

Meridian IVR

Maintenance and Diagnostics Guide

Publication number: 555-9001-500
Product release: 2.0/1
Document release: Standard 1.0
Date: February 1996

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Printed in the United States of America

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Publication history

February 1996

This document is the first standard issue for Meridian IVR Release 2.0/I.

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About this guide

Who should use this guide

This guide is intended to be used by Meridian IVR 2.0/I users, VADs, field technicians, and field support engineers. This guide is designed to assist in identifying, diagnosing, and resolving fault conditions on the Meridian IVR system.

How to use this guide

This manual contains the following chapters and appendices:

Chapter 1: Diagnostics overview

Provides an overview of the diagnostics procedures available for components of the Meridian IVR 2.0/I application processor.

Chapter 2: Fault isolation

Provides procedures for identifying problems that can occur with the Meridian IVR 2.0/I system and related devices.

Chapter 3: Troubleshooting procedures

Provides possible solutions for common hardware problems.

Chapter 4: Maintenance activities

Describes procedures for the removal and installation of all field-replaceable Meridian IVR application processor components.

Chapter 5: Software reinstallation

Provides an overview of Meridian IVR software requirements, and the procedures necessary to reinstall the software.

Appendix A: POST diagnostics

Provides a reference for power on self test (POST) diagnostics codes and messages.

Appendix B: MTA diagnostics reference

Provides a command reference for the Modular Test Architecture (MTA) diagnostics.

Appendix C: System configuration utility

Provides information and procedures for configuring adapter cards using the system configuration utility.

Appendix D: UNIX diagnostics

Describes diagnostics procedures for third-party adapter cards.

Appendix E: X terminal support

Describes how to install an X terminal on a Release 20/I system.

Appendix F: Cable pinouts

Provides connector pin assignments for the DigiBoard DB-25 connectors. Cabling information for the U.S. Robotics modem is also described.

Appendix G: Customizing the user interface

Provides information on customizing the appearance of interface elements, altering the wording of menu options, and translating Meridian IVR 2.0/I into foreign languages.

Appendix H: Console redirection

Describes procedures and requirements for redirecting console output for remote support.

Appendix I: Error messages

Lists the error messages that may appear in the Transaction Log.

Additional Meridian IVR guides

The following documents are part of the Meridian IVR 2.0/I Operational and Developmental document suites:

Manual	NTP Number
<i>Meridian IVR Product Guide</i>	555-9001-010
<i>Meridian IVR Planning and Engineering Guide</i>	555-9001-200
<i>Meridian IVR System Administration Guide</i>	555-9001-210
<i>Meridian IVR Getting Started Guide</i>	555-9001-301
<i>Meridian IVR Application Development Guide</i>	555-9001-310
<i>Meridian IVR 3270 Gateway Development Guide</i>	555-9001-312
<i>Meridian IVR SQL Server Guide</i>	555-9001-314
<i>Meridian IVR VT100 Gateway Development Guide</i>	555-9001-316
<i>Meridian IVR 5250 Guide</i>	555-9001-318
<i>Meridian IVR Fax Application Guide</i>	555-9001-350
<i>Meridian IVR Installation Guide</i>	555-9001-210

Third-party documentation

The information supplied with your vendor's host connectivity package will be necessary for hardware and software installation and configuration. You should also have the documentation supplied with the following hardware and software:

- 8-port serial card
- integrated UPS (hardware and software)
- external remote support modem
- printer
- monitor

- mouse
- SCO UNIX software

Conventions used in this guide

Throughout this guide, several typographic conventions have been used to highlight certain types of information.

- Buffer names are shown in all upper case characters, for example, the CURRENT MESSAGE buffer.
- Commands you must type are shown in bold, for example, type **sam** at the prompt.
- Keynames you press are enclosed in angle brackets, for example, the <Enter> key.
- Softkeys shown on the screen which are mapped to function keys are enclosed in square brackets, for example, the [Save] softkey.
- Variables shown in command lines appear in italics, for example, the *host_cfgn* file, where *n* is a variable representing a board number.
- Screen output is shown in *courier*.

Chapter 1: Diagnostics overview

This chapter outlines diagnostic procedures available for components of the Meridian IVR 2.0/I Application Processor.

Components tested

The diagnostic procedures cover testing routines for the following components:

- Intel ALTAIR Motherboard
- Intel Pentium P5-100 MHz or P5-75 MHz CPU
- Random Access Memory (RAM)
- hard disk drive
- floppy disk drive
- tape drive
- mouse
- keyboard
- SVGA monitor (14 inch or 17 inch)
- external modem
- 3270 SNA card (Arnet SYNC/570)
- Ethernet card (ZYNX PCI)
- VT100 serial card (DigiBoard PC/Xe)
- token ring card (Madge Smart 16/4 AT) for Host Connectivity
- token ring card (Madge Smart 16/4 AT) for LAN Connectivity
- fax card (Dialogic VFX/40E)

Diagnostic routines

There are three ways to diagnose system faults:

- Power On Self Test (POST)
- third-party DOS-based utilities including MTA Testview
- UNIX-based utilities provided by Northern Telecom (Nortel) and other vendors

These diagnostic approaches are described in the following sections.

Power On Self Test (POST) diagnostics

The system BIOS performs a Power On Self Test (POST) to verify the correct operation of the baseboard hardware.

Error messages are displayed on screen after the video subsystem has been tested and initialized. Before initialization, beep codes are used to notify you of errors.

The POST error codes are logged in NVRAM and in the extended BIOS data area, and are displayed on the LCD display.

For a full description of POST error codes and descriptions, refer to Appendix A: "POST diagnostics," on page A-1.

DOS-based utilities

The following third-party DOS-based utilities are provided with IVR 2.0/I:

- serial board diagnostics
- Intel system diagnostics (MTA)
- 3270 SNA card diagnostics
- token ring card diagnostics
- power supply diagnostics
- Ethernet card diagnostics

These utilities reside on a 10-Mbyte DOS partition in the Application Processor drive. You can access this partition by booting the system from a DOS floppy and accessing the c: drive.

UNIX-based utilities

This diagnostic group includes vendor-supplied programs and procedures developed by Nortel. The following procedures are available:

- Nortel UNIX system diagnostics
- ACCESS diagnostics
- serial board diagnostics
- fax test software

You can detect some problems with UNIX tools, such as the tool **fsck**. You can use this tool to detect hard drive failures.

Chapter 2: Fault isolation

This chapter helps you to identify problems that might occur while using the Meridian IVR Release 2.0/I system and related devices.

The procedures described in this chapter may produce results requiring a specific maintenance procedure. In these cases, you are directed to a specific procedure in Chapter 4, “Maintenance activities”.

If a fault persists, contact your Nortel service representative.

Gathering information

To diagnose a system failure effectively, you should determine which processes were active at the time of the failure.

Once the system has been reset, the state of the system at the time of the failure is lost.

You can check the status of all Meridian IVR processes by issuing the following UNIX command:

```
ps -ef | grep '\.\/'
```

With this command, `ps` displays the process table, and `grep` limits the display to those Meridian IVR processes with UNIX path names with the special character `./`.

Meridian IVR requires certain processes to be running at all times. Other Meridian IVR processes may run but are not considered essential.

The following table lists the processes for Meridian IVR:

Table 2-1
Meridian IVR processes

Process name	Process description
gui_main	Main fax gui
gui_sys	Fax system administration
gui_mdm	Fax modem administration
gui_mon	Fax modem monitor
gui_cal	Call back administration
gui_log	OM and log administration
gui_ve	View and edit administration
frusr	Fax user function
fax_server	Fax server process
log_server	Log server process
cal_server	Call back server process
ses_server	One point for each channel
gs	PostScript conversion
img_create	Image create process
cal_submit	Call back submit process
img_print	Image print process
dcat	Allows the dynamic mixture of variable and fixed data from files and text buffers as part of a Meridian IVR call flow.
scm	System configuration manager
sai	System application interface
xai	System monitor
sde	System database editor

Table 2-1
Meridian IVR processes (Continued)

Process name	Process description
xae	Graphical application editor
xconsole	Main error console
xclock	Clock
mwm	X manager for IVR
passwd	Password change process
xbup	Backup and restore utility
ntcu	MMconsole process
accdiag	Access diagnostic process
uif	IVR main gui process
mcm (parent)	Meridian channel manager
mcm (child)	Meridian channel manager
vrtd (parent 1)	Voicetek run-time daemon
vrtd (parent 2)	Voicetek run-time daemon
vrtd (child x 4)	Voicetek run-time daemon
psm	Protocol state machine
ueh	User error handler
vtk	VTk request router
vip	VTk interface process
vrn	VTk resource manager
cli	Call logic interpreter
dfs	Voicetek database server
qds	Query DBMS server
csc	Call scheduler

Table 2-1
Meridian IVR processes (Continued)

Process name	Process description
sad	System administration daemon
vft	File transfer
pmg	Pull manager
trs	Host connectivity session manager
trsl	Trs log process
msg (multi)	Messaging process
trsc	TRS protocol handling process
cli_s	Call logic process
ust	User statistic process
lh	Access link handler
lhrx	Link handler
nedit	Report writer
sri_disp	Report writer related process
frep	Report writer related process
vpe	Voice prompt editor
sam	System application monitor
csnap	Curses based snap
rstat	Reset statistic
sched	Schedule application process
devent	Display sched application
qds	Query DBMS server
xdx	Database process
Xpowerchute	UPS gui interface

Table 2-1
Meridian IVR processes (Continued)

Process name	Process description
_xpwrchute	UPS gui interface
_upsd	UPS daemon
_upsd	UPS daemon
agent	Apertus agent process
cdmserver	Apertus process
executive	Apertus software daemon
watchdog	Apertus software daemon
express	Express manager process
CM	Configuration utility process
CFG	Control communications and diagnostics process
End	

Examining interprocess communication queues

The interprocess communication (IPC) queues are used by Meridian IVR to let its processes communicate with each other. If these processes do not function properly, the system will fail. To view the queues in the system, issue the following command:

```
ipcs -a
```

This command displays the last sender, the last receiver, and the number of bytes in each queue.

During normal operation, the queues contain zero bytes because they are being read from and emptied constantly.

If the queues are not empty, one process is no longer reading information from the queues. Since there are limited system resources for each individual queue and for all combined queues, the system will fail. You must determine which process has stopped.

Meridian IVR log files

The following error logs are found in Meridian IVR:

- /u/ivr/log.d/event.log
Transaction log file
- /u/ivr/log.d/start.log
Startup log file
- /u/ivr/log.d/xconsole.log
Xconsole log file
- /u/fax/log/yyyymdd.log
Fax event log
- /u/fax/log/cal_server.err
Fax error log
- /u/fax/log/fax_server.err
Fax error log
- /u/fax/log/log_server.err
Fax error log
- /u/admin/accdiag.log
ACCESS diagnostics log
- /u/ivr/vrs/exe/accdiag.log
ACCESS diagnostics log
- /u/ivr/vrs/exe/lhn.log
Link handler log file
- /u/ivr/vrs/exe/lhn_old.log
Old (previous) link handler log file
- /u/ivr/vrs/log.d/start.log
VRS start log (logs last start time of VRS)
- /u/ivr/vrs/log.d/event.log
VRS event log

Examining the error logs

The error logs contained in */u/ivr/log.d/event.log* (viewing the Reports Generator, this file is referred to as the Transaction log file) and */u/ivr/vrs/log.d/event.log* are important sources of system information. These logs report error messages for each process which are used for debugging applications and system failures.

Use the **more** command to examine the contents of the error logs.

Logs are circular files of 500 lines in length. If any logs contain pertinent information, save the file to a unique name.

Note: A circular file has a set length. When messages exceed this length, they are written at the beginning of the file and, thus, overwrite the earliest messages in the file.

Examining the /tmp directory

The */tmp* directory contains information about each process in the system. Each process has a file called *pid.msg.log* in the */tmp* directory.

Process shutdown information

Each file indicates the last state of the process which created it. These files can often indicate which process shutdown abnormally.

Examining the Meridian IVR console window

The Meridian IVR console window displays Meridian IVR status errors at start-up and shutdown.

These messages are also written to a file.

Security problems are also displayed in this console window.

Reading Transaction Log Report self-diagnostic messages

Whenever Meridian IVR is powered up, it performs self-diagnostics and then reports the results of these diagnostics to the system console.

One item is Message #102 which reports a CCC1 or a CCC0 diagnostic reply in the Transaction Log Report.

CCC0 - Fatal errors

If Meridian IVR has fatal errors, diagnostics report them in a CCC0 reply. (Fatal errors are errors that prevent Meridian IVR from running.)

CCC1 - Non-fatal errors

If Meridian IVR has non-fatal errors, diagnostics report them with one or more CCC1 replies.

To read CCC1 and CCC0 replies, go to the Transaction Log Report and look at every Message #102 that has been added to the report since the last diagnostics were performed.

Meridian Access link setup problem

If you suspect a Meridian Access link setup problem, you can check Meridian Access link settings by following the procedure below.

Procedure 2-1

Checking Meridian Access link settings

- 1 Check that Meridian Access link is enabled on Meridian Mail by going to the Meridian Mail menu and selecting General System Administration.
- 2 Select General System Options. If the Meridian link is enabled, it is listed in the Available Features display.
- 3 Check that the Access link cable is connected to data port MMLINK.
- 4 View settings of the hardware database by selecting Hardware Administration on the Meridian Mail menu.
- 5 Select Data Port Configuration to display a list of configured system data ports. One data port should appear as MMLINK.

MMLINK must be set to the proper baud rate (for example, 9600 for Meridian Mail 8) and a specific data port location.

For more information on how to establish the Meridian Access link with IVR, see the *Meridian IVR Installation Guide* (NTP 555-9001-210).

Troubleshooting operational problems

This section provides general guidelines for troubleshooting operational problems in the Meridian IVR system.

If you cannot correct the problem, contact your Nortel service representative.

Failure to synchronize the Meridian Access link

The Meridian Access link manages communications between Meridian IVR and Meridian Mail.

Use the MM Link Diagnostics menu on your terminal to check that communications are synchronized and running properly. This menu displays link handler status.

If the *Link not synchronized* message appears, do the following:

- 1 Check if the Meridian Access link is installed using the tools level in Meridian Mail and the MMverify command (option 13, for example, Link Diagnostics).
- 2 Check that the EC/RSM utility card is seated properly within the Meridian Mail system.
- 3 Check that the fanout cable at the RSM utility card is connected properly.
- 4 Check the I/O panel cabling.
- 5 Check that the Digiboard cable is connected to the first port of the RSM/EC fanout cable.
- 6 If the fanout cable is connected to the wrong RSM/EC utility port, you might have to reset Meridian Mail to synchronize the Meridian Mail link.

An application cannot run

If the Meridian IVR core software is running but an application is not executing, check system configuration parameters using the system configuration interface.

Procedure 2-2

Checking system configuration parameters

- 1 Check the mailbox id and the channel mailbox password. Correct if necessary.
- 2 Start Meridian IVR, and, through the system administration menu, display the system monitor administration window.
- 3 Press the Node Toggle Button to display channel activity.
 - If Meridian Mail channels are all gray, check that the Meridian Mail link is connected and synchronized.
 - If the number of configured channels exceeds the number of defined channels, only the defined channels will work.
 - The number of channels on the screen should match the number of channels purchased or defined for the system.
- 4 Check the log files and examine any error messages.
- 5 On the system administration menu, select system configuration to display the system configuration screen. Check the number of configured channels.

The system configuration screen shows the Number of Nodes and Maximum # of System Wide Prompts.

The number of nodes should always be 1.

Meridian IVR cannot run

If the Meridian IVR core software is not running check the following error logs:

- /u/ivr/log.d/event.log
- /u/ivr/log.d/xconsole.log

If you cannot correct the problem, contact your Nortel service representative.

A call cannot reach Meridian IVR

If a call cannot reach a Meridian IVR channel, check the system configuration on Meridian IVR and on Meridian Mail.

If the configuration has changed, reset Meridian IVR as described in the *Meridian IVR Installation Guide* (NTP 555-9001-210).

Failure to access the voice prompt mailbox

If Meridian IVR is running and all of its channels are defined as dedicated, then the VPE will not have a free channel for logging in to the voice prompt mailbox. The VPE needs at least one unused shared channel on the Meridian Mail System to access the mailbox.

To check if the VPE has a shared channel, follow these steps:

	<p style="text-align: center;">CAUTION</p> <p>Do not stop Meridian IVR during the recording of voice prompts because this causes the Meridian Mail link to stop. When the link is stopped, changes made during the VPE session cannot be saved.</p>
---	--

Check that the mailbox which the VPE is trying to access is available and that the password being used is correct.

Meridian Mail console window not available

An optional Meridian Mail console window can be displayed on the SVGA monitor using special cabling. If no Meridian Mail console window appears on the SVGA monitor, check that the cabling between the Meridian Mail I/O panel and the Meridian IVR panel is the correct cable. Refer to the *Meridian IVR Installation Guide* (NTP 555-9001-210).

The Meridian Mail console baud rate must be 2400 bps to work properly with IVR.

Contact the Nortel service representative to correct this problem.

Chapter 3: Troubleshooting procedures

Initial system start-up quick reference checklist

Problems that occur at initial system startup are usually caused by incorrect installation or configuration. Hardware failure is a less frequent cause.

Table 3-1
System start-up reference chart

Check	Reference
Is voltage switch setting correct for line voltage?	Refer to the <i>Meridian IVR Installation Guide</i> .
Is AC power available at the wall outlet?	Obvious
Is system power cord properly connected to system and plugged into NEMA 5-15 outlet for 100-120 V AC or NEMA 6-15R outlet for 200-240 V AC?	Refer to the <i>Meridian IVR Installation Guide</i> .
Is the I/O panel seated on base board?	See "System base board and I/O panel" on page 4-26 of this guide.
If you pressed power on/off push button switch to turn server on, power-on LED should be lit.	Verify that the power-on LED on the Front Panel Controls and Indicators is lit.
Are cables correctly connected and secured?	See "System base board and I/O panel" on page 4-26 of this guide.
Are jumper settings on base board correct?	See "System board jumpers" on page 4-59 of this guide.

Table 3-1
System start-up reference chart (Continued)

Check	Reference
Are expansion boards, modules, and components properly seated on the base board?	See "Add-in boards" on page 4-21 of this guide.
Are jumper and switch settings on expansion boards and peripheral devices correct?	See "Add-in boards" on page 4-21 of this guide.
Are peripheral devices properly installed?	See "Add-in boards" on page 4-21 of this guide.
If system has a hard drive, is it properly formatted, defined, and recognized?	Refer to the <i>Meridian IVR Installation Guide</i> .
Is the SCSI backplane configured and terminated correctly?	See "Swapping SCSI hard drives" on page 4-46 of this guide.
Are device drivers properly installed?	See "Swapping SCSI hard drives" on page 4-46 of this guide.
Are configuration settings made with the SCU correct?	Refer to Appendix C: "System configuration utility".
Is the operating system properly loaded?	Refer to the <i>Meridian IVR Installation Guide</i> .
End	

Specific operational problems and corrective actions

The following sections provide possible solutions to the following problems:

- Power light does not light.
- System fans do not rotate.
- Characters do not appear on screen.
- Characters on the screen appear distorted.
- No beep or incorrect beep pattern.
- Diskette drive activity light does not work.
- Hard disk drive activity light does not work.
- Tape drive activity light does not work.
- CU does not boot.

If you cannot correct the problem with any of the solutions, contact your Nortel service representative.

Power light does not work

The following table outlines actions you can take if your power light is not working.

Table 3-2
Power light troubleshooting

Check	Reference
Is the system otherwise operating normally?	The LED is defective.
Are there other system problems?	Check the items listed in the Fans section below.

If the problems persist, contact your Nortel service representative.

System cooling fans do not rotate

This section outlines high-level actions that you can take if your system cooling fans are not operating.

Check the following:

- Is AC power available at the wall outlet?
- Is the system power cord properly connected to the system and the wall outlet?
- If present, is the fuse in the system AC power cord plug OK?
- Is the power-on light lit?
- Is the power connector for the front cooling fan properly connected to the system board?
- Is the cable from the front panel board connected to the system board?
- Are the power supply cables properly connected to the system board?
- Is the power supply cable with the 2-pin enable connector properly connected to the system board?
- Are there any shorted wires caused by pinched cables or power connector plugs forced the wrong way into power connector sockets?

If the switches and connections are correct and AC power is available at the wall outlet, the power supply has probably failed. Contact your Nortel service representative for assistance.

If the fan motor has failed, you need to replace the fan. See “Fans” on page 4-32.

No characters appear on screen

This section outlines steps which you can take if characters do not appear on your video display terminal.

Check the following:

- Is the keyboard working?
- Is the video monitor plugged in and turned on?
- Are the brightness and contrast controls on the video monitor properly adjusted?
- Are the video monitor switch settings correct?
- Is the video monitor signal cable properly installed?
- Is the onboard video controller enabled?

Use the following procedure if you are using an add-in video controller board.

Procedure 3-1

Add-in video board troubleshooting

- 1 Verify that the video controller board is fully seated in the system board connector.
- 2 Run the System Configuration Utility to disable the onboard video controller. Specify that an offboard VGA/EGA adapter is installed.
See Appendix C: "System configuration utility" for more details.
- 3 Reboot the system for changes to take effect.

If there are still no characters on the screen after you reboot the system, contact your Nortel service representative for assistance.

POST emits a specific beep pattern to indicate problems with the video display controller. If you do not receive a beep pattern and characters do not appear, the video display monitor or video controller may have failed. Contact your Nortel service representative<Enter> for assistance.

Characters are distorted or incorrect

This section outlines high-level steps which you can take if characters on your video display terminal are distorted or incorrect.

Check the following:

- Are the brightness and contrast controls properly adjusted on the video monitor?
- Are the video monitor signal and power cables properly installed?

If the problem persists, the video monitor may be faulty, or it may be the incorrect type. Contact your Nortel service representative for assistance.

Incorrect or no beep codes

This section outlines high-level steps which you can take if your system is producing incorrect beep codes or if no beep codes are played.

Check the following:

- Is the speaker enabled?
- Is the signal cable connected to the front panel?

Record the beep codes emitted by POST. Refer to "POST error and signal codes" on page A-4 for information about beep codes and error messages.

If the system operates normally and there is no beep, the speaker may be defective. Verify that the speaker is enabled by running the System Configuration Utility. For information about running the SCU, see Appendix C: "System configuration utility".

If the speaker is enabled but not functioning, contact your Nortel service representative.

Diskette drive activity light does not light

This section outlines steps which you can take to verify the correct operation of your diskette drive activity light.

Check the following:

- Are the diskette drive power and signal cables properly installed?
- Are all relevant switches and jumpers on the diskette drive set correctly?
- Is the diskette drive configured properly?

If you are using the onboard diskette controller, use the System Configuration Utility to make sure that the Onboard Floppy parameter is set to Enabled. If you are using an add-in diskette controller, make sure that the Onboard Floppy parameter is set to Disabled. For information about running the SCU, see Appendix C: "System configuration utility".

If the problem persists, there may be a problem with the diskette drive, system board, or drive signal cable. Contact your Nortel service representative for assistance.

Hard disk drive activity light does not light

If you have installed one or more hard disk drives in your system, check the following:

- Are the power and signal cables to the hard disk drive properly installed?

Note: The hard disk drive activity light, second light from the top, lights when either an IDE hard disk drive or SCSI device is in use.

- Is the hard disk drive properly configured?
- If your system contains a SCSI host adapter controller board, is the hard disk activity LED cable connector plugged into the controller board?

Run the System Configuration Utility to make sure that the hard disk drive is configured with the correct parameters. For information about running the SCU, see Appendix C: "System configuration utility".

If the problem persists, there may be a problem with the hard disk drive, the add-in controller board, system board, drive signal cable, or LED connector. Contact your Nortel service representative for assistance.

Testing hardware components

The following sections outline how to test specific hardware components of the Meridian IVR 2.0/I system.

Intel ALTAIR motherboard

This section outlines procedures for visual inspection and testing of the components of the ALTAIR motherboard.

Visual inspection of connections

The following connections on the motherboard can be verified visually:

- CPU module connector
- memory module connector
- onboard DRAM slots
- master add-in board slots (3 PCI, 5 EISA, and 1 hybrid)
- PS/2-compatible parallel port
- two PS/1-compatible, 9-pin serial ports
- VESA video connector

The following procedure outlines how you can verify motherboard connections:

Procedure 3-2 **Verifying connections**

- 1 Power down the Application Processor as described in "Powering down the application processor" on page 4-5.
- 2 Remove the side cover of the Application Processor as described in "Removing the side cover" on page 4-7.
- 3 Verify all connections visually.
- 4 Reseat all loose connections by gently pushing connectors into place.

The following figure illustrates the major connections on the motherboard.

Figure 3-1
Motherboard connections

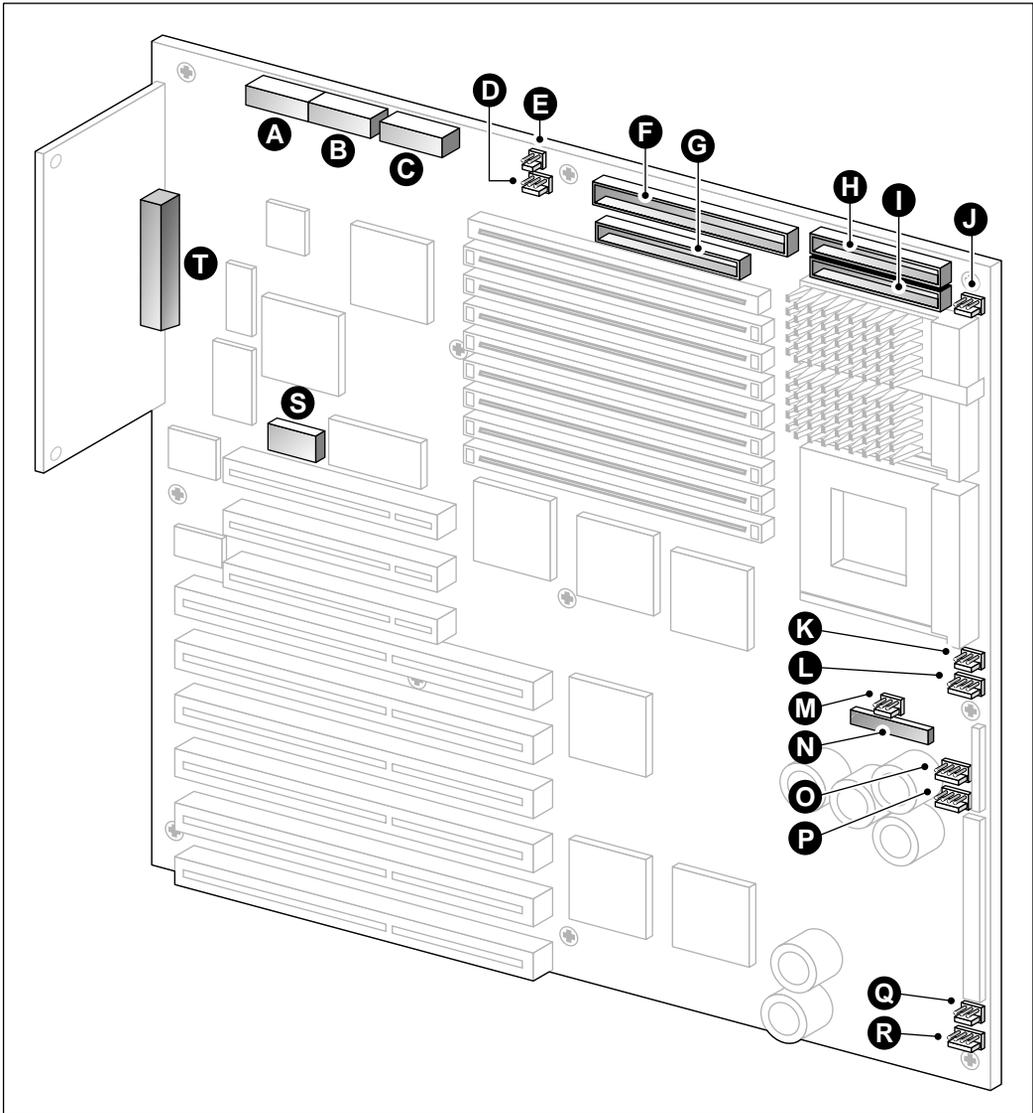


Table 3-3
Motherboard connections

Letter	Description
A	Power connector
B	Power connector
C	Power connector
D	Configuration jumpers
E	Configuration jumpers
F	SCSI connector
G	IDE connector
H	Front panel connector
I	3 1/2-inch drive connector
J	5 volt microprocessor fan connector
K	12 volt fan connector
L	Hard drive LED connector
M	5 volt fan connector
N	Server monitor module extended feature connector
O	Chassis switch
P	Front panel hard drive LED connector
Q	12 volt fan connector and jumper
R	Hard drive LED connector
S	3.3 volt PCI connector
T	I/O panel connector

Motherboard component diagnostics

The following procedure outlines how to test motherboard components using MTA Testview. The following components can be tested using this routine:

- real-time clock/calendar (RTC) chip
- basic input/output system (BIOS) in flash EPROM
- programmable interrupt controller (PIC)
- programmable interrupt timer (PIT)
- system monitor (INCA)
- direct access memory (DMA)
- serial controller (COM_1 and COM_2)
- parallel port (PARALLEL_1)
- speaker (SPEAKER)

Use the following procedure to test these components.

Procedure 3-3**Performing motherboard diagnostic routine**

- 1 Boot the Application Processor from a floppy drive using DOS 6.22 or higher.
- 2 Change to the testview directory:

```
c:  
cd c:\testview
```
- 3 Enter the following command:

```
testview /self
```

A menu appears displaying your system hardware.
- 4 Press the <Enter> key to continue.

- 5 Enable the following test module options using the arrow keys and spacebar:
- POST
 - INCA
 - SMP_PROCESSOR_0
 - RTC
 - PIC
 - PIT
 - DMA
 - LED
 - SPEAKER
 - COM1
 - COM2
 - PARALLEL_1

The selected tests are displayed in deep blue.

- 6 Change to the OPTIONS/RUN ALL TESTS menu.
- 7 Change the LOOP COUNT parameter from Unlimited to 1 pass.
- 8 Press the <Enter> key to begin the test.

This set of test modules takes up to three minutes per run.

Intel Pentium P5-75 MHz or 100 MHz CPU

The following procedure tests these functions of the CPU:

- CPU information
- floating point unit
- clock speed
- arithmetic functions
- logical functions

This test can only detect CPUs of types Pentium or lower.

Procedure 3-4
CPU diagnostics

- 1 Boot the Application Processor from a floppy drive using DOS 6.22 or higher.
- 2 Change to the testview directory:

```
c:  
cd c:\testview
```
- 3 Start testview using the following command:

```
testview /self
```

A display of your system hardware appears.
- 4 Press the <Enter> key to continue.
- 5 Enable the following test modules using the arrow keys and the spacebar:
 - CPU
 - MATH
- 6 Change to the OPTIONS...RUN ALL TESTS menu.
- 7 Change the LOOP COUNT parameter from Unlimited to 1 pass.
- 8 Press the <Enter> key to start the test.

This set of test modules takes about 5 seconds per run.

Onboard dynamic random access memory

The following procedure tests these functions of dynamic random access memory (DRAM):

- Refresh request
- Data lines
- Addressing
- Read/write operation
- Each location in memory and the bus
- Cache memory

This diagnostic routine will not run correctly if an extended memory manager is present.

Procedure 3-5 DRAM diagnostics

- 1 Boot the Application Processor from a floppy drive using DOS 6.22 or higher.
- 2 Change to the testview directory:

```
c:  
cd c:\testview
```
- 3 Start testview using the following command:

```
testview /self
```

A display of your system hardware appears.
- 4 Press the <Enter> key to continue.
- 5 Enable the following test modules and their submenu tests using the arrow keys and spacebar:
 - Cache
 - Memory
- 6 Change to the OPTIONS...RUN ALL TESTS menu.
- 7 Change the LOOP COUNT parameter from Unlimited to 1 pass.
- 8 Press the <Enter> key to start the test.

The memory test takes approximately nine minutes for every four Mbyte of RAM in your system.

Mouse and onboard mouse controller

The following procedure outlines how to interactively test your mouse and mouse controller.

This test checks the proper movement of the mouse pointer and proper mouse button operation. You are directed to move the mouse to specific screen areas.

Procedure 3-6
Mouse diagnostics

- 1 Boot the Application Processor from a floppy drive using DOS 6.22 or higher.
- 2 Load the appropriate mouse driver.
- 3 Change to the testview directory:

```
c:
cd c:\testview
```
- 4 Start testview using the following command:

```
testview /self
```

A display of your system hardware appears.
- 5 Press the <Enter> key to continue.
- 6 Enable the MOUSE test module.
- 7 Change to the OPTIONS...RUN ALL TESTS menu.
- 8 Change the LOOP COUNT parameter from Unlimited to 1 pass.
- 9 Press the <Enter> key to start the test.
- 10 Test the mouse as requested.

This test takes about 20 seconds per run assuming a reasonable response from the operator.

Keyboard and onboard keyboard controller

The following procedure tests these functions and components of the keyboard:

- Interrupt-handling mechanism
- Scroll/Caps/Num Lock indicators
- Work as Text model

Note: A keyboard must be attached to the Under Unit Test (UUT) for some tests to pass.

Procedure 3-7
Keyboard diagnostics

- 1 Boot the Application Processor from a floppy drive using DOS 6.22 or higher.
- 2 Change to the testview directory:

```
c:  
cd c:\testview
```
- 3 Start testview using the following command:

```
testview /self
```

A display of your system hardware appears.
- 4 Press the <Enter> key to continue.
- 5 Enable the KB test module.
- 6 Go to the OPTIONS...RUN ALL TESTS menu.
- 7 Change the LOOP COUNT parameter from Unlimited to 1 pass.
- 8 Press the <Enter> key to start the test.
- 9 Test keyboard LEDs as directed.

This test module takes approximately 20 seconds to run.

Monitor and video adapter card

This procedure tests the following functions of the monitor and its adapter:

- Video RAM
- VGA modes
- Pixel (picture element)
- Video oscillator
- Video controller
- Digital-to-analog converter (DAC)

The test group tests all video adapters recognized on the system. Each type of adapter has a set of modes that it supports, and each test in the group has a set of supported modes.

Procedure 3-8
Monitor and adapter diagnostic

- 1 Boot the Application Processor from a floppy drive using DOS 6.22 or higher.
- 2 Change to the testview directory:

```
c:  
cd c:\testview
```
- 3 Start testview using the following command:

```
testview /self
```

A display of your system hardware appears.
- 4 Press the <Enter> key to continue.
- 5 Enable the VID_CL test module and its submenu tests.
Note: 512 Kbyte RAM, 2 Mbyte RAM, 1280 x 1024 x 25655, 1024 x 768 x 64 Kbyte, 800 x 600 x 16 Mbyte are not applicable. You can omit unnecessary tests by pressing the spacebar on selected tests.
- 6 Go to the OPTIONS...RUN ALL TESTS menu.
- 7 Change the LOOP COUNT parameter from Unlimited to 1 pass.
- 8 Press the <Enter> key to start the test.
- 9 Test the monitor as requested.

This test takes approximately three minutes with all applicable interactive tests enabled.

SCSI hard disk and controller

This procedure tests the following functions of the hard disk and its controller:

- SCSI hard disk controller
- Diagnostic track write/read
- All sectors/heads/cylinders access test



CAUTION! **Risk of data loss**

This module contains destructive tests.

Procedure 3-9

Running SCSI hard disk and controller diagnostics

- 1 Boot the Application Processor from a floppy drive using DOS 6.22 or higher.
- 2 Change to the testview directory:

```
c:  
cd c:\testview
```
- 3 Start testview using the following command:

```
testview /self
```

A display of your system hardware appears.
- 4 Press the <Enter> key to continue.
- 5 Enable the IDE_OR_SCI_DRIVE_0 module and its submenu tests.
- 6 Go to the OPTIONS...RUN ALL TESTS menu.
- 7 Change the LOOP COUNT parameter from Unlimited to 1 pass.
- 8 Press the <Enter> key to start the test.
- 9 Test the SCSI hard disk and its controller as requested.
This module takes approximately 10 minutes per run.

SCSI tape drive

This procedure tests the following functions of the tape drive and its controller:

- SCSI controller capability of supporting a 2.5-Gbyte tape drive
- Write/read option

Procedure 3-10

Running SCSI tape drive diagnostics

- 1 Boot the Application Processor from the floppy drive using DOS 6.22 or higher.
- 2 Change to the SCSI directory:

```
c:  
cd c:\scsi
```
- 3 Insert a bootable floppy diskette into the floppy drive.
- 4 Copy the config.sys file to the bootable floppy diskette:

```
copy config.sys a:config.sys
```
- 5 Reboot the Application Processor from the floppy drive.
- 6 Change to the testview directory:

```
c:  
cd c:\testview
```
- 7 Start testview using the following command:

```
testview /self
```

A display of your system hardware appears.
- 8 Enable the SCSI_Tape test module and all of its submenu tests, with the exception of Write_Read and Write_Read_All.
- 9 Go to the OPTIONS...RUN ALL TESTS menu.
- 10 Change the LOOP COUNT parameter from Unlimited to 1 pass.
- 11 Press the <Enter> key to start testview.
- 12 Test the SCSI tape drive as requested.

This module takes about six minutes per run.

Floppy disk drive and floppy disk controller

This procedure tests the following functions of the floppy disk and its controller:

- On-board floppy disk IDE controller capable of supporting a 1.44-Mbyte floppy disk drive
- Modular test architecture
- Run-in system test



CAUTION! **Risk of data loss**

This module contains destructive tests.

Procedure 3-11 **Running floppy disk drive diagnostics**

- 1 Boot the Application Processor from a floppy drive using DOS 6.22 or higher.
 - 2 Change to the testview directory:

```
c:  
cd c:\testview
```
 - 3 Start testview using the following command:

```
testview /self
```

A display of your system hardware appears.
 - 4 Press the <Enter> key to continue.
 - 5 Enable the FLOPPY_A test module and its submenu tests.
 - 6 Insert a formatted floppy disk into the floppy drive.
 - 7 Go to the OPTIONS...RUN ALL TESTS menu.
 - 8 Change the LOOP COUNT parameter from Unlimited to 1 pass.
 - 9 Press the <Enter> key to start the test.
- This module takes approximately six minutes per run.

Testing expansion cards

The following sections outline diagnostic procedures for expansion cards in the Application Processor. The diagnostic routines are stored in their respective directories in the DOS partition.

IBM 3270 SNA card (Arnet SYNC/570)

The Arnet SYNC/570 is an expansion board for ISA computers which adds two synchronous/asynchronous serial ports. This procedure tests the following functions of the Arnet SYNC/570:

- IRQ, the base memory address, and the base I/O address
- control line loopback testing of RTS to CTS, and DTR to DSR to DCD
- data line loopback testing of the default single channel chained-block DMA transfer mode
- the ability of the card to generate interrupts by way of internal data loopbacks

Table 3-4 lists the correct memory and I/O address for the Arnet SYNC/570.

Table 3-4
SYNC/570 Interrupt/Memory address and I/O port addresses

IRQ	15
Memory Address	DC000
I/O Port Address	340

Table 3-5 lists the correct dip switch settings found on the Arnet SYNC/570 card.

Table 3-5
SYNC/570 dip switch settings

Switch 1	On
Switch 2	On
Switch 3	Off
Switch 4	On
Switch 5	Off
Switch 6	Off

Procedure 3-12
Testing the Arnet SYNC/570 card

- 1 Boot the Application Processor from a floppy drive using DOS 6.22 or higher.
- 2 Change to the sync570 directory:

```
c:  
cd c:\sync570
```
- 3 Run the diagnostic using the following command:

```
sync570
```
- 4 Follow the instructions on the screen.
- 5 Ensure that the address is set as outlined in Table 3-4.
- 6 Install the single-channel loopback connector onto line 1 (bottom connector) when prompted.
- 7 Repeat the procedure for line 2 (top connector).
This test takes approximately five minutes.

Test results

In the event of a failed test, make sure that the I/O port address is set correctly (see Table 3-4). If the settings are correct, the card may have to be replaced.

Ethernet card (ZNYX PCI)

The following procedures outline test routines for the ZNYX PCI Ethernet card.

ping

In UNIX, the ping utility determines if the Ethernet card is connected to the network. The ping utility sends an ICMP echo (ECHO_REQUEST) packet to the host once every second. Each packet that is echoed back (through an ECHO_RESPONSE packet) is reported on screen, including round-trip time.

Notes:

- 1 To use the ping utility, the card must be properly configured.
- 2 The jumper does not need to be set for cable selection. Cable type is automatically determined by the configuration software.

Procedure 3-13

Using the ping utility

- 1 Run the ping utility on the local host to verify that the local network interface is working correctly.

Ping sends one datagram per second, and prints one line of output for every ECHO_RESPONSE returned. If an optional count is given, only the specified number of requests is sent.

- 2 From the UNIX command line, enter the following command to run the diagnostic:

```
ping hostname <Enter>
```

If no output is produced, there is a problem with the card. Run the diag312 diagnostic utility, as outlined in Procedure 3-14, to check the card.

- 3 Press <Ctrl+C> to terminate the program after a sufficient number of datagrams are sent.
- 4 When all responses have been received or the program times out (with a specified count), or if the program is terminated with a SIGINT, a brief summary is displayed similar to:

```
----hostname.xxx.yy.com PING Statistics----
```

```
87 packets transmitted, 87 packets received, 0% packet  
loss
```

```
round-trip (ms) min/avg/max = 0/0/3
```

- 5 If the test passes, test ping against other machines on the network.
- 6 From the UNIX command line, enter the following command to run the diagnostic, where *hostnumber* is the ip address of a machine on the network:

```
ping hostnumber<Enter>
```

- 7 Press <CTRL>-D to stop the test after several lines are displayed.

Ping test result

When all responses have been received or the program times out, or if the program is terminated with a SIGINT, a summary is displayed. If no output appears after ping is entered, there is a network problem. Check the card, configuration, and network connection.

diag312

Procedure 3-14 outlines the use of the DIAG312.exe DOS-based diagnostic to test the ZYNX PCI Ethernet card.

Procedure 3-14

Running the diag312 diagnostic

- 1 Boot the Application Processor from a floppy drive using DOS 6.22 or higher.
- 2 Change to the Ethernet directory:

```
c:  
cd c:\ethernet
```

- 3 Run the diagnostic with the following command:

```
diag312
```

This procedure takes about five seconds to run.

Diag312 test results

If this diagnostic does not complete successfully, error messages appear. Replace the card if any of these messages appear.

Table 3-6 lists diag312 error codes and explanations.

Table 3-6
Diag312 error messages

Code	Output	Explanation
3001	MAC initialization failure	The device driver cannot initialize the network controller chip.
3002	MAC shared memory test failure	The device driver has tested shared memory that failed.
3003	(Excessive) Loss of interrupts	An unexpected loss of interrupts from the host system was detected.
3004	Configuration registers are locked	Used by ZX300 only. The adapter cannot have its configuration changed until there is a power down/power up cycle with the configuration reset jumper installed.
3005	Node address PROM failure	The driver could not read the Ethernet MAC address from the adapter.
3006	Bus error	The system reported a bus error.
3007	DMA error	The system reported a DMA error.
3008	(Excessive) FIFO Underrun	The system bus cannot provide data fast enough for a complete LAN transmission. Another device on the bus is taking too much bus bandwidth.
3009	(Excessive) FIFO Overrun	The system bus cannot absorb data fast enough. Another device on the bus is taking too much bus bandwidth.

VT100 serial card (DigiBoard PC/Xe board)

The following procedures outline test routines for the DigiBoard PC/Xe serial card.

The **UD-CISC.exe** DOS-based diagnostic tests the following functions of the PC/Xe board:

- dual ported memory
- the base memory address, and the base I/O address
- port test of a single port or all ports
- system compatibility and board reliability

The MPI UNIX-based utility is used to run DigiBoard Port Authority (DPA), which allows you to monitor the status of the Front End Processor/Operating System (FEP/OS). The DPA software also tests:

- individual port status
- board functionality
- performance level
- loop back tests to confirm data transmission and reception

Table 3-7 lists the correct interrupt/memory and I/O port addresses for two VT100 boards.

Table 3-7
VT100 Interrupt/memory and I/O port addresses

Board	Memory address	I/O port address	Switch 1	Switch 2	Switch 3	Switch 4
1st board	D0000	300	On	On	Off	On
2nd board	D0000	320	On	On	On	On

Procedure 3-15
Running the UD-CISC diagnostic

- 1 Boot the Application Processor from a floppy drive using DOS 6.22 or higher.
- 2 Change to the diags directory:

```
c:
cd c:\diags
```
- 3 Run the diagnostic with the following command:

```
ud-cisc
```
- 4 Enter <A> when prompted for a board family.
- 5 Ensure the proper I/O address and Host Base Mem address is set as shown in Table 3-7.
- 6 Disable the Continuous Testing parameter.
- 7 Press <E> to start the test.

This procedure takes under one minute to complete. Pass/fail status is indicated on the right side of your screen.

UD-CISC Test results

If a failure occurs, check the Host Base Address and execute the diagnostics again.

If you receive a Hardware Reset Error, try a different I/O address (reset DIP switches), and try the diagnostics again.

Procedure 3-16
Running the MPI diagnostic

- 1 Log in as root.
- 2 Type in the following:

```
mpi <Enter>
```

The MPI main menu appears.
- 3 Select the **Monitor** option.

The DPA main menu appears.
- 4 Select the PC/Xe board option.

The Channel Monitoring screen appears.

- 5 Select a channel. Press 1–9 for channels 1–9, and a–g for channels 10–16.
- 6 Run a loop back diagnostic test against the selected channel. A loop back plug must be installed in the channel to be tested.

See the procedure below for the loop back test instructions.

Procedure 3-17
Running the loop back test

- 1 Verify that the channel is not currently in use. If the port is busy, the following message appears:

```
**** Port is Busy :DTR:CD:DSR:RTS
```

This message indicates that the port is open by some process, or that an incorrect loop back connector or cable is attached to the port.

- 2 Press the T (or t) key from the channel monitoring screen.

128 bytes of test data (the letter A is used) are placed in the transmit buffer. If this write operation fails, a message similar to the following appears:

```
**** Loop Back Test Failure #1.
```

- 3 After the write operation completes, the FEP/OS is notified that data is available for transmission. At this time, the 128 bytes of data is transmitted. If the transmission fails, the following message appears:

```
**** Loop Back Failure Sending 128 Bytes from Buffer.
```

This message indicates hardware failure, FEP/OS failure, or driver failure.

- 4 At this point, the FEP/OS should have received 128 bytes of data. If not, the following message appears:

```
**** Loop Back Failure Receiving 128 Bytes.
```

```
**** Data Not Transferred to RX.
```

This message indicates

- hardware failure
- loop back connector not installed or incorrectly wired
- FEP/OS or driver failure

- 5** The 128 bytes of data are read from the receive buffer.
 If the read operation fails, the following message appears:

```
**** Loop Back Failure Reading 128 Bytes from Buffer.
```

 This message indicates
 - hardware failure
 - FEP/OS or driver failure
- 6** The data that was transmitted is compared with the data that has been read from the receive buffer. If the comparison fails, the following message appears:

```
**** Loop Back Failure Verifying 128 Bytes.
```

```
Data Incorrectly Transferred
```

 This message indicates
 - hardware failure
 - FEP/OS or driver failure
- 7** If all test phases pass, the following message appears:

```
Loop Back Test Passed.
```

 After the test completes, the input and output data can be viewed.
- 8** Press the **I** key to see the last 128 bytes of data that were placed in the receive (input) buffer.
- 9** Press the **O** key to see the last 128 bytes of data that were put into the transmit (output) buffer. The display shows the hexadecimal value of each character above the character itself. If the character is a non-printing character, “|” is displayed in its place.
- Note:** For security reasons, the receive buffer contents are only displayed if the loop back test passes.

Token ring card (Madge Smart 16/4 AT Plus)

The Smart 16/4 AT Plus Ringnode provides a token ring network connection for the Meridian IVR 2.0/I.

Connectivity tests

To test the token ring card for LAN connectivity, use the UNIX ping command as outlined in Procedure 3-13 on 3-23.

To test the token ring card for host connectivity, use the `express_adm` command as outlined in the following procedure.

Procedure 3-18

Using the `express_adm` command

- 1 Log in as root and change directory to the `express/bin` directory:

```
cd /u/express/bin/
```

- 2 Enter the following:

```
./express_adm admin <Enter>
```

- 3 Press 1 to choose *Work with Communication Adapters*.

- 4 Press 4 to choose *Test Communication Adapters*.

The **Test Communication Adapter** menu is displayed. This menu includes a list of all adapters currently installed in your system for EXPRESS.

- 5 Enter the appropriate number for the Madge Adapter.

A message appears indicating that the test is in progress.

- 6 If an error occurs, a message is displayed that indicates the source of the error.

- 7 Press <Enter> to return to the Test Communication Adapter menu.

This test should take less than 2 minutes.

Test Result Expected

If no errors are reported the card is functioning properly.

Token ring card configuration

You must make sure that the card is properly configured before running this diagnostic procedure.

Table 3-8 outlines the proper configuration settings for the Madge Smart 16/6 AT Plus.

Table 3-8
Token ring interrupt/memory and I/O port addresses

Connectivity type	IRQ	Memory address	I/O port address	DMA channel	Switch 1	Switch 2
LAN connectivity	10	DC000	1a20	6	On	Off
Host connectivity	15	DE000	3a20	5	On	On

Procedure 3-19 outlines how to configure the Madge Smart 16/4 AT Plus.

Procedure 3-19
Configuring the Madge Smart 16/4 AT Plus Ringnode

- 1 Boot the Application Processor from a floppy drive using DOS 6.22 or higher.
- 2 Change to the token directory:

```
c:
cd c:\token
```
- 3 Run the configuration by entering the following command:

```
trcfg
```
- 4 Press <F4> to begin the process.
- 5 Select the adapter using the arrow keys.
- 6 Press <F4>.
- 7 Select the proper IRQ, I/O port address, and DMA channel.

Procedure 3-20 outlines how to run the Madge Smart token ring card diagnostics.

Procedure 3-20
Token ring card diagnostics

- 1 Boot the Application Processor from a floppy drive using DOS 6.22 or higher.
- 2 Change to the token directory:

```
c:  
cd c:\token
```
- 3 Run the diagnostic using the following command:

```
diag
```
- 4 Press <F4> to start.
This test takes approximately five minutes.

Test Results

Table 3-9 outlines error messages generated by the diag command.

Table 3-9
Token ring diagnostic error messages

Code	Output	Explanation
1001	Failed to bring up adapter	Either the Ringnode is faulty, or a Ringnode is not present.
1002	Failed to discover interrupt number	The Ringnode's interrupt may conflict with that of another device installed in the computer. Check the interrupt and I/O location settings.
1003	No adapter at specified address	No adapter has been found at the expected I/O location. Either no Ringnode is present, or the Ringnode is failing to respond correctly.
1004	No network adapter is installed, or an adapter is missing	No adapter has been found at the expected I/O location. Either no Ringnode is present, or the ringnode is failing to respond correctly.

Table 3-9
Token ring diagnostic error messages

Code	Output	Explanation
1005	Invalid IRQ number	The Ringnode's interrupt setting may conflict with that of another device installed in the computer. Check the interrupt and I/O location settings.
1008	Failed to download code to the adapter	Software was not successfully downloaded to the Ringnode. The Ringnode has insufficient memory or is not a Madge Smart 16/4 Ringnode.

Fax Card (Dialogic VXF/40E)

The VXF/40E Dialogic Fax board offers four ports of enhanced call processing and 14 000 bps Fax services in a single slot. The board is an AT form factor board with an 8-bit XT or 16-bit AT expansion slot. This board comprises a 4-line facsimile daughterboard mounted directly onto a D/41E World card.

Each Fax port should be tested. To perform these tests an external fax machine is needed. Once the diagnostic tool is run a fax transmission must be sent to each port and it is sent back to the fax machine to confirm correct operation of the fax card. This test only accepts a one page fax transmission and sends the page back to the fax machine twice to test different modes.

Faxdiag utility

Procedure 3-21 outlines how to use the faxdiag UNIX-based utility.

Procedure 3-21 **Using the faxdiag utility**

- 1 Log in as root.
- 2 Enter the following:


```
faxdiag <Enter>
```

The program requests the Fax Board Number.
- 3 Enter the number of the card to be tested. If there is only one Fax card in the machine, the number will be 1. Press the <Enter> key.

- 4** Enter the port number to test. There are 4 ports on each fax card, and there must be a line going into each one for the test to work. Press <Enter>.
- 5** Enter the External Fax Phone Number. This is the phone number of the fax machine that is sending the test fax. Press the <Enter> key.

One test should be run for each port on each card.
- 6** When you are finished, press <q> as per the instructions on the screen.

Faxdiag test results

If the fax is sent back correctly from each port, then the ports are working properly. Each test will send back 2 copies of the fax that was sent to it.

Chapter 4: Maintenance activities

This chapter describes procedures for the removal and installation of all field-replaceable Meridian IVR Application Processor components.

Preparing for field maintenance

This section describes the required tools and equipment you need to perform maintenance procedures.

Field maintenance should always be performed by fully qualified, trained personnel.

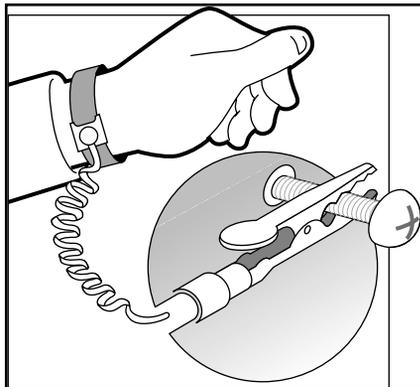
Antistatic wrist strap

Electrostatic Discharge (ESD) can seriously damage component parts such as disk drives and add-in boards. We recommend that the procedures described in this chapter be performed at an ESD workstation.

If an ESD workstation is not available, you can provide some ESD protection by wearing an antistatic wrist strap. Ground the ESD wrist strap by attaching it to any unpainted surface on your system chassis as shown in [Figure 4-1](#).

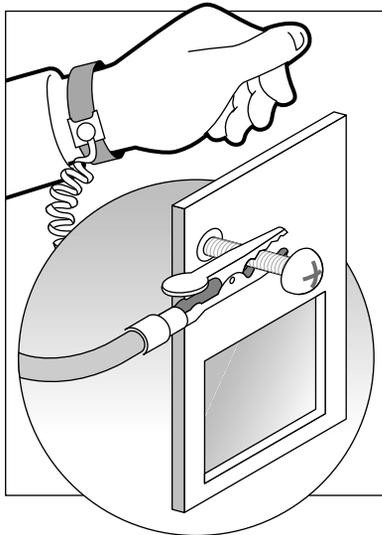
Note: The Application Processor should be plugged in to the AC power source to ensure a proper ground.

Figure 4-1
ESD wrist strap



Your wrist strap should be tested before each use as shown in [Figure 4-2](#).

Figure 4-2
Testing ESD wrist strap



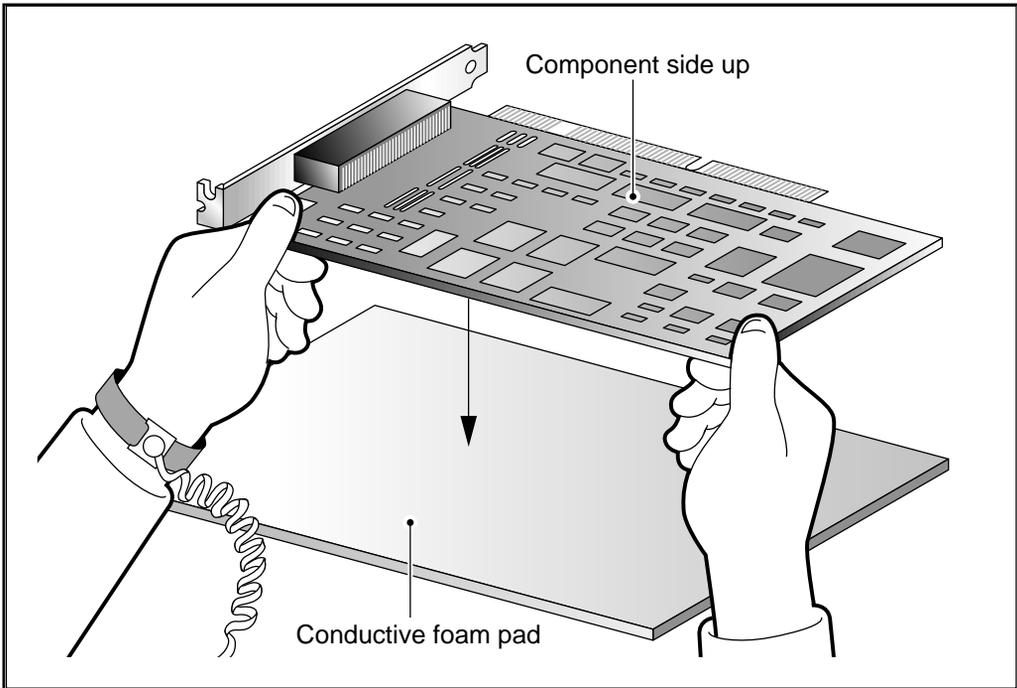
Conductive foam pad

Add-in boards are extremely sensitive to ESD. After removing a board from its protective wrapper or from the system, place it component-side up on a conductive foam pad as shown in [Figure 4-3](#).

Do not place the board on its wrapper.

Do not slide the board over any surface.

Figure 4-3
Using conductive foam pad

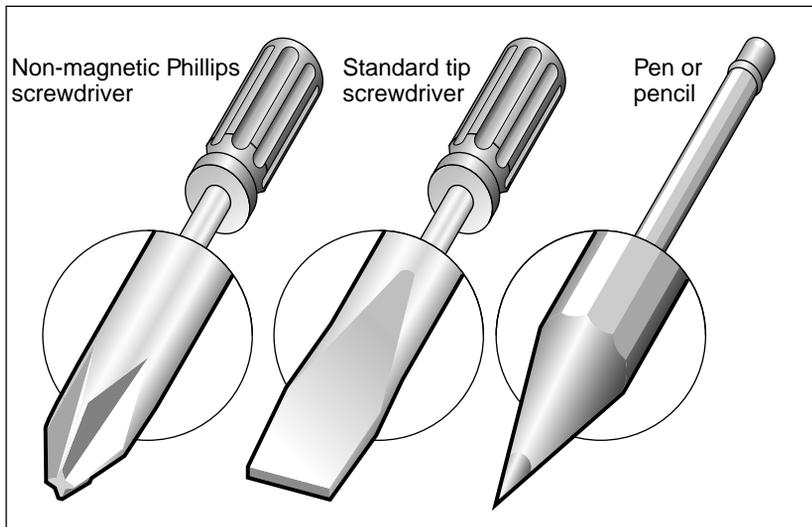


Required tools

You will need the following tools to perform the maintenance activities described in this chapter:

- Non-magnetic Phillips screwdriver with a #2 bit
- Standard (slot-head) screwdriver (1/4"–1/2")
- IC removal tool
- ESD wrist strap
- pen or pencil

Figure 4-4
Required tools



Application processor power-down

If you need to install, reinstall, or replace hardware components, you must power down the application processor.

Procedure 4-1

Powering down the application processor

- 1 Shut down the system by logging in as root and issuing the following command:

shutdown

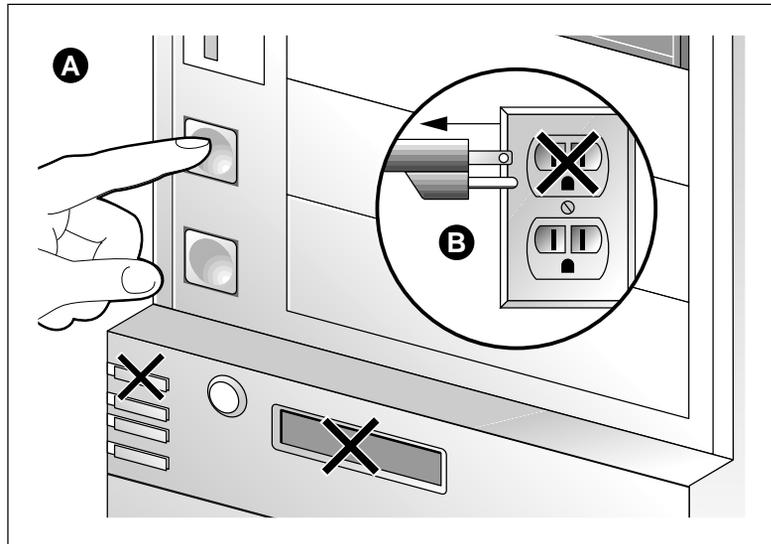
After several system messages, the system is ready to power down.

- 2 Turn off all peripheral devices connected to the application processor.
- 3 Open the front panel door.
- 4 Turn the server off with the DC push-button switch on the front panel of the server as shown in (A) of [Figure 4-5](#).

The green power light and LCD indicator panel will power out.

- 5 Unplug the AC power cord from the wall plug as shown in (B) of [Figure 4-5](#).

Figure 4-5
Powering down the server



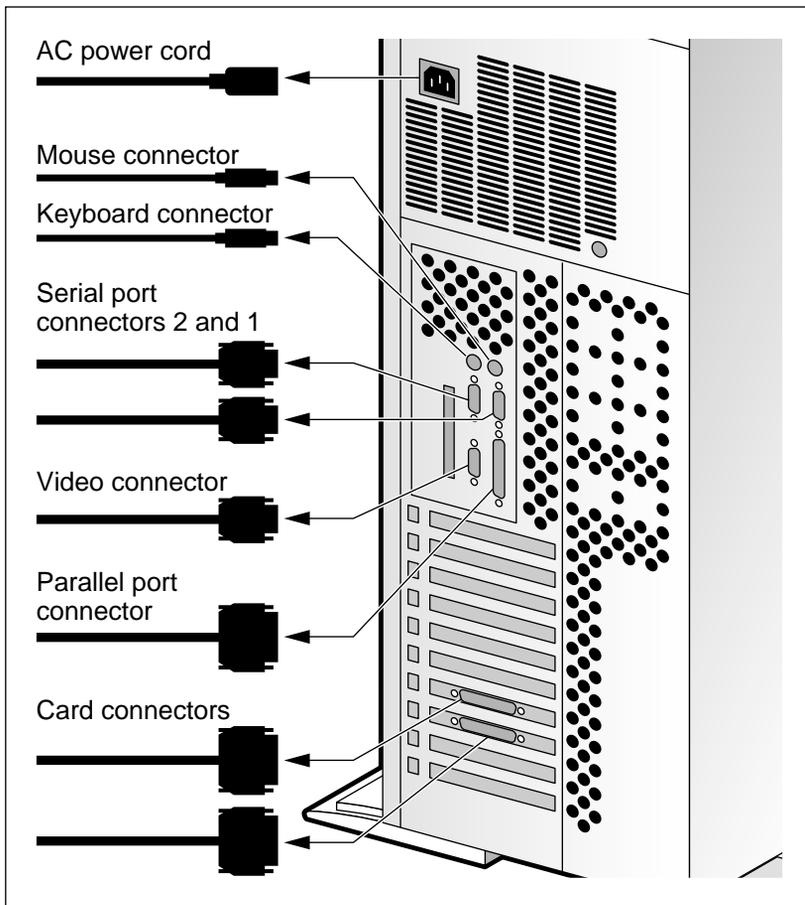
Accessing the server chassis

This section outlines the steps necessary for accessing the server chassis.

Disconnecting peripheral cables

Label and disconnect all peripheral cables attached to the I/O panel on the back of the server as shown in [Figure 4-6](#).

Figure 4-6
Peripheral cables



Side cover removal

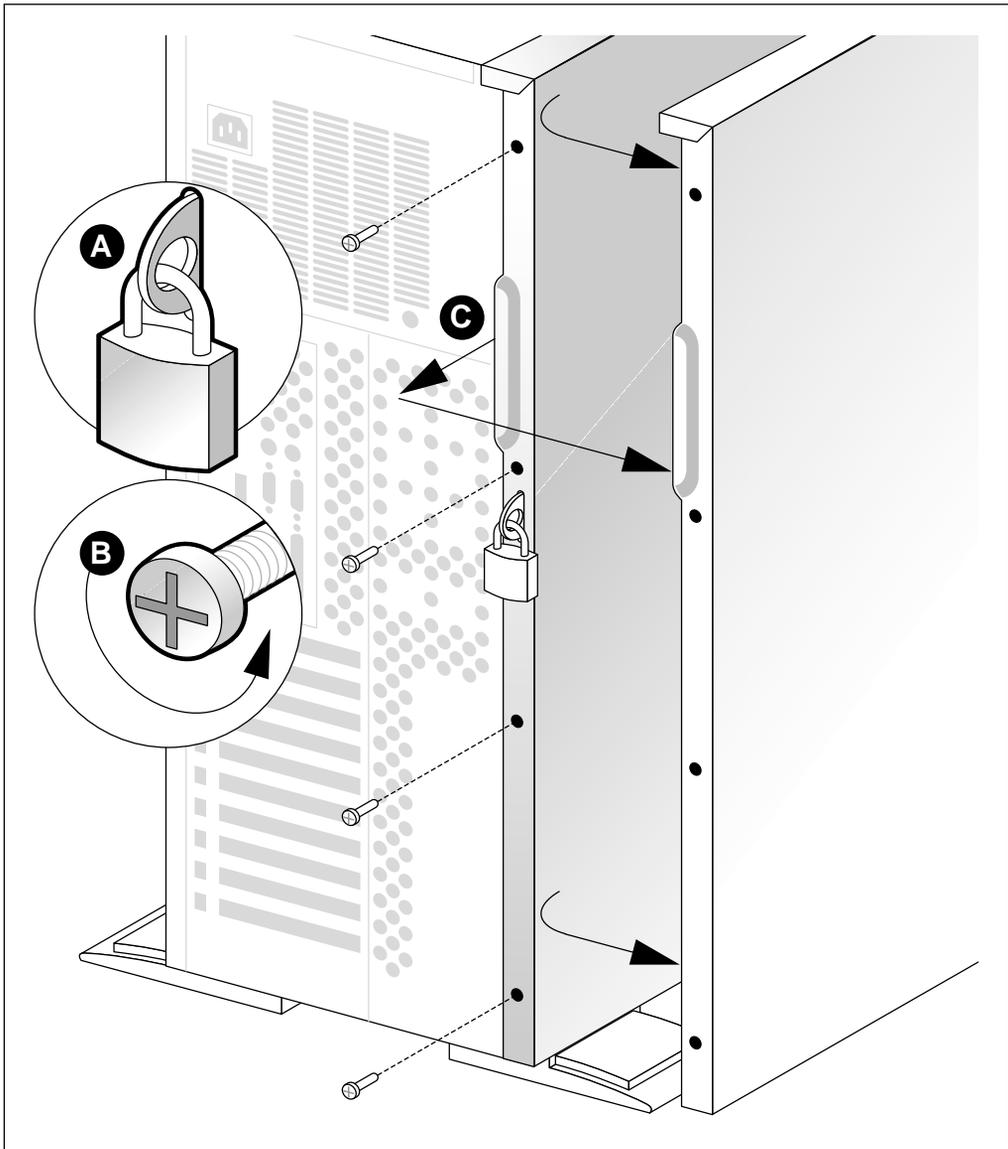
To remove the side cover of the server, follow the procedure below.

Procedure 4-2

Removing the side cover

- 1 Remove the padlock device from the back of the server as shown in (A) of [Figure 4-7](#).
- 2 Remove the four screws from the back of the side cover as shown in (B) of [Figure 4-7](#).
- 3 Pull the cover backwards slightly as shown in (C) of [Figure 4-7](#).

Figure 4-7
Side cover, back view



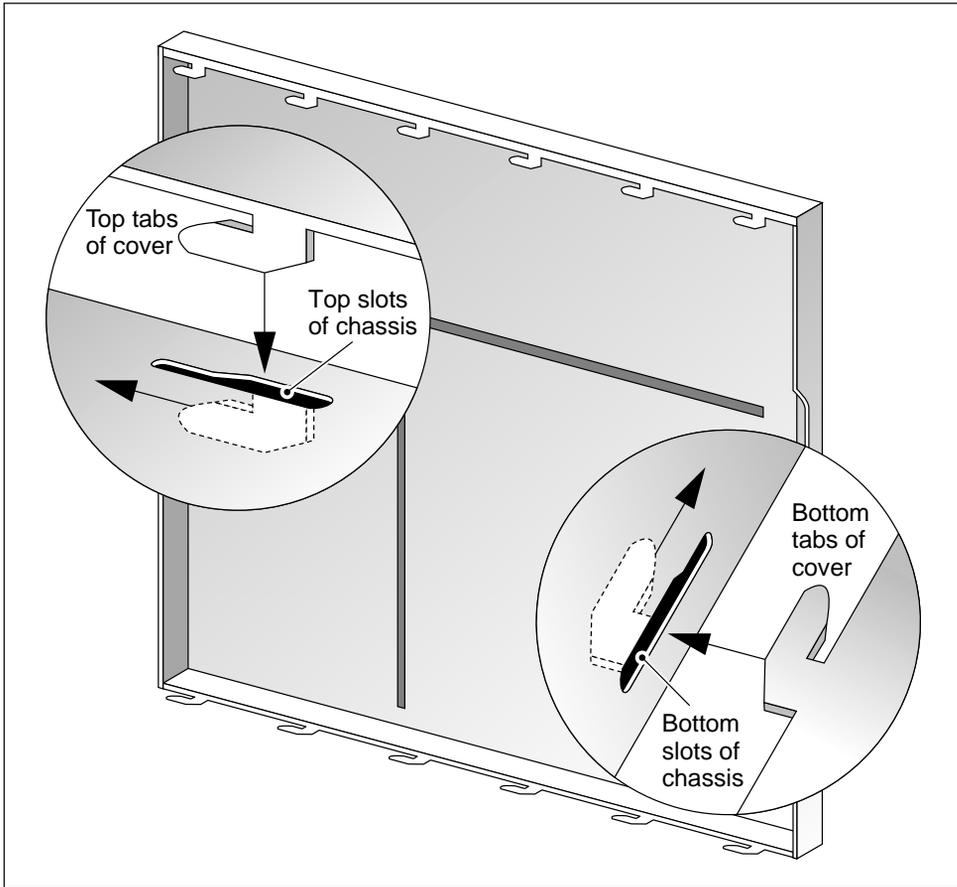
- 4 Pull the bottom cover toward you to disengage the bottom row of tabs from the notches in the chassis.
- 5 Lift the cover up to disengage the top row of tabs from the notches at the top of the chassis. The tabs are detailed in [Figure 4-8](#).



DANGER!
Risk of personal injury

Touching the sharp metal edges of the cover may cause personal injury.

Figure 4-8
Side cover, tabs detail



Side cover replacement

To replace the side cover of the chassis, follow the procedure below.

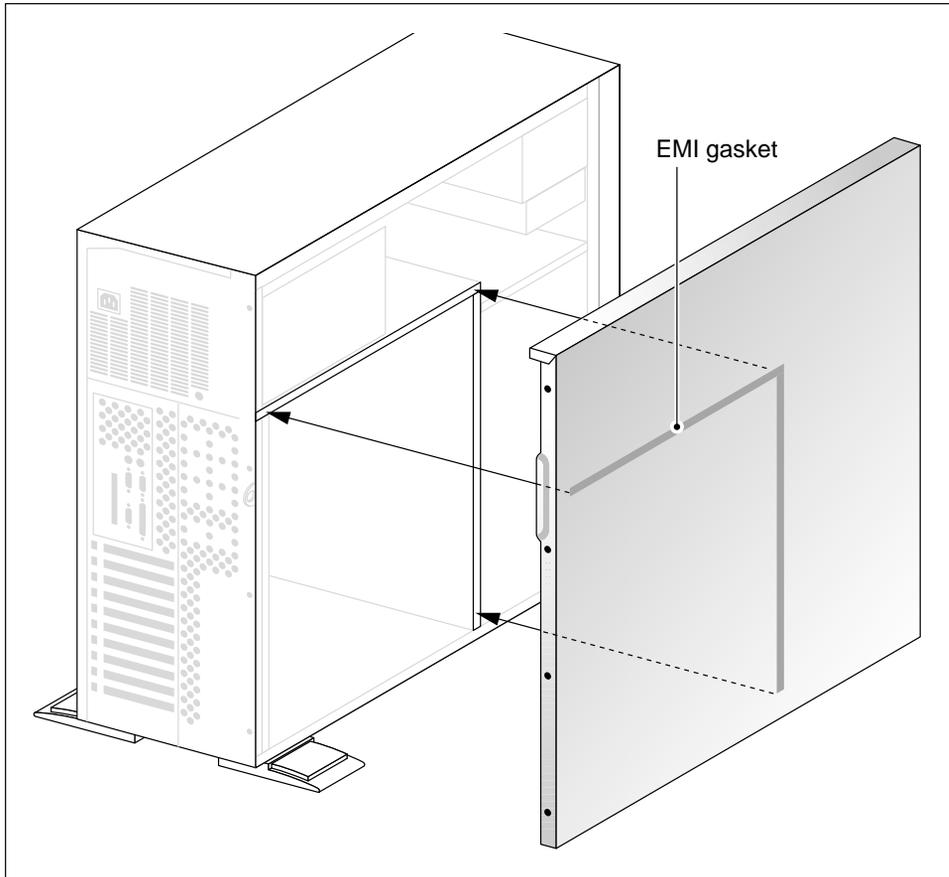
Before replacing the side cover, ensure that there are no tools or loose parts inside the chassis.

Procedure 4-3 Replacing the side cover

- 1 Position the side cover over the chassis so that the top and bottom rows of tabs align with the slots in the chassis.
- 2 Slide the cover toward the front of the server so that the tabs firmly engage in the chassis notches.

Note: Be careful not to damage the electromagnetic interference (EMI) gaskets mounted on the side cover as shown in [Figure 4-9](#). Replace all damaged gaskets.

Figure 4-9
Side cover, EMI gaskets detail



- 3 Attach the side cover to the chassis, tightening the screws firmly.
- 4 Replace the padlock at the back panel.
- 5 Connect all external cables and the power cord to the back panel.

Front panel and door assembly removal

The front panel and door assembly consists of a base panel with four removable filler panels and a door. A combination of metal clips and tabs on the assembly secure it to the front of the chassis. If you are installing peripheral devices in the external bays, you must remove the filler panels.

Before removing the front door assembly, all peripheral devices must be disconnected from the server, and the side panel must be removed.

To remove the front door assembly, follow the procedure below.

Procedure 4-4

Removing the front panel and door assembly

- 1 Open both plastic front doors of the server.
- 2 Grasp the two metal clips on the left side of the front panel and door assembly. Gently lift them up until they detach from the chassis.
- 3 Pull the left side of the assembly away from the chassis at a 15-degree angle.
- 4 Slide the assembly to the right to disengage the metal tabs from the right side of the chassis.

Front panel and door assembly replacement

To replace the front panel and door assembly, follow the procedure below.

Procedure 4-5

Replacing the front panel and door assembly

- 1 Position the assembly in front of the server so that the metal tabs on the right side of the assembly align with the slots in the chassis wall.
- 2 Slide the assembly to the left to engage the metal tabs in the slots.
- 3 Push the assembly toward the chassis until the two metal clips on the right side snap in place on the chassis.
- 4 Close the plastic front doors of the server.

Removing and installing the diskette drive

The server has a 3.5-inch diskette drive installed in the external 3.5-inch peripheral bay. The drive is attached to the server chassis by a carrier assembly. This section outlines the procedures for removing and installing the diskette drive and carrier assembly.

Diskette drive removal

Before removing the diskette drive, you must power down the server, remove the side panel, and remove the front panel and door assembly.

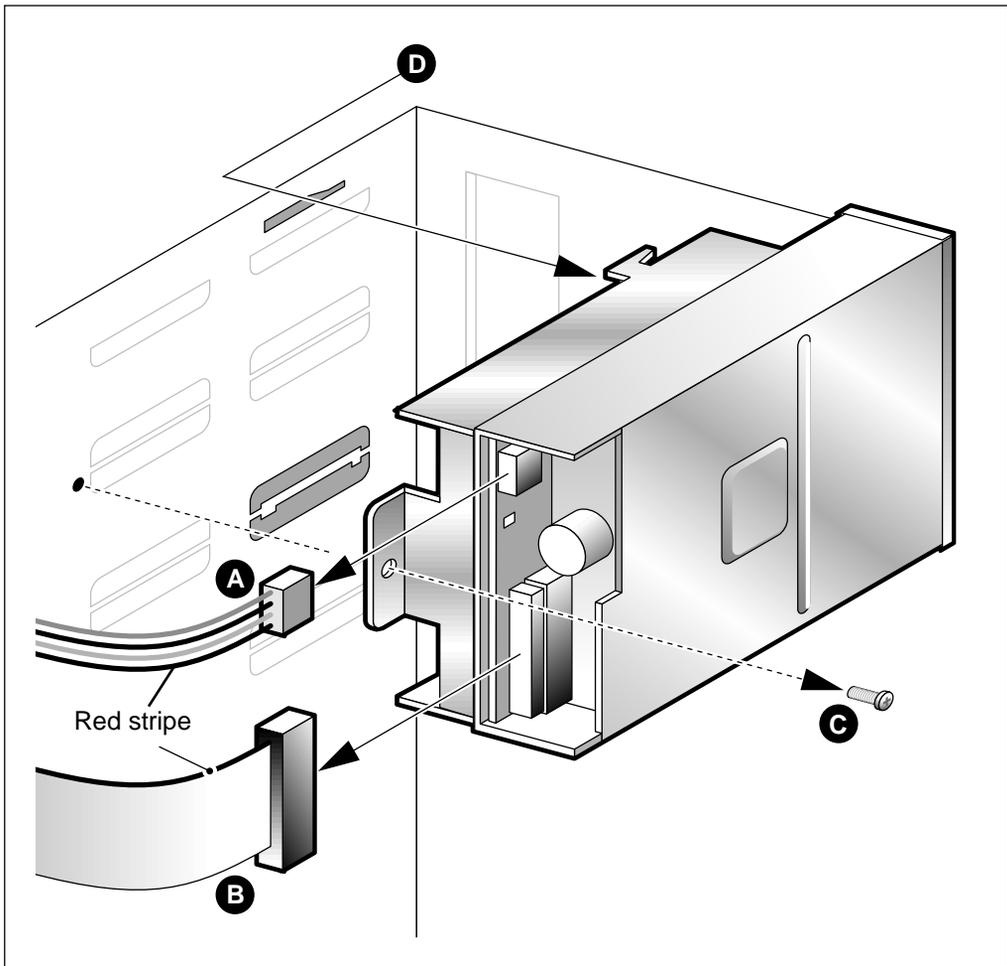
To remove the diskette drive, follow the procedure below.

Procedure 4-6

Removing the diskette drive

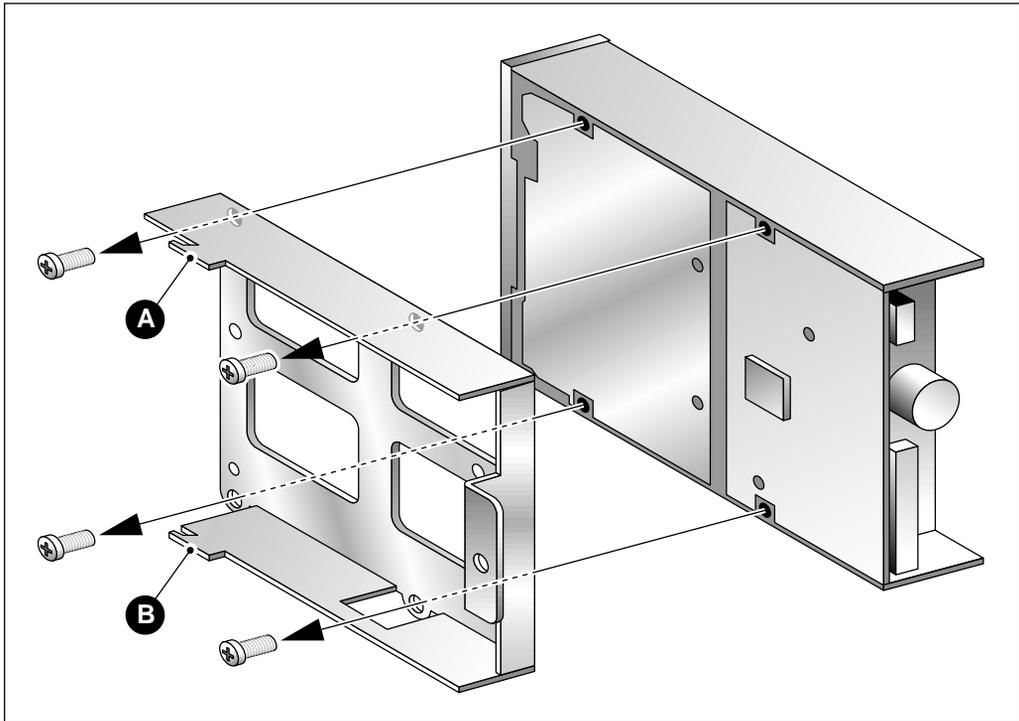
- 1 Disconnect the power cable and signal cable from the back of the diskette drive as shown in (A) and (B) of [Figure 4-10](#).
- 2 Remove the screw securing the drive and carrier assembly to the chassis as shown in (C) of [Figure 4-10](#).
- 3 Slide the assembly towards the back of the server to disengage the tabs from the slots on the chassis wall as shown in (D) of [Figure 4-10](#).

Figure 4-10
Disconnecting the diskette drive



- 4 Remove the drive and assembly from the chassis, and place it component-side up on an antistatic surface.
- 5 Remove the four screws holding the carrier assembly to the drive as shown in [Figure 4-11](#).

Figure 4-11
Remove diskette carrier assembly



- 6 Place the drive in an antistatic protective wrapper.

Diskette drive installation

To install the diskette drive and carrier assembly, follow the procedure below.

Procedure 4-7 **Installing a diskette drive**

- 1 Remove the diskette drive from its protective wrapper, and place it component-side up on an antistatic surface.
- 2 Record the drive model and serial numbers in your equipment log.
- 3 Set any jumpers and switches according to the drive manufacturer's specifications.
- 4 Place the drive carrier on the component-side of the drive aligning the four mounting holes.

- 5 Attach the carrier assembly to the drive with four screws.
- 6 Position the drive and carrier assembly over the slots in the chassis wall.
- 7 Slide the assembly towards the front of the server to attach tabs (A) and (B) (as shown in [Figure 4-11](#)) in the slots in the chassis wall.
- 8 Use a screw to secure the drive and carrier assembly to the chassis wall.
- 9 Connect the signal cable and power cable to the diskette drive. Note the position of the red wire on the power cable.

Removing and installing a mass storage device

The server includes four external 5.25-inch half-height bays that provide space for tape backup, CD-ROM, and other removable media devices. The following sections outline how to remove and install a removable media device in the half-height drive bays.

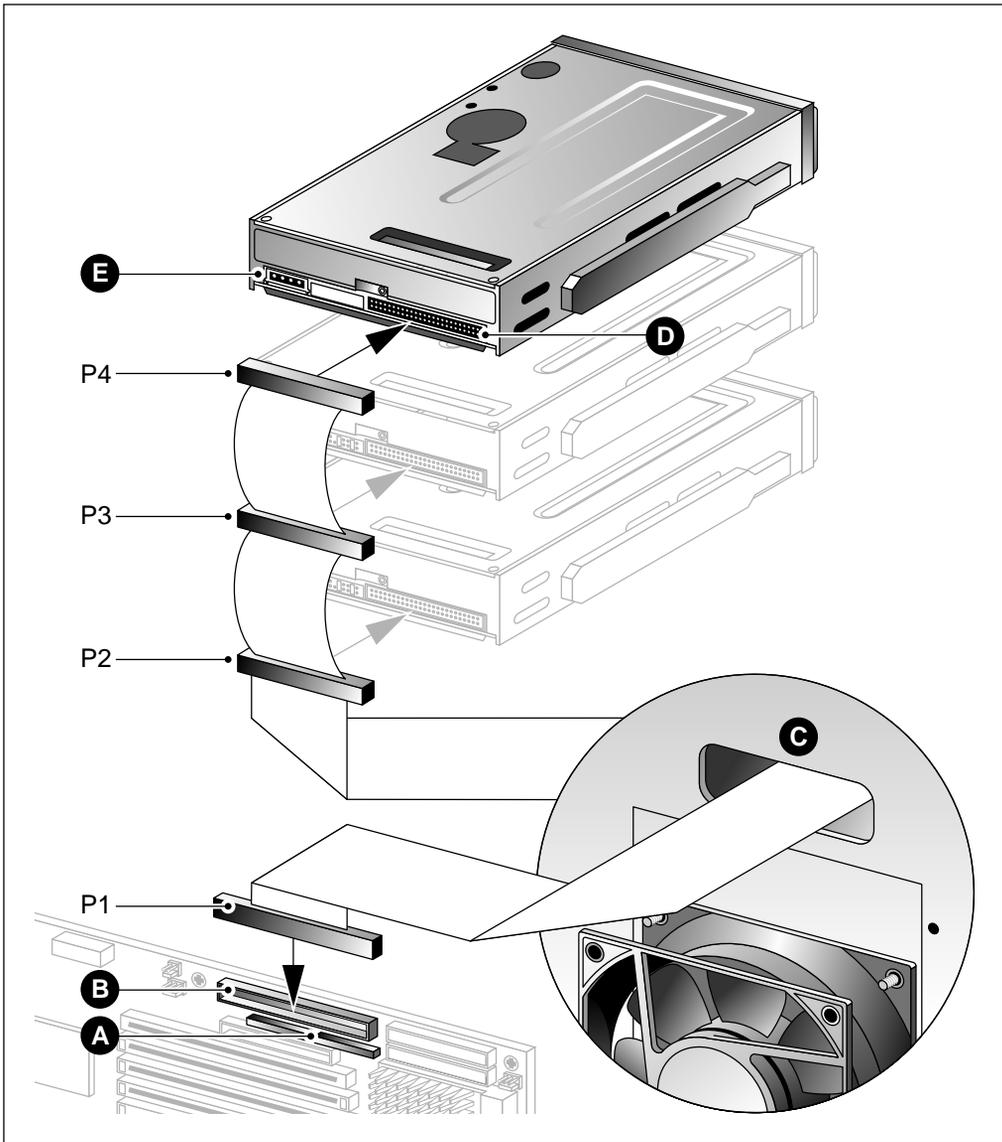
Installing the SCSI cable

Before installing a removable media device, you must install the narrow SCSI cable.

Procedure 4-8 SCSI cable installation

- 1 Remove the SCSI terminating resistor packs from the system board.
- 2 Insert the P1 connector end of the SCSI 50-conductor signal cable through the slot in the chassis above the fan as shown in (C) of [Figure 4-12](#).
- 3 Attach P1 to the SCSI connector on the system board as shown in (B) of [Figure 4-12](#). Align the red stripe on the cable toward the I/O panel. The connector is keyed and can be inserted one way only.
- 4 Install the mass storage device as detailed in [Figure 4-13](#).
- 5 Plug the P4 cable connector into the top SCSI device in the 5.25-inch bays as shown in (D) of [Figure 4-12](#).

Figure 4-12
SCSI cable installation



Note: If the device which you are installing is terminated with resistor packs, do not remove the packs. If the device is terminated with a SCSI IC active terminator, do not disable the SCSI terminator.

Mass storage device installation

The following procedure details how to install a mass storage device in the server.



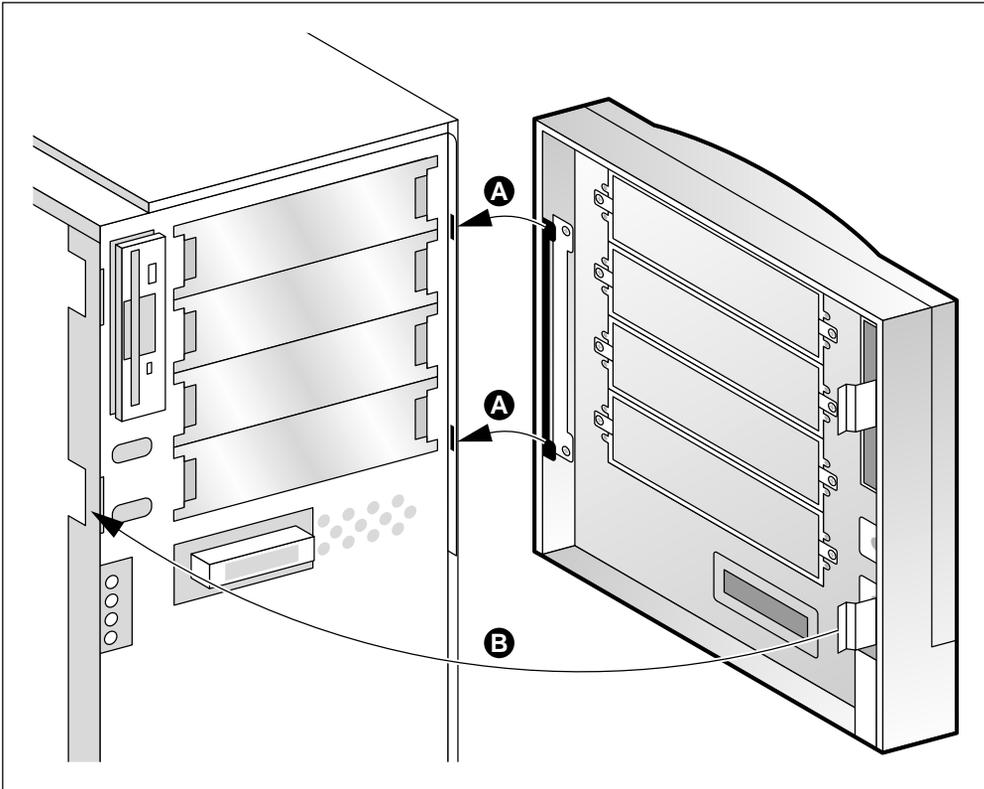
CAUTION! **Risk of data loss**

Do not mount a hard disk drive in a 5.25-inch external bay as the drive will generate electromagnetic interference.

Procedure 4-9
Installing a mass storage device

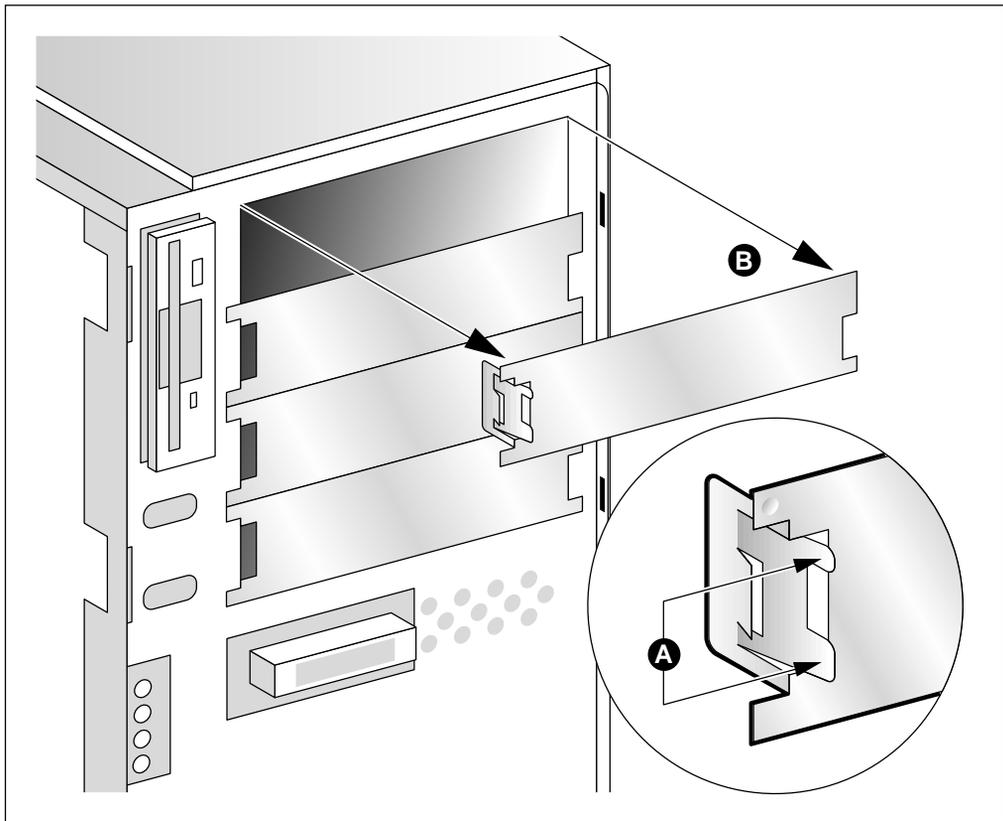
- 1 Completely remove the upper front door of the application processor by unclipping the door as in (B) of the following figure.

Figure 4-13
Installing the mass storage device



- 2 Push the tab on the left side of the metal shield to the right to disengage it from the chassis.

Figure 4-14
Removing the metal shield



- 3 Remove the device from its protective wrapper and place it on an antistatic surface.
- 4 Record the model and serial number of the device in your equipment log.
- 5 Set the SCSI ID to 2 for the tape drive.
- 6 Ensure that the last narrow SCSI device on the SCSI bus is terminated.
- 7 Attach the plastic snap-in slide rail B to the left side of the device using two screws and a grounding clip as shown in [Figure 4-13](#). The grounding clip should be installed under the screw used at the front of the device.

- 8 Attach rail A to the right side of the device using two screws.
- 9 Position the device so that the plastic slide rails on each side engage in the bay guide rails as shown in [Figure 4-16](#).
- 10 Push the device into the bay until the slide rails lock in place.
- 11 Connect the SCSI signal cable and power cable to the back of the device. The connectors are keyed and can be inserted one way only.
- 12 Replace the side cover and front door assembly.

Removing a mass storage device

The following procedure outlines how to remove a mass storage device from the server.

Before removing a mass storage device, you must complete [Procedure 4-1, Powering down the application processor, on page 4-5](#), and [Procedure 4-2, Removing the side cover, on page 4-7](#).

Procedure 4-10

Mass storage device removal

- 1 Disconnect the power cable and SCSI signal cable from the device.
- 2 Squeeze both plastic rails attached to the device and carefully slide the device forward out of the bay.
- 3 Place the device on an antistatic surface.
- 4 Remove the screws and grounding clips holding the two snap-in rails to the device.
- 5 If you plan to leave the bay empty, install a filler panel and stainless steel EMI shield on the bay.
- 6 Replace the side cover and front door assembly.

Add-in boards

The system base board provides three PCI slots and six EISA bus master slots. These slots accept any EISA expansion board.

These slots are numbered from the bottom, with slot #1 the lowermost EISA slot. Slot #6 shares a chassis I/O expansion slot with PCI slot #1. You can use either the PCI slot or the EISA slot, but not both.

Before installing or removing an add-in board, you must complete [Procedure 4-1, Powering down the application processor, on page 4-5](#), and [Procedure 4-2, Removing the side cover, on page 4-7](#).

Installing an add-in board

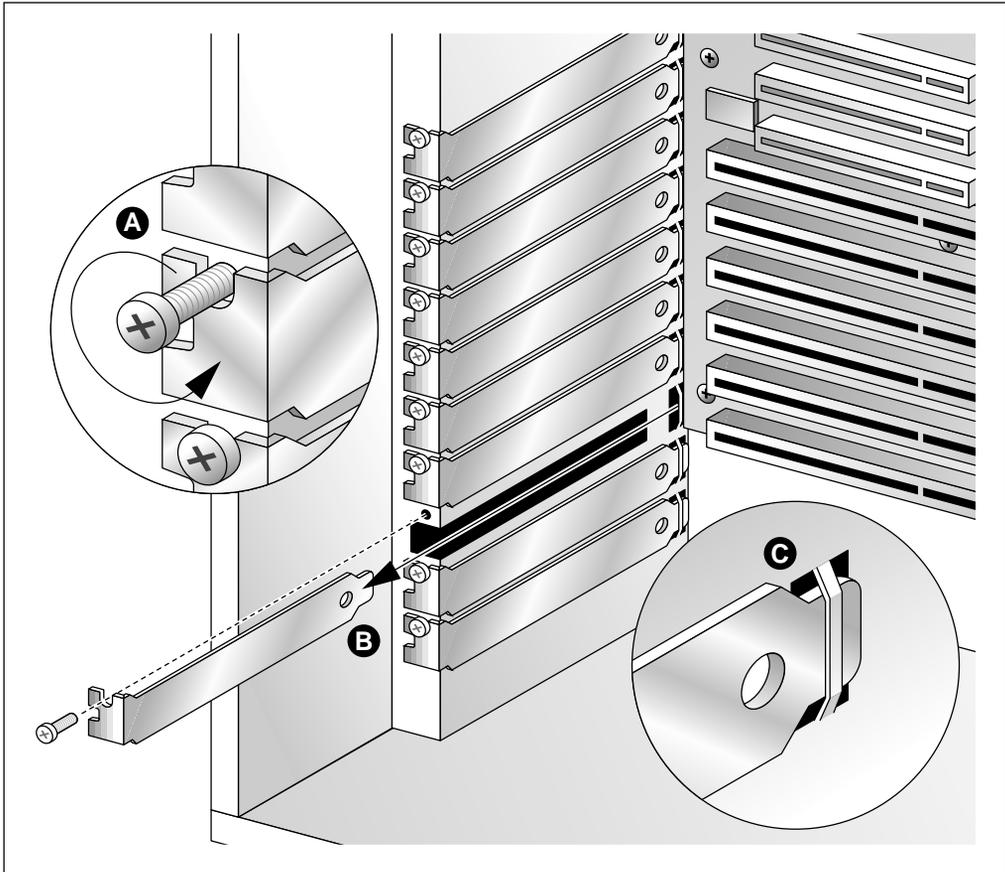
To install an add-in board, follow the procedure below.

Procedure 4-11

Add-in board installation

- 1 Remove the expansion slot screw as shown in (A) in [Figure 4-15](#).
- 2 Remove the expansion slot cover as shown in (B) in [Figure 4-15](#).

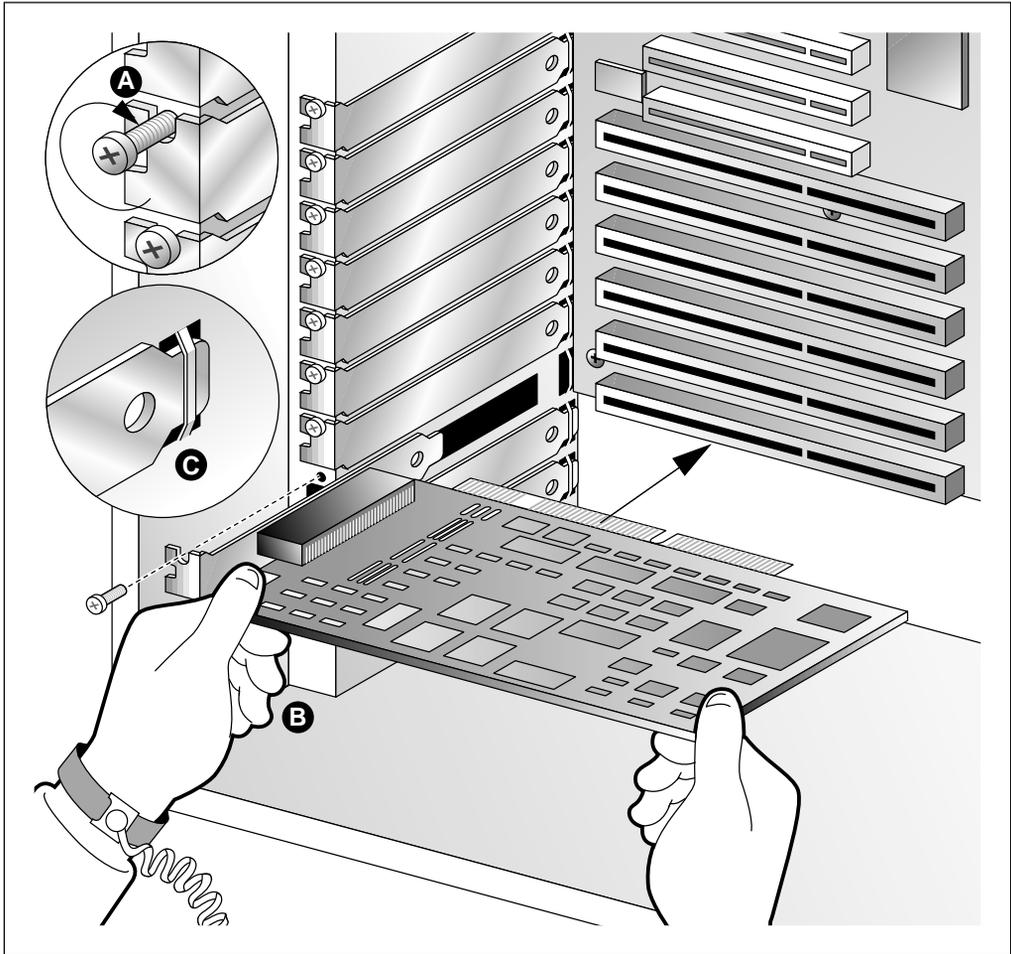
Figure 4-15
Removing the expansion slot cover



- 3 Remove the add-in board from its wrapper and place it component-side up on an antistatic surface.
- 4 Record the board's serial number.

- 5 Set jumpers and switches:
 - For the Arnet SYNC/570 card, see “[IBM 3270 SNA card \(Arnet SYNC/570\)](#)” on page 3-21.
 - For the Ethernet card, see “[Ethernet card \(ZNYX PCI\)](#)” on page 3-23.
 - For the VT100 serial card, see “[VT100 serial card \(DigiBoard PC/Xe board\)](#)” on page 3-26.
 - For the token ring card, see “[Token ring card \(Madge Smart 16/4 AT Plus\)](#)” on page 3-30.
 - For the fax card, see “[Fax Card \(Dialogic VXF/40E\)](#)” on page 3-33.
- 6 Hold the board by its top edges and firmly press it into an expansion slot as shown in (B) of [Figure 4-16](#). Make sure the tapered end of the retaining bracket is aligned to fit into the notch at the end of the expansion slot as shown in (C) of [Figure 4-16](#).
- 7 Attach the retaining bracket to the chassis with the expansion slot screw as shown in [Figure 4-16](#).

Figure 4-16
Add-in board installation



- 8 Replace the side cover.
- 9 Run the System Configuration Utility to configure the system.

Removing an add-in board

To remove an add-in board, follow the procedure below.

Procedure 4-12

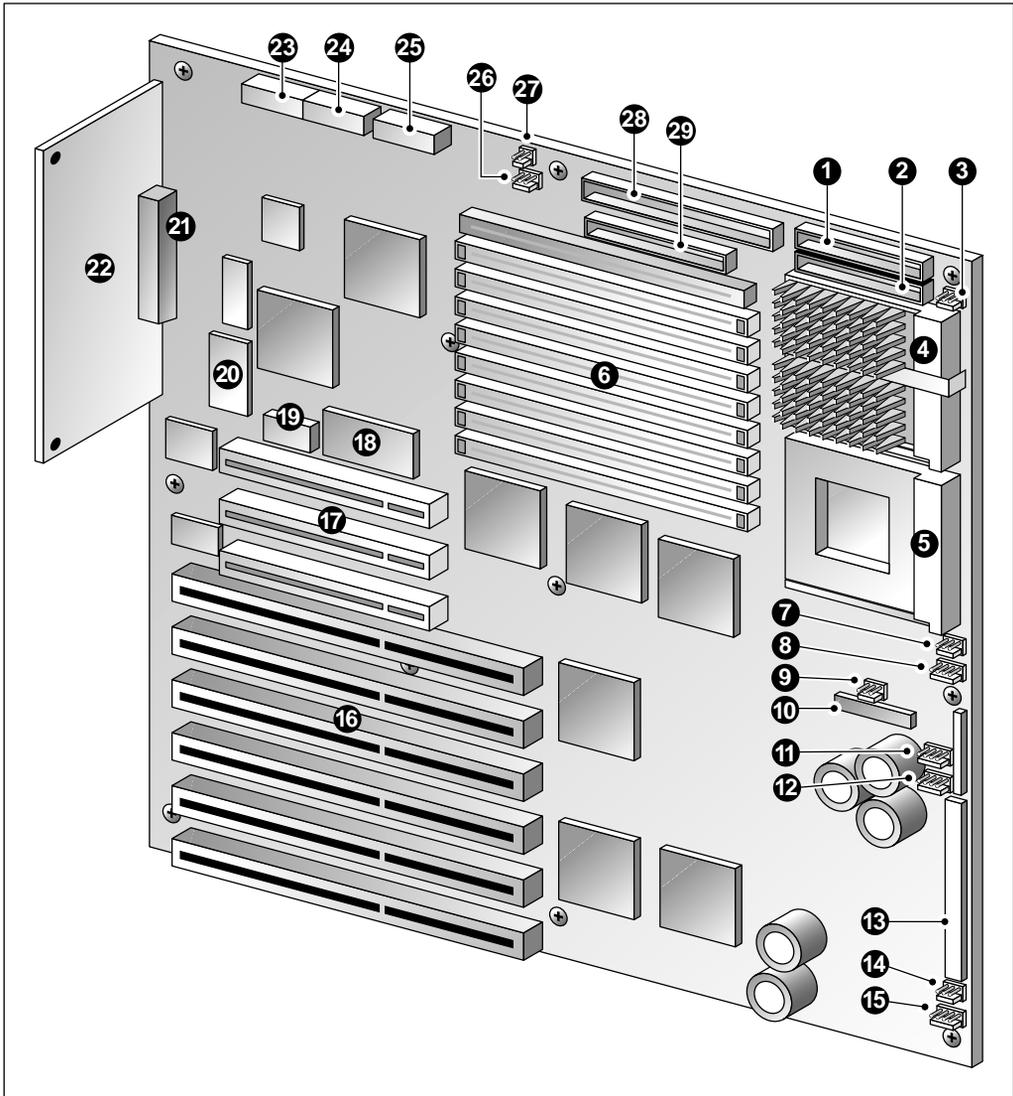
Add-in board removal

- 1 Label and disconnect any cables attached to the board.
- 2 Remove the add-in board retaining screw.
- 3 Hold the board by its upper corners and rock it gently until the edge connectors pull free.
- 4 Store the board in an antistatic wrapper.
- 5 Install an expansion slot cover in the vacant slot.
- 6 Insert the retaining screw in the expansion slot cover.
- 7 Replace the side cover.

System base board and I/O panel

Figure 4-17 illustrates the component parts of the system base board and I/O panel.

Figure 4-17
System base board and I/O panel components



The following table describes the numbered items in [Figure 4-17](#).

Table 4-1
Base board components

Number	Description	Number	Description
1	Front panel connector	16	EISA slots
2	3.5 inch diskette drive connector	17	PCI slots
3	5 volt fan connector	18	Real-time clock
4	Pentium processor in ZIF socket	19	3.3 v PCI connector
5	ZIF socket for second Pentium processor	20	Video DRAM socket
6	SIMM sockets	21	I/O panel connector
7	Fan 1 power connector	22	I/O Board
8	Hard drive LED connector	23	P1 power connector
9	5 volt fan connector	24	P2 power connector
10	Server management interface	25	P3 power connector
11	Chassis switch	26	Power connector
12	Front panel LED connector	27	Power supply enable header
13	Configuration jumper block	28	SCSI cable connector
14	Fan 2 power connector	29	IDE connector
15	Hard drive LED connector		

Removing the system base board and I/O panel assembly

To replace the system base board and I/O panel, follow the procedure below.

Before removing the system base board and I/O panel, you must complete [Procedure 4-1, Powering down the application processor, on page 4-5](#), and [Procedure 4-2, Removing the side cover, on page 4-7](#).

Procedure 4-13

System base board and I/O panel removal

- 1 Label and disconnect any peripheral cables attached to the I/O panel at the back of the server.
- 2 Label and disconnect all internal cables connected to the add-in boards installed in the expansion slots.
- 3 Remove the add-in boards as described in [Procedure 4-12, Add-in board removal, on page 4-26](#).
- 4 Label and disconnect all internal cables connected to the system base board.
- 5 Unlatch the I/O panel from the chassis.
- 6 Remove the system board retaining screws.
- 7 Slide the system boards and I/O panel assembly toward the front of the server until the I/O connectors clear the rear of the chassis.
- 8 Remove the board and I/O assembly and place them on an antistatic surface.
- 9 If necessary, remove the I/O panel from the system board.

Installing the system board and I/O panel

To install the system board and I/O panel, follow the procedure below.

Procedure 4-14

System base board and I/O panel installation

- 1 Snap the I/O panel into place on the connector on the system board.
- 2 Position the system board and I/O panel assembly over the threaded standoffs inside the chassis.
- 3 Slide the system board and I/O assembly toward the rear of the server until the I/O connectors protrude through the back panel.

- 4 Holding the board with one hand, insert a screw through one of the mounting holes on the board and into a threaded standoff. Do not tighten the screw until every screw has been inserted.
- 5 Insert the remaining screws through the mounting holes and into the threaded standoffs.
- 6 Tighten all the screws firmly in the standoffs.
- 7 Latch the I/O panel or replace the screws to secure the panel to the chassis.
- 8 Connect all internal cables to the system board.
- 9 Install the add-in boards as described in [Procedure 4-11, Add-in board installation, on page 4-22](#).
- 10 Connect all internal cables connected to the add-in boards.
- 11 Replace the side cover as described in [Procedure 4-3, Replacing the side cover, on page 4-11](#).
- 12 Connect all peripheral device cables to the I/O panel.
- 13 Run the SCU utility to configure the system.

Front panel board

The front panel board contains the system controls and indicators. It is mounted to a strap-on standoff and to a threaded standoff inside the chassis.

Removing the front panel board

Before removing the front panel board, you must complete [Procedure 4-1, Powering down the application processor, on page 4-5](#), and [Procedure 4-2, Removing the side cover, on page 4-7](#).

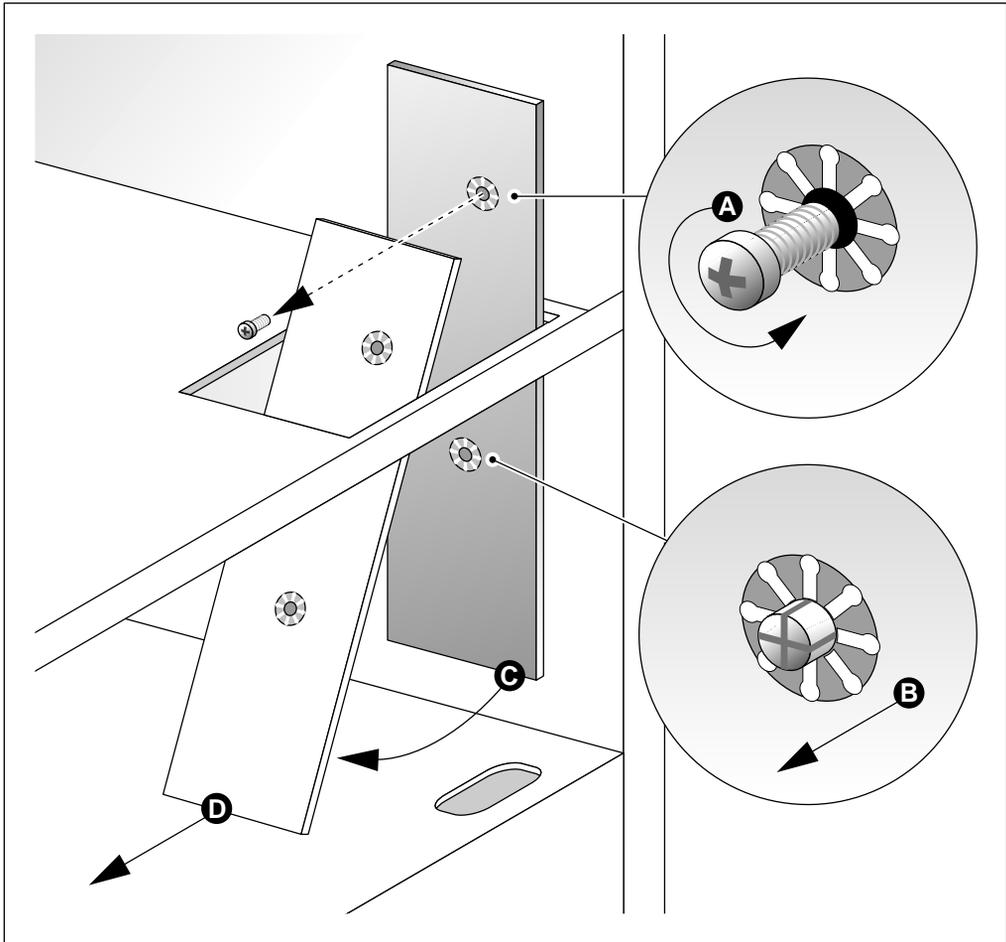
To remove the front panel board, follow the procedure below.

Procedure 4-15

Front panel board removal

- 1 Remove the screw from the threaded standoff as shown in (A) of [Figure 4-18](#).
- 2 Pull the front panel board toward the system fans until it clears the snap-on standoff as shown in (B) of [Figure 4-18](#).

Figure 4-18
Removing front panel board



- 3 Disconnect all cables connected to the front panel board, as marked as (A) through (F) in [Figure 4-19](#).
- 4 Carefully slide the front panel board down toward the hard drive bays until it clears the cutout in the chassis as shown in (C) and (D) of [Figure 4-18](#).
- 5 Remove the board from the server and place it on an antistatic surface.

Replacing the front panel board

Before replacing the front panel board, you must complete [Procedure 4-1, Powering down the application processor, on page 4-5](#), and [Procedure 4-2, Removing the side cover, on page 4-7](#).

To replace the front panel board, follow the procedure below.

Procedure 4-16

Front panel board replacement

- 1 Place the front panel board in the open area above the hard drive bays.
- 2 Slide the front panel board through the cutout in the chassis.
- 3 Reconnect the cables to the front panel board.
- 4 Position the front panel over the snap-on standoff and the threaded standoff inside the chassis.
- 5 Press the front panel board onto the snap-on standoff until it snaps in place.
- 6 Replace and tighten the screw that secures the front panel board to the chassis.
- 7 Replace the side cover as described in [Procedure 4-3, Replacing the side cover, on page 4-11](#).

Fans

The application processor contains two fans for cooling and airflow:

- Fan 1, for CPUs and SIMMs
- Fan 2, for add-in boards and hard disk drives

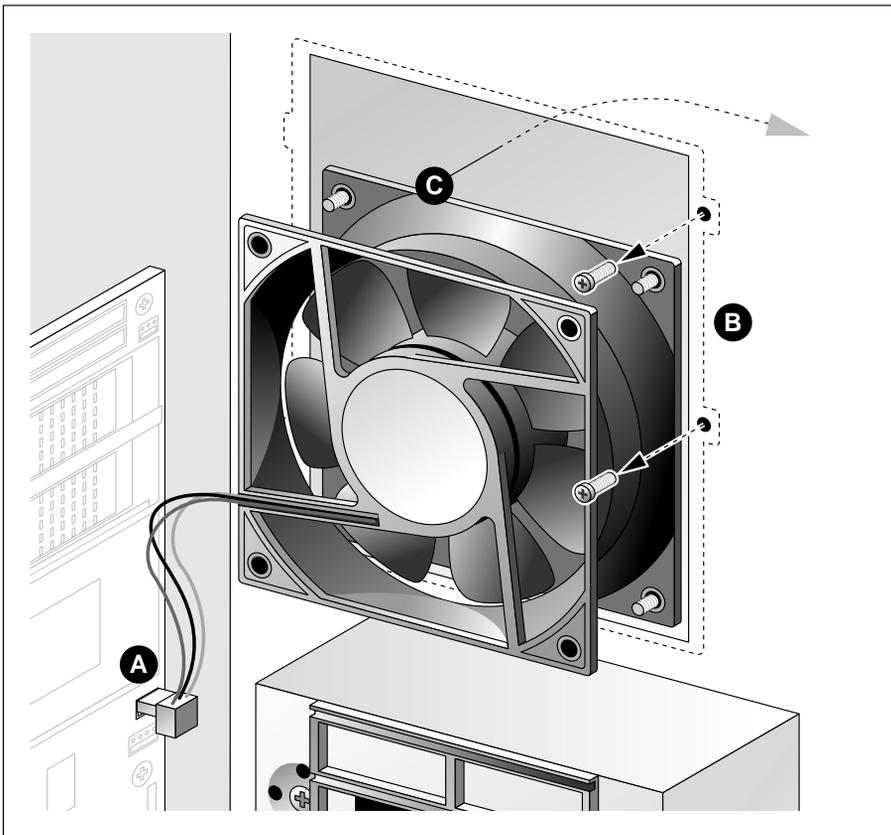
Removing Fan 1

Before removing Fan 1, you must complete [Procedure 4-1, Powering down the application processor, on page 4-5](#), and [Procedure 4-2, Removing the side cover, on page 4-7](#).

To remove Fan 1, follow the procedure below.

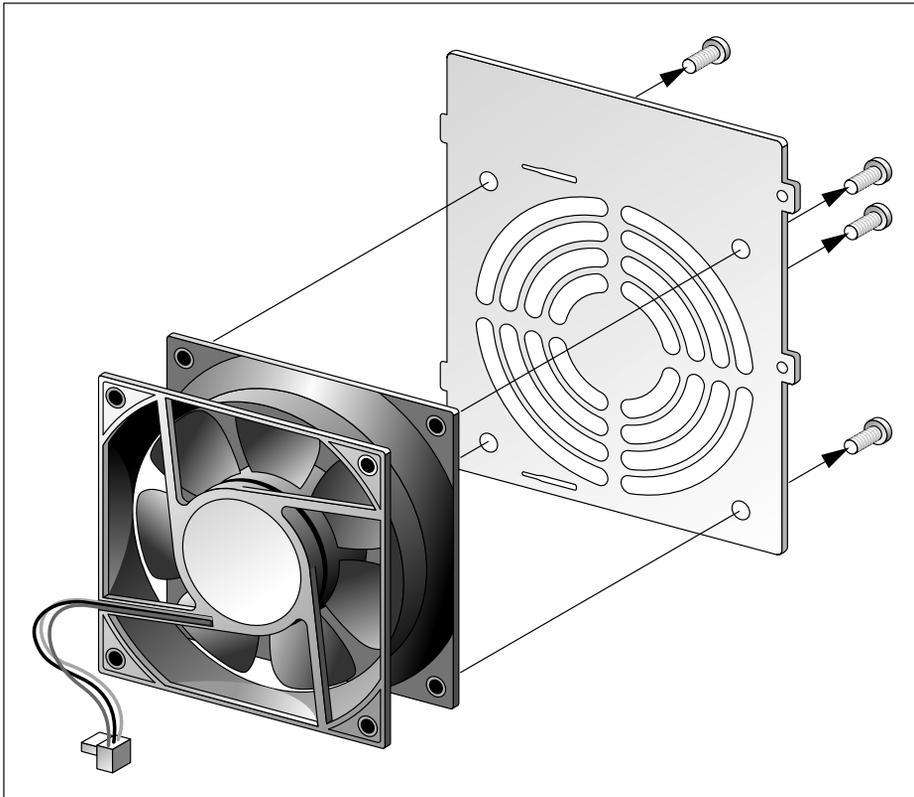
Procedure 4-17
Fan 1 removal

- 1 Disconnect the fan power cable connector from the Fan 1 header on the system board as shown in (A) of **Figure 4-19**.
- 2 Remove the screws that secure the fan assembly to the chassis as shown in (B) of **Figure 4-19**.
- 3 Pull the fan assembly toward you until the tabs on the metal panel clear the slots in the chassis as shown in (C) of **Figure 4-19**.

Figure 4-19
Removing Fan 1

- 4 Slide the fan assembly into the cavity above the hard drive bays and remove it from the system. Place the fan label-side down on a flat surface.
- 5 Remove the four screws attaching the metal panel to the fan as shown in [Figure 4-20](#).

Figure 4-20
Removing metal panel from Fan 1



Replacing Fan 1

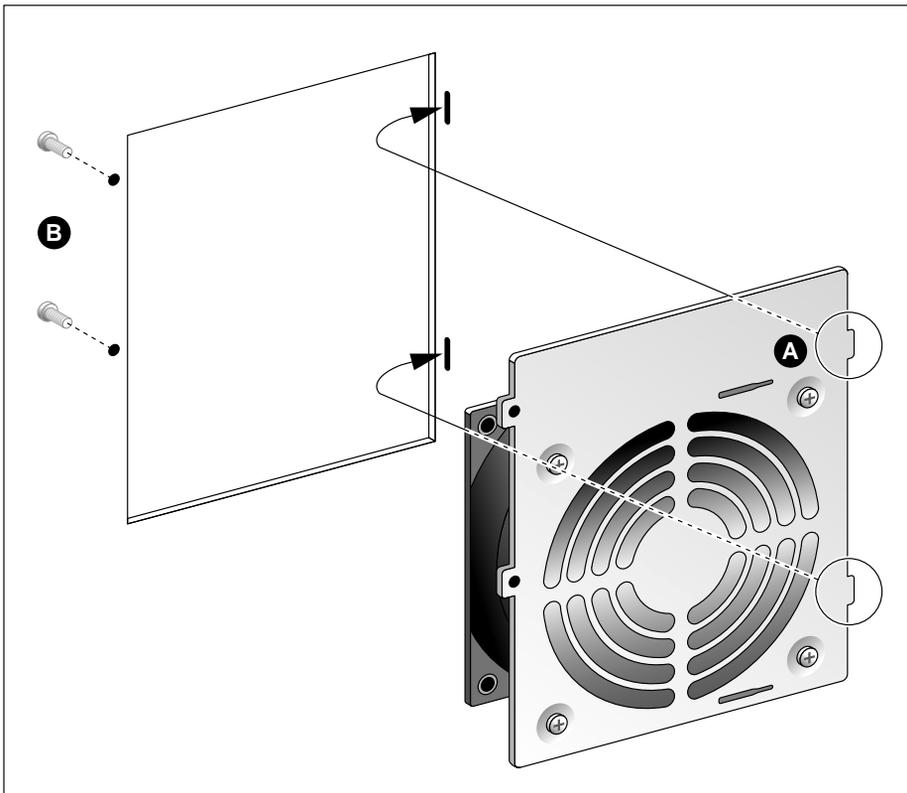
To replace Fan 1, follow the procedure below.

Procedure 4-18

Fan 1 replacement

- 1 Place the fan label-side down on a flat surface.
- 2 Place the metal panel on top of the fan with the concave surface up and the tabs facing the power cable.
- 3 Insert the screws through the holes in the metal panel and into the fan mounting holes. Tighten the screws firmly.
- 4 Slide the fan assembly into the cavity above the hard drive bays. The fan should be facing up and its cable facing toward the inside of the chassis.
- 5 Insert the fan and its power cable side of the assembly through the opening in the inner chassis wall.
- 6 Slide the tabs on the metal panel into the slots in the side of the chassis as shown in (A) in [Figure 4-21](#).

Figure 4-21
Fan 1 replacement



- 7 Replace and tighten the screws while holding the fan assembly in place as shown in [Figure 4-21](#).
- 8 Connect the fan power cable connector to the Fan 1 header on the system board.
- 9 Replace the side cover.

Removing Fan 2

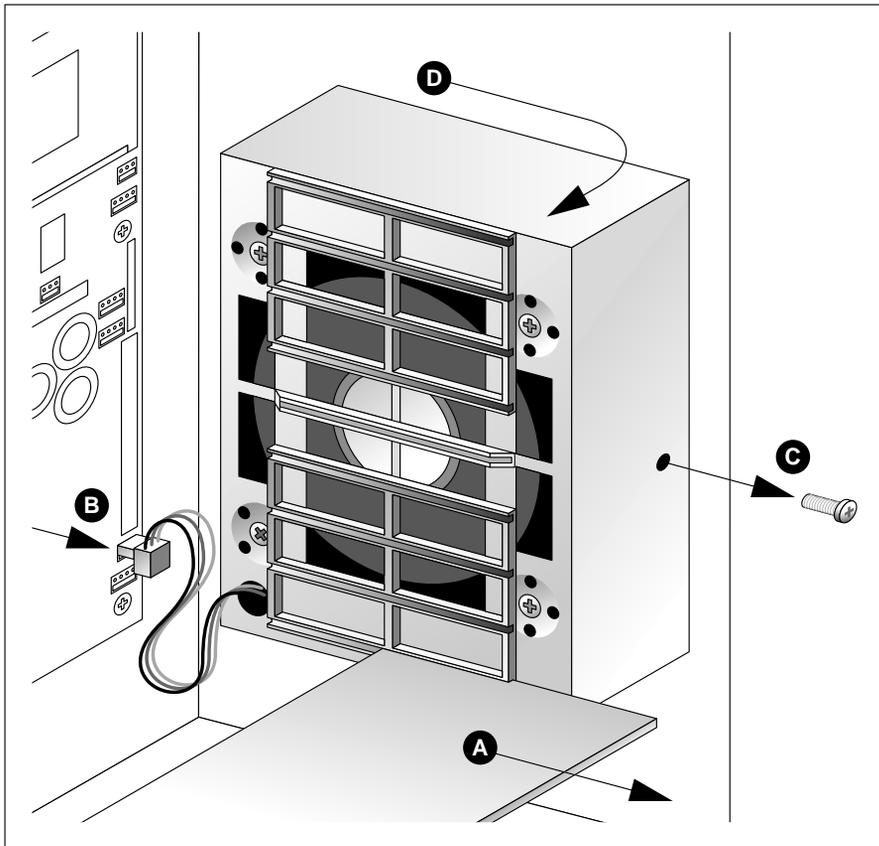
Before removing Fan 2, you must complete [Procedure 4-1, Powering down the application processor, on page 4-5](#), and [Procedure 4-2, Removing the side cover, on page 4-7](#).

To remove Fan 2, follow the procedure below.

Procedure 4-19**Fan 2 removal**

- 1 Remove any add-in boards engaged in the card guide rails attached to the fan panel assembly as shown in (A) in [Figure 4-22](#). This procedure is fully described in [Procedure 4-12, Add-in board removal, on page 4-26](#).
- 2 Disconnect the fan power cable connector from the Fan 2 header on the System Board as shown in (B) in [Figure 4-22](#).
- 3 Remove the assembly retaining screw as shown in (C) in [Figure 4-22](#).
- 4 Disengage the tabs from the notches in the inner chassis wall by sliding the assembly in the direction shown in (D) in [Figure 4-22](#).

Figure 4-22
Removing Fan 2



- 5 Remove the assembly from the system and place it, with the card guide rails facing up, on a flat surface.
- 6 Remove the four screws that attach the metal panel to the fan.

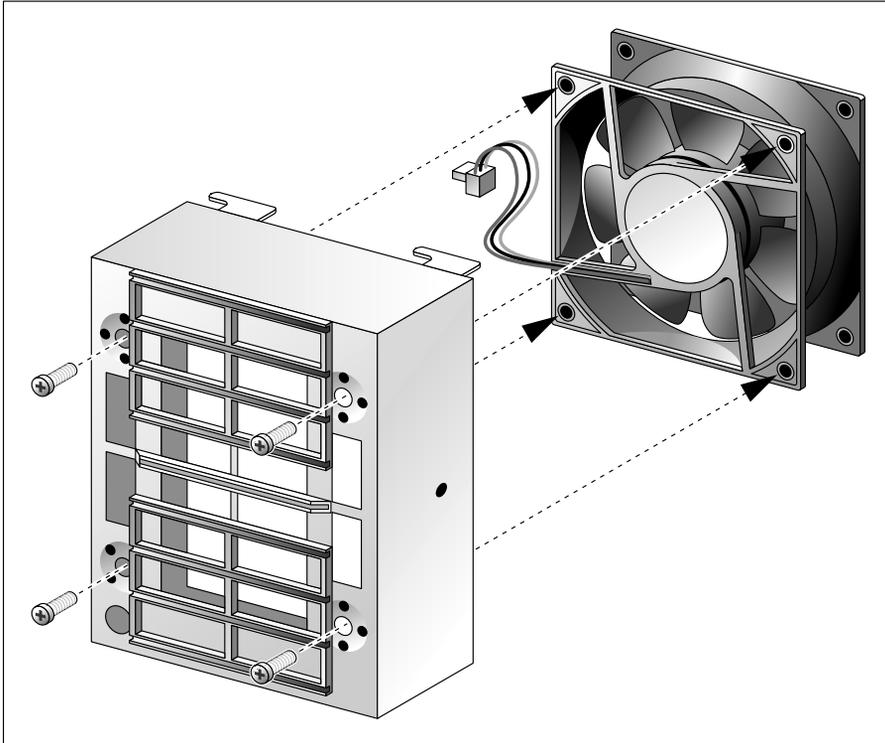
Replacing Fan 2

Before replacing Fan 2, you must complete [Procedure 4-1, Powering down the application processor, on page 4-5](#), and [Procedure 4-2, Removing the side cover, on page 4-7](#).

To replace Fan 2, follow the procedure below.

Procedure 4-20
Fan 2 replacement

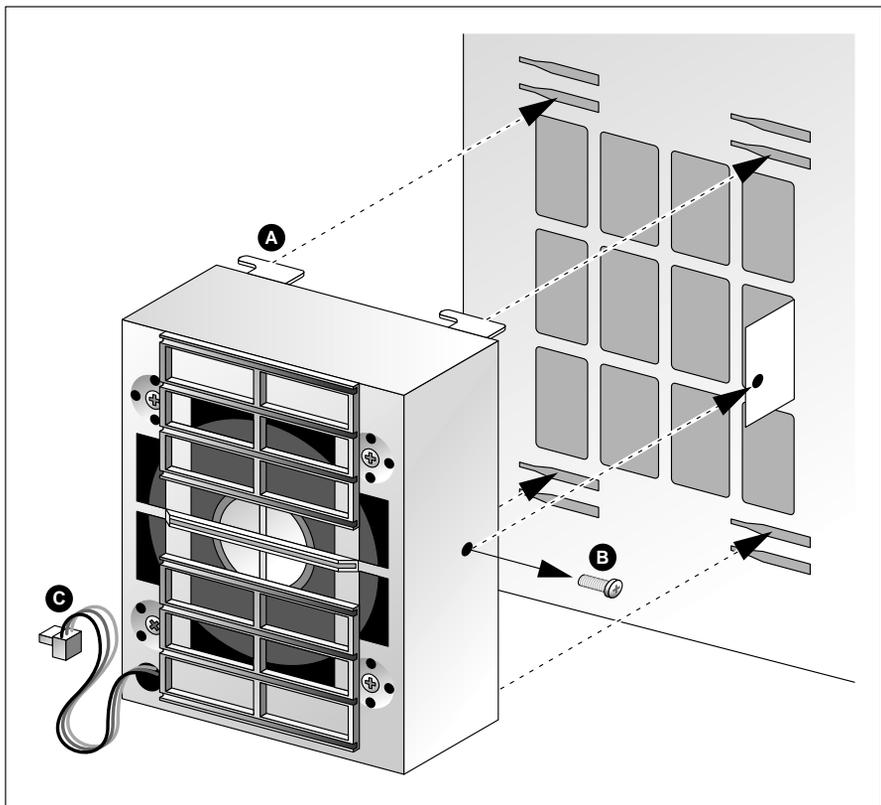
- 1 Place the metal fan panel assembly on its side.
- 2 Place the fan inside the assembly with the label side facing the screw holes in the assembly.
- 3 Orient the fan so that the power cable faces the feed-through hole in the assembly.
- 4 Insert the screws through the holes in the metal panel and into the fan mounting holes as shown in [Figure 4-23](#).

Figure 4-23
Mounting Fan 2 assembly

- 5 Tighten the screws firmly.
- 6 Insert the fan power cable through the feed-through hole in the assembly.

- 7 Position the assembly in the chassis so that the top and bottom row of tabs on the metal panel engage with the notches in the inner chassis wall. Slide the assembly toward the system board until the tabs firmly engage in the notches as shown in (A) in [Figure 4-24](#).
- 8 Replace and tighten the assembly retaining screw as shown in (B) of [Figure 4-24](#).
- 9 Connect the fan power cable connector to the Fan 2 header on the system board as shown in (C) of [Figure 4-24](#).

Figure 4-24
Mounting Fan 2 to chassis



- 10 Replace any add-in boards.
- 11 Replace the side cover.

Hard drive bay assembly

The hard drive bay assembly consists of a SCSI backplane, two drive status light boards, and a metal cage. The assembly is attached to the chassis with seven screws.

Removing the bay assembly

Before removing the assembly, you must complete [Procedure 4-1, Powering down the application processor, on page 4-5](#), and [Procedure 4-2, Removing the side cover, on page 4-7](#).

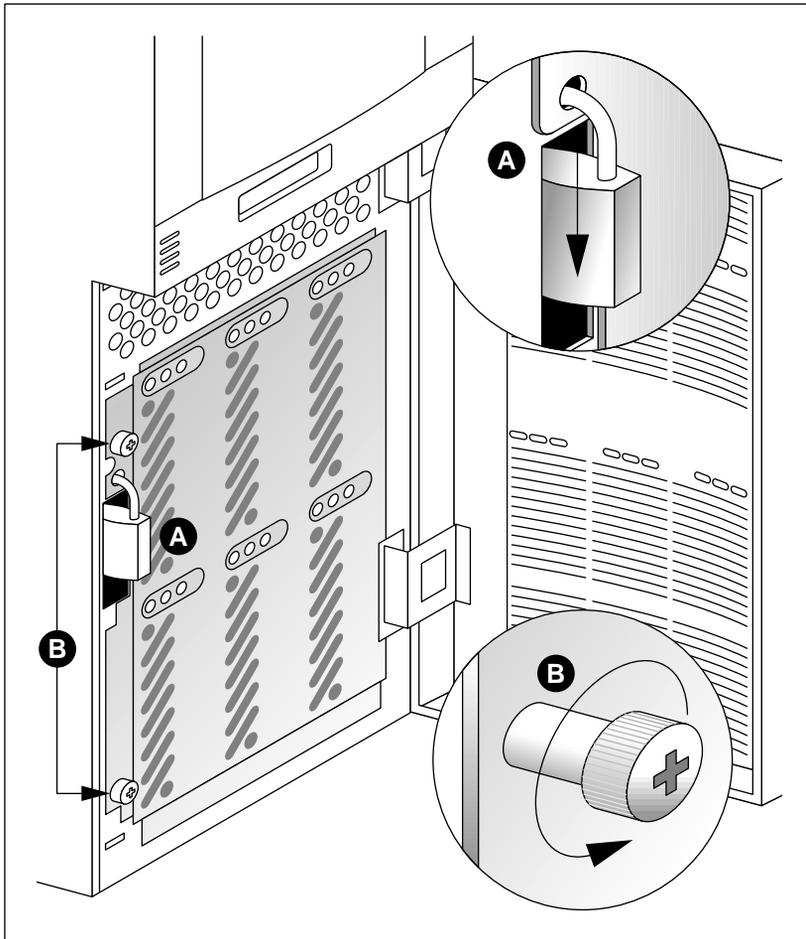
To remove the bay assembly, follow the procedure below.

Procedure 4-21

Hard drive bay assembly removal

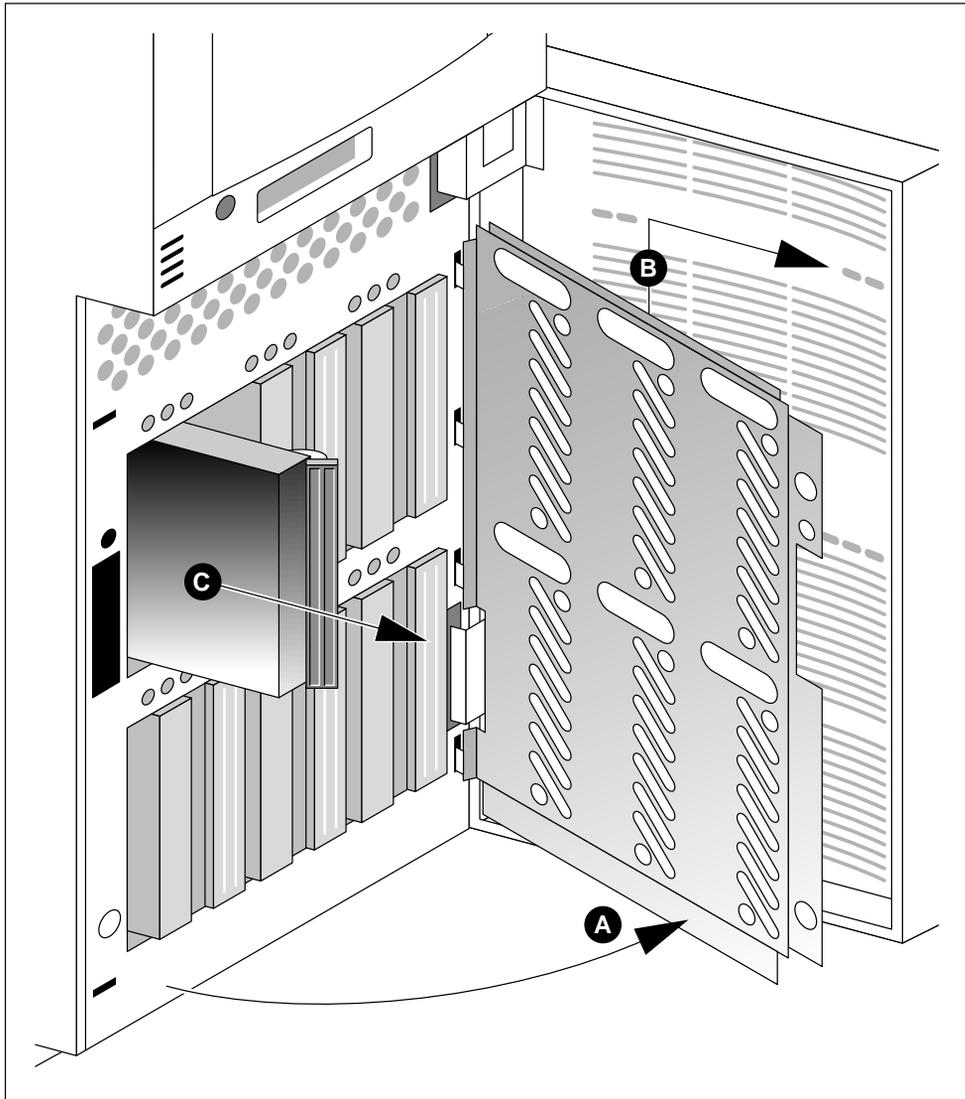
- 1 Open the lower plastic front door of the server.
- 2 Unlock and remove the padlock on the metal door above the hard drive bays as shown in (A) of [Figure 4-25](#).
- 3 Loosen the two spring-loaded thumbscrews securing the metal door to the chassis as shown in (B) of [Figure 4-25](#).

Figure 4-25
Opening metal front door



- 4 Open the door until it is at an angle of about 45 degrees relative to the server as shown in (A) of [Figure 4-26](#). Lift up on the door and pull it toward you to disengage it from the chassis as shown in (B) of [Figure 4-26](#).

Figure 4-26
Removing front metal door



- 5 Reach through the opening above the bays, and disconnect the drive fault cable from J5 on the front panel board.

- 6 Disconnect the wide SCSI cable (if installed) from J16 on the SCSI backplane.
- 7 Disconnect the wide SCSI cables of the add-in SCSI controller board (if installed) from J7 and J16 on the SCSI backplane.
- 8 Disconnect the add-in PCI RAID controller board data port cable (if installed) from J17 on the SCSI backplane.
- 9 Remove the seven screws that secure the bay assembly to the chassis.
- 10 Slide the assembly toward the fans and pull it toward you to disengage it from the slots in the chassis wall.



CAUTION!

Be careful when removing the hard drive bay assembly. The LEDs above the upper and lower bays are easily damaged.

- 11 Pull the assembly out of the chassis.
- 12 Disconnect the power cable from J18 on the SCSI backplane.
- 13 Place the hard drive bay assembly on a static-free surface.

Removing the SCSI backplane

To remove the SCSI backplane, complete the following procedure.

Procedure 4-22

Removing the SCSI backplane

- 1 Disconnect the LED status cables from J2 and J9 on the SCSI backplane. These cables can be accessed through the side openings on the SCSI backplane.
- 2 Remove the nine screws that attach the backplane to the hard drive bay assembly.
- 3 Place the backplane on an antistatic surface.

Replacing the SCSI backplane

To replace the SCSI backplane, complete the following procedure.

Procedure 4-23
Replacing the SCSI backplane

- 1 Connect the LED status cables to J2 and J9 on the SCSI backplane.
- 2 Attach the backplane to the hard drive bay assembly with nine screws.

Replacing the hard drive bay assembly

To replace the hard drive bay assembly, complete the following procedure.

Procedure 4-24
Replacing the hard drive bay assembly

- 1 Place the hard drive bay assembly near the opening between the system fans and the front of the chassis.
- 2 Connect the power cable to J18 on the SCSI backplane.

**CAUTION!**

Be careful when replacing the hard drive bay assembly. The LEDs mounted on the light boards on the upper and lower bays are easily damaged.

- 3 Slide the assembly into the chassis until the tabs on the back of the assembly engage in the chassis wall.
- 4 Slide the assembly toward the front of the system chassis.
- 5 Attach the assembly to the chassis with the seven screws.
- 6 Connect the drive fault cable to J5 on the front panel board.
- 7 Connect the wide SCSI cable from the wide SCSI connector on the I/O panel to J16 on the SCSI backplane, if applicable.
- 8 Connect the wide SCSI cables from channels 0 and 1 of the add-in PCI RAID controller board to J7 and J16 on the SCSI backplane, if applicable.
- 9 Connect the data port cable of the add-in PCI RAID controller board to J17 on the SCSI backplane.
- 10 Position the metal door at a 45-degree angle in front of the hard drive bays.
- 11 Slide the door tabs into the channel slots.

- 12 Close the metal door and secure it to the chassis with the two captive spring-loaded thumbscrews.
- 13 Secure a padlock through the metal door and chassis if desired.
- 14 Close the lower plastic front door of the server.
- 15 Replace the side cover.

Swapping SCSI hard drives

The server includes six 3.5-inch hard drive bays that provide over 12 Gbytes of hard disk drive expansion.

The connectors on the SCSI backplane accept wide/fast SCSI-2 drives with 80-pin SCA connectors.

The server system supports a variety of single-ended SCSI devices.

Mounting a SCSI hard disk drive in a plastic carrier

To mount a SCSI hard disk drive in a plastic carrier, follow the procedure below.

Procedure 4-25

Mounting a SCSI hard disk drive in a plastic carrier

- 1 Remove the 3.5-inch hard disk drive from its protective wrapper, and place it on an antistatic surface.
- 2 Record the model number and serial number of the drive in your equipment log.
- 3 Set jumpers and switches according to the drive manufacturer's specifications, and remove the terminating resistors.
- 4 Orient the drive so that the power and signal connector is at the top edge facing you.
- 5 Place the plastic carrier on top of the drive.
- 6 Attach the carrier to the drive using four screws of appropriate size and length.

Note: Screws are not supplied.

Installing a SCSI hard disk drive in a hard drive bay

To install a SCSI hard disk drive in a bay, follow the procedure below.

Procedure 4-26**Installing a SCSI drive in a hard drive bay**

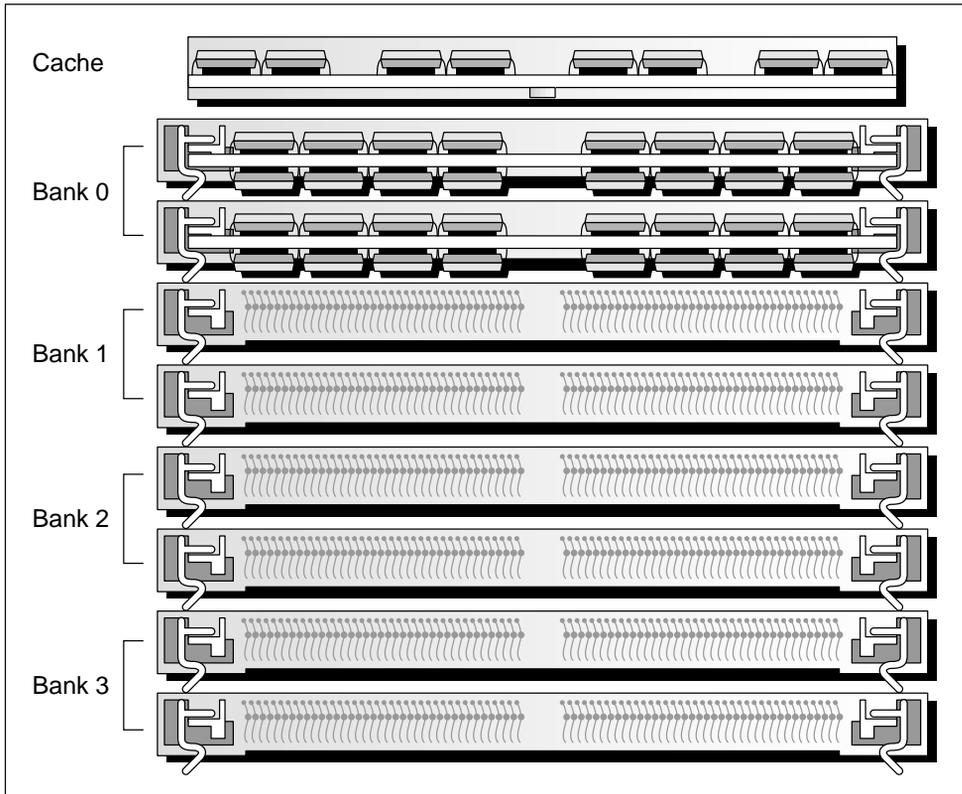
- 1 Open the lower plastic front door of the server.
- 2 Unlock and remove the padlock on the metal door to the hard drive bays if applicable.
- 3 Loosen the two captive thumbscrews securing the metal door to the chassis, and open the door.
- 4 Position the carrier and drive assembly in the hard drive bay guide rails.
- 5 Push the drive into the bay until it docks with the SCSI backplane connector.
- 6 Push the plastic lever on the carrier to the right until it locks around the metal posts on the bay.
- 7 Secure the metal hard drive bay door to the chassis.
- 8 Lock the metal door with a padlock if desired.
- 9 Close the plastic front door of the Application Processor.
- 10 Run the System Configuration Utility (SCU) to verify that the hard disk drive is installed in the system.

Note: If you have installed an external controller board in your server, you may need to set the Hard Disk Drive options to “Not Installed” and the Onboard IDE option to “Disabled” with the SCU. For more information on the SCU, see Appendix C: System configuration utility.

System board SIMMs

The system board contains eight SIMM sockets arranged in four banks as shown in [Figure 4-27](#). The system board supports up to 256 Mbytes with eight 32 Mbyte SIMMs. Starting with bank 0, completely fill each bank.

Figure 4-27
SIMM banks



Contact your sales representative or service technician for a list of approved JEDEC-compatible SIMMs. Use only 36-bit, 72-pin, 70 ns or 60 ns fast page mode SIMMs with tin-lead alloy plated edge connectors for tin lead alloy plated sockets, or with gold-lead alloy plated edge connectors for gold-lead alloy plated gold socket, single or double-sided. Use 256 Kbyte, 1 Mbyte, 4 Mbyte, 16 Mbyte single-sided or 512 Kbyte, 2 Mbyte, 8 Mbyte, 32 Mbyte double-sided SIMMs. You must place identical SIMMs in pairs in each bank.

**CAUTION!****Risk of equipment failure**

Mixing dissimilar metals may cause failures.

Remove a SIMM from its antistatic package by holding the SIMM by its edges only.

Installing system board SIMMs

Before installing system board SIMMs, you must complete [Procedure 4-1, Powering down the application processor, on page 4-5](#), and [Procedure 4-2, Removing the side cover, on page 4-7](#).

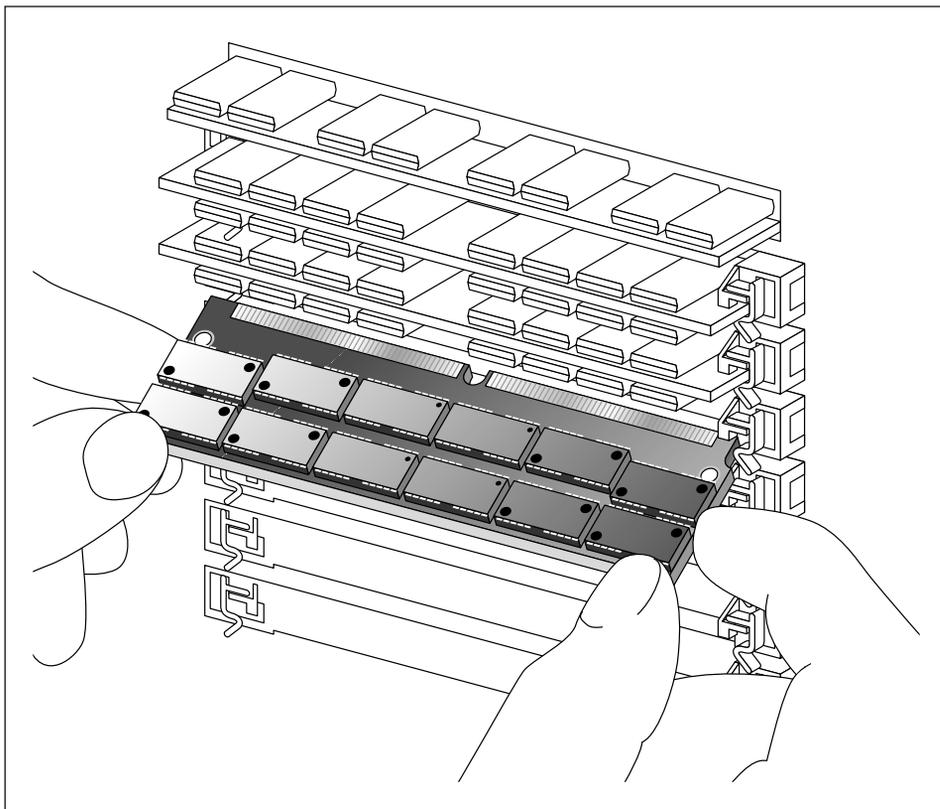
Always record the SIMMs in your equipment log.

Note: To facilitate SIMM installation or removal, position the application processor on its side for the following procedures.

Procedure 4-27
Installing system board SIMMs

- 1 Hold the SIMM at a 45-degree angle, and press it firmly into the bank socket as shown in **Figure 4-28**.

Figure 4-28
Installing system board SIMMs





CAUTION!

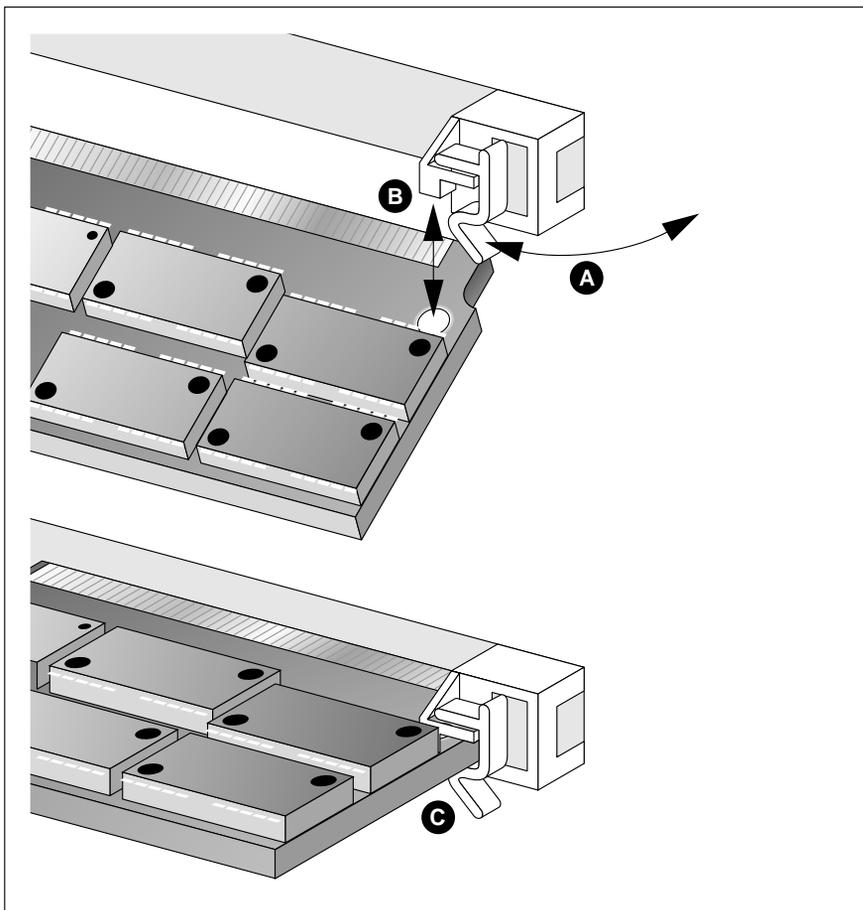
Risk of equipment damage

Use extreme care when installing a SIMM. Applying too much pressure can break the retaining clips or damage the socket slot. SIMMs are keyed and can be inserted in one way only.

- 2 Push the SIMM vertically until it is held in place by the retaining clips as shown in (A) of [Figure 4-29](#).

The small horizontal posts near the retaining clips should pass through the SIMM as shown in (B) of [Figure 4-29](#).

Figure 4-29
Positioning SIMMs



The SIMM should be perpendicular to the system board when installed properly as shown in (C) of [Figure 4-29](#). If there is a gap between the SIMM and the retaining clips, open the clips, remove the SIMM, and try again.

- 3 Replace the side cover of the Application Processor.

Removing system board SIMMs

Before removing system board SIMMs, you must complete [Procedure 4-1, Powering down the application processor, on page 4-5](#), and [Procedure 4-2, Removing the side cover, on page 4-7](#).

Remove system board SIMMs starting with the socket furthest from bank 0.

Procedure 4-28

Removing system board SIMMs

- 1 Open the retaining clips enough to tilt the top edge of the SIMM away from the retaining clips.
- 2 Lift the SIMM away from the socket.
- 3 Store the SIMMs in an antistatic package.
- 4 Replace the side cover of the Application Processor.

Cache memory module

The system board contains a cache memory module connector. Use a 256 Kbyte or 512 Kbyte, asynchronous or burst, cache memory module.

Installing a cache memory module

Before installing a cache memory module, the following procedures must be completed.

Procedure 4-29

Installing a cache memory module

- 1 Align the wide connector section of the module with the wide side of the connector.



CAUTION!

Risk of equipment damage

Hold the module by its edges only.

- 2 Insert the module into the connector.
- 3 Press the module down firmly until it is fully seated in the connector.
- 4 Replace the side cover.

Removing a cache memory module

Before installing a cache memory module, the following procedures must be completed.

Procedure 4-30

Removing a cache memory module

- 1 Rock the module gently from side to side until the edge connectors pull free.
- 2 Remove the module from the slot.
- 3 Store the module in an antistatic package.
- 4 Replace the side cover.

Video memory

The system board comes with 512 Kbytes of onboard video memory. Increasing the video memory buffer size to 1 Mbyte with a 512 Kbyte (32 Kbyte 16-bit), fast-page mode, 70ns DRAM allows the PCI VGA controller to provide 24-bit color, which displays 16 million colors in video resolutions.

Advanced video modes are automatically enabled. You may need to load drivers to enable setting higher resolution modes in Windows Setup, for example.

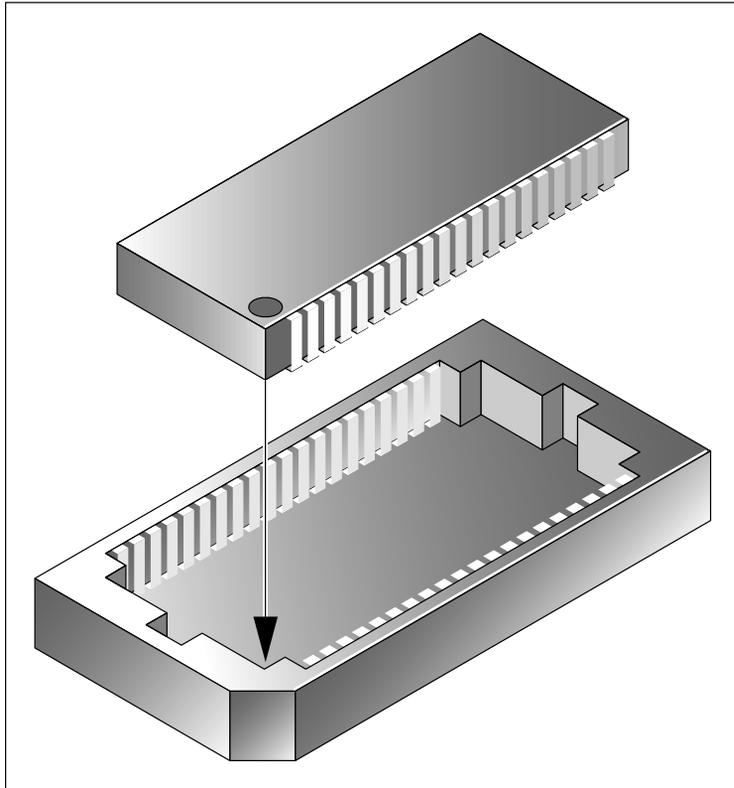
Installing the video DRAM chip

Before installing the video DRAM chip, the following procedures must be completed.

Procedure 4-31
Installing the video DRAM chip

- 1 Align the beveled edge on one end of the DRAM chip with the bottom of the socket, as shown in **Figure 4-30**.

Figure 4-30
Replacing the video DRAM chip



- 2 Press the DRAM chip down firmly until it is fully seated in the socket.

- 3 Replace the side cover.

	<p>CAUTION! Risk of equipment damage</p>
<p>Installing the video DRAM chip incorrectly in the socket could produce an extremely high case temperature, destroying the chip and possibly the system board. Do not touch the chip until the case has cooled.</p>	

Removing the video DRAM chip

Before removing the video DRAM chip, the following procedures must be completed.

Procedure 4-32

Removing the video DRAM chip

- 1 Pry up each end of the DRAM chip with a small pointed tool.
- 2 Pull the chip straight out of the socket.
- 3 Place the DRAM chip in an antistatic package.
- 4 Replace the side cover.

Real-time clock chip

You may need to replace the real-time clock chip because of its internal integral lithium battery life span. When the battery starts to weaken, it loses voltage. When the voltage drops below +3 V, system settings stored in CMOS RAM may no longer apply.

	<p>DANGER! Risk of personal injury</p>
<p>The battery may explode if incorrectly replaced. Replace only with the same or equivalent type recommended by the equipment manufacturer.</p>	
<p>Discard used batteries according to the manufacturer's instructions.</p>	

Removing the real-time clock chip

Before removing the real-time clock chip, you must complete [Procedure 4-1, Powering down the application processor, on page 4-5](#), and [Procedure 4-2, Removing the side cover, on page 4-7](#).

Please see [Figure 4-17, System base board and I/O panel components, on page 4-27](#), for the location of the real-time clock chip.

Procedure 4-33

Removing the real-time clock chip

- 1 Remove the real-time clock chip from its socket with an IC-removal tool.
- 2 Dispose of the lithium battery-powered real-time clock chip as required by local ordinance.
- 3 Replace the side cover.



CAUTION!

Risk of equipment damage

Do not expose the component to excessive heat or fire.

Keep batteries away from children.

Installing the real-time clock chip

Before installing the real-time clock chip, the following procedures must be completed.



CAUTION!

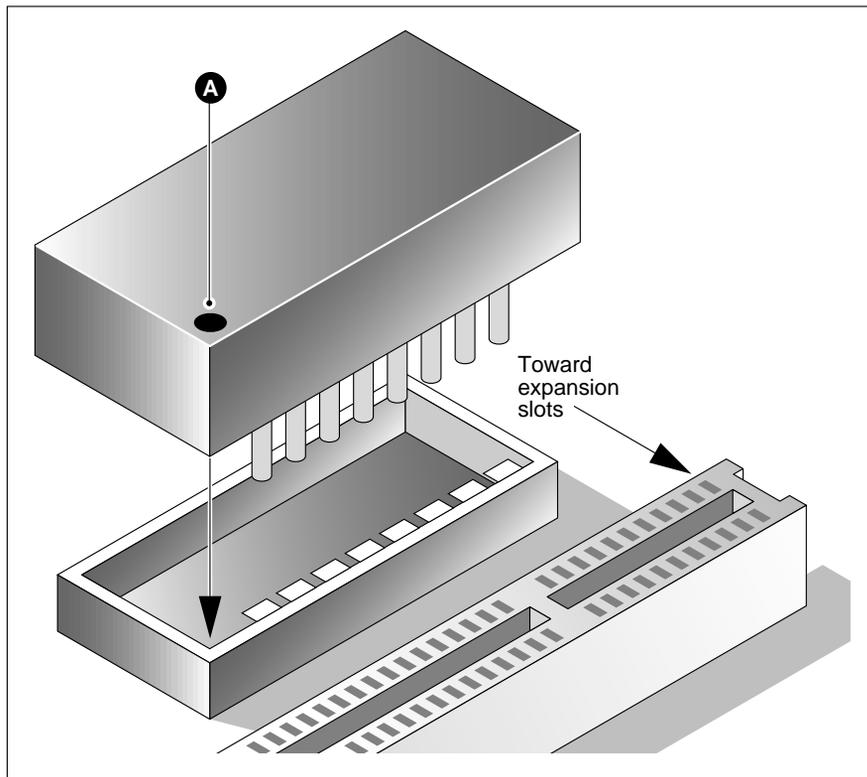
Risk of equipment damage

Do not touch or bend the pins on the real-time clock chip.

Procedure 4-34
Installing the real-time clock chip

- 1 Position the real-time clock chip over the socket so that the dot on the real-time clock is facing the expansion slot as shown in **Figure 4-31**.

Figure 4-31
Replacing real-time clock chip



- 2 Press down on the real-time clock chip until it is firmly seated in the socket.
- 3 Run the CU to restore configuration settings to the real-time clock.
- 4 Replace the side cover.

Recovering and updating the BIOS

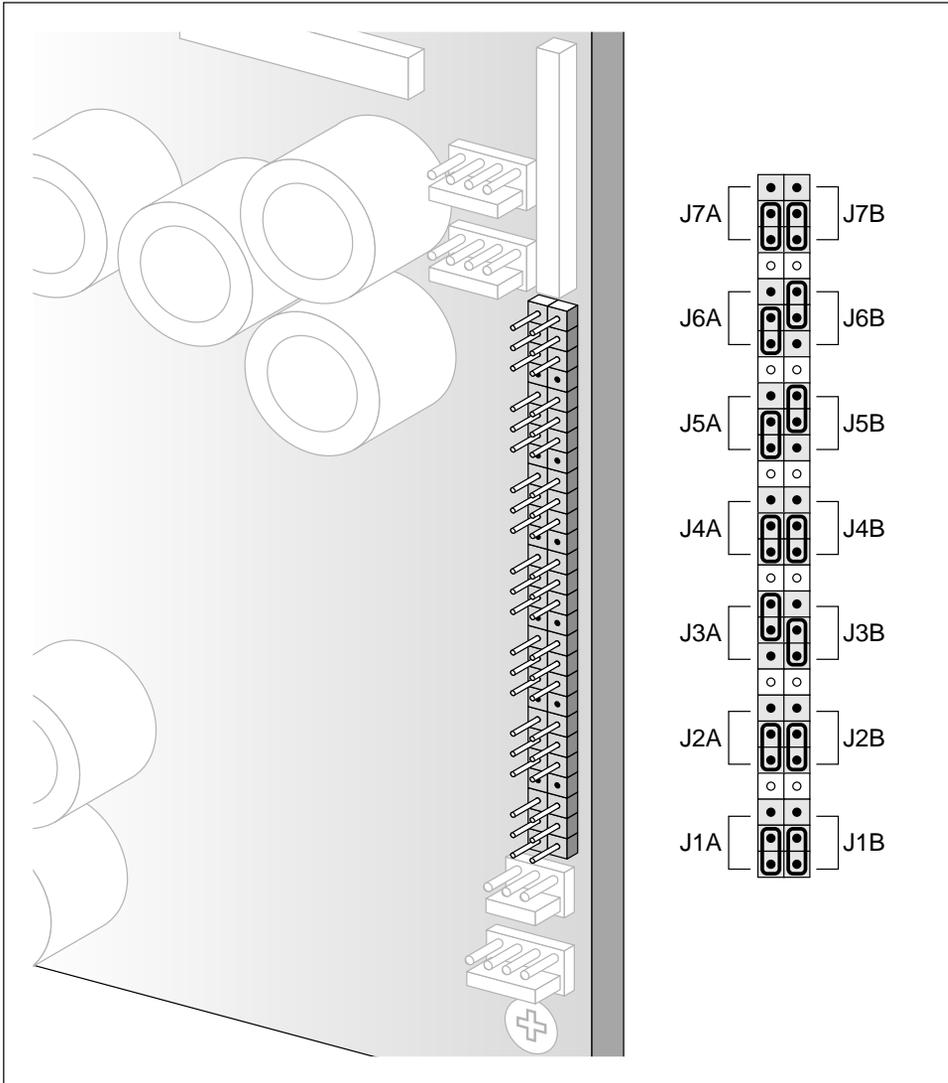
The following section outlines how to recover and update the BIOS settings on your Application Processor.

System board jumpers

The system board configuration jumpers enable you to set specific operating parameters in the Application Processor. Jumper setting defaults are 1-2 for a 90 MHz microprocessor operating at a 60 MHz bus speed.

Figure 4-32 shows the jumper settings on the Meridian IVR application processor.

Figure 4-32
System board jumper settings



Removing or installing a jumper

Before removing or installing jumpers, you must complete [Procedure 4-1, Powering down the application processor, on page 4-5](#), and [Procedure 4-2, Removing the side cover, on page 4-7](#).)



CAUTION!

Always turn off and unplug the Application Processor before moving the jumpers.

Do not bend the jumper pins.

Procedure 4-35

Removing or installing a jumper

- 1 Find the appropriate jumper on the jumper block. Use a jumper removal tool or small needle-nose pliers to pull it off the pins.
- 2 Orient the jumper over the two pins for the desired setting, and press it onto the pins.

Recovering the BIOS

Flash memory contains a protected area that cannot be corrupted. Code in this area boots the server from drive A when the BIOS is corrupted. BIOS corruption is generally detected by the POST at system start-up.

The recovery procedure automatically loads flash memory from the BIOS files on the BIOS recovery diskette.

Before initiating the BIOS recovery procedure, the following procedures must be completed.

Procedure 4-36

Recovering the BIOS

- 1 Power down the Application Processor.
- 2 Move the Boot Option jumper to pins 2-3.
- 3 Insert the BIOS recovery diskette in drive A.
- 4 Power up the Application Processor.
- 5 Power down the Application Processor once the recovery process is complete.

- 6 Remove the diskette from drive A.
- 7 Set the Boot Option jumper to pins 1-2.
- 8 Replace the side cover.
- 9 Power up the Application Processor to reboot it.

Updating the BIOS

BIOS updates are available from your distributor technician.

Procedure 4-37

Updating the BIOS

- 1 Unzip the BIOS update file and copy it to a bootable diskette.
- 2 Power down the Application Processor.
- 3 Insert the update diskette in drive A.
- 4 Power up the Application Processor. The update process starts automatically following the system boot. Follow the system prompts.
- 5 Power down the Application Processor after the update process is complete.
- 6 Remove the BIOS update diskette.
- 7 Power up the Application Processor to reboot it.

Chapter 5: Software reinstallation

This chapter provides a brief overview of the software requirements for an IVR system, and all the necessary reinstallation procedures. It is important to note that these procedures are not required for installation of a new system, as the required software comes factory preinstalled.

Use the following table to determine which installation procedure to follow:

Purpose	Procedure
Application installation, conversion, upgrade, or expansion	"Reinstalling the IVR application software" on page 5-8
Operating system installation or upgrade	"Installing the operating system" on page 5-2, "Reinstalling the IVR application software" on page 5-8
Installation of a second hard drive	"Reinstalling the IVR application software" on page 5-8 "Installing a second hard drive" on page 5-11
Installation of a second serial board	"Installing a second DigiBoard" on page 5-12

Before following the procedures in this chapter, ensure that you have

- three floppy disks and two tapes (described in the following sections)
- SCO Open Desktop Lite registration card
- SCO Development system registration card (for Development systems)
- Report Writer keycode and serial number
- IVR keycode number

Software information

Meridian IVR Release 2.0 and SCO UNIX software are distributed on three floppy disks and two tapes:

- Volume N1 Boot diskette
- Volume N2 diskette
- M01 MIT Master Install diskette
- SCO Operating System tape (System Image)
- Meridian IVR Application tape

Before you attempt to reinstall any Meridian IVR software, be sure to review this entire chapter carefully. Reinstalling the Meridian IVR software replaces the entire contents on the hard drive. For an existing system, it is important to get a backup system copy of all your site-specific files before the install is done. This allows you to quickly restore your current configuration once the installation from tape is complete.

Note: Allow up to 75 minutes for a complete reinstallation (including operating system and application software).

Installing the operating system

Note: Perform a full application-related backup before reinstalling the operating system software for an existing system. See the section on performing a full system backup in the *Meridian IVR System Administration Guide* (NTP 555-9001-300).

Since the Operating System software and Meridian IVR software is factory installed, this procedure is used only when the hard disk has crashed and needs to be replaced or reformatted, or when software upgrades are to be applied to the Meridian IVR system.

Such events require you to load the operating system and application software from the two software distribution tapes delivered with the system. These tapes are *not* to be used for backups; they should be kept in write-protected mode and only used to rebuild the system.

It is recommended that you perform a backup frequently to ensure that the backup tape is always current.

Procedure 5-1 Rebooting the system using diskettes

1 Insert the Volume N1 Boot diskette in the floppy drive.

2 Power up the application processor.

The system boots normally. After the startup messages, the following message will appear:

Insert N2 (Filesystem) floppy and press <Return>

3 Insert the Volume N2 diskette and press <Enter> to continue installation.

Installation will continue until the following message appears:

**Insert diskette volume M01 (MIT Master Install)
and press <Return> to continue.**

4 Insert the last floppy diskette (MIT Install diskette) and press <Enter>.

The following messages will appear:

**Creating and setting permissions
for file system mount points.
fsstat: /dev/u okay
Mounted /u filesystem**

When the initial operating system installation is complete, the following message appears:

Is the System Image ready? (y/n)

5 If you are ready to install the operating system from the SCO Operating System tape, continue with the next procedure.

Procedure 5-2
Reinstalling the operating system using the SCO Operating System tape

This procedure takes approximately 45 minutes to complete. Be sure to allow enough time to complete the full procedure. Make sure you answer all of the questions.

- 1 Insert the SCO Operating System tape (tape 1) into the tape drive on the application processor. Ensure that the tape drive latch is fully closed once the tape is inside.

- 2 Type **y** to the following prompt and press <Enter>.

Is the System Image ready?

The following messages appear.

Using default buffer size of 5K.

Device is SCSI: /dev/xStp0

Extracting image ...

This may take a few minutes ...

Installation will continue at this point for approximately 40 to 45 minutes. *The following messages will appear after this time:*

You may remove the M1 diskette, it is no longer needed.

Fixing permissions for specified files...

This machine has been installed with the Mass Installation Toolkit.

You are asked to supply system information that must be entered before the target machine is used in multiuser mode. You have two choices for entering this information, doing so now or waiting until the next time the system is rebooted.

Do you wish to set the system time? (y/n)

- 3 Type **y** to set the system time. *The following prompt appears:*
- Time zone initialization**
- Are you in North America? (y/n)**
- After responding to this message, you will see a list of time zones with the following prompt:*
- Enter the number that represents your time zone or enter q to quit:**
- 4 Enter the number for your time zone and press <Enter>.
- You see the following prompt:*
- Does daylight saving time (summer time) apply at your location? (y/n)**
- 5 After responding to this message, set the system date and time using the format **yymmddhhmm** and press <Enter>.
- After you set the system date and time, you can set the system password. *The following prompt appears:*
- Do you wish to set the system password at this time? (y/n)**
- If you respond **y**, you can then select a root password.
- 6 If you select your own password, ensure that the password is greater than six characters in length, and contains no spaces or symbols.
- After you set the system password, the following prompt appears:*
- Do you wish to set the system name at this time? (y/n)**
- 7 Type **y** to set the system name.
- The following prompt appears:*
- Enter new system node name:**
- 8 Type in the system name you want and press <Enter>.
- The following messages appear:*
- Your system name is set to *system_name*. Do you wish the mail system to use a different name?**
- Note:** This prompt refers to the UNIX mail system, *not* Meridian Mail.

- 9 Type **y** to enter a different name for the mail system or **n** to use the same name and continue.

If you choose **y**, you are prompted for the new name. Enter a name and press <Enter>. *The following prompts appear:*

Press <Return> to continue.

Do you wish to serialize the system at this time?

- 10 Type **y** to serialize the system.

The following prompt appears:

Execute disk-based serialization? (y/n)

- 11 Type **n** to enter the serial numbers manually and continue.

The following message appears:

SCO Open Desktop Lite System Serialization

When prompted, use the serial number and activation key included with the SCO Open Desktop Lite distribution.

Note: The serial number and activation key for SCO are case sensitive. Type them exactly as they appear on the activation cards.

- 12 Respond to the following prompts using the appropriate serial number and activation key from the SCO Product Activation card:

Enter your serial number or enter q to quit:

Enter your activation key or enter q to quit:

The following message appears:

SCO Open Desktop Development System Serialization

When prompted, use the serial number and activation key included with the SCO Open Desktop Development System distribution.

- 13 Respond to the following prompts using the appropriate serial number and activation key from the SCO Product Activation card:
- ```
Enter your serial number or enter to quit:
Enter your activation key or enter to quit:
The following message appears:
MIT serialization complete
The following prompt appears:
Do you have a need to set the IP address for this build?
Enter Y/N
```
- 14 Type **n** to skip this part of the installation. Refer to the *Meridian IVR Installation Guide* (NTP 555-9001-210) for procedures on configuring your AP for a network. Check with your system administrator for the correct values for network settings.
- A list of your selections followed by this prompt appears:*
- ```
Would you like to change your answer to any
of these questions? Enter the number
to change or q to quit.
```
- 15 Type **q** and press <Enter> to quit.
- Various system messages appear, followed by the message:*
- ```
The system is down.

** Safe to Power Off **
 - or -

** Press Any Key to Reboot **
```
- Operating system installation is complete.
- 16 Ensure that the MIT Master Install diskette and SCO Operating System tape have been removed from their respective drives, and press a key to reboot the system.

## Rebooting the system

When the operating system reinstallation is completed, you must reboot the system to continue with reinstallation of the IVR application software. The following procedure describes how to reboot the system.

If you are continuing installation from the last section, skip step 1.

### **Procedure 5-3** **Rebooting the system**

- 1 Type **reboot** and press <Enter> at the system prompt.

*The system reboots. Shortly after the system restarts, the following prompt appears:*

```
Boot
:
```

**Note:** If you do not press <Enter> at this prompt during software installation, bootup may not proceed properly. Once the operating system and application have been installed, you do not have to press <Enter> at this prompt unless you want to enter maintenance mode.

- 2 Press <Enter> to continue the bootup procedure.

*The following prompt appears:*

```
Type CONTROL-d to proceed with normal startup,
(or give root password for system maintenance):
```

- 3 Enter the root password and press <Enter> to enter Maintenance mode.

The reboot process is now complete. You can now continue with reinstallation of the IVR application software.

**Note:** If you did not choose a system name during the operating system installation procedure, you will have to enter a system name at this point. Once you have entered a system name, the system will reboot and you will have to repeat the above procedure.

## **Reinstalling the IVR application software**

When the system has been rebooted, you can continue with reinstallation of the IVR application software. The following procedure describes how to install the IVR application software.

You can also use this procedure on its own (without reinstalling the operating system) to perform an upgrade, expansion, or conversion.

**Procedure 5-4**  
**Reinstalling the IVR software**

- 1 Insert the IVR application tape in the tape drive.
- 2 Start the install script using the following command:

**init.install**

A message appears stating the conditions for IVR installation. Ensure that the following conditions are met for IVR software installation:

- You are logged in as root.
- The system is in single user mode.
- The Meridian IVR application tape is in the tape drive.

*The following prompt appears:*

**Are the above conditions met? (y/n)**

- 3 Type **y** and press <Enter> if the above conditions are met. If the conditions are not met, type **n** and press <Enter>, and repeat this procedure.

If the system is not in single user mode, use the following command to restart it in single user mode:

**init 1**

*The following message appears after installation begins:*

**Extracting installation script and files from tape ..**

*After five to ten minutes, the following prompt appears:*

**please enter your keycode or enter q to quit:**

- 4 Type the keycode for your IVR application configuration and press <Enter>. Do not type spaces within the keycode. The keycode is not case sensitive. You have three chances to enter the correct keycode, after which the installation script will exit.

*The list of options is displayed, followed by the prompt:*

**Please enter y to continue and n to abort (y/n)**

- 5 Type **y** to continue with the installation.  
*After various system messages, the following messages appear:*
- Installing Report Writer**
- INSTALLATION**
- At least 6 MB free disk space should be available.**  
**Is there enough free space [y]**
- 6 Type **y** and press <Enter> to continue with Report Writer installation, or **n** to skip this part of the installation.
- If you type **y**, respond to the following prompts for the Report Writer:
- Serial number:**
- Key :**
- Number of users :**
- Directory to install fs- Report [/usr/local/fsreport]**
- Do not use the default directory path for the Report Writer. The Number of users should be 1 and directory should be /u/fsreport.*
- If you have the Fax Response option, several fax installation messages appear.
- After Report Writer installation (and fax installation, if applicable), the following prompt appears:*
- Do you have a second hard disk to configure? (y/n)**
- 7 Type **y** and press <Enter> if you have installed a second hard drive, otherwise type **n** followed by <Enter>.
- 8 If you answer **y**, follow the procedure in **“Installing a second hard drive” on page 5-11** to install the hard drive and complete IVR application installation.
- After several system messages, the system returns to the operating system prompt. IVR application software installation is complete. You can now shut down or restart the system using the next step.
- 9 Follow the procedure under **“Rebooting the system” on page 5-7** until the following prompt appears:
- Type CONTROL-d to proceed with normal startup, (or give root password for system maintenance):**
- 10 Type <Ctrl+D> to continue with normal startup and start the Meridian IVR GUI.

## Installing a second hard drive

This procedure is a subset of the procedure in “[Reinstalling the IVR application software](#)” on page 5-8. You must reinstall the IVR application software to install a second hard drive. This procedure cannot be performed separately.

### Procedure 5-5 Installing a second hard drive

- 1 Follow the procedure in “[Reinstalling the IVR application software](#)” on page 5-8 until the following prompt appears:

*Do you have a second hard disk to configure? (y/n)*

- 2 Type **y** and press <Enter>

*The following messages are displayed:*

```
Copying the required files for configuring the second
disk
```

```
System is Adding the Following SCSI Hard Disk:
```

```
Host
Adapter Adapter
Type Device Number ID LUN

alad Sdisk 0 1 0
Updating SCSI configuration.
```

```
The SCSI configuration file has been updated.
A new kernel must be built and rebooted before disk
configuration can continue.
Would you like to relink at this time?
```

```
The UNIX Operating System will now be rebuilt.
This will take a few minutes. Please wait.
```

```
Root for this system build is /.
```

```
The UNIX Kernel has been rebuilt.
```

```
Backing up /unix to /unix.old
```

```
Installing new /unix
Setting up new kernel environment
Relinking now
```

After the system is rebooted with the new kernel, invoke `.second` (by typing `./second`) to initialize the new hard disk.

```
Successful completion of Meridian IVR NewInstall
MIVR Installation has successfully completed.
```

- 3 Follow the procedure under **“Rebooting the system”** on page 5-7 and log in as root to enter maintenance mode.
- 4 At the system prompt, type the following command:

```
./second
```

*The following messages appear:*

```
Initializing The Second Disk
```

```
Overwriting all of the present contents of the hard disk.
```

```
Second DISK Detected!
```

```
Installation of Second Disk In progress
```

```
Formatting and Creating UNIX Partition on Second Disk
```

```
bytes per logical block = 1024
```

```
total logical blocks = 510079
```

```
total inodes = 65488
```

```
gap (physical blocks) = 7
```

```
cylinder size (physical blocks) = 400
```

```
cluster size = 16
```

```
mkfs: Available blocks = 1011840
```

```
Mounting filesystem
```

```
Move Fax Data from Prime Disk to Second Disk? (y/n)
```

- 5 Type **y** to move the Fax data to the second hard drive.

*After several messages, the following message appears:*

```
End of Second Disk Installation!
```

Installation of the second hard drive is complete. Reboot the system normally to start Meridian IVR.

## Installing a second DigiBoard

The following procedure outlines how to install a second DigiBoard in your Application Processor.

---

To physically install a card, follow the steps in “Add-in boards” on page 4-21.

**Procedure 5-6**  
**Configuring a second DigiBoard**

- 1 Make sure the second DigiBoard is installed correctly and uses the following dip switch settings:

**Table 5-1**  
**Dip switch settings for second DigiBoard**

| Switch 1 | Switch2 | Switch 3 | Switch 4 |
|----------|---------|----------|----------|
| On       | On      | On       | On       |

*Note:* The switches are in the ON position when they’re positioned towards the switch number label on the card.

- 2 If the switches are not set properly, power down the AP, reset them, and reboot the system.
- 3 Type the following command at the UNIX prompt:  
**mpi**  
*The initial mpi utility screen is displayed.*
- 4 Press a key to continue.  
The Main menu is displayed, as shown in [Figure 5-1](#).



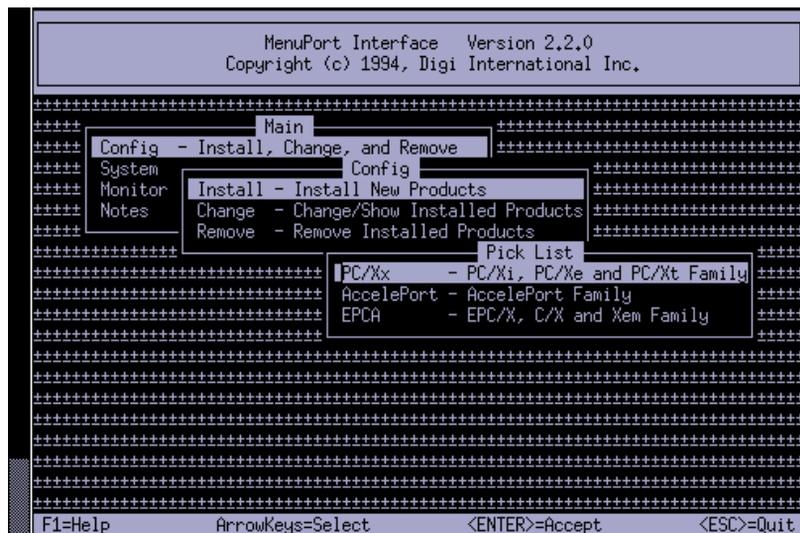
**Figure 5-2**  
**Config menu**



- 6 Select Install from the Config menu and press <Enter>.

The Pick List menu is displayed, as shown in [Figure 5-3](#).

**Figure 5-3**  
Pick List menu



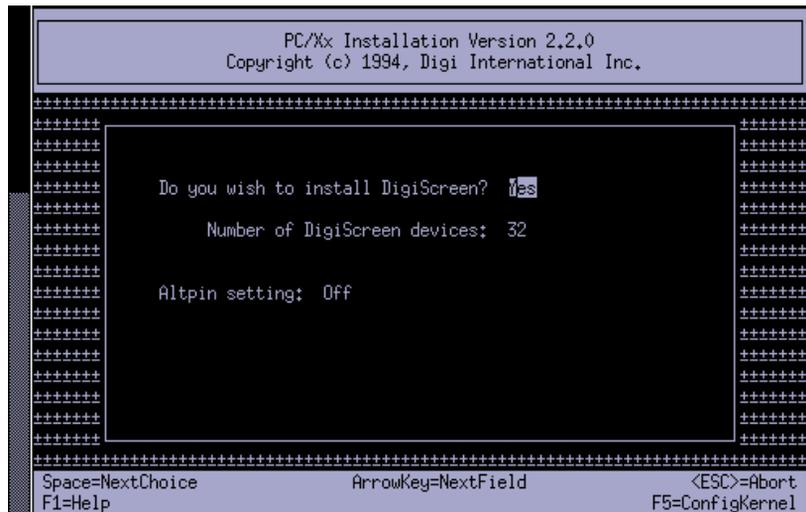
- 7 Select PC/Xe from the Pick List menu and press <Enter>.

The Board Configuration screen is displayed.

Fill in the values for the second board as shown in [Figure 5-4](#).



**Figure 5-5**  
**DigiScreen screen**



- 11 Press <F5> to complete the installation.

## Appendix A: POST diagnostics

Power On Self Test (POST) diagnostics run when you power on or reset the system. POST diagnostics initialize the system, set interrupt vectors, detect installed peripheral devices, and boot the operating system.

During the test, POST displays the amount of memory accessed and tested.

**Table A-1**  
**POST and related processes**

| Action/Message                     | Description                                                                                                                                                                                                                                                                                                                          |
|------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| If POST Beeps before Video Appears | Initialization failed before video initialized. Most Beep code errors are fatal; initialization cannot continue.                                                                                                                                                                                                                     |
| If Monitor Displays Error          | Record error; press <Esc> to continue boot or <F1> to enter BIOS Setup.                                                                                                                                                                                                                                                              |
| To Enter BIOS Setup                | Press <F1> during initialization to run the Setup utility. If you do not press <F1>, the boot process continues.<br>Use the Setup Utility before using the System Configuration Utility (SCU) to enable the diskette drive and after using SCU to make specific changes. Setup changes specific options, then writes to CMOS, NVRAM. |
| To Enter SCSI Select               | Press <Ctrl-A> during memory test to run SCSI Select. If you do not press <Ctrl>, the boot process continues.<br>Use SCSI Select utility before using the System Configuration Utility (SCU) to enable the diskette drive, and after using SCU to make specific changes. Setup changes specific options, then writes to CMOS, NVRAM. |
| To Enter SCU                       | Insert SCU diskette before system boots.                                                                                                                                                                                                                                                                                             |
| POST Beeps                         | Initialization has completed.                                                                                                                                                                                                                                                                                                        |

## Hot keys

The following table lists the key combinations you can use while POST is running.

**Table A-2**  
**POST hot key combinations**

| Key sequence   | Description                                                                   |
|----------------|-------------------------------------------------------------------------------|
| <Ctrl-Alt-Del> | System software reset. Reruns POST.                                           |
| <Ctrl-Alt-2>   | Enables turbo mode. System runs at rated speed of CPU.                        |
| <Ctrl-Alt-1>   | Disables turbo mode.                                                          |
| <Ctrl-Alt-S>   | Secure mode, only if password is enabled in SCU. Disables mouse and keyboard. |

## Security

The following table lists security considerations for IVR 2.0/I.

**Table A-3**  
**Security events**

| Activating event       | Setup                                                                                                      |
|------------------------|------------------------------------------------------------------------------------------------------------|
| Power on or reset      | Requires setting User password and enabling Secure Boot Mode in SCU. The system prompts for your password. |
| Hot Key sequence       | Requires setting User password and enabling Hot Key Option in SCU.                                         |
| Specified time expires | Requires setting User password and Inactivity Timer Function in SCU.                                       |

## System reset

POST diagnostics will run whenever the system is reset.

The following table lists methods you can use to reset the MIVR 2.0/I Application Processor.

**Table A-4**  
**Reset activators**

| <b>Keys</b>         | <b>Action</b>                                                                         |
|---------------------|---------------------------------------------------------------------------------------|
| <Ctrl+Alt+Del>      | Soft boot clears system memory and reloads operating system.                          |
| Reset button        | Clears system memory, restarts POST, and reloads operating system.                    |
| Power on/off button | Cold boot has same effect as reset button, except power is halted to all peripherals. |

## POST error and signal codes

When you power up or reboot the Application Processor, POST displays informational messages about system components.

This section describes the following error beep codes and screen messages of the Magellan/Altair system:

- POST Beep Codes
- POST Error Codes and Messages
- Countdown Codes displayed during normal BIOS POST

When POST displays an error message, the speaker beeps twice before the message appears.

### 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 Nortel Service.

Most POST Beep Codes are fatal and indicate that you should replace your baseboard.

**Table A-5**  
**POST Beep Code descriptions**

| Beeps | Error Message and Conditions                                                                         |
|-------|------------------------------------------------------------------------------------------------------|
| 1     | Refresh failure; memory refresh circuitry on baseboard is faulty                                     |
| 2     | Parity error; parity error in first 64 Kbyte memory                                                  |
| 3     | Base 64Kbyte memory failure; memory failure in first 64 Kbyte memory                                 |
| 4     | Timer not operational; timer on baseboard not operational or memory failure in first 64 Kbyte memory |
| 5     | Processor error; CPU on baseboard generated an error                                                 |

**Table A-5**  
**POST Beep Code descriptions (Continued)**

| Beeps | Error Message and Conditions                                                                                 |
|-------|--------------------------------------------------------------------------------------------------------------|
| 6     | 8042 gate a20 failure; BIOS cannot switch to protected mode                                                  |
| 7     | Processor exception interrupt                                                                                |
| 8     | Display memory read/write error; system video adapter is missing or its memory is faulty (not a fatal error) |
| 9     | ROM checksum error; ROM checksum value does not match encoded value in BIOS                                  |
| 10    | CMOS shutdown register read/write error; shutdown register for CMOS RAM failed.                              |

## **POST codes and countdown codes**

The BIOS indicates the current stage of POST after the video adapter has been successfully initialized. A two-digit hex code is sent to I/O location 80h, and is shown on an LED display if a Port 80h card is installed.

The current countdown code is displayed on the LCD panel once it is initialized.

The following sections outline the Recovery and Normal port-80 codes and countdown codes.

**Recovery port-80 codes and countdown codes**

The following table lists the port-80 codes and POST countdown codes that are displayed during the recovery boot process.

**Table A-6**  
**Recovery port-80 codes and countdown codes**

| <b>Port-80 codes</b> | <b>Countdown codes</b> | <b>Reason</b>                                                                                 |
|----------------------|------------------------|-----------------------------------------------------------------------------------------------|
| 02h                  | ..                     | Disable internal cable                                                                        |
| 08h                  | ..                     | Disable DMA controller #1, #2,<br>disable interrupt controller #1, #2,<br>reset video display |
| 13h                  | ..                     | Init all chipset registers (enable LCD<br>display here)                                       |
| 15h                  | 900                    | Initialize system timer                                                                       |
| 1Bh                  | 800                    | Real mode base 64Kbyte test                                                                   |
| 20h                  | 700                    | 16k base RAM test                                                                             |
| 23h                  | 650                    | Set up interrupt vectors                                                                      |
| 40h                  | 600                    | Test memory in virtual mode                                                                   |
| 65h                  | 500                    | Initialize 8237 DMA controller                                                                |
| 67h                  | 400                    | 8259 interrupt controller test                                                                |
| 80h                  | 300                    | Unmask diskette, kb and timer<br>interrupts                                                   |
| 88h                  | 200                    | Floppy unit initialization                                                                    |
| A0h                  | 100                    | Cache enable                                                                                  |
| 00h                  | 000                    | Boot OS                                                                                       |

## Normal port-80 codes and countdown codes

The following table lists the port-80 codes and countdown codes displayed during the normal BIOS POST process.

**Table A-7**  
**Normal port-80 codes and countdown codes**

| Port-80 codes | Countdown codes | Reason                                                        |
|---------------|-----------------|---------------------------------------------------------------|
| D0h           | ..              | Returned from ResetInit                                       |
| D1h           | ..              | Power On Init                                                 |
| D2h           | ..              | Returned from Power On Init                                   |
| D3h           | ..              | Soft Reset Entry Point                                        |
| D4h           | ..              | Test if in Protected mode (entered from POST.BIN)             |
| D5h           | ..              | Checksum only the LOADER.BIN                                  |
| D6h           | ..              | Loader.BIN checksum good (enable LCD in Init Before KBC Init) |
| D7h           | 900             | Issue BAT command to KBD controller                           |
| D8h           | ..              | After waitForEmptyBuffer                                      |
| D9h           | ..              | After Empty8042InputBufferX                                   |
| DAh           | ..              | After Retrieve8042OutputBufferX                               |
| Dbh           | 820             | Keyboard Init Passed                                          |
| DDh           | ..              | After initAfterKBCInitEnd                                     |
| DFh           | ..              | 2nd Empty8042InputBufferX                                     |
| E0h           | 780             | Initialize Master/Slave PICs                                  |
| E1h           | ..              | Before ChipsetInitEnd                                         |
| E2h           | ..              | After ChipsetInitEnd                                          |
| E3h           | 760             | Initialize timer channel 0 for system timer                   |

**Table A-7**  
**Normal port-80 codes and countdown codes (Continued)**

| Port-80 codes | Countdown codes | Reason                                                                |
|---------------|-----------------|-----------------------------------------------------------------------|
| E4h           | ..              | Before beginning memory test, need to clear any pending parity errors |
| E6h           | 740             | Test RAM from 0–640KB                                                 |
| E7h           | ..              | GetMinPartitionSizeX                                                  |
| E8h           | ..              | RAM failure, call RemapMemoryPartitionX                               |
| E9h           | ..              | RAM test complete, passed                                             |
| Eah           | 730             | Set up stack at 30:100                                                |
| EBh           | ..              | BIOS just shadowed                                                    |
| Ech           | ..              | Make F000h DRAM R/W Enabled                                           |
| EDh           | ..              | Dispatch POST                                                         |
| 23h           | 700             | Setup interrupt vectors                                               |
| 24h           | ..              | Just after call to SetPostEnvironment                                 |
| 0Dh           | ..              | CustomCheckManufacturingMode and CheckDefaultJumper                   |
| 0Eh           | 690             | Check validity of CMOS                                                |
| 0Fh           | ..              | Force CMOS defaults                                                   |
| 10h           | ..              | CMOS init complete                                                    |
| 25h           | ..              | After initialize CMOS pointers in EBDA                                |
| F0h           | 600             | EISA slot initialization                                              |
| F1h           | ..              | Enable extended NMI sources                                           |
| F2h           | ..              | Text extended NMI sources                                             |
| 28h           | ..              | Set monochrome mode                                                   |
| 29h           | ..              | Set color display                                                     |

**Table A-7**  
**Normal port-80 codes and countdown codes (Continued)**

| Port-80 codes | Countdown codes | Reason                                                  |
|---------------|-----------------|---------------------------------------------------------|
| 2ah           | ..              | Clear parity status if any                              |
| 2bh           | ..              | call ChipsetBeforeVideoInit                             |
| 2ch           | 580             | Video option ROM search                                 |
| 2dh           | ..              | call CustomAfterVideoInit                               |
| 2eh           | 570             | After video init                                        |
| 2fh           | 560             | After mono display setup                                |
| 30h           | ..              | Before check for vertical retrace                       |
| 31h           | ..              | Test for color display memory                           |
| 32h           | ..              | Check for vertical retrace                              |
| 34h           | ..              | Video card detected                                     |
| 35h           | 520             | Initialize Console Redirection                          |
| 36h           | ..              | InitializeMessagingServices and ClearScreen             |
| 37h           | 500             | CustomDisplaySignon                                     |
| F3h           | ..              | EisaErrorDisplay                                        |
| 80h           | 370             | KB/mouse port check                                     |
| 81h           | ..              | Keyboard error determination                            |
| 82h           | ..              | Enable Keyboard Interrupts and init kbd circular buffer |
| 83h           | ..              | Check if keyboard is locked                             |
| F5h           | 330             | Initialize mouse                                        |

**Table A-7**  
**Normal port-80 codes and countdown codes (Continued)**

| Port-80 codes | Countdown codes | Reason                                                                                                                |
|---------------|-----------------|-----------------------------------------------------------------------------------------------------------------------|
| 39h           | ..              | CustomUpdateScreenPointers,<br>CustomDisplaySetupMessage,<br>CustomDisplayKeyboardSignon,<br>CustomDisplayMouseSignon |
| 3bh           | ..              | Jumps to 'StartMemoryTesting' in next module                                                                          |
| 43h           | 290             | call GetMinPartitionSizeX                                                                                             |
| 4Fh           | ..              | call DisableEnhancedPost                                                                                              |
| 52h           | ..              | call ChipsetAdjustMemorySize                                                                                          |
| 61h           | 250             | DMA register tests                                                                                                    |
| 62h           | ..              | DMA test OK                                                                                                           |
| 64h           | ..              | DMA controller F/F latch test                                                                                         |
| 65h           | ..              | Initialize 8237 DMA controller                                                                                        |
| 66h           | ..              | clear DMA write request reg and mask set/reset reg                                                                    |
| 67h           | 220             | 8259 Interrupt controller test                                                                                        |
| F4h           | ..              | Enable extended NMI sources                                                                                           |
| 8Ch           | 140             | Chipset@Devinit and ConfigurePeripheralController                                                                     |
| 8Fh           | 130             | Floppy init                                                                                                           |
| 91h           | 120             | HD init                                                                                                               |
| 92h           | ..              | set printer, rs-232 time out                                                                                          |
| 96h           | ..              | Before Option ROM scan                                                                                                |
| 97h           | 080             | Option ROM scan C800h-E000h                                                                                           |
| 98h           | ..              | After Option ROM scan                                                                                                 |

**Table A-7**  
**Normal port-80 codes and countdown codes (Continued)**

| <b>Port-80 codes</b> | <b>Countdown codes</b> | <b>Reason</b>                                            |
|----------------------|------------------------|----------------------------------------------------------|
| 9Ah                  | ..                     | soft reset (1234) --> (1200)                             |
| 9Dh                  | 070                    | time data area initialization                            |
| A0h                  | ..                     | printer setup                                            |
| A1h                  | ..                     | rs_232 setup                                             |
| A2h                  | ..                     | After KB circular buffer set up                          |
| Abh                  | ..                     | Before NPX test and init                                 |
| Ach                  | 060                    | NPX test and init                                        |
| ADh                  | ..                     | update coprocessor info in CMOS and recalculate checksum |
| Aeh                  | ..                     | Set typematic rate                                       |
| Afh                  | 050                    | KBD read ID command                                      |
| B0h                  | ..                     | Wait for READ ID response                                |
| A3h                  | ..                     | Display POST errors                                      |
| A6h                  | ..                     | Before Setup                                             |
| A7h                  | 030                    | Call Setup                                               |
| B1h                  | ..                     | Enable Cache for boot                                    |
| B3h                  | ..                     | Setup display mode set                                   |
| B4H                  | ..                     | Jmp preos.asm                                            |
| BBh                  | 020                    | Start of PreOS                                           |
| 00h                  | 000                    | Execute BOOT                                             |
| <b>End</b>           |                        |                                                          |

## POST error codes and messages

The BIOS indicates errors two ways:

- writing an error code to the logging area in the Extended BIOS Data Area
- displaying a POST error code and a message on the screen.

The following chart lists the onscreen POST error codes and messages.

**Table A-8**  
**Onscreen POST codes and messages**

| Code | Error message                             |
|------|-------------------------------------------|
| 0002 | Primary Boot Device Not Found             |
| 0010 | Cache Memory Failure, Do Not Enable Cache |
| 0015 | Primary Output Device Not Found           |
| 0016 | Primary Input Device Not Found            |
| 0041 | EISA ID Mismatch for Slot                 |
| 0043 | EISA Invalid Configuration for Slot       |
| 0044 | EISA config NOT ASSURED                   |
| 0045 | EISA Expansion Board Not Ready in Slot    |
| 0047 | EISA CMOS Configuration Not Set           |
| 0048 | EISA CMOS Checksum Failure                |
| 0049 | EISA NVRAM Invalid                        |
| 0060 | Keyboard Is Locked...Please Unlock It     |
| 0070 | CMOS Time & Date Not Set                  |
| 0080 | Option ROM has bad checksum               |
| 0083 | Shadow of PCI ROM Failed                  |
| 0084 | Shadow of EISA ROM Failed                 |
| 0085 | Shadow of ISA ROM Failed                  |

**Table A-8**  
**Onscreen POST codes and messages (Continued)**

| <b>Code</b> | <b>Error message</b>                                  |
|-------------|-------------------------------------------------------|
| 0131        | Floppy Drive A:                                       |
| 0132        | Floppy Drive B:                                       |
| 0135        | Floppy Disk Controller Failure                        |
| 0140        | Shadow of System BIOS Failed                          |
| 0170        | Disabled CPU slot #                                   |
| 0171        | CPU Failure - Slot 1, CPU # 1                         |
| 0172        | CPU Failure - Slot 1, CPU # 2                         |
| 0173        | CPU Failure - Slot 2, CPU # 1                         |
| 0174        | CPU Failure - Slot 2, CPU # 2                         |
| 0171        | Previous CPU Failure - Slot 1, CPU # 1                |
| 0172        | Previous CPU Failure - Slot 1, CPU # 2                |
| 0173        | Previous CPU Failure - Slot 2, CPU # 1                |
| 0174        | Previous CPU Failure - Slot 2, CPU # 2                |
| 0175        | CPU modules are incompatible                          |
| 0180        | Attempting to boot with failed CPU                    |
| 0191        | CMOS Battery Failed                                   |
| 0195        | CMOS System Options Not Set                           |
| 0198        | CMOS Checksum Invalid                                 |
| 0289        | System Memory Size Mismatch                           |
| 0295        | Address Line Short Detected                           |
| 0299        | ECC Error Correction failure                          |
| 0301        | ECC Single bit correction failed, Correction Disabled |
| 0302        | ECC Double bit Error                                  |

**Table A-8**  
**Onscreen POST codes and messages (Continued)**

| <b>Code</b> | <b>Error message</b>                     |
|-------------|------------------------------------------|
| 0310        | ECC Address failure, Partition #         |
| 0370        | Keyboard Controller Error                |
| 0373        | Keyboard Stuck Key Detected              |
| 0375        | Keyboard and Mouse Swapped               |
| 0380        | ECC SIMM failure, Board in slot 1 SIMM # |
| 0392        | ECC SIMM failure, Board in slot 2 SIMM # |
| 0430        | Timer Channel 2 Failure                  |
| 0440        | Gate-A20 Failure                         |
| 0441        | Unexpected Interrupt in Protected Mode   |
| 0445        | Master Interrupt Controller Error        |
| 0446        | Slave Interrupt Controller Error         |
| 0450        | Master MA Controller Error               |
| 0451        | Slave DMA Controller Error               |
| 0452        | DMA Controller Error                     |
| 0460        | Fail-safe Timer NMI Failure              |
| 0461        | Software Port NMI Failure                |
| 0465        | Bus Timeout NMI in Slot                  |
| 0467        | Expansion Board NMI in Slot              |
| 0501        | PCI System Error                         |
| 0510        | PCI Parity Error                         |
| 0710        | System Board Device Resource Conflict    |
| 0711        | Static Device Resource Conflict          |
| 0800        | PCI I/O Port Conflict                    |

**Table A-8**  
**Onscreen POST codes and messages (Continued)**

| <b>Code</b> | <b>Error message</b>                       |
|-------------|--------------------------------------------|
| 0801        | PCI Memory Conflict                        |
| 0802        | PCI IRQ Conflict                           |
| 0803        | PCI Error Log is Full                      |
| 0810        | Floppy Disk Controller Resource Conflict   |
| 0811        | Primary IDE Controller Resource Conflict   |
| 0812        | Secondary IDE Controller Resource Conflict |
| 0815        | Parallel Port Resource Conflict            |
| 0816        | Serial Port 1 Resource Conflict            |
| 0817        | Serial Port 2 Resource Conflict            |
| 0820        | Expansion Board Disabled in Slot           |
| 0900        | NVRAM Checksum Error, NVRAM Cleared        |
| 0903        | NVRAM Data Invalid, NVRAM Cleared          |
| 0905        | NVRAM Cleared by Jumper                    |
| 0982        | I/O Expansion Board NMI in Slot            |
| 0984        | Expansion Board Disabled in Slot           |
| 0985        | Fail Safe Timer NMI                        |
| 0986        | System Reset caused by Watchdog Timer      |
| 0987        | Bus Timeout NMI in Slot                    |
| <b>End</b>  |                                            |

## **Appendix B: MTA diagnostics reference**

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This appendix consists of a command reference for the Modular Test Architecture (MTA) diagnostics. Tests described in this manual do not directly apply to a specific installation.

### **MTA Testview**

Testview is the name of the menu interface for MTA test programs and support files.

Two interfaces exist for the MTA tests. T (t.exe) is the command line interface for the tests, while Testview is a menu interface. Both interfaces allow users to run test sequences through a numerical mapping. In both cases a PKG file is used to map names and numbers to a test invocation line.

### Testview main menu

When you sign on to Testview, a menu bar appears across the center of the screen. [Table B-1](#) lists the available menus.

**Table B-1**  
**Testview menus**

| Menu name     | Function                              |
|---------------|---------------------------------------|
| TEST          | Access to test modules and subtests.  |
| ERRORS        | View history of error messages.       |
| SUMMARY       | View summary of test run.             |
| CONFIGURATION | Menu and system configuration tools.  |
| OPTIONS       | Changes the way tests are run.        |
| HELP          | Online help for using Testview menus. |
| QUIT          | Exits Testview and returns to DOS.    |

**README.TXT** README.TXT is a file distributed with each release of the diagnostic package. You may view this file by pressing <Enter>, not F1, from the Testview menus.

**Using T.EXE** T (t.exe) is used to run tests from the DOS command line or the batch file. For more information see t.hlp or press <Enter>, not F1, on the appropriate Testview menu item.

## Starting tests

There are several ways to initiate diagnostic tests in Testview. [Table B-2](#) summarizes the possibilities. If you press F2 or ALT-F2, you are prompted to specify the number of loops. If you press <Enter> while in a SUBTEST menu, the test will run once only.

**Table B-2**  
**Test module options**

| Test Parameters | TEST menu | SUBTEST menu |
|-----------------|-----------|--------------|
| All modules     | ALT-F2    | ---          |
| One module      | F2        | ALT-F2       |
| One test        | ---       | F2 or ENTER  |

## Execution sequence

The tests will execute in the order in which they appear in the menus. This order may be changed using Ctl+D and Ctl+A or by editing the PKG file. The subset of tests may be changed by using F3 and F4 to enable or disable subtests or modules.

The *Run-list* selection in the OPTIONS menu allows you to specify different sequences of tests with looping. **Table B-3** summarizes how to set parameters in the run-list buffer menu.

**Table B-3**  
**Run-list functions**

| Run list setting | Function                                     |
|------------------|----------------------------------------------|
| 1-8              | Range of modules                             |
| 1.3-1.5          | Range of subtests                            |
| 1*5              | Use looping constant                         |
| 1-4*5            | Module range with looping constant           |
| 12*              | No looping constant                          |
| {1,2,3}          | Sequence of modules                          |
| {1,2,5.1,3*3,4}  | Sequence of modules and subtest with looping |
| {LED,CPU,DRAM}   | Names may be used                            |

*Note:* Do not put spaces between commas and module names and numbers.

## Looping options

There are three ways to run multiple sequences of tests:

- The F2 function key prompts you for the number of loops before executing.
- You can also change the invocation parameter /N. Changing /N will cause the test to run multiple times each time its name comes up in a sequence.
- The run-list may also be used to loop arbitrary test sequences.

## Test window

The output of each test appears in a window. Certain test results, such as the video test, use a full-screen window. If the result output exceeds the window area, you can use F7 or the ERROR menu to review the results.

When a test is complete, the “press any key to continue” prompt displays.

## Error messages

Error messages are directed to the console or to a test window. You can redirect the error message output by changing the /Rx run-time flag (where x can be R, E, A, or S) through the OPTIONS menu or the F5 function key.

Messages redirected to a file can be viewed through the ERRORS menu or function key F7. The default setting of the error message buffer file is set to record error messages only. If “status” or “advisory” messages are desired, use F5 to change the global run-time flag from “/RE test.out” to “/RR test.out”.

## Runtime environment

When booted from diskette, **Testview** runs from the RAM drive. The AUTOEXEC.BAT file on the boot diskette sets up a RAM drive before invoking **Testview**. **Testview** uses the RAM drive as a virtual cache by copying tests selected for execution to the RAM drive, and then running the tests. Tests will execute faster if they are running from RAM.

Once a test EXE file is loaded, it remains on the RAM drive. If space on the RAM drive becomes full, Testview removes tests from the RAM drive before copying a new test to the RAM drive.

Testview and all of its test module files can be copied to a hard drive or another floppy and executed from there. It will run exclusively out of the directory in which it was placed.

Using the RAM drive is faster, but any files which you have modified will be purged when the Application Processor is shut down. You can avoid this situation by specifying a pathname on nonvolatile media when possible, or by using DOS to copy files.

## Stopping tests

Using Ctrl-C or Ctrl-Break will stop tests. The Ctrl-C command will not work if the input buffer is full. The Control-Break command is more effective, but may interrupt critical DOS functions.

The amount of time that a test takes to respond to Ctrl-C depends on the type of loop that is running and the amount of clean-up required.

### Run-time flags

The execution of diagnostic tests is controlled through run-time flag settings. **Table B-4** summarizes the flag types.

**Table B-4**  
**Run-time flags in Testview**

| Flag type | Flag name                                   |
|-----------|---------------------------------------------|
| required  | /T /CF                                      |
| control   | /HE /PE /N /RR /RE /RA<br>/RS /Q /SS /SF /W |
| custom    | /P /V /L /CD and others                     |

**Table B-5** summarizes the required run-time flag types.

**Table B-5**  
**Required run-time flags**

| Flag name | Function                                                                                                                                          |
|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| /T        | Required for all MTA tests. Specifies the internal subtest number for the test module.                                                            |
| /CF       | Specifies the CFG file. Not necessary if a default CFG file is present. The default file name is the base name of the EXE file with a CFG suffix. |

The control flags are handled by the MTA run-time library. [Table B-6](#) summarizes the available run-time control flags.

**Table B-6**  
**Run-time control flags**

| Flag name  | Function                                                                                                                                                                                       |
|------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| /HE        | Halt on error. Halts testing when an error occurs.                                                                                                                                             |
| /PE        | Prompt on error. If an error occurs, the test will not proceed until keyboard input is received.                                                                                               |
| /N         | Specifies number of times to run the test. Defaults to “/N 1”, not needed with Testview.                                                                                                       |
| /Q         | No messages to console. Does not affect the other redirects.                                                                                                                                   |
| /RR file   | Redirect error, advisory, and status messages to file.                                                                                                                                         |
| /RE file   | Redirect error messages to file.                                                                                                                                                               |
| /RA file   | Redirect advisory messages to file.                                                                                                                                                            |
| /RS file   | Redirect status messages to file.                                                                                                                                                              |
| /SS <file> | Summarize loops and fails after each test. Can be optionally redirected to a file or to a printer.                                                                                             |
| /SF file   | Summary file redirection. Overrides default.                                                                                                                                                   |
| /W nn      | Wait only nn seconds when reading keyboard. Waits indefinitely if the parameter is not present. NN may be any positive integer value. This is useful for running interactive tests unattended. |

Custom flags are handled directly by the tests and may not behave the same way for each test. For information on custom flags for a specific test, refer to the On-Line-Help file for the test module.

## Sources of Run-time flags

The parameters that control testing can be found in different sources. They are listed below in priority order. If there is a conflict between flags, the flag specified from a higher priority is selected.

- the global run-time flags buffer in the menus
- Testview or T command line
- the substest entry in the PKG file
- the module entry in the PKG file

Flags entered on the Testview command line are placed in the global run-time flags buffer along with the Testview default (/RE test.out). This buffer is modified with the F5 function key. The buffer is combined with the module and substest entries from the PKG file before processing. The module and substest run-time flag entries are modified with the F5 function key.

### CFG parameters

Each MTA test is designed to handle device and peripheral implementations using hardware configuration parameters instead of hard coding. The specific parameters vary among the test modules, but each is described by its label and assigned a value.

The parameters are found in the PKG file or in the CFG file. The *ts\_getcfg\_xxx* calls access the parameters in both locations. Parameters in the PKG file take precedence over those in the CFG file.

The default CFG file has the same base name as the load file. It has a .cfg extension instead of .exe. If the file name is different from the load file, use the flag */CF <file name>* on the test invocation line.

The file contains one line for each parameter and comments. The format of a line specifying a parameter is

```
<module name>.<parameter name> = <value>
```

The value can be a number or a string. Quotation marks will force a number to be interpreted as a string or will force spaces to be imbedded in the string. The maximum length of a value string is 256 characters.

Pressing the F6 function key displays an editable parameter list. The listing includes the module name in square brackets followed by the parameter. The CFG parameters are listed before PKG parameters.

If the changes are saved, a file of the same name is written to the RAM drive. Changes will apply to the current session only. To save changes to the CFG file, exit to DOS and copy the changed file to the floppy.

## PKG file

The PKG file is an ASCII (readable) file containing a description of each module and subtest in the package. The PKG file is separated into groups of subtests belonging to modules. In addition to subtests, module groups may contain CFG parameters. The file may also contain one or more product-code sections.

The PKG file creates the logical mapping between test names and their corresponding EXE files and parameters. The order of the subtests and modules in the file determines the numerical labeling. Use the numerical labels to reference tests when using the T.EXE command.

PKG is not case-sensitive and may contain comments. Comments appear on separate lines between the “/\*” and “\*/” symbols.

## Subtest syntax

There are two ways of specifying a subtest. The preferred method is based on the Windows **.ini** format, where each group of subtests is preceded by a header. For example:

```
[disk_drive_1, drive.exe /cf mongo.cfg]
test1, +w, /t 1
test2, +w, /t 7
test3, +wid, /t 2
```

The header contains the module name and an optional field with common invocation flags. The subtest line consists of three fields: the subtest name, attribute flags, and subtest-specific invocation flags. Invocation flags are combined with the module and the subtest.

You can also specify a subtest by placing all information on a single line, as in the following example:

```
disk_drive_1.test1, +w, drive.exe /cf mongo.cfg /t 1
disk_drive_1.test2, +w, drive.exe /cf mongo.cfg /t 7
disk_drive_1.test3, +wid, drive.exe /cf mongo.cfg /t 2
```

## Cloning

Some modules represent hardware components, such as hard drives, which have more than one unit present in the system. The following syntax directs Testview to create a second module identical to the first.

```
[disk_drive_2<disk_drive_1>]
```

## Attribute flag

The attribute flags, which consist of one or more single characters, cause a warning to occur when a test is enabled by an operator. The following table lists the attribute flags available.

**Table B-7**  
**Attribute flags**

| Flag | Function                                 |
|------|------------------------------------------|
| +    | subtest enabled                          |
| -    | subtest disabled                         |
| C    | user configuration required              |
| D    | destructive subtest                      |
| H    | external hardware required               |
| I    | interactive subtest                      |
| W    | run in a window (default is full screen) |

The attribute flag must always start with either + or -, but other characters may occur in any order. The **W** flag is expected for all tests except those which interfere with the display, such as video tests.

## Product\_code sections

Product\_code sections contain CFG parameters that override the defaults and configure the system to a specific product code. For example:

```
.
. /* normal stuff here */
.

[[product_code_X]]
module.label = value
module.mable = walue
module.nable = xalue

[[product_code_Y]]
.
.
.
```

The `/PC <product code>` command line flag to `t` or `Testview` will cause the statements in the referenced section to be evaluated. Otherwise, the sections are ignored.

### **Minus (-) Module or Subtest**

Most of the product code sections specify system configurations with fewer assembly subunits than the total possible. Use the minus syntax to exclude subunits not expected in a specific product code.

#### **-MODULE -MODULE.SUBTEST**

This syntax excludes the module or its subtests from the menus and the run list.

The product code section can enable a subtest which is normally disabled using the plus (+) sign.

#### **+MODULE.SUBTEST**

The + syntax does not have a corresponding effect on modules.

### **MODULE NAME**

The name of the module, up to a maximum of 31 characters.

### **SUBTEST NAME**

The name of the subtest, up to a maximum of 31 characters.

## Attributes

The characteristics field is a string of characters from the subtest entry in the PKG file. The subtest entry in a PKG file has the form

<logical name>, <characteristics>, <invocation line>

**Table B-8** summarizes the defined single-character flags.

**Table B-8**  
**Single-character attributes**

| Flag | Function                                    |
|------|---------------------------------------------|
| +    | subtest enabled                             |
| -    | subtest disable                             |
| W    | run in a window (default is full screen)    |
| D    | destructive subtest                         |
| I    | interactive subtest                         |
| H    | external hardware required to run subtest   |
| C    | configuration files required to run subtest |

The flag string must always start with either + or -, but other flags may occur in any order. The W flag is expected for all tests except those which write directly to the console. Not using W, reduces the risk of file corruption.

The attribute flags display a warning whenever the operator attempts to enable the subtest. Any number of these flags may occur in the string.

## Invocation

The invocation line is a field from the subtest entry in the current PKG file. A subtest entry in the PKG file has the form

<logical name>, <attributes>, <invocation line>

A module entry has the form

[<module name>, <invocation line>]

The invocation line is a string which is passed to DOS when the test is invoked. It starts with the **.exe** file name, followed by a list of flags.

The /T flag is required and is used by test modules to determine which subtest to run.

```
"floppy.reset, +W, flop.exe /T 3"
```

or

```
"[floppy, flop.exe]
 reset, +W, /T 3"
```

The two invocation lines are concatenated, module first, subtest second. The flags are defined under [“Using the T Command” on page -29](#).

## Function keys

The function keys are available while you are in the TEST and SUBTEST menus. However, the F1 function key produces help for selected items.

**Table B-9**  
**Function keys**

| Key name      | Function                                              |
|---------------|-------------------------------------------------------|
| F1 and ALT-F1 | Help for <i>&lt;item&gt;</i>                          |
| F2 and ALT-F2 | Run <i>&lt;item&gt;</i>                               |
| F3 and ALT-F3 | Disable <i>&lt;item&gt;</i>                           |
| F4 and ALT-F4 | Enable <i>&lt;item&gt;</i>                            |
| F5            | Edit run-time flags for <i>&lt;item&gt;</i>           |
| F6 and ALT-F6 | Edit configuration parameters for <i>&lt;item&gt;</i> |
| F7            | View error messages                                   |
| F8            | View summary                                          |
| F9 and ALT-F9 | Display version of <i>&lt;item&gt;</i>                |
| F10           | Print <i>&lt;help file or parameter list&gt;</i>      |

## Using menus

There are three menu types used in **Testview**:

- selectable lists
- text windows
- value lists

These menus are described in the following sections.

### Selectable Lists

These menus contain a list of items.

The menu may contain more items than can fit in the window. An arrow icon appears on the window border to indicate the undisplayed items.

**Table B-10** lists the keys that can be used to change the active position in the menu.

**Table B-10**  
**Testview selection keys**

| Key        | Function                                   |
|------------|--------------------------------------------|
| ENTER      | Differs for each list                      |
| UP ARROW   | Moves up by one (cycles from 1 to last)    |
| DOWN ARROW | Moves down by one (cycles from last to 1)  |
| PAGE UP    | Moves up by size of window                 |
| PAGE DOWN  | Moves down by size of window               |
| HOME       | Moves to first item                        |
| END        | Moves to last item                         |
| "1,2..a,b" | Jumps to next item starting with character |
| ESCAPE     | Closes menu and returns to previous menu.  |
| F1         | Displays help information about the item.  |

**Text Windows**

Text windows display text for help, summary, and error messages.

**Table B-11** lists the keys used to reposition text in the window.

**Table B-11**  
**Text positioning keys**

| <b>Key</b> | <b>Function</b>                       |
|------------|---------------------------------------|
| UP ARROW   | Moves position up by one              |
| DOWN ARROW | Moves position down by one            |
| PAGE UP    | Moves position up by size of window   |
| PAGE DOWN  | Moves position down by size of window |
| SPACE BAR  | Moves position down by size of window |
| HOME       | Moves position to top of file         |
| END        | Moves position to end of file         |
| ESCAPE     | Closes window, returns to menu        |

### Value lists

Data entry forms are used to modify parameters, such as the hardware configuration.

**Table B-12**  
**Data selection keys**

| Key    | Function                                                      |
|--------|---------------------------------------------------------------|
| ENTER  | Save your changes. A dialog box prompts you for verification. |
| ESCAPE | Exit without saving changes.                                  |
| INS    | Toggles between insert and overtype modes.                    |
| HOME   | Jumps to the first character in the line.                     |
| END    | Jumps to the last character in the line.                      |
| ARROWS | Move the cursor position around the form.                     |

### Test module menu

The TEST menu lists the available test modules. The list of modules reflects the current system configuration. The maximum number of modules is 99.

Table B-13 describes the keys available in this menu.

**Table B-13**  
**Test module keys**

| Key   | Function                                                                                                                                                                                                                        |
|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ENTER | Opens the SUBTEST menu. A SUBTEST menu is a list of all the subtests available in this module.                                                                                                                                  |
| SPACE | Toggles enable/disable settings for all the tests in the module. That is, if all subtests are disabled, pressing SPACE is the same as pressing F4. If any of the subtests are enabled, pressing SPACE will disable all of them. |
| F1    | Displays the entire help file. The help file contains general information about the test module and specific information about each subtest.                                                                                    |

**Table B-13**  
**Test module keys (Continued)**

| Key    | Function                                                                                                                                                                                                                                                                                       |
|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| F2     | Runs all enabled tests in the module. A dialog box prompts for the number of loops to execute (the number 0 means no limit).                                                                                                                                                                   |
| F3     | Disables all tests in the selected module. Disabled means it cannot be run until it is reenabled.                                                                                                                                                                                              |
| F4     | Enables all tests in the selected module. If any of the tests have secondary attributes (see the section below on attributes), confirmation will be requested. If a test has more than one attribute, more than one confirmation will be requested. Use <Cntrl+C> to stop the enable sequence. |
| F5     | Accesses the global run-time flags and module run-time flags. (To change the subtest run-time flags use F5 in the SUBTEST menu.)                                                                                                                                                               |
| F6     | Accesses the test module CFG parameters. The CFG file is displayed (if one is specified) and any parameters from the PKG file. The parameters from the PKG file will have brackets ([]) around the module name.                                                                                |
| F7     | Displays current error message file.                                                                                                                                                                                                                                                           |
| F8     | Displays current summary file.                                                                                                                                                                                                                                                                 |
| F9     | Displays the version number of the test module.                                                                                                                                                                                                                                                |
| ALT+F2 | Runs all enabled tests in all modules. As in F2, a dialog box prompts for the number of loops to execute.                                                                                                                                                                                      |
| ALT+F3 | Disables all tests in all modules.                                                                                                                                                                                                                                                             |
| ALT+F4 | Enables all tests in all modules. The handling of secondary attributes, such as “destructive” by the ALT+F4 key, is the same as F4 above.                                                                                                                                                      |
| ALT+F6 | Accesses all CFG parameters read from the PKG file. This includes system parameters, such as “bios_id” or “version_number”, as well as module parameters.                                                                                                                                      |

**Table B-13**  
**Test module keys (Continued)**

| <b>Key</b> | <b>Function</b>                                                    |
|------------|--------------------------------------------------------------------|
| ALT+F9     | Displays the current version number of <b>Testview</b> .           |
| CTL+A      | Adds a new item to the TEST menu from the delete-buffer.           |
| CTL+D      | Deletes an item from the TEST menu, copies it to the delete-buffer |
| CTL+E      | Edits the module name and module invocation parameters.            |
| <b>End</b> |                                                                    |

## Subtest menu

The SUBTEST menu contains the list of subtests available in the selected module. The specified number of subtests should be between 1 and 99. You can scroll through the list and select any entry using the arrow and page keys.

**Table B-14**  
**Subtest menu keys**

| <b>Key</b> | <b>Function</b>                                                                                                                                              |
|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ENTER      | Runs the selected test once. If the test is disabled, a warning message will appear. Pressing <Cntrl+C> aborts the test. (see the "Stopping tests" section). |
| ESCAPE     | Causes the SUBTEST menu to disappear, and the active position returns to the TEST menu.                                                                      |
| SPACE      | Toggles enable and disable for the selected subtest.                                                                                                         |
| F1         | Displays the portion of the test module help file which applies to the selected subtest.                                                                     |
| F2         | Runs the subtest. A dialog box prompts for the number of loops to execute (the number 0 means no limit).                                                     |
| F3         | Disables the selected subtest.                                                                                                                               |

**Table B-14**  
**Subtest menu keys (Continued)**

| Key        | Function                                                                                                                                                                                                        |
|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| F4         | Enables the selected subtest. (See the description of how attributes affect F4 in the "PKG file" section).                                                                                                      |
| F5         | Accesses the run-time flags from all sources.                                                                                                                                                                   |
| F6         | Accesses the test module CFG parameters. The CFG file is displayed (if one is specified) and any parameters from the PKG file. The parameters from the PKG file will have brackets ([]) around the module name. |
| F7         | Displays error message file.                                                                                                                                                                                    |
| F8         | Displays summary file.                                                                                                                                                                                          |
| F9         | Displays the version number of the test module.                                                                                                                                                                 |
| ALT+F2     | Runs all subtests in the module. Like F2, a dialog box allows the user to specify the number of loops to run the number of loops prior to execution.                                                            |
| ALT+F3     | Disables all subtests in the menu.                                                                                                                                                                              |
| ALT+F4     | Enables all subtests in the menu.<br><br><i>Note:</i> This may result in many attribute warnings. To stop the prompting sequence, press <Ctrl+C>.                                                               |
| ALT+F6     | Accesses all CFG parameters read from the PKG file. This includes system parameters, such as "bios_id" or "version_number", as well as module parameters.                                                       |
| ALT+F9     | Displays the current version number of <b>Testview</b> .                                                                                                                                                        |
| CTL+A      | Adds a new subtest to the menu from the delete-buffer in reverse order (see CTL+D).                                                                                                                             |
| CTL+D      | Deletes subtest, inserts it in delete-buffer.                                                                                                                                                                   |
| CTL+E      | Edits the subtest name, attribute flags, and run-time flags from the PKG file. See the section on "PKG files" for more information.                                                                             |
| <b>End</b> |                                                                                                                                                                                                                 |

## Errors menu

Use the Errors menu to review error messages. The menu has four options: View, Clear, Save, and Redirect. The View option is also available through the F7 function key.

This menu uses the redirect parameter on the primary invocation parameter list. If the parameter is changed (using the F5 function key) the menu will use the new file name. If the parameter is removed or if output is redirected to the line printer, the menu is disabled. If there is more than one redirect file specified, the first one is used.

The default destination of the errors is a file named “test.out” located on the RAM drive. This file disappears when the system is rebooted and must be saved manually in DOS if desired.

**Table B-15** summarizes the Error menu options.

**Table B-15**  
**Errors menu options**

| Option          | Function                                                                                         |
|-----------------|--------------------------------------------------------------------------------------------------|
| View Errors     | Displays the current error message file.                                                         |
| Clear Errors    | Deletes any text in the file and resets the flashing ERRORS box on the display.                  |
| Save Errors     | Copies the errors file to a new location, or transfers the file from the RAM disk to the floppy. |
| Redirect Errors | Changes the name and the location of the error file.                                             |

## Summary menu

The summary file contains a list of completed tests, test passes, test failures, and error messages. The total number of times run is the sum of pass count and fail count. The number of errors may on some occasions exceed the number of failures.

The summary file is named “test.sum” and is located on the RAM drive. If Testview is running from the RAM drive, the file disappears when the system is rebooted.

**Table B-16** details the Summary menu options.

**Table B-16**  
**Summary menu options**

| Option           | Function                                                                                          |
|------------------|---------------------------------------------------------------------------------------------------|
| View Summary     | Displays the current summary file.                                                                |
| Clear Summary    | Deletes any text in the file.                                                                     |
| Save Summary     | Copies the Summary file to a new location, or transfers the file from the RAM disk to the floppy. |
| Redirect Summary | Changes the name and location of the summary file.                                                |

## Configuration menu

You can customize your menus with different test packages, or different colors, or change the *testview.ini* file through the Configuration menu. The contents of the Test and Subtest menus are determined by the PKG file.

### Configure test menu from list

The *Configure test menu from list* selection offers a menu of different configuration choices. Each entry represents a file on the boot device in **pkg** format. The actual words in the menu are read from a line in the **pkg** file. If a selection is made, the current test menus are replaced with the contents of the selected file.

### Select a Configuration Submenu

This menu contains a list of descriptions of all files with a **.pkg** suffix.

Pressing <Enter> after selecting one of the items invokes the Test menu. If the file contains product codes, another submenu appears allowing you to select a product code.

Pressing <F1> on a selected item displays its file name.

### **Select a Product Code Submenu**

This menu appears if the selected configuration file contains product codes. A product code contains parameters which describe hardware in a specific system. If a product code is unknown, press <Esc> to exit the menu.

### **Configure test menu from file**

This choice invokes a dialog box requesting a test menu file name. The system replaces the current test menus with the contents of the requested file.

### **Self-configure test menu**

This choice configures the test menus based on the hardware detected in the system. The BIOS-id for the current system is detected and a pkg file is selected based on the ID. The self-sense test for each module is run and may alter some of the CFG parameters.

### **Auto-integrate test package**

This option runs the same utilities found in the Self-configure test menu, as well as the integration utilities configured in the Integration\_List parameter in the Package module. After running the utilities, it prompts for a product code and writes the altered cfg parameters and the generated run-list to the pkg file.

### **Display system hardware**

This option probes the system hardware and builds the display. If the file *display.cfg* exists, its contents will be displayed without probing.

### **Save test configuration**

The *Save test configuration* option converts current test menus to pkg format and writes the data to a file. You are prompted to enter a file name and title.

### **Change menu colors**

This option provides access to menu colors through lists of changeable menu regions. You can save or restore your selections.

The following display options are available:

- Desk top
- Main menus
- Form window
- Text window
- Test window
- Dialog box

Selecting one of the above options invokes a menu listing of specific display regions. The following display regions are available:

- Background
- Letters
- Enabled letters
- Disabled letters
- Border background
- Border lines

There are eight available colors in VGA text mode including black and white. Each of these colors has a blink or bold option depending on whether it is used in the foreground or background.

**Table B-17** lists the keys used in Change menu colors.

**Table B-17**  
**Change menu colors options**

| Key            | Function                                           |
|----------------|----------------------------------------------------|
| SPACE BAR      | Steps through each of the color choices            |
| + (plus sign)  | Toggles bold attribute for letters and lines only  |
| - (minus sign) | Toggles blink attribute for letters and lines only |
| ENTER          | Saves colors for the current Testview session      |
| ESCAPE         | Exits menu without saving changes                  |

Color changes remain in effect only for the current session unless the Save colors option is used.

The Save colors and Restore colors options access the color settings from the file **TESTVIEW.INI**.

### **Change TESTVIEW.INI parameters**

This choice displays a menu of the parameters in the TESTVIEW.INI file.

## **Options menu**

The Options menu presents a list of miscellaneous choices. Some are available through function keys, some apply to the tests, and others apply to the menus only.

### **Line printer**

This option toggles error message redirection between the line printer and the default *test.out* file.

### **Halt on error**

This option toggles the halt on error flag (“/HE”).

### **Prompt on error**

This option toggles the prompt on error flag (“/PE”).

### **Summarize Loops/Fails**

This option toggles the set summarize flag (“/SS”).

### **Interactive waiting**

This option allows you to set a response waiting period for an interactive test. Most modules contain one or more tests requiring operator input to pass. If there is no operator, the tests will wait indefinitely. When this option is selected, the test will wait for the number of seconds specified.

### Edit run-time flags

This option provides access to global run-time flags. The buffer contains any flags present on the Testview command line as well as the defaults added by /RE test.out. **Table B-18** lists the run-time flags supported by the run-time library.

**Table B-18**  
**Run-time edit flags**

| Flag       | Function                                                                                                                                                                                           |
|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| /HE        | Halt on error. Testing halts when an error occurs.                                                                                                                                                 |
| /PE        | Prompt on error. If an error occurs the test will not proceed until keyboard input is received.                                                                                                    |
| /N         | Specifies number of times to run the test. Defaults to "/N 1", not needed with Testview.                                                                                                           |
| /Q         | No messages to console. Does not affect the other redirects.                                                                                                                                       |
| /RR file   | Redirect error, advisory, and status messages to file.                                                                                                                                             |
| /RE file   | Redirect error messages to file.                                                                                                                                                                   |
| /RA file   | Redirect advisory messages to file.                                                                                                                                                                |
| /RS file   | Redirect status messages to file.                                                                                                                                                                  |
| /SS <file> | Summarize loops and fails after each test. Optionally redirected to file or printer.                                                                                                               |
| /SF file   | Summary file redirection. Overrides default.                                                                                                                                                       |
| /W nn      | Wait only <i>nn</i> seconds when reading keyboard. Waits indefinitely if the parameter is not present. May be any positive integer value. This is useful for running interactive tests unattended. |

### Run all tests

This option runs all enabled tests in the TEST menu. A submenu provides looping options.

Typing Ctrl-C or Ctrl-Break after starting the test aborts the sequence.

### **Loop count submenu**

The Loop count submenu specifies the number of complete passes through the list of subtests. Choosing 0 or UNLIMITED means run indefinitely. The Test duration option will halt testing if set to a positive number.

Use the space bar to cycle through the following choices for this option:

- UNLIMITED
- 1 pass
- Blank (edit mode)

In edit mode, enter a positive integer (four-digit maximum).

Pressing <Enter> anywhere in the menu will start test execution with all options selected.

### **Test duration submenu**

Test duration specifies the number of hours for testing. Actual testing time is also specified by the Loop count. Testing will stop if the loop count expires even if the specified duration has not elapsed.

Use the space bar to cycle through the following choices for this option:

- Unlimited
- 1 hour
- Blank (edit mode)

In edit mode, enter a positive number (four-digit maximum).

Pressing <Enter> anywhere in the menu will start test execution with all the options selected.

### **Subtest order submenu**

The subtest order is the order in which the test will be run.

There are two subtest order choices:

- SEQUENTIAL runs tests in the order they are found in the menus.
- SHUFFLED runs each pass in a different random order.

Use the Space bar to alternate between the two choices.

Press <Enter> to start the tests with the options selected.

### **Use run-list**

This option allows you to specify any sequence of tests and nested loops.

To specify modules, list the modules, separated by commas, within brackets as follows:

```
{1,2,3,4,5,6}
```

Any number in the list can be replaced with a range, such as:

```
{1-5,6,9}
```

Looping can be indicated using the \* symbol:

```
{1-5,6*3,9}*
```

An asterisk without a number following indicates an infinite loop.

The following example shows how to indicate lists within lists:

```
{1-5,{6.2,6.3}*3,9}
```

Spaces are not allowed in the run-list string. You can use text or numbers in the lists.

### **Run DOS command**

The QUIT menu provides the means to exit Testview.

## **Invoking Testview**

You can select the following options when invoking Testview without a specified PKG file: self-configuring, selection for PKG file list, or supply a PKG filename.

### Testview command line flags

The Testview command line may use either Testview flags or run-time flags. [Table B-19](#) contains descriptions of the Testview flags.

**Table B-19**  
**Testview flags**

| Flag                  | Function                                                                                                                                                                                                                                                                                                                                                                      |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| /AUTO<br>[<filename>] | Auto integrate. This parameter causes Testview to perform a self configuration, display the hardware detected in the system, append the selfsens.cfg file to the PKG with a product code heading and invoke tests found in the PACKAGE.INTEGRATION_LIST parameter.<br><br>If <filename> is present, the contents of the file specified are appended to the selfsens.cfg file. |
| /EXIT                 | Exit Testview when done. Runs all tests from the run-list, when used with /RUNALL, then exits without operator intervention.                                                                                                                                                                                                                                                  |
| /HOURS<br><nn.n>      | Set the duration of testing. After <nn.n> hours has elapsed, testing will halt. Used in combination with other flags, such as /RUNALL or /SHUFFLE, <nn.n> becomes an upper limit, not a guaranteed duration.                                                                                                                                                                  |
| /RUNALL<br>[<nn>]     | Run all enabled tests automatically. After tests are run the menus are up and ready for input. The <nn> argument indicates the number passes to be taken through the run list. Zero (0) or omitting <nn> indicates run forever.                                                                                                                                               |
| /PC<br><product-code> | Product code selection. This flag will cause Testview to search the PKG file for a section labeled <product-code>. This section is then processed. All processed parameter definitions and test exclusions will over-ride previous settings from the PKG file.                                                                                                                |
| /PKG<br><filename>    | Causes Testview to use <filename> instead of t.pkg.                                                                                                                                                                                                                                                                                                                           |

**Table B-19**  
**Testview flags (Continued)**

| Flag                  | Function                                                                                                                                                                                                                                                                            |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| /SELF<br>[<filename>] | Self sense. Probes the system hardware and sets the CFG parameters appropriately. The “sensed” hardware is presented to the operator for approval. The optional <filename> specifies a default PKG file when the BIOS ID matching fails.                                            |
| /SHUFFLE<br>[<nn>]    | Shuffle test order. This flag causes all enabled subtests to be shuffled and run before the menus begin accepting input. The optional <nn> argument determines the number of times through the list. Omitting <nn> will cause the subtests to run forever, assuming no RUNALL flag. |
| /TITLE <i>text</i>    | Over-rides the default banner at the top of the <b>Testview</b> screen.                                                                                                                                                                                                             |
| <b>End</b>            |                                                                                                                                                                                                                                                                                     |

### TESTVIEW.INI file

This file stores custom colors for specific menu groups in **Testview**.

The parameters determine the color of the menus and should not be modified with a text editor. The CONFIGURATION menu *Changing menu colors* option allows you to change colors without accessing this file.

## Using the T Command

T (**t.exe**) is used to run tests from the DOS command line or batch file. The syntax for T is

```
t [<tests>] [<flags>]
```

The <tests> parameter can be a single test, module, or sequence of tests. If this parameter is omitted, it indicates that all tests be run.

**Note:** The <tests> parameter must always precede the <flags> parameter on the command.

The following table lists samples of T commands.

**Table B-20**  
**T commands**

| Command line | Function                                                                               |
|--------------|----------------------------------------------------------------------------------------|
| T            | Run all enabled subtests in all modules in the PKG files.                              |
| T FLOPPY     | Run all enabled subtests in the floppy module.                                         |
| T 1.1        | Run the first subtest of the first module in the PKG file, if enabled.                 |
| T FLOPPY.1   | Run the first subtest of the FLOPPY module, if enabled.                                |
| T 1-5        | Run all enabled subtests of the first 5 modules in the PKG file.                       |
| T 1.3-1.7    | Run all enabled subtests in the range 3 through 7 of the first module in the PKG file. |
| T {1,5,7}    | Run all enabled subtests in modules 1, 5, and 7.                                       |

The *<flags>* parameter can be any number of valid flags which are either handled by T or passed on to the test.

The *<tests>* parameter has a rich syntax to allow for flexibility. The terse definition is as follows:

**Note:** The [...] and <...> are metasympols. Spaces are not allowed.

```
<tests> = <runlist>|<range>|<logical>[*<count>]
<runlist> = {<tests>[,<tests>]}
<range> = <logical>[-<logical>]
<logical> = <label>[.<label>]
<label> = string | number
```

When the hyphen (-) is used, enabled tests listed in the PKG file between (and including) the two specified tests are run.

When specifying a single subtest, it is necessary to separate the module name and the subtest name with a dot (.).

Both the module name and the subtest name may be specified as either a number or a string. Both of these mappings are determined by the **t.pkg** file. An empty runlist may be specified as {}.

The *<flags>* parameter is any subset of the following lists (see [Table B-21](#)). Control flags are passed to the test and handled by its library. Subtest flags are also passed to the test, but handled directly and may differ from test to test.

**Table B-21**  
**Flags parameter groups**

| Flag Group | Flags                                |
|------------|--------------------------------------|
| (control)  | /HE /PE /RR /RE /RA /RS /Q /SS /SF / |
| (subtest)  | /P /V /L /CD ...                     |

The flags in [Table B-22](#) are handled directly by T and not passed to the tests. In most cases the argument is optional

**Table B-22**  
**Flag description**

| Flag             | Description                                                                                                                                                                                                                                                                                                                                                                                                   |
|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| /?               | Help. Prints out the "T.HLP" file                                                                                                                                                                                                                                                                                                                                                                             |
| /AUTO [filename] | Auto integrate. This parameter causes T to perform a self configuration, display the hardware detected in system, add the selfsens.cfg file to the PKG with a product code heading and invoke any tests in the PACKAGE.INTEGRATION_LIST parameter in the PKG file.                                                                                                                                            |
| /DT [nn]         | Display tests. Lists the names and numbers of all subtests in the PKG file with a "+" or "-" for each subtest indicating if it is enabled. The default number of lines printed before pause is 20. The optional argument will override the default.                                                                                                                                                           |
| /GROUP chars     | <p>Restrict run-list. Selects only those subtests which have a character from the string &lt;chars&gt; in the attribute field. The predefined attributes such as "+" or "I" may be used. Or a group may be created by adding a single digit (such as "1") to the attribute fields of subtests to be included.</p> <p>CAUTION: this flag overrides the disable attribute. All tests in the group will run.</p> |
| /N nn            | Number of loops. This flag indicates the number of complete passes to be taken through the run-list. Zero(0) indicates run forever.                                                                                                                                                                                                                                                                           |
| /OVER            | Override disable flag. This flag will cause T to ignore the disable flag for any subtest called out specifically in the run-list. Subtests called out by a range, group or module in the run-list will not be overridden.                                                                                                                                                                                     |

**Table B-22**  
**Flag description (Continued)**

| <b>Flag</b>      | <b>Description</b>                                                                                                                                                                                                                                                                                                                                                                                                 |
|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| /PC product-code | Product code selection. This flag will cause T to search the PKG file for a section labeled product-code. This section is then processed and any parameter definitions or test exclusions will override the previously processed contents of the PKG file.                                                                                                                                                         |
| /PKG filename    | PKG file. This flag will cause T to process filename instead of "T.PKG."                                                                                                                                                                                                                                                                                                                                           |
| /SELF [filename] | Self configure. This flag causes T to run all subtest-0's in the PKG file. These subtests create two files, "selfsens.cfg" and "display.cfg". The PKG file for a self sense is chosen by the BIOS ID. If the BIOS ID cannot be matched and no filename is specified, an error occurs. If filename is present, this is taken as the default PKG file. To over-ride the BIOS ID matching, use "/SELF /PKG filename". |
| /SHUFFLE [nn]    | Shuffle the run-list. This flag causes the run-list to be shuffled on each pass. The optional nn argument determines the number of passes, unless the /N flag is used.                                                                                                                                                                                                                                             |
| <b>End</b>       |                                                                                                                                                                                                                                                                                                                                                                                                                    |

## Standard error codes

The error codes listed in [Table B-23](#) are generated by t.

**Table B-23**  
**T error codes**

| <b>Error Code</b> | <b>Explanation</b>                            |
|-------------------|-----------------------------------------------|
| 01300000          | Error opening redirect file                   |
| 01300001          | Error opening PKG file                        |
| 01300002          | Error processing PKG or CFG file              |
| 01300003          | Product code not found in PKG file            |
| 01300004          | Test module EXE file not found                |
| 01300005          | Error returned by spawn (while loading test)  |
| 01300006          | Invalid return code from test                 |
| 01300007          | Memory error after running test               |
| 01300008          | Error deleting file from RAM drive            |
| 01300009          | Error renaming file on RAM drive              |
| 0130000A          | Critical error handler return codes           |
| 0130000B          | Parity interrupt occurred                     |
| 0130000C          | Invalid module name in command line run-list  |
| 0130000D          | Invalid test name in command line run-list    |
| 0130000E          | Second module name in run-list not valid      |
| 0130000F          | Second test name in run-list not valid        |
| 01300010          | Error checking free space on RAM drive        |
| 01300012          | BIOS ID not found in any PKG file             |
| 01300013          | Unexpected return code from substest 0        |
| 01300014          | Unable to open PKG file during auto-integrate |
| 01300015          | Unable to open selfsens.cfg file              |

## Appendix C: System configuration utility

---

The System Configuration Utility (SCU) configures ISA, EISA, PnPISA, and PCI computer systems.

EISA systems and adapter cards are more complex and flexible than ISA designs. PnPISA and PCI systems have registers on their cards which contain pertinent resources information. The SCU was designed to automate the configuration process for all of these systems, to maintain system parameters, and to store those parameters in nonvolatile RAM. Since the SCU assigns all system resources, there are no conflicts between adapter cards.

You must execute the SCU every time ISA or EISA adapter cards are physically added, removed, or moved in your system. Running SCU is optional for PnPISA and PCI adapter cards.

The SCU operates on information provided by the configuration files, configuration registers on PCI and PnPISA cards, and NVRAM in the system memory.

### Configuring your system with SCU

In order to run the SCU, you must reboot your system using the SCU diskette.

#### **Procedure C-1** **Running SCU**

- 1 Boot the Application Processor from a floppy drive using DOS 6.22 or higher.
- 2 Put the SCU diskette into the floppy drive.
- 3 Assure the write protection is turned off the SCU diskette.

- 4 Run SCU by entering the following command:  
`a:\scu <Enter>`.  
*The SCU title screen appears.*
- 5 Press the enter key to access the main menu.
- 6 Select "Step 3: Change Configuration Settings", and press <Enter>.
- 7 Press the <ESC> key to skip the Admin Password screen.  
*The following message will appear:*  
Virtual memory files will be stored in diskette.
- 8 Press <Enter>..  
*The following menu appears:*  
System Board  
  
PCI Undefined Device  
  
PCI Ethernet Device  
  
PCI VGA Device  
  
PCI SCSI Device
- 9 Select "System Board" and press <Enter>.
- 10 Scroll to "LCD Subsystem Group" using the page down key.
- 11 Select "LCD Display String Before OS Boot" and press <Enter>.  
When "String to Display:" comes up type the following:  
Meridian IVR
- 12 Assure all values match those in [Table C-2, "SCU configurable features," on page C-5.](#)
- 13 Press <ESC> when done to exit from the settings screen  
*The "Change Configuration Settings" screen appears.*
- 14 Select "PCI SCSI Device" and press <Enter>.
- 15 Select "Enabled: Automatic configuration" and press <Enter>.
- 16 Change the parameter to "Enabled: Manual configuration" and press <Enter>.

- 17 Press <F6> for the configuration menu.
- 18 Change IRQ to "11" and press <Enter>.
- 19 Press <ESC> to exit "Edit Setting for: PCI SCSI Device" screen.  
*The "Change Configuration Settings" screen appears.*
- 20 Follow steps 21 through 26 if you are using a PCI Ethernet adapter.
- 21 Select "PCI Ethernet Device" and press <Enter>.
- 22 Select "Enabled: Automatic configuration" and press <Enter>.
- 23 Change the parameter to "Enabled: Manual configuration" and press <Enter>.
- 24 Press <F6> for the configuration menu.
- 25 Change IRQ to "10" and press <Enter>.
- 26 Press <ESC> to exit "Edit Setting for: PCI Ethernet Device" screen.  
*The "Change Configuration Settings" screen appears.*
- 27 Select "PCI VGA Device" and press <Enter>.
- 28 Select "Enabled: Automatic configuration" and press <Enter>.
- 29 Change this parameter to "Enabled: Manual configuration" and press <Enter>.
- 30 Press <F6> to return to the configuration menu.
- 31 Change IRQ to "9" and press <Enter>.
- 32 Press <ESC> to exit back to the "System Configuration Utility".
- 33 Press <ESC> once more to get back to the main menu.
- 34 Check to verify your settings.
- 35 Select "Step 4: Save Configuration" and press <Enter>. This will save the CFG file to the floppy disk and store the settings in the CMOS
- 36 Select "Step 6: Exit" and press <Enter>. to exit.  
You will be asked to confirm the exit.
- 37 Press <F10> to reboot. Assure that the SCU diskette is out of the drive and the MS-DOS boot disk is back in the drive.

You must now run the SCSI Select Utility.

**Procedure C-2**  
**Running the SCSI select utility**

- 1 Boot with a DOS 6.22 or higher version system diskette from a floppy drive.
- 2 Insert the "System Configuration Utility" diskette in the floppy drive.
- 3 Enter the following command to run SCU:  
a:\7870cfg <Enter>.
- 4 Select "Configure/View Host Adapter Settings" and press <Enter>.
- 5 Select "SCSI Device Configuration" and press <Enter>.
- 6 Assure the settings match those in [Table C-1](#).

**Table C-1**  
**SCSI device settings**

| SCSI Device ID             | 0   | 1   |
|----------------------------|-----|-----|
| Initiate Sync Negotiation  | Yes | Yes |
| Maximum Sync Transfer Rate | 8   | 8   |
| Enable Disconnection       | Yes | Yes |
| Initiate Wide Negotiation  | Yes | Yes |
| Send Start Unit Command    | Yes | Yes |
| Include in BIOS Scan       | Yes | Yes |

- 7 Press <ESC> twice to save changes ,and select "Yes" to save changes followed by <Enter>.
- 8 Press <ESC>, and select "Yes" to exit followed by <Enter>.

## SCU configurable features

Table C-2 shows all of the SCU configurable features. Default values are shown in bold type.

**Table C-2**  
**SCU configurable features**

| Configuration feature             | Selection options       | Notes                                                                                            |
|-----------------------------------|-------------------------|--------------------------------------------------------------------------------------------------|
| System Identification String      | None                    | Configured by User or System Integrator using the ROM-based or disk-based configuration utility. |
| Configuration and Overlay Version | N/A                     | Display only, the version of the SCU.                                                            |
| BIOS Version String               | N/A                     | Display only.                                                                                    |
| MP Spec Version                   | N/A                     | Display only.                                                                                    |
| System Processors and Status      | N/A                     | Display only for CPU 1 and CPU 2.                                                                |
| Power-On Speed                    | <b>Fast</b> / Slow      | BIOS programs the SLOWH timer before boot.                                                       |
| ..                                | <b>Shadowing ROM</b>    | ..                                                                                               |
| Shadowing at C0000                | Enable / <b>Disable</b> | ..                                                                                               |
| Shadowing at C4000                | Enable / <b>Disable</b> | ..                                                                                               |
| Shadowing at C8000                | Enable / <b>Disable</b> | ..                                                                                               |
| Shadowing at CC000                | Enable / <b>Disable</b> | ..                                                                                               |

**Table C-2**  
**SCU configurable features (Continued)**

| <b>Configuration feature</b> | <b>Selection options</b>                                                                              | <b>Notes</b> |
|------------------------------|-------------------------------------------------------------------------------------------------------|--------------|
| Shadowing at D0000           | Enable / <b>Disable</b>                                                                               | ..           |
| Shadowing at D4000           | Enable / <b>Disable</b>                                                                               | ..           |
| Shadowing at D8000           | Enable / <b>Disable</b>                                                                               | ..           |
| Shadowing at DC000           | Enable / <b>Disable</b>                                                                               | ..           |
| Shadowing at E0000           | Enable / <b>Disable</b>                                                                               | ..           |
| Shadowing at E4000           | Enable / <b>Disable</b>                                                                               | ..           |
| ..                           | <b>Memory Subsystem</b>                                                                               | ..           |
| Base Memory Option           | 512 / <b>640</b> KB                                                                                   | ..           |
| Total System Memory          | <b>32 Mbyte WB(No 1Mbyte Hole)</b> / 32 NC(No 1MB Hole) / 31 WB(With 1MB Hole) / 31 NC(With 1MB Hole) | ..           |
| ..                           | <b>Peripheral Configuration</b>                                                                       | ..           |
| Automatic Configuration      | Enable / <b>Disable</b>                                                                               | ..           |
| ..                           | <b>On-Board Disk Controller</b>                                                                       | ..           |

**Table C-2**  
**SCU configurable features (Continued)**

| <b>Configuration feature</b> | <b>Selection options</b>                                                       | <b>Notes</b> |
|------------------------------|--------------------------------------------------------------------------------|--------------|
| On-Board Floppy Controller   | <b>Enable</b> / Disable                                                        | ..           |
| On-Board IDE Controller      | <b>Enable</b> / Disable                                                        | ..           |
| ..                           | <b>On-Board Communication Devices</b>                                          | ..           |
| Serial Port 1 Configuration  | COM4 2E8-3 /<br>COM2 2F8-3 /<br>COM3 3E8-4 /<br><b>COM1 3F8-4</b> /<br>Disable | ..           |
| Serial Port 2 Configuration  | COM4 2E8-3 /<br><b>COM2 2F8-3</b> /<br>COM3 3E8-4 /<br>COM1 3F8-4 /<br>Disable |              |
| Parallel Port Configuration  | LPT2 278-5 /<br><b>LPT1 378-7</b> /<br>LPT3 3BC-7 /<br>Disable                 | ..           |
| Parallel Port Mode           | <b>ISA</b> / PS-2 / Ext /<br>No DMA / DMA 3<br>/ DMA 5 / DMA 6                 | ..           |
| ..                           | <b>Floppy Subsystem</b>                                                        | ..           |
| Floppy Drive A Options       | <b>1.44</b> / 360 / 1.2 /<br>720 / 2.88 /<br>Disable                           | ..           |

**Table C-2**  
**SCU configurable features (Continued)**

| <b>Configuration feature</b>                  | <b>Selection options</b>                       | <b>Notes</b>                       |
|-----------------------------------------------|------------------------------------------------|------------------------------------|
| Floppy Drive B Options                        | 1.44 / 360 / 1.2 / 720 / 2.88 / <b>Disable</b> | ..                                 |
| ..                                            | <b>IDE Subsystem</b>                           | ..                                 |
| ISA IDE DMA Transfers                         | <b>Auto</b> / Disable                          | ..                                 |
| IDE Auto Configuration Drive C/D/E/F          | Auto / Customize / <b>Drive Not Detected</b>   | ..                                 |
| Multi-Sector Transfer Selection Drive C/D/E/F | <b>Auto</b> / 4 sectors / 8 sectors / Disable  | ..                                 |
| Translation Mode                              | <b>CHS</b> / LBA / ExtCHS / Auto               | ..                                 |
| Fast Programmed I/O Modes                     | <b>Auto</b> / Disable                          | ..                                 |
| ..                                            | <b>Language</b>                                | ..                                 |
| Language Support Group                        | <b>US</b> / FR / GR / SP / IT                  | ..                                 |
| ..                                            | KB / Mouse Subsystem                           | ..                                 |
| NumLock Options                               | On at Boot / <b>Off at Boot</b>                | ..                                 |
| Typematic Speed                               | <b>Auto</b> / Slow / Medium / Fast             | ..                                 |
| Mouse Control Option                          | Mouse Auto Detected                            | Using Phoenix Keyboard Controller. |

**Table C-2**  
**SCU configurable features (Continued)**

| <b>Configuration feature</b>    | <b>Selection options</b>                   | <b>Notes</b>                                               |
|---------------------------------|--------------------------------------------|------------------------------------------------------------|
| ..                              | <b>Console Redirection</b>                 | ..                                                         |
| Select COM port for Redirection | <b>Disable</b> / COM1 / COM2               | ..                                                         |
| Serial Port Baud Rate           | 2400 / 9600 / 19.2 k / <b>115.2 k</b>      | ..                                                         |
| Hardware Flow Control           | <b>None</b> / CTS-RTS / CTS-RTS & Xoff/Xon | ..                                                         |
| Select Terminal Type            | <b>ANSI</b>                                | ..                                                         |
| ..                              | <b>Security Subsystem</b>                  | ..                                                         |
| Administrative Password         | Set / <b>Not Set</b>                       | ..                                                         |
| User Password                   | Set / <b>Not Set</b>                       | ..                                                         |
| Hot-key Option                  | Enable / <b>Disable</b>                    | Prompted for key to combine with Ctrl-Alt-key.             |
| Secure Boot Mode                | Enable / <b>Disable</b>                    | Boot Without Keyboard, no error message will be displayed. |
| Enable Video Blanking           | Enable / <b>Disable</b>                    | ..                                                         |
| Set Lockout Timer               | Timeout, 1-127 ( <b>10 min</b> ), Disabled | Keyboard inactivity.                                       |
| Floppy Writes                   | <b>Enable</b> / Disable                    | ..                                                         |
| ..                              | <b>Boot Subsystem</b>                      | ..                                                         |

**Table C-2**  
**SCU configurable features (Continued)**

| <b>Configuration feature</b>                  | <b>Selection options</b>                               | <b>Notes</b> |
|-----------------------------------------------|--------------------------------------------------------|--------------|
| Boot Sequence                                 | <b>A: then C:</b> , C:<br>then A:, C: only,<br>A: only | ..           |
| Display<br>Message<br>During POST             | Enable / <b>Disable</b>                                | ..           |
| Require User<br>Interaction on<br>POST Errors | Enable / <b>Disable</b>                                | ..           |
| ..                                            | SCSI ROM BIOS<br>Options                               | ..           |

**Table C-2**  
**SCU configurable features (Continued)**

| <b>Configuration feature</b>      | <b>Selection options</b>         | <b>Notes</b>                                                                                                                          |
|-----------------------------------|----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| SCSI-A ROM BIOS Scan              | <b>Enable</b> / Disable          | ..                                                                                                                                    |
| ..                                | LCD Subsystem                    | ..                                                                                                                                    |
| LCD Display String                | <b>Enable</b> / Disable          | ..                                                                                                                                    |
| LCD Display String Before OS Boot | (user-defined string or default) | Default is "N x PID Speed System Ready" where N= number of processors. PID is processor ID string, and Speed is the processor in MHz. |
| ..                                | Management Subsystem             | ..                                                                                                                                    |
| Voltage Limit Control Default     | Default / <b>Customize</b>       | ..                                                                                                                                    |
| A/D Channel Enable Switch         | Default / <b>Customize</b>       | ..                                                                                                                                    |
| Speaker Option                    | <b>Enable</b> / Disable          | ..                                                                                                                                    |
| Scanning User Flash Area          | Enable / <b>Disable</b>          | ..                                                                                                                                    |
| <b>End</b>                        |                                  |                                                                                                                                       |



---

## Appendix D: UNIX diagnostics

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This appendix lists the available UNIX-based diagnostic utilities developed by Nortel for IVR 2.0/I.

### accdiag

The `accdiag` utility analyses the status of ACCESS-related components in the IVR system. The `accdiag` command is in the `/u/ivr/vrs/exe` directory and must be run from that directory.

To test the ACCESS link, type `accdiag` in a UNIX shell window.

The following option flags are available with the `accdiag` command:

```
[-l LogFileName]
[-n LogicalLinkNumber]
[ConfigFilePath]
[?]
```

The *System Status* screen appears. The following options are available through the System Status screen:

**Table D-1**  
**System Status window function keys**

| Function key | Explanation                          |
|--------------|--------------------------------------|
| F1 Start lh  | This option starts the link handler. |

**Table D-1**  
**System Status window function keys (Continued)**

| Function key | Explanation                                                                                        |
|--------------|----------------------------------------------------------------------------------------------------|
| F2 Om Data   | This option calls the System Operational Measurements window, as shown <a href="#">Table D-2</a> . |
| F3           | This option redraws the screen.                                                                    |
| F4           | This option exits the system.                                                                      |

The System Operational Measurements window includes the following data: Packet Counts, Error Counts, and Link Handler statistics.

[Table D-2](#) outlines function key options available in the System Operational Measurements window.

**Table D-2**  
**System Operational Measurements function key options**

| Function key | Explanation                                           |
|--------------|-------------------------------------------------------|
| F2 Clear OM  | Clears existing Measurements from window.             |
| F3 Redraw    | Refreshes the System Operational Measurements window. |
| F4           | Exits the window.                                     |

## backup\_default.bup file

The backup\_default.bup file contains the default list of files used by the backup utility. This list can be edited.

To view the backup\_default.bup file, type

```
more /u/ivr/backup/backup_default.bup
```

at the UNIX shell prompt.

The default contents of this file are the `/u/ivr/apps` and `/u/ivr/log.d` directories. The other directories and files in the `backup_default.bup` file are dependent on the features installed in your system. Other directories you may want to backup include the following:

### Local database-related files

`/u/ivr/sys_files/*.dbm`  
`/u/ivr/sys_files/*.tpl`  
`/u/ivr/sys_files/*.ext`

### Host connectivity (except vt100)

`/u/ivr/3270/*`  
`/u/ivr/sys_files/vtekhst_adm`

### vt100

`/u/ivr/vt100/*`

### System configuration

`/u/ivr/exe/*.sai`  
`/u/ivr/sys_files/sysgen.d`  
`/u/ivr/vrs/exe/lh.config`

### User functions

`/u/ivr/usr/*`

### Backup list file

`/u/ivr/backup/backup_default.bup`

#### *Notes:*

- 1 Host connectivity files created by the `express_adm` tool should also be backed up using `express_adm`. For information on backing up these files, refer to the *Apertus EXPRESS Administration Guide*. (The `express_adm` tool is used for configuring the Arnet Sync/570 adapter and Madge Token Ring adapter for 3270/5250 host connectivity.)
- 2 The backup tool should not be used to backup system files.

## dappl

The `dappl` command is used to dump the content and call flow of applications.

This command generates two report listings:

- The “Listing of the Application” file provides specific configuration details for each cell in ASCII format.
- The “Graphical Structure Chart” file provides a representation of the call flow in ASCII format.

The `dappl` command is found in the `/u/ivr/tools` directory and must be run from this directory or from a directory at the same level. To invoke the `dappl` command, type the following:

```
dappl appl_name
```

where *appl\_name* is the name of the application to be dumped.

**Table D-3** contains the flags available for the `dappl` command.

**Table D-3**  
**Flags for `dappl` command**

| Flag   | Explanation                                                                            |
|--------|----------------------------------------------------------------------------------------|
| -h     | Display help message                                                                   |
| -c     | Cell contents output (default setting)                                                 |
| -nc    | No cell contents output                                                                |
| -g     | Graphic output (default setting)                                                       |
| -s     | Only success branches in graphic output                                                |
| -ng    | No Graphic Output                                                                      |
| -d     | Debugging (full) dump                                                                  |
| -nd    | No Debugging (default setting)                                                         |
| -cwd   | Read application from . rather than ../apps                                            |
| <appl> | Name of application to dump (REQUIRED)<br>(Do not include path, extension is optional) |

## Directing the dappl report to a file

You can direct the results of the `dappl` command to a file. To direct the result of running the `dappl` command for the application called “test” to a file, enter the following command:

```
dappl test > test.out
```

## Viewing the dappl output file

To view the contents of the `filetest.out`, enter the following command:

```
more test.out
```

The following figures show the results of the `dappl` command.

### Figure D-1 dappl command application listing output

```
Listing of Application ../apps/test.vpf
Application Revision : 3
Editor Release : 1.3

Application contains 8 cells:
 Uses NO Databases
 Uses NO User Buffers

Cell 0: DFLT
 Database : <NONE>
 Pause Digit : 6
 Resume Digit : 7
 Termination Digit : #
 Abort Digit : NONE
 Pause Time : 15
 Pause Action : ABORT
 Interdigit Timeout : 5
 Pause Prompt : 65
 Resume Prompt : 115
 Abort Prompt : 117
 Min Voice Duration : 200
 Cleanup : <NONE>
 Next Cell : 2 (Untitled #2 (ANSW))
 SQL DBMS Type : <NONE>
 SQL Database : <NONE>
 SQL Server Count : 1

Cell 1: HANG|
 Cell Description : Hangup
 Name : hangup #1 (HANG)
 Type : HANG
 Prompt Count : 1
 Prompt : 55, 0, 0, 0, 0
```



```

Cell 7: HANG
Cell Description : Hangup
Name : Error hangup #7 (HANG)
Type : HANG
Prompt Count : 1
Prompt : 73, 0, 0, 0, 0

```

**Figure D-2**  
dappl command graphical structure chart output

```

Graphical Structure Chart for Application 'test'

Cell_0:DFLT:'c
../cells/deliv.cdsc
../Cell'
+-->Next Cell:
 Cell_2:ANSW:'Answer #2 (ANSW)'
 +-->Next Cell:
 Cell_3:PDAT:'Play IVR # #3 (PDAT)'
 +-->Next Error:
 | Cell_7:HANG:'Error hangup #7 (HANG)'
 +-->Next Cell:
 Cell_4:PDAT:'Play orig. # #4 (PDAT)'
 +-->Next Error:
 | Cell_7:HANG:'Error hangup #7 (HANG)'
 +-->Next Cell:
 Cell_5:GDAT:'Get DTMF #5 (GDAT)'
 +-->Next Error:
 | Cell_7:HANG:'Error hangup #7 (HANG)'
 +-->Next Timeout:
 | Cell_7:HANG:'Error hangup #7 (HANG)'
 +-->Next Cell:
 Cell_6:PDAT:'Play # #6 (PDAT)'
 +-->Next Error:
 | Cell_7:HANG:'Error hangup #7 (HANG)'
 +-->Next Cell:
 Cell_1:HANG:'hangup #1 (HANG)'

Integrity Check:
All cells in application have been referenced.
(EOF):

```

## System Applications Monitor

The System Applications Monitor (SAM) utility is a stand-alone process that logs user activity as an application runs on one or more channels. This online application debugging tool tracks the execution path of the application and captures all selected data.

**Table D-4** defines the data types accessed and captured by the **sam** tool.

**Table D-4**  
**sam data capture list**

| Data type           | Definition                                                  |
|---------------------|-------------------------------------------------------------|
| Channel number      | Identifies the channel on which the cell has been executed. |
| Application name    | Name of the application being processed.                    |
| Application ID      | Unique number identifying the application.                  |
| Current cell type   | Type of cell that was executed (PLAY, MENU).                |
| Current cell number | Unique number identifying the cell in the application.      |
| Next cell type      | The next cell type.                                         |
| Next cell number    | Unique number identifying the next cell in the application. |
| Digits collected    | String of digits input by the caller for the current cell.  |

Typically you use **sam** to monitor a call, tracing the transition between cells and identifying caller-selected data.

*Note:* Although you can monitor multiple channels, it is recommended that you run **sam** on only one channel at a time to avoid compromising system performance.

If two digits are collected during cell execution, **sam** generates two log entries for the same cell.

The first entry identifies the digits. You can disregard the Next Cell Type and Next Cell Number fields, which **sam** logs correspondingly as blank and “-1”. The second entry identifies the next cell (see [Table D-4](#)).

### Accessing sam

The **sam** utility is found in the `/u/ivr/exe` directory, but can be accessed from any directory.

To invoke **sam**, enter the following at the shell prompt:

```
sam -f filename -lo low_channel_num
 -hi high_channel_num
```

[Table D-5](#) defines the variables used in the **sam** utility.

**Table D-5**  
**sam command line variables**

| Variable                | Definition                                                                                                                                                                                                                                                                                       |
|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>filename</i>         | Identifies the name of the file where you want <b>sam</b> to log the information. The default filename is <code>sam.out</code> in the current directory.                                                                                                                                         |
| <i>low_channel_num</i>  | Shows the low end of the channel range that you want to monitor. If you do not specify a number, the default value is 0.                                                                                                                                                                         |
| <i>high_channel_num</i> | Shows the high end of the channel range that you want to monitor. The number for this parameter must be equal to or less than 48. If you do not specify a number, the default value is 63. <b>Do not use this default value.</b> In Meridian IVR, a maximum number of 48 channels are available. |

### Example scenario

To log the application **mikefl** running on channel 2, enter the following command:

```
sam -f -lo 2 -hi 2
```

Since a file name was not entered, the **sam** utility will log user activity to the default file *sam.out*.

**Table D-6**  
**sam sample output**

|                                                                                                                                                                      |                                                                                                                                                                                     |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <pre>Channel: 2 Appl Name: mikefl Appl_id: 0 Cur_cell_type: DFLT ← indicates application start t Cur_cell_num: 0 Next_cell_type: ANSW Next_cell_num: 1 Digits:</pre> |                                                                                                                                                                                     |
| <pre>Channel: 2 Appl Name: mikefl Appl_id: 0 Cur_cell_type: ANSW Cur_cell_num: 1 Next_cell_type: MENU Next_cell_num: 2 Digits:</pre>                                 |                                                                                                                                                                                     |
| <pre>Channel: 2 Appl Name: mikefl Appl_id: 0 Cur_cell_type: MENU Cur_cell_num: 2 Next_cell_type: Next_cell_num: -1 ← Digits: 2</pre>                                 | <p>Notice these two entries in the log correspond to the same current cell.</p> <p>The first entry identifies the digits that are captured; the next cell is indicated as "-1".</p> |
| <pre>Channel: 2 Appl Name: mikefl Appl_id: 0 Cur_cell_type: MENU Cur_cell_num: 2 Next_cell_type: PLAY Next_cell_num: 4 Digits:</pre>                                 | <p>The second entry identifies the Next cell type and number.</p>                                                                                                                   |

## Exiting sam

The **sam** utility runs on the specified range of channels until you enter <Ctrl + c> to end the process. At that point, **sam** stops writing channel activity data and returns control to the shell.

## Displaying and printing the SAM log

The log generated by **sam** is an ASCII file with the default name of *sam.out*.

To display the log, enter this shell command:

```
pg /u/ivr/exe/sam.out
```

To print the log, enter this shell command:

```
lp /u/ivr/exe/sam.out
```

It can be useful to compare the **sam** log file to your application callflow.

The flags in [Table D-7](#) can be used with the **sam** command.

**Table D-7**  
**sam command flags**

| Flag                   | Explanation                                    |
|------------------------|------------------------------------------------|
| [-verbose]             | for verbose mode                               |
| [-f <i>filename</i> ]  | to write application data to a file            |
| [-lo <i>channel#</i> ] | for low range of trace channels                |
| [-hi <i>channel#</i> ] | for high range of trace channels               |
| [-b <i>branch</i> ]    | specifies a MIVR/I to attach to                |
| [-r ]                  | to report revision level of <b>sam</b> utility |

## Sample output

The following is an example of output from the **sam** command.

```
*** SAM Trace Started on channels 0 to 0 ***
*** SAM Trace Stopped ***
```

## devnt

The **devnt** utility displays a list of all scheduled application times, telephone numbers, and event IDs, as contained in the `/sys_files/csc_events` directory. The **devnt** command must be run from the `/u/ivr/sys_files` directory.

## dsysf

The **dsysf** tool displays the contents of the system configuration file.

### Sample output

The following is an example of output from the **dsysf** command.

```
SYSTEM DATA
system_data_size 60
channel_data_size 80
node_data_size 100
sysgen_version 2
sysgen_update 0
total_nodes 1
max_system_prompt 0x7D0
hisys_vsn 0x7CF
backup_vsn 0xF601
duplicate log path /dev/null
NODE 1 DATA
node_type SYS_TYPE_MERIDIAN
max_channels 12
active_channels 12
connection_type SYS_CONNECT_ETHERNET
node_name localhost
CHANNEL 0 DATA
channel_type SYS_TTYPE_SHARED
channel_init_type SYS_ITYPE_ANI2
channel_dir SYS_DIRECT_IN
channel_mbox 2000
channel_pwd 200000
channel_class 0
access_link 1
CHANNEL 1 DATA
channel_type SYS_TTYPE_SHARED
channel_init_type SYS_ITYPE_ANI2
channel_dir SYS_DIRECT_IN
channel_mbox 2000
channel_pwd 200000
channel_class 0
access_link 1
```

---

```
CHANNEL 2 DATA
channel_type SYS_TTYPE_SHARED
channel_init_type SYS_ITYPE_ANI2
channel_dir SYS_DIRECT_IN
channel_mbox 2000
channel_pwd 200000
channel_class 0
access_link 1
CHANNEL 3 DATA
channel_type SYS_TTYPE_SHARED
channel_init_type SYS_ITYPE_ANI2
channel_dir SYS_DIRECT_IN
channel_mbox 2000
channel_pwd 200000
channel_class 0
access_link 1
CHANNEL 4 DATA
channel_type SYS_TTYPE_SHARED
channel_init_type SYS_ITYPE_ANI2
channel_dir SYS_DIRECT_IN
channel_mbox 2000
channel_pwd 200000
channel_class 0
access_link 1
CHANNEL 5 DATA
channel_type SYS_TTYPE_SHARED
channel_init_type SYS_ITYPE_ANI2
channel_dir SYS_DIRECT_IN
channel_mbox 2000
channel_pwd 200000
channel_class 0
access_link 1
CHANNEL 6 DATA
channel_type SYS_TTYPE_SHARED
channel_init_type SYS_ITYPE_ANI2
channel_dir SYS_DIRECT_IN
channel_mbox 2000
channel_pwd 200000
channel_class 0
access_link 1
CHANNEL 7 DATA
channel_type SYS_TTYPE_SHARED
channel_init_type SYS_ITYPE_ANI2
channel_dir SYS_DIRECT_IN
channel_mbox 2000
channel_pwd 200000
channel_class 0
access_link 1
```

```
CHANNEL 8 DATA
channel_type SYS_TTYPE_SHARED
channel_init_type SYS_ITYPE_ANI2
channel_dir SYS_DIRECT_IN
channel_mbox 2000
channel_pwd 200000
channel_class 0
access_link 1
CHANNEL 9 DATA
channel_type SYS_TTYPE_SHARED
channel_init_type SYS_ITYPE_ANI2
channel_dir SYS_DIRECT_IN
channel_mbox 2000
channel_pwd 200000
channel_class 0
access_link 1
CHANNEL 10 DATA
channel_type SYS_TTYPE_SHARED
channel_init_type SYS_ITYPE_ANI2
channel_dir SYS_DIRECT_IN
channel_mbox 2000
channel_pwd 200000
channel_class 0
access_link 1
CHANNEL 11 DATA
channel_type SYS_TTYPE_SHARED
channel_init_type SYS_ITYPE_ANI2
channel_dir SYS_DIRECT_IN
channel_mbox 2000
channel_pwd 200000
channel_class 0
access_link 1
```

## kccheck

The **kccheck** tool displays the list of Meridian IVR options available on your system.

The following is an example of output from the **kccheck** command.

```
Meridian IVR Option List
=====
Version number : 2.00
Platform : SCO UNIX
Voice server : Other than MM Opt 11
Development options : Full
Fax response : yes

3270 SNA host connectivity : yes
3270 QLLC host connectivity : yes
5250 emulation : yes
X.25 host connectivity : yes
VT100 host connectivity : yes
Informix connectivity : yes
Oracle connectivity : yes
Ingres connectivity : yes
Sybase connectivity : yes
Smart UPS : yes

Number of IVR ports : 96
Number of fax ports : 8
=====
```

## readdongle

The **readdongle** command checks the status of the security keylock. If the keylock is properly installed, its serial number will be displayed as output.

If the keylock is not properly installed or is missing, the following message appears:

```
Failed to read from the security keylock device
```

## Transaction logs

Transaction logs are files into which errors and transactions may be written. These files reside in the */u/ivr/log.d* directory.

The following files contain transaction data:

- event.log
- sec.log
- start.log
- xconsole.log

## Event log

The **event.log** file contains a timestamped record of all application events.

To access the event log, complete the following procedure:

### Procedure D-1 Accessing the event log

- 1 At a UNIX shell prompt, change to the */u/ivr/log.d* directory using  

```
cd /u/ivr/log.d
```
- 2 Type the following:  

```
cat event.log
```

The event log is displayed as shown in the section below.

### Sample output

```
09/21 11:08 CLI ADVISORY 6 Application Load : eight
09/21 11:08 CLI ADVISORY 10 Application Startup : eight
09/21 11:10 CLI ADVISORY 71 Stopping Application: eight
09/21 11:10 CLI ADVISORY 72 Application Stopped: eight
09/21 11:10 CLI ADVISORY 12 Application Unload : eight
09/21 11:10 CLI ADVISORY 6 Application Load : test1
09/21 11:10 CLI ADVISORY 10 Application Startup : test1
```

## Sec log

The **sec.log** file contains all security-related messages from the application.

To access the sec log, complete the following procedure.

### Procedure D-2

#### Accessing the sec log

1 Change to the `/u/ivr/log.d` directory at a UNIX shell prompt using  
**cd /u/ivr/log.d**

2 Type the following  
**more sec.log**

*The sec log is displayed as shown in the section below.*

#### Sample output

```
**** Error Messages from process: vrtcd ****

**** Error Messages from process: vrtcd ****

**** Error Messages from process: vrtcd ****
```

## Start log

The **start.log** file contains a timestamped record of all application and tool start times.

To access the start log, complete the procedure below.

### Procedure D-3

#### Accessing the start log

1 At a UNIX shell, change to the `/u/ivr/log.d` directory using  
**cd /u/ivr/log.d**

2 Type the following:  
**cat start.log**

*The start.log file is displayed, as shown in the section below.*

### Sample output

```
[09/21 11:00] System Started
[09/21 11:00] ./ueh p[5130] q[224] Running
[09/21 11:00] ./vtk p[5131] q[232] Running
[09/21 11:00] ./vip p[5132] q[227] Running
[09/21 11:00] ./vrm p[5133] q[230] Running
[09/21 11:00] ./cli p[5134] q[231] Running
[09/21 11:00] ./dbs p[5135] q[228] Running
[09/21 11:00] ./qds p[5136] q[222] Running
[09/21 11:00] ./csc p[5137] q[223] Running
[09/21 11:00] ./sad p[5138] q[229] Running
[09/21 11:00] ./vft p[5139] q[225] Running
[09/21 11:00] ./pmg p[5140] q[226] Running
[09/21 11:00] ./trs p[5141] q[233] Running
[09/21 11:00] ./ust p[5142] q[221] Running
```

### Xconsole log

The xconsole.log file contains a timestamped record of all events logged through the console.

To access the xconsole log, complete the procedure below

#### Procedure D-4

##### Accessing the xconsole log

- 1 At a UNIX shell prompt, change to the `/u/ivr/log.d` directory using  
**cd /u/ivr/log.d**
- 2 Type the following:  
**more xconsole.log**

*The xconsole.log file appears, as shown in the example below.*

### Sample output

```
07/28 15:00 Welcome to Meridian IVR/I. Console Ready.
08/03 18:37 Starting Meridian IVR/I...
08/03 18:38 Meridian IVR/I startup complete, assuming the link is up
08/03 18:38 Error reading the security profile
08/04 09:57 Starting Meridian IVR/I...
08/04 09:58 Meridian IVR/I startup complete, assuming the link is up
08/04 10:01 Unable to open software profile.
07/28 15:12 CLI ADVISORY 10 Application Startup : test1
07/28 16:52 CLI ADVISORY 71 Stopping Application: test1
07/28 16:52 CLI MINOR 72 Application Stopped: test1
07/28 16:52 CLI ADVISORY 12 Application Unload : test1
07/28 16:54 Stopping Meridian IVR/I...
```

```
07/28 16:54 Meridian IVR/I is down
07/28 16:54 Starting Meridian IVR/I...
07/28 16:55 Meridian IVR/I startup complete, assuming the link is up
07/28 16:55 VIP1 ADVISORY 100 Process Startup
07/28 16:55 Generations process ./trs terminated prematurely.
07/28 16:55 CLI ADVISORY 0 CLI Startup
07/28 16:55 DBS ADVISORY 800 Process Startup
07/28 16:55 CSC ADVISORY 1100 Process Startup
07/28 16:55 SAD ADVISORY 1300 Startup
```

## rstat

The **rstat** command resets the call audit, cell detail, channel usage, and subscriber statistics to zero.

To run the **rstat** command, type

```
rstat
```

at a UNIX shell prompt.

*The following confirmation message appears after you run the rstat command:*

```
Statistics Have Been Reset.
```

This command is also available through the IVR menu interface.

## **sched**

The **sched** utility manipulates and schedules events. This command must be run from the **/u/ivr/sys\_files** directory.

### **Command flags**

The following flags are available with the sched command.

Usage:

```
 sched -d
 -a application_name
 [-v]
 [-o outdial_number]
 {-t abs_time | -r n | -n n,mmddyyyhhmm}
 [-h handle] [-1 aa ... -5 aa]
```

OR

```
2] sched -u
 -e event_id [-v]
```

OR

```
3] sched -l
 -a application_name -o outdial_number [-v]
```

OR

```
4] sched -r {f,s}
```

## **testivr.vpf**

The testivr.vpf application in the **/u/ivr/apps** directory is used as a sanity check after installation. It is run from Application Management.

## **testfax.vpf**

The testfax.vpf application in the **/u/ivr/apps** directory is used as a sanity check for fax after installation. It is run from Application Management.

## Vrs tools

The following vrs tools are accessed through the `/u/ivr/vrs/tools` directory:

- `dpsm`
- `gmessage`
- `maudit`

### **dpsm**

The **dpsm** utility displays a channel map for the system.

#### **Command flags**

The following flags are available with the `dpsm` command.

Usage:

```
dpsm [-branch name] to specify the branch to use
[-audit chan] to specify a channel to audit
[-chan] to display a channel map
[-log] to display the alarm log
```

### **gmessage**

The **gmessage** utility is used by the system and is not intended for use by the user.

### **maudit**

The **maudit** utility displays the audit trail for a particular channel.

#### **Command flags**

The following flags are available with the `maudit` command.

Usage:

```
maudit [-channel #] for channel number
[-branch path] to specify the IVR branch
```

## Appendix E: X terminal support

---

Meridian IVR 2.0/I supports the following X terminals:

- MCX17 X terminal with a 17-inch color monitor
- Explora X terminal with a 17-inch color monitor

For Meridian IVR systems intended for application development, an X terminal with a 17-inch monitor is recommended.

The following sections describe how to cable and configure the X terminal for use with Meridian IVR.

### Cabling the X terminal

Information on unpacking and setting up the X terminal is provided in the material that accompanies the X terminal. This information includes instructions to

- unpack and inspect the X terminal
- attach the monitor to the base
- connect the monitor, mouse, and keyboard
- connect to a network using an ethernet connection
- connect to AC power and use the controls and indicators

Cabling the X terminal to the Meridian IVR application processor requires the following components:

- Transceiver cable (10 ft) (NT7D47EA)
- Ethernet transceiver (A0377957)
- Ethernet terminator (A0368825)
- “T” connector (A0368824)
- Ethernet cable (50 ft) [NT7D47BA (A0401138)]
- MCX17 17-inch color X terminal (AS8600)  
or  
NCD15R 15-inch monochrome X terminal (A0609632)
- DEC style keyboard (A0609639)

### **Procedure E-1**

#### **Connecting the X terminal to the application processor**

- 1 Connect one end of the transceiver cable (10 ft).
- 2 Connect the other end of the transceiver cable to the DB15 male side of the ethernet transceiver.
- 3 Connect a “T” connector to the BNC side of the ethernet transceiver.
- 4 Connect the thin ethernet cable (50/100 ft) to the “T” connector.
- 5 Ensure that a 50 Ohm terminator is installed in the opposite side of the “T” connector.
- 6 On the back panel of the X terminal, locate the network selection button. Ensure that this button is pressed to the “in” position for thin ethernet connection.
- 7 Connect the other end of the thin ethernet cable to a “T” connector.
- 8 Ensure that a 50 Ohm terminator is installed in the opposite side of the “T” connector.
- 9 Connect the “T” connector to the BNC “thin” position on the back panel of the X terminal base.

**Note:** The thin ethernet cable (NT7D47BA/BB) includes the “T” connectors (A0368824) and the 50 Ohm terminators (A0368825).

---

## Configuring the X terminal

The Meridian IVR system can be configured with one X terminal by the ethernet LAN. Performance may be negatively impacted if more than one X terminal is connected to a single Meridian IVR system.

Before setting up the X terminal with the Meridian IVR system, make sure you know the Internet Protocol (IP) addresses of both the application processor and the X terminal. These addresses and node names are configurable and are assigned by the network administrator.

The following procedure describes how to set up the X terminal to allow an auto-boot from the Meridian IVR system every time the X terminal is powered up, reset, or rebooted.

### Procedure E-2

#### Setting up the X terminal in the network

- 1 Ensure that the X terminal is connected to the Meridian IVR system as documented in the previous section.
- 2 Power up the X terminal. Self-testing begins.

*If you have an MCX17, the following messages appear. Similar messages appear for other types of X terminal.*

```
Boot Monitor V2.6.0
Testing code memory 4.0 Mbytes
Testing data memory 8.0 Mbytes
Network Controller passed xx.xx.xx:xx:xx:xx
Boot Monitor resolution 640X480 60Hz
Server Resolution 1024X768 75 Hz NCD
TFTP load <ESC> to abort
Searching for IP address ...
```

- 3 Press <ESC> (F11 on DEC-style keyboard) to abort. The following messages appear:

```
File transfer aborted
8-bit Color Boot Monitor
>
```

- 4 If you have a 17-inch color monitor made by Motorola or NCD, type the following:

**bt /tftpboot/Xncd17c XterminalIPAddress APIIPAddress**

If you have a 17-inch color monitor made by Explora, type the following:

**bt /tftpboot/Xncdtpl XterminalIPAddress APIIPAddress**

*Several lines of dots are displayed as the X terminal is booting. When the terminal finishes booting, the Meridian IVR login window appears on the X terminal. The terminal and host IP addresses are stored in the X terminal NVRAM. The X terminal will now automatically boot up without requiring this procedure.*

**Procedure E-3  
Rebooting the X terminal**

When the X terminal has been properly configured, it boots automatically upon power up. However, you should not reboot the X terminal by cycling the power off/on.

- 1** Press the Alt-F3 keys (for DEC-style keyboards) or the <F3> key (for PS2 keyboards) to access a graphical setup window. Fault conditions on the LAN may temporarily prevent access to the setup window.
- 2** Select "Reboot..." from the console menu and click OK to confirm X terminal reboot.

*This invokes a terminal reset and self-test, followed by automatic TFTP boot if the X terminal is properly configured and the Meridian IVR host is responding.*

*If TFTP boot fails or is aborted by pressing <ESC>, the Boot Monitor prompt is displayed. The rs command invokes a terminal reset and self test, followed by automatic TFTP boot if the X terminal is properly configured and the Meridian IVR host is responding.*

- 3** If the boot fails, type **rs** followed by <Enter>.

The **bt** command invokes TFTP boot. If the X terminal is not properly configured or if Meridian IVR system software is not installed and running, TFTP boot will time out and fail. If the Ethernet connections are faulty, you may see the message

Error: External Loopback. Check network connection.

**Procedure E-4****Responding to the default hosts login chooser window**

The Default Hosts Login Chooser window may be displayed if the Meridian IVR application processor stops responding to the X terminal server after it has already been booted. The host may stop responding because the system has been secured for shutdown or a power failure has affected the Meridian IVR system. Ethernet faults may also prevent host response.

When the Default Hosts Login Chooser window appears, the X terminal starts a 120-second timer and continuously requests a response from the default host IP. After the 120 seconds have elapsed, the X terminal stops looking for the host.

- 1 Select OK to restart the 120-second timer and have the X terminal resume looking for the host.

*When the Meridian IVR system has rebooted, it will respond to the X terminal and then display the Meridian IVR Login window.*

---

## Appendix F: Cable pinouts

---

This appendix provides connector pin assignments for the DigiBoard DB-25 connectors. Cabling information for the U.S. Robotics modem is also described.

### DigiBoard connectors

The pin assignments for DigiBoard DB-25 connectors follow the usual conventions for RS-232 wiring.

**Table F-1**  
**DB-25 connector pin assignments**

| Signal | Description         | DCE use   | Pin number |
|--------|---------------------|-----------|------------|
| GND    | Chassis Ground      | N/A       | Shell      |
| TxD    | Transmitted Data    | Input     | 2          |
| RxD    | Received Data       | Output    | 3          |
| RTS    | Request To Send     | Input     | 4          |
| CTS    | Clear To Send       | Output    | 5          |
| DSR    | Data Set Ready      | Output    | 6          |
| SG     | Signal Ground       | reference | 7          |
| DCD    | Data Carrier Detect | Output    | 8          |
| DTR    | Data Terminal Ready | Input     | 20         |
| RI     | Ring Indicator      | Output    | 22         |

## U.S. Robotics modem

The U.S. Robotics modem uses a standard shielded serial cable of the following description:

**To the PC** 9-pin female connector.

**To the Modem** 25-pin male connector.

## Appendix G: Customizing the user interface

---

You can customize the appearance of the Meridian IVR 2.0/I user interface to

- alter the appearance of interface elements
- translate Meridian IVR 2.0/I into foreign languages
- alter the wording of menu options

The changes you make will take effect immediately. No recompilation of source code is necessary.

### Modifying resource files/colors

The Snap and Snap\_bw resource files contain the colors used by Meridian IVR 2.0/I processes. Window manager and process independent color resources are stored in the .Xdefaults file.

As supplied, these files support 16-color and black-and-white systems. On displays which support more colors, you may wish to alter the appearance of the user interface by modifying the color entries in these files.

Should you decide to modify the supplied resource files, select colors from the palette which follows, or your changes may fail to work on systems that support only 16 colors.

### The Nortel 16 color palette

|              |            |
|--------------|------------|
| white        | red        |
| light blue   | peach puff |
| medium blue  | magenta4   |
| blue         | light gray |
| forest green | gray33     |
| yellow       | gray53     |
| orange       | gray75     |
| brown        | black      |

### The user interface language directory

The user interface language directory, referred to here as *ui\_lang*, supports the customization/internationalization feature. You can customize items (such as icons, user interface language files, error string files, and help text) in the *ui\_lang* directory for a particular language or special release.

An environment variable, `VOICE_LANG`, assigned within the user's `.profile`, points to the active *ui\_lang* directory. Nortel supplies the language files in U.S. English.

**Note:** If you want to set the language to something other than US English, you must modify the profile in the Nortel user's directory, and the gen script file in `/etc`,

If the Meridian IVR 2.0/I installation directory were called `/u/ivr` then the following `.profile` line would tell Meridian IVR 2.0/I to look inside `/u/ivr/ui_lang/en_US` for language specific files:

```
VOICE_LANG=en_US;export VOICE_LANG
```

If multiple languages are required for a project, you can create several VOICE\_LANG subdirectories to support them. Suggested choices for naming subdirectories appear in [Table G-1](#).

**Table G-1:**  
**VOICE\_LANG**

| Language   | Country     | Subdirectory |
|------------|-------------|--------------|
| Danish     | Denmark     | da_DK        |
| Dutch      | Belgium     | nl_BE        |
| Dutch      | Netherlands | nl_NL        |
| English    | Japan       | en_JP        |
| English    | U.K.        | en_GB        |
| English    | U.S.        | en_US        |
| Finnish    | Finland     | fi_FI        |
| French     | Belgium     | fr_BE        |
| French     | Canada      | fr_CA        |
| French     | France      | fr_FR        |
| French     | Switzerland | fr_CH        |
| German     | Germany     | de_DE        |
| German     | Switzerland | de_CH        |
| Icelandic  | Iceland     | is_IS        |
| Italian    | Italy       | it_IT        |
| Japanese   | Japan       | ja_JP        |
| Korean     | Korea       | ko_KR        |
| Norwegian  | Norway      | no_NO        |
| Portuguese | Portugal    | pt_PT        |

**Table G-1:  
VOICE\_LANG (Continued)**

|         |        |       |
|---------|--------|-------|
| Spanish | Spain  | es_ES |
| Swedish | Sweden | sv_SE |

## Items in the UI\_LANG directory

### Application Editor buttonlabel icons

The following files, located in the UI\_LANG directory, contain the icons used in the Application Editor cell palette as button labels. All icons are encoded in XPM (X Pixmap) format. These icons use colors from the Nortel 16-color palette.

|                 |                |
|-----------------|----------------|
| audio.xpm       | logo.xpm       |
| audio16.xpm     | message.xpm    |
| buf_manip.xpm   | message16.xpm  |
| buf_manip16.xpm | msg_db.xpm     |
| call_mgmt.xpm   | msg_db16.xpm   |
| call_mgmt16.xpm | out_dial.xpm   |
| clock.xpm       | out_dial16.xpm |
| clock16.xpm     | prompt.xpm     |
| comm.xpm        | prompt16.xpm   |
| comm16.xpm      | sql.xpm        |
| db.xpm          | sql16.xpm      |
| db16.xpm        | user.xpm       |
| execute.xpm     | user16.xpm     |
| execute16.xpm   | voice.xpm      |
| fax.xpm         | voice16.xpm    |
| fax16.xpm       |                |

|                 |  |
|-----------------|--|
| intrnatnl.xpm   |  |
| intrnatnl16.xpm |  |

### Control Panel Button Label Icons

The following icons are used in the Control Panel as button labels. All icons are encoded in XPM (X Pixmap) format. The Graphical User Interface Control Panel supports color and monochrome systems. When the Control Panel is launched, it tries to load icon files that end in `_4.xpm` (4-bit or 16 color icons). If this fails, it loads the set ending in `_1.xpm` (which contains only black and white icons).

|                    |                   |
|--------------------|-------------------|
| uif_database_1.xpm | uif_logo_1.xpm    |
| uif_database_4.xpm | uif_logo_4.xpm    |
| uif_editor_1.xpm   | uif_prompt_1.xpm  |
| uif_editor_4.xpm   | uif_prompt_4.xpm  |
| uif_help_1.xpm     | uif_reports_1.xpm |
| uif_help_4.xpm     | uif_reports_4.xpm |
| uif_icon_1.xpm     | uif_service_1.xpm |
| uif_icon_4.xpm     | uif_service_4.xpm |
| uif_lock_1.xpm     |                   |
| uif_lock_4.xpm     |                   |

### Help files

When you invoke help on a menu option or a cell in the Application Editor, the contents of one of the following files are displayed.

|             |          |          |
|-------------|----------|----------|
| addtext.hlp | DINS.hlp | QSEL.hlp |
| AMSG.hlp    | DMSG.hlp | QUPD.hlp |
| ANSW.hlp    | DOUT.hlp | RECP.hlp |
| BOUT.hlp    | EXEC.hlp | RETN.hlp |

|              |           |               |
|--------------|-----------|---------------|
| browser.hlp  | find.hlp  | RFAX.hlp      |
| buffers.hlp  | GAIN.hlp  | RMSG.hlp      |
| cell.hlp     | GMSG.hlp  | save_as.hlp   |
| CEND.hlp     | grid.hlp  | SFAX.hlp      |
| CHEK.hlp     | GSUB.hlp  | SNAP.hlp      |
| CMSG.hlp     | HANG.hlp  | STOR.hlp      |
| COMA.hlp     | LANG.hlp  | STPT.hlp      |
| COMI.hlp     | LDLV.hlp  | SUBS.hlp      |
| COMO.hlp     | MATH.hlp  | TIME.hlp      |
| COMP.hlp     | MENU.hlp  | TONE.hlp      |
| CONC.hlp     | MSGs.hlp  | UDLV.hlp      |
| CONP.hlp     | PDAT.hlp  | UMSG.hlp      |
| COUT.hlp     | PLAY.hlp  | UPDT.hlp      |
| DBs.hlp      | PMSG.hlp  | UPWD.hlp      |
| DCNP.hlp     | prefs.hlp | USER.hlp      |
| DDEL.hlp     | pte.hlp   | userFuncs.hlp |
| DEFAULTS.hlp | QCNT.hlp  | VINP.hlp      |
| DELV.hlp     | QDEL.hlp  | XFER.hlp      |
| DIAL.hlp     | QINS.hlp  |               |

**Error log**

Many Meridian IVR 2.0/I processes log events to the error log. The following files contain the text that appears in log entries. Previous versions of Meridian IVR 2.0/I maintained these files in the log.d directory.

|             |             |             |
|-------------|-------------|-------------|
| cli_erl.str | sam_erl.str | vft_erl.str |
|-------------|-------------|-------------|

|              |              |                               |
|--------------|--------------|-------------------------------|
| csc_erl.str  | sase_erl.str | vip_erl.str                   |
| db_s_erl.str | sde_erl.str  | Application Processor_erl.str |
| gds_erl.str  | trs_erl.str  | xai_erl.str                   |
| plf_erl.str  | trsc_erl.str | xpm_erl.str                   |
| qds_erl.str  | trsl_erl.str | severity                      |
| sad_erl.str  | ueh_erl.str  |                               |
| sai_erl.str  | ust_erl.str  |                               |

### Language files

Language files contain any text strings displayed within the Meridian IVR 2.0/I user interfaces. You can edit virtually everything that appears on the screen or in popup menus by modifying these files.

Language files contain a table of token (or menu option) and string pairs. **Do not alter the menu options.** Ensure that the string is on the same line as the menu option and separated from it by one or more spaces or tabs.

Encompass the string by double quotes. The string may consist of any sequence of printable ASCII characters or spaces. To designate a line as a comment, start it with a pound sign (#). For clarity, you can use both comments and blank lines.

**Note:** Pay close attention to any comments within the files noting limitations on string lengths. It is possible to insert strings that are too long to fit in the space provided on the screen.

Make copies of these files before modifying them. In addition, if a string contains formatting characters (%s, %d, etc.), ensure that these are not removed from the string or reordered, or unpredictable behavior may result.

The language files, named for their corresponding processes, follow:

|         |         |
|---------|---------|
| plf.lng | xae.lng |
| sai.lng | xai.lng |

|         |         |
|---------|---------|
| plf.lng | xae.lng |
| scm.lng | xpm.lng |
| sde.lng | xri.lng |
| uif.lng |         |

### Smarthelp

The uif.hlp file contains the SmartHelp (context sensitive help) text used for every menu selection in the Control Panel interface.

|                                                                                   |                                                                                                                        |
|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|
|  | <b>Warning!</b><br>The following files are used internally by the Control Panel process.<br><b>DO NOT MODIFY THEM.</b> |
|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|

|               |                           |
|---------------|---------------------------|
| uif_lng.uid   | Motif user interface file |
| uif_menu.uid  | Motif user interface file |
| uif_login.uid | Motif user interface file |

### Modifying the UIF.HLP file

When the system reads the uif.hlp file, it associates sections of text with pull-down menu selections. Sections of help text appears in the SmartHelp window when the user enters a menu selection with the mouse button depressed.

If you modify the pull-down menu option strings in the uif.lng file, be sure to modify the text enclosed within brackets in the uif.hlp file as well. The text in these files must match or context sensitive help will not function.

## Appendix H: Console redirection

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This chapter describes the procedures and requirements for redirecting the application processor console for remote support.

You require the following hardware and software to follow the procedures in this section:

- US Robotics 14,400 Sportster external modem
- BIOS version 1.00.15.BIO or later
- SCU version 3.20 or later

### **Procedure H-1**

#### **Setting up your system for remote support**

- 1 Ensure that the following values are set in SCU:  
Console Redirection: Enabled  
Com Port: COM1  
Serial Port Baud Rate: 9600 BPS  
Hardware Flow Control: None
- 2 Set the modem dip switches according to [Table I-1](#).
- 3 Reboot the application processor using a DOS boot disk.
- 4 Turn the external modem on.
- 5 Call into the modem from an external computer using a terminal program that supports ANSI and logon at 9600 bps.

**Table I-1**  
**Modem settings for console redirection**

| <b>Dip Switch</b> | <b>Value</b> | <b>Setting</b>                                            |
|-------------------|--------------|-----------------------------------------------------------|
| 1                 | ON           | Modem ignores DTR (override)                              |
| 2                 | OFF          | Display numeric result codes                              |
| 3                 | OFF          | Suppress result codes                                     |
| 4                 | ON           | Suppress local echo                                       |
| 5                 | OFF          | Enable auto answer                                        |
| 6                 | OFF          | Modem sends CD signal when it connects with another modem |
| 7                 | OFF          | Load NVRAM setup with power-on and ATZ reset              |
| 8                 | OFF          | Suppress command recognition                              |

---

## Appendix I: Error messages

---

The following messages can appear in the Transaction Log. A brief explanation for each message and suggests actions that you may need to take if the message appears in the Transaction Log is included. Messages are listed in numerical order. Each range of messages reports information for one of the processes within Meridian IVR 2.0/I. The message sources are as follows.

| <b>Message Range</b> | <b>Message Source</b>                  |
|----------------------|----------------------------------------|
| 0 TO 99:             | CALL LOGIC INTERPRETER (CLI)           |
| 100 TO 199:          | MRS INTERFACE PROCESS (VIP)            |
| 200 TO 299:          | MRS INPUT AND MRS OUTPUT PROCESS (MRS) |
| 300 TO 399:          | POOL MANAGER (PMG)                     |
| 400 TO 499:          | MRS RESOURCE MANAGER (VRM)             |
| 500 TO 518:          | SQL DATABASE SERVER (QDS)              |
| 600 TO 699:          | SYSTEM ADMINISTRATION INTERFACE (SAI)  |
| 700 TO 799:          | STATISTICS PROCESS (UST)               |
| 800 TO 899:          | DATABASE SERVER (DBS)                  |
| 900 TO 999:          | VOICE FILE TRANSFER PROCESS (VFT)      |
| 1000 TO 1099:        | USER FUNCTION PROCESS (USR)            |
| 1100 TO 1199:        | CALL SCHEDULER (CSC)                   |
| 1200 TO 1299:        | PROMPT LOADING FACILITY (PLF)          |

| Message Range | Message Source                                    |
|---------------|---------------------------------------------------|
| 1300 TO 1399: | SYSTEM ADMINISTRATION PROCESS (SAD)               |
| 1400 TO 1499: | GRAPHICAL SYSTEM MONITOR (XAI)                    |
| 1500 TO 1599: | SYSTEM APPLICATION MONITOR PROCESS (SAM)          |
| 1600 TO 1699: | ALTERNATE ERR:OR HANDLING PROCESS (UEH)           |
| 1700 TO 1799: | GRAPHICAL PROMPT MANAGER (XPM)                    |
| 1800 TO 1899: | TERMINAL RESOURCE SERVER (TRS)                    |
| 1900 TO 1999: | DATABASE EDITOR COMMAND LINE MESSAGES (SDE)       |
| 2000 - 2099:  | CLI_S                                             |
| 2100 - 2199:  | TRSC                                              |
| 2200 TO 2299: | GENERIC SQL DATA SERVER (GDS, IDS, ODS, FDS, SDS) |
| 2300 - 2399:  | SASE                                              |
| 2400 - 2499   | TRSL                                              |

*Note:* Some messages make references to commands or replies. These are the commands and replies that the application processor and the MRS use to communicate with each other.

## Messages 0 To 99: Call Logic Interpreter (CLI)

### 0 - CLI Startup

Meaning: The CLI process has been started.

Action to take: None. Notification only.

### 1-CLI Shutdown

Meaning: The CLI process has been stopped.

Action to take: None. Notification only.

### 2 - Unable to allocate Application Cell Table

Meaning: The CLI cannot allocate the memory necessary to store the application.

Action to take: Contact your Nortel service representative.

**3 - Unable to allocate Application Descriptor for: application\_name**

Meaning: The CLI cannot allocate the memory necessary to build the main control block for the application being loaded.

Action to take: Contact your Nortel service representative.

**4 - Unable to allocate Application Header**

Meaning: The CLI cannot allocate the memory necessary to read in the header portion of the application. It needs this information in order to build the internal structure for the application cell table.

Action to take: Contact your Nortel service representative.

**5 - File is NOT a valid VPF Application File: application\_name**

Meaning: The application that was requested to be loaded is of questionable origin. It must be produced with the Meridian IVR 2.0/I Application Editor to be tagged with the proper identifiers.

Action to take: Edit the application with the current version of the Application Editor.

**6 - Application Load: application\_name**

Meaning: This provides the time and date when the listed application was loaded or installed into the CLI.

Action to take: None. Notification only.

**7- Unable to read Offset Table**

Meaning: The CLI is unable to read the portion of the application file that contains the cell table and the offset to the portions of the file that contain the modifiers for each of the cells.

Action to take: Edit the application with the current version of the Application Editor and save the new version. This confirms that the application has not been corrupted or made obsolete.

**8 - Unable to open Application File: application\_name**

Meaning: The CLI cannot read the file that contains the application.  
This may be because the file is empty.

Action to take: Verify that the file exists, that it is not empty, and that the protections are set to allow reading.

**9 - Unable to read Application File: application\_name**

Meaning: The CLI cannot read the file that contains the application.  
The file may have been corrupted.

Action to take: Edit the file with the current version of the Application Editor and save the file again.

**10 - Application Startup: application\_name**

Meaning: The named application was started at the indicated date and time and is able to accept calls.

Action to take: None. Notification only.

**11 - Application Shutdown: application\_name**

Meaning: The named application was stopped at the indicated date and time and is unable to accept calls.

Action to take: None. Notification only.

**12 - Application Unload: application\_name**

Meaning: The named application was unloaded at the indicated date and time.

Action to take: None. Notification only.

**13 - Illegal Comparison Type in Instruction Stream**

Meaning: An illegal conditional expression exists in a cell definition.  
The instruction stream is corrupted, possibly because the version of the CDL compiler does not match the version of the CLI.

Action to take: Contact your Nortel service representative.

#### **14 - Illegal Cell Transition in Instruction Stream**

Meaning: A cell within the application requested a transition to a cell that does not exist. The application is most likely incomplete. Verify this by viewing the application with the Application Editor.

Action to take: Edit the application so that the cell transactions are correct.

#### **15 - Unable to read CELL directory**

Meaning: The directory of compiled cells could not be found by the CLI, and therefore no cell definitions will be available to execute any application.

Action to take: Verify that the CELLS directory exists in the home directory for Meridian IVR 2.0/I. Also verify that the directory contains files with the following extension: .cdsc

#### **16 - Failure fetching CELL cell\_number**

Meaning: The CLI was unable to obtain information about the next cell in the application to be executed. Either the requested cell is out of the application's range, or an I/O error occurred during a file read for the cell's modifiers.

Action to take: Use the Application Editor to verify that each cell in the application has branches to valid next cells, then save the application.

#### **17 - Unable to allocate Cell Header: cell\_name**

Meaning: The CLI cannot allocate the memory necessary to build the internal control block for the cell description.

Action to take: Contact your Nortel service representative.

#### **18 - Unable to allocate Cell Instruction Buffer: cell\_name**

Meaning: The CLI cannot allocate the memory necessary to be able to read in the compiled cell description code.

Action to take: Contact your Nortel service representative.

#### **19 - Failure locating Cell # number in Cell Cache**

Meaning: The CLI cannot find the cell description for the application cell identified by the number in the message.

Action to take: Check to see that the cell type in the application is a valid type, and that the cell directory has all of the cells necessary to run the application.

**20 - Invalid Value for Next Cell Number: number**

Meaning: The number of the next cell to execute is out of the range defined for the current application. There may be corruption of the internal control block or the application file.

Action to take: Use the current version of the Application Editor to verify that each cell in the application has branches to valid “next cells,” then save the application.

**21 - Unable to open CELL file: cell\_name**

Meaning: The CLI cannot open the disk file that contains the named cell description.

Action to take: Check to see that the file protections associated with the cell in the CELLS directory allow “read” privileges.

**22 - Unable to read Cell Header: cell\_name**

Meaning: The CLI cannot read the file that contains the cell description. This may be because the file is empty.

Action to take: Contact your Nortel service representative.

**23 - Unable to read Cell Instruction Stream**

Meaning: The CLI cannot read the compiled instruction stream from the cell description file, which when executed performs the cell action. This may be because the file has been corrupted or truncated.

Action to take: Contact your Nortel service representative.

**24 - Channel Control Block Allocation Error...**

Meaning: The CLI cannot allocate the memory necessary to build the internal control block for a channel (trunk) and therefore no application will be able to run on that channel.

Action to take: Contact your Nortel service representative.

### **25 - Channel from VRM Out of Range**

Meaning: The MRS Resource Manager (VRM) sent a message to the CLI about a channel that is outside the configuration range that the CLI knows about (the channel is not owned by the CLI).

Action to take: Contact your Nortel service representative.

### **26 - Channel Initialization Failure on trunk number**

Meaning: The MRS Interface Process (MIP) was unable to initialize a channel owned by the CLI. Therefore, no applications will be allowed to run on this channel.

Action to take: Contact your Nortel service representative.

### **27 - Invalid response for command: number**

Meaning: The MRS has sent an invalid reply to the indicated command.

Action to take: Contact your Nortel service representative.

### **28 - Start received on ACTIVE trunk number**

Meaning: Ringing was received on a channel that was already processing a call. Even though this is logically impossible for a stable running system, it can occur after a recovery from a MRS power outage, where a call was in progress on the application processor when the MRS suddenly went down (dropping all its calls) and the application processor was not notified about the call loss.

Action to take: Restart Meridian IVR 2.0/I.

### **29 - Channel number INACTIVE. STOP received**

Meaning: A call stop (hang-up) was received on a channel that had no active calls. In a heavily loaded system, a rare condition can occur where the application hangs up and the caller hangs up before the trunk is placed on-hook.

Action to take: None.

### **30 - Unexpected Response from Channel number**

Meaning: The Resource Manager (VRM) sent a message to the CLI concerning a channel that is within the configuration range, but was probably reserved for some other purpose.

Action to take: Contact your Nortel service representative.

### **31 - Unexpected Response from VRM. I/O not pending**

Meaning: The Resource Manager (VRM) sent a message to the CLI that contains data (for example, DTMF digits), but the CLI is not expecting any data. So, it does not know where to store the data to make it available to the application.

Action to take: Contact your Nortel service representative.

### **32 - Unknown response for command: number**

Meaning: The MRS has returned a reply to the indicated command and the CLI is unable to recognize the reply.

Action to take: Contact your Nortel service representative.

### **33 - Unknown CLI command: number**

Meaning: The CLI has received the indicated command, but is unable to recognize it.

Action to take: Contact your Nortel service representative.

### **34 - Cannot operate on complex types (LIST, PLIST, etc.)**

Meaning: This error indicates that a cell has been badly formed. Complex types are not allowed in expressions where a number or a buffer is normally expected. These types are similar to arrays, and should be indexed to provide one element instead of the entire structure.

Action to take: Contact your Nortel service representative.

### **35 - Illegal Data Location in Instruction Stream**

Meaning: This error indicates that a cell has been badly formed. A cell refers to an invalid data type or a data type that the CLI cannot handle.

Action to take: Contact your Nortel service representative.

**36 - ERROR sending message to DBS: command name**

Meaning: An internal error occurred while sending the command to the DBS.

Action to take: Contact your Nortel service representative.

**37 - Dispatch Enable Failure...**

Meaning: The CLI was unable to request the MRS Interface Process (VIP) to place a channel in a state that it is available to accept calls.

Action to take: Contact your Nortel service representative.

**38 - Endless loop detected on channel number**

Meaning: A circular path has been detected in the application where no services have been requested (for example, a cell transitions to itself.) To prevent possible lock-up of Meridian IVR 2.0/I, the call is ended.

Action to take: Edit the application and remove the infinite loop logic.

**39 - Global Index value number out of range**

Meaning: A global buffer was requested and its internal ID number is greater than the maximum allowable number of global buffers.

Action to take: Verify that the number of user-defined global buffers do not exceed the documented maximum.

**40 - Immediate Data Locations cannot be used as values**

Meaning: Immediate data, which is actually taken into a cell as a constant, cannot be changed by placing it on the left side of an assignment statement or in a position to receive a new value.

Action to take: Verify that all cells in the application use buffer names, and not constant values, wherever they are required.

#### **41 - Local Index value number out of range**

Meaning: A local buffer was requested and its internal ID number is greater than the maximum allowable number of local buffers. Local buffers are those that are used internally to a cell as temporary storage locations. This error indicates that a cell has been badly formed.

Action to take: Contact your Nortel service representative.

#### **42 - Modifier Index value out of range**

Meaning: This error indicates that a cell has been badly formed. An element was requested from a list (or paired list) and its index is greater than the dimension of the list.

Action to take: Contact your Nortel service representative.

#### **43 - Illegal Modifier Offset in Instruction Stream**

Meaning: A cell parameter was requested whose address is outside of the range expected by the cell. The application could have been created with a now obsolete version of the cell definitions.

Action to take: Edit and save the application so that the application and the cell definition will be synchronized.

#### **44 - Illegal Modifier Type in Instruction Stream**

Meaning: This error indicates that a cell has been badly formed. A cell refers to a data type for a parameter and the data type is invalid or is one that the CLI cannot handle.

Action to take: Contact your Nortel service representative.

#### **45 - Message Block Allocation Error...**

Meaning: The CLI cannot allocate the memory necessary to contain the contents of messages to be sent to or received from other processes.

Action to take: Contact your Nortel service representative.

**46 - Error reading message queue. Code = number**

Meaning: An error occurred while attempting to retrieve a message from another process. The code number indicates the problem.

Action to take: Contact your Nortel service representative.

**47 - Cannot modify Read Only System Buffers**

Meaning: The application attempted to modify a system buffer that was marked “read-only.” Information in the CHANNEL, REPLY CODE, and STATUS CODE buffers is available to the application but cannot be changed.

Action to take: Modify the application so that it does not try to write to these buffers. See the Applications Development Guide.

**48 - CELL Call Stack Overflow**

Meaning: A cell attempted to call too many subroutines or tried to call itself recursively. This indicates a badly formed cell.

Action to take: Contact your Nortel service representative.

**49 - CELL Call Stack Under flow**

Meaning: A cell has an improperly placed “RETURN” statement.

Action to take: Contact your Nortel service representative.

**50 - Illegal System Buffer Type in Instruction Stream**

Meaning: A cell referred to an illegal address for a System Buffer or a Predefined Global Buffer. This indicates that the cell has been badly formed.

Action to take: Contact your Nortel service representative.

**51 - Unknown Function Table**

Meaning: This indicates a badly formed cell. A cell referred to an entry in a non-existent runtime library. Runtime libraries contain tables of functions for communication to MRS’, the Database Server, and user-defined functions.

Action to take: Contact your Nortel service representative.

**52 - Wrong number of arguments in user function primitive**

Meaning: The number of parameters/modifiers supplied by the application is not the number expected by the user function process.

Action to take: Edit and re-save the application to synchronize it with cell definitions.

**53 - ERROR sending message to VRM: command name**

Meaning: An internal error occurred while sending the command to the VRM.

Action to take: Contact your Nortel service representative.

**54 - ERROR sending message to CSC: command name**

Meaning: An internal error occurred while sending the command to the CSC.

Action to take: Contact your Nortel service representative.

**55 - Attempt to play too many prompts**

Meaning: The application has requested that more than 32 prompts be played in a single request.

Action to take: Contact your Nortel service representative.

**56 - No application info available**

Meaning: The SAM has requested information on an application that does not exist.

Action to take: Contact your Nortel service representative.

**57 - Cleanup Handler Stack Overflow**

Meaning: An attempt was made to use too many cleanup handlers.

Action to take: Contact your Nortel service representative.

**58 - CLI Not Able to Make Enough Memory**

Meaning: CLI can not allocate memory for internal data structure.

Action to take: Contact your Nortel service representative.

**59 - Error sending message to QDS: command name**

Meaning: An internal error occurred while sending the command to the QDS.

Action to take: Contact your Nortel service representative.

**60 - Error sending message to PMG:**

Meaning: The cli failed while attempting to send a message to the PMG.

Action to take: Contact your Nortel service representative.

**61 - Error sending message to q\_id ipc\_queue\_number errno= error code**

Meaning: An internal error occurred while sending a process with the queue id ipc\_queue\_number. Error code provides the Meaning of the error.

Action to take: Contact your Nortel service representative.

**62 - Error sending message to SAD: errno= error code**

Meaning: An internal error occurred while sending a command to the SAD. Error code provides the Meaning of the error.

Action to take: Contact your Nortel service representative.

**63 - SUB call stack overflow**

Meaning: An attempt was made to nest subroutine calls more than 6 deep.

Action to take: Remove the last nested subroutine call (GSUB) from the application.

**64 - SUB call stack under flow**

Meaning: An attempt was made to return from a subroutine that was never executed.

Action to take: Make sure that there are no RETN cells in your application without a previous GSUB being executed.

**65 - Error reading system info error = error code**

Meaning: CLI can not read the sysgen.d file in the SYS\_files directory. File could be missing or have improper file permissions set.

Action to take: Select the System Configuration Manager from the System Administration icon on the Control Panel, and save the configuration file.

### **66 - Error sending message to TRS: command-name**

Meaning: An internal error occurred while sending command-name to the TRS.

Action to take: Contact your Nortel service representative.

### **67 - Buffer passed is empty**

Meaning: The Data Buffer parameter on the PDAT cell being executed has no value.

Action to take: Informational. PDAT will take the error branch.

### **68 - Unconnected cell found for chan = channel number appl:application name**

Meaning: The application has ended on the channel indicated running the application indicated because there is no next cell to execute.

Action to take: Load application into editor. Select, save, view, and resolve unconnected cells.

### **69 - No ASCII buffers passed**

Meaning: A request was made through either the FAX data file parameter of the SFAX cell or the Text File parameter of the SAY cell. However, no file name was specified.

Action to take: Load the application into the editor and verify that the text file name is being specified.

### **70 - Stopping Application**

Meaning: Meridian IVR 2.0/I is commencing the stop application process.

Action to take: None. Notification only.

### **71 - Application Stopped**

Meaning: The application has stopped.

Action to take: None. Notification only.

**72 - Statistics Exceeded 2K Limit**

Meaning:

Action to take:

**73 - Can't Send to cli\_s, stat=%ld Errorno=%ld Cmd=0x%x**

Meaning:

Action to take:

**74 - Total Calls=%ld**

Meaning:

Action to take:

**75 - PDAT: Value out of Range**

Meaning: A PDAT Cell attempted to play a value greater than 999,999,999,999. The PDAT Cell takes the Invalid Data branch. This is a limitation of the PDAT cell.

Action to take: Modify your application.

**Messages 100 to 199: MRS Interface Process (VIP)**

Some of these messages have prefixes. The prefix format for these messages relates to the current state of the channel.

**CH=xx ST=yy SS=zz CMD=cc**

where

xx is the channel number

yy is the channel state

zz is the channel substate

cc is the command or reply received (For more information on commands and replies, see the MRS Command Reference Manual)

**100 - Process Startup**

Meaning: The VIP process has been started.

Action to take: None. Notification only.

**101 - Process Shutdown**

Meaning: The VIP process has been stopped.

Action to take: None. Notification only.

**102 - vru\_diagnostic\_reply**

Meaning: This message contains the text of a CCC0 or CCC1 diagnostic reply that is returned to the application processor by the MRS.

Action to take: Contact your Nortel service representative.

**103 - CH=xx ST=yy SS=zz CMD=cc Cmd Link Not Empty**

Meaning: Data corruption has occurred in the channel control block for the indicated channel.

Action to take: Contact your Nortel service representative.

**104 - CH=xx ST=yy SS=zz CMD=cc Cmd Chain Corrupt**

Meaning: Data corruption has occurred in the channel control block for the indicated channel.

Action to take: Contact your Nortel service representative.

**105 - CH=xx ST=yy SS=zz CMD=cc Illegal Msg Src**

Meaning: A message was received on a channel from a process that did not own that channel.

Action to take: Check any user functions active at the time for possible misdirection of messages. If this is not the source of the problem, Contact your Nortel service representative.

**106 - CH=xx ST=yy SS=zz CMD=cc MRSmsg - Bad State**

Meaning: This message is generated when a message from the MRS is received in a state where no message should have been generated. This usually indicates that the current state of the VIP has lost synchronization with the MRS.

Action to take: Call Customer Service.

**107 - CH=xx ST=yy SS=zz CMD=cc Bad Call Flow Msg**

Meaning: A message that was not expected in the current state has been received.

Action to take: This reply does not in itself indicate an error condition, since queuing delays can cause commands and replies to lose synchronization occasionally. If this symptom is detected in conjunction with other problems, however, include it in any report to Customer Service.

**108 - CH=xx ST=yy SS=zz CMD=cc UNBUSY - not open**

Meaning: An attempt was made to unbusy (free) a trunk without registering a trunk open (channel initialization) request first.

Action to take: Check the order of operations performed when the current application was started. If this operation seems to have been performed correctly, Contact your Nortel service representative.

**109 - CH=xx ST=yy SS=zz CMD=cc Unexp Msg**

Meaning: A message that was not expected in the current state has been received.

Action to take: This reply does not in itself indicate an error condition, since queuing delays can cause commands and replies to lose synchronization occasionally. But if this symptom is detected in conjunction with other problems, include it in any report to Customer Service.

**110 - CH=xx ST=yy SS=zz CMD=cc Illegal Mode**

Meaning: Data corruption has occurred in the channel control block for the indicated channel.

Action to take: Contact your Nortel service representative.

**111 - CH=xx ST=yy SS=zz CMD=cc Illegal State**

Meaning: Data corruption has occurred in the channel control block for the indicated channel.

Action to take: Contact your Nortel service representative.

**112 - CH=xx ST=yy SS=zz CMD=cc Illegal Substate**

Meaning: Data corruption has occurred in the channel control block for the indicated channel.

Action to take: Contact your Nortel service representative.

**113 - CH=xx ST=yy SS=zz CMD=cc MRSmsg - Bad Substate**

Meaning: This message is generated when a message from the MRS is received in a state where no message should have been generated. This usually indicates that the current state of the VIP has lost synchronization with the MRS.

Action to take: Contact your Nortel service representative.

**114 - CH=xx ST=yy SS=zz CMD= cc MRSmsg - after Hang**

Meaning: This message is generated when a message from the MRS is received in a state where no message should have been generated. This usually indicates that the current state of the VIP has lost synchronization with the MRS.

Action to take: Contact your Nortel service representative.

**115 - CH=xx ST=yy SS=zz CMD=cc VRMmsg - Bad State**

Meaning: A message from the VRM is received in a state where no message should have been generated. This usually indicates that the current state of the VIP has lost synchronization with the VRM.

Action to take: Contact your Nortel service representative.

**116 - CH=<xx ST=yy SS=zz CMD=cc VRMmsg - Bad Mode**

Meaning: A message from the VRM is received in a state where no message should have been generated. This usually indicates that the current state of the VIP has lost synchronization with the VRM.

Action to take: Contact your Nortel service representative.

**117 - CH=xx ST=yy SS=zz CMD=cc CMD UNSUPPORTED**

Meaning: An attempt has been made to execute certain functionality that required a higher revision of the VIP.

Action to take: Check the revision of the VIP in use. If it is at least equal to the revision required to use the command, Contact your Nortel service representative.

**118 - CH=xx ST=yy SS=zz CMD=cc VSM action failed**

Meaning: An error was encountered in processing the current action.

Action to take: Contact your Nortel service representative.

**119 - CH=SYS CMD=cc Channels not enabled**

Meaning: Commands or replies have been directed at a channel that has not yet been initialized and removed from the busy state.

Action to take: Contact your Nortel service representative.

**120 - CH=SYS CMD=cc Bad Channel Number**

Meaning: A command has been directed at a channel and its number is greater than the maximum allowable channel in the system.

Action to take: Contact your Nortel service representative.

**121 - CH=SYS CMD=cc Request Queue Corrupted**

Meaning: Data corruption has occurred in the system control block request queues.

Action to take: Contact your Nortel service representative.

**122 - CH=SYS CMD=cc Badly formed Request**

Meaning: A command received on the system channel had contradictory parameters or options.

Action to take: Examine the application or set of instructions that generated the command.

**123 - CH=SYS CMD=cc Illegal Msg Src**

Meaning: A system control message was received from a process that did not own the system channel.

Action to take: Check any user functions that were active at the time to see if they may have misdirected a message.

**124 - CH=SYS CMD=cc Unexp Msg**

Meaning: The VIP has received a request on the system channel that it does not support.

Action to take: Check any user functions active at the time for possible inappropriate requests to the system channel.

**125 - CH=SYS CMD=cc Rcvd Sysopen while opening sys**

Meaning: Internal to code. No Meaning for user.

Action to take: Contact your Nortel service representative.

**126 - CH=SYS CMD=cc Illegal Channel Close**

Meaning: Internal to code. No Meaning for user.

Action to take: Contact your Nortel service representative.

**127 - CH=SYS CMD=cc CC REPLY - AP Errors detected**

Meaning: An error has been detected during MRS diagnostics.

Action to take: Contact your Nortel service representative.

**128 - CH=SYS CMD=cc CC REPLY - FATAL Errors detected**

Meaning: An error has been detected during MRS diagnostics.

Action to take: Refer to the MRS Command Reference Manual for information about error replies and diagnostic procedures.

**129 - CH=SYS CMD=cc CC REPLY - No Disk Report**

Meaning: An error has been detected during MRS diagnostics.

Action to take: Refer to the MRS Command Reference Manual for information about error replies and diagnostic procedures.

**130 - CH=SYS CMD=cc CC REPLY - Async CC rcvd**

Meaning: The MRS has been physically reset (as opposed to being reset via a software request).

Action to take: Check with your system administrator or check the Transaction Log to determine if the reset was intentional, accidental, or unexplained.

**131 - No Buffers available**

Meaning: The VIP has run out of buffers to use for the transactions.

Action to take: Shut down and restart the MRS in question. Consult the installation manual for information concerning system loading for your software configuration.

**132 - Disk xx is xx percent full**

Meaning: The indicated disk is approaching its capacity.

Action to take: Purge the disk.

**133 - Message Queue Corrupted**

Meaning: The VIP has received a message from a process that is not registered to communicate with it.

Action to take: Check any user function active at the time for possible misdirection of messages.

**134 - CH=xx CMD=cccc VSN=yyyy ERR:=zz Play VSN Error**

Meaning: The MRS has returned the indicated reply to report an error in playing a VSN. Consult your MRS Command Reference Manual for more information about the indicated reply.

Action to take: If the reply has to do with the existence (or non-existence) of a VSN, refer this information to the system administrator so that person can correct the problem. If the error was a hardware-related error, refer to diagnostic procedures in your MRS Product Manual.

**135 - CH=xx CMD=cccc VSN=yyyy ERR:=zz Record VSN Error**

Meaning: The MRS has returned the indicated reply to report an error in recording a VSN. Consult your MRS Command Reference Manual for more information about the indicated reply.

Action to take: If the reply has to do with the existence (or non-existence) of a VSN, refer this information to the system administrator so that person can correct the problem. If the error was a hardware-related error, refer to diagnostic procedures in the MRS/Tower Product Manual.

**136 - CH=xx STATUS=ss ANI ERROR**

Meaning: An ANI hardware error occurred when ANI was in use by the indicated channel. The status code in this message is the status code from the ANI reply.

Action to take: For information about the Meanings of ANI replies, see the MRS Command Reference Manual.

**137 - Major Alarm Detected**

Meaning: The handshake protocol on the MRS command link has detected a loss of communications with the MRS. This loss of communications usually results in a major alarm.

Action to take: Check the RS-232 cable or Ethernet cable connecting the application processor to the MRS to ensure that it is firmly connected. If this is not the problem, Contact your Nortel service representative.

**138 - Failure to write statistics**

Meaning: A queue write failed on a statistics process reply, most likely due to an overflow condition on queue traffic.

Action to take: Shut down the MRS in question. Consult the installation manual for information concerning system loading for your hardware configuration.

**139 - CMD=AA CH= xx DISK= dd VSN= nnnn ERR:= ee PLX = ss**

Meaning: A disk error has occurred while processing a request on channel xx. The error occurred at vsn nn on disk dd, an error of ee. If disk mirroring exists on your system, the status of the mirroring is specified in the code ee.

Action to take: Contact your Nortel service representative.

**140 - CMD=BF CH= xx ERR:= ee - Trunk Error**

Meaning: Internal to code. No Meaning for user.

Action to take: Contact your Nortel service representative.

**141 - CH= xx CMD=eeee VSN- nnnn FAX VSN Err**

Meaning: The MRS has returned the indicated reply to report an error in faxing a VSN. Consult your MRS Command Reference Manual for more information about the indicated reply.

Action to take: If the reply has to do with the existence (or non-existence) of a VSN, refer this information to the System Administrator so that person can correct the problem.

**142 - CMD=AC E RRR= Err**

Meaning: Internal to code. No Meaning for user.

Action to take: Contact your Nortel service representative.

**143 - CMD=AC E RRR= Err - MRS is shutting down**

Meaning: A power failure has occurred and the MRS will be shutting down.

Action to take: None, your applications will automatically resume execution once the MRS comes back up.

**144 - CH= xx - Too many digits buffered**

Meaning: More than 64 digits were pressed on channel xx without a digit request being issued by the application.

Action to take: Make sure that your application contains MENU or GDAT cells to collect digits pressed by the user.

**145 - CH= xx CMD= cccc Null Pointer**

Meaning: The command cccc was issued to channel xx which is not a legal channel.

Action to take: Contact your Nortel service representative.

**146 - CH= xx CMD= cccc STATUS=ssss Bad Digit Reply**

Meaning: An error has occurred in digit collection.

Action to take: Contact your Nortel service representative.

**147 - CH= xx CMD= cccc STATUS=ssss Text to Speech VSN Err**

Meaning: The VSN number doesn't exist.

Action to take: Contact your Nortel service representative.

**148 - CH= xx CMD= cccc STATUS=ssss Text to Speech Chan Err**

Meaning: The channel number is in the wrong range.

Action to take: Contact your Nortel service representative.

**149 - CH= xx CMD= cccc STATUS=ssss Text to Speech HWR Err**

Meaning: There is a problem with the Text to Speech Board.

Action to take: Contact your Nortel service representative.

## **Messages 200 To 299: MRS Input And MRS Output Process (MRS)**

### **200 - Process Startup**

Meaning: The MRS process has been started.

Action to take: None. Notification only.

### **201 - Process Shutdown**

Meaning: The MRS process has been stopped.

Action to take: None. Notification only.

### **202 - Cannot Open Queues**

Meaning: Initialization failed on the queues for the indicated process.

Action to take: Shut down the whole system and ensure that all queues have been removed (super-user status may be required for this).

### **203 - NAKd xx Times on buffer**

Meaning: The MRS Input process has received a reply that is garbled and exceeds the maximum retry limit in attempting to receive it properly.

Action to take: Check the baud rate setting.

### **204 - Queue Write to VIP failed**

Meaning: A queue write failed on a MRS reply. This is most likely due to an overflow condition on queue traffic.

Action to take: Shut down and restart the MRS in question. Consult the installation manual for information concerning system loading for your hardware configuration.

### **205 - Queue Write to VTO failed**

Meaning: A queue write failed on a MRS reply. This is most likely due to an overflow condition on queue traffic.

Action to take: Shut down and restart the MRS in question. Consult the installation manual for information concerning system loading for your hardware configuration.

### **206 - Cannot open VSNs File: vsn\_file\_name**

Meaning: An error has been detected in opening the VSN file.

Action to take: Check the permission on the file and make sure that no two MRS'MRS' are using the same file name.

### **207 - Delete reply - Bad VIP write chan= cc vsn= xxxx**

Meaning: A queue write failed on a delete reply. This is most likely due to an overflow condition on queue traffic. The status of the VSN in question will be accurately reflected in the VSNs file; however, this error can cause the delete queue

Action to take: Shut down and restart the MRS in question. Consult the installation manual for information concerning system loading for your hardware configuration.

### **208 - VSN file access before opened**

Meaning: An attempt was made to update the VSN file before it had been successfully opened.

Action to take: The MRS process has been restarted without the VRM having reissued a system\_open, or the VSN file open has failed.

### **209 - Seek failed on valid vsn in VSN file xxxxx**

Meaning: An error was detected in accessing the VSNs file.

Action to take: Call Customer Service.

**210 - Read failed on valid vsn in VSN file xxxxx**

Meaning: An error was detected in accessing the VSN file.

Action to take: Call Customer Service.

**211 - Write failed on valid vsn in VSN file xxxxx**

Meaning: An error was detected in accessing the VSN file.

Action to take: Call Customer Service.

**212 - Write failed on com port**

Meaning: A transmission has occurred in writing to a MRS.

Action to take: Check the cable that is being used to communicate with the MRS.

**213 - ACK or NAK Write failed to com port**

Meaning: A transmission has occurred in writing to a MRS.

Action to take: Check the cable that is being used to communicate with the MRS.

**Messages 300 To 399: Pool Manager (PMG)**

**300 - Startup**

Meaning: The pmg process has started up.

Action to take: None. This is not an error message.

**301 - Shutdown**

Meaning: The pmg process has shut down.

Action to take: None. This is not an error message.

**302 - ERROR sending message to PROC. dst\_id = %ld**

Meaning: The pmg failed while attempting to send a message to PROC.

Action to take: Call Customer Service.

**303 - ERROR sending message to CLI. dst\_id = %ld**

Meaning: The pmg failed while attempting to send a message to the cli.

Action to take: Call Customer Service.

**305 - Could not alloc memory for outdial pool**

Meaning: Failed to allocate memory for outdial pool data storage.  
System resource error.

Action to take: Call Customer Service.

**306 - Could not alloc memory for channel %ld**

Meaning: Failed to allocate memory for channel data storage. System  
resource error.

Action to take: Call Customer Service.

**307 - Could not alloc memory for channel link**

Meaning: Failed to allocate memory for channel link data storage.  
System resource error.

Action to take: Call Customer Service.

**308 - Could not alloc memory for request link; lost msg**

Meaning: Failed to allocate memory for request link data storage.  
System resource error.

Action to take: Call Customer Service.

**309 - No such link in pool**

Meaning: An operation referenced a channel that does not exist in this  
outdial pool.

Action to take: Call Customer Service.

**310 - no such pool**

Meaning: An operations referenced an outdial pool that does not exist.

Action to take: Call Customer Service.

**311 - No free channels to allocate**

Meaning: There are no outdial channels available for allocation to an  
application that is requesting one. There must be enough  
outdial channels for all requests, or at some time, this  
message will be logged.

Action to take: Make more outdial channels available in your configuration, or schedule less applications.

**312 - Failed to remove a channel link**

Meaning: An operation referenced a channel that does not exist in this outdial pool.

Action to take: Call Customer Service.

**313 - Channel %ld does not exist in channel array**

Meaning: A channels unavailable message from the vrm referenced a channel that had never been available.

Action to take: Call Customer Service.

**314 - NULL application name in message**

Meaning: Bad interprocess message or corrupt interprocess message.

Action to take: Call Customer Service.

**315 - Could not create a pool**

Meaning: Failed to allocate memory for outdial pool data storage.

Action to take: Call Customer Service.

**316 - Could not delete a pool**

Meaning: An outdial pool whose channels were all deassigned could not be deleted and its memory could not be freed.

Action to take: Call Customer Service.

**317 - Can not use generic pool name for dedicated pool**

Meaning: The Meridian IVR 2.0/I generic outdial pool is named gen\_pool. Any other dedicated outdial pool is given the name of its application. That application can not be named gen\_pool.

Action to take: Rename the application.

**Messages 400 To 499: MRS Resource Manager (VRM)**

**400 - Process startup**

Meaning: The MRS Resource Manager process has begun executing.

Action to take: None. This is not an error message.

#### **401 - Process shutdown**

Meaning: The MRS Resource Manager has been shut down.

Action to take: None. This is not an error message.

#### **402 - No more room in DISTRIBUTE queue**

Meaning: Too many DISTRIBUTE requests have been made before previous requests have completed. The VRM can hold up to 64 outstanding DISTRIBUTE requests. The queue will overflow under the following conditions:

More than 64 DISTRIBUTE requests were sent at one time to the VRM.

The VIPs, MRSIOs, or MRS are not responding to the current DISTRIBUTE request.

Action to take: Make sure that the VIP and MRSIO processes are still running and that the MRS is still running.

#### **403 - COPY request did not get sent properly to path id xx**

Meaning: COPY message could not be sent to the process with the following mail queue id: path id.

Action to take: Call Customer Service.

#### **404 - MRS45 COPY request queue is corrupt**

Meaning: The request queue for MRS-45 (MessagePaths) COPIES is in an invalid state. The VRM will shut down immediately after this message is written to the Transaction Log.

Action to take: Contact Customer Service.

#### **405 - Couldn't free buffer!**

Meaning: A fatal error has occurred in the VRM where mail buffers could not be freed. The VRM will shut down immediately after this error is written to the Transaction Log.

Action to take: Contact Customer Service.

**406 - Resource list for channel xx is corrupt**

Meaning: The resource list for the specified channel is in an invalid state. While in this state, the channel may not allocate any resources.

Action to take: Contact Customer Service.

**407 - Trunks cannot be allocated for MRS xx, cage xx**

Meaning: A trunk resource for outdialing could not be allocated on MRS number xx.

Action to take: Check the system configuration file to make sure that there are enough trunks specified with the direction type OUTPUT for the applications that are being executed.

**409 - Illegal OUTDIAL type: xx**

Meaning: An illegal outdial request has been made.

Action to take: Call Customer Service.

**410 - Error reading system info errno= xx**

Meaning: The VRM could not read the sysgen.d file. The VRM will shut down after this message is written to the Transaction Log.

Action to take: Make sure that the sysgen.d file resides in the proper directory and that it is not locked.

**411 - Error reading vru info errno= xx**

Meaning: The VRM could not read the sysgen.d file. The VRM will shut down after this message is written to the Transaction Log.

Action to take: Make sure that the file is not locked.

**412 - Error opening VSN file: filename**

Meaning: The VRM could not open a VSN file. The VRM will shut down after this message is written to the Transaction Log.

Action to take: Make sure that vsn1.data, vsn2.data, vsn3.data, and vsn4.data reside in the sys\_files directory located in the base directory of Meridian IVR 2.0/I.

**414 - Couldn't read VSN info from file: errno= xx**

Meaning: The VRM could not read a VSN file. The VRM will shut down after this message is written to the Transaction Log.

Action to take: Make sure that the file is not locked.

**415 - Ran out of free buffers.**

Meaning: A fatal error has occurred - the VRM cannot allocate any more mail buffers. The VRM will shut down after this message is written to the Transaction Log.

Action to take: Contact Customer Service.

**416 - Cannot access MRS controlled by VIP xx**

Meaning: A request has been sent to a MRS that never booted.

Action to take: Make sure that the specified MRS is operational.

**417 - Couldn't allocate free buffer pool**

Meaning: The VRM could not allocate the memory needed by its internal structures. The VRM will shut down after this message is written to the Transaction Log.

Action to take: Contact Customer Service.

**418 - Couldn't initiate link with CLI**

Meaning: The VRM could not establish a communication path with the CLI process. The VRM will shut down after this message is written to the Transaction Log.

Action to take: Contact Customer Service.

**419 - Couldn't initiate link with SAD**

Meaning: The VRM could not establish a communication path with the SAD (System Administration) process. The VRM will shut down after this message is written to the Transaction Log.

Action to take: Contact Customer Service.

**420 - Couldn't initiate link with VFS**

Meaning: The VRM could not establish a communication path with the VFS process. The VRM will shut down after this message is written to the Transaction Log.

Action to take: Contact Customer Service.

**421 - Couldn't initiate link with PLF**

Meaning: The VRM could not establish a communication path with the PLF (Prompt Loading Facility) process. The VRM will shut down after this message is written to the Transaction Log.

Action to take: Contact Customer Service.

**422 - Couldn't initiate link with CSC**

Meaning: The VRM could not establish a communication path with the CSC process. The VRM will shut down after this message is written to the Transaction Log.

Action to take: Contact Customer Service.

**423 - Couldn't initiate link with PMG**

Meaning: The VRM could not connect to the pool manager process. Meridian IVR 2.0/I will not start in this event. Check that the pmg binary is in the exe directory, and that it is executable. If this is unsuccessful,

Action to take: Check that the pmg binary is in the exe directory, and that it is executable. If this is unsuccessful, contact Customer Service.

**424 - Couldn't initiate link with VIP xx**

Meaning: The VRM could not establish a communication path with a VIP process. The VRM will shut down after this message is written to the Transaction Log.

Action to take: Contact Customer Service.

**425 - COPY queue for MRS xx is corrupt**

Meaning: The queue for COPY requests for the specified MRS is in an invalid state.

Action to take: Contact Customer Service.

#### **426 - OTHER queue for MRS xx is corrupt**

Meaning: The queue for system channel requests for the specified MRS is in an invalid state.

Action to take: Contact Customer Service.

#### **427 - Network hardware is not available to MRS xx**

Meaning: The physical link to a networking device (SafePaths, MessagePaths) is not present and the user specified the use of a networking device in the sysgen.d file. The system will continue to run under this condition; however, prompt and message distribution cannot be made to the specified MRS.

Action to take: Check the SCSI link from the networking device to the specified MRS.

#### **428 - Couldn't reset MRS controlled by VIP xx**

Meaning: The specified MRS did not boot successfully. The system will continue to run under this condition; however, no calls can be serviced by the specified MRS.

Action to take: Make sure that the specified MRS is operational.

#### **429 - Alloc for channels available info was unsuccessful**

Meaning: The VRM could not find enough memory for an internal data structure. The VRM will shut down after logging this message.

Action to take: Contact Customer Service.

#### **430 - Command xx for channel xx was REJECTED by VRM**

Meaning: The VRM received an illegal request for the specified channel.

Action to take: Make sure that the process that made the request has initialized the specified channel.

**431 - Command xx for channel xx was REJECTED by VIP xx**

Meaning: The specified VIP has received an illegal request for the specified channel.

Action to take: This reply does not in itself indicate an error condition, since queuing delays can cause commands and replies to lose synchronization occasionally. But if this symptom is detected in conjunction with other problems, include it in any report to Customer Service.

**432 - Free list for rsrc xx subtype xx is corrupted**

Meaning: The resource type with subtype listed in the message has a corrupt queue. Consequently, free resources cannot be added to the system. The VRM will continue to run in this situation. However, the number of free resources of this type may begin to decrease over time and eventually a restart of the software may be necessary.

Action to take: Contact Customer Service.

**433 - Couldn't allocate a VSN on MRS xx**

Meaning: There are no more VSNs available for recording messages.

Action to take: Purge the disk or disks on the specified MRS.

**434 - Couldn't allocate a buffer**

Meaning: The VRM cannot allocate any more mail buffers and will shut down after this message is logged.

Action to take: Contact Customer Service.

**435 - Got response xx from VIP xx w/o a previous request**

Meaning: The VRM received an unexpected response from the specified VIP.

Action to take: Contact Customer Service.

**436 - ANI trunks active in MRS xx 55 Subsys xx, no paths**

Meaning: The user has configured the trunk boards in the specified MRS to be ANI boards, but there are no common audio paths available to support these trunk boards. The system will continue to run under this condition. However, calls cannot be serviced on the trunks that are configured as ANI.

Action to take: Check the number of reserved audio paths for the specified MRS.

**438 - Error opening trunk\_init.d errno= xx**

Meaning: The VRM could not open the trunk initialization file trunk\_init. d. The VRM will shut down after logging this message.

Action to take: Check to see that the trunk\_init.d file exists in the ../sys\_files directory.

**439 - Error reading trunk init info errno= xx**

Meaning: The VRM could not read the trunk initialization file trunk\_init. d. The VRM will shut down after logging this message.

Action to take: Make sure the file is not locked.

**440 - Wait list for rsrc xx subtype xx is corrupted**

Meaning: The queue for pending resource requests of the types listed is in an invalid state.

Action to take: Contact Customer Service.

**441 - Illegal rsrc xx subtype xx was specified**

Meaning: A request for an invalid resource was made.

Action to take: Contact Customer Service.

**442 - Unreserving rsrc xx subtype xx while in use**

Meaning: An attempt has been made to free a resource that is still being utilized by another channel or channels. The request for freeing the specified resource will not be executed.

Action to take: Make sure that no channels are using the resource before freeing it.

**443 - Rsrc xx subtype xx is already free**

Meaning: The queue for free resources of the specified type is in an invalid state.

**444 - Disk xx on vru xx is full**

Meaning: No more messages can be saved on the specified disk.

Action to take: Purge the disk.

**445 - Couldn't allocate memory for prompt stat list**

Meaning: There is not enough memory available for an internal data structure. The VRM will shut down after logging this message.

Action to take: Contact your Nortel service representative.

**446 - No more room in handle list for channel number**

Meaning: An internal data structure is full. The VRM will continue to run. However, prompts that are currently being installed through the PLF may not play back properly.

Action to take: Contact your Nortel service representative.

**447 - Prompt number could be interrupted during play**

Meaning: An internal data structure is full. The VRM will continue to run. However, prompts that are currently being installed through the PLF may not play back properly.

Action to take: Contact your Nortel service representative.

**448 - Timer number was not requested by the vrm**

Meaning: The UTM process sent an illegal message to the VRM.

Action to take: Contact your Nortel service representative.

**449 - Couldn't initiate link with TMR**

Meaning: The VRM could not establish a communication path with the TMR process. The VRM will shut down after this message is written to the Transaction Log.

Action to take: Contact Customer Service.

#### **450 - Trunk tt on MRS vv does not support ANI**

Meaning: The user specified a trunk initialization type of ANI1, ANI2, ANI3, or ANI4 for trunk tt through the System Configuration Manager (SCM), however this trunk does not physically contain this capability.

Action to take: If you do not wish to initiate calls with MF detection, change the trunk initialization type specified for the trunk in the SCM. Otherwise make sure the specified trunk is configured properly in the MRS.

#### **451 - Couldn't allocate memory for res rr subtype ss: structure type**

Meaning: There is not enough memory available for an internal data structure. The VRM will continue to operate, however no resources of the type listed will be available to the applications running.

Action to take: Contact your Nortel service representative.

#### **452 - No memory allocated for res rr subtype ss: structure type**

Meaning: A request was made for a resource that the VRM has no knowledge about.

Action to take: Contact your Nortel service representative.

#### **453 - No rsrcrs available of type rr subtype ss**

Meaning: A request was made for a resource that does not exist in the system.

Action to take: Make sure that the MRS(s) connected to your application processor contain the proper resources.

#### **454 - Error reading trunk info errno\_ ee**

Meaning: The VRM could not read the sysgen.d file. The VRM will shut down after this message is written to the transaction log.

Action to take: Make sure the sysgen.d file resides in the proper directory and that it is not locked.

**456 - Could not get vocabulary type and id**

Meaning: Could not match an existing vocabulary with one that actually exists on the voice recognition board.

Action to take: Verify that a mrvv.config file exists in the sys\_files directory, and that it matches what is actually loaded on the voice recognition board. In addition, check that the tokens used in mrvv.config match the tokens in the xae.lng file.

**457 - ERROR sending message to PMG :**

Meaning: The vrm failed while attempting to send a message to the PMG.

Action to take: Contact your Nortel service representative.

**Messages 500 To 518: SQL Database Server (QDS)**

**500 - Process Startup**

Meaning The SQL database server process has started.

Action to take None. This is not an error message.

**501 - Process Shutdown**

Meaning The SQL database server process has been shut down.

Action to take None. This is not an error message.

**502 - IPC Send Fail (merror=MMMM, errno=UUUU):  
process\_name**

Meaning An attempt to send a message from the QDS to the process specified failed. The UNIX error number is UUUU, the message library error number is MMMM.

Action to take This is a serious condition indicating the Interprocess communications through the operating system are failing. Bring the system down and restart.

**503 - IPC partial Receive: Command=0x%08lx**

Meaning The previous SQL request was only partially received. The first part is not acted upon and the application will take the ERROR branch from the cell.

Action to take Examine the overall load and number of dataservers currently running on the system.

**504 - Illegal Command Received. (Cmd=%lx, src=%ld)**

Meaning An illegal command was sent to the QDS.

Action to take The QDS exits on its own.

**505 - Message from unknown source. Qid=%ld**

Meaning A command was send from an unknown client.

Action to take The QDS exits on its own.

**506 - Trace Enabled: filename**

Meaning The qds will provide trace information in the file specified.

Action to take (none)

**507 - Trace Disabled**

Meaning The qds has stopped tracing information.

Action to take (none)

**508 - Extended Diags Enabled:**

Meaning The qds will provide detailed diagnostics in the file specified.

Action to take (none)

**509 - Extended Diags Disabled**

Meaning The qds has stop providing detailed diagnostics.

Action to take (none)

**510 - Caught Unix Signal %ld, Aborting.**

Meaning An erroneous UNIX signal has been trapped by the qds.

Action to take The qds exits on its own.

**511 - No SQL Data Server: RDBMS**

Meaning The specified database type is not supported (INGRES, ORACLE, SYBASE, INFORMIX)

Action to take    Modify the default cell of the offending application and specify a supported RDBMS.

**512 - Cannot Access SQL Data Server: servername (RDBMS)**

Meaning            The servername (ids, ods, fds, sds) executable is missing from the exe directory.

Action to take    Re-install SQLeasy.

**513 - Cannot Execute SQL Data Server: servername (RDBMS)**

Meaning            The servername (ids, ods, fds, sds) executable has the wrong permissions.

Action to take    Re-install SQLeasy.

**514 - Abnormal Exit (qid=xxxx): classname**

Meaning            The SQL process with the classname specified has exited on its own.

Action to take    The qds shuts itself down.

**515 - Max number of servers have been started: servername (RDBMS)**

Meaning            The licensed number of SQLeasy servers for the particular type has been exceeded.

Action to take    Increase the licenses or lower the count in the default cells of the applications that use the RDBMS in question.

**516 - SQL option not enabled for dbms type: RDBMS**

Meaning            There are no licenses for the specified RDBMS.

Action to take    Acquire a license.

**517 - No resources to handle request: Command=0x%lx**

Meaning            There is not enough built-in queues for the QDS to buffer requests to GDS processes.

Action to take    Increase the number of GDS processes.

**Messages 600 To 699: System Administration Interface (SAI)**

600 - SAI: Startup

Meaning: The SAI process has been started.

Action to take: None. Notification only.

**601 - SAI: Shutdown**

Meaning: The SAI process has been stopped.

Action to take: None. Notification only.

**602 - SAI: Unknown CLI response:**

Meaning: Internal to code. No Meaning for user.

Action to take: Contact your Nortel service representative.

**603 - SAI: Unknown DBS response:**

Meaning: Internal to code. No Meaning for user.

Action to take: Contact your Nortel service representative.

**604 - SAI: ERR:OR sending message to CLI:**

Meaning: Internal to code. No Meaning for user.

Action to take: Contact your Nortel service representative.

**605 - SAI: ERR:OR sending message to DBS:**

Meaning: Internal to code. No Meaning for user.

Action to take: Contact your Nortel service representative.

**606 - SAI: Message Block Allocation Error...**

Meaning: The SAI cannot allocate the memory necessary to contain the contents of messages to be sent to or received from other processes.

Action to take: Contact your Nortel service representative.

**607 - SAI: Error reading message queue. Code= xx**

Meaning: An error occurred while attempting to retrieve a message from another process. The code number indicates the problem.

Action to take: Contact your Nortel service representative.

**608 - SAI: Message from Unknown Source. ID= xx**

Meaning: Internal to code. No Meaning for user.

Action to take: Contact your Nortel service representative.

**609 - Miscellaneous messages that are generated by the SAI when a request made by the user results in a failure.**

Meaning: Some examples of possible messages are:  
Application appl\_name could not be loaded, already loaded.  
Channel chan\_num could not be assigned to application name appl\_name.

Action to take: Consult the Application Management screen to make sure that the proper applications are loaded and the appropriate channels are assigned.

**Messages 700 To 799: Statistics Process (UST)**

**700 - Process Startup**

Meaning: The UST process has been started.

Action to take: None. Notification only.

**701 - Process Shutdown**

Meaning: The UST process has been stopped.

Action to take: None. Notification only.

**702 - Info-**

Meaning: Various pieces of additional information that are logged after message 709 missing call record.

Action to take: Contact your Nortel service representative.

**703 - Cannot Open Queues**

Meaning: Initialization failed on the queues for the indicated process.

Action to take: Shut down the whole system and ensure that all queues have been removed. Super-user status may be required to do this.

### **704 - Cannot Open Statistic Files**

Meaning: The statistics process encountered an error while trying to open the statistics log files for update.

Action to take: Check the permissions on the statistics files to make sure that they are accessible by Meridian IVR 2.0/I. If the problem persists, Contact your Nortel service representative.

### **705 - Queue Write Failed**

Meaning: A queue write failed on a UST reply. This is most likely due to an overflow condition on queue traffic.

Action to take: Shut down and restart the whole system. Consult the installation manual for information concerning system loading for your hardware configuration.

### **706 - File Write Failed**

Meaning: The statistics process encountered an error while trying to write to one of the statistics log files.

Action to take: Check the permissions on the statistics files to make sure that they are accessible by Meridian IVR 2.0/I. If the problem persists, Contact your Nortel service representative.

### **707 - Cannot Set signal Handler**

Meaning: An error has occurred in setting the signal handlers for alarm and shutdown.

Action to take: Contact your Nortel service representative.

### **708 - Message from unexpected Source**

Meaning: A process statistics message has been received from a process that was not in the timer service list.

Action to take: Check any user functions that were active at the time to see if they may have misdirected any messages.

### **709 - Missing Call record from VIP**

Meaning: The call statistics records received by the UST were out of sequence or contained gaps. This generally occurs only as a result of queue overflow.

Action to take: Contact your Nortel service representative.

## **Messages 800 To 899: Database Server (DBS)**

### **800 - Process Startup**

Meaning: The DBS process has been started.

Action to take: None. Notification only.

### **801 - Process Shutdown**

Meaning: The DBS process has been stopped.

Action to take: None. Notification only.

### **802 - Process Shutdown: Major Failure**

Meaning: Internal to code. No Meaning for user.

Action to take: Contact your Nortel service representative.

### **803 - Cannot Create DBS file: filename**

Meaning: Internal to code. No Meaning for user.

Action to take: Contact your Nortel service representative.

### **804 - Cannot Create Extension Table:**

Meaning: Internal to code. No Meaning for user.

Action to take: Contact your Nortel service representative.

### **805 - Cannot find DBS EXCH Lookup Table:**

Meaning: Internal to code. No Meaning for user.

Action to take: Contact your Nortel service representative.

### **806 - Cannot Allocate necessary table space**

Meaning: Internal to code. No Meaning for user.

Action to take: Contact your Nortel service representative.

### **807 - Error reading message queue. Code= xx**

Meaning: An error occurred while attempting to retrieve a message from another process. The code number indicates the problem.

Action to take: Contact your Nortel service representative.

**808 - Cannot Open DBS File: filename**

Meaning: Internal to code. No Meaning for user.

Action to take: Contact your Nortel service representative.

**809 - Cannot Open DBS EXCH Lookup Table:**

Meaning: Internal to code. No Meaning for user.

Action to take: Contact your Nortel service representative.

**810 - Cannot Open DBS EXCH Lookup Table:**

Meaning: Internal to code. No Meaning for user.

Action to take: Contact your Nortel service representative.

**811 - Database READ ERR:OR:**

Meaning: Internal to code. No Meaning for user.

Action to take: Contact your Nortel service representative.

**812 - Cannot register a path to:**

Meaning: Internal to code. No Meaning for user.

Action to take: Contact your Nortel service representative.

**813 - Database SEEK ERR:OR:**

Meaning: Internal to code. No Meaning for user.

Action to take: Contact your Nortel service representative.

**814 - Error sending response message**

Meaning: Internal to code. No Meaning for user.

Action to take: Contact your Nortel service representative.

**815 - Database WRITE ERR:OR:**

Meaning: Internal to code. No Meaning for user.

Action to take: Contact your Nortel service representative.

**816 - Cannot write to EXCH Lookup file:**

Meaning: Internal to code. No Meaning for user.

Action to take: Contact your Nortel service representative.

**817 - Cannot write to EXCH Lookup file:**

Meaning: Internal to code. No Meaning for user.

Action to take: Contact your Nortel service representative.

**818 - Cannot open DBS.tpl file: filename**

Meaning: Internal to code. No Meaning for user.

Action to take: Contact your Nortel service representative.

**819 - Cannot close DBS.tpl file: filename**

Meaning: Internal to code. No Meaning for user.

Action to take: Contact your Nortel service representative.

**820 - Cannot read DBS .tpl file: filename**

Meaning: Internal to code. No Meaning for user.

Action to take: Contact your Nortel service representative.

**821 - Cannot write DBS .tpl file: filename**

Meaning: Internal to code. No Meaning for user.

Action to take: Contact your Nortel service representative.

**822 - DBS significant digits missing: db\_name**

Meaning: Internal to code. No Meaning for user.

Action to take: Contact your Nortel service representative.

**823 - DBS significant digits out of range: db\_name**

Meaning: Internal to code. No Meaning for user.

Action to take: Contact your Nortel service representative.

**824 - DBS significant digits not needed: db\_name**

Meaning: Internal to code. No Meaning for user.

Action to take: Contact your Nortel service representative.

**825 - Invalid value passed to dbs\_pow 10 ()**

Meaning: Internal to code. No Meaning for user.

Action to take: Contact your Nortel service representative.

## **Messages 900 To 999: Voice File Transfer Process (VFT)**

### **900 - Process Startup**

Meaning: The VFT process has started up successfully.

Action to take: None. Notification only.

### **901 - Process Shutdown**

Meaning: The VFT process has stopped successfully.

Action to take: None. Notification only.

### **902 - Ran out of free buffers.**

Meaning: The VFT process has run out of internal storage buffers to process requests.

Action to take: Contact your Nortel service representative.

### **903 - Host, TCP, or FTP information not found**

Meaning: The VFT process was unable to get information about the destination host, TCP/IP or the FTP service. This is the first of three lines describing an error. More information is available in entries 905 and 906.

Action to take: See 904 and 905 below for Action to take.

### **904 - -hp = xxxx, pp = yyyy, sp = zzzz.**

Meaning: This is the second line of a problem which occurred during a file transfer attempted by the VFT process. If the value "xxxx" is 0, then the problem was obtaining information about the destination host. If the value "yyyy" is 0, the problem was obtaining information about the TCP/IP protocol. If the value "zzzz" is 0, the problem was obtaining information about the FTP service.

Action to take: If the problem is with the destination host, verify that the MRS being transferred to is in the “/etc/hosts” file and that the same name or an alias is being used in the system configuration. If your application processor is running Yellow Pages‘ (YP), check with your network administrator to determine if the MRS’s host name is in the YP database.

If the problem is with TCP/IP, check the protocols database contained in the file /etc/protocols for an entry for tcp.

If the problem is with the FTP service, check the services database contained in /etc/services for an entry for ftp which will look similar to the line below:

```
ftp 21/tcp
```

### **905 - Hostname = xyz**

Meaning: Indicates the host name that was being referenced when an error occurred. This line will appear in the log after an error 903 or 913. In the case of an error 903, it indicates what the VFT process considers the destination hostname. In the case of an error 913, it indicates what the VFT process considers the application processors hostname.

Action to take: Verify that the hostname specified is in the /etc/hosts file. If this is not the name you would expect (especially in the case of 903 error) check the System Configuration to see that the host name of the MRS’ have been correctly specified.

### **906 - socket() system call failed, errno = xxxx**

Meaning: There has been an error in creating a TCP/IP socket.

Action to take: Contact customer service. Include in your description of the error the value of “xxxx”.

### **907 - connect() system call failed, errno = xxxx**

Meaning: There has been a problem encountered in connecting to the FTP service on the destination MRS.

Action to take: The FTP service, or the MRS node are not available. Attempt to reboot the MRS in order to correct the problem. If the problem persists, contact customer service. Include in your description of the error the value of “xxxx”.

**908 - listen() system call failed, errno = xxxx**

Meaning: There is a problem in listening for connection to a TCP/IP socket.

Action to take: Contact customer service. Include in your description of the error the value of “xxxx”.

**909 - Error in FTP reply. Expected xxxx. Received yyyy**

Meaning: There has been a problem transferring data to the MRS.

Action to take: Contact customer service. Include in your description of the error the value of “xxxx” and “yyyy”.

**910 - Error sending FTP command, errno = xxxx**

Meaning: There has been a problem sending FTP commands to the MRS. This error will be accompanied by error 911.

Action to take: Refer to error 911 for Action to take.

**911 - -FTP Command =**

Meaning: This error is associated with a previous error 910 indicating an error issuing an FTP command. This error details the FTP command that resulted in the error.

Action to take: Contact customer service. Include in your description the FTP command that caused the failure.

**912 - Unable to get hostname, errno = %d.**

Meaning: An error occurred when attempting to get the application processor’s host name.

Action to take: Contact customer service. Include in your description of the error the value of “xxxx”.

**913 - Unable to get host info, errno = %d.**

Meaning: The application processor's host name could not be found in the host database /etc/hosts or in the Yellow Pages database (if YP is being used).

Action to take: Verify that the host name assigned to the application processor is included in the /etc/hosts file. This can be done by issuing a hostname command at a shell prompt and checking for the name returned in /etc/hosts.

**914 - bind of port xxxx->yyyy failed, errno = zzzz.**

Meaning: Another daemon is using the port numbers that VFT expects to be able to use.

Action to take: Contact customer service. Include in your description of the error the values "xxxx", "yyyy" and "zzzz".

**915 - accept() system call failed, errno = xxxx.**

Meaning: An error occurred in issuing of the accept() system call.

Action to take: Contact customer service. Include in your description of the error the value of "xxxx".

**916 - Bytes written not equal to bytes read.**

Meaning: A problem has occurred writing to the socket connected to the MRS or writing to the file on the application processor.

Action to take: Contact customer service. Include in your description of the error the values "xxxx", "yyyy" and "zzzz".

**917 - -wrote xxxx & read yyyy bytes, errno = zzzz**

Meaning: This entry in the transaction log should occur after a 916 error and includes additional information to help diagnose the problem.

Action to take: Contact customer service. Include in your description of the error the values "xxxx", "yyyy" and "zzzz".

**918 - Error on read() or write().**

Meaning: An error has occurred in the transfer of data between the application processor and a MRS. The error was in the read() or write() system call.

Action to take: Contact customer service. Include in your description of the error the values “xxxx”, “yyyy” and “zzzz”.

**919 - -wrote xxxx & read yyyy bytes, errno = zzzz**

Meaning: This entry in the transaction log should occur after a 918 error and includes additional information to help diagnose the problem.

Action to take: Contact customer service. Include in your description of the error the values “xxxx”, “yyyy” and “zzzz”.

**920 - open() system call failed, errno = xxxx.**

Meaning: An error occurred opening the file that is to be transferred from the application processor to the MRS.

Action to take: Verify that the file being transferred really exists. If it does or if it is not a file you specifically requested to transfer, call customer service. The file being transferred is listed in transaction log entry 922.

**921 - creat() system call failed, errno = xxxx.**

Meaning: An error has occurred creating the destination for the file that will be received by the application processor from the MRS.

Action to take: Verify that the directory the file is going to be created in exists and that Meridian IVR 2.0/I has permission to create files in that directory. Also check to see if a file by the same name already exists and if so that Meridian IVR 2.0/I has permission to write the file. The file to be created is listed in transaction log entry 922.

**922 - -Filename =**

Meaning: This entry in the transaction log is associated with a previous entry in the log (either 920 or 921). This entry indicates the file that caused the problem.

Action to take: Refer to the previous VFT transaction log entry for Action to take.

**923 - Illegal request.**

Meaning: An illegal file transfer request was received by the VFT.

Action to take: Refer to transaction log entry description 924 for Action to take.

**924 - -cmd = xxxx, chnl = yyyy, flags = zzzz**

Meaning: This entry in the transaction log is associated with a previous 923 entry in the log. It contains additional information that can be used in diagnosing the problem.

Action to take: Contact customer service. Include in your description of the error the values “xxxx”, “yyyy” and “zzzz”.

**925 - REQUEST\_FAIL:**

Meaning: If any problems occurred other than an illegal request (923), then this entry in the transaction log would occur indicating that overall, the file transfer request has failed.

Action to take: Refer to transaction log entry description 926 for Action to take.

**926 - -OP:www, HOST:xxxx, LOCAL\_FILE:yyyy, REMOTE\_FILE:zzzz**

Meaning: This Transaction Log entry is associated with a previous 925 entry and provides information that can be used in diagnosing the problem.

Action to take: This entry is provided for additional information and will always be associated with a previous 925 entry as well as some other VFT entry in the transaction log. If the description of the other entry indicates any other information, when you call customer service, then also provide the information in this entry to customer service, otherwise, use this information in helping to diagnose the problem.

**927 - setsockopt() failed, errno = xxxx**

Meaning: A setsockopt() system call has failed.

Action to take: Contact customer service. Include in your description of the error the value of “xxxx”.

## Messages 1000 To 1099: User Function Process (USR)

### 1000 - USR: xx Startup

Meaning: The indicated user function has been started.

Action to take: None. Notification only.

### 1001 - USR: xx Shutdown

Meaning: The indicated user function has been stopped.

Action to take: None. Notification only.

### 1002 - User specified messages

Meaning: The indicated message is a user related.

Action to take: None. Notification only.

### 1003 - Error reading message queue. Code= cccc

Meaning: An error occurred while attempting to retrieve a message from another process. The code cccc indicates the problem

Action to take: Contact your Nortel service representative.

## Messages 1100 To 1199: Call Scheduler (CSC)

### 1100 - Process startup

Meaning: The CSC process has been started.

Action to take: None. Notification only.

### 1101 - Process shutdown

Meaning: The CSC process has been stopped.

Action to take: None. Notification only.

### 1102 - Error reading csc\_events file errno= number

Meaning: The CSC could not read the file that contains events to be scheduled. The CSC will shut down after writing this message to the Transaction Log.

Action to take: Make sure that the csc\_events file has the appropriate permissions.

**1103 - Error opening csc\_events file errno= number**

Meaning: The CSC could not open the file that contains the events to be scheduled.

Action to take: Make sure that ../sys\_files/csc\_events is not locked and that it has read/write privileges for everyone.

**1104 - Error opening /tmp/csc\_events.tmp file errno= number**

Meaning: The CSC could not open the file that temporarily contains events to be scheduled the next time that the CSC comes up.

Action to take: Make sure that /tmp/csc\_events.tmp is not locked and that it has read/write privileges for everyone.

**1105 - Couldn't initiate link with CLI**

Meaning: The CSC could not establish a communication path with the CLI process. The CSC will shut down after this message is written to the Transaction Log.

Action to take: Contact Customer Service.

**1106 - Couldn't initiate link with TMR**

Meaning: The CSC could not establish a communication path with the TMR process. The CSC will shut down after this message is written to the Transaction Log.

Action to take: Contact Customer Service.

**1107 - Error reading message queue, errno= number**

Meaning: An error occurred during an attempt to retrieve a message from another process. The code number indicates the problem.

Action to take: Contact Customer Service.

**1108 - Unknown CLI command: number**

Meaning: The CSC has received the indicated command, but is unable to recognize it.

Action to take: Contact Customer Service.

**1109 - Couldn't allocate a channel**

Meaning: A request has been made to use an outdial trunk on the system. However, all available outdial trunks are in use.

Action to take: (1) Go to the Trunk Configuration screen in the System Administration Interface of Meridian IVR 2.0/I. (2) Make sure that at least one trunk is configured as an output trunk. When this message appears, as long as there is at least one output trunk in the system, the CSC will attempt to request an output trunk every minute until it is successful. If you receive many of these messages, you might want to consider configuring more of your trunks as output trunks.

**1110 - Couldn't send cmd number to CLI, errno= number**

Meaning: An internal error occurred while sending the command to the CLI. The error number indicates the problem.

Action to take: Contact your Nortel service representative.

**1111 - Application is not LOADED: application\_name**

Meaning: The specified application has been scheduled to start, but the scheduler process could not start it because it has not been loaded.

Action to take: Go to the Application Management screen in the System Administration Interface and load the application.

**1112 - Application application\_name could not be invoked**

Meaning: The specified application could not be executed.

Action to take: Contact your Nortel service representative.

**1113 - Couldn't allocate memory for event**

Meaning: The CSC did not have the memory necessary to allocate an internal data structure. The CSC will continue to run, however the event will not be scheduled.

Action to take: Contact your Nortel service representative.

**1114 - No more request IDs, event not scheduled.**

Meaning: The user has attempted to schedule more than 65535 events without any events being delivered.

Action to take: Contact your Nortel service representative.

## **Messages 1200 To 1299: Prompt Loading Facility (PLF)**

### **1200 - Process Startup**

Meaning: The PLF process has been started.

Action to take: None. Notification only.

### **1201 - Process Shutdown**

Meaning: The PLF process has been stopped.

Action to take: None. Notification only.

### **1202 - Unexpected mail: xx from path xx**

Meaning: A message was received by the PLF from a process that was not expected to send a message.

Action to take: Contact your Nortel service representative.

### **1203 - Unable to set up user interface**

Meaning: Data corruption has occurred in the user interface data area.

Action to take: Contact your Nortel service representative.

### **1204 - Cannot open PLF queue: vpf error code= xx**

Meaning: Initialization failed on the queue for the PLF process.

Action to take: Stop Meridian IVR 2.0/I and ensure that all queues have been removed. Super-user status may be required to do this.

### **1205 - Cannot open VRM queue: vpf error code= xx**

Meaning: Initialization failed on the queue for the VRM process.

Action to take: Stop Meridian IVR 2.0/I and ensure that all queues have been removed. Super-user status may be required to do this.

### **1206 - Cannot open CLI queue: vpf error code= xx**

Meaning: Initialization failed on the queue for the CLI process.

Action to take: Stop Meridian IVR 2.0/I and ensure that all queues have been removed. Super-user status may be required to do this.

**1207 - No appropriate reply handler for xx**

Meaning: An expected message was received at an unexpected time.

Action to take: This message occurs when someone selects a channel for use by the PLF and that channel is already running an application. If this is not the case, Contact your Nortel service representative.

**Messages 1300 To 1399: System Administration Process (SAD)****1300 - Startup**

Meaning: The SAD process has been started.

Action to take: None. Notification only.

**1301 - Shutdown**

Meaning: The SAD process has been stopped.

Action to take: None. Notification only.

**1302 - Error sending message to CLI: command\_name**

Meaning: An internal error occurred while sending command\_name to the cli.

Action to take: Contact your Nortel service representative.

**1303 - Error sending message to DBS: command\_name**

Meaning: An internal error occurred while sending command\_name to the DBS.

Action to take: Contact your Nortel service representative.

**1304 - Error broadcasting message to clients: command\_name**

Meaning: An internal error occurred while sending command\_name to the SAI(s) that are running.

Action to take: Contact your Nortel service representative.

**1305 - Message block allocation error...**

Meaning: The SAD cannot allocate the memory needed to contain the contents of messages to be sent to or received from other processes.

Action to take: Contact your Nortel service representative.

**1306 - Error reading message queue. Code = number**

Meaning: An error occurred during an attempt to retrieve a message from another process. The code number indicates the problem.

Action to take: Contact your Nortel service representative.

**1307 - Message from unknown source. ID=qq**

Meaning: SAD received message from an unknown process with the IPC queue ID of qq.

Action to take: Contact your Nortel service representative.

**1308 - Unknown CLI response: reply\_name**

Meaning: The reply reply\_name is not a response that the sad can process.

Action to take: Contact your Nortel service representative.

**1309 - Unknown DBS response: reply\_name**

Meaning: The reply reply\_name is not a response that the sad can process.

Action to take: Contact your Nortel service representative.

**1310 - INFO**

Meaning: Various informational messages from the SAD process.

Action to take: None. Notification only.

**1311 - ERR:OR**

Meaning: Various error messages from the SAD process resulting from illegal requests issued by the user through the SAI.

Action to take: Make sure that the correct applications are loaded and the appropriate channels assigned on the Application Management screen.

**1312 - Error sending message to QDS: command-name**

Meaning: An internal error occurred while sending command\_name to the QDS.

Action to take: Contact your Nortel service representative.

**1313 - Bad User Function (errno=error\_code):user function name**

Meaning: The user function indicated could not be started.

Action to take: Verify that the user function indicated in the exe directory. Also verify that the user function runs by invoking it from the command line as follows:

```
user_func -i
```

where user\_func is the name of the executable user function.

## Messages 1400 To 1499: Graphical System Monitor (XAI)

**1400 - Process startup**

Meaning: The XAI process has been started.

Action to take: None. Notification only.

**1401 - Process shutdown**

Meaning: The XAI process has been stopped.

Action to take: None. Notification only.

**1402 - Message block allocation error...**

Meaning: The XAI cannot allocate the memory needed to contain the contents of messages to be sent to or received from other processes.

Action to take: Contact your Nortel service representative.

**1403 - Error reading message queue. Code = number**

Meaning: An error occurred during an attempt to retrieve a message from another process. The code number indicates the problem.

Action to take: Contact your Nortel service representative.

**1404 - Message from unknown source. ID=qq**

Meaning: XAI received message from an unknown process with the IPC queue ID of qq.

Action to take: Contact your Nortel service representative.

**1405 - Cannot open SAD queue: vpf error code= ee**

Meaning: The XAI could not establish a communication path with the SAD process. Error code ee indicates the cause of the problem. The XAI will shut down after writing this problem to the transaction log.

Action to take: Contact your Nortel service representative.

**1406 - No appropriate reply handler for command-code**

Meaning: An expected message was received at an unexpected time.

Action to take: This message occurs when someone selects a channel for use by the XAI and that channel is already running an application. If this is not the case, Contact your Nortel service representative.

**Messages 1500 To 1599: System Application Monitor Process (SAM)**

**1500 - Process startup**

Meaning: The SAM process has been started.

Action to take: None. Notification only.

**1501 - Process shutdown**

Meaning: The SAM process has been stopped.

Action to take: None. Notification only.

**1502 - Couldn't initiate link with CLI.**

Meaning: The SAM could not establish a communication path to the CLI. The SAM will shut down after writing the message to the transaction log.

Action to take: Contact your Nortel service representative.

**1503 - Error sending message to CLI. Error= ee Msg= mm**

Meaning: An internal error occurred while sending the command to the CLI. Error code ee indicates the cause of the problem.

Action to take: Contact your Nortel service representative.

**1504 - Error receiving message Error= ee**

Meaning: An error occurred during an attempt to receive a message from another process. Error code ee indicates the cause of the problem.

Action to take: Contact your Nortel service representative.

**1505 - Message from unknown source. ID=qq**

Meaning: SAM received a message from an unknown process with the IPC queue ID of qq.

Action to take: Contact your Nortel service representative.

**Messages 1600 To 1699: Alternate Error Handling Process (UEH)**

**1600 - Process startup**

Meaning: The UEH process has been started.

Action to take: None. Notification only.

**1601 - Process shutdown**

Meaning: The UEH process has been stopped.

Action to take: None. Notification only.

**1603 - Error receiving message Error= ee**

Meaning: An error occurred during an attempt to receive a message from another process. Error code ee indicates the cause of the problem.

Action to take: Contact your Nortel service representative.

**1604 - Message from unknown source. ID=qq**

Meaning: UEH received a message from an unknown process with the IPC queue ID of qq.

Action to take: Contact your Nortel service representative.

**Messages 1700 To 1799: Graphical Prompt Manager (XPM)**

**1700 - Process startup**

Meaning: The XPM process has been started.

Action to take: None. Notification only.

**1701 - Process shutdown**

Meaning: The XPM process has been stopped.

Action to take: None. Notification only.

**1702 - Unexpected mail: xx from path xx**

Meaning: A message was received from the XPM from a process that was not expected to send a message

Action to take: Contact your Nortel service representative.

**1703 - Unable to set up user interface.**

Meaning: Data corruption has occurred in the user interface data area.

Action to take: Contact your Nortel service representative.

**1704 - Cannot open queue to self:vpf error code= ee**

Meaning: Initialization failed on the queue for the XPM process.

Action to take: Contact your Nortel service representative.

**1705 - Cannot open VRM queue: vpf error code= ee**

Meaning: The XPM could not establish a communication path with the VRM process. Error code ee indicates the cause of the problem. The XPM will shut down after writing this problem to the transaction log.

Action to take: Contact your Nortel service representative.

**1706 - Cannot open CLI queue: vpf error code= ee**

Meaning: The XPM could not establish a communication path with the CLI process. Error code ee indicates the cause of the problem. The XPM will shut down after writing this problem to the transaction log.

Action to take: Contact your Nortel service representative.

**1707 - No appropriate reply handler for command code**

Meaning: An expected message was received at an unexpected time.

Action to take: This message occurs when someone selects a channel for use by the PLF and that channel is already running an application. If this is not the case, Contact your Nortel service representative.

## **Messages 1800 - 1899: Terminal Resource Server (TRS)**

### **o ERR: Unable to reset application environment**

Meaning: TRS was unable to reset the 3270 system.

Action to take: Stop Meridian IVR 2.0/I. Make sure the 3270 board has been downloaded correctly. The download command should be included in the .profile file. If the TRS is running on a Motorola system, make sure both the SNA and the session manager are running.

### **o ERR: Unable to load configuration file**

Meaning: TRS was unable to load the configuration file trs.conf.

Action to take: Syntax error in trs.conf under 3270 directory, revise it.

### **o ERR: Failed to startup VT100 Server**

Meaning: TRS was unable to reset the vt100 system.

Action to take: Check the existence of the file ../vt100/vt100.ctl. Make sure its format is correct. Look at ../vt100/vt100.log to make sure that the communication ports have been opened successfully. Also make sure the communication device is properly defined.

### **o ERR: VT100 Server startup**

Meaning: VT100 Server has been started up.

Action to take: None. Notification only.

### **o ERR: Create\_3270\_objects**

Meaning: TRS was unable to create or initialize the session, board or process data structure.

Action to take: Contact your Nortel service representative.

**o ERR: Create\_screen\_templates**

Meaning: TRS was unable to open a screen template file or found a syntax error in the screen template files.

Action to take: Check the screen template files. Make sure they are syntax error free, readable text files.

**o ERR: Create\_action\_templates**

Meaning: TRS was unable to open an action template file or found a syntax error in the action template files.

Action to take: Check the correctness of action template files. Make sure they are syntax error free, readable text files.

**o ERR: Order\_templates**

Meaning: The screen templates referenced in the action templates were not found.

Action to take: Create the appropriate screen templates.

**o ERR: Load\_runtime\_config**

Meaning: TRS was unable to load the configuration file trs.conf.

Action to take: Syntax error in trs.conf, revise it.

**o ERR: Check\_action\_template**

Meaning: TRS was unable to find the reset or logout action templates defined in the header of an action template.

Action to take: Check and create the appropriate action templates.

**o ERR: All communication boards are not operational**

Meaning: None of the communication boards is operational.

Action to take: Make sure the communication board has been downloaded correctly. The download command should be included in the .profile file. If the TRS is running on a Motorola system, make sure both the SNA and session manager are running.

**o ERR: All available session are non-operational**

Meaning: None of the sessions is operational.

Action to take: Make sure the communication board has been downloaded correctly. The download command should be included in .profile file. If the TRS is running on a Motorola system, make sure both the SNA and the session manager are running.

**o ERR: xx Sessions are Operational**

Meaning: TRS found that xx sessions are operational.

Action to take: Check to see if the number matches the defined number of sessions in the trs.conf file.

**o ERR: BD xx SS xx Failure to create process object**

Meaning: TRS was unable to allocate memory for the process structure for board xx session xx.

Action to take: Contact your Nortel service representative.

**o ERR: Unable to create Board Object Instance**

Meaning: TRS was unable to allocate memory for the board object structure.

Action to take: Contact your Nortel service representative.

**o ERR: Unable to create Session Object Instance**

Meaning: TRS was unable to allocate memory for the session object structure.

Action to take: Contact your Nortel service representative.

**o ERR: Unable to create Process Object Instance**

Meaning: TRS was unable to allocate memory for the project object structure.

Action to take: Contact your Nortel service representative.

**o ERR: Unable to create Application Object**

Meaning: TRS was unable to allocate memory for the application object structure.

Action to take: Contact your Nortel service representative.

**o ERR: xx is not a keyword**

Meaning: The screen template contains an invalid keyword.

Action to take: Revise the screen template. Make sure the KEYWORD (&LOGIN\_ID, &PASSWORD, &LU\_BUF1 and &LU\_BUF2) are spelled correctly.

**o ERR: BD xx SS xxx ERR: start host notify**

Meaning: TRS was unable to communicate with host on Board xx session xxx.

Action to take: Contact your Nortel service representative.

**o ERR: CH=xx ERR::Request does not contain action name**

Meaning: The action template name passed by Meridian IVR 2.0/I is a zero-length string.

Action to take: Check the COMI or USER cell used to start a transaction to make sure it contains an action template name.

**o ERR: CH= xx ERR::Invalid action name xxx**

Meaning: The action template name xxx in the USER or COMI cell was not found under the 3270 directory.

Action to take: Check or create action template file.

**o ERR: CH=xx ERR::Action xxx not defined in any appl**

Meaning: The action template xxx did not define an application name.

Action to take: Revise the action template to add the application name in the appropriate field.

**o ERR: CH=xx ERR::Appl name xxx not defined in trs.conf**

Meaning: The application name defined in the action template did not match any application name defined in the trs.conf file.

Action to take: Revise the trs.conf or the action template to make sure the application name matches.

**o ERR: CH=xx BD xxx SS xxx: Session not working-manual mode**

Meaning: This particular session is not working. TRS was unable to attach this session.

Action to take: Contact your Nortel service representative.

**o ERR: CH=xx ERR::Parse: Incorrect Action [xxx]**

Meaning: Action template xxx was not found under the 3270 directory.

Action to take: Create an action template which matches the action template name in the COMI or USER cell.

**o ERR: CH=xx Read\_input:ERR: Create\_timer\_instance**

Meaning: TRS was unable to allocate memory for timer structure.

Action to take: Contact your Nortel service representative.

**o ERR: CH=xx BD xxx SS xxx Read\_input:ERR: copy PS**

Meaning: TRS was unable to copy the presentation space.

Action to take: TRS will try again. If this message continues to appear, Contact your Nortel service representative.

**o ERR: CH=xx BD xxx SS xxxx Read\_input:ERR: Query cursor**

Meaning: TRS was unable to locate the cursor in the presentation space.

Action to take: Check the communication system and make sure the host connection exists.

**o ERR: CH=xx Read\_Update:ERR: Create\_timer\_instance**

Meaning: TRS was unable to allocate memory for timer structure.

Action to take: Contact your Nortel service representative.

**o ERR: CH=xx BD xxx SS xxxx Read\_updated:ERR: Query PS  
CODE= xxxxx**

Meaning: The presentation space was not updated as expected.

Action to take: Check the communication system and make sure it works properly.

**o ERR: Send Aid key failed**

Meaning: TRS did not succeed in sending the aid key to host.

Action to take: Make sure that the host connection exists.

**o ERR: CH=xx Process:ERR: Syntax error for variable operation**

Meaning: Syntax error in internal variable operation.

Action to take: Check the screen templates which use the internal variable operation.

**o ERR: CH=xx Process:ERR: write to screen**

Meaning: TRS was unable to copy a string to the presentation screen.

Action to take: Check if the field is write protected.

**o ERR: msg\_wait\_start**

Meaning: Error message was received while TRS was waiting for other processes to initialize.

Action to take: Contact your Nortel service representative.

**o ERR: Initialize 3270 Controller software**

Meaning: 3270 initialization failure.

Action to take: Check the communication system to make sure it works properly.

**o ERR: Failure to connect to a TRS Server**

Meaning: TRS envoy was unable to connect to TRS server.

Action to take: Make sure that the TRS in server mode is running on a node on the network and this node is specified in the trs.node file. Also, check to see if the /etc/hosts file contains the node information and check that the socket number is contained in the /etc/services file. If the TRS is running in a server mode, make sure that the communication board is downloaded properly.

**o ERR: 3270 Server Process Startup**

Meaning: 3270 server process has been started up.

Action to take: None. Notification only.

**o ERR: 3270 Envoy Process Startup**

Meaning: 3270 envoy has been started up.

Action to take: None. Notification only.

**o ERR: Process Startup**

Meaning: The TRS process with no 3270 communication capability has been started up. This TRS process can not run applications which access a remote host via COMI, COMO, COMA or USER cells.

Action to take: None. Notification only.

**o ERR: Received a service abort from the TRS Server**

Meaning: TRS envoy process receives a message indicating that TRS server is exiting.

Action to take: If the TRS running in server mode was brought down, this is a normal message.

**o ERR: Received a Service Free Message**

Meaning: Meridian IVR 2.0/I stopped.

Action to take: None. Normal shutdown notification.

**o ERR: Accept a connection to a client**

Meaning: TRS server was unable to accept TRS envoy's request for connection.

Action to take: Check the network integrity before consulting Customer Service.

**o ERR: A flush command was sent prior to any request**

Meaning: The flush command was sent before a transaction request was made.

Action to take: A COMI cell was missing in the application or the USER cell did not use function code 2 or 1 to initialize the request. Revise the application.

**o ERR: CH=xx illegal Command xxx**

Meaning: TRS received an illegal command from another process.

Action to take: Contact your Nortel service representative.

**o ERR: Server Node file trs.node does not exist**

Meaning: trs.node file was missing from the envoy process node.

Action to take: This ERR: message can happen in two cases. One is in envoy-server case. In order for a TRS envoy to communicate with a TRS server running on another node, the trs.node file must exist in the 3270 directory and contain the node name where the TRS server is running. The other case is when the TRS is running in a server mode, and the communication board is not downloaded correctly. The TRS will assume this TRS is running in envoy mode and then complain that the trs.node file does not exist. In this case, make sure the communication board is downloaded correctly.

**o ERR: The server node name is the same as envoy node name**

Meaning: The server node defined in trs.node file is the same as the node name on which the TRS envoy is running.

Action to take: Revise the trs.node file so that it contains the proper remote trs server node.

**o ERR: NET\_TO\_ENVOY: ERR: Reply Code =xx from SERVER**

Meaning: The TRS envoy received an error message from the TRS server.

Action to take: Contact your Nortel service representative.

**o ERR: Invalid Aid key specified use the Enter Key**

Meaning: The Aid key specified in the screen template is not valid. The system will use the enter key as the AID key in this case.

Action to take: Define a valid aid key.

**o ERR: Send\_with\_aid: Connect to Session xx failed**

Meaning: TRS failed to connect to session xx before sending the aid key.

Action to take: Check the communication system to make sure it works properly.

**o ERR: Send\_with\_aid: failed with return code of xx**

Meaning: TRS failed to send the aid key.

Action to take: Check the communication system to make sure it works properly.

**o ERR: Write\_to\_screen: Connect request to Session xx failed**

Meaning: TRS failed to connect to session xx before it wrote to the presentation space.

Action to take: Contact your Nortel service representative.

**o ERR: Write\_to\_screen: Writing of input xx failed**

Meaning: TRS failed to write to the presentation space.

Action to take: Check if an attempt was made to write to a protected field.

**o ERR: No Match Found for field id xx**

Meaning: The field identification xx defined in the screen template could not be found in the presentation space.

Action to take: Revise the screen template so that it contains the valid field descriptor.

**o ERR: Session index xx not defined in appl**

Meaning: The session index xx is out of the range of sessions defined for this application.

Action to take: Contact your Nortel service representative.

**o ERR: Ping request memory allocation failed**

Meaning: TRS was unable to allocate memory for ping request structure.

Action to take: Contact your Nortel service representative.

**o ERR: Create\_queue\_object: Attempt to create Queue class instance failed**

Meaning: TRS was unable to allocate memory for the QUEUE\_CLASS structure.

Action to take: Contact your Nortel service representative.

**o ERR: A request for this channel is already being processed**

Meaning: The last COMO cell did not retrieve all the output buffers from TRS.

Action to take: Place a COMA cell in the clean up handler section of the application to ensure that all output buffers will be flushed when the caller hangs up in the middle of a transaction. Furthermore, there should always be a COMO cell(s) after COMI cell(s) even though no output from the host is expected. The COMO cell(s) will retrieve a status indicating whether the transaction has been successful or not.

**o ERR: Create\_transaction\_instance: Unable to create Transaction Object Instance**

Meaning: TRS was unable to allocate memory for the transaction structure

Action to take: Contact your Nortel service representative.

**o ERR: Create\_timer\_instance: Unable to create Timer Object Instance**

Meaning: TRS was unable to allocate memory for the timer structure.

Action to take: Contact your Nortel service representative.

**o ERR: Create\_client\_instance: Unable to create Client Object Instance - Exiting**

Meaning: TRS was unable to allocate memory for the client object structure.

Action to take: Contact your Nortel service representative.

**o ERR: Create\_request\_instance: Create\_request malloc failed for queuing**

Meaning: TRS was unable to allocate memory for the request structure.

Action to take: Contact your Nortel service representative.

**o ERR: Create\_idle\_timer: Idle timer memory allocation failed**

Meaning: TRS was unable to allocate memory for the idle timer structure.

Action to take: Contact your Nortel service representative.

**o ERR: Configuration file trs.conf not found**

Meaning: Configuration file trs.conf was either not found or not readable.

Action to take: Create or change the permissions of trs.conf under 3270 directory.

**o ERR: No application field in trs.conf**

Meaning: Application name is not defined in trs.conf.

Action to take: Revise trs.conf so that it contains the application name before the ':'

**o ERR: An invalid entry in the trs.conf**

Meaning: An illegal symbol occurred in the trs.conf file.

Action to take: Check syntax of the trs.conf file.

**o ERR: Init action missing,put - if not available**

Meaning: Initial action template is missing from the trs.conf file.

Action to take: Add the initial action template in the trs.conf file or put '-' if not available.

**o ERR: Ping action missing,put - if not available**

Meaning: Heartbeat action template was missing from the trs.conf file.

Action to take: Add a heartbeat action template in the trs.conf file or put '-' in this field if not available.

**o ERR: Protocol missing, specify 3270 or VT100**

Meaning: The protocol type was missing from the trs.conf protocol field.

Action to take: Make sure that '3270' or 'vt100' is specified in the protocol field.

**o ERR: Incorrect syntax for ping action**

Meaning: The heartbeat action template was specified incorrectly in the trs.conf file.

Action to take: Revise the trs.conf file so that the heartbeat field has the correct syntax.

**o ERR: Invalid Protocol xxx, protocol**

Meaning: xxx is an invalid protocol.

Action to take: Revise the trs.conf file so that the protocol is either '3270' or 'vt100'.

**o ERR: Invalid entry non-numeric**

Meaning: A non-numeric symbol occurred in the board number or session number field of the trs.conf file.

Action to take: Check the syntax of the trs.conf file.

**o ERR: A board # was not specified in the trs.conf**

Meaning: The board number was missing from the board field of the trs.conf file.

Action to take: Check the syntax of the trs.conf file.

**o ERR: Possibly exceeded number of allowable boards**

Meaning: The number of total boards defined in the trs.conf file exceeds the total number of boards the system allowed.

Action to take: Revise the trs.conf file and make sure the total board number does not exceed the maximum allowed which is 4.

**o ERR: First LU cannot be less than xx.**

Meaning: The first session defined in the trs.conf file was less than allowed, xx.

Action to take: Revise the session field of the trs.conf file.

**o ERR: Last LU cannot be greater than xx**

Meaning: The last session defined in trs.conf was greater than allowed, xx.

Action to take: Revise the session field of trs.conf file.

**o ERR: An Invalid Board# xx is specified**

Meaning: The board number xx specified in trs.conf file was outside the valid range.

Action to take: Revise the board field of trs.conf file.

**o ERR: Couldn't create appl object**

Meaning: TRS was unable to allocate memory for the application instance structure.

Action to take: Consult the Customer Service.

**o ERR: read data from map file ../3270/map.dat**

Meaning: Invalid data in the map.dat file.

Action to take: Revise the map.dat file

**o ERR: Invalid Channel specified in ../3270/map.dat**

Meaning: The map.dat file contains an invalid channel number

Action to take: Check the map.dat file.

**o ERR: Invalid Session Number xx specified in ../3270/map.dat**

Meaning: The map.dat file contains invalid session number xx.

Action to take: Revise the map.dat file and make sure that the channels and sessions are numeric.

**o ERR: in map.dat:Session xx not defined in trs.conf**

Meaning: The session number xx defined in the map.dat file was not defined in the trs.conf file.

Action to take: Revise the map.dat file or the trs.conf file and make sure that the session number matches.

**o ERR: read data from file ../3270/lubuf.dat**

Meaning: Syntax error in lubuf.dat file.

Action to take: Revise lubuf.dat file.

**o ERR: Invalid Board number xx specified in ../3270/lubuf.dat**

Meaning: lubuf.dat file defined an invalid board number xx.

Action to take: Revise lubuf.dat file.

**o ERR: Invalid Session Number xx specified in ../3270/lubuf.dat**

Meaning: The lubuf.dat file contains an invalid session number.

Action to take: Check the lubuf.dat file.

**o ERR: "In ../3270/lubuf.dat:BD xx SS xxx not defined in trs.conf**

Meaning: lubuf.dat contained board number xx session number xxx which is not defined in the trs.conf file.

Action to take: Revise the trs.conf file or the lubuf.dat file to make sure that the board and session numbers matches.

**o ERR: In ../3270/lubuf.dat:login\_id xx exceeds xxx characters**

Meaning: There are too many characters in the login ID defined in the lubuf.dat file.

Action to take: Revise the lubuf.dat file so that the length of the login ID will not exceed xxx.

**o ERR: In ../3270/buf.dat:password xx exceeds xxx characters**

Meaning: There are too many character in password defined in the lubuf.dat file.

Action to take: Revise password in lubuf.dat file so that the length of the password won't exceed xxx.

**o ERR: In ../3270/lubuf.dat:lu\_buf1 exceeds xx characters**

Meaning: There are too many characters in the lu\_buf1 field defined in the lubuf.dat file.

Action to take: Revise the lu\_buf1 field in the lubuf.dat file so that the length won't exceed xx.

**o ERR: In ../3270/lubuf.dat:lu\_buf2 exceeds xx characters**

Meaning: There are too many characters in the lu\_buf2 field defined in the lubuf.dat file.

Action to take: Revise the lu\_buf2 field in the lubuf.dat file so that the length won't exceed xx.

**o ERR: Unable to open screen file xx**

Meaning: TRS was unable to open the screen file xx.

Action to take: Screen file was missing or unreadable. Create one or change the permissions to make it readable.

**o ERR: Memory allocation failure for Screen entry**

Meaning: TRS was unable to allocate memory for the screen template structure.

Action to take: Contact your Nortel service representative.

**o ERR: No header data for Screen file xx**

Meaning: Header data was missing from the screen template file xx.

Action to take: Add header data to the screen template file xx.

**o ERR: Screen name xx exceeds xxx characters**

Meaning: There are too many characters in the screen template file name xx.

Action to take: Change xx so that the length of it won't exceed xxx.

**o ERR: Screen name xx must match the file name without .scn**

Meaning: Invalid screen name defined in the screen template file.

Action to take: Revise the screen template file and make sure the screen name is the screen template file name without .scn.

**o ERR: Validate tag xx of screen xxx exceeds xxx characters.**

Meaning: There are too many characters in the validation tag field defined in the screen template file.

Action to take: Revise the validation tag in the screen template so that length of it won't exceed xxx.

**o ERR: Unable to get offset value from file xx**

Meaning: Syntax error in row/column field defined in the screen template file.

Action to take: Revise the screen template file and make sure there is a delimiter ',' between row and column.

**o ERR: Parse string xx of screen xxx**

Meaning: Syntax error in screen template file.

Action to take: Check the syntax of the screen template file.

**o ERR: field id xx exceeds xxx characters**

Meaning: There are too many characters in the field ID name defined in the screen template file.

Action to take: Correct the field name in the screen template file so that the length of it won't exceed xxx.

**o ERR: I/O descriptor xx of screen xxx exceeds xxxx characters**

Meaning: There are too many characters in the I/O field of the screen template.

Action to take: Correct the I/O field of the screen template so that the length of it won't exceed xxxx characters.

**o ERR: The screen templates exceed xx**

Meaning: There are too many screen templates in this application.

Action to take: Revise the application to keep the screen templates within the limit xx.

**o ERR: Open action file xx failed**

Meaning: TRS failed to open the action file xx.

Action to take: Create or change permissions of the action template file to readable.

**o ERR: Memory allocation failure for ACTION entry**

Meaning: TRS was unable to allocate memory for the action structure.

Action to take: Contact your Nortel service representative.

**o ERR: read head data from action file xx**

Meaning: Syntax error in the header section of the action template file.

Action to take: Check the syntax of the header section of the action template file.

**o ERR: read screen name from action file xx**

Meaning: The screen name was missing from the action template file xx.

Action to take: Add appropriate screen names under the header section of the action template file.

**o ERR: Action xx exceeds max screen entries xxx**

Meaning: There are too many screens defined in the action template file xx.

Action to take: Revise the action template file to keep the total number of screens within limit xxx.

**o ERR: Screen xx of Action xxx not found**

Meaning: Screen xx defined in the action template xxx was not found under the 3270 directory.

Action to take: Create the appropriate screen template file.

**o ERR: reset action xx of the action xxx not found**

Meaning: The reset action template xx defined in the action template xxx was not found under the 3270 directory.

Action to take: Create the appropriate reset template file.

**o ERR: logout action xx of the action xxx not found**

Meaning: Logout action xx defined in the action template xxx was not found under the 3270 directory.

Action to take: Create the appropriate logout template file.

**o ERR: Unable to find ACTION xx**

Meaning: Action template file xx was missing from the 3270 directory.

Action to take: Create appropriate action template file.

**o ERR: Unable to Open Information Logger**

Meaning: TRS was unable to open trs.log file.

Action to take: Check the permissions of the trs.log file.

**o ERR: Buffer size is greater than xx**

Meaning: The entry exceeds the maximum buffer size xx.

Action to take: Contact your Nortel service representative.

**o ERR: No row/column delimiter for screen template**

Meaning: Syntax error in row/column field defined in the screen template file.

Action to take: Revise the screen template file and make sure there is a delimiter ',' between the row and column so that the format is 'row, col'.

**o Set\_timer: Error setting interval timer struct**

Meaning: TRS got an operating system error when it was trying to set a timer.

Action to take: Contact your Nortel service representative.

## **Messages 1900 To 1999: Database Editor Command Line Messages (SDE)**

**1900 - Error: Do Import and Export separately**

Meaning: Import and export flag detected in the same command line.

Action to take: Do import and export from separate command lines.

**1901 - DB name is missing**

Meaning: Name flag -n is missing. -n is required when either of -c, -i or -e is detected.

Action to take: Add -n flag followed by the database name:  
-n databasename.

**1902 - No DB name is specified**

Meaning: -n is detected but no database name follows.

Action to take: Give the database name immediately after the -n flag.

**1903 - Parse record failed**

Meaning: Function parse\_record returned a fail. Database record number may be invalid.

Action to take: Check record number in the file you are trying to import or  
Contact your Nortel service representative.

**1904 - File name missing. Usage -e [filename] -n [dbname]**

Meaning: Export flag -e detected but no file name follows.

Action to take: Specify a file name (can specify with path) immediately after the flag -e.

**1905 - File name missing. Usage -i [filename] -n [dbname]**

Meaning: Import flag -i detected but no file name follows.

Action to take: Give a file name (can specify with path) immediately after the flag -i.

**1906 - Unable open file: filename**

Meaning: File filename can not open.

Action to take: Check existence or permission of the file filename.

**1907 - Request Buffer failed**

Meaning: Function create\_buffer\_request returned a fail. Record number may be invalid.

Action to take: Check record number. Contact your Nortel service representative.

**1908 - Invalid DB type. Usage -t [i|m]**

Meaning: Database type flag -t detected, but the type which follows is invalid.

Action to take: Give type I, i, M or m to specify information or message database type immediately after -t.

**1909 - DB type missing. Usage -t [i|m]**

Meaning: Create flag detected but no type specified.

Action to take: Add type to specify information or message database type.

**1910 - Digits missing. Usage -d [number (4 -11)]**

Meaning: Create flag detected but no significant digits specified.

Action to take: Add significant digits between 4 and 11.

**1911 - Error modifying: msg**

Meaning: Error modifying database.

Action to take: Check msg and Contact your Nortel service representative.

**1912 - Invalid format! Usage: -f [csv | internal]**

Meaning: Format flag is detected but the format which follows is invalid.

Action to take: Give either internal or csv format immediately after -f.

**1913 - Missing format! Usage: -f [csv|internal]**

Meaning: Export flag or import flag is detected but no format is specified.

Action to take: Add flag -f and give either internal or csv format.

**1914 - msg**

Meaning: Dynamic msg will pass in. Most of these messages are a violation of the command input such as “databases does not exist.” Others will be “record number invalid” or “internal problems.”

Action to take: Check databases or files specified in the messages, check file format, or Contact your Nortel service representative.

**Messages 2000 - 2099: CLI\_S**

**2000 CLI\_S Startup**

Meaning: The CLI\_S process has been started

Action to take: None. Notification only.

**2001 CLI\_S Shutdown**

Meaning: The CLI\_S process has been stopped

Action to take: None. Notification only.

**2002 Unable to generate Cell Array for: file name**

Meaning: The CLI\_S cannot allocate memory necessary for holding cell information. It needs this to generate call statistics. Limited statistics will be generated if this message occurs.

Action to take: Contact your Nortel service representative

**2003 Unable to allocate Application Block for: file name**

Meaning: The CLI\_S cannot allocate memory necessary for holding application information. It needs this to generate call statistics. No statistics will be generated if this message occurs.

Action to take: Contact your Nortel service representative

**2004 Unable to allocate Application Header**

Meaning: The CLI\_S cannot allocate the memory necessary to read in the header portion of the application. It needs this information in order to generate call statistics. No statistics will be generated if this message occurs.

Action to take: Contact your Nortel service representative

**2005 File is NOT a valid VPF Application File: file name**

Meaning: The application that was requested to be loaded is of questionable origin. It must be produced with the Meridian IVR 2.0/I Application Editor to be tagged with the proper identifiers. Limited statistics will be generated if this message occurs.

ACTION: Edit the application with the current version of the Application Editor.

**2006 Unable to read Offset Table**

Meaning: The CLI\_S is unable to read the portion of the application file that contains the cell table and the offset to the portions of the file that contain the modifiers for each of the cells. Limited statistics will be gathered if this message occurs.

ACTION: Edit the application with the current version of the Application Editor and save the new version. This confirms that the application has not been corrupted or made obsolete.

**2007 Unable to read modifier for app: file name**

Meaning: The CLI\_S is unable to read the CELL NUMBER, CELL NAME or CELL COMMENT from the application file. Limited statistics will be generated if this message occurs.

Action to take: Edit the application with the current version of the Application Editor and save the new version. This confirms that the application has not been corrupted or made obsolete.

**2008 Unable to open Application File: file name**

Meaning: The CLI\_S cannot read the file that contains the application. This may be because the file is empty or has improper file permissions set.

Action to take: Verify that the file exists, that it is not empty, and that the protections are set to allow reading.

**2009 Unable to read Application File: file name**

Meaning: The CLI\_S cannot read the file that contains the application. The file may have been corrupted or has improper file permissions set.

Action to take: Verify that the permissions on the file are set to allow reading. Edit the file with the current version of the Application Editor and save the file again.

**2010 Unable to read stats File: file name**

Meaning: The CLI\_S cannot read the file that contains the statistics for running applications. The file may have been corrupted or has improper file permissions set. No statistics will be generated if this message occurs.

Action to take: Verify that the permissions on the file audit\_stat.d in the stat.d directory are set to allow reading and writing.

**2011 Unknown CLI\_S command: command number**

Meaning: The CLI\_S has received the indicated command, but is unable to recognize it.

Action to take: Contact your Nortel service representative.

**2012 Error establishing communications with CLI**

Meaning: The CLI\_S cannot open an IPC message queue to the CLI. No statistics will be generated if this message occurs

Action to take: Contact your Nortel service representative.

**2013 Error sending message to the CLI: command name**

Meaning: An internal error occurred while sending the command to the CLI.

Action to take: Contact your Nortel service representative.

**2014 Error reading message queue. Code = number**

Meaning: An error occurred while attempting to retrieve a message from another process. The code number indicates the problem.

Action to take: Contact your Nortel service representative.

**2015 No application info available for id = %ld**

Meaning: The CLI\_S has no information for the application indicated by the id. No statistics will be generated is this message occurs.

Action to take: Contact your Nortel service representative.

**2016 Error reading system info errno=%d**

Meaning: The CLI\_S process cannot read the system configuration file sysgen.d in the sys\_files directory. The file could be corrupted or has improper file permissions set. Limited statistics will be generated if this message occurs.

Action to take: Verify that the protections on the file are set to allow reading and writing. Also select the Configuration Management option from the System Administration icon on the Control Panel. This will verify that the file is not corrupt.

**2017 Can't back up call statistics to:**

Meaning: The CLI\_S could not service a request to backup the file audit\_stat.d in the stats.d directory to the file named in the message. The backup file indicated could have the improper file permissions set.

Action to take: Verify that the directory where the backup file will be located has read and write permissions by the user of the Meridian IVR 2.0/I account. Also verify that the audit\_stat.d file exists in the stat.d directory. Also make sure that the tool statsbkup is run from the tools directory.

**2018 Can't reset call statistics file**

Meaning: The CLI\_S process could not reset the statistics file audit\_stat.d in the stat.d directory.

Action to take: Verify the audit\_stat.d file has read and write permissions set. If the reset command was issued through the rstat tool, make sure it is run from the tools directory.

**2019 Can't resize call statistics file**

Meaning: The CLI\_S process could not update the max records field of the statistics file audit\_stat.d in the stat.d directory.

Action to take: Verify the audit\_stat.d file has read and write permissions set. If the resize request was issued through the exp tool, make sure it is run from the tools directory.

**2020 Failed to create socket errno=%ld**

Meaning: The CLI\_S process could not establish a socket link to the CLI. No statistics will be generated.

Action to take: Contact your Nortel service representative.

**2021 Failed to bind socket errno=%ld**

Meaning: The CLI\_S process could not establish a socket link to the CLI. No statistics will be generated.

Action to take: Contact your Nortel service representative.

**2022 Failed to accept socket errno=%ld**

Meaning: The CLI\_S process could not establish a socket link to the CLI. No statistics will be generated.

Action to take: Contact your Nortel service representative.

**Messages 2100 - 2199: TRSC**

**2100 - Process Startup**

Meaning: Process starting up.

Action to take: None. Informational.

**2101 - Process Shutdown**

Meaning: Process shutting down.

Action to take: None. Informational.

**2102 - Initialization TRSC error**

Meaning: TRSC can not open service to TRS.

Action to take: Contact your Nortel service representative.

**2103 - Initialization TRS LOGGER error**

Meaning: TRSL can not open service to TRS.

Action to take: Contact your Nortel service representative.

**Messages 2200 To 2299: Generic SQL Data Server (GDS, IDS, ODS, FDS, SDS)**

**2200 - Process Startup**

Meaning: The GDS process has been started.

Action to take: None. Notification only.

**2201 - Process Shutdown**

Meaning: The GDS process has been stopped.

Action to take: None. Notification only.

**2202 - IPC Link Fail (merror=MMMM, errno=NNNN): processname**

Meaning: An attempt to connect to the Meridian IVR 2.0/I process processname has failed. The message library error is MMMM and the unix error is NNNN.

Action to take: Contact your Nortel service representative.

**2203 - IPC Send Fail (merror=MMMM, errno=NNNN): processname**

Meaning: An attempt to send a message to the Meridian IVR 2.0/I process processname has failed. The message library error is MMMM and the unix error is NNNN.

Action to take: Contact your Nortel service representative.

**2206 - Illegal Command Received. (Cmd=%ld, src=%ld)**

Meaning: An illegal command was sent to the GDS.

Action to take: Contact your Nortel service representative.

**2207 - Message from unknown source. Qid=%ld**

Meaning: A command was sent from an unknown client.

Action to take The command is ignored.

**2208 - Open DB: dbname (user = username)**

Meaning: The GDS has successfully connected to the database specified as the specified user.

Action to take: None. Informational.

**2209 - Close DB: dbname**

Meaning: The GDS has disconnected from the database.

Action to take: None. Informational.

**2212 - Can't allocate memory: SqlConnect**

Meaning: Cannot allocate the necessary memory as part of the internal initialization.

Action to take: Contact your Nortel service representative.

**2214 - Internal Error: information**

Meaning: An unusual condition has occurred.

Action to take: Contact your Nortel service representative.

**2215 - Open Error: database**

Meaning: A connect request failed.

Action to take: Turn database tracing on and inspect the command the specific RDMBS results for the CONNECT request.

**2216 - User Authentication failed for user**

Meaning: The username and password supplied for Ingres DBMS access did not match the UNIX OS username and password.

Action to take: Supply a correct set. Try logging in as the supplied user with the supplied password. Contact your Nortel service representative.

**2217 - Close Error: database**

Meaning: An attempt to close a database that was not successfully opened occurred.

Action to take: None. Informational.

**2218 - Session Lock Failure.**

Meaning: The DBMS specific locking behavior could not be set.

Action to take: Turn on GDS tracing and examine commands being executed. Contact your Nortel service representative.

The following 5 error messages are usually due to improperly constructed SQL cells. The RDBMS text of the error message follows the error number.

**2220 - ERR (%ld):**

Meaning: Fetch error.

Action to take: Turn on tracing and Contact your Nortel service representative.

**2221 - ERR (%ld):**

Meaning Open cursor error.

Action to take: Turn on tracing and Contact your Nortel service representative.

**2222 - ERR (%ld):**

Meaning: Prepare error. QSEL and QCNT. This is usually due to a column being referenced that does not exist in a given table. Also, incorrect table names can cause this error.

Action to take: Verify the SQL statement is correct. Turn on tracing and examine the full text of the RDBMS error message. Contact your Nortel service representative.

**2223 - ERR (%ld):**

Meaning: Describe error. Turn on tracing and re-rerun request.

Action to take: Contact your Nortel service representative.

**2225 - ERR (%ld):**

Meaning: execute immediate error. QINS, QDEL, QUPD. This is usually due to a column being referenced that does not exist in a given table. Also, incorrect table names can cause this error.

Action to take: Verify the SQL statement is correct. Turn on tracing and examine the full text of the RDBMS error message. Contact your Nortel service representative.

**2226 - SELECT ERR: Expect %ld Columns when %ld exist**

Meaning: Internal Error.

Action to take: Contact your Nortel service representative.

**2230 - Prior Transaction left incomplete. Rolling back.**

Meaning: Internal error.

Action to take: Contact your Nortel service representative.

**2231 - Appl Query Trace Enabled: filename**

Meaning: The GDS will provide trace information in the file specified.

Action to take: None. Informational.

**2232 - Appl Query Trace Disabled**

Meaning: The qds has stopped tracing information.

Action to take: None. Informational.

**2233 - Extended Diags Enabled:**

Meaning: The GDS will provide detailed diagnostics in the file specified.

Action to take: None. Informational.

**2234 - Extended Diags Disabled**

Meaning: The GDS has stop providing detailed diagnostics.

Action to take: None. Informational.

**2236 - Caught Unix Signal %ld, Aborting.**

Meaning: An erroneous UNIX signal has been trapped by the GDS.

Action to take: The GDS exits on its own.

**Messages 2300 - 2399: SASE**

**2300 - Process Startup**

Meaning: Process starting up.

Action to take: None. Informational.

**2301 - Process Shutdown**

Meaning: Process shutting down.

Action to take: None. Informational.

**2302 - Running script**

Meaning: Tells what script is running.

Action to take: None. Informational.

**Messages 2400 - 2499: TRSL**

**2400 - TRS Logger Startup**

Meaning: Process starting up.

Action to take: None. Informational.

**2401 - TRS Logger Process Shutdown**

Meaning: Process shutting down.

Action to take: None. Informational.

**2402 - Initialization TRSL Logger failure**

Meaning: TRSL can not open service to TRS.

Action to take: Contact your Nortel service representative.

**2403 - Failed to connect to the Meridian IVR 2.0/I Logger**

Meaning: TRSL can not open service to Meridian IVR 2.0/I logger process.

Action to take: Contact your Nortel service representative.

**Messages -1 - -82: License Manager**

**-1 LM\_NOCONFFILE**

“cannot find license file”

The license file cannot be opened. FLEXlm will attempt to open the standard file/usr/ local / flexlm/ licenses / license . dat,(or the file specified by the vendor (via Ic\_set\_attr()), or the file specified by the user inLM\_LICENSE\_FILE.

**-2 LM\_BADFILE**

“Invalid license file syntax”

A feature name is > MAX\_FEATURE\_LEN,

A daemon name is > MAX\_DAEMON\_LEN.

A server name is > MAX\_SERVER\_NAME.

A feature specifies no hostid and # of licenses is <= 0.

**-3 LM\_NOSERVER**

“Cannot connect to a license server”

The daemon name specified in the license file FEATURE line does not match the vendor daemon name.

**-4 LM\_MAXUSERS**

“licensed number of users already reached”

The licenses number of users has been reached.

**-5 LM\_NOFEATURE**

No such feature exists

The feature could not be found in the license file.

A call was made to one of the software license working group usage metering functions (um\_XXX\_record()).

**-5 LM\_NOFEATURE**

No such feature exists

The feature could not be found in the license file.

A call was made to one of the software license working group usage metering functions (um\_XXX\_record()).

**-6 LM\_NOSERVICE**

No TCP “license” service exists

This happens if a SERVER line does not specify a TCP/port number, and the TCP license service does not exist in /etc/services.

**-7 LM\_NOSOCKET**

No socket connection to license manager server

lc\_disconn() was called after the process had been disconnected from the socket. This error can also occur if an internal error happens within l\_sndmsg() or l\_rovmsg()

**-8 LM\_BADCODE**

Encryption code in license file is inconsistent

The code in a license file line does not match the other data in the license file. This is usually the result of not building all the software components with the same encryption seeds. Check create\_lic . c, ls\_vendor . c, and your application code carefully to insure that they are all built with the same vendor code.

**-9 LM\_NOTTHISHOST**

Invalid host

The host id specified in the license file does not match the node on which the software is running.

**-10 LM\_LONGGONE**

Feature has expired

The feature has expired, i.e., today's date is after the expiration date in the license file.

**-11 LM\_BADDATE**

Invalid date format in license file

The start or expiration date in the license file is invalid.

**-12 LM\_BADCOMM**

Invalid returned data from license server

The port number returned from lmgrd is invalid.

An attempted connection to a vendor daemon did not result in a correct acknowledgment from the daemon.

The daemon did not send back a message within the timeout interval.

A message from the daemon had an invalid checksum.

An `lc_userlist()` request did not receive the correct data.

**-13 LM\_NO\_SERVER\_IN\_FILE**

No SERVER lines in license file

There is no SERVER line in the license file. All non-zero license count features need at least one SERVER line.

**-14 LM\_BADHOST**

Cannot find SERVER hostname in network database

The `gethostbyname()` system call failed for the SERVER nodename in the license file.

**-15 LM\_CANTCONNECT**

Cannot connect to license server

The `connect()` system call failed, while attempting to connect to the daemon.

The attempt to connect to the vendor daemon on all SERVER nodes was unsuccessful.

`lc_status()` returns LM\_CANTCONNECT if the feature had been checked out but the program is in the process of reconnecting.

If reconnection fails, the final status return is LM\_CANTCONNECT.

**-16 LM\_CANTREAD**

Cannot read data from license server

The process cannot read data from the daemon within the timeout interval.

The connection was reset by the daemon (usually because the daemon exited) before the process attempted to read data.

**-17 LM\_CANTWRITE**

Cannot write data to license server

The process could not write data to the daemon after the connection was established.

**-18 LM\_NOSERVSUPP**

License server does not support this feature

The feature has expired (on the server node), or has not yet started, or the version is greater than the highest supported version.

**-19 LM\_SELECTERR**

Error in select system call

The `select()` system call failed. This should never happen in a client program.

**-20 LM\_SERVBUSY**

License server busy (no majority)

The license server is busy establishing a quorum of server nodes so that licensing can start. This error is very rare, and checkout should be retried if this occurs.

**-21 LM\_OLDVER**

License file does not support this versions

The version requested is greater than the highest version supported in the license file FEATURE line.

**-22 LM\_CHECKINBAD**

Feature checking failure detected at license server

The check in request did not receive a proper reply from the vendor daemon (the license might still be considered in use).

**-23 LM\_BUSYNEWSERV**

License server temporarily busy (new server connecting)

The vendor daemon is in the process of establishing a quorum condition. New requests from clients are deferred during this period. This request should be retried.

**-24 LM\_USERSQUEUED**

Users are queued for this feature

This error is similar to MAX USERS but supplies the additional information that there are other users in the queue for this feature.

**-25 LM\_SERVLONGGONE**

License server does not support this version of this feature

The version specified in the checkout request is greater than the highest version number the daemon supports.

**-26 LM\_TOOMANY**

Request for more licenses than this feature supports

A checkout request was made for more licenses than are supported in the license file. This request will never succeed.

**-27 LM\_CANTREADKMEM**

Cannot read /dev/kmem

The file /dev/ kmem is not readable on this system. This error will only occur if using extended hostid checking, which is no longer supported in current versions of FLEXlm.

**-28 LM\_CANTREADVMUNIX**

Cannot read /vmunix"

The file /vmunix is not readable on this system. This error will only occur if using extended hostid checking, which is no longer supported in current versions of FLEXlm.

**-29 LM\_CANTFINDEETHER**

Cannot find ethernet device

The ethernet device could not be located on this system.

**-30 LM\_NOREADLIC**

Cannot read license file

The license file could not be read (errno = EPERM or EACCES).

**-31 LM\_TOOEARLY**

Feature not yet available

The feature is not enabled yet (current date is before the feature start date).

**-32 LM\_NOSUCHATTR**

No such attribute

A call to `lc_get_attr()` or `lc_set_attr()` specified an unknown attribute code.

### **-33 LM\_BADHANDSHAKE**

Bad encryption handshake with daemon

The client performs an encryption handshake operation with the daemon prior to any licensing operations. This handshake operation failed.

### **-34 LM\_CLOCKBAD**

Clock difference too large between client and server

The date on the client system does not agree closely enough with the date on the server (daemon) system. The amount of difference allowed is set by the software vendor with:

```
lc_set_attr (LM_A_MAX_TIMEDIFF, . . .) .
```

### **-35 LM\_FEATQUEUE**

In the queue for this feature

This checkout request has resulted in the process being placed in the queue for this feature. Subsequent calls to `lc_status()` will yield the status of this queued request.

### **-36 LM\_FEATCORRUPT**

Feature database corrupted in daemon

The daemon's run-time feature data structures have become corrupted. This is an internal daemon error.

### **-37 LM\_BADFEATPARAM**

Duplicate selection mismatch for this feature

The checkout request for this feature has specified a duplicate mask that does not match the mask specified by an earlier checkout. This is probably the result of using different versions of your client software, or from having an uninitialized variable in the `dup_group` field for `lc_checkout()`.

### **-38 LM\_FEATEXCLUDE**

User/host on EXCLUDE list for feature

The user/host/display has been excluded from this feature by an end-user's daemon option file.

**-39 LM\_FEATNOTINCLUDE**

User/host not on INCLUDE list for feature

The user/host/display has NOT been included in this feature by an end-user's daemon option file.

**-40 LM\_CANTMALLOC**

Cannot allocate dynamic memory

The malloc() call failed to return sufficient memory.

**-41 LM\_NEVERCHECKOUT**

Feature was never checked out

This code is returned by lc\_status() if the feature requested has never been checked out.

**-42 LM\_BADPARAM**

Invalid parameter

A call to lc\_set\_attr() specified an invalid value for its attribute.

lc\_get\_attr(LM\_A\_MASTER,...) called without connection already established to server.

**-43 LM\_NOKEYDATA**

No FLEXlm key data supplied in lc\_init () call

No FLEXlm key data was supplied to the lc\_init() call. Some FLEXlm functions will be disabled.

**44 LM\_BADKEYDATA**

Invalid FLEXlm key data supplied

Invalid FLEXlm key data was supplied to the lc\_init() call. Some FLEXlm functions will be disabled.

**-45 LM\_FUNCNOTAVAIL**

FLEXlm function not available in this version

This FLEXlm function is not available. This could be a result of a BADKEYDATA, NOKEYDATA, or DEMOKIT return from lc\_init().

**-47 LM\_NOCLOCKCHECK**

Clock setting check not available in daemon

`lc_checkout()` returns this code when the CLOCK SETTING check between client and daemon is not supported in this daemon. Try calling:

**`lc_set_attr(LM_A_MAX_TIMEDIFF, -1)`** to disable the clock check.

**-48 LM\_BADPLATFORM**

FLEXIm platform not enabled

The software is running on a platform which is not supported by the vendor keys you have purchased. To purchase keys for additional platforms, contact Nortel

**-49 LM\_DATE\_TOOBIG**

Date too late for binary format

The expiration date format in FLEXIm licenses are good until the year 2027.

**-51 LM\_NOFLEXLINIT**

FLEXIm not initialized

A FLEXIm function was called before `lc_init()` was called. Always call `lc_init()` first.

**-52 LM\_NOSERVRESP**

Server did not respond to message

UDP communications failure. UDP communications are not guaranteed. FLEXIm makes a best effort to recover from lost and garbled messages, but this indicates a failure.

**-53 LM\_CHECKOUTFILTERED**

Request rejected by vendor-defined filter

`lc_checkout()` failed because of the vendor defined routine which is set in `ls_vendor.c: ls_outfilter`.

**-54 LM\_NOFEATSET**

No FEATURESET line present in license file

`lc_ck_feats()` called, but no FEATURESET line in license file.

**-55 LM\_BADFEATSET**

Incorrect FEATURESET line in license file

Error return from `lc_ck_feats()`

**-56 LM\_CANTCOMPUTEFEATSET**

Cannot compute FEATURESET line

Error return from `lc_ck_feats()`, which occurs because `lc_feat_set()` can not compute the FEATURESET line. This can happen because there's no FEATURES in the file.

**-57 LM\_SOCKETFAIL**

`socket()` call failed

This can occur when the UNIX OS runs out of system resources.

**-58 LM\_SETSOCKFAIL**

`setsockopt()` failed

The `setsockopt()` call has failed. This is likely due to an OS error.

**-59 LM\_BADCHECKSUM**

Message checksum failure

Communications error - messages between client and server are encrypted and checksummed for security and integrity. The checksum will usually fail because of poor networking communications.

**-60 For internal use**

**-61 LM\_SERVNOREADLIC**

Cannot read license file from server

This occurs when the license file, via `LM_LICENSE_FILE`, or `lc_set_attr(LM_A_LICENSE_FILE, path)`, is incorrectly defined. This only occurs when `LM_LICENSE_FILE` is set to ***port@host***

**-62 LM\_NONETWORK**

Network software (tcp/ip) not available

This is reported on systems where this is detectable. Some systems may have this problem, but the error will not be reported as `LM_NONETWORK` - system calls will simply fail.

**-63 LM\_NOTLICADMIN**

Not a license administrator

Various functions, such as `lc_remove()` and `lc_shutdown()`, require that the user be an license administrator, depending on how `lmgrd` was started. See `lmgrd()`, `lmremove()` and `lmdownf()`.

**-64 LM\_REMOVETOOSOON**

`lmremove` request too soon

An `lc_remove` request occurred, but `ls_min_lmremove` (defined in `ls_vendor.c`) seconds have not elapsed since the license was checked out. See `ls_vendor()`.

**-65 LM\_BADVENDORDATA**

Bad `VENDORCODE` struct passed to `lc_init()`

`LM_CODE` macro was not used to define the `VENDORCODE` argument for `lc_init`. See `lm_code.h` and `lmclient.c` for an example of how to use the `LM_CODE` macro.

**-66 LM\_LIBRARYMISMATCH**

`FLEXlm` include file/library mismatch

An attempt was made to create a licensed binary with mismatching source/header files and `liblmgr.a`. The source code version must match the linking libraries.

**-67 For Internal Use****-68 For Internal Use****-69 For Internal Use****-70 For Internal Use****-71 LM\_BAD\_TZ**

Invalid `TZ` environment variable

On some operating systems, the end-user can significantly change the date using the `TZ` environment variable. This error detects this type of theft.

**-72 LM\_OLDVENDORDATA**

'Old-style' vendor keys (3-word)

V3.0 uses 4-vendor keys. This error detects that the `LM_CODE` macro was used with only 3 keys.

**-73 LM\_LOCALFILTER**

Local checkout filter requested request

Request was denied by filter specified in `lc_set_attr(LM_A_CHECKOUTFILTERs filter)`.

**-74 LM\_ENDPATH**

Attempt to read beyond the end of LF path

An error occurred with the colon-separated list of license files.

**-75 LM\_VMS\_SETIMR\_FAILED**

SYSS\$SETIMR call failed

SYSS\$SETIMR is used on VMS to time out certain FLEXlm system calls.

**-76 LM\_INTERNAL\_ERROR**

Internal FLEXlm Error - Please report to Nortel

**-77 LM\_BAD\_VERSION**

Bad version number - must be floating point number, with no letters

A line in the license file has an invalid version number. `lc_checkout()` was called with an invalid version character string.

**-78 LM\_NOADMINAPI**

FLEXadmin API functions not available

An attempt to get information from another company's vendor daemon was made via `lc_get_attr(LM_A_VD_*, ...)`. This function call is only allowed for the client's own vendor daemon.

**-79 For Internal Use**

**-80 For Internal Use**

**-81 For Internal Use**

**-82 LM\_BADPKG**

Invalid PACKAGE line in license file

PACKAGE missing or invalid COMPONENTS.

A COMPONENT has number of users set, with `OPTIONS=SUITE`.

A COMPONENT has number of users=0

# Glossary

---

## **cli**

Call logic interpreter. It is an essential Meridian IVR process that interprets applications.

## **csc**

Call scheduler. It is an essential Meridian IVR process. It is a scheduling process for DELV and other timing.

## **CSL**

Command and status link.

## **db**

Database server. It is an essential Meridian IVR process that controls the information database.

## **dcm**

Channel manager. It is an essential Meridian IVR process that communicates with Meridian Mail. One dcm process is necessary for each active channel along with one parent dcm.

## **devnt**

A tool that displays the contents of the csc\_events file in the /usr/sys\_files directory. This file contains a list of the application's times, telephone numbers, and event IDs that are scheduled to be run. This file is created by the DELV cell.

## **keylock**

Meridian IVR hardware security device.

### **lh**

Link handler. It is an essential Meridian IVR process that connects the Meridian IVR application processor to Meridian Mail.

### **lhrx**

An essential Meridian IVR link handler receiver process.

### **Meridian ACCESS**

The software interface between the application module running Meridian IVR and Meridian Mail.

### **Meridian Mail**

A comprehensive voice processing module that manages incoming and outgoing calls and provides user services for performing various voice messaging functions.

### **MSM**

Message Service Module. A Meridian Mail platform for DMS and SL-100 switches.

### **psm**

Protocol state machine. it is an essential Meridian IVR process identifying the state machine for Meridian IVR.

### **SMDI**

Simplified message desk interface.

### **rstat**

A tool that resets all of the statistics file and clears the transaction log file. This tool is used in installations of Meridian IVR that do not run X applications. Meridian IVR must be running before you can use rstat. Also available through the menu interface.

### **sad**

System administration process. It is an essential distributive Meridian IVR process that helps cli sort requests.

### **sae**

System application editor, a curses-based application editor. Is is a non-essential Meridian IVR process for use by Nortel support personnel only.

**sai**

System administration interface. it is a non-essential Meridian IVR process.

**sam**

System application monitor. A call trace tool allowing cell walk-through per channel. The system application monitor is a standalone process that you can use to log user activity as an application runs on one or more channels. It is an online application debugging tool. sam is a non-essential Meridian IVR process.

**sde**

System database editor. It is a non-essential Meridian IVR process.

**sectool**

A tool for checking the security keylock, for use by Nortel support personnel only.

**session**

A connection to a host as defined in the trs.conf file, representing a terminal connection.

**sri**

System reports interface. It is a non-essential Meridian IVR process.

**trs**

Terminal resource server. It is a Meridian IVR process that manages the assignment of the available terminal resources on the application processor.

**ueh**

Alternate error handling process. It is an essential Meridian IVR process.

**usr**

User function process. It is an essential Meridian IVR process that controls customer-written user functions.

**ust**

Statistics process. It is an essential Meridian IVR process that keeps statistics for Meridian IVR.

**uvm**

UNIX VSM manager. It is an essential Meridian IVR process that handles disk requests during messaging.

**vft**

An essential Meridian IVR process that performs file transfers.

**vip**

An essential Meridian IVR process that identifies the state machine for Meridian IVR.

**vrn**

An essential Meridian IVR process that keeps track of available channels.

**vtk**

An essential Meridian IVR process that handles input and output to the PSM (process state machine).

Meridian 1

# **Meridian IVR**

## **Maintenance and Diagnostics**

### **Guide**

Customer Documentation  
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Toronto, Ontario, Canada  
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Publication Number: 555-9001-500  
Product release: 2.0/1  
Document release: Standard 1.0  
Date: February 1996

Printed in the United States of America

**NORTEL**  
NORTHERN TELECOM