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A **BELDEN** BRAND

KALEIDO-IP VM

COMPLETE VIRTUAL IMAGE VERSION OF THE KALEIDO-IP
VIDEO MULTIVIEWER

Installation & Service Manual

M926-9005-105

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toc

Table of Contents

1 Overview	7
Related Documentation	7
Software and Firmware Updates	7
About the Multiviewer	7
Limitations	8
Kaleido Software Minimum Version Compatibility	8
Overview of the Kaleido-IP VM System	9
2 Installation	11
Getting Organized	11
Requirements	11
Hypervisor Software	11
Required Materials	12
Creating the Kaleido-IP Virtual Machine	12
Adding Network Adapters	14
License Activation	14
3 IP Network Setup	17
Networking Essentials	17
Factory-Default IP Addresses	18
Configuring a Multiviewer's IP, Date, and Time Settings with XAdmin	19
Configuring Head Streaming	23
Network Considerations	24
TCP/UDP Port Usage	25
Network Considerations for a Multiviewer Cluster	28
Changing the Output Resolution	29
4 System Configuration	31
System Requirements for a Client PC	31
Multiviewer Model Representation in XEdit and XAdmin	31
Installing Kaleido Software Client Applications	31
Installing XEdit from your Multiviewer's Home Page	32
Uninstalling XEdit	36
Installing Router Control	37
Uninstalling Router Control	40
Opening XAdmin	41
Connecting to a Multiviewer with a Different XEdit Version from your PC's Version	41
Ways to Access XAdmin	42
Opening XAdmin from a Browser	42

Opening XAdmin from XEdit.....	43
Registering your Multiviewer's Security Credentials with your Browser.....	43
Enabling the Compatibility View in Internet Explorer.....	53
XAdmin Access Control.....	54
Enabling XAdmin Access Control.....	54
Changing the XAdmin Password.....	56
Disabling XAdmin Access Control.....	57
Closing a Password-Protected XAdmin Session.....	59
Viewing a Multiviewer's Status Information.....	60
Configuring Sources.....	60
Configuring the RCP-200.....	61
Configuring the RCP-200's IP settings.....	61
Specifying multiviewers for the RCP-200.....	61
Specifying lookup servers for the RCP-200.....	62
Logging on to the RCP-200.....	62
Correlating Monitor Wall Destinations and KX Router Logical Routers for the RCP-200.....	64
Testing the Monitor Wall Operation.....	65
Customizing Layouts, Logical Sources, and other Kaleido-IP Elements.....	65
Available Hardware and Software Options.....	66
Enabling Options.....	68
Restarting and Shutting Down a Kaleido-IP Multiviewer.....	70
Configuring Virtual Machine Network Adapters on a Kaleido-IP VM.....	72
Adding Fonts to a Kaleido-IP VM.....	74
Importing a Database.....	76
5 Maintenance & Troubleshooting.....	79
System Verification.....	79
Verifying the Management Port IP Address and Application Version.....	79
Maintenance.....	80
Generating a System Snapshot.....	80
Upgrading the Multiviewer.....	81
Pre-upgrade Checklist.....	81
Upgrade Overview.....	81
Installing the Software Upgrade.....	81
Downgrading the Multiviewer System.....	86
Displaying the Dashboard.....	86
Troubleshooting.....	87
Troubleshooting with the Kaleido-IP VM server's USB ports.....	87
MAC Address Misalignment Between the VM and the VM Manager.....	87
Troubleshooting Common Issues.....	90
6 Specifications.....	91
Kaleido-IP Inputs.....	91
Codec Support by Streaming Mode.....	92
Remote Output via IP Streaming.....	92
Operation and Configuration.....	92
Multiviewer Integration with other Systems and Equipment.....	93
Optional Drivers for Controlling Routing Devices from the Multiviewer.....	93

Drivers for Controlling Tally Interface Devices from the Multiviewer 94
Drivers for Timers 95
Built-in Communications Protocols 95
..... 96

Contact Us 98

1 Overview

Welcome to the Kaleido family of multiviewers! This Installation & Service Manual is designed to help you get your Kaleido-IP VM multiviewer up and running. The following chapters will guide you through the installation of a Kaleido-IP VM system in its default configuration. This chapter provides an overview of the Kaleido-IP VM installation.

The Kaleido-IP VM is a complete version of the Kaleido Software for the Kaleido-IP multiviewers, packaged as a virtual image (OVA file).

Related Documentation

Use the following related documentation to configure the multiviewer and to better understand the features available with this multiviewer. You can obtain the latest product documentation from the Documentation Library section of Grass Valley's website (www.grassvalley.com/docs/multiviewers).

Document Number	Title
M770-2800	Kaleido Software User's Manual
M770-2103	Kaleido Software Release Notes
M770-9904	Kaleido Software Product Comparison Charts
GVB-1-0133F-EN-DS	Kaleido-IP Datasheet
M770-9905	Kaleido Multiviewers Documentation Resource Guide
M926-9005	Kaleido-IP VM Installation & Service Manual
M876-9900	RCP-200 Guide to Installation and Operation
M770-0900	Kaleido Remote Control Protocol (Gateway) User's Guide
M407-9900	iControl Router User Guide
Published online	iControl Online Help iControl Solo Online Help

Software and Firmware Updates

You can obtain the latest Kaleido Software, drivers, and sample databases from the *Downloads* section of the Grass Valley's website (www.grassvalley.com/dl/multiviewers).

About the Multiviewer

The Kaleido-IP VM can monitor and display HD and SD television programs distributed over IP. It supports MPEG-2, H.264/AVC and H.265/HEVC compressed video, AAC (LC, HE-AAC & HE-AACv2), AC-3, DD+, MPEG-1, MPEG-2 layer 2 and MPEG-2 layer 3 compressed audio

formats, within unencrypted MPEG sources. The Kaleido-IP VM outputs to a single, streaming head. See [Specifications](#), on page 91 for more information about the supported number of video programs.

A Kaleido-IP multiviewer system in its default configuration includes a predefined room and some layouts. Once you have configured your Kaleido-IP within your local Management and Media Networks, specified source information, and connected your preferred application to the multiviewer's streaming output, you can start using these layouts to monitor video signals distributed over IP. Consult the *Kaleido Software User's Manual* (see [Related Documentation](#), on page 7) for instructions on how to define more layouts to suit your specific requirements.

Limitations

The Kaleido-IP multiviewer supports a subset of the features offered by other Kaleido Multiviewer series models as shown in the *Kaleido Multiviewer Product Comparison Guide* (see [Related Documentation](#), on page 7). The Kaleido-IP VM currently also does not support the following Kaleido Software V9.00 or higher features:

- Overlapping video monitors on the monitor wall
- Full screen layouts
- YUV 4:2:2 texturing
- Cropping and zooming (underscan/overscan)
- 2022-6 (uncompressed stream)

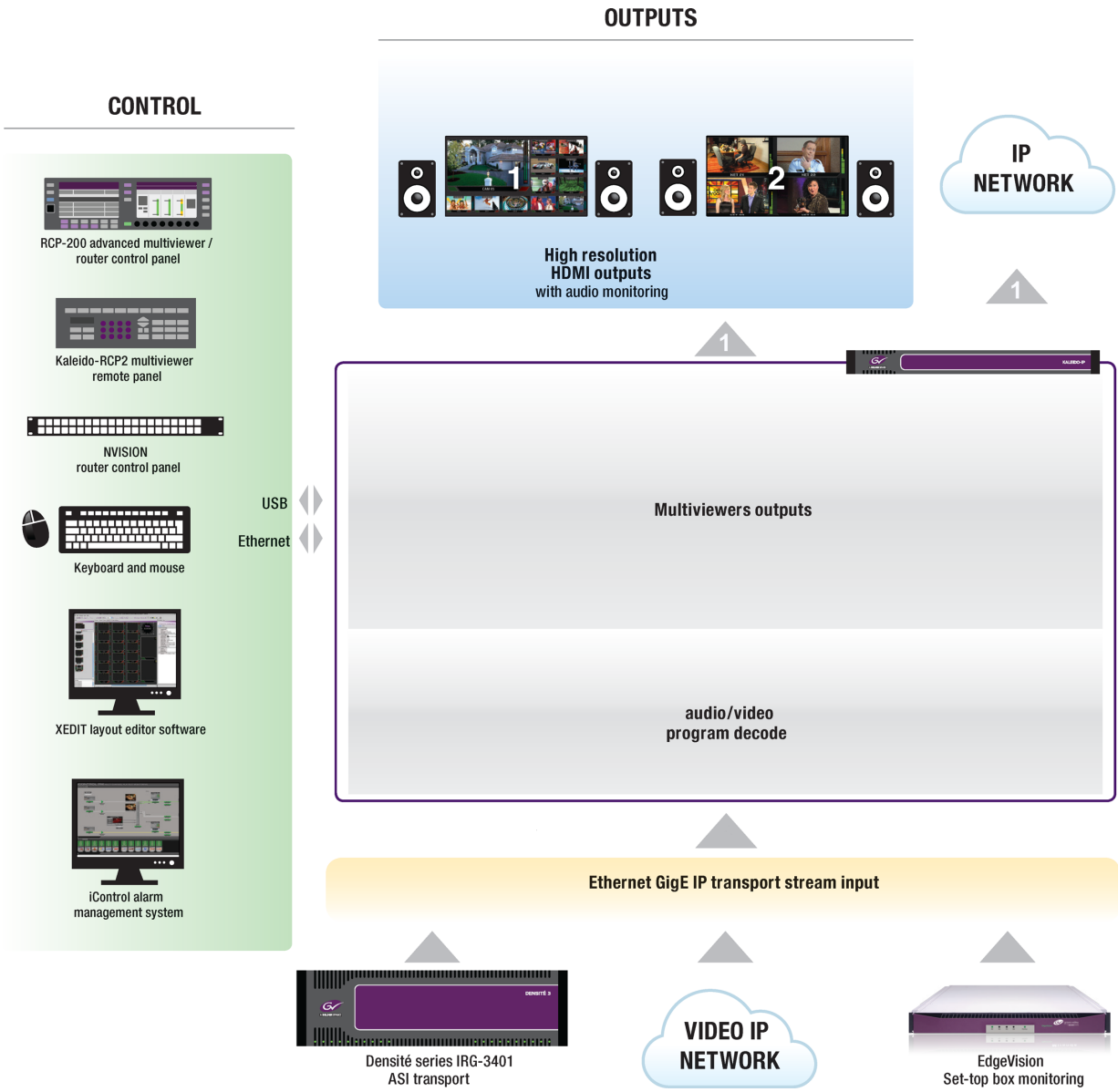
Kaleido Software Minimum Version Compatibility

A Kaleido-IP multiviewer cannot be downgraded to a Kaleido Software version earlier than 8.40. When downgrading this multiviewer, certain other requirements and limitations may be in effect; see [Upgrading the Multiviewer](#), on page 81 for more information.

To upgrade a multiviewer, see [Upgrading the Multiviewer](#), on page 81.

Whenever possible, upgrade the multiviewer to use the latest Kaleido Software version to take advantage of the latest bug fixes and stability enhancements. See the Kaleido Software Release Notes for more information about a Kaleido Software release.

Overview of the Kaleido-IP VM System



Overview

Overview of the Kaleido-IP VM System

2 Installation

This chapter provides information about system requirements, items shipped with your Kaleido-IP VM unit and it will guide you through the installation of a Kaleido-IP VM multiviewer.

Getting Organized

Requirements

Hypervisor Software

Before you begin, make sure you have met the following conditions:

- You have the required Kaleido-IP image (OVA file). To obtain this file, contact Grass Valley Technical Support (see [Grass Valley Technical Support](#), on page 98).
- You have VMware ESXi version 5.5 or later already installed on your target machine (i.e., the machine you will install Kaleido-IP on).
- You have the appropriate client-side software installed on a client PC to communicate with the server's hypervisor software.

In the procedure below, the VMware vSphere Client is used to interface with VMware vSphere server-side software.

IMPORTANT

Although **OVA** is an open-standard VM format, to date, Grass Valley has only qualified the OVA standard using *VMware* hypervisor software. Additionally, Grass Valley only supports installing Kaleido-IP on VMware-qualified hardware platforms that have *Intel* CPUs. For more information on supported hardware platforms, see the [VMware Compatibility Guide](#).

- You know the IP address you will use to configure the Kaleido-IP virtual machine within your *Management Network*, as well as the appropriate network mask and gateway address (contact your network administrator, if needed).
- To meet a performance of 24 HD H.264 simultaneous video decodes, your target machine hardware specifications (for EACH virtual machine) are as follows:
 - **CPU:** Minimum 2 virtual sockets, with 12 cores per socket, for a total of 24 physical cores (48 logical cores) (54 GHz reserved)
 - **Memory:** Minimum 24 GB (24576 MB reserved)
 - **Hard drive:** Minimum 160 GB
 - **Network adapters:** Between 1 and 6, to match your intended Kaleido-IP configuration

Required Materials

You will need the following (not supplied):

- Client PC (see [System Requirements for a Client PC](#), on page 31)

Creating the Kaleido-IP Virtual Machine

The installation of an Kaleido-IP image on a virtual machine is simple. As long as the requirements above are met, the whole process should not take more than ten to fifteen minutes. Follow the procedure below to install a Kaleido-IP multiviewer on a virtual machine.

To install a Kaleido-IP OVA image on a VMware vSphere server

- 1 Open vSphere Client and connect to your Hypervisor host.
- 2 On the **File** menu, click **Deploy OVF Template**.
The **Deploy OVF Template** wizard appears, prompting you for the location of the file you wish to install.
- 3 Navigate to the desired OVA file on your local file system, and then click **Next**.
The **OVF Template Details** page appears, with information about the selected OVA file (e.g., download size, virtual machine size).
- 4 Click **Next**.
The **Name and Location** page appears, prompting you to enter a name for your virtual machine.
- 5 Type the desired name, and then click **Next**.
The **Storage** page displays the storage disks available on your host.
- 6 Select the appropriate destination storage for your virtual machine files, and then click **Next**.
The **Disk Format** page appears.
- 7 Click the option that best suits your purposes, and then click **Next**.
The **Network Mapping** page appears.
- 8 Set the appropriate mapping for your virtual machine's network adapters.

Note: The Kaleido-IP image is based on a Kaleido-IP with 2 network adapters. Should you require more network adapters, it is possible to add them at a later stage (See [Adding Network Adapters](#) on page 14).

- 9 Click **Next**.
The **Ready to Complete** page appears.
- 10 Review the deployment settings, and then click **Next**.
A window appears, showing the OVA deployment progress, followed by a confirmation message once the deployment is complete.
- 11 Click **Close** to dismiss the confirmation message.
In the main vSphere Client window, the status of the recently completed deployment appears in the **Recent Tasks** area.
- 12 On the **View** menu, point to **Inventory**, and then click **Inventory**.

- 13 Your new virtual machine appears, in the vSphere Client inventory.
- 14 Right-click the virtual machine you just created, point to **Power**, and then click **Power On**.
- 15 Switch to the **Console** tab in the main pane. Wait until the virtual machine has completed its startup.
Once the operating system and application have loaded, a login prompt appears in the console window.
- 16 Log on to your Kaleido-IP with the following credentials:
 - Login: root
 - Password: pw1234
- 17 Type `k3bin`, on the command line, and then press Enter.
- 18 Type `./setupNetwork.bash`, and then press Enter.
The system prompts you for a system name, the *Management Port* IP address, network mask and default gateway.
- 19 Enter the appropriate values.

Note: If there are more than one multiviewer in the same network environment, it is important to assign each a unique system name, so that you can tell them apart (for example, when using a remote control panel such as the RCP-200).

The system name must also comply with RFC 1123, because it is also used as the device's host name. Up to 8 characters are allowed, limited to A-Z, a-z, 0-9, and the hyphen. The system name cannot start or end with an hyphen.

- 20 If you wish to change the settings you just entered, repeat from [step 18](#) above.
- 21 If you are satisfied with your settings, type `reboot`, and then press Enter.
The Kaleido-IP restarts with the new network settings.

TIP

To leave the console

- 1 Press Ctrl+Alt+Enter.
The console window opens in full screen mode.
 - 2 Click the Restore down button to close the full screen window.
Your mouse pointer is now free.
-

From this point, the Kaleido-IP functions just like a physical Kaleido-IP multiviewer with two network adapters (identified as *Kaleido-IP-2*, in XEdit and XAdmin). The Kaleido Software supports Kaleido-IP configurations with two, four, or six network adapters. If you require more network adapters for your Kaleido-IP, proceed with [Adding Network Adapters](#), below.

Adding Network Adapters

To troubleshoot a virtual machine network adapter assignment, see [MAC Address Misalignment Between the VM and the VM Manager](#), on page 87.

To add network adapters to your Kaleido-IP multiviewer

- 1 In the vSphere Client inventory, right-click the virtual machine you just created, point to **Power**, and then click **Power Off**.
A message appears, prompting you to confirm your intention.
- 2 Click **Yes**.
Your virtual machine is powered off.
- 3 Right-click the virtual machine, and then click **Edit Settings**.
The **Virtual Machine Properties** window appears.
- 4 In the **Hardware** tab, click **Add**.
The **Add Hardware** wizard appears.
- 5 Click **Ethernet Adapter**, and then click **Next**.
The **Network Type** page appears.
- 6 Set the adapter type to *VMXNET 3*, and physical network connection for this new virtual machine network adapter, and then click **Next**.
The **Ready to Complete** page appears.
- 7 Review the selected options, and then click **Finish**.
The new network adapter appears in the list of hardware devices, in the **Virtual Machine Properties** window.
- 8 Repeat from [step 4](#), until you have added the required number of network adapters.
- 9 Click **OK**, to close the **Virtual Machine Properties** window.
- 10 In the vSphere Client inventory, right-click your virtual machine, point to **Power**, and then click **Power On**.
Your Kaleido-IP restarts.

Note: In XEdit and XAdmin, a Kaleido-IP with four network adapters is identified as *Kaleido-IP-4*, and a Kaleido-IP with six network adapters is identified as *Kaleido-IP-6*.

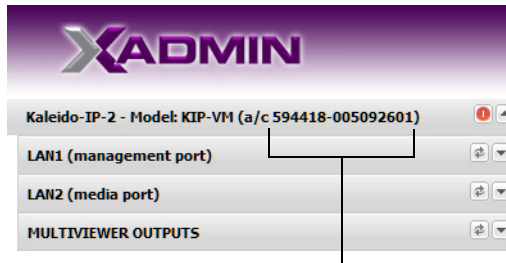
License Activation

To activate your Kaleido-IP license

- 1 Once the restart is complete, open a Web browser, and type the *Management Port* IP address for your Kaleido-IP multiviewer, in the address bar.
The multiviewer's home page appears.
- 2 Click the XAdmin button.
- 3 If you see a security warning, or a certificate error message, then see [Registering your Multiviewer's Security Credentials with your Browser](#), on page 43.
- 4 **Internet Explorer users:** If a blank page appears, then see [Enabling the Compatibility View in Internet Explorer](#), on page 53.

The XAdmin *Status and Options* page appears.

- 5 Take note of the *authorization code* located in the top heading row, and send it, along with your purchase order, to ordering@grassvalley.com, to request the option key you need to activate your Kaleido-IP license.



- 6 Once you have obtained your KIP-VM option key, click the arrow button at the end of the MULTIVIEWER OUTPUTS heading row, to expand this section.
- 7 Click the **Enable** button, next to the KIP-VM entry.
A window appears prompting you for the option key.
- 8 Enter the key, and then click **OK**.
Once the option is enabled, the key is displayed, and a **Disable** button replaces the **Enable** button.

3 IP Network Setup

This chapter shows how to implement IP network connectivity with the multiviewer.

A Kaleido-IP VM multiviewer system can be controlled in the following ways:

- A GPI interface allows remote layout selection.
- The RCP-200 advanced remote control panel allow you to perform operations on the monitor wall, either by themselves or in association with an external keyboard and a mouse. Refer to the RCP-200 and Kaleido Software documentation. See [Related Documentation](#), on page 7.

Networking Essentials

The following network prerequisites must be met:

- The management port **LAN1** is used for multiviewer management: that is, any PC that uses XEdit or XAdmin to configure this multiviewer and any RCP-200 must have IP connectivity to the **LAN1** port. The **LAN1** port can be used for media streams also.
- The media ports **LAN2** and higher are to be used for media streams only.
- The Ethernet switch for the *Management Network* must support 100 Mbps full-duplex connections. The Ethernet switch associated with the *Media Network* should support 1000 Mbps full-duplex.
- The port on the Ethernet switch to which the multiviewer is connected should be configured to auto-negotiate. By default, multiviewers have their Ethernet ports set to auto-negotiate. If a switch does not support auto-negotiation, the recommended settings are 1000 Mbps, full-duplex for a switch associated with a Kaleido-IP *Media Network*, and 100 Mbps, full-duplex, for all other cases. As required by the IEEE-802.3 standard, section 28D.5, 1000 Mbps full-duplex communication is only supported via auto-negotiation.
- **Kaleido-IP VM support for multicast join and leave:** it is possible to add and configure up to 6000 logical sources in a Kaleido-IP VM system without exceeding the network's bandwidth or the unit's decoding resources.

The Kaleido-IP multiviewer joins a multicast group only when decoding is required, that is when a source is being monitored on the wall. In addition, streams that are not decoded are joined momentarily in a polling manner, one stream at a time, to update the PMT and PAT information. The Kaleido-IP leaves the multicast group as soon as a change of layout implies that a different set of streams must be decoded.

However, if your situation involves frequent changes of layout (e.g., loading a new layout to the monitor wall every minute) then, when you are creating or editing a layout, make sure to terminate XEdit's connection to the Kaleido-IP once configuration tasks are completed.

A client PC must have IP connectivity with the *Management Network*, to communicate with the multiviewer (see [System Requirements for a Client PC](#), on page 31).

Note: If the *Management Port* IP address of your Kaleido-IP VM has been changed (i.e. it no longer corresponds to the as-shipped configuration), it is still possible to determine the current *Management Port* IP address setting. See [Verifying the Management Port IP Address and Application Version](#) on page 79.

Factory-Default IP Addresses

The networked ancillary equipment is shipped with the following default network settings:

Equipment	System IP address	Network mask	Gateway
RCP-200	10.0.3.200	255.255.255.0	0.0.0.0

Configuring a Multiviewer's IP, Date, and Time Settings with XAdmin

To change the Kaleido-IP's management and Media IP addresses

- 1 Open a Web browser window and type your multiviewer's *Management* IP address in the address bar. See [Opening XAdmin](#), on page 41.

The XAdmin *Status and Options* page appears.

- 2 Click **System configuration**, in the navigation area on the left of the page.

The *System Configuration* page appears, showing the current system name, management and Media IP addresses, network masks, default gateway, connection-speed and duplex-mode settings, as well as the date and time settings.

The screenshot shows the XAdmin interface with the following configuration details:

- System configuration** (General)
 - System name: KIP-XVM2
- Ethernet**
 - LAN1 (management port) IP address: 10 .37 .64 .72
 - Network mask: 255 .255 .255 .0
 - Default gateway: 10 .37 .64 .1 (Remove)
 - Detected link mode: 10000Mbps full-duplex
- LAN2 (media port):
 - Enabled
 - IP address: 172 .30 .1 .72 (Remove)
 - Network mask: 255 .255 .0 .0 (Remove)
 - Gateway: (Add)
 - Detected link mode: 10000Mbps full-duplex
- Virtual LAN configuration** (Configure)
- DNS and proxy configuration** (Configure)
- Font configuration** (Configure)
- Date and Time**
 - Current date and time: Tuesday January 30, 2018 12:44:22 PM UTC-5
 - Date and time format: English (United States)
 - Time zone: UTC
 - NTP synchronization: Enabled Disabled
 - New date: January 30, 2018
 - New time: 12 :44 :22 PM

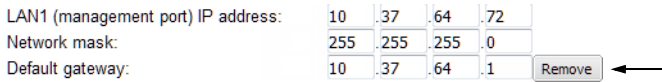
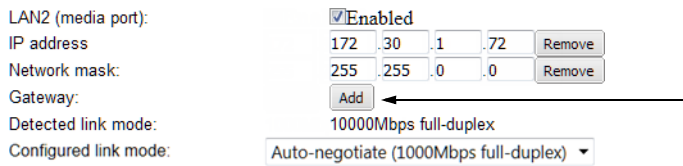
Buttons: Apply settings..., Log out, Save

- 3 Under **General**, type a descriptive name for your system to make it readily identifiable.

If there are more than one multiviewer in the same network environment, it is important to assign each a unique system name, so that you can tell them apart (for example, when using a remote control panel such as the RCP-200).

Note: The system name must comply with RFC 1123, because it is also used as the device's host name. Up to 8 characters are allowed, limited to A-Z, a-z, 0-9, and the hyphen character. The system name cannot start or end with a hyphen character.

- Under **Ethernet**, type the appropriate IP addresses, network masks, and gateway settings, and review the detected connection speeds and duplex modes for your Kaleido-IP's *Media Network* ports.

LAN1 (management port) IP address	Set the network IP address to be used for multiviewer management: that is, any PC that uses XEdit or XAdmin to configure this multiviewer and any RCP-200 must have IP connectivity to the LAN1 port. The LAN1 port can be used for media streams also.
LAN2 or higher (media port)	Set the network IP address to be used for the <i>Media Network</i> . This port must have IP connectivity to the associated streaming devices (e.g. encoders, multiplexers). To omit network configuration for an unused Media Port, clear the corresponding Enabled check box.
Network mask	Set the connected network's subnet mask.
Default gateway	If your <i>Management Network</i> is not configured with a gateway, clear the default gateway IP address, by clicking Remove . 
Gateway	If LAN1 , LAN2 , or higher are configured within different subnets, and this multiviewer is meant to monitor HLS, RTSP, or RTMP sources, then add the required gateway addresses by clicking Add , and then typing the appropriate gateway address, for each LAN section. 
Detected link mode	By default, all network ports are set to auto-negotiate. The connection speed and duplex mode will be set automatically based on the corresponding port settings on the associated switch.
Configured link mode	10000 Mbps full-duplex communication can only be achieved via auto-negotiation, as required by the IEEE-802.3 standard, section 28D.5. Should your network configuration require specific speed and duplex mode settings, select the appropriate value from the Configured link mode list.

- Under **Date and Time**, select the appropriate time zone and format for your location.

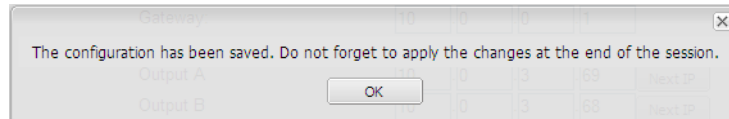
- 6 If this Kaleido-IP is meant to monitor HLS sources, enable NTP synchronization: next to **NTP synchronization**, click **Enabled**, and then type the NTP server's IP address.

Date and Time

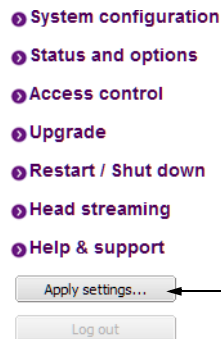
Current date and time: Wednesday November 26, 2014 03:56:37 PM UTC-5
Date and time format: English (Canada)
Time zone: America/Montreal
NTP synchronization: Enabled Disabled
NTP server IP address: 10 . 0 . 2 . 8

- 7 Click **Save**.

The new settings are saved locally.



- 8 Click **OK**.
- 9 The **Apply settings** button becomes available.



- 10 Click **Apply settings**.

The multiviewer must be restarted for changes to the network configuration to take effect. A message appears, prompting you to reboot the system immediately.

- 11 Click **OK**.

Your Kaleido-IP restarts.

Note: Settings cannot be applied to a multiviewer system while an upgrade is in progress. If the multiviewer does not reboot after 10 seconds or so, try clicking **Apply settings** again after a minute or two, until the multiviewer reboots.

- 12 In XEdit, a URL path can be used to identify a source located on a remote server to access HTTP, RTSP, or RTMP streams. When using a URL, the multiviewer's DNS server configuration must be configured to allow the multiviewer to be able to resolve the URL to the stream server's current network IP address.

If your network uses a proxy server, then you must configure the proxy server's URL.

- a Click **Configure**, under **DNS and proxy configuration**.
The DNS and Proxy Configuration page appears.

DNS configuration

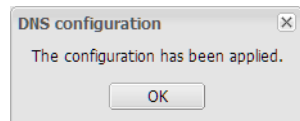
domain:	<input type="text" value="miranda.com"/>
search:	<input type="text" value="miranda.com"/>
primary:	<input type="text" value="10"/> <input type="text" value=".0"/> <input type="text" value=".2"/> <input type="text" value=".8"/>
secondary:	<input type="text" value="10"/> <input type="text" value=".0"/> <input type="text" value=".2"/> <input type="text" value=".20"/>

Proxy configuration

Enable proxy
proxy (URL to PAC file):

- b Type the appropriate suffixes for your primary domain, and search domain, and the IP addresses for the primary, and secondary DNS server.
- c Select **Enable proxy**, and then type the URL of the appropriate proxy auto-config (PAC) file, if required.
- d Click **Apply configuration**.

A message appears confirming that the changes have been applied.

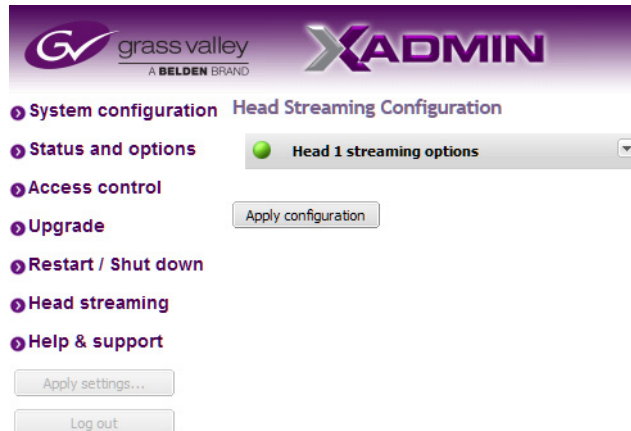


- e Click **OK** to dismiss the message.
- 13 If this system must monitor sources from a VLAN environment, then see [Configuring Virtual Machine Network Adapters on a Kaleido-IP VM](#), on page 72, to add the required virtual machine network adapters.
 - 14 If you need to change the head streaming settings, see [Configuring Head Streaming](#), below.
 - 15 If you need to set up a RCP-200, make sure it is connected to your *Management Network*, connect a mouse and a keyboard to your RCP-200 (if desired), and proceed with [Configuring the RCP-200](#), on page 61.

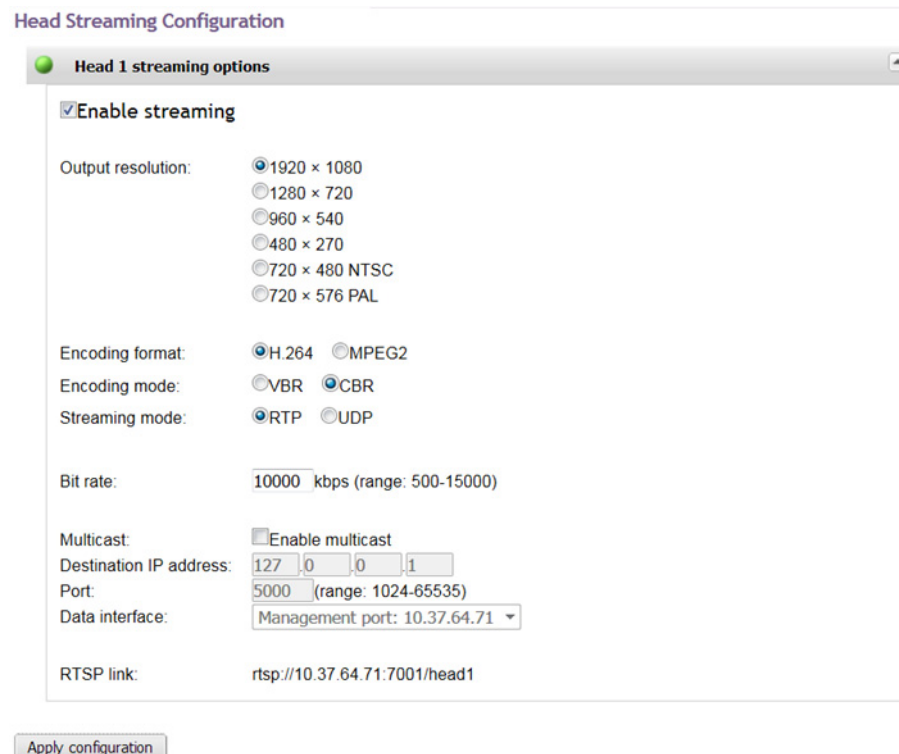
Configuring Head Streaming

To configure head streaming

- 1 Click **Head streaming**, in the navigation area on the left of the page.
The *Head Streaming Configuration* page appears.



- 2 Expand the streaming options section.



- 3 Configure the appropriate parameters for your purposes:
 - a Select the desired output resolution, encoding format, encoding mode, streaming mode.
 - b Type the appropriate bit rate.

Notes

- If the streaming output is meant to feed a Kaleido-IPmultiviewer, the following output resolution / bit rate combinations should ensure good video quality on the monitor wall:
 - 1920×1080 at 15000 kbps
 - 1280×720 at 11000 kbps
 - 960×540 at 8000 kbps
 - 720×480 at 8000 kbps
 - 720×576 at 8000 kbps
 - 480×270 at 3500 kbps
 - If you choose MPEG-2 compression, limit the output resolution to 720p.
 - In CBR mode, the minimum bit rate is:
 - 3500 kbps for MPEG-2
 - 1500 kbps for H.264XAdmin does not prevent you from specifying a lower bit rate but the Kaleido Software will ignore lower values and enforce the appropriate minimum listed above.
-

c Configure multicast options if needed.

4 Click **Apply configuration**.

A message appears confirming that the configuration has been applied.

5 Click **OK** to dismiss the message.

Network Considerations

It is possible to add and configure up to 6000 logical sources without exceeding the network's bandwidth or the unit's decoding resources.

The Kaleido-IP VM supports:

- concurrent decoding of up to 512 elementary streams within a program.
- layouts using up to 600Mbps of streaming bandwidth.
- streaming over wide area networks (WAN), which are subject to packet delay variation (jitter), latency, packet reordering, and packet loss. It also supports encoders that transmit in bursts or with long delays between packets. The Kaleido-IP VM can handle transmission delays matching the encoder's video buffer delay, and, in the case of RTP streams, up to ±120 ms of packet delay variation.

The Kaleido-IP VM multiviewer joins a multicast group only when decoding is required, that is when a source is being monitored on the wall. In addition, streams that are not decoded are joined momentarily in a polling manner—one stream at a time—to update the PMT and PAT information. The Kaleido-IP VM leaves the multicast group as soon as a change of layout implies that a different set of streams must be decoded.

However, if your situation involves frequent changes of layout (e.g., loading a new layout to the monitor wall every minute) then, when you are creating or editing a layout, make sure to terminate XEdit's connection to the Kaleido-IP VM once configuration tasks are completed.

TCP/UDP Port Usage

The various Kaleido-IP VM communication protocols require access to specific ports. In networks where a firewall is present between device A and device B, the ports used to communicate **from** device A **to** device B must be open on the incoming (external) side of the firewall.

Note: All necessary ports are open by default on the multiviewer. There is no mechanism provided for changing the default settings.

From client to multiviewer

The following ports must be open on the Client (i.e., the workstation running XEdit):

Port	Used for	Transport	Notes
443	HTTPS	TCP	Used by XAdmin for secure access
7	HTTP	TCP	Used by XEdit for ping probing
80		TCP	Used by XEdit and XAdmin
5122		TCP	Used by XEdit for <i>keepalive</i> (heartbeat)
5432		TCP	Used by XEdit for export operations
7600		TCP	Used for troubleshooting the REST API (remote control)
13000		TCP	Online connection
13100		TCP	Used for calibration data from XEdit

From multiviewer to client

Port	Used for	Transport	Notes
1024–5000 ⁱ 49152–65535 ⁱⁱ	Java RMI	TCP	Remote Method Invocation (client/server communication). Dynamic Allocation of ports. Required for communication between client and Application Server.

i. For Windows XP and earlier

ii. For Windows 7 and later

From multiviewer to multiviewer

The following ports, used for inter-multiviewer communications, are open by default on all Kaleido Software systems:

Port	Used for	Transport	Notes
22	SSH	TCP	Secure Shell Login is required to login to a multiviewer for maintenance.
4160	Java Jini	TCP	Responsible for discovery and communications between devices/services on a network.
8080	HTTP	TCP	Internal communication

Port	Used for	Transport	Notes
8082		TCP	Internal communication
8083		TCP	Internal communication
8084		TCP	Internal communication
8085		TCP	Internal communication
8086		TCP	Internal communication
8087		TCP	Used for debugging purposes
8090		TCP	Web service
32769		TCP	filenet-rpc
7572		UDP	On multicast 230.8.8.8 for "keep-alive" (heartbeat)
7571		UDP	For "keep-alive" (heartbeat)

From iControl to multiviewer

Port	Used for	Transport	Notes
4160	Java Jini	TCP	Responsible for discovery and communications between devices/services on a network.
32768–65535	Java RMI	TCP	Remote Method Invocation (client/server communication). Dynamic Allocation of ports. Required for communication between client and Application Server. This range can be restricted to match specific security requirements. A minimum of 4000 ports should be allocated.

Between multiviewer and remote control panel

The following ports, used for communications to/from RCP-200 control panels, are open by default on all Kaleido Software systems:

Port	Used for	Transport	Notes
80	HTTP	TCP	Used by the RCP-200 to obtain information from the multiviewer's system database
13000		TCP	Used by the RCP-200 to control the multiviewer via the gateway

From multiviewer to peripheral devices

Port	Used for	Transport	Notes
25	SMTP	TCP	Simple Mail Transfer Protocol, for e-mail alerts.
5100	GPI-1501	TCP	Used to obtain information from GPI-1501 General Purpose Interface I/O modules. ¹
5353	mDNS discovery	UDP	Used for mDNS discovery on multicast 224.0.0.251

Port	Used for	Transport	Notes
8851	Alpermann + Velte	TCP	Used to obtain information from Plura (Alpermann+Velte) Studio Production Timer (SPT) systems.
8910 ⁱⁱ	TSL (network)	TCP	Used to obtain information from TSL devices that use the TSL UMD version 5.0 protocol.

i. See also: [From multiviewer to multiviewer](#), on page 25.

ii. Configurable.

From peripheral devices to multiviewer

The following ports must be open on peripheral devices (e.g., router controllers):

Port	Transport	Notes
2000	TCP	Used to control a multiviewer's internal router via the SAM (Snell/Pro-Bel) SW-P-02 protocol
4381	TCP	Used to control a multiviewer's internal router via the Nevion (Network) protocol
5194	TCP	Used to control a multiviewer's internal router via the NVEP Router (NP0016) protocol.
5353	UDP	Used for mDNS discovery on multicast 224.0.0.251
7600	TCP	Used to control a Kaleido-IP multiviewer via a REST API
14000	TCP	Used to control a multiviewer's internal router via the SAM (Snell/Pro-Bel) SW-P-08 protocol

Router drivers also use default ports:

Port	Driver	Transport	Notes
4000	ETL	TCP	
12345	GVG 7000 Native	TCP	
9193	NVEP NV9000 (NP0017)	TCP	
4381	VikinX Modular	TCP	
9100	Quintech	TCP	
12345	Sony HKSPC	TCP	GVGNP Emulator
5001	Utah RCP-3	TCP	SC-4 Ethernet
2000	SAM (Snell/Pro-Bel) SW-P-02	TCP	
14000	SAM (Snell/Pro-Bel) SW-P-08	TCP	

Note: This is configurable in XEdit—you can choose any UDP or TCP/IP port to use for communications between the multiviewer and an external router.

Between multiviewer and SNMP managers

Port	Used for	Transport	Notes
161	SNMP	UDP	Used for SNMP (Simple Network Management Protocol) communications between external SNMP managers and a multiviewer (e.g., sending get, get-next, and set messages to a multiviewer's SNMP agent, and receiving the response).
1161		UDP	Used for SNMP (Simple Network Management Protocol) communications between external SNMP managers and a <i>Kaleido-IP</i> multiviewer (e.g., sending get, get-next, and set messages to a multiviewer's SNMP agent, and receiving the response).

Between multiviewer and NTP server

The following ports, used for communications to/from Network Time Protocol servers, are open by default on all Kaleido Multiviewer systems:

Port	Used for	Transport	Notes
123	NTP	TCP	Used for Network Time Protocol synchronization. Port needs to be open in both directions.

Network Considerations for a Multiviewer Cluster

IMPORTANT

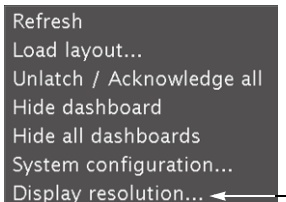
Before changing the system name or IP address of a multiviewer associated with a cluster, review the following.

- If you change the system name or IP address of a cluster member while another cluster member is offline or otherwise unavailable, the cluster's integrity will be broken. If you attempt to make such a change, XEdit will alert you of the situation, prompting you to cancel the operation and try again later, when all cluster members are available. However, in the advent that such a change was made by mistake, or that it as been forced for some reason, you will have to repair the broken cluster (see "Repairing a Cluster System" in the Kaleido Software User's Manual). See [Related Documentation](#), on page 7.
- To maintain the integrity of a cluster configuration, such changes must be made by using the *System Configuration* features available in XAdmin.

Changing the Output Resolution

To change a display's resolution from the monitor wall

- 1 Connect a mouse to one of the Kaleido-IP VM server's USB ports. See [Troubleshooting with the Kaleido-IP VM server's USB ports](#), on page 87 for more information about this.
- 2 Right-click anywhere on the monitor wall, point to **Monitor Wall** (if you clicked a monitor), and then click **Display resolution**.



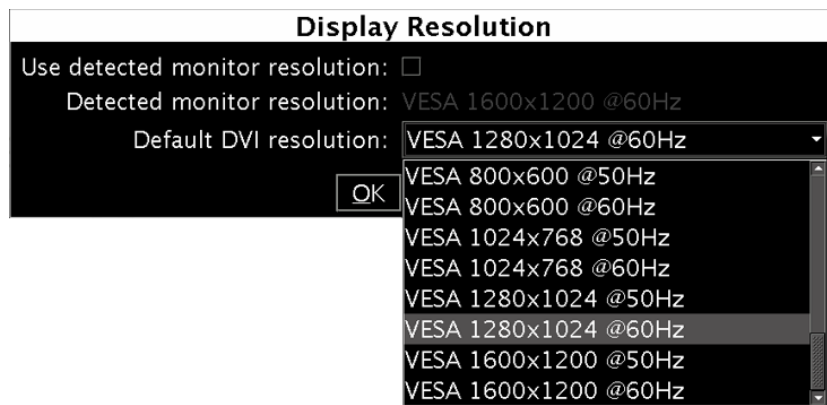
The **Display Resolution** window appears.



- 3 Clear the **Use detected monitor resolution** check box.

Note: The value indicated for **Detected monitor resolution** in the **Display Resolution** window is always “unknown” since this multiviewer does not support automatic resolution detection.

- 4 Select the desired resolution from the **Default DVI resolution** list.



- 5 Click **OK**.

The output resolution is adjusted accordingly.

4 System Configuration

This chapter shows how to configure the multiviewer.

System Requirements for a Client PC

A client PC or laptop meeting the following requirements is required to access the XAdmin Web client, and the other Kaleido Software client applications.

Operating system	Microsoft Windows 10, Windows 8.1, Windows 8, or Windows 7.
Processor	The minimum required by the operating system or better.
Memory	The minimum required by the operating system plus 2 GB or more.
Disk space	The minimum required by the operating system plus 2 GB or more.

Multiviewer Model Representation in XEdit and XAdmin

The name used to represent a multiviewer model is shown in the table below.

Multiviewer model	Represents
Kaleido-IP-2	A Kaleido-IP VM with two network adapters attached.
Kaleido-IP-4	A Kaleido-IP VM with four network adapters attached.
Kaleido-IP-6	A Kaleido-IP VM with six network adapters attached.

Installing Kaleido Software Client Applications

In addition to the XAdmin Web client, which does not require installation, the Kaleido Software includes the following client applications:

- XEdit is a client application used to create layouts for the monitor wall, and to configure your multiviewer system, from your PC. When this PC has network connectivity to the multiviewer, you can use XEdit to modify layouts and settings directly on the multiviewer, or you can work locally on the computer and then export your changes to the multiviewer.
- If you have only one multiviewer (or if you have more than one but you intend to always have the same version of the Kaleido Software on all of them), download the XEdit installer file from the multiviewer's home page. Whenever you install a new version of the Kaleido Software on the multiviewer, the next time you open XEdit, your copy of the application will be automatically updated from the multiviewer. See [Installing XEdit from your Multiviewer's Home Page](#) on page 32.
- The Router Control Software Single Bus and Matrix View applications (also part of the iRouter Router Control Software packaged with iControl Application Servers) can be

used to control your multiviewer's logical sources and monitor wall destinations, via the *KX Router* logical router, or to control other logical routers configured within your multiviewer system. See [Installing Router Control](#) on page 37.

Installing XEdit from your Multiviewer's Home Page

To install XEdit from your multiviewer's home page

- 1 With your PC, open a Web browser window and type the multiviewer's IP address in the address bar.

The multiviewer's home page appears.



- 2 Click the **XEdit** button.

The browser prompts you to save an executable file to your hard drive (`Kaleido-windows32-online.exe1`). This file is an online installer, which will download XEdit and other companion elements from your multiviewer, and install them. Some browsers may allow you to run the file directly. Depending on your browser's security features, warnings may appear, which you may safely dismiss.

- 3 Unless your browser let you run the file (and you chose to do so), navigate to the location where you saved the installer file and open it.

More security warnings or prompts may appear, which you may safely dismiss or accept.

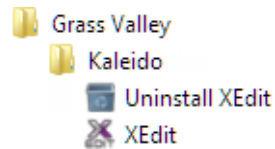
1. Installers for Linux or Mac OS X are not available.

A window appears, showing the download and installation progress.

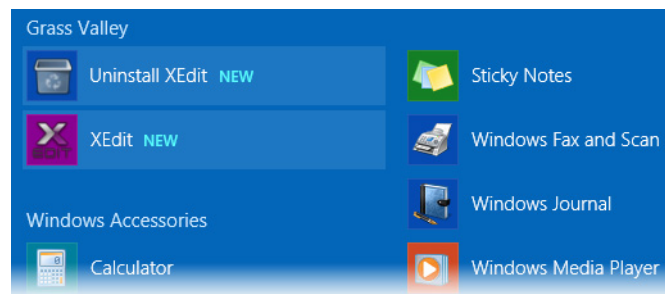


At the end of the installation process:

- If you have Windows 7, or Windows 10, shortcuts (XEDIT) are added to your desktop and to the Start menu (under **All Programs**).



- If you have Windows 8.1, or Windows 8, XEdit will appear on your desktop, in the Apps view with all the other applications on your PC (Windows 8.1), or in your Start screen (Windows 8).



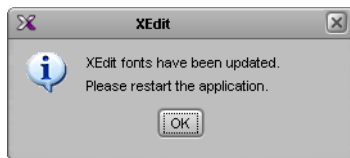
Once the installation has completed, the XEdit startup screen appears.



Depending on your Windows Firewall settings, a security alert may appear.

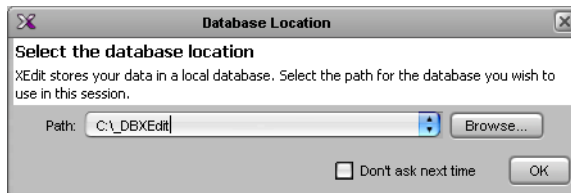
- Click **Allow access** to unblock the application.

If XEdit cannot find all of the fonts it needs already on your PC, it downloads them from the multiviewer automatically, in which case a message will appear to confirm the font update, and instruct you to restart the application.

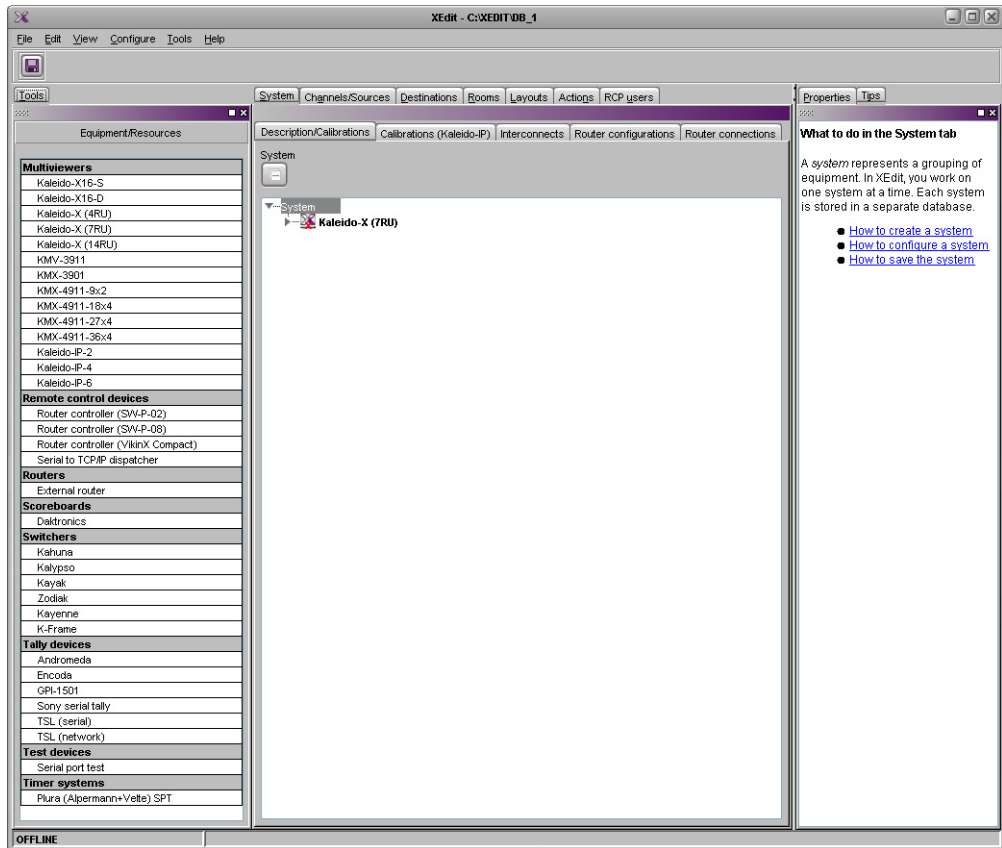



- Click **OK** to continue, and then open XEdit again, by using the shortcut on your desktop, in your Apps view (Windows 8.1) or Start screen (Windows 8), or from the Start menu (Windows 7, Windows 10).

- 4 When prompted to specify a database, choose one from the **Path** list, or click **Browse** to navigate to the database you wish to use as your local workspace, and then click **OK**.



Once the database has completed loading, XEdit's main application window appears.



Note: Once it has been installed from the multiviewer, XEdit remains on your PC, and can be launched from the  shortcut that was added to your desktop, Apps view, or Start screen (see [page 33](#)), or from the Start menu. Whenever you install a new version of the Kaleido Software on the multiviewer, the next time you open XEdit, your installed copy of the application will be automatically updated from the multiviewer.

For more information about calibrating your system, configuring rooms, creating layouts, and operating the monitor wall, refer to the *Kaleido Software User's Manual*. See [Related Documentation](#), on page 7.

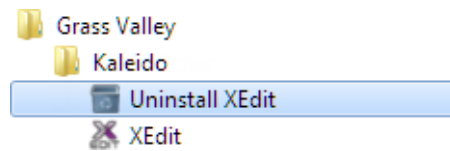
Uninstalling XEdit

With recent versions of XEdit, an uninstall program is available from the Windows Start menu. See [Uninstalling XEdit \(Dynamic Version 7.20 or Later\)](#), on page 36.

Uninstalling XEdit (Dynamic Version 7.20 or Later)

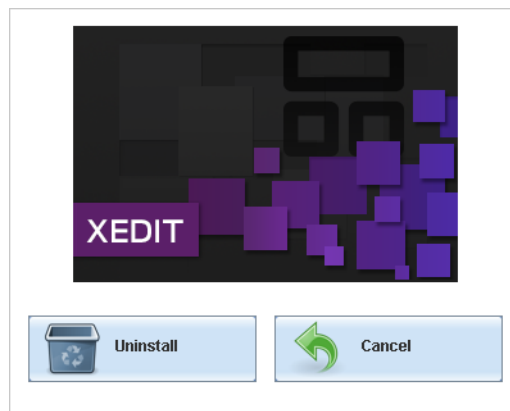
To uninstall XEdit (dynamic version 7.20 or later)

- 1 Close all XEdit windows you may have open.
- 2 Locate the **Uninstall XEdit** shortcut.
 - If you have Windows 7, or Windows 10: Open the Start menu, click **All Programs**, scroll to the **Grass Valley** folder, and then expand the **Kaleido** folder.



- If you have Windows 8.1, or Windows 8: Switch to the App view or your Start screen.
- 3 Click **Uninstall XEdit**.

An uninstall screen appears.



- 4 Click **Uninstall**.

This removes XEdit, including all shortcuts, launchers, and other elements that were installed with it, from your system.

Installing Router Control

To install Router Control from your multiviewer's home page

- 1 From a workstation on the same subnet as the multiviewer, open a Web browser window and type the multiviewer's IP address in the address bar.

The multiviewer's home page appears.

- 2 Click the **Router Control** button.

The browser prompts you to save an executable file to your hard drive (Kaleido__RouterControl-windows32-online.exe²). This file is an online installer, which will download Router Control and other companion elements from your multiviewer, and install them. Some browsers may allow you to run the file directly. Depending on your browser's security features, warnings may appear, which you may safely dismiss.


- 3 Unless your browser let you run the file (and you chose to do so), navigate to the location where you saved the installer file and open it.

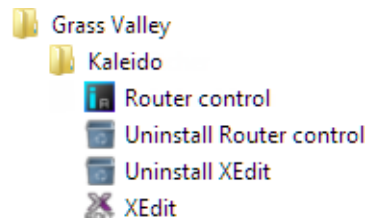
More security warnings or prompts may appear, which you may safely dismiss or accept.

A window appears, showing the download and installation progress.



At the end of the installation process:

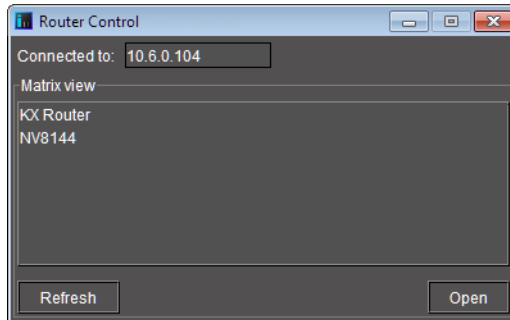
- If you have Windows 7, or Windows 10, shortcuts () are added to your desktop and to the Start menu (under **All Programs**).



- If you have Windows 8.1, or Windows 8, Router Control will appear on your desktop, in the Apps view with all other installed applications on your PC (Windows 8.1), or in your Start screen (Windows 8).

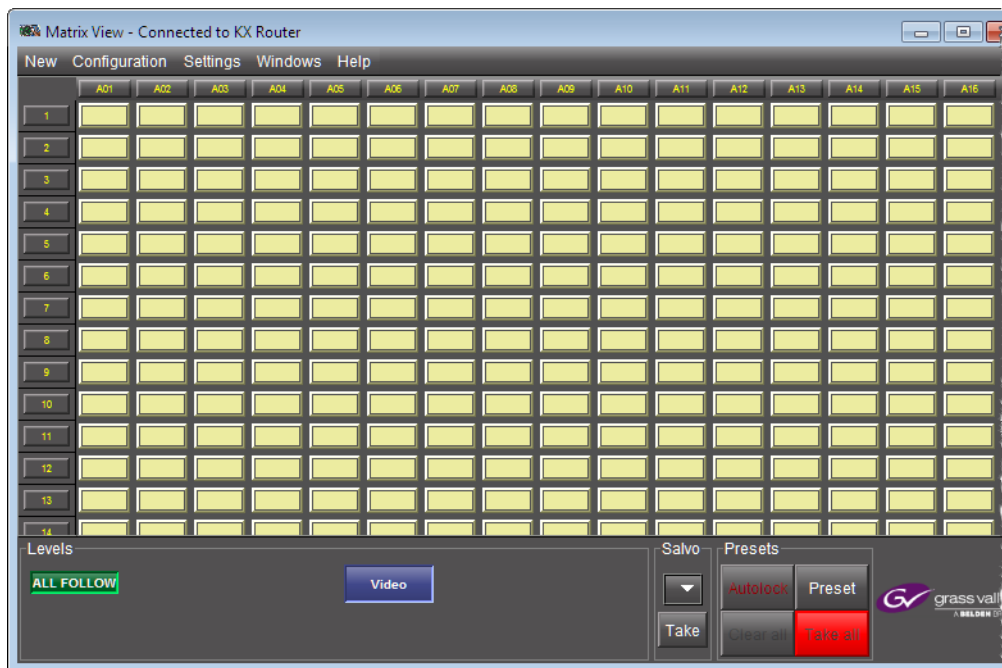
² Installers for Linux or Mac OS X are not available.

Once the installation has completed, the Router Control main application window appears. The application automatically connects to your multiviewer. The main window lists all logical routers configured within your multiviewer system, in addition to the *KX Router* logical router.




- 4 In **Router Control**, click the router you want to control, and then click **Open**. Depending on your Windows Firewall settings, a security alert may appear.
 - Click **Allow access** to unblock the application.

The Matrix View application window opens.



On the **Help** menu, click **Help** to access the online documentation, or refer to the *iControl Router User Guide*. See [Related Documentation](#), on page 7.

Notes

- Once it has been installed from the multiviewer, Router Control remains on your PC, and can be launched from the  shortcut that was added to your desktop, Apps view, Start screen (see [page 37](#)), or from the Start menu. Whenever you install a new version of the Kaleido Software on the multiviewer, the next time you open Router Control, your installed copy of the application will be automatically updated from the multiviewer.

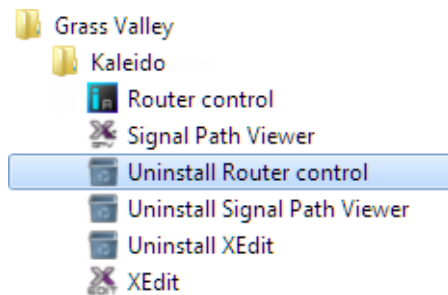
Notes (continued)

- Router Control can also connect to other Kaleido multiviewers or iControl Application Servers, and control their routers.
 - Routers configured within a Kaleido multiviewer system are compatible with the Router Control modules packaged with iControl Application Servers version 6.10 and later.
 - When Router Control is connected to an Application Server, a router manager configuration application is available from the main application window. When Router Control is connected to a Kaleido multiviewer, this router manager configuration application is not available (router configuration is performed with XEdit, in this case).
-

Uninstalling Router Control

To uninstall Router Control

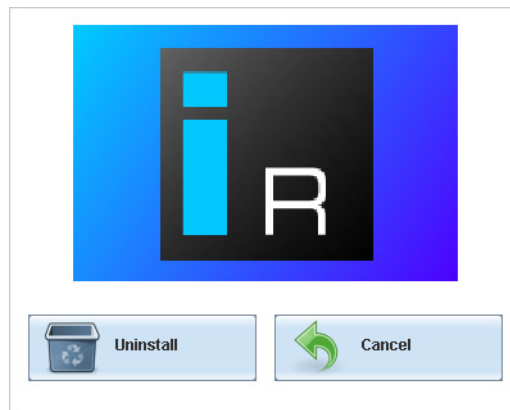
- 1 Close all Router Control windows you may have open.
- 2 Locate the **Uninstall Router Control** shortcut.
 - If you have Windows 7, or Windows 10: Open the Start menu, click All Programs, scroll to the Grass Valley folder, and then expand the Kaleido folder.



- If you have Windows 8.1, or Windows 8: Switch to the App view or your Start screen.

- 3 Click **Uninstall Router Control**.

An uninstall screen appears.



- 4 Click **Uninstall**.

This removes Router Control, including all shortcuts, and other elements that were installed with it, from your system.

Opening XAdmin

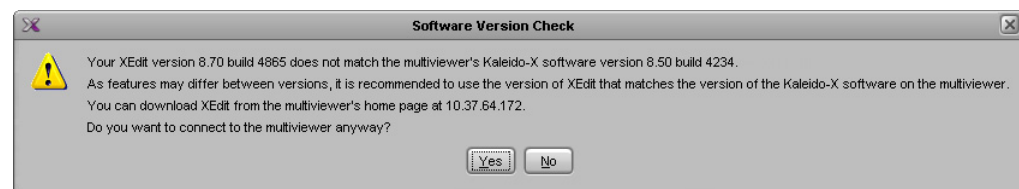
Connecting to a Multiviewer with a Different XEdit Version from your PC's Version

When connecting to a multiviewer with your PC and your PC already has XEdit installed, the XEdit version installed on your PC and the Kaleido Software version on the multiviewer must be same as explained below.

The composition of a Kaleido Software / XEdit version numbering is explained in the following table.

Kaleido Software / XEdit Version Reference	Description
Version <i>M.mp</i>	M is the major revision number m is the minor revision number p is the patch revision number

When you connect to a multiviewer, the multiviewer's Kaleido Software major and minor version must match the XEdit major and minor version installed on your PC. When there is a version number mismatch between the multiviewer's Kaleido Software version and your PC's XEdit version, you will receive the following error when you try to connect to the multiviewer with your PC.



Under this circumstance, proceed as follows.

- There is no compatibility problem if only the patch revision number is different between the Kaleido Software version on the multiviewer and the XEdit version on your PC. Click **Yes** to the Software Version Check screen.
- There is a compatibility problem if the major version, minor version, or both are different between the Kaleido Software version on the multiviewer and the XEdit version on your PC. The solution is to downgrade / upgrade the XEdit version used on your PC to the Kaleido Software version used by the multiviewer. Proceed as follows:
 - Click **No** to the Software Version Check screen.
 - Uninstall XEdit from your PC (see [Uninstalling XEdit](#), on page 36).
 - Install XEdit from the multiviewer (see [Installing XEdit from your Multiviewer's Home Page](#), on page 32).

If you regularly connect to different multiviewer systems that use different Kaleido Software versions, and as a result you receive the Software Version Check error message, the best solution to avoid this is to upgrade all of your multiviewer systems to the same Kaleido Software version.

Ways to Access XAdmin

Access the XAdmin Web client as follows:

- from a **Web browser** (see [Opening XAdmin from a Browser](#) on page 42),
- from **XEdit** (see [Opening XAdmin from XEdit](#) on page 43),

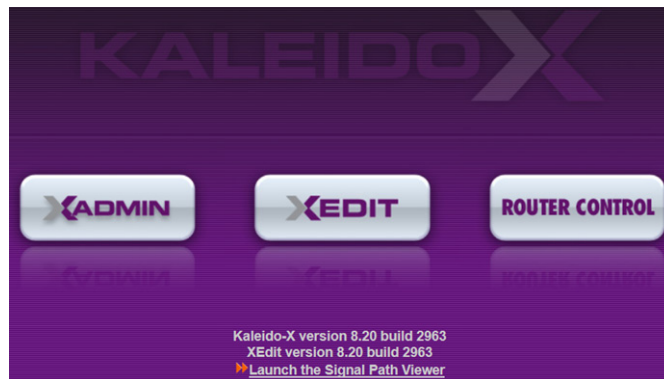
The first time you access XAdmin for a multiviewer (and every time the multiviewer's IP address has changed), you may see a security warning or a certificate error message. The procedures below include instructions on how to address these messages (see [Registering your Multiviewer's Security Credentials with your Browser](#) on page 43). Internet Explorer users may also need to enable compatibility view (see [Enabling the Compatibility View in Internet Explorer](#) on page 53).

Opening XAdmin from a Browser

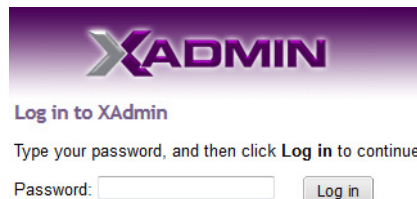
To open XAdmin from a browser

- 1 Open a Web browser window and enter the multiviewer's *Management* IP address in the address bar.

The Kaleido Multiviewer's home page appears.



- 2 Click the XAdmin button.
- 3 If you see a security warning, or a certificate error message, then see [Registering your Multiviewer's Security Credentials with your Browser](#), on page 43.
- 4 If the "Log in to XAdmin" page appears, type the password, and then click **Log in**.



- 5 **Internet Explorer users:** If a blank page appears, then see [Enabling the Compatibility View in Internet Explorer](#), on page 53.

The XAdmin *Status and Options* page appears. You can access all XAdmin features, by clicking the links, in the navigation area on the left of the page.

Opening XAdmin from XEdit

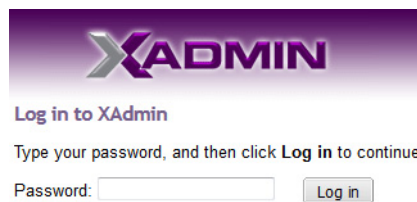
To open XAdmin from XEdit

- 1 On the **Configure** menu, click **Use XAdmin**.

XEdit prompts you for the *Management* IP address of the multiviewer you want to access.



- 2 Type the IP address, and then click **OK**.
Your default Web browser opens.
- 3 If you see a security warning, or a certificate error message, then see [Registering your Multiviewer's Security Credentials with your Browser](#), on page 43.
- 4 If the "Log in to XAdmin" page appears, type the password, and then click **Log in**.



- 5 **Internet Explorer users:** If a blank page appears, then see [Enabling the Compatibility View in Internet Explorer](#), on page 53.

The XAdmin *Status and Options* page appears. You can access all XAdmin features, by clicking the links, in the navigation area on the left side of the page.

Registering your Multiviewer's Security Credentials with your Browser

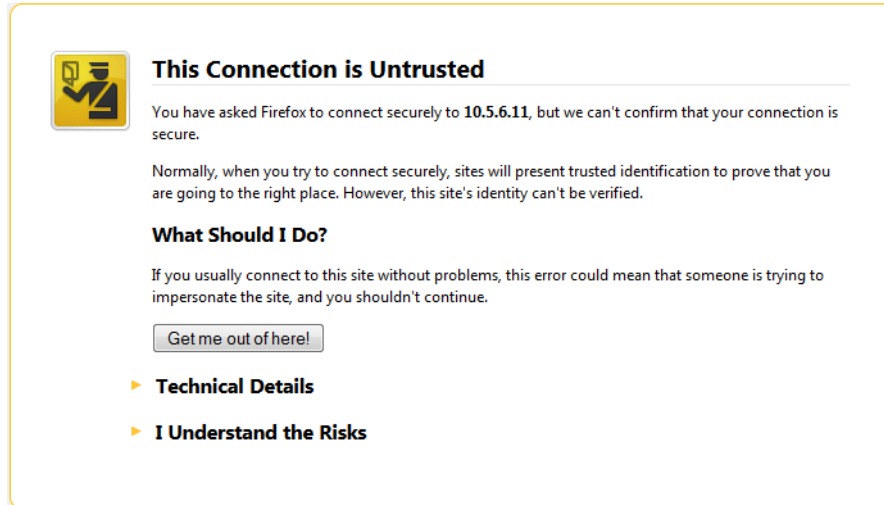
When you open your multiviewer's home page, or try to access XAdmin, your browser may report a certificate error (Internet Explorer), warn you about the site's security certificate (Chrome), or report an untrusted connection (Firefox). Follow the appropriate procedure below to register your multiviewer's security credentials with your browser:

- [Suppressing untrusted connection warning in Firefox](#), on page 44
- [Suppressing certificate error in Internet Explorer or Chrome](#), on page 46

You will be then able to access your multiviewer's client applications without seeing the error message again, as long as the multiviewer's IP address does not change.

Suppressing untrusted connection warning in Firefox

The first time you try to access XAdmin in Firefox, the browser may display the following page instead, prompting you to confirm the multiviewer's security credentials.

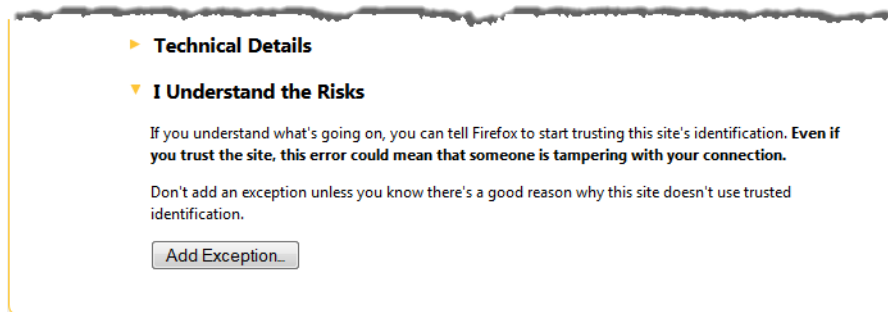


The screenshot shows a yellow warning dialog box with a shield icon containing a red 'X'. The title is "This Connection is Untrusted". The text reads: "You have asked Firefox to connect securely to 10.5.6.11, but we can't confirm that your connection is secure. Normally, when you try to connect securely, sites will present trusted identification to prove that you are going to the right place. However, this site's identity can't be verified." Below this is a section "What Should I Do?" with the text: "If you usually connect to this site without problems, this error could mean that someone is trying to impersonate the site, and you shouldn't continue." There is a button "Get me out of here!". At the bottom, there are two expandable sections: "▶ Technical Details" and "▶ I Understand the Risks".

To register your multiviewer's security credentials with Firefox

- 1 Click **I understand the Risks**, at the bottom of the page.

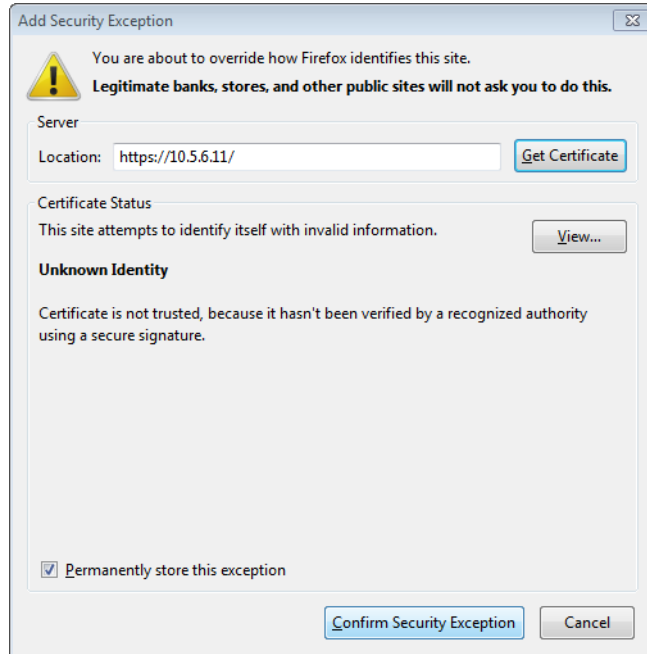
The message expands.



The screenshot shows the expanded version of the warning dialog. The "▶ I Understand the Risks" section is now expanded and highlighted in yellow. It contains the text: "If you understand what's going on, you can tell Firefox to start trusting this site's identification. **Even if you trust the site, this error could mean that someone is tampering with your connection.** Don't add an exception unless you know there's a good reason why this site doesn't use trusted identification." There is a button "Add Exception..." at the bottom.

- 2 Click **Add Exception**.

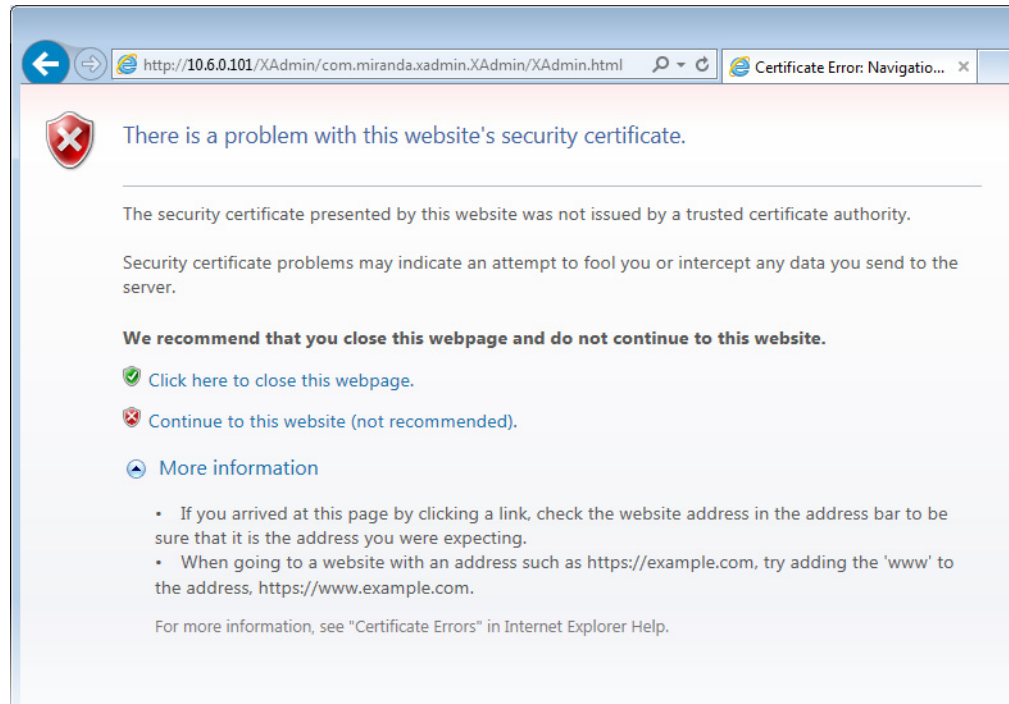
3 In **Add Security Exception**, click **Confirm Security Exception**.



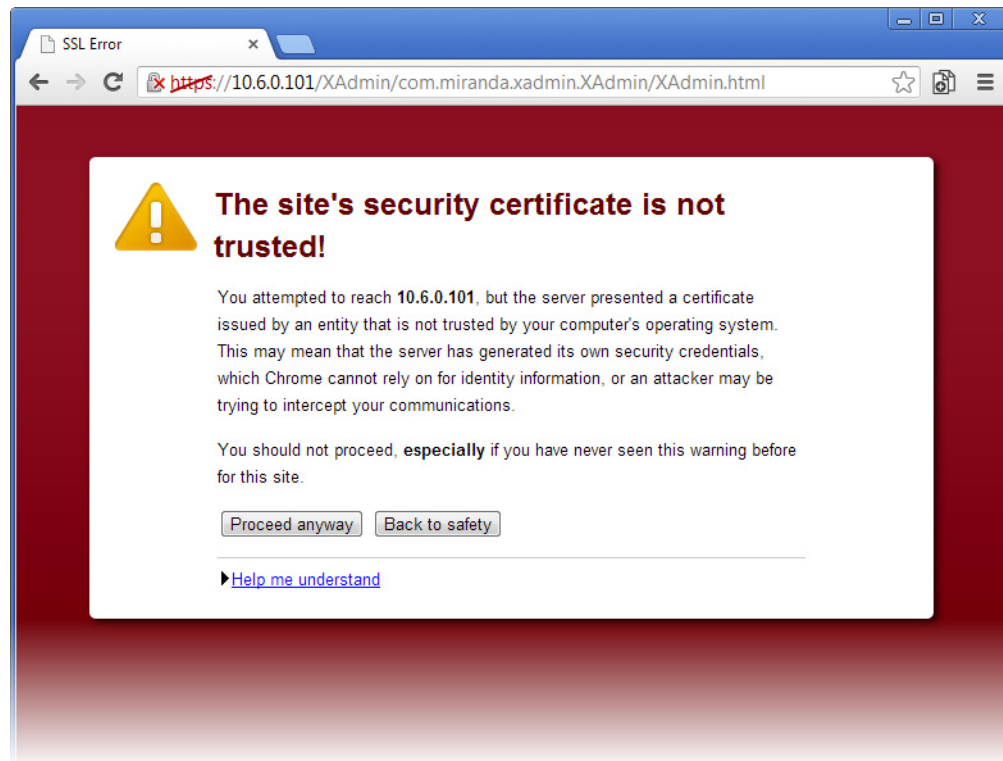
Your multiviewer's home page appears. You will now be able to access your multiviewer's client applications without seeing the warning. This will remain effective until the multiviewer's IP address is changed, in which case you will need follow the procedure again.

Suppressing certificate error in Internet Explorer or Chrome

The first time you try to access XAdmin in Internet Explorer or Chrome, the browser may prompt you to confirm the multiviewer's security credentials.



Internet Explorer's security warning



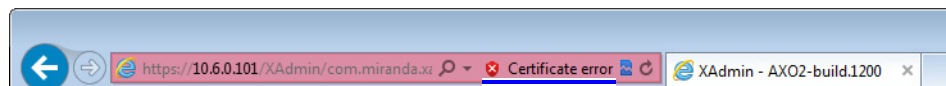
Chrome's security warning

Clicking **Continue to this website (not recommended)** (Internet Explorer), or **Proceed anyway** (Chrome) will let you access XAdmin but the browser's address bar will keep indicating that the multiviewer's identity is not verified. To suppress this warning, you need to perform the following, in Internet Explorer, *even if your preferred browser is Chrome*.

To register your multiviewer's security credentials with Internet Explorer

- 1 Click **Continue to this website (not recommended)**.

The address bar now indicates the certificate error.

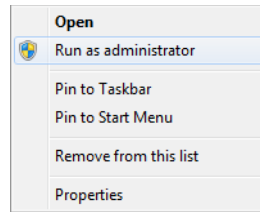


Special notes for Internet Explorer users

- If you see a blank page instead of XAdmin's *Status and Options* page, then see [Enabling the Compatibility View in Internet Explorer](#), on page 53.

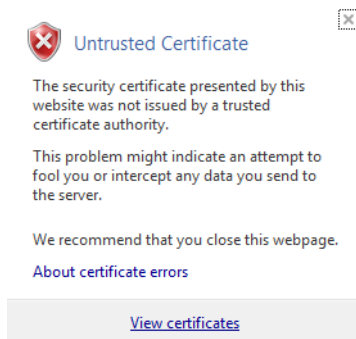
Special notes for Internet Explorer users (*continued*)

- You must have administrator status to accept the certificate error. If your user account does not have administrator status, then close your browser and, before you open it again, right-click the Internet Explorer icon, and then click **Run as administrator**:

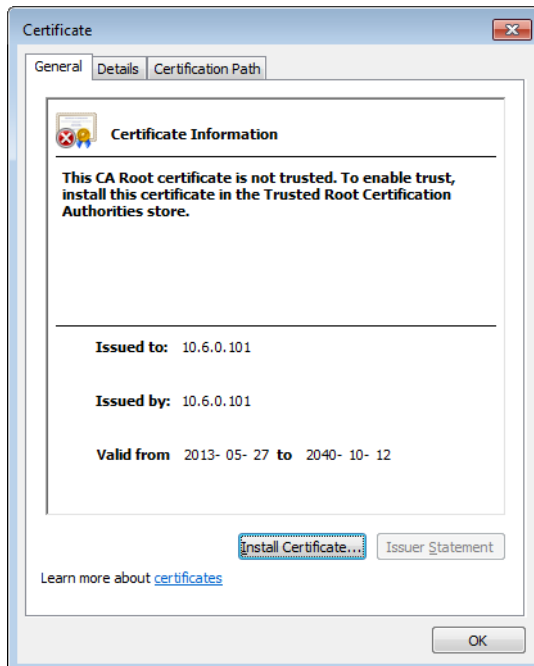


2 Click **Certificate error**.

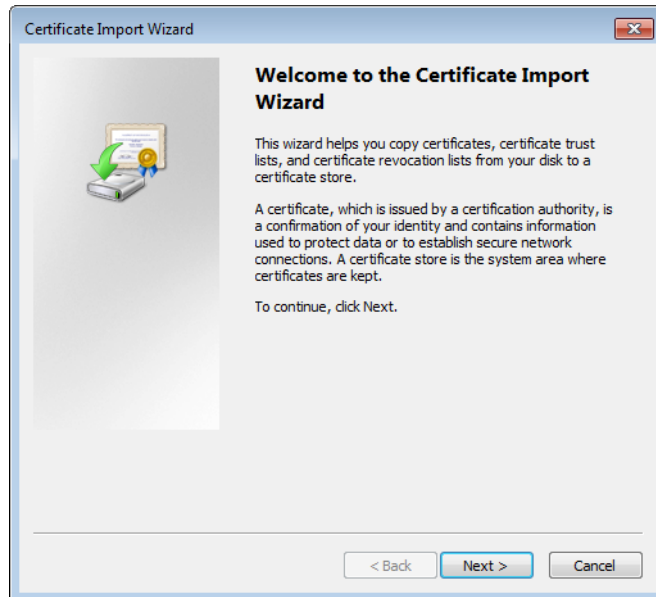
3 In **Untrusted Certificate**, click **View certificates**.



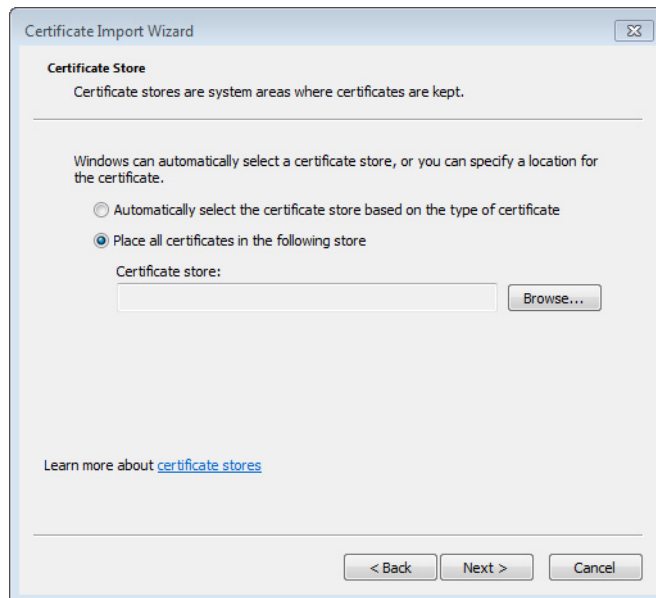
4 In **Certificate**, click **Install Certificate**.



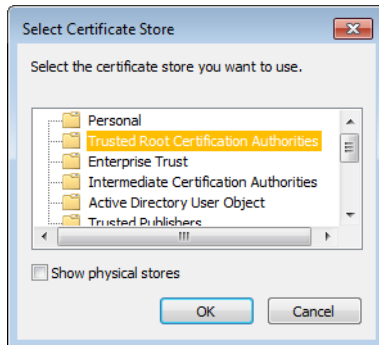
5 In **Certificate Import Wizard**, click **Next**.



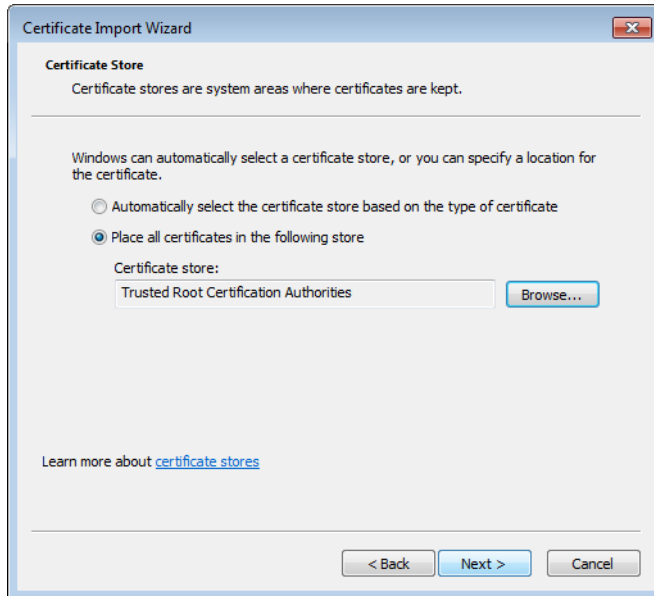
6 In **Certificate Import Wizard**, click **Place all certificates in the following store**, and then click **Browse**.



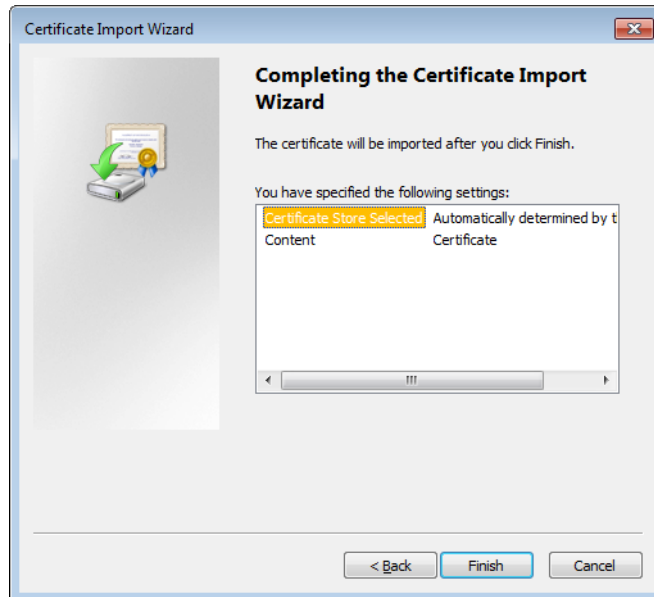
- 7 In **Select Certificate Store**, select **Trusted Root Certification Authorities**, and then click **OK**.



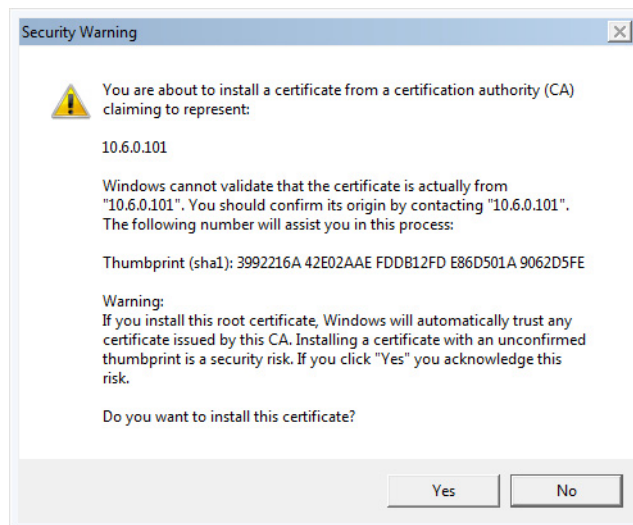
- 8 Back in **Certificate Import Wizard**, click **Next**.



9 Click **Finish**.

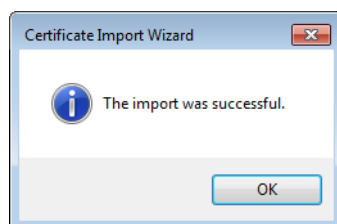


A security warning appears.



10 Click **Yes**.

11 **Certificate Import Wizard** reports that the import was successful.



12 Click **OK** to continue, and then click **OK** to close the **Certificate** window.

13 Close all Internet Explorer (and Chrome, if any) windows, and then open your browser again.

System Configuration


Registering your Multiviewer's Security Credentials with your Browser

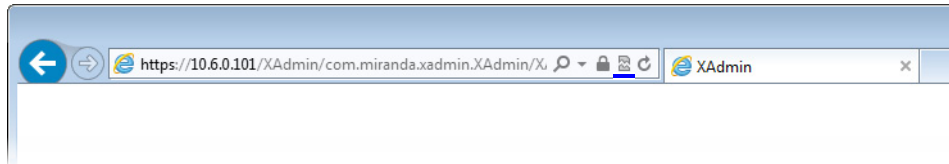
You should now be able to access XAdmin, from your multiviewer home page without ever seeing the security warning again, unless the multiviewer's IP address is changed, in which case you will want to repeat this procedure.

Enabling the Compatibility View in Internet Explorer

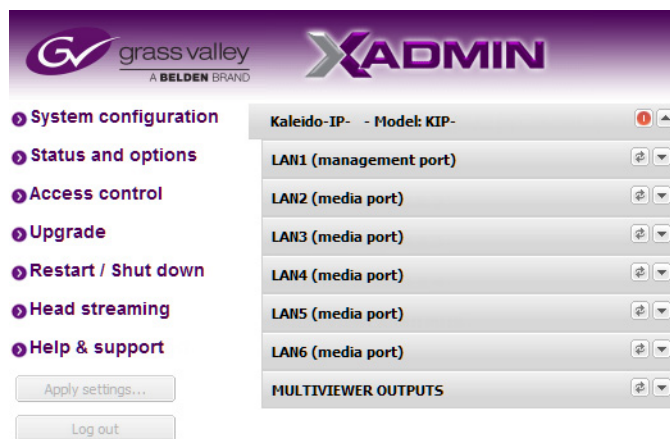
When you try to access XAdmin, from your multiviewer's home page, in *Internet Explorer 8, 9, or 10*, you may see a blank page instead of XAdmin's *Status and Options* page.³

To enable the compatibility view for your multiviewer's XAdmin Web client

- Click the Compatibility View  button at the end of your browser's address bar.



XAdmin's *Status and Options* page appears



The Compatibility View mode will remain enabled for this multiviewer as long as its IP address does not change.

³.Should this happen with Internet Explorer 11, refer to *Fix site display problems with Compatibility View*, at <http://windows.microsoft.com/en-us/internet-explorer/use-compatibility-view#ie=ie-11>

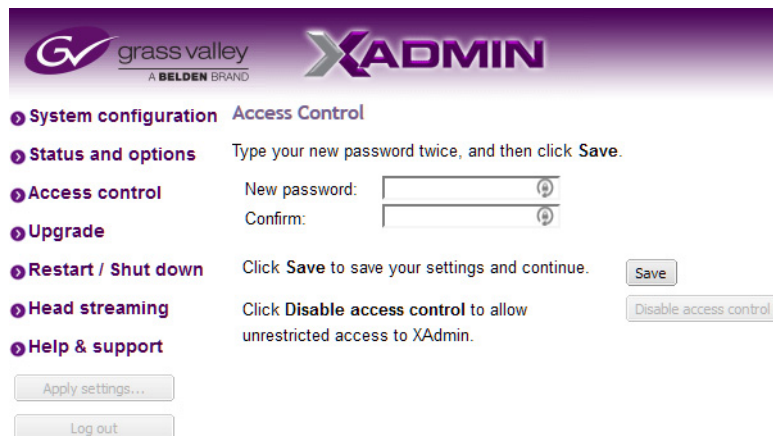
XAdmin Access Control

XAdmin supports a simple authentication mechanism to prevent unauthorized users from modifying a multiviewer's system configuration.

Enabling XAdmin Access Control

To enable access control in XAdmin

- 1 Open XAdmin. See [Opening XAdmin](#), on page 41.
- 2 Click **Access control**, in the navigation area on the left side of the page.
The Access Control page appears.

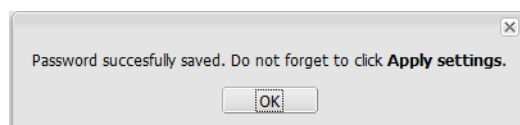


- 3 Type the password you want to enforce in both the **New password** and the **Confirm** boxes.

The password must contain between 6 and 20 alphanumeric characters or symbols.

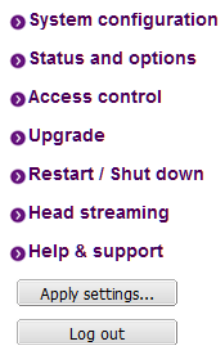
- 4 Click **Save**.

A confirmation message appears.



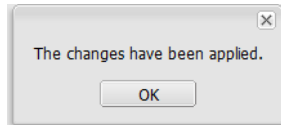
- 5 Click **OK** to close the message window.

The **Apply settings** button becomes available.



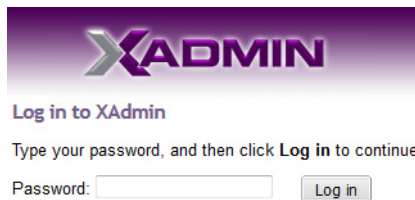
- 6 Click **Apply settings**.

XAdmin must upload the password to the multiviewer, for password enforcement to take effect. A progress indicator appears momentarily, followed by a confirmation message.



- 7 Click **OK**.

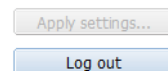
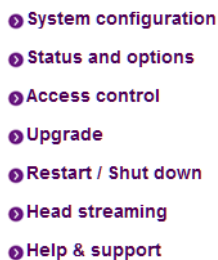
The Log in to XAdmin page appears. Other XAdmin sessions open against the same multiviewer are also redirected to the login page.



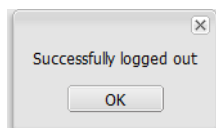
- 8 Type the password, and then click **Log in**.

The XAdmin *Status and Options* page appears.

- 9 Click **Log out**, when you are ready to close your session.



A confirmation message appears.




- 10 Click **OK**.

The login page appears. Only authorized users have access to XAdmin.

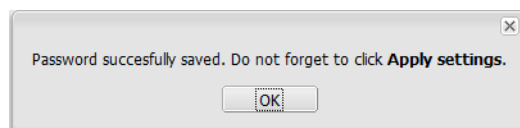
Changing the XAdmin Password

To change the password used to prevent access to your multiviewer from XAdmin

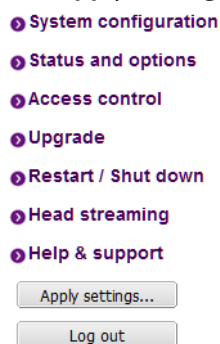
- 1 Open XAdmin. See [Opening XAdmin](#), on page 41.
- 2 Click **Access control**, in the navigation area on the left side of the page.
The Access Control page appears.



- 3 Type the new password you want to enforce in both the **New password** and the **Confirm** boxes.
The password must contain between 6 and 20 alphanumeric characters or symbols.
- 4 Click **Save**.
A confirmation message appears.

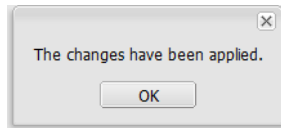


- 5 Click **OK** to close the message window.
The **Apply settings** button becomes available.



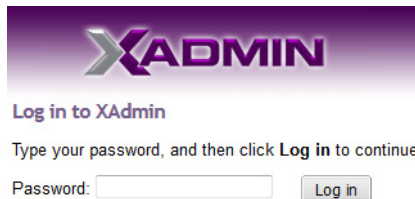
- 6 Click **Apply settings**.

XAdmin must upload the password to the multiviewer, for the password change to take effect. A progress indicator appears momentarily, followed by a confirmation message.



7 Click **OK**.

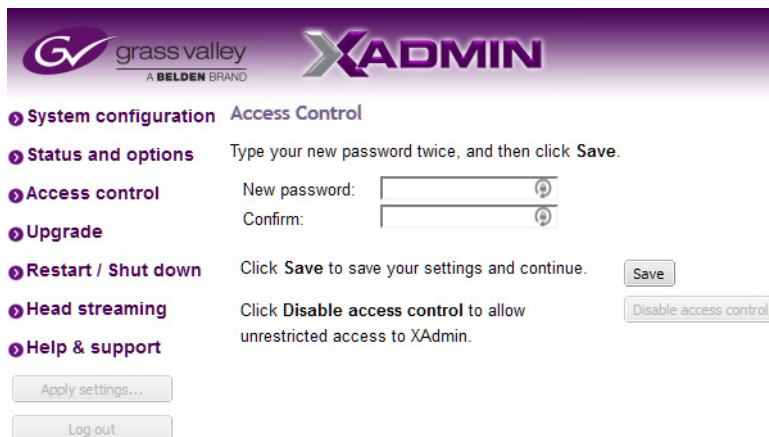
The Log in to XAdmin page appears. Other XAdmin sessions open against the same multiviewer are also redirected to the login page.



Disabling XAdmin Access Control

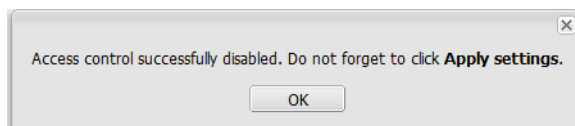
To disable access control in XAdmin

- 1 Open XAdmin. See [Opening XAdmin](#), on page 41.
- 2 Click **Access control**, in the navigation area on the left side of the page.
The Access Control page appears.



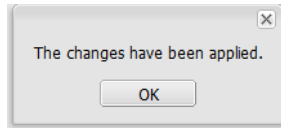
3 Click **Disable access control**.

A confirmation message appears.



4 Click **OK** to close the message window, and then click **Apply settings**.

A progress indicator appears momentarily, followed by a confirmation message.



5 Click **OK**.

Unrestricted access to XAdmin is restored, for this multiviewer.

Closing a Password-Protected XAdmin Session

To close your XAdmin session

- 1 Click **Log out**, in the navigation area on the left side of the current page, when you are ready to close your session.

① System configuration

② Status and options

③ Access control

④ Upgrade

⑤ Restart / Shut down

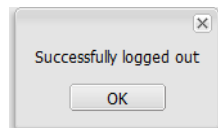
⑥ Head streaming

⑦ Help & support

Apply settings...

Log out

A confirmation message appears.



- 2 Click **OK**.

The login page appears. Only authorized users have access to XAdmin for this multiviewer.

Viewing a Multiviewer's Status Information

To view the status information for a multiviewer

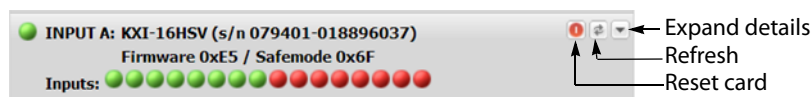
- 1 Open XAdmin. See [Opening XAdmin](#), on page 41.

XAdmin's *Status and Options* page appears, showing the multiviewer model, and a list of all modules and their statuses.

Kaleido-IP - Model: KIP	
LAN1 (management port)	
LAN2 (media port)	
Bandwidth	1313 Mbit/s
Network Status	●
MULTIVIEWER OUTPUTS	
Options - 4K UHD H.265 decode	● Disable... (Key: [REDACTED])
Options - HD/SD H.265 decode	● Disable... (Key: [REDACTED])
Options - Uncompressed video/audio over IP (ST2022-6/ST2110)	● Disable... (Key: [REDACTED])
CPU usage	10.68%
CPU usage status	●
CPU1 temperature	41°C
CPU1 temperature status	●
CPU2 temperature	40°C
CPU2 temperature status	●
GPU temperature	43°C
GPU temperature status	●
GPU usage	15%
GPU usage status	●
Memory usage	12.5 GiB/62.8 GiB
Memory usage status	●
PSU status	●

XAdmin Status and Options page

- 2 Click the arrow button at the end of a module's heading row to see more details the item.



- At any time you can click the Refresh button to make sure the data displayed for the selected module is up to date.
- Click the "Reset card" button to restart the multiviewer remotely from your Web browser.

Configuring Sources

Refer to *Configuring the System Representation* in the Kaleido Software User's Manual. See see [Related Documentation](#) on page 7.

Configuring the RCP-200

For the RCP-200 factory default IP address, see [Factory-Default IP Addresses](#), on page 18. On installation, you should consult your system administrator and replace this address with an appropriate address for your local network configuration (see [Configuring the RCP-200's IP settings](#) on page 61). Once your RCP-200 has an active connection to the network, you must then register the multiviewers you want to operate from the RCP-200 (see [Specifying multiviewers for the RCP-200](#) on page 61), and their respective *KX Router* logical routers (see [Specifying lookup servers for the RCP-200](#) on page 62). Once this is completed, you will be able to control the monitor wall from the RCP-200 (see [Logging on to the RCP-200](#) on page 62).

Configuring the RCP-200's IP settings

To assign an IP address to the RCP-200

- 1 Press the CONFIG button, located between the two screens on the front of the RCP-200.
- 2 Touch the COMM category at the top of the right-hand screen.
- 3 Touch the ETHERNET tab on the right-hand screen.
- 4 In the SELECT area, rotate the leftmost control knob to select IP ADDRESS.
- 5 Use the four control knobs in the CHANGE area to set the new address.
The current address is displayed in the CURRENT box for reference, and the new address you are setting appears in the MODIFIED box, as well as at the controls.
- 6 Press the SAVE control knob to store the new address.
- 7 Repeat from [step 4](#) to configure the NETWORK MASK and GATEWAY settings.
- 8 Press the RESTART control knob to apply the changes.
The panel will go dark for about 15 seconds before the startup screens appear.

Specifying multiviewers for the RCP-200

To specify a multiviewer for the RCP-200

- 1 Press the CONFIG button, located between the two screens on the front of the RCP-200.
- 2 Touch the COMM category on the right-hand screen.
- 3 Touch the KALEIDO DISCOVERY tab on the right-hand screen.
- 4 Use the four control knobs in the ADD TO LIST area to dial in the IP address of the multiviewer you want to operate.
The address appears in the TO ADD box.
- 5 Press the ADD control knob.
The multiviewer's IP address appears in the LOOKUP LIST area.
- 6 Press the CONFIG button, located between the two screens on the front of the RCP-200 to end the configuration process and return to normal operation.

Specifying lookup servers for the RCP-200

The RCP-200 needs to connect to a lookup server in order to control devices, including a multiviewer's *KX router* logical router.

To specify a lookup server for the RCP-200

- 1 Press the CONFIG button, located between the two screens on the front of the RCP-200.
- 2 Touch the COMM category on the right-hand screen.
- 3 Touch the DISCOVERY tab on the right-hand screen.
- 4 Use the four control knobs in the ADD TO LIST area to dial in the IP address of the multiviewer you want to operate.
The address appears in the TO ADD box.
- 5 Press the ADD control knob.
The multiviewer's IP address appears in the LOOKUP LIST area.
- 6 Press the CONFIG button, located between the two screens on the front of the RCP-200 to end the configuration process and return to normal operation.

Logging on to the RCP-200

Note: In a default system configuration, a multiviewer's video outputs are assigned to ROOM1.

To log on to a Kaleido Multiviewer room from the RCP-200

- 1 On an RCP-200 with an active connection to the network, press the LIST button.
All devices, and Kaleido Multiviewer rooms, detected by the RCP-200 appear on the left screen. Kaleido Multiviewer rooms are listed in the form [multiviewer name]\[room name].
If a room belongs to a cluster system, its name appears once for each of the member multiviewers (e.g., if two multiviewers, KX1 and KX2, are configured as a cluster, and ROOM1 includes displays fed by both multiviewers, then both KX1\ROOM1 and KX2\ROOM1 will be listed. To determine the one you should select, review the following:
 - Has the RCP user configuration you want to use been replicated on every member of the cluster? RCP Users are not automatically propagated to all multiviewers. Before a user can log on to a room associated with a cluster system, the corresponding RCP user configuration must be manually replicated on all member multiviewers across the cluster. See *Managing RCP Users* in the Kaleido Software User Guide. See [Related Documentation](#), on page 7.
 - Do you need to control an external router whose configuration is available only from one or some specific members of the cluster?
 - Does your system configuration include actions that were configured only on one or some specific members of the cluster?
 - Do you need to control a timer from the monitor wall in a cascade room?

If any of the above elements is available only from one or some specific members, then make sure you select the room name prefixed with the appropriate multiviewer name. In the case of a cascade room, unless you remember which multiviewer you were

connected to when you added the timer you need to control, you will have to proceed by trial and error.

- 2 Touch the room you want to access (press the DOWN or UP soft keys to scroll the list as needed).

The list of users assigned to this room appears on the right-hand screen.

- 3 Touch the user name under which you want to log on, enter your password, and then touch LOG IN.

Note: By default, the user “Admin” has no password.

The following message appears on the right-hand screen: PLEASE SELECT A ROUTER FROM THE LEFT-HAND SCREEN, prefixed with the name of the multiviewer that appeared before the room name you selected in [step 2](#).

- 4 In the list on the left-hand screen, touch the *KX Router* logical router associated with the same multiviewer (you can see the multiviewer name, its IP address, and the size of that particular KX Router).
- 5 Touch the Video level, in the area to the right of the router list, if it is not selected already, and then push SELECT.

The room’s monitor wall control panel appears on the right-hand screen, with the ASSIGN CHANNEL category selected. If a mouse is connected to the RCP-200, then after touching WALL MOUSE you should be able to see and move the mouse pointer on the monitor wall.

- If the room you selected belongs to a *cascade* system, touch a monitor showing a source you can identify as coming from a different multiviewer than the one indicated with the room name you selected in [step 2](#).
- If the room you selected belongs to a *cluster* system, rotate the HEAD knob (or touch the DISPLAY SELECT category) to display a head view from a different member of the cluster, and then touch a monitor.

The ROUTER SELECT category becomes selected instead of ASSIGN CHANNEL, and the right-hand screen shows the message prompting you to select a router from the left-hand screen, prefixed with the name of the multiviewer, which means that you still need to complete the correlation between some monitor wall destinations and the representation of the KX Router logical router for this multiviewer. See [Correlating Monitor Wall Destinations and KX Router Logical Routers for the RCP-200](#) on page 64. Repeat this for one head, with one layout, for every multiviewer that is part of the cluster. If you need to connect to a different instance of the same room then you will have to establish the correlation again, to be able to operate the monitor wall from the different context.

Notes

- The RCP-200 will remember your user credentials until you log out explicitly (by touching LOG OUT at the upper-right corner of the control panel).
 - The pointer may flicker when two RCP users access displays fed by the same multiviewer output.
 - Two users accessing the same display will be limited to sharing a single pointer.
-

For more information on the RCP-200, refer to the *RCP-200 Guide to Installation and Operation*. See [Related Documentation](#), on page 7.

Correlating Monitor Wall Destinations and KX Router Logical Routers for the RCP-200

To operate the monitor wall from the RCP-200's category/index router view, your system must have been configured to be controlled as a router. In a layout, the RCP-200 can only control monitors that have been assigned a monitor wall destination. The first time you log on to a room from the RCP-200, you will be prompted to select a router from the left-hand screen. By selecting the appropriate KX Router logical router, you will establish the correlation between your multiviewer's monitor wall destinations and the RCP-200's representation of the multiviewer's *KX Router* logical router. In the case of a cluster or cascade system, you will also be prompted to select a router, the first time to try to assign a source to a monitor located in a part of the layout that belongs to a different member of the cluster or cascade. You only need to do this once, for every multiviewer that is part of a cluster (or cascade).

To correlate a monitor wall destination in a layout and the corresponding KX Router logical router

- 1 In the list on the left-hand screen, touch the *KX Router* logical router associated with the multiviewer whose name was indicated in the message prompting to select a router (you can see the multiviewer name, its IP address, and the size of that particular KX Router).
- 2 Touch the Video level, in the area to the right of the router list, if it is not selected already, and then push SELECT.

The RCP-200 will remember the association with the KX Router logical router's destinations for the current multiviewer's monitor wall destinations.

Testing the Monitor Wall Operation

If your system was configured prior to shipment, then a layout appears on all displays. Otherwise, a gray screen will appear with the following message in the middle: *No layout has been assigned to this room. Please load a layout.*

To load a layout on the monitor wall

- Connect a mouse directly to one of the Kaleido-IP VM server's USB ports. See [Troubleshooting with the Kaleido-IP VM server's USB ports](#), on page 87 for more information about this.
 - a Right-click anywhere on the monitor wall, point to **Monitor Wall** (if you clicked a monitor), and then click **Load layout** on the shortcut menu.
A layout browser appears on the displays associated with the current room.
 - b Select the layout you want to load from the list of available layouts for this room, and then click **OK**.
The selected layout appears on the room displays.

Customizing Layouts, Logical Sources, and other Kaleido-IP Elements

Refer to the *Kaleido Software User Manual* to learn how to customize the Kaleido-IP to suit your specific needs. See [Related Documentation](#), on page 7.

Available Hardware and Software Options

You can purchase various software and hardware options to expand your multiviewer's capabilities that are not part of the basic offer. Software options are enabled by entering a software key that has been sent to you once you have purchased the option. The following table lists options that can be enabled via the XAdmin *Status and Options* page (see [Enabling Options](#) on page 68).

Kaleido-IP VM options

Option	Part No.	Feature
Kaleido-IP VM activation	KIP-ACTIVATION	Activates a Kaleido-IP virtual machine software installation license. One license per Kaleido-IP VM.
HD/SD H.265 decode	KIP-OPT-DEC-HEVC-HDSD	Decode license for H265/HEVC SD/HD video CODEC. One license per Kaleido-IP.
UHD/HD/SD H.265 decode	KIP-OPT-DEC-HEVC-UHD	Decode license for H265/HEVC SD/HD and UHD video CODEC. For Kaleido-IP X320 only. One license per Kaleido-IP.

The following table lists options that can be enabled by contacting Technical Support. See [Grass Valley Technical Support](#), on page 98.

Kaleido-IP VM options

Option	Part No.	Feature
Decode Dolby Digital 5.1	KIP-OPT-DEC-DD-5.1	Decode license for up to 32 Dolby Digital 5.1 (AC3) programs ⁱ .
Decode Dolby Digital 2.0	KIP-OPT-DEC-DD-2.0	Decode license for up to 32 Dolby Digital stereo (AC3) programs ⁱ .
Decode AAC 5.1	KIP-OPT-DEC-AAC-5.1	Decode license for up to 32 Advanced Audio Codec (AAC) 5.1 programs ⁱ .
Decode AAC 2.0	KIP-OPT-DEC-AAC-2.0	Decode license for up to 32 Advanced Audio Codec (AAC) 2.0 programs ⁱ .
Loudness	KIP-OPT-LOUDNESS	Loudness level measurement for a single audio program
SCTE35	KIP-OPT-SCTE-35	SCTE35 metadata extraction and alarming license for a single program
TR 101 290 DVB	KIP-OPT-TS-PROBE	TR 101 290 DVB transport stream probing option for priority 1 and priority 2 indicators. One license per Kaleido-IP. Note: indicator 2.4 is not supported.
Display 90-Degree Rotation	KIP-OUT-ROTATOR	Rotation license.

i. For example, each stream that has 5.1 and 2.0 audio is considered to have two programs and requires one 5.1 decode license and one 2.0 decode license.

Note:

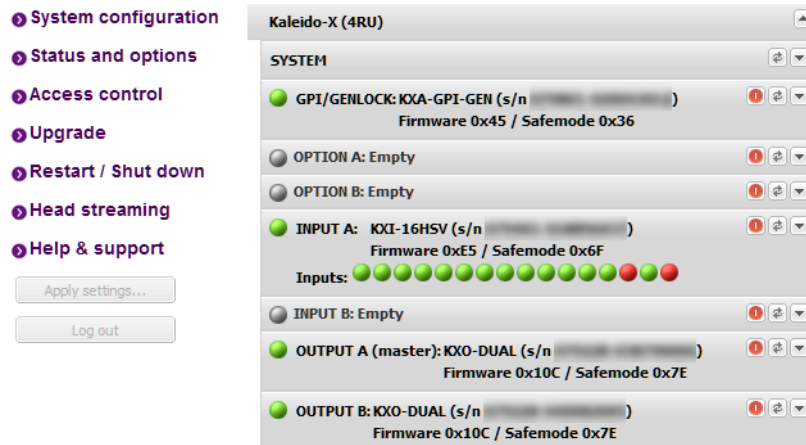
- The Kaleido-IP VM currently supports display rotation. It is not possible to enable or verify these options in XAdmin's *Status and Options* page, for this multiviewer model. Contact Technical Support for activation and configuration instructions ([Grass Valley Technical Support](#), on page 98).
-

Enabling Options

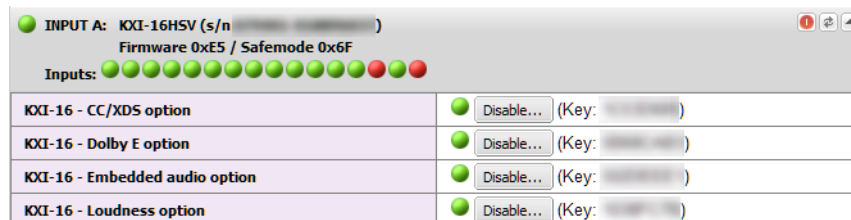
To enable options on a multiviewer

- 1 Obtain a license key from Grass Valley.
- 2 Open XAdmin.

The XAdmin Status and Options page appears.



- 3 Click the arrow button at the end of the heading row that corresponds to the module for which you want to enable an option.

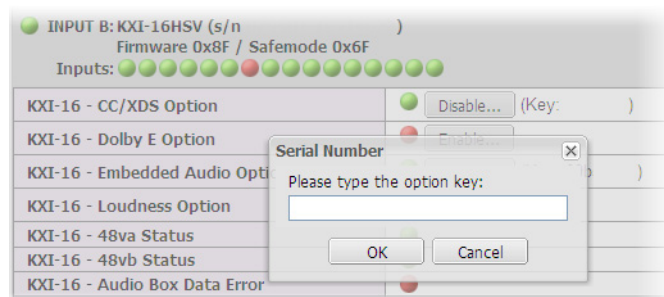


- 4 Locate the entry for the option you want to enable.

For example, to activate the Extraction of CC, Subtitling and XDS metadata option (CC/XDS Option) for an input card, you would need to locate the appropriate card in XAdmin's Status and Options page, expand it, and then locate the **KXI-16-CC/XDS option** line.

- 5 Click the **Enable** button.

A window appears prompting you for the license key.



- 6 Enter the license key for the specific option in the box, and then click **OK**.

Once the option is enabled, the license key is displayed, and a **Disable** button replaces the **Enable** button.

Restarting and Shutting Down a Kaleido-IP Multiviewer

The following options are available to restart or shutdown the multiviewer.

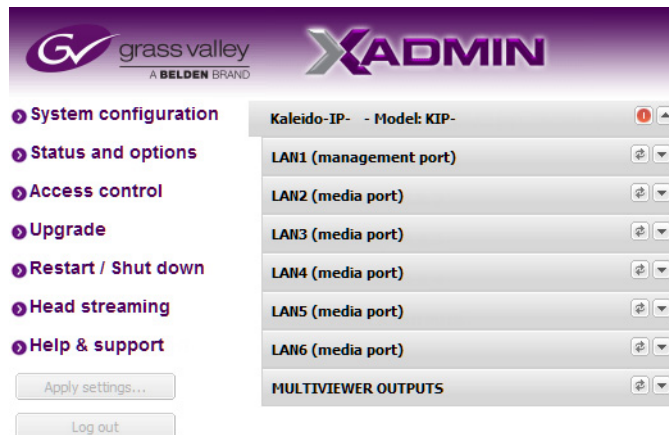
- Restarting the Monitor Wall Software
- Restarting a Kaleido-IP Multiviewer
- Shutting Down a Kaleido-IP Multiviewer

Note: The Kaleido Software does not support activating a soft shutdown from the Kaleido-IP VM server's power button. Should you be unable to access XAdmin, then perform a hard shutdown by pressing and holding the power button.

Proceed as follows.

- 1 Open XAdmin. See [Opening XAdmin](#), on page 41.

The XAdmin *Status and Options* page appears.



- 2 Click **Restart / Shut down** in the navigation area on the left side of the page.

The Restart / Shut down page appears.



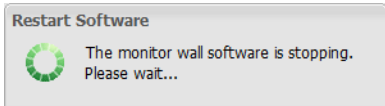
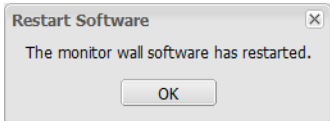
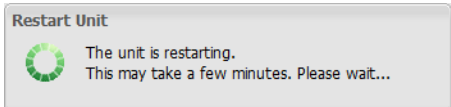
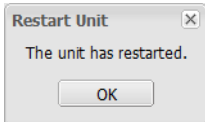
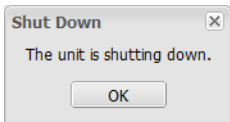
- 3 Click one of the following options.

Click	To
Restart software	Restart the monitor wall software

Click	To
Restart unit	Restart a Kaleido-IP multiviewer Note: Clicking the “Reset multiviewer” button on the <i>Status and Options</i> page for a Kaleido-IP is equivalent to this option except that there is no feedback from XAdmin.
Shutdown	Shut down a Kaleido-IP multiviewer

The system prompts you to confirm.

4 Click **Yes** to proceed.

For	Then
Restart software	<p>Your multiviewer’s operating system will shut down, and then start again. This may take a while.</p>  <p>Once the monitor wall software has restarted, the system notifies you.</p>  <p>Click OK. The XAdmin <i>Status and Options</i> page appears.</p>
Restart unit	<p>Your multiviewer will shut down, and then start again, during which time you can observe messages associated with the Linux shutdown and boot sequences on the monitor wall display connected to Head 1. This may take a while.</p>  <p>Once the multiviewer has restarted, the system notifies you.</p>  <p>Click OK. The XAdmin <i>Status and Options</i> page appears.</p>
Shutdown	<p>Your multiviewer will perform a clean shut down, during which time you can observe messages associated with the Linux shutdown sequence on the monitor wall display connected to Head 1.</p>  <p>Click OK to continue.</p>

Configuring Virtual Machine Network Adapters on a Kaleido-IP VM

To add virtual machine network adapters on a Kaleido-IP VM

- 1 Open XAdmin. See [Opening XAdmin](#), on page 41.
- 2 Click **System configuration**, in the navigation area on the left side of the page. The *System Configuration* page appears.

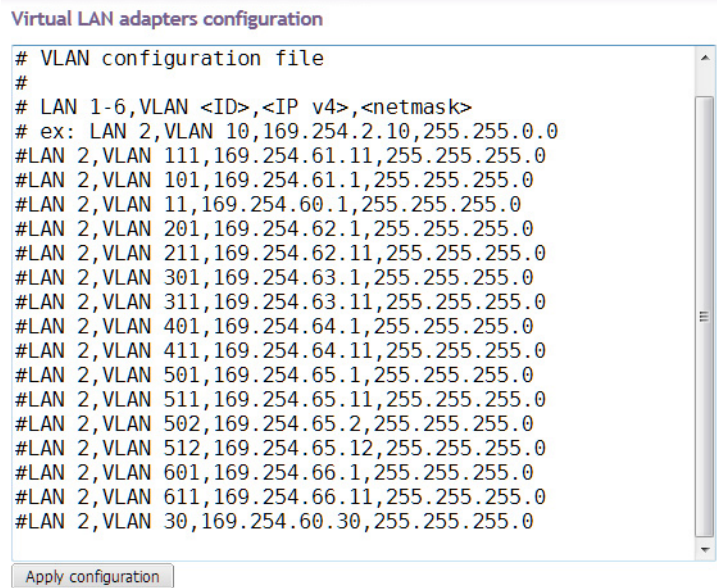
The screenshot shows the XAdmin interface for system configuration. The header includes the Grass Valley logo and 'XADMIN'. The left sidebar contains navigation links: System configuration (selected), Status and options, Access control, Upgrade, Restart / Shut down, Head streaming, and Help & support. The main content area is titled 'System configuration General' and shows the following settings:

- System name:** KIP-XVM2
- Ethernet**
 - LAN1 (management port) IP address:** 10 .37 .64 .72
 - Network mask:** 255 .255 .255 .0
 - Default gateway:** 10 .37 .64 .1 (Remove)
 - Detected link mode:** 10000Mbps full-duplex
 - LAN2 (media port):** Enabled
 - IP address:** 172 .30 .1 .72 (Remove)
 - Network mask:** 255 .255 .0 .0 (Remove)
 - Gateway:** (Add)
 - Detected link mode:** 10000Mbps full-duplex
- Virtual LAN configuration:** (Configure)
- DNS and proxy configuration:** (Configure)
- Font configuration:** (Configure)
- Date and Time**
 - Current date and time:** Tuesday January 30, 2018 12:44:22 PM UTC-5
 - Date and time format:** English (United States)
 - Time zone:** UTC
 - NTP synchronization:** Enabled Disabled
 - New date:** January 30, 2018
 - New time:** 12 :44 :22 PM

Buttons for 'Apply settings...', 'Log out', and 'Save' are visible.

- 3 Click **Configure**, under *Virtual LAN configuration*.

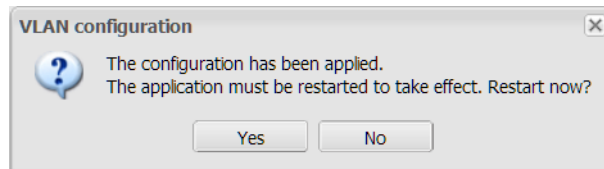
The *Virtual LAN adapters configuration* page appears.



- 4 Edit the VLAN configuration file as required. Refer to the Help pane for guidelines, if needed.

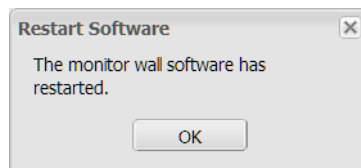
- 5 Click **Apply configuration**.

A message appears prompting you to restart the software.



- 6 Click **Yes**.

A message appears confirming that the software has restarted.

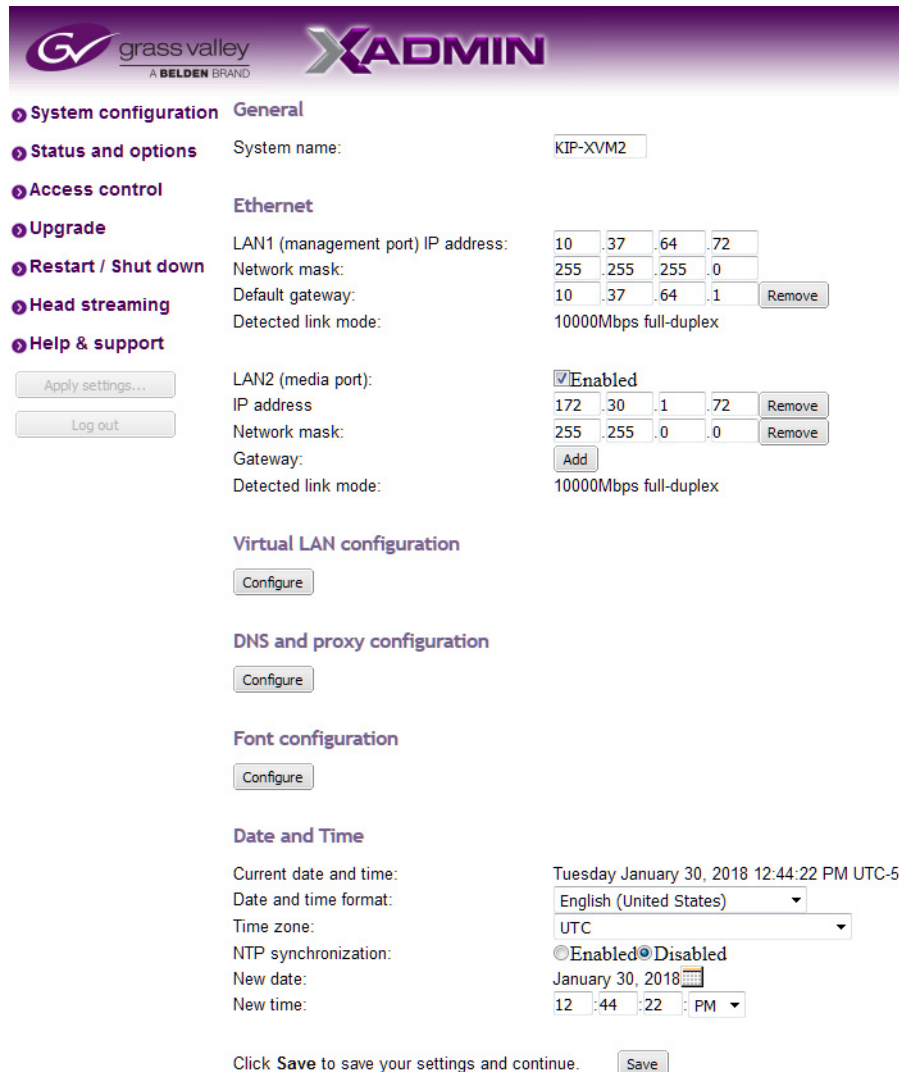


- 7 Click **OK** to continue.

Adding Fonts to a Kaleido-IP VM

To add fonts on a Kaleido-IP VM

- 1 Open XAdmin. See [Opening XAdmin](#), on page 41.
- 2 Click **System configuration**, in the navigation area on the left side of the page. The *System Configuration* page appears.



The screenshot shows the XAdmin interface for system configuration. On the left is a navigation menu with options: System configuration (selected), Status and options, Access control, Upgrade, Restart / Shut down, Head streaming, and Help & support. Below the menu are 'Apply settings...' and 'Log out' buttons. The main content area is titled 'System configuration General' and includes sections for Ethernet (LAN1 and LAN2), Virtual LAN configuration, DNS and proxy configuration, Font configuration, and Date and Time. The 'Font configuration' section is highlighted with a blue header and a 'Configure' button. Below the main content, there is a 'Save' button and a message: 'Click Save to save your settings and continue.'

- 3 Click **Configure**, under Font configuration. The "Font configuration" page appears.



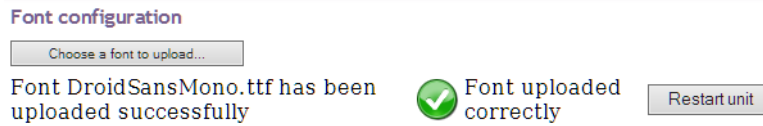
The screenshot shows the XAdmin interface for font configuration. The navigation menu on the left now highlights 'Font configuration'. The main content area is titled 'Font configuration' and contains a single button labeled 'Choose a font to upload...'. The 'System configuration' and 'Status and options' sections are visible in the navigation menu.

- 4 Click **Choose a font to upload**. A file chooser window appears.

- 5 Navigate to the font file you want to upload, select it, and then click **Open**.

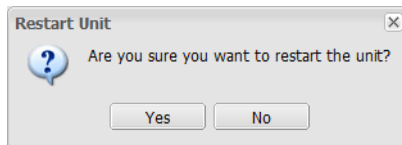
Note: The Kaleido Software supports true type fonts (TTF) only.

A progress indicator appears momentarily, followed by a confirmation message.



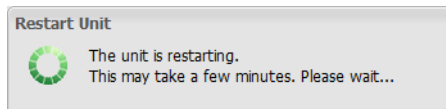
- 6 Click **Restart unit**.

The system prompts you to confirm.

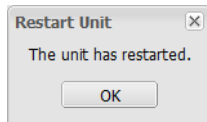


- 7 Click **Yes** to proceed.

Your multiviewer will shut down, and then start again. This may take a while.



Once the multiviewer has restarted, the system notifies you.



- 8 Click **OK**.

The XAdmin *Status and Options* page appears.

- 9 Make sure the same font is available on the client PC where you use XEdit. (To install a font on Windows 7 or later, right-click the TTF file, and then click **Install**.)
- 10 Close XEdit and then open it again.

The new fonts are now available, if you:

- Connect XEdit to the multiviewer.
- Download the database from the multiviewer to your local workspace (see [Importing a Database](#) on page 76).

IMPORTANT

Upgrading or reinstalling the Kaleido Software removes all additional fonts you may have uploaded to the multiviewer. In such case, you will need to repeat this procedure.

Importing a Database

To import a database

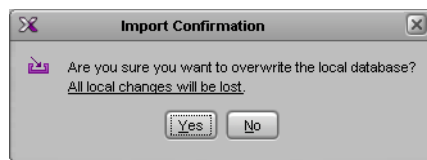
- 1 On the **Configure** menu, point to **Database**, and then click **Import**.

The **Import from Multiviewer** window appears, prompting you for the IP address of the multiviewer whose database you want to import.

Your recent connections, and all the multiviewers that are on the same subnet as your PC are automatically included in the list.

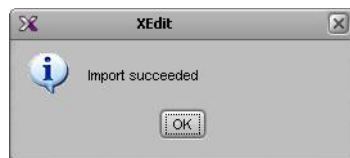
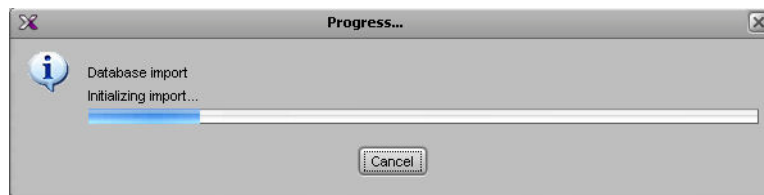
- 2 Select the multiviewer from the list (if present), or type the appropriate IP address in the box, and then click **OK**.

A window appears, prompting you to confirm that you really want to import the database from the multiviewer.



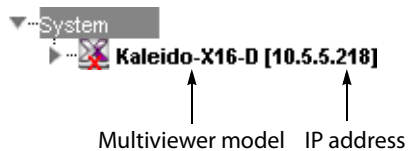
- 3 Click **Yes**.

A progress window appears, followed by a message stating whether the import succeeded or not.



- 4 Click **OK**.

The imported data has replaced the former content in your local workspace. The originating system's multiviewer model and IP address now appear in the System list.



In the case of a cluster system, the System list shows cluster members in alphabetical order based on their system name, which appears first and is followed by the multiviewer model and IP address.

The screenshot displays the Kaleido-IP VM interface. On the left, the 'Equipment/Resources' pane lists various multiviewers and test devices. The main pane shows a tree view of the 'System' hierarchy. The selected system is 'S-0-3-70 [Kaleido-X16-S - 10.5.5.215]', which is highlighted in bold. A text box with an arrow points to this bolded text, stating: 'Bold text indicates the cluster member to which XEdit is currently connected.' Below the system list, the status bar shows 'Connected to "10.5.5.215"' and a timestamp. Arrows from the labels below point to the connection status, system name, multiviewer model, and system IP address in the status bar.

Connection status System name Multiviewer System IP address
 model

5 Maintenance & Troubleshooting

This chapter shows you the various maintenance operations and corrective actions that maybe required to be performed during system commissioning and over the multiviewer's lifetime.

System Verification

Verifying the Management Port IP Address and Application Version

To find the Management Port IP address and application version

- 1 Connect a mouse to one of the Kaleido-IP VM server's USB ports. See [Troubleshooting with the Kaleido-IP VM server's USB ports](#), on page 87 for more information about this.
- 2 Right-click anywhere on the monitor wall. On the shortcut menu, point to **Monitor Wall** (if you clicked a monitor), and then click **Show dashboard** to display the dashboard associated with the current head. A small window appears in the bottom-right area, revealing the *Management Port* IP address and the system version.

Maintenance

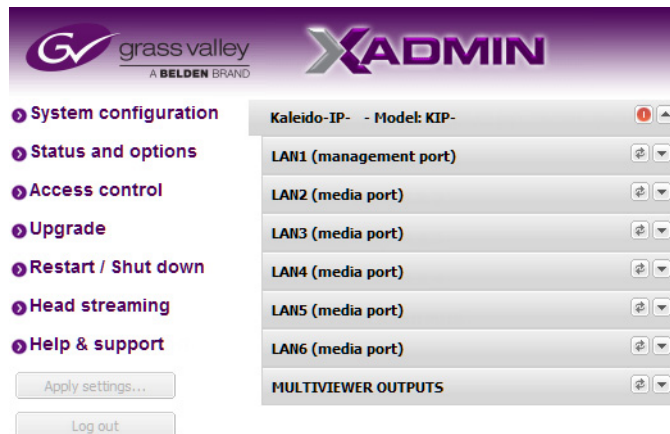
Generating a System Snapshot

A system snapshot creates a compressed file that contains information that can be used by Technical Support for troubleshooting purposes.

To generate a system snapshot

- 1 Open XAdmin. See [Opening XAdmin](#) on page 41.

The XAdmin *Status and Options* page appears.



- 2 Click the **Help & support** link in the navigation pane.

The Technical Support page appears.



- 3 Click **system snapshot**.

The system snapshot generation may take a few moments, after which your browser prompts you to save the resulting compressed folder to your hard drive.

- 4 Browse to the location where you want to save the ZIP file, and then click **Save**.

Upgrading the Multiviewer

Whenever possible, upgrade the multiviewer to use the latest Kaleido Software version number to take advantage of the latest bug fixes and stability enhancements. See the Kaleido Software Release Notes for more information about a Kaleido Software release.

Pre-upgrade Checklist

IMPORTANT

Back up your system database

Before upgrading the multiviewer system, make sure you have a backup of the current system database so that you can return to the previous Kaleido Software version if necessary. Refer to *Creating a Backup* in the Kaleido Software User's Manual, for details. See [Related Documentation](#), on page 7.

Note:

During the upgrade process, you may notice video tearing and audio breaking up on the monitor wall.

Workaround: Make sure your Kaleido-IP VM system is off air, before you start uploading the RUN package.

Upgrade Overview

Upgrade packages are made available by contacting technical support (see [Grass Valley Technical Support](#), on page 98). Download the update files onto your PC's hard drive. The format of the file should be `926-XXG01-xxx.zip`.

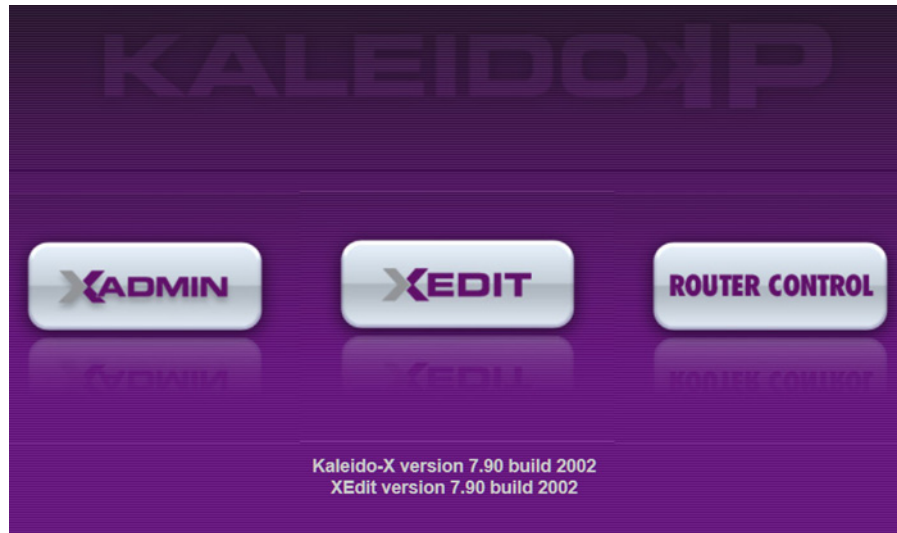
The upgrade is performed from your PC, by using XAdmin. See [Installing the Software Upgrade](#) on page 81.

Installing the Software Upgrade

To upgrade your Kaleido-IP multiviewer

- 1 From a workstation on the same subnet, open a Web browser window, and type the *Management Port* IP address of the multiviewer, in the address bar.

The Kaleido-IP home page appears.

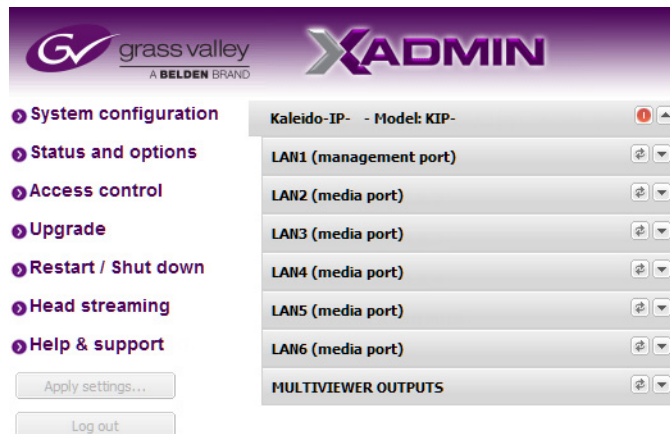


Firefox users:

If you see a security warning instead of the home page, see [Registering your Multiviewer's Security Credentials with your Browser](#), on page 43.

- 2 Click the **XAdmin** button.

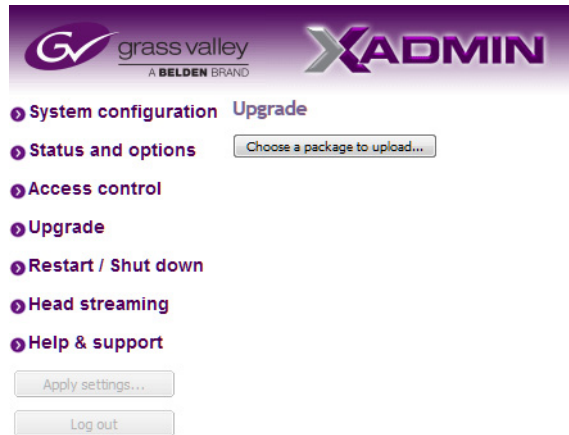
The XAdmin *Status and Options* page appears.



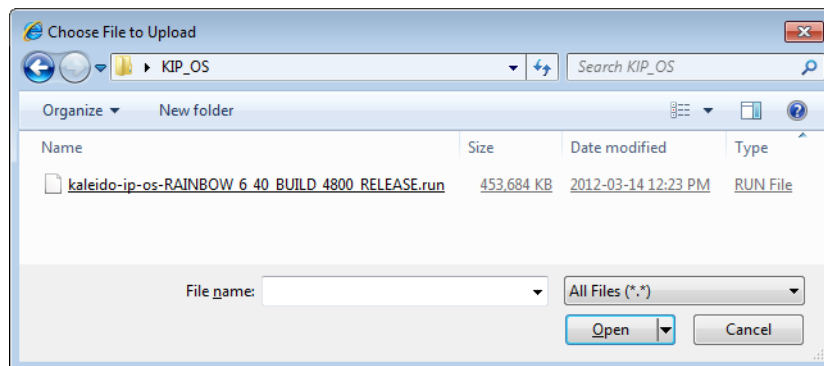
Internet Explorer users:

- If the page remains blank, then see [Enabling the Compatibility View in Internet Explorer](#), on page 53.
 - If you see a certificate error message instead of the *Status and Options* page, then see [Registering your Multiviewer's Security Credentials with your Browser](#), on page 43.
-

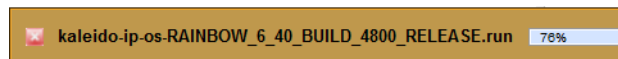
- 3 Click **Upgrade**, in the navigation area on the left of the page.
The *Upgrade* page appears.



- 4 Click **Choose a package to upload**.
A file chooser window appears.
- 5 Navigate to the RUN package you wish to install, select it, and then click **Open**.
The upgrade file should have the following format: kaleido-ip-os-9.10_build_xxxx.run



The selected file is uploaded to the Kaleido-IP VM. This may take a few seconds.

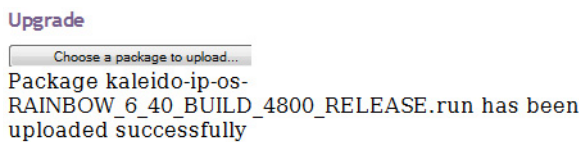



- 6 Once the upload has completed, click **Apply update**.



While the upgrade is taking place you can monitor its progress if you wish, or wait until the system prompts you to restart the Kaleido-IP VM unit.

Note: If nothing happens, verify that you are using the correct Kaleido Software RUN package, with the following format: `kaleido-ip-os-9.10_build_xxxx.run`



 Upgrade successful! Please reboot.

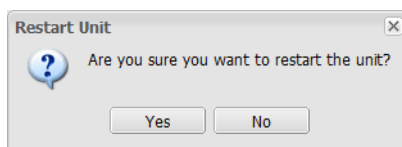
```
Verifying archive integrity... All good.
Uncompressing Kaleido-IP-
OS.....
sending incremental file list
bin/
bin/grub-bin2h
6.26K 100% 0.00kB/s 0:00:00
6.26K 100% 0.00kB/s 0:00:00 (xfer#1, to-check=1179/1241)
bin/grub-editenv
32.77K 93% 144.14kB/s 0:00:00
35.23K 100% 68.81kB/s 0:00:00 (xfer#2, to-check=1178/1241)
bin/grub-ekelfimage
```

- 7 Once the upgrade has completed, if you wish to keep a copy of the log messages, scroll down to the bottom of the page, right-click **Download the Upgrade log**, and save the log to your hard drive as a text file.

```
var/tmp/
var/tmp/tomcat-6/
deleting var/tmp/tomcat-6/hsperfdata_root/
deleting var/tmp/tomcat-6/2F60D6C4E6ABED4F464734578C01C61B/kaleido-ip-os-
deleting var/tmp/tomcat-6/2F60D6C4E6ABED4F464734578C01C61B/
var/tmp/tomcat-6/.keep_www-servers_tomcat-6
0 100% 0.00kB/s 0:00:00 (xfer#1223, to-check=0/46312)
sent 478.05M bytes received 45.04K bytes 10.07M bytes/sec
total size is 1.54G speedup is 3.22
/tmp/selfgz1641631452 /tmp/selfgz1641631452
/tmp/selfgz1641631452
/tmp/selfgz1641631452 /tmp/selfgz1641631452
/tmp/selfgz1641631452
/tmp/selfgz1641631452 /tmp/selfgz1641631452
/tmp/selfgz1641631452
ALTER ROLE
upgrade successful... please reboot
Download the Upgrade log
```

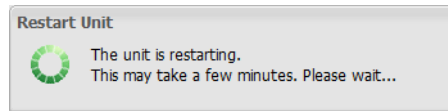
- 8 Click **Restart unit**.

The system prompts you to confirm.

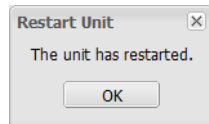


- 9 Click **Yes** to proceed.

Your multiviewer will shut down, and then start again. This may take a while.



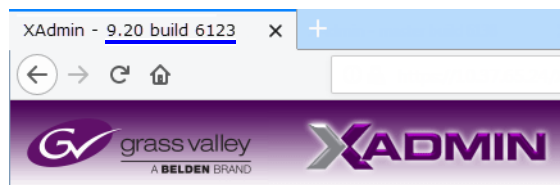
Once the multiviewer has restarted, the system notifies you.



- 10 Click **OK**.

The XAdmin *Status and Options* page appears.

- 11 Verify that the expected version number appears in the page title (check the tab label, or the browser's title bar).



At this point, the upgrade is complete.

You can verify the new version number by displaying the dashboard on the monitor wall. See [Displaying the Dashboard](#), on page 86.

Downgrading the Multiviewer System

IMPORTANT

The Kaleido-IP VM multiviewers cannot be downgraded to a version earlier than 8.60.

To downgrade your multiviewer to an earlier version of Kaleido Software

- Follow the upgrade instructions in the Release Notes that were published for the Kaleido Software version you want to downgrade to.

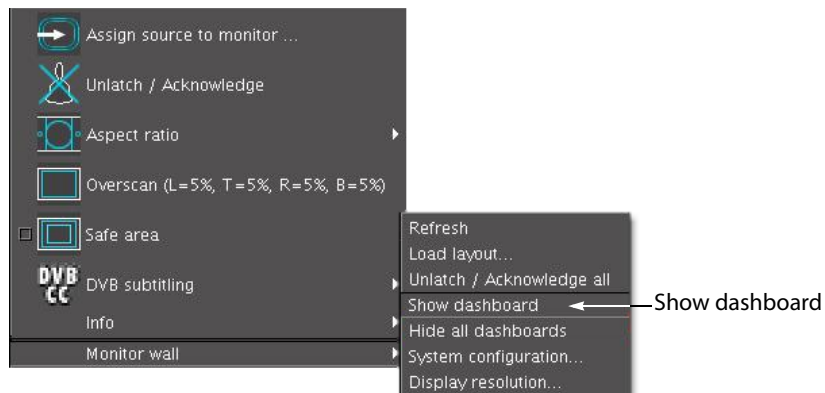
Displaying the Dashboard

The multiviewer supports the following types of dashboards:

- Status dashboard - displays IP address, Kaleido Software version, currently loaded layout, multiviewer server name/Room, associated Output head
- Update dashboard - displays status of System upgrade.

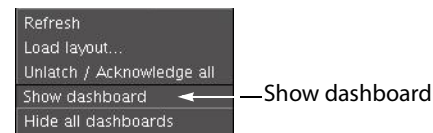
To display the dashboard

- 1 Right-click anywhere on the monitor wall. On the menu, point to **Monitor wall**, and then click **Show dashboard** to display the dashboard associated with the current head.



Monitor wall menu (within composite monitor menu)

Note: If you right-click the monitor wall background directly, then the monitor wall menu appears immediately. Click **Show dashboard**.



After a brief delay, the dashboard appears at the bottom-right corner of the monitor, and the command **Hide dashboard** replaces **Show dashboard** on the menu.



Dashboard on the monitor wall

Troubleshooting

Troubleshooting with the Kaleido-IP VM server's USB ports

A USB mouse can be directly connected to the multiviewer for troubleshooting purposes with the following conditions.

- The pointer can only travel between the displays connected to the Kaleido-IP VM server.
- When more than one display is connected to the card, the required mouse movement to go between displays does not always follow the wall layout set in XEdit. For example, you will have to move the mouse pointer horizontally or vertically in order to go from one display to the next.

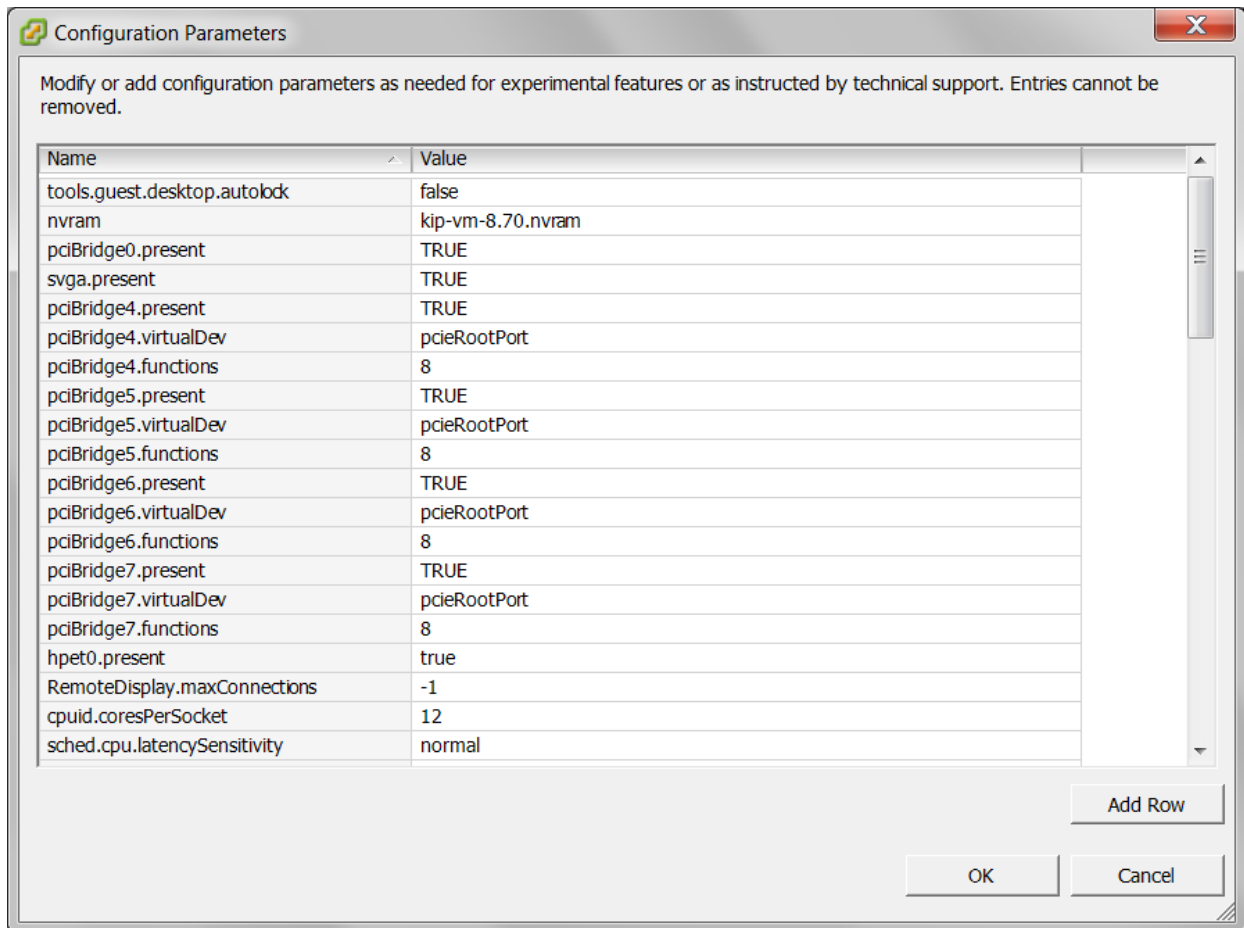
MAC Address Misalignment Between the VM and the VM Manager

When adding VM network adapters to the KIP-VM (to turn it into a KIP-4 or KIP-6, for example), it causes the MAC addresses to become misaligned between the VM and the VMWare software running the VM. This can occur when you add network adapters to an existing VM, and the PCI slot ID given by VMWare is a value greater than 1000. PCI slot IDs over 1000 can commandeer another pre-existing connection (to ETH0 for example).

To solve this issue

Once all network adapters have been added, go to VMWare configuration and edit the VM parameters manually.

- 1 Power off the VM, otherwise the configuration parameters are not accessible.
- 2 In the *Virtual Machine Properties*, select the *Options* tab.
- 3 Under *Advanced - General*, then *Configuration Parameters*, click *Configuration*.



For example, the Ethernet PCI slot numbers are shown as follows:

Name	Value
scsi0.pciSlotNumber	160
ethernet0.pciSlotNumber	192
ethernet1.pciSlotNumber	224
ethernet2.pciSlotNumber	256
ethernet3.pciSlotNumber	1184

Note that for Ethernet PCI slot number 3 is set to a value greater than 1000. For the example above, to correct this situation, find the following values and change them to:

Name	Value
scsi0.pciSlotNumber	1184
ethernet0.pciSlotNumber	160
ethernet1.pciSlotNumber	192
ethernet2.pciSlotNumber	224
ethernet3.pciSlotNumber	256

Note: the values for each Ethernet PCI slot number must increase but not exceed 1000. For example, the value for Ethernet PCI slot number 2 is greater than value for Ethernet PCI slot number 1.

- 4 Click OK on all dialogs to reconfigure the VM.
- 5 Boot the VM.

The MAC addresses should now be aligned between the VM and the VMWare software running the VM.

Troubleshooting Common Issues

Troubleshooting consists of using fault-isolation techniques to narrow down the probable cause to a specific multiviewer component. Schedule these maintenance operations during off hours when the system is not in use if possible as troubleshooting can cause outage. Use the following troubleshooting table to diagnose common issues and take corrective actions to restore operation.

Symptom	Probable cause	Test	Corrective action
Closed captioning/XDS / Dolby E / SCTE / Loudness does not work for certain tiles / video feeds.	Insufficient licenses have been installed.	View license status in XAdmin. See Enabling Options , on page 68. Valid licenses have a green dot.	Purchase and install a sufficient number of licenses as required. Contact Technical Support for more information and see Available Hardware and Software Options , on page 66. See Grass Valley Technical Support , on page 98.
Kaleido Software upgrade / downgrade has failed	A Kaleido Software installation requirement was not observed	Review the Kaleido Software Release Notes for information about compatibility, requirements, limitations, known issues, and bug fixes for a given software version. Confirm that the multiviewer's memory has sufficient capacity for the upgrade.	Install a software version that is compatible with your hardware or upgrade your hardware as required. See also Kaleido Software Minimum Version Compatibility , on page 8. See Related Documentation , on page 7.

Should you need further assistance, see [Grass Valley Technical Support](#), on page 98.

6 Specifications

Kaleido-IP Inputs

IP INPUTS

Transport	MPEG transport streams over UDP or RTP Multicast/Unicast MPEG elementary streams over RTP Multicast/Unicast IGMPv3 SSM/SFM Multi Program Transport Streams (MPTS) Single Program Transport Streams (SPTS)
Performance	Up to 1 Gbps

Notes

- The Kaleido-IP VM supports streaming over wide area networks (WAN), which are subject to packet delay variation (jitter), latency, packet reordering, and packet loss. It also supports encoders that transmit in bursts or with long delays between packets. The Kaleido-IP VM can handle transmission delays matching the encoder's video buffer delay, and, in the case of RTP streams, up to ± 120 ms of packet delay variation.

Other Input Formats Supported through Ancillary Hardware

ASI	Densité IRD-3802 (optional)
ATSC RF	Densité IRD-3811-VQ (optional)
DVB-S/S2 RF	Densité IRD-3811-DVB-S2 (optional)
Set-top box	EdgeVision (optional)

Codec Support by Streaming Mode

KIP decoding mode →		RTMP	HLS	Transport Stream	RTSP	RTSP-ES	RTP-ES	Uncompressed ^a
Protocols →		RTMP ^b	HLS ^c (HTTP)	MPEG-TS ^d	RTSP		Elementary stream	SMPTE ST 2022-6
Video codec	H.265 (HEVC)		Optional ^e	Optional ^e	Optional ^e			
	H.264 (AVC) ^f	•	•	•	•	•	•	
	MPEG-4 ^g					•	•	
	MPEG-2 ^h		•	•	•			
Audio codec ⁱ	AAC ^j LATM		Optional	Optional	Optional			
	AAC ^j	Optional	Optional	Optional	Optional	Optional		
	AC-3 (Dolby Digital)		Optional	Optional	Optional	Optional		
	E-AC-3 (Dolby Digital+)		Optional	Optional	Optional			
	MPEG-1 Layer 2		•	•	•	•		
	MPEG-1 Layer 3	•	•	•	•	•		

a. Unsupported by the Kaleido-IP VM.

b. Dynamic RTMP Streaming is not supported. Only the H.264 (AVC) codec is supported. Other codecs (JPEG, Sorenson H.263, screen video, screen video v2, VP6, VP6 + Alpha) are not supported.

c. Limitations may apply depending on stream content, usage of a content delivery network and/or encryption mode. Please contact Grass Valley to submit a playlist file for review.

d. A maximum of 512 elementary streams per program is supported.

e. One license is required to decode all HD/SD streams and one to decode all 4K streams.

f. Streams encoded only with P-frames are not supported.

g. MPEG-4 decoding capacity is identical to H.264.

h. Including unencrypted Digicipher 2 (DCII).

i. Up to 48kHz. Some limitations apply when the sample rate is different than 48kHz.

j. LC-AAC, HE-AAC (SBR) & HE-AACv2 (SBR+PS)

Remote Output via IP Streaming

Video formats	MPEG transport stream over Unicast or Multicast RTSP
Audio format	MPEG-1 Layer 2 stereo

Operation and Configuration

Source and layout configuration	XEdit
Alarms management	iControl (optional)

Multiviewer Integration with other Systems and Equipment

A number of configurable services are available to establish communications between the multiviewer and a wide variety of devices.

Note: This multiviewer does not have an RS-232 serial port for use with other systems and equipment. Any equipment integration must be made using an IP connection. Only use drivers that are IP capable before considering the use of the driver for a solution.

Optional Drivers for Controlling Routing Devices from the Multiviewer

Optional drivers are available to extend your Kaleido system with the ability to control routing devices that comply with the protocols listed in the following table. Contact your sales representative for details.

Company	Protocol	Text database download	Routers/Controllers
Datatek	D-2815 Control Module Protocol	No	
ETL	ETL Matrix	Yes	ETL Matrix
Evertz	Quartz Type 1	Yes	EQX
Grass Valley (Miranda)	Densité	Yes	HRS-1801
		No	HCO-1821, HCO-1822
Grass Valley (Miranda/NVISION)	NVEP NV9000 – Deprecated (NP0017) ^a	Yes	NV9000 system controllers
	NVEP NV9000 – Port Takes (NP0017) ^b	Yes	
	NVEP NV9000 – Device Takes (NP0017) ^c	Yes	
	NVEP Router (NP0016)	No	Compact router series
Grass Valley	GVG-NP Emulation	No	Jupiter CM-4000 and CM-4400 system controllers
	GVG 7000 Native Protocol ^d	Yes	Concerto-series routers, Encore-series control panels
Grass Valley (Thomson/Philips) ^e	Jupiter ASCII communications protocol	No	Venus-series and Trinx-series routers
Imagine Communications (Harris/Leitch)	Harris XY Passthrough Protocol	No	Platinum, Xplus, Integrator, Via-32, Panacea, Xpress
Lantronix	(Lightwave) Matrix-Hub Protocol	No	Matrix-Hub 1000

Company	Protocol	Text database download	Routers/Controllers
Nevion (Network Electronics)	Network Modular (Ethernet)	No	VikinX Modular
PESA	USP (Unsolicited Status Protocol)	No	Cheetah, Tiger, Jaguar, Cougar, Ocelot, Bobcat, TDM3000, PERC2000 system controller
Grass Valley (SAM / Snell / Pro-Bel)	General Switcher Protocol (SW-P-02)	No	
Sony	Sony HKSPC (GVGNP Emulator)	No	Sony routers (requires HKSPC card); GVG routers (Ethernet)
Utah Scientific	PL-160/PL-320	No	AVS-1B
	RCP-1	No	SC-1, SC-2, SC-3 series
	RCP-3	Yes	SC-4 series (Ethernet only)

- a. Deprecated. To be used with legacy configurations only.
- b. To be used in most cases. Supports native locks, and aliases from router (provided system controller has NV9000 router control system version 6.0.6 or later)
- c. To be used in very specific scenarios involving physical router interconnects with tie lines, or with hybrid router configurations. Contact Technical Support for more information (see [Grass Valley Technical Support](#), on page 98).
- d. For Thomson / Grass Valley Series 7000 devices, our current implementation of the Series 7000 Native Protocol supports some Encore system controller models, which are supported by Ethernet connection. For other Series 7000 devices you wish to control by Ethernet connection, use the Sony HKSPC (GVGNP Emulator).
- e. Our current implementations of the protocols listed above for Grass Valley (Thomson/Philips) routers and controllers support neither the CM-4400 nor the CM-4000 system controllers.

Drivers for Controlling Tally Interface Devices from the Multiviewer

Drivers are available to extend your Kaleido-X system with the ability to control tally interface devices such as the ones listed in the tables below. Contact your sales representative for more information.

Production Switchers

Company	Device/System
Grass Valley (Thomson)	Kayenne K-Frame, Karrera K-Frame, Zodiak, XtenDD HD/SD series

UMD controllers

Company	Protocol	Device/System
TSL	TSL UMD protocol V5.0	UMD Controller (TCP/IP or UDP/IP) <i>IP Limitation: only one screen index can be received per unicast port.</i>
Image Video		TSI-1000 Tally System Interface (requires option from Image Video)

Automation systems

Company	Device/System
Sundance Digital	Fastbreak NXT Automation (requires option from Sundance Digital)

Drivers for Timers

Timer systems

Company	Device/System
Plura (Alpermann+Velte)	Studio Production Timer (SPT)

Built-in Communications Protocols

The multiviewer itself can be controlled by external devices (for example, RCP-200, router control panels) or applications (e.g. router control software application, Remote Control Gateway) via built-in communications protocols. Such devices or applications can be used to command monitor wall operations (e.g. source assignment) or routing operations.

A router control device or application can control a Kaleido-X (7RU) or Kaleido-X16 multiviewer's internal router module, or any multiviewer's logical sources and monitor wall destinations, via the *KX Router* logical router. It can also control other logical routers configured within your multiviewer system. In the case of the *KX Router* logical router, the device or application must support the *NVEP Router (NP0016)* protocol.

The supported communications protocols are listed in the following table, with an indication of the supported connection types (TCP/IP), and the dedicated port number on the multiviewer, for TCP/IP connections.

Company	Protocol	TCP/IP (port)	Serial
Grass Valley (Miranda)	Kaleido Remote Control Protocol	Yes (13000)	No
Grass Valley (Miranda/NVISION)	NVEP Router (NP0016)	Yes (5194)	No
Nevion (Network Electronics)	Network Modular	Yes (4381)	No
Grass Valley (SAM/Snell/Pro-Bel)	SW-P-08	Yes (14000)	No
	SW-P-02	Yes (2000)	No



Grass Valley Technical Support

For technical assistance, contact our international support center, at 1-800-547-8949 (US and Canada) or +1-530-478-4148.

To obtain a local phone number for the support center nearest you, consult the Contact Us section of Grass Valley's website (www.grassvalley.com).

An online form for e-mail contact is also available from the website.

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