

Haivision

Calypso™

Video Recording and Distribution Platform
User's Guide v1.3

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Issue 01

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Safety Guidelines

Use the following guidelines when unsafe conditions exist or when potentially hazardous voltages are present:

- Always use caution and common sense.
- To reduce the risk of electrical shock, do not operate equipment with the cover removed.
- Repairs must be performed by qualified service personnel only.

Antistatic Precautions

Electrostatic discharge (ESD) results from the buildup of static electricity and can cause computer components to fail. Electrostatic discharge occurs when a person whose body contains a static buildup touches a computer component.

The equipment contains static-sensitive devices that may be easily damaged, and proper handling and grounding is essential. Use ESD precautionary measures when installing systems or cards, and keep the parts and cards in antistatic packaging when not in use. If possible, use antistatic floorpads and workbench pads.

Improper handling and/or installation practices may VOID the warranty.



CAUTION When handling components, or when setting switch options, always use an antistatic wrist strap connected to a grounded equipment frame or chassis. *If a wrist strap is not available, periodically touch an unpainted metal surface on the equipment.* Never use a conductive tool, such as a screwdriver or a paper clip, to set switches.

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About This Guide

Welcome to the User's Guide for Haivision's Calypso™ Video Recording and Distribution Platform, Version 1.3. This guide tells how to set up and manage Calypso systems.

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About Haivision

Haivision is a global leader in delivering advanced video networking, digital signage, and IP video distribution solutions. Haivision offers complete end-to-end technology for video, graphics, and metadata to help customers to build, manage, and distribute their media content to users throughout an organization or across the Internet. Haivision has specific expertise in the enterprise, education, medical/healthcare, and federal/military markets.

Haivision is based in Montreal and Chicago, with technical centers in Beaverton, Oregon; Austin, Texas; and Hamburg, Germany.

Audience

This guide is intended for several different user groups, including content creators, system administrators, and system integrators. To accommodate different types of users, different chapters are devoted to different user tasks, as described below:

Chapter/Appendix	Intended Audience
Chapter 1: Introduction	All users
Chapter 2: Hardware Setup	Product Installers, System Integrators
Chapter 3: Configuring Calypso	
Chapter 4: Managing Access Control	System Administrators
Chapter 5: Getting Started Browsing Content	All Users
Chapter 6: Working with Sessions and Recordings	
Chapter 7: Managing Imports and Exports	System Administrators, Content Creators
Appendix A: Technical Specifications	All Users
Appendix B: KLV Dictionary Format	System Integrators, System Administrators

Reliability of Information

The information contained in this user's guide has been carefully checked and is believed to be entirely reliable. However, as Haivision improves the reliability, function, and design of its products, the possibility exists that this user's guide may not remain current.

If you require updated information, or any other Haivision product information, contact:

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Obtaining Documentation

You may download the latest Release Notes, Quick Start Guide, User's Guide, software, and updates from our Download Center at: <http://www.haivision.com/download-center/>



NOTE All customers may access the Download Center; however, a login is required. If you do not have a login, select the link to create an account.

Related Documents

In addition to this user's guide, the following document(s) are also available through Haivision's Download Center (see link above):

- Calypso Quick Start Guide
- Calypso REST API Integrator's Guide
- Calypso Command Line API Integrator's Guide
- Calypso Data Ports and Security Policy

Service Support

Haivision is committed to providing the service support and training needed to install, manage, and maintain your Haivision equipment.

For more information regarding service programs, training courses, or for assistance with your support requirements, contact Haivision Technical Support via our Support Portal on our website at: <http://www.haivision.com/support-portal-home>

Document Conventions

The following document conventions are used throughout this user's guide.



TIP The light bulb symbol highlights suggestions or helpful hints.



NOTE Indicates a note, containing special instructions or information that may apply only in special cases.



IMPORTANT Indicates an emphasized note. It provides information that you should be particularly aware of in order to complete a task and that should not be disregarded. IMPORTANT is typically used to prevent loss of data.



CAUTION Indicates a potentially hazardous situation which, if not avoided, may result in damage to data or equipment, or minor to moderate injury. It may also be used to alert against unsafe practices.

New Product Features

Calypso Version 1.3 introduces the following new features and enhancements:

Introducing Mobile Streaming

Calypso Version 1.3 introduces native HLS streaming for live and recorded content. Calypso Web Interface is now optimized for iOS tablets, enabling users to watch, edit, and manage video content directly from tablet devices. Some features (such as installing system updates, exporting videos, importing files, and downloading recordings) are not transferable to tablets.

Privacy Options

Calypso Version 1.3 allows you to restrict viewing capabilities to one or many viewers in real time to protect sensitive content. For example, if you have allowed viewers access to a session or active recordings on a session but then “hide” the session, a still image will immediately replace the stream. Then if you “show” the session, the stream will immediately restart.

For details, see [“Viewing Sessions”](#) on page 124.

Category Improvements

Category functionality has been upgraded to allow you to group and arrange categories. This provides more organized display and intuitive data entry.

Category filtering has been enhanced to support the “NOT” operator and the EMPTY set for even more granular filters.

For details, see [“Editing Session Information and Category Metadata”](#) on page 128.

Bulk Content Management

Edit, Share, Export and Delete tasks can now be done in bulk. This applies to sources, sessions, and recordings, and includes management of Category metadata.

Calypso now supports shift-click to select a range of items (checkboxes).

For details, see [“Performing Bulk Edits”](#) on page 114.

CHAPTER 1: Introduction

This chapter provides a brief overview of Haivision’s Calypso Video Recording and Distribution Platform, along with a description of the key features and main hardware components.

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Product Overview

Calypso is a high-throughput network video recorder. It allows users to review, both live and on-demand, video streams originating from Haivision Makito and Makito X encoders or other systems that produce similar H.264 streams.

Calypso provides real-time access control on the viewing of both live and on-demand video to any user on a desktop browser.

Calypso allows users to generate and manage content from multiple real-time live sources and efficiently share and review that content with colleagues, while enjoying Haivision's high quality video (e.g., full frame rate, full resolution, multiple streams), as well as low latency and content security protection.

Figure 1-1 Calypso 1U System (S-CLYPSO-X-1U)



Extensive Multi-Source Capabilities

Calypso may be configured to receive multiple H.264 encoded streams from different A/V sources to be viewed, captured, and reviewed together as a single video experience.

Recording Performance

A fully licensed Calypso appliance can record up to 400 Mbps of video simultaneously with 400 Mbps of playback. Calypso can also re-stream recordings back out as transport streams.

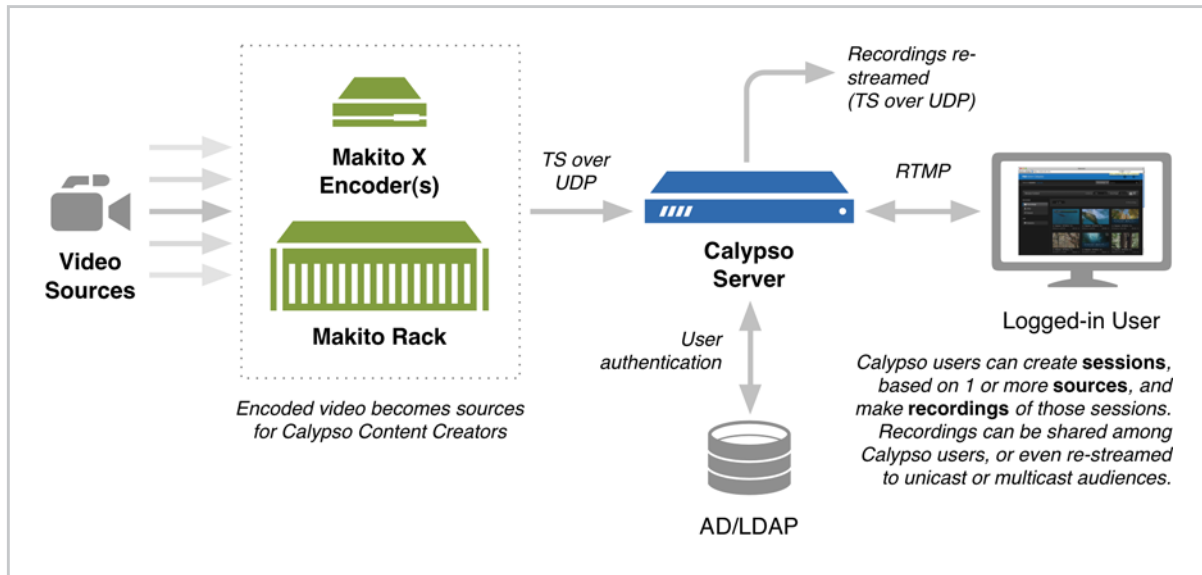
Monitor and Share Real-Time Events

Calypso puts the power of real-time content sharing into the hands of those responsible for monitoring the events. Users can quickly identify sources, associate them together into contextual sessions, and immediately share the multi-view high resolution session with the intended audience. Sharing privileges can also be revoked in real time.

Workflow Efficiency and Access Control

Calypso enables simple record and review workflows to empower decision making, collaboration, and assessment. Users can quickly and easily share, authorize, and de-authorize live and on-demand media recordings.

Figure 1-2 Calypso Workflow



Calypso Features

Calypso features and benefits include the following:

- **Multi-Source Viewing and Recording:** Provides in-context viewing, recording and playback of diverse HD A/V elements within a Web player.
- **Real-Time Sharing:** Viewing privileges can be assigned on-the-fly for both live and VoD recordings.
- **Recording Performance:** Records up to 50 HD sources simultaneously on a single appliance.
- **Metadata:** Users can assign HotMarks™ metadata to important events within a recording.
- **Search:** Users can search across all recordings, sessions, and sources for basic metadata.
- **Category Filters:** Users can perform complex searches across all recordings, sessions, and sources for administrator-defined metadata “categories”.
- **Trimming:** Content owners can create clips out of longer recordings. This generates a new recording to be shared or downloaded.
- **Storage Management:** Administrators can configure the default recording expiry (days) and the maximum recording duration (hours). Expired recordings are deleted automatically.
- **All/Mine/Shared display filters:** Users can filter their display of the Sessions and Recordings lists to show only sessions and recordings that they own (“Mine”) or only those that have been shared with them (“Shared”).

- Recording Management: Users can create recordings in Calypso and export/download them to other editing tools and later import them back into Calypso.
 - Export recordings: Administrators and content creators can export MP4 and TS (Transport Stream) files to FTP/FTPS servers or the Haivision Video Cloud (HVC).
 - Import recordings: Administrators, content creators, and content contributors can import Calypso-compatible MP4 and TS files.
 - Download recordings: Recording owners download MP4 and TS files.
- API Access: Both a Command Line API and a REST API are available to create custom applications for Calypso.
- Network Storage: Network-Attached Storage available via NFS for greater storage capabilities (licensable option).
- KLV: Support of KLV data parsing and display (licensable option). Users can create metadata dictionary files to customize and dynamically display KLV metadata.
- Custom roles/share permissions: Calypso supports fully customizable roles and permissions to support site specific workflows.

Calypso Applications

Calypso applications include the following:

Training

Train employees and/or students through the review of live interactive scenarios.

Skills Assessment

Assess performance through the review of staged situations.

Simulation

Review team efforts in complex simulated events.

Calypso Appliance Options

Calypso is available either as a 1U or 2U appliance (shown in [Figure 1-1](#) on page 14 and [Figure 1-3](#) following).

Calypso 1U System – S-CLYPSO-X-1U

- 25/50 or 50/100 Mbps recording/playback
- Active Directory support
- approximately 5 to 10 HD sources simultaneously (expandable)
- 1.8 TB RAID storage.

Calypso 2U System – S-CLYPSO-X-2U

- 50/100 to 200/400 Mbps recording/playback
- Active Directory support
- approximately 10 to 40 HD sources simultaneously (expandable)
- 6.6 TB RAID storage.

Figure 1-3 Calypso 2U System (S-CLYPSO-X-2U)



For more information, see [“Setting Up the Appliance”](#) on page 23.

Physical Description

The Calypso appliance comes delivered as an enterprise-ready, ultra-compact appliance made for single-tier architectures. Following is a description of the Calypso interfaces and LED status indicators:

System Interface

Calypso provides either two or four 1 Gb Ethernet (GbE) Network Interface Card (NIC) ports for both traffic and management.

- 1U system: two ports.
- 2U system: four ports.

The RJ-45 connectors are located on the rear of the appliance.

Figure 1-4 Ethernet Connection - Rear view (1U System)

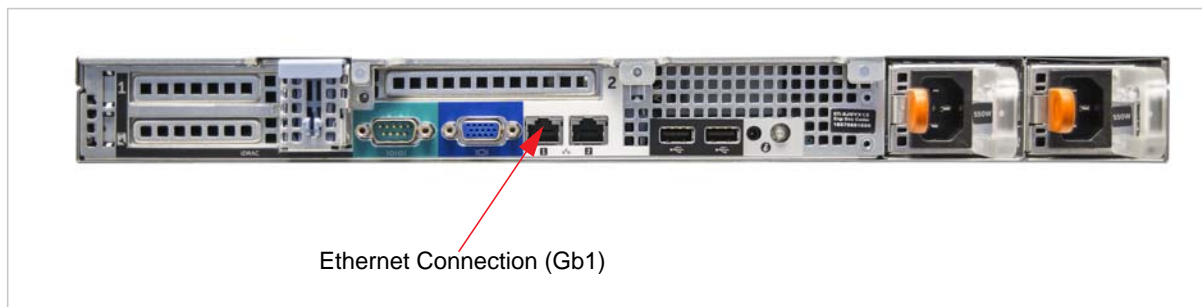
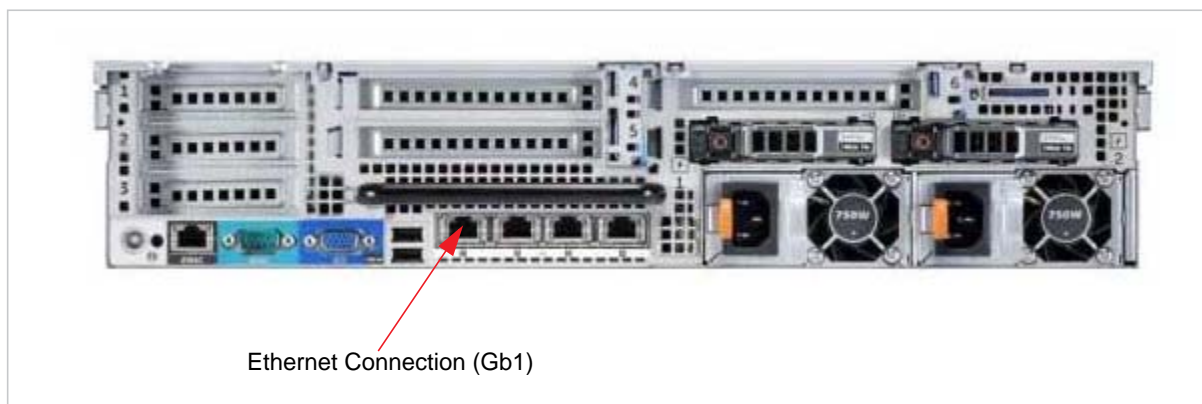


Figure 1-5 Ethernet Connection - Rear view (2U System)



Related Topics

- [“Connecting Calypso to the Network”](#) on page 24

LED Status Indicators

The LED colors and flashing (blinking) speed indicate the status (operational state) of the appliance.

1U System LEDs

Table 1-1 LED Status Indicators - 1U System


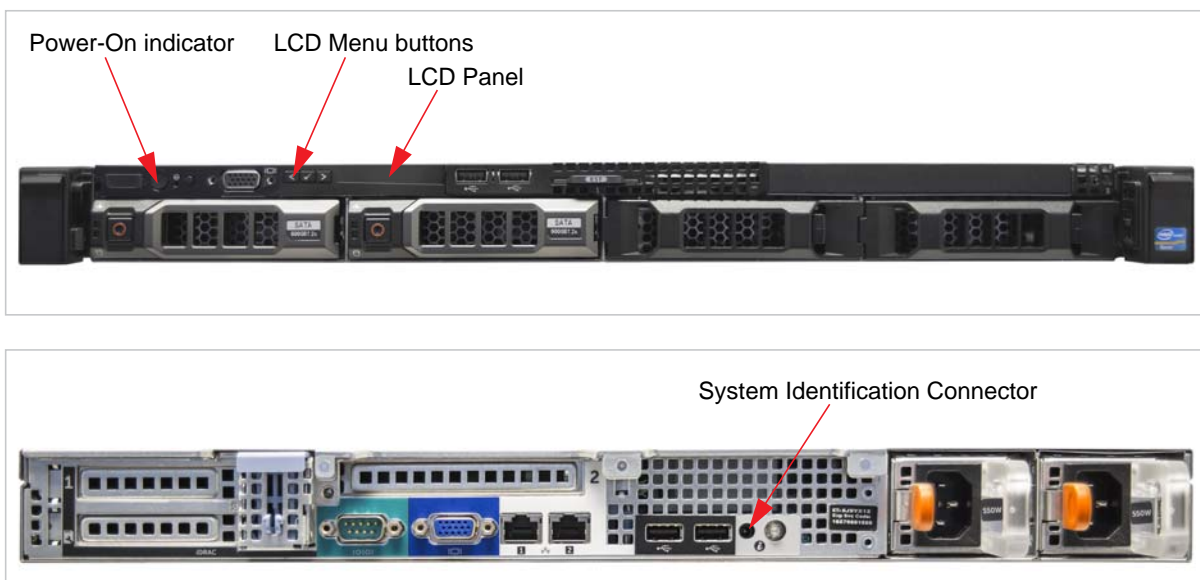
Indicator	Icon	Description
Front Panel		
Power-On		Power-on indicator lights when the system power is on. The Power button controls the power supply output to the system.
LCD Panel		Displays system ID, status information, and system error messages. <ul style="list-style-type: none"> LCD lights blue during normal system operation LCD lights amber when the system needs attention, and the LCD panel displays an error code followed by descriptive text.
Back Panel		
System Identification Connector		Connects the optional system status indicator assembly through the optional cable management arm.

Figure 1-6 LED Status Indicators - (1U System)
(Front panel TOP/Rear view BOTTOM)



2U System LEDs

Table 1-2 LED Status Indicators - 2U System


Indicator	Icon	Description
Front Panel		
Power-On		Power-on indicator lights when the system power is on. The Power button controls the power supply output to the system.
Diagnostic Indicators		<p>Diagnostic indicators (including Health, Hard-drive, Electrical, and Temperature) display error status during system startup.</p> <ul style="list-style-type: none"> • Solid blue during normal system operation • LCD lights amber when the system needs attention, and the LCD panel displays an error code followed by descriptive text.
Back Panel		
System Identification Connector		Connects the optional system status indicator assembly through the optional cable management arm.

Figure 1-7 LED Status Indicators - (2U System)
(Front panel TOP/Rear view BOTTOM)



Related Topics

- [“Powering Up Calypso”](#) on page 25

CHAPTER 2: Hardware Setup

This chapter explains how to set up and connect the Calypso appliance.



NOTE This chapter covers the initial setup of your Calypso. The intended audience is system integrators with administrative privileges.

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Setting Up the Appliance

Always read the instructions carefully and keep this user's guide for future reference.

Please choose a suitable location for operating the appliance. By doing so you will preserve the operational lifetime and stability of the unit(s).

Set up the unit on a reliable and flat surface, or mount in a rack.

Safety First



CAUTION Please pay particular attention to the following points in order to help protect yourself and the appliance.

- Refer to [“Safety Guidelines”](#) on page 3.
- Calypso is an indoor appliance and should be kept in a dry, dust free environment.
- There are no user-serviceable parts inside the unit. Making unauthorized changes will void the warranty.
- Only connect the unit to a compatible power source.
- If an electrical fault occurs, disconnect the unit and contact Haivision Technical Support.
- Never try to force the connections when setting up the system as this may damage the unit.

Connecting Calypso to the Network

To connect the Network Interface:

1. Connect the Ethernet port (Gb1) to the IP network using an Ethernet UTP cable (Type Cat 5 or higher).

This will allow you to connect to the unit via the Web interface or SSH.

Figure 2-1 Sample Network Connection - Rear view (1U System)

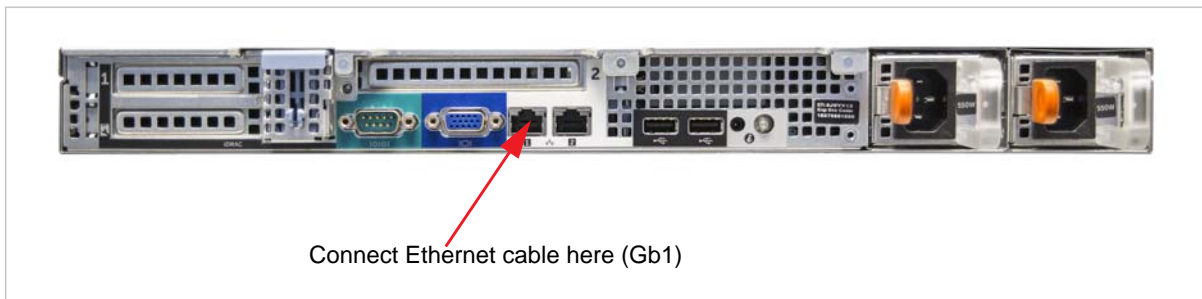
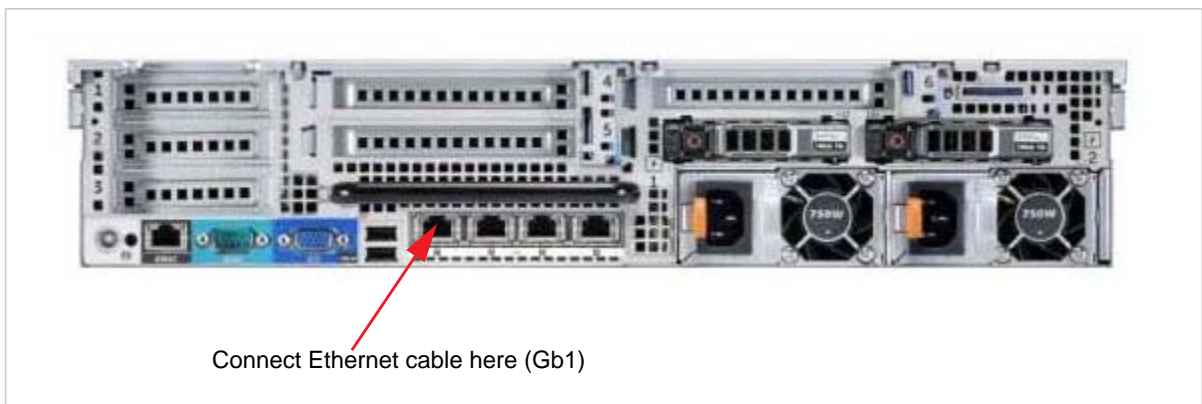


Figure 2-2 Sample Network Connection - Rear view (2U System)



Powering Up Calypso

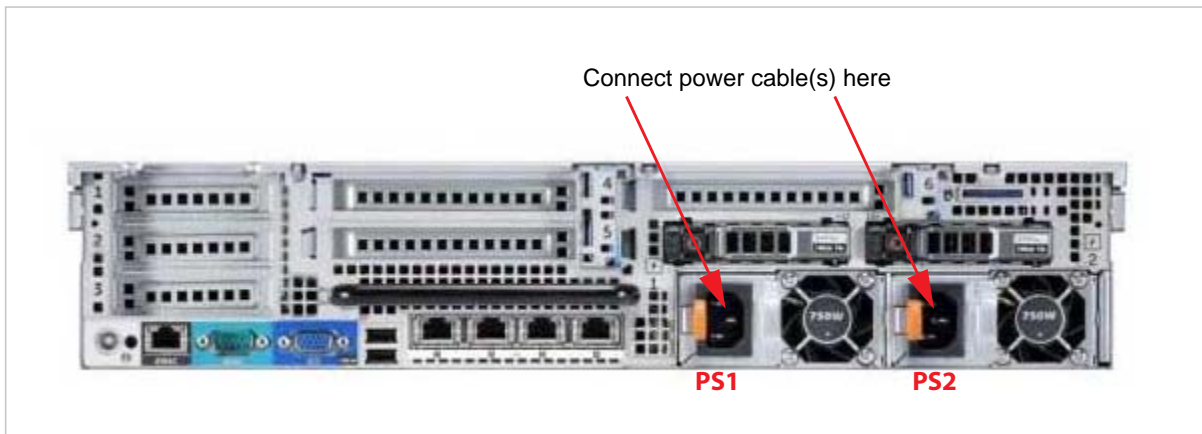
To power up Calypso:

1. Connect the power cable(s) to the appliance.

Figure 2-3 Power Connections - Rear view (1U System)



Figure 2-4 Power Connections - Rear view (2U System)



2. Plug the other end of each power cable into a grounded electrical outlet or a separate power source such as an uninterruptible power supply (UPS) or a power distribution unit (PDU).

3. Press the Power button on the front of the appliance. The power-on indicator should light.

Figure 2-5 Sample Power Switch - Front panel (1U System)



Figure 2-6 Sample Power Switch - Front panel (2U System)



CHAPTER 3: Configuring Calypso

This chapter describes how to access the Calypso Web interface and configure your Calypso appliance, including sources, network settings, and authentication services. It also provides the steps to install system updates.



NOTE This chapter covers the initial setup of your Calypso system. The intended audience is system integrators with administrative privileges.

For information on the viewing and other options available to content creators and other non-administrative users, please refer to [Chapter 5: “Getting Started Browsing Content”](#).



IMPORTANT Before proceeding, make sure that the appliance is set up correctly and all necessary network and A/V connections are established. See [Chapter 2: “Hardware Setup”](#).

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Administration

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Accessing the Appliance

To access the Calypso Web interface:

1. Open a Flash-enabled Web browser of your choice, such as Chrome, Firefox, Safari, or Internet Explorer (IE8 and above).
2. Type the Calypso's URL or IP address in the browser's address bar and press Enter.

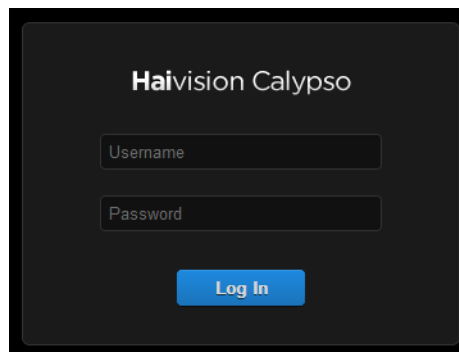


NOTE Calypso ships with a default IP address of 10.5.1.3.

3. If you see a Security Certificate warning, click [Proceed anyway](#) (or equivalent) to accept the certificate and continue to the Login page.
4. On the Login page, type the Username and Password and click [Log In](#) (or press Enter).

The default administrative Username and Password are:

Username: haiadmin
Password: manager



NOTE The default administrative username/password is haiadmin / manager. haiadmin is a special "system user" intended primarily for initial setup and system troubleshooting. It is not intended for regular use as it has unrestricted access privileges that cannot be changed. For day-to-day system control and administration, you are strongly advised to create a regular (administrative) user with a secure password.

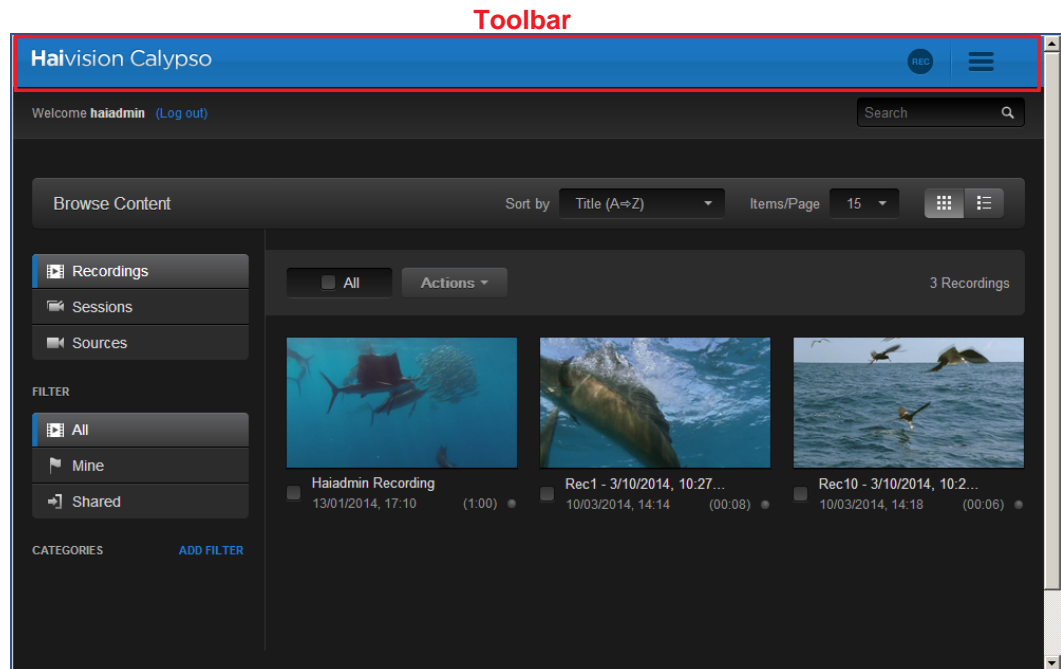
As a security measure, be sure to change the default password for the haiadmin account.


Note that your initial admin credentials may have been set to something other than haiadmin / manager, if requested. In this case, please contact Haivision Technical Support to retrieve this information.

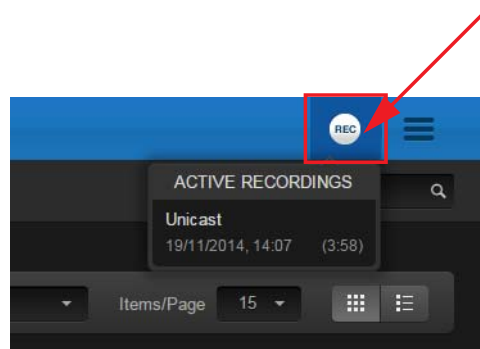
To change the haiadmin password, click haiadmin on the navigation bar (next to "Welcome"). For more information, see ["Changing Your Password"](#) on page 103.

Navigating the Interface


The Calypso Web interface opens to the Browse Content page (showing the Recordings list, see following example).

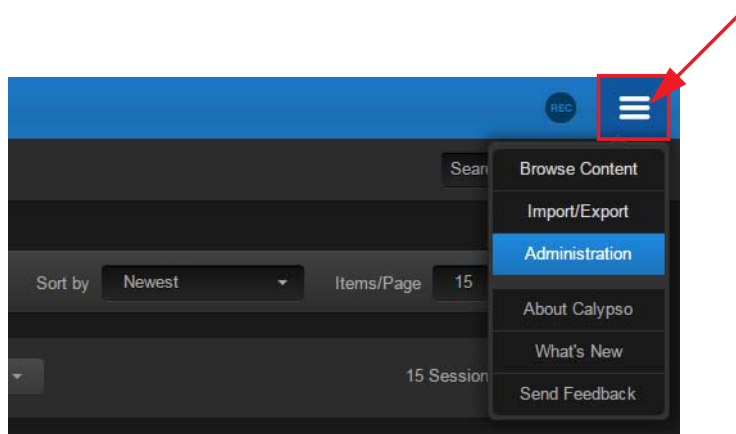


- To view a list of active recordings, click the  icon on the toolbar.



Clicking on one of the recordings in the list will take you to the session viewer for that recording.

- To navigate to the Import/Export or Administration page, click the  icon on the toolbar and select from the navigation drop-down menu.



TIP You can also display a list of new Calypso features by selecting [What's New](#) from the navigation drop-down menu.


After successfully logging in, system integrators and administrators will need to go to the Administration page (see the following section, [“System Activity Dashboard”](#)).

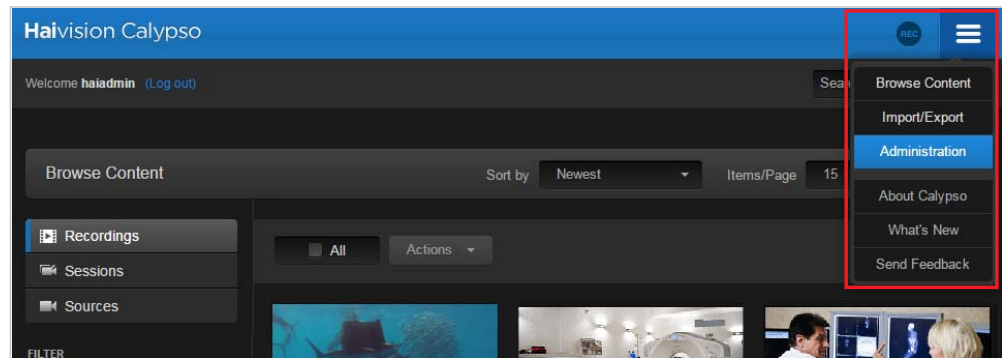
For an overview of the Web interface, including viewing and search options, see [“Exploring the Web Interface”](#) on page 104.

System Activity Dashboard

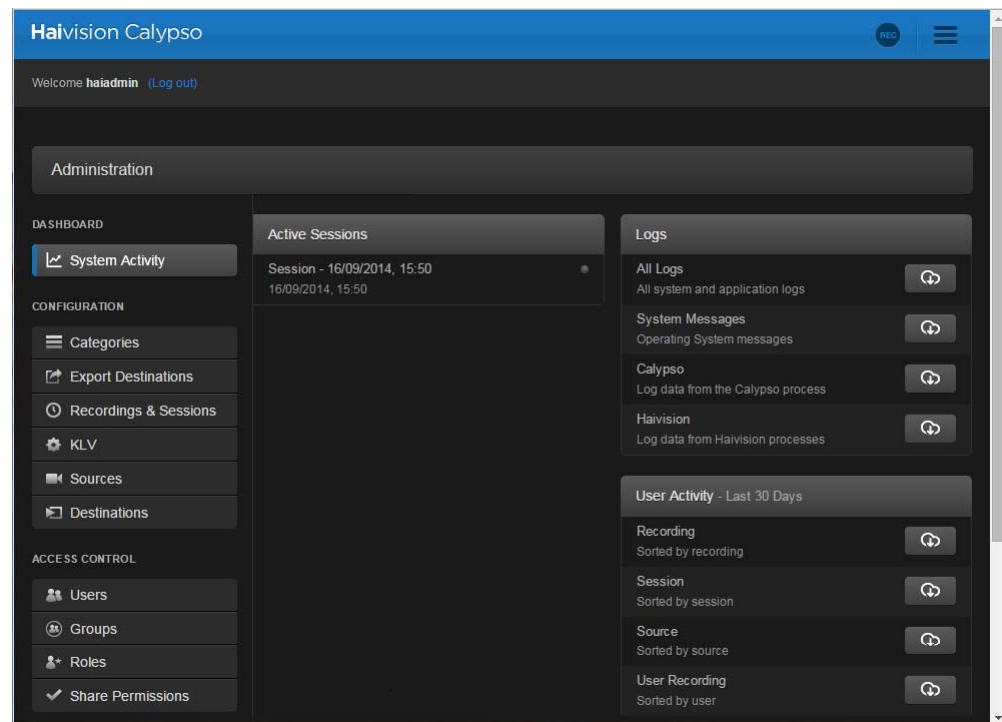
The System Activity dashboard shows a current status snapshot for your system as a whole, including the active sessions and logs.

To view the System Activity Dashboard:

1. Click the  icon on the toolbar and select Administration from the navigation drop-down menu.



The Administration page opens, showing the System Activity dashboard (see following example).



From here you can view the list of active sessions, download usage and system log information. The following table describes the available logs.

Activity	Description
Active Sessions	A list of sessions currently active on the Calypso server, identified by name, date and duration.
Logs	
All Logs	All system and application logs.
System Messages	A log of messages generated by the operating system.
Calypso	Log data from Calypso processes.
Haivision	Log data from Haivision processes.
User Activity	A list of the last 30 days of activities, sorted either by user, or title of recording, session, or source. Each activity in the list contains the ID of the user performing the activity, the uuid of the associated item, the time of the activity, the item's name, and a link to launch it.

2. To download a user activity report or one of the logs to your local system, click



Configuring Categories

Calypso administrators can define metadata “categories” with default values to identify and store custom metadata. For example, sessions, recordings, and sources may be categorized by surgical procedure, course title, geographical location, or patient ID number – whatever categories make sense in your environment.

These categories become usable metadata fields for users to assign to sessions, recordings, and sources. On the Browse Content page, viewers can then select these categories and values to filter the Sources, Sessions, or Recordings list. See [“Filtering the Content Lists”](#) on page 107.



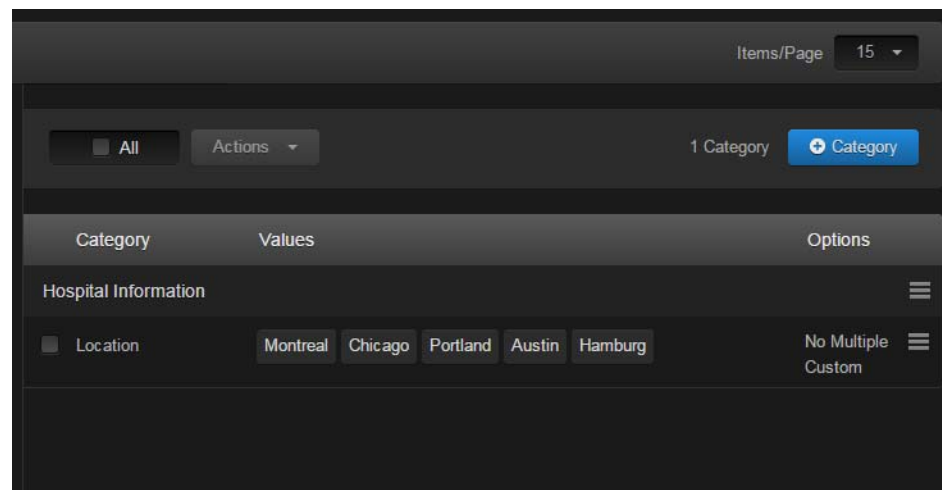
NOTE Viewers only see categories assigned to videos for which they have access.

To help you manage your categories, you can organize categories into groups, sort the order of categories within the group, and sort groups within the list of categories. (Note that you cannot sort categories on mobile devices because they do not have the same drag and drop support as desktop Web browsers.)


To configure categories:

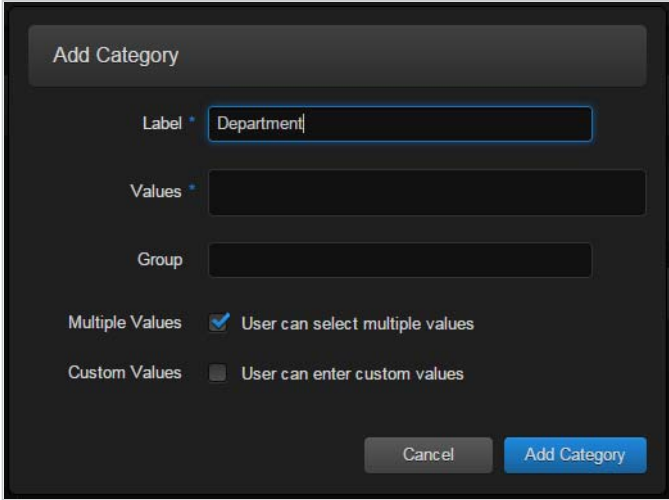
1. On the Administration page, click **CATEGORIES** from the sidebar menu.

The Categories page opens (as shown below). Any defined categories are listed.



To add a category:


1. On the Categories page, click .
2. On the Add Category dialog, type in the label for the category, for example, “Department”.



3. In the Values field, type in the values for the category, one at a time (as shown in the example on the following page) Press Enter after each value.



NOTE By default, users will be able to enter multiple values, but not custom (i.e., their own) values when assigning categories to sessions, recordings, and sources.

To remove a value, mouse over the value and click .

- (Optional) In the Group field, type in the group for the category.

Edit Category
 ID: 1d42ef81-c77f-42f0-a859-ddd101d05938
 Label: Department
 Values: Anaesthetics, Cardiology, Diagnostic Imaging, Ear nose and throat (ENT), Gynaecology, Microbiology, Neurology, Obstetrics, Oncology, Pharmacy, Rheumatology, Urology
 Group: Hospital Information
 Multiple Values: Hospital Information (New Group)
 Custom Values: User can enter custom values
 Cancel Save Category




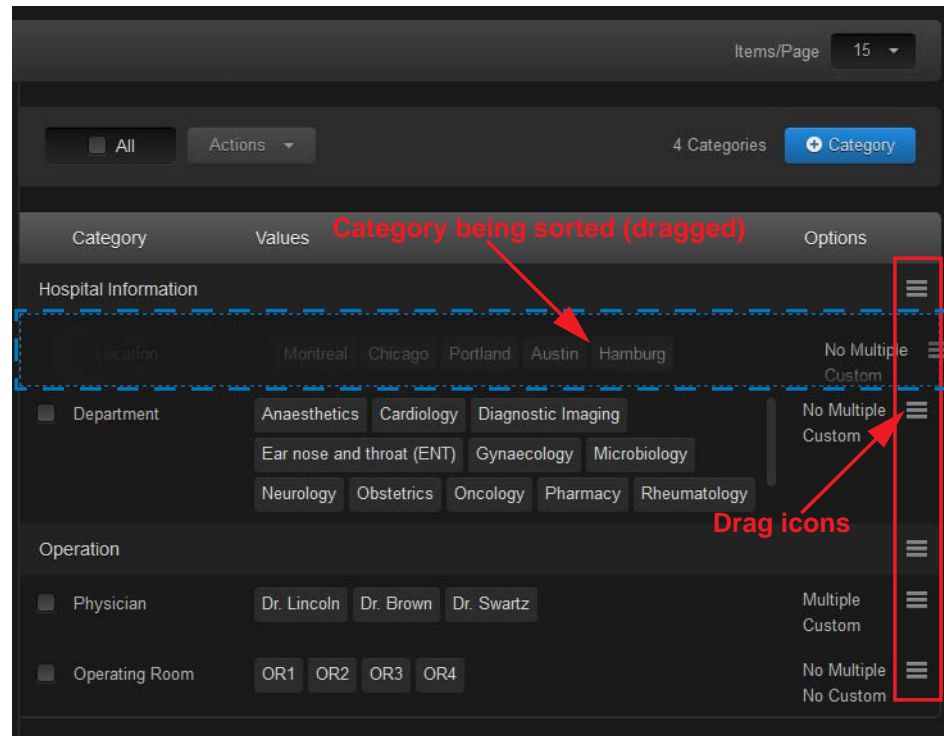
TIP If you do not assign a group to the category, it will be listed as “UNGROUPED”.

Category	Values	Options
UNGROUPED		
Location	Montreal, Chicago, Portland, Austin, Hamburg	No Multiple, Custom

- Check the checkboxes to modify the default settings for Multiple Values and Custom Values as required. For more information see [“Category Settings”](#) on page 39.
- When you have finished typing in the values, click [Add Category](#).

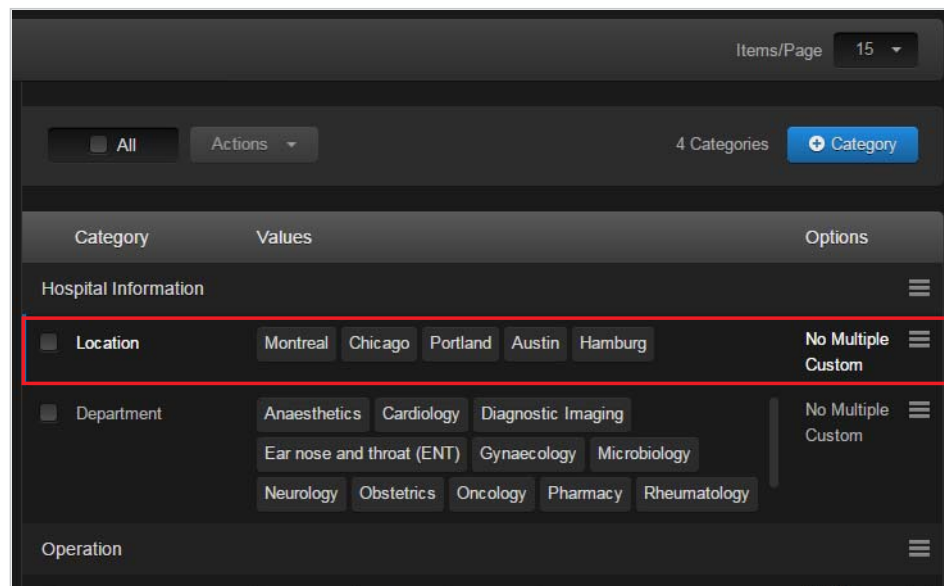
The new category will be added to the Categories list.

- To sort the order of categories within a group or groups within the Categories list, click the  icon for the category or group and drag it to the adjust the order of the list.

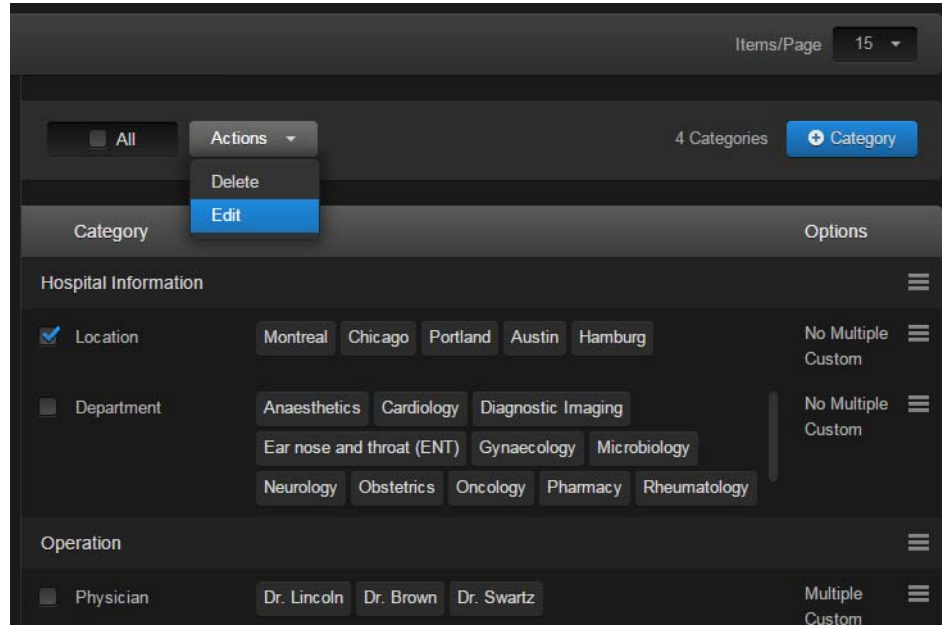


To edit categories:

- Mouse over the category to edit in the Categories list and click anywhere in the row.



Or you can check the checkbox next to one or more categories (or check [All](#)) and select Edit from the Actions drop-down menu (this menu is selectable when one or more items are checked).



2. On the Edit Category dialog, enter or select the value(s) to modify the category. See [“Category Settings”](#) on page 39.

Edit Category

ID:

Label *

Values *

Group:

Multiple Values User can select multiple values

Custom Values User can enter custom values



TIP If you select multiple categories, you can only edit the Group field.

3. Click [Save Category](#).

To delete categories:

1. Check the checkbox next to one or more categories in the Categories list (or check [All](#)).
2. Select Delete from the Actions drop-down menu.
3. Select Delete from the warning dialog.



IMPORTANT Deleting a category will also remove associated values on all recordings.

Category Settings

The following table lists the Category configuration settings:

Category Setting	Default	Description/Values
Label	n/a	The label for the category.
Values	n/a	One or more default values that can be selected by users for this category.
Group	n/a	(Optional) The group to assign the category to. Grouping helps you organize large numbers of categories and intuitively arrange them for viewers. You can also sort categories within groups and sort groups within the list of categories.
Multiple Values	Enabled	Check this checkbox to allow users to add more than one metadata value to this category.
Custom Values	Disabled	Check this checkbox to allow users to add their own values for this category.

Related Topics

- [“Filtering the Content Lists”](#) on page 107

Configuring Export Destinations

When setting up Calypso, administrators can add export destinations for video and metadata to FTP/FTPS servers and the Haivision Video Cloud (HVC) platform.

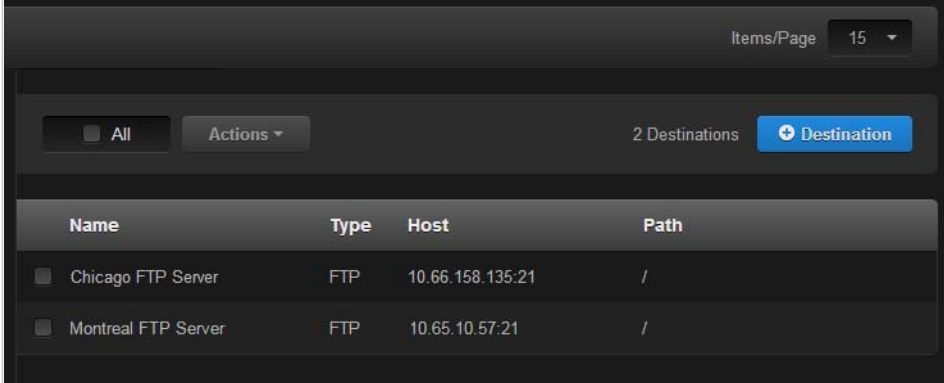
These destinations will be available for users to select when exporting recordings. See [“Exporting Recordings”](#) on page 153.

For information on managing exports from the Import/Export page, see [“Managing Imports and Exports”](#) on page 157.

To view and manage the export destinations:

1. On the Administration page, click **EXPORT DESTINATIONS** from the sidebar menu.

The Export Destinations page opens, displaying the list of defined destinations for your platform, if any (see following example).



The screenshot shows the 'Export Destinations' page in a dark-themed interface. At the top right, there is a 'Items/Page' dropdown set to '15'. Below this, there are two buttons: 'All' and 'Actions'. To the right of these buttons, it says '2 Destinations' and a blue button with a plus icon and the text 'Destination'. The main content is a table with the following columns: Name, Type, Host, and Path. There are two rows of data:

Name	Type	Host	Path
<input type="checkbox"/> Chicago FTP Server	FTP	10.66.168.135:21	/
<input type="checkbox"/> Montreal FTP Server	FTP	10.65.10.57:21	/

To add an export destination:

1. From the Export Destinations page, click [Destination](#).
2. On the Add Export Destination dialog, enter or select the value(s) to define the destination. See [“Export Destination Settings”](#) on page 43.

The screenshot shows the 'Add Export Destination' dialog box. It features a title bar at the top with the text 'Add Export Destination'. Below the title bar are several input fields and controls:

- Name ***: A text input field that is currently empty.
- Type**: A dropdown menu with 'FTP' selected.
- Host ***: A text input field that is currently empty.
- Port ***: A text input field containing the value '21'.
- Username ***: A text input field that is currently empty.
- Password ***: A text input field that is currently empty.
- Pathname**: A text input field that is currently empty.
- Mode**: A dropdown menu with 'Passive' selected.
- Untrusted Certificates**: A checkbox labeled 'Accept' which is checked.
- HVC**: A checkbox labeled 'Watch Folder' which is checked.

At the bottom of the dialog, there are three buttons: 'Test Settings', 'Cancel', and 'Add Destination'.

3. To test the connection, click [Test Settings](#).



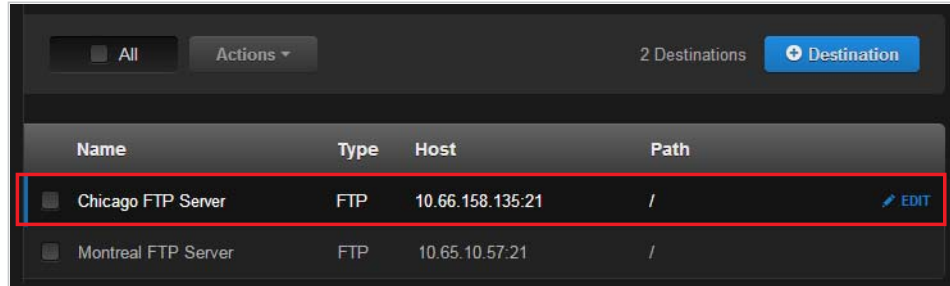
NOTE You do not need to save in order to test settings.

4. Click [Add Destination](#).

The new export destination will be added to the list.

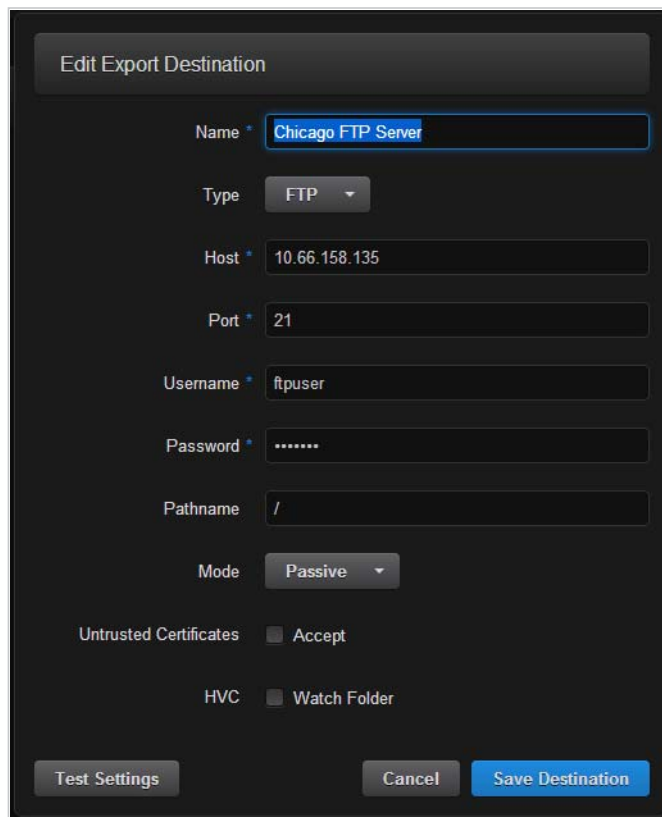
To edit an export destination:

1. Select the destination in the Export Destinations list.



Name	Type	Host	Path	
Chicago FTP Server	FTP	10.66.158.135:21	/	EDIT
Montreal FTP Server	FTP	10.65.10.57:21	/	

2. On the Edit Export Destination dialog, enter or select the value(s) to modify the destination. See [“Export Destination Settings”](#) on page 43.



Edit Export Destination

Name *

Type

Host *

Port *

Username *

Password *

Pathname

Mode

Untrusted Certificates Accept

HVC Watch Folder

3. To test the connection, click [Test Settings](#).



NOTE You do not need to save in order to test settings.

4. Click [Save Destination](#).

Your changes will be shown on the Export Destinations list.

To delete export destinations:

1. Select one or more destinations in the Export Destinations list.
2. Select Delete from the Actions drop-down menu and click [Confirm](#).

The selected destination(s) will be removed from the list.

Export Destination Settings

The following table lists the Export Destination configuration settings:

Export Destination Setting	Default	Description/Values
Name	n/a	Enter a name for the destination. This name will be selectable on the Export Recording list.
Type	FTP	Select the protocol type, either: <ul style="list-style-type: none"> • FTP: File Transfer Protocol • FTPS: FTP with explicit Transport Layer Security (TLS)
Host	n/a	Type in the server's DNS host name or IP address for the destination.
Port	21	Type in the port number for the destination server.
Username	n/a	Type in your login username for the site.
Password	n/a	Type in your password.
Pathname	n/a	(Optional) Type in the file path to use on the server, or leave blank for the server's default path.
Mode	Passive	Select the FTP data connection mode provided by your FTP administrator, either: <ul style="list-style-type: none"> • Passive: Passive mode may be used in situations where the client is behind a firewall and unable to accept incoming TCP connections. By default, most Web browsers use passive (PASV) mode, which more easily traverses end-user firewalls. • Active: In active mode, the client creates a TCP control connection.

Export Destination Setting (Cont.)	Default (Cont.)	Description/Values (Cont.)
Untrusted Certificates	Do not Accept	Check this checkbox to allow Calypso to connect to an FTPS server that is using an untrusted SSL certificate.
HVC - Watch Folder	Disabled	Check this checkbox to create an HVC-compatible mRSS (Media RSS) metadata file.

Configuring Recording and Session Settings

When setting up Calypso, administrators can configure system-wide recording and session settings such as the default recording expiry and maximum recording duration.

Default Recording Expiry

The Default Recording Expiry specifies the number of days after which a recording will expire and be deleted. Alternatively, you can select “Keep Forever”, so that recordings will *not* be deleted automatically. The minimum expiration is one (1) day.

Setting a global timer to delete recordings saves you from having to spend time cleaning up old recordings.



NOTE Modifying a recording does not reset the timer; it is based on the creation time. Trimming a recording creates a new recording and resets the timer for that new recording but leaves the old one unchanged.

When editing Recording information, users can override the Default Recording Expiry on a per-recording basis. For details, see [“Recording Information”](#) on page 145.

Maximum Recording Duration

Each recording session is limited to a maximum duration. Calypso will stop recording once that duration has been reached. You can define the maximum duration for all recordings. The default is 24 hours.

Recordings Inherit Permissions

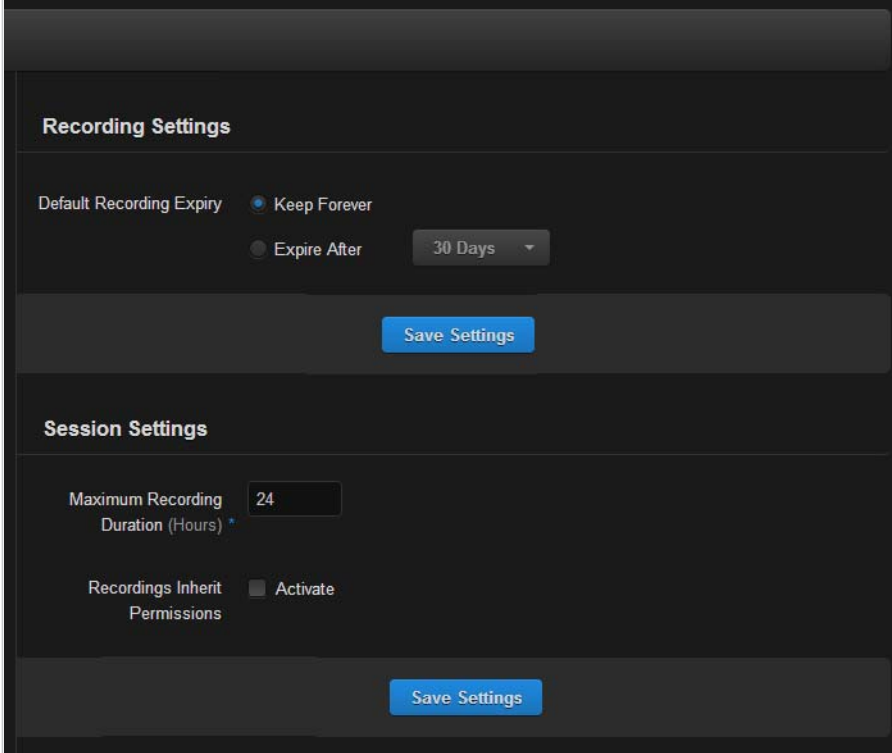
A session’s sharing permissions may now be passed on to any recordings made from that session. The objective is a workflow decision to help reduce the number of times a user must enter the sharing dialog.

Administrators can enable or disable this setting (disabled by default). Permissions are copied at the start of the recording. The recording creator is still granted “OWN” permissions on the new recording.

To configure the recording and session settings:

1. On the Administration page, click [RECORDINGS & SESSIONS](#) from the sidebar menu.

The Recording and Session Settings page opens (see following example).



The screenshot shows a dark-themed settings page with two main sections: "Recording Settings" and "Session Settings".

Recording Settings

- Default Recording Expiry: Keep Forever, Expire After
- Expire After: 30 Days (dropdown menu)
- Save Settings (button)

Session Settings

- Maximum Recording Duration (Hours): 24 (input field)
- Recordings Inherit Permissions: Activate
- Save Settings (button)

2. For the Default Recording Expiry, select either Keep Forever or Expire After.
3. For Expire After, select a duration from the Days drop-down menu (ranging from 1 – 180 days).
4. To change the Maximum Recording Duration, type in the number of hours.
5. To allow a session's sharing permissions to be passed on to recordings made from that session (disabled by default), check the [Recordings Inherit Permissions – Activate](#) checkbox.
6. Click [Save Settings](#).

Managing KLV Inputs



NOTE KLV is a licensed option. For more information, please contact Haivision Sales.

Calypso supports KLV data parsing and display as a licensable option per system. Administrators can create and upload a metadata dictionary file to customize and dynamically display KLV metadata to provide context with associated video/audio streams.

To accommodate changes to the KLV dictionary, Calypso accepts a library file which will translate the KLV data being sent into human readable fields and units of measure. The library file is in JSON format and complies with MISB RP 0602.2 and Standard 0604.1.

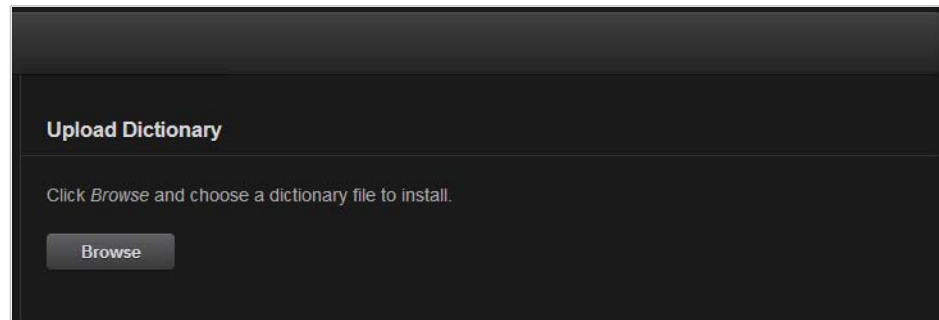
Administrators can also download and review the currently uploaded KLV dictionary.

On the Browse Content page, users can turn on/off the display of KLV data in a sidebar in the multi-window viewer.

To manage KLV inputs:

1. On the Administration page, click [KLV](#) from the sidebar menu.

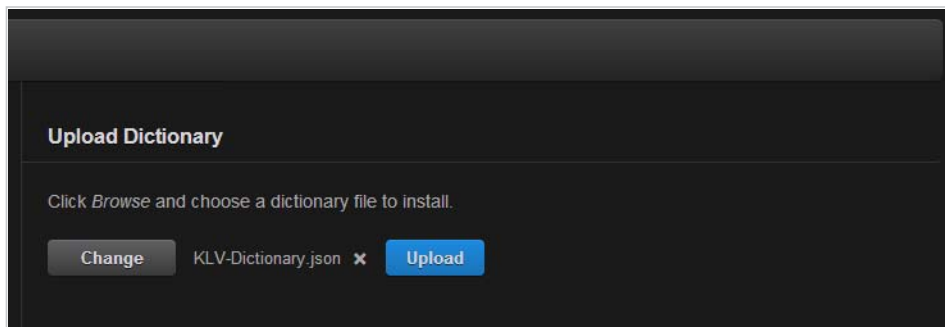
The KLV page opens (see following example of a new system).



2. To upload a dictionary, click [Browse](#) and select the dictionary file to load in the Open File dialog box. For details on the dictionary file format, see [“KLV Dictionary Format”](#) on page 167 (Appendix B).

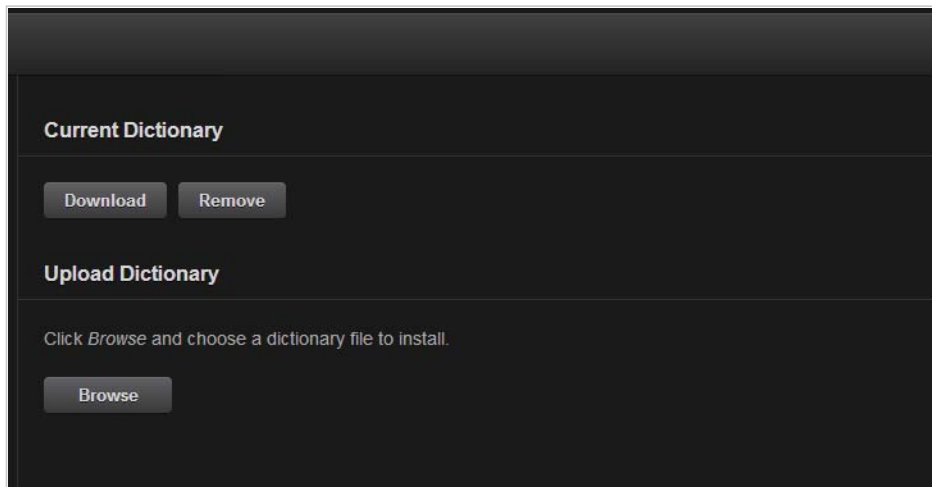
A sample dictionary file is available on Haivision’s Download Center at:
<http://www.haivision.com/download-center/>

3. When you see the filename in the text box, click [Upload](#).



TIP To select a different dictionary file, click [Change](#). To remove the selection, click .

The dictionary is now loaded. KLV metadata can now be displayed for sources, sessions and recordings.



4. To view the currently installed dictionary, click [Download](#). You can then open the file in a text editor to view the KLV dictionary.
5. To remove the currently installed dictionary from your system, click [Remove](#).

Managing Sources

A *source* is an incoming UDP transport stream that can be recorded or viewed live. When setting up Calypso, you need to specify the streaming A/V sources to be available for content creators and other users to view and capture.

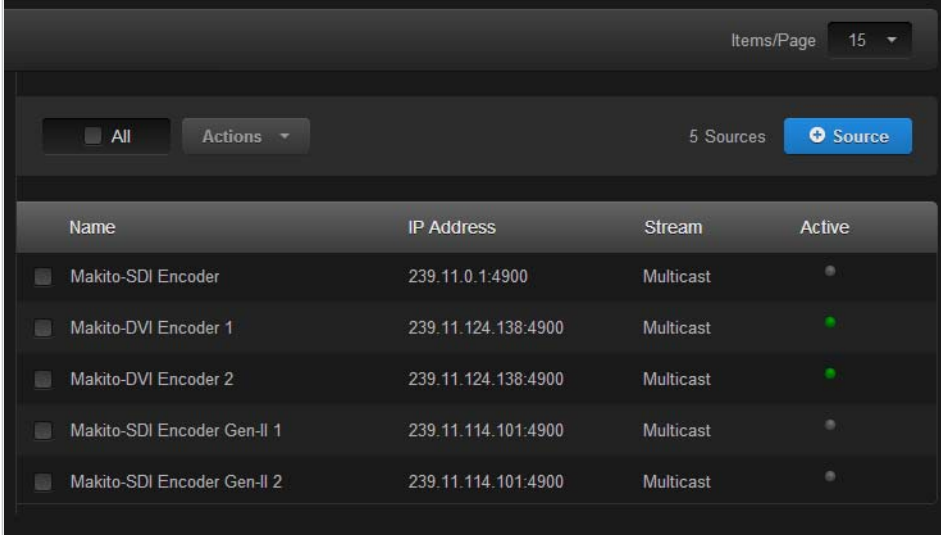
When adding a source you can assign the name, IP address and port, and stream type (multicast or unicast). When editing source information, you can also add a description and assign category metadata. Sources can also be shared with other users or groups.

Users can view source content before creating a session from the Browse Content page. See [“Previewing Sources”](#) on page 118.

To view and manage the sources for your platform:

1. On the Administration page, click **SOURCES** from the sidebar menu.


The Sources list opens, displaying the list of defined sources for your platform (see following example).

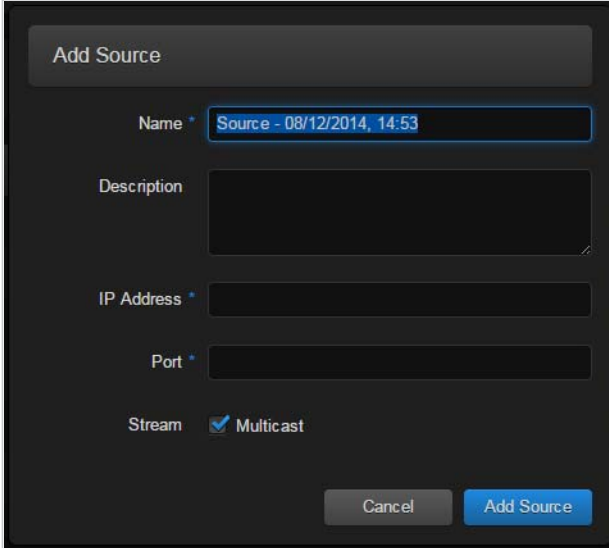


Name	IP Address	Stream	Active
<input type="checkbox"/> Makito-SDI Encoder	239.11.0.1:4900	Multicast	<input type="checkbox"/>
<input type="checkbox"/> Makito-DVI Encoder 1	239.11.124.138:4900	Multicast	<input checked="" type="checkbox"/>
<input type="checkbox"/> Makito-DVI Encoder 2	239.11.124.138:4900	Multicast	<input checked="" type="checkbox"/>
<input type="checkbox"/> Makito-SDI Encoder Gen-II 1	239.11.114.101:4900	Multicast	<input type="checkbox"/>
<input type="checkbox"/> Makito-SDI Encoder Gen-II 2	239.11.114.101:4900	Multicast	<input type="checkbox"/>

Configuring Sources

To add a source:

1. From the Sources list (Administration page), click .
2. On the Add Source dialog, enter or select the value(s) to define the source. See [“Source Settings”](#) on page 55.



The Add Source dialog box is shown with the following fields and options:


- Name: Source - 08/12/2014, 14:53
- Description: (empty text area)
- IP Address: (empty text field)
- Port: (empty text field)
- Stream: Multicast
- Buttons: Cancel, Add Source

3. Click [Add Source](#).

The new source will be added to the Sources list.

To edit sources:

1. Select a source in the Sources list.

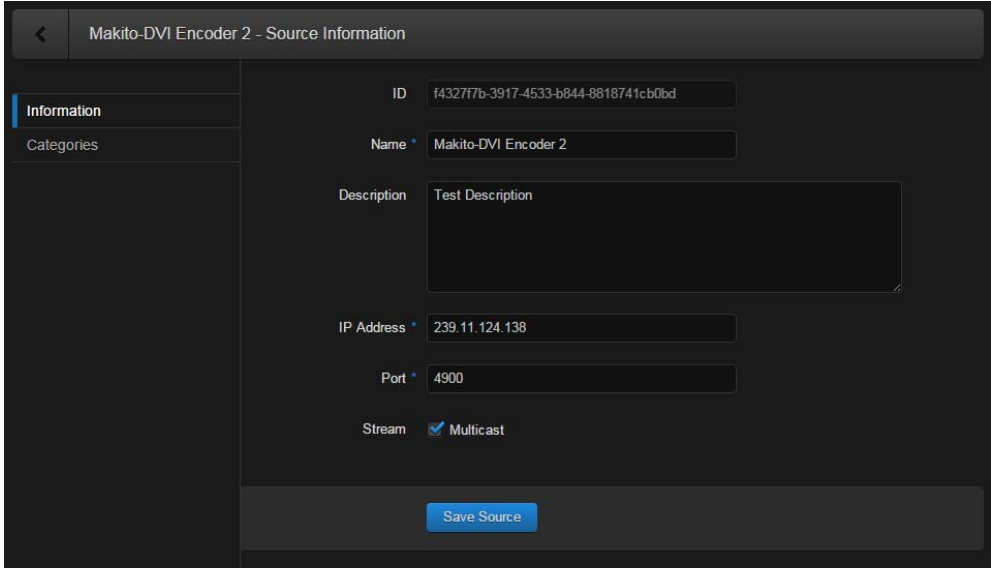


The Sources list table is shown with the following columns and rows:

Name	IP Address	Stream	Active
<input checked="" type="checkbox"/> Makito-SDI Encoder	239.11.0.1:4900	Multicast	<input type="checkbox"/>
<input type="checkbox"/> Makito-DVI Encoder 1	239.11.124.138:4900	Multicast	<input checked="" type="checkbox"/>
<input type="checkbox"/> Makito-DVI Encoder 2	239.11.124.138:4900	Multicast	<input checked="" type="checkbox"/>
<input type="checkbox"/> Makito-SDI Encoder Gen-II 1	239.11.114.101:4900	Multicast	<input type="checkbox"/>

Or you can check the checkbox next to one or multiple sources (or check [All](#)) and select Edit from the Actions drop-down menu.

2. On the Edit Source Information page, enter or select the value(s) to modify the source. See [“Source Settings”](#) on page 55.



Makito-DVI Encoder 2 - Source Information

Information

Categories

ID: f4327f7b-3917-4533-b844-8818741cb0bd

Name: Makito-DVI Encoder 2

Description: Test Description

IP Address: 239.11.124.138

Port: 4900

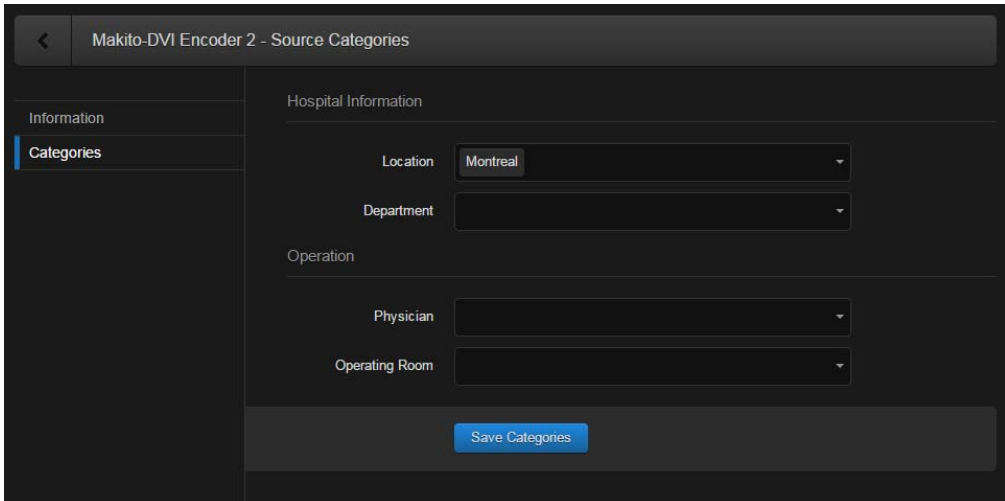
Stream: Multicast

Save Source



TIP If you select multiple sources, you can only edit the Description field.

3. Click [Save Source](#).
4. To assign category metadata to the source(s), click [CATEGORIES](#) from the sidebar menu.



Makito-DVI Encoder 2 - Source Categories

Information

Categories

Hospital Information

Location: Montreal

Department:

Operation

Physician:

Operating Room:

Save Categories

Categories must be pre-defined on your system. See [“Configuring Categories”](#) on page 34.

5. On the Edit Source Categories page, select the applicable categories and value(s) from the drop-down list(s). See [“Source Settings”](#) on page 55.



NOTE If you selected multiple sources and the categories have “mixed” (i.e., different) values, you will see a warning across the top of the list and the categories with mixed values will be displayed in red (as shown in the following figure).

6. To “bulk-edit” category values for multiple sources, check the checkbox beside each category to modify. (Only checked categories will be changed when you click [Save Categories](#).)

The screenshot shows the 'Sources Categories' configuration page. A warning message at the top indicates that categories with mixed values will be standardized upon saving. The 'Location' field is highlighted in red, and a dropdown menu is open, showing a list of locations: Austin, Chicago, Hamburg, Montreal, Ottawa, and Portland. The 'Department', 'Physician', and 'Operating Room' fields also have checkboxes next to them. A 'Save Categories' button is located at the bottom of the form.



CAUTION Bulk edits cannot be undone. For information on bulk editing Category metadata, see [“Performing Bulk Edits”](#) on page 114.

7. Click [Save Categories](#).

To delete sources:

1. Select one or more sources in the Sources list.
2. Select Delete from the Actions drop-down menu and click [Confirm](#).

The selected source(s) will be removed from the Sources list.

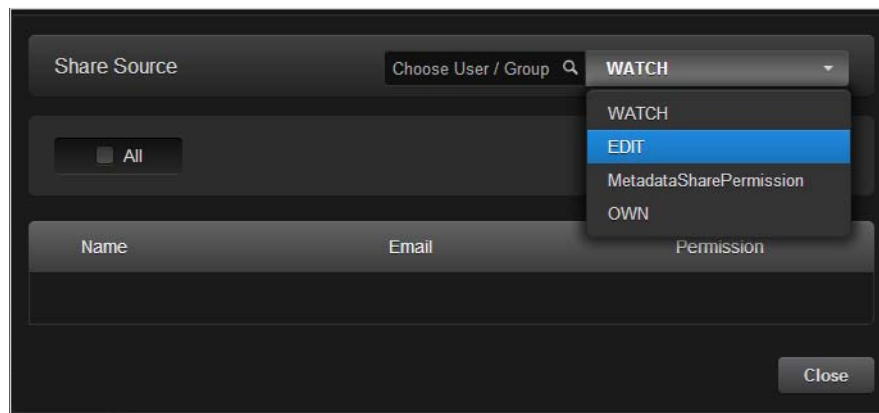
Sharing Sources

You can share sources with other users or groups and can also assign “share” permissions on a per user or group basis.

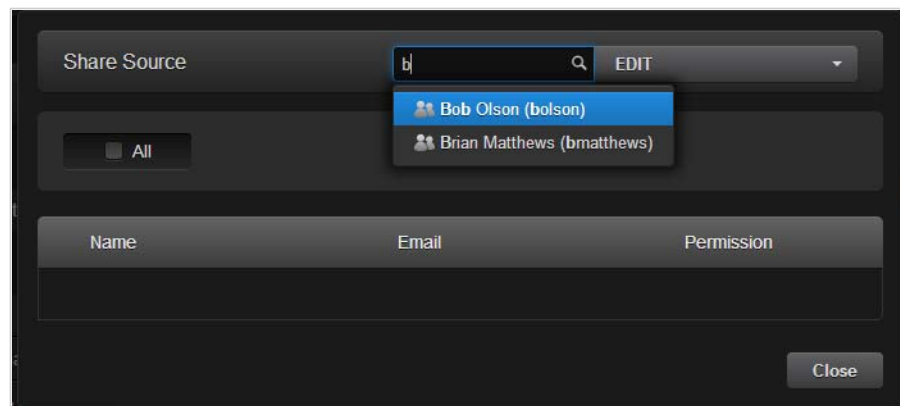
For information on the default share permissions, see [“Session Invitations”](#) on page 131. For information on the adding and modifying share permissions, see [“Managing Share Permissions”](#) on page 96.

To share sources with a user or group:

1. Select one or more sources in the Sources list.
2. Select Share from the Actions drop-down menu.
3. On the Share Source dialog, select the permission from the drop-down menu.

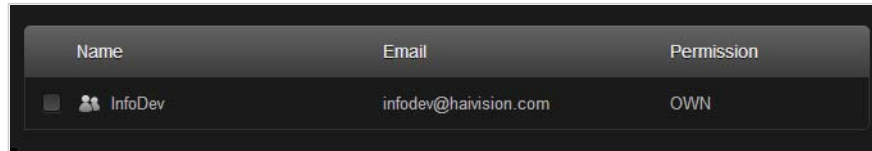


4. Type the first few characters of the first user or group’s name in the search field, and then select the name from the auto-complete drop-down list.



NOTE Only users and groups that have been assigned roles appear in the auto-complete list.

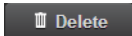
The user or group name is added to the Share Source list below, along with the selected permission.

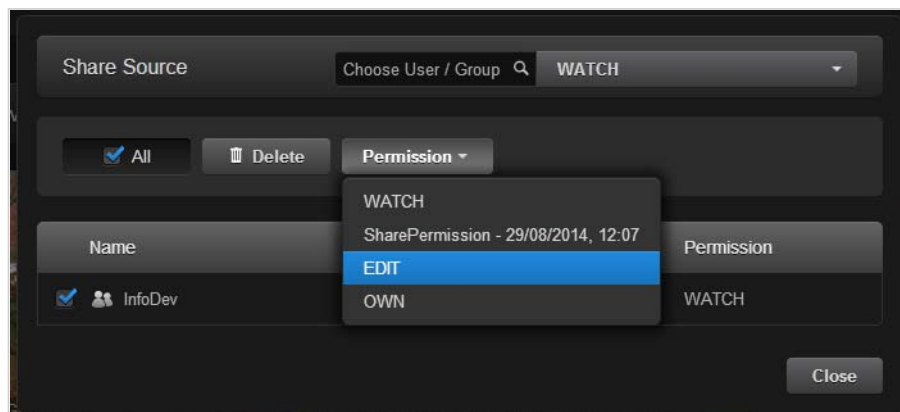


Name	Email	Permission
<input type="checkbox"/> InfoDev	infodev@haivision.com	OWN

5. Repeat for each user (or group) with whom you wish to share the source.

To delete or modify share permissions for the source:

1. Select one or more names in the Share Source list.
2. To delete the share permission(s), click  .
3. To modify the share permission(s), select the new permission from the drop-down menu.



The modified share permission(s) will be shown on the Share Source list.

4. Click [Close](#).

Source Settings

The following table lists the Source configuration settings:

Source Setting	Default	Description/Values
Information		
ID	n/a	Calypso assigns a unique identifier (ID) to each source when it is defined. NOTE: If you are using the Calypso Command Line API, you will need to copy this ID to add this source to a session.
Name	date, time	Enter a name for the source. This name will be selectable on the Sources list when content creators define sessions.
Description	n/a	Enter a description for the source.
IP Address	n/a	Type in the IP address for the source.
Port	n/a	Type in the port number for the source.
Stream- Multicast	Enabled	Check this checkbox to indicate this is a multicast stream.
Categories		
Categories	n/a	(Optional) To assign category metadata to the source, select a category and select one or more values or (where allowed) type in custom values NOTE: Categories must be pre-defined. See “Configuring Categories” on page 34.



NOTE Only UDP stream sources are supported in Version 1.3.

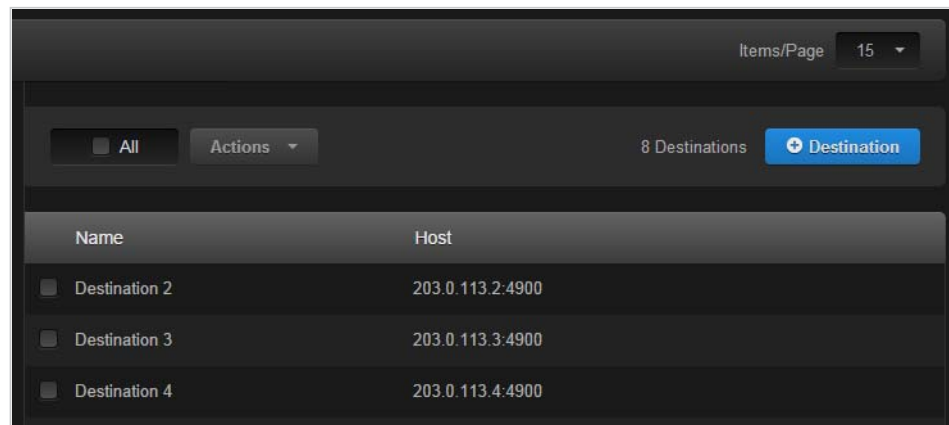
Managing Re-Stream Destinations

When setting up Calypso, you can define multiple re-stream destinations for users to select from when re-streaming recordings. (Note that they can also enter an IP address and Port for the streaming destination.) With multi-source recordings, users can choose the track to re-stream and then choose a different streaming destination for each track. See [“Re-Streaming Recordings”](#) on page 152.

To manage Destinations:

1. On the Administration page, click **DESTINATIONS** from the sidebar menu.

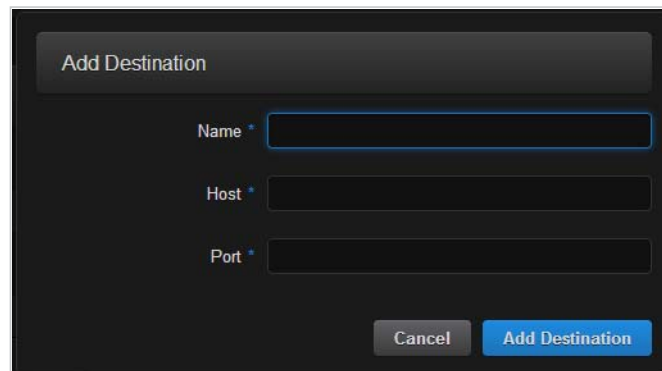
The Destinations page opens, displaying the list of defined re-stream destinations for your system, if any (see following example).



Name	Host
Destination 2	203.0.113.2:4900
Destination 3	203.0.113.3:4900
Destination 4	203.0.113.4:4900

To add a re-stream destination:

1. From the Destinations page, click **+ Destination**.
2. On the Add Destination dialog, enter the name, host IP address or URL, and port for the destination.



Add Destination

Name *

Host *

Port *

Cancel Add Destination

3. Click **Add Destination**.

The new destination will be added to the Destinations list.

To edit a re-stream destination:

1. Select the destination in the Destinations list.



2. On the Edit Destination dialog, enter or select the value(s) to modify the destination.
3. Click [Save Destination](#).

Your changes will be shown on the Destination list.

To delete re-stream destinations:

1. Select one or more destinations in the Destinations list.
2. Select Delete from the Actions drop-down menu and click [Confirm](#).

The selected destination(s) will be removed from the Destinations list.

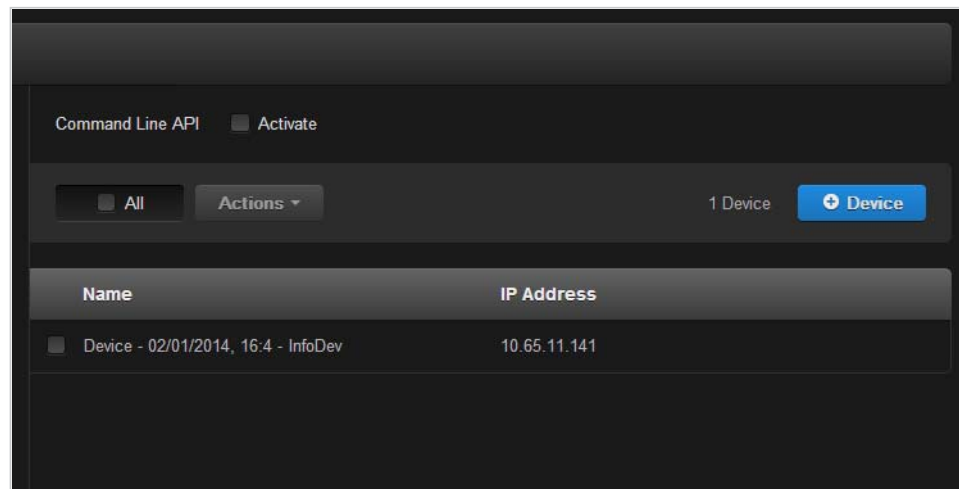
Activating Command Line API Access

In order to use the Command Line API, you need to activate Command Line API access on Calypso and add the client devices to the list of authorized devices.

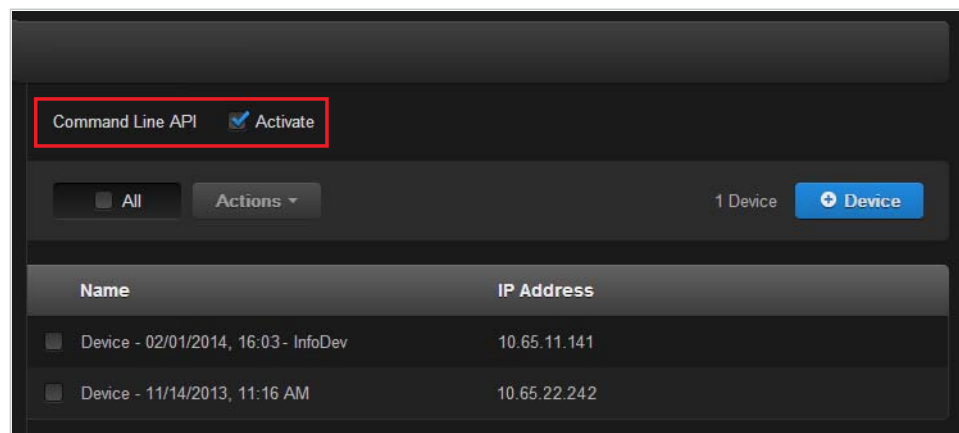
To activate Command Line API access on Calypso:

1. On the Administration page, click [API ACCESS](#) from the sidebar (under [ADMINISTRATION](#)).

The Calypso API Access page opens, displaying the list of authorized devices (if any).



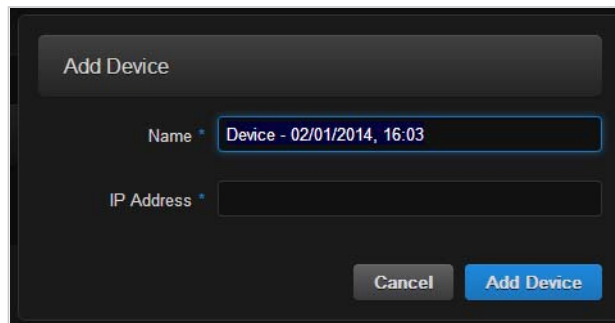
2. Check the [Activate Command Line API](#) checkbox.



NOTE Checking the [Activate Command Line API](#) checkbox activates *all* devices in the list.

3. To add a device to the list, click [+ Device](#).

4. On the Add Device dialog, enter a unique name that identifies this device.



The screenshot shows a dark-themed dialog box titled "Add Device". It features two input fields: "Name" and "IP Address". The "Name" field contains the text "Device - 02/01/2014, 16:03". The "IP Address" field is currently empty. At the bottom right of the dialog, there are two buttons: a grey "Cancel" button and a blue "Add Device" button.

5. Enter the IP address of the device that will be accessing the Command Line API.
6. Click [Add Device](#).

The new device will be added to the list of authorized devices.



NOTE Further changes to the list of authorized devices will be applied automatically. You do not need to restart Calypso.

Managing Directory (Authentication) Services

Calypso allows you to connect to your LDAP or Active Directory server for user accounts.



IMPORTANT If Calypso is connected to an LDAP or Active Directory server, the Calypso Users and Groups lists will be populated with information from the directory server. In an LDAP/AD environment, you cannot add or modify users or groups directly from Calypso.

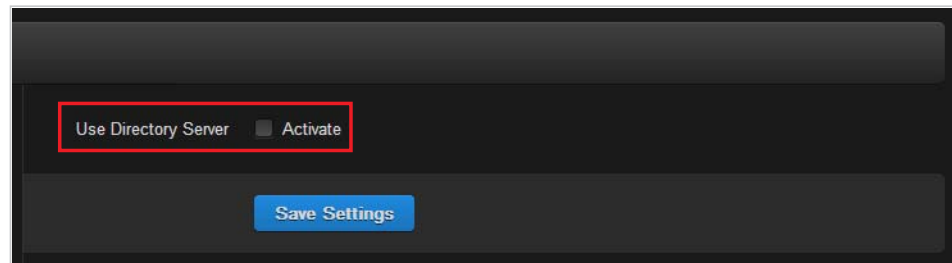
LDAP and Active Directory are used for authentication purposes only. No Calypso data is stored or changed on these systems.

Connecting to a Directory Server

To connect Calypso to a Directory Server:

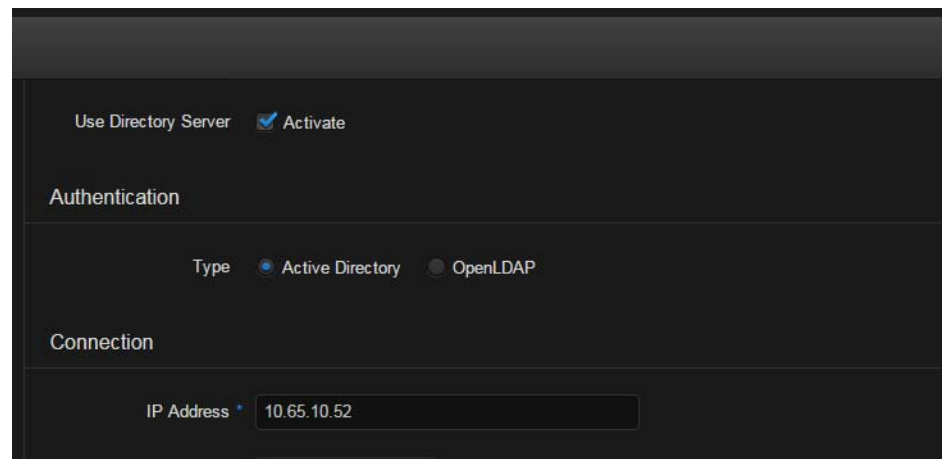
1. On the Administration page, click [DIRECTORY SERVICES](#) from the sidebar menu.

The Directory Services page opens, showing the [Use Directory Server – Activate](#) checkbox.

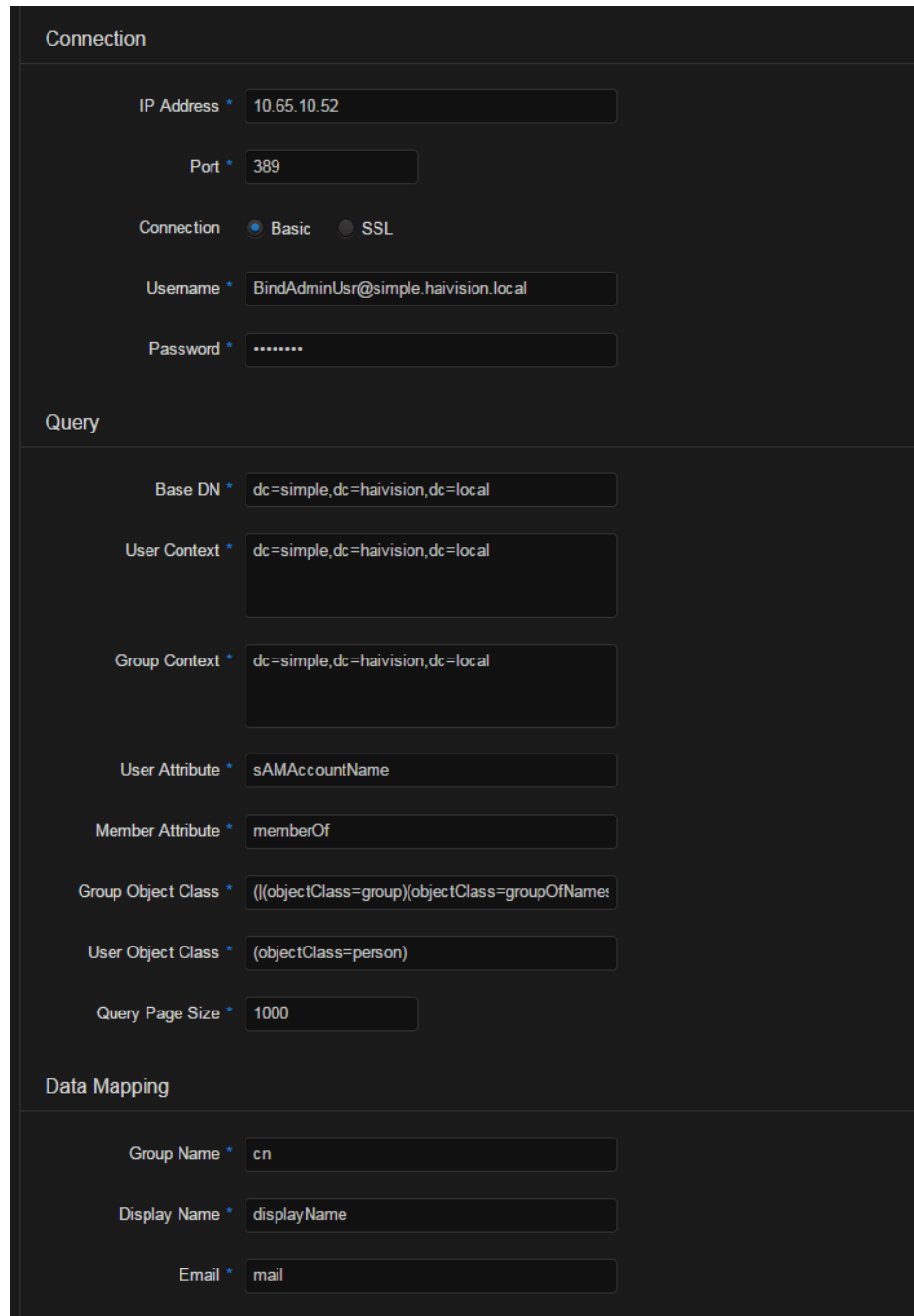


2. To connect to an LDAP or Active Directory server, check the checkbox.

The Directory Services configuration settings then become available, as shown in following examples.



3. Under Authentication, select type of LDAP implementation for your system, either:
 - Active Directory: An implementation of LDAP directory services by Microsoft.
 - Open LDAP: An open source implementation of LDAP directory services.
4. For the server Connection, Query, and Data Mapping settings, enter or select the new value(s) in the appropriate field(s). See [“Directory Service Settings”](#) on page 63.



Connection

IP Address * 10.65.10.52

Port * 389

Connection Basic SSL

Username * BindAdminUsr@simple.haivision.local

Password *

Query

Base DN * dc=simple,dc=haivision,dc=local

User Context * dc=simple,dc=haivision,dc=local

Group Context * dc=simple,dc=haivision,dc=local

User Attribute * sAMAccountName

Member Attribute * memberOf

Group Object Class * ((objectClass=group)(objectClass=groupOfName:

User Object Class * (objectClass=person)

Query Page Size * 1000

Data Mapping

Group Name * cn

Display Name * displayName

Email * mail

5. To test the connection from Calypso to the defined directory server, click [Test Settings](#).

The screenshot displays the 'Data Mapping' configuration page in Calypso. It features three input fields for mapping: 'Group Name' with the value 'cn', 'Display Name' with 'displayName', and 'Email' with 'mail'. Below these is a 'Test Settings Results' section showing a green message: 'Connection Test Successful'. At the bottom, there are two columns of lists: 'Users (First 10)' and 'Groups (First 10)'. The 'Users' list includes entries like 'Administrator', 'bindadminusr', and 'childOU1_BasicUsr'. The 'Groups' list includes 'HelpServicesGroup', 'TelnetClients', and 'Administrators'. At the bottom right, there are two buttons: 'Save Settings' and 'Test Settings', with the latter highlighted by a red box.

Users (First 10)	Groups (First 10)
Administrator	HelpServicesGroup
bindadminusr	TelnetClients
BINDADMINUSR\$	Administrators
childOU1_BasicUsr	Users
childOU1_child	Guests
childOU1_Usr	Print Operators
childOU2_BasicUSR	Backup Operators
childOU2_Usr	Replicator
comma_user	Remote Desktop Users
commaOU_BasicUsr	Network Configuration Operators



NOTE If you get the message “Anonymous Connection Succeeded,” this means that Calypso has found the server, but the Username and/or Password is most likely wrong.

If you get the message “Connection Test Succeeded,” this means that the server IP Address, Port, Username and Password are correct. A list of the first 10 users and groups will be displayed (as shown in the example above).

6. Click [Save Settings](#) to save the connection.

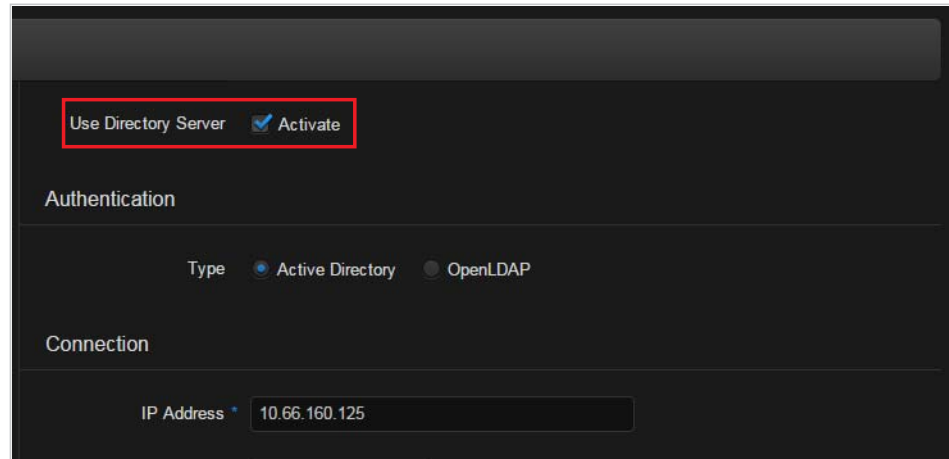
The Calypso Users and Groups lists will now be populated with the LDAP or Active Directory users and groups.

For more information, see [“Managing Users”](#) on page 80 and [“Managing Groups \(LDAP/AD Only\)”](#) on page 87.

Disconnecting from a Directory Server

To disconnect Calypso from a Directory Server:

1. On the Directory Services page, uncheck the [Use Directory Server](#) checkbox.



2. Click [Save Settings](#).

The LDAP or Active Directory information will be removed from Calypso and the Users and Groups pages will return to the local account lists.

Directory Service Settings

The following table lists the Directory Service settings.

Setting	Default	Description/Values
Authentication		
Type	Active Directory	Select your authentication server type: <ul style="list-style-type: none"> • Active Directory • OpenLDAP
Connection		
IP Address	n/a	The IP address or domain name of the server that hosts the authentication server.
Port	389	The communications port that the authentication service uses. The default value is 389 (the standard port used for LDAP connections), or 636 for SSL connections.

Setting (Cont.)	Default (Cont.)	Description/Values (Cont.)
Connection	Basic	Select the encryption protocol: <ul style="list-style-type: none"> • Basic: Unencrypted connection • SSL: Secure Socket Layer (recommended)
Username	n/a	The username for Calypso to connect to your authentication system and query it for the required information. The user account needs to have permission to connect to the server and read the information in the authentication directory.
Password	n/a	The password that corresponds with the user name provided for the Username field.
Query		
Base DN	n/a	The Base DN (Distinguished Name) used by your authentication system. This setting should be provided by your AD/LDAP administrator. For example, ou=staff,dc=haivision,dc=com NOTE: Spaces are not allowed unless they are part of the path. IMPORTANT: If the Base DN is wrong, Calypso will not be able to access the groups. When the connection test succeeds, you will see a list of the first 10 users and groups (see example on page 62).
User Context	n/a	The DN of the context (container) where your authentication system users can be found. This setting should be provided by your AD/LDAP administrator. For example, ou=people,dc=haivision,dc=com IMPORTANT: If the User Context is wrong, users will not be able to log in correctly. For example, they may only have the anonymous privileges or even a blank screen. NOTE: In order to simplify management of user bases, you can specify separate search bases for User and Group objects. You can also input multiple User Contexts (separated by line feeds, i.e., each line is a new context).

Setting (Cont.)	Default (Cont.)	Description/Values (Cont.)
Group Context	n/a	The DN of the context where your authentication system groups can be found. This setting should be provided by your AD/LDAP administrator. NOTE: See previous NOTE: to input multiple Group Contexts.
User Attribute	sAMAccountName	The user attribute your directory system uses. OpenLDAP systems normally use “cn” or “uid”, while Active Directory systems normally use “sAMAccountName”.
Member Attribute	memberOf	The member attribute your directory system uses. OpenLDAP systems normally use “member” or “memberUid”, while Active Directory systems normally use “memberOf”.
Group Object Class	((objectClass=group) (objectClass=groupOfNames))	Object class query for groups. The default will work with almost all directory servers.
User Object Class	(objectClass=person)	Object class query for users. The default will work with almost all directory servers.
Query Page Size	1000	Sets the size of a page for paged results. Paged results are typically supported, but the supported page size may need to be configured for your site. If the requested size is not supported by the LDAP server, a non-paged query will be attempted. The default on most directory servers is 1000.
Data Mapping		
Group Name	cn	These are the fields that Calypso needs to read from the directory server. The defaults should work on most systems. If your system uses different attribute names, you need to configure them here.
Display Name	displayName	
Email	email	

Managing Licenses

This section provides instructions to update your Calypso license from the Web interface.

For major releases or when purchasing licensed options, you need to obtain a valid license key from Haivision Technical Support and apply this before or after the update. For example, KLV support and network storage are both licensed options.



NOTE Any update (other than a maintenance release such as v1.1.x) requires a new license.

To update your license:

1. On the Administration page, click [LICENSING](#) from the sidebar menu.

The Calypso License page opens, showing the expiry date for the current license (see following example).

A screenshot of the Calypso License management interface. The page has a dark theme. At the top, there is a header "Calypso License". Below it, a line of text states "License for 00:0C:29:E0:A0:39 expires on 31/12/2035, 19:00". Underneath, there is a prompt: "To update your license, paste the new license string here:". Below this prompt is a large, empty text input field labeled "License *". At the bottom of the form area, there is a blue button labeled "Update".

2. Paste the new license string in the License text box.
3. Click [Update](#) to load the license.

Configuring Network Settings

When setting up Calypso, you will need to configure the network settings. This includes general settings such as specifying the server hostname, IP address, subnet mask, and DNS server(s), as well as advanced settings such as setting up multiple network interfaces, NIC bonding, link negotiation settings, and static routes.

To configure the network settings:

1. On the Administration page, click **NETWORK** from the sidebar menu.

The Network Configuration page opens (shown in the following example).

Network Configuration

General

Hostname: Calypso

Default Interface: eth0

DNS Servers: 10.65.0.10, 10.65.0.11

Search Domains: haivision.com

NTP Server: pool.ntp.org

Interfaces

eth0 | eth1 | eth2 | eth3 | BOND INTERFACE: ADD

Addressing: None Static DHCP

IP Address: []

Subnet Mask: []

Gateway: []

MTU: 1500

MAC Address: d4:ae:52:6f:55:eb

Link: Auto

Static Routes

All | Actions | Route

Destination	Subnet Mask	Gateway	Interface

Save Settings | Reboot

2. Fill in the General section. For details, see [“Network Settings”](#) on page 69.
3. Under Interfaces, select eth0 (if not already selected).
4. In the Addressing field, select either DHCP or Static to enable or disable the Dynamic Host Configuration Protocol for the interface.



NOTE When DHCP is enabled, Calypso will get an IP Address from a DHCP server on the network to which it is connected. When it is disabled, you must manually enter the appliance’s IP Address and Netmask.

5. Fill in the required fields. For details, see [“Network Settings”](#) on page 69.
6. To configure multiple network interfaces, after you complete eth0, select the next interface (e.g., eth1) and repeat the configuration.
7. To add a bond interface, click **ADD** and fill in the fields, including the Bonding Mode.



TIP Bond interfaces provide a method for aggregating multiple network interfaces into a single logical bonded interface. The goal is to increase throughput and to ensure redundancy in case one of the links should fail.

8. To add one or more static routes, click  under Static Routes and fill in the fields.
9. Click [Save Settings](#).
10. Click [Reboot](#) to restart the Calypso server.

Network Settings

The following table lists the configurable Calypso Network settings.



NOTE Please contact your Network Administrator if you are unsure what to put in any of these fields or if you are unsure whether the setting is required on your network.

Network Setting	Description
General	
Hostname	The hostname to be assigned to Calypso. This is a FQDN (Fully Qualified Domain Name); for example, myserver.mycompany.com.
Default Interface	The default Ethernet interface: either eth0, eth1, eth2, or eth4.
DNS Servers	(Optional) The IPv4 address(es) of the Domain Name Server(s) to use.
Search Domains	(Optional) The search strings to use when attempting to resolve domain names.
NTP Server	(Optional) If Network Time Protocol (NTP) is enabled, enter the IP address of the NTP server.
Interfaces	
eth0 eth1 eth2 eth3	Select the interface tab to view and configure.
Bond Interface	Bonding enables an administrator to use more than one physical network port as a single connection. This can be used to increase performance or redundancy of a server.
Addressing	Choose whether the interface will use a static or dynamic IP address: <ul style="list-style-type: none"> • None: Select to disable the interface. • Static: Select to disable DHCP. When it is disabled, you must manually enter the IP Address and Subnet Mask. • DHCP: Select to enable the Dynamic Host Configuration Protocol. When DHCP is enabled, the appliance will receive an IP Address from a DHCP server on the network.
IP Address	The IP Address for the interface. This is a unique IPv4 address that identifies the unit in the IP network. NOTE: If DHCP is disabled, you may enter an IP address in dotted-decimal format (xxx.xxx.xxx.xxx).

Network Setting	Description
Subnet Mask	<p>The IPv4 network mask for the interface. This is a 32-bit mask used to divide an IP address into subnets and specify the network's available hosts.</p> <p>NOTE: If DHCP is disabled, you may enter a Network Mask in dotted-decimal format (e.g., 255.255.0.0).</p>
Gateway	<p>The IPv4 default route to be assigned to the interface. This is the gateway that is used when no other route matches. This address must be reachable on your local subnet.</p> <p>NOTE: If DHCP is disabled, you may enter a gateway address in dotted-decimal format.</p>
MTU	<p>(Maximum Transmission Unit) Specifies the maximum allowed size of IP packets for the outgoing data stream. 228..1500</p>
MAC Address	<p>(Read-only) The Media Access Control address assigned to the interface. This is the physical address of the network interface and cannot be changed.</p>
Link	<p>Select the link negotiation settings for the interface, either Auto or Manual.</p> <p>If you select Manual, you can select the Speed (10, 100 or 1000) and Duplex setting (Full or Half).</p>

Managing Network Storage

Network Storage is a licensed option that enables you to move recording storage from your Calypso to Network-Attached Storage through an NFS connection.

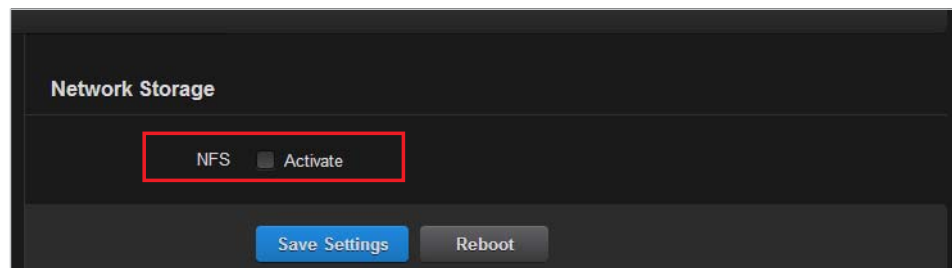


NOTE For information on the Network Storage option, please contact Haivision Sales. The NFS server must be configured on your network storage host before setting up Calypso.

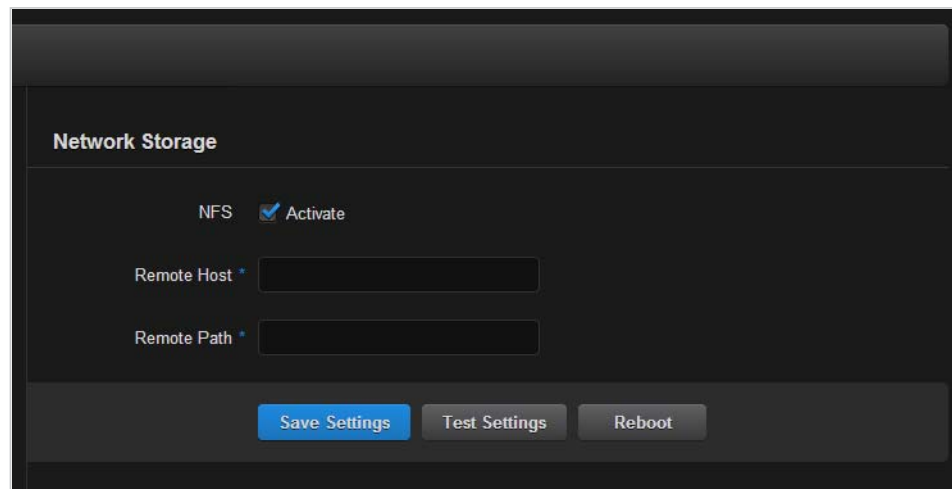
To configure network storage:

1. On the Administration page, click [NETWORK STORAGE](#) from the sidebar menu.

The Network Storage page opens, showing the [NFS – Activate](#) checkbox.

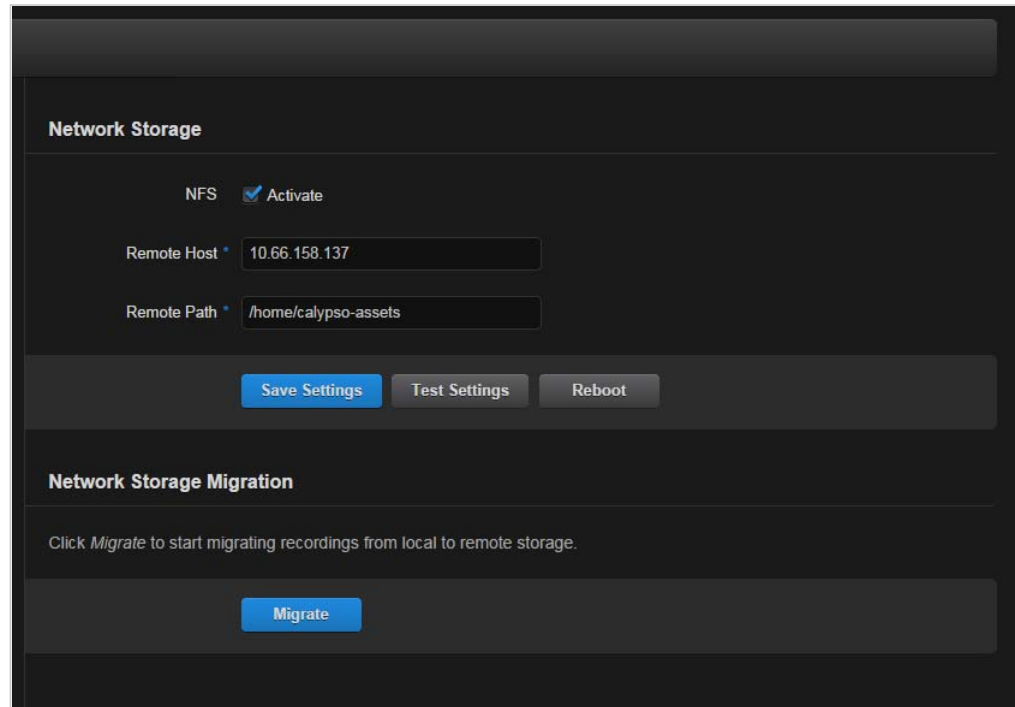


2. To connect to an NFS server, check the checkbox.

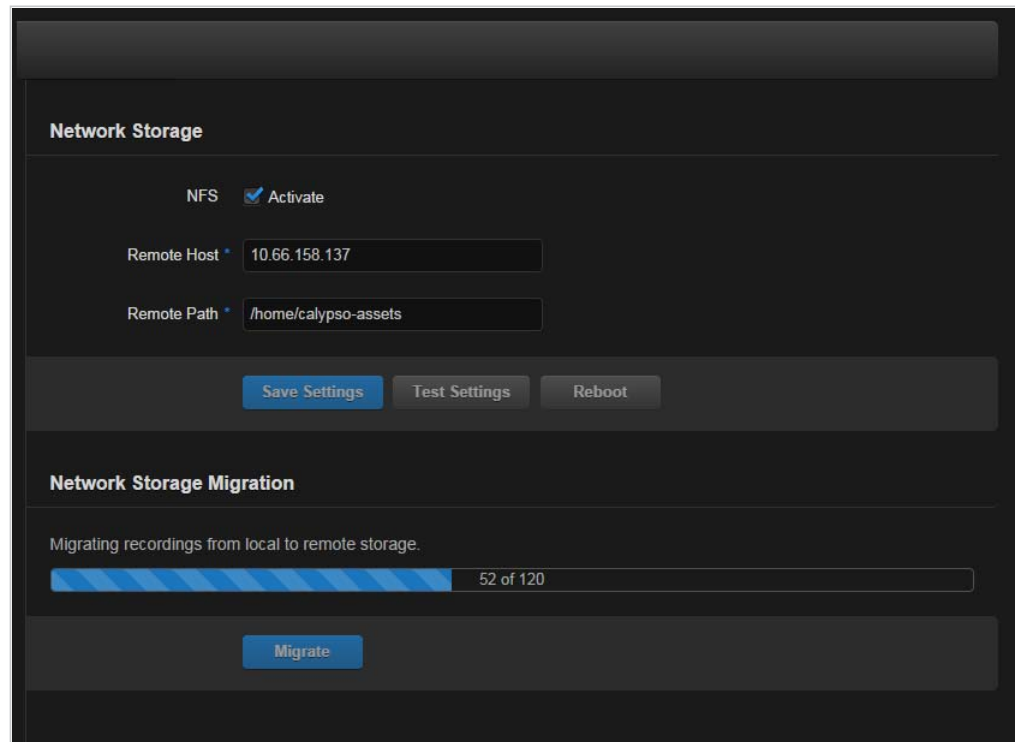


3. Fill in the remote host IP address and path.
4. To test the connection from Calypso to the defined NFS server, click [Test Settings](#).
5. Click [Save Settings](#) to save the connection.
6. Click [Reboot](#) to restart the Calypso server.

7. After the reboot, click [Migrate](#) to copy your recordings to the NFS server.



The progress bar shows the progress of the migration.



Your recordings will now be stored on the defined NFS server.

Managing Secure Streaming

When setting up Calypso, you may (optionally) enable secure streaming. Calypso supports encrypted streaming from the appliance to the desktop via RTMPS.



NOTE Streams from the source to Calypso are unencrypted.

RTMPS encryption uses SSL (Secure Sockets Layer) certificates to encrypt the traffic for the Web browser. Calypso ships with a self-signed SSL certificate which will work with any configured server hostname. However, Web browsers do not consider this to be a trusted certificate because it was not signed by a Certificate Authority.

When accessing the Web interface, users will see a security warning and may be prompted for authorization each time they try to view a video. Some Web browsers may reject the RTMPS connection completely. Haivision recommends that site administrators install a signed SSL certificate if they plan to use RTMPS streaming. Site administrators should generally contact their Network Administrators for help getting SSL certificates.

To enable encrypted streaming:

1. On the Administration page, click **SECURITY** from the sidebar menu.

Secure Streaming

Protocol RTMPS RTMP

Mobile Streaming Secure Insecure Disabled

Active Certificate

Certificate:
Data:
Version: 3 (0x2)
Serial Number: 16937248034915786305 (0xeb0d3159b1d69e41)
Signature Algorithm: sha1WithRSAEncryption
Issuer: C=US, ST=Illinois, L=Lake Forest, O=Haivision Network Video Inc., OU=PRODUCT DEVELOPMENT,
CN=localhost.localdomain/emailAddress=support@haivision.com
Validity
Not Before: Oct 20 20:41:15 2014 GMT

To update your certificate, paste the new certificate and key below:

SSL Certificate

SSL Certificate Key

SSL Intermediate Certificate Bundle

2. For the Protocol, select RTMPS.
3. To enable Mobile Streaming, select either Secure or Insecure. See the following section, [“Security Settings”](#).
4. To update your security certificate, paste in the new SSL Certificate and SSL Certificate Key, and optionally an SSL Intermediate Certificate Bundle in the text boxes. See the following section, [“Security Settings”](#).
5. Click **Save Settings**.

- To regenerate a self-signed certificate based on the values in the Network Configuration section, click [Renew Certificate](#).

Clicking [Renew Certificate](#) will replace the existing certificate with a newly generated one.

- Click [Reboot](#) to restart the Calypso server.

Security Settings

The following table lists the configurable Calypso Security settings.



NOTE Please contact your Network Administrator if you are unsure what to put in any of these fields or if you are unsure whether the setting is required on your network.

Security Setting	Description
Protocol	Choose whether Calypso will use a plain or secure streaming protocol: <ul style="list-style-type: none"> RTMP: Select to enable standard RTMP. RTMPS: Select to enable secured RTMP. See “Managing Secure Streaming” on page 73.
Mobile Streaming	When streaming to a mobile device, choose whether Calypso will use secure (encrypted) or insecure (unencrypted) mode for HLS streaming. Mobile Streaming is disabled by default. <ul style="list-style-type: none"> Secure: Select to ensure that users cannot stream on a mobile device without a valid security certificate. Insecure: Select to allow users to stream on a mobile device without a valid security certificate. Disabled: Users will not be able to stream live or VOD content on a mobile device.
Active Certificate	Displays the currently active security certificate (if applicable).
SSL Certificate	To update your security certificate, paste in the new SSL certificate in the text box. <p>NOTE: Haivision recommends that site administrators install a signed SSL certificate if they plan to use RTMPS streaming. Please contact your Network Administrator to obtain the SSL certificate and key.</p>

Security Setting	Description
SSL Certificate Key	To update your security certificate, paste in the new SSL certificate key in the text box.
SSL Intermediate Certificate Bundle	<p>You may also need to provide one or more certificate chain files signed by intermediate CA providers.</p> <p>An intermediate certificate goes between your site (server) certificate and a root certificate to complete the chain to the trusted root.</p> <p>This is useful when a Certificate Authority (CA) signs the SSL certificate using intermediate certificates in the chain of trust. In these cases, Web browsers don't know about this intermediate certificate and cannot "walk up the chain of trust" to validate the SSL certificate. To work around this problem, Calypso optionally accepts a "bundle" of any intermediate certificates, instead of only taking the SSL certificate.</p>

Installing System Updates

When you first receive the Calypso appliance, the necessary software is pre-installed on it. System updates are issued through Haivision's Download Center on our website at: <http://www.haivision.com/download-center/>

You may download the latest software and documentation by registering via the Haivision Support Portal. When a system update becomes available, you can easily install it from the Web interface. You will first need to copy the update file to your local computer or network.



NOTE For major releases or when adding new features, you need to apply a valid license key before or after the update. For more information, see ["Managing Licenses"](#) on page 66.

Please contact Haivision Technical Support to obtain a valid license key. Only customers under a maintenance agreement can obtain an update package. If you install an update without a valid license key, Calypso will not function.

You cannot install system updates from a mobile device.

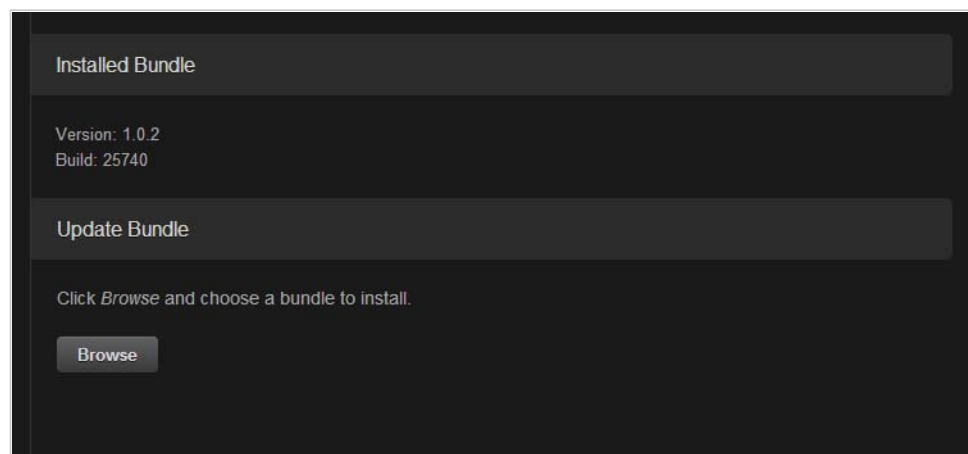
The system update comes in the form of a software package entitled `calypso-xxxxx_rxxxxx_release.hai`, which when loaded will replace the application on your Calypso.

This section provides instructions to install a system update from the Web interface.

To install a system update:

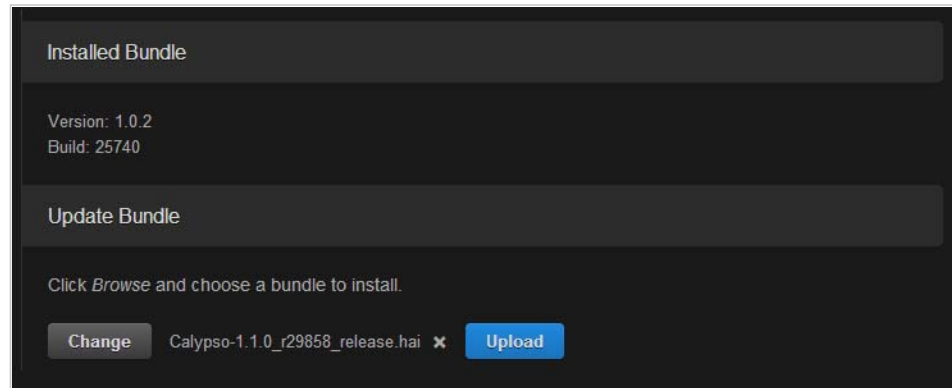
1. On the Administration page, click **UPDATE** from the sidebar menu.

The Update page opens (see following example).



2. Click **Browse** to select the update bundle to load.

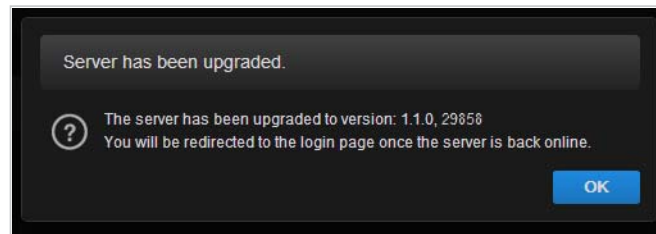
After you select the bundle, you will see a confirmation such as the following.



3. Click [Upload](#) to continue.

The progress bar shows the progress of the upload.

4. Wait until the bundle has been uploaded and verified.
5. Click [Update](#) and then click [Confirm](#).
6. When you see the following confirmation dialog, click [OK](#) to continue.



7. Wait until the update is complete and the appliance restarts.

Once the appliance has restarted, the browser will display the Calypso Login page (depending on your Web browser and settings). If not, reload the Login page.

CHAPTER 4: Managing Access Control

This chapter describes how to set up and manage user accounts, groups, roles, and share permissions for your Calypso appliance.



NOTE The intended audience for this chapter is system administrators.

For information on viewing and other options available to content creators and other non-administrative users, please refer to [Chapter 5: “Getting Started Browsing Content”](#).



IMPORTANT Before proceeding, make sure that:

- The appliance is set up correctly and all necessary network and A/V connections are established. See [Chapter 2: “Hardware Setup”](#).
- Sources and (if applicable) Directory Authentication Services have been configured for your system. See [Chapter 3: “Configuring Calypso”](#).

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Managing Users



IMPORTANT If Calypso is connected to an LDAP or Active Directory server, the Calypso Users list will be populated with information from the directory server. See [“Managing Directory \(Authentication\) Services”](#) on page 60.

Calypso allows you to display a list of users and assign roles to users. Calypso uses roles with pre-defined permissions to provide users or groups with controlled access to sessions, recordings, and sources. In order to successfully log in, a user must be assigned a role.

If your system is *not* connected to a directory server, you may also add and modify user accounts from Calypso.



NOTE Although the typical workflow in an LDAP/AD environment is to assign roles via Groups, assigning roles from the Users list may be useful in some cases.

To view and manage the users for your platform:

1. On the Administration page, click **USERS** from the sidebar menu.

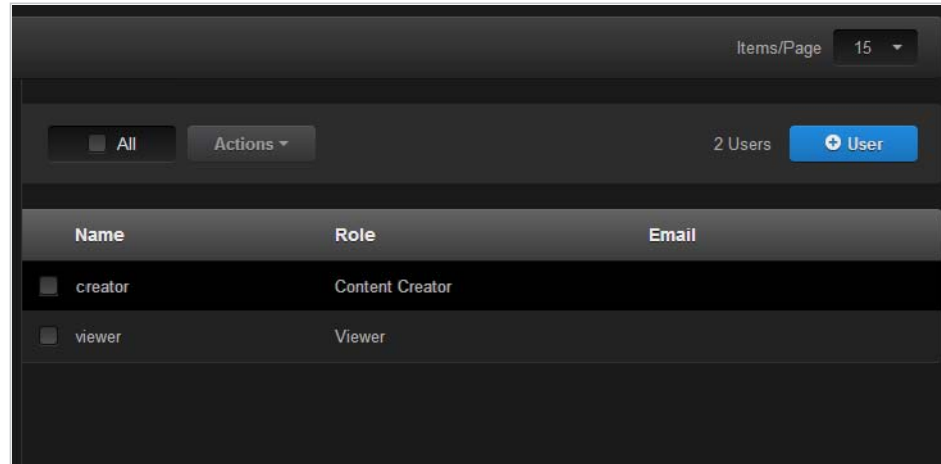
The Users list opens (shown in the following examples), displaying the list of defined users for your platform.

2. In an LDAP/AD environment, you may browse through the list and assign roles to users. See [“Assigning Roles to LDAP/AD Users”](#) on page 82.

Name	Role	Email
<input type="checkbox"/> Administrator		
<input type="checkbox"/> BindAdmin		
<input type="checkbox"/> CNTest		
<input type="checkbox"/> Comma, User		
<input type="checkbox"/> DevUser		
<input type="checkbox"/> Email user		
<input type="checkbox"/> TestUsr1		

-or-

3. If your Calypso is *not* connected to a directory server, you may browse through the list, assign roles to users, *as well as* add and modify user accounts. See [“Managing User Accounts \(Non LDAP/AD\)”](#) on page 83.



NOTE The default Calypso users (non LDAP/AD) are creator and viewer.

Assigning Roles to LDAP/AD Users

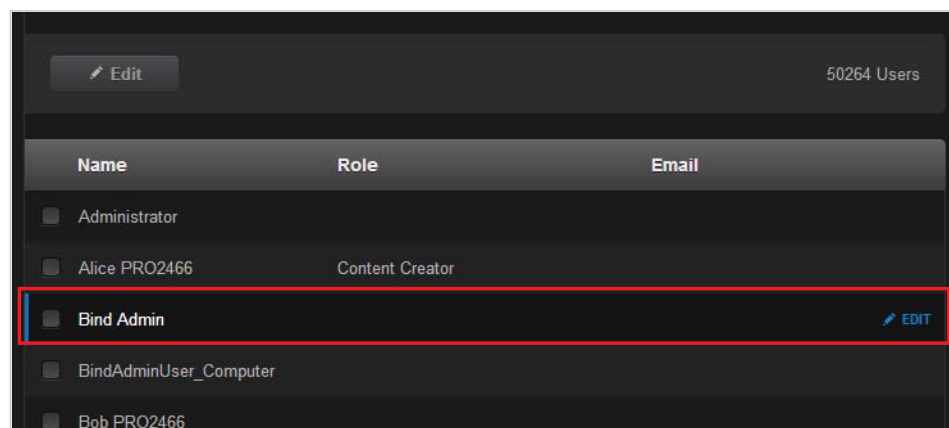


IMPORTANT If Calypso is connected to a directory server, user accounts must be created or modified from the LDAP or Active Directory server. You cannot add or modify user accounts from Calypso. Calypso users will log in using their LDAP/AD username and password.

In an LDAP/AD environment, you may browse through the Users list and assign roles to users.

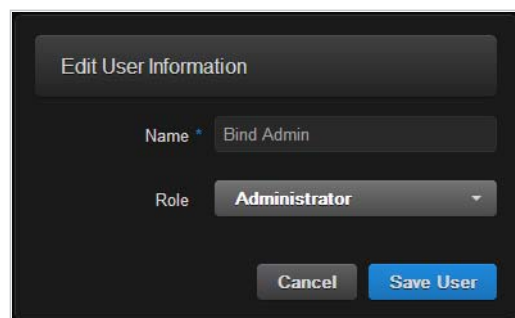
To assign a role to a user:

1. Select the user by mousing over the user name in the Users list and click anywhere in the row.



Or you can check the checkbox next to the user name and select Edit from the Actions drop-down menu.

2. On the Edit User Information dialog, select the role for the user account. See [“Role”](#) on page 86.



3. Click [Save User](#).

The new role will be displayed on the Users list.




TIP The **A** icon next to a user name indicates that the user has been assigned an Administrator role.

Name	Role	Email
<input type="checkbox"/> Administrator A	Administrator	
<input type="checkbox"/> Bind Admin A	Administrator	
<input type="checkbox"/> BindAdminUser_Computer		
<input type="checkbox"/> CN=Microsoft Corporation,L=...		

Managing User Accounts (Non LDAP/AD)

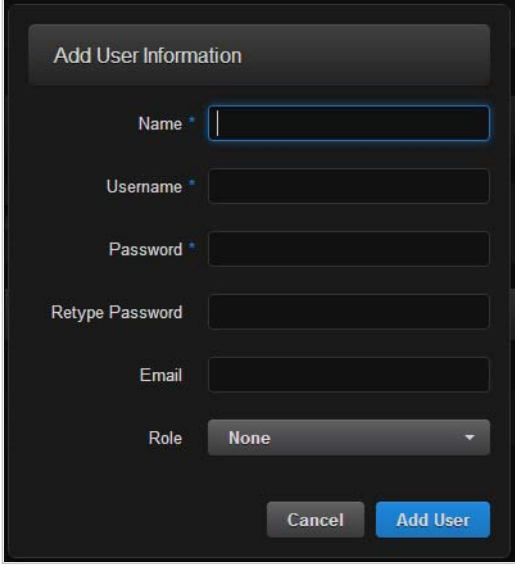
If your Calypso is *not* connected to a directory server, you will need to add and modify user accounts from the Users list.

To add a user:

1. From the Users list (Administration page), click .

Name	Role	Email
<input type="checkbox"/> DevUser A	Administrator	info@haivision.com
<input type="checkbox"/> InfoDev	Content Creator	InfoDev@haivision.com
<input type="checkbox"/> content contributor	Content Contributor	
<input type="checkbox"/> creator	Content Creator	
<input type="checkbox"/> viewer	Viewer	

2. On the Add User Information dialog, enter or select the value(s) to define the user. See [“User Settings”](#) on page 86.



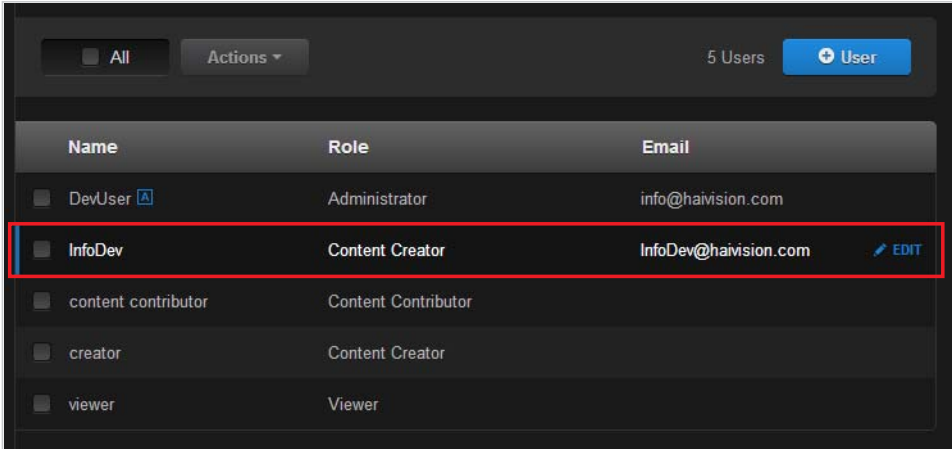
The image shows a dark-themed dialog box titled "Add User Information". It contains several input fields: "Name" (with an asterisk), "Username" (with an asterisk), "Password" (with an asterisk), "Retype Password", "Email", and a "Role" dropdown menu currently set to "None". At the bottom, there are two buttons: "Cancel" and "Add User".

3. Click [Add User](#).

The new user will be added to the Users list.

To edit a user account:

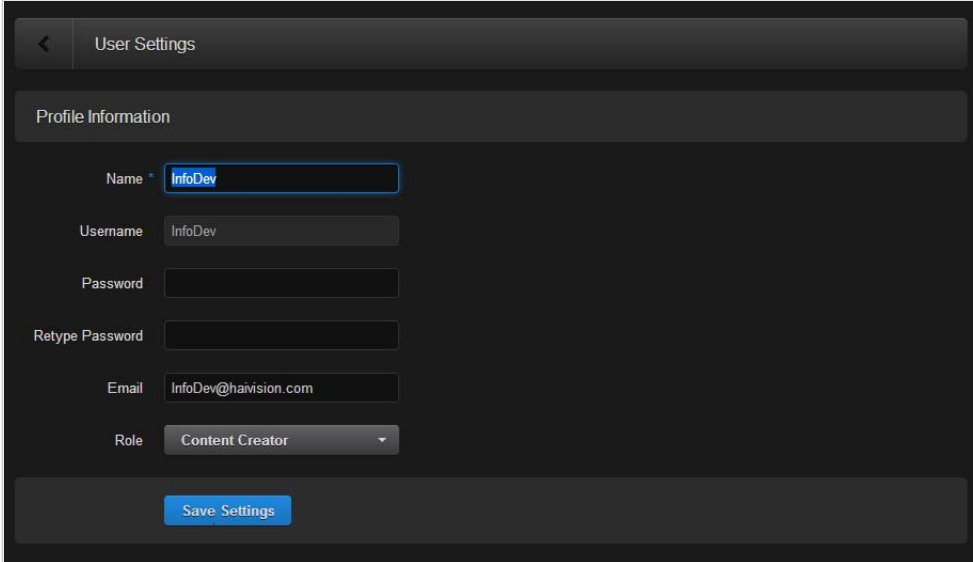
1. Select the user in the Users list.



The image shows a table of users in a dark theme. The table has columns for "Name", "Role", and "Email". The "InfoDev" user is highlighted with a red box, and an "EDIT" link is visible next to it. The table also includes a "5 Users" count and a "+ User" button at the top right.

Name	Role	Email
DevUser A	Administrator	info@haivision.com
InfoDev	Content Creator	InfoDev@haivision.com EDIT
content contributor	Content Contributor	
creator	Content Creator	
viewer	Viewer	

2. On the User Settings page, enter or select the value(s) to modify the user account. See [“User Settings”](#) on page 86.



The screenshot shows the 'User Settings' page. At the top left is a back arrow and the text 'User Settings'. Below this is a section titled 'Profile Information'. It contains several input fields: 'Name' with the value 'InfoDev', 'Username' with 'InfoDev', 'Password' (empty), 'Retype Password' (empty), 'Email' with 'InfoDev@haivision.com', and 'Role' with a dropdown menu showing 'Content Creator'. At the bottom of the form is a blue button labeled 'Save Settings'.

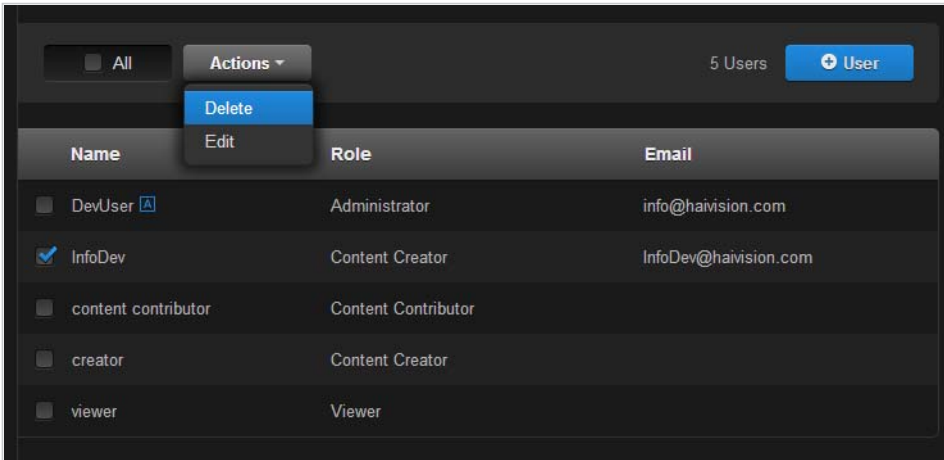
3. Click [Save Settings](#).

The user settings will be updated and, where applicable, will be shown on the Users list.


4. To return to the Users list, click .

To delete users:

1. Select one or more users in the Users list.



The screenshot shows the 'Users list' page. At the top left is a radio button for 'All'. To its right is an 'Actions' dropdown menu. Further right is the text '5 Users' and a blue button with a plus sign and the word 'User'. Below this is a table with columns for 'Name', 'Role', and 'Email'. The table contains five rows of user data. The 'InfoDev' user is selected, indicated by a blue checkmark in the first column. An 'Actions' dropdown menu is open over the 'InfoDev' row, showing 'Delete' and 'Edit' options. The 'Delete' option is highlighted in blue.

Name	Role	Email
<input type="checkbox"/> DevUser 	Administrator	info@haivision.com
<input checked="" type="checkbox"/> InfoDev	Content Creator	InfoDev@haivision.com
<input type="checkbox"/> content contributor	Content Contributor	
<input type="checkbox"/> creator	Content Creator	
<input type="checkbox"/> viewer	Viewer	

2. Select Delete from the Actions drop-down menu and click [Confirm](#).

The selected user(s) will be removed from the Users list.

User Settings

The following table lists the configurable User settings on non-LDAP/AD systems:

User Setting	Default	Description/Values
Name	n/a	Enter a name for the user. This name will be displayed on the Users list.
Username	n/a	Enter a unique username. The user will use this name to log into the Calypso Web Interface. NOTE: You cannot modify the username.
Password	n/a	Type in the new password.
Retype Password	n/a	Type in the new password again.
Email	n/a	Enter an email address to associate with the user account.
Role	None	Select the role for user. In order to successfully log in, a user must be assigned a role (other than None). NOTE: For information on creating and customizing roles for your system, see “Managing Roles” on page 89. For the default role permissions, see “Default Roles” on page 95.

Managing Groups (LDAP/AD Only)



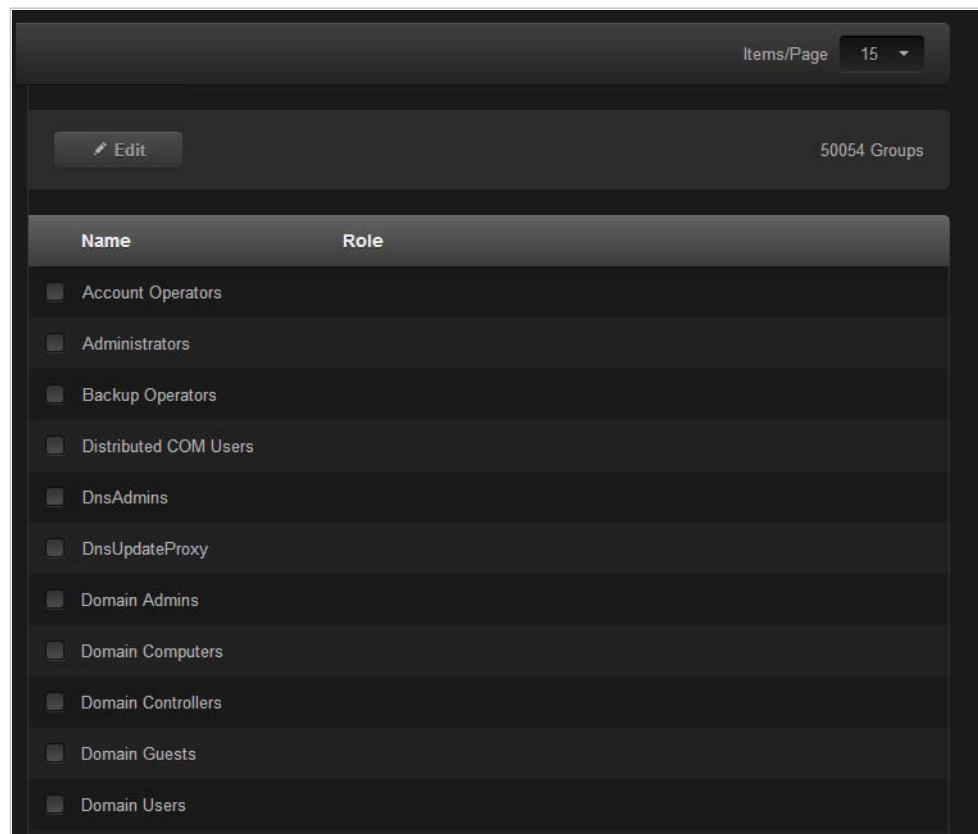
IMPORTANT Groups are only available on Calypso if your system is connected to an LDAP or Active Directory server. See [“Managing Directory \(Authentication\) Services”](#) on page 60.

If Calypso is connected to an LDAP or Active Directory server, the Groups list will be populated with information from the directory server. From the Groups list, you can assign roles to groups. This provides a means to efficiently manage multiple users. You cannot add or modify users or groups directly from Calypso.

To view and manage the groups for your platform:

1. On the Administration page, click **GROUPS** from the sidebar menu.

The Groups list opens, displaying the list of defined groups for your platform (shown in the following example, connected to an Active Directory server).



2. To assign roles to groups, see the following section, [“Assigning Roles to LDAP/AD Groups”](#).

Assigning Roles to LDAP/AD Groups



IMPORTANT If Calypso is connected to an LDAP or Active Directory server, the Calypso Groups list will be populated with information from the directory server. See [“Managing Directory \(Authentication\) Services”](#) on page 60.

Groups must be created or modified from the directory server. You cannot add or modify groups from Calypso, other than to assign the role.

To assign a role to a group:

1. Select the group name in the Groups list.
2. On the Group Information dialog, select the role for the group. See [“Default Roles”](#) on page 95.

Group Information

Name Account Operators


Role None


Cancel Save Group

3. Click **Save Group**.

The new role will be displayed on the Users list.



TIP The  icon next to a group name indicates that the group has been assigned an Administrator role.

Name	Role
<input type="checkbox"/> topOU_CycleGrp1	Content Creator
<input type="checkbox"/> topOU_CycleGrp2 	Administrator
<input type="checkbox"/> topOU_MultiGrp1	
<input type="checkbox"/> topOU_MultiGrp2	
<input type="checkbox"/> topOU_Space Grp	

Managing Roles

Roles are used to confer permissions to users and groups. A user must be assigned a role in order to log in. Calypso provides the following default roles.

Role	Default Permissions
Administrator	In charge of system
Content Creator	Make sessions and create recordings
Content Contributor	Create recordings with no other system responsibilities
Viewer	View or interact with content with no other system responsibilities
NOTE: For more information, see “Default Roles” on page 95.	

In addition, users may be assigned “share” permissions for content rights (recordings and sessions) by administrators or other users. Share permissions may further qualify a user’s privileges.

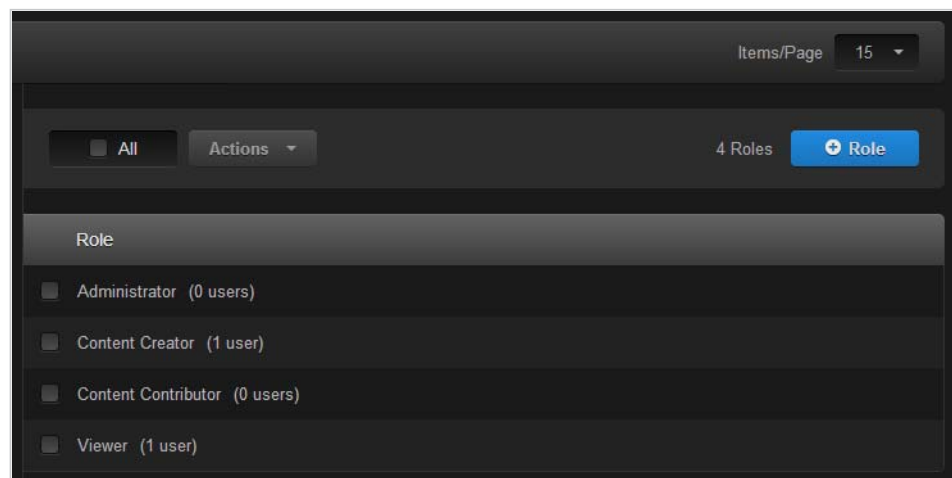
Calypso roles and share permissions are fully customizable (see [“Creating Custom Roles”](#) on page 93 and [“Managing Share Permissions”](#) on page 96).

Roles remain with users regardless of the group to which they belong. When a user belongs to a group, the user’s permissions come from their assigned role.

To view and manage the roles for your platform:

1. On the Administration page, click **ROLES** from the sidebar menu.

The Roles list opens, as shown in the following example.



The Roles list displays the list of available roles and the number of users (and groups, if applicable) assigned to each role. From here, you can add users to and remove users

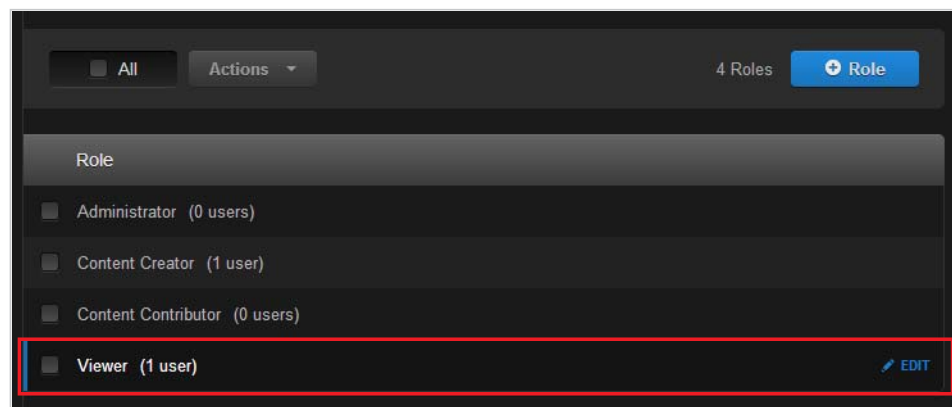
from an existing role, and edit role permissions. You can also create new roles and delete roles.

- To add users (and groups, if applicable) to a role, see the following section, [“Adding Users and Groups to Roles”](#).
- To remove users (and groups, if applicable) from a role, see [“Removing Users or Groups from Roles”](#) on page 91.
- To edit role permissions, see [“Editing Role Permissions”](#) on page 92.
- To create new roles, see [“Creating Custom Roles”](#) on page 93.
- To delete roles, see [“Deleting Roles”](#) on page 94

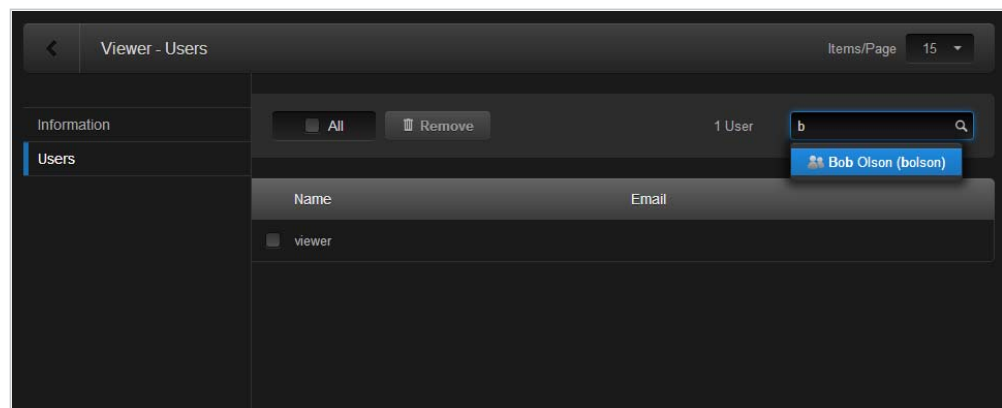
Adding Users and Groups to Roles

To add users and/or groups to a role:

1. Select the role in the Roles list.

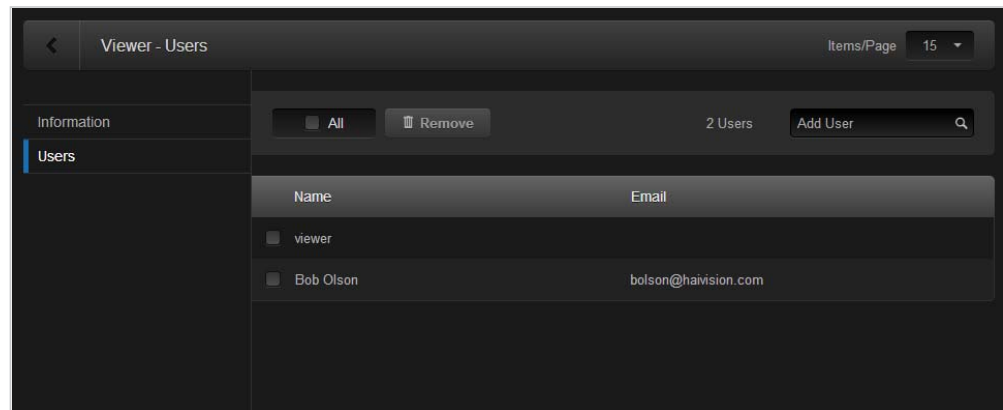



2. Click **USERS** or **GROUPS** from the sidebar menu.
3. On the <Role> Users or Groups page, type the first few letters of the user or group name in the Add User/Group field.



4. Select the user or group from the list that appears.

The selected user or group is now added to the role (see following example).

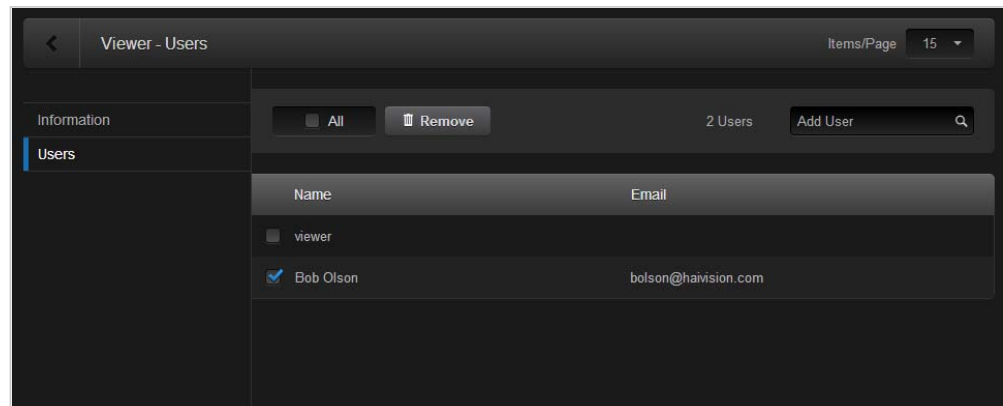


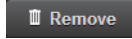

5. Click  to return to the Roles list.

Removing Users or Groups from Roles

To remove users or groups from a role:

1. Select the role in the Roles list.
2. On the <Role> Users or Groups page, check the checkbox next to the users or groups to remove (or check [All](#)).

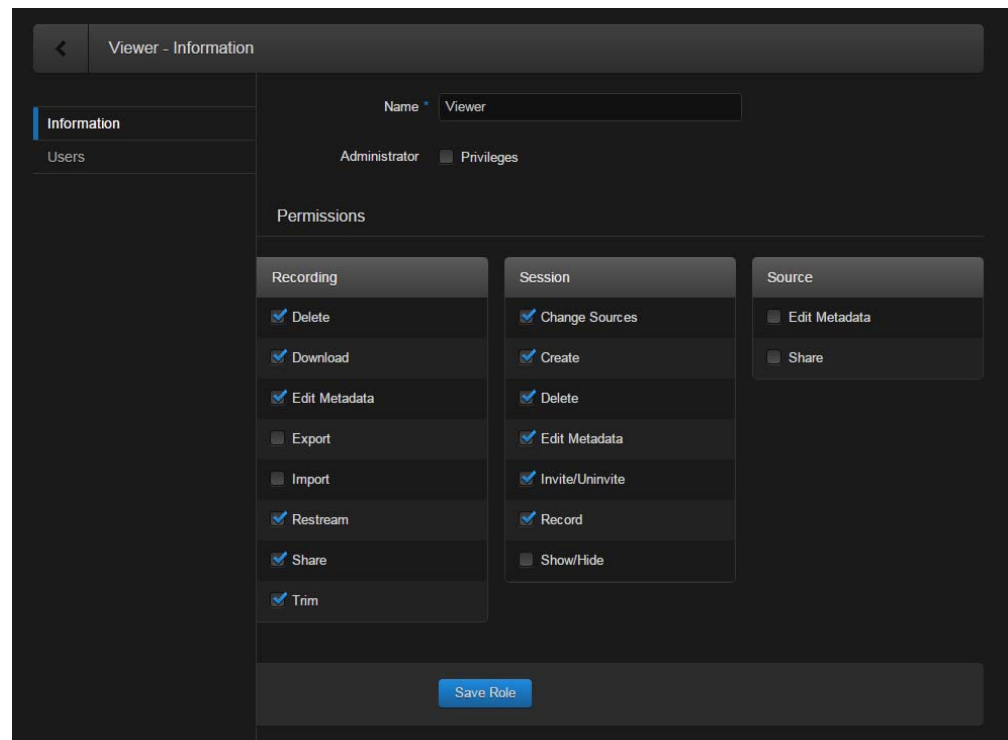


3. Click .
4. Click [Confirm](#).
The selected user(s) or group(s) will be removed from the list.
5. Click  to return to the Roles list.

Editing Role Permissions

To edit permissions for a role:

1. Select the role in the Roles list.
2. On the <Role> Users or Groups page, click **INFORMATION** from the sidebar menu.
3. On the <Role> Information page, check or uncheck the permissions in the Recording, Session, and Source sections as required.



TIP To give a role full administrative privileges, check the Administrator Privileges checkbox.


4. Click **Save Role**.

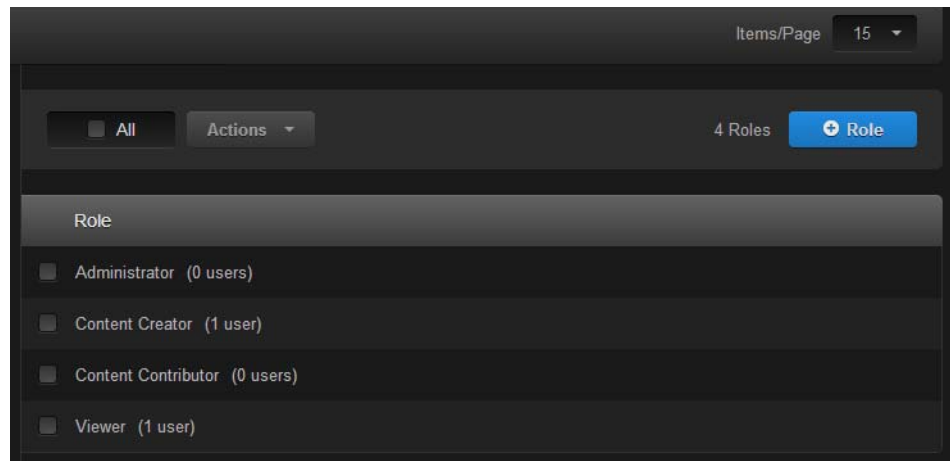
The selected permissions will be applied to the role.

Creating Custom Roles

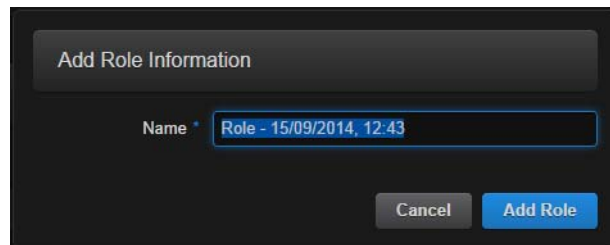
Administrators can create custom roles with full control of fine-grain permissions. For example, end-users can be assigned a role enabling them to create a session but not share it with other users, or to create a recording but not download or delete it.

To create a custom role:

1. From the Roles list, click .

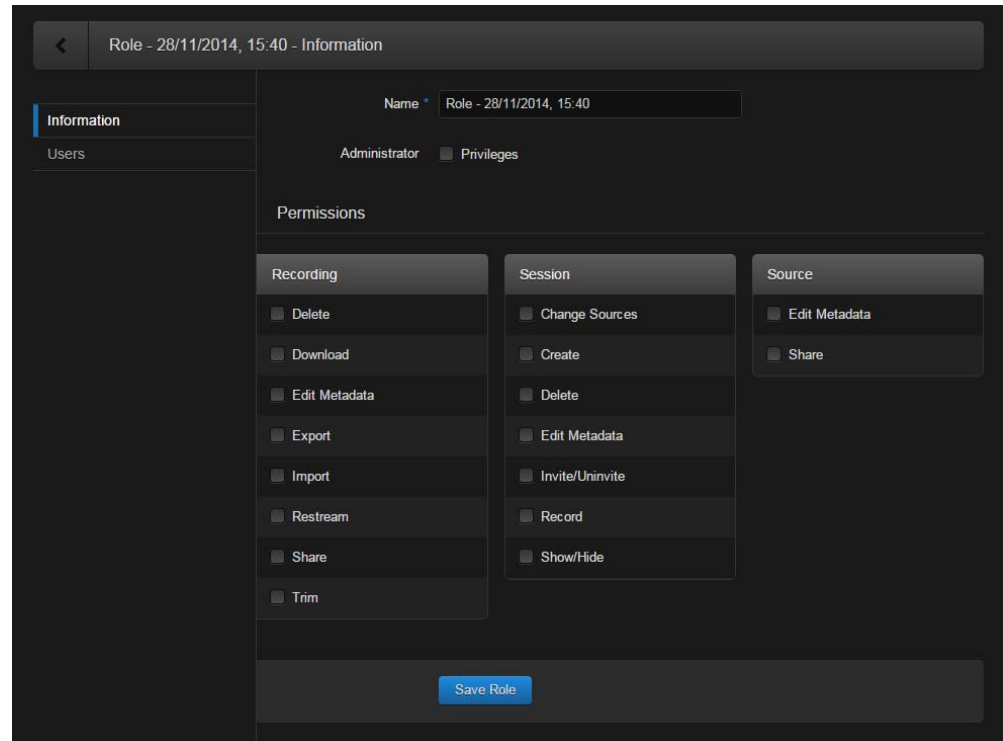



2. On the Add Role Information dialog, type in a name for the role.



3. Click [Add Role](#).

4. On the <Role> Information page, check the permissions in the Recording, Session, and Source sections to assign to the role.



5. Click [Save Role](#)
6. To add users or groups to the role, click [USERS](#) or [GROUPS](#) from the sidebar menu. See [“Adding Users and Groups to Roles”](#) on page 90.
7. Click  to return to the Roles list.

Deleting Roles

To delete roles:

1. Select the role(s) in the Roles list.
2. Select Delete from the Actions drop-down menu and click [Confirm](#).

The selected role(s) will be deleted.

Default Roles



IMPORTANT Administrators may create additional roles as well as edit the permissions for the default roles.

The following table is a matrix of the default roles (i.e., for system functions) available to assign to Calypso users and groups. In addition, where applicable, the table lists the “share” permissions for content rights (recordings and sessions):

Tasks	Roles			
	Administrator	Content Creator	Content Contributor	Viewer
Create Sessions	✓	✓		✓
Add/remove Sources from Sessions	✓	OWN		✓
Record Sessions	✓	OWN	OWN	OWN
Import Recordings	✓	✓	✓	
Export Recordings	✓	✓		
Edit Metadata	✓	EDIT	EDIT	EDIT
Share Recordings	✓	OWN	OWN	OWN
Download Recordings	✓	OWN	OWN	OWN
Trim Recordings	✓	OWN	OWN	OWN
Stop Other People's Recordings	✓			
Show/Hide Sessions	✓	OWN	OWN	OWN



NOTE Role permissions may be further qualified by “share” permissions. For example, a user with the Viewer role might have been given “OWN” permissions on a recording and can therefore edit and delete it.

Managing Share Permissions

Administrators and other users may assign users “share” permissions for content rights (recordings and sessions). Share permissions are combined with a user’s role and may further qualify the user’s privileges.

Permission needs to be granted on both the role AND shared level in order for a user to have access. Basically, a user’s role and share permission must match in order for the user to be able to do something.

When setting up Calypso, administrators can create custom share permissions. Calypso provides the default share permissions shown below.

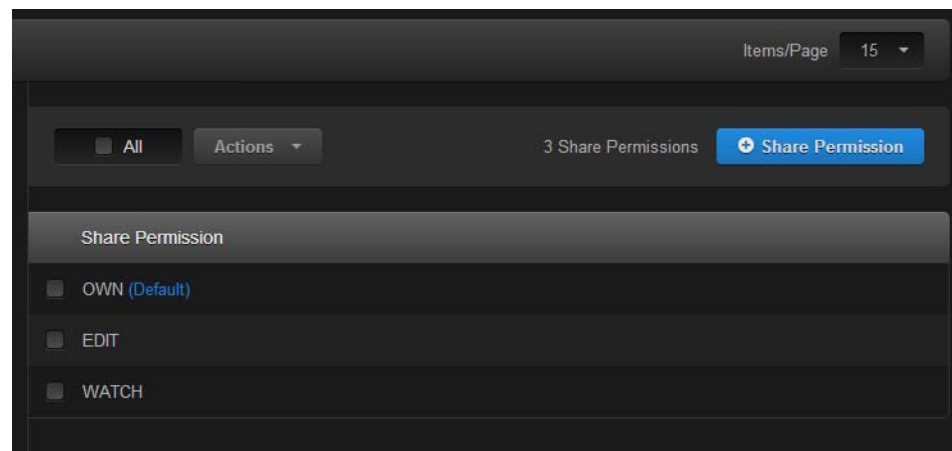


NOTE For the default share permissions, see [“Session Invitations”](#) on page 131.

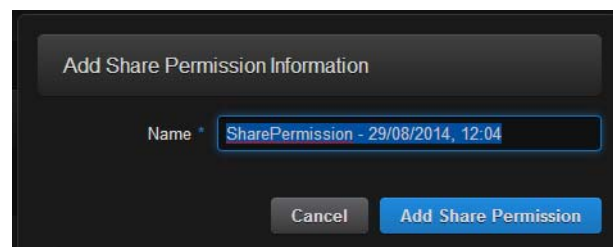
To view and manage the share permissions for your system:

1. On the Administration page, click **SHARE PERMISSIONS** from the sidebar menu.

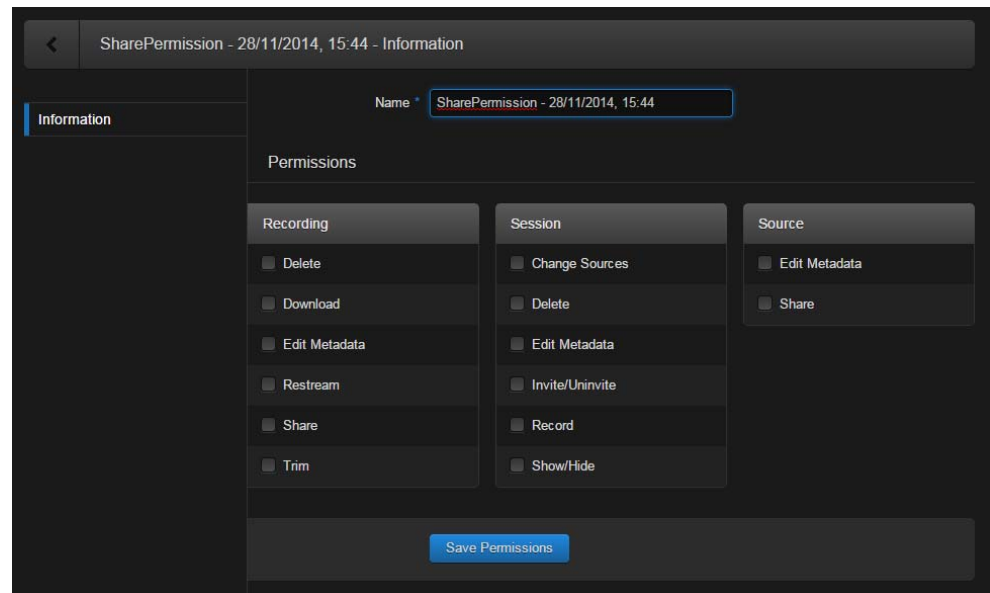
The Share Permissions list opens, as shown in the following example.




2. To create new a share permission, click **+ Share Permission**.
3. On the Add Share Permission Information dialog, type in a name for the share permission and click **Add Share Permission**.



4. On the Edit Share Permission Information page, check the permissions in the Recording, Session, and Source sections to assign to the share permission

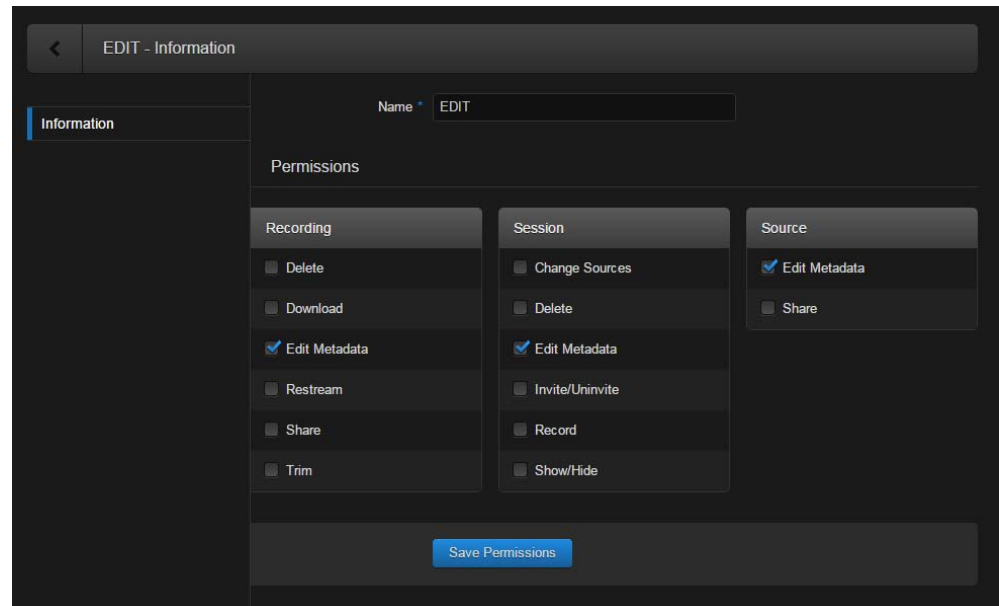



5. Click [Save Permissions](#).
6. Click  to return to the Share Permissions list.

This share permission is now available to users when sharing sessions, recordings, or sources.

To edit a share permission:

1. Select the share permission in the Share Permissions list.
2. On the Edit Share Permission Information page, check the permissions to modify the share permission.



3. Click [Save Permissions](#).
4. To return to the Share Permissions list, click .

To delete a share permission:

1. Select one or more share permissions in the Share Permissions list.
2. Select Delete from the Actions drop-down menu and click [Confirm](#).

The selected share permission(s) will be removed from the list.

CHAPTER 5: Getting Started Browsing Content

This chapter describes how to access the Calypso Web Interface and provides an overview of the Web interface, including viewing options and searching.



NOTE The intended audience for this chapter is all users, including content creators, content contributors, and viewers. Administrative privileges are typically not required for these tasks.

However, some of the functions described below are user-specific. Please contact your system administrator to have the proper permissions assigned.



IMPORTANT Calypso must be set up correctly with sources, users, and roles configured for your system. For any questions, see your system administrator.

Topics In This Chapter

Introduction	100
Accessing the Calypso Web Interface	101
Changing Your Password	103
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Viewing Options	105
Searching	106
Filtering the Content Lists	107
Displaying Only Recordings/Sessions that are Mine or Shared with Me	111
Selecting Items from the Content List	112
Performing Bulk Edits	114
Keyboard Shortcuts (Browse Content)	115

Introduction

The Content Browser is the primary “landing page” for Calypso users. With the Content Browser you can:

- search and manage the content (sessions, recordings and sources) available on the Calypso server
- filter session, recording and source lists by category to quickly find relevant content
- view existing sources
- view and create sessions and recordings
- edit session, recording and source metadata
- show only sessions and recordings that you own (“Mine”) or only those that have been shared with you (“Shared”)
- annotate recordings by inserting HotMarks
- use the “Trim” feature to create clips out of longer recordings
- invite users to participate in sessions
- share recordings with other users
- export videos to an FTP/FTPS server or the Haivision Video Cloud*
- import Calypso-compatible MP4 and TS (Transport Stream) files and create new recordings to view or share*
- download recordings as MP4 or TS files*
- re-stream recordings to create TS streams



NOTE *You cannot export videos or import or download MP4 or TS files from a mobile device.

Multi-Stream Sessions

By default, when multi-stream sessions are recorded, the sources are “synchronized”. This means that recording operations (such as start, stop and pause) operate on all sources simultaneously. However, you can specify that the streams are to be recorded separately, whereby each stream has its own set of controls. In this case, recording operations can be applied on each source independently of the others. See [“Editing Session Information and Category Metadata”](#) on page 128.

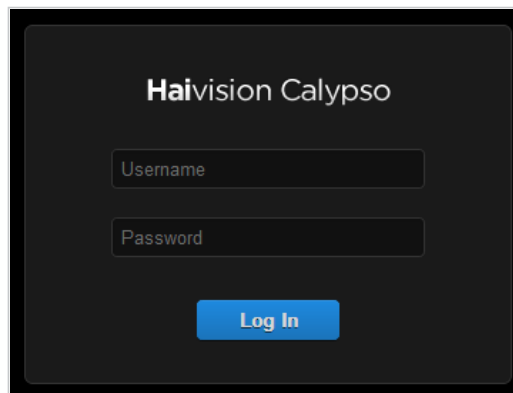
Accessing the Calypso Web Interface



NOTE Your system administrator will provide the URL or IP address for your Calypso, as well as your username and password. To change your password, see [“Changing Your Password”](#) on page 103.

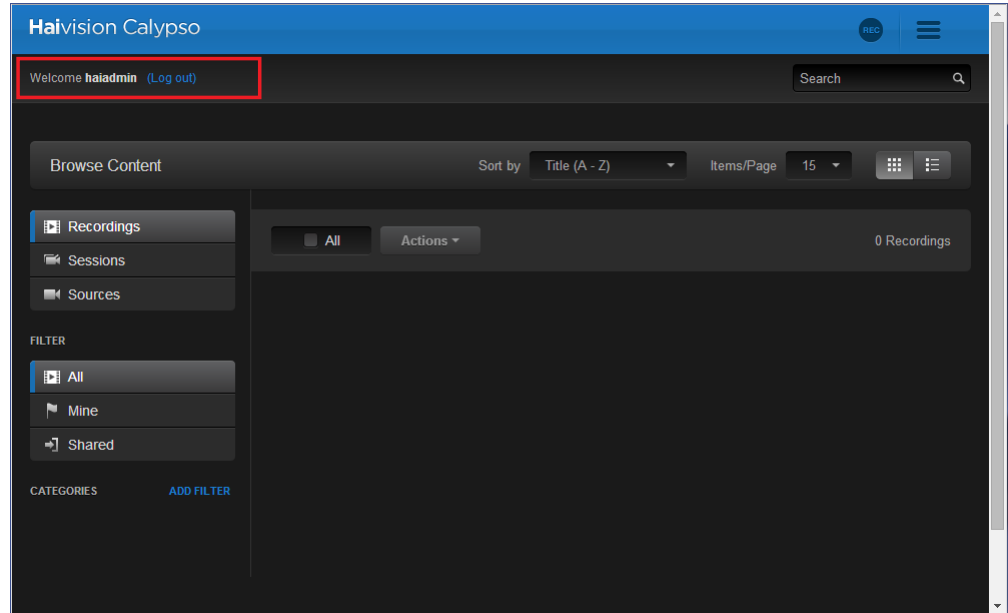
To access the Calypso Web Interface:

1. Open a Flash-enabled Web browser of your choice, such as Chrome, Firefox, Safari, or Internet Explorer (IE8 and above).
2. Type the URL or IP address for Calypso in the browser’s address bar and press Enter.
3. If you see a Security Certificate warning, click [Proceed anyway](#) (or equivalent) to accept the certificate and continue to the Login page.



4. On the Login page, type in your username and password and click [Log In](#) (or press Enter).

Once you have successfully logged in, the Web interface opens to the Browse Content page with your account information displayed in the navigation bar (as shown in the following example).



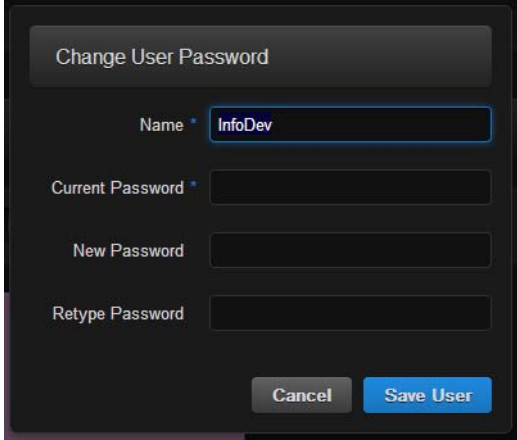
Changing Your Password

If your Calypso is *not* connected to an LDAP or Active Directory server, you can change your password.

To change your password:

1. Click your username on the navigation bar (next to “Welcome”).

The Change User Password dialog opens as shown in the following example.



The screenshot shows a dark-themed dialog box titled "Change User Password". It contains the following fields and buttons:

- Name ***: A text input field containing the text "InfoDev".
- Current Password ***: An empty password input field.
- New Password**: An empty password input field.
- Retype Password**: An empty password input field.
- Buttons**: "Cancel" and "Save User" buttons at the bottom right.



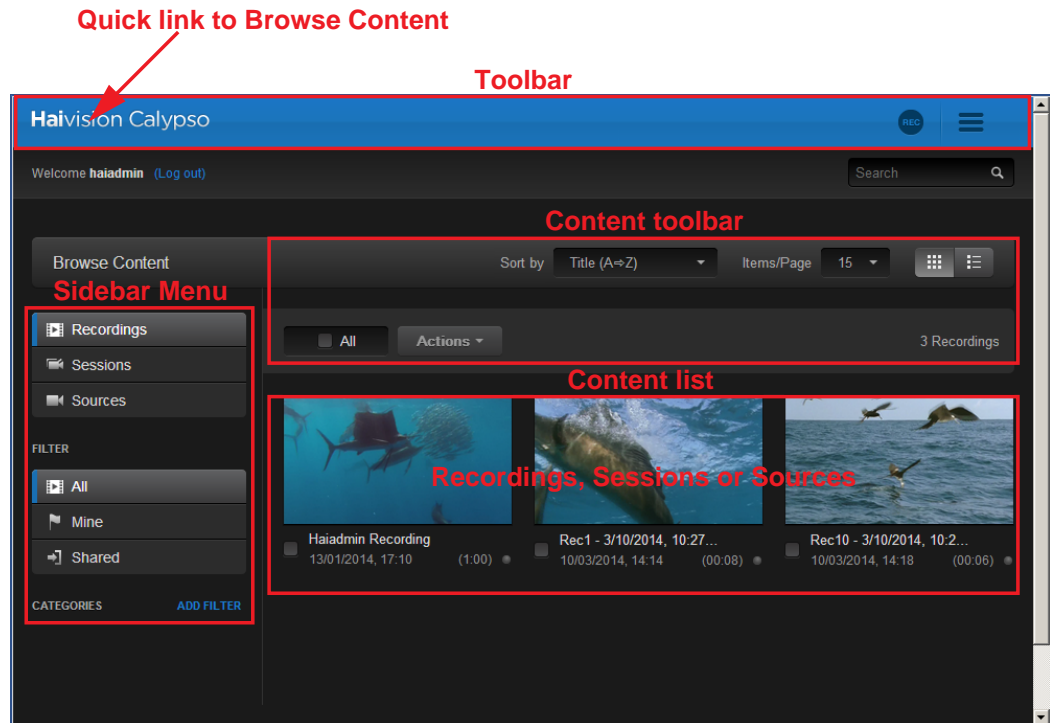
NOTE You can also change your display name but cannot change your username.

2. Type your current password in the Current Password field.
3. Type the new password in the New Password field and again in the Retype Password field.
4. Click [Save User](#).

The password change will take effect immediately.

Exploring the Web Interface

The Calypso Web Interface opens to the Browse Content page, showing the Recordings list (as shown in the following example). The displayed content depends on the role (i.e., access permissions) assigned to your account.



The Calypso Web Interface features include:

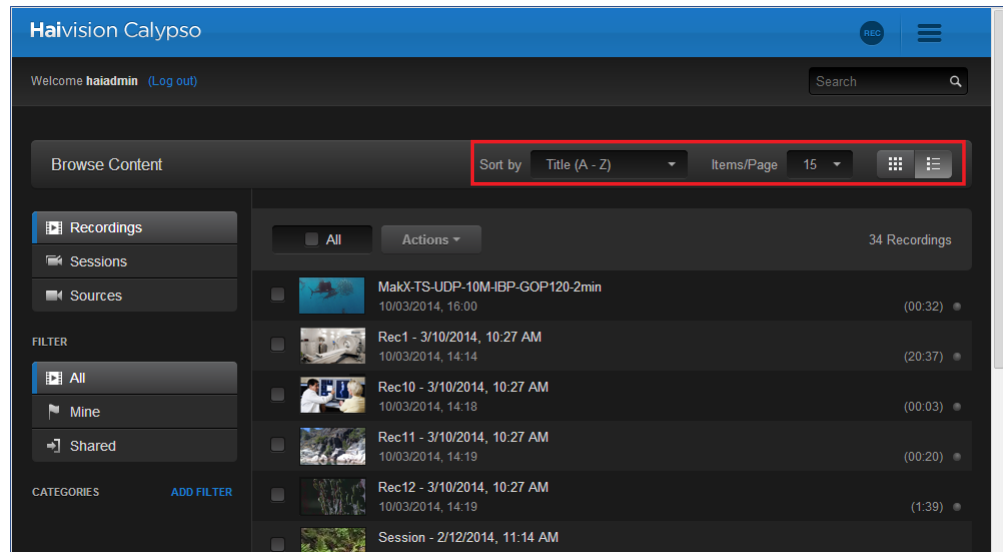
- Toolbar along the top providing quick access to the Active Recordings list and navigation drop-down menu.
- Sidebar menu on the left to select the content to be displayed. The Browse Content page displays either [RECORDINGS](#), [SESSIONS](#), or [SOURCES](#) content.
- Content toolbar containing controls to sort and manage the displayed content. The Actions drop-down menu (selectable when one or more list items are checked) provides options such as Edit, Delete, Export, and Share/Invite.
- Content list of available sessions, recordings, or sources. The list may be displayed in either thumbnail or list view (thumbnail view shown above). You can also filter the list by selecting from pre-defined categories.

Viewing Options

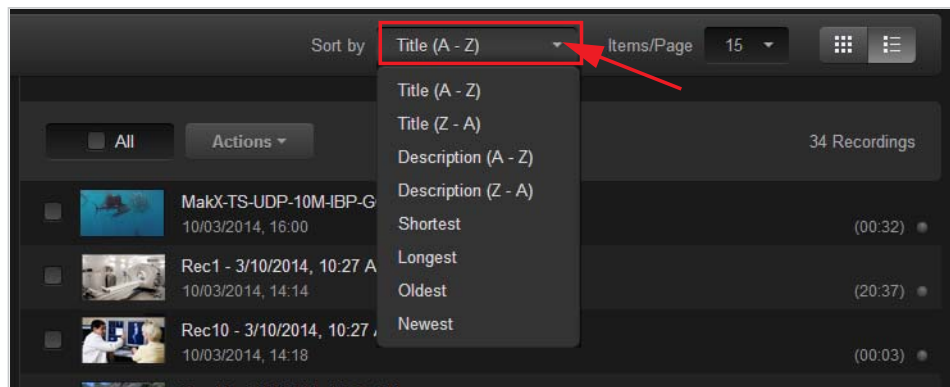
By default, the Browse Content page opens with the Recordings list displayed in Thumbnail view, sorted by title (A-Z, as shown in the previous example).

You can adjust the display to List view, which replaces the thumbnails with horizontal rows of information (see following example). You can also sort the list by a different metadata field, change the sort order, and change the number of items to display per page.

1. To switch from thumbnail view to list view, click  on the content toolbar.

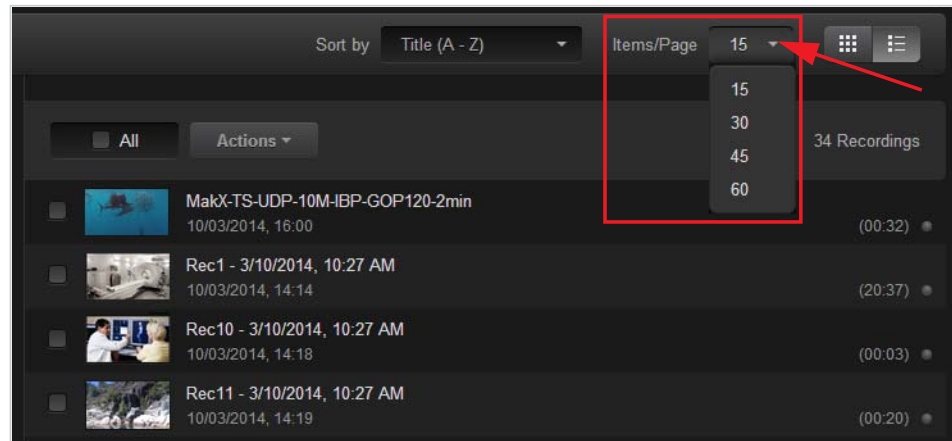


2. To sort the list by a different metadata field or change the sort order, select from the **Sort by** drop-down menu.



The **Sort by** options include title (A-Z, default, or Z-A), description (A-Z or Z-A), duration (Shortest or Longest, applies only to recordings), and creation date (Oldest or Newest).

3. To change the number of items to display per page, select the number from the [Items/Page](#) drop-down menu (the default is 15).




4. If the list is more than one page, you can page forward and backward through the list by clicking [Next](#) and [Previous](#) (along the bottom of the page).

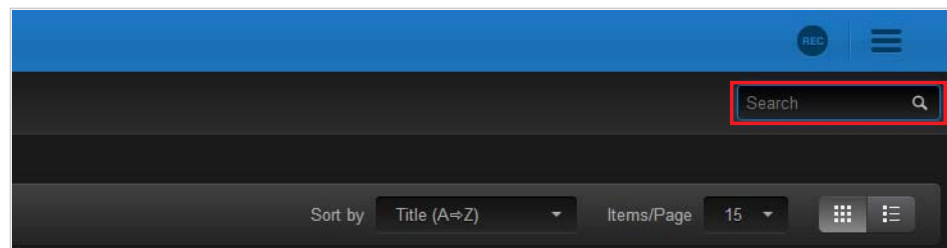


Searching

You can search for sessions, recordings, or sources by entering keywords from either the title or description, creator name, or a HotMark title/description.

To search for sources, sessions, or recordings:


1. On the Browse Content page (Sources, Sessions, or Recordings list), type a keyword or phrase in the Search field and then click  or press Enter.



The list will then only show sessions, recordings, or sources that contain that word or phrase in the Title or Description, or in the HotMark title/description.



TIP You can click either [RECORDINGS](#), [SESSIONS](#) or [SOURCES](#) from the sidebar menu to toggle the search results between recordings, sessions, or sources.

2. To clear the search results (as well as any filters), click the  next to the Search field or move the cursor outside the search field and press ESC.

Filtering the Content Lists

On the Browse Content page, you can filter the content lists by category. This can help you to quickly find relevant content because you only see sessions, recordings, or sources that have been assigned the categories that you choose.

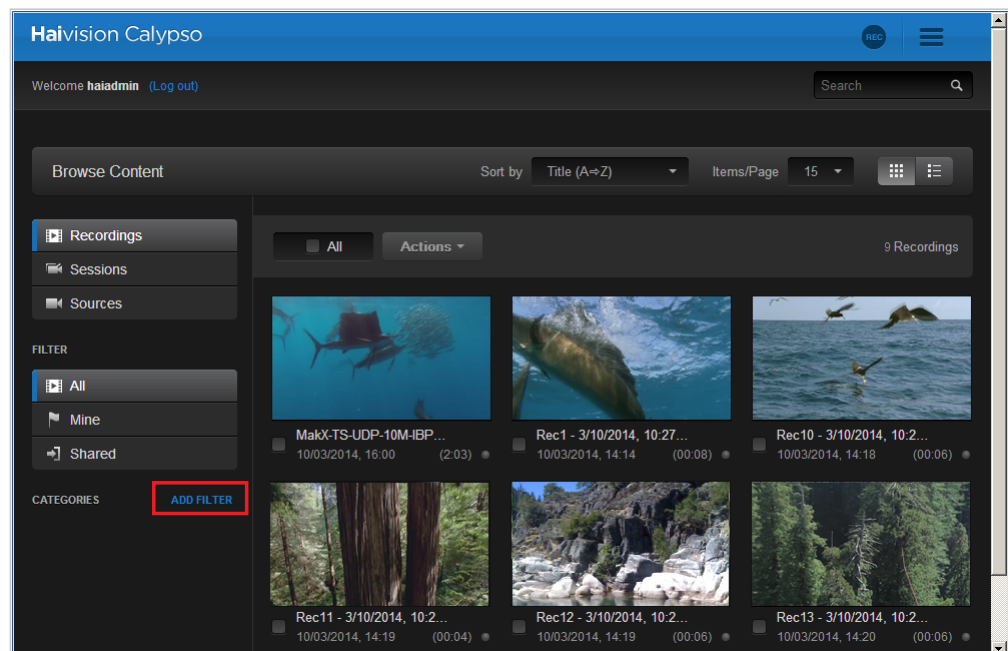
For example, to search for recordings of physician/patient sessions at a particular location (e.g., Montreal), assuming a “Location” category has been defined on your system, you can filter the list to only show recordings that have been assigned “Location: Montreal” category metadata.



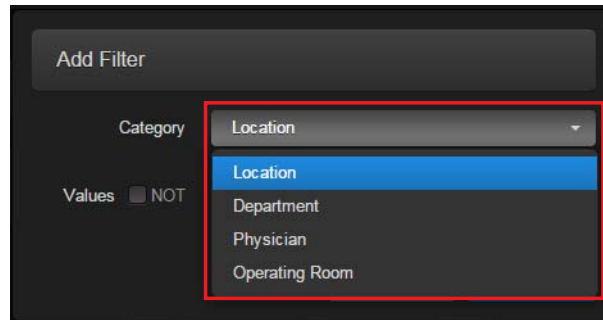
NOTE Categories must be pre-defined by your system administrator.

To filter the content list:

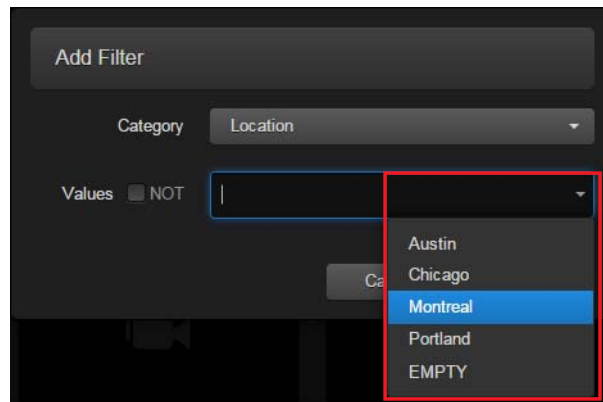
1. On the Browse Content page (Sources, Sessions, or Recordings list), click [ADD FILTER](#) from the sidebar menu.



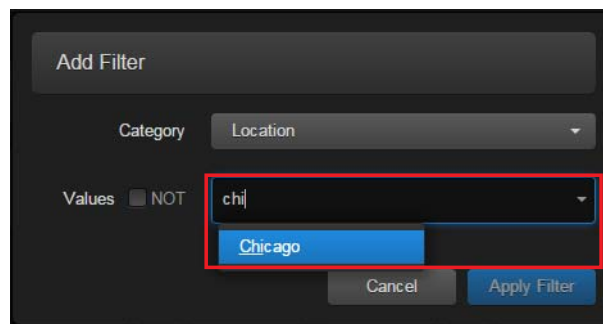
2. On the Add Filter dialog, select the category from the drop-down list. (If no Categories are available, contact your system administrator.)




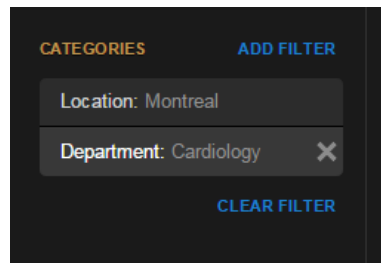
3. Next, select a value from the drop-down list.



TIP If you start typing, Calypso will display a drop-down list of matching values that you can choose from (as shown in the following example).



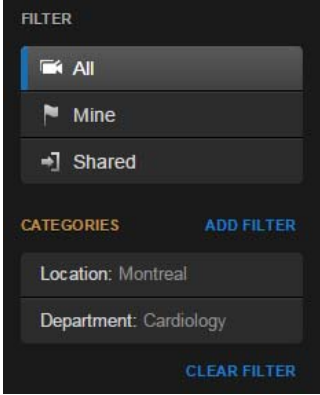
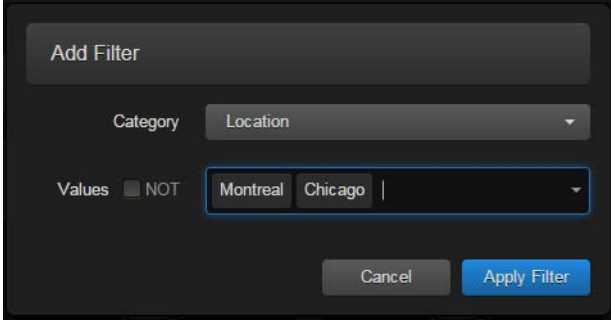
4. To expand the results, you can select multiple values for a single category. Calypso will then display items that match *any* of the values. For details, see the following section, [“Advanced Filtering Using \(Implicit\) AND, OR and NOT”](#).
5. You can specify “NOT” for a category value to display items that do not contain this category value. For example, “Location: NOT Chicago” will display items from all locations *except* Chicago as well as items with no Location metadata.
6. You can also specify “EMPTY” for a category value to display items that have not been assigned this category. For example, “Location: EMPTY” will display only items that have not been assigned a Location.
7. Click [Apply Filter](#).
8. To further narrow the results, you can add multiple category filters (i.e., to filter by multiple criteria). Calypso will then display only items that match *all* the category filters.
9. To remove an individual filter, hover over the filter on the sidebar menu and click the .

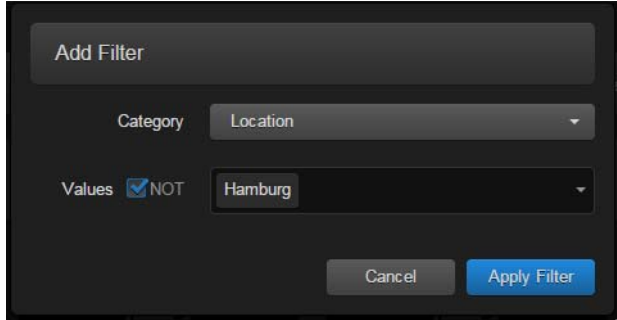


10. To clear all filters, press ESC or click [CLEAR FILTER](#).

Advanced Filtering Using (Implicit) AND, OR and NOT

You can set up filter(s) to either narrow or expand the results using implicit AND, OR, or NOT operators.

Logic Operator	Description/Example
<p>AND ["all"]</p>	<p>Adding multiple category filters narrows the results by only displaying items that match <i>all</i> category filters.</p>  <p>For example, if you add two filters, one for Location and select "Montreal" and the second one for Department and select "Cardiology", Calypso will only display items with BOTH "Locations: Montreal" AND "Department: Cardiology" Category metadata.</p>
<p>OR ["any"]</p>	<p>Selecting multiple values for a single category expands the results by displaying items that match <i>any</i> of the values.</p> <p>For example, if you add a Location filter and select "Montreal" and "Chicago", Calypso will display any items with either "Location: Montreal" OR "Location: Chicago" category metadata.</p> 

Logic Operator	Description/Example
NOT	<p>Filtering with the NOT operator fine-tunes the search by excluding unwanted items.</p> <p>For example, if you add a Location filter and select NOT “Hamburg”, Calypso will display items from all locations except Hamburg as well as items with no Location metadata.</p> 

Displaying Only Recordings/Sessions that are Mine or Shared with Me

On the Browse Content page, you can also adjust your view of the Recordings or Sessions list to show only recordings that you own (“Mine”) or only those that have been shared with you (“Shared”).



TIP When you have finished, be sure to return your view to “All”.

To display only recordings or sessions that you own:

1. On the Browse Content page (Recordings or Sessions list), click **MINE** from the sidebar menu.

The content list now only shows recordings or sessions that you have created or for which you have “OWN” permissions.

To display only recordings or sessions that are shared with you:

1. On the Browse Content page, click **SHARED** from the sidebar menu.

The content list now only shows recordings or sessions that have been shared with you.

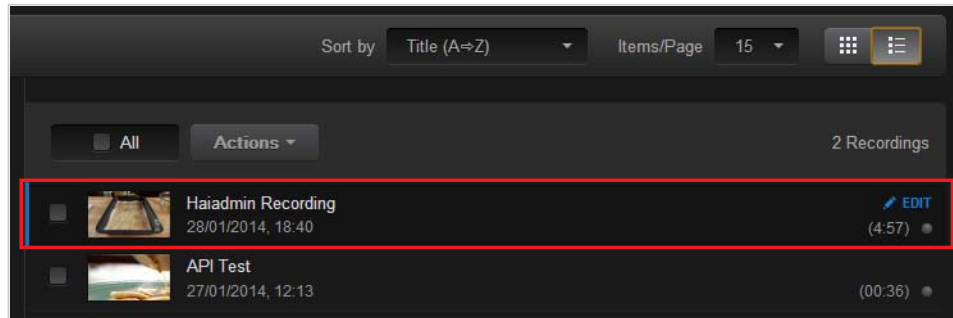
For details on “share” permissions, see [“Session Invitations”](#) on page 131 and [“Sharing Recordings”](#) on page 150.

Selecting Items from the Content List

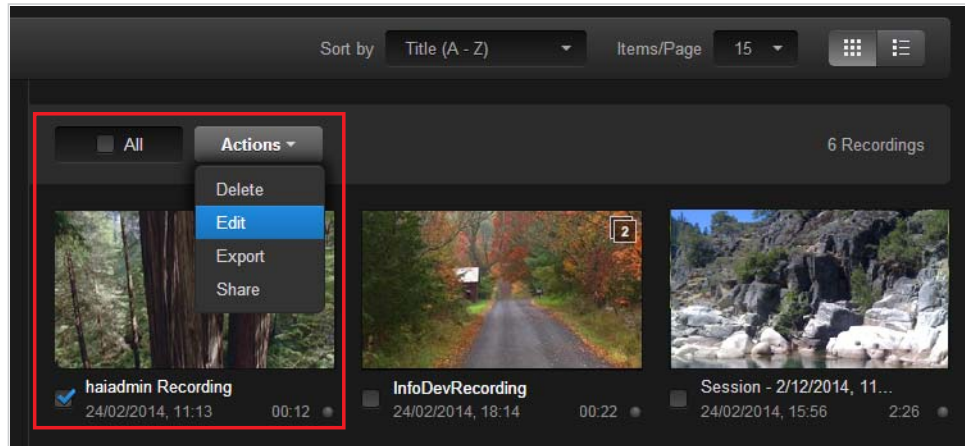
These steps summarize the different ways to select items on the Browse Content page (Sources, Sessions, or Recordings list). You select one or multiple items or check **All** when editing, deleting, exporting, or sharing/inviting items.

To select sources, sessions, or recordings:

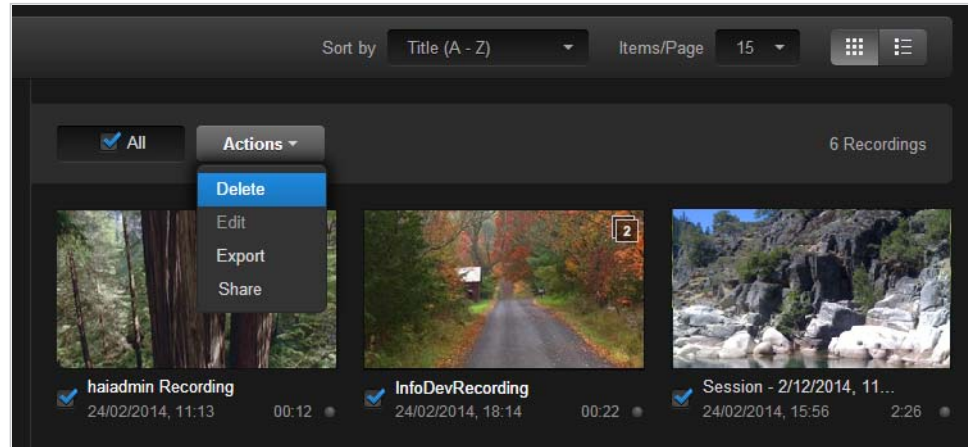
1. To edit information for a single source, session, or recording, hover the mouse over the item in the list and click **EDIT**.



Or check the checkbox next to an item and select Edit from the Actions drop-down menu (this menu is selectable when one or more items are checked).



2. To edit, delete, export, or share/invite multiple items, you can check multiple items in the list or check **All**.



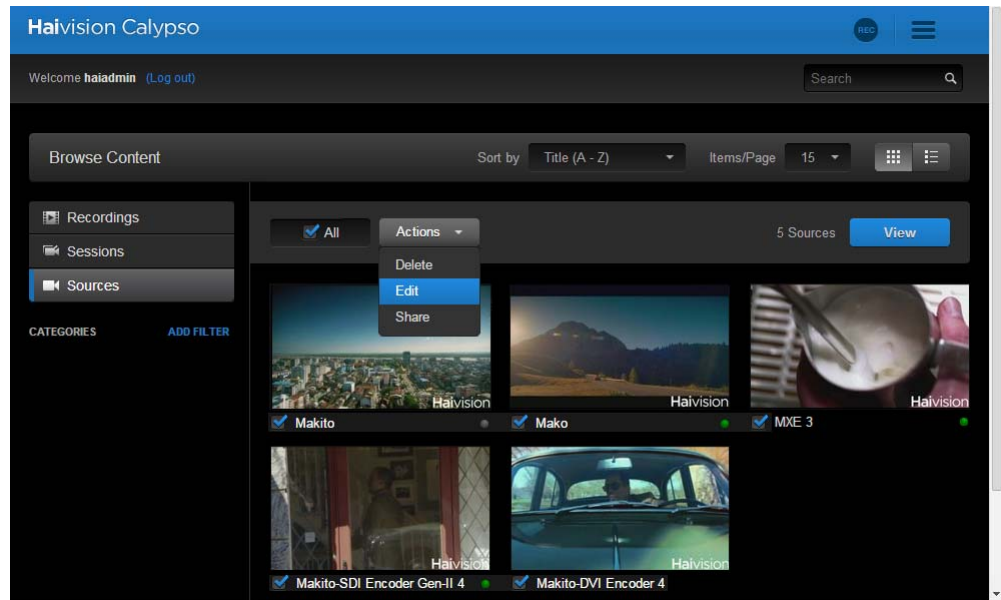
TIP You can shift-click (i.e., click multiple items while holding the Shift key down) to select a range of items (checkboxes).

Performing Bulk Edits

You can “bulk edit” multiple items (i.e., sources, sessions, or recordings) that you select on the Browse Content page. For example, you might want to standardize the category values for all sessions from a selected source.

To bulk edit items:

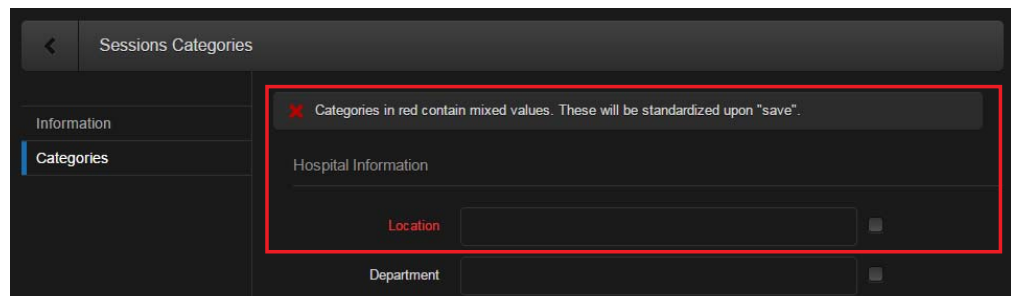
1. On the Browse Content page, select the items to edit in the Sources, Sessions, or Recordings list (or check [All](#)) and select Edit from the Actions drop-down menu.



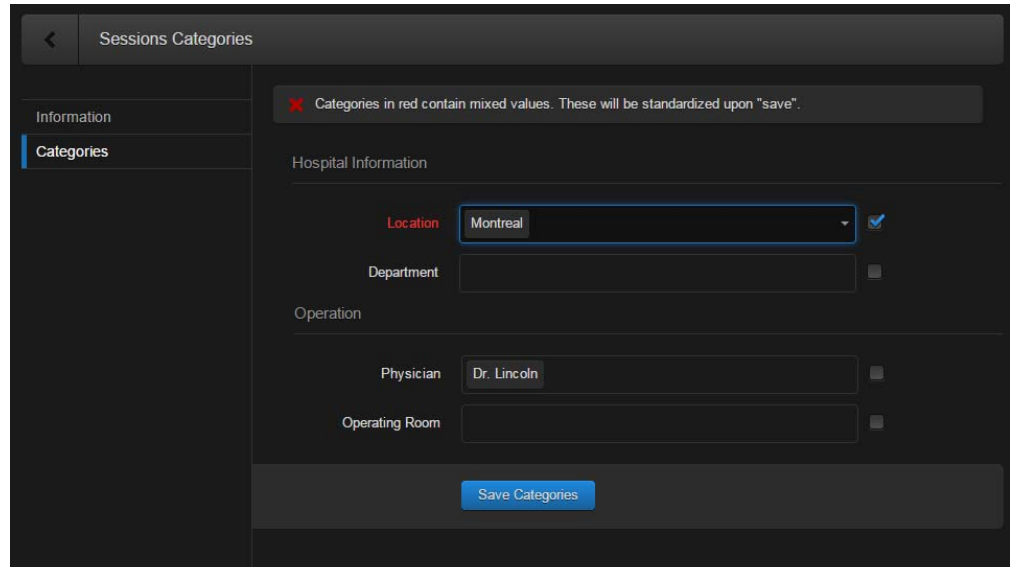
2. On the Edit Information page, the only bulk-editable parameter is the description. To specify a uniform description for all selected items, type it in and click [Save](#).
3. On the Edit Categories page, carefully review the list of groups and categories.



NOTE If the categories have “mixed” (i.e., different) values, you will see a warning across the top of the list and the categories with mixed values will be displayed in red (as shown in the following figure).



4. Check the checkbox beside each category to modify.
5. For each checked category, you may either:
 - select a new value (or values, if allowed) from the drop-down list, or
 - leave the value as is.



IMPORTANT Either way, this value will be applied to the category metadata for *all* selected items.

6. Click [Save Categories](#).

The selected categories will be updated, and will no longer be displayed in red. Also, if you edit and thereby harmonize *all* the Category values, the warning will no longer be displayed along the top of the list.

Keyboard Shortcuts (Browse Content)

The following keyboard shortcuts are available for the Browse Content page:

Shortcut	Use to...
ESC	Clear Search results and Category Filters
1, 2, 3	Switch the Browse Content display between Recordings (1), Sessions (2), and Sources (3)

CHAPTER 6: Working with Sessions and Recordings

This chapter describes how to get started creating sessions from sources, and viewing, recording and sharing video.



NOTE The intended audience for this chapter is all users, including content creators, content contributors, and viewers. Administrative privileges are typically not required for these tasks.

However, some of the functions described below are user-specific. Please contact your system administrator to have the proper permissions assigned.



IMPORTANT Calypso must be set up correctly with sources, users, and roles configured for your system. For any questions, see your system administrator.

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Creating and Managing Sessions

A *session* is a grouping of “sources” that can be viewed, shared, or recorded as a logical unit. For example, to use Calypso to create an online class for students, you might want to assemble streams from several lecture hall cameras and the teacher’s laptop.

Using the Content Browser, you can preview sources and create sessions, edit session and source information, and watch live previews of sessions before you start recording. You can also can give other users access to the session.

Previewing Sources

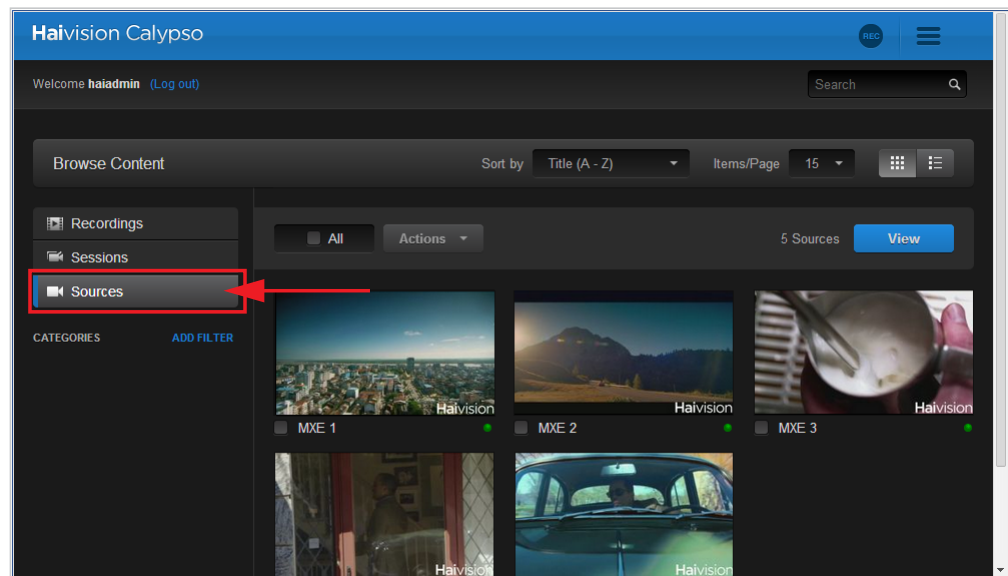
From the Browse Content page, you can select and preview sources in a multi-viewer layout before creating a session.



TIP Sources are the available incoming video streams that you can use to generate sessions.

To preview sources:

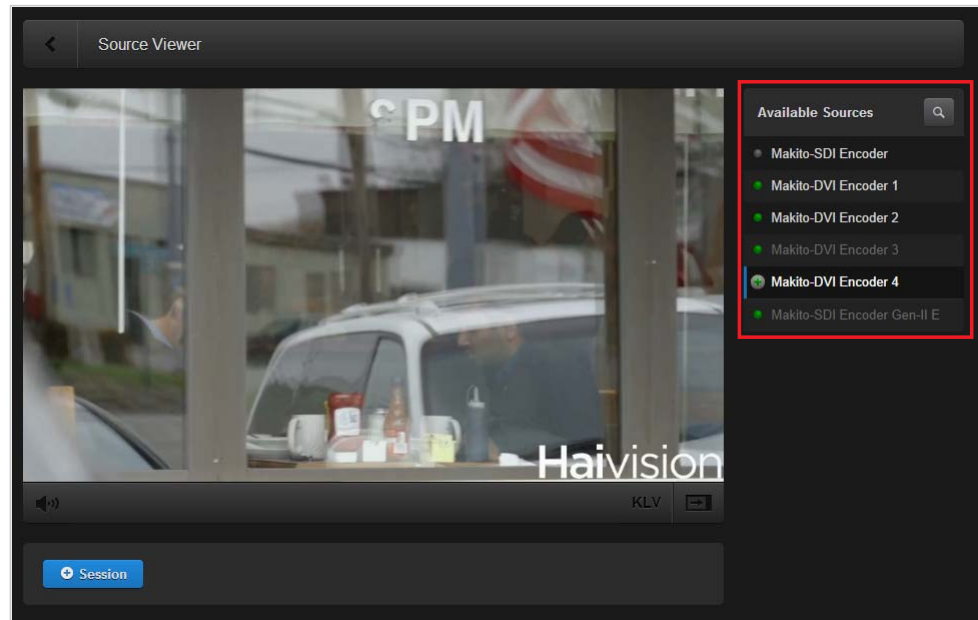
1. On the Browse Content page, click **SOURCES** from the sidebar menu.




2. Locate the first source in the Sources list and click the thumbnail.

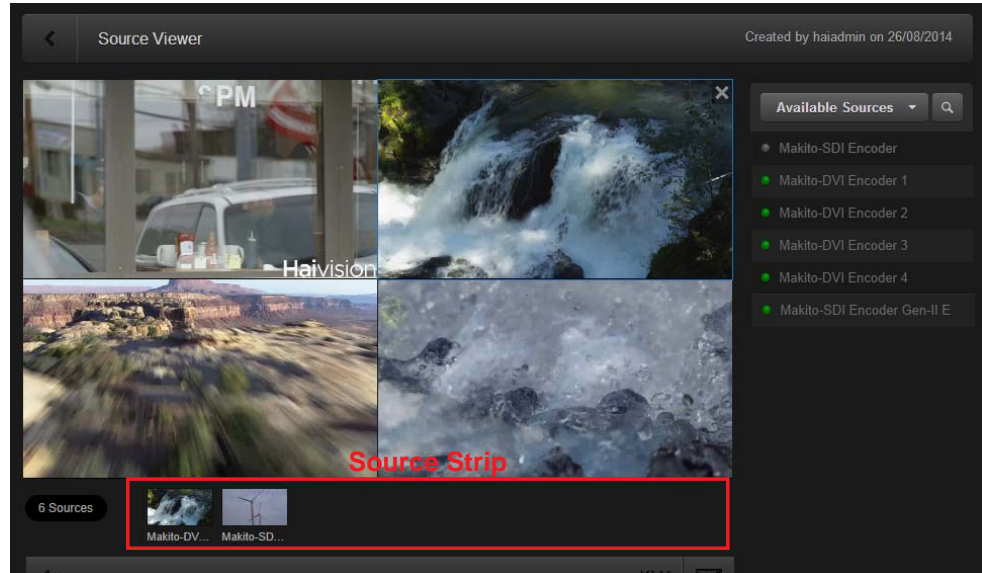
Or you can select one or more sources and click **View**. For details, see [“Selecting Items from the Content List”](#) on page 112.

The Source Viewer opens, with the selected source(s) playing in the viewer window. Available sources are listed in the sidebar.

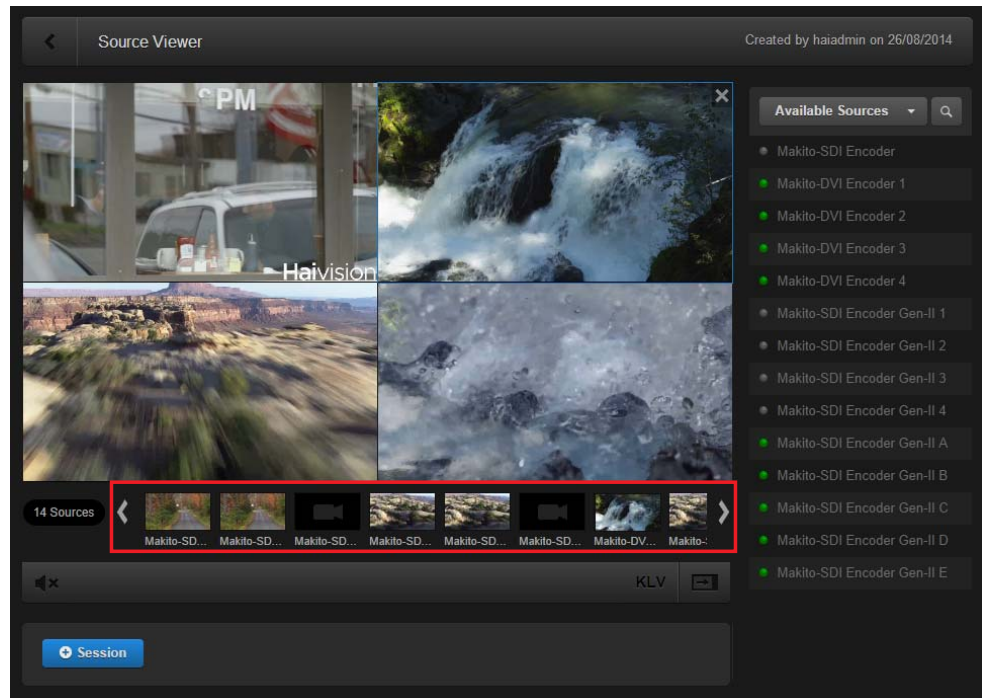



- Green status icons indicate active sources.
 - Gray text indicates sources that are already in the session.
 - To search for a source, click  and type in the source name.
 - As you mouse over the list, the icons change to plus icons on sources that are not yet in the session.
3. To add another source, click the source name in the Available Sources list.

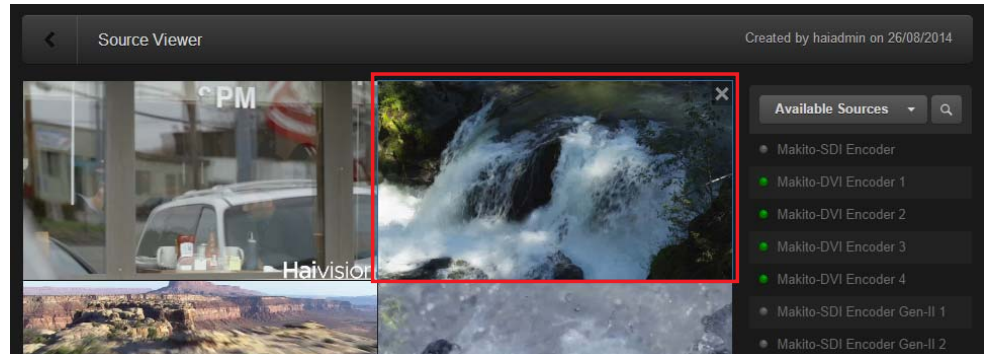
Each source that you select starts to play in the viewer (up to four sources). Additional sources are added as thumbnails to the source strip (below the viewer).




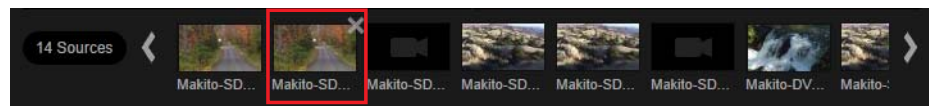
- You can drag a thumbnail from the source strip to the viewer to replace a source or add it to the viewer.
- You can click a thumbnail to add it to an empty location. (On a mobile device, since you can only have one player in the viewer, it will replace the player.)
- You can drag a player to reorder players in the viewer.
- For a large source list, you can slide the strip to the left or right by clicking the arrows at either end of the row.




- To remove a source from the viewer, click the  in the top right corner of the player. The source moves to the source strip below the viewer.



- To return it to the viewer, click the thumbnail in the source strip or drag it to the viewer.
- To remove it from the session, click the  next to the thumbnail.



To create a new session using the source(s);

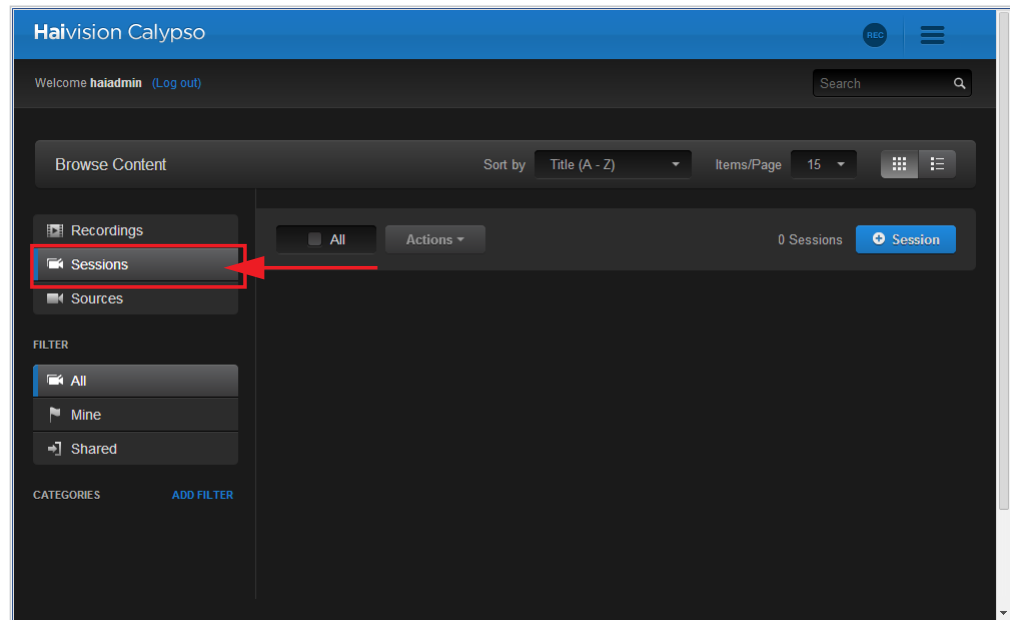
- Click  (in the bar below the viewer window).

This opens the Add Session Information dialog (for details, see the following section, [“Adding a Session”](#)).

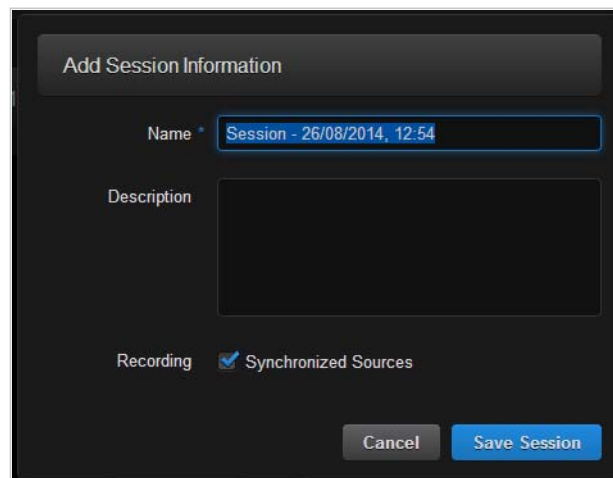
Adding a Session

To add a session:

1. On the Browse Content page, click **SESSIONS** from the sidebar menu.

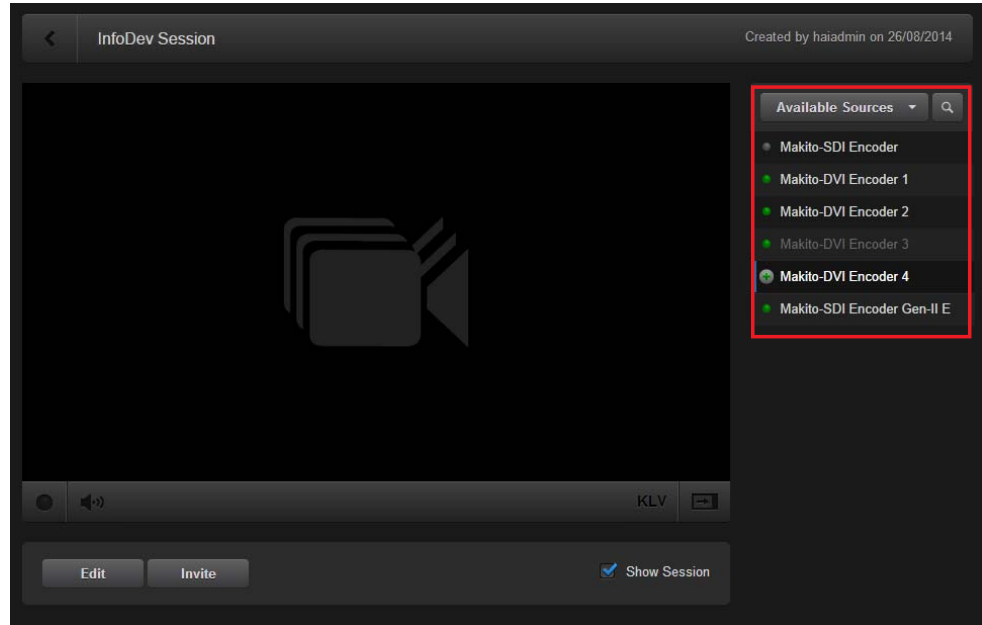


2. Click **+ Session**.
3. On the Add Session Information dialog, enter a name and description to identify the session. A default name is provided consisting of `Session - <date>, <time>`.


A screenshot of the 'Add Session Information' dialog box. The dialog has a title bar 'Add Session Information'. It contains a 'Name' field with a blue border and a default value 'Session - 26/08/2014, 12:54'. Below the name field is a 'Description' field, which is a large empty text area. At the bottom of the dialog, there is a 'Recording' section with a checked checkbox labeled 'Synchronized Sources'. At the very bottom, there are two buttons: 'Cancel' and 'Save Session'.

4. For multi-source sessions, if you do *not* want to record in synchronous mode, uncheck the **Synchronized Sources** checkbox. (The default is synchronous recording.) See [“Session Information”](#) on page 130.
5. Click **Save Session**.

The Session viewer opens. Available sources are listed in the sidebar. For details on selecting and previewing sources for the session, see [“Previewing Sources”](#) on page 118.



From here, you can view and record the session, edit session information, including assigning categories, as well as invite other users to view it. For details, see the following section, [“Viewing Sessions”](#).

- To return to the Browse Content page, click .

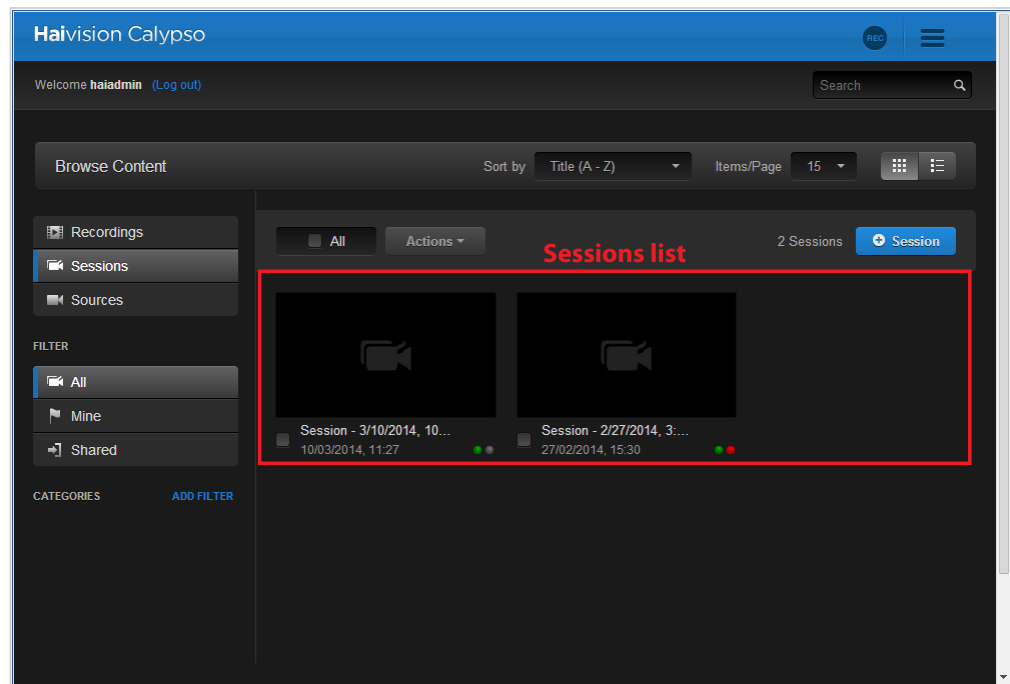
Viewing Sessions

When you add a new session, the Session viewer opens. (See the previous section, [“Adding a Session”](#).)

You can also select a session to view from the Sessions list on the Browse Content page. To do this, follow the steps below.

To view an existing session:

1. On the Browse Content page, click **SESSIONS** from the sidebar menu.



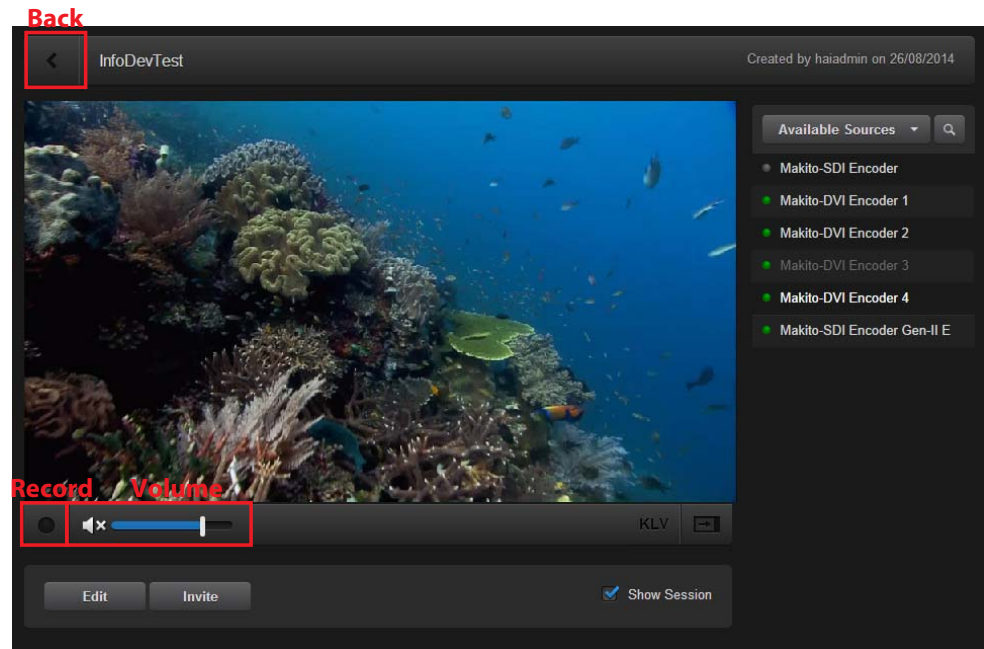
The Sessions list displays the title and creation date and time for each session. Two LEDs (green and red) indicate the session status:

Status LED Color	Indication
Green	The session has been shown (i.e., made viewable).
Red	The session is being recorded.

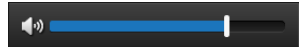
2. Locate the session to view in the Sessions list and click the thumbnail or title/date (i.e., anywhere in the row except **Edit**).

For viewing and search options to locate sessions, see [“Exploring the Web Interface”](#) on page 104.



The Session viewer opens and the source video(s) begin(s) to play (as shown in the following example).



3. To adjust the volume, hover over and adjust the volume slider




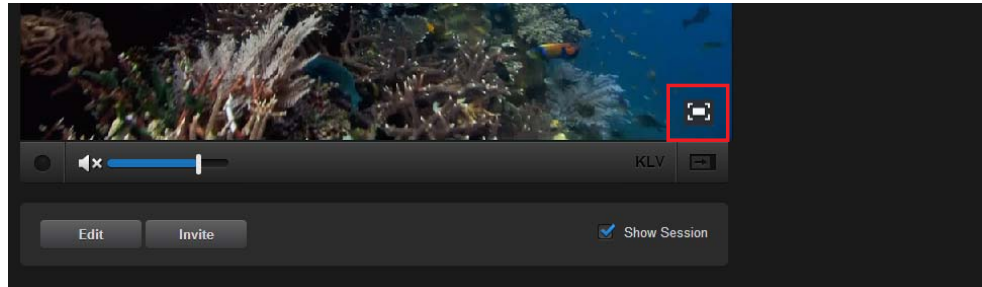
NOTE There are no volume controls on a mobile device. You must use the built-in volume controls.

4. To mute or unmute the volume, click  or .



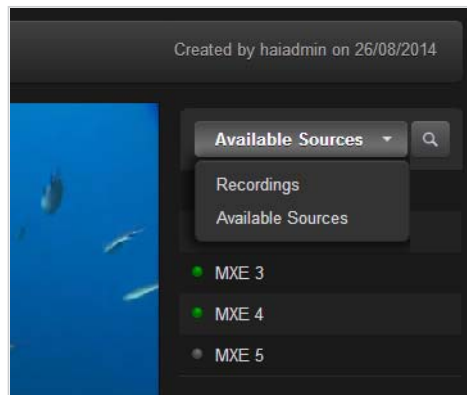
NOTE For multi-source sessions *not* in synchronous mode, Record buttons are located within each individual player.



5. To switch to full-screen mode (i.e., to fill your entire screen and remove the player controls), mouse over the viewer and click  (in the bottom right corner).



Press ESC or click  on the control bar to exit full-screen mode.

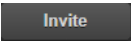
6. To view a list recordings generated from the session (instead of available sources) in the sidebar, select Recordings from the drop-down menu.



7. To resize the viewer and hide the sidebar, click . This toggles the window between full-size (no sidebar) and compact size (with sidebar).
8. To edit the session information, click .

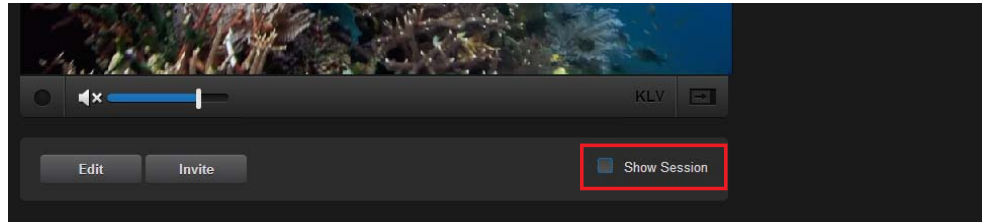
This opens the Edit Session Information page, from which you can edit the name or description, disable/enable Synchronous (recording) Mode, and/or assign categories. See [“Editing Session Information and Category Metadata”](#) on page 128.

Any description or assigned categories will be listed below the viewer.

9. To give other system users or groups access to the session, click .

This opens the Invite Session dialog, from which you can assign “share” permissions for user or group access. See [“Session Invitations”](#) on page 131.

10. To hide the session (from non-owners), uncheck the [Show Session](#) checkbox.




To show a session that has been hidden, check the [Show Session](#) checkbox.



NOTE Hidden sessions are only visible to “owners”. This allows you to restrict viewing capabilities to one or many viewers in real time to protect sensitive content. For example, if you have allowed viewers access to a session or active recordings on a session but then “hide” the session, a still image will immediately replace the stream. All recordings of the session will also be stopped. Then if you “show” the session, the stream will immediately restart.



TIP When playing a session on a mobile device, you cannot pause the session (because it is a live feed), but the [Pause](#) button is still there on the iPad when you view the session in full screen mode. So if you click [Pause](#), the display goes out of full screen.

11. To record the session, click . See [“Recording a Session”](#) on page 135.

12. To return to the Browse Content page, click .

Keyboard Shortcuts (Viewer)


The following keyboard shortcuts are available for the Session viewer:

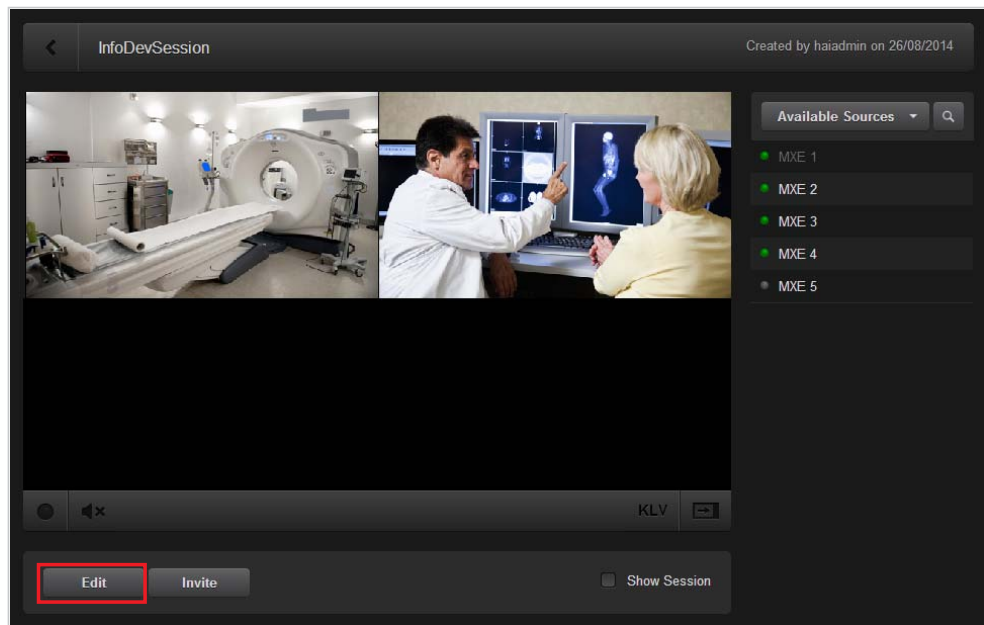
Shortcut	Use to...
1, 2	Toggle the sidebar display between Available Sources and Recordings in Session viewer.
i	Toggle display of source name overlay on Source/Session/Recording viewer.

Editing Session Information and Category Metadata

Once a session is created, you can edit the session information by opening its Edit Session Information page from either the Session viewer or the Browse Content page (Sessions list). You can edit the session name, add a description, and disable/enable synchronous recording. If categories have been pre-defined on your system, you can also assign category metadata to the session.

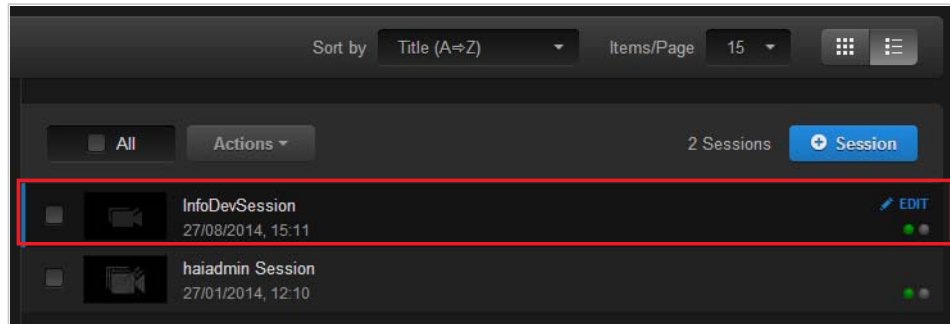
To edit session information:

1. While viewing the session, click .



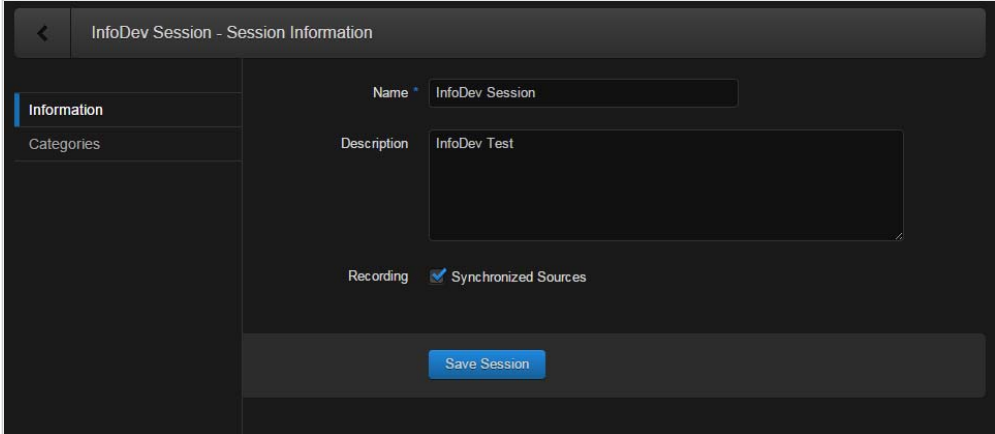
-OR-

Select the session on the Sessions list (Browse Content page).



Or you can check the checkbox next to one or multiple sessions on the Browse Content page (or check [All](#)) and select Edit from the Actions drop-down menu.

2. On the Edit Session Information page, make the desired changes to the Information fields. See [“Session Information”](#) on page 130.

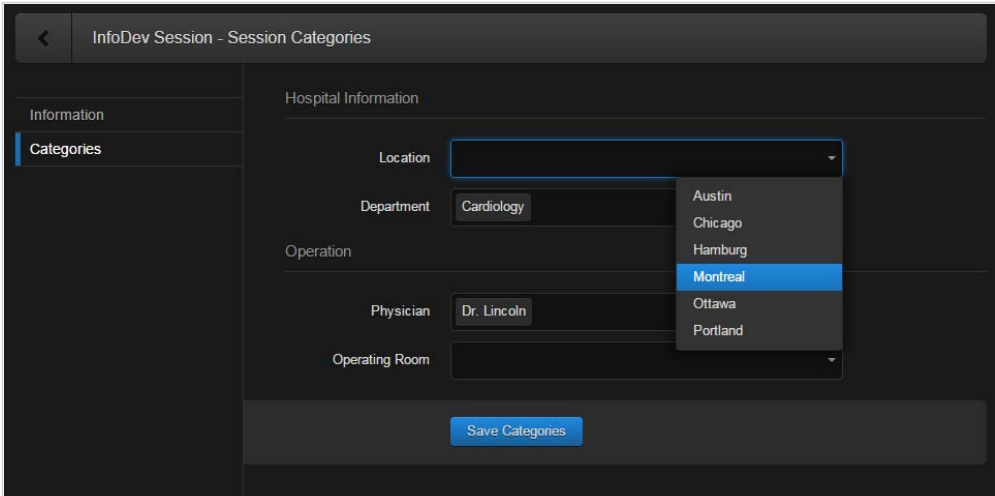


The screenshot shows the 'InfoDev Session - Session Information' page. On the left, there is a sidebar with two options: 'Information' (selected) and 'Categories'. The main content area has the following fields: 'Name' with the value 'InfoDev Session', 'Description' with the value 'InfoDev Test', and 'Recording' with a checked box for 'Synchronized Sources'. At the bottom of the main area is a blue button labeled 'Save Session'.



TIP If you select multiple sessions, you can only edit the Description field.

3. Click [Save Session](#).
4. To assign category metadata to the session, click [CATEGORIES](#) from the sidebar menu.
5. On the Edit Session Categories page, select the applicable categories and value(s) from the drop-down list(s). See [“Session Information”](#) on page 130.



The screenshot shows the 'InfoDev Session - Session Categories' page. On the left, there is a sidebar with two options: 'Information' and 'Categories' (selected). The main content area has the following fields: 'Hospital Information' with sub-fields 'Location', 'Department' (Cardiology), 'Operation', 'Physician' (Dr. Lincoln), and 'Operating Room'. A dropdown menu is open for the 'Location' field, showing a list of options: Austin, Chicago, Hamburg, Montreal (highlighted in blue), Ottawa, and Portland. At the bottom of the main area is a blue button labeled 'Save Categories'.



TIP If you start typing, Calypso will display a drop-down list of matching values that you can choose from. Also, if the category accepts custom values, you can type a new value and press Enter.

- If the category accepts multiple values, you may select additional values.



TIP For information on bulk editing Category metadata for multiple sessions, see [“Performing Bulk Edits”](#) on page 114. Bulk edits cannot be undone.

- Click [Save Categories](#).

Session Information

The following table lists the Session information and category settings:

Session Setting	Default	Description/Values
Information		
Name	Session - <date, time>	A name to identify the session in the Sessions list and viewer.
Description	n/a	(Optional) Information that describes the session.
Recording - Synchronized Sources	Enabled	<p>Check this checkbox to enable Synchronous Recording.</p> <ul style="list-style-type: none"> When Synchronized Sources is enabled, Calypso records all sources of a multi-source session as a synchronous recording. When Synchronized Sources is disabled, each source of a multi-source session is recorded as a separate recording.
Categories		
Categories	n/a	<p>(Optional) To assign category metadata to the session, select a category and select one or more values or (where allowed) type in custom values.</p> <p>NOTE: Categories must be pre-defined by your system administrator.</p> <p>For information on bulk editing Category metadata for multiple sessions, see “Performing Bulk Edits” on page 114.</p>

Deleting Sessions

To delete sessions:

1. On the Browse Content page, select the session(s) in the Sessions list.
2. Select Delete from the Actions drop-down menu and click [Confirm](#).

The selected session(s) will be deleted from the Sessions list.

Session Invitations

Owners of a session can invite users or groups to the session, allowing them to view the live video and metadata, edit the session's metadata, or even to start their own recordings of the session. You can specify access permissions for each user/group that you invite.

Calypso provides the default "share" permissions listed below. Your system administrator may also have created custom share permissions.

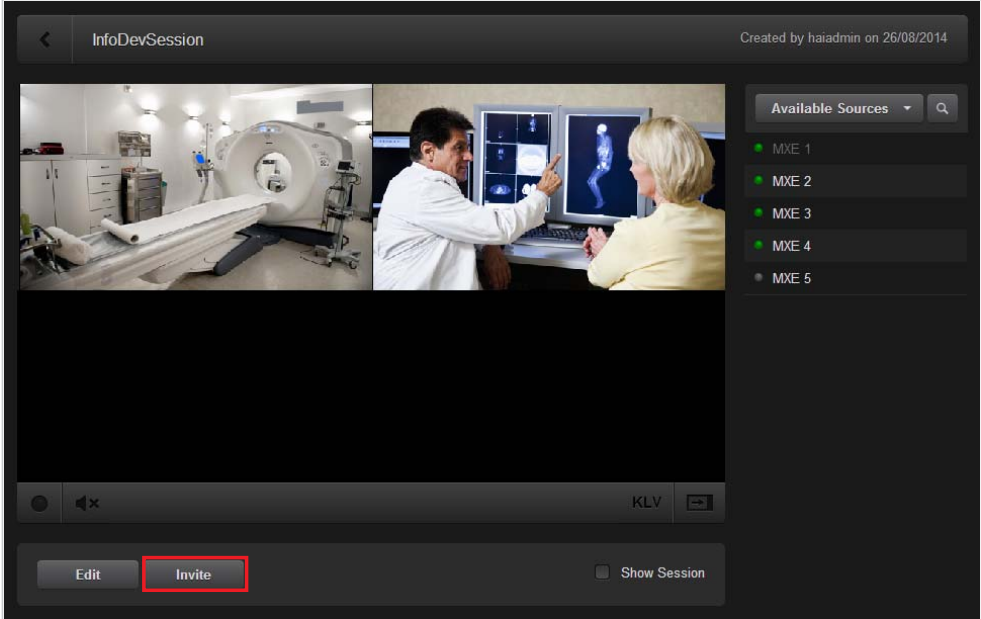
Share Permission	Privileges
WATCH	View this source / session / recording.
EDIT	View and edit this source / session / recording.
OWN	All capabilities, including deleting this source / session / recording.



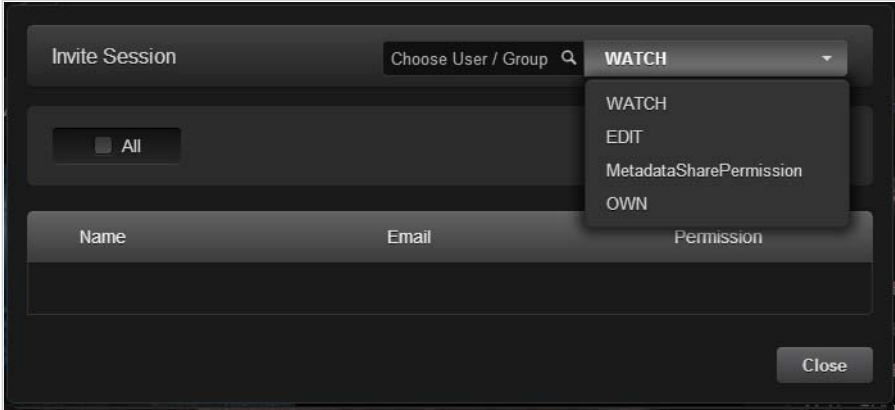
NOTE As a user, your ability to take action is a combination of your role and share permissions, if any. For example, if both your role and the permission allow you to download, you may download. Whereas if your role does not allow you to download, you can not download regardless of the share permission. For more information, see ["Managing Roles"](#) on page 89 or contact your system administrator.

To invite users or groups to a session:

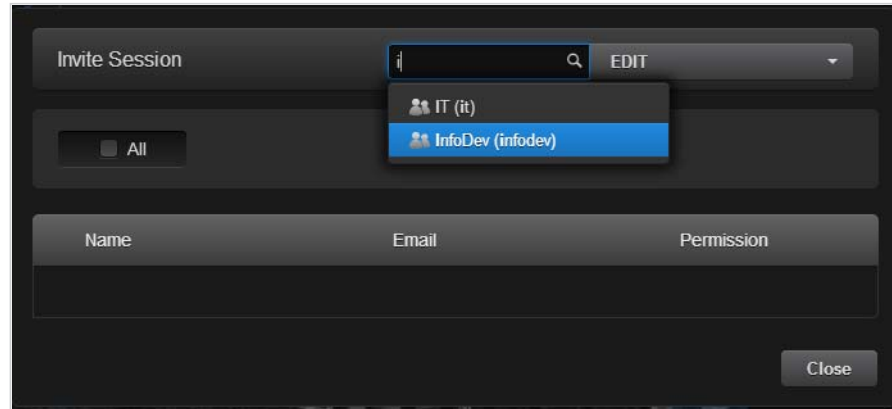
- 1. While viewing the session, click **Invite**.



- 2. On the Invite Session dialog, select the permission from the drop-down menu.

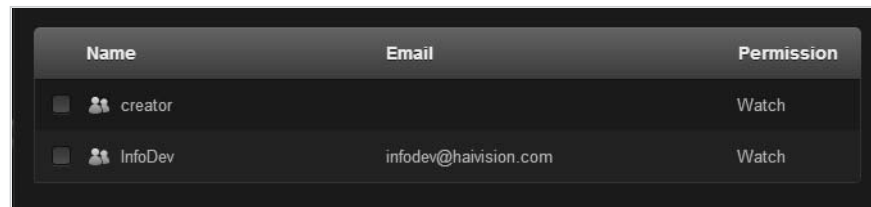


3. Type the first few characters of the user or group's name in the search field, and then select the name from the auto-complete drop-down list:

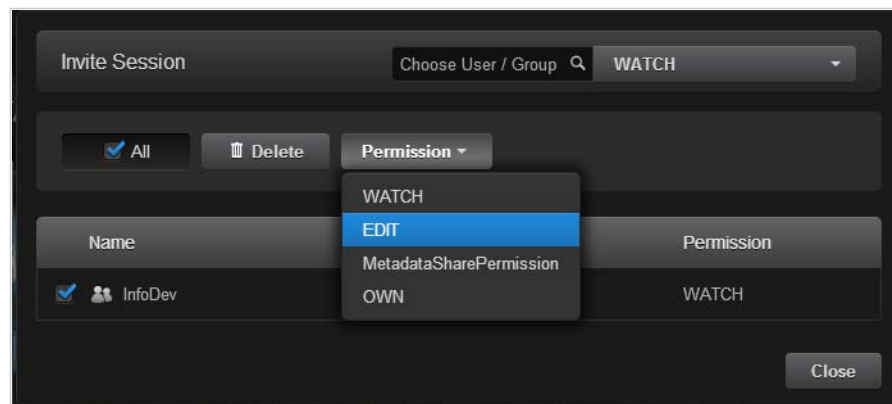


NOTE Only users and groups that have been assigned roles appear in the auto-complete list.

The user or group name is added to the list below, along with the selected permission.



4. Repeat for each user or group that you wish to invite to the session. You can assign different “share” permissions to each user or group.
5. To modify session “share” permissions, check the checkbox next to one or more names in the list (or check [All](#)), and select the new permission from the drop-down menu.



6. To delete users or groups from the session invitation, check the checkbox next to one or more names in the list (or check [All](#)), and click [Delete](#).
7. Click [Close](#).

Recording and Sharing Video

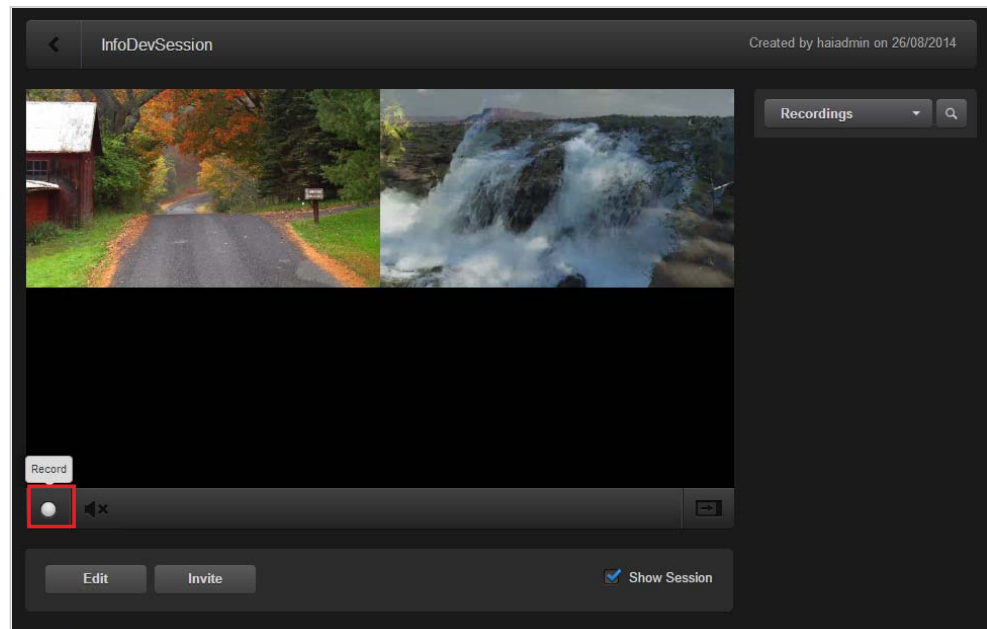
A *recording* is the resulting asset after a session has been recorded.

While recording a session as well as when playing back recordings, users can edit recording metadata, share/invite users or groups, and insert HotMarks. While playing back recordings, users can also re-stream, trim, and download recordings.

Recording a Session

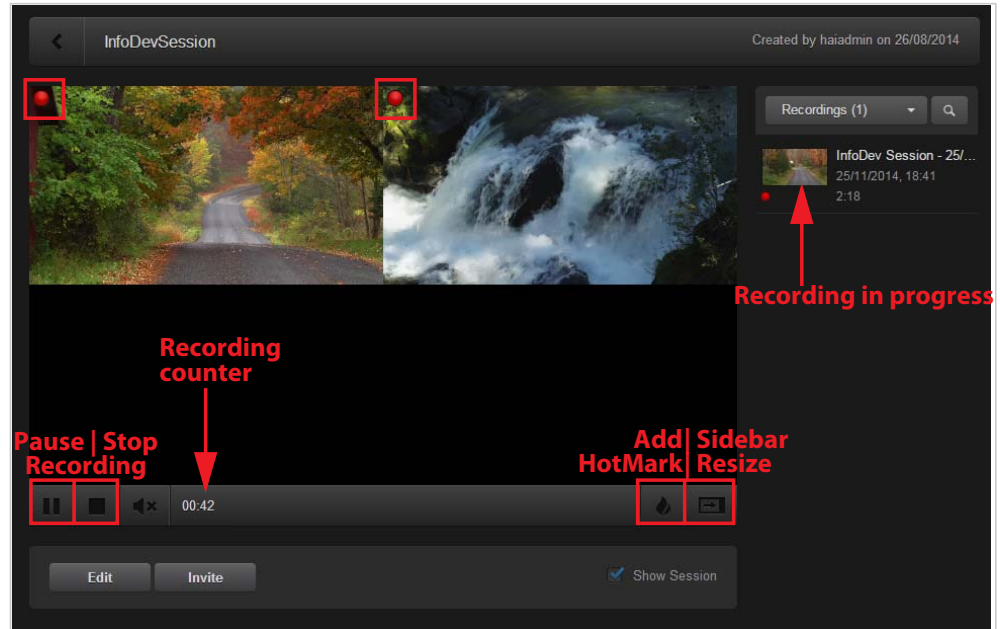
To record a session:


1. Open a session. (See [“Viewing Sessions”](#) on page 124.)
2. In the Session viewer, click  to start recording the session.



The new recording is added to the list of Recordings beside the viewer (as shown in the following example), as well as to the Recordings list on the Browse Content page.

Red status icons indicate that the session is being recorded. Calypso keeps track of the Duration and updates the counter value below the viewer, as well as the Recordings list.



- To insert a HotMark at the current time, click .

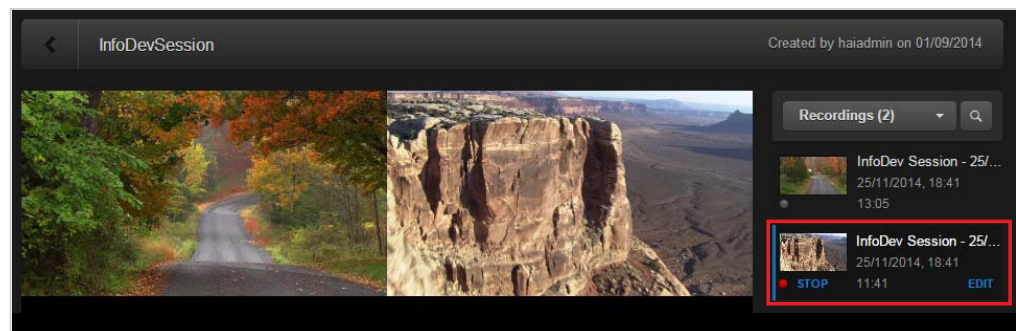
For information on creating and managing HotMarks, see [“Managing HotMarks”](#) on page 146.

- To pause the recording, click . Note that a paused recording remains active.

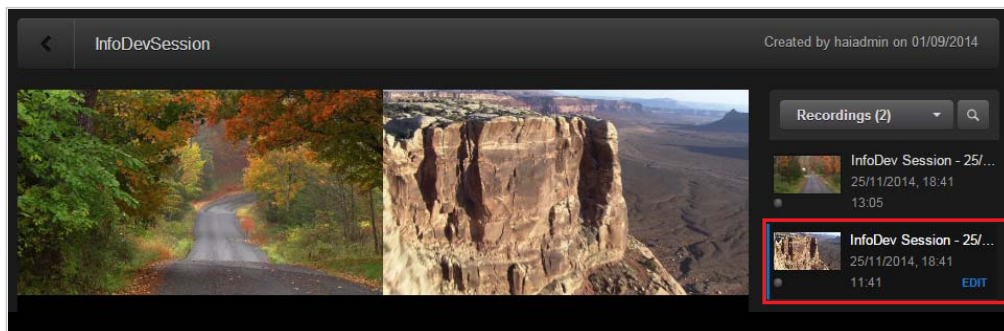
- To stop recording, click .



NOTE A **STOP** button appears when you hover over an active recording on the Recordings list.



- To play the new recording, click the thumbnail (or anywhere in the row except [Edit](#)) in the list of Recordings.



The recording opens in the Recording viewer, and the Recording controls are replaced by Playback controls.

For details, see the following section, [“Playing Back Recordings”](#).



NOTE The general Recording viewer controls are the same as in the Session viewer, including adjusting the volume, resizing the viewer, and switching to full-screen mode. For details, see [“Viewing Sessions”](#) on page 124.

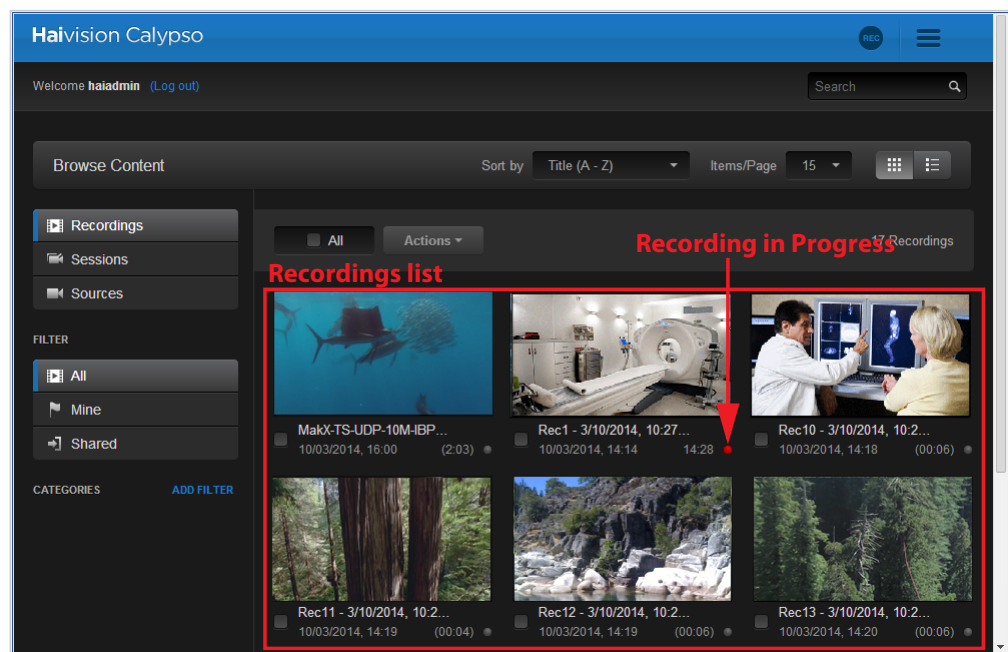
Playing Back Recordings

When you create a new recording, you can immediately play it by clicking the thumbnail in the list of Recordings beside the Session viewer.

You can also select an existing recording from the Recordings list on the Browse Content page. To do this, follow these steps.

To play a recording:

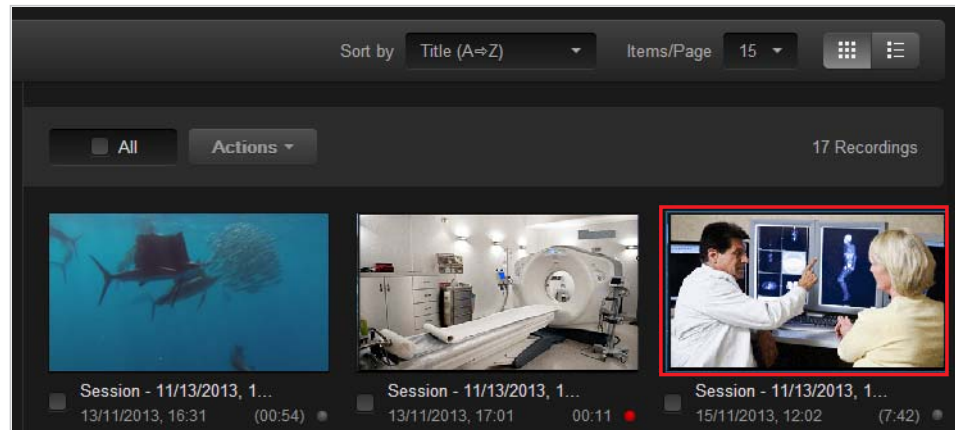
1. On the Browse Content page, click **ALL** (or **MINE** or **SHARED**) from the sidebar menu to display the Recordings list.



For each Recording, the list displays a thumbnail (if available), the title, creation date and time, and (duration).

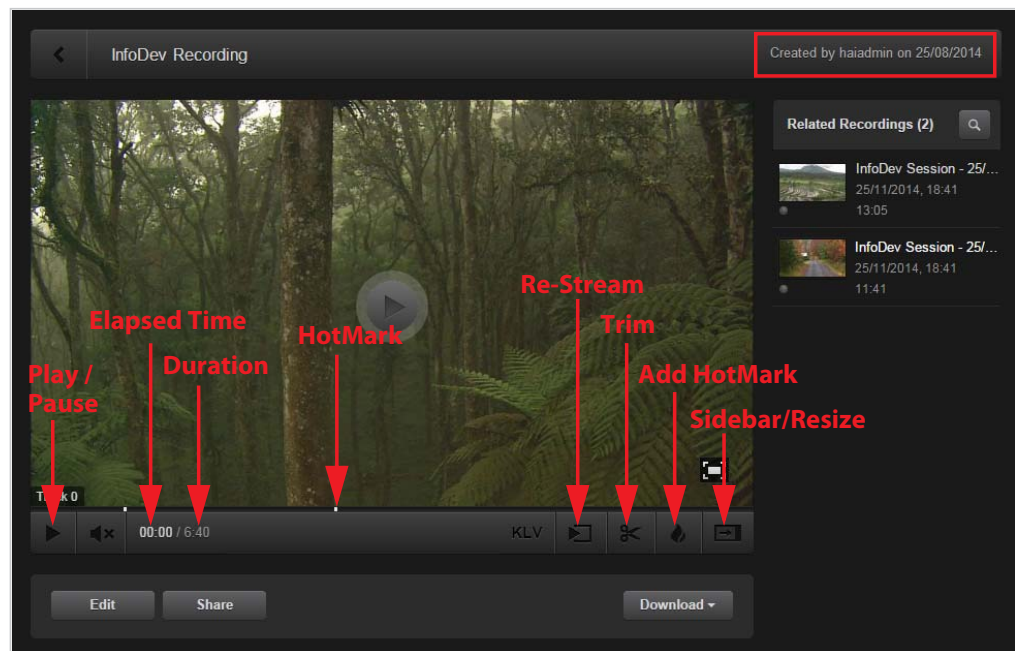
The LED turns red to indicate that a recording is in progress, or that some other process is underway, such as trimming or importing.

- Locate the recording to play and click the thumbnail or title/date (i.e., anywhere in the row except [Edit](#)).



For viewing and search options to locate recordings, see [“Exploring the Web Interface”](#) on page 104.

The recording opens in the viewer, and the Recording controls are replaced by Playback controls (as shown in the following example). The session “Created by” metadata is replaced by the recording “Created by” metadata. If HotMarks have been added, you will see them on the progress/scrub bar.



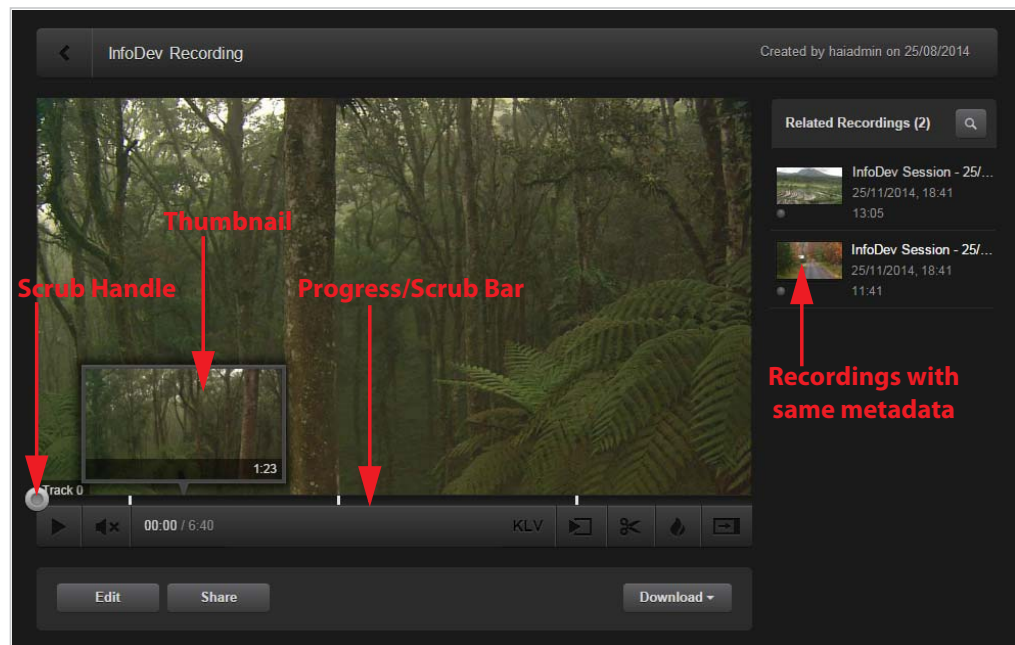
From here, you can do the following:

- play the recording or pause playback
- scrub forward or backward through the video

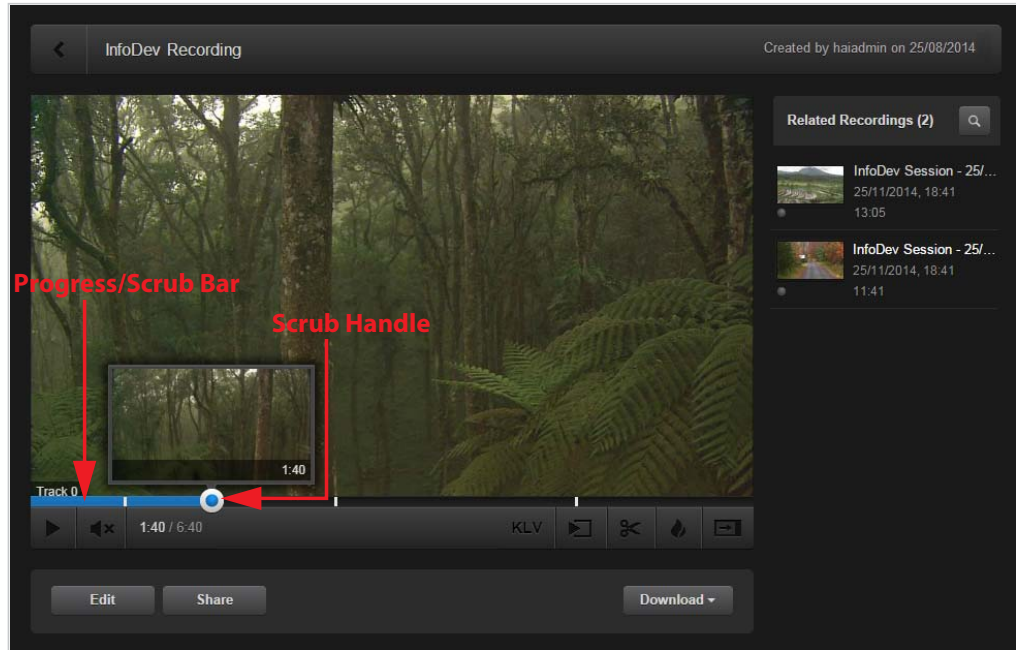
- insert, edit or delete HotMarks to annotate and create shortcuts to selected points of interest
- trim the recording (i.e., adjust the start and stop points)
- re-stream the recording on a known multicast or unicast address and port
- edit the recording information, including assigning category metadata
- share the recording with other users or groups
- download the recording.


When you hover the cursor over the controls, the scrub handle, progress/scrub bar, and thumbnail appear.

3. To preview the content, move the cursor along the progress/scrub bar to see thumbnails of the recording at various intervals.

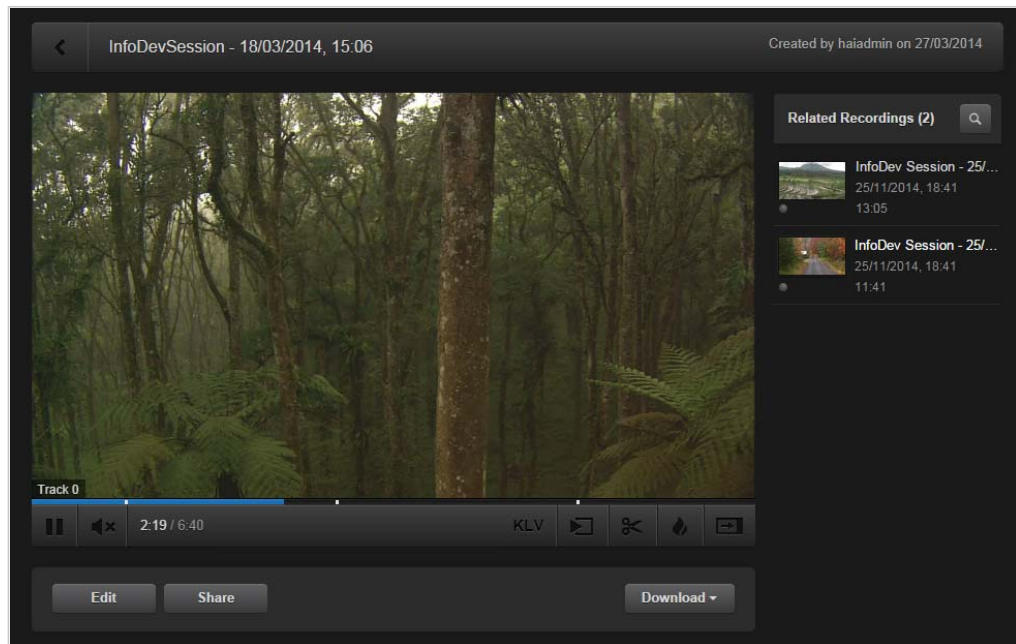


4. To select the starting point for playback, drag the scrub handle or click the position on the progress/scrub bar.




5. To start playing the recording, click .

As the recording plays, a blue progress bar tracks the progress.




6. To insert a HotMark, click .

For information on creating and managing HotMarks, see [“Managing HotMarks”](#) on page 146.

7. To trim the recording, click . For details, see [“Trimming Recordings”](#) on page 147.

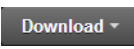
8. To re-stream the recording, click . For details, see [“Re-Streaming Recordings”](#) on page 152.

9. To edit the recording information, click .


This opens the Edit Recording Information page, from which you can edit the recording name or description, set the Recording Expiry, and/or assign category metadata. See [“Editing Recording Information and Category Metadata”](#) on page 143.

10. To share the recording, click .


This opens the Share Recording dialog, from which you can assign permissions to restrict user access. See [“Sharing Recordings”](#) on page 150.

11. To download the recording to an MP4 or TS file, click .

For information on downloading recordings, see [“Downloading Recordings”](#) on page 149.

12. To pause playback of the recording, click .


13. With multi-track recordings, you may wish to view some tracks and remove others from the viewer.

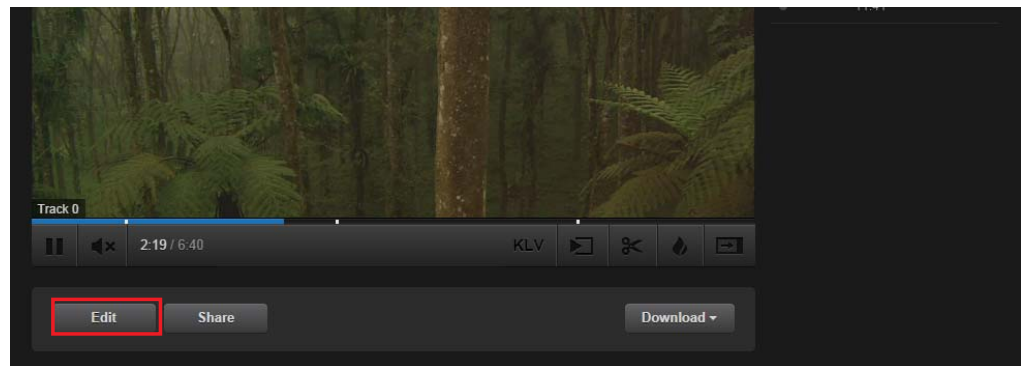
- To remove a track, click the  in the top right corner of the player. This moves the track into source strip below the viewer.
- To return the track to the Recording viewer, click the thumbnail in the source strip.
- Note that you can only remove the track from the viewer, but it remains part of the recording.

Editing Recording Information and Category Metadata

Once the recording is created, you can edit the recording information by opening its Edit Recording Information page from either the Recording viewer or the Browse Content page (Recordings list). You can edit the recording name, add a description, and override the global Recording Expiry. If categories have been pre-defined on your system, you can assign categories to the recording.

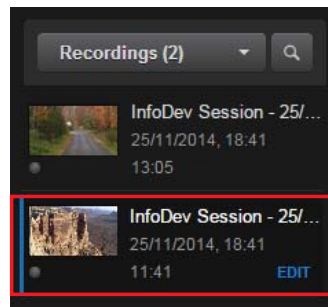
To edit recording information:

1. With the recording open, click .



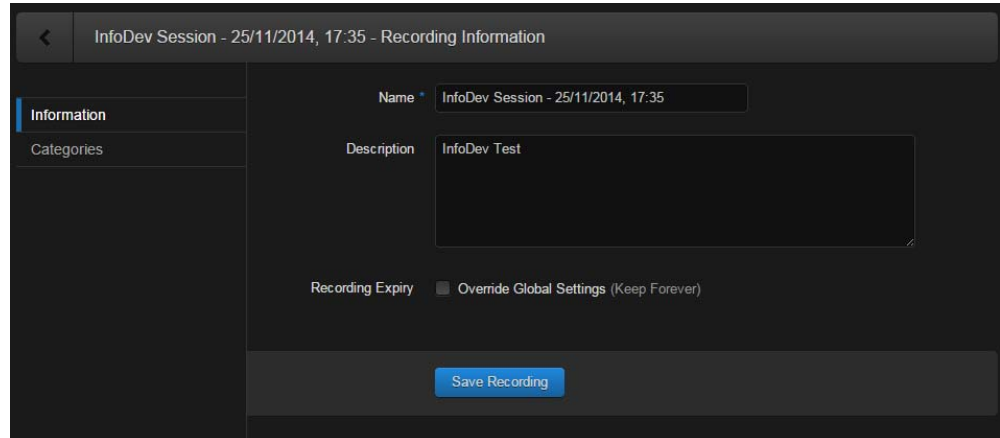
-or-

Select the recording in the Recordings list either on the Session viewer or Browse Content page.



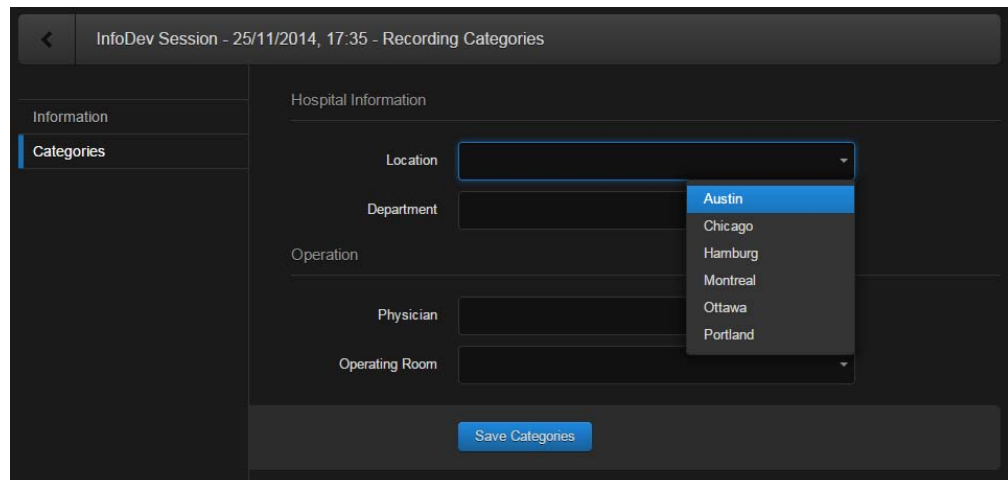
Or you can check the checkbox next to one or multiple recordings on the Browse Content page (or check [All](#)) and select Edit from the Actions drop-down menu.

2. On the Edit Recording Information page, you can modify the recording Name, add a description, and override the global Recording Expiry. See [“Recording Information”](#) on page 145.



TIP If you select multiple recordings, you can only edit the Description field.

3. Click [Save Recording](#).
4. To assign category metadata to the recording, click [CATEGORIES](#) from the sidebar menu. For details, see [“Editing Session Information and Category Metadata”](#) (beginning [Step #5](#) on page 129.).



5. Click [Save Categories](#).



TIP For information on bulk editing Category metadata for multiple recordings, see [“Performing Bulk Edits”](#) on page 114. Bulk edits cannot be undone.

Recording Information

The following table lists the properties you can view and modify in the Recording information dialog:


Field	Default	Description/Values
Information		
Name	<Session name>	A name to identify the recording in the Recordings list and viewer.
Description	n/a	(Optional) Information that describes the recording.
Recording Expiry	Not checked	<p>Check this checkbox to override the Default Recording Expiry set by your system administrator (which specifies the number of days after which recordings will expire and be deleted).</p> <ul style="list-style-type: none"> • Checking “Override Global Settings (Keep Forever)” overrides the Default Recording Expiry for this recording. When checked, you can select either “Keep Forever” or specify the expiry date. • When left unchecked, this recording will expire and be deleted as specified by the Default Recording Expiry. <p>NOTE: For details on the Default Recording Expiry, see “Configuring Recording and Session Settings” on page 45 or contact your system administrator.</p>
Categories		
Categories	n/a	<p>(Optional) To assign category metadata to the recording, select a category and select one or more values or (where allowed) type in custom values.</p> <p>NOTE: Categories must be pre-defined by your system administrator.</p> <p>For information on bulk editing Category metadata for multiple recordings, see “Performing Bulk Edits” on page 114.</p>

Managing HotMarks

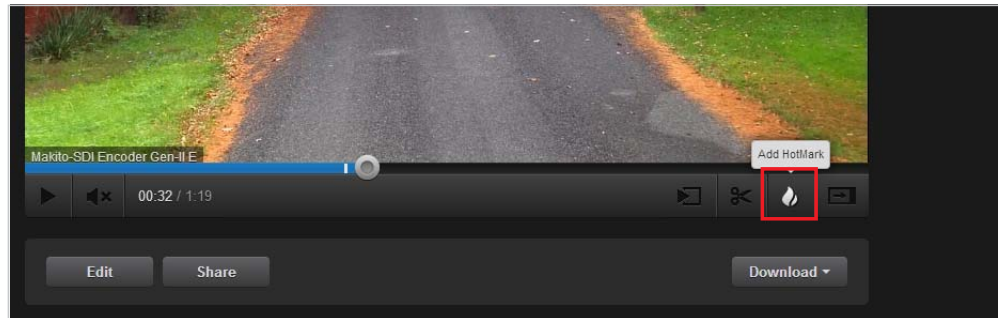
HotMarks provide a means for you to insert metadata in real-time. HotMarks, with optional title and description, are typically used to create shortcuts to selected points of interest in the recording. You can insert HotMarks while recording a session as well as playing back a recording, as you drag the scrub handle along the progress/scrub bar.


Users can search for recordings by entering keywords from HotMark titles or descriptions.

To insert a HotMark:

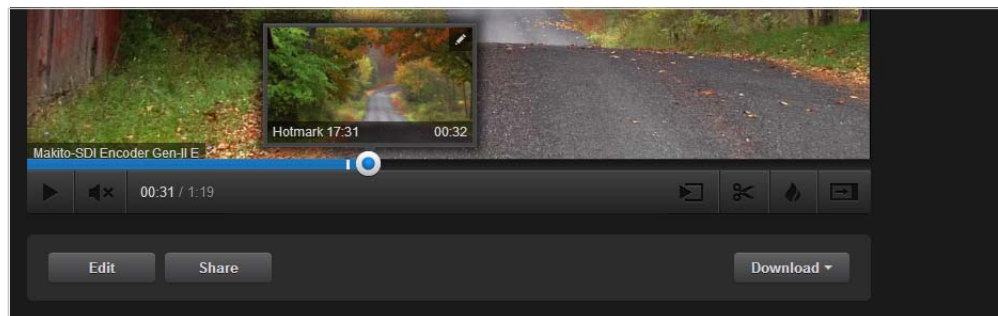
1. While recording a session or with a recording open, click .


This inserts a HotMark in the recording and places an indicator along the progress/scrub bar.



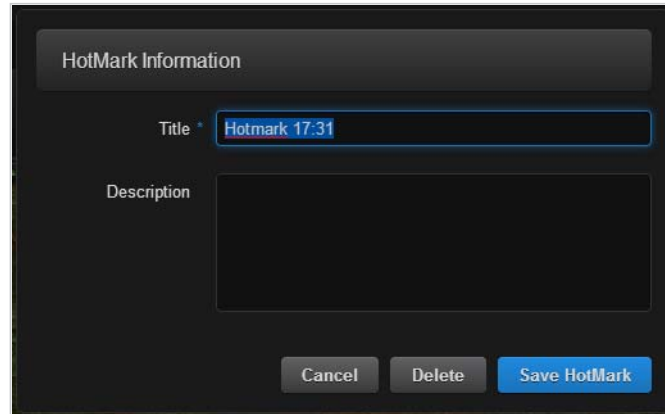
You can also pause the recording, drag the scrub handle to the desired position, and then click .

2. To display the HotMark, hover over the indicator (as shown in the following example).



3. To modify the HotMark title or description, click  in the corner of the thumbnail.

4. On the HotMark Information dialog, edit the Title and Description fields as necessary and click [Save HotMark](#).



5. To delete a HotMark, click [Delete](#) on the HotMark Information dialog.

Trimming Recordings


When playing back a recording, you can use the “Trim” feature to clip segments out of full recordings. For example, you can adjust the start and stop points to trim unwanted material. Trimming a recording creates a new copy; trim points are not saved on the original recording. You (i.e., the creator) will own the recording; existing sharing permissions are not carried over but existing metadata is copied.

Thumbnail previews are shown as you hover over the trim handles.

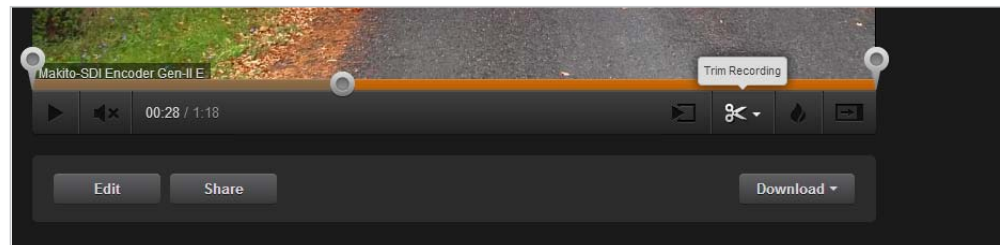


NOTE Scrub handle and trim handles can be positioned independently and do not affect each other.

To trim a recording:

1. With a recording open, click .

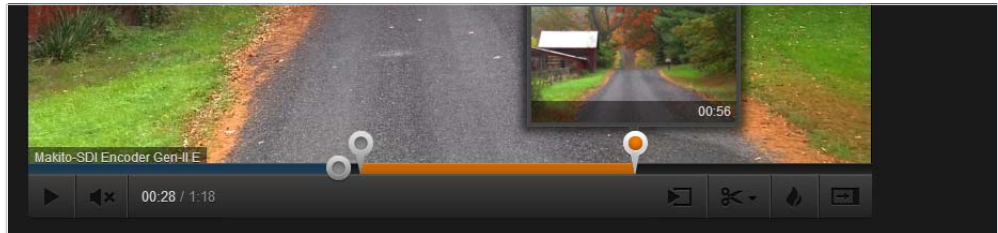
The progress bar switches to Trim mode.



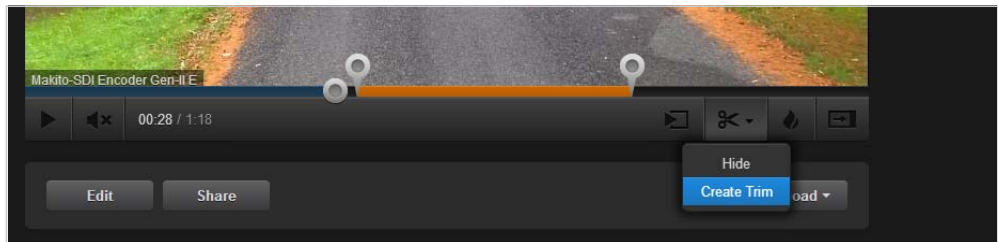
2. Move one trim handle to the desired start point.



3. Move the other trim handle to the desired stop point.



4. Click  and select Create Trim from the drop-down menu.



The new “trimmed” recording is now added to the Recordings list.

Deleting Recordings

To delete recordings:

1. On the Browse Content page, select the recording(s) in the Recordings list.
2. Select Delete from the Actions drop-down menu and click [Confirm](#).

The selected recording(s) will be removed from the Recordings list.

Downloading Recordings

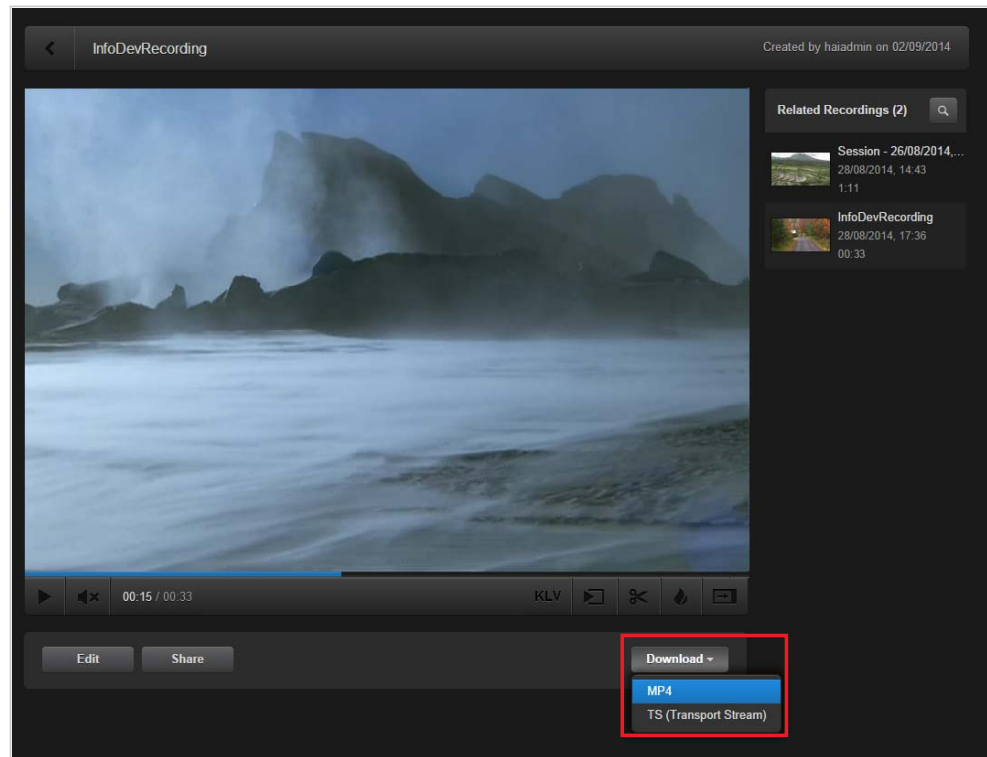
You can download a recording as either an MP4 or TS (Transport Stream) file onto your local computer.



NOTE You cannot download MP4 or TS files from a mobile device.

To download a recording:

1. With the recording open, click **Download**.



2. Select the file format, either MP4 or TS (Transport Stream).

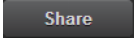


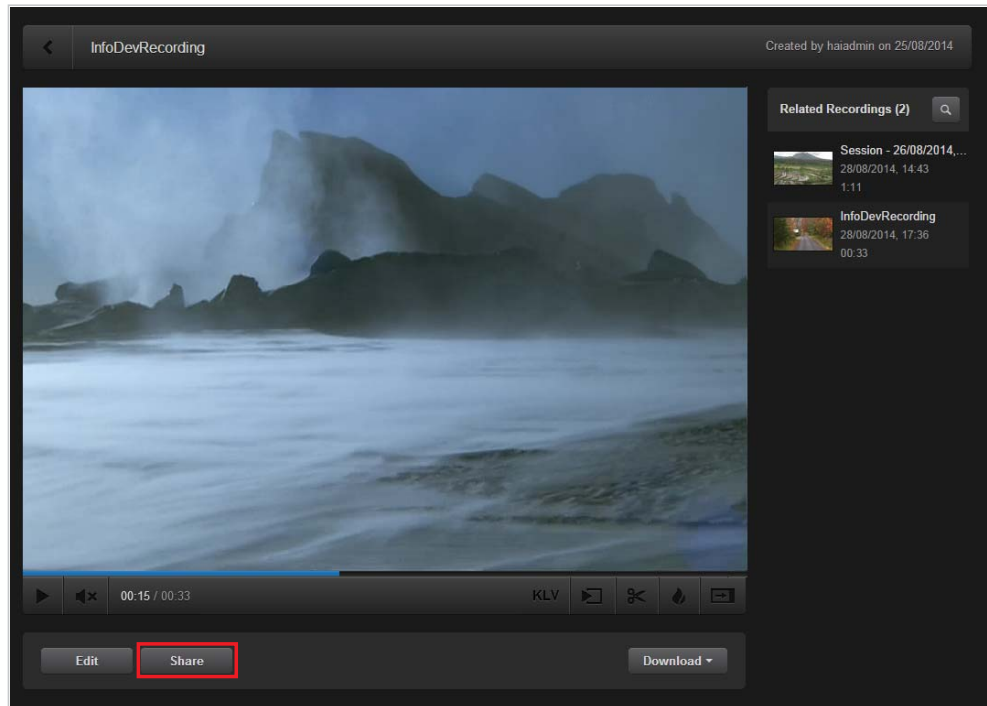
NOTE The download is delivered in a (64-bit) .zip file which may contain several files for a multitrack recording. Windows Vista, Windows 7, and Windows 8 have built-in support for 64-bit zip files. However, Windows XP and Mac OSX require a third party zip application with 64-bit support in order to unzip the downloads.

Sharing Recordings

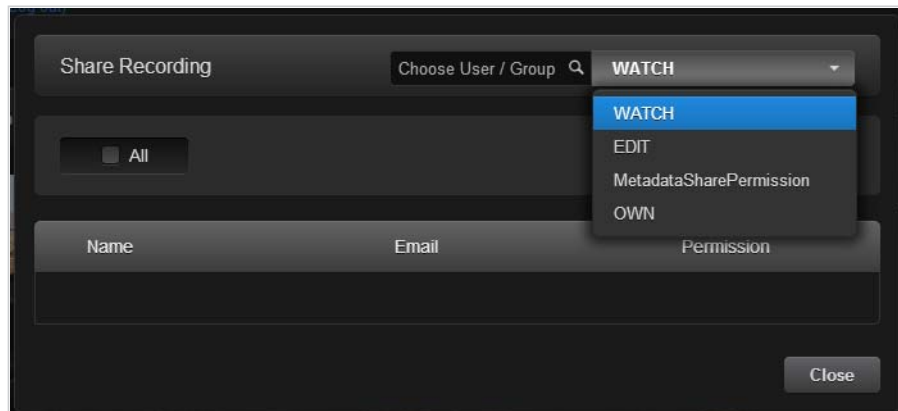
You can share recordings with other users or groups and can also specify access permissions on a user or group basis (the same as inviting to Sessions). For information on “share” permissions, see [“Session Invitations”](#) on page 131.

To share a recording with a user or group:

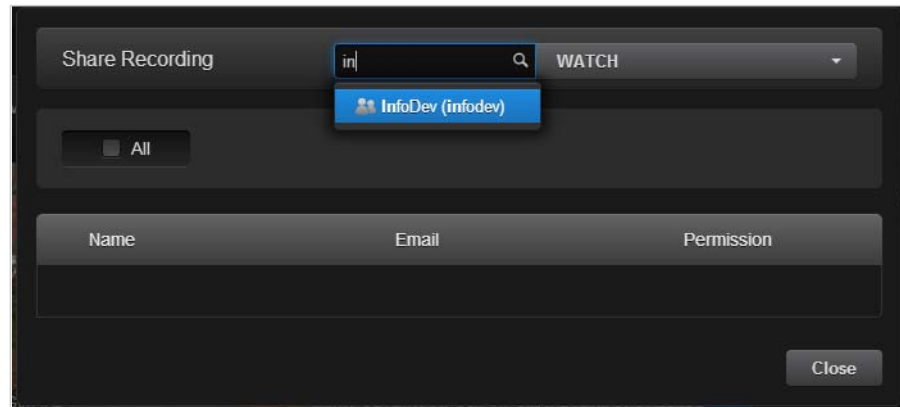
1. With a recording open, click .



2. On the Share Recording dialog, select the permission from the drop-down menu.

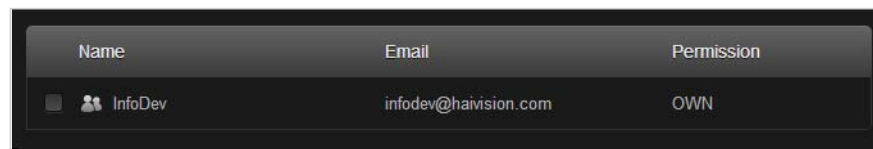


3. Type the first few characters of the user or group's name in the search field, and then select the name from the auto-complete drop-down list.

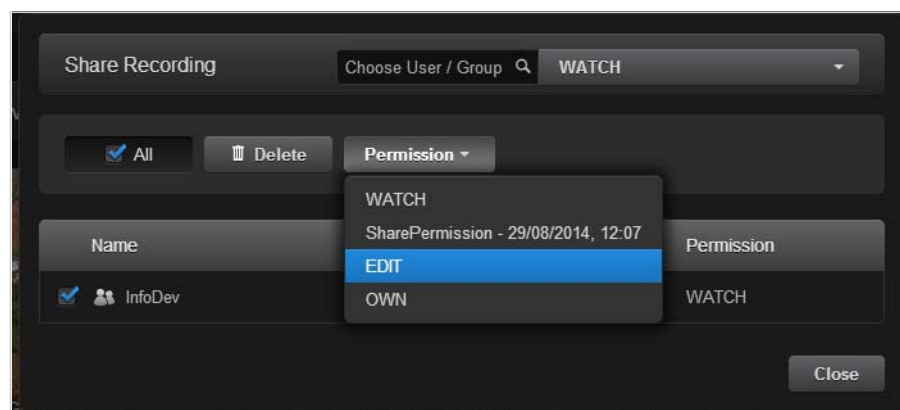


NOTE Only users and groups that have been assigned roles appear in the list.

The user or group name is added to the list below, along with the selected permission.



4. Repeat for each user (or group) with whom you wish to share the recording. You can assign different share permissions to each user or group.
5. To modify the recording share permissions, select one or more names in the list and select the new permission from the drop-down menu.




6. To delete users or groups from the recording share permissions, select one or more names in the list and click [Delete](#).
7. Click [Close](#).

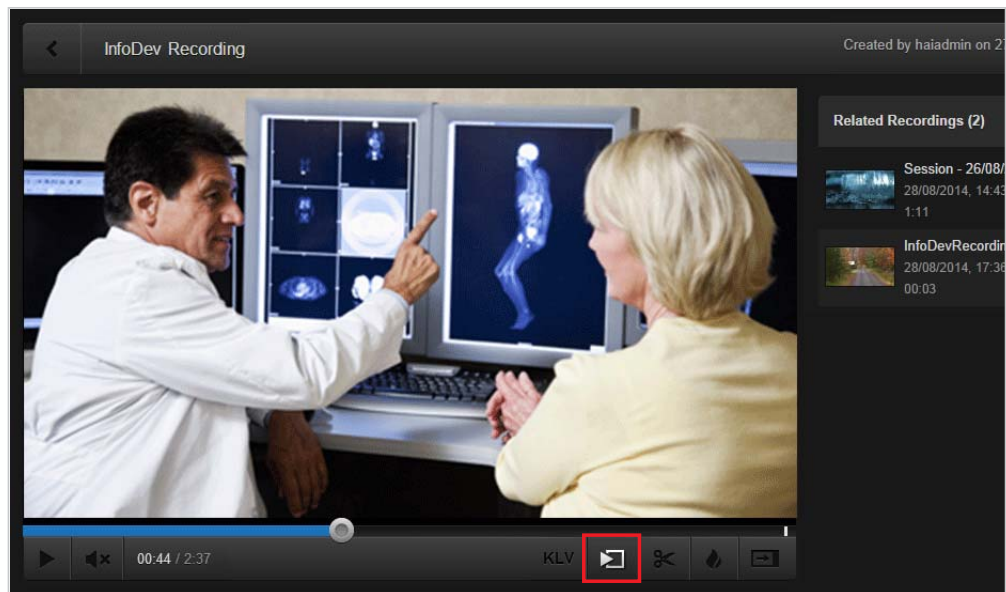
Re-Streaming Recordings

You can re-stream a recording to a known multicast or unicast address in order to play streams back to fixed devices such as a set-top box or Makito decoder. With multi-source recordings, you can choose the track(s) to re-stream and then choose the streaming destination for each track.

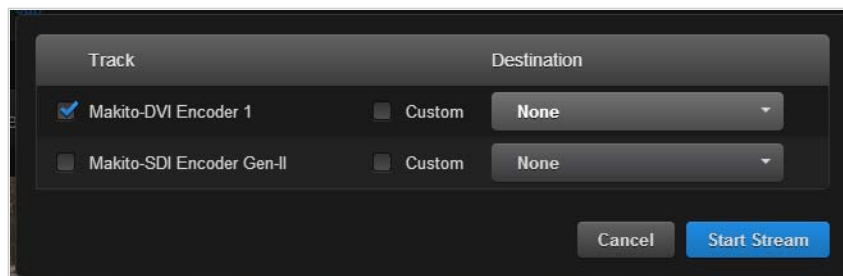
You can also continue to control the re-streamed video using the Calypso player controls (Play, Pause, and Scrub).

To re-stream a recording:

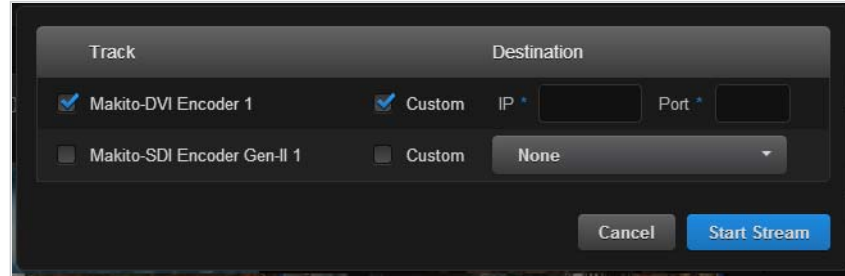
1. With a recording open, click .



2. In the Start Stream dialog, select the tracks to re-stream.



3. Then select the streaming destination for each track; you can either:
 - Select from the drop-down list of available destinations, or
 - Check [Custom](#) and enter an IP address and port number:



4. Click **Start Stream**.



NOTE If the unicast/multicast address and port are already being used, you will receive an error message.

You may wish to open a video player such as VLC and tune it to the unicast/multicast address to verify that the recording is being re-streamed.

5. To stop re-streaming, click .

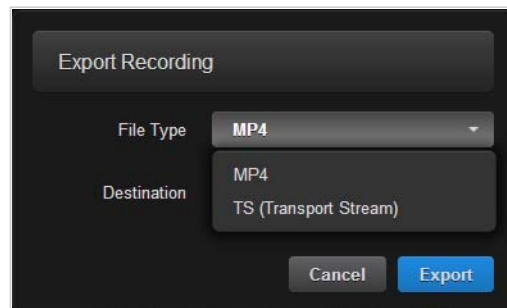
Exporting Recordings

If you have export permissions, you can export recordings as either MP4 or TS (Transport Stream) files to an FTP/FTPS server or the Haivision Video Cloud (HVC) platform. Content creators and other users with “Export” permissions can select and “queue up” several recordings to be exported one at a time.

Export destinations must be pre-defined by your system administrator.

To export recordings:

1. On the Browse Content page, select the recording(s) in the Recordings list.
2. Select Export from the Actions drop-down menu.
3. On the Export Recording dialog, select the file type (either **MP4** or **TS**) and destination from the drop-down menus.



4. Click [Confirm](#).

The selected recording(s) will be exported. If you select multiple recordings or if other exports are already in progress, the export jobs will be processed in the order in which they are received.

Viewing KLV Data



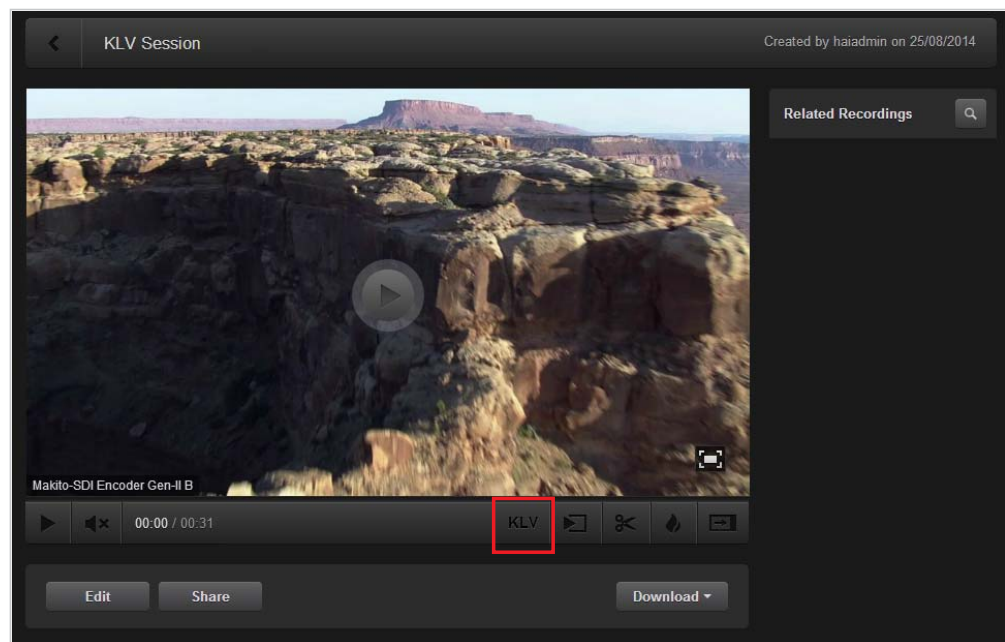
NOTE You cannot view KLV data from a mobile device.



Calypso supports KLV data parsing and display as a licensable option per system. On the Browse Content page of a licensed system, you can turn on/off the display of KLV data in a sidebar in the multi-window viewer. The steps are the same for the Source, Session, or Recording viewer.

To view KLV data in a viewer window:

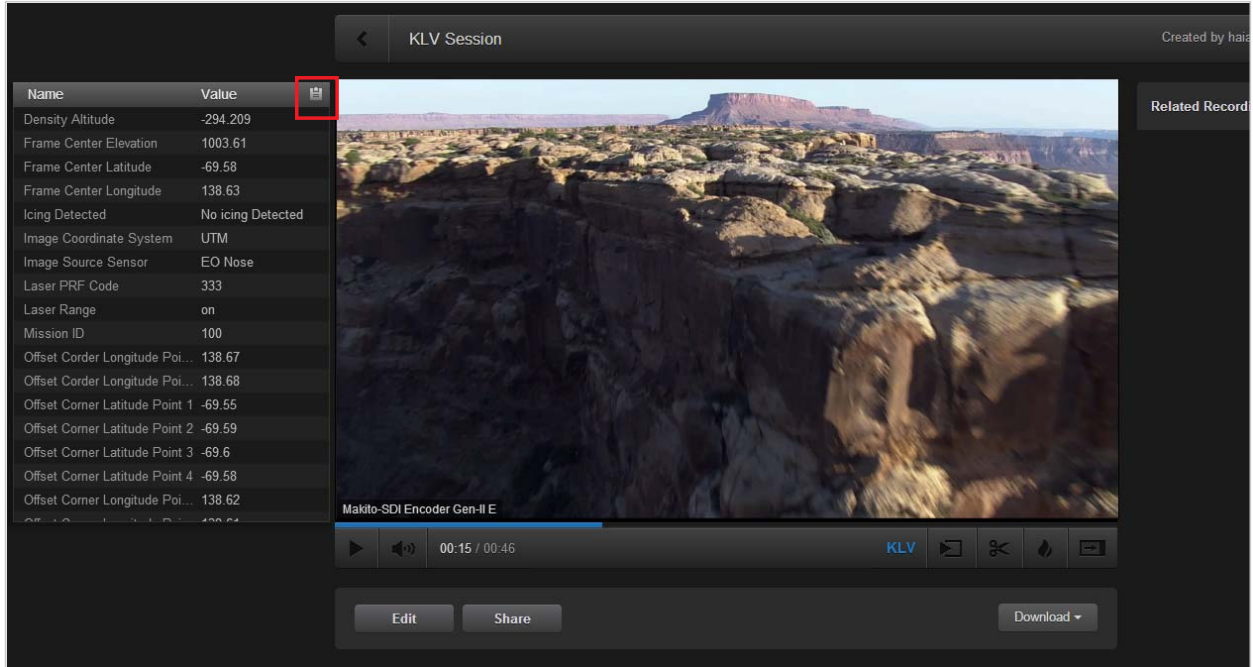
1. On the Browse Content page, open a session, recording, or source in the viewer.


The following example shows a recording.



2. To start playing the recording, click .
3. To display KLV data, click .

The KLV data list opens in beside the player.



4. To copy the KLV data to your clipboard, click  in the sidebar title bar. You can then paste the data into a text editor for viewing.

CHAPTER 7: Managing Imports and Exports

This chapter describes Calypso’s Import/Export capabilities.



NOTE Access to Import/Export capabilities depends on your permissions. If you have questions about your access permissions, please contact your system administrator.

Also, you cannot import or export recordings from a mobile device.

Topics In This Chapter

Import/Export

Introduction	158
Importing Recordings	159
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Introduction

Calypso supports manually initiated import/export.

Import/Export capabilities enable users with appropriate permissions to:

- download a Calypso video (to which they have access) as an MP4 or TS (Transport Stream) file
- import a Calypso-compatible MP4 or TS (Transport Stream) video to Calypso (e.g., re-import a recording edited using third party editors)
- assign metadata to the uploaded recording
- export recordings and metadata from Calypso to an FTP or FTPS server
- export HVC-compatible mRSS metadata
- batch export, through which users may select and “queue up” several recordings to be exported one at a time.


Importing Recordings

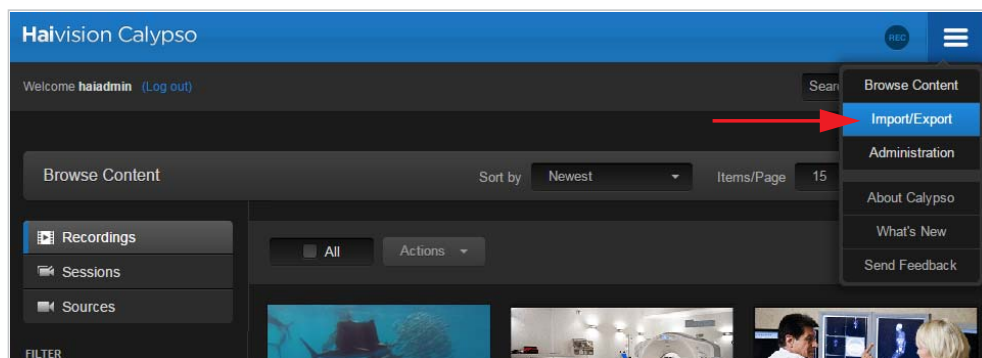
From the Import page, you can import Calypso-compatible MP4 and TS (Transport Stream) video files into Calypso and create new recordings to view or share.



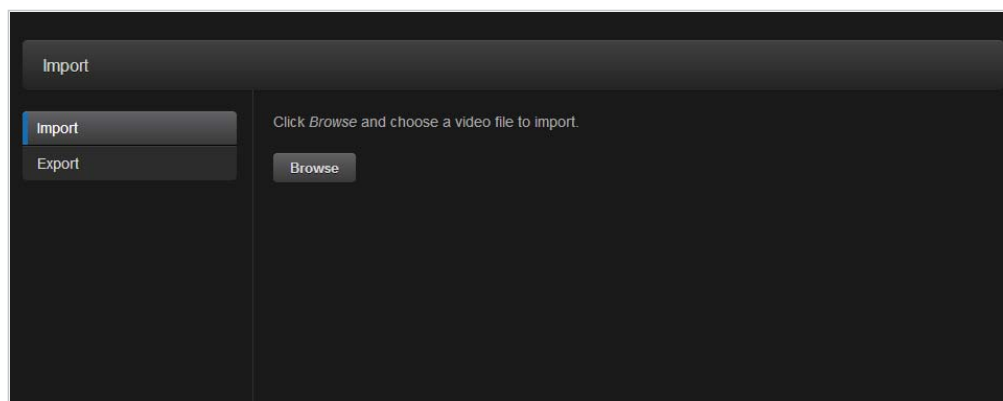
NOTE Calypso supports H.264 video and AAC audio.

To import a recording:

1. Click the  icon on the toolbar and select Import/Export from the navigation drop-down menu.

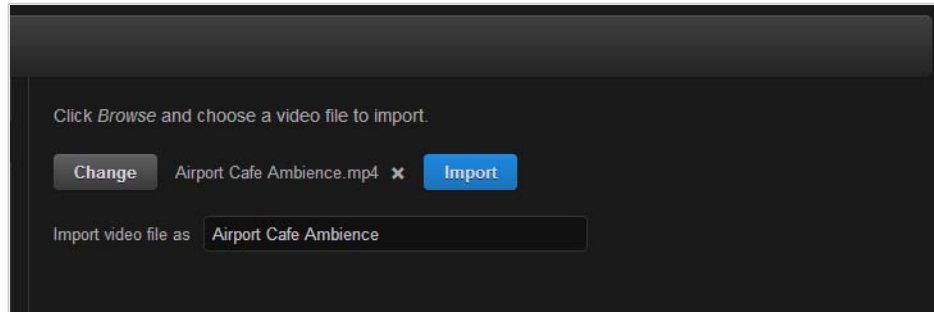


The Import page opens, as shown in the following example.




2. Click **Browse** and select the video file to import in the Open File dialog box.

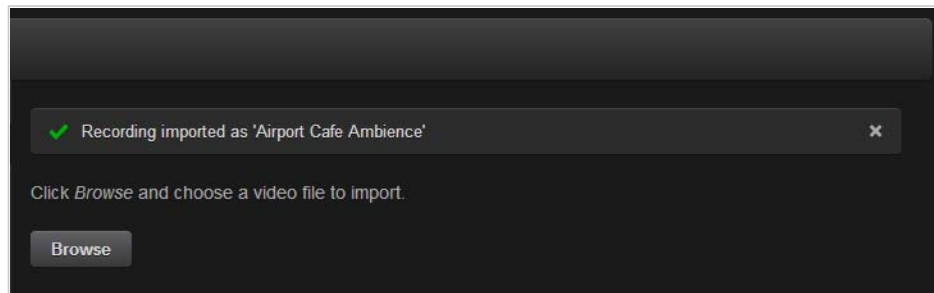
3. When you see the filename in the text box, you can (optionally) change the name of the imported recording.



TIP To select a different video file, click [Change](#). To remove the selection, click .

4. Click [Import](#).

The video file will be imported and you will see a confirmation message such as the following. To remove the message, click .



The video file will be added to the Recordings list.

Managing Exports

From the Export page, you can view and manage export jobs. From here, you can cancel or clear recording jobs, or re-export recordings.

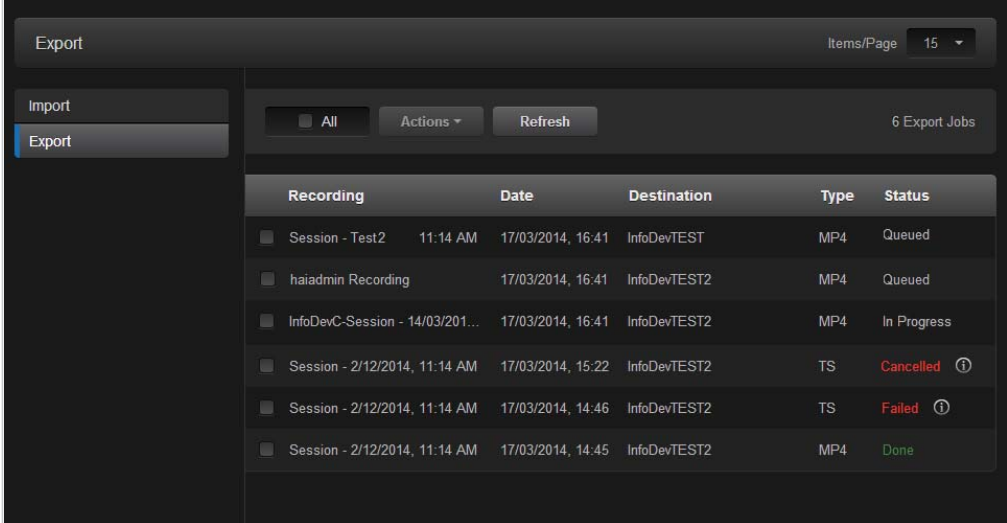
Recordings are selected and “queued up” for export from the Recordings list (Browse Content page, see [“Exporting Recordings”](#) on page 153).

Export destinations must be pre-defined from the (Administration) Export Destinations page (see [“Configuring Export Destinations”](#) on page 40).

To manage exports:

1. On the Import page, select **EXPORT** from the sidebar menu.

The Export page opens, showing the list of exported recordings (see following example).

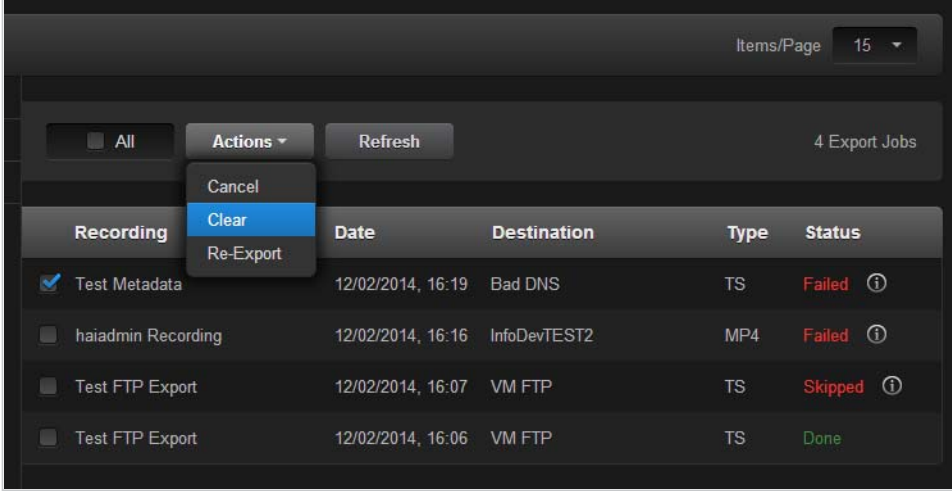


Recording	Date	Destination	Type	Status
Session - Test2	11:14 AM 17/03/2014, 16:41	InfoDevTEST	MP4	Queued
haiadmin Recording	17/03/2014, 16:41	InfoDevTEST2	MP4	Queued
InfoDevC-Session - 14/03/201...	17/03/2014, 16:41	InfoDevTEST2	MP4	In Progress
Session - 2/12/2014, 11:14 AM	17/03/2014, 15:22	InfoDevTEST2	TS	Cancelled ⓘ
Session - 2/12/2014, 11:14 AM	17/03/2014, 14:46	InfoDevTEST2	TS	Failed ⓘ
Session - 2/12/2014, 11:14 AM	17/03/2014, 14:45	InfoDevTEST2	MP4	Done

The Export list displays the title, creation date and time, destination, file type, and status for each recording to be exported. The status can be either Queued, In Progress, Done, Cancelled, Failed, or Skipped (i.e., already exported).

Hovering over the ⓘ will display information about error conditions, including skipped, cancelled, or failed export jobs.

2. To perform any actions on one or more recordings in the Recordings list, check the checkbox next to the recording(s) (or check [All](#)).



The screenshot shows a dark-themed interface with a table of recordings. At the top right, there is a 'Items/Page' dropdown set to '15'. Below this, there are buttons for 'All', 'Actions', and 'Refresh', along with a '4 Export Jobs' indicator. The 'Actions' dropdown menu is open, showing options: 'Cancel', 'Clear' (highlighted in blue), and 'Re-Export'. The table has columns: 'Recording', 'Date', 'Destination', 'Type', and 'Status'. The first row is selected with a blue checkbox and contains: 'Test Metadata', '12/02/2014, 16:19', 'Bad DNS', 'TS', and 'Failed' with an information icon.

Recording	Date	Destination	Type	Status
<input checked="" type="checkbox"/> Test Metadata	12/02/2014, 16:19	Bad DNS	TS	Failed ⓘ
<input type="checkbox"/> haiadmin Recording	12/02/2014, 16:16	InfoDevTEST2	MP4	Failed ⓘ
<input type="checkbox"/> Test FTP Export	12/02/2014, 16:07	VM FTP	TS	Skipped ⓘ
<input type="checkbox"/> Test FTP Export	12/02/2014, 16:06	VM FTP	TS	Done

- To cancel export jobs (i.e., remove from the queue), select Cancel from the Actions drop-down menu and click [Confirm](#).
- To remove jobs from the Export list, select Clear from the Actions drop-down menu.
- To re-export Cancelled or Failed jobs, select Re-export from the Actions drop-down menu.



TIP You can click [Refresh](#) to update the status listings.

APPENDIX A: Technical Specifications

This appendix lists the technical specifications for Calypso.

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<u>Calypso - 1RU (S-CLYPSO-X-1U)</u>	165
<u>Calypso - 2RU (S-CLYPSO-X-2U)</u>	166

Calypso (S-CLYPSO-X)

Calypso (S-CLYPSO-X)	
Management Interfaces	<ul style="list-style-type: none"> Calypso Portal REST API Command Line API Console UI
Features	<ul style="list-style-type: none"> Session-based workflow Access control HotMarks insertion with annotation API-enabled control Multi-source recording Real-time streaming & sharing No software installation
Inputs	<ul style="list-style-type: none"> MPEG Transport Stream H.264 ADTS AAC Audio
Output	<ul style="list-style-type: none"> RTMP
Platform	<ul style="list-style-type: none"> Secure Linux-based OS

Calypso - 1RU (S-CLYPSO-X-1U)

Calypso - 1RU (S-CLYPSO-X-1U)	
Physical Specifications	
Hardware Platform	Haivision optimized server platform (1RU) 1.8 TB RAID 5
Physical Characteristics	Intel-based processing
Power Supplies	2 x 550 W hot swappable
Dimensions (H x W x D)	42.8 x 642.3 x 482.4 (mm) 1.68" x 17.09" x 24.69"
Weight	(Maximum config) 19.9 kg (43.87 lbs.)
Environmental Specifications	
Temperature	
Operating	10 ° to 35 °C (50 ° to 95 °F)
Relative humidity	
Operating	10% to 80% (noncondensing)

Calypso - 2RU (S-CLYPSO-X-2U)

Calypso - 1RU (S-CLYPSO-X-2U)	
Physical Specifications	
Hardware Platform	Haivision optimized server platform (2RU) 6.6 TB RAID 5
Physical Characteristics	Intel-based processing
Power Supplies	2 x 750 W hot swappable
Dimensions (H x W x D)	87.3 H x 723.0 W x 482.4 D (mm) 3.4" x 17.44" x 26.8"
Weight	(Maximum config) 32.5 kg (71.5 lbs.)
Environmental Specifications	
Temperature	
Operating	10 ° to 35 °C (50 ° to 95 °F)
Relative humidity	
Operating	10% to 80% (noncondensing)

APPENDIX B: KLV Dictionary Format

This appendix lists the requirements for the Calypso KLV dictionary format.



NOTE A sample dictionary file is available from the Haivision Download Center at: <http://www.haivision.com/download-center/>

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Dictionary Syntax

A dictionary must have a top-level attribute “items” whose type is a list. It contains a list of Local Data Sets (LDS) or items to be decoded. A LDS or item is matched by its universal key (e.g. the universal key of UAS is “06 0E 2B 34 02 0B 01 01 0E 01 03 01 01 00 00 00”).

A LDS has also a list of items. Each item can be either of type “item” or “lds” (for example, see item 48 below).

```
{
  "items": [{
    "type": "lds",
    "name": "uas",
    "key": "06 0E 2B 34 02 0B 01 01 0E 01 03 01 01 00 00 00",
    "items": [
    ]
  }]
}
```

Item - Translation

An item can be modified by a translation object. For example:

```
{
  "type": "item",
  "key": "25",
  "format": "uint16",
  "translation": {
    "multiplier": 0.30365453574425879301136797131304,
    "error": 2147483648,
    "addend": -900
  },
  "name": "Frame Center Elevation"
}
```

If the raw value of item 25 (a 16-bit unsigned integer) is equal to 2147483648, then the decoded value will be the string “error”. Otherwise, the decoded value will be the raw value multiplied by 0.30365453574425879301136797131304 and subtracted by 900.

Example:

```
"25": {
  "value": 1000.88
}
```


You can also specify a key for the addend and that key's addend will be used. For example:

```
"addend": {  
  "key": "23"  
},
```

The default addend is 0.

Item - Translation: Format/Suffix/Precision

The `displayValue` attribute is formatted according to the `format`, `suffix` and `precision` attributes.

If a format is supplied, the suffix and precision are ignored.

format

Supported formats: time, latitude, longitude.

suffix

The value of the suffix is appended to the value.

precision

The precision controls how many digits there are after the decimal point.

Examples

suffix/precision:

```
{
  "type": "item",
  "key": "5",
  "format": "uint16",
  "translation": {
    "multiplier": 0.0054932478828107118333714808880751,
    "suffix": "°",
    "precision": 2
  },
  "name": "Platform Heading Angle"
}
```

```
{
  "value": 22.0664,
  "displayValue": "22.07°",
  "name": "Platform Heading Angle"
}
```

The second section shows what is sent to Calypso based on the dictionary.

format:

```
{
  "type": "item",
  "key": "13",
  "format": "int32",
  "translation": {
    "multiplier": 4.1909515877212172316951757444512e-8,
    "addend": 0,
    "error": 2147483648,
    "format": "latitude"
  },
  "name": "Sensor Latitude"
}

{
  "value": -34.84,
  "displayValue": "034°50'24\" S",
  "name": "Sensor Latitude"
}
```

Common suffixes include “ °C”, “°”, “m/s”, and “m”.

Item - Enum

An item can be modified by an `enum` object. The `enum` object can either have a “values” attribute or a “bits” attribute.

Item - Enum - Values

Example:

```
{
  "type": "item",
  "key": "34",
  "format": "uint8",
  "enum": {
    "values": {
      "0": "Detector off",
      "1": "No icing Detected",
      "2": "Icing Detected"
    }
  }
}
```

The values attribute is a mapping between the raw value (a 8-bit unsigned integer) and a string.

If the raw value is 1, then the decoded value is the string “No icing Detected”.

```
{
  name: "Icing detected"
  value: "No icing detected"
}
```

Item - Enum - Bits

Example:

```
{
  "type": "item",
  "key": "47",
  "format": "uint8",
  "enum": {
    "bits": {
      "1": {
        "name": "Laser Range",
        "values": {
          "0": "off",
          "1": "on"
        }
      },
      "2": {
        "name": "Auto-Track",
        "values": {
          "0": "off",
          "1": "on"
        }
      },
      "3": {
        "name": "IR Polarity",
        "values": {
          "0": "blk",
          "1": "wht"
        }
      },
      "4": {
        "name": "Icing detected",
        "values": {
          "0": "off/no ice",
          "1": "on"
        }
      },
      "5": {
        "name": "Slant Range",
        "values": {
          "0": "calc",
          "1": "measured"
        }
      }
    }
  }
}
```

```
    "6": {
      "name": "Image Invalid",
      "values": {
        "0": "valid",
        "1": "invalid"
      }
    }
  }
}
```

The bits object is a mapping between each bit of the raw value and a string. If the raw value of item 47 (a 8-bit unsigned integer) is 3 (0000 0011). Then the decoded value is:

```
"47": {
  "value": {
    "1": {
      "value": "on",
      "name": "Laser Range"
    },
    "2": {
      "value": "on",
      "name": "Auto-Track"
    },
    "3": {
      "value": "blk",
      "name": "IR Polarity"
    },
    "4": {
      "value": "off/no ice",
      "name": "Icing detected"
    },
    "5": {
      "value": "calc",
      "name": "Slant Range"
    },
    "6": {
      "value": "valid",
      "name": "Image Invalid"
    },
    "7": null,
    "8": null
  }
}
```

Since we didn't specify a mapping for bits 7 and 8, they are set to null.

64-bit integer

64-bit integers are converted to a string because JavaScript doesn't support 64-bit integers.

APPENDIX C: Warranty Information

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5. INDEMNIFICATION

5.1. Indemnification by Haivision.

- (a) Haivision shall indemnify and hold You harmless against any and all actions, claims, losses, damages, liabilities, awards, costs and expenses (including reasonable attorneys' fees) ("Claims") arising out of (i) any accusation or purported violation of any third person's US and Canadian copyright, trademark, patent rights or trade secrets, proprietary information on account of Your use of the Product when used in accordance with the terms of this Agreement, or (ii) relating to or arising out of any negligence or willful misconduct on the part of Haivision or any breach by Haivision of the terms of this Agreement or any Maintenance and Support Agreement, or applicable law. You shall promptly notify Haivision in writing of any such Claim and promptly tender the control of the defense and settlement of any such Claim to Haivision. Haivision shall thereafter undertake the defense of any such Claim using counsel of its choice. You shall cooperate with Haivision, in defending or settling such Claim at the expense of Haivision; provided that Haivision shall not settle any Claim against You which would require the payment of money by You without the prior written consent of You, which consent shall not be unreasonably withheld. You shall have the right to consult and provide input into the defense with counsel of its choice at its own expense. Haivision shall not reimburse You for any expenses incurred by You without the prior written approval of Haivision, which approval shall not be unreasonably withheld.
- (b) If any Product is, or in the opinion of Haivision may become, the subject of any Claim for infringement, then Haivision may, or if it is adjudicatively determined that any of the Product infringes in the manner described above (except to the extent that any translation, modification, addition or deletion or combination by You is the sole source of such Claim), then Haivision shall, at its option, either (i) procure for You the right to continue use of the Product for the term hereof, (ii) replace or modify the Product with other suitable and reasonably equivalent products so that the Product becomes non-infringing, or (iii) terminate this Agreement and refund to You a portion of the fee paid for the relevant Product.
- (c) Haivision shall have no liability for: (i) the use of other than the then current release of the Product; (ii) the use of the Product other than as set forth in its accompanying documentation and as permitted herein; (iii) the modification of any of the Product by any party other than Haivision; or (iv) any infringement arising from the use of any Product by You after Haivision has issued a written notice to You requiring You to cease using such Product when Haivision exercises its option to terminate the License pursuant to Section 3.2 (collectively, "Exclusions"). SECTION 5.1 STATES HAIVISION'S ENTIRE OBLIGATION WITH RESPECT TO ANY CLAIM REGARDING THE INTELLECTUAL PROPERTY RIGHTS OF ANY THIRD PARTY.

- 5.2. Indemnification by You.** You shall indemnify and hold Haivision harmless against any and all Claims directly or indirectly arising out of, or in any manner whatsoever associated or connected with Your performance, purported performance or non-performance of your rights and obligations under this Agreement, and against any and all Claims incurred by or on behalf of any of the foregoing in the investigation or defense of any and all such Claims.

6. OTHER PROVISIONS

- 6.1. Export and Other Restrictions.** This Agreement, and all Your rights and Your obligations under this Agreement, are subject to all applicable Canadian and U.S. Government laws and regulations relating to exports including, but not limited to, the U.S. Department of Commerce Export Administration Act and its associated Regulations and all administrative acts of the U.S. Government thereunder. In the event the Product or the Hardware is exported from the United States or re-exported from a foreign destination, You shall ensure that the distribution and export/re-export of the Product or the Hardware is in compliance with all laws, regulations, orders, or other restrictions of the U.S. Export Administration Act and its associated Regulations. You agree that neither you nor any of your Affiliates will export/re-export any Product, any hardware on which the Product is loaded or embedded, technical data, process, or service, directly or indirectly, to any country for which the Canadian government or United States government (or any agency thereof) requires an export license, other governmental approval, or letter of assurance, without first obtaining such license, approval or letter.
- 6.2. Content.** Your data and/or your use of the Product may not: (i) interfere in any manner with the functionality or proper working of the Product; (ii) stream any material that is copyrighted, protected by trade secret or otherwise subject to third party proprietary rights, including privacy and publicity rights, unless You are the owner of such rights or have permissions from the rightful owner to post the material; (iii) constitute, promote, facilitate or permit any illegal activities, including without limitation, activities that might be libelous or defamatory, invasive of privacy or publicity rights, abusive or otherwise malicious or harmful to any person or entity; (iv) distribute, share or facilitate unauthorized data, malware, viruses, Trojan horses, spyware, worms or other malicious or harmful distributions; or (v) otherwise violate, misappropriate or infringe the intellectual property, privacy, publicity, contractual or other proprietary rights of any third party.
- 6.3. Consent to Use Data.** You agree that Haivision may collect and use technical data and related information, including but not limited to technical information about Your device, system and application software and peripherals, that is gathered periodically to facilitate the provision of software updates, product support and other services to You (if any) related to the Product. Haivision may use this information, as long as it is in a form that does not personally identify You, to improve its products or to provide services or technologies to You.
- 6.4. Transfer and Assignment.** Haivision may assign, sublicense, or transfer this Agreement and/or any or all of its rights or obligations hereunder. You may not assign, transfer or delegate any of its rights or obligations hereunder (whether by operation of law or otherwise) without the prior written consent of Haivision. For purposes of the preceding sentence, and without limiting its generality, any merger, consolidation or reorganization involving You (regardless of whether You are a surviving or disappearing entity) will be deemed to be a transfer of rights, obligations or performance under this Agreement for which Haivision's prior written consent is not required. Any unauthorized assignment, transfer or delegation by You shall be null and void. This Agreement is binding upon and inures to the benefit of the parties hereto and their respective permitted successors and assigns.
- 6.5. Waiver and Amendment.** No modification, amendment or waiver of any provision of this Agreement shall be effective, unless in writing signed by both parties. No failure or delay by either party in exercising any right, power or remedy under this Agreement, except as specifically provided herein, shall operate as a waiver of any such right, power or remedy. Without limiting the foregoing, any additional legal terms and conditions submitted by You in any other documents, including but not limited to the Entitlement, shall be of no legal force or effect.
- 6.6. Enforcement by Third Party.** For any Product licensed by Haivision from other suppliers, the applicable supplier is a third party beneficiary of this Agreement with the right to enforce directly the obligations set forth in this Agreement against You.

- 6.7. Third Party Content.** Haivision is not responsible for examining or evaluating the data, accuracy, completeness, timeliness, validity, copyright compliance, legality, decency, quality or any other aspect of any Third Party Content. Haivision does not warrant or endorse and does not assume and will not have any liability or responsibility to You or any other person for any Third Party content. You agree that any Third Party Content may contain proprietary information and material that is protected by applicable intellectual property and other laws, including but not limited to copyright, and that you will not use such proprietary content, information or materials in any way whatsoever except for permitted uses of the Third Party Content.
- 6.8. Third Party Royalties.** Your further reuse, retransmission, rebroadcast, display or other distribution of your Third Party Content using the Product may require that you obtain a license from and / or pay royalties to the owners of certain third party audio and video formats. You are solely responsible for obtaining such licenses and paying such royalties.
- 6.9. Governing Law/Submission to Jurisdiction.** This Agreement shall be governed by and construed in accordance with the laws of the Province of Québec, Canada and the Laws of Canada applicable therein (excluding any conflict of laws rule or principle, foreign or domestic), exclusive of the U.N. Convention on the International Sale of Goods. You hereby consent to the jurisdiction of any provincial or federal court located within the Province of Quebec and waive any objection which You may have based on improper venue or forum non conveniens to the conduct of any proceeding in any such court.
- 6.10. Severability.** If any provision of this Agreement is held by a court of competent jurisdiction to be contrary to law, such provision shall be changed and interpreted so as to best accomplish the objectives of the original provision to the fullest extent allowed by law and the remaining provisions of this Agreement shall remain in full force and effect.
- 6.11. Force Majeure.** Neither party shall be liable to the other party for any failure or delay in performance to the extent that such delay or failure is caused by fire, flood, explosion, war, terrorism, embargo, government requirement, labor problems, export controls, failure of utilities, civil or military authority, act of God, act or omission of carriers or other similar causes beyond its control. If any such event of force majeure occurs, the party delayed or unable to perform shall give immediate notice to the other party, and the party affected by the other's delay or inability to perform may elect, at its sole discretion, to terminate this Agreement or resume performance once the condition ceases, with an option in the affected party to extend the period of this Agreement up to the length of time the condition endured. Unless written notice is given within 30 calendar days after the affected party is notified of the condition, the latter option shall be deemed selected. During an event of force majeure, the affected party shall exercise reasonable effort to mitigate the effect of the event of force majeure.
- 6.12. Entire Agreement.** This Agreement, together with the Entitlement and all other documents that are incorporated by reference herein, constitutes the sole and entire agreement between Haivision and You with respect to the subject matter contained herein, and supersedes all prior and contemporaneous understandings, agreements, representations and warranties, both written and oral, with respect to such subject matter.
- 6.13. Language.** The parties confirm that it is their wish that this Agreement, together with the Entitlement and any other documents relating hereto, have been and shall be drawn up in the English language only. Les parties confirment que c'est leur volonté expresse que ce contrat et tous documents y étant relative, y compris les bons de commande, le avis, le annexes, les autorisations, les pièces jointes et les amendments soient rédigés en langue anglaise seulement.
- 6.14. Headings Not Controlling.** The headings used in this Agreement are for reference purposes only and shall not be deemed a part of this Agreement.

- 6.15. US Government Rights.** Some Products are commercial computer software, as such, term is defined in 48 C.F.R. §2.101. Accordingly, if You, as the Licensee, is the US Government or any contractor therefor, You shall receive only those rights with respect to the Product and Reference Materials as are granted to all other end users under license, in accordance with:
- (a) 48 C.F.R. §227.7201 through 48 C.F.R. §227.7204, with respect to the Department of Defense and their contractors; or
 - (b) 48 C.F.R. §12.212, with respect to all other US Government licensees and their contractors.
- 6.16. Notices.** All notices, requests, consents, claims, demands, waivers and other communications hereunder shall be in writing and shall be deemed to have been given:
- (a) When delivered by hand (with written confirmation of receipt);
 - (b) When received by the addressee if sent by a nationally recognized overnight courier (receipt requested);
 - (c) On the date sent by facsimile (with confirmation of transmission) if sent during normal business hours of the recipient, and on the next business day if sent after normal business hours of the recipient; or
 - (d) On the third day after the date mailed, by certified or registered mail, return receipt requested, postage prepaid. Such communications must be sent to the respective parties at the addresses set forth on the Entitlement (or to such other address as may be designated by a party from time to time in accordance with this Section **6.16**).

If you have questions, please contact Haivision Systems Inc., at 4445 Garand, Montréal, Québec, H4R 2H9 Canada or legal@haivision.com.

