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KALEIDO-IP X320
KALEIDO-IP X120

HIGH QUALITY IP VIDEO MULTIVIEWERS

Installation & Service Manual

M926-8902-104

2018-06-19

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Title	Kaleido-IP X320/X120 Installation & Service Manual
Part Number	M926-8902-104
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Important Safety Information

This section provides important safety guidelines for operators and service personnel. Specific warnings and cautions appear throughout the manual where they apply. Please read and follow this important information, especially those instructions related to the risk of electric shock or injury to persons.

Symbols and Their Meanings

Indicates that dangerous high voltage is present within the equipment enclosure that may be of sufficient magnitude to constitute a risk of electric shock.

Indicates that the user, operator or service technician should refer to the product manuals for important operating, maintenance, or service instructions.

This is a prompt to note the fuse rating when replacing fuses. The fuse referenced in the text must be replaced with one having the ratings indicated.

Identifies a protective grounding terminal which must be connected to earth ground prior to making any other equipment connections.
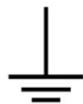
Identifies an external protective grounding terminal which may be connected to earth ground as a supplement to an internal grounding terminal.

Indicates that static sensitive components are present, which may be damaged by electrostatic discharge. Use anti-static procedures, equipment and surfaces during servicing.

Indicates that the equipment has more than one power supply cord, and that all power supply cords must be disconnected before servicing to avoid electric shock.

The presence of this symbol in or on Grass Valley equipment means that it has been tested and certified as complying with applicable Canadian Standard Association (CSA) regulations and recommendations for USA/Canada.

The presence of this symbol in or on Grass Valley equipment means that it has been tested and certified as complying with applicable Underwriters Laboratory (UL) regulations and recommendations for USA/Canada.

The presence of this symbol in or on Grass Valley equipment means that it has been tested and certified as complying with applicable Intertek Testing Services regulations and recommendations for USA/Canada.

The presence of this symbol in or on Grass Valley product means that it complies with all applicable European Union (CE) directives.

The presence of this symbol in or on Grass Valley product means that it complies with safety of laser product applicable standards.

Warnings

A warning indicates a possible hazard to personnel, which may cause injury or death. Observe the following general warnings when using or working on this equipment:

- Appropriately listed/certified mains supply power cords must be used for the connection of the equipment to the mains voltage at either 120 V AC or 240 V AC.
- This product relies on the building's installation for short-circuit (over-current) protection. Ensure that a fuse or circuit breaker for 120 V AC or 240 V AC is used on the phase conductors.
- Any instructions in this manual that require opening the equipment cover or enclosure are for use by qualified service personnel only.
- Do not operate the equipment in wet or damp conditions.
- This equipment is grounded through the grounding conductor of the power cords. To avoid electrical shock, plug the power cords into a properly wired receptacle before connecting the equipment inputs or outputs.
- Route power cords and other cables so they are not likely to be damaged. Properly support heavy cable bundles to avoid connector damage.
- Disconnect power before cleaning the equipment. Do not use liquid or aerosol cleaners; use only a damp cloth.
- Dangerous voltages may exist at several points in this equipment. To avoid injury, do not touch exposed connections and components while power is on.
- High leakage current may be present. Earth connection of product is essential before connecting power.
- Prior to servicing, remove jewelry such as rings, watches, and other metallic objects.
- To avoid fire hazard, use only the fuse type and rating specified in the service instructions for this product, or on the equipment.
- To avoid explosion, do not operate this equipment in an explosive atmosphere.
- Use proper lift points. Do not use door latches to lift or move equipment.
- Avoid mechanical hazards. Allow all rotating devices to come to a stop before servicing.
- Have qualified service personnel perform safety checks after any service.

Cautions

A caution indicates a possible hazard to equipment that could result in equipment damage. Observe the following cautions when operating or working on this equipment:

- This equipment is meant to be installed in a restricted access location.

- When installing this equipment, do not attach the power cord to building surfaces.
- Products that have no on/off switch, and use an external power supply must be installed in proximity to a main power outlet that is easily accessible.
- Use the correct voltage setting. If this product lacks auto-ranging power supplies, before applying power ensure that each power supply is set to match the power source.
- Provide proper ventilation. To prevent product overheating, provide equipment ventilation in accordance with the installation instructions.
- Do not operate with suspected equipment failure. If you suspect product damage or equipment failure, have the equipment inspected by qualified service personnel.
- To reduce the risk of electric shock, do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so. Refer all servicing to qualified service personnel. Servicing should be done in a static-free environment.
- This unit may have more than one power supply cord. Disconnect all power supply cords before servicing to avoid electric shock.
- Follow static precautions at all times when handling this equipment.

Electrostatic Discharge (ESD) Protection

Electrostatic discharge occurs when electronic components are improperly handled and can result in intermittent failure or complete damage adversely affecting an electrical circuit. When you remove and replace any card from a frame always follow ESD-prevention procedures:

- Ensure that the frame is electrically connected to earth ground through the power cord or any other means if available.
- Wear an ESD wrist strap ensuring that it makes good skin contact. Connect the grounding clip to an *unpainted surface* of the chassis frame to safely ground unwanted ESD voltages. If no wrist strap is available, ground yourself by touching the *unpainted* metal part of the chassis.
- For safety, periodically check the resistance value of the antistatic strap, which should be between 1 and 10 megohms.
- When temporarily storing a card make sure it is placed in an ESD bag.
- Cards in an earth grounded metal frame or casing do not require any special ESD protection.

Battery Handling

This product includes a backup battery. There is a danger of explosion if the battery is replaced incorrectly. Replace the battery only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions. Before disposing of your Grass Valley equipment, please review the *Disposal and Recycling Information* appendix.

Mesures de sécurité et avis importants

La présente section fournit des consignes de sécurité importantes pour les opérateurs et le personnel de service. Des avertissements ou mises en garde spécifiques figurent dans le manuel, dans les sections où ils s'appliquent. Prenez le temps de bien lire les consignes et assurez-vous de les respecter, en particulier celles qui sont destinées à prévenir les décharges électriques ou les blessures.

Signification des symboles utilisés

Signale la présence d'une tension élevée et dangereuse dans le boîtier de l'équipement ; cette tension peut être suffisante pour constituer un risque de décharge électrique.

Avertit l'utilisateur, l'opérateur ou le technicien de maintenance que des instructions importantes relatives à l'utilisation et à l'entretien se trouvent dans la documentation accompagnant l'équipement.

Invite l'utilisateur, l'opérateur ou le technicien de maintenance à prendre note du calibre du fusible lors du remplacement de ce dernier. Le fusible auquel il est fait référence dans le texte doit être remplacé par un fusible du même calibre.

Identifie une borne de mise à la terre de protection. Il faut relier cette borne à la terre avant d'effectuer toute autre connexion à l'équipement.

Identifie une borne de mise à la terre externe qui peut être connectée en tant que borne de mise à la terre supplémentaire.

Signale la présence de composants sensibles à l'électricité statique et qui sont susceptibles d'être endommagés par une décharge électrostatique. Utilisez des procédures, des équipements et des surfaces antistatiques durant les interventions d'entretien.

Le symbole ci-contre signifie que l'appareil comporte plus d'un cordon d'alimentation et qu'il faut débrancher tous les cordons d'alimentation avant toute opération d'entretien, afin de prévenir les chocs électriques.

La marque C-CSA-US certifie que l'appareil visé a été testé par l'Association canadienne de normalisation (CSA) et reconnu conforme aux exigences applicables en matière de sécurité électrique en vigueur au Canada et aux États-Unis.

La marque C-UL-US certifie que l'appareil visé a été testé par Underwriters Laboratory (UL) et reconnu conforme aux exigences applicables en matière de sécurité électrique en vigueur au Canada et aux États-Unis.

La marque ETL Listed d'Intertek pour le marché Nord-Américain certifie que l'appareil visé a été testé par Intertek et reconnu conforme aux exigences applicables en matière de sécurité électrique en vigueur au Canada et aux États-Unis.

Le marquage CE indique que l'appareil visé est conforme aux exigences essentielles des directives applicables de l'Union européenne en matière de sécurité électrique, de compatibilité électromagnétique et de conformité environnementale.

Le symbole ci-contre sur un appareil Grass Valley ou à l'intérieur de l'appareil indique qu'il est conforme aux normes applicables en matière de sécurité laser.

Avertissements

Les avertissements signalent des conditions ou des pratiques susceptibles d'occasionner des blessures graves, voire fatales. Veuillez vous familiariser avec les avertissements d'ordre général ci-dessous :

- Un cordon d'alimentation dûment homologué doit être utilisé pour connecter l'appareil à une tension de secteur de 120 V CA ou 240 V CA.

- La protection de ce produit contre les courts-circuits (surintensités) dépend de l'installation électrique du bâtiment. Assurez-vous qu'un fusible ou un disjoncteur pour 120 V CA ou 240 V CA est utilisé sur les conducteurs de phase.

- Dans le présent manuel, toutes les instructions qui nécessitent d'ouvrir le couvercle de l'équipement sont destinées exclusivement au personnel technique qualifié.

- N'utilisez pas cet appareil dans un environnement humide.

- Cet équipement est mis à la terre par le conducteur de mise à la terre des cordons d'alimentation. Pour éviter les chocs électriques, branchez les cordons d'alimentation sur une prise correctement câblée avant de brancher les entrées et sorties de l'équipement.

- Acheminez les cordons d'alimentation et autres câbles de façon à ce qu'ils ne risquent pas d'être endommagés. Supportez correctement les enroulements de câbles afin de ne pas endommager les connecteurs.

- Coupez l'alimentation avant de nettoyer l'équipement. Ne pas utiliser de nettoyants liquides ou en aérosol. Utilisez uniquement un chiffon humide.

- Des tensions dangereuses peuvent exister en plusieurs points dans cet équipement. Pour éviter toute blessure, ne touchez pas aux connexions ou aux composants exposés lorsque l'appareil est sous tension.

- Avant de procéder à toute opération d'entretien ou de dépannage, enlevez tous vos bijoux (notamment vos bagues, votre montre et autres objets métalliques).

- Pour éviter tout risque d'incendie, utilisez uniquement les fusibles du type et du calibre indiqués sur l'équipement ou dans la documentation qui l'accompagne.

- Ne pas utiliser cet appareil dans une atmosphère explosive.

- Présence possible de courants de fuite. Un raccordement à la masse est indispensable avant la mise sous tension.

- Après tout travail d'entretien ou de réparation, faites effectuer des contrôles de sécurité par le personnel technique qualifié.

Mises en garde

Les mises en garde signalent des conditions ou des pratiques susceptibles d'endommager l'équipement. Veuillez vous familiariser avec les mises en garde ci-dessous :

- L'appareil est conçu pour être installé dans un endroit à accès restreint.
- Au moment d'installer l'équipement, ne fixez pas les cordons d'alimentation aux surfaces intérieures de l'édifice.
- Les produits qui n'ont pas d'interrupteur marche-arrêt et qui disposent d'une source d'alimentation externe doivent être installés à proximité d'une prise de courant facile d'accès.
- Si l'équipement n'est pas pourvu d'un modules d'alimentation auto-adaptables, vérifiez la configuration de chacun des modules d'alimentation avant de les mettre sous tension.
- Assurez une ventilation adéquate. Pour éviter toute surchauffe du produit, assurez une ventilation de l'équipement conformément aux instructions d'installation.
- N'utilisez pas l'équipement si vous suspectez un dysfonctionnement du produit. Faites-le inspecter par un technicien qualifié.
- Pour réduire le risque de choc électrique, n'effectuez pas de réparations autres que celles qui sont décrites dans le présent manuel, sauf si vous êtes qualifié pour le faire. Confiez les réparations à un technicien qualifié. La maintenance doit se réaliser dans un milieu libre d'électricité statique.
- L'appareil peut comporter plus d'un cordon d'alimentation. Afin de prévenir les chocs électriques, débrancher tous les cordons d'alimentation avant toute opération d'entretien.
- Veillez à toujours prendre les mesures de protection antistatique appropriées quand vous manipulez l'équipement.

Protection contre les décharges électrostatiques (DES)

Une décharge électrostatique peut se produire lorsque des composants électroniques ne sont pas manipulés de manière adéquate, ce qui peut entraîner des défaillances intermittentes ou endommager irrémédiablement un circuit électrique. Au moment de remplacer une carte dans un châssis, prenez toujours les mesures de protection antistatique appropriées :

- Assurez-vous que le châssis est relié électriquement à la terre par le cordon d'alimentation ou tout autre moyen disponible.
- Portez un bracelet antistatique et assurez-vous qu'il est bien en contact avec la peau. Connectez la pince de masse à une *surface non peinte* du châssis pour détourner à la terre toute tension électrostatique indésirable. En l'absence de bracelet antistatique, déchargez l'électricité statique de votre corps en touchant une surface métallique *non peinte* du châssis.

- Pour plus de sécurité, vérifiez périodiquement la valeur de résistance du bracelet antistatique. Elle doit se situer entre 1 et 10 mégohms.
- Si vous devez mettre une carte de côté, assurez-vous de la ranger dans un sac protecteur antistatique.
- Les cartes qui sont reliées à un châssis ou boîtier métallique mis à la terre ne nécessitent pas de protection antistatique spéciale.

Remplacement et élimination des piles

L'appareil renferme une pile. Pour réduire le risque d'explosion, vérifiez la polarité et ne remplacez la pile que par une pile du même type, recommandée par le fabricant. Mettez les piles usagées au rebut conformément aux directives du fabricant. Avant de vous défaire de l'équipement, assurez-vous d'avoir lu l'appendice *Disposal and Recycling Information.*

Recycling

Visit www.grassvalley.com for recycling information.

Certification and Compliance

Safety Compliance

This equipment complies with the requirements of CSA/UL/IEC/EN 60950-1, 2nd Ed. + AM1, Safety of information technology equipment.

The power cords supplied with this equipment meet the appropriate national standards for the country of destination.

Electromagnetic Compatibility

This equipment has been tested for verification of compliance with FCC Part 15, Subpart B requirements for class A digital devices.

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy, and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

This equipment has been tested and found to comply with the requirements of the EMC directive 2014/30/EU — Electromagnetic Compatibility:

- EN 55022 Class A Radiated and conducted emissions

- EN 55024 Class A Immunity
- EN 61000-3-2 Limits for harmonic current emissions
- EN 61000-3-3 Limitation of voltage fluctuations and flicker

This equipment has also been tested and found to comply with the requirements of the EMC directive 2006/95/EC — Low Voltage:

- EN 60950-1, 2nd edition
- IEC 60950-1, 2nd edition
- UL/CSA 60950-1, 2nd edition
- GOST R 50377-92 Certification (Russia)
- GS Certification (Germany)

Environmental Compliance

部件名称 Part name	有毒有害物质或元素 (Toxic or hazardous substances and elements)					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr6)	多溴联苯 (PBB)	多溴二苯 (PBDE)
电缆及电缆组件 Cables and cable assemblies	O	X	X	X	X	X
电路模块 Circuit modules	O	X	X	X	X	X
金属零件 Metal parts	O	X	X	X	X	X

O: 表示该有毒有害物质在该部件所有均质材料中的含量均在 GB/T 26572-2011 规定的限量要求以下。

O: Indicates that this toxic or hazardous substance contained in all of the homogeneous materials for this part is below the limit requirement in GB/T 26572-2011.

X: 表示该有毒有害物质至少在该部件的某一均质材料中的含量超出 GB/T 26572-2011 规定的限量要求。

X: Indicates that this toxic or hazardous substance contained in at least one of the homogeneous materials for this part is above the limit requirement in GB/T 26572-2011.

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Technical explanations: This statement is based on the information provided by our suppliers of components and collected through our Grass Valley's environmental management system. Grass Valley believes this environmental information to be correct but cannot guarantee its completeness or accuracy as it is based on data received from sources outside our company. All specifications are subject to change without notice.

Table of Contents

Overview

Introduction

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

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
M926-8902	Kaleido-IP Installation & Service Manual
M926-3804	Kaleido-IP Cascade Step-by-Step Configuration
MNL-1678-QRG	Supermicro SuperServer 1028U Series User's Manual for model 1028U-TR4+
M735-9902	Kaleido-RCP2 Guide to Installation and Operation
M876-9900	RCP-200 Guide to Installation and Operation
M916-9900	DXF-200 DVI/HDMI Optical Extension System User's Manual
M407-9900	iControl Router User Guide
Published online	iControl Online Help iControl Solo Online Help

Software and Firmware Updates

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

About the Multiviewer

The Kaleido-IP can monitor and display HD and SD television programs distributed over IP, across two HDTV displays. It supports numerous compressed and uncompressed video and audio formats. See Specifications, on page 101 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 connected your Kaleido-IP to your local *Management* and *Media Networks*, hooked up one or two 1920 × 1080 @ 60 Hz (HDTV) displays, and specified source information, 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 15) for instructions on how to define more rooms and 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 15).
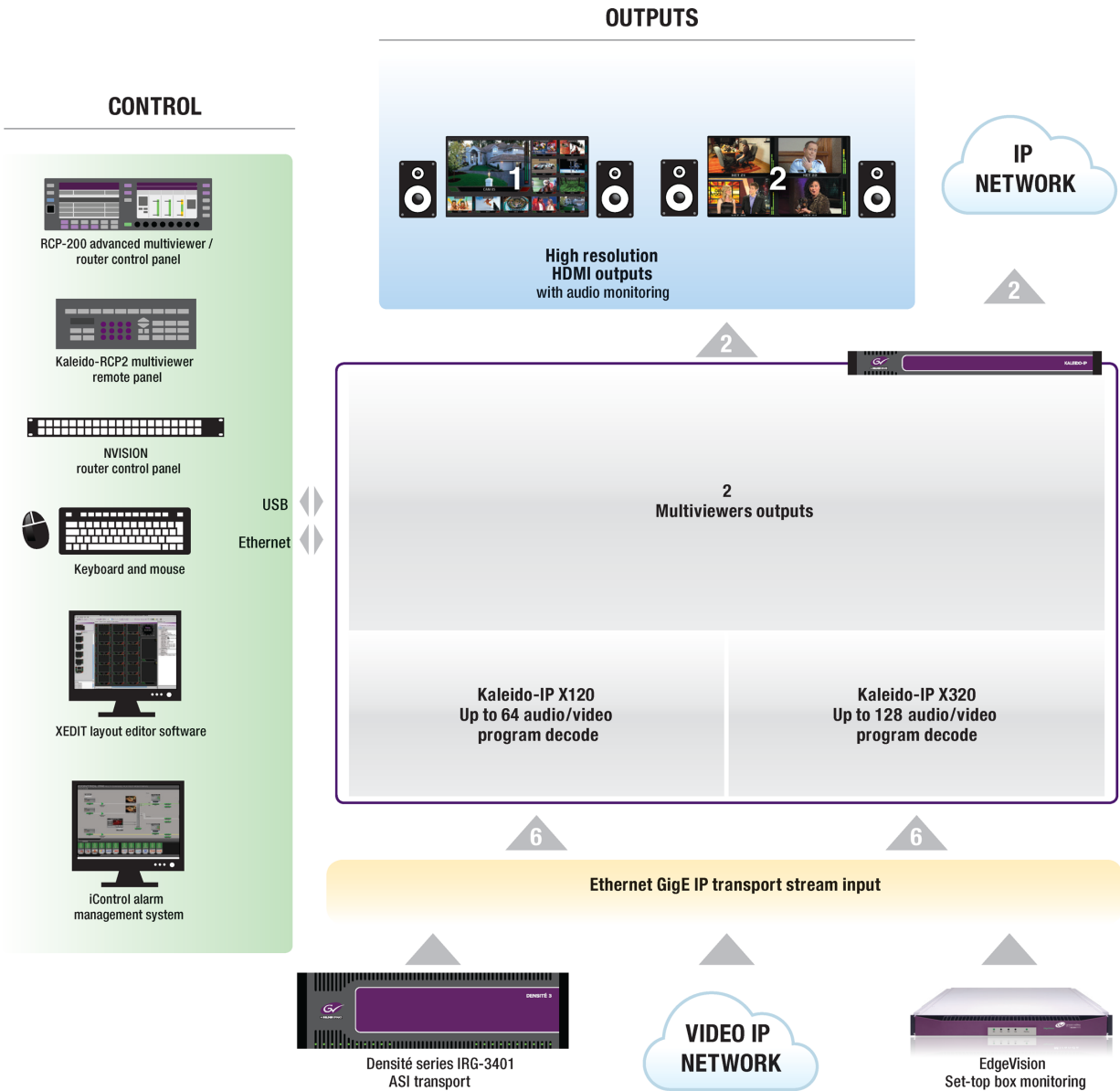
Kaleido Software Minimum Version Compatibility

A Kaleido-IP X320 or X120 multiviewer cannot be downgraded to a Kaleido Software version earlier than 8.60. When downgrading this multiviewer, certain other requirements and limitations may be in effect; see Upgrading the Multiviewer, on page 89 for more information.

To upgrade a multiviewer, see Upgrading the Multiviewer, on page 89.

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 System

OUTPUTS

CONTROL

RCP-200 advanced multiviewer /
router control panel

Kaleido-RCP2 multiviewer
remote panel

NVISION
router control panel

Keyboard and mouse

USB

Ethernet

XEDIT layout editor software

iControl alarm
management system

**High resolution
HDMI outputs**
with audio monitoring

1 2

**IP
NETWORK**

2

2

**2
Multiviewers outputs**

Kaleido-IP X120
Up to 64 audio/video
program decode

Kaleido-IP X320
Up to 128 audio/video
program decode

6 6

Ethernet GigE IP transport stream input

Densité series IRG-3401
ASI transport

**VIDEO IP
NETWORK**

EdgeVision
Set-top box monitoring

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2 Installation

Introduction

This chapter provides information about system requirements, items shipped with your Kaleido-IP unit and it will guide you through the installation of a Kaleido-IP X320, or Kaleido-IP X120 multiviewer.

Getting Organized / Unpacking

Required Materials

Your Kaleido-IP system package includes the following:

- Kaleido-IP unit
- Installation hardware and rails, including manufacturer's documentation for the rails
- Two 25.4 cm (10 in.) DisplayPort-to-HDMI adapter cables
- Two power cords
- The Kaleido Multiviewers Documentation Resource Guide, which provides instructions on how to access the documentation you need to install and use your new multiviewer. See Related Documentation, on page 15.

Note: In line with our commitment to environmental preservation, only the *Kaleido Multiviewers Documentation Resource Guide*, and some related documents (e.g., welcome letters, warranty cards) are distributed in printed form. You can obtain the latest version of the Kaleido Software User's Manual and Installation & Service Manual for this multiviewer model, as well as the Release Notes, from the *Documentation Library* section of the Grass Valley website. Software, drivers, and sample databases are available from the *Downloads* section of the website.

**In addition to the above, you will need the following (not supplied):**

- One or two displays for every Kaleido-IP unit
- Keyboard, mouse for basic Kaleido-IP configuration
- One dedicated 1000Base-T (or 100Base-T) Ethernet switch with enough ports for your Kaleido-IP units, client PCs, and Kaleido-RCP2 devices
- Dedicated 1000Base-T (or 100Base-T) Ethernet switches
    - Up to three more dedicated 1000Base-T (or 100Base-T) Ethernet switches for your Kaleido-IP X120 units equipped with four network adapters to connect to high-bitrate data streams

- Up to five more dedicated 1000Base-T (or 100Base-T) Ethernet switches for your Kaleido-IP X320 units equipped with six network adapters to connect to high-bitrate data streams
- Client PC (see System Requirements for a Client PC, on page 39)
- Cables (to connect your multiviewers to displays, and to the networks):

Cable type	Purpose
CAT-5	For Ethernet connectivity (*Management Network*, *Media Networks*)
Display cables	Extension modules: • for example Grass Valley's DXF-200 (part number DXF-200-C) • or standard DVI, HDMI, or DisplayPort cables and DisplayPort-to-DVI adapters, if needed.

Frame Physical Interface

When the front cover is removed, the following controls and indicators are available.

Control Panel

10 × SAS3/SATA/NVMe Hot-Swap Drive Bays   2 × USB Ports
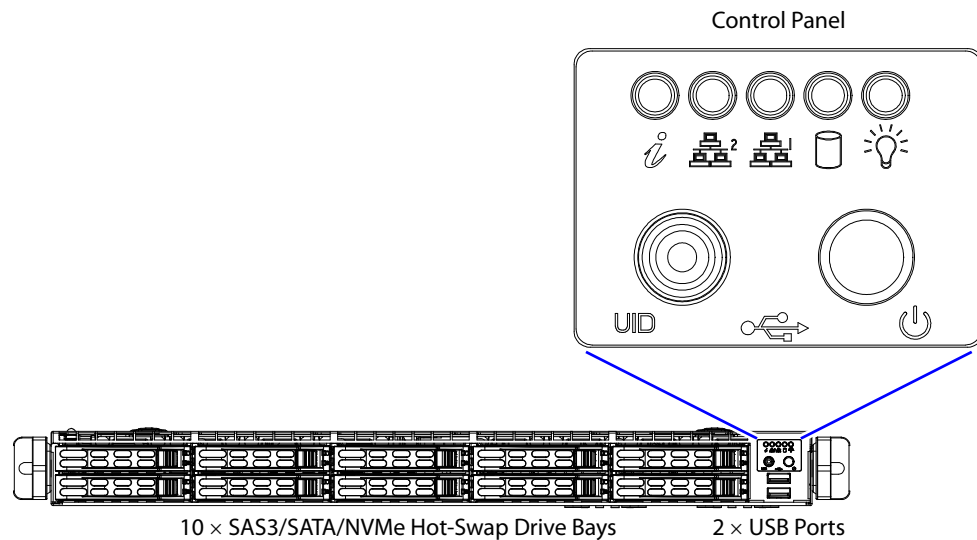
For more information about the frame's controls and indicators, refer to the Supermicro SuperServer User's Manual. See Related Documentation, on page 15.

Mechanical Installation

Setting up the Kaleido-IP Hardware

To set up the Kaleido-IP hardware

- Refer to the Supermicro SuperServer User's Manual (see Related Documentation, on page 15) shipped with your Kaleido-IP unit, mount the unit in a standard 19-inch rack. Make sure that the unit has adequate ventilation.

3

Multiviewer Cabling

Introduction

This chapter shows how to interconnect the multiviewer with its associated equipment.

Cabling Diagram
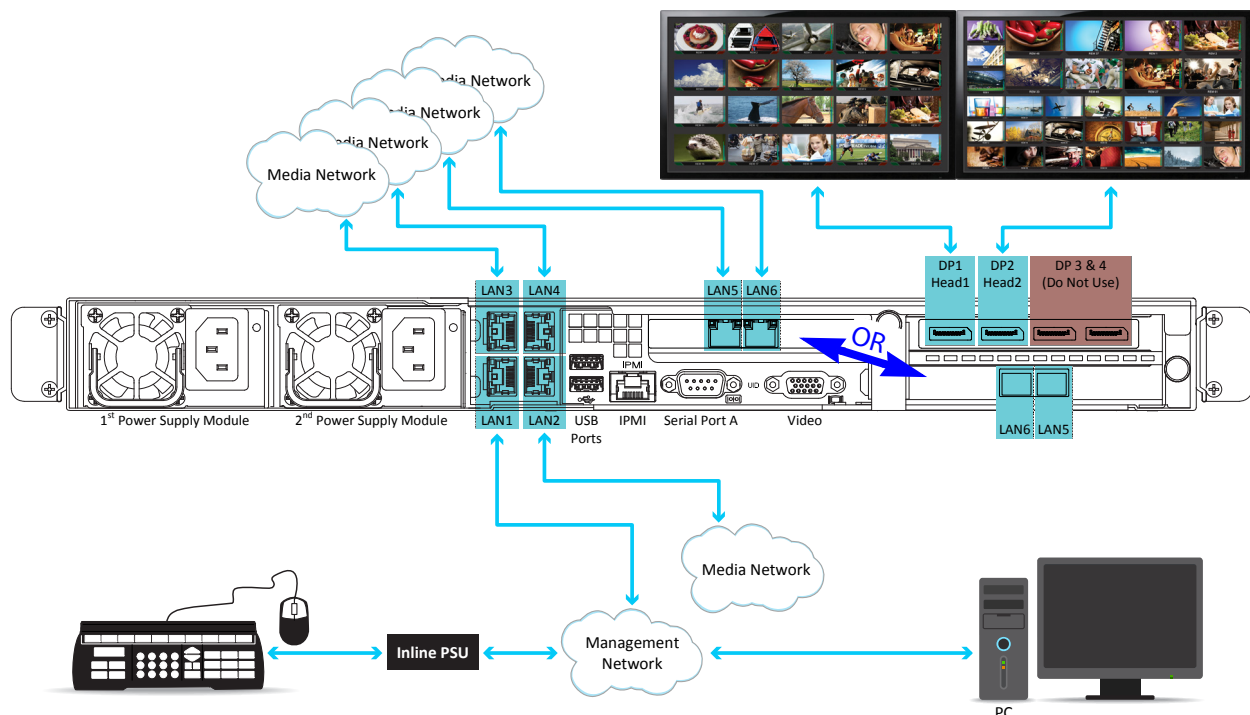
*Typical cabling diagram for a Kaleido-IP X320 / X120 with two optional Media Ports (**LAN5** & **LAN6**).*

The location of the optional Media Ports (**LAN5** & **LAN6**) depends on the network interface option card that has been ordered / installed. See Network Interface Card Installation Location in the Server, on page 71.

Kaleido-IP Multiviewer Ethernet Port Usage

On the rear panel of non-virtual machine (VM) Kaleido-IP multiviewers are Ethernet connections that should be used as follows:

- 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 management port **LAN1** port can be used for media streams also.

- The media ports **LAN2** and higher are to be used for media streams only.
- 2022-6 encoded streams can only be used with media ports **LAN5** and **LAN6**. This is a licensed option. See Available Hardware and Software Options, on page 69.

Commissioning the Multiviewer

Connect the multiviewer as follows.

1 With the Kaleido-IP frame installed in its designated rack position, power up the frame.

   The multiviewer starts up. The startup sequence takes approximately four minutes.

2 Connect your Kaleido-IP multiviewer's Ethernet ports to two or more Ethernet switches (one *Management Network* and one or more *Media Networks*) according to Kaleido-IP Multiviewer Ethernet Port Usage, on page 21 and Cabling Diagram, on page 21).

> Note: To disconnect an RJ-45 network cable connected to the optional **LAN5** or **LAN6** media ports, you may need to use the blade of a flat screwdriver to reach the cable's locking mechanism.

3 Connect a client PC, and the Kaleido-RCP2 (if available) to the switch on **LAN1**. You can also connect a mouse and a keyboard to your Kaleido-RCP2.

> Notes
>
> • The Kaleido-RCP2 is an optional device, and may not have been shipped with your Kaleido-IP system. For information on this and other options for your multiviewer system, contact your Grass Valley sales representative.
>
> • You may need to upgrade your Kaleido-RCP2 devices (if available) to the latest firmware. See Software and Firmware Updates, on page 15. Refer to the *Kaleido-RCP2 Guide to Installation and Operation* for instructions on how to determine the firmware level, and how to perform the upgrade. See Related Documentation, on page 15.

4 Connect one of the DisplayPort outputs of the multiviewer to a display that supports a resolution of 1920 × 1080 @ 60 Hz (HDTV) (see Cabling Diagram, on page 21).

> Notes
>
> • Depending on your display type, you may use the DisplayPort-to-HDMI that shipped with your system, or DisplayPort-to-DVI adapters (not included).
>
> • Although the Kaleido-IP unit has four DisplayPort outputs, only the first two DisplayPort outputs are used.
>
> • To disconnect a display cable at the DisplayPort outputs, you may need to use an object (e.g., the blade of a flat screwdriver) to reach the cable's locking mechanism.
>
> • Disconnecting and reconnecting any Kaleido-IP DisplayPort-to-HDMI adapter may require a restart. The adapter cables must be properly connected when the multiviewer restarts. If you connect such an adapter after the multiviewer has restarted, the display will remain blank.

Notes *(continued)*

- If your displays are not collocated with your Kaleido-IP unit, you may choose to employ DXF-200 transmitter/receiver devices that allow you to install a display up to 1,000 meters (3,300 feet) from the signal source. In this case, use the provided DisplayPort-to-HDMI cable between the Kaleido-IP and the DXF-200 transmitter module.
  For more information on the:

    DXF-200, refer to the *DXF-200 DVI/HDMI Optical Extension System User's Manual*. See Related Documentation, on page 15.

5 Connect the power cords, and then turn the power on. The power switch is located on the front panel.[1]

> **IMPORTANT**
> Should you want to add or replace a display or AV receiver at a later time, make sure the multiviewer is powered off, before making these changes. In the event that you have connected such a device while the multiviewer was running, you must restart the multiviewer for audio monitoring to be restored. Refer to *Restarting and Shutting Down a Kaleido-IP Multiviewer*, in the Kaleido Software User's Manual. See Related Documentation, on page 15.

6 If you want to use a different display resolution, see Changing the Output Resolution, on page 24, for detailed instructions.

Changing the Output Resolution

To change a display's resolution from the monitor wall

1 Connect a mouse to one of the Kaleido-IP frame's USB ports. See Troubleshooting with the Kaleido-IP frame's USB ports, on page 96 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**.

---
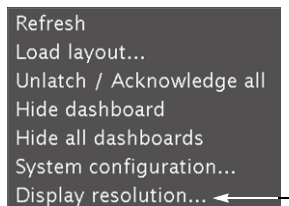
1. The Kaleido Software does not support activating a soft shutdown from the Kaleido-IP frame's power button.

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 the Kaleido-IP does not support automatic resolution detection.

4 Select the desired resolution from the **Default DVI resolution** list.
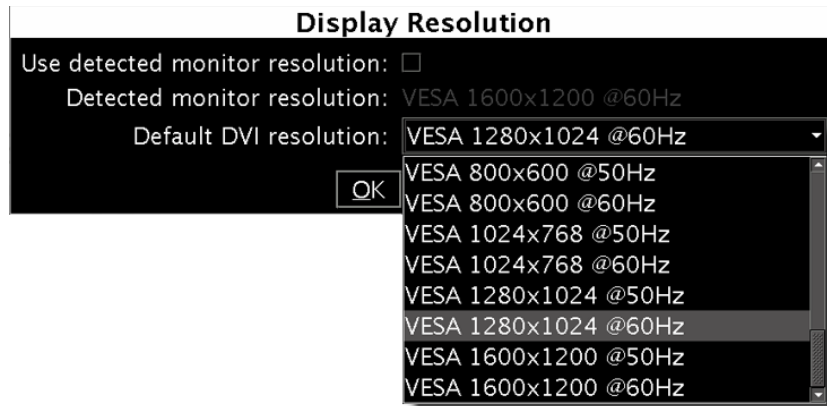
5 Click **OK**.

The output resolution is adjusted accordingly.

IP Network Setup

Introduction

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

Networking Essentials

The following network prerequisites must be met:

- The type of network traffic to be found on the Kaleido-IP multiviewer's Ethernet ports must be segregated according to Kaleido-IP Multiviewer Ethernet Port Usage, on page 21
- The Ethernet switch for the *Management Network* must support 1000 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*. As required by the IEEE-802.3 standard, section 28D.5, 1000 Mbps full-duplex communication is only supported via auto-negotiation.
- **Kaleido-IP support for multicast join and leave:** it is possible to add and configure up to 6000 logical sources in a Kaleido-IP system without exceeding the network's bandwidth or the unit's decoding resources. See Decoding Capacity, on page 102 for details on the number of programs and total streaming bandwidth supported.

  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.

The Kaleido-IP multiviewer must be configured with at least two IP addresses; one for the *Management Network*, and one for a *Media Network*, with the corresponding network mask and gateway settings, and a system name. The Kaleido-IP X320 model may require up to six IP addresses. In XAdmin and XEdit, a Kaleido-IP X120 or Kaleido-IP X320 with *four* network adapters is identified as **Kaleido-IP-4**, and a Kaleido-IP X120 or Kaleido-IP X320 with *six* network adapters is identified as **Kaleido-IP-6**.

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 39). You must also configure any Kaleido-RCP2 units you may have ordered (see Using a Kaleido-RCP2 with Default Settings, on page 67).

The Kaleido-IP is shipped with the following default settings.

Kaleido-IP default IP settings

	Kaleido-IP-6	Kaleido-IP-4
Management Port IP address (**LAN1**)	10.0.3.70	10.0.3.70
Network mask	255.255.0.0	255.255.0.0
Default gateway	10.0.0.1	10.0.0.1
Link mode	Auto-negotiate	Auto-negotiate
Media Port 1 IP address (**LAN2**)	172.30.3.70	172.30.3.70
Network mask	255.255.0.0	255.255.0.0
Gateway	None	None
Link mode	Auto-negotiate	Auto-negotiate
Media Port 2 IP address (**LAN3**)	172.30.3.71	172.30.3.71
Network mask	255.255.0.0	255.255.0.0
Gateway	None	None
Link mode	Auto-negotiate	Auto-negotiate
Media Port 3 IP address (**LAN4**)	172.30.3.72	172.30.3.72
Network mask	255.255.0.0	255.255.0.0
Gateway	None	None
Link mode	Auto-negotiate	Auto-negotiate
Media Port 4 IP address (**LAN5**)	172.30.3.73	—
Network mask	255.255.0.0	
Gateway	None	
Link mode	Auto-negotiate	
Media Port 5 IP address (**LAN6**)	172.30.3.74	—
Network mask	255.255.0.0	
Gateway	None	
Link mode	Auto-negotiate	

Note: If the *Management Port* IP address of your Kaleido-IP 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 85.

Changing the Management Network IP Address from the Monitor Wall

The *Management Network* IP address, system name, and other parameters can be set via a control panel on the monitor wall, however this will also change the current IP address of the *Media Network* interfaces.

To change the Management Network IP address of the Kaleido-IP from the monitor wall

1 Connect a mouse to one of the USB connectors of the Kaleido-IP. See Troubleshooting with the Kaleido-IP frame's USB ports, on page 96 for more information about this.

2 Connect a keyboard to one of the USB connectors of the Kaleido-IP.

3 Right-click anywhere on the monitor wall, point to **Monitor Wall** (if you clicked a monitor), and then click **System configuration**.

   The **System Configuration** window appears.

4 Click the **Ethernet** tab.

5 Type the required *Management Network's* IP address, network mask, and gateway address in the appropriate boxes.

6 Click **OK**.

7 When prompted to restart the system to apply your changes, click **Yes**.

8 Continue with the next procedure to set the IP addresses for the *Media Networks*.

Once you have configured the *Management Network* IP address from the monitor wall, use XAdmin to configure an IP address for the network adapter that is connected to the *Media Network*.

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 49.

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.

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 network adapters.

LAN1 (management port) IP address	Set the network IP address to be used for multiviewer management: that is, any PC that uses XEdit or XAdmin to configure this multiviewer and any Kaleido-RCP2 / RCP-200 must have IP connectivity to the **LAN1** port. See also Kaleido-IP Multiviewer Ethernet Port Usage, on page 21.
LAN2 or higher (media port)	Set the network IP addresss to be used for the *Media Network*. This port must have IP connectivity to the associated streaming devices (e.g. encoders, multiplexers). See also Kaleido-IP Multiviewer Ethernet Port Usage, on page 21. To omit network configuration for an unused Media Port, clear the corresponding **Enabled** check box.
Network mask	Set the connected network's subnet mask.
Default gateway	If your *Management Network* is not configured with a gateway, clear the default gateway IP address, by clicking **Remove**. LAN1 (management port) IP address: 10 .37 .64 .72 Network mask: 255 .255 .255 .0 Default gateway: 10 .37 .64 .1 [Remove] ←
Gateway	If **LAN1**, **LAN2**, or higher are configured within different subnets, and this multiviewer is meant to monitor HLS, RTSP, or RTMP sources, then add the required gateway addresses by clicking **Add**, and then typing the appropriate gateway address, for each LAN section. 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 Configured link mode: Auto-negotiate (1000Mbps full-duplex) ▼
Detected link mode	By default, all network ports are set to auto-negotiate. The connection speed and duplex mode will be set automatically based on the corresponding port settings on the associated switch.
Configured link mode	**10000 Mbps full-duplex** communication can only be achieved via auto-negotiation, as required by the IEEE-802.3 standard, section 28D.5. Should your network configuration require specific speed and duplex mode settings, select the appropriate value from the **Configured link mode** list.

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

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

Date and Time

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

7   Click **Save**.

The new settings are saved locally.

The configuration has been saved. Do not forget to apply the changes at the end of the session.

OK
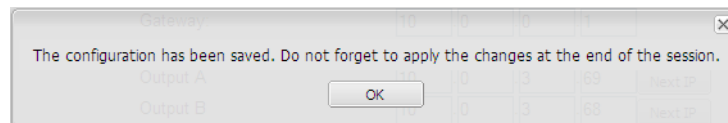
8   Click **OK**.

9   The **Apply settings** button becomes available.

- ❯ System configuration
- ❯ Status and options
- ❯ Access control
- ❯ Upgrade
- ❯ Restart / Shut down
- ❯ Head streaming
- ❯ Help & support

Apply settings...

Log out

10 Click **Apply settings**.

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

11 Click **OK**.

Your Kaleido-IP restarts.

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

---

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

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

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

DNS configuration

domain:	miranda.com
search:	miranda.com
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.

DNS configuration ☒
The configuration has been applied.
[OK]
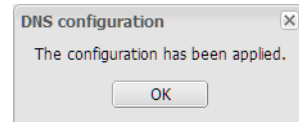
  e Click **OK** to dismiss the message.

13 If this system must monitor sources from a VLAN environment, then see Configuring Virtual LAN Adapters on a Kaleido-IP, on page 79 to add the required Virtual LAN Adapters.

14 If you need to change the head streaming settings, see Configuring Head Streaming on a Kaleido-IP, on page 76.

15 If this system requires new fonts, then see Adding Fonts to a Kaleido-IP, on page 81 to add the required Virtual LAN Adapters.

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 supports concurrent decoding of up to 512 elementary streams within a program.

The Kaleido-IP supports layouts using up to 600 Mbps of streaming bandwidth. However, when using a layout touring application, the total bandwidth usage per layout should be limited to 400 Mbps across all network interfaces, and the touring period should be at least 30 seconds. In the case of the Kaleido-IP-6, layout touring should be avoided (a source cycling application should be preferred when required). Implementing a source cycling or layout touring configuration requires iControl.

The Kaleido-IP 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 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 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.

TCP/UDP Port Usage

The various Kaleido-IP 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 *keepalive* (heartbeat)
5432		TCP	Used by XEdit for export operations

Port	Used for	Transport	Notes
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	Used to listen for Kaleido Software discovery packets
10000		TCP	For RCP2 protocol
10001		TCP	For RCP2 protocol
5120		UDP	On multicast 230.8.8.9 for RCP2 protocol
5121		UDP	For 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-frame 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 RCP2

Port	Used for	Transport	Notes
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 RCP2 protocol
10001		TCP	For RCP2 protocol
5120		UDP	On multicast 230.8.8.9 for RCP2 protocol
5121		UDP	For 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 35.
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 routervia the NVEP Router (NP0016) protocol.
5353	UDP	Used for mDNS discovery on multicast 224.0.0.251
7600	TCP	Used to control a Kaleido-IP multiviewer via a REST API
14000	TCP	Used to control a multiviewer's internal router via the SAM (Snell/Pro-Bel) SW-P-08 protocol

Router drivers also use default ports:

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

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

Between multiviewer and SNMP managers

Port	Used for	Transport	Notes
161	SNMP	UDP	Used for SNMP (Simple Network Management Protocol) communications between external SNMP managers and a multiviewer (e.g., sending get, get-next, and set messages to a multiviewer's SNMP agent, and receiving the response).
1161		UDP	Used for SNMP (Simple Network Management Protocol) communications between external SNMP managers and a *Kaleido-IP* 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).
- To maintain the integrity of a cluster configuration, such changes must be made by using the system configuration features available in XAdmin.

System Configuration

Introduction

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-4	A Kaleido-IP X120 or X320, frame with four network adapters
Kaleido-IP-6	A Kaleido-IP X320 frame with six network adapters

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 40.

- 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 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.exe`[1]). 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 were 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**).
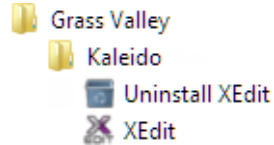
- If you have Windows 8.1, or Windows 8, XEdit will appear on your desktop, in the Apps view with all the other applications on your PC (Windows 8.1), or in your Start screen (Windows 8).
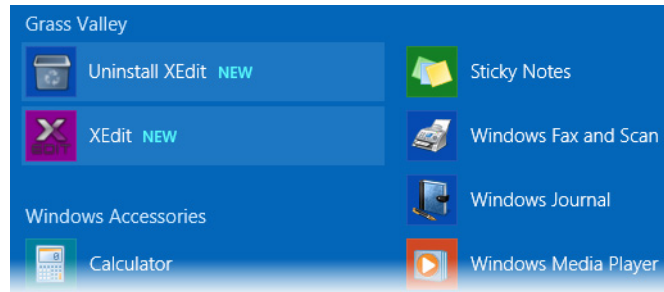
Once the installation has completed, the XEdit startup screen appears.

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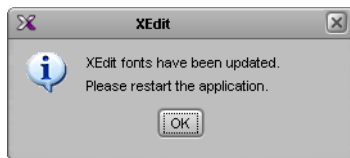
* Click **OK** to continue, and then open XEdit again, by using the shortcut on your desktop, in your Apps view (Windows 8.1) or Start screen (Windows 8), or from the Start menu (Windows 7, Windows 10).

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**.
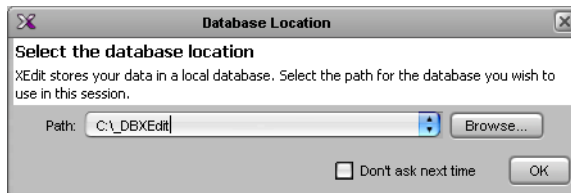
Once the database has completed loading, XEdit's main application window appears.
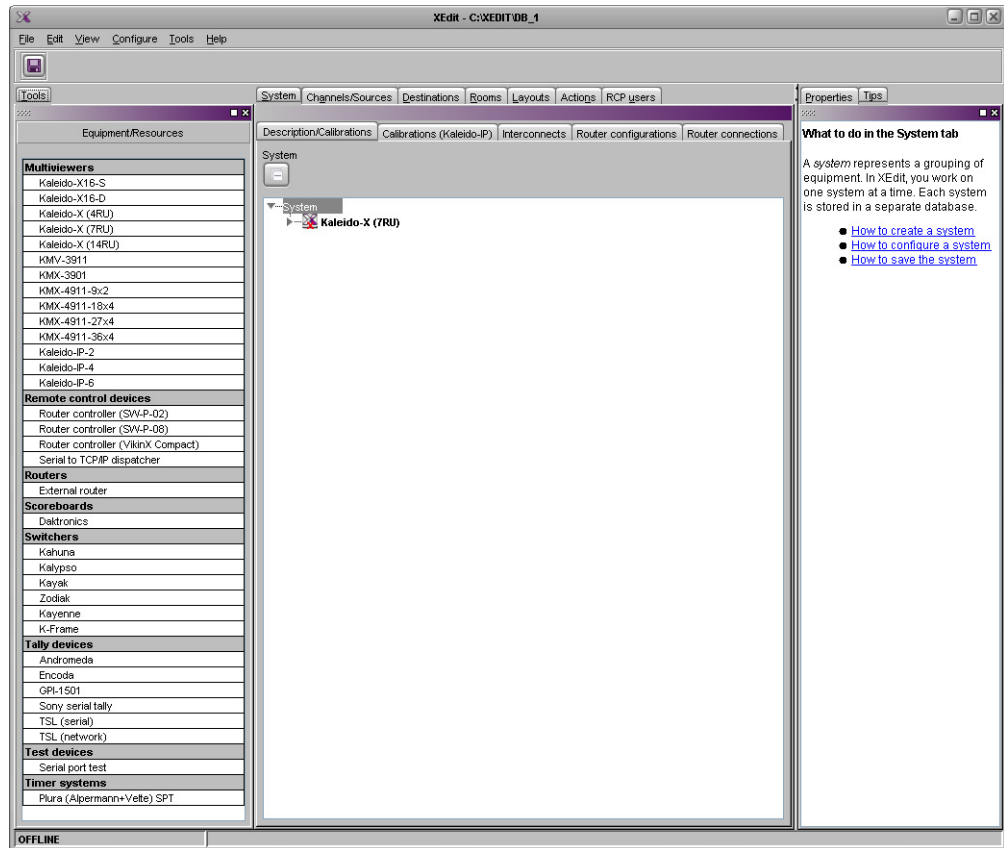
Note: Once it has been installed from the multiviewer, XEdit remains on your PC, and can be launched from the ⌧ shortcut that was added to your desktop, Apps view, or Start screen (see page 41), or from the Start menu. Whenever you install a new version of the Kaleido Software on the multiviewer, the 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 15.

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 44.

If you have been using XEdit versions *earlier* than 7.20 you may want to uninstall them, by clearing the Java cache, on your PC. See Uninstalling XEdit (Version 7.11 or Earlier) on page 44.

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** (or **Miranda Technologies**[2]) folder, and then expand the **Kaleido** folder.
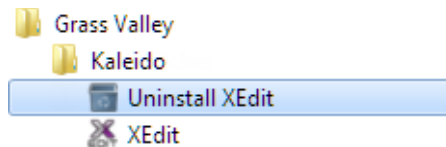
   • If you have Windows 8.1, or Windows 8: Switch to the App view or your Start screen.

3 Click **Uninstall XEdit**.

   An uninstall screen appears.
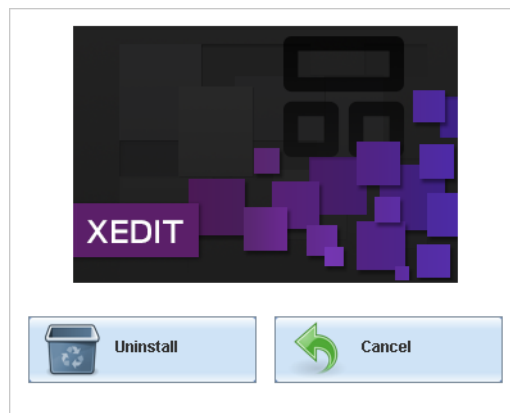
4 Click **Uninstall**.

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

### Uninstalling XEdit (Version 7.11 or Earlier)

To uninstall XEdit (version 7.11 or earlier)

1 Close all Java applications you may have open.

---

2. Launcher icons for versions 7.20–7.52 would have been installed in the Miranda Technologies folder.

2 On the Start menu, click **Control Panels**, and then click **Java (32-bit)**.

Java Control Panel opens.

3 In the **General** tab, click **Settings**.

4 In **Temporary Files Settings**, click **Delete Files**.

5 In **Delete Files and Applications** select all the check boxes, and then click **OK**.

6 Close **Temporary Files Settings**, and then **Java Control Panel**, by clicking their **OK** button.

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.exe`[3]). 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 were 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**).

3. Installers for Linux or Mac OS X are not available.
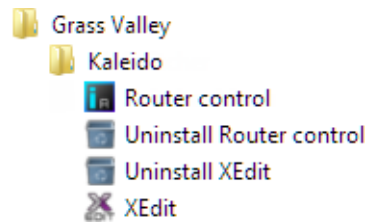
- If you have Windows 8.1, or Windows 8, Router Control will appear on your desktop, in the Apps view with all other installed applications on your PC (Windows 8.1), or in your Start screen (Windows 8).

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.
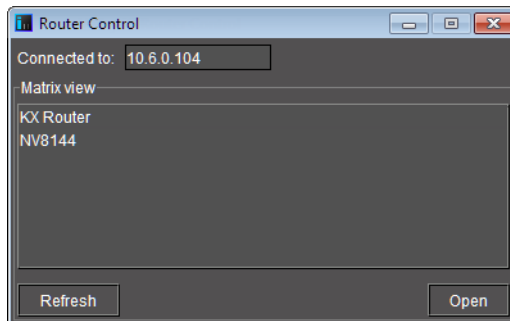
4 In **Router Control**, click the router you want to control, and then click **Open**.

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

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

The Matrix View application window opens.
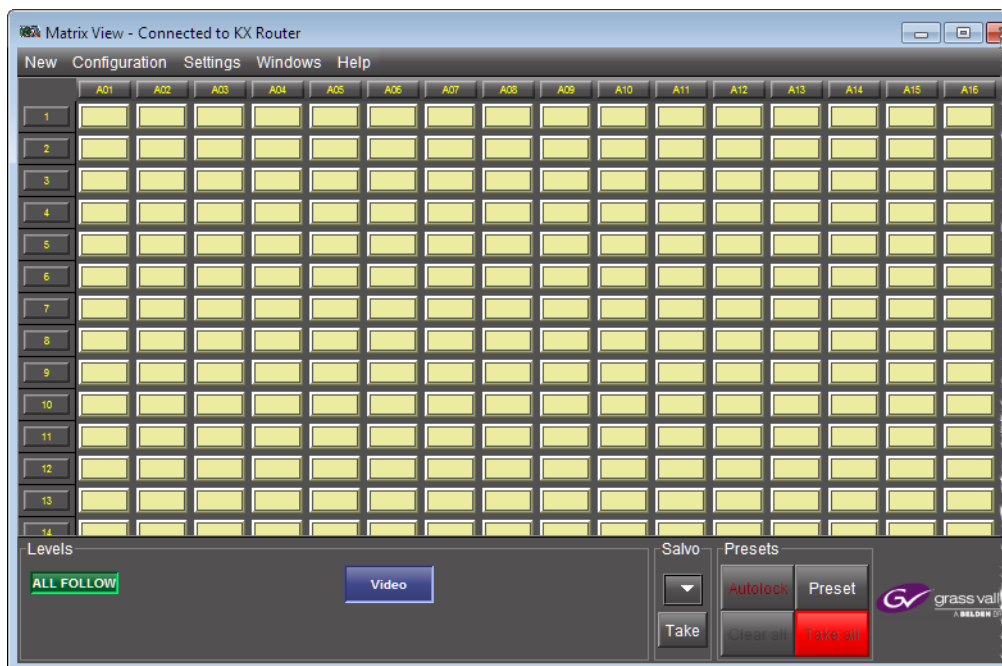
On the **Help** menu, click **Help** to access the online documentation, or refer to the *iControl Router User Guide,* see Related Documentation, on page 15.

> 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 (step on page 45), 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.
>
> • 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.
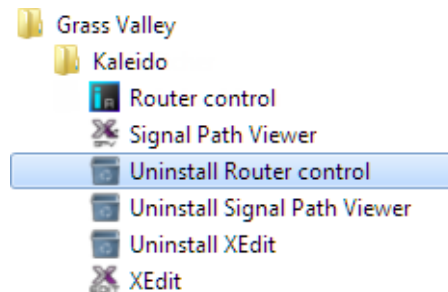
   • If you have Windows 8.1, or Windows 8: Switch to the App view or your Start screen.

3 Click **Uninstall Router Control**.

An uninstall screen appears.
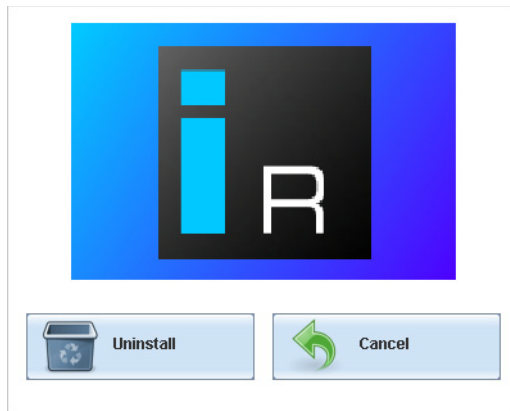
4 Click **Uninstall**.

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 *M.mp*	**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.
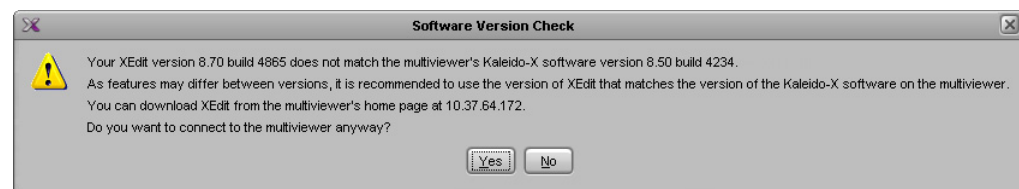
Under this circumstance, proceed as follows.

- 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.
  - Unistall XEdit from your PC (see Uninstalling XEdit, on page 44).
  - Install XEdit from the multiviewer (see Installing XEdit from your Multiviewer's Home Page, on page 40).

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 50),
- from **XEdit** (see Opening XAdmin from XEdit on page 51),

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 51). Internet Explorer users may also need to enable compatibility view (see Enabling the Compatibility View in Internet Explorer on page 60).

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.
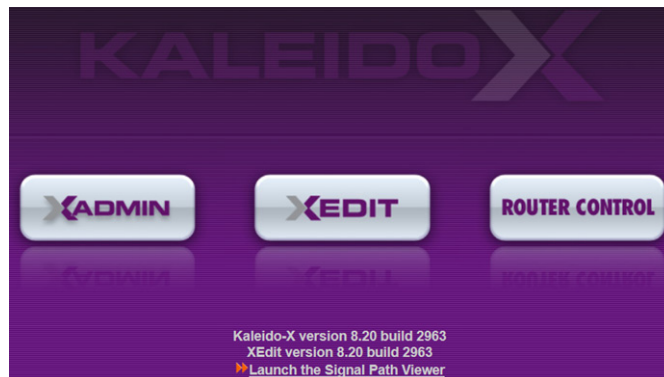
2 Click the XAdmin button.

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 51.

4 If the "Log in to XAdmin" page appears, type the password, and then click **Log in**.
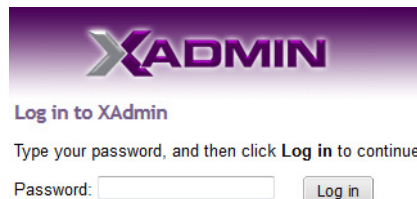
5 **Internet Explorer users:** If a blank page appears, then see Enabling the Compatibility View in Internet Explorer, on page 60.

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 51.

4 If the "Log in to XAdmin" page appears, type the password, and then click **Log in**.
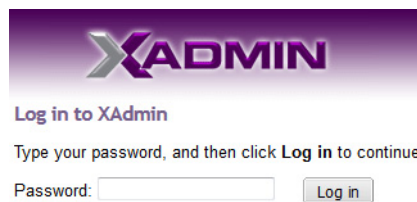
5 **Internet Explorer users:** If a blank page appears, then see Enabling the Compatibility View in Internet Explorer, on page 60.

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 52
- Suppressing certificate error in Internet Explorer or Chrome, on page 54

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.
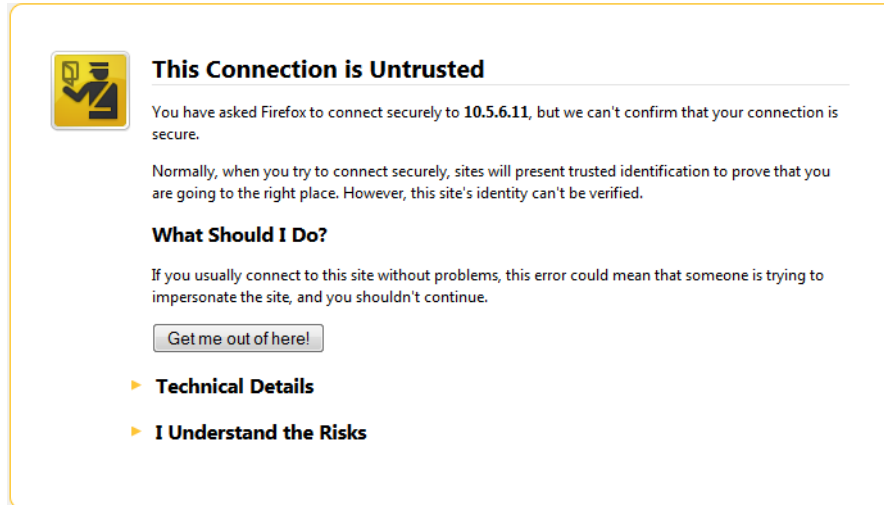
To register your multiviewer's security credentials with Firefox

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

The message expands.
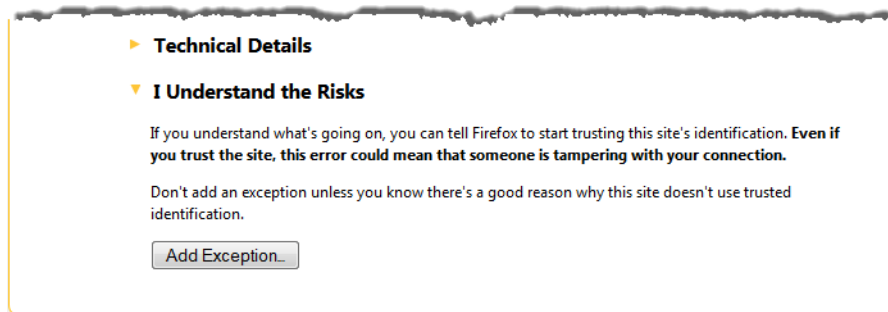
2 Click **Add Exception**.

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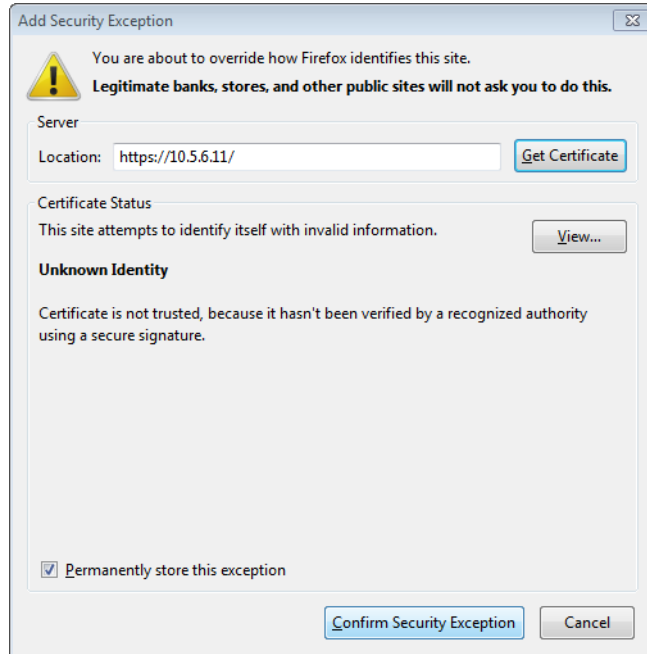
Your multiviewer's home page appears. You will now be able to access your multiviewer's client applications without seeing the warning. This will remain effective until the multiviewer's IP address is changed, in which case you will need follow the procedure again.

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.
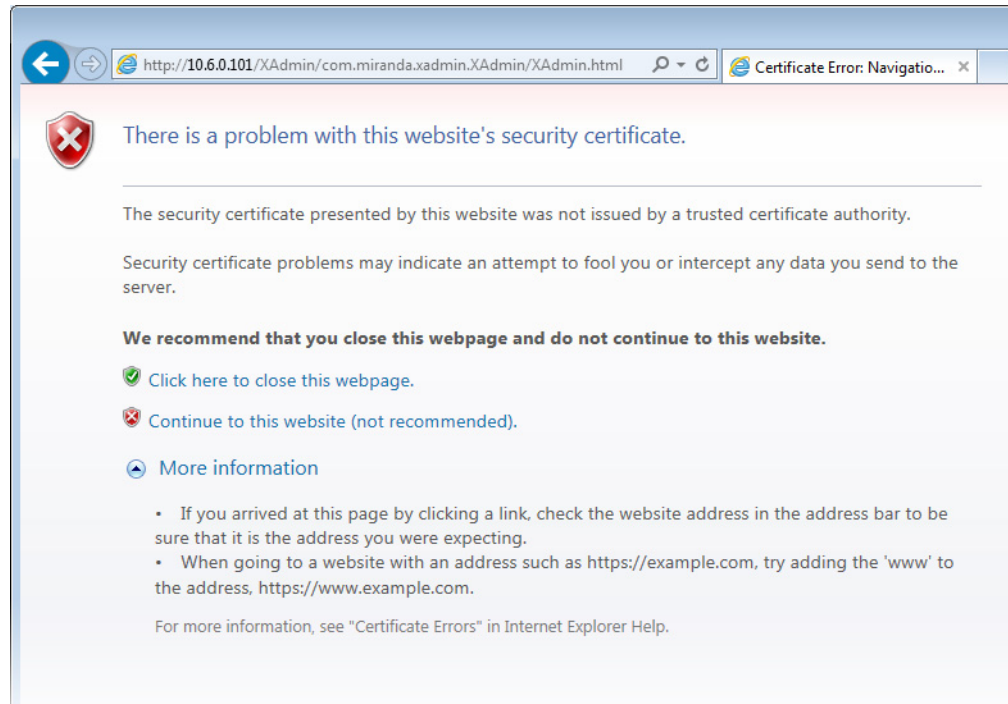
Internet Explorer's security warning
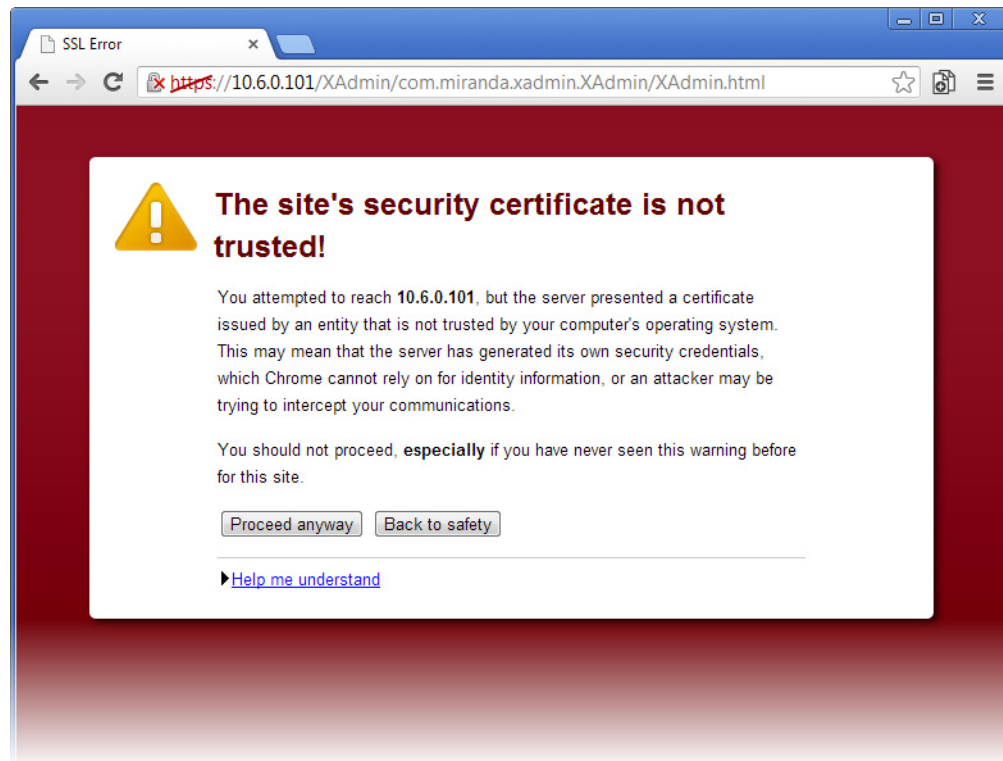
Chrome's security warning

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.
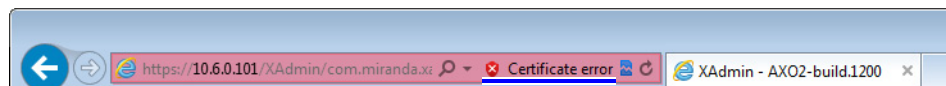
Special notes for Internet Explorer users

• 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 60.

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**:

Open
🛡 Run as administrator
Pin to Taskbar
Pin to Start Menu
Remove from this list
Properties
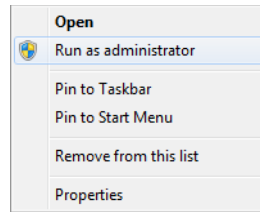
2 Click **Certificate error**.

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

⊗ **Untrusted Certificate**

The security certificate presented by this website was not issued by a trusted certificate authority.

This problem might indicate an attempt to fool you or intercept any data you send to the server.

We recommend that you close this webpage.

About certificate errors
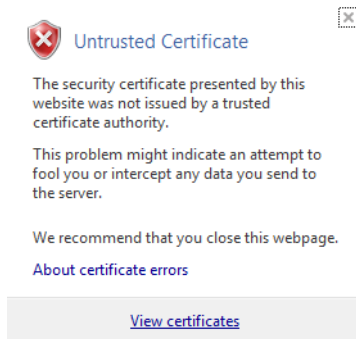
View certificates

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

Certificate

General | Details | Certification Path

Certificate Information

This CA Root certificate is not trusted. To enable trust, install this certificate in the Trusted Root Certification Authorities store.

Issued to: 10.6.0.101

Issued by: 10.6.0.101

Valid from 2013- 05- 27 **to** 2040- 10- 12

Install Certificate... | Issuer Statement

Learn more about certificates

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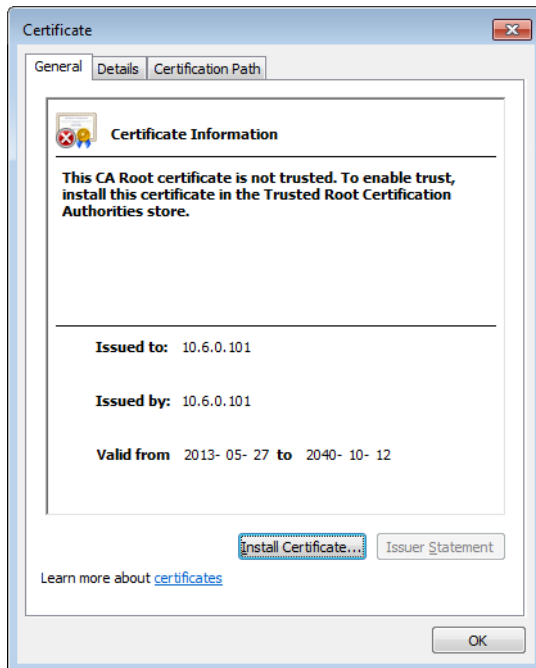
5 In **Certificate Import Wizard**, click **Next**.

6 In **Certificate Import Wizard**, click **Place all certificates in the following store**, and
then click **Browse**.
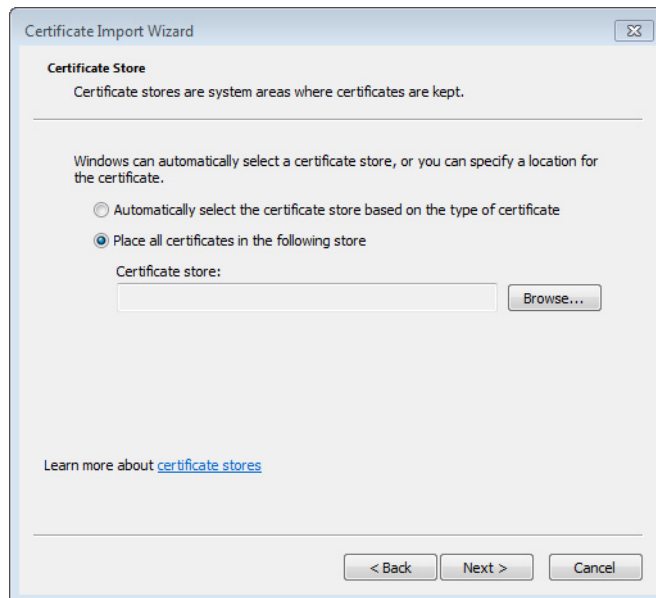
7 In **Select Certificate Store**, select **Trusted Root Certification Authorities**, and then click **OK**.
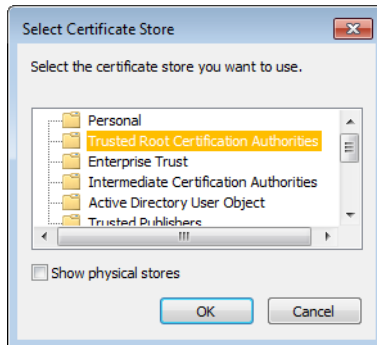
8 Back in **Certificate Import Wizard**, click **Next**.
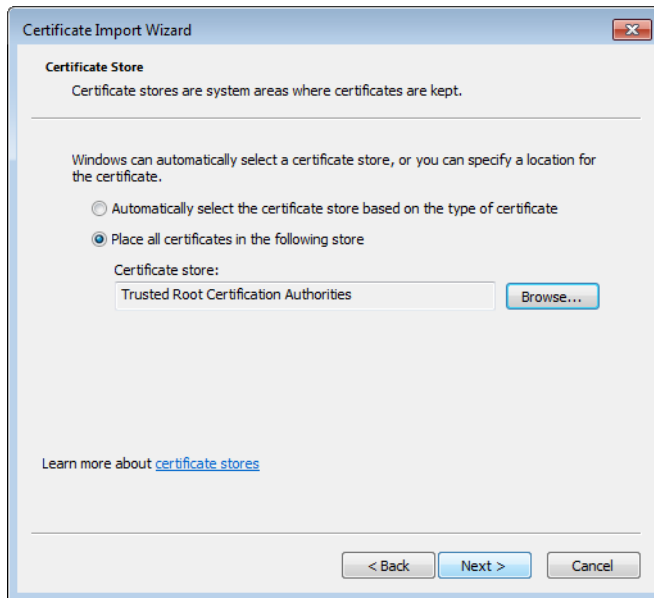
9 Click **Finish**.
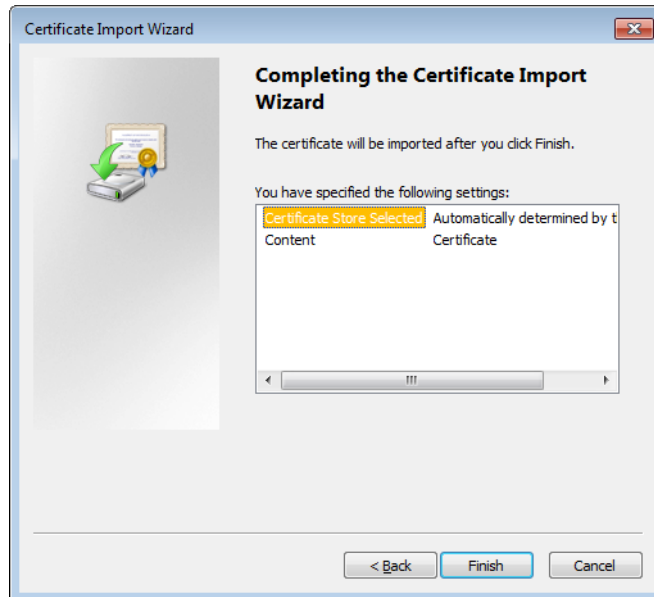
A security warning appears.
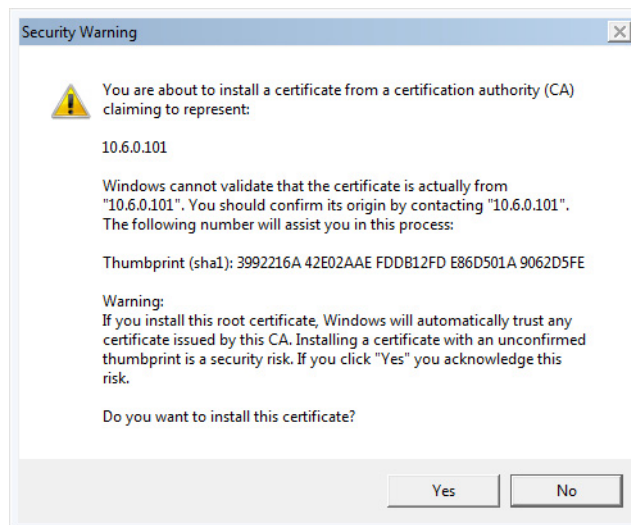
10 Click **Yes**.

11 **Certificate Import Wizard** reports that the import was successful.
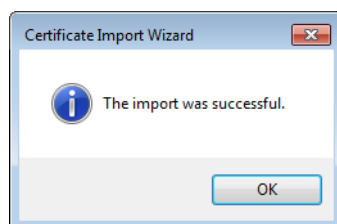
12 Click **OK** to continue, and then click **OK** to close the **Certificate** window.

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

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.[4]

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.
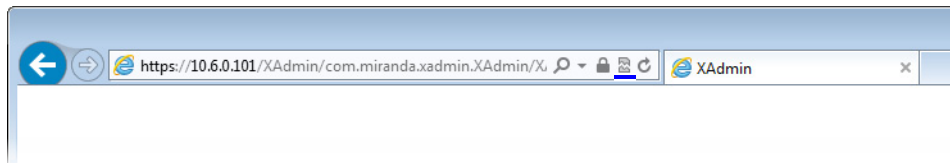
XAdmin's *Status and Options* page appears
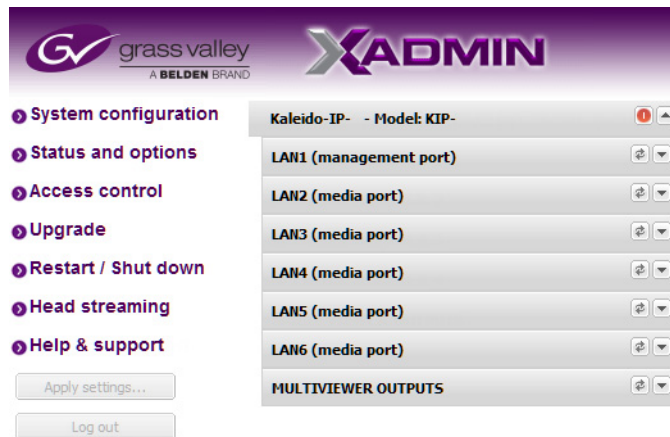
The Compatibility View mode will remain enabled for this multiviewer as long as its IP address does not change.

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4. 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 49.

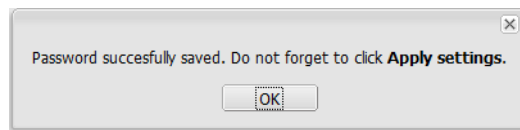2 Click **Access control**, in the navigation area on the left side of the page.

   The Access Control page appears.

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

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

4 Click **Save**.

   A confirmation message appears.
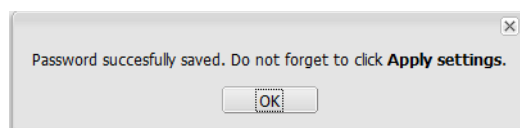
5 Click **OK** to close the message window.

   The **Apply settings** button becomes available.


6 Click **Apply settings**.

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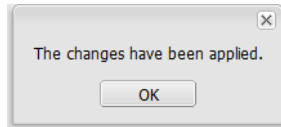
7 Click **OK**.

The Log in to XAdmin page appears. Other XAdmin sessions open against the same multiviewer are also redirected to the login page.
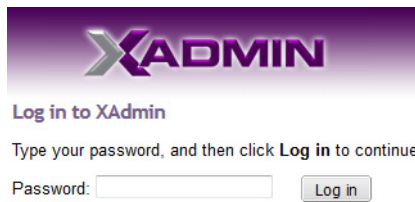
8 Type the password, and then click **Log in**.

The XAdmin *Status and Options* page appears.

9 Click **Log out**, when you are ready to close your session.
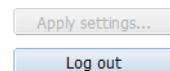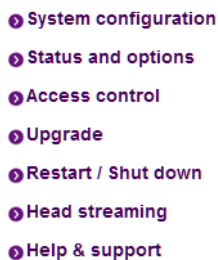
A confirmation message appears.
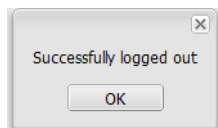
10 Click **OK**.

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

Changing the XAdmin Password

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

1 Open XAdmin. See

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.
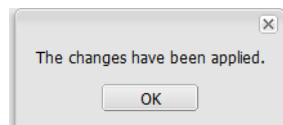
7   Click **OK**.

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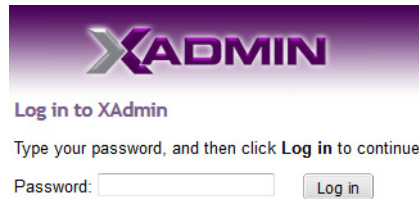
Disabling XAdmin Access Control

To disable access control in XAdmin

1 Open XAdmin. See Opening XAdmin, on page 49.

2 Click **Access control**, in the navigation area on the left side of the page.
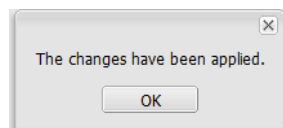
   The Access Control page appears.
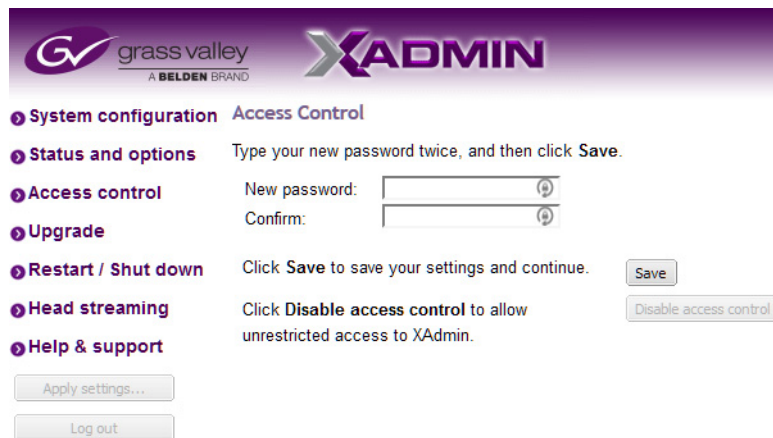
3 Click **Disable access control**.

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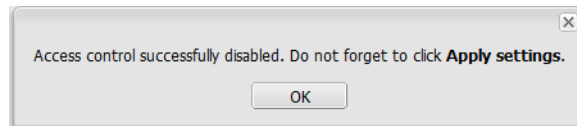
4 Click **OK** to close the message window, and then click **Apply settings**.

   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.

- ⊙ System configuration
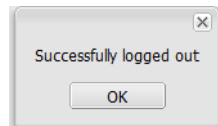- ⊙ Status and options
- ⊙ Access control
- ⊙ Upgrade
- ⊙ Restart / Shut down
- ⊙ Head streaming
- ⊙ Help & support

    Apply settings...

    Log out

A confirmation message appears.

Successfully logged out

    OK

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 49.

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

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.
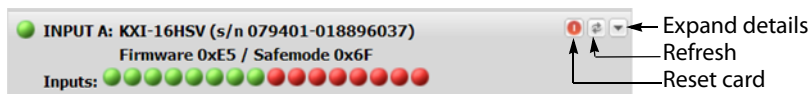
- At any time you can click the Refresh button ⟳ to make sure the data displayed for the selected module is up to date.

- 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 Related Documentation, on page 15.

Using a Kaleido-RCP2 with Default Settings

By default, the Kaleido-RCP2 is configured with DHCP enabled, so it will automatically be assigned an IP address by a DHCP server. If no DHCP server can be found, the Kaleido-RCP2 will fall back to its default static IP address, subnet mask, and gateway settings:

Default IP address	10.0.3.191
Default subnet mask	255.255.0.0
Default gateway	0.0.0.0

If you need to operate with a fixed IP address, you must use the Kaleido-RCP2's configuration menu to disable DHCP and set up the correct IP address, Network Mask, and Gateway (see the "Enabling or Disabling DHCP" and "Setting an IP Address, Subnet Mask and Gateway" sections in the *Kaleido-RCP2 Guide to Installation and Operation*, available from the Documentation Library section of Grass Valley's website).

To access Kaleido-X rooms located in other subnets, the Kaleido-RCP2 must be configured with the appropriate unicast IP addresses (see the "Configuring Unicast IP Addresses" section in the *Kaleido-RCP2 Guide to Installation and Operation*, available from the Documentation Library section of Grass Valley's website).

To start using the Kaleido-RCP2 with its default settings

1 On the Kaleido-RCP2 unit, press the ENTER button and hold it until the ESC button lights up.

   The following message appears on the LCD display:
   Configuration
   ROOM SELECTION

2 Press ENTER again to obtain the room list from the multiviewers that are currently available on the network.

   The message **ROOM Select** followed by the name of the first room available appears on the LCD display.

3 Press the **2** key (to move up in the list) or the **8** key (to move down the list) until the name of the room you wish to access is displayed.

4 Press ENTER, and then press ESC to exit the configuration menu.

5 Press the LOGIN button.

   The following message appears on the LCD display:
   LOGIN Position
   Admin

6 Press ENTER to log on to your system as *Admin*.

   A message prompting you for a password appears on the LCD display.

7 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.

8 Press any of the LAYOUT PRESETS buttons to load a predefined layout on the monitor wall.

If your system was configured prior to shipment, then a layout will appear 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."

> 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.

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 Using a Kaleido-RCP2 with Default Settings, 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 frame's USB ports. See Troubleshooting with the Kaleido-IP frame's USB ports, on page 96 for more information about this.

    a   Right-click anywhere on the monitor wall, point to **Monitor Wall** (if you clicked a monitor), and then click **Load layout** on the shortcut menu.
    A layout browser appears on the displays associated with the current room.

    b   Select the layout you want to load from the list of available layouts for this room, and then click **OK**.
    The selected layout appears on the room displays.

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

Refer to the *Kaleido Software User Manual* to learn how to customize the Kaleido-IP to suit your specific needs. See Related Documentation, on page 15.

Available Hardware and Software Options

You can purchase various Kaleido Software and hardware options to expand your multiviewer's capabilities that are not part of the basic offer. Kaleido 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 72).

Kaleido-IP X320/X120 CODEC options

Option	Part Number	Feature
HD/SD H.265 decode	KIP-OPT-DEC-HEVC-HDSD	Decode license for H265/HEVC SD/HD video CODEC. One license per Kaleido-IP.
UHD/HD/SD H.265 decode	KIP-OPT-DEC-HEVC-UHD	Decode license for H265/HEVC SD/HD and UHD video CODEC. For Kaleido-IP X320 only. One license per Kaleido-IP.
2022-6 decode	KIP-OPT-UCIP	Decode license for 2022-6 video. One license per Kaleido-IP.

The following table lists options that can be enabled by contacting Technical Support. See Grass Valley Technical Support, on page 110.

Kaleido-IP X320/X120 feature options

Option	Part Number	Feature
Remote IP streaming	KIP-OPT-STREAMING-OUT	License for remote streaming of the multiviewer outputs over IP.
Dolby Digital 5.1 decode	KIP-OPT-DEC-DD-5.1	Decode license for up to 32 Dolby Digital 5.1 (AC3) programs[i].
Dolby Digital 2.0 decode	KIP-OPT-DEC-DD-2.0	Decode license for up to 32 Dolby Digital stereo (AC3) programs[i].
AAC 5.1 decode	KIP-OPT-DEC-AAC-5.1	Decode license for up to 32 Advanced Audio Codec (AAC) 5.1 programs[i].
AAC 2.0 decode	KIP-OPT-DEC-AAC-2.0	Decode license for up to 32 Advanced Audio Codec (AAC) 2.0 programs[i].
Loudness	KIP-OPT-LOUDNESS	Loudness level measurement for all audio programs. One license per Kaleido-IP.
SCTE-35	KIP-OPT-SCTE-35	SCTE35 metadata extraction and alarming license for all programs. One license per Kaleido-IP.
TR 101 290 DVB	KIP-OPT-TS-PROBE	TR 101 290 DVB transport stream probing option for priority 1 and priority 2 indicators. One license per Kaleido-IP. Note: indicator 2.4 is not supported.

Kaleido-IP X320/X120 feature options *(continued)*

Option	Part Number	Feature
Display 90-Degree Rotation	KIP-OUT-ROTATOR	Rotation license.

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

> Note: The Kaleido-IP currently supports the streaming of both heads through the KIP-OPT-STREAMING-OUT option. It is not possible to enable or verify this option in XAdmin's *Status and Options* page, for this multiviewer model. Contact Technical Support for activation and configuration instructions (Grass Valley Technical Support, on page 110).
>
> The Kaleido-IP currently supports display rotation. It is not possible to enable or verify these options in XAdmin's *Status and Options* page, for this multiviewer model. Contact Technical Support for activation and configuration instructions (Grass Valley Technical Support, on page 110).

The following table lists hardware options that can be installed in the field. Refer to the *Supermicro SuperServer 1028U Series User's Manual for model 1028U-TR4+* for more information about how to install an option card. See Related Documentation, on page 15.

Kaleido-IP X320/X120 PCI network interface add-on card options (choose one)

Option	Part Number	To be Installed in Server PCI Expansion Slot Number	Feature
Extra 2 × GigE RJ45 ports	KIP-OPT-ETH-2B	4	Dual NIC card (1Gb/s)[i].
Extra 2 × 10/25G SFP28 ports	KIP-OPT-ETH-2S	2	Dual NIC card (1/10/25 Gbps) for SFP cartridges[i].
Extra 2 × 40/50G QSFP28 ports	KIP-OPT-ETH-2Q	4	Dual NIC card (40/50 Gb/s) for QSFP cartridges[i].

i. Adds **LAN5** and **LAN6** to the multiviewer (if not already installed). PCI network interface cards cannot be installed in both slot #2 and slot #4 at the same time; only one network interface card can be installed. The KIP-OPT-UCIP option is also required for any one of these cards to decode 2022-6 video streams (see the table Kaleido-IP X320/X120 CODEC options, on page 69).

Add-on cards must be installed in specific server card-slot locations. See Network Interface Card Installation Location in the Server, on page 71.

The following table lists the SFP cartridges that can be installed in the field.

Kaleido-IP X320/X120 SFP hardware options

Option	Part Number	Feature	Minimum supported Kaleido Software version
850 nm / 10.3 G multimode SFP transceiver	SFP-ETH10G-RT-M85	Ethernet multimode fiber Cartridge/850nm with LC/PC conn[i]	9.20
1310 nm / 10.3 G single mode SFP transceiver	SFP-ETH10G-RT-S13	Optical 10GBase Ethernet cartridge, 1310 nm, LC/PC connector[i]	9.20
40 G pluggable optical QSFP transceiver	QSFP-40G-SR4	40GBASE-SR4, 4 lanes, 850 nm MMF, 1x12 MPO receptacle[ii]	9.20
40 G pluggable optical QSFP transceiver	QSFP-40G-ESR4	40GBASE-SR4, 4 lanes, 850 nm MMF, 1x12 MPO receptacle, extended range[ii]	9.20
40 G integrated active optical cable	QSFP-CBL-1MM	1m long multi-mode fiber QSFP+ cable[ii]	9.20
40 G integrated active optical cable	QSFP-CBL-5MM	5m long multi-mode fiber QSFP+ cable[ii]	9.20

i. For use with KIP-OPT-ETH-2S
ii. For use with KIP-OPT-ETH-2Q

Network Interface Card Installation Location in the Server

Certain PCI add-on cards must be installed in a specific server PCI expansion slot according to the table Kaleido-IP X320/X120 PCI network interface add-on card options (choose one), on page 70. The location of server slots are shown below with the corresponding LAN port number designations. PCI network interface cards cannot be installed in both slot #2 and slot #4 at the same time.
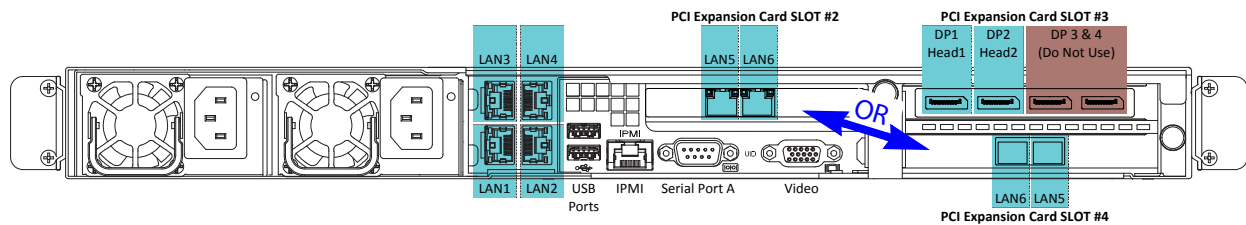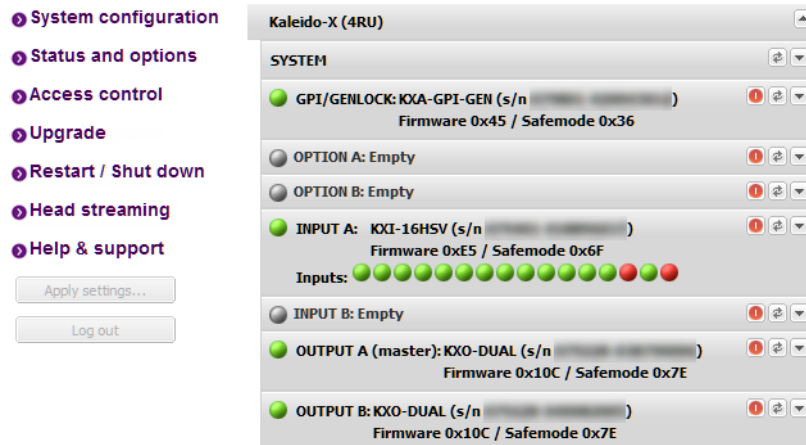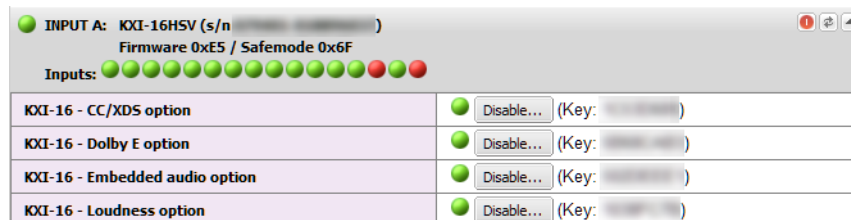
Enabling Options

To enable options on a multiviewer

1 Obtain a license key from Grass Valley.

2 Open XAdmin.

The XAdmin Status and Options page appears.

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


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

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

5 Click the **Enable** button.

A window appears prompting you for the license key.
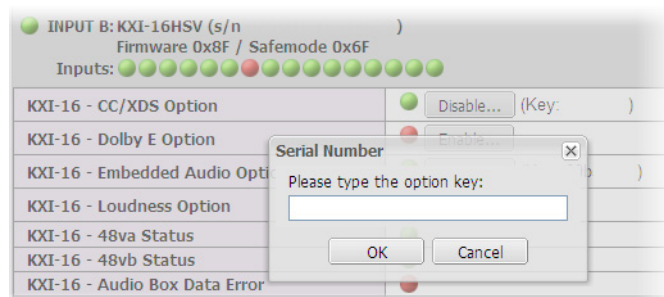
6 Enter the license key for the specific option in the box, and then click **OK**.

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

Restarting or Shutting Down the Multiviewer

The following options are available to restart or shutdown the multiviewer.
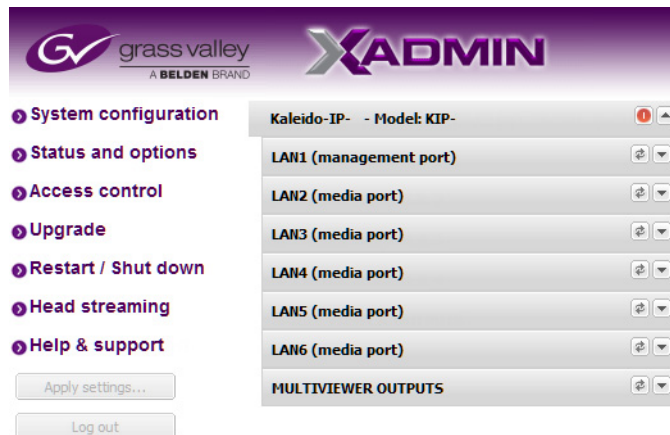
- Restarting the Monitor Wall Software
- Restarting a Kaleido-IP Multiviewer
- Shutting Down a Kaleido-IP Multiviewer

Note: The Kaleido Software does not support activating a soft shutdown from the Kaleido-IP frame'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

The XAdmin *Status and Options* page appears.

2 Click **Restart / Shut down** in the navigation area on the left side of the page.
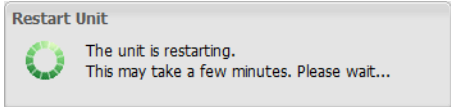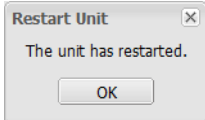
The Restart / Shut down page appears.
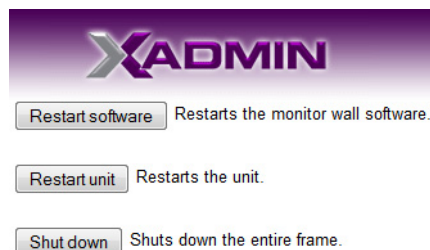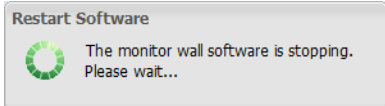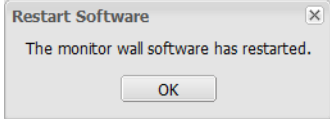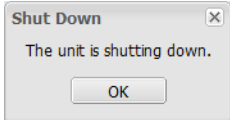
3 Click one of the following options.

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 *Status and Options* 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	Your multiviewer's operating system will shut down, and then start again. This may take a while. **Restart Software** The monitor wall software is stopping. Please wait... Once the monitor wall software has restarted, the system notifies you. **Restart Software** ✕ The monitor wall software has restarted. OK Click **OK**. The XAdmin *Status and Options* page appears.
Restart unit	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. **Restart Unit** The unit is restarting. This may take a few minutes. Please wait... Once the multiviewer has restarted, the system notifies you. **Restart Unit** ✕ The unit has restarted. OK Click **OK**. The XAdmin *Status and Options* page appears.
Shutdown	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. **Shut Down** ✕ The unit is shutting down. OK Click **OK** to continue.

# Configuring Head Streaming on a Kaleido-IP

Notes

- Kaleido-IP VM multiviewers output to a single, streaming head. In the case of a Kaleido-IP VM, disregard references to a second head, in the procedure below.

- Kaleido-IP multiviewers support head streaming, as an option. It is not possible to enable or verify options in XAdmin's *Status and Options* page, for Kaleido-IP multiviewers. Contact Technical Support for activation and configuration instructions (Grass Valley Technical Support, on page 110).

To configure head streaming

1 Obtain a license key from Grass Valley.

2 Open XAdmin. See Opening XAdmin, on page 49.

3 Click **Head streaming**, in the navigation area on the left side of the page.

The *Head Streaming Configuration* page appears.
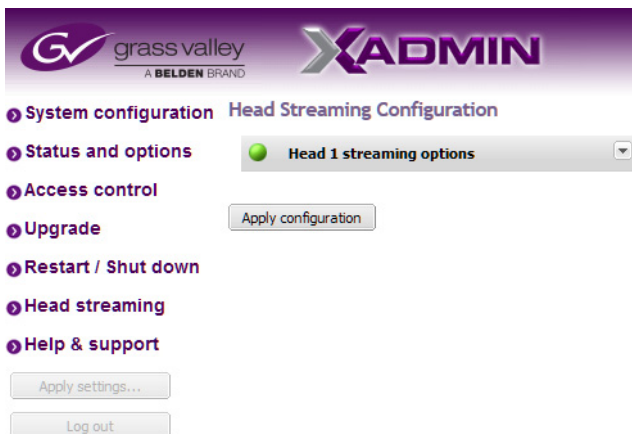
4 Expand the streaming options section for the head you want to configure.

5 Select **Enable streaming** and 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-IP multiviewer, 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.264
     XAdmin 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.

6 Click **Apply configuration**.

A message appears confirming that the configuration has been applied.

7 Click **OK** to continue.

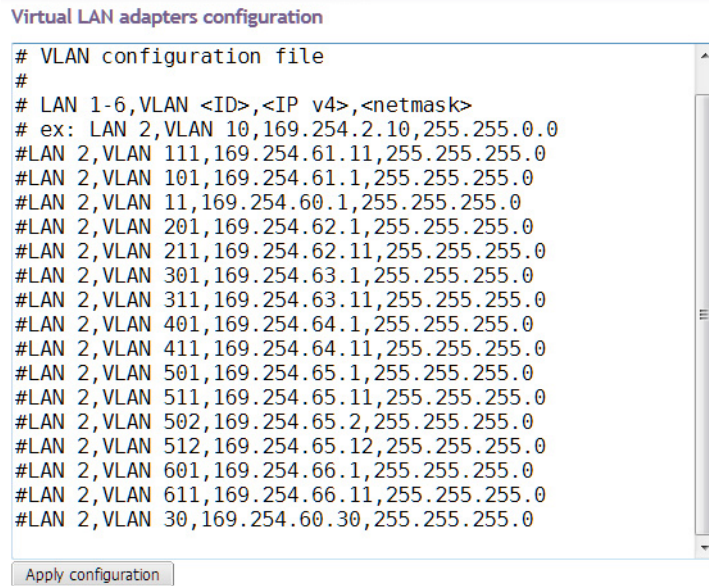# Configuring Virtual LAN Adapters on a Kaleido-IP

To add Virtual LAN adapters on a Kaleido-IP

1 Open XAdmin. See Opening XAdmin, on page 49.

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

The *System Configuration* page appears.

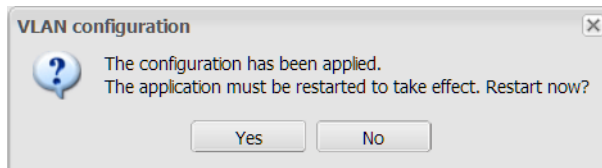3 Click **Configure**, under Virtual LAN configuration.

The "Virtual LAN adapters configuration" page appears.

Virtual LAN adapters configuration

```
# VLAN configuration file
#
# LAN 1-6,VLAN <ID>,<IP v4>,<netmask>
# ex: LAN 2,VLAN 10,169.254.2.10,255.255.0.0
#LAN 2,VLAN 111,169.254.61.11,255.255.255.0
#LAN 2,VLAN 101,169.254.61.1,255.255.255.0
#LAN 2,VLAN 11,169.254.60.1,255.255.255.0
#LAN 2,VLAN 201,169.254.62.1,255.255.255.0
#LAN 2,VLAN 211,169.254.62.11,255.255.255.0
#LAN 2,VLAN 301,169.254.63.1,255.255.255.0
#LAN 2,VLAN 311,169.254.63.11,255.255.255.0
#LAN 2,VLAN 401,169.254.64.1,255.255.255.0
#LAN 2,VLAN 411,169.254.64.11,255.255.255.0
#LAN 2,VLAN 501,169.254.65.1,255.255.255.0
#LAN 2,VLAN 511,169.254.65.11,255.255.255.0
#LAN 2,VLAN 502,169.254.65.2,255.255.255.0
#LAN 2,VLAN 512,169.254.65.12,255.255.255.0
#LAN 2,VLAN 601,169.254.66.1,255.255.255.0
#LAN 2,VLAN 611,169.254.66.11,255.255.255.0
#LAN 2,VLAN 30,169.254.60.30,255.255.255.0
```

Apply configuration

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.

VLAN configuration   ✕

? The configuration has been applied.
The application must be restarted to take effect. Restart now?

Yes   No

6 Click **Yes**.

A message appears confirming that the software has restarted.

Restart Software   ✕

The monitor wall software has restarted.

OK
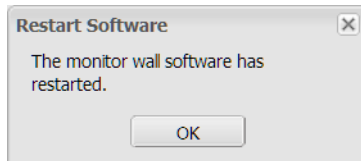
7 Click **OK** to continue.

Adding Fonts to a Kaleido-IP

To add fonts on a Kaleido-IP

1 Open XAdmin. See

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

The *System Configuration* page appears.

3 Click **Configure**, under *Font configuration*.

The "Font configuration" page appears.

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

A file chooser window appears.

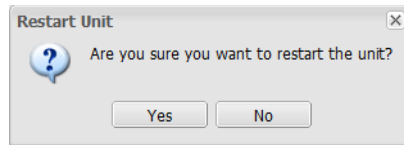5 Navigate to the font file you want to upload, select it, and then click **Open**.

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

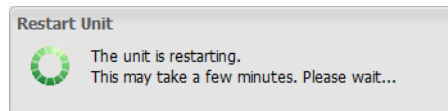A progress indicator appears momentarily, followed by a confirmation message.
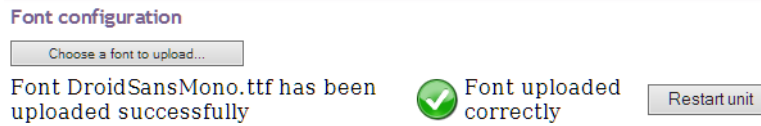
Font configuration

Choose a font to upload...

Font DroidSansMono.ttf has been
uploaded successfully

✓ Font uploaded
correctly

Restart unit

6 Click **Restart unit**.

The system prompts you to confirm.

Restart Unit   ✕

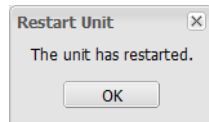? Are you sure you want to restart the unit?

Yes   No

7 Click **Yes** to proceed.

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

Restart Unit

The unit is restarting.
This may take a few minutes. Please wait...

Once the multiviewer has restarted, the system notifies you.

Restart Unit   ✕

The unit has restarted.

OK

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 83).

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.
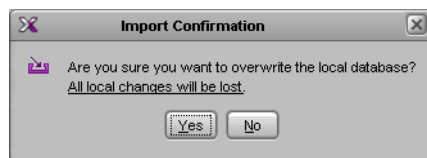
3 Click **Yes**.

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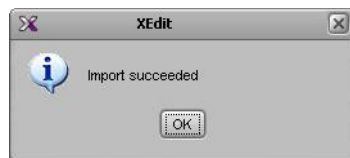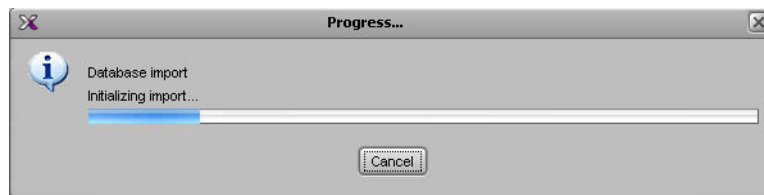
4 Click **OK**.

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.

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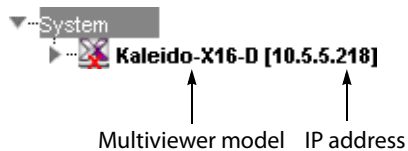
In the case of a cluster system, the System list shows cluster members in alphabetical order based on their system name, which appears first and is followed by the multiviewer model and IP address.

Maintenance & Troubleshooting

Introduction

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 frame's USB ports. See Troubleshooting with the Kaleido-IP frame's USB ports, on page 96 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.

Adding SNMP Support to Manage the Kaleido-IP Frame's Hardware

Adding SNMP support to a Kaleido-IP frame allows you to monitor the frame's health parameters such as:

- Hardware Monitoring: fan speed, temperature, voltage, chassis intrusion, redundant power failure, power consumption, disk health, and memory health.
- System Information: BIOS, baseboard, chassis, computer system, disk drives, memory, network, printer, processor, system slot, IPMI, power supply, account, operating system, process, service, share, time zone, OEM strings, and system configuration options.

SNMP Service Installation

The following procedure requires that you have WinSCP and PuTTY installed on your PC to install the SNMP service. These freeware applications allows you to transfer files to the Kaleido-IP and to make a remote terminal connection to the Kaleido-IP to carry out file system actions on the Kaleido-IP.

The following procedure installs the Super Doctor service on the Kaleido-IP frame that once installed, provides the SNMP service on the Kaleido-IP frame. Proceed as follows.

1 Register and download *Super Doctor 5* version 5.4.0 (linux version) from the following URL: https://www.supermicro.com/SwDownload/UserInfo.aspx?sw=0&cat=SD5

2 Extract the downloaded zip file.

3 Documentation is available for this service by opening *SuperDoctor5_UserGuide.pdf*

4 Copy the installer file for Super Doctor onto your Kaleido-IP:

   a Run WinSCP.

   b Connect to the Kaleido-IP's *Management Network* IP address. See Verifying the Management Port IP Address and Application Version, on page 85. Use the following credentials to connect to the Kaleido-IP frame.

      Username: **root**

      Password: **pw1234**

   c Copy *SuperDoctor5Installer_5.4.0_build.703_linux_x64_20160629131648.bin* into any directory on the Kaleido-IP's hard disk. For example, `/data`.

5 Make the installer file executable.

   a From WinSCP, launch PuTTY.

   b Make a remote terminal connection to the Kaleido-IP's console.

      Username: **root**

      Password: **pw1234**

   c In the console, execute the following command:

```
chmod +x SuperDoctor5Installer_5.4.0_build.703_linux_x64_20160629131648.bin
```

6 In the console, run the installer with the following command:

```
./SuperDoctor5Installer_5.4.0_build.703_linux_x64_20160629131648.bin -i silent
```

> Note: Running the installer without the silent mode may not always result in the installation successfully completing.

Now Super Doctor is installed in */opt/Supermicro/SuperDoctor5*.

7 Delete the installer file from the Kaleido-IP:

```
rm SuperDoctor5Installer_5.4.0_build.703_linux_x64_20160629131648.bin
```

8 You can now point your browser to *http://<KIP IP address>:8181/SuperDoctor5/login* and login with username *ADMIN* and password *ADMIN* to view the SNMP web application.

Configuration

Configure the SNMP Service as follows.

1 Using WinSCP's editor, open the file */etc/snmp/snmp.conf* in an editor. Replace the line "*pass .1.3.6.1.4.1.10876 /usr/sbin/sd_extension*" with "*pass .1.3.6.1.4.1.10876 /opt/Supermicro/SuperDoctor5/libs/native/snmpagent*".

2 Reboot the Kaleido-IP. See Restarting or Shutting Down the Multiviewer, on page 74.

Maintenance

Field-Replaceable Units

The following components are field replaceable units (FRUs). The repair procedure is to swap in a new (known good) component to restore system operation.

- Power supply (#1 or #2)
- Other FRUs may be available: contact Customer Support.

There are no user-serviceable parts within FRU components. For the procedure to replace a FRU, see *Supermicro SuperServer 1028U Series User's Manual for model 1028U-TR4+*. See Related Documentation, on page 15.

Contact Customer Support to order an FRU. See Grass Valley Technical Support, on page 110.

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 49.

The XAdmin *Status and Options* page appears.

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

The Technical Support page appears.

Click here

... or here

3 Click **system snapshot**.

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

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

Upgrading the Multiviewer

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

Pre-upgrade Checklist

IMPORTANT

Back up your system database

Before upgrading the multiviewer system, make sure you have a backup of the current system database so that you can return to the previous Kaleido Software version if necessary. Refer to *Creating a Backup* in the Kaleido Software User's Manual, for details. See Related Documentation, on page 15.

Cluster and cascade systems

All multiviewers that are part of a cluster or cascade system must have the same Kaleido Software version.

For cluster systems, Kaleido Software version 8.70 introduce a hard compatibility break with previous Kaleido Software versions.

Cluster backups you create with version 8.70 (or higher), cannot be restored by using an earlier version of XEdit. Grass Valley recommends you make a backup of the individual databases for every cluster member, *before upgrading* from a pre-8.70 version, to version 8.70 (or higher).

Upgrade Oveview

Upgrade packages are made available by contacting technical support (see Grass Valley Technical Support, on page 110). 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 Upgrading the Kaleido-IP Multiviewer on page 90.

Upgrading the Kaleido-IP Multiviewer

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.
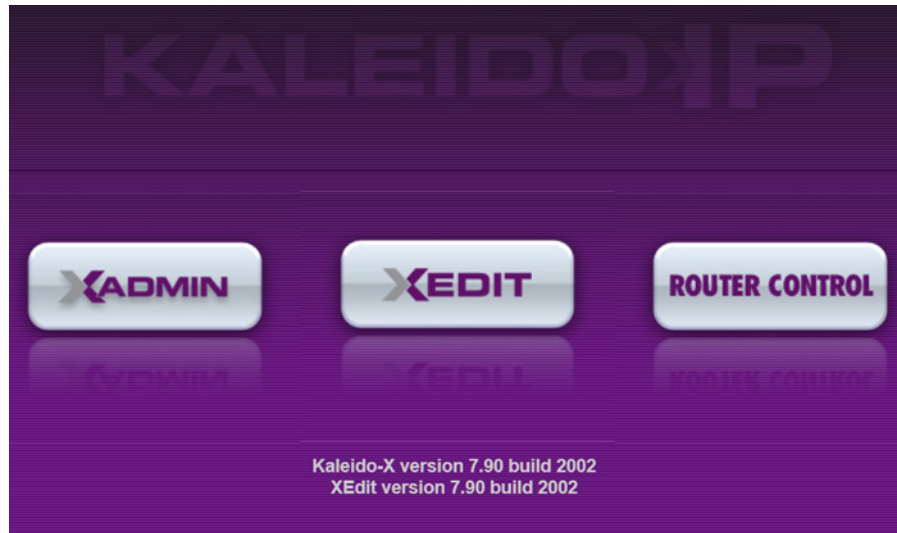
Firefox users:
If you see a security warning instead of the home page, then see Registering your Multiviewer's Security Credentials with your Browser, on page 51

---

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 60.
- 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 51.

---

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

The *Upgrade* page appears.
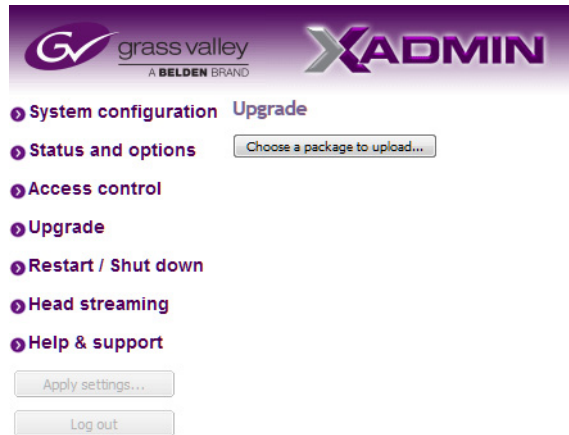
4 Click **Choose a package to upload**.

A file chooser window appears.

5 Navigate to the RUN package to install, select it, and then click **Open**.

The upgrade file should have the following format: `kaleido-ip-os-9.10_build_xxxx.run`
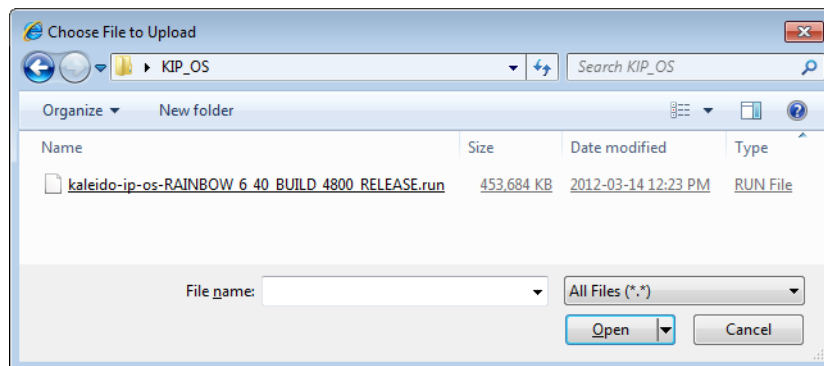
The selected file is uploaded to the Kaleido-IP. This may take a few seconds.
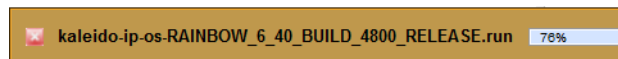
6 Once the upload has completed, click **Apply update**.

Upgrade

Choose a package to upload...

Package kaleido-ip-os-
RAINBOW_6_40_BUILD_4800_RELEASE.run has been
uploaded successfully

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 unit.

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

Upgrade

Choose a package to upload...

Package kaleido-ip-os-
RAINBOW_6_40_BUILD_4800_RELEASE.run has been
uploaded successfully
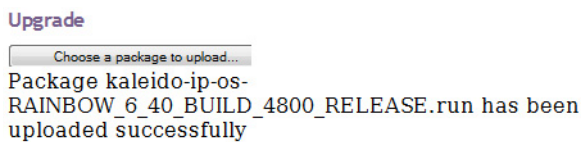
✅ Upgrade successful! Please reboot.

```
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-mkelfimage
```

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

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

8 Click **Restart unit**.

The system prompts you to confirm.

Restart Unit [×]

? Are you sure you want to restart the unit?

Yes   No

9 Click **Yes** to proceed.

Your multiviewer will shut down, and then start again, during which time you can observe messages associated with the operating system shutdown and boot sequences on the monitor wall display connected to Head 2. This may take a while.
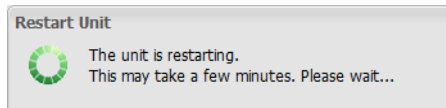
Once the multiviewer has restarted, the system notifies you.
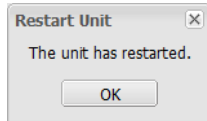
10 Click **OK**.

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).
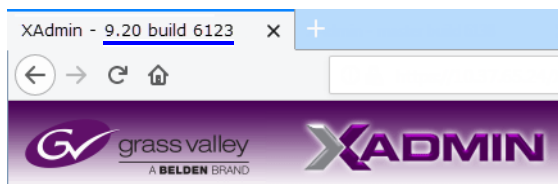
At this point, the upgrade is complete.

You can verify the new version number by displaying the dashboard on the monitor wall. See Displaying the Dashboard, on page 94.

Downgrading the Multiviewer System

> IMPORTANT
> The Kaleido-IP X320 and X120 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, Frame 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.
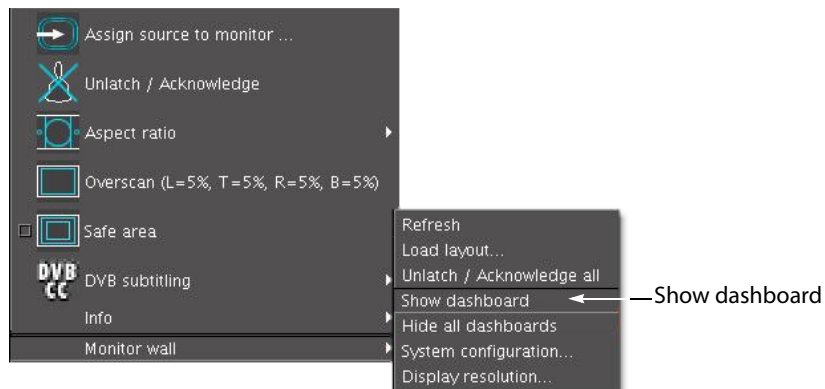
Monitor wall menu (within composite monitor menu)

> **Note:** If you right-click the monitor wall background directly, then the monitor wall menu appears immediately. Click **Show dashboard**.
>
> Refresh
> Load layout…
> Unlatch / Acknowledge all
> Show dashboard ⟵ —Show dashboard
> Hide all dashboards
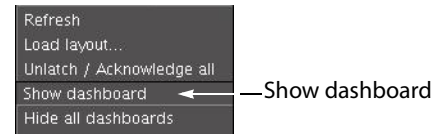
After a brief delay, the dashboard appears at the bottom-right corner of the monitor, and the command **Hide dashboard** replaces **Show dashboard** on the menu.

PSU B absent
Layout: (OUTPUT A – Head 1)
Room: **0-0-9-39\Room4** (10.0.9.39) X
Version: 4.00 build 3801

Dashboard on the monitor wall

Troubleshooting

Troubleshooting with the Kaleido-IP frame'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 frame.
- 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.

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 72. 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 69. See Grass Valley Technical Support, on page 110.
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 16. See Related Documentation, on page 15.
Display of an HDMI mosaic output is pixilated, blocked, intermittent, or blank (signal loss)	HDMI cable is too low-quality or is too long	Use a short (<6ft (1.8m)), high-quality cable with the display	Use a shorter HDMI cable, use an HDMI cable constructed with heavier conductors (for example, AWG 22 (0.34mm^2) or thicker), or both.

Should you need further assistance, see Grass Valley Technical Support, on page 110.

Swapping around a Power Supply in a Multiviewer

Schedule this maintenance operation during off hours when the system is not in use if possible as this procedure can cause multiviewer outage.

In an attempt to restore multiviewer operation and to perform fault isolation procedures, you can swap the position of a power supply around in the multiviewer frame to see if normal multiviewer operation can be restored.

If the frame has an empty power supply slot (for example, for a redundant power supply unit (PSU)), you can remove the PSU from the frame and insert it into the other power supply slot. Refer to the *Supermicro SuperServer 1028U Series User's Manual*; see Related Documentation, on page 15. Ensure to connect a power cable at the rear of the frame's chassis for the PSU's new position in the frame. To RMA a defective PSU, see Grass Valley Technical Support, on page 110.

Disposal and Recycling Information

Your Grass Valley equipment comes with at least one lithium button battery (Li-MnO$_2$) located on the main printed circuit board.
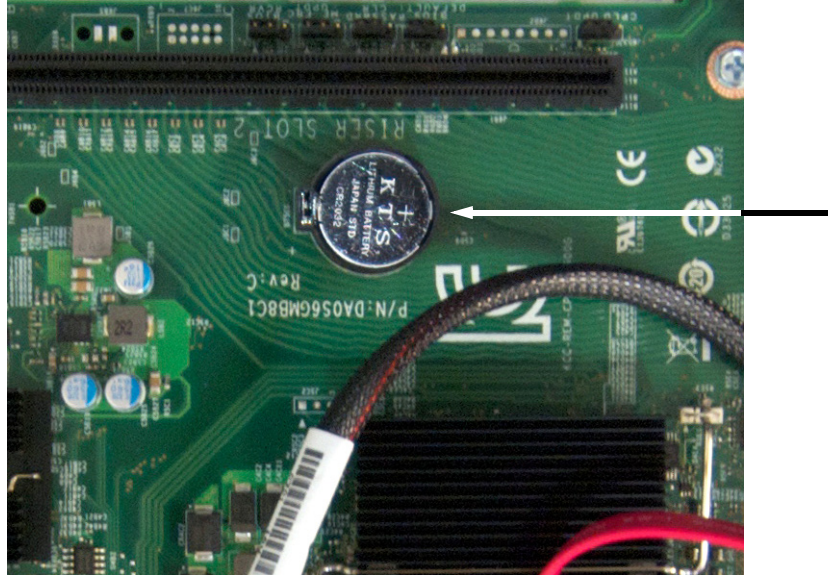
Before disposing of your Grass Valley equipment, remove the battery as follows:

1 Make sure the equipment's AC adapters are unplugged from the power outlet.

2 Remove the protective cover from your equipment.

3 Gently remove the battery from its casing using a blunt instrument for leverage such as a screwdriver if necessary.

4 Dispose of the battery and equipment according to your local environmental laws and guidelines.

IMPORTANT

Be careful not to short-circuit the batteries by adhering to the appropriate safe handling practices. Do not dispose of batteries in a fire as they may explode. Batteries may explode if damaged or overheated. Do not dispose of batteries as household waste. Do not dismantle, open or shred batteries. Keep batteries out of the reach of children.

The electrolyte of the batteries contains 1,2-dimethoxyethane (DME) (CAS 110-71-4, EINECS 203-794-9) above 0.1% by weight. DME is listed as a Substance of Very High Concern (SVHC) by the regulation (EC) No 1907/2006 of the European Parliament and of the Council. It is classified as a reprotoxic of category 2 in the European Union. Accordingly, exposure to DME may impair fertility and may cause harm to the unborn child. DME is also classified as harmful by inhalation.

Risk of exposure occurs only if the battery is mechanically or electrically abused. The most likely risk is acute exposure when a cell vents. In the event of a battery leak, do not allow battery liquid to come in contact with skin or eyes. Seek medical help immediately in case of ingestion, inhalation, skin or eye contact, or suspected exposure to the contents of an opened battery.

For more information about recycling, contact Grass Valley.

Specifications

Kaleido-IP Inputs

IP Inputs

Kaleido-IP physical	1 × Gigabit Ethernet with RJ-45 connector (Management Port)
	3 × Gigabit Ethernet with RJ-45 connector (Media Ports)
	One of the following: • 2 × Gigabit Ethernet with RJ-45 connectors or • 2 × Gigabit Ethernet with SFP28 connectors or • 2 × Gigabit Ethernet with QSFP28 connectors. See Kaleido-IP X320/X120 PCI network interface add-on card options (choose one), on page 70 and Kaleido-IP X320/X120 SFP hardware options, on page 71.

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)

Kaleido-IP Display Outputs

The Kaleido-IP supports two independently configurable and operable progressive scan display outputs.

Connectors	HDMI or DisplayPort
Standard	DisplayPort 1.2 HDMI 1.4
Resolution	Up to 1920 × 1200 @ 60 Hz (all progressive scan)[a]

a. The output will be upgradable in the future to 4K UHD.

The following table lists some (but not all) output formats supported at the DisplayPort connections.

Kaleido-IP HDMI output formats

Resolution	Format name	Refresh rates (Hz)
1600 × 1200	UXGA	50, 59.94
1920 × 1080	HDTV	50, 59.94
1920 × 1200	WUXGA	50, 59.94

You can customize your own timing rates for resolutions ranging from 1280 × 1024 pixels up to 1920 × 1200 pixels (all progressive scan), by using XEdit.

> **Note:** After configuring custom resolutions in XEdit, you must restart the Kaleido-IP for the new resolutions to become effective.

Decoding Capacity

Numbers represent the maximum video decoding capacity when only this format is used and head streaming is disabled. Actual performance may vary according to the content's complexity. This table and accompanying notes should only be used as general guidelines. The absolute maximum video decoding capacity is 128 streams under all conditions. Audio decoding capacity is limited only by processor usage.

- If one head streaming is enabled, decoding capacity is reduced by 4%. If two head streaming is enabled, decoding capacity is reduced by 8%.
- Halving the bit rate increases the decoding capacity by approximately 33%. Doubling the bit rate decreases the decoding capacity by approximately 25%.
- Using H.265 with Main profile instead of Main10 increases the decoding capacity by approximately 25%.
- Using 4:2:2 instead of 4:2:0 will decrease the decoding capacity. Benchmark results are not available for 4:2:2.

Video Codec Decoding Capacity

Codec → Model ↓	MPEG-2		H.264		H.265				
	SD Main, 8 Mb/s	HD Main, 20 Mb/s	SD High, 2 Mb/s	HD High, 10 MB/s	SD Main10, 2 Mb/s	HD Main10, 5 Mbps	1080p50/59 Main10, 5 Mbps	4K Main10, 25 Mb/s Main Tier	4K Main10, 125 Mb/s High Tier
X120	128[a]	45	84	18	64	16	10	2	1
X320	128[a]	90	128[a]	36	128	32	20	4	3

a. 128 maximum stream limit reached before machine limit.

Codec →	2022-6		
Model ↓	SD	HD	3G 1080p50/59
X120	32[a]	32[a]	16[a]
X320	32[a]	32[a]	16[a]

a. Preliminary. Contact Grass Valley for more information.

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]	MPEG-TS[d]	RTSP	RTSP Elementary stream	Elementary stream	SMPTE ST 2022-6
Video codec — H.265 (HEVC)		Optional[e]	Optional[e]	Optional[e]			
Video codec — H.264 (AVC)[f]	●	●	●	●	●	●	
Video codec — MPEG-4[g]					●	●	
Video codec — MPEG-2[h]		●	●	●			
2022-6 audio & video							Optional[i]
Audio codec[j] — AAC[k] LATM		Optional	Optional	Optional			
Audio codec[j] — AAC[k]	Optional	Optional	Optional	Optional	Optional		
Audio codec[j] — AC-3 (Dolby Digital)		Optional	Optional	Optional	Optional		
Audio codec[j] — E-AC-3 (Dolby Digital+)		Optional	Optional	Optional			
Audio codec[j] — MPEG-1 Layer 2		●	●	●	●		
Audio codec[j] — 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. One license is required to decode uncompressed audio & video streams. Also requires an optional high bit rate network card.
j. Up to 48kHz. Some limitations apply when the sample rate is different than 48kHz.
k. LC-AAC, HE-AAC (SBR) & HE-AACv2 (SBR+PS)

Notes

- The Kaleido-IP 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 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.

Kaleido-IP Frame

Height	43 mm (1.7 in), 1 RU
Width	437 mm (17.2 in)
Depth	710 mm (28 in)
Weight	12.7 kg (28 lbs)
Power supply	750 W (1+1) hot-swappable, redundant power supply 110VAC: 10 Amp 240VAC: 4 Amp
Nominal power Kaleido-IP X320 Frame	325 W
Nominal power Kaleido-IP X120 Frame	250 W
AC	100-240 V, 60-50 Hz
Operating temperature	10-35 °C (50-95 °F)
Max. storage humidity	90% RH non-condensing
Max. functional humidity	65% RH non-condensing

Operation and Configuration

On-screen control	Kaleido-RCP2 (optional)
Source and layout configuration	XEdit
Alarms management	iControl (optional)

Display Output Extender via Fiber Optic

Device	DXF-200 (optional)
Distance	<1 km (3280 ft)
Fiber optic cable	Multi-mode 50 or 62.5/125 SC
Connector	SC

Remote Output via IP Streaming

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

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 Trinix-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 110).

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	Device/System
Image Video	TSI-1000 Tally System Interface (requires option from Image Video)
TSL	UMD Controller (TCP/IP or UDP/IP) *IP Limitation:* only one screen index can be received per unicast port.

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

Contact Us

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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