K2
MEDIA CLIENT

Service Manual

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QuickTime

Revision Status

Rev Date	Description
November 23, 2005	Initial release of the K2 Media Client Service Manual— 071-8468-00
September 6, 2006	Changes to recovery and networking procedures — 071-8468-01
July 3, 2007	Added information for new K2 Media Client models — 071-8468-02
September 7, 2007	Revised information for direct-connect storage, teaming — 071-8468-03
January 11, 2008	Revised information for Type II motherboard — 071-8468-04
March 28, 2008	Revised information for Type III motherboard — 071-8468-05
July 28, 2008	Updates to information for services, FC card, motherboard, SCSI interface board — 071-8468-06

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Safety Summaries

General Safety Summary

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

Only qualified personnel should perform service procedures.

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

Injury Precautions

Use Proper Power Cord

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

Ground the Product

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

Do Not Operate Without Covers

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

Do Not operate in Wet/Damp Conditions

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

Do Not Operate in an Explosive Atmosphere

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

Avoid Exposed Circuitry

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

Product Damage Precautions

Use Proper Power Source

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

Provide Proper Ventilation

To prevent product overheating, provide proper ventilation.

Do Not Operate With Suspected Failures

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

Battery Replacement

To avoid damage, replace only with the same or equivalent type. 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 préscrites 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).

Finding Information

This service manual provides procedures for servicing the K2 Media Client to the field-replaceable unit level. Use this manual to isolate problems to a board or module, such as the Power Supply, and to make repairs through module exchange.

How this manual is organized

This manual is organized around the tasks required to service the K2 Media Client. The following describes the chapters included in this manual:

Chapter 1, *Product Description* — Describes the key features, system components, and status indicators of the K2 Media Client.

Chapter 2, *System Messages* — Lists the various messages and system codes that you might encounter as you use the K2 Media Client.

Chapter 3, *Service Procedures* — Contains procedures for periodic maintenance and repair.

Chapter 4, *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 K2 Media Client.

Chapter 5, *Removing and replacing FRUs* — Contains procedures for removing and replacing field replaceable hardware components.

Getting more information

The following illustration shows the recommended order in which to reference the documentation.

Path for the installer of K2 Media Client models with stand-alone storage

K2 Media Client Release Notes
The latest information about the hardware and software shipped with the system. Packaged with K2 Media Client.

Quick Start Guide
The essential steps for installing the K2 Media Client. Different models each have their own version, packaged with the K2 Media Client.

K2 Media Client System Guide*
Specifications and instructions for system settings.

Path for the installer of the K2 Storage System with connected K2 Media Clients

K2 Media Client and K2 Storage System Release Notes**
The latest information about the hardware and software shipped with the system.

K2 Storage System Cabling Guide**
Diagrams for cabling K2 Storage System devices.

K2 Storage System Instruction Manual*
Instructions to install/configure K2 Storage (SAN), with K2 Media Client, K2 Media Server.

K2 Media Client System Guide*
Specifications and instructions for system settings.

Other Manuals*
Including:
- *Quick Start Guide*
- *User Manual*
- *Service Manual*
- *RAID manuals*

Path for the operator

K2 Media Client Release Notes
The latest information about the hardware and software shipped with the system.

K2 Media Client User Manual*
Information for using the user interface to record, play and manage clips and to configure channels.

* Find the K2 Documentation CD packaged with K2 Media Clients and with K2 RAID Storage devices, primary chassis.

** Find the Storage Release Notes and Cabling Guide packaged with K2 RAID Storage devices, primary chassis.

Quick Start Guide

You receive this guide in the product packaging with your K2 Media Client. The Quick Start Guide provides step-by-step installation instructions for basic installation and operation of your K2 Media Client, including recording and playing clips.

Release Notes

The release notes contain the latest information about the K2 Media Client software shipped on your system. There are K2 Storage System release notes and K2 Media Client release notes. The information in this document includes software upgrade instructions, software specifications and requirements, feature changes from the previous releases, and any known problems. Because release notes contain the latest information, they are printed out rather than included in the Documentation CD-ROM.

K2 Documentation CD

Except for the release notes, the full set of support documentation, including this manual, is available on the Documentation CD-ROM that you received with your K2 Media Client.

The K2 Documentation CD includes the following documents:

- **K2 Storage System Instruction Manual** — Contains installation, configuration, and maintenance procedures for shared storage options.

- **K2 Storage System Cabling Guide** — Contains diagrams for cabling the devices of the K2 Storage System.

- **RAID Instruction Manuals** — There is an Instruction Manual for each type of RAID storage device that can be a part of a K2 Media Client. These manuals contain procedures for configuring and servicing the device.

- **K2 Media Client System Guide** — Contains the product specifications and step-by-step instructions for modifying system settings. Includes instructions for adding a K2 Media Client to the K2 Storage System.

- **K2 Media Client Quick Start Guides** — The Quick Start Guides provides step-by-step installation instructions for basic installation and operation of the K2 Media Client, including recording and playing clips.

- **K2 Media Client User Manual** — Describes the K2 Media Client and provides instructions for configuring and operating the product.

- **K2 Media Client Service Manual** — Contains information on servicing and maintenance.

NetCentral documentation

The NetCentral product has its own documentation set, described as follows:

- **NetCentral User Guide** — This is a printed manual. It provides instructions for installing, using, and administering the NetCentral monitoring system.

- **NetCentral Help** — From the NetCentral interface access on-line help as follows:

  - For general help with NetCentral manager, select **Help | NetCentral Help Topics**. This content is identical to that in the NetCentral User Guide.

  - For help specific to monitoring K2 Media Client system devices, select **Help | Device Providers** and then select the monitored device.

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 a question, or to report new issue, 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.

International (France)	+800 80 80 20 20 +33 1 48 25 20 20	Italy	+39 02 24 13 16 01 +39 06 87 20 35 42
International (United States, Canada)	+1 800 547 8949 +1 530 478 4148	Belarus, Russia, Tadzikistan, Ukraine, Uzbekistan	+7 095 258 09 20 +33 (0) 2 334 90 30
Hong Kong, Taiwan, Korea, Macau	+852 2531 3058	Indian Subcontinent	+91 11 515 282 502 +91 11 515 282 504
Australia, New Zealand	+61 1300 721 495	Germany, Austria, Eastern Europe	+49 6150 104 444
Central, South America	+55 11 5509 3440	Near East, Africa	+33 1 48 25 20 20
China	+861 066 0159 450	Netherlands	+31 (0) 35 62 38 421
Belgium	+32 (0) 2 334 90 30	Northern Europe	+45 45 96 88 70
Japan	+81 3 5484 6868	Singapore	+65 6379 1313
Malaysia	+603 7805 3884	Spain	+41 487 80 02
Middle East	+971 4 299 64 40	UK, Ireland, Israel	+44 118 923 0499

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.

grass valley

END-OF-LIFE PRODUCT RECYCLING NOTICE

Grass Valley's innovation and excellence in product design also extends to the programs we've established to manage the recycling of our products. Grass Valley has developed a comprehensive end-of-life product take back program for recycle or disposal of end-of-life products. Our program meets the requirements of the European Union's WEEE Directive, the United States Environmental Protection Agency, and U.S. state and local agencies.

Grass Valley's end-of-life product take back program assures proper disposal by use of Best Available Technology. This program accepts any Grass Valley branded equipment. Upon request, a Certificate of Recycling or a Certificate of Destruction, depending on the ultimate disposition of the product, can be sent to the requester.

Grass Valley will be responsible for all costs associated with recycling and disposal, including freight. However, you are responsible for the removal of the equipment from your facility and packing the equipment to make it ready for pickup.

For further information on the Grass Valley product take back system please contact Grass Valley at + 800 80 80 20 20 or +33 1 48 25 20 20 from most other countries. In the U.S. and Canada please call 800-547-8949 or 530-478-4148, and ask to be connected to the EH&S Department. Additional information concerning the program can be found at: www.thomsongrassvalley.com/environment

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Finding Information

Chapter **1**

Product Description

Topics in this section include the following:

Overview description

The K2 Media Client is a cost-effective media platform that incorporates IT and storage technologies to deliver a networked solution to facilities for ingest, playout, and media asset management. It is a comprehensive platform that provides a suite of user applications, system tools, and the largest range of third party interactivity in the industry.

Refer to the *K2 Media Client System Guide* for other high-level descriptions of features, controls, applications, and subsystems.

K2 Media Client orientation

The following illustrations show the location of Field Replaceable Units (FRUs) and other components in the K2 Media Client. For clarity, illustrations of internal components are shown with the top cover removed and no cabling displayed. Note that the RTP board and the Dual Ethernet adapter are in different locations in different models.

Front view components
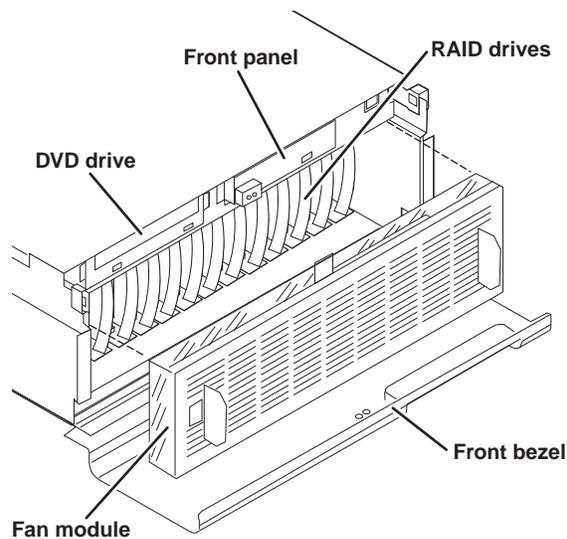
Rear view components SDA-00 model

Codec board

SCSI interface
board

DVD drive

Center support

Power supplies

XLR board

Motherboard

RS-422 board*

SCSI controller adapter

RTP board

Graphics board

*RS-422 configuration varies.

Dual Ethernet board
(optional)

RS-422 board*

Rear card guide

SCSI backplane
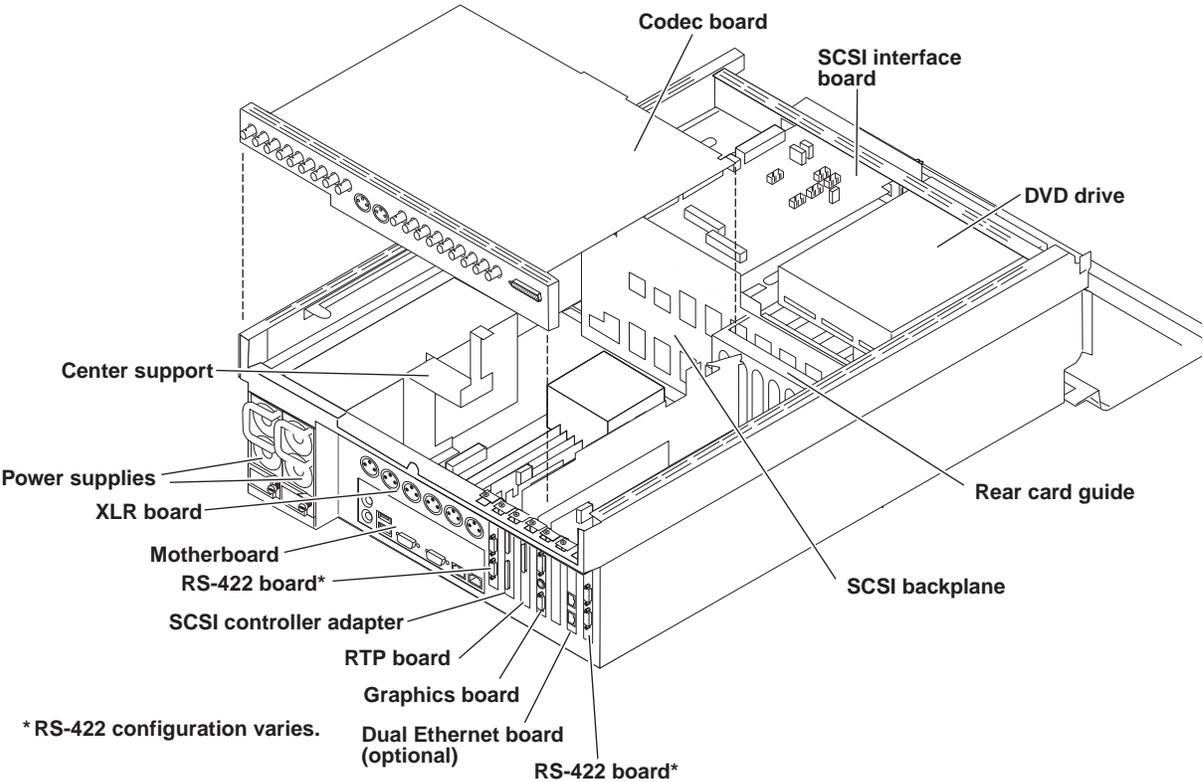
Rear view components SD-00 model

Codec board

SCSI interface board

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Rear card guide

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XLR board

Motherboard

RS-422 board*

SCSI controller adapter

RTP board

SCSI backplane

*RS-422 configuration varies.   Graphics board

RS-422 board*

Dual Ethernet board
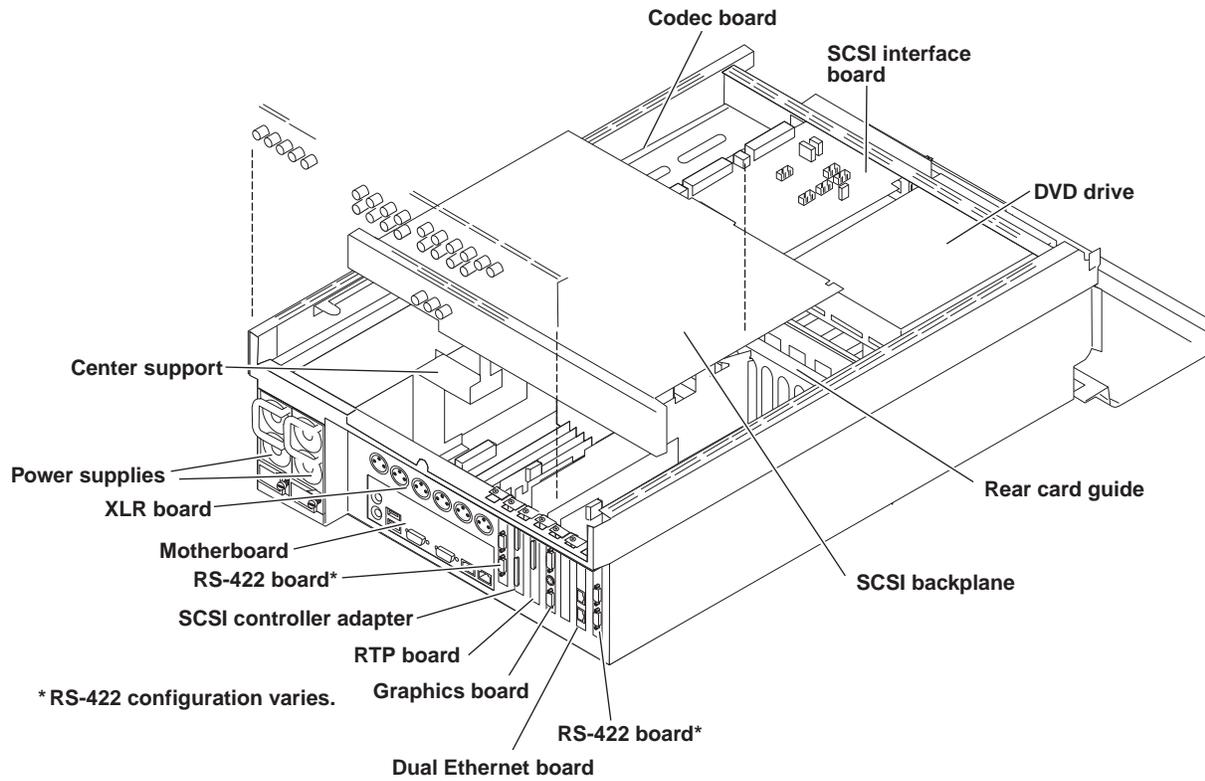
Rear view components HD-00 model

**Mezzanine boards
(under codec board)**

Codec board

**SCSI interface
board**

DVD drive

Center support

Power supplies

XLR board

Motherboard

RS-422 board*

SCSI controller adapter

Dual Ethernet board

Graphics board

RTP board

RS-422 board*

Rear card guide

SCSI backplane

*** RS-422 configuration varies.**
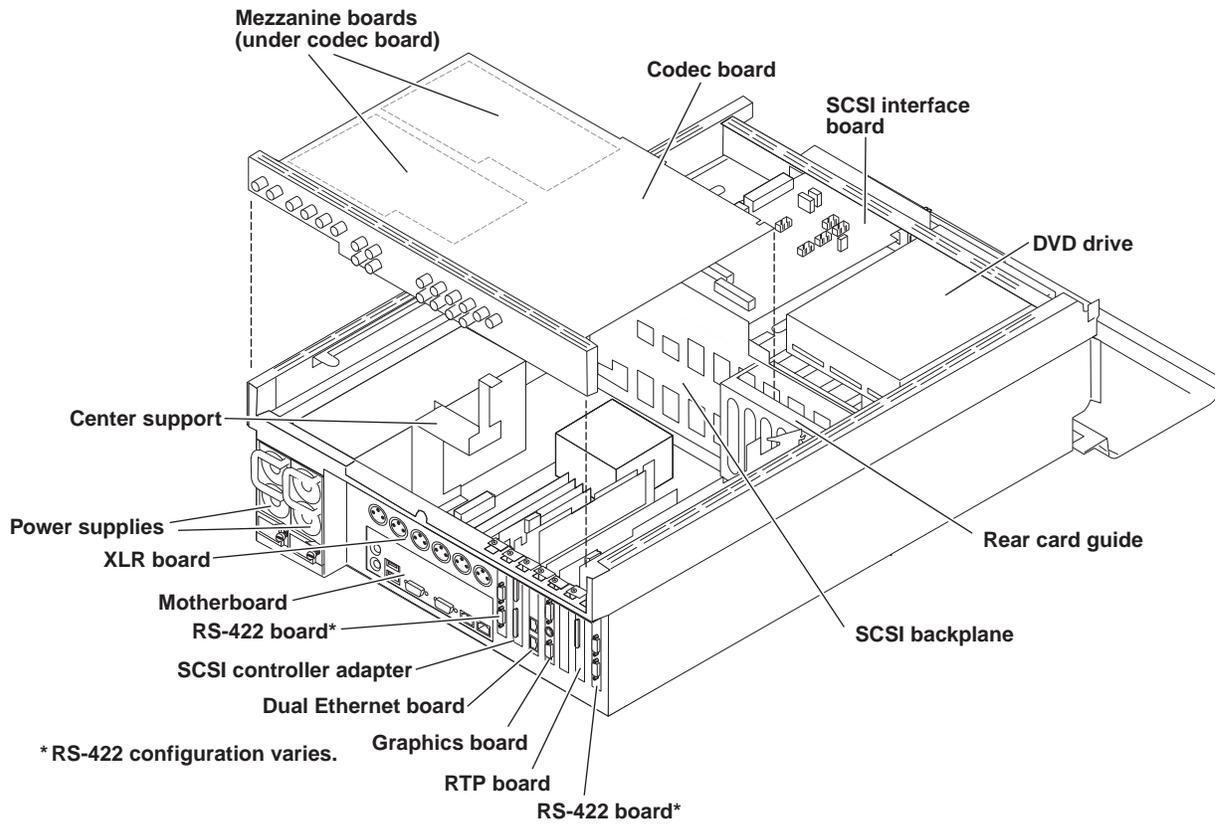
FRU functional descriptions

The Field Replaceable Units (FRUs) described in this section are as follows:

- "Base chassis"
- "Fan module"
- "RAID drives"
- "Power supplies"
- "Removable media drives"
- "Codec board"
- "Mezzanine boards"
- "RTP board"
- "XLR board"
- "RS-422 adapters"
- "Dual Ethernet adapter"
- "Graphics board"
- "SCSI controller adapter"
- "SCSI interface board"
- "SCSI backplane"
- "CPU motherboard"

For procedures, refer to Chapter 5, *Removing and replacing FRUs*.

Base chassis

For some serious system faults or for mechanical damage, the entire K2 Media Client can be replaced as a base chassis FRU. Refer to "Replacing a K2 Media Client" on page 80.

Fan module

The fan module has three fans and provides cooling for the K2 Media Client chassis. Air intake is from the front of the K2 Media Client and outflow is through the rear. The fan module is accessed behind the front bezel.

Refer to "Fan module removal" on page 105 for procedures.

RAID drives

There are 12 slots for RAID drives in the K2 Media Client. They are located behind the fan module in the front of the unit. Internal storage models have two RAID drives for system data and five or ten RAID drives for media storage. External storage units have only the two RAID drives for system data.

The two RAID 1 drives for system data form one LUN and the RAID drives for media storage are configured as RAID 1 or RAID 0. Each LUN appears to the operating system as a single disk.

In internal storage models, media data is written or "striped" across the media disks in a continuous fashion, which makes the disks a "stripe group". This media stripe group appears as the V: drive to the Windows operating system.

The system disk has a C: partition for application and operating system files, a D: partition for the media file system, database, and configuration information, and an E: partition for recovery images.

When configured as RAID 1, you can remove and replace a RAID drive while the K2 Media Client is operational. Refer to "RAID disk removal" on page 107 for procedures.

Power supplies

The K2 Media Client has redundant (two) power supplies. The power supplies can be accessed from the rear of the unit. You can remove and replace a power supply while the K2 Media Client is operational. Each power supply has a fan with automatic speed control and status LEDs that indicate current state and health. Refer to "Power supply problems" on page 91 for LED descriptions. The power supply has protection for over voltage, over current, and short circuits.

Refer to "Power supply removal" on page 107 for procedures.

Removable media drives

The K2 Media Client uses a standard removable media drive similar to those found in desktop PCs. The drive is accessed behind the front bezel. The drive uses standard Windows drivers for easy plug-and-play installation. K2 Media Client options for the removable media drive is as follows:

• One standard CD drive.

Refer to "Removable media drive removal" on page 111 for procedures.

Codec board

The codec board is oriented horizontally across the rear of the K2 Media Client chassis. It provides the majority of the K2 Media Client's media-related input and output connectors on the rear panel. This board hosts the circuits responsible for encoding/decoding video and processing audio and timecode. It is connected to the motherboard via the RTP board.

The SDA-00 model, the SD-00 model, and the HD-00 model each use a different codec board. The codec board in the HD-00 model can also host the mezzanine boards, as described below.

Refer to "Codec board removal" on page 112 for procedures.

Mezzanine boards

There are two types of mezzanine boards: an encoder mezzanine board and a decoder mezzanine board. The codec board in the HD-00 K2 Media Client can host one or two mezzanine boards of either type, so the number and type of mezzanine boards on the codec board determines the fixed channel configuration of the HD-00 K2 Media Client model. The encoder mezzanine board provides one record channel, while the decoder mezzanine board provides one play channel.

Refer to for procedures.

RTP board

This Real Time Processor (RTP) board provides a dedicated real time 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.

Refer to for procedures.

XLR board

The XLR Board provides XLR connectors at the K2 Media Client rear panel. It is primarily an extension of the codec board to allow the space and orientation required for XLR connections. On the SDA-00 model, the XLR connections are used for analog audio and LTC. On other models, the XLR connections are only used for LTC. The XLR board is connected via cable to the codec board.

Refer to for procedures.

RS-422 adapters

RS-422 configuration varies, as follows:

- A K2 Media Client with a Type III motherboard has RS-422 adapters in rear panel slots 1 and 7. A K2 Media Client with a Type I motherboard has RS-422 adapters in rear panel slots 3 and 7. Each adapter is connected via an internal USB cable to the motherboard, so while a RS-422 adapter does occupy a rear panel slot, it does not plug into a PCI bus. Each adapter provides two RS-422 ports for connecting equipment for remote control of the K2 Media Client.

- A K2 Media Client with a Type II motherboard has one RS-422 adapter. The adapter is connected via PCI slot to the motherboard. The adapter includes an external interface with eight ports. On the external interface, ports 1–4 are active. This provides the four ports for connecting equipment for remote control of the K2 Media Client.

Refer to for procedures.

Dual Ethernet adapter

The dual Ethernet adapter provides two Gigabit Ethernet ports. The dual Ethernet adapter plugs into one of the standard PCI slots on the motherboard. On some models the dual Ethernet adapter is optional.

Refer to for procedures.

Graphics board

This board provides enhanced performance for screen graphics and a connection for a VGA monitor. The graphics board plugs into one of the standard PCI slots on the motherboard.

Refer to "Graphics board removal" on page 121 for procedures.

SCSI controller adapter

This board provides the SCSI controller functionality for the internal RAID disks. On internal storage models, both system and media data require this RAID controller functionality, as both are stored on the internal RAID disks. On external storage models, only the system data requires RAID controller functionality, as the media is stored on the K2 Storage System or on direct-connect RAID storage. The SCSI controller adapter plugs into one of the standard PCI slots on the motherboard.

Refer to "SCSI controller adapter removal" on page 123 for procedures.

SCSI interface board

This board provides the SCSI interface for the RAID drives. It monitors and reports the status of the RAID drives, the chassis fans, and the power supplies. It also controls the individual RAID status LEDs and the front panel Power and Service LEDs. It is mounted horizontally in the front of the unit, above the RAID drives. It provides a front panel USB connection.

Refer to "SCSI interface board removal" on page 110 for procedures.

SCSI backplane

This board provides the connection for each RAID drive. It is mounted in the center of the unit.

Refer to "SCSI backplane removal" on page 117 for procedures.

CPU motherboard

The K2 Media Client uses an extended ATX motherboard with an Intel Xeon processor. The motherboard provides PCI board slots, built in Gigabit Ethernet, and USB ports. The Type I motherboard provides USB 1.1 ports. The Type II and Type III motherboard provides USB 2.0 ports. It is located in the bottom rear of the K2 Media Client chassis.

Refer to "CPU motherboard replacement" on page 126 for procedures.

Status indicators

The following sections describe the visual and audible indicators that communicate the current operating status and system health of the K2 Media Client.

Front panel indicators

You can see the front panel LEDs while the front bezel is closed or open.
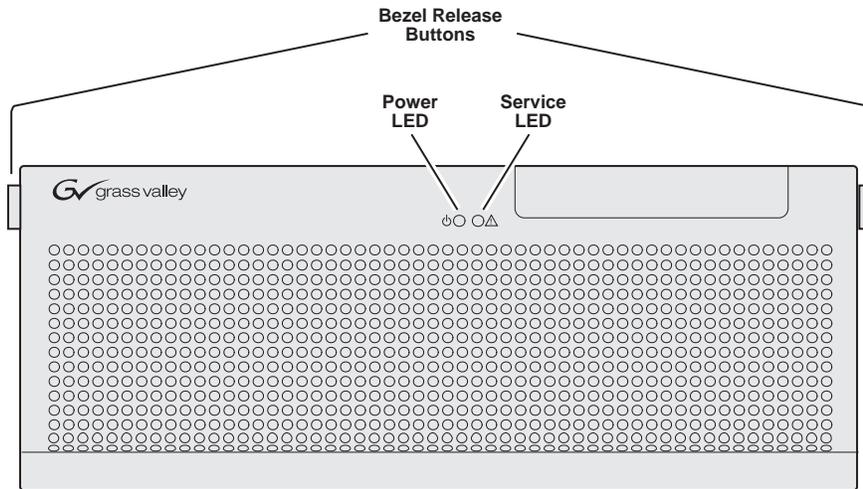
Power LED

This LED indicates status as follows:

Off: The standby switch is set to Off and the K2 Media Client is not operational.

⚠   *WARNING: The power standby switch does not turn off power to the system. To turn power off the system must be disconnected from the power source.*

Steady on (green): The standby switch is set to On and the K2 Media Client is either in the startup process or has competed the startup process and is operational.

Service LED

The following table explains the status conditions indicated by the different Service LED behaviors. If two or more status conditions occur simultaneously, the LED displays the behavior for the highest priority condition.

LED behavior	Status Condition	Priority
Flashing pattern alternating Yellow/Green/Red/Off twice a second	Identify — The K2 Media Client is being directed to identify itself by NetCentral or some other application.	1

LED behavior	Status Condition	Priority
Solid Red	Global failure — The K2 Media Client system software has detected a critical error or failure that impacts record/play operations.	2
Solid Yellow	Warning — The K2 Media Client system software has detected a problem that requires attention but does not immediately impact record/play operations. For example, a fan or power supply has failed but its redundant partner is maintaining functionality.	3
Flashing Yellow pattern three time a second.	Drive failure — An internal RAID drive has failed. If RAID 1, the failure does not immediately impact record/play operations. The redundant partner RAID drive is maintaining functionality.	4
Flashing pattern alternating Yellow/Green once a second.	Drive rebuild — If RAID 1, an internal RAID drive is rebuilding.	5
Off	Normal — The K2 Media Client is healthy and operating normally.	5

RAID drive indicators

Each RAID drive has LEDs that indicate status. You must remove the fan module to see these LEDs. The following table explains the status conditions indicated by the different LED behaviors. If two or more status conditions occur simultaneously, the LED displays the behavior for the highest priority condition.

LED behavior	Status Condition	Priority
Flashing pattern alternating Yellow/Green/Red/Off twice a second	Identify — The RAID drive is being directed to identify itself by Storage Utility or some other application.	1
Both Red and Green LED off	Drive is not fully engaged in slot.	2
Red LED is ON solid. Green LED is off.	Fault — The SCSI controller has marked the drive as faulty.	3
Flashing pattern alternating Yellow/Green once a second	Rebuild — The SCSI controller has marked the drive as rebuilding.	4
Red LED is off. Green LED displays pulsing patterns.	Normal drive activity — The RAID drive is healthy and disk access is underway. (Both LEDs are off when there is no disk activity.)	5

Rear panel indicators

The following indicators are visible from the rear panel view.

Motherboard LAN connector indicator codes

The motherboard has two RJ-45 LAN connectors that include integrated status LEDs. The LEDs are oriented as follows:
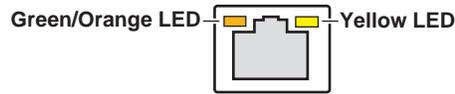
The meanings of the LED states are described in the following table:

LED	LED state	Condition
Green/Orange	Green On	100 MHz.
	Orange On	1 GHz
Yellow	Off	LAN link is not established
	On (steady state)	LAN link is established
	On (brighter and pulsing)	The computer is communicating with another computer on the LAN.

If a LAN connector is faulty, you must replace the motherboard.

Dual Ethernet adapter LAN connector indicator codes

The dual Ethernet adapter has two RJ-45 LAN connectors that include integrated status LEDs. The LEDs are oriented as follows:
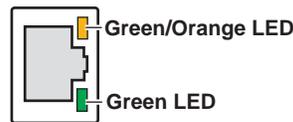
The meanings of the LED states are described in the following table:

LED	LED state	Condition
Green/Orange	Green On	100 MHz.
	Orange On	1 GHz
Green	Off	LAN link is not established
	On (steady state)	LAN link is established
	On (brighter and pulsing)	The computer is communicating with another computer on the LAN.

If a LAN connector is faulty, you must replace the dual Ethernet adapter.

Power supply indicators

Each power supply has a LED that indicates status.

Status LEDs
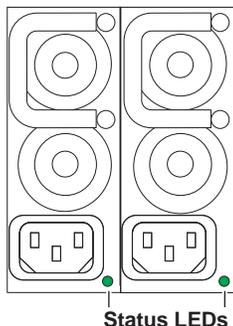
Interpret the power supply LED as follows:

LED behavior	Power supply condition
Green ON	Normal operation
OFF	Power supply is defective or not fully connected.

The Service LED on the front of the K2 Media Client also indicates power supply status. Refer to "Service LED" on page 28.

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 107.

System beep codes

If there are no errors present the K2 Media Client does not emit any audible beeps during startup process or otherwise. When a recoverable type of error occurs during Power On Self Test (POST), the motherboard BIOS will display a POST code that describes the problem. Refer to "BIOS POST messages" on page 34. The BIOS may also issue one of the following beep codes:

Error Beep Code	Description
One long and two short beeps	Video configuration error
One continuous long beep	No memory detected

These beep codes indicate a problem with the motherboard.

Chapter **2**

System Messages

Topics in this section include the following:

About system messages

The following messages are displayed to indicate K2 Media Client status:

• Normal BIOS messages — During normal startup processes these messages can be observed on a locally connected VGA monitor. Refer to "Motherboard BIOS startup information" on page 85, "SCSI controller adapter BIOS startup information" on page 86, and "Motherboard BIOS startup summary screen" on page 87.

• BIOS POST error messages — If there is a problem these messages are displayed on a locally connected VGA monitor startup processes. Refer to "BIOS POST messages" on page 34.

• K2 Media Client startup messages — As AppCenter opens the K2 Media Client determines if system health is adequate by checking critical subsystems. A dialog box is displayed that indicates progress and displays messages. Refer to "Critical system startup messages" on page 38.

• Status bar and StatusPane messages — During normal operation AppCenter displays system status messages on the status bar. From the status bar you can open the StatusPane to see both current and previous messages. You can observe these messages in AppCenter on a locally connected VGA monitor or on a network connected control point PC. Refer to "Viewing AppCenter system status messages" on page 38.

• Storage Utility messages — While you are using Storage Utility, pop-up message boxes inform you of the current status of the storage system.

• NetCentral messages — If you are monitoring the K2 Media Client with NetCentral, the NetCentral interface displays a variety of messages and other status indicators. Refer to the NetCentral Help menu for a complete list of all the messages that a monitored device can send.

BIOS POST messages

During the Power On Self Test (POST), the motherboard BIOS checks for problems. If a problem is found, the BIOS activates an alarm or displays a message. For startup troubleshooting refer to "Step 4: Identify problems using the startup sequence" on page 82.

The following is a list of BIOS POST messages.

BIOS Message	Description
Failure Fixed Disk	Fixed disk is not working or not configured properly. Check to see if fixed disk is attached properly. Run Setup. Find out if the fixed-disk type is correctly identified.
Stuck key	Stuck key on keyboard.
Keyboard error	Keyboard not working.

BIOS Message	Description
Keyboard Controller Failed	Keyboard controller failed test. May require replacing keyboard controller.
Keyboard locked - Unlock key switch	Unlock the system to proceed.
Monitor type does not match CMOS - Run SETUP	Monitor type not correctly identified in Setup
Shadow Ram Failed at offset: nnnn	Shadow RAM failed at offset nnnn of the 64k block at which the error was detected.
System RAM Failed at offset: nnnn	System RAM failed at offset nnnn of in the 64k block at which the error was detected.
Extended RAM Failed at offset: nnnn	Extended memory not working or not configured properly at offset nnnn.
System battery is dead - Replace and run SETUP	The CMOS clock battery indicator shows the battery is dead. Replace the battery and run Setup to reconfigure the system.
System CMOS checksum bad - Default configuration used	System CMOS has been corrupted or modified incorrectly, perhaps by an application program that changes data stored in CMOS. The BIOS installed Default Setup Values. If you do not want these values, enter Setup and enter your own values. If the error persists, check the system battery or contact your dealer.
System timer error	The timer test failed. Requires repair of system board.
Real time clock error	Real-Time Clock fails BIOS hardware test. May require board repair.
Check date and time settings	BIOS found date or time out of range and reset the Real-Time Clock. May require setting legal date (1991-2099).
Previous boot incomplete - Default configuration used	Previous POST did not complete successfully. POST loads default values and offers to run Setup. If the failure was caused by incorrect values and they are not corrected, the next boot will likely fail. On systems with control of wait states, improper Setup settings can also terminate POST and cause this error on the next boot. Run Setup and verify that the waitstate configuration is correct. This error is cleared the next time the system is booted.
Memory Size found by POST differed from CMOS	Memory size found by POST differed from CMOS.
Diskette drive A error	Drive A: or B: is present but fails the BIOS POST diskette tests. Check to see that the drive is defined with the proper diskette type in Setup and that the diskette drive is attached correctly.
Diskette drive B error	
Incorrect Drive A type - run SETUP	Type of floppy drive A: not correctly identified in Setup.
Incorrect Drive B type - run SETUP	Type of floppy drive B: not correctly identified in Setup.

BIOS Message	Description
System cache error - Cache disabled	RAM cache failed and BIOS disabled the cache. On older boards, check the cache jumpers. You may have to replace the cache. See your dealer. A disabled cache slows system performance considerably.
CPU ID:	CPU socket number for Multi-Processor error.
EISA CMOS not writeable	ServerBIOS2 test error: Cannot write to EISA CMOS.
DMA Test Failed	ServerBIOS2 test error: Cannot write to extended DMA (Direct Memory Access) registers.
Software NMI Failed	ServerBIOS2 test error: Cannot generate software NMI (Non-Maskable Interrupt).
Fail-Safe Timer NMI Failed	ServerBIOS2 test error: Fail-Safe Timer takes too long.
device Address Conflict	Address conflict for specified device.
Allocation Error for: device	Run ISA or EISA Configuration Utility to resolve resource conflict for the specified device.
CD ROM Drive	CD ROM Drive identified.
Entering SETUP…	Starting Setup program
Failing Bits: nnnn	The hex number nnnn is a map of the bits at the RAM address which failed the memory test. Each 1 (one) in the map indicates a failed bit. See errors 230, 231, or 232 above for offset address of the failure in System, Extended, or Shadow memory.
Fixed Disk n	Fixed disk n (0-3) identified.
Invalid System Configuration Data	Problem with NVRAM (CMOS) data.
I/O device IRQ conflict	I/O device IRQ conflict error.
PS/2 Mouse Boot Summary Screen:	PS/2 Mouse installed.
nnnn kB Extended RAM Passed	Where nnnn is the amount of RAM in kilobytes successfully tested.
nnnn Cache SRAM Passed	Where nnnn is the amount of system cache in kilobytes successfully tested.
nnnn kB Shadow RAM Passed	Where nnnn is the amount of shadow RAM in kilobytes successfully tested.
nnnn kB System RAM Passed	Where nnnn is the amount of system RAM in kilobytes successfully tested.
One or more I2O Block Storage Devices were excluded from the Setup Boot Menu	There was not enough room in the IPL table to display all installed I2O blockstorage devices.
Operating system not found	Operating system cannot be located on either drive A: or drive C:. Enter Setup and see if fixed disk and drive A: are properly identified.

BIOS Message	Description
Parity Check 1 nnnn	Parity error found in the system bus. BIOS attempts to locate the address and display it on the screen. If it cannot locate the address, it displays ????. Parity is a method for checking errors in binary data. A parity error indicates that some data has been corrupted.
Parity Check 2 nnnn	Parity error found in the I/O bus. BIOS attempts to locate the address and display it on the screen. If it cannot locate the address, it displays ????.
Press <F1> to resume, <F2> to Setup, <F3> for previous	Displayed after any recoverable error message. Press <F1> to start the boot process or <F2> to enter Setup and change the settings. Press <F3> to display the previous screen (usually an initialization error of an Option ROM, i.e., an add-on card). Write down and follow the information shown on the screen.
Press <F2> to enter Setup	Optional message displayed during POST. Can be turned off in Setup.
PS/2 Mouse:	PS/2 mouse identified.
Run the I2O Configuration Utility	One or more unclaimed block storage devices have the Configuration Request bit set in the LCT. Run an I2O Configuration Utility (e.g. the SAC utility).
System BIOS shadowed	System BIOS copied to shadow RAM.
UMB upper limit segment address: nnnn	Displays the address nnnn of the upper limit of Upper Memory Blocks, indicating released segments of the BIOS which can be reclaimed by a virtual memory manager.
Video BIOS shadowed	Video BIOS successfully copied to shadow RAM.

Critical system startup messages

The following messages appear in the AppCenter system startup message box as critical subsystems are checked during K2 Media Client startup processes. If one of these critical subsystems fails, the K2 Media Client is rendered inoperable and the failure message appears.

Critical subsystem check messages	Failure messages
System Startup	Startup error
	Missing or bad hardware
	The real time processor is not functioning correctly
Checking hardware…	Hardware fault
Checking media disks…	One or more media disks failed to initialize
	Missing or bad hardware
	Missing or bad SQL database
Checking file system…	No file system is running
Checking database…	Database fault
Checking real-time system status…	The real-time system failed to initialize
Updating configuration…	Failed to synchronize configurations
Starting services…	Unable to communicate with <service name>

Viewing AppCenter system status messages

System status messages are displayed in the AppCenter status bar. There are two type of system status messages, as follows:

• Channel status messages — In normal operation, this type of message displays the current operating status of the selected channel.

• System error messages — If a problem develops with the system software or a hardware subsystem, this type of message is displayed for approximately 5 seconds. Afterward, the display returns to the channel status message and the error message is written to the status log file. When a message is written to the status log, a *Status Icon* indicates the severity of the message.

Viewing system status messages

System status messages appear in the AppCenter status bar, which is located across the bottom of the AppCenter window, and consists of a message area, several tool buttons, and a status icon. The button icons appear only when the related function is active. In the position of the StatusPane button, status icons appear.
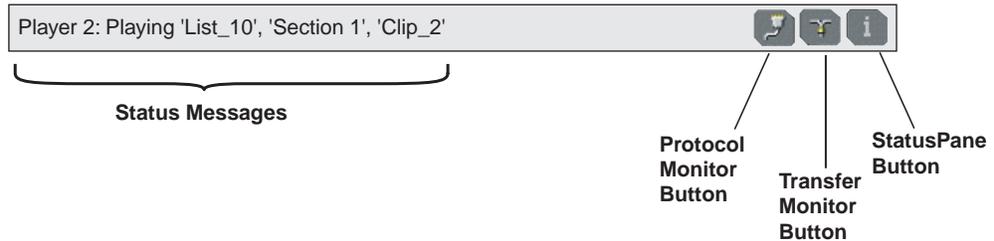
The status icon changes depending on the status of the current status message.

Icon	Name	Description
	Information	A recent information message is present.
	Warning	There is at least one warning message, and no alert messages.
	Alert	There is at least one uncleared alert message.

Current and previous system status messages can be viewed in the StatusPane. To open the StatusPane, click **Help | System Status**.

Status icon   Date   Time   The machine that   The subsystem that
**   reports this message   reports this message**
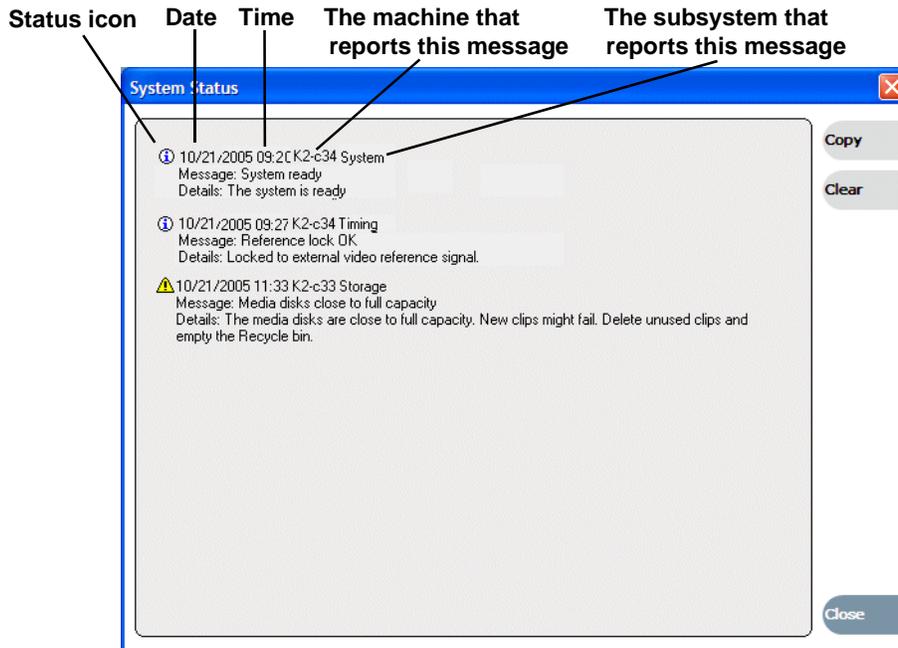
The StatusPane is used to view detailed system messages including status, warning, and error messages. System status messages provide status icons and a description of the status event reported by the message. If there is a problem, a corrective action is indicated. Use these messages along with Chapter 4, *Troubleshooting problems* to determine if a service procedure is necessary.

If you have a remote AppCenter Channel Suite with channels from multiple K2 Media Clients, the messages from the different machines are combined in the StatusPane that you view from the Channel Suite. To help you determine which machine is generating a message, each message lists the machine name.

Copying StatusPane messages to the clip board

1. Select the message or messages in the StatusPane.

2. Click **Copy**.

   After copying the message, it can be pasted using standard Windows techniques.

Clearing messages

Clearing messages from the StatusPane removes them from the logging database and the StatusPane. This also clears the state of the subsystem indicators so they no longer display the alert and warning symbols.

1. Open the StatusPane, then click **Clear**.

2. When a message prompts you to confirm, click **Yes**.

   All messages are removed from the StatusPane and logging database.

Chapter **3**

Service Procedures

Topics in this section include the following:

Exporting log files

The procedures in this section describe how to export log files from the K2 Media Client. The log files can include the following:

- All applications messages

- The Windows Event Log

- Logs from the media database.

- Dr. Watson messages.

The exported log files are combined in a ZIP file. The ZIP file can be sent to Grass Valley product support where they can analyze the logs to determine the operational status of your K2 Media Client.

NOTE: ExportLog does not export StatusPane messages. To capture StatusPane messages, refer to the "Copying StatusPane messages to the clip board" on page 40.

Use one of the following procedures to export the logs.

Exporting log files from AppCenter workstation

1. In AppCenter workstation click **System | Export Log**. The Export Log dialog box opens.

2. Click the **Logs** tab.
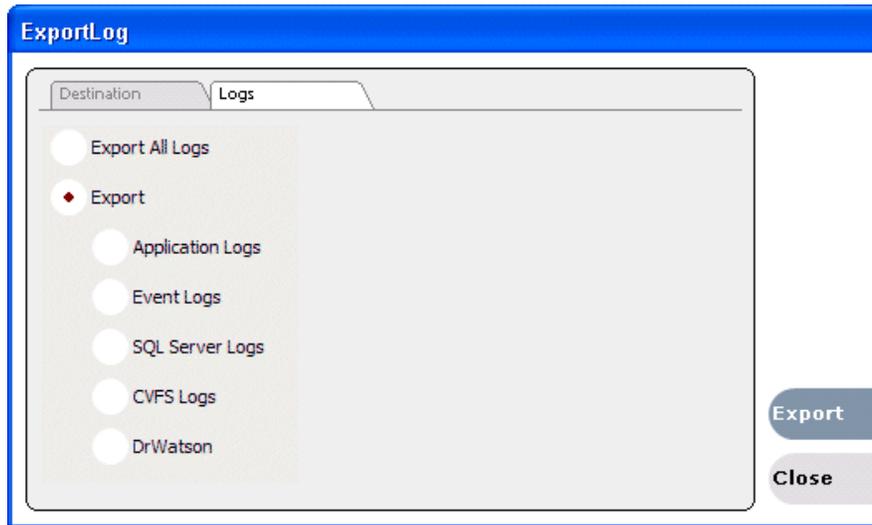
3. Select the logs to export.

4. Click the **Destination** tab.
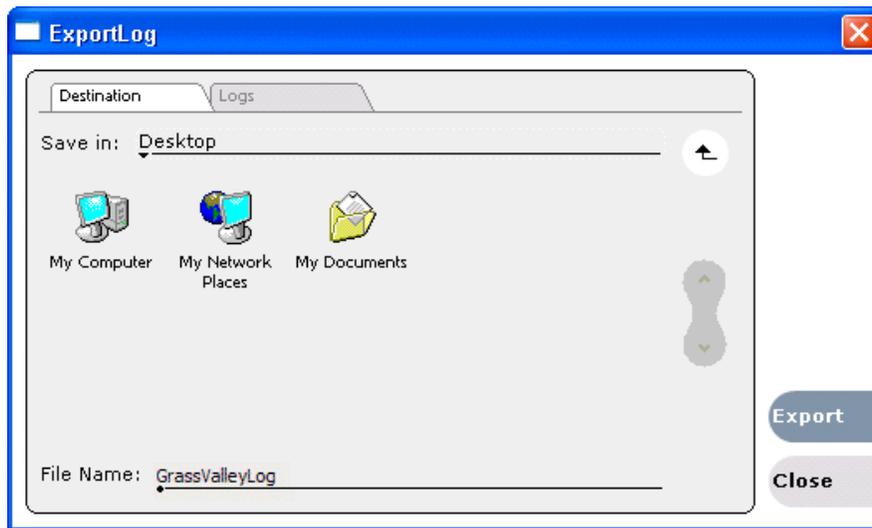
5. Browse to a location for saving the log file.

6. Name the log file.

7. Click **Export**. A progress bar appears.

8. When the export process is complete, and message confirms success. Click **OK** and close the Export Log dialog box to continue.

9. Find the log file at the specified location.

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 K2 client system.

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. Continue with the procedure , starting with step 2.

Replacing a RAID 0 drive

If configured as RAID 0 (media drives only), when one drive fails, all media is lost. To replace a RAID 0 drive, do the following:

1. Unbind the LUN that has the failed drive. Do not unbind the system drive RAID 1 LUN.

2. Remove the failed drive from the K2 Media Client chassis.

3. Insert the replacement drive in the K2 Media Client chassis.

4. Restart the K2 Media Client.

5. Using Storage Utility on the K2 Media Client, bind disks as RAID 0.

6. Restart the K2 Media Client.

7. Using Storage Utility on the K2 Media Client, make a new file system.

8. Restart the K2 Media Client.

Always use the Storage Utility to physically identify the failed drive. Accidently removing the wrong drive can destroy data. To identify a drive, in Storage Utility right-click the drive and select **Identify**. This causes the disk lights to flash.

Refer to the *K2 Media Client System Guide* for Storage Utility procedures.

Refer to for the mechanical procedure for removing and inserting a drive.

Replacing a RAID 1 drive

If configured as RAID 1, you'll repair the system by replacing the drive as soon as possible. The two RAID drives that make the system drive are always RAID 1. You can replace a single RAID 1 drive (either system or media) while continuing media operations.

Always use the Storage Utility to physically identify the failed drive. Accidently removing the wrong drive can destroy data. To identify a drive, in Storage Utility right-click the drive and select **Identify**. This causes the disk lights to flash. Refer to the *K2 Media Client System Guide* for Storage Utility procedures.

Before removing the disk module, you should use Storage Utility to disable the disk.

Refer to "RAID disk removal" on page 107 for the mechanical procedure for removing and inserting a drive.

On inserting a RAID 1 replacement drive, if disk access (record/play operations) is underway, the RAID controller automatically starts rebuilding the drive. You can verify rebuild status by looking at the drive LED or by looking at the Service LED. Refer to "Front panel indicators" on page 28. If there is no media access currently underway, you can use Storage Utility to force-start the rebuild process.

You can also check disk status in the Storage Utility by selecting the disk module icon in the device tree. Status is reported in the right-hand pane. On completion, the disk drive status changes from Rebuilding to Online. You may need to refresh the Storage Utility display. You can also open the Progress dialog box, by clicking **View | Progress Report**.

Restoring network configuration

When you receive an internal storage K2 Media Client from the factory, the four Gigabit Ethernet ports are DHCP enabled and there is a loopback adapter installed. There is no teaming on an internal storage K2 Media Client.

When you receive a direct-connect storage K2 Media Client from the factory, the two Gigabit Ethernet ports are DHCP enabled and there is a loopback adapter installed. There is no teaming on a direct-connect storage K2 Media Client.

On stand-alone storage (either internal or direct-connect storage) K2 Media Clients, do the following to restore the network configuration:

• Use standard Windows procedures to reset the ports to DHCP enabled.

• "Install the loop-back adapter"

• "Identify adapters"

• "Set Rx/Tx Descriptors Value"

• "Reorder adapters"

When you receive an shared storage K2 Media Client from the factory, it has specialized network configuration, including a loopback adapter and two of the four Gigabit Ethernet ports configured as a teamed pair.

On shared storage K2 Media Clients, do the following to restore the network configuration:

• "Install the loop-back adapter"

• "Identify adapters"

• "Set Rx/Tx Descriptors Value"

• "Create the Control Team"

- "Name team"

- "Reorder adapters"

Install the loop-back adapter

When you receive a K2 Media Client from the factory, it has a loop-back adapter installed. This is true for all storage types. Use the following procedure to restore the loop-back adapter:

1. In the Windows Control Panel, open **Add Hardware** and then click **Next**.

2. Click **Yes, I have already connected the hardware**, and then click **Next**.

3. At the bottom of the list, click **Add a new hardware device**, and then click **Next**.

4. Click **Install the hardware that I manually select from a list**, and then click **Next**.

5. Click **Network adapters**, and then click **Next**.

6. In the Manufacturer box, click **Microsoft**.

7. In the Network Adapter box, click **Microsoft Loopback Adapter**, and then click **Next**.

8. Click **Next**, then **Finish**.

9. In Control Panel, go to **Network Connections**.

10. Find the connection that reports itself in the Device Name column as the loopback adapter. Right-click on this icon and rename the connection to Loopback.

11. Right-click on the Loopback icon and select **Properties**.

12. Select **Internet Protocol (TCP/IP)** and click the **Properties** button.

13. Click **Use the following IP address** and set the address to 192.168.200.200 and set the subnet mask to 255.255.255.0.

NOTE: The Microsoft Loopback Adapter must have its IP address set to 192.168.200.200. If a different IP address is used the stand-alone storage K2 Media Client can not access its own media file system.

14. Click **OK** and **Close** to exit.

15. Return to **Network Connections** in Control Panel.

16. On the menu bar at the top of the window, select **Advanced**, then **Advanced Settings…**

17. On the **Adapters and Bindings** tab move the Loopback connection to the end of the LAN adapters in the list (leaving it above Remote Access connections).

18. Click **OK** to exit.

19. Continue with the next procedure "Identify adapters".

Identify adapters

1. Open Device Manager as follows:

   a. On the Windows desktop, right-click **K2 Media Client** (My Computer) and select

Manage. The Computer Management window opens.
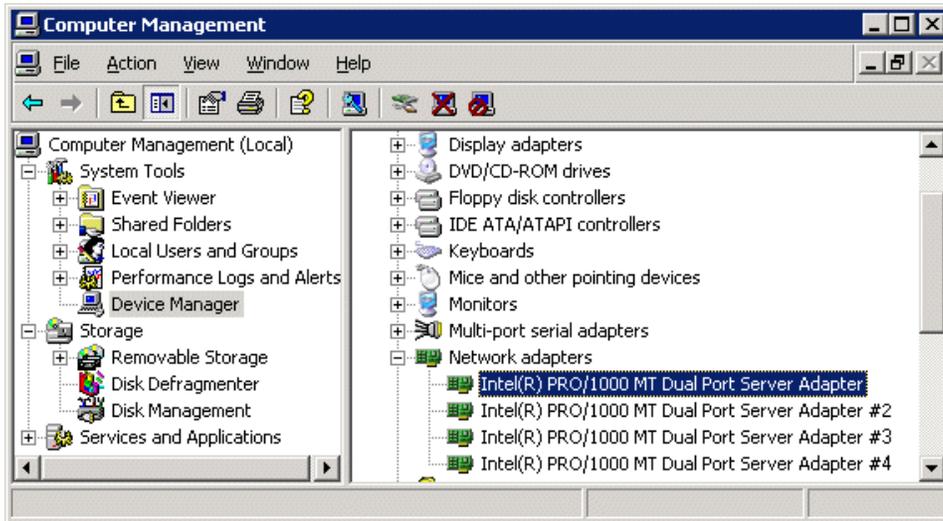
b. In the left pane select **Device Manager**. Device Manager opens in the right pane.

2. In Device Manager, verify that adapter names are the correct default names as follows:

a. Expand **Network Adapters**.

b. If a Type I motherboard, verify that there are four adapters listed, named as follows:

- Intel® PRO/1000 MT Dual Port Server Adapter

- Intel® PRO/1000 MT Dual Port Server Adapter #2

- Intel® PRO/1000 MT Dual Port Server Adapter #3

- Intel® PRO/1000 MT Dual Port Server Adapter #4

c. If a Type II or Type III motherboard, verify that there are four adapters listed, named as follows:

- Intel® PRO/1000 EB Network Connection with I/O Acceleration

- Intel® PRO/1000 EB Network Connection with I/O Acceleration #2

- Intel® PRO/1000 MT Dual Port Server Adapter

- Intel® PRO/1000 MT Dual Port Server Adapter #2

Sometimes adapter names change due to PNP device removal and recreation. If you are having this problem, remove all network devices, then reboot and let Windows PNP enumerate network adapters. The default network names should reappear numbered correctly. If the numbering is still incorrect, shut down the K2 Media Client, remove the dual Ethernet card, then start up the K2 Media Client. This forces the system to scan the motherboard ports first and enumerate properly. Then shutdown the K2 Media Client, replace the dual Ethernet card, and start up the K2 Media Client. This time the dual Ethernet card is scanned

and enumerated after the motherboard ports.

External storage K2 Media Clients with the optional Fibre Channel card installed have only two adapters.

3. For each adapter name shown, verify that the adapter name is mapped correctly to a physical port, as follows:

   a. Under Network adapters, right-click an adapter and select **Properties**. The Properties dialog box opens.
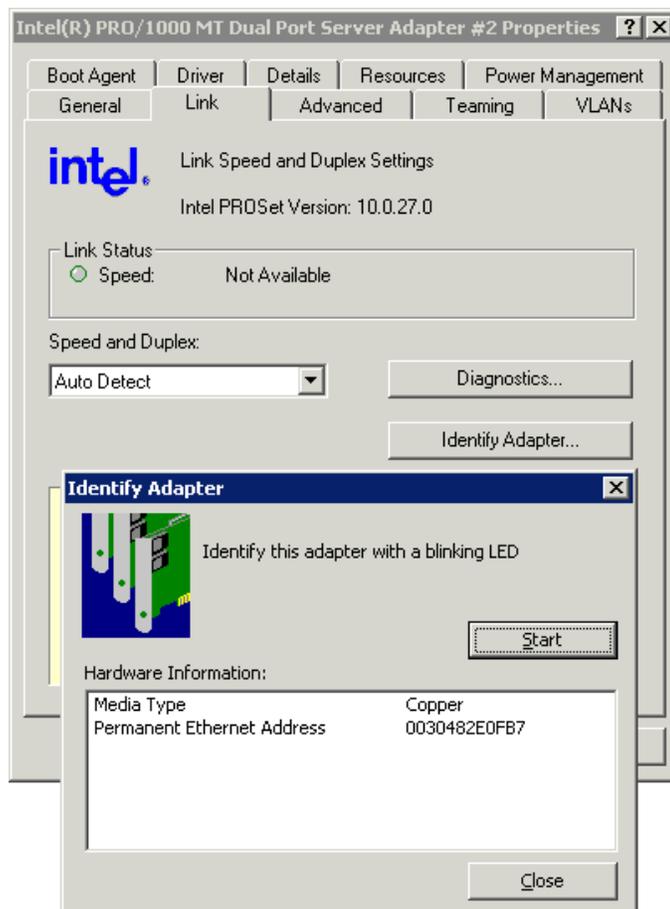
4. Select the **Link** tab and then click **Identify Adapter**. The Identify Adapter dialog box opens.

5. Click **Start**.

6. Verify that the LED is blinking next to the physical network port corresponding to that adapter software name, as follows:

Software adapter name Type I Motherboard	Software adapter name Type II and Type III Motherboard	Physical port (as viewed facing the rear panel)
…MT Dual Port Server Adapter	…EB Network Connection…	1st (left) port on the motherboard
…MT Dual Port Server Adapter #2	…EB Network Connection…#2	2nd (right) port on the mother board
…MT Dual Port Server Adapter #3	…MT Dual Port Server Adapter	1st (upper) port on the dual Ethernet adapter
…MT Dual Port Server Adapter #4	…MT Dual Port Server Adapter #2	2nd (lower) port on the dual Ethernet adapter

External storage K2 Media Clients with the optional Fibre Channel card installed do not have the dual Ethernet adapters.

7. Continue with the next procedure "Set Rx/Tx Descriptors Value".

Set Rx/Tx Descriptors Value

All K2 Media Clients, with all storage types, should be configured as instructed in the following procedure:

1. In Device Manager, highlight and right-click the **Intel® PRO/1000 MT Dual Port Server Adapter** (Type I MB) or the **Intel® PRO/1000 EB Network Connection with I/O Acceleration** (Type II and Type III MB).

2. Select **Properties**. The Properties dialog box opens.

3. Click **Advanced** tab.

4. In the Settings list, select **Performance Options**, then click the **Properties** button. The Performance Options dialog box opens.

5. In the Property list, select **Receive Descriptors**.

6. In the Values field, use the up/down arrows to set the value to **1024**. If 1024 is not available, select a different entry in the settings list, then select back to Receive Descriptors. This resets the values available in the Values field.

7. In the Settings list, select **Transmit Descriptors**.

8. In the Values field, set the value to **1024**.

9. Click **OK** to close dialog boxes and save settings.

10. Repeat this procedure on the remaining Ethernet adapters.

For stand-alone storage K2 Media Clients, continue with "Reorder adapters" on page 56.

For shared storage K2 Media Clients, continue with the next procedure "Create the Control Team".

Create the Control Team

Only shared storage K2 Media Clients are required to have a control team, as instructed in the following procedure. Refer to the *K2 Media Client System Guide* if you want to optionally team an internal storage K2 Media Client.

Teams are not supported on external storage stand-alone K2 Media Clients with direct-connect RAID storage.

On shared storage K2 Media Clients, the goal of teaming is to create a team for the control network. There is no team for the media (iSCSI) network. The teaming should be set up such that the first physical port on the motherboard and the first physical port on the dual Ethernet adapter are teamed for control.

Prior to K2 system software release 3.2.5x in the Fall of 2007, there was a bug in the teaming software for which the work around required creating a team named "DO NOT USE". With release 3.2.5x., drivers were updated and the bug was fixed. The fix is available on K2 Media Clients shipping after the release of 3.2.5x. Earlier K2 Media Clients retain the same drivers, even if the system software is updated, and so must use continue to use the "DO NOT USE" work around if teaming must be reconfigured. Use the procedure appropriate for your K2 Media Client.

Create the Control Team on systems shipping before 3.2.5x

Use this procedure if the K2 Media Client shipped from Grass Valley prior to release 3.2.5x in the Fall of 2007.

1. In Device Manager, right-click **…MT Dual Port Server Adapter** (Type I MB) or **…EB Network Connection…** (Type II and Type III MB) and select **Properties**. The Properties dialog box opens.

2. Select the **Teaming** tab.
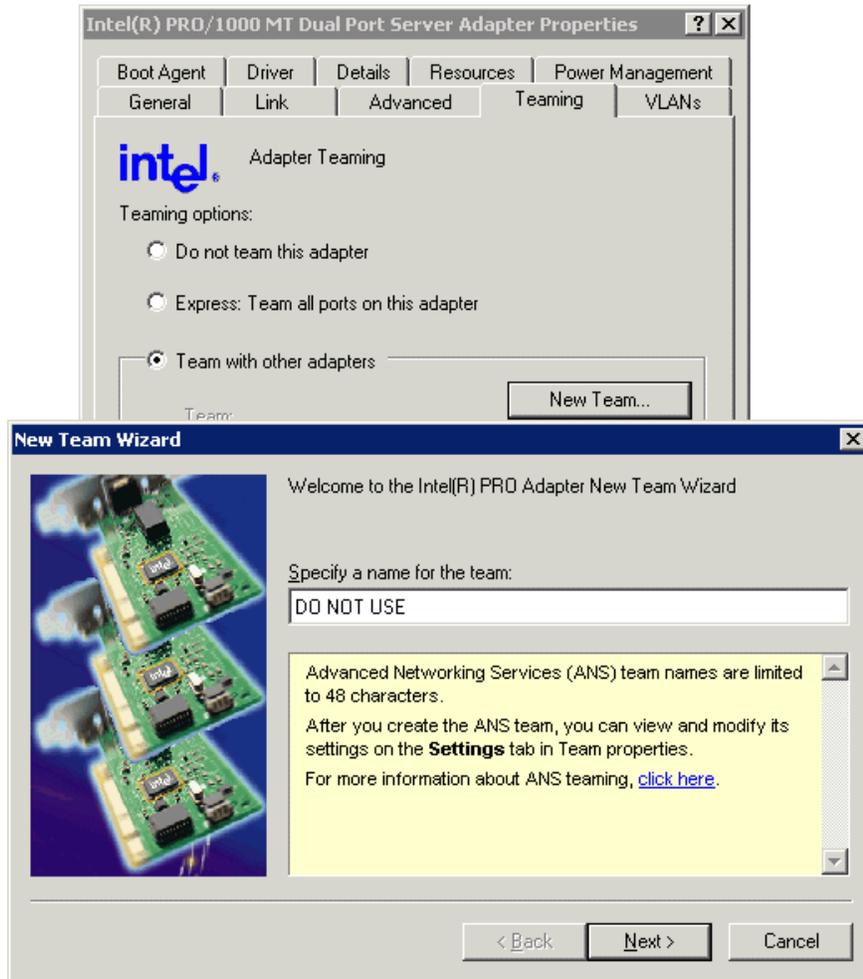
3. Select **Team with other adapters**, then click **New Team**. The New Team Wizard opens.

4. Enter `DO NOT USE`.

   You enter this name because there is a bug in the teaming software that creates a "phantom" entry with this name, however that entry is not usable. Continue with this procedure to work around the bug.

   Click **Next**.
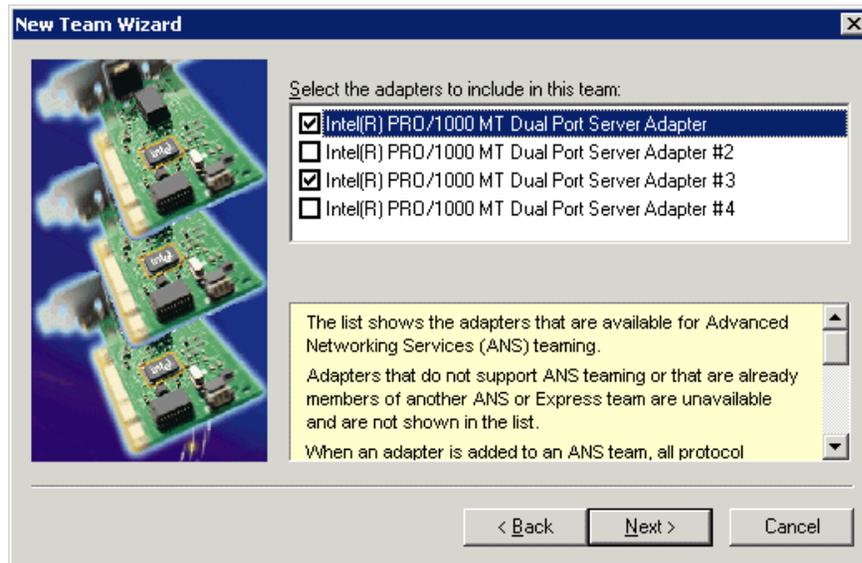
5. Select the check box for **…Adapter** and **…Adapter #3**. Click **Next**.
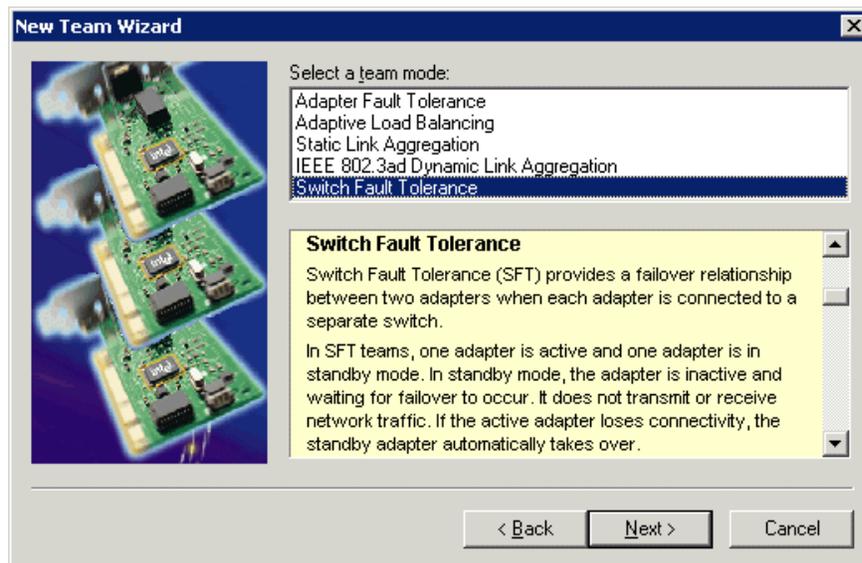
6. Select **Switch Fault Tolerance**. Click **Next**.

7. Click **Finish** and wait a few seconds for the adapters to be teamed.

8. Restart the K2 Media Client and log in with administrator privileges.

9. Open the Modify Team dialog box as follows:

   a. In Device Manager | Network Adapters, right-click **Intel® Advanced Network Services Virtual Adapters #2** (make sure it is the adapter identified as a **Virtual** adapter) and select **Properties**. The Properties dialog box opens.

b. Select the **Settings** tab.

c. Click **Modify Team**. A dialog box opens.

10. On the **Adapters** tab, do the following:

a. Select the top entry, which is **Intel® PRO/1000 MT Dual Port Server Adapter** (Type I MB) or **Intel® PRO/1000 EB Network Connection with I/O Acceleration** (Type II and Type III MB), and click **Set Primary**.

b. Select **Intel® PRO/1000 MT Dual Port Server Adapter #3** (Type I MB) or **Intel® PRO/1000 MT Dual Port Server Adapter** (Type II and Type III MB) and click **Set Secondary**.

11. Click **Name** tab and rename to *Control Team*.

12. Click **OK** and **OK** and to close dialog boxes.

13. Do not create a media team for the media (iSCSI) network. The two remaining connections remain as independent ports and are used as follows:

•   Media Connection #1, which is GigE port 2 on the K2 Media Client rear panel, is the connection for the media (iSCSI) network on a non-redundant K2 Storage System, or for the "A" media (iSCSI) network on a redundant K2 Storage System.

•   Media Connection #2, which is GigE port 4 on the K2 Media Client rear panel, is not used on a non-redundant K2 Storage System. It is the connection for the "B" media (iSCSI) network on a redundant K2 Storage System.

14. Restart the K2 Media Client.

Continue with the .

Create the Control Team on systems shipping after 3.2.5x

Use this procedure if the K2 Media Client shipped from Grass Valley after release 3.2.5x in the Fall of 2007.

1. In Device Manager, right-click **…MT Dual Port Server Adapter** (Type I MB) or **…EB Network Connection…** (Type II and Type III MB) and select **Properties**. The Properties dialog box opens.

2. Select the **Teaming** tab.

3. Select **Team with other adapters**, then click **New Team**. The New Team Wizard opens.

4. Enter Control Team.

   Click **Next**.
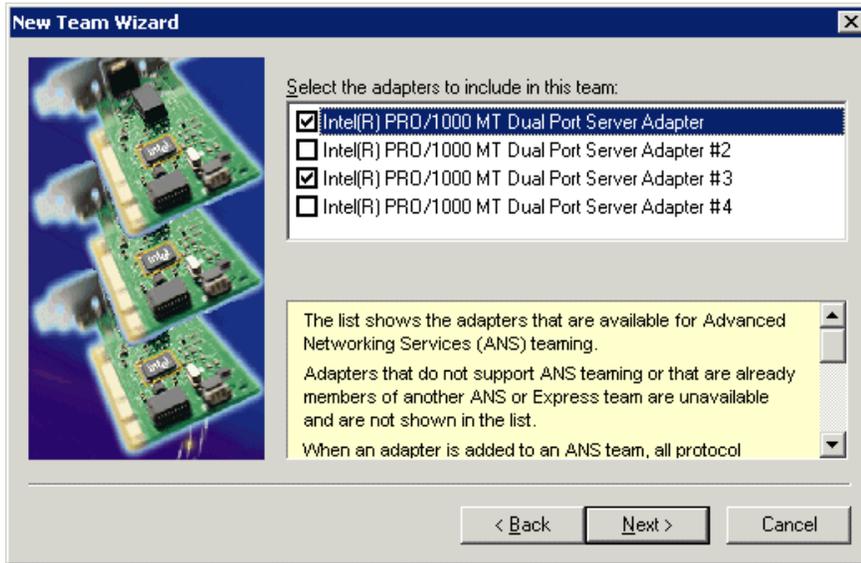
5. Select the check box for **…Adapter** and **…Adapter #3**. Click **Next**.
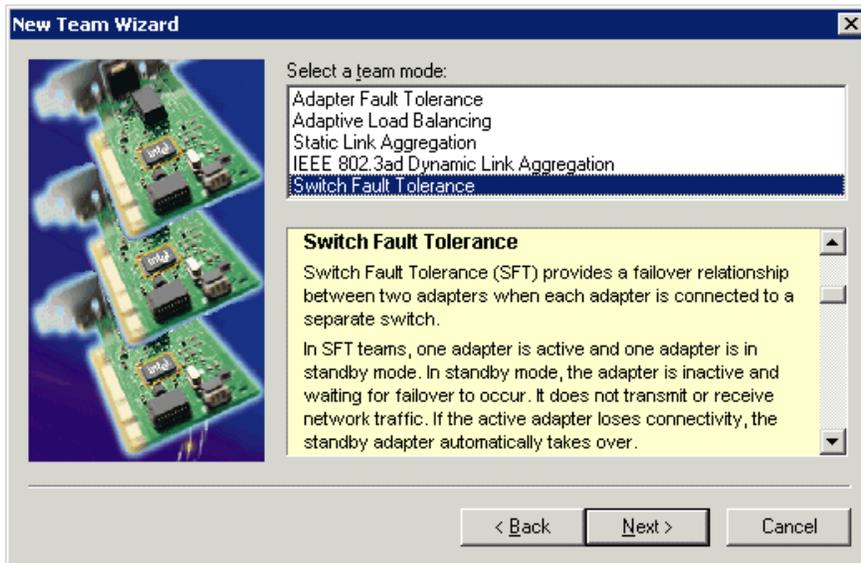
6. Select **Switch Fault Tolerance**. Click **Next**.

7. Click **Finish** and wait a few seconds for the adapters to be teamed.
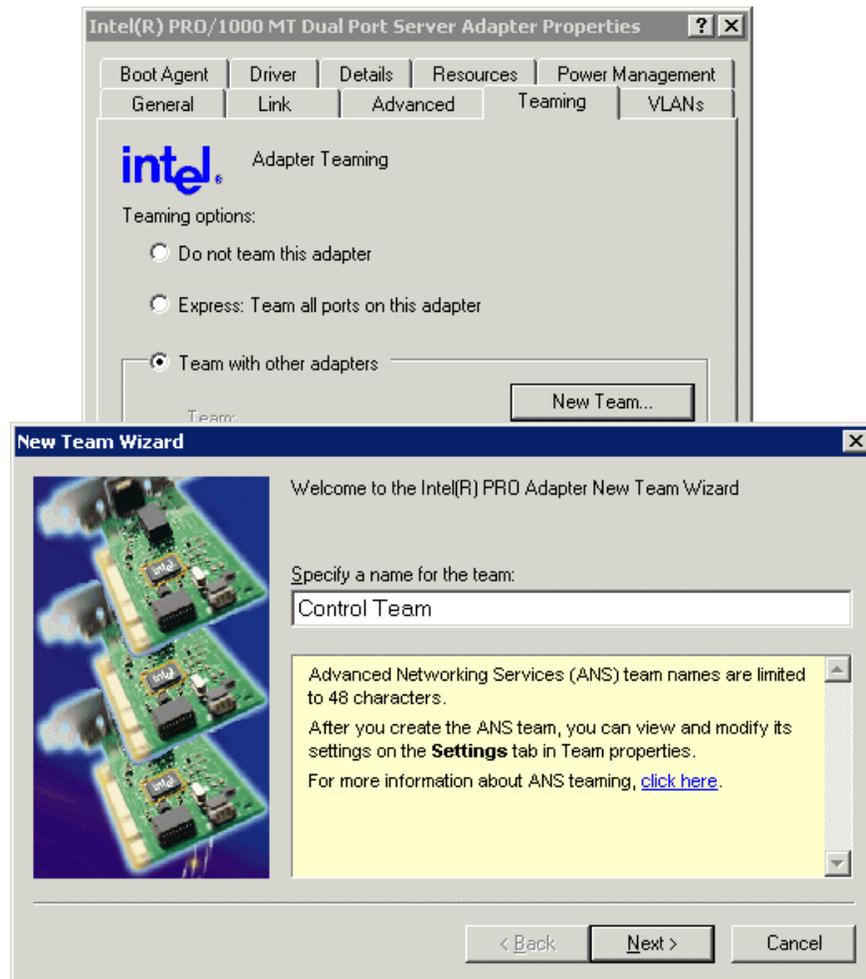
8. Open the Modify Team dialog box as follows:

   a. In Device Manager | Network Adapters, right-click **Intel® Advanced Network Services Virtual Adapters #2** (make sure it is the adapter identified as a **Virtual** adapter) and select **Properties**. The Properties dialog box opens.

   b. Select the **Settings** tab.

    c. Click **Modify Team**. A dialog box opens.

9. On the **Adapters** tab, do the following:

    a. Select the top entry, which is **Intel® PRO/1000 MT Dual Port Server Adapter** (Type I MB) or **Intel® PRO/1000 EB Network Connection with I/O Acceleration** (Type II and Type III MB), and click **Set Primary**.

    b. Select **Intel® PRO/1000 MT Dual Port Server Adapter #3** (Type I MB) or **Intel® PRO/1000 MT Dual Port Server Adapter** (Type II and Type III MB) and click **Set Secondary**.

10. Click **OK** and **OK** and to close dialog boxes.

11. Do not create a media team for the media (iSCSI) network. The two remaining connections remain as independent ports and are used as follows:

- Media Connection #1, which is GigE port 2 on the K2 Media Client rear panel, is the connection for the media (iSCSI) network on a non-redundant K2 Storage System, or for the "A" media (iSCSI) network on a redundant K2 Storage System.

- Media Connection #2, which is GigE port 4 on the K2 Media Client rear panel, is not used on a non-redundant K2 Storage System. It is the connection for the "B" media (iSCSI) network on a redundant K2 Storage System.

12. Restart the K2 Media Client.

Continue with the next procedure .

Name team

The following procedure is intended for use on shared storage models only.

1. On the Windows desktop right-click **My Network Places** and select **Properties**. The Network Connections window opens.
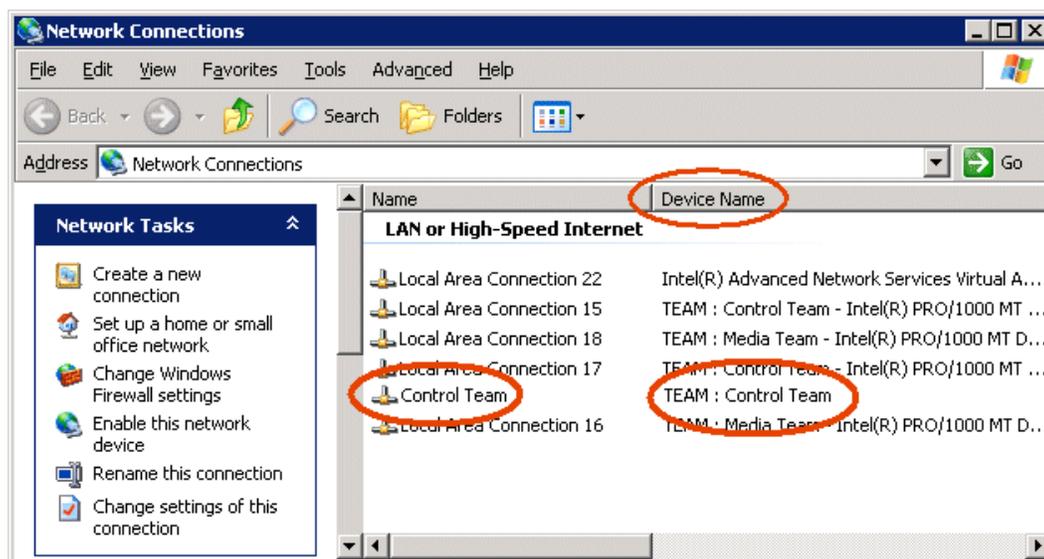
2. Identify the adapter that in the "Device Name" column is labeled "TEAM : Control Team". Rename the adapter follows:

    a. Click the Adapter Name.

    b. Select **File | Rename** to enter rename mode.

    c. Type `Control Team`.

3. Ensure that eight entries are named as follows in Network Properties:

Name	Device Name
…Connection #1	TEAM : Control Team - Intel® PRO/1000 MT Dual Port Server Adapter (Type 1 MB) -or- TEAM : Control Team - Intel® PRO/1000 EB Network Connection… (Type II and Type III MB)
…Connection #2	TEAM : Control Team - Intel® PRO/1000 MT Dual Port Server Adapter #3 (Type 1 MB) -or- TEAM : Control Team - Intel® PRO/1000 MT Dual Port Server Adapter (Type II and Type III MB)
Control Team	TEAM : Control Team
…Connection #3	Team : DO NOT USE[a]
Loopback	Microsoft Loopback Adapter
Media Connection #1	TEAM : Media Team - Intel® PRO/1000 MT Dual Port Server Adapter #2 (Type 1 MB) -or- TEAM : Media Team - Intel® PRO/1000 EB Network Connection…#2 (Type II and Type III MB)
Media Connection #2	TEAM : Media Team - Intel® PRO/1000 MT Dual Port Server Adapter #4 (Type 1 MB) -or- TEAM : Control Team - Intel® PRO/1000 MT Dual Port Server Adapter #2 (Type II and Type III MB)

a. This team only on K2 Media Clients shipping before system software version 3.2.5x.

4. Set an IP address for the Control Team. Use standard Windows procedures.

    Do not set IP addresses for the two Media Connections, as these must be configured only by the K2 System Configuration application as part of configuring the K2 Storage System.

    Continue with the next procedure .

Reorder adapters

1. On the Windows desktop right-click **My Network Places** and select **Properties**. The Network Connections window opens.

2. On the menu bar at the top of the window, select **Advanced**, then **Advanced Settings…**

3. On the **Adapters and Bindings** tab, depending on the K2 Media Client's storage,

order adapters as follows:

Internal storage unteamed	Internal storage teamed	Direct-connect storage	Shared (SAN) storage
Loopback	Loopback	Loopback	Control Team
Control Connection #1	Control Team	Control Connection #1	Media Connection #1
Control Connection #2	FTP Team	Media Connection #1	Media Connection #2
Media Connection #1	—	—	Loopback
Media Connection #2	—	—	—

4. Click **OK** to close Advanced settings and accept the changes.

5. Close the Network Properties window.

The network configuration procedure is complete.

Configuring Event Viewer

If you have a problem with the Windows Event Viewer logs getting too big, configure as follows:

1. From the Windows taskbar click **Start | Control Panel**. Open **Administrative Tools | Computer Management**.
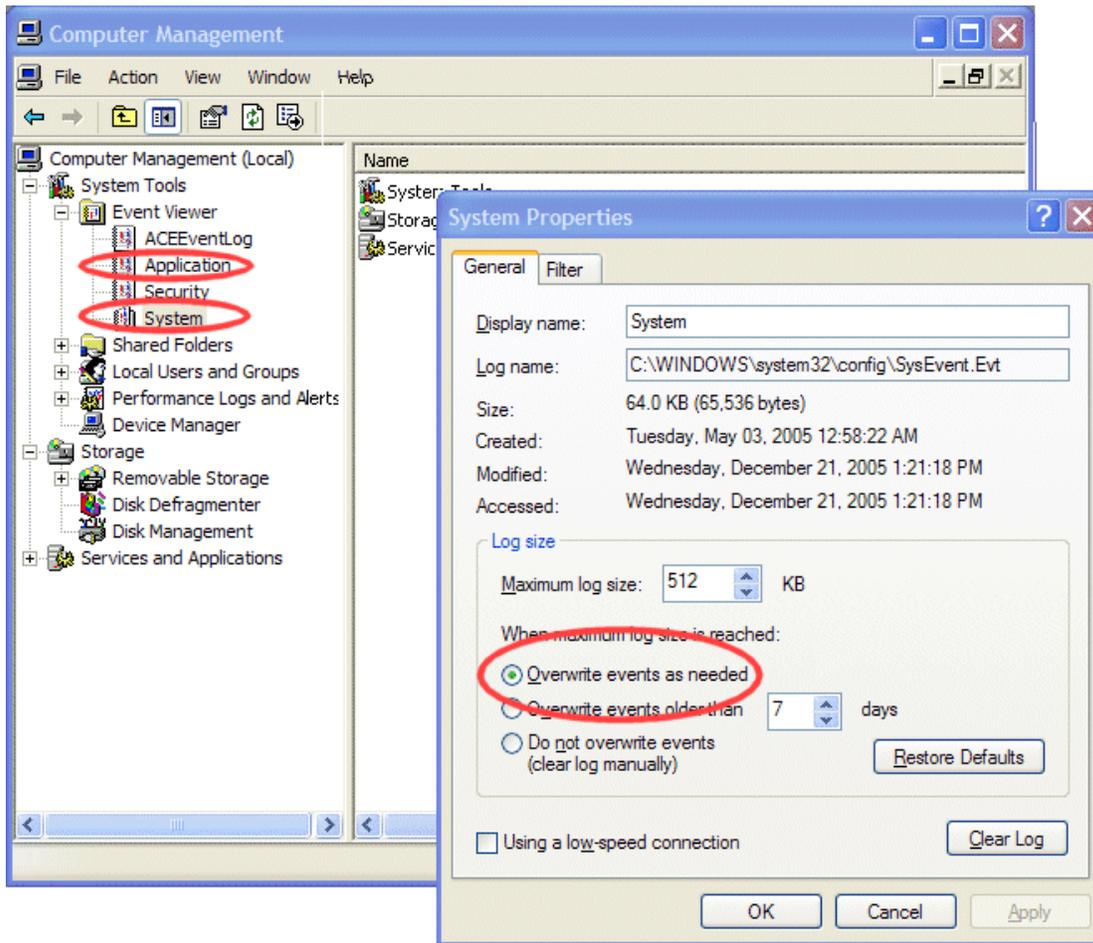
2. Under **Event Viewer** right-click the **Application** node and select **Properties**. The System Properties dialog box opens.

3. If not already set, select **Overwrite events as needed**. Click **OK** to close.

4. Under **Event Viewer** right-click the **System** node and select **Properties**. The System Properties dialog box opens.

5. If not already set, select **Overwrite events as needed**. Click **OK** to close.

Checking services

Depending on storage type (stand-alone or shared) of the K2 Media Client, various services are turned off or on or set to different startup types. These services are automatically set by the K2 Media Client software installation program and by the Status Server service whenever the K2 Media Client starts up.

NOTE: Do not manually change the way services run on a K2 Media Client.

If you suspect that services have been tampered with or for any reason are not set correctly, you can check their current settings in the Windows Services Control Panel. The table below provides the settings for the services that are critical to a correctly operating K2 Media Client.

Services on a stand-alone storage K2 Media Client

When a stand-alone storage K2 Media Client is operating in the online mode, in the Services control panel services appear as follows:

Service	Status	Startup Type	Comments
Grass Valley AppService	Started	Automatic	Depends on Status Server service
Grass Valley Catch Server Ingest Engine	—	Automatic	Used with Capture Service features.
Grass Valley Catch Server Monitor Host	—	Automatic	Used with Capture Service features.
Grass Valley File-Import Watcher Service	—	Manual	Used with the HotBin feature.
Grass Valley FTP Daemon	Started	Manual	Started by Status Server service on stand-alone storage models
Grass Valley K2 Config	Started	Automatic	Not used on a stand-alone storage K2 Media Client
Grass Valley MegaRaid Server	Started	Manual	—
Grass Valley Pathfire Bin	—	Automatic	Used with the K2 Pathfire Capture Service feature.
Grass Valley RTS Service	Started	Automatic	—
Grass Valley Storage Utility Host	Started	Automatic	—
Grass Valley System Status Server	Started	Automatic	At startup the Status Server service makes sure the following services are started: -AMP TCP Service -AppService -FTP Daemon
Grass Valley Transfer Queue Service	Started	Automatic	—
Grass Valley XML Movie Importer	—	Manual	Used with the K2 XML Import Service feature.
Microsoft iSCSI Initiator Service	Started	Automatic	Not used on a stand-alone storage K2 Media Client
MSSQLSERVER	Started	Automatic	The K2 software installation for stand-alone storage clients sets startup type to automatic.
MSSQLServerADHelper		Manual	—

Service	Status	Startup Type	Comments
SQLSERVERAGENT		Manual	Log On As: <machine name>\Administrator This service must log on with the local machine's administrator account.
StorNext File System File System	Started	Automatic	—
StorNext File System RPC Port Mapper	Started	Automatic	—

Services on an shared storage K2 Media Client

When a shared storage K2 Media Client is operating in the online mode, in the Services control panel services appear as follows:

Service	Status	Startup Type	Comments
Grass Valley AppService	Started	Automatic	Depends on Status Server service
Grass Valley FTP Daemon		Manual	***Intentionally not started by Status Server service on shared storage models***. Transfers go to K2 Media Server, not K2 Media Client.
Grass Valley K2 Config	Started	Automatic	Needed on shared storage K2 Media Client
Grass Valley MegaRaid Server	Started	Manual	—
Grass Valley RTS Service	Started	Automatic	—
Grass Valley Storage Utility Host	Started	Automatic	—
Grass Valley System Status Server	Started	Automatic	At startup the Status Server service makes sure the following services are started: -AMP TCP Service -AppService
Grass Valley Transfer Queue Service	Started	Automatic	Not used on an shared storage K2 Media Client. Transfers go to K2 Media Server, not K2 Media Client.
Microsoft iSCSI Initiator Service	Started	Automatic	Needed on shared storage K2 Media Client
MSSQLSERVER		Manual	Not used on an shared storage K2 Media Client. The K2 software installation for shared storage clients sets startup type to manual.
MSSQLServerADHelper		Manual	—

Service	Status	Startup Type	Comments
SQLSERVERAGENT		Manual	Log On As: <machine name>\Administrator This service must log on with the local machine's administrator account.
StorNext File System File System	Started	Automatic	—
StorNext File System RPC Port Mapper	Started	Automatic	—

Checking pre-installed software

Software is pre-installed on K2 products when you receive them from the factory. This load of pre-installed software is referred to as the "golden drive". The following list is an example of the software pre-installed. Check *K2 Media Client Release Notes* for the most up-to-date list with version information.

If you suspect that pre-installed software is not correct, use the disk image process to re-load the software. Do not attempt to un-install, install, or repair pre-installed software without guidance from your Grass Valley Support representative.

K2 Media Client pre-installed software

• Adobe Acrobat Reader

• ATI video driver for Radeon 9250

• Intel Pro Software

• QuickTime

• Microsoft iSCSI Initiator

• MS XML

• .NET Framework

• MS-SQL Desktop Engine

• Power Console Plus — Do not use this utility on a K2 Media Client. This utility is for use by qualified Grass Valley Service personnel only. When this utility is opened it scans the SCSI bus and interferes with record and play operations.

• J2SE Runtime Environment

• StorNext software

• Supero Doctor

• Texas Instruments VCP — For USB RS422 ports

• Windows PowerShell

• Windows XP Professional

Grass Valley Control Point PC pre-installed software

- Broadcom Gigabit Integrated Controller

- Conexant D850 V.9x DFVc Modem

- QuickTime

- Dell Resource CD

- HighMAT Extension to WinXP CD Writing Wizard

- .NET Framework

- MS XML

- Windows Installer

- Windows Media Connect

Configuring NVRAM

NOTE: This procedure is intended for use by Grass Valley Service personnel or under the direct supervision of Grass Valley Service personnel.

It is necessary to reconfigure the LSI RAID BIOS settings in the following cases:

- After replacing a SCSI controller adapter as in "SCSI controller adapter removal" on page 123, the NVRAM configuration will not match the disk configuration.

- You start up the K2 Media Client with a SCSI cable disconnected.

- You remove both of the system RAID drives from the chassis at the same time.

In these instances, even if you restart the machine with the problem corrected, the K2 Media Client does not recognize the system drive. Startup process do not complete. and the K2 Media Client is inoperable.

To recover from this condition, do the following:

1. Connect keyboard, monitor, and mouse to the K2 Media Client.

2. Restart the K2 Media Client.

3. During startup processes, at the LSI MegaRAID BIOS screen, press **Ctrl + M** and go into the LSI BIOS.

4. Navigate through the menu system as follows:
   Management Menu | Configuration | Clear Configuration

5. When prompted "Clear Configuration?" select **YES**.

6. When the message "Existing Configuration is Cleared" is displayed, press any key to continue.

7. On the Configuration Menu, select **Easy Configuration**.

The Easy Configuration - ARRAY SELECTION MENU screen is displayed.

ID	CHANNEL - 1
0	FAILED
1	READY
2	READY
3	READY
4	READY
5	READY
6	PROC

ID	CHANNEL - 2
0	FAILED
1	READY
2	READY
3	READY
4	READY
5	READY
6	PROC

8. For CHANNEL - 1, select the cell for ID 0.

9. Press the **SPACE** bar.

    In the cell for CHANNEL - 1 ID 0, flashing text "ONLIN A01-01" is displayed.

10. For CHANNEL -2, select the cell for ID 0.

11. Press the **SPACE** bar.

    In the cell for CHANNEL - 2 ID 0, flashing text is displayed.

12. Press **Enter**.

    The Select Configurable Array(s) menu area is displayed.

```
                    Select Configurable Array(s)

          A-01

         ┌─────────┐
         │ SPAN-1  │
         └─────────┘
```

13. Press the **Space** bar.

    In the A-01 box, the text SPAN-1 appears.

14. Press **F10**.

    The Logical Drives 01 menu is displayed.

15. On the Logical Drives 01 menu, select **Advanced Menu**.

    The Advanced menu is displayed.

16. On the Advanced menu, select **Stripe Size** and press **Enter.**

17. Type `128` and press **Enter**.

18. Press **Escape**.

19. On the Logical Drive 01 menu, select **Accept** and press **Enter**.

    The Easy Configuration - ARRAY SELECTION MENU screen is displayed.

20. For CHANNEL - 1, select the cell for ID 1.

21. Press the **SPACE** bar.

    In the cell for CHANNEL - 1 ID 0, flashing text is displayed.

22. For CHANNEL -2, select the cell for ID 1.

23. Press the **SPACE** bar.

    In the cell for CHANNEL - 2 ID 0, flashing text is displayed.

24. Press **Enter**.

    The Select Configurable Array(s) menu area is displayed.

25. Press the **Space** bar.

    The text SPAN-1 appears.

26. Press **F10**.

    The Logical Drives 01 menu is displayed.

27. On the Logical Drive 01 menu, select **Accept** and press **Enter**.

28. Repeat step 20 to step 27 for ID 2 through ID 5.

29. On the Logical Drives Configured screen, verify that all six Logical Drives (LD) are set to stripe size 128KB.

30. At the Save Configuration prompt, select **YES.**

31. Press any key to continue.

32. Press **Escape** two times.

33. At the Exit? prompt, select **YES**.

34. Press **Ctrl + Alt + Delete** to reboot.

The K2 Media Client restarts, system drives are recognized, and startup processes complete.

If you replaced the SCSI controller adapter, on restart check the SCSI controller adapter BIOS startup screen. Make sure the firmware is the correct version. The firmware version reports on the following line:

```
Standard FW 413Z DRAM = 128 MB (SDRAM)
```

Version 413Z is the correct version at the time of this writing. Check release notes to verify the version.

Making motherboard CMOS settings

NOTE: This procedure is intended for use by Grass Valley Service personnel or under the direct supervision of Grass Valley Service personnel.

When configuring motherboard CMOS settings, it is no longer necessary to configure Option ROM Scan settings. Version 3.2 and higher K2 System Software on SDA-00, SD-00, and HD-00 models supports Option ROM Scan set to either Enable and Disable with no operational difference.

After you remove and replace the motherboard you must make CMOS settings. Replacement motherboards are Type III motherboards.

Type I motherboard CMOS settings

To make CMOS settings for the Type I motherboard, do the following:

1. Connect keyboard, monitor, and mouse to the K2 Media Client.

2. Restart the K2 Media Client.

3. During the motherboard BIOS startup screen, press **Delete** to enter Setup. After the SCSI controller adapter BIOS screen is displayed, the motherboard BIOS Setup Utility screen opens.

4. Make the following setting:

   Legacy disc A, set to **Disabled**

5. In the BIOS Setup Utility menu, navigate through the menu system as follows: **Advanced | PCI/PnP Configuration | PCI Slot Configuration | PCI/PICX Frequency (Slot 4)**.

6. Set the **PCI/PCIX Frequency** to **[PCI 33MHz]**.

7. Select **Advanced Chipset Control | Clock Spectrum Feature**, set to **Enabled**

8. Press **F10** and select **Yes** to save the configuration and restart.

9. Depending on the changes you made, you might need to rescan PCI slots, as instructed in the next procedure.

Type II motherboard CMOS settings

To make CMOS settings for the Type II motherboard, do the following:

1. Connect keyboard, monitor, and mouse to the K2 Media Client.

2. Restart the K2 Media Client.

3. During the motherboard BIOS startup screen, watch the keyboard lights (capslock, numlock, etc.). When the lights flash, press **Delete** to enter Setup.

4. Press **F9** and then press **Enter** to load BIOS defaults.

5. On the **Main** page, set **Legacy Diskette A** to **Disabled**

6. On the **Advanced** page, select **PCI Configuration** and then press **Enter**.

7. Select **Frequency for PCIX#4-#5** and then press **Enter**.

8. Select **PCI 33MHz** and then press **Enter**.

9. Press **ESC** to go back to the Advanced page.

10. On the **Advanced** page, select **I/O Device Configuration** and then press **Enter**.

11. Select **Floppy disk controller** and then press **Enter**.

12. Select **Disabled** and then press **Enter**.

13. Press **F10** and then press **Enter** to save settings and restart.

14. Depending on the changes you made, you might need to rescan PCI slots, as instructed in the next procedure.

Type III motherboard CMOS settings

To make CMOS settings for the Type III motherboard, do the following:

1. Connect keyboard, monitor, and mouse to the K2 Media Client.

2. Restart the K2 Media Client.

3. During the motherboard BIOS startup screen, watch the keyboard lights (capslock, numlock, etc.). When the lights flash, press **Delete** to enter Setup.

4. Press **F9** and then press **Enter** to load BIOS defaults.

5. On the **Main** page, set **Legacy Diskette A** to **Disabled**.

6. On the **Advanced** page, do the following:

   a. Set **QuickBoot Mode** to **Disabled**.

   b. Set **QuietBoot Mode** to **Disabled**.

   c. Set **POST Errors** to **Disabled**.

7. On the **Advanced** page, select **PCI Configuration** and then press **Enter**.

8. Select **Frequency for PCIX#4-#5** and then press **Enter**.

9. Select **PCI 33MHz** and then press **Enter**.

10. Press **ESC** to go back to the Advanced page.

11. On the **Advanced** page, select **Advanced Chipset Control** and then press **Enter**.

12. Select **Clock Spectrum Feature** and then press **Enter**.

13. Select **Enabled** and then press **Enter**.

14. Press **ESC** to go back to the Advanced page.

15. On the **Advanced** page, select **I/O Device Configuration** and then press **Enter**.

16. Select **Floppy disk controller** and then press **Enter**.

17. Select **Disabled** and then press **Enter**.

18. On the **Boot** page, do the following:

    a. Select **USB FDC** and then press **x** to move it down and exclude if from the boot list.

      b. Select **USB KEY** and then press **x** to move it down and exclude if from the boot list.

      c. Select **USB HDD** and then press **+** to move it up to the second position in the boot list.

19. Press **F10** and then press **Enter** to save settings and restart.

20. Depending on the changes you made, you might need to rescan PCI slots, as instructed in the next procedure.

Rescanning PCI slots

If a board in a PCI slot is not detected, do the following. This resets (clears) PCI config data, then rescans the bus for each slot the next time the K2 Media Client starts.

1. Connect keyboard, monitor, and mouse to the K2 Media Client.

2. Restart the K2 Media Client.

3. During the motherboard BIOS startup screen, press **Delete** to enter Setup. After the SCSI controller adapter BIOS screen is displayed, the motherboard BIOS Setup Utility screen opens.

4. In the BIOS Setup Utility menu, navigate through the menu system as follows: **Advanced | PCI/PnP Configuration | Reset Config Data**. Set to **YES**.

When set to YES, it is enabled for the next startup and then set back to NO afterwards.

5. Press **F10** and select **Yes** to save the configuration and restart.

Using recovery disk images

Procedures in this section are as follows:

- "About the recovery disk image process" on page 67
- "Creating a recovery disk image for storing on E:" on page 69
- "Creating a recovery disk image CD set" on page 71
- "Restoring from a system-specific recovery disk image on E:" on page 72
- "Restoring from the generic recovery disk image on E:" on page 73
- "Restoring from a recovery disk image CD set" on page 76

About the recovery disk image process

You can create a disk image of the K2 Media Client system drive and restore from the image. This simplifies the process of rebuilding a system in a disaster-recovery scenario.

NOTE: This process is not intended as a means to backup and restore media.

You can also create a disk image of the Control Point PC system drive and restore from the image.

The system drive of the K2 Media Client is actually a logical drive made up of a RAID 1 pair of disks. The system drive is divided into three partitions, as follows:

• The C: partition — This is the normal PC system drive, which hosts the Windows operating system and most software components.

• The D: partition — This drive contains the media file system software, including the media file system metadata files and journal files. The drive also contains the media database application (SQL) and data files. By storing the media file system metadata and the media database —both of which contain references to the media files—on a separate drive, you can re-image the C: system drive while saving your media.

• The E: partition — This is where recovery disk images are stored.

When you receive your K2 Media Client new from the factory, a default disk image is stored on the E: partition. This image is generic for all K2 Media Clients, regardless of the storage type.

You receive a recovery CD with your K2 Media Client. This recovery CD does not contain a disk image. Rather, the recovery CD is bootable and contains the Acronis True Image software necessary to create and restore a disk image. You can use the recovery CD to create and restore disk images for the K2 Media Client and for the control point PC. Refer to *K2 Media Client Release Notes* for compatible versions of the recovery CD.

After your K2 Media Client is installed, configured, and running in your system environment, you should create new recovery disk images to capture settings changed from default. These "first birthday" images are the baseline recovery image for the K2 Media Client in its life in your facility. You should likewise create a new recovery disk image after completing any process that changes system software or data, such as a software upgrade. In this way you retain the ability to restore your K2 Media Client to a recent "last known good" state.

For the highest degree of safety, you should create a set of disk image recovery CDs, in addition to storing disk images on the E: partition. Since the system drive is RAID protected, in most cases the disk images on the E: partition will be accessible. But in the unlikely even of a catastrophic failure whereby you lose the entire system drive RAID 1 LUN, you can use your disk image recovery CDs to restore the system. You should also create a set of disk image recovery CDs for the Control Point PC.

NOTE: The recovery disk image process is an "off-line" process. Do not attempt this process while media access is underway.

The recovery disk image process that you should follow is summarized in the following steps.

At the K2 Media Client first birthday…

1. Boot from the Recovery CD.

2. Create a set of disk image recovery CDs for the K2 Media Client. These CDs contain the C:, D:, and E: partitions.

3. Create a set of disk image recovery CDs for the Control Point PC.

4. On the K2 Media Client, create a disk image, writing the disk image to the E: partition. This disk image contains the C: and D: partitions.

5. Copy the disk image from the E: partition to another location, such as a network drive.

At milestones, such as software upgrades…

1. Boot from the Recovery CD.

2. Create a disk image, writing the disk image to the E: partition. This disk image contains the C: and D: partitions.

3. Copy the disk image from the E: partition to another location, such as a network drive.

If you need to restore the K2 Media Client…

1. Boot from the Recovery CD.

2. If the E: partition is accessible, read the image from the E: partition to restore the C: partition, restore the D: partition, or restore both partitions.

3. If the E: partition is not accessible, do the following:

   a. Read the disk image from your set of CDs and restore all three partitions.

   b. Restart into Windows.

   c. Copy your most recent disk image to the E: partition.

   d. Boot from the Recovery CD.

   e. Read the image from the E: partition to restore the C: partition, restore the D: partition, or restore both partitions.

If you need to restore the Control Point PC…

1. Boot from the Recovery CD.

2. Read the disk image from your set of CDs and restore the system drive.

Use the following procedures to implement the recovery disk image process as necessary.

Creating a recovery disk image for storing on E:

Do the following at the local K2 Media Client to create a disk image of the C: partition and the D: partition and store the image file on the E: partition:

1. Make sure that media access is stopped and that the K2 Media Client on which you are working is not being used.

2. If you have not already done so, connect keyboard, monitor, and mouse to the K2 Media Client.

3. Insert the Recovery CD and restart the machine.

   The machine boots from the disc. The Acronis True Image program loads.

4. At the startup screen, select **True Image (Full Version)**.

   The Acronis True Image program loads.

   The Acronis True Image main window appears.

5. In the Acronis True Image main window, click **Backup**.

   The Create Backup Wizard opens.

6. On the Welcome page, click **Next**.

   The Select Backup Type page opens.

7. Select **The entire disk contents or individual partition** and then click **Next**.

   The Partitions Selection page opens.

8. Select the **System (C:)** and the **Database (D:)** partitions and then click **Next**.

   The Backup Archive Location page opens.

9. In the tree view select the **Backup (E:)** partition and then enter the name of the image file you are creating. Create the file name using the K2 Media Client hostname and the date. Name the file with the .tib extension. For example, if the hostname is K2Client1, in the File name field you would have `E:\K2Client1_20051027.tib`. Click **Next**.

   The Backup Creation Options page opens.

10. Do not change any settings on this page. Click **Next**.

    The Archive Comment page opens.

11. If desired, enter image comments, such as the date, time, and software versions contained on the image you are creating. Click **Next**.

    The "…ready to proceed…" page opens.

12. Verify that you are creating images from the C: and D: partitions and writing to the E: partition. Click **Proceed**.

    The Operation Progress page opens and displays progress.

13. When a "Backup archive creation has been successfully completed" message appears, click **OK**.

14. Click **Operations | Exit** to exit the Acronis True Image program.

    The K2 Media Client restarts automatically.

15. Remove the Recovery CD while the K2 Media Client is shutting down.

16. Upon restart, log on to Windows. When the AppCenter log on appears, you can cancel.

17. Open Windows Explorer and find the image file on the E: partition.

Creating a recovery disk image CD set

Do the following at the local K2 Media Client or the Control Point PC to create a disk image of the entire system drive and store the disk image on a set of CDs. On the K2 Media Client, the disk image includes the C:, D:, and E: partitions:

1. Make sure that media access is stopped and that the K2 Media Client on which you are working is not being used.

2. If you have not already done so, connect keyboard, monitor, and mouse to the K2 Media Client or the control point PC.

3. Insert the Recovery CD and restart the machine.

   The machine boots from the disc. The Acronis True Image program loads.

4. At the startup screen, select **True Image (Full Version)**.

   The Acronis True Image program loads.

   The Acronis True Image main window appears.

5. In the Acronis True Image main window, click **Backup**.

   The Create Backup Wizard opens.

6. On the Welcome page, click **Next**.

   The Select Backup Type page opens.

7. Select **The entire disk contents or individual partition** and then click **Next**.

   The Partitions Selection page opens.

8. Select **Disk 1**. On the K2 Media Client, this selects the System (C:), the Database (D:), and the Backup (E:) partitions. Click **Next**.

   The Backup Archive Location page opens.

9. In the tree view select **CD-RW Drive (F:)** and then enter the name of the image file you are creating. To create the file name for a K2 Media Client, use the K2 Media Client hostname and the date. Name the file with the .tib extension. For example, if the hostname is K2Client1, in the File name field you would have `F:\K2Client1_20051027.tib`. Click **Next**.

   The Backup Creation Options page opens.

10. Do not change any settings on this page. Click **Next**.

    The Archive Comment page opens.

11. If desired, enter image comments, such as the date, time, and software versions contained on the image you are creating. Click **Next**.

    The "…ready to proceed…" page opens.

12. Remove the Recovery CD and insert a blank CD.

13. Verify that you are creating an image from Disk 1 and writing to the CD-RW Drive (F:). Click **Proceed**.

    The Operation Progress page opens and displays progress.

14. Remove and insert CDs as prompted. As you remove each burned CD make sure you label it correctly to show the sequence of CDs.

15. When a "Backup archive creation has been successfully completed" message appears, click **OK**.

16. Click **Operations | Exit** to exit the Acronis True Image program.

    The machine restarts automatically.

17. Remove any CD that is still in the CD drive while the machine is shutting down.

Restoring from a system-specific recovery disk image on E:

The following procedure can be used on a K2 Media Client that needs its image restored, if the image was made from that specific K2 Media Client. If the image is the generic factory-default image, refer to "Restoring from the generic recovery disk image on E:".

1. Make sure that media access is stopped and that the K2 Media Client on which you are working is not being used.

2. If you have not already done so, connect keyboard, monitor, and mouse to the K2 Media Client.

3. Insert the Recovery CD and restart the machine. If there is a problem restarting, hold the standby button down for five seconds to force a hard shutdown. Then press the standby button again to startup.

   The machine boots from the disc. The Acronis True Image program loads.

4. At the startup screen, select **True Image (Full Version)**.

   The Acronis True Image program loads.

   The Acronis True Image main window appears.

5. In the Acronis True Image main window, click **Recovery**.

   The Restore Data Wizard opens.

6. On the Welcome page, click **Next**.

   The Archive Selection page opens.

7. In the tree view expand the node for the E: partition and select the image file, then click **Next**:

   The Verify Archive Before the Restoring page opens.

8. Leave the selection at **No, I don't want to verify** and then click **Next**.

   The Partition or Disk to Restore page opens.

9. Select **System (C:)** and then click **Next**.

   The Restored Partition Location page opens.

10. Select **System (C:)** and then click **Next**.

    The Restored Partition Type page opens.

11. Leave the selection at **Active** and then click **Next**.

    The Restored Partition Size page opens.

12. Leave settings at their defaults. The size reported in the upper pane is the size detected of the actual C: partition. This should be the same as that reported in the

Partition size field in the middle of the page. Free space before and Free space after should both be reported at 0 bytes. Click **Next**.

The Next Selection page opens.

13. Depending on the partitions you are restoring, do one of the following:

    • If you are restoring only the C: partition, select **No, I do not** and then click **Next**.

      The "…ready to proceed…" page opens.

      Skip ahead to step 20.

    • If you are also restoring the D: partition, select **Yes, I want to restore another partition or hard disk drive** and then click **Next**.

      The Partition or Disk to Restore page opens. Continue with the next step in this procedure.

14. Select **Database (D:)** and then click **Next**.

    The Restored Partition Location page opens.

15. Select **Database (D:)** and then click **Next**.

    The Restored Partition Type page opens.

16. Leave the selection at **Primary** and then click **Next**.

    The Restored Partition Size page opens.

17. Leave settings at their defaults. The size reported in the upper pane is the size detected of the actual D: partition. This should be the same as that reported in the Partition size field in the middle of the page. Free space before and Free space after should both be reported at 0 bytes. Click **Next**.

    The Next Selection page opens.

18. Select **No, I do not** and then click **Next**.

    The Restore Operation option page opens.

19. Do not make any selections. Click **Next**.

    The "…ready to proceed…" page opens.

20. Verify that you are restoring the correct partition or partitions. Click **Proceed**.

    The Operation Progress page opens and displays progress.

21. When a "The data was successfully restored" message appears, click **OK**.

22. Click **Operations | Exit** to exit the Acronis True Image program.

    The K2 Media Client restarts automatically.

23. Remove any CD currently in the CD drive while the K2 Media Client is shutting down.

Restoring from the generic recovery disk image on E:

There can be multiple versions of the generic recovery disk image on the K2 Media Client's E: partition. Use the most recent (highest number) version, unless instructed otherwise by Grass Valley Support.

This procedure can be used on a K2 Media Client that needs to be restored to its factory default state. For example, if you neglected to make a first birthday image, you might need to use this procedure. If the image from which you are restoring was made from the specific K2 Media Client, refer to the previous procedure "Restoring from a system-specific recovery disk image on E:".

NOTE: This procedure restores the K2 Media Client (both C: and D: partitions) to its factory default condition. Passwords and other site-specific configurations are reset to factory defaults and all media is lost.

1. Make sure that media access is stopped and that the K2 Media Client on which you are working is not being used.

2. If you have not already done so, connect keyboard, monitor, and mouse to the K2 Media Client.

3. Insert the Recovery CD and restart the machine. If there is a problem restarting, hold the standby button down for five seconds to force a hard shutdown. Then press the standby button again to startup.

   The machine boots from the disc. The Acronis True Image program loads.

4. At the startup screen, select **True Image (Full Version)**.

   The Acronis True Image program loads.

   The Acronis True Image main window appears.

5. In the Acronis True Image main window, click **Recovery**.

   The Restore Data Wizard opens.

6. On the Welcome page, click **Next**.

   The Archive Selection page opens.

7. In the tree view expand the node for the E: partition and select the image file, then click **Next**:

   The Verify Archive Before the Restoring page opens.

8. Leave the selection at **No, I don't want to verify** and then click **Next**.

   The Partition or Disk to Restore page opens.

9. Select **System (C:)** and then click **Next**.

   The Restored Partition Location page opens.

10. Select **System (C:)** and then click **Next**.

    The Restored Partition Type page opens.

11. Leave the selection at **Active** and then click **Next**.

    The Restored Partition Size page opens.

12. Leave settings at their defaults. The size reported in the upper pane is the size detected of the actual C: partition. This should be the same as that reported in the Partition size field in the middle of the page. Free space before and Free space after should both be reported at 0 bytes. Click **Next**.

    The Next Selection page opens.

13. You are restoring both the C: partition and the D: partition, so select **Yes, I want to restore another partition or hard disk drive** and then click **Next**.

    The Partition or Disk to Restore page opens. Continue with the next step in this procedure.

14. Select **Database (D:)** and then click **Next**.

    The Restored Partition Location page opens.

15. Select **Database (D:)** and then click **Next**.

    The Restored Partition Type page opens.

16. Leave the selection at **Primary** and then click **Next**.

    The Restored Partition Size page opens.

17. Leave settings at their defaults. The size reported in the upper pane is the size detected of the actual D: partition. This should be the same as that reported in the Partition size field in the middle of the page. Free space before and Free space after should both be reported at 0 bytes. Click **Next**.

    The Next Selection page opens.

18. Select **No, I do not** and then click **Next**.

    The Restore Operation option page opens.

19. Do not make any selections. Click **Next**.

    The "…ready to proceed…" page opens.

20. Verify that you are restoring the correct partition or partitions. Click **Proceed**.

    The Operation Progress page opens and displays progress.

21. When a "The data was successfully restored" message appears, click **OK**.

22. Click **Operations | Exit** to exit the Acronis True Image program.

    The K2 Media Client restarts automatically.

23. Remove any CD currently in the CD drive while the K2 Media Client is shutting down.

24. Upon restart the Windows Setup Wizard automatically opens. Do Windows setup as follows:

    a. Enter in Windows Product Key and click **Next**.

       The Product Key is on a sticker on the right side of the K2 Media Client Chassis.

    b. Enter the name of the K2 Media Client.

       The factory default name is on a label near the power button.

       The password is pre-set to the factory default. Leave the password as is.

    c. Click **Next**

    d. Set Time and click **Next**.

    Windows loads network components and restarts the K2 Media Client.

    Upon restart, a Found New Hardware wizard and/or messages about services/ drivers can be displayed.

25. Do one of the following:

    • If the K2 Media Client has the Fibre Channel option, you must install the Fibre Channel card driver. Follow the procedure at "Installing the Fibre Channel card driver" on page 78, and then complete the remainder of this procedure.

    • If the K2 Media Client has does not have the Fibre Channel option, dismiss all wizards and messages. Do not install drivers. Support for hardware is provided when you install K2 system software.

26. Restore networking on the K2 Media Client. Refer to "Restoring network configuration" on page 44.

27. You must now activate the Windows operating system. You must do this before installing drivers or installing software. Refer to "Activating the Windows operating system" on page 78.

28. Shut down the K2 Media Client.

29. Power up the K2 Media Client.

30. Install K2 Media Client software, making the appropriate selection for stand-alone storage or shared storage. Also install related software, such as SNFS, if required for the latest upgrade. Refer to your latest *K2 Media Client Release Notes* for detailed instructions.

    Upon restart, a Found New Hardware wizard and/or messages about services/ drivers can be displayed.

31. Dismiss all wizards and messages. Do not install drivers.

32. Cancel AppCenter startup as follows:

    a. Click **Cancel** on the log in dialog box.

    b. Click **Cancel** on the AppCenter Startup check.

    c. Click **Abort** when AppCenter tries to log in again.

33. If the K2 Media Client is an shared storage model, you can now configure the shared storage by adding the K2 Media Client to a K2 Storage System. To do this you use the K2 System Configuration application. Refer to the *K2 Storage System Instruction Manual* and the *K2 Media Client System Guide* for detailed procedures.

34. If the K2 Media Client is a stand-alone storage model, configure the storage by creating a new media file system. To do this you use Storage Utility. Refer to the "Managing Internal Storage" chapter or the "Direct Connect Storage" chapter in the *K2 Media Client System Guide* as appropriate for detailed procedures.

The K2 Media Client is now restored to its factory default state.

Restoring from a recovery disk image CD set

The following procedure can be used on a K2 Media Client or a Control Point PC that needs its system drive restored. On the K2 Media Client, this includes all three partitions on the system drive.

This procedure assumes that the image on the CD set is the system-specific image, for the particular machine that you are restoring.

NOTE: At any step in this procedure if a message appears asking for disc/volume, insert CDs as prompted until you can proceed to the next step.

1. Make sure that media access is stopped and that the K2 Media Client on which you are working is not being used.

2. If you have not already done so, connect keyboard, monitor, and mouse to the K2 Media Client.

3. Insert the Recovery CD and restart the machine. If there is a problem restarting, hold the standby button down for five seconds to force a hard shutdown. Then press the standby button again to startup.

    The machine boots from the disc. The Acronis True Image program loads.

4. At the startup screen, select **True Image (Full Version)**.

    The Acronis True Image program loads.

    The Acronis True Image main window appears.

5. Insert the last CD (volume) in your recovery disk image CD set. For example, if there are three CDs that make up the disk image, insert the third CD.

6. In the Acronis True Image main window, click **Recovery**.

    The Restore Data Wizard opens.

7. On the Welcome page, click **Next**.

    The Archive Selection page opens.

8. In the tree view expand the node for the CD ROM drive and select the image file, then click **Next**:

    The Verify Archive Before The Restoring page opens.

9. Leave the selection at **No, I don't want to verify** and then click **Next**.

    The Partition or Disk to Restore page opens.

10. Select **Disk 1**. This selects all three partitions to be restored.

    If you do not want to restore all three partitions, refer to similar steps in "Restoring from a system-specific recovery disk image on E:" on page 72.

    Click **Next**.

    The Restored Partition Sizing page opens.

11. Select **No, I don't want to resize source partitions** and then click **Next**.

    The Restored Hard Disk Drive Location page opens.

12. Select **Disk 1** and then click **Next**.

    The Non-Empty Destination Hard Disk Drive page opens.

13. Select **Yes…delete all partitions…** and then click **Next**.

    If messages appear asking for disks, insert CDs sequentially and click **Retry** until you can proceed to the next step.

    The Next Selection page opens.

14. Select **No, I do not** and then click **Next**.

The Restore Operation option page opens.

15. Do not make any selections. Click **Next**.

The "…ready to proceed…" page opens.

16. Verify that you are restoring partitions. Click **Proceed**.

The Operation Progress page opens and displays progress.

17. Insert CDs as prompted. As messages appear asking for disks, insert CDs sequentially and click **Retry**.

18. When a "The data was successfully restored" message appears, click **OK**.

19. Click **Operations | Exit** to exit the Acronis True Image program.

The machine restarts automatically.

20. Remove the Recovery CD while the machine is shutting down.

Activating the Windows operating system

If a K2 Media Client is restored to its factory default state or otherwise has the Windows operating system re-applied, you might need to activate the operating system. This procedure provides instructions for doing this while the machine is connected to the Internet. The Activation wizard provides other options, which you can also choose if desired.

To activate the Windows operating system on a K2 device, do the following:

1. Make sure the machine is connected to the Internet.

2. From the Windows desktop, in the system tray double-click on the key symbol icon. The Activate window opens.

3. Select **Yes, let's activate Windows over the Internet now** and click **Next**.

4. When prompted, "If you want to register with Microsoft right now.", select **No**.

5. Wait for the connection. If the system times out, you are prompted for entering information in the Internet Protocol Connection dialog. Enter the proxy address and port number as appropriate for your facility's connections.

6. Ensure that "You have successfully activated your copy of Windows" message appears in Activate Windows.

7. Click **OK** to close the Activate Windows.

Installing the Fibre Channel card driver

If the K2 Media Client has the Fibre Channel option and you restore from the generic disk image, the Fibre Channel card driver is not on the disk image. After restoring the disk image, you must install the Fibre Channel card driver as instructed in this procedure.

1. Make sure that you have access to the Fibre Channel card driver file. On the local K2 Media Client, look for *C:\profile\drivers\LSI_SCSIPORT_1.21.25.00*, then do one of the following:

   • If the file is present, continue with the next step in this procedure.

- If the file is not present, procure the file from *ftp://ftp.thomsongrassvalley.com/ pub/K2/Microcode_and _Drivers/LSI_SCSIPORT*. The filename is *LSI_SCSIPORT_1.21.25.00.zip.* Then continue with this procedure

2. After restoring the disk image and restarting the K2 Media Client, a Found New Hardware wizard opens for the Fibre Channel controller. Install the driver on the first FC port as follows:

   a. Select **Install from a list or specific location**. Click **Next**.

   b. Select **Don't search. I will choose the driver to install**. Click **Next**.

   c. Select **SCSI and Raid Controllers** and **Have Disk**.

   d. Browse to *C:\profile\drivers\LSI_SCSIPORT_1.21.25.00*. Click **Open** and **OK**.

   e. Start the driver install by selecting **Next**.

   f. On the Hardware Installation page, click **Continue Anyway**.

   g. Click **Finish**.

3. If the K2 Media Client has a dual port Fibre Channel card, on the Found New Hardware wizard, install the driver on the second FC port as follows:

   a. Select **Install from a list or specific location**. Click **Next**.

   b. Select **Don't search. I will choose the driver to install**. Click **Next**.

   c. Select **Have Disk**.

   d. Browse to *C:\profile\drivers\LSI_SCSIPORT_1.21.25.00*. Click **Open** and **OK**.

   e. Start the driver install by selecting **Next**.

   f. On the Hardware Installation page, click **Continue Anyway**.

   g. Click **Finish**.

4. On the Found New Hardware wizard, install the first LSI Pseudo Device as follows:

   a. Select **Install from a list or specific location**. Click **Next**.

   b. Select **Don't search. I will choose the driver to install**. Click **Next**.

   c. Select **Have Disk**.

   d. Browse to *C:\profile\drivers\LSI_SCSIPORT_1.21.25.00*. Click **Open** and **OK**.

   e. Start the driver install by selecting **Next**.

   f. On the Hardware Installation page, click **Continue Anyway**.

   g. Click **Finish**.

5. If the K2 Media Client has a dual port Fibre Channel card, on the Found New Hardware wizard, install the driver on the second LSI Pseudo Device port as follows:

   a. Select **Install from a list or specific location**. Click **Next**.

   b. Select **Don't search. I will choose the driver to install**. Click **Next**.

    c. Select **Have Disk**.

    d. Browse to *C:\profile\drivers\LSI_SCSIPORT_1.21.25.00*. Click **Open** and **OK**.

    e. Start the driver install by selecting **Next**.

    f. On the Hardware Installation page, click **Continue Anyway**.

    g. Click **Finish**.

6. If the K2 Media Client is on a redundant K2 Storage System, do the following:

    a. Install MPIO as instructed in the *K2 Media Client System Guide.*

    b. Make the following registry settings:

```
[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Service
s\Symmpi\Parameters\Device]
```

```
"DriverParameter"="EnablePseudoDevice=1;MPIOMode=2"
```

```
"MaximumSGList"=dword:000000ff
```

```
"NumberOfRequests"=dword:00000020
```

Replacing a K2 Media Client

To correct some system faults Grass Valley Support sends you a replacement K2 Media Client. Contact Grass Valley Support if you think you need a replacement K2 Media Client.

Chapter **4**

Troubleshooting problems

If you think there is something wrong (broken) with your K2 client system, go through the following preliminary steps:

Then use the following topics to troubleshoot specific problem areas:

Step 1: Check configurations

Many times what appears to be a K2 Media Client fault is actually an easy-to-fix configuration problem. Check settings in Configuration Manager and verify that the system is configured as you expect. Refer to the *K2 Media Client User Guide* and the *K2 Media Client System Guide.*

Step 2: Check connections and external equipment

Loose or improperly connected cables are the most likely source of problems for the system. A quick check of all the cable connections can easily solve these problems. Refer to the *K2 Media Client System Guide* for help with making connections. Refer to the troubleshooting topic "Checking external equipment" on page 88 if you suspect a failure in a device connected to the K2 Media Client.

Step 3: Check system status messages

While the K2 Media Client is in operation, some problems are detected and reported in system status messages. To view system status messages, in AppCenter select **Help | System Status**. Also refer to "Viewing AppCenter system status messages" on page 38.

When connecting to a K2 Media Client from a control point PC using remote AppCenter, if there is an AppCenter system startup error, the error is reported during the connection attempt.

If the system status message indicates a problem, refer to the related troubleshooting topic later in this chapter.

NOTE: Do not use the "Power Console Plus" (PCP) utility on a K2 Media Client. This utility is for use by qualified Grass Valley Service personnel only. When this utility is opened it scans the SCSI bus and interferes with record and play operations.

Step 4: Identify problems using the startup sequence

The startup sequence is your primary tool for identifying a K2 Media Client fault. As the different levels of the K2 Media Client system become operational in the startup process, the primary components of the system are checked. You can identify most problems by evaluating the messages and other indicators that occur during the startup sequence.

NOTE: This procedure assumes that the K2 Media Client is in the normal (online) mode, not the offline mode.

To identify problems using the startup sequence, do the following:

1. Connect mouse, keyboard, and monitor. You must observe the VGA screen and be able to interact with the system via keyboard and mouse to fully identify problems.

2. Restart the K2 Media Client. If you have problems, refer to "Shutdown/restart problems" on page 87.

3. Once the startup sequence begins, observe the progression of behaviors as listed in the following table. These are the behaviors you should expect to see and/or hear for a normally operating K2 Media Client. If you observe behaviors other than those listed, refer to the indicated troubleshooting topics to identify problems.

NOTE: You can press the Pause/Break key on the keyboard to keep BIOS text on the screen for longer viewing.

At about this time…	This behavior should occur…	If not, refer to the following:
—	Pressing the standby button starts the K2 Media Client	"Shutdown/restart problems" on page 87
0 seconds	Power on LED goes on and stays on.	"Power supply problems" on page 91
	Service LED stays off.	
	Power supply LEDs go on (green) and stay on.	
	Chassis fan module and processor fan start	"Thermal problems" on page 91
2 seconds	CD LED flashes intermittently. This lasts for 5 - 10 seconds.	"CD drive problems" on page 92
3 seconds	On motherboard GigE ports, green LEDs go on, then off, then on and stay on. This sequence lasts about 3 seconds.	"Network, transfer, and streaming problems" on page 101
18 seconds	On NIC GigE ports, green and orange LEDs go on.	
22 seconds	Motherboard BIOS startup information appears, as documented page 85.	"Motherboard/BIOS startup" on page 89
25 seconds	On NIC GigE board ports, orange LEDs go off. Green LEDs stay on.	"Network, transfer, and streaming problems" on page 101
	SCSI controller adapter startup information appears, as documented page 86.	"System problems" on page 97
62 seconds	Motherboard BIOS startup summary screen appears, as documented page 87.	"Motherboard/BIOS startup" on page 89
66 seconds	Black screen appears.	"Motherboard/BIOS startup" on page 89
71 seconds	Windows starting up screen appears	"Windows startup" on page 89
93 seconds	Keyboard lights flash	"Checking external equipment" on page 88
	On all GigE ports, LEDs go off, then orange LEDs go on and stay on while link activity LEDs begin pulsing, indicating network traffic	"Network, transfer, and streaming problems" on page 101
94 seconds	Black screen appears	"Motherboard/BIOS startup" on page 89
109 seconds	Blue screen appears	"Windows startup" on page 89
113 seconds	Windows logon screen appears.	"Windows startup" on page 89

Logon to Windows to continue the startup sequence.

After Windows logon:

At about this time…	This behavior should occur…	If not, refer to the following:
0 seconds	Grass Valley logo desktop appears	"K2 Media Client system startup" on page 90
9 seconds	Desktop icons and startbar appear	"Windows startup" on page 89
12 seconds	AppCenter logon box appears.	"K2 Media Client system startup" on page 90

Logon to AppCenter to continue the startup sequence.

After AppCenter logon:

0 seconds	System Startup messages appear	"K2 Media Client system startup" on page 90
Time varies. Between 30 seconds and 2 minutes.	All system components check out as OK and AppCenter workstation opens. Media operations are functional.	"Operational problems" on page 96

Motherboard BIOS startup information

The following information appears on the locally connected VGA monitor during a normal startup of the K2 Media Client. This is a part of the BIOS Power On Self Test (POST) generated by the motherboard.

Information	Explanation
Phoenix BIOS XX…	Motherboard BIOS and firmware version information
Copyright…	Copyright information for the manufacturer of the motherboard.
Supermicro X5DP8-G2/X5DPE-G2/X5DP6…	Motherboard model information
CPU = 2 Intel (R) Xeon (TM) CPU 2.66 GHz	Report of processor(s) currently installed on motherboard
System Bus at 533MHz	
Hyper-Threading Enabled	
1023M System RAM Passed	Results of test of memory currently installed
512K L2 Cache SRAM Passed	Results of test of memory currently installed
System BIOS shadowed	
Video BIOS shadowed	
ATAPI CD-ROM: TEAC CD-W5526	Report of removable media drive currently installed
Mouse Initialized	Report of mouse detected

SCSI controller adapter BIOS startup information

The following information appears on the locally connected VGA monitor during a normal startup of the K2 Media Client. This is a part of the BIOS Power On Self Test (POST) generated by the SCSI controller adapter.

Information	Explanation
LSI MegaRAID BIOS Version…	SCSI controller adapter BIOS and firmware version information
Copyright…	Copyright information for the manufacturer of the SCSI controller adapter.
Initializing SCSI controllers Scanning… Checking… Spinning… Reading…	This list of flashing messages refer to the startup of the internal RAID drives and their supporting components.
HA-1 (Bus 3 Dev 0) MegaRAID SCSI 320-2X	Report of the SCSI controller adapter
Standard FW 413Z DRAM = 128 MB (SDRAM)	Report of firmware and memory installed on the SCSI controller adapter.
6 Logical drives found… 6 Logical drives handled…	A report of the LUNs (groups of RAID drives) currently installed. Internal storage models have multiple LUNs. External storage models have one LUN.
Press <Ctrl> <M> to run Configuration Utility Press <Ctrl> <H> for WebBIOS	This is the SCSI controller adapter configuration. Do not press these keys. All settings should be left at their default values.

Motherboard BIOS startup summary screen

The following information appears on the locally connected VGA monitor during a normal startup of the K2 Media Client. This is a summary of the current settings for the motherboard BIOS.

```
                 Phoenix BIOS Setup Utility

      CPU Type:   Intel (R) Xeon (TM) CPU 2.66 GHz

      CPU Speed:  2.66 GHz           System ROM:  E5B7-FFF

   System Memory: 640 KB             BIOS Date:   10/28/04

 Extended Memory: 1047040 KB         COM Ports:   03F8 02F8

     Shadow RAM:  384 KB             LPT Ports:   0378

      L2 Cache:   512 MB           Display Type:  EGA/VGA

                                    PS/2 Mouse:   Installed

    Hard Disk 0:  CD-ROM            Diskette A:   Disabled

    Hard Disk 1:  None              Diskette B:   Disabled

    Hard Disk 2:  None

    Hard Disk 3:  None


 PCIX Slot 1/2/3: 66 MHz           PCIX Slot 4:   33 MHz

    PCIX Slot 5:  XX[a] MHz         PCIX Slot 6:   133 MHz
```

[a.] PCIX Slot 5 is 66 MHz on SD-00 and on SDA-00 models, 133MHz on HD-00 models.

Shutdown/restart problems

If the K2 Media Client is inoperable due to a software error it can effect the operation of the standby button. If pressing the standby button does not shut down the K2 Media Client, press and hold the button for five seconds. This forces the K2 Media Client to execute a hard power down. If that doesn't work, disconnect the power cable.

Checking external equipment

This section provides troubleshooting procedures for external devices that connect to the K2 Media Client. Before using these procedures, first check connections, as in "Step 2: Check connections and external equipment" on page 82.

VGA display problems

Problem	Possible Causes	Corrective Actions
Screen turns on, but nothing from K2 Media Client is displayed	VGA connector or cable is faulty.	Replace VGA monitor.
	K2 Media Client system settings have been tampered with.	Restore default settings by restoring the system drive image from a recent backup image.

Keyboard problems

The keyboard is detected during BIOS startup. There should be a very brief message displayed indicating detection of input devices connected to USB or PS2 ports

Problem	Possible Causes	Corrective Actions
The K2 Media Client does not respond correctly when one or more of the keys on the keyboard are pressed.	The keyboard is faulty.	Replace the keyboard.
	K2 Media Client system settings have been tampered with.	Restore default settings by restoring the system drive image from a recent backup image.

Mouse problems

The mouse is detected during BIOS startup. There should be a very brief message displayed indicating detection of input devices connected to USB or PS2 ports.

Problem	Possible Causes	Corrective Actions
The K2 Media Client does not respond correctly when one or more of the buttons on the mouse are clicked.	The mouse is faulty.	Replace the mouse.
	K2 Media Client system settings have been tampered with.	Restore default settings by restoring the system drive image from a recent backup image.

Power connection sequence

The following table lists the sequence of behaviors you should expect to see and/or hear as you connect the power cable to a normally operating K2 Media Client. If you observe behaviors other than those listed, refer to other sections of this manual to investigate potential problems.

In this time…	On the K2 Media Client front panel or chassis, look/listen for the following…	If not, refer to the following.
0 seconds	The CD light flashes on and off quickly.	"CD drive problems" on page 92
	Power on LED goes on and stays on.	"Power supply problems" on page 91
	Drive busy LED goes on then off.	"Media disk problems" on page 98
3 seconds	If there is a LAN connection, the green LED on the NIC adapter (rear panel) goes on and stays on.	"Dual Ethernet adapter LAN connector indicator codes" on page 30

This power connection sequence assumes that before the power cord was removed, the K2 Media Client was properly shut down from AppCenter, from the Windows operating system, or from the standby button. If the power cord was removed without a proper shutdown, when the power cord is connected the K2 Media Client might go directly to the startup sequence. Refer to "Shutdown/restart problems" on page 87.

Motherboard/BIOS startup

A few seconds after startup, on the VGA monitor a black screen is displayed with system information messages. This is the BIOS Power On Self Test (POST). Press **Delete** on the keyboard during this time to enter the BIOS settings pages. When the BIOS POST completes the Windows operating system begins to load.

If during the BIOS POST time a message appears that requires your input or if the K2 Media Client 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. Normally the Windows operating system completes its processes automatically without the need to press keys or respond to messages. When the Windows startup is complete the Windows logon dialog box is 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 the system drive image. Refer to "Using recovery disk images" on page 67.

K2 Media Client system startup

After the Windows operating system startup processes complete, you must log in to AppCenter to trigger K2 Media Client system startup processes to begin. The K2 Media Client determines that system health is adequate by checking critical subsystems. Critical subsystems are those upon which the K2 Media Client depends for core functionality. Critical subsystem checks are displayed in the System Startup message box.

System Startup

Connecting to local
Checking file system...
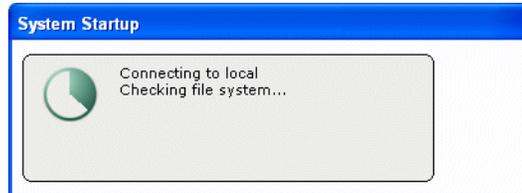
When all critical subsystem checks are successful, AppCenter workstation opens. If one of the system checks fails, a message appears and AppCenter does not open, so the K2 Media Client is unable to accomplish media operations. Refer to "Critical system startup messages" on page 38 for a list of the messages that can appear.

To correct problems revealed at system startup, use the indicated troubleshooting information from the following sections.

Thermal problems

Problem	Possible Causes	Corrective Actions
The fans are noisy or otherwise run erratically. The K2 Media Client overheats. This can be accompanied by a StatusPane message indicating a temperature or fan problem.	Airflow is blocked.	Ensure adequate airflow around the K2 Media Client.
	The fan module is not operating correctly.	Inspect the fan module and its connections for proper operation. If the fans are not operating correctly, replace the fan module as explained in "Fan module removal" on page 105.

Codec board problems

Investigate the problem further as described in the following table. If the problem persists, contact Grass Valley Support.

Problem	Possible Causes	Corrective Actions
A system status message indicates a problem with the codec board.	The codec board and/or riser board are not connected properly or are faulty.	Visually inspect the RTP board and codec board. Make sure they are connected properly and there is no sign of physical damage. Restart the K2 Media Client. If the problem persists, replace the codec board. Refer to "Codec board removal" on page 112.

Power supply problems

Problem	Possible Causes	Corrective Actions
The K2 Media Client will not power on or power fails while the K2 Media Client is in operation. This can be accompanied by a StatusPane message indicating a power supply problem prior to the failure.	The power source is faulty.	Make sure your power source is reliable.
	The power cord is faulty.	Try another power cord.
	The K2 Media Client is too hot. The built-in overtemperature protection can shut down the power supply.i	Check for thermal problems. Cool the K2 Media Client.
	The power supply is faulty. This is indicated if the front panel power indicator does not come on.	Replace the power supply

If the power source and the power cord are OK, replace the power supply. Refer to "Power supply removal" on page 107.

CD drive problems

Problem	Possible Causes	Corrective Actions
There is no access to a disk in the CD 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.	1. Make sure a correctly formatted disk is inserted correctly. Try another disk if necessary. 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 K2 Media Client 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 this does not fix the problem, replace the drive as explained in "Removable media drive removal" on page 111.
When attempting to burn a CD, a "F:\ is not accessible. Incorrect function" message is displayed.	The K2 Media Client does not support burning CDs under the Windows operating system.	None. The only supported process for burning CDs is the recovery disk image process, which occurs while the K2 Media Client is booted from the Recovery CD, not Windows.

Video problems

For the corrective actions in this section, refer to the *K2 Media Client User Guide* for detailed instructions.

Problem	Possible Causes	Corrective Actions
The picture level modulates at a particular frequency.	There is excessive hum riding on the video input signal.	Check the video input signal for excessive hum.
In stop mode the still-play video shows some motion jitter.	Two fields are displayed in still play mode.	Switch the still-play mode setting to Field.
On HD-00 models, the loopback video displays erratically moving green lines.	K2 Media Client is not locked to a video reference. It must be locked to a video reference and loop-back videos must be synchronous to the video reference for the loop-back feature to work properly.	Lock the K2 Media Client to a video reference.

Audio problems

For the corrective actions in this section, refer to the *K2 Media Client User Guide* for detailed instructions.

Problem	Possible Causes	Corrective Actions
No audio	Wrong audio input selected	Select the correct audio input.
No embedded audio	Wrong embedded audio input group selected.	Ensure the correct embedded audio input group is selected.
	Wrong embedded audio output group selected.	Ensure the correct embedded audio output group is selected.
Playback audio output is 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.
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 AppCenter Monitor Pane.	The Monitor Pane configured to not display audio meters.	Configure the Channel Monitoring setting to display audio meters.

Timecode problems

For the corrective actions in this section, refer to the *K2 Media Client User Guide* for detailed instructions

Problem	Possible Causes	Corrective Actions
Recorded timecode reads xx.xx.xx.xx.	No timecode source for the channel.	Set the timecode 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.

Operational problems

For the corrective actions in this section, refer to the *K2 Media Client User Guide* for detailed instructions.

Problem	Possible Causes	Corrective Actions
The K2 Media Client 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 other clips play on the same channel.	The clip does not match current K2 Media Client 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 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 AppCenter. Controls are disabled.	The channel is configured for control by a remote control protocol.	Set the control mode for limited local control.

System problems

For the corrective actions in this section, refer to the *K2 Media Client User Guide* for detailed instructions.

Problem	Possible Causes	Corrective Actions
One of the record channels does not record or video is jumpy.	The K2 Media Client is configured for PAL, yet the video input is NTSC	Check the current setting for video standard. Verify that the video input signal is the correct standard.
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.	Verify the time-of-day source. Verify the source's time accuracy.

Storage problems

Use the following sections if you suspect problems with your K2 Media Client's storage system. Refer to the *K2 Media Client System Guide* for Storage Utility procedures.

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 StatusPane 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 100 for causes related to certain usage patterns.	1. 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. 2. Work through "Checking and repairing media" on page 39. If the file system fails the check process you must make a new file system. When you do so you lose all media.
During K2 Media Client startup a "…no file system running…" message appears.	The file system is corrupt or disks are faulty/missing such that they are not part of a stripe group.	Work through "Checking and repairing media" on page 39. If the file system fails the check process you must make a new file system. When you do so you lose all media.

Media disk problems

On the Windows desktop open **K2 Media Client** (My Computer) for a quick check of the drives. You should see C:, D:, E:, and V: drives.

Problem	Possible Causes	Corrective Actions
No clips appear in the Clips pane. This may be accompanied by a startup message or a StatusPane message regarding media disks being unavailable.	A media disk is bad or there has been a hardware failure.	Open Storage Utility and identify faulty disks. Replace faulty disks. Refer to "Replacing a RAID 0 drive" on page 43.
On startup the VGA startup sequence stalls at the black screen with a "…operating system not found…" message.	There is a problem with the RAID 1 (pair) system drive.	Check the RAID system disks. If status lights indicate problems on both drives, replace the drives. Refer to "Configuring NVRAM" on page 62.

Problem	Possible Causes	Corrective Actions
The StatusPane message "Media disks getting full…" appears or a "FSS 'default(0)'" message appears.	The media disks are reaching maximum capacity.	In Recorder, select the Time Dome and choose **Available Storage**. If the Time Dome is filled it confirms that your K2 Media Client is out of space. Make space on the media drives by doing the following: - Delete unused clips and empty the Recycled Bin.
When streaming to another K2 Media Client the operation fails. In Transfer Monitor the streaming operation shows "Status:Error".	There is a network connection error or the media disks at the destination are reaching maximum capacity.	Check network connections and configuration. Check available storage on the destination K2 Media Client. In Recorder, select the Time Dome and choose **Available Storage**. If the Time Dome is filled it confirms that the destination K2 Media Client is out of space. Make space on the media drives by deleting unused clips and emptying the Recycle 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.	If you have recently removed and replaced RAID drives, make sure that you have returned them to their correct position. If this solves the problem, use the Storage Utility to check the file system.
System status message "File system…is fragmented".	Extended record/play activity has fragmented the disks.	Use the Storage Utility to check the file system.
Continual and noticeable black frames or freeze frames in video.	Drives are aging.	Look in the Windows system log. Aging drives are indicated if you see a large quantity of the following types of errors: dmio: Harddisk0 write error at block… Replace aging drives.

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
Symptoms can include black video recorded or at playout, frozen video, slow performance, or inconsistent media access. These symptoms can be accompanied by StatusPane messages regarding disk problems or overrun/underrun conditions for encoders, decoders, or timecode.	The following causes can occur on their own or in combination to produce the problem: 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. 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 K2 Media Client applications. Virus scanners and screen savers can cause this type of problem, since they can start automatically and consume system resources. Encoder overrun — This occurs when an encoder is flooded with more data than it can process within its real-time requirements for recording. Decoder underrun — This occurs when a decoder is starved for data and cannot deliver enough to satisfy real-time requirements for playout. 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.	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. 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.

Network, transfer, and streaming problems

Problem	Possible Causes	Corrective Actions
When importing or exporting (sending) between K2 Media Clients a "…failed to connect…" message appears and the operation fails.	There is a problem with Windows networking or there is a mis-spelling with the host name as entered in Configuration Manager.	Check networking as follows: - Check basic Windows networking. 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	Remote** 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.
	The K2 Media Client to which you are trying to connect is not operating or the network is mis-configured.	Verify that the K2 Media Client to which you are trying to connect is operational and that the network is configured correctly. Verify that the name of the K2 Media Client is entered correctly in the Configuration Manager Hosts page. Refer to networking procedures in the *K2 Media Client System Guide*
A networked device does not appear in the "Import" and "Send to" dialog boxes, even though it is present on the Windows network.	The device is not entered as a host.	In AppCenter select **System	Configuration	Remote	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 *K2 Media Client System Guide.*
Files do not appear in" Send To" or "Export" dialogs.	File names do not have proper extensions.	Rename files with proper extensions.

Also refer to the *UIM Instruction Manual* for more troubleshooting information.

Chapter **5**

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 K2 Media Client FRUs:

- *"External Parts Removal"*

- *"Internal Parts Removal"*

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

Unless otherwise indicated, you need only a Torx tool with T15 magnetic tip to remove and replace parts in the K2 Media Client.

You can also replace the entire K2 Media Client as a FRU, as explained in *"Replacing a K2 Media Client" on page 80*.

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 cords are 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

This section provides the following procedures:

- "Opening the front bezel" on page 104

- "Fan module removal" on page 105

- "Front panel removal" on page 106

- "RAID disk removal" on page 107

- "Power supply removal" on page 107

All the parts in this category can be removed and replaced without opening the K2 Media Client cabinet and, except for the power supply, are accessible from the front of the cabinet.

Opening the front bezel
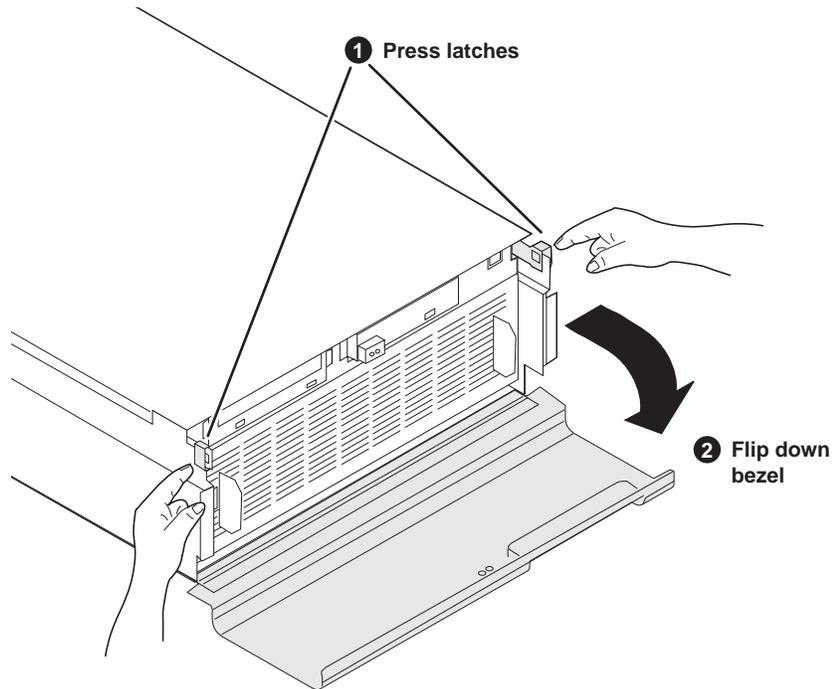
Fan module removal

To remove the fan module, first open the front bezel, then proceed as illustrated.

2 Grab handles and pull out

1 Remove screw
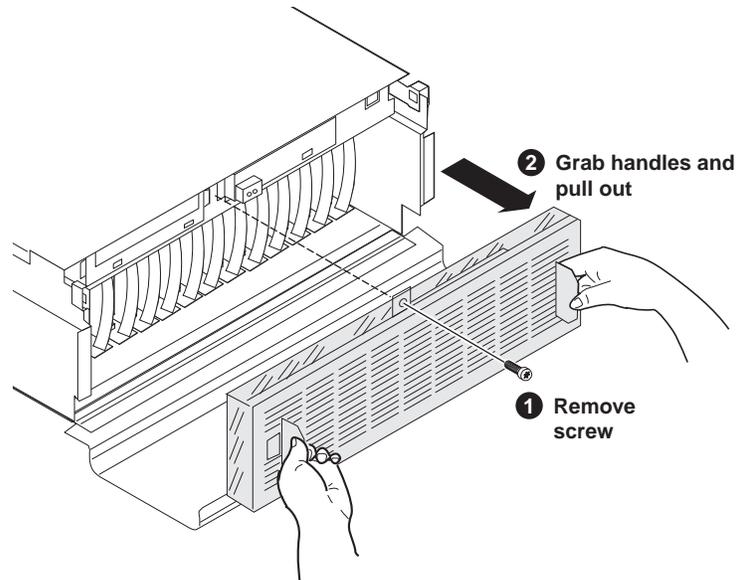
You can remove the fan module while the K2 Media Client is operating. If you do so, make sure you replace it within one minute to ensure that the correct operating temperature is maintained.

Front panel removal

To remove the front panel, first remove the fan module, then proceed as illustrated.
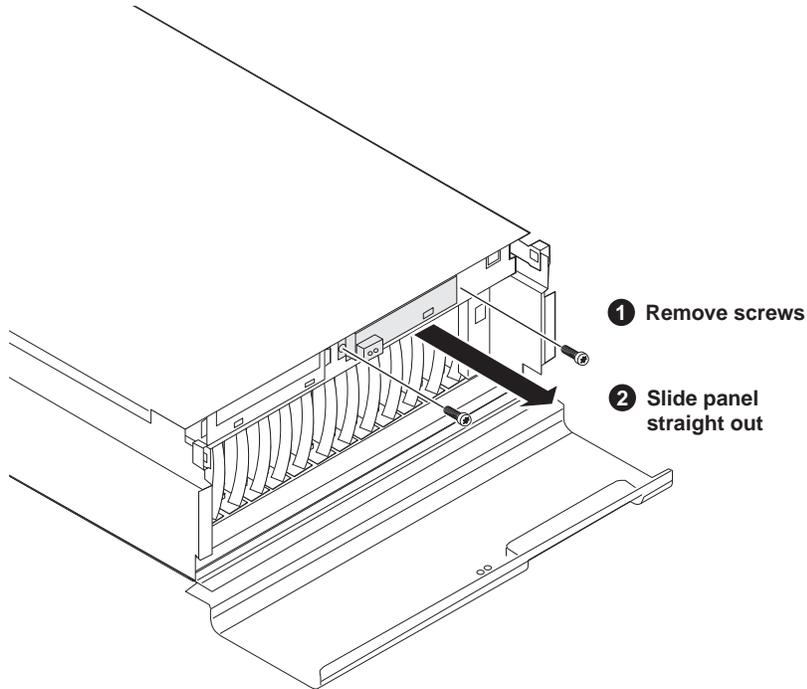
You must remove the front panel before removing the SCSI interface board.

RAID disk removal

Before removing a RAID disk, refer to "Replacing a RAID 0 drive" on page 43. Before removing a drive you should make sure you have identified the proper disk module. In some cases you must also perform operations with Storage Utility.

To remove a RAID disk first open the front bezel and remove the fan module as described in the previous procedures, then proceed as illustrated.
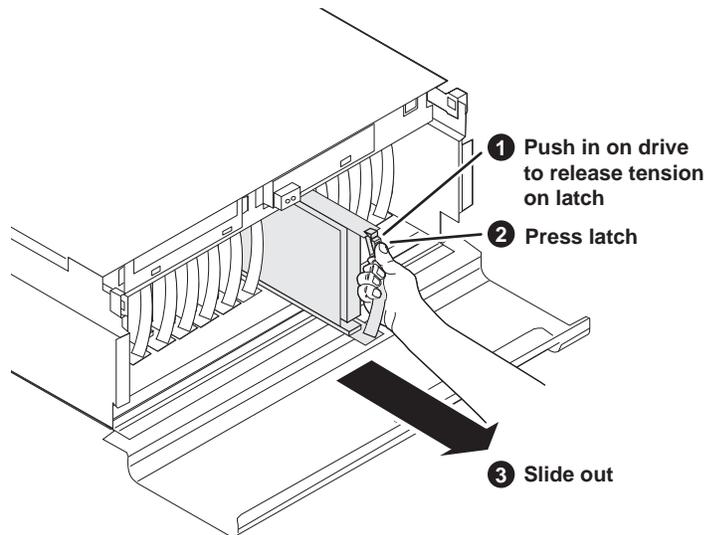
When installing a media drive, push it in firmly and make sure that it clicks into place completely.

Power supply removal

Access the power supply from the rear panel. Remove as illustrated.
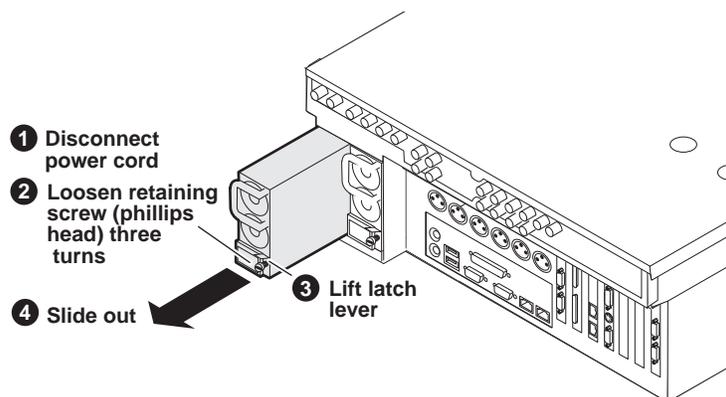
Internal Parts Removal

The sections that follow show how to remove internal parts from the K2 Media Client.

⚠ *CAUTION: To avoid possible damage to circuit boards and other sensitive parts, turn off the K2 Media Client and disconnect AC power before opening the top cover or removing any internal parts.*

Top cover removal

To access the internal hardware, first remove the top cover as follows:

❶ Remove screw

❷ Pull cover toward rear 2 cm to release, then lift off
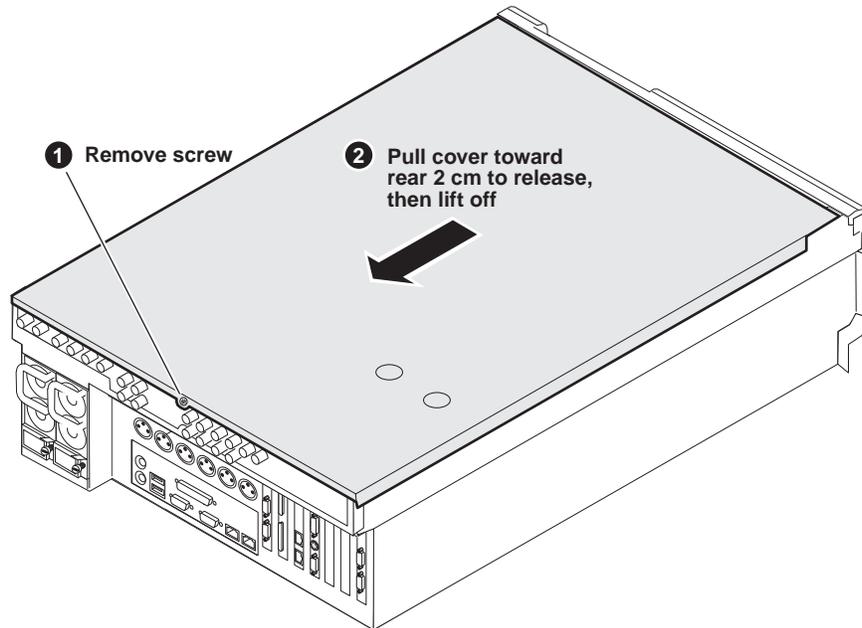
SCSI interface board removal

To remove the SCSI interface board, first remove the top cover and the front panel, then proceed as illustrated.

3 Remove power distribution cables

4 Remove motherboard cable**

5 Remove USB cable

2 Remove SCSI 1 cable*

6 Remove fan power cable

1 Remove SCSI 0 cable*

SCSI 1

SCSI 0

* **Trace SCSI cables to RAID controller adapter to identify**

** **The motherboard cable is not present on older versions of the SCSI interface board**

7 Remove six screws

8 Disengage from backplane

9 Slide out through front
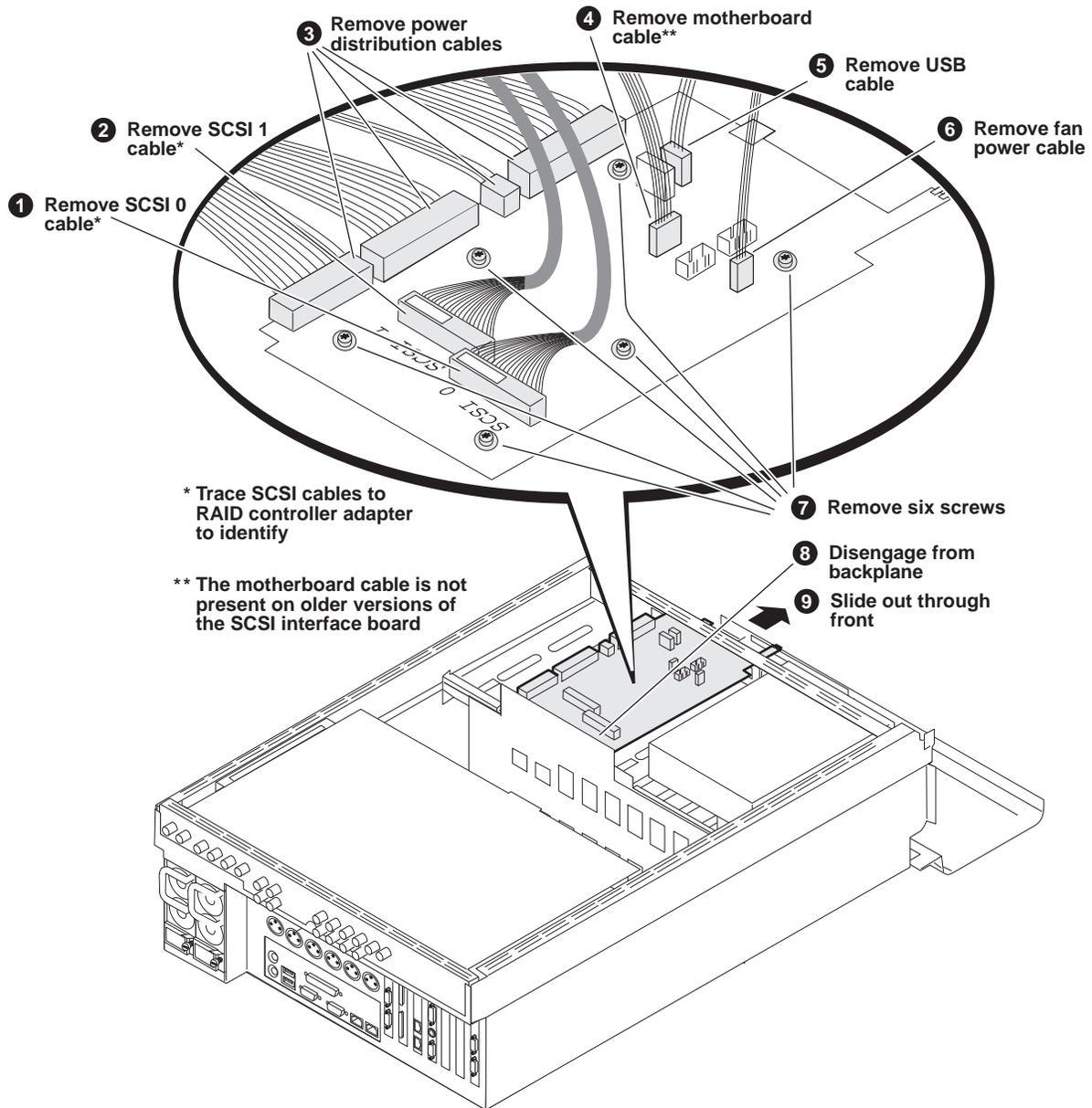
Refer to "SCSI controller adapter removal" on page 123 for cable detail on RAID controller adapter to identify SCSI 0 and SCSI 1 cables.

Removable media drive removal

To remove the CD drive, first remove the top cover and the fan module, then proceed as illustrated.

3 **Slide out through front**

2 **Remove screws**

1 **Disconnect cables**
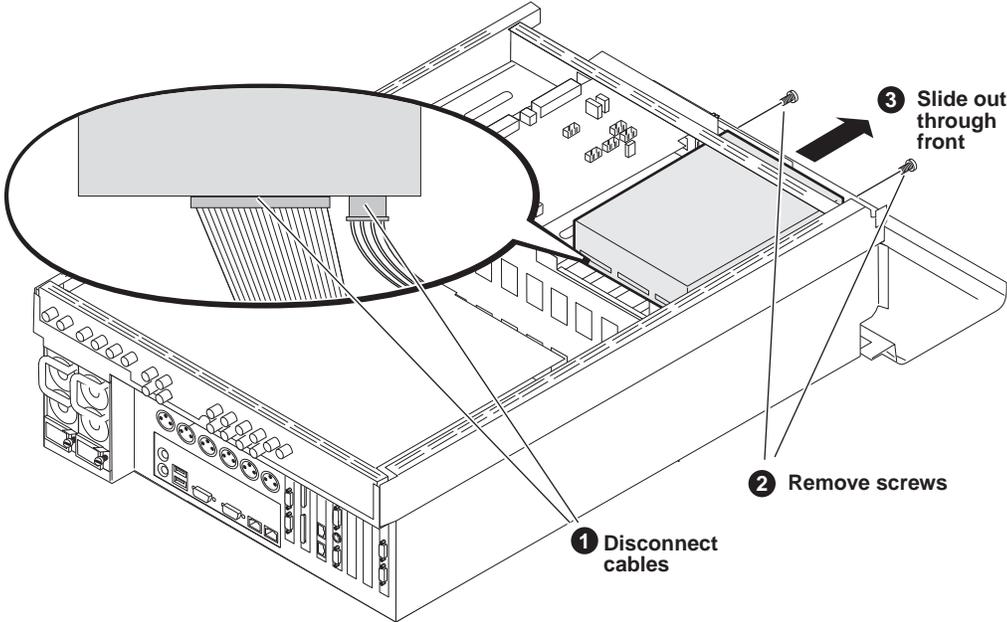
For the CD drive, you must exchange the brackets with the replacement unit, as in the following illustration.

1 **Remove screws (phillips head) on both sides**

2 **Transfer brackets to replacement unit**
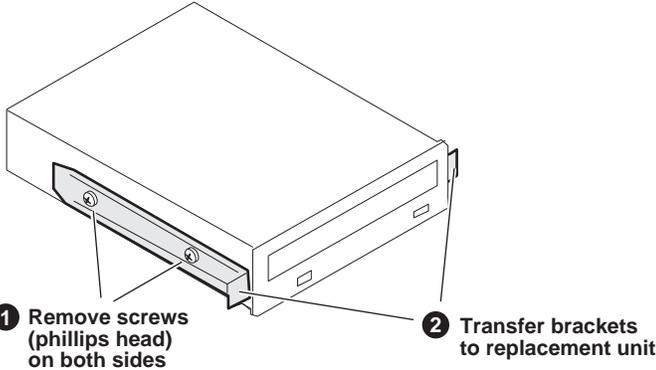
Codec board removal

1. Remove the codec board as follows:

   a. Remove the top cover.

   b. Proceed as shown in the following illustration:
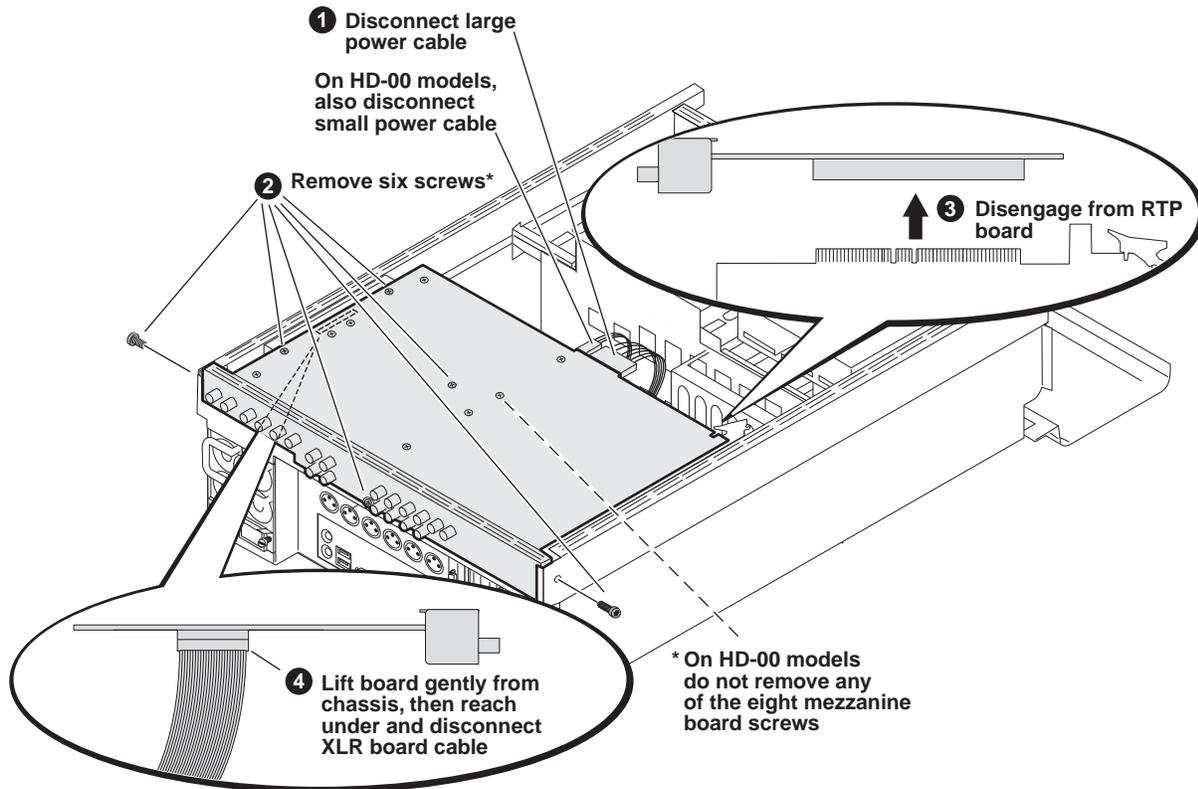
The codec board in HD-00 models is a different size than the codec board in the other models. On HD-00 models the codec board is wider, as shown. This requires that the RTP board be in rear slot two. On SD-00 models and on SDA-00 models, the codec board is narrower, which requires that the RTP board be in rear slot five. Take this into consideration when removing a codec board.

2. After removing the faulty codec board, do one of the following:

   • If a codec board in a SDA-00 or SD-00 model, skip ahead to step 3.

   • If a codec board in a HD-02 model, there are no mezzanine boards attached to the codec board, so removing/installing mezzanine boards is not required. Skip ahead to step 3.

   • If a HD-00 codec board in any other HD-00 model, there are one or two mezzanine boards attached. You must remove these mezzanine boards from the codec board you are removing and install them on the replacement codec board. Make sure you install the mezzanine boards in the same position. Refer to "Mezzanine board removal" on page 114.

3. Install the replacement codec board as shown in the following illustration. When

installing the replacement board, make sure screws are installed in the proper sequence, as illustrated:

8 Connect large power cable

On HD-00 models, also connect small power cable

2 Carefully engage the RTP board

4 Install side screws tightly

5 Tighten center screw

6 Install side screws

3 Loosely install center screw

7 Install center rear screw

6 Install side screws

1 Move board into position, then reach under and connect XLR board cable
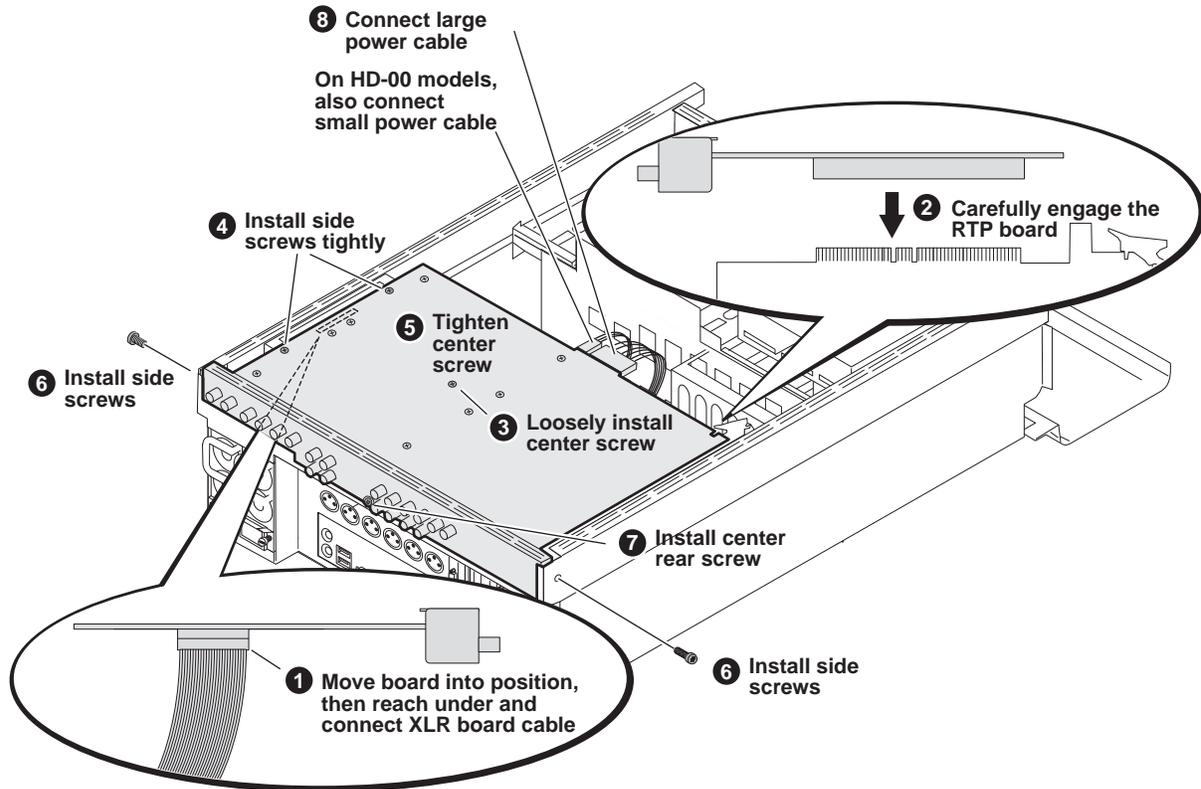
Mezzanine board removal

On HD-00 models, to remove a mezzanine board, first remove the top cover and the codec board, then proceed as illustrated.

❶ Remove the four screws attaching the faulty mezzanine board

Screws for P3/R2 mezzanine board

❷ Flip the codec board over so the mezzanine board is on top.

Screws for P4/R1 mezzanine board

❸ Rock the board slightly to the side to disengage connectors at both ends.

❹ Lift up to remove board.

P3/R2 mezzanine board

P4/R1 mezzanine board
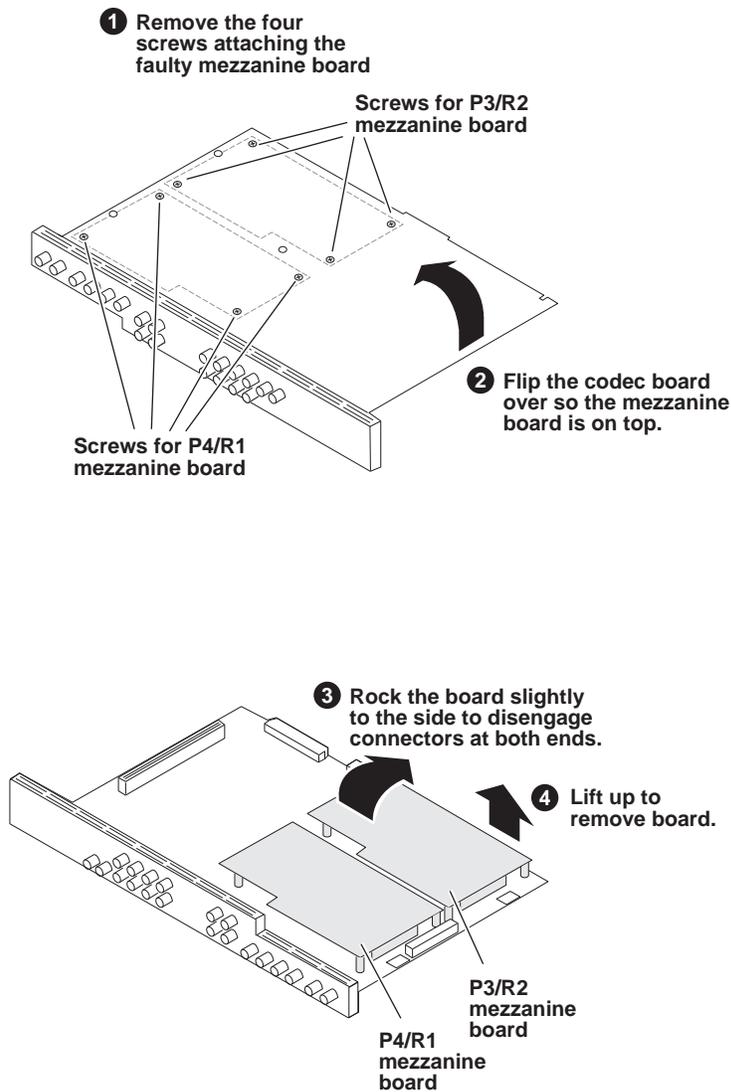
Installation is the reverse of removal.

NOTE: When you install a mezzanine board, make sure it's type (encoder or decoder) and position is the same as the previous type and position. Changing the type, position, or number of encoder/decoder mezzanine boards renders the K2 Media Client inoperable.

RTP board removal

To remove the RTP board, first remove the top cover and the codec board, then proceed as illustrated.

3 **LIft lever to disengage board**

2 **Remove screw**

4 **Lift board straight up**

Keep board aligned front and rear when sliding out and in.

1 **Loosen retaining screws on adjacent boards to allow the RTP board to move in the rear panel slot.**
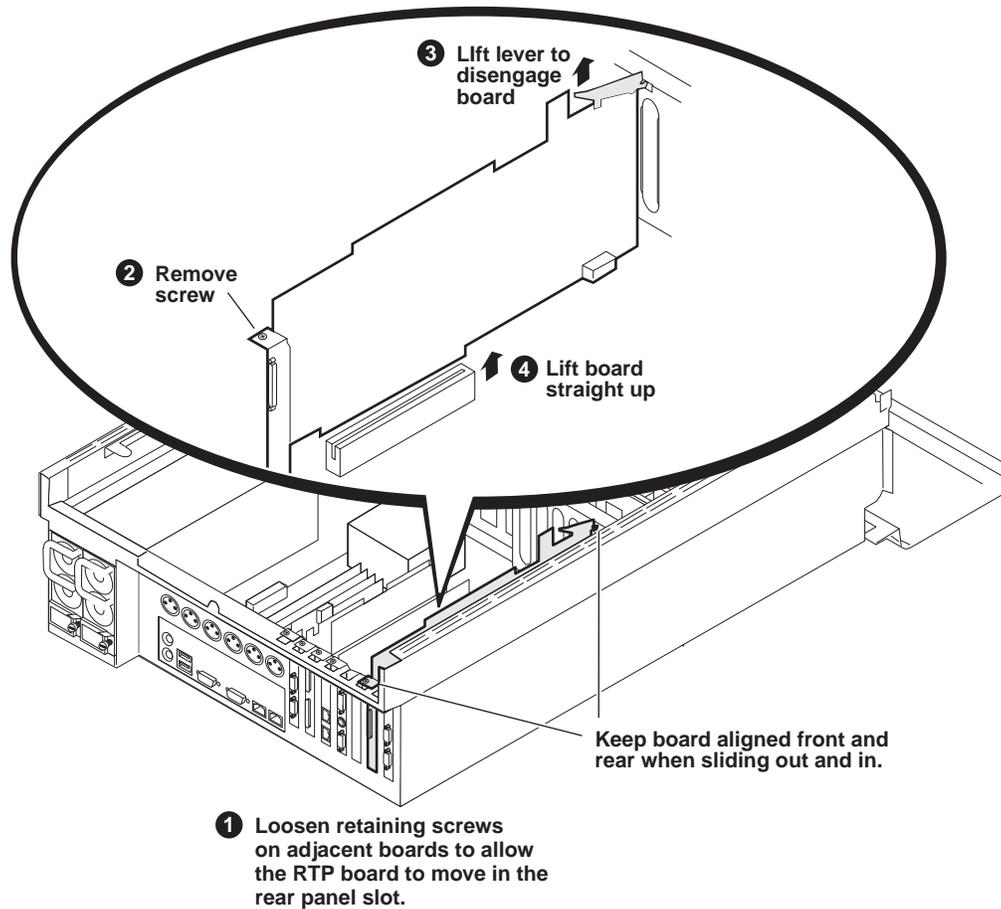
On HD-00 models the RTP board is in rear panel slot two, as shown. On other models the RTP board is in rear panel slot five.

After installing the replacement RTP board, install the current version of K2 Media Client software. (Note: An over-install is all that is required. You do not need to first un-install the software.) This ensures that the board is flashed with the proper version to be compatible with K2 Media Client software.

Rear card guide removal

To remove the rear card guide, first remove the top cover, the codec board, and the RTP board, then proceed as illustrated.
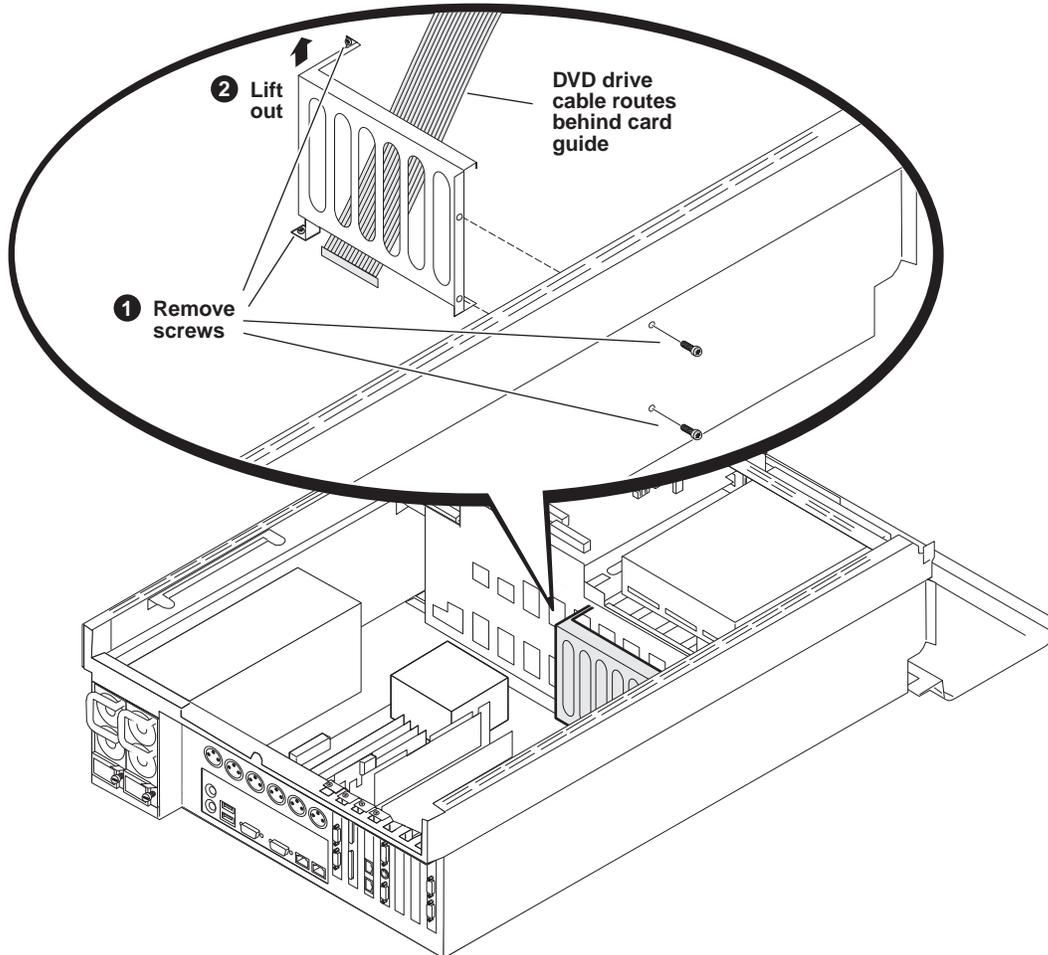
SCSI backplane removal

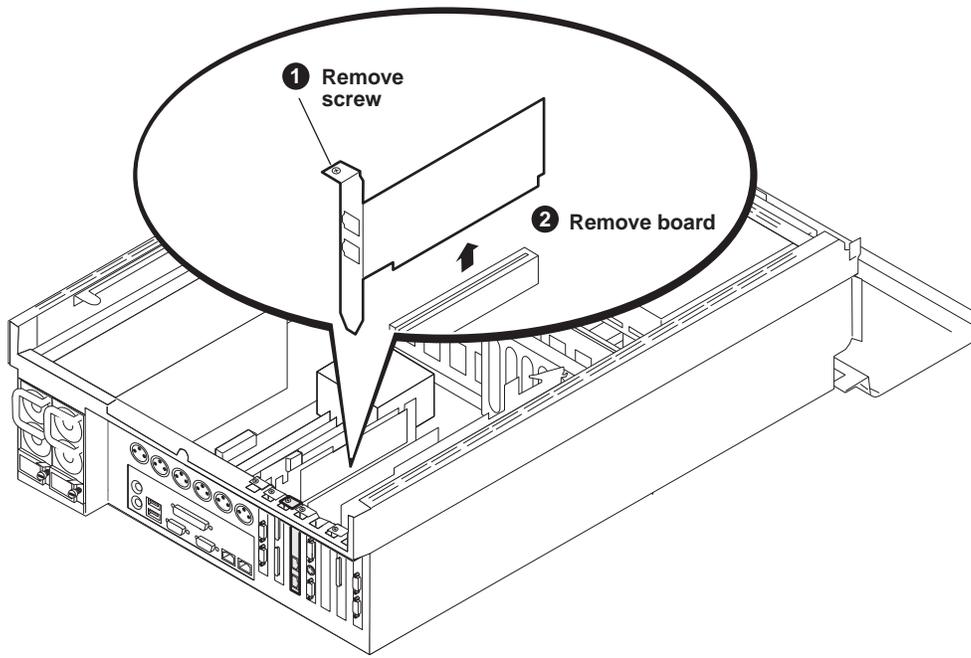To remove the SCSI backplane, first remove the top cover and the codec board, then proceed as illustrated.
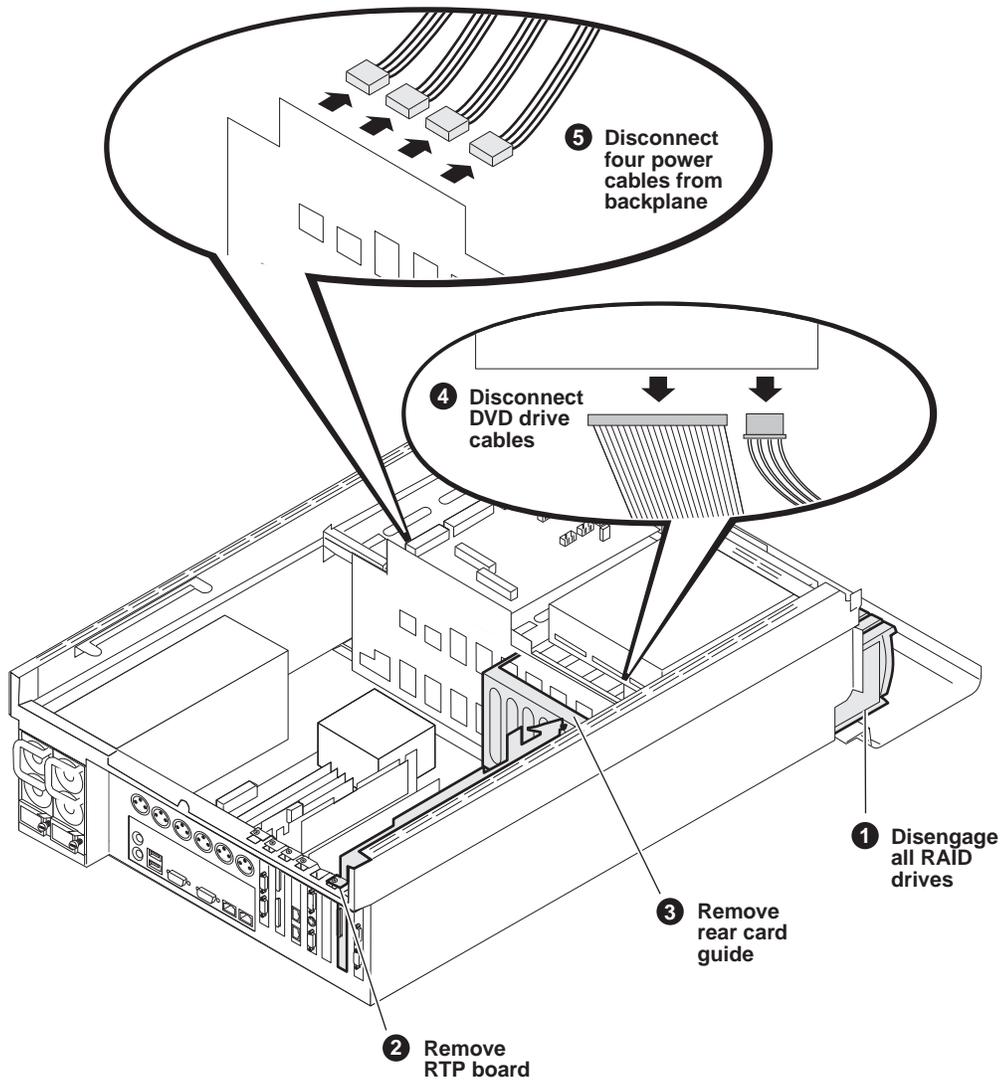
Procedure continues on next page.

7 Remove two screws

6 Remove six screws

8 Remove bar

9 Disengage connector from SCSI interface board

11 Slide backplan to the side and rotate up to remove

10 Carefully slide SCSI backplane to the rear to disengage the 12 LEDS
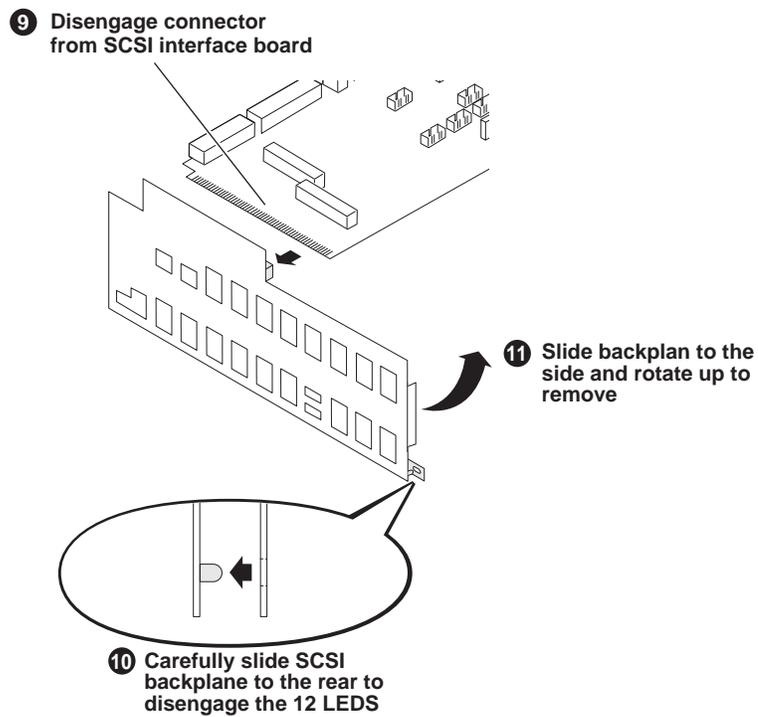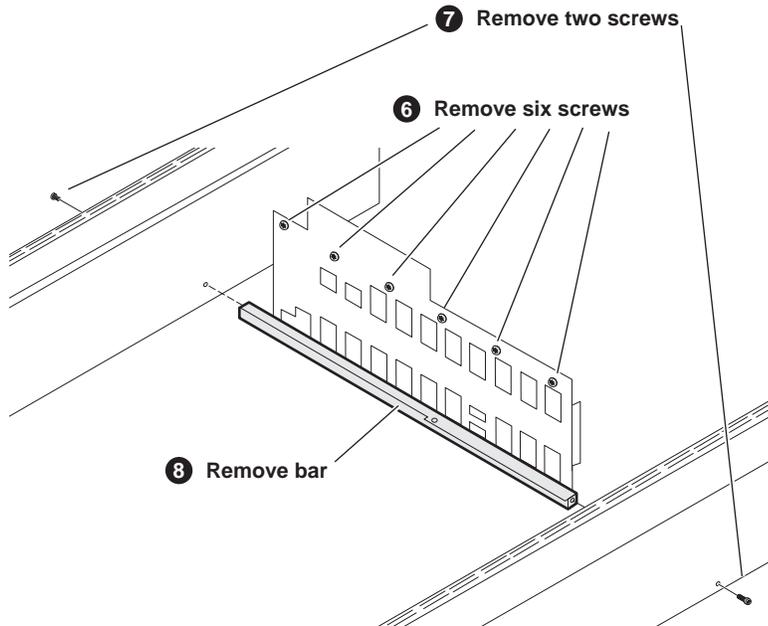
When installing replacement, ensure the LED solder ends clear the cut outs and are not shorting against the bracket.

RS-422 adapter removal

Your K2 Media Client has one of the following for RS-422 connections:

- Two dual-port adapters in slots 1 and 7, connected to the motherboard via USB cables. This is the configuration for a K2 Media Client with a Type III motherboard.

- Two dual-port adapters in slots 3 and 7, connected to the motherboard via USB cables. This is the configuration for a K2 Media Client with a Type I motherboard.

- One adapter (with external 8-port interface), connected to motherboard via PCI slot. This is the configuration for a K2 Media Client with a Type II motherboard.

To remove a RS-422 adapter, first remove the top cover and the codec board, then proceed as directed by the appropriate illustration below.

USB RS-422 adapter

In the following diagram, RS-422 adapters are shown in slots 1 and 7. If your K2 Media Client has RS-422 adapters in slots 3 and 7, apply the procedure similarly.
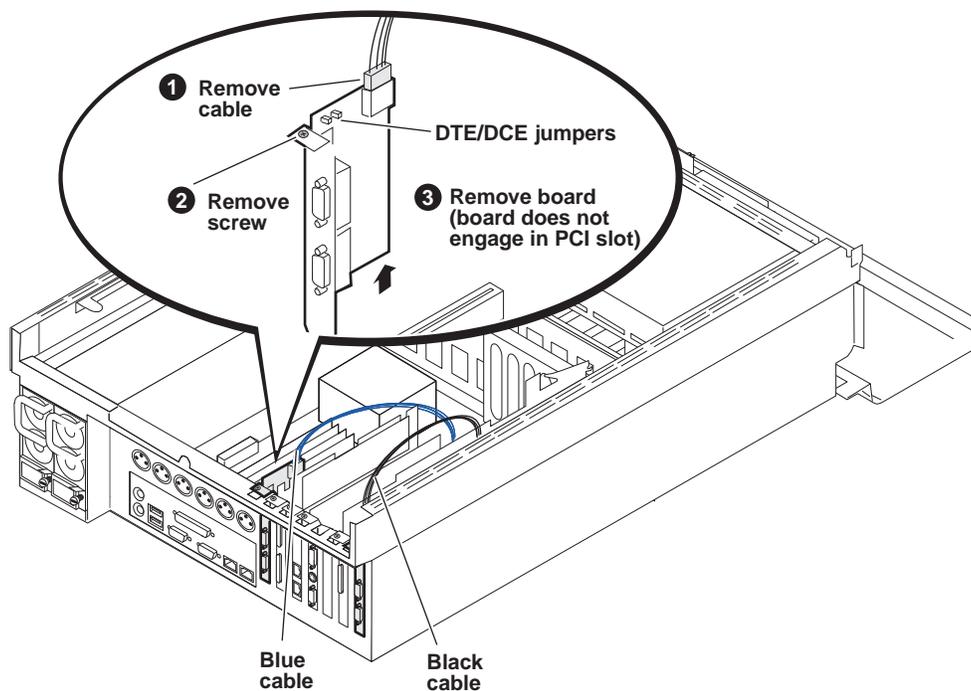
The RS-422 adapter in rear slot seven has the blue cable. The RS-422 adapter in rear slot one or three has the black cable. Refer to "Remove faulty motherboard" on page 130 for detail of USB connections to motherboard.

On the replacement RS-422 adapter, verify that the jumpers that set channels to Data Terminal Emulation (DTE) or Data Communications Emulation (DCE) are in the same position as those on the adapter that you are replacing.

To configured for DTE mode.

Port 1 (J2) jumper should be set to the Pin 2/3 position.

Port 2 (J3) jumper should be set to the Pin 2/3 position.

PCI RS-422 adapter
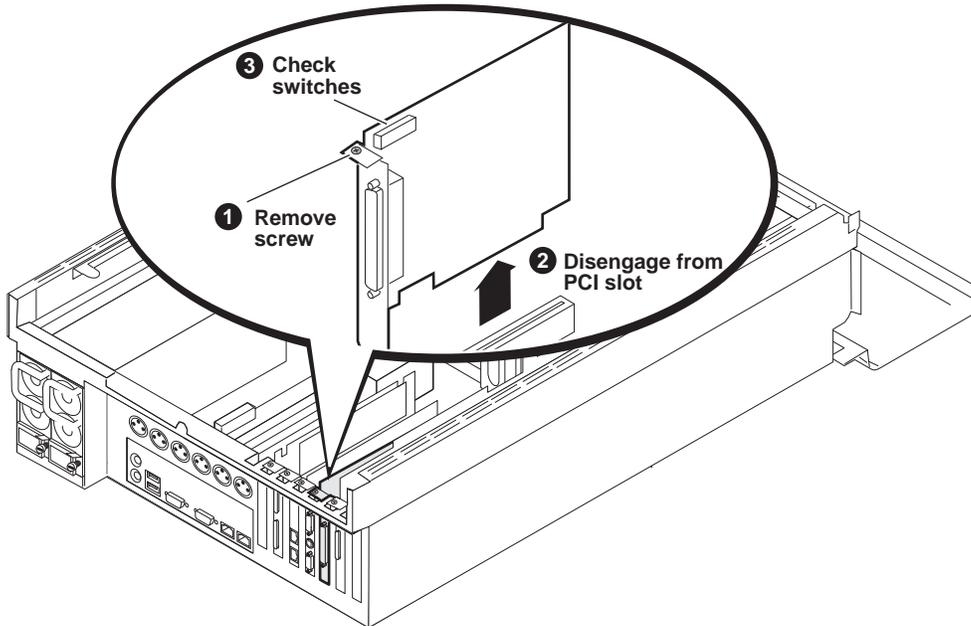
On the replacement RS-422 adapter, verify that the switches that set channels to Data Terminal Emulation (DTE) or Data Communications Emulation (DCE) are in the same position as those on the adapter that you are replacing.

The default setting is DTE. To configure a channel for DTE mode, set its switch to OFF, as illustrated.
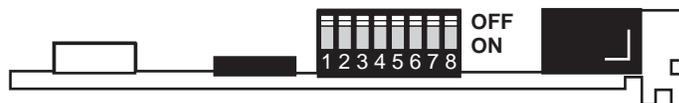
Graphics board removal

To remove the Graphics board, first remove the top cover and the codec board, then proceed as illustrated.
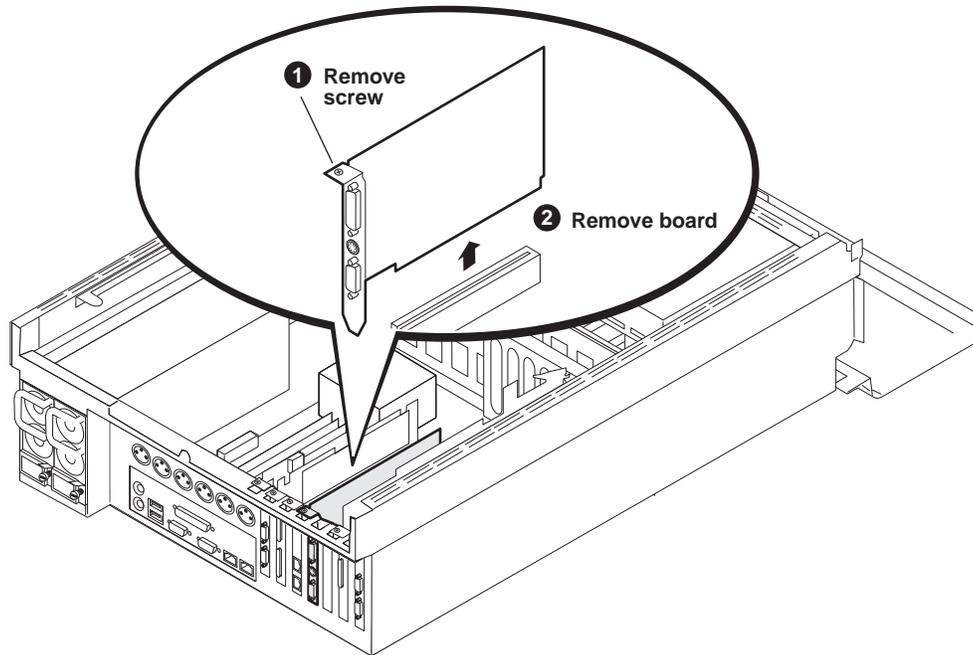
The faulty Graphics board might be slightly taller than the other board and as such require a shim to mount correctly. This shim can be discarded, as the replacement Graphics board is the correct height to mount in the rear panel slot without a shim.

On all models the Graphics board is in rear panel slot four, as shown.

Dual Ethernet adapter removal

On some models the dual Ethernet adapter is optional.

To remove the Dual Ethernet adapter, first remove the top cover and the codec board, then proceed as illustrated.

On HD-00 models the Dual Ethernet adapter is in rear panel slot five, as shown. On other models the Dual Ethernet adapter is in rear panel slot two.

SCSI controller adapter removal

To remove the SCSI controller adapter, first remove the top cover and the codec board, then proceed as illustrated.

1 Remove cable SCSI 0*

2 Remove cable SCSI 1*

3 Remove screw

4 Remove board

Maintain three coils in cables

CH 1   CH 0

* Locate connector labeling on board under SCSI connectors. Cable SCSI 0 connects to CH 0. Cable SCSI 1 connects to CH 1.
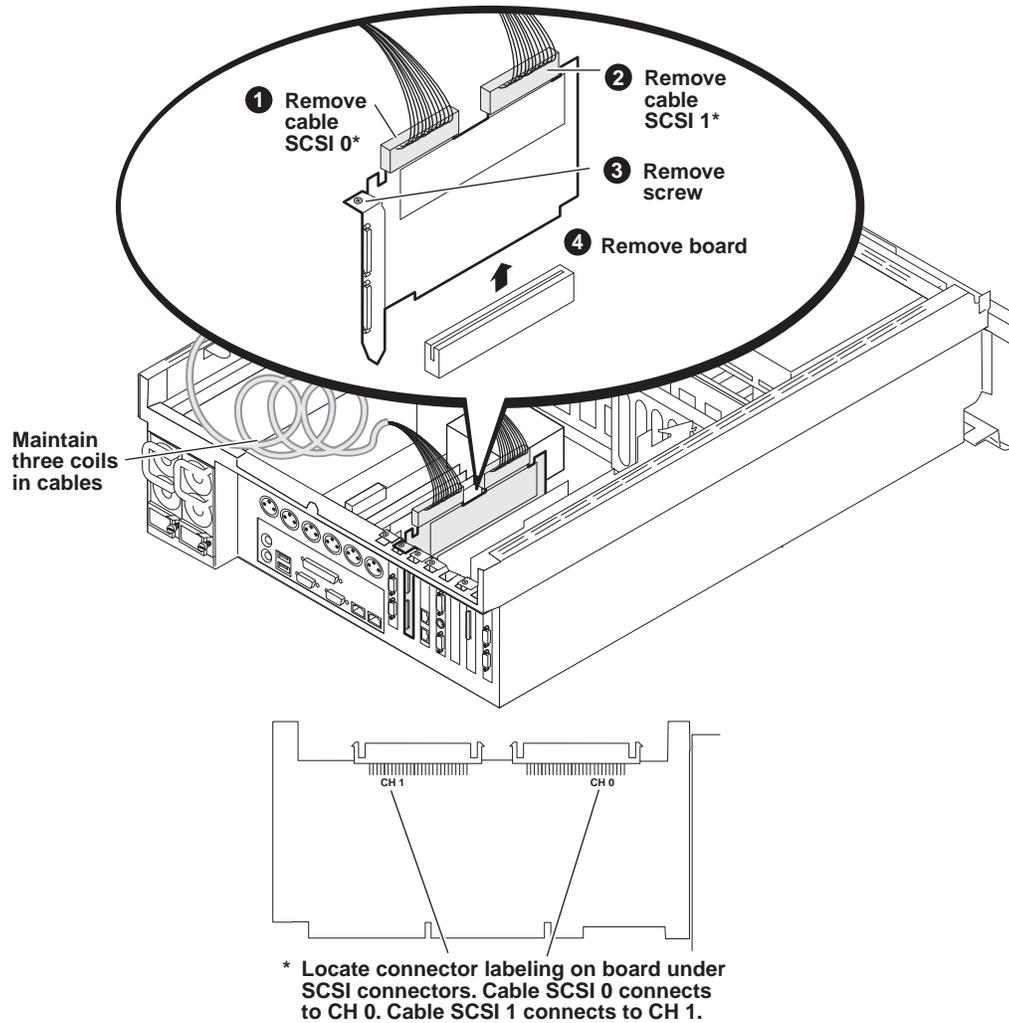
On all models the RAID controller adapter is in rear panel slot six, as shown.

After replacing the RAID controller adapter you must do the procedure at "Configuring NVRAM" on page 62.

XLR board removal

To remove the XLR board, first remove the top cover and the codec board then proceed as illustrated.
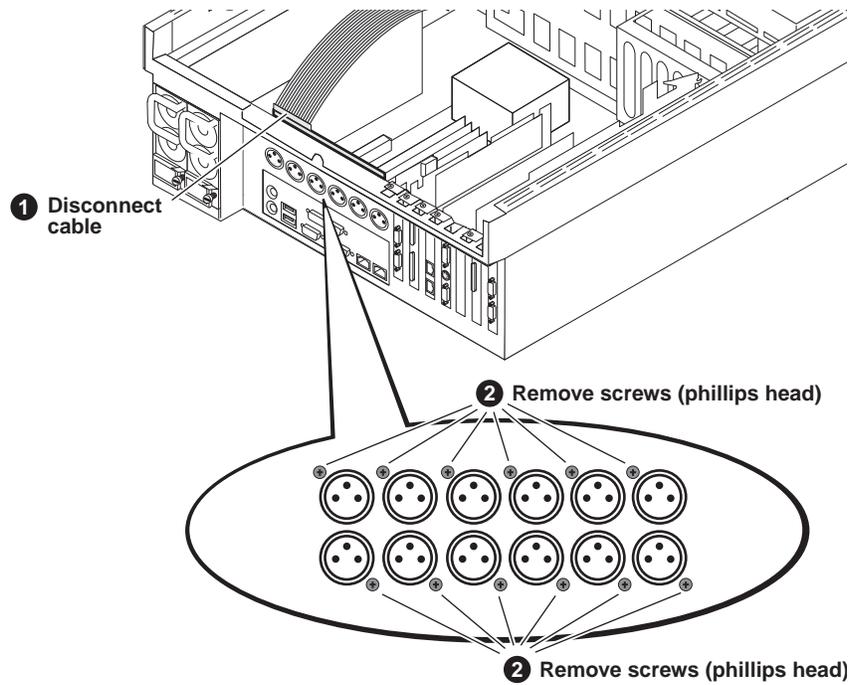
When installing the replacement XLR board, apply pressure as you insert the screws as the screws must cut their own threads.

Center support bracket removal

To remove the bracket that supports the center of the codec board, first remove the top cover and the codec board then proceed as illustrated.
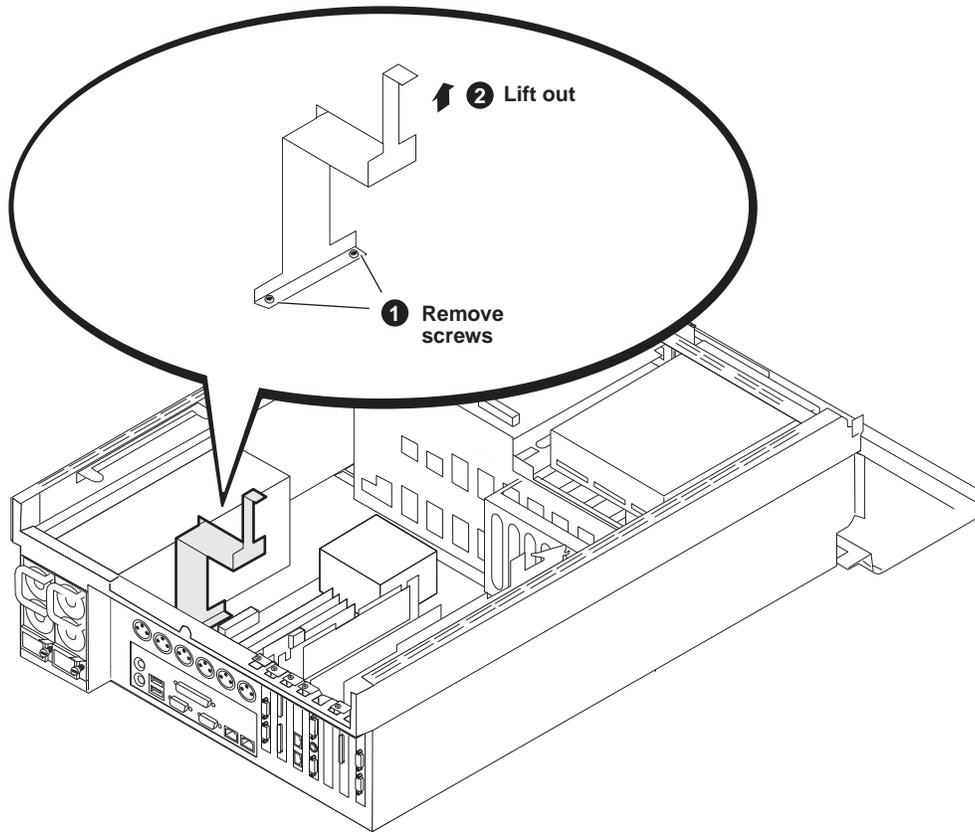
CPU motherboard replacement

Use the following checklist to guide you through the replacement process.

Do task if faulty motherboard is:				
Type I	**Type II**	**Type III**	**Task**	**Instructions**
❏ X	X	X	Identify motherboard	"Prepare for motherboard replacement" on page 130
❏ X			If system is operational, save system-specific network settings.	Use standard Windows procedures to view and write down settings as applicable for the control network, the FTP/Streaming network, SNMP, custom accounts, etc. Also copy *C:\WINDOWS\system32\drivers\etc\hosts* to a different location. You must restore network settings later in this process.
❏ X			If system is operational, note current versions of K2 software and SNFS.	In AppCenter, click **Help | About**. Write down versions. You must reinstall software later in this process.
❏ X			If system is operational, note if you have the 50 MB option.	In AppCenter, click **Help | About**. You must reapply the 50 MB option later in this process.
❏ X	X	X	If system is operational, note current Grass Valley licenses.	Click on the License Manager icon on the Windows Desktop. Write down license types, as listed in the "Feature" column. Because the replacement motherboard's MAC address is different than the faulty motherboard's MAC address, you must obtain new licenses based on the new MAC address, as instructed later in this process.
❏ X			If system is operational, save configuration files.	Copy C:\profile\config to a different location.
❏ X			If a SAN client, note settings then remove from K2 Storage System.	Refer to the *K2 Media Client System Guide* for K2 System Configuration application procedures. Write down all settings, then remove. You must add the K2 Media Client back to the K2 Storage System later in this process.
❏ X	X	X	Gather tools/materials	"Prepare for motherboard replacement" on page 130
❏ X	X	X	Remove motherboard	"Remove faulty motherboard" on page 130
❏ X			Install baseplate bracket	"Install baseplate bracket" on page 133
❏ X	X	X	Install motherboard	"Install replacement motherboard" on page 135
❏ X		X	Install your existing USB RS-422 adapters into rear panel slots 1 and 7.	"PCI RS-422 adapter" on page 120
❏	X		Install your existing PCI RS-422 adapter.	"PCI RS-422 adapter" on page 120
❏ X			Re-image the C: partition	"Restoring from a recovery disk image CD set" on page 76, except restore only the C: partition. Use the K2 Service Disk Image CD set that you received with the motherboard FRU kit. Do not use any other disk image. Do not use a disk image that has SNFS already installed.

	Do task if faulty motherboard is:				
	Type I	Type II	Type III	Task	Instructions
❏	X			Restart	If a Windows Activation message appears, click **Resolve Later**.
❏	X			Do Windows setup	"Restoring from the generic recovery disk image on E:" on page 73, step 24.
❏	X			Restart	If a Windows Activation message appears, click **Resolve Later**.
❏	X	X	X	Make motherboard CMOS settings	"Making motherboard CMOS settings" on page 65
❏	X			Restart	If a Windows Activation message appears, click **Resolve Later**.
❏	X			Configure default network settings	"Restoring network configuration" on page 44
❏	X			Restore system-specific network settings	Use standard Windows procedures. Restore the settings you saved earlier in this process. Copy the host file to *C:\WINDOWS\system32\drivers\etc\hosts.*
❏	X			Install K2 system software	Follow instructions in *K2 Media Client Release Notes* for your version of K2 system software.
❏	X			Restart	Cancel AppCenter login. Ignore AppCenter error messages. If a Windows Activation message appears, click **Resolve Later**.
❏	X			Install SNFS software.	Follow instructions in *K2 Media Client Release Notes* for your version of K2 system software.
❏	X			Run *snfsRegistry.exe*	Find this file at *C:\K2supportapps\SNFS\SNFSRegistry*
❏	X			Start the media file system	From the Windows desktop, click **Start	StorNext	Start File System Services**
❏	X			Restart	If a Windows Activation message appears, click **Resolve Later**.
❏	X			Restore configuration files	Overwrite C:\profile\config with the copy you made earlier.
❏	X	X	X	Re-license Grass Valley software	Refer to *K2 Media Client Release Notes* for licensing instructions. Licenses are keyed to MAC address. The replacement motherboard has a new MAC address, therefore your current licenses no longer work. You must request new licenses for the license types you noted earlier in this process.
❏	X			If you have the 50 MB option, reapply.	Run the Codec Upgrade License CD.
❏	X			If a SAN client, add back to the K2 Storage System and restore iSCSI network and load balancing settings.	Refer to the *K2 Media Client System Guide* for K2 System Configuration application procedures. Restore the settings you saved earlier in this process.

Do task if faulty motherboard is:				
Type I	Type II	Type III	Task	Instructions
❑ X			If a SAN client on a redundant K2 Storage System, install Multi-Path I/O software.	Refer to the *K2 Media Client System Guide*. Restore the settings you saved earlier in this process.
❑ X			Activate the Windows operating system	"Activating the Windows operating system" on page 78. You must do this within 30 days.

Identify motherboard

Identify the motherboard currently in your K2 Media Client as illustrated.

Type I motherboard has:
- **Parallel port**
- **RS-422 in slots 3 & 7**

Type II motherboard has:
- **No parallel port**
- **RS-422 in slot 3**

Type III motherboard has:
- **No parallel port**
- **RS-422 in slots 1 & 7**
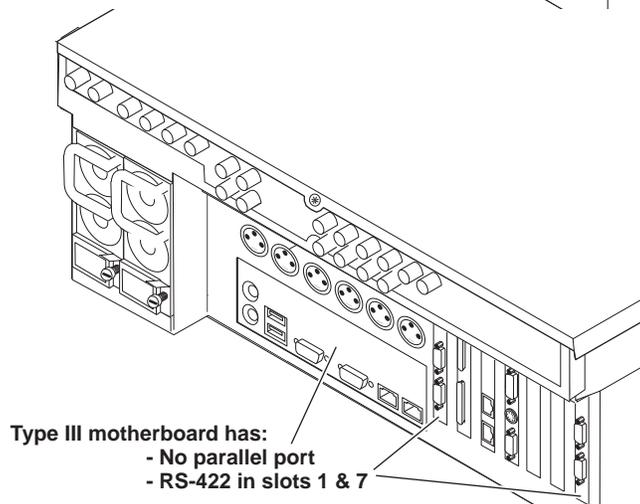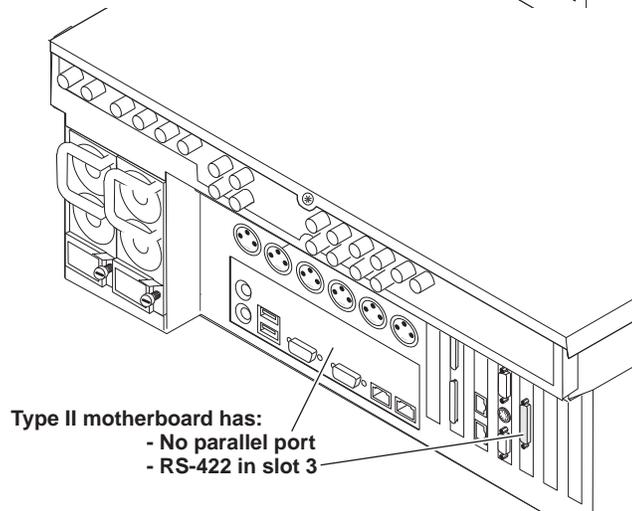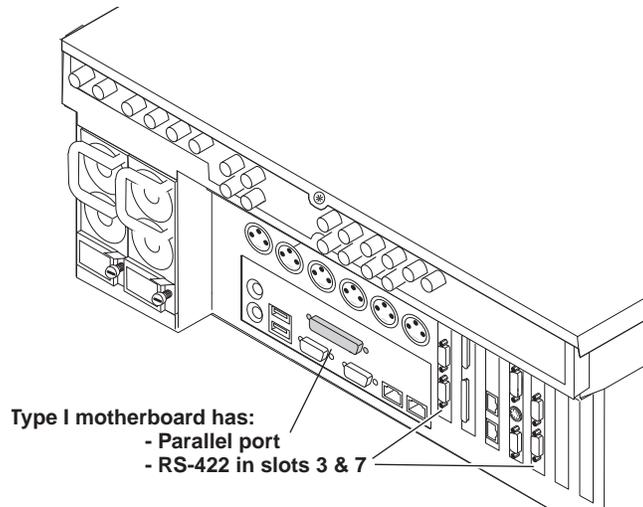
Prepare for motherboard replacement

In addition to the replacement motherboard, gather the following materials and tools:

If the faulty motherboard is Type II or Type III:

- Torx tool with T15 magnetic tip
- Phillips screwdriver

If the faulty motherboard is Type I:

- Torx tool with T15 magnetic tip
- Phillips screwdriver
- 5/16" nutdriver
- A rubber mallet or other tool suitable for driving clips over chassis studs.
- Cable ties
- *K2 Media Client Release Notes* for your current version of K2 software
- Installation files for your current versions of K2 system software and SNFS software. You can find these on the K2 system software CD.
- If you have the 50 Mb option, you need the Codec Upgrade License CD.
- The following items from the motherboard FRU Kit:
  - Baseplate bracket
  - K2 Media Client Service Disk Image CD set
  - USB cable
  - Power cable adapter (necessary only for HD-00 K2 Media Client)

Remove faulty motherboard

To remove a faulty motherboard, first remove the top cover and then remove the following components:

- Codec board
- All boards that occupy rear panel slots
- The center support bracket
- The rear card guide

After removing those components, proceed as illustrated.

Remove Type I motherboard

1 **Disconnect cables**

12 volt power

Standby switch

Front USB (connects to SCSI interface board)

Power

Jumper (JP4)

PCI slot

1 2 3

RS-422 boards

DVD drive

Verify position of video jumper (Pins 2 & 3)

Refer to procedures for individual FRUs for cabling detail

Continue with step **2** **on next illustration**

2 **Remove 13 screws**

3 **Lift out**

Remove Type II or Type III motherboard

1 **Disconnect cables**

CPU fan

12 volt power

Standby switch

Power 1

Jumper (JP4)

PCI slot

1 2 3

DVD drive

RS-422 boards (Not present with Type II)

Red **Black**

SCSI interface board (this cable not present on older systems)

Verify position of video jumper (Pins 2 & 3)

Front USB (connects to SCSI interface board)

Refer to procedures for individual FRUs for cabling detail

Continue with step 2 on next illustration

2 **Loosen heatsink screws in the sequence shown**

3 2 1 4

3 **Gently wriggle the heatsink to loosen it from the CPU**

4 **Remove the heatsink from the CPU socket**

Continue with step 5 on next illustration

NOTE: On the Type II or Type III motherboard, the CPU is in slot 2.

Remove 9 screws — step 5

Lift out — step 6
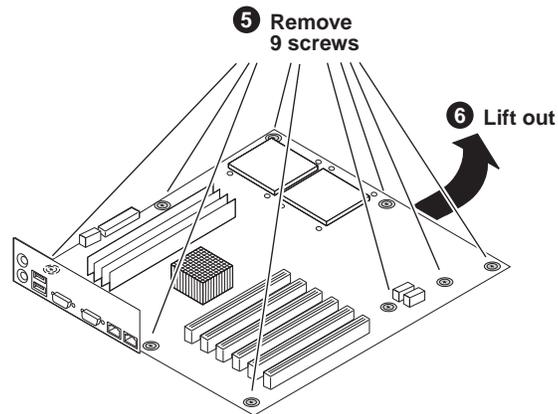
Install baseplate bracket

Skip this step if:

• The faulty motherboard was a Type II or Type III motherboard. In this case, the baseplate bracket is already in place. Skip ahead to "Install replacement motherboard".

Do this step if:

• The faulty motherboard was a Type I motherboard. You must install the baseplate bracket to support the replacement Type III motherboard.

Proceed as illustrated.

3 Use a 5/16" nutdriver or similar tool to push clips down and secure baseplate bracket to chassis. If necessary, apply a rubber mallet or other suitable tool to the nutdriver to seat the clips.

2 Fit clips over chassis studs

1 Align holes and install baseplate bracket over chassis studs
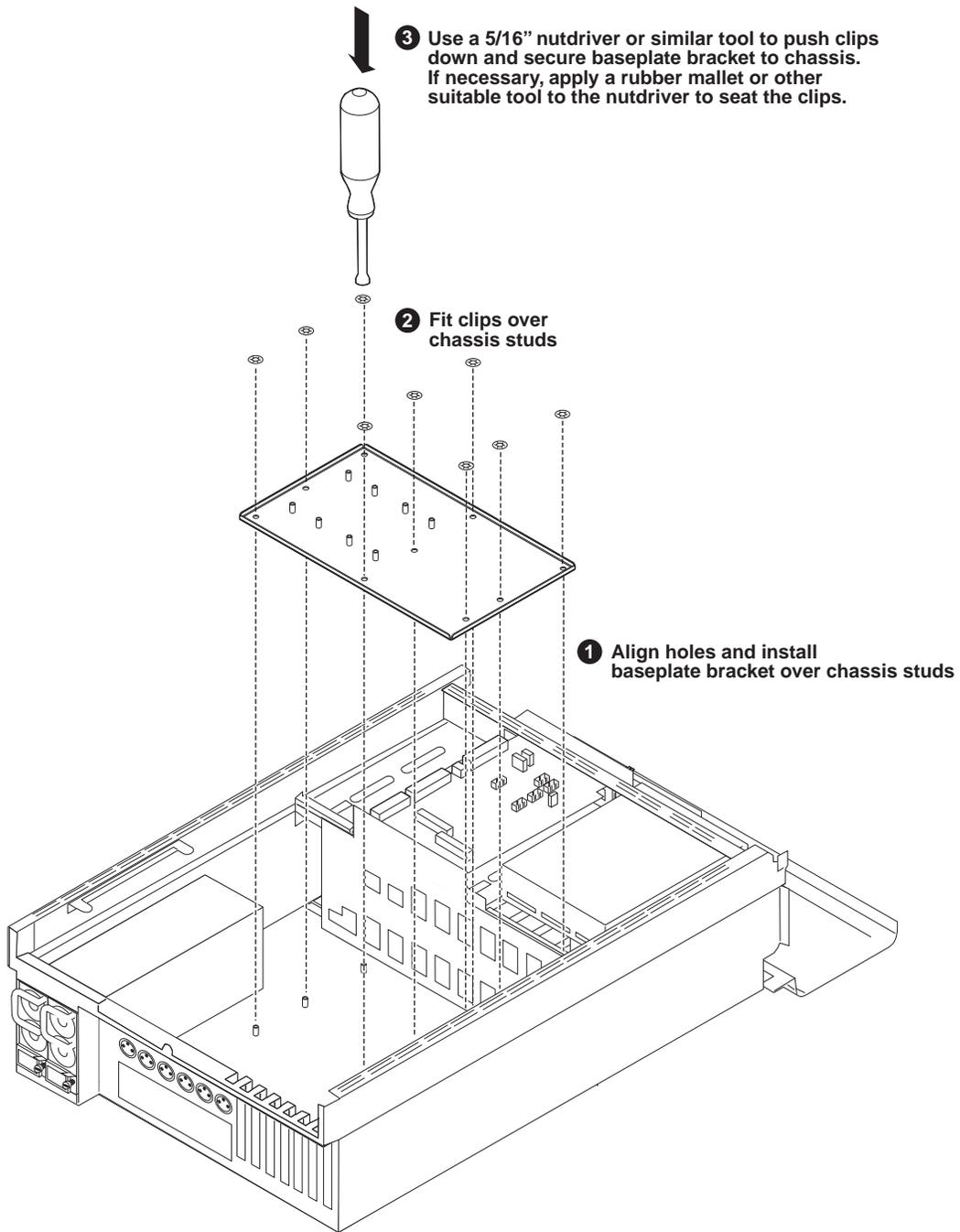
Install replacement motherboard

Replacement motherboards are Type III motherboards. Install as follows:

1. Make sure the video jumper is in the correct position.

2. Install the connector panel in the chassis, making sure the connector panel "snaps" into the chassis on all edges. Use the connector panel that you received with the FRU kit.

3. Install the motherboard in the chassis, being careful to engage connector panel flanges on connectors.

4. Align the motherboard in the chassis as illustrated.

3 Make sure heatsink mounting holes and baseplate studs are aligned.

1 Fasten 1 screw

2 Adjust motherboard position in the direction indicated until it snaps into place.
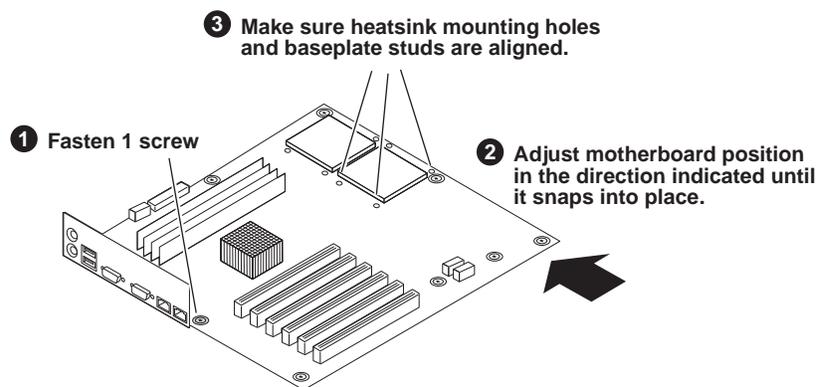
5. Fasten the remaining screws that affix the motherboard to the chassis.

6. Install the heatsink as shown.

2 1 **2** Fasten diagonal screws (1 and 2) until just snug

3   4 **3** Tighten all four screws

1 Place on top of CPU, aligned with mounting holes
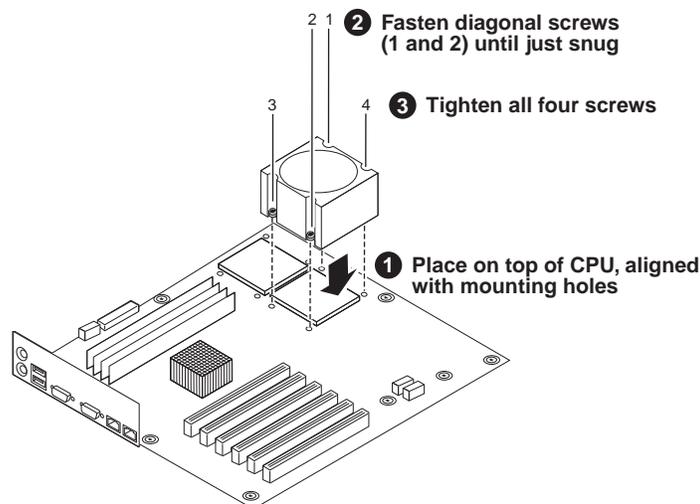
7. Complete the installation of the replacement motherboard by reversing the removal steps for the Type III motherboard. As you do so, follow additional instructions in one of the following sections, as appropriate.

If the faulty motherboard was a Type III motherboard:

1. Cable as illustrated. No additional instructions are needed. Install the existing USB RS-422 adapters back into rear panel slots 1 and 7.

2. Install the remaining components and the top cover.

3. Refer to the checklist at the beginning of this section for the remaining steps to complete the motherboard replacement process.

If the faulty motherboard was a Type II motherboard:

1. Cable as illustrated. No additional instructions are needed. Install the existing PCI RS-422 adapter back into rear panel slot 3.

2. Install the remaining components and the top cover.

3. Refer to the checklist at the beginning of this section for the remaining steps to complete the motherboard replacement process.

If the faulty motherboard was a Type I motherboard and you are replacing it in a SDA-00 or SD-00 K2 Media Client:

1. Remove and discard the USB cable that previously connected the front SCSI interface board and the Type I motherboard.

2. To make the connection between the front SCSI interface board and the motherboard, use the USB cable that comes with the Type III motherboard replacement kit.

3. To make the Power 2 connection to the motherboard, unbundle power cables and use the spare cable that has the appropriate connector. Re-bundle power cables.

4. Retain the two dual-port RS-422 adapters and the USB cables that you removed from the Type I motherboard. Install these adapters in rear panel slots 1 and 7. Refer to the appropriate procedure earlier in this chapter.

5. Install the remaining components and the top cover.

6. Refer to the checklist at the beginning of this section for the remaining steps to complete the motherboard replacement process.

If the faulty motherboard was a Type I motherboard and you are replacing it in a HD-00 K2 Media Client:

1. Remove and discard the USB cable that previously connected the front SCSI interface board and the Type I motherboard.

2. To make the connection between the front SCSI interface board and the motherboard, use the USB cable that comes with the Type III motherboard replacement kit.

3. To make the Power 2 connection to the motherboard, use the power cable that was previously connected to the HD-00 codec board.

4. Locate the power cable adapter that comes with motherboard replacement kit.

5. Unbundle power cables and connect the large end of the power cable adapter to the spare cable that has the appropriate connector. Re-bundle power cables.

6. Retain the two dual-port RS-422 adapters and the USB cables that you removed

from the Type I motherboard. Install these adapters in rear panel slots 1 and 7. Refer to the appropriate procedure earlier in this chapter.

7. Install remaining components.

8. When you install the HD-00 codec board, connect the small end of the power cable adapter to the codec board.

9. Install the top cover.

10.Refer to the checklist at the beginning of this section for the remaining steps to complete the motherboard replacement process.

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