GRASS VALLEY GROUP

# Service Manual with NetCentral XP

071-8049-00
SEPTEMBER 2000

**PROFILE XP** PVS Series
**MEDIA PLATFORM**

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# *Safety Summaries*

## General Safety Summary

Review the following safety precautions to avoid injury and prevent damage to this product or any products connected to it.

*Only qualified personnel should perform service procedures.*

While using this product, you may need to access other parts of the system. Read the *General Safety summary* in other system manuals for warnings and cautions related to operating the system.

### Injury Precautions

**Use Proper Power Cord**

To avoid fire hazard, use only the power cord specified for this product.

**Ground the Product**

This product is grounded through the grounding conductor of the power cord. To avoid electric shock, the grounding conductor must be connected to earth ground. Before making connections to the input or output terminals of the product, ensure that the product is properly grounded.

**Do Not Operate Without Covers**

To avoid electric shock or fire hazard, do not operate this product with covers or panels removed.

**Do Not operate in Wet/Damp Conditions**

To avoid electric shock, do not operate this product in wet or damp conditions.

**Do Not Operate in an Explosive Atmosphere**

To avoid injury or fire hazard, do not operate this product in an explosive atmosphere.

**Avoid Exposed Circuitry**

To avoid injury, remove jewelry such as rings, watches, and other metallic objects. Do not touch exposed connections and components when power is present.

### Product Damage Precautions

**Use Proper Power Source**

Do not operate this product from a power source that applies more than the voltage specified.

**Provide Proper Ventilation**

To prevent product overheating, provide proper ventilation.

**Do Not Operate With Suspected Failures**

If you suspect there is damage to this product, have it inspected by qualified service personnel.

**Battery Replacement**

To avoid damage, replace only with the same or equivalent type recommended by the circuit board manufacturer. Dispose of used battery according to the circuit board manufacturer's instructions.

# Safety Terms and Symbols

**Terms in This Manual**

These terms may appear in this manual:



***WARNING:*** Warning statements identify conditions or practices that can result in personal injury or loss of life.



***CAUTION:*** Caution statements identify conditions or practices that can result in damage to the equipment or other property.

**Terms on the Product**

These terms may appear on the product:

DANGER indicates a personal injury hazard immediately accessible as one reads the marking.

WARNING indicates a personal injury hazard not immediately accessible as you read the marking.

CAUTION indicates a hazard to property including the product.

**Symbols on the Product**

The following symbols may appear on the product:



DANGER high voltage



Protective ground (earth) terminal



ATTENTION – refer to manual

# Service Safety Summary

**Do Not Service Alone**

Do not perform internal service or adjustment of this product unless another person capable of rendering first aid and resuscitation is present.

**Disconnect Power**

To avoid electric shock, disconnect the main power by means of the power cord or, if provided, the power switch.

**Use Care When Servicing With Power On**

Dangerous voltages or currents may exist in this product. Disconnect power and remove battery (if applicable) before removing protective panels, soldering, or replacing components.

To avoid electric shock, do not touch exposed connections

# Certifications and Compliances

**Canadian Certified Power Cords**

Canadian approval includes the products and power cords appropriate for use in the North America power network. All other power cords supplied are approved for the country of use.

**FCC Emission Control**

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense. Changes or modifications not expressly approved by Tektronix can affect emission compliance and could void the user's authority to operate this equipment.

**Canadian EMC Notice of Compliance**

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe A préscrites dans le Règlement sur le brouillage radioélectrique édicté par le ministère des Communications du Canada.

**Canadian Certified AC Adapter**

Canadian approval includes the AC adapters appropriate for use in the North America power network. All other AC adapters supplied are approved for the country of use.

**EN55022 Class A Warning**

For products that comply with Class A. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

## Laser Compliance

**Laser Safety Requirements**

The device used in this product is a Class 1 certified laser product. Operating this product outside specifications or altering its original design may result in hazardous radiation exposure, and may be considered an act of modifying or new manufacturing of a laser product under U.S. regulations contained in 21CFR Chapter 1, subchapter J or CENELEC regulations in HD 482 S1. People performing such an act are required by law to recertify and reidentify this product in accordance with provisions of 21CFR subchapter J for distribution within the U.S.A., and in accordance with CENELEC HD 482 S1 for distribution within countries using the IEC 825 standard.

### Laser Safety

Laser safety in the United States is regulated by the Center for Devices and Radiological Health (CDRH). The laser safety regulations are published in the "Laser Product Performance Standard," Code of Federal Regulation (CFR), Title 21, Subchapter J.

The International Electrotechnical Commission (IEC) Standard 825, "Radiation of Laser Products, Equipment Classification, Requirements and User's Guide," governs laser products outside the United States. Europe and member nations of the European Free Trade Association fall under the jurisdiction of the Comité Européen de Normalization Electrotechnique (CENELEC).

### FCC Emission Limits

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesirable operation.

## Certification

| Category | Standard |
|---|---|
| Safety | *Designed/tested for compliance with:* |
| | **UL1950 -** Safety of Information Technology Equipment, including Electrical Business Equipment (Third Edition, 1995) |
| | **IEC 950 -** Safety of Information Technology Equipment, including Electrical Business Equipment (Second edition, 1991) |
| | **CAN/CSA C22.2, No. 950-95 -** Safety of Information Technology Equipment, including Electrical Business Equipment |
| | **EN60950 -** Safety of Information Technology Equipment, including Electrical Business Equipment |

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# Preface

## About this manual

This service manual provides procedures for servicing the Profile XP Media Platform to the field-replaceable unit level. Use this manual to isolate problems to a board or module, such as the Power Supply, and to make repairs through module exchange.

## Organization of the manual

The Service Manual is divided into the following chapters and appendixes:

#### Chapter 1 - Characterizing the problem

A troubleshooting-guide starting point. Asks basic questions that:

1. enable you to determine the nature of the problem
2. guide you to the chapter that deals with that problem for further tests, analysis, and corrective action

This chapter also briefly discusses the various diagnostic aids available, and describes the obvious hardware faults that require no further analysis.

#### Chapter 2 - Troubleshooting Windows NT boot problems

Guides you through the Windows NT boot sequence and problems associated with booting.

#### Chapter 3 - Troubleshooting video problems

Lists the NetCentral XP messages for the video subsystem, and provides corrective action for video problems that occur whether the media platform is controlled locally or remotely with automation tools.

#### Chapter 4 - Troubleshooting audio problems

Lists the NetCentral XP messages for the audio subsystem, and provides corrective action for audio problems that might occur as a result of incorrect settings, connections, etc.

#### Chapter 5 - Troubleshooting timecode problems

Lists the NetCentral XP messages for timecode problems,and provides corrective action for timecode problems that might occur as a result of incorrect settings, connections, etc.

#### Chapter 6 - Troubleshooting storage system problems

Lists the NetCentral XP messages for the storage system, and suggests preventive or corrective action for common media storage problems.

**Chapter 7 - Troubleshooting video network problems**

Lists NetCentral XP messages and provides corrective action for both FibreChannel and Ethernet video networking problems. Includes procedures for testing either video network.

**Chapter 8 - Troubleshooting miscellaneous system problems**

Lists NetCentral XP messages and provides corrective action for a variety of subsystems in the Profile XP media platform including the Applications subsystem, the Real Time Processor board, the power supplies, the fans, and the thermal monitoring.

**Chapter 9 - Troubleshooting channel control problems**

Provides corrective action for some common control problems.

**Chapter 10 - Routine Maintenance**

Provides procedures for filter cleaning and other routine maintenance tasks.

**Chapter 11 - Parts Removal and Replacement**

Provides illustrated procedures for disassembly and a list of field-replaceable parts.

**Appendix A - Diagnostic Tools**

Serves as a reference for use of the various diagnostic tools available on Profile XP media platform, including instructions for using the NetCentral XP system, Profile XP diagnostics, WindowsNT diagnostics, and POST (power-on self-test).

**Appendix B - Theory of operation**

High level system overview, and high level discussions of each of the boards in the system.

## Related documentation

*Profile Family User Manual*

*PVS1000 Installation Guide*

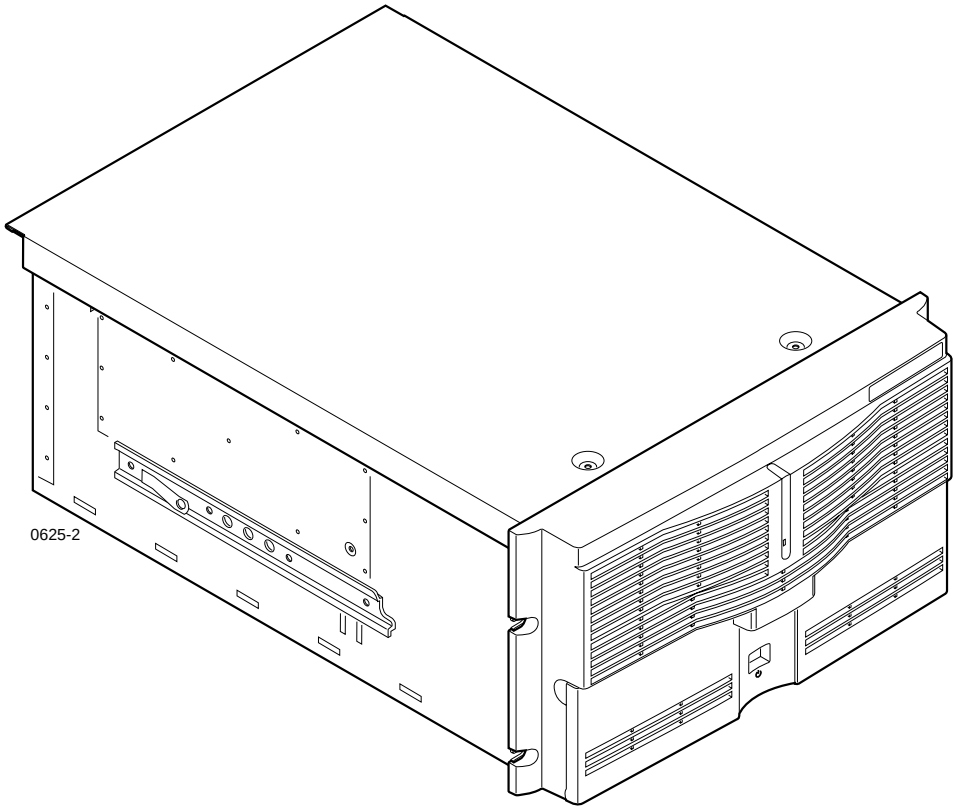
*PVS2000 Installation Guide*

*Profile XP Series System Guide*

*Profile Release Notes*

# Product description

The Grass Valley Group Profile XP Media Platform provides a high bandwidth platform for the storage and manipulation of video and audio in professional applications including spot insertion, program delay, store and forward, and multi-channel replay.




The Profile XP Media Platform

## Standard accessories

The Profile XP Media Platform is shipped with the following standard accessories:

- Manuals, which include:
  - Installation Guide
  - System Guide
  - User Manual
  - Service Manual
  - Profile Software Release Notes
- Software package which includes the Profile XP Software CD-ROM and an emergency repair disk.
- Windows NT software package
- Rack size keyboard with integrated pointing device
- I/O Breakout Box and cable (provides LTC, RS-422 & GPI interfaces)
- Power cable assembly
- Rack mounting slides
- Ethernet cable

## Profile XP Media Platform features

Profile XP Media Platform features include:

- Up to 8 standard definition (SD) channels or 4 high definition (HD) channels of broadcast-quality video

**Table 1** Profile XP Media Platform Channel Configurations by model

| Model Number | Number of MPEG Encoder Boards[a] | Number of MPEG Decoder Boards | Channel Configuration |
|---|---|---|---|
| PVS1022 | 1 | 1 | 2 in/2 out |
| PVS1024 | 1 | 2 | 2 in/ 4 out |
| PVS1026 | 1 | 3 | 2 in/6 out |
| PVS1044 | 2 | 2 | 4 in/4 out |
| PVS1062 | 3 | 1 | 6 in/2 out |
| PVS1008 | 0 | 4 | 0 in/8 out |
| PVS2012 | 1 | 1 | 1 in/2 out |
| PVS2013 | 1 | 2 | 1 in/ 3 out |
| PVS2004 | 0 | 2 | 0 in/4 out |
| PVS2022 | 2 | 2 | 2 in/2 out |
| PVS2212 | 1 HD, 1 SD | 1 HD, 1 SD | 2 in/2 out (SD)<br>1 in/2 out (HD) |

[a] MPEG Encoder and Decoder boards in PVS1000 series are Standard Definition; in PVS2000 series, High Definition.

- MPEG-2 4:2:2 @ Main Level from 4-50Mbs, long GOP (for SD)
  MPEG-2 4:2:0 @ Main Level from 24-80Mbs, long GOP (for HD)
- SD: SMPTE 259M, 270MHz Serial Digital I/O (Optional analog monitor with timecode burn-in and text overlay)
- HD: SMPTE 292M, 1.485 Gbs Serial Digital I/O (includes downconverted SD SDI and composite analog monitor with text overlay and timecode burn-in)
- Redundant power supply, NT disk, cooling fans for reliability
- 525/60 or 625/50 SD operation: accepts NTSC, PAL
- 1080i and 720p line rates for HD, 50, 59.94, and 60 fps, accepts house black and tri-level sync reference
- External Fibre Channel RAID-3 storage (dual controllers optional)
- Distributed storage for more than 100 channels over high speed 1Gb/s Fibre Channel video network.
- Ethernet IP network transfers up to 5MB/s.
- Flexible audio formats including 16 channels standard (32 channels optional) of, AES/EBU or embedded digital audio (analog optional)
- Dolby D, Dolby E, and AC-3 compressed audio support.
- Remote error reporting & monitoring via SNMP
- Remote control including:
  - Remote Applications over Ethernet
  - RS-422 control protocol including Louth, Odetics, BVW, or Profile protocols.
  - GPI Trigger (8 I/O)

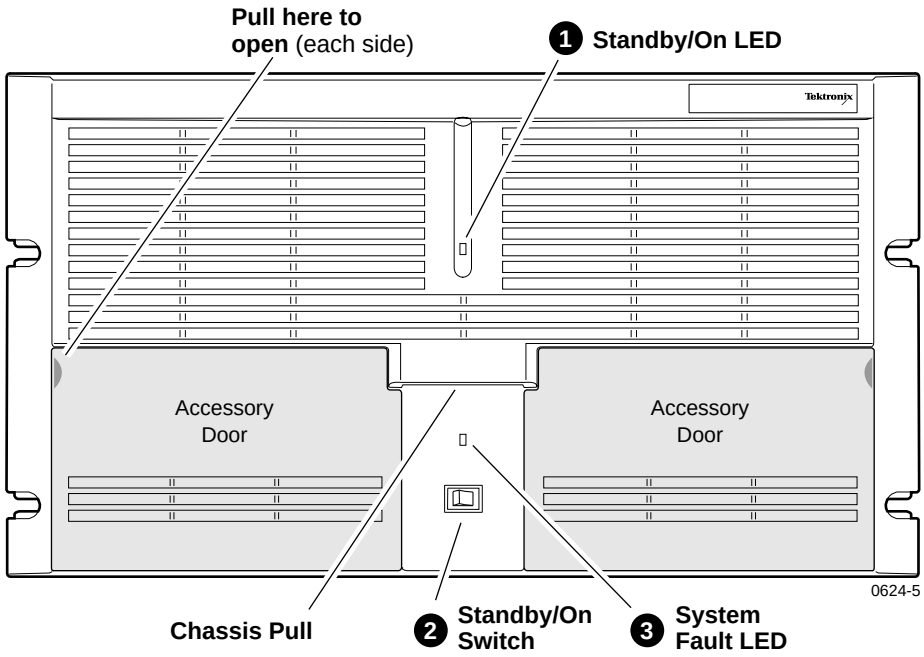
## Front panel controls and indicators

The Profile XP Media Platform front panel shown here includes the following controls and indicators:

❶ **Standby/On LED** - indicates the standby switch is in the on position and that secondary voltages are present in the chassis.

❷ **Standby/On Switch** - provides system On/Off control.

❸ **System Fault LED** - indicates a system fault somewhere in the Profile XP system. This LED is under control of the NetCentral XP system and goes off when NetCentral XP receives notice from the system that the cause of the fault is cleared.




Profile XP Media Platform front panel

The Profile XP front panel features two accessory doors that provide access to several application subsystem storage devices. A system with standard equipment is shown on page 19, while a system equipped with the redundant storage option is shown on page 20.

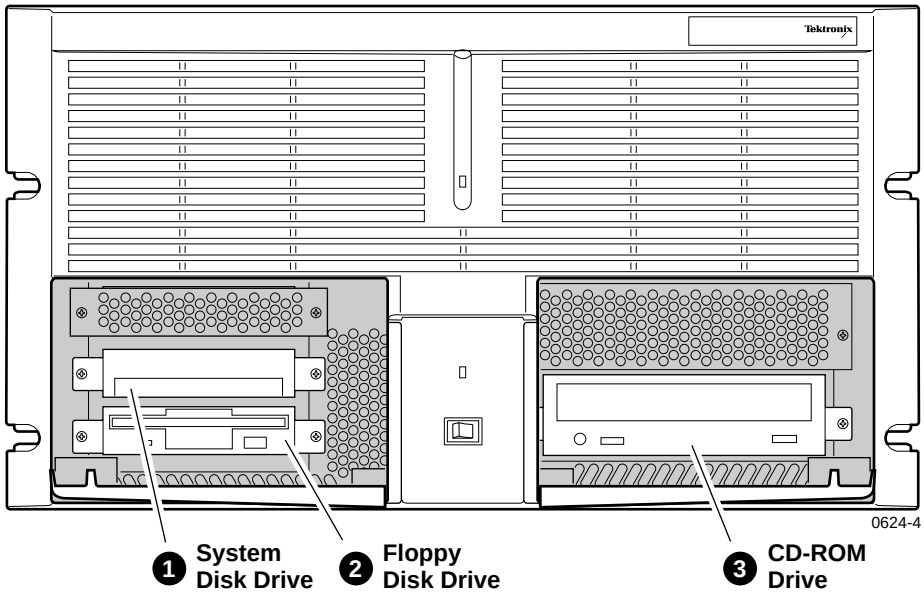
The storage devices in the standard system include:

❶ **System Drive** - contains Windows NT operating system and Profile XP software and applications.

❸ **1.44MB Floppy Disk Drive -** for installing operating system and Profile XP system software upgrades.

❹ **CD-ROM Drive** - for installing operating system and Profile XP system software upgrades.

***NOTE: The snap-in hinges in the front panel accessory doors allow you to easily pop the door back into place should it be accidentally knocked from its hinges.***




Profile XP Media Platform with accessory doors open

The storage devices in the system with the redundant storage option include:

❶ **Primary System Drive** - contains Windows NT operating system and Profile XP software and applications.

❷ **Mirror System Disk** - mirrors primary system disk and provides automatic fail-over in the event primary system disk fails.

❸ **Drive Mirroring Controller and Indicator Panel** - The Primary and Mirror LEDs monitor the status of the channels as follows:

- **Green** - Drive installed on the current channel
- **Red** - Drive not installed or channel marked as bad
- **Orange** - Drive activity

The Status LED indicates the operating mode of the mirroring system:

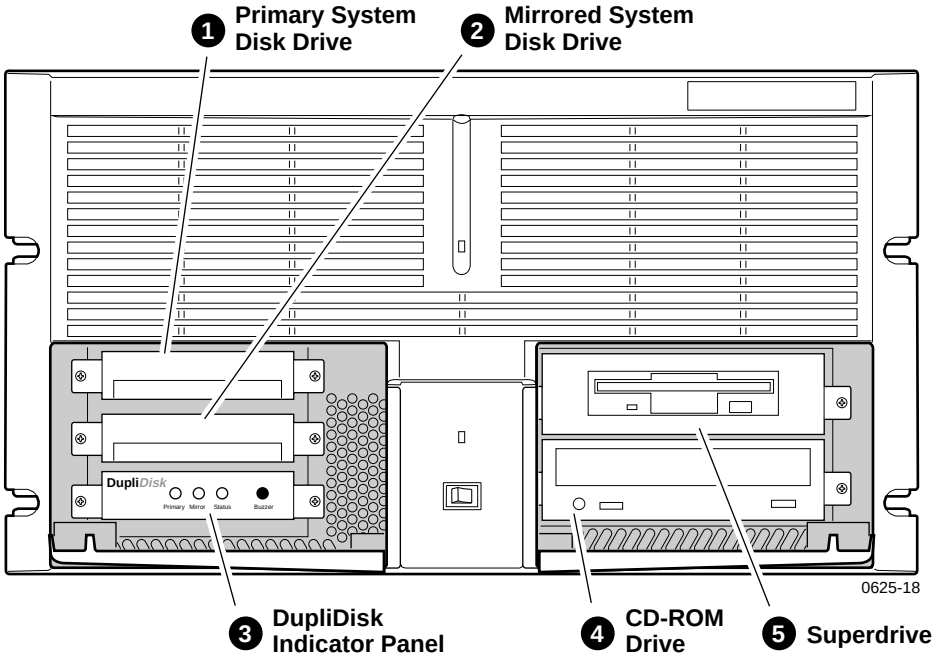
- **Green** - Drives are in Mirror mode
- **Red** - Drives in Single mode

The Buzzer Off switch can be used to silence the buzzer, which sounds under the following conditions:

- Short beep during power on indicates successful boot-up
- Second beep indicates the mirroring system is running in single mode
- Continuous or intermittent beep indicates a drive failure

❹ **CD-ROM Drive** - for installing operating system and Profile XP system software upgrades.

❺ **120MB Superdrive** - for installing operating system and Profile XP system software upgrades.

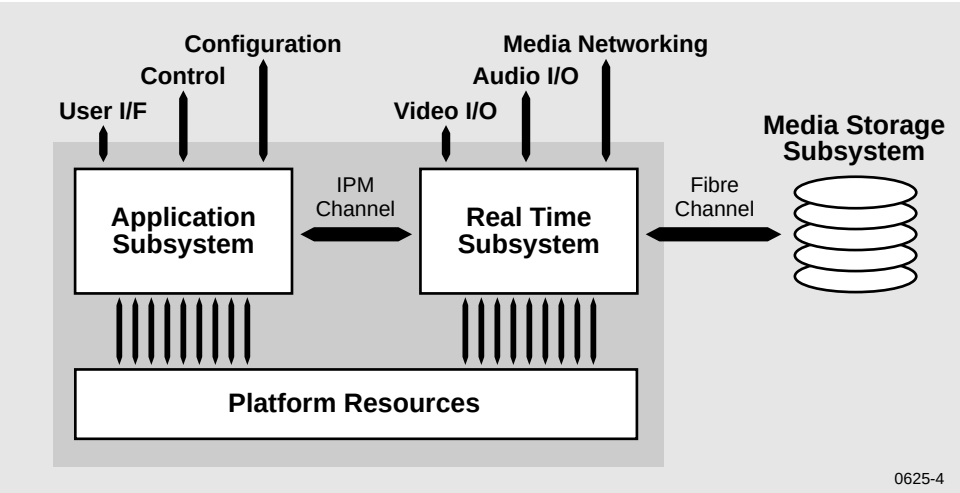



Profile XP with redundant storage option

# Profile XP system overview

The Profile XP Media Platform system is an extension to a standard PCI bus based Windows NT Computer. This standard computer base is enhanced to add functionality and performance necessary to deliver an industrial grade, broadcast quality, disk-based media platform. This section discusses the major architectural blocks, what they do, and how they interconnect. A more detailed overview of the system is available in Appendix B, *Theory of operation*.

The Profile XP Media Platform consists of two major subsystems, the Application Subsystem and the Real Time Subsystem, and the platform resources needed for them to function. These are shown in the darker tinted area of the high-level block diagram. A third major subsystem, the Media Storage Subsystem, is external to the media platform.




High-level Block Diagram

## Platform resources

The platform resources provide the infrastructure necessary to operate, interconnect, and integrate all the components of the Application and Real Time Subsystems. The platform resources include the multi-slot PCI bus, the video & audio crosspoint fabric, the power supply, and system cooling.

## Applications subsystem

The Applications Subsystem is a Windows NT computer subsystem in a standard NLX single board computer form factor. The Applications Subsystem provides a platform for running Windows based applications that configure and control the Real Time Subsystem both locally and remotely.

### Real Time subsystem

The Real Time Subsystem contains an Intel i960 processor and peripheral devices and runs the VxWorks operating system.The Real Time Subsystem manages all the hardware involved in controlling the flow of video, audio, and timecode in and out of the system. This includes video I/O boards, audio I/O boards, video compression boards, and networking and storage. The Real Time Subsystem is controlled by applications running on the Applications Subsystem using Inter-Processor Messaging channels (IPM). It is responsible for the execution of events on the play time line.

### Media storage subsystem

The Storage Subsystem is where the video, audio, timecode and other media related data is stored. This storage system is made up of one or more external RAID level 3 storage chassis containing Fibre Channel disks. The Profile XP Real Time Subsystem controls read/write disk operations by sending SCSI protocol commands over one or more Fibre Channel links.

Chapter 1

# Characterizing the problem

This is your first step in diagnosing the problem you are having with your Profile XP Media Platform. The information presented here and the questions asked will enable you to:

- Determine the nature of the problem
- Direct you to the area of the manual that deals more specifically with the problem you are experiencing

You will also find brief discussions of the diagnostic aids available on the media platform. In cases where the error message carries with it the remedy to the cause, you will not need to go beyond this chapter.

## Localizing the problem

In determining the nature of the problem, there are four questions that will in most cases help you localize the problem to one of the three major subsystems.

### What was the media platform doing when the problem occurred?

Another way to ask this would be, “What were you doing with the media platform when the problem occurred?” or “How were you using the media platform when the problem occurred?” This can include “When did the problem occur?”

- Does the problem occur at start-up?

Any failure before the desktop appears is most likely a Windows NT boot problem. If you are experiencing boot problems, refer to Chapter 2, *Troubleshooting Windows NT boot problems*, which covers the potential problems you can encounter during the WindowsNT boot sequence.

- Can you record and play video, audio, and timecode?

Record and play problems can have a number of causes. The most frequent problems result from a change in configuration, or cables being accidentally disconnected or misconnected. Refer to Chapter 3, *Troubleshooting video problems*, Chapter 4, *Troubleshooting audio problems*, or Chapter 5, *Troubleshooting timecode problems* for help determining those problems.

If an automatic controller is used to operate the media platform, refer to Chapter 9, *Troubleshooting channel control problems* for dealing with possible problems caused by controller interface problems.

- Is there a problem with the video network?

If you are having network problems such as an inability to access other Profile systems on the network see Chapter 7, *Troubleshooting video network problems*, which deals with possible problems in the fibre channel or ethernet video network systems.

### What has changed?

If the media platform has been working, but has suddenly developed a problem, think of what has changed in the system.

- Have you changed resources for any of the channels?
- Have you installed any software?
- Have you installed or removed a board?

If reversing the changes restores the system, perhaps there is a problem with the software or hardware that was installed or removed.

### What error indications were reported by the NetCentral XP system?

The NetCentral XP system monitors the operational status of the media platform, keeping track of a number of operating parameters and the health of the circuit boards. Many of the messages displayed by the NetCentral XP system contain the remedy for a problem along with the notification. NetCentral XP also generates log files that you can use to help determine where and when faults have occurred. You can select a log file for viewing from the **View** menu in the NetCentral XP window. Refer to *Viewing logs* on page 107.

### What attempts have you made to remedy the problem?

Keep track of efforts you make to remedy your problem. In the event that you need to contact Grass Valley Group Support, this information can greatly assist the person working with you to isolate and correct the problem.

## Readily Diagnosed Problems

Many problems are easily diagnosed because they are primarily hardware faults that are indicated by messages at boot time or because they raise the NetCentral XP window with an Alarm or an Attention message.

- Power-supply failure
- Fan failure
- Temperature (fans/filter/overload)
- Applications processor boot failure

Any of the plug-in circuit boards in the media platform will generate a NetCentral XP Alarm message if the board fails. This message states the name of the board and its slot location in the Profile XP media platform, and recommends that you replace the board.

# Diagnostic tools

Several diagnostic tools are available to you for determining the nature and source of a problem. They are listed here with brief explanations of their uses, and they are discussed in more detail in Appendix A, *Diagnostic Tools.*

**NetCentral XP —** Monitors the state of the Profile XP media platform, and alerts you to component failures and maintenance needs. This system uses SNMP managers and agents to monitor one Profile XP media platform locally or, if you are using NetCentral XP Enterprise, many Profile XP systems from a remote location. The system constantly monitors the status of the Profile XP media platform and generates Attention messages when hardware failures are imminent or when operating conditions are degrading, and generates Alarm messages when hardware failures occur or when the operating environment exceeds safe parameters.

**Profile XP Diagnostics —** A diagnostic suite that checks the functionality of the boards in the Profile XP Media Platform.

**Windows NT diagnostic tools —** Provided by Microsoft for use in troubleshooting problems with Windows NT.

**POST —** Power-On Self-Test. Basic tests to assess the initial health of the system as it boots.

Chapter 2

# Troubleshooting Windows NT boot problems

This chapter deals with problems that occur between setting the switch to “on” and the appearance of the desktop on the monitor screen. During this period, the power-on self-test runs and Windows NT boots.

## Pre-boot problems

The pre-boot sequence of events occurs when you first turn on the computer before Windows NT loads and begins to run. The problems that occur during pre-boot are primarily hardware problems. These problems are typically in the Applications Processor board or in one of the peripherals attached to it: the display, the keyboard, the mouse, the system drive, or the diskette drive. When these events are complete, the computer is ready to begin loading Windows NT.

The following table lists some possible problem symptoms that you might see as error messages that appear during the Power-On Self-Test (POST).

| Symptom | Possible Cause | Solution |
|---|---|---|
| Error message indicating failure in a hard disk drive. | Hard disk drive failure | Try replacing the hard disk drive. |
| | Connecting cable failure | Check the connecting cable, replace if necessary. |
| Error message indicating failure in diskette drive | Diskette drive failure | Try replacing the diskette drive. |
| | Connecting cable failure | Check the connecting cable, replace if necessary. |
| Error message indicating keyboard problem. | Keyboard unplugged | Plug in keyboard |
| | Keyboard or connecting cable defective | Replace keyboard |
| Error message indicating inability to find boot device or operating system. | Hard disk drive failure | Try replacing the hard disk drive. |
| | Connecting cable failure | Check the connecting cable, replace if necessary. |
| Error message indicating CMOS battery low or dead. | Battery low or dead | Replace Applications Processor board. |
| Error message indicating memory problem. | Defective memory. | Replace Applications Processor board. |
| Error message indicating timer or clock problems. | Component failure in Applications Processor board | Replace Applications Processor board. |
| No display | Component failure in Applications Processor board | Replace Applications Processor board. |
| | Monitor or cable failure | |

# Booting Windows NT

This is the sequence that the computer follows when loading Windows NT.

1. Load *NTLDR* into memory and run it.
2. *NTLDR* reads contents of *Boot.ini*. On the screen it displays the boot loader menu, a menu that allows the user to select which operating system to load.
3. *NTLDR* loads Windows NT, or Windows NT VGA-mode if selected by the user.
4. *NTLDR* executes *NTDETECT.COM*.

   On the screen, *NTDETECT* displays "NTDETECT V1.0 Checking Hardware…"
5. Ready to load and initialize Windows NT.
   Display: OS Loader V4.0
   Press spacebar now to invoke Hardware Profile/Last Known Good menu.
6. Initialize Windows NT.
   The screen turns blue with white lettering.
7. Begin loading Windows NT. The boot process is complete when the desktop appears following a user log on or autologon.

## Invoking *LastKnownGood*

As its name implies, *LastKnownGood* is a copy of the configuration from the last successful system boot-up. Invoking *LastKnownGood* allows you to overcome configuration related boot problems. It is used to undo any configuration changes that did not have the intended effect, such as those caused by adding a new driver to the system, or those caused by user-modified registry values. However, *LastKnownGood* does not repair corrupted or missing drivers or files.

LastKnownGood is loaded in when the user presses the space bar at the prompt before Windows NT begins to load.

It is important to remember that when you invoke *LastKnownGood*, any system configuration changes made since the last successful start up are discarded. And once you successfully log on, the configuration used becomes *LastKnownGood*

## Windows NT boot problems

Possible problems that occur during the Windows NT boot sequence are listed in the following table. These problems can be repaired using the emergency repair process described later in this chapter.

| Problem | Probable cause |
|---|---|
| Windows boots without displaying Boot Loader Menu<br>or<br>Problem in Windows NT Path | This will occur if *Boot.ini* is missing. If *Boot.ini* is missing *NTLDR* will boot from the *\winnt* directory by default. If this is the correct directory, Windows NT boots automatically. If not, the following message appears:<br>Windows NT could not start because the following file is missing or corrupt:<br>\winnt root\system32\ntoskrnl.exe<br>Please reinstall a copy of the above file. |
| New boot loader operating system menu item appears | If the path for the default operating system in the boot loader section of the *boot.ini* file does not match any paths in the operating system portion of the file a new entry, "NT (default)" will be added to the operating system portion of the file. This new entry will be highlighted and used to boot NT if user does not make a selection. |
| The following message is displayed:<br>OS Loader V4.0<br>Windows NT could not start because of a computer disk hardware configuration. Could not read from the selected boot disk. Check boot path and disk hardware. Please check the Windows NT (TM) documentation about hardware disk configuration and your hardware reference manuals for additional information. | Invalid device (Name, for instance) in Windows NT path in *boot.ini*. |
| The following error message is displayed:<br>Boot: Couldn't find *NTLDR*<br>Please insert another disk | NTLDR file is corrupt or missing |
| The following error message is displayed:<br>NTDETECT V1.0 Checking Hardware…<br>NTDETECT failed | *Ntdetect.com* file is corrupt or missing |
| The following error message is displayed:<br>Windows NT could not start because the following file is missing or corrupt:<br>\winnt root\system32\ntoskrnl.exe<br>Please re-install a copy of the above file. | *Ntoskrnl.exe* file is corrupt or missing |
| The following error message is displayed:<br>I/O Error accessing boot sector file<br>multi (0) disk (0) rdisk (0) partition (1):\bootsect.dos | *Bootsect.dos* file is corrupt or missing |

# Using the emergency repair process

The emergency repair data located in **c:\winnt\repair** and on the Emergency Repair Disk (ERD) is used to restore a Windows NT workstation back to the state of the last repair update. It is used to search for missing or corrupt Windows NT files and to restore the registry files, including SAM database, security information, disk configuration, software registry entries, and other information.

Use of the Emergency Repair Disk (ERD) is called for when Windows NT Fails to function correctly and invoking the LastKnownGood configuration does not solve the problem. Some points to remember when using the ERD:

- The ERD is computer specific. An ERD created on one computer will not work on another unless the computers are identical and the software is installed in the same locations.
- If you replace the SAM database, you must remember the Administrator password used when the ERD was updated.
- Using the ERD returns the system to the state it was in at the time of the last update to the Emergency Repair directory or disk.

Follow this procedure to use the ERD:

1. Locate the Windows NT installation CD-ROM. You need the installation CD-ROM in case any system files are bad or missing. Also locate the installation media for any Service Packs or Y2K fix installed on the computer.

***NOTE: If you repair System files, the emergency repair process DELETES all Service Packs and the Y2K fix; you must re-install them at the end of the process.***

2. Insert the Windows NT Setup disk 1 and restart the computer. The repair process is a part of Windows NT Setup.
3. Insert Disk 2 when prompted, and type "**R**" to select repair from the Setup Menu that appears (do not select new or update). The following menu appears:

   [X] Inspect registry files
   [X] Inspect start-up environment
   [X] Verify Windows NT system files.
   [X] Inspect boot sector.
   Continue (perform selected tasks)

4. Leave all choices selected, choose Continue, and press **Enter**.
5. When prompted, insert Windows NT Workstation Setup Disk #3 and press **Enter**.
6. When prompted to scan for mass storage devices press "**S**" to skip.
7. In the next screen press "**S**" again, this time to specify the CD ROM Drive.
8. Select "Other" and press **Enter**.
9. Insert the CDROM Driver floppy disk when prompted, then press **Enter**.
10. Select "FIT" and press **Enter** to continue.
11. When prompted, again insert Windows NT Workstation Setup Disk #3 and press **Enter** to continue.

12. Insert the ERD when prompted. If you do not have an ERD, the repair process uses the repair data it finds under *c:\winnt\system32\repair.*

13. Confirm that you want your hard disk(s) examined for corruption by pressing **Enter**.

14. The registry repair choices appear if you left "inspect registry files" selected.

    [X] SYSTEM (System Configuration)
    [X] SOFTWARE (Software Information)
    [ ] DEFAULT (Default User Profile)
    [ ] NTUSER.DAT (New User Profile)
    [ ] SECURITY (Security Policy and SAM (User Accounts Database)
    Continue (perform selected tasks)

    Select the keys you want to restore by entering X between brackets, then highlight Continue and press **Enter**. *SYSTEM* and *SOFTWARE* are the recommended choices because in most cases they will correct problems that require emergency repair.

15. Press **Enter** to restart the computer.

16. Re-install the Windows NT service pack(s) and Y2K fix that were in use before you performed the emergency repair process.

# Re-installing and configuring drivers

In the event that the display, Ethernet, or RS-422 drivers are corrupted or the settings lost, here is the information you need for re-installing the drivers and making settings that return the Profile XP media platform to its factory default conditions. Drivers for the Ethernet adapter, the VGA adapter, and the RS-422 board are located in *c:\profile\Drivers*. When a dialog box requests a location for a file normally found on the CD-ROM, start the path name with *c:\profile\Drivers\…*

| Hardware | Driver | Location | Factory settings |
|---|---|---|---|
| VGA adapter | ATI Rage PRO | *c:\profile\Drivers\ATI_RAGE* | Desktop Area: 1024 X 768<br>Refresh Rate: 70 Hz<br>Color Palate: 24 bit, 16,777,216 Colors |
| RS-422 board | Comtrol RocketPort Ver 4.32 | *c:\profile\Drivers\rocket* | Com Port Range:<br>Starting COM Port: COM3<br>Scan Rate (ms): 1 |
| Ethernet adapter | Intel EtherExpress PRO Adapter 82558 | *c:\profile\Drivers\Intel_PRO* | Memory Address: 0xFC000000<br>I/O Address: 0x1000<br>Interrupt: 9 |

Chapter 3

# Troubleshooting video problems

If your video problem is a result of equipment failure, your first indication might be a message in the NetCentral XP system. The tables of NetCentral XP messages list the Attention and Alarm messages you might see, with some possible causes and solutions.

When you are troubleshooting video problems and you have determined that the problem is hardware related, remember that you are trying isolate the fault to a field-replaceable unit. There are three field-replaceable units that could cause video problems:

- An SDI or HD SDI board or Video Monitor board
- the Motherboard
- the MPEG-2 Encoder or Decoder board

In general, you can verify or rule out hardware problems by using the Profile XP diagnostics described in Appendix A, *Diagnostic Tools*. If the diagnostics indicate that a board is defective, replace that board.

In many cases an improper configuration setting or other change in the system setup can result in video problems. Search through the problems listed in *Correcting common setup problems* and *Correcting common video problems* later in this chapter.

The *System Guide* referred to in the tables in this chapter is the Profile XP *System Guide*.

## Checking NetCentral XP messages

These are Attention and Alarm messages you might see from the NetCentral XP system. The tables present the messages that appear as a result of some fault condition in the SDI board or MPEG-2 Decoder and Encoder boards.

### SDI problems

| Problem | Possible Causes | Corrective Action |
|---|---|---|
| Video is not present at SDI input *N*. | Cable disconnected or damaged. | Reconnect cable, after repairs if necessary. |
| | Signal source interrupted. | Check that signal is available from source. |
| SDI digital signal processor *N* has failed. | Defective board. | Do one or more of the following:<br>• Run Profile XP diagnostics to verify that the board has failed.<br>• Replace the board.<br>• If the problem persists, contact Support. |

## MPEG-2 Decoder problems

| Problem | Possible Causes | Corrective Action |
|---|---|---|
| Unable to initialize decoder *N*. | Defective MPEG-2 Decoder board, or problem with internal software. | Do one or more of the following:<br>• Restart the Profile XP system.<br>• Replace the board.<br>• Contact Support. |
| Unable to establish IPM communication with the decoder board. | Defective MPEG-2 Decoder board, or problem with internal software. | |
| Could not allocate resources for the task on the Real Time System. | | Contact Support. |
| Could not allocate resources for the task on the MPEG-2 Decoder board. | | Contact Support. |
| Decoder *N* cannot access the image because the disk subsystem is not responding. | Fibre Channel RAID system not operating. | Make sure the PFC500 is operating. |
| | Fibre Channel cables between FC Disk Interface and RAID system disconnected or defective. | Reconnect cable if disconnected, replace if defective. |
| | FC Disk Interface board defective. | Replace board. |
| Decoder *N* is unable to decode image due to lack of memory. | | Do one or more of the following:<br>• Restart the Profile XP system.<br>• Contact Support. |
| An internal error occurred in decoder *N*. Message: (*See message on screen).* | | For Warning: No action.<br>For Alarm: Try shutting down and restarting the Profile XP system. If the problem persists, contact Support. |

## MPEG-2 Encoder problems

| Problem | Possible Causes | Corrective Action |
|---|---|---|
| Unable to initialize encoder *N*. | Defective MPEG-2 Encoder board, or problem with internal software. | Do one or more of the following:<br>• Restart the Profile XP system.<br>• Replace the board.<br>• Contact Support. |
| MPEG-2 Encoder board stopped responding. | Defective MPEG-2 Encoder board, or problem with internal software. | |
| Encoder *N* generated a system request error due to either a hardware error or lack of resources. Message: (*See message on screen).* | | Contact Support. |
| An internal error occurred in encoder *N*. Message: (*See message on screen).* | | For an Attention: No action.<br>For an Alarm: Try shutting down and restarting the Profile XP system. If the problem persists, contact Support. |

# Correcting common setup problems

This troubleshooting aid provides corrective action for some common record/play problems. Search the table for the problem you are experiencing, then try the corrective action. Some problems have more than one corrective action.

| Problem | Possible Causes | Corrective Action |
|---|---|---|
| Application fails to select a channel or channels when it is started. | Resource conflict because a resource needed by the channel is already in use. | Check for resources that may be assigned to more than one channel and correct the problem Refer to "Using the Warning symbol to find shared resources" in the *Profile XP System Guide.* Also, make sure the Channel Configuration dialog box is closed before running the application or selecting channels. |
| The recorded clip contains colorbar. | The colorbar generator is selected as the channel input. | Select the desired video input as the channel source. Refer to "Selecting video quality and crosspoints" in the *Profile XP System Guide.* |
| The recorded clip contains black or freeze frame. | Loss of input signal. | Verify that you have a valid input signal. Refer to "Viewing video input status" in the *Profile XP System Guide.* |
| The channel output is black in E to E, but playback is fine. | Loss of input signal. | Verify that you have a valid input signal. Refer to "Viewing video input status" in the *Profile XP System Guide.* |
| Channel output is always black. | The output you're monitoring is not assigned to the channel. | Determine the video output assigned to the channel by referring to"Selecting video quality and crosspoints" in the *Profile XP System Guide*, then verify cable connections. |
| Freeze frames or black frames during playback. | The number of record and play, channels operating simultaneously exceeds the system storage bandwidth. | Reduce the number of channels operating at the same time, or select a lower video quality preset for the record. Refer to "Guidelines for selecting Video Quality Presets" in the *Profile XP System Guide.* |

# Correcting common video problems

This troubleshooting aid provides corrective action for some common video problems. Search the table for the problem you are experiencing, then try the corrective action. Some problems have more than one corrective action.

| Problem | Possible Causes | Corrective Action |
|---|---|---|
| Video output distortion in playback and E to E. | Wrong video standard. | Verify system video standard is configured correctly. Refer to "Changing the system video standard" in the *Profile XP System Guide.* |
| Continuous horizontal picture shift in Record mode (or E to E). Sometimes intermittent depending on the input signal selected. | Input frame sync set to "pass" when incoming signal is asynchronous. | Set frame sync to "Auto-time". Refer to "Options for timing asynchronous feeds" in the *Profile XP System Guide.* |
| Playout timing is 16 lines delayed | Playout timing set to E to E timed output. | Change playout timing to "Zero-Timed" output. Refer to "Adjusting playout timing to match zero time" in the *Profile XP System Guide.* |
| Vertical shift when switching between video input and playout. | Playout timing set to Zero-Timed output. | Change playout timing to "E to E-Timed" output. Refer to "Adjusting playout timing to match E to E timing" in the *Profile XP System Guide.* |
| Compression artifacts are present in the output. | Video quality setting is too low for your program material. | Select higher video quality preset (refer to "Guidelines for selecting Video Quality Presets" in the *Profile XP System Guide*, or define your own video quality preset. Refer to "Defining and selecting a custom video quality preset" in the *Profile XP System Guide.* |

Chapter 4

# Troubleshooting audio problems

If your audio problem is a result of equipment failure, your first indication might be a message in the NetCentral XP system. The tables of NetCentral XP messages list the Warning and Alarm messages you might see, with some possible causes and solutions.

When you are troubleshooting audio problems and you have determined that the problem is hardware related, remember that you are trying isolate the fault to a field-replaceable unit. There are four field-replaceable units that could cause video problems:

- An SDI board (if you are working with embedded audio)
- the Motherboard
- An Audio board
- An audio interface (a PAC216 Audio Chassis or BNC/XLR216 breakout box)

In general, you can verify or rule out hardware problems by using the Profile XP diagnostics described in Appendix A, *Diagnostic Tools*. If the diagnostics indicate that a board is defective, replace that board.

In many cases an improper configuration setting or other change in the system setup can result in audio problems. Search through the problems listed in *Correcting common audio problems* later in this chapter.

The *System Guide* referred to in the tables in this chapter is the Profile XP *System Guide*.

## Checking NetCentral XP messages

These are Warning and Alarm messages you might see from the NetCentral XP system.

### Audio problems related to SDI board

| Problem | Possible Causes | Corrective Action |
|---|---|---|
| The audio sync is frequently lost (more than 10 times per hour). The audio output is not clear. | Bad signal from source. | • Check the SDI video input(s) for bad signal sources.<br>• Try another source or a known good source.<br>• Replace the board.<br>• Contact Support. |
| Frequent audio extraction errors (more than 10 times per hour) from the combined audio/video source. | | |

## Audio problems related to Audio board

| Problem | Possible Causes | Corrective Action |
|---|---|---|
| Internal memory problems in the Digital Signal Processor during play. | The DSP's internal memory buffers have overflowed during play mode. | Do one or more of the following:<br>• Restart the Profile XP system.<br>• Replace the board.<br>• If the problem persists contact Support. |
| The audio system was unable to extract embedded during an EE or record mode. This indicates a loss in audio and a possible loss in video. | — | Do one or more of the following:<br>• Check for loss of input signal.<br>• Replace the board<br>• Restart the Profile XP system.<br>• If the problem persists, contact Support. |
| Audio is lost due to a loss in connectivity between Receive-Port *N* on the Audio board and the crosspoint fabric. | — | Check for configuration problems. See the table under *Correcting common audio problems* on page 42. |
| The recording and playing of audio will be disrupted due to a bad audio-clock average sample count. | Disrupted audio clock.<br>Audio sample clock reference incorrectly selected. | Use system reference as audio clock reference for synchronous video signals.<br>For asynchronous video use the video input as reference. |
| The Digital Signal Processor is producing poor audio. | The DSP hardware has failed to wait for a new mode because its command queue is full and is not producing good audio. | Do one or more of the following:<br>• Restart the Profile XP system.<br>• Replace the board.<br>• If the problem persists contact Support. |
| Bad recording, or bad E-E audio (fifo overflow). | SDI input error. | |
| Disrupted play/record of audio with AES I/O. | Loss of input signal due to no signal or poor signal from source. | Check presence and quality of input signal from source. |
| | Loss of input signal due to cable disconnect. | Check all cabling into breakout box and between breakout box and Audio board. |

| Problem | Possible Causes | Corrective Action |
|---|---|---|
| External audio option is unusable. | The audio system was unable to connect to the external audio option's SIO interrupt. | If the audio subsystem cannot recover from this error condition, try these solutions:<br>• Check the external audio option and the cable connecting it to the audio board.<br>• Check that PAC has power.<br>• Check for a flashing LED on rear of PAC.<br>• Replace the external audio option and interconnect cables.<br>• Restart the external audio option and the Profile system.<br>• Contact Support if the problem persists. |
| | The audio system was unable to create a TTY for the external audio option. | |
| | The audio system was unable to open the TTY for the external audio option. | |
| | The audio system software received an invalid inter-processor communication message during startup or configuration. | |
| | The audio system software encountered an inter-processor messaging write error during startup or configuration. | |
| | The external audio option failed to reset. | |
| Temporary loss of contact with external audio option. Resetting to known state. Results in an audio glitch. | | None — status information only. |
| Lost contact with the external audio option. | Cable disconnected. | Check the Profile Audio Chassis while the audio subsystem attempts to regain contact. |
| | Power to PAC disconnected. | |
| Detected PAC208, which Profile XP does not support. Results cannot be predicted. | | Replace with a PAC216, an XLR216, or a BNC216 external audio option. |

# Correcting common audio problems

This troubleshooting aid provides corrective action for some common audio problems. Search the table for the problem you are experiencing, then try the corrective action. Some problems have more than one corrective action.

| Problem | Possible Causes | Corrective Action |
|---|---|---|
| Clicking, popping, or interruptions in the audio signal. | Wrong clock reference selected when asynchronous video input is recorded. | Select the correct video input as the audio sample clock reference for the channel pair. Refer to "Selecting the audio clock reference" in the *Profile XP System Guide*. |
| *AES/EBU or analog audio:* No audio I/O or the audio does not match the video. | You are using audio I/O connectors for audio channels not assigned to the video channel you are using. | Verify the audio channel pair(s) assigned to the channel you're using. Refer to"Selecting audio channels for an audio track" in the *Profile XP System Guide*. |
| *AES/EBU or analog audio:* No audio I/O. | The incorrect audio input format is selected for the audio channels you are using. | Determine the audio channels assigned the channel by referring to "Selecting audio channels for an audio track" in the *Profile XP System Guide*, then verify that the correct audio input format is selected. Refer to "Changing the audio I/O format" in the *Profile XP System Guide*. |
| *Analog audio:* Audio is present on audio level meters in applications, but there is no audio output signal. | Analog audio out is muted. | Un-mute the audio output. Refer to "Muting analog audio outputs" in the *Profile XP System Guide*. |
| *Analog audio:* Both E to E and playback audio output are distorted. | Audio input signal clipping caused by excessive audio input level or wrong input impedance setting. PAC216 input impedance is set to Hi-Z by default. | Check for input audio clipping, and reduce the input audio level using the input gain adjustment. Refer to "Adjusting analog audio input level" in the *Profile XP System Guide*. Change input impedance to 600 ohms if required in your system. |
| *Analog audio:* Audio level is too low. | Analog input and output level can be adjusted in the Profile XP system user interface. | Adjust the input or output audio level as required. Refer to "Adjusting analog audio input level" in the *Profile XP System Guide* or "Adjusting analog audio output level" in the *Profile XP System Guide* |
| *Embedded audio:* No audio input. | Wrong video source selected. | Select the correct video input. Refer to "Select audio input format" in the *Profile XP System Guide*. |

| Problem | Possible Causes | Corrective Action |
|---|---|---|
| *Embedded audio:*<br>No audio input. | Wrong audio group or channel pair selected. | Determine which audio group is being used in the video input signal by using "Viewing video input status" in the *Profile XP System Guide*, then refer to "Select audio input format" in the *Profile XP System Guide*. |
| *Embedded audio:*<br>No audio output. | Wrong video output selected. | Select the correct video output. Refer to "Select audio output format" in the *Profile XP System Guide*. |
| *Embedded audio:*<br>No audio output. | Incorrect audio group or channel pair selected for your system. | Verify which embedded audio group and channel pair are used in your system, then refer to "Select audio output format" in the *Profile XP System Guide*. |
| Audio level meters do not display the correct reference level used in my system. | Incorrect reference level | Refer to "Selecting audio reference level" in the *Profile XP System Guide*. |
| Distorted audio or no audio | Wrong incoming digital audio coding format selected. | Verify the input audio format is set correctly, refer to "Selecting incoming digital audio coding format" in the *Profile XP System Guide*. |

Chapter 5

# Troubleshooting timecode problems

If your timecode problem is a result of equipment failure, your first indication might be a message in the NetCentral XP system. The tables of NetCentral XP messages list the Warning and Alarm messages you might see, with some possible causes and solutions.

When you are troubleshooting timecode problems and you have determined that the problem is hardware related, remember that you are trying isolate the fault to a field-replaceable unit. There are several field-replaceable units that could cause video problems depending on whether the problem is with VITC, LTC, or with timecode burn-in on the monitor output. If the problem is with VITC, the faulty field-replaceable unit could be one of these:

- An SDI board
- the Motherboard
- the MPEG-2 Encoder or Decoder board

If the problem is with LTC, the RTS board could be at fault as well as the Motherboard. If the problem is with timecode burn-in, the Monitor board might be faulty.

In general, you can verify or rule out hardware problems by using the Profile XP diagnostics described in Appendix A, *Diagnostic Tools*. If the diagnostics indicate that a board is defective, replace that board.

In many cases an improper configuration setting or other change in the system setup can result in video problems. Search through the symptoms in “Common setup problems,” “Problems with video,” and “Problems with Configuration Manager.”

# Checking NetCentral XP messages

This table of NetCentral XP messages lists some of the messages issued by the NetCentral XP system in response to timecode problems.

| Problem | Possible Causes | Corrective Action |
|---|---|---|
| Detected VITC errors on SDI Input *N*. | | No action — information only. Check the log for other instances. |
| Detected CRC errors resulting from VITC captures on SDI Input *N*. | | |
| Detected frequent VITC errors (more than 10 times per hour) on SDI Input *N*. | Bad signal on video input. | • Check the SDI video input(s) for bad signal sources.<br>• Replace the SDI board.<br>• Call support. |
| Detected frequent CRC errors (more than 10 times per hour) resulting from VITC captures on SDI Input *N*. | | |
| VITC not present in input channel *N*. | — | Status information — no action required. |
| VITC present in input channel *N*. | | |

# Correcting common timecode problems

This troubleshooting aid provides corrective action for some common timecode problems. Search the table for the problem you are experiencing, then try the corrective action. Some problems have more than one corrective action.VITC Record

The *System Guide* referred to in the tables in this chapter is the Profile XP *System Guide*.

| Problem | Possible Causes | Corrective Action |
|---|---|---|
| *VITC:*<br>Incorrect recorded timecode. | VITC reader is set to automatic and there are two sets of VITC in the VBI. | Use manual VITC detection and specify lines where VITC should be read. Refer to "Recording VITC" in the *Profile XP System Guide.* |
| *VITC:*<br>Incorrect or no recorded timecode. | The VITC reader is set to manual and there are two sets of VITC in the VBI and the wrong VITC lines may be specified. | Verify location of VITC signals and set up manual VITC detection accordingly. Refer to "Recording VITC" in the *Profile XP System Guide.* |
| *VITC:*<br>Can't read or record VITC. | VITC detection is set to manual and the wrong VITC lines are specified | Set VITC detect to Automatic or verify location of VITC signals and set up manual VITC detection accordingly. Refer to "Recording VITC" in the *Profile XP System Guide.* |

| Problem | Possible Causes | Corrective Action |
|---|---|---|
| *VITC:*<br>The VITC output I want to use is not listed in the Timecode Output list. | You have not assigned the corresponding video output to the channel. | Assign the video output you want to use to the channel. Refer to "Changing the video I/Os used by a channel" in the *Profile XP System Guide* |
| *VITC:*<br>Incorrect VITC timecode on the video output. | There may be two sets of VITC on the video output and the external reader is reading the wrong timecode signal. Two VITC signals can occur when there is VITC on the video input or playback signal and at the same time, the video output is generating VITC. | Erase the VITC signal on the video output (refer to "Erasing video input VBI information" in the *Profile XP System Guide*) or turn off the VITC generator on the output (refer to "Setting up the VITC generator on a video output" in the *Profile XP System Guide* and choose "Do not generate VITC"). |
| *VITC:*<br>Two sets of VITC signals are present on the output. | There may be two sets of VITC because there is VITC on the video input or playback signal and also the video output is generating VITC. | Erase the VITC signal on the video output (refer to "Deleting unwanted VITC signals" in the *Profile XP System Guide*) or turn off the VITC generator on the output (refer to "Setting up the VITC generator on a video output" in the *Profile XP System Guide* and choose "Do not generate VITC"). |
| Recorded timecode reads xx.xx.xx.xx. | No timecode source for the channel. | Select a timecode source. Refer to "Selecting timecode I/O for each timecode track" in the *Profile XP System Guide*. This is normal in Profile Applications when there is no clip cued. |
| *LTC:*<br>No time code or incorrect time code. | The incorrect LTC input is assigned to the channel you're using. | Determine the LTC input assigned to the channel by referring to"Recording or generating LTC" in the *Profile XP System Guide*, then modify if needed. |
| *LTC:*<br>No time code or incorrect time code. | The LTC output you're monitoring is not assigned to the channel. | Determine the LTC output assigned to the channel by referring to"Recording or generating LTC" in the *Profile XP System Guide*, then verify cable connections. |
| *Timecode Burn-in*<br>Video Monitor timecode burn-in doesn't change. | The Video Monitor output is not selected as the timecode output for the channel. | Make sure the video monitor you are connected to is selected as a timecode output for the channel. Refer to "Select a timecode source for timecode burn-in" in the *Profile XP System Guide.* |

Chapter 6

# Troubleshooting storage system problems

If your video storage problem is a result of equipment failure, your first indication might be a message in the NetCentral XP system. Look through "Checking NetCentral XP messages" for the Warning or Alarm message you might see, and the suggested corrective action.

When you are troubleshooting storage system problems and you have determined that the problem is hardware related, remember that you are trying isolate the fault to a field-replaceable unit. Most storage system problems will be confined to:

- the Fibre Channel Disk Interface board
- the fibre channel cables
- the PFC500 RAID storage system

In general, you can verify or rule out hardware problems by using the Profile XP diagnostics described in Appendix A, *Diagnostic Tools*. If the diagnostics indicate that a board is defective, replace that board.

In many cases an improper configuration setting or other change in the system setup can result in storage system problems. Search through the symptoms in "*Correcting common storage system problems*," then try the corrective action.

## Checking NetCentral XP messages

These are Warning and Alarm messages you might see from the NetCentral XP system that relate to the storage system. A dash in the Possible Cause column means that the cause is implicit in the problem statement, that knowing the cause is unimportant to the solution, or in the case of status messages, there is no cause.

***NOTE: Instruction procedures for changing drives and other components in the RAID system are available in the PFC500 Instruction Manual.***

| Problem | Possible Causes | Corrective Action |
|---|---|---|
| Profile XP Fibre Channel Disk board in slot *X* has failed. | — | Log in as administrator and restart the PDR Access Control Service. |
| RAID controller *N* has failed. | — | • Replace as soon as possible.<br>• Call Support if the replacement fails to clear the Warning message. |

| Problem | Possible Causes | Corrective Action |
|---|---|---|
| RAID chassis *X* is rebuilding disk *N*; *A*% complete.<br>Data is being rebuilt on drive N in RAID chassis X associated with RAID controller Y.<br>Rebuild Progress: A% | — | Status information only — no action required. |
| The data rebuild process on drive *N* in RAID chassis *X* associated with RAID controller *Y* has completed. | — | |
| The data rebuilding process on drive *N* in RAID chassis *X* associated with RAID controller *Y* has been aborted. | — | |
| Profile XP Fibre Channel Disk board port A (or port B) failed. The other port has taken over. | — | Replace the board as soon as possible. |
| The the fan module was removed from RAID chassis X associated with RAID controller card N. The RAID chassis will shut down two minutes following the fan module removal. | — | Re-install the fan module. |
| The fan module in RAID chassis *X* associated with RAID controller card *N* was shut down or removed. | — | Re-install the fan module. |
| Disk drive *N* in RAID chassis *X* associated with RAID controller card *Y* has shut down. | — | Replace this drive if the RAID system cannot restart it. |
| Disk drive *N* in RAID chassis *X* associated with RAID controller card *Y* could fail very soon. | — | Replace the disk drive. |
| Disk drive *N* in RAID chassis *X* associated with RAID controller card *Y* has failed. | — | 1) Restart both the Profile XP and RAID systems.<br>2) Contact Support if this fails. |
| The RAID storage system has only *X%* capacity remaining. | — | Delete stored media files as necessary. |
| The RAID storage system is at maximum capacity and unable to store additional media. | — | Delete stored media files as necessary. |
| Replacement disk drive *N* in RAID chassis *X* associated with RAID controller card *Y* does not have adequate capacity to start rebuilding. | — | 1) Replace with a drive of the correct capacity.<br>2) Contact Support. |

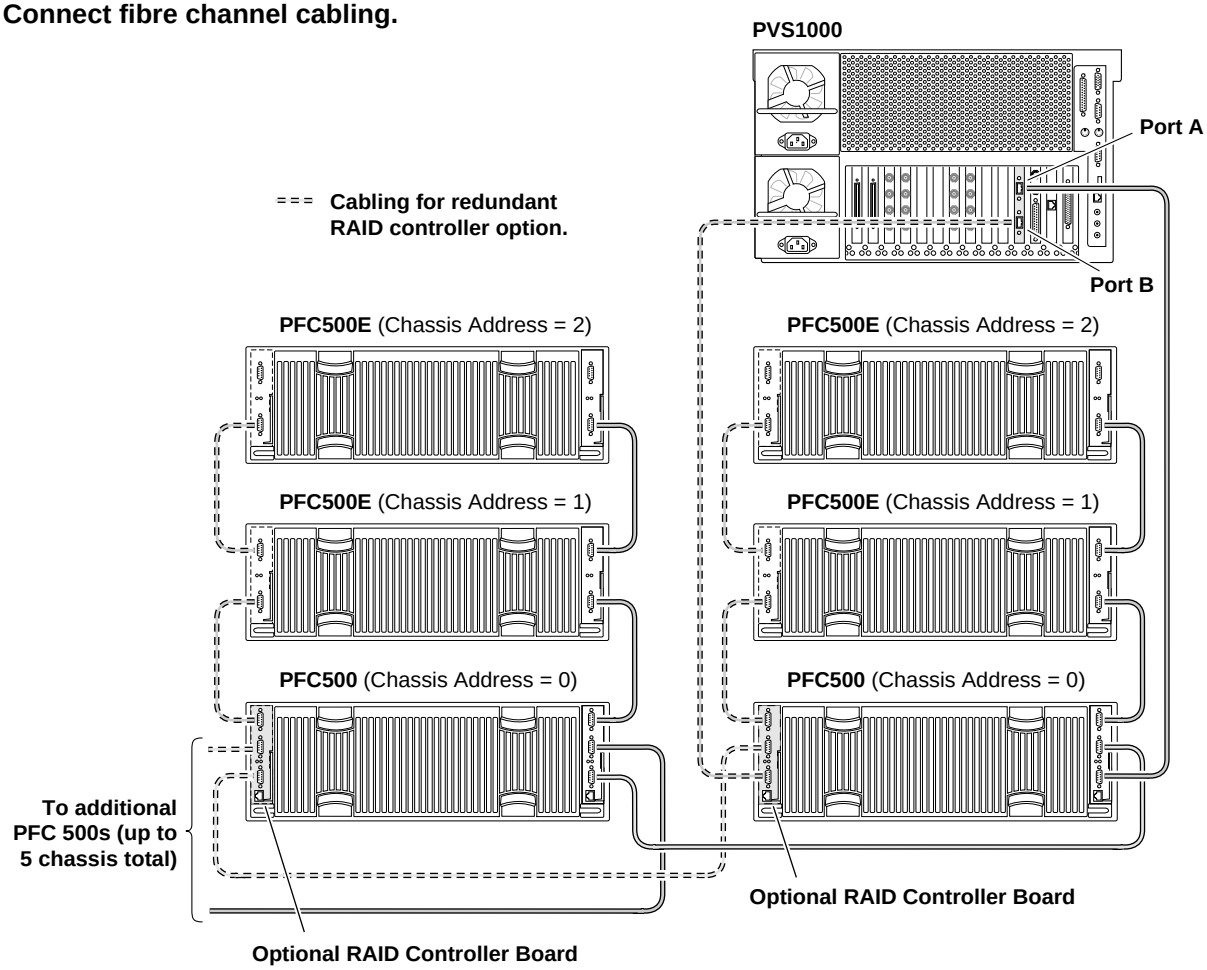
| Problem | Possible Causes | Corrective Action |
|---|---|---|
| Disk drive *N* in RAID chassis *X* associated with RAID controller card *Y* is of a type not supported by the RAID controller card software and is unusable. | — | 1)Restart both the Profile XP and RAID systems.<br>2) Replace the drive if restarting fails.<br>3) Contact Support. |
| The firmware on disk drive *N* in RAID chassis *X* associated with RAID controller card *Y* is not supported by the current RAID controller code. | — | 1) Replace the drive.<br>2) Contact Support if drive replacement fails. |
| Disk drive *N* in RAID chassis *X* associated with RAID controller card *Y* is of a type not supported. | — | 1) Replace the drive.<br>2) Contact Support if drive replacement fails. |
| Disk drive *N* in RAID chassis *X* associated with RAID controller card *Y* reported a media defect that was successfully cleared by the RAID controller card. | — | Status information — no action required. |
| Disk drive *N* in RAID chassis *X* associated with RAID controller card *Y* has reported soft errors too frequently. | — | Replace this drive as soon as convenient. |
| An abnormal SCSI bus or disk drive event was detected that could not be cleared through retries. | — | 1) Restart both the Profile XP and RAID systems.<br>2) Contact Support if restarting fails. |
| The temperature in RAID chassis *X* associated with RAID controller card *Y* has exceeded the recommended maximum. The RAID controller card is attempting to correct the condition. | One or more fans in the fan module have stopped running. | Replace the fan module. |
| | Blocked cooling air intakes or exhaust on RAID chassis. | Check for and remove blockage. |
| | Ambient room temperature too high. | Take steps, if possible, to lower ambient room temperature. |
| Shutting down all drives in RAID chassis *X* associated with RAID controller card *Y* due to overheating that cannot be corrected. | One or more fans in the fan module have stopped running. | Replace the fan module. |
| | Blocked cooling air intakes or exhaust on RAID chassis. | Check for and remove blockage. |
| | Ambient room temperature too high. | Take steps, if possible, to lower ambient room temperature. |
| RAID controller card *N* must reload from disk and restart. | — | Try shutting down and restarting both the Profile XP and RAID systems. If this fails, contact Support. |
| Some hardware condition has caused RAID controller *N* to disable the cache. | — | 1) Try restarting both the Profile XP and RAID systems.<br>2) Contact Support if restarting fails. |

| Problem | Possible Causes | Corrective Action |
|---|---|---|
| RAID controller card *N*, which is operating in non-mirrored caching mode, has detected a non-recoverable memory fault in the cache memory area. | — | 1) Try restarting both the Profile XP and RAID systems.<br>2) Contact Support if restarting fails. |
| The standby power supply in RAID chassis *N* associated with RAID controller card *X* has failed or has been removed. | — | 1) Replace the supply.<br>2) Contact Support if replacing the supply fails. |
| Disk drive *N* in RAID chassis *X* associated with RAID controller card *Y* reports a hard media defect that could not be cleared by the storage processor. | — | 1) Shut down both the Profile and disk subsystems.<br>2) Replace the affected disk.<br>3) Restart both systems.<br>4) Contact Support if this fails. |
| RAID controller card *N* encountered errors in loading the cache image from disk, which may indicate multiple drive failures. | — | 1)Shut down both the Profile XP and disk subsystems.<br>2) Replace the disk(s).<br>3) Restart.<br>4) Contact Support if this fails. |
| The standby power supply in RAID chassis *X* associated with RAID controller care *Y* has failed. | — | 1) Replace the power supply.<br>2) Contact Support if this fails. |
| RAID controller card *Y* has re-initialized its non-volatile memory to the default state. The RAID controller card will be functional after a reboot. | — | 1) Restart both the Profile XP and RAID systems.<br>2) Contact Support if this fails. |
| RAID controller card *Y* cannot determine the correct configuration of all logical units; some logical units might be unusable. | — | 1) Restart both the Profile XP and RAID systems.<br>2) Contact Support if this fails. |
| RAID controller card *Y* is no longer receiving responses from the other RAID controller card. | — | 1) Restart both the Profile XP and RAID systems.<br>2) Contact Support if this fails. |
| Compression bit rate is set to a higher rate than the RAID system is able to process causing a disk bandwidth overflow. Media capture tasks may have failed. | — | 1) Check compression bit rate configuration settings.<br>2) Restart the Profile XP and RAID systems.<br>3) Contact Support if this fails. |
| The link control card in Expansion chassis *X* associated with RAID controller card *Y* has failed. | — | Try shutting down and restarting both the Profile XP and RAID systems. If that fails, replace the board. If the problem persists, contact Support. |

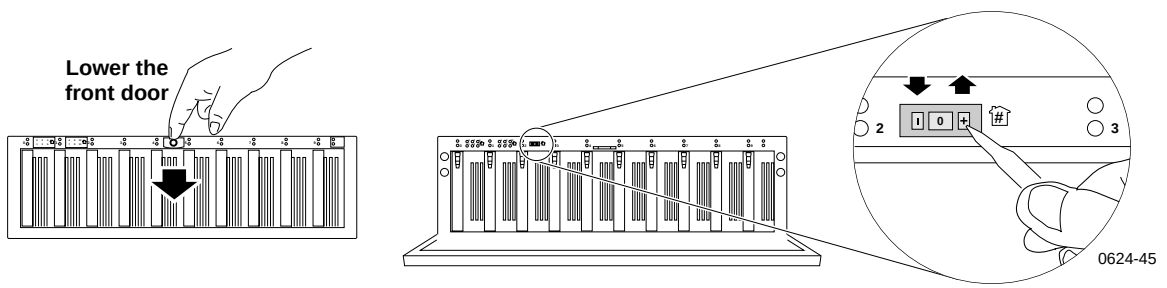
## Locating a drive or a chassis

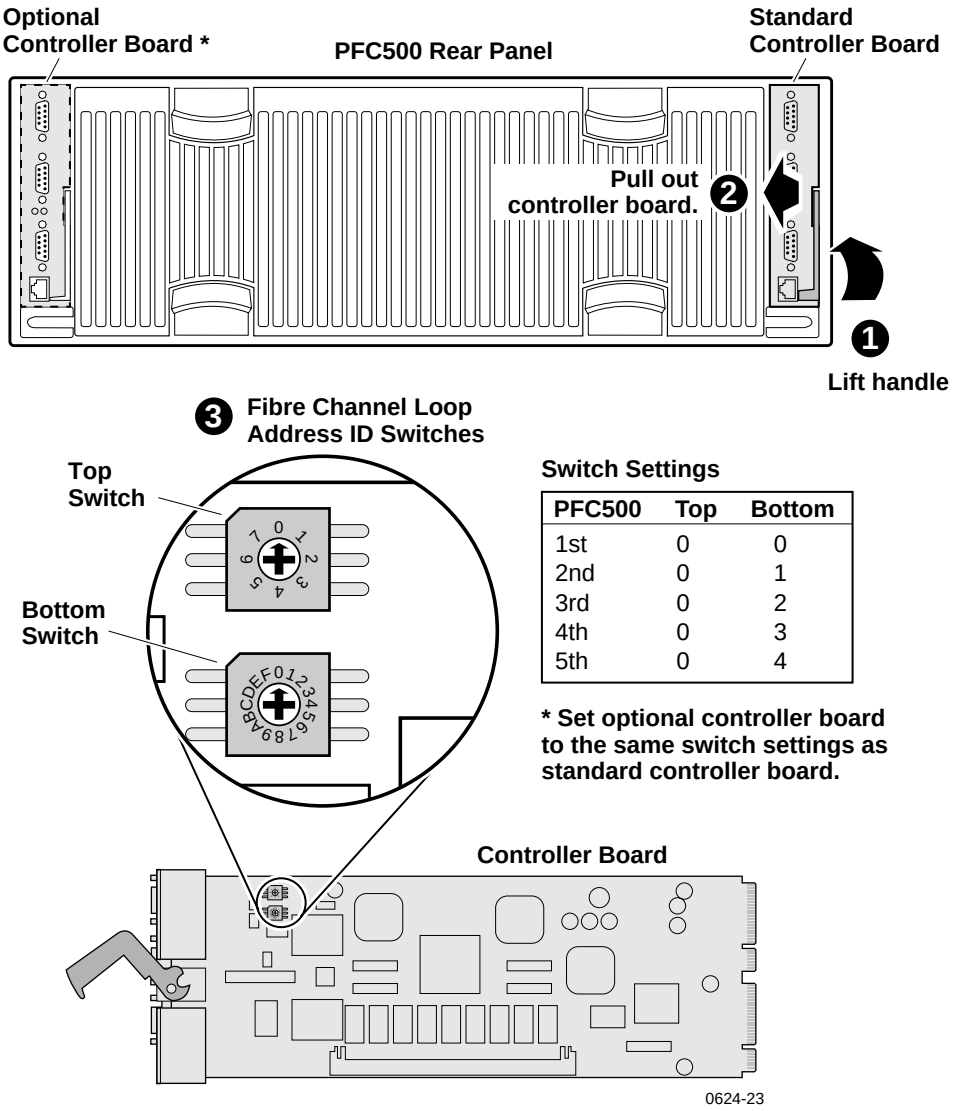
When trying to locate a drive or a chassis named in a NetCentral XP message, use these installation diagrams as a guide. The key to locating any RAID component is to remember that the RAID controller board in the RAID chassis has the unique number.

**Connect fibre channel cabling.**




**Set required chassis addresses as labeled above.**




Optional
Controller Board *
PFC500 Rear Panel
Standard
Controller Board
Pull out
controller board.
2
1
Lift handle
3
Fibre Channel Loop
Address ID Switches
Top
Switch
Bottom
Switch
Switch Settings
PFC500 Top Bottom
1st 0 0
2nd 0 1
3rd 0 2
4th 0 3
5th 0 4
* Set optional controller board to the same switch settings as standard controller board.
Controller Board
0624-23

# Correcting common storage system problems

This troubleshooting aid provides corrective action for some common storage system problems. Search the table for the problem you are experiencing, then try the corrective action. Some problems have more than one corrective action.

| Problem | Possible Causes | Corrective Action |
|---|---|---|
| No file system found message displayed at first time power-up of the Profile XP system. | No video file system. | If this is a first time start-up for the system, you must create a video file system. Create a video file system on the storage disks. Refer to "Working with Profile XP storage systems" in the *Profile XP System Guide*. |
| No file system found message after a video file system has been created in the past. | All PFC500s or PFC500E systems are not powered on and initialized before the Profile XP system is powered on. | PFC500 and/or one of the expansion chassis is not powered on and fully initialized. Refer to "Configuring storage: Using a single PFC500" or "Connecting storage: Using multiple PFC500s" in the *Profile XP System Guide.* If this does not help, you may have a hardware problem. Refer to the *PFC500 Instruction Manual.* Do not create a new file system until you have identified the problem. Making a new file system destroys all existing media. |
| Cannot "see" the disk system in disk utility. | Interface problem. | Check all cabling and that all systems are fully initialized. Refer to the *PFC500 Instruction Manual.* |

Chapter 7

# Troubleshooting video network problems

If your video network problem is a result of equipment failure, your first indication might be a message in the NetCentral XP system. Look through the table in "Checking NetCentral XP messages" for the Warning or Alarm message you might see, and the suggested corrective action.

When you are troubleshooting video network problems and you have determined that the problem is hardware related, remember that you are trying isolate the fault to a field-replaceable unit. Most video network problems will be confined to:

- the Fibre Channel Video Network board
- the Ethernet Video Network board

In general, you can verify or rule out hardware problems by using the Profile XP diagnostics described in Appendix A, *Diagnostic Tools*. If the diagnostics indicate that a board is defective, replace that board.

In many cases an improper configuration setting or other change in the system setup can result in video network problems. Search through the symptoms in "Correcting common Fibre Channel video network problems" or "Correcting common Ethernet video network problems"then try the corrective action.

## Checking NetCentral XP messages

These are Warning and Alarm messages you might see from the NetCentral XP system that relate to the video network. A dash in the Possible Cause column means that the cause is implicit in the problem statement or that knowing the cause is unimportant to the solution or that, in the case of status messages, there is no cause.

| Problem | Possible Causes | Corrective Action |
|---|---|---|
| The Fibre Channel video network adapter is not responding. | | Do one or more of the following:<br>• Check the connections<br>• Restart the Profile XP system.<br>• Replace the board.<br>• Contact Support. |
| The Ethernet video network adapter is not responding. | | |

# Correcting common Fibre Channel video network problems

This troubleshooting aid provides corrective action for some common Fibre Channel video network problems. Search the table for the problem you are experiencing, then try the corrective action. Some problems have more than one corrective action.

The *System Guide* referred to in the tables in this chapter is the *Profile XP System Guide*.

| Problem | Possible Causes | Corrective Action |
|---|---|---|
| Can't transfer files in Media Manager. | There may be an incorrect Fibre Channel name entry in the HOSTS file on the Profile XP system. | Verify all Ethernet and Fibre Channel entries in the HOSTS all systems. Make sure Fibre Channel names use _fc0, that is, zero and not the letter O. Refer to "Manually Edit the hosts file on each Profile XP" in the *Profile XP System Guide*. |
| Can't transfer files in Media Manager. | No Fibre Channel connectivity. | Refer to *Testing the Fibre Channel Video network* on page 59. |
| In Media Manager, files transfer only one direction. | There may be an incorrect entry in the HOSTS file on the Profile XP systems. | Verify all Ethernet and Fibre Channel entries in the HOSTS file on both systems, refer to "Manually Edit the hosts file on each Profile XP" in the *Profile XP System Guide*. |
| Media Manager can't find a Profile XP when you try to add it to the network hosts list. | PortServer is not running on the remote Profile XP system. | Start PortServer on the remote system, refer to "Running PortServer to enable remote operation" in the *Profile XP System Guide*. |
| Media Manager can't find the Profile XP when you try to add it to the network hosts list. | Unable to resolve Ethernet name. There may be an incorrect Ethernet name entry in the HOSTS file. | Verify all Ethernet and Fibre Channel entries in the HOSTS file on both systems, refer to "Manually Edit the hosts file on each Profile XP" in the *Profile XP System Guide*. |
| Media Manager can't find a Profile XP when you try to add it to the network hosts list. | No Ethernet connectivity. | Refer to *Testing the Ethernet Video network* on page 63. |

# Testing the Fibre Channel Video network

Use this procedure to test your Fibre Channel video network setup.

## Testing the Ethernet name resolution and connectivity

The Fibre Channel video network relies on Ethernet connectivity and name resolution.This procedure uses the *ping* command which requests a response from the named Profile XP system. If the remote system does not respond, you'll try *ping* using the IP address of the remote system. If the system responds, you have a name resolution problem. If there is no response, there may be problems with the Ethernet adapter or cabling.

To test the Ethernet network:

1. Open the Windows NT command prompt by selecting **Start | Programs | Command Prompt**.
2. Type *ping*, then the Ethernet name of one of the Profile XP systems on the network, then press **Enter**. For Example:

   **ping Profile1**

   If this command returns:

   **Pinging Profile1 with 32 bytes of data:**
   **Reply from 192.168.99.100: bytes=32 time<10ms TTL=128**
   **Reply from 192.168.99.100: bytes=32 time<10ms TTL=128**
   **Reply from 192.168.99.100: bytes=32 time<10ms TTL=128**
   **Reply from 192.168.99.100: bytes=32 time<10ms TTL=128**

   You have successfully resolved the name **Profile1** and you have Ethernet network connectivity.

   If, however, the *ping* command returns:

   **Pinging Profile1 with 32 bytes of data:**
   **Request timed out.**
   **Request timed out.**
   **Request timed out.**
   **Request timed out.**

   There is a connectivity problem or the Ethernet IP address could not resolve properly. Continue with step 3.
3. Type *ping*, then, this time, use the IP address of one of the Profile XP systems on the network, then press **Enter**. For Example:

   **ping 192.168.99.100**

   If this command returns:

   **Pinging 192.168.99.100 with 32 bytes of data:**
   **Reply from 192.168.99.100: bytes=32 time<10ms TTL=128**
   **Reply from 192.168.99.100: bytes=32 time<10ms TTL=128**
   **Reply from 192.168.99.100: bytes=32 time<10ms TTL=128**
   **Reply from 192.168.99.100: bytes=32 time<10ms TTL=128**

   You have connectivity to the network, so there must be a name resolution problem for the IP address. You need to re-check your *HOSTS* file for accuracy. Refer to *Manually Edit the hosts file on each Profile XP* in the *Profile XP System Guide*.

***NOTE: You may want to re-boot to ensure that any changes have taken effect.***

If, however, the *ping* command returns:

**Pinging 192.168.99.100 with 32 bytes of data:**
**Request timed out.**
**Request timed out.**
**Request timed out.**
**Request timed out.**

One or both of the Profile XP systems appears to have a network connectivity problem. Re-check the cabling and try again. If this does not solve the problem, check for NetCentral XP messages.

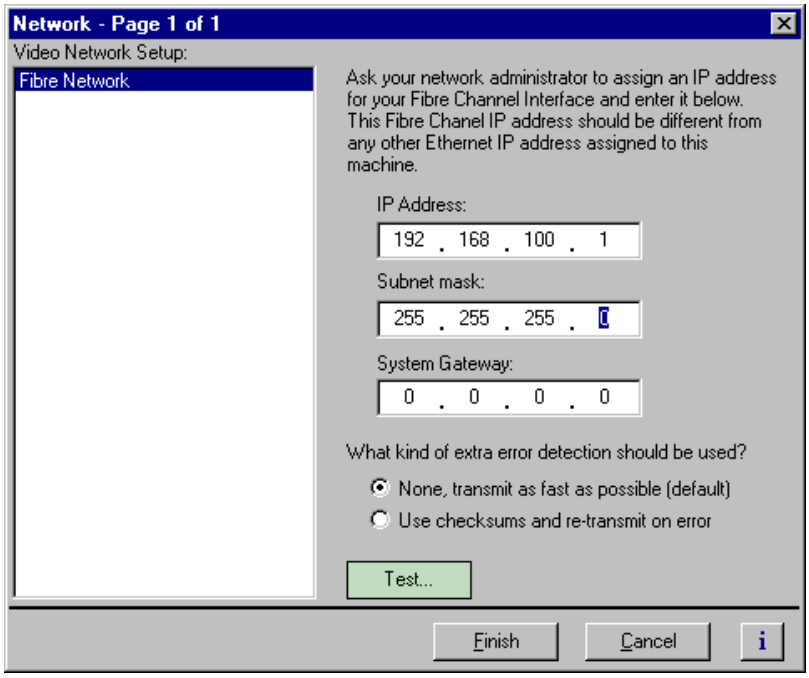
4. Repeat step 2 on all Profile XP systems on the network, then proceed with *Testing Fibre Channel name resolution and connectivity* on page 60.

## Testing Fibre Channel name resolution and connectivity

Use this procedure to test for Fibre Channel network connectivity and proper name resolution. This procedure uses the **Test** button in the Configuration Manager Network dialog box.

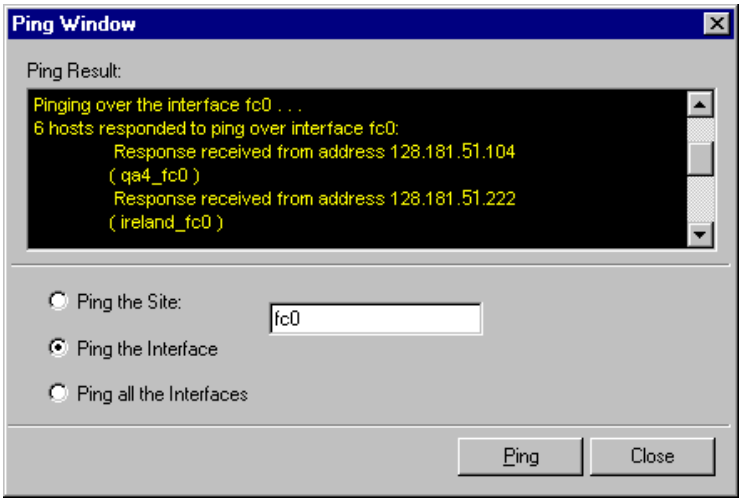
To verify name resolution and Fibre Channel connectivity:

1. Open Configuration Manager, then click **Network**.




2. Click the **Test**.

3. In the Ping Window, select the **Ping the Interface** option.




4. Type *fc0* in the text box, then click **Ping**. Make sure to enter a zero not an O. All Profile systems connected to Fibre Channel are asked to respond.
5. Wait for ping results.
6. Check the Ping Results window, then do one of the following:
   a. If only the local system responded, there is a problem with the Fibre Channel network connectivity. Verify the Fibre Channel connections for all systems, then review all configuration steps under *Setting up a simple video network: Fibre Channel* in the *Profile XP System Guide*.
   b. If all systems responded, but a Profile system name is missing or incorrect, there is an error in the HOSTS file. Refer to *Manually Edit the hosts file on each Profile XP* in the *Profile XP System Guide*.

***NOTE: You can use the "Ping the Site" option to ping a specific Profile system using it's IP address or name, for example Profile1_fc0. Pinging by name requires the HOSTS file to be correct. Pinging by IP address does not require the HOSTS file.***

# Correcting common Ethernet video network problems

This troubleshooting aid provides corrective action for some common Ethernet video network problems. Search the table for the problem you are experiencing, then try the corrective action. Some problems have more than one corrective action.

| Problem | Possible Causes | Corrective Action |
|---|---|---|
| Can't transfer files in Media Manager. | There may be an incorrect network name entry in the HOSTS file on the Profile XP system. | Verify all Windows NT Ethernet and video Ethernet entries in the HOSTS all systems. Make sure video Ethernet names use Ø, that is, zero and not the letter O. Refer to "Manually Edit the hosts file on each Profile XP" in the *Profile XP System Guide*. |
| Can't transfer files in Media Manager. | No video Ethernet connectivity. | Refer to *Testing the Ethernet Video network* on page 63. |
| In Media Manager, files transfer only one direction. | There may be an incorrect entry in the HOSTS file on the Profile XP systems. | Verify all Windows NT Ethernet and video Ethernet entries in the HOSTS file on both systems, refer to "Manually Edit the hosts file on each Profile XP" in the *Profile XP System Guide*. |
| Media Manager can't find a Profile XP when you try to add it to the network hosts list. | PortServer is not running on the remote Profile XP system. | Start PortServer on the remote system, refer to "Running PortServer to enable remote operation" in the *Profile XP System Guide*. |
| Media Manager can't find the Profile XP when you try to add it to the network hosts list. | Unable to resolve Windows NT Ethernet name. There may be an incorrect Windows NT Ethernet name entry in the HOSTS file. | Verify all Windows NT Ethernet and video Ethernet entries in the HOSTS file on both systems, refer to "Manually Edit the hosts file on each Profile XP" in the *Profile XP System Guide* |
| Media Manager can't find a Profile XP when you try to add it to the network hosts list. | No Windows NT Ethernet connectivity. | Refer to *Testing the Ethernet Video network* on page 63. |

## Testing the Ethernet Video network

Use this procedure to test your Ethernet video network setup.

### Testing the Windows NT Ethernet name resolution and connectivity

The video Ethernet video network relies on Windows NT Ethernet connectivity and name resolution.This procedure uses the *ping* command which requests a response from the named Profile XP system. If the remote system does not respond, you'll try *ping* using the IP address of the remote system. If the system responds, you have a name resolution problem. If there is no response, refer to *Correcting common Ethernet network problems* on page 68 for help with solving problems with the Windows NT Ethernet adapter or cabling.

To test the Windows NT Ethernet network:

1. Open the Windows NT command prompt by selecting **Start | Programs | Command Prompt**.

2. Type *ping*, then the Windows NT Ethernet name of one of the Profile XP systems on the network, then press **Enter**. For Example:

   **ping Profile1**

   If this command returns:

   **Pinging Profile1 with 32 bytes of data:**
   **Reply from 192.168.99.100: bytes=32 time<10ms TTL=128**
   **Reply from 192.168.99.100: bytes=32 time<10ms TTL=128**
   **Reply from 192.168.99.100: bytes=32 time<10ms TTL=128**
   **Reply from 192.168.99.100: bytes=32 time<10ms TTL=128**

   You have successfully resolved the name **Profile1** and you have Windows NT Ethernet network connectivity.

   If, however, the *ping* command returns:

   **Pinging Profile1 with 32 bytes of data:**
   **Request timed out.**
   **Request timed out.**
   **Request timed out.**
   **Request timed out.**

   There is a connectivity problem or the Windows NT Ethernet IP address could not resolve properly. Continue with step 3.

3. Type *ping*, then, this time, use the IP address of one of the Profile XP systems on the network, then press **Enter**. For Example:

   **ping 192.168.99.100**

   If this command returns:

   **Pinging 192.168.99.100 with 32 bytes of data:**
   **Reply from 192.168.99.100: bytes=32 time<10ms TTL=128**
   **Reply from 192.168.99.100: bytes=32 time<10ms TTL=128**
   **Reply from 192.168.99.100: bytes=32 time<10ms TTL=128**
   **Reply from 192.168.99.100: bytes=32 time<10ms TTL=128**

   You have connectivity to the network, so there must be a name resolution problem for the IP address. You need to re-check your *HOSTS* file for accuracy. Refer to *Manually Edit the hosts file on each* Profile XP in the *Profile XP System Guide*.

If, however, the *ping* command returns:

**Pinging 192.168.99.100 with 32 bytes of data:**
**Request timed out.**
**Request timed out.**
**Request timed out.**
**Request timed out.**

One or both of the Profile XP systems appears to have a network connectivity problem. Re-check the cabling and try again.

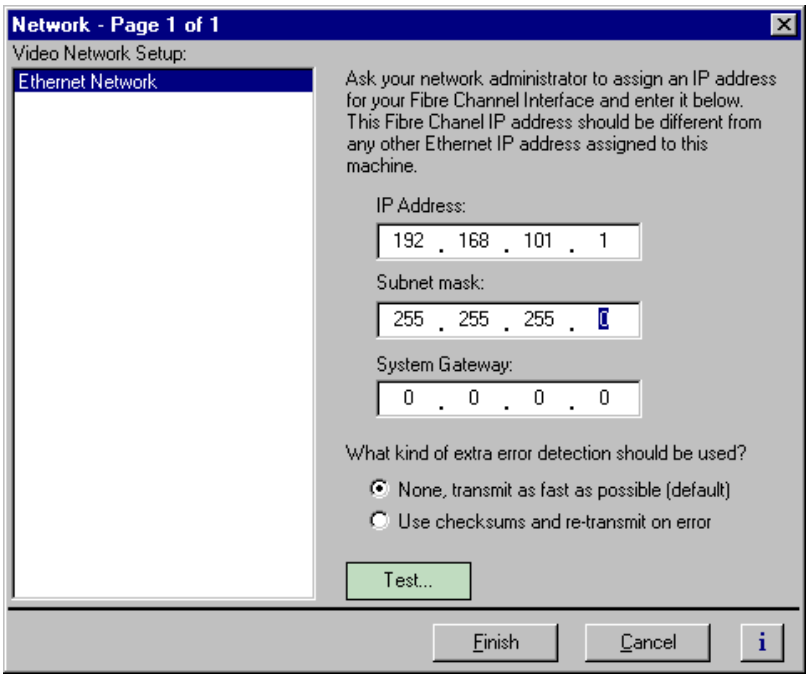
4. Repeat step 2 for all Profile XP systems on the network, then proceed with *Testing video Ethernet name resolution and connectivity* on page 64.

### Testing video Ethernet name resolution and connectivity

Use this procedure to test for video Ethernet network connectivity and proper name resolution. This procedure uses the **Test** button in the Configuration Manager Network dialog box.

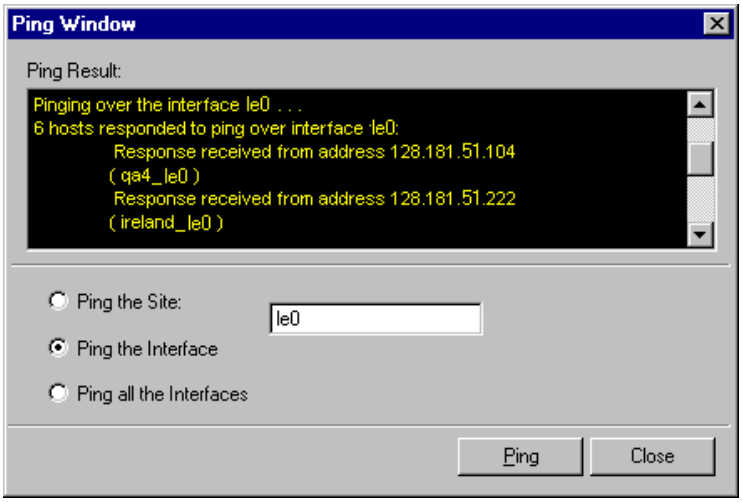
To verify name resolution and video Ethernet network connectivity:

1. Open Configuration Manager, then click **Network**.




2. Click the **Test**.

3. In the Ping Window, select the **Ping the Interface** option.




4. Type *le0* in the text box, then click **Ping**. Make sure to enter a zero not an O. All Profile systems are asked to respond.
5. Wait for ping results.
6. Check the Ping Results window, then do one of the following:
   a. If only the local system responded, there is a problem with the video Ethernet network connectivity. Verify the video Ethernet connections for all systems, then review all configuration steps under *Setting up a simple video network: Ethernet* in the *Profile XP System Guide*.
   b. If all systems responded, but a Profile system name is missing or incorrect, there is an error in the HOSTS file. Refer to *Manually Edit the hosts file on each Profile XP* in the *Profile XP System Guide*.

***NOTE: You can use the "Ping the Site" option to ping a specific Profile system using it's IP address or name, for example Profile_le0. Pinging by name requires the HOSTS file to be correct. Pinging by IP address does not require the HOSTS file.***

Chapter 8

# Troubleshooting miscellaneous system problems

This chapter covers problems and NetCentral messages from a variety of subsystems in the Profile XP media platform including:

- Problems related to the Applications Subsystem I/O, including tables for Ethernet problems, common problems associated with using Configuration Manager, and NetCentral messages generated by the DupliDisk controller
- NetCentral messages for the Real Time Processor, including RefGen and GPI
- NetCentral messages for power supply and thermal subsystem problems

Search the tables for the problem you are experiencing, then try the corrective action. Some problems have more than one corrective action.

## Applications subsystem problems

A dash in the Possible Causes column means that the cause is implicit in the problem statement, that knowing the cause is unimportant to the solution, or in the case of status messages, there is no cause.

### Correcting common Applications Subsystem I/O problems

This troubleshooting aid lists some of the more common problems encountered and suggests corrective action for those problems.

| Symptom | Possible Causes | Solution |
|---|---|---|
| Error message indicating failure in a hard disk drive. | Hard disk drive failure | Try replacing the hard disk drive. |
| | Connecting cable failure | Check the connecting cable, replace if necessary. |
| | Defective controller for mirrored system drive (if installed). | Replace the controller. |
| Error message indicating failure in diskette drive | Diskette drive failure | Try replacing the diskette drive. |
| | Connecting cable failure | Check the connecting cable, replace if necessary. |
| Error message indicating keyboard problem. | Keyboard unplugged | Plug in keyboard |
| | Keyboard or connecting cable defective | Replace keyboard |
| Erratic cursor movement when mouse is moved. | Dirty ball or rollers in mouse. | Inspect and clean the ball and internal rollers. |

| Symptom | Possible Causes | Solution |
|---|---|---|
| No cursor movement with mouse or response to mouse clicks. | Mouse unplugged. | Plug in mouse. |
| | Defective cable or mouse. | Replace mouse. |
| No display | Component failure in Applications Processor board | Replace Applications Processor board. |
| | Monitor or cable failure | Replace cable or monitor as necessary. |

## Correcting common Ethernet network problems

This troubleshooting aid provides corrective action for some common Ethernet network problems.

| Problem | Possible Causes | Corrective Action |
|---|---|---|
| Windows NT reports there is an IP address conflict. | Two or more Profile XP systems have the same Ethernet IP address. | Refer to the procedure *Set machine name and IP address on each* Profile XP *system* in the *Profile XP System Guide*. |
| Only the local Profile XP system is listed in Network Neighborhood. | Missing network connection. | Check that the link indicator LED is lit on the hub you're using. If not, make sure the network cable is properly connected. |
| No Profile XP systems are listed in the network neighborhood. | Some component of Windows NT Networking improperly installed. | Refer to the Windows NT documentation that came with your Profile XP Media Platform. |
| Profile XP systems do not immediately appear in Network Neighborhood, but are eventually displayed. | This is the normal operation of Network Neighborhood.They same applies when systems are switched off. It may be several minutes before refreshing the display removes the system from the list. | None |

## Correcting common problems using Configuration Manager

This troubleshooting aid provides corrective action for some common problems when using Configuration Manager. Search the table for the problem you are experiencing, then try the corrective action. Some problems have more than one corrective action.

| Problem | Possible Causes | Corrective Action |
|---|---|---|
| Configuration Manager does not display the effect of your crosspoint selections as you make them. | Another application is using the channel or a channel which uses one or more of the same resources. | Terminate the use of the channel by the application. |
| After using import or export the two Profile XP systems do not have the same configuration. | There may be hardware differences between the Profile XP systems which include circuit board locations in the motherboard. | Compare the hardware configurations of the two systems. Refer to "Viewing board location information" in the *Profile XP System Guide.* |
| When attempting to connect to a remote system, the remote Profile XP system does not appear in the "Remote Host List". | No network connection. | Refer to "Common Ethernet network problems" in the *Profile XP System Guide.* |
| Cannot connect to a remote machine after selecting it in the "Remote Host List". | PortServer not running on the remote machine. | Start PortServer on remote Profile XP system. Refer to "Running PortServer to enable remote operation" in the *Profile XP System Guide.* |
| A message appears that states that Configuration Manager is already running. | Configuration Manager already running or some one is running Configuration Manager remotely. | Use the Configuration Manager already running or resolve the conflict with the remote user. |
| Can't start Configuration Manager locally. | Configuration Manager is already running or someone is connected remotely. | Use the session already running or terminate the remote session. |

## Checking NetCentral messages for the redundant system drives

These are the messages you might see if one of the redundant system disk drives fails. In addition to these messages, the failed drive's indicator LED on the DupliDisk controller panel changes from green to red, and the DupliDisk buzzer will sound.

| Symptom | Possible Causes | Solution |
|---|---|---|
| The primary system disk drive channel has failed. | — | Replace the primary disk drive. |
| The mirrored system disk drive channel has failed. | — | Replace the mirrored disk drive. |

# Checking Real Time Processor board NetCentral messages

These are the NetCentral Warning and Alarm messages you might see:

| Symptom | Possible Causes | Solution |
|---|---|---|
| The reference timing is no longer locked to the reference (house) black signal and is out of sync. | • Signal not present from source<br>• Input cable disconnected.<br>• Defective board. | Do one or more of the following:<br>• Check input cable and signal.<br>• Try restarting Profile XP system if cables and signals OK.<br>• Replace the board.<br>• Contact Support. |
| This subsystem did not initialize correctly. | | Do one or more of the following:<br>• Check that reference black signal is present and clean.<br>• Restart the Profile XP system.<br>• Replace the Real Time Processor board.<br>• Contact Support if the problem persists after replacing board. |

# Checking power supply, fan, and thermal NetCentral messages

These are the NetCentral Warning and Alarm messages you might see if problems occur in a power supply or fan unit, or if the chassis temperature rises too fast or too high.

| Symptom | Possible Causes | Solution |
|---|---|---|
| Power supply *X* has failed. | — | Replace the power supply as soon as possible. |
| One or more fans in the fan unit have failed. | — | Replace the fan unit as soon as possible. |
| Internal temperature of *X degrees* C. exceeds recommended operating range. *NOTE: This message appears for both Warning and Alarm conditions.* | Check for:<br>• faulty boards<br>• overheating power supplies<br>• faulty fans<br>• blocked vents | Do one or more of the following:<br>• Take appropriate steps to cool the system.<br>• Replace faulty components. |
| The chassis temperature has risen by *X degrees* C. in *N* seconds. | Check for:<br>• faulty boards<br>• overheating power supplies<br>• faulty fans<br>• blocked vents | Condition can be temporary. No action required unless overheating occurs. |

Chapter 9

# Troubleshooting channel control problems

This troubleshooting aid provides corrective action for some common control problems. Search the table for the problem you are experiencing, then try the corrective action. Some problems can have more than one corrective action.

The *System Guide* referred to in this table is the Profile XP *System Guide*.

| Problem | Possible Causes | Corrective Action |
|---|---|---|
| *VdrPanel RS-422 Control:* The Profile XP system fails to respond. | Incorrect protocol selected. | Refer to "Setting up RS-422 remote control in VdrPanel" in the *Profile XP System Guide*. |
| | Controller connected to the wrong RS-422 Port. | Verify the RS-422 cable is connected to the correct physical port (P1-P8). |
| *Prolink:* Cannot open channel. | *Channel names do not match those expected by the controller*. | *Define new channels or rename existing ones. Refer to"Adding and configuring a new channel" or "Entering channel name and description" Profile XP System Guide.* |
| | Controller connected to the wrong RS-422 port. | Check the title bar of the Prolink window and verify the RS-422 cable is connected to the correct physical port (P1-P8). |
| Ethernet: Cannot connect to a remote machine. | PortServer is not running on remote machine. | Start PortServer on remote machine. Refer to "Running PortServer to enable remote operation" in the *Profile XP System Guide.* |
| Ethernet: When running an application remotely, you cannot find the Profile XP system listed in the Remote Host List. | The Profile XP system has a problem with the Ethernet connection. | Refer to "Correcting common Ethernet network problems" on page 68. |

Chapter **10**

# Routine Maintenance

Routine maintenance in the Media Platform consists primarily of cleaning the air filters on a scheduled basis, and removing accumulated dust and dirt from the equipment on an as-needed basis. In addition to the cleaning, the Emergency Repair Disk should be updated routinely as part of any hardware or software installation.

## Cleaning or replacing air filters

In order to operate in all environmental conditions, the Profile XP and PAC216 require clean, unrestricted internal air flow. For both units, internal fans pull air into the chassis through filters in the front panel. The air then flows across the boards and power supply and exhausts from the chassis through the rear panel and right side panel in the case ofthe PAC216.

The Profile XP uses one large filter and two small filters, and the PAC216 uses a single filter. Check these air filters frequently for dust and grime buildup. Much of the buildup of dust and lint can be removed through the front panel with a portable vacuum cleaner. However, frequent cleaning ensures adequate, clean cooling air to the equipment.

### Cleaning the filters

The air filters supplied with this Profile XP and PAC216 can easily be cleaned and used again. Wash them in warm water and mild detergent. Make sure the filters are dry before reinstalling them and powering up the Profile XP or PAC216.

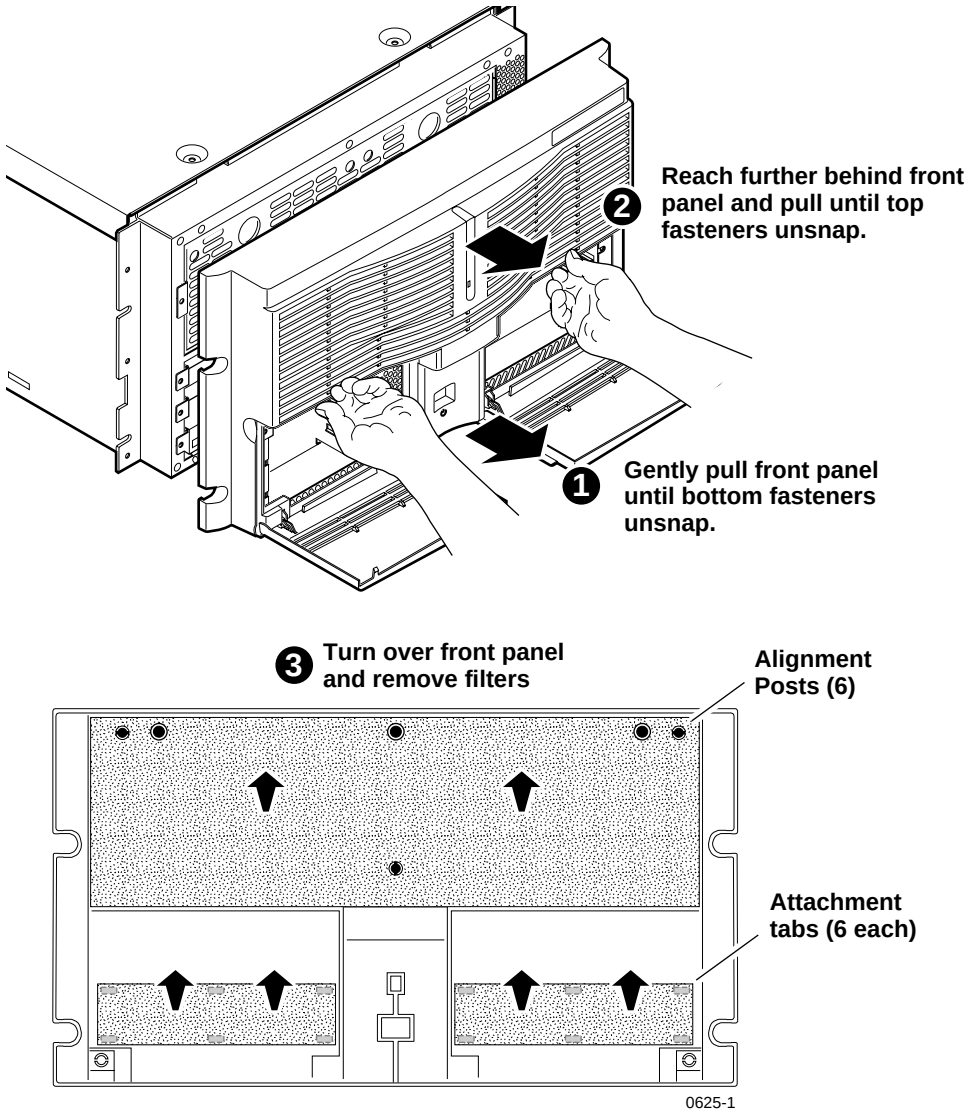
### Additional air filters

Additional air filters can be ordered directly from Grass Valley Group. See the Replaceable Parts Lists in Chapter 11 for the part numbers.

### Removing and replacing the Profile XP filters

Removal of the air filters for cleaning or replacement requires removal of the front panel, but does not require shutting down the Profile XP. To remove the Profile XP air filters:

1. Grasp the front panel at both sides and snap loose from the chassis as shown on page 74.
2. Remove the large filter from the mounting posts on the inside of the panel cover; detach the small filters from the two access doors. The small filters are each held in place by six hook and loop fasteners.
3. Install the cleaned or replacement filters.
4. Position the front panel cover at the chassis so that the cover alignment posts engage the holes in the chassis; snap the front panel cover onto the chassis.

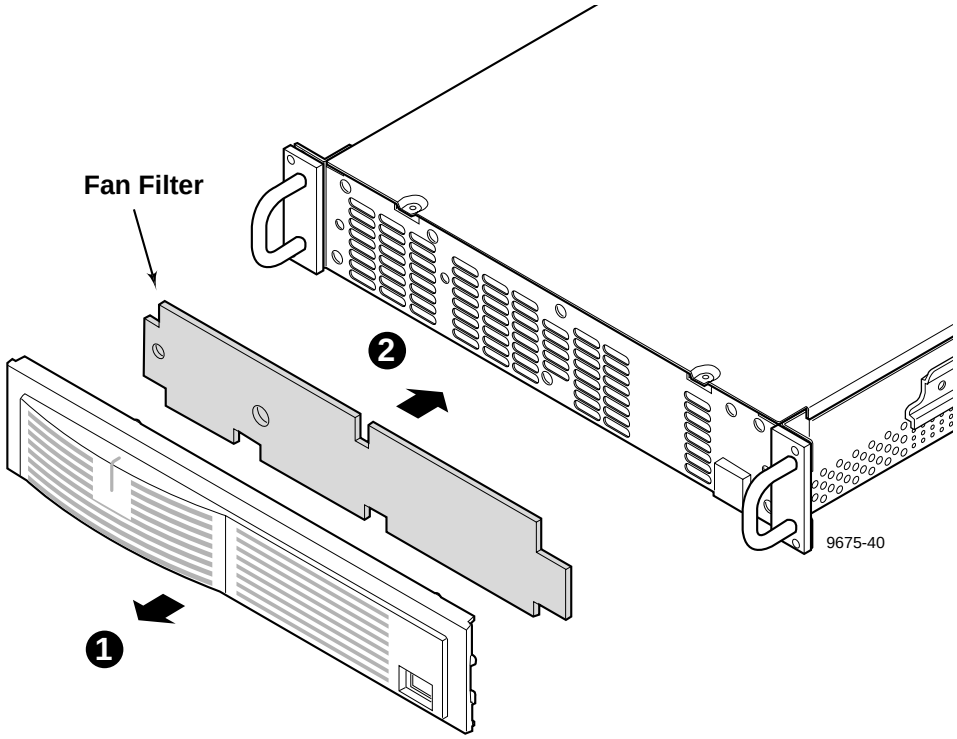



Removing the Profile XP Media Platform Front Panel and Air Filters

## Removing and replacing the PAC216 filter

Removal of the air filter for cleaning or replacement does not require removal of the PAC216 from the rack or the use of any tools. To remove the PAC216 air filter:

1. Grasp the front panel cover at both sides and snap loose from the chassis as shown here.
2. Place face down and remove the filter from the mounting posts on the inside of the panel cover.




PAC216 Filter Removal

3. Attach the cleaned or replacement filter to the mounting posts on the inside.
4. Position the front panel cover at the chassis so that the cover mounting posts align with the holes in the chassis; snap the front panel cover onto the chassis.

# Cleaning and inspecting the chassis

Any schedule established for cleaning and visually inspecting the equipment should be based on the environment in which it is operated and the amount it is used. Under average conditions, cleaning and visual inspection should be scheduled every 2000 hours of operation.

## Cleaning

The equipment should be cleaned often enough to prevent dust or dirt from accumulating. Dirt acts as a thermal insulating blanket that prevents effective heat dissipation, and can provide high-resistance electrical leakage paths between conductors or components in a humid environment.

### Exterior

Clean the dust from the outside by wiping with a soft cloth or small brush. A brush is especially useful to remove dust from around the connectors. Hardened dirt may be removed with a cloth dampened in water that contains 50% Isopropyl alcohol. Abrasive cleaners should not be used.

### Interior

Clean the interior by loosening the accumulated dust with a dry, soft brush. Once the dirt is loosened, remove it with low-pressure air (high-velocity air can damage some parts). Hardened dirt or grease may be removed with a cotton-tipped applicator dampened with a solution of 50% Isopropyl alcohol and water. Abrasive cleaners should not be used. If the circuit board assemblies must be removed for cleaning, follow the removal/replacement instructions.

After cleaning, allow the interior to thoroughly dry before applying power to the unit.

⚠ ***CAUTION: Do not allow water to get inside any enclosed assembly or component. Do not clean any plastic materials with organic cleaning solvents, such as benzene, toluene, xylene, acetone, or similar compounds, because they may damage the plastic.***

## Visual Inspection

After cleaning, carefully check the equipment for defective connections, damaged parts, and improperly seated connectors and plug in components. If heat-damaged parts are discovered, to prevent additional damage, determine the cause of overheating before replacing the damaged part.

# Updating the emergency repair data

The emergency repair data located in **c:\winnt\repair** and on the Emergency Repair Disk (ERD) is used to restore a Windows NT workstation back to the state of the last repair update. It is used to search for missing or corrupt Windows NT files and to restore the registry files, including SAM database, security information, disk configuration, software registry entries, and other information.

To keep repair data up-to-date, the administrator should update repair data in the repair directory and on the repair disk any time hardware is added to the system, or software is added or updated.

To update the emergency repair data:

1. Click on **Start | Run**.
2. Type **rdisk**, and then click **OK**.
3. Click **Update Repair Info**. The Repair Disk Utility dialog box will ask if you really want to update the repair data.
4. Click **Yes**. After the repair data has been updated the Repair Disk Utility dialog box will appear and ask if you would like to make an Emergency Repair Disk.
5. Click **Yes** to create an Emergency Repair Disk.
6. When prompted, insert the Emergency Repair Disk that was created during installation, and then click **OK**.
7. When the update is finished, click **Exit**.

The following table lists the files in the repair directory and on the repair disk:

| File | Description |
|---|---|
| SETUP.LOG | An information file used for verifying the files system files installed on the system drive. This is a read-only, hidden, system file. |
| SYSTEM._[a] | A copy of the system hive from the registry. |
| SAM._ | A copy of the Security Accounts Manager (SAM) from the registry. |
| SECURITY._ | A copy of the Security hive from the Registry. |
| SOFTWARE._ | A copy of the registry's Software hive. |
| DEFAULT._ | A copy of the registry's default hive. |
| CONFIG.NT | The windows NT version of the CONFIG.SYS file used when running a Virtual DOS Machine (VDM). |
| AUTOEXEC.NT | The Windows NT version of the AUTOEXEC.BAT file used when running a VDM. |

a. Files with the ._ extension are compressed files. These can be decompressed in the same manner as the Windows N files on the source disks, using the *expand* command.

Chapter **11**

# *Parts Removal and Replacement*

The pictures in this chapter show how to disassemble the Profile XP Media Platform. Re-assembly is the reverse. A list of field-replaceable parts is found at the end of the chapter.

***NOTE: Do not discard any hardware unless specifically instructed to do so.***

⚠ ***WARNING: To avoid serious injury from high currents, insure that the power cord is disconnected prior to removing or replacing any internal parts.***

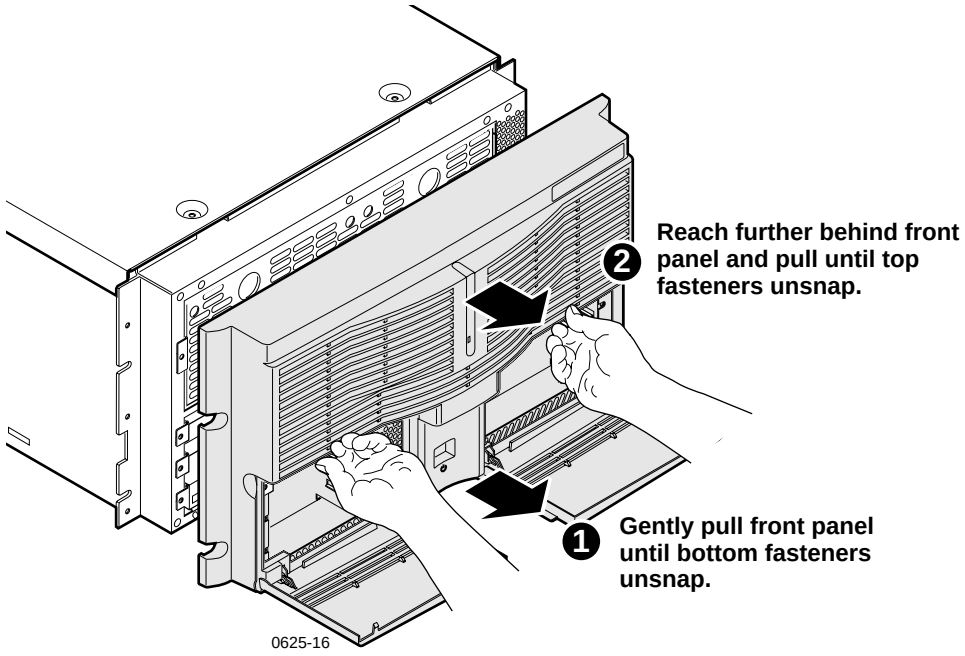
## Procedures

The disassembly procedures are divided into two categories: external parts removal, and internal parts removal. You need only a Torx tool with T15 magnetic tip to remove and replace parts in the Profile XP Media Platform.

### External Parts Removal

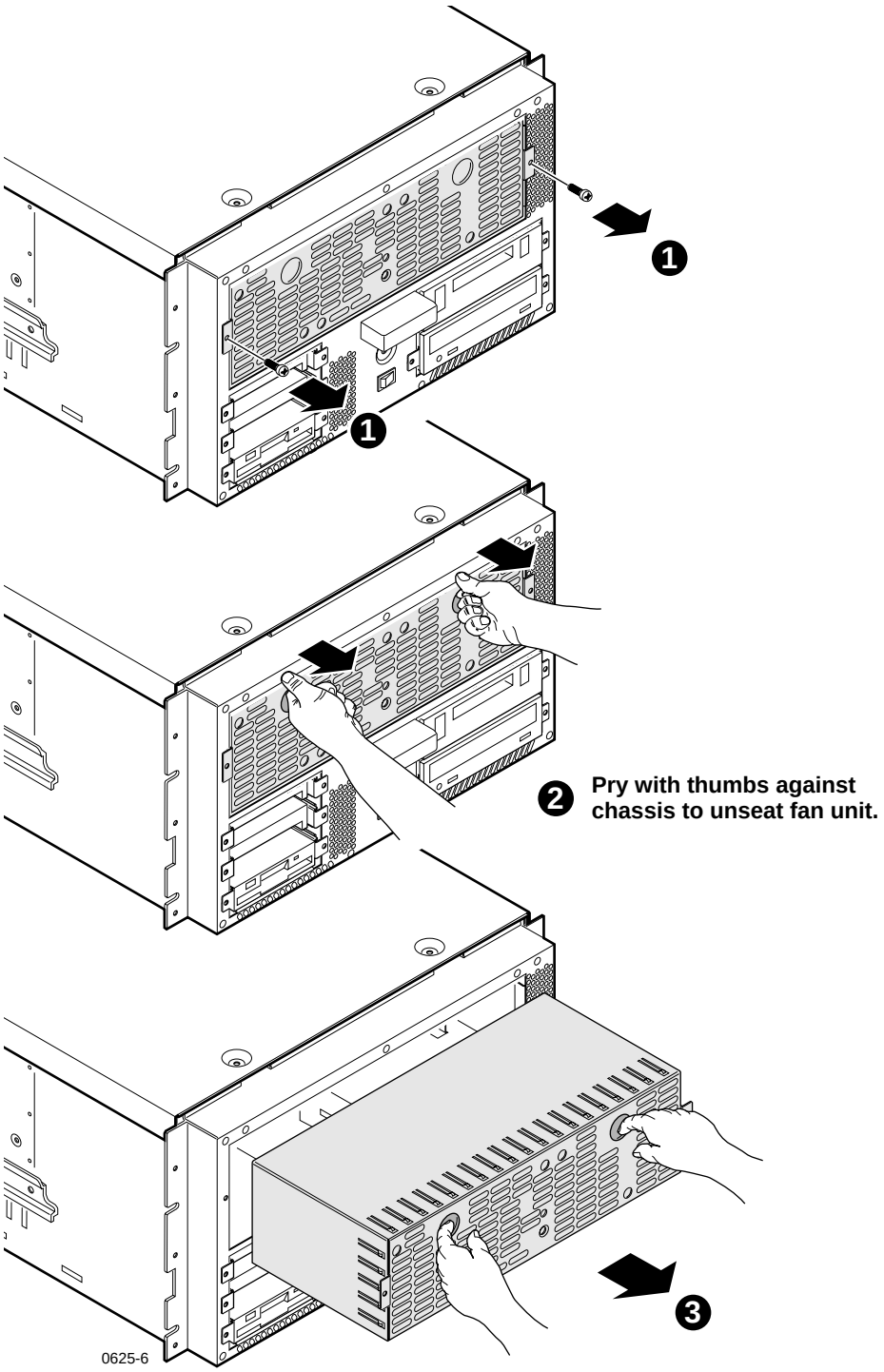
All the parts in this category can be removed and replaced without opening the Profile XP cabinet, and except for the power supplies, are accessible from the front of the cabinet.

#### Removing the front panel

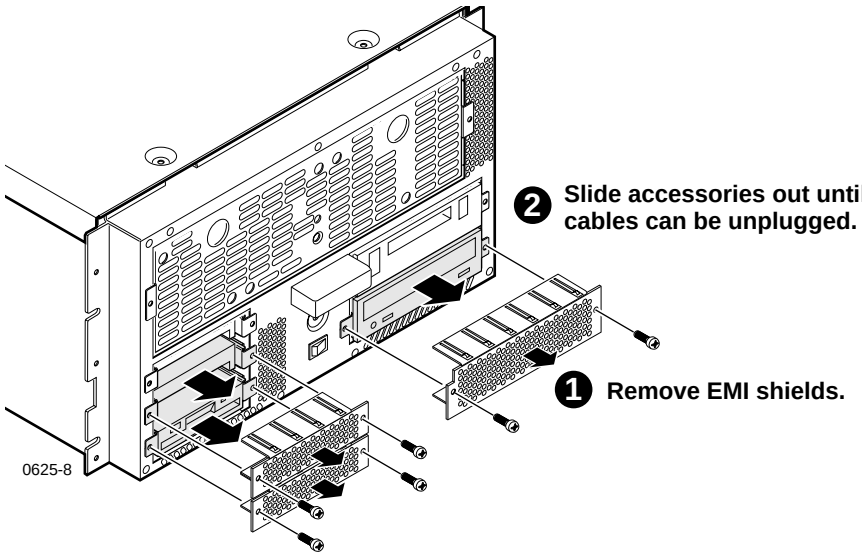


### Removing the fan unit

When removing the fan unit, hook forefingers in the holes on the fan unit and pull while pressing the thumbs against the edge of the chassis.



### Removing the system disk, floppy disk, or CD ROM drive




⚠ ***CAUTION: There are no field procedures that require opening or adjustment of the CD ROM drive. Attempts to open or adjust the CD ROM drive could result in hazardous radiation.***

### Installing a new system disk

***NOTE: This procedure applies only to systems with single system drives. If you are replacing a failed drive in a media platform with a redundant system drive, follow the instructions found in "Replacing a redundant system disk drive " on page 91.***

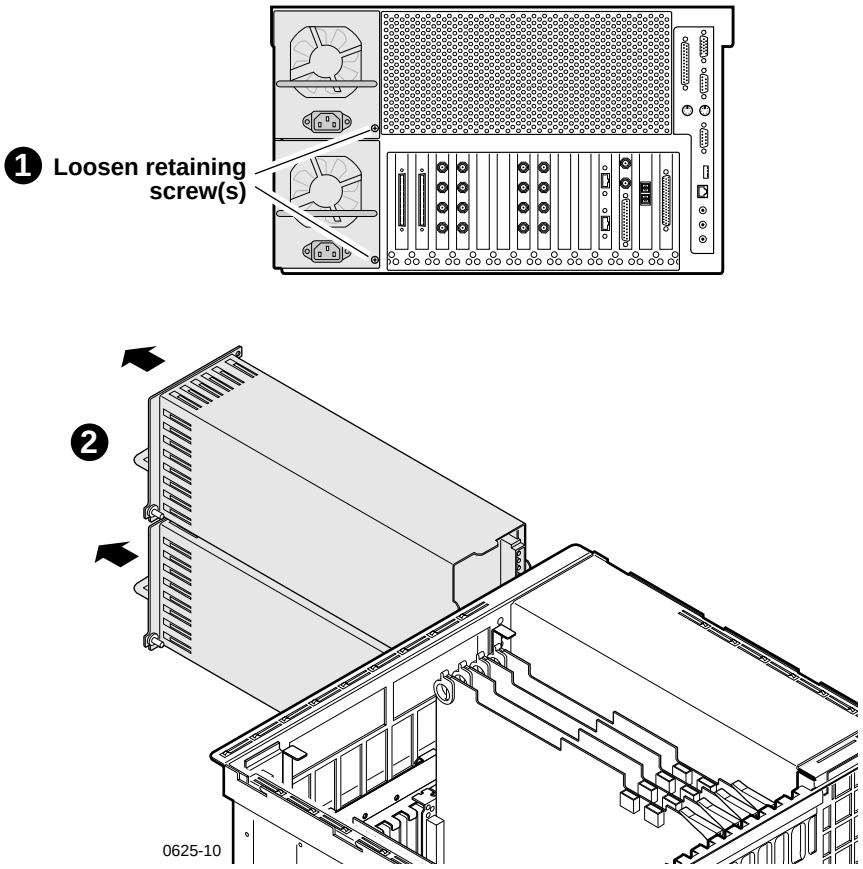
If you are installing a new system disk in the media platform, you must perform the following procedure to return the system to operation after all the cables are attached, the screws tightened, and the covers snapped back in place. The replacement system disk has Windows NT loaded, but you will need to re-install the Profile XP software from your CD ROM, restore network settings, and restore hardware and channel configurations.

1. Power-up the media platform.
2. When the Windows NT desktop appears, insert the Profile XP CD ROM and run the Setup program.
3. Install the Profile XP serial number (from the tag on the rear of the media platform) on the system disk using the *serutil* program.
   a. Open an MS-DOS command window.
   b. At the prompt type **serutil** *number* (*number* = the serial number) and press **Enter**.
   c. When prompted, affirm that the number is correct.
   d. Close the MS-DOS command window.

4. Restore the network settings for the media platform. These include settings for the Windows NT Ethernet and the video network, either Ethernet or Fibre Channel. In the Profile XP *System Guide*, follow the instructions for setting up a network in the chapter called *Setting up a Simple Network.*
5. Restore the hardware and channel configurations either from a saved configuration file, or by importing the configuration from another Profile XP system on the network. In the Profile XP *System Guide*, refer to "Saving and restoring your system settings" in the chapter called *Working with Configuration Manager*.

### Removing the power supplies

When removing a power supply, unplug its ac power cable before removing the power supply from the cabinet.



## Internal Parts Removal

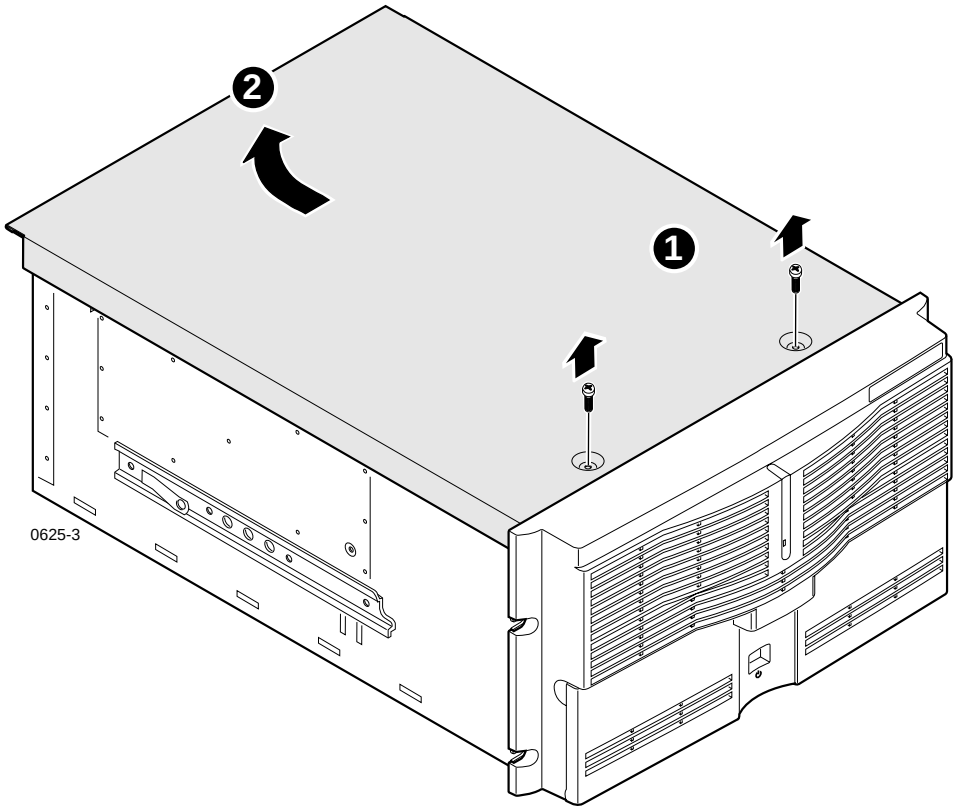
The illustrations that follow show how to remove all the internal parts of the Profile XP Media Platform beginning with removing the top cover and finishing with removing the motherboard from the bottom of the cabinet. The last illustration shows the cable connections on the front of the Motherboard to aid in reassembly.

***NOTE: Before you can remove the motherboard you must first remove all the externally removable parts.***

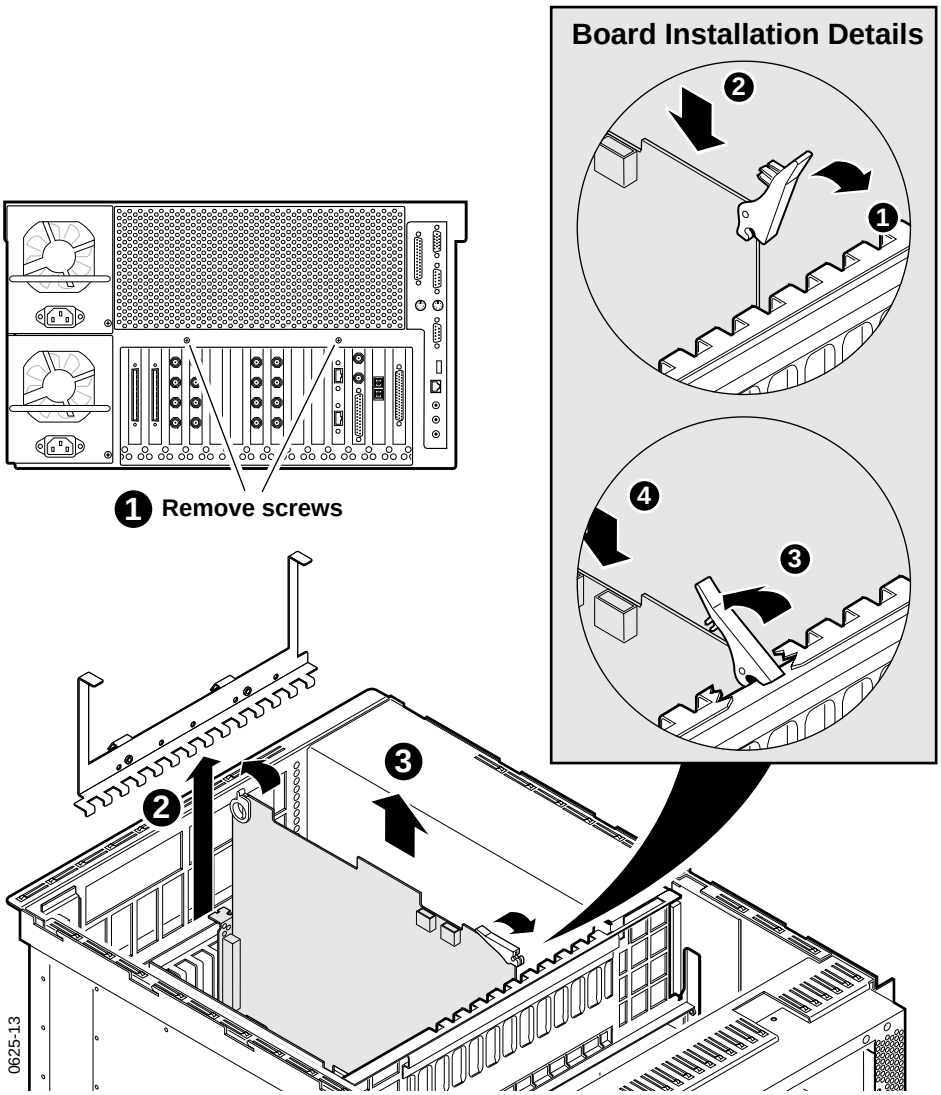
⚠ ***CAUTION: To avoid possible damage to circuit boards and other sensitive parts, turn off the media platform and disconnect ac power before opening the top cover or removing any internal parts or circuit boards.***

⚠ ***WARNING: The media platform can have more than one power supply cord, and the power supply cords are the only means of disconnecting mains power. Disconnect all power supply cords before servicing to avoid electrical shock.***

### Removing the top cover



### Removing and installing plug-in circuit boards



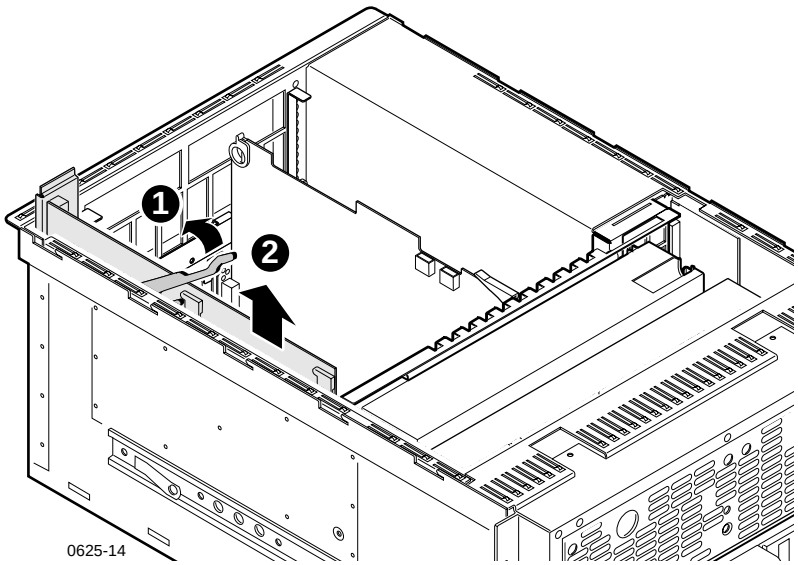

***NOTE: Holding the lever up while pushing down on the board can jam it against the bulkhead, making board extraction extremely difficult.***

To install a board, follow these steps (refer to the installation detail in the illustration):

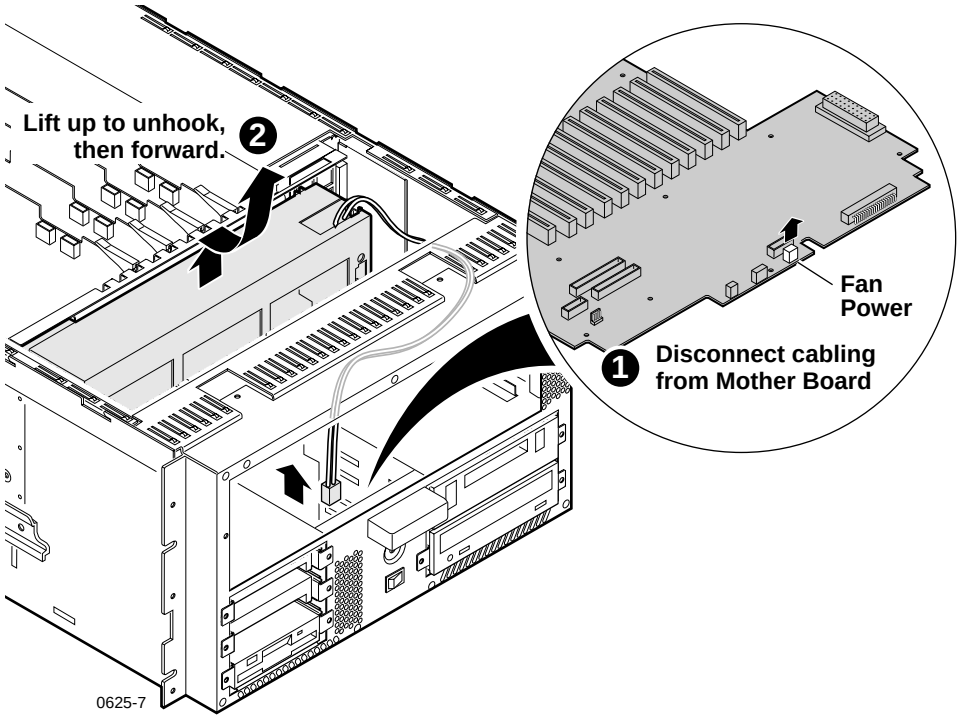
1. Lift the release lever to the up position.
2. Lower the board in the slot.
3. When the lever contacts the bulkhead, swing the lever down to seat the board in the front socket and latch the board in place.
4. Push down on the rear of the board to seat the board in the rear socket.

### Removing the processor board

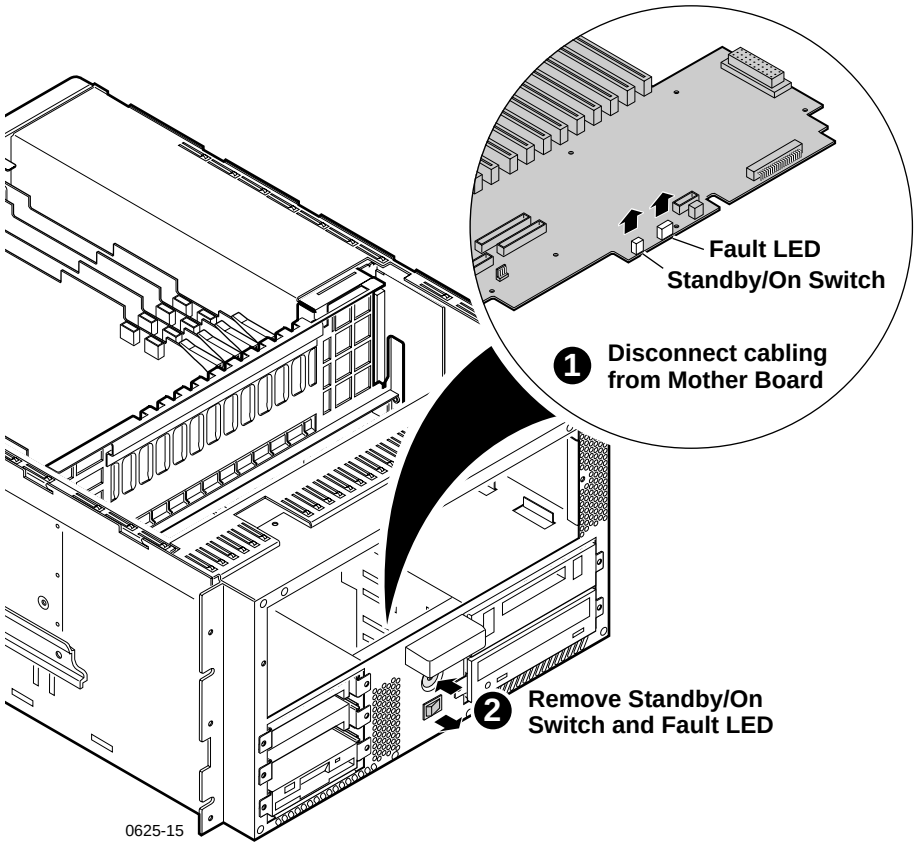
⚠ ***CAUTION: To avoid damage when replacing the battery, replace only with the same or equivalent type recommended by the circuit board manufacturer. Dispose of used battery according to the circuit board manufacturer's instructions.***



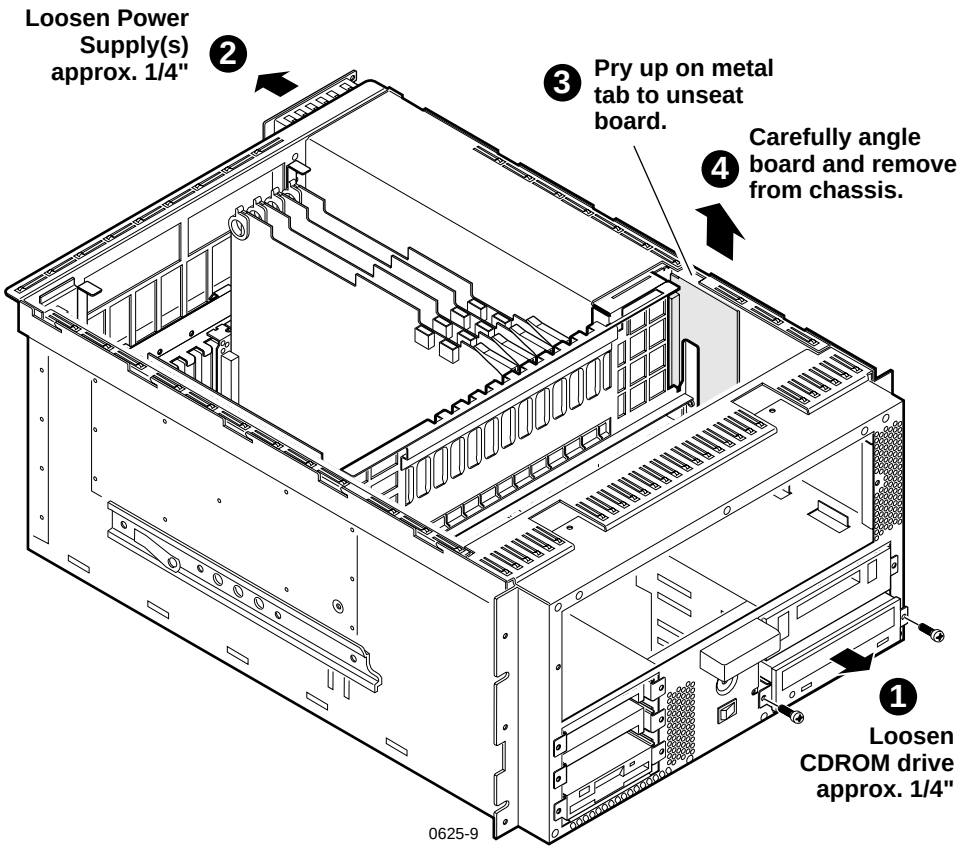

### Removing the air chamber



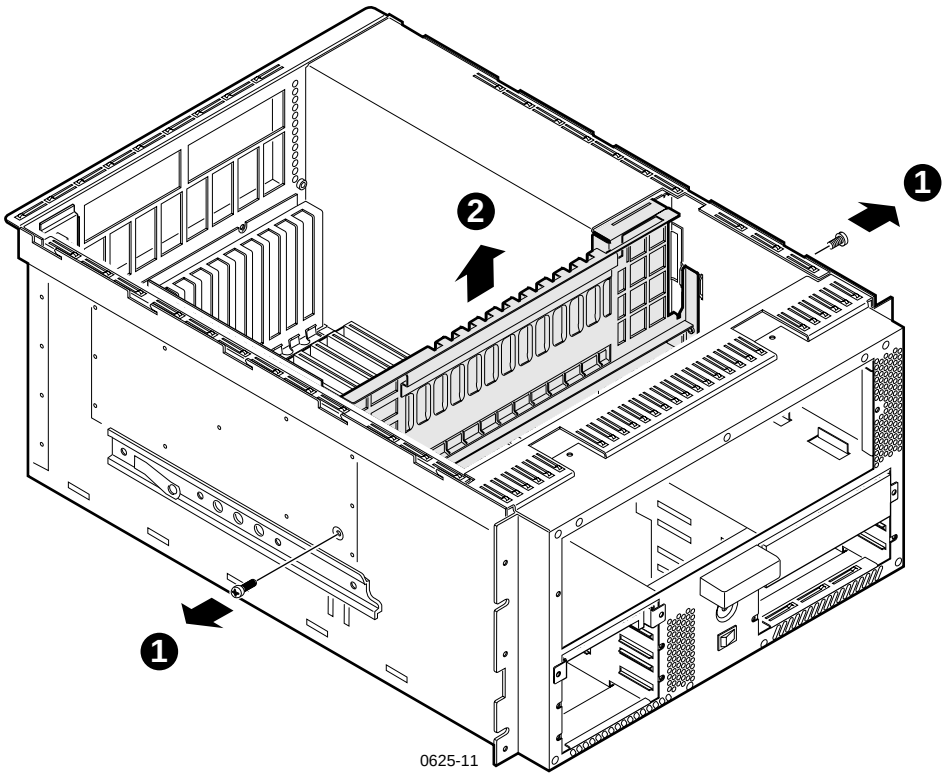
### Removing the standby/on switch and fault LED



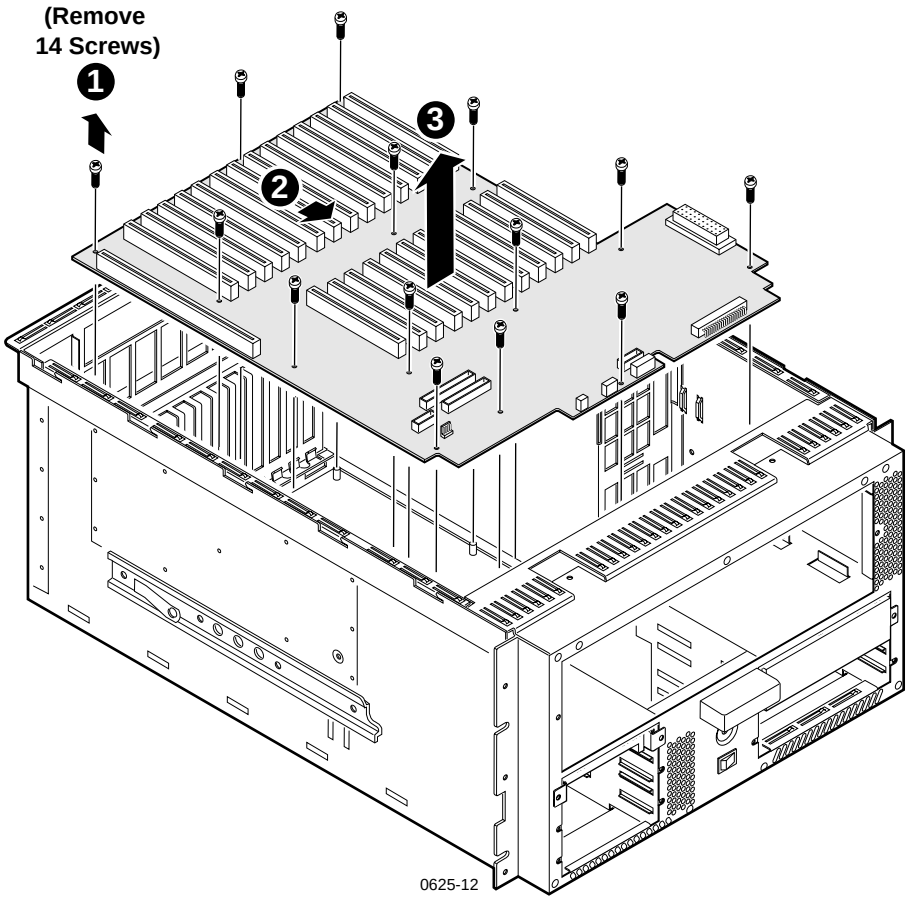
### Removing the power distribution board



### Removing the bulkhead

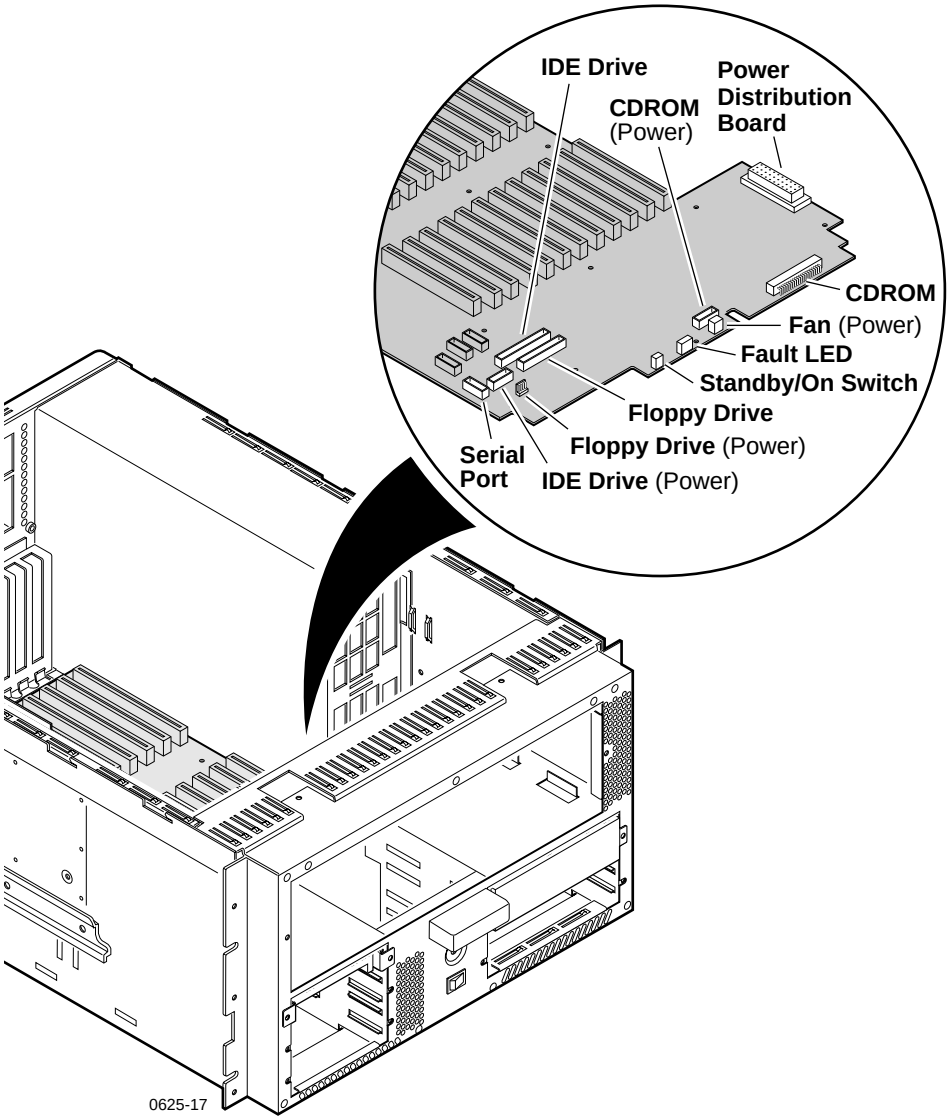


### Removing the motherboard



### Motherboard connections

This illustration can be helpful when re-assembling the media platform.



## Replacing parts in a system with the redundancy option

When removing or installing the DupliDisk™ controller, the primary or mirror system disk drives, or the Superdrive™ 3.5" diskette drive, refer to the illustrations that follow as you perform the steps in the procedure.

### Replacing a redundant system disk drive

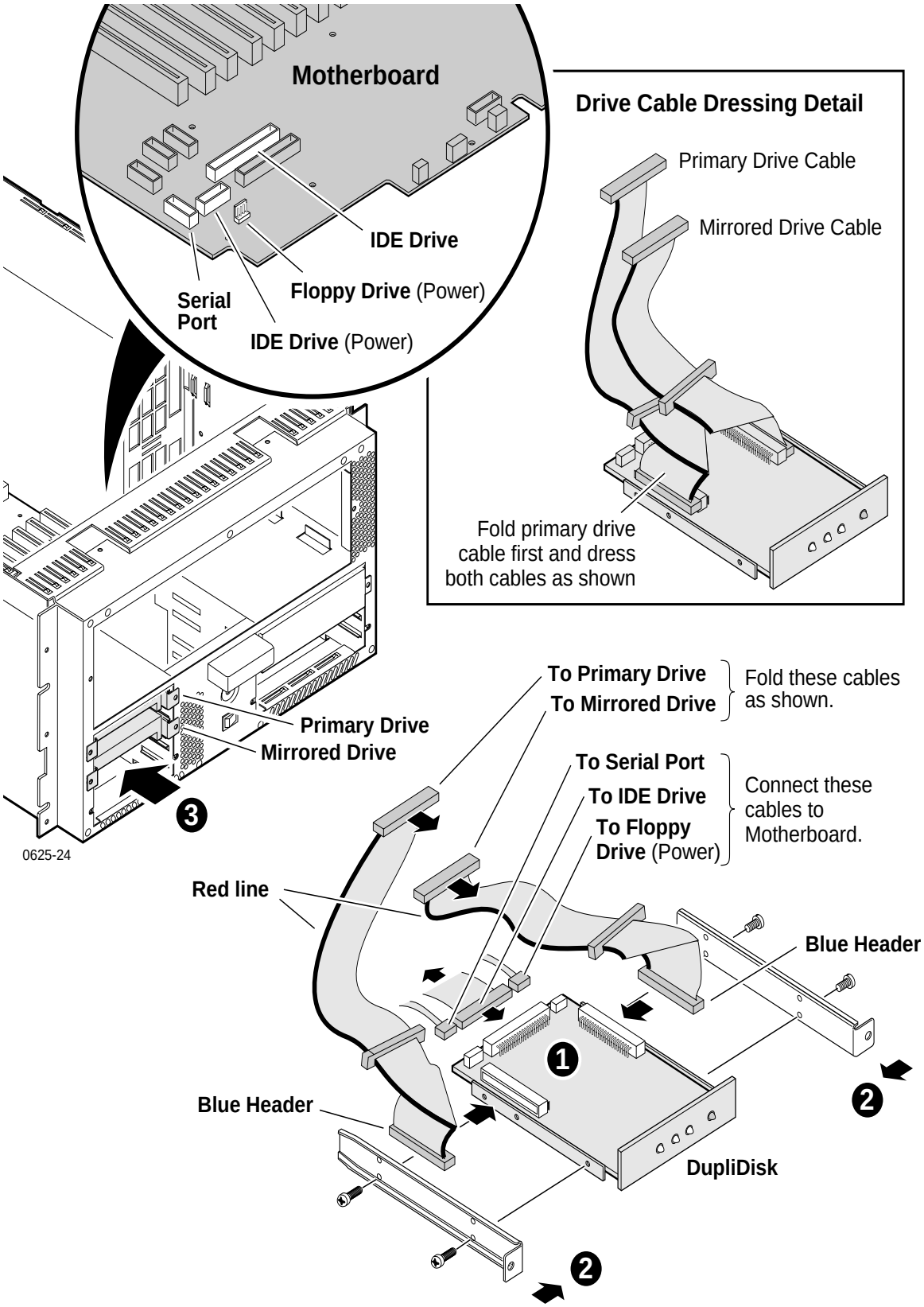
If one of the system disk drives fails, the buzzer in the DupliDisk controller will sound, indicating the drive has failed; both the drive and status LEDs will turn red, and the NetCentral system generates an Warning message. The buzzer continues to sound until the system is turned off or the buzzer switch on the DupliDisk controller is depressed. When a failure is detected, the remaining drive automatically takes over and allows you to safely save the data and shut down the system to replace the failed drive.

To replace the bad drive:

1. Close any open application and shut down the Profile XP system.
2. Insert the ACP Program diskette and turn on the Profile XP system. Allow the system to boot from the diskette.
3. At the command line prompt type **ACP** and press **Enter**. The ACP Program will identify the failed drive. Confirm that the drive identified by the program is the same as the drive indicated by the red LED on the DupliDisk controller.
4. Shut down the Profile XP system and remove the front panel, fan unit, top cover, and air chamber from the Profile XP chassis to allow access to the cable connectors on the motherboard and the back of the drives installed in the bays.
5. Unplug the IDE ribbon cable and power cable from the rear of the failed drive.
6. Remove the bay cover and slide out the failed drive.
7. Slide in the replacement drive and connect the IDE ribbon and power cables. Replace the bay cover.
8. Boot again from the ACP Program diskette, type **ACP** at the command prompt, and press **Enter**. The ACP Program will offer the following options:

   **CLEAR THE ERROR MESSAGE**
   **RESTORE THE DATA**

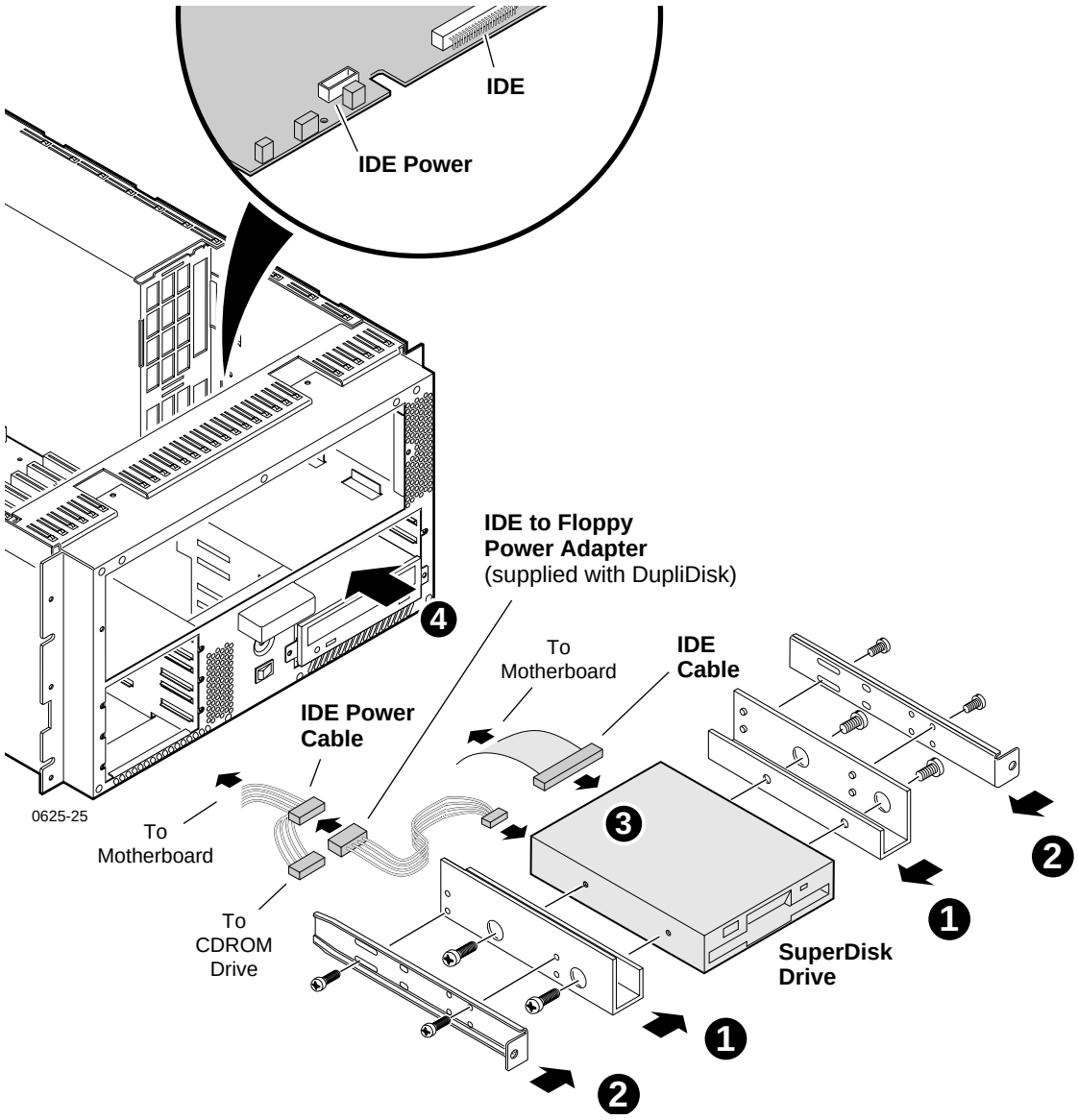
   Select **RESTORE THE DATA** to remove the error message and have the ACP program automatically initialize the replacement drive and perform the correct copy procedure.
9. When the data is finished copying, shut down the Profile XP system, remove the ACP Program diskette, and reboot the system from the system disk drive as usual.


Motherboard
IDE Drive
Floppy Drive (Power)
IDE Drive (Power)
Serial Port
Drive Cable Dressing Detail
Primary Drive Cable
Mirrored Drive Cable
Fold primary drive cable first and dress both cables as shown
Primary Drive
Mirrored Drive
3
0625-24
To Primary Drive
To Mirrored Drive
Fold these cables as shown.
To Serial Port
To IDE Drive
To Floppy Drive (Power)
Connect these cables to Motherboard.
Red line
Blue Header
1
2
Blue Header
DupliDisk
2

### Replacing the Superdrive™

To replace the Superdrive in the Profile XP chassis:

1. Shut down the Profile XP system and remove the front panel, fan unit, top cover, and air chamber from the Profile XP chassis to allow access to the cable connectors on the motherboard and the back of the drives installed in the bays.
2. Disconnect the IDE ribbon cable and power cable from the drive.
3. Install the 5.25" adapter brackets to the sides of the replacement Superdrive.
4. Slide the Superdrive into the upper 5.25" bay until it seats.
5. Connect the IDE ribbon cable and power cable to the plugs on the rear of the Superdrive.
6. Reinstall the air chamber, the fan unit, the top cover, and the front panel.



# Field-replaceable parts

The parts listed in this table are the parts that you can order from Grass Valley Group and replace on-site.

| Description | Part Number |
|---|---|
| Applications Processor Module (NLX) | 039-0081-XX |
| Ethernet board | 039-0087-XX |
| RS422 board | 116-0331-XX |
| Fibre Channel Network board | 116-0836-XX |
| Power Supply | 119-5787-XX |
| 1.44MB Floppy Disk Drive | 119-6204-XX |
| 32X CD-ROM Drive | 119-6205-XX |
| IDE Hard Disk Drive, 8.4GB | 119-6206-XX |
| DupliDisk™ controller board | 119-6322-XX |
| Superdrive™ floppy disk drive | 119-6323-XX |
| I/O Panel (RS422, GPI, LTC) | 650-4116-XX |
| Audio board | 671-4299-XX |
| Motherboard | 671-4322-XX |
| SDI 2In/2Out board | 671-4537-XX |
| Video Monitor board | 671-4564-XX |
| MPEG-2 Encoder board | 671-4565-XX |
| MPEG-2 Decoder board | 671-4630-XX |
| Fibre Channel Disk board | 671-4668-XX |
| Real Time System board (RTP, Ref. In, LTC, GPI) | 671-4914-XX[a] |
| SDI 4Out board | 671-4958-XX |
| Dual Power Supply Merge board | 671-4782-XX |
| HD SDI board | 671-4975-XX |
| HD MPEG-2 Encoder board | 671-4900-XX |
| HD MPEG-2 Decoder board | 671-4899-XX |
| Cable Assy, Motherboard - Fan & Power Indicator | 174-4023-XX |
| Cable Assy, Power, Motherboard - IDE Drive | 174-4032-XX |
| Cable Assy, Power Indicator LED | 174-4030-XX |
| Cable Assy, Fault Indicator | 174-4031-XX |
| Cable Assy, 2X20 IDE Drive | 174-4039-XX |
| Cable Assy, Floppy Disk Drive | 174-4040-XX |
| Cable Assy, Power, Motherboard - Floppy | 174-4041-XX |
| Cable Assy., Standby/Power Switch | 174-4042-XX |
| Cable, RS422 to I/O Panel | 174-4343-XX |
| Cable, Real Time System board to I/O Panel | 174-4344-XX |
| Top Cover | 200-4523-XX |
| Front Bezel | 333-4327-XX |

| Description | Part Number |
|---|---|
| Air Filter, Door | 378-0474-XX |
| Air Filter, Bezel | 378-0475-XX |
| Front Panel Assy. | 426-2602-XX |
| Fan Assy. (Fan tray, three fans, power distribution board) | 386-7139-XX |
| Mouse | 119-4330-XX |
| Keyboard | 119-5662-XX |
| Cable Assy., Fibre Channel Network | |
| Cable Assy., Fibre Channel, FC Disk to RAID | |
| Cable Assy., Ethernet | |
| Cable Assy., Audio board to Audio interface (PAC/XLR/BNC 216) | |

[a.] PVS2000 Series requires the -02 or later version of the Real Time System board.

Appendix **A**

# Diagnostic Tools

Diagnostic tools available to you for help in localizing and diagnosing problems in the Profile XP Media Platform are:

- NetCentral XP — NetCentral XP Lite monitors the Profile XP media platform locally; NetCentral XP Enterprise allows monitoring of many Profile XP systems from a remote monitoring station. In addition to monitoring, NetCentral XP provides a diagnostic aid that includes suggestions for resolving or repairing problems.
- Profile XP Diagnostics — A diagnostic suite that checks the functionality of the boards in the Profile XP Media Platform.
- Windows NT diagnostic tools — Provided by Microsoft for use in troubleshooting problems with Windows NT.
- POST — Power-On Self-Test. Basic tests to assess the initial health of the system as it boots. These are hardware diagnostics found in the CPU boot ROM. Results are displayed on the monitor. If the keyboard LED's flash, at least the CPU kernel is functional and able to execute code from the BIOS chip.

# Using NetCentral XP

The NetCentral XP system monitors the state of the Profile XP media platform, and alerts you to component failures and maintenance needs. NetCentral XP Lite is the version of NetCentral supplied with every Profile XP media platform. NetCentral XP Lite monitors only the media platform on which it is running. With the optional, full-featured NetCentral XP Enterprise you can monitor many ethernet-connected Profile XP media platforms from a central location. With the exception of remote monitoring features, both versions look and operate the same.

NetCentral XP Enterprise uses the Simple Network Management Protocol (SNMP) as the communication mechanism for centralized control. Any Profile XP media platform or PC that is running NetCentral XP Enterprise's SNMP manager and is connected to the network of Profile XP systems can function as the central monitoring station.

These are the main NetCentral XP functions:

- Provide status information for all major subsystems in a Profile XP media platform.
- Alert the user when a subsystem is operating at reduced capacity or is no longer functioning.
- Suggest corrective action for fault conditions.

Fault conditions are indicated by Warning or Alarm messages. Warning messages are generated when a media platform is no longer operating at optimum level, but it is still able to provide the functionality for which it was configured. Alarms are generated when a media platform is no longer functional, either due to a loss of resource or other environmental changes. Both Warning and Alarm messages are accompanied by actions such as sounding a beeper, triggering a GPI port, etc. NetCentral XP allows you to configure the actions that it takes in response to fault conditions.

## Using the NetCentral XP window



This small, rectangular block is the NetCentral XP icon that appears in the taskbar. The moving color block in the icon provides visual confirmation that the system is running, using these three colors to provide basic system status:

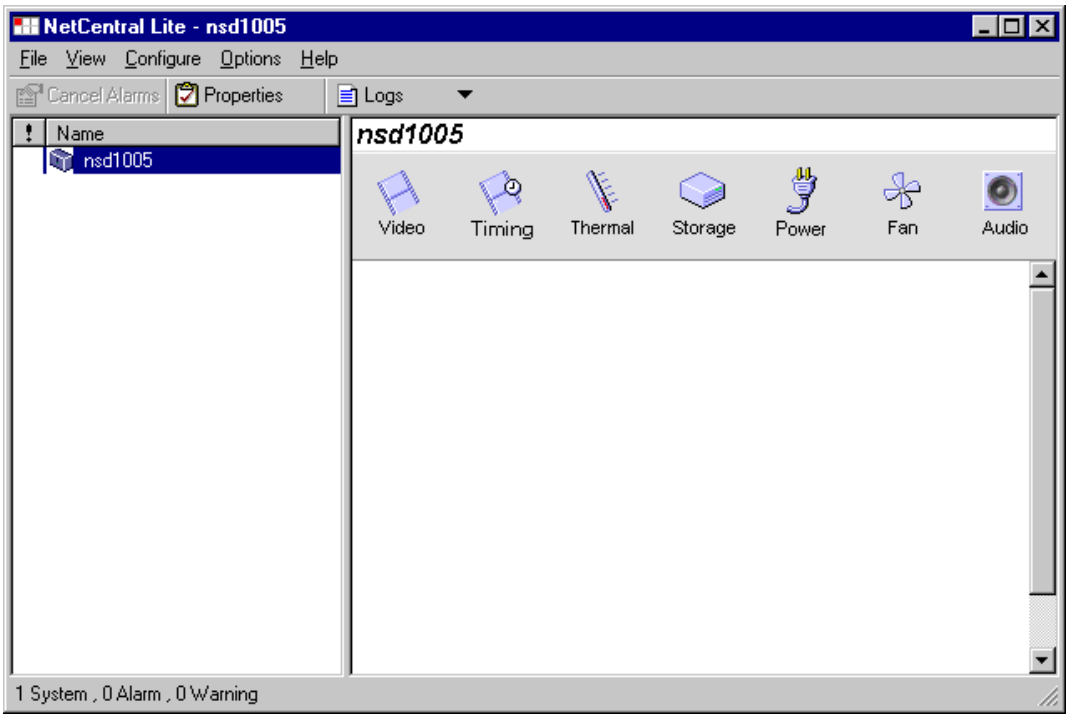
**Green —** Indicates that NetCentral XP has not detected any errors. All monitored systems are operating under normal conditions.

**Yellow —** Indicates a Warning condition. Something has occurred that reduces the media platform's ability to function normally, but no Alarm conditions exist.

**Red —** Indicates an Alarm condition. something has occurred that prevents the media platform from functioning.

Double-clicking on the icon raises the NetCentral XP window.

The left panel includes the names of all the media platforms that you've chosen to monitor. When you select one of the media platforms in the list, the right panel displays the icon bar and any status information for that media platform.



## Adding or deleting systems to be monitored

To add or remove names from the left panel, select **File | Add** or **File | Delete**. In the dialog box that appears, enter the name or IP Address of the media platform you want to add to the list, enter the SNMP community name if it is not already entered, and click **OK**.




## Displaying subsystem status

An icon for each of the subsystems monitored by NetCentral XP appears in the icon bar near the top of the panel. To display the status panel for a subsystem, click on the icon for the subsystem.

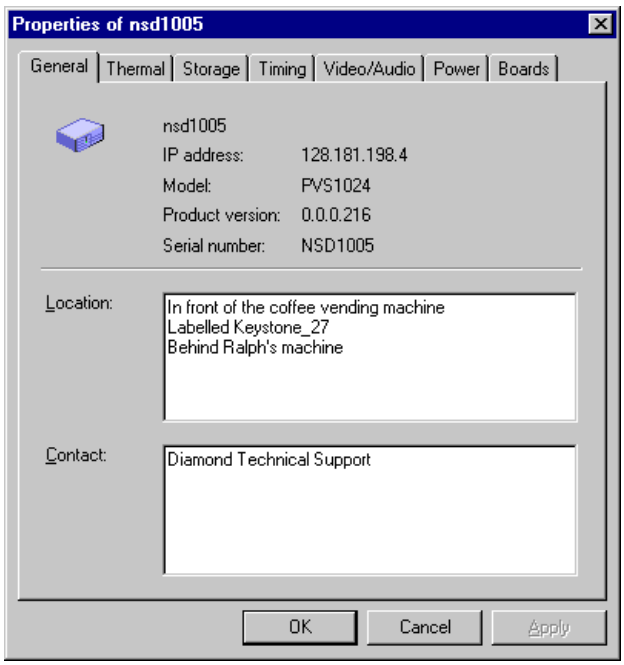


You can also display properties by clicking on the **Properties** button in the tool bar or by selecting **View | Properties**. Then click on the tab for the properties panel you want to view.

### To view General properties

- Select the **General** tab in the Properties window.

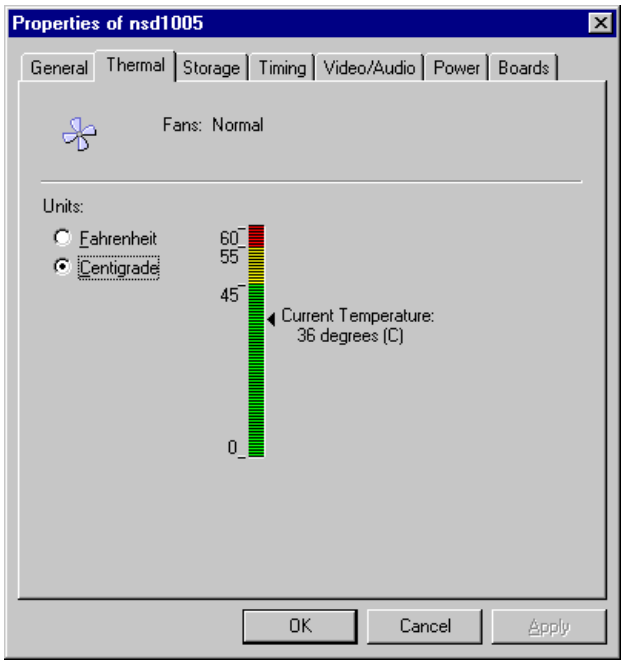
The General properties panel displays information about the Profile XP media platform including the model number, serial number, IP address, product version number, and other useful information.



### To view Thermal properties

1. Click on the **Thermal** tab in the Properties window.
2. Select Fahrenheit or Centigrade units for temperature reporting.

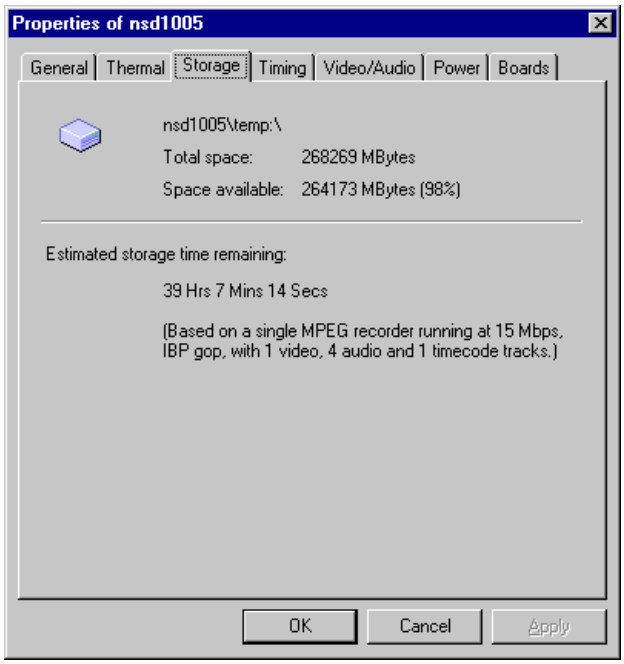
The Thermal properties panel shows you the current operating temperature of the Profile XP media platform. The green area on the thermometer shows the safe range of operating temperatures, the yellow area shows the temperature range in which NetCentral XP sends a Warning message, and the red area shows the temperature range that generates an Alarm message.



### To view Storage properties

1. Select the **Storage** tab in the Properties window.
2. In the date entry box, enter the number of the Fibre Channel RAID Chassis or select a number from the pull down menu.

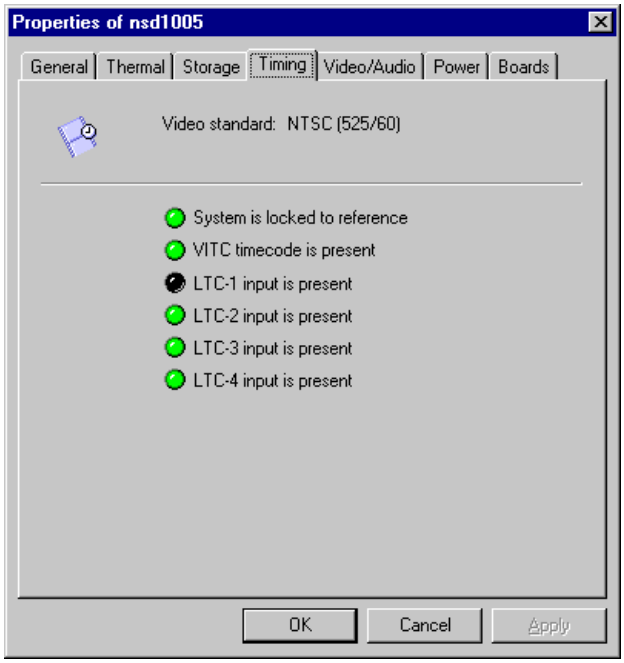
The storage time remaining estimate is based on the values that you enter in the Disk Capacity setting when configuring Profile XP settings. See “To make settings for a Profile XP system” on page 112.



### To view Timing properties

- Select the **Timing** tab in the Properties window.

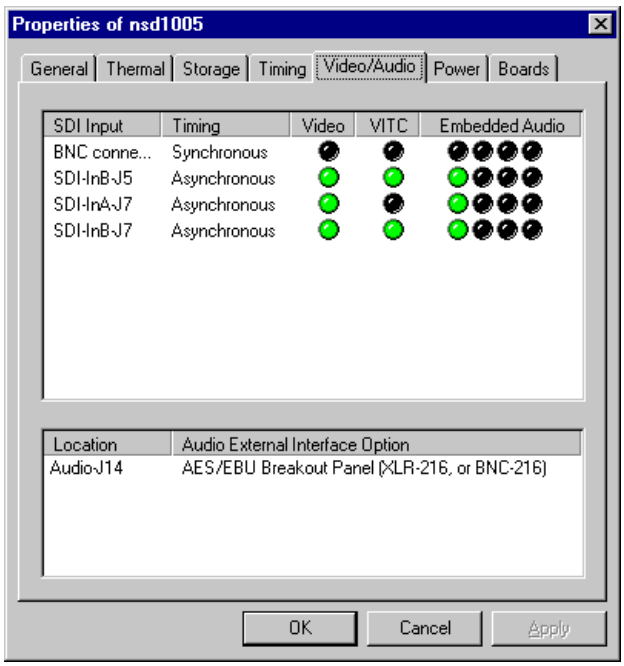
This panel reports the video standard in use (NTSC or PAL), and indicates with green "lights" when the system is locked to the reference, and when VITC and LTC timecodes are present.



### To view Video and Audio properties

- Select the **Video** tab in the Properties window

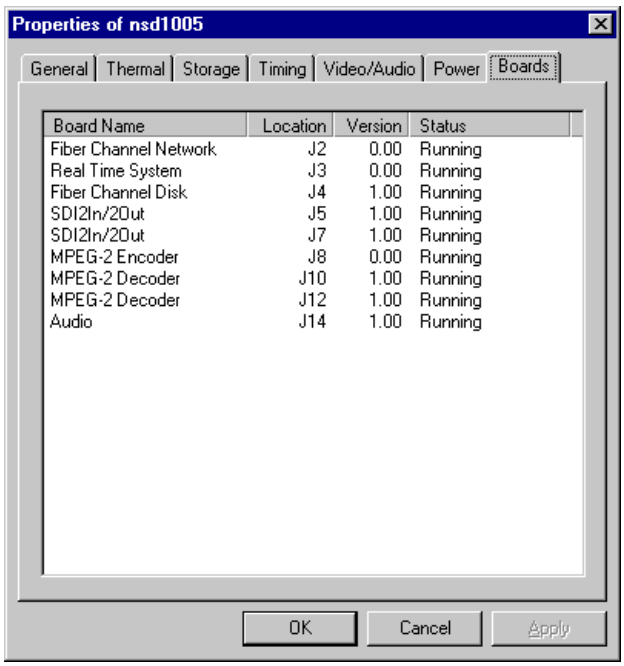
Video properties are displayed in the upper portion of the panel, and Audio properties in the lower portion. The green lights indicate which signals are present.



### To view Board Status

- Select the **Board Status** tab in the Properties window.

This panel lists the boards that are installed in the Profile XP media platform, the slot in which each is installed, version of the board installed, and its current status.

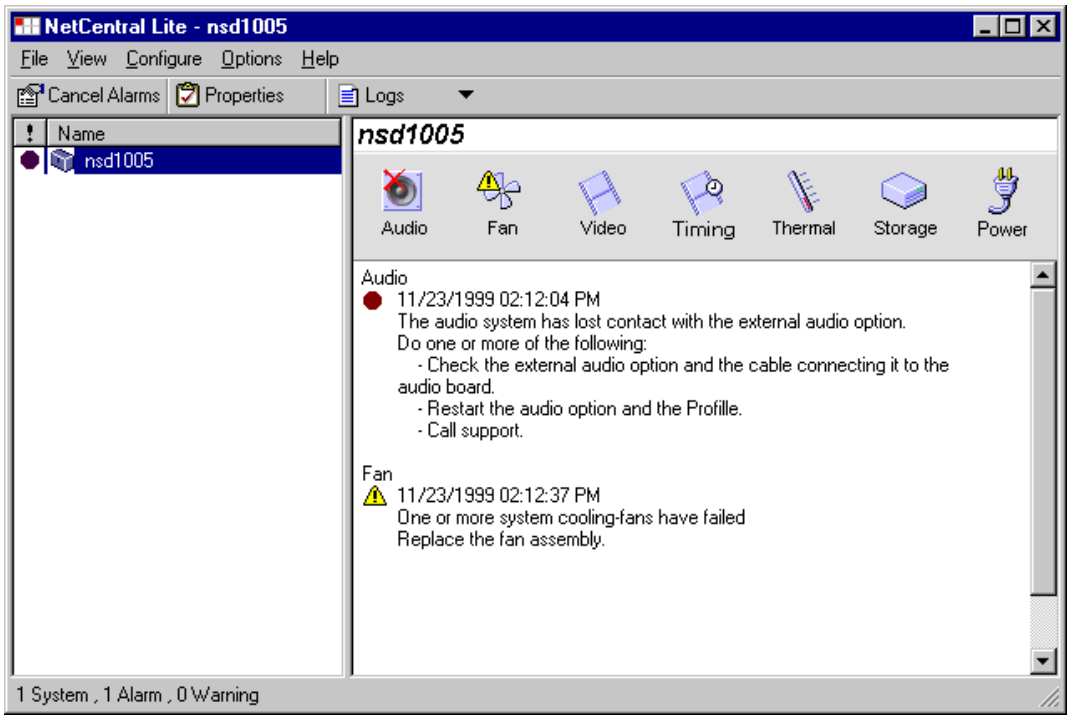


## Interpreting fault information

As soon as NetCentral XP detects a fault condition, it raises the NetCentral XP window. In the left window panel, a status indicator appears beside the name of the system reporting the fault and the name moves to the top of the list. The status indicator for an Alarm message is a red octagon ; the status indicator for a Warning is a yellow triangle with an exclamation point . Messages that convey status information or that announce a return to normal conditions are accompanied by a small blue "i." In the tool bar, a red "X" appears on the icon of a subsystem generating an Alarm and that icon moves to the leftmost position on the tool bar. Similarly, the icon for a subsystem generating a Warning is displayed

If one system has and Alarm condition and a different system has a Warning condition, the system with the Alarm condition always appears at the top followed by the system with the Warning condition.

If NetCentral XP Enterprise loses all communication with a Profile XP, it generates a generic alarm alerting the user.



## Viewing logs



To view logs with NetCentral XP, click the **View Logs** button, then select the log you want to view from the list, or select the log from the **View** menu. Selecting a log launches the WinTail log-viewing tool to display the log.

The list of logs includes the three logs created by NetCentral XP:

- Engineering Log
- NetCentral XP Log
- NetCentral XP Manager Log

The list of logs may also include the following logs generated by a Profile XP system.

- Port Timeline Control Logs
- Profile Protocol Log
- Transfer Log
- VdrPanel Logs

## Clearing alarms



To turn off an alarm such as a beeper that was triggered by an Alarm condition, click on the **Cancel Alarms** button or select **Options | Cancel Alarms**. This turns off the alarm for a period of time while you take steps to correct the problem, but NetCentral XP will send the message again and trigger the alarm at the end of that time period. The length of that time period is configurable and is discussed under “Configuring Alarm and Warning responses” on page 107.

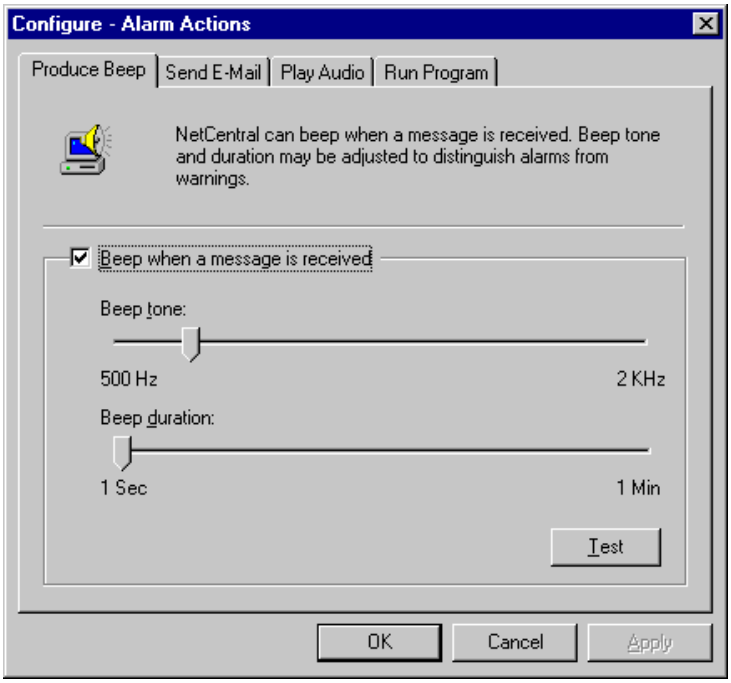
## Configuring Alarm and Warning responses

When the NetCentral XP manager receives a fault indication, it responds with one or more actions such as a beep, or e-mail, or paging the system administrator, or triggering a GPI port, etc. You can configure the actions NetCentral XP takes in response to Alarm and Warning conditions by selecting **Configure | Alarms...** or **Configure | Warnings...**. The tab panels used to configure responses for Alarms are identical to the panels used to configure responses for Warnings.

When you have entered settings in a panel, click **Apply** to put the settings into effect and leave the Configure window open; click **OK** to put the settings into effect and close the Configure window; click **Cancel** to leave the settings unchanged and close the Configure window.

### To produce a beep

1. Select the **Produce Beep** tab in the Configure window.
2. Click the check-box to enable the beep.
3. Adjust the slider controls to set the pitch and duration of the beep tone.
4. Click the **Test** button to test your settings and fine-tune them as necessary.

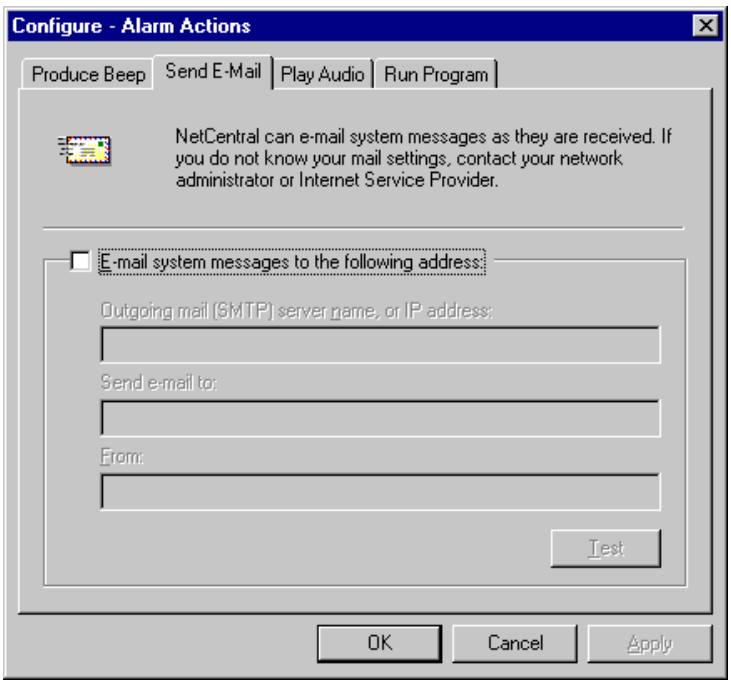


### To send e-mail

When you enable the e-mail feature, NetCentral XP automatically sends the Alarm or Warning message in e-mail to the e-mail address that you specify.

You can also use this feature to notify a pager or cell phone if the pager or cell phone service is able to accept e-mail messages. One example of the address to send the message to might be (501)234-5678@mobil.telco.net. Remember that many pager systems limit the number of characters allowed in a message, so not all of the NetCentral XP Alarm message would be transmitted if it exceeds that number.

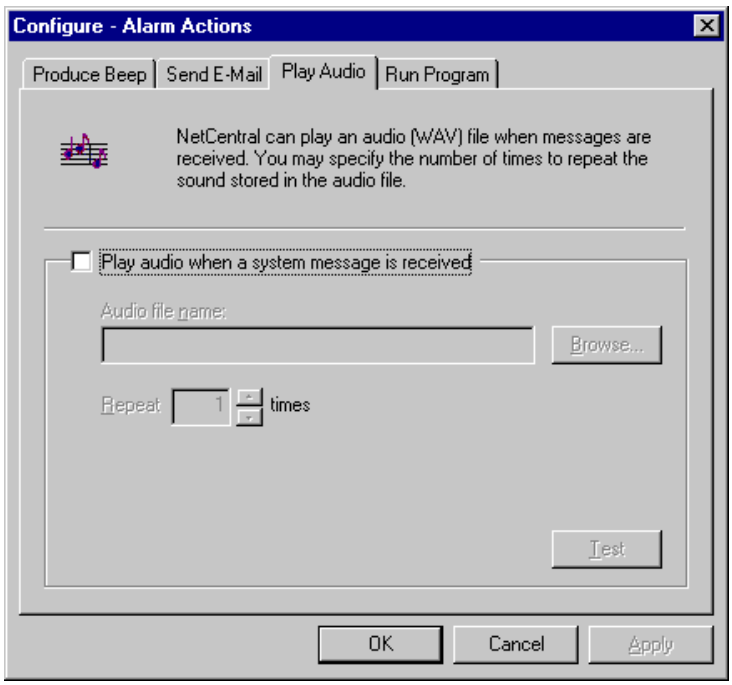
1. Select the **Send E-mail** tab in the Configure window.
2. Click the check box to enable e-mail.
3. Enter the required information in the text entry boxes. In the top box enter the name of your mail server. In the center box enter the e-mail address of the recipient. In the bottom box enter your e-mail address. Contact your system administrator if you are uncertain about what to put in the boxes.
4. Click the **Test button** to send a test message to the recipient.



### To play an audio file in response to an Alarm or Warning message

This feature is available only when the NetCentral XP Enterprise manager is running on a system that has a multi-media player, which is typically a PC serving as the central monitoring station. When you enable the Play Audio feature, NetCentral XP Enterprise will play a WAV audio file using the PC's multi-media player.

1. Select **Configure | Alarms...** or **Configure | Warnings...**.
2. Select the **Play Audio** tab in the Configure window.
3. Click the check box to enable.
4. Enter the complete path and name of the WAV file.
5. Select the number of times the file is to repeat.
6. Click the **Test** button to verify that the function is working, and to make adjustments to parameters like playback volume.
7. Click the **Apply** button to put the settings into effect, but leave the Configure window open. Click the **OK** button to put the settings into effect and close the Configure window. Click **Cancel** to leave the settings unchanged and close the Configure window.

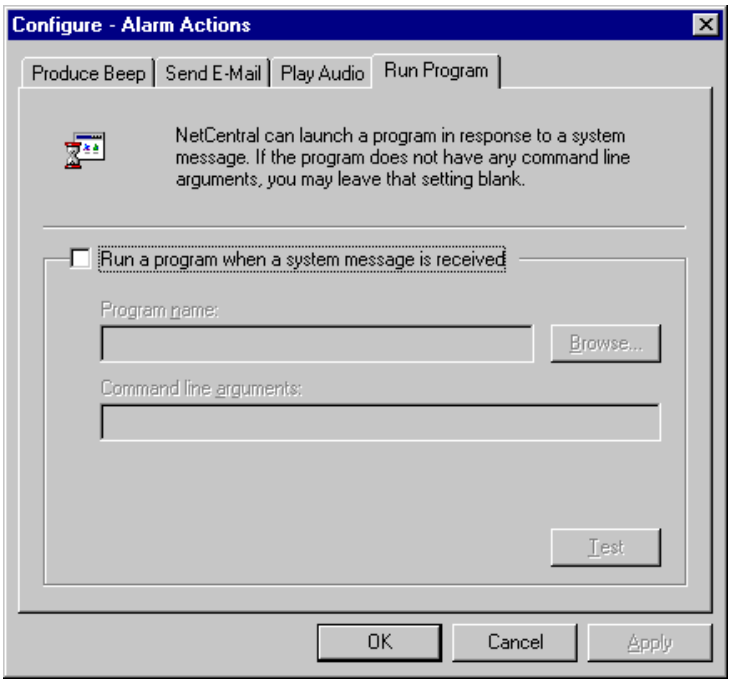


### To run a program

When you enable this feature and specify a program name, NetCentral XP launches the program in response to an Alarm or Warning condition.

1. Select the **Run Program** tab in the Configure window.
2. Click in the check-box to enable running a program.
3. Enter the complete pathname of the program file to be run.
4. Enter command line arguments if the program requires them.
5. Click the **Test** button to verify that the program launches.

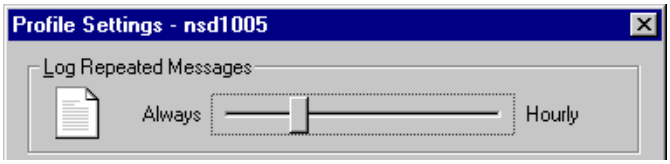
For a simple example, you can enter the MS-DOS command *net.exe* as the program name, then in the arguments box, enter **send profile3 NetCentral Alarm**. "NetCentral Alarm" will appear in a message box on the screen of the machine named "profile3."



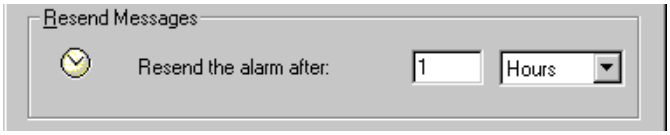
## To make settings for a Profile XP system

Select **Configure | Advanced | Profile Settings...** to make the following settings that determine how NetCentral XP monitors a specific media platform. Click the **Apply** button to put the settings into effect.

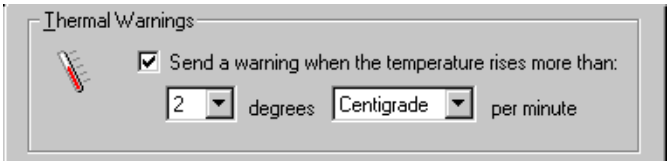
**Log Repeated Messages —** Adjust the slider to set how frequently NetCentral XP will send a repeated message to a log file. Use this feature to prevent log files from filling up with routine messages.



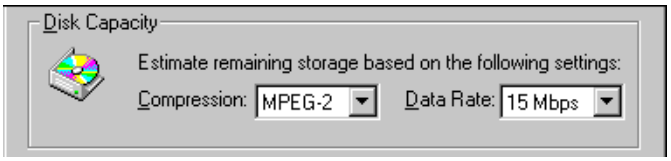

**Resend Messages —** Specify the amount of time for correcting a problem before an Alarm message is re-sent for that problem.




**Thermal Warnings —** Enable by clicking in the check-box, then specify the rate of temperature increase at which NetCentral XP sends a Warning message.



**Disk Capacity —** Select the compression method and data rate being used by the media platform to allow NetCentral XP to accurately estimate the remaining storage capacity in the RAID storage subsystem.




**GPI Outputs —** By triggering a GPI output, you can activate an external alarm or indicating device when an Alarm or Warning condition occurs.

a. Click in the check-box to enable GPI port triggering.

b. Select one of the output ports.



## Setting NetCentral XP Enterprise remote monitoring parameters

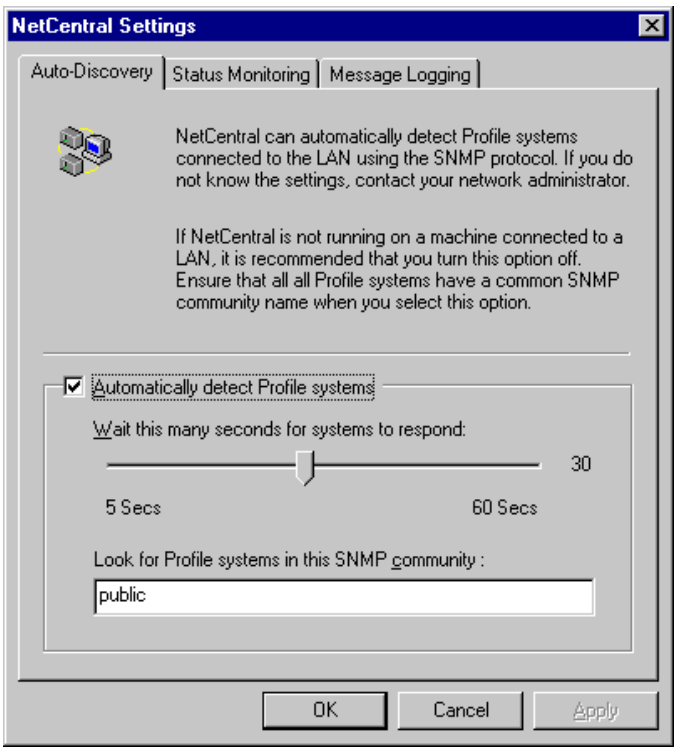
Select **Configure | Advanced | Settings...** to enable and configure these three NetCentral XP Enterprise remote monitoring features. These are features not available in NetCentral XP Lite.

### To enable auto-discovery

Auto-discovery allows NetCentral XP Enterprise to use the SNMP protocol to detect all live Profile XP media platforms connected to the local area network (LAN). If a Profile XP media platform is not connected to a LAN, this feature should be disabled.

1. Select the **Auto-discovery** panel in the NetCentral XP Enterprise Settings window.
2. Click the check-box to enable auto-discovery.
3. Adjust the slider to select a time between 5 and 60 seconds to wait for all Profile XPs on the network to respond.
4. Enter the name of the SNMP community to which the Profile XP systems must belong.

If you are uncertain what data to enter, contact your system administrator.

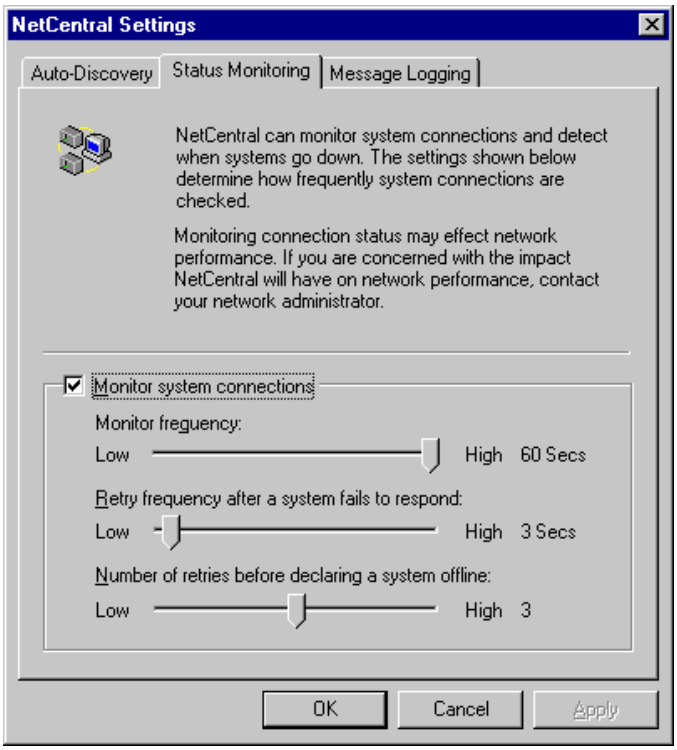


### To enable Status-Monitoring

When this feature is enabled, NetCentral XP Enterprise monitors the status of all the media platforms of which it is aware.

1. Select the **Status Monitoring** tab in the NetCentral XP Enterprise Settings window.
2. Click in the check-box to enable status monitoring of all Profile XP media platforms known to NetCentral XP Enterprise.
3. Adjust the sliders to select the interval between monitoring requests, the interval between retries when querying an individual media platform, and the number of times to retry (from x to y) before declaring a media platform dead.

***NOTE: Because this feature can increase network traffic on the LAN, use settings that will not adversely affect network performance. Contact your system administrator if you are not sure of the network limitations.***



### To set up message logging

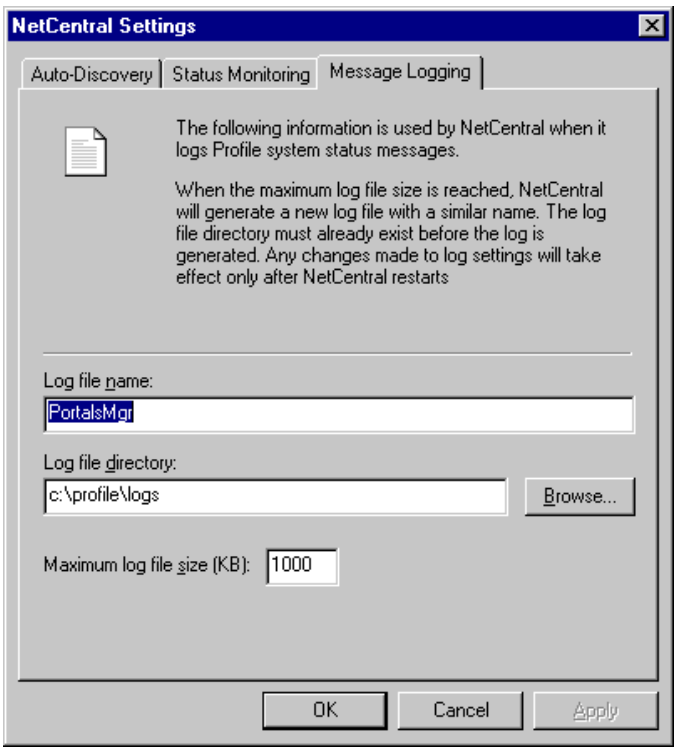
NetCentral XP Enterprise generates three logs:

- Engineering log — This log captures all error messages generated by the real time system and by NetCentral XP.
- NetCentral XP log — Captures all NetCentral XP messages for storage on the local media platform.
- NetCentral XP Enterprise manager log— Captures all NetCentral XP messages for storage on the machine serving as monitoring station.

In the **Message Logging** panel, you set the maximum size of the log file before NetCentral XP Enterprise begins creating a new log file by that name.

To set up message logging:

1. Select the **Message Logging** panel in the NetCentral XP Enterprise Settings window.
2. Enter the name of the log file in the first text entry box.
3. Enter the complete path to the log file storage directory.
4. Enter a maximum size in kilobytes for the log file.
5. Click the **Apply** button to apply the changes.



# Setting NetCentral XP Lite monitoring parameters

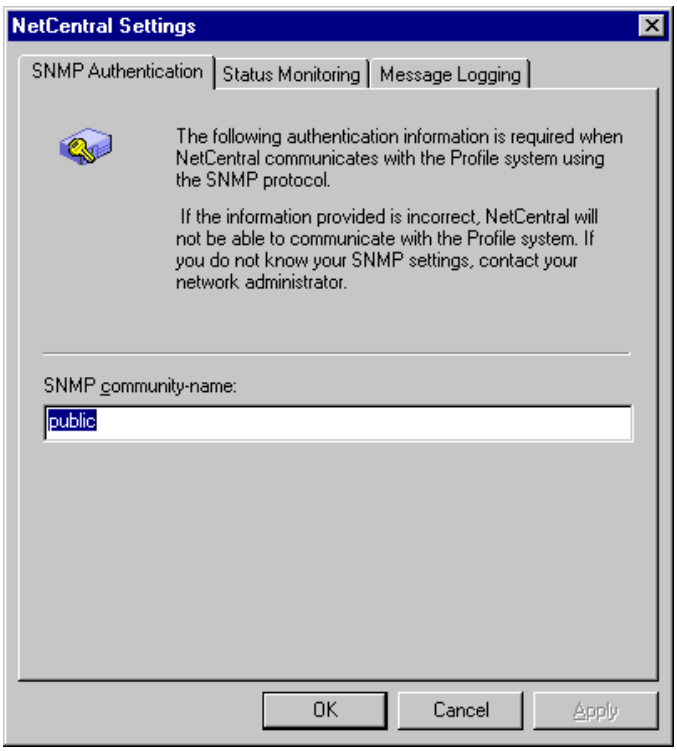
Select **Configure | Advanced | Settings...** to enable and configure these NetCentral XP Lite monitoring features.

## Entering SNMP authentication

By entering the correct community name, the monitoring software in the Profile XP system can communicate with NetCentral XP's SNMP manager to display status information.

1. Select the **SNMP Authentication** panel in the NetCentral XP Enterprise Settings window.
2. Enter the name of the SNMP community to which the Profile XP systems must belong.

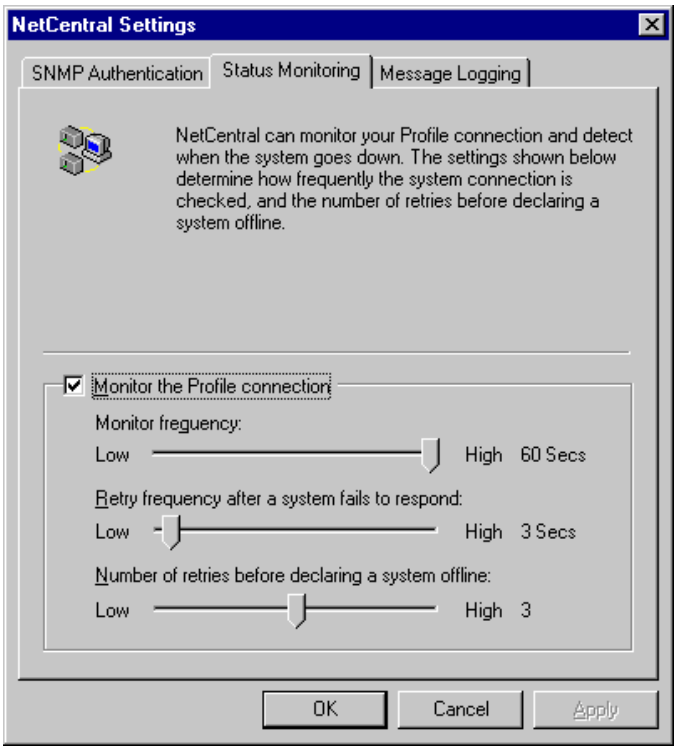
If you are uncertain what data to enter, contact your system administrator.



### To enable Status-Monitoring

When this feature is enabled, NetCentral XP Lite monitors the status of all the media platforms of which it is aware.

1. Select the **Status Monitoring** tab in the NetCentral XP Lite Settings window.
2. Click in the check-box to enable status monitoring of the Profile XP system.
3. Adjust the sliders to select the interval between monitoring requests, the interval between retries when querying an individual media platform, and the number of times to retry (from x to y) before declaring a media platform off-line.



### To set up message logging

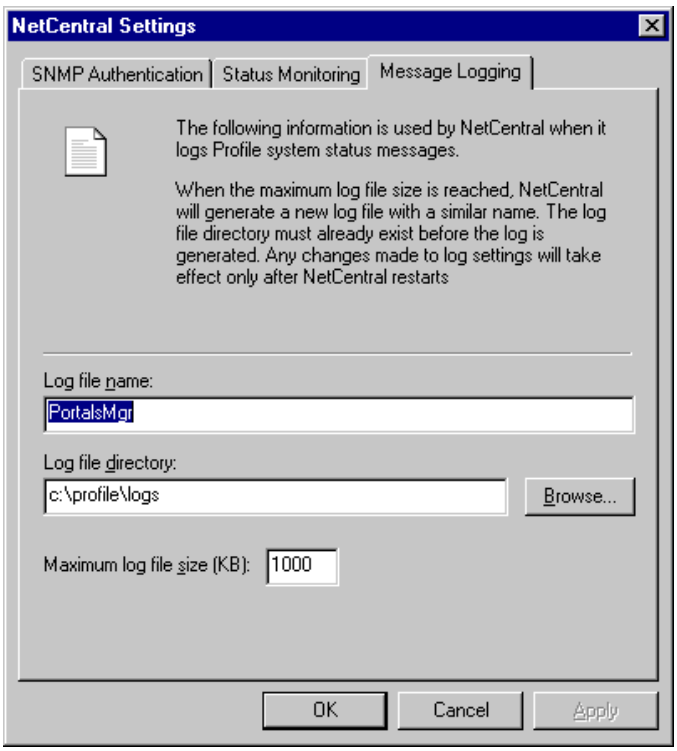
NetCentral XP Lite generates two logs:

- Engineering log — This log captures all error messages generated by the real time system and by NetCentral XP.
- NetCentral XP log — Captures all NetCentral XP messages for storage on the local media platform.

In the **Message Logging** panel, you set the maximum size of the log file before NetCentral XP Lite begins creating a new log file by that name.

To set up message logging:

1. Select the **Message Logging** panel in the NetCentral XP Lite Settings window.
2. Enter the name of the log file in the first text entry box.
3. Enter the complete path to the log file storage directory.
4. Enter a maximum size in kilobytes for the log file.
5. Click the **Apply** button to apply the changes.



# Profile XP Diagnostics

Before you start Profile XP diagnostics, you must shut down any Profile applications and the services that they use. Diagnostics will not run when applications or services are running to avoid possibly interfering with on-air operation.

## Before you begin

1. Shut down any Profile applications that are running.
2. Check that Profile XP *Diagnostic Service* is running: in the **Control Panel**, double-click on the **Services** icon, then find the Profile XP *Diagnostic Service* listing and verify that the status is "Started."

   If you do not find Profile XP *Diagnostic Service* listed in the **Services** dialog box, install the service by opening a MS-DOS command window and execute the following commands:

   ```
   C:> cd \profile\diag
   C:\profile\diag> diagsvc -install
   ```

   Close and re-open the **Services** dialog box to update the list.
3. Stop the *Host Transfer* service. Stopping the Host Transfer service automatically stops the *Mux-Demux* service. Click **OK** when asked if you want to stop *Mux-Demux*.
4. Stop the *Profile Broker Service* if it is running.
5. Stop the *Resmon* service.

## Starting Profile XP diagnostics

To open the Profile XP diagnostics window and connect to the local host:

1. Select **Start | Programs | Profile Diag Tools | Diagnostics**.
2. Click the **Connect** button, .

## Launching the tests

The tests are arranged in a hierarchical tree structure, which is displayed in the left panel of the window when you activate the **Test Tree** button on the tab.

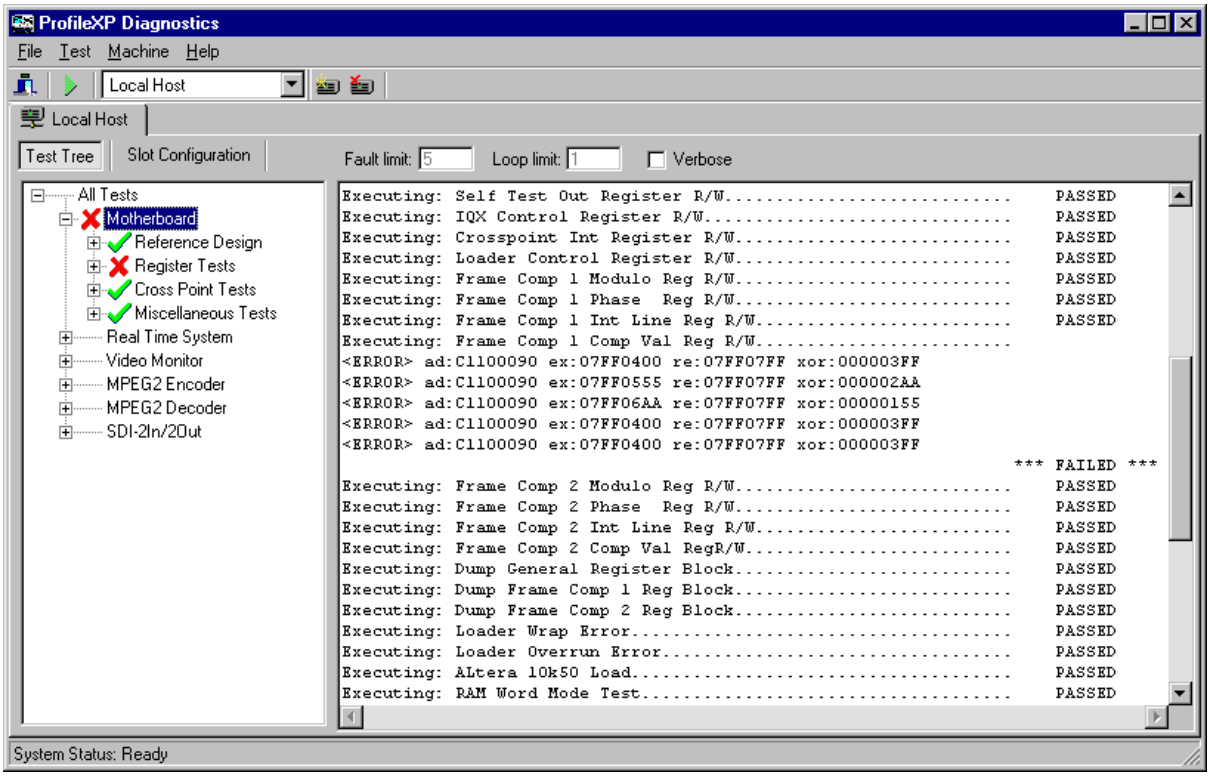
- Double-click the **All tests** selection in the test tree or double-click a particular board to run tests on that board alone. When the tests run, a green check mark appears by the boards that test OK and a red X appears next to the names of boards that fail.

## Restarting VDR Service

When you are finished running the diagnostics, you must restart the services that were stopped at the beginning. To do this:

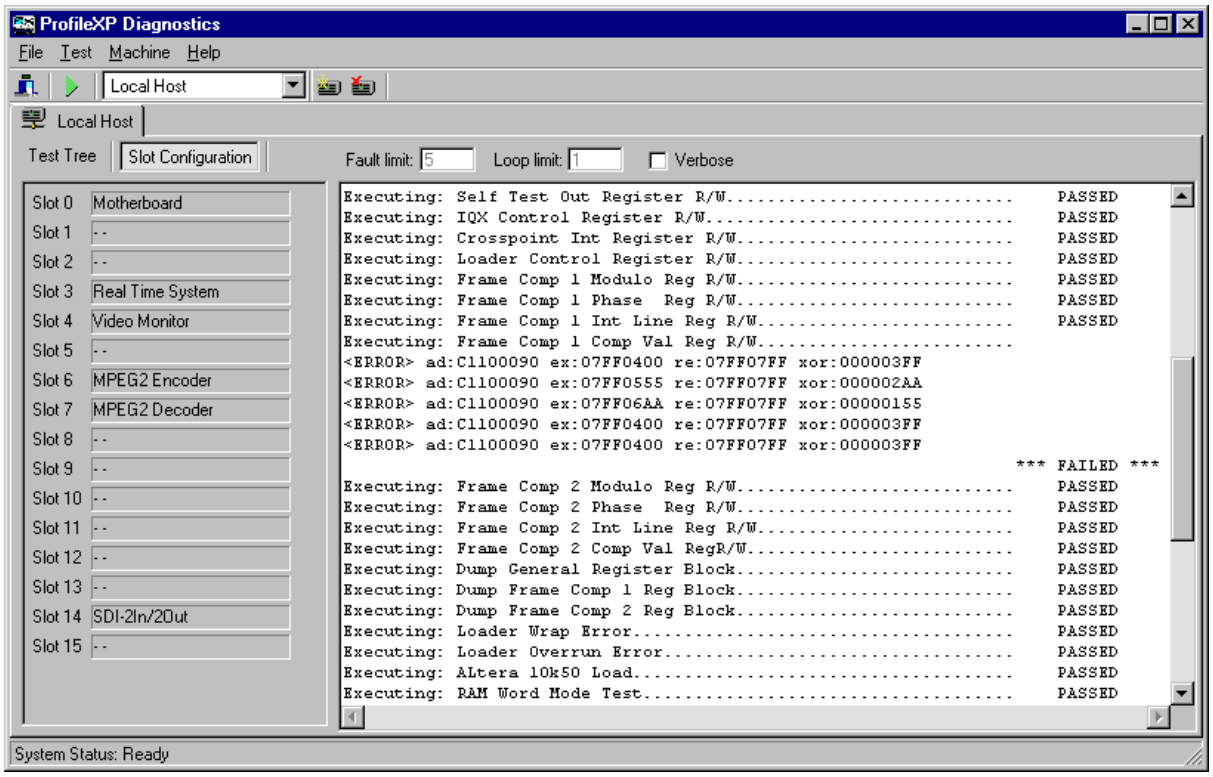
- Select **Programs | Profile Debug Tools | Reset VDR Service.**

Running this program returns the system to a freshly re-booted state.



### To view the slot configuration:

- Click the **Slot Configuration** button. A slot map showing the installed boards appears in the left panel as shown here.



# Windows NT Diagnostic Tools

The Windows NT diagnostics and event viewer are found by clicking **Start | Programs | Administrative Tools**. The registry editor must be accessed from the **File | Run** menu in the Windows NT diagnostics.

## Windows NT diagnostics

This utility provides administrators with information on the operating system version, application-server hardware, memory, drivers, services, IRQs, network, and disk drives, as well as access to Event Viewer, Registry Editor, and Disk Administrator (with the **File | Run** menu). You can even print out some of this info as reports.

Here is a brief description of each of the tabs in the Windows NT diagnostics window:

**Version** shows operating system and hardware information, such as the number and type of processors.

**System** displays more details about the computer, including the type of processor BIOS, and Hardware Abstraction Layer (HAL).

**Resources** shows information about system resources such as IRQs, I/O ports, DMA channels and memory addresses.

**Environment** displays system and user environment settings

**Drives** displays information about the disks connected to the computer, the partitions on hard drives, and network share.

**Memory** shows information about physical memory and the page file.

**Display** describes the video display and its driver.

**Services** shows the status of all services and devices. The same information is displayed in the Control Panel, Services & Devices programs, but more detail is shown here.

**Network** displays information about the network, including network statistics.

## Event viewer

Event viewer is used to record and view Windows NT events. An event is any significant occurrence — in the system or in an application — that warrants notification of the user. For critical events, Windows NT can notify users with an alert on the screen. For non-critical events that do not require immediate attention, Windows NT can add information to an event log file. Event logs can be viewed in real time or can be saved for later analysis. Event viewer is the single facility for logging events by system and Windows-based applications.

Refer to the on-line Help system for detailed information about the Event viewer.

### The event logs

Event viewer provides access to three log files under the **Log** menu.

The *System Log* records all events relating to the operating system, device drivers, and services. For example, if a driver or system component fails to load on booting, this generates an event in the log.

The *Security Log* records events relating to system security, such as failed logons.

The *Application Log* records events generated by applications, such as "log file too large."

Logs can be saved for analysis, and with proper access rights, logs on remote computers and be viewed over the network.

### Event types

There are five different "types" of events, each with its own icon:

 **Information —** Significant but successful events that occur infrequently. For example, "New cartridge has been inserted. From device: \Device\Tape0."

 **Warning —** Warnings of possible future problems. For example, "The F: disk is at or near capacity. You may need to delete some files."

 **Error —** Existing problems. For example, "Failed to set the user's home directory d:\USERS\helend."

 **Success Audit —** A successful attempt at a security-audit procedure. For example, "Successful Logon: User Name: timk."

 **Failure Audit —** An unsuccessful attempt at a security-audit procedure. For example, "Logon Failure: Reason: Unknown user name or bad password. User Name: rosea."

The events display does not refresh automatically; you must press F5 for manual refresh to see the latest events. In the **View** menu you can choose to view all events or only events filtered by type and date, to list either the newest events first or the oldest first, to search for events, and to display details about an event.

**Diagnostic tip —** Analyze events closest to the last System Boot. Often errors that occur later have failed because of dependency on events before them.

## Registry editor

The registry editor lets you view and modify information in the registry files that make up the configuration database. The registry structure is hierarchical, with the HKey at the root level. The following table lists and describes the five HKeys:

| Root Key Name | Description |
|---|---|
| HKEY_LOCAL_MACHINE | Contains information about local computer system including hardware, operating system, memory, device drivers, and start-up control data. This data effects all users. |
| HKEY_CURRENT_USER | Contains the user profile for the user currently logged on, including environment variables, personal program groups, desktop settings, network connections, printers, and applications preferences. This data effects only current user. |
| HKEY_USERS | Contains all actively loaded user profiles, including HKEY_CURRENT_USER, which always refers to a child of HKEY_USERS, and the default profile. |
| HKEY_CLASSES_ROOT | Contains file association data and object linking and embedding data. (equivalent to the Registry in Windows for MS-DOS. |

***NOTE: The "H" in HKey stands for "handle". It indicates to software developers that this is a handle that a program can use. A handle is a value that uniquely identifies a resource so that a program can access it.***

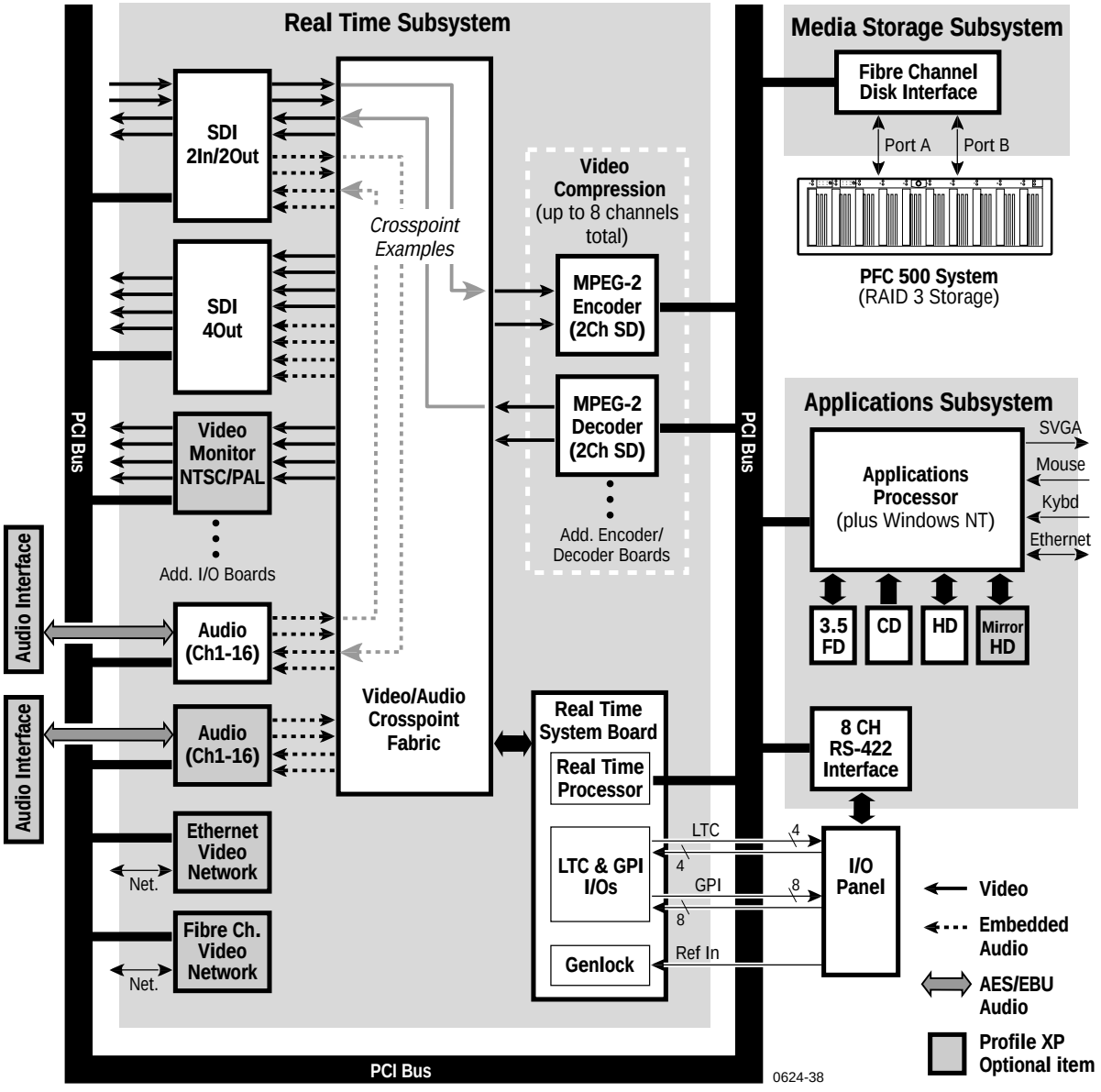
### Role of the registry during boot:

During boot, the registry's role is to provide the information that determines what drivers and services to load and when to load them. All the data needed to control bootup is contained in registry subkeys called control sets found in HKEY_LOCAL_MACHINE\SYSTEM. To ensure that the system can always be started, a backup version of system configuration is kept by the registry. Invoking LastKnownGood allows you to undo any configuration changes that did not have the intended effect.

Appendix **B**

# Theory of operation

This appendix is a high-level overview of the Profile XP media platform that provides a basic understanding of system operation to support module-level servicing.




Profile XP architectural building blocks

# Architecture overview

The Profile XP architecture is an extension to a standard PCI bus-based computer that uses the Window NT operating system. This standard computer base is enhanced to deliver an industrial strength, broadcast quality, disk based video server. This section describes the major architectural blocks, what they do, and how they interconnect.

The Profile XP system can be viewed as three main components or subsystems: the application subsystem, the real time subsystem, and the media storage subsystem, along with the platform resources required for operation. The real time subsystem, the application subsystem, and the platform resources are contained within the Profile XP media platform. The media storage subsystem consists of one or more separate RAID chassis.

The architectural building blocks of a Profile XP system are shown on page 127.

# Applications subsystem (Windows NT system)

The applications subsystem executes and controls the standard user interface (GUI), system control I/O, system configuration, and the various applications that control the system from a functional level. The application subsystem consists of the applications processor, the user input and display devices, various applications system disk storage devices, and an 8-channel RS-422 interface.

## Applications processor

The applications processor executes the application and system configuration software, and consists of a plug-in Windows NT computer subsystem in a standard NLX form factor. It is a complete PC system in and of itself. The applications processor communicates with the Real Time Processor (RTP) using Inter-processor Messaging (IPM), a shared memory-based communications channel, which gives the applications processor the ability to interrupt, and to accept interrupts from, the RTP.

## Windows NT I/O devices

These include a standard SVGA display, keyboard, and mouse.

## Ethernet Interface

The Applications Processor board includes a built-in 10/100BaseT Ethernet interface for network communications.

## Applications system disk storage

The applications system storage devices include:

- a standard system IDE hard drive with provision for a second IDE hard drive that mirrors the primary through an optional drive-mirroring controller
- an IDE CD-ROM drive
- a floppy-disk drive or a high-capacity super-drive

All of these drives are connected to the NLX board through IDE connectors and passive circuits on the system motherboard.

## RS-422 interface

The RS-422 interface is the serial control interface used by most of the common external automation and control devices. This interface is implemented by means of various protocols over an RS-422 physical interface. The applications processor controls and communicates with the RS-422 Interface over the PCI bus.

# Real time subsystem

The real time subsystem is responsible for the following functions in the Profile XP system:

- manages the data flow to and from, and the real time control of, the encoders and decoders, the video, audio, and time code I/O, and the media storage subsystem.
- executes the low-level device drivers
- manages the Media File System
- executes events on a play time line

## Real Time System board

The Real Time System board contains circuitry for three separate functions:

- Real Time Processor
- LTC and GPI I/O's
- Genlock

### Real Time Processor (RTP)

The RTP executes all the real time core software. The RTP controls all of the I/O and processing modules included in the Real Time Subsystem via communication over the PCI bus. The RTP communicates with the applications processor over a shared memory-based inter-processor communications channel which includes the ability to interrupt and to accept interrupts from the applications processor.

### LTC & GPI I/O's

Four linear time code (LTC) inputs and outputs are provided. Vertical interval time code (VITC) is input from the video reference signal.

The general purpose interface (GPI) port has 8 inputs and 8 outputs, and is intended for signaling events in a studio environment.

### Genlock

The Genlock section provides a 27Mhz system clock and Frame Reference pulse for PAL or NTSC. These can be free running or locked to the video black reference. Locked operation is automatically selected when a video black reference is connected.

## MPEG-2 Encoder and Decoder boards

The MPEG-2 Encoder board receives an uncompressed video stream of CCIR 601 video data from the video/audio crosspoint fabric and compresses (encodes) it into MPEG-2 format. The MPEG-2 video is then sent over the PCI bus to the media storage subsystem.

The MPEG-2 Encoder board features the following functions:

- Two (2) channels of MPEG-2 encoding at a maximum bit rate of 50 Mb/s, and at a minimum bit rate of 4 Mb/s
- Simultaneous extraction of VBI data from both video channels on lines 10 through 22 NTSC and 6 through 23 PAL
- Extraction of 720 bytes of luminance and 720 bytes of chrominance data

The MPEG-2 Decoder reads compressed MPEG-2 video data from a local memory buffer, decompresses (decodes) the video data, and outputs a CCIR 601 video data stream to the video routing fabric.

The MPEG-2 Encoder and Decoder boards are controlled by the RTP via the PCI Bus.

## Serial Digital Interface (SDI) boards

The SDI boards used in the Profile XP media platform provide either two input and two output ports, or four output ports.

The SDI inputs receive serial component video conforming to SMPTE 259M. The input decoder synchronizes the incoming video to the Profile XP internal video timing and converts the serial stream into 10-bit component 4:2:2 video that is sent to the video/audio crosspoint fabric.

The SDI outputs accept 10-bit component 4:2:2 video from the video/audio crosspoint fabric. Circuitry on the board performs blanking, HANC data insertion, VITC data insertion, and variable delay. The resulting video output is a SMPTE 259M compatible bit stream.

## Video networking I/O

The Video Networking I/O consists of the Ethernet and Fibre Channel Video network boards and provides the physical interface between the real time subsystem and the video network. The purpose of the video network is to provide high-speed transfer of media files between different media storage systems such as other Profile XP systems or a large computer file server. The video networking I/O also provides the resource to move data to and from buffers in the real time subsystem's PCI memory space. The video networking I/O is controlled by the RTP via the PCI bus.

## Audio interface

The audio interface receives external analog or AES/EBU digital audio signals and converts them into the internal form used by the Audio board. The audio interface also receives data from the audio processor and converts it to the appropriate external audio signal.

### Audio

The Audio board receives PCM audio from either an audio interface or from the SDI boards after routing through the video/audio crosspoint fabric. The Audio board is responsible for the physical I/O, algorithmic processing, and distribution of sixteen channels of uncompressed PCM audio. In its simplest form it does simple processing of the audio and level monitoring or level adjust. It may also be used to do more complex functions such as EQ, channel mixing, or scrub audio processing.

### Time code I/O

Provides the physical interface to time code I/O signals. It extracts and decodes this signal on inputs and generates and inserts this signal on outputs. The time code I/O functionality is generally combined with video I/O or RefGen modules. The time code data is read or written by the RTP via the PCI bus.

## Media storage subsystem

The media storage subsystem is where the video, audio, time code, and other media related data is stored. This storage system consists of one or more RAID units that are connected to the Profile XP platform by one or more Fibre Channel links.

### Fibre channel disk interface

The fibre channel disk interface consists of the Dual Fibre Channel Disk Interface board that provides the physical interface between the real time subsystem and the PFC500 RAID chassis. The dual connection to the PFC500 RAID chassis allows instant and seamless failover in the event of a failure of one of the interfaces on the board, or of one of the RAID Controller boards in the RAID chassis.

## Platform resources

The platform resources provide the infrastructure necessary to operate, interconnect, and integrate all the application subsystem and real time subsystem components. The elements that make up the platform resources are found mostly (but not exclusively) on the Motherboard and include the following:

- Multi-slot, bridged PCI Bus
- Support for NLX form factor single board computer.
- Mechanical card cage compatible with industry standard PCI boards
- Uncompressed video and audio routing fabric
- Compressed video and audio routing on the PCI bus
- Programmable PCI interrupt routing
- System power supply
- System cooling

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