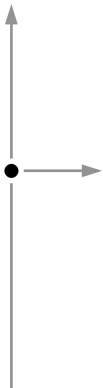


M-Series

INTELLIGENT VIDEO DIGITAL RECORDER

Service Manual



071-8229-01
JULY 6, 2004

the most watched worldwide

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Revision Status

Rev Date	Description
September 8, 2003	Initial release of the M-Series Service Manual 071-8229-00
July 6, 2004	Updated to include service information for units with digital audio—071-8229-01

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Finding Information

About this manual

This service manual provides procedures for servicing the M-Series iVDR. Use this manual to isolate and repair problems.

How this manual is organized

The Service Manual is divided into the following chapters:

[Chapter 1, *Product Description*](#) — Describes the key features and system components of the M-Series iVDR.

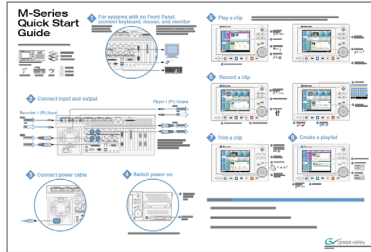
[Chapter 2, *Troubleshooting problems*](#) — Contains problem descriptions with steps for diagnosing and correcting the cause of the problem. Use this information if you are having trouble with your M-Series iVDR.

[Chapter 3, *Service Procedures*](#) — Contains procedures for periodic maintenance. Also contains procedures for repairing the software components of the system.

[Chapter 4, *Removing and replacing FRUs*](#) — Contains procedures for removing and replacing field replaceable hardware components.

Other printed manuals

This manual is part of a full set of support documentation for the M-Series iVDR.



•**M-Series iVDR Quick Start Guide** — This guide provides step-by-step instructions for basic installation and operation, including recording and playing clips, trimming clips, and making a playlist.



•**M-Series iVDR Release Notes** — Contains the latest information about the M-Series iVDR software shipped on your system. The information in this document includes software upgrade instructions, software specifications and requirements, feature changes from the previous releases, and any known problems.



•**M-Series iVDR User Manual** — Describes the M-Series iVDR and provides instructions for installing and operating the product in a variety of applications.

Getting more information

In addition to the printed manuals, information is available in the following locations.

On-line Help

On-line help is available through the M-Series user interface.



To access online help:

- In the main user interface toolbar, select **Tools**, then choose **Help** from the pop-up menu. The M-Series Help home page is displayed.
- or -
- In any M-Series application or tool, select the context menu, then choose **Help**. Online help for the application is displayed.

Printed manuals in PDF format

All printed manuals are available in the Acrobat file format (pdf) on the *M-Series iVDR System Software* CD-ROM. The manuals are located in the CD-ROM *Documentation* directory.

Thomson Grass Valley Web site

This public Web site contains all the latest manuals and documentation, and additional support information. Use the following URL.

<http://www.thomsongrassvalley.com>.

Grass Valley Product Support

To get technical assistance, check on the status of problems, or report new problems, contact Grass Valley Product Support via e-mail, the Web, or by phone or fax.

Web Technical Support

To access support information on the Web, visit the product support Web page on the Grass Valley Web site. You can download software or find solutions to problems by searching our Frequently Asked Questions (FAQ) database.

World Wide Web: <http://www.thomsongrassvalley.com/support/>

Technical Support E-mail Address: gvgtechsupport@thomson.net.

Phone Support

Use the following information to contact product support by phone during business hours. Afterhours phone support is available for warranty and contract customers.

United States	(800) 547-8949 (Toll Free)	France	+33 (1) 34 20 77 77
Latin America	(800) 547-8949 (Toll Free)	Germany	+49 6155 870 606
Eastern Europe	+49 6155 870 606	Greece	+33 (1) 34 20 77 77
Southern Europe	+33 (1) 34 20 77 77	Hong Kong	+852 2531 3058
Middle East	+33 (1) 34 20 77 77	Italy	+39 06 8720351
Australia	+61 3 9721 3737	Netherlands	+31 35 6238421
Belgium	+32 2 3349031	Poland	+49 6155 870 606
Brazil	+55 11 5509 3440	Russia	+49 6155 870 606
Canada	(800) 547-8949 (Toll Free)	Singapore	+656379 1390
China	+86 106615 9450	Spain	+ 34 91 512 03 50
Denmark	+45 45968800	Sweden	+46 87680705
Dubai	+ 971 4 299 64 40	Switzerland	+41 (1) 487 80 02
Finland	+35 9 68284600	UK	+44 870 903 2022

Authorized Support Representative

A local authorized support representative may be available in your country. To locate the support representative for your country, visit the product support Web page on the Grass Valley Web site.

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 may result in damage to equipment or other property, or which may cause equipment crucial to your business environment to become temporarily non-operational.

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



WARNING: *The service instructions in this manual are intended for use by qualified service personnel only. To avoid personal injury, do not perform any servicing unless you are qualified to do so. Refer to all safety summaries before performing service.*

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 Grass Valley 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 prescrites dans le Règlement sur le brouillage radioélectrique édicté par le ministère des Communications du Canada.

EN55103 1/2 Class A Warning

This product has been evaluated for Electromagnetic Compatibility under the EN 55103-1/2 standards for Emissions and Immunity and meets the requirements for E4 environment.

This product complies with Class A (E4 environment). In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

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.

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).

Safety Certification

This product has been evaluated and meets the following Safety Certification Standards:

Standard	Designed/tested for compliance with:
ANSI/UL60950, CAN/CSA C22.2 No. 60950-00 12/01/2000	Safety of Information Technology Equipment, including Electrical Business Equipment (Third edition).
IEC 950	Safety of Information Technology Equipment, including Electrical Business Equipment (Third edition, 1999).
EN60950	Safety of Information Technology Equipment, including Electrical Business Equipment (Third Edition 2000).

Product Description

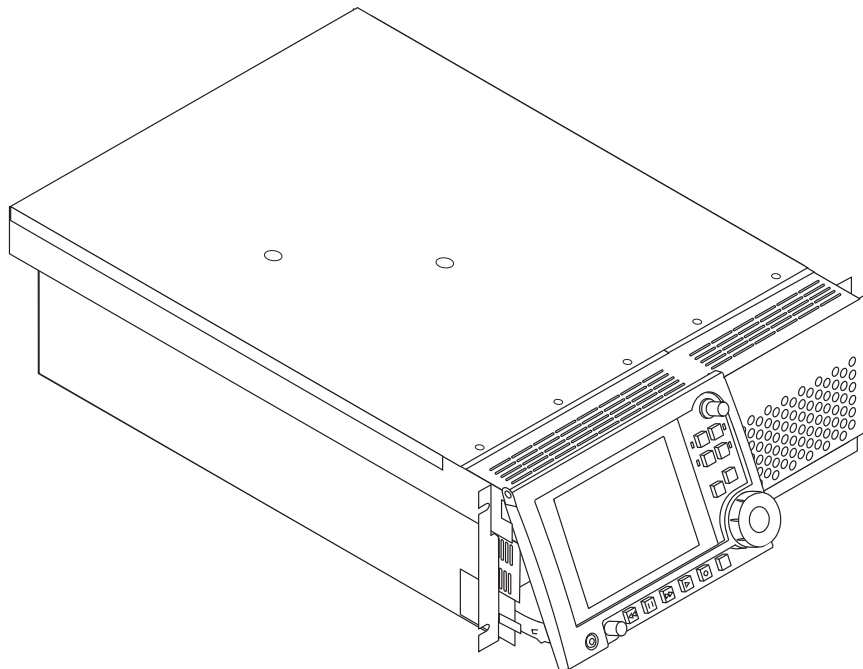
Topics in this chapter include the following:

- “Overview description” on page 15
- “Functional description” on page 16
- “System description” on page 17
- “Media control and processing” on page 20
- “FRU functional descriptions” on page 23

Overview description

The M-Series iVDR is a multi-channel video disk recorder that allows four channels of simultaneous record and playback. Media is stored on internal disk drives. Storage capacity depends on the disk option installed and the video compression settings selected.

The iVDR includes a built in disk recorder application that handles essential tasks — record, edit, play, and create/play event lists. The optional front panel includes an LCD display with touch screen, and transport controls to allow easy operation and monitoring with minimal external connections.



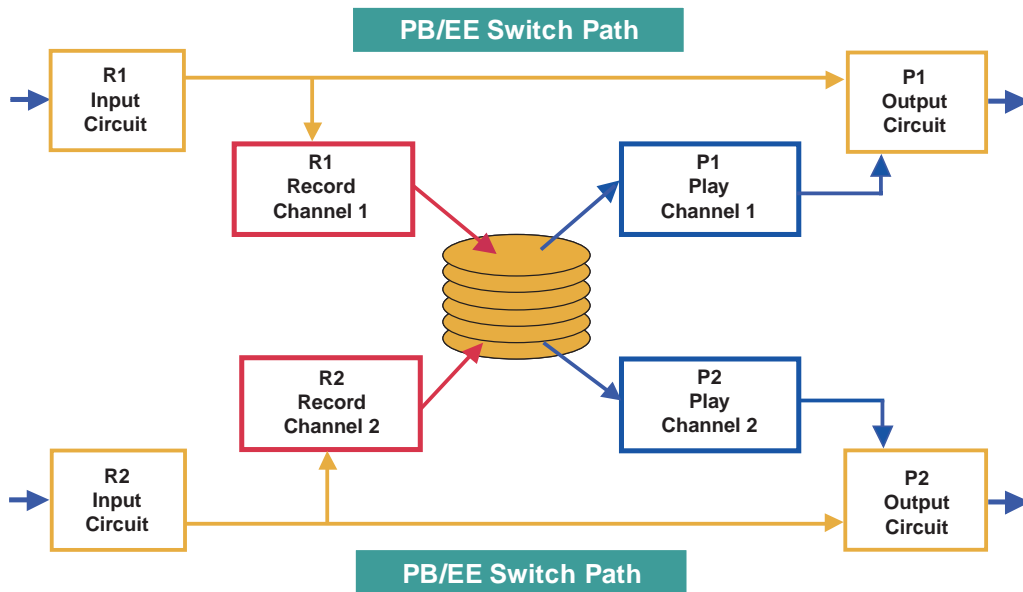
Refer to the *M-Series User Manual* for other high-level descriptions of features, controls, and applications.

Functional description

The diagram illustrates how the four iVDR channels operate independently, but share a common internal disk storage area. This gives all channels, two record channels for recording media and two play channels for playing media, simultaneous random access to the same media files. This means that you can play a clip that is still recording on one of the record channels. Each channel handles one video track, two audio tracks, and one timecode track.

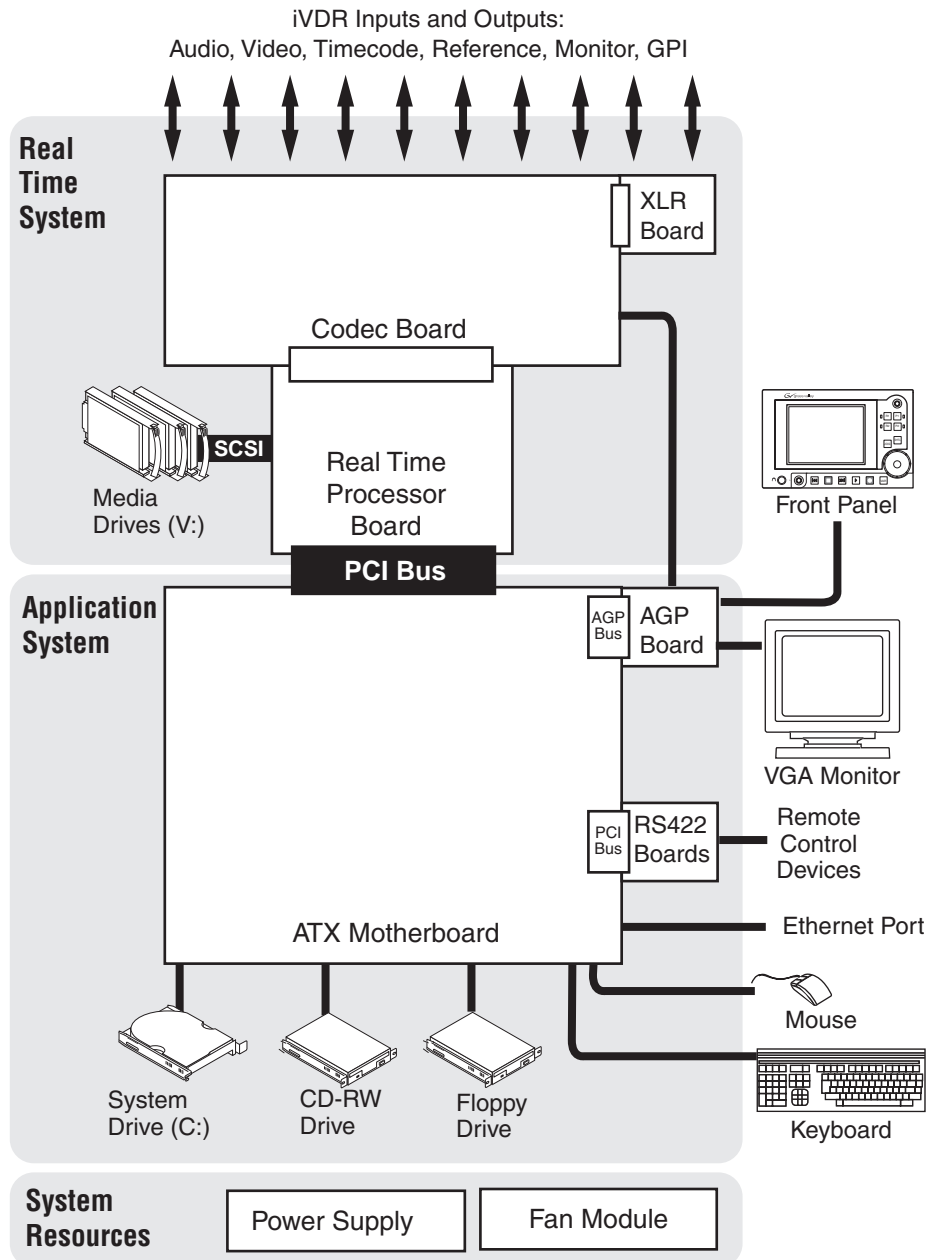
Note that an E to E playback path is provided for monitoring purposes. The E to E path allows the play channel output to switch to the record channel input when the play channel is in stop mode or not asset is loaded on the channel. You can configure the iVDR so that the play channel does not use E to E, but instead freezes on the last frame when the play channel is in stop mode.

NOTE: E to E is provided for monitoring the record channel, and is not intended as a program switch.



System description

The M-Series iVDR is a standard PCI bus-based Windows computer with extensive enhancements to provide the video disk recorder functionality. This section explains the major architectural blocks.



Application System

The Application system architecture is similar to that of standard PC-type computers. It uses an ATX form factor motherboard which provides PCI board slots for expansion, built in Ethernet, dual IDE ports for connecting to the system drive and removable media drives, USB2.0 ports, and an AGP slot for graphics. Standard iVDR boards are as follows:

- Accelerated Graphics Port (AGP) Board — This Grass Valley board provides an Accelerated Graphics Port for the Front Panel and a connection for a VGA monitor. This board receives video from the Real Time system and uses a specialized application of AGP technology to provide active video monitoring within the computer display.
- RS422 Boards — The iVDR has two RS422 boards. These standard boards provide four RS-422 ports for connecting remote control devices.

The media drives are adapted and configured by Grass Valley for use in the iVDR. They contain the media and communicate to the iVDR via a SCSI interface. They are mapped to the Windows operating system using the V: drive letter.

The Application system uses a Windows operating system upon which all M-Series applications run for configuration and control of the iVDR.

Real Time System

The Real Time system uses Grass Valley boards to provide the core video disk recorder functionality. Primary components are as follows:

- Real Time Processor (RTP) Board — This board provides a dedicated processor and connections for media access and processing. It functions as a riser board, connecting to the PCI slot below and the Codec board above.
- Codec Board — This board hosts the circuits responsible for encoding/decoding video and processing audio and timecode. It also provides the majority of the iVDR's media-related input and output connectors.
- XLR Board — This board provides XLR audio connectors. It is primarily an extension of the codec board to allow the space and orientation required for XLR connections.
- SCSI interface — The SCSI interface for the media drives is on the Real Time Processor board.

The Real Time system uses a dedicated operating system. This operating system runs on the RTP board and manages all the hardware involved in controlling the flow of video, audio, timecode, genlock, and GPI in and out of the iVDR.

Board map

Boards are mapped to slots and the Windows operating system as follows:

Board	Slot	Comments
ATX Motherboard	—	Assigned to Com Ports 1 and 2
AGP	AGP slot	—
RS422	PCI 1	Assigned to Com Ports 3 and 4. Labeled on rear panel as Port 1, Port 2.
RTP	PCI 2	—
RS422	PCI 3	Assigned to Com Ports 5 and 6. Labeled on rear panel as Port 3, Port 4.
Optional board	PCI 4	—
Optional board	PCI 5	—
Optional board	PCI 6	—
Optional board	PCI 7	—

Current optional boards

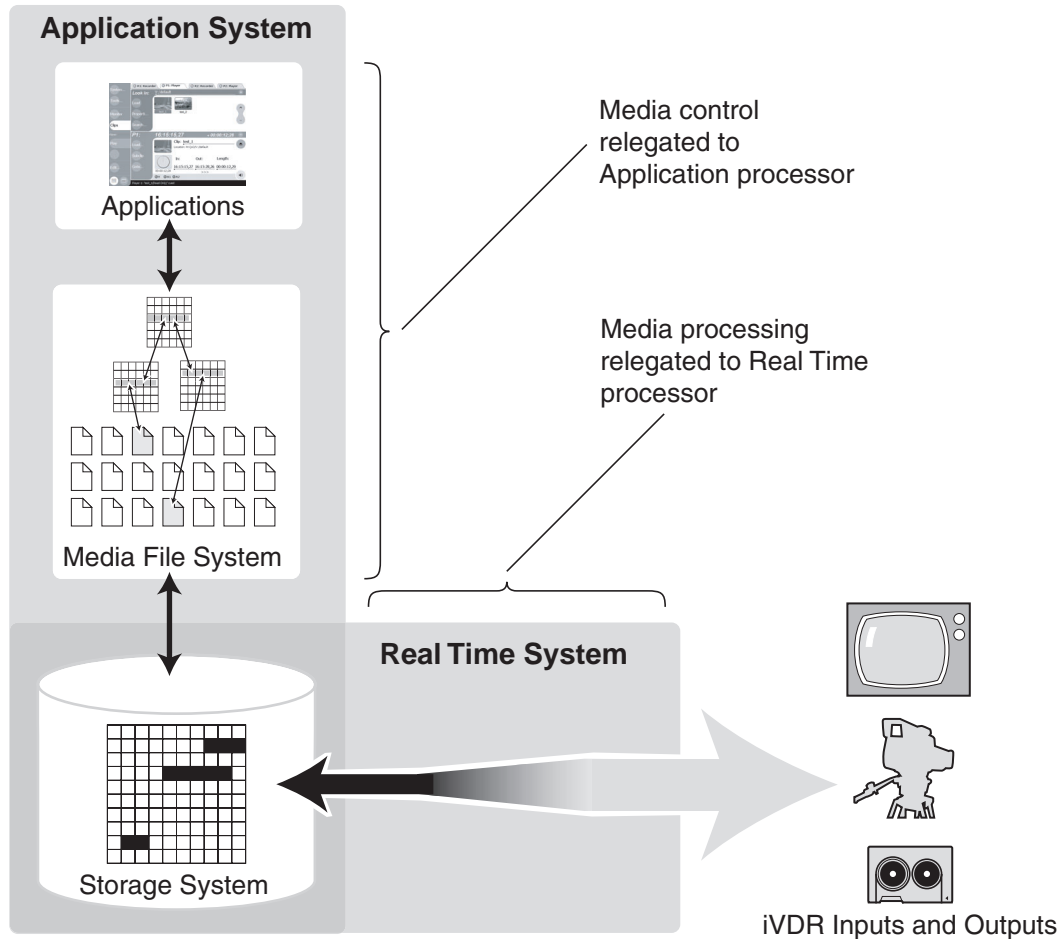
The following is a list of optional boards currently available:

- 1000BT Ethernet Adapter - provides one 1000BT Ethernet port.
- IEEE 1394 (Firewire) Adapter - provides one IEEE 1394 port for recording media from a DV device.

NOTE: Other optional boards may be available. Contact Thomson Grassvalley for more information.

Media control and processing

The following section explains how the Application system and the Real Time system work together to provide iVDR functionality.



The high processing requirements of digital video can overwhelm the processor on a standard desktop PC, resulting in wait-times that destroy the video's essential real-time aspect. The iVDR avoids this problem by providing dedicated systems that isolate processing needs. The components that work together to provide this functionality are as follows:

The Application system is, at its core, a conventional desktop PC-type system. In the iVDR it is dedicated to control, configuration, and networking functions that do not require real-time accuracy. The Application system has the following components:

- Application software provides the user interface for operating the iVDR. The software runs as Windows programs. Application servers use DCOM, a standard Microsoft technology, which allows both local and remote operation.
- The Media File System manages clips. It includes a database that associates the clip with its video, audio, and timecode files and a dedicated file system (separate from

the Windows file system) that controls access to the raw data that makes up each file. Any reading and writing of clips, be it through play and record operations or through file transfers and media streaming, is managed by the database. The database also contains iVDR configurations and logs. The database and file system run as Windows programs.

The Storage System includes the media disk drives, controllers, drivers, and adapters necessary for access and movement of the data. While the primary data flow is within the overall control of the Real Time System, some components and their communication pathways cross over into the Application System. For example, the SCSI controller resides on the RTP board, yet it is controlled by Windows. The media drives appear as the V: drive to the Windows operating system.

The Real Time System manages the media flow between the Storage System and the iVDR inputs and outputs. The Real Time system has a dedicated processor and time-sensitive mechanisms to serve media processing needs while maintaining real-time accuracy.

When you control iVDR play and record operations from within the Application System you trigger a chain of events that eventually crosses over into the Real Time System and results in media access. The following sequence is an example of this type of chain of events:

1. A user operates the Player application to play a particular clip. The Player application communicates with the Media File System to initiate play access to the clip.
2. The database identifies the files that make up the clip and the file system instructs the Storage System to open access to the files.
3. The Storage System finds the raw data and opens the appropriate read access. At this point both the Application system and the Real Time system are involved. Windows controls the media drives and controllers, so the Real Time system makes file requests to Windows and it causes the data to be transferred to buffers on the Real Time Processor. The data is then available to the Real Time System so that it can be processed at exactly the right time.
4. The Real Time System processes the media, decompresses it, adjusts its timing, and moves it as required to play the clip as specified by the user.

iVDR services

The following Windows services run during operation to allow specific iVDR functionality:

Grass Valley System Status Service	This service controls AppCenter startup, checks hardware, checks the health of the Real Time System, reports status via startup messages and Status Pane messages, controls the startup of drivers, and routes Real Time System log messages to the database. When the iVDR starts up Status Service reports system health and if there is a problem, Status Service takes appropriate action to limit AppCenter functionality.
Grass Valley FTP Daemon	This service acts as the server for remote file streaming transfers.
SNMP Service	This is a standard Windows service that has been adapted for the iVDR. It is required only for remote monitoring via NetCentral or other SNMP managers.
MSSQLSERVER SQLSERVERAGENT MSSQLServerADHelper	These services support the database component of the Media File System.
CentraVision File System CentraVision RPC Port Mapper	These services support the file system component of the Media File System.

FRU functional descriptions

The M-Series has several Field Replaceable Units (FRUs) that you can replace yourself. FRUs described in this section are as follows:

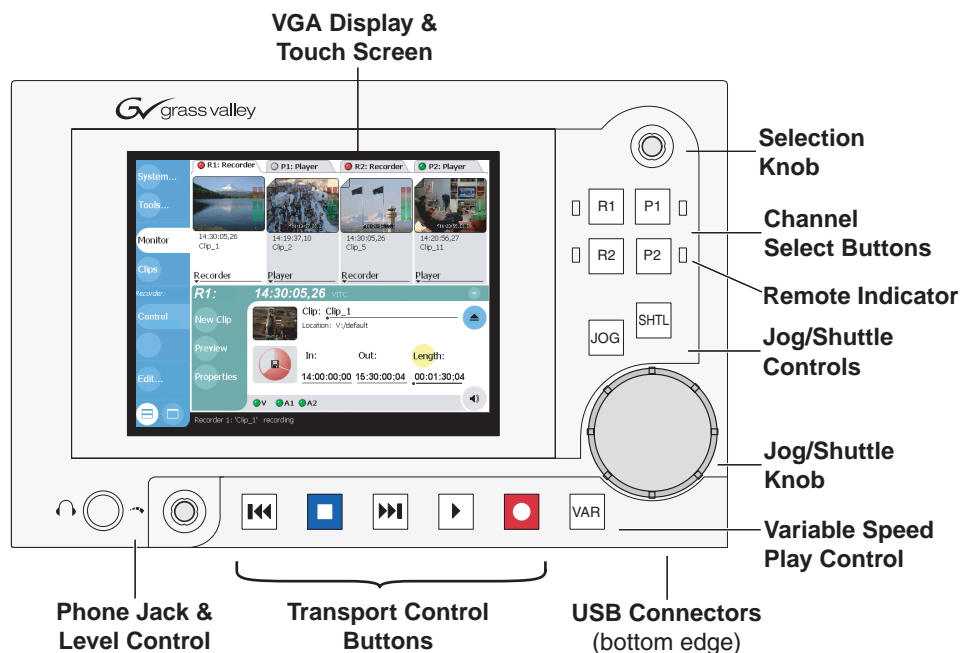
- “Base chassis”
- “Front Panel and cable”
- “Media drives”
- “Floppy, CD, DVD drives”
- “Power Supply”
- “Fan module”

For procedures, refer to [Chapter 4, Removing and replacing FRUs](#).

Base chassis

For some serious system faults or for mechanical damage the entire iVDR, as described earlier in this chapter, can be replaced as a base chassis FRU. Refer to [“Replacing an iVDR” on page 46](#).

Front Panel and cable



Note: Refer to display brightness control, and touch panel calibration procedures in the M-Series User Manual as needed.

The optional Front Panel provides a control panel user interface for the M-Series iVDR. The panel attaches directly to the front of the iVDR or remotely with an optional cradle and extension cable. The Front Panel includes the following components:

The display is a color flat panel display overlaid with a touch screen that translates finger contact into mouse-type USB control information. The VGA resolution of the display is 640 x 480 pixels.

The manual controls on the Front Panel include an audio level control knob, four transport control buttons, a Jog/Shuttle knob with three control buttons, four channel selection buttons, and a selection knob.

LEDs indicate current control activities. Buttons have integrated LEDs that light up when the button is activated. The channel selection buttons also have adjacent LEDs that light up as indicators when the channel is under remote control.

The audio interface includes a stereo headphone connection with a volume knob, powered by a stereo amplifier integrated into the Front Panel. The volume knob can be configured to also control the volume level of the iVDR rear panel audio monitor output.

Two USB ports are provided on the bottom edge of the Front Panel for directly connecting keyboard and mouse.

The brightness control adjusts the Front Panel display. The knob is located on the back of the Front Panel.

The cable and connection is a DVI-D connector with a modified pin-out specific to the iVDR. The DVI connection provides graphical, audio, and USB control signals to the Front Panel. It also provides a +12 volt power source. For local mounting, the Front Panel is connected to the AGP board via a front-facing connector and short cable. For remote mounting with the optional cradle kit, the Front Panel is connected to the AGP board via a rear-panel connector and five meter extension cable.

Refer to [“Front Panel or door removal” on page 70](#) for procedures.

Refer to the *M-Series User Manual* for instructions on using the Front Panel.

Media drives

The media drives are accessed from the front of the iVDR. They are located behind the Front Panel or door and fan module. Media drives operate in groups of three, for a total of either three or six drives in an iVDR. The drives in each group of three must be identical. Drives are available in different sizes to accommodate a range of storage capacity needs.

Media data is written or “striped” across a group of three drives in a continuous fashion, which makes the three drives a “stripe group”. Stripe groups appear as the V: drive to the Windows operating system. Because of this stripe group relationship, if one media drive is removed during media access or is faulty, all data is lost on the entire stripe group. To make a new stripe group you must use the Storage Utility “Make File System” feature.

Refer to [“Media disk removal” on page 71](#) for procedures.

Floppy, CD, DVD drives

The iVDR uses standard removable media drives similar to those found in desktop PCs. The drives are installed in the drive bay, which is accessed from the front of the iVDR. These drives use standard Windows drivers for easy plug-and-play installation.

Refer to [“Removing floppy, CD, DVD drives” on page 74](#) for procedures.

Power Supply

The iVDR power supply is installed from the rear panel. It has a fan with automatic speed control and status LEDs that indicate the current state and health of the power supply. Refer to [“Power supply problems” on page 40](#) for LED descriptions. The power supply has protection for over voltage, over current, over temperature, and short circuits.

Refer to [“Power supply removal” on page 72](#) for procedures.

Fan module

The fan module contains two fans which provide cooling for the iVDR chassis. Air intake is from the front of the iVDR and outflow is through the rear. The fan module is installed from the front of the iVDR and is located immediately behind the Front Panel or door.

Refer to [“Fan module removal” on page 71](#) for procedures.

Chapter 2

Troubleshooting problems

Topics in this chapter include the following:

- “Video problems” on page 28
- “Audio problems” on page 29
- “Timecode problems” on page 30
- “Operational problems” on page 31
- “System problems” on page 32
- “Storage problems” on page 33
- “Network, transfer, and streaming problems” on page 37
- “Thermal problems” on page 39
- “Floppy, DVD, CD drive problems” on page 39
- “Power supply problems” on page 40
- “Front Panel problems” on page 40
- “Start up problems” on page 43

Video problems

For the corrective actions in this section, refer to the *M-Series User Manual* for detailed instructions.

Problem	Possible Causes	Corrective Actions
A channel displays black at the end of the clip.	The channel is in E to E mode and there is no video signal present at the input.	Verify that you have a valid input signal.
Play channels have a dissimilar video display when no clip is playing.	One channel is in E to E and the other channel is not.	If similar display is required, configure both channels the same.
VBI signals have integrity problems during playback.	The MPEG data rate is set too low. (MPEG is not available in model M-122A)	On the Configuration Manager System page, increase the MPEG data rate
The picture level modulates at a particular frequency.	There is excessive hum riding on the video input signal. The automatic gain control (AGC) circuits will tend to modulate the picture level at that frequency in an attempt to compensate for the problem.	Check the video input signal for excessive hum. Try turning off AGC while monitoring the record channel in E to E mode (no clip loaded in Recorder).
In stop mode the still-play video shows some motion jitter.	Two fields are displayed in still play mode.	On the Configuration Manager Channel page, switch the still-play mode setting to Field.
Periodic vertical shift artifacts are observed on the play channel output in E to E mode.	An asynchronous signal is routed through the iVDR.	Connect an external reference signal which is synchronous to the video input.

Audio problems

For the corrective actions in this section, refer to the *M-Series User Manual* for detailed instructions.

Problem	Possible Causes	Corrective Actions
No audio	Wrong audio input selected (M-222D/M-322D only)	On the Configuration Manager Record Channel page, select Audio Input, and select the audio input.
No embedded audio (M-222D/M-322D only)	Wrong embedded audio input group selected. Wrong embedded audio output group selected.	On the Configuration Manager Record Channel page, select audio input, then ensure correct embedded audio group is selected. On the Configuration Manager Play Channel page, select audio output, then ensure correct embedded audio group is selected.
Both E to E and playback audio output are distorted.	Audio input signal clipping caused by excessive audio input level.	Check for input audio clipping. Adjust the audio input trim. Adjust the Player audio level. Reduce the source audio input level.
Analog audio level is too low.	Audio level needs to be adjusted.	Adjust the audio input trim. Adjust the Player or Recorder audio level. Increase the source audio input level.
Audio level is too low.	Audio level needs to be adjusted.	Adjust the Player or Recorder audio level. Increase the source audio input level.
The audio level is not correct only when playing a particular clip.	The clip's audio level is out of adjustment.	Load the clip in Player and adjust its playback audio level.
Audio level meters do not display the correct reference level used in my system.	Incorrect audio reference level	Select the correct audio reference level.
Audio meters do not appear in the Monitor Pane.	The Monitor Pane configured to not display audio meters.	On the Configuration Manager Channel page, configure the Monitor setting to display audio meters.

Timecode problems

For the corrective actions in this section, refer to the *M-Series User Manual* for detailed instructions

Problem	Possible Causes	Corrective Actions
Recorded timecode reads xx.xx.xx.xx.	No timecode source for the channel.	In Recorder, open the context menu and choose "Options". Select "Timecode" in the Options dialog to set the source.
A clip shows no mark-in/mark-out timecode, the current timecode display shows XX:XX:XX:XX, or the last valid timecode is displayed.	The selected timecode source was missing or intermittent during recording.	Check that you have the right record channel timecode source selected, verify that timecode is present in the source, and record the clip again. You can also stripe the timecode on an existing clip.
Incorrect recorded VITC timecode.	VITC reader is set to automatic and there are two sets of VITC in the VBI.	Use "Look for timecode on lines..." VITC detection and specify lines where VITC should be read.
Incorrect or no recorded VITC timecode.	The VITC reader is set to "Look for timecode on lines..." 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 "Look for timecode on lines..." VITC detection accordingly.
Can't read or record VITC.	VITC detection is set to "Look for timecode on lines..." and the wrong VITC lines are specified	Set VITC detect to Automatic or verify location of VITC signals and set up "Look for timecode on lines..." VITC detection accordingly.
Incorrect VITC timecode on the video output.	There may be two sets of VITC on the video output and an 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.	Turn off the VITC generator on the output.

Operational problems

For the corrective actions in this section, refer to the *M-Series User Manual* for detailed instructions.

Problem	Possible Causes	Corrective Actions
The iVDR is not operating as expected in relation to a setting displayed in Configuration Manager.	The setting was changed in Configuration Manager but not saved to the database.	Verify the setting you want in Configuration Manager and then select OK. When prompted to change the system settings, select Yes.
AppCenter displays different buttons than those expected.	Assignable buttons have been changed.	Assign buttons to the interface as desired.
A clip does not play, even though similar clips play on the same channel.	The clip does not match current iVDR settings or the clip is corrupt.	If the clip appears grayed-out it means it doesn't match current settings. Check the clip's properties and verify they are correct for the video standard, compression, and other current settings. Compare properties with those of a clip that plays correctly. If properties are correct the clip is corrupt. Delete and re-record the clip.
A clip does not play or can not be edited.	The clip is locked.	Unlock the clip.
Can't rename a clip or modify mark-in/mark-out points	The clip loaded or playing is still being recorded. In this case, "Read-Only" is displayed in the StatusBar.	Wait until recording is complete.
Cannot load and play a list.	The application currently selected for the channel is not Playlist.	Select Playlist as the channel application. Lists load and play in the Playlist application only.
On setting mark-out, the subclip is automatically generated and ejected, and a new subclip name is loaded in the subclip pane.	Auto Subclip mode is enabled.	Disable Auto Subclip mode.
Can't change what information is displayed in the Monitor Pane for Playlist.	You are attempting to use Configuration Manager to change what information is displayed in Monitor Pane for Playlist.	Use the Playlist Options dialog instead.
Can't eject a list.	There is no eject operation in Playlist, as a list must always be loaded.	Remove the list from the Playlist application by creating a new list or by opening an existing list.
Can't control a channel from the local iVDR. Controls are disabled.	A protocol application is selected for the channel and the channel's control mode is set to Status.	Set the control mode for limited local control.

System problems

For the corrective actions in this section, refer to the *M-Series User Manual* for detailed instructions.

Problem	Possible Causes	Corrective Actions
Cannot record media. This is accompanied by Status Pane messages "...composite detected..." and "...composite lost..." in quick succession.	SDI signal being fed to composite input	Verify input signal and connections
One of the record channels does not record.	The iVDR is configured for PAL, yet the video input is NTSC	In AppCenter select System Configuration System and check the current setting for video standard. Verify that the video input signal is the correct standard.
Transport controls are not displayed on the VGA monitor	The resolution of the VGA monitor is incorrect	Make sure the resolution is higher than 640 X 480. If the resolution is 640 X 480, AppCenter is displayed as if it were on a Front Panel, with no transport controls. If you change the resolution, restart AppCenter.
The VGA monitor is blank	The monitor is connected to the motherboard connector.	Connect to the AGP card connector.
Audio level from rear panel outputs cannot be adjusted.	The iVDR is configured to disable the adjustment.	On Configuration Manager's Panel page, set the Rear panel audio monitor output setting to "Controlled by front panel volume knob".
A scheduled event, such as an automatic play or record event, does not occur at the proper time.	The time-of-day source for event scheduling is not accurate.	On the Configuration Manager System page, verify the time-of-day source. Verify the source's time accuracy.

Storage problems

Use the following sections if you suspect problems with your iVDR's storage system.

Media File System problems

Problem	Possible Causes	Corrective Actions
One or more clips do not play or record correctly. This can be accompanied by a Status Pane message indicating a fault in the media file system.	The media database is out of sync with the media files or there is a corrupt media file. Also see “Checking the storage system” on page 36 for causes related to certain usage patterns.	<ol style="list-style-type: none"> 1. Work through “Cleaning the media file system” on page 64. If the problem persists, proceed with the next step. 2. If the problem is only associated with a specific clip or clips, delete the problem clips. If the problem persists, proceed with the next step. 3. Work through “Checking the media file system” on page 62. If the file system fails the check process you must make a new file system. When you do so you lose all media currently stored on the media disks. See “Making a media file system” on page 61.
During AppCenter startup a “...no file system running...” message appears.	The file system (CVFS) is corrupt or disks are faulty/missing such that they are not part of a stripe group.	Make sure drives are properly installed and seated. If you have just added a group of three drives, make sure you have updated the file system as instructed by the field kit instructions. Then work through “Checking the media file system” on page 62 . If the file system fails the check process you must make a new file system. When you do so you lose all media currently stored on the media disks. See “Making a media file system” on page 61 .

Media disk problems

Problem	Possible Causes	Corrective Actions
<p>No clips appear in the Clips pane. This may be accompanied by a startup message or a Status Pane message regarding media disks being unavailable.</p>	<p>A media disk is bad or the SCSI bus is unavailable because there has been a hardware failure.</p>	<ol style="list-style-type: none"> 1. Restart into storage maintenance mode and open the Storage Utility. 2. If no disks are displayed then there has been a hardware failure. Contact Support for a replacement iVDR. 3. If at least one disk is displayed but another disk or disks are missing, then you likely have a disk failure problem. Check disks as follows: <ul style="list-style-type: none"> - Power down and make sure the disks are properly seated. Open Storage Utility and check if all disks are now displayed. - Determine which disk is not displayed in Storage Utility. Select a disk then select Identify and view disk lights to verify which disks are displayed and which are not displayed. - Determine if all slots are operating correctly. Temporarily move a disk that checks out as good (displayed in Storage Utility and identified with a flashing disk light) into the slot of a disk that does not check out as good. If the good disk still checks out as good in the same slot, then you know the slot is operating correctly. If you find a faulty slot, contact Support for a replacement iVDR. 4. If all slots are operating correctly and a disk is not displayed in Storage Utility, the disk is faulty. When a disk fails all stored media is lost. Replace the faulty disk with a new disk and use the Storage Utility to make new file system. Refer to “Replacing a media disk drive” on page 49.
<p>The Status Pane message “Media disks getting full...” appears or a “FSS ‘default(0)’” message appears.</p>	<p>The media disks are reaching maximum capacity.</p>	<p>In Recorder, select the Time Dome and choose Available Storage. If the Time Dome is filled it confirms that your iVDR is out of space. Make space on the media drives by doing one or both of the following:</p> <ul style="list-style-type: none"> - Delete unused clips and empty the Recycled Bin. - Work through “Cleaning the media file system” on page 64.

Problem	Possible Causes	Corrective Actions
When streaming to another iVDR the operation fails. In Transfer Monitor the streaming operation shows "Status:Error".	There is a network connection error or the media disks on the destination iVDR are reaching maximum capacity.	Check network connections and configuration. Check available storage on the destination iVDR. In Recorder, select the Time Dome and choose Available Storage . If the Time Dome is filled it confirms that the destination iVDR is out of space. Make space on the media drives by deleting unused clips and emptying the Recycled Bin.
Playback flashes. After this occurs for several seconds a decoder error occurs and the play channel hangs.	One of the disks is not part of the stripe group because there is a disk error or because disks have been re-arranged in their slots.	If you have recently removed and replaced disks, make sure that you have returned them to their correct slots. If this solves the problem, work through " Cleaning the media file system " on page 64 to solve related faults. If the problem persists, check disks as described earlier in this section.

Checking the storage system

The following section provides guideline for investigating problem areas related to the storage system. Use this section if you have problems with media input and/or output that are intermittent or seem to be related to certain usage patterns.

Problem	Possible Causes	Corrective Actions
<p>Symptoms can include black video recorded or at playout, frozen video, slow performance, or inconsistent media access. These symptoms can be accompanied by Status Pane messages regarding disk problems or overrun/underrun conditions for encoders, decoders, or timecode.</p>	<p>The following causes can occur on their own or in combination to produce the problem:</p> <p>Disk oversubscription — This occurs when requests to the media disk exceed the disk's bandwidth capabilities. This generally occur in extreme cases when a combination of high-bandwidth operations are taking place, such as jog/shuttle, record/play on multiple channels, or streaming multiple clips.</p> <p>High CPU activity in Windows — This occurs when activities on the Windows operating system over-tax the capabilities of the motherboard processor. This commonly happens when unsupported software has been installed that competes with iVDR applications. Virus scanners and screen savers can cause this type of problem, since they can start automatically and consume system resources.</p> <p>Encoder overrun — This occurs when an encoder is flooded with more data than it can process within its real-time requirements for recording.</p> <p>Decoder underrun — This occurs when a decoder is starved for data and cannot deliver enough to satisfy real-time requirements for playout.</p> <p>Disk faults — This occurs when a media disk is severely fragmented or has a bad blocks that interfere with some, but not all, media operations. For example, a particular clip can be written on a bad block, so the problem occurs only on that clip.</p>	<p>Try to re-create the problem. Identify all the interactions that affected the system and run all the same operations as when the error occurred. Record/play/stream the same clips.</p> <p>Investigate the functions that seem to push the system into the error state. If you determine that certain simultaneous operations cause the problem, re-order your workflow to avoid those situations. If you determine that the problem is only on certain clips, investigate disk faults.</p>

Network, transfer, and streaming problems

Problem	Possible Causes	Corrective Actions
<p>When importing or exporting (sending) between iVDRs over the low-speed network (not Gigabit Ethernet) a "...failed to connect..." message appears and the operation fails.</p>	<p>There is a problem with Windows networking or there is a mis-spelling with the host name as entered in Configuration Manager.</p>	<p>Check networking as follows:</p> <ul style="list-style-type: none"> - Check basic Windows networking. In AppCenter select System Minimize and use Windows Explorer to test a basic copy operation to the machine to which you are trying to connect. If basic networking fails, use standard Windows procedures to troubleshoot and correct your network. - If the Windows network is working properly, in AppCenter select System Configuration Hosts and verify that the name of the machine to which you are trying to connect is spelled correctly and has no extra spaces or characters.
<p>When streaming between iVDRs over the high speed (Gigabit Ethernet) network, a "...failed to connect..." message appears and the operation fails.</p>	<p>The iVDR to which you are trying to connect is not operating or the high speed network is mis-configured.</p>	<p>Verify that the iVDR to which you are trying to connect is operational and that the network is configured according to the requirements for a high speed network, including static IP addresses and hosts files. Verify that the name of the iVDR is entered correctly in the Configuration Manager Hosts page. Refer to networking procedures in the <i>M-Series User Manual</i>.</p>
<p>A networked device does not appear in the "Import" and "Send to" dialog boxes, even though it is present on the Windows network.</p>	<p>The device is not entered as a host.</p>	<p>In AppCenter select System Configuration Hosts Add and enter the name of the machine to which you are trying to connect. Make sure it is spelled correctly and has no extra spaces or characters. Refer to networking procedures in the <i>M-Series User Manual</i>.</p>
<p>When using VDCP remote protocol, video network transfers fail.</p>	<p>The controller ID of the iVDR is not entered.</p>	<p>In AppCenter select System Configuration Hosts Add and enter the controller ID of the machine to which you are trying to transfer. Refer to networking procedures in the <i>M-Series User Manual</i>.</p>

Chapter 2 *Troubleshooting problems*

Problem	Possible Causes	Corrective Actions
In the Send To or Import user interface, cannot browse media on a Profile XP Media Platform.	The iVDR user interface does not support browsing a non-M-Series device	You must select the Profile XP Media Platform, then specify the target manually by entering the disk volume and bin name, e.g. EXT:\default.
Files do not appear in Send To or Export dialogs.	File names do not have proper extensions. The dialogs only see files with either .AVI or .GXF extensions.	Rename files with proper extensions.

Thermal problems

Problem	Possible Causes	Corrective Actions
The fans are noisy or otherwise run erratically. The iVDR overheats. This can be accompanied by a Status Pane message indicating a temperature or fan problem.	The fan module is not operating correctly.	Remove the Front Panel or door and inspect the fan module for proper operation. If the fans are not operating correctly, replace the fan module as explained in “Fan module removal” on page 71.

Floppy, DVD, CD drive problems

Problem	Possible Causes	Corrective Actions
There is no access to a disk in the CD, DVD, or floppy drive. This can be accompanied by an error message from the Windows operating system.	There is a problem with the disk currently inserted in the drive, the Windows operating system is not recognizing the drive, or the drive itself is dirty or faulty.	<ol style="list-style-type: none"> 1. Make sure a correctly formatted disk is inserted correctly. Try another disk if necessary. Refer to the <i>M-Series User Manual</i> for formatting instructions. If the problem persists with a correctly formatted and inserted disk, proceed with the next step. 2. Watch the disk drive access lights while you attempt access to the disk. If the lights do not flash correctly, restart the iVDR and try disk access again. If the problem persists, proceed with the next step. 3. Clean the drive with a cleaning kit (available in computer stores) and try disk access again. If the problem persists, proceed with the next step. 4. On the AppCenter System menu select Minimize to go to the Windows desktop. Use the Windows operating system Hardware Troubleshooter to troubleshoot the problem drive. If this does not fix the problem, replace the drive as explained in “Media disk removal” on page 71.
CD or DVD disk created on iVDR is not readable in another computer or device.	“Make Compatible” step omitted.	Do “Make Compatible” step before moving disk. Refer to the <i>M-Series User Manual</i> .

Power supply problems

Problem	Possible Causes	Corrective Actions
The iVDR will not power on or power fails while the iVDR is in operation. This can be accompanied by a Status Pane message indicating a power supply problem prior to the failure or the Power Supply LEDs indicating a problem.	The power source is faulty, the power cord is faulty, or the power supply is faulty.	Make sure your power source is reliable. Try another power cord. Check the LED indicators on the power supply itself. Refer to the following table.

Interpret power supply LED indicators as follows:

Power supply condition	Power LED (Green)	Predictive Fail LED (Amber)	Fail LED (Amber)
No AC power to power supply	OFF	OFF	OFF
AC present/Standby Outputs ON	Blinking	OFF	OFF
Power supply DC outputs ON and OK	ON	OFF	OFF
Power supply failure (indicates over voltage, over temperature)	OFF	OFF	ON
Current limit	ON	OFF	Blinking
Predictive failure	ON	Blinking/Latched	OFF

If the power source and the power cord are OK and the status lights on the power supply indicate a problem, replace the power supply. Refer to [“Power supply removal” on page 72](#) and [“Power supply installation” on page 72](#).

Front Panel problems

Problem	Possible Causes	Corrective Actions
The standard Windows operating system desktop is displayed rather than the expected applications of the iVDR AppCenter.	AppCenter is minimized or AppCenter is not running.	Maximize AppCenter or open the AppCenter icon on the Windows desktop.
The Windows desktop appears around the edges of AppCenter and scrolls as the cursor moves to edge locations. Transport controls are displayed.	The display properties are set to the wrong resolution.	Make sure the display properties area set to 640 X 480. This is a Windows operating system display setting.

Problem	Possible Causes	Corrective Actions
The Windows Taskbar hides a portion of the AppCenter interface.	The factory default Windows Taskbar settings have been modified.	Make sure that for Windows Taskbar settings both Autohide and Always on top are disabled.
When you touch an object on the touch screen it does not become selected or else a nearby object is selected instead.	The touch screen is out of calibration.	Calibrate the touch screen as explained in the <i>M-Series User Manual</i> .
The touch screen is blank or black and displays no image at all or the image is faulty.	<ul style="list-style-type: none"> - A display setting is mis-configured - There is a connection failure between the Front Panel and the iVDR chassis. - The software or operating system on the iVDR has a fault - The touch screen itself is faulty 	<ol style="list-style-type: none"> 1. Check display settings in the following places: <ul style="list-style-type: none"> - The brightness control on the back of the Front Panel - Go to the Windows desktop, right-click, and select Properties. You can also use the Windows operating system Display Troubleshooter. If you find no problems, continue with the next step. 2. Check the Front Panel cable connections and watch the screen for corresponding effects. <ul style="list-style-type: none"> - If you find a disconnected or faulty cable, reconnect or replace the cable. - If the Front Panel connector is bad, replace the Front Panel. - If the iVDR connector is bad, replace the iVDR. If you find no problems, continue with the next step. 3. Connect a mouse, keyboard, and VGA monitor to the iVDR AGP card and test functionality. Compare this functionality to that of the Front Panel. <ul style="list-style-type: none"> - If everything works fine with the VGA monitor but not the Front Panel, there is likely a low-level hardware fault on the touch screen. Replace the Front Panel. - If the VGA monitor and Front Panel operate identically there is likely a problem on the iVDR. Restart the iVDR. If after restart the problem persists, contact Support.

Chapter 2 *Troubleshooting problems*

Problem	Possible Causes	Corrective Actions
The Jog/Shuttle knob, the Selection knob, or the Headphone level knob operates poorly or not at all.	The knob is bent or broken.	Inspect the knob to confirm that there is a mechanical problem with the knob. If so, replace the Front Panel.

Start up problems

Observe the iVDR's start up sequence and correct problems as described in the following sections.

NOTE: *These sections assume that the PC motherboard and Windows operating system are at M-Series default settings. If settings at this level have been modified, unpredictable and unsupported problems can result.*

Motherboard/BIOS startup

When you power up, you first see a product logo displayed. The logo is displayed during the BIOS POST time. If during this time a message appears that requires your input or if the iVDR does not progress to Windows startup, it indicates a problem at the motherboard level. To correct problems of this nature, contact Grass Valley Support.

Windows startup

After the motherboard startup processes complete the Windows operating system starts up, displaying the standard Microsoft "Starting Windows..." image. Normally the screen appears and completes its processes automatically without the need to press keys or respond to messages. The iVDR is set to automatically log on without any input. When the Windows startup is complete the Windows desktop is momentarily displayed.

If the Windows startup screen does not proceed automatically or if a message appears that requires your input, it indicates a problem at the operating system level. If the problem cannot be corrected with a supported procedure (such as networking), the Windows operating system is not operating as it should. To correct problems of this nature, restore your system drive software. Refer to ["Using the software recovery disk image" on page 50](#).

No VGA monitor output

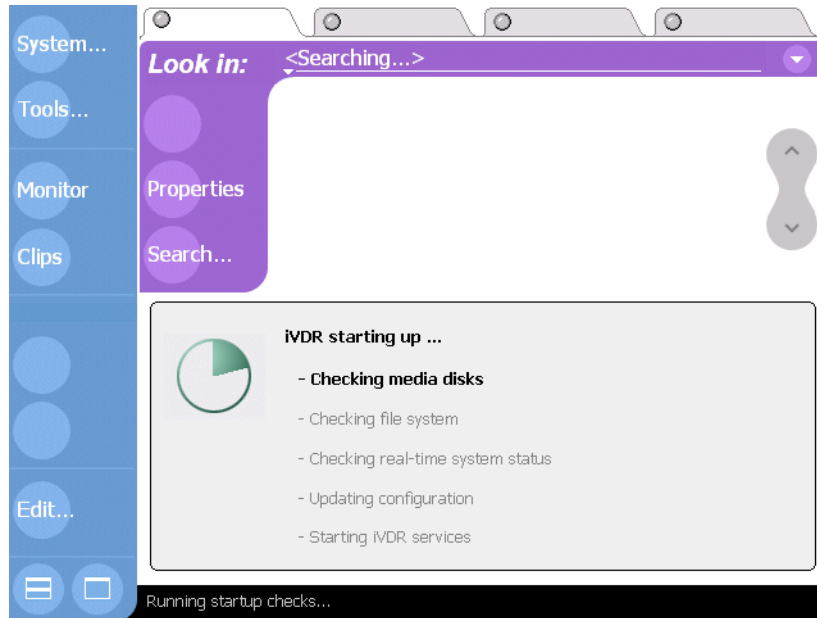
The VGA output is disabled on iVDRs equipped with the optional Front Panel. You can enable the VGA output if you want to display AppCenter on the VGA monitor output and the optional Front Panel at the same time. This allows you to monitor iVDR operations on a larger display. With an external keyboard connected, you can use the display mode hot-keys to enable the VGA output. The following table shows the VGA output hot-key sequences for switching between display modes.

Monitor Mode	Hot-key sequence to use
Front panel only	Ctrl + Alt + L
VGA output only	Ctrl + Alt + C
Front panel and VGA output ^a	Ctrl + Shift + C

^a. Configure screen resolution in Windows for 640x480 for full screen display.

AppCenter startup

After the Windows operating system startup processes complete, iVDR startup process begin. When the iVDR determines that primary system health is adequate, the AppCenter framework opens but with control application disabled. Additional checks take place, as displayed in AppCenter's lower pane.



When all system checks are successful, control applications become fully enabled in AppCenter.

If one of the system checks fails a message appears. Messages of this type indicate problems with the specialized iVDR hardware or software. To correct problems of this nature follow the instructions embedded in the message and use the troubleshooting information from earlier in this chapter.

Service Procedures

Topics in this chapter include the following:

- [“Cleaning the Front Panel touch screen” on page 45](#)
- [“Backing up the iVDR” on page 45](#)
- [“Replacing an iVDR” on page 46](#)
- [“Replacing a media disk drive” on page 49](#)
- [“Using the software recovery disk image” on page 50](#)
- [“Using the Storage Utility” on page 58](#)
- [“Exporting log files” on page 65](#)

Cleaning the Front Panel touch screen

The front surface of the touch screen should be kept free of dirt, dust, finger prints and other materials that could degrade optical properties. Long term contact with abrasive materials will scratch the front surface, and image quality will be degraded. For best results, use a clean, damp, non-abrasive cloth towel and any commercially available window cleaner to regularly clean the surface. The cleaning solution should be applied to the towel rather than the surface of the touch screen. Do not flood the surface of the touch screen. Fluid ingress may occur from behind the panel and cause damage.

Backing up the iVDR

It is recommended that you back up your iVDR to support recovery in case of a system fault. You can back up your iVDR using the following mechanisms:

- Software recovery disk image — Refer to [“Using the software recovery disk image” on page 50](#). A software recovery disk image is a file that contains an image of the entire system drive (C:) of your iVDR. When you restore your system drive from this image you effectively “undo” any software faults that might have been introduced into your system through ongoing use.

You should make an image when you first get your iVDR set up and configured for operation in your facility. That way you can easily return the iVDR to its “like new” state, yet with all your site-specific configurations intact. You should also make an image immediately after you do an update of the M-Series system software. This allows you to return to the baseline operating condition for that version of software.

The image is stored on the second partition on the system drive and it is not intended to be used to rebuild a failed system drive. Refer to [“Replacing an iVDR” on page 46](#) for information on system drive faults.

The software recovery disk image does not include your media, but it does include all elements of the Media File System. Therefore, when you make a software recovery disk image, it contains a “snapshot” of the references that point to the

media as it exists on your media disks at that moment in time. Ongoing media access alters these references, so to recover your media you need to routinely backup your Media File System, as explained in the next point.

- Media File System backup — Refer to [“Backing up the media file system” on page 63](#). This creates a file that contains all the references to the media currently on the media disks. It contains all the database records that define your clips and all the file system metadata that organizes the data on the media disks.

You should back up the Media File System whenever you do service work on your iVDR, especially when it involves restoring from a software recovery disk image or using the Storage Utility. You should also back up the Media File system on a regular basis to allow partial recovery of your media in case of a major fault, such as a system drive failure. However, keep in mind that any clips that are new or have been modified since your last Media File System backup can not be recovered.

- Configuration backup — Refer to the *M-Series User Manual* for instructions on using Configuration Manager to save a configuration file. This is a file in XML format that contains all the current configuration settings as managed by Configuration Manager. This file can be loaded into Configuration Manager and saved to the database as a means to restore all settings at once. The default configuration file is part of the software recovery disk image.
- Media backup — There is no built-in mechanism in the iVDR for backing up the media itself. The media files in total can become very large, so if you need to back up your media you should establish a mechanism that is suited to your facility and its resources. You can stream media to another iVDR or Profile XP Media Platform or export media files to a network server or removable media, i.e. USB drive, DVD, etc.. Refer to the *M-Series User Manual* for instructions.

It is recommended that you place backup files (not media backup) on the second partition on the iVDR system drive. That way they are readily available for your service work. You can further enhance the security of these files by copying them to a location outside the iVDR, such as to a network drive, CD-RW media, or DVD-RW media.

Replacing an iVDR

To correct some system faults Grass Valley Support sends you a replacement iVDR. The replacement iVDR is shipped with no media drives so that you can re-use the media drives from the faulty iVDR. In some cases you can even keep the media that is stored on the drives intact so that it can be saved and used on the replacement iVDR. Read the explanations at the beginning of the following procedures and use the appropriate procedure for replacing your iVDR.

Replacing an iVDR with saved media

If you want to save media and configurations, read the following explanation and procedure. If you do not need to save the media and configurations currently on the faulty iVDR, work though [“Replacing an iVDR without saved media” on page 49](#).

If the problem on the faulty iVDR does not prevent you from making backups, you should be able to completely recover your media and configurations. For example, if the problem is a faulty Codec board, all media and configurations should still be intact and available on the faulty iVDR. By making backups you can transfer media and configurations to the replacement iVDR.

If the problem prevents you from making backups, complete recovery is unlikely. For example, if the problem is a failed system drive, the iVDR is inoperable and the Media File System is lost. However, if you still have access to a recent backup of the Media File System, you can likely recover part of your media, as explained in the following procedure. If you do not have a backup of the Media File System, media recovery is impossible and you must use [“Replacing an iVDR without saved media” on page 49](#).

To save media and configurations as you replace a faulty iVDR, do the following:

1. If the problem on the faulty iVDR prevents you from making backup files, make sure the replacement iVDR can access a previously made Media File System backup file. To attempt to recover part of your media from this previous backup file, skip ahead to step 3.
2. If the problem on the faulty iVDR does not prevent you from making backup files, do the following:
 - While in Normal mode, backup your current configurations as a saved configuration file. Refer to the *M-Series User Manual* for instructions on using Configuration Manager.
 - Restart into Storage Maintenance mode and backup the media file system. Refer to [“Backing up the media file system” on page 63](#).

Save the backup files to the system drive’s second partition, then copy the files to a network location or onto CD-RW media so that the files will be accessible from the replacement iVDR.

3. Power off the faulty iVDR. If the replacement iVDR has been powered on, power it off as well.
4. Keeping the drives in the same order, remove the media drives from the faulty iVDR and install them in the replacement iVDR. See [“Media disk removal” on page 71](#).
5. Power on the replacement iVDR. You should see error messages appear as AppCenter opens, since the replacement iVDR now has foreign media disks. You can ignore these error messages. AppCenter opens with only partial functionality because of the error conditions.

If you see no error messages and the Storage Utility opens automatically, it means the iVDR is in Storage Maintenance mode. In this case you can skip ahead to step 7.
6. From AppCenter, select **System | Shutdown**. Then in the Shutdown dialog select **Storage Maintenance** and **OK**. The iVDR restarts into Storage Maintenance mode and the Storage Utility opens automatically.
7. Work through the tasks necessary to access your backup file or files, such as the following:
 - If you saved the backup files onto CD-RW media, insert the media into the

CD-RW drive.

- If you saved the backup files to a network location, you must gain network access to the files. Close the Storage Utility. Do not restart, but remain in Storage Maintenance mode. The Windows desktop appears, from which you can do your Windows networking configurations. Make the required connections and configurations as explained in the *M-Series User Manual*. When you are done with your Windows procedures, open the Storage Utility shortcut on the Windows desktop.
8. Using the Storage Utility, work through [“Restoring the media file system” on page 63](#), restoring from your Media File System backup file. When the Storage Utility completes the process, your Media File System contains references to media as it existed on the media disks at the time the backup was made.

A message is displayed asking if you want to restart. Depending on when you made the backup, proceed as explained in the next two steps.
 9. If you made your backup as in step 2 earlier in this procedure the Media File System references are correct as they were on the faulty iVDR and there are no further Storage Utility operations required. Proceed as follows:
 - a. Answer **Yes** to confirm the restart. The next message asks if you want to stay in Storage Maintenance mode.
 - b. Answer **No** to restart into Normal mode. AppCenter opens automatically. There should be no error messages, since the media disks are now properly incorporated into the Media File System. Skip ahead to step 11.
 10. If you are restoring from a backup you made previously (prior to the problem on the faulty iVDR), the Media File System references are not all correct. Any media that is new or modified since you made the backup is not referenced and is therefore unrecoverable. However, this unreferenced media leaves behind unreferenced media files on the media disks, unreferenced movies (database records) in the database, or a combination of both. You must remove these problems from the Media File System to prevent ongoing errors. Proceed as follows:
 - a. Answer **No** so that you do not restart the iVDR and the Storage Utility remains open.
 - b. Work through [“Cleaning the media file system” on page 64](#). When prompted, confirm that you want to delete both the unreferenced movies and the unreferenced files.
 - c. Close the Storage Utility. When prompted to restart the iVDR, answer **Yes** to confirm the restart. The next message asks if you want to stay in Storage Maintenance mode.
 - d. Answer **No** to restart into Normal mode. AppCenter opens automatically. There should be no error messages, since the media disks are now properly incorporated into the Media File System.
 11. If you have not already done so, complete any remaining connections necessary so that the replacement iVDR can operate just as the faulty iVDR did. Refer to the *M-Series User Manual*.
 12. If you have a saved backup configuration file, restore your saved configurations

from the file. Otherwise, reconfigure manually. Refer to the *M-Series User Manual* for instructions on using Configuration Manager.

You should now be able to access your saved media on the replacement iVDR.

13. Backup the system drive using [“Creating the software recovery disk image” on page 50](#).

Replacing an iVDR without saved media

If you do not plan to save the media and configurations currently on the faulty iVDR, work through the following procedure. The result of this procedure is that the replacement iVDR is ready to use as if it were a new, blank unit received from the factory.

To replace a faulty iVDR without saving media and configurations, do the following:

1. Power off the faulty iVDR. If the replacement iVDR has been powered on, power it off as well.
2. Keeping the drives in the same order, remove the media drives from the faulty iVDR and install them in the replacement iVDR. See [“Media disk removal” on page 71](#).
3. Power on the replacement iVDR. You should see error messages appear as AppCenter opens, since the replacement iVDR now has foreign media disks. You can ignore these error messages. AppCenter opens with only partial functionality because of the error conditions.

If you see no error messages and the Storage Utility opens automatically, it means the iVDR is in Storage Maintenance mode. In this case you can skip ahead to step 5.

4. From AppCenter, select **System | Shutdown**. Then in the Shutdown dialog select **Storage Maintenance** and **OK**. The iVDR restarts into Storage Maintenance mode and the Storage Utility opens automatically.
5. Work through [“Making a media file system” on page 61](#). When prompted, confirm that you want to make a new file system, which loses all current media on the media drives. When prompted to restart the iVDR, answer **Yes** and restart in Normal mode.
6. Connect and configure the replacement iVDR. Refer to the *M-Series User Manual*.
The iVDR should now be fully operational and ready to record your media.
7. Backup the system drive using [“Creating the software recovery disk image” on page 50](#).

Replacing a media disk drive

Use this procedure after you have determined that one of your media disk drives needs to be replaced. Refer to [“Media disk problems” on page 34](#). When you replace a media disk drive all media currently stored on your media disks is lost.

To replace a media disk drive do the following:

1. From AppCenter, select **System | Shutdown**. Then in the Shutdown dialog select **Storage Maintenance** and **OK**. The iVDR restarts into Storage Maintenance mode

and the Storage Utility opens automatically.

2. Close the Storage Utility.

A message is displayed asking if you want to restart. Answer **No** so that you do not restart the iVDR, yet the iVDR remains in Storage Maintenance mode. Now when you power on after replacing the drive, the iVDR will start up in Storage Maintenance mode and the Storage Utility will be ready to use.

3. Power off the iVDR.
4. Remove the failed media disk drive and insert a replacement media disk drive, as explained in [“Media disk removal” on page 71](#).
5. Power on the iVDR. The iVDR starts up in Storage Maintenance mode. The Storage Utility opens automatically.
6. Make a new file system as explained in [“Making a media file system” on page 61](#).
7. Close the Storage Utility. When prompted to restart the iVDR, answer **Yes** and restart in Normal mode.

Your iVDR is now operational, but with an empty file system and no media stored. You can now record your media.

Using the software recovery disk image

You can restore the complete software on the system disk from a disk image stored on the system disk's second partition. This simplifies the process of troubleshooting and correcting software faults.

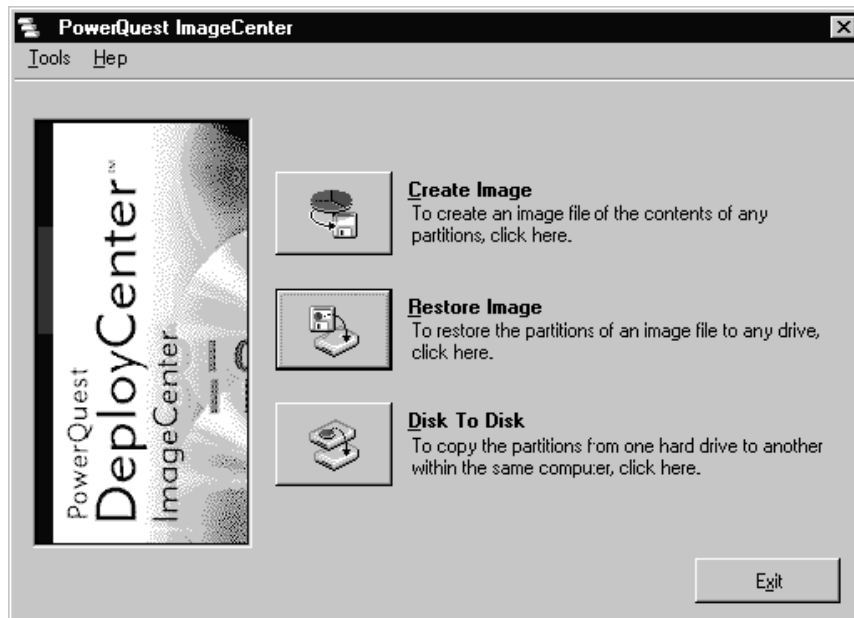
Creating the software recovery disk image

1. From AppCenter, select **System | Shutdown**. Then in the Shutdown dialog select **Storage Maintenance** and **OK**.

The iVDR restarts into Storage Maintenance mode. This means that the disk image you are about to create will be in Storage Maintenance mode. That way, if you ever restore from the disk image, the iVDR will start initially in Storage Maintenance mode and you will be able to easily restore your Media File System, as instructed in procedures later in this chapter.

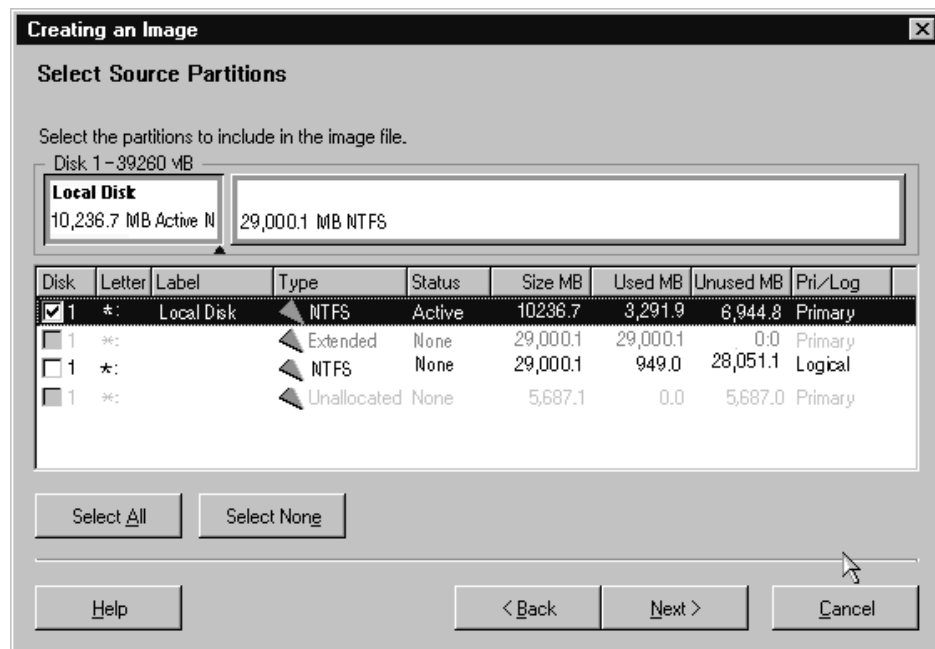
2. Insert the Recovery Program CD and use Windows **Start | Shutdown** to restart the iVDR.

At restart the iVDR boots from the CD. The DeployCenter program loads.



3. On the opening screen, select **Create Image**.

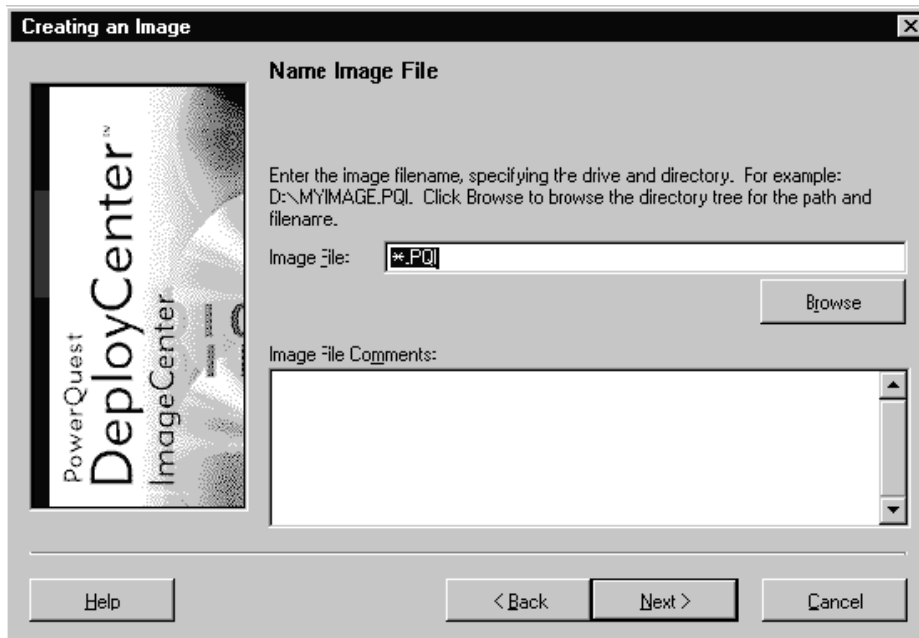
The Creating an Image wizard opens. The Select Source Partitions screen appears. It displays the partitions on the iVDR's system drive.



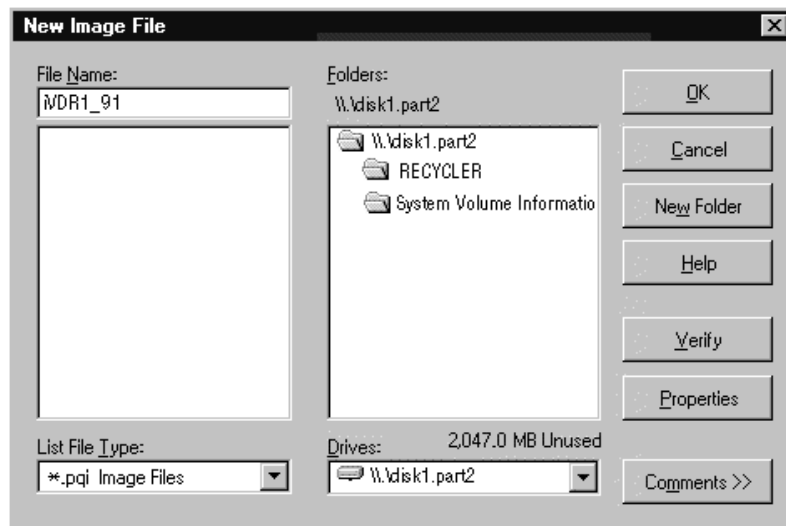
4. From the partition list select **Local Disk**.

This is the system drive, which should be at the top of the list and reported as Active in the Status column.

5. Click **Next**. The Name Image File screen appears.



6. On the Name Image File screen, click **Browse**. The New Image File dialog box opens.



7. Enter the file name for the disk image you are creating. It is recommended that you incorporate the name of the iVDR and the current date in the file name so that you can easily identify the disk image for the iVDR.

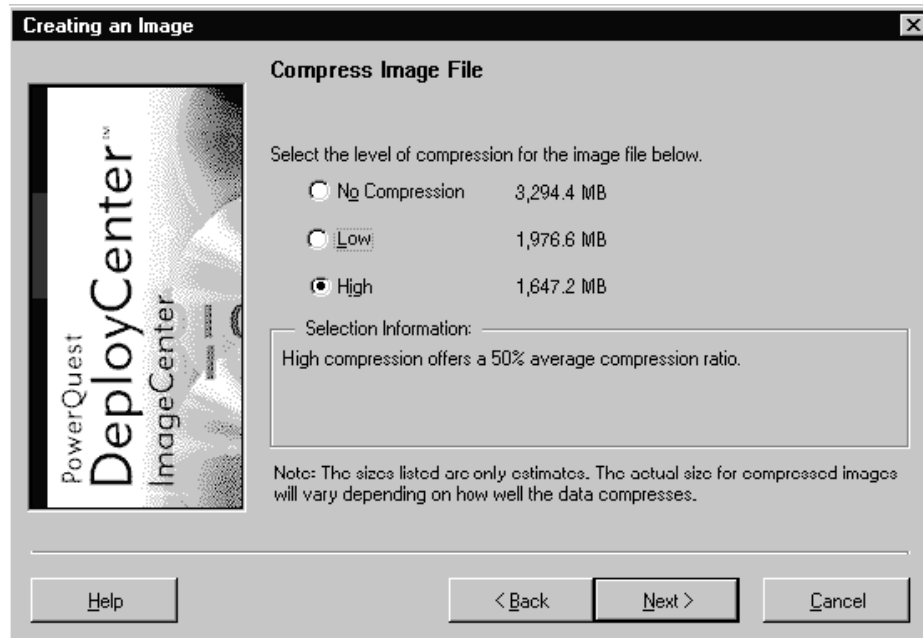
NOTE: For the file name use DOS format (eight characters or less) with no spaces or extended characters.

8. In the Drive drop-down list, select disk1.part2. This is the second partition on the

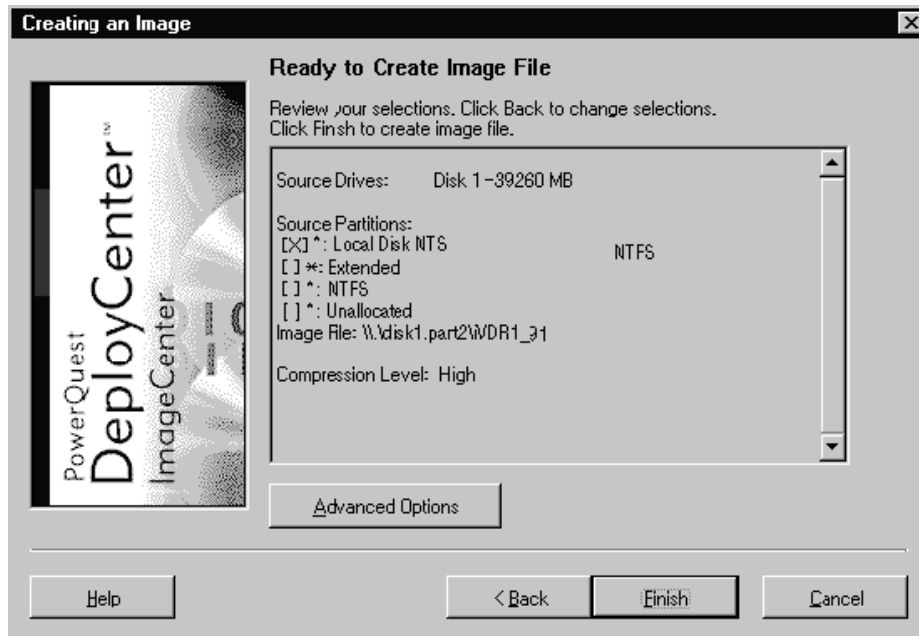
iVDR system drive, on which disk images are stored. Do not attempt to store the disk image directly onto removable media, such as CD-RW media, as this causes errors and the process fails.

NOTE: NTFS drives are un-named, so make sure you do not select the system drive.

9. Click **OK**. The New Image File dialog box closes.
10. On the Name Image File screen, enter image file comments, such as the date, time, and software versions contained on the disk image you are creating. Click **Next**. The Compress Image File screen appears.



11. On the Compress Image File screen, select **High**. Click **Next**. The Ready to Create Image File screen appears.



12. On the Ready to Create Image File screen, click **Advanced Options**. The Create Image Advanced Options dialog box opens.
13. On the Create Image Advanced Options dialog box, do the following:
 - a. Accept the following default selection:
 - Check for file system errors
 - b. Select **Split image file...** and enter 630,000,000. This splits the disk image into separate files that are small enough to fit on a CD-RW, in case you want to copy the disk image onto removable media.
 - c. Click **OK**. The Create Image Advanced Options dialog box closes.
14. On the Ready to Create Image File screen, confirm that the information displayed is correct for the disk image you are creating. Click **Finish**.
15. On the Creating an Image screen, monitor progress bars as the DeployCenter program writes the disk image files to the second partition. If the file name is "iVDR1_91", files are named *iVDR1_91.PQI*, *iVDR1_91.002*, *iVDR1_91.003* and so on.
16. Click **OK** to the "Image was copied successfully..." message and exit the DeployCenter program.
17. Remove the CD and use the standby switch to restart the iVDR. The iVDR starts up in Storage Maintenance mode.
18. Open the AppCenter icon on the Windows desktop and when prompted to restart in Normal mode select **Yes**. The iVDR starts up in Normal mode.

Restoring from the software recovery disk image



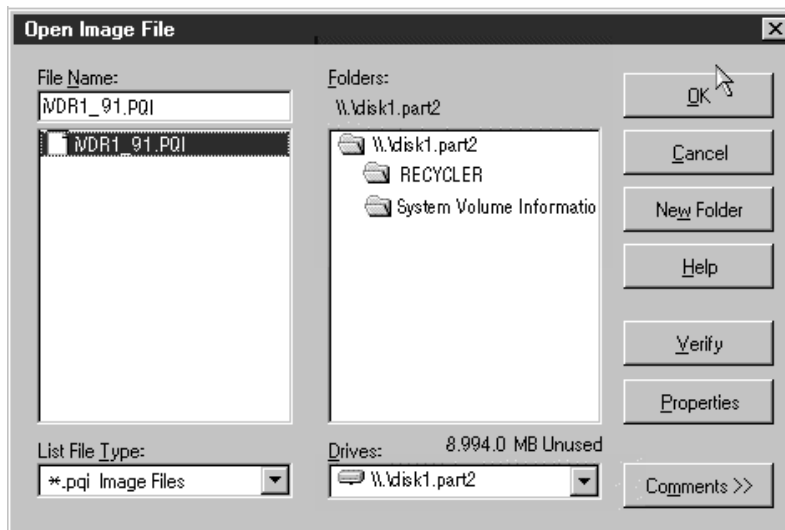
CAUTION: This procedure overwrites the system disk. You must backup the Media File System to prevent media loss.

NOTE: Do not use this procedure to replace an iVDR. Instead, use [“Replacing an iVDR” on page 46](#). Restoring a disk image from a different iVDR renders the iVDR inoperable.

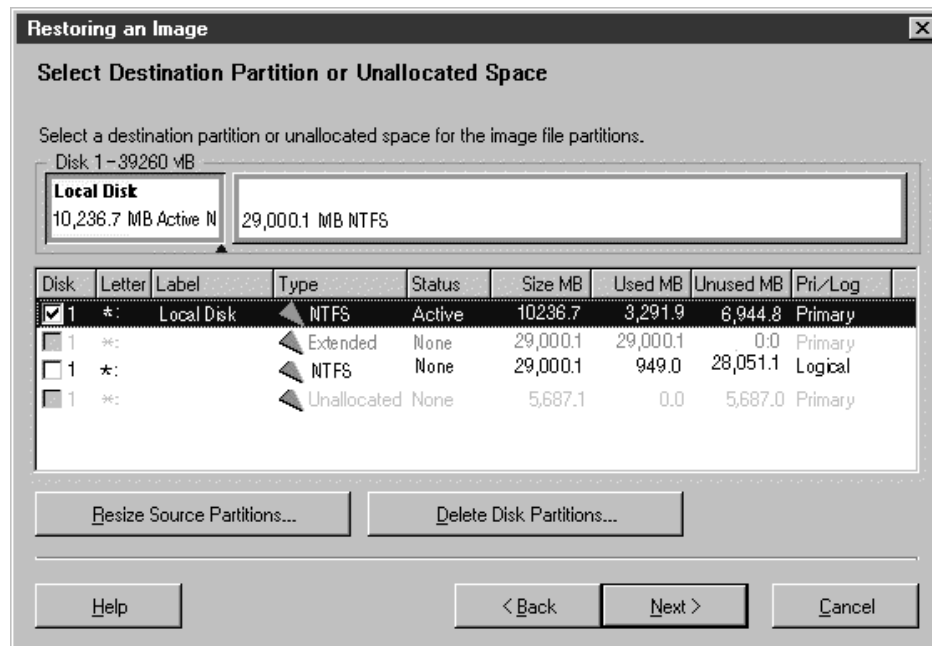
1. If the image file from which you are restoring is not already on the second partition (drive letter D:) of the system drive, copy it to the second partition before proceeding.
2. From AppCenter, select **System | Shutdown**. Then in the Shutdown dialog select **Storage Maintenance** and **OK**.
The iVDR restarts into Storage Maintenance mode, which allows you to backup the Media File System.
You must backup the Media File System before restoring the iVDR system drive from a disk image. This is because media that has changed since the disk image was created is not referenced by the Media File System on the image. However, with the Media File System backup file, you can restore all the references.
3. Open the Storage Utility and backup the Media File System as explained in [“Backing up the media file system” on page 63](#). Copy the backup file to the iVDR’s second partition so it is in the same location as the disk image.
4. Insert the Recovery Program CD and use Windows **Start | Shutdown** to restart the iVDR. The iVDR boots from the CD. The DeployCenter program loads.
5. On the opening screen, select **Restore Image**. The Restoring an Image wizard opens.



6. On the Select Image File screen, click **Browse**. The Open Image File dialog box opens.



7. In the Drive drop-down list, select the disk1.part2 drive.
8. Click the file name of the disk image file. Make sure that the correct file name appears in the File Name box.
9. Click **OK**. The Open Image File dialog box closes.
10. On the Select Image File screen, click **Next**.
The Select Destination Partition ... screen appears



11. On the Select Destination Partition... screen, from the partition list select **Local Disk**.
This is the system drive, which should be at the top of the list and reported as Active in the Status column.
12. Click **Next**. A dialog box is displayed that informs you that the existing partition will be deleted before your image file is restored. Click **OK**. The Ready to Restore Image File screen appears.
13. On the Ready to Restore Image File screen, all the information you have entered to this point is displayed. Confirm that you are restoring *from* the disk image file on the second partition *to* the iVDR system drive location. Click **Finish** to begin restoring from the image file.
14. The Restoring the Image dialog appears, tracking the progress of the image restore. Upon completion, the following message appears: "Image was restored successfully."
15. Click **Yes**, return to the ImageCenter main screen, and exit the DeployCenter program.
16. Remove the CD and use the standby switch to restart the iVDR.
The iVDR should start in Storage Maintenance mode, if you made the disk image as instructed in "Creating the software recovery disk image" on page 50. If the iVDR starts in Normal mode, from AppCenter select **System | Shutdown**. Then in the Shutdown dialog select **Storage Maintenance** and **OK** to restart in Storage Maintenance mode.
17. Open the Storage Utility and restore the Media File System from the backup file you copied to the second partition at the beginning of this procedure. Refer to "Restoring the media file system" on page 63.
18. Close the Storage Utility and restart in Normal mode.

Using the Storage Utility

The following procedures use the Storage Utility for operations on the file system, database, and media disks of the iVDR.



CAUTION: Use the Storage Utility only as directed by a documented procedure or by Grass Valley Support. If used improperly, the Storage Utility can render your iVDR inoperable or result in the loss of all your media.

Opening and closing the Storage Utility

The Storage Utility requires that the iVDR be in the proper startup mode. The iVDR can run in two different startup modes, as follows:

- Normal mode — In this mode AppCenter runs for normal operation of the iVDR. Normal mode automatically logs on using the following Windows user account:

- Username: mseries
- Password: mseries

The Storage Utility cannot run in Normal mode.

- Storage Maintenance mode — In this mode the Storage Utility runs. Storage Maintenance mode automatically logs on using the following Windows user account:

- Username: administrator
- Password: mseries

AppCenter cannot run in Storage Maintenance mode. This means all media access operations are disabled while you are using the Storage Utility.

You switch between these startup modes by opening and closing the Storage Utility, as explained in the following procedures.

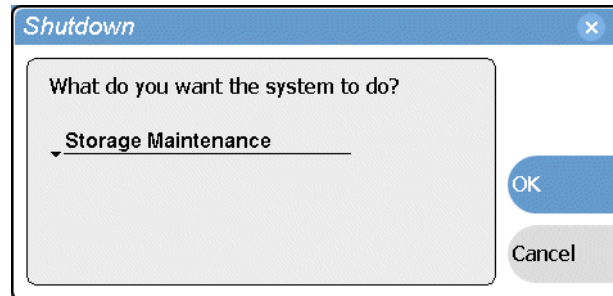


CAUTION: The M-Series is not a general purpose Windows workstation. The Windows configuration on the iVDR has been specifically set for use as a real time device. The M-Series iVDR is configured for automatic logon allowing unattended booting. To avoid partial or total system failure, do not modify any operating system settings unless approved by Grass Valley, including but not limited to the following:

- Do not use the User Manager
- Do not use the Disk Administrator
- Do not load any third party software
- Do not install any Windows updates other than “critical updates” without contacting Grass Valley Product Support

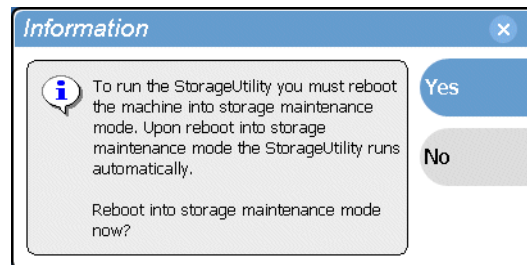
Opening the Storage Utility from Normal mode

1. If you have not already done so, stop all record operations, play operations, and any other media access.
2. Open the Storage Utility using one of the following:
 - If AppCenter is currently running, open the AppCenter **System** menu and select **Shutdown**. The Shutdown dialog appears.



On the Shutdown dialog select **Storage Maintenance** and select **OK**. The iVDR restarts into Storage Maintenance mode.

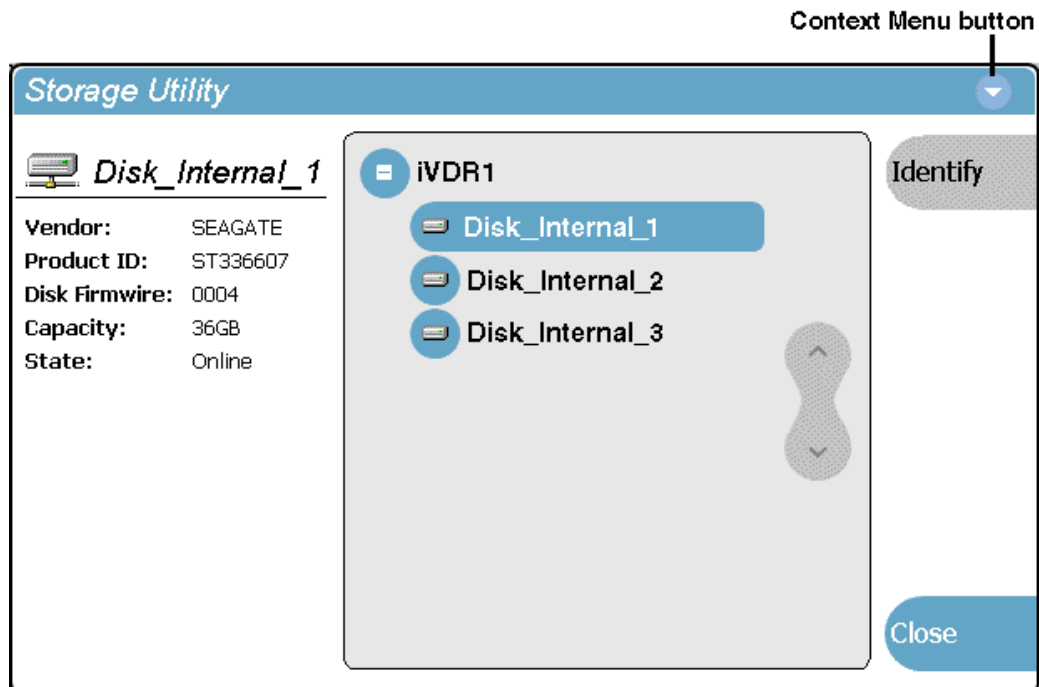
- If AppCenter is not currently running, open the Storage Utility shortcut on the Windows desktop. A message appears.



Select **Yes** to confirm the reboot into the Storage Maintenance mode.

If you get a message about restarting in Normal mode it means that you are already in Storage Maintenance mode. Refer to [“Opening the Storage Utility from Storage Maintenance mode”](#) on page 61.

There can be a pause of several seconds before shutdown processes begin. Upon reboot into the Storage Maintenance mode the Storage Utility opens automatically.



The Storage Utility detects disks available to the iVDR and lists them on the opening screen. The Storage Utility names the disks by whether they are internal to the iVDR or in an external device and by the number of the slot in which they are installed.

Closing the Storage Utility

The Storage Utility only runs in Storage Maintenance mode, so if you are closing the Storage Utility you are already in Storage Maintenance mode.

1. Complete all the service work that you need to do using the Storage Utility.
2. On the Storage Utility window select **Close**.
A message appears that asks if you want to reboot.
3. Answer the "...reboot?..." message as follows:
 - Select **Yes**. In most cases this is the appropriate answer, given that your work with the Storage Utility is complete and you are ready to restart into Normal mode. When you select Yes a message appears that asks if you want to stay in Storage Maintenance mode after the restart. Continue with step 4 to answer the question.
 - You can also select No if you have a reason to close the Storage Utility yet not restart. When you select No a message appears the advises you to restart into Normal mode later. The Storage Utility closes and the iVDR remains in Storage Maintenance mode.
4. Answer the "...stay in storage maintenance...?" message as follows:

- Select **No**. In most cases this is the appropriate answer, given that your work with the Storage Utility is complete and you are ready to restart into Normal mode. When you select No the iVDR restarts into Normal mode. There can be a pause of several seconds before shutdown processes begin.
- You can also select Yes if you have a reason to restart yet remain in Storage Maintenance mode. When you select Yes the iVDR remains in Storage Maintenance mode after restart. If you subsequently do a standard Windows restart, the iVDR still restarts into Storage Maintenance mode.

To reboot into Normal mode you can open and close the Storage Utility, or attempt to open AppCenter and follow the prompts for rebooting into Normal mode.

Opening the Storage Utility from Storage Maintenance mode

If you previously had the Storage Utility running and then closed it while remaining in Storage Maintenance mode, you can open the Storage Utility shortcut on the Windows desktop. You can also restart the iVDR. This will cause the Storage Utility to open automatically at startup.

Locating a media disk

Use this procedure if you need to identify the location of a particular media disk.

1. If you have not already done so, remove the Front Panel or door and the Fan module so that you can see the media disks lights. Refer to [“Front Panel or door removal” on page 70](#) and [“Fan module removal” on page 71](#).
2. Open the Storage Utility as explained in [“Opening and closing the Storage Utility” on page 58](#). The Storage Utility detects disks available to the iVDR and lists them on the opening screen. The Storage Utility names the disks by whether they are internal to the iVDR or in an external device and by the number of the slot in which they are installed.
3. Select the disk that you want to locate.
4. Select **Identify**. A message appears to notify you of the flashing light.
5. Locate the flashing light to identify the disk.

Viewing the properties of a media disk

Use this procedure if you need to view the properties of a particular media disk.

1. Open the Storage Utility as explained in [“Opening and closing the Storage Utility” on page 58](#).
2. Select the disk for which you want to view properties. The properties appear in the Storage utility window.

Making a media file system

This procedure creates a new, blank, media file system on your iVDR.

NOTE: *You lose all existing media with this procedure.*

1. Open the Storage Utility as explained in [“Opening and closing the Storage Utility”](#)

[on page 58.](#)

2. Open the Storage Utility context menu  .




Select **Make Media File System**. A dialog opens to confirm that you want to reinitialize the file system and lose all media.

3. Select **Yes** to confirm making the file system. A progress indicator appears. When the process is complete a message appears to confirm success and to prompt you to restart.
4. Select **OK** to restart into Normal mode.

The iVDR restarts. Your new, blank file system is ready to store your media.

Checking the media file system

This procedure checks the media file system but retains current media files.


1. Open the Storage Utility as explained in [“Opening and closing the Storage Utility” on page 58.](#)
2. Open the Storage Utility context menu  and select **Check Media File System**. A progress indicator appears.
If problems are discovered they are reported. If the check process passes, when the process is complete a message appears to confirm success.
3. Select **OK**.
Your file system has been checked.

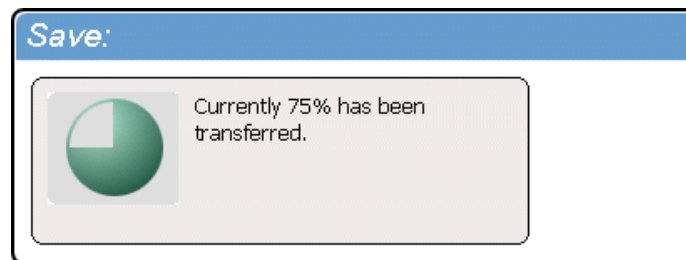
Backing up the media file system

When you back up the media file system you save a snapshot of your iVDR's references to the media currently stored on its media disks. Subsequent media access changes references, so if you restore from the snapshot the subsequent changes are lost.

NOTE: This procedure does not backup the media itself.

To backup the media file system do the following:

1. Open the Storage Utility as explained in [“Opening and closing the Storage Utility” on page 58.](#)
2. Open the Storage Utility context menu  and select **Backup Media File System**. A message appears to confirm saving the backup file.
3. Select **Yes** to confirm the backup. A Save dialog opens.
4. Navigate to your backup location, name the backup file and save it. A progress indicator appears.



When the backup completes a message appears confirming the successful backup.

5. Select **OK**.


Your Media File System is backed up.

Restoring the media file system

This procedure restores your iVDR's references to the media that was stored on its media disks at the time you made the backup files.

NOTE: This procedure does not restore the media itself.

To restore the media file system do the following:

1. Open the Storage Utility as explained in [“Opening and closing the Storage Utility” on page 58.](#)
2. Open the Storage Utility context menu  and select **Restore Media File System**. A message appears for confirmation of the restore operation.
3. Select **Yes** to confirm. A Open dialog opens.

4. Navigate to your backup file and open it.


A progress indicator appears. When the restore completes a message appears to confirm the successful restore and to prompt you to restart.

5. Select **Yes** and restart in Normal mode.

The Media File System restore operation is complete.

Cleaning the media file system


This procedure allows you to keep the media database and the media files in sync. The Storage Utility checks the movies (clips) in the media database for the references to media files that should be currently stored on the media disks. If the Storage Utility finds any movies that refer to non-existent media files it deletes those movies from the media database. Likewise, the Storage utility checks for media files that are not referenced by a movie in the media database and deletes the unreferenced files as well.

1. Open the Storage Utility as explained in [“Opening and closing the Storage Utility” on page 58](#).
2. Backup the media file system as explained in [“Backing up the media file system” on page 63](#). This is a precaution. When the cleaning operation is successful the backup file will not be needed.
3. Open the Storage Utility context menu  and select **Clean Media File System**. A dialog opens to confirm that you do not need to backup your media file system.
4. Select **No** to skip the backup and continue. A progress indicator appears as the Media File System is cleaned.
5. Respond to messages as follows:
 - a. If unreferenced movies are found a message is displayed. Select **Yes** to delete unreferenced movies.
 - b. If unreferenced media files are found a message is displayed. Select **Yes** to delete unreferenced media files.When the Clean Media File System process is complete a message appears to confirm success.
6. Select **OK**. Your Media File System has been checked and cleaned.

Updating the media file system


This procedure detects the media disks currently installed in the iVDR and makes sure that they are properly utilized by the media file system. You will be directed to use this procedure when you add a group of three drives to your iVDR and expand your storage capacity. Do not use this procedure unless directed.

1. Open the Storage Utility as explained in [“Opening and closing the Storage Utility” on page 58](#).
2. Backup the media file system as explained in [“Backing up the media file system” on page 63](#). This is a precaution. When the update is successful the backup file will not be needed.

3. Open the Storage Utility context menu  and select **Update Media File System**. A dialog opens to confirm that you do not need to backup your media file system.
4. Select **No** to skip the backup and continue with the Update Media File System process. A progress indicator appears. When the process is complete a message appears to confirm success.
5. Select **OK**. Your Media File System has been updated.


Downloading disk drive microcode

Use this procedure if you need to update the microcode for your media disk drives.

1. Open the Storage Utility as explained in [“Opening and closing the Storage Utility” on page 58](#).
2. Open the Storage Utility context menu  and select **Download Disk Microcode**. A dialog opens to confirm that you want to update the microcode.
3. Select **Yes** to confirm the update. A Open dialog opens.
4. Navigate to the microcode file and open it. A progress indicator appears. When the update completes a message appears to confirm a successful process.
5. Select **OK**. Your media disk drive microcode updates are complete.

Resetting disk mode pages

Use this procedure if you are directed by Grass Valley Support to restore the disk mode pages to the iVDR default settings. Do not use this procedure unless directed.

1. Open the Storage Utility as explained in [“Opening and closing the Storage Utility” on page 58](#).
2. Open the Storage Utility context menu  and select **Check Disk Mode Pages**. A progress indicator appears as the Storage Utility resets the disk mode page for one of the media disks. When the process completes a message appears to confirm a success.
3. Select **OK**. The disk mode page is reset for the media disk. The Storage Utility continues the process for each of your media disks.
4. For each of your remaining media disks, when the message appears to confirm a success, select **OK**.



Exporting log files

The procedures in this section describe how to export the M-Series iVDR and Windows operating system log files. The M-Series iVDR log files include all applications messages, the Windows Event Log, and messages related to managing the media file system. The exported log files can be sent to Thomson Grass Valley product support where they can be examined to analyze the operation of your iVDR.

NOTE: *ExportLog does not export StatusPane messages. To capture StatusPane messages, refer to “Copying messages to the clip board” in the M-Series iVDR User Manual.*

Use one of the following procedures to export the logging database to a file.

Exporting log files using the StatusPane

1. Click the StatusPane button  in the AppCenter StatusBar to open the StatusPane.
2. Select the StatusPane menu button , then choose **Export Log**.
The ExportLog dialog box is displayed.



3. In the ExportLog dialog box, browse to locate the destination directory.
4. Select the **File Name** edit control, then enter a file name for the exported log file.
5. Use the **Logs** tab to select the log files to export.
6. Select **Export**.
7. When the export confirmation message appears, click **OK**.
8. Retrieve the log files, and send them to Thomson Grass Valley support for analysis.

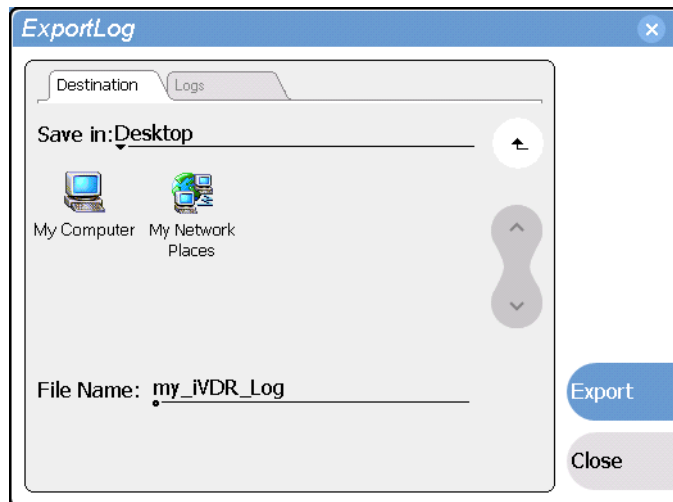
Exporting log files using the Windows command line

This procedure allows you to export log files even if AppCenter does not start properly. It uses the Windows command prompt.

1. If you have not already done so, connect a mouse and keyboard to the iVDR using the rear panel ports, or the ports on bottom edge of the Front Panel.
2. In the Windows task bar, select **Start | Run**.
3. Type the following in the Run dialog box, then click **OK**.

```
c:\profile\exportlog
```

The ExportLog dialog box is displayed.



4. In the ExportLog dialog box, browse to locate the destination directory.
5. Select the **File Name** edit control, then enter a file name for the exported log file.
6. Use the **Logs** tab to select the log files to export.
7. Select **Export**.
8. When the export confirmation message appears, click **OK**.
9. Retrieve the log files, and send them to Thomson Grass Valley support for analysis.

Removing and replacing FRUs

Field Replaceable Units (FRUs) are modular hardware components that can be serviced without disturbing other components in the system. The following topics discuss working with the M-Series iVDR FRUs.

- “External Parts Removal”
- “Internal Parts Removal”

The pictures in these topics show how to disassemble. Unless otherwise documented, re-assembly is the reverse.

You need only a Torx tool with T15 magnetic tip to remove and replace parts in the M-Series iVDR.

NOTE: Only Grass Valley components are supported. Do not attempt to use components procured from a different source.

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



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



CAUTION: This system contains board-level components that must be protected from static discharge and physical shock. Wear a wrist strap grounded through one of the system's ESD Ground jacks when handling system components.

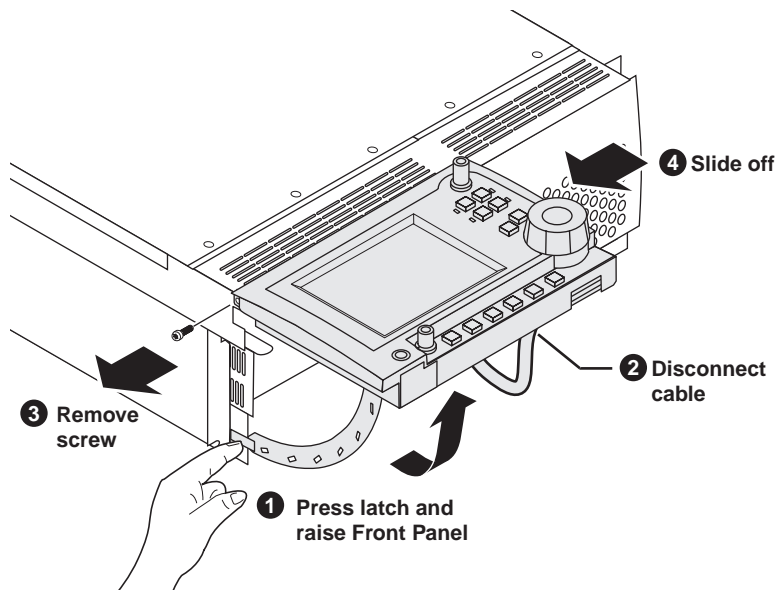
External Parts Removal

All the parts in this category can be removed and replaced without opening the M-Series iVDR cabinet and, except for the power supply, are accessible from the front of the cabinet.

Front Panel or door removal

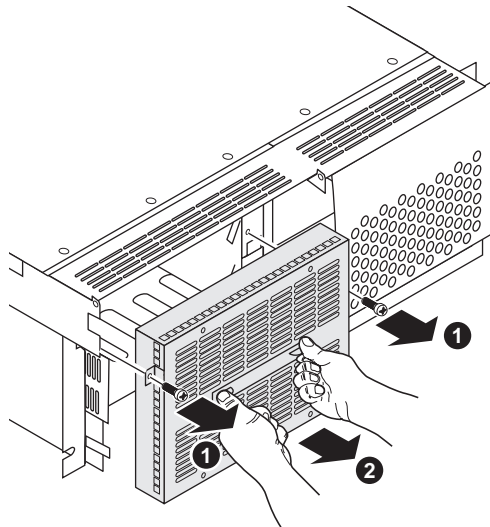
If the optional Front Panel is currently installed on your iVDR, remove it using the following procedure.

If the Media Drive door is currently installed on your iVDR, remove it using the following procedure also. However, disregard steps for the latch and the cable, as these are not applicable to the Media Drive door.



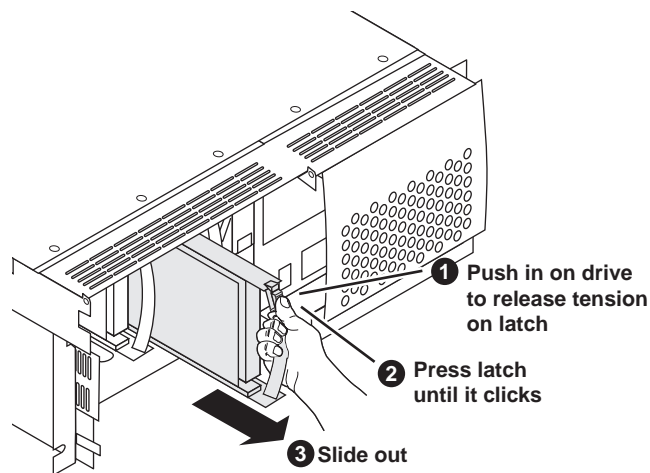
Fan module removal

To remove the fan module first remove the Front Panel or door as described in the previous procedure then proceed as illustrated.



Media disk removal

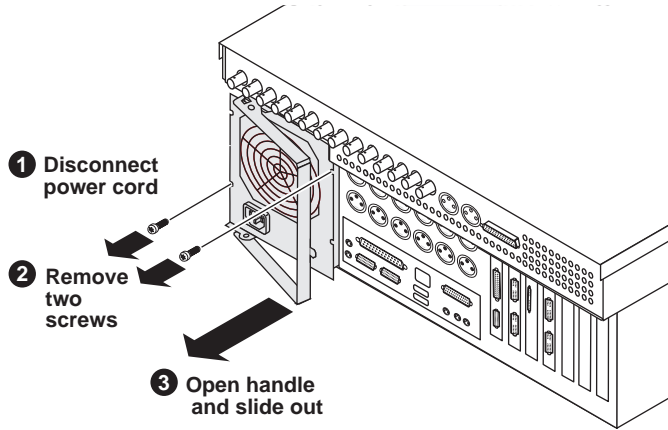
To remove a media disk first remove the Front Panel or door and the Fan module as described in the previous procedures, then proceed as illustrated.



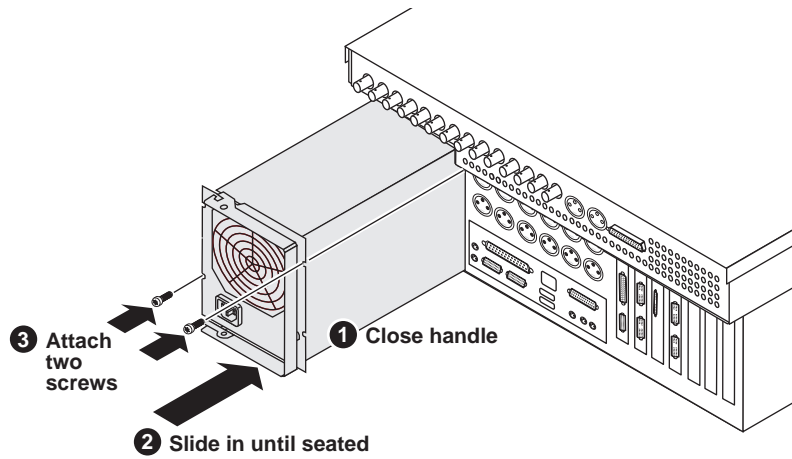
When installing a media drive, push it in firmly and make sure that it clicks into place completely.

Power supply removal

Access the power supply from the rear panel. Remove as illustrated.



Power supply installation



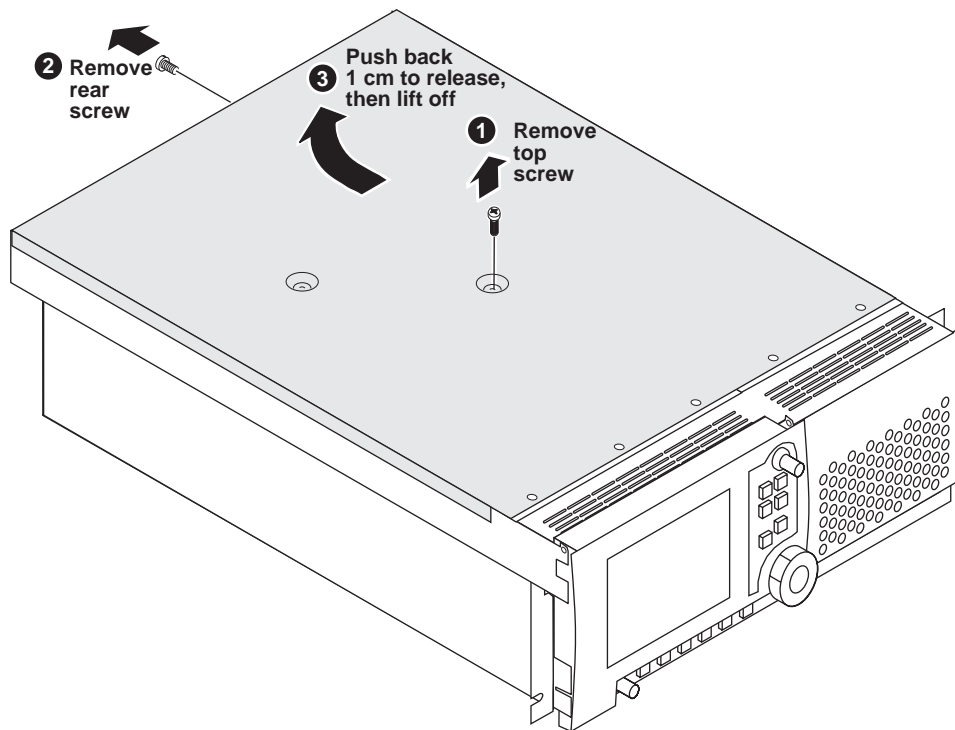
Internal Parts Removal

The illustrations that follow show how to remove internal parts from the M-Series iVDR.



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

Top cover removal

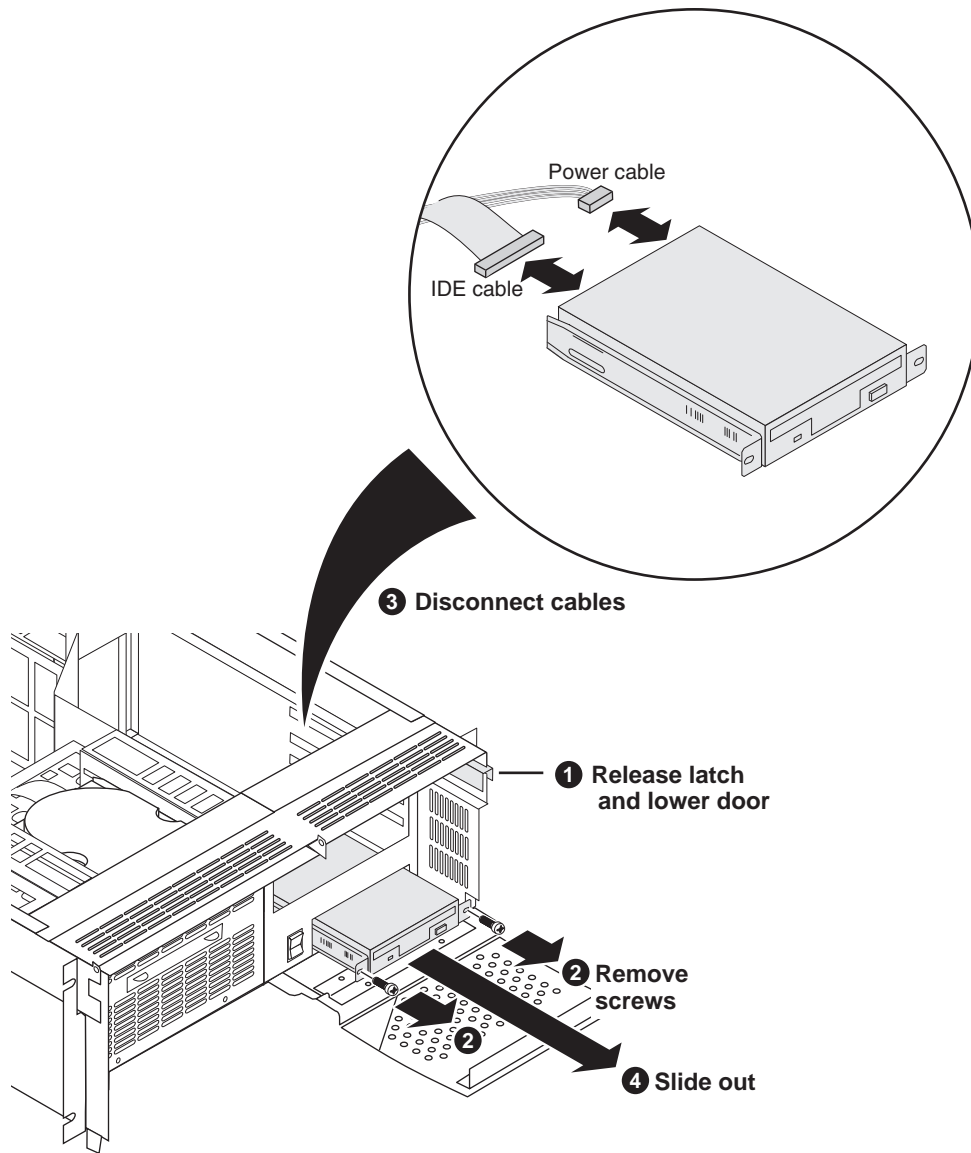


Removing floppy, CD, DVD drives

To remove any drive, first remove the top cover as described in the previous procedure, then proceed as illustrated.

To remove the full-width drives, such as the CD and DVD drives, also remove the Front Panel or door as described in previous procedures. This creates clearance for the drive mounting tab.

Procedures for removing the different drives from the drive bay are similar, as illustrated by the following procedure for the 3.5 inch floppy drive.



When replacing a drive make sure that the master/slave jumper on the rear of the drive is in the same position as on the drive originally removed and that you connect to the same IDE connector.

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