Matrox ConductIP

Installation and User Guide

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(Go to our *website* for the latest version)

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CHAPTER 1

Introduction

This chapter includes the following topics:

About Matrox ConductIP

Transitioning your equipment installation to IP does not have to be expensive or complicated. With Matrox® ConductIP, you can monitor and manage AMWA NMOS-enabled SMPTE ST 2110 or IPMX-ready devices and signals. ConductIP uses NMOS IS-04 for device discovery and registration, NMOS IS-05 for connection management, and NMOS IS-09 for system-wide parameter management and configuration.

ConductIP is available as a web server-based application packaged in a small form factor appliance. It gives you a real-time, comprehensive view of all media connections on your IP network while allowing you to organize devices based on your unique setup. Designed to simplify content distribution in AV networks of any size, ConductIP enables you to manage video, audio, and ancillary data streams, whether they come from native IP devices or are converted from your existing broadcast and Pro AV equipment.

For more information about Matrox ConductIP, go to our *website*.

Matrox ConductIP terminology

This section provides short definitions of some of the terms commonly used in this documentation and in the ConductIP user interface. Whenever possible, our terminology attempts to be consistent with the official NMOS (Networked Media Open Specifications) terminology:

- **Devices:** These are physical devices on the network that are NMOS compliant, can be seen by ConductIP, and whose video/audio/ancillary data can be routed in the ConductIP user interface (e.g. Matrox ConvertIP devices).

  In ConductIP, devices are shown as rectangles (

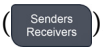
).

- **Groups:** These are groups of senders or receivers. A natural group, as defined by NMOS, includes all three types of streams (audio/video/ancillary data).

  In ConductIP, groups are shown as rectangles with rounded corners (

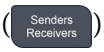
).

- **Senders (Tx):** A sender is an NMOS resource that transmits a single video, audio, or ancillary data stream to a receiver. For ConductIP, the term may also indicate a device or a group that contains several senders. In the Matrox ConductIP user interface and documentation, the abbreviation “Tx” may be used, depending on the context.

  In ConductIP, senders are shown as rectangles with two rounded corners (

).

- **Receivers (Rx):** A receiver is an NMOS resource that receives a single video, audio, or ancillary data stream from a sender. For ConductIP, the term may also indicate a device or a group that contains several receivers. In the Matrox ConductIP user interface and documentation, the abbreviation “Rx” may be used depending on the context.

  In ConductIP, receivers are shown as rectangles with two rounded corners (

).

- **Streams/flows:** Streams or flows are audio/video/ancillary data that pass from senders to receivers. In the Matrox ConductIP documentation, either term may be used depending on the topic's context.
- **Rooms:** A ConductIP Administrator or Super operator creates rooms for operators. A room contains the groups, and optionally devices as well, that ConductIP users are allowed to route.
- **Panels:** These are where you connect the flows between senders and receivers.

Matrox ConductIP roles

There are three different types of ConductIP users:

Administrators: As a ConductIP Administrator, you have full rights and permissions over all aspects of the ConductIP.

Super operators: As a Super operator, you have the same rights that an Administrator has regarding Room and Panel management, but you do not have access to advanced configuration options such as registry or certificate configuration, user management, licensing, updating, etc.

Operators: As an operator, you can see the Rooms and Panels that are assigned to you, and make the required sender/receiver connections in the Panels page.

Matrox ConductIP user documentation

The Matrox ConductIP user documentation consists of the following:

Matrox ConductIP Device Setup sheet: This is a printed quick start sheet included with your ConductIP MRA (Media Routing Appliance). It describes the hardware connections and basic setup required to create an Administrator account and get you logged in to the ConductIP. This document is also available on our *website*.

Matrox ConductIP Installation and User Guide: This is the main documentation for the ConductIP and is accessible from the ConductIP user interface at any time. Please note that the version of the user guide included with the ConductIP software is only current at the time of the official release. The most up-to-date version of the user guide can always be found on our *website.*

Tooltips: In addition to the traditional documentation, the ConductIP user interface includes tooltips that provide immediate contextual information on various commands and settings. Mouse over most buttons in ConductIP for a short description of their function.

Guided user interface tours: The ConductIP user interface features guided tours, which offer a step-by-step overview of the key areas you will frequently use. These tours are particularly valuable for users who are new to the interface.

Supported web browsers

Matrox ConductIP currently supports Microsoft Edge, Google Chrome, and Mozilla Firefox (on Windows and macOS).

Other web browsers may work but have not been fully validated by Matrox Video.

About the Matrox Unified Utility

The Matrox Unified Utility is a free application that simplifies the deployment and management of Matrox Video devices on IP networks. The utility reduces setup time and improves efficiency by streamlining key deployment tasks. For more, refer to the Matrox Unified Utility User Guide on the Matrox Video *website*.

About the Matrox ConductIP Media Routing Appliance

The Matrox ConductIP MRA (Media Routing Appliance) is a small form factor appliance that you connect to your network and then log in to using your web browser. If needed, you can also connect to it locally using a keyboard, mouse, and monitor for troubleshooting or debugging purposes (see *Logging in locally to the ConductIP MRA*).

Where to find more information

Matrox ConductIP MRA Device Setup: The setup sheet that is included in the box with your ConductIP MRA device provides all the information needed to get started with connecting it to your network and setting it up. The setup sheet is also available on the Matrox Video *website*.

Rackmount kit: If you want to secure the Matrox ConductIP MRA to a rack, please contact Matrox Video technical support for more information.

CHAPTER 2

Getting Started with Matrox ConductIP

This chapter includes the following topics:

Initial setup overview

The following list is an overview of the tasks you'll need to perform to get started with Matrox ConductIP. When needed, links to other topics are provided for more information.

Although this list is shown as a series of steps, you do not necessarily need to do all these tasks in the order described. For example, you could update your ConductIP before updating the security certificate and it would not impact your setup process. With other tasks, the order matters; such as connecting your hardware before logging in to the ConductIP software.

NOTE The ConductIP user interface features guided tours, which offer a step-by-step overview of the key areas you will frequently use. These tours are particularly valuable for users who are new to the interface.

To get started with Matrox ConductIP:

Step 1. **Verify your network:** Make sure your NMOS devices (such as your Matrox ConvertIP devices) are connected to your network.

Step 2. **Connect the Matrox ConductIP MRA to your network:** Matrox ConductIP is installed on a small form factor Media Routing Appliance (the ConductIP MRA) that you must connect to your network. When it is connected to your network, you can log in to it from your web browser, or you can physically connect to it using a monitor, keyboard, and mouse.

More info: This process is described in the *Matrox ConductIP MRA Device Setup* sheet that is included in the box with your device. You can also download it from the Matrox Video *website*.

Step 3. **Create an Administrator account:** When ConductIP is connected to your network, it will boot in DHCP and broadcast in mDNS, so you can connect to it from your web browser by typing *https://conductip* in the address bar or by typing the IP address (e.g. *https://192.168.12.345*). When you first log in to ConductIP, you will need to create the initial Administrator account.

More info: This process is described in the *Matrox ConductIP MRA Device Setup* sheet that is included in the box with your device (also available on the Matrox Video *website*).

Step 4. **Verify your date and time settings:** If you have not already done so in the basic setup when connected locally to the ConductIP MRA, you must verify the date and time settings now. Specify whether ConductIP uses an NTP time server (recommended), or set the time and date manually. If your date and time settings are not correct, you will not be able to activate your trial or full license.

More info: System

Step 5. **Review network and security best practices:** There are several best practices you should follow when setting up your ConductIP.

More info: Configuring your network and security

Step 6. **Activate your license:** Whether you already have a full license for ConductIP or want to activate the trial license, you will need to activate the license in ConductIP to begin using the software.

More info: Activating your ConductIP license

Step 7. **Update security certificate:** When you log in to ConductIP, you typically receive a warning that the security certificate is not valid. You can ignore this warning each time you log in, but it is better to update your computer certificate store to verify the ConductIP user interface and remove the warning.

More info: Managing ConductIP certificates

Step 8. **Specify your NMOS registry:** You need to specify which NMOS registry server ConductIP will use, as well as any redundancy servers if applicable. You can use ConductIP's internal registry server, or you may already have one available.

More info: Connecting to an NMOS registry server

Step 9. **Update Matrox ConductIP:** There may be a more recent firmware version available for your ConductIP from the Matrox Video website. It is recommended to always use the latest version. Ignore this step if you already have the latest version of ConductIP.

More info: Updating Matrox ConductIP

Step 10. **Confirm that your devices appear:** Whenever you log in to ConductIP, the available NMOS devices on your network will automatically appear in the device bin. If no devices appear, there may be a network issue that is interfering with ConductIP's scanning.

Step 11. **Create users:** As an Administrator, you will need to create user accounts for the ConductIP. You can create other Administrators, Super operators, and Operators. Each user type has specific permissions.

More info:

- *Matrox ConductIP roles*
- *Creating user accounts*
- *Creating user groups*

Step 12. **Create and configure your Rooms:** By default, a single Room is created for you when you first start with ConductIP. At minimum, you will need to rename and configure that room for your specific workflow. Depending on your needs, you may need to create more rooms for your users.

More info:

- *About the Matrox ConductIP User Interface*
- *Creating rooms*
- *Adding groups and devices to rooms*
- *Assigning users and user groups to rooms*

Step 13. **(Optional) Create your Panels:** The Panels page is where you make the connections between devices and set up your streaming workflow. This step is optional because ConductIP automatically creates a panel every time you cre-

ate a room. However, you can create other panels when needed or change the names of your panels to customize your workspace.

More info:

- *About the Matrox ConductIP User Interface*
- *Creating panels*
- *Connecting senders and receivers*
- *Creating connection presets*

Step 14. **Export your database:** After you have configured your ConductIP, it is highly recommended that you export your database (i.e. back it up) so that you can easily re-configure your settings in the event an unexpected issue occurs. This can also help you configure other ConductIP setups if they are similar.

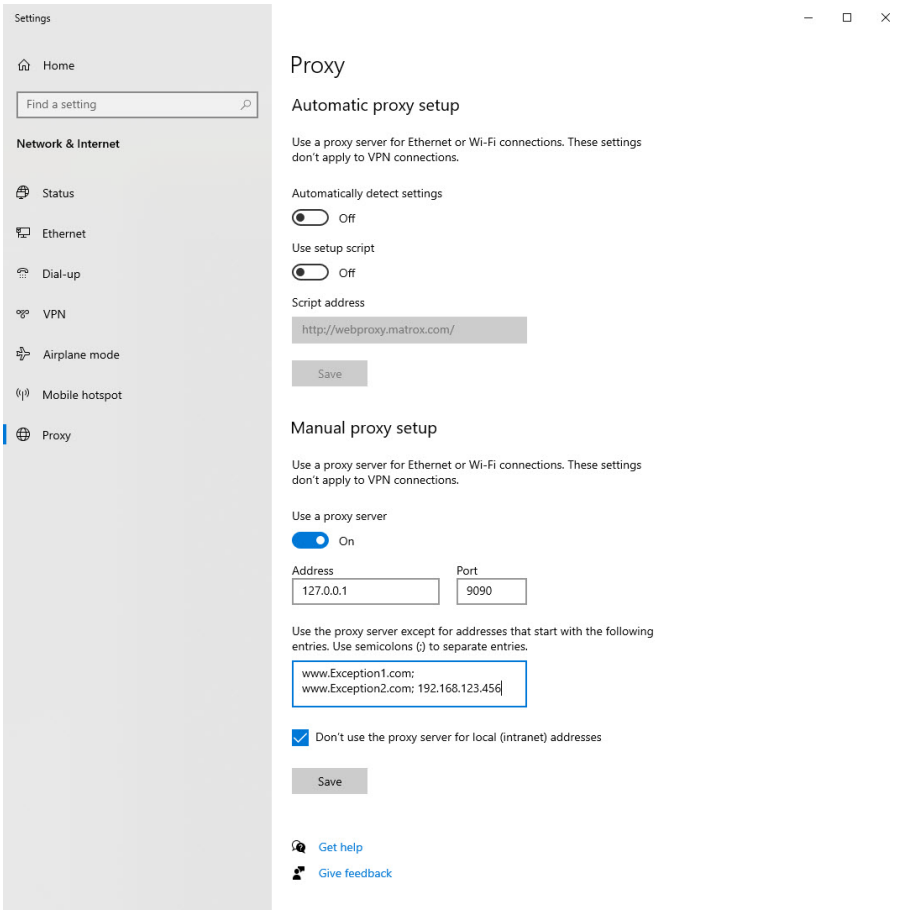
More info: Application

Result of this task: You are ready to use ConductIP. Any remaining tasks, such as customizing your workspace, can be done at your convenience.

Configuring your network and security

When you connect ConductIP to your network, it is recommended to follow these best practices to maintain optimal security:

- Make sure the ConductIP MRA is in a secure area that cannot be easily accessed by unauthorized personnel.
- If possible, install and use your own security certificate instead of the standard ConductIP certificate.
- Protect the ConductIP MRA BIOS with a secure password.
- If you want to use DNS-SD to detect the ConductIP registry, it must be added to the table of the DNS-SD server. The table entry must expose the service name "_nmos-register._tcp".
- If you are connecting via a proxy server, configure the Windows Proxy settings as follows (it is recommended to consult your network administrator for this step):



  - Turn off **Automatically detect settings**.
  - Turn on **Use a proxy server**.
  - Enter your company's proxy address and port.
  - Enter your list of exceptions, such as your company's website, IP subnet, etc.
  - Select **Don't use the proxy server for local (intranet) addresses**.

Finding Matrox ConductIP on your network

When Matrox ConductIP is connected to your network, it will boot up in DHCP mode and broadcast itself in mDNS (multicast DNS). This means that you can connect to it from your web browser by typing *https://conductip* in the address bar, or by typing the IP address (e.g. *https://192.168.12.345*). The mDNS capability ensures that the domain name is recognized.

If the mDNS address system does not work (e.g. if your computer does not have *Bonjour* or *Avahi* installed), you can always use the IP address to connect to ConductIP.

You can find the IP address as follows:

- **Connect an HDMI monitor:** If an HDMI monitor is connected to the ConductIP hardware when you turn it on, the IP address will be displayed on the monitor. This is the simplest way to find the IP address if you have a monitor available and have access to the ConductIP MRA.
- **Use Matrox ConvertIP Manager:** The *Matrox ConvertIP Manager* utility that is offered with the Matrox ConvertIP devices allows you to find any ConvertIP device on the network, as well as the ConductIP MRA if it is on the same subnet.
- **Use Matrox Unified Utility:** The *Matrox Unified Utility* application allows you to find a ConductIP MRA on your network.

When you know the IP address of your ConductIP, you can bookmark it in your web browser for easier and quicker access.

Logging in to Matrox ConductIP

You can log in to ConductIP remotely from your web browser, or locally using a keyboard, mouse, and monitor connected to the ConductIP MRA.

Logging in to ConductIP remotely

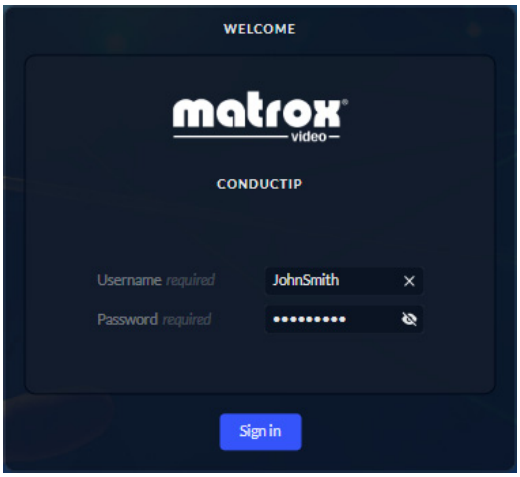
To access the ConductIP user interface from a web browser:

Step 1. Open your web browser (Google Chrome is recommended).

Step 2. Do one of the following:

- Go to *https://conductip*. If your computer is set up to use mDNS, this will take you to the ConductIP login page.
- Go to the IP address of your ConductIP MRA (e.g. *https://192.168.12.345*). If you don't know the IP address, see *Finding Matrox ConductIP on your network*.

Step 3. Log in to the ConductIP with your username and password.



More info: If this is the first time you are logging in to this ConductIP, you will instead be prompted to create an Administrator account so you can continue with initial setup. This process is described in the *Matrox ConductIP MRA Setup* sheet included with your ConductIP MRA, or you can download the setup sheet from our *website*.

More info: When you log in for the first time, ConductIP will guide you through its basic features to help you get started. You can watch the tour later or revisit it if needed (see *Guided tours*).

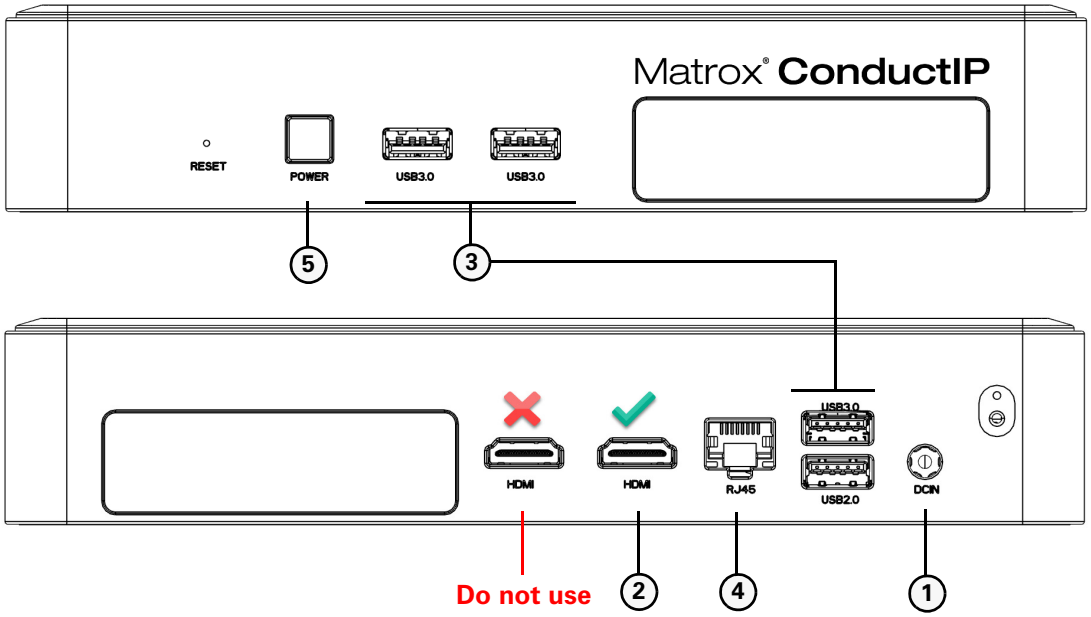
Result of this task: You are logged in to the ConductIP and you should see your Rooms and available devices.

Logging in locally to the ConductIP MRA

You can log in to the ConductIP MRA by connecting a monitor, keyboard, and mouse to the device and booting it up. Logging in locally is typically used for the following:

- Creating the Administrator account as part of the initial setup process. Although this is usually done by remote login, you have the option of doing it by logging in locally. For more information on this, see the *Matrox ConductIP MRA Setup* sheet included with your device, or download it from our *website.*
- Accessing the **Recovery Tools** for troubleshooting or technical support purposes.
- Finding the IP address of the ConductIP MRA. When the log in page appears, the IP address is shown on the bottom left of the screen.

To log in to the ConductIP MRA:



Step 1. Connect your power cable to the ConductIP MRA.

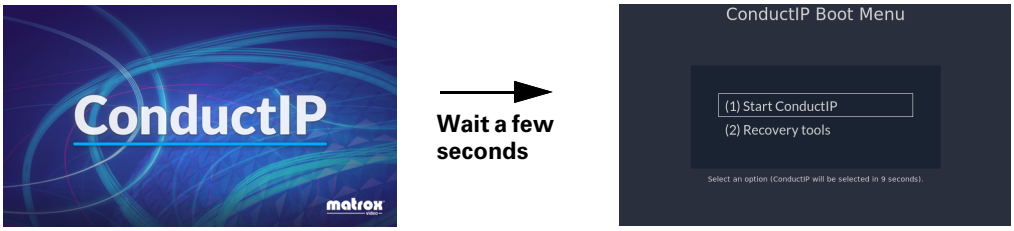
Step 2. Connect an HDMI monitor to the HDMI port.

Step 3. Connect a keyboard and mouse to any of the USB ports.

Step 4. Connect the ConductIP MRA to your network using an ethernet cable.

Step 5. Press the power button on the front of the ConductIP MRA to turn it on.

When the ConductIP boots up you will see the initial splash screen. After a few seconds the **ConductIP Boot Menu** will appear.



Step 6. Select **ConductIP** to access the ConductIP user interface.

More info: **Recovery Tools** are intended for technical support purposes only. For more information, see *Using the Matrox ConductIP recovery application*.

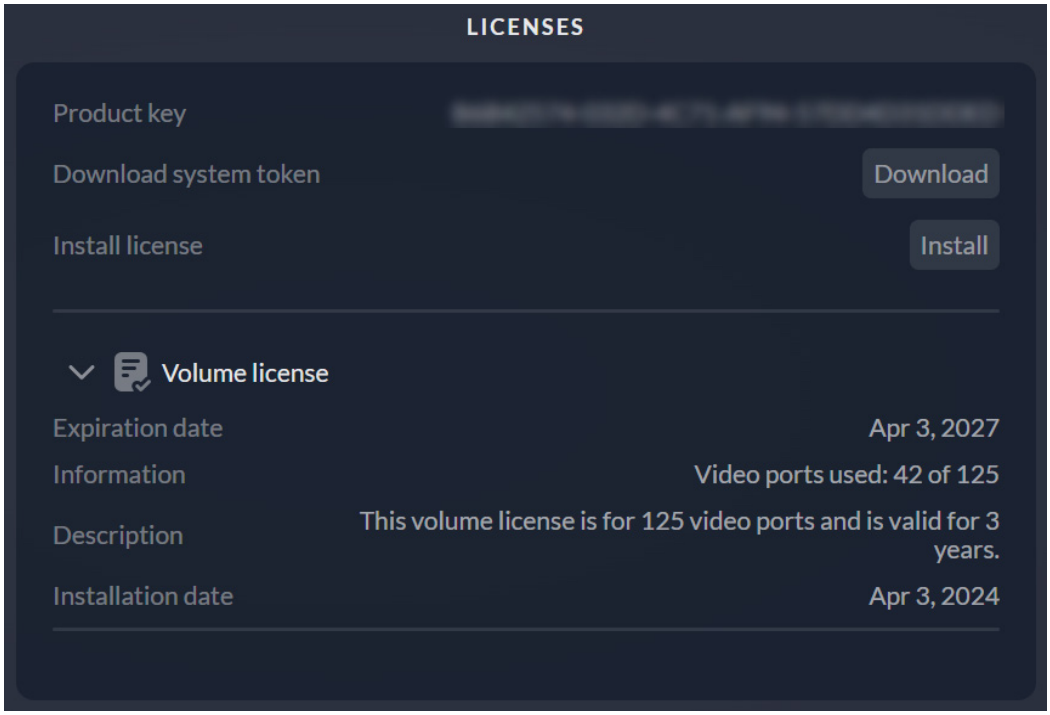
Step 7. Enter the user credentials to start a ConductIP session.

Result of this task: You are logged in to the ConductIP locally on the MRA.

Activating your ConductIP license

Activating your Matrox ConductIP license requires that you download a system token from the ConductIP **Licenses** page, and use that token to get a license file (*.lic*) from the Matrox Video website. A brief tutorial demonstrating ConductIP license installation is available on our *website*.

Step 1. Go to (xx) **> Settings > Application > Licenses**.



Step 2. Click **Download** and save the file to your computer.

More info: Contact your Matrox Video reseller and specify the number of video ports and number of years you require for your license. Your reseller will use your system token to obtain the corresponding license file (*.lic*) you'll need to activate your license in ConductIP.

Step 3. When you have your license file, go to (xx) **> Settings > Application > Licenses**, click **Install**, then select the license file you received.

Step 4. Click **OK** to install the new license.

Result of this task: Your Matrox ConductIP license has been activated.

Connecting to an NMOS registry server

Matrox ConductIP has an internal NMOS registry server that is enabled by default, but you can choose to use any NMOS registry server available on your network. For more information on the settings described in this section, go to *NMOS and discovery*.

Configuring the ConductIP NMOS registry

If you want to use the ConductIP internal NMOS registry, you must configure the following settings. For more information on any of these settings, see *NMOS and discovery*.

To configure the ConductIP NMOS registry:

Step 1. Go to (xx) **> Settings > NMOS and discovery > Internal registry configuration.**

Step 2. Enable the **Matrox ConductIP registry**.

More info: If you disable the ConductIP registry, the remaining settings on this page will become unavailable.

Step 3. Make sure **mDNS advertisement** is enabled.

Step 4. Select the **Protocol** for the ConductIP registry (http or https).

More info: If you select https, you may need to configure your server certificates accordingly (see *Managing ConductIP certificates*).

Step 5. Select the **Priority** for the ConductIP registry.

More info: If you have several NMOS registry servers on your network (e.g. for redundancy), specify what priority you want the ConductIP NMOS registry to have relative to the other servers.

Step 6. Select the **Expiry interval** for the ConductIP registry.

Step 7. Click **Save**.

Result of this task: The ConductIP NMOS registry has been configured.

When done, remember: Make sure **Internal** is selected in (xx) **> Settings > NMOS and discovery > Registry selection** or the ConductIP NMOS registry will not work even if you enabled it above (see *Selecting an NMOS registry*).

Selecting an NMOS registry

Whether you want to use the ConductIP NMOS registry or any other NMOS registry, you must specify which registry you want ConductIP to use. For more information on any of these settings, see *NMOS and discovery*.

To select an NMOS registry:

Step 1. Go to (xx) **> Settings** > **NMOS and discovery** > **Registry selection**.

Step 2. Select one of the registry selection modes:

- **Internal:** Uses the internal ConductIP NMOS registry. You will need to configure the settings described in *Configuring the ConductIP NMOS registry*. This option is only available when the Matrox ConductIP registry is enabled.
- **Manual:** Uses a specific NMOS registry on your network. You will need to configure the corresponding settings. For more information on the settings, see *NMOS and discovery*.
- **Automatic:** Allows ConductIP to automatically select from available NMOS registries on the network. You will need to enter your search domain name. NMOS registries with DNS-SD advertisement will be prioritized before mDNS advertisement, with advertised priority (such as what you would select for the ConductIP NMOS registry) coming after that.

Step 3. Click **Save**.

Result of this task: You have selected the NMOS registry that ConductIP will use.

When done, remember: If an NMOS registry uses the https protocol, you may need to configure your server certificates accordingly (see *Managing ConductIP certificates*).

Managing ConductIP certificates

The Matrox ConductIP has a self-signed root certificate (root CA) that you can use to verify the secure connection between the ConductIP user interface and your client machine. If you don't want to use the default certificate, you have the option to specify a different one.

Downloading the root certificate

When you first log in to the ConductIP user interface, your browser will not recognize the ConductIP root certificate and display a security warning. You will need to accept the warning to continue. By downloading the root certificate and installing it in your browser, that security warning will no longer be displayed, as you have designated the ConductIP as a trusted secure connection.

For more information on any of these settings, go to *Security*.

To download the root certificate:

Step 1. Log in to ConductIP (see *Logging in to Matrox ConductIP*).

Step 2. Go to (xx) **> Settings > Security > Server certificate**.

Step 3. Click **Download** and save the file to your computer.

Step 4. Install the root certificate in your web browser.

Step 5. Close your web browser.

More info: To use the root certificate in Mozilla Firefox, you must either enable Firefox to use the certificate in the Windows trusted store (type about:config in the URL and search for security.entreprise_roots.enabled) or install the certificate manually in the Firefox settings (Settings > Privacy & security > Certificates > View certificates > Import).

Step 6. Re-open your web browser and log in to the ConductIP user interface.

Result of this task: The security warning is not displayed when you log in to ConductIP.

Specifying a different certificate

If you don't want to use the ConductIP root certificate, you can upload a different one that ConductIP will use.

For more information on any of these settings, go to *Security*.

To install a server certificate:

Step 1. Log in to ConductIP (see *Logging in to Matrox ConductIP*).

Step 2. Go to (xx) **> Settings > Security > Server certificate**.

Step 3. Click **Install** and follow the on-screen instructions.

More info: If your certificate includes an embedded private key, ConductIP will detect it and you can skip that step.

Step 4. After you have uploaded the certificate and the ConductIP has rebooted, click **Download** to use the certificate (see *Downloading the root certificate*).

Result of this task: ConductIP is now using your installed certificate as the root certificate.

Adding trusted certificates

ConductIP connects to NMOS devices on a network in non-encrypted http protocol. However, if you have an NMOS device (e.g. an NMOS secure registry) that is using https protocol, you may need a trusted security certificate to allow the connection. You can add the certificate to ConductIP.

For more information on any of these settings, go to *Security*.

To add a trusted certificate to ConductIP:

Step 1. Log in to ConductIP (see *Logging in to Matrox ConductIP*).

Step 2. Go to (xx) **> Settings > Security > Trusted certificates**.

Step 3. Click **Add** and select the certificate file to upload.

Your certificate will appear in the list of certificates.

Step 4. (Optional) If you want ConductIP to ignore specific IP addresses or host-names, you can add them to the **Exceptions** list.

Example: If your certificate has expired and you do not want to renew it, add the device's IP address or hostname to this list and ConductIP will not verify the certificate for that device.

Step 5. (Optional) If you do not want ConductIP to verify any certificates on the net-work, click **Disable certificate validation**.

Example: If your secure NMOS registry has an expired certificate, you can temporarily disable certificate checking so you can continue working while resolving the issue.

Result of this task: You have added your trusted certificate(s) to ConductIP.

Updating Matrox ConductIP

Software updates will be made available on our website. We recommend that you visit the site periodically to check for new software versions.

To update your Matrox ConductIP:

Step 1. Download the latest update from our *website*.

Step 2. Log in to your ConductIP (see *Logging in to Matrox ConductIP*).

Step 3. Go to (XX) **> Settings > Application > Software update**.

Step 4. Click **Update** and follow the on-screen instructions. Do not refresh or close the page while an update is in progress.

More info: The ConductIP MRA will reboot to complete the update.

Result of this task: The Matrox ConductIP has been updated.

CHAPTER 3

Managing Matrox ConductIP Users

This chapter includes the following topics:

Creating user accounts

As a Matrox ConductIP Administrator, it is up to you to create the required ConductIP Super operator and Operator user accounts. Each role has specific permissions and responsibilities. For more information on what each type of user can do in ConductIP, see *Matrox ConductIP roles*.

To create a new user:

Step 1. Go to (XX) **> Settings > User management**.

Step 2. If you have access to an LDAP (Lightweight Directory Access Protocol) server, follow the steps below. If you are creating users manually, go to *Step 3*.

a. Go to the *LDAP service* settings.

b. If you know the user domain enter the information required, or scan for LDAP servers on the network and select **Use detected LDAP servers** for ConductIP to use them. The additional LDAP servers are listed.

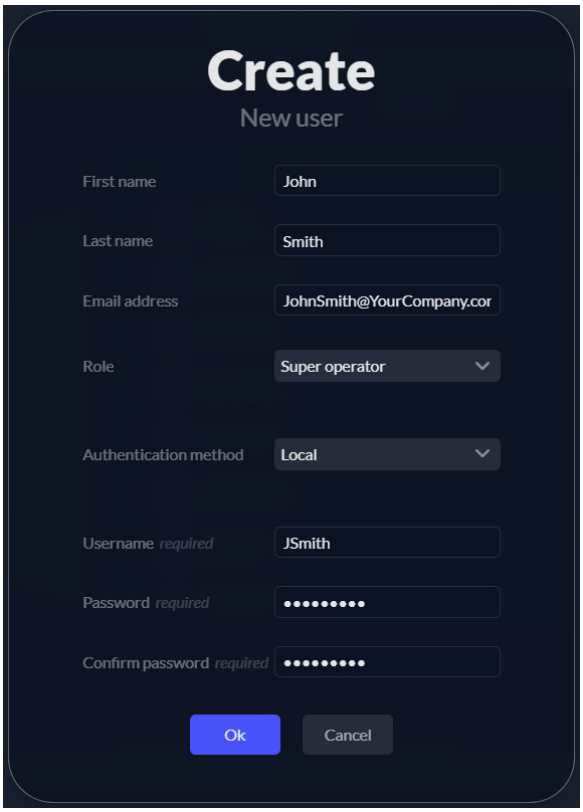
c. Click **Save**.

Step 3. Go to the *Users* settings.

More info: If this is the first time you are creating ConductIP users, your Administrator account (created at initial log in) will be the only account listed in the table. Otherwise, all the users with access to the ConductIP should be listed.

Step 4. Click (⊕)**Add.**

The **Create new user** window opens.



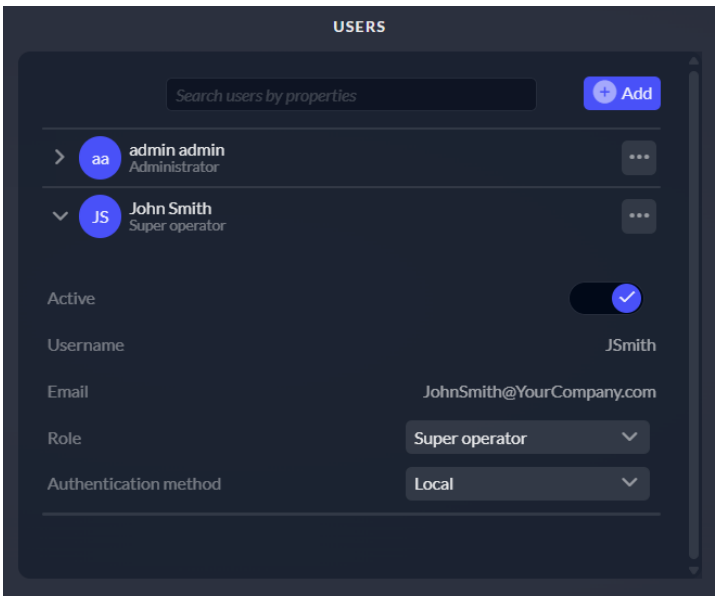
a. Enter the user's personal information.

b. Select the user's ConductIP **Role**.

c. Select the **LDAP** or **LOCAL** authentication method. If you select **LDAP**, enter the username that corresponds to the user's LDAP server (the LDAP server verifies the password). If you select **LOCAL**, provide a password for your new user.

d. Click **Ok**.

Step 5. Verify that your new user is on the list.



Result of this task: Your new user is created and has the credentials associated to their role.

When done, remember: With your users created, you can quickly activate/deactivate their accounts, edit their information, change their passwords, or choose which user groups they belong to from this list.

Creating user groups

User groups allow Administrators and Super operators to assign multiple users to a room simultaneously (see *Assigning users and user groups to rooms*). When you create a user, you will add them to either the Operator or Super Operator group, depending on their role. However, as a Matrox ConductIP Administrator, you can also group users together who will access the same rooms, regardless of their roles.

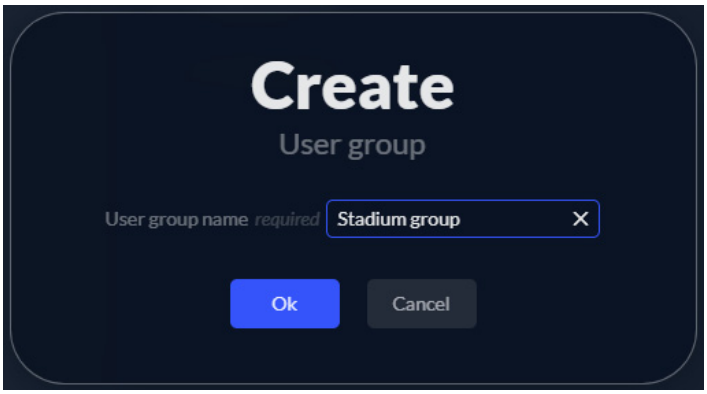
To create a new user group:

Step 1. Go to (XX) **> Settings > User management**.

Step 2. Go to the *User groups* settings.

Step 3. Click (⊕)**Add**.

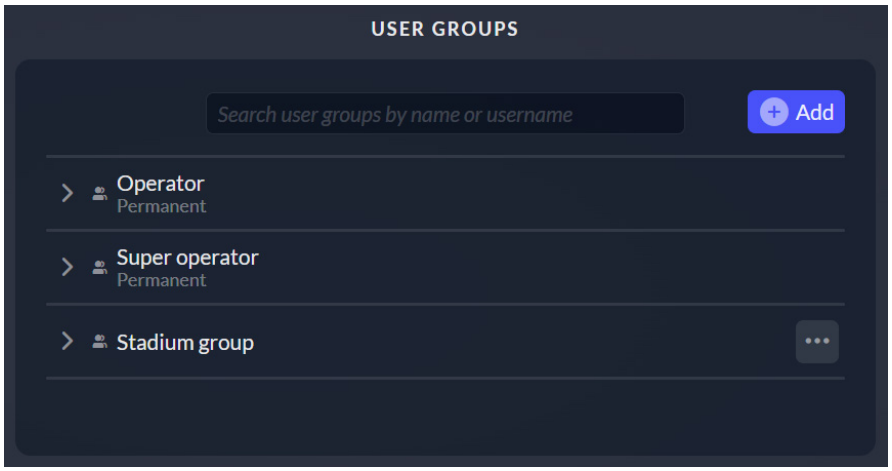
The **Create user group** window opens.



a. Enter a user group name.

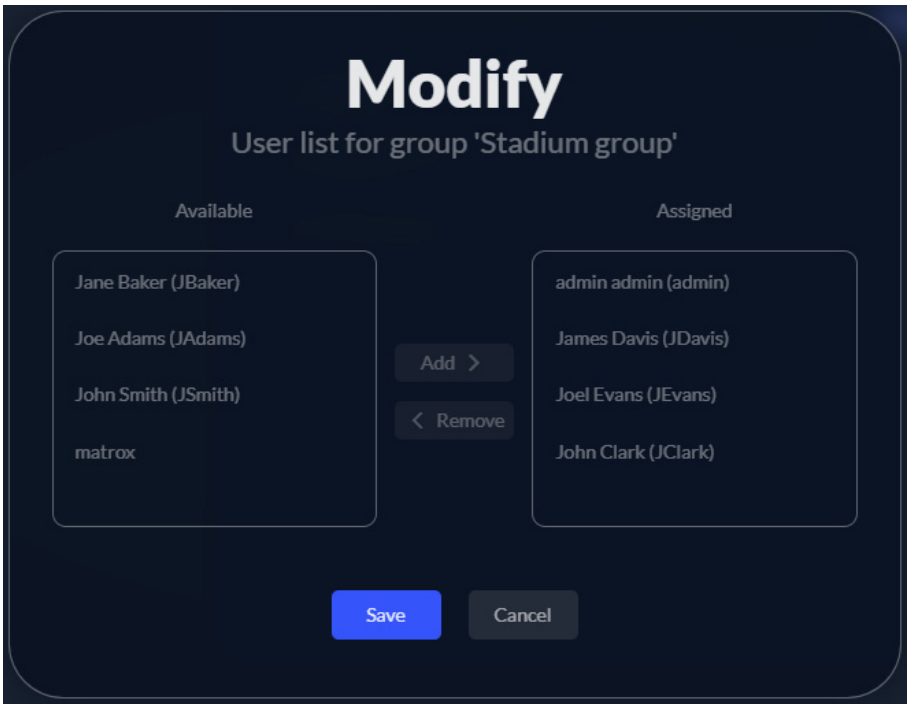
b. Click **Ok**.

Step 4. Verify that your new group is on the list.



Step 5. Click the more options menu (•••) and select **Edit users list**.

The **Modify user list** window opens.

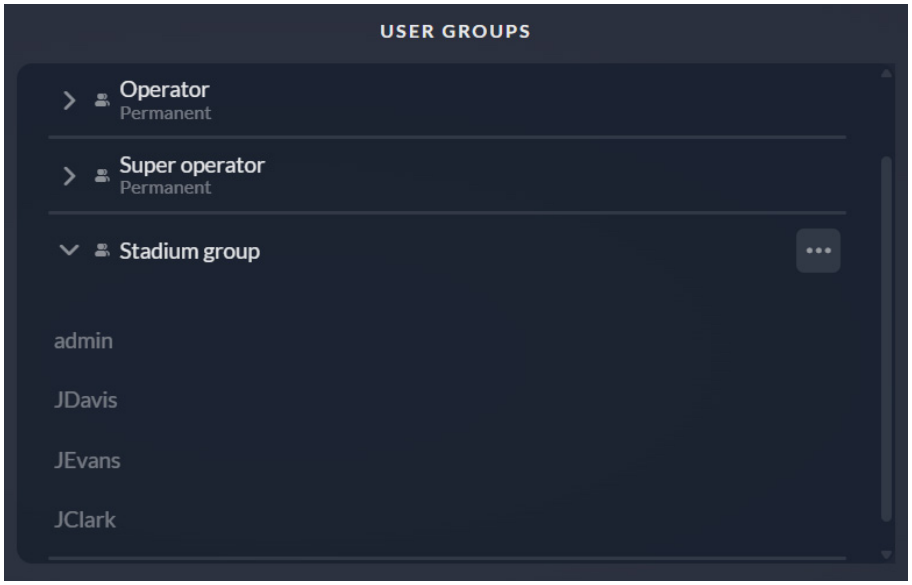


a. Hold the **Ctrl** key and select users in the **Available** list.

b. Click **Add >** to move users to the **Assigned** list.

c. Click **Save**.

Step 6. Verify that the users are in the user group.



Result of this task: Your new user group is created and it includes the users you selected.

When done, remember: With your user group created, from this list you can edit the group name, modify the list of users included in the group, or delete the group.

Assigning users and user groups to rooms

As a Matrox ConductIP Administrator, you will be able to see all the rooms that were created on your ConductIP. Other users will only have access to the rooms they are authorized to manipulate. You can assign authorized users to a room as individuals or as part of a user group.

Both Administrators and Super operators can assign users to rooms. However, Super operators can only assign users to the rooms they themselves are authorized to use.

To assign users to a room:

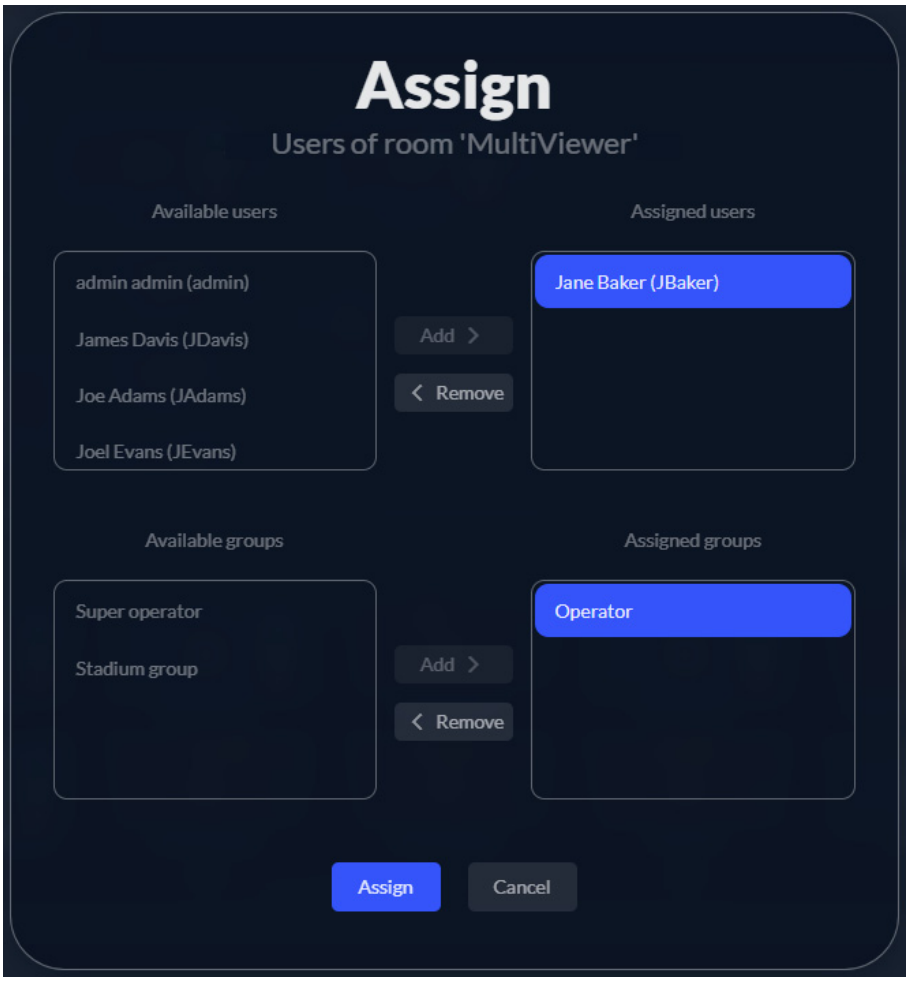
Step 1. Go to the ConductIP **Rooms** page.

Step 2. Click on a room

Step 3. Click (•••) directly above the Rooms list.

Step 4. Click **Assign users**.

The **Assign users of room** window opens.



a. Hold the **Ctrl** key and select groups in the **Available groups** list.

b. Click **Add >** to move the user groups to the **Assigned groups** list.
You can also double-click a group in the **Available groups** list to move it

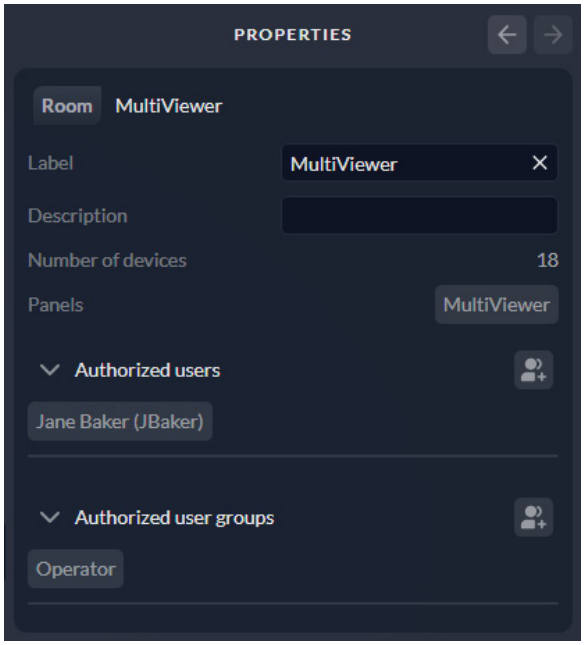
to the **Assigned groups** list. To remove groups from the room, select them in the **Assigned groups** list and click **< Remove**.

c. Hold the **Ctrl** key and select individual users in the **Available users** list. You only need to select users who are not included in the groups that were assigned.

d. Click **Add >** to move the users to the **Assigned users** list.
You can also double-click a user in the Available users list to move it to the Assigned users list. The user who creates a room is assigned to it by default. To remove users from the room, select them in the **Assigned users** list and click **< Remove**.

e. Click **Assign**.

Step 5. In the **Properties** panel, verify that the authorized users and groups are assigned to the room.



Result of this task: Authorized users and user groups are assigned to the selected room.

When done, remember: Only the users and user groups you have assigned to the room will be able to see that room. You can modify the list of authorized users and groups at any time.

CHAPTER 4

Using Matrox ConductIP

This chapter includes the following topics:

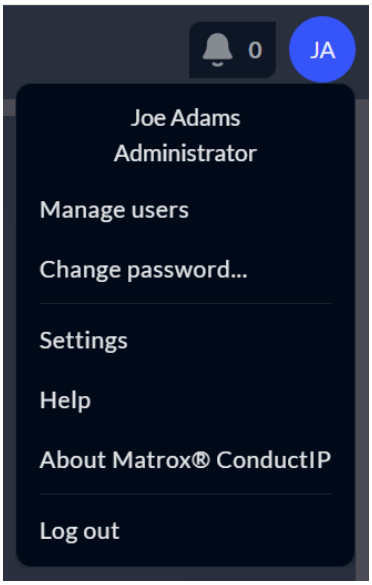
About the Matrox ConductIP User Interface

You control and configure the Matrox ConductIP via a web-based user interface that you access through a web browser.

Here are some quick concepts to understand about the user interface:

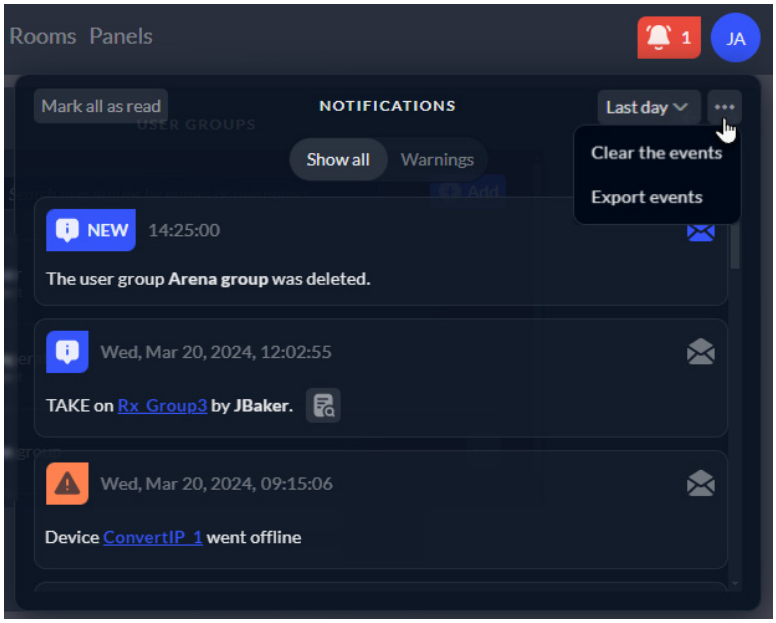
- The user interface is split into two main work areas: **Rooms** (see *About Rooms*) and **Panels** (see *About Panels*).
- There are three types of users for ConductIP: *Administrators*, *Super operators*, and *Operators*. Each type of user has different responsibilities and tasks which will be discussed in later sections.
- As a browser-based user interface, ConductIP can be used on many different operating systems and devices. However, there are certain requirements that you should be aware of before you begin using ConductIP (see *Supported web browsers*).

ConductIP's notifications log and main menu are at the top-right. From the main menu you can access information about the ConductIP as well as general functions, depending on your role.

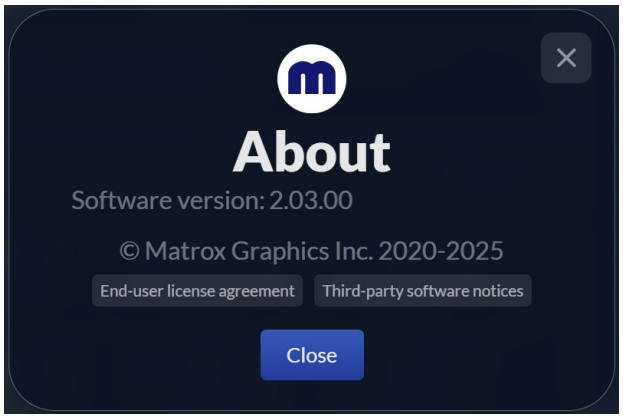


The **Notifications** panel logs any events that have occurred (e.g. deleted rooms, lost connections, etc). Events can be filtered by time period or by their warning status. New notifications are those that have happened since the last time the log was checked. When details are available, click ( ) to see them in the Properties panel.

From the options menu (•••), you can export the events log to use for troubleshooting. Events are exported based on the applied filters.



ConductIP's Information panel ( ) is at the bottom-left. On the information panel, you can see the current ConductIP software version, as well as access the end-user license agreement and the list of third-party licenses for the software packages that ConductIP uses.



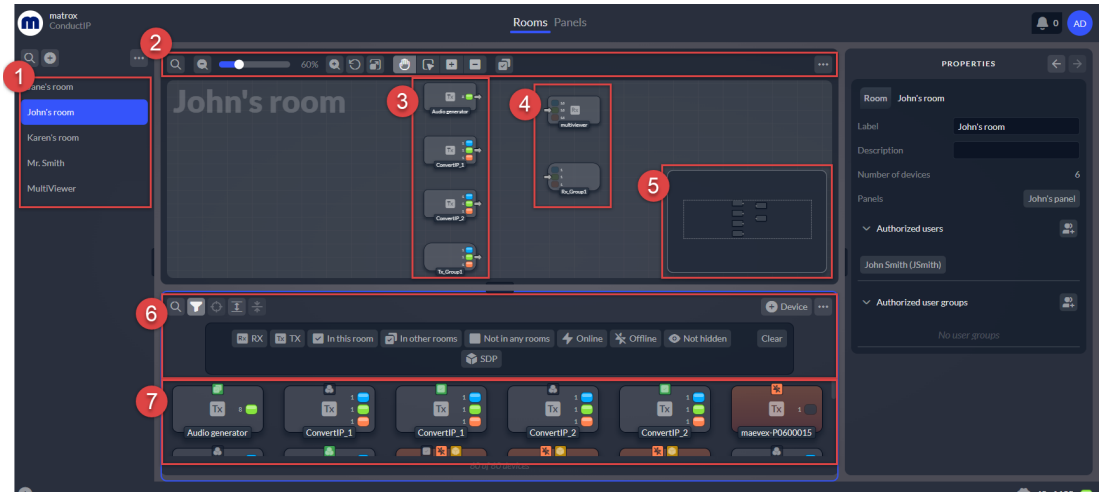
About Rooms

Matrox ConductIP uses the concept of a “room” to show the senders and receivers that can be manipulated by users. Administrators and Super operators can create, edit, and delete rooms, and populate those rooms with devices and groups of senders and receivers. They can also assign the users and user groups that will manipulate items in the room.

ConductIP rooms do not necessarily represent physical places in the real world. They are simply a way of grouping senders and receivers together for an operator. A room’s devices and groups of senders and receivers can literally be in the same room (such as a server room), or they could be miles apart in completely different locations.

For example, to illustrate how this concept works, here is a **Rooms** page called *John’s room* that contains a variety of devices and groups:

Image A. John’s Rooms page



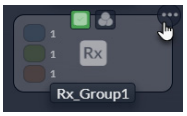
1. These are the rooms that Administrators or Super operators have created for this ConductIP. Although all the rooms are visible, for the purposes of this example, we will assume that John will only manipulate his own room and the resources in it.
2. These options allow John to change the view of the items in the room (e.g. zoom, scale to fit, etc), and to change the behavior of his mouse when selecting items (e.g. grab, select all, etc).

   From the options menu on the right (•••), John can reorganize some or all items in the room, edit a selected item’s properties or delete it, or show/hide the selection tools or minimap.
3. These are the senders available to John. There are three (3) sender devices (*Audio generator*, *ConvertIP_1*, *ConvertIP_2*), and one (1) sender group (*Tx_Group1*).
4. These are the receivers available to John. There is one (1) receiver device (*multiviewer*) and one (1) receiver group (*Rx_Group1*).
5. The minimap gives John an overall view of the room. He can draw an outline in the minimap or click and drag the dotted outline to focus on specific devices, or quickly identify issues when they flash in red. John can also move the minimap in the room

area by clicking and dragging (✥) in the top-left corner or minimize it by clicking (✖) in the top-right corner.

6. These options allow John to customize the view of the device bin, locate a specific item in the room, and filter on the items that he wants to see. From the submenu (⋯), John has additional options for manipulating the items in the device bin.

   By mousing over any individual item in the device bin, more options become available.



7. This is the device bin. All the devices and sender/receiver groups that are visible on the network are shown here. Administrators and Super operators can drag and drop the ones they want to include in John's room.

John's room is essentially a visual representation of John's ConductIP workspace. He can quickly see which senders and receivers are connected and if the connections are working (in the image above, no connections have yet been made from the **Panels** page).

Now that John's room has been set up by the Administrator or Super operator, some of the things he can do in the room are:

- Search for and view the details of other rooms. For example, John can see what's happening in Jane's room.
- Search for and view the devices and sender/receiver groups on the network. From the device bin, John can see all the network NMOS resources visible to the ConductIP. He does not have permission to add them to his room but he can see them.
- View the connection status of the senders and receivers in his room. This is the main function of the **Rooms** page.
- Arrange the senders and receivers as needed for a better visual representation of the actual workspace. For example, in the image of *John's Rooms page* above, senders are positioned on the left and the receivers on the right. John can re-arrange these as desired.
- The right side of the **Rooms** page consists of the Properties panel, where John can view information about the room and the items in the room. Administrators and Super operators can edit properties in the panel.

John is now ready to make the needed connections in the **Panels** page (see *About Panels*).

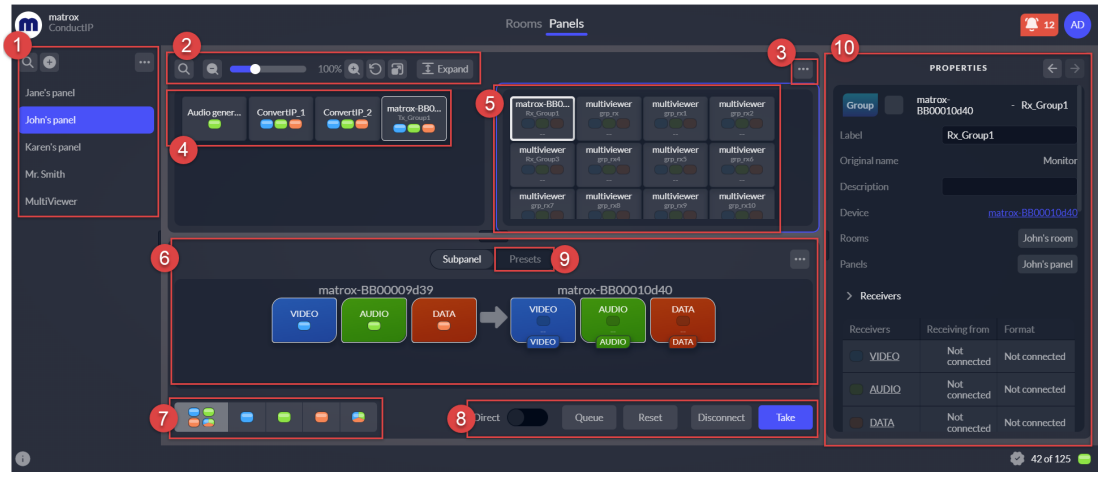
About Panels

The Matrox ConductIP **Panels** page is where you make the connections between your senders and receivers. You can think of this as a virtual switchboard that allows connections between any available senders and receivers (devices, groups, or individual senders/receivers).

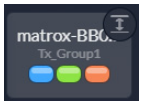
Before you can make connections from the **Panels** page, you must have a room created and populated with senders and receivers (see *About Rooms*). After the Administrator or Super operator has created and populated the room, you have several different ways to connect senders and receivers (see *Connecting senders and receivers*).

To continue with the example of John's room from the *About Rooms* topic, this is the **Panels** page that John sees, based on the room that was created for him.

Image B. John's Panels page (Side-by-side mode)



1. John can search for a specific panel. If John were an Administrator or Super operator, he would have additional options. Tooltips are provided to describe each option.
2. John can search for senders and receivers, and adjust the view of the page (e.g. zoom in/out, scale to fit, etc). John can also expand devices as needed to access individual flows.
   - Click ↕ on a selected device to expand it into a pop-up window.
   - Mouse over any individual device or group to expand it. It will take a second for the expand icon to appear.



3. John can view senders and receivers in **Matrix mode** or **Side-by-side mode**. Depending on the number of senders and receivers available, one mode may be easier than another to help visualize and make the connections (see *Connecting senders and receivers*). In this example, John is using **Side-by-side mode**, but he can switch between modes at any time as needed (see *Panel viewing options*).
4. These are John's available senders. If the sender is in a group, the group name appears below the device name (device *matrox-BB00009d39* in group *Tx_Group1* is selected).
5. These are John's available receivers. If the receiver is in a group, the group name appears below the device name (device *matrox-BB00010d40* in group *Rx_Group1* is selected).
6. The subpanel is where John makes the connections between senders and receivers. In this subpanel, *Tx_Group1* will be connected to *Rx_Group1*. John can select multiple senders and receivers by holding the **Ctrl** or **Shift** key while making his selections. For more information on connections, see *Connecting senders and receivers*.
7. John can filter the senders/receivers by type of flow. He can hold the **Ctrl** key to select multiple filters. When filters are selected, only those types of flows will be visible in the panel. A color gradient will indicate if multiple flows are selected:

- – () Shows senders/receivers with all flows.
- – () Shows senders/receivers with Video only.
- – () Shows senders/receivers with Audio only.
- – () Shows senders/receivers with Data only (ancillary data).
- – () Shows senders/receivers with video, audio, and ancillary data mixed together in a single flow (i.e. muxed or multiplexed).

8. This is the connection toolbar. When John selects his senders and receivers, this is where he makes the connections (i.e. he “takes” the sender data he wants). For more information on connections, see *Connecting senders and receivers*.
9. The Presets panel lets John manage device connection presets. The minimap that appears in John’s room also appears here. For more information, see *Creating connection presets*.
10. The Properties panel lets John see the status of whatever he clicks on in the main page (e.g. room, device, group, etc).

Creating rooms

Matrox ConductIP Administrators and/or Super operators must create rooms for their Operators. A single room is available by default when you initially start Matrox ConductIP. A room contains the individual senders and receivers, or groups of senders and receivers, that authorized users can route in the **Panels** page (see *Connecting senders and receivers*).

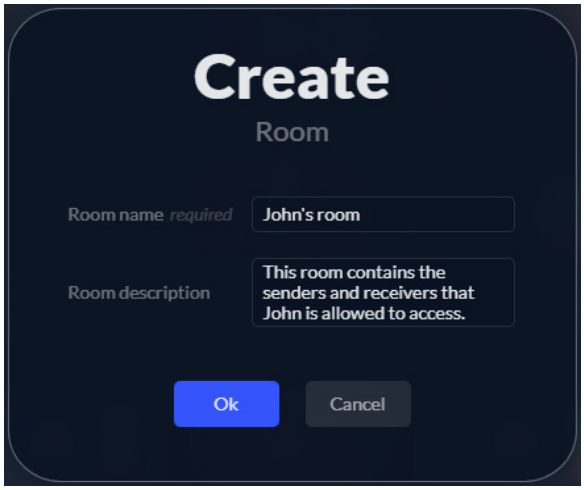
For more information about ConductIP **Rooms** and how they are used, see *About Rooms*.

To create a room:

Step 1. Go to the ConductIP **Rooms** page.

Step 2. Click the **Create room** button (⊕).

Step 3. In the **Create room** window, enter the information for the room.



Step 4. Click **Ok**.

Result of this task: Your new room is created and will appear in the list of rooms.

Additional room options

Administrators and Super operators have additional room options. From the ConductIP **Rooms** page, click on a room and then click (•••) directly above the Rooms list.

- **Edit** (✎): Edit the selected room's name and/or description.
- **Assign users** (👤+): Assign users and user groups to a room (see *Assigning users and user groups to rooms*).
- **Duplicate** (⧉): Quickly create a new room with the same senders and receivers in it (i.e. clone a room).
- **Delete** (🗑): Delete the selected room.
- **Show my rooms**: (Administrators only) See only the rooms that are assigned to you in the Rooms list.

Adding non-NMOS senders to ConductIP

You can add non-NMOS senders to ConductIP using a dummy NMOS device as a proxy. This proxy, called an SDP device, implements the essential features to be compatible with NMOS and it provides the SDP data of the non-NMOS sender.

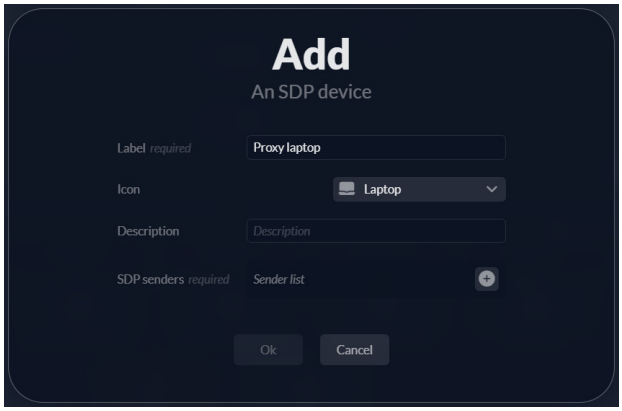
Each SDP device can host multiple SDP senders. When creating an SDP sender, you must provide the SDP data of the non-NMOS device. The SDP device and its senders do not communicate with the non-NMOS devices.

NOTE SDP senders must have valid SDP data. If you modify the configuration of the non-NMOS device, you must also update the SDP data in the SDP sender.

To create an SDP device:

Step 1. In the Device bin, click (⊕ **Device**) and select **Create SDP device**.

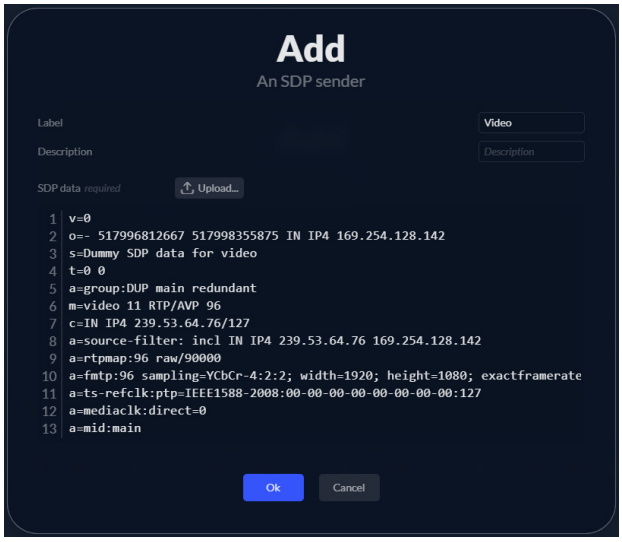
Step 2. In the **Add an SDP device** window, enter a label and description for the device, and select an icon.



Step 3. Click the **Add an SDP sender** button (⊕).

Step 4. In the **Add an SDP sender** window, enter a label for the sender.

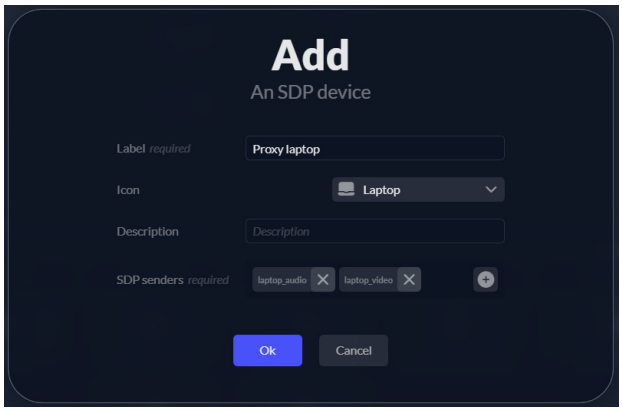
Step 5. Click **Upload** to add a SDP data file. Alternatively, cut and paste the SDP data into the text box.



Step 6. Click **Ok**. The sender is added to the sender list.

Step 7. Add other SDP senders to the device as needed.

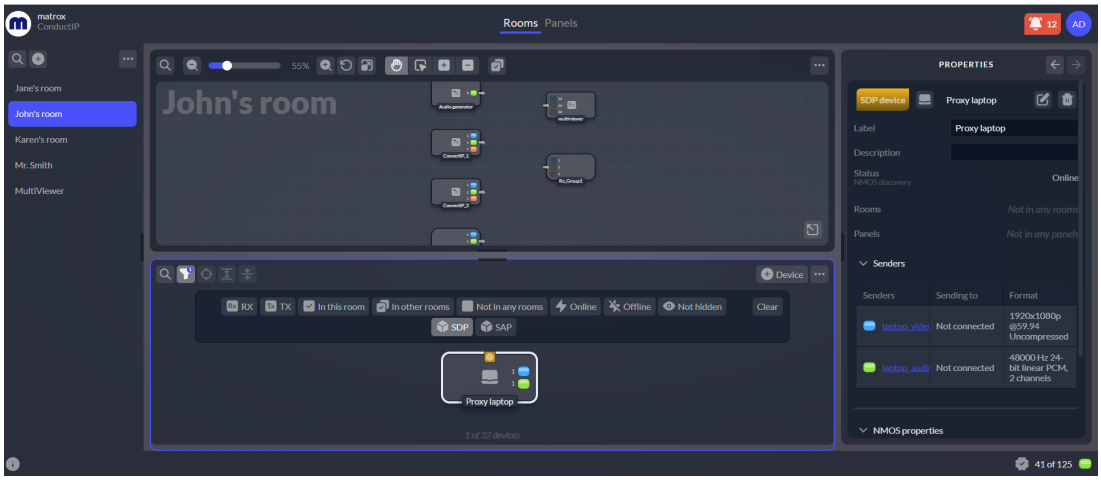
Step 8. Once all senders have been added, click **Ok**.



Result of this task: Your new SDP device is created.

When done, remember: Once you've created your SDP devices, you can use the SDP filter in the Device bin to quickly locate them. To access modification or removal options, mouse over a

device. You can edit the SDP device information, including the SDP data, in the Properties panel.



Adding SAP devices to ConductIP

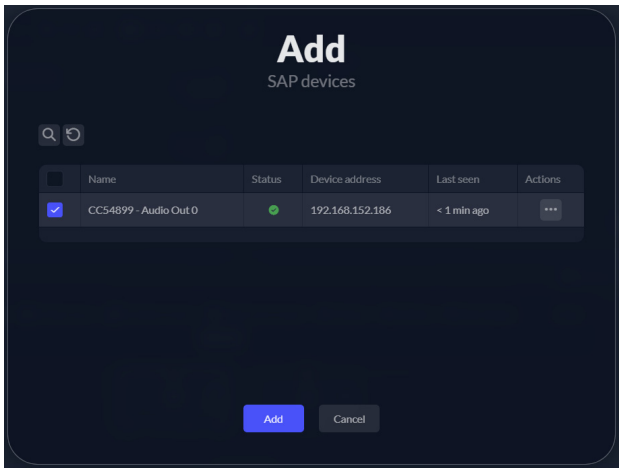
You can add to ConductIP any transmitter device that uses the Session Announcement Protocol (SAP) to announce its streams on the network. Since a device that uses SAP for announcement and detection is not an NMOS device, ConductIP will convert it into a proxy NMOS device, called an SAP device, that includes its SDP data.

SAP devices can be used to bring AES67 audio devices into ConductIP so they can be connected to ConvertIP or any other device that supports this audio format.

To create an SAP device:

Step 1. In the Device bin, click (⊕ **Device**) and select **Create SAP device**.

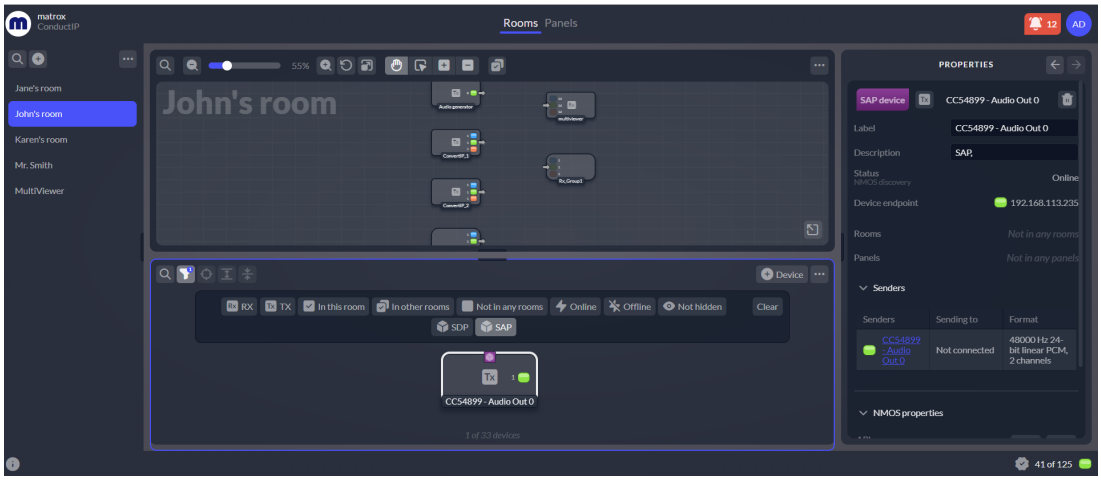
Step 2. In the **Add SAP devices** window, select the SAP devices to add.



Step 3. Click **Add**.

Result of this task: Your new SAP device is created.

When done, remember: Once you've created your SAP devices, you can use the SAP filter in the Device bin to quickly locate them. To access modification or removal options, mouse over a device. You can edit the SAP device information in the Properties panel.



Additional SAP device options

From the ConductIP **Add SAP devices** window, you can access more options. To see some of them, you will need to click (•••) in the **Actions** column.

- **Search** (): You can search for an SAP device by name or device address.
- **Refresh** (): You can reset the list of SAP devices. It will be cleared and as each device is announced it will reappear in the list.
- **Status**: Shows the status of the SAP device. If a warning icon appears, you can hover on it to see if the device is encrypted or compressed, or if it has invalid SDP data.
- **Remove** (): You can temporarily remove the source from the list of SAP devices. When the device is announced again, it will reappear in the list.
- **Show SDP** (): You can see the SDP data of the SAP source.

Adding groups and devices to rooms

After creating a room, Administrators and Super operators must add sender and receiver groups and devices to the room so that Operators can perform their routing tasks. The sender/receiver groups and devices are available from the device bin.

To add a device or group to the room:

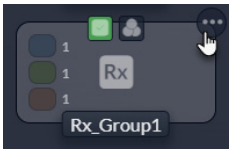
Step 1. Go to the ConductIP **Rooms** page.

More info: The device bin at the bottom of the page contains all the sender and receiver devices that ConductIP can see on the network via the NMOS registry.

Step 2. Select a room from the Rooms list.

Step 3. From the device bin toolbar, search for items ( ), filter for items ( ), locate an item in the room ( ), expand all devices ( ), collapse all devices ( ), add SDP or SAP devices (**Device**), or see other options (•••) to help you find the senders and receivers you want. You can also edit the device properties.

More info: To see additional options for individual devices or groups, mouse over a device or group and the options icon will appear.



Step 4. Drag and drop items from the device bin to the room area to make them available for your Operators.

More info: When a device or group is already in the room area, it will be displayed in the device bin with a checkmark. If the device or any group within it is already in the room, it cannot be dragged to the room area.

Step 5. Repeat for all the senders and receivers you need.

Result of this task: The room is ready for your Operators.

When done, remember: You must assign Operators to the room before they can use it. For more information, see *Assigning users and user groups to rooms*.

Additional device bin options

Click (•••) directly above the Device bin for more device management options.

- **Select all items** ( ): You can select all items in the device bin.
- **Hide devices** ( ): You can remove selected items from the device bin. Items can later be found using the device bin's **Hidden** filter.

- **Unhide devices** ( ): When the **Hidden** filter is applied, you can unhide devices that were previously hidden.
- **Add selected items to room** ( ): You can add the selected items to the room.
- **Edit item** ( ): You can modify the item's properties.
- **Delete all offline items** ( ): You can remove offline items from the ConductIP.
- **Delete selected removable items** ( ): You can remove selected SDP, SAP, and offline devices from the ConductIP.

Additional room area options

Once items have been added to the room, click (•••) above the room area for more options.

- **Reorganize all items in room/Reorganize selected items** ( ): You can automatically arrange all items in the room into sender and receiver columns with their connections, or arrange only the items you have selected. Senders will appear on the left and receivers on the right.
- **Reorganize all items in room/Reorganize selected items** ( ): You can automatically arrange all items in the room into sender and receiver rows with their connections, or arrange only the items you have selected. Senders will appear at the top and receivers at the bottom.
- **Edit properties** ( ): Administrators and Super operators can edit the properties of a selected item, including the item label, description, and icon.
- **Remove from room** ( ): Administrators and Super operators can remove all selected items from the room.
- **Show selection tools**: You can activate this option to show the selection tools in the room area toolbar.
- **Open minimap**: You can activate this option to open the minimap in the room area.

Creating panels

Matrox ConductIP automatically creates a panel each time a room is created, but Administrators and/or Super operators may need to create additional panels for their Operators. A panel is where the connections between the senders and receivers are made.

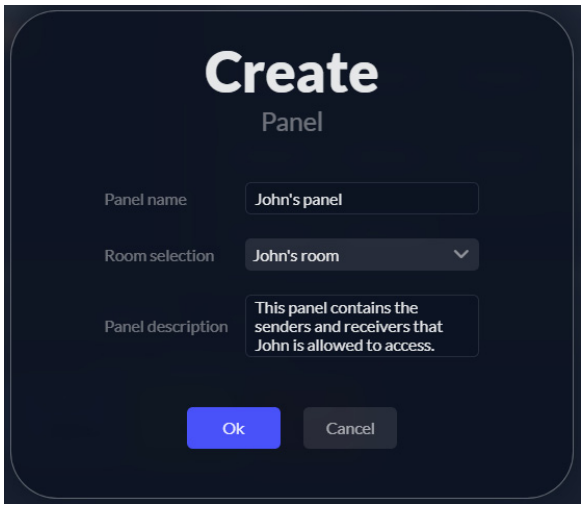
For more information about ConductIP **Panels** and how they are used, see *About Panels*.

To create a panel:

Step 1. Go to the ConductIP **Panels** page.

Step 2. Click the **Create panel** button (⊕).

Step 3. In the **Create panel** window, enter the information for the panel and specify which room it is associated to (e.g. create “John’s panel” and associate it to “John’s room”).



Step 4. Click **Ok**.

Result of this task: Your new panel is created and the senders and receivers in the room associated to it will appear.

Additional panel options

From the ConductIP **Panels** page, click on a panel and then click (•••) directly above the Panels list for more panel management options.

- **Group by rooms:** You can associate rooms to more than one panel. Grouping them by rooms will help you visualize which rooms are associated with which panels.
- **Edit** (✎): Administrators and Super operators can edit the selected panel’s name and/or description.
- **Delete** (🗑): Administrators and Super operators can delete the selected panel.

Panel viewing options

From the ConductIP **Panels** page, select a panel and then click (•••) on the right for more viewing options.

- **Matrix mode:** You can select this option to view the panel in matrix mode.
- **Side-by-side mode**: You can select this option to view the panel in side-by-side mode.
- **Flip senders and receivers**: When in Matrix mode, you can activate this option to transpose the matrix layout.
- **Hide offline items**: You can select this option to hide offline devices from the panel.
- **Ignore receiver constraints:** You can select this option to ignore device constraints for all receivers in the panel. When enabled, the ConductIP will try to connect to the elements even if they seem incompatible. The receivers will return an error if they cannot perform the connection.
- **Deactivate unused senders:** You can select this option to automatically deactivate senders that will no longer be in use once a Take or a Disconnect operation is done or once a preset is applied.

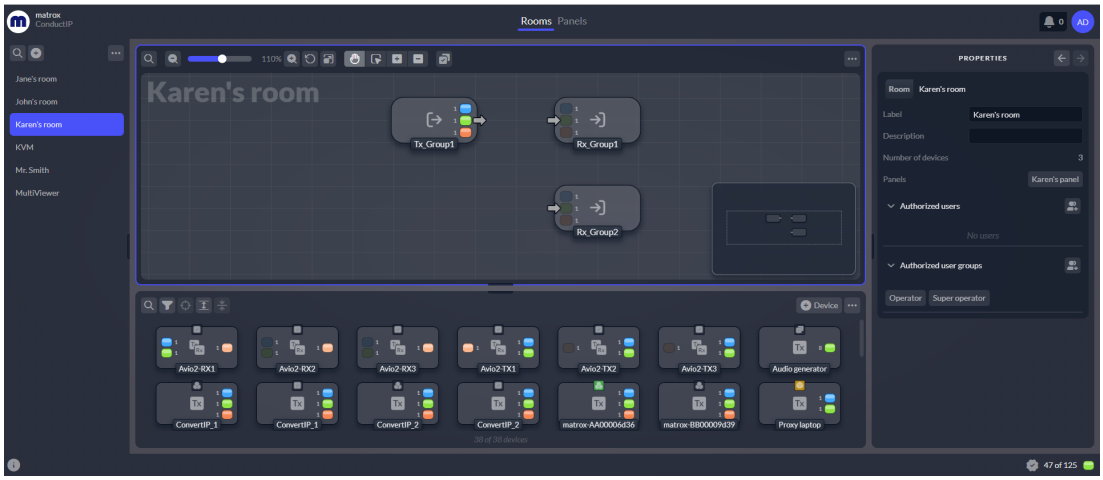
Connecting senders and receivers

The senders and receivers in your **Rooms** must be connected to each other from the **Panels** page for the streaming flows to function.

Although your real-world setup will likely be more complex than what is shown here, this simplified example will help you understand the connection process. After you understand how it works, you can connect as many senders to as many receivers as needed.

In this example, the ConductIP Administrator has created a room called *Karen's room* with one sender group and two receiver groups. Two receiver groups are being used to show the optional queuing feature.

Image A. Karen's room



With Karen's room already created by the Administrator or Super operator, connect your senders and receivers as follows:

Step 1. Go to the ConductIP **Panels** page. Karen's panel appears in **Matrix mode** or in **Side-by-side mode**.

More info: Both views are shown below, but this procedure will continue to describe the steps using **Matrix mode**. You can switch between modes at any time as needed.

Image B. Karen's panel in Matrix mode

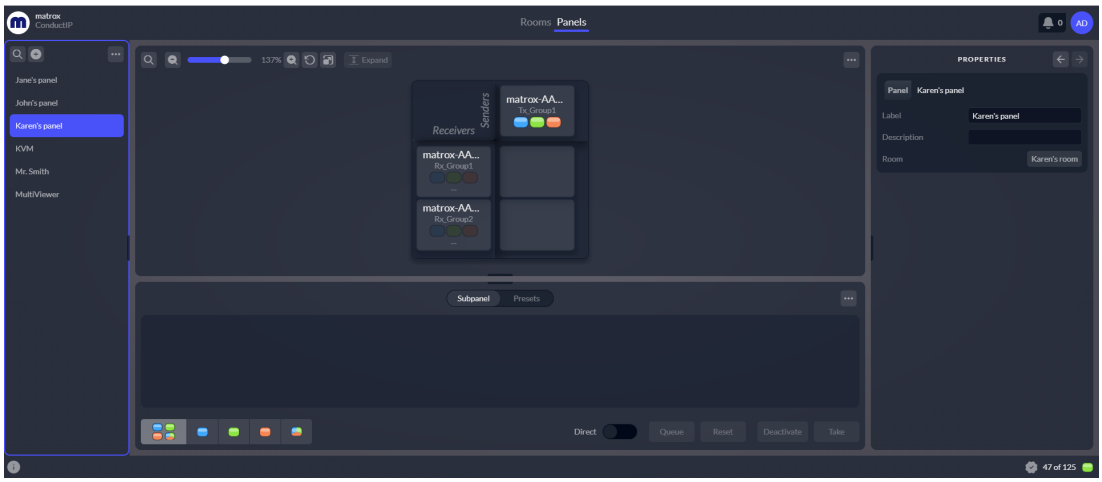
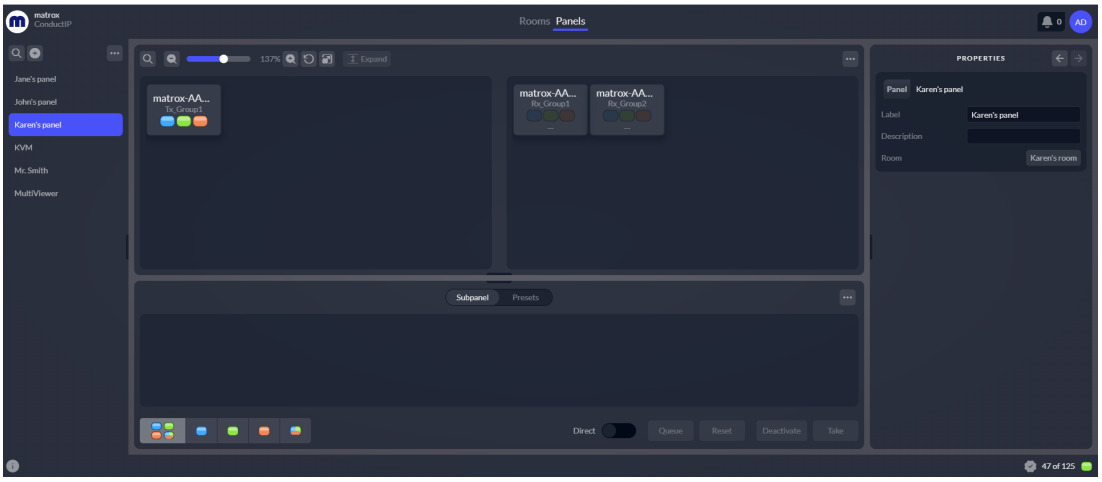


Image C. Karen's panel in Side-by-side mode



Step 2. In **Matrix mode**, click the crosspoint (i.e. the rectangle that corresponds to the intersection) of *Tx_Group1* and *Rx_Group1*. The senders and receivers will appear in the subpanel.

Step 3. Click **Queue** to queue this connection. If you prefer to apply it right away rather than queuing it up, go directly to *Step 6.*

More info: When a connection is queued, the colored flow indicators change from a solid color to a *Play* button and the Take button turns green.

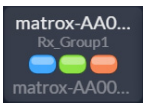
More info: You can also execute takes immediately by double-clicking the crosspoint or by toggling **Direct** to the ON position. When the Direct option is ON, you will not be able to queue connections. The take will be applied the moment you click on the crosspoint connection.

Step 4. Click the crosspoint of *Tx_Group1* and *Rx_Group2*.

Step 5. Click **Queue** to queue this connection.

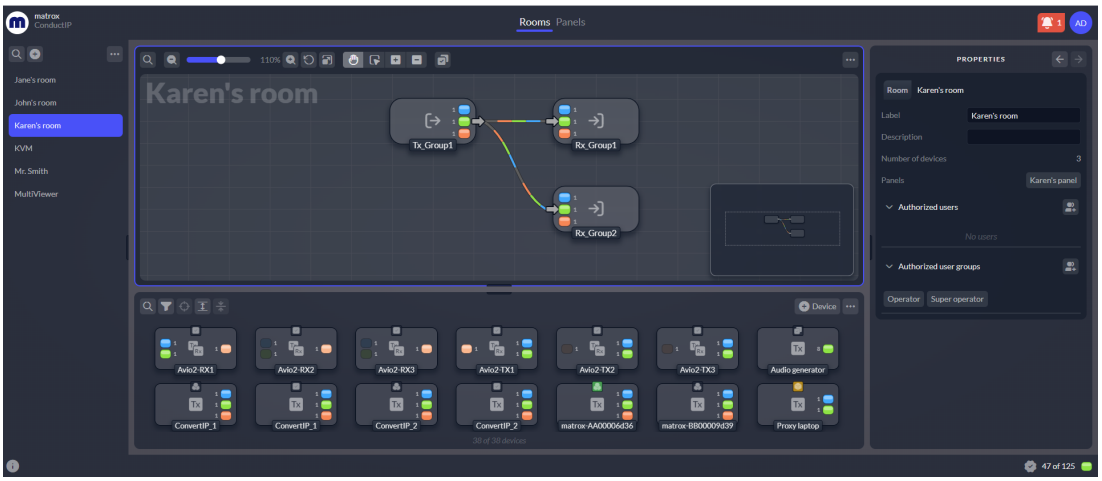
Step 6. Click **Take** to apply your connection(s) or click **Reset** to purge all queued connections and start over. A "Take" should also clear any unconnected receivers.

More info: Once a connection is applied, the name of the sender appears on the receiver tile in the panel area and in the subpanel, below the led indicators.



Result of this task: The sender and receiver connections are applied and you can go to Karen's room to see the flows. In the panel, in Side-by-side mode, hover on a sender to highlight the connected device on the receiver side. You can click **Disconnect** at any time to disconnect the sender and receiver flows.

Image D. Karen's room with senders and receivers connected



Connecting individual sender and receiver flows in the subpanel

The connection options with ConductIP go beyond connecting sender groups to receiver groups. You can also perform breakaway connections (i.e. send individual flows to different receivers).

For example, you can have a typical sender group of video, audio, and ancillary data send individual flows or combinations of individual flows to different receivers. To illustrate this, we will add an extra receiver group to *Karen's room* and send different flows to each (video, audio, and ancillary to *Rx_Group1*, video and audio to *Rx_Group2*, and video to *Rx_Group3*).

Image E. Karen's room with three receiver groups

To connect Karen's sender flows to their receivers:

Step 1. Go to the ConductIP **Panels** page.

Karen's panel appears (**Matrix mode** shown).

Step 2. Click the crosspoint of *Tx_Group1* and *Rx_Group1*. The senders and receivers will appear in the subpanel.

Step 3. In the subpanel, the video, audio, and ancillary flow under *Tx_Group1* are selected by default. Selected flows appear in color.

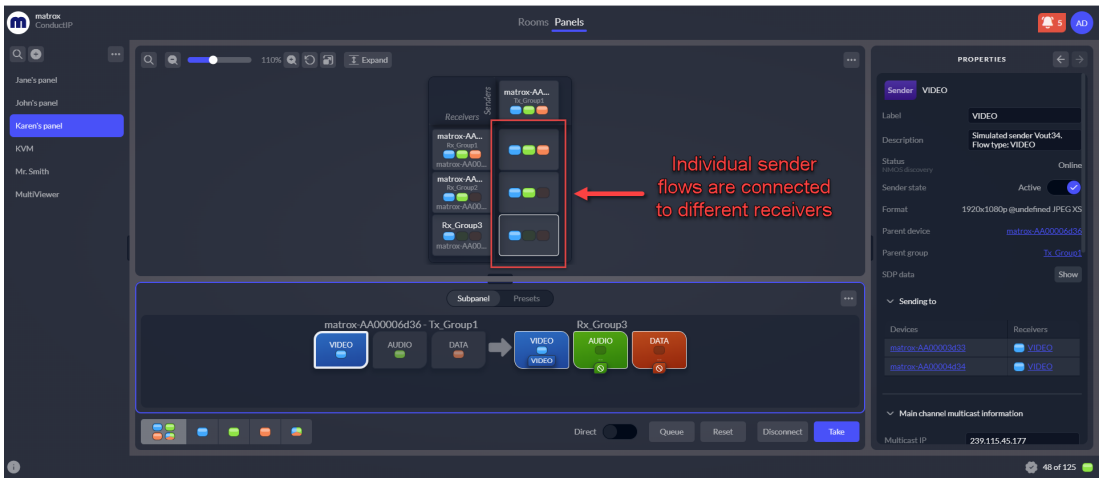
More info: To select multiple consecutive flows, select the first flow then hold the **Shift** key and select the last flow. To select or deselect multiple individual flows, hold the **Ctrl** key then click on each flow. Note that multiple flows of the same type will be connected in the order in which they're selected.

Step 4. Click **Take**.

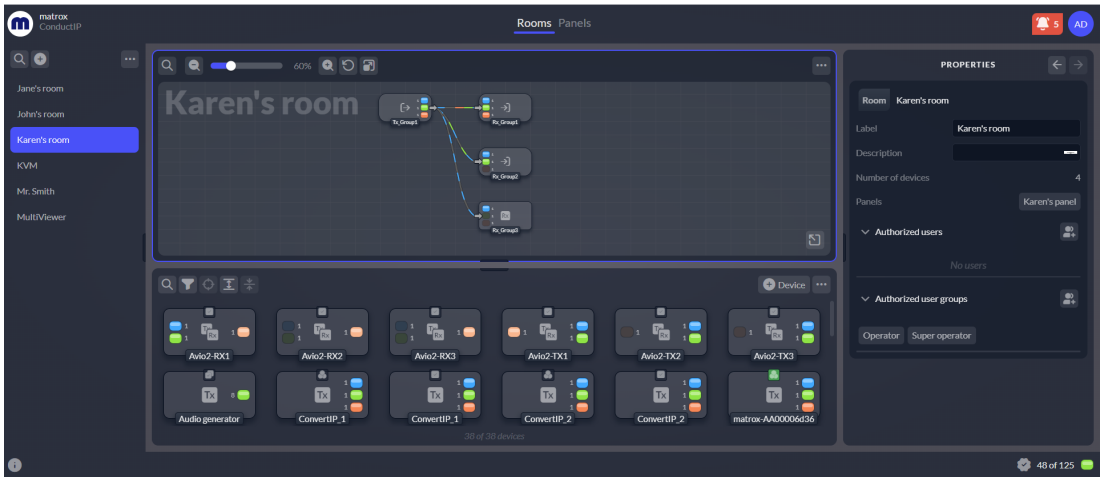
The three sender flows from *Tx_Group1* are now connected to the receiver *Rx_Group1*.

Step 5. As you did with the three flows, connect the video and audio flows from *Tx_Group1* to *Rx_Group2*, and only the video flow from *Tx_Group1* to *Rx_Group3*.

Karen's panel should now look like this:



Karen's room should now look like this:



Result of this task: As you can see in Karen's room, each receiver now has different flows connected to it. Video (blue), audio (green), and ancillary (orange) are going from *Tx_Group1* to *Rx_Group1*. Both video and audio are going from *Tx_Group1* to *Rx_Group2*. Only video is going from *Tx_Group1* to *Rx_Group3*.

When done, remember: The flow colors can be changed (see *User interface*), and you can filter your subpanel view according to each type of flow, which will help you view all your individual connections (see *About Panels*). You can also execute takes immediately by double-clicking the crosspoint or by toggling **Direct** to the ON position, and **Disconnect** any of your sender/receiver connections at any time.

Connecting individual sender and receiver flows using the expanded view

By expanding sender and receiver groups in the panel area, you can select and connect individual flows similarly to how you would in the subpanel. In Matrix mode, this can be done by expanding a crosspoint. In Side-by-side mode, you can select a sender and receiver, expand them, and connect their individual flows.

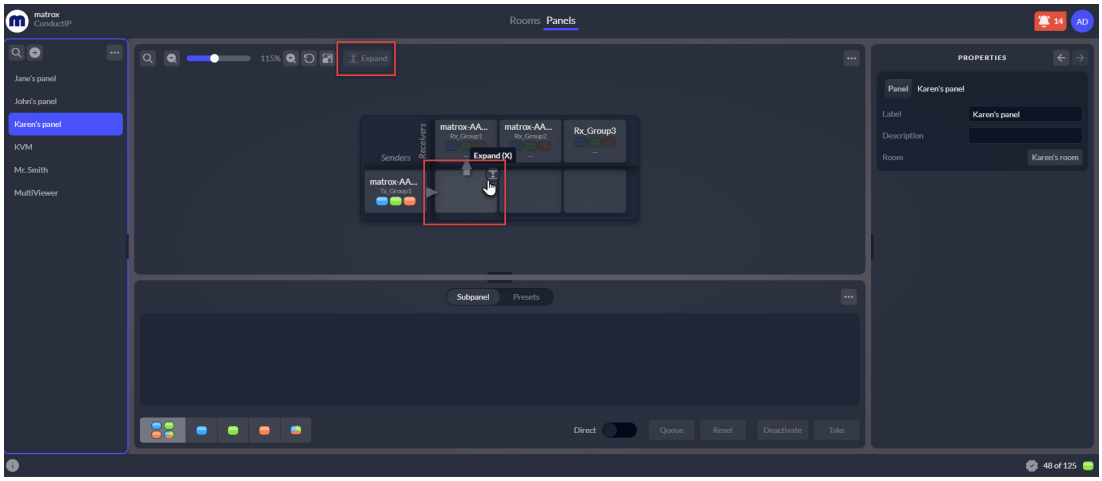
This example shows how to make expanded connections in Matrix mode, and will mirror the one used to connect individual flows in the subpanel. If you don't often make breakaway connections, you may choose to minimize the subpanel, giving you more space to work in the panel area.

To better see the flows in Karen's panel, we will flip the senders and receivers.

Image F. Karen's panel with expanded Tx_Group1 > Rx_Group1 crosspoint

To connect Karen's sender flows to their receivers:

Step 1. Click the crosspoint of *Tx_Group1* and *Rx_Group1* then click expand (↥) on the panel toolbar, or hover over the top-right of the crosspoint and click the expand icon. The sender and receiver flows will appear as a pop-up overlay on the panel area.



Step 2. Click the crosspoint of the video flow of *Tx_Group1* and the video receiver *Rx_Group1*. The action is mirrored in the subpanel.

Step 3. Click **Take**.

The video flow from *Tx_Group1* is now connected to the video receiver *Rx_Group1*.

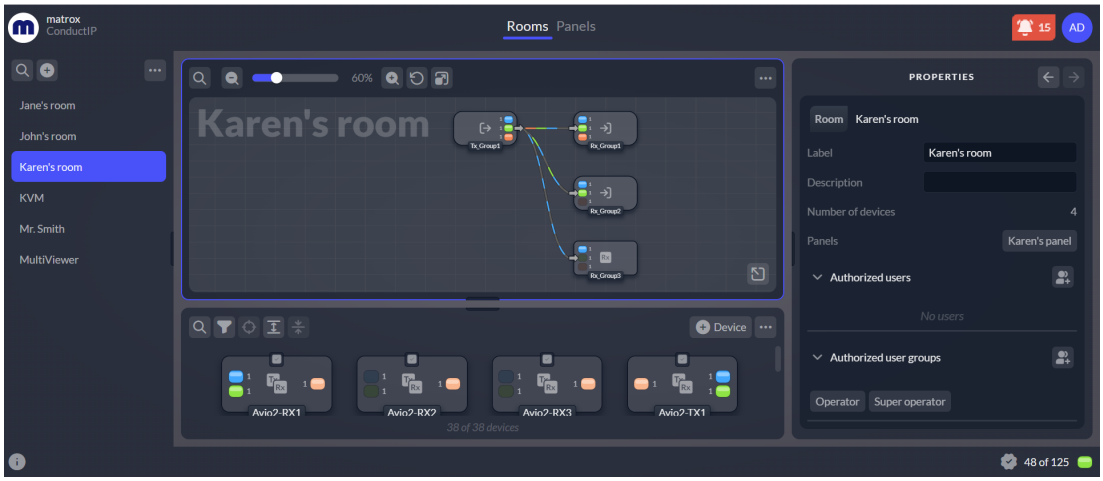
Step 4. As you did with the video flow, connect the audio and ancillary flows from *Tx_Group1* to *Rx_Group1*. Once done, click close ( ) or press **Esc** to exit the expanded view.

More info: To select or deselect multiple individual flows, hold the **Ctrl** key then click each flow.

Step 5. Just as you connected the flows from *Tx_Group1* to *Rx_Group1*, connect the video and audio flows from *Tx_Group1* to *Rx_Group2*, and only the video flow from *Tx_Group1* to *Rx_Group3*.

Karen's panel should now look like this:

Karen's room should now look like this:



Result of this task: As you can see in Karen's room, each receiver now has different flows connected to it. Video (blue), audio (green), and ancillary (orange) are going from *Tx_Group1* to *Rx_Group1*. Both video and audio are going from *Tx_Group1* to *Rx_Group2*. Only video is going from *Tx_Group1* to *Rx_Group3*.

When done, remember: You can execute takes immediately by double-clicking the crosspoint or by toggling **Direct** to the ON position, and **Disconnect** any of your sender/receiver connections at any time.

Connecting KVM senders and receivers

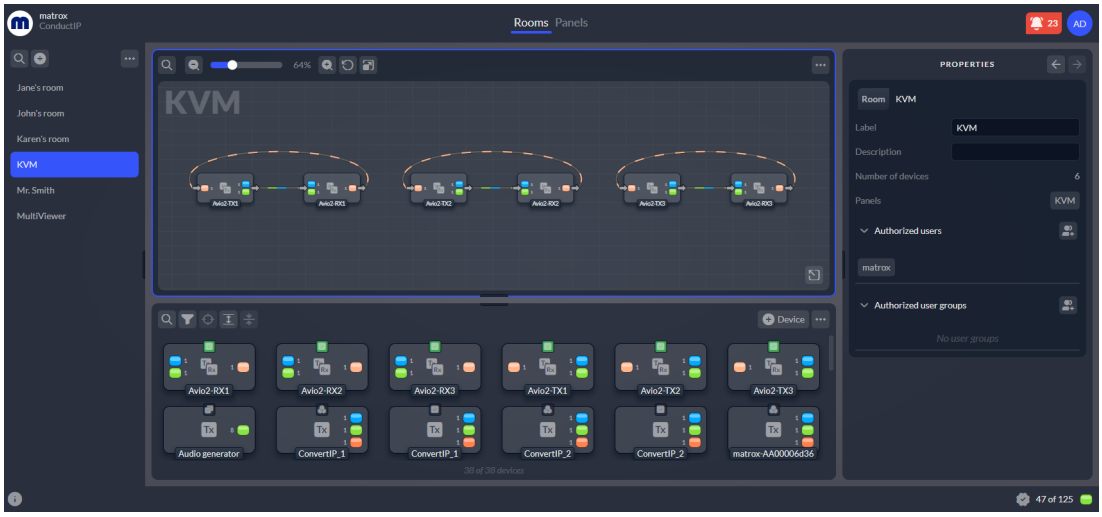
Connecting Matrox Avio2 senders and receivers in ConductIP works much like connecting other types of senders and receivers. However, when an Avio2 is connected to ConductIP, its USB sender and receiver flows are inverted in the panel. That is, an Avio2 sender will be comprised of a video and audio flow sender with a USB receiver. Avio2 receivers are comprised of a video and audio flow receiver with a USB sender. The keyboard and mouse of the receiver control the sender.

Connections between KVM devices are exclusive. Each Avio2 sender device can only be connected to a single Avio2 receiver device. However, Avio2 video and audio senders can also be routed to other devices, such as ConvertIP.

This example shows three Avio2 sender devices connected to three Avio2 receiver devices. In the subpanel, notice that the sender is indicated at the bottom of each connected receiver flow.

Image G. KVM panel with devices connected

Image H. KVM room with devices connected



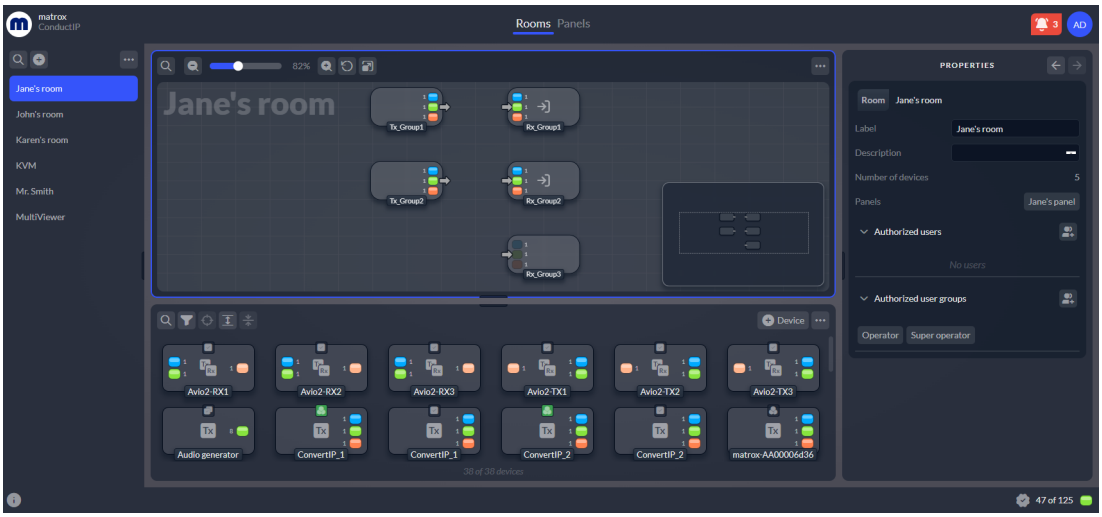
Creating connection presets

In a real-world setup, you may need to change multiple connections simultaneously. Presets (sometimes referred to as *salvos* in the broadcast industry) let you set up multiple connections between senders and receivers that you can then apply all at once. You can save these configurations and use them whenever necessary, avoiding the need to reconnect them in the subpanel each time. While each panel has its own presets, you can transfer them between panels if needed.

When you create a ConductIP panel, it comes with a default preset: *No connections*. If you activate this preset, it disconnects all panel connections.

In this example, the ConductIP Administrator has created a room called *Jane's room* with various devices and sender/receiver groups.

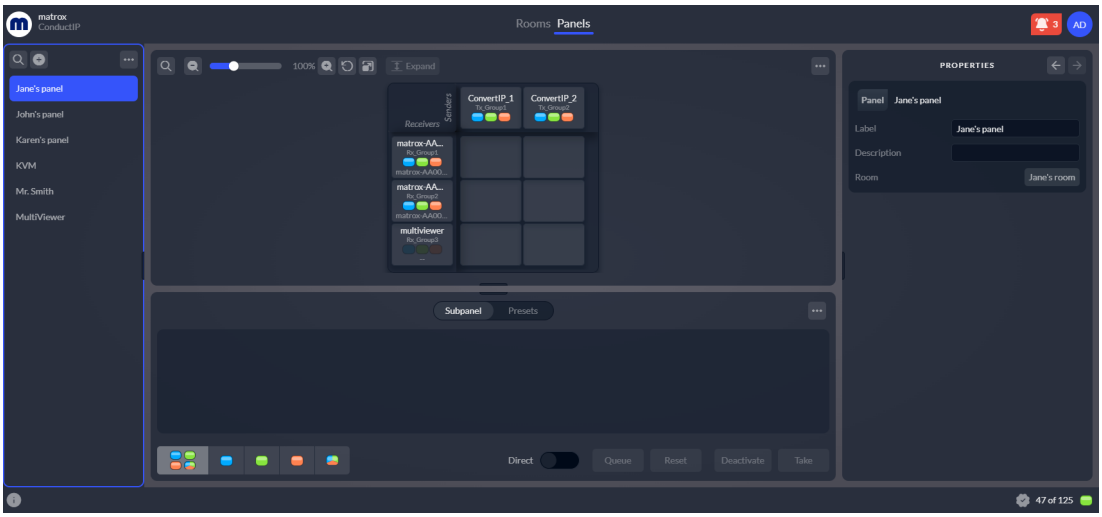
Image I. Jane's room



With Jane's room already created by the Administrator or Super operator, create a preset as follows:

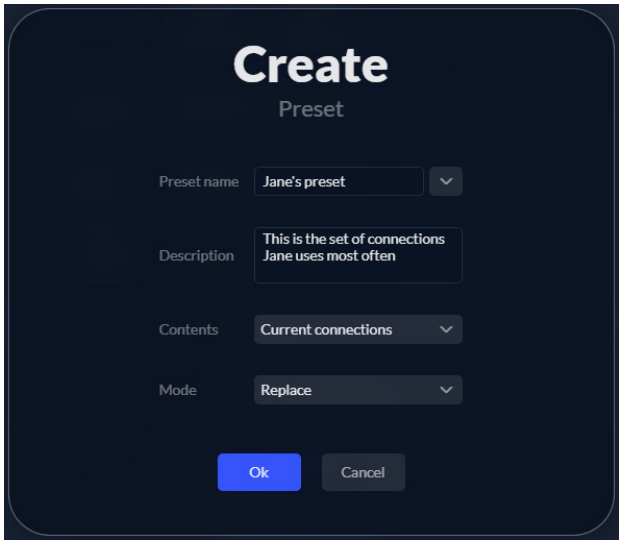
Step 1. Go to the ConductIP **Panels** page. Jane's panel appears in **Matrix mode**.

Image J. Jane's panel in Matrix mode



Step 2. Connect your senders and receivers as needed (see *Connecting senders and receivers*).

Step 3. In the Presets panel, click **Preset** to create a new preset.



Step 4. In the **Create preset** window, enter the following information:

- **Preset name:** Each preset must have a unique name.
- **Description:** Enter a description for the preset.
- **Contents:** Select **Current connections** if you made your connections in *Step 2.* You can also create a preset that contains **Queued connections** or create an **Empty preset**. You can edit your preset later if needed.
- **Mode:** Select **Replace** to override all panel connections when you execute a take, leaving only your preset connections. Select **Merge** to merge your

preset connections with any existing connections. You can change the mode later if needed.

Step 5. Click **Ok** to create the preset.

Result of this task: You have created your preset, and its tile has been added to the presets bin.

When done, remember: Presets work like any other connections. You can queue the preset, you can click **Take** to execute the preset, or you can execute a take immediately if you select the preset and **Direct** is on or if you double-click the tile in the presets bin. To disconnect all connections at once, apply the **No connections** preset.

Additional preset options

There are several more options (•••) in the **Presets** panel.

- **Presets bin**: You can select a preset to queue or take its connections, or double-click the preset to immediately execute a take. When a preset is queued, the colored indicators for the flows that are included in the preset appear as *Play* buttons and the **Take** button appears green.
- **Delete preset** ( ): You can delete a selected preset.
- **Update preset** ( ): You can update a selected preset with current or queued connections.
- **Import presets** ( ): You can import a copy of a single preset or multiple presets from another panel. Only the connections that use devices that are in your panel will be carried over. When you modify an imported preset, it will not affect the original.

Modifying a preset's contents

Once a preset is created, you can select it in the presets bin to see its connections and other details in the Properties panel. From there, you can modify the preset's label, description, and mode, or update the preset's contents.

Just like in the panel area, you can mouse over an individual device or group to expand or collapse it.

Image K. Expanded preset connections in the Properties panel

Modify a preset as follows:

Step 1. Execute a take of the preset.

Step 2. In the panel area or the Subpanel, disconnect connections to remove them.

Step 3. Take or queue connections to add them.

Step 4. When done, go to the Presets panel and select the preset in the presets bin.

Step 5. Click (•••) in the Presets panel or in the Properties panel.

Step 6. Click **Update preset**.

Step 7. Select the **Contents** based on how you have set up the connections in the panel (current connections or queued connection).

Step 8. Click **Ok**.

Result of this task: The preset's contents have been modified.

CHAPTER 5

Matrox ConductIP Settings Reference

This chapter includes the following topics:

System

This section describes the **System** settings in Matrox ConductIP.

Setting	Description
Date and time	
Current server time	The current server time of your ConductIP.
Time zone	Select the time zone of the ConductIP MRA.
Clock mode	**Manual:** Specify a date and time for the ConductIP MRA. This disables time synchronization with an NTP server. **Auto (NTP):** Specify a primary and secondary NTP server for time synchronization. If needed, use the **Test** button to check the connection with the server. The connection status is indicated on the right.
Network configuration	
Information	Display the current network configuration of the ConductIP, including IP address, Subnet mask, Gateway, MAC address, Search domains, and DNS servers.

Setting	Description
Network	**Hostname:** Specify a name for the ConductIP. This name will be broadcast on the network. If you choose a name that is already being used on the network, ConductIP will automatically add a numbered suffix to differentiate between them (e.g. ConductIP-1, ConductIP-2, ConductIP-3, etc). **Search domains:** Enter the search domain(s) to resolve DNS searches to a Fully Qualified Domain Name. You can use spaces to separate each domain if you enter more than one. **DNS servers:** Enter the IP addresses of your DNS server(s). You can use spaces to separate each address if you enter more than one. **Hostname mapping:** Enter an IP address and a hostname to associate the two with each other. Once done, the system will recognize the hostname and automatically link it to the corresponding IP address.
IP address	**Assignment method:** Select **DHCP** if you are connected to a DHCP-enabled network. The DHCP network will assign the ConductIP's IP address. If you use a **Static** IP address instead of DHCP, you must enter the related information (e.g. **IP address**, **Subnet mask**, etc). **Use DHCP DNS resolution:** When enabled, the system will automatically obtain DNS server addresses from the DHCP server on the network.
Reboot	
Reboot the Matrox ConductIP Media Routing Appliance	Reboots the ConductIP MRA.

NMOS and discovery

This section describes the **NMOS and discovery** settings in Matrox ConductIP.

Setting	Description
System parameters configuration (IS-09)	
Matrox ConductIP IS-09 registry	Enable to activate the ConductIP internal NMOS registry. This is enabled by default.
mDNS advertisement	Enable to broadcast the ConductIP internal NMOS registry on the network under the multicast DNS protocol. This resolves host-names to IP addresses within networks that do not include a domain name server. **NOTE** Multicast DNS publication only works with devices on the same subnet.
Protocol	Select the security level of communication that the ConductIP internal NMOS registry will use: HTTP (unsecured) or HTTPS (secured).
Priority	Priority values from 0 to 99 correspond to an active NMOS Registration API, with 0 being the highest priority. Values of 100 and over are reserved for development work to avoid conflicts with a live system.
Heartbeat interval	Defines how often nodes should perform a heartbeat to maintain their resources in the Registration API.
PTP announce receipt timeout	Defines the number of announce intervals that must pass before declaring a timeout.
PTP domain number	Defines the PTP domain number.
Internal registry configuration	
Matrox ConductIP registry	Enable to activate the ConductIP internal NMOS registry. This is enabled by default.

Setting	Description
mDNS advertisement	Enable to broadcast the ConductIP internal NMOS registry on the network under the multicast DNS protocol. This resolves host-names to IP addresses within networks that do not include a domain name server. **NOTE** Multicast DNS publication only works with devices on the same subnet.
Protocol	Select the security level of communication that the ConductIP internal NMOS registry will use: HTTP (unsecured) or HTTPS (secured).
Priority	By default, ConductIP is set to 99 as a priority and will function as the redundant NMOS server if other servers become unavailable. Lower values indicate a higher priority (e.g. "1" is the highest priority).
Expiry interval	Defines the time lapse after which a resource is removed from the library when there is no heartbeat detected.
Registry selection	
Connection status	Displays the IP address and connection status of the registry currently in use, and indicates if the connection is secure (i.e. http or https). If you see an **Invalid certificate** icon, click on it to add the certificate to the registry list.

Setting	Description
Registry selection mode	**Internal:** Use the internal ConductIP NMOS registry. This option is only available if the ConductIP registry is enabled. **Manual:** Specify an NMOS registry to use by selecting the protocol and entering the IP address, query port, and registration port of the registry server. **Automatic:** Automatically selects a registry that is discovered on the network according to priority. The available registries will appear in the **Registry list** where you can see their connection status and expand each for more information. You may need to specify a search domain for the registries to appear in the list.
Session announcement protocol	
Expiry interval	Defines the time lapse after which a device is deemed to be offline.

Security

This section describes the **Security** settings in Matrox ConductIP.

Setting	Description
Server certificate	
Install server certificate	Install the certificate to use for secure communication. For more information, see "*Managing ConductIP certificates*" on page *19*.
Download Root CA	Download the ConductIP Root CA certificate to your computer.
Remove certificate	Remove the current certificate installed on the server. An internal Root CA certificate will be used instead. A reboot is required after removal.
Trusted certificates	
Add	Add a certificate that has been previously saved to your computer. This recognizes a secure connection. For more information, see "*Managing ConductIP certificates*" on page *19*.
Trusted certificates	List of trusted certificates that have been added to your ConductIP.
Remove certificate	Remove the current certificate installed on the server.
Trusted certificates validation	**Exceptions:** Add a list of hosts that ConductIP will ignore when validating trusted certificates. **Disable certificate validation:** Disables checking so ConductIP will not validate certificates for any host.

User management

This section describes the **User management** settings in Matrox ConductIP.

Setting	Description
LDAP service	
Search domains	Enter the domain name of your LDAP (Lightweight Directory Access Protocol) server if available.
Default user domain	The default user domain to use when communicating with the LDAP server. This is only used when the user does not specify a domain in the login dialog.
LDAP servers	**Scan LDAP servers:** Click **Scan** to perform a search of LDAP servers. **Use scanned LDAP servers:** Select to allow ConductIP to use the detected LDAP server. **Additional LDAP servers:** Enter additional LDAP server names, IP addresses, and ports.
Users	
Search users	Enter the keyword term to search for within the list of current users.
Add	If you are the Administrator, you can add new users and select their roles. For more information, see "*Creating user accounts*" on page *23*.
Users list	Administrators can deactivate users, change their roles, choose their authentication method, edit their information, change their passwords, and choose their user groups. They can also delete users.
User groups	
Search user groups	Enter the keyword term to search for within the list of user groups.
Add	Administrators can create a group and add users to it. For more information, see "*Creating user groups*" on page *26*.

Setting	Description
User groups list	Administrators can change the group name, modify the list of users in the group, and delete the group. The default **Operator** and **Super operator** groups are updated automatically and cannot be modified or deleted.

Application

This section describes the **Application** settings in Matrox ConductIP.

Licenses	
Product key	Your ConductIP product key.
Download system token	Downloads the system token file to the download directory of your computer. You send this file to Matrox Video to get back a license file (*.lic*) to activate the full ConductIP license.
Install license	Select and install the license file obtained from Matrox Video. The current license usage is also displayed at the bottom-right of the ConductIP application.
Installed licenses list	List of licenses that have been installed on your ConductIP. Click on a license to see a description as well as its installation and expiration dates.
Software update	
Version	Your ConductIP software version.
Upload an update package	Browse to an update file to update the ConductIP. You will need to obtain an update file from Matrox Video. For more information, see "*Updating Matrox ConductIP*" on page *21*.
Web application	
Install as a Progressive Web Application (PWA)	Installs ConductIP as a progressive web application so you can run it from your desktop rather than through your web browser. This option is only available if you have installed the root CA in your web browser.
Database	
Clear all database events	Clears all database event messages.
Import a data file into the database	Imports a ConductIP data file into the database.

Export content of the database to a file	Exports the current database to the download directory of your computer.

User interface

This section describes the **User interface** settings in Matrox ConductIP.

Setting	Description
Date and time	
Current time	The current time of your ConductIP.
Date format	Change the way the date is displayed.
Time format	Change the format to 12- or 24-hour clock.
Theme	
Color theme	Change the look of the user interface.
Workspace	
Reset the application windows and areas to their factory default settings	Reset the look of the user interface to factory default settings.
Colors	
Media colors	Change the colors used for the video, audio, and ancillary data device media components. Click **Default** at any time to reset to factory default settings (i.e. blue, green, orange).
Connection wire	
Connection wire settings	Change the look of the virtual wires connecting devices in the user interface. Click **Default** at any time to reset to factory default settings.

Guided tours

This section describes the **Guided tours** settings in Matrox ConductIP.

Setting	Description
Guided tours	
Overview of the most important configuration settings	See an overview of the most important settings to configure before using ConductIP.
Overview of the basic features	See an overview of ConductIP's core features.

Support

This section describes the **Support** settings in Matrox ConductIP.

Setting	Description
Contact us	Link to the Matrox Video Contact Support web page that includes all *technical support* resources.
Download a diagnostic data file	Exports a snapshot of the system's current configuration to the download directory of your computer. The snapshot includes system logs and is typically used for troubleshooting by Matrox Video *technical support*.
Clear project data	Erases all data related to rooms, panels, devices, groups, senders, and receivers. Users and general data such as licenses and the NMOS registry will not be erased.
Open the Matrox ConductIP Installation and User Guide	Opens the *Matrox ConductIP Installation and User Guide*.
Open debug ports for technical support	Only to be used when approved by Matrox Video *technical support* during a support session.

About

This section describes the **About** settings in Matrox ConductIP.

Setting	Description
Software version	The current ConductIP software version.
Product key	The ConductIP product key.
OS version	The ConductIP operating system version.
End-user license agreement	See the end-user license agreement.
Third-party software notices	See the list of third-party licenses for the software packages that ConductIP uses.

Appendix A

ConductIP keyboard shortcuts

This appendix includes the following topics:

ConductIP keyboard shortcuts

ConductIP has built-in shortcuts to make tasks easier.

General

These are general shortcuts that can be used in ConductIP.

Function	Shortcut
Search fields	
Delete search text	Esc
Properties panel	
Reset the Label to its original	Esc
Help page	
Find	Ctrl+F
Find next word	F3
Print	Ctrl+P

Rooms page

These shortcuts can be used in the Rooms page of ConductIP.

Function	Shortcut
Rooms list	
Select/deselect a room	Ctrl+Click
Copy data of selected rooms to the clipboard	Ctrl+C
Create a copy of the rooms that were copied to the clipboard (paste)	Ctrl+V

Function	Shortcut
Delete selected rooms	Delete
Create Room dialog	
Create the room and close the dialog	Enter
Room area	
Select/deselect individual tiles	Ctrl+Click
Select a group of tiles	Alt+Click and drag the cursor
Deselect tiles from a selected group	Shift+Click and drag the cursor
Select and add tiles to a selected group	Ctrl+Click and drag cursor
Scroll up	Scroll wheel up
Scroll down	Scroll wheel down
Scroll right	Alt or Shift+Scroll wheel up
Scroll left	Alt or Shift+Scroll wheel down
Zoom in to the cursor position	Ctrl+Scroll wheel up
Zoom out from the cursor position	Ctrl+Scroll wheel down
Remove selected items from the room	Delete
Room area minimap	
Redraw the region of interest within the current region	Ctrl+Click within the current region and drag the cursor
Redraw the region of interest outside the current region	Click outside the current region and drag the cursor
Move the region of interest	Click within the region and drag the cursor
Device bin	
Select/deselect individual items	Ctrl+Click
Select a range of items[1]	Click the first item in the range, then Shift+Click the last item in the range
Select all devices in the device bin or select all groups of a specific device[2]	Ctrl+A

Function	Shortcut
Locate the selected items in the room area	L
Locate a single item in the room area	Double-click the item
Expand selected items	X
Collapse selected items	C
Delete selected items	Delete

1. Clicking a group then using Shift+Click on another group from the same device will select all groups between the first and last selected items. Clicking a group and then using Shift+Click on another group from a different device will select all devices between the first and last selected items.
2. If one or more groups are selected and they are all from the same device, Ctrl+A will select all groups from that device. If every group of a device is selected, Ctrl+A will select all devices in the device bin, If multiple groups are selected and they are not all from the same device, Ctrl+A will select all devices in the bin.

Panels page

These shortcuts can be used in the Panels page of ConductIP.

Function	Shortcut
Panels list	
Select/deselect a panel	Ctrl+Click
Copy data of a selected panel to the clipboard	Ctrl+C
Create a copy of the panel that was copied to the clipboard (paste)	Ctrl+V
Delete selected panels	Delete

Function	Shortcut
Create Panel dialog	
Create the panel and close the dialog	Enter
Panel area	
Toggle the Video flow filter	V
Toggle the Audio flow filter	A
Toggle the Data flow filter	D
Toggle the Muxed flows filter	M
Apply the All filter	Z
Take	Enter
Queue	Q or Shift+Click
Toggle direct mode	T
Deactivate the selected sender	Delete or Backspace
Disconnect the selected receivers if they are connected	Delete or Backspace
Reset selections	Esc
Expand the selected item	X
Collapse the selected item	C
Subpanel area	
Toggle the selection of an item	Ctrl+Click
Select and match all senders and receivers	Ctrl+A
Deselect all senders and receivers	Esc

Recovery application

These are shortcuts that can be used in ConductIP's setup and recovery applications.

Function	Shortcut
Setup and recovery	
Focus on next item	Tab
Focus on previous item	Shift+Tab
Move up in the menu	Up arrow
Move down in the menu	Down arrow
Focus on an option	Number corresponding to the option
Close a pop-up dialog	Esc[1]
Check a box	Spacebar

1. Will not close a menu.

Appendix B

Troubleshooting Matrox ConductIP

This appendix includes the following topics:

Using the Matrox ConductIP recovery application

The Matrox ConductIP MRA includes a local application that you can use for troubleshooting. To access the application, you will need to use a monitor, mouse, and keyboard to physically connect to the ConductIP MRA. For more information, see the section *Logging in locally to the ConductIP MRA*.

NOTE Some of the recovery tools require a USB key (only one partition, formatted in FAT32). To ensure that USB is enabled in the BIOS of the device, reboot your ConductIP and press F2 to access the system BIOS settings, then enable USB.

IMPORTANT It is recommended that you only use the recovery tools when guided by Matrox Video technical support staff.

Tool	Description
Status	Shows you the current and previous ConductIP software versions that are installed on your ConductIP MRA.
Start ConductIP	Launches the latest ConductIP software version that was installed on your ConductIP MRA, as well as your current database of settings, users, rooms, panels, and presets.
Start previous ConductIP	Launches the previous ConductIP software version that was installed on your ConductIP MRA, with your database of settings, users, rooms, panels, and presets as it was at the time of your last update.
Configure network settings	Allows you to change the network settings.
Create Administrator account	Allows you to create an Administrator account.
Generate a diagnostic file	Allows you to export a snapshot of the system's current configuration to a USB key. The snapshot includes system logs and is typically used for troubleshooting by Matrox Video *technical support*.
Export database	Allows you to export the current database to a USB key.
Repair database	Checks for database corruption and attempts a repair.
Clear database	Clears the entire ConductIP database, keeping only network settings and licenses.

Tool	Description
Update ConductIP software	Updates the ConductIP from an update file stored on a USB key. You will need to download the latest update from our *website* and save it in the root directory of a USB key before launching the update.
Restore to factory default settings	Resets your ConductIP MRA software and settings to the manufacturer default (i.e. the software and settings that were installed when you received your ConductIP MRA). When you restore to factory default settings, your databases will be deleted and you will no longer be able to launch a previously installed software version.
Reboot	Reboots the ConductIP MRA.

Common issues

Here are some common issues you may encounter when using Matrox ConductIP and possible solutions for each.

Issue	Solution
Network connection	
I cannot access ConductIP since I changed my network settings.	You may have entered the wrong network settings. You will need to connect directly to the ConductIP MRA and change them via the Recovery Tools application. You can also find the IP address of the ConductIP MRA using the ConvertIP Manager. Refer to the ConvertIP Manager embedded help for more information.
I'm stuck on the "waiting for server" message.	There are three possible reasons for this: • You may have entered the wrong network settings. You will need to connect directly to the ConductIP MRA and change them via the Recovery Tools application. • You may have switched the ConductIP to a static IP address while your Web browser is still using your DHCP-assigned address. Open a new browser window and enter the new static IP address. • You may have reinstalled a server root CA for the same server in your Web browser. Delete the cache from your Web browser then restart the browser.
NTP server connection	
I still get the error message "NTP server not found" even after I set the NTP time in the ConductIP settings.	ConductIP may be set to a static IP address. You can either set ConductIP to DHCP, or if you want to keep it as a static IP, you need to properly configure the DNS server. For more information, see the *System* settings.

Issue	Solution
Browser	
My Web browser doesn't display the Web UI correctly.	Verify that the web browser you are using is officially supported (see *Supported web browsers*).
Logging in	
I don't remember my username and/or password.	An Administrator can consult the user list to find a username. If a user has forgotten their password, an administrator can change it by entering their own password and a new password for the user. For more, see "*Users*" on page *69* If no Administrator is able to log in, you can create an Administrator account from the recovery application (see *Using the Matrox ConductIP recovery application*).
Panels	
I don't see video/audio/data flows in my panel.	The filter for the flow type is not selected. Select the **All** filter to see all flow types.

Appendix C

Configuring your device’s firewall settings

This appendix includes the following topics:

Matrox ConductIP firewall port configuration

The following are the firewall port recommendations for your ConductIP.

Port	TCP/UDP	Configurable	Description
All	TCP/UDP	No	From 224.0.1.129 (NTP: Network Time Protocol)
22	TCP/UDP	No	SSH, only accessible by everyone when debug port is activated in Web UI
27017	TCP/UDP	No	Database, only accessible by everyone when debug port is activated in Web UI
8888	TCP/UDP	No	Backend, only accessible by everyone when debug port is activated in Web UI
8000	TCP/UDP	No	Backend, only accessible by everyone when debug port is activated in Web UI
8870	TCP/UDP	No	Query Port, NMOS Registry
8871	TCP/UDP	No	Query Port, NMOS Registry (websocket)
8872	TCP/UDP	No	Query Port, NMOS Registry (websocket)
8873	TCP/UDP	No	Query Port, NMOS Registry (websocket)
8874	TCP/UDP	No	Query Port, NMOS Registry (websocket)
8875	TCP/UDP	No	Query Port, NMOS Registry(websocket)
8876	TCP/UDP	No	Query Port, NMOS Registry (websocket)
8877	TCP/UDP	No	Query Port, NMOS Registry (websocket)
8235	TCP/UDP	No	Registration Port, NMOS Registry
443	TCP/UDP	No	Frontend (https)
80	TCP/UDP	No	Frontend (http) redirected to https
319	UDP	No	PTP
320	UDP	No	PTP
5353	UDP	No	MDNS
9875	TCP/UDP	No	SAP device discovery

Appendix D

Using REST API

This appendix includes the following topics:

Matrox ConductIP Public REST API

This section describes how to use the Matrox ConductIP public REST API. The API allows external control of ConductIP without using the ConductIP web interface.

Currently, the REST API is used to:

- Discover available presets created in the ConductIP web application.
- Apply those presets.
- Disconnect all receivers of a panel.

The REST API is defined in the format of the OpenAPI/Swagger specification. For the most up-to-date reference, see the corresponding YAML file, which you can obtain from your Matrox representative.

Overview

The ConductIP REST API includes two core functions:

- **Retrieving configuration data:** Includes calls to obtain room, panel, and preset information.
- **Applying routing changes:** Includes calls to disconnect panel connections and apply presets.

The API requires user authentication. User roles (Administrator, Super operator, Operator) determine the scope of access to rooms and panels.

Prerequisites

Before using the API:

- Ensure ConductIP is running (version 2.02.00 or later).
- Use a tool capable of HTTP requests, such as cURL or Postman.
- Use valid credentials for a ConductIP user account.
- Ensure at least one preset is created in the web interface.
- Assign the REST API user to the correct room (see *Assigning users and user groups to rooms*).

Getting the Preset ID

To apply a preset using the REST API, you need its unique identifier. There are two ways to obtain it:

- From the property pane in the web interface.
- From the REST API directly.

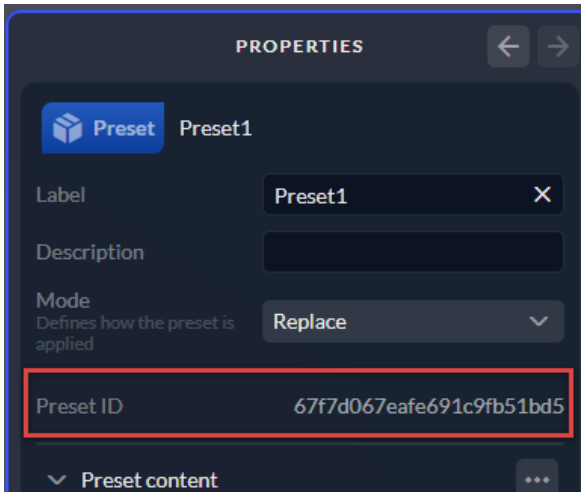
From the ConductIP web interface

Step 1. Go to the **Panels** page.

Step 2. Select the **Presets** panel.

Step 3. Click a preset to view its properties.

Step 4. Locate the *Preset ID* in the **Properties** panel. This is the identifier used in the REST API.

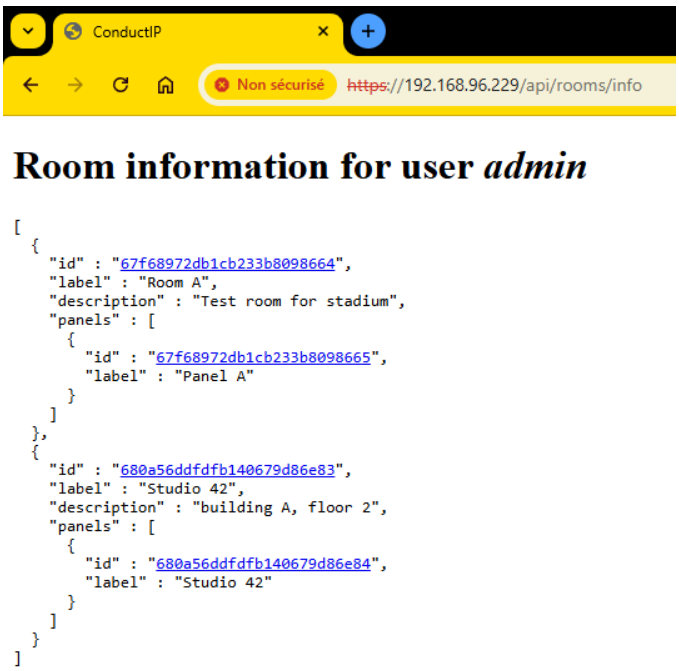


From the REST API

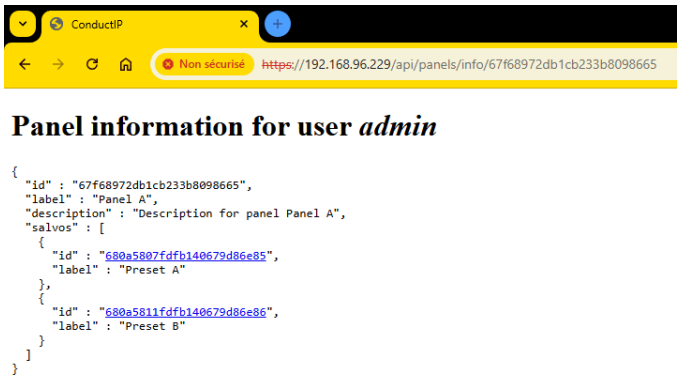
You can discover preset IDs by calling the REST API endpoints using your browser, cURL, or Postman.

Example: Using a web browser

1. Fetch all rooms.



2. Click a panel ID to view its associated presets.



3. Locate the preset ID in the response. This is the value used to activate the preset.

Example: Using cURL

1. Get room information.

   ```
   curl --user user:password --insecure https://conduct-ip-address/api/
   rooms/info
   ```

   The response is a JSON array of rooms and panels:

   ```
   [{"id":"67f68972db1cb233b8098664","label":"Room A",
   "description":"Test room for stadium",
   "panels":[{"id":"67f68972db1cb233b8098665","label":"Panel A"}]}]
   ```

2. Get panel information:

   ```
   curl --user user:password --insecure https://conduct-ip-address/api/pan-
   els/info/67f68972db1cb233b8098665
   ```

   The response includes available presets:

   ```
   {"id":"67f68972db1cb233b8098665","label":"Panel A","sal-
   vos":[{"id":"680a5807fdfb140679d86e85","label":"Preset A"}]}
   ```

NOTE JSON responses are not formatted by default. Use a JSON viewer for readability. The `--insecure` flag is required if the ConductIP root certificate is not installed on your system.

Applying a preset

To activate a preset using the REST API, send an HTTP `POST` request with the preset ID.

```
curl --user admin:Admin123! --insecure --write-out '%{http_code}\n' \
-X POST https://conduct-ip-address/api/salvos/680a5807fdfb140679d86e85
```

NOTE This command returns only the HTTP status code. It does not return response data.

Legal and compliance

USA

FCC Compliance Statement

Remark for the Matrox hardware products supported by this guide 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 instructions 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.

WARNING Changes or modifications to this unit not expressly approved by the party responsible for the compliance could void the user's authority to operate this equipment. The use of shielded cables for connection of the monitor to the card is required to meet FCC requirements.

CANADA

(English) Innovation, Science and Economic Development Canada

Remark for the Matrox hardware products supported by this guide These digital apparatus does not exceed the Class A limits for radio noise emission from digital devices set out in the Radio Interference Regulation of Innovation, Science and Economic Development Canada.

(Français) Innovation, Sciences et Développement économique Canada

Remarque sur les produits matériels Matrox couverts par ce guide Ce present appareil numérique n'émet aucun bruit radioélectrique dépassant les limites applicables aux appareils numériques de Classe A prescrites dans le Règlement sur le brouillage radioélectrique édicté par Innovation, Sciences et Développement économique Canada.

UNITED KINGDOM

United Kingdom user's information – Declaration of Conformity

Remark for the Matrox hardware products supported by this guide These devices comply with Directive UK SI 2016 No. 1091 relating to electromagnetic compatibility for a Class A digital device. They have been tested and found to comply with EN55032/CISPR32 and EN55035/CISPR35. In a domestic environment these products may cause radio interference in which case the user may be required to take adequate measures. To meet UK requirements, shielded cables must be used to connect the monitor and other peripherals to the card. These products have been tested in a typical class A compliant host system. It is assumed that these products will also achieve compliance in any class A compliant system.

USA

(English) FDA (Food and Drug Administration) requirements for Laser Products

Remark for the Matrox hardware products supported by this guide This product includes a 850 nm Laser Product compliant to 21CFR Subpart J Class 1.

KOREA

A 급 기기 (업무용 방송통신기자재)

이 기기는 업무용 (A 급) 전자파적합기기로서 판 매자 또는 사용자는 이 점을 주의하시기 바라 며 , 가정 외의 지역에서 사용하는 것을 목적으 로 합니다 .

EUROPE

(English) European user's information – Declaration of Conformity

Remark for the Matrox hardware products supported by this guide These devices comply with EC Directive 2014/30/EU for a Class A digital device. They have been tested and found to comply with EN55032/CISPR32 and EN55035/CISPR35. In a domestic environment these products may cause radio interference in which case the user may be required to take adequate measures. To meet EC requirements, shielded cables must be used to connect the monitor and other peripherals to the card. These products have been tested in a typical class A compliant host system. It is assumed that these products will also achieve compliance in any class A compliant system.

(Français) Informations aux utilisateurs Européens – Déclaration de conformité

Remarque sur les produits matériels Matrox couverts par ce guide Ces unités sont conformes à la directive communautaire 2014/30/EU pour les unités numériques de classe A. Les tests effectués ont prouvé qu'elles sont conformes aux normes EN55032/CISPR32 et EN55035/CISPR35. Le fonctionnement de ces produits dans un environnement résidentiel peut causer des interférences radio, dans ce cas l'utilisateur peut être amené à prendre les mesures appropriées. Pour respecter les impératifs communautaires, les câbles de connexion entre le moniteur ou autres périphériques et la carte doivent être blindés. Ces produits ont été testés dans un système hôte typique compatible classe A. On suppose qu'ils présenteront la même compatibilité dans tout système compatible classe A.

(Deutsch) Information für europäische Anwender – Konformitätserklärung

Anmerkung für die Matrox Hardware-Produktunterstützung durch dieses Handbuch Diese Geräte entsprechen EC Direktive 2014/30/EU für ein digitales Gerät Klasse A. Sie wurden getestet und entsprechen demnach EN55032/CISPR32 und EN55035/CISPR35. In einer Wohnumgebung können diese Produkte Funkinterferenzen erzeugen, und der Benutzer kann genötigt sein, entsprechende Maßnahmen zu ergreifen. Um EG-Anforderungen zu entsprechen, müssen zum Anschließen des Monitors und anderer Peripheriegeräte an die Karte abgeschirmte Kabel verwendet werden. Diese Produkt wurden in einem typischen, der Klasse A entsprechenden, Host-System getestet. Es wird davon ausgegangen, daß diese Produkte auch in jedem Klasse A entsprechenden System entsprechend funktionieren.

(Italiano) Informazioni per gli utenti europei – Dichiarazione di conformità

Nota per i prodotti hardware Matrox supportati da questa guida Questi dispositivi sono conformi alla direttiva CEE 2014/30/EU elativamente ai dispositivi digitali di Classe A. Sono stati provati e sono risultati conformi alle norme EN55032/CISPR32 e EN55035/CISPR35. In un ambiente domestico, questi prodotti possono causare radiointerferenze, nel qual caso all'utente potrebbe venire richiesto di prendere le misure adeguate. Per soddisfare i requisiti CEE, il monitor e le altre periferiche vanno collegati alla scheda grafica con cavi schermati. Questi prodotti sono stati provati in un tipico sistema host conforme alla classe A. Inoltre, si dà per scontato che questi prodotti acquisiranno la conformità in qualsiasi sistema conforme alla classe A.

(Español) Información para usuarios europeos – Declaración de conformidad

Observación referente a los productos de hardware de Matrox apoyados por este manual Estos dispositivos cumplen con la directiva de la CE 2014/30/EU para dispositivos digitales de Clase A. Dichos dispositivos han sido sometidos a prueba y se ha comprobado que cumplen con las normas EN55032/CISPR32 y EN55035/CISPR35. En entornos residenciales, estos productos pueden causar interferencias en las comunicaciones por radio; en tal caso el usuario deberá adoptar las medidas adecuadas. Para satisfacer las disposiciones de la CE, deberán utilizarse cables apantallados para conectar el monitor y demás periféricos a la tarjeta. Estos productos han sido sometidos a prueba en un típico sistema anfitrión que responde a los requisitos de la clase A. Se supone que estos productos cumplirán también con las normas en cualquier sistema que responda a los requisitos de la clase A.

EUROPE

(English) European user's information – Directive on Waste Electrical and Electronic Equipment (WEEE)

Please refer to the Matrox Web site (https://video.matrox.com/en/environment/product-waste-management) for recycling information.

(Français) Informations aux utilisateurs Européens – Règlementation des déchets d'équipements électriques et électroniques (DEEE)

Se référer au site Web de Matrox (https://video.matrox.com/en/environment/product-waste-management) pour l'information concernant le recyclage.

(Deutsch) Information für europäische Anwender – Europäische Regelungen zu Elektro- und Elektronikaltgeräten (WEEE)

Bitte wenden Sie sich an der Matrox-Website (https://video.matrox.com/en/environment/product-waste-management) für Recycling-Informationen.

(Italiano) Informazioni per gli utenti europei – Direttiva sui rifiuti di apparecchiature elettriche ed elettroniche (RAEE)

Si prega di riferirsi al sito Web Matrox (https://video.matrox.com/en/environment/product-waste-management) per le informazioni di riciclaggio.

FRANCE

Avertissement sur l'épilepsie

À lire avant toute utilisation d'un jeu vidéo par vous-même ou votre enfant Certaines personnes sont susceptibles de faire des crises d'épilepsie ou d'avoir des pertes de conscience à la vue de certains types de lumières clignotantes ou d'éléments fréquents dans notre environnement quotidien. Ces personnes s'exposent à des crises lorsqu'elles regardent certaines images télévisées ou qu'elles jouent à certains jeux vidéo. Ces phénomènes peuvent apparaître alors même que le sujet n'a pas d'antécédent médical ou n'a jamais été confronté à une crise d'épilepsie.

Si vous-même ou un membre de votre famille avez déjà présenté des symptômes liés à l'épilepsie (crise ou perte de conscience) en présence de stimulations lumineuses, veuillez consulter votre médecin avant toute utilisation.

Nous conseillons aux parents d'être attentifs à leurs enfants lorsqu'ils jouent avec des jeux vidéo. Si vous-même ou votre enfant présentez un des symptômes suivants: vertige, trouble de la vision, contraction des yeux ou des muscles, perte de conscience, trouble de l'orientation, mouvement involontaire ou convulsion, veuillez immédiatement cesser de jouer et consultez un médecin.

Précautions à prendre dans tous les cas pour l'utilisation d'un jeu vidéo Ne vous tenez pas trop près de l'écran. • Jouez à bonne distance de l'écran de TV et aussi loin que le permet le cordon de raccordement. • Utilisez de préférence les jeux de vidéo sur un écran de petite taille. • Évitez de jouer si vous êtes fatigué ou si vous manquez de sommeil. • Assurez-vous que vous jouez dans une pièce bien éclairée. • En cours d'utilisation, faites des pauses de dix à quinze minutes toutes les heures.

USA

FCC Compliance Statement

Remark for the Matrox hardware products supported by this guide This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment causes harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures: • Reorient or relocate the receiving antenna • Increase the separation between the equipment and receiver • Connect the equipment into an outlet on a circuit different from that to which the receiver is connected • Consult the dealer or an experienced radio/TV technician for help.

WARNING Changes or modifications to this unit not expressly approved by the party responsible for the compliance could void the user's authority to operate this equipment. The use of shielded cables for connection of the monitor to the card is required to meet FCC requirements.

Declaration of conformity of a Class B digital device according to the FCC rules

We, the Responsible Party Matrox, 2002 Ridge Road, Champlain, NY 12919 • Telephone: (514) 822-6000 (extension 2026) • Attention: Conformity Group Matrox

Declaration The Matrox hardware products supported by this guide comply with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) these devices may not cause harmful interference, and (2) these devices must accept any interference received, including interference that may cause undesired operation. Any question regarding this declaration should be forwarded to the above coordinates.

CANADA

(English) Innovation, Science and Economic Development Canada

Remark for the Matrox hardware products supported by this guide These digital devices do not exceed the Class B limits for radio noise emission from digital devices set out in the Radio Interference Regulation of Innovation, Science and Economic Development Canada.

(Français) Innovation, Sciences et Développement économique Canada

Remarque sur les produits matériels Matrox couverts par ce guide Ces appareils numériques n'émettent aucun bruit radioélectrique dépassant les limites applicables aux appareils numériques de Classe B prescrites dans le Règlement sur le brouillage radioélectrique édicté par Innovation, Sciences et Développement économique Canada.

KOREA

B 급 기기 (가정용 방송통신기자재)

이 기기는 가정용 (B 급) 전자파적합기기로서 주 로 가정에서 사용하는 것을 목적으로 하며 , 모든 지역에서 사용할 수 있습니다 .

EUROPE

(English) European user's information – Information on Conformity

Remark for the Matrox hardware products supported by this guide These devices comply with EC Directive 2014/30/EU for a Class B digital device. They have been tested and found to comply with EN55032/CISPR32 and EN55024/CISPR24. In a domestic environment these products may cause radio interference in which case the user may be required to take adequate measures. To meet EC requirements, shielded cables must be used to connect the monitor and other peripherals to the card. These products have been tested in a typical class B compliant host system. It is assumed that these products will also achieve compliance in any class B compliant system.

(Français) Informations aux utilisateurs Européens – Informations sur la conformité

Remarque sur les produits matériels Matrox couverts par ce guide Ces unités sont conformes à la directive communautaire 2014/30/EU pour les unités numériques de classe B. Les tests effectués ont prouvé qu'elles sont conformes aux normes EN55032/CISPR32 et EN55024/CISPR24. Le fonctionnement de ces produits dans un environnement résidentiel peut causer des interférences radio, dans ce cas l'utilisateur peut être amené à prendre les mesures appropriées. Pour respecter les impératifs communautaires, les câbles de connexion entre le moniteur ou autres périphériques et la carte doivent être blindés. Ces produits ont été testés dans un système hôte typique compatible classe B. On suppose qu'ils présenteront la même compatibilité dans tout système compatible classe B.

(Deutsch) Information für europäische Anwender – Konformitäts-Informationen

Anmerkung für die Matrox Hardware-Produktunterstützung durch dieses Handbuch Diese Geräte entsprechen EC Direktive 2014/30/EU für ein digitales Gerät Klasse B. Sie wurden getestet und entsprechen demnach EN55032/CISPR32 und EN55024/CISPR24. In einer Wohnumgebung können diese Produkte Funkinterferenzen erzeugen, und der Benutzer kann genötigt sein, entsprechende Maßnahmen zu ergreifen. Um EG-Anforderungen zu entsprechen, müssen zum Anschließen des Monitors und anderer Peripheriegeräte an die Karte abgeschirmte Kabel verwendet werden. Diese Produkt wurden in einem typischen, der Klasse B entsprechenden, Host-System getestet. Es wird davon ausgegangen, daß diese Produkte auch in jedem Klasse B entsprechenden System entsprechend funktionieren.

(Italiano) Informazioni per gli utenti europei – Informazioni sulla conformità

Nota per i prodotti hardware Matrox supportati da questa guida Questi dispositivi sono conformi alla direttiva CEE 2014/30/EU relativamente ai dispositivi digitali di Classe B. Sono stati provati e sono risultati conformi alle norme EN55032/CISPR32 e EN55024/CISPR24. In un ambiente domestico, questi prodotti possono causare radiointerferenze, nel qual caso all'utente potrebbe venire richiesto di prendere le misure adeguate. Per soddisfare i requisiti CEE, il monitor e le altre periferiche vanno collegati alla scheda grafica con cavi schermati. Questi prodotti sono stati provati in un tipico sistema host conforme alla classe B. Inoltre, si dà per scontato che questi prodotti acquisiranno la conformità in qualsiasi sistema conforme alla classe B.

(Español) Información para usuarios europeos – Información sobre la conformidad

Observación referente a los productos de hardware de Matrox apoyados por este manual Estos dispositivos cumplen con la directiva de la CE 2014/30/EU para dispositivos digitales de Clase B. Dichos dispositivos han sido sometidos a prueba y se ha comprobado que cumplen con las normas EN55032/CISPR32 y EN55024/CISPR24. En entornos residenciales, estos productos pueden causar interferencias en las comunicaciones por radio; en tal caso el usuario deberá adoptar las medidas adecuadas. Para satisfacer las disposiciones de la CE, deberán utilizarse cables apantallados para conectar el monitor y demás periféricos a la tarjeta. Estos productos han sido sometidos a prueba en un típico sistema anfitrión que responde a los requisitos de la clase B. Se supone que estos productos cumplirán también con las normas en cualquier sistema que responda a los requisitos de la clase B.

EUROPE

(English) European user's information – Directive on Waste Electrical and Electronic Equipment (WEEE)

Please refer to the Matrox Web site (https://video.matrox.com/en/environment/product-waste-management) for recycling information.

(Français) Informations aux utilisateurs Européens – Règlementation des déchets d'équipements électriques et électroniques (DEEE)

Se référer au site Web de Matrox (https://video.matrox.com/en/environment/product-waste-management) pour l'information concernant le recyclage.

(Deutsch) Information für europäische Anwender – Europäische Regelungen zu Elektro- und Elektronikaltgeräten (WEEE)

Bitte wenden Sie sich an der Matrox-Website (https://video.matrox.com/en/environment/product-waste-management) für Recycling-Informationen.

(Italiano) Informazioni per gli utenti europei – Direttiva sui rifiuti di apparecchiature elettriche ed elettroniche (RAEE)

Si prega di riferirsi al sito Web Matrox (https://video.matrox.com/en/environment/product-waste-management) per le informazioni di riciclaggio.

FRANCE

Avertissement sur l'épilepsie

À lire avant toute utilisation d'un jeu vidéo par vous-même ou votre enfant Certaines personnes sont susceptibles de faire des crises d'épilepsie ou d'avoir des pertes de conscience à la vue de certains types de lumières clignotantes ou d'éléments fréquents dans notre environnement quotidien. Ces personnes s'exposent à des crises lorsqu'elles regardent certaines images télévisées ou qu'elles jouent à certains jeux vidéo. Ces phénomènes peuvent apparaître alors même que le sujet n'a pas d'antécédent médical ou n'a jamais été confronté à une crise d'épilepsie.

Si vous-même ou un membre de votre famille avez déjà présenté des symptômes liés à l'épilepsie (crise ou perte de conscience) en présence de stimulations lumineuses, veuillez consulter votre médecin avant toute utilisation.

Nous conseillons aux parents d'être attentifs à leurs enfants lorsqu'ils jouent avec des jeux vidéo. Si vous-même ou votre enfant présentez un des symptômes suivants: vertige, trouble de la vision, contraction des yeux ou des muscles, perte de conscience, trouble de l'orientation, mouvement involontaire ou convulsion, veuillez immédiatement cesser de jouer et consultez un médecin.

Précautions à prendre dans tous les cas pour l'utilisation d'un jeu vidéo Ne vous tenez pas trop près de l'écran. • Jouez à bonne distance de l'écran de TV et aussi loin que le permet le cordon de raccordement. • Utilisez de préférence les jeux de vidéo sur un écran de petite taille. • Évitez de jouer si vous êtes fatigué ou si vous manquez de sommeil. • Assurez-vous que vous jouez dans une pièce bien éclairée. • En cours d'utilisation, faites des pauses de dix à quinze minutes toutes les heures.

(English) Disclaimer

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(Deutsch) Haftungsablehnungserklärung

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