Ultrix

User Guide

www.rossvideo.com

Thank You for Choosing Ross

You've made a great choice. We expect you will be very happy with your purchase of Ross Technology.

Our mission is to:

1. Provide a Superior Customer Experience
    - offer the best product quality and support
2. Make Cool Practical Technology
    - develop great products that customers love

Ross has become well known for the Ross Video Code of Ethics. It guides our interactions and empowers our employees. I hope you enjoy reading it below.

If anything at all with your Ross experience does not live up to your expectations be sure to reach out to us at *solutions@rossvideo.com*.

David Ross
CEO, Ross Video
dross@rossvideo.com

Ross Video Code of Ethics

Any company is the sum total of the people that make things happen. At Ross, our employees are a special group. Our employees truly care about doing a great job and delivering a high quality customer experience every day. This code of ethics hangs on the wall of all Ross Video locations to guide our behavior:

1. We will always act in our customers' best interest.
2. We will do our best to understand our customers' requirements.
3. We will not ship crap.
4. We will be great to work with.
5. We will do something extra for our customers, as an apology, when something big goes wrong and it's our fault.
6. We will keep our promises.
7. We will treat the competition with respect.
8. We will cooperate with and help other friendly companies.
9. We will go above and beyond in times of crisis. *If there's no one to authorize the required action in times of company or customer crisis - do what you know in your heart is right. (You may rent helicopters if necessary.)*

Ultrix · User Guide

- Ross Part Number: **2101DR-004-18**
- Release Date: February 26, 2021.
- Software Issue: **4.5.0**

The information contained in this Guide is subject to change without notice or obligation.

Copyright

Patents

Patent numbers US 7,034,886; US 7,508,455; US 7,602,446; US 7,802,802 B2; US 7,834,886; US 7,914,332; US 8,307,284; US 8,407,374 B2; US 8,499,019 B2; US 8,519,949 B2; US 8,743,292 B2; GB 2,419,119 B; GB 2,447,380 B; and other patents pending.

Notice

The material in this manual is furnished for informational use only. It is subject to change without notice and should not be construed as commitment by Ross Video Limited. Ross Video Limited assumes no responsibility or liability for errors or inaccuracies that may appear in this manual.

Trademarks

- Dolby® is a registered trademark of Dolby Laboratories.
- Google® is a registered trademark of Google Inc.
- Microsoft® Excel® and Internet Explorer® are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries.
- Mozilla® and Firefox® are registered trademarks of the Mozilla Foundation.
- Oracle® and Java® are registered trademarks of Oracle and/or its affiliates. Other names may be trademarks of their respective owners.
- Safari® is a trademark of Apple Inc., registered in the U.S. and other countries.

Safety Notices

Refer to the "**Important Regulatory and Safety Notices**" document that accompanied your product.

Statement of Compliance

This product has been determined to be compliant with the applicable standards, regulations, and directives for the countries where the product is marketed.

Compliance documentation, such as certification or Declaration of Compliance for the product is available upon request by contacting techsupport@rossvideo.com. Please include the product; model number identifiers and serial number and country that compliance information is needed in request.

EMC Notices

United States of America - FCC Part 15

This equipment has been tested and found to comply with the limits for a class A Digital device, pursuant to part 15 of the FCC Rules.

These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a Commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in

accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Canada

This Class A device complies with Canadian ICES-003 and part 15 of the FCC Rules.

Cet appariel numerique de la classe “A” est conforme a la norme NMB-003 du Canada.

> **Notice** — *Changes or modifications to this equipment not expressly approved by Ross Video Ltd. could void the user’s authority to operate this equipment.*

European Union

This equipment is in compliance with the essential requirements and other relevant provisions established under regulation (EC) No 765/2008 and Decision No 768/2008/EC referred to as the “New Legislative Framework”.

> **Warning** — *This equipment is compliant with Class A of CISPR 32. In a residential environment this equipment may cause radio interference.*

Australia/New Zealand

This equipment is in compliance with the provisions established under the Radiocommunications Act 1992 and Radiocommunications Labelling (Electromagnetic Compatibility) Notice 2008.

Korea

This equipment is in compliance with the provisions established under the Radio Waves Act.

Class A equipment (Broadcasting and communications service for business use).

This device is a business-use (Class A) EMC-compliant device. The seller and user are advised to be aware of this fact. This device is intended for use in areas outside home.

Type of Equipment	User’s Guide
A급 기기 (업무용 방송통신기자재)	이 기기는 업무용(A급) 전자파적합기기로서 판매자 또는 사용자는 이 점을 주의하시기 바라며, 가정외의 지역에서 사용하는 것을 목적으로 합니다.
Class A Equipment (Industrial Broadcasting & Communication Equipment)	This equipment is **Industrial (Class A) electromagnetic wave suitability equipment** and seller or user should take notice of it, and this equipment is to be used in the places except for home.

International

This equipment has been tested under the requirements of CISPR 22:2008 or CISPR 32:2015 and found to comply with the limits for a Class A Digital device.

> **Notice** — *This is a Class A product. In domestic environments, this product may cause radio interference, in which case the user may have to take adequate measures.*

Warranty and Repair Policy

The Ultrix systems are backed by a comprehensive one-year warranty on all components.

> **Notice** — *Changes or modifications to this equipment not expressly approved by Ross Video Limited could void the user’s authority to operate this equipment.*

If an item becomes defective within the warranty period Ross will repair or replace the defective item, as determined solely by Ross.

Warranty repairs will be conducted at Ross, with all shipping FOB Ross dock. If repairs are conducted at the customer site, reasonable out-of-pocket charges will apply. At the discretion of Ross, and on a temporary loan basis, plug in circuit boards or other replacement

parts may be supplied free of charge while defective items undergo repair. Return packing, shipping, and special handling costs are the responsibility of the customer.

This warranty is void if products are subjected to misuse, neglect, accident, improper installation or application, or unauthorized modification.

In no event shall Ross Video Limited be liable for direct, indirect, special, incidental, or consequential damages (including loss of profit). Implied warranties, including that of merchantability and fitness for a particular purpose, are expressly limited to the duration of this warranty.

This warranty is TRANSFERABLE to subsequent owners, subject to Ross' notification of change of ownership.

Environmental Information

The equipment may contain hazardous substances that could impact health and the environment.

To avoid the potential release of those substances into the environment and to diminish the need for the extraction of natural resources, Ross Video encourages you to use the appropriate take-back systems. These systems will reuse or recycle most of the materials from your end-of-life equipment in an environmentally friendly and health conscious manner.

The crossed-out wheeled bin symbol invites you to use these systems.

If you need more information on the collection, reuse, and recycling systems, please contact your local or regional waste administration. You can also contact Ross Video for more information on the environmental performances of our products.

This appliance may contain a Coin type battery which should not be treated as household waste.

To ensure that the battery will be treated properly use the appropriate take-back systems in your area. These systems will reuse or recycle most of the materials from your end-of-life equipment in an environmentally friendly and health conscious manner.

Company Address

Ross Video Limited
8 John Street
Iroquois, Ontario
Canada, K0E 1K0

Ross Video Incorporated
P.O. Box 880
Ogdensburg, New York
USA 13669-0880

General Business Office: (+1) 613 • 652 • 4886
Fax: (+1) 613 • 652 • 4425

Technical Support: (+1) 613 • 652 • 4886
After Hours Emergency: (+1) 613 • 349 • 0006

E-mail (Technical Support): techsupport@rossvideo.com
E-mail (General Information): solutions@rossvideo.com
Website: http://www.rossvideo.com

Contents

Introduction

This guide covers the configuration and operation of the Ultrix router. The following chapters are included:

- "**Introduction**" summarizes the guide and provides important terms, and conventions.
- "**Getting Started**" provides general information to keep in mind before configuring your Ultrix.
- "**Basic Configuration**" provides instructions for configuring the Ultrix network settings, and displaying the Ultrix nodes in DashBoard.
- "**Software License Keys**" provides instructions for enabling licensed features of your Ultrix router.

Hardware Configuration

- "**Configuring the Ports**" provides instructions on how to manage your hardware matrices, configure an AUX port, and assign an UltriScape (Multiviewer) head to a physical output.
- "**UHD Gearbox Configuration**" provides instructions on how to set up your Gearbox groups.
- "**UltriScape Setup**" provides instructions on how to configure the hardware for UltriScape.
- "**ULTRIX-IP-IO Setup**" outlines how to configure receivers and senders for the Ultrix router to be used in video and audio streaming when at least one ULTRIX-IP-IO blade is installed in a slot of an Ultrix router chassis.
- "**ULTRIX-SFP-IO Setup**" outlines how to utilize the ports for the Ultrix router when an ULTRIX-SFP-IO blade is installed in a slot of an Ultrix router chassis.

Routing Configuration and Operation

- "**Device Communication Setup**" provides instructions for using Ultrix to establish connection points to Ross NK Series devices, Ross Ethernet devices, and third-party devices in your routing system.
- "**Database Configuration**" provides instructions on how to define destinations, sources, and levels for your router.
- "**UltriScape Configuration**" provides information on using layout templates, editing layouts, adding objects to a layout, and publishing a finished layout.
- "**Managing the UltriScape Heads**" provides instructions on how to, load and assign a layout to an UltriScape head, and assign router input signals to PiPs in a layout.
- "**Tallies**" provides instructions on how to enable TSL UMD messages in the active database, assign Tally IDs to your sources and destinations, and how to manage tally objects in your UltriScape heads.
- "**Configuring an Audio Matrix**" provides instructions on how to enable Sample Rate Conversion (SRC) of the embedded audio, audio fading, configuring how the audio is embedded in the outputs, mapping audio channels, and configuring MADI signals.
- "**Using Remote Control Panels**" provides information on operating the Ultrix router with Ross remote control panels (RCP).
- "**Using Categories**" describes how to assign each destination, source, and level to a specific category in the router database.
- "**Soft Panels in DashBoard**"describes the Matrix, MultiBus, and Category panels in DashBoard, and provides instructions on how to use the soft panels to perform crosspoint switches.
- "**Using Salvos**" describes how to create and recall a salvo using the options in DashBoard.
- "**Operation with Ross Devices**" provides general information for operating the Ultrix router in a routing system that also includes Ross NK Series devices.
- "**External Control**" lists the third-party protocol commands the Ultrix router supports.
- "**ULTRIX-UCCI Redundancy**" outlines the ULTRIX-UCCI Control redundancy feature for the ULTRIX-FR5.
- "**Managing your Ultrix Settings**" outlines how to import and export archived files (*.ufs) of your Ultrix router settings to another Ultrix router.

- "**Monitoring the Hardware**" outlines how to monitor the router hardware via the DashBoard status fields.
- "**Monitoring the Communications**" summarizes how to verify communications on an Ethernet port, an Ultricore connection, and the overall communication status of the Ultrix router.
- "**Monitoring the Signals**" outlines how to monitor the reference signal, the inputs and outputs signals via the options in the Frame Configuration interface of DashBoard.
- "**Software Upgrades**" provides instructions on how to upgrade the Ultrix router through DashBoard.
- "**DashBoard Interface Overview**" summarizes the functions, menus, and parameters of the Ultrix tabs and windows in DashBoard.
- "**Glossary**" provides a definitions of commonly used terms and conventions for this guide.

If you have questions pertaining to the operation of Ultrix, contact us at the numbers listed in the section "**Contacting Technical Support**". Our technical staff is always available for consultation, training, or service.

Documentation Conventions

Special text formats are used in this guide to identify parts of the user interface, text that a user must enter, or a sequence of menus and sub-menus that must be followed to reach a particular command.

Interface Elements

Bold text is used to identify a user interface element such as a dialog box, menu item, or button. For example:

In the **Save As** dialog, click **OK**.

User Entered Text

Courier text is used to identify text that a user must enter. For example:

In the **Language** box, enter **`English`**.

Referenced Guides

Italic text is used to identify the titles of referenced guides, manuals, or documents. For example:

For more information, refer to the section "**Hardware Overview**" in the ***Ultrix Installation Guide***.

Menu Sequences

Menu arrows are used in procedures to identify a sequence of menu items that you must follow. For example, if a step reads "**File** > **Save As**," you would click the **File** menu and then click **Save As**.

Important Instructions

Star icons are used to identify important instructions or features. For example:

✶ An error message displays when an object overlaps a tile or when one tile overlaps another in the workspace.

Contacting Technical Support

At Ross Video, we take pride in the quality of our products, but if problems occur, help is as close as the nearest telephone.

Our 24-hour Hot Line service ensures you have access to technical expertise around the clock. After-sales service and technical support is provided directly by Ross Video personnel. During business hours (Eastern Time), technical support personnel are available by telephone. After hours and on weekends, a direct emergency technical support phone line is available. If the technical support person who is on call does not answer this line immediately,

a voice message can be left and the call will be returned shortly. This team of highly trained staff is available to react to any problem and to do whatever is necessary to ensure customer satisfaction.

- **Technical Support**: (+1) 613-652-4886
- **After Hours Emergency**: (+1) 613-349-0006
- **E-mail**: techsupport@rossvideo.com
- **Website**: http://www.rossvideo.com

Getting Started

Implement your routing system plan and then use the Ultrix user interfaces in DashBoard to configure the router.

Configuration Overview

The generalized work-flow of configuring your Ultrix router is:

1. Implement your routing system plan.
2. Configure the network settings for the Ultrix router.
3. Ensure that DashBoard discovers the Ultrix router on your network.
4. Define the database for the router using the options in the Ultrix interfaces in DashBoard.
5. Set up control panels.

Implementing Your System Plan

An effective routing system takes careful planning. You may use multiple router levels across several input and output devices.

✶ Ultrix supports a maximum of 25 DashBoard clients with 50 other TCP/IP connections (remote control panels, third-party control systems, etc.).

Establish Communications

Ultrix supports the Walkabout system for initial configuration of its IP settings. Once you establish communications over Ethernet between the Ultrix router and DashBoard, you can proceed to use the interfaces in DashBoard that enable Ultrix to communicate with the other devices in your routing system.

Define the Database for the Router

The Database interface in DashBoard for an Ultrix enables you to create system input and output lists, assign those signals to system sources and destinations, define multiple levels and matrices. You may wish to use the following process when defining the database for your router.

✶ Ultrix supports a maximum of 64 levels, with a maximum matrix of 4096 sources and 4096 destinations.

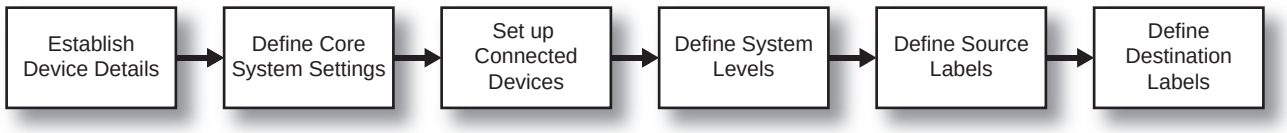


Figure 2.1 Process for Configuring an Ultrix Router

✶ Ultrix does not support Unicode characters.

Re-naming the Ultrix Router via the Front Panel

If you installed multiple Ultrix routers in your system, each router must have a unique name assigned to it via its front panel menu system. This ensures that the router is easily identifiable in the Walkabout interface and uniquely identifies its inputs and outputs in the DashBoard database interfaces.

Navigating the Front Panel Menu System

The LCD Display on the Ultrix front panel reports the chassis IP Address, the unique name of the router, and reports when an error or warning condition is occurring on the router. Next to the LCD Display is a five-direction round finger joystick that is used to access and navigate the Ultrix messages and menus on the LCD Display.

For More Information on...

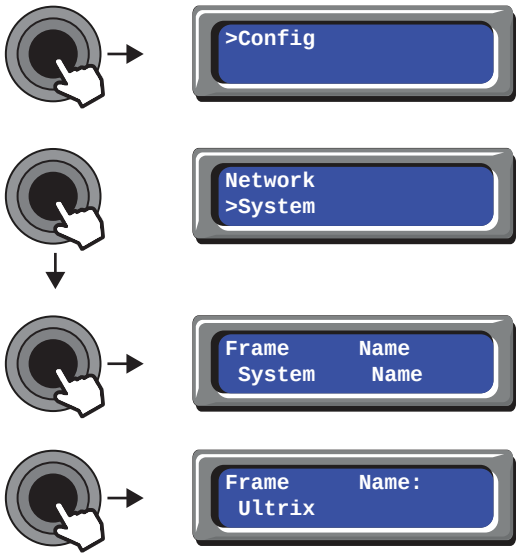
- using the joystick to navigate the front panel menu system, refer to the ***Ultrix Installation Guide***.

Re-naming the Ultrix Router

Throughout the DashBoard interface, actual sockets (inputs and outputs) of a router (or matrix) are referred to by hierarchical dotted notation: **Frame.Slot.Port.Type.Channel** where **Frame** identifies the physical router chassis housing the matrix/matrices. By default, each Ultrix router ships with the name "Ultrix" automatically set. By re-naming each Ultrix router, you are providing a unique identifier for the sockets within the router system.

To re-name an Ultrix router via the front panel

1. Navigate to the **Frame Name** menu via the front panel as follows:



   The current name for the router is displayed in the bottom line of the **Frame Name:** field. The first character position in the field will alternate flash with an underscore character. This provides visual feedback to the current cursor position.

2. Use the joystick to assign a new name to the router.
   - Pressing the joystick **LEFT**/**RIGHT** positions the cursor.
   - Pressing **UP**/**DOWN** selects a character.
3. Press the joystick **IN** to apply the new name.
4. Ensure the cursor is positioned at the front of the name.
5. Press the joystick **LEFT** to navigate back up the menu tree.

Basic Configuration

The DashBoard client software allows configuration and monitoring of the Ultrix router, and provides access to other devices in your routing system. This chapter provides general information for enabling the Ultrix router to connect to your facility network, and configuring the router to establish communications with other devices in your routing system.

Launching DashBoard

DashBoard must be run on a computer that has a physical wired Ethernet connection. Wireless connections do not allow device discovery.

For More Information on...

- downloading and installing the DashBoard client software, refer to the ***DashBoard User Manual***.

To launch DashBoard

1. Ensure that you are running DashBoard software version 9.0 or higher.
2. Launch DashBoard by double-clicking its icon on your computer desktop.

Using Walkabout to Assign the Initial IP Address to the Ultrix Router

Once the Ultrix router is physically installed and cabled to your facility network, you will need to assign it an initial static IP Address to enable DashBoard to locate it on your network. Establishing an initial IP Address enables DashBoard to communicate with the router and update the Basic Tree View with the Ultrix nodes.

To assign the initial static IP address for the Ultrix router

1. Launch DashBoard.
2. From the DashBoard client main toolbar, select **File** > **Show Walkabout**.

   The DashBoard window displays the **Walkabout** table.
3. Click **Refresh**, located at the bottom of the Walkabout tab, to ensure the list in the Walkabout interface is current.
4. In the **Walkabout** table, find the entry for the Ultrix you want to configure.

✶ After you edit a cell in the **Walkabout** table, it is recommended to wait approximately 1 minute, then click **Refresh** to apply the new settings.

5. Use the **Name** field to assign a unique identifier to the Ultrix router. This will be the name displayed in the Tree View of DashBoard.
6. Use the **Address** field to specify the IP Address supplied by your IT Department for this device.

✶ The ULTRIX-FR5 requires two IP addresses.

7. Ensure the **Netmask** field is set to match your network requirements.
8. Use the **Gateway** field to specify the IP Address for connection outside of the local area network (LAN).
9. Click **Reboot** in the row of the **Walkabout** table for the Ultrix router.

Adding the Ultrix Router to the Tree View in DashBoard

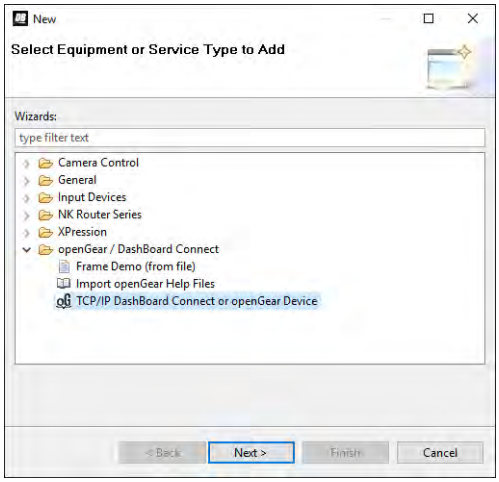
Once you have assigned the Ultrix router a static IP Address, you can then manually add it to the Tree View in DashBoard. Manually adding the Ultrix router displays its node in the Tree View, granting you access to the interfaces described in the chapter "**DashBoard Interface Overview**" on page 315.

To manually add the Ultrix router to the Tree View in DashBoard

1. In the **Basic Tree View** toolbar of DashBoard, click .

   The **Select Equipment or Service Type to Add** dialog opens.

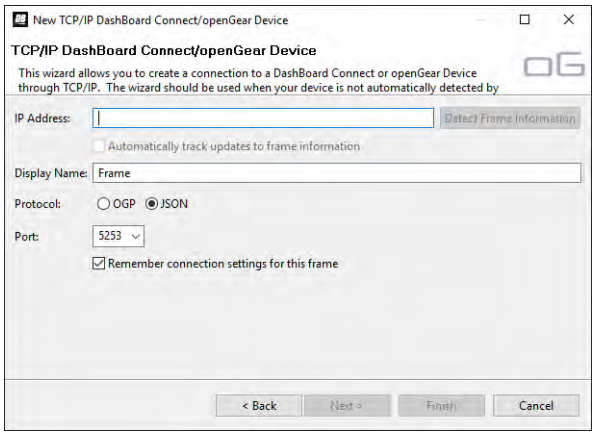
2. Expand the **openGear/DashBoard Connect** node.



3. Select **TCP/IP DashBoard Connect or openGear Device**.
4. Click **Next >**.

   The **TCP/IP DashBoard Connect/openGear Device** dialog opens.

5. Select the **JSON** radio button as the **Protocol**.



6. Enter the IP Address for the router in the **IP Address** field that you assigned in the section "**To assign the initial static IP address for the Ultrix router**" on page 23.
7. Perform one of the following steps:
   - In the text fields provided, enter the display name for the Ultrix router, and port of the panel you wish to add.
   - Click **Detect Frame Information** to automatically retrieve the connection details.
8. Click **Finish**.

   The Ultrix router displays in the **Tree View**.

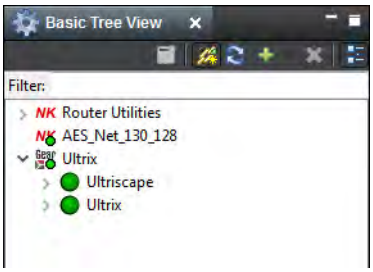
Accessing the Ultrix Interfaces in DashBoard

The interfaces are accessed by expanding the Ultrix node in the DashBoard Tree View and selecting the appropriate sub-node. Several of the interfaces are organized in a table layout with a toolbar on the bottom, and a toolbar on the left side of the tab.

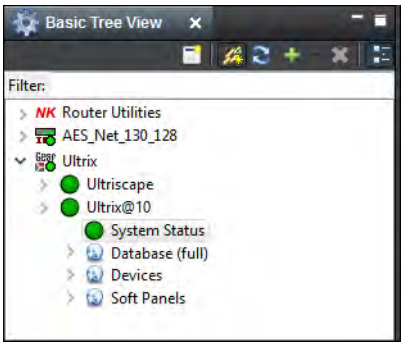
To access the Database interfaces in DashBoard

1. Locate the Ultrix in the Tree View of DashBoard.
2. Expand the Ultrix node to display a list of sub-nodes in the Tree View.

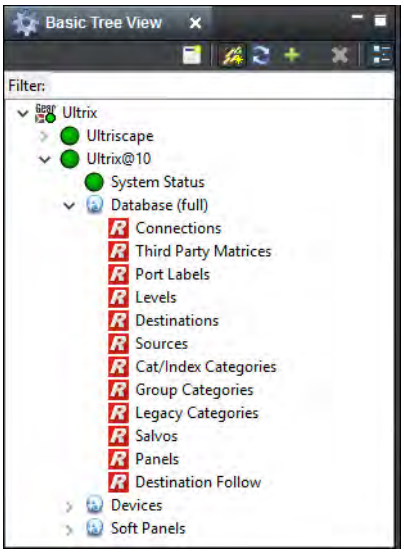
   Each sub-node is an Ultrix interface.



3. Select a sub-node for the interface you want to access. For example, expand the Ultrix node to display a list of options for the Ultrix router.

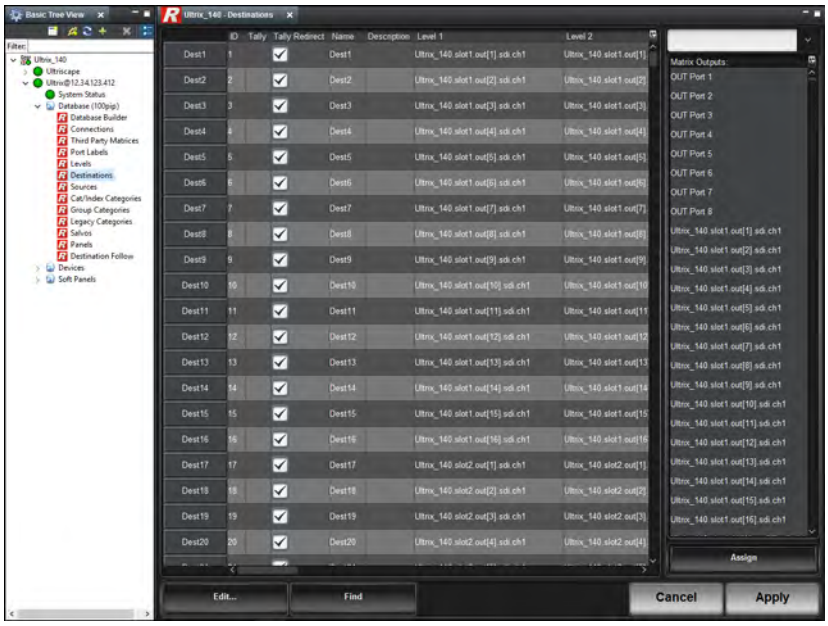


4. If required, expand the sub-node to access the function of the interface. For example, expand the Database node to list the options available for configuring a database for the Ultrix router.



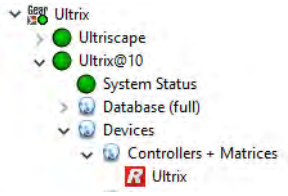
5. Double-click a sub-node to display its tab in the right-side of the DashBoard window. For example, double-click the Destinations node to display the Destinations interface.

★ The selected interface may be blank or missing some data if the database is new and is not configured yet.

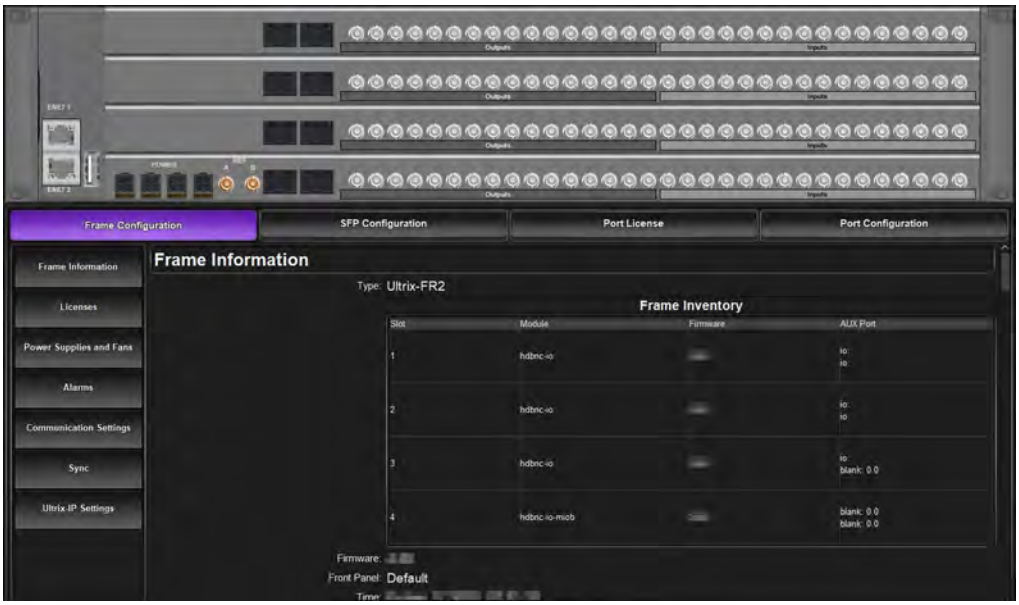


To access the Device Configuration interfaces in DashBoard

1. Locate the Ultrix in the Tree View of DashBoard.
2. Expand the Ultrix node to display a list of sub-nodes in the Tree View.
3. Expand the **Devices** node.
4. Expand the **Controllers + Matrices** node.



5. Double-click the **Ultrix** node to open the **Device Configuration** interface.



6. Click a button in the center toolbar to display the interface in the DashBoard window. In the previous example, the **Frame Configuration** button is selected.

Updating the Network Settings for the Ultrix Router

Once you establish initial communications with the Ultrix router, and it displays in the DashBoard Tree View, you may wish to review or change the IP Address and other settings according to your facility network requirements.

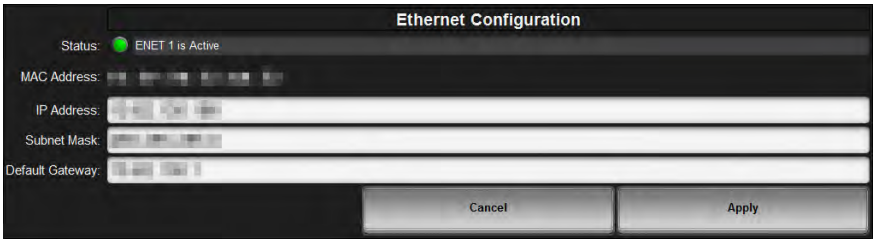
✶ This section is not applicable if your router is already set to the correct IP Address.

To update the network settings for the Ultrix router

1. Locate the Ultrix in the Tree View of DashBoard.
2. Expand the Ultrix node to display a list of sub-nodes in the Tree View.
3. Expand the **Devices** node.
4. Expand the **Controllers + Matrices** node.
5. Double-click the **Ultrix** node for your Ultrix router.

   The **Device Configuration** interface opens with the **Frame Configuration** interface selected.
6. Click **Communication Settings**.
7. Locate the **Ethernet Configuration** area.

   The **Ethernet Configuration** area reports the status of the active ENET port on the Ultrix rear panel, and the network settings for the router.



8. Use the **IP Address** field to specify the new static IP Address for the Ultrix router.
9. Use the **Subnet Mask** field to specify the subnet mask for your network.

10. Use the **Default Gateway** field to specify the gateway for communications outside of the local area network (LAN).
11. Click **Apply**.
12. Reboot the router:
    a. In the Tree View of DashBoard, double-click the **System Status** node.

       The **System Interfaces** display in the DashBoard window.

    b. Click **Reboot**. This button is located at the bottom of the window.

Re-naming the Ultrix Router in the DashBoard Tree View

Each Ultrix router can be given a unique name that is used on internal menus and as the identifier in the tree views of DashBoard.

✶ Changing the router name *after* database configuration takes time to propagate through the system, and for DashBoard to reconnect, resuming stable system operation. Sufficient time must be allowed when making this change before attempting to use the system. This time will vary depending on features, matrix size, and configuration. In the case of the ULTRIX-FR1(-NS) and ULTRIX-FR2(-NS), the worst case will be 3-4 minutes. In the case of the ULTRIX-FR5, the worst case is 10 minutes. The router name is typically assigned during initial commission and very rarely ever changed again.

To re-name the Ultrix router in DashBoard

1. In the Tree View of DashBoard, double-click the **System Status** node.

   The **System Interfaces** display in the DashBoard window.
2. Select the **Setup** tab.
3. Use the **Device Name** field to specify the new name for the Ultrix router.
4. Press **Enter** to apply the new name.

✶ It may take several seconds or more for the Ultrix node name to update in the Tree View of DashBoard.

Specifying a Default Reference Format

If you did not connect a reference source signal to the **REF** port on the Ultrix rear panel, you can still configure a Default Reference format using the options in the Frame Configuration interface. Note that this Default Reference setting only applies to start-up with no reference source connected.

Keep the following in mind:

- If you connect a valid reference source to the **REF** port, it will take precedence over the Default Reference setting.
- If the connected reference source becomes unavailable, the Ultrix router will use the last known good reference format until a re-boot or power cycle occurs (at which time the Default Reference setting will be applied).
- If the Ultrix router does not have a valid reference signal connected to it, UltriScape still needs a reference to output correctly. Specifying the Default Reference Format provides an internal reference signal of either NTSC or PAL rates to allow UltriScape to still output with no system reference signal connected.

To specify the default reference format for the Ultrix router

1. Expand the **Devices** node.
2. Expand the **Controllers + Matrices** node.
3. Double-click the node for your Ultrix router.

   The **Device Configuration** interface opens with the **Frame Configuration** interface selected.

4. Click **Sync**.

   The **Sync** area displays in the **Frame Configuration** interface.

5. Use the **Default Reference** menu to specify the reference format for the Ultrix router. The default is NTSC.

Specifying the Time Source

The Ultrix router requires an external time source in order to accurately report the time-of-day. The options in the Frame Configuration interface enable the selection of time/date source via an NTP Server in your facility, or you can set the device time to match the computer which is running the current DashBoard client.

Using an NTP Server as the Time Source

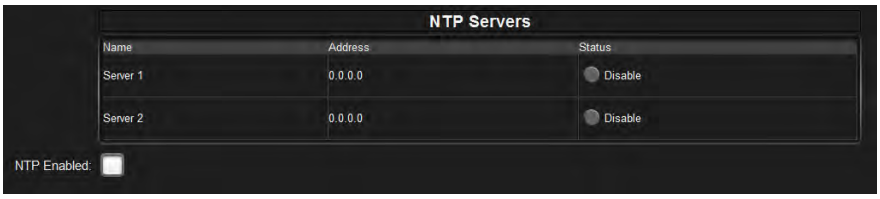
✶ Before proceeding, contact your IT Department to learn the IP address(es) of the NTP server(s) in your facility.

To specify an NTP Server as the time source for the Ultrix router

1. Expand the **Devices** node.
2. Expand the **Controllers + Matrices** node.
3. Double-click the node for your Ultrix router.

   The **Device Configuration** interface opens with the **Frame Configuration** interface selected.

4. Locate the **NTP Servers** table on the **Frame Configuration** interface.



5. If you are using one NTP server, enter the IP address in the **Address** field of the **Server 1** row.
6. If using a backup NTP server:
   a. Enter the IP address of the first NTP server in the **Address** field of the **Server 1** row.
   b. Enter the IP address of the backup NTP server in the **Address** field of the **Server 2** row.
7. Select the **NTP Enabled** box.
8. Verify that the **Status** field(s) in the **NTP Servers** table report a valid connection to the listed IP address(es). You may need to refresh the interface as follows:
   a. Close the **Device Configuration** interface.
   b. Re-open the **Device Configuration** interface by repeating steps 1 to 3 to update the **Status** field(s).

Using the DashBoard Client Computer as the Time Source

This section outlines how to set the Ultrix to the local time without using an NTP Server. Instead, you will set the time to the values reported by the DashBoard client computer you are using.

✶ The time the Ultrix reports is not linked to this computer. It is a once off setting of the time to match the computer time when the **Set to PC Time** button is selected on the Ultrix interface. If the DashBoard client computer time changes, you will need to update the time reported on the router by repeating the procedure below.

To specify the DashBoard client computer as the time source for the Ultrix router

1. Expand the **Devices** node.
2. Expand the **Controllers + Matrices** node.

3. Double-click the node for your Ultrix router.

   The **Device Configuration** interface opens with the **Frame Configuration** interface selected.

4. Locate the **NTP Servers** table on the **Frame Configuration** interface.

5. Click **Set to PC Time**. This button is located above the **NTP Servers** table.

Configuring Access for DashBoard Clients

You can specify which DashBoard clients on your network can access and connect to your Ultrix. By default, the **Permitted Clients** list is blank, allowing all DashBoard clients on your network to connect to your Ultrix.

✶ Ross Video strongly encourages use of static IP addresses throughout systems using its equipment. A network device which acquires its address through DHCP is not guaranteed to always be assigned to the same IP address. In this case, use of DHCP could result in DashBoard client PCs being denied access to the Ultrix system.

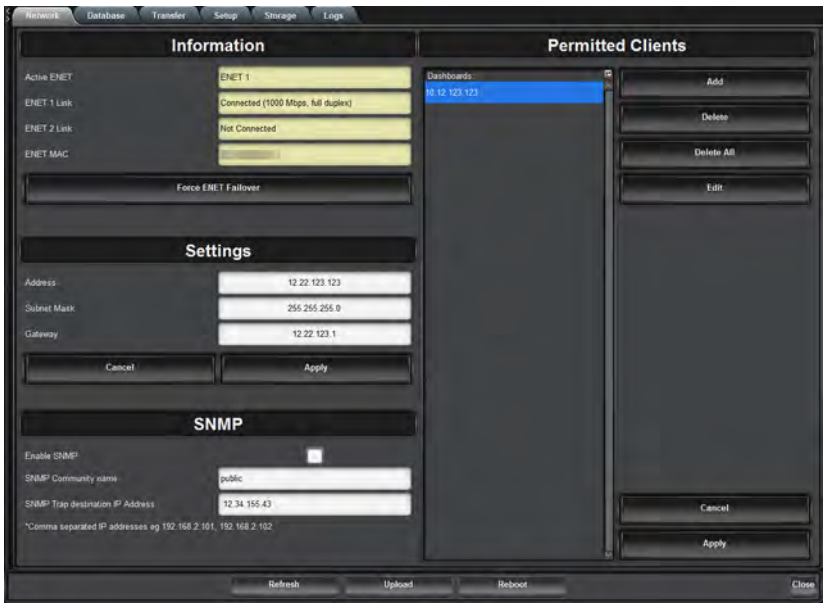
To enable access for a DashBoard client

1. In the Tree View of DashBoard, double-click the **System Status** node.

   The **System Interfaces** display in the DashBoard window.

2. Select the **Network** tab.

3. Locate the **Permitted Clients** area of the **Network** tab.



4. Click **Add** in the Permitted Clients area.

   The **Add Address** dialog opens.

5. Use the **IP Address** field to specify the IP Address of the DashBoard client you wish to grant access to your Ultrix.

✶ IPV6 addresses and computer names are not currently supported for this list.

6. Click **Apply**.

   The **Add Address** dialog closes.

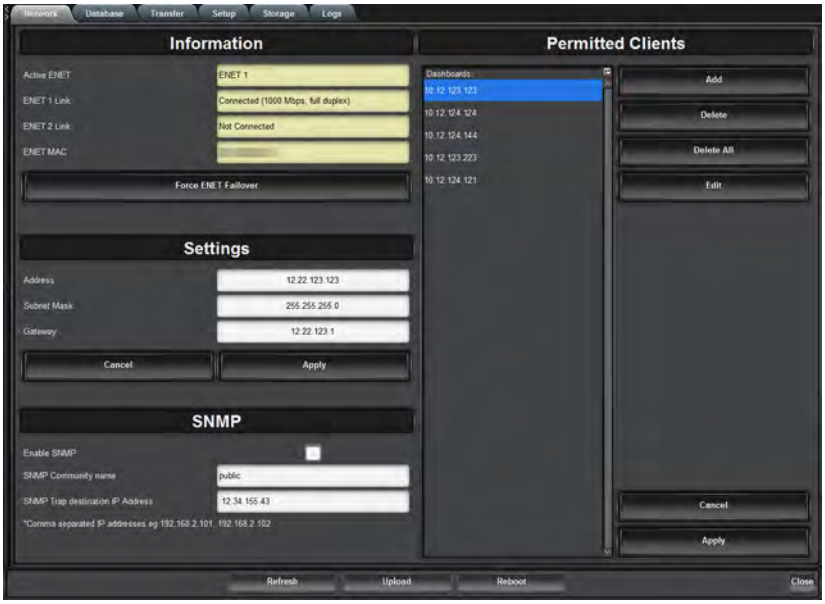
   The **Dashboards** list in the Permitted Clients area updates to display the specified IP Address.

7. Repeat steps 4 to 6 for each DashBoard client you want to allow access.

✶ Ensure that the IP Address for your DashBoard client machine is also added.

8. Click **Apply** in the Permitted Clients area to apply the changes.

   In the following example, four DashBoard clients were added to the Permitted Clients area.



To disable access for a DashBoard client

1. In the Tree View of DashBoard, double-click the **System Status** node.

   The **System Interfaces** display in the DashBoard window.

2. Select the **Network** tab.
3. From the **Dashboards** list, select the IP Address for the DashBoard client you want to disable access for.

✶ Do not delete the IP Address for your DashBoard client machine.

4. Click **Delete** in the Permitted Clients area of the **Network** tab.
5. Click **Apply** in the Permitted Clients area to apply the change.

Software License Keys

The Ultrix routers have software options that license functions and features. This chapter outlines the available software licensed features, and how to install a software key for a licensed feature.

Before You Begin

When installing a software license key on the Ultrix router:

- You must have the DashBoard client installed and communicating with the Ultrix router that you wish to install the key for.
- Ensure that you are using DashBoard version 9.0 or higher. This information is available by selecting **Help** > **About DashBoard** from the DashBoard main toolbar.

License Keys Overview

Table 4.1 provides a brief summary on the types of licensed features available for the Ultrix router.

✶ The per slot UltriMix license comes standard with every Ultrix router.

Table 4.1 List of Ultrix Licensed Features

License	Description
ULTRIMIX-MXR	A license that enables the configuration and use of audio mixer soft panels.
UltriScape	Each license enables one Multiviewer Head (output) per slot. Each slot supports up to three Multiviewer Heads.
UltriSpeed	A license that enables the use of UHD 12Gbps SDI signaling on all slots of the Ultrix router. The 12Gbps SDI signaling through an SFP module installed in an AUX port is also supported. You must order the SFP module separately. This license is required if you wish to configure a UHD Gearbox.
UltriSRC	A per input license enabling Sample Rate Conversion (SRC) on MADI audio inputs. This allows MADI inputs that are not synchronized to the frame reference.
UltriSync	A per input 3G frame sync license enabling alignment to router sync.
Ultrisync-UHD	A per input frame sync license to support UHD video rates. Each slot supports up to 3 Ultrisync-UHD ports. Requires software version 4.2.0 or higher and is applicable only to the ULTRIX-HDBNC-IO and ULTRIX-SFP-IO blades.
Ultricore-EMBER+	A license that enables the use of the EMBER+ protocol for video and audio streaming via an ULTRIX-IP-IO blade.
Ultricore-NVISION	A license that enables the use of the NVISION protocol on all slots of the Ultrix router.
Ultricore-SNMP	A license that enables basic SNMP monitoring on Ultrix routers.

Installing a License Key

Ross Video uses license keys to control user access to specific Ultrix features. You can obtain a key for an Ultrix licensed feature from Ross Video Technical Support.

To install an Ultrix license key

1. Launch the DashBoard client.
2. Locate the Ultrix node in the Tree View.
3. Expand the Ultrix node to display a list of sub-nodes in the Tree View.
4. Expand the **Devices** node.
5. Expand the **Controllers + Matrices** node.
6. Double-click the node for your Ultrix router.

   The **Device Configuration** interface opens with the **Frame Configuration** interface selected.
7. Click **Port Licenses**.

8. Make a note of the character string in the **Request Code** field for the feature you wish to enable.
9. Contact Ross Video Technical Support using the information found in the section "**Contacting Technical Support**" on page 18.
   a. When you speak to your Technical Support representative, tell them your name, your facility name, and the **Request Code** from the **Licenses** table.
   b. You will be given a License Key that must be entered in the applicable field in the **Licenses** table.
10. Enter the provided License Key in the applicable **License Key** field in the **Licenses** table.

✶ You can also right-click on the row for the License Key you are installing, and copy the Request Code to or paste the License Key from the Microsoft® Windows® clipboard.

11. Click **Apply** in the row for the License Key you entered in step 10.
12. Verify that the **Count** field is updated to report each installed License Key.

To activate an UltriScape license for a specific slot/head

1. Install the license key as outlined in the procedure "**To install an Ultrix license key**" on page 34.
2. Click **Port Licenses**.

   The **Port Licenses** interface displays.
3. Select the **UltriScape** tab.

   Each row in the tab represents a slot and UltriScape head in the Ultrix router (with slot 1 as the topmost slot in the router). The Port column in the tab represents the output for the head. The Format column represents the video format assigned to that head.
4. In the **Port** column, select the cell for the UltriScape head you want to enable.

A drop-down menu displays that lists the available ports.

5. Select **Enable** to apply the UltriScape license to that UltriScape head.

Removing a License Key

When you want to move an Ultrix licensed feature from one slot to another in the same router, you must first disable the Ultrix feature on the current Ultrix router.

✶ Removing a License Key also removes user access to all of the Ultrix features associated with that License Key.

To remove a Ultrix license key

1. Launch the DashBoard client.
2. Locate the Ultrix node in the Tree View.
3. Expand the Ultrix node to display a list of sub-nodes in the Tree View.
4. Expand the **Devices** node.
5. Expand the **Controllers + Matrices** node.
6. Double-click the node for your Ultrix router.

   The **Device Configuration** interface opens with the **Frame Configuration** interface selected.
7. Click **Port Licenses**.
8. Scroll to the second table in the **Licenses** area.

   Each row in the table represents a slot in the Ultrix router. Each column represents a type of licensed feature.
9. Click in the cell for the slot and licensed feature you want to remove.

   A drop-down menu displays.
10. Select **Disable** to remove the license for the selected slot.

If you wish to apply the same License Feature to another slot, follow the steps outlined in the procedure "**Installing a License Key**" on page 34.

Locking Access to the Licenses

The Ultrix includes a password-protected feature that prevents unauthorized changes to license keys. When the Port License tab is locked, users require a password to access/edit the license key information. This feature is disabled by default (the Port License tab is editable).

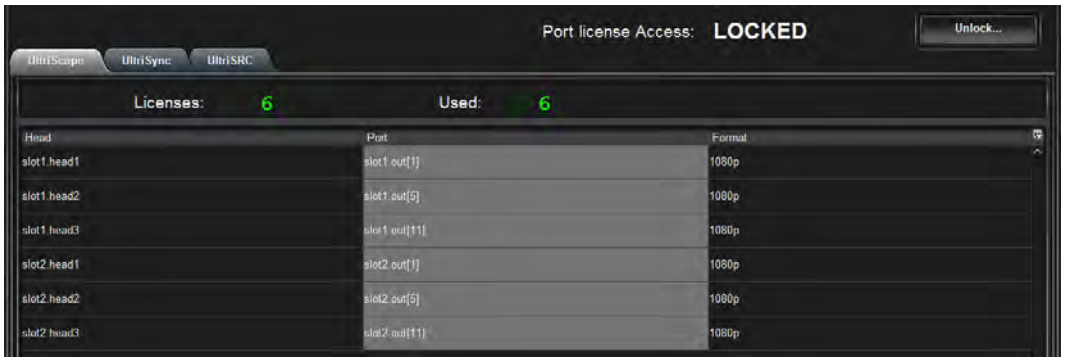


Figure 4.1 Port License Tab — Port License Access is Locked

Enabling the Port License Lock

To lock the tab, you must enable the Password Protected settings in the System Status > Setup tab.

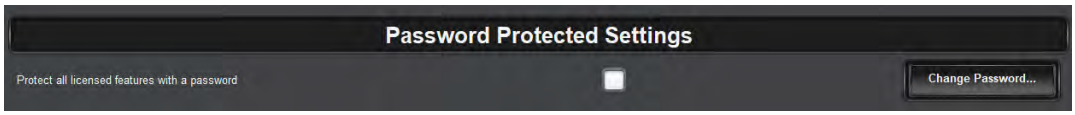
To enable the lock on the Port License tab

1. In the Tree View of DashBoard, double-click the **System Status** node.

   The **System Interfaces** display in the DashBoard window.

2. Select the **Setup** tab.

3. In the **Password Protected Settings** area, select the **Protect all Licensed features** with a password box.



4. Click **Apply** at the bottom of the **Setup** tab.

Changing the Password

It is recommended to change the password from the default value that is assigned at the factory.

✶ A password must be at least 8 characters long.

To change the password

1. Click **Change Password**.

   The **Enable Password Protection** dialog opens.

2. If you are changing the password from the default value:

   a. In the **Password** field, type **`r0ssUltrix`**.

   b. Click **Apply**.

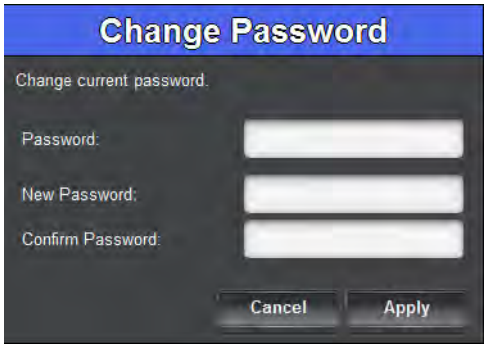
      The **Change Password** dialog opens.

3. If you are changing the password from a value other than the default:

   a. In the **Password** field, type the character string for the current password.

   b. Click **Apply**.

      The **Change Password** dialog opens.



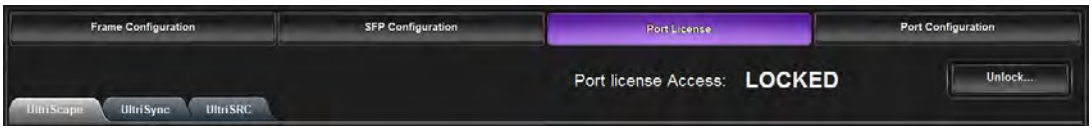
4. Use the **Password** field to type the current password.

5. Use the **New Password** field to type the character string for the new password.

6. Use the **Confirm Password** field to type the same character string you entered in step 5.

7. Click **Apply**.

   The **Change Password** dialog closes and the **Port License** tab is now locked.



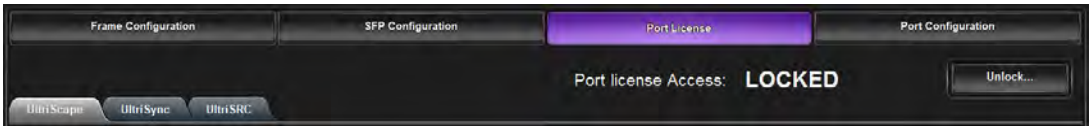
Unlocking the Port Licenses via Password

A user can unlock the Port License tab by clicking the **Unlock** button and entering a password.

To unlock the Port Licenses tab via password

1. Launch the DashBoard client.
2. Locate the Ultrix node in the Tree View.
3. Expand the Ultrix node to display a list of sub-nodes in the Tree View.
4. Expand the **Devices** node.
5. Expand the **Controllers + Matrices** node.
6. Double-click the node for your Ultrix router.

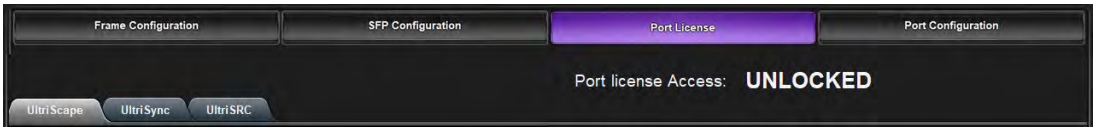
   The **Device Configuration** interface opens with the **Frame Configuration** interface selected.
7. Click **Port Licenses**.



8. Click **Unlock...** .

   The **Protected Access** dialog opens.
9. In the **Password** field, type the password as defined in step 5 of the procedure "**To enable the lock on the Port License tab**" on page 36.
10. Click **Apply**.

    The **Protected Access** dialog closes and the **Port License** tab is now editable.



✶ To re-lock the **Port License** tab, click **Lock**.

Configuring the Ports

Ultrix is capable of switching video signals[1] from 270Mbps to 12Gbps[2]. This format flexibility permits SD, HD, 3G and UHD video signals to be used seamlessly in the same system.

Ultrix also comes complete with an audio matrix side-chain to enable multiplexing, de-multiplexing, channel swapping and processing of the SDI embedded audio.

For More Information on...

- configuring the UHD Gearbox, refer to the chapter "**UHD Gearbox Configuration**" on page 61.
- configuring the ULTRIX-IP-IO ports, refer to the chapter "**ULTRIX-IP-IO Setup**" on page 71.
- configuring the ULTRIX-SFP-IO ports, refer to the chapter "**ULTRIX-SFP-IO Setup**" on page 91.
- the audio features of the Ultrix router, refer to the chapter "**Configuring an Audio Matrix**" on page 47.

Physical Port Configuration Overview

Table 5.1 summarizes the configuration options for the physical input and output ports of the Ultrix router.

Table 5.1 Available Port Configurations

Port Option	Notes
Inputs	
2-SI Group	Enables 2SI quad input (four 3Gbps streams). Refer to the section "**Configuring the Ultrix Router for Multiplexing Quad Input Signals**" on page 63 for details.
Audio sub-channel processing	You can apply a gain (+/- 20db), invert channels, and/or sum channels as required. Refer to the section "**Applying Proc Amps to the Embedded Audio Input**" on page 51 for details.
FrameSync Delay	Specify a frame buffer size. Refer to the section "**UltriSync Configuration**" on page 42 for details.
Outputs	
Clean Switch enable	Per output enable/disable of Clean Switch. Refer to the section "**UltriClean Configuration**" on page 43 for details.
Clean Switch mode	Selectable Clean Switch clock source. Refer to the section "**UltriClean Configuration**" on page 43 for details.
Clean Switch Delay	Specify a Clean Switch buffer size. Refer to the section "**UltriClean Configuration**" on page 43 for details.
Audio sub-channel processing	Apply a gain (+/- 20db), invert channels, sum channels, and/or insert tones as required. Refer to the section "**Applying Proc Amps to the Embedded Audio Input**" on page 51 for details.

1. SMPTE standard rates.
2. Requires the UltriSpeed license.

Configuring a Reference Trigger for the Ultrix Router

If multiple reference formats will be fed into the Ultrix router, you can configure a reference trigger with a custom switching point. This is useful when you will be manually changing the reference signal format that is fed into the **REF** port on the Ultrix rear panel.

✶ A variety of switching points across the routing switchers may be required to deal with the range of digital video formats that are available.

For More Information on...

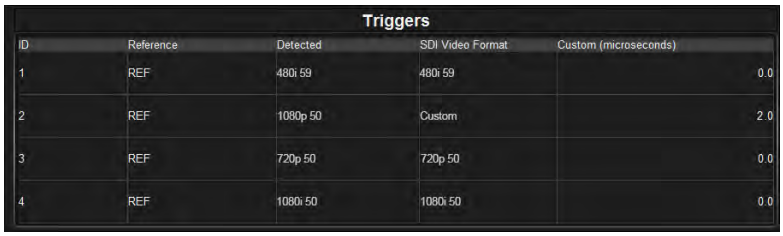
- cabling the reference source for your router, refer to the ***Ultrix Installation Guide***.
- monitoring the reference status, refer to the section "**Monitoring the Reference Signal**" on page 309.

To configure the reference trigger for the router

1. Expand the **Devices** node.
2. Expand the **Controllers + Matrices** node.
3. Double-click the node for your Ultrix router.

   The **Device Configuration** interface opens with the **Frame Configuration** interface selected.
4. Click **Sync**.

   The **Frame Configuration** interface updates to display the **Sync** area for the router.
5. Locate the **Triggers** table in the **Sync** area.



Triggers

ID	Reference	Detected	SDI Video Format	Custom (microseconds)
1	REF	480i 59	480i 59	0.0
2	REF	1080p 50	Custom	2.0
3	REF	720p 50	720p 50	0.0
4	REF	1080i 50	1080i 50	0.0

✶ Only the **REF A** port is implemented at this time.

   The **Detected** field indicates the format of the reference signal connected to the REF A port on the router.
6. Use the **SDI Video Format** field to select the switch timing that will be used by the router when switching inputs/outputs.
7. If you selected **Custom** in step 6, use the **Custom** field to specify the time (number of microseconds) from the start of the custom switching line to the actual switching event. The maximum value is 65,535ms.
8. Repeat steps 6 and 7 to configure additional triggers as required.

Configuring an SFP Port

The various modules available for Ultrix provide SFP+ slots for expansion of the base module I/O blade. Refer to the ***Ultrix SFP Modules Guide*** for a list of available SFP modules from Ross Video.

Keep the following in mind:

- The Flex slot in the ULTRIX-FR5 does not support any I/O in the AUX ports.
- The ULTRIX-SFP-IO blade only supports MADI in the AUX A and AUX B ports.
- The ULTRIX-IP-IO blade only supports Ultriscape outputs (SDI video) in the AUX 1 and AUX 2 ports.

Before You Begin

You will also need to install an:

- UltriSpeed license for each slot that includes an SFP-HDB-IN-12G and/or SFP-HDB-OUT-12G.
- UltriScape license for each AUX port that will be used to provide an UltriScape head output.
- UltriSRC license for each AUX port configured for asynchronous MADI input.

Specifying the SFP Type

Once the SFP module is installed in a port, you must specify the port type. Select SDI Video for video SFP types, or MADI for audio SFP types. MADI audio SFP types allow you to specify the channel quantity (either 56 or 64) as per your facilities' standard.

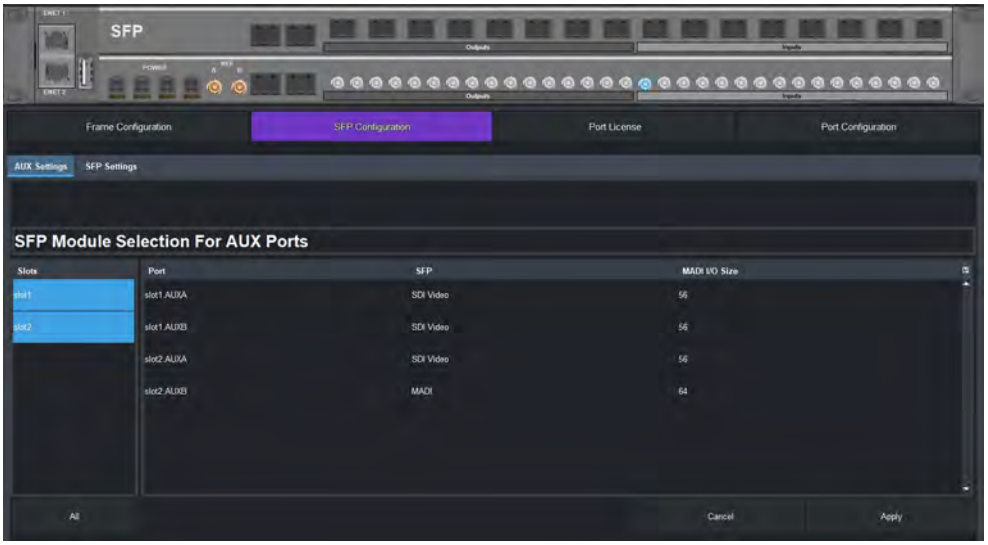
The **SFP Configuration** interface is organized into two sections: AUX Settings, and SFP Settings. The AUX Settings lists all the AUX port settings for all blades in the Ultrix chassis. The SFP Settings list all the ULTRIX-SFP-IO blade port settings.

To specify the SFP type

1. Expand the **Devices** node.
2. Expand the **Controllers + Matrices** node.
3. Double-click the node for your Ultrix router.

   The **Device Configuration** interface opens with the **Frame Configuration** interface selected.
4. Click **SFP Configuration**.

   The SFP Settings table displays all SFP ports in two groupings; AUX ports from all Ultrix I/O blades, and the SFP ports from any installed ULTRIX-SFP-IO blades.



5. From the **Slots** table, select the router slot for the port you want to configure.

   The tab updates to display a list of available ports based on the slot(s) selected.
6. Locate the row for the port you want to configure.
7. In the SFP column select either SDI Video or MADI as appropriate for the fitted port.
8. Click **Apply** to save your changes.

UltriSync Configuration

UltriSync allows the re-timing of asynchronous or time offset input signals to the frame reference. UltriSync is a per input feature and requires a license for each input that will be used by the UltriSync. There are two licenses:

- The **UltriSync** license allow for SDI data rates up to 3Gbps (1080p). This license was available in software versions 4.1.0 or lower.
- The **UltriSync-UHD** license (available as of software version 4.2.0 onward) allows the Frame Sync to operate at up to 12Gbps (2160p) data rates. This license is available on 3 inputs per ULTRIX-HDBNC-IO or ULTRIX-SFP-IO blade only (AUX B or Input 1, Input 5 or Input 6, Input 11 or Input 12).

Before You Begin

Ensure to:

- Monitor the video input signals via the **Timing Lines** and **Timing Pixels** fields in the **Port Configuration** > **Input Summary** interface. These fields report the amount of detected timing offset (in lines and pixels respectively) between the incoming signal and the frame reference signal. The timing fields are updated every 15 seconds. This information is useful in deciding where to install an UltriSync license as follows:
  - › If there is an input that is out of time with regards to the frame reference, then it would beneficial to synchronize it with the frame reference.
  - › If the timing is +/- half-line, then UltriClean can accommodate the synchronization. The amount of pixels per line depends on the video standard being used. For example, 1080p is actually 1920x1080 pixels (nominally) so 1920 pixels makes one line.
- Install one (or more) UltriSync licenses. Refer to the section "**Installing a License Key**" on page 34.
- Verify that the video source signals are the same format as the frame reference.

Configuring UltriSync for an Input Port

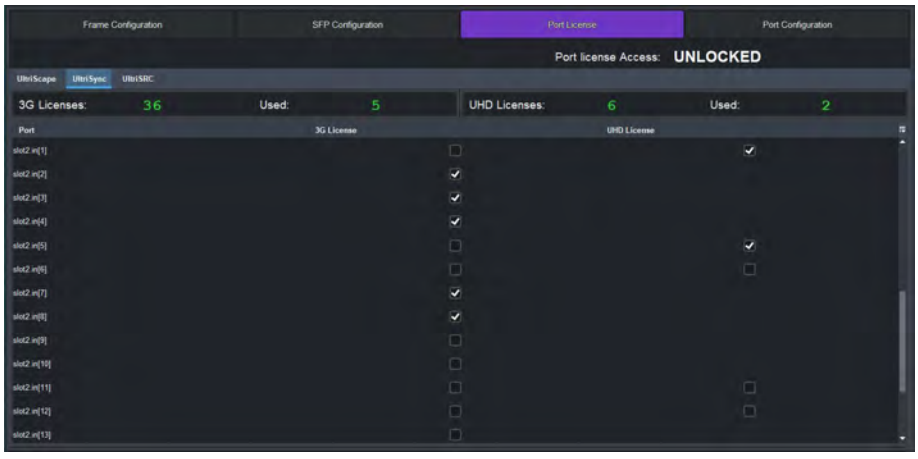
UltriSync allows configuration of the frame buffer size between 1 frame and 2 frames. Data is clocked out of the buffer using the frame reference, thus timing arbitrarily timed input signals to a common clock. The size of the buffer can determine its resilience to incoming signal disturbances.

To assign an UltriSync license to an input port

1. Install the license key as outlined in the procedure "**Installing a License Key**" on page 34.
2. Click **Port License**.

   The **Port License** interface displays.
3. Select the **UltriSync** tab.

   Each row in the tab represents a port on the Ultrix router with each column a type of UltriSync license.



4. Select the box in the applicable **License** column for the port you want to enable an UltriSync license for.

To configure the UltriSync settings for an input port

1. Expand the **Devices** node.
2. Expand the **Controllers + Matrices** node.
3. Double-click the node for your Ultrix router.

   The **Device Configuration** interface opens with the **Frame Configuration** interface selected.
4. Click **Port Configuration**.

   The **Port Configuration** interface opens.
5. Click an **Inputs** banner (bar underneath BNC images) in the router rear panel map, located at the top of the **Port Configuration** interface.

   The **Port Configuration** interface updates to the **Input Summary** table and all Inputs display with a light-blue background.
6. In the **Physical Address** column, locate the row for the input port you wish to configure.
7. In the **FrameSync Delay** column, select the buffer size for the required port. Choose from the following:
   - **1 frame** — ensures a short delay (up to 1 frame) in router throughput, but is susceptible to incoming stream disturbances like a non-clean upstream switch.
   - **2 frames** — delays the signal between 1 and 2 frames depending on signal to reference timing offset. If an incoming signal is corrupted at a line or single frame rate, then a 2 frame buffer can repeat the last known good frame for the corrupted frame thus ensuring a clean output.

✶ If there is a 1 or 2 frame timing difference between the audio and video, try setting the **FrameSync Delay** to **1 frame** to minimize the difference.

UltriClean Configuration

UltriClean allows users to enable a Clean Switch mode and apply a line buffer (delay) on a per output basis. Incoming video is buffered based on the timing of the input, and is then output based on the timing of the Ultrix system reference (including any offsets added in the Triggers setup). Users can then switch between inputs that are not perfectly co-timed without perceiving any glitches of the incoming data. Video source timing must remain within the buffer to properly switch between sources (buffer depth is user-configurable).

Before You Begin

Ensure that:

- All video sources must be the same video format, locked to the same reference, and vertically timed to within the selected Clean Switch window.
- Reference triggers are correctly configured. The trigger format for the selected trigger must match the input video format or an equivalent custom trigger set up to comply with RP-168 Switch point. Refer to the section "**Configuring a Reference Trigger for the Ultrix Router**" on page 40 for details on setting up a reference trigger.

Notes on Timing

It possible that you may find a discrepancy on an output from Ultrix when trying to set the horizontal time to zero with respect to the reference.

This is because there is a certain amount of latency through the Ultrix router even with Clean Switch disabled for the port. Due to our industry leading internal processing engine which supplies advanced features, a certain amount (though minimal) of delay should be expected. This should not pose a problem for most digital downstream

equipment. If you do encounter a problem, we recommend using an external line sync device (such as our SFS-8622 openGear card) to zero time the Ultrix router output.

While it may be technically possible to zero time (horizontally) the output of the Ultrix router, it is not recommended for the following reasons:

- While you can zero time the output if you disable Clean Switch for that output, there will still be a large timing window that you have to exceed in order to get the output timing to re-sync. This is due to the line sync is always enabled even though it is put into a very low line length mode (resulting in a small the timing window). As a result, every timing adjustment applied to the input is ignored on the output until the window is exceeded. Once it is exceeded, the output timing jumps. You will need to adjust the timing incrementally until the timing is set to zero. This is further complicated during a power cycle where the timing may not be exactly zero as the window may have moved slightly on re-boot.
- The frame syncs output timing is hard coded to match the timing of a synchronous input that is zero timed at the input to the router.

It is recommended that all synchronous inputs to the router be zero timed to the inputs of the router instead of trying to zero time the router outputs.

Configuring Clean Switch Mode for an Output Port

The Clean Switch mode uses the input signal timing to decide when a frame of active picture begins.

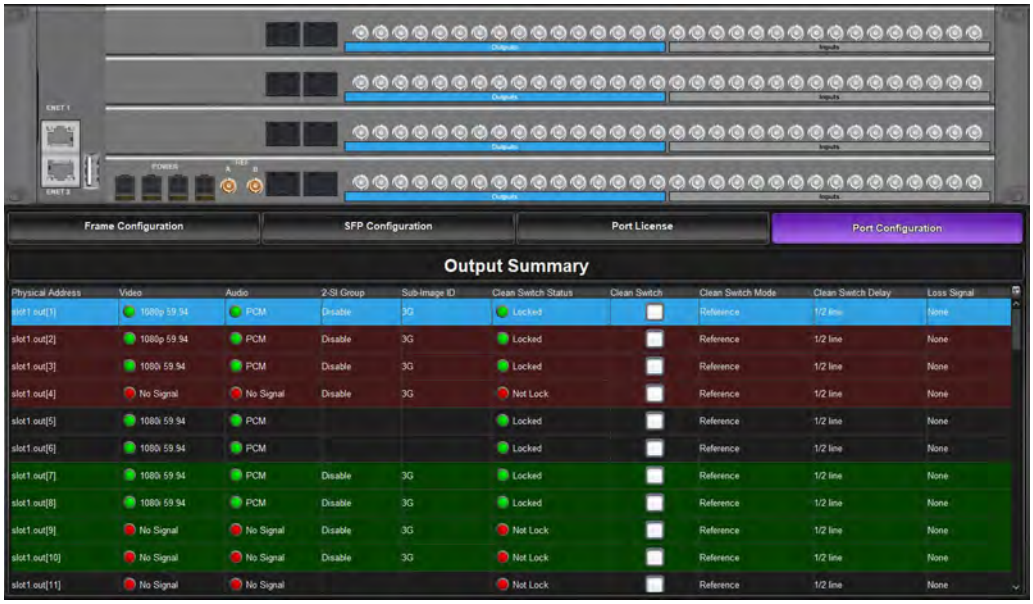
To configure the Clean Switch mode for an output port

1. Expand the **Devices** node.
2. Expand the **Controllers + Matrices** node.
3. Double-click the node for your Ultrix router.

   The **Device Configuration** interface opens with the **Frame Configuration** interface selected.
4. Click **Port Configuration**.

   The **Port Configuration** interface opens.
5. Click an **Outputs** banner in the router rear panel map, located at the top of the **Port Configuration** interface.

   The **Port Configuration** interface updates to the **Output Summary** table.



6. In the **Physical Address** column, locate the row for the output port you wish to configure.
7. To enable Clean Switch mode for an output, click the **Clean Switch** box for the output you want to configure.

8. Use the **Clean Switch Mode** menu to specify timing source. Choose from the following:
   - **Reference** — The Clean Switch is based on the reference signal available on the REF port of the router.
   - **Input** — The Clean Switch is based on the input signal available on the specified port of the router.

To configure the Clean Switch timing window

1. Navigate to the **Port Configuration** interface as outlined in the procedure "**To configure the Clean Switch mode for an output port**" on page 44.
2. In the **Physical Address** column, locate the row for the output port you wish to apply a delay to.
3. Click in the **Clean Switch Delay** cell for the output you want to configure.

   A drop-down menu displays.
4. Use the drop-down menu to specify the buffer size to apply.

✶ This will effectively delay the signal up to the amount specified minus signal-to-reference offset for a maximum delay of the chosen setting.

✶ Select Full Line to add one full line of delay to the output. This will align the output horizontally with the reference but with one full line delayed vertically (two lines when using 3G Level B). This option is useful if you want a horizontally timed output.

UltriSRC Configuration

The UltriSRC license is a per port license enabling Sample Rate Conversion for MADI audio inputs. The sample rate conversion will re-sample incoming MADI up to 48kHz. This allows MADI sources that are not reference locked to the Ultrix.

To assign an UltriSRC license to an input port

1. Install the license key as outlined in the procedure "**Installing a License Key**" on page 34.
2. Click **Port Licenses**.

   The **Port Licenses** interface displays.
3. Select the **UltriSRC** tab.

   Each row in the tab represents a physical AUX SFP port on the Ultrix. Each column in the second table represents a type of licensed feature and indicates whether it is enabled for that input.
4. Select the box in the **License** column for the physical port you want to enable an UltriSRC license for.

Loss of Input Signal Behavior

You can specify what the output signal is in the event of a loss of video input.

✶ Ultrix uses the last known and valid video format detected on the output.

This feature is similar to a “squelch” control. High-speed digital devices will try to lock to any signal. If there is no direct input, they will try to equalize noise (to a point), possibly resulting in down-stream equipment having issues with a non-valid SDI stream. If there is a router input that is either not terminated, or the upstream device outputs a non-valid signal, then the input may be forced to SDI black.

To specify what to output when a loss of input signal occurs

1. Navigate to the **Port Configuration** interface as outlined in the procedure “**To configure the Clean Switch mode for an output port**” on page 44.
2. In the **Physical Address** column, locate the row for the output port you wish to configure.
3. Click in the **Loss Signal** cell for the output you want to configure. Choose from the following:
   - **None** — The router ignores the loss of input signal.
   - **Black** — If the input signal is absent, the output is set to black.

Configuring an Audio Matrix

The UltriMix sub-system provides advanced audio integration, including the ability to embed and de-embed audio on all of the inputs and outputs of the router. Users also have complete flexibility to process, swap, sum, mute, or route any discrete or embedded audio input to any output. UltriMix is perfect for applications where audio is constantly changing, and it can be added as needed without throwing away any initial investment in the system.

The Ultrix routers include the following features:

- 16 AES audio channels coming from each input SDI video stream
- Asynchronous processing of all audio channels
- Support for MADI on the AUX ports when a SFP-MADI-COAX, SFP-MADI-850MM, or SFP-MADI-1300MM is installed
- Audio channel status Dolby® bit capture and overwrite capabilities

Audio Routing Overview

The Ultrix router handles high-bandwidth, broadcast-quality, digital video and audio signals, and embedded audio signals. The Ultrix router can perform signal processing functions like audio shuffling and insert into and extra from MADI streams.

Each SDI I/O allows for up to 1 stream of 16 channels of 48kHz sampled, 24bit audio, for a total of 16 channels. If there are audio channels that are received at a higher rate than 48kHz, the number of channels is limited.

Before You Begin

Keep the following in mind when using the UltriMix feature:

- By default, all embedded audio is de-multiplexed at each input and passed through processing (proc-amps) and the audio matrix.
- Each input has an Audio Bypass configuration option. When Audio Bypass is enabled for an input, the audio will follow the SDI regardless of any individual audio channel routing or configuration on the output. The individual channels of a input in Bypass mode are still de-multiplexed and available for audio routing via the audio matrix.
- Re-mapping of all audio channels from source to destination with transitions is available
- Audio processing controls are available for each audio channel (gain, sum, invert, tone insert)
- Audio summing of any two adjacent channel pairs is available (1 + 2, 3 + 4, 5 + 6, etc.)

General Configuration Workflow

You may wish to use the following process when defining the database for your audio workflow.

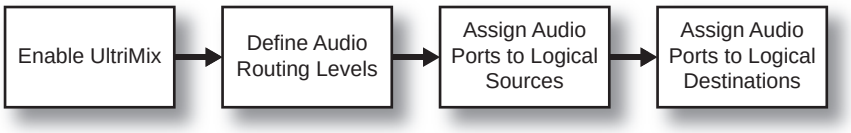


Figure 6.1 Process for Configuring the Audio Channels

For More Information on...

- enabling the UltriMix license for a slot, refer to the section "**Installing a License Key**" on page 34.

Audio Matrix Routing and Processing

Table 6.1 summarizes the audio mapping options when using SDI embedded audio or MADI signals.

Table 6.1 Audio Mapping Options

Source		Destination		Result
Audio Mapping	Input Proc Amp Available	Audio Mapping	Output Proc Amp Available	
EMB	✓	EMB	✓	Switches based on logical configuration (with full breakaway support)
EMB, PT	✓	EMB	✓	Switches logical configuration (but passes through each channel defined as pass-through from the SDI input content)
EMB, DS	X	EMB	X	Switches logical configuration (but mutes for each channel that has “disconnect” defined)
EMB	✓	MADI	✓	Follows breakaway operation based on logical mapping
EMB, PT	✓	MADI	X	Switches logical configuration (but passes through each channel defined as pass-through from the SDI input content)
EMB, DS	X	MADI	X	Switches logical configuration (but mutes for each channel that has “disconnect” defined)
MADI	✓	MADI	✓	Switches based on logical configuration (with full breakaway support)
MADI, PT	✓	MADI	X	Not Valid
MADI, DS	X	MADI	X	Switches logical configuration (but mutes for each channel that has “disconnect” defined)

Table Legend

✓	Feature is enabled/available or SDI embedded audio is mapped to audio levels.
X	Feature is not enabled/available or no audio levels are mapped
EMB	Source or destination is mapped for SDI embedded audio channels
MADI	Source or destination is mapped for MADI audio channels
PT	‘passthrough[1].audio’ is defined for some or all source levels
DS	‘disconnect[1].audio’ is defined for some or all source levels

Notes on Using the Audio Bypass

- Selecting Audio Bypass in the Device Configuration interface forces the embedded audio of the input SDI stream to bypass the audio routing section and be routed with the SDI to a Destination for all embedded audio channels.
- Selecting Audio Bypass in the Device Configuration interface for MADI inputs or outputs results in a non-valid situation where MADI channels cannot be routed.

Defining the Database Audio Levels

A level is a term used to describe a section or layer of the routing system (e.g. video level, audio level). Refer to the section “**Defining the Levels in a Database**” on page 110 for instructions on how to define a level in your database. For each audio level, you will assign a port channel.

✶ If an audio level is not defined for a given input or output channel of the port, then the output will remain at its default selection (**`slot1.in[1].audio.chxx`**). For example, if OUT 3 is selected to IN 10 but only channels 1 - 4 are defined in the logical map, then OUT 3 will have channels of IN 1 audio mapped to channels 5 - 16.

In **Figure 6.2**, Levels 2-6 are defined for audio channels.

Figure 6.2 Example of Defined Audio Levels in a Database

MADI Overview

Multi-channel Audio Digital Interface (MADI) is the industry standard for the transmission of up to 64 audio channels on a single cable. The Ultrix router supports the following SFP module options that provide the ability to route discrete MADI:

- SFP-MADI-COAX — the AUX port can receive and transmit MADI signals of 125Mbps over 75Ω coaxial cables via HD-BNC connectors.
- SFP-MADI-850MM, SFP-MADI-1300MM — the AUX port can receive and transmit MADI optical signals as defined in SMPTE 297-2006.

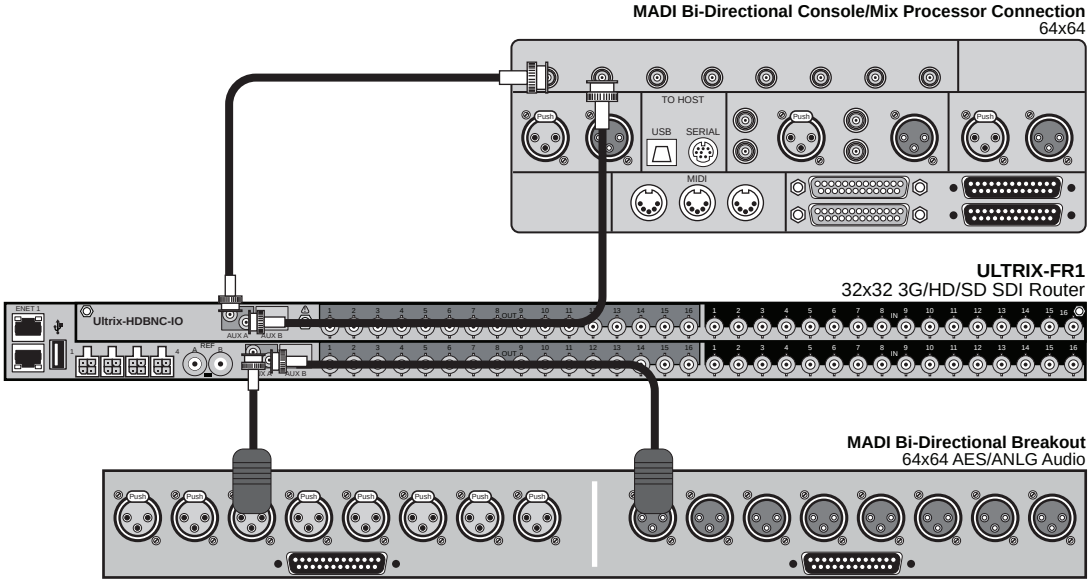


Figure 6.3 Example of Ultrix Audio Interconnect using Two SFP-MADI-COAX Options

For More Information on...

- the specifications for your SFP module, refer to the ***Ultrix SFP Modules Guide***.

Before You Begin

Ensure an SFP Module that supports MADI is physically installed in an AUX port of the Ultrix router.

✶ Downstream equipment of the Ultrix MADI output may report signal on all channels due to Ultrix setting status bits. This is to ensure maximum equipment compatibility.

Configuring an AUX Port for MADI

Each SFP Module that supports MADI includes an IN (Rx) connector and an OUT (Tx) connector.

✶ External MADI devices must be timed to the Ultrix reference signal unless an UltriSRC license is enabled for a given SFP port.

For More Information on...

- on the input and output connections for your module, refer to the ***Ultrix SFP Modules Guide***.

MADI Inputs

A MADI input source is identified in the routing system using the nomenclature **Frame.Slot.Port.Type.Channel**. For example, **`ultrix.slot4.AUXA-in1.madi.ch5`** where `AUXA` represents the physical **AUX** port the SFP module is installed, and **`ch5`** represents Channel 5 in the MADI signal.

You must define the MADI input channels in the database for your Ultrix router to be able to route the individual MADI channels.

MADI Outputs

A MADI output source is identified in the routing system using the nomenclature **Frame.Slot.Port.Type.Channel**. For example, **`ultrix.slot4.AUXB-out1.madi.ch64`** where `AUXB` represents the physical AUX port the SFP module is installed in, and `ch64` represents Channel 64 in the MADI signal.

You must define the MADI output channels in the database for your Ultrix router to be able to route the individual MADI channels.

Mapping the Audio Channels

You can configure audio channels from DashBoard. Note that source and destination logical mapping is required to complete the setup of the Ultrix embedded audio routing.

To map the audio destinations

1. Double-click the **Destinations** node located under the **Database** node.

✶ As the audio map for Ultrix may be very large, an Advanced Fill tool is available to automatically generate a map for the audio levels. Refer to the section "**Using the Advanced Fill Tool**" on page 118 for more information on using this tool.

2. In the table of the **Destinations** tab, select the first row in the series for the audio level you defined in the section "**Defining the Database Audio Levels**" on page 48.
3. Press and hold **Shift**.
4. Click the last row in the series to select a range of cells within the **Level** column.
5. Select a range of audio outputs as outlined in the section "**To map a physical output to a destination**" on page 113.
6. Click **Assign**.
7. Click **Apply** at the bottom of the **Destinations** tab to apply the changes to the database.

To map the audio sources

1. Double-click the **Sources** node located under the **Database** node.
2. In the table of the **Sources** tab, select the first row in the series for the audio level you defined in the section "**Defining the Database Audio Levels**" on page 48.
3. Press and hold **Shift**.
4. Click the last row in the series to select a range of cells within the **Level** column.

5. Select a range of inputs as outlined in the section "**To map an input to a source**" on page 117.
6. Click **Assign**.
7. Click **Apply** at the bottom of the **Sources** tab to apply the changes to the database.

Specifying the Audio Transition Mode

You can specify an audio transition mode for each audio channel output.

To set the audio transition mode for an audio channel

1. Expand the **Devices** node.
2. Expand the **Controllers + Matrices** node.
3. Double-click the node for your Ultrix router.

   The **Device Configuration** interface opens.
4. Click **Port Configuration**.

   The **Port Configuration** interface displays.
5. From the Ultrix rear panel map, select the icon for the output source you wish to set the transition mode for.

   The icon in the map is lit blue.
6. Click **audio**.

   The **Port Configuration** interface updates to display the audio options for the selected output.
7. Use the **Transition** menu to set the audio transition mode for the audio channel. Choose from the following:
   - **Cut** — The audio input channel is immediately switched to its selected output. A transition to or from Dolby® will always be a Cut transition regardless of what the Transition setting is set to.
   - **V Fade** — The original audio input channel fades down to silence followed by the new input channel fades up from silence to unity gain level.
   - **X Fade** — The original audio input channel fades down to silence as the new input fades up from silence, and both will be mixed.
   - **Cut Fade** — The original audio input channel cuts to silence and the new input fades up from silence to unity gain level.
   - **Fade Cut** — The original audio channel fades down to silence and the new input is cut in at unity gain level.
   - **Quiet Cut** — The original audio channel performs a V Fade transition with a 5ms duration.
8. Use the **Duration** slider to specify the length of the audio fade, in milliseconds, between audio transitions.

Applying Proc Amps to the Embedded Audio Input

Ultrix includes Processing Amplifiers (Proc Amps) for the audio inputs. For each audio channel of an input signal, you can set the Bypass Mode, invert selected channels, and sum two adjacent audio channels or apply audio delay. The Proc Amp settings are applied before going through the audio matrix.

To set up processing of the embedded audio input

1. Expand the **Devices** node.
2. Expand the **Controllers + Matrices** node.
3. Double-click the node for your Ultrix router.

   The **Device Configuration** interface opens.
4. Click **Port Configuration**.

   The **Port Configuration** interface displays.

5. From the Ultrix rear panel map, select the icon for the audio input you wish to process.

   The icon in the map is lit.

6. Click **Audio**.

   The **Port Configuration** interface updates to display the audio options for the selected input.

7. Select the **Audio Bypass** box to a prevent breakaway switching of untimed sources. The router will alarm when the audio signal becomes asynchronous to the reference signal provided on the **REF** port of the router.

✶ Select the **Audio Bypass** box if the input is asynchronous to other inputs. This will avoid any improper mapping of the associated audio channels onto other asynchronous outputs.

8. To apply a gain to a channel, use the associated **Gain** field to select a value between -20dB and 20dB.

9. To invert a channel, select the associated **Invert** box.

10. To sum two adjacent audio channels, select the **Sum** box for the first channel.

    The **Sum** box for the second channel is automatically selected.

✶ Each selected channel will carry the average of the two input channels ((A+B)/2). When the input is summed, the original signals are no longer available for output.

11. Apply up to 500ms of delay per channel.

✶ The audio delay feature requires an UltriSync license applied to the port.

12. If required, repeat steps 5 to 11 for each audio input you want to configure.

Applying Proc Amps to the Embedded Audio Outputs

The Ultrix router includes Processing Amplifiers (Proc Amps) for the audio outputs. Proc Amp adjustments are applied in the following order:

1. Gain — This option provides a +/- 20dB gain range in 0.50dB increments. If you have added a gain to an input channel, the gain value specified for the output channel is an addition. For example, if you set the gain for an input to 10dB, then specify a gain of 2dB on the output, the total gain will be 12dB on the final output.
2. Invert — This option enables you to invert the polarity of the audio signal for the selected channel.
3. Sum — This option enables the selected channels to carry the average of the specified channels ((A+B)/2).

To configure the embedded audio outputs

1. Expand the **Devices** node.
2. Expand the **Controllers + Matrices** node.
3. Double-click the node for your Ultrix router.

   The **Device Configuration** interface opens.

4. Click **Port Configuration**.

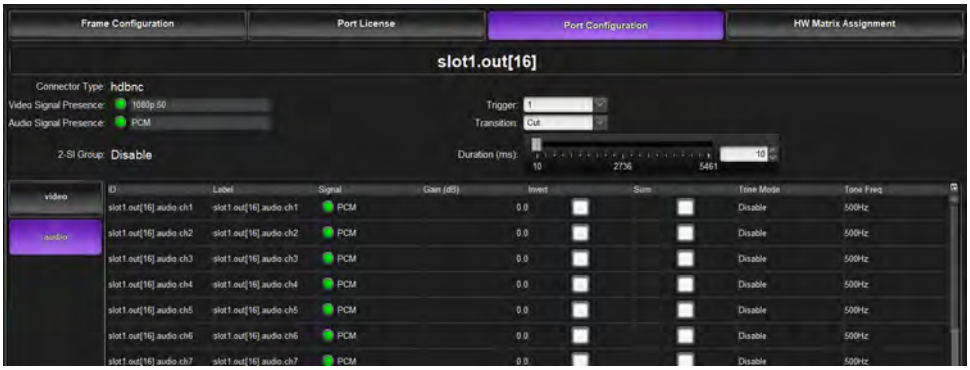
   The **Port Configuration** interface displays.

5. From the Ultrix rear panel map, select the icon for the output you wish to configure.

   The icon for the output in the map is lit.

6. Click **audio**.

   The **Port Configuration** interface updates to display the audio options for the selected output.



7. Use the **Trigger** menu to specify which reference signal trigger to use. Refer to the section "**Configuring a Reference Trigger for the Ultrix Router**" on page 40 for details.
8. To apply a gain to a channel, use the associated **Gain** field to select a value between -20dB and 20dB.
9. To invert a channel, select the associated **Invert** box.
10. To two adjacent audio channels, select the **Sum** box for the first channel.

    The **Sum** box for the second channel is automatically selected.

✶ Each selected channel will carry the average of the two channels ((A+B)/2). When the output is summed, the original signals are no longer available for output.

11. To insert a test tone into a channel:
    a. Use the **Tone Freq** menu to specify the type of test tone to embed in the output.
    a. Use the **Tone Mode** menu to enable test tones for that channel.
12. Repeat steps 5 to 11 for each channel you wish to configure.

Examples of Audio Configured Databases

UltriMix enables access to the 16 audio channels embedded in the SDI stream.

Muting Embedded Channels

Once the various channels are mapped to levels, then we may treat those channels individually akin to them being independent physical connections to the router. For example, we may define a source to the router as:

Source	SDI	Level 1	Level 2	Level 3	Level 4	...
Input1	SDI.in[1]	SDI.in[1].ch1	SDI.in[1].ch2	SDI.in[1].ch3	SDI.in[1].ch4	...
...	...	...	...	...	...	...

With this mapping, we may route the embedded channels to any other audio enabled destination by selecting levels required prior to making our route selection.

Consider the case where only the first audio group (Embedded channels 1, 2, 3 and 4) are needed for routing. What occurs to the other 12 channels of the SDI stream that are not mapped?

The remaining audio channels within the SDI stream are still there and even though they are not explicitly defined within the logical map. They will remain at a default routing of 1-to-1 (i.e.; input #1 embedded channel #8 will always be routed to output #1 embedded channel #8). It may be undesirable to have these extra embedded audio channels routed this way, so a 'disconnect' may be defined for the input channels not required.

Source	SDI	Level 1	Level 2	Level 3	Level 4	Level 5	...	Level 16
Input1	SDI.in[1]	SDI.in[1].ch1	SDI.in[1].ch2	SDI.in[1].ch3	SDI.in[1].ch4	Disconnect	...	Disconnect
.....	...	...	...	...	...		...	...

Switching Bilingual Sources

This example assumes the following setup:

- Embedded audio channels 1 and 2 are the primary channels.
- Incoming sources have English on Embedded channels 1 and 2, and French on 3 and 4.

The Sources are defined as follows:

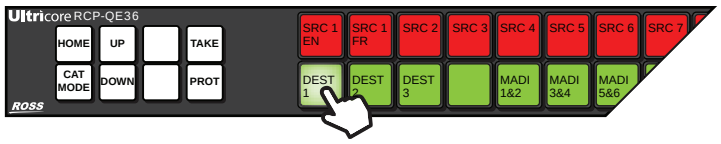
Sources	SDI	Level A1	Level A2	Level A3	Level A4	...
SRC1 EN	SDI.in[1]	SDI.in[1].ch1	SDI.in[1].ch2	SDI.in[1].ch3	SDI.in[1].ch4	...
SRC1 FR	SDI.in[1]	SDI.in[1].ch3	SDI.in[1].ch4	SDI.in[1].ch1	SDI.in[1].ch2	...

The Destinations are defined as follows:

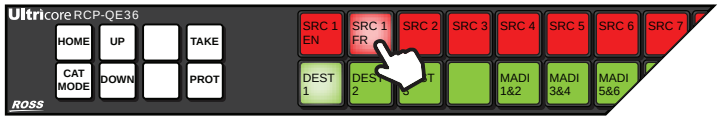
Destinations	SDI	Level A1	Level A2	Level A3	Level A4	...
Dest 1	SDI.out[1]	SDI.out[1].ch1	SDI.out[1].ch2	SDI.out[1].ch3	SDI.out[1].ch4	...
...	...	...	...	...	...	...

To route Src1 to Dest1 and swap the Primary Audio from English to French

1. Select the **Destination**.



2. Select the **Source**.



The resulting status would be:

Status	SDI	Level A1	Level A2	Level A3	Level A4
Dest1	SDI.in[1]	SDI.in[1].ch3	SDI.in[1].ch4	SDI.in[1].ch1	SDI.in[1].ch2

The Destination will have the video from SDI.in[1] but embedded channels Level A1 and Level A2 will have the input SDI embedded channels 3 and 4 respectively which we have previously defined as being our French language stereo pair. Note that in this example the English language stereo pair are still available but now on the destination channels Level A3 and Level A4.

If pair Level A3 and Level A4 are not required to be muted, the source definitions change to contain a 'disconnect' in the Level A3 and Level A4 levels (and any other levels requiring muting):

Sources	SDI	Level A1	Level A2	Level A3	Level A4	...
SRC1 EN	SDI.in[1]	SDI.in[1].ch1	SDI.in[1].ch2	disconnect[1].ch1	disconnect[1].ch1	...
SRC1 FR	SDI.in[1]	SDI.in[1].ch3	SDI.in[1].ch4	disconnect[1].ch1	disconnect[1].ch1	...

Embedded Channel Routing

Embedded audio routing encompasses the following scenarios:

- Embedded channels to embedded channels
- Embedded channels to MADI channels
- MADI channels to Embedded channels
- MADI channels to MADI channels

To accommodate these scenarios, the database source table defines many individual channels in addition to the standard SDI plus audio source. In the examples below, In 1 is our SDI and audio source - our normal “audio follow video” source. Also defined are the individual embedded audio channels that will allow routing of these to other audio destinations.

✶ If all 16 channels of embedded audio are not required or used, then only the in-use channels need be defined. This can serve to reduce the source table size to just the required definitions.

The Source definitions for SDI IN 1 and its individual embedded audio channels are defined as follows:

Sources	SDI	Level A1	Level A2	...	Level A15	Level A16
In1	sdi.ch1	audio.ch1	audio.ch2	...	audio.ch15	audio.ch16
In1 ch1		audio.ch1	audio.ch1	...	audio.ch1	audio.ch1
In1 ch2		audio.ch2	audio.ch2	...	audio.ch2	audio.ch2
...	...	...	...	...	...	...
In1 ch16		audio.ch16	audio.ch16	...	audio.ch16	audio.ch16

The Destinations for SDI outputs are defined as follows:

Destination	SDI	Level A1	Level A2	...	Level A15	Level A16
Out1	sdi.ch1	audio.ch1	audio.ch2	...	audio.ch15	audio.ch16
Out2	sdi.ch1	audio.ch1	audio.ch2	...	audio.ch15	audio.ch16
...	...	...	...	...	...	...

The Source definitions for MADI inputs are defined as follows:

Sources	SDI	Level A1	Level A2	...	Level A15	Level A16
MADIch1		audio.ch1	audio.ch1	...	audio.ch1	audio.ch1
MADIch2		audio.ch2	audio.ch2	...	audio.ch2	audio.ch2
...		...	...	...	...	...
MADIch63		audio.ch63	audio.ch63	...	audio.ch63	audio.ch63
MADIch64		audio.ch64	audio.ch64	...	audio.ch64	audio.ch64

The Destinations for MADI outputs are defined as follows:

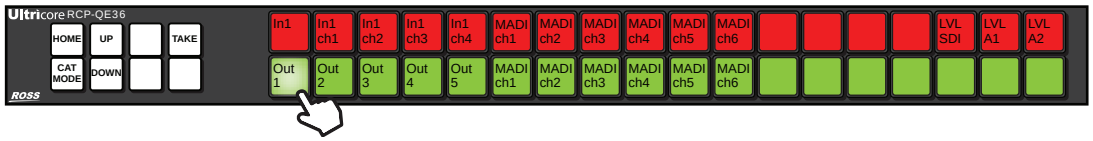
Destination	SDI	Level A1	Level A2	...	Level A15	Level A16
MADIch1		audio.ch1		...		
MADIch2		audio.ch2		...		
...				...		
MADIch63		audio.ch63		...		
MADIch64		audio.ch64		...		

Embedded Channels to Embedded Channels

If we wish to perform the route as illustrated below (a channel swapping route) where the audio.ch3 and audio.ch4 are to be routed to destination audio.ch1 and audio.ch2, we need to route the embedded channels individually as our default mapping provides no common control levels between source audio.ch3 and audio.ch4 and destination audio.ch1 and audio.ch2.

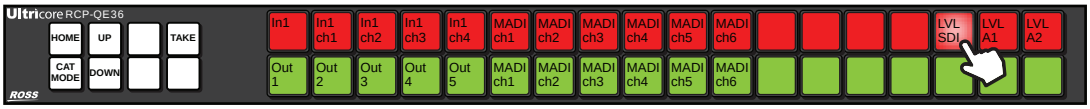
To route Audio Channels 3 and 4 from Src1 to SDI OUT 1 Channels 1 and 2

1. Select the **Destination** (Out 1).

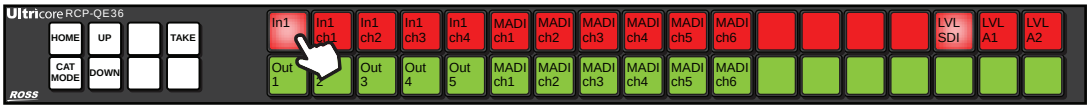


2. Perform the first switch (Switch the SDI Level) as follows:

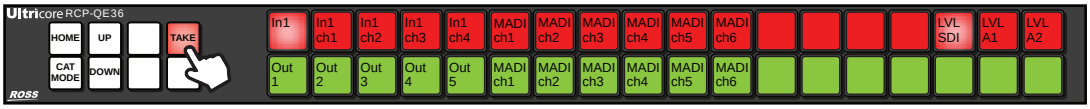
   a. Select the **SDI Level**.



   b. Select the **Source** (In 1).

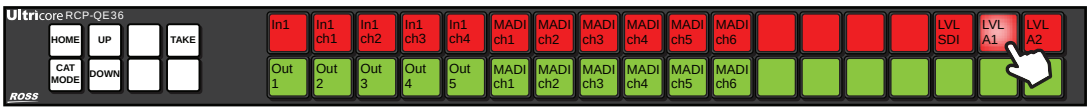


   c. Press **TAKE** to switch.

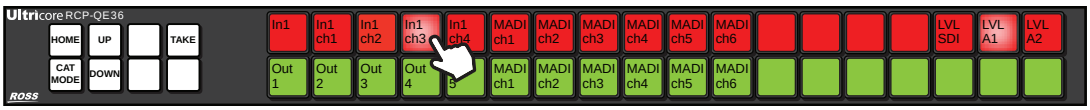


3. Perform the second switch (Source In1ch3 on Audio Level 1) as follows:

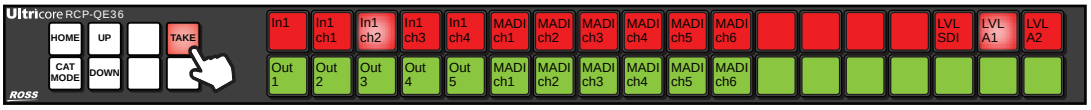
   a. Select **Level A1**.



   b. Select the **Source** (In1 ch3).

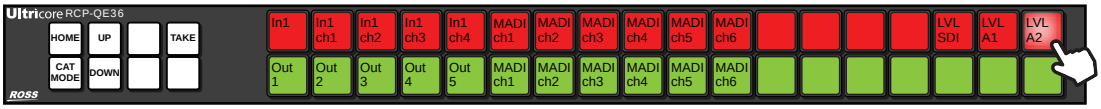


c. Press **TAKE** to switch.

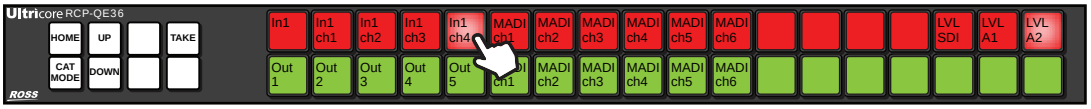


4. Perform the third switch (Source In1ch4 on Audio Level 2) as follows:

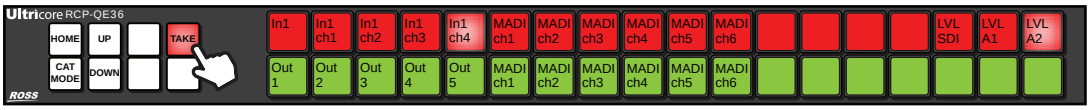
a. Select **Level A2**.



b. Select the **Source** (In1ch4).



c. Press **TAKE** to switch.



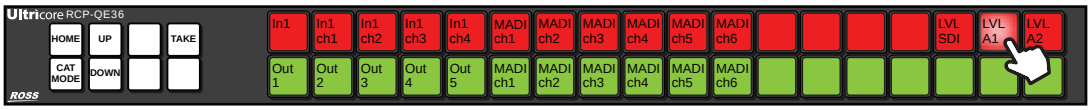
The Level buttons serve to indicate the Destination channels we are routing to.

Embedded Channels to MADI Channels

To route embedded channels to MADI channels, select a MADI channel destination, then select the appropriate source. If the current level mask or breakaway contains level A1, then level A1 does not need specific selection. As the destination **`MADIchx`** contains only physical port assignments in level A1, then all other levels are ignored.

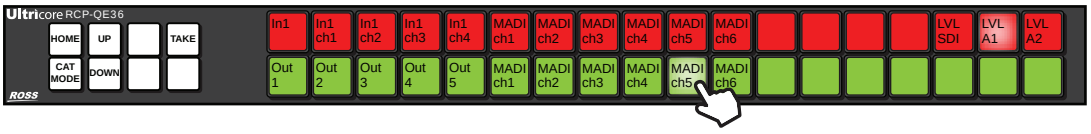
The following illustrates routing source In1 embedded ch3 and ch4 to our MADI destination on ch5 and ch6 respectively:

1. Select the **Audio Level**.

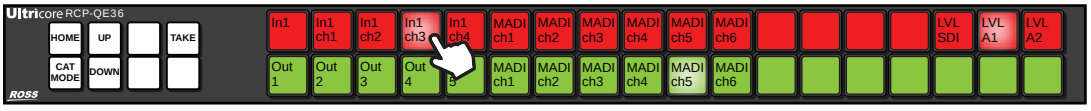


2. Perform the first switch (Source In1ch3 to Destination MADIch5) as follows:

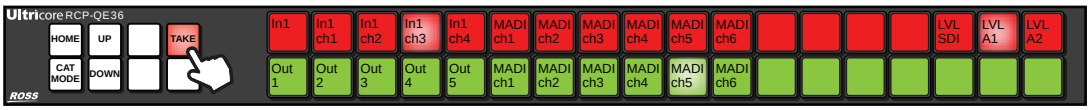
a. Select the **Destination** (MADIch5).



b. Select the **Source** (In1ch3).

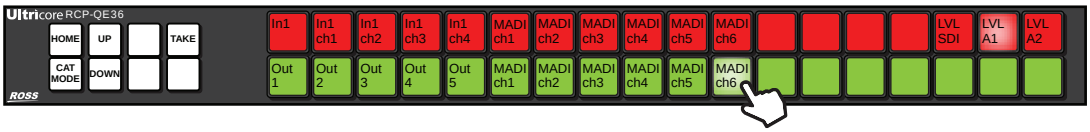


c. Press **TAKE** to switch.

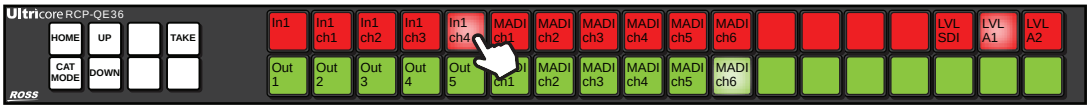


3. Perform the second switch (Source In1ch4 to MADIch6) as follows:

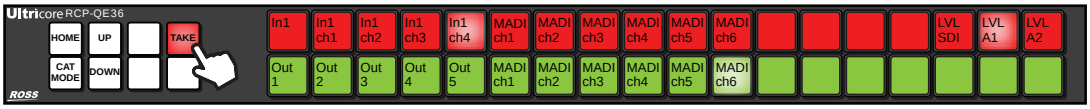
   a. Select the **Destination** (MADIch6).



   b. Select the **Source** (In1ch4).



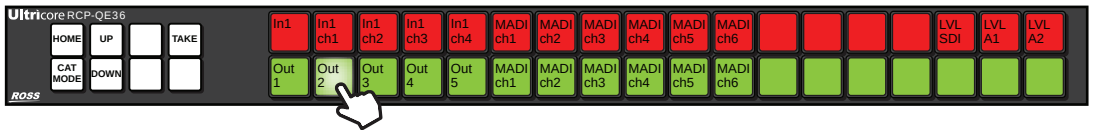
   c. Press **TAKE** to switch.



MADI Channels to Embedded Channels

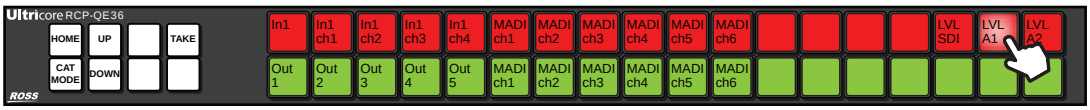
Routing MADI input ch5 and ch6 to SDI embedded ch1 and ch2 of Out 2 is as follows:

1. Select the **Destination** (OUT 2).

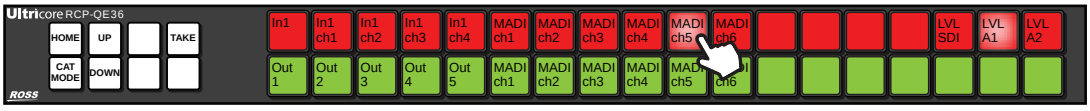


2. Perform the first switch as follows:

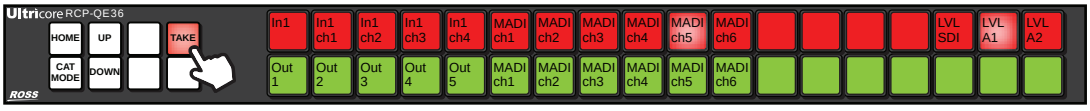
   a. Select **Level A1**.



   b. Select the **Source** (MADIch5).

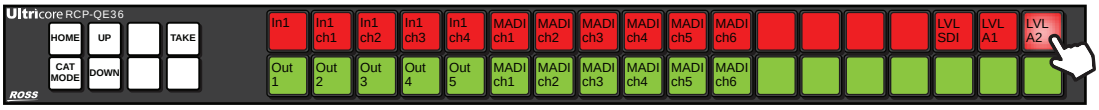


   c. Press **TAKE** to switch.

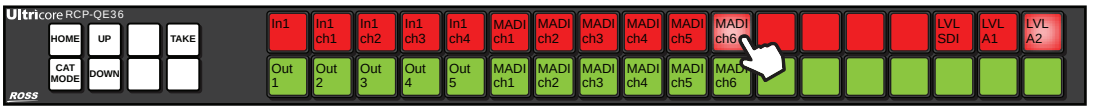


3. Perform the second switch.

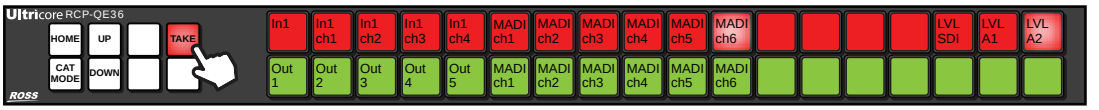
a. Select **Level A2**.



b. Select the **Source** (MADIch6).



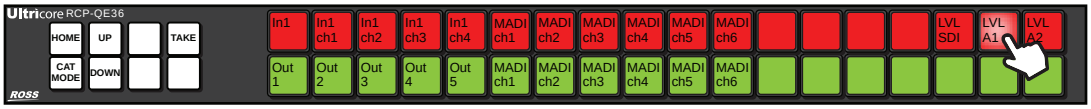
c. Press **TAKE** to switch.



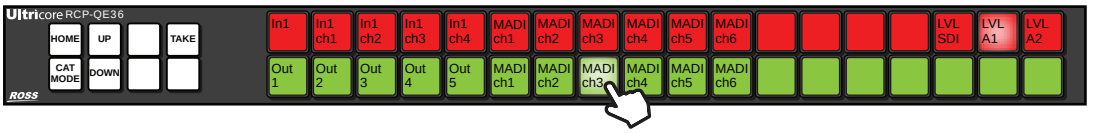
MADI Channels to MADI Channels

Routing MADI inputs to MADI outputs is as follows:

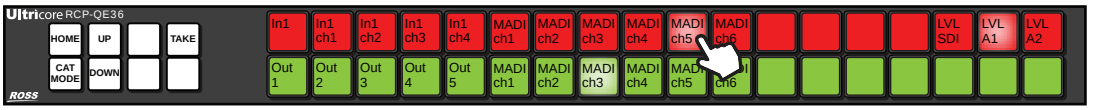
1. Select the **Destination**.



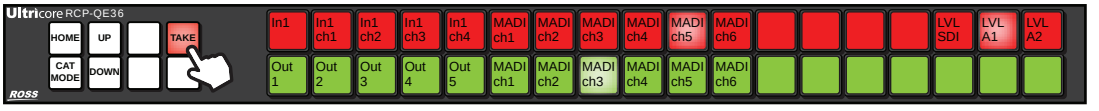
2. Perform the first switch.
   a. Select the **Destination** (MADIch3).



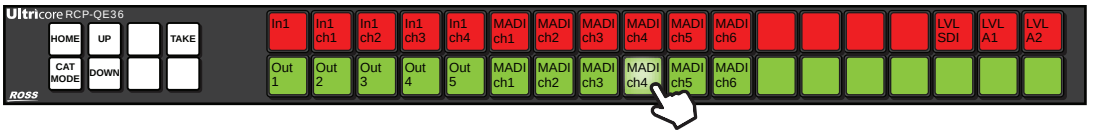
   b. Select the **Source** (MADIch5).



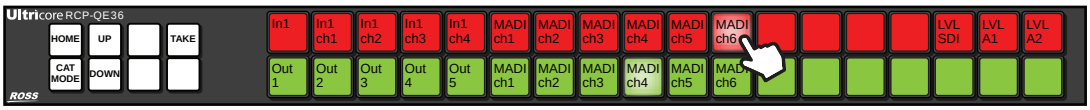
   c. Press **TAKE** to switch.



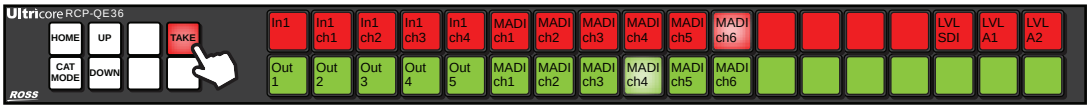
3. Perform the second switch.
   a. Select the **Destination** (MADIch4).



   b. Select the **Source** (MADIch5).



c. Press **TAKE** to switch.



UHD Gearbox Configuration

Ultrix provides maximum performance and quality with standard configurations supporting data rates up to 12Gbps. In addition, you can purchase the UltriSpeed software license that enables 12Gbps performance throughout every signal path within the router. When combined with the inherent capabilities within the router, the UltriSpeed license also enables routing of the emerging single link UHD (50Hz, 60Hz) standard alongside Quad-link UHD signals, and seamlessly switch these signals back and forth to each other.

✶ The Ultrix Gearbox function handles the two sample interleave (2SI) format of quad link. Note that Square Division Quad Split is not implemented.

Example Setup for Multiplexing

Assign Gearbox Group 1 on the Ultrix router to be 4:1 (multiplex four 3Gbps inputs into a single 12Gbps output). The router OUT 1 BNC is the combined signal of IN 1-4. The OUT 2, 3, and 4 BNCs are reserved by the system.

Table 7.1 Example Mapping for Multiplexing

Name	Channel 1	Channel 2	Channel 3	Channel 4
Source				
QUAD IN	slot2.in[1]	slot2.in[2]	slot2.in[3]	slot2.in[4]
Destination				
12G OUT	slot2.out[1]			

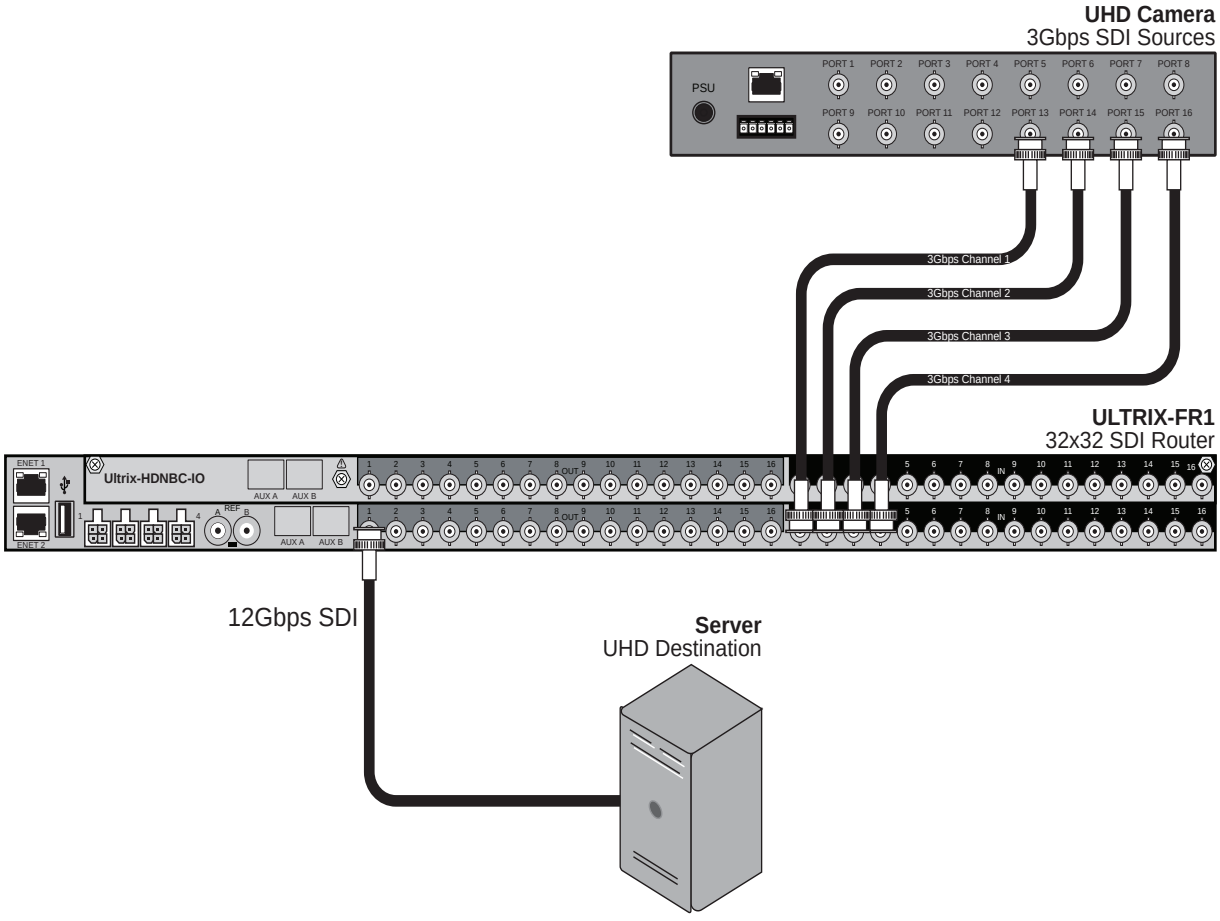


Figure 7.1 Example of Gearbox Workflow of an Ultrix Router — Multiplexing to a 12Gbps Signal

Example Setup for De-multiplexing

Assign Gearbox Group 1 on the Ultrix router to be 1:4 (de-multiplex a single 12Gbps input into four 3Gbps outputs). The router OUT 1, 2, 3, and 4 BNCs are the split output signals.

Table 7.2 Example Mapping for De-multiplexing

Name	Channel 1	Channel 2	Channel 3	Channel 4
Source				
12G IN	slot1.in[4]			
Destination				
QUAD OUT	slot2.out[1]	slot2.out[2]	slot2.out[3]	slot2.out[4]

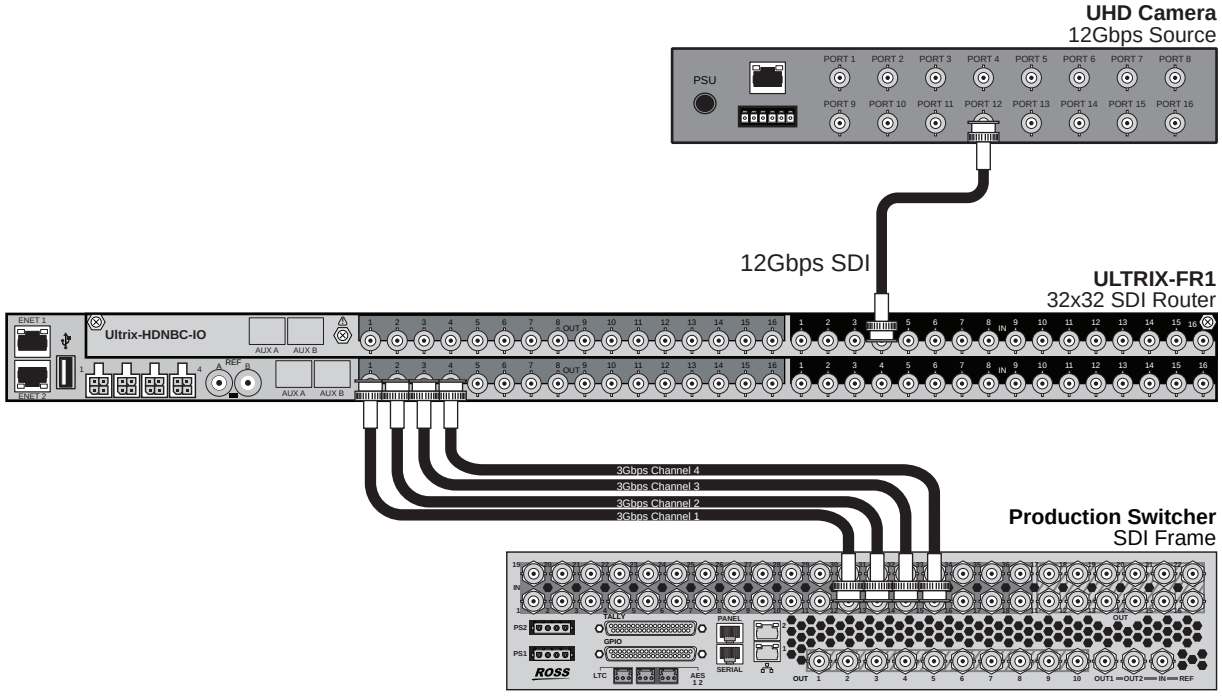


Figure 7.2 Example of Gearbox Workflow of an Ultrix Router — De-multiplexing a 12Gbps Signal

Gearbox Overview

A Gearbox is a group of four consecutive inputs or four consecutive outputs that are automatically grouped together in the Ultrix database. The first port of the Gearbox group is used for routing and UltriScape, while the remaining three ports in the group are reserved but not used (they are not listed in the Third Party Matrices, Sources, and Destinations tabs of the database).

- When you enable a Gearbox input group, Ultrix multiplexes the signals of the four 3Gbps Level A channels together.
- When you enable a Gearbox output group, Ultrix takes the signals of the four 3Gbps Level A channels together and provides a single 12Gbps signal to an output.

The most common application of a Gearbox is when there are quad channels coming in and out of the Ultrix router. The first channel is used as the port for those I/O to define single level of logical I/O while only the audio on the first channel is available.

For More Information on...

- cabling for a Gearbox application, refer to the ***Ultrix Installation Guide***.

Signal Medic

The Signal Medic is a function that attempts to 'repair' the incoming Gearbox signal group if one of the four input stream is temporarily interrupted. The Signal Medic will replace the missing stream with an interpolated version derived from the other incoming signals.

For More Information on...

- the Signal Medic options, refer to **Table 30.9**.

Gearbox Timing

Ultrix Gearbox requires all four of the input signals be within 350ns of each other. Cable lengths to the Gearbox input should be as matched as practicable.

For More Information on...

- the cable length specifications, refer to the ***Ultrix Installation Guide***.

Configuring the Ultrix Router for Multiplexing Quad Input Signals

When I/O ports are enabled for a Gearbox, the first port of the group is the designated port for mapping (the other three ports of the group are reserved but not used). The Port Configuration interface indicates the groups using color backgrounds with each group set in a different color. (**Figure 7.3**)

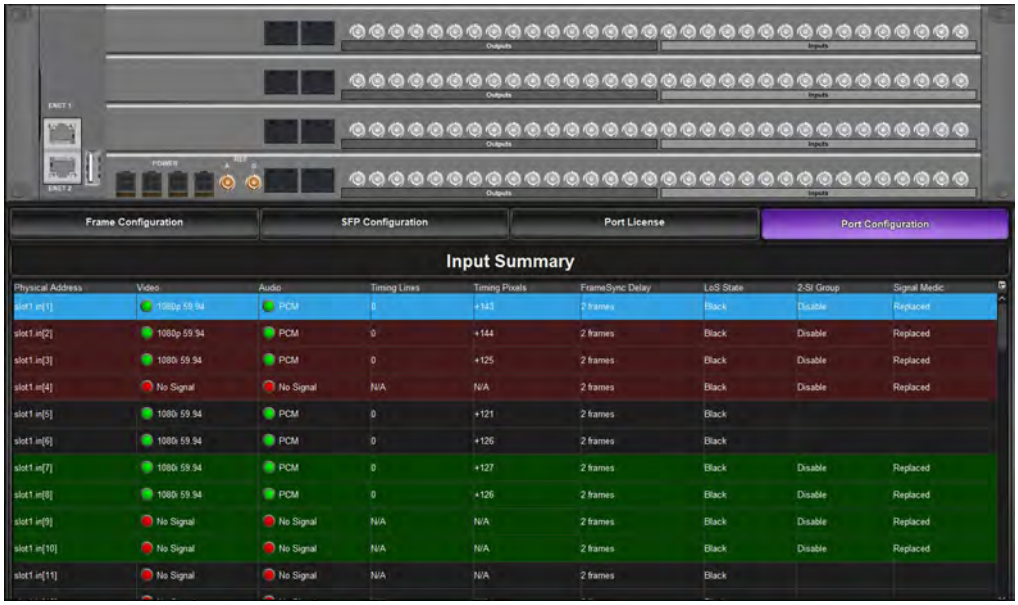


Figure 7.3 Example of Port Configuration Interface — Gearbox Groups

Before You Begin

Ensure the following steps are completed before configuring the router to multiplex a 12Gbps signal:

1. Install the UltriSpeed software license for the Ultrix router that will multiplex the four 3Gbps into one 12Gbps signal.
2. Set up a connection between the external device that will provide the four 3Gbps input signals and the Ultrix router, ensuring the four input signals are cabled to the Ultrix rear panel as outlined in **Table 7.3**.

Table 7.3 Gearbox Mapping — Default Input Groups

Group	Channel 1	Channel 2	Channel 3	Channel 4
1	slot#.in[1]	slot#.in[2]	slot#.in[3]	slot#.in[4]

Table 7.3 Gearbox Mapping — Default Input Groups

Group	Channel 1	Channel 2	Channel 3	Channel 4
2	slot#.in[7]	slot#.in[8]	slot#.in[9]	slot#.in[10]
3	slot#.in[13]	slot#.in[14]	slot#.in[15]	slot#.in[16]

3. Set up a connection between the Ultrix router and the external device that will receive the 12Gbps signal.
4. Make a note of the physical **IN** BNCs on the Ultrix router that will receive the 3Gbps signals.
5. Make a note of the physical **OUT** BNC on the Ultrix router that will transmit the 12Gbps signal.

Assigning Physical Router Inputs to a Gearbox Group

The Gearbox inputs are automatically arranged in groups of four (e.g. slot1.in[1] to slot 1.in[4] is one group). You can enable up to four Gearbox groups per Ultrix slot.

To assign router inputs to a UHD Gearbox group

1. Expand the **Devices** node.
2. Expand the **Controllers + Matrices** node.
3. Double-click the node for your Ultrix router.

   The **Device Configuration** interface opens with the **Frame Configuration** interface selected.
4. Click **Port Configuration**.

   The **Port Configuration** interface opens and displays the **Input Summary** table.
5. In the **Physical Address** column:

   a. Locate the slot that the UltriSpeed license was installed for.

   b. Locate the first input port in the Gearbox group you wish to configure for multiplexing four 3Gbps signals.
6. In the **2-SI Group** column, click the cell for the first input port of the Gearbox group.

   A drop-down menu opens.

7. Select **Enable**.

   The new setting is applied to the selected port and the three associated ports in the same Gearbox group. Note that only the first input in the Gearbox group (e.g. slot1.in[1]) will display in the **Matrix I/O** lists in the **Third Party Matrices** and **Sources** tabs.

Assigning a Multiplexed 12Gbps Signal in the Database

You can assign the new 12Gbps signal in the Ultrix database much like assigning an input of any other signal type. However, the new 12Gbps signal is now the first input in the Gearbox group (e.g. slot1.in[1]) to a Destination in the database.

The original 3Gbps signals will still display in the Matrix I/O lists in the Ultrix database and can still be managed as individual sources in the database.

Example of a Gearbox Database for Inputs

Table 7.4 provides an example of mapping the Gearbox inputs in an Ultrix database.

Table 7.4 Example of Gearbox Input Database Mapping

Source Name	SDI	Level A1	Level A2
GearBox In 1	Slot**x**.in[1].sdi.ch1	Slot**x**.in[1].audio.ch1	Slot**x**.in[1].audio.ch2
GearBox In 2	Slot**x**.in[7].sdi.ch1	Slot**x**.in[7].audio.ch1	Slot**x**.in[7].audio.ch2
GearBox In 3	Slot**x**.in[13].sdi.ch1	Slot**x**.in[13].audio.ch1	Slot**x**.in[13].audio.ch2

For More Information on...

- managing the sources in a database, refer to the section "**Defining the Sources in a Database**" on page 115.

Configuring the Ultrix Router for De-multiplexing a 12Gbps Signal

The Ultrix router is capable of de-multiplexing a 12Gbps SDI sources into four separate 3Gbps SDI output signals.

Before You Begin

Ensure the following steps are completed before configuring the router to de-multiplex a 12Gbps signal:

1. Install the UltriSpeed software license for the Ultrix router that will de-multiplex the 12Gbps signal.
2. Set up a connection between the external device that will provide the 12Gbps signal to the Ultrix router.
3. Setup a connection between the Ultrix router and the external device that will receive the four 3Gbps signals.
4. Make a note of the physical **IN** BNC on the Ultrix router that will receive the 12Gbps.
5. Make a note of the physical **OUT** BNCs on the Ultrix router that will transmit the processed 3Gbps signals.

Configuring the Ultrix Router for De-multiplexing a 12Gbps Signal

De-multiplexing an 12Gbps signal produces four 3Gbps SDI signals. These SDI signals can then be assigned to separate Ultrix router outputs.

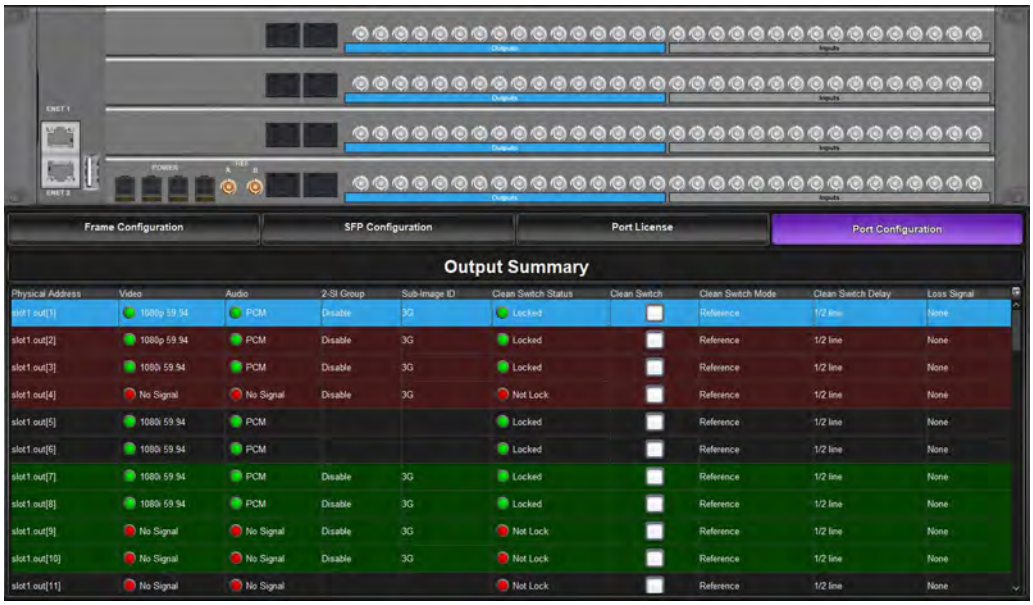
To assign the de-multiplexed signals to a Gearbox group

1. Expand the **Devices** node.
2. Expand the **Controllers + Matrices** node.
3. Double-click the node for your Ultrix router.

   The **Device Configuration** interface opens with the **Frame Configuration** interface selected.
4. Click **Port Configuration**.

   The **Port Configuration** interface opens.
5. Click an **Outputs** banner in the router rear panel map, located at the top of the **Port Configuration** interface.

   The **Port Configuration** interface updates to the **Output Summary** table and all **Outputs** banners are lit blue.



6. In the **Physical Address** column, locate the first output port in the Gearbox group you wish to configure for multiplexing.
7. In the **2-SI Group** column, click the cell for the first output port of the Gearbox group.

   A drop-down menu opens in the column.
8. Select **Enable**.

   The new setting is applied to the selected port and the three associated ports in the same Gearbox group.

Assigning the De-multiplexed 12Gbps Signal to a Destination in the Database

You can assign the new 3Gbps signals as outputs in the Ultrix database much like assigning a destination of any other signal type. Refer to the section "**Defining the Destinations in a Database**" on page 112 for details on configuring destinations in your database.

You can still assign the original 12Gbps signal as a source in the Ultrix database much like assigning a source of any other signal type. Refer to the section "**Defining the Sources in a Database**" on page 115 for information on managing the sources in a database.

Example of a Gearbox Database for Outputs

Table 7.4 provides an example of mapping the Gearbox outputs in an Ultrix database.

Table 7.5 Example of Gearbox Output Database Mapping

Destination Name	SDI	Level A1	Level A2
GearBox Out 1	Slot**x**.out[1].sdi.ch1	Slot**x**.out[1].audio.ch1	Slot**x**.out[1].audio.ch2
GearBox Out 2	Slot**x**.out[7].sdi.ch1	Slot**x**.out[7].audio.ch1	Slot**x**.out[7].audio.ch2
GearBox Out 3	Slot**x**.out[13].sdi.ch1	Slot**x**.out[13].audio.ch1	Slot**x**.out[13].audio.ch2

UltriScape Setup

The UltriScape licensed feature allows you to view multiple video sources from a single output on an Ultrix router. Any video source on the router can be assigned to any PiP on an UltriScape layout. Each layout is configured independently and can be applied to one or more UltriScape outputs (Heads). Each router slot supports up to three Heads.

Overview

UltriScape provides:

- 3 UltriScape Heads (Multiviewer outputs) per Ultrix slot
- 1080i or 1080p configurable output standard
- UltriScape Head layout switched by any router controlling device
- choose 2 system wide PiP sizes from 9 available
- head specific third PiP (large sizes)
- up to 128 system wide PiPs available
- 21 layout templates
- flexible layout editor to create custom layouts
- PiPs may follow a router input, router output, or be switched as a destination
- flexible audio metering per PiP
- dynamic or static PiP labeling
- TSL protocol controls border, indicator, and label tallies

Before You Begin

Keep the following in mind as you implement your UltriScape Heads:

- You must have assigned a router OUT BNC to each UltriScape Head that is licensed in each slot.
- Moving overlay elements on the DashBoard interfaces are in real time, and there is a rendering delay on the UltriScape Head output making layout changes/updates non- real time. Refer to **Table 8.1** for approximate refresh times (once the layout is selected and applied).

Table 8.1 UltriScape — Refresh Times

Element	Refresh Time
Label Change	0.5 seconds
Layout Change	1 second/layout
Audio Meters	All meters update every 10 frames

For More Information on...

- installing a license for an UltriScape Head, refer to the section "**Installing a License Key**" on page 34.

Workflow

Once the Ultrix router is listed in the Tree View of Dashboard, and the UltriScape licensed feature is enabled for each head, the UltriScape nodes are displayed in the Tree View.

The UltriScape hardware setup includes the following tasks:

1. Install the UltriScape license keys for your router.
2. Assign each UltriScape Head to a physical output on the router.
3. Plan your layouts for each UltriScape Head. This will determine the number of PiPs and outputs you will need to set up in the database.

✶ UltriScape can have PiPs that are shared between all Head outputs (shared PiPs), or PiPs that are specific to a particular Head (local PiPs). The shared PiPs are particularly useful when the same source or destination is to be shown on one or more UltriScape outputs.

4. Assign each PiP to a Destination in the database. Refer to the section "**Assigning the UltriScape Destinations**" on page 154.

Once the hardware setup is completed, proceed to the chapter "**UltriScape Configuration**" on page 151 for details on configuring the layouts for the UltriScape Heads.

Installing an UltriScape License Key

The number of UltriScape Heads for an Ultrix router depends on the number of installed UltriScape license keys. An UltriScape license enables one UltriScape Head on one slot only. For example, if you wanted to enable three UltriScape Heads on slot 1, you would install three UltriScape licenses on slot 1.

✶ You must have at least one UltriScape license installed for each slot that will provide an UltriScape Head.

For More Information on...

- installing an UltriScape license key, refer to the section "**Installing a License Key**" on page 34.

Assigning an UltriScape Head to a Physical Router Output

Only certain physical outputs may be designated as UltriScape outputs. For example, if you installed a second UltriScape license for slot 2, you must assign either OUT 5 or OUT 7 as the UltriScape Head output. **Table 8.2** lists the connections on the rear panel that are available for UltriScape Heads.

Table 8.2 Outputs Allocated for UltriScape Heads

Slot	UltriScape Head 1	UltriScape Head 2	UltriScape Head 3
Slot #	AUX A or OUT 1	OUT 5 or OUT 7	OUT 11 or OUT 13

Figure 8.1 illustrates the output connections allocated for UltriScape Heads on a router rear panel.

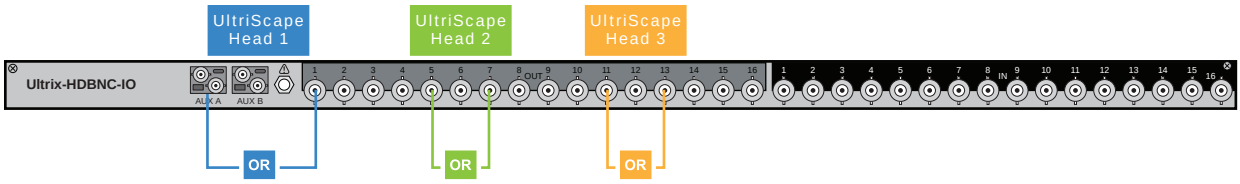


Figure 8.1 UltriScape Heads — Output Connections

To assign an UltriScape Head to a router output

1. Expand the **Devices** node.
2. Expand the **Controllers + Matrices** node.
3. Double-click the node for your Ultrix router.

   The **Device Configuration** interface opens.
4. Click **Port Licenses**.

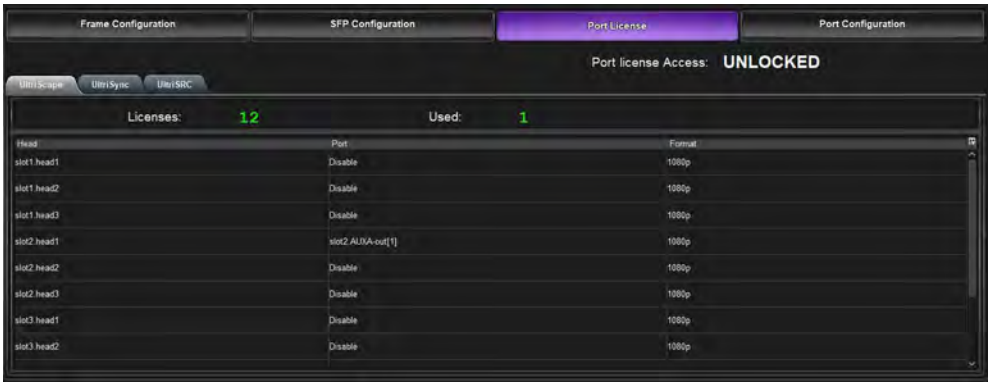
   The **Port Licenses** interface displays.

5. Verify that the **Port Licenses** interface reports the correct number of licensed UltriScape Heads for your router.

✶ The Ultrix rear panel map at the top of the **Port License** interface will display the text "**MV**" set in red on each output socket that has the UltriScape enabled for it.

6. In the **Port License** interface, locate the UltriScape Head you want to assign.

   The example below, there are twelve UltriScape Heads licenses enabled and one is assigned.



7. Use the **Port** field to select the physical OUT BNC on the Ultrix router you want to assign to the UltriScape Head. Choose from the following:

   - **Disable** — Select **Disable** if you do not wish to assign the physical OUT BNC as the UltriScape Head output.
   - **Slot#.[#]** — Specifies which physical OUT BNC on the Ultrix rear panel will be the UltriScape Head output. Note that the slot combinations listed depends on the slot and number of Heads enabled.

8. Use the **Format** field to specify the output video format for the UltriScape Head. Choose from the following:

   - 1080p (3Gbps SDI)
   - 1080i (1.5Gbps SDI)
   - 1080i-LC (1.5Gbps SDI)

✶ This adds video processing for some interlace formats to ensure stability by introducing 1 frame delay.

ULTRIX-IP-IO Setup

This chapter outlines how to configure receivers and senders for the Ultrix router to be used in video and audio streaming when an ULTRIX-IP-IO blade is installed in a slot of an Ultrix router chassis.

✶ The ULTRIX-IP-IO supports multicast IP Addresses in the range of 232.x.x.x or 239.x.x.x only.

For More Information on...

- the installation and cabling of the ULTRIX-IP-IO, refer to the ***Ultrix Installation Guide***.

What are Receivers, Senders, and Streams?

The following terms may be used throughout this chapter:

Device

A physical, virtual, or software application that may include multiple sources, destinations, senders, or receivers.

Flow

The continuous raw media content. It can contain more than one essence (e.g. an audio flow can contain multiple channels, and an SDI flow may contain audio and video essences).

A flow is independent of the transport protocol. For example, 48kHz LPCM audio is a flow; AES67 is one type of stream which can carry the flow.

Flows cannot generally be passed around natively, and need to be encapsulated in a stream. Flows from the same source are considered “editorially equivalent”, but may be encoded differently. For example, a video source may be encoded as 4:2:2 YCbCr uncompressed, 4:4:4 RGB uncompressed, and h.265 encoded. Each of these would be a separate flow from a common source.

Receiver

An element within a device that receives exactly one stream, which contains one flow from a network.

Sender

An element within a device which presents exactly one flow, packaged as a stream onto a network.

Stream

One flow, encapsulated within a transport protocol. Examples include SMPTE ST 2022-6, SMPTE ST 2110-20 Video, or SMPTE ST 2110-30 Audio (AES67).

Before You Begin

This section provides information to keep in mind before setting up Ultrix-IP streams.

✶ Each ULTRIX-IP-IO blade has four ENET ports with 25Gb bandwidth per port. The ports are grouped into two pairs where the first pair is ENET 1 and ENET 2; the second pair is ENET 3 and ENET 4.

Audio Streams

Keep the following in mind when setting up audio IP streams:

- Each ENET pair can support a maximum of 32 audio streams.
- If redundancy is enabled for an ENET pair, an additional 32 redundant streams are made available.

- Only ENET 1 and ENET 3 support audio streams at this time.
- Each audio stream can support up to 8 audio channels. For example, a stream with 10 audio channels requires 2 audio streams where the first stream includes channels 1-8, and the second stream includes channels 9-10.

Video Streams

Keep the following in mind when setting up video IP streams:

- When using 1080p or lower video formats, each ENET pair can support up to 8 video streams with a maximum of 16 streams per ULTRIX-IP-IO blade. An additional 8 redundant streams are available if the Redundant option is enabled for the ENET pair.
- When using UHD 6G formats (2160p 30/29.97/25Hz), each ENET pair can support up to 4 video streams with a maximum of 8 streams per ULTRIX-IP-IO blade. An additional 4 redundant streams are available if the Redundant option is enabled for the ENET pair.
- When using UHD 12G formats (2160p 60/59.94/50Hz), each ENET pair can support up to 3 video streams with a maximum of 6 streams per ULTRIX-IP-IO blade. If the Redundant option is enabled for the ENET pair, up to 4 video streams (2 streams in the first port and 2 redundant streams in the second port) are available.
- When using a mix of UHD 6G and 12G formats, each ENET pair can support up to 4 video streams. For example, 3x12G streams and 1x6G stream.

Redundant Streams

The ULTRIX-IP-IO blade also provides protection switching as per SMPTE 2022-7. This option can be enabled for each pair on the blade.

Keep the following in mind when setting up redundant streams:

- You will need to assign a unique IP address to each stream (primary and secondary) in the same multicast range (the first octet in the addresses must match). For example, if the primary stream is set to 239.1.1.1, the secondary stream could be 239.2.2.2.
- ENET 2 is reserved for redundant streams when the Redundant option is enabled for that ENET pair.
- ENET 4 is reserved for redundant streams when the Redundant option is enabled for that ENET pair.
- When an ENET pair is in redundant mode:
  - The stream must be added to the first port of the ENET pair (ENET 1 or ENET 3) and a duplicate (secondary) stream is automatically added to the second port (ENET 2 or ENET 4 respectively).
  - The primary and secondary audio streams must have the same IP Address but different UDP ports.

Overview

The generalized work flow of configuring your ULTRIX-IP-IO is:

1. Download and install the latest version of the DashBoard client software.
2. Contact your IT department for the required IP addresses for your ULTRIX-IP-IO ports.
3. Cable the ULTRIX-IP-IO ports.
4. Configure the protocol settings for the ULTRIX-IP-IO.
5. Configure the Port Network settings.
6. Define the Network Stream Groups.
7. Specify the timing requirements for the ULTRIX-IP-IO.
8. Configure the sender streams for the ULTRIX-IP-IO.
9. Configure the receiver streams for the ULTRIX-IP-IO.
10. Enable and configure the redundant streams.

11. Make your connections.
12. Continue to setup your database as outlined in "**Database Configuration**" on page 105.

Setups with an Ultricore BCS

An Ultricore BCS enables the video senders/receiver endpoints to be reported as available ports to the router database. The video senders/receivers are seen as part of a single video-IP matrix, and the audio senders/receivers are part of a single audio-IP matrix. Refer to the ***Ultricore BCS User Guide*** for details on setting up and configuring the Ultricore BCS in your routing system.

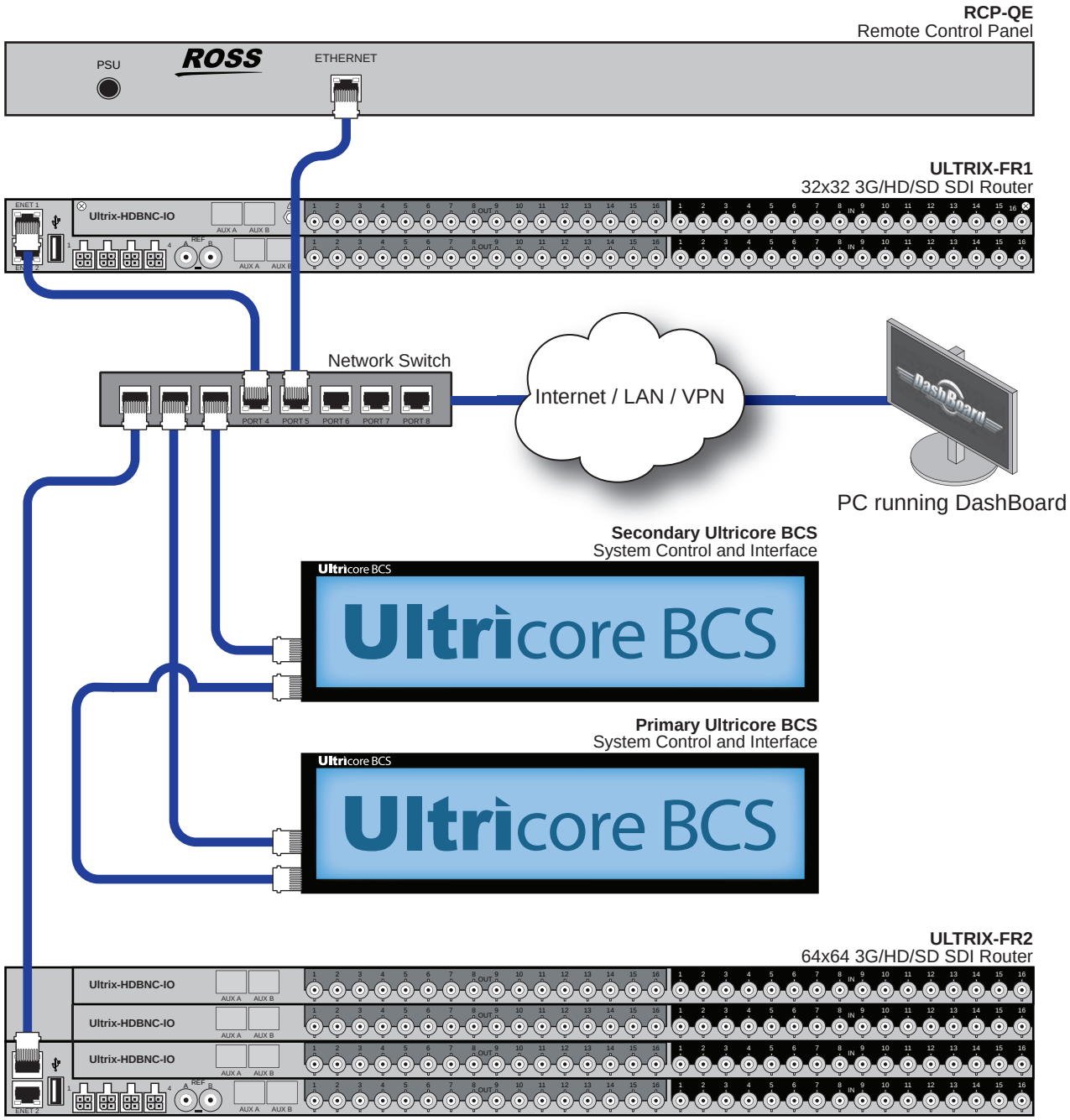


Figure 9.1 Example Setup with an Ultricore BCS Redundancy System

Configure the Protocol Settings

The Ultrix-IP supports media distribution based on NMOS, and Ember+. This section outlines how to configure the Ultrix-IP for each protocol.

✶ Any changes made to the ULTRIX-IP-IO settings requires a frame reboot.

Configuring the NMOS Settings

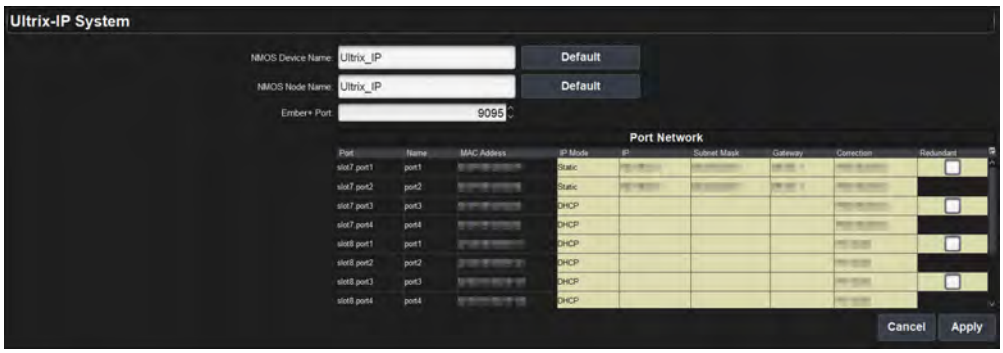
This section outlines the required settings for the Ultrix to establish communications via the Network Media Open Specifications (NMOS).

To configure the Ultrix as a NMOS device

1. Expand the **Devices** node.
2. Expand the **Controllers + Matrices** node.
3. Double-click the node for your Ultrix router.

   The **Device Configuration** interface opens with the **Frame Configuration** interface selected.
4. Click **ULTRIX-IP Settings**.

   The **Frame Configuration** interface updates to display the **ULTRIX-IP-IO Settings** area for the router.



5. To assign a name to the Ultrix for use in the NMOS network, perform one of the following:
   - Use the **NMOS Device Name** field to specify a unique identifier for the Ultrix in the NMOS network; or
   - Click **Default** beside the **NMOS Device Name** field to use the pre-assigned name.
6. Use the **SDP Port** field to specify the SDP HTTP port used to GET SDPS.
7. To specify the HTTP port used by the Ultrix to browse NMOS properties, perform one of the following:
   - Use the **NMOS Node** field to specify the port as defined by your IT Department; or
   - Click **Default**.

Configuring the Ember+ Settings

✶ Ultrix implements BESS v1.1 for Ember+ support to communicate with third-party controllers.

To establish a connection between the Ember+ client and the Ultrix, you will first need to:

1. Add the Ultrix in the Ember+ client interface using the IP Address assigned to the Ultrix router.
2. Enable SDP patching with the Ember+ client to establish video and audio receivers on the Ultrix.
3. Set the TCP port to **9095**, in the Ember+ client, for the Ultrix.
4. Ensure that all network streams have a consistent audio channel count.

Establishing a Connection

Before proceeding, ensure that SDP patching is enabled with the Ember+ client to establish receivers on the Ultrix.

To establish a connection between the Ember+ client and the Ultrix

1. Expand the **Devices** node.
2. Expand the **Controllers + Matrices** node.
3. Double-click the node for your Ultrix router.

   The **Device Configuration** interface opens with the **Frame Configuration** interface selected.
4. Click **ULTRIX-IP Settings**.

   The **Frame Configuration** interface updates to display the **ULTRIX-IP Settings** area for the router.
5. Type `9095` in the **Ember+ Port** field.

Mapping

You will need to configure the Senders, and then use the Ember+ controller interface (e.g. Lawo VSM) to map the sources to the targets. Refer to the documentation that came with your Ember+ controller for details.

Configuring the Port Network

By assigning an IP Address to each port of the ULTRIX-IP-IO blade, you are able to uniquely identify it on the network and control it via the DashBoard interface. Each port can be configured separately for media traffic.

✶ All ENET ports are set to DHCP by default.

To assign the network settings for an ULTRIX-IP-IO port

1. Expand the **Devices** node.
2. Expand the **Controllers + Matrices** node.
3. Double-click the node for your Ultrix router.

   The **Device Configuration** interface opens with the **Frame Configuration** interface selected.
4. Click **ULTRIX-IP Settings**.

   The **Frame Configuration** interface updates to display the **ULTRIX-IP Settings** area for the router.
5. In the **Port Network** table, locate the row for the port you wish to configure.
6. If you are manually configuring the Ethernet settings:
   a. Click the cell in the **IP Mode** column and select **Static**.
   b. Use the **IP** field to specify the static IP Address for the port. This is the IP Address that is used to control and communicate with the specified port.
   c. Use the **Subnet Mask** field to specify the subnet mask for the port.
   d. Use the **Gateway** field to specify the gateway for communications outside of the local area network (LAN) the ULTRIX-IP-IO will use.
7. If you want the network settings for the port to be automatically obtained, and DHCP service is available on your control network, click the cell in the **IP Mode** column and select **DHCP**.
8. Click **Apply** to save the new settings.
9. Repeat this procedure for the second port you wish to configure.
10. Click **Reboot** to apply the new settings. This button is located at the bottom of the interface.

    The Ultrix is temporarily taken off-line during the reboot.

11. Verify the new settings reported on the Frame Configuration status fields.

Configuring the Timing Settings

The Ultrix supports the Precision Time Protocol (PTP) as defined in the IEEE 1588-2008 standard and the SMPTE ST-2059 specification.

✶ The Ultrix behaves only as a slave and cannot be used as a Boundary Clock or Grandmaster device.

Configuring the PTP Settings

You can synchronize the Ultrix to real-time clocks of other devices in the same network. You create a profile (use the default settings or create a custom profile) that identifies the Ultrix to the Grandmaster clock.

✶ There are several criteria that PTP clocks compare to determine who will be master and who will be slave (called the Best Master Clock Algorithm, or BMCA), and they are evaluated in order: Priority1, clock class, accuracy, scaled log variance, Priority2, clock ID (similar to the MAC address). Practically, Priority1 is the only setting configured on all clocks to control the outcome of the Grandmaster election. If Priority1s are equal, the next criterion is evaluated (clock class) and the criteria are evaluated in succession until a Grandmaster is determined.

To configure a PTP default profile for the Ultrix

1. Expand the **Devices** node.
2. Expand the **Controllers + Matrices** node.
3. Double-click the node for your Ultrix router.

   The **Device Configuration** interface opens with the **Frame Configuration** interface selected.
4. Click **ULTRIX-IP Settings**.

   The **Frame Configuration** interface updates to display the **ULTRIX-IP Settings** area for the router.
5. Locate the **ULTRIX-IP PTP** area.

✶ You may need to scroll down to the **ULTRIX-IP PTP** area.

6. Use the **Profile** menu to specify the standard/specification used for PTP. The default is SMPTE ST 2059-2.

✶ The **Domain** is automatically set if the **Custom PTP Profile** is not selected.

To create a custom PTP profile for the Ultrix

1. Expand the **Devices** node.
2. Expand the **Controllers + Matrices** node.
3. Double-click the node for your Ultrix router.

   The **Device Configuration** interface opens with the **Frame Configuration** interface selected.
4. Click **ULTRIX-IP Settings**.

   The **Frame Configuration** interface updates to display the **ULTRIX-IP Settings** area for the router.
5. Locate the **ULTRIX-IP PTP** area.
6. Select the **Custom PTP Profile** box.
7. Use the **Domain** menu to specify the sub-domain the PTP clock is assigned to. The default is 127.

✶ There can be multiple PTP domains operating concurrently within a network. The domain is a field in all PTP message headers. Messaging between entities are segregated by domain (e.g. the Ultrix is an endpoint configured for domain 128 and ignores messages from a neighboring clock configured for domain 127).

Configuring the PTP Settings for a Specific Port

Once you create a PTP profile for the Ultrix, you may want to uniquely define the PTP settings for each ULTRIX-IP-IO port.

To configure the PTP settings for a specific port

1. In the **ULTRIX-IP PTP** area of the **Frame Configuration** interface, select the **Custom PTP Profile** box for the required port.
2. Locate the **Port PTP Intervals** table.
3. Use the **Name** field to assign a unique identifier to the port.
4. Use the **Sync Interval** field to specify the number of seconds at which synchronization messages are sent from the master clock to the specified ULTRIX-IP-IO port.
5. Use the **Announce Interval** field to specify the rate of announce messages that the specified ULTRIX-IP-IO port requests from the master clock during a unicast session.
6. Use the **Announce Receipt Timeout** field to specify the number of seconds the specified ULTRIX-IP-IO port waits for an announce interval message before timing out.
7. Click **Apply**.

Configuring the Senders

You will need to specify the IP encapsulation properties for the active video and audio. For each input signal, you need to specify the IP encapsulation properties for the active video and audio. A sender stream on the ULTRIX-IP-IO can be configured with any multicast IP address in the range of 232.x.x.x or 239.x.x.x.

✶ Make note of the bandwidth allocation for the ULTRIX-IP-IO port to determine the available capacity of the port. You can add as many streams to fill up the 25Gb bandwidth of the selected ENET port. Once that maximum this maximum is reached, existing streams of the selected ENET port are automatically removed before new streams are added.

To display the Senders table for a port in DashBoard

1. Expand the **Devices** node.
2. Expand the **Controllers + Matrices** node.
3. Double-click the node for your Ultrix router.

   The **Device Configuration** interface opens with the **Frame Configuration** interface selected.
4. Click **Port Configuration**.

   The **Port Configuration** interface opens.
5. Locate the **ULTRIX-IP-IO** blade in the router rear panel map.

✶ You may need to scroll to the bottom of the map to display this slot.

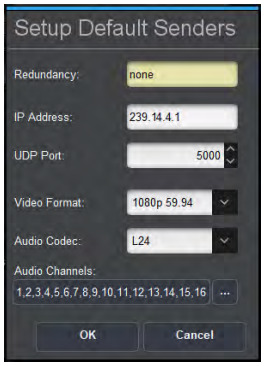
6. Click an **SFP** port in the ULTRIX-IP-IO slot.

   The selected port is lit blue and the **Port Configuration** interface updates to display the options for the port.
7. Locate the **Senders** table in the **Port Configuration** interface.

To add advertised sender streams

1. Click **Default**.

   The **Setup Default Senders** dialog opens.

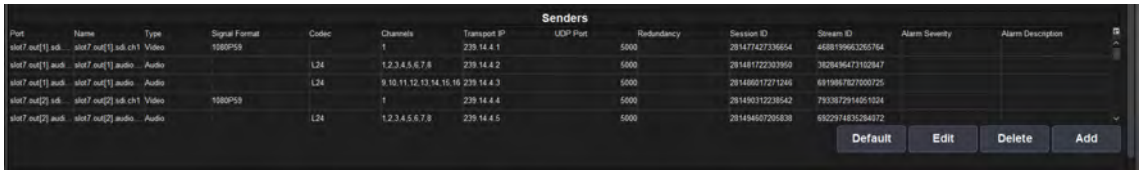


2. Use the **IP Address** field to specify the IP range for the sender.

   In the above example, the user entered 239.14.4.1 as the starting point for the sender streams. Each subsequent advertised stream after this IP Address (e.g. 239.14.4.2, 239.14.4.3, 239.14.4.4 etc.) will be added to the Senders table.

3. Use the **UDP Port** field to specify the RTP port for the advertised stream.
4. Use the **Video Format** field to specify the video format of the signal available for the advertised stream.
5. Use the **Audio Codec** field to specify the audio compression format for the advertised stream.
6. Use the **Audio Channels** field to specify the maximum number of audio channels in each stream.
7. Click **OK**.

   The **Setup Default Senders** dialog closes and the Senders table updates to list the sender streams advertised using the IP Address specified in step 2.



✶ Make a note of the automatically assigned label in the **Name** field for each stream. This name will be used in the database to represent the specific stream as an output (destination).

To manually add a sender stream

1. Click **Add**.

   The **Add Senders** dialog opens.

2. Use the **IP Address** field to specify the stream address for the video and/or audio signals for the sender.
3. Edit the **UDP Port** to specify the source port to connect to the stream. This must match the source you are attempting to connect to.
4. Use the **Type** menu to select the type of stream that will be available at the specified IP Address.

✶ It is recommended to not edit the **UDP Port** field as this field is auto-populated by the advertised stream.

5. Use the **Output** menu to assign the SDI input signal to the sender stream.
6. If you selected **Video & Audio**, or **Video** in step 4, use the **Video Format** menu to specify the video format of the signal available to the sender.
7. If you selected **Video & Audio**, or **Audio** in step 4:
   a. Use the **Audio Codec** menu to specify the audio compression format for the sender.
   b. Use the **Audio Channels** menu to specify the maximum number of audio channels in the specified stream.
8. Click **OK**.

   The **Add Senders** dialog closes and the new stream is added to the Senders table.

✶ Make a note of the automatically assigned label in the **Name** field for the stream. This name will be used in the database to represent the specific stream as an output (destination).

To edit a sender stream

1. Select the row for the sender stream you wish to edit in the Senders table.
2. Click **Edit**.
3. Edit the fields as required.

✶ The fields with yellow backgrounds are read-only and cannot be edited.

4. Click **OK**.

Configuring the Receivers

Each configured Receiver enables the Ultrix to advertise to the Senders (in your network) how much data it can receive and buffer. A receiver on the ULTRIX-IP-IO can be configured to connect to a network stream with any destination multicast IP address in the range of 232.x.x.x or 239.x.x.x.

To display the Receivers table for a port in DashBoard

1. Expand the **Devices** node.
2. Expand the **Controllers + Matrices** node.
3. Double-click the node for your Ultrix router.

The **Device Configuration** interface opens with the **Frame Configuration** interface selected.

4. Click **Port Configuration**.

   The **Port Configuration** interface opens.

5. Locate the **ULTRIX-IP-IO** blade in the router rear panel map.

✶ You may need to scroll to the bottom of the map to display this slot.

6. Click an **SFP** port in the ULTRIX-IP-IO slot.

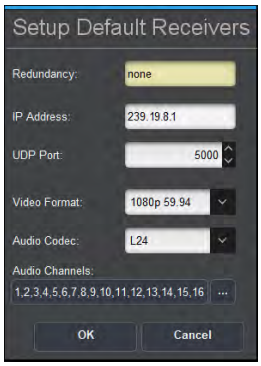
   The selected port is lit blue and the **Port Configuration** interface updates to display the options for the port.

7. Locate the **Receivers** table in the **Port Configuration** interface.

To add a series of receivers

1. In the **Receivers** table, click **Default**.

   The **Setup Default Receivers** dialog opens.



2. Use the **IP Address** field to specify the IP range for the receiver.

   In the above example, the user entered 239.19.8.1 as the starting point for the receiver streams. Each subsequent advertised stream after this IP Address (e.g. 239.19.8.2, 239.19.8.3, 239.19.8.4 etc.) will be added to the Receivers table.

3. Use the **UDP Port** field to specify the RTP port the receivers will use.

4. Use the **Video Format** field to specify the video format of the signal the receivers will output.

5. Use the **Audio Codec** field to specify the audio compression format for the receiver streams.

6. Use the **Audio Channels** field to specify the maximum number of audio channels in each stream.

7. Click **OK**.

   The **Setup Default Receivers** dialog closes and the Receivers table updates to list the receiver streams using the IP Address specified in step 2.

✶ Make a note of the automatically assigned label in the **Name** field for each stream. This name will be used in the database to represent the specific stream as an input (source).

To manually add a single receiver

1. In the **Receivers** table, click **Add**.

   The **Add Receivers** dialog opens.

2. Use the **IP Address** menu to specify the IP Address for the transport stream for the receiver.
3. Use the **UDP port** menu to specify the UDP port number of the transport stream for the receiver.
4. Use the **Type** field to specify the type of signal.

✶ Selecting **Video+Audio** automatically creates table entries for one video and multiple audio streams.

5. If you selected **Video** or **Video+Audio** in step 4, use the **Video Format** field to specify the video format for the stream.
6. If you selected **Audio** or **Video+Audio** in step 4, use the **# of Audio Channels** field to specify the audio channels in the stream.
7. Use the **Transport IP** field to specify the UDP IP address of the transport stream for the signal.
8. Click **OK** to create a new entry in the **Receivers** table.

   The **Add Receivers** dialog closes and the **Receivers** table updates with the new receiver stream.

✶ Make a note of the automatically assigned label in the **Name** field for the stream. This name will be used in the database to represent the specific stream as an input (source).

Enabling Redundant Mode

The ULTRIX-IP-IO enables a user to protect their streams to ensure mission critical operation. Using SMPTE ST 2022-7, they can run the same video and audio over two separate, redundant networks in case an error occurs.

✶ This section is only applicable if your system requires protection switching.

Before You Begin

Ensure that:

- your source is capable of sending SMPTE ST 2022-7 streams
- the Ultrix is set up within a protection switching network

Enabling the Redundant Mode

By default, the Redundant mode is disabled.

To enable the Redundant Mode for an ENET pair

1. Expand the **Devices** node.
2. Expand the **Controllers + Matrices** node.
3. Double-click the node for your Ultrix router.

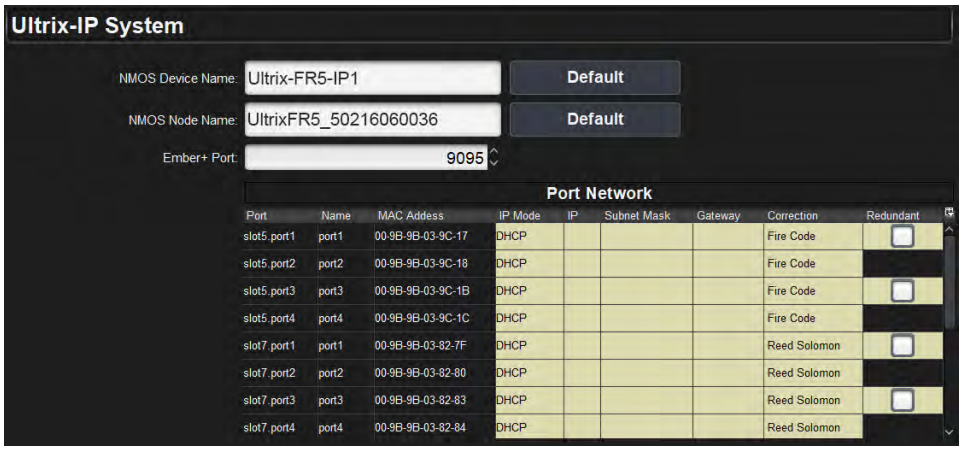
   The **Device Configuration** interface opens with the **Frame Configuration** interface selected.

4. Click **ULTRIX-IP Settings**.

   The **Frame Configuration** interface updates to display the **ULTRIX-IP Settings** area for the router.

5. In the **Port Network** table, locate the ENET pair you wish to configure.

   Each row in the table is an ENET port on an installed ULTRIX-IP-IO blade. In the example below, there are two ULTRIX-IP-IO blades (slot 5 and slot 7).



6. Select the **Redundant** box for the ENET pair you wish to configure for protection switching.
7. Click **Apply**.

Configuring the Ultrix for Protection Switching

You will need to assign a unique IP address to each stream (primary and redundant) in the same multicast range (the first octet in the addresses must match) and a different UDP port. For example, if the primary stream is set to 239.1.1.1, the redundant stream could be 239.2.2.2 but not 232.2.2.2.

✶ The audio streams must have the same IP address as the video streams.

To configure the Ultrix for protection switching

1. Expand the **Devices** node.
2. Expand the **Controllers + Matrices** node.
3. Double-click the node for your Ultrix router.

   The **Device Configuration** interface opens with the **Frame Configuration** interface selected.
4. Click **Port Configuration**.

   The **Port Configuration** interface opens.
5. Select the first port of the ENET pair you enabled the Redundant mode for in the router rear panel map, located at the top of the **Port Configuration** interface.

   The **Port Configuration** interface updates to display the Status, Senders, and Receivers tables for the port. The port also displays with a light-blue background.
6. Configure the primary Senders as outlined in the section "**Configuring the Senders**" on page 77.
7. Configure the redundant Sender stream for the ENET pair as follows:
   a. In the Senders table, select the row for the first port of the ENET pair you enabled Redundant Mode for.
   b. Click **Edit**.

      The **Edit Senders** dialog opens.
   c. Use the **Secondary IP** menus to specify the IP address for the secondary (redundant) stream. Ensure that it is the same IP Address as the primary stream.
   d. Use the **Secondary UDP** port to specify the UDP port for the secondary (redundant) stream. Ensure that it is not the same value as the primary stream.
   e. Click **OK**.
   f. Verify the new Redundancy settings are reported in the Redundancy column of the Senders tab.

8. Configure the primary Receivers as outlined in the section "**Configuring the Receivers**" on page 79.
9. Configure the redundant Receiver stream as follows:
   a. In the Receivers table, select the row for the first port of the ENET pair you enabled Redundant Mode for.
   b. Click **Edit**.

      The **Edit Receivers** dialog opens.
   c. Use the **Secondary IP** menus to specify the IP address for the secondary (redundant) stream. Ensure that it is the same IP Address as the primary stream.
   d. Use the **Secondary UDP** port to specify the UDP port for the secondary (redundant) stream. Ensure that it is not the same value as the primary stream.
   e. Click **OK**.
   f. Verify the new Redundancy settings are reported in the Redundancy column of the Receivers tab.

Troubleshooting

Table 9.1 provides brief explanations for some common stream setup messages.

Table 9.1 Troubleshooting the Error Messages

Error Message	Cause
Cannot set default due to maximum allowable streams has reached	ENET pair has reached the maximum number of allowable streams
Cannot add 2160P59 video due to maximum allowable UHD streams has reached	
Primary and Secondary UDP port cannot be the same	When in Redundant mode, the primary and secondary streams must have the same IP address but different UDP ports assigned.
This IP port does not have enough bandwidth to add 2160P29 video stream	The ENET port has reached the maximum 25G bandwidth.
slot#.port# is a redundant IP port. It is reserved for redundant senders.	The ENET pair is in Redundant mode and you cannot edit the second port (ENET 2 or ENET 4) of the pair.
UHD video must be assigned to output 1, 2, 3, 4, 9, 10, 11, or 12.	The UHD video stream (6G or 12G) format must be assigned to one of the inputs/outputs 1-4 or 9-12.
Address x.x.x.x:x is being used by slotx.out[y].#.chz	Each stream must have a unique network address

Using Senders and Receivers in the Router Database

Throughout the Dashboard interface, the senders and receiver streams (outputs and inputs respectively) of a router (or matrix) are referred to by hierarchical dotted notation: **Slot.Port[x].Type.Channel** where:

- **Slot** identifies which slot in the router chassis the ULTRIX-IP-IO blade is located in.
- **Port[x]** identifies the physical port on the ULTRIX-IP-IO blade.
- **Type** identifies the generic signal type (e.g. SDI, audio).
- **Channel** identifies the audio channel within the stream. If the stream is video, the channel number is fixed to 1.

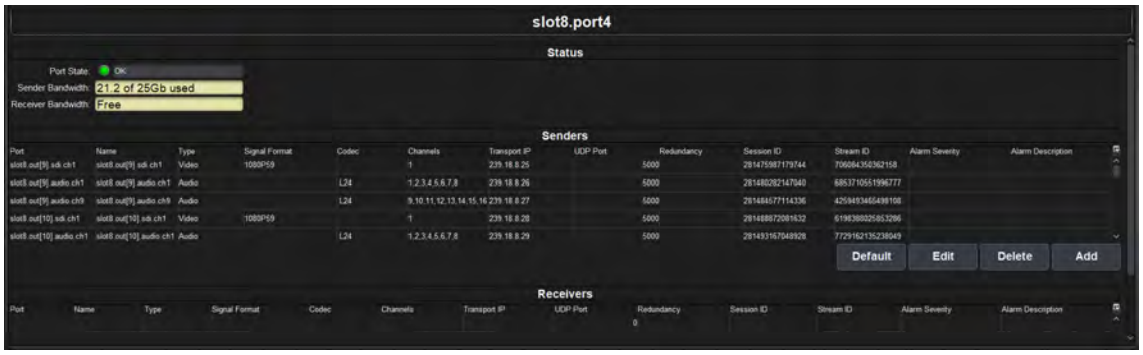


Figure 9.2 Example of Senders in the Port Configuration Interface

These designators may be assigned more user friendly names if required by editing the **Port Labels** interface.

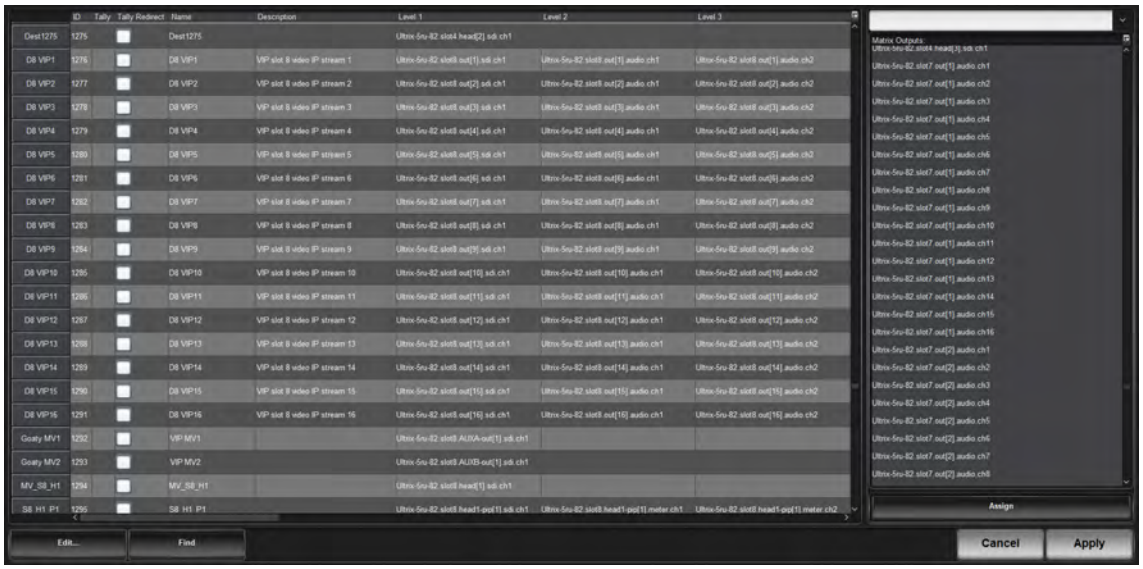


Figure 9.3 Example of Senders in the Database Interface

Integration Examples

This section describes use cases for video streams.

Using 3G HD Video

The following setups use 3G HD video or lower formats. All streams can fit within the first ENET port but there is a maximum of eight video streams per pair.

Redundancy Mode is Disabled

Figure 9.4 shows two ULTRIX-FR5 routers with the first router (Frame A) transmitting eight 3G HD video streams and the second router (Frame B) receiving eight 3G HD streams.

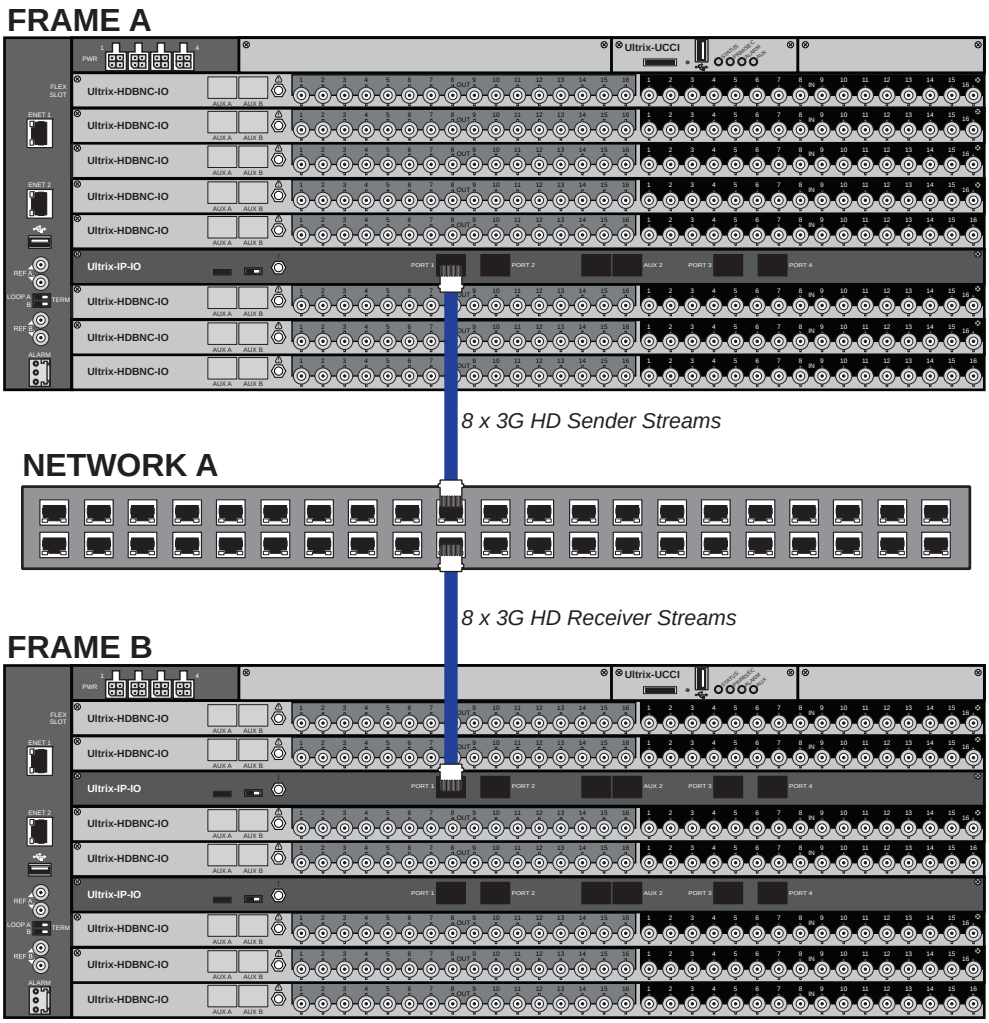


Figure 9.4 Example of ULTRIX-IP-IO with 3G HD Video Streams

In this setup you would configure eight video streams with 1080p 59.94 format (including the audio streams) without redundancy.

1. For Frame A you would configure eight video sender streams with 1080p 59.94 format (pairing two audio sender streams per video stream).
2. For Frame B you would configure eight video receiver streams with 1080p 59.94 format (pairing two audio receiver streams per video stream).
3. Ensure that the receiver IP address on Frame B matches the existing sender address on Frame A.

Redundancy Mode is Enabled

In this setup, there are eight video streams with 1080p 59.94 format (including the audio streams) but the Redundancy Mode is enabled. All streams can fit within the first ENET port but there is a limit of eight video streams per pair. The second ENET port is reserved for the redundant streams.

Figure 9.5 shows two ULTRIX-FR5 routers with one router (Frame A) transmitting eight 3G HD primary video streams and eight 3G HD secondary streams. The second router (Frame B) receives two sets of eight 3G HD streams (primary and secondary).

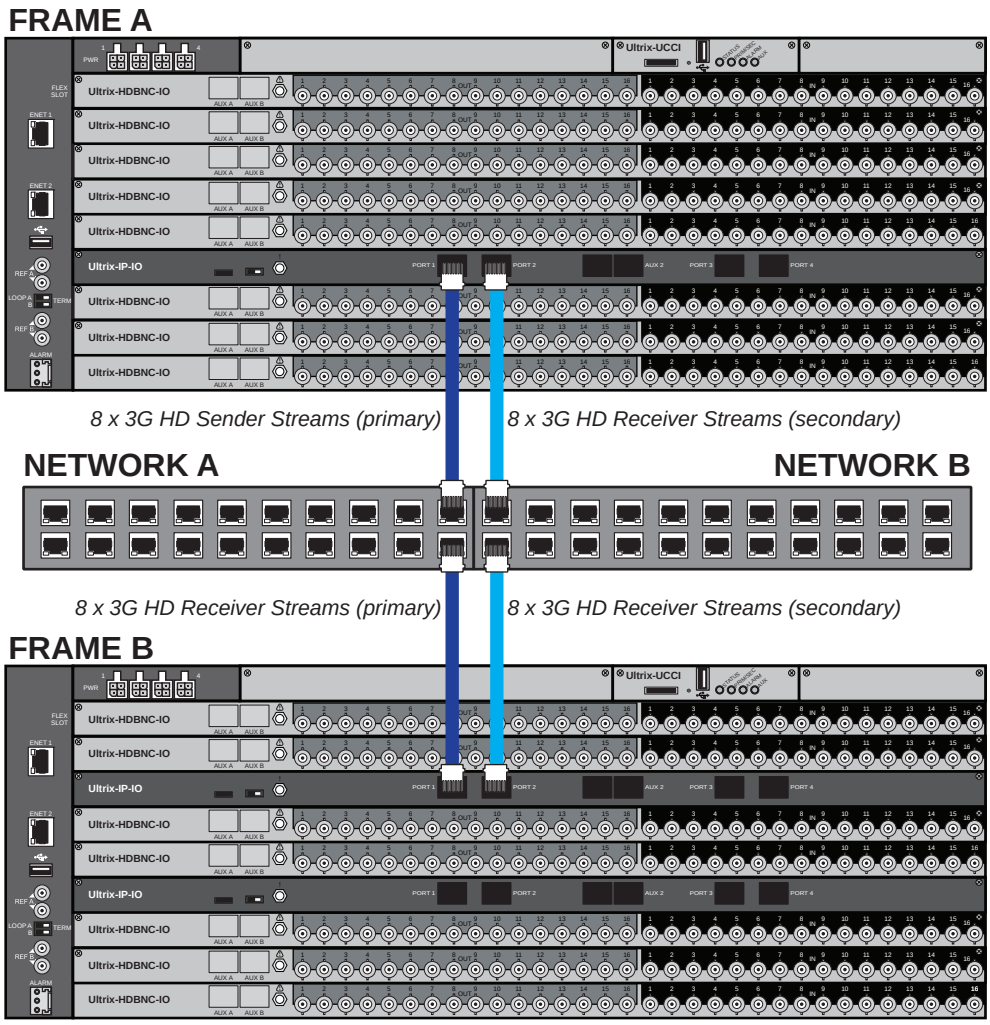


Figure 9.5 Example of ULTRIX-IP-IO with 3G HD Video Streams — Redundancy Mode

In this setup you would configure eight video streams with 1080p 59.94 format (including audio streams) with the Redundancy Mode enabled for each ENET pair in use.

1. For Frame A you would:
   a. configure two sets of eight video sender streams with 1080p 59.94 format (pairing two audio sender streams per video stream).
   b. enable Redundant Mode for the ENET pair where ENET 1 will transmit the primary streams and ENET 2 will transmit the secondary (redundant) streams.
2. For Frame B you would:
   a. configure two sets of eight video receiver streams with 1080p 59.94 format (pairing two audio sender streams per video stream).
   b. enable Redundant Mode for the ENET pair. ENET 1 will receive the primary streams and ENET 2 will receive the secondary (redundant) streams.

Using UHD 12G Video Format

When using UHD 12G video formats (60/59.94/50Hz), there is a limit of two video streams per ENET port with a maximum of three video streams per ENET pair.

Redundancy Mode is Disabled

Figure 9.6 shows two ULTRIX-FR5 routers with one (Frame A) transmitting three 12G UHD video streams and the second router (Frame B) receiving three 12G UHD streams.

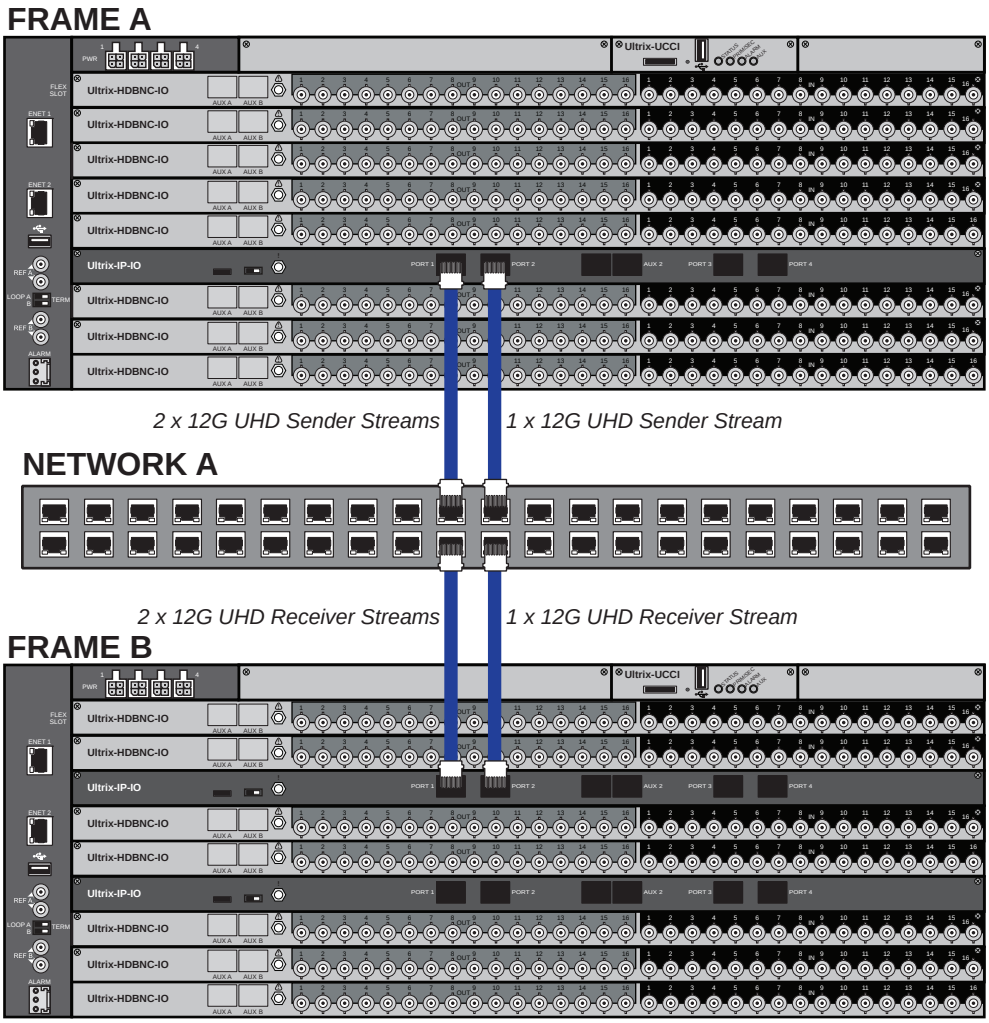


Figure 9.6 Example of ULTRIX-IP-IO with 12G UHD Video Streams

In this setup you would configure three video streams with 2160p 59.94 format without redundancy.

1. For Frame A you would configure two video sender streams with 2160p 59.94 format on ENET 1 and one 2160p 59.94 video sender stream on ENET 2.
2. For Frame B you would configure two video receiver streams with 2160p 59.94 format on ENET 1 and one 2160p 59.94 video receiver stream on ENET 2.
3. Ensure that the receiver IP addresses on Frame B match the existing sender addresses on Frame A.

Redundancy Mode is Enabled

In this setup, there are two video streams with 2160p 59.94 format (including the audio streams) but the Redundancy Mode is enabled. There is a limit of two video streams per ENET port. The second ENET port is reserved for the redundant streams.

Figure 9.7 shows two ULTRIX-FR5 routers with one router (Frame A) transmitting two 12G UHD primary video streams and two 12G UHD secondary streams. The second router (Frame B) receives a primary set of two 12G UHD streams and a secondary set of two 12G UHD streams.

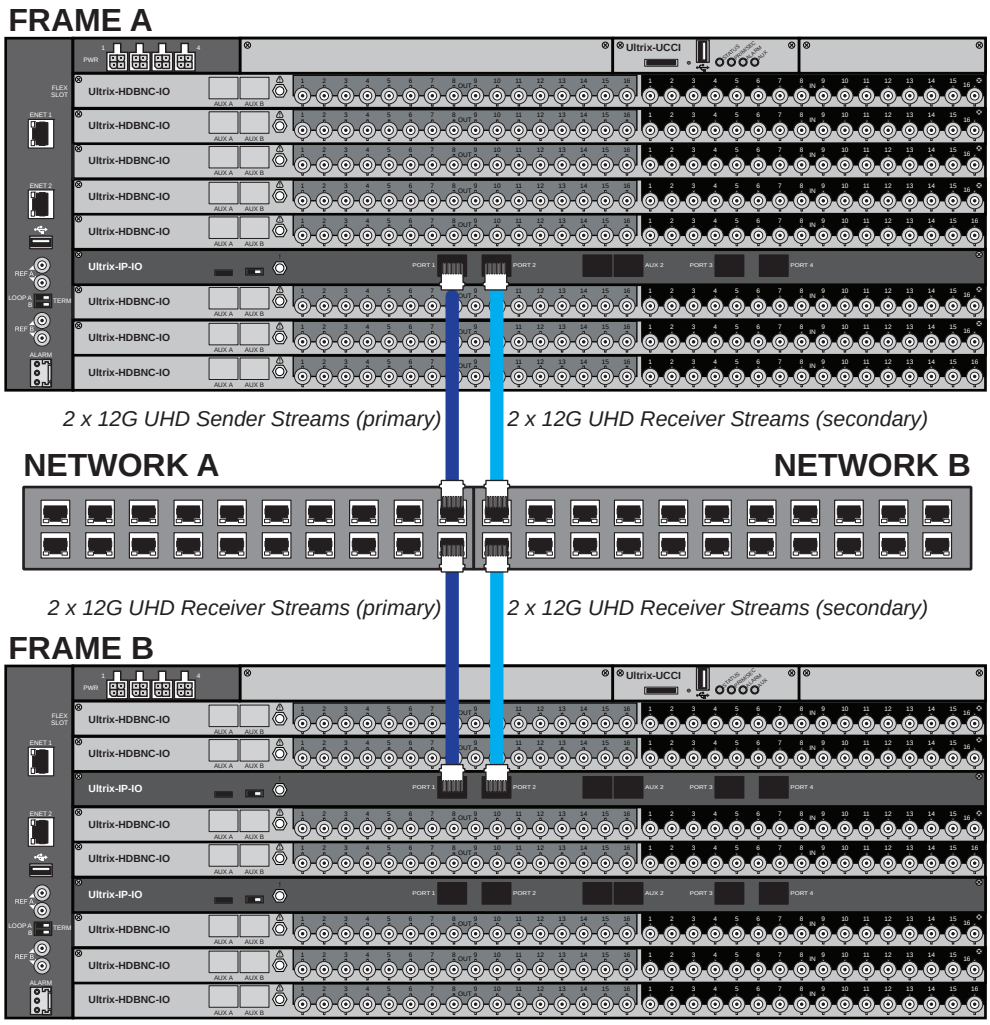


Figure 9.7 Example of ULTRIX-IP-IO with 12G UHD Video Streams — Redundancy Mode

In this setup you would configure two video streams with 2160p 59.94 format with Redundancy enabled for each ENET pair in use.

1. For Frame A you would:
   a. enable Redundant Mode for the ENET pair where ENET 1 will transmit the primary streams and ENET 2 will transmit the secondary (redundant) streams.
   b. configure two sets of two 12G UHD video sender streams with 2160p 59.94 format.
2. For Frame B you would:
   a. enable Redundant Mode for the ENET pair. ENET 1 will receive the primary streams and ENET 2 will receive the secondary (redundant) streams.
   b. configure two sets of two video receiver streams with 2160p 59.94 format.

Using Multiple Video Streams with Different Formats

In this setup, there are multiple video streams with different video formats with a total bandwidth of all streams totaling less than 25Gb.

Figure 9.8 shows two ULTRIX-FR5 routers with one router (Frame A) transmitting four 3G HD video streams and one 12G UHD video stream on ENET 1. The second router (Frame B) receives four 3G HD streams and one 12G UHD video stream on ENET 1.

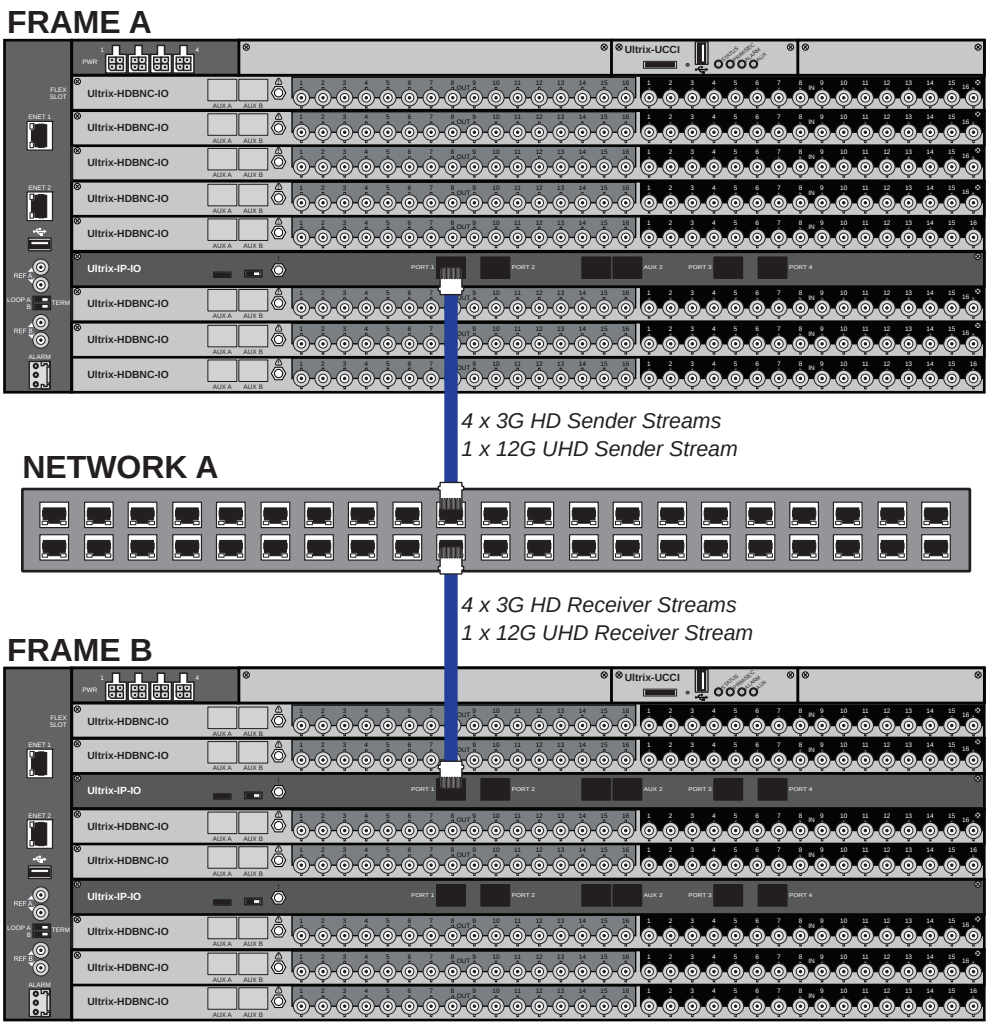


Figure 9.8 Example of ULTRIX-IP-IO with Multiple Streams with Different Video Formats

In this setup you would configure a total of five video streams on each ENET port of each router.

1. For Frame A you would configure:
   a. four video sender streams with 1080p 59.94 format on ENET 1.
   b. one 2160p 59.94 video sender stream on ENET 1.
2. For Frame B you would configure:
   a. four video receiver streams with 1080p 59.94 format on ENET 1.
   b. one 2160p 59.94 video receiver stream on ENET 1.
3. Ensure that the receiver IP addresses on Frame B match the existing sender addresses on Frame A.

ULTRIX-SFP-IO Setup

This chapter outlines how to utilize the ports for the Ultrix router when an ULTRIX-SFP-IO blade is installed in a slot of an Ultrix router chassis.

For More Information on...

- the installation and cabling of the ULTRIX-SFP-IO, refer to the ***Ultrix Installation Guide***.

Overview

The Ultrix router automatically detects when the ULTRIX-SFP-IO blade is installed. Each signal is made available in the Ultrix routing system much like those available via the standard IN and OUT HD BNCs for each slot. The signals are initially named using the standard Frame.Slot.Port.Type.Channel nomenclature where Port is reported as the physical AUX and/or SFP port on the Ultrix rear panel that the module is installed in. The options in the SFP Configuration interface for a module are the same as those for video and audio signals on the BNCs.

✶ MADI SFP modules are only supported in the AUXA and AUXB ports.

For More Information on...

- the supported modules for the ULTRIX-SFP-IO blade, refer to the ***Ultrix Installation Guide*** and ***Ultrix SFP Modules Guide***.

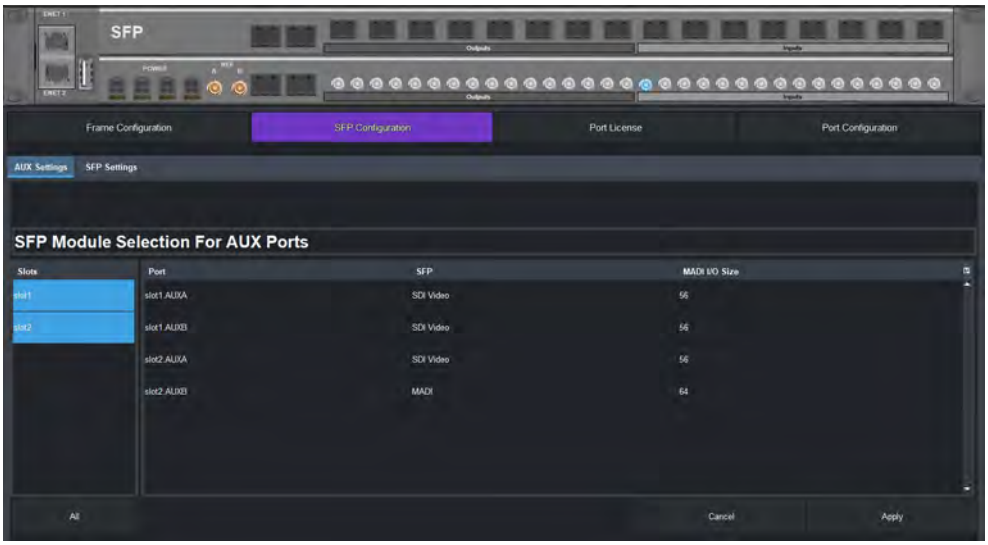


Figure 10.1 Example of the SFP Configuration Interface

Before You Begin

You may also need to install an:

- UltriSpeed license if the ULTRIX-SFP-IO includes an SFP-HDB-IN-12G, SFP-FIBER-12G, and/or SFP-HDB-OUT-12G.
- UltriScape license for each port that will be used to provide an UltriScape head output.
- UltriSRC license for each AUX port configured for asynchronous MADI input.

Configuring an SFP Port

Once the SFP module is installed in a port, you must specify the port type. Select SDI video for video SFP types, or MADI for Audio SFP types. MADI audio SFP type allow you to specify the channel quantity - either 56 or 64 as per your facilities' standard.

The SFP Configuration interface is organized into two sections: AUX settings, and SFP settings. The AUX Settings lists all the AUX port settings for all blades in the frame. The SFP Settings list all the SFP I/O port settings.

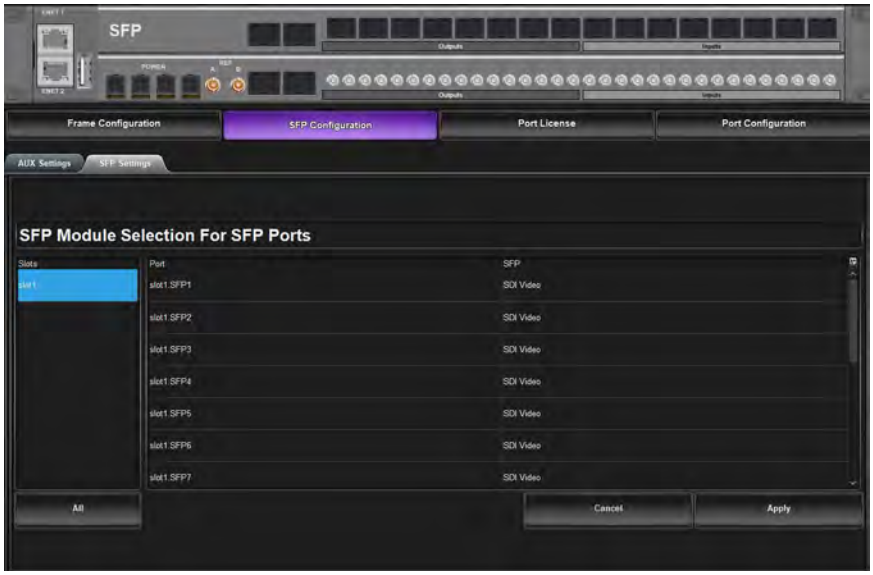
To specify the number of inputs and outputs for an SFP port

1. Expand the **Devices** node.
2. Expand the **Controllers + Matrices** node.
3. Double-click the node for your Ultrix router.

   The **Device Configuration** interface opens with the **Frame Configuration** interface selected.
4. Select **SFP Configuration**.
5. Select the tab appropriate to the port location you wish to configure.
6. From the **Slots** table, select the router slot the ULTRIX-SFP-IO blade is installed in.

✶ Click **ALL** to display the available SFP/AUX ports available in the router.

The **Settings** table updates to display the port name, and the type of signals for each populated port.



7. Locate the row for the port you want to configure.
8. In the **SFP** column for the port, verify the type of signal the port will provide.
9. If applicable, use the **MADI I/O Size** menu for the AUX port to specify the input and output configuration for the port.

✶ MADI is only available in the AUX ports. The SFP I/O ports 1-16 does not support MADI I/O.

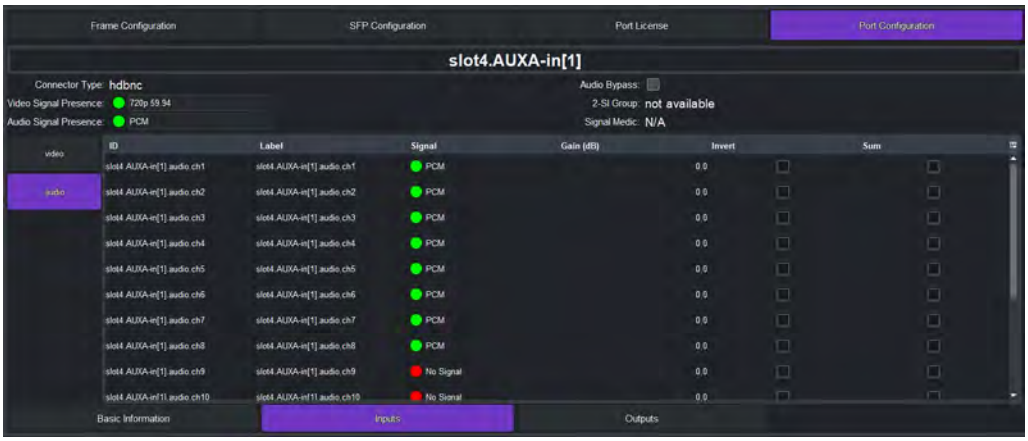
10. Click **Apply** to save your changes.

To verify an SFP port

1. Expand the **Devices** node.
2. Expand the **Controllers + Matrices** node.
3. Double-click the node for your Ultrix router.

The **Device Configuration** interface opens with the **Frame Configuration** interface selected.

4. Select **Port Configuration**.
5. Locate the SFP for the port you want to verify in the router rear image and click to high-light it.
6. Use the **Inputs** and **Outputs** tabs to monitor the current audio and video status.



Device Communication Setup

A single Ultrix router can communicate with external devices such as remote control panels, Ross NK devices, and automation devices running third-party protocols.

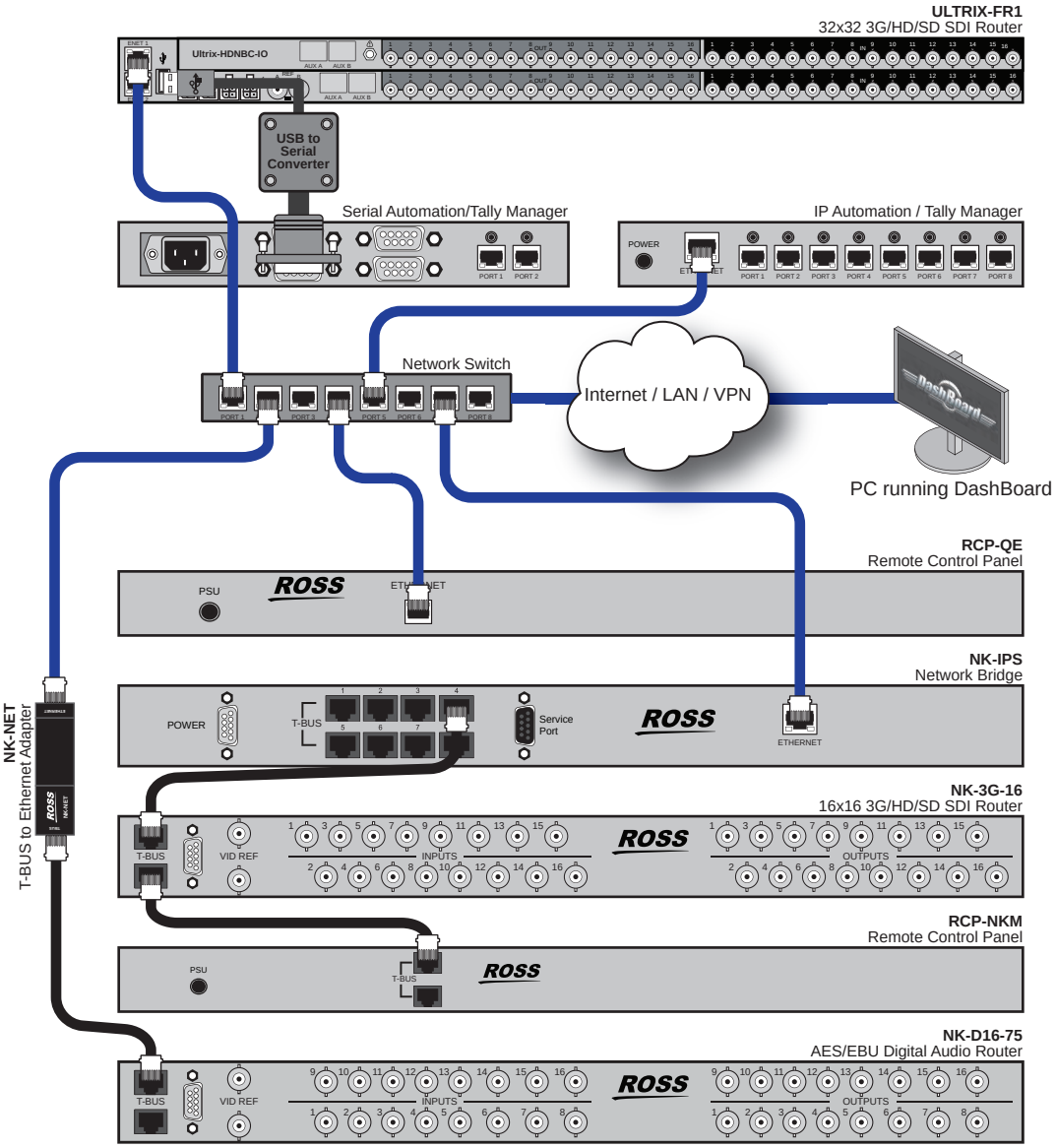


Figure 11.1 Example of System Connectivity Options with an Ultrix Router

Communication between an external device and the Ultrix router is over Ethernet via an established **connection point**. A connection point defines the interface and the protocol to be used for communications. By default, Ultrix runs several server connections points as listed in **Table 11.1** for incoming control/communications. Client connection points from the router to the external device is configured using the options in the Ultrix Connections interface of DashBoard. This step is only required if external routing systems are connected to the Ultrix router.

Device Discovery in DashBoard

When DashBoard is launched, devices such as openGear frames and Ross NK routers, are listed and made available in the Tree View. DashBoard uses the open SLP protocol to locate devices on the same network as the computer running the DashBoard client software. There are two methods for adding a device to the Tree View in DashBoard:

using the auto-connect feature of DashBoard or manually adding a device by specifying the IP address of the device. Both methods are described in more detail in the ***DashBoard User Manual***.

✶ Third-party device information is not automatically retrieved. These devices must be added manually.

Communications between Ultrix and the Devices in a Routing System

The Ultrix Connections tab enables you to use DashBoard to locate devices in your network. To enable Ultrix to function as the 'master' of the routing system, you must establish communications with the devices it is connected to and define how they are connected. Each external router must have a connection point defined. For those devices that are not directly connected to your network, such as Ross NK Series routers and remote control panels, you must supply their connection information (port number) in the Connections interface. Once this information is entered into the interface, the Ultrix can communicate directly with the device and list it as a node under the Devices interface.

Connecting to Ross Remote Control Panels

A single Ultrix router can communicate with external remote control panels such as the Ross RCP-NK series, RCP-ME, and RCP-QE. Communication with Ethernet enabled panels is direct from the panel to Ultrix. Refer to the panel user manual for specific configuration details.

RCP-NK Series Panels

Communication with RCP-NK series panels is via an established connection point with either an NK-IPS or NK-NET network bridge. Refer to the ***RCP-NK User Guide*** for details.

RCP-ME and RCP-QE Panels

The connection from the remote control panel to Ultrix is configured on the panel's DashBoard interface.

1. Display the **RCP Connection Editor** in DashBoard for your remote control panel. Refer to the user guide for your remote control panel for details.
2. Locate the **Servers to Connect** table.
3. In the first row of the table, use the **IP address** column to specify the IP address of the Ultrix router that the remote control panel will communicate with.
4. Send the current configuration file to the remote control panel. Refer to the user guide for your remote control panel for details.

   The remote control panel will connect to the Ultrix router and receive a copy of the current database labels.

Connecting to Ross NK Series Devices

Ross NK routers and remote control panels are linked via the T-Bus Control System, a multi-drop RJ-45 control system. These T-Bus devices can communicate over Ethernet via a Ross NK-IPS or NK-NET.

A connection point between the Ultrix router and an NK-IPS or NK-NET is defined using the auto-populated fields in the Connections tab of the Ultrix interface. Once a connection point is established, the Ultrix router gains control over those Ross NK devices connected to the NK-IPS or NK-NET.

For More Information on...

- Ultrix work-flow with Ross NK devices in a routing system, refer to the chapter "**Operation with Ross Devices**" on page 257.

To establish communication between Ultrix and an NK-IPS or NK-NET

1. Launch the Walkabout utility in DashBoard as follows:
   a. Expand the **NK Utilities** node in the Tree View.
   b. Double-click **Show Walkabout** to open the Walkabout utility in the DashBoard window.
   c. Verify that the NK-IPS or NK-NET is listed in the table of the Walkabout utility. Make a note of its name and IP Address.

✶ If the device you want to connect to Ultrix is not detectable in Walkabout, you can still establish communications with it in Ultrix using the **Connections > Settings** menu to manually enter/edit the device settings.

2. Display the **Connections** tab for Ultrix as follows:
   a. Expand the **Database** node in the Tree View.
   b. Double-click the **Connections** node.

      The **Connections** tab opens that lists the current database connection points.
3. Click **Edit** > **Add**.

   The **Add Connections** dialog opens.
4. In the **Add Connections** dialog, perform the following:
   a. Use the **Protocol** menu to select **Ross NK**.
   b. Use the **Type** menu to select **tcp**.
   c. Use the **Count** menu to specify the number of new connection entries to make in the **Servers** table.
   d. Click **Apply** to create the new device row(s) in the **Servers** table and close the **Add Connection** dialog.
5. In the **Name** column, click the cell of the new row to display the drop-down menu.
6. From the drop-down menu, select the device you which to establish a connection to.

✶ Ross Video devices detected by Walkabout will auto-populate this menu.

7. In the **Enabled** column of the new row, select **Enable**.
8. Click the **[...]** button to verify the IP Address and TCP port values for the device.
9. Click **Apply** at the bottom of the **Connections** tab to save the new settings.

Defining a Database with a Ross NK Router Matrix

Once a connection point is established between Ultrix and the Ross NK router, the NK router ports are automatically included in the Available Ports lists of the Ultrix database.

Defining the Levels for an NK Router

Once a connection point is established between Ultrix and the Ross NK router, you can define levels for the router via Ultrix and save them to the Ultrix database.

For More Information on...

- defining the levels, refer to the section "**Defining the Levels in a Database**" on page 110.

Defining the Sources and Destinations for an NK Router

Once a connection point is established between Ultrix and the Ross NK router, you can define a physical input/output socket as a source destination in a specific level within the Ultrix database.

✶ When creating a virtual label for a source or destination, it is recommended to use a short or abbreviated name as this text is used to identify the specific signal on the remote control panels which have limited display areas.

For More Information on...

- defining the sources, refer to the section "**Defining the Sources in a Database**" on page 115.
- defining the destinations, refer to the section "**Defining the Destinations in a Database**" on page 112.

Connecting to Ultricore Central Controllers

The Ultricore Central Controller (Ultricore-CC) and the Ultricore Broadcast Central Controller (Ultricore-BCS) may act as a master controller for one or more Ultrix routers as well as legacy Ross NK series devices. A connection is made from the controlling Ultricore panel to the Ultrix router(s). The controlling Ultricore (primary) contains the full database configuration for the entire operation of the system.

All control devices, such as a remote control panel (RCP) or third-party controller, must be configured for and communicate with the master Ultricore. Any Ultrix configured as a sub-device will only accept control commands via the master Ultricore.

✶ Any Ultrix devices to be controlled by the Ultricore Central Controller must have the Remote Controller Mode enabled. Refer to the section "**Enabling Remote Controller Mode on the Client Ultrix Routers**" on page 102 for details.

✶ Ultricore redundancy is only available when using Ultricore-BCS units.

For More Information on...

- configuring a connection point from an Ultricore to an Ultrix router, refer to the ***Ultricore User Guide*** or the ***Ultricore BCS User Guide***.

Connecting to Third-Party Devices

Ultrix provides support for many industry standard protocols for interfacing to external devices such as control systems, external routing matrices, and tally systems.

✶ Before proceeding, ensure that your third-party device is installed and configure according to its documentation.

Connection to third-party devices may be categorized into two broad groups: controller and controllee.

- **Controllers** are devices that will control the Ultrix router and connect via what may be termed an *incoming* connection.
- **Controllee**s are devices to be controlled by Ultrix router and connect via what may be termed an *outgoing* connection.

Incoming Ethernet connections are defined within the Ultrix control system by default and need no further configuration. **Table 11.1** lists the available protocols and ports. Serial connections must be defined before either incoming or outgoing connection styles may be utilized by Ultrix.

Third-part Connection via Ethernet

The Ultrix router can communicate with third-party external devices via a TCP connection. By default, Ultrix runs a server process for the following Ethernet protocols:

Table 11.1 Supported Protocols — Ethernet Connection

Protocol	Default Port
GVG Native Series 7000	TCP: 12345
Probel SW-P-08	TCP: 8910
RossTalk	TCP: 7788
TSL UMD v3.1	TCP: 5727 UPD: 4490

Table 11.1 Supported Protocols — Ethernet Connection

Protocol	Default Port
TSL UMD v4.0	TCP:5728 UDP: 4491
TSL UMD v5.0	TCP: 5729 UDP: 4492

These Ethernet servers are always running. No further configuration is required — simply configure your client device to match the TCP/IP address and port number of the Ultrix.

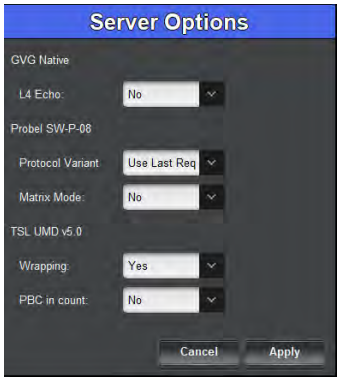


Figure 11.2 Example of the Protocol Server Option Dialog

The available Protocol Server options depends on the type of protocol. **Table 11.2** briefly summarizes the server configuration options for each protocol type.

Table 11.2 Protocol Server Options

Protocol Option	Notes
GVG Native Series 7000	
L4 Echo	• **No** — the Ethernet Layer 4 acknowledge is disabled. This is the default. • **Yes** — the Ethernet Layer 4 acknowledge is enabled.
Probel SW-P-08	
Protocol Variant	• **Use Last Req** — Ultrix will respond using protocol variant (extended/non-extended) as per the received request format. This is the default. • **Non-Extended** — Ultrix will always replay using non-extended formatting. • **Extended** — Ultrix will respond with extended formatting.
Matrix Mode	• **No** — Ultrix will use information from the LEVEL section of the protocol to control Ultrix levels. • **Yes** — Ultrix will use information from the MATRIX_ID section of the protocol to control Ultrix levels.
TSL UMD v5.0	
Wrapping	• **No** — the DLE/STX wrapping is not enabled. This is the default. • **Yes** — enables the DLE/STX wrapping for TCP/IP transport
PBC in Count	• **No** — Packet Byte Count is not included in total byte count. This is the default. • **Yes** — Packet Byte Count is included in total byte count.

To set up an outgoing connection over Ethernet between Ultrix and a third-party device

1. Expand the **Database** node.
2. Double-click the **Connections** node located under the Database node.

   The **Connections** tab opens that lists the current database connection points.
3. Click **Edit** > **Add**.

   The **Add Connection** dialog opens.
4. In the **Add Connection** dialog, perform the following:
   a. From the **Protocol** menu in the **Add Connection** dialog, select the communication protocol the third-party uses. Refer to **Table 30.12** on page 337 for a list of options.
   b. From the **Type** menu in the **Add Connection** dialog, select **tcp**.
   c. Use the **Count** menu to specify the number of devices you want to establish a connection point to.
   d. Click **Apply** to create the new device row(s) in the **Servers** table and close the **Add Connection** dialog.
5. In the **Name** field, type a unique identifier for the third-party device. This name is used to identify the specific device within the Ultrix database.
6. Click the **[...]** button in the new row to display the **Communications** dialog.
7. To manually create a connection point via the TCP protocol:
   a. From the **Type** menu in the **Communications** dialog, select **tcp**.

      The table in the **Communications** dialog updates to display the settings for TCP communication.

   b. Use the **IP Address** field to specify the IP Address assigned to the third-party device.
   c. Use the **Port** field to specify the Port Number assigned to the third-party device that the Ultrix router will try to connect to.
   d. Use the **Wrapping** field to specify the TSL UMD v5.0 TCP wrapping is enabled or disabled. This setting is ignored for other protocol types.
   e. Click **Apply** to save your settings and close the dialog.
8. Edit the **Description** field to your requirements.
9. In the **Enabled** column of the new row of the **Servers** table, select **Enabled**.
10. Click **Apply** in the **Connections** tab to save the new settings.

Defining a Serial Connection

Ultrix may communicate directly with third-party devices using a native serial protocol. A USB-to-Serial converter must be used to give the Ultrix a serial communication port. Refer to **Table 11.3** for information on the supported protocols.

✶ Only USB-serial devices based on these chip-sets are supported: FTDI Chip, Belkin, Prolific PL 2303, and Silicon Labs CP210x.

Table 11.3 Supported Protocols — Serial Connections

Protocol	Settings				
	Type	Baud	Data Bits	Parity	Stop Bits
GVG Native Series 7000	RS232 or RS422	38400	8	None	1
Probel SW-P-08	RS232 or RS422	38400	8	None	1
TSL UMD v3.1	RS422 or RS485	38400	8	Even	1
TSL UMD v4.0	RS422 or RS485	38400	8	Even	1
TSL UMD v5.0	RS422 or RS485	38400	8	Even	1

✶ A serial connection point must be implemented on the **Connections** tab in the Ultrix database before communications can start. The settings may be changed from the protocol defaults to suit your requirements.

To set up a serial connection between Ultrix and a third-party device

1. Double-click the **Connections** node located under the **Database** node.

   The **Connections** tab opens.

2. Click **Edit** > **Add**.

   The **Add Connections** dialog opens.

3. In the **Add Connections** dialog, perform the following:

   a. Use the **Protocol** menu to select the protocol standard.

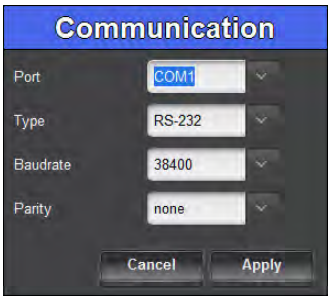
   b. Use the **Type** menu to select **Serial**.

   c. Use the **Count** menu to specify the number of new connection entries to make in the **Servers** table.

   d. Click **Apply** to create the new device row(s) in the **Servers** table.

4. In the **Name** field, type a unique identifier for the third-party device. This name is used to identify the device within the Ultrix database.

5. Click the **[...]** button in the new row to display the **Communication** dialog.



6. Use the **Port** field to specify the Port Number assigned to the third-party device that Ultrix will connect to.

7. From the **Type** menu in the **Communication** dialog, select **RS232** or **RS422**.

   The table in the **Communication** dialog updates to display the settings for serial communication.

8. Use the **Type** field to specify the serial transmission standard for the third-party device.

9. Use the **Baud Rate** field to specify the bit rate for the third-party device.

10. Use the **Parity** field to specify the parity.

11. Click **Apply** to save your settings and close the **Communication** dialog.
12. In the new row of the **Servers** table, select the **Enabled** box.
13. Click **Apply** to save your settings.

    The **Connected** field in the **Connections** tab reports "`Connect`" when the ability to communicate with the serial port is confirmed and enabled. The system does not poll or query the serial link to verify the validity of the setup.

Connecting to Other Ultrix Routers

Ultrix may act as a master controller for additional Ultrix routers. A connection is made from the controlling (primary) Ultrix to the sub-device (client) router(s). The primary Ultrix contains the full database configuration for the entire operation of the routing system.

Setup Overview

1. Set up any Ultrix licensing requirements within each Ultrix router.
2. Set up any UltriScape requirements within each Ultrix router.
3. Enable Remote Controller Mode on the client Ultrix routers.
4. Create a database within the primary Ultrix to accommodate the inputs/outputs provided by the client routers.
5. Create a connection point from the primary Ultrix to any/all clients.
6. Edit the primary database to map logical source and destinations to client inputs/outputs, and any UltriScape heads/PiPs.

Setup Notes

Keep the following in mind when establishing a connection point from a primary Ultrix to client Ultrix routers:

- Ensure unique device names for each Ultrix router. This allows identification of each individual router throughout the setup process. You can edit the name via the Ultrix front panel interface as outlined in the section "**Re-naming the Ultrix Router via the Front Panel**" on page 21.
- Client device configuration (licensing, port configuration, etc.) is achieved via its own device node within the DashBoard tree.
- Client UltriScape Multiviewers are configured via the UltriScape node within the DashBoard tree of the Client that physically hosts that Multiviewer.
- Routing commands are issued to the primary device via remote control panels, external protocols or DashBoard soft panels[1]. Any client Ultrix will ignore routing commands not originating from the primary while in this connected mode.

Enabling Remote Controller Mode on the Client Ultrix Routers

Before establishing a connection point between routers, each client Ultrix router must have its Remote Controller Mode enabled. This allows the client Ultrix router to be controlled by the primary Ultrix router in the routing system.

To enable the Remote Controller Mode on a client Ultrix router

1. In the Tree View, double-click the **System Status** node for the client Ultrix router.

   The **System** interface displays in the DashBoard window.
2. Select the **Database** tab.

1. Only the soft panels defined within the database of the primary Ultrix may control the system.

3. Select the **Remote Controller Mode** box.
4. Reboot the client Ultrix router to apply the new setting.

Adding an Ultrix Connection Point

Once a connection point is established between the primary Ultrix router and its clients, the physical inputs and outputs the clients provide will display in the **Port Labels** tab of the primary database. These input and outputs ports are now ready for renaming (if required) and mapping to logical source and destinations.

- A connection point is created using the primary router's interface. Do not create a connection from a client router to the primary router.
- UltriScape PiP and head destination mapping is required in the primary Ultrix database for each UltriScape Head in use. The procedure is the same as the UltriScape configuration for a stand-alone Ultrix router.

To create a connection point between the two Ultrix routers

1. Ensure each Ultrix router is installed, configured, and listed in the Basic Tree View of your DashBoard client.
2. Expand the **Database** node for the primary Ultrix router.
3. Double-click the **Connections** node located under the Database node.

   The **Connections** tab opens.
4. Click **Edit** > **Add**.

   The **Add Connection** dialog opens.

5. In the **Add Connection** dialog, perform the following:
   a. From the **Protocol** menu in the **Add Connection** dialog, select **ultrix**.
   b. From the **Type** menu in the **Add Connection** dialog, select **tcp**.
   c. Use the **Count** menu to specify the number of client Ultrix routers you want to connect.
   d. Click **Apply** to create the new device row(s) in the **Servers** table.

      The **Add Connection** dialog closes.
6. In the **Name** column of the **Servers** table, click the cell of the new row to display the drop-down menu.
7. From the drop-down menu, select the client Ultrix router you wish to establish a connection to.
8. If the client Ultrix router name is not listed in the drop-down menu:
   a. Close the **Connections** tab.
   b. Launch Walkabout to detect the on-line devices in your system.
   c. Double-click the **Connections** node for the master Ultrix router to display the **Connections** tab.
   d. Repeat steps 4 to 7.
9. In the **Enabled** column of the new row, select **Enabled**.

10. Repeat steps 6 to 9 for each additional client Ultrix router.
11. Click **Apply** at the bottom of the Connections tab to save the new settings.

Deleting an Ultrix Connection Point

If requirements change, an Ultrix to Ultrix connection point may be deleted from the Servers table. Devices listed in the Clients table are automatically deleted when the connection point to Ultrix is no longer valid.

To delete a connection point between Ultrix routers

1. Expand the **Database** node for the primary Ultrix router.
2. Double-click the **Connections** node located under the Database node.

   The **Connections** tab opens.
3. In the **Servers** table, select the row for the Ultrix connection point to be deleted.
4. Click **Edit** > **Delete**.
5. Power cycle the client Ultrix router.

✶ You must power cycle the client router to re-establish its internal database.

6. Re-configure the primary Ultrix and the client Ultrix routers as per the new requirements.

Database Configuration

Procedures in this chapter assume that you have DashBoard launched and the Ultrix router displayed in the Tree View.

✶ Ultrix does not support Unicode characters.

How a Database Determines the Routing System

The various tables within an Ultrix router determine if a signal/route can be made from input to output.

For a given level, if there is a physical port mapped, for the same physical device, in both the Source and Destination tabs, and the controlling device has the level enabled, then a crosspoint switch can be issued and executed on the router(s). **Table 12.1** outlines a database with four levels. Level 1 has mapped valid Sources and Destinations, and the level is enabled on the controlling device.

Table 12.1 Example of a Multi-Level Database Setup

	Level 1	Level 2	Level 3	Level 4
Is a physical source assigned?	✓	X[a]	✓	✓
Is a physical destination assigned?	✓	✓	X[b]	X
Is the Level enabled on the Controller device?	✓	✓	✓	X
Can a switch be executed?	✓[c]	X[d]	X[d]	X[d]

a. An entry is not present in the corresponding Level column of the Source tab.
b. An entry is not present in the corresponding Level column of the Destinations tab.
c. A switch will be executed.
d. A switch will not be executed. Physical ports from the same logical matrix must be entered in the same control level before a connection can be made.

Defining a Database for the Router

The Database interface in DashBoard for an Ultrix enables you to create system input and output lists, assign those signals to system sources and destinations, define multiple levels and matrices. You may wish to use the following process when defining the database for your router.

Configuration Overview

The generalized work flow of configuring a database for the Ultrix router is:

1. Create a database as outlined in the section "**Creating a New Database**" on page 106.
2. Establish connection points to external devices. This step is only required if external routing systems are connected to the Ultrix router. Refer to the chapter "**Device Communication Setup**" on page 95 for details.
3. Verify the available IN/OUT ports to ensure correct system connections. The default port naming convention of **`frame.slot.port.type`** may be overwritten (if required) at this stage.
4. Create levels as outlined in the section "**Defining the Levels in a Database**" on page 110.
5. Create destination labels and assign physical ports to the labels as outlined in the section "**Defining the Destinations in a Database**" on page 112.
6. Create source labels and assign physical ports to the labels as outlined in the section "**Defining the Sources in a Database**" on page 115.
7. Define a soft panel or establish a connection from a remote control panel (RCP).

Database File Management Overview

Each Ultrix database consists of a collection of configuration files necessary for Ultrix operation. The database resides within the Ultrix storage system. Multiple databases may be saved and accessed at any time, but only one database can be active at a time.

Use the **System Status** > **Database** tab to create, load, and delete databases. Use the **System Status** > **Transfer** tab to backup and restore databases.

For More Information on...

- the System Status tabs and menus, refer to "**System Status Interface**" on page 317.

Database management consists of the following tasks:

Creating a New Database

A database manages the configuration file and settings for your Ultrix router. A router may use a number of database configurations depending on its role in the routing system. Refer to "**Creating a New Database**" below.

Loading an Existing Database

Use the **System Status** > **Database** tab to load a configured database to your Ultrix router. Refer to "**Loading a Database**" on page 109.

Exporting a Database

Enables you to capture a database configuration in a *.uda file that is saved to a location on your network that you can specify. Refer to "**Exporting a Database**" on page 125.

Importing a Database

Enables you to import a saved *.uda file and make it available in the **System Status** > **Database** tab. Refer to "**Importing a Database**" on page 125 for details.

Deleting an Existing Database

You can choose to permanently delete any configured database on your Ultrix router. Refer to "**Deleting a Database**" on page 125 for details.

Creating a New Database

When you define a database, the information you enter into the Levels, Sources, and Destinations fields will auto-populate the applicable fields in the other interfaces for that Ultrix router. You can change the labels for the destinations and sources at any time using the options in the Destinations and Sources interfaces. There are two methods for creating a new database: using the Database Builder, or using the options in the System Status > Database tab. Both methods are described below.

Using the Database Builder

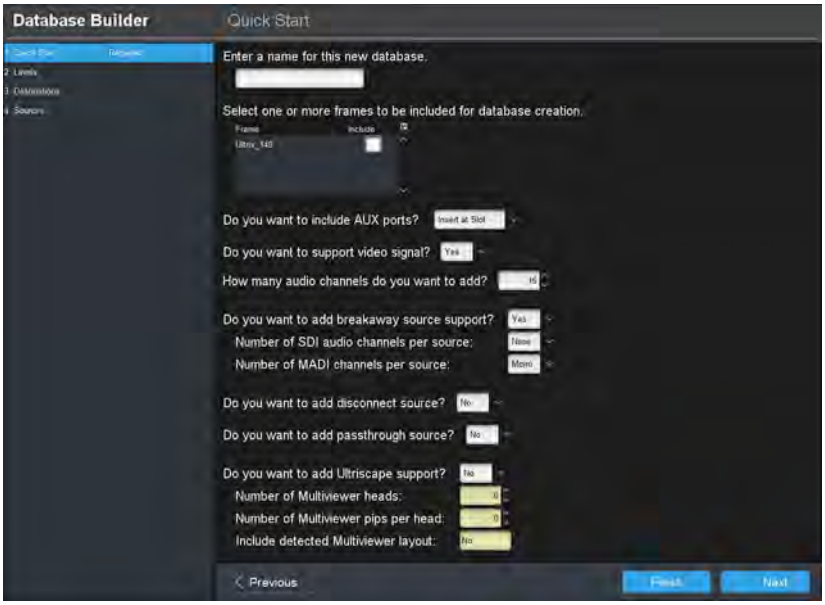
Use the Database Builder to easily create a working database. Once you define the basic parameters of the new database using the settings in the Quick Start interface, you can then define the levels, destinations, and sources for the new database. This makes it very easy to build basic configurations as well as get a system up and running quickly.

✶ Before proceeding, ensure that the required license keys are installed for your router(s). Refer to the chapter "**Software License Keys**" on page 33 for more information.

To create a new database using the Database Builder

1. Display the Database nodes as outlined in the procedure "**To access the Database interfaces in DashBoard**" on page 25.
2. Double-click the **Database Builder** sub-node.

   The **Database Builder** interface opens in the DashBoard window with the Quick Start page displayed.



3. Use the **Provide a Name** field to type a unique identifier for the database.
4. Select the box(es) from the provided list of detected routers the routers to make the database available to.
5. If you wish to leave the remaining settings at their default values and quickly setup a database, you can click **Finish** and the database will be generated based on selected routers in step 4.

✶ Click **Next**, located at the bottom of the DashBoard window, to display the next page of options in the Database Builder interface.

6. If any AUX Ports are populated with SFP modules, use the **Include AUX ports** menu to specify how to label the I/O in the database.

✶ The default is Insert at Slot, which labels the I/O in each slot as 1-18 with the AUX Ports as 17 and 18.

7. Use the **Support Video Signal** and **Number of Audio Channels** menus to define the Levels in the database.
8. Use the **Breakaway Source Support** menus to implement audio shuffling. The options for SDI and MADI channels are as follows:
   - None — no audio-only breakaway sources are created.
   - Mono — sources are created to enable individual mono audio channel routing.
   - Stereo — sources are created for stereo pair audio routing (1-2, 3-4, 5-6 etc.).
   - Quad — sources are created for four channel groups or quad-audio routing (1-4, 5-8, 9-12 etc.).
   - Oct — sources are created for eight group audio routing (1-8, 9-16, 17-24 etc.).

✶ You must have SFP modules installed that support MADI to implement the MADI routing with breakaway support.

9. Use the **Disconnect Source** menu to create a disconnect source. This enables the routing silence to audio channels (muting).
10. Use the **Passthrough Source** menu to create a pass-through source definition. This enables setting an audio source to follow video bypassing the audio processing and other routing.

11. If you have an UltriScape license installed, use the last set of menus to define the heads, including the number of Picture in Picture (PIPs) that new layouts can include.

✶ You can still create and edit layouts in a database with settings that differ from these.

12. Click **Finish** to save the new settings and:

    a. Use the **Levels** page to review or rename the level labels if required.

    b. Use the **Destinations** page to review the destination label to physical port mapping. Renaming the labels is also possible from this page if required.

    c. Use the **Sources** page to review the source label to physical port mapping. Renaming the labels is also possible from this page if required.

✶ Click the **Rename** button on a page to define multiple elements. For example, clicking Rename on the Sources page enables you to define a prefix (e.g. SRC) and apply from a starting point (input 4).

13. Click **Finish** to create the new database and apply it to the routers selected in step 4.

Using the Database Tab

You can use the Database tab in the System Status interface when only configuring a database for a single router.

For More Information on...

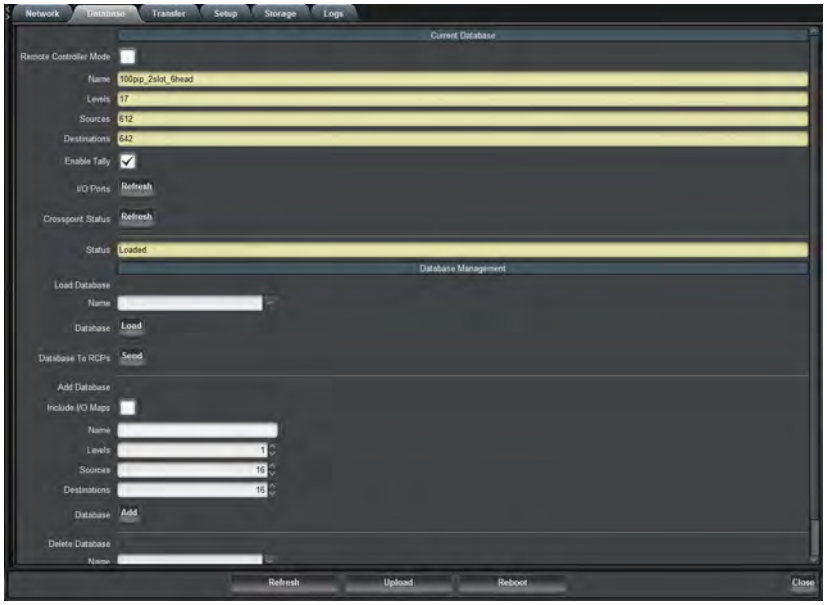
- assigning destinations, refer to the section "**Defining the Destinations in a Database**" on page 112.
- assigning sources, refer to the section "**Defining the Sources in a Database**" on page 115.

To create a new database using the options in the Database tab

1. In the Tree View of DashBoard, double-click the **System Status** node under the Ultrix node.

   The **System Interfaces** display in the DashBoard window.

2. Select the **Database** tab.



3. Locate the **Add Database** options in the **Database Management** area of the tab.

4. In the Add Database **Name** field, type a unique identifier for the database.

✶ When the database is currently loaded in the system (in use), the Database node displays the database name in the tree view under the Ultrix node.

5. Select the **Include I/O Maps** box to create a database to match the quantity of BNC I/O ports available in the current Ultrix router.

✶ Each SDI IN/OUT ports will be mapped to the default labels of SRC# and DST# respectively for Level 1 only (SDI). The Destinations and Sources fields are ignored, but the Level field is applied.

6. Use the **Levels** field to specify the total number of levels available in the database for this router.
7. Use the **Sources** field to specify the total number of inputs available in the database for this router.
8. Use the **Destination** field to specify the total number of outputs in the database for this router.
9. Click Database **Add** to create the new database and save it to the Ultrix memory.
10. Load the database to ensure it is active before proceeding to customize.

Loading a Database

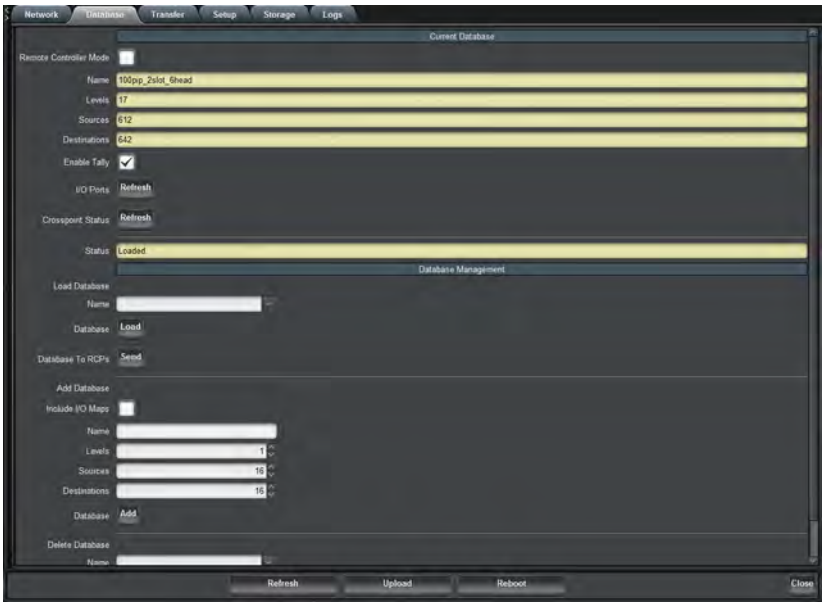
Each active database includes a unique setup saved to the Ultrix file system. You must load a database before you can configure the matrices, levels, sources and destinations, and soft panels for a particular setup. This also enables you to quickly load a saved (configured) routing setup just by recalling a different database.

To load a saved database

1. In the Tree View, double-click the **System Status** node.

   The **System** interface displays in the DashBoard window.

2. Select the **Database** tab.



3. From the **Name** menu in the **Load Database** area, select the database you want to load.
4. Click **Load**.
5. Verify the following to ensure the database was loaded:
   - The **Name**, **Levels**, **Sources**, and **Destination** read-only fields in the **Current Database** area in the **Database** tab report the correct values.
   - The **Database** node in the Tree View for the Ultrix router reports the correct Database name.

Defining the Levels in a Database

A level is a term used to describe a section or layer of the routing system (e.g. video level, audio level). Ultrix uses level definitions for easy identification and control of various routing matrices or parts of the system. The levels defined in the Levels tab have a direct relationship with the Level entries in other database configuration tabs.

Before You Begin

Determining the number of levels needed requires a little planning:

- Ultrix can operate with as little as one level to define control of the SDI switching matrix. Ultrix contains the UltriMix audio sub-system which allows independent routing of SDI embedded audio channels as well as MADI channels. Using a single level control, Ultrix can limit the independent selection of embedded audio and/or MADI streams.
- Any Ross NK series routers or other third-party routers attached to the Ultrix system will require their own control levels.

✶ The quantity of levels determines how many independent IN/OUT ports (including embedded / MADI channels) may be grouped together as one source or destination selection.

Example 1

A single control level can be used when there is no requirement for independent embedded audio/MADI channel switching. For example:

ID	Name
1	SDI

✶ If AFV (audio-follow-video) is desired on a single level database, the Audio Bypass must be enabled for each IN and OUT port. Alternatively, the UltriMix audio routing sub-system may be disabled on a per slot basis. Refer to the sections "**Applying Proc Amps to the Embedded Audio Input**" on page 51 and "**Applying Proc Amps to the Embedded Audio Outputs**" on page 52 respectively.

Example 2

A single Ultrix level setup with NK-A64 analog audio router attached would require the following levels:

ID	Name
1	SDI
2	AnAud L
3	An Aud R

Example 3

A setup using SDI with 4 embedded audio levels. This can allow independent switching of 4 of the embedded SDI channels and grouping of 4 MADI channels.The following levels would be required:

ID	Name
1	SDI
2	A1
3	A2
4	A3
5	A4

To define a level in the database

1. Double-click the **Levels** node located under the **Database** node.

   The **Levels** tab opens.

2. Verify the **ID** field to specify the priority of the level.

✶ The **ID** field is a row number automatically defined by the routing system. This ID value corresponds to level numbers when used in remote control panel (RCP) configurations and third-party communications.

3. To re-name a level:

   a. In the **Name** column, type a unique identifier for the level. It is recommended to use words that describe the level such as 3G, Audio, etc.

   b. Click **Apply** to update the name.

4. To select a unique color that will represent the level in the soft panels:

   a. In the **Color** column, click the cell for the level you want to configure to display the **Color Select** dialog.

   b. Select the hue from the provided vertical color grid in the **Color Select** dialog.

   c. Use the **Saturation** options to specify the depth of the color.

   d. Use the **Lightness** options to specify the amount of white or black mixed with the selected hue.

   e. Confirm that the field beneath the color grid displays the correct color for the level.

   f. Apply your changes using one of the following options:

      - Click **Live** to preview the color scheme and apply it but not close the **Color Select** dialog; or
      - Click **OK** to apply the new color to the level and close the **Color Select** dialog.

5. Use the **Description** column to enter a brief summary of the level or provide additional information about the level use or purpose.

✶ The **Description** column is for identification purposes only and not required for operation.

6. Click **Apply** to save your changes.

To create additional levels

1. Select a row in the **Levels** tab.

✶ It is recommended to insert below the last row in the table.

2. Click **Edit**.

✶ You can also copy and paste an existing level by clicking **Copy**, then **Paste** from the **Edit** dialog.

3. To add a single level, select **Add**.

4. To add multiple levels:

   a. Select **Add Series** to display the **Fill Cell Values** dialog.

   b. In the **Prefix** field, type the phrase. For example, to create levels as `AUDIO 1`, `AUDIO 2`, etc., you would type `AUDIO` into the **Prefix** field.

   c. In the **Start Value** field, type the first number to be used in the series.

   d. In the **End Value** field, type the last number to be used in the series.

   e. Click **Apply**.

To delete an entry from the Levels table

1. Select the row for the destination to delete in the **Levels** tab.
2. Click **Edit** > **Delete**.

Defining the Destinations in a Database

Ultrix uses a database to assign inputs and outputs, as well as define levels and matrices. **Table 12.2** outlines the available outputs for mapping to the destinations in your database.

Table 12.2 Mapping Outputs to Database Destinations

Default Slot Label	Physical or Virtual Port?	Description
Slot**x**.out[**y**].sdi.ch1	P	Digital video output slot **x** port **y**
flex.out[**y**].sdi.ch1	P	Digital video output flex slot port **y** (ULTRIX-FR5 only)
Slot**x**.out[**y**].audio.ch**n**	P	Digital audio channel **n** of output slot **x** port **y**
flex.out[**y**].audio.ch**n**	P	Digital audio channel **n** of flex slot output port **y** (ULTRIX-FR5 only)
Slot**x**.head[**y**].sdi.ch1	V	Ultriscape video output slot **x** head **y**
Slot**x**.head**y**-pip[**z**].sdi.ch1	V	Video destination for PiP **z** of slot **x** Ultriscape Head **y**
Slot**x**.head**y**-pip[**z**].meter.ch**n**	V	Audio destination for meter **n** PiP **z** of slot **x** Ultriscape Head **y**
Slot0.mixer-in[**y**].audio.ch1	V	Audio destination mixer input port **y**
Slot0.virt-out[**y**].sdi.ch1	V	Acuity AUX BUS output port **y**

For More Information on...

- defining a database, refer to the section "**Creating a New Database**" on page 106.

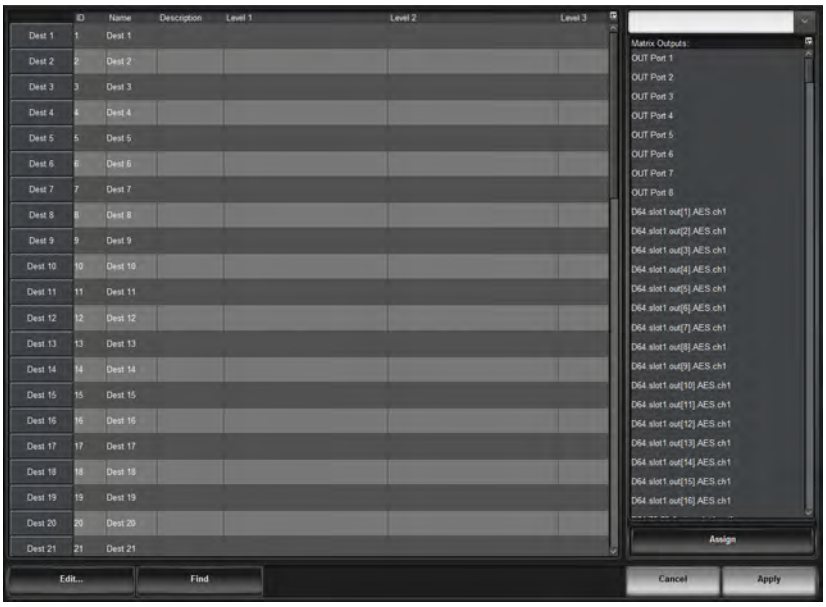
Specifying a Destination Label

The Destinations tab allows the definition of names (or labels) for your routing system outputs. When a database is initialized, default labels of `Dest #` are automatically filled in to the quantity specified by the database. These destination labels may be changed to suit your naming conventions.

To specify a label for a destination

1. Double-click the **Destinations** node located under the **Database** node.

   The **Destinations** tab opens.



2. Select the cell in the **Name** column of the label to alter.
3. Type the required label.

✶ Take care to limit the amount of characters as these labels are displayed on Remote Control Panels (RCPs) which have a limited display area.

4. Repeat steps 2 to 3 for each destination you want to specify a virtual label for.
5. Click **Apply** at the bottom of the **Destinations** tab to save your changes.

Mapping an Output to a Destination

The Destinations tab is organized into a table with each row representing a Destination and each column representing a Level. The table cells are the output ports assigned to the Destination for that level. Initially, the table cells are empty (e.g. the destination labels are not assigned to physical output sockets). These may be populated as described in "**To map a physical output to a destination**", or, via the **Advanced Fill** tool.

The **Advanced Fill** tool is provided to create new destination labels that are automatically assigned to physical outputs depending on options set by the user. The audio routing features provided by Ultrix can result in an extensive source and destination definition map requiring some time to manually enter. The **Advanced Fill** tool will speed the assignment of physical ports greatly.

Various editing options are available from the editing menus, accessed via the **Edit** button located on the bottom toolbar of the tab. Refer to "**Additional Dialogs, Menus, and Toolbars in the Database Interfaces**" on page 355 for details on these menus.

✶ If you are defining the destinations in a database for use with UltriScape, it is recommended to first define the destinations using the Advanced Fill tool, then re-name the UltriScape Heads as required. Otherwise there may be duplicate assignments of channels in the database.

For More Information on...

- the **Advanced Fill** tool, refer to "**Using the Advanced Fill Tool**" on page 118.
- assigning Tally IDs to destinations, refer to "**Assigning the Tally IDs to the Destinations**" on page 194.

To map a physical output to a destination

1. Double-click the **Destinations** node located under the **Database** node.
2. If desired, type a new name for the destination in the **Name** cell as outlined in the procedure "**To specify a label for a destination**" on page 112.

3. In the table of the **Destinations** tab, locate the column for the level you wish to include in the destination definition.
4. To map a single output, perform one of the following:
   - Select the cell of the row in the table to display a list of available outputs; or
   - Choose an output from the available **Matrix Outputs** list, located to the far right, and click **Assign**.

✶ Cell ranges may be horizontal as well as vertical. For example, a common operation would be to assign SDI embedded channels 1 to 16 to levels 2 to 17. The selected range would be horizontal across many levels but the selection would be vertical from the available outputs. The assignment operation will take the top-most of the available outputs selection and assign it to the left-most of the horizontal selection etc. through the range.

5. To map a range of outputs:
   a. Select the first cell in the table column.
   b. Press and hold **Shift**.
   c. Select the last cell in the table column.
   d. Select a range in the available **Matrix Outputs** list with same click, shift-click method.
   e. Click **Assign**.
6. Click **Apply** at the bottom of the **Destinations** tab to apply the changes to the database.

To map a series of outputs to multiple destinations on the same level

1. In the table of the **Destinations** tab, select the first row in the series you want to define for the level.
2. Press and hold **Shift**.
3. Click the last row in the series to select a range of cells within a **Level** column.
4. Select a range of outputs as outlined in step 5 of the procedure "**To map a physical output to a destination**" on page 113.
5. Click **Assign**.
6. Click **Apply** at the bottom of the **Destinations** tab to apply the changes to the database.

To delete an entry from the Destination table

1. Select the row for the destination to delete in the **Destinations** tab.
2. Click **Edit** > **Delete**.

✶ Ensure the ID numbers are correctly sequenced when deleting and inserting entries in the **Destinations** table. To re-order the Destinations ID numbers in the database, click **Edit** > **Reset All IDs** in the **Destinations** tab.

3. Click **Apply**.

Configuring the Destination Follow Feature

The Destination Follow feature enables you to route a specific destination's source signal to another destination. For example, set **`Dest 1`** to follow **`Dest 6`** so when `Dest 6` is switched to a different source, **`Dest 1`** is also switched to that same source. You can set multiple destinations to follow another single destination, or each following their own unique destination.

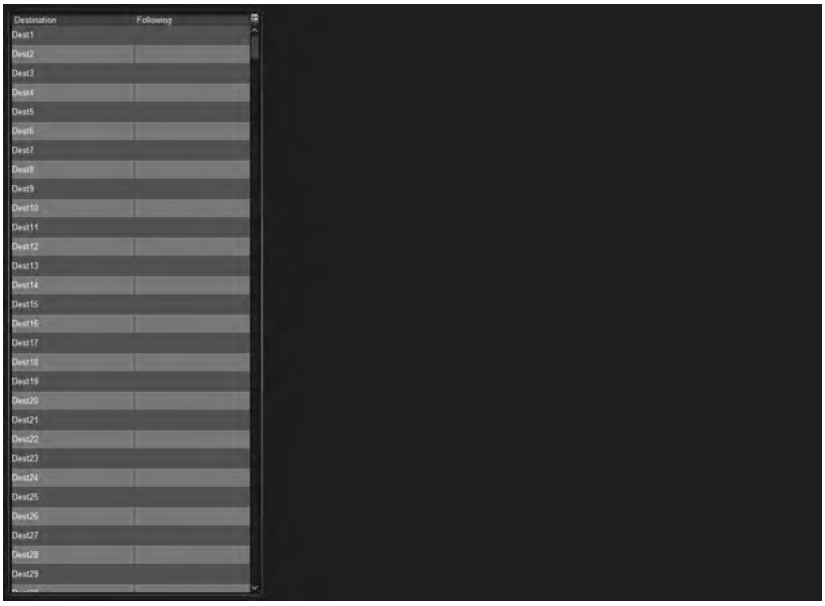
Controlling a destination that has a follow directly will overwrite the current status. Any subsequent changes to the followed destination will again update that destination. For example, if Dest 1 follows Dest6 and a a controller requests a new source to Dest1, that source is routed to Dest1. If a controller then requests a new source to Dest6, Dest1 will then also change status to the new source.

✶ Destinations defined as UltriScape Heads or UltriScape PiPs are not enabled for DestFollow configuration. A PiP DestFollow is configured via the UltriScape interface.

To configure the Destination Follow feature

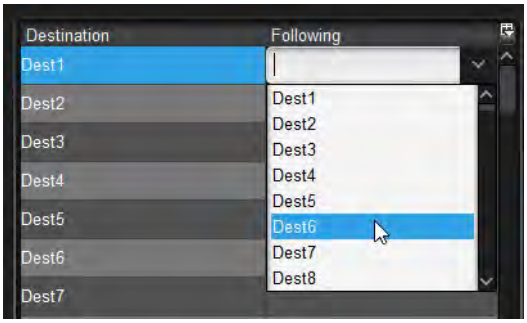
1. Double-click the **Destination Follow** node located under the **Database** node.

   The **Destination Follow** tab opens.



2. Locate the row for the destination to configure.
3. Use the **Following** menu to specify the output that the selected Destination will follow.

   In the example below, the user is configuring `Dest1` to follow `Dest6`.



✶ To delete a DestFollow, use the **Following** menu to select the required DestFollow and click **Delete**.

Defining the Sources in a Database

Ultrix uses a database to assign inputs, as well as define levels and matrices. **Table 12.2** outlines the available inputs for mapping to the sources in your database.

Table 12.3 Mapping Inputs to Database Sources

Default Slot Label	Physical or Virtual Port?	Description
Slot**x**.in[**y**].sdi.ch1	P	Digital video input slot **x** port **y**
flex.in[**y**].sdi.ch1	P	Digital video output flex slot port **y** (ULTRIX-FR5 only)
Slot**x**.in[**y**].audio.ch**n**	P	Digital audio channel **n** of input slot **x** port **y**
flex.in[**y**].audio.ch**n**	P	Digital audio channel **n** of flex slot input port **y** (ULTRIX-FR5 only)
Slot0.disconnect[1].sdi.ch1	V	A 'no signal/disconnected' video source
Slot0.disconnect[1].audio.ch1	V	A 'no signal/disconnected' audio source
Slot0.passthrough[1].audio.ch1	V	Audio on this channel will follow video regardless of audio matrix
Slot0.layout:name[**n**].mv.ch1	V	Ultriscape Head layout file name id **n** – route a layout to a head to change Ultriscape layouts
Slot0.mixer-out[**y**].audio.ch1	V	Audio source for mixer output port **y**
Slot0.mixerd-out[**y**].audio.ch1	V	Audio source for mixer channel strip direct output port **y**
Slot0.virt-in[**y**].sdi.ch1	V	Acuity AUX BUS Input port **y**

Specifying a Label for a Source

The Sources tab allows the definition of labels for your routing system inputs. When a database is initialized, default labels of `Src #` are automatically filled in to the quantity specified by the database. These source labels may be changed to suit your naming conventions.

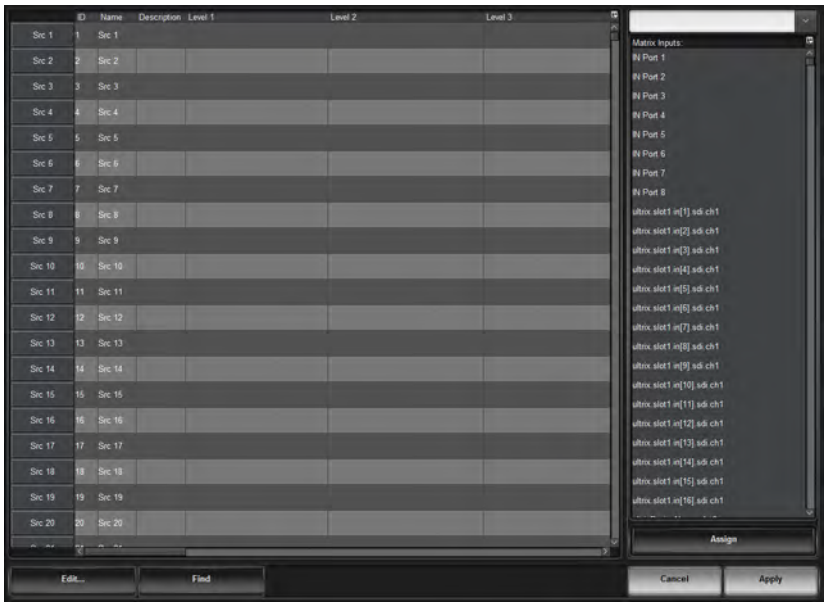
For More Information on...

- assigning Tally IDs to sources, refer to "**Assigning the Tally IDs to the Sources**" on page 193.

To specify a label for a source

1. Double-click the **Sources** node located under the **Database** node.

   The **Sources** tab opens.



2. Select the cell in the **Name** column of the label to alter.
3. Type the required label.
4. Press **Enter** to apply the change.

✶ Take care to limit the amount of characters as these labels are displayed on Remote Control Panels (RCPs) which have a limited display area.

5. Repeat steps 2 to 4 for each source you want to specify a virtual label for.
6. Click **Apply** at the bottom of the **Sources** tab to save your changes.

Mapping an Input to a Source

The Sources tab allows the mapping of physical and virtual input ports to your routing system inputs. The tab is organized into a table with each row representing a Source and each column representing a Level. At the top of the column is the name of the Level. The table cells are the input ports assigned to the source for that level.

An **Advanced Fill** tool is provided to create new source labels that are automatically assigned to inputs depending on options set by the user. The audio routing features provided by Ultrix can result in an extensive source and destination definition map requiring some time to manually enter. The **Advanced Fill** tool will speed the assignment of ports greatly.

Various editing options are available from the editing menus, accessed via the **Edit** button located on the bottom toolbar of the tab. Refer to "**Additional Dialogs, Menus, and Toolbars in the Database Interfaces**" on page 355 for details on these menus.

To map an input to a source

1. Double-click the **Sources** node located under the **Database** node.
2. If desired, type a new name for the source in the **Name** cell as outlined in "**To specify a label for a source**" on page 116.
3. In the table of the **Sources** tab, locate the column for the level you wish to include in the source definition.
4. To map a single input, perform one of the following:
   - Select the cell of the row in the table to display a list of available input sockets.
   - Choose an input from the available **Matrix Inputs** list and click **Assign**.

✶ Cell ranges may be horizontal as well as vertical. For example, a common operation would be to assign SDI embedded channels 1 to 16 to levels 2 to 17. The selected range would be horizontal across many levels but the selection would be vertical from the available inputs. The assignment operation will take the top most of the available inputs selection and assign it to the left most of the horizontal selection and so on through the selection range.

5. To map a range of inputs:
   a. Select the first cell in the table column.
   b. Press **Shift**.
   c. Select the last cell in the table column.
   d. Select a range in the available **Matrix Inputs** list.
   e. Click **Assign**.
6. Click **Apply** at the bottom of the **Sources** tab to apply the changes to the database.

To map a series of inputs to multiple sources on the same level

1. In the table of the **Sources** tab, select the first row in the series you want to define for the level.
2. Press and hold **Shift**.

3. Click the last row in the series to select a range of cells within a **Level** column.
4. Select a range of inputs as outlined in step 5 of "**To map an input to a source**" on page 117.
5. Click **Assign**.
6. Click **Apply** at the bottom of the **Sources** tab to apply the changes to the database.

To delete an entry from the Sources table

1. Select the row for the destination to delete in the **Sources** tab.
2. Click **Edit** > **Delete**.
3. Click **Apply** at the bottom of the **Sources** tab to apply the changes to the database.

Using the Advanced Fill Tool

The Advanced Fill operation is typically a tool used to initially set up an Ultrix database. Edits and customization may then be performed after the Advanced Fill tool has done the bulk of the work.

The following examples are shown on a new database with only database default settings loaded.

✶ Take care when determining label names. While a long name may be nice and descriptive for the Source and Destination tabs, many control devices have limited screen space and labels may be truncated.

For More Information on...

- the settings and menus available in the Advanced Fill tool, refer to "**Advanced Fill Tool**" on page 357.

Create Source Labels with Assignments for SDI Video Levels

The objective of this example is to insert new labels and assignments for inputs for the entire Ultrix router on SDI Levels only.

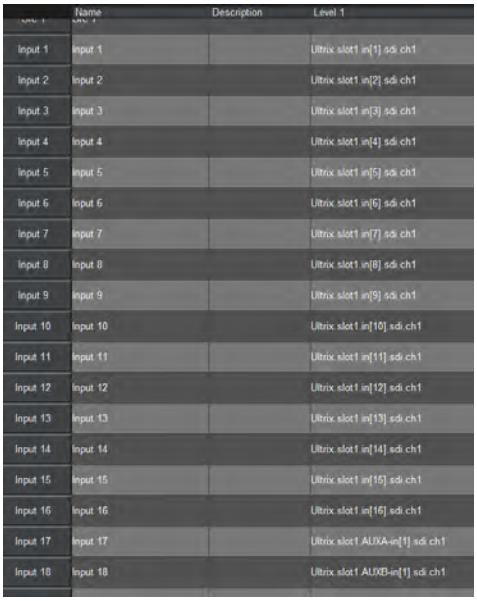
To create source labels with assignments for SDI video levels

1. Define the levels as outlined in the section "**Defining the Levels in a Database**" on page 110.
2. Select an entry point in the **Sources** tab from where the new labels and assignments will begin.
   a. Double-click the **Sources** node located under the **Database** node.
   b. Select the cell of the row for the entry point. The new entries will be inserted *below* this row.
   c. Click **Edit** > **Fill** to open the **Breakaway Fill** dialog.

3. If required, select **Fill** > **Entire Device**.
4. In the **Name** field, type a label prefix. Enter a trailing space to ensure a space between the prefix and the numerical counter.
5. From the **AUX Port** menu, define the AUX ports. Refer to **Table 30.42** for a list of options.

6. From the **Slot** menu, select the first slot in the Ultrix router. (e.g. Ultrix.slot1)
7. From the **Port** menu, select the first IN port of the first slot. (e.g. Ultrix.slot1.in[1])
8. From the **Starting Channel** menu, select the first channel of the selected port. (e.g. Ultrix.slot1.in[1].sdi.ch1)
9. In the **Levels** table of the dialog, select the fully qualified input name from the **I/O Assignment** column.
10. Click **Apply**.

    The dialog closes, and the **Source** tab updates with the newly created and insert labels with assignments.



Create Destination Labels with Assignments for SDI Video Levels

The objective of this example is to insert new labels and assignments for Ultrix outputs for the SDI only level.

To create destination labels with assignments for SDI video levels

1. Define the levels as outlined in the section "**Defining the Levels in a Database**" on page 110.
2. Select an entry point in the **Destinations** tab from where the new labels and assignments will begin.
   a. Double-click the **Destinations** node located under the **Database** node.

      The **Destinations** tab opens.

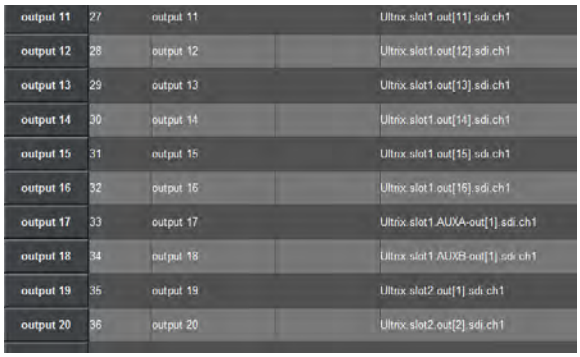
   b. Select the cell of the row for the entry point. The new entries will be inserted *below* this row.

   c. Click **Edit** > **Fill**.

      The **Fill** dialog opens.

3. If required, select **Fill** > **Entire Device**.
4. In the **Name** field, type a label prefix. Enter a trailing space to ensure a space between the prefix and the numerical counter.
5. From the **AUX Port** menu, define the AUX ports. Refer to **Table 30.42** for a list of options.
6. From the **Slot** menu, select the first slot in the Ultrix router. (e.g. Ultrix.slot1)
7. From the **Port** menu, select the first OUT port of the first slot. (e.g. Ultrix.slot1.out[1])
8. From the **Starting Channel** menu, select the first channel of the selected port. (e.g. Ultrix.slot1.out[1].sdi.ch1)
9. In the **Levels** table of the dialog, select the fully qualified Output assignment name from the **I/O Assignment** column.
10. Click **Apply**.

    The dialog closes, and the **Source** tab updates with the newly created and insert labels with assignments.



Create Source Labels with Assignments for SDI and Embedded Audio

The objective of this example is to create source labels and assignments for the SDI video and the first four embedded audio channels for an entire Ultrix enabled slot. The remaining twelve audio channels are not used.

To create source labels with assignments for the SDI video and embedded audio levels

1. Ensure that you have the UltriMix licensed feature enabled for the slot. Refer to "**Installing a License Key**" on page 34 for details.
2. Define one level for SDI Video and 16 levels for the embedded audio. Refer to "**Defining the Levels in a Database**" on page 110.
3. Select an entry point in the **Sources** tab from where the new labels and assignments will begin.
   a. Double-click the **Sources** node located under the **Database** node.

      The **Sources** tab opens.

b. Select the cell of the row for the entry point. The new entries will be inserted *below* this row.

c. Click **Edit** > **Fill**.

The **Breakaway Fill** dialog opens.

4. If required, select **Fill** > **Entire Slot**.
5. In the **Name** field, type a label prefix. Enter a trailing space to ensure a space between the prefix and the numerical counter.
6. From the **AUX Port** menu, define the AUX ports. Refer to **Table 30.42** for a list of options.
7. From the **Slot** menu, select the UltriMix enabled slot in the Ultrix router. (e.g. Ultrix.slot1)
8. From the **Port** menu, select the first port of the UltriMix enabled slot. (e.g. Ultrix.slot1.out[1])
9. From the **Starting Channel** menu, select the first channel of the selected port. (e.g. Ultrix.slot1.in[1].sdi.ch1)
10. In the **Levels** table of the dialog, select a range of **Level** rows by clicking the first row level name, then holding the **Shift** button, click the last row level name.

★ Ensure to select the SDI Video level and the first four embedded audio levels.

11. Click **Assign** to automatically fill the **I/O Assignment** column for the selected levels.

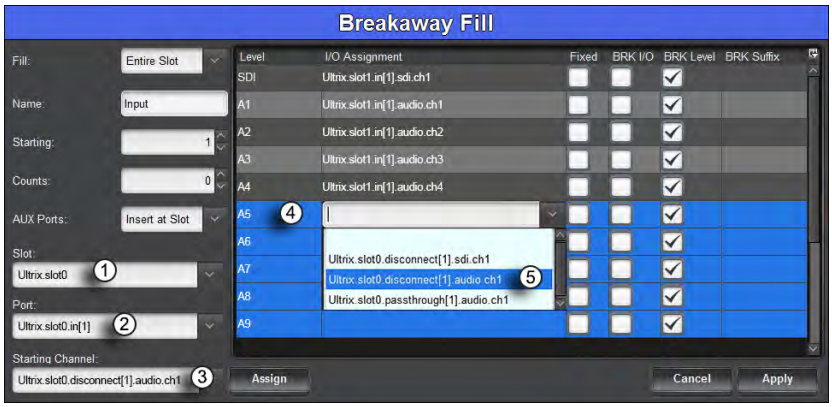
The **Breakaway Fill** dialog updates but does not close.

To set the unused audio channels to disconnect

1. From the **Slot** menu in the **Breakaway Fill** dialog, select **Ultrix.slot0**.
2. From the **Port** menu, select **Ultrix.slot0**.
3. From the **Starting Channel** menu, select **Ultrix.slot0.disconnect[1].audio.ch1**.
4. In the **Levels** table of the dialog, select the remaining twelve audio levels (e.g. A5-A16) from the **I/O Assignment** column.
5. Select **Ultrix.slot0.disconnect[1].audio.ch1** from the **I/O Assignment** cell for the first selected row (e.g. A5).

The disconnect[1].audio will be applied to all the selected rows[1].

1. Pass through may also be selected. Pass through has the effect of passing through any audio (silence or otherwise) on the channels A5 to A16. Disconnect effectively mutes those channels on the output stream.

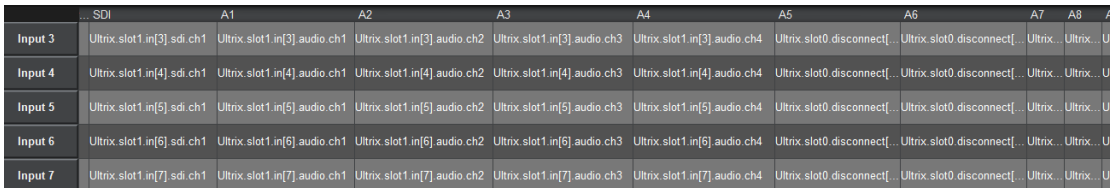


6. Click **Apply**.

   The dialog closes.

7. Click **Apply** in the **Sources** tab.

   The **Sources** tab updates with the newly created and insert labels with assignments.



Creating Labels with Assignments for SDI and Embedded Audio, with Audio Breakaways

The objective of this example is to create and insert a series of source labels with assignments for SDI video and embedded audio. Also, audio breakaway sources will be required to implement audio shuffling.

To enable the ability to shuffle audio (that is to take an audio channel and route into another stream in a different position within that stream), we need to define that audio channel as a source and assign it across all required levels. For example, we may wish to take channel 3 audio from an input SDI stream, and route (just that individual channel) to channel 2 of an output SDI stream. To facilitate this, the following definitions are needed;

Table 12.4 Example 1

	SDI Level	Level A1	Level A2	Level A3	Level A4
Source Name					
SDI 1 ch3	<blank>	In[1].audio.ch3	In[1].audio.ch3	In[1].audio.ch3	In[1].audio.ch3
Destination Name					
SDI out1	Out[1].sdi.ch1	Out[1].audio.ch1	Out[1].audio.ch2	Out[1].audio.ch3	Out[1].audio.ch4

✶ If only four audio levels are defined as shown in **Table 12.4**, and assuming no other level definitions, the user can only route **`SDI 1 ch3`** to any of the corresponding levels in the destination, i.e. cannot route **`SDI 1 ch3`** to a destination stream channel 8 as Out[1].audio.ch8 is not defined in any of the destination levels.

To enact the previous example, the user selects the destination channel by selecting the appropriate level button on the control panel (in this case, the A2 level) before actuating the crosspoint switch (destination button SDI out1, then, source button SDI 1 ch1). The **Advanced Fill** tool can automate the creation of these audio breakaway sources saving a great deal of setup time.

To create source labels with assignments for SDI and embedded audio, with audio breakaways

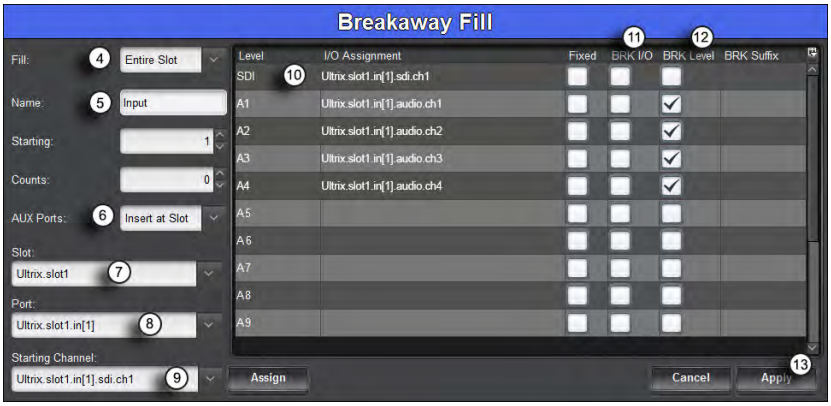
1. Define one level for SDI Video and 16 levels for the embedded audio as outlined in the section "**Defining the Levels in a Database**" on page 110.
2. Select an entry point in the **Sources** tab from where the new labels and assignments will begin.
   a. Double-click the **Sources** node located under the **Database** node.

      The **Sources** tab opens.

   b. Select the cell of the row for the entry point. The new entries will be inserted *below* this row.

   c. Click **Edit** > **Fill**.

      The **Breakaway Fill** dialog opens.

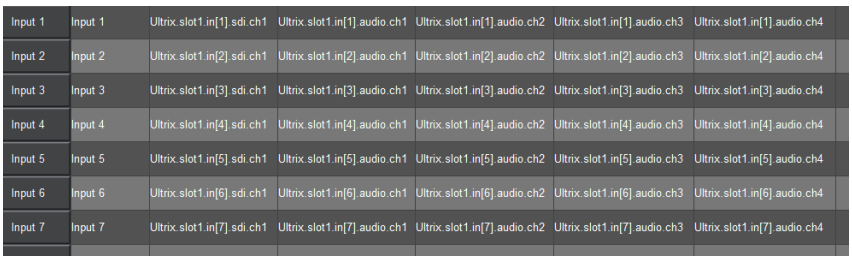


3. If required, select **Fill** > **Entire Slot**.
4. In the **Name** field, type a label prefix. Enter a trailing space to ensure a space between the prefix and the numerical counter.
5. From the **Slot** menu, select the UltriMix enabled slot in the Ultrix router. (e.g. Ultrix.slot1)
6. From the **AUX Port** menu, define the AUX ports. Refer to **Table 30.42** for a list of options.
7. From the **Port** menu, select the first port of the UltriMix enabled slot. (e.g. Ultrix.slot1.out[1])
8. From the **Starting Channel** menu, select the first channel in the series.
9. In the **Levels** table of the dialog, assign physical ports to the levels.
10. Select the **BRK I/O** box for the Levels assignment to be broken out to a separate label/assignment definition.
11. Select the **BRK Level** box for each level to be included in that label/assignment definition.
12. Click **Apply**.

    The dialog closes.

13. Click **Apply** in the **Sources** tab.

    The **Sources** tab updates with the newly created and insert labels with assignments, and the audio breakaways definitions.



✶ Notice the **ch*x*** automatic suffix to the label. This may be overridden by placing text in the **BRK Suffix** cell of the **Breakaway Fill** dialog.

Creating Categories

You can assign each destination, source, and level to a specific category in the router database. Defining multiple categories enable you to filter the sources, destinations, and level and organize them into logical groups. Each database provides up to six categories that you can define.

For More Information on...

- managing the categories for your Ultrix router, refer to the chapter "**Using Categories**" on page 207.

Acuity AUX Bus Mapping

When setting up the Ultrix router to support an Acuity switcher, you must also map the switcher aux buses to router sources and destinations so that video can be assigned to them. Aux bus routing is done virtually within the router. When a source is selected on an aux bus in the switcher, the switcher tells the router to connect a video source to an aux bus destination. The video does not pass through the switcher, only the router. An aux bus source must be assigned to a router destination for that video stream to be available on an output. Refer to the switcher documentation for details on setting up an Ultrix with an Acuity switcher.

For More Information on...

- setting up an Ultrix with an Acuity switcher, refer to the switcher documentation.

Managing your Databases

A database can be archived by saving it as a *.uda file to a specified location. This enables you to import and export an archived database which is useful for:

- creating a safe, off-frame copy of a default database configuration for that router
- importing a copy of a reference database that can be tailored to a specific application for that router
- restoring a known backup copy of a database to a specific router

✶ This feature requires DashBoard v8.2 or higher and Ultrix software v2.0 or higher.

Overview

The following information is captured when you archive a database:

- Definitions of levels, sources, and destinations
- Salvos
- Category assignments
- Soft panels
- User assigned port labels
- Current crosspoint status

✶ The following information is not captured: hardware specifics, and license settings.

Exporting a Database

You create an archive of a database (as a *.uda file) using the options in the **System Status** > **Transfer** tab.

To export a database to the archive

1. In the Tree View of DashBoard, double-click the **System Status** node.

   The **System Interfaces** display in the DashBoard window.
2. Select the **Transfer** tab.
3. Select the **Ultricore Database** sub-tab.
4. Locate the **Export** area on the tab.
5. Use the **Database** field to specify the database to export.
6. Click **Browse...** to specify the location to save the *.uda file to.

   The **Archive** read-only field updates with the selected path and database name.
7. Click **Apply**.

   The **Downloading Archive** dialog opens to report the status of the export.

Importing a Database

Once a database is imported from the archive to your system, you can select it from the list of databases to load via the **System Status** > **Database** tab.

✶ The database is not automatically loaded. Refer to "**Loading a Database**" on page 109 to load a database.

To import a database to an Ultrix router

1. In the Tree View of DashBoard, double-click the **System Status** node.

   The **System Interfaces** display in the DashBoard window.
2. Select the **Transfer** tab.
3. Select the **Ultricore Database** sub-tab.
4. Locate the **Import** area.
5. Select the *.uda file you wish to import as follows:
   a. Click **Browse...** to display the **Open** dialog.
   b. Use the **Open** dialog to specify the *.uda file to import.
   c. Click **Open** to close the dialog and load the file.
6. Click **Apply**.

   The **Uploading Archive** dialog opens to report the status of the transfer.
7. Verify that the imported database is now available for selection in the **System Status** > **Database** tab.

Deleting a Database

✶ You cannot delete the active database.

To delete a database

1. In the Tree View, double-click the **System Status** node.
2. Select the **Database** tab.

3. From the **Delete Database Name** menu, select the database you want to delete.
4. Click Database **Delete**.

ULTRIMIX-MXR

The ULTRIMIX-MXR licensed feature is a virtual audio mixer that can be configured up to 128×64. It can be partitioned into smaller mixers so you can have multiple instances within the frame.

The ULTRIMIX-MXR has access to every input in the system, and its outputs can be routed to any output in the frame, providing tremendous flexibility for audio work-flows. Each input has a 4-band parametric equalizer, noise gate and compressor/limiter. In addition, ULTRIMIX-MXR has 128 direct outputs for simple audio processing as part of its standard feature set. It is controllable via a DashBoard user interface as well as application-specific panels for both the Ultritouch-2 and Ultritouch-4 control panels.

Key Features

- Licensed in 32×16 blocks
- Multiple licenses can be purchased to build a maximum size of 128×64
- 4 Band Parametric EQ per input
- Noise Gate per input
- Compression/Limiter per input
- DashBoard control
- Ultritouch-2 and Ultritouch-4 panel support

Flexible Mapping

Any Ultrix audio input (embedded SDI, MADI, or IP based) may be routed to any mixer input, and any mixer output may be routed to any audio output channel. You may route any audio signal within Ultrix via any mixer input. Also, the mixer outputs may be routed to any Ultrix audio destination, including back into the mixer.

Each ULTRIMIX-MXR license provides an I/O (Input/Output) block of 32 inputs by 16 outputs. A maximum of 4 licenses provides an I/O block of 128 inputs by 64 outputs.The ULTRIMIX-MXR may be partitioned into smaller blocks to provide multiple small audio mixers.

Figure 13.1 is an example of one audio mixer (one license) with 64 stereo inputs (128 channels) and 32 stereo outputs (64 channels). **Figure 13.2** is an example of partitioning to obtain two smaller independent ULTRIMIX-MXR I/O blocks. Each partition is stereo 32x16.

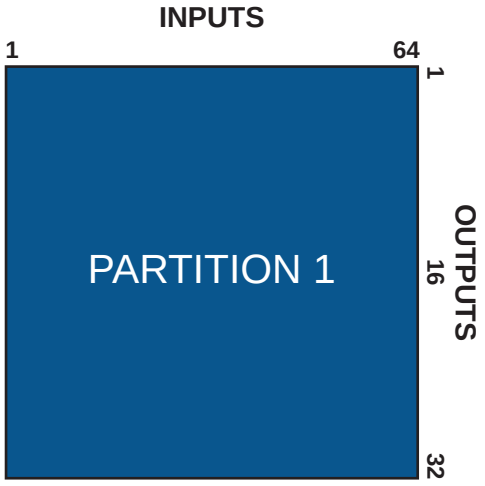


Figure 13.1 One Audio Mixer — 64x32

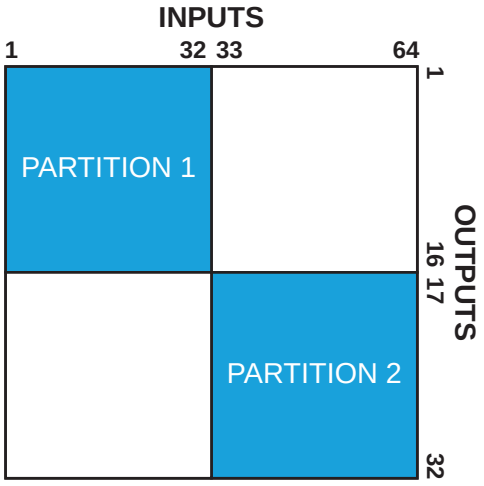


Figure 13.2 Two Audio Mixers — Each 32x16

Soft Panels

An Audio Mixer soft panel type allows for real-time adjustment of audio levels and audio processing, and provides a familiar interface similar to other audio consoles.

✶ Each channel strip is a stereo pair (i.e. two audio channels). Similarly, each output bus is a stereo pair.

By default, the Home View of an audio mixer soft panel is similar to Ross RAVE. The window is divided into channel strips and includes the features you enabled during the soft panel configuration. You also have the option to add drawers to the left and/or right margins of the soft panel window (like an Ultritouch soft panel).

For More Information on...

- audio mixer soft panels, refer to the section "**Creating Audio Mixer Soft Panels**" on page 133.

Figure 13.3 Example of an Audio Mixer (Desktop) Soft Panel

Setup Overview

This chapter summarizes how to set up an audio mixer soft panel. This requires you to:

1. Install a ULTRIMIX-MXR license(s) for each audio mixer partition you require. You can install up to 4 licenses in a single router.
2. Specify the audio mixer I/O partitions.
3. Create sources and destinations with audio mixer I/O mappings.
4. Configure an audio mixer soft panel.
5. Load the audio mixer soft panel to your desktop or an Ultritouch panel.

The following sections outline each step.

Installing the License Key for an Audio Mixer

Install the ULTRIMIX-MXR software license for the Ultrix router as outlined in the chapter "**Software License Keys**" on page 33.

Configure the Audio Mixer I/O Partitions

Each ULTRIMIX-MXR license provides a block of audio mixer Inputs and Outputs (I/O). The block size is determined by how many ULTRIMIX-MXR licenses are enabled. This I/O block may be partitioned to create smaller independent mixers.

For example, an Ultrix with all four ULTRIMIX-MXR licenses enabled will yield a single audio mixer with an I/O matrix of 64 stereo inputs × 32 stereo outputs. The **Frame Configuration** interface in DashBoard enables you to create the following matrices based on how you want to partition the inputs and outputs:

- 1 Mixer where the mixer is a 64×32 (stereo)
- 2 Mixers where each mixer is a 32×16 (stereo)
- 4 Mixers where each mixer is a 16×8 (stereo)
- 8 Mixers where each mixer is a 8×4 (stereo)

✶ It is strongly recommended to configure your audio mixer partitions at the same time as configuring the other ports for your router. Changes to mixer partition is a major operation due to existing mixer I/O maps in sources and destinations are no longer valid, and mixer partition assigned to a mixer panel may no longer available.

Master and Monitor Outputs

Each partition has two defined outputs named Master and Monitor. The physical outputs the Master and Monitor buses are assigned to is user configurable. By default, Master is assigned to the first output bus and Monitor is assigned to the last output bus of the partition.

For example, an Ultrix with one ULTRIMIX-MXR license allows a single block of 32×16 audio mixer I/O. This equates to a possible mixer with 16 stereo inputs and 8 stereo outputs, or buses. By default, a single partition on this I/O block will set the Master bus to mixer I/O OUT 1 and the Monitor bus to OUT 8.

With Master set to bus OUT 1 and Monitor set to bus OUT 8, this leaves the remaining 6 outputs as Auxiliary (AUX) buses.

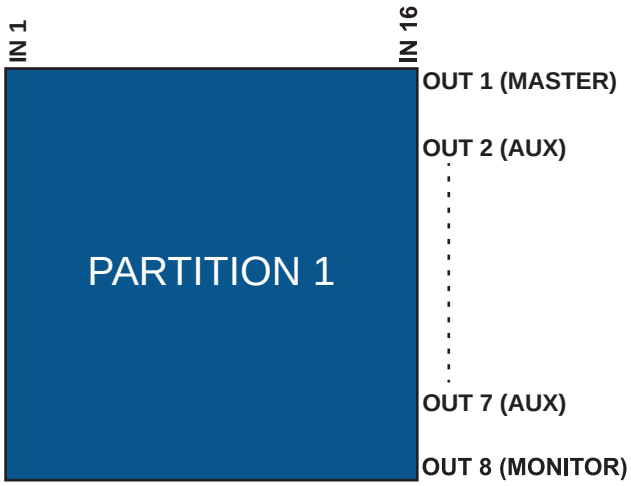


Figure 13.4 Master and Monitor Outputs within a Partition

The Master and Monitor buses operate in conjunction as follows;

- The Monitor bus follows the Master unless a channel strip has SOLO activated.
- When no channel strip SOLO is activated, the Monitor bus has the same audio mix as the Master bus.
- When a channel strip SOLO is activated, the Monitor bus mutes other channels except for those in SOLO mode. The SOLO button is highlighted (this applies whether the active bus is Master or an AUX).
- Any Master channel strip with SOLO activated does NOT affect the Master bus.
- Multiple channel strip SOLOs are allowed, and they all appear in the Monitor simultaneously.

- Selecting the SOLO Clear button will clear all currently active SOLO channel strips.

The SOLO mode on an auxiliary bus operates differently as there is no specific monitoring bus output for the Auxiliary buses.

- Any channel strip with SOLO activated will MUTE the other channels on that AUX bus.
- When an AUX strip SOLO is activated, the Monitor bus has the same audio mix as an AUX bus with SOLO activated.

Configure the Audio Mixer Partitions

The number of default partitions is determined by the license key you installed.

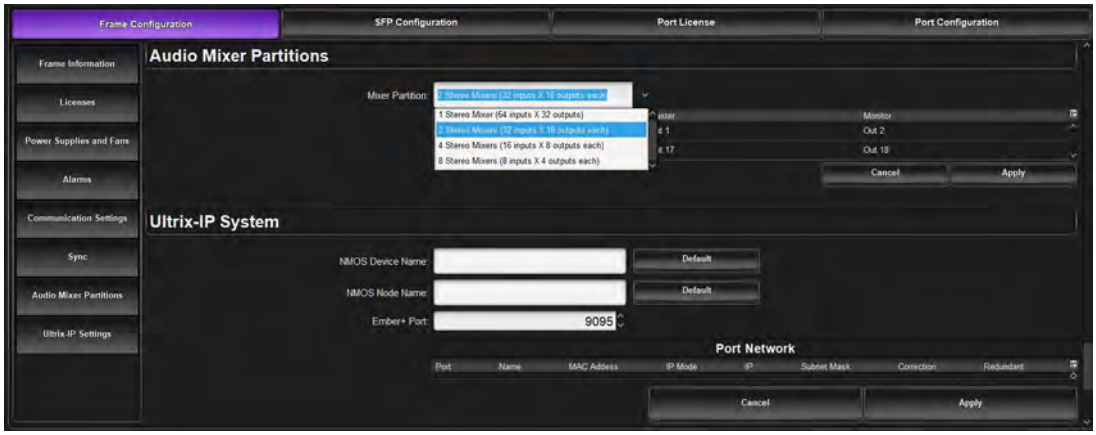
To configure an audio mixer partition

1. Locate the Ultrix in the Tree View of DashBoard.
2. Expand the Ultrix node to display a list of sub-nodes in the Tree View.
3. Expand the **Devices** node.
4. Expand the **Controllers + Matrices** node.
5. Double-click the node for your Ultrix router.

   The **Device Configuration** interface opens with the **Frame Configuration** interface selected.
6. Click **Audio Mixer Partitions**.

   The **Frame Configuration** interface updates to display the **Audio Mixer Partitions** area for the router.
7. Use the **Mixer Partition** menu to specify the number and types of audio partitions you require.

   In the example below, the user has four licenses installed but selected the option for 2 stereo partitions.



8. Click **Apply**.

Mapping the Sources and Destinations for the Audio Mixer

An Audio Mixer Fill Tool is provided in the Destination and Source interfaces to help quickly map the audio mixer I/O. The Audio Mixer Fill tool enables you to specify:

- one or more partitions to create destinations/sources based on the I/O available in those selected partition(s).
- the starting audio level for the I/O mapping for each destinations/sources.
- how many audio levels for each destinations/sources.
- a prefix for each destinations/sources and a starting number (if there are more than one destination).

Before You Begin

When mapping your audio mixer I/O:

- **Mixer Inputs** (channel strips) are mapped to **Router Destinations**
- **Mixer Outputs** (output strips) are mapped to **Router Sources**

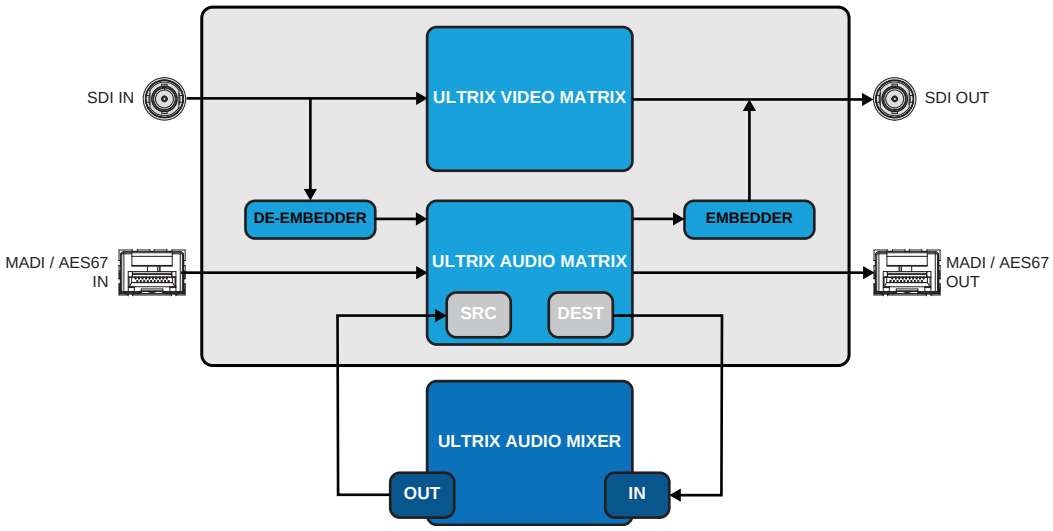


Figure 13.5 Block Diagram of Mapping Audio Mixer I/O to Router Destinations and Sources

Mapping the Router Destinations to the Audio Mixer Inputs

The Audio Mixer Fill Tool prevents a user from mapping I/Os from two different mixers into one logical matrix since each source/destination can have I/O mappings from only one mixer partition.

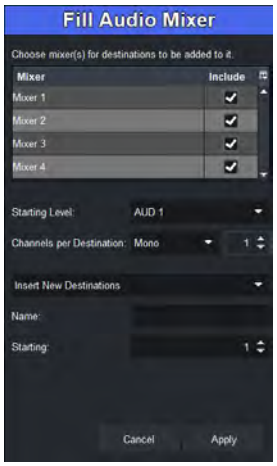
By default, the Audio Mixer Fill Tool assigns consecutive mixer inputs across the table starting at the defined Starting Level and continuing each level column for the channels per Destination quantity. Note the chosen Channels per destination setting will impact the total number of logical labels created. For example, when creating mixer input logical label for a 64×32 mixer, a setting of Quad will result in 32 logical destinations (mixer inputs) created or 32 destinations × 4 levels (Quad) with 128 mixer inputs (64 stereos channel strips).

✶ When mapping stereo pairs, each channel strip in the soft panel Home View represents a stereo pair with the first strip automatically assigned to the first pair of the selected partition. For example, slot0.mixer-in[1] and slot.mixer-in[2] is mapped to Channel strip 1, and slot0.mixer-in[3] and slot.mixer-in[4] is mapped to channel strip 2 etc. This is also true for the mixer outputs.

To map the destinations to the audio mixer

1. Display the Database nodes as outlined in "**To access the Database interfaces in DashBoard**" on page 25.
2. Double-click the **Destinations** sub-node.
3. Select an entry point in the **Destinations** tab from where the new audio mixer assignments will begin.
4. Click **Edit** > **Audio Mixer Fill**.

   The **Fill Audio Mixer** dialog opens.



5. Select the **Include** box for each audio mixer partition you want to add router destinations for.
6. Use the **Starting Level** field to specify the starting audio level for the I/O mapping for each destination.
7. Use the **Channels per Destination** menu and field to specify how many audio levels for each destination.

✶ If you selected **Custom**, use the provided field to specify the number of audio levels for each destination.

8. When mapping multiple destinations, specify a prefix for each destinations and a starting number as follows:
   a. Select **Insert New Destinations**.
   b. In the **Name** field, type a label prefix. Enter a trailing space to ensure a space between the prefix and the numerical counter.
   c. Use the **Starting** menu to select the cell of the row for the entry point. The new entries will be inserted *below* this row.
9. Click **Apply**.

   The dialog closes and the **Destinations** tab updates with the newly created and insert labels with assignments.

Mapping the Router Sources to the Audio Mixer Outputs

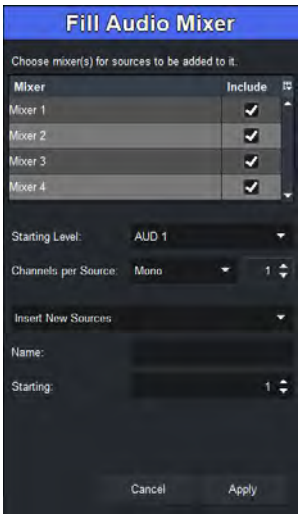
✶ When mapping sources, ensure to use the same mixer partition(s) that was selected in step 5 of "**To map the destinations to the audio mixer**" on page 131.

To map the inputs for an audio matrix

1. Display the Database nodes as outlined in the procedure "**To access the Database interfaces in DashBoard**" on page 25.
2. Double-click the **Sources** sub-node.

3. Select an entry point in the **Sources** tab from where the new audio mixer assignments will begin.
4. Click **Edit** > **Audio Mixer Fill**.

   The **Fill Audio Mixer** dialog opens.



5. Select the **Include** box for each audio matrix you want to add router source to.
6. Use the **Starting Level** field to specify the starting audio level for the I/O mapping for each source.
7. Use the **Channels per Source** menu and field to specify how many audio levels for each source.

✶ If you selected **Custom**, use the provided field to specify the number of audio levels for each source.

8. When mapping multiple sources, specify a prefix for each source and a starting number as follows:

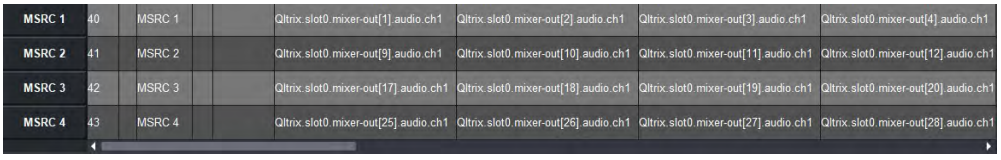
   d. Select **Insert New Source**.

   e. In the **Name** field, type a label prefix. Enter a trailing space to ensure a space between the prefix and the numerical counter.

   f. Use the **Starting** menu to select the cell of the row for the entry point. The new entries will be inserted *below* this row.

9. Click **Apply**.

   The dialog closes and the **Sources** tab updates with the newly created and insert labels with assignments.



Creating Audio Mixer Soft Panels

Much like other types of soft panels, when you create a new audio mixer soft panel, you select from an existing soft panel type (templates). You then assign a Panel Name and ID to display in the tree view using the nomenclature "**`Panel Name [#]`**" where **`[#]`** is the Panel ID.

✶ If you prefer to manually perform crosspoint switching on the panel, you also have the option to add router destinations and sources to the audio mixer soft panel.

To create a new audio mixer soft panel

1. Double-click the **Panels** node located under the **Database** node.

   The **Panels** tab opens.

2. Click **Edit** > **Add**.

   The **Add Panel** dialog opens.

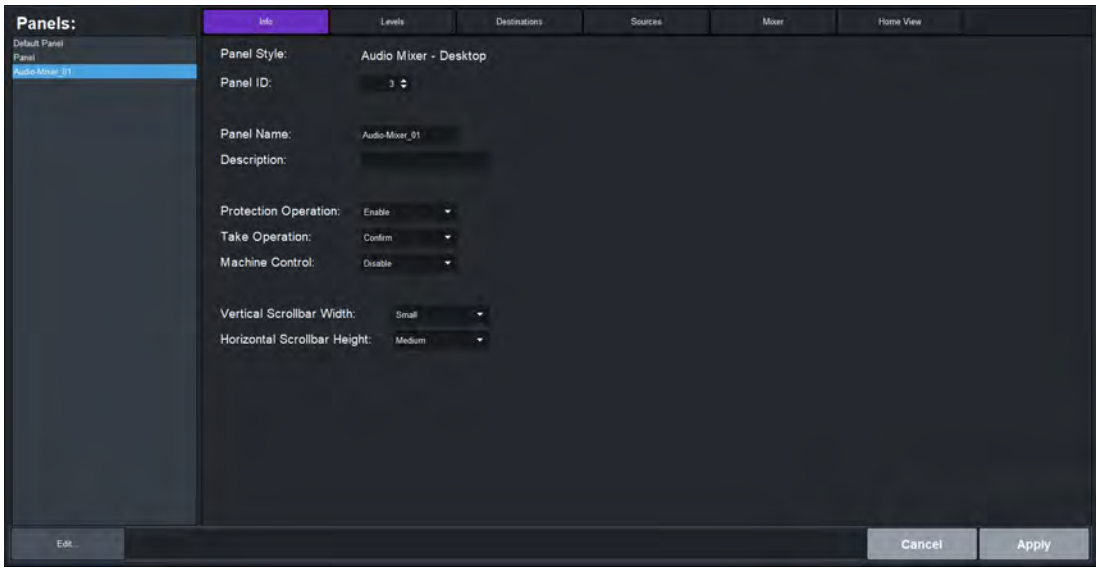
3. Type a unique identifier in the **Name** field. This will be used to identify the panel in the tree under the Soft Panels node.

4. Use the **Style** menu to specify the type of audio mixer panel to create. Choose from the following:

   - **Audio Mixer** — Creates a soft panel suitable for a desktop monitor where multiple rows of channel strips are possible.
   - **Audio Mixer 4RU** — Creates a soft panel formatted for an Ultritouch-4 panel.
   - **Audio Mixer 2RU** — Creates a soft panel formatted for an Ultritouch-2 panel.

5. Click **Apply** to save your settings and close the **Add Panel** dialog.

   The new panel name is added to the **Saved Panels** list and automatically selected for editing.



6. Use the **Panel ID** menu to determine the position of the panel in the Soft Panels tree where a value of "1" is the highest priority (and listed at the top).

✶ Ensure that the new soft panel does not use the same **Panel ID** as a previously saved soft panel.

7. Use the **Description** field to provide a textual summary of the panel.

8. Click **Apply** (located at the bottom of the **Panels** tab).

Adding Operation Features to the Soft Panel

You can customize the soft panel to include, or not, specific operational buttons used when switching crosspoints.

To set the operation modes for your audio mixer soft panel

1. Select the **Info** tab.

2. Set the **Take Operation** to **Direct**.

   The audio mixer soft panel does not display a **Take** button. A crosspoint switch occurs automatically after each destination/source selection is made by the user on the soft panel.

3. Click **Apply**.

4. If required, add router (video) levels, destinations, and sources to your audio mixer soft panel according to the following sections.

Levels

For consistent crosspoint status reporting, the levels for an audio mixer soft panel should be assigned database audio levels only. (**Figure 13.6**)

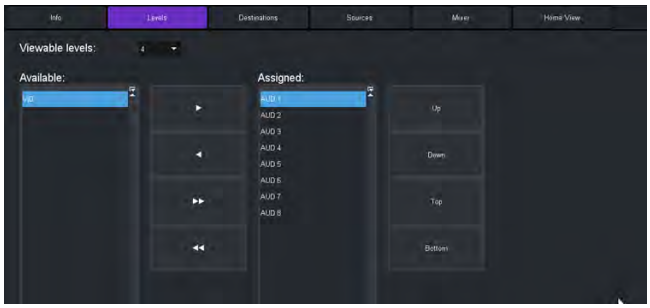


Figure 13.6 Example of Router Levels for an Audio Mixer Soft Panel

Destinations

Audio mixer soft panels can be enabled to route the mixer outputs to Ultrix router destinations. The destinations located in the assigned list are available for selection to route mixer outputs to Ultrix destinations in the soft panel. In **Figure 13.7**, only Ultrix router destinations DST1 - DST9 will be available for this soft panel.

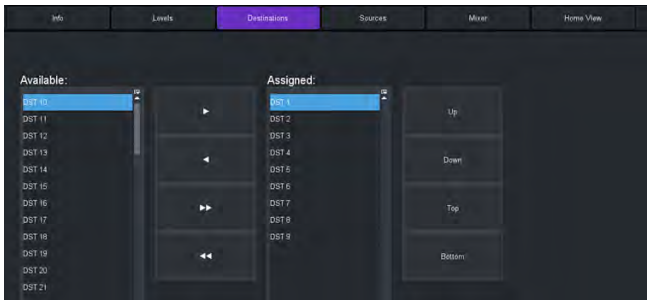


Figure 13.7 Example of Router Destinations for an Audio Mixer Soft Panel

If destinations are assigned to an audio mixer soft panel, you must assign a mixer destination drawer window. If no destinations are assigned, the audio mixer soft panel cannot route mixer outputs to Ultrix destinations. Another panel must perform this function.

Sources

Audio mixer soft panels can be enabled to route the Ultrix sources to mixer inputs. The sources placed in the assigned list are available for selection to route mixer Ultrix sources to mixer inputs in the soft panel. In **Figure 13.8**, only Ultrix router sources SRC1 - SRC10 will be available for this soft panel to choose mixer inputs

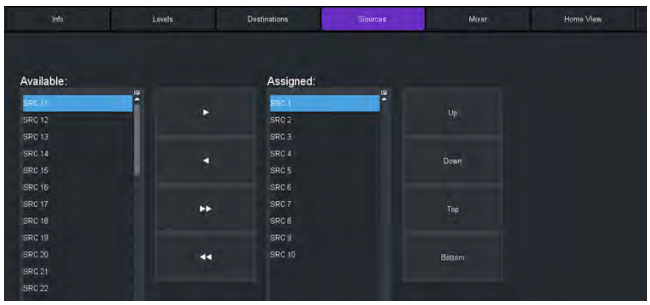


Figure 13.8 Example of Router Sources for an Audio Mixer Soft Panel

If sources are assigned to an audio mixer soft panel, you must assign a mixer sources drawer window.

If no sources are assigned, the audio mixer soft panel cannot route Ultrix sources to mixer inputs. Another panel must perform this function.

Audio Mixer Partitions

Select one or more audio mixer partition that this soft panel has access to. The mixer source and mixer destination lists provide information of the selected partition inputs and outputs as per the database definitions. (**Figure 13.9**)

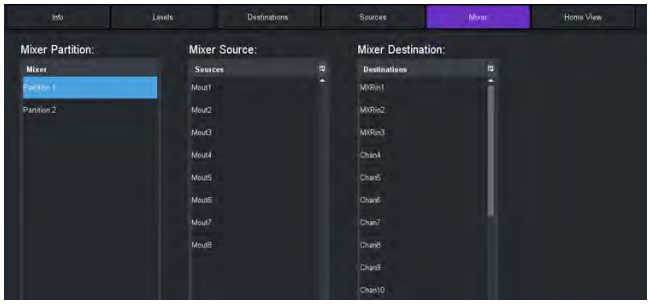


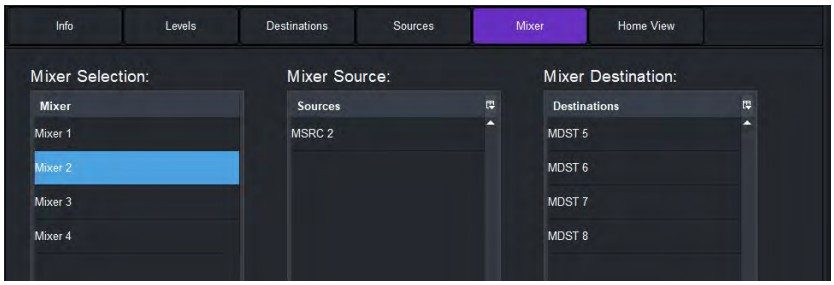
Figure 13.9 Example of Partitions for an Audio Mixer Soft Panel

Assign an Audio Matrix to the Soft Panel

To assign an audio matrix to the soft panel

1. Select the **Mixer** tab.
2. From the **Mixer Selection** list, select the audio matrix you want to assign to the soft panel.

   The Mixer Source and Mixer Destination lists update to display the available sources/destinations that have mixer I/O maps.



✶ The **Mixer Source** and **Mixer Destination** lists are read-only.

3. Click **Apply** to save your new soft panel.

Customizing the Soft Panel Layout

When creating an audio mixer soft panel, you also have the option to customize the different areas (windows) of the panel, and determine the width of each window, drawer, and their elements. A Home Page can be a collection of windows as defined during the soft panel configuration using the options in the Panels > Home View tab.

Table 13.1 summarizes the options for the types of windows you can assign to the Home Page of an audio mixer panel.

Table 13.1 Home Page — Types of Windows

Window Type	Description
Channel Strip	Displays the controls for the inputs of the selected audio mixer
Output Strip	Displays the controls for the outputs of the selected audio mixer
Mixer Destination	Displays the audio mixer destination selection buttons
Monitor	Displays read-only status information of the selected audio mixer
Sources	Displays the router source selection buttons

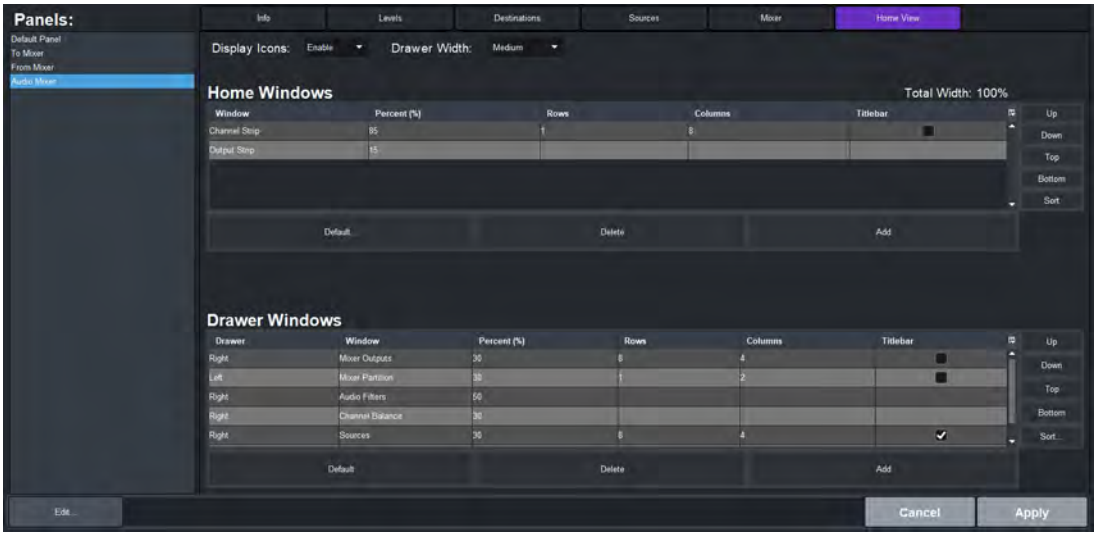
Defining the Home Window Elements of a Soft Panel

The options for defining the Home Windows of a soft panel are arranged in a table format of the Home View tab. You can chose to use the default settings, or customize the width and number of rows/columns in each window independently.

✶ The order of the rows in the **Home Windows** table determine the order of the windows that display on the soft panel. For example, if the first row is assigned to Sources, the first window next to the main toolbar of the soft panel will display the Sources buttons.

To customize the layout of your audio mixer soft panel

1. To re-size the scroll bars on your soft panel:
   a. Select the **Info** tab.
   b. Use the **Vertical Scrollbar Width** field to determine the size of the bar that enables the user to scroll along the vertical axis of the soft panel.
   c. Use the **Horizontal Scrollbar Height** field to determine the size of the bar that enables the user to scroll along the horizontal axis of the soft panel.
   d. Click **Apply**.
2. Select the **Home View** tab.



3. Use the **Display Icons** menu to specify whether buttons will display the default icons based on window type (**Enable**) or will only display the label text as determined by the database (**Disable**).
4. To add a window to the Home View:

a. Select a row in the **Home Windows** table.

b. Use the **Up**, **Down**, **Top**, **Bottom**, **Sort** buttons (located in the toolbar to the right of the table) to move a highlighted row to the desired position.

c. Click **Add**.

The **Add Window** dialog opens.

d. Use the **Window** menu to specify the first window to include in the soft panel. Choose from the following:

✶ You cannot have multiples of the same window in either Home windows or Drawer windows.

e. Click **Apply**.

The **Add Window** dialog closes and the Home Windows table updates to include the selection.

5. Repeat step 4 for each window you want to include in the soft panel.
6. Specify the order that the windows will display in the completed soft panel layout as follows:

✶ By default, the windows are organized in the following order (left to right): Channel Strip, and Output Strip.

a. In the **Home Windows** table, select the row for the window you want to move to on the soft panel layout.

b. Use the buttons in the toolbar to move the row to the desired position.

7. Adjust a window size as follows:
   - Use the **Percent** field to specify the size of the window as a percentage of the total soft panel area.
   - Use the **Rows** field to specify the number of button rows the window will display.
   - Use the **Columns** field to specify the number of button columns the window will display
8. Click **Apply** to save your changes.

Defining the Drawers on a Soft Panel

Soft panels to control an audio mixer can also include fly-out menus (drawers) that operate like horizontal drop-down menus. You can specify what menus, functions, and settings each drawer includes.

✶ By default the Drawer window is populated with a right-side **Mixer Output** window, a left-side **Mixer Selection** window, and a right-side **Mixer Filters** window. When multiple windows are assigned to either left or right drawers, the user must first select the drawer handle, then the window that is required.

Table 13.2 summarizes the options for the types of windows you can assign to the drawers of an audio mixer panel.

Table 13.2 Drawers — Types of Windows

Window Type	Description
Mixer Outputs	Displays the available audio mixer outputs. Select to switch the mixer panel current output bus.
Mixer Partition	Displays the audio matrix (partition) selection buttons.
Audio Filters	Displays the audio filter page for the currently selected channel strip.
Channel Balance	Displays the audio channel balance slider.
Mixer Destinations	Displays the router destination selection buttons in the specified drawer. Select to route the current mixer output to one or more Ultrix destinations.
Sources	Displays the router source selection buttons in the specified drawer. Select to route an Ultrix source to the current mixer channel.

Table 13.3 summarizes the default sizes for the types of drawers for each type of audio mixer panel.

Table 13.3 Drawer Windows — Default Settings

Window Type	Default Percent
Audio Mixer Desktop	
Mixer Output	30
Mixer Selection	30
Mixer Filters	50
Audio Mixer 4RU	
Mixer Output	30
Mixer Selection	30
Mixer Filters	100
Audio Mixer 2RU	
Mixer Output	30
Mixer Selection	30
Mixer Filters	100

To define the drawer elements of the soft panel

1. Double-click the soft panel name from the **Panels** list in the left toolbar of the **Panels** tab.
2. Select the **Home View** tab.
3. Locate the **Drawer Windows** area of the tab.

4. Select a row in the **Drawer Windows** table.

✶ The order of the rows in the **Drawer Windows** table determine the order of the windows that display on the soft panel. For example, if the first row is assigned to Sources, the first window next to the main toolbar of the soft panel will display the Sources buttons.

5. Click **Add**.

   The **Add Drawer** dialog opens.

6. Use the **Type** menu to specify the location of the drawer, in relation to the window it will be assigned to.

   For example, if you select **Type** > **Left** and **Window** > **Sources**, the drawer will display on the left side of the Sources window.

7. Use the **Window** menu to specify the window to assign to the drawer to.
8. Click **Apply**.

   The **Add Window** dialog closes and the **Drawer Windows** table updates to include the selection.

9. Repeat steps 5 to 8 for each drawer you want to include in the soft panel.
10. To customize a drawer size:

a. Use the **Width** field to specify the percentage of the allocated drawer space.

b. Use the **Rows** field to specify the number of rows in the drawer will display.

c. Use the **Columns** field to specify the total number of columns in the drawer will display.

✶ You can also use the **Drawer Width** menu, located near the top of the **Home View** tab, to specify the width of the drawer handle size.

11. Repeat step 10 for each drawer of the soft panel you wish to re-size.

12. Click **Apply** to save your settings.

Soft Panel Features

The panel UI design are similar to Ultritouch approach where UI sections are categorized into UI windows. These UI windows can be placed in main display and/or drawers.

Home View Window

By default, the channel strips are placed from left to right, and the output strips are placed at the far right.

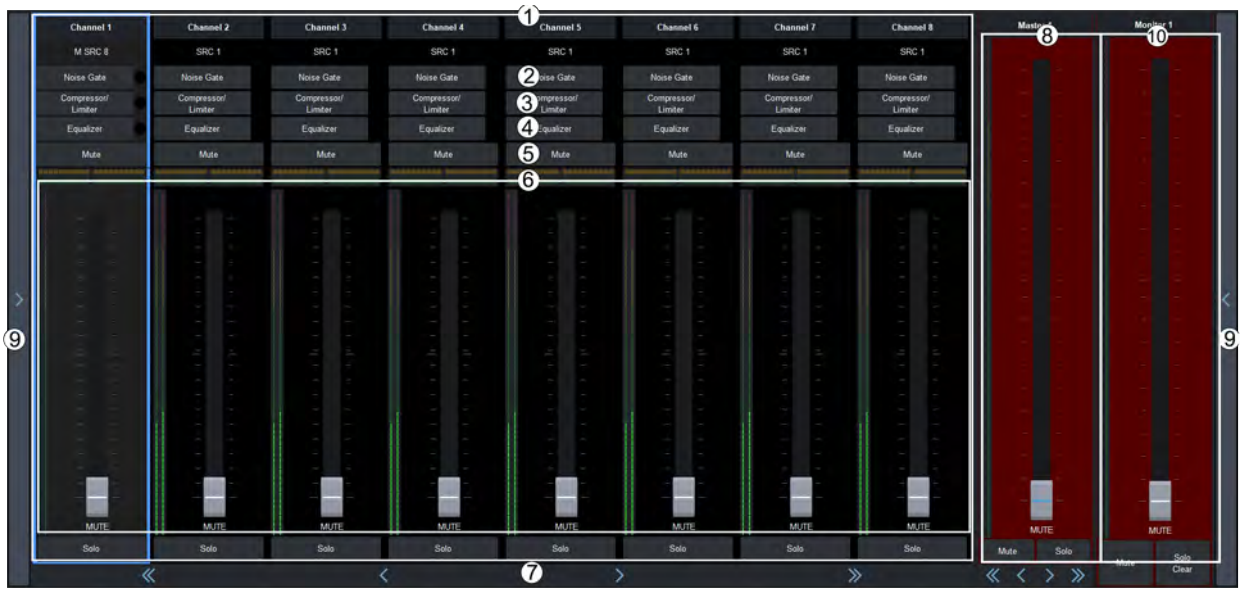


Figure 13.10 Example of an Audio Mixer Soft Panel

1. Channel Strips

Each strip controls the input from that audio channel and are color coded for where the audio comes from. Each strip includes the name of the audio channel and the router source assigned to it. Clicking the router source name opens the router source selection drawer window if defined.

2. Noise Gate

Opens the Noise Gate page in the Audio Filters window. Refer to "**Noise Gate**" on page 142 for details.

3. Compressor/Limiter

Opens the Compressor/Limiter page in the Audio Filters window. Refer to "**Compressor/Limiter**" on page 143 for details.

4. Equalizer

Opens the Equalizer page in the Audio Filters window. Refer to "**Equalizer**" on page 141 for details.

5. Mute

Turn off the audio from this source. This does not change the level.

6. Audio Fader and Meter

Adjust the level of the audio from the source.

7. Solo, Solo Clear

The solo action is dependant on the current mixer output.

› Master output — Selecting solo will route that channel to the defined Monitoring output. It does not affect the master output. Only those channels with solo activated will be connected to the Monitoring output. If no channels have solo activated, the monitoring output follows the Master output.

› Aux outputs — Selecting solo MUTES all other inputs to the selected output bus.

Any channels with solo active will illuminate the **Solo Clear** button - even channels not currently visible.

Clicking **Solo Clear** disables any solo action for the selected output bus.

8. Output Strips

The output channel strip fader controls the over-all level for that mixer output. Use the scroll bar at the bottom or the mixer output drawer window to select a mixer output bus.

9. Drawers

A navigation drawer is available on the left and right sides of the interface. Tap the drawer icon once to open a pane that provides access to additional menus and functions of your soft panel. Tap the drawer icon again to close the pane. The contents of a drawer is determined when the soft panel was configured.

10.Monitor Strip

The Master layer also has a Monitor output and level. By default, the Monitor strip reports the status of the last channel pair of the partition.

Audio Filters

By default, the audio filters are located in the right drawer of the soft panel. The following audio filters are available for each channel strip: audio equalizer, noise gate, and compressor/limiter.

✶ At the top of each audio filter setting is a Clipping indicator to warn you if clipping is occurring in the Equalizer stage (EQ) or Compressor/Limiter stage (CL).

Equalizer

The audio equalizer (EQ) allows you to enhance the sound quality of audio sources. An independent equalizer is available for every audio fader in the system and allows for adjustment in four bands (low-shelf, mid-range, high mid-range, and high-shelf).

✶ You can adjust the EQ settings using the EQ graph or the specific slider control.

To configure an equalizer

1. Expand the applicable drawer to display the **Audio Filters** window.
2. Click **Equalizer**.

   In the example below, the **Audio Filters** window displays in the right drawer.

3. Select an audio channel to modify.

   In the example above, the user is modifying Channel 1.

4. Use the **Low Shelf** slider to adjust the gain of the low frequency band.

✶ You can also move the L point around on the graph to adjust the low shelf values.

- **Gain** — set the audio level of the frequency band (-20dB to 20dB).
- **Max Freq** — set the maximum frequency that you want the low shelf audio band limited to (20Hz to 1kHz).

5. Use the **Midrange 1** slider to adjust the gain of a midrange frequency band.

✶ You can also move the M1 point around on the graph to adjust the midrange 1 values. The dot below the M1 allows you to adjust the Q ratio.

- **Gain** — set the audio level of the frequency band (-20dB to 20dB).
- **Center Freq** — set the middle frequency of the audio band (20Hz to 20kHz).
- **Q** — set the bandwidth of the Q ratio filter (0.51 to 9.91). Note that adjusting the bandwidth also changes the frequency range the filter affects.

6. Use the **Midrange 2** slider to adjust the gain of a midrange frequency band.

✶ You can also move the M2 point around on the graph to adjust the midrange 2 values. The dot below the M2 allows you to adjust the Q ratio.

- **Gain** — set the audio level of the frequency band (-20dB to 20dB).
- **Center Freq** — set the middle frequency of the audio band (20Hz to 20kHz).
- **Q** — set the Q ratio.

7. Use the **High Shelf** slider to adjust the gain of the high frequency band.

✶ You can also move the H point around on the graph to adjust the high shelf values.

- **Gain** — set the audio level of the frequency band (-20dB to 20dB).
- **Min Freq** — set the minimum frequency that you want the high shelf audio band limited to (20kHz to 1kHz).

Noise Gate

A noise gate allows a signal above a certain selected threshold to pass through. Noise gates are typically used to reduce unwanted external sounds, and/or reduce natural channel noise.

To configure the noise gate

1. Expand the applicable drawer to display the **Audio Filters** window.
2. Click **Noise Gate**.

   In the example below, the **Noise Gate** window displays in the right drawer.

3. Select an audio channel to modify.

   In the example above, the user is modifying Channel 1.
4. Use the **Threshold** slider to specify the level at which the gate opens.
5. Use the **Gain Reduction** slider to
6. Use the **Attack** slider to specify how quickly sounds louder than the threshold are affected.
7. Use the **Release** slider to specify how quickly sounds softer than the threshold are affected.
8. Select the **Enable Clipping** to

✶ Click **Reset Noise Gate** to return all Noise Gate settings to the default values.

Compressor/Limiter

The audio compressor allows you to restrict audio levels from passing a threshold level. These are often used to prevent digital clipping of audio levels that are too high for output equipment. Once the threshold is reached, the compressor starts to reduce the gain at a specific ratio. The higher the compression ratio, the harsher the reduction in gain. The compression continues until the audio level falls below the threshold. You can adjust how quickly the compressor is applied once the threshold is surpassed as well as how long after the level drops below the threshold that the compressor is still applied.

✶ The compressor is said to be acting as a limiter when the compression ratio is set very high, or to infinity, and the attack time is set very low. This has the effect of causing a very abrupt flattening of the audio level once the threshold is reached.

To configure the Compressor/Limiter settings for the audio matrix inputs

1. Expand the applicable drawer to display the **Audio Filters** window.
2. Click **Compressor/Limiter**.

   In the example below, the **Compressor/Limiter** window displays in the right drawer.

3. Select an audio channel to modify.

   In the example above, the user is modifying Channel 1.

4. Use the **Threshold** slider to select the level (dB) at which the compressor is applied.

5. Use the **Compression** slider to select the ratio for the amount of compression you want to apply. The higher the ratio the more compression is applied to lower the level. At infinity the audio level is limited to the threshold.

6. Use the **Attack** slider to select the amount of time (ms) you want to pass between the level surpassing the threshold and the full compression ratio being applied.

7. Use the **Release** slider to select the amount of time (ms) you want to pass between the level falling below the threshold and the compression ratio returning to 1:1 (no compression applied).

8. Use the **Makeup** slider to increase the gain of the audio after compression.

Adjusting the Balance an Audio Source

Adjusting the balance of an audio source adjusts the volume of the left and right stereo channel. For example, as you move the Balance slider to the right the volume of the right channel is increased and the volume of the left channel is decreased.

To adjust the balance of an audio source

1. Expand the applicable drawer to display the available window options.

2. Click **Pre-Processors & Balance Control**.

   In the example below, the **Pre-Processors & Balance Control** window displays in the right drawer.

3. Select an audio channel to modify.

   In the example above, the user is modifying Channel 1.

4. Use the slider in the **Balance** area to adjust the volume of the left and right stereo channel.

Audio Processing Options

The audio mixer panel enables you to adjust the gain and phase invert, individually, each of the audio sources.

To configure the audio proc-amps for an audio source

1. Expand the applicable drawer to display the available window options.
2. Click **Pre-Processors & Balance Control**.
3. Select an audio channel to modify.
4. Use the **Pre-Gain** field to specify the amount of gain (dB) applied to the input channel.
5. To invert a channel:
   - Click **Left Channel Phase Invert** to inverts the audio signal of the left channel.
   - Click **Right Channel Phase Invert** to inverts the audio signal of the right channel.
6. Click **Input Sum** to sum the left and right input channels. Both channels will carry the average ((A+B)/2) of the two input (Left and Right) channels.

Loading the Audio Mixer Soft Panel

The audio mixer soft panels are only available in DashBoard. You can load a soft panel to the DashBoard window on your PC, or to an Ultritouch panel. Both methods are presented here.

To load an audio mixer soft panel to a desktop

1. Launch DashBoard on your PC as described in the section "**Launching DashBoard**" on page 23.
2. Locate the Ultrix in the Tree View of DashBoard.
3. Expand the Ultrix node to display a list of sub-nodes in the Tree View.
4. Expand the **Soft Panels** node for the Ultrix.
5. Double-click the node for the newly edited soft panel.

The selected soft panel opens in the DashBoard window of your PC.

To load an audio mixer soft panel to an Ultritouch

1. On the Ultritouch hard panel display, tap  .

   The **All Connections** interface displays.
2. Tap the router you want to control via the Ultritouch.
3. Tap the second button.

   The panel updates to display the router hierarchy much like the tree view in the router menu system.
4. Tap **Soft Panels**.

   A list of available soft panels displays.
5. Tap the audio mixer soft panel for the Ultrix.
6. Tap **Open**.

   The Ultritouch interface updates to display the selected soft panel.

Notes on Audio Mixing via a Soft Panel

If your audio mixer soft panel includes partitions, you can switch between matrices as follows:

1. Expand the applicable drawer to display the **Mixer Selection** window.

✶ By default, the **Mixer Selection** window is located in the left drawer of the soft panel.

2. Click the **Partition** button for the required mixer (partition).
   - The channel strips and output strips are auto-populated.
   - The mixer inputs are automatically routed to the mixer outputs.
   - The soft panel recognizes a take transition from an external panel.

If your audio mixer soft panel includes router levels, sources, and destination, you can perform crosspoint switches as outlined in the“**Soft Panels in DashBoard**” on page 221.

Audio Mixer Operation

This section provides examples two possible audio mixer setups: a generic system and a.

Generic Setup

This example assumes the following generic setup seen in **Table 13.4**. Note that generic physical IO names shown for brevity.

Table 13.4 Example Mapping for Router Sources and Destinations

	Video	A1	A2
Source			
SRC1	slot1.in[1].sdi	slot1.in[1].audio.ch1	slot1.in[1].audio.ch2
SRC2	slot1.in[2].sdi	slot1.in[2].audio.ch1	slot1.in[2].audio.ch2
SRC3	slot1.in[3].sdi	slot1.in[3].audio.ch1	slot1.in[3].audio.ch2
...	...	...	...
MXR MSTR		slot0.mixer-out[1]	slot0.mixer-out[2]
MXR AUX1		slot0.mixer-out[3]	slot0.mixer-out[4]

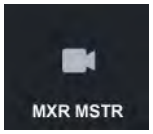
Table 13.4 Example Mapping for Router Sources and Destinations

	Video	A1	A2
...	...	...	...
Destination			
Dest1	slot1.out[1].sdi	slot1.out[1].audio.ch1	slot1.out[1].audio.ch2
Dest2	slot1.out[2].sdi	slot1.out[2].audio.ch1	slot1.out[2].audio.ch2
Dest3	slot1.out[3].sdi	slot1.out[3].audio.ch1	slot1.out[3].audio.ch2
...	...	...	...
MXR IN1		slot0.mixer-in[1]	slot0.mixer-in[2]
MXR IN2		slot0.mixer-in[3]	slot0.mixer-in[4]
...	...	...	...

To perform a simple route of audio mixer channels

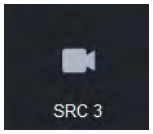
1. To route a mixer output to a destination:
   a. Choose a destination to receive the mix.

   b. Choose a source for the destination.



2. To route a source audio to a mixer input:
   a. Select the mixer input.

   b. Select the required source.



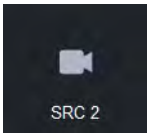
   With these route operations, we have routed the output of the Mixer Master bus (assuming Master is set to **Out1** in the mixer partition settings), to our router destination **DST 1**, and then routed audio channels 1 and 2 (as the mixer map is only configured for two channels in this example), of our router source **SRC 3** to the mixer Channel strip 1.

   Or, to look at it another way; audio channels 1 and 2 on router destination **DST 1** are connected to the mixer Master bus. The Master bus has router source **SRC 3** audio channels 1 and 2 via Channel strip 1.

3. To add another source to the mix:

a. Select another mixer input.

b. Select the source of the extra channels.



After this route, audio mixer Channel strip 2 receives the audio channels 1 and 2 of **SRC 2**. The **MXR MSTR** can have a mix of **SRC 3** channels 1 and 2, and **SRC 2** channels 1 and 2. Channel strip faders 1 and 2 control the mix of their respective sources. The Mixer Master fader controls the overall level of the mix.

Using Audio Mixer Direct Outputs

ULTRIMIX-MXR provides a direct channels strip output (pre-fader). This allows the use of the equalizer, compressor/limiter, and noise gate without requiring the effects to be routed through a mix bus.

In this example, we assume the mapping seen in **Table 13.5**.

Table 13.5 Example Mapping for Router Sources and Destinations

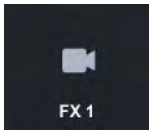
	Video	A1	A2
Source			
SRC1	slot1.in[1].sdi	slot1.in[1].audio.ch1	slot1.in[1].audio.ch2
SRC2	slot1.in[2].sdi	slot1.in[2].audio.ch1	slot1.in[2].audio.ch2
SRC3	slot1.in[3].sdi	slot1.in[3].audio.ch1	slot1.in[3].audio.ch2
...	...	...	...
FX1		slot0.mixerd[a]-out[1]	slot0.mixerd-out[2]
FX2		slot0.mixerd-out[3]	slot0.mixerd-out[4]
...	...	...	...
Destination			
Dest1	slot1.out[1].sdi	slot1.out[1].audio.ch1	slot1.out[1].audio.ch2
Dest2	slot1.out[2].sdi	slot1.out[2].audio.ch1	slot1.out[2].audio.ch2
Dest3	slot1.out[3].sdi	slot1.out[3].audio.ch1	slot1.out[3].audio.ch2
...	...	...	...
MXR IN1		slot0.mixer-in[1]	slot0.mixer-in[2]
MXR IN2		slot0.mixer-in[3]	slot0.mixer-in[4]
...	...	...	...

a. The “d” in the mixer physical label represents Direct Out.

With the above mapping, we can feed the output of the filters (noise gate, equalizer, compressor/limiter) to any destination.

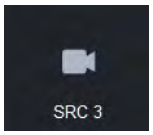
1. Route a channel strip direct output to a destination:
   a. Select the required destination.

   b. Select an output of the mixer as the source.



2. Route a source to the channel strip:
   a. Select a mixer input as a destination for the source.

   b. Select the required source.



   With these route operations, we have routed the direct outputs of mixer Channel strip 1 to our router destination **DST1**, and then routed audio channels 1 and 2 of our router source **SRC3** to the mixer Channel strip 1.

   Or, to look at it another way; audio channels 1 and 2 on router destination **DST1** are connected to router source **SRC3** audio channels 1 and 2 via mixer Channel strip 1 filters (gate, compressor/limiter, and equalizer). The settings of the filters will effect the audio channels 1 and 2 of destination **DST1**.

UltriScape Configuration

This chapter outlines how to create, edit, and manage your UltriScape layouts.

Overview

Once you have set up the UltriScape hardware as outlined in "**UltriScape Setup**" on page 67:

1. Install the UltriScape license key. Refer to "**Installing a License Key**".
2. Assign each UltriScape Head to an output. Refer to "**Assigning an UltriScape Head to a Physical Router Output**".
3. Configure the UltriScape Heads and PiPs in your database. Refer to "**Assigning the UltriScape Destinations**".
4. Navigate to the UltriScape Configuration interface to configure the global settings for all UltriScape Heads.
5. Create a new layout using the UltriScape Layout Editor.
6. Save the layout with a unique name.
7. Assign each required UltriScape Head to a layout. Refer to "**Managing the UltriScape Heads**".

Configuring the UltriScape Global Settings

UltriScape provides a central Configuration interface that allows you to set parameters that are common between PiPs, tallies, and labels. Global settings apply to all layouts with either Shared or Local PiPs.

Configuring the Local and Global PiP Settings

UltriScape supports two concurrent PiP sizes (A, B). Each PiP can be set to a specific dimension, allowing you to quickly set the size for the two PiPs and build layouts using the PiPs.

To set the Local PiP settings for all layouts

1. Double-click the **Configuration** node located under the **Ultriscape** node.

   The **Configuration** interface opens.

2. Select the **PiP Layout** sub-tab located at the bottom of the Layout Editor Settings tab.

3. Use the **PiP Size A** field to set the first of the common PiP sizes for the UltriScape layout[1].
4. Use the **PiP Size B** field to set the second of the common PiP sizes for the UltriScape layout[1].
5. Use the **PiP SD Aspect Ratio** options to set the aspect ratio to match the expected SD-SDI signal format (if applicable).
6. Use the **Audio Meter** options to set the audio meter green to yellow transition level.
7. Click **Apply**.

✶ Layout configurable properties are stored on the router and are accessible from any DashBoard client on the same network.

Configuring the Global PiP Border Settings

You can specify the border width and placement for all layouts.

To specify the border location for the PiPs

1. Double-click the **Configuration** node located under the **Ultriscape** node.

   The **Configuration** interface opens.
2. Select the **PiP Layout** sub-tab located at the bottom of the Layout Editor Settings tab.
3. Locate the **PiP Video Alignment** area in the **PiP Layout** sub-tab.
4. Use the **Video** options to specify where the PiP borders are drawn. Choose from the following:
   - **Overlap** — The border displays as a layer over the video. The thicker the border width, the less of the video image displays within the PiP. This is the default. The Pip Border Width Override fields are now read-only.
   - **Frame** — The border surrounds the image within the PiP. The image is scaled to fit within the PiP. This will override individual PiP border settings.
5. Click **Apply**.

To set the global PiP border widths for all layouts

1. Locate the **PiP Border Width** area in the **PiP Layout** sub-tab.

✶ This option is only available if the **Video** option was set to **Frame** during step 4 of the previous procedure.

2. Use the **Border** field to specify the border width in number of pixels.
3. Click **Apply**.

Configuring the Global Label Settings

You can also edit the global settings relating to the display of tally objects and the level of transparency for the label boxes overlaid on the PiPs.

✶ Ultrix does not support Unicode characters.

To set the global label transparency setting for all layouts

1. Double-click the **Configuration** node located under the **Ultriscape** node.
2. Select the **Label Settings** sub-tab located at the bottom of the Layout Editor Settings tab.

1. Applying changes to PiP size settings may prevent the currently selected layout from displaying correctly.

3. Use the **Transparency** slider to specify the level of transparency of the label background.

UltriScape Layout Editor Overview

Use the UltriScape Layout Editor to manage your layouts. The workspace of the UltriScape Layout Editor provides a visual representation of how your PiPs will be organized in the final output. The tools and menus available enable you to define the number of PiPs in a layout, customize their display, and add labels, borders, and audio meters.

For More Information on...

- the menus and options in the Layout Editor, refer to the section "**Layout Editor Interface**" on page 363.

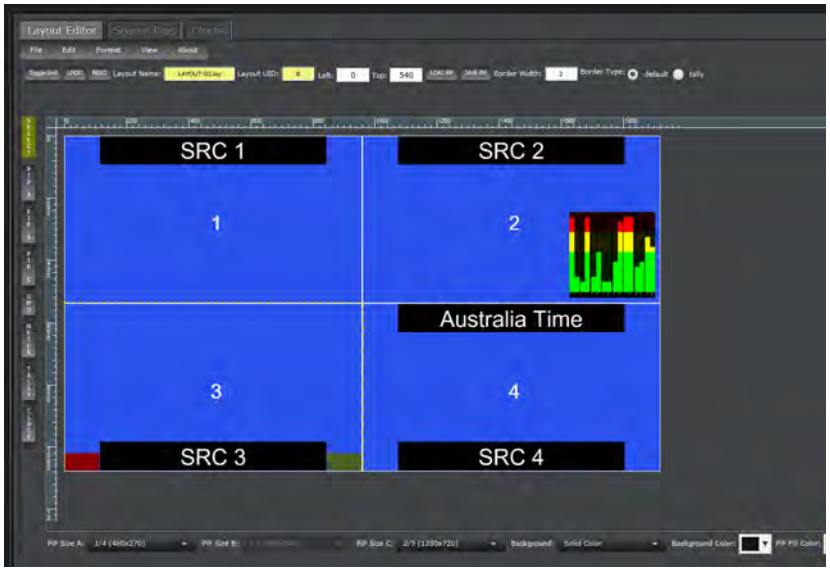


Figure 14.1 Example of a UltriScape Layout Editor Interface — LAYOUT-2.lay Template

Shared and Local PiPs Overview

UltriScape provides two methods for addressing the PiP elements: Shared and Local.

What are Shared PiPs?

Shared PiPs are defined PiPs that may be displayed by any UltriScape output (head). Shared PiPs can lessen the quantity of definitions required when multiple UltriScape heads are required to access many of the same PiPs.

What are Local PiPs?

Local PiPs are PiPs defined for use with a particular UltriScape head. Local PiPs may only be used by the head for which they are defined.

Which PiP method should I choose?

Shared PiPs can be more convenient for multiple UltriScape Head systems where some or all PiPs are shown on more than one Multiviewer head (e.g. PiP 1 on Head 1 is the same as PiP 1 on Head 2). Changing the source for PiP 1 requires one route or configuration change and both UltriScape Head outputs update simultaneously.

Local PiPs offer the advantage of independent control (e.g. PiP 1 on Head 1 is different to PiP 1 on Head 2). Changing the source for both those PiPs will require two routes or configuration changes.

Assigning the UltriScape Destinations

UltriScape Heads (Multiviewer outputs) and PiPs (Picture-in-Picture tiles) are required to be mapped in as logical destinations. To the router control system, they are a destination of the router and may be controlled as such from external controlling devices.

Ensure that for every licensed UltriScape Head:

- Each PiP of an UltriScape Head must be assigned to a destination within the router database.
- Each UltriScape Head must be assigned to a destination within the router database.

Identifying UltriScape Destinations in the Database

The UltriScape Heads and PiPs are identified much like a physical BNC using the standard nomenclature of **Frame.Slot.Port.Type.Channel**.

- UltriScape Local PiPs are identified as **frame.slot n.headx-pip[y].sdi.ch1** where **x** represents the UltriScape Head ID and **y** represents the individual PiP. For example:

	ID	Name	Description	Level 1
MV1 PiP1	65	MV1 PiP1		Ultrix.slot1.head1-pip[1].sdi.ch1
MV1 PiP2	66	MV1 PiP2		Ultrix.slot1.head1-pip[2].sdi.ch1
MV1 PiP3	67	MV1 PiP3		Ultrix.slot1.head1-pip[3].sdi.ch1

- UltriScape Shared PiPs are identified as **frame.slot0.pip[y].sdi.ch1** where **y** represents the individual PiP number. For example:

	ID	Name	Description	Level 1
PiP1	73	PiP1		Ultrix.slot0.pip[1].sdi.ch1
PiP2	74	PiP2		Ultrix.slot0.pip[2].sdi.ch1
PiP3	75	PiP3		Ultrix.slot0.pip[3].sdi.ch1

- UltriScape Heads are identified as **frame.slot n.head[x].sdi.ch1** where **x** represent the Head ID within a given slot (there can be up to 3). For example:

	ID	Name	Description	Level 1
MV1	1	MV1		Ultrix.slot1.head[1].sdi.ch1
DST 2	2	DST 2		Ultrix.slot1.out[2].sdi.ch1
DST 3	3	DST 3		Ultrix.slot1.out[3].sdi.ch1

Assigning an UltriScape Destination

The assignment of UltriScape Heads and PiPs will enable the UltriScape sub-nodes in the Device Tree for further UltriScape configuration.

To assign an UltriScape destination in the database

1. Expand the **Database** node.
2. Double-click the **Destinations** node located under the **Database** node.

   The **Destinations** tab opens. The number of rows are specified in the Destination field of the active database.

✶ If required, you can add Destinations to the list to accommodate the assignment of UltriScape Heads and PiPs.

3. If desired, type a new name for the destination in the **Name** cell as outlined in the procedure "**To specify a label for a destination**" on page 112.
4. In the table of the **Destinations** tab, locate the column for the level.
5. Assign an UltriScape Head to a Destination in the database as follows:
   a. Click the cell of the Destination row in the table to display a list of available Destinations sockets.
   b. Select the UltriScape Head you want to assign.
6. To assign a single PiP to a Destination:
   a. Select the Destination to assign to the PIP.
   b. Perform one of the following:
      - Click the cell of the row in the table to display a list of available Destinations sockets.
      - Choose a PiP from the available **Matrix Outputs** list and click **Assign**.
7. To associate a range of PiPs:
   a. Select the first cell in the table column.
   b. Press and hold **Shift**.
   c. Select the last cell in the table column.
   d. Select a range of PiPs in the available **Matrix Outputs** list with same click, shift-click method.
   e. Click **Assign**.
8. Click **Apply** at the bottom of the **Destinations** tab to apply the changes to the database.

Using the Auto-Fill Function

You can also use the auto-fill function to populate the PiPs in the Destinations database.

When using the auto-fill function, we recommend naming PiPs for a particular UltriScape Head a base name that will distinguish them from PiPs for other UltriScape Heads. For example, using base names of **`S1H1P`**, **`S2H2P`**, and **`S3H3P`** for the first UltriScape Head on Slot 1, the second UltriScape Head on Slot 2, and the third head on Slot 3, respectively, would generate names for PiPs as follows:

```
S1H1P1, S1H1P2, S1H1P3, ...
S1H2P1, S1H2P2, S1H2P3, ...
S1H3P1, S1H3P2, S1H3P3, ...
```

In order to achieve these results the auto-generation would have to be done as three separate operations.

To use the auto-fill function to assign PiPs to destinations

1. Click **Edit** > **Fill**.
2. Set the **Fill Type** to **Custom**.

3. Enter the desired base name in the **Name** field. (e.g. S4H1P)

✶ The starting and count fields define the trailing number for PiP identification.

4. Specify the starting and count values. (e.g. generally PiP range starts at 1)
5. Select the slot.

   It should be of the form `<frame name>.slot<n>.head-pip`, where **n** is the slot of interest on the designated router.
6. Select the port.

   It should be of the form **`<frame name>.slot<n>.head<m>-pip[x]`**, where **m** is the head whose PiPs are being assigned, and **x** is the PIP number. Normally x will be 1 (the first PiP on the UltriScape Head).
7. Select the starting channel.

   This should be of the form **`<frame name>.slot<n>.head-pip[x].sdi.ch1`**.
8. Specify the levels on which the PiPs for the selected UltriScape Head will be active.
9. Click **Assign**.
10. Click **Apply**.
11. Repeat the process for UltriScape Heads whose PiPs will be assigned while ensuring the correct slot, port, and starting channel are selected.

Creating a Layout

UltriScape layouts are created and stored within Ultrix to be assigned to a live UltriScape Head when needed. You create a new layout using one of the default templates or start with a blank layout then add your PiPs based on the selected PiP size settings. Both methods are outlined here.

By default, layouts are created using Local PiPs (for use only on a per head basis). Shared PiPs (for use with any UltriScape Head), require additional configuration. Refer to the section "**Using Shared PiPs**" on page 159 for more information.

Layout Templates

A layout is comprised of a series of tiles organized into a grid layout. Each tile in a layout represents a single Picture in Picture (PiP) element. Each tile displays a number that represents the PiP number. By default, the PiPs are organized with PiP1 in the top left corner of each layout.

Creating a Layout using a Template

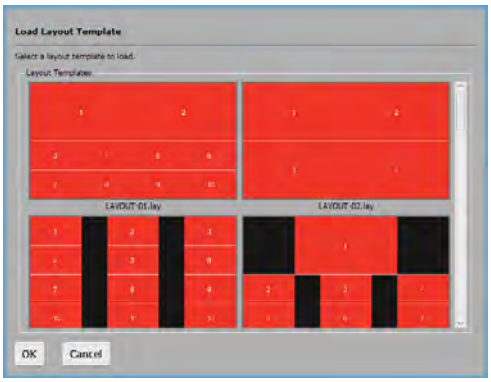
You can create a new layout using one of the default templates that come standard with UltriScape.

To load a layout template

1. Double-click the **Layout Editor** node located under the **Ultriscape** node.

   The **Layout Editor** interface opens.
2. From the main toolbar, select **File** > **Load Layout Template from Ultricore**.

   The **Load Layout Template** dialog opens.



3. Select a template from the provided list.
4. Click **OK**.

   The Layout Templates dialog closes and the UltriScape Layout Editor workspace now displays the selected template layout.

Creating a Custom Layout

Creating a custom layout clears the workspace and enables you to add your Local PiPs in a customized pattern.

To create a custom layout

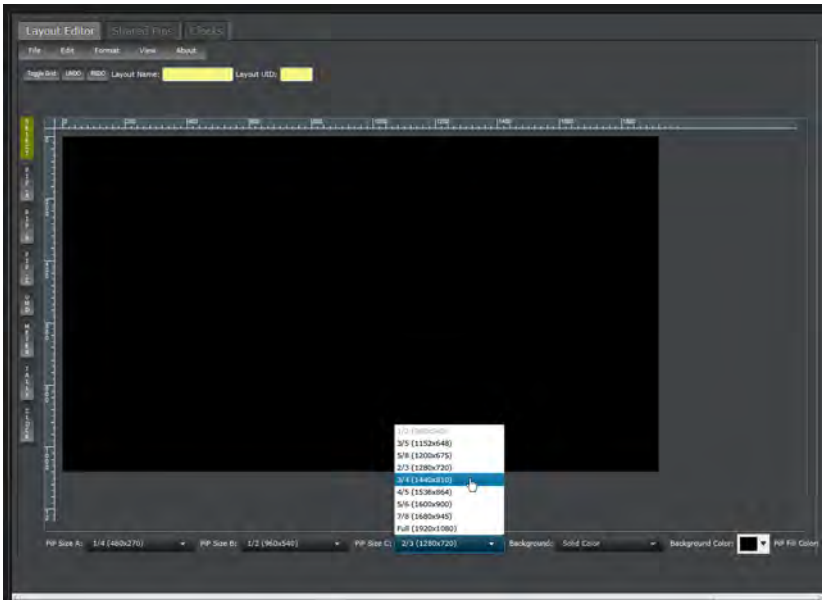
1. Double-click the **Layout Editor** node located under the **Ultriscape** node.

   The **Layout Editor** interface opens.
2. From the main toolbar, select **File** > **New Layout**.

   The **Create Blank Layout** dialog opens.
3. Set the required dimensions for PiP sizes A, B, and C using the applicable fields in the lower toolbar of the Layout Editor.

   In the following example, the user selected a new size for PiP C.

★ It is possible to create a layout with different PiP sizing to the currently configured. The new layout will not output from the Ultriscape head if the PiP A or PiP B tiles do not match the values set in the Configuration > PiP Layout > PiP Size Selection menus. The PiP C tile size is defined by the layout it is in.



4. Click **OK**.

To add a Local PiP to a layout

1. From the **Objects** toolbar, located on the left side of the Layout Editor, choose one of the following:
   - Click **PIP • A** to add a PiP A tile to the layout.
   - Click **PIP • B** to add a PiP B tile to the layout.
   - Click **PIP • C** to add a PiP C tile to the layout.

✶ You many only place one instance of a PiP C tile per layout.

2. If you wish, click **Toggle Grid** to display a grid background (and optionally snap to). The grid can help with the placement of the PiPs on your layout.

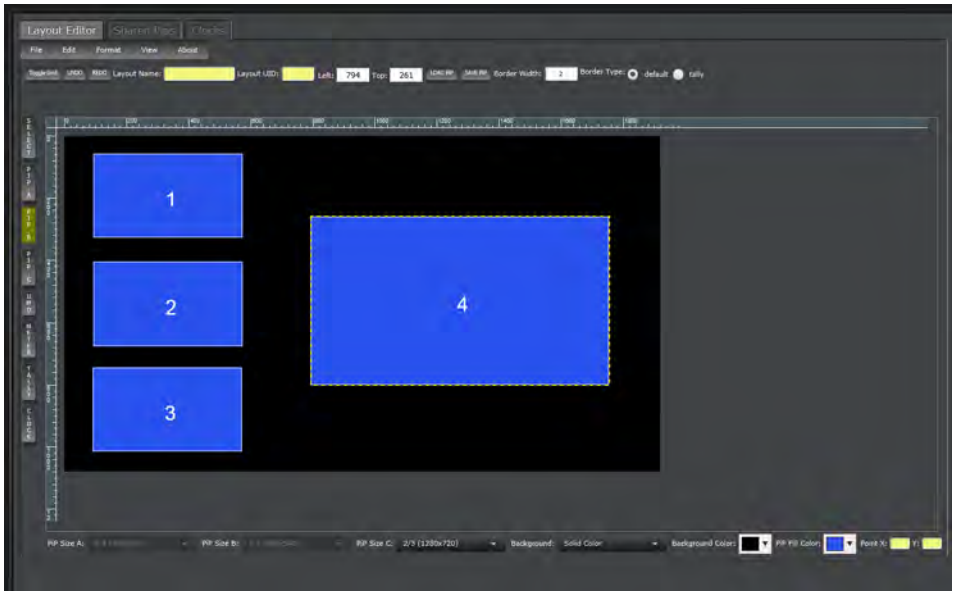
✶ You can change the grid dimensions by selecting **Format** > **Grid** from the main toolbar, specifying the horizontal (h) and vertical spacing (v), then clicking **OK**.

3. On the Layout Editor workspace, select the location for the Local PiP.

✶ For more precise positioning of PiPs on the layout, select **Format** > **Grid** > **Snap To Grid**.

The layout updates to display a new PiP.

In the following example, one large PiP was positioned on the right margin of the workspace and three smaller PiPs were positioned near the left margin.



4. Reposition the PiP by selecting and dragging with your mouse.
   - For fine, accurate movements, the keyboard arrow keys move the PiP in 2 pixel increments.
   - The top left of a PiP may be set by defining the left and top coordinates in the tool bar.
   - When PiPs overlap, a red **Overlap** message displays on the top right of the Layout Editor interface. Overlapping PiPs and/or elements will not function. The layout cannot be saved until the overlap is corrected.

5. Repeat for each PiP you wish to add to the layout.

✶ You may place multiple instances of PiP A and B tiles, but only one instance of the PiP C tile.

6. To save your layout to the system, select **File** > **Save to Ultricore**.

Using Shared PiPs

Shared PiPs are PiPs that may be displayed on multiple UltriScape Heads. Updating the source for shared PiPs updates all Multiviewer layouts that contain that shared PiP definition.

For More Information on...

- the Shared PiP settings, refer to the section "**Shared PiPs Tab**" on page 366.

To configure a Shared PiP

1. Double-click the **Layout Editor** node located under the **Ultriscape** node.

   The **Layout Editor** interface opens.

2. Select the **Shared Pips** tab.

   The **Shared Pips** tab is organized as a table where each row represents a specific Shared PiP.

3. To configure a new Shared PiP, right-click the last row in the table and select **Insert Row Below**.

4. Use the **Mode** field to determine how sources are assigned to the PiP when in a layout regardless of the UltriScape Head. Choose from the following:

   - **Normal** — The PiP monitors the Source that the Destination the PiP is assigned to is currently switched to (e.g. a PiP acts like a regular router destination).
   - **Follow** — The source that the PiP displays is dependent on the source routed to the specified Destination.
   - **Source** — The PiP displays the specified Source in the database.

5. Use the **Source** field to specify the resource that the Shared PiP will monitor. This applies to all layouts with this Shared PiP in all UltriScape Heads.

✶ The list of available resources depends on the database currently loaded.

6. If the **Mode** is set to **Normal**, use the **Audio Mode** field to configuring the audio meters for the Shared PiP in a layout regardless of the UltriScape Head. Choose from the following:

   - **Logical** — the audio bars on the Shared PiP displays audio levels based on a source's logical definition. The bars index from left to right (meter port channel 1 represents the leftmost audio meter bar, and meter port channel 16 represents rightmost possible audio meter bar).
   - **Physical** — the audio bars on the Shared PiP represents the audio that is embedded in the SDI stream.

7. To configure the channel numbering for the audio meters in the Shared PiP:

   a. Select the **Audio Bars** cell for the Shared PiP.

      The **Audio Channels** dialog opens.

   b. If the **Audio Mode** is set to **Logical**, select the audio levels to map to the audio meters.

✶ To select multiple levels/channels, press **Ctrl** then click the levels/channels to include.

   c. If the **Audio Mode** is set to **Physical**, select the audio channels to map to the audio meters.

      The Audio Bars cell updates to display the selected items, separated by commas.

8. Click **Apply** to save your changes.

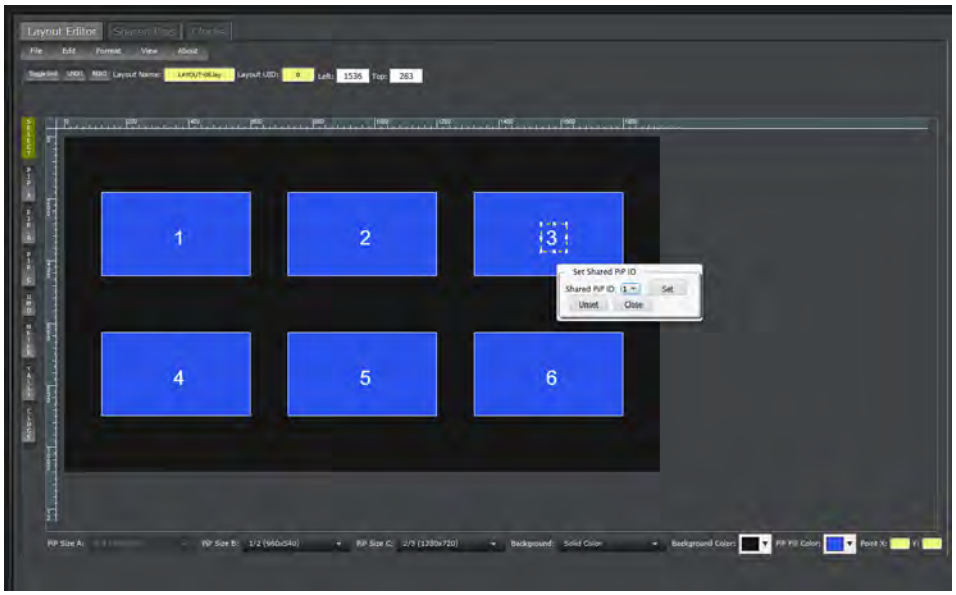
Adding a Shared PiP to a Layout

You can add a Shared PiP to any layout.

To add a Shared PiP to a layout

1. Create or load a layout in the UltriScape Layout Editor.
2. Right-click the PiP Number on the PiP tile you wish to convert to a Shared PiP.

   The **Set Shared PiP ID** dialog opens. In the following example, PiP 3 was selected.



3. Use the **Shared PiP ID** menu to select the ID of the Shared PiP you want to add.
4. Click **Set**.

   The **Set Shared PiP** dialog closes and the layout updates to display the Shared PiP ID inside the selected PiP.
5. To save your layout to the system, select **File** > **Save to Ultricore**.

Changing the Layout Background

The UltriScape Layout editor provides the option to insert a background color or background image. This will display in the space between PiPs.

To change the background color of a layout

1. Create a new layout as outlined in the section "**Creating a Layout**" on page 156 or load an existing layout as outlined in the section "**Loading a Previously Saved Layout**" on page 176.
2. From the bottom toolbar, set the **Background** menu to **Solid Color**.
3. Select the **Background Color** menu.
4. Select a color from the provided color grid in the dialog.
5. Click **Choose** to update the layout background.

To change the background image of a layout

1. Create a new layout as outlined in the section "**Creating a Layout**" on page 156.
2. From the top toolbar, select **File** > **Upload Background Image**.

   The **Upload Background Image** dialog opens.
3. Click **Choose File**.

   The **Open** dialog opens.
4. Navigate to the image file you want to display, then click **Open**.

✶ Images must be 1920x1080 pixels or less.

   The **Open** dialog closes and the **Upload Background Image** dialog updates with the new image.
5. Click **OK** to confirm the file upload to Ultrix.
6. Use the **Background** menu, located in the bottom toolbar, to select the image file.

   The layout displays the selected image.

Editing the Border for a PiP

You can specify the border thickness for a single PiP or all the PiPs in a layout. **Figure 14.2** shows a layout of four PiPs where PiP1 and PiP4 have a border set to 16. If the border is for a tally, as seen in PiP 4, the border color is always to dark blue. Refer to the section "**Adding a Tally Border to a PiP**" on page 197 for details.

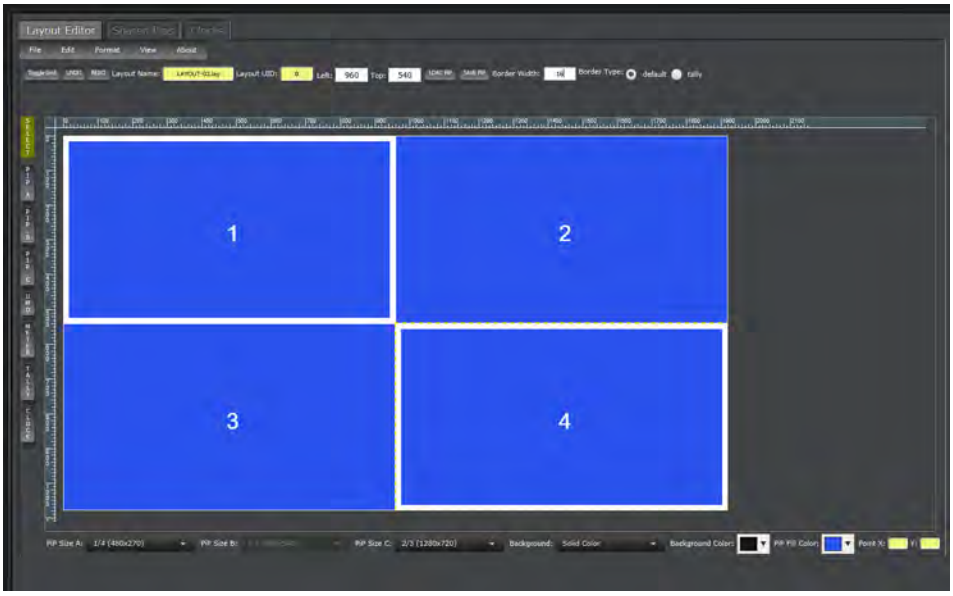
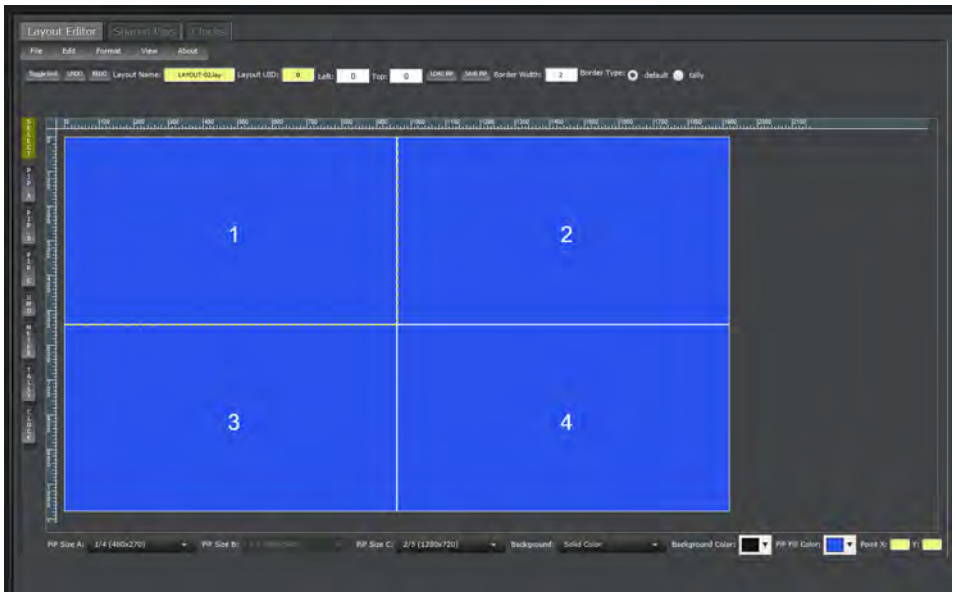


Figure 14.2 Example of Borders

To edit the border width for a PiP

1. Create a layout in the UltriScape Layout Editor as outlined in the section "**Creating a Layout**" on page 156.
2. From the **Objects** toolbar, click **SELECT**.
3. Select the PiP to edit the border width for.

   The PiP displays with a dotted yellow border and the **Border Width** field now displays under the Main toolbar. In the example below, PiP1 is selected.



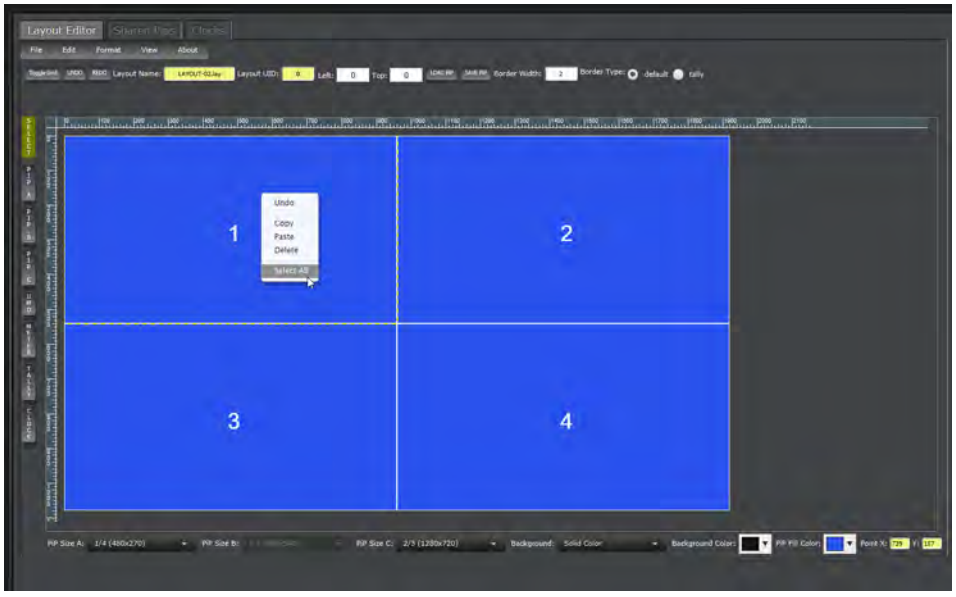
✶ Press **Ctrl** then click the PiP on the layout to unselect a single PiP.

4. From the top toolbar, use the **Border Width** field to specify the border width in number of pixels and lines.
5. Press **Enter** to apply the new width value.

To edit the border width for all PiPs in a layout

1. Create or load a layout in the UltriScape Layout Editor.
2. Right-click any PiP in the layout.
3. Click **Select All**.

   The PiPs display with a dotted yellow border and the **Border Width** field now displays under the Main toolbar.



4. In the **Border Width** field, specify the border width in number of pixels and click **Enter**.

   The border width for each PiP in the layout updates to the new size.

Adding Objects to a Layout

Once a layout is created, you can add objects using Edit Mode. This section outlines how to add specific object types to a single layout.

What is a layout object?

An object is any element in a layout that is not a direct video source from the router. For example, a block of audio meters, or a text label. The following objects can be added to an UltriScape layout.

- **UMD Labels** — This object is a text area. The Under Monitor Display (UMD) or label can display static text, database names or text from a TSL tally manager device.
- **Audio Meters** — Each PiP can display up to 16 channel of audio meters. The audio meters can be positioned anywhere on the layout including outside of a PiP.
- **Tally Borders, Labels, and Lamps** — When tallies are enabled in a database, Ultrix will track the current tally status for all sources that have an associated Tally Display ID. When a PiP has a tally display object defined (such as a label, lamp, and/or border), the current source that is displayed on the PiP determines what is shown on the UltriScape Head display (based on the associated tally ID for that source). Refer to the chapter "**Tallies**" on page 189 for details.
- **PiP Borders** — You can adjust the size of each PiP border. A global setting sets the border to overlay on top of the video, or resize the video to fit within the border confines.
- **Clocks** — You can add a clock that reports the time of day, counts down from a set point, or counts up from zero.

Managing the Objects in a Layout

You can add new objects to PiPs in a layout using the options in the Objects toolbar. Simply select a PiP in the layout, select the tool for the object type you want to add, and draw a box to place the object on the PiP. Each object provides a series of menus for configuring the look and feel of the object on a PiP. You can add multiple objects to a single PiP, but objects cannot span multiple PiPs.

Editing an Object

Any object in a layout can be re-sized, re-positioned, or deleted. The available configuration options for the object depends on its type.

Grouping Objects in a Layout

You can select multiple PiPs in a layout by pressing **Ctrl** and then clicking the PiPs you want to group together. This enables you to quickly select and edit the properties of specific PiPs.

Cut/Paste Objects

You can select an object on a PiP, copy it, and then paste it to another location within that same PiP, to a different PiP in the same layout, or to a PiP in a separate layout.

Adding a UMD/Label

Labels can be added PiPs to provide source information. A PiP label (or Under Monitor Display) shows the database name for the currently displayed source (this will update when a different source is routed to the PiP). A PiP label may overlay the PiP image area, or be positioned outside the PiP if there free space available.

Additionally labels may also be configured to show static text or tally text from a tally management system.

When you place a label on a layout, the menus under the main toolbar update to include options for configuring your label. The top left corner of the label is defined by the **Top** and **Left** fields (in absolute pixels). The label height and width are defined by the corresponding fields.

The label type options change depending if placed on a PiP, or placed in free space:

- on a PiP — choose between PiP Source or Static Text
- in free space — choose between Static Text or the UltriScape Head identifier

To create a label using the database name as the content

1. Create or load a layout in the UltriScape Layout Editor.
2. From the **Objects** toolbar, click **UMD**.
3. Select the PiP to add the label to.

   The PiP displays a new text area. It will automatically size to proportionally to the size of PiP the label was placed on.

   The Label Settings displays under the main toolbar.
4. Click and drag the label to a position outside of the PiP area if required.

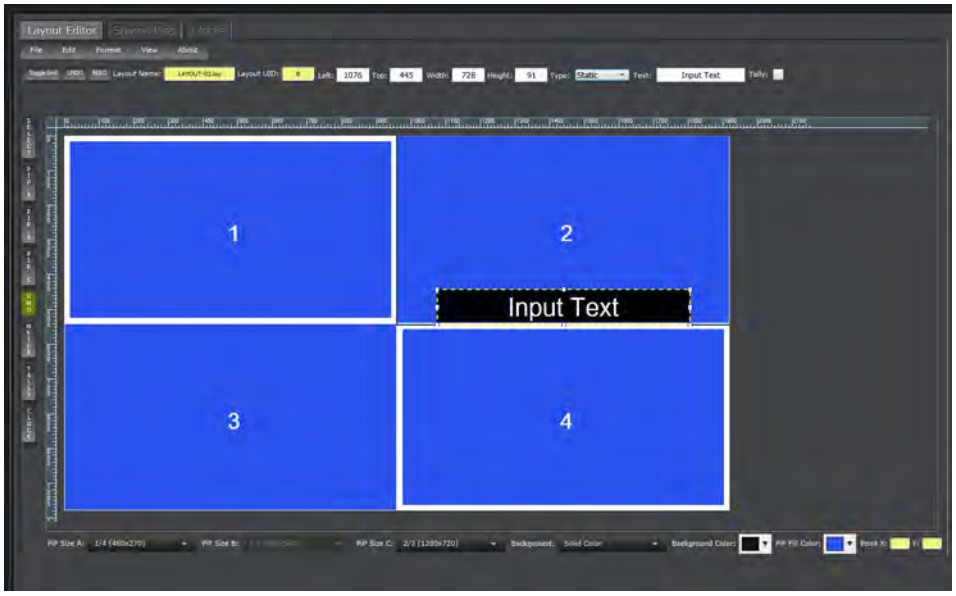
For More Information on...

- adding a tally label, refer to the section "**Adding a Tally Label to a PiP**" on page 198.

To add static text to a label

1. From the **Objects** toolbar, click **SELECT**.
2. Select the label you wish to edit.
3. From the **Type** menu, select **Static** to display the **text** field under the main toolbar.

   The text box on the PiP automatically displays "`Input Text`".



4. In the **text** field, enter the content to display in the label for the PiP to a maximum of 121 characters. The text automatically re-sizes to fit inside- the text box.
5. Click **Enter**.

   The label on the PiP automatically updates with the new text.

To re-size a label

1. From the **Objects** toolbar, click **SELECT**.
2. Select the label box you wish to re-size.

   The box displays with a dotted yellow border with white nodes at the corners.

3. Perform one of the following:
   - Hover your cursor over the label box and expand its height using the provided tools; or
   - Use the height menu to specify the number of pixels for the box height.

   The text in the box automatically adjusts to the new box dimensions.

To re-position a label

1. From the **Objects** toolbar, click **SELECT**.
2. Select the label box you wish to move.

   The box displays with a dotted blue border with white nodes at the corners.
3. Perform one of the following:
   - Hover your cursor over the label box and drag it into the new position on the PiP; or
   - Use the top menu to specify the number of pixels to offset the box from the top of the PiP.
   - Use the keyboard arrow keys to nudge selected objects around a PiP.

Adding a UMD Label to the Background

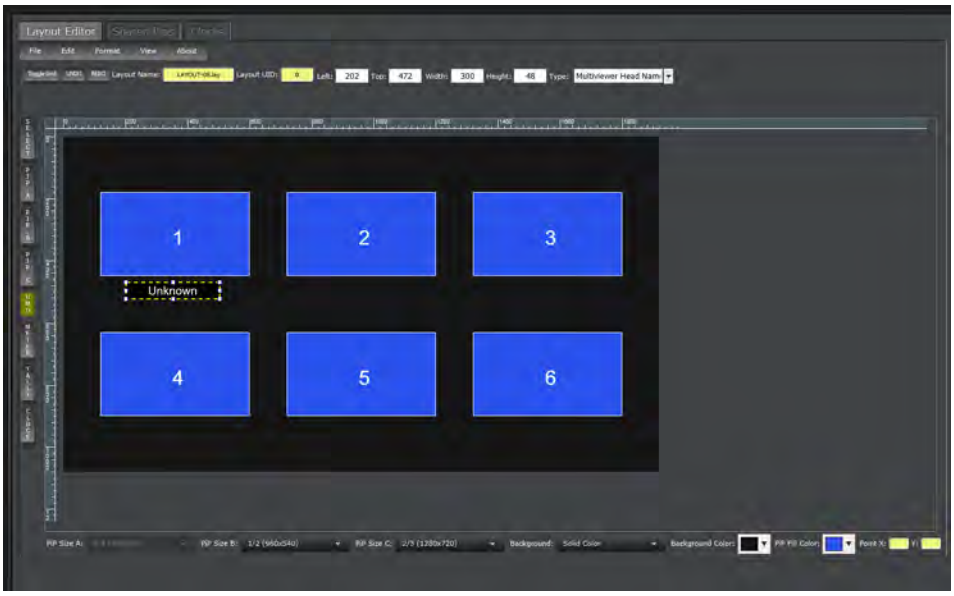
Layouts with blank areas, or sections where no PiP is positioned, can also display a label outside of the PiPs but still on the layout background. These labels can display static text or the Multiviewer Head label. By default, the width of the label is set to 300 pixels, and the height is set to 48 pixels.

To add a UMD label to free space

1. Create or load a layout in the UltriScape Layout Editor. Ensure the layout includes a blank area to position the UMD label in.
2. From the **Objects** toolbar, click **UMD**.
3. Click on the free space between PiPs to create a static text label.

✶ If you wish the label to be controlled via the PiP source, click the PiP to create a label on the PiP, then select and drag the label to free space.

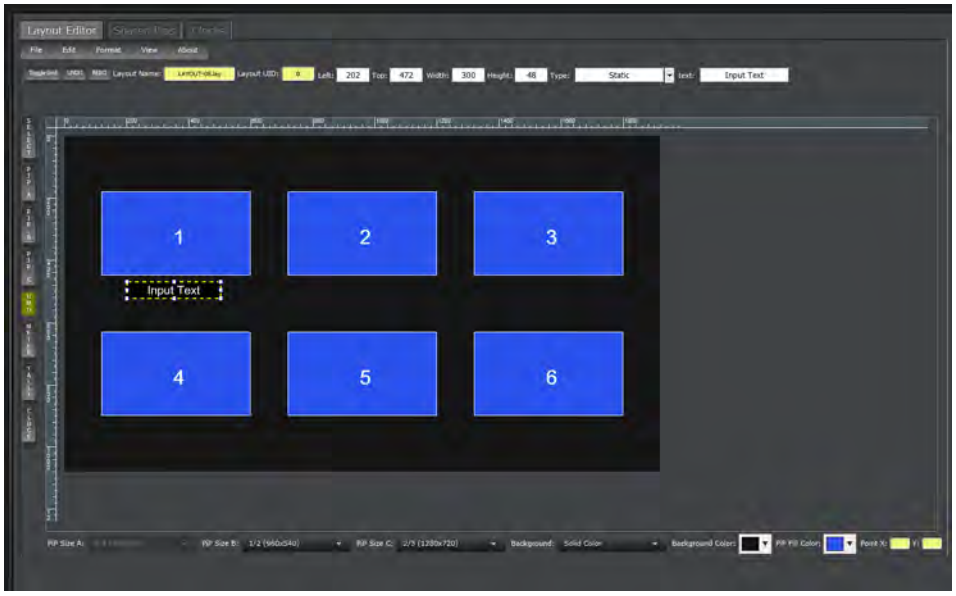
The text box on the layout automatically updates with "`Unknown`" and the **Type** menu displays.



To create a UMD label with static text

1. Create or load a layout in the UltriScape Layout Editor.
2. Ensure the layout includes a blank area to position the UMD label in.
3. From the **Objects** toolbar, click **UMD**.
4. Draw a box for the label on the layout (but not on a PiP).
5. From the **Type** menu, select **Static** to display the **text** field under the main toolbar.

   The text box updates to display "**`Input Text`**".



6. In the **text** field, enter the content to display in the label.
7. Click **Enter**.

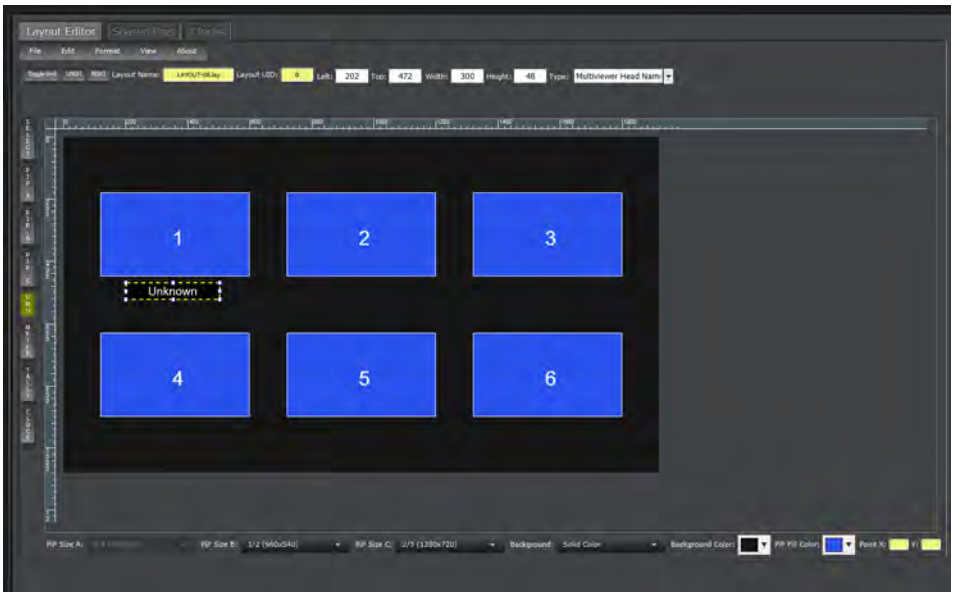
   The text box on the PiP automatically updates with the new text.

To create a UMD label that displays the identifier of the UltriScape Head output

1. Create or load a layout in the UltriScape Layout Editor.
2. Ensure the layout includes a blank area to position the UMD label in.
3. From the **Objects** toolbar, click **UMD**.
4. Draw a box for the label on the layout (but not on a PiP).
5. Select **Multiviewer Head Name** from the **Type** menu.

   The text box on the PiP updates to display "**`Unknown`**".

✶ The label will automatically update when the layout is assigned to an UltriScape head. Refer to "**Assigning a Layout to an UltriScape Head**".



Adding a Block of Audio Meters

For each PiP, you have the ability to display up to 16 channels of audio in a single block of audio meters. The meters can be positionable individually anywhere in the layout (even outside of the PIP). The meters display the peak level of the waveform no matter how brief its duration. The audio meters report the audio peak level measurements for your audio channels. Measurement units are in decibel full scale (dBFS) where 0dBFS is the maximum digital value. Each audio meter displays audio level information as illustrated in **Figure 14.3**.

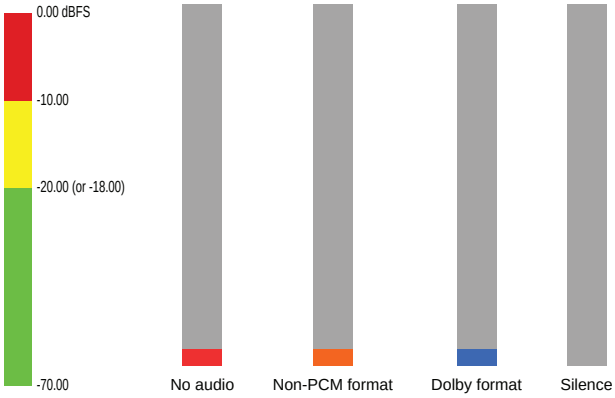


Figure 14.3 Illustrative Example of Audio Level Information

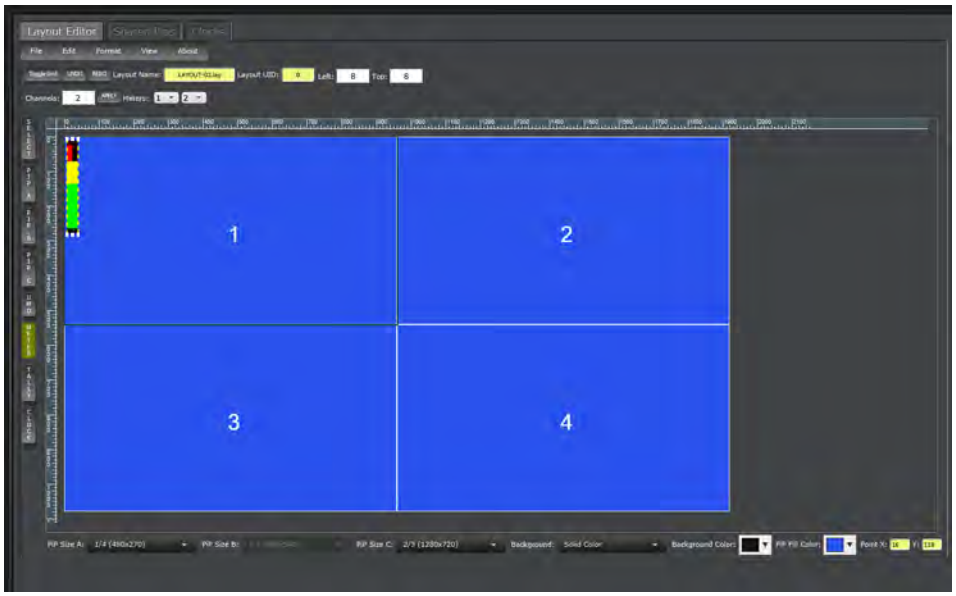
Audio meters may be configured in either **Physical** or **Logical** mode. Physical mode ensures the meter responds to audio that is associated with SDI currently feeding the PiP. Logical mode allows other audio sources to display.

To add an audio meter to a PiP

1. Create or load a layout in the UltriScape Layout Editor.
2. From the **Objects** toolbar, click **METER**.
3. Use the mouse pointer to indicate where to create the box for the audio meter on a PiP of the layout.

   The box auto-populates with two static audio meters and the Audio Meter menus display under the main toolbar. An error message displays in the top right corner of the Layout Editor interface when a block of audio meters overlaps more than one PiP or another object in a layout.

★ By default, the audio meters are aligned by the upper left corner of the selected PiP. Ensure that you click in a region that allows the meter to be positioned within the PiP to avoid the overlap.



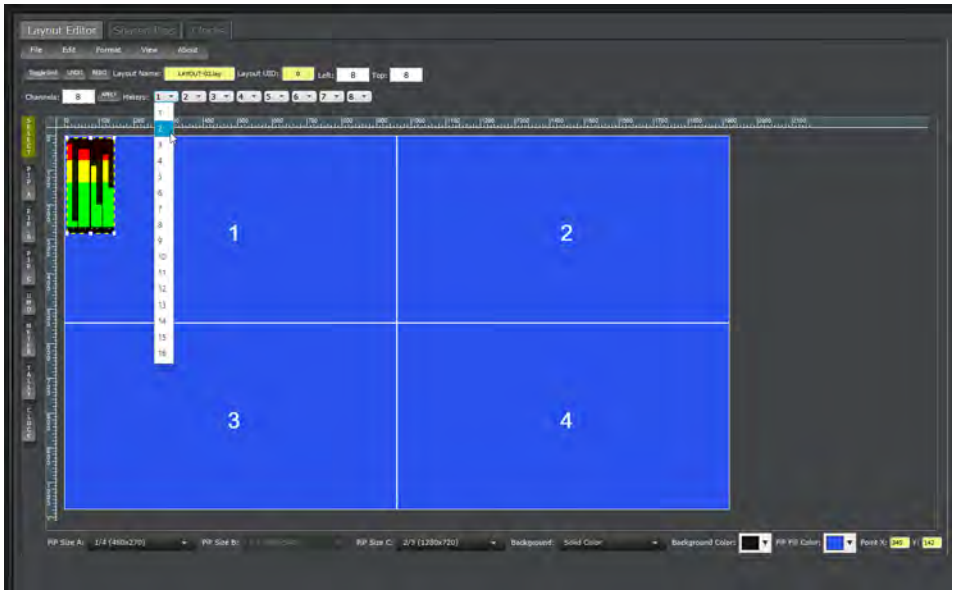
4. To place audio meters outside a PiP:
   a. Place the audio meters on a PiP.
   b. Click and drag the meters to the required location on the layout.
5. Use the **Number of Channels** field to specify how many channels to display.

To assign an audio channel to a meter

1. From the **Objects** toolbar, click **SELECT**.
2. Select the audio meters you want to configure.

   The Audio Meter menus display under the main toolbar. The selected meters display a dotted yellow border.
3. Assign the first meter to a channel using the **Meter Channels** menu.
4. Click **Assign Channels** to update the channel assignments.

   The channel assigned to the first meter determines the series of channels displayed in the meters. In the example below, a meter block of 8 channels was created in PiP 1.



To re-position a block of audio meters

1. From the **Objects** toolbar, click **SELECT**.
2. Select the block of audio meters you wish to re-position.

   The audio meters display with a dotted yellow border.
3. Perform one of the following:
   - Click and drag the audio meters to their new position on the layout; or
   - Use the keyboard arrow keys to nudge the audio meters on a PiP.

Assigning Logical Audio Meter Destinations

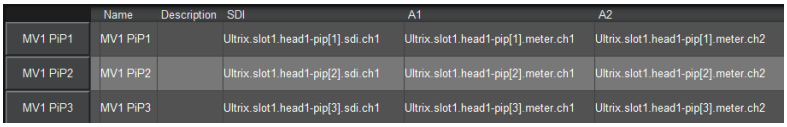
Audio meters may be set to Logical Mode to allow the display of audio levels of sources not associated with the video currently displayed on a PiP. The process is similar to defining a standard destination for the video level and any audio levels in the system.

Keep the following in mind when assigning logical audio meters:

- Local PiP metering is identified by **frame.slot n.head x.pip[y].meter.ch z** where **x** represents the UltriScape Head number, **y** represents the PiP number, and **z** represents the audio channel number.
- Shared PiP metering is identified by the **frame.slot 0.pip[y].meter.ch z** where **y** represents the PiP number, and **z** represents the audio channel number.

To assign metering for logical operation

1. Assign a PiP to the video level.
2. Assign a PiP meter to the audio levels.



	Name	Description	SDI	A1	A2
MV1 PiP1	MV1 PiP1		Ultrix.slot1.head1-pip[1].sdi.ch1	Ultrix.slot1.head1-pip[1].meter.ch1	Ultrix.slot1.head1-pip[1].meter.ch2
MV1 PiP2	MV1 PiP2		Ultrix.slot1.head1-pip[2].sdi.ch1	Ultrix.slot1.head1-pip[2].meter.ch1	Ultrix.slot1.head1-pip[2].meter.ch2
MV1 PiP3	MV1 PiP3		Ultrix.slot1.head1-pip[3].sdi.ch1	Ultrix.slot1.head1-pip[3].meter.ch1	Ultrix.slot1.head1-pip[3].meter.ch2

3. Refer to the section "**Configuring the Audio Meter Logical Source Mode**" on page 184.

Adding a Clock

When creating layouts with a clock object, you first must define the types of clock(s) available to add to a layout. The **Clocks** tab in the **Layout Editor** is used to define and list the available clocks.

Defining a Clock

A clock can perform one of the following functions:

- Time-of-day — this clock is a 24 hour display of system time. You can add an offset to display time zone relative to the system time. By default, one clock is defined as this type.
- Count down — the clock counts down from a set point. This may be controlled via RossTalk commands or the clock control panel.
- Stop watch — the clock counts up from a value of 00:00:00. This may be controlled via RossTalk commands or the Clock Control interface.

To define a clock

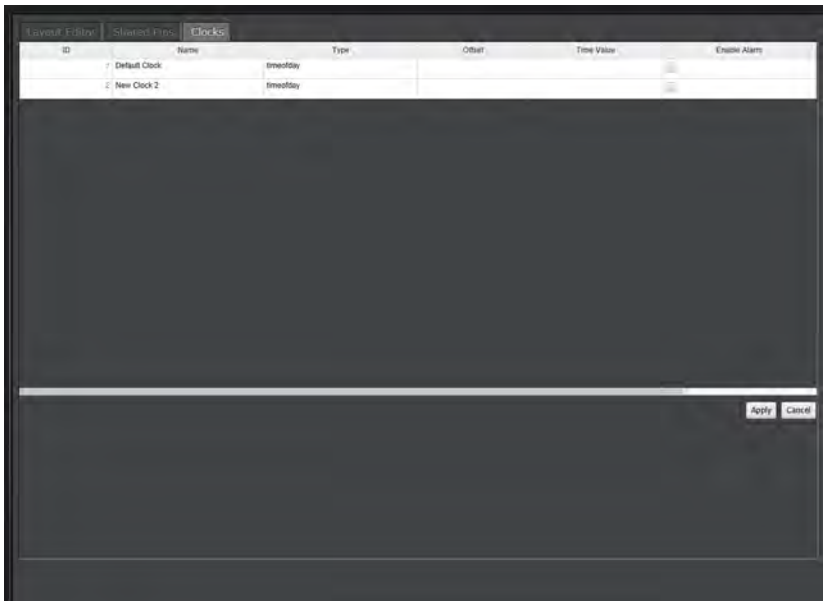
1. Double-click the **Layout Editor** node located under the **Ultriscape** node.

   The **Layout Editor** interface opens.
2. Select the **Clocks** tab.

The **Clocks** tab is organized as a table where each row represents a specific clock that is available to add to your layouts.

3. Right-click the last row in the tab.
4. Select **Insert Row Below**.

   A new blank row displays in the tab. The text "**`New Clock #`**" displays in the **Name** cell of the new row. In the example below, a new row was created for "New Clock 2".



5. To name the clock:
   a. Select the **Name** cell in the new row.
   b. Type a unique identifier in the **Name** cell.

      This text will be used to identify this clock object in the Layout Editor menus.
6. To assign a function to the clock:
   a. Right-click the **Type** cell in the new row.
   b. Select an option. Refer to **Table 30.52** on page 367 for a list of options.
7. Use the **Offset** menu to specify an offset (hh:mm) relative to the system clock.

✶ This value is only applicable when **Type** is set to **timeofday**.

8. Use the **Time Value** menu to specify the timer start value (hh:mm:ss).

✶ This value is only applicable when **Type** is set to **countdown**.

9. Click **Apply**.

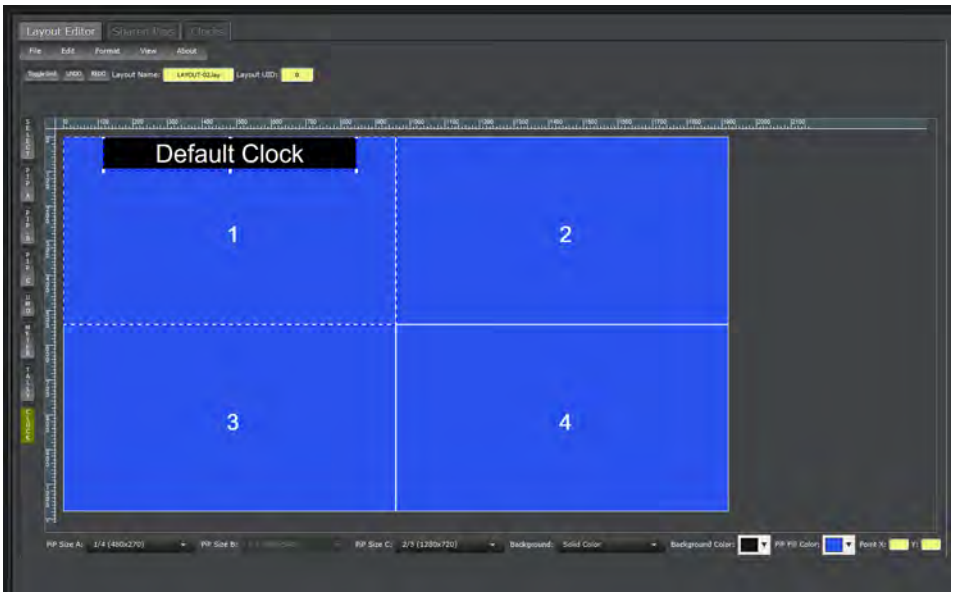
Adding a Clock to a Layout

A clock may be placed on a PiP or the layout background.

To add a clock to a PiP

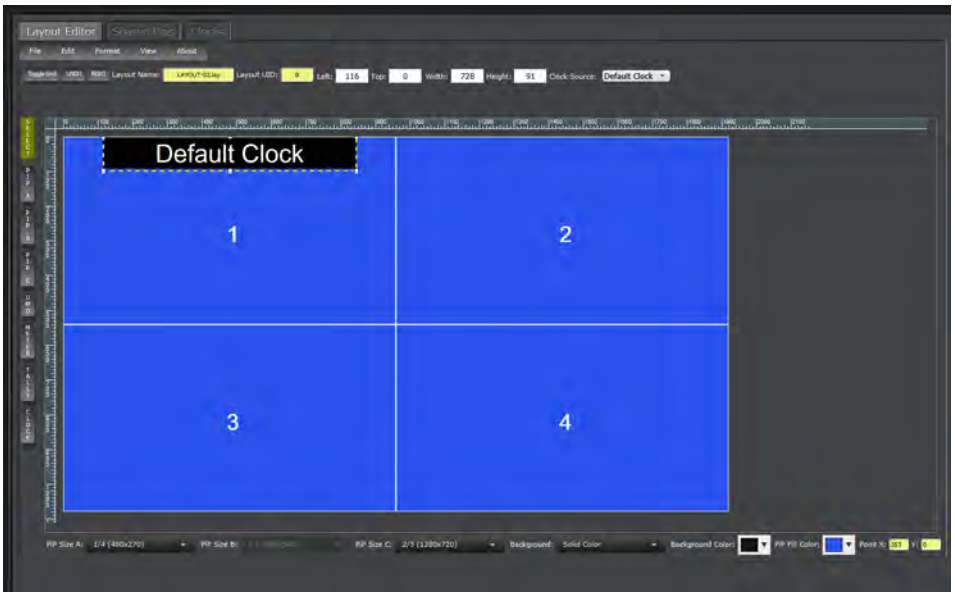
1. Create or load a layout in the UltriScape Layout Editor.
2. From the **Objects** toolbar, click **CLOCK**.
3. Use the mouse pointer to indicate where to create the box for the clock on a PiP of the layout.

   The box auto-populates with the text "**`Default Clock`**".



4. From the **Objects** toolbar, click **SELECT**.
5. Select the clock box you created in step 3.

   The Clock menus display under the main toolbar.



6. Use the **Clock Source** menu to specify the clock to use in the clock selected box.

   The box auto-populates with the clock function you selected.

✶ There may be only four clocks in a horizontal line across the layout. The bounding box (dotted outline) of small clocks increases to indicate this.

Copying Objects in a Layout

Using hot-keys, you can quickly select, and copy individual or groups of objects from one PiP to another PiP, multiple PiPs, or to a PiP in another layout. When you select a PiP, all of its associated objects are also selected (as a group) and can be move or re-sized as a group. Clicking the PiP again, or any of the objects, will then select that object only.

To copy a single object in a PiP

1. Create or load a layout in the UltriScape Layout Editor.
2. Configure the object of the PiP as required.
3. From the **Objects** toolbar, click **SELECT**.
4. Select the object in the PiP.

   The object displays a dotted yellow border.
5. Press **Ctrl** + **C** or right-click the object and select **Copy**.

To copy all objects in a single PiP

1. Create or load a layout in the UltriScape Layout Editor.
2. Configure the objects of the PiP as required.
3. From the **Objects** toolbar, click **SELECT**.
4. Select the PiP with the objects you want to copy.

   The PiPs displays a dotted yellow border.
5. Press **Ctrl** + **C** or right-click the object and select **Copy**.

To copy a selection of objects in a single PiP

1. Create or load a layout in the UltriScape Layout Editor.
2. Configure the objects in your layout as required.
3. From the **Objects** toolbar, click **SELECT**.
4. Select the first object you want to copy.

   The object displays a dotted yellow border.
5. Press and hold **Ctrl** as you select additional objects to copy.

   The additional selected objects now display a blue border.
6. Press **Ctrl** + **C**.

Pasting Objects in a Layout

Using hot-keys, you can quickly paste objects from one PiP to another PiP, multiple PiPs, or to a PiP in another layout. If you are pasting the contents of one PiP to another PiP of a different size, the objects are automatically re-sized to fit the new PiP. The position of the objects within the new PiP reflects the position in the original PiP.

✶ An object is pasted where your cursor was last positioned within the selected PiP. For example, if you selected a PiP by clicking in its center, the object will be pasted to the center of the new PiP.

To paste an object to a PiP in the same layout

1. Copy the object using one of the methods in the section "**Copying Objects in a Layout**" on page 171.
2. From the **Objects** toolbar, click **SELECT**.
3. Select the PiP to paste the object into.

   The PiP displays with a dotted yellow border.
4. Press **Ctrl** + **V**.

   A copy of the object is added to the selected PiP.

✶ If the PiP that the object is pasted into is a different size from the original PiP, an error message displays alerting you that the pasted object now straddles multiple PiPs.

To paste an object to multiple PiPs in the same layout

1. Copy the object using one of the methods in the section "**Copying Objects in a Layout**" on page 171.
2. From the **Objects** toolbar, click **SELECT**.
3. Select the PiPs to paste the object into.

   The selected PiPs display with a dotted yellow border.
4. Press **Ctrl** + **V**.

   A copy of the object is added to all the selected PiPs.

To paste an object to a PiP of a different layout

1. Save the changes to the current layout if required as outlined in the section "**To save a layout to the local DashBoard client computer**" on page 175.
2. Copy the object(s) using one of the methods in the section "**Copying Objects in a Layout**" on page 171.
3. Load the layout you wish to paste the object(s) into as outlined in the section "**To load a layout template**" on page 156.
4. From the **Objects** toolbar, click **SELECT**.
5. Select the PiP to paste the object(s) into.

   The PiP displays with a dotted yellow border.
6. Press **Ctrl** + **V**.

   A copy of the object(s) is added to the selected PiP.

✶ If the PiP that the object is pasted into is a different size from the original PiP, an error message displays alerting you that the pasted object now straddles multiple PiPs.

Using PiP Templates

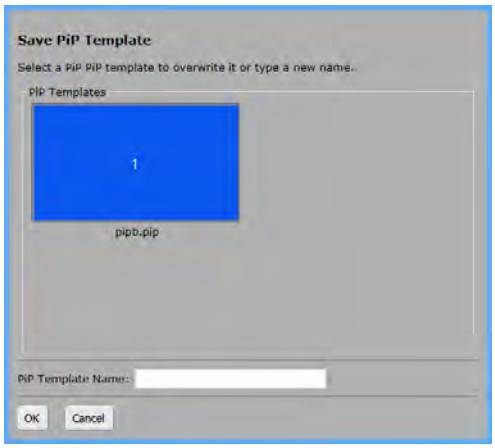
Once you have configured a PiP, you can save it as a PiP template to be applied to other PiPs in the same layout, or other active layouts. Note that a PiP template only captures the objects and their placement on the PiP and not the PiP Simulation Color.

To save a PiP as a new template

1. Create or load a layout in the UltriScape Layout Editor.
2. Configure the objects of the PiP as required.
3. From the **Objects** toolbar, click **SELECT**.
4. Select the PiP.

   The PiP displays with a dotted yellow border.
5. From the main toolbar, click **SAVE PiP**.

   The **Save PiP Template** dialog opens.



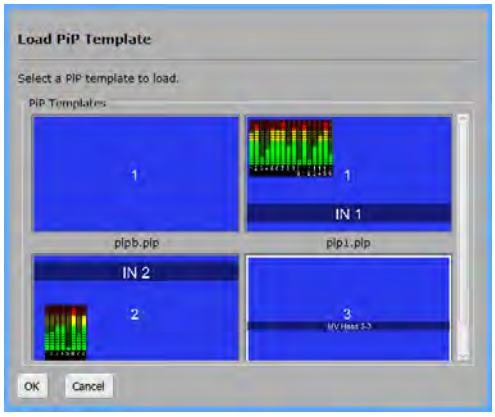
6. In the **PiP Template Name** field, type a unique identifier.
7. Click **OK** to save the current PiP settings as a new PiP template and close the dialog.

To apply a PiP template

1. Create or load a layout in the UltriScape Layout Editor.
2. From the **Objects** toolbar, click **SELECT**.
3. Select the PiP to apply the template to.

   The PiP displays with a dotted yellow border.
4. From the main toolbar, click **LOAD PiP**.

   The **Load PiP Template** dialog opens.

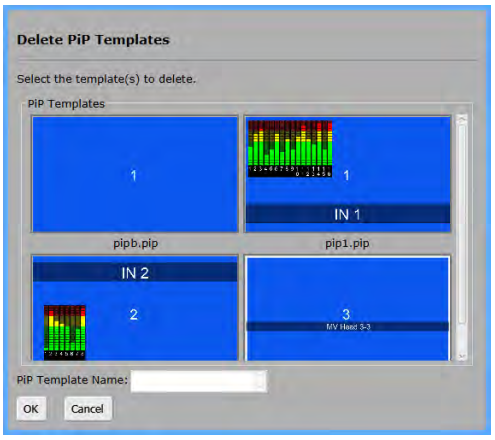


5. Select a template from the list.
6. Click **OK** to apply the template to the selected PiP and close the dialog.

To delete a PiP template

1. From the main toolbar, select **File** > **Delete PiP**.

   The **Delete PiP Templates** dialog opens.



2. Select a template from the list.
3. Click **OK** to apply the template to the selected PiP and close the dialog.

   Any PiPs that had the template applied are not affected, but the PiP template will no longer be made available for applying to future PiPs.

Saving a Layout to the Multiviewer System

Before a layout can be assigned to a UltriScape Head, you must first publish the layout and make it available to the Multiviewer system. Once a layout is published, it is available for use by all UltriScape Heads in your routing system and appears in the Activate Layout area of the UltriScape Head interface.

To save a layout to the database

1. Create or load a layout in the UltriScape Layout Editor.
2. Edit your PiPs as required.
3. Save your layout changes.
4. From the main toolbar, select **File** > **Save to Ultricore**.

   The **Save Layout** dialog opens.
5. To overwrite a previously published layout in the Ultricore system:
   a. Select a layout to overwrite from the provided list.
   b. Click **OK**.
6. To publish the layout as a new layout in the Ultricore system:
   a. Type a unique identifier for the layout in the **Layout Name** field.
   b. Click **OK**.

Saving a Layout as a Local Copy

When you save a layout, it saves a local copy to the computer running your DashBoard client. To make the layout available to the routing system, you must publish the layout as outlined in "**Saving a Layout to the Multiviewer System**" on page 175.

To save a layout to the local DashBoard client computer

1. Create or load a layout in the UltriScape Layout Editor.
2. Edit your PiPs as required.
3. From the main toolbar, select **File** > **Save to Local**.

The **Save to Local** dialog opens.

4. Type a unique identifier for the layout in the Layout Name field.
5. Click **OK** to save your changes.

   The **Save to Local** dialog closes.

Loading a Previously Saved Layout

Loading a saved layout automatically clears the Layout Editor workspace.

To load a previously saved local layout

1. From the main toolbar, select **File** > **Load from Local**.

   The **Open Layout** dialog opens.
2. Select a layout from the provided list.
3. Click **OK**.

   The Load Layout dialog closes and the UltriScape Layout Editor workspace updates with the selected layout.

To load a previously saved layout in Ultricore

1. From the main toolbar, select **File** > **Load from Ultricore**.

   The **Load Layout** dialog opens.
2. Select a layout from the provided list.
3. Click **OK**.

   The Load Layout dialog closes and the UltriScape Layout Editor workspace updates with the selected layout.

Managing your Layouts

A layout can be archived by saving it as a *.lay file to a specified location. This enables you to import and export an archived layout.

✶ This feature requires DashBoard v8.2 or higher and Ultrix software version 2.0 or higher.

Exporting a Layout

You create an archive of a layout (as a *.lay file) using the options in the **System Status** > **Transfer** tab.

✶ The following information is not captured: hardware specifics, and license settings.

To export an UltriScape layout

1. In the Tree View of DashBoard, double-click the **System Status** node.

   The **System Interfaces** display in the DashBoard window.
2. Select the **Transfer** tab.
3. Select the **UltriScape Layout** tab.
4. Locate the **Export UltriScape Layout** area on the tab.
5. Use the **Layout** field to select the layout to export.
6. Click **Browse...** to specify the location to save the *.lay file to.

   The **Save As** read-only field updates with the selected path and layout name.
7. Click **Export**.

   The **Downloading Archive** dialog opens to report the status of the export.

Importing a Layout

Once a layout is imported from the archive to your system, you can select it from the list of layouts to load in the **UltriScape** > **Layout Editor** > **Load from Local** menu and the **Head Selection** > **Activate Layout** area.

To import an UltriScape layout

1. In the Tree View of DashBoard, double-click the **System Status** node.

   The **System Interfaces** display in the DashBoard window.
2. Select the **Transfer** tab.
3. Select the **UltriScape Layout** tab.
4. Locate the **Import UltriScape Layout** area.
5. Select the *.lay file you wish to import as follows:
   a. Click **Browse...**

      The **Open** dialog opens.
   b. Use the **Open** dialog to specify the *.lay file to import.
   c. Click **Open** to close the dialog and load the file.
6. Click **Import**.

   The **Uploading Archive** dialog opens to report the status of the transfer.
7. Verify that the imported layout is now available for selection in the following locations:
   a. **UltriScape** > **Layout Editor** > **Load from Ultricore** menu
   b. **UltriScape** > **Head Selection** > **Activate Layout** area

Deleting a Layout

✶ If the layout is not displayed in the **Delete Layout** dialog, it is currently in use by a UltriScape Head.

To delete a layout from the Ultricore system

1. From the main toolbar, select **File** > **Delete Layout from Ultricore**.

   The **Delete Layout** dialog opens.
2. Select the layout from the provided list.
3. Click **OK** to delete the layout from the Ultricore system.

Clearing the Workspace

Changes and updates to layouts and PiPs only take effect if you save the new settings. You can clear the workspace and start over.

✶ Any unsaved changes to the current layout will be discarded.

To clear the workspace

- From the main toolbar, select **Edit** > **Clear All**.

  The Workspace area is now blank.

Managing the UltriScape Heads

This chapter summarizes how to load and assign a layout to an UltriScape Head, and assign router sources to PiPs in a layout.

For More Information on...

- assigning an UltriScape Head to a router output, refer to the section "**Assigning an UltriScape Head to a Physical Router Output**" on page 68.

Before You Begin

Keep the following in mind when configuring an UltriScape Head:

- The UltriScape Layout Editor look matches the output UltriScape Head to the pixel. The output is selectable between either 1080p or 1080i. Refer to the section "**To assign an UltriScape Head to a router output**" on page 68.
- The UltriScape license is on a per head basis. When not licensed, the UltriScape Layout Editor is available, but you cannot assign any layouts to an UltriScape Head.
- Ancillary data is stripped, except for audio; SMPTE 352 and AFD packets are re-generated and output by the system.
- The output aspect ratio is always 16:9
- If a PIP is set to follow a router destination, audio levels reflect any processing done (gain, shuffle etc.).
- If a PIP is set to follow a source, it reports the source audio information without any processing.
- Ultrix does not support Unicode characters.

Head Selection Interface

The Head Selection interface is organized into a series of tabs, each representing an enable Head. Each Head Selection tab is divided into three areas: Activate Layout (top area), Source Selection (middle area), and Settings (bottom area).

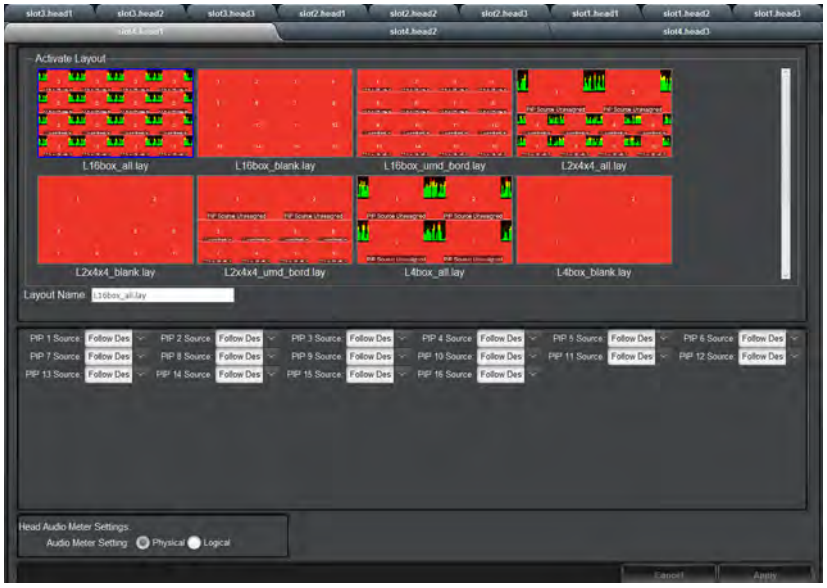


Figure 15.1 Example of the Head Selection Interface

Activate Layout Area

The Activate Layout area is the top half of the interface. This area provides a visual representation of each layout that is enabled in your routing system. Multiple routers can load a layout at the same time. Each PiP is numbered (1, 2, 3 etc.) to enable quick identification when assigning sources. The currently selected Layout for the UltriScape Head output displays a blue border, and its name is displayed in the Layout Name field. In the example above, the `L16box_all.lay` is selected. A layout will appear gray to indicate the PiP sizes within the layout do not match the current settings. These layouts cannot be selected for UltriScape output until the Configuration > PiP Layout > PiP Size Selection settings for Pip A and PiP B match those on the layout.

Source Selection Area

You assign sources to a PiP using the list provided in the Source Selection area of the UltriScape Head interface. The menu for each PiP lists the input signals available via the IN sockets for the Ultrix router you are configuring the UltriScape Head for. The number of PiP menus depends on the number of tiles in the currently selected layout.

Head Audio Meter Settings

The Head Audio Meter Settings enable you to specify whether the audio bars on PiPs represent the audio that is embedded in the SDI stream (Physical mode), or if audio bars on PiPs display audio levels based on a source's logical definition (Logical mode).

For More Information on...

- the Head Audio Meter Settings, refer to the section "**Audio Meter Modes Setup**" on page 183.

Assigning a Layout to an UltriScape Head

Each UltriScape Head in your system can use the same layout, or different layouts depending on your needs. Both instances share the same layout properties, but can have different sources assigned to each PiP. The list of available sources to assign to each PiP depends on the currently loaded database for the Ultrix router.

To assign a layout to an UltriScape Head

1. Double-click the Ultrix router in the Basic Tree View of DashBoard.

   The tree for the router expands.

2. Expand the UltriScape node.

3. Double-click the **Head Selection** node.

   The **Head Selection** tab displays in the right side of the DashBoard window. Each UltriScape Head displays as a sub-tab in this window.

4. Select a layout from the **Activate Layout** area of the tab.

   The **Head Selection** tab updates to list the number of PiPs in the selected layout. In the example below, **`layout 2_4_4Box_UMD.lay`** is selected.

5. Click **Apply** at the bottom of the **Head Selection** tab.

PiP Layout Mapping Overview

This section provides examples to illustrate the PiP assignment in a layout where:

- **x** is the slot number counted from the top of the layout starting at 1.
- **n** is the UltriScape Output Head number. The actual physical port this output appears on is defined by the **Port License** tab of the Ultrix Hardware Interface.

Example using the LAYOUT-01 Template

This template is a 2+8 layout with a total number of 10 PiPs available to map.

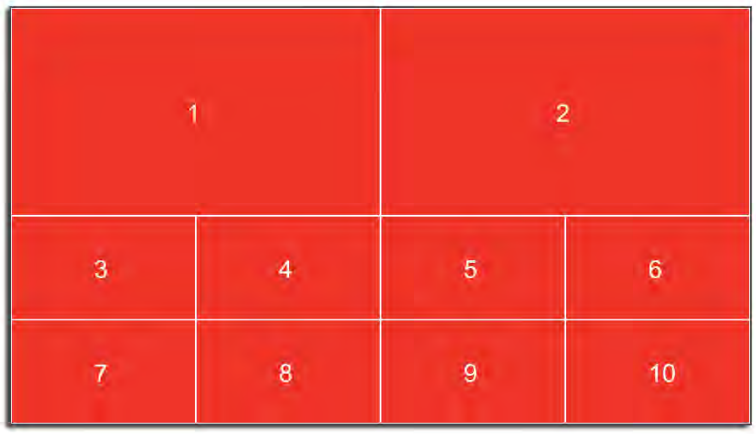


Figure 15.2 Example of the LAYOUT-01 Template

Table 15.1 outlines the destination assignment for each PiP in the LAYOUT-01 template.

Table 15.1 PiP Layout Mapping — LAYOUT-01 Template

PiP Number	Destination Assignment
1	Ultrix.slot**x**.head**n**-pip[1]
2	Ultrix.slot**x**.head**n**-pip[2]
3	Ultrix.slot**x**.head**n**-pip[3]
4	Ultrix.slot**x**.head**n**-pip[4]
5	Ultrix.slot**x**.head**n**-pip[5]
6	Ultrix.slot**x**.head**n**-pip[6]
7	Ultrix.slot**x**.head**n**-pip[7]
8	Ultrix.slot**x**.head**n**-pip[8]
9	Ultrix.slot**x**.head**n**-pip[9]
10	Ultrix.slot**x**.head**n**-pip[10]

Example using the LAYOUT-02 Template

This template is a 2x2 layout with a total number of 4 PiPs available to map. In this example, the user altered the template to utilize shared PiPs.

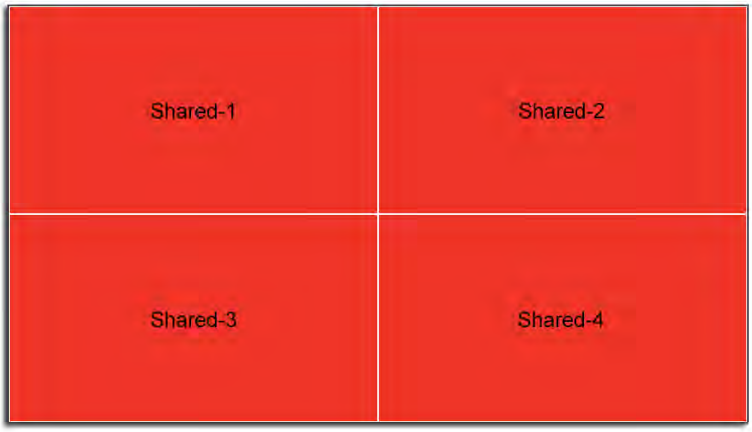


Figure 15.3 Example of the LAYOUT-02 Template

Table 15.2 outlines the destination assignment for each PiP in the LAYOUT-02 template.

Table 15.2 PiP Layout Mapping — LAYOUT-02 Template

PiP Number	Destination Assignment
1	Ultrix.slot**0**.head**n**-pip[1]
2	Ultrix.slot**0**.head**n**-pip[2]
3	Ultrix.slot**0**.head**n**-pip[3]
4	Ultrix.slot**0**.head**n**-pip[4]

Multiple Heads

If multiple heads are configured, destination assignments must be defined for all heads and PiPs.

Table 15.3 PiP Layout Mapping — Multiple Heads

Name	Destination Assignment
MV Head 1	Ultrix.slot**1**.head**1**.sdi.ch1
MV1 PiP1	Ultrix.slot**1**.head**1**-pip[1]
MV1 PiP 2	Ultrix.slot**1**.head**1**-pip[2]
	...more MV1 PiP Assignments
MV Head 2	Ultrix.slot**2**.head**1**.sdi.ch1
MV2 PiP1	Ultrix.slot**2**.head**1**-pip[1]
MV2 PiP 2	Ultrix.slot**2**.head**1**-pip[2]
	...more MV2 PiP Assignments

Assigning a Source to a PiP

A PIP source is controlled by routing just like any destination. Each PiP can be configured as a ‘direct source’ take operation or a ‘destination follow’ operation (where they switch to the same input signal that a destination is switched to).

Each PiP in a layout is assigned a video signal from the Head Selection interface. If the input signal includes embedded audio, the audio is included in the UltriScape Head output.

The source selection area is for initial setting and quick visual changes. The Ultrix router can override these selections by directly routing to the PiP destinations. The Head control source selection area may not update to show current status if direct control changes have been applied.

When assigning new sources to the PiPs of an UltriScape Head, you can display sources:

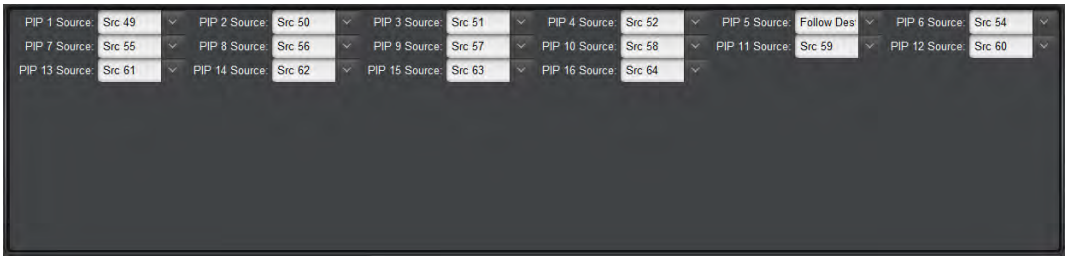
- of different formats on the same head at one given time.
- with no assumed timing relationship on the same head at one given time.

To assign a source to a PiP

1. Assign a layout to the UltriScape Head as outlined in the section “**To assign a layout to an UltriScape Head**” on page 180.

✶ The options in the **PiP Source** menus depend on the sources and destinations configured in the currently loaded database.

2. For each PiP in the layout, select a source from its **PiP Source** menu. Choose from the following:
   - **Normal** — The PiP displays the source that the **Destination** the PiP is assigned to is currently switched to (e.g. a PiP acts like a regular router destination). Refer to the section “**To assign an UltriScape destination in the database**” on page 155 for information on assigning PiPs to Destinations.This is the default setting for all PiPs.
   - **Src #** — The PiP displays the specified Source in the database.
   - **Follow Dest # —** The source that the PiP displays is dependent on the source routed to the specified Destination. In the following example, PiP 5 is set to Follow Dest 10. If the user switches Dest 10 to Src 3, PiP 5 displays Src 3. If Dest 10 then switches to Src 30, PiP 5 will then display Src 30.



3. Click **Apply** at the bottom of the **Head Selection** tab.

Audio Meter Modes Setup

This section outlines how to set up and monitor audio meters for PiPs that are configured for Normal or Default Source modes. There are two source modes when configuring audio meters:

- **Physical Source** mode — the audio bars on PiPs represent the audio that is embedded in the SDI stream. This is the default mode.
- **Logical Source** mode — the audio bars on PiPs display audio levels based on a source’s logical definition. The bars index from left to right (meter port channel 1 represents the leftmost audio meter bar, and meter port channel 16 represents rightmost possible audio meter bar).

Overview

A PiP containing a defined audio meter object may be configured to represent the audio from a variety of sources as outlined in **Table 15.4**.

Table 15.4 Audio Meter Settings

	Audio Meter Mode	
PiP Mode	**Physical**	**Logical**
Source	Audio from the SDI source	Router audio channels
Normal	Audio from routed SDI source	Routed audio channels
Dest Follow	Audio from destination SDI	Audio from destination SDI

By default, UltriScape Heads will be in Physical mode, which shows the levels for the audio embedded in the SDI stream currently displayed on the PiP.

To enable an UltriScape Head to show display audio metering based on the logical source definition, select **Logical** from the **Head Audio Meter Settings** menu in the **Head Selection** interface.

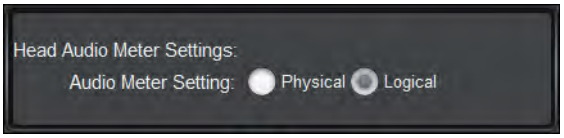


Figure 15.4 Head Audio Meter Settings Menu

Note that when activated, the Logical Mode setting:

- is global to the UltriScape Head and it affects all PiPs defined on the Head that are not set to **Dest Follow**. The Logical mode is enabled regardless of which layout is applied to the UltriScape Head.
- causes the affected PiPs to ignore the meter channels assignment made in the active layout's PiP definition (which are only used for Physical mode). The same number of meter bars defined in the PiP is still displayed.
- requires that PiP meter ports be assigned in the logical database to map the meter to audio channels; otherwise no audio levels will be displayed for PiPs that are set to **Normal** or **Source #**.

✶ Audio meters on PiPs set to **Dest Follow**, by definition, will always show what has been embedded into the output SDI stream, regardless of the Head Audio Meter Setting.

Configuring the Audio Meter Logical Source Mode

In order for the PiPs to display logical source audio levels, the audio meters' ports must be assigned to logical destinations associated with the UltriScape PiPs.

Each available PiP SDI port in the system will now have associated with it 16 'meter' ports; one for each possible audio bar in a meter. These ports should be mapped to the audio levels within the database. The bars index from left to right (meter port channel 1 represents the leftmost audio meter bar, and meter port channel 16 represents rightmost possible audio meter bar). It is not required to add meter port entries to the database for bars that will not be shown in a PiP. **Figure 15.5** provides an example where the SDI for the video source and two audio (A1 and A2 levels) for the metering.

Figure 15.5 Example of Defining the Audio Meter Ports

There are two stages to configuring Audio Meter Logical Source mode support:

1. UltriScape Layout and Head Configuration
2. Logical Database Configuration

Audio Meter Behaviors

Table 15.5 summarizes the behaviors for the Audio meters in Physical vs. Logical mode under various switching scenarios. Note for all “Logical” switching scenarios, the assumption is that the UltriScape Layout/Head is configured for meters and that the appropriate meter ports have been assigned to the database as required.

Table 15.5 Expected Audio Meter Behavior

Audio Meter Source Mode	Source Port Definition	Input License	Result
Logical	No Logical Audio defined	No	Bars active (Physical shown)
Logical	No Logical Audio defined	Yes	No bar activity
Logical	Logical Audio defined	Yes	Bars Active (Logical shown)
Logical	Logical with pass-through port	Yes	Bars Active (Logical shown, Physical on pass-through)
Logical	Port set to ‘Bypass’	Yes	Bars Active (Physical shown)
Physical	No Logical defined	No	Bars active (Physical shown)
Physical	No Logical defined	Yes	Bars active (Physical shown)
Physical	Logical Audio defined	Yes	Bars active (Physical shown)
Physical	Logical with pass-through port	Yes	Bars active (Physical shown)
Physical	Port set to ‘Bypass’	Yes	Bars active (Physical shown)

Notes

- If the input port is from an UltriMix enabled slot, then the logical definition can be used to route the audio.
- To see the physical audio associated with an UltriMix input, there would need to be an additional source defined in the logical database that has the appropriate pass through (or audio ports) assigned (similar to defining “breakaway” audio sources) (or the user can set the UltriScape Head to Physical mode).

Configuration Example

Consider the following scenario: a bilingual source is defined where the English audio appears on embedded channels 1 and 2, and the French audio appears on embedded channels 3 and 4 and a PiP destination is defined to have audio metering showing 2 channels.

Table 15.6 Example 1

	SDI Level	Level A1	Level A2
Source Name			
Src 1 EN	Slot1.in[1]	Slot1.in[1].ch1	Slot1.in[1].ch2
Src 1 FR	Slot1.in[1]	Slot1.in[1].ch3	Slot1.in[1].ch4
Destination Name			
PiP1	Head1-pip[1]	pip[1].meter.ch1	pip[1].meter.ch2

When the user routes source 'Src 1 EN' to the PiP, it will display the SDI from Slot1.in[1] port, and the embedded audio channels 1 and 2 will be mapped to the PiP meters 1 and 2.

When the user routes source 'Src 1 FR' to the PiP, it will display the SDI from Slot1.in[1] port, and the embedded audio channels 3 and 4 will be mapped to the PiP meters 1 and 2.

UltriScape Layout and Head Configuration

When activated, the Logical Mode setting is global to the Head and affects all PiPs defined on that Head that are not in **Dest Follow** mode. The Logical Mode is enabled regardless of which layout is active on the Head.

To enable logical source mode on a PiP of an UltriScape Head

1. Define an UltriScape layout with PiPs that include audio meters as outlined in the section "**Adding a Block of Audio Meters**" on page 167.
2. Activate the layout on the required UltriScape Head as outlined in the section "**Assigning a Layout to an UltriScape Head**" on page 180.
3. Define the sources for each PiP in the layout as outlined in the section "**Assigning a Source to a PiP**" on page 183.
4. Make a note of which PiPs in the layout display the audio meter bar(s) you wish to configured. This information is required when assigning meter ports in the database.

★ The audio meters on PiPs set to **Dest Follow** mode always represent what has been embedded into the output SDI stream, regardless of the Head's Audio Meter setting.

5. Select **Logical** from the **Head Audio Meter Settings** menu located at the bottom of the Head Selection tab.

★ To disable the Logical Mode, select **Physical** from the Head Audio Meter Setting menu.

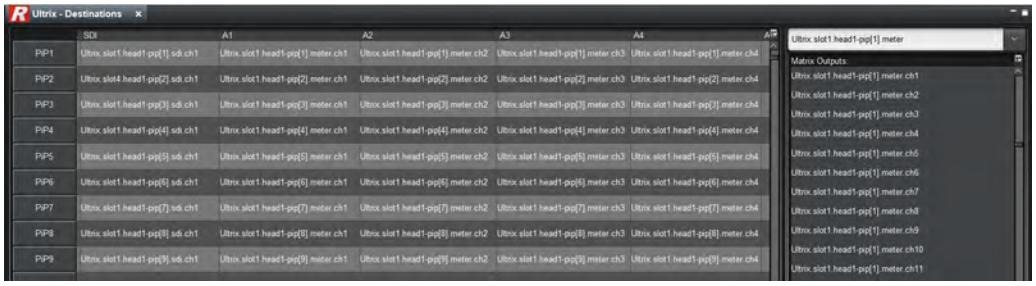
Logical Database Configuration

This section outlines the database configuration steps necessary to enable Logical Source Audio meter support on a UltriScape PiP and Head.

To assign PiP audio meter ports to Multiviewer PiP Destinations

1. Double-click the **Destinations** node located under the **Database** node.

   The **Destinations** tab opens. The **Matrix Outputs** list, located to the far right, displays the PiP meter ports for licensed UltriScape Heads, as shown below. Note that you may need to scroll through the list, or use the provided drop-down menu, to locate the PiP meter ports.



2. Assign the UltriScape Head to a Destination in the database as outlined in the section "**Assigning an UltriScape Head to a Physical Router Output**" on page 68.
3. Assign a PiP audio meter port to level for that Head Destination as follows:

★ The database level to which the meter bar's port is assigned determines the signal for which the bar will display audio meter data when switched. The bar will display the audio meter data from the audio port channel assigned to the corresponding level of a logical source when switched to the PIP destination.

   a. Select the first cell in the first **Level** column of the **Destination** row for the Head output.

      This will be the first meter bar in the PiP.

a. Choose a PiP meter output from the available **Matrix Outputs** list.

   The meter outputs are labeled as **`Ultrix.slot#head#-pip[#].meter.ch#`**. For example, to assign the first bar for the second PiP of Head 3, you would select **`Ultrix.slot#head3-pip[2].meter.ch1.`**

b. Click **Assign**.

4. Repeat step 3 for each audio meter bar you want to assign.
5. Click **Apply** at the bottom of the **Destinations** tab to save your changes.

✶ It is not required to add meter port entries to the database for bars that will not be shown in a PiP.

Clock Control

The procedure for operating a clock in UltriScape is the same for either countdown or stopwatch types. There is no control option for time-of-day clocks.

For More Information on...

- the Clock Control interface, refer to the section "**Clock Control Interface**" on page 368.

To use a clock

1. Configure your clock type(s) as outlined in the section "**To define a clock**" on page 169.
2. Add a clock to an UltriScape layout as outlined in the section "**To add a clock to a PiP**" on page 170.
3. Assign the layout to an UltriScape Head as outlined in the section "**Assigning a Layout to an UltriScape Head**" on page 180.
4. Double-click the **Clock Control** sud-node in the UltriScape tree.

   The Clock Control tab opens.
5. Select the row for the Clock ID for the stopwatch you wish to use.
6. Use the buttons in the right toolbar to control the clock. Choose from the following:
   - **PLAY** — starts the stopwatch or countdown timer.
   - **RESET** — stops the stopwatch or countdown timer and resets it 00:00:00.
   - **PAUSE** — temporarily stops the stopwatch or countdown timer without resetting to start point. Click this button again to re-start the clock.

Tallies

The Ultrix accepts TSL UMD tally messages, and passes tally status notifications to a configured UltriScape Head. Tally messages associated with a router source may also be passed to the routed destination tally status. Tally information may be associated with either routing system sources or destinations.

For More Information on...

- the TSL UMD protocols that Ultrix supports, refer to the chapter "**External Control**" on page 263.

Tally Types

Tally information may be associated with either routing system sources or destinations.

✶ Ultrix does not support Unicode characters.

Source Association

Tally IDs associated with routing system sources may serve two purposes:

1. Trigger any UltriScape Multiviewer to display tally status (this requires that the Ultrix router has at least one UltriScape Head enabled and configured).
2. Enable the tally status to be mapped to other Tally IDs based on router crosspoint status (the destination must have Tally ID associated and **Tally Re-direct** enabled).

To associate Tally IDs to sources in the database you must:

- Use the **Sources** tab in the Database interface to associate the Tally IDs with logical sources in the Ultrix database.
- Specify the UMD "Tally Level" using the **Tally Status Level** menu in the **Levels** tab.

Destination Association

A Tally ID may be associated with routing system destinations. This enables any tally status associated with router sources to map to a different Tally ID associated with a router destination, based on current router crosspoint status.

- Use the **Destinations** tab in the Database interface to associate Tally IDs with logical destinations.
- When a source is switched to a destination on the selected Tally Level, Ultrix forwards the tally status of the source that is active on the destination, but the outbound TSL message has its display ID re-mapped to the display ID that is associated with the destination (Tally Redirect is set to ON).

✶ Ensure the destination Tally IDs do not conflict with Tally IDs asserted by other devices.

- When the TallyID is associated with an UltriScape PiP (**slotn.headx-pip[y]** or **slot0.pip[y]**), any assertion on this TallyID will directly control the PiP tally visual elements and over ride any Tally associated with the PiP video source (Tally Redirect is set to OFF).
- For switcher support, the label of the connected source to a destination is sent as TSL tally text (TSL v3.1 only and when Tally Redirects is set to OFF).

Tally ID Format

Table 16.1 summarizes the format that the TSL protocol defines Display IDs that are associated with the tally displays.

Table 16.1 TSL Protocol — Tally ID Format

TSL Protocol Version	Tally ID Format	Range
3.1	<displayID>	0 - 127
4.0	<displayID>	0 - 127
5.0	<screenID>:<displayID>	0 - 65535 : 0 - 65535

Keep the following in mind when using tally display IDs:

- TSL UMD protocols v3.1 and v4.0 messages will always map to screen 0.
- When using TSL UMD v5.0, the screen ID is assumed to be 0 if no screen ID is entered.
- If the controller is configured for either v3.1 or v4.0 protocol, it is not necessary to enter a screen ID.
- If the controller is configured for v5.0, it is only necessary to specify the screen ID if the tally controller is configured to send messages to tally displays on 'screens' other than the one with the screen ID of 0.

UltriScape PiP Tally Operation Overview

Ultrix will track current tally status for all sources or destinations that have an associated TallyID configured. When an UltriScape PiP has tally display objects (e.g. border, label, lamp) enabled, the PiP determines what is shown on the display based on the configured source and destination TallyIDs and the Tally Redirect setting.

UltriScape PiPs may be configured to follow the TallyID of the currently displayed source, or, a direct Tally mode, over-riding any information from the currently displayed source.

The two modes are:

1. **Tally Redirect** — UltriScape PiPs will show tally information associated with the currently connected source, i.e. the tally information of the currently displayed source is redirected to the PiP.
2. **Tally Direct** — UltriScape PiPs will show tally information directly associated with the PiP, overriding any currently displayed source tally information.

✶ The signal must have tally data to drive the tally display objects on the PiP it is assigned to. If the signal does not include the applicable tally data for an object, that object does not update but still displays on the PiP.

For More Information on...

- assigning Tally IDs to sources, refer to the section "**Assigning the Tally IDs to the Sources**" on page 193.
- defining tally PiP objects, refer to the section "**Configuring PiP Tallies in an UltriScape Head**" on page 197.

Example

In this example, the following sources are configured for Tally IDs:

Table 16.2 Example of Sources Assigned to Tally IDs

Source Name	Tally ID	Tally Status
Src 2	10	off
Src 3	15	on

Figure 16.1 Assigning Tally IDs to Src 2 and Src 3 in the Database

Assuming the UltriScape layout has a tally border object defined for the top right hand tile (PiP 2 in **Figure 16.2**), when the PiP is displaying the source **`Src 2`**, the PiP displays the status of `Tally ID 10`, which in **Figure 16.3** is `off` (no border displays).

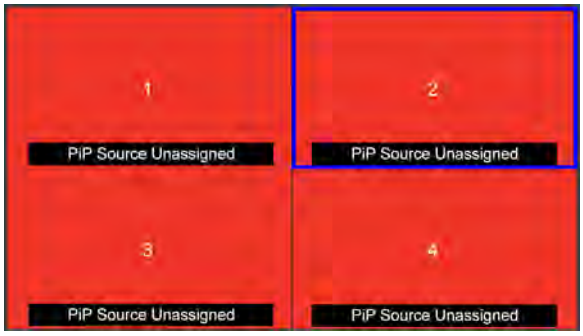


Figure 16.2 Example of Creating a 2x2 Layout with a Tally Border in PiP 2

Figure 16.3 Example of a 2x2 Layout with Src 2 Assigned to PiP 2

If `Src 3` is routed to PiP 2, the PiP now displays the status of `Tally ID 15`, which in this example is `on`. Now the tally border configuration is displayed. Any changes to `Tally ID 15` (from external devices) will be displayed by the PiP as long as `Src 3` is routed to PiP 2.

Figure 16.4 Example of a 2x2 Layout with Src 3 Assigned to PiP 2 and Tally ID 15 is On

Router Tally Output Operation

Ultrix will track current Tally Status messages sent by a controller via Tally Display IDs associated with router sources. When a source (with a Tally ID) is routed to a destination (with a Tally ID), the router will emit Tally Status messages that reflect the current tally status of the Tally ID associated with the source, but that target the Display ID associated with the destination.

✶ An outgoing connection point must be defined for Ultrix to send the new status out.

Example

Consider the following source and destination configurations:

Table 16.3 Example of Sources and Destinations Assigned to Tally IDs

Name	Tally ID	Tally Status
Sources		
Src 1	5	T1:on
Src 2	10	T1:off
Destinations		
Dest 1	33	T1:xxx

For the above configuration settings, the following states are possible:

Table 16.4 Example of Sources and Destinations Assigned to Tally IDs

Router Status	Tally Status
Src 1 > Dest 1	TallyID 33 = TallyID 5 (on)
Src 2 > Dest 1	TallyID 33 = TallyID 10 (off)

Router Status over TSL UMD v3.1 Operation

Ultrix can use the TSL UMD protocol version 3.1 to send the connected source database name as tally text. This requires you to:

1. Set up an outgoing TSL v3.1 connection.
2. Assign Tally ID numbers to the destinations you wish to track.
3. Ensure the Tally Redirect mode is set to Off.

When a configured destination changes, the name of the new source will be sent as tally text. Ultrix will resend all the configured destinations every 1 minute, and immediately for any source change on a configured destination.

Getting Started

Before configuring tallies in an UltriScape Head, you must first perform the following in the active database:

1. If RS-232 or RS-422 communication is required, add a serial connection point for either incoming or outgoing TSL protocol support.
2. Add an Ethernet connection point for outgoing TSL protocol support (if required).
3. Enable Tally ID support.
4. Assign the Tally IDs to the sources.
5. Assign the Tally IDs to the destinations.
6. Set the Tally Redirect mode.

Adding a Serial Connection Point

Connections may be created via the Edit > Add menu on the Connections tab and selecting the **TSL** protocol from the **Protocol** menu in the **Add Connection** dialog.

For More Information on...

- a serial connection point to third-party devices, refer to "**Defining a Serial Connection**" on page 100.

Adding an Ethernet Connection Point

An Ethernet connection point must be added for outgoing TSL protocol support only. Incoming Ethernet services are natively available. Refer to the chapter "**External Control**" on page 263 for settings.

For More Information on...

- Ethernet connection point to third-party devices, refer to "**Third-part Connection via Ethernet**" on page 98.

Enabling Tally ID Support in the Active Database

To enable tally ID configuration in an active database, you must select the **Enable Tally** box on the **System Status** > **Database** tab, and then define the Status Level for tally operation.

Once support is enabled, the **Source** and **Destinations** tabs display a **Tally** column which is used to assign Tally IDs to sources and/or destinations in the active database.

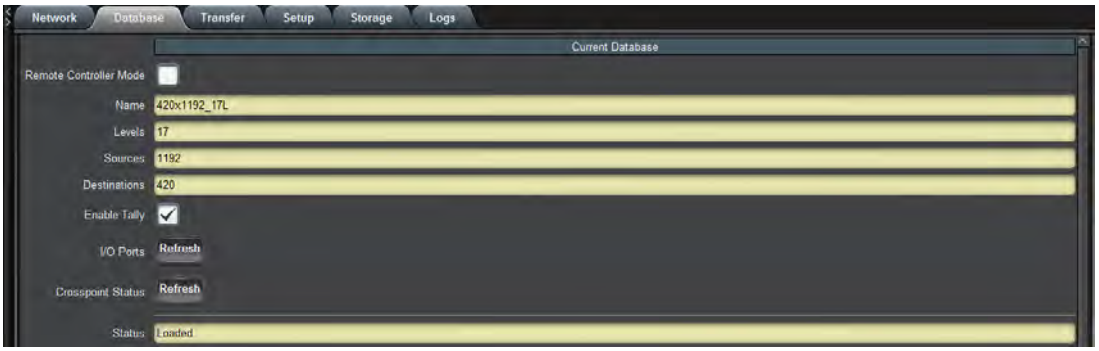
To enable tally ID support in the active database

1. In the Tree View, double-click the **System Status** node.

   The **System** interface displays in the DashBoard window.

2. Select the **Database** tab.

3. Verify that the active database is the one you wish to enable tally ID support for.



4. Select the **Enable Tally** box located in the **Current Database** area.

   The **Source** and **Destinations** tabs automatically update to display the **Tally** column. The **Levels** tab now displays the **Tally Status Level** menu.

Defining the Status Level for Tally Operation

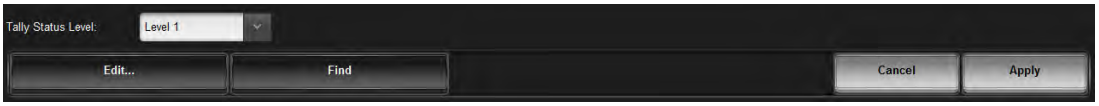
The Tally Status Level specifies which level in the routing system is used to determine the current source switched to a given logical destination. Generally this should be the main SDI Video level; which in most systems is the level to which the UltriScape Head PiP and/or Router Video destinations are mapped in the system database.

To define the status level for tally operation

1. Double-click the **Levels** node located under the **Database** node.

   The **Levels** tab opens.

2. Use the **Tally Status Level** menu (located at the bottom of the **Levels** tab) to specify the Level in the active database that will determine the tally status.

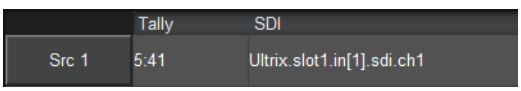


Assigning the Tally IDs to the Sources

Assigning a Tally ID to an Ultrix source enables configured UltriScape displays to show tally information.

For example, if an UltriScape Head contains a PiP configured to display tally information (as outlined in the section "**Configuring PiP Tallies in an UltriScape Head**" on page 197), and a source with an assigned Tally ID is routed to that PiP, that PiP will reflect the incoming messages received by Ultrix via the TSL protocol.

TallyID 41 is associated with Src 1 in the Ultrix database. (TSL UMD v3.1 and v4.0)



Tally Screen 5, ID 41 is associated with Src 1 in the Ultrix database. (TSL UMD v5.0)

Figure 16.5 Example of a Sources with Assigned Tally IDs

✶ Before proceeding, ensure you verify which TSL protocol you are using. The protocol determines how you must enter the information into the **Tally** cells of the **Sources** tab. Refer to **Table 16.1** for details.

To assign a Tally ID to a source in the database

1. Double-click the **Sources** node located under the **Database** node.

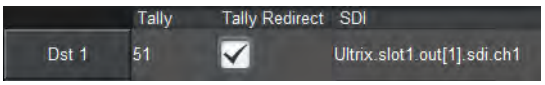
   The **Sources** tab opens.

2. Verify that the **Tally** column displays in the **Sources** tab. If it does not, refer to the section "**Enabling Tally ID Support in the Active Database**" on page 192.
3. Select the cell in the **Tally** column of the **Sources** tab to assign the Tally ID to.
4. Type the Tally ID you wish to assign to that source.
5. Press **Enter** to apply the change.
6. Repeat steps 3 to 5 for each source you wish to assign a Tally ID.
7. Click **Apply** at the bottom of the **Sources** tab to save your changes.

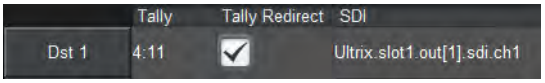
Assigning the Tally IDs to the Destinations

Assigning a Tally ID to an Ultrix destination enables the pass-through of source tally status to a configured destination in the database.

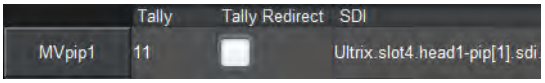
✶ An outgoing connection point (either ethernet server or RS232/422 port) is required for Ultrix to emit tally information. Refer to the section "**Connecting to Third-Party Devices**" on page 98 for connection details.



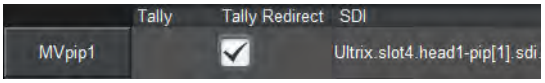
Tally ID 51 follows the connected source associated tally. This requires an established outgoing connection point. (TSL UMD v3.1 and v4.0)



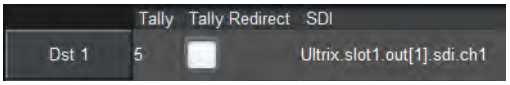
Tally Screen 4, ID 11 follows the connected source associate tally. This requires an established outgoing connection point. (TSL UMD v5.0)



The UltriScape PiP displays the tally information from Tally ID 11 regardless of the displayed source video.



The UltriScape PiP will display tally information from the connected source associated Tally ID.



The label of the source currently connected to Dst 1 will be sent as TSL text on Tally ID 5. (TSL UMD v3.1)

Figure 16.6 Example of Destinations with Assigned Tally IDs

✶ Before proceeding, ensure you verify which TSL protocol you are using. The protocol determines how you must enter the information into the **Tally** cells of the **Destinations** tab. Refer to **Table 16.1** for details.

To assign a Tally ID to a destination in the database

1. Double-click the **Destinations** node located under the **Database** node.

   The **Destinations** tab opens.

2. Verify that the **Tally** column displays in the **Destinations** tab. If it does not, refer to the section "**Enabling Tally ID Support in the Active Database**" on page 192.
3. Select the cell in the **Tally** column of the **Destinations** tab to assign the Tally ID to.

4. Type the Tally ID you wish to assign to that destination.
5. Press **Enter** to apply the change.
6. Select the **Tally Redirect** box to enable the connected source Tally ID to be directed to this destination Tally ID.
7. Repeat steps 3 to 6 for each destination you wish to assign a Tally ID.
8. Click **Apply** at the bottom of the **Destinations** tab to save your changes.

Assigning a Tally ID to an UltriScape PiP Destination

Assigning a TallyID to an UltriScape PiP will cause the PiP to display that TallyID information and ignore any tally information from the displayed source.

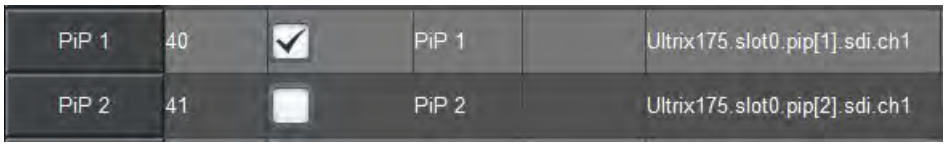
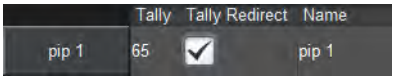
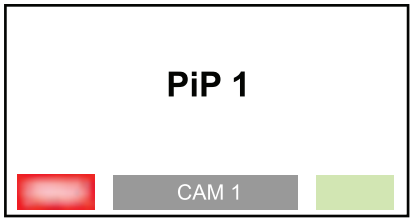
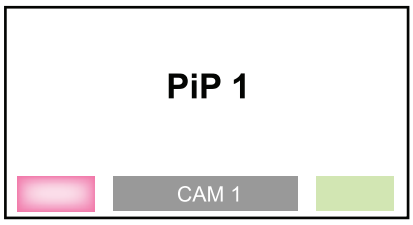
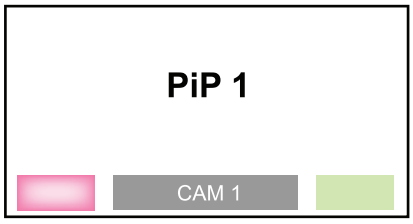


Figure 16.7 Example of a TallyID to an UltriScape PiP

Table 16.5 Examples of TallyIDs for an UltriScape PiP

PiP Destination Configuration	Example	Notes
		The tally will be asserted when the tally ID associated with source 'CAM 1' is asserted, ie; the PiPs video source TallyID is redirected to the PiP.
		The tally will be asserted when Tally ID 65 is asserted as '65' is entered in the Tally column.
		No tally information will display on the PiP as neither tally redirect is enabled, nor, a direct TallyID specified.

UltriScape Tally Settings

The UltriScape Configuration interface provides options for specifying the tally colors for all UltriScape Heads, and setting the operation mode.

Specifying the Global Tally Colors for the UltriScape Heads

The Tally Lamp Color enable you to specify the color of Tally 0 and Tally 1 for all the UltriScape Heads enabled in the active database. Note that the function of Tally 0 and Tally 1 is determined by the TSL UMD protocol version as outlined in the chapter "**External Control**" on page 263.

To specify the tally colors used in all UltriScape Heads

1. Double-click the Ultrix router in the Basic Tree View of DashBoard.

   The tree for the router expands.

2. Expand the UltriScape node.

3. Double-click the **Configuration** node.

   The **Configuration - Layout Editor Settings** tab displays in the right side of the DashBoard window.

4. Locate the **Tally Lamp Color** options.

✶ Changing the **Global Tally Settings** values on one **UltriScape Head** tab automatically updates all UltriScape Heads in the active database.

5. Use the **Tally** menus to specify the color used when the tally is active (on). By default, Tally 0 is set to Red and Tally 1 is set to Green.

   The setting change is automatically applied.

Specifying the Global Tally Label Settings for the UltriScape Heads

Tally label text can be determined by the source of the tally or the labels defined in the Ultrix database. An UltriScape UMD label may either show database name, the associated tally text, or, it may show tally text appended to the database name.

✶ If the associated tally contains no text, the UMD label displays as a blank field.

To specify the tally label text used in all UltriScape Heads

1. Double-click the Ultrix router in the Basic Tree View of DashBoard.

   The tree for the router expands.

2. Expand the UltriScape node.

3. Double-click the **Configuration** node.

   The **Configuration - Layout Editor Settings** tab displays in the right side of the DashBoard window.

4. Locate the **Tally Label Text Settings** options.

✶ The tally label text setting change is automatically applied.

5. Use the **Source Mode** options to specify the tally label text when any UltriScape Head PiP Source is assigned to a **Src #**. Choose from the following:

   - **overwrite** — the tally label text is entirely replaced with the text provided by the tally.
   - **append** — the tally label text displays as **`src : tally`** where src is the name the source is assigned in the Ultrix database, and **`tally`** is the text provided by the tally.

6. Use the **Follow Dest Mode** options to specify the tally label text when any UltriScape Head PiP Source is assigned to a **Follow Dest #**:

   - **overwrite** — the tally label text is entirely replaced with the text provided by the tally.
   - **append** — the tally label text displays as **`dest : tally`** where dest is the name the destination is assigned in the Ultrix database, and **`tally`** is the text provided by the tally.

Specifying the Tally Behavior

You can specify whether only the red tally or both tallies are lit when the tallies are on (tally indicator PiP objects only).

To specify the tally behavior in all UltriScape Heads

1. Double-click the Ultrix router in the Basic Tree View of DashBoard.
2. Expand the UltriScape node.
3. Double-click the **Configuration** node.

   The **Configuration - Layout Editor Settings** tab displays in the right side of the DashBoard window.
4. Locate the **Tally Behavior Settings** area.
5. Choose one of the following:
   - **Red tally only** — the red tally indicator is lit when both tallies are on. The green is unlit.
   - **Both tallies lit** — both the red and green tally indicators are lit.

Configuring PiP Tallies in an UltriScape Head

In the UltriScape Layout Editor interface, you can select PiPs and add a border or a text box to represent the status of a tally in the UltriScape Head output.

Adding a Tally Border to a PiP

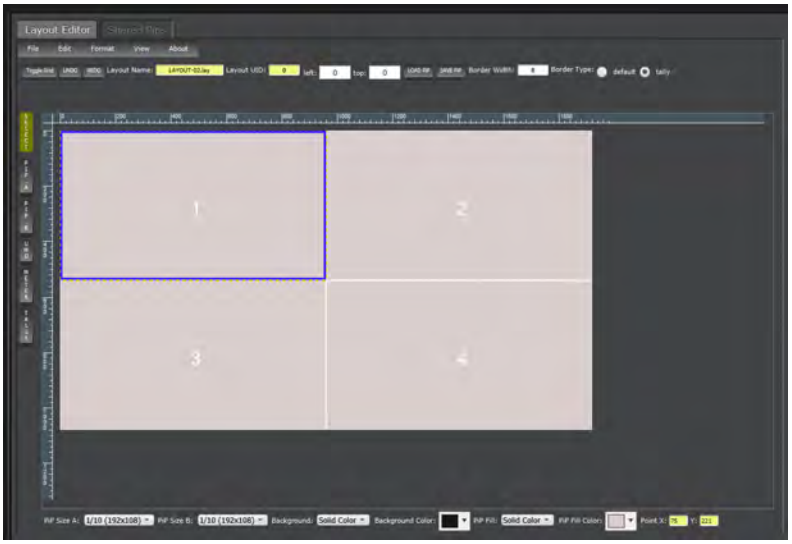
A tally border is a PiP border that will change color depending on the associated Tally ID information. By default, a tally border is set in blue on the layout and the color cannot be edited. The default border width is fixed at 8 pixels.

To add a tally border to a PiP in a layout

1. Load the layout in the Layout Editor as outlined "**Loading a Previously Saved Layout**" on page 176.
2. From the **Objects** toolbar, click **SELECT**.
3. Select the tile to add a tally border to.

   The tile displays with a dotted yellow border and the **Border Width** and **Border Type** menus now display under the Main toolbar.
4. Set the **Border Type** to **Tally**.

   The tile displays with a solid blue border. In the example below, a tally border was added to PiP1.



5. From the top toolbar, use the **Border Width** field to specify the border width in number of pixels and lines.
6. Press **Enter** to apply the new width value.
7. Save the changes to the layout as outlined in the section "**To save a layout to the database**" on page 175.

Adding a Tally Label to a PiP

Adding a tally label is similar to adding a static or dynamic text box to a PiP. Once a source is assigned to the tile (via the options in the UltriScape Head interface) its Tally ID information automatically populates the box contents.

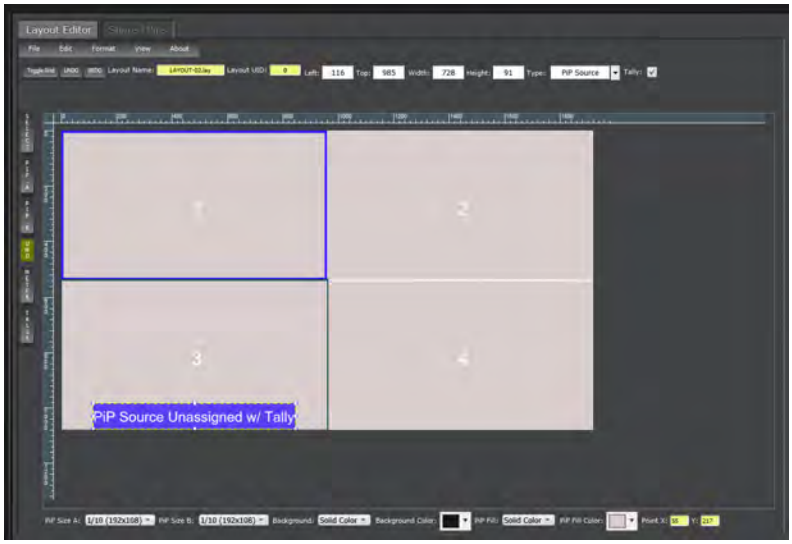
The background color of a tally enabled UMD label will change with the tally information. A blue background on a tally enabled UMD label means the Ultrix does not have any tally information to display.

To add a tally label to a PiP

1. Load the layout in the Layout Editor as outlined in "**Loading a Previously Saved Layout**" on page 176.
2. From the **Objects** toolbar, click **UMD**.
3. Select the PiP to add a text box.

   The **Label** settings, including the **Type** menu and the **Tally** box, display under the main toolbar.
4. From the **Type** menu, select **PiP Source**.
5. Select the **Tally** box.

   The box on the tile automatically updates to "`PiP Source Unassigned w/ Tally`".



6. Save the changes to the layout as outlined in the section "**To save a layout to the database**" on page 175.

Adding Tally Lamps to a PiP

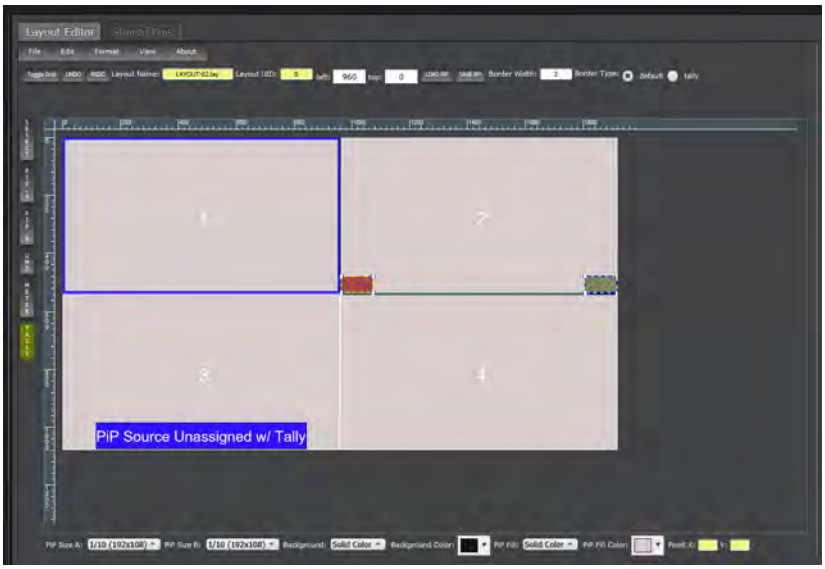
Tally lamps (or Tally Indicators) are blocks on the PiP that emulate the classic UMD tally lamp behavior. You can add tally lamps to any PiP in a layout.

Once a source is assigned to the tile (via the options in the UltriScape Head interface) its Tally ID information automatically sets the lamp colors.

To add a tally lamp to a PiP

1. Load the layout in the Layout Editor as outlined in "**Loading a Previously Saved Layout**" on page 176.
2. From the **Objects** toolbar, click **TALLY**.
3. Select the PiP in the layout to add the tally lamps to.

The PiP displays a dotted blue border with a lamp box in the bottom left and right corners. By default, the left lamp is Tally 0 (red) and the right lamp Tally 1 (green). In the example below, tally lamps were added to PiP2.



4. Save the changes to the layout as outlined in the section "**To save a layout to the database**" on page 175.

Configuring the UltriScape Head

Each PiP in a layout is assigned a video signal from the current database. If the input signal includes tally data *and* the PiP assigned to that source includes tally objects (e.g. border, label), the tally data is included in the UltriScape Head output.

Assigning a Source to a PiP with Tally Objects

If a layout in the UltriScape Head interface includes tally objects in the PiPs, the objects are set in blue for quick identification on the layout. In specific:

- **Tally labels** — this object displays as a text box, in the PiP, with white text on a blue background.
- **Tally border** — the blue border displays around the PiP.

Figure 16.8 shows two layouts with tally elements: lay9_all.lay and newone.lay.

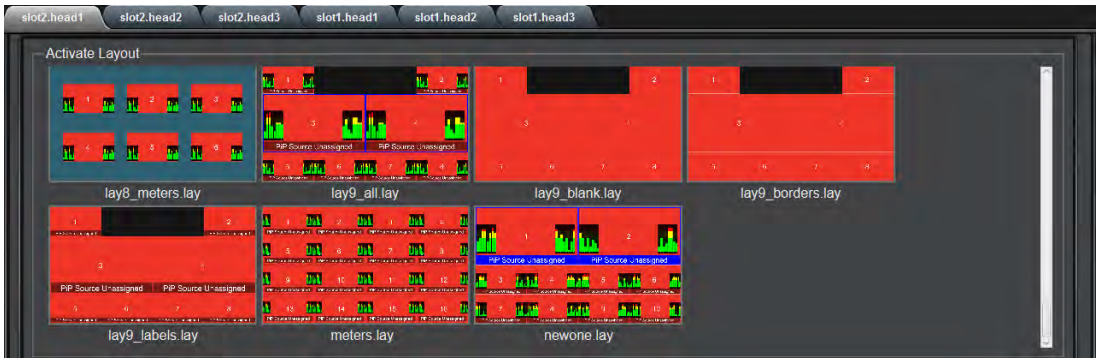


Figure 16.8 UltriScape Interface — Example of Layouts with Tally Objects

For More Information on...

- assigning a layout to an UltriScape Head, refer to the section "**Assigning a Layout to an UltriScape Head**" on page 180.
- assigning a source to a PiP, refer to the section "**Assigning a Source to a PiP**" on page 183.

Using Remote Control Panels

When the Ultrix router is configured for Ultricore mode, it responds to switch commands from Ross NK Series and Ross series control devices. These commands contain source, destination, and level designations. Routers acknowledge the switch request with the selected crosspoint switch status after the switch has occurred. The Remote Control Panels (RCP) may operate singularly, or in a linked mode where two or more (up to 10) panels may operate as a larger panel with more buttons.

Connection to Ultrix

The method of connection between Ultrix and an RCP will vary depending on the type of panel. Ethernet enabled devices such as the RCP-ME and RCP-QE communicate with Ultrix directly. Non-ethernet panels such as the RCP-NKQ, RCP-NKM and RCP-NK1 connect through an NK-NET or NK-IPS to convert the native T-Bus commands to ethernet.

Native ethernet panels receive their labels automatically from the Ultrix database upon panel start-up. Any subsequent changes to the database labels are also automatically pushed out to connected ethernet panels. The NK series panels do not automatically get updates from the Ultricore control system and must use a manual process via DashBoard. Refer to the user guide for your RCP for details.

✶ For optimal performance when using a Ross RCP with Ultrix, the **Comms Retry** factor should be set to **80ms** or greater within the RCP configuration. Refer to the user guide for your RCP for details.

RCP-NKM Connection to a Ross NK Router and an Ultrix Router

The RCP connection as shown in **Figure 17.1** requires a connection point between Ultrix and the NK-NET. Refer to the section "**Connecting to Ross NK Series Devices**" on page 96 for details.

✶ The NK-NET requires power from the Ross NK Router (over T-Bus).

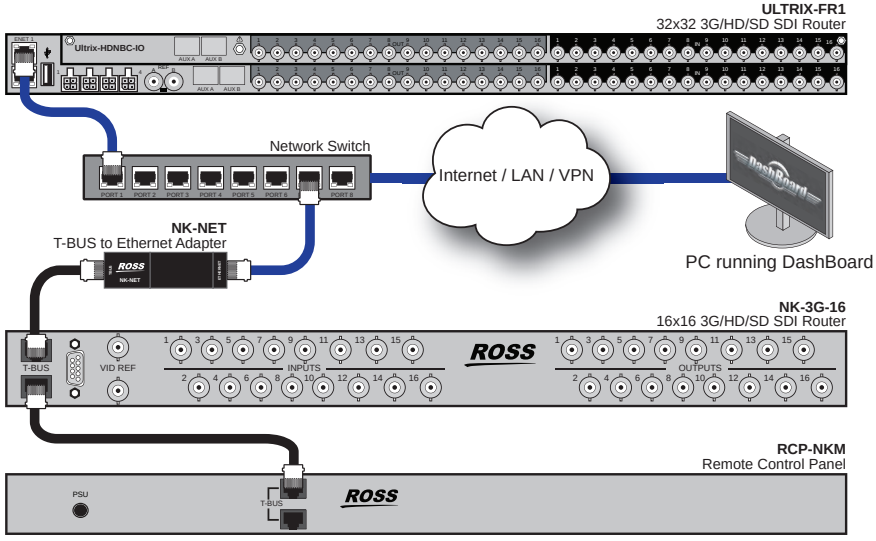


Figure 17.1 Example of a Connection from an Ultrix Router to an NK-3G-16 and RCP-NKM

RCP-QE Connection to an Ultrix Router

RCP-QE and RCP-ME remote control panels require a a connection point between Ultrix and the panel. Refer to the user guide for your panel for details.

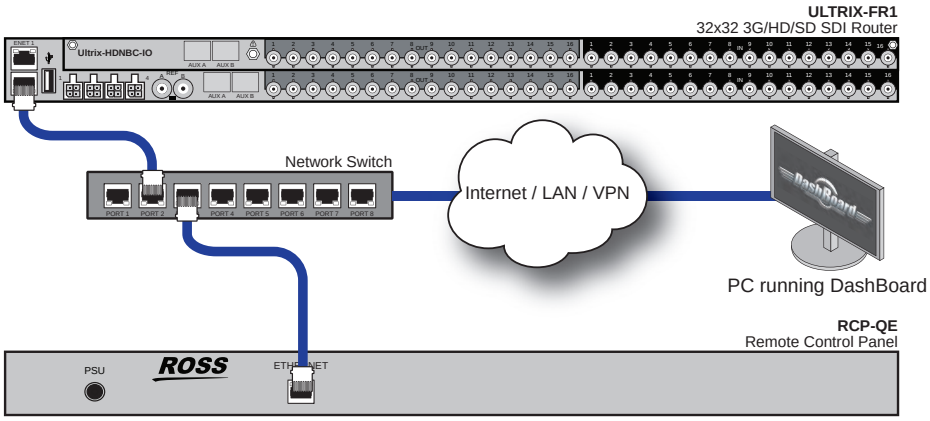


Figure 17.2 Example of a Connection from an Ultrix to an RCP-QE

RCP-NKM with a NK-IPS and NK Router to an Ultrix Router

The RCP connection as shown in **Figure 17.3** requires a connection point between Ultrix and the NK-IPS. Refer to the section "**Connecting to Ross NK Series Devices**" on page 96 for details.

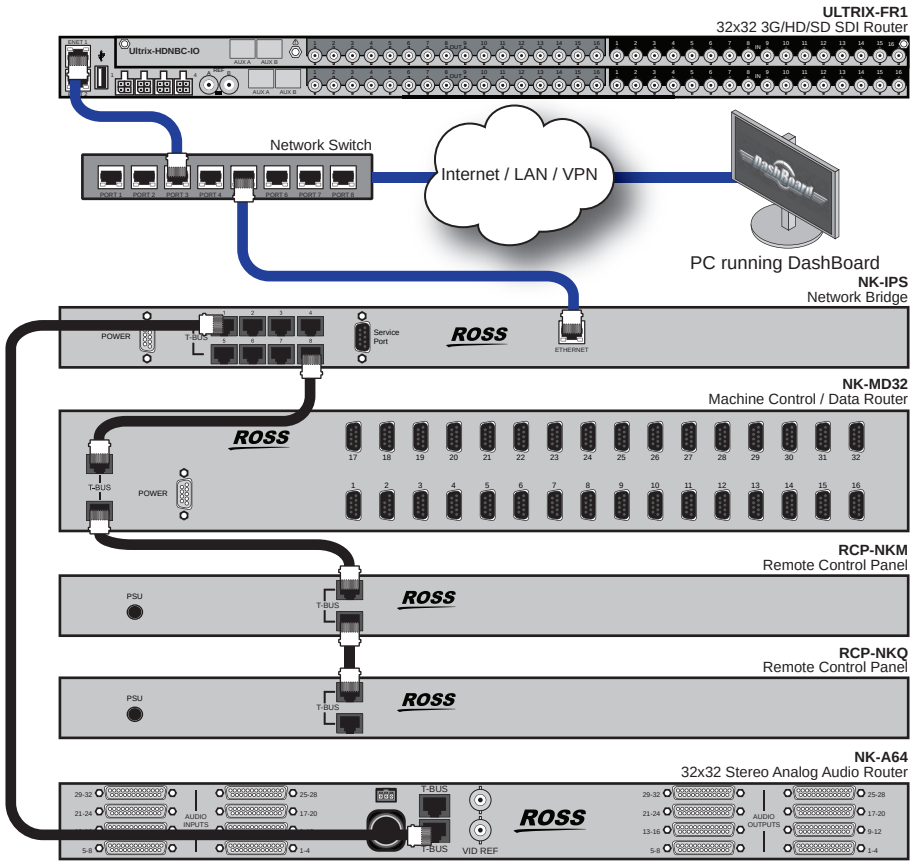


Figure 17.3 Example of a Connection from an Ultrix Router to an NK-IPS and an RCP-NKM

Remote Control Panel Operation

The control panel functions detailed in this section can be programmed with the Ultricore for full functionality. The examples herein are generic functions applicable to all panel types.

For More Information on...

- specific applications, refer to the user documentation that accompanied your device.

Destination Buttons

Selecting a destination changes the destination the panel controls or switches the next time a **Source** button is pressed. Destinations can be selected by pressing a preset **DESTINATION** button.

When a preset **DESTINATION** button is pressed, that button and its source status button (if a preset key exists on the current view or menu) will be illuminated.

✶ Each panel type has slightly differing method of displaying current status depending on the display type or lack there-of. Refer to individual RCP manuals for details.

Figure 17.4 illustrates an RCP-QE36 panel where **Outpt1** is the selected destination.

Figure 17.4 Selecting a Destination Button — Outpt1 Selected

Source Buttons

Source switching is performed by pressing a preset **SOURCE** button. Selecting a source (when a **TAKE** function button is not assigned), results in the controller requesting the selected source to be switched by the router to the panel's current destination. If a **TAKE** function button is assigned to the current view or menu, the **TAKE** button will be illuminated. This indicates that **TAKE** is armed and the requested switch will be completed upon the user pressing the **TAKE** button.

Figure 17.5 illustrates a panel where **Outpt1** is the destination, **Input 7** is the source, and the **TAKE** is armed.

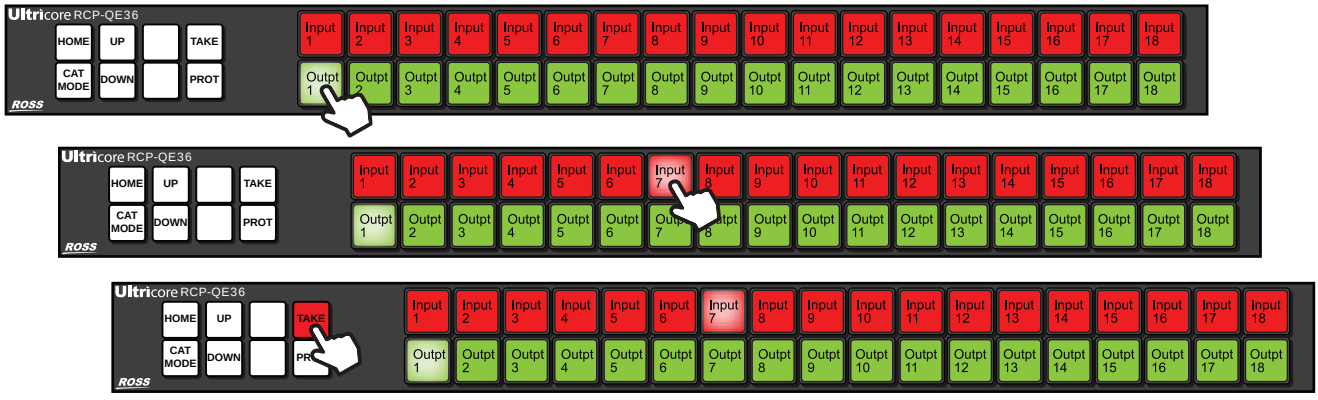


Figure 17.5 Selecting a Source Button — Camera 7 Selected

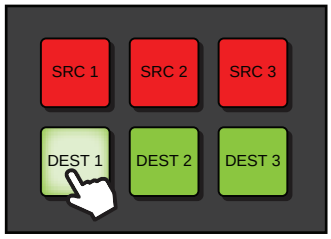
The flow is always destination selection followed by source selection. This switch will be executed with the current panel breakaway/level selections.

Level Buttons

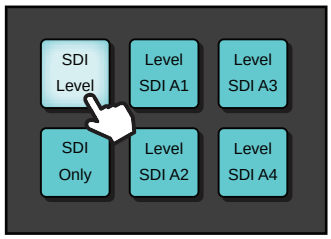
Level buttons select individual router levels. These correspond to the levels tab of the current Ultricore database. Level buttons are cumulative e.g. you may activate other levels after already selecting a level button.

The following sequence of button presses would result in **SRC 1** being routed to **DEST 1** but only on the levels named **SDI**, **SDI A1** and **SDI A2**. Any other levels defined in the current Ultricore database will be ignored and their status will remain as previously selected. If a level is selected in error, press that key again to unselect. The switch occurs once the Source selection is made.

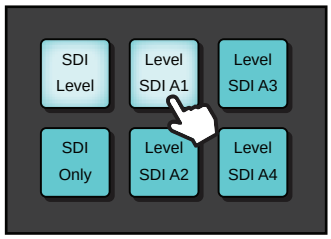
1. Select the **Destination** button.



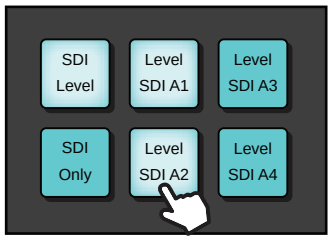
2. Select the **SDI Level** button.



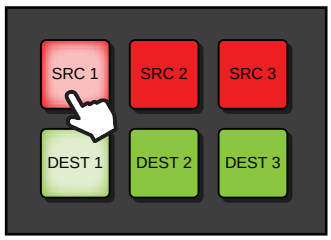
3. Select the **Level SDI A1** button.



4. Select the **Level SDI A2** button.



5. Select the **Source** button.



Breakaway Buttons

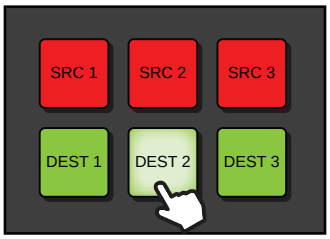
Breakaway buttons are buttons tied to a breakaway definitions. A breakaway is a pre-set pattern of levels defined within the panel configuration. Breakaways can be customized from the control panel's properties settings via the interface in DashBoard. **Figure 17.6** is an example of configuring a breakaway for a control panel.

Figure 17.6 Example of a Breakaway Setup Interface

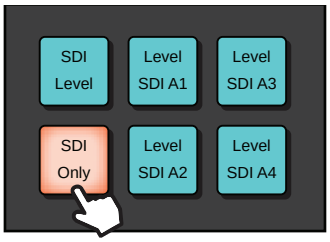
✶ The level numbers correspond to the number in the **ID** column of the **Levels** tab within the current database.

The following sequence of key presses would result in **Src 3** being routed to **Dest 2** but only on the levels included in the **SDI Only** breakaway pattern as defined within the RCP set-up (**Level 1** in this example). The switch occurs once the source selection is made.

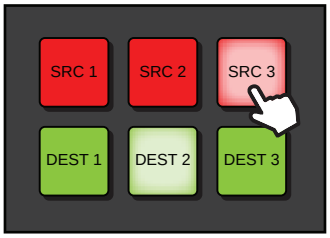
1. Select the **Destination** button.



2. Select the **SDI Only** breakaway button.

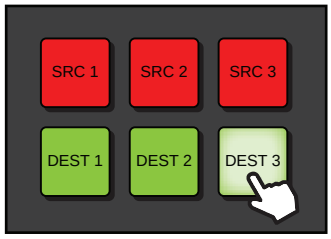


3. Select the **Source** button to activate the switch selection.

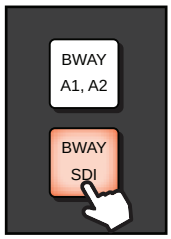


In the following example, the user is switching video from one source (**Src 1**) and embedded audio from another (**Src 2**).

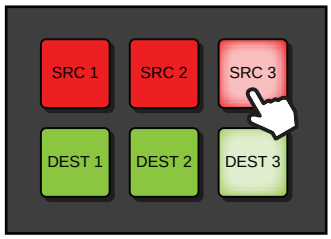
1. Select the **Destination** button.



2. Select the **SDI** breakaway button containing SDI video only level.

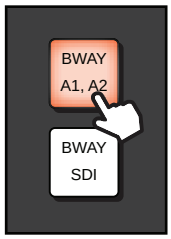


3. Select the **Source** button to activate the switch selection.

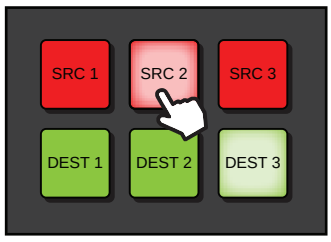


4. Select the breakaway button containing the SDI embedded Ch1 and Ch2 levels.

   Once **BWAY A1, A2** is pressed, **BWAY SDI** becomes unlit.



5. Select the **Source** button for the embedded audio.



Crosspoint Buttons

Crosspoint buttons perform a preset single crosspoint switch in a single button press. A crosspoint key contains a source (e.g. Src 1), a destination (e.g. Dest 1), and breakaway (e.g. SDI Only) within its definition.

Using Categories

Category navigation enables you to organize the resources (sources, destinations, and/or levels) in a router database to defined categories. There are three types of categories (each with independent interfaces):

- **Group** — allows a user to organize database resources into folders and sub-folders with arbitrary group names. Resources may be assigned to multiple groups if required.
- **Cat/Index** — allows a user to piece together or build up the final resource name from category names and index identifiers.
- **Legacy** — allows compatibility with earlier RCP-QE models. Note that this is not available as a soft panel.

Group Categories Overview

✶ Group category mode is only available when using an Ultrix router or Ultricore CC running software version 2.0 or higher.

Group Category allows the user to organize database resources (sources, destinations, and levels) into folders and sub-folders with arbitrary group names. The group name is not required to match the resource names (it is similar to setting up file folders). This group categorization is useful when you need to group resources based on their operational regions, events, personnel credentials etc.

✶ Ultrix does not support Unicode characters.

Example of a Group Category Setup

A user wants to arrange sources and destinations based on the types of sports the network broadcasts: baseball and football. The resources available are:

Sources	Destinations
HD1	SAT1
HD2	SAT2
HD3	SAT3
HD4	SAT4
HD5	SAT5

The resources need to be arranged into the following groups based on the sport type:

Baseball	Football
HD1	HD4
HD2	HD5
HD3	SAT4
SAT1	SAT5
SAT2	
SAT3	

The Group Category interface would be used to arrange the resources into group categories:

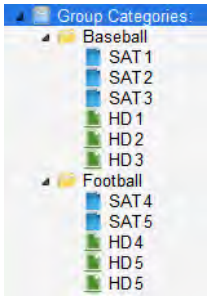


Figure 18.1 Example of Group Categories Arrangement Based on Sport Type

Once the group categories are defined, the user can perform switches, on a hard or soft panel, based on the group categories.

In **Figure 18.2**, an RCP-QE18 is used to select the source labeled as **HD 3**.

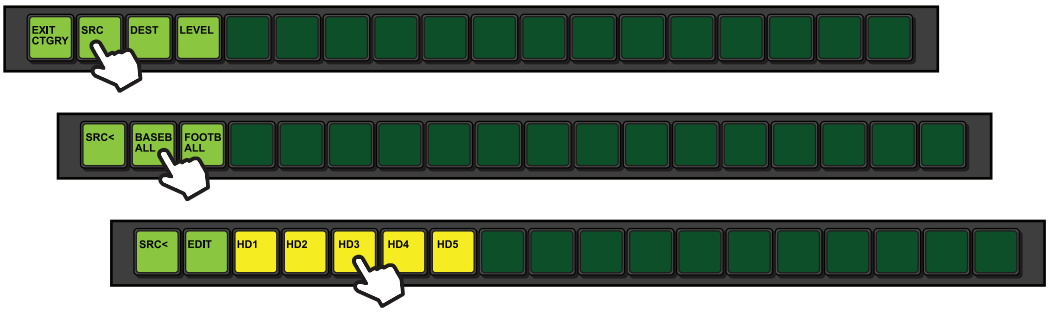


Figure 18.2 RCP-QE18 — Selecting HD 3 via Category Mode

In **Figure 18.3**, an Ultrix soft panel is used to select the destination labeled as **SAT 1**.

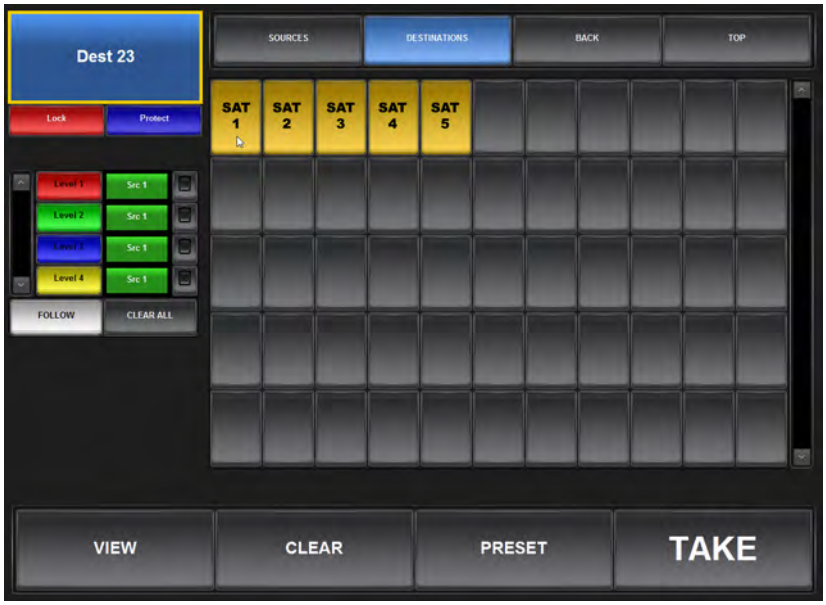


Figure 18.3 Ultrix — Selecting SAT 1 via a Soft Panel

Configuring Group Categories

Group categories are arranged in a hierarchy and displayed in a tree view. Each group is represented as a folder or node, and the resources included in that group are sub-nodes. Each type of resource is represented within the hierarchy as follows: sources are green, destinations are blue, and levels are red. **Figure 18.4** also shows two main groups (MV, and SDI) where the SDI group also has four sub-groups (Slot1, Slot2, Slot3, and Slot4)

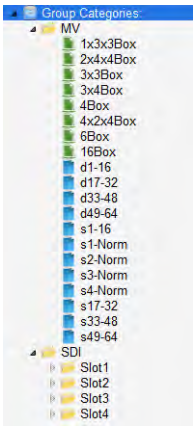


Figure 18.4 Example of Group Categories Tree View

Configuring group categories requires:

1. Creating group names
2. Assigning destinations, sources, and/or levels to groups
3. Configuring a soft panel or a hard panel for use

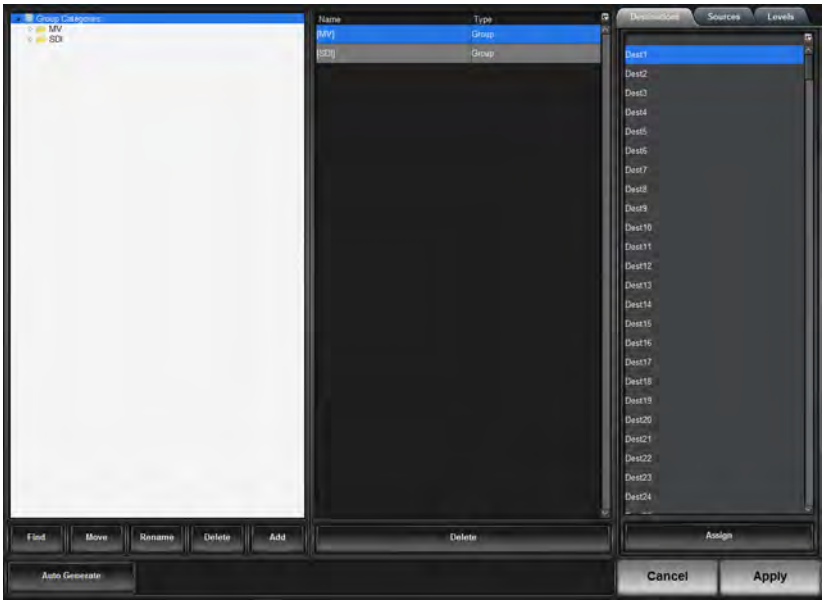
Creating Group Names

For each database, you can create multiple category groups and add sub-groups. Once you create your groups, resources can be added. Note that by default, the groups are organized alphabetically in the tree view.

To create a category group

1. Double-click the **Group Categories** node located under the **Database** node.

   The **Group Categories** tab opens.

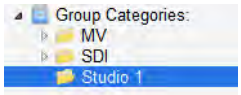


2. Select the **Group Categories:** node.
3. Click **Add**.

   The **Add Group** dialog opens.
4. In the **Name** field, type a unique identifier for the new group.
5. Click **Apply**.

   The **Add Group** dialog closes and the new group is added as a child of the selected node.

   In the example below, a new sub-group "**Studio 1**" was created in the **SDI** group.



6. Click **Apply** in the bottom right corner to apply your changes.

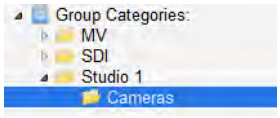
To create a category sub-group

1. In the **Group Categories** tree, select the group icon that you wish to add a sub-group to.
2. Click **Add**.

   The **Add Group** dialog opens.
3. In the **Name** field, type a unique identifier for the new sub-group.
4. Click **Apply**.

   The **Add Group** dialog closes and the new sub-group is added to the Group Categories tree view.

   In the example below, a new sub-group "**Cameras**" was created in the **Studio 1** group.



5. Click **Apply** in the bottom right corner to apply your changes.

To move a group within the tree view

1. In the **Group Categories** tree, select the group you want to move.

   The **Move** dialog opens. The dialog header displays the name of the selected group to move.
2. Use the tree view in the dialog to select where to move the group to.
3. Click **Apply**.

   The **Move** dialog closes.

   The group displays in the selected position of the tree view.
4. Click **Apply** in the bottom right corner to apply your changes.

Auto Generating the Groups

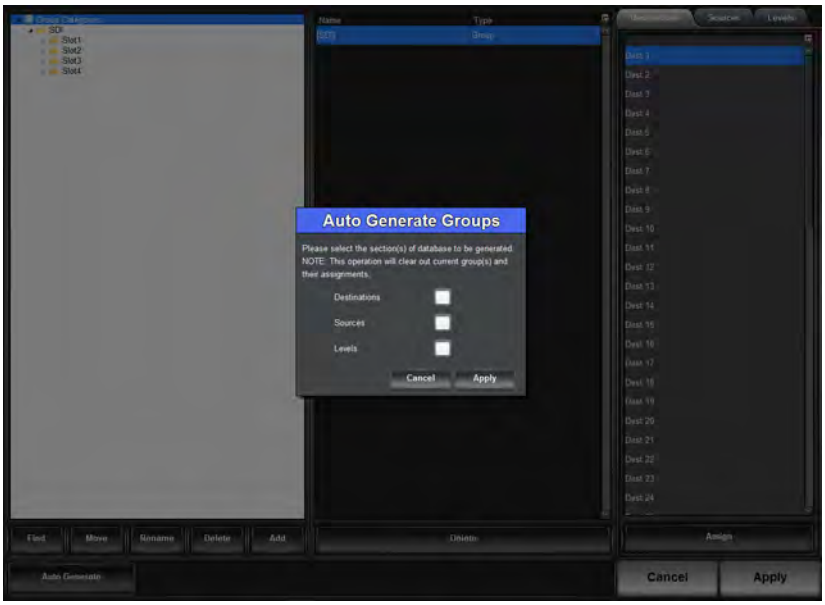
You can also choose to create a group based on the levels, sources, and destinations in your database or a combination. This requires the virtual labels for each resource to be consistent. For example, if all destinations are labeled as Dest x, a group will be created called "Dest" with each destination listed as a separate node.

★ Auto generating a group will delete the groups currently listed in the Group Categories tree view.

To auto generate a group

1. Click **Auto Generate**.

   The **Auto Generate Groups** dialog opens.



2. Select the box to include the resources in the group.
3. Click **Apply**.

   The **Auto Generate Groups** dialog closes and the **Group Categories** tree updates.
4. Click **Apply** in the bottom right corner to apply your changes.

Assigning Resources to a Group

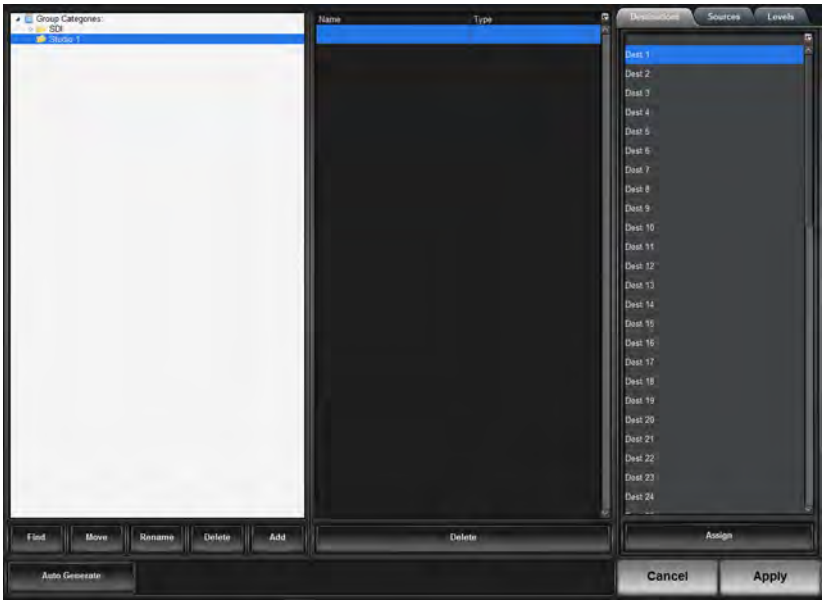
You can assign resources (destinations, sources, levels) once a group is configured.

To assign a resource to a group

1. In the **Group Categories** tree, select the group you want to add a resource to.

   The middle pane of the Group Categories interface updates to list the sub-groups or resources assigned to it.

   In the example below the area is blank because nothing is assigned to the selected group.



2. In the right pane, select the tab for the type of resource you wish to assign to the group.

   In the example above, the **Destinations** tab was selected.

3. To assign a single resource, select the resource from the tab.

4. To select a series of resources:

   a. In the selected tab, select the first resource in the series you want to assign.

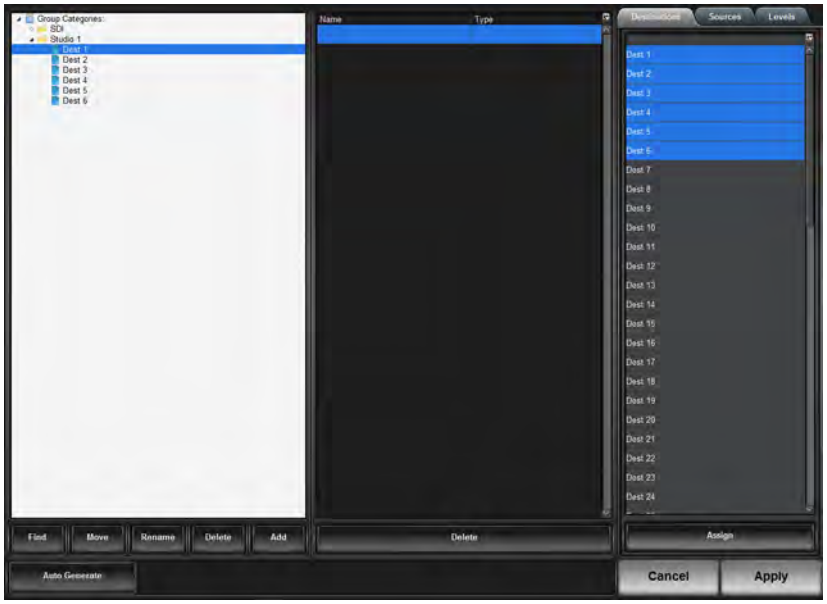
   b. Press and hold **Shift**.

   c. Click the last row in the series.

5. Click **Assign**.

   The **Group Categories** tree updates to display the selected resources in the group.

   In the example below, **Dest 1** to **Dest 6** were assigned to the **Studio 1** group.



6. Click **Apply** in the bottom right corner to apply your changes.

To move a resource to another group

1. In the **Group Categories** tree, select the resource you want to move.

2. Click **Move**.

   The **Move** dialog opens.

3. Select the new location for the resource.

4. Click **Apply**.

   The **Move** dialog closes.

   The **Group Categories** tree updates to display the resource in the new location. Notice that the resource is now removed from the original group.

5. Click **Apply** in the bottom right corner to apply your changes.

To delete a resource from a group

1. In the **Group Categories** tree, select the specific resource you want to delete from the group.

2. Click **Delete**.

   The **Delete** dialog opens.

3. Click **Yes**.

   The **Delete** dialog closes.

   The **Group Categories** tree updates to no longer display the resource in the group.
4. Click **Apply** in the bottom right corner to apply your changes.

To delete a series of resources from a group

1. In the **Group Categories** tree, select the specific group you want to edit.

   The middle pane of the Group Categories interface updates to list the sub-groups or resources assigned to it.
2. In the middle pane, select the first resource in the series you want to delete.
3. Press and hold **Shift**.
4. Click the last row in the series.
5. Click **Delete**.

   The **Delete** dialog opens.
6. Click **Yes**.

   The **Delete** dialog closes.

   The **Group Categories** tree updates to no longer display the resource in the group.
7. Click **Apply** in the bottom right corner to apply your changes.

Managing the Groups

✶ You cannot rename resources using the options in the Group Categories interface.

To rename a group

1. In the **Group Categories** tree, select the specific group you want to rename.
2. Click **Rename**.

   The **Rename Group** dialog opens.
3. Use the **Name** field to enter a unique identifier for the selected group.
4. Click **Apply**.

   The **Rename Group** dialog closes.

   The **Group Categories** tree updates to display the new name for the group.
5. Click **Apply** in the bottom right corner to apply your changes.

To delete a group

1. In the **Group Categories** tree, select the group you want to delete.
2. Click **Delete**.

   The **Delete** dialog opens.
3. Click **Yes**.

   The **Delete** dialog closes.

   The **Group Categories** tree updates to no longer display the group.
4. Click **Apply** in the bottom right corner to apply your changes.

Cat/Index Categories Overview

Category Index category mode (also referred to as Cat/Index mode), allows alpha-numeric extensions to labels to “build up” the final label selection. For example, VTR 1 - 6 may be expressed as a VTR label with numerical extensions 1 through 6. Similarly, alpha extensions may be used, for example, VTR A - E for VTRs A through E.

Destination and source names are split into substrings - the first substring is referred to as the *category*, and subsequent substrings as the *indexes* (e.g. Category VTR index 1 through 6). As source/destination names become more complex, an index may not be the final part of the selection name. For example, consider the source names CG TX 1 and CG TX 2; Cat/Index category mode may be configured so that a user selects CG, then TX, then either 1 or 2. This may be extrapolated to cover a large range of sources and destinations.

Example of a Cat/Index Category Setup

The following resources are available:

Sources / Destination Names				
CAM 1	SAT A1	CG RX 1	EDIT A	VTR1
CAM 2	SAT A2	CG RX 2	EDIT B	VTR2
CAM 3	SAT A3	CG TX 1	EDIT C	VTR3
CAM 4	SAT B1	CG TX 2	EDIT D	VTR4
CAM 5	SAT B2	CG TX A	EDIT E	VTR5

The possible categories and indexes would be:

Categories	Indexes		
CAM_[a]	1	5	D
SAT_	2	A	E
CG_	3	B	RX_
EDIT_	4	C	TX_
VTR			

a. The “_” characters represents a blank space. This indicates the category will filter resources with a space in the name (e.g. the CAM_ category will allow resources named CAM 1, CAM 2 but not CAM3).

Once the Cat/Index categories are defined, the user can perform switches, on a hard or soft panel, based on the categories. In **Figure 18.5**, a RCP-QE18 is used to select the source labeled as **CAM 3**. Note only the sources are available for the second button selection. In this example, the user would need to select **TAKE** to make the switch.

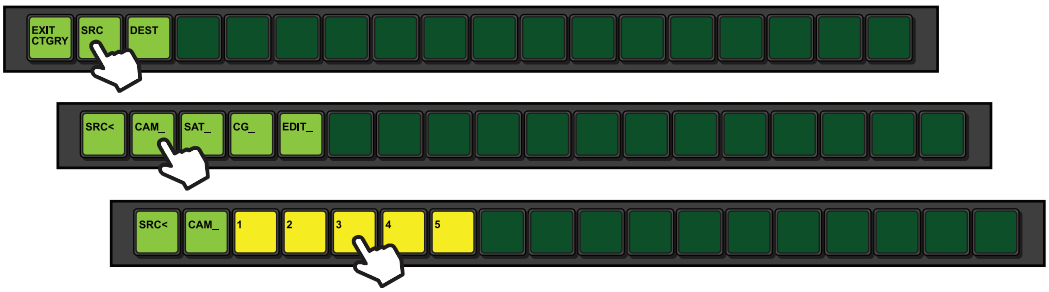


Figure 18.5 RCP-QE18 — Selecting CAM 3 via Category Mode

In **Figure 18.6**, an Ultrix soft panel is used to select the destination labeled as **CG RX 2**.

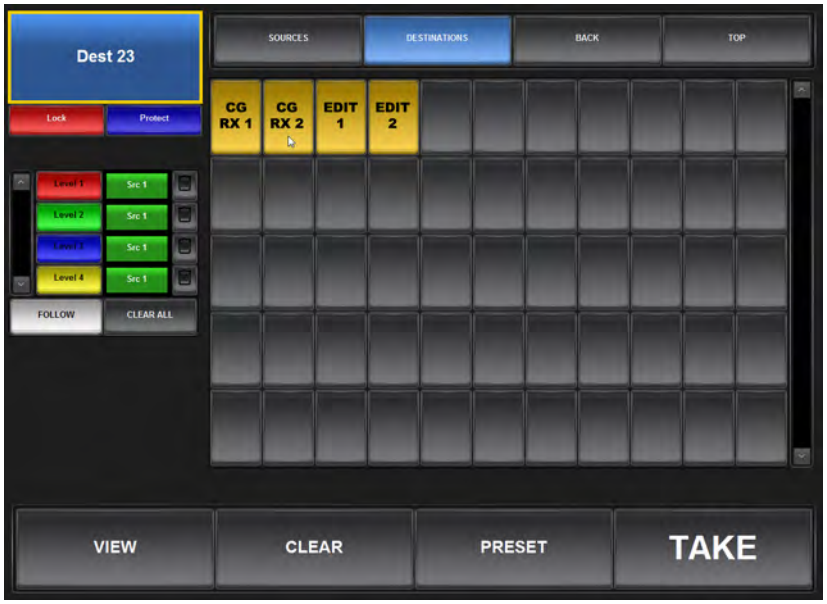


Figure 18.6 Ultrix — Selecting CG RX 2 via a Soft Panel

Configuring a Cat/Index Category Setup

Configuring Cat/Index categories requires:

1. Assigning categories
2. Assigning indexes
3. Configuring a soft panel or a hard panel for use

Assigning Categories

You can assign each destination to a specific category or multiple categories in a database. Using multiple categories enable you to filter the destinations, and organize them into logical groups. By default, categories are organized in alphabetical order.

To auto generate categories based on a database

1. Double-click the **Cat/Index Categories** node located under the **Database** node.

   The **Cat/Index Categories** tab opens.

2. Click **Generate**.

   The **Auto-Generate** dialog opens.

3. Click **Yes**.

   The **Auto-Generate** dialog closes.

   All previous categories are deleted from the **Categories** pane and new ones are listed based on the resource labels in your database.

4. Click **Apply**.

To manually create categories

1. Double-click the **Cat/Index Categories** node located under the **Database** node.

   The **Cat/Index Categories** tab opens

2. Click **Add** (located next to the **Categories** pane).

   The **Add Category** dialog opens.

3. Use the **Name** field to specify a unique identifier for the new category.

✶ The entry must match a resource name prefix.

   For example:

   - "**CG_**" creates a category to categorize resources named **CG_xxxx** where **xxxx** is any index.
   - "**CG**" creates a category to categorize resources named **CGxxxx** where **xxxx** is any index.
   - "**cg**" will not categorize any resources as the category names are case sensitive.

4. Select the **Insert trailing space** box to represent a space character with the "_" symbol.

5. Click **Apply**.

   The **Add Category** dialog closes.

   The new category is listed in the **Categories** pane.

6. Click **Apply**.

To create a category for a specific resource type

1. Double-click the **Cat/Index Categories** node located under the **Database** node.

   The **Cat/Index Categories** tab opens.

2. Click **Create** for the resource type you wish to filter.

   The **Create Category/Index** dialog opens.

3. Use the **Category Name** field to specify the characters for the new index filter.

✶ The entry must match a partial resource name.

4. Select the **Insert trailing space** box if you wish to include trailing spaces in the filter.
5. Click **Apply**.

   The **Create Category/Index** dialog closes.

6. Click **Apply**.

Assigning Index Filters

An index for a category enables you to filter resources. As category names and indexes are entered, the **Affected Resources** pane in the interface will update to indicate which sources or destinations of a given category is accessible on a control panel. Select a name in the **Categories** pane to see which source or destinations are in that category and filtered by the available **Indices** pane.

To assign an index filter

1. Double-click the **Cat/Index Categories** node located under the **Database** node.

   The **Cat/Index Categories** tab opens.

2. Click **Add** (located next to the **Indices** pane).

   The **Add Index** dialog opens.

3. Use the **Name** field to specify a new index filter.

✶ The entry must match a partial resource name.

   For example:

   - "**`TX_`**" creates a sub-index of TX, meaning further entry is required on the control panel. This will filter resources named **`<category name>`TX_xxxx** where **xxxx** is any index.
   - "**`TX 1`**" creates an 'end-point' index, meaning TX 1 is the last substring and no further entry is required on a control panel. This will filter resources named **`<category name>`**TX 1.
   - Note that you would not create an index of "TX 1" and a sub-index of "TX_". You must choose one or the other.

4. Click **Apply**.

   The **Add Index** dialog closes.

   The new index filter is listed in the **Indices** pane.

5. Click **Apply**.

To assign an index filter for a specific resource type

1. Double-click the **Cat/Index Categories** node located under the **Database** node.

   The **Cat/Index Categories** tab opens.

2. Click **Create** for the resource type you wish to filter.

   The **Create Category/Index** dialog opens.

3. Use the **Index Name** field to specify a unique identifier for the new index filter.

✶ The entry must match a partial resource name.

4. Select the **Insert trailing space** box if you wish to include trailing spaces in the filter.
5. Click **Apply**.

   The **Create Category/Index** dialog closes.
6. Click **Apply**.

Legacy Categories Overview

Legacy Category mode allows some category functionality on legacy RCP-QE control panels (17 button). There is no soft panel for Legacy Category Mode. Legacy mode is similar in operation to Group category mode with some elements of the index functionality of the Cat/Index Category mode.

Keep the following in mind when using legacy category mode:

- A destination or source cannot be in more than one category
- Only numerical indexes are supported

For More Information on...

- legacy category mode, refer to the ***RCP-QE User Guide***.

Configuring Legacy Categories

Source and destination selection may be achieved in two ways: direct selection or numerical index entry. The setup of the Ultricore Category tables determines the operational functionality.

For More Information on...

- Category mode for the Ultricore, refer to the ***Ultricore User Guide***.

Category Direct Selection Mode

Figure 18.7 illustrates the Categories configured in the Ultrix database for direct selection mode.

Figure 18.7 Ultrix — Entries in the Legacy Categories Tab

Figure 18.8 illustrates direct destination entries and the resulting available destinations in the selected category.

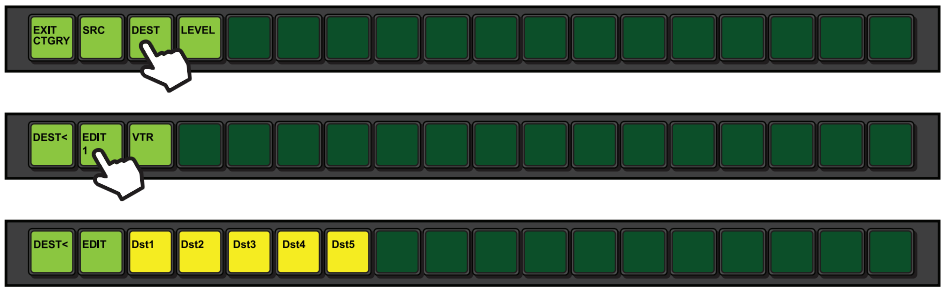


Figure 18.8 Ultrix — Resulting Operation on a Remote Control Panel

To set up direct selection in categories

1. Expand the **Database** node in the Tree View.
2. Double-click the **Legacy Categories** node.
3. Click **Destination** or **Source** as required.
4. Type the text for a category name in the **Category 1** column for each row that is required to be in that category.
5. Copy the items in the name column to the **Category 2** column.

   This will result in those rows being within the category you named in column Category 1.

★ You can use keyboard shortcuts such as **Ctrl**+**C** (copy) and **Ctrl**+**V** (paste) and **Shift**+click to select a range for ease of data entry.

Numerical Index Entry Mode

Figure 18.9 illustrates the Categories configured in the Ultrix database for numerical entry mode

Figure 18.9 Ultrix — Entries in the Legacy Categories Tab

Because we have set the VTRs numbered 6 through 10 in **Figure 18.9**, the Ultrix expects a two digit entry signified by the two underlines on the button next to the category name. As only numerals 1 or 0 are the only possible entries to make for the first digit, the Ultrix has blanked the invalid entry keys. (**Figure 18.10**)

To select VTR 6, press **0** then the remaining available numbers will become available, then press **6** to finish the selection.

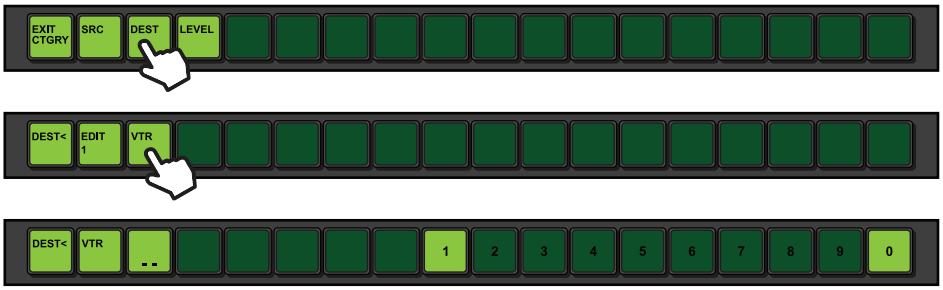


Figure 18.10 Ultrix — Resulting Operation on a Remote Control Panel

To set up numerical index selection in categories

1. Expand the **Database** node in the Tree View.
2. Double-click the **Legacy Categories** node.
3. Click **Destination** or **Source** as required.
4. Enter a category name in the **Category 1** column for each row that is required to be in that category. For example, in **Figure 18.9** the user entered "VTR".
5. Enter a number in the **Category 2** column.

   This will result in those rows being within the category you named in the Category 1 column. These destinations are accessible via entering the numerical extension of the required destination. For example, in **Figure 18.9** the user entered "6" for row 5.

Creating a Soft Panel with Categories

Once you have defined your categories and tags for each level of a database, you can create a custom soft panel using the category settings as a basic for arranging the sources, destinations, and levels. This topic is covered in the section "**Using Category Panels**" on page 239.

Soft Panels in DashBoard

A soft panel is a software implementation of a physical remote control panel (RCP). The soft panel configurations are part of a database so any instance of DashBoard connecting to a given Ultrix router has the defined soft panels available. You can customize a soft panel by defining the sources, destinations, levels, and/or salvos that will be available on the panel interface. The Ultricore Control Mode in the Ultrix router provides four types of soft panels for router control:

- **Matrix** — the destinations and sources are organized into a grid layout.
- **MultiBus** — the destinations and sources are organized into separate a rows (buses) of buttons.
- **Group Category** — the destinations and sources are grouped by pre-defined categories.
- **Cat/Index Category** — the resources are defined using a defined set of search criteria (indexes).
- **Ultritouch PB** — the resources are organized into a customized layout that is pre-sized for an Ultritouch hard panel. Refer to the ***Ultritouch + Ultrix User Guide*** for details.
- **Push Button** — similar layout and features of the Ultritouch PB panel but sized for use on a computer monitor.

✶ For information on the Audio Mixer soft panel options, refer to the chapter "**ULTRIMIX-MXR**" on page 127.

Before You Begin

Keep the following in mind when managing your soft panels in DashBoard:

- Soft panels require the setup of the database source/destinations/levels and port assignment to be complete.
- If the database changes (source/destination/level/salvo addition or deletion), you will need to edit the soft panel configuration to ensure the correct sources/destinations/levels/salvos are visible.
- Ultrix does not support Unicode characters.

For More Information on...

- databases, refer to the chapter "**Database Configuration**" on page 105.

Soft Panels Overview

A soft panel is created using the options in the Panels interface for your database. Soft panels are listed as sub-nodes under the Soft Panels node in the Tree View of DashBoard. Double-click a sub-node to display the corresponding soft panel in the DashBoard window. The hierarchy of the nodes in the tree is determined by their Panel ID which is assigned when the soft panel is created in the database. In **Figure 19.1** there are seven soft panels in the tree view.

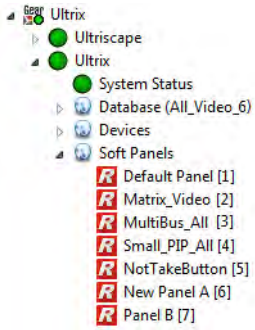


Figure 19.1 Example of a Soft Panels Tree View

A soft panel can be as simple or complex in its layout as you require. The Panels interface enables you to specify the number of destinations, sources, levels, and salvos displayed on your panel. You select one of six soft panel types and specify the elements of the soft panel including giving the panel a unique name.

For More Information on...

- Matrix panels, refer to the section "**Using Matrix Panels**" on page 230.
- Multibus panels, refer to the section "**Using MultiBus Panels**" on page 236.
- Category panels, refer to the section "**Using Category Panels**" on page 239.
- Ultritouch PB panels, refer to the ***Ultritouch + Ultrix User Guide***.
- Push Button panels, refer to the section "**Using Push Button Panels**" on page 243.
- Audio Mixer panels, refer to the section "**Creating Audio Mixer Soft Panels**" on page 133.

Enabling Machine Control

Typically, the ports on a data router (such as the NK-M series routers) are bi-directional where there is both a transmit (input to output) and reciprocal receive connection that is made for each port. For example, a switch from port 1 to port 2 involves a forward path (from port 1 input to port 2 output) and the reciprocal connection from (port 2 input to port 1 output).

In some cases however, there is a need to connect on the port's input to several ports' output (e.g. one device commanding many target devices) without making the reciprocal connection. This allows the commanding device to just broadcast commands and not receive from the many devices it communicates with.

When configuring a soft panel, you have the option to add a Machine Control button to the panel. When selected on the panel, this Machine Control button sends a Take request directed to an NK-M series data router to automatically make the reciprocal port switch. On a video router, the connection is all one way from an input port to an output port (e.g. such as from IN 1 to OUT 2).

Creating a Soft Panel

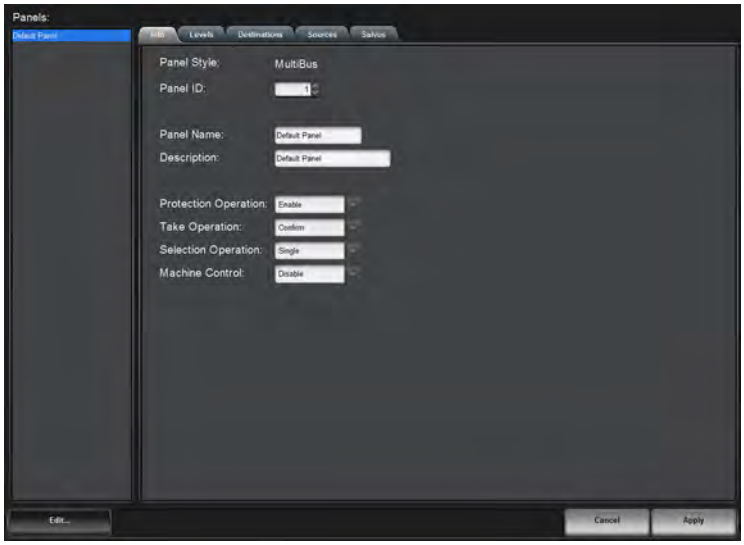
Soft panels are listed under the Soft Panels node in a hierarchy as determined by their Panel ID. When you create a new soft panel, you select from the existing soft panel types. You then assign a Panel Name and ID to display in the tree view using the nomenclature "**`Panel Name [#]`**" where **`[#]`** is the Panel ID.

✶ A Default Panel is available that is a MultiBus style with 1 level, 4 destinations, and 4 sources.

To create a soft panel

1. Double-click the **Panels** node located under the **Database** node.

   The **Panels** tab opens.



2. Click **Edit** > **Add**.

The **Add Panel** dialog opens.

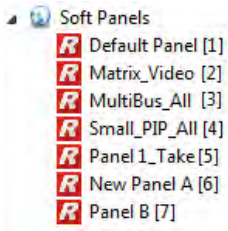
3. Type a unique identifier in the **Name** field. This will be used to identify the panel in the tree under the Soft Panels node.
4. Use the **Style** menu to specify the type of panel to create. Choose from the following:
   - **Matrix** — Creates a soft panel that organizes the destinations and sources in a grid layout.
   - **MultiBus** — Creates a soft panel where destinations and sources are organized into separate buses.
   - **Group Category** — Creates a soft panel where the hierarchy of the destinations and sources are determined by the values in the **Group Categories** tab. Refer to "**Using Categories**" for details.
   - **Cat/Index Category** — Creates a soft panel where the hierarchy of the destinations and sources are determined by the values in the **Cat/Index Categories** tab. Refer to "**Using Categories**" for details.
   - **Push Button** — Creates a soft panel that organizes the destinations and sources in a distinct vertical layout.
   - **Ultritouch PB** — Creates a soft panel that is used on an Ultritouch hard panel. Refer to the ***Ultritouch + Ultrix User Guide*** for details.
5. Click **Apply** to save your settings and close the **Add Panel** dialog.

   The new panel name is added to the **Saved Panels** list of the **Panels** tab and automatically selected in the tab for editing.
6. Select the **Info** tab.
7. Use the **Panel ID** menu to determine the position of the panel in the Soft Panels tree where a value of "1" is the highest priority (and listed at the top).

✶ Ensure that the new soft panel does not use the same **Panel ID** as a previously saved soft panel.

8. Use the **Description** field to provide a textual summary of the panel.
9. Use the **Protection Operation** menu to provides options for preventing crosspoint switches. Choose from the following:
   - **Enable** — The **Lock**, **Protect**, and **Free** buttons display on the soft panel. Refer to "**Using Matrix Panels**" or "**Using MultiBus Panels**" for a description of these buttons.
   - **Disable** — The **Lock**, **Protect**, and **Free** buttons do not display on the soft panel. These protection options are not available for the soft panel.
10. Use the **Take Operation** menu to configure the **Take** button for the soft panel. Choose from the following:
    - **Confirm** — Displays a **Take** button on the soft panel. You must select **Take** to perform a crosspoint switch.
    - **Direct** — The soft panel does not display a **Take** button. A crosspoint switch occurs automatically after each destination/source selection is made by the user on the soft panel.
11. If you selected MultiBus in step 4, use the **Selection Operation** menu to enable multiple crosspoint/level selections and display the **Multi Select** button. Choose from the following:
    - **Single** — Disables this feature. The **Multi Select** button does not display on the soft panel.
    - **Multi** — The **Multi Select** button displays on the soft panel.
12. Use the **Machine Control** menu to control whether a Take request directed to an Ross NK-M series data router automatically makes a reciprocal port switch. Choose from the following:
    - **Enable** — Displays a **Machine Control** button on the soft panel. You must select **Machine Control** to enable the reciprocal port switch on the NK-M series router.
    - **Disable** — The soft panel does not display a **Machine Control** button. This is the default setting.
13. If you set the **Style** to **Push Button**, proceed to "**Configuring a Push Button Soft Panel**" on page 245.
14. Click **Apply** to save your new soft panel.

    The new panel displays in the Soft Panels tree. In the example below, there are seven soft panels in the tree view. Note that the Priority ID is the value displayed in the [#] brackets.



15. Continue to the next sections to add levels, destinations, sources, and salvos to your soft panel as required.

Levels for the Soft Panel

You can specify the total number of levels available on the soft panel to the user. For example, if you set the Viewable levels to 6 but have assigned 8 levels to the panel, only the first six levels in the Assigned list are displayed. You can also specify the order in which the levels are displayed on the soft panel.

To specify the levels for the soft panel

1. Double-click the soft panel name from the **Panels** list in the left toolbar of the **Panels** tab.
2. Select the **Levels** tab.
3. Use the **Viewable levels** field to specify the total number of levels for the soft panel.
4. To add a level to the soft panel:
   a. From the **Available** list, select the level(s) you wish to add to the soft panel.
   b. Click ▶.

   The **Assigned** list updates to include the selected level(s).

5. To assign all the available levels in the database to the soft panel, click ▶▶.
6. To assign multiple levels to the soft panel:
   a. From the **Available** list, select the first level you wish to add to the soft panel.
   b. Press **Shift**.
   c. From the **Available** list, select the other level(s) you wish to add to the soft panel.
   d. Click ▶.

   The **Assigned** list updates to include the selected levels.

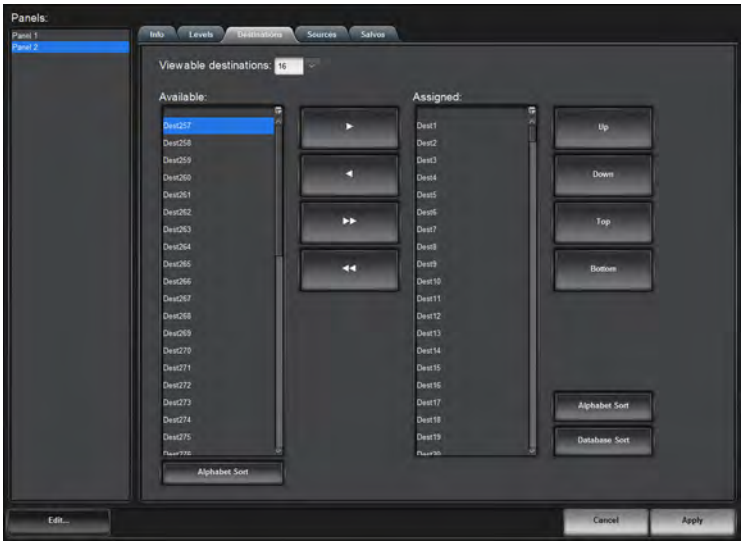
7. Use the provided buttons beside the **Assigned** list to determine the order in which the levels are displayed on the soft panel.
8. Click **Apply** at the bottom of the Panels tab to save your settings.

Destinations for the Soft Panel

You can create a soft panel with a specified number of destinations and determine the order in which they are displayed in the crosspoint row of the panel. For example, the router may have 32 destinations but you only want to make the first 4 outputs selectable on the crosspoint row of your soft panel. You would then set the Viewable destinations to 4. You can also specify the order in which the destinations are displayed on the soft panel.

To specify the destinations for the soft panel

1. Double-click the soft panel name from the **Panels** list in the left toolbar of the **Panels** tab.
2. Select the **Destinations** tab.



3. Use the **Viewable destinations** field to specify the total number of destinations for the soft panel.
4. To add a destination to the soft panel:
   a. From the **Available** list, select the destination(s) you wish to add to the soft panel.
   b. Click ▶.

   The **Assigned** list updates to include the selected destination(s).
5. To assign all the available destinations in the database to the soft panel, click ▶▶.
6. To assign multiple destinations to the soft panel:
   a. From the **Available** list, select the first destination you wish to add to the soft panel.
   b. Press **Shift**.
   c. From the **Available** list, select the other destination(s) you wish to add to the soft panel.
   d. Click ▶.

   The **Assigned** list updates to include the selected destinations.
7. Use the provided buttons beside the **Assigned** list to determine the order in which the destinations are displayed on the soft panel.
8. Click **Apply** at the bottom of the Panels tab to save your settings.

Sources for the Soft Panel

You can create a soft panel with a specified number of sources and determine the order in which they are displayed in the crosspoint row of the panel. For example, the router may have 64 sources but you only want to make the first 12 inputs selectable on the crosspoint row of your soft panel. You could set the Viewable sources to 12 or assign only those 12 inputs to the soft panel. You can also specify the order in which the sources are displayed on the soft panel.

To specify the sources for the soft panel

1. Double-click the panel name from the **Panels** list in the left toolbar of the **Panels** tab.
2. Select the **Sources** tab.
3. Use the **Viewable sources** field to specify the total number of sources for the soft panel.
4. To add a source to the soft panel:
   a. From the **Available** list, select the source(s) you wish to add to the soft panel.
   b. Click ▶.

   The **Assigned** list updates to include the selected source(s).

5. To assign all the available sources in the database to the soft panel, click ▶▶.
6. To assign multiple sources to the soft panel:
   a. From the **Available** list, select the first source you wish to add to the soft panel.
   b. Press **Shift**.
   c. From the **Available** list, select the other source(s) you wish to add to the soft panel.
   d. Click ▶.

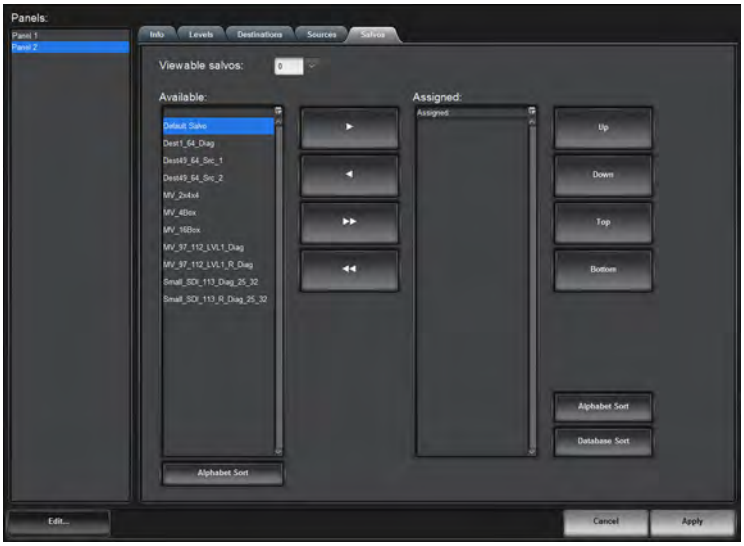
   The **Assigned** list updates to include the selected sources.
7. Use the provided buttons beside the **Assigned** list to determine the order in which the sources are displayed on the soft panel.
8. Click **Apply** at the bottom of the Panels tab to save your settings.

Salvos for the Soft Panel

Before you can add salvos to a soft panel, you must configure them as outlined in "**Creating Salvos**" on page 249.

To specify the salvos available on the soft panel

1. Double-click the soft panel name from the **Panels** list in the left toolbar of the **Panels** tab.
2. Select the **Salvos** tab.



3. Use the **Viewable salvos** field to specify the total number of salvos for the soft panel.
4. To add a salvo to the soft panel:
   a. From the **Available** list, select the salvo you wish to add to the soft panel.
   b. Click ▶.

   The **Assigned** list updates to include the selected source(s).
5. To assign all the available salvos in the database to the soft panel, click ▶▶.
6. To assign multiple salvos to the soft panel:
   a. From the **Available** list, select the first salvo you wish to add to the soft panel.
   b. Press **Shift**.
   c. From the **Available** list, select the other salvo(s) you wish to add to the soft panel.
   d. Click ▶.

   The **Assigned** list updates to include the selected salvos.
7. Use the provided buttons beside the **Assigned** list to determine the order in which the salvos are displayed on the soft panel.
8. Click **Apply** at the bottom of the Panels tab to save your settings.

Copying a Soft Panel

✶ Ensure the soft panel is currently not in use.

To copy a soft panel

1. Double-click the **Panels** node located under the **Database** node.

   The **Panels** tab opens.
2. From the **Panels** list in the left toolbar, select the soft panel to copy.
3. Click **Edit** > **Copy**.

4. Click **Edit** > **Paste**.

   The **Panels** tab updates to display the settings for the selected soft panel. New soft panels are automatically named "**`New Panel #`**" where **#** is an auto-generated value.

5. Select the **Info** tab.
6. Type a unique identifier in the **Panel Name** field. This will be used to identify the panel in the tree under the Soft Panels node.
7. Click **Apply** at the bottom of the Panels tab to save the new panel. This also helps to ensure that you do not mistakenly edit the original panel that you copied.

Editing a Soft Panel

Once you edit a soft panel, you must re-load the soft panel if it was in use prior to the edit.

✶ Ensure the soft panel is currently not in use.

To edit a soft panel

1. Double-click the **Panels** node located under the **Database** node.

   The **Panels** tab opens.

2. From the **Panels** list in the left toolbar, select the soft panel to edit.

   The **Panels** tab updates to display the settings for the selected soft panel.

3. Edit the settings for the panel using one of the following procedures:

✶ You cannot edit the **Panel Style** of a soft panel.

- "**To specify the levels for the soft panel**" on page 224
- "**To specify the destinations for the soft panel**" on page 225
- "**To specify the sources for the soft panel**" on page 226
- "**To specify the salvos available on the soft panel**" on page 227

4. Click **Apply** at the bottom of the **Panels** tab to save the new settings.
5. If a dialog opens to remind you that the affected soft panel is currently in use:
   a. Click **OK** to close the dialog.
   b. Perform the procedure "**To re-load a soft panel**".

To re-load a soft panel

1. Close the newly edited soft panel as follows:
   a. Locate the tab for the soft panel in the DashBoard client window.
   b. Click  to close the tab.
2. In the **Basic Tree View**, expand the **Soft Panels** node for the Ultrix.
3. Double-click the node for the newly edited soft panel.

   The tab for the selected soft panel opens.

Deleting a Soft Panel from the Database

✶ Ensure the soft panel is currently not in use.

To delete a soft panel from the database

1. Double-click the **Panels** node located under the **Database** node.

   The **Panels** tab opens.

2. Select the soft panel name from the **Panels** list in the left toolbar.
3. Click **Edit** > **Delete**.
4. Click **Apply** at the bottom of the **Panels** tab.

Using the Lock and Protect Features

Whether your soft panel includes the Lock and Protect features depends on the panel type. The Matrix and Category panels can include the **Lock**, **Protect**, and **Free** buttons. The MultiBus panels can include only the **Lock** button. Matrix and Category soft panels must have their **Protection Operation** set to **Enable** to display these buttons.

For More Information on...

- the **Protection Operation**, refer to **Table 30.30** on page 351.

Using a Lock

If your soft panel includes a **Lock** button, you have the option to protect source/level and destination/level pairs. When another control panel or DashBoard client attempts to switch that combination, the request will be denied.

To lock a source/level pair

1. Display the soft panel in the DashBoard window.
2. Select the source/level pairs from the soft panel interface.
3. Click **Lock**.

   The label on the button changes to **Unlock** and the button remains lit.

To lock a destination/level pair

1. Display the soft panel in the DashBoard window.
2. Select the destination/level pairs from the soft panel interface.
3. Click **Lock**.

   The label on the button changes to **Unlock** and the button remains lit.

To clear a lock

- Click the **Unlock** button.

  The label on the button changes to **Lock** and the button remains lit.

Using a Protect

A soft panel can be locked by clicking the **Protect** button. The button is lit until pressed again. A protect alarm message is displayed in the System Status tab when an output is protected.

This feature protects the currently selected destination/level pair from use by other sources, as well as from other linked panels. The **Protect** button is especially useful in instances where a destination must be held after a switch has been made.

To apply a protect

- Click **Protect**.

  The button is lit. Selecting crosspoints will not take effect and the panel does not update when buttons are pressed.

To clear a protect

- Click **Protect**.

  The button is no longer lit and crosspoint switches can be initiated.

Using Matrix Panels

Matrix panels enable you to perform direct take transitions, and local salvo definitions using a grid of sources and destinations.

Panel Interface Overview

Each level is represented as a button in the color defined in the current database. Notice that the crosspoints are represented in the same color as the applicable level.

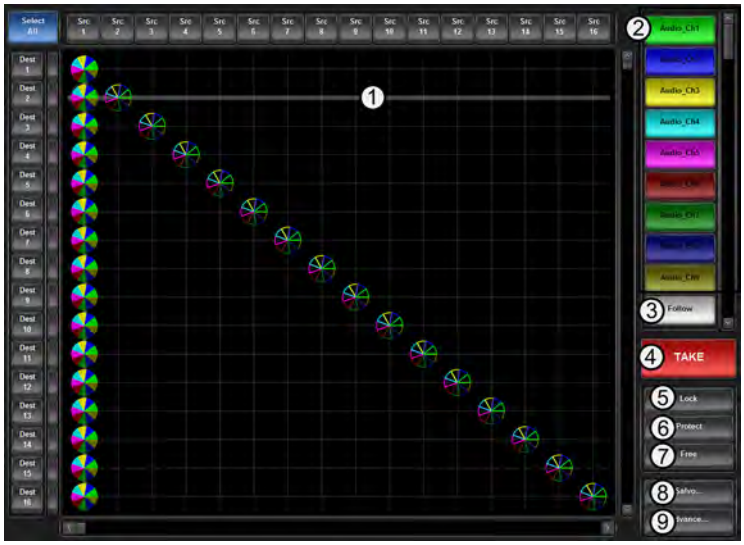


Figure 19.2 Example of a Matrix Panel

1. Crosspoints

The number of Destinations and Sources and their labels in the matrix are specified using the **Destinations** and **Sources** interfaces. Click within the matrix or click the Destination and Source buttons to select the crosspoints for switching the selected levels. In **Figure 19.2**, crosspoints were selected using the **Advanced** > **Diagonal Presets** option.

2. Levels Button

Click a level button to include that level in the next crosspoint switch. A lit button indicates that the corresponding level will be included in the next transition. The color and name of the button are specified using the **Levels** interface. **Figure 19.2** illustrates a Matrix panel with nine levels selected.

3. Follow Button

Click this button to select all levels in the matrix. Clicking **TAKE** after pressing **Follow** will then switch all crosspoints at the same time on all available levels.

4. TAKE Button

Click this button to execute the switch between crosspoints. If you are using a soft panel with the **Take Operation** was set to **Direct**, a **TAKE** button is not displayed because the transitions will occur automatically after a crosspoint switch is selected.

5. Lock Button

Click this button to prevent switching of the selected crosspoints. When creating the soft panel, if the **Protection Operation** was set to **Disable**, the **Lock** and **Protect** buttons are not displayed.

6. Protect Button

Click this button to prevent switching of the selected crosspoints except in the DashBoard client session the Protect was initiated in.

7. Free Button

Click this button to end a lock or protect on the selected crosspoints.

8. Salvo Button

Click this button to display the Salvo menu. Refer to the "**Salvo Menus**" on page 370 for information on the menu options.

9. Advanced Button

Click this button to display the Advanced menu. Refer to the section "**Advanced Menus**" on page 371 for a list of the menu options.

10.Machine Control Button

If you are using a soft panel with the **Machine Control** set to **Enabled**, the **MACHINE CONTROL** button is displayed. Refer to the section "**Enabling Machine Control**" on page 222 for details on this button.

Crosspoint Switches via a Matrix Panel

Crosspoint selections can be made using the cross-hairs or clicking the required Destination and Source buttons on the panel. This section provides instructions using the cross-hairs for crosspoint selections.

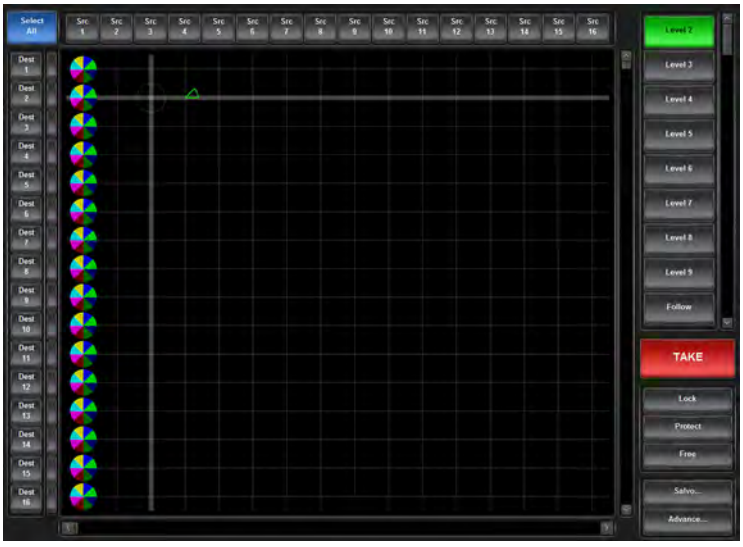
To make a crosspoint switch using a single level

1. In the **Basic Tree View**, expand the **Soft Panels** node for the Ultrix.
2. Double-click the node for a matrix soft panel.

   The **Matrix Panel** tab opens.
3. Select a level from the toolbar.

   The button is now lit.
4. Select the source and destination intersection inside the matrix.

   The selection is represented as an icon set in the color that matches the level. In the example below, **Level 2**, **Src 4**, and **Dest 2** are selected. The **TAKE** button is now lit.



5. Click **TAKE**.

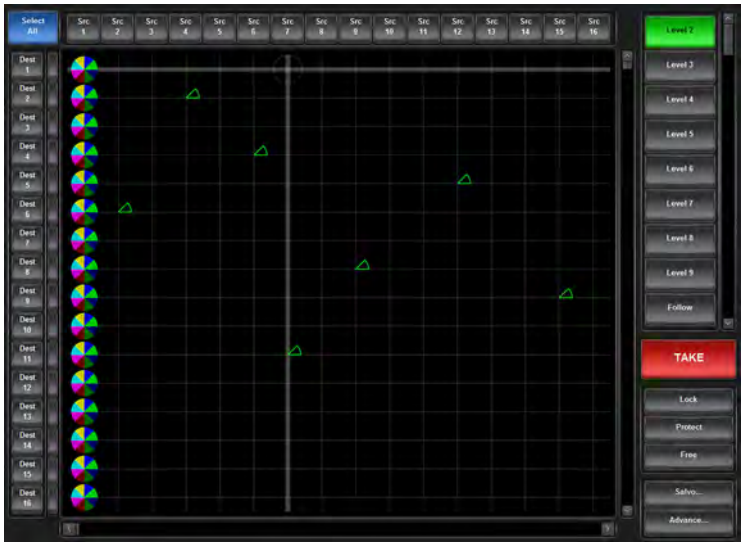
   The icon on the matrix is solid in the color that matches the level and the **TAKE** button is no longer lit.

To make a crosspoint switch between multiple sources and destinations on a single level

1. In the **Basic Tree View**, expand the **Soft Panels** node for the Ultrix.
2. Double-click the node for a matrix soft panel.

   The **Matrix Panel** tab opens.
3. Select a level from the toolbar.
4. Select the first source and destinations inside the matrix.
5. Select the additional crosspoints to switch.

   In the example below, **Level 2** is selected but seven crosspoint switches are also selected (each is represented with a green icon on the matrix).



6. Click **TAKE**.

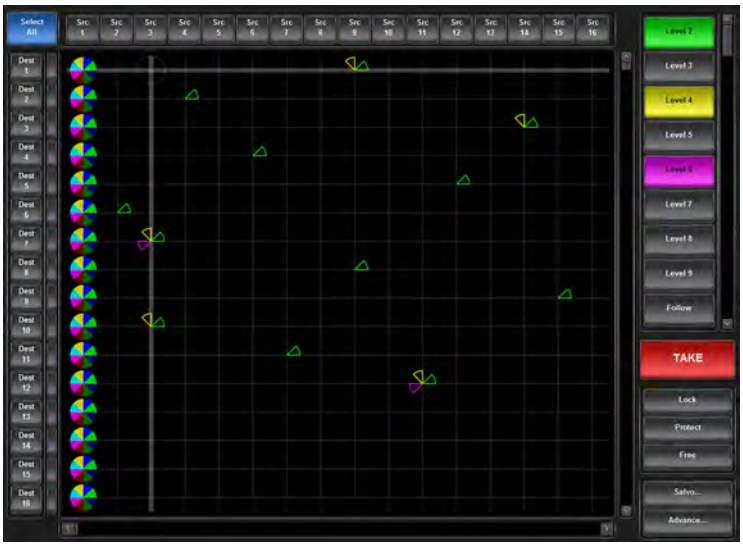
   The icons on the matrix are solid in the color that matches the level and the **TAKE** button is no longer lit.

To make a crosspoint switch using multiple levels

1. In the **Basic Tree View**, expand the **Soft Panels** node for the Ultrix.
2. Double-click the node for a matrix soft panel.

   The **Matrix Panel** tab opens.
3. Select each level from the toolbar or click **Follow** to include all levels.
4. Select the first source and destination inside the matrix.
5. Select the additional crosspoints to switch.

   When multiple levels are selected, the circle on the crosspoint is divided into colored sections with each section representing a level. In the example below, Levels 2, 4, and 6 are selected; each with multiple crosspoint selections on the matrix.



6. Click **TAKE**.

   The icons on the matrix are solid in the color that matches the level and the **TAKE** button is no longer lit.

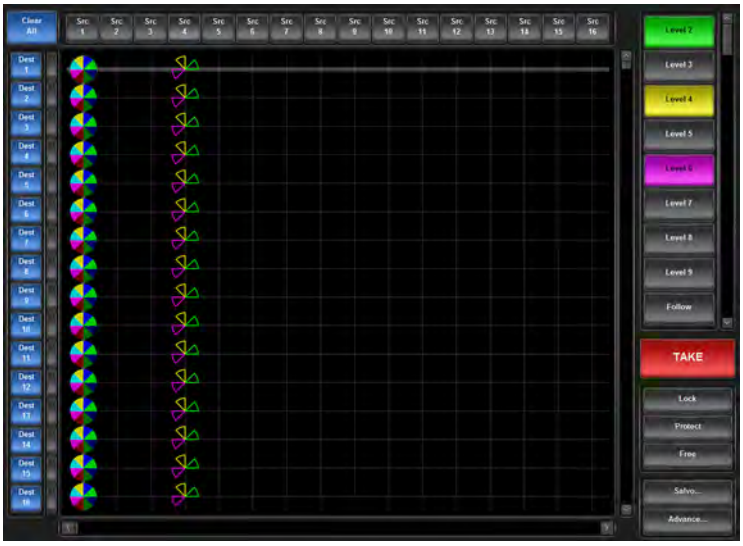
To perform a crosspoint switch on multiple destinations with a single source

1. In the **Basic Tree View**, expand the **Soft Panels** node for the Ultrix.
2. Double-click the node for a matrix soft panel.

   The **Matrix Panel** tab opens.
3. Select each level from the toolbar or select **Follow** to include all levels.
4. Click **Select All** located at the top left corner of the interface.

   All the **Dest** buttons on the Matrix panel are now lit and selected.The **Select All** button is labeled **Clear All**.
5. From the top toolbar, select the **Src** button to switch.

   The matrix updates to indicate the crosspoint switches that will occur on the next transition to the same source and the **TAKE** button is now lit. In the example below, Levels 2, 4 and 6 are selected; all destinations will switch to **Src 4**.



6. Click **TAKE**.

   The icons on the matrix are solid in the color that matches the level and the **TAKE** button is no longer lit.

Using a Default Preset

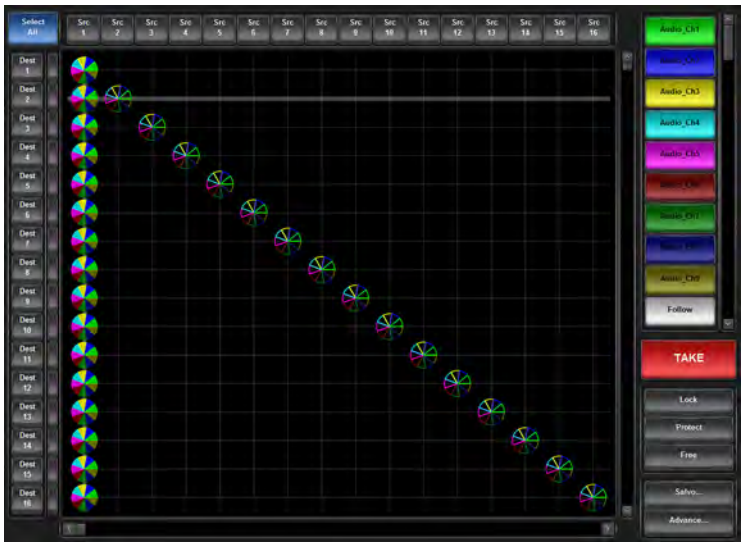
The **Advanced** menu provides two pre-configured presets: Diagonal and R-Diagonal.

Diagonal Presets

Crosspoint selection is organized into a diagonal line that starts with the top left corner of the matrix (e.g. **Src 1** and **Dest 1**), continues in single step intervals (e.g. **Src 2** and **Dest 2**, **Src 3** and **Dest 3** etc.) and ends with the bottom right corner of the matrix (e.g. **Src 16** and **Dest 16**).

To use the Diagonal Preset

1. Select each level from the toolbar or select **Follow** to include all levels.
2. Click **Advanced** > **Diagonal Presets**.



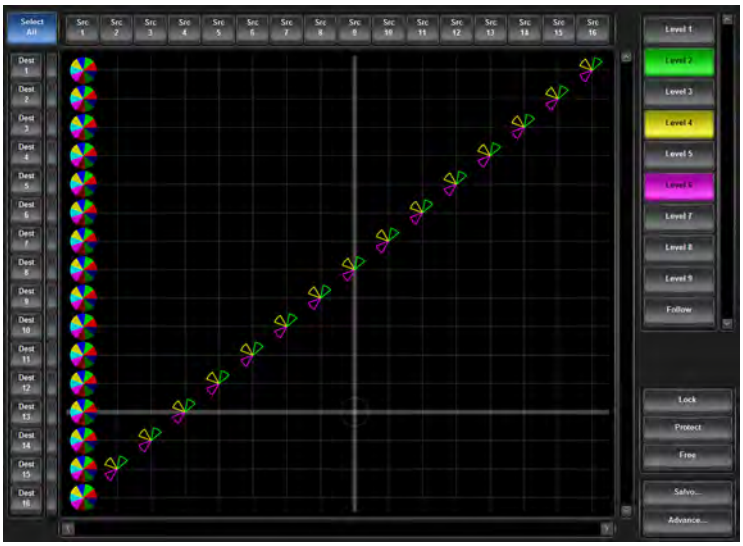
3. Click **TAKE**.

R-Diagonal Presets

Crosspoint selection is organized into a diagonal line that starts with the top right corner of the matrix (e.g. **Src 16** and **Dest 1**), continues in single step intervals (e.g. **Src 15** and **Dest 2, Src 14** and **Dest 3** etc.) and ends with the bottom left corner of the matrix (e.g. **Src 1** and **Dest 16**).

To use the R-Diagonal Preset

1. Select each level from the toolbar or select **Follow** to include all levels.
2. Click **Advanced** > **R-Diagonal Presets**.



3. Click **TAKE**.

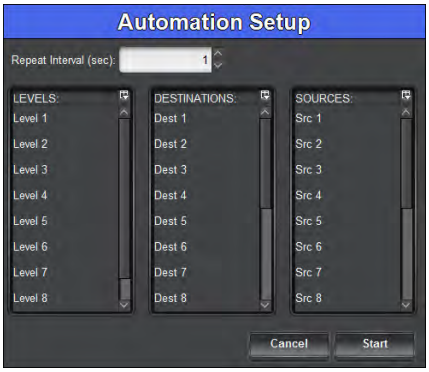
Creating an Automatic Switching Loop

The Automation feature enables you to set up a crosspoint and create a continuous switch loop using the specified crosspoints.

To set up an automated crosspoint selection loop

1. Click **Advanced** > **Setup Automation**.

   The **Automation Setup** menu opens.



2. Use the **Repeat Interval** field to specify the number seconds the crosspoint switch will continuously loop for.
3. Use the **Levels** menu to specify the levels the crosspoint will include.
4. Use the **Destinations** menu to select the outputs on the router.
5. Use the **Sources** menu to select the input signals to route to the output for the switch.
6. Click **Start**.

   The menu closes and the crosspoint switch begins. The loop continues for the length of time specified in step 2.

✶ To instantly stop the loop, click **Advanced** > **Stop Automation**.

Clearing the Matrix Selections

You can choose to clear all the crosspoint selections, or only the selected Destinations.

To clear all crosspoint selections on the matrix

- Click **Advanced** > **Clear All Presets**.

To clear only the Destination selections on the matrix

- Click **Advanced** > **Clear Dest Presets**, or
- Click **Clear All**.

Using MultiBus Panels

Use the MultiBus Panel to send a source to multiple destinations.

Panel Interface Overview

The MultiBus Panel provides breakaway control and status monitoring of several destinations simultaneously.

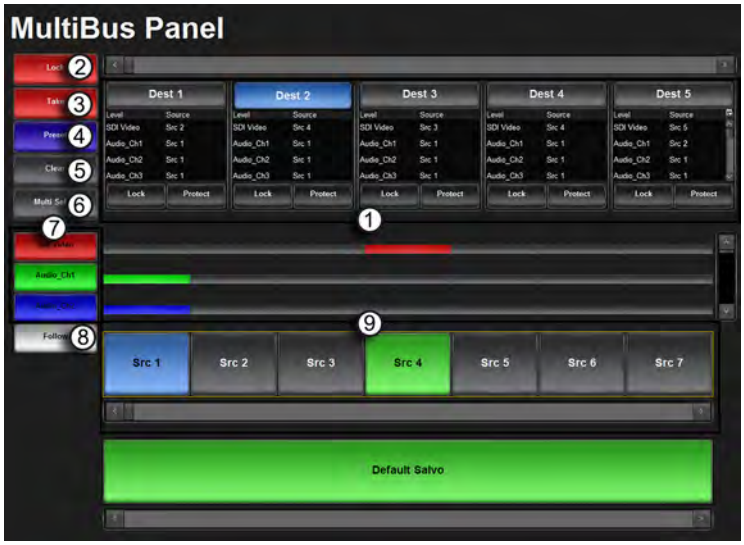


Figure 19.3 Example of a MultiBus Panel

1. Destination Bus

Each button in this crosspoint row represents a configured output for the selected router. Selecting a button includes the destination in the next crosspoint switch. The number of destinations and label for each button is defined by its entry in the Destinations interface. A destination selected to be included in the next crosspoint switch will have a lit button. For example, **Dest 2** is selected in **Figure 19.3**.

2. Lock Button

Click this button to prevent switching of the selected crosspoints. If you are using a soft panel with the **Protection Operation** set to **Disable**, the **Lock** button is not displayed.

3. Take Button

Click this button to execute the switch between the selected crosspoints. If you are using a soft panel with the **Take Operation** set to **Direct**, a **TAKE** button is not displayed because the transitions will occur automatically after a crosspoint switch is selected.

4. Preset Button

When this button is lit, a new crosspoint switch is set up on the soft panel. At least one source, once destination, and one level are selected on the interface (the **Dest** and **Src** buttons are lit blue to indicate their inclusion in the next switch).

✶ When this button is not lit, the crosspoint switch setup is still valid but is no longer indicated on the soft panel.

If you are using a soft panel with the **Take Operation** set to **Confirm**, the crosspoint switch will take effect the next time the **TAKE** button is selected. If you are using a soft panel with the **Take Operation** set to **Direct**, a **TAKE** button is not displayed because the transitions occurred automatically (hot-punch operation).

5. Clear Button

Clicking this button clears the selections made for the next crosspoint switch in the soft panel interface.

6. Multi Select Button

Clicking this button enables you to perform a switch on multiple crosspoint combinations. If you are using a soft panel with the **Selection Operation** set to **Single**, a **Multi Select** button is not displayed.

7. Level Button(s)

Click a level button to include the level in a crosspoint that you are configuring in the matrix. A lit button indicates that the corresponding level will be included in the next transition. The color and name of the button are specified using the **Levels** interface. **Figure 19.3** illustrates a MultiBus panel with three levels selected.

8. Follow Button

Click this button to select all levels in the matrix. If you are using a soft panel with the **Take Operation** set to **Confirm**, pressing **TAKE** after pressing **Follow** will then switch all crosspoints at the same time on all available levels.

9. Source Bus

Each button in this crosspoint row represents an input in the routing system. Selecting a button includes the source in the next crosspoint switch. The label for the button is defined by its entry in the Sources tab of the Database. A source selected to be included in the next crosspoint switch will have a lit button. For example, in **Figure 19.3** the **Src 1** is selected for the next transition while the **Src 4** is the current source in use.

10.Machine Control Button (not shown)

If you are using a soft panel with the **Machine Control** set to **Enabled**, the **MACHINE CONTROL** button is displayed. Refer to the section "**Enabling Machine Control**" on page 222 for details on this button.

Crosspoint Switches via a MultiBus Panel

The layout of a MultiBus panel is similar to a production switcher layout where the destinations are arranged into a horizontal row of buttons near the top of the panel and the sources are arranged on the row near the bottom.

To make a crosspoint switch on a single level using a MultiBus panel

1. In the **Basic Tree View**, expand the **Soft Panels** node for the Ultrix.
2. Double-click the node for your MultiBus Panel.

   The **MultiBus Panel** tab opens.
3. From the left toolbar, select the button for the level you want to perform the crosspoint switch.
4. Select a **Src** button from the Source bus located at the bottom of the interface.

   The button is now lit.
5. Select a **Dest** button from the Destination bus located at the top of the interface.

   The **Dest**, **Preset**, and **Take** buttons are now lit.

In the example below, **Level 2** is selected and **Dest 4** will switch with **Src 6**. The **Src 1** button is lit green to indicate that Source 1 was used in the last crosspoint switch.

6. Click **Take**.

To make a crosspoint switch using multiple levels

1. In the **Basic Tree View**, expand the **Soft Panels** node for the Ultrix.
2. Double-click the node for a MultiBus Panel.

   The **MultiBus Panel** tab opens.
3. Select each level from the toolbar or select **Follow** to include all levels.

   When multiple levels are selected, the center row of the panel reports the level status using a horizontal bar to represent the level.
4. Select a **Src** button from the Source bus located at the bottom of the interface.

   The button is now lit.
5. Select the **Dest** buttons for the outputs to include in the crosspoint switch.

   The **Dest**, **Preset**, and **Take** buttons are now lit. In the example below, **Follow** is selected and **Dest 5** will switch with **Src 4** on all levels.

6. Click **Take**.

Using the Multi Select Function

Use the **Multi Select** button when you want to group multiple destinations to use a single source during the next crosspoint switch.

To use the Multi Select

1. In the **Basic Tree View**, expand the **Soft Panels** node for the Ultrix.
2. Double-click the node for a MultiBus Panel.

   The **MultiBus Panel** tab opens.
3. Select the level(s) from the left toolbar.
4. Click **Multi Select**.

   The **Multi Select** button is now lit.
5. Select the **Dest** buttons from the Destination bus located near the top of the interface.

   The **Dest** buttons are now lit.
6. Select a **Src** button from the Source bus located near the bottom of the interface.

   The **Src**, **Preset**, and **Take** buttons are now lit.

   In the example below, **Levels 2** and **3** are selected, and **Dest 2**, **3**, and **5** will switch with **Src 6**.

7. Click **Take**.

Using Category Panels

Category panels organize sources, destinations and levels based on the settings in the Category tab. There are two types of category panels: group and classic. This section outlines both types.

For More Information on...

- legacy categories, refer to the ***RCP-QE User Guide***.

Panel Interface Overview

The soft panel interface for each category type is similar in layout and available buttons.

Figure 19.4 Example of a Group Category Soft Panel for an Ultrix Router

1. Group Window

This area of the soft panel interface may include the following buttons:

› **SOURCES**, **DESTINATIONS** Buttons — Clicking one of these buttons updates the button matrix to display the sources or destinations available as per the selected category. The button labels update to display the source or destination labels.

› **BACK** Button — Click this button to return the navigation to the previous category selection (back one level).

› **RESET** Button — Click this button to clear all selections on the interface. This button is only available on the Classic Category soft panels.

› **SELECT** Button — This button is only available on the Classic Category soft panels.

› **TOP** Button — This button is only available on the Group Category soft panels.

✶ When using a Group Category soft panel and the **Info** > **Non-group Resources** setting is set to **Hide**, only the resources assigned to a group are displayed on the soft panel.

2. Status Window

The bottom right corner of each soft panel includes a status window. For each level in the list of available levels, a corresponding status indicator display will indicate the current source for the currently selected destination.

The following buttons are located on the right-side of the soft panel interface:

› Individual Level Buttons — Click a level button to include the level in a crosspoint that you are configuring in the matrix. A lit button indicates that the corresponding level will be included in the next transition. The color and name of the button are specified using the **Levels** interface.

› **CURRENT** button — This button updates the level display area to show the current status for all displayed levels.

› **FOLLOW** Button — Click this button to select all levels in the matrix. Clicking **TAKE** after clicking **Follow** will then switch all crosspoints at the same time on all available levels.

› **PENDING** button — This button updates the level display area to show status for the currently pending operation (if selected source has not been switched yet. e.g. before TAKE is pressed). The user may clear individual source selections by selecting the levels to be cleared, then pressing **CLEAR SRC SEL** button.

› **CLEAR** Button — Click this button to clear all selections on the interface.

› **USER** button — This button shows current lock/protect status of each levels (and the soft panel name that is currently owned it). Since the soft panel does not recognize the names of remote control panels (RCP) to retrieve their name, a “owner #” name is used.

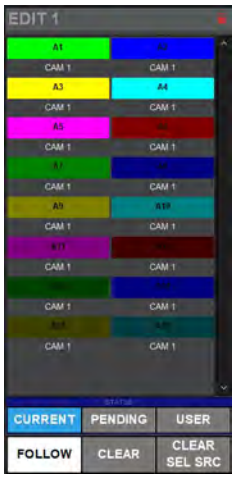


Figure 19.5 Status Protected — Destination *Figure 19.6 Status Protected — User*

3. TAKE Control Area

The bottom toolbar of the soft panel interface includes the following buttons:

› **PROTECT** Button — Click this button to prevent switching of the selected destination except by the panel that initiated the protect. If you are using a soft panel with the **Protection Operation** set to **Disable**, the **Protect** button is not displayed.

› **LOCK** Button — Click this button to prevent switching of the selected destination by an control device. If you are using a soft panel with the **Protection Operation** set to **Disable**, the **Lock** button is not displayed.

› **VIEW** Button — Click this button to display the VIEW dialog. This dialog lists the current TAKE commands in the queue. Individual items may be removed from the queue via the options in the VIEW dialog.

› **CLEAR** Button — Click this button to clear the current TAKE queue.

› **PRESET** Button — This button is used to queue up multiple TAKE commands. Select a destination/source combination, then click PRESET. Select another destination/source combination then click PRESET. A following TAKE command will execute all the PRESET switches. To view the switch commands queued by the PRESET, click VIEW.

› **TAKE** Button — Click this button to execute the switch between the selected crosspoints. If you are using a soft panel with the **Take Operation** set to **Direct**, a **TAKE** button is not displayed because the transitions will occur automatically after a crosspoint switch is selected.

Crosspoint Switches via a Category Panel

The buttons and options in a Category soft panel are dependent on the categories defined for the current database, and how the soft panel was defined in the **Panels** tab. Instead of having access to all sources, destinations, and levels at one time, a Category soft panel provides access based on the categories and the tags you have created.

To make a crosspoint switch using a Group Category Panel

1. In the **Basic Tree View**, expand the **Soft Panels** node for the Ultrix.
2. Double-click the node for the Category Panel.

   The **Category Panel** tab opens.
3. From the status window, highlight the level(s) you wish to include in the crosspoint switch.
   - Selected levels highlight in the level defined color.
   - Non-selected levels are indicated by a gray button with white text.

4. To select a destination:

   a. Click **DEST** from the category navigation tools.

   b. Navigate to the desired group using the displayed groups in the main group window.

✶ Only groups containing destination assignments will be displayed unless the **Non-group Resources** option for this soft panel is set to **Show**.

   c. Select a **DEST** button from the available category destinations located in the main group window.

   The status title bar (if enabled) reports the currently selected destination. In the example below, the user has selected Level **A1** and destination **EDIT 3** from the **EDIT** group.

5. To select a source:

   a. Click **SRC** from the category navigation tools.

   b. Select a **SRC** button from the Source bus located in the middle of the interface.

✶ If your Category soft panel was created with the **Take Operation** set to Confirm, the **TAKE** button is lit. Otherwise the crosspoint switch automatically occurs.

6. Click **TAKE**.

Using Push Button Panels

✶ This soft panel type is not suitable for use on an Ultritouch hard panel. To control the Ultrix via an Ultritouch, you must create and load an Ultritouch PB soft panel as outlined in the ***Ultritouch + Ultrix User Guide***.

Panel Interface Overview

The Push Button soft panel is organized into three distinct windows. The order and width of each window can be customized using the options in the Panels > Home View interface.

Figure 19.7 is an example of a Push Button soft panel set to portrait.

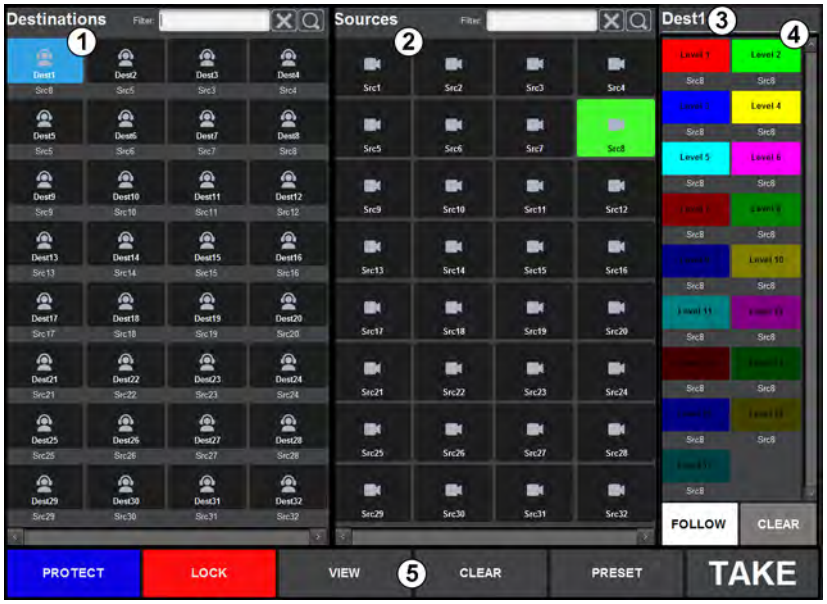


Figure 19.7 Example of the Default Push Button Soft Panel — Portrait

Figure 19.8 is an example of a Push Button soft panel set to landscape.

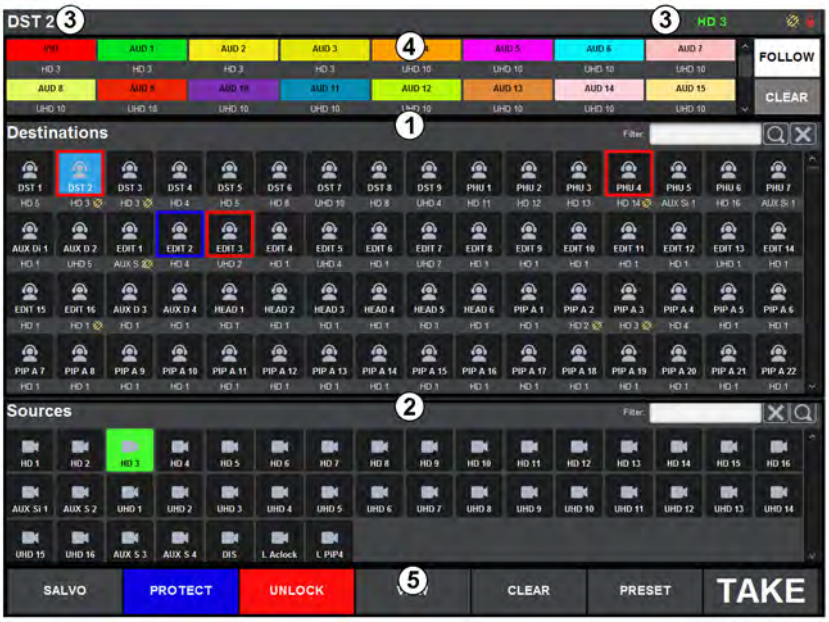


Figure 19.8 Example of the Default Push Button Soft Panel — Landscape

1. Destinations Area

The **Destinations** area displays the available destinations for router control. Select a **Destination** button to arm that destination for subsequent panel operations. Beneath each destination button is displayed the current source for that destination.

This area also includes the **Filter** field. A filter is available to match destination names against the entered text:

- Enter text in the **Filter** field.
- Click  (or press **Enter**). The destinations area updates to display only those destinations starting with the filter text.
- To clear the active filter, click  .

2. Sources Area

The Sources area displays the available sources for router control. Select a **Source** button to control the crosspoint for the currently selected destination.

This area also includes a **Filter** field. A filter is available to match source names against the entered text:

- Enter text in the field provided
- Click  (or press **Enter**). The sources area updates to display only those sources starting with the filter text.
- To clear the active filter, click  .

3. Current Destination

The currently selected destination label is displayed here. All subsequent panel operations operate on this destination until a new destination is selected.

›  — the current status is not the same for all levels (ie a breakaway switch has occurred).

›  — the current destination is locked. No switches can be made on this destination.

›  — the current destination is protected. Only the panel that initiated the protect may switch this destination.

4. Levels Area

The Levels area displays the available router levels as individual buttons. The current source for a given router level is displayed each level button. Select a **Level** button to include this level in the next source selection operation. Select the button again to toggle the level selection setting.

› **FOLLOW** Button — toggles the selection for all displayed levels.

› **CLEAR** Button — toggles the currently active level buttons.

5. Operation Area

This area provides buttons for soft panel and router control.

› **PROTECT** Button — protect the current destination. The following occurs:

- The destination button displays a blue border.
- The **Current Destination** area displays  . When a destination is protected, only the panel that initiated the protect can change the destination status.
- The **PROTECT** button is now labeled as **UNPROTECT**. Toggle the button to disable the protect.

✶ Only the panel that initiated the protect may change the protect status.

› **LOCK** Button — locks the current destination. The following occurs:

- The destination button displays a red border.
- The current destination display area displays . A panel cannot change the destination status of a locked destination.
- The **LOCK** button is now labeled as **UNLOCK**.

✶ Only the panel that initiated the lock may change the lock status.

› **VIEW** Button — displays the current crosspoint switch requests currently in the preset list. Individual crosspoints may be removed via the list view.

› **CLEAR** Button — clear the preset list of all crosspoint selections.

› **PRESET** Button — adds the current destination/source/level selection to a preset list. A crosspoint is added to the list for every level selected. This enables the user to add more switches and execute them all with a single take operation. The preset function is only available when the **Take Mode** is set to **Confirm**.

› **SALVO** Button — reveals a list of predefined salvos. A salvo may be executed from the dialog. The salvo button is visible only when the panel configuration has one or more salvos assigned.

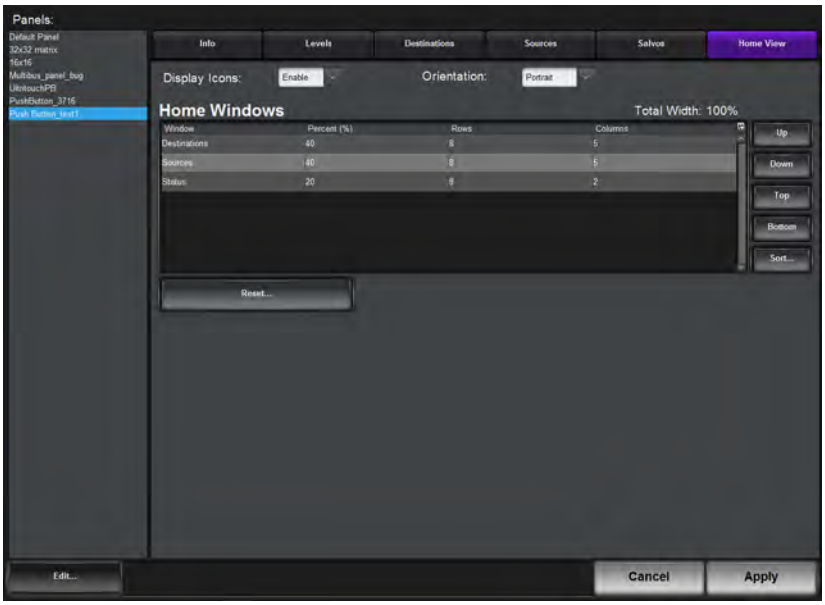
› **TAKE** Button — is lit when the current destination/source selection is ready to be requested of the router. The Take operation is a configurable and will only be activated if the soft panel **Take Mode** is set to **Confirm**.

Configuring a Push Button Soft Panel

The Push Button soft panel provides additional configuration options in addition to those outlined in "**Creating a Soft Panel**" on page 222.

To configure a Push Button soft panel

1. Create a new soft panel as outlined in the procedure "**To create a soft panel**" on page 222.
2. Select the **Home View** tab.



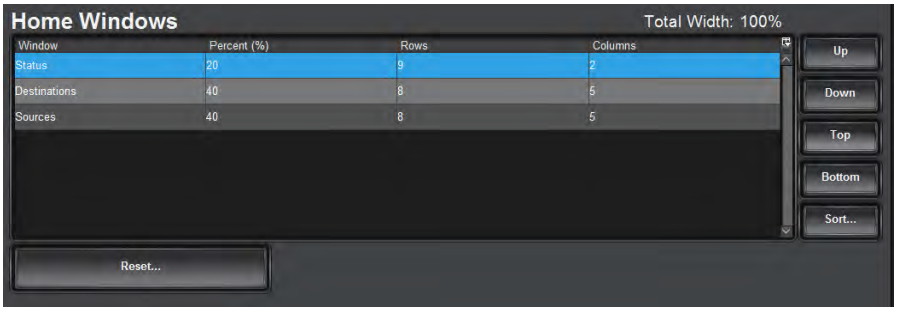
3. Use the **Display Icons** menu to specify whether buttons will display the default icons based on window type (**Enable**) or will only display the label text as determined by the database (**Disable**).
4. Use the **Orientation** menu to specify the layout on the monitor. Choose from the following:
   - **Portrait** — a horizontal layout; the panel is taller than it is wide. (**Figure 19.7**)
   - **Landscape** — a vertical layout; the soft panel is wider than it is tall. (**Figure 19.8**)
5. Specify the order that the windows will display in the completed soft panel layout as follows:

✶ By default, the windows are organized in the following order (left to right): Destinations, Sources, and Status.

a. In the **Home Windows** table, select the row for the window you want to move to on the soft panel layout.

b. Use the buttons in the toolbar to move the row to the desired position.

In the example, the **Status** window moved to the top of the table and displays on the far left of the panel.



6. Adjust a window size as follows:
   - Use the **Percent** field to specify the size of the window as a percentage of the total soft panel area.
   - Use the **Rows** field to specify the number of button rows the window will display.
   - Use the **Columns** field to specify the number of button columns the window will display
7. Click **Apply** to save your changes.

Crosspoint Switches via a Push Button Panel

The buttons and options in a Push Button soft panel are dependent on the current database, and how the soft panel was defined in the **Panels** tab. You can also use the Filter fields in the Destinations and Sources area of the panel to provide access based on the search criteria entered into each Filter field.

To make a crosspoint switch on a single level using the Push Button Panel

1. In the **Basic Tree View**, expand the **Soft Panels** node for the Ultrix.
2. Double-click the node for the Push Button Panel to open the **Push Button Panel** tab.
3. Select the **Level** you want to perform the crosspoint switch.
4. Select a **DEST** button from the Destinations window.

   The Status field reports the selected **DEST** button. In the example below, the user selected **Level 6** and **Dest 54**.

5. Select a **SRC** button from the Sources window.

✶ If your soft panel was created with the **Take Operation** set to Confirm, the **TAKE** button is lit. Otherwise the crosspoint switch automatically occurs.

6. Click **TAKE**.

To make a crosspoint switch on multiple levels using the Push Button Panel

1. In the **Basic Tree View**, expand the **Soft Panels** node for the Ultrix.
2. Double-click the node for a Push Button Panel.

   The **Push Button Panel** tab opens.
3. Select each level from the Levels window or click **Follow** to include all levels.

   The Level buttons are lit in the toolbar.
4. Select a **DEST** button from the Destination window.

   The Status area updates to display report the selected **DEST** button. In the example below, the user selected **Levels 2**, **6**, **8** and **11**, then **Dest 40**.

5. Select a **SRC** button from the Source window.

The Status area updates to display only the selected **SRC** button. In the example below, **Src 6** is selected.

✶ If your soft panel was created with the **Take Operation** set to Confirm, the **TAKE** button is lit. Otherwise the crosspoint switch automatically occurs.

6. Click **TAKE**.

Using an Ultritouch PB Panel

An Ultritouch PB soft panel is organized into a pre-sized layout that can be loaded for use on an Ultritouch hard panel. Customize each soft panel by specifying the size of each window, the location of each window on the layout, and what operational buttons to include on the panel.

✶ The Ultritouch PB soft panel can only be loaded and used on an Ultritouch hard panel.

Figure 19.9 Example of an Ultritouch PB Soft Panel

For More Information on...

- configuring and using an Ultritouch PB soft panel, refer to the ***Ultritouch + Ultrix User Guide***.

Using Salvos

Salvos are a selected series of crosspoints to switch in the matrix that can be saved and later recalled for use.

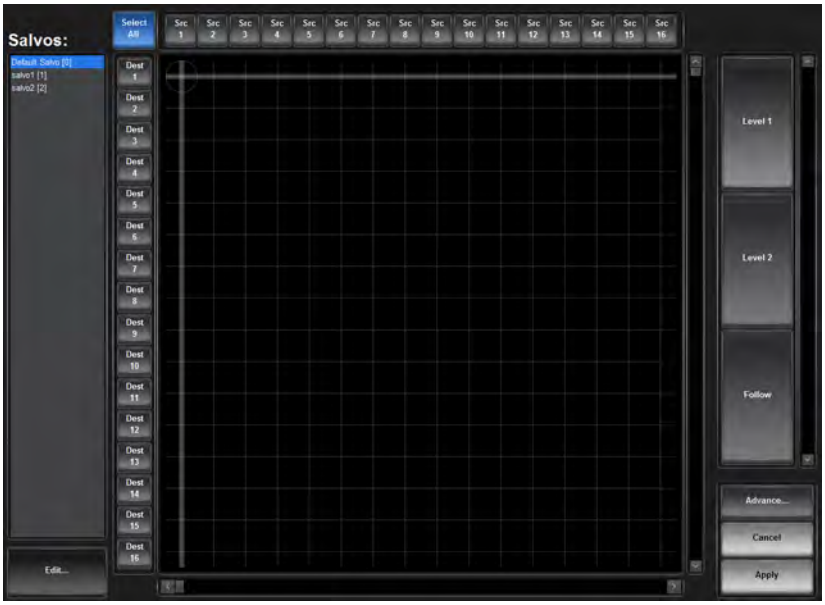
Creating Salvos

The Salvos tab enables you to create, delete, re-name, and manage your salvos in an interface that is off-line. The Salvo tab layout is similar to the Matrix Panel layout where crosspoints are arranged in a grid layout with sources in columns and the destinations in rows.

To create a salvo

1. In the **Basic Tree View**, expand the **Database** node for the Ultrix router.
2. Double-click the **Salvos** node.

   The **Salvos** tab opens.



3. Create a new salvo in the database as follows:
   a. Click **Edit** > **Add**.

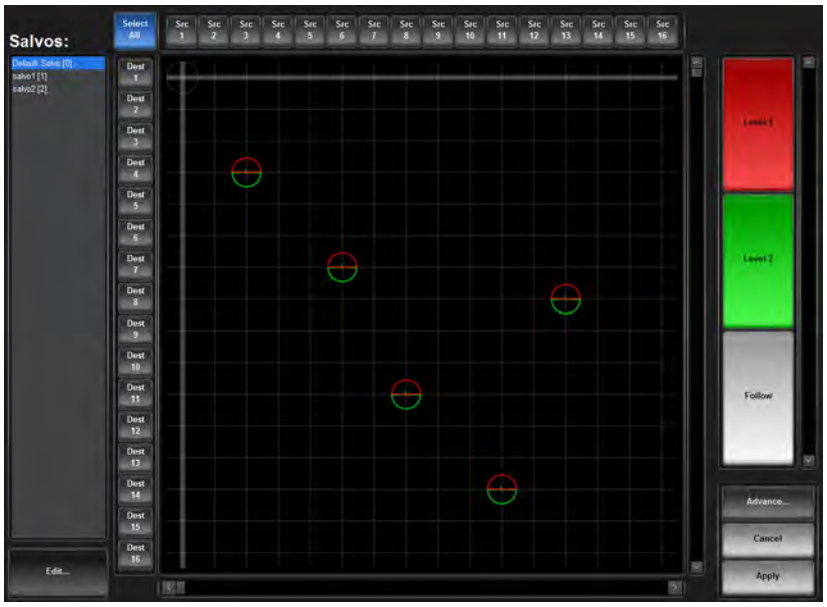
      The **Add Salvo** dialog opens.

   b. Type a unique identifier in the **Name** field for the new salvo.

   c. Click **Apply**.

      The **Add Salvo** dialog closes and the **Salvos** list updates with the new salvo selected.
4. Select the **Level**(s) button for the level(s) to include in the salvo.

   The **Level**(s) buttons are lit.
5. To create a single crosspoint switch, use the cross-hairs to select the source/destination combination on the grid.

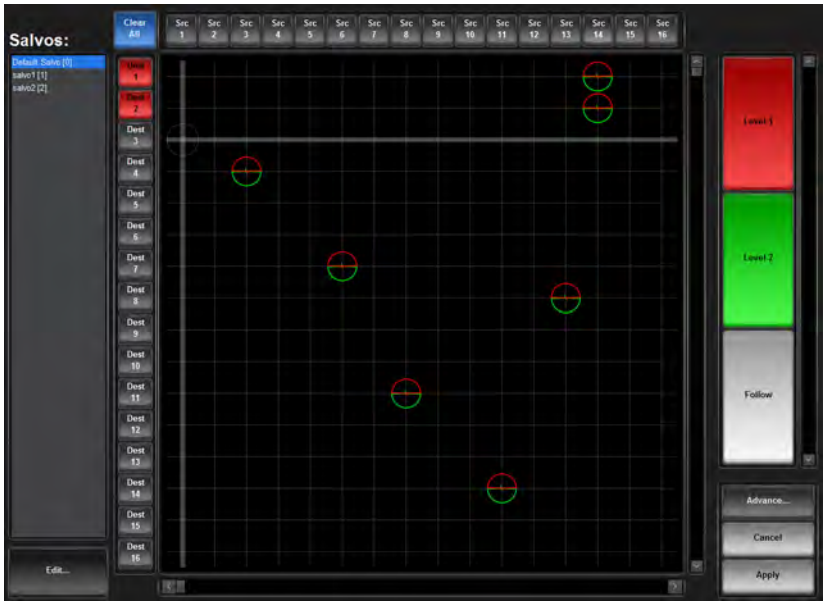


6. To assign multiple destinations to the same source.

   a. Click the button(s) in the **Destination** toolbar for each destination to include in the switch; or click **Select All** to include all the available Destinations.

   b. Click the button in the **Source** toolbar for the source to use for the switch.

   The grid updates to indicate the new selections. Notice that each level is represented by a corresponding slice of the crosspoint indicator. In the case below, there are seven crosspoint switches selected that will affect two levels.



7. Click **Follow** to enable the levels to automatically follow the switches.

✶ Click **Advanced** > **Clear Dest Presets** to cancel the destination selections or click **Advanced** > **Clear All Presets** to clear the workspace.

8. Click **Apply**.

   The salvo settings are updated.

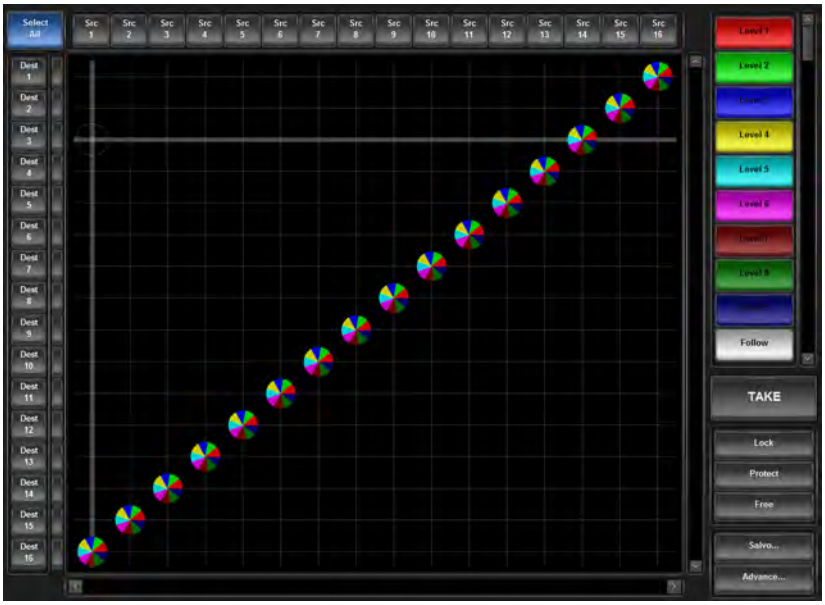
Saving the Current Crosspoint Status as a New Salvo

The Advanced menu in the Salvos tab provides the option to capture the current state of the crosspoint selections and save them as a salvo.

To create a salvo based on the current destination status

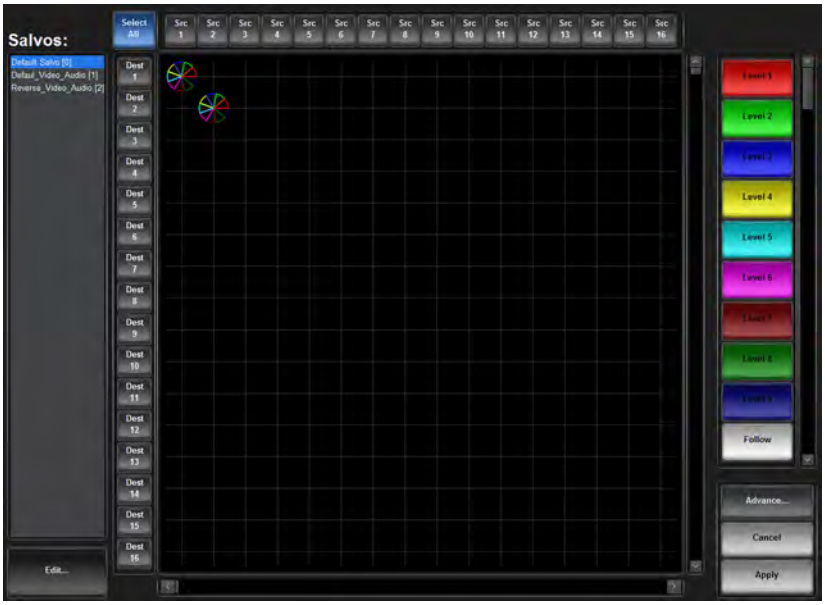
★ This procedure captures the status of all destinations.

1. Verify the current crosspoint state using one of the soft panels in your database. Refer to the chapter "**Soft Panels in DashBoard**" on page 221.



2. In the **Basic Tree View**, expand the **Database** node for the Ultrix router.
3. Double-click the **Salvos** node.

   The **Salvos** tab opens.



4. Create a new salvo in the database as follows:
   a. Click **Edit** > **Add**.

      The **Add Salvo** dialog opens.

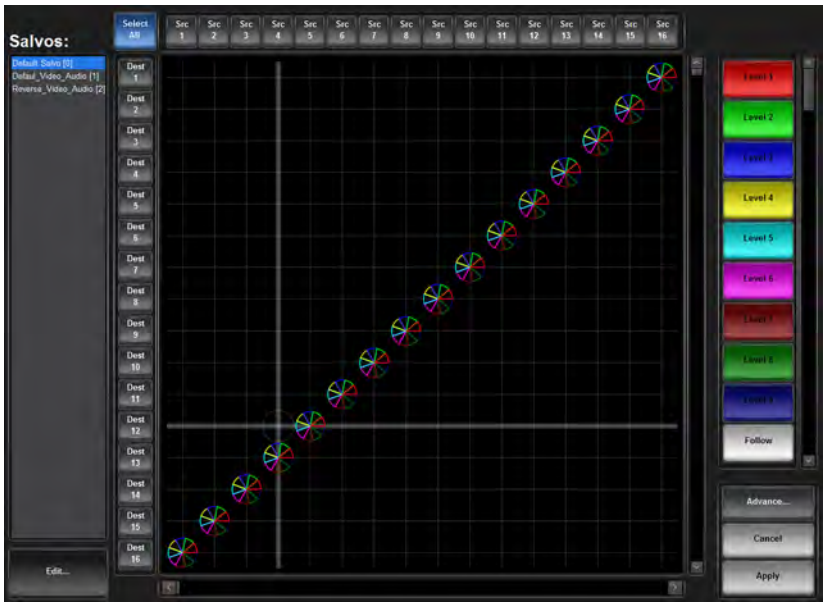
   b. Type a unique identifier in the **Name** field for the new salvo.

   c. Click **Apply**.

      The **Add Salvo** dialog closes and the **Salvos** list updates with the new salvo selected.

5. Click **Advanced** > **Capture System Status**.

   The matrix in the **Salvos** tab updates to reflect the current crosspoint state as verified in step 1.



6. Click **Apply**.

   The salvo settings are updated.

To create a salvo based on selected destinations

✶ This procedure captures the status for selected destinations.

1. Verify the current destination crosspoint states using one of the soft panels in your database. Refer to the chapter "**Soft Panels in DashBoard**" on page 221.
2. In the **Basic Tree View**, expand the **Database** node for the Ultrix router.
3. Double-click the **Salvos** node.

   The **Salvos** tab opens.

4. Create a new salvo in the database as follows:
   a. Click **Edit** > **Add**.

      The **Add Salvo** dialog opens.

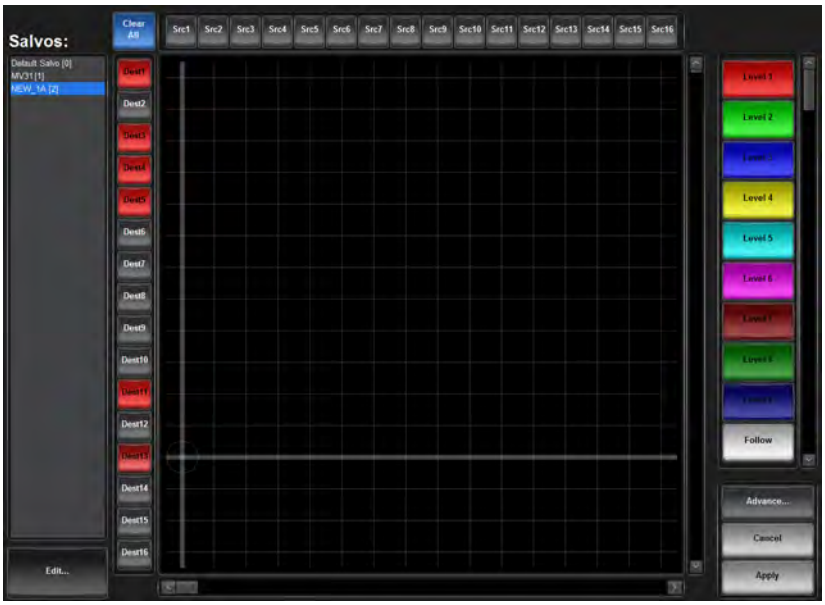
   b. Type a unique identifier in the **Name** field for the new salvo.

   c. Click **Apply**.

      The **Add Salvo** dialog closes and the **Salvos** list updates with the new salvo selected.

5. Click **Advanced** > **Capture Dest Status**.

   The matrix in the **Salvos** tab updates to reflect the current Destination states as verified in step 1.



6. Select the **Level**(s) button for the level(s) to include in the salvo.

   The **Level**(s) buttons are lit.

7. Select the source(s) to use in the crosspoint switch.
8. Click **Apply** to update the salvo settings.

Copying and Pasting a Salvo

You can create a copy of a saved salvo and edit its settings or add crosspoint selections separately from the original salvo.

To copy and paste a salvo

1. In the **Basic Tree View**, expand the **Database** node for the Ultrix router.
2. Double-click the **Salvos** node.

   The **Salvos** tab opens.

3. Select the salvo to copy from the **Salvos** list.
4. Click **Edit** > **Copy**.
5. Click **Edit** > **Paste**.

   A new salvo displays at the bottom of the **Salvos** list in the **Salvos** tab. By default, the salvo is named Salvo # where # is an automatically assigned value.

6. Give the new salvo a unique identifier as outlined in the procedure "**To re-name a salvo**" on page 254.
7. Edit the settings of the new salvo as outlined in the procedure "**To edit a salvo**" on page 253.

Editing a Salvo

Once a salvo is created in the database, you can edit its crosspoint selections,

To edit a salvo

1. In the **Basic Tree View**, expand the **Database** node for the Ultrix router.
2. Double-click the **Salvos** node.

The **Salvos** tab opens.

3. Select the salvo from the **Salvos** list.

   The grid updates to display the crosspoint selections currently saved for the salvo.

4. Perform steps 4 to 6 as outlined in the procedure "**To create a salvo**" on page 249.

5. Click **Apply** to save your changes.

To re-name a salvo

1. In the **Basic Tree View**, expand the **Database** node for the Ultrix router.

2. Double-click the **Salvos** node.

   The **Salvos** tab opens.

3. Select the salvo from the **Salvos** list.

   The grid updates to display the crosspoint selections saved for the salvo.

4. Click **Edit** > **Rename**.

   The **Rename Salvo** dialog opens.

5. Type a new name for the salvo in the **Name** field.

6. Click **Apply**.

   The **Rename Salvo** dialog closes and the salvo displays with the new name in the **Salvos** list.

Deleting a Salvo

Deleting a salvo removes it from the database. The corresponding button on any soft panels for the deleted salvo are also no longer displayed.

To delete a salvo from the database

1. In the **Basic Tree View**, expand the **Database** node for the Ultrix router.

2. Double-click the **Salvos** node.

   The **Salvos** tab opens.

3. From the **Salvos** list, select the salvo to delete.

4. Click **Edit** > **Delete**.

5. Click **Apply** to close the dialog.

   The salvo no longer displays in the Salvos list to the left of the workspace. If the salvo was assigned to a button in a soft panel, the button is automatically deleted from the panel.

Recalling a Salvo

Once you have saved a salvo, you can recall it for use on a soft panel in DashBoard.

✶ You cannot recall salvos from a Category soft panel.

For More Information on...

- adding salvos to customized soft panels, refer to the section "**Creating a Soft Panel**" on page 222.

To recall a salvo from a Matrix panel

1. In the **Basic Tree View**, expand the **Soft Panels** node for the Ultrix router.

2. Double-click the node for a **Matrix Panel**.

   The **Matrix Panel** tab opens.

3. Click **Salvo**.
4. Click **Recall**.

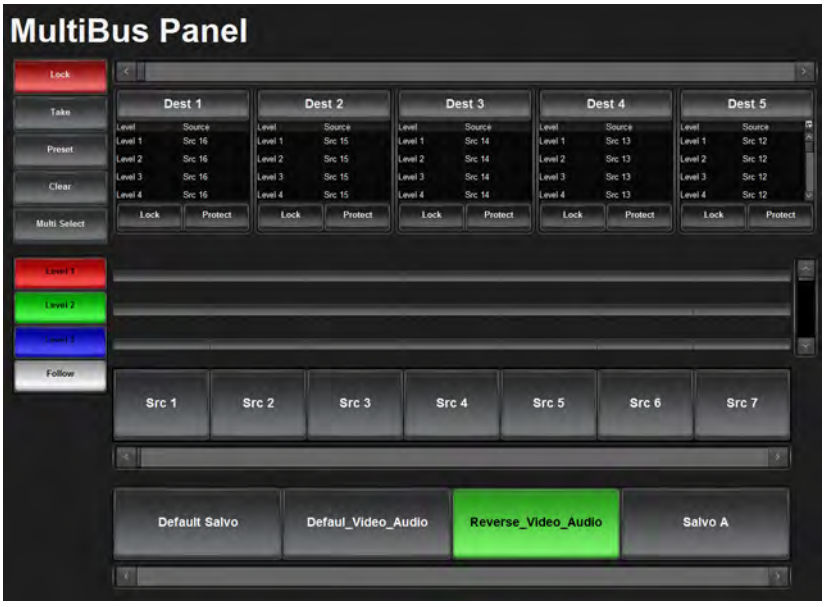
   The **Execute Salvo** dialog opens. Notice that the **Active** column reports whether the salvo is currently in use (ON) or not (OFF).

5. Select the salvo to recall.
6. Click **Apply** to close the dialog.
7. Click **Take** to apply the salvo.

To recall a salvo from a MultiBus panel

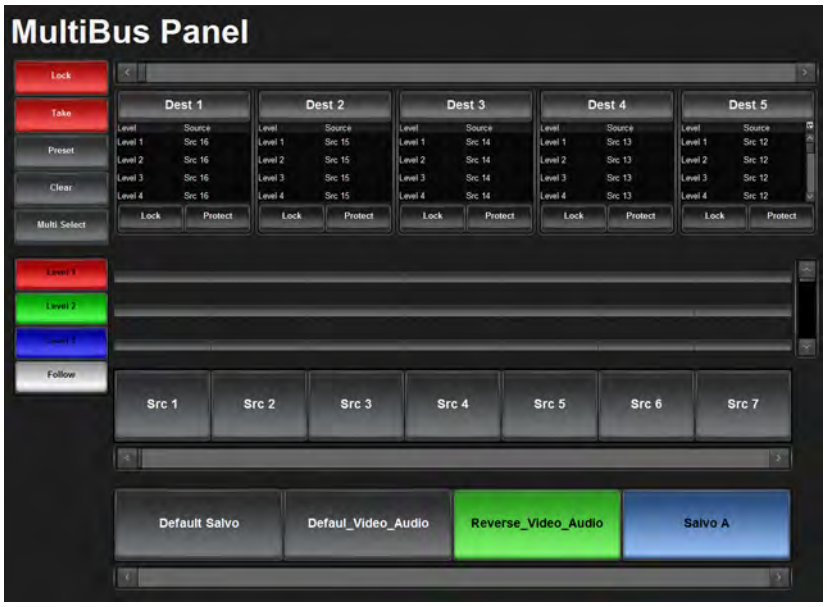
1. In the **Basic Tree View**, expand the **Soft Panels** node for the Ultrix router.
2. Double-click a **MultiBus Panel** node.

   The **MultiBus Panel** tab opens. The salvo buttons are located at the bottom of the soft panel interface. If a salvo button is lit green, the current router status matches the salvo presets.



3. Click the button for the salvo you wish to recall.

   The salvo button and **Take** buttons are now lit on the soft panel.



4. Click **Take** to apply the salvo.

   The crosspoint switch is made, and the salvo button is no longer lit.

To recall a salvo from a Category panel

1. In the **Basic Tree View**, expand the **Soft Panels** node for the Ultrix router.
2. Double-click a **Category Panel** node.

   The **Category Panel** tab opens. The salvo buttons are located at the bottom of the soft panel interface. If a salvo button is lit green, the current router status matches the salvo presets.

3. Click the button for the salvo you wish to recall.

   The salvo button and **Take** buttons are now lit on the soft panel.

4. Click **Take** to apply the salvo.

   The crosspoint switch is made, and the salvo button is no longer lit.

Operation with Ross Devices

Ultrix may also connect to Ross NK series devices to expand functionality for signal types the Ultrix router itself does not handle. The Ross NK series devices must be connected to the Ethernet network by virtue of an Ross NK-IPS or NK-NET devices to enable the Ultrix router to communicate with them.

Overview

Introducing an Ultrix router to a Ross NK system will require specific configuration to enable the Ultrix routing system to manage them.

Using RCP-NKx Remote Control Panels

When adding the Ultrix router to an existing system with one or more RCP-NKx devices, each remote control must:

- have the **Virtual routing** enabled on their **Configuration** page
- have the **Comms Retry Delay Factor** set to 80ms or greater
- ensure that the level numbers correspond to the Ultrix Level ID number

Be aware that the RCP-NKx devices do not:

- support Ultrix salvos
- automatically get source and destination labels from the Ultrix router. They must be entered manually or via a global labels file.

Using Ross NK Series Routers

The Ross NK router partitioning not supported. The logical mapping of the Ultricore control system is far more capable and should be implemented there if required.

Keep the following in mind:

- The NK-IPS requires version 2.23 or greater to communicate with an Ultrix router.
- The SCP/A is not supported.
- The SCP/K2 is not supported.
- NK-A64 control level is not supported.

Table 21.1 outlines the nomenclature that Ultrix automatically uses for Ross NK devices.

Table 21.1 Default Ultrix Naming for Ross NK Devices

Ross NK Device	Matrix Name	Port Name
NK-3Gxxx	deviceName.SDI	deviceName.slot1.in/out[socket number].SDI.ch1
NK-Axxx	deviceName.An Aud L	deviceName.slot1.in/out[socket number].An Aud L.ch1
	deviceName.An Aud R	deviceName.slot1.in/out[socket number].An Aud R.ch1
NK-Dxxx	deviceName.AES	deviceName.slot1.in/out[socket number].AES.ch1
NK-Mxx	deciceName.Machine Control	deviceName.slot1.in/out[socket number].Machine Control.ch1
NK-MDxxx	deviceName.SDI	deviceName.slot1.in/out[socket number].SDI.ch1
NK-Vxxx	deviceName.An Vid	deviceName.slot1.in/out[socket number].An Vid.ch1

Using Ross Analog Audio Devices (NK-A16, NK-A32, NK-A64)

The Ross NK Analog Audio devices (NK-A16, NK-A32, NK-A64) will present as two matrices: Left and Right respectively. Note that the NK-A64 control level is not supported.

Connection Diagrams

Figure 21.1 provides an example of a routing system with an Ultrix router, an NK-NET, and several Ross NK devices. Communication between the NK-NET and the Ross NK devices is over T-Bus.

✶ The NK-NET requires any Ross NK router to supply phantom power for operation.

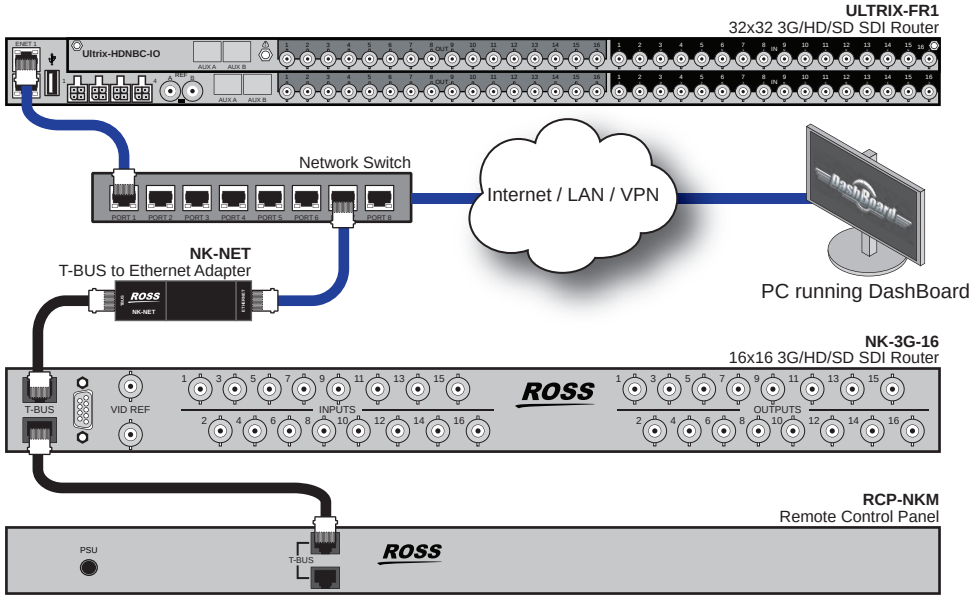


Figure 21.1 Connection Example with an NK-NET

Figure 21.2 provides an example of a system with an Ultrix router, an NK-IPS, and several Ross NK devices.

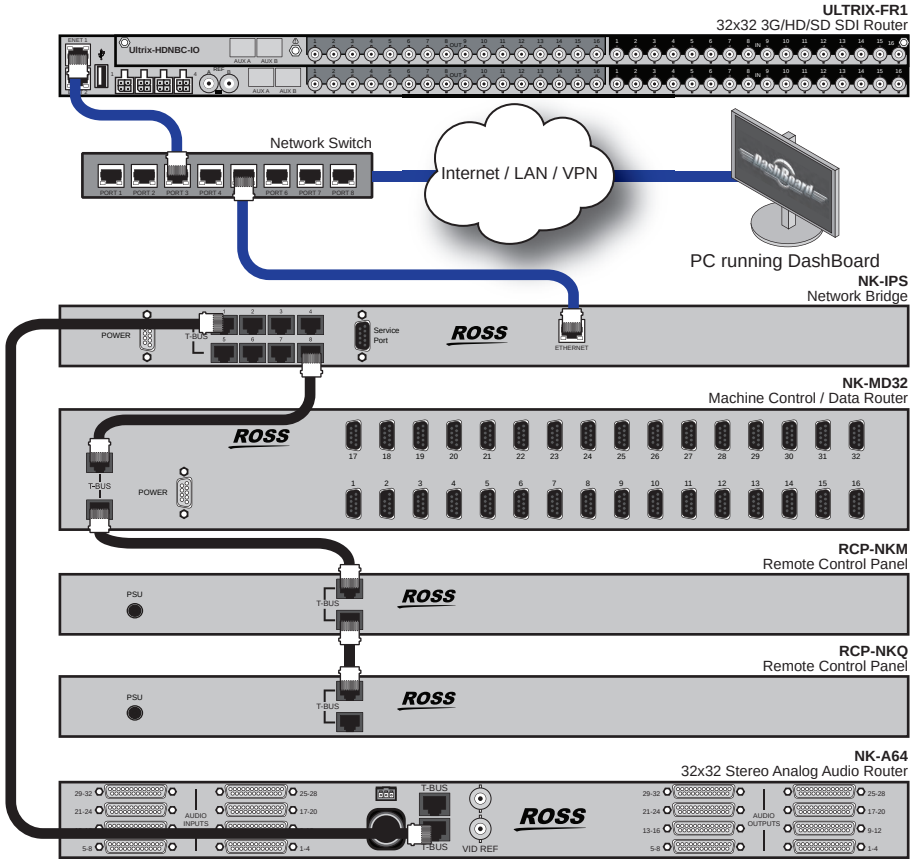


Figure 21.2 Connection Example with an NK-IPS

Adding Ross NK Series Devices to the Ultrix Routing System

To add a Ross NK series device to the Ultrix routing system:

1. Define a connection point between the Ultrix router and each Ross NK series device. Refer to the chapter "**Device Communication Setup**" on page 95 for details.
2. Review the logical matrices for the Ultrix database.
3. Assign outputs to the logical destinations in the database as outlined in the section "**To map a physical output to a destination**" on page 113.
4. Assign inputs to the logical sources in the database as outlined in the section "**To map an input to a source**" on page 117.

Machine-Control (RS-422) Logical Mapping

Connecting an NK-M series router to Ultrix requires some special consideration;

Machine control routing requires two crosspoints for a point to point connection due to the bi-directional nature of the signal. Each physical socket contains a transmit/receive pair. This can be thought of as a source-destination combination and is known as a port.

It is necessary to configure the input and output of the machine control port on the same row ID on the logical mapping tables.

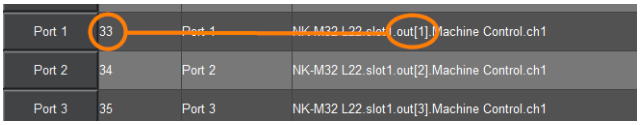


Figure 21.3 Destination Mapping

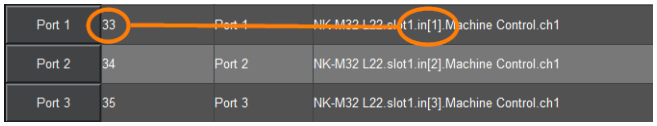


Figure 21.4 Source Mapping

It does not matter where the machine control is mapped (either row 3 or 300), but the input and outputs physical ports must be mapped to the same row ID.

Conditions for Machine Control

Three conditions must be met before machine control can be switched.

1. The NK machine control router is attached and configured within Ultrix (level, destination. and source maps).
2. Selected breakaway or level must include the machine control level.
3. Machine control reciprocal must be enabled on the controller.

Using Ultricore-CC as a System Controller

Ultricore-CC may control one or more Ultrix routers. Ultricore has the advantage of supporting more external connections so is ideal for systems with many external connections (RCPs, DashBoard instances, third-party control).

★ Ensure a unique device name for each Ultrix within a system.

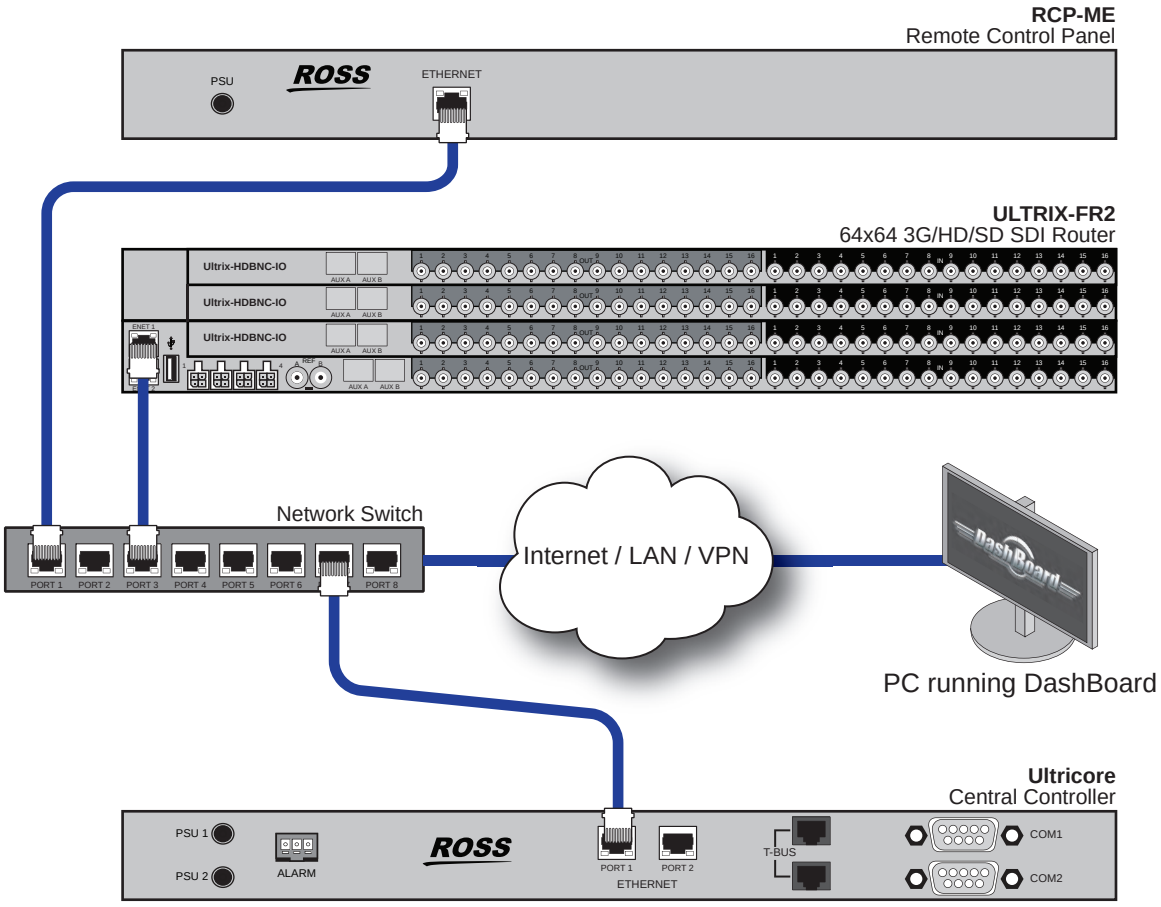


Figure 21.5 Example Setup Using an Ultrix and an Ultricore

Configuration

The workflow of enabling an Ultricore as a system controller for multiple Ultrix routers:

1. Setup any Ultrix licensing requirements within each Ultrix router.
2. Enable Remote Controller Mode on each Ultrix as outlined in the section "**Enabling Remote Controller Mode on the Client Ultrix Routers**" on page 102.
3. Create a basic database within each Ultrix to accommodate the inputs/outputs. Ensure to:
   a. use generic names
   b. a basic level of routing is functional.
4. Create a connection point (via the Ultricore interface) from the Ultricore-CC to each Ultrix.
5. Edit the Ultricore-CC database to control Ultrix specific resources.
6. Configure all RCP devices to connect to the Ultricore-CC system controller.

Ross MC1 Master Control System

The MC1 Master Control System is a dedicated card-based solution that provides complete program path protection using input bypass relays, protecting your channel output. Communication between the MC1-MK and Ultrix is via an ethernet connection. Any router source can be mapped to any crosspoint button on the MC1-MK On Air Control interface. Refer to the ***MC1-MK Operation Manual*** for details on crosspoint button assignment.

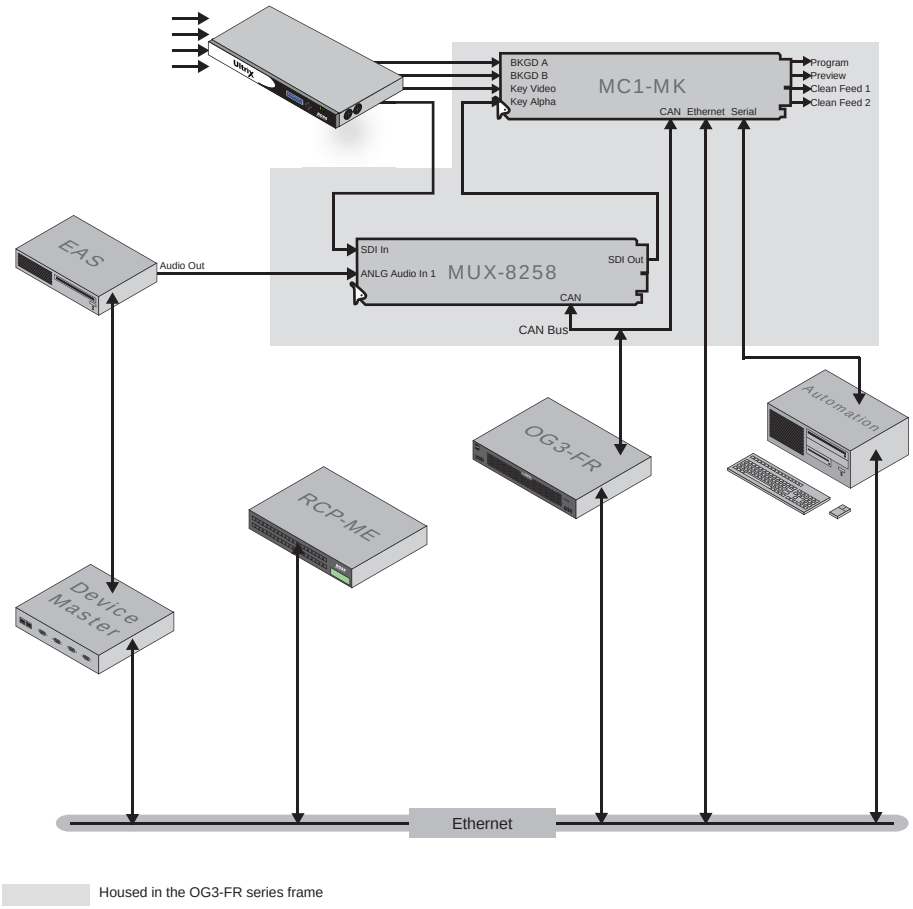


Figure 21.6 Workflow Example of an MC1-MK with an Ultrix Router

Communications between an MC1-MK and the Ultrix Router

✶ The MC1-MK requires software version 5.0 or higher to support the Ultrix router.

Keep the following in mind when configuring the options in the **Configuration** > **Router** interface of the MC1-MK:

- Ensure the **Virtual** menu is set to **Virtual**.
- Ensure the **Delay** value is set to a minimum of **6 frames**.

Keep the following in mind when configuring the options in the **Remote Control** tab of the MC1-MK:

- The Ultrix router uses the **NK Router** protocol in the **Ethernet Port** area.
- Set the **Role** to **Client**.
- Set the **Protocol** to **TCP**.
- Use the **IP Address** field to specify the IP Address of the Ultrix router.
- Set the **Port** field to **5000**.

For More Information on...

- the communications setup for the MC1-MK, refer to the ***MC1-MK Installation Manual***.

External Control

This chapter summarizes the third-party protocols the Ultrix router supports.

Ultrix Control with Third-Party Systems

Ultrix may be controlled by third-party control or automation systems via the GVG Native Series 7000 or Probel SW-P-08 protocols.

Ethernet Communication

The Ethernet interfaces to these protocols are automatically started with Ultrix and no further configuration is necessary. However, you must configure your external control systems to match the settings outlined in **Table 11.1**.

For More Information on...

- defining an Ethernet connection between Ultrixand an external device, refer to the section "**Third-part Connection via Ethernet**" on page 98.

Serial Communication

If you are using a serial connection, you must first define the serial connection point as outlined in the section "**Defining a Serial Connection**" on page 100 and selecting GVG Native or Probel SW-P-08 from the **Protocol** menu and the settings as outlined in **Table 11.3**.

Third-Party Matrix Control with Ultrix

The Ultrix control system is able to control third-party matrix devices. Two popular routing protocols are available to enhance compatibility: GVG Series 7000 and Probel SW-P-08.

To configure third-party matrix control

1. Create an outgoing connection point from the Ultrix to the third-party matrix device.
2. Define the external matrix.
3. Mapping the external matrix inputs and outputs.
4. Define the Ultrix operating level.
5. Assign external matrix to the Ultrix source and destination levels.

The following sub-sections outline each step required to configure third-party matrix control.

Create an Outgoing Connection Point

You must define an interface for the system to access third-party matrix devices. The connection point must be compatible with the settings of the external device you are trying to control.

Before proceeding, ensure that you have the following connection specifics:

- Communication protocol (GVG Native Series 7000 or Probel SW-P-08)
- Communication type (TCP/IP or serial[1])

Refer to the section "**Connecting to Third-Party Devices**" on page 98 details.

1. Only available natively on the Ultrix Central Controller. Serial connections from Ultrix requires an external USB-serial converter.

Defining the External Matrix

The system does not automatically know the details of any connected third-party matrix. The user must manually define the size and operating level within the Ultrix database.

Creating a Logical Matrix for an External Device

Once you establish a valid connection point between the Ultrix router and an external device, you can create logical matrices in an Ultrix database using the device inputs and outputs. Creating a logical matrix from the external device enables Ultrix to include the inputs and outputs for selection in the Sources and Destination tabs of the Ultrix database.

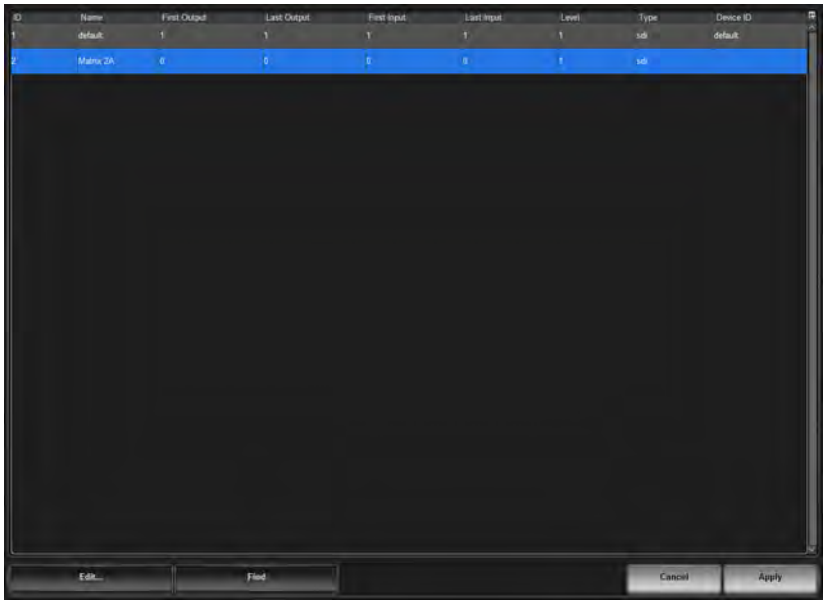
✶ The input/output range and level you specify in the Ultrix database must match the settings within the external matrix.

To create a logical matrix from an external device

1. Expand the **Database** node.
2. Double-click the **Third Party Matrices** node located under the **Database** node.

   The **Third Party Matrices** tab opens.
3. Click **Edit** > **Insert** to display the **Insert Matrix** dialog.
4. In the **Name** field, type a unique identifier for the third-party matrix. This name is used to identify the matrix within the Ultrix database.
5. Click **Apply** to close the **Insert Matrix** dialog and add a blank row to the **Third Party Matrices** table.

   In the example below, a new matrix named "**`Matrix 2A`**" was added.



6. From the **Device ID** drop-down menu, select the device you want to define the logical matrix for. This is the name given to the device when you established a connection point with it on the Connections tab.

✶ The **Device ID** menu lists only the third-party devices that have a valid connection point with the Ultrix router.

7. Define the matrix size as follows:
   a. Use the **First Output** and **Last Output** fields to define the range of destinations from the device within the Ultrix database.
   b. Use the **First Input** and **Last Input** fields to define the range of sources from the device within the Ultrix database.

✶ These created inputs and outputs will use the nomenclature **DeviceID.Slot.Port.Type.Channel** where **DeviceID** represents the Name assigned to the external device on the Connections tab.

8. Use the **Level** field to specify the number of levels for the device within the Ultrix database.
9. Use the **Type** field to specify the signal type for the matrix.
10. Click **Apply** to save the new matrix to the database and add it to the list of available matrices in the **Port Labels** tab.

Mapping the External Matrix Inputs and Outputs

Once the connection point and matrix are defined in the Ultrix database, you can map the external matrix inputs and outputs in the same manner as we do with Ross device matrices. However, you will instead select an external matrix output from the **Outputs** list (or an external matrix input from the **Inputs** list) in the database interfaces. The available inputs and outputs will display in the format of **DeviceID.slot#.in[x].Type.ch#** or **DeviceID.slot#.out[x].Type.ch#**.

✶ It may be necessary to create a new level in the Ultrix database for the assignment of inputs and outputs to logical labels. Refer to the section "**Defining the Levels in a Database**" on page 110 for details.

For More Information on...

- assigning destinations, refer to the section "**Defining the Destinations in a Database**" on page 112.
- assigning sources, refer to the section "**Defining the Sources in a Database**" on page 115.

Using Index Numbers

Some protocols refer to source and destinations with a numerical index number. This number is listed in the ID column of the **Source** and **Destination** tabs of the Ultrix database.

For example, the GVG protocol reference to destination '00h' correlates to Ultrix destination ID 1 in the case shown below for the Dest 1 entry in the table.

Figure 22.1 Example of ID Numbers Listed in a Destinations Tab

GVG Series 7000 Native Protocol Commands

Ultrix supports the GVG Series 7000 Native protocol and is available over an RS-422 or RS-232 serial connection, as well as ethernet connection.

Table 22.1 Default GVG Native Connection Types

	Setting
Serial	
Connection Type	RS422 or RS232
Baud	38400

Table 22.1 Default GVG Native Connection Types

	Setting
Data Bits	8
Parity	None
Stop Bits	1
Ethernet	
Port	12345[a]

a. Port 12345 is the default value but is user configurable.

To send GVG Native commands to Ultrix

1. Create a network connection to the Ultrix router on TCP/IP **Port 12345**.
2. A successful connection will be displayed in the listed client devices under the Device Configuration interface.
3. Refer to **Table 22.2** for a list of GVG Native Protocol commands that Ultrix supports.

Table 22.2 GVG Native Protocol Commands

Message Command	Description	Notes
BK[,parameter]		
BK,D	Force next QD command to return status of all destinations	Clears the flags associated with the D,no_parameter command. After BK,D is sent, the next QD,no_parameter command will result in destination statuses or all destinations being returned.
BK,E	Request status of level 4 echo setting	
BK,E,ON	Set level 4 echo to on	An err=00 response will be returned for successful commands that do not generate their own response (eg. Take commands). This is a per session setting.
BK,E,OFF	Set level 4 echo to off (default)	No response will be given for commands that do not generate their own response.
PR,dest_name,level_bitmap	Protects a specific destination from having its source changed	ER error-code response is currently not supported.
QC[,dest_name]	Query Combined Destination status by name	
QD[,dest_name]	Query Destination status by name	No information is returned for unmatched destination levels
Qd[,dest_name]	Query Destination status by name	Sets response src_name to NO_XPT for unmatched destination levels
QI,destIndex,lvlIndex	Query Destination status by index[a]	
Qi,destIndex,lvlIndex	Query Destination status by index[a]	The srcIndex returned will be 0xfffe if an error condition applies to the crosspoint being reported.
QJ[,destIndex]	Query Destination status by index[a]	No information is returned for unmatched destination levels
Qj	Query Destination status by index[a]	Sets response srcIndex to 0xFFFe for unmatched destination levels
QN,parameter		
QN,S	Query source names/labels	As defined inactive database

Table 22.2 GVG Native Protocol Commands

Message Command	Description	Notes
QN,D	Query destination names/labels	As defined inactive database
QN,L	Query level names/labels	As defined inactive database
QN,IS	Query names via source index[a]	
QN,ID	Query names via destination index[a]	
QT	Query date and time[a]	
TA,dest_name,nbr_sources,src_name_entry1[,...src_name_entryn]	Takes sources (on specified levels) to specified destination, by name rather than index	Src_name_entryn = src_name,level_bitmap
TD,dest_name,src_name_entry	Takes same source to all or specified levels	Src_name_entryn = src_name[,levelbitmap] No levelbitmap=all destination levels
TI,destIndex,srcIndex[,levelIndex]	Request take by index with level index[a]	
TJ,destIndex,nbr_sources,srcIndex,level_bitmap[,...,srcIndex,level_bitmap]	Takes sources (on specified levels) to specified destinations by index rather than name; allows breakaways	
TS,salvo_name	Request Take Salvo	TS,salvo_name
UP,dest_name,level_bitmap	Removes Protect from specified destination	ER, error-code response is currently not supported.

a. Zero-based hex logical index numbering.

For More Information on...

- these commands, refer to the GVG protocol documentation.

RossTalk Commands

The RossTalk protocol is a plain text based protocol that allows control of Ross Video equipment.

✶ Each command should be terminated by a carriage return and a line feed (CR/LF).

To send RossTalk commands to Ultrix

1. Create a network connection to the Ultrix router on **Port 7788**.
2. At the prompt, enter the commands you wish to send. Refer to **Table 22.3** for a list of supported commands.

Table 22.3 RossTalk Protocol Commands

Message Command	Description	Notes
GPI ##	Execute the salvo number corresponding to the numerical ## extension of the command	For example, GPI 04 triggers the salvo <salvo_name>[4] as listed in the Ultrix database
TIMER ##:RUN	Request Timer ID to start/resume	
TIMER ##:STOP	Request Timer ID to stop	
TIMER ##:PAUSE	Request Timer ID to pause	

Table 22.3 RossTalk Protocol Commands

Message Command	Description	Notes
TIMER ##:END	Request Timer ID to end	
XPT D:<dest> S:<source> I:<user_id> [L:<levels>]	Crosspoint command for a router TAKE where: • <dest> is the logical destination ID from the active database (1-based) • <source> is the logical source ID from the active database (1-based) • <user_id> is the numeric user/panel ID that will be used to request the switch • <levels> is an optional parameter specifying comma-separated list of 1-based level IDs to switch (for breakaway, e.g. L:1,2,4). If no levels are specified, a follow switch (all valid levels) is requested. • <levels> supports ranges specified by two numbers separated by dash (e.g. L:1-16)	Range start value must be less than the end value Single levels and ranges can be mixed in the list (eg. L:1,3,4-8,12-17) There are no spaces between numbers or ranges Invalid numbers or improperly specified ranges will be ignored An argument is separated from its value using a single colon (:) Command arguments are separated single spaces The arguments may be specified in any order, (e.g. these are equivalent: XPT D:1 S:4 I:2 and XPT S:4 I:2 D:1) Examples: • ID 7 requesting to switch Dest 2 to Source 1 on Levels 1,3,5 and 12-16 • XPT I:7 D:2 S:1 L:1,3,5,12-16

Probel SW-P-08 Protocol Commands

Ultrix supports the Probel SW-P-08 protocol and is available over an RS-422 or RS-232 serial connection, as well as ethernet connection. **Table 22.4** provides the default values for this protocol.

Table 22.4 Default Probel SW-P-08 Connection Types

	Setting
Serial	
Connection Type	RS422 or RS232
Baud	38400
Data Bits	8
Parity	None
Stop Bits	1
Ethernet	
Port	8910[a]

a. Port 8910 is the default value but is user configurable.

Table 22.5 lists the Probel SW-P-08 Serial Protocol commands the Ultrix supports.

Table 22.5 Probel SW-P-08 Native Protocol Commands

Request Message		Response Message		
Cmd ID	Description	Cmd ID	Description	Notes
01	Crosspoint Interrogate	03	Crosspoint Tally	Get single crosspoint status
02	Crosspoint Connect	04	Crosspoint connected	Take single crosspoint

Table 22.5 Probel SW-P-08 Native Protocol Commands

Request Message		Response Message		
Cmd ID	Description	Cmd ID	Description	Notes
10	Protect Interrogate	11	Protect Tally	Get destination protect status
12	Protect Connect	13	Protect connected	Set destination protect
14	Protect Disconnect	15	Protect dis-connected	Turn off destination protect
17	Protect Device Name Request	18	Protect Device Name Response	Get name of device that hold protect
19	Protect Tally Dump Request	20	Protect Tally Dump	Get all protect status
21	Crosspoint Tally Dump Request	22, 23	Crosspoint Tally Dump	Get all crosspoint status Cmd22: Byte max dest 191 Cmd23: Word max. dest. 65535
97	Implementation Request	98	Implementation Status	Get list of commands supported
100	All Source Names Request	106	Source Name Response	Get all source names (8 char. max.)
101	Single Source Name Request	106	Source Name Response	Get single source names (8 char. max.)
102	All Destination Association Name Request	107	Destination Association Name Response	Get destination names (8 char. max.)
103	Single Destination Association Names Request	107	Destination Association Name Response	Get single destination name (8 char. max.)
104	All UMD Labels Request	108	UMD Label Response	Only one set of labels is currently supported. UMD Labels replicate source labels. (16 char. max.)
105	Single UMD Labels Request	108	UMD Label Response	Get single source label (16 char. max.)
120	Crosspoint Connect On Go Group Salvo	122	Crosspoint Connect On Go Group Salvo Acknowledge	Add crosspoint to preset group
121	Crosspoint Go Group Salvo	123	Crosspoint Go Done Group Salvo Acknowledge	Switch/clear preset group
124	Crosspoint Salvo Group Interrogate	125	Crosspoint Group Salvo Tally	Preset group status
EXTENDED				
129	Extended Crosspoint Interrogate	131	Extended Crosspoint Tally	Get crosspoint status
130	Extended Crosspoint Connect	132	Extended Crosspoint Connected	Take single crosspoint
138	Extended Protect Interrogate	139	Extended Protect Tally	Get destination protect status
140	Extended Protect Connect	141	Extended Protect Connected	Protect a destination
142	Extended Protect Disconnect	143	Extended Protect Disconnected	Turn off protect for a destination
147	Extended Protect Tally Dump	148	Extended Protect Tally Dump Message	Get all protect status for given level
149	Extended Crosspoint Tally Dump	151	Extended Crosspoint Tally Dump Word Message	Get destination status for given level
228	Extended All Source Names	234	Extended Source Name Response	Get source names (8 char max.)
229	Extended Single Source Name	234	Extended Source Name Response	Get single source name (8 char max.)

Table 22.5 Probel SW-P-08 Native Protocol Commands

Request Message		Response Message		
Cmd ID	Description	Cmd ID	Description	Notes
230	Extended All Destination Association Names	235	Extended Destination Association Names Response	Get all destination names (8 char. max.)
231	Extended Single Destination Association Name	235	Extended Destination Association Names Response	Get single destination name (8 char. max.)
232	Extended Single UMD Label Request	236	Extended UMD Labels Response	Get all source labels (16 char. max.)
233	Extended Single UMD Label Request	236	Extended UMD Labels Response	Get single source label (16 char. max.)
248	Extended Crosspoint Connect On Go Group Salvo	250	Extended Crosspoint Connect On Go Group Salvo Acknowledge	Preset group acknowledge
124	Crosspoint Group Salvo Interrogate	253	Extended Crosspoint Group Salvo Tally	Preset group status

NVISION Commands

This section outlines the NVISION protocol commands supported by Ultrix.

✶ Ensure that the Ultricore-NVISION license is installed for your router. Refer to the section "**Installing a License Key**" on page 34 for details.

NVISION NP16 Ethernet Protocol

Ultrix supports the NVISION NP16 Ethernet protocol. **Table 22.6** outlines the default values for the Ultrix when using NP16.

Table 22.6 Default Connection Types — NVISION NP16

	Setting
TCP Port	5194

NP16 Commands

The NP16 protocol defines the message format: Protocol ID | Sequence Number | byte count | Command

Each field consists of a 32bit number where:

- Protocol ID — 0x0000000C (Router Control Protocol)
- Sequence number — controller generated and added to Ultrix response message
- byte count — total number of bytes in message including header (<8176)
- Command — refer to **Table 22.7**

✶ The protocol is zero based, meaning that destination 0 in the protocol relates to destination ID#1 in Ultrix. This is true for sources, destinations, and level values.

Refer to **Table 22.7** for a list of supported NP16 commands.

Table 22.7 NP16 Protocol Commands

Message		
Command	Description	Notes
0x0000 0050	Performs a TAKE	
0x0000 0051	Set Output LPR	Sets or releases a lock or protect on a destination

Table 22.7 NP16 Protocol Commands

Message Command	Description	Notes
0x0000 0052	Get Status of Outputs	Retrieves the crosspoint status
0x0000 0059	Router Partition Information	
0x0000 005E	Crosspoint Tally	Retrieves the crosspoint status
0x0000 0070	Machine Control Take	Format 1 only

NVISION NP0010 Serial Protocol

Ultrix supports a limited sub-set of the NVISION serial NP0010 protocol.

Table 22.8 outlines the default values for the Ultrix for an NP0010 serial connection.

Table 22.8 Default Connection Types — NVISION NP0010

	Setting
Connection Type	RS232, RS422
Baud	9600, 19200, 38400, 56700, 115200
Data Bits	8
Parity	No
Stop Bits	1

Refer to **Table 22.9** for a list of supported NP0010 commands.

Table 22.9 NP0010 Protocol Commands

Message Command	Description	Notes
0x50	Take	Non-timestamped version only
0x51	Destination status	Get destination status
0x55	Lock destination	Assert a destination lock
0x56	Protect destination	Assert a destination protect
0x58	Release destination lock/protect	Releases the destination lock and protect
0x66	Destination LPR state	Get destination locked/protect/released status

TSL UMD Protocol v3.1 Commands

Table 22.10 outlines the default values for the Ultrix when using TSL UMD v3.1.

Table 22.10 Default Connection Types — TSL UMD v3.1

	Setting
Serial	
Connection Type	RS422
Baud	38400
Data Bits	8
Parity	Even
Stop Bits	1
Ethernet	
TCP Port	5727
UDP Port	4490

Protocol Implementation

Ultrix implements the protocol with the following structure: DisplayID|Control|DisplayData.

Table 22.11 lists the TSL UMD Protocol v3.1 commands the Ultrix supports.

Table 22.11 TSL UMD Protocol v3.1 Commands

Protocol Breakdown	Description	UltriScape System Use
Display Address	0 - 126 display identification enumeration	DisplayID associated with source or destination
Control Byte		
Bit 0	Tally 1 status (1=on, 0=off)	Tally 1 (Red)[a]
Bit 1	Tally 2 status	Tally 2 (Green)[a]
Bit 2	Tally 3 status	Not used
Bit 3	Tally 4 status	Not used
Bits 4-5	Brightness value	Not used
Bit 6	Reserved	Not used
Bit 7	0	Not used
Display Data	16 ASCII display characters (20h-3Eh)	UMD display text

a. Green/Red may be swapped by configuring the Global Tally Settings in the UltriScape Head interface.

Refer to **Table 22.12** when using TSL UMD v3.1 and configuring PiP Tallies in an UltriScape Head.

Table 22.12 UltriScape Tally Display — TSL UMD v3.1

Red Tally	Green Tally	Display
ON	ON	RED IS ON
ON	OFF	RED IS ON
OFF	ON	GREEN IS ON
OFF	OFF	OFF (no tallies are lit)

TSL UMD Protocol v4.0 Commands

Table 22.13 outlines the default values for the Ultrix when using TSL UMD v4.0.

Table 22.13 Default Connection Types — TSL UMD v4.0

	Setting
Serial	
Connection Type	RS422
Baud	38400
Data Bits	8
Parity	Even
Stop Bits	1
Ethernet	
TCP Port	5728
UDP Port	4491

Protocol Implementation

Ultrix implements the protocol with the following structure: Header | Control | DisplayData | VBC | XData.

Table 22.14 lists the TSL UMD Protocol v4.0 commands the Ultrix supports.

Table 22.14 TSL UMD Protocol v4.0 Commands

Protocol Breakdown	Description	UltriScape System Use
Header	0x80 + 0 - 126 display address	DisplayID associated with source or destination
Control Byte		
Bit 0	Tally 1 status (1=on, 0=off)	Not used
Bit 1	Tally 2 status	Not used
Bit 2	Tally 3 status	Not used
Bit 3	Tally 4 status	Not used
Bit 4-5	Brightness value	Not used
Bit 6	0=display data, 1=command data	Display data only (0)
Bit 7	0	Not used

Table 22.14 TSL UMD Protocol v4.0 Commands

Protocol Breakdown	Description	UltriScape System Use
Display Data	16 ASCII display characters (20h - 7Eh)	UMD display text
VBC		
Bits 3-0	Byte count of XData	
Bits 6-4	Minor protocol version (v4.0=0)	
Bit 7	0	
XData1		
Bits 0-1	Right Hand tally value[a]	Not implemented
Bits 2-3	Text display value[a]	Sets text background color
Bits 4-5	Left hand tally value[a]	Displayed in either border or text background; can be either or both
Bit 6	Reserved	
Bit 7	0	
XData2		
Bits 0-1	Right Hand tally value	Not implemented
Bits 2-3	Text display value	Not implemented
Bits 4-5	Left hand tally value	Not implemented

a. Where 0=off, 1=Red, 2=Green, 3=Amber

TSL UMD Protocol v5.0 Commands

Table 22.15 outlines the default values for the Ultrix when using TSL UMD v5.0.

Table 22.15 Default Connection Types — TSL UMD v5.0

	Setting
Serial	
Connection Type	RS422
Baud	38400
Data Bits	8
Parity	Even
Stop Bits	1
Ethernet	
TCP Port	5729
UDP Port	4492

Protocol Implementation

Ultrix implements the protocol with the following structure: PBC | Ver. | Flags | Screen | DMSG (Index, Control, Length, Text).

Table 22.16 lists the TSL UMD Protocol v5.0 commands the Ultrix supports.

Table 22.16 TSL UMD Protocol v5.0 Commands

Protocol Breakdown	Description	UltriScape System Use
PBC	Total byte count of packet	
Ver.	Minor version number (0=v5.00)	
Flags		
Bit 0	0=ASCII strings, 1=UTF-16LE	
Bit 1	0=display data, 1=screen control	Display data only (0)
Bits 2-7	Reserved (0)	Not used
Screen	16bit Screen ID	ScreenID associated with source or destination
DMSG		
Index	16bit Display Address	DisplayID associated with source or destination
Control		
Bits 0-1	Right hand tally value[a]	Sets right-hand tally indicator color
Bits 2-3	Text display value[a]	Sets text background and border color
Bits 4-5	Left hand tally value[a]	Sets left-hand tally indicator color
Bits 6-7	Brightness value (0-3)	Not implemented
Bits 8-14	Reserved (0)	
Bit 15	0=display data, 1=command data	Display data only (0)
Length	Byte count of text	
Text	Text as defined by Flag 0 setting	UMD display text

a. Where 0=Off, 1=Red, 2=Green, 3=Amber

Enabling SNMP Support

Ultrix routers running software version 3v4 or higher provide optional support for remote monitoring and control of your router using SNMP (Simple Network Management Protocol). This protocol is compatible with many third-party monitoring and control tools.

✶ The MIB file provides SNMP traps for the configurable alarms on Ultrix as well as on the power supplies and fans.

Enabling SNMP Support

The SNMP Agent on the Ultrix router uses SNMP version 2 to allow queries of the configured system alarms, and state changes to configured alarms will be sent out as SNMP traps to the specified Trap Destination IP Address(es).

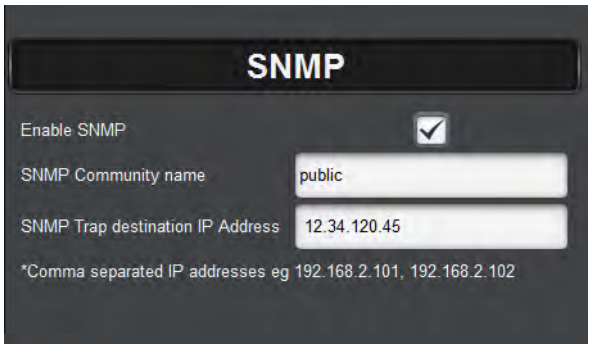
✶ Whenever the options in the SNMP area are edited, the SNMP Agent is restarted on the Ultrix router. It can take up to 10 seconds for all monitored states to be updated. This latency only applies once on startup.

The SNMP monitoring and control feature for your Ultrix is a software option that you enable in the System Status > Network tab.

To enable SNMP support on the Ultrix

1. Verify that the Ultricore-SNMP license key is installed for the Ultrix router. Refer to the section "**Installing a License Key**" on page 34 for details.
2. In the Tree View of DashBoard, double-click the **System Status** node under the Ultrix node.

   The **System Interfaces** display in the DashBoard window.
3. Select the **Network** tab.
4. Locate the **SNMP** area of the tab.



5. Select the **Enable SNMP** box.
6. Ensure that the Alarms you want to monitor via SNMP are also enabled on the Ultrix router. Refer tothe section "**Monitoring the Hardware**" on page 285.

To configure the SNMP Agent using DashBoard

1. In the Tree View of DashBoard, double-click the **System Status** node under the Ultrix node.

   The **System Interfaces** display in the DashBoard window.
2. Select the **Network** tab.
3. Locate the **SNMP** area of the tab.
4. Use the **SNMP Community Name** field to specify the SNMP password for GET requests. For example, **`public`**.
5. Use the **SNMP Trap Destination IP Address** field to specify the target address to which traps should be sent.

   An example of a valid target is provided in the **SNMP** area.

✶ A maximum number of six strings are displayed in the **SNMP Trap Destination IP Address** field at one time. If at the maximum number, you must select a string from the field and delete it before adding a new target entry.

6. Press **[Enter]** to apply the changes.

Ember+ Registration and Discovery

This section provides information on the setup and operation for the Ultrix to communicate with a third-party control system via the Ember+ media distribution protocol.

Establishing a Connection

To establish a connection between the Ember+ client and the Ultrix

1. Configure your network streams as outlined in "**ULTRIX-IP-IO Setup**" on page 71.
2. Configure your router database as outlined in "**Database Configuration**" on page 105.
3. Install the Ultricore-EMBER+ license on the Ultrix. Refer to "**Installing a License Key**" on page 34. This enables the Ultrix to start an Ember+ server and listen to incoming connections.
4. Add the Ultrix in the Ember+ control system interface using the IP Address assigned to the Ultrix.
5. In the Ember+ controls system, set the TCP port to 9000 for the Ultrix.

Specifying the Operation Mode

Ultrix can be controlled via Ember+ in two modes: Virtual Mode (table mapped IO) or Physical Mode (direct socket control).

To specify the Ember+ operation mode on the Ultrix

1. Display the **Connections** tab for Ultrix as follows:
   a. Expand the **Database** node in the Tree View.
   b. Double-click the **Connections** node.
2. Click **Options** in the **Protocol Servers** area.

   The **Server Options** dialog opens.

3. Use the **Ember Plus** menu to specify the operation mode required by your Ember+ control system. Choose from the following:
   - **Virtual Mode** — each level is represented by a Matrix and the Labels will be the one defined in the Destinations and Sources tabs.
   - **Physical Mode** — the whole router is represented as a single Matrix and the physical socket labels are used. The external control system using Ember+ commands bypasses the virtual IO mapping and directly controls the Ultrix physical socket connections. Therefore the Ultrix should not be switched by any other devices.
4. Click **Apply** to close the dialog.
5. Click **Apply** at the bottom of the **Connections** tab to apply the new setting.

Supported Commands

We support the **`Get Directory`** and **`Connect`** commands. The router is represented using the Ember+ Matrix object including Labels. This allows the Ember+ control system to see the number of levels, number of sources and destinations and their labels, the per destination status, and issue switch commands.

✶ If you make changes to the router database (such as Levels, Destinations and Sources) after establishing communications, you may need to refresh/reload/reconnect the connection.

ULTRIX-UCCI Redundancy

This chapter outlines the ULTRIX-UCCI Control redundancy feature for the ULTRIX-FR5. This feature is not available for the ULTRIX-FR1(-NS) or the ULTRIX-FR2(-NS).

Before You Begin

The following are required for ULTRIX-UCCI Control redundancy:

- Two ULTRIX-UCCI Control cards physically installed and configured in the ULTRIX-FR5
- The ULTRIX-FR5 is installed, fully configured, and running software 4v10 or higher

✶ Contact Ross Technical Support for installing the second ULTRIX-UCCI Control card in your ULTRIX-FR5.

Overview

The ULTRIX-UCCI Control redundancy feature provides built-in redundancy for your routing system. In the event that one ULTRIX-UCCI Control card is affected, the router communications and traffic automatically routes to the second card. When the primary ULTRIX-UCCI Control card is back on-line, communications automatically switch from the secondary to the primary without user interaction. A DashBoard option also exists that enables a user to manually switch from one card to the other.

Monitoring

Communications can be monitored via the LEDs on the ULTRIX-UCCI Control hardware or via the Devices > Frame Configuration interface in DashBoard.

Using the Physical LEDs

There are two ULTRIX-UCCI Control Card slots in the top-right corner of the ULTRIX-FR5. Each slot houses an Ultricore-CC Internal board which includes a Micro SD Card slot, a USB port, and four status LEDs.

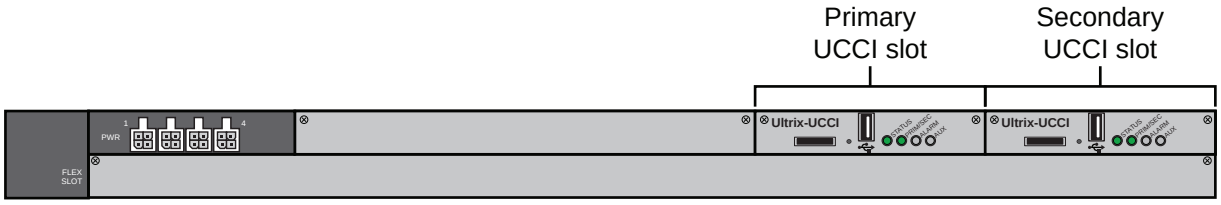


Figure 23.1 Location of ULTRIX-UCCI Control Slots in an ULTRIX-FR5

Table 23.1 describes the Ultrix-UCCI status LEDs.

Table 23.1 Hardware — Ultrix-UCCI LEDs

LED	Status	Description
STATUS	Green	Indicates the ULTRIX-UCCI Control card is powered and the last re-boot was successful
	Flashing Green	Indicates the ULTRIX-UCCI Control card is powered and in the progress of a re-boot
	Red	Indicates the ULTRIX-UCCI Control card is powered but requires a re-boot

Table 23.1 Hardware — Ultrix-UCCI LEDs

LED	Status	Description
PRIM/SEC	Green	Indicates the ULTRIX-UCCI Control card is configured and functioning as the Primary
	Flashing Green	Indicates the ULTRIX-UCCI Control card is in standby (Secondary) mode
ALARM	Red	Indicates the ULTRIX-UCCI Control card is experiencing an error condition; verify the message(s) on the router front panel LCD display and DashBoard
	Off	Indicates the ULTRIX-UCCI Control card is operating correctly and is not experiencing any errors
AUX	This LED is not implemented.	

Using DashBoard

The Device Configuration interface in DashBoard enables you to monitor the ULTRIX-FR5 hardware including each ULTRIX-UCCI Control slot.

To monitor an ULTRIX-UCCI Control card via DashBoard

1. Display the Device Configuration interface as outlined in the section "**To access the Device Configuration interfaces in DashBoard**" on page 26.

   A rear panel map that represents the Ultrix router displays at the top of the interface.

2. Refer to **Table 23.2** for the ULTRIX-UCCI Control status LEDs.

Table 23.2 DashBoard — Ultrix-UCCI LEDs

LED	Status	Description
STATUS	Green	Indicates the ULTRIX-UCCI Control card is powered and the last re-boot was successful
	Red	Indicates the ULTRIX-UCCI Control card is powered but is currently re-booting
PRIM/SEC	Green	Indicates the ULTRIX-UCCI Control card is configured and functioning as the Primary
	Off	Indicates the ULTRIX-UCCI Control card is in standby (Secondary) mode

Table 23.2 DashBoard — Ultrix-UCCI LEDs

LED	Status	Description
ALARM	Red	Indicates the ULTRIX-UCCI Control card is experiencing an error condition; verify the message(s) on the router front panel LCD display and DashBoard
	Off	Indicates the ULTRIX-UCCI Control card is operating correctly and is not experiencing any errors
AUX	This LED is not implemented.	

Upgrading an ULTRIX-UCCI Control Card

Contact Ross Technical Support for information on upgrading the software on your ULTRIX-UCCI Control card.

Managing your Ultrix Settings

The **System Status** > **Transfer** interface provides options to import and export archived files (*.ufs) of your Ultrix frame settings to another Ultrix. The *.ufs file captures the settings of the Device Configuration interface except for:

- database configuration
- UltriScape layouts
- device name
- network settings
- NTP server settings
- installed license keys

✶ This feature requires DashBoard v8.2 or higher and Ultrix software v2.0 or higher.

For More Information on...

- the settings available in the Device Configuration interface, refer to the section "**Device Configuration Interfaces**" on page 323.

Exporting the Device Configuration Settings

You create an archive of your frame settings using the options in the **System Status** > **Transfer** tab.

To export your settings to an archived file

1. In the Tree View of DashBoard, double-click the **System Status** node.

   The **System Interfaces** display in the DashBoard window.
2. Select the **Transfer** tab.
3. Select the **Ultrix Frame Settings** sub-tab.
4. Locate the **Export** area on the tab.
5. Click **Browse...** to specify the name and location to save the *.ufs file to.

   The **Save As** read-only field updates with the selected path and file name.
6. Click **Apply**.

   The **Downloading Archive** dialog opens to report the status of the export.

Importing a Frame Settings File

You must re-boot the Ultrix to apply the settings of the imported *.ufs file.

To import an Ultrix Frame Settings file

1. In the Tree View of DashBoard, double-click the **System Status** node.

   The **System Interfaces** display in the DashBoard window.
2. Select the **Transfer** tab.
3. Select the **Ultrix Frame Settings** sub-tab.
4. Locate the **Import** area.
5. Select the *.ufs file you wish to import as follows:

a. Click **Browse...**

   The **Open** dialog opens.

b. Use the **Open** dialog to specify the *.ufs file to import.

c. Click **Open** to close the dialog and load the file.

6. Click **Apply**.

   The **Uploading Archive** dialog opens to report the status of the transfer.

Monitoring the Hardware

The Frame Configuration interface in DashBoard provides status fields for monitoring the individual Power Supplies (PSU), the internal chassis fans, the SD Card, Ethernet ports, and the flash storage space of your Ultrix router.

Primary and Redundant Power Alarms

The Primary and Redundant Power alarms in the Frame Configuration interface do not consider what ports the PSU are connected on the Ultrix rear panel. The alarms trip only if the required minimum state for main or redundant power is not met. Refer to **Table 25.1** for the power requirements.

Table 25.1 PSU Requirements based on Frame Size

Frame Size	Min. PSU	Min. PSU for Redundancy (N+1)	Min. for Fully Redundant (2N)	Max. Redundancy
ULTRIX-FR1(-NS)	1	2	2	4N
ULTRIX-FR2(-NS)	2	3	4	2N
ULTRIX-FR5	1 x Ultripower			

Enabling the Alarms for the Router PSU Ports

You can customize the monitoring of the PSU by selecting which units to monitor and display an alarm message when the unit is not detected. The Alarms table fields in the Frame Configuration interface vary in severity from green (valid), yellow (caution), to red (alarm). DashBoard reports the most severe alarm for a single field.

For More Information on...

- the messages displayed in the Power Supplies and Fans status fields, refer to **Table 25.2**.

To monitor the hardware status of an Ultrix router

1. In the Tree View of DashBoard, expand the node for the Ultrix router you want to monitor.
2. Expand the **Controllers + Matrices** node.
3. Double-click the node for your Ultrix router.

   The **Device Configuration** interface opens with the **Frame Configuration** interface selected.
4. Click **Alarms**.

   The **Frame Configuration** interface displays the status fields that report on the hardware components.
5. To add a new item to monitor:

✶ The ULTRIX-FR5 has an option of triggering a GPI contact closure for use with external equipment. Select the **Alarm Relay** box to activate for each alarm type required.

   a. Click the **Type** cell in a row that is not assigned to an item to monitor. The row will report "**`Not Configured`**" with a yellow indicator in the **State** cell.

   b. Select a PSU to monitor from the drop-down menu. Choose from the following:

   › **PSU #** — Monitors the specified PSU port on the Ultrix rear panel.

   › **Primary Power** — Monitors the main power connection (non-PSU port specific) to the Ultrix rear panel and determines whether a sufficient number of power supplies are connected and operating for the router to run reliably (one PSU for a ULTRIX-FR1(-NS), two PSU for a ULTRIX-FR2(-NS), and one Ultripower for the ULTRIX-FR5). Refer to **Table 25.1** for details.

› **Redundant Power** — Monitors additional power supplies connected to the Ultrix rear panel. When the Primary PSU is unavailable and no other PSU ports are in use, an alarm message will be raised to indicate that in the event of a power loss on the primary PSU, the router will lose power. Refer to **Table 25.1** for details.

6. Refer to **Table 25.2** for a summary of the possible messages displayed in the Alarms status fields.

Table 25.2 Alarms — Status Messages

Item	Parameters	Description
System Error	OK (Green)	The last re-boot (power cycle) of the router was successful and no errors are detected.
	Failed (Red)	The last re-boot/power cycle of the router failed. You must re-boot/power cycle the router. If the issue still persists, contact Ross Technical Support.
None	Not Configured (Yellow)	The row in the table is not currently monitoring any component of the Ultrix router.
Fan #	OK (Green)	Normal operation; no hardware errors are associated with the specified fan
	x/y	Indicates the fan speed in RPM where: • x represents the current speed • y represents the maximum speed
	Stalled (Red)	Indicates the specified fan is not running
Primary Power	OK (Green)	Normal operation; no hardware errors associated with the PSU • ULTRIX-FR5— an Ultripower connection is detected • ULTRIX-FR2(-NS) — at least 2 connected PSU are detected • ULTRIX-FR1(-NS) — at least 1 connected PSU is detected
	Failed (Red)	Indicates the minimum number of PSU[a] are not detected
Redundant Power	OK (Green)	Indicates extra PSU are detected/available; normal operation; no hardware errors associated with the PSU • ULTRIX-FR2(-NS) — at least 3 connected PSU are detected • ULTRIX-FR1(-NS) — at least 2 connected PSU are detected
	Failed (Red)	Indicates the minimum number of PSU[b] are not detected
Temperature	OK (Green)	Indicates that the chassis core components temperature is within the normal range
	Warning (Yellow)	Indicates that at least one chassis core component temperature is between 75°C and 80°C (167°F and 176°F)
	Failed (Red)	Indicates that at least one chassis core component temperature is above 80°C (176°F)
Battery	OK (Green)	The battery installed in the Cooling Fan Module of the chassis is operating normally.
	Warning (Yellow)	The battery power is between 1.5V and 2.7V.
	Failed (Red)	The battery power is below 1.5V and requires replacement. Refer to "**Monitoring the Battery**" on page 291.

a. An ULTRIX-FR2(-NS) requires a minimum of 2 PSU to be connected at all times. For ULTRIX-FR1(-NS) routers, a minimum of 1 PSU is required.
b. An ULTRIX-FR2(-NS) requires a minimum of 2 PSU to be connected at all times. For ULTRIX-FR1(-NS) routers, a minimum of 1 PSU is required.

Setting the PSU Fan Speed

The Ultrix router enables you to control the cooling fan speed of the power supply units for optimum cooling.

To set the fan speed

1. Expand the **Devices** node.
2. Expand the **Controllers + Matrices** node.
3. Double-click the node for your Ultrix router.

   The **Device Configuration** interface opens with the **Frame Configuration** interface selected.
4. Click **Power Supplies and Fans**.
5. Use the **Minimum Fan Speed** slider to specify how fast (rpm) the fans the will run.

Monitoring the Internal Memory

The **Device Configuration** interface enables you to monitor the flash storage space of your Ultrix router. This is useful when managing a large number of databases or during upgrades.

To monitor the flash storage space

1. In the Tree View of DashBoard, expand the node for the Ultrix router you want to monitor.
2. Expand the **Controllers + Matrices** node.
3. Double-click the node for your Ultrix router.

   The **Device Configuration** interface opens with the **Frame Configuration** interface selected.
4. Click **Alarms**.

   The **Frame Configuration** interface displays the status fields that report on the hardware components.
5. To enable the **Flash Storage** alarm:
   a. Click the **Type** cell in a row that is not assigned to an item to monitor. The row will report "**`Not Configured`**" with a yellow indicator in the **State** cell.
   b. Select **Flash Storage**.
6. Refer to **Table 25.3** for a summary of the possible messages displayed in the **Flash Storage** status field.

Table 25.3 Alarms — Flash Storage

Parameter	Description	Solution
OK	Database and layout storage space is available	
WARNING	Database and layout storage space is low	• Export unused databases and layouts as outlined in "**Exporting a Database**" on page 125; or • Delete unused databases as outlined in "**Deleting a Database**" on page 125
CRITICAL	Database and layout storage is nearly depleted	

Monitoring the SD Card

The **Device Configuration** interface provides two methods for monitoring the SD Card:

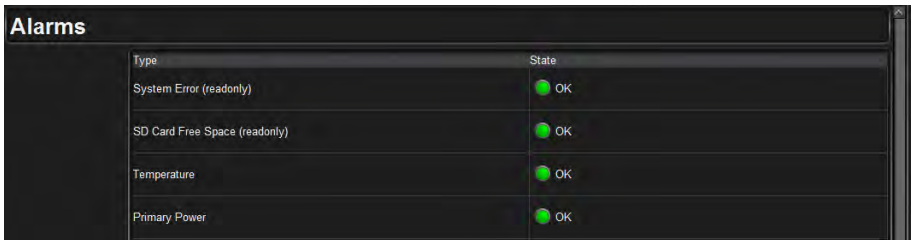
- **SD Card Free Space** — provides an estimate of how much memory is currently allocated on the SD Card.
- **SD Card Presence** — monitors the physical state of the SD Card within the Ultrix chassis.

To monitor the SD Card storage space

1. In the Tree View of DashBoard, expand the node for the Ultrix router you want to monitor.
2. Expand the **Controllers + Matrices** node.
3. Double-click the node for your Ultrix router.

   The **Device Configuration** interface opens with the **Frame Configuration** interface selected.
4. Click **Alarms**.

   The **Frame Configuration** interface displays the status fields that report on the hardware components.
5. To enable the **SD Card Free Space** alarm:
   a. Click the **Type** cell in a row that is not assigned to an item to monitor. The row will report "**`Not Configured`**" with a yellow indicator in the **State** cell.
   b. Select **SD Card Free Space**.



6. Refer to **Table 25.4** for a summary of the possible messages displayed in the **SD Card Free Space** status field.

Table 25.4 Alarms — SD Card Free Space

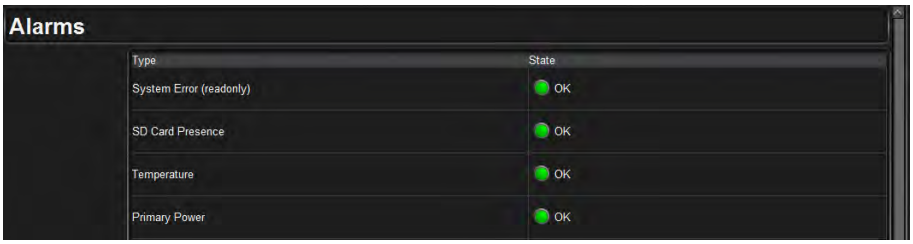
Parameter	Description	Solution
OK	Storage space is available	
WARNING	Less than 20% of the storage space is available	Contact Ross Technical Support
CRITICAL	Less than 10% of the storage space is available	

To monitor the physical state of the SD Card

1. In the Tree View of DashBoard, expand the node for the Ultrix router you want to monitor.
2. Expand the **Controllers + Matrices** node.
3. Double-click the node for your Ultrix router.

   The **Device Configuration** interface opens with the **Frame Configuration** interface selected.
4. Click **Alarms**.

   The **Frame Configuration** interface displays the status fields that report on the hardware components.
5. To enable the **SD Card Presence** alarm:
   a. Click the **Type** cell in a row that is not assigned to an item to monitor. The row will report "**`Not Configured`**" with a yellow indicator in the **State** cell.
   b. Select **SD Card Presence**.



6. Refer to **Table 25.5** for a summary of the possible messages displayed in the **SD Card Presence** status field.

Table 25.5 Alarms — SD Card Presence

Parameters	Description
OK (Green)	There are no SD Card issues detected
FAIL	The SD Card is not properly installed in the router chassis. Contact Ross Technical Support.

Monitoring the Ethernet LEDs via the Rear Panel

Each RJ45 connector on the Ultrix rear panel include two LEDs that report the ethernet communication activity and speed. Refer to **Figure 25.1** for LED locations on the Ultrix rear panel.

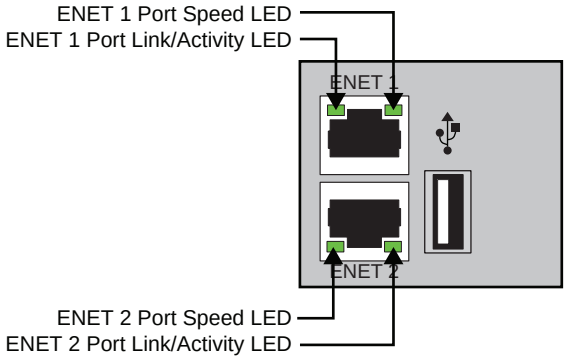


Figure 25.1 ENET Ports on Rear Panel — ULTRIX-FR1(-NS) and ULTRIX-FR2(-NS) LEDs

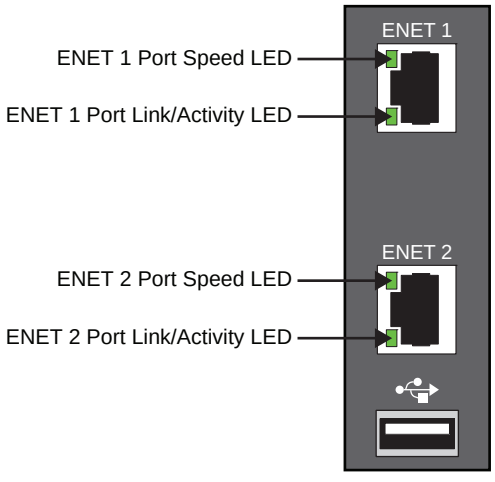


Figure 25.2 ENET Ports on Rear Panel — ULTRIX-FR5 LEDs

Table 25.6 provides basic LED descriptions.

Table 25.6 ENET Port LEDs

LED	Status	Description
ENET # - Link/Activity	Green	When lit green, this LED indicates a valid link is established on the specified ENET port.
	Flashing	When flashing green, this LED indicates communication activity is occurring on the specified ENET port.
	Off	When unlit, this LED indicates an invalid link is detected on the specified ENET port. Verify the cable connection on the rear module port and your network connections.
ENET # - Port Speed	Green	When lit green, this LED indicates the ENET Port communication speed is at 1Gbps.
	Yellow	When lit orange, this LED indicates the ENET Port communication speed is at 100Mbps.
	Off	When unlit, this LED indicates the ENET Port communication speed is at 10Mbps.

Monitoring the Battery

The Ultrix router uses a Panasonic® CR2032 battery to serve as an emergency backup power source for the essential memory of the router. This enables the router to power up with the same crosspoint selection as when it was powered off. This battery is located on the Cooling Fan Module installed inside the Ultrix router chassis.

✶ A spare battery was included in the ***Ultrix Shipping Kit*** (Ross P/N 2101KR-084) when your router was shipped from the factory.

Enabling the Battery Status Monitoring Feature in DashBoard

You can monitor the battery status via the Alarms table in the Frame Configuration interface.

To configure an alarm for battery status monitoring

1. To In the Tree View of DashBoard, expand the node for the Ultrix router you want to monitor.
2. Expand the **Controllers + Matrices** node.
3. Double-click the node for your Ultrix router.

   The **Device Configuration** interface opens with the **Frame Configuration** interface selected.
4. Click **Alarms**.

   The **Frame Configuration** interface displays the status fields that report on the hardware components.
5. Click the **Type** cell in a row that is not assigned to an item to monitor. The row will report "**`Not Configured`**" with a yellow indicator in the **State** cell.

   The **Type** menu opens.
6. Select **Battery** from the **Type** menu.

Replacing a Failed Battery in an ULTRIX-FR5

This section describes how to replace a failed battery within the ULTRIX-FR5 chassis.

Removing the Door from the Chassis

Caution — *For reliable performance, the Ultrix router should not run without the Cooling Fan Module for more than 5 minutes.*

If the Battery alarm displays a red indicator in the Alarms table of the Frame Configuration interface, you will need to replace the battery installed inside the Cooling Fan Module of the chassis. This module is accessed via the front of the router chassis and requires that you remove the door first. The door is secured to the front of the router chassis with a rare earth magnet on each side.

ESD Susceptibility — *Static discharge can cause serious damage to sensitive semi-conductor devices. Avoid handling circuit boards in high static environments such as carpeted areas and when synthetic fiber clothing is worn. Always exercise proper grounding precautions when working on circuit boards and related equipment.*

To remove the door from the ULTRIX-FR5

1. With your left hand, grasp the top and bottom of the door at the left sides.
2. With your right hand, grasp the middle of the door on the right side.

Caution — *The door of the ULTRIX-FR5 is heavy. Ensure that you have a firm grip on the door, or that the door is otherwise supported, before removing it from the chassis.*

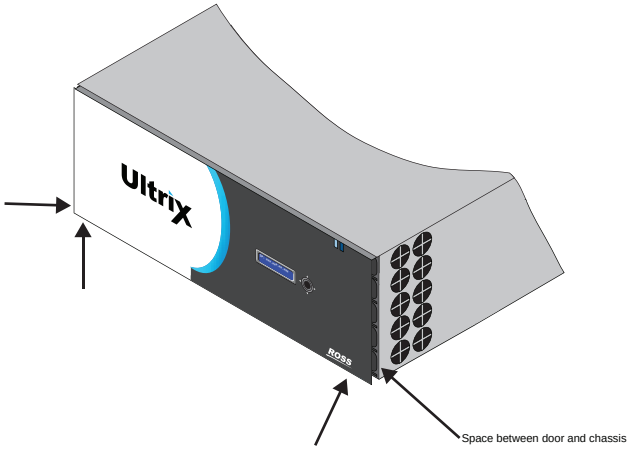


Figure 26.1 ULTRIX-FR5 Front Panel — Where to Grasp the Door

★ If you have trouble removing the door from the chassis, use your right-hand fingers in the space between the door and the chassis for added leverage.

3. Pull the right side of the door towards you to disengage it approximately 1.0” from the chassis.
4. Pull the left side of the door towards you to fully disengage the door from the chassis.

Caution — *Pull the door off without twisting or rotating it at too steep of an angle.*

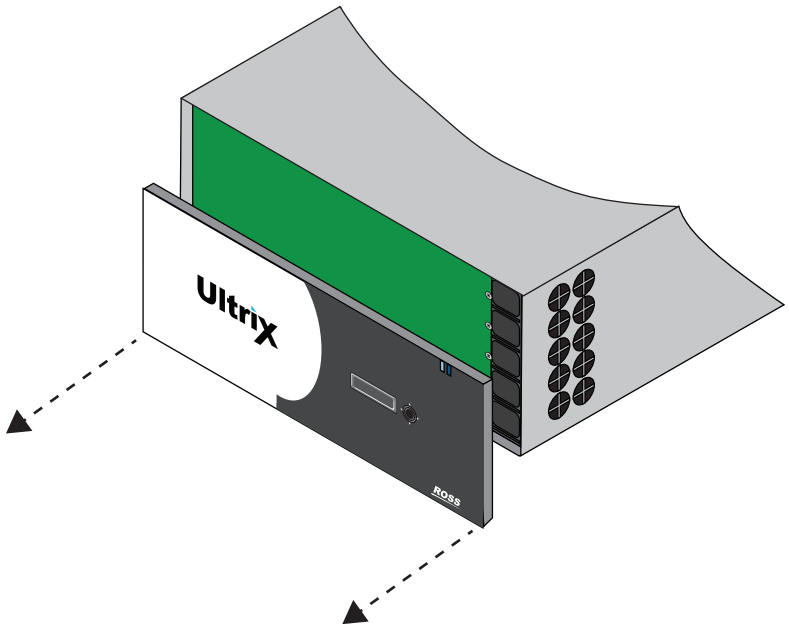


Figure 26.2 ULTRIX-FR5 — Front Panel — Removing the Door

Removing a Battery from the ULTRIX-FR5

The battery is located on the Main Board inside the ULTRIX-FR5 chassis. You do not need to remove the Cooling Fan Module to replace the battery in an ULTRIX-FR5.

To remove the battery from an ULTRIX-FR5

1. Locate and note the orientation of the failed battery on the Main Board. Refer to **Figure 26.16** for battery location.

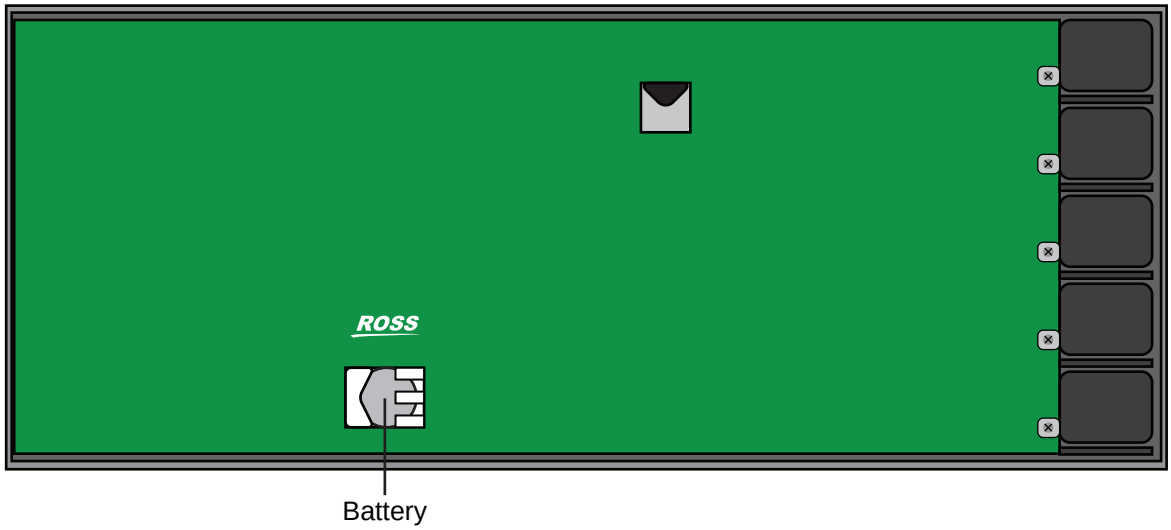


Figure 26.3 ULTRIX-FR5 — Battery Location inside the Chassis

2. Gently move the latch to the left and away from the failed battery.
3. Remove the battery from its slot by pulling it away from the Main Board.

Installing a New Battery in the ULTRIX-FR5

Installing a new battery requires you to orient the battery on the Main Board, and secure the battery to the board.

To install a new battery in the ULTRIX-FR5

1. Hold the battery in one hand and orient it so that the Positive side (+) faces away from you.
2. Pull the latch slightly away to make room for the new battery installation.
3. Slide the battery into the empty slot the failed battery was in.
4. Secure the battery to the Main Board using the latch.

To re-install the door on the ULTRIX-FR5

1. Align the door to the front of the router, ensuring that:
   - the door is oriented upright
   - the corner with the Ultrix logo is in your left hand, and
   - the corner with the Ross logo is in your right hand. (**Figure 26.4**)

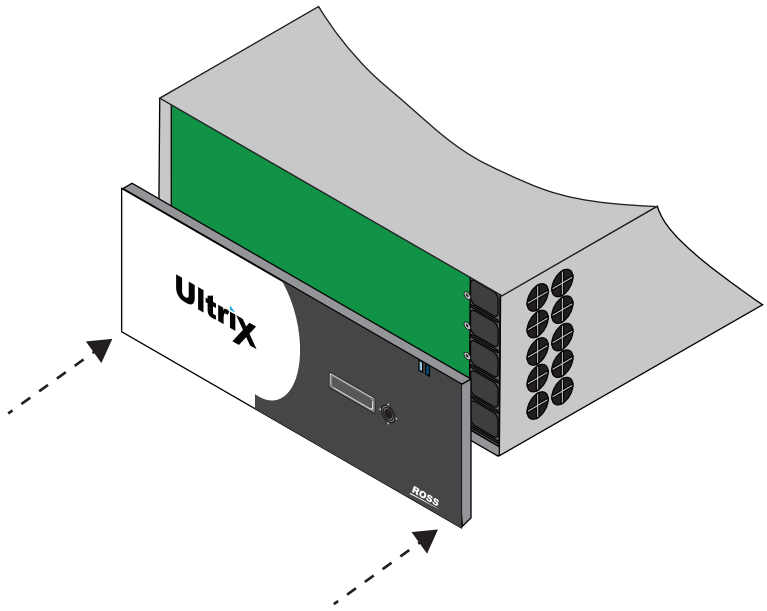


Figure 26.4 ULTRIX-FR5 — Aligning the Door to the Chassis

2. Align the left-side of the door against the chassis.
3. Align the right-side of the door, gently rotating the door into position.
4. Verify that the door is fully seated in place with the magnets securing it to the chassis.

Replacing a Failed Battery in an ULTRIX-FR2(-NS)

This section describes how to replace a failed battery within the ULTRIX-FR2 or ULTRIX-FR2-NS chassis. Note that the battery location differs depending on the model.

Removing the Door from the Chassis

Caution — *For reliable performance, the Ultrix router should not run without the Cooling Fan Module for more than 5 minutes.*

If the Battery alarm displays a red indicator in the Alarms table of the Frame Configuration interface, you will need to replace the battery installed inside the Cooling Fan Module of the chassis. This module is accessed via the front of the router chassis and requires that you remove the door first. The door is secured to the front of the router chassis with a rare earth magnet on each side.

ESD Susceptibility — *Static discharge can cause serious damage to sensitive semi-conductor devices. Avoid handling circuit boards in high static environments such as carpeted areas and when synthetic fiber clothing is worn. Always exercise proper grounding precautions when working on circuit boards and related equipment.*

To remove the door from the ULTRIX-FR2(-NS)

1. With your left hand, grasp the top and bottom of the door at the left sides.
2. With your right hand, grasp the top and bottom of the door at the right side.

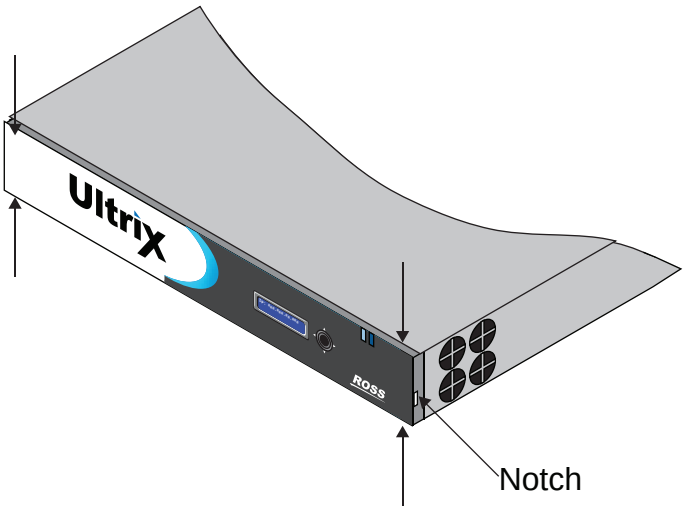


Figure 26.5 ULTRIX-FR2-NS Front Panel — Where to Grasp the Door

✶ If you have trouble removing the door from the chassis, you can insert a flathead screwdriver into the notch on either side of the door for added leverage.

3. Pull the right side of the door towards you to disengage it approximately 1.0” from the chassis.
4. Pull the left side of the door towards you to fully disengage the door from the chassis.

Caution — *Pull the door off without twisting or rotating it at too steep of an angle.*

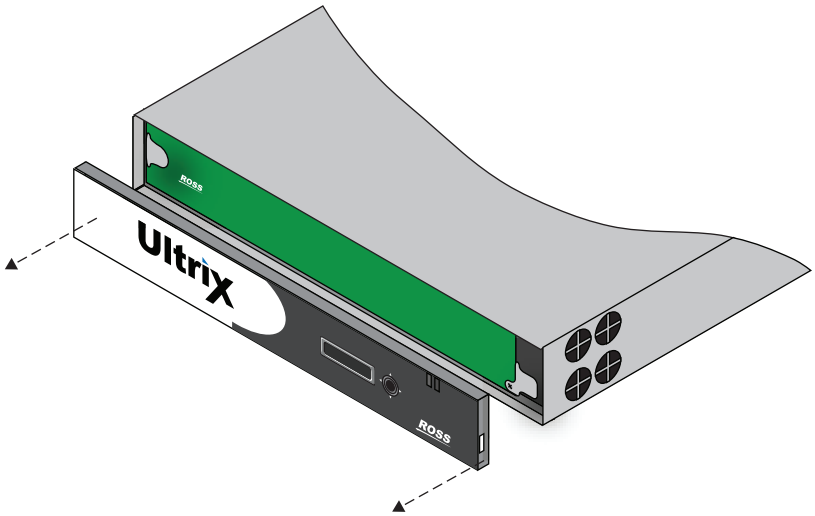


Figure 26.6 ULTRIX-FR2-NS Front Panel — Removing the Door

Removing the Cooling Fan Module from the ULTRIX-FR2(-NS)

This section only applies if you are replacing a battery in the ULTRIX-FR2(-NS).

To remove the Cooling Fan Module from the ULTRIX-FR2(-NS)

1. With the door removed, use a #1 Phillips screwdriver to loosen the screw that affixes the Cooling Fan Module to the Main Board.

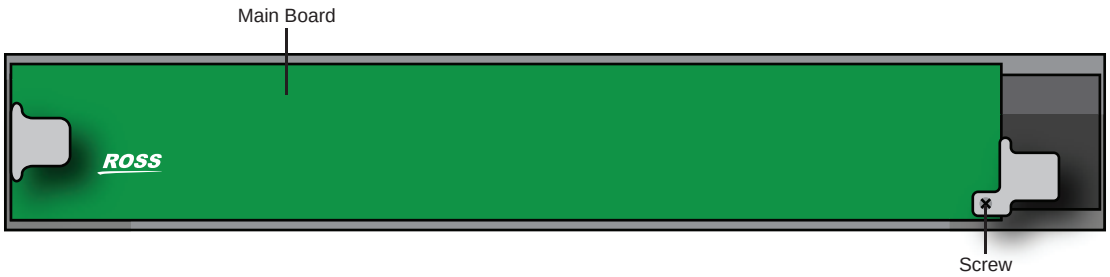


Figure 26.7 ULTRIX-FR2(-NS) — Location of Screw for Cooling Fan Module

2. Gently pull the Cooling Fan Module towards you to unseat it from the backplane and to disengage the module from the chassis.

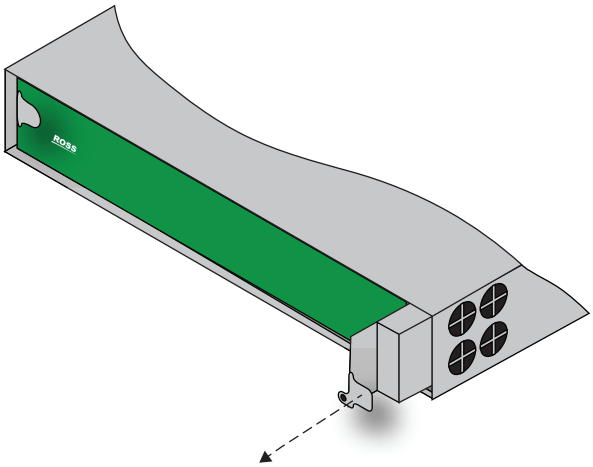


Figure 26.8 ULTRIX-FR2(-NS) — Removing the Cooling Fan Module from the Chassis

3. Pull the Cooling Fan Module free from the chassis and set it on a static-free surface.

Removing a Battery from the ULTRIX-FR2(-NS)

The battery is installed in a slot on the side of the Cooling Fan Module and secured in place with a small latch.

To remove a failed battery from the ULTRIX-FR2(-NS) Cooling Fan Module

1. Locate and note the orientation of the failed battery inside the Cooling Fan Module. (**Figure 26.9**)

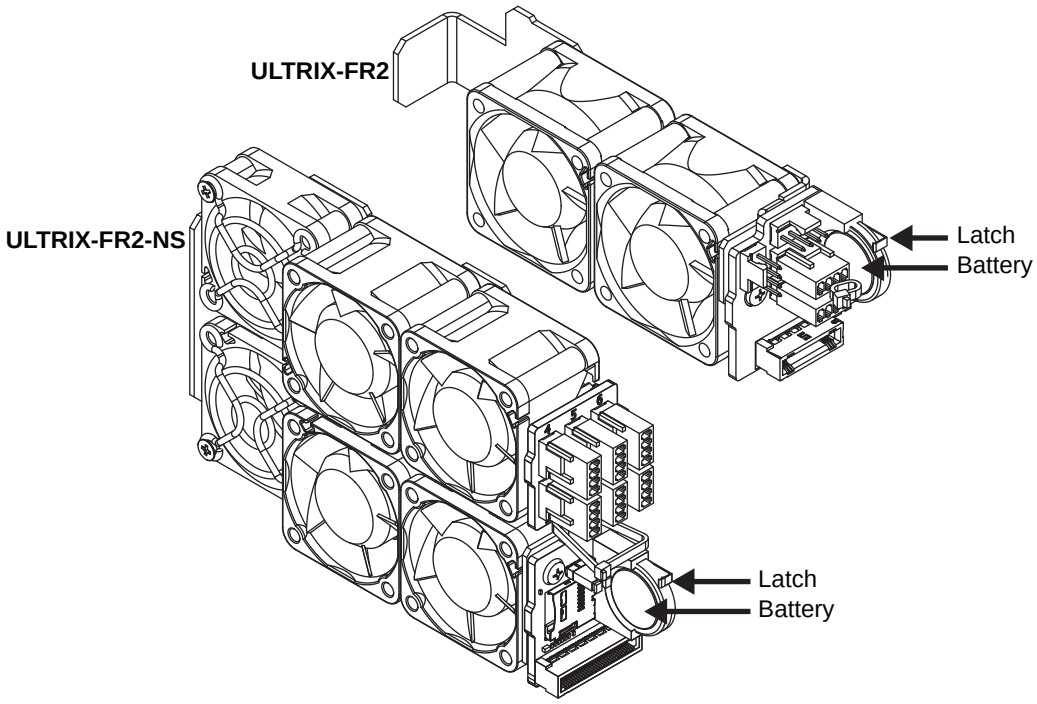


Figure 26.9 Battery Location inside the Cooling Fan Module — ULTRIX-FR2 and ULTRIX-FR2-NS

2. Gently move the latch to the right and away from the failed battery.
3. Remove the battery from its slot by pulling it away from the Cooling Fan Module.

Installing a New Battery in the ULTRIX-FR2(-NS)

Installing a new battery requires you to orient the battery on the module, secure the battery to the module, and then re-install the front door on the chassis.

To install a new battery in the Cooling Fan Module

1. Hold the battery in one hand and orient it so that the Positive side (+) faces away from you. (**Figure 26.17**)

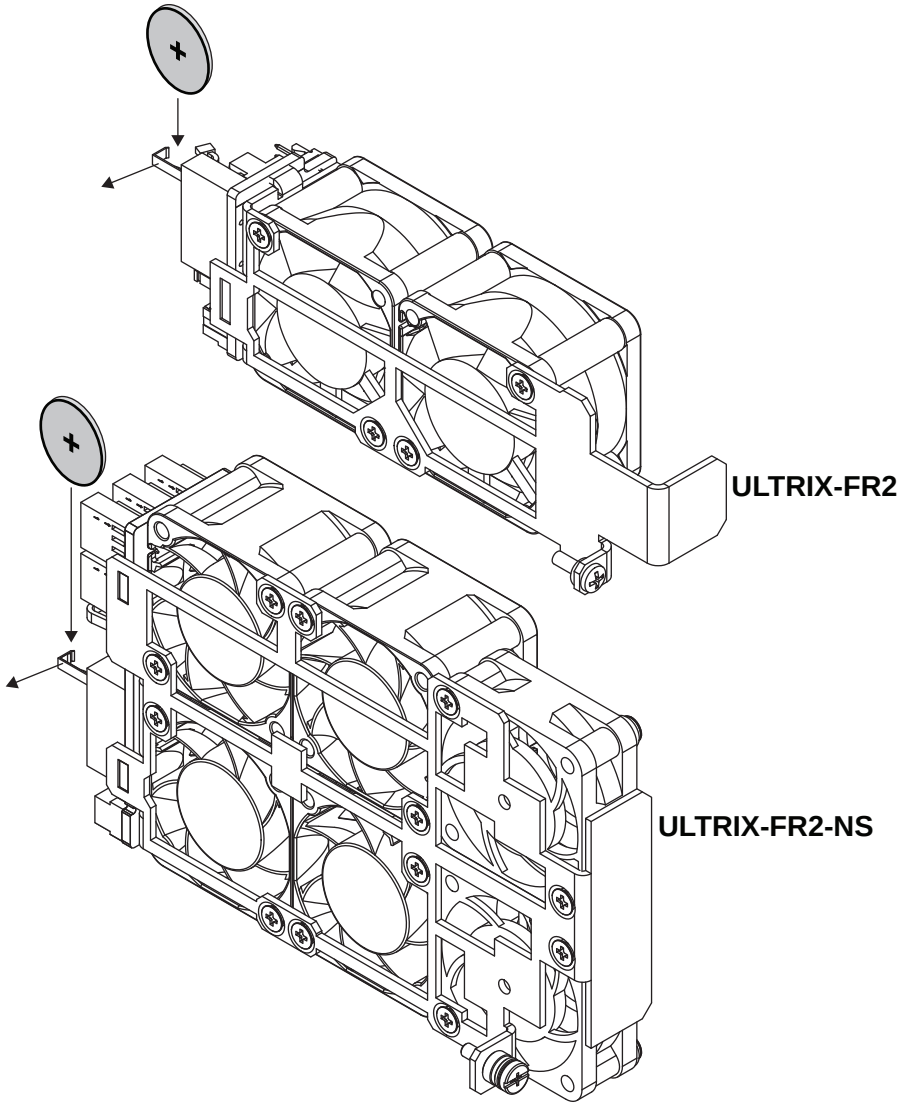


Figure 26.10 New Battery Orientation —ULTRIX-FR2 and ULTRIX-FR2-NS

2. Slide the battery into the empty slot the failed battery was in.
3. Secure the battery to the module using the latch.

Re-installing the Cooling Fan Module

Once you have installed the new battery into the new Cooling Fan Module, you can re-install the Cooling Fan Module into the Ultrix chassis and replace the door on the front panel.

To install the Cooling Fan Module into the chassis

1. Align the new Cooling Fan Module in its slot inside the chassis.
2. Gently push the Cooling Fan Module into the slot until the module is fully seated. You will feel the back connector of the module engaged with its connector inside the chassis.

3. Use the screw from step 1 in the procedure "**To remove the Cooling Fan Module from the ULTRIX-FR2(-NS)**" on page 295 to affix the Cooling Fan Module to the frame.

Caution — *The Cooling Fan Module includes a connector that must be fully seated. Reinstalling the Cooling Fan Module retention screw is required to ensure proper contact.*

Re-installing the Door on the Chassis

Caution — *Re-installing the door incorrectly or misaligned can damage the door or internal components.*

ESD Susceptibility — *Static discharge can cause serious damage to sensitive semi-conductor devices. Avoid handling circuit boards in high static environments such as carpeted areas and when synthetic fiber clothing is worn. Always exercise proper grounding precautions when working on circuit boards and related equipment.*

To re-install the door on the ULTRIX-FR2(-NS)

1. Align the door to the front of the router, ensuring that the door is oriented upright, the corner with the Ultrix logo is in your left hand, and the corner with the Ross logo is in your right hand. (**Figure 26.18**)

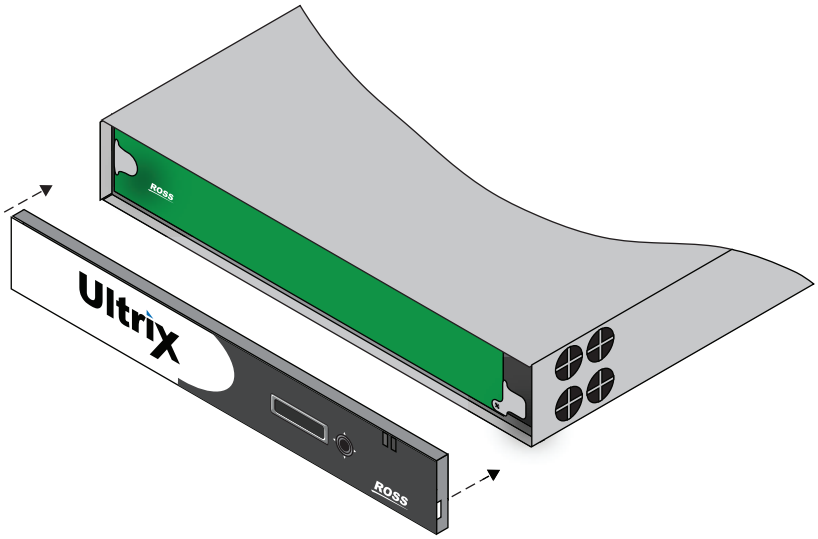


Figure 26.11 ULTRIX-FR2(-NS) — Aligning the Door to the Chassis

2. Align the left-side of the door against the chassis.
3. Align the right-side of the door, gently rotating the door into position.
4. Verify that the door is fully seated in place with the magnets securing it to the chassis.

Replacing a Failed Battery in an ULTRIX-FR1(-NS)

This section describes how to replace a failed battery within the ULTRIX-FR1 or ULTRIX-FR1-NS chassis. Note that the battery location differs depending on the model.

Removing the Door from the Chassis

Caution — *For reliable performance, the Ultrix router should not run without the Cooling Fan Module for more than 5 minutes.*

If the Battery alarm displays a red indicator in the Alarms table of the Frame Configuration interface, you will need to replace the battery installed inside the Cooling Fan Module of the chassis. This module is accessed via the front of the router chassis and requires that you remove the door first. The door is secured to the front of the router chassis with a rare earth magnet on each side.

ESD Susceptibility — *Static discharge can cause serious damage to sensitive semi-conductor devices. Avoid handling circuit boards in high static environments such as carpeted areas and when synthetic fiber clothing is worn. Always exercise proper grounding precautions when working on circuit boards and related equipment.*

To remove the door from the ULTRIX-FR1(-NS)

1. With your left hand, grasp the top and bottom of the door at the left sides.
2. With your right hand, grasp the top and bottom of the door at the right side.

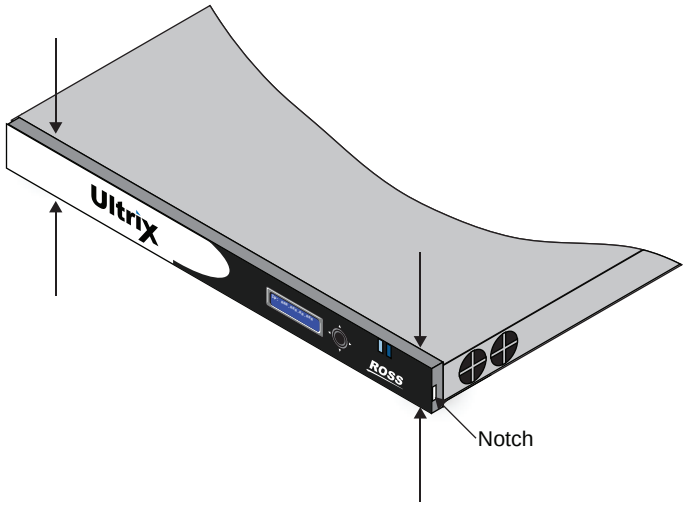


Figure 26.12 ULTRIX-FR1 Front Panel — Where to Grasp the Door

★ If you are having trouble removing the door from the chassis, you can insert a flathead screwdriver into the notch on either side of the door for added leverage.

3. Pull the right side of the door towards you to disengage it approximately 1.0” from the chassis.
4. Pull the left side of the door towards you to fully disengage the door from the chassis.

Caution — *Pull the door off without twisting or rotating it at too steep of an angle.*

Figure 26.13 ULTRIX-FR1-NS Front Panel — Removing the Door

Removing the Cooling Fan Module from the ULTRIX-FR1(-NS)

This section only applies if you are replacing a battery in the ULTRIX-FR1(-NS).

To remove the Cooling Fan Module from the ULTRIX-FR1(-NS)

1. With the door removed, use a #1 Phillips screwdriver to loosen the screw that affixes the Cooling Fan Module to the Main Board.

Figure 26.14 ULTRIX-FR1(-NS) — Location of Screw for Cooling Fan Module

2. Gently pull the Cooling Fan Module towards you to unseat it from the backplane and to disengage the module from the chassis.

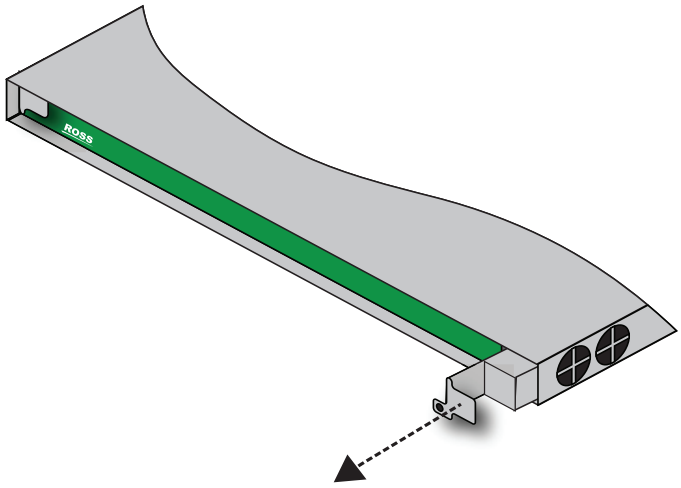


Figure 26.15 ULTRIX-FR1(-NS) — Removing the Cooling Fan Module from the Chassis

3. Pull the Cooling Fan Module free from the chassis and set it on a static-free surface.

Removing a Battery from the ULTRIX-FR1(-NS)

The battery is installed in a slot on the side of the Cooling Fan Module and secured in place with a small latch.

To remove a failed battery from the ULTRIX-FR1(-NS) Cooling Fan Module

1. Locate and note the orientation of the failed battery inside the Cooling Fan Module. (**Figure 26.16**)

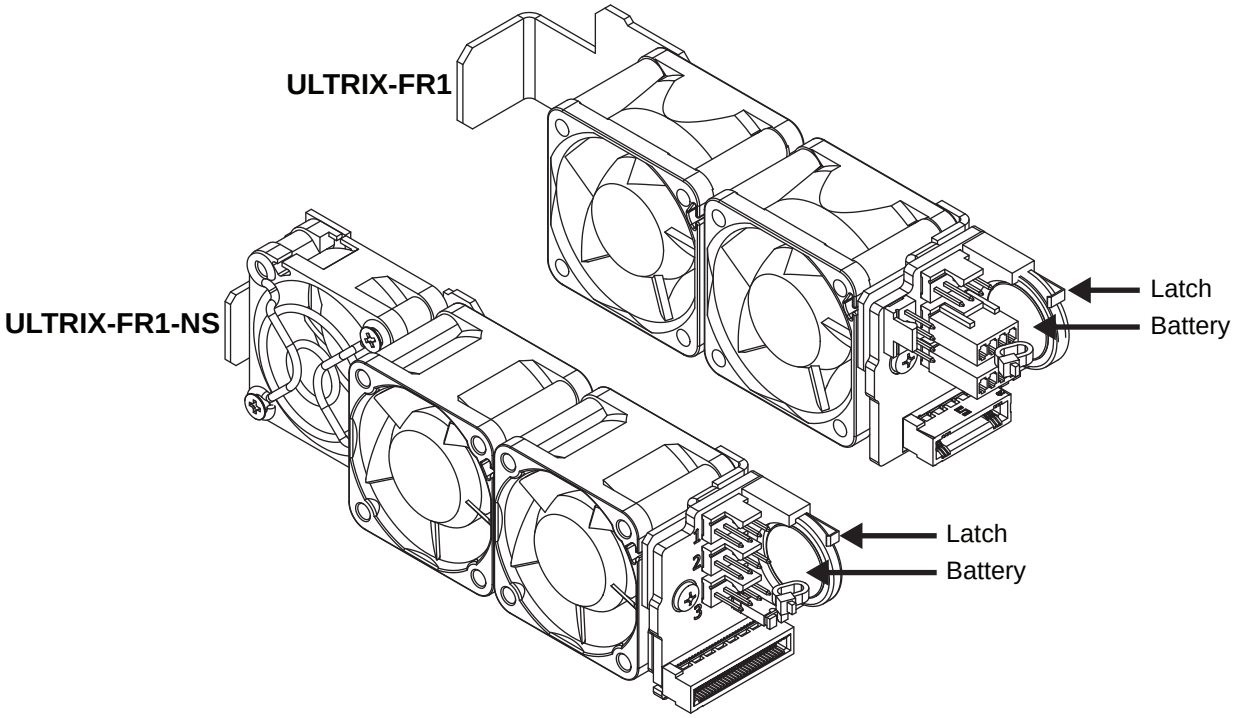


Figure 26.16 Battery Location inside the Cooling Fan Module — ULTRIX-FR1 and ULTRIX-FR1-NS

2. Gently move the latch to the right and away from the failed battery.
3. Remove the battery from its slot by pulling it away from the Cooling Fan Module.

Installing a New Battery in the ULTRIX-FR1(-NS)

Installing a new battery requires you to orient the battery on the module, and secure the battery to the module.

To install a new battery in the Cooling Fan Module

1. Hold the battery in one hand and orient it so that the Positive side (+) faces away from you. (**Figure 26.17**)
2. Pull the latch slightly away to make room for the new battery installation.
3. Slide the battery into the empty slot the failed battery was in.

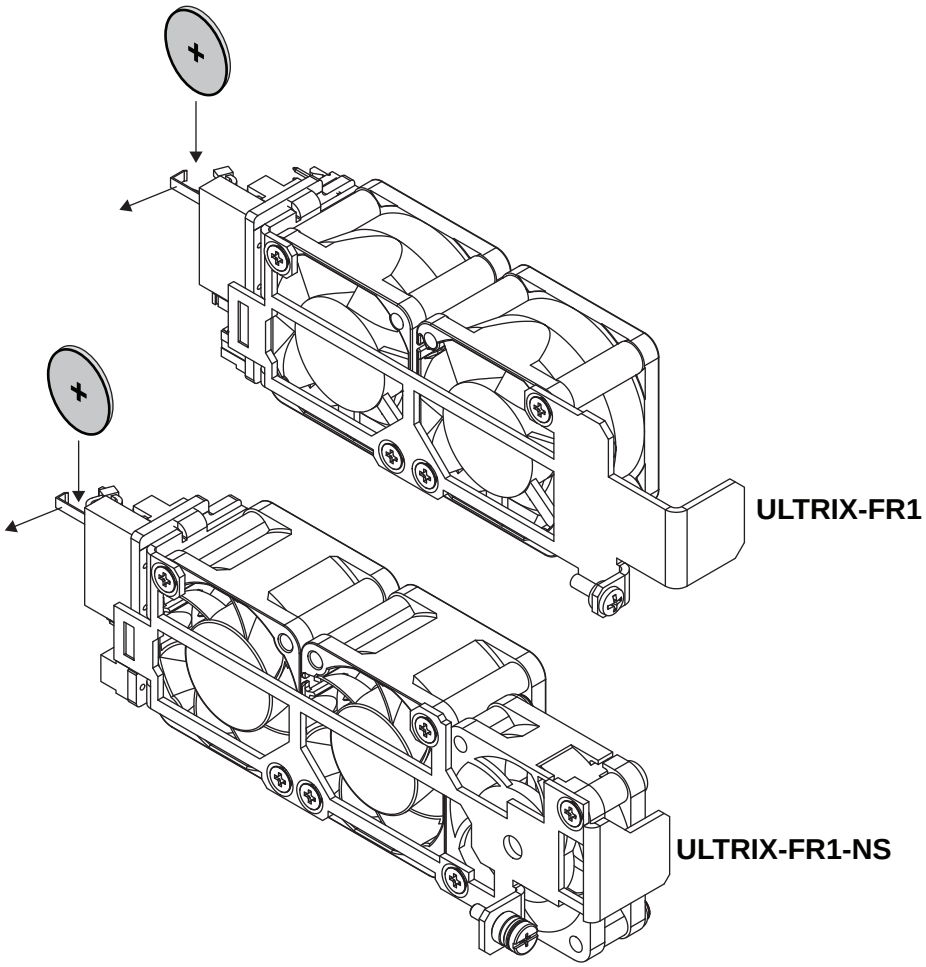


Figure 26.17 New Battery Orientation —ULTRIX-FR1 and ULTRIX-FR1-NS

4. Secure the battery to the module using the latch.
5. Proceed to the section "**Re-installing the Cooling Fan Module**" on page 303.

Re-installing the Cooling Fan Module

Once you have installed the new battery into the new Cooling Fan Module, you can re-install the Cooling Fan Module into the Ultrix chassis and replace the door on the front panel.

To install the Cooling Fan Module into the chassis

1. Align the new Cooling Fan Module in its slot inside the chassis.
2. Gently push the Cooling Fan Module into the slot until the module is fully seated. You will feel the back connector of the module engaged with its connector inside the chassis.
3. Use the screw from step 1 in the procedure "**To remove the Cooling Fan Module from the ULTRIX-FR1(-NS)**" on page 301 to affix the Cooling Fan Module to the frame.

Caution — *The Cooling Fan Module includes a connector that must be fully seated. Reinstalling the Cooling Fan Module retention screw is required to ensure proper contact.*

Re-installing the Door on the Chassis

Caution — *Re-installing the door incorrectly or misaligned can damage the door or internal components.*

ESD Susceptibility — *Static discharge can cause serious damage to sensitive semi-conductor devices. Avoid handling circuit boards in high static environments such as carpeted areas and when synthetic fiber clothing is worn. Always exercise proper grounding precautions when working on circuit boards and related equipment.*

To re-install the door on the ULTRIX-FR1(-NS)

1. Align the door to the front of the router, ensuring that the door is oriented upright, the corner with the Ultrix logo is in your left hand, and the corner with the Ross logo is in your right hand. (**Figure 26.18**)

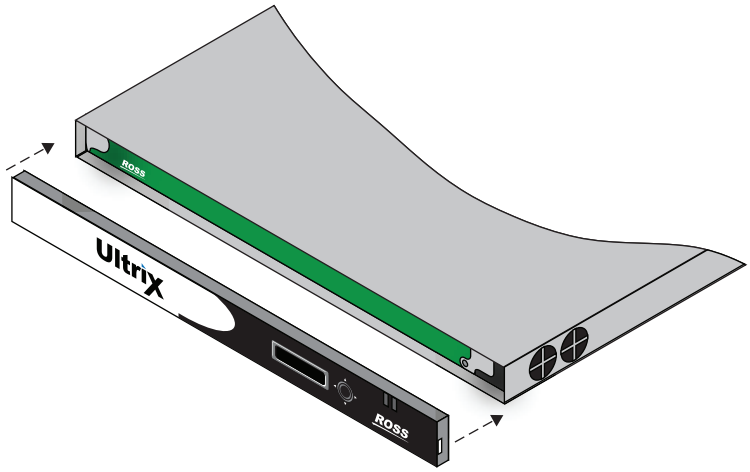


Figure 26.18 ULTRIX-FR1-NS — Aligning the Door to the Chassis

2. Align the left-side of the door against the chassis.
3. Align the right-side of the door, gently rotating the door into position.
4. Verify that the door is fully seated in place with the magnets securing it to the chassis.

Monitoring the Communications

This chapter summarizes how to verify communications on an Ethernet port, an Ultricore connection, and the overall communication status of the Ultrix router.

Monitoring the Network Status

The Ethernet ports on the Ultrix rear panel are used to connect to an Ethernet network for communications. An ENET port is set to active when Ultrix automatically detects a valid network link on the port. When a valid link is detected on both ports, the ENET 1 port is set to active and is the primary connection.

✶ There are two ENET ports on the Ultrix rear panel. A fail-over feature enables the Ultrix router to automatically use the second ENET port when the primary ENET connection is lost or unavailable.

To verify the communication status of an Ethernet Port via the Device Configuration interface

1. Expand the **Devices** node.
2. Expand the **Controllers + Matrices** node.
3. Double-click the node for your Ultrix router.

   The **Device Configuration** interface opens with the **Frame Configuration** interface selected.
4. Click **Communication Settings**.

   The **Ethernet Configuration** area reports which **Ethernet** port is currently active.
5. Refer to **Table 27.1** for a summary of the possible messages displayed in the **Status** field for the port.

Table 27.1 Frame Configuration — Ethernet Configuration

Item	Parameters	Description
Status	ENET # is Active (Green)	Ethernet communications for the specified port are valid. The specified ENET port on the Ultrix rear panel is the currently active (in use).
	Inactive (Red)	Ethernet communications for the router are invalid. The following conditions may be occurring: • The ethernet cables are disconnected from the rear panel. • A valid network connection may be unavailable. • The IP Address is for the router is no longer valid.

Monitoring the Ultricore Mode Status

The primary Ultrix router passes all commands to each client Ultrix router in the system. Each client Ultrix router responds back to the primary in minute intervals.

Primary Status

If the Ultrix router is configured as a primary, the **Ultricore Clients** table in the **Communication Settings** interface reports on the status between it and each client router connected to it. Each client is listed in the table, with the most recently connected router displayed at the bottom of the list.

Client Status

If the Ultrix router is configured as a client, the **Communication Settings** interface reports on the communications between it and the primary.

Troubleshooting

If you have lost communication between the primary Ultrix router and its clients:

1. Verify that each router is installed correctly.
2. Verify that each router is installed with a network connection to your facility.
3. Verify the ethernet settings for each router are valid.
4. Verify that the primary Ultrix router reports a list of valid connections to clients in its **Ultricore Clients** table.
5. Verify that each client Ultrix router is running software compatible to the primary Ultrix router.

Monitoring the Ultrix System Status

The System Status node displays an indicator that varies in severity from green (valid) to red (alarm). This indicator reports the most severe alarm the Ultrix is experiencing. The types of alarms the Ultrix reports is configured via the **Frame Configuration** > **Alarms** interface.

When you hover your mouse cursor over a red System Status node in the Tree View of DashBoard, as seen below, a tool tip displays with a brief error message. The message and indicator continue to report an error until the condition is addressed or the alarm is disabled in the **Alarms** interface.

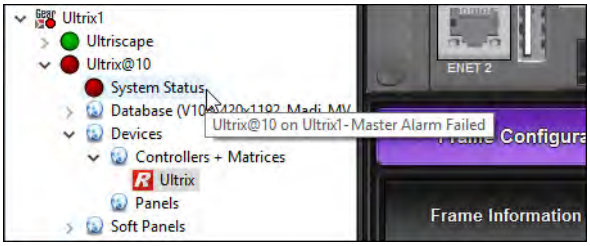


Figure 27.1 Example of a Master Alarm Message

For More Information on...

- the options available in the **Alarms** interface, refer to the section "**Alarms**" on page 324.

Using the System Logs in DashBoard

An entry in each log includes a timestamp, a code number, and a description. Messages are written to the log when significant changes occur in the operation of the Ultrix router. These could include: changes to video, reference, audio or time inputs; power-on or reboot cycles; configuration changes that can have an effect on the routing path; alarm conditions.

To access the system logs in DashBoard

1. In the Tree View of DashBoard, double-click the **System Status** node under the Ultrix node.

   The **System Interfaces** display in the DashBoard window.

2. Select the **Logs** tab.

   The **Logs** tab opens.

3. To view the communication log for Ultrix only, select the **System Log** option.
4. To view the log for communications between Ultrix and other devices, select **Controller Communications Log**.
5. To view the log for executed tasks in DashBoard for the router, select **DashBoard Communications Log**.
6. Click **Refresh** to update the entries for the currently selected log.

Monitoring the Signals

This section outlines how to monitor the reference signal, the inputs and outputs signals via the options in the Frame Configuration interface.

Monitoring the Reference Signal

The Sync area of the Frame Configuration interface reports on the signals connected to the REF ports on the Ultrix rear panel.

For More Information on...

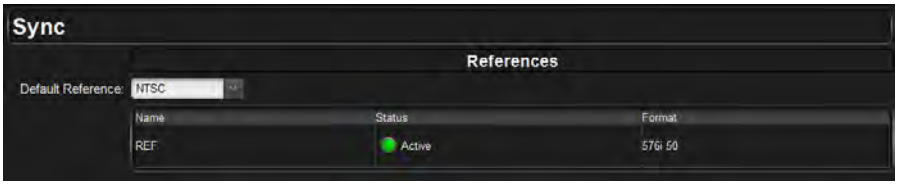
- setting the default reference, refer to the section "**Specifying a Default Reference Format**" on page 28.

To monitor the Ultrix reference signal

1. In the Tree View of DashBoard, expand the **Devices** node.
2. Expand the **Controllers + Matrices** node.
3. Double-click the node for your Ultrix router.

   The **Device Configuration** interface opens with the **Frame Configuration** interface selected.
4. Click **Sync**.

   The **Frame Configuration** interface now displays the **References** table for the router.



5. Refer to **Table 28.1** to troubleshoot the messages displayed in the status fields.

Table 28.1 Frame Configuration — References Status

Item	Parameters	Description
Status	Active (Green)	A valid reference signal is connected to the REF port on the Ultrix rear panel
	No Sync (Yellow)	No signal detected on the REF port on the Ultrix rear panel
Format	Unknown	A reference signal is detected but the format is not supported by the router
	#	Indicates the video format of the reference signal

Triggers Status

The Sync area of the Frame Configuration interface reports on the signals connected to the reference ports on the Ultrix rear panel.

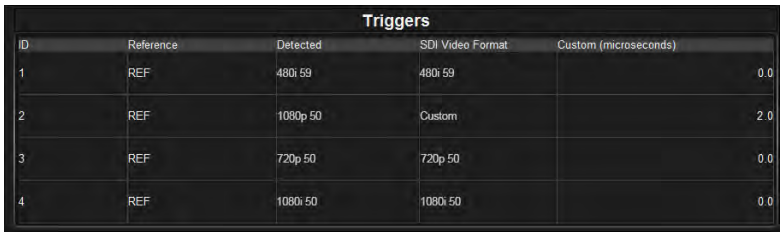
To monitor the Ultrix reference signal

1. In the Tree View of DashBoard, expand the **Devices** node.
2. Expand the **Controllers + Matrices** node.
3. Double-click the node for your Ultrix router.

The **Device Configuration** interface opens with the **Frame Configuration** interface selected.

4. Click **Sync**.

   The **Frame Configuration** interface now displays the **Triggers** table for the router.



Triggers

ID	Reference	Detected	SDI Video Format	Custom (microseconds)
1	REF	480i 59	480i 59	0.0
2	REF	1080p 50	Custom	2.0
3	REF	720p 50	720p 50	0.0
4	REF	1080i 50	1080i 50	0.0

5. Refer to **Table 28.2** to troubleshoot the messages displayed in the Detected and Format status fields for each sync trigger.

Table 28.2 Frame Configuration — Triggers Status

Item	Parameters	Description
Detected	Unknown	The format of the reference signal is not supported by the router
	#	Indicates the video format of the reference signal that is used when the specified Trigger ID is used by an output
Format	Custom	The switching line is specified by the user via the Custom menu
	#	Indicates the video format of the reference signal that the specified Trigger will use

Monitoring the SDI Outputs

The Port Configuration interface enables you to monitor the signal status of the SDI outputs of the Ultrix.

To monitor the status of all the SDI outputs of the Ultrix router

1. In the Tree View of DashBoard, expand the **Devices** node.
2. Expand the **Controllers + Matrices** node.
3. Double-click the node for your Ultrix router.

   The **Device Configuration** interface opens.

4. Click **Port Configuration**.

   The **Port Configuration** interface opens.

5. Click one of the **Outputs** banners in the Ultrix rear panel map.

   The **Outputs Summary** table displays and all the **Outputs** banners are lit blue on the Ultrix rear panel map.

6. Refer to **Table 28.3** to troubleshoot the messages displayed in the status fields for each physical output socket.

Table 28.3 Port Configuration — Output Summary

Item	Parameters	Description
Physical Address	slot#.out[#]	Indicates the physical socket on the Ultrix rear panel
Error Status	OK (Green)	Indicates a valid output signal is detected on the specified socket
	No Signal (Red)	Indicates that a valid output signal is not detected on the specified socket
Video	#	Indicates the SDI signal type detected on the specified socket
Audio	#	Indicates the audio signal type detected on the specified socket

Monitoring the SDI Inputs

The Port Configuration interface enables you to monitor the signal status of the SDI inputs of the Ultrix router.

To monitor the status of all the inputs of the Ultrix router

1. In the Tree View of DashBoard, expand the **Devices** node.
2. Expand the **Controllers + Matrices** node.
3. Double-click the node for your Ultrix router.

   The **Device Configuration** interface opens.
4. Click **Port Configuration**.

   The **Port Configuration** interface opens.
5. Click one of the **Inputs** banners in the Ultrix rear panel map.

   The **Inputs Summary** table displays and all the **Inputs** banners are lit blue on the Ultrix rear panel map.
6. Refer to **Table 28.4** to troubleshoot the messages displayed in the status fields for each physical input socket.

Table 28.4 Port Configuration — Input Summary

Item	Parameters	Description
Physical Address	slot#.in[#]	Indicates the physical socket on the Ultrix rear panel
Error Status	OK (Green)	Indicates a valid input signal is detected on the specified socket
	No Signal (Red)	Indicates that a valid input signal is not detected on the specified socket
Video	#	Indicates the SDI signal type detected on the specified socket
Audio	#	Indicates the audio signal type detected on the specified socket

Monitoring a Specific BNC

The Port Configuration interface enables you to monitor the video and/or audio signal status of a specific port on the Ultrix rear panel.

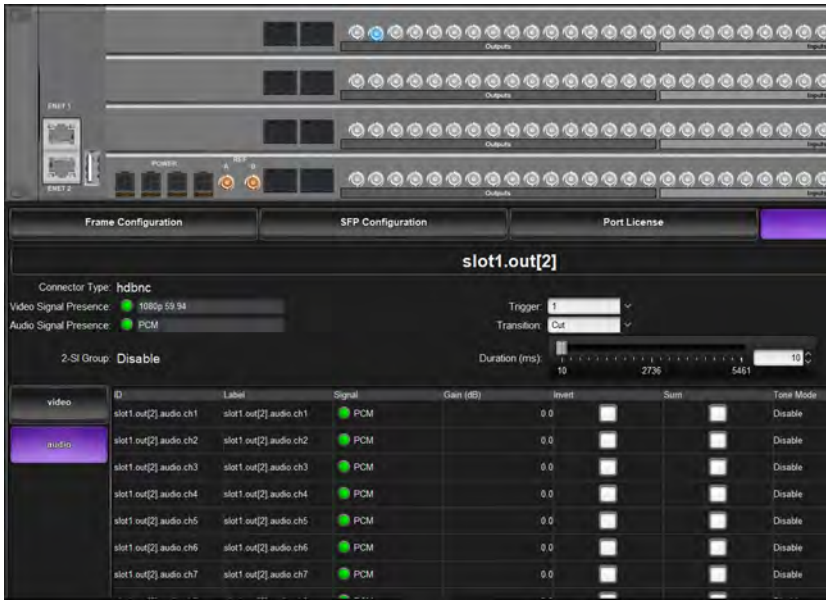
To monitor the status of a specific port for the Ultrix router

1. In the Tree View of DashBoard, expand the **Devices** node.
2. Expand the **Controllers + Matrices** node.
3. Double-click the node for your Ultrix router.

   The **Device Configuration** interface opens.
4. Click **Port Configuration**.

   The **Port Configuration** interface opens.
5. From the Ultrix rear panel map, select the port you wish to monitor.

   The icon in the map is lit blue and the **Port Configuration** interface updates to display information on the selected socket. In the example below, OUT 2 in slot 2 was selected on an ULTRIX-FR2 and the user clicked **Audio** to display the audio monitoring features.



6. Click **Video** to monitor the status of the video signal on the selected port.
7. Click **Audio** to monitor the status of the audio channels on the selected port.

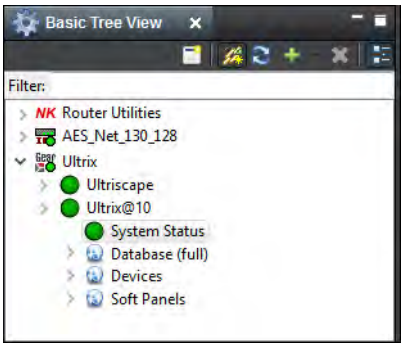
Software Upgrades

The Ultrix router is upgraded through the DashBoard client. To obtain the most recent upgrade package, contact Ross Technical Support.

✶ Ensure that you are running DashBoard software version 8.7.1 or higher and that the computer running the DashBoard client is located on the same network as the Ultrix router.

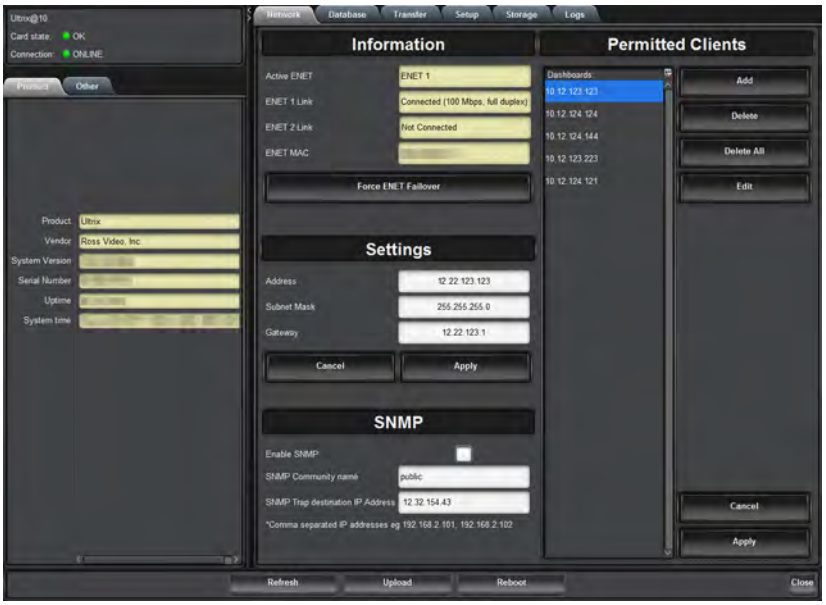
To upgrade the Ultrix software

1. Contact Ross Technical Support for the latest software version file.
2. Ensure the router has a valid Ethernet connection.
3. Launch DashBoard by double-clicking its icon on your computer desktop.
4. Locate the Ultrix in the Tree View of DashBoard.
5. Expand the Ultrix node to display a list of sub-nodes in the Tree View.
6. Expand the Ultrix sub-node.



7. Double-click the **System Status** node.

   The **System Status** interface displays in the DashBoard window.



8. Click **Upload**, located near the bottom of the tab.

   The **Select File to Upload** dialog opens.

9. Navigate to the *.bin file you want to upload.
10. Click **Open**.
11. Click **Finish** to start the upgrade.
12. Monitor the upgrade.

    An **Upload Status** dialog enables you to monitor the upgrade process.

✶ Avoid clicking **Reboot** until the Ultrix has successfully completed the file upload process and the **OK** button, located in the bottom right corner of the dialog, is enabled.

13. Click **OK** to reboot the Ultrix.

    The **Reboot Confirm** dialog opens, indicating the Ultrix will reboot.

14. Click **Yes** to continue the upgrade process.

✶ The router is temporarily taken off-line during the reboot process. The process is complete once the status indicators for the router return to their previous status.

DashBoard Interface Overview

The DashBoard client software enables you to monitor and configure your Ultrix routers. Using the interfaces provided via the DashBoard client software, you can:

- Configure the network connection for your router
- Configure router levels and assign level names
- Assign physical router inputs and outputs to logical sources and destinations
- Configure source and destination labels
- Perform crosspoint preset/takes
- Monitor the status of multiple levels
- Create and use salvos

For More Information on...

- the DashBoard client software, refer to the ***DashBoard User Manual***.
- navigating the interfaces in DashBoard, refer to the section "**Accessing the Ultrix Interfaces in DashBoard**" on page 25.

Ultrix in DashBoard

Ultrix groups the configuration, monitoring, and operating features in a Tree View in the DashBoard client window. Each node of the tree opens to reveal one or more sub-nodes, giving access to the features for your router.

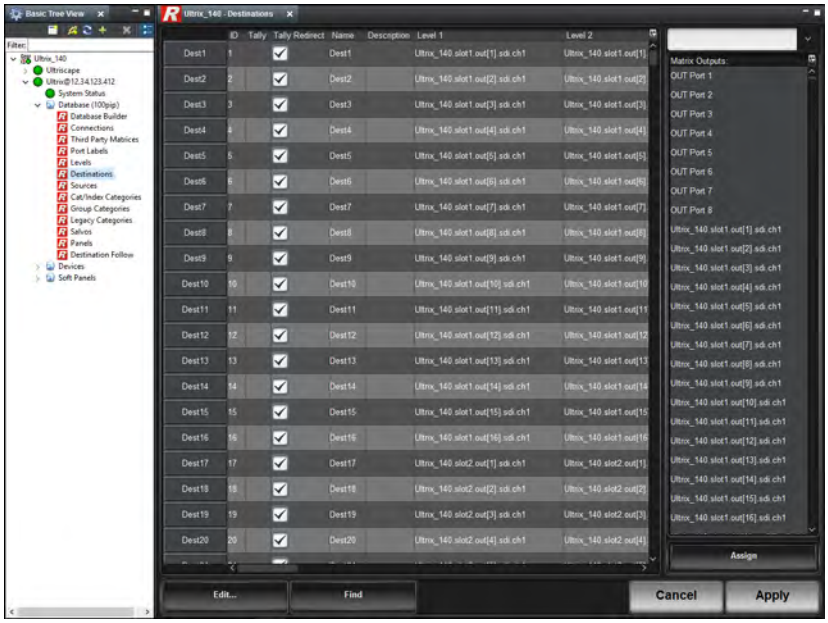


Figure 30.1 Example of the Ultrix Nodes in a DashBoard Window

Ultrix includes the following interfaces, as separate nodes, in the DashBoard Tree View.

UltriScape

The first node provides access to the UltriScape Layout Editor, and UltriScape Head interfaces. UltriScape is the integrated Multiviewer for Ultrix routers. Use the UltriScape Layout Editor to manage the layouts and the UltriScape Head to assign sources to the UltriScape Head outputs. You must have at least one UltriScape license key installed to access the UltriScape interfaces.

System Status

Double-clicking the System Status node displays two types of tabs within the same DashBoard window: Status (read-only) tabs located on the left, and a series of Configuration tabs located on the right. This interface is similar to an openGear® card tab system.

Database

Expanding the Database node enables you to configure the connection points, matrices, destinations, sources, group, levels, soft panels, and salvos for the router. The settings are saved locally on the router.

Devices

The sub-nodes under Devices provide a list of devices in the routing system currently communicating with the Ultrix router.

Soft Panels

The Soft Panels tree provides access to the Matrix, MultiBus, and Category soft panels for the Ultrix router. From these panels you can perform crosspoint switches, and manage salvos.

Terminology

Throughout the Dashboard interface, actual sockets (inputs and outputs) of a router (or matrix) are referred to by hierarchical dotted notation: **Frame.Slot.Port.Type.Channel** where:

- **Frame** identifies the physical router chassis housing the matrix/matrices.
- **Slot** identifies which slot in the matrix the socket is located in.
- **Port** identifies the physical input or output socket.
- **Type** identifies the generic signal type (e.g. SDI, audio).
- **Channel** identifies the audio channel within an SDI stream.

These designators may be assigned more user friendly names if required by editing the **Port Labels** interface.

System Status Interface

The System Status interface provides hardware information, IP Address settings, and general database management for your router. The interface is organized into two distinct areas in the DashBoard window: Status tabs (located on the left), and Configuration tabs (located on the right).

Figure 30.2 Example of a System Status Interface

Status Tabs

The Status tabs display read-only information about the Ultrix hardware and software.

Product Tab

Table 30.1 summarizes the read-only information displayed in the Product tab.

Table 30.1 Product Tab

Item	Parameters	Description
Product		Indicates the Ultrix product name
Vendor		Indicates the supplier/manufacturer of the router
System Version		Indicates the build version of the Ultrix router
Serial Number		Indicates the serial number of the Ultrix router
Uptime	#h #m #s	Indicates the number of hours since the last reboot of the Ultrix router
System Time	DD mm dd yyyy hh:mm:ss	Indicates the current date based on the Ultrix internal clock (if no connection to an NTP Server is available) where: • DD represents the calendar day • mm represents the month • dd represents the day • yyyy represents the year • hh:mm:ss represents the current local time

Other Tab

Table 30.2 summarizes the read-only information displayed in the Other tab.

Table 30.2 Other Tab

Item	Parameters	Description
Frontend Software Date	<number>	Read-only information used by Ross Technical Support.
Backend Software Date	<number>	
Device FW Rev	<number>	

Configuration Tabs

The Configuration tabs are located on the right side of the DashBoard window. This series of tabs provide network setup options for the Ultrix router and managing the databases for your router.

Network Tab

Table 30.3 summarizes the fields and menus displayed in the Network tab.

Table 30.3 Network Tab

Item	Parameters	Description
Information (Read-only)		
Active ENET	ENET #	Indicates which Ethernet port on the router is the primary Ultrix network connection
ENET # LINK	Connected (x, y)	Indicates that a valid network link is configured on the specified Ethernet port of the Ultrix router where: • x represents the connection speed in number of Mbps • y represents the link type (e.g. full duplex)
	Not Connected	Ethernet communications for the Ultrix router are invalid. The Ethernet cable may be disconnected on the rear panel or the Ethernet network may be down or experiencing problems.
ENET MAC	<number>	Indicates the MAC Address for the Ultrix router
Settings		
Address	###.###.###.###	Specifies the IP address for the Ultrix router
Subnet Mask	###.###.###.###	Specifies the subnet mask for the Ultrix router
Gateway	###.###.###.###	Specifies the gateway for communication outside of the local area network (LAN)
Cancel		Ignores any unsaved changes made to the Address, Subnet Mask, and Gateway settings and reverts back to the current running values.
Apply		Updates the Address, Subnet Mask, and Gateway settings
SNMP		
Enable SNMP	Selected	Enables the SNMP Agent on the Ultrix
	Cleared	Disables the SNMP Agent on the Ultrix
SNMP Community Name	#	Specifies the SNMP Agent identifier for communications

Table 30.3 Network Tab

Item	Parameters	Description
SNMP Trap Destination IP Address	###.###.###.###	Specifies the target address the Ultrix sends SNMP traps to
Permitted Clients		
DashBoards:	###.###.###.###	Lists the IP Address of each DashBoard client that is allowed to communicate with this Ultrix router
Add		Enables you to add a new DashBoard client to the Permitted Clients list
Delete		Deletes the selected DashBoard client from the Permitted Clients list
Delete All		Clears all entries in the Permitted Clients list
Edit		Enables you to modify the selected entry in the Permitted Clients list
Cancel		Ignores any unsaved changes made to the Permitted Clients list and reverts back to the current running values.
Apply		Updates the Permitted Clients list settings

Database Tab

Table 30.4 summarizes the fields and menus displayed in the Database tab. The options in the Database tab are organized into two sections: Current Database, and Database Management.

Table 30.4 Database Tab

Item	Parameters	Description
Current Database[a]		
Remote Controller Mode	Selected	This Ultrix router will be controlled by a remote (primary) Ultrix router or Ultricore device. You must reboot this router before the change can take effect.
	Cleared	This Ultrix router is a standalone router or is the primary router (system controller) for the routing system.
Name (read-only)	<name>	Indicates the database currently loaded in the Ultrix router
Levels (read-only)	#	Indicates the number of levels the database is configured for
Sources (read-only)	#	Indicates the number of inputs the database is configured for
Destinations (read-only)	#	Indicates the number of outputs the database is configured for
Enable Tally	Selected	Select this box to enable Ultrix to read tally identifiers from the input signals. This information is used by the database for displaying in the PiPs of the UltriScape head(s), and passed through to any assigned outputs. Selecting this box also updates the Sources and Destinations tabs with a new column “Tally” that is used to assign Tally IDs to sources and/or destinations.

Table 30.4 Database Tab

Item	Parameters	Description
Enable Tally	Cleared	Tally information from the input signals is not read into the Ultrix database
I/O Ports	Refresh	Updates the Matrix Inputs and Outputs lists in the Sources and Destinations tabs respectively
Crosspoint Status	Refresh	Updates the Status field located directly below this button
Status (read-only)	Loaded	The active database was successfully loaded.
	Error[b]	One of the following has occurred: • the selected database is no longer available • an attempt was made to delete a non-existent database • an attempt was made to save a database with an existing name
Database Management - Load Database		
Name	<name>	Selects the database to load for the Ultrix router
Database	Load	Loads the specified database to the Ultrix router
Database to RCPs	Send	Forces the currently loaded database to refresh/update all connected devices (i.e. RCPs, etc.)
Database Management - Add Database		
Name	<name>	Provides a unique identifier for the new database (up to 32 characters)
Include I/O Maps		Creates a database to match the quantity of BNC I/O fitted in the Ultrix router. Each input / output SDI port will be mapped to default labels of SRC xx and DST xx respectively. • I/O mapping occurs for Level 1 only (SDI) • the Sources field is ignored • the Destination field is ignored • the Level field is applied
Levels	#	Specifies the total number of levels the database will make available
Sources	#	Specifies the total number of sources the database will make available
Destinations	#	Specifies the number of destinations the database will make available
Database	Add	Uses the settings in the Database Management fields to create a new database
Database Management - Delete Database		
Name	<name>	Specifies the database to delete
Database	Delete	Deletes the currently selected database

a. The Levels, Sources, and Destinations fields indicate the initial values when the database was created. Levels, Sources, and Destinations can be removed from or added to the database on their respective configuration tabs. Doing so will not alter the fields in the Database tab.

b. This message displays for a maximum of 10 seconds only.

Transfer Tab

Table 30.5 summarizes the sub-tabs displayed on the Transfer tab.

Table 30.5 Transfer Tab

Section	Item	Parameters	Description
Ultricore Database Tab			
Export	Database	<database name>	Selects the database to be exported
	Save As: (read-only)	*.uda	Automatically updates with the name of the database archive
Export	Browse...		Enables you to save or re-name the database to a specific location
	Apply		Click to begin exporting the file to specified location
Import	Archive File: (read-only)	*.uda	Indicates the last file that was selected for restore
	Browse...		Enables you to specify the database to import
	Retrieve Database As:	<database name>	Indicates the file currently selected for importing
	Apply		Click to begin the import
Ultriscape Layout Tab			
Export	Layout	<layout name>	Selects the layout to be exported
	Save As... (read-only)	*.lay	Automatically updates with the name of the layout archive
	Browse...		Enables you to save or re-name the layout to a specific location
	Apply		Click to begin exporting the file to the specified location
Import	Layout File (read-only)	*.lay	Indicates the last layout file that was imported
	Browse...		Enables you to specify the layout to import
	Retrieve Layout As:	<layout name>	Indicates the file currently selected for importing
	Apply		Click to send the file to the device
Ultrix Frame Settings Tab			
Export	Save As: (read-only)	*.ufs	Automatically updates with the name of the frame settings archive
	Browse...		Enables you to save or re-name the frame file to a specific location
	Apply		Click to begin exporting the file to the specified location
Import	Settings File:	*.ufs	Indicates the last frame file that was imported
	Browse...		Enables you to specify the frame file to import
	Apply		Click to send the file to the device

Setup Tab

Table 30.6 summarizes the options displayed in the Setup tab.

Table 30.6 Setup Tab

Item	Parameters	Description
Device Identification		
Device Name	<name>	Provides a unique identifier for the router in the Tree View of DashBoard
System Name	<name>	Provides a unique identifier for the routing system
Log Settings		
Logging	Selected	Enables the router to update the entries in the Logs tab
	Cleared	Disables this feature
Output Debug Messages	Selected	Only use this feature under the guidance of Ross Technical Support.
	Cleared	
DashBoard Interface		
DashBoard Timeout	10-300s	Sets the maximum number of seconds that DashBoard waits until it queries Ultrix. The default is 10 seconds. This value is re-set after a power-cycle.
Update	Applies the new value in the DashBoard Timeout menu.	
Password Protected Settings		
Protect all licensed features with a password	Selected	Enables the password-protected feature that prevents unauthorized changes to license keys. When the Port License tab is locked, users require a password to access/edit the license key information.
	Cleared	Disables this feature (the Port License tab is editable). T his is the default.
Change Password...	Enables you to specify a password at least 8 characters long. It is recommended to change the password from the default value that is assigned at the factory.	
Status		
Status (read-only)	mm/dd/yy ERROR: Duplicate device name [abc] for ID [#]	Reports when multiple devices, with the same name, are communicating with the Ultrix router where: • **mm/dd/yy** represents the date of the error • **[abc]** represents the device name • **[#]** represents the ID number assigned to the device
	Clear	Clears the Status field entry

Storage Tab

Table 30.7 summarizes the read-only displayed in the Storage tab.

Table 30.7 Storage Tab

Item	Parameters	Description
Internal	OK	There are no storage space issues detected
	WARNING	Less than 20% of the storage space is available
	CRITICAL	Less than 10% of the storage space is available
SD Card	OK	There are no storage space issues detected

Logs Tab

There are three logs that can be viewed from the Logs tab: System Log, Controller Communications Log, and DashBoard Communications Log. The read-only information displayed in the logs is used by Ross Technical Support for diagnostic and troubleshooting purposes.

Device Configuration Interfaces

The Device Configuration interfaces enable you to define the physical outputs, inputs, and communication ports of the Ultrix router. You can also monitor the overall status of the Ultrix router, or just the status of a specific signal path or port on the rear panel. A rear panel map that represents the Ultrix router displays at the top of the interface, enabling you to quickly select physical ports to configure and monitor. The Device Configuration options are organized into four interfaces: Frame Configuration, SFP Configuration, Port Licenses, and Port Configuration.

For More Information on...

- displaying the Device Configuration interfaces, refer to the section "**To access the Device Configuration interfaces in DashBoard**" on page 26.

Frame Configuration Interface

The Frame Configuration interface is organized into distinct areas, each accessed by clicking the corresponding button on the left toolbar of the interface.

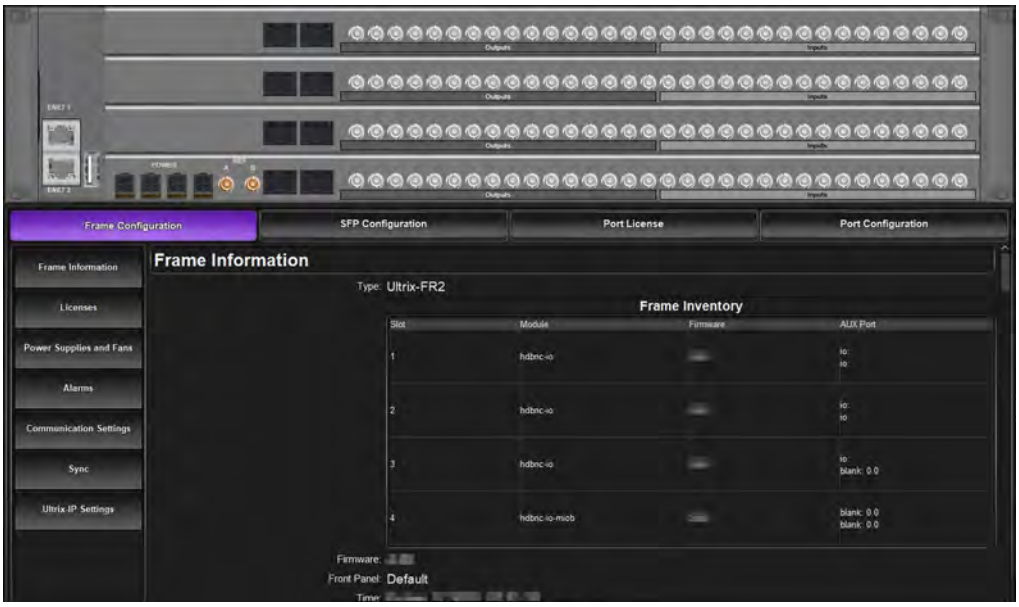


Figure 30.3 Example of Frame Configuration Interface — 2RU Router

Frame Information

The read-only fields in the Frame Information area report on the overall hardware status of the Ultrix router. The information is organized in the **Frame Inventory** table with each slot in the router chassis as a separate row. For each slot, the cells indicate the I/O Board version, firmware running on the I/O Board, what licenses are enabled for the slot, and which AUX ports are populated with SFP modules.

Below the Frame Inventory table are the fields that report status information on the Ultrix hardware such as the version of the front panel and the system firmware. From this area you can also specify the NTP Server to be used as the time source for the router.

Licenses

Use the options in the Licenses area to manage the licensed features for your Ultrix router. From here you can view which licensed features on which slots are enabled, and enter license keys for new features. Refer to the section "**Software License Keys**" on page 33 for details.

Power Supplies and Fans

The Power Supplies and Fans area displays read-only fields that report on the four PSU connections of the Ultrix router. Some fields in this interface include color indicators which vary in severity from green (valid), yellow (caution), to red (alarm). In the case of multiple messages, the most severe alarm is reported for a single row in the table. You can choose to enable the Ultrix router to monitor the presence of each power supply or ignore when a PSU is not in use or missing. You can also set the speed of the interior chassis fans.

Alarms

From the Alarms table you can specify what components the Ultrix router monitors such as the power supplies, fans, network status, the SD Card, the chassis battery, and the interior chassis temperature.

By default, the Ultrix monitors the following components (these options in the Alarms table are enabled):

- System Error
- Temperature
- Primary Power
- Redundant Power
- SD Card Presence
- Battery
- Storage Space
- Fan 1
- Fan 2
- Fan 3 (applicable only to the ULTRIX-FR1-NS, ULTRIX-FR2-NS, and ULTRIX-FR5)
- Fan 4 (applicable only to the ULTRIX-FR2-NS, and ULTRIX-FR5)
- Fan 5 (applicable only to the ULTRIX-FR5)

The Alarms table also displays read-only State column that reports the status of each enabled alarm using color indicators which vary in severity from green (valid), yellow (caution), to red (alarm). For example, if the SD Card status is set to red in the Alarms table, an SD Card is not detected or the SD Card not mounted correctly inside the chassis.

Communication Settings

The Frame Communications area enables you to monitor the status of the Ethernet connection of the Ultrix router. From here you can verify the network settings of the active Ethernet port on the router, and view the mode of the control system (primary/client).

Sync

The Sync area is organized into two tables: References and Triggers. The References table displays read-only fields that report the status on the reference signal. The Triggers table provides options for configuring the reference signal for the routing system. From this table you can configure up to four reference triggers which then can be assigned to the inputs and outputs of the router. Refer to the sections "**Specifying a Default Reference Format**" on page 28 and "**Configuring a Reference Trigger for the Ultrix Router**" on page 40 for details.

ULTRIX-IP Settings

✶ The ULTRIX-IP settings are only available when using an ULTRIX-FR1-NS, ULTRIX-FR2-NS, or an ULTRIX-FR5 with an ULTRIX-IP-IO blade installed in at least one of the rear panel slots.

The ULTRIX-IP area provides options for configuring the individual SFP+ ports, the transport protocol, and PTP settings that are required for the streaming of video and/or audio. Refer to the chapter "**ULTRIX-IP-IO Setup**" on page 71 for details.

Table 30.7 summarizes the fields and menus displayed in the ULTRIX-IP area.

Table 30.8 ULTRIX-IP Area

Item	Parameters	Description
NMOS Device Name	<text>	Specifies the name that the Ultrix router uses to advertise itself to the NMOS server
	Default	Applies the system device identifier to the Ultrix router as provided by the master NMOS device
NMOS Node Name	<text>	Name of the NMOS node being advertised. The default name is Ross Ultrix.
	Default	Applies the system device identifier to the NMOS mode as provided by the master NMOS device
Ember+ Port	#	Specifies the TCP port the Ultrix router uses for Ember+ protocol communications. The default is 9095.
Port Network		
Port	slot***x***.port***y***	Specifies the port on the ULTRIX-IP blade you are configuring where: • ***x*** represents the physical slot the ULTRIX-IP blade is installed in • ***y*** represents the physical port on the ULTRIX-IP blade
Name	<text>	Assigns a unique identifier to the port. This name is displayed in the router database tables
MAC Address	#:#:#:#:#:#	Indicates the MAC Address currently assigned to the Ultrix router for the specified ULTRIX-IP port
IP Mode	Static	The user manually supplies the network settings for the specified ULTRIX-IP port
	DHCP	Automates the assignment of the network settings for the specified ULTRIX-IP port. This is the default.
IP Address	#.#.#.#	Indicates the IP Address currently assigned to the selected ULTRIX-IP port. The default is 128.0.0.0 <port #>
Subnet Mask	#.#.#.#	Indicates the subnet mask for the specified ULTRIX-IP port. The default is 255.255.255.0.

Table 30.8 ULTRIX-IP Area

Item	Parameters	Description
Gateway	#.#.#.#	Indicates the gateway for communications outside of the local area network (LAN).
ULTRIX-IP PTP		
Custom PTP Profile	Selected	Enables the user to create and assign a custom PTP profile for the ULTRIX-IP ports. The Domain, Priority1, Priority2, Sync Interval, Announce Interval, and Announce Receipt Timeout fields can be edited to create a custom PTP profile.
	Cleared	The Domain, Priority1, Priority2, Sync Interval, Announce Interval, and Announce Receipt Timeout fields do not display and cannot be edited. This is the default.
Profile	IEEE 1588 Default	The ULTRIX-IP timing uses the IEE1588 standard
	AES67 Media	The ULTRIX-IP timing uses the AES67 Media standard
	SMPTE ST 2059-2	The ULTRIX-IP timing uses the SMPTE ST 2059-2 standard. This is the default.
Custom PTP Options		
Domain	#	Specifies that the ULTRIX-IP is within the specified group of clocks in your network
Sync Interval	#	Specifies often the ULTRIX-IP port sends Sync messages
Announce Interval	#	Specifies how often the ULTRIX-IP sends Announce messages
Announce Receipt Timeout	#	Controls how long the ULTRIX-IP port will wait before declaring the Grandmaster absent and initiating a new election

ULTRIX-UCCI Control Card

✶ The ULTRIX-UCCI Control Cards area is only available when using an ULTRIX-FR5 with at least one ULTRIX-UCCI Control Card in the top slot of the rear panel.

SFP Configuration Interface

The SFP Configuration interface is applicable when:

- at least one ULTRIX-SFP-IO blade is in an ULTRIX-FR1-NS, ULTRIX-FR2-NS, or an ULTRIX-FR5; or,
- at least one AUX port is populated in a router chassis.

From this interface you can configure each populated AUX and/or SFP port on the blade. This interface is organized into two sub-tabs: AUX Settings and SFP Settings.

For More Information on...

- the physical SFP ports of your router, refer to the ***Ultrix Installation Guide***.

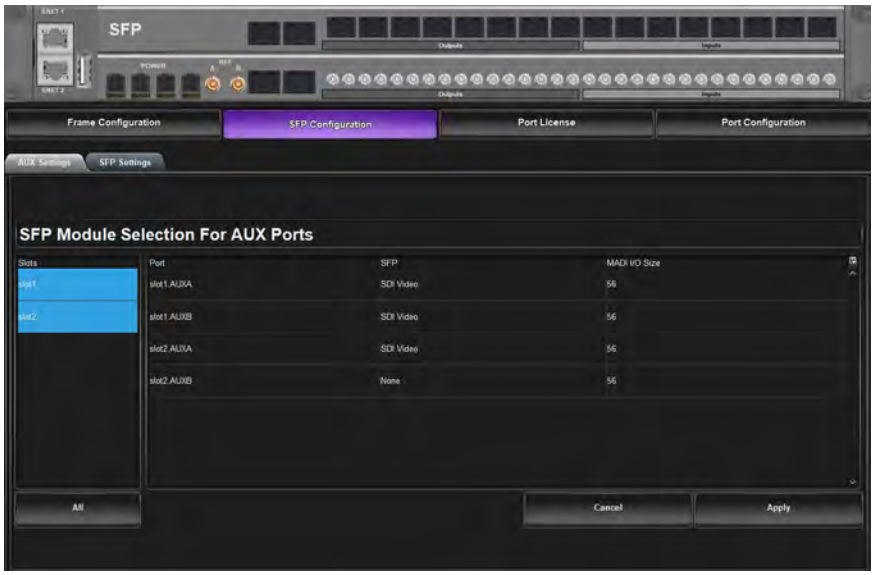


Figure 30.4 Example of the SFP Configuration Interface

AUX Settings Tab

The information in the AUX Settings tab is organized into two areas: a table on the left that lists the slots with available AUX ports, and a table on the right that provides details on each SFP port of a selected slot. Each row of the table reports the port name, type of SFP module installed, and the number of MADI channels that are available from SFP module. Refer to the section "**Configuring an SFP Port**" on page 40 for details.

SFP Settings Tab

The information in the AUX Settings tab is organized into two areas: a table on the left that lists the slots with available AUX ports, and a table on the right that provides details on each SFP port of a selected slot. Each row of the table reports the port name, type of SFP module installed, and the number of MADI channels that are available from SFP module. Refer to the section "**Configuring an SFP Port**" on page 40 for details.

Port License Interface

The Port License interface displays the following sub-tabs: UltriScape, UltriSync, and UltriSRC.

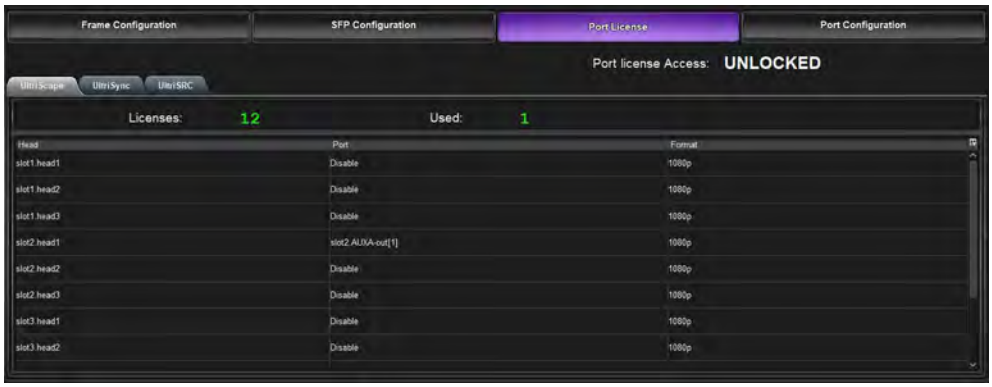


Figure 30.5 Example of the Port License Interface

✶ The Port License interface takes up to 35 seconds to register any changes to the table entries.

UltriScape

The UltriScape table reports on the number of UltriScape licenses installed, and the number of UltriScape Heads enabled on the Ultrix router. From this interface, you can assign an UltriScape Head to a physical OUT socket on the router. Refer to the chapter "**UltriScape Configuration**" on page 151 for details.

✶ At least one UltriScape license must be installed for a slot before you can assign an UltriScape Head to a router output in that slot.

The UltriScape table is organized into three columns:

- **Head** — read-only fields that report the physical address name of an UltriScape output.
- **Port** — used to enable/assign an UltriScape Head.
- **Format** — used to select the an UltriScape output format.

UltriSync

The UltriSync table reports on the number of UltriSync-3G and Ultrisync-UHD licenses installed, and the number of slots with the licensed enabled on the Ultrix router. The UltriSync table is organized into two columns:

- **Port** — read-only fields that report the physical address name of an Ultrix router output.
- **3G License** — used to enable the UltriSync-3G on the specified port.
- **UHD License** — used to enable the UltriSync-UHD on the specified port.

✶ The UltriSync-UHD is only available for the following ports of a slot: AUXB-in[1] or in[1], in[5] or in[6], and in[1] or in[12].

UltriSRC

The UltriSRC table reports on the number of UltriSRC licenses installed, and the number of AUX ports with the licensed enabled on the Ultrix router. The UltriSRC table is organized into two columns:

- **Port** — read-only fields that report the physical address name of the Ultrix AUX port.
- **License** — used to enable the UltriSRC on the specified port.

Port Configuration Interface

Use the Port Configuration interface to assign each physical port on the Ultrix router to the type of signal (video, audio, etc.), then further define its purpose using the options based on the type. Use the router rear panel map at the top of the interface to select individual ports to configure.

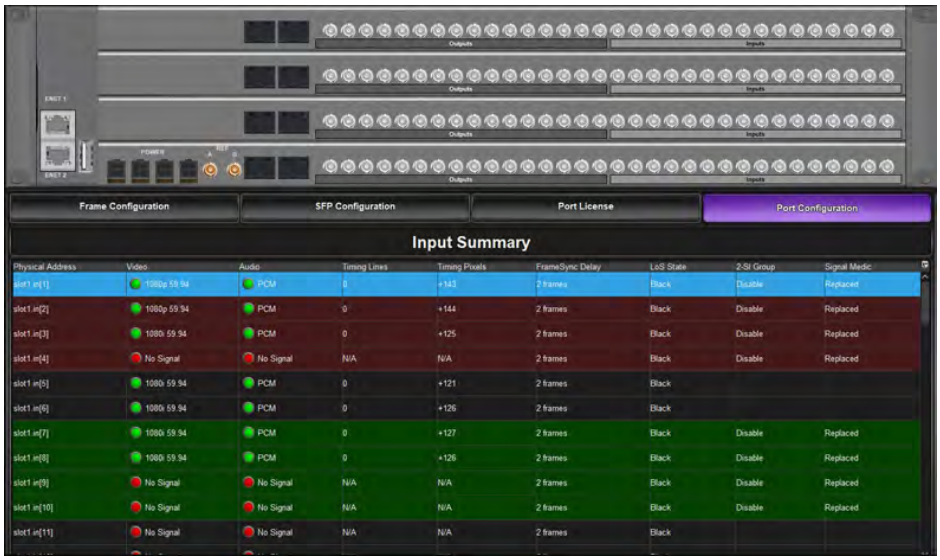


Figure 30.6 Example of the Port Configuration Interface — Input Summary

Input and Output Summaries

Select the **Input** banner under any row of input sockets to display the Input Summary table for the router as seen in **Figure 30.6**. Select the **Output** banner under any row of output sockets to display the Output Summary table for the router.

Table 30.9 summarizes the read-only information displayed in the Input and Output Summary tables.

Table 30.9 Input and Output Summary Tables

Item	Parameters	Description
Input and Output Summary Tables		
Physical Address	Frame.Slot.Port .Type.Channel	Lists the physical sockets, in ascending order, of the Ultrix router. Each row represents a socket.
Video	#	If a port is used for video signals, this field indicates the type of video (e.g. HD, 3G, UHD, etc.).
Audio	#	If a port is used for audio signals, this field indicates the type of audio detected (e.g. PCM, AES etc.).
2-SI Group	Enable	Gearbox is available on the indicated I/O Group in groups of 4 consecutive I/O. For example, selecting Enable in the row for slot1.in[1] creates a Gearbox group from slot1.in[1] to slot1.in[4]. Note that I/O Groups for Gearbox are defined in the table using colored backgrounds. In **Figure 30.6**, the first Gearbox group is set in dark red, the second group is set in dark green.
	Disable	The indicated I/O is not included in a Gearbox configuration
Input Summary Table only		
Timing Lines (read-only)	#	Reports the value of timing difference between input and frame reference in number of lines.
	Detecting	The timing difference is being detected; updates the field approximately every 33 seconds.
Timing Lines (read-only)	Async	There is no timing relationship between the input signal and the frame reference.
Timing Pixels (read-only)	#	Reports the value of timing difference between input and frame reference in number of pixels.
	Detecting	The timing difference is being detected; updates the field approximately every 33 seconds.
	Async	There is no timing relationship between the input signal and the frame reference
Frame Sync Delay	# frame(s)	Specifies the frame buffer size for the selected input port
LoS State[a]	Black	Sets the input to black during the loss of signal
	Freeze	Sets the input to the last valid frame of video before the loss of signal
Signal Medic (read-only)[b]	Not available	This port does not support the Gearbox feature.
	Good	This port is included in a Gearbox setup.
	Replaced	This port can be included in a Gearbox setup but is currently not included in the 12G link.
Output Summary Table only		

Table 30.9 Input and Output Summary Tables

Item	Parameters	Description
Sub-Image ID	3G	Some legacy equipment does not accept a 2SI SMPTE-352 payload identifier for quad-link SDI. You may need to select this if you are connecting legacy equipment to the specified output on the Ultrix.
	2SI	Set the SMPTE-352 payload identifier to 2SI for quad-link.
Clean Switch Status (read-only)	Locked	The specified output is locked to its input.
	Not Locked	The specified output is not locked to its input.
Clean Switch	Selected	Clean Switch is applied to the specified output. The Clean Switch Delay value is applied.
	Cleared	Clean Switch is not applied to the specified output.
Clean Switch Mode	Reference	Clean Switch is based on the reference signal available on the REF port of the router
	Input	Clean Switch is based on the input signal available on the specified port of the router
Clean Switch Delay	#	Specifies the Clean Switch buffer depth. Select between 1/16 to full line to clean switch between signals with slight timing offsets.
Loss Signal	None	A loss of input is ignored.
	Black	Sets the output to black when there is a loss of input.

a. This affects UltriScape and routed destinations.
b. Use this field to replace a missing 3G signal when one or more of the four 3G signals for a Gearbox configuration are unavailable.

Individual HD-BNC I/O Port Interfaces

Selecting a specific socket on the Ultrix rear panel map updates the Port Configuration interface to display the read-only information and configurable options for that port. The location of the port is reported at the top of the interface. Click the **video** or **audio** buttons, located on the left toolbar of the interface, to display the corresponding options for configuring the signals on the socket.

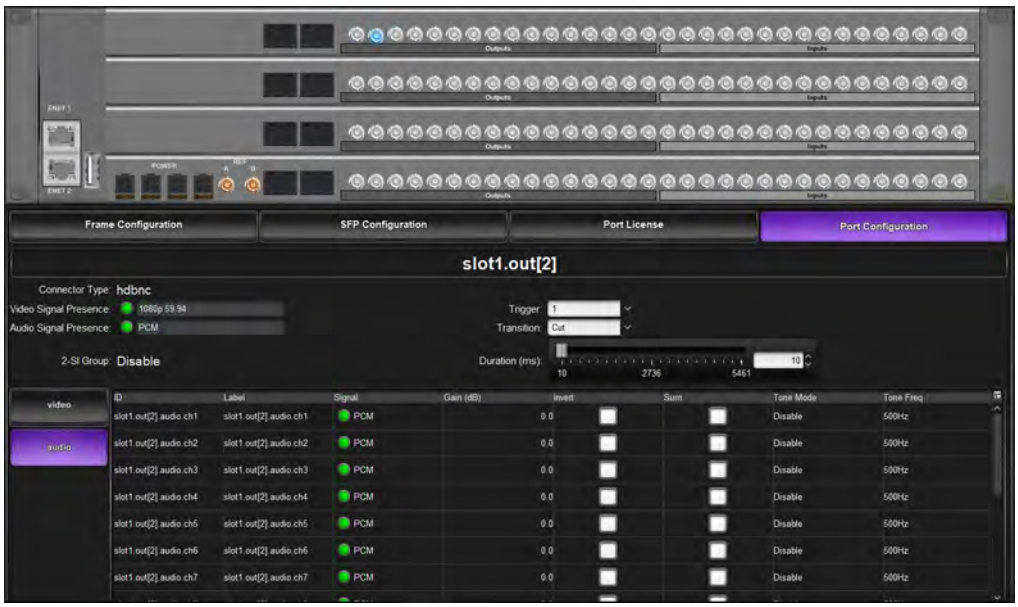


Figure 30.7 Example of Port Configuration Interface — slot1.out[2] Selected

ULTRIX-IP Interface

When an ULTRIX-IP-IO blade is installed in a router slot, selecting a specific port on the rear panel map displays configurable options for that port. From this interface, you can configure the sender, and receiver streams the port will manage. Refer to the chapter "**ULTRIX-IP-IO Setup**" on page 71 for details on using this interface.

Figure 30.8 Example of Port Configuration Interface — ULTRIX-IP Port Selected

Table 30.12 summarizes the fields displayed in the options in the Port Configuration page for the ULTRIX-IP-IO blade.

Table 30.10 Port Configuration — ULTRIX-IP

Item	Parameters	Description
Port Status (read-only)	OK (Green)	The selected port is ready to accept stream setting changes
	NOT READY (Red)	Failure to communicate with the port. The router will continue to re-establish connection with the port until it is successful.
Sender Bandwidth (read-only)	# of 25Gb used	Reports the amount of data the router is currently transmitting on the specified port
Receiver Bandwidth (read-only)	FREE	Reports the amount of data the router is currently receiving on the specified port
Senders		
Port	slot.port.type.ch	Specifies the ULTRIX-IP-IO port when subscribing to streams
Name	<text>	Specifies a unique identifier for the sender stream
Type		Indicates whether the stream includes video or audio data
Signal Format	#	Indicates the video format detected on the stream
Codec	#	Specifies the AES67 standard that the ULTRIX-IP-IO will default to for all IP-based audio sender streams
Channels	#	Specifies the maximum number of audio channels available for configuration within the specified stream
Transport IP	#	Specifies the IP address for the stream
UDP Port	#	Indicates the port associated with the IP address and the communication protocol for the stream
Redundancy		Indicates if Redundancy Mode (protection switching) is enabled for the specified ULTRIX-IP-IO port
Session ID	#	Indicates the ID number assigned to the ULTRIX-IP-IO within the system

Table 30.10 Port Configuration — ULTRIX-IP

Item	Parameters	Description
Stream ID	#	Indicates the ID number assigned to the specific stream within the system
Alarm Severity		Indicates any detected errors for the specific stream
Alarm Description		
Receivers		
Port	slot.port.type.ch	Specifies the ULTRIX-IP-IO port for the receiver stream
Name	<text>	Specifies a unique identifier for the receiver stream
Type		Indicates whether the stream includes video or audio data
Signal Format	#	Indicates the video format detected on the stream
Codec		Specifies the AES67 standard that the ULTRIX-IP-IO will default to for all IP-based audio receiver streams
Channels	#	Specifies the maximum number of audio channels available for configuration within the specified stream
Transport IP	#	Specifies the IP address for the stream
UDP Port		Indicates the port associated with the IP address and the communication protocol for the stream
Redundancy	#	Indicates if Redundancy Mode (protection switching) is enabled for the specified ULTRIX-IP-IO port
Session ID	#	Indicates the ID number assigned to the ULTRIX-IP-IO within the system
Stream ID	#	Indicates the ID number assigned to the specific stream within the system
Alarm Severity		Indicates any detected errors for the specific stream
Alarm Description		

Database Interfaces

The Database interfaces enable you to configure control aspects of your router. Note that the currently active database name is displayed in parentheses beside the Database node in the tree view. For example, **Figure 30.9** illustrates a router with the `100pip` database loaded. Unicode names are supported so that names may be defined in other languages or writing systems.

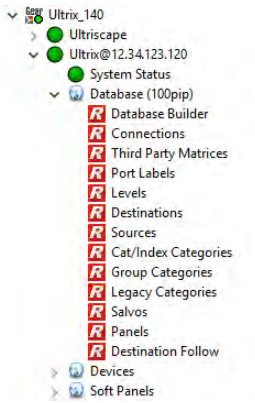


Figure 30.9 Expanded Database Node in the Tree View

Most of the interfaces are organized into a table format with a row of buttons at the bottom of the interface. You can select individual cells, columns, or rows of entries to define.

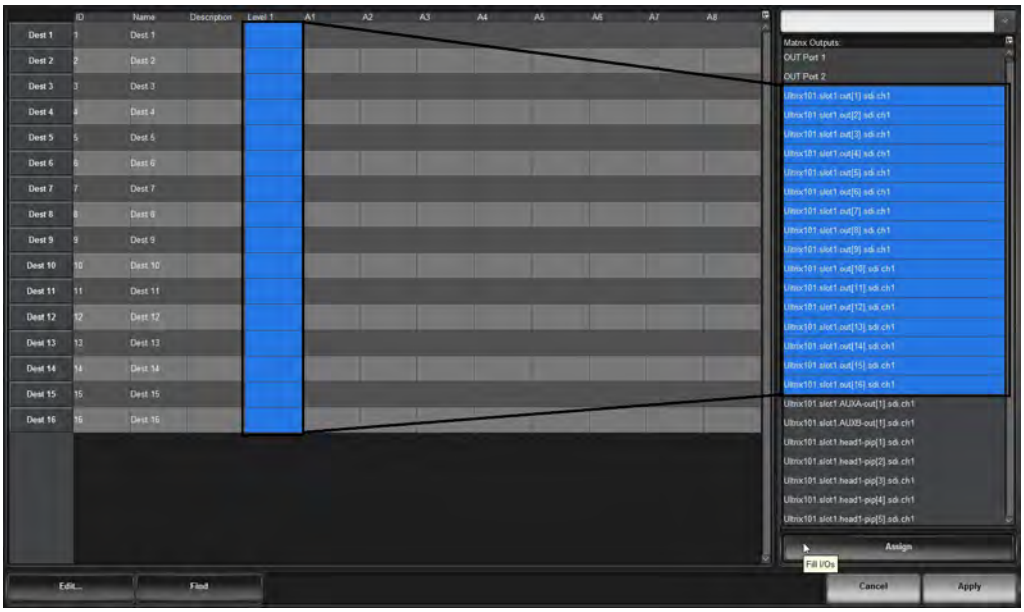


Figure 30.10 Example of Filling a Column of Entries

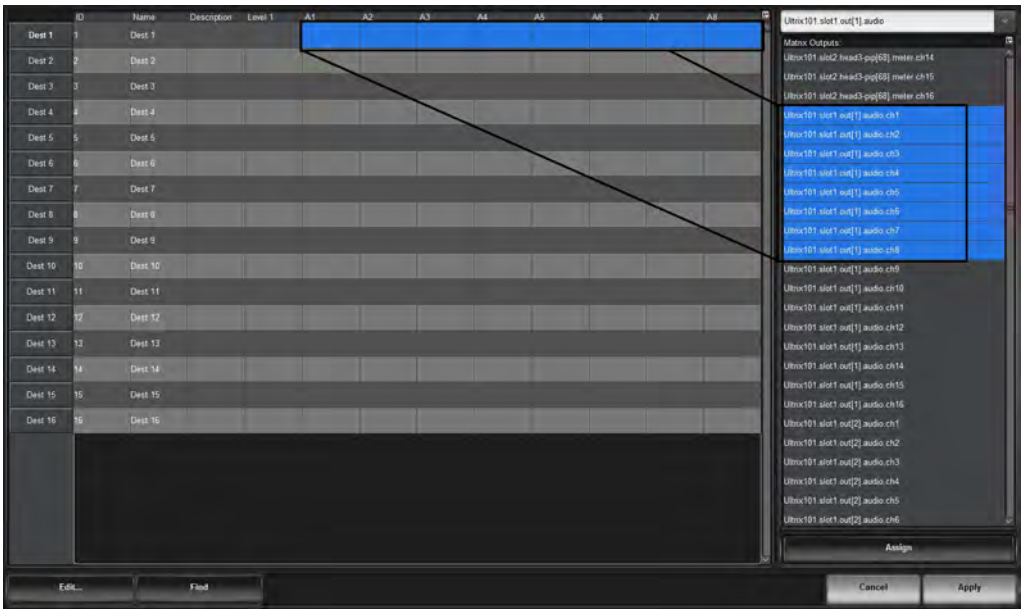


Figure 30.11 Example of Filling a Row of Entries

A summary of each interface is provided in the following sub-sections.

Database Builder

The Database Builder interface helps you to quickly create a database by grouping basic controls on four pages: Quick Start, Levels, Destinations, and Sources. The same controls are available as sub-nodes of the Database interface.

Quick Start

The Quick Start options display by default when the Database Builder displays in DashBoard. From this page you can define the database properties including: type of signals (video, audio) the number of Ultrix routers that the database includes, the audio elements of the database, and basic UltriScape parameters.

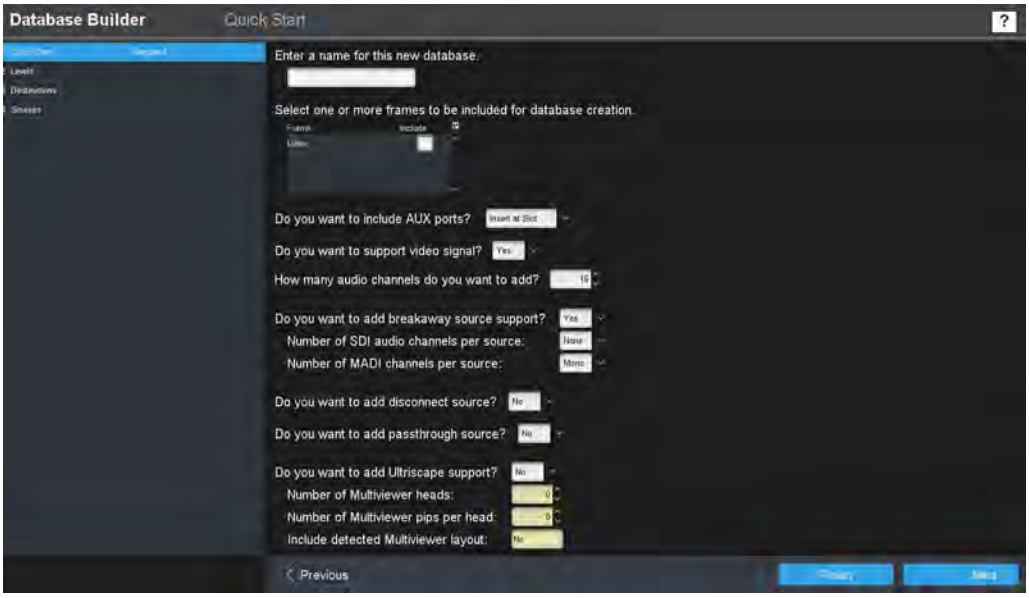


Figure 30.12 Example of the Database Builder — Quick Start Page

Table 30.12 summarizes the fields displayed in the options in the Quick Start page.

Table 30.11 Database Builder — Quick Start

Item	Parameters	Description
Database name	<name>	Assigns a unique identifier for the device in the routing system. This name is also used when matrices are defined in the Ultrix system.
Frame select table		Displays a list of detected routers in your network. Select a box to apply the database to the specified router.
Include AUX ports	None	Do not create entries for AUX ports in the database
	Insert at slot	Create AUX port entries as they are physically located within the Ultrix chassis (e.g. ports 17 and 18).
	At the end	Create AUX ports after BNC entries
Video support	Yes	Creates a database that includes video and audio signals
	No	Creates an audio-only database
Audio channels	#	Specifies the quantity of audio channels (levels) required
Breakaway source support	Yes	Create sources for audio breakaways/shuffles
	No	Audio breakaways are not included in this database
SDI audio per channel		Creates audio breakaway sources using the selected audio channel grouping size
MADI channels per source		Creates MADI sources using the selected audio channel grouping size

Table 30.11 Database Builder — Quick Start

Item	Parameters	Description
Disconnect source?	Yes	Creates a source that will disconnect (mute) SDI and audio channels
	No	This option is not included in the database
Passthrough source?	Yes	Sources are routed without changes/edits
	No	This option is not included in the database
UltriScape support?	Yes	Enables UltriScape heads and PiPs to be included in the database
	No	UltriScape heads and PiPs are not included in the database
Number of Multiviewer heads	#	Specifies the number of UltriScape heads the database will support
Number of Multiviewer pips per head	#	Specifies the maximum number of PiPs available per layout
Include detected Multiviewer layout		Creates sources for detected UltriScape layouts to enable layout changing from control panels

Levels

Once you defined the options on the Quick Start interface, you can proceed to preview and customize the levels, destinations, and sources this database will include. Clicking **Next** on the Quick Start page displays the **Levels** page. (**Figure 30.13**)

The options in the Levels page are organized into a table where each row represents a level and the columns provide the options for configuring that level. From this page you assign a unique name to each level, a color that represents the level to make it easier to identify the level in a soft panel.

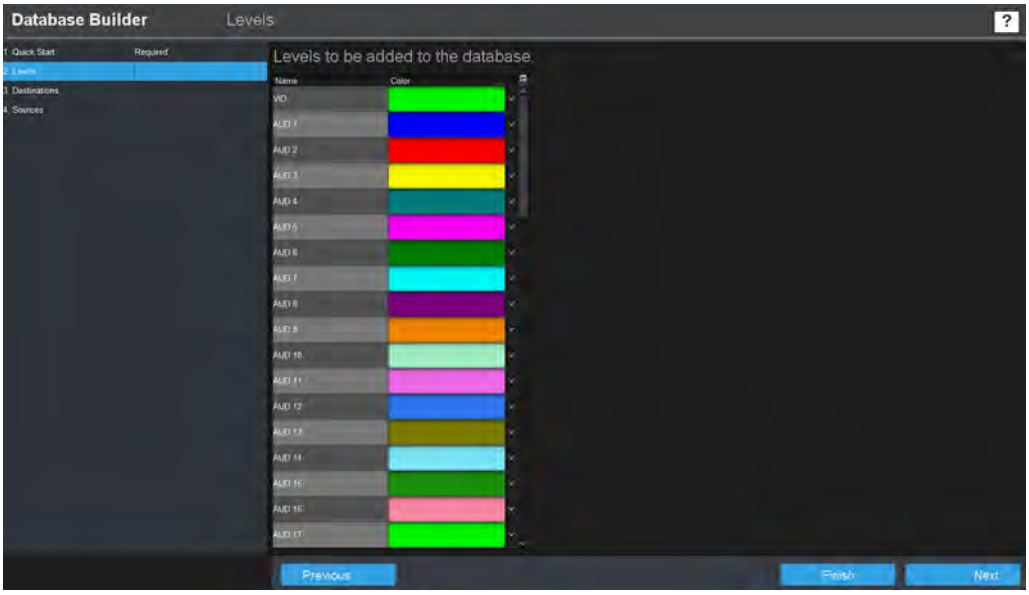


Figure 30.13 Example of the Database Builder — Levels Page

Destinations

Clicking **Next** on the Levels page displays the **Destinations** page. (**Figure 30.14**)

The Destinations page enables the assignment of logical labels (used by remote control panels and soft panels) to physical outputs of the attached matrices or routers. The options in the Destination page are organized into a table where each row associates a name of the destination with one or more logical matrix output sockets.

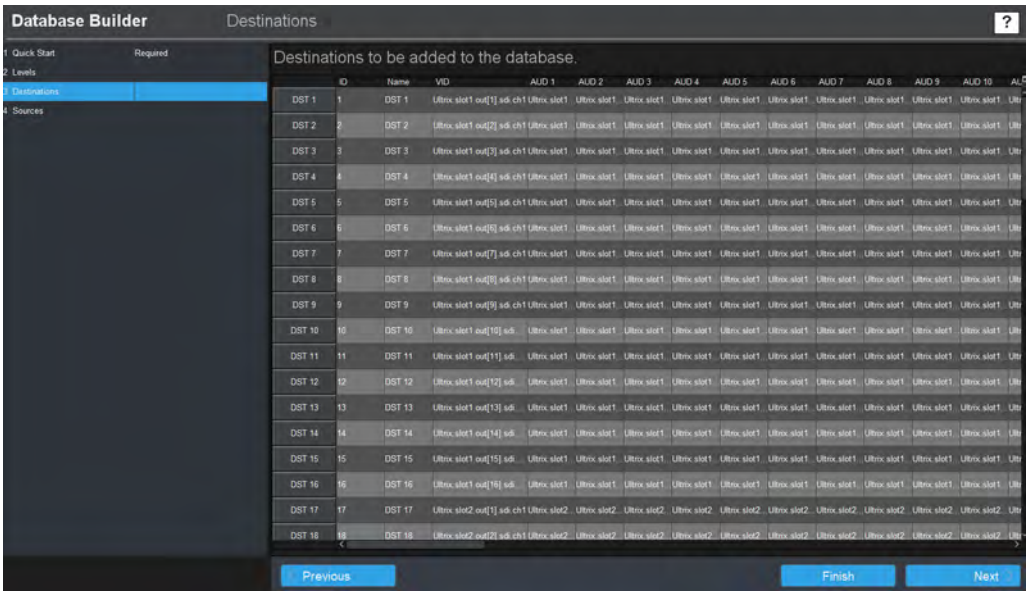


Figure 30.14 Example of the Database Builder — Destinations Page

Sources

Clicking **Next** on the Destinations page displays the **Sources** page. (**Figure 30.15**)

The Sources page enables the assignment of labels (used by remote control panels and soft panels) to inputs of the attached matrices or routers. The options in the Sources page are organized into a table where each row associates a name of the source with one or more logical matrix input sockets.

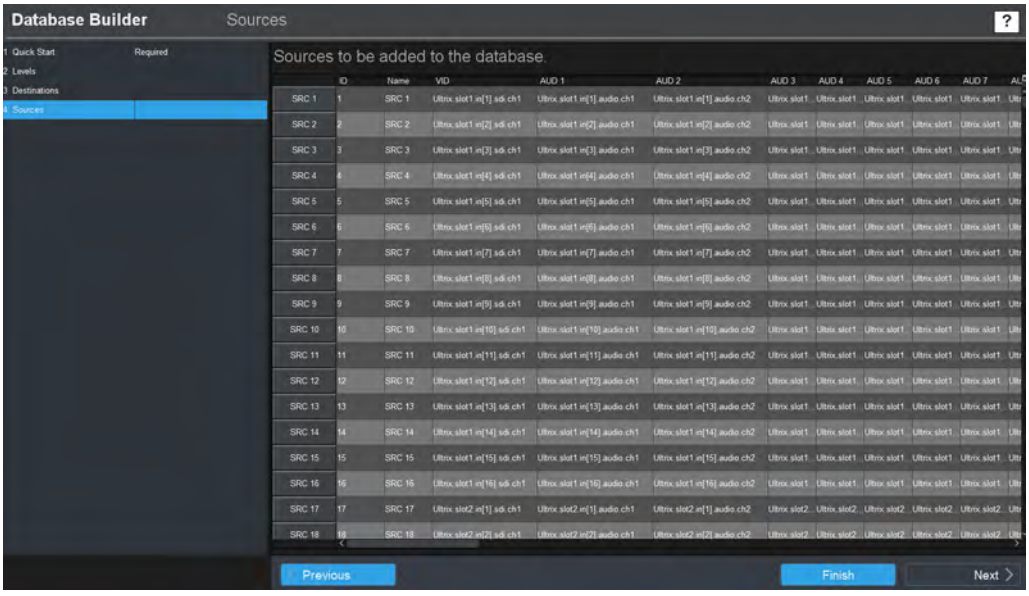


Figure 30.15 Example of the Database Builder — Sources Page

Connections Tab

The Connections tab lists and configures the Ultrix communications systems. The first two tables, Protocol Servers and Incoming Connections, configure and list server connections from an external client. The third table, Outgoing Connections, lists and configures client connections to an external server.

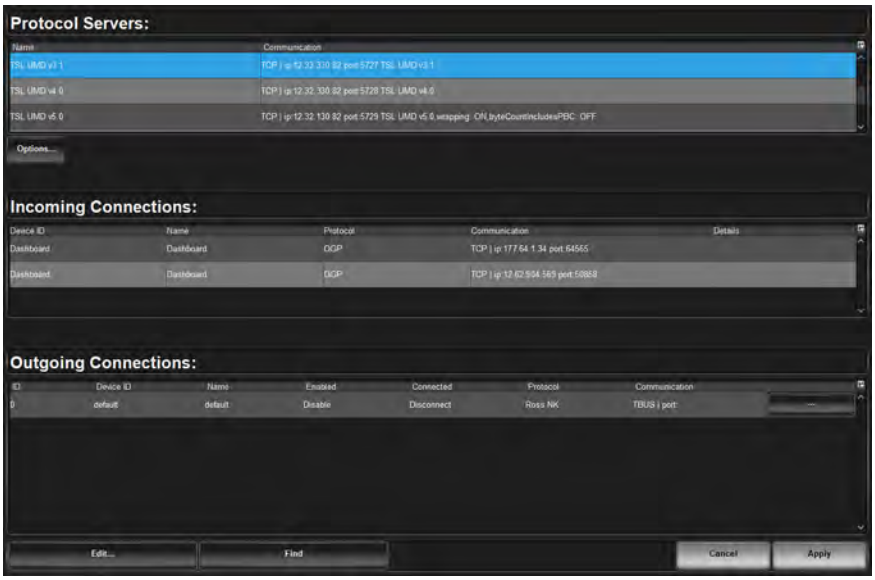


Figure 30.16 Example of Entries in a Connections Tab

Protocol Servers Table

The protocol servers table lists the currently active servers running on the Ultricore control system.

Server Options Dialog

Click **Options** to display a dialog that provides settings for the supported protocol servers.

For More Information on...

- configuring the protocol settings, refer to the chapter "**External Control**" on page 263.

Incoming Connections Table

The Clients table lists the connection details of remote client devices (e.g. devices that are under the supervision of this Ultrix router control system) currently communicating with the Ultrix router.

Table 30.12 summarizes the fields displayed in the Clients table in the Connections tab.

Table 30.12 Connections Tab — Incoming Connections

Item	Parameters	Description
Device ID	<name>	Specifies the external device for the connection point
Name	<name>	Assigns a unique identifier for the device in the routing system. This name is also used when matrices are defined in the Ultrix system.
Protocol (read-only)	GVG Native	The device uses the third-party GVG protocol to communicate. Refer to "**GVG Series 7000 Native Protocol Commands**" on page 265.
	NVISION	This device communicates via the third-party NVISION protocol. Refer to "**NVISION Commands**" on page 270.
	OGP	This device uses the openGear Protocol to communicate
	Probel SW-P-08	The device communicates via the Probel SW-P-08 protocol
	Ross NK	The device uses the Ross NK protocol to communicate (T-Bus or TCP only). Refer to "**Connecting to Ross NK Series Devices**" on page 96.

Table 30.12 Connections Tab — Incoming Connections

Item	Parameters	Description
Protocol (read-only)	TSL UMD v3.1	The device uses TSL UMD protocol version 3.1
	TSL UMD v4.0	The device uses TSL UMD protocol version 4.0
	TSL UMD v5.0	The device uses TSL UMD protocol version 5.0
	Ultrix	The device uses the Ross Ultrix protocol to communicate (TCP only). Refer to "**Adding an Ultrix Connection Point**" on page 103.
Communication	type: tcp	The device is communicating over a network connection. Note that the DashBoard client computer, the Ultrix router, and the external device must be on the same network.
	ip: ###.###.###.###	Specifies the IP Address of the device on the network.
	ip: localhost	Specifies that the device is the router you are currently configuring
	port:#####	Specifies the ethernet port the devices is associated with on the network.
	TBUS | port:	The device is communicating via the specified T-Bus port.
	...	This button opens a dialog allowing further connection point setting adjustments such as specifying an IP address, IP port, etc.
Details		Provides additional information on the device such as device type, and firmware version

Outgoing Connections Table

The Servers table lists the connection details of remote server devices (e.g. devices that are controlling this Ultrix router control system) currently communicating with the Ultrix router.

Table 30.12 summarizes the fields displayed in the Outgoing Connections table.

Table 30.13 Connections Tab — Outgoing Connections

Item	Parameters	Description
ID	#	Auto-numbered field (read-only).
Device ID	<name>	Specifies the external device for the connection point
Name	<name>	Assigns a unique identifier for the device in the routing system. This name is also used when matrices are defined in the Ultrix system.
Enabled	Enable	Direct communication is established between Ultrix and the device.
	Disable	Communication between the router and the device is unavailable.
Connected (read-only)	Connect	A valid connection is established between the device and the Ultrix on your network. This box is automatically selected when communication is established.
	Disconnect	The connection is invalid or absent between the device and the Ultrix on your network.

Table 30.13 Connections Tab — Outgoing Connections

Item	Parameters	Description
Protocol (read-only)	GVG Native	The device uses the third-party GVG protocol to communicate. Refer to "**GVG Series 7000 Native Protocol Commands**" on page 265.
	NVISION	This device communicates via the third-party NVISION protocol. Refer to "**NVISION Commands**" on page 270.
	Probel SW-P-08	The devices uses the third-party protocol known as Probel SW-P-08.
	Ross NK	The device uses the Ross NK protocol to communicate (T-Bus or TCP only). Refer to the section "**Connecting to Ross NK Series Devices**" on page 96.
	TSL UMD v3.1	The device uses TSL UMD protocol version 3.1
	TSL UMD v4.0	The device uses TSL UMD protocol version 4.0
	TSL UMD v5.0	The device uses TSL UMD protocol version 5.0
	Ultrix	The device uses the Ross Ultrix protocol to communicate.(TCP only). Refer to the section "**Adding an Ultrix Connection Point**" on page 103.
Communication	type: tcp	The device is communicating over a network connection. Note that the DashBoard client computer, the Ultrix router, and the external device must be on the same network.
	ip: ###.###.###.###	Specifies the IP Address of the device on the network.
	ip: localhost	Specifies that the device is the router you are currently configuring.
	port:#####	Specifies the Ethernet port the devices is associated with on the network.
	TBUS | port:	The device is communicating via the specified T-Bus port.
	...	This button opens a dialog allowing further connection point setting adjustments such as specifying an IP address, IP port, etc.

Third Party Matrices Tab

Once connection points are established with the devices in your routing system, use the **Third Party Matrices** tab to define the size and type of the external device for use in assignment within the Ultricore control system database.

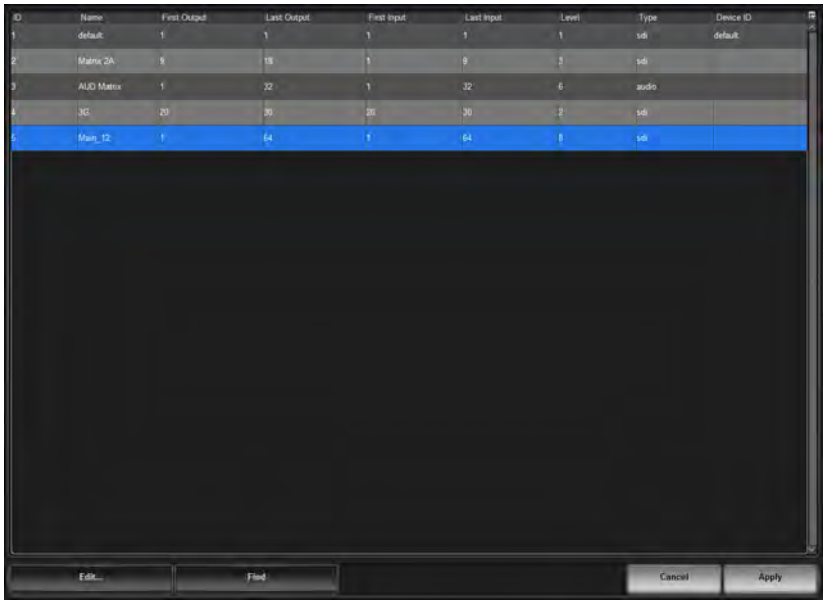


Figure 30.17 Example of Entries in a Third Party Matrices Tab

Table 30.14 summarizes the options displayed in the Third Party Matrices tab.

Table 30.14 Third Party Matrices Tab

Item	Parameters	Description
ID	#	Auto-numbered field (read-only).
Name	<name>	Assigns a unique identifier for the imported third party matrix to be used by the Ultrix database.
First Output	#	Specifies the first destination for the device within the Ultrix database
Last Output	#	Specifies the last destination for the device within the Ultrix database
First Input	#	Specifies the first source for the device within the Ultrix database
Last Input	#	Specifies the last source for the device within the Ultrix database
Level	#	Specifies the number of levels for the device in the Ultrix database
Type		Specifies the signal type of inputs and outputs this device provides within the Ultrix database
Device ID		Specifies the external third-party device the imported logical matrix applies to

Port Labels Tab

The Port Labels tab lists the matrices automatically discovered (Ultrix and NK Series), and those defined via the Third Party Matrices tab. A matrix (or router) socket is identified via the **Frame.Slot.Port.Type.Channel** nomenclature. Custom labels may be applied to the ports if required. These may be also known as actual labels in other terminology (the name the cable would be assigned). This re-naming is not necessary for router operation, but it may make your assignment of source and destination labels easier to identify when using your internal cable naming conventions.

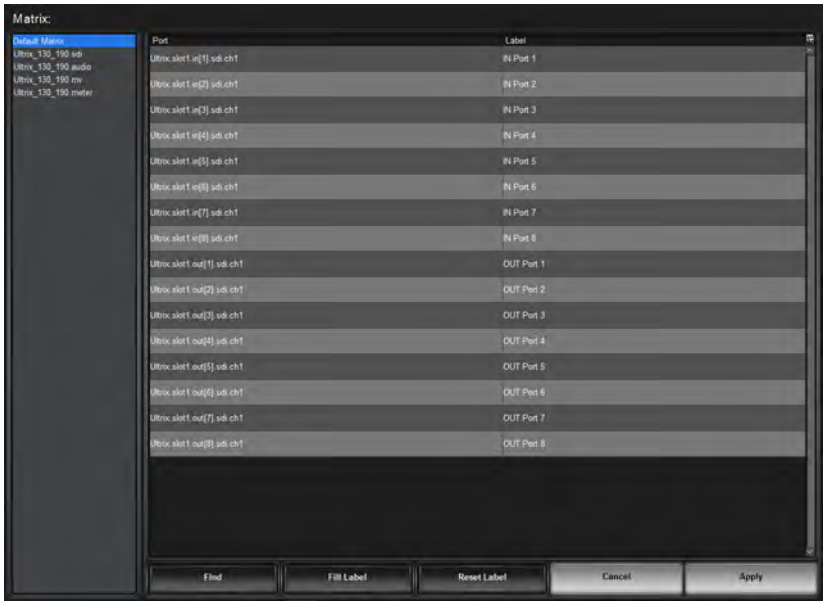


Figure 30.18 Example of Entries in a Port Labels Tab

Table 30.15 summarizes the options displayed in the main area of the Port Labels tab (from left to right on the interface).

Table 30.15 Port Labels Tab

Item	Description
Matrix:	Provides a list of configured label matrices for the currently loaded database. Click an item in the list to reveal the physical port names and associated labels for the given matrix selection in the right-hand table area.
Port	Indicates the physical socket on the Ultrix router that is included in the currently selected logical matrix using the nomenclature **Frame.Slot.Port.Type.Channel**.
Label	Provides a text label that identifies the port in other interfaces of the database. This virtual label is used instead of the **Frame.Slot.Port.Type.Channel** format for logical label assignment. For example, you might re-name port: `Ultrix.slot1.in[1].SDI.ch1` to `IN 1`.

Bottom Toolbar

Refer to **Table 30.39** for a summary of the buttons displayed in the Bottom toolbar of the Database interfaces.

Levels Tab

A level is a specific grouping of signal input and output ports, that may be controlled separately from other groups (a breakaway). Typically a level is associated with input/output ports that are used with sets of similar or related signals, such as SDI Video, AES Audio, Analog Video, Analog Audio, Timecode, or Machine Control, and often include routing matrices that are dedicated to controlling that specific type of signal.

The options in the Levels tab are organized into a table where each row represents a level and the columns provide the options for configuring that level. From this tab you assign a unique name to each level, a color that represents the level to make it easier to identify the level in a soft panel, and add a description of the level to aid identification.

For More Information on...

- the buttons located in the bottom toolbar of the Levels tab, refer to **Table 30.39** on page 355.
- the Tally Status Level menu, refer to the section "**Defining the Status Level for Tally Operation**" on page 193.

Figure 30.19 Example of Entries in a Levels Tab

Destinations Tab

The Destinations tab enables the assignment of logical labels (used by remote control panels and soft panels) to physical outputs of the attached matrices or routers. The options in the Destination tab are organized into a table where each row associates a name of the destination with one or more logical matrix output sockets.

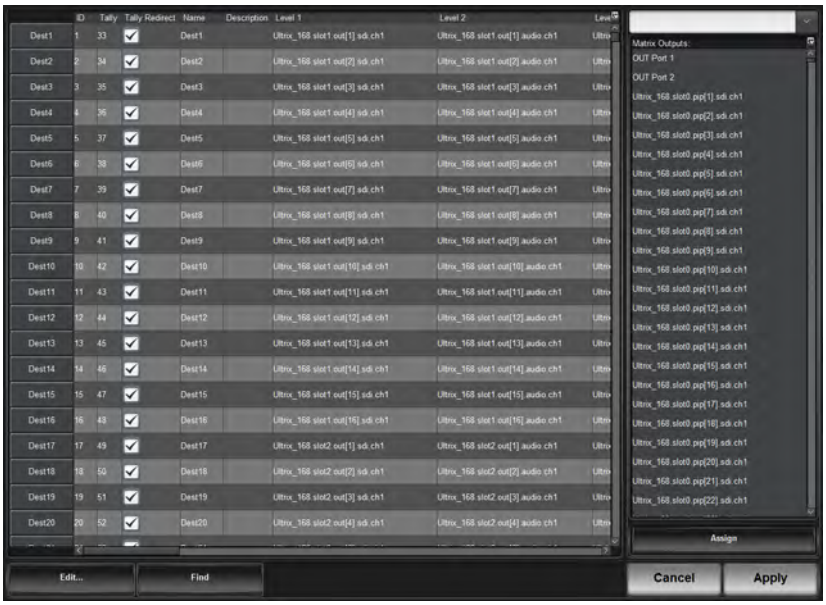


Figure 30.20 Example of Entries in a Destinations Tab

Table 30.16 summarizes the options displayed in the main area of the Destinations tab (from left to right on the interface).

Table 30.16 Destinations Tab

Item	Parameters		Description
ID	#		Auto-numbered field (read-only). This is not used within the Ultrix system itself, however, third-party protocols that do not support labels will reference this field in their communications.
Tally	TSL v3.1	<displayID>	Displays the TSL protocol Tally ID entry. The Enable Tally box is selected in the Database tab.
	TSL 4.0	<displayID>	
	TSL v5.0	<screenID>:<displayID>	
Tally Redirect			Enables/disables the re-direction of connected source Tally ID to destination Tally ID as set by the Tally field
Name	<name>		Assigns a unique identifier (label) for the destination in the routing system. This label is used by control interfaces/devices.
Description			Provides additional information or user entered notes about the output
Level #			Specifies the physical output port associated with the destination and assigns it to the specified level. Unless you have given the port a different label via the Port Labels tab, the port is labeled as **Frame.Slot.Port.Type.Channel**.
Matrix Outputs	#		Lists all the physical output ports available that can be assigned to a destination in the routing system
Assign			Click this button to add the selected physical output port(s) to the list of Destinations for the database

Sources Tab

The Sources tab enables the assignment of labels (used by remote control panels and soft panels) to inputs of the attached matrices or routers. The options in the Sources tab are organized into a table where each row associates a name of the source with one or more logical matrix input sockets.

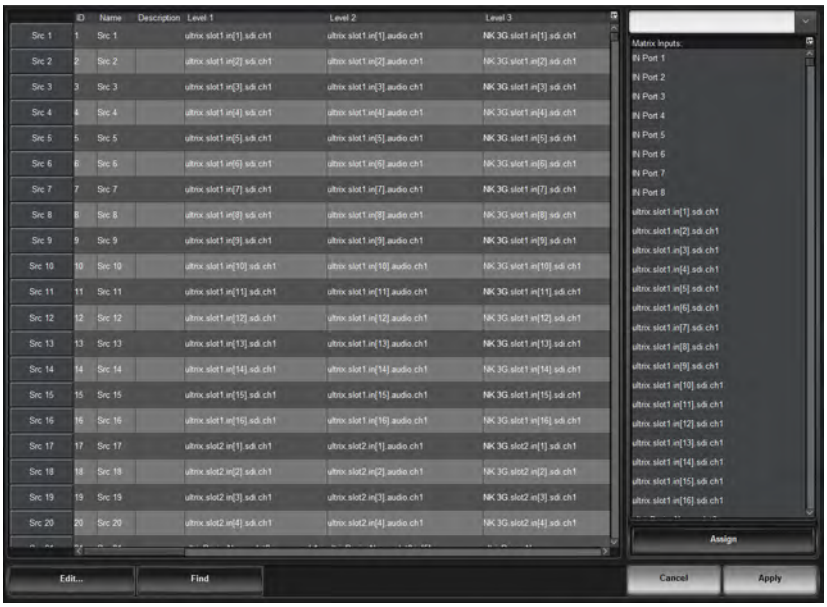


Figure 30.21 Example of Entries in a Sources Tab

Table 30.17 summarizes the options displayed in the main area of the Sources tab (from left to right on the interface).

Table 30.17 Sources Tab

Item	Parameters	Description
ID	#	Auto-numbered field (read-only). This is not used within the Ultrix system itself, however, third-party protocols that do not support labels will reference this field in their communications.
Tally	<displayID> or <screenID>:<displayID>	Displays the TSL protocol tally ID entry. The Enable Tally box is selected in the Database tab.
Name	<name>	Assigns a unique identifier (label) for the source in the routing system. This label is used by control interfaces/devices.
Description		Provides additional information or user entered notes about the input
Level #		Specifies the physical input port associated with the source and assigns it to the specified level. Unless you have given the port a different label via the Port Labels tab, the port is labeled as **Frame.Slot.Port.Type.Channel**.
Matrix Inputs	#	Lists all the physical input ports available that can be assigned as a source in the routing system
Assign		Click this button to add the selected physical input port to the Source label in the database

Cat/Index Categories Tab

The Cat/Index Categories tab enables you to categorize sources, destinations, and levels via a hierarchal system of tags. You can use categories to filter sources, destinations or levels into manageable groups for a Category soft panel.Refer to the section "**Category Panels**" on page 373 for more information.

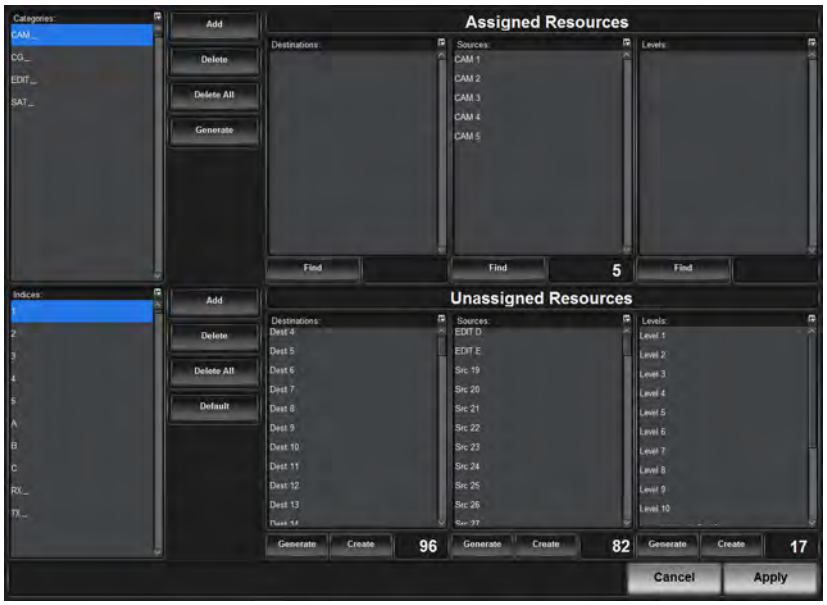


Figure 30.22 Example of Entries in a Cat/Index Categories Tab

Categories Area

Table 30.18 summarizes the options displayed in the Categories area of the Cat/Index Categories tab.

Table 30.18 Cat/Index Categories — Categories Area

Item	Parameters	Description
Categories:		Lists the category tags defined for this database
Add		Adds a category tag
Delete		Deletes the selected tag
Delete All		Deletes all tags listed in the Categories: pane
Generate		Automatically generates category tags based on the entires in your database. Categories are automatically defined by searching for space characters within the database logical source and destination names.

Assigned Resources Area

Table 30.19 summarizes the options displayed in the Assigned Resources area of the Cat/Index Categories tab.

Table 30.19 Cat/Index Categories — Assigned Resources Area

Item	Parameters	Description
Destinations:	<text>	Lists the destinations that are accessible via the defined Category/Index combinations
	Find	Performs a search for destinations in the database to add to the category

Table 30.19 Cat/Index Categories — Assigned Resources Area

Item	Parameters	Description
Sources:	<text>	Lists the sources that are accessible via the defined Category/Index combinations
	Find	Performs a search for sources in the database to add to the category
Levels:	<text>	Lists the levels that are accessible via the defined Category/Index combinations
	Find	Performs a search for level in the database to add to the category

Indices Area

Table 30.20 summarizes the options displayed in the Indices area of the Cat/Index Categories tab.

Table 30.20 Cat/Index Categories — Indices Area

Item	Parameters	Description
Indices:		Creates search terms to define category tags
Add		Adds a new entry to the Indices list
Delete		Deletes the selected entry from the Indices list
Delete All		Deletes all entries from the Indices list
Default		Creates indexes 0-9 and A-F

Unassigned Resources Area

Table 30.21 summarizes the options displayed in the Inaccessible Resources area of the Cat/Index Categories tab.

Table 30.21 Cat/Index Categories — Unassigned Resources Area

Item	Parameters	Description
Destinations:	<text>	Lists the destinations in the current database that are not included in any Cat/Index categories
	Generate	Automatically generates category tags based on the destinations in your database
	Create	Enables you to create a new Cat/Index filter for destinations
Sources:	<text>	Lists the sources in the current database that are not included in any classic categories
	Generate	Automatically generates category tags based on the sources in your database
Sources:	Create	Enables you to create a new Cat/Index filter for sources
Levels:	<text>	Lists the levels in the current database that are not included in any classic categories
	Generate	Automatically generates category tags based on the levels in your database
	Create	Enables you to create a new Cat/Index filter for levels

Group Categories Tab

The Categories tab enables you to categorize sources, destinations, and levels via a hierarchal system of tags. You can use categories to filter sources, destinations or levels into manageable groups for a Category soft panel.Refer to the section "**Category Panels**" on page 373 for more information.

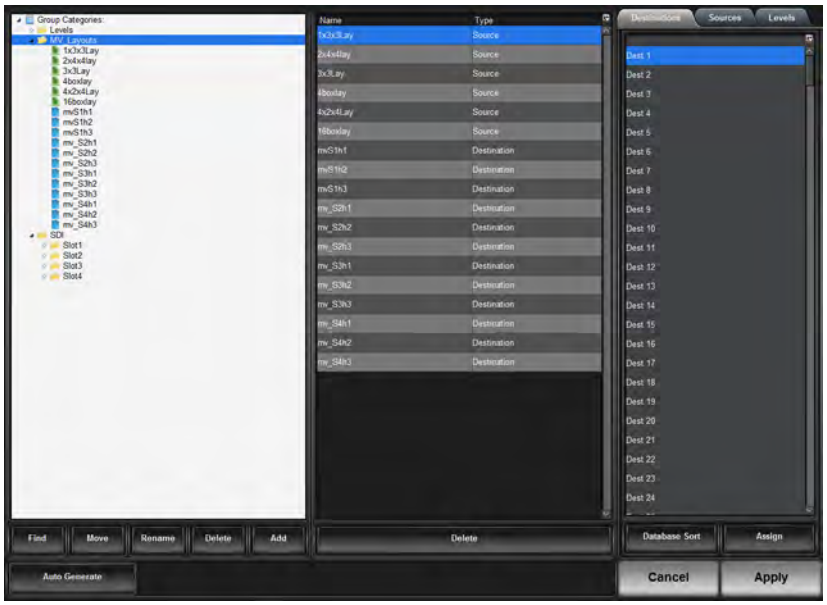


Figure 30.23 Example of Entries in a Group Categories Tab

The Group Categories tab is organized into three panels and a bottom toolbar.

Table 30.22 summarizes the options displayed in the left panel of the Group Categories tab. This panel displays all the created groups and sub-groups, and/or resources in a top-down hierarchy. Note that the nodes are sorted by type and then by alphabetical order.

Table 30.22 Group Categories Tab — Left Panel

Item	Description
Group Categories:	Displays the groups as folders arranged in a tree view
Find	Displays the Find dialog that enables you to search for a category or resource name
Move	Displays the Move dialog that enables you to move a selected group and its contents to another group
Rename	Renames a selected group; the resource type will be not re-named
Delete	Deletes a selected group and all of its contents
Add	Adds a new group to the selected group

Table 30.23 summarizes the options displayed in the middle panel of the Group Categories tab. This panel shows the assigned contents (groups and/or resources) of the currently selected group from the tree view (in the left panel).

Table 30.23 Group Categories Tab — Middle Panel

Item	Description
Name	Indicates the name of a resource
Type	Indicates the type of resource
Delete	Deletes the selected resource(s) from the currently selected group

Table 30.24 summarizes the options displayed in the right panel of the Group Categories tab. This panel displays the available destinations, sources, and levels that can be arranged into group categories.

Table 30.24 Group Categories Tab — Right Panel

Item	Description
Destinations	Displays the unassigned destinations
Sources	Displays the unassigned sources
Levels	Displays the unassigned levels
Database/alphabet Sort	Toggles the sorting style of the unassigned labels
Assign	Select the resource(s) and click Assign to assign it to the group selected in the left table

Table 30.25 summarizes the bottom toolbar.

Table 30.25 Group Categories Tab — Bottom Toolbar

Item	Description
Auto Generate	Click to auto-generate group categories based on the resource names from the current database
Cancel	Ignores all unsaved changes and reverts the tab back to the last saved entries
Apply	Applies all change made in the Group Categories tab

Legacy Categories Tab

The Legacy Categories tab enables you to categorize sources, destinations, and levels via a hierarchal system of tags. You can use legacy categories to filter sources, destinations, or levels into manageable groups for legacy RCP-QE panels (identified by 17 LCD buttons and firmware versions prior to 1.55). Refer to the ***RCP-QE User Guide*** for details.

✶ It is recommended for new installations to utilize the Cat.Index or Group Category methods.

Table 30.26 summarizes the options displayed in the top toolbar.

Table 30.26 Legacy Categories Tab — Top Toolbar

Item	Description
Destination	Lists the destination category/index assignments
Source	Lists the source category/index assignments
Level	Lists the level category/index assignments

Table 30.27 summarizes the options displayed when the Edit button is selected from the bottom toolbar.

Table 30.27 Legacy Categories Tab — Bottom Toolbar

Item	Description
Copy	Copies the selected cells in the tab
Paste	Pastes the previously copied items to the current cell selection
Clear	Clears the data from the selected cells
Clear All	Clears all category/index assignments

Table 30.27 Legacy Categories Tab — Bottom Toolbar

Item	Description
Fill	Auto fills a range of cells
Auto Generate	Auto fills the cells based on spaces in the source/destination names

Salvos Tab

A salvo is a set of pre-defined switch events. The Salvos tab provides a list of the global salvos available in the currently selected database. From this tab you can create salvos, rename, edit, and delete salvos.

The workspace in the Salvos tab displays a grid pattern with sources at the top and the destinations along the left side. A list of currently available (saved) salvos displays on the far left-side of the tab. The toolbar on the far right-side displays a button for each level available in the database with each button set in the color specified for the level. Click the **Follow** button, located below the level buttons, to include all the Levels in the salvo. The toolbar in the bottom right corner of the interface displays three buttons: Advanced, Cancel, and Apply.

Figure 30.24 Example of a Salvos Tab

Table 30.28 summarizes the options displayed in the Salvos tab.

Table 30.28 Buttons on the Salvos Interface

Button	Description
Salvos:	Provides a list of configured salvos for the currently loaded database. Double-click an item in the list to update the grid in the Salvos tab.
Edit...	Displays the Edit dialog for the soft panel. Refer to "**Edit Dialogs**" on page 356.
Select All	Click this button to select all the Destinations in the matrix of the Salvos tab. This will include all the destinations in the matrix in the salvo configuration. • All the Destination buttons are lit red in the matrix. • The button now displays the **Clear All** label. Click the button again to remove all the Destinations from the salvo configuration.
Level #	A button is assigned to each level available in the currently loaded database. The color and label of the button is specified in the Levels tab.
Advanced	Displays the Advanced options outlined in **Table 30.29**.

Table 30.28 Buttons on the Salvos Interface

Button	Description
Cancel	Discards any recent changes made in the Salvos tab, and clears the matrix. Note that the Destinations are still selected (buttons are lit red) if you clicked **Select All**.
Apply	Applies changes made in the Salvos tab and updates the salvo settings.

Advanced Menus

Clicking the **Advanced** button in the Salvos tab displays the options outlined in **Table 30.29**.

Table 30.29 Salvos Tab — Advanced Menu Items

Button	Description
Clear All Presets	Clears the workspace in the Salvos tab and resets all settings to the default values.
Clear Dest Presets	Clears all selections made in the Destinations column of the workspace.
Capture System Status	Captures the current routing state of the Ultrix router.
Capture Dest Status	Updates the workspace to reflect only the status of the destinations of the Ultrix router.

Panels Tab

The Panels tab includes a series of sub-tabs that enable you to customize the soft panels (control panels within the DashBoard environment). You can choose to assign the levels, sources, and destinations, from an Ultrix database to the panel buttons. The soft panels display as sub-nodes in the Soft Panels tree using the name specified in the **Info** tab. When you save a soft panel to the database, a node for the panel automatically displays under the Soft Panels node in the Tree View. The soft panels display in the tree according to their assigned Panel ID number (where an ID of 1 is the highest, and ID of 2 is the second highest etc.).

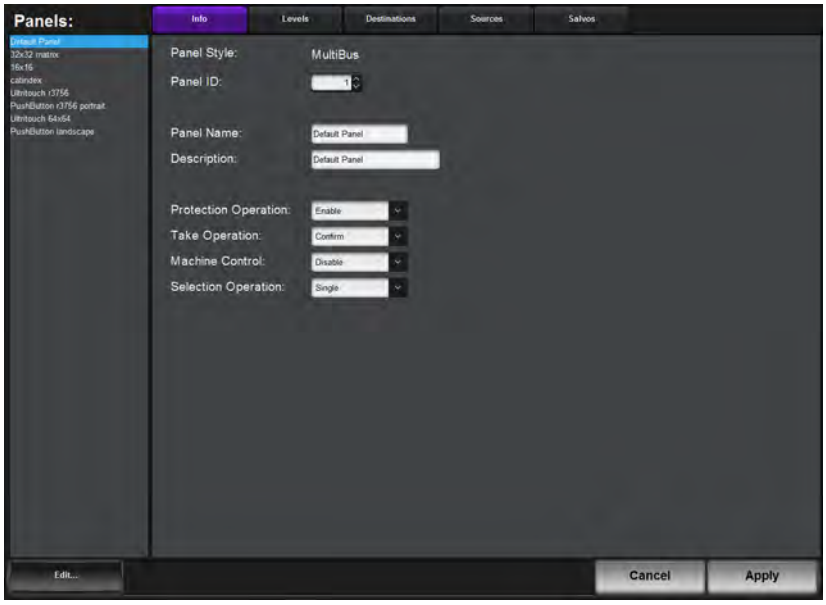


Figure 30.25 Example of Entries in a Panels Tab

Panels Area

The Panels area displays on the left side of the interface. This area displays a list soft panels saved in the current database. Selecting a soft panel from the list updates the tab entries in the Panels tab with the settings for that soft panel.

Info Tab

Use the options in the Info tab to assign a panel a unique identifier, select the panel style template to use, and how the panel will perform tasks such as Take transitions. This is the default tab that the interface opens on. **Table 30.30** summarizes the fields and menus displayed in the Info tab.

Table 30.30 Info Tab

Item	Parameters	Description
Panel Style (read-only)	<name>	Specifies the panel type that was assigned to the soft panel when it was created.
Panel ID	<integer>	Assigns an ID number to the panel. This value determines the panel node placement in the hierarchy of the Soft Panel tree.
Panel Name	<name>	Provides a unique identifier for the soft panel. This name also displays as a sub-node in the Soft Panels tree.
Description	#	Provides a textual summary of the soft panel or additional information about the panel.
Protection Operation	Lock	Displays only the Lock button in the panel interface.
	Protect	Displays only the Protect button in the panel interface.
	Both	Displays the Lock and Protect buttons in the panel interface
Take Operation	Confirm	Confirmation dialog displays, prompting the user to confirm a Take before the transition occurs.
	Direct	The Take transition occurs automatically.
Machine Control	Enable	Displays a Machine Control button on the panel. When selected on the panel, this Machine Control button sends a Take request directed to a Ross NK-M series data router to automatically make the reciprocal port switch. On a video router, the connection is all one way from an input port to an output port (e.g. such as from IN 1 to OUT 2).
	Disable	Does not display a Machine Control button on the panel
Selection Operation	Single	The Multi Select button does not display on the soft panel
	Multi	Displays the Multi Select button on the soft panel. Use this button to quickly select multiple destinations for a crosspoint switch. This button is only applicable for MultiBus and Category panels.
Nongroup Resources[a]	Hide	Resources that are not assigned to a specific group are not displayed on the soft panel.
	Show	All resources are displayed on the soft panel.

a. This menu is only available when the Panel Style is set to Group Category.

Levels Tab

Use the options in the Levels tab to specify the number of levels for the panel, and organize them in a hierarchy for the panel. **Table 30.31** summarizes the fields and menus displayed in the Levels tab.

Table 30.31 Levels Tab

Item	Parameters	Description
Viewable Levels	<integer>	Specifies the maximum number of levels, as selectable buttons, that can display on the panel
Available	<integer>	Lists all the levels in the current database
Assigned	<integer>	Specifies which levels will be available in the soft panel

Destinations Tab

Use the options in the Destinations tab to specify which outputs will be available in Destination bus of the soft panel. **Table 30.32** summarizes the fields and menus displayed in the Destinations tab.

Table 30.32 Destinations Tab

Item	Parameters	Description
Viewable Destinations	<integer>	Specifies the maximum number of destinations available, as selectable buttons, on the panel. This field is not displayed when the Panel Style is set to Group Category or Cat/Index Category.
Available	<integer>	Lists all the destinations in the current database
Assigned	<integer>	Specifies which destinations will be available in the soft panel

Sources Tab

Use the options in the Sources tab to specify which router inputs will be available in the Source bus of the soft panel, and their hierarchy. **Table 30.33** summarizes the fields and menus displayed in the Sources tab.

Table 30.33 Sources Tab

Item	Parameters	Description
Viewable Sources	<integer>	Specifies the maximum number of sources available, as selectable buttons, on the panel. This field is not displayed when the Panel Style is set to Group Category or Cat/Index Category.
Available	<integer>	Lists all the sources in the current database
Assigned	<integer>	Specifies which sources will be available in the soft panel.

Salvos Tab

Use the options in the Salvos tab to specify the total number of salvos displayed in the soft panel and their hierarchy. **Table 30.34** summarizes the fields and menus displayed in the Salvos tab.

Table 30.34 Salvos Tab

Item	Parameters	Description
Viewable salvos	<integer>	Specifies the maximum number of salvos that will be listed on the Recall Salvos dialog for the panel. This field is not displayed when the Panel Style is set to Matrix.

Table 30.34 Salvos Tab

Item	Parameters	Description
Available	<integer>	Lists all the salvos in the current database
Assigned	<integer>	Specifies which salvos will be available in the soft panel.

Favorites Tab

✶ The Favorites tab only displays when the Panel Style is set to Ultritouch PB.

Table 30.34 summarizes the fields and menus displayed in the Favorites tab.

Table 30.35 Favorites Tab

Item	Parameters	Description
Name	<name>	Provides a unique identifier for the type of Favorite for this soft panel.
Type	Crosspoint	Creates a Favorites button on the soft panel that recalls a specific crosspoints switch
	Group	Creates a Favorites button on the soft panel that loads a specific Group Category in the database
	Salvo	Creates a Favorites button on the soft panel that recalls a specific salvo in the database
	Sources	Creates a Favorites button on the soft panel that selects a specific source in the database
	Destinations	Creates a Favorites button on the soft panel that selects a specific destination in the database
Field 1		Specifies the first item for the Favorite. For example, if the type is set to Crosspoint, Field 1 reports the destination.
Field 2		Specifies the second item for the Favorite. For example, if the type is set to Crosspoint, Field 2 reports the source.
Up		Moves the selected row higher in the table
Down		Moves the selected row lower in the table
Top		Moves the selected row to the top of the table
Bottom		Moves the selected row to the bottom of the table
Sort		Sorts by window type

Home View Tab

✶ The Home View tab only displays when the Panel Style is set to Ultritouch PB or Push Button.

Table 30.36 summarizes the options displayed in the Home View tab.

Table 30.36 Home View Tab

Item	Parameters	Description
Display Icons	Enable	The Destination and Source buttons on the soft panel display icons
	Disabled	The Destination and Source buttons do not display icons; only the labels are displayed on each button.

Table 30.36 Home View Tab

Item	Parameters	Description
Orientation	Portrait	The windows are organized into columns (vertical panes) on the soft panel
	Landscape	windows are organized into rows (horizontal panes) on the soft panel
Home Windows		
Window (read-only)	<text>	Specifies the window type
Percent	#	Specifies the width of the window in a percentage of the overall soft panel size
Rows	#	Specifies the number of button rows in the window
Columns	#	Specifies the number of button columns in the window
Reset		Loads the default window layout and widths
Up		Moves the selected row higher in the table
Down		Moves the selected row lower in the table
Top		Moves the selected row to the top of the table
Bottom		Moves the selected row to the bottom of the table
Sort		Sorts by window type

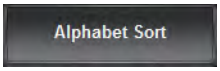
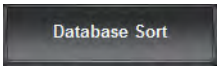
Buttons

Table 30.37 summarizes the buttons displayed in all Panel sub-tabs.

Table 30.37 Button on the Panels Interface

Button	Description
	In the Available area, clicking this button toggles the sorting order between alphabetical or database-index (based on the current order listed in the Levels, Destinations, or Sources tabs)
	Moves the selected items in the Available list to the Assigned list.
	Moves the selected item(s) from the Assigned list back to the Available list. These items will not be available in the soft panel window.
	Moves all the available labels to the Assigned list
	Removes all the items from the Assigned list back to the Available list. These items will not be available in the soft panel window.
Up	Moves the selected item in the Assigned list up one position. This changes the order of the displayed items on the soft panel.
Down	Moves the selected item in the Assigned list down one position. This changes the order of the displayed items on the soft panel.
Top	Moves the selected item in the Assigned list to the top of the list. This changes the order of the displayed items on the soft panel.

Table 30.37 Button on the Panels Interface

Button	Description
Bottom	Moves the selected item in the Assigned list to the bottom of the list. This changes the order of the displayed items on the soft panel.
	In the Assigned area, clicking this button arranges the items into alphanumerical order.
	In the Assigned area, clicking this button arranges the items in the Assigned list according to the order established in the Levels, Destinations, or Sources tabs.
Edit...	Displays the Edit dialog for the soft panel
Cancel	Discards any recent changes made in the soft panel, and reverts to the previously saved settings.
Apply	Applies changes made in the soft panel and updates the Ultrix database

Destination Follow Tab

Table 30.38 summarizes the options displayed in the Destination Follow tab.

Table 30.38 Destination Follow Tab

Item	Parameters	Description
Destination	#	Specifies the Destination you want to configure
Following	#	Specifies the router output that the specified Destination will follow

Additional Dialogs, Menus, and Toolbars in the Database Interfaces

Each tab displays a toolbar located at the bottom that provides buttons that display additional editing dialogs (e.g. insert, cut, paste, search). Also, right-clicking a row in any tab also displays a menu of editing dialogs. This section briefly outlines those additional editing dialogs.

Bottom Toolbar

The bottom toolbar of a tab in the Database includes buttons for applying changes made to settings in the interface, or adding elements to the table in the interface. **Table 30.39** summarizes the buttons displayed in a bottom toolbar. Note that not all buttons display in all tabs.

Table 30.39 Bottom Toolbar Items

Button	Description
Edit	Displays the Edit dialog for the tab. Refer to **Table 30.40** for details.
Find	Displays the Find dialog that enables the entering of criteria for searching of the tab contents.
Fill Label	Applies a custom label to the selected port
Reset Label	Reverts the label content to the previously saved text
Delete	Removes the selected port from the list for the matrix
Add	Adds the selected port from the list for the matrix

Table 30.39 Bottom Toolbar Items

Button	Description
Cancel	Discards any recent changes made in the tab, and reverts to the previously saved table settings.
Apply	Applies changes made in the tab and updates the Ultrix database

Edit Dialogs

Table 30.40 summarizes the buttons displayed in the **Edit** dialogs. Note that not all options display in all tabs.

Table 30.40 Edit Dialogs Items

Button	Description
Add	In interfaces with lists on the left toolbar (e.g. Panels, Port Labels, Salvos), selecting a list item and then clicking Add creates a copy of the selected item. The name to the newly created item includes the name from the copied item with the prefix “New”.
Auto Generate	Automatically fills the cells in the table with a default value. For example, clicking this button in the Destinations tab automatically fills all the cells with the text “Dest”.
Clear	Removes the data from the selected cell.
Clear All	Removes the text or entry in all cells of the interface.
Copy	Copies the selected cell data to the clipboard. In some interfaces, such as in the Salvo tab, the salvo settings are copied in entirety.
Cut	Copies the cell data to the clipboard and then delete it from the table.
Delete[a]	When working in an interface with a table layout, clicking this button removes the currently active row from the table. When working in an interface with lists on the left toolbar, clicking this button removes the selected item from the list. You will still need to click Apply to completely remove the item from the database.
Fill	A range of name cells may be filled with consecutive numerical data. For example, VTR1 to VTR4 may be entered quickly by defining a prefix (in this case VTR) and a suffix that will numerically increment. Selecting Fill from the Insert toolbar, a dialog displays prompting you to enter a prefix (alphanumeric) and the start/end numerical values. This method adds rows to the destination table inserting below the active row. Refer to the section “**Advanced Fill Tool**” on page 357 for details.
Fill & Replace	Enables you to overwrite a range of cells in the table. Rows beneath the currently active row are overwritten with data from the Fill & Replace dialog.
Insert Above	Inserts a new row above the currently active row in the table. Any existing data is moved down the table by one row.
Insert Below	Inserts a new row below the currently active row in the table. Any existing data is moved up one row.
Insert Series	Inserts a sequential range of labels below the currently selected row.
Paste	Pastes the copied cell data from the clipboard. In some interfaces, such as in the Salvo tab, the copied salvo settings are pasted in entirety.
Paste Below	Pastes the copied cell data, from the clipboard, to currently selected cell.

Table 30.40 Edit Dialogs Items

Button	Description
Rename	When working in an interface with lists on the left toolbar, clicking this button enables you to provide a different name/label to the selected item.
Reset All IDs	Resets the source/destination ID numbers based on their current row number. It is recommended to verify the interfaces that reference IDs (such as Soft Panels, Salvos, etc.)

a. Ensure the ID numbers are correctly sequenced when deleting and inserting entries in the tabs. Refer to the Reset All IDs row in this table.

Find Dialogs

Table 30.41 summarizes the buttons displayed in the **Find** dialogs.

Table 30.41 Find Dialogs Items

Item	Description
Column	A pull-down menu that lists the columns available in the current interface. Select the column to perform the search within.
Find What:	Specifies the characters, or text, to search the table contents.
Direction	Begins the search by searching below the currently selected row (Down), or above the selected row (Up).
Match whole word only	Select the check box to search only for the characters in the Find What: field as they are typed in the field. For example, typing "`put`" will search for instances of the word "put" and not "input" or "output".
Cancel	Cancels the search criteria and closes the Find menu.
Find	Performs a search through the table contents based on the specified criteria.

Advanced Fill Tool

The **Advanced Fill** tool is provided to create new destination and source labels where physical outputs and inputs are automatically assigned depending on options set by the user. The audio routing features provided by Ultrix can result in an extensive source and destination definition map requiring some time to manually enter. The **Advanced Fill** tool will speed the assignment of physical sockets greatly.

For More Information on...

- using the tool to set up your database, refer to the section "**Using the Advanced Fill Tool**" on page 118.

Breakaway Fill Dialog

The **Breakaway Fill** dialog is the **Advanced Fill** tool for the **Sources** tab. This dialog is displayed when you click **Edit** > **Fill**.

Figure 30.26 Example of a Breakaway Fill Dialog

Table 30.42 summarizes the options displayed in the **Breakaway Fill** dialog.

Table 30.42 Breakaway Fill Dialog

Item	Parameters	Description
Fill	Custom	Insert labels with assignments for a custom range defined by the Range setting
	Entire Slot	Insert labels with assignments for a single Ultrix slot (including the AUX ports)
	Entire Device	Insert labels with assignments for the entire Ultrix router (including the AUX ports)
Name	<text>	The prefix for the label creation. For example, typing **`VTR`** results in labels `VTR1`, **`VTR2`**, etc. Take care when determining label names. While a long name may be nice and descriptive for the Source tab, many control devices have limited screen space and labels may be truncated.
Starting	#	The starting numerical extension for the label creation. For example, typing **`3`** results in labels **`Name3`**, **`Name4`**, etc.
Count	#	The quantity of labels for custom fill range
AUX Ports	None	AUX ports will not be included in the resulting definitions
	Insert at Slot	AUX ports will be defined immediately following a given slot BNC definitions
	Add at End	AUX port definitions will be defined immediately following ALL BNC definitions
	AUX only	Defines only AUX port settings (useful when adding in one AUX port to a system)
Slot	#	The Ultrix slot number to start the label assignment[a]
Port	#	The Ultrix port to start the label assignment from[a]
Starting Channel	#	The Ultrix channel to start the label assignment from[a]
Level	#	This column lists the levels defined as per user entries in the system Levels setup table
I/O Assignment	#	This column lists the starting assignment for the given Level row

Table 30.42 Breakaway Fill Dialog

Item	Parameters	Description
Fixed		Select the box to fix the I/O assignment selection even though it may be out of order compared to other I/O assignments. For example, **`Ultrix.slot1.in[1].audio.ch1`** and **`Ultrix.slot2.in[1].audio.ch1`**.
BRK I/O		Select the box to insert a label with this I/O assignment on all BRK Level selections. For example, `IN 1 ch1 | slot1.in[1].audio.ch1 | slot1.in[1].audio.ch1 | slot1.in[1].audio.ch1`.
BRK Level		Select the box to include this level when creating a breakaway label. For example, `IN 1 ch1`.
BRK Suffix	<text>	By default, breakaway label naming uses the ch**x** part of the Ultrix name. A user defined suffix may be entered here.
Assign		Click this button to automatically fill the I/O Assignment column based on the **Slot**, **Port**, **Starting Channel** settings to the selected row(s).
Apply		Click this button to insert labels with assignments based on dialog settings into the source assignment table below the current selected row.
Cancel		Click this button to cancel the settings and close the dialog. No changes to the Source table will be made.

a. The Breakaway Fill dialog uses the default naming convention of FrameName.slot n.in/out[p].type.chx.

Destinations Fill Dialog

The **Destinations Fill** dialog is the **Advanced Fill** tool for the **Destinations** tab.

Figure 30.27 Example of a Destinations Fill Dialog

Table 30.43 summarizes the options displayed in the **Destinations Fill** dialog.

Table 30.43 Destinations Fill Dialog

Item	Parameters	Description
Fill	Custom	Insert labels with assignments for a custom range defined by the Range setting
	Entire Slot	Insert labels with assignments for a single Ultrix slot (including the AUX ports)
	Entire Device	Insert labels with assignments for the entire Ultrix device (including the AUX ports)
Name	<text>	The prefix for the label creation. e.g. typing `VTR` results in labels `VTR 1`, `VTR 2`, etc. Take care when determining label names. While a long name may be nice and descriptive for the Destination tab, many control devices have limited screen space and labels may be truncated.
Starting	#	The starting numerical extension for the label creation. e.g. typing `3` results in labels `Name3`, `Name4`, etc.
Count	#	Specifies the quantity of labels for custom fill range
AUX Ports	None	AUX ports will not be included in the resulting definitions
AUX Ports	Insert at Slot	AUX ports will be defined immediately following a given slot BNC definitions
	Add at End	AUX port definitions will be defined immediately following all BNC definitions
	AUX only	Defines only AUX port settings (useful when adding in one AUX port to a system)
Slot	#	The Ultrix slot number to start the label assignment from[a]
Port	#	The Ultrix port to start the label assignment from[a]
Starting Channel	#	The Ultrix channel to start the label assignment from[a]
Level	#	Defines the levels as per the entries in the Levels tab
I/O Assignment	#	Starting assignment for the given level row
Assign		Click to automatically fill the I/O Assignment column based on the **Slot**, **Port**, and **Starting Channel** settings to the selected row(s)
Apply		Click to insert labels with assignments based on dialog settings into the source assignment table below the current selected row
Cancel		Click to cancel the settings and close the dialog

a. The Fill Destination dialog uses the default naming convention of FrameName.slot n.in/out[p].type.chx.

UltriScape Interfaces

The UltriScape licensed feature provides the following nodes in the tree view: Configuration, Layout Editor, and Head Selection. Double-click a node to displays its interface in the DashBoard window.

Configuration Interface

The Configuration interface is the first node listed under the main UltriScape node. This interface provides global layout editor settings that apply to all UltriScape layouts and heads in the current database. From this interface you can specify the Global PiP settings, tally colors, and tally label behavior.

PiP Layout Tab

Table 30.44 summarizes the options displayed in the Layout Editor Settings > PiP Layout tab.

Table 30.44 Layout Editor Settings — PiP Layout Tab

Item	Parameters	Description
PiP Size Selection		
PiP Size A	#	Specifies the default dimensions of the PiP Size A template for all layouts created with the current database. The default is 1/4 (480x270).
PiP Size B	#	Specifies the default dimensions of the PiP Size B template for all layouts created with the current database. The default is 1/2 (960x540).
PiP Video Alignment		
Video	Overlap	The PiP border overlaps the video image. The PiP Border Width Override fields are set to read-only.
	Frame	The PiP border frames the video image. The video image is modified to fit inside the PiP but not overlap the border.
PiP Border Width Override		
Border	#	Sets the border width (in number of pixels) for all layouts created with the current database
PiP SD Aspect Ratio		
SD is	4:3	270Mbit SD SDI is 4x3 format
	16:9	270Mbit SD SDI is of 16x9 format
Audio Meter		
Auto Meter Standard	-20dBFS	Audio meter green to yellow transition equates to audio level of -20dBFS
	-18dBFS	Audio meter green to yellow transition equates to audio level of -18dBFS
Cancel		Click this button to cancel the settings. No changes to the PiP Layout tab will be made.
Apply		Click this button to apply the new tab settings.

Tally Settings Tab

Table 30.45 summarizes the options displayed in the Layout Editor Settings > Tally Settings tab.

Table 30.45 Layout Editor Settings — Tally Settings Tab

Item	Parameters	Description
Tally Lamp Color		
Tally #[a]	Red	When the tally is active (on), the tally object is set to red in the UltriScape layout. By default, Tally 0 is set to Red.
	Green	When the tally is active (on), the tally object is set to green in the UltriScape layout. By default, Tally 1 is set to Green.
Tally Label Text Settings		
Source Mode	overwrite	When a PiP is assigned to Src # in the Head Selection interface, and the Label Type is set to Tally, the label text is determined by the tally label.
	append	When a PiP is assigned to Src # and the Label Type is set to Tally, the label text is **src : tally** where: • **src** — represents the source label defined in the Ultrix database. • **tally** — represents the text defined by the tally label.
Follow Dest Mode	overwrite	When a PiP is assigned to Follow Dest # in the Head Selection interface, and the Label Type is set to Tally, the label text is determined by the tally label.
	append	When a PiP is assigned to Follow Dest # and the Label Type is set to Tally, the label text is **dest : tally** where: • **dest** — represents the destination label defined in the Ultrix database. • **tally** — represents the text defined by the tally label.
Tally Behavior Settings		
When both tallies are on:	Red tally only	Only the red tally indicator is lit. The green is off.
	Both tallies lit	Both the red and green tally indicators are lit.

a. The function of Tally 0 and Tally 1 is determined by the TSL UMD protocol version as outlined in the chapter "**External Control**" on page 263.

Label Settings Tab

Table 30.46 summarizes the options displayed in the Layout Editor Settings > Label Settings tab.

Table 30.46 Layout Editor Settings — Label Settings Tab

Item	Parameters	Description
Label Settings		
Label Background Transparency	0 to 100	Adjusts the background transparency level of all label boxes in all PiPs of all UltriScape Heads where: • 0 — The label background is completely opaque. Only the label text is visible. • 100 — The label background is completely transparent; the video in the PiP is visible through the label background.

Layout Editor Interface

The Layout Editor interface is the second node displayed under the main UltriScape node in the Tree View. The UltriScape Layout Editor provides a central workspace with menus and options set into toolbars for customizing a layout. The interface also includes three tabs at the top: Layout Editor, Shared PiPs, and Clocks.

Layout Editor Tab

The Layout Editor tab includes a toolbar at the top of the interface, the workspace in the middle, rulers along the top and left side of the workspace, and a toolbar for selecting and adding objects to the layout. From the UltriScape Layout Editor interface you can edit, load and save layouts, add objects to a layout, and modify the tiles within a layout.

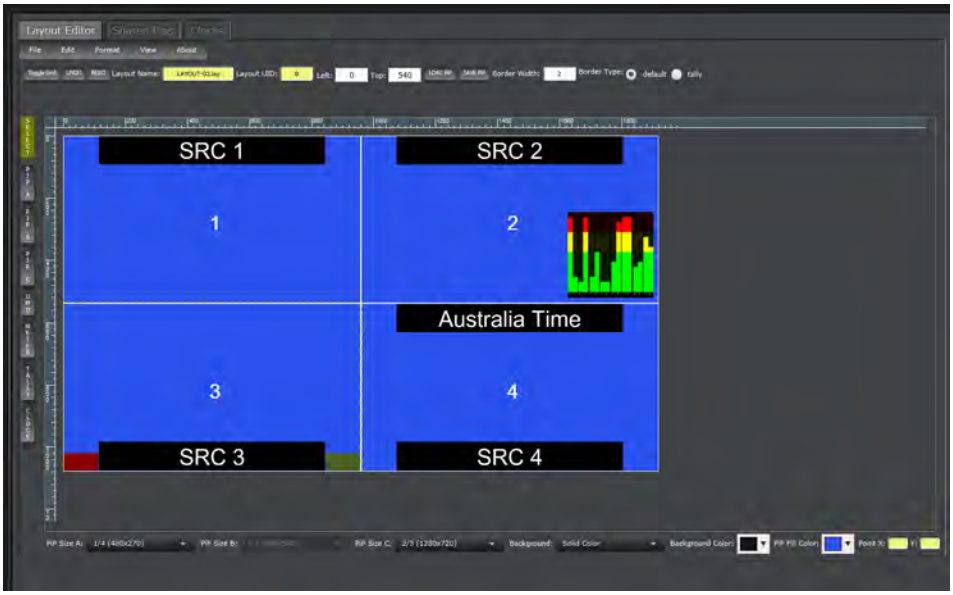


Figure 30.28 Example of the Layout Editor with a Loaded Layout

Main Toolbar

The Main toolbar is located under the Layout Editor tab. (**Figure 30.29**) The options are organized into two areas: a row of menus at the top, and a row of buttons and fields on the bottom. The buttons and fields will change depending on what is selected in the workspace.

Figure 30.29 Layout Editor — Main Toolbar when a PiP is Selected

Table 30.47 outlines the menus and buttons available from the Main toolbar.

Table 30.47 Main Toolbar Menus and Buttons

Name	Description
File	Provides options for loading templates, publishing layouts to the UltriScape Head interface, opening a previously saved layout, managing PiP templates, and saving the changes to the currently loaded layout.
Edit	Provides options, such as copy, paste, delete, and select all, for managing the objects in the currently loaded layout.
Format	Provides global options for distributing the PiPs within a layout.

Table 30.47 Main Toolbar Menus and Buttons

Name	Description
View	Provides options for changing how the loaded layout is currently displayed in the UltriScape Layout Editor. The default is 100%.
About	Provides information about the UltriScape software.
Toggle Grid	Click to toggle to display or hide the workspace grid. The grid is hidden by default. To change the dimensions of the grid, select **Format** > **Grid** and use the **Configure Grid** dialog to specify the grid spacing (in number of pixels). You must also select the **User Spacing** check box to apply the new dimension.
UNDO	Reverses the last change made to the layout.
REDO	Repeats the last change made to the layout.
Layout Name	Displays the filename of the layout currently loaded in the UltriScape Layout Editor workspace.
Layout UID	Displays the unique identifier of the layout currently loaded in the UltriScape Layout Editor workspace. This is an auto-generated number.
LOAD PiP	This button only displays when you click a PiP on the loaded layout. Enables you to load and apply a previously saved PiP template.
SAVE PiP	This button only displays when you click a PiP on the loaded layout. Use it to save the current PiP as a template to be recalled and applied to other PiPs.
Border Width	This field only displays when you click a PiP on the loaded layout. Use this field to specify the border width in number of pixels and lines.
Border Type	This field only displays when you click a PiP on the loaded layout. Use this field to define the border applied to the selected PiP.

UltriScape Layout Editor Keyboard Shortcuts

Table 30.48 outlines the keyboard shortcuts for the UltriScape Layout Editor.

Table 30.48 Keyboard Shortcuts

Task	Keyboard Shortcut
File Menu	
New Layout	Alt+N
Load from Local	Ctrl+Shift+O
Save to Local	Ctrl+Shift+L
Delete from Local	Ctrl+Shift+D
Load from Ultricore	Alt+O
Save to Ultricore	Alt+S
Delete from Ultricore	Alt+D
Load Layout Template from Ultricore	Alt+T
Load PiP from Ultricore	Shift+O
Save PiP to Ultricore	Shift+S
Delete PiP from Ultricore	Ctrl+D
Upload Background Image	Ctrl+Shift+U
Edit Menu	

Table 30.48 Keyboard Shortcuts

Task	Keyboard Shortcut
Undo	Ctrl+Z
Redo	Ctrl+Shift+Z
Copy	Ctrl+C
Paste	Ctrl+V
Clear All	Ctrl+Shift+C
Delete	Del
Select All	Ctrl+A
Refresh	F5
View Menu	
Zoom 100%	Ctrl+0
Zoom 50%	Ctrl+5
Zoom 25%	Ctrl+2

Objects Toolbar

The Objects toolbar is located on the left side of the interface and provides tools for adding and editing the objects in a loaded layout. Objects are elements that you can place, re-size, and re-position as required within the layout.

Table 30.49 outlines the menus available from the Objects toolbar. Refer to the section "**Managing the Objects in a Layout**" on page 163 for more details.

Table 30.49 Objects Toolbar Icons

Name	Description
SELECT	This pointer tool enables you to select objects and PiPs in the loaded layout. When selecting a PiP, the overlay settings are displayed in the Main toolbar. Select more than one PiP to make global overlay changes to the layout.
PIP A	Enables you to add a new pre-defined PiP A to the layout. Specify the settings for PiP A in the Layout Editor > Configuration tab.
PIP B	Enables you to add a new pre-defined PiP A to the layout. Specify the settings for PiP B in the Layout Editor > Configuration tab.
PIP C	Enables you to add a new pre-defined PiP C to the layout. Specify the settings for PiP C using the PiP Size C menu located in the Bottom toolbar.
UMD	Enables you to add a new label box on the loaded layout.
METER	Enables you to add a new set of audio meters on the loaded layout.
TALLY	Enables you to add tally lamps to the selected PiP. Refer to the section "**Configuring PiP Tallies in an UltriScape Head**" on page 197 for details.
CLOCK	Enables you to add a clock to the layout. Specify the settings for the clock in the Layout Editor > Clocks tab.

Bottom Toolbar

The Bottom toolbar of the interface enables you to customize the overall look of the currently loaded layout.

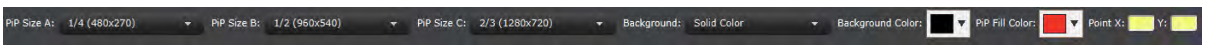


Figure 30.30 Layout Editor — Bottom Toolbar Example

Table 30.50 outlines the menus available from the Bottom toolbar.

Table 30.50 Bottom Toolbar Menus

Name	Description
PiP Size A	Specifies the dimensions for Local PiP A. This applies to the current layout using PiP A created/edited during this session.
PiP Size B	Specifies the dimensions for Local PiP B. This applies to the current layout using PiP B created/edited during this session.
PiP Size C	Specifies the dimensions for Local PiP C. This applies to the current layout using the PiP C applied during this session. Note that each layout can only include a maximum of one PiP C tile.
Background	Specifies the background the entire layout (solid color or a loaded still image). The default is Solid Color.
Background Color	Specifies the layout background color when Background is set to Solid Color. The default is black.
PiP Fill	Specifies the background of the PiPs in the layout. Choose from a Solid Color or 75% Color Bars.
PiP Fill Color	If you set the PiP Simulation to Solid Color, this menu enables you to specify the color for the PiP backgrounds in the Layout Editor and UltriScape Head interfaces
Point X	Indicates the horizontal position of your cursor on the Layout Editor workspace.
Point Y	Indicates the vertical position of your cursor on the Layout Editor workspace.

Shared PiPs Tab

The Shared PiPs tab lists the configured PiPs to be shared by various layouts in this database. From this tab you can assign the operation mode, the video source, the audio mode, and specify the audio bar numbering scheme.

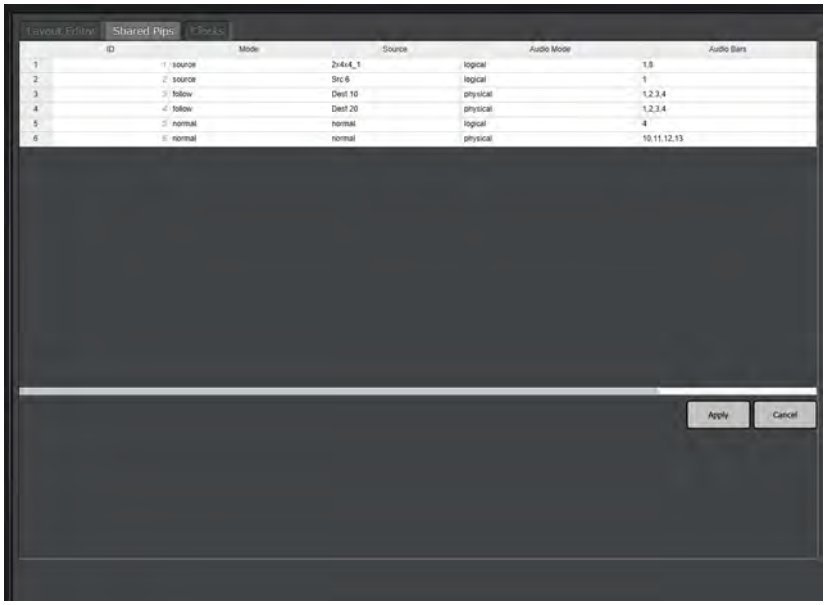


Figure 30.31 Example of the Shared PiPs Tab

Table 30.51 summarizes the options displayed in the Layout Editor Settings > Shared PiPs tab.

Table 30.51 Layout Editor — Shared PiPs Tab

Item	Parameters	Description
ID (read-only)	#	The unique identifier for the Shared PiP
Mode	Normal	The PiP does not monitor a specific resource; the Source is automatically set to Normal
	Follow	The PiP monitors a specific destination (as specified in the Source column of this tab)
	Source	The PiP monitors a specific source (as specified in the Source column of this tab)
Source	#	Specifies the resource the PiP will monitor when Mode is set to Follow or Source
Audio Mode	Logical	The PiP audio signals use the source/destination logical mapping.
	Physical	The PiP audio signals map to the physical IN connection on the rear panel. Use the Audio Bars field to specify which channels to included in the PiP UltriScape Head output
Audio Bars	#	Specifies up to 16 audio channel(s) the PiP will monitor; separate each channel with a comma (e.g. 1,2,3,4)

Clocks Tab

Table 30.52 summarizes the options displayed in the Layout Editor Settings > Clocks tab.

Table 30.52 Layout Editor — Clocks Tab

Item	Parameters	Description
ID (read-only)		The numerical identifier for the clock
Name		Assigns a unique identifier for the clock
Type	timeofday	The clock reports the time of day as determined by the NTP Server it is using
	stopwatch	The clock functions as a free running timer that counts up from 00:00. The count will reset after a maximum of 23:59:59.
	countdown	The clock counts down from a value specified by the user.
TZ Offset	+/-HH:MM	Specifies an offset to the reported time zone value
Time Value	HH:MM:SS	Specifies the value the clock counts down from (when Type is set to countdown)

Head Selection Interface

The Head Selection interface is displayed by selecting the third node listed under the UltriScape node in the Basic Tree View of DashBoard. The interface displays a tab for each UltriScape Head. From the Head Selection interface you can recall a layout and assign it to an UltriScape Head, assign matrix sources to each PiP of a layout (any router source can be assigned to a head), assign a layout to an UltriScape Head and display it in the head output.

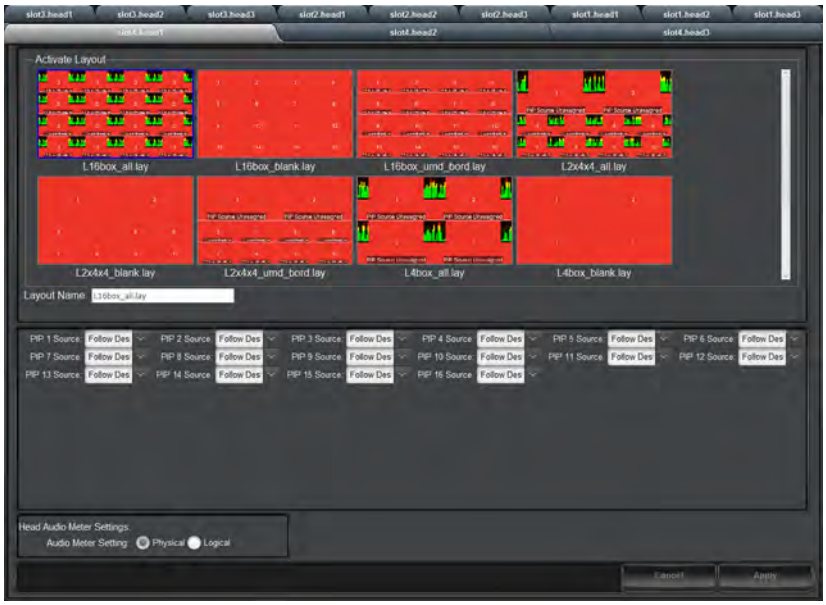


Figure 30.32 Example of the Head Selection Interface

Clock Control Interface

The Clock Control interface is displayed by selecting the fourth node listed under the UltriScape node in the Basic Tree View of DashBoard.

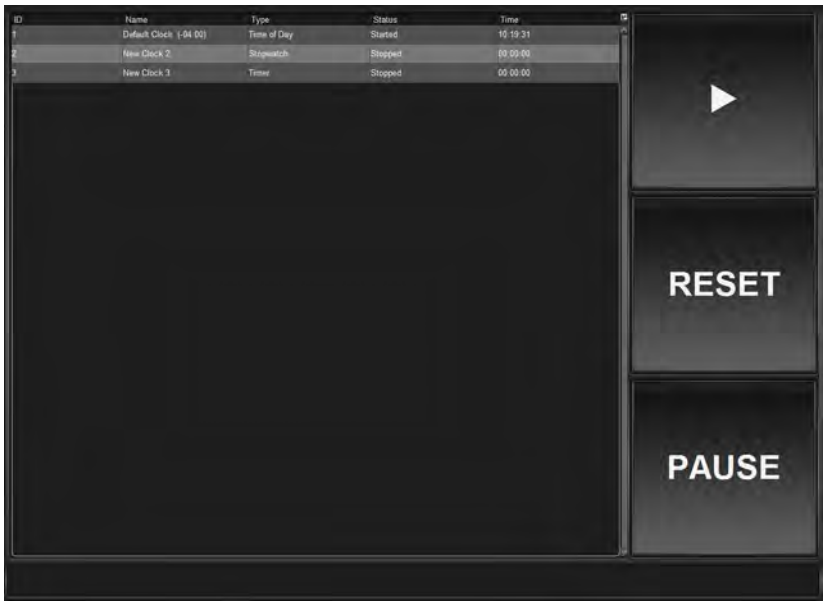


Figure 30.33 Example of the Clock Control Interface

The interface is organized into two distinct areas: a table that lists the configured clocks in the database and a toolbar with function buttons.

Configured Clocks Area

The table lists, in numeric order based on the ID automatically assigned to each clock, the clocks that are configured for the current database. Refer to the section "**Adding a Clock**" on page 169.

Clock Buttons

Some buttons are only available on count down timers and stopwatch clock elements.

Devices Interfaces

The Devices node summarizes the hardware components of the routing system. The nodes represent a hierarchy of the devices in the routing system communicating with the Ultrix router.

For More Information on...

- how Ultrix communicates with remote control panels, refer to the chapter "**Using Remote Control Panels**" on page 201.
- how Ultrix communicates with Ross devices, refer to the chapter "**Operation with Ross Devices**" on page 257
- general control of external devices via third-party protocols, refer to the chapter "**External Control**" on page 263.

Controllers and Matrices

Under the **Controllers and Matrices** node provides an inventory of remote control devices and routers that make up your routing system, and have a defined connection to Ultrix.

- A **Matrix** is, generally speaking, a simple router consists of a matrix and a limited control system.
- A **Controller** is a complex router consisting of many matrices and its own control system.

Expanding the **Controllers and Matrices** reveals devices defined by rows in the Connections tab. Double-click the node for a device to open the setup options for that particular device in DashBoard.

Ross Video devices that previously displayed in the Tree View as a sub-node of their IP connection point (i.e. NK-NET or IPS), are now relocated to the **Controllers and Matrices** node of Ultrix once they are defined in the Connections tab. This indicates the device in question is now part of the Ultrix control system.

Soft Panels Interfaces

The Soft Panels interface represents the routing system crosspoint control in the virtual space of the Ultrix router. Each available soft panel in the database displays as a sub-node under the Soft Panels main node in a tree layout. The soft panels display in a hierarchy based on their Panel ID. Double-click a soft panel node in the tree to display its interface in the DashBoard window. There are three types of soft panels: Matrix, MultiBus, and Category.

✶ You must configure your connections, sources, destinations, and levels, before you can create a soft panel and perform crosspoint switches.

For More Information on...

- creating a database for your routing system, refer to the section "**Creating a New Database**" on page 106.
- the interface for creating soft panels, refer to the section "**Panels Tab**" on page 350.
- using soft panels, refer to the chapter "**Soft Panels in DashBoard**" on page 221.
- creating and using salvos, refer to the chapter "**Using Salvos**" on page 249.

Matrix Panel

The Matrix Panel provides a visual representation of multi-level crosspoints, in a grid layout, and offers a convenient and easy way to select and switch crosspoints. The columns of the grid represent the configured Sources and are labeled with the global names specified in the Input Name cells of the Sources tab. The rows of the grid represent the configured Destinations and display the virtual labels specified in the Destination tab.

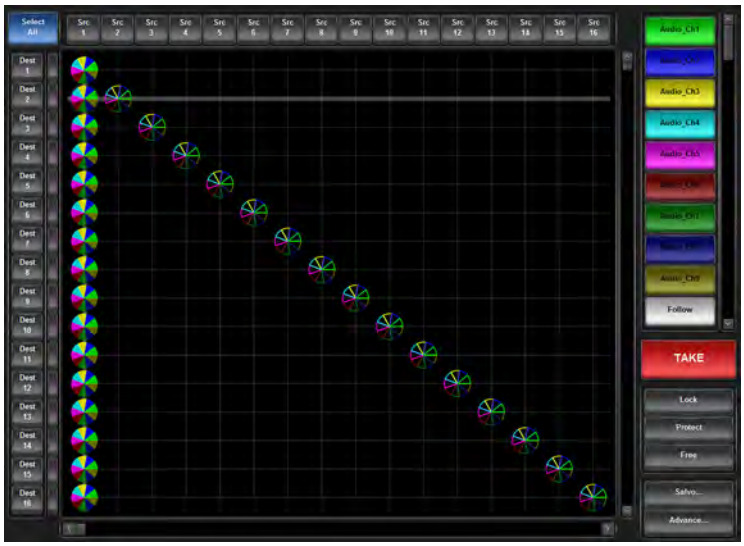


Figure 30.34 Example of a Matrix Panel

Right-side Toolbar

Table 30.53 summarizes the buttons displayed in the toolbar on the right-side of the interface.

Table 30.53 Matrix Panel Toolbar Items

Button	Description
Level #	Each configured level in the currently active database is represented with a button. A selected button is lit with the color assigned to the level. Crosspoint selections on the matrix are also lit this color when the level is included in the next switch.
Follow	Automatically selects all the Level buttons listed on the Matrix panel (buttons are now lit). All levels are now included in the next crosspoint selection.
TAKE	Performs a Take transition to the next crosspoint selection.
Lock	Locks the Matrix panel from all switches or function button operation.
Protect	Protects the currently selected source/destination level pair from use by other sources, as well as from other linked panels.
Free	Removes the Lock and Protect from the next crosspoint switch.
Salvo	Displays the options for managing the salvos for your soft panel. Refer to the section "**Salvo Menus**" on page 370 for details.
Advanced	Displays the options for managing crosspoint switches on your soft panel. Refer to the section "**Advanced Menus**" on page 371 for details.

Salvo Menus

Table 30.54 summarizes the options displayed in the **Salvo** menu.

Table 30.54 Matrix Panel — Salvo Menus

Button	Description
Recall	Recalls and applies the last saved salvo settings.
Edit	Enables you to load a salvo, update its settings, and then save your changes.
Save	Saves the current crosspoint selection as a salvo.

Table 30.54 Matrix Panel — Salvo Menus

Button	Description
Capture Current Status	Automatically creates a salvo based on the currently selected destination and source positions.
Capture Dest Status	Automatically creates a salvo based on the currently selected destination positions.

Advanced Menus

Table 30.55 summarizes the options displayed in the **Advanced** menu.

Table 30.55 Matrix Panel — Advanced Menus

Button	Description
Clear All Presets	Removes all selections currently made on the soft panel and returns the panel to its default destination and source selections.
Clear Dest Presets	Removes only the selections made on the Destinations bus.
Diagonal Presets	The destination and source crosspoint selections are automatically made starting at the top left corner and progressively moving down the grid in a 1:1 pattern. For example, Src1 and Dest1, Src2 and Dest2, Src3 and Dest3 etc.
R-Diagonal Presets	The destination and source crosspoint selections are automatically made starting at the top right corner and progressively moving down the grid in a 1:1 pattern. For example, Src10 and Dest1, Src9 and Dest2, Src8 and Dest3 etc.
Setup Automation	Automatically loops the crosspoint switches for the specified length of time.
Stop Automation	Stops the automatic loop of crosspoint switches that was initiated using the Setup Automation option.

MultiBus Panel

The MultiBus Panel provides breakaway control and status monitoring of several destinations simultaneously. The MultiBus Panel interface is organized into two buses with a central status row of indicators for the levels. The toolbar on the far left of the interface provides options for locking and protecting crosspoints, setting up the transition, and selecting the levels. The bottom row of the interface is populated with buttons for the salvos defined in the database.

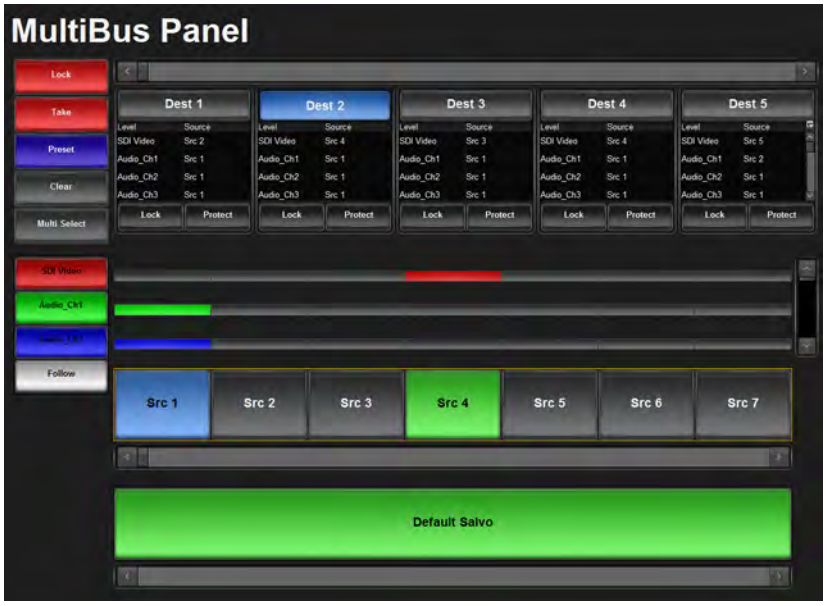


Figure 30.35 Example of a MultiBus Panel

Left Toolbar

Table 30.56 summarizes the fields and information displayed in the left toolbar of the **MultiBus Panel**.

Table 30.56 MultiBus Panel — Left Toolbar Items

Button	Description
Lock	Locks the MultiBus panel from all switches or function button operation.
Take	Performs a Take transition to the next crosspoint selection.
Preset	When lit, it indicates both the current crosspoint switch results (buttons are lit green) and the newly-selected crosspoints that have not taken effect (buttons are lit blue).
Clear	Clears the selections in the crosspoint buses. No buttons are lit and the fields in the Destination buses are blank.
Multi Select	Enables you to assign a single source to multiple destinations for a multi-switch configuration.
Level #	Each configured level in the currently active database is represented with a button. When selected, the button is lit with the color assigned to the level. Crosspoint selections on the matrix are also lit this color when the level is included in the next switch.
Follow	Automatically selects all the Level buttons listed on the Matrix panel (buttons are now lit). All levels are now included in next crosspoint selection.

Destinations Bus

Each Destination is represented as a distinct box on the top bus of the MultiBus Panel. **Figure 30.36** provides an example of a Destination bus. The Destination bus only displays the destinations selected, and their hierarchy, specified when the soft panel was configured.

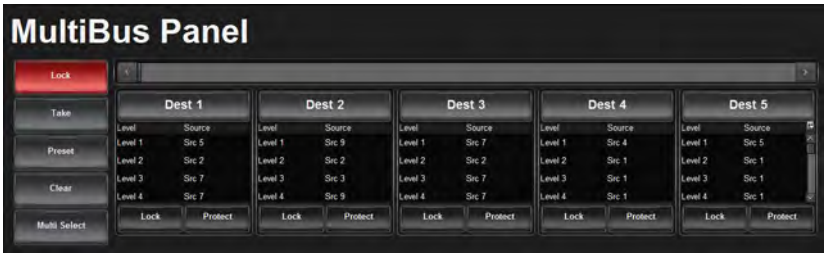


Figure 30.36 Example of a Destination Bus on a MultiBus Panel

Table 30.57 summarizes the information displayed for each Destination in the **MultiBus Panel**.

Table 30.57 MultiBus Panel — Destination Items

Button	Description
Name	The Destination name/label is reported at the top of each area and displays as a selectable button. This enables for quick identification on the bus when selecting crosspoint switches. The Destinations available on the bus is dependent on the database currently loaded on the router and how many destinations were specified when the soft panel was configured.
Level #	This field reports the level(s) that the destination was associated with on the last crosspoint switch.
Source #	This field reports the source(s) currently selected on the Source bus located near the bottom of the MultiBus Panel interface.

Table 30.57 MultiBus Panel — Destination Items

Button	Description
Lock	Locks the Destination from all switches or function button operation.
Protect	Protects the currently selected Destination from use by other sources, as well as from other linked panels.

Sources Bus

Each Source is represented as a distinct button on the bottom bus of the MultiBus Panel. **Figure 30.37** provides an example of a Source bus. The Source bus only displays the sources, and in the hierarchy, specified when the soft panel was configured.

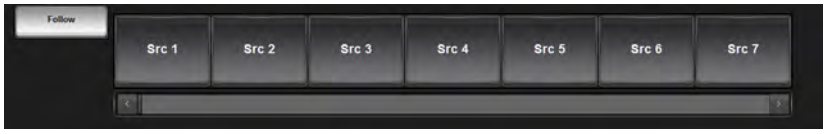


Figure 30.37 Example of a Sources Bus on a MultiBus Panel

Category Panels

There are two types of Category Panels: Classic and Group. Each Category Panel organizes the sources and destinations according to the definitions set in the applicable Category interface for the database. The top toolbar is used in conjunction with the central button matrix for selecting sources and destinations. The left side of the interface provides access to level selection, and reports on the breakaway status with fields for each level. Some functions are category type specific.

For More Information on...

- the items in a Category soft panel, refer to the section "**Using Category Panels**" on page 239.

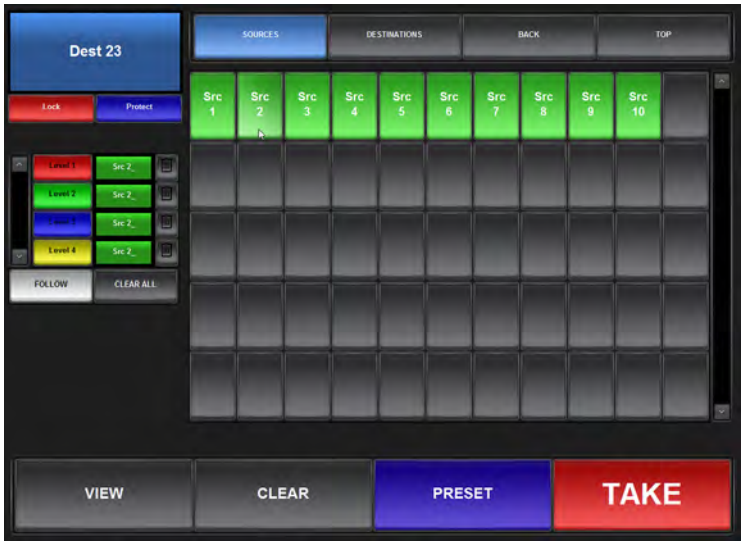


Figure 30.38 Example of a Group Category Soft Panel for an Ultrix Router

Ultritouch PB Panels

You can control an Ultrix router via Ultritouch by loading a saved soft panel using the Ultritouch hard panel interface. Loading a soft panel to Ultritouch requires a similar method as loading a soft panel in the Ultrix and/or Ultricore menu system. You select the device in the Ultritouch > All Connections interface, navigate to the specific soft panel you wish to load, and select it from the provided list.

Figure 30.39 Example of an Ultritouch Soft Panel

For More Information on...

- the creating and using Ultritouch soft panels, refer to the ***Ultritouch + Ultrix User Guide***.

Push Button Panels

The Push Button Panel interface is organized into four distinct areas. The top area displays the Destinations, the middle row includes the Source buttons, and each area can include an independent method for filtering the buttons. A toolbar provides access to the level buttons, and includes a status field. A second toolbar provides options for locking and protecting crosspoints, setting up the transition, selecting salvos, and other functions.

Figure 30.40 Example of a (Landscape) Push Button Soft Panel

For More Information on...

- the creating and using Push Button soft panels, refer to the section "**Using Push Button Panels**" on page 243.

Using Walkabout in DashBoard

Walkabout is a Ross router utility operating within DashBoard that enables you to configure the network settings for Ross routers, remote control panels, and other devices. Once a valid connection is established with Walkabout, the router is listed in the Tree View of DashBoard and available for monitoring and configuration using the options in DashBoard.

Ultrix supports a basic configuration mode via the Walkabout system for initial configuration of IP settings. Use Walkabout to:

- specify device IP settings and names
- specify a name for your routing system
- specify the system role (e.g. primary, backup, device)
- select a system to join from a list of valid system names assigned to controllers

- set communications server from a list of valid communication server devices (or IP)

For More Information on...

- the features of Walkabout, refer to the Ross Video document ***Configuring Devices Using Walkabout***.
- using Walkabout and the Ultrix router, refer to the section "**Using Walkabout to Assign the Initial IP Address to the Ultrix Router**" on page 23.

Glossary

The following terms are used throughout this guide:

Breakaway — an act of performing a switch on only some of the signals grouped together under one label.

Connection Point — setting to define a communication connection between an Ultrix and a device in the routing system.

Crosspoint — a switch within a matrix. For example, the connection of signal IN 1 to OUT 1 requires one crosspoint.

Destination — a label applied to a router output (or group of outputs).

Device — a physical, virtual, or software application that may include multiple sources, destinations, senders, or receivers.

Flow — the continuous raw media content. It can contain more than one essence (e.g. an audio flow can contain multiple channels, and an SDI flow may contain audio and video essences). A flow is independent of the transport protocol. For example, 48kHz LPCM audio is a flow; AES67 is one type of stream which can carry the flow. Flows cannot generally be passed around natively, and need to be encapsulated in a stream. Flows from the same source are considered "editorially equivalent", but may be encoded differently. For example, a video source may be encoded as 4:2:2 YCbCr uncompressed, 4:4:4 RGB uncompressed, and h.265 encoded. Each of these would be a separate flow from a common source.

Hard Panel — a physical hardware panel of buttons that is used to control the routing system.

Head — An OUT port on the Ultrix router that is assigned as an UltriScape (Multiviewer) output.

IP Address — a setting that defines the Internet protocol address of a device within a network.

Label — text that is used by control displays to identify a signal as an input or output.

Level — refers to a section of a routing system. For example, a video router would be one level and an audio router would be a second level.

Logical (virtual) Label — a name for a group of routing system inputs or outputs.

Logical (virtual) Routing — the action of switching a group of otherwise unrelated signals via a common label (name).

Macro — a recorded sequence of Remote Control Panel operations (local to the panel).

Map — a table that defines the allocation of names (labels) to router input and output sockets.

Matrix — the part of the routing system that performs the actual signal switching tasks.

Partition — matrices may be partitioned to behave as smaller independent matrices.

Picture in Picture (PIP) — a sub-picture in an UltriScape (Multiviewer) output.

Receiver — an element within a device that receives exactly one stream, which contains one flow from a network.

Remote Control Panel (RCP) — a physical hardware panel of buttons that is used to control the routing system.

Resource — a source or destination of a router configuration; an external device providing some conversion functionality for use within the routing control system.

Salvo — a system wide sequence of matrix control operations and crosspoint actions.

Sender — an element within a device which presents exactly one flow, packaged as a stream onto a network.

Stream — one flow, encapsulated within a transport protocol. Examples include SMPTE ST 2022-6, SMPTE ST 2110-20 Video, or SMPTE ST 2110-30 Audio (AES67).

Soft Panel — a DashBoard interface that represents a panel of buttons that is used to control the routing system.

Source — a label applied to a router input (or group of inputs).

T-Bus — the Ross Video proprietary routing communication method via a defined physical interface.

UltriClean — clean switch functionality of the Ultrix routers.

Ultricore — refers to the Ultricore-CC and the Ultricore-BCS unless otherwise stated.

UltriMix — SDI embedded audio manipulation sub-system of the Ultrix routers.

UltriScape — licensed Multiviewer option for Ultrix routers.

UltriSpeed — licensed 12Gbps SDI video option.

UltriSync — a per input licensed frame synchronizer.

ULTRIX-FR1 — refers to all versions of the ULTRIX-FR1 router unless otherwise noted.

ULTRIX-FR2 — refers to all versions of the ULTRIX-FR2 router unless otherwise noted.

ULTRIX-FR1-NS — refers to the next generation of the ULTRIX-FR1 router. This router displays the Ultrix logo on the front door with a blue dot in the “i”.

ULTRIX-FR2-NS — refers to the next generation of the ULTRIX-FR2 router. This router displays the Ultrix logo on the front door with a blue dot in the “i”.