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A **BELDEN** BRAND

KALEIDO-IP VM

COMPLETE VIRTUAL IMAGE VERSION OF THE KALEIDO-IP
VIDEO MULTIVIEWER

Installation & Service Manual

M926-9005-106

2019-10-23

www.grassvalley.com

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Title	Kaleido-IP VM Installation & Service Manual
Part Number	M926-9005-106
Revision	2019-10-23, 17:43

toc

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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
M735-9902	Kaleido-RCP2 Guide to Installation and Operation
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
13-00926-010	Kaleido-IP Migration to Version 11 or Higher Upgrade Guide

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, EAC-3, 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 95 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)

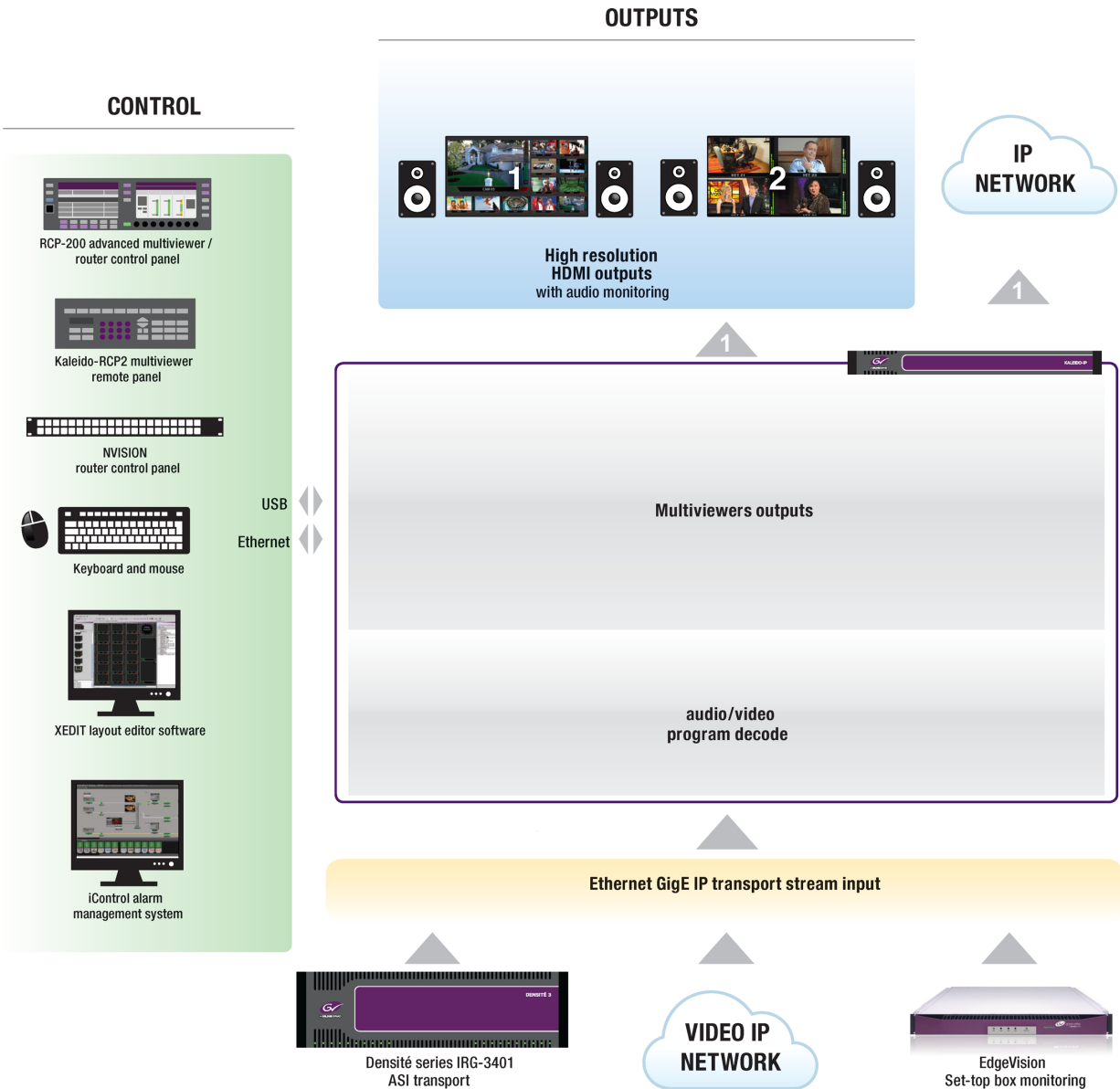
Kaleido Software Minimum Version Compatibility

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 85 for more information.

To upgrade a multiviewer, see [Upgrading the Multiviewer](#), on page 85.

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 102).
- 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 33)

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 Kaleido-RCP2 or 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 91.

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*.

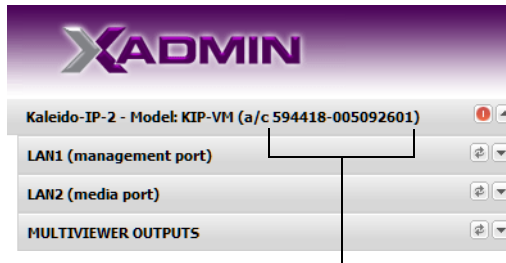
License Activation

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 45.
- 4 **Internet Explorer users:** If a blank page appears, then see [Enabling the Compatibility View in Internet Explorer](#), on page 55.

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-OPT-ACTIVATION 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, and the Kaleido-RCP2 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, Kaleido-RCP2, 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 Kaleido-RCP2 / 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 33) so it can be configured with XEdit and XAdmin. You must also configure any Kaleido-RCP2 units you may have ordered (see [Configuring the Kaleido-RCP2](#), on page 67).

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 83.

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
Kaleido-RCP2 ⁱ	10.0.3.191	255.255.255.0	0.0.0.0

i. When no network DHCP server is available.

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 43.

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 web interface. The 'System configuration' menu item is highlighted in green. The page is divided into several sections:

- General:** System name: kip-ff50f052edf11ca4
- Ethernet:**
 - LAN1 (management port):**
 - DHCP
 - System IP address: 10.37.31.14
 - Network mask: 255.255.240.0
 - Default gateway: 10.37.16.1 (Remove)
 - Link mode: 1000Mbps full-duplex
 - LAN6 (media port):**
 - DHCP
 - IP address: 192.193.26.2 (Remove)
 - Network mask: 255.255.255.252 (Remove)
 - Gateway: 192.193.26.1 (Remove)
 - Link mode: 10000Mbps full-duplex
- DNS and proxy configuration:** [Configure]
- Date and Time:**
 - Date and time source in use: PTP
 - Current date and time: Wednesday October 9, 2019 11:10:23 AM UTC-4
 - Date and time format: English (United States)
 - Time zone: America/New_York
 - PTP configuration:**
 - Domain number (0-127): 127
 - Announce interval (sec): 1
 - Announce receipt timeout count: 3
 - Locked to PTP:
 - Grand master: 08:00:11:FF:FE:22:04:00
 - Boundary clock: B4:DE:31:FF:FE:B1:0E:77
 - Interfaces in use: LAN5/LAN6 (Restart PTP service to update interfaces)
 - Interface active: LAN5
 - Step: Two step
 - Average offset: -13ns
 - NTP configuration:**
 - NTP server IP address: 10.10.10.66
 - Local configuration:**
 - New date: October 9, 2019
 - New time: 11:10:23 AM
- Font configuration:** [Configure]
- Virtual LAN configuration:** [Configure]

Click **Save** to save your settings and continue. [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 Kaleido-RCP2 or 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.

- 4 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.

Parameter	Description
DHCP	<p>Enable this option to allow the network's DHCP server set the port's IP configuration.</p> <p>If you are using an NMOS registry with the Kaleido-IP, then the LAN1 (management network) must be set to use DHCP.</p> <p>Note: When the DHCP server's lease time for IP addresses expires, DHCP-enabled devices on the network renew their IP configuration data.</p> <p>When the multiviewer is assigned a new IP address from the DHCP server, you must reboot the multiviewer so it can apply the new IP address to its configuration.</p> <p>For this reason, once the DHCP server has assigned an IP address to the multiviewer and you have IP connectivity to the multiviewer, set a static IP address for the multiviewer. Ask your network administrator to provide you with one or more static IP addresses you need for this purpose.</p>
LAN1 (management port) IP address	<p>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 Kaleido-RCP2 / RCP-200 must have IP connectivity to the LAN1 port. See also Kaleido-IP Multiviewer Ethernet Port Usage, on page 23.</p>
LAN2 or higher (media port)	<p>Set the network IP addresss to be used for these <i>Media Networks</i>. These ports must have IP connectivity to the associated streaming devices (e.g. encoders, multiplexers). See also Kaleido-IP Multiviewer Ethernet Port Usage, on page 23.</p> <p>To omit the network configuration for an unused Media Port, clear the corresponding IP address and network mask by clicking Remove.</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>LAN2 (media port): <input type="checkbox"/> DHCP</p> <p>IP address: 10 . 0 3 . 70 Remove</p> <p>Network mask: 255 . 255 255 . 0 Remove</p> <p>Gateway: <input type="button" value="Add"/></p> <p>Link mode: 1000Mbps full-duplex</p> </div>
Network mask	Set the connected network's subnet mask.

Parameter	Description
Default gateway	<p>If your <i>Management Network</i> is not configured with a gateway, clear the default gateway IP address, by clicking Remove.</p> <p>LAN1 (management port) <input type="checkbox"/> DHCP</p> <p>System IP address: 10 .37 .31 .14</p> <p>Network mask: 255 .255 .240 .0</p> <p>Default gateway: 10 .37 .16 .1 Remove</p> <p>Link mode: 1000Mbps full-duplex</p>
Gateway	<p>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.</p> <p>LAN2 (media port): <input type="checkbox"/> DHCP</p> <p>IP address: 10 .0 .3 .70 Remove</p> <p>Network mask: 255 .255 .255 .0 Remove</p> <p>Gateway: Add</p> <p>Link mode: 1000Mbps full-duplex</p>
Link mode	<p>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.</p> <p>10000 Mbps full-duplex communication can only be achieved via auto-negotiation, as required by the IEEE-802.3 standard, section 28D.5.</p>

- 5 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:

search:

primary: 10 .0 .2 .8

secondary: 10 .0 .2 .20

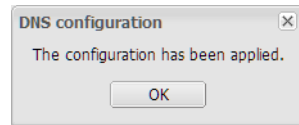
Proxy configuration

Enable proxy

proxy (URL to PAC file):

Apply configuration

- 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.

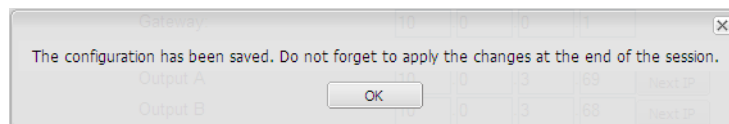
6 Configure the **Date and Time**.

Parameter	Description
Date and time source in use	Shows the current date and time's source: PTP / NTP / Local
Current date and time	Shows the Kaleido-IP's current date and time.
Date and time format	Select the appropriate time format for your location.
Time zone	Select the appropriate time zone for your location.
PTP configuration	<p>If this Kaleido-IP is meant to be used with SMPTE ST 2110-20 outputs, this option must be enabled. Use this option also when your network has a PTP grandmaster.</p> <p>Domain number (0-127): set the domain number for the PTP grandmaster to be used. The PTP grandmaster must be on the same domain as the Kaleido-IP.</p> <p>Announce interval (sec): sets the interval between PTP announce messages on the active interface.</p> <p>Announce receipt timeout count: sets the number of PTP intervals before a timeout occurs on the active interface.</p> <p>Locked to PTP: the connection status to the PTP grandmaster. Green: The Kaleido-IP is locked to the PTP clock. Red: The Kaleido-IP is unable to lock to the PTP clock.</p> <p>Grand master: the PTP grandmaster clock's identity.</p> <p>Boundary clock: the boundary clock's identity.</p> <p>Interfaces in use: the PTP protocol is currently enabled and detected on these ports.</p> <p>Restart PTP service to update interfaces: After adding a network interface, click to restart the PTP service to refresh the list of available interfaces.</p> <p>Interface active: the PTP protocol is currently active on this port.</p> <p>Step: Shows the clock's message type.</p> <p>Average offset: the measured Kaleido-IP's time offset (delay or advance) with respect to the PTP grandmaster. The maximum permitted operating offset is ± 500 nanoseconds. This refreshes every 30 seconds. When commissioning the Kaleido-IP, wait for the offset to settle below 500 nanoseconds before proceeding.</p>

Parameter	Description
NTP configuration	If this Kaleido-IP is meant to monitor HLS sources, enable this option, and then type the NTP server's IP address. The Kaleido-IP must have network connectivity to the NTP server.
Local configuration	Use the Kaleido-IP server's internal time base and set the current date and time. This option is the least accurate time keeping option. You may need to readjust this setting every few months to maintain clock accuracy.

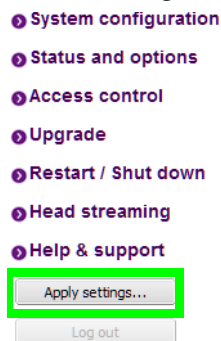
7 Click **Save**.

The new settings are saved locally.



8 Click **OK**.

9 Once a setting change has been saved, 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.

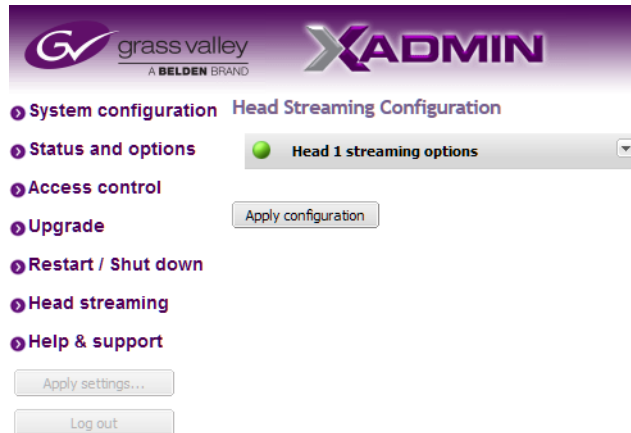
Note: Settings cannot be applied to a multiviewer system while an upgrade is in progress. If the multiviewer does not reboot after 10 seconds or so, try clicking **Apply settings** again after a minute or two, until the multiviewer reboots.

- 12 If this system must monitor sources from a VLAN environment, then see [Configuring Virtual Machine Network Adapters on a Kaleido-IP VM](#), on page 75, to add the required virtual machine network adapters.
- 13 If you need to change the head streaming settings, see [Configuring Head Streaming](#), below.
- 14 If this system requires new fonts to support subtitles, then see [Adding Fonts to a Kaleido-IP VM](#), on page 78 to add the required fonts.

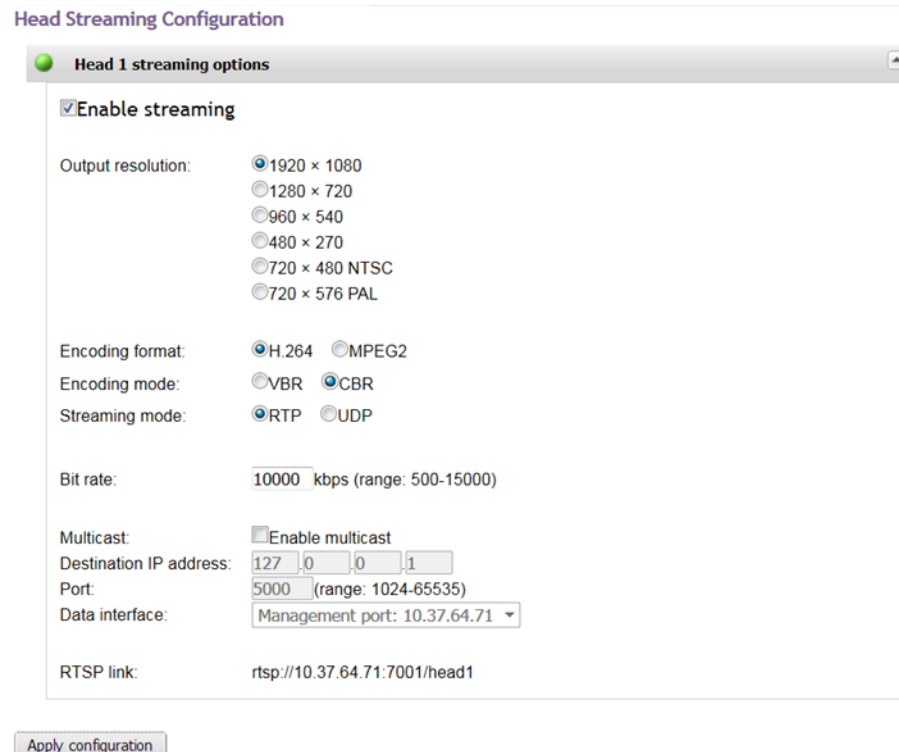
Configuring Head Streaming

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
5120		RCP2	TCP
10000	TCP		For Kaleido-RCP2 protocol
10001	TCP		For Kaleido-RCP2 protocol
5120	UDP		On multicast 230.8.8.9 for Kaleido-RCP2 protocol
5121	UDP		For Kaleido-RCP2 protocol

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
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
5120		UDP	On multicast 230.8.8.9 for Kaleido-RCP2
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 and Kaleido-RCP2 control panels, are open by default on all Kaleido Software systems:

Port	Used for	Transport	Notes
5120	RCP2	TCP	Used to listen for Kaleido Software discovery packets
10000		TCP	For Kaleido-RCP2 protocol
10001		TCP	For Kaleido-RCP2 protocol
5120		UDP	On multicast 230.8.8.9 for Kaleido-RCP2 protocol
5121		UDP	For Kaleido-RCP2 protocol
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. ⁱ
5353	mDNS discovery	UDP	Used for mDNS discovery on multicast 224.0.0.251
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 26.

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

Port	Transport	Notes
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.

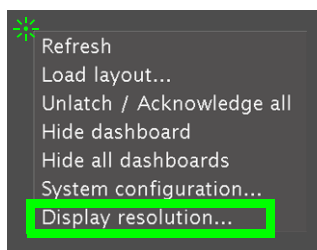
- If you change the system name or IP address of a cluster member while another cluster member is offline or otherwise unavailable, the cluster's integrity will be broken. If you attempt to make such a change, XEdit will alert you of the situation, prompting you to cancel the operation and try again 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

The multiviewer's output resolution can also be set in XEdit in the Rooms tab.

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 91 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**.



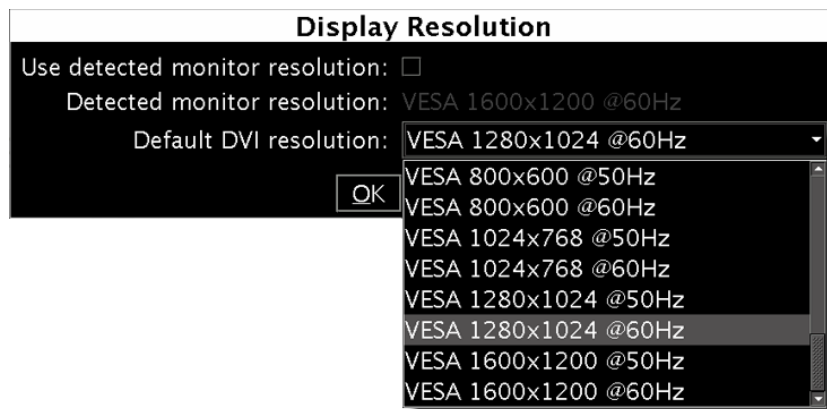
The **Display Resolution** window appears.



- 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 34.
- 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 39.

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.

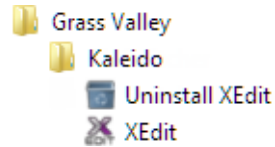
1. Installers for Linux or Mac OS X are not available.

A window appears, showing the download and installation progress.

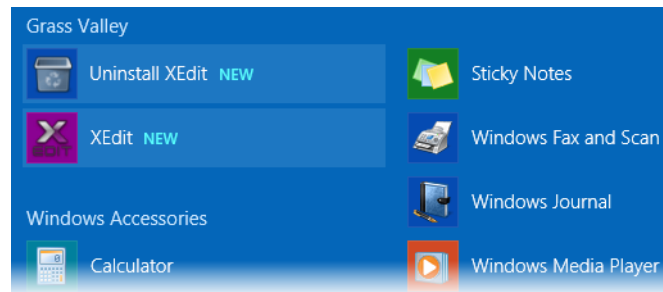


At the end of the installation process:

- If you have Windows 7, or Windows 10, shortcuts () 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).



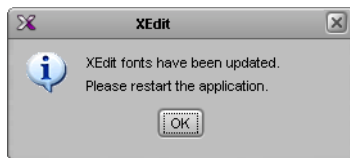
Once the installation has completed, the XEdit startup screen appears.



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

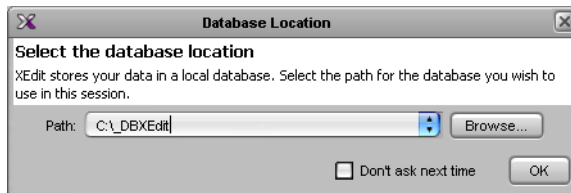
- Click **Allow access** to unblock the application.

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.

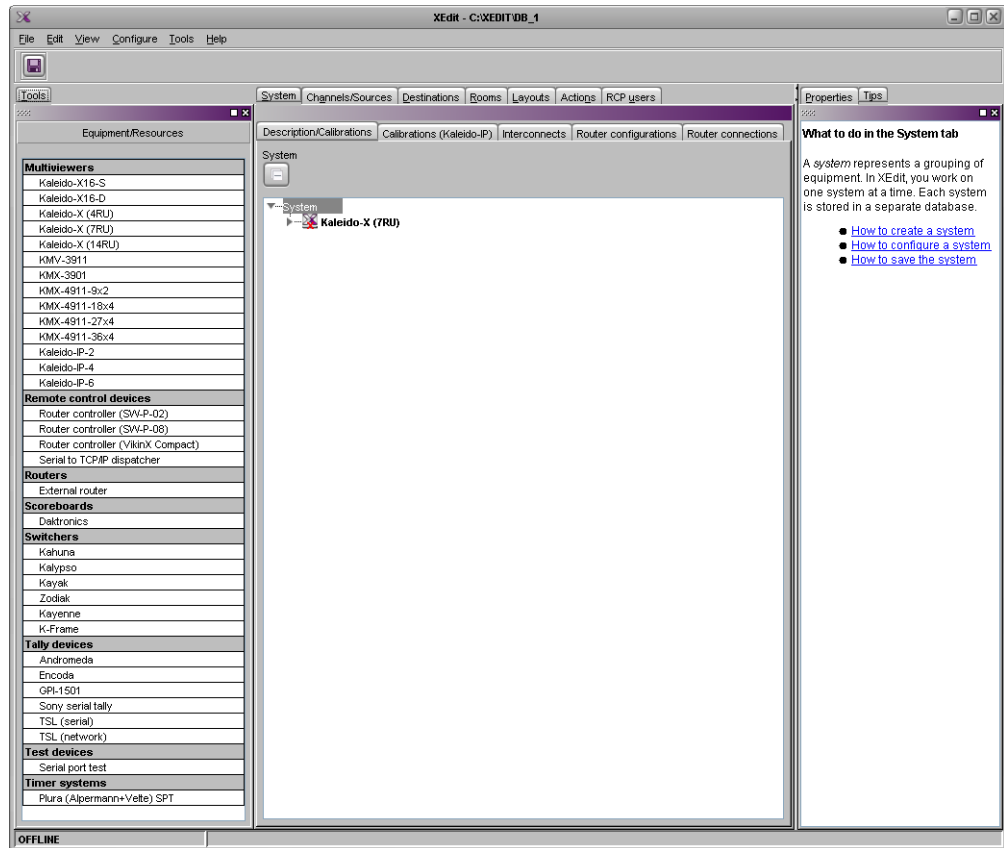



- Click **OK** to continue, and then open XEdit again, by using the shortcut on your desktop, in your Apps view (Windows 8.1) or Start screen (Windows 8), or from the Start menu (Windows 7, Windows 10).

- 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 35](#)), 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.

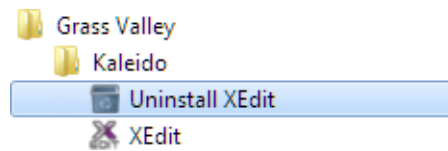
Uninstalling XEdit

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 38.

Uninstalling XEdit (Dynamic Version 7.20 or Later)

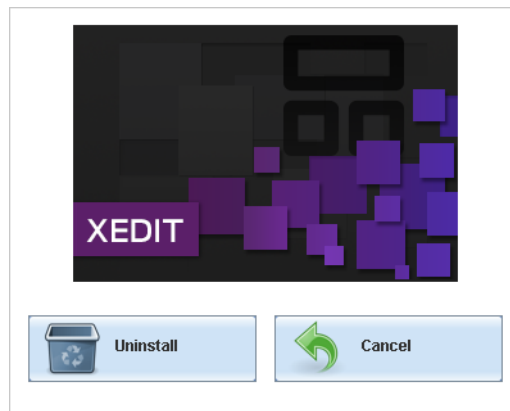
To uninstall XEdit (dynamic version 7.20 or later)

- 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.

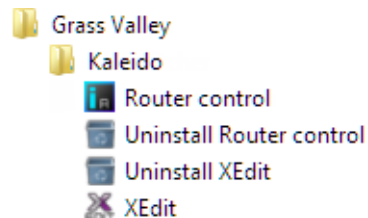
More security warnings or prompts may appear, which you may safely dismiss or accept.

A window appears, showing the download and installation progress.



At the end of the installation process:

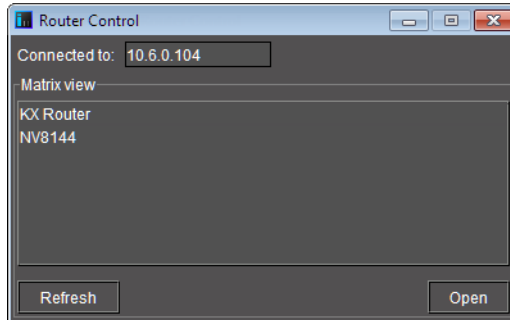
- If you have Windows 7, or Windows 10, shortcuts () are added to your desktop and to the Start menu (under **All Programs**).



- 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).

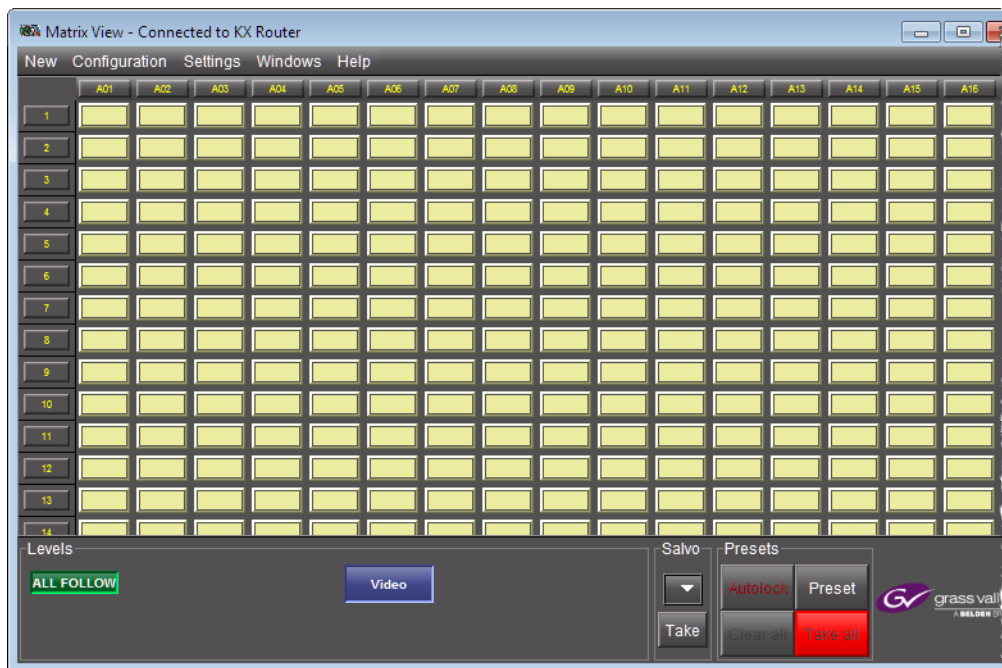
2. Installers for Linux or Mac OS X are not available.

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 39](#)), 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.

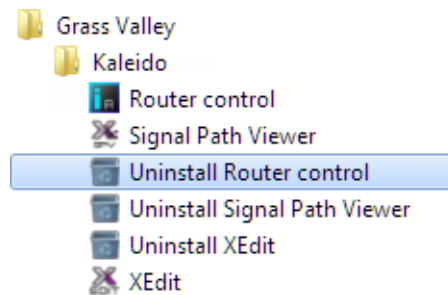
Notes (continued)

- 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

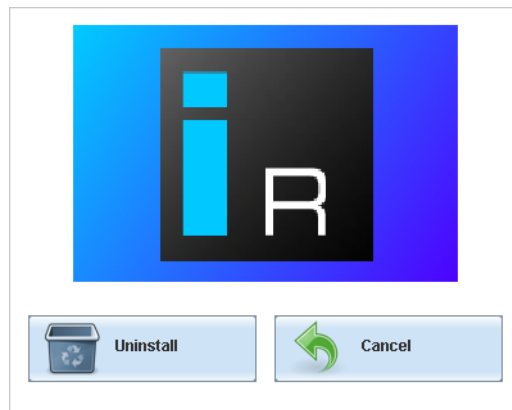
- 1 Close all Router Control windows you may have open.
- 2 Locate the **Uninstall Router Control** shortcut.
 - If you have Windows 7, or Windows 10: Open the Start menu, click All Programs, scroll to the Grass Valley folder, and then expand the Kaleido folder.



- 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 38).
 - Install XEdit from the multiviewer (see [Installing XEdit from your Multiviewer's Home Page](#), on page 34).

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 44),
- from **XEdit** (see [Opening XAdmin from XEdit](#) on page 45),

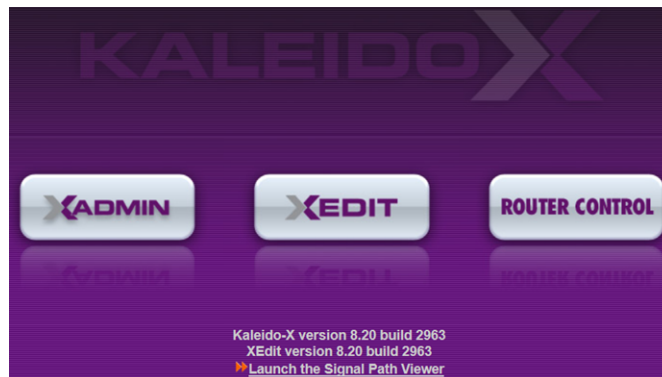
The first time you access XAdmin for a multiviewer (and every time the multiviewer's IP address has changed), you may see a security warning or a certificate error message. The procedures below include instructions on how to address these messages (see [Registering your Multiviewer's Security Credentials with your Browser](#) on page 45). Internet Explorer users may also need to enable compatibility view (see [Enabling the Compatibility View in Internet Explorer](#) on page 55).

Opening XAdmin from a Browser

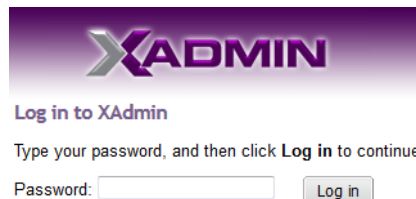
To open XAdmin from a browser

- 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 45.
- 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 55.

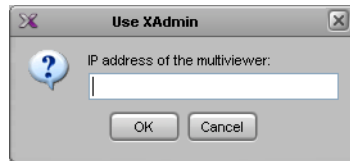
The XAdmin *Status and Options* page appears. You can access all XAdmin features, by clicking the links, in the navigation area on the left of the page.

Opening XAdmin from XEdit

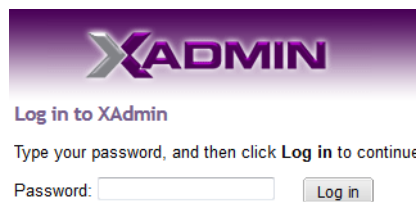
To open XAdmin from XEdit

- 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 45.
- 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 55.

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

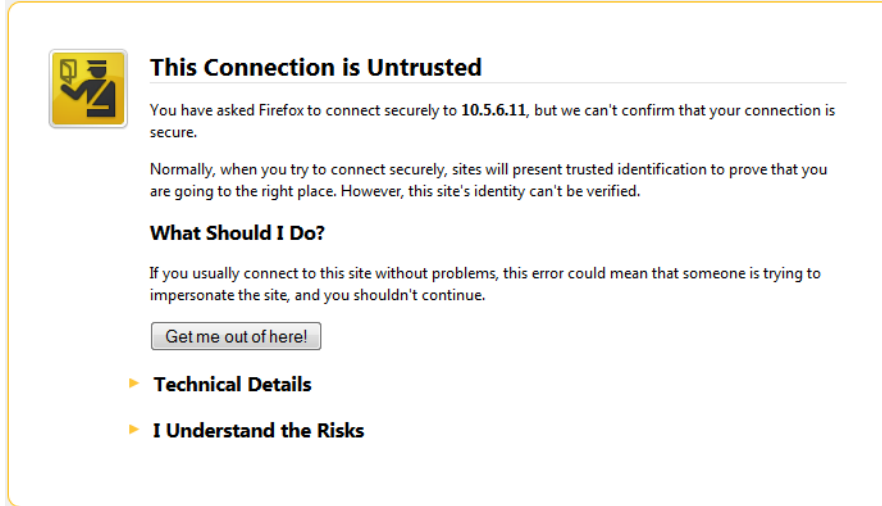
When you open your multiviewer's home page, or try to access XAdmin, your browser may report a certificate error (Internet Explorer), warn you about the site's security certificate (Chrome), or report an untrusted connection (Firefox). Follow the appropriate procedure below to register your multiviewer's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

- [Suppressing untrusted connection warning in Firefox](#), on page 46
- [Suppressing certificate error in Internet Explorer or Chrome](#), on page 48

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.



This Connection is Untrusted

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.

What Should I Do?

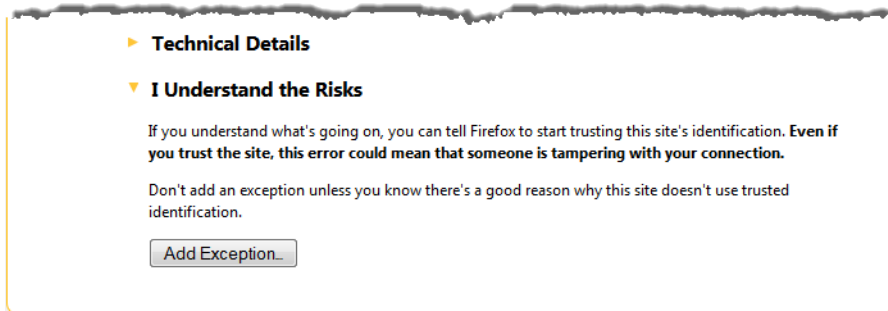
If you usually connect to this site without problems, this error could mean that someone is trying to impersonate the site, and you shouldn't continue.

- ▶ **Technical Details**
- ▶ **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.



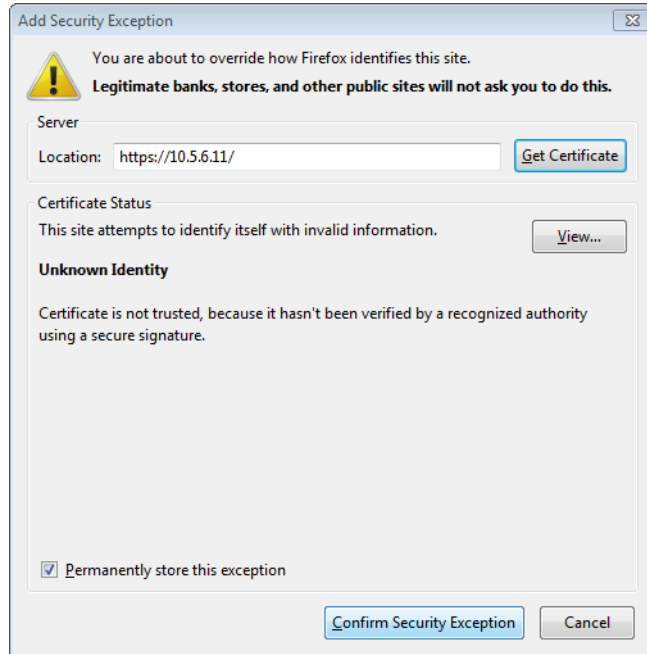
- ▶ **Technical Details**
- ▼ **I Understand the Risks**

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.

- 2 Click **Add Exception**.

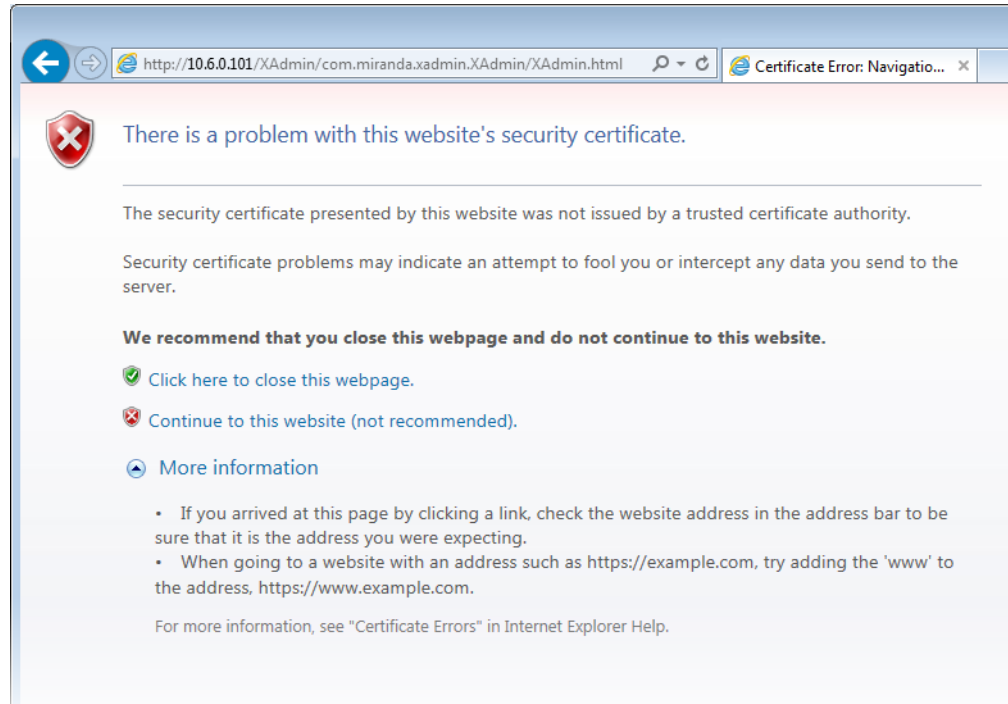
3 In **Add Security Exception**, click **Confirm Security Exception**.



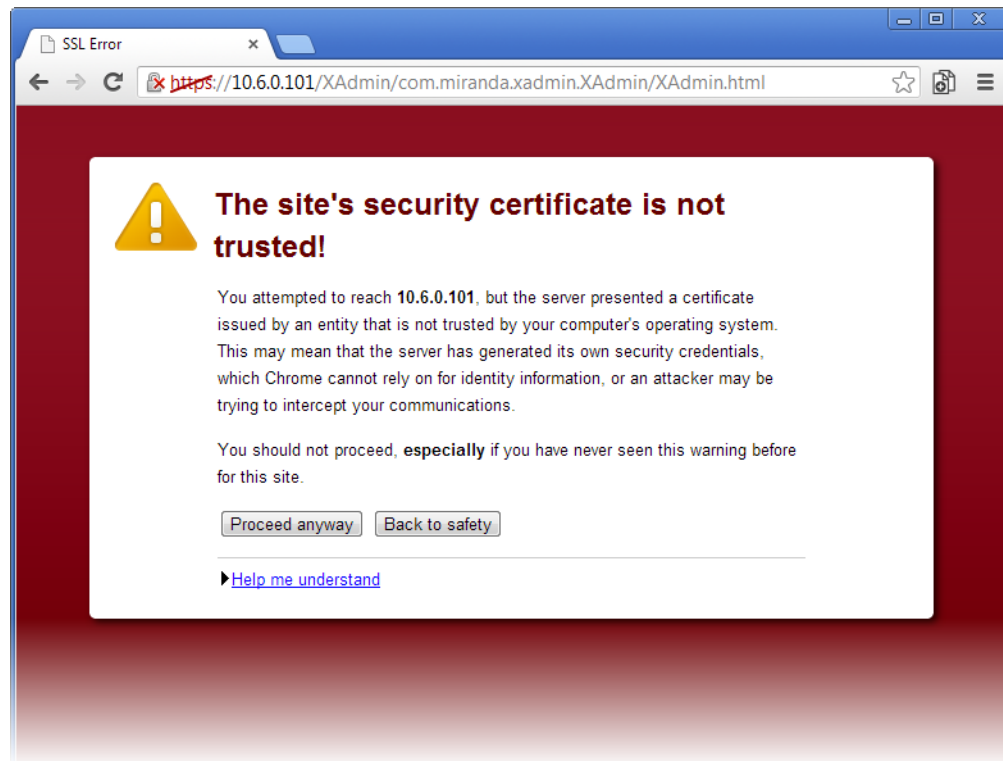
Your multiviewer's home page appears. You will now be able to access your multiviewer's client applications without seeing the warning. This will remain effective until the multiviewer's IP address is changed, in which case you will need follow the procedure again.

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



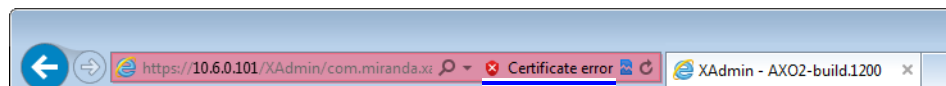
Chrome's security warning

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.

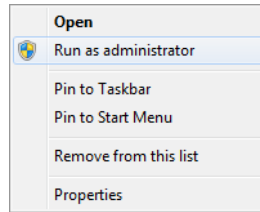


Special notes for Internet Explorer users

- 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 55.

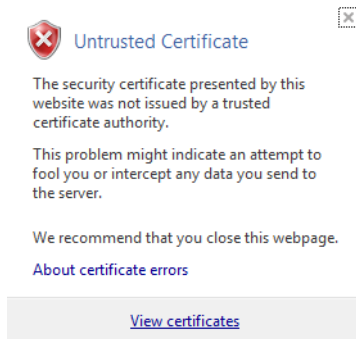
Special notes for Internet Explorer users (*continued*)

- 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**:

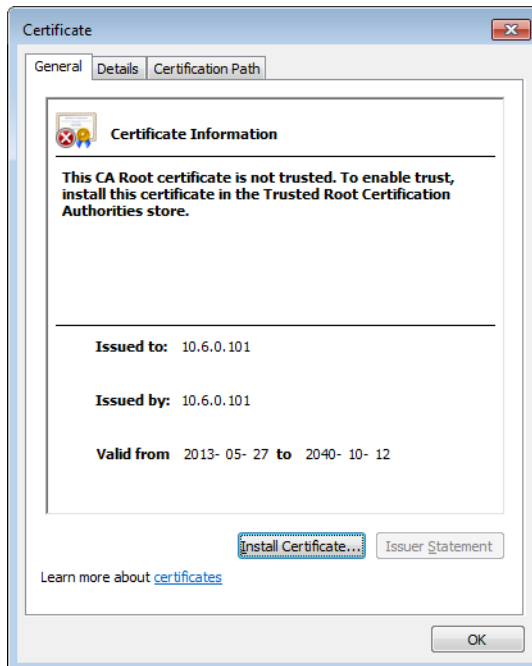


2 Click **Certificate error**.

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



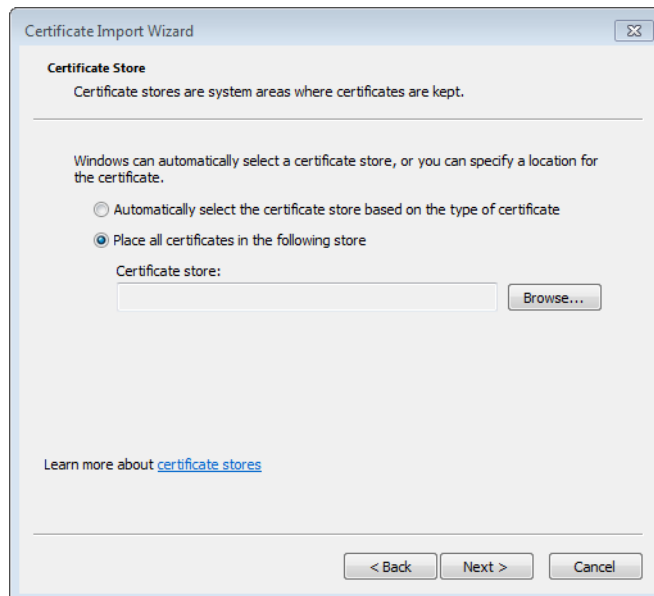
4 In **Certificate**, click **Install Certificate**.



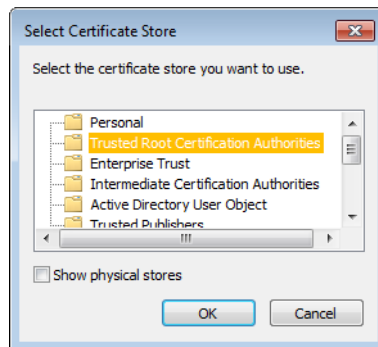
5 In **Certificate Import Wizard**, click **Next**.



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



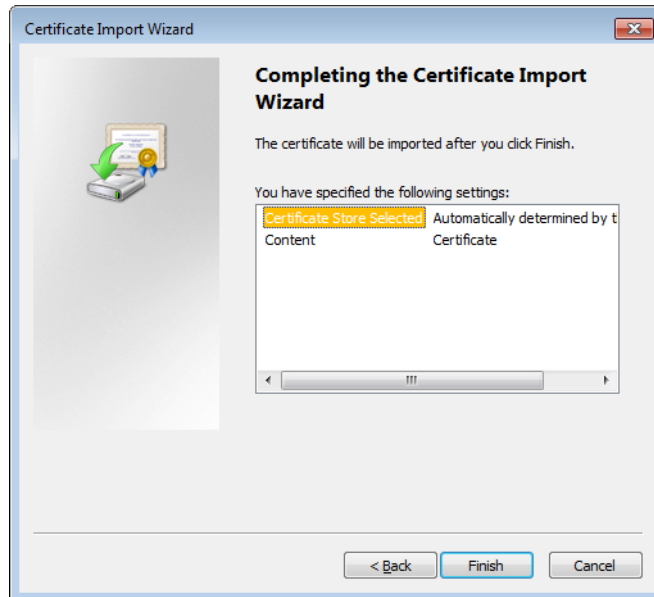
- 7 In **Select Certificate Store**, select **Trusted Root Certification Authorities**, and then click **OK**.



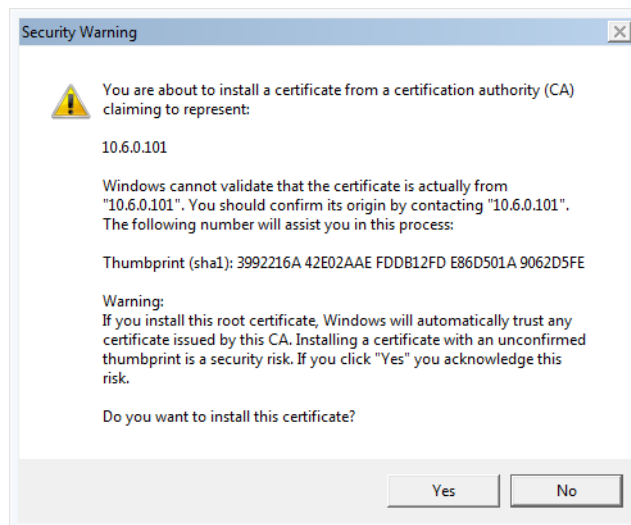
- 8 Back in **Certificate Import Wizard**, click **Next**.



9 Click **Finish**.

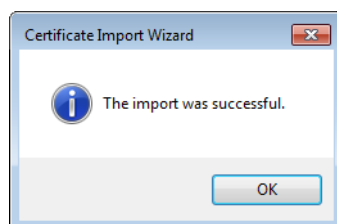


A security warning appears.



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

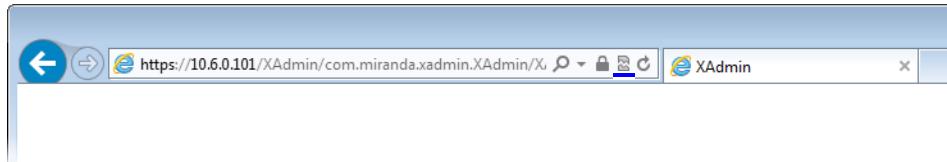
You should now be able to access XAdmin, from your multiviewer home page without ever seeing the security warning again, unless the multiviewer's IP address is changed, in which case you will want to repeat this procedure.

Enabling the Compatibility View in Internet Explorer

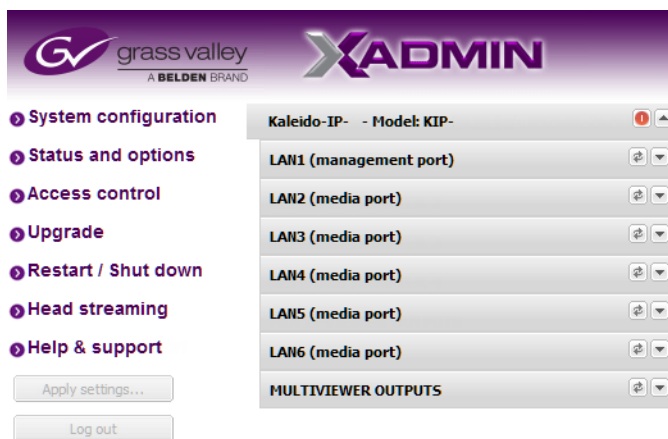
When you try to access XAdmin, from your multiviewer's home page, in *Internet Explorer 8, 9, or 10*, you may see a blank page instead of XAdmin's *Status and Options* page.³

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>

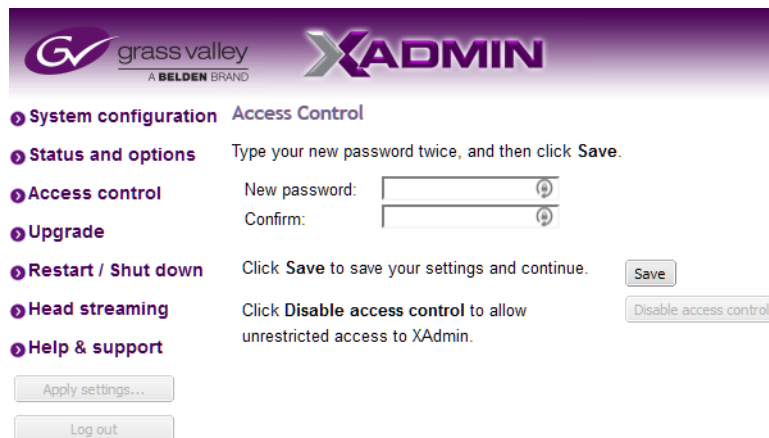
XAdmin Access Control

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 43.
- 2 Click **Access control**, in the navigation area on the left side of the page.
The Access Control page appears.



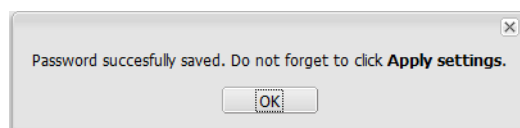
The screenshot shows the XAdmin interface with the 'Access Control' page selected. The page title is 'System configuration Access Control'. Under 'Status and options', it says 'Type your new password twice, and then click Save.' There are two password input fields: 'New password:' and 'Confirm:'. Below these are buttons for 'Save' and 'Disable access control'. At the bottom of the page are buttons for 'Apply settings...' and 'Log out'.

- 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.

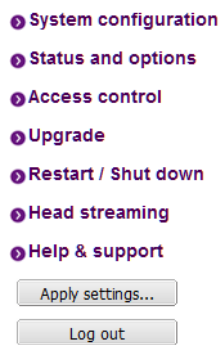
- 4 Click **Save**.

A confirmation message appears.



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

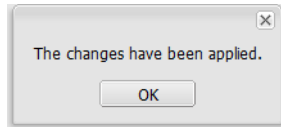
The **Apply settings** button becomes available.



The screenshot shows the navigation menu on the left side of the XAdmin interface. The 'Access control' option is highlighted. Below the menu are buttons for 'Apply settings...' and 'Log out'.

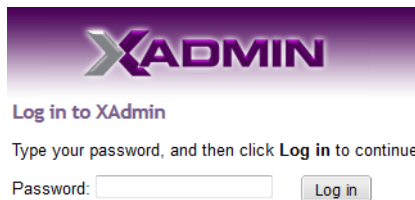
- 6 Click **Apply settings**.

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**.

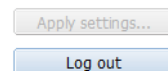
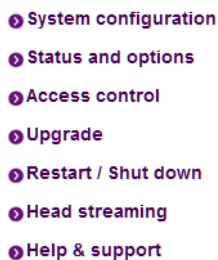
The Log in to XAdmin page appears. Other XAdmin sessions open against the same multiviewer are also redirected to the login page.



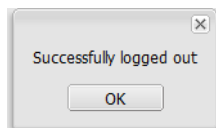
- 8 Type the password, and then click **Log in**.

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

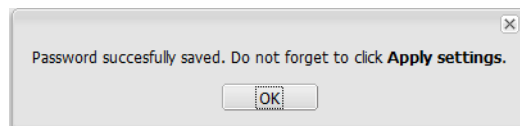
To change the password used to prevent access to your multiviewer from XAdmin

- 1 Open XAdmin. See [Opening XAdmin](#), on page 43.
- 2 Click **Access control**, in the navigation area on the left side of the page.
The Access Control page appears.

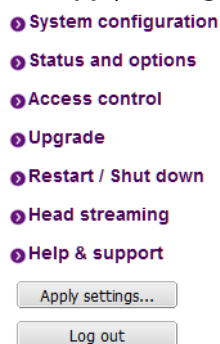


- 3 Type the new password you want to enforce in both the **New password** and the **Confirm** boxes.
The password must contain between 6 and 20 alphanumeric characters or symbols.
- 4 Click **Save**.

A confirmation message appears.

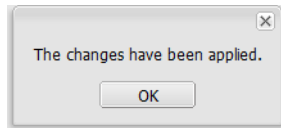


- 5 Click **OK** to close the message window.
The **Apply settings** button becomes available.



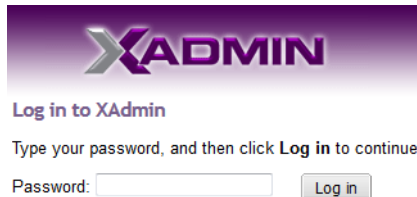
- 6 Click **Apply settings**.

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

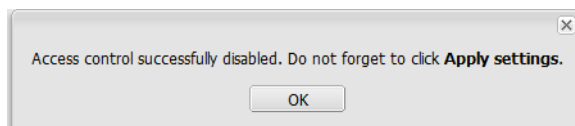
To disable access control in XAdmin

- 1 Open XAdmin. See [Opening XAdmin](#), on page 43.
- 2 Click **Access control**, in the navigation area on the left side of the page.
The Access Control page appears.



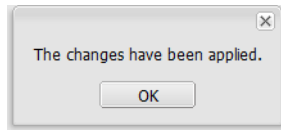
3 Click **Disable access control**.

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

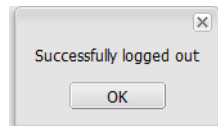
⑥ Head streaming

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

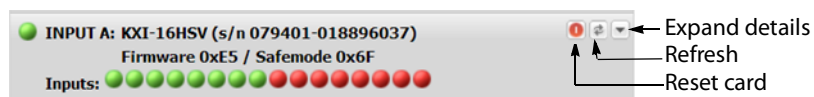
- 1 Open XAdmin. See [Opening XAdmin](#), on page 43.

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

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 63). 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 63), and their respective *KX Router* logical routers (see [Specifying lookup servers for the RCP-200](#) on page 64). 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 64).

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 66. 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

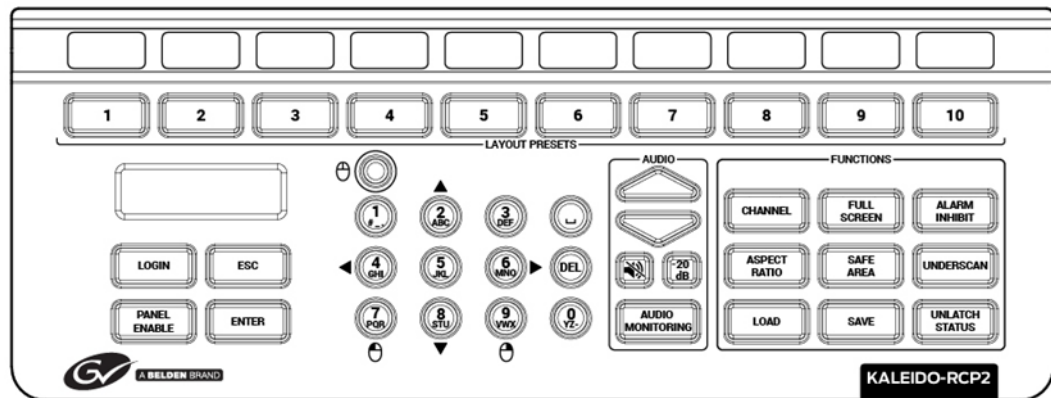
- 1 In the list on the left-hand screen, touch the *KX Router* logical router associated with the multiviewer whose name was indicated in the message prompting to select a router (you can see the multiviewer name, its IP address, and the size of that particular KX Router).
- 2 Touch the Video level, 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.

Configuring the Kaleido-RCP2

Note: The Kaleido-RCP2 unit is optional and is not included in the standard Kaleido-IP package.

The Kaleido-RCP2 is a multi-function remote control panel designed for use with Kaleido multiviewers. Ethernet connectivity allows multiple RCP users to access multiple Kaleido Multiviewer systems, allowing convenient access to the real-time operating features. When logged on to a Kaleido multiviewer via its Ethernet connection, the RCP user can control various operating features.



Before you can use the Kaleido-RCP2 to operate your Kaleido Multiviewer, you must set up the Ethernet connection between the two devices. By default, the Kaleido-RCP2 is shipped with DHCP enabled, so it will automatically be assigned an IP address by a DHCP server. If no DHCP server is present on the network, the Kaleido-RCP2 will default to the static IP address 10.0.3.191.

Notes

- The Kaleido-RCP2 is powered through the RJ45 Ethernet connector. There is no power ON/OFF button, so the device is ON whenever a powered Ethernet cable is connected.
- If you purchased more than one Kaleido-RCP2 units, keep in mind that they all ship with the same default static IP address. Make sure to assign them different static IP addresses before connecting them to the network if DHCP is not used. See the Kaleido-RCP2 User Guide for more information. See [Related Documentation](#), on page 7.
- The time-out period before the Kaleido-RCP2 defaults to its static address is 1 minute. To speed up the initialization, disable the DHCP option.

Assigning a static IP address to the Kaleido-RCP2

To assign a static IP address to the Kaleido-RCP2

- 1 Press and hold the ENTER button until the ESC button lights up, to display the configuration menu.
- 2 Press the 8 key (to move down the list) until ETHERNET OPTIONS appears on the LCD display.

- 3 Press the ENTER key to display the ETHERNET OPTIONS menu.
- 4 Select the IP ADDRESS menu using the **2** key (to move up in the list) or the **8** key (to move down the list), and then press ENTER.
- 5 Using the numeric keypad, type the chosen IP address, and then press ENTER.
- 6 Select the NETWORK MASK menu using the **2** key (to move up in the list) or the **8** key (to move down the list), and then press ENTER.
- 7 Using the numeric keypad, type the chosen network mask, and then press ENTER.

You have assigned a static IP address to the Kaleido-RCP2.

Selecting a room for the Kaleido-RCP2

To select a room for the Kaleido-RCP2

- 1 Press and hold the ENTER button until the ESC button lights up, to display the configuration menu.
- 2 In the ROOM SELECTION display, press ENTER again to get the room list from the Kaleido Multiviewer systems that are currently available on the network.
- 3 In the room list, select the room you want to access by pressing the **2** key (to move up in the list) or the **8** key (to move down the list).

Note: By default, a multiviewer's video outputs are assigned to specific rooms: the outputs are assigned to ROOM1.

- 4 When the appropriate room name is highlighted, press ENTER to accept the new selection.
- 5 When prompted, log on to the selected room. See [Logging on to the Kaleido-RCP2](#) on page 69.

Connecting the Kaleido-RCP2 to Other Kaleido Multiviewer Systems

The unicast IP feature enables a Kaleido-RCP2 to find up to three Kaleido Multiviewer systems on different subnets and connect to them (via network gateways), while maintaining connections to Kaleido Multiviewer systems in its own subnet.

Notes

- To navigate the Kaleido-RCP2 menu, press the **2** key to move up, or the **8** key to move down.
 - There is no need to configure unicast IP addresses for Kaleido Multiviewer systems on the same subnet as the Kaleido-RCP2.
-

To configure a unicast IP address on the Kaleido-RCP2

- 1 Press and hold the ENTER button until the ESC button lights up, to display the configuration menu.
- 2 Select ETHERNET OPTIONS on the LCD display, and then press ENTER.
- 3 Select **Unicast host IP**, and then press ENTER.
- 4 Select **Enable IP 1**, and then press ENTER.

The Enable IP x parameter instructs the Kaleido-RCP2 to query the selected IP address for a list of rooms.

- 5 Select **Host IP ADDR**, and then press ENTER.
- 6 Using the numeric keypad, type the IP address of a Kaleido Multiviewer on a remote subnet, and then press ENTER.
- 7 Repeat [step 4](#) to [step 6](#) to add unicast IP addresses for up to three remote Kaleido Multiviewer systems.

Logging on to the Kaleido-RCP2

As a network device, the Kaleido-RCP2 provides access to any room configuration on any Kaleido Multiviewer system on the network. As a security measure, access is controlled by a login procedure.

To log on to a Kaleido Multiviewer system from the Kaleido-RCP2

- 1 Press the LOGIN key.

The following message will appear on the LCD display:

LOGIN Position
Admin

- 2 Press ENTER to select "Admin".

A message prompting you to enter a password will appear on the LCD display.

- 3 Press ENTER again (by default, there is no password).

The message "Access granted" will appear on the LCD display if the login is successful. If a mouse is connected to the Kaleido-RCP2, then you should be able to see and move the mouse pointer on the monitor wall.

Note: If at any time the message "Target system is offline" or "No login list available" appears on the LCD display, press the ESC, ENTER and DEL keys simultaneously and go back to [step 1](#).

For more information, refer to the *Kaleido-RCP2 Guide to Installation and Operation*. See [Related Documentation](#), on page 7.

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 71).

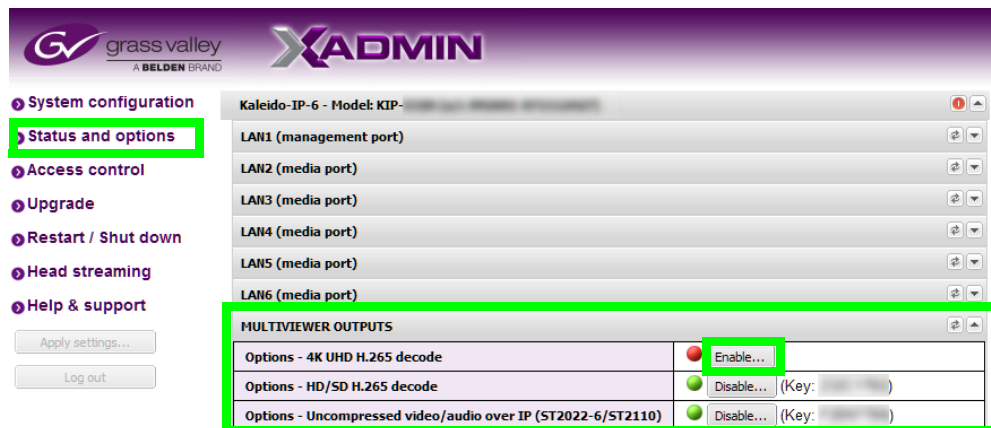
Kaleido-IP X320/X120 software options

Part Number	Option	Feature
KIP-OPT-ACTIVATION	Kaleido-IP software activation	Makes the Kaleido-IP operable. One license is required per Kaleido-IP. This license is included with the purchase of a Kaleido-IP X120/X320 or Kaleido-IP VM.
KIP-OPT-HD-HEVC	HD/SD HEVC/H.265 decode	Decode license for H.265/HEVC SD/HD video CODEC. One license per Kaleido-IP.
KIP-OPT-UHD-HEVC	4K UHD HEVC/H.265 decode	Decode license for H.265/HEVC SD/HD and UHD video CODEC. One license per Kaleido-IP.
KIP-OPT-DEC-AVC	AVC/H.264 decode	Decode license for H.264/AVC SD/HD video CODEC. One license per Kaleido-IP.
KIP-OPT-DEC-DD-5.1	AC3 stereo and 5.1 decode	Decode license for up to 32 AC3 stereo or 5.1 programs.
KIP-OPT-DEC-DD-2.0	AC3 2.0 decode	Decode license for up to 32 AC3 stereo programs.
KIP-OPT-DEC-AAC-5.1	AAC stereo and 5.1 decode	Decode license for up to 32 Advanced Audio Codec (AAC) stereo or 5.1 programs.
KIP-OPT-DEC-AAC-2.0	AAC 2.0 decode	Decode license for up to 32 Advanced Audio Codec (AAC) 2.0 programs.
KIP-OPT-LOUDNESS	Loudness level measurement	Loudness level measurement for all audio program. One license per Kaleido-IP.
KIP-OPT-SCTE-35	SCTE-35 metadata extraction	SCTE-35 metadata extraction and alarming license for all programs. One license per Kaleido-IP.
KIP-OPT-TS-PROBE	TR 101 290 DVB transport stream probing	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.

Enabling Options

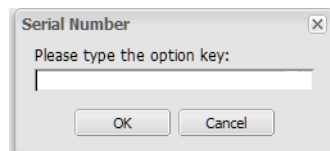
To enable options on a multiviewer

- 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 for **MULTIVIEWER OUTPUTS**.



- 4 Locate the entry for the option you want to enable.
- 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, the status indicator turns green, and a **Disable** button replaces the **Enable** button.

Testing the Monitor Wall Operation

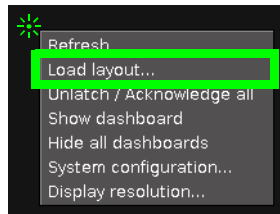
If your system was configured prior to shipment, then a layout appears on all displays. Otherwise, a gray screen will appear with the following message in the middle: *No layout has been assigned to this room. Please load a layout.*

To load a layout on the monitor wall

- If you have configured a Kaleido-RCP2 (see [Configuring the Kaleido-RCP2](#), on page 67), press any of the LAYOUT PRESETS buttons to load a predefined layout on the monitor wall.

Note: To access other layouts, press the LOAD button. To assign a layout to a preset button, press and hold the button for more than six seconds while the desired layout is showing on the monitor wall.

- Alternatively, 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 91 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.

Restarting and Shutting Down a Kaleido-IP Multiviewer

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

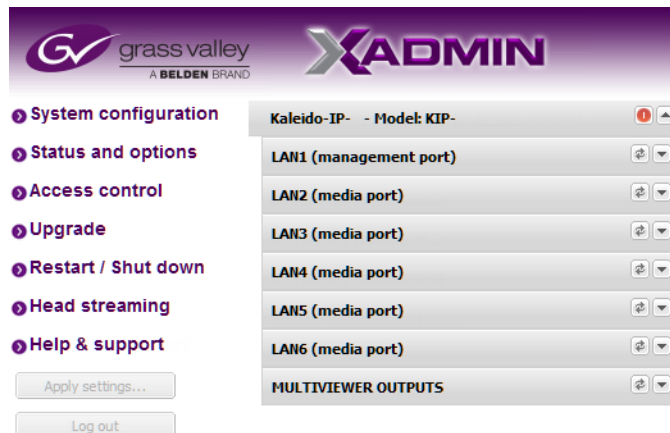
- Restarting the Monitor Wall Software
- Restarting a Kaleido-IP Multiviewer
- Shutting Down a Kaleido-IP Multiviewer

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 43.

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.



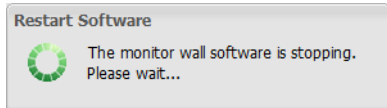
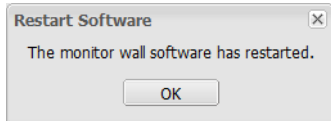
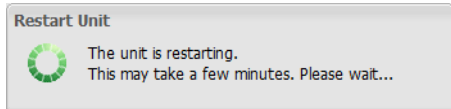
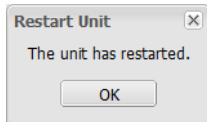
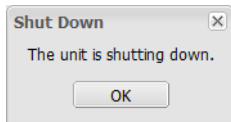
- 3 Click one of the following options.

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

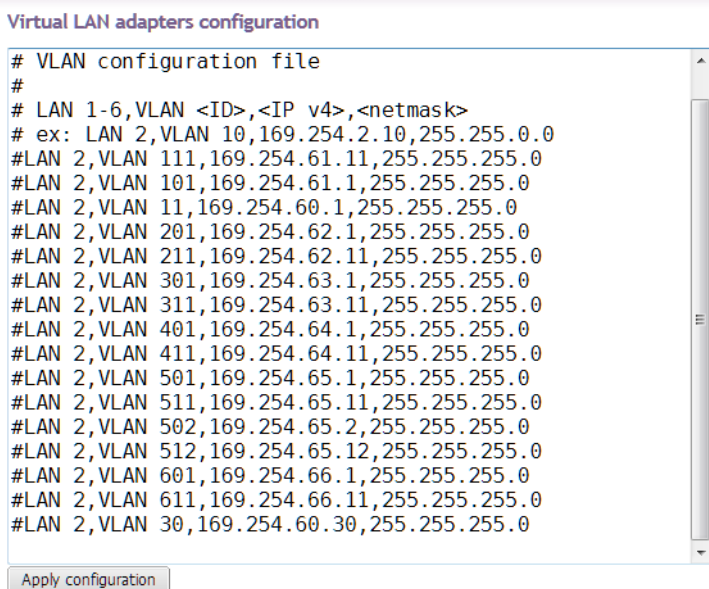
- 1 Open XAdmin. See [Opening XAdmin](#), on page 43.
- 2 Click **System configuration**, in the navigation area on the left side of the page. The *System Configuration* page appears.

The screenshot shows the XAdmin interface with the following elements:

- Navigation Menu (Left):** System configuration (selected), Status and options, Access control, Upgrade, Restart / Shut down, Head streaming, Help & support.
- Buttons (Left):** Apply settings..., Log out.
- System Configuration (Top):** System name: KIP-XVM2.
- Ethernet Section:**
 - 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.
- Bottom:** Click Save to save your settings and continue. Save

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

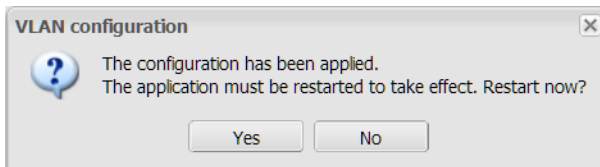
The *Virtual LAN adapters configuration* page appears.



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

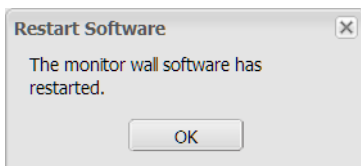
- 5 Click **Apply configuration**.

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.

Configuring the Kaleido-IP to Receive NMOS Streams

Kaleido-IP supports Networked Media Open Specifications (NMOS) AMWA IS-04 for device discovery and registration and IS-05 for connection management. Furthermore, it supports AMWA BCP-002-01 for the natural grouping of NMOS resources.

To make the Kaleido-IP discoverable as an NMOS device, the management port (LAN1) must be on the same subnet as the NMOS registry. The Kaleido-IP is discovered as a receiver for SMPTE ST 2110 streams. It uses DNS Service Discovery (DNS-SD) and multicast DNS (mDNS) protocols which for mDNS must be allowed on your network. The mosaic output heads are not available as a source to other NMOS devices.

NMOS sources are available for use in XEdit as a *Virtual Input*. See the **Kaleido Software User's Manual** for more information. See [Related Documentation](#), on page 7.

Once the following prerequisites have been observed, any NMOS controller is able to assign an NMOS sender to a Kaleido-IP NMOS receiver.

PREREQUISITES:

- Only one discovery service can be used at a time: either DNS-SD or mDNS:
 - For DNS-SD:
 - The DNS-SD server should contain a registration entry for an NMOS registry. The NMOS registry can be connected to any multiviewer port.
 - DHCP must be enabled on the LAN1 port. See [Configuring a Multiviewer's IP, Date, and Time Settings with XAdmin](#), on page 19.
 - For mDNS:
 - When using mDNS, a working NMOS registry must be available on the same subnet switch that the Kaleido-IP's LAN1 is connected to.
- If multiple NMOS registries or mDNSs are found, then the registry with highest priority (the lowest number) is used.
- The connected network must have a PTP grandmaster server clock on its domain.
- The Kaleido-IP's date and time setting must be set to use PTP. See [Configuring a Multiviewer's IP, Date, and Time Settings with XAdmin](#), on page 19.

Adding Fonts to a Kaleido-IP VM

Certain subtitles use a specific font in order to work. Fonts can be added to the Kaleido-IP VM to support such subtitles.

To add fonts on a Kaleido-IP VM

- 1 Open XAdmin. See [Opening XAdmin](#), on page 43.
- 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 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)
 - LAN2 (media port): 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 (radio selected), Disabled (radio selected)
 - New date: January 30, 2018
 - New time: 12:44:22 PM

Click **Save** to save your settings and continue. **Save**

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

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

- System configuration** (Font configuration): Choose a font to upload...

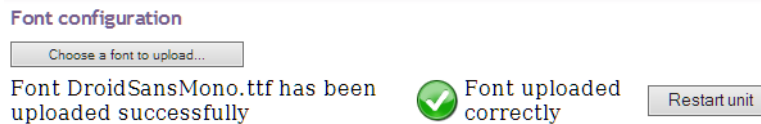
4 Click **Choose a font to upload**.

A file chooser window appears.

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

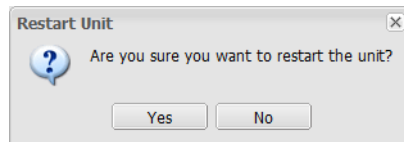
Note: The Kaleido Software supports true type fonts (TTF) only.

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



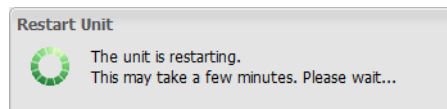
6 Click **Restart unit**.

The system prompts you to confirm.

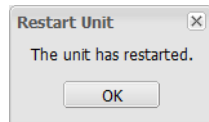


7 Click **Yes** to proceed.

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 80).

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

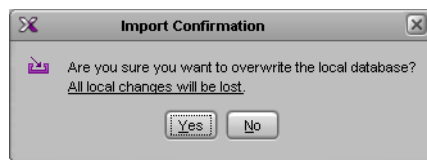
- 1 On the **Configure** menu, point to **Database**, and then click **Import**.

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.

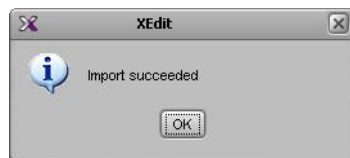
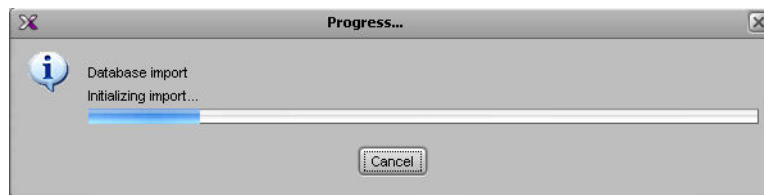
- 2 Select the multiviewer from the list (if present), or type the appropriate IP address in the box, and then click **OK**.

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



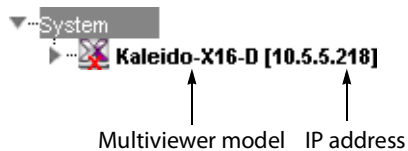
- 3 Click **Yes**.

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

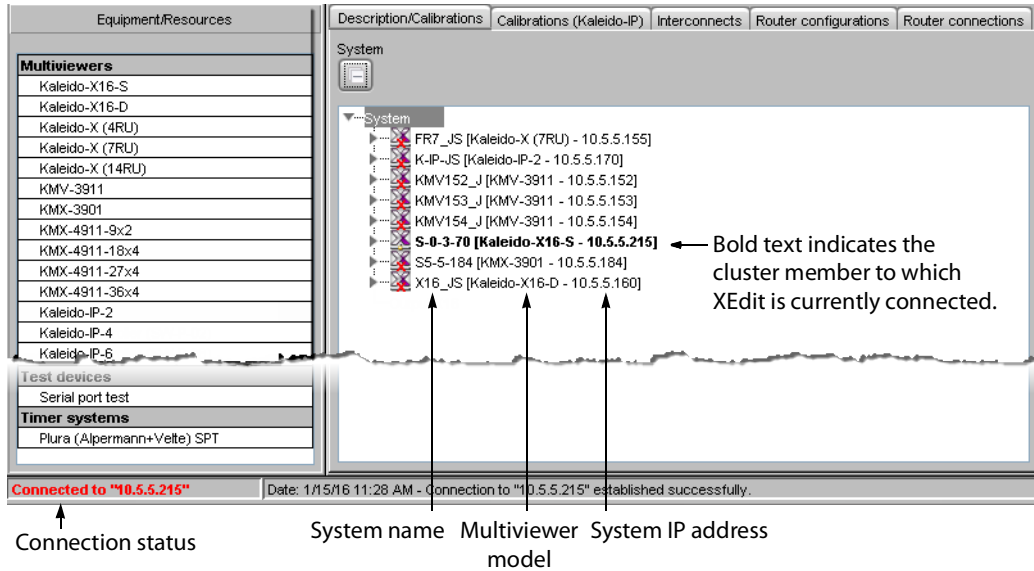


- 4 Click **OK**.

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.



Maintenance & Troubleshooting

5

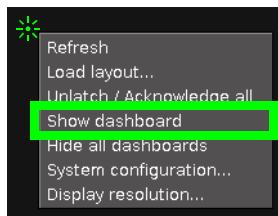
This chapter shows you the various maintenance operations and corrective actions that maybe required to be performed during system commissioning and over the multiviewer's lifetime.

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 91 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

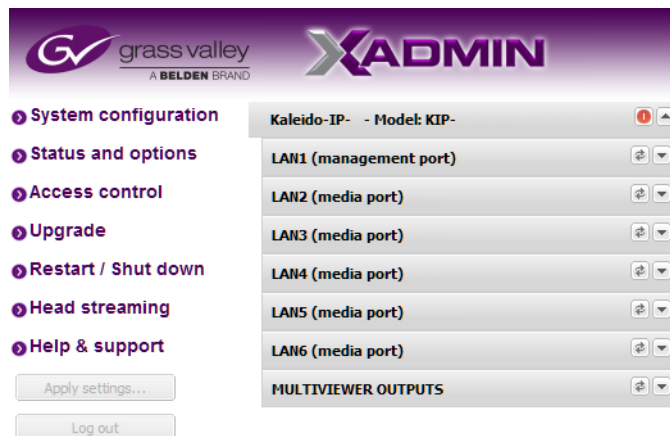
Generating a System Snapshot

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 43.

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.

When a Kaleido-IP VM multiviewer is currently using Kaleido Software version 10.xx or lower, and you want to upgrade it to a Kaleido Software version 11.00 or higher, a special migration procedure must be followed. Refer to the *Migration to Version 11 or Higher Upgrade Guide* for more information about how to do this. See [Related Documentation](#), on page 7.

To downgrade the multiviewer to Kaleido Software version 10.xx or lower, refer to the *Migration to Version 11 or Higher Upgrade Guide* for more information about how to do this.

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

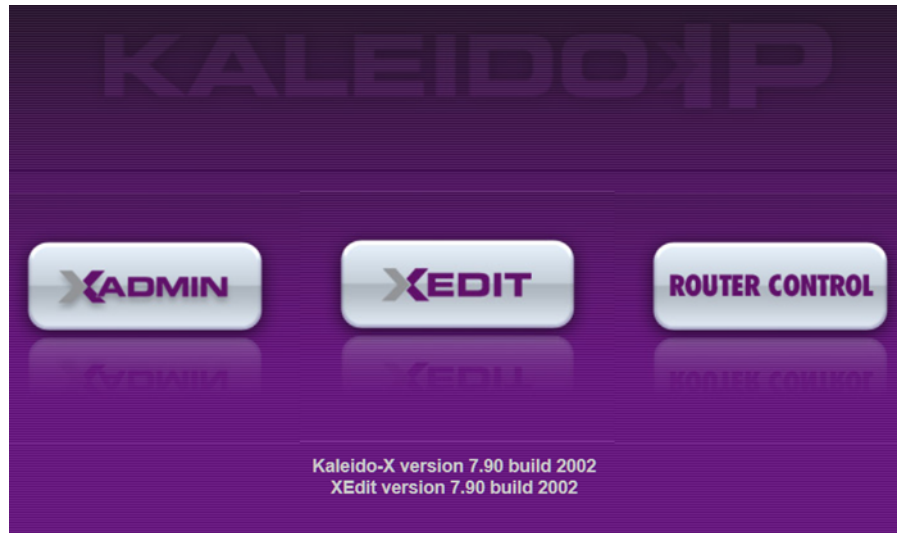
Upgrade packages are made available by contacting technical support (see [Grass Valley Technical Support](#), on page 102). Download the update files onto your PC's hard drive. The format of the file should be 926-XXG01-xxx.zip.

The upgrade is performed from your PC, by using XAdmin. See [Installing the Software Upgrade](#) on page 85.

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.

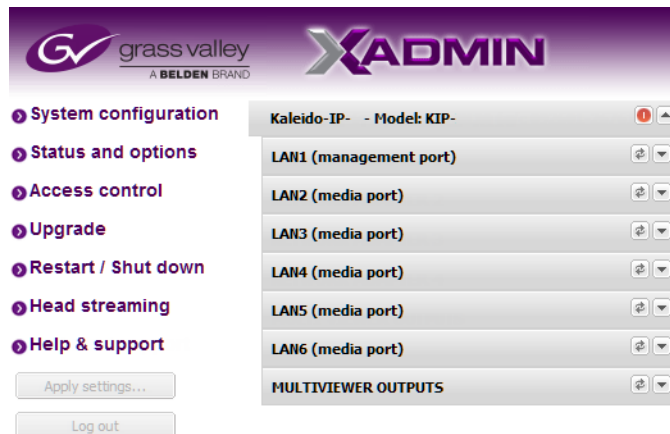


Firefox users:

If you see a security warning instead of the home page, see [Registering your Multiviewer's Security Credentials with your Browser](#), on page 45.

- 2 Click the **XAdmin** button.

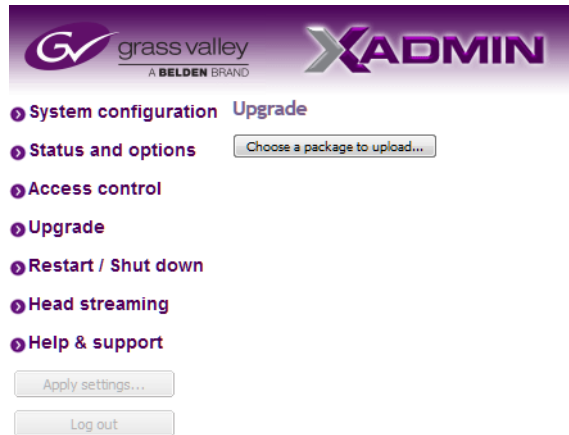
The XAdmin *Status and Options* page appears.



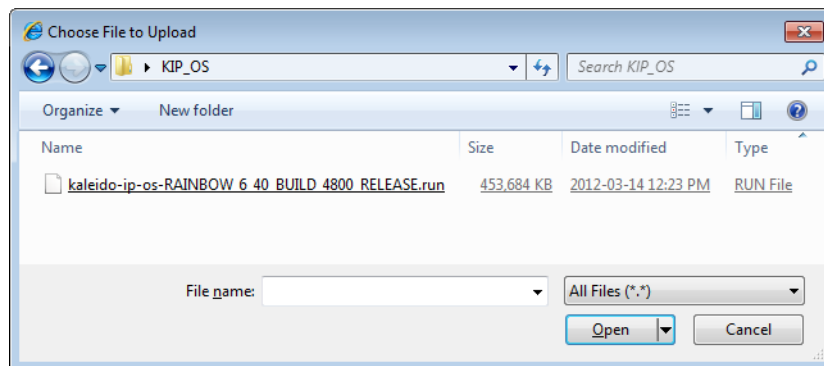
Internet Explorer users:

- If the page remains blank, then see [Enabling the Compatibility View in Internet Explorer](#), on page 55.
 - 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 45.
-

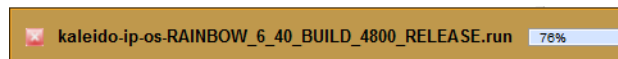
- 3 Click **Upgrade**, in the navigation area on the left of the page.
The *Upgrade* page appears.



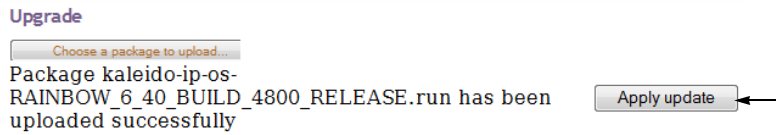
- 4 Click **Choose a package to upload**.
A file chooser window appears.
- 5 Navigate to the RUN package you wish to install, select it, and then click **Open**.
The upgrade file should have the following format: kaleido-ip-os-9.10_build_xxxx.run



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

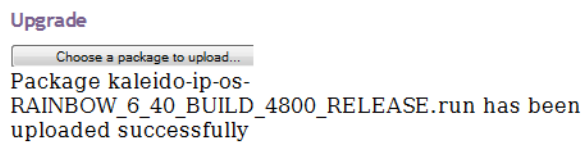



- 6 Once the upload has completed, click **Apply update**.



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`



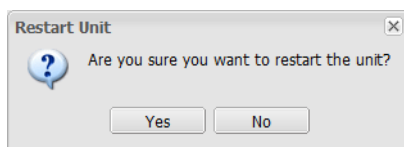
 Upgrade successful! Please reboot.

```
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.

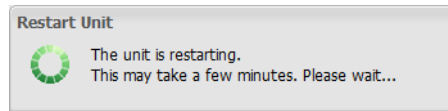
```
var/tmp/
var/tmp/tomcat-6/
deleting var/tmp/tomcat-6/hspcrfdata_root/
deleting var/tmp/tomcat-6/2F60D6C4E6ABED4F464734578C01C61B/kaleido-ip-os-
deleting var/tmp/tomcat-6/2F60D6C4E6ABED4F464734578C01C61B/
var/tmp/tomcat-6/.keep_www-servers_tomcat-6
0 100% 0.00kB/s 0:00:00 (xfer#1223, to-check=0/46312)
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.

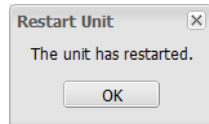


- 9 Click **Yes** to proceed.

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



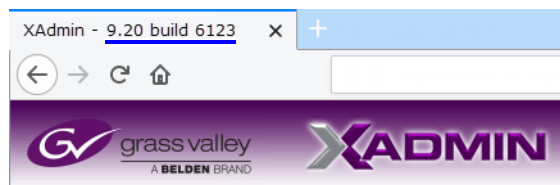
Once the multiviewer has restarted, the system notifies you.



- 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 90.

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.

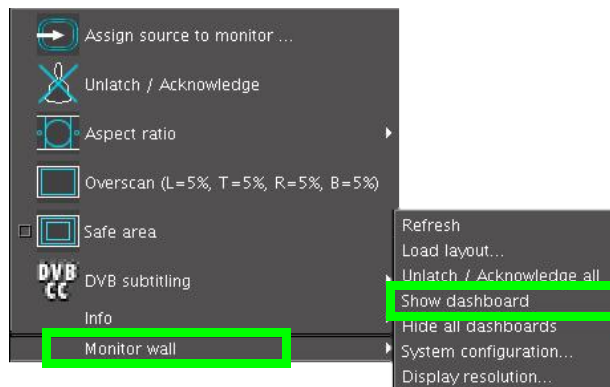
Displaying the Dashboard

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.

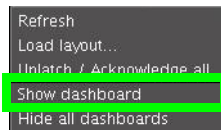
To display the dashboard

- 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 (as opposed to connecting the mouse to a Kaleido-RCP2, for instance) 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.

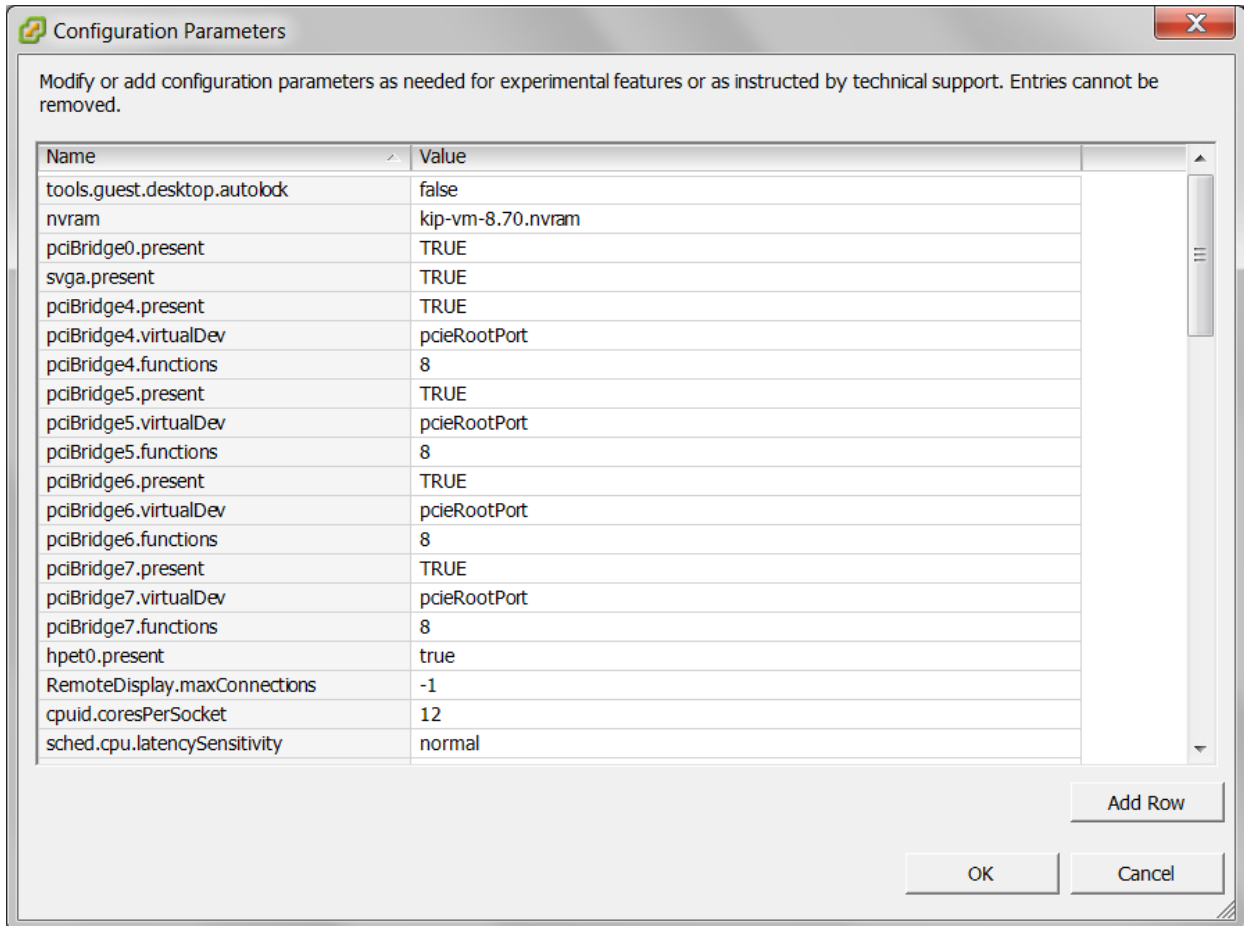
MAC Address Misalignment Between the VM and the VM Manager

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 71. 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 70. See Grass Valley Technical Support , on page 102.
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 102.

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		
	EAC-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

On-screen control	Kaleido-RCP2 (optional)
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 102).
- 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 (e.g. Kaleido-RCP2, 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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