Haivision

Furnace™

IP Video System

Administrator's Guide v6.6

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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.

Waste Electrical and Electronic Equipment (WEEE) Disposal

This symbol on Haivision products or packaging means that the product should not be disposed of with general waste. It is your responsibility to dispose of your waste equipment by handing it over to a designated recycling collection point. The correct disposal of your end-of-life equipment will help prevent potential negative consequences to the environment and human health.

In accordance with the European Union (EU) WEEE Directive, Haivision products that fall within the scope of the WEEE, are labeled with the above symbol, and customers are encouraged to responsibly recycle their equipment at the time of disposal. Haivision also offers its customers the option of returning Haivision equipment to facilitate its environmentally sound disposal.

For more information, please visit our website at: http://www.haivision.com/environment

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About This Guide

Welcome to the Administrator's Guide for Haivision's Furnace™, Version 6.6. This guide describes how to set up and manage systems using the administrative tools available via the Tools portal.

For information on installing and connecting to your Application Programming Interface physical or VMware server, please refer to the Quick Start Guide.

NOTE This guide is intended for system administrators and authorized site personnel only. Please see the InStream User's Guide for information on the system interfaces that InStream users see.

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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 directed towards qualified service personnel such as technicians and network system administrators who have a basic knowledge of telecommunications equipment, and IP and LAN concepts and terminology.

Reliability of Information

The information contained in this administration 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 guide may not remain current.

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

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Email: infodev@haivision.com

Or visit our website at: http://www.haivision.com

Obtaining Documentation

You may download the latest software, Release Notes, Quick Start Guide, and other relevant documentation from our Download Center at: https://support.haivision.com

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 administration guide, the following document(s) are also available through Haivision's Download Center (see link above):

- Furnace Quick Start Guide
- Furnace Software-Only Installation Guide
- InStream User's Guide
- Furnace REST API Integrator's Guide
- Furnace API Translator Guide
- Haivision Security Policy
- Mantaray Administrator's Guide
- Stingray User's Guide
- Makito X User's Guide
- Makito X Decoder User's Guide

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: https://support.haivision.com

Document Conventions

The following document conventions are used throughout this 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 Features and Enhancements in Furnace v6.6

Furnace v6.6 introduces the following new features, performance enhancements, and security updates.

Mantaray Manager Redesign

- A major redesign has made the Mantaray Manager more intuitive, informative and efficient when managing and scheduling Mantaray set-top boxes individually and via customizable tags. (Tag-based configuration of devices replaces the Group feature in v6.5.)
- New GRID scheduler view and tag-based filtering makes it easy to find and select one, some, or all devices for actions or mass (bulk) editing.
- Administrators can now set more defaults for new Mantarays, including the NTP Server and timezone.

For more information, see "Managing Mantaray STB Devices" on page 211.

Mantaray Enhancements

- Enhancements to closed captioning enable on-screen positioning and resizing so important screen data / tickers are not obscured, persistent through channel changes.
- Furnace now supports High-Efficiency Advanced Audio Coding (HE-AAC).

Enhanced InStream Talkback control (Windows only)

- InStream Talkback users can now lock Talkback mode On rather than having to continuously hold the mouse button.

For more information, see "Setting Up InStream Talkback" on page 115.

Support Enhancements

- Dell OpenManage is now available to provide customers with access to Dell Command line tools, OM reports and Dell SNMP MIBs.
- Dell Server LCD automatically displays the appliance's IP Address.
- Support for iDRAC – the Dell lights-out management module – can be enabled by customers for use by system administrators.
- OS level SNMP has been enabled for monitoring by third party SNMP tools.

- Haivision Helper app Version 1.1 is available as an .msi-based package for manual or automated installation (including option for silent install via MSI parameters) for individual users.

For more information, see the Haivision Helper Deployment Guide, available from Haivision's Download Center at: https://support.haivision.com/

CHAPTER 1: Product Overview

Haivision's Furnace™ is a complete end-to-end IP video solution that delivers live and pre-recorded video programming over IP to LCD displays or desktops in hospitals, schools, enterprises, military applications, and live venues. The Furnace provides a secure, easy-to-use, and simple-to-deploy system for encoding and distributing live video to computers and set top boxes, for creating scheduled playback channels for enterprise TV and signage, and for recording content with real-time metadata and delivering intelligent video-on-demand.

The Furnace viewing experience provides access to live, recorded, and on-demand content – for the desktop through the "zero footprint" InStream™ player, and to fixed monitors and displays through the Stingray™ set top box. With fine-grain administrative control of all players and displays, the Furnace is the ideal system for managing and distributing enterprise video securely, for establishing HD signage throughout a facility, for providing on-demand material, and for capturing, organizing, and reviewing events.

This overview summarizes some key Furnace features and provides links to relevant sections in this guide.

Reliable and Secure

The Furnace delivers reliable and secure video programming to desktops and set top boxes. With AES encrypted streams originating directly from Haivision's Makito and Barracuda encoders, both unicast and multicast IP video traffic adheres to the most stringent data and system security requirements. The Furnace can also be licensed with the VF Conditional Access module which supports both stand-alone and enterprise integrated user authentication and access privilege control.

See "Using Conditional Access for User Authentication" on page 53.

"Zero-Footprint" InStream Player

InStream is a platform independent soft player delivered "on demand" to the desktop through simple web links. InStream supports Apple OS X and Windows systems that remain supported by their respective manufacturers. (Please note that although a Linux version is available, Linux is no longer supported with InStream.)

Whether delivered to the desktop as needed or to Stingray set top boxes on power-up, InStream requires no software installation, software upgrades, or maintenance! It is secure, easy-to-use, and allows for very controlled player distribution and a harmonious user experience across the enterprise.

For information on the system interfaces that InStream users see, see the InStream User's Guide. You can also right-click anywhere in the InStream player window and select Help from Player Settings menu to access the InStream online Help.

Dual-Streaming

The Furnace supports dual-streaming, defined as two streams processed at once, but accessed from one channel. InStream supports dual-stream playback from two encoder sources to one channel. Users may select one or both streams for playback with standard Picture-in-Picture (PIP) functionality. VF NVR supports dual-stream recordings in either Guide or Crash mode. VF Editor supports dual-stream editing, along with exporting of dual-stream assets to standard transport streams.

For dual-stream recordings (VF NVR), see "VF NVR - Recording Broadcast Events" on page 159.

For dual-stream editing (VF Editor), see "VF Editor - Digitizing and Managing Assets" on page 135.

Capture, Create, Schedule

The Furnace offers powerful tools for recording, editing, bookmarking (HotMarks™), and publishing live, scheduled, and on-demand video assets.

For VF NVR (recording), see "VF NVR - Recording Broadcast Events" on page 159.

For VF Editor, see "VF Editor - Digitizing and Managing Assets" on page 135, and for VF Now (publishing), see "Managing Video on Demand" on page 175.

Record with Real-Time Metadata

Furnace's Network Video Recorder (VF NVR) allows users to contribute content in the Furnace and add metadata (HotMarks) in real-time. The VF NVR virtual recorders can be controlled through the graphical user interface or from third party devices as integrated with the Furnace application programming interface (API). HotMarks allow users to go directly to specific points of interest during video-on-demand sessions.

See "VF NVR - Recording Broadcast Events" on page 159.

Command and Control with Reporting

Whether on the desktop, or as provisioned to Stingray set top boxes, InStream always maintains strict communication with the Furnace Portal Server. Through the VF Command and Control module, administrators have fine-grained control over each and every player attached to the system. Commands such as channel changes, player size, volume, and even direct user messaging through scrolls or pop-up windows can be applied immediately, at any point in the future, or on schedule over a 30 year period. This client/server relationship

also allows administrators to report on user activity and actions at an incredibly minute level.

See "VF Reports - Accessing Usage Statistics" on page 240.

CHAPTER 2: Hardware Setup - Furnace Appliance

This chapter explains how to set up and connect the Furnace appliances.

NOTE The illustrations in this chapter are provided for reference only. The actual appearance of your appliance may vary depending on the Furnace configuration purchased, such as the Portal Server, Media Server, NVR, or Pilot Server Appliance.

TIP If you are using the Software-Only version of the Furnace, you can skip to the following chapter "Initial System Setup - Managing Users" on page 26.

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Setting Up the Appliance

Always read the instructions carefully and keep this administration 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

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

- Refer to "Safety Guidelines" on page 3.
- The Furnace 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 the Furnace 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 (Portal Server)

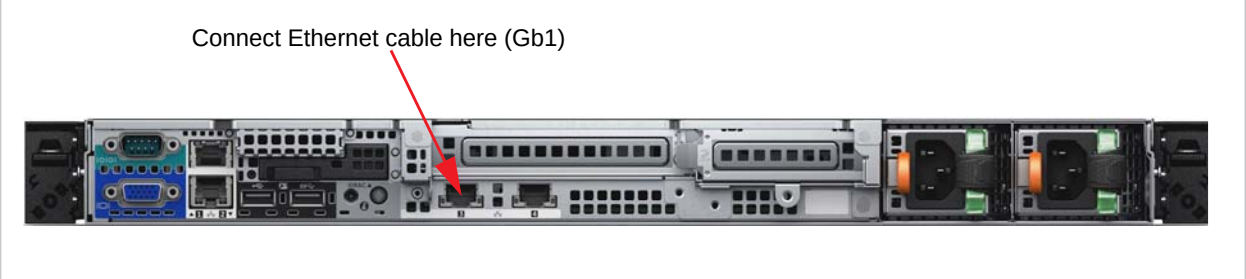
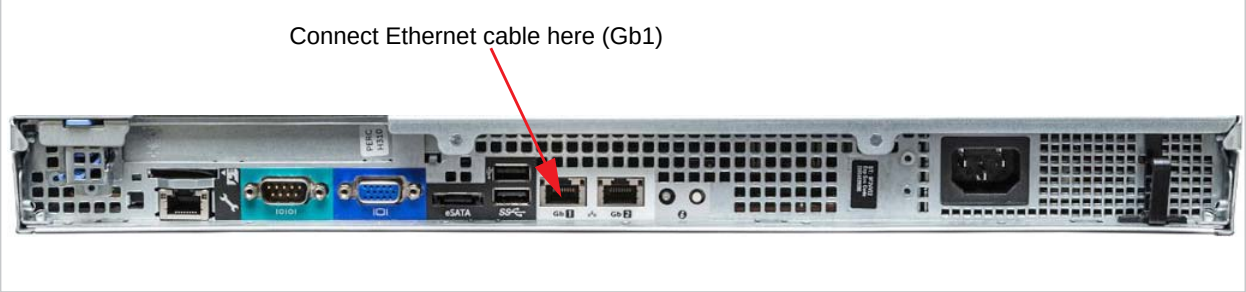


Figure 2-2 Sample Network Connection - Rear view (Pilot Server)



Connecting the Furnace Console UI

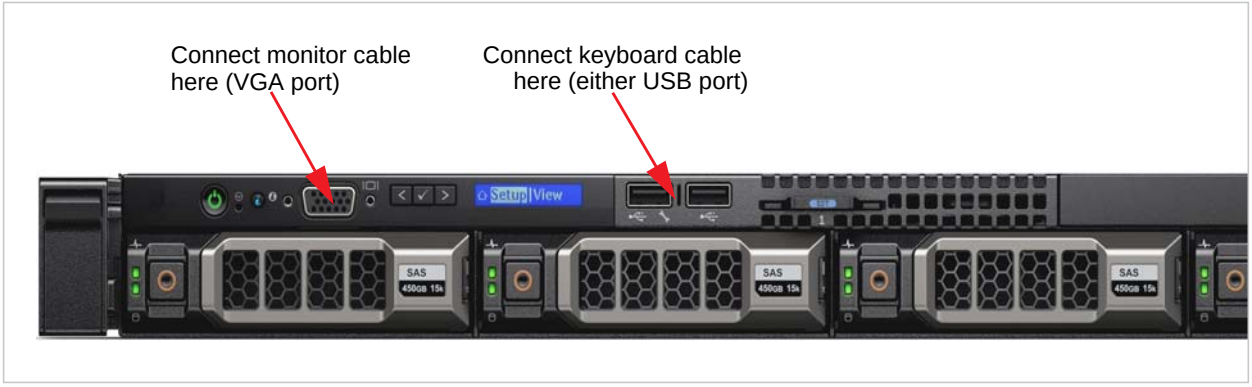
You can directly access the Furnace Console user interface by connecting a keyboard and monitor to the appliance (either from the front or the back of the appliance).

NOTE You can also access the Console UI via SSH (through the Ethernet connection).

To connect the Console UI:

1. Connect a monitor to one of the Furnace's VGA ports.
2. Connect a keyboard to one of the Furnace's USB ports.

Figure 2-3 Sample Console UI Connections - Portal Server (Front panel TOP/Rear view BOTTOM)



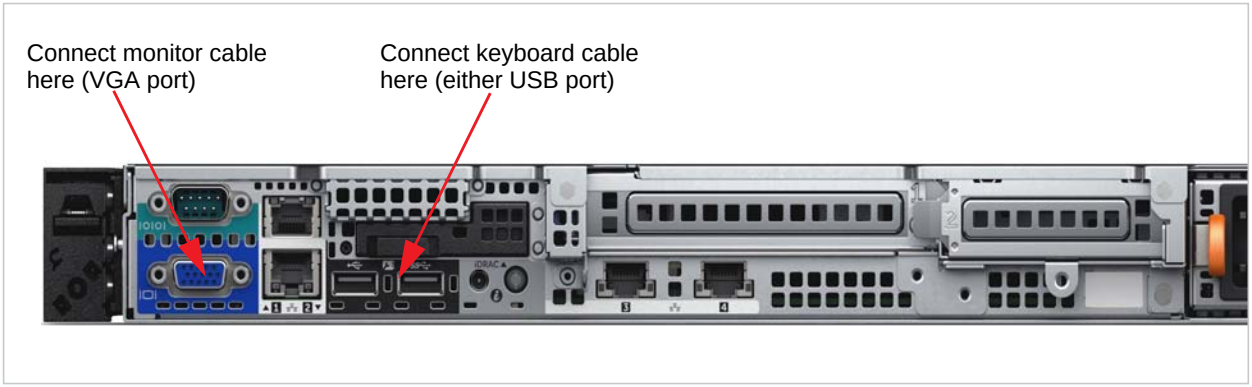
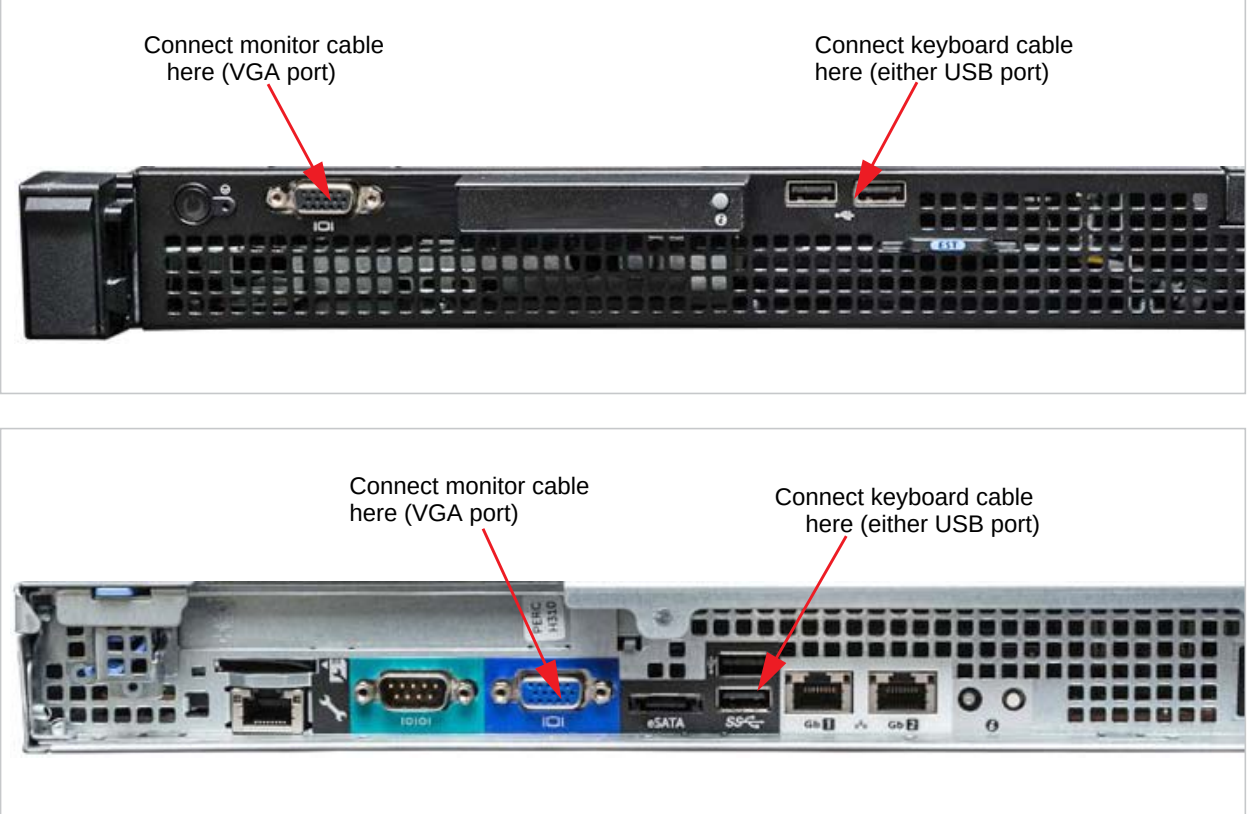


Figure 2-4 Sample Console UI Connections - Pilot Server (Front panel TOP/Rear view BOTTOM)



For information on using the Console UI, see "Logging in to the Console UI" on page 247.

Powering Up the Furnace

To power up the Furnace:

1. Connect the appliance's power cable to the appliance.

Figure 2-5 Sample Power Connection - Rear view (Portal Server)

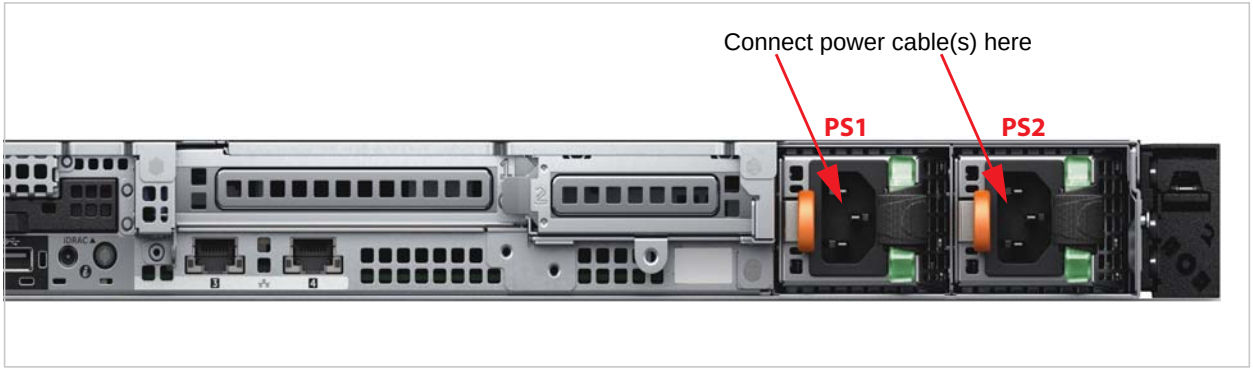
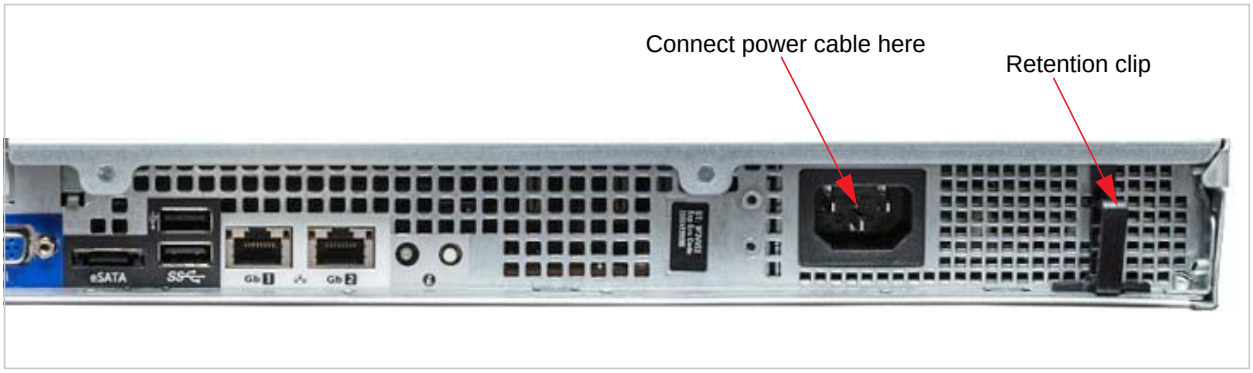


Figure 2-6 Sample Power Connections - Rear view (Pilot Server)



2. (Pilot Server Appliance Only) Fold the power cable and secure the cable in the retention clip.
3. Plug the other end of the power cable into a grounded electrical outlet or a separate power source such as an uninterrupted power supply (UPS) or a power distribution unit (PDU).

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

Figure 2-7 Sample Power Switch - Front panel (Portal Server)

Figure 2-8 Sample Power Switch - Front panel (Pilot Server)

Support Enhancements

Haivision has enabled, however, does not provide support for, Dell management and monitoring utilities. For help with Dell OpenManage or iDRAC, please consult Dell documentation (see links below).

Dell OpenManage

Dell OpenManage is available to provide customers with access to Dell Command line tools, OM reports and Dell SNMP MIBs.

To use OpenManage MIBS for SNMP monitoring, please refer to the *Dell OpenManage Server Administrator Version 8.3 User's Guide*:

http://topics-cdn.dell.com/pdf/dell-openmanage-server-administrator-v8.3_User's%20Guide2_en-us.pdf

TIP You can configure the SNMP Trap Destination(s) and Community Names from the Furnace Server Manager (VF Admin> Server Manager> Realm Settings). See "Configuring Realm Settings" on page 93.

Dell iDRAC

Furnace v6.6 supports Dell Remote Access Controller (iDRAC). System administrators can now enable Dell Hardware / software iDRAC support for out-of-band server administration and monitoring on supported VF server (Dell) platforms. The goal is to allow IT administrators to monitor system health (not application health) primarily with spotting failing / failed drives, but also temperature and other HW issues that iDRAC monitors.

For more information, please refer to the following Dell page:

https://www.dell.com/en-us/work/learn/enterprise-systems-management

NOTE iDRAC must be present on the server. It is Off by default, and is controlled in the BIOS settings. For details, please refer to Dell documentation.

Integrated Dell Remote Access Controller 8 (iDRAC8) Version 2.05.05.05 User's Guide

http://topics-cdn.dell.com/pdf/idrac8-with-lc-v2.05.05.05_User's%20Guide_en-us.pdf

OS-level SNMP has been enabled for monitoring by third party SNMP tools.

Haivision Helper Version 1.1 is available as an .msi-based package for manual or automated installation (including option for silent install via MSI parameters) for individual users.

CHAPTER 3: Initial System Setup - Managing Users

This chapter describes how to access the Administrative Tools portal and get started setting up and managing Furnace using VF Admin.

NOTE The procedures described in this chapter assume that you have administrative privileges.

For information on the system interfaces that InStream users see, please refer to the InStream User's Guide, or the online Help available from the InStream Player Settings menu.

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Accessing the Administration Tools Portal

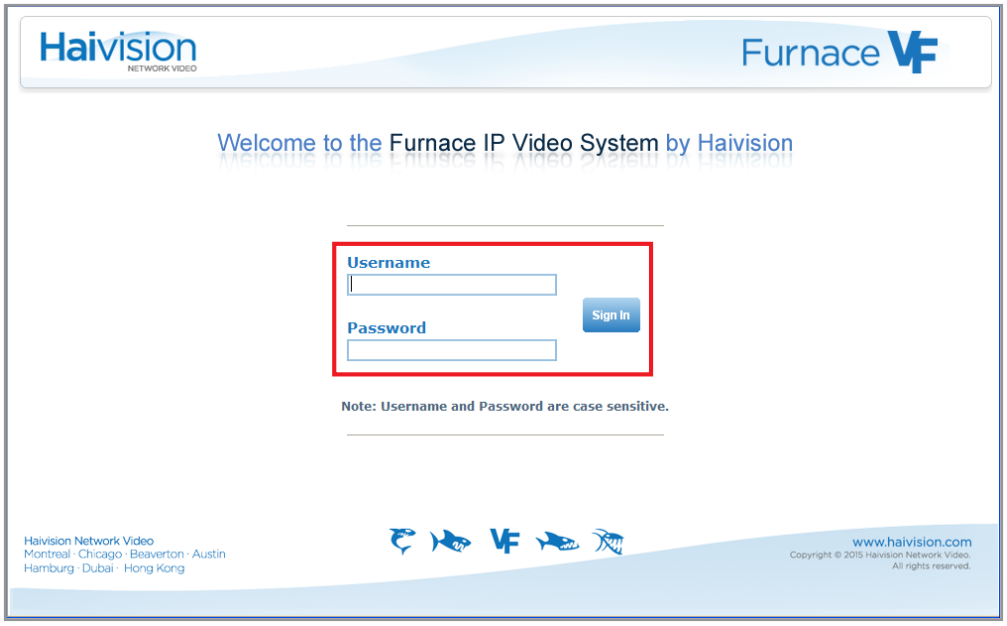
To access the Administration Tools portal:

1. Launch a Java-enabled Web browser of your choice (such as Internet Explorer, Firefox, Chrome, or Safari).
2. Type the URL or IP address for your license server in the browser's address bar and press ENTER.

   The Furnace Launch portal appears, listing the available video assets for your system, as shown in the following example.

3. Click Sign In from the navigation bar.
4. If you see a Security Certificate warning, click Proceed anyway (or equivalent) to accept the certificate and continue to the Login page.

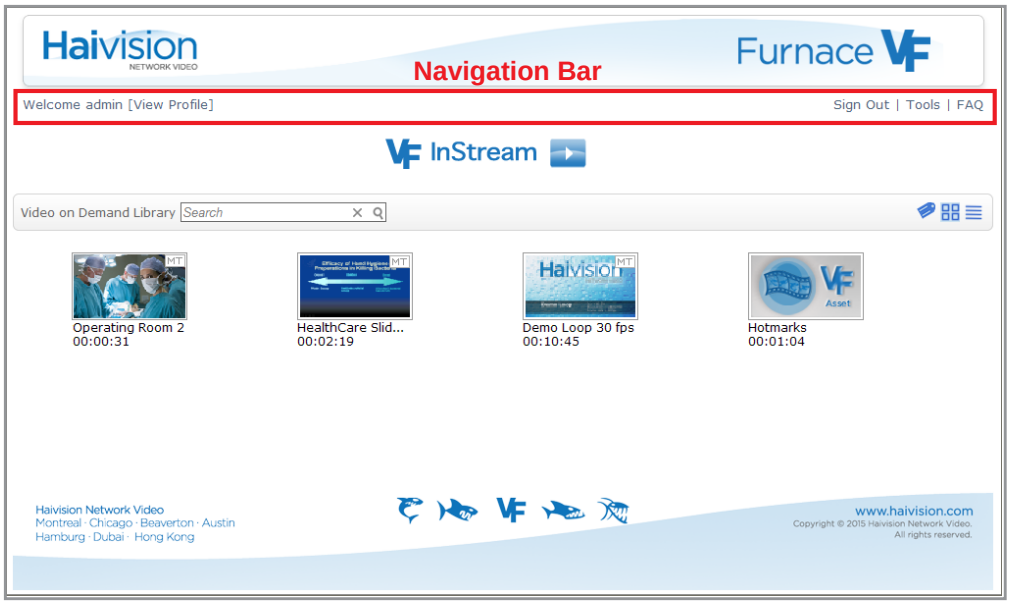
5. On the Sign In page, sign in with the username and password supplied by Haivision. Then press ENTER or click Sign In.



NOTE If the Sign In page does not appear, verify the address of your server and make necessary corrections to the address you are entering in your Web browser.

Also check to make sure that the Furnace network configuration, as provided on your site survey at the time of purchase, is compatible with your current network settings.

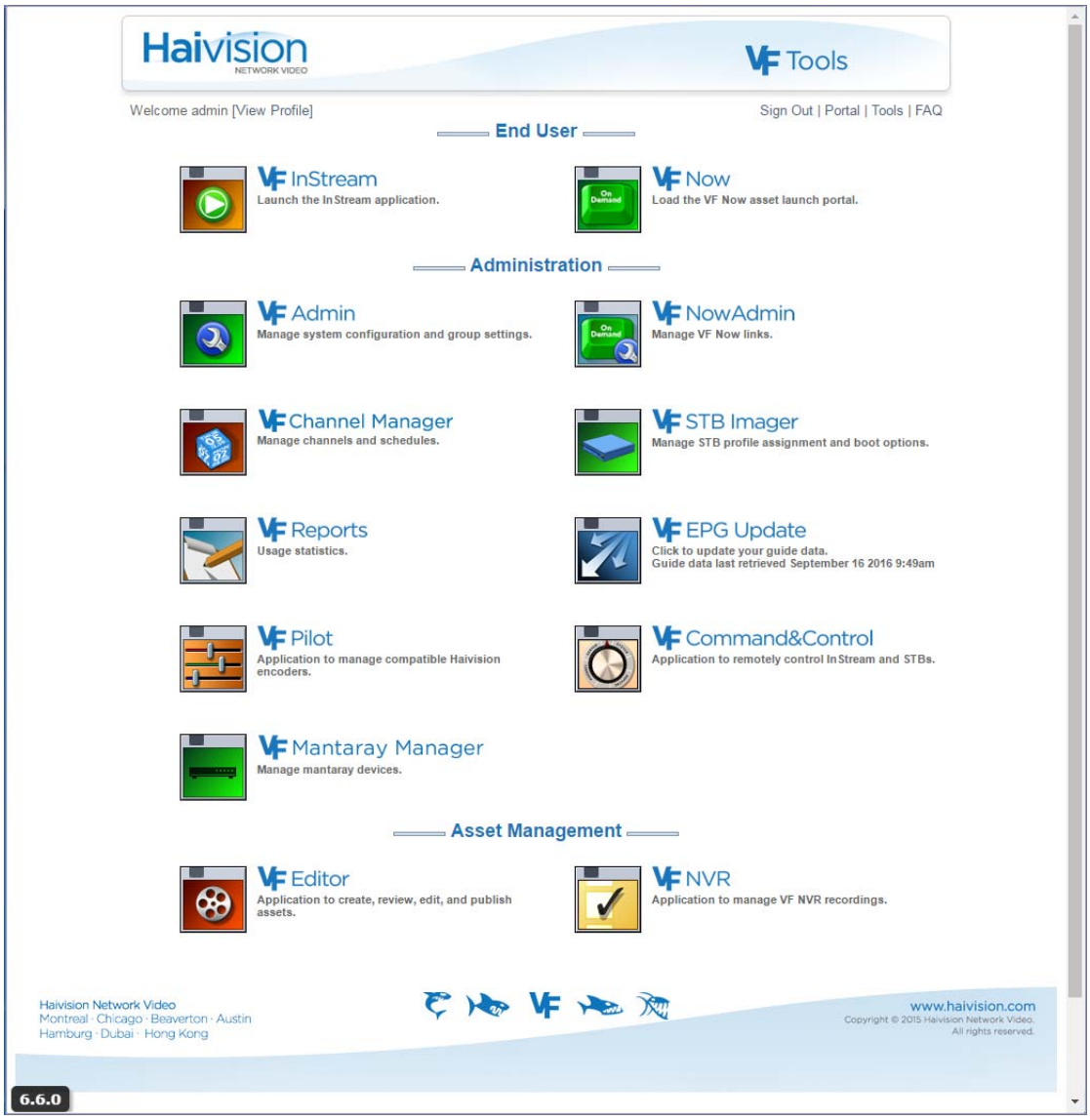
Once you have successfully signed in, the Launch portal re-appears with your account information and the Tools button added to the navigation bar (sample shown in the following example).



6. Click Tools.

Next you will see the Tools page (shown in the example on the following page). This is the central administration portal page used to administer the Furnace system.

When the Tools page appears, the Furnace system is ready for administrative access.



NOTE The Tools page is intended for administrators and authorized site personnel only. End users should be directed to the Launch portal and VF Now page for viewing purposes.

TIP The Furnace version number is displayed in the lower left corner.

Launching Client Applications

By default, Furnace uses a Java launcher as the default mechanism for starting client applications such as the InStream player. Your Web browser must be Java enabled in order to launch Furnace player clients. You can find the latest Java plug-in at http://www.java.com.

If you prefer not to use the Java launcher as the default mechanism, you can install and enable the Haivision Helper utility (available from the Haivision Download Center). For more information, see "Launch InStream using Haivision Helper" on page 68.

NOTE (Mac OS X users) The Furnace client applications (InStream, Pilot, Command & Control, Editor, NVR) run via VFAgent when launched from the Furnace portal.

By default, Safari prevents the VFAgent plugin from downloading and executing the client application binaries. You will need to enable "Run in Unsafe Mode" in the Safari security settings to run these applications.

For steps to enable "Run in Unsafe Mode", refer to the Apple Support topic Safari: About Internet plug-in management (https://support.apple.com/en-us/HT202819).

Creating and Managing Users and Groups

VF Admin

VF Admin is used by system administrators for a range of Authentication, General, and Service Configuration tasks. The initial setup tasks for Authentication depend on whether or not the system uses the Conditional Access module.

The Conditional Access module provides several components to manage user and group settings, including Conditional Access (group or user entitlements to channels and assets), Device Manager (to assign set top boxes and decoders to groups), and LDAP Configuration.

NOTE LDAP (Lightweight Directory Access Protocol) is an Internet protocol used to look up information from a server. LDAP directories are used for authentication, permissions, and directory lookups for information such as user name, email, phone number, or address.

If the Conditional Access module has been purchased, you can (optionally) configure Furnace to connect to your company or organization's LDAP server to store and streamline the retrieval of user permissions and login credentials.

With Conditional Access, you can also use the Device Manager to add and remove devices from groups. (The entitlements are still managed through the Conditional Access tool.)

If you do not have Conditional Access – or if you have Conditional Access but are not using LDAP or Active Directory – you can use VF Admin to directly manage users and groups.

NOTE The default admin username/password is haiadmin / manager. haiadmin is a special system user intended primarily for initial setup purposes. It is not intended for permanent use and has a limited permission set that cannot be changed. For access to all Furnace features, create a regular (administrative) user with a secure password.

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

Your admin credentials may have been set differently if requested. In this case, please contact Haivision Technical Support to retrieve this information.

To start using VF Admin:

1. Open the Web browser of your choice and browse to the IP Address provided on your System Details sheet. i.e., 192.168.1.100 as http://192.168.1.100.
2. On the Launch portal, click Sign In from the navigation bar.
3. Sign in with the default admin username and password: haiadmin/manager.

The VF Admin Welcome page appears, with links to the Authentication, General, and Service Configuration sections on the left side of the page.

The available Authentication links depend on your system and the permissions assigned to your account. Following are three typical setups:

- Conditional Access, but *not* connected to LDAP server: All Authentication links are available: LDAP Configuration, Conditional Access, Group Permissions, User Permissions, Group Administration, User Administration, and Device Manager.
- Conditional Access and connected to LDAP server: Group Administration and User Administration links are no longer available since Furnace is now connected to the LDAP user list.
- No Conditional Access: Group Administration and User Administration links are available to manage user and group settings. The LDAP Configuration and Conditional Access links are not available.

The following sections describe how to use VF Admin to directly manage user and group settings.

TIP To configure your system to use an LDAP service, see "Configuring LDAP Settings" on page 49.

Configuring Users

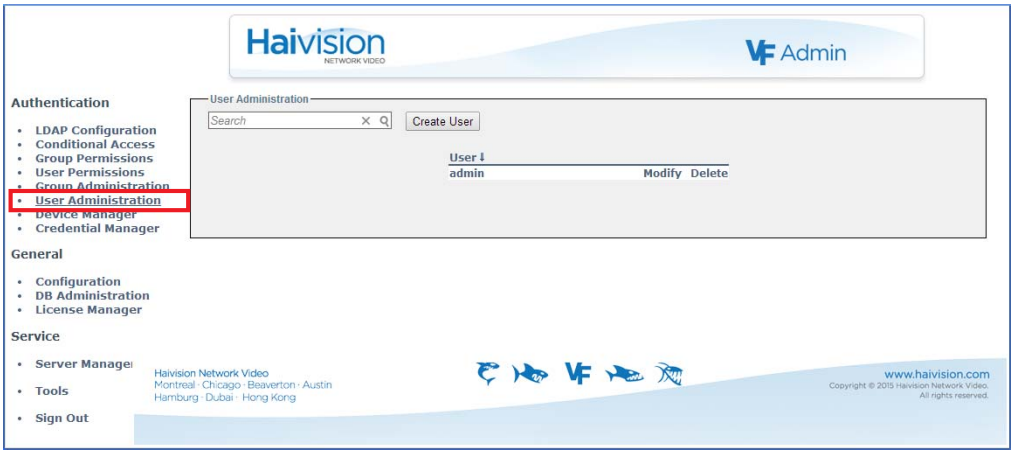
The VF Admin User Administration module allows you to create and manage the users for your system.

NOTE That this module is only available if you have *not* configured Furnace to connect to an LDAP server.

To configure user accounts:

1. Click the User Administration link on the left side of the VF Admin page.

   The User Administration page opens (shown in the following example) displaying the current list of users for your system.



   From here you can browse through the list, search for users, add and delete users, and modify existing user accounts. This includes modifying user information, enabling or disabling accounts, and changing passwords.

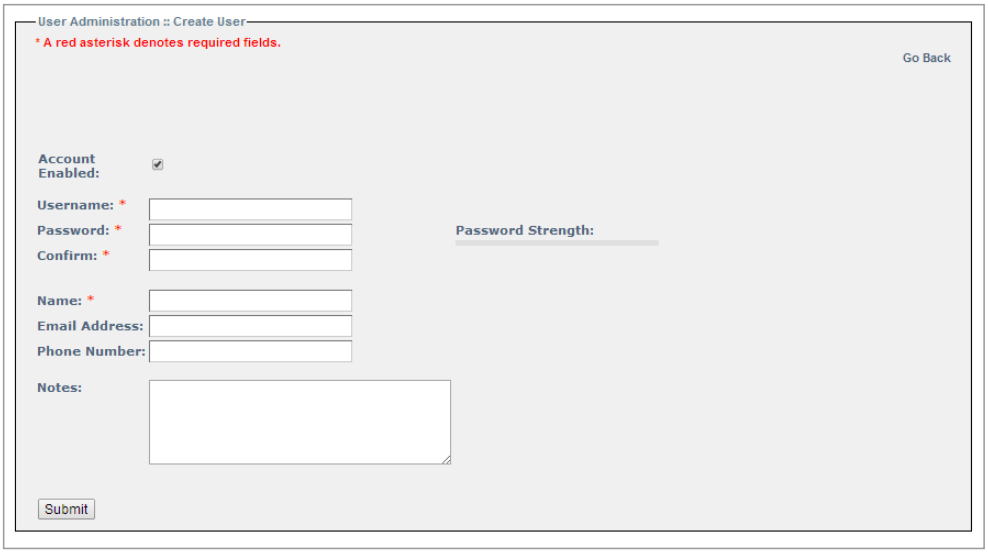
2. To search for a user, type the name or part of the name in the Search field and click .

   This will filter the list to show only users whose names contain the search text.

TIP You can also change the sort order of the list by clicking User↓.

3. To clear your search, click ✕.

4. To add a user, click Create User.
5. On the Create User page (shown below), fill in the fields to set up the new user account.



   a. To enable or disable this user account, check or uncheck the Account Enabled checkbox.
   b. Type in the Username and Password. (Both the username and password are case sensitive.)

      User passwords require a minimum length of 6 characters (uppercase/lowercase letters, numbers, punctuation and symbols), with no maximum length. VF Admin prompts you to improve the password security as you type in characters.

NOTE Furnace user password requirements differ depending on whether they are admins or non-admins. Furnace admins can set a password to something less secure than regular users can (i.e., minimum one character).

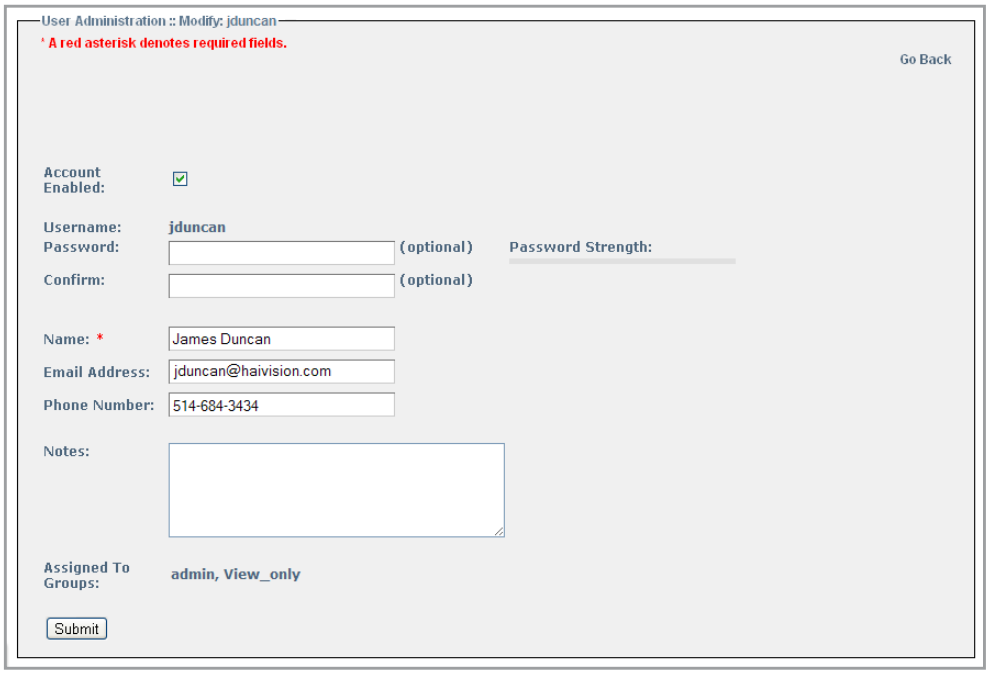
   c. Type in any descriptive information to identify this user such as the full name, email address, phone number, and notes. (The user name will be modified accordingly on the navigation bar.)
   d. Click Submit to save the changes.

   You will be returned to the User Administration page, and the name will be added to the User list.

TIP You can either assign Group Permissions to this user, by adding the user to a group (see "Configuring Groups": Step #8 on page 40), or you can define the permissions for the user (see "Configuring User Permissions" on page 44).

6. To modify user information, including enabling or disabling the account or changing the password, click Modify next to the user name.

   The Modify User page opens (shown below).



   The Modify User page displays the basic user information and lists any groups to which the user has been assigned.

7. Enter your modifications and click Submit to save the changes.

8. To remove a user, on the User Administration page, click Delete next to the user name. This permanently deletes the user from the system.

Your changes take effect immediately. When you have completed all sections, you can either navigate to another module or click Sign Out to exit VF Admin.

Configuring Groups

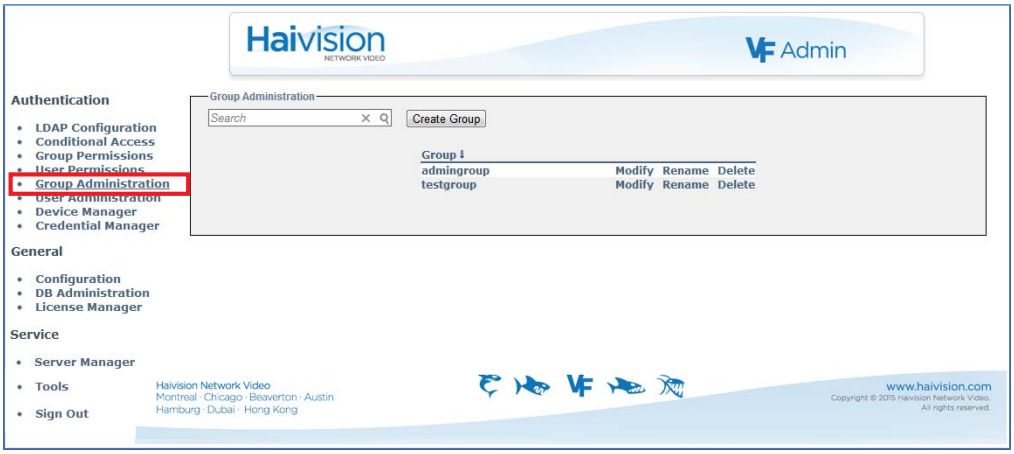
The VF Admin Group Administration module allows you to create and manage the user groups for your system. (Note that this module is only available if you have *not* configured Furnace to connect to an LDAP server.)

NOTE Groups may also be used to assign viewing entitlements to set top boxes (STBs). This requires the Device Manager, which is included in the Conditional Access module.

To configure user groups:

1. Click the Group Administration link on the left side of the VF Admin page.

   The Group Administration page opens (shown in the following example) displaying the current list of groups defined for your system.



   From here you can browse through the list, search for groups, create new groups, and modify existing groups. This includes renaming groups, deleting groups, as well as adding and removing users to/from the group.

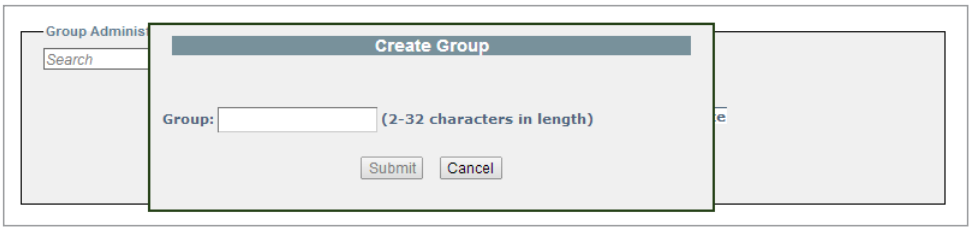
2. To search for a group, type the name or part of the name in the Search field and click 🔍.

   This will filter the list to show only groups whose names contain the search text.

TIP You can also change the sort order of the list by clicking Group↓.

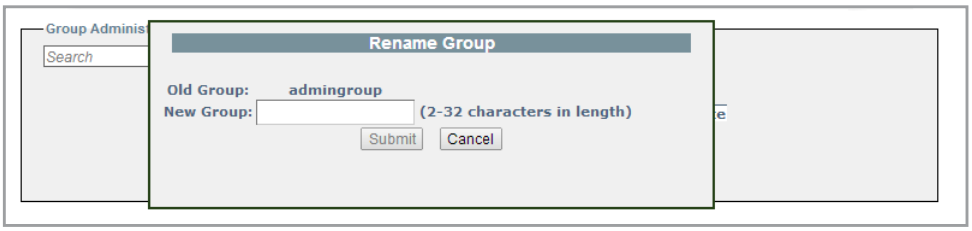
3. To clear your search, click ✕.

4. To create a new group, click Create Group.
5. On the Create Group popup (shown below), type the new group name into the text box and click Submit.



The name will be added to the Group list.

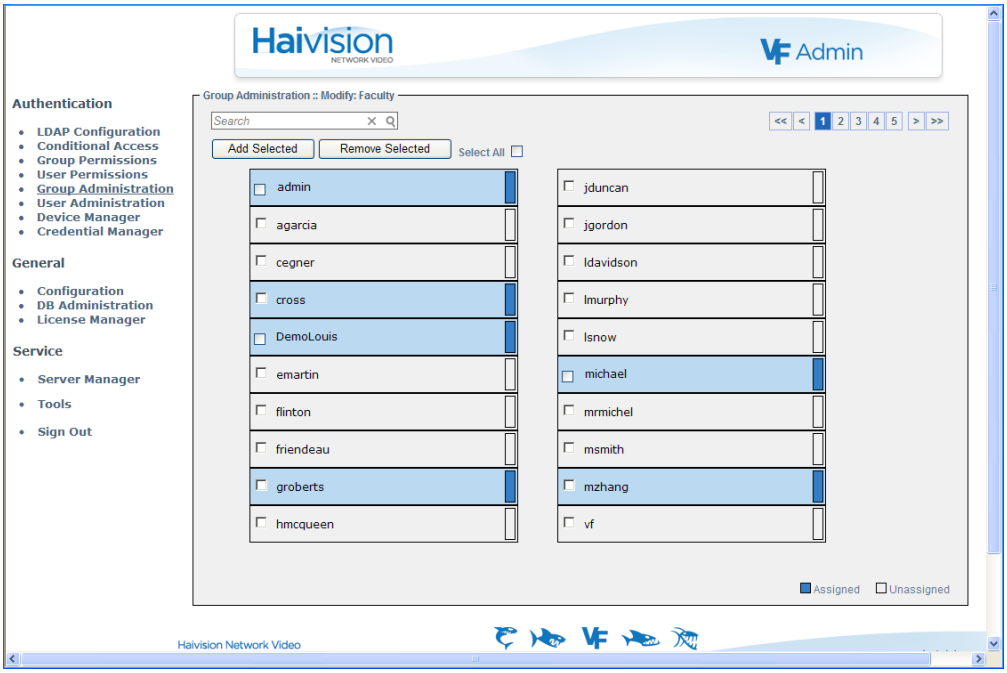
6. To rename a group, on the Group Administration page, click Rename next to the group name.
7. On the Rename Group popup (shown below), type the new group name into the text box and click Submit.



The name will be modified on the Group list.

8. To add and remove users from the group, click Modify next to the group name.

   The Modify Group page opens (shown in the following example) displaying the current list of available users for your system. Users that are part of the group are highlighted in blue.



   a. To add users to the group, check the names of the users and click Add Selected.

   b. To remove users from the group, check the names of the users and click Remove Selected.

TIP You can check the Select All checkbox and then click Add Selected or Remove Selected to either add all names to or delete all names from the group. You can also use the CTRL or SHIFT keys to select multiple names.

   To return to the Group Administration page, click the Group Administration link on the left side of the page.

9. To remove a group, on the Group Administration page, click Delete next to the group name.

Your changes take effect immediately. When you have completed all sections, you can either navigate to another module or click Sign Out to exit VF Admin.

Configuring Permissions for Groups or Users

VF Admin provides two complementary methods for defining user access permissions and entitlements. You can either:

- Define Group Permissions and then add users to groups, or
- Define User Permissions on a per user basis.

In either case, “permissions” include user account permissions, access to Furnace applications such as InStream, administrative permissions for specific tools and clients, as well as assigning command line arguments to specify InStream launch preferences.

The two methods are not mutually exclusive and can be used in any combination for entitlement.

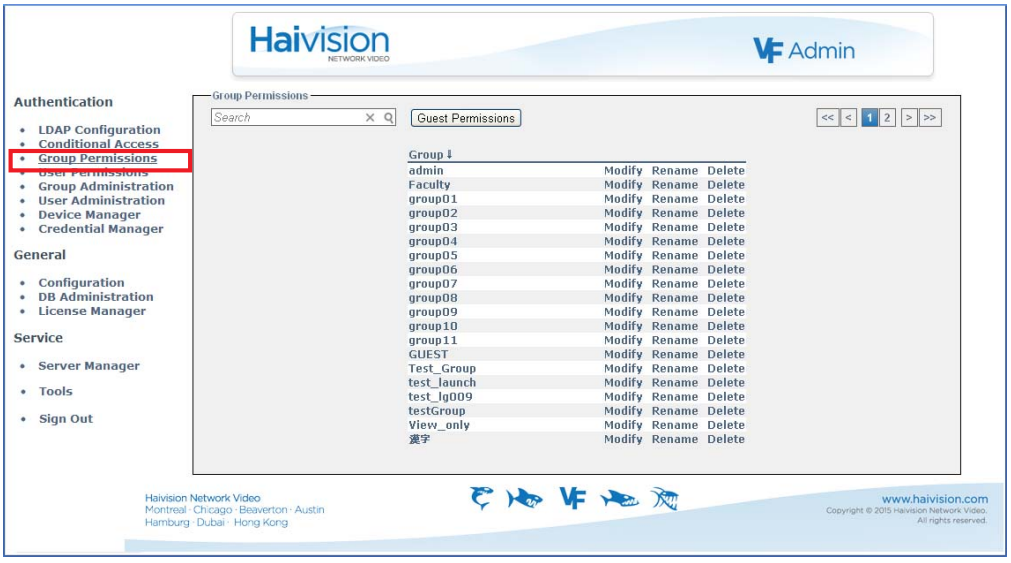
NOTE Permissions are additive, meaning that a user can perform all actions granted to any of their assigned roles.

Configuring Group Permissions

To configure group permissions:

1. Click the Group Permissions link on the left side of the VF Admin page.

   The Group Permissions page opens (shown in the following example) displaying the current list of groups defined for your system.



From here you can browse through the list, search for groups, and modify the administrative privileges and user permissions for groups. You may also define the "Guest" Permissions for the system, which will apply to unauthenticated users (i.e., users who are not signed in). See "Configuring Guest Permissions" on page 45.

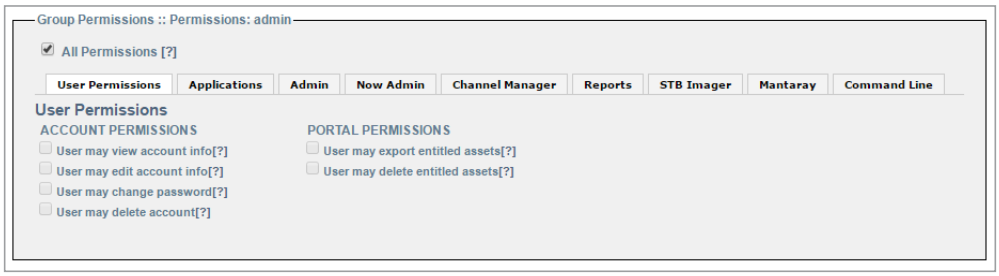
2. To search for a group, type the name or part of the name in the Search field and click 🔍.

   This will filter the list to show only groups whose names contain the search text.

TIP You can also change the sort order of the list by clicking Group↓.

3. To clear your search, click ✕.
4. To modify administrative privileges and/or user permissions for a group, click Modify next to the group name.

   The Modify Group Permissions page opens (example below, showing User Permissions tab).

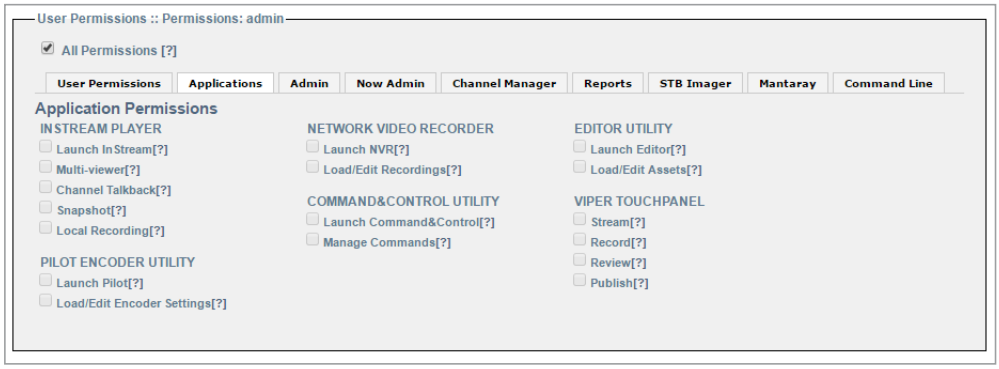


   The Modify Group Permissions page provides tabbed sections to define user permissions and access to Furnace applications. From here, you can configure access to the tools that this group will need.

TIP To give the group "administrative" permissions, i.e., access to all Furnace applications and Web tools, as well as full control over user and system administration, check the All Permissions checkbox.

5. For each tabbed section, check all boxes that apply to define the group privileges and user permissions. For example:

   - To give the group access to the VF Editor tool and allow group members to load and edit assets, click the Applications tab (shown below). Then under EDITOR UTILITY, check the Launch Editor and Load/Edit Assets checkboxes.



   - To give the group access to the InStream player, on the Applications tab under INSTREAM PLAYER, check the Launch InStream checkbox.

     Also check the checkboxes to enable licensed options such as Multi-viewer, Channel Talkback, Local Recording, or Snapshot as required.

NOTE Talkback is enabled on a per channel basis. For more information, see "Setting Up InStream Talkback" on page 115.

   - To give the group access to the Viper Touch Panel interface, on the Applications tab under VIPER TOUCHPANEL, check the appropriate checkbox(es): Stream, Record, Review, and/or Publish.

TIP When a Viper is joined to a Furnace realm, the authentication is made against the Furnace database.

Your changes take effect immediately. When you have completed all sections, you can either navigate to another module or click Sign Out to exit VF Admin.

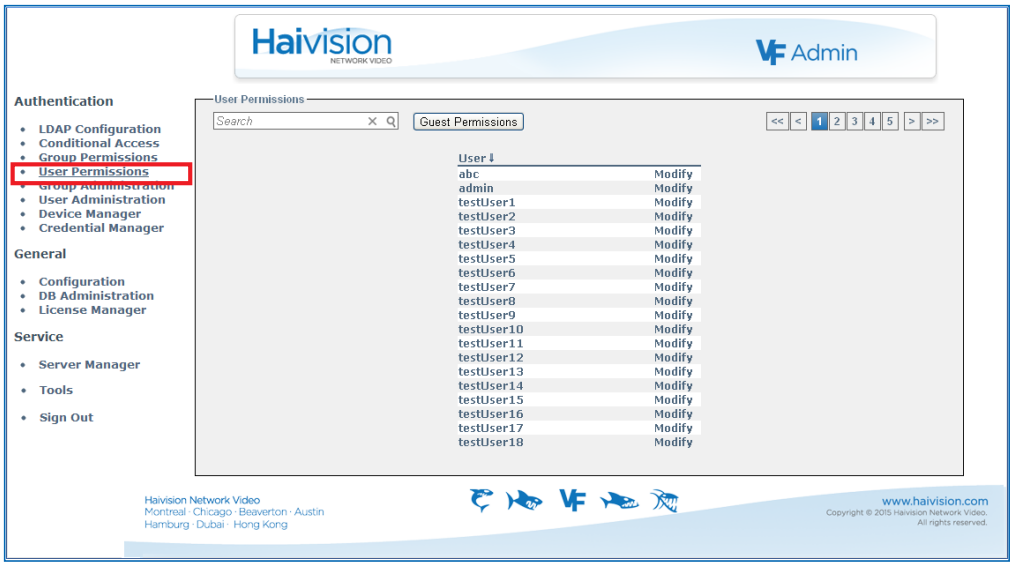
Configuring User Permissions

User-based permissions allow you to set access to Furnace features on a user-by-user basis. The selections for user-based permissions are the same as those for group-based permissions.

To configure user permissions:

1. Click the User Permissions link on the left side of the VF Admin page.

   The User Permissions page opens (shown in the following example) displaying the current list of users defined for your system.



   From here you can browse through the list, search for users, and modify the administrative privileges and user permissions for individual users. You may also define the "Guest" Permissions for the system, which will apply to unauthenticated users (i.e., users who are not signed in). See "Configuring Guest Permissions" on page 45.

   For details on modifying administrative privileges and/or user permissions, see "Configuring Permissions for Groups or Users" on page 41.

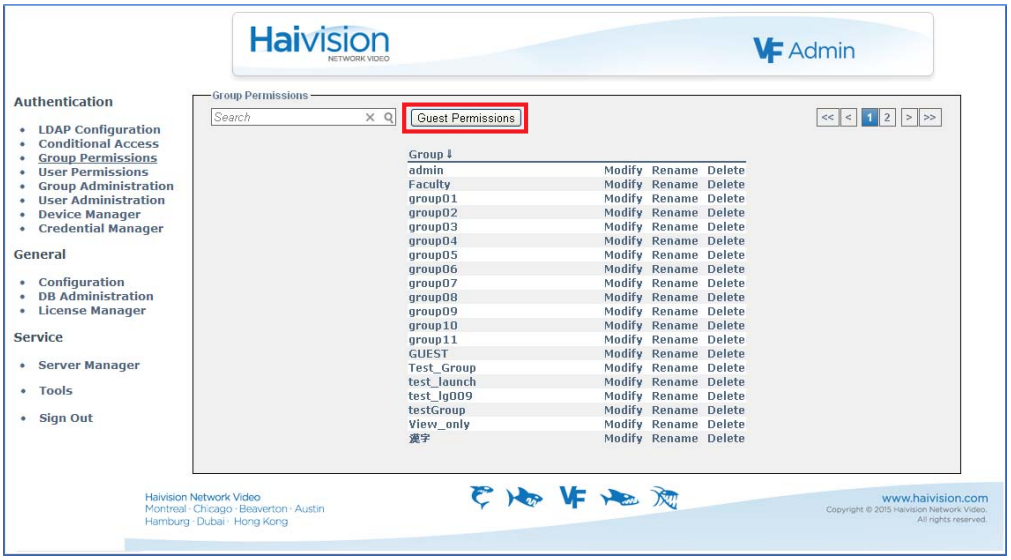
Configuring Guest Permissions

You can also define Guest Permissions for your system. Guest Permissions are used when a user has not signed in. For example, you may choose to allow visitors to the Furnace portal to launch the InStream player and view the contents of the /now VoD page, without requiring them to sign in. The Guest permissions apply to these users.

IMPORTANT Guest permissions are not “default” permissions. Authenticated users (i.e., users who have signed in) will only get the permissions assigned to their account (based on the group or groups to which they are assigned). Guest permissions are never assigned to users who are signed in.

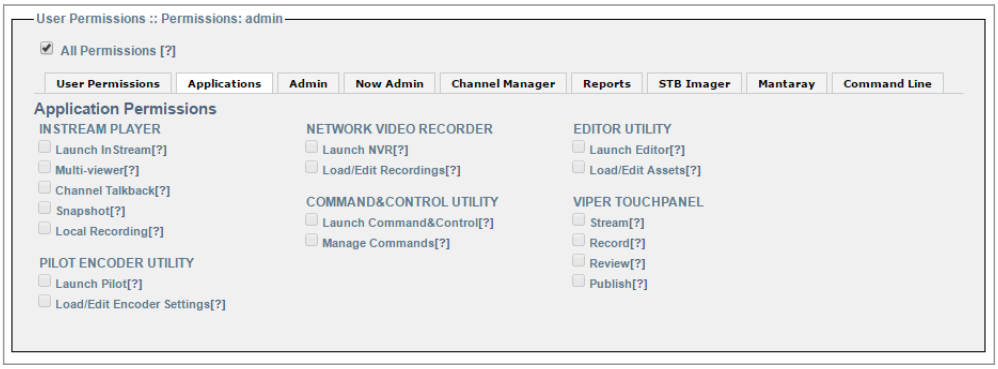
To define Guest Permissions:

1. On either the Group Permissions or User Permissions page, click Guest Permissions.



2. On the Guest Permissions page, click the Applications tab.

   The Applications tab opens (shown below).



3. For each tabbed section, check all boxes that apply to define the privileges and user permissions for guest users. For more information, see "Configuring Permissions for Groups or Users" on page 41.

When you have completed all sections, you can either navigate to another module or click Sign Out to exit VF Admin.

Using Command Line Arguments to Manage Launch Preferences

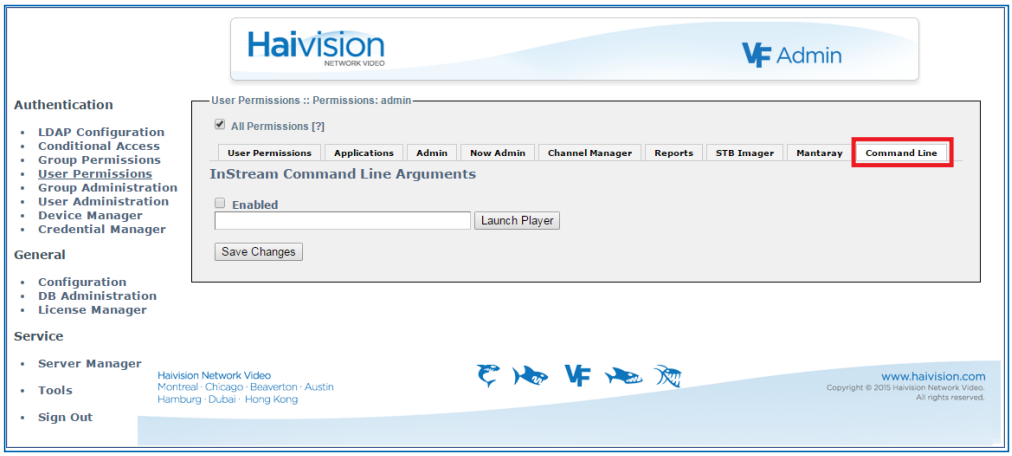
You can also assign command line arguments (CLAs) to specify InStream launch preferences and other behaviors. For example, the system can be configured to hide the player window upon startup, mute the audio, or disable loading of existing preferences and saving of preferences on exit. You can also specify the configuration of the Channel List columns.

For a list of InStream launch preferences that may be managed via command line arguments, see Appendix C: "Command Line Arguments".

NOTE CLAs are only applied when InStream is launched from the main portal page (example shown on in "Accessing the Administration Tools Portal" on page 28). They do not apply with launches from the VF Now page, launching VOD assets from the portal, or launching InStream from the Tools page.

To define InStream launch preferences using command line arguments:

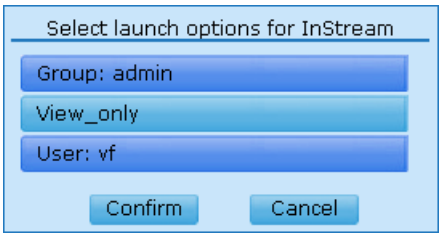
1. On either the Group Permissions or User Permissions page, click Modify next to the group or user name to assign the preference(s).
2. On the Modify Group/User Permissions page, click the Command Line tab.



3. Type in the command line argument(s) and values (using spaces to separate multiple arguments, if required) for each application.

   Refer to the list of command line arguments in Appendix C:.
4. Check the Enabled checkbox.
5. Click Launch Player to test the display.
6. Click Save Changes to save these preferences.

IMPORTANT Users may be assigned to more than one group, which may have conflicting launch preferences assigned using command line arguments. In this case, when such a user tries to launch the player, Furnace will provide an option dialog prompting the user to select which launch options to use (shown in the following example).



Configuring LDAP Settings

NOTE LDAP Configuration is an option, which is included in the Conditional Access module, and must be purchased separately.

If you are not using an LDAP service, see "Creating and Managing Users and Groups" on page 33.

If your company or organization uses an LDAP server, you can configure Furnace to access this server. This will allow you to take advantage of your existing LDAP directory for access control, account management, and user authentication.

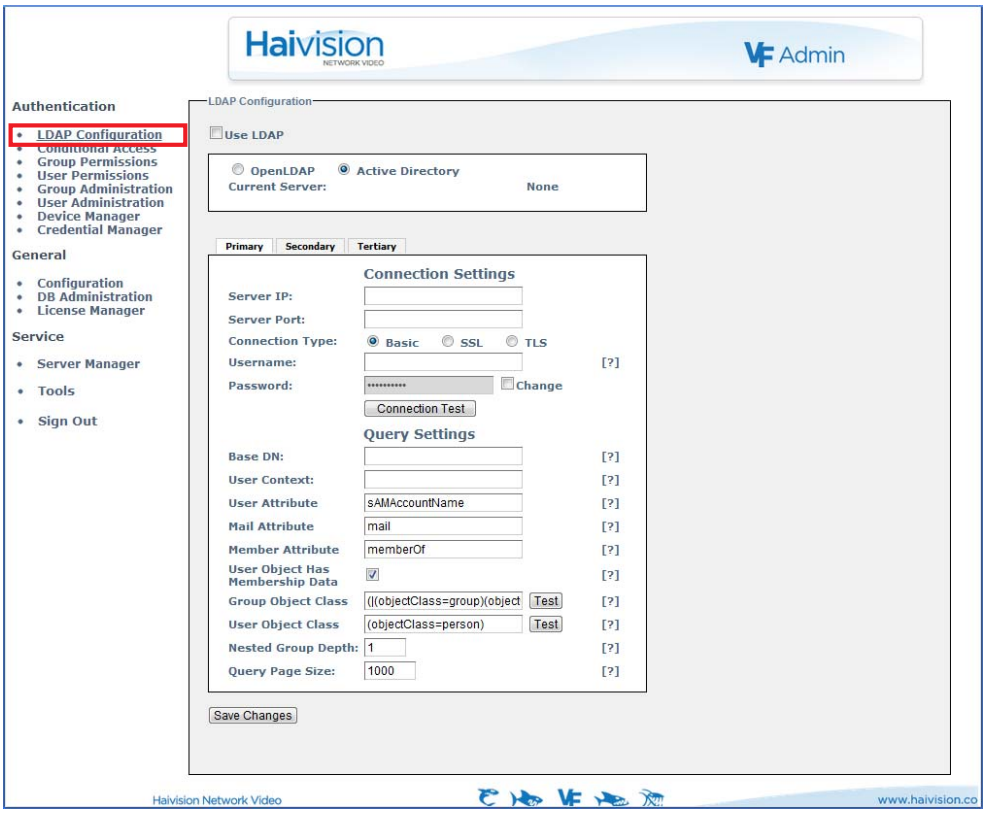
From the LDAP Configuration page, you can configure up to three LDAP servers: typically, a Primary server with optional Secondary and Tertiary backups. The system provides automatic failover switching; you may also manually switch the current server.

You may also define and save LDAP server settings for future use without enabling LDAP.

To configure LDAP settings:

1. Click the LDAP Configuration link on the left side of the VF Admin page.

   The LDAP Configuration page opens (shown in the following figure).



The LDAP Configuration page displays the panes for configuring multiple LDAP servers (Primary, Secondary, and Tertiary). It also provides a button to test a connection to the defined LDAP server.

2. To configure Furnace to use your LDAP service, check the Use LDAP checkbox.
3. Select the type of LDAP implementation for your system, either:
   - Open LDAP: An open source implementation of LDAP directory services.
   - Active Directory: An implementation of LDAP directory services by Microsoft.
4. To configure either a Secondary or Tertiary backup system, click the associated tab. (The default is Primary.)
5. Fill in the fields to configure the server connection. See the following section "LDAP Configuration Settings".
6. (Optional) To configure another backup server (i.e., Secondary or Tertiary), repeat Steps #4 and #5.
7. (Optional) To switch the active server, click either Primary, Secondary or Tertiary. Then click Continue to confirm the change.
8. Click Save Changes to save the LDAP settings.

IMPORTANT When LDAP is engaged, the Furnace server no longer recognizes any users or groups defined while LDAP was not enabled. This means that when you configure Furnace to use LDAP, you will need to sign in again using an LDAP user account (unless you are using haiadmin, which does not get "kicked out" when the LDAP settings change).

When you configure Furnace to use LDAP, you must still assign permissions to your groups or users. See "Configuring Permissions for Groups or Users" on page 41.

LDAP Configuration Settings

The following table lists the LDAP Configuration Settings.

LDAP Field	Description
Connection Settings	
Server IP	The IP address or domain name of the server that hosts the LDAP server.
Server Port	The communications port that the LDAP service uses. The default value is 389 (the standard port used for LDAP connections), or 636 for SSL connections.

LDAP Field (Cont.)	Description (Cont.)
Connection Type	Select the encryption protocol: • Basic: Unencrypted connection • SSL: Secure Socket Layer (recommended) • TLS: Transport Layer Security
Username	The username for Furnace to connect to your LDAP 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 LDAP directory.
Password	The password that corresponds with the user name provided for the Username field. To change the password, check the Change checkbox and then type in the new password. NOTE: You must check the checkbox in order to change the password. This allows you to update other information on the page without re-entering the password.
Connection Test	Click to test the connection from Furnace to your LDAP system. If the test is successful, click Save Changes. NOTE: If you get the message "Anonymous Connection Succeeded," this means that Furnace has found the server, but the Username and/or Password is most likely wrong. IMPORTANT: If you get the message "Connection Test Succeeded," this means that the Server IP, Server Port, Username and Password are correct.
Query Settings	
Base DN	The Base DN (Distinguished Name) used by your LDAP system. You can think of this as where (i.e., the folder) in the file system (i.e., the domain tree) you have put the files relevant to Furnace. For example, ou=Groups,dc=haivision,dc=com NOTE: Spaces are not allowed unless they are part of the path. IMPORTANT: If the Base DN is wrong, Furnace will not be able to access the groups. To verify that the Base DN is correct, you must check the available groups on the Group Permissions page.

LDAP Field (Cont.)	Description (Cont.)
User Context	The context under which your LDAP users can be found. You can think of this as what to append to the user name to make it work. For example, ou=People,dc=haivision,dc=com NOTE: You may omit the ou portion and specify the dc portion only. 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.
User Attribute	The user attribute your directory system uses. OpenLDAP systems normally use "cn" or "uid", while Active Directory systems normally use "sAMAccountName".
Mail Attribute	The mail attribute your directory system uses. OpenLDAP and Active Directory systems normally use "mail".
Member Attribute	The member attribute your directory system uses. OpenLDAP systems normally use "member" or "memberUid", while Active Directory systems normally use "memberOf".
User Object Has Membership Data (checkbox)	Indicates that your directory system stores group membership data on the user object (memberOf). Check this box if you are using Active Directory or an OpenLDAP extension that supports memberOf.
Group Object Class	Object class query for groups. Default: (|(objectClass=group)(objectClass=groupOfNames)). The default will work with almost all directory servers.
User Object Class	Object class query for users. Default: (objectClass=person). The default will work with almost all directory servers.
Nested Group Depth	Sets the maximum recursion level for nested group support (i.e., defines the depth of the nesting) for user permissions and entitlements. This should be a low number, or 1 to disable nesting.
Query Page Size	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.

Using Conditional Access for User Authentication

NOTE Conditional Access is an optional module and must be purchased separately.

If you are not using Conditional Access to manage user and group settings, see "Creating and Managing Users and Groups" on page 33.

The Conditional Access module provides a range of selections you can use to manage conditional access entitlements to the Furnace system. For example, you can:

- Assign access to channels and Video on Demand (VoD) assets to specific groups and users. (Groups or users that are not given access to either channels or VoD assets will not be able to view either.)
- Create entitlement rules based on keywords in the asset's Title, Description and Tag metadata.

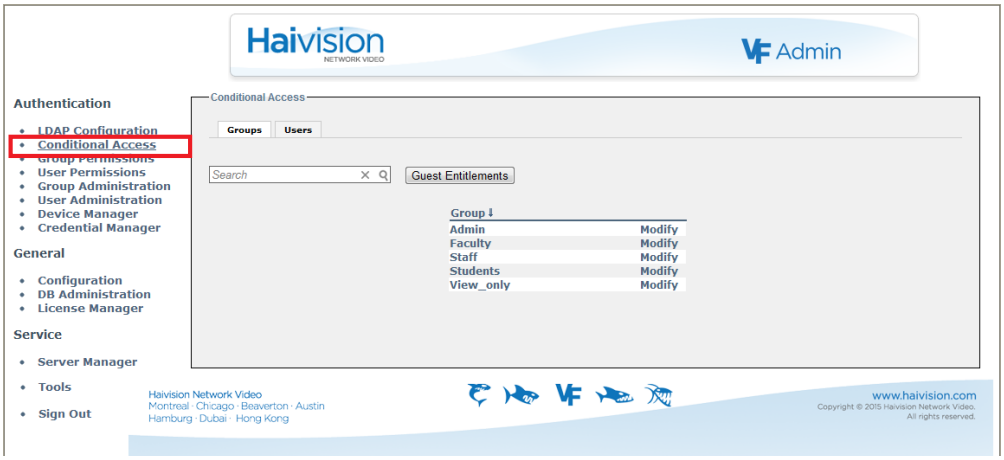
You may also define the "Guest" Entitlements for the system, which will apply to unauthenticated users (i.e., users who are not signed in). The selections for defining Guest entitlements are the same as those for groups and users.

TIP To enable Conditional Access entitlements, you need to select Integrated for Conditional Access Method on the Configuration page. See "General Configuration" on page 65.

To configure Conditional Access Entitlements:

1. Click the Conditional Access link on the left side of the VF Admin page.

   The Conditional Access page opens (shown in the following example) displaying the current list of groups defined for your system.



The Groups tab is selected by default.

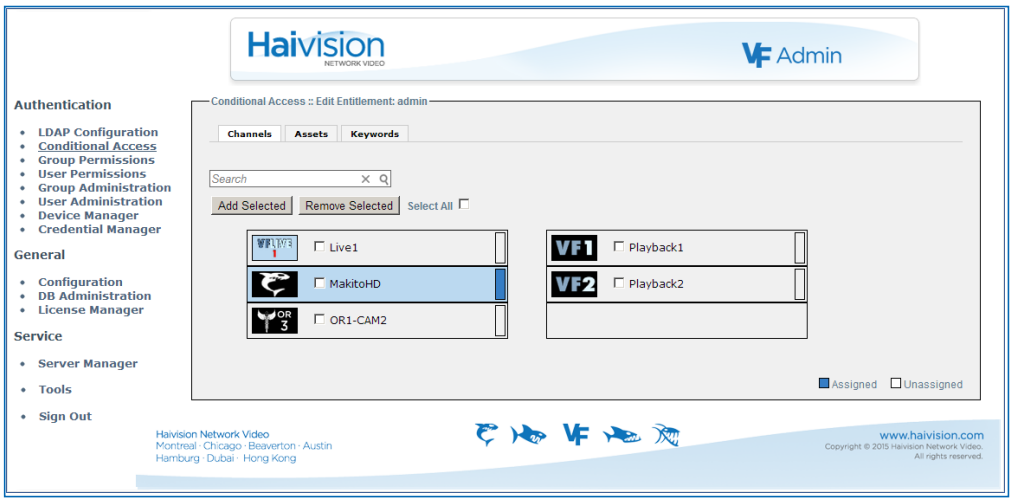
2. First select whether you want to modify the entitlements for a group, or a user, or for guests.

Channel Entitlements

1. To modify the authorized resources:
   a. For a group, click Modify next to the group name.
   b. For a user, first click the Users tab and then click Modify next to the user name.
   c. For Guest entitlements, first click Guest Entitlements.

NOTE The steps that follow apply equally to group, user or Guest entitlements.

The Edit Entitlements page opens (shown in the following example) displaying the current list of available channels for your system. Authorized channels for the group are highlighted in blue.



   a. To add channels to the group's authorized resources, check the names of the channels and click Add Selected.
   b. To remove channels from the group's authorized resources, check the names of the channels and click Remove Selected.

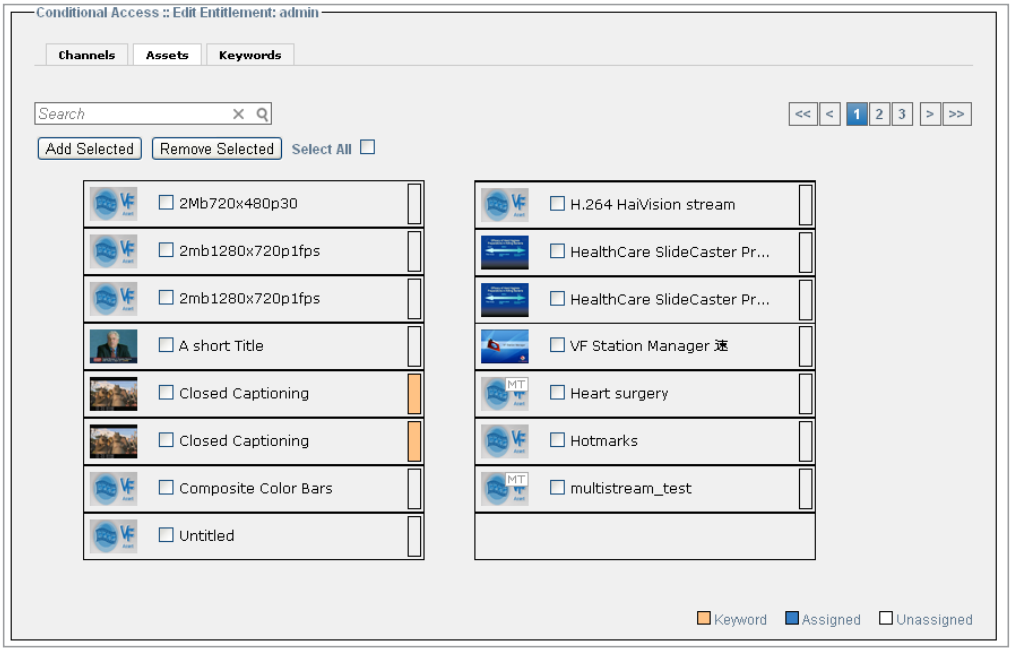
TIP You can check the Select All checkbox and then click Add Selected or Remove Selected to either add all names to or delete all names from the group. You can also use the CTRL or SHIFT keys to select multiple names.

Asset Entitlements

1. To modify the authorized Furnace assets for the group or user, click the Assets tab.

   The Asset Entitlements page (shown in the following example) displays the current list of available Furnace assets for your system.

TIP Authorized assets for the group are highlighted in blue. In addition, the color of the smaller rectangle to the far right indicates the entitlement method. It is blue for assets that have been selected "manually" from this page, and orange for assets that are keyword-entitled. See "Keyword-based Entitlements" on page 56.



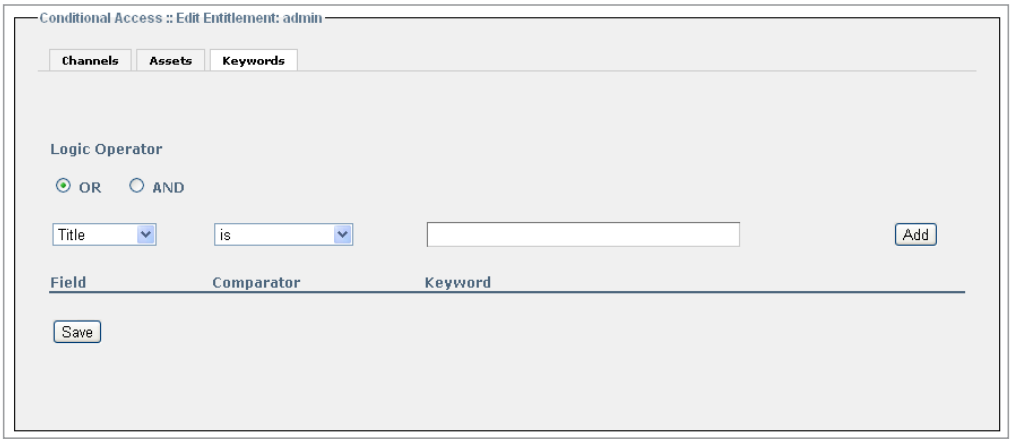
a. To add assets to the group's authorized resources, check the names of the assets and click Add Selected.

b. To remove assets from the group's authorized resources, check the names of the assets and click Remove Selected.

Keyword-based Entitlements

1. To create entitlement rules for the group or user based on keywords in the asset's Title, Description and Tag metadata, click the Keywords tab.

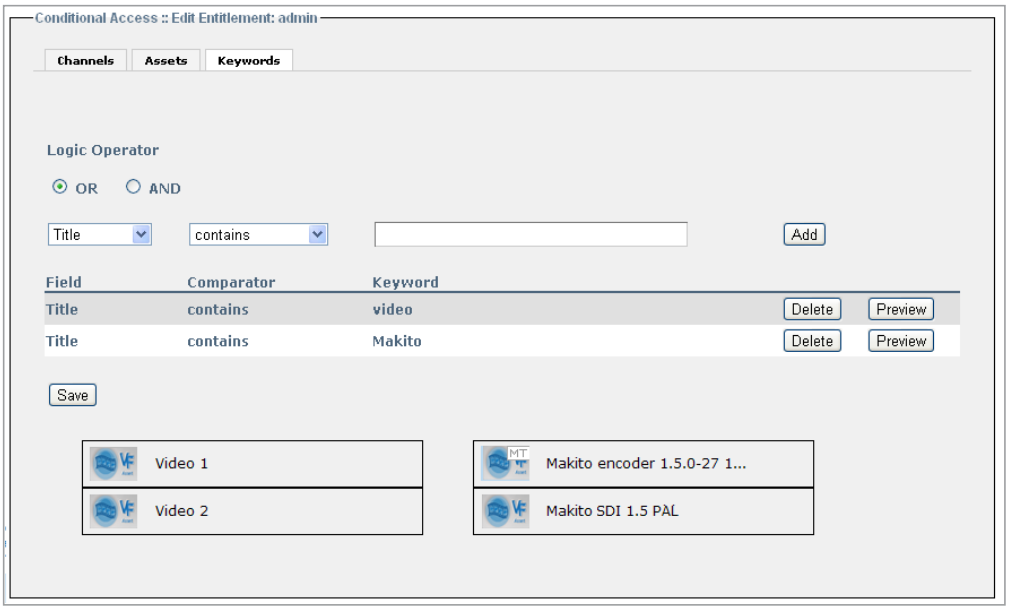
   On the Keyword Entitlements page (shown below), you can build entitlement rule expressions that combine multiple rules using the Logic Operators OR or AND.



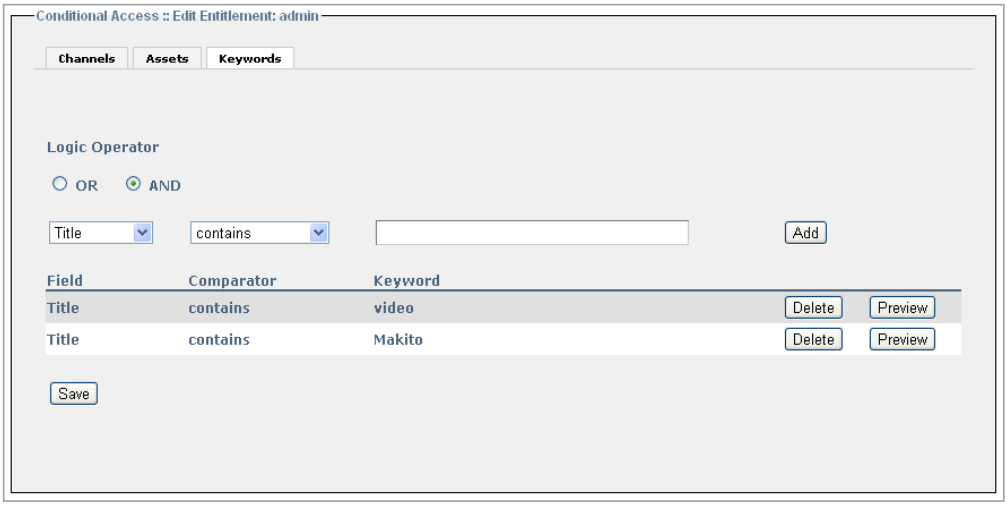
2. Select the Logic Operator:
   - OR: Only one rule needs to be met for the group of users associated with the rule to be entitled.
   - AND: All rules must be met for the group to be entitled.
3. For each rule, select the Metadata source ("Field"), either: Title, Description or Tag.
4. Select the Comparator, either: is, is not, contains, or does not contain.
5. Type the Keyword in the text field and click Add.
6. To view a preview of the asset list resulting from the keyword-based entitlement, click Preview.
7. Repeat Steps #2- #5 to enter additional rules (i.e., to build a rule expression).

   Each time you add a rule, any assets that met the conditions of the rule are displayed below the list (see examples on the following page).
8. Click Save to save the entitlement rules.

   In the following example, when you add the first rule ("title"+ "contains" + "video"), thumbnails for the assets "Video 1" and "Video 2" are displayed below the list. Then when you add a second rule ("title"+ "contains" + "Makito"), thumbnails for the assets "Makito encoder …" and "Makito SDI" are added.



However, if you change the Logical Operator to AND, all thumbnails will be removed because there are no assets that meet the criteria for *both* rules.



9. To return to the Conditional Access page, click the Conditional Access link on the left side of the page.

Managing Device Entitlements

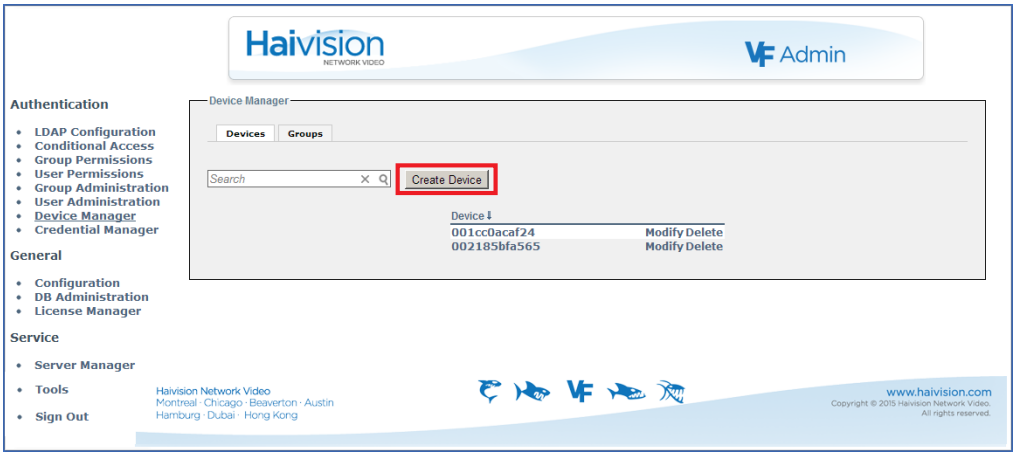
NOTE The Device Manager is included in the Conditional Access module.

The Device Manager allows you to "register" Stingray set-top boxes (STBs) and Makito decoders in your realm and then assign them to groups to control entitlements. [Please note that Mantaray STBs are registered from the Mantaray using the Mantaray STB Settings application.]

TIP A Makito decoder can decode encrypted stations if it is invited and used as a integrated device in the Furnace realm, commanded by VF Command & Control. However, a decoder cannot decode encrypted stations if it is not invited.

To configure a device entitlement:

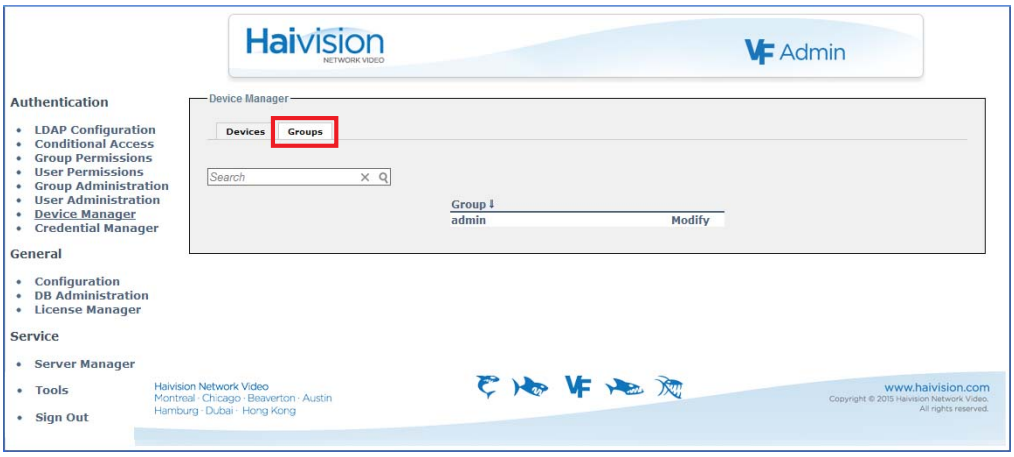
1. Click the Device Manager link on the left side of the VF Admin page.
2. On the Device Manager page, click Create Device.



3. On the Create Device page, type in the MAC address of the device (using hexadecimal digits without separators).

4. Select the device type, either Stingray 1, Stingray 2, or Makito Decoder.

5. (Optional) Type in a Description.
6. Click Submit.
7. On the Device Manager page, click the Groups tab.



8. To add the device to a group, click Modify next to the group name.

   The Modify Group page opens displaying the current list of defined devices for your system. Devices that are part of the group are highlighted in blue.

9. Check the name of the device to add to the group and click Add Selected.
10. Click the Device Manager link on the left side of the VF Admin page to return to the Devices tab.

Managing API Credentials

The Furnace's REST API uses the OAuth standard to provide authentication to API clients. All clients accessing the API are required to authenticate.

To get started implementing API applications, you must set the API Version to 2.0 and then generate an API credential for authentication.

This section provides the steps to accomplish this.

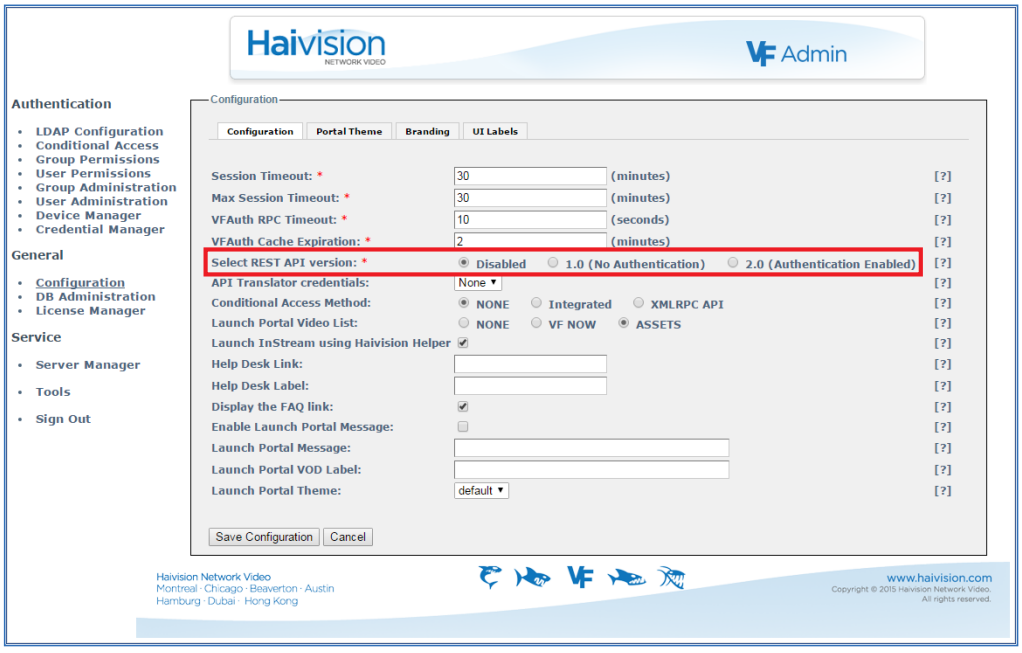
Set API Version to 2.0

In order to enable OAuth authentication on your system, you must first set the API Version to 2.0. (For more information, see "General Configuration Options" on page 67.)

To select the API Version to enable OAuth Authentication:

1. Click the Configuration link on the left side of the VF Admin page.

   The Configuration page opens (shown below).

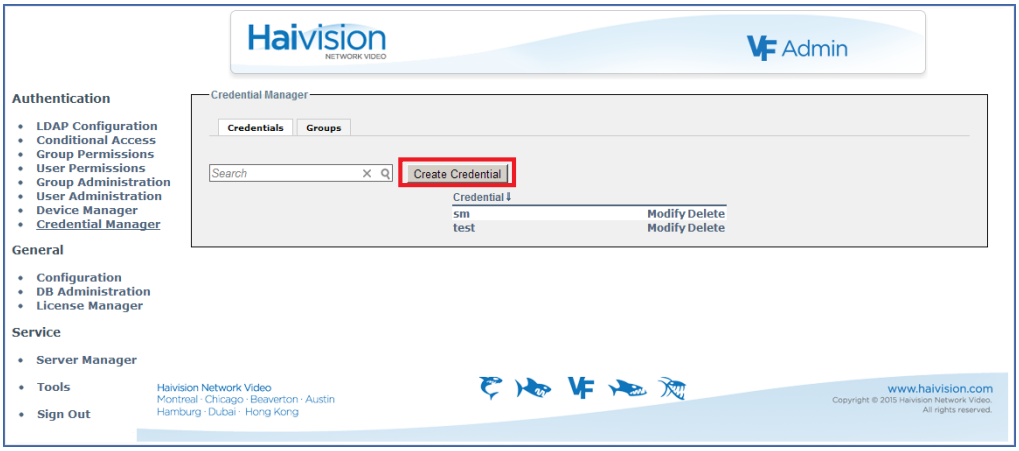


2. For Select API version. select 2.0 (Authentication Enabled).
3. Click Save Configuration.

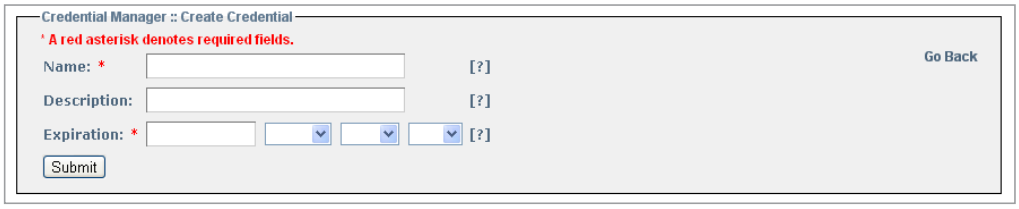
Creating a Credential

To create a credential for the Furnace API or a Viper:

1. On the VF Admin page, click the Credential Manager link (on the left side under Authentication).
2. On the Credential Manager page, click Create Credential.



3. On the Create Credential page, type in a Name to associate with the credential and a Description.



4. Select the Expiration date and time (when the credential should expire and the system should deny access). Be sure to enter a complete date, including the hour, minute, and second.
5. Click Submit.

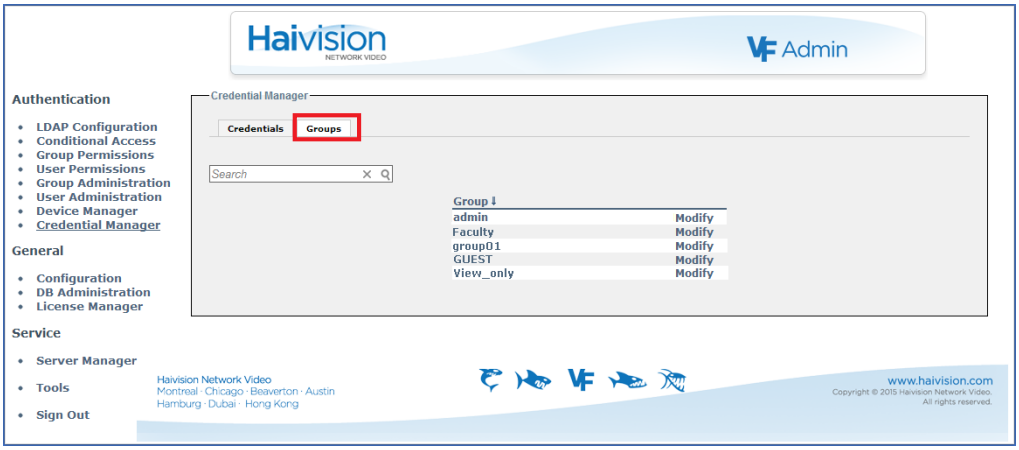
TIP In order to use the Furnace API Translator, you need to create an API credential. For more information, see the "API Translator credentials" on page 67.

Associating the Credential With Furnace Groups

Groups are used to restrict the permissions with which an API credential can operate. API actions are limited to the credential's assigned group permissions.

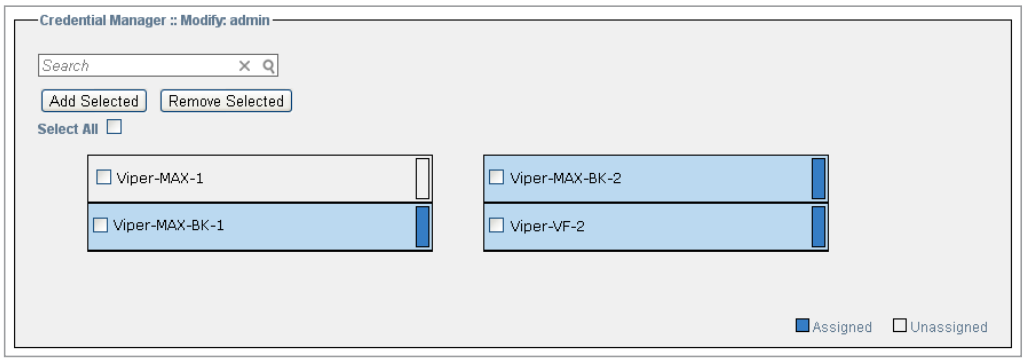
To associate a Credential with Furnace User Groups:

1. On the Credential Manager page, click the Groups tab.



2. To add the credential to a group, click Modify next to the group name.

   The Modify Group page opens displaying the current list of defined credentials for your system. Credentials that are part of the group are highlighted in blue.



3. Check the name of the credential to add to the group and click Add Selected.

NOTE The group requires the All Permissions setting for API credentials to be allowed. See "Configuring Permissions for Groups or Users" on page 41.

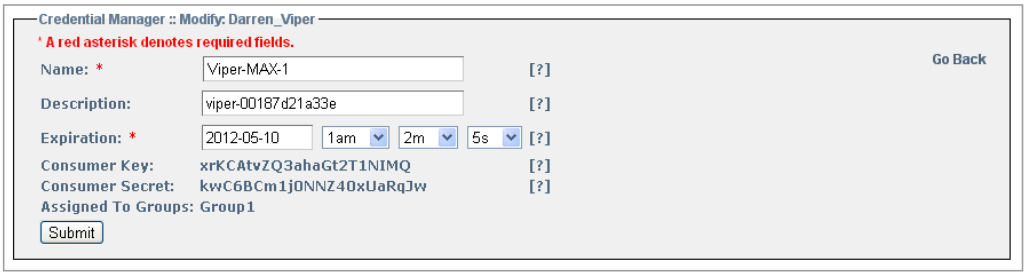
Viewing the Consumer Key and Secret pair

You will need to copy the Consumer Key and Secret pair in order to use OAuth for your Furnace APIs or to integrate a Viper in the realm of this Furnace server.

To view the Consumer Key and Secret pair:

1. Click the Credential Manager link on the left side of the VF Admin page to return to the Credentials tab.
2. Find your credential in the list and click Modify next to the credential name.

   The Modify Credential page opens showing the Consumer Key and Consumer Secret generated for this credential (shown in the following example).



3. Select and copy this Consumer Key and Consumer Secret.

CHAPTER 4: VF Admin - General System Configuration

This chapter continues the VF Admin module, covering the General and Service Configuration tasks.

NOTE The procedures described in this chapter assume that you have administrative privileges.

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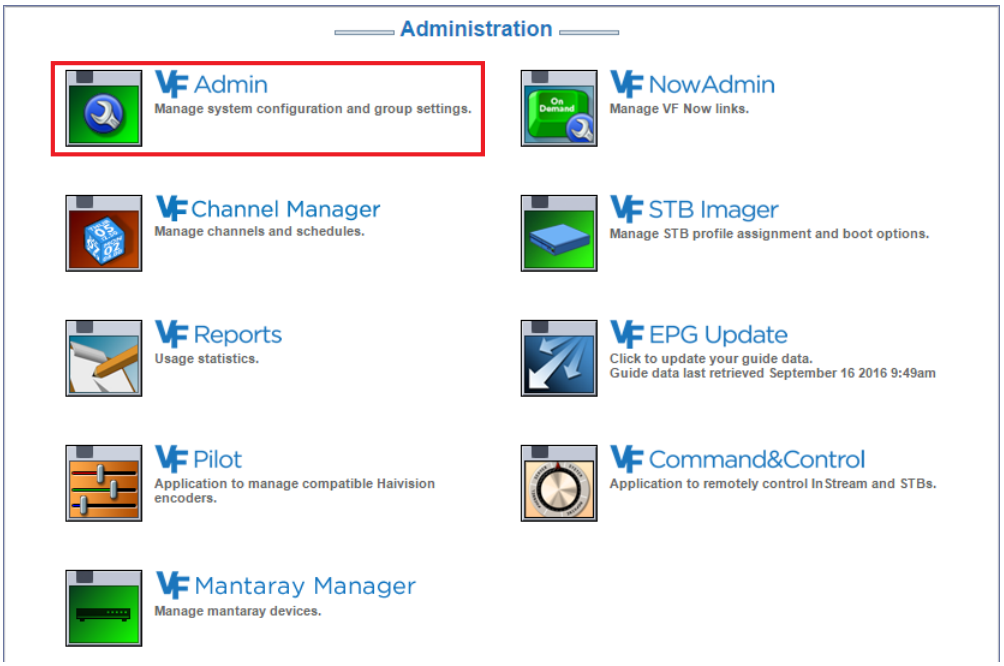
General Configuration

VF Admin provides General Configuration tools to configure the Furnace Web tools and interface, as well as the Launch portal theme and the InStream player user interface. For example, you can:

- Select the API version, and in doing so, enable or disable authentication (see page 67).
- Select the Conditional Access method (see page 67).
- Upload and select themes for the Launch portal (see page 69).
- Customize the InStream player user interface (including the company logo, player window, player controls, menu colors, and push-button look, see page 72).
- Customize the text displayed on the user portal and InStream player user interface (including the labels and tooltips, see page 78).
- Disable the Java launching mechanism used by default for the InStream player and instead use the Haivision Helper (available from the Haivision Download Center) to launch the InStream player without Java (see page 68).
- View existing and update the system license (License Manager page).

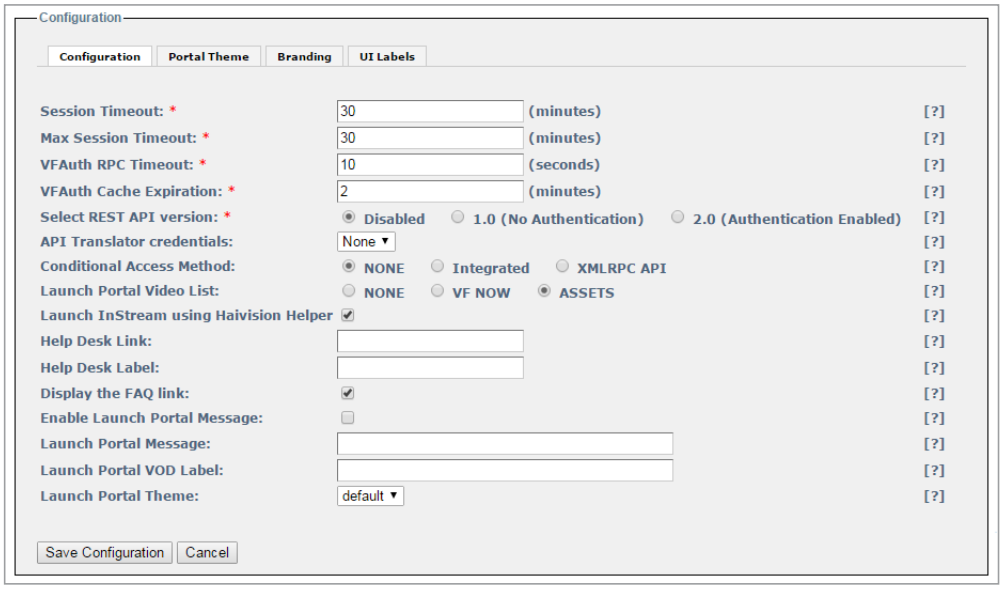
To configure the Admin Web tools and interface:

1. On the Tools page, click the VF Admin icon.



2. Click the Configuration link on the left side of the VF Admin page.

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



3. Select or enter the new value(s) in the appropriate field(s). See the following section, "General Configuration Options".

4. Once you are finished with your changes, click Save Configuration.

General Configuration Options

The following table lists the Configuration options:

Configuration Option	Description
Session Timeout	Enter the time in minutes before active sessions expire: 10-60
Max Session Timeout	Enter the maximum time in minutes before active sessions expire: 10-60
VFAuth RPC Timeout	Time (in seconds) before vfauthd RPC calls should time out. The default is 10 seconds. Only increase this if AD/LDAP queries are longer than the timeout.
VFAuth Cache Expiration	Time (in minutes) before vfauthd expires cached group membership data. The default is 2 minutes. Only increase this if you want to limit the frequency of group membership lookups. NOTE: Changing this requires a vfauthd service restart or server reboot.
Select REST API version	Select which version of the Furnace API to use: • Disabled • 1.0 (No Authentication) • 2.0 (Authentication Enabled) NOTE: In order to use OAuth on your system, you must first set the API Version to 2.0 to enable authentication. For more information, see the API Integrator's Guide.
API Translator credentials	Select the API credential to apply to the API Translator. NOTE: Furnace offers a simplified API over a Telnet-like connection for programmers who do not want to use the full REST API. For more information, see the API Translator Integrator's Guide. TIP: You must have already created the credential using the VF Admin Credential Manager (see "Creating a Credential" on page 61). Also, in order to use the API Translator, you need to set Select REST API version to 2.0 to enable authentication.
Conditional Access Method	(Conditional Access optional module must have been purchased) Select to enable or disable the Furnace Conditional Access module: • Off • On • XMLRPC API: Select if you are using the legacy VF-CA-API

Configuration Option	Description
Launch Portal Video List	(Conditional Access Method must be None) Select the type of videos to be displayed on the Launch portal: • None • VF NOW links • All Assets
Launch InStream using Haivision Helper	Check to use the Haivision Helper (available from the Haivision Download Center) to launch the InStream player (without Java). If the Haivision Helper is not installed on the client PC, launching will fall back to Java.
Help Desk Link	Enter a full http:// or mailto: address to provide a Help link from the Launch portal.
Help Desk Label	Change the default Help Desk label on the Launch portal (navigation bar).
Display the FAQ Link	Check to display the FAQ Link on the Launch portal (navigation bar).
Enable Launch Portal Message (checkbox)	Check to display the Launch Portal Message.
Launch Portal Message	Message that will appear (in red) above the launch icons on the Launch portal.
Launch Portal VOD Label	Description of the VOD Library that will appear next to the Search field.
Launch Portal Theme	Select which theme to use for the Launch Portal. NOTE: To preview or modify the themes, see the following section "Configuring the Launch Portal Theme".

NOTE [Furnace Version 6.6 adds a new environment variable for Windows that allows InStream install to define the path for batch file creation: HAIVISION_INSTREAM_TEMP_PATH

InStream will try to use the path defined in this variable before using the paths provided by Windows GetTempPath.

Configuring the Launch Portal Theme

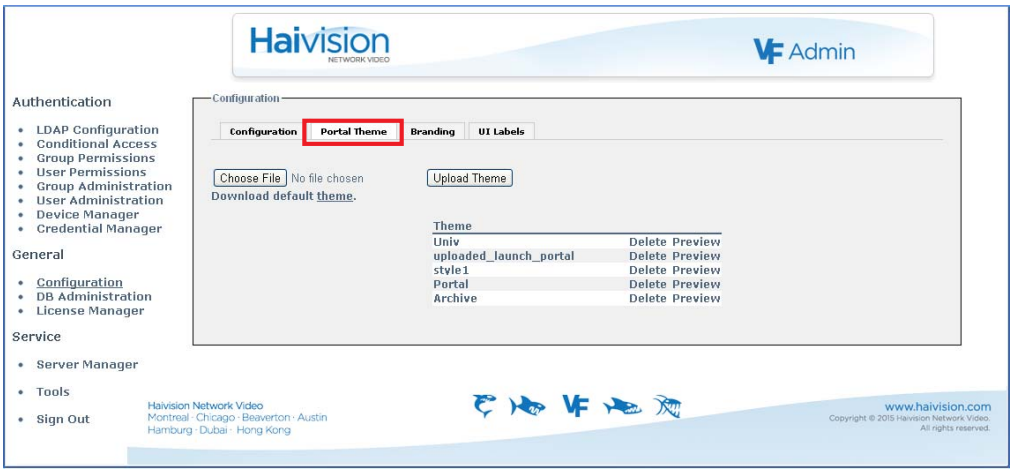
You can also configure the theme for your site's Launch portal. This is done by modifying the .css (Cascading Style Sheet) file provided with the Furnace.

To get started, you need to download the Furnace default theme and then adapt it (using a text editor) to suit your company or organization.

To adapt the default Furnace portal theme:

1. On the Configuration page, click the Portal Theme tab.

   The Portal Theme tab opens, listing the themes available for your system.



2. Click Download default theme to open the default Furnace .css file in a text editor on your local computer.
3. Type in your changes in the text editor and save the file under a new name. For guidelines, refer to "Guidelines for Changing the Launch Portal Theme" on page 70.
4. On the Portal Theme tab, click Choose File (or Browse, depending on your browser) to select the modified .css file, and then click Upload Theme to add it to the list of available themes.
5. Once a new or modified theme is included on the Theme List, you can click Preview next to it and a prototype launch page will open in a new window.
6. Once you are satisfied with the theme, click the Configuration tab and select it from the Launch Portal Theme drop-down list.
7. Click Save Configuration.

The modified Launch portal will take effect immediately. You may have to refresh your browser to see the changes.

Guidelines for Changing the Launch Portal Theme

This section suggests some general guidelines for changing the Launch portal theme.

IMPORTANT This section is intended for qualified web developers and therefore does not attempt to provide instructions on how to modify the .css (Cascading Style Sheet) file. Doing so would be beyond the scope of this document.

However, CSS is a well documented standard. For more information, please refer to the following resources:

- http://www.w3.org/TR/CSS2/
- http://www.w3schools.com/css/

To change the theme, you can upload either a .css file, or a .zip file. Using a .zip file enables you to upload your own images along with the .css file.

The .zip file must contain a style.css file (this is the theme itself). There is currently no limit as to the number of .gif, .jpg and .png files the .zip file can contain. However, the maximum upload size is 20MB.

NOTE Images that are uploaded should be defined in the .css file with a relative path.

For example, an image that already exists may be defined as:

```
background-image: url('/images/vf_instream_button.png');
```

An image uploaded with your changes should be defined as:

```
background-image: url('custom_instream_button.png');
```

NOTES:

- Keep in mind that CSS uses selectors to choose which HTML object to modify. Consider the following example (from the Furnace default .css file):

```
#footer
{
height: 159px;
background-image: url('/images/launch_footer.png');
background-repeat: no-repeat;
background-position: center center;
width: 1000px;
margin: auto;
}
```

The #footer is the selector, i.e., it selects which HTML object to modify. Therefore, you should not change the selector, because the footer will no longer have an image. Instead, to change the image, you can just change the background-image line to contain a different url.

- To use an image that you uploaded in a .zip file, the URL should look like this:

```
url('launch_footer.png')
```

NOTE There is no leading slash. This is important, because if you put a slash at the front, it won't work.

- To use an image from your own server, you can specify something like this:

```
url('http://www.google.com/logo.png')
```

- Do not switch to a blank profile, as it can be difficult to fix. The login page becomes basically unusable without a theme. If this occurs, you can enter a username and password and press ENTER. Or you can use the following url to view the page with the theme disabled:

```
https://servername.com/login.php?theme=&action=/admin/
```

- There can only be one active theme at a time.

Re-Branding the InStream Interface

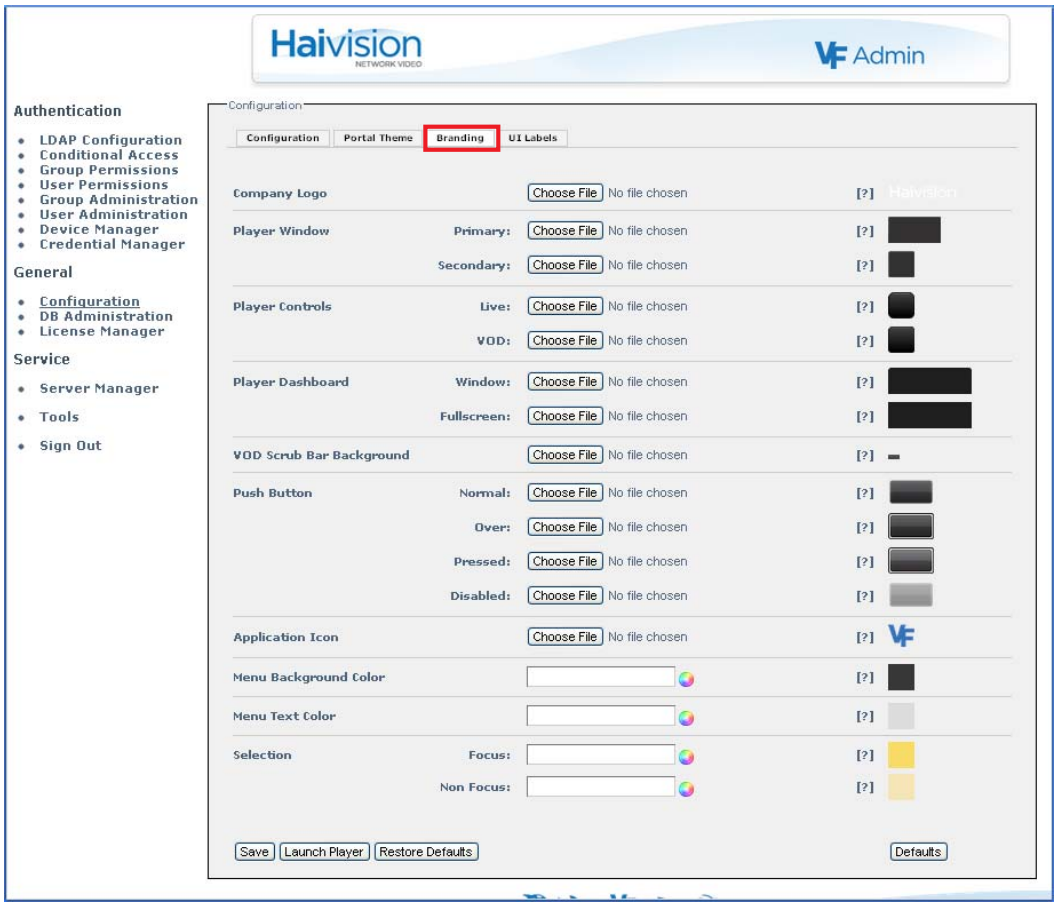
From the Configuration Branding page, you can customize the InStream player user interface components such as the company logo, player window, player controls, menu colors, and push-button look. From this page, you can view details about individual components such as the image filename or color value. You can upload image files to replace the default components, select new colors, save, and then launch the InStream player to preview the rebranded interface.

NOTE After upgrading a Furnace server, you will need to reapply the branding by re-saving. However, you do not need to reload any of the individual components.

To customize the InStream player user interface:

1. On the Configuration page, click the Branding tab.

   The Branding tab opens (shown below).



   The Branding page consists of a list of components, either image files (in .PNG format) or colors (RGB values), that make up the InStream player user interface.

For each component, a thumbnail of the current image file or color value is displayed in the far right column. You can pass the cursor over the thumbnail to display the image filename or the RGB color value. Clicking [?] displays the information you need to know to replace the component, such as the image size, and for "stretchable" components, the xy coordinates and dimensions of the quadrants. (See the following section ""Stretchable" Images".)

2. Select the components to customize your InStream player user interface. (See "Branding Options" on page 75.)
   - For image files, click Choose File to locate the file, and then click Open to select the image to upload.
   - For colors, click the color wheel and select the color.
3. To preview your changes, click Save and then click Launch Player.

"Stretchable" Images

For components such as the player window, player controls, player dashboard, and push button, you can upload a small image which will be used as a background when the InStream application displays the window. Using a concept called "stretching" (Windows/Mac OS X), the application will take the image and stretch it across (and in some cases, down) to fill the space in your application window. (Note that Linux doesn't stretch the images; it repeats them, i.e., "tiling".)

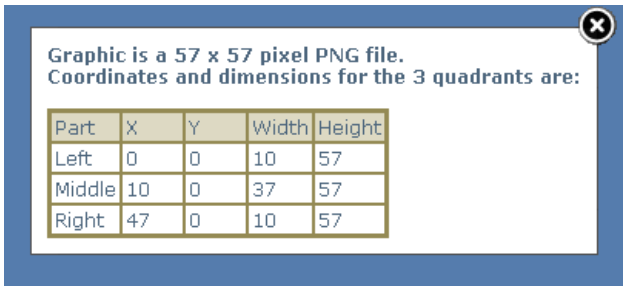
NOTE Logo images (i.e., the Company Logo and Application Icon) are not stretched.

Each "stretchable" component uses either a 3 or 9 quadrant grid: 3 quadrant images are only stretched horizontally, while 9 quadrant images are stretched both horizontally and vertically.

- With a 3 quadrant image, the two side quadrants of the image are displayed without change, while the space between is stretched horizontally to fill the space. See the following section "Example: 3 Quadrant Image".
- With a 9 quadrant image, the four corner quadrants of the image are displayed without change, while the space between the top and bottom, and left and right is stretched both horizontally and/or vertically to fill the space.

Example: 3 Quadrant Image

Clicking [?] for Player Controls: VOD displays the filesize (57 x 57 pixels) and the coordinates and dimensions for a 3 quadrant grid:



To continue the example, below is a simple 57 x 57 pixel .PNG graphic divided into three quadrants, with the "stretchable" area indicated between the two white lines:

The following image shows the above .PNG graphic after it has been stretched horizontally. Note that the two side quadrants are displayed without change.

Branding Options

The following table lists the Branding options. [For an illustration of the components in the InStream player window, see Figure 4-1 on page 77.]

User Interface Component	Description
Company Logo	Select a PNG file to display as the logo. [Top left, within Player Window dashboard, *not* stretched.] The height must be less than or equal to 32 pixels so it will fit within the player dashboard. The logo can be as wide as needed. NOTE: The Haivision graphic is a 74 x 18 pixel PNG file.
Player Window	These images will be stretched both horizontally and vertically to fit the Player Window. For the xy coordinates and dimensions of the 9 quadrants, click [?].
Primary	Select a 300 x 150 pixel PNG file to display for the Primary player window.
Secondary	Select a 75 x 75 pixel PNG file to display for the Picture-In-Picture (PIP) window.
Player Controls	These items define the player control bar below the Player Window. These images will only be stretched horizontally. For the xy coordinates and dimensions of the 3 quadrants, click [?].
Live	Select a 35 x 35 pixel PNG file to display for the Live video control bar.
VOD	Select a 57 x 57 pixel PNG file to display for the VoD control bar.
Player Dashboard	These items define the “dashboard” at the top of the InStream player. These images will only be stretched horizontally. For the xy coordinates and dimensions of the 3 quadrants, click [?].
Window	Select a 100 x 32 pixel PNG file to display for the dashboard.
Fullscreen	Select a 100 x 32 pixel PNG file to display when the player window is in Fullscreen mode.

User Interface Component	Description (Cont.)
VOD Scrub Bar Background	Select a 13 x 5 pixel PNG file to display for the VOD scrub bar background.
Push Button	These items define the Watch and Close push buttons. These images will be stretched both horizontally and vertically. Select a 49 x 28 pixel PNG file for each. For the xy coordinates and dimensions of the 9 quadrants, click [?].
Normal	This graphic will be displayed when the push button is in the Normal state.
Over	This graphic will be displayed when the cursor hovers over the push button.
Pressed	This graphic will be displayed when the push button is pressed.
Disabled	This graphic will be displayed when the push button is disabled.
Application Icon	Select a 49 x 28 pixel PNG file to be displayed on the InStream button on the taskbar. NOTE: The Application Icon is not stretched. (Does not apply to Mac OS X, only Windows and Linux.)
Menu Background Color	Select the background color for menu windows (e.g., Player Settings and Multi-viewer Settings windows).
Menu Text Color	Select the color for the text in menu windows.
Selection	Select the color to indicate selection.
Focus	Select the color for the selected item while the focus is in that window.
Non Focus	Select the color for the selected item while the focus is not in that window.
Save	Click to save your selections. You must save *before* launching the player in order to preview your changes in the rebranded interface. NOTE: This causes the Defaults button to appear to allow you to toggle the thumbnails between system defaults and your saved selections. TIP: Because some browsers cache images, you may need to refresh your browser if an uploaded image doesn't show in the thumbnail.

User Interface Component	Description (Cont.)
Launch Player	Click to launch the InStream player to see your (saved) changes (i.e., preview the rebranded interface).
Defaults / User Defined	These buttons become available once you have saved changes. Click to toggle the thumbnails between the system defaults and your saved selections. This is helpful when comparing your rebranded components to the defaults.
Restore Defaults	Click to restore the InStream player to its default look. NOTE: Your changes will be discarded.

Figure 4-1 Components of InStream Player Interface (Player window)

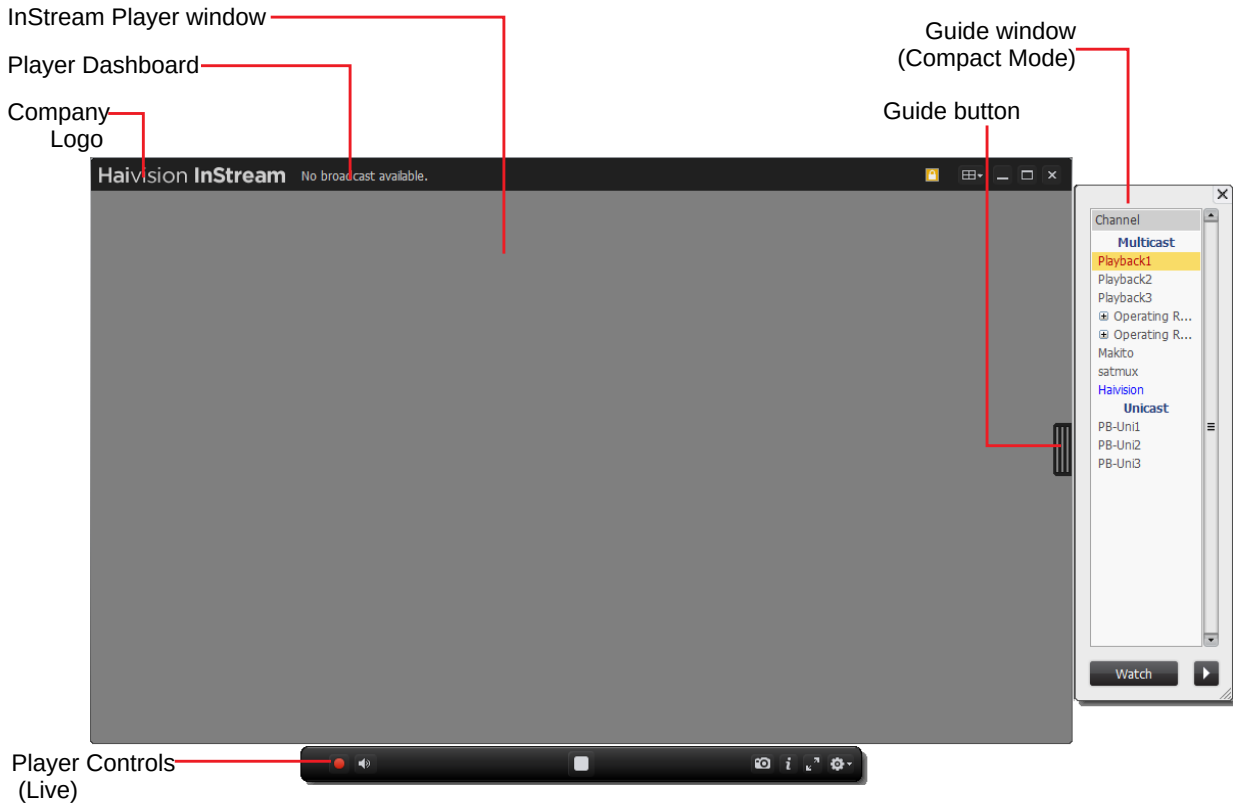
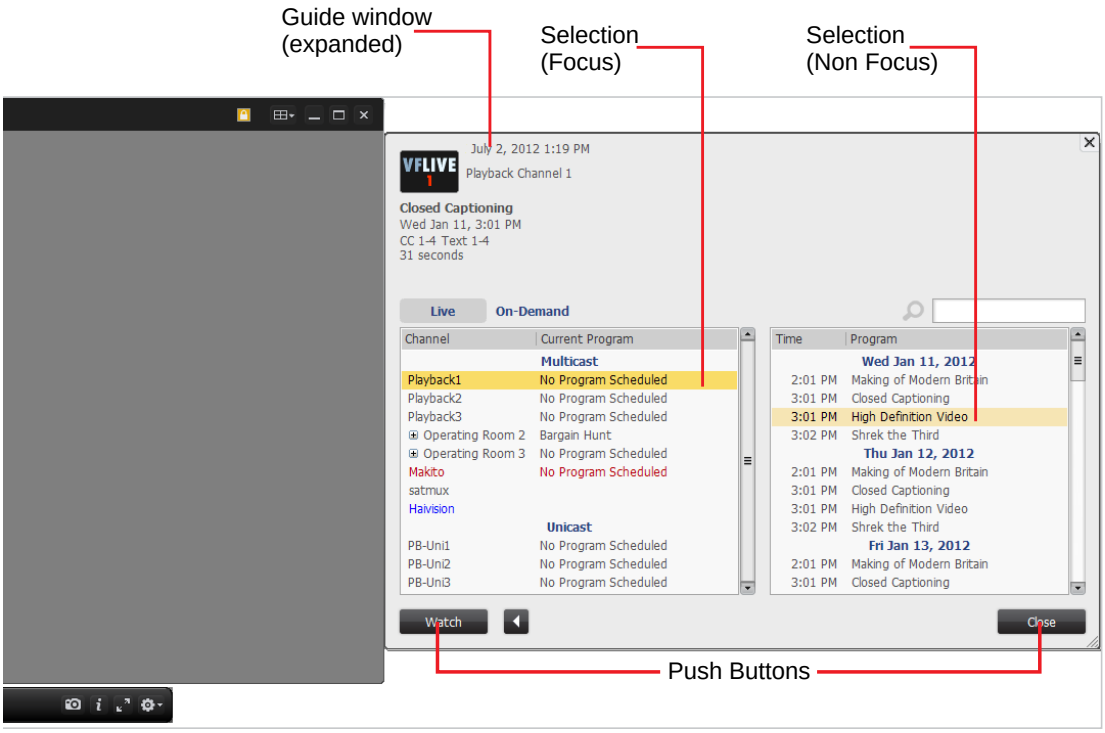


Figure 4-2 Components of InStream Player Interface (Guide window)



Customizing UI Labels

From the Configuration UI Labels page, you can customize the text displayed on the InStream player, user portal, and error messages. The text that you can replace includes labels as well as tooltips (which appear when the user hovers the cursor over an item).

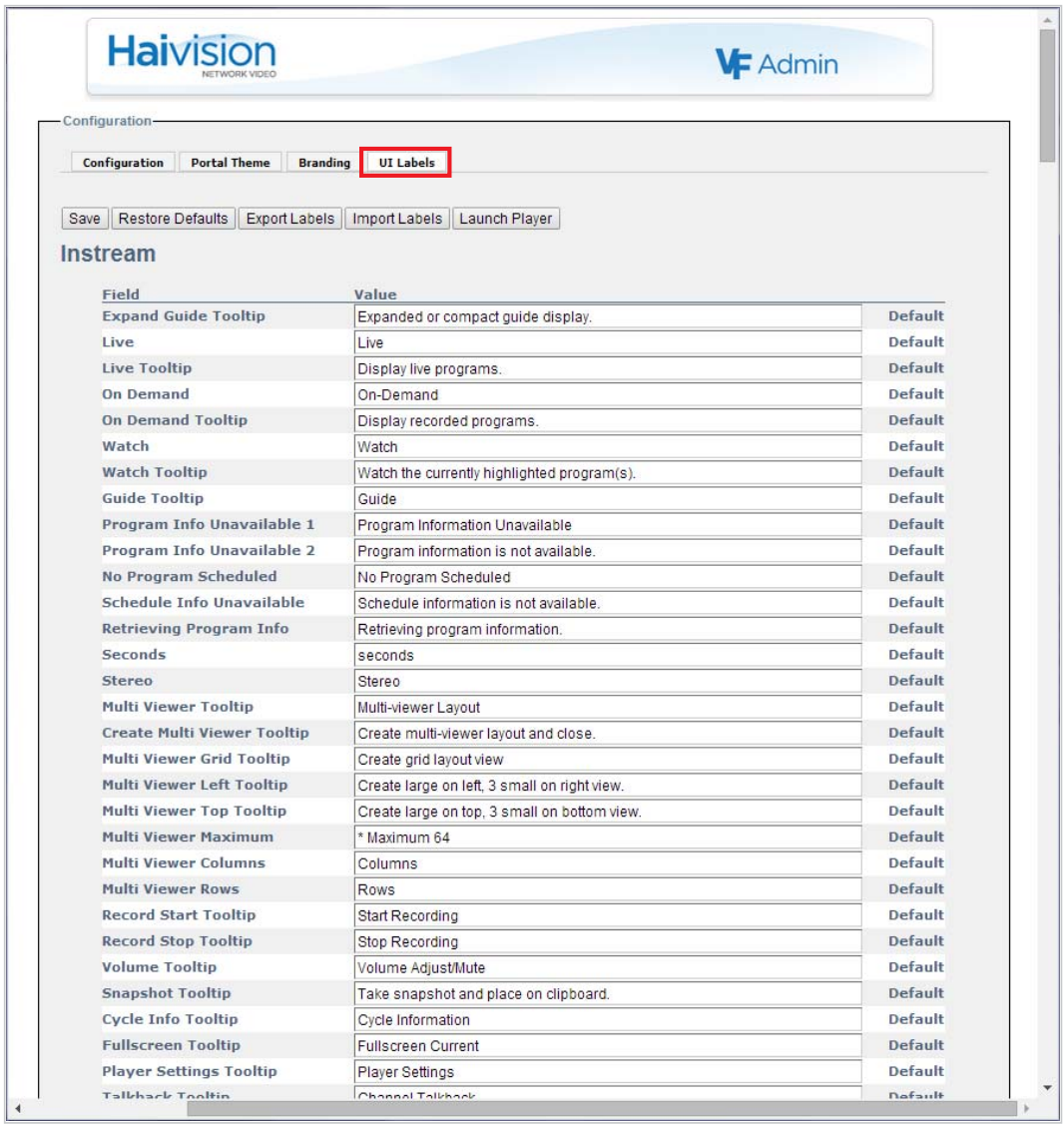
This allows you to adapt the interface to your requirements, including translating the interface into other languages. For example, you can create customized versions in French, German, and Spanish. You would export each version and then distribute it to be imported on other Furnace systems.

As you work, you can launch the InStream player to preview the customized labels. At any time, you can restore a label to its default or restore all labels to their default values.

To customize the InStream player user labels:

1. On the Configuration page, click the UI Labels tab.

   The UI Labels tab opens (shown in the following example).



2. For each label or tooltip to customize, type the new text in the Value field.
3. To preview your changes, click Save and then click Launch Player.
4. To restore a label to its default, click the Default button to the right of the Value field.
5. To restore all labels to the defaults, click Restore Defaults.
6. When you are satisfied with your customized interface, you can export it. To do so, click Save and then click Export Labels. The interface labels and tooltips are saved in a proprietary file entitled labels.data in your default Downloads folder. You can modify the filename as required to distinguish different customized versions.
7. To import a saved interface customization, click Import Labels and select the customized .data file to load onto the current Furnace system.

Server Manager

A Furnace realm must include a Portal (or License) Server. You may then install additional servers such as a Media Server, NVR server, USS Server, or Satmux/Encrypt Server as part of the realm.

Managing the Server

In order to get started using the Furnace, you must register all encoders, decoders, or other devices that will communicate with your system or local realm. The Server Manager page lists all the network-reachable VF-compatible devices it can see through its service discovery feature, and allows you to select which ones belong to your system.

The devices on the Server Manager list are divided into three sections: Local Realm, Unassigned Devices, and Foreign Realms. Your "local" realm is the Portal Server to which you are currently connected, while "foreign" realms are devices that can be seen but are not managed by the Portal Server (because they belong to a different Portal Server). Unassigned devices are still searching for and have not joined a realm.

From the Server Manager page, you can perform the following key functions:

- Add ("invite") devices to, or evict devices from your local realm.
- View the server name, IP address, realm status, and "Last Seen" date of devices; also view the MAC address for unassigned devices and devices in foreign realms.
- Modify the network settings for the Portal Server as well as the realm-wide settings.
- Change the host name of a device in the local realm, in particular, to give meaningful, descriptive names to associate with encoders, decoders, and servers.
- Navigate directly to the Web configuration interface for Makito-class devices in the local realm (i.e., Makito X Series, Makito, and Barracuda encoders, and Makito decoders).
- Reboot the server or other selected device.
- Install a system upgrade (Portal Server and non-portal servers).

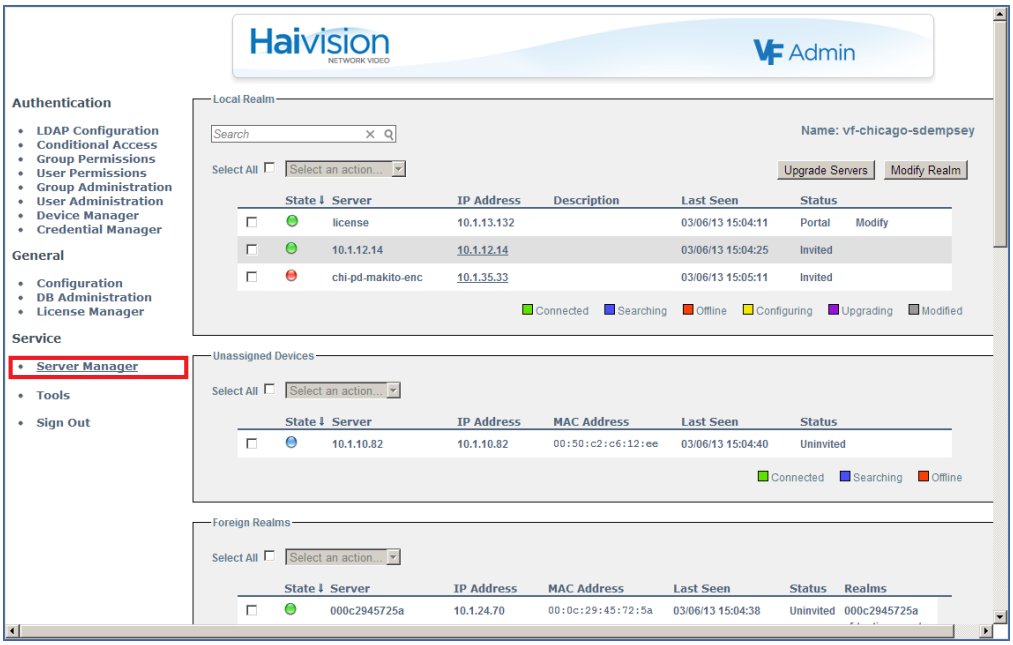
From the Server Manager page, you can also check the status of devices, i.e., to see whether a device is active ("Connected"), turned off ("Offline"), or attempting to locate and join its realm ("Searching"). For more information, see "Device States" on page 84.

NOTE A server will attempt to locate and join its realm for approximately 10 minutes. Afterwards it will accept an invitation from any realm on the network. If a server has been evicted or has never joined a realm, it will accept an invitation immediately.

To access the Server Manager list:

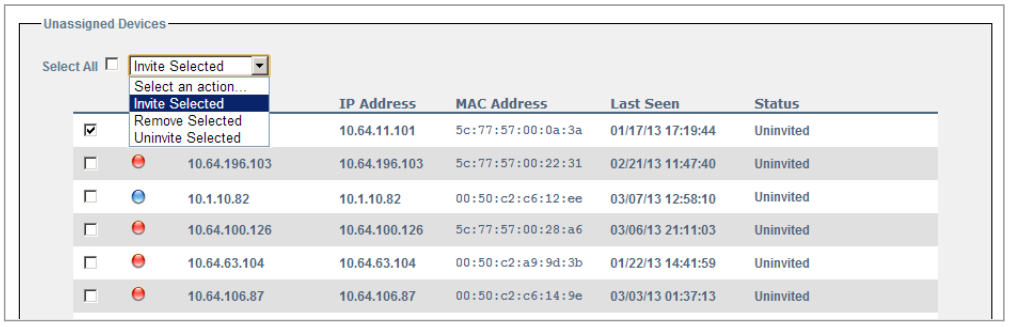
1. Click the Server Manager link on the left side of the VF Admin page.

   The Server Manager page opens (shown in the following example).



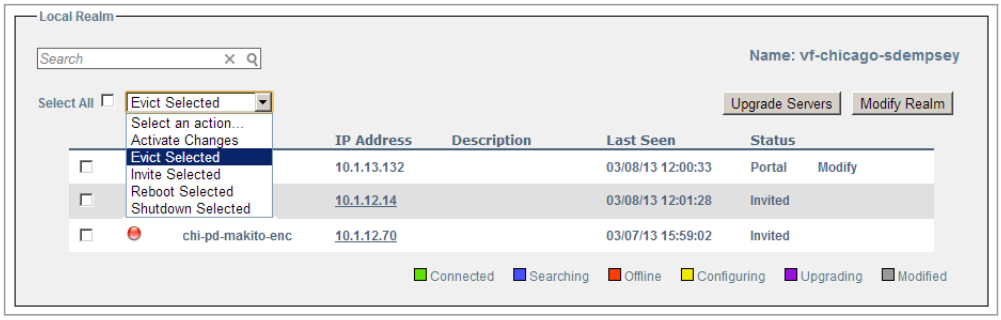
   The Server Manager page lists all the VF-compatible devices available on the network, including their IP address and their status on the network/realm. The server list is derived from the License key on the Portal Server, but shows the realm status of all servers. This is important when you are adding hardware or if you have been shipped servers where the realm isn't properly set up.

2. To add an encoder, decoder or server (that is already connected) to your local realm, select the device name in either the Unassigned Devices or Foreign Realms list and select Invite Selected from the Select an action… drop-down list (shown in the following example). For more information, see "Device Options" on page 84.

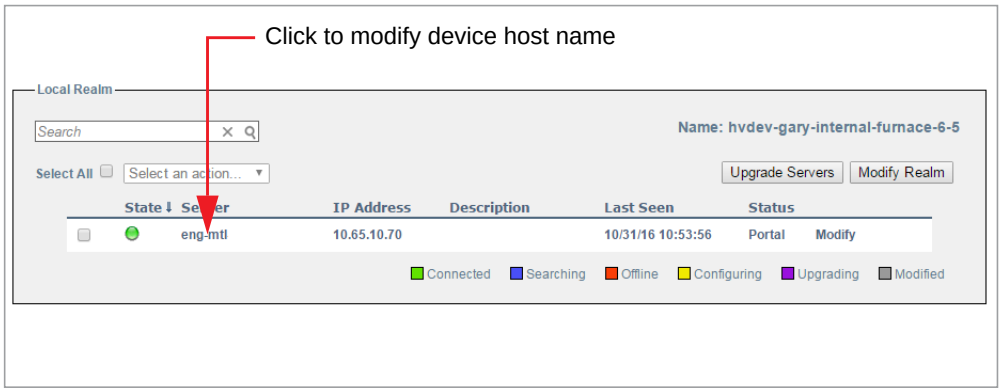


   For a system to be fully operational, it must be listed in your local realm and its status must be Connected. Also, for servers, it must *not* say ("unlicensed") next to it.

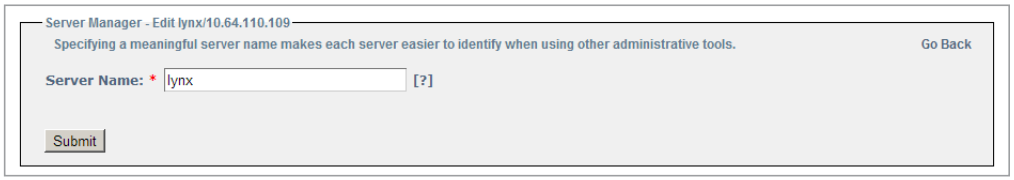
3. To remove a device from your local realm, select the device name in the list and select Evict Selected from the Select an action… drop-down list.



4. To change the host name of a device in the local realm, click the device name in the list (under Server).

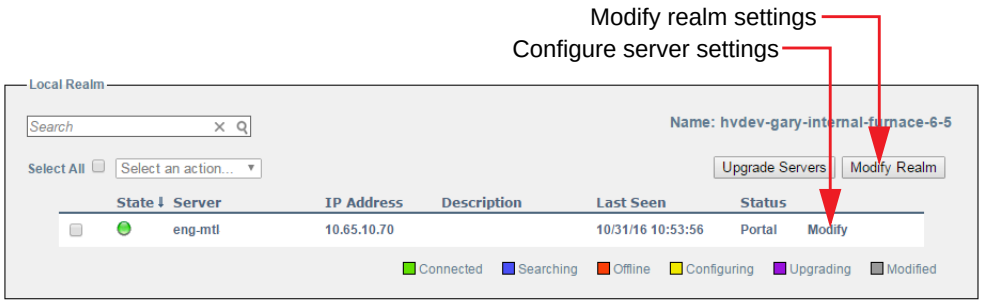


Type the new name in the Edit dialog and click Submit.



NOTE This allows administrators to change default host names to something more meaningful, for example, “Media Server” instead of “EUDBC002” and “Portal Server” instead of “EUDBC001”.

5. To configure the network settings for either the Portal Server or an NVR Server in your realm, click the Modify button next to the server in the Local Realm list. See "Configuring Network Settings" on page 86.



6. To configure the extended network settings for your realm, click Modify Realm. See "Configuring Realm Settings" on page 93.

7. To navigate to the Web configuration interface for Makito-class devices in the local realm, click the link for the device (underlined IP address). The Login page for the device will open in a separate tab. This is useful to start and stop video/audio encoders as well as configure encoding parameters. For details, please refer to the user's guide for the device.

NOTE Makito X Series encoders must be configured and started from the encoder UI (Web Interface or CLI). This is unlike Makito and Barracuda encoders, which may be configured from the Furnace using VF Pilot and started automatically by VF Pilot.

8. To install a system upgrade for either the portal server or non-portal servers, click Upgrade Servers. See "Installing System Upgrades" on page 96.

9. To reboot the server or other selected device, check the checkbox(es) to select the device to reboot and select Reboot Selected from the Select an action… drop-down list. Note that there is a three-minute delay before the unit reboots.

10. When you have completed your changes, to activate the server or other selected devices, check the checkbox(es) to select the devices. Then select Activate Changes from the Select an action… drop-down list.

    This causes all saved changes to be "synced" to the servers that required reconfiguration. Changes will be saved and communicated to other Furnace servers over the network as soon as they are made. The other servers will report back to the Portal Server that they have received the change(s) and are ready for reboot.

Device States

The possible device states are as follows:

Device State	Description
Connected	Device is on network / communicating with Portal Server
Searching	Device is searching for a Portal Server to join. The server either does not have an active invitation to join, or has not heard from the server it wants to join.
Offline	Device is off network / not communicating with Portal Server
Configuring	(Local Realm only) Server has been told to reconfigure but has not yet done so (could indicate that server has accepted the configuration and is in process of reconfiguring, or server has rejected/denied the configuration and is not reconfiguring).
Upgrading	(Local Realm only) System upgrade is in progress.
Modified	(Local Realm only) Pending IP or Realm Settings changes.

Device Options

The server options are as follows:

Device Option	Description
Local Realm	
Activate Changes	Activates network and realm settings. Causes all saved changes to be “synced” to the servers that required reconfiguration. Also reboots the selected servers. You will be prompted to confirm the selection before the action is performed.
Evict Selected	Applies to a system that has joined your realm. This option removes it from the realm.
Invite Selected	Invites a system that has not yet joined the realm.
Reboot Selected	Reboots the selected servers. You will be prompted to confirm the selection before the reboot is performed.

Device Option	Description
Shutdown Selected	Shuts down the selected servers. You will be prompted to confirm the selection before the shutdown is performed.
Unassigned Devices / Foreign Realms	
Invite Selected	Applies to a system that is not in your realm yet.
Remove Selected	Applies to an offline system. This option allows you to delete records of a system that is no longer available, to help clean up the records of old systems which are no longer owned or have been replaced.
Uninvite Selected	Applies to a system that has been invited, but has not yet joined the realm.

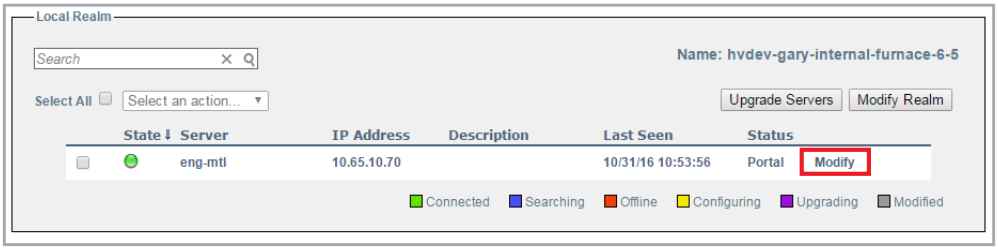
Configuring Network Settings

The Server Manager allows you to configure the network settings for either the Portal Server or an NVR server in your realm. This includes modifying the IP address, subnet mask, gateway address, DNS server, and server hostname, as well as advanced settings such as NIC bonding, additional routes, and link negotiation settings.

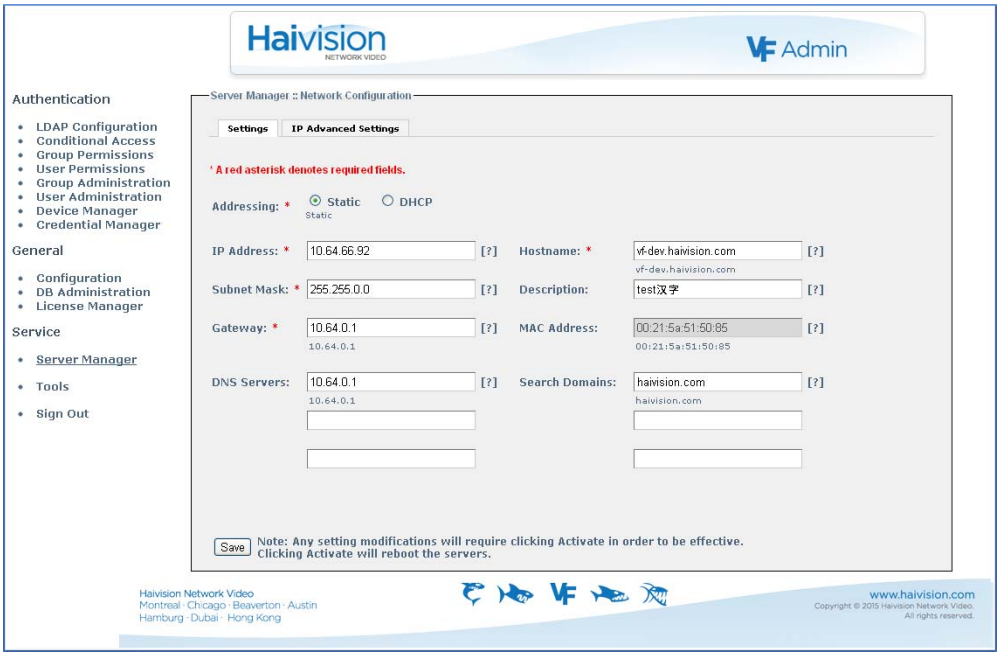
NOTE This is only available to configure VF Portal Servers, *not* encoders or other devices in the realm.

To configure the Network Settings:

1. On the Server Manager page, click the Modify button next to the server in the Local Realm list.



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



2. Select either Static or DHCP to enable or disable the Dynamic Host Configuration Protocol.

NOTE When DHCP is enabled, the server will get an IP Address from a DHCP server on the network. When it is disabled, you must manually enter the server's IP Address, Netmask, and Gateway Address.

3. Make the required modifications and click Save. See the following section "Network Settings".

TIP To configure multiple network configurations, including configuring bonding or setting up static routes, see "Advanced IP Settings" on page 91.

4. On the Server Manager page, select Activate Changes from the Select an action… drop-down list.

   This causes all saved changes to be "synced" to the servers that required reconfiguration. Clicking Activate Changes will reboot the selected servers.

Network Settings

The following table lists the configurable Furnace network settings. The current value is displayed below the text field (where applicable). A red asterisk denotes required fields, when static IP addressing is selected. (For advanced settings, see "Advanced IP Settings" on page 91.)

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.

IP Setting	Description
Addressing	Choose whether the appliance will use a static or dynamic IP address: • Static: Select to disable DHCP. When it is disabled, you must manually enter the IP Address, Netmask & Gateway Address. • 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	Displays the IP Address for the appliance. 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).
Hostname	The hostname to be assigned to this appliance. This is a FQDN (Fully Qualified Domain Name); for example, myserver.mycompany.com.
Subnet Mask	Displays the IPv4 network mask for the appliance. This is the 32-bit mask used to determine the IP addresses of the local network. NOTE: If DHCP is disabled, you may enter a Netmask in dotted-decimal format (e.g., 255.255.0.0).
Description	The name to be assigned to the appliance in Furnace Tools. This may match the hostname, but does not need to. For example, you can specify a more descriptive name to use across the Furnace toolsets.

IP Setting	Description
Gateway	Displays the IPv4 default route to be assigned to this appliance. This is the gateway used to route traffic to destinations beyond the local network. This address must be reachable on your local subnet. NOTE: If DHCP is disabled, you may enter a gateway address in dotted-decimal format.
MAC Address	(Read-only) The Media Access Control address assigned to the appliance. This is the physical address of the network interface and cannot be changed.
DNS Servers	(Optional) The IPv4 address of the Domain Name Servers to use.
Search Domains	(Optional) The search strings to use when attempting to resolve when accessing domain names.
IP Advanced Settings	
Bonding	(Optional) Select a mode for the Linux bonding driver to enable bonding. Bonding modes determine the way in which traffic sent out of the bonded interface is actually dispersed over the real interfaces. • None: Disables bonding (default). • Round Robin Sequential: Transmits packets in first available network interface (NIC) slave through the last. This mode provides load balancing and fault tolerance. • Active Backup: Only one NIC slave in the bond is active at a time. A different slave becomes active only when the active slave fails. This mode provides fault tolerance. • XOR Sequential: Transmits based on XOR formula. (Source MAC address is XOR'd with destination MAC address). This mode selects the same NIC slave for each destination MAC address and provides load balancing and fault tolerance. • Broadcast – Fault Tolerance: Transmits network packets on all slave interfaces. This mode is least used (only for specific purpose) and provides only fault tolerance. • IEEE 802.3ad Dynamic Link Aggregation: Creates aggregation groups that share the same speed and duplex settings. Utilizes all slave network interfaces in the active aggregator group according to the 802.3ad specification. This mode is similar to the XOR mode above and supports the same balancing policies. The link is set up dynamically between two LACP-supporting peers.

IP Setting	Description
	• Transmit Load Balancing (TLB): The outgoing traffic is distributed according to the current load and queue on each slave interface. Incoming traffic is received by one currently designated slave network interface. If this receiving slave fails, another slave takes over the MAC address of the failed receiving slave. • Active Load Balancing (ALB): This includes balance-tlb + *receive load balancing* (rlb) for IPV4 traffic. The receive load balancing is achieved by ARP negotiation. The bonding driver intercepts the ARP Replies sent by the server on their way out and overwrites the source hardware address with the unique hardware address of one of the slaves in the bond such that different clients use different hardware addresses for the server.
Speed	(Optional) Select the link negotiation settings for the interface. For speed, the default is Auto or you can select the Speed (either 10 or 100 Mb/s).
Duplex	(Optional) Select the link negotiation settings for the interface. For Duplex, the default is Auto or you can select setting (either Full or Half).

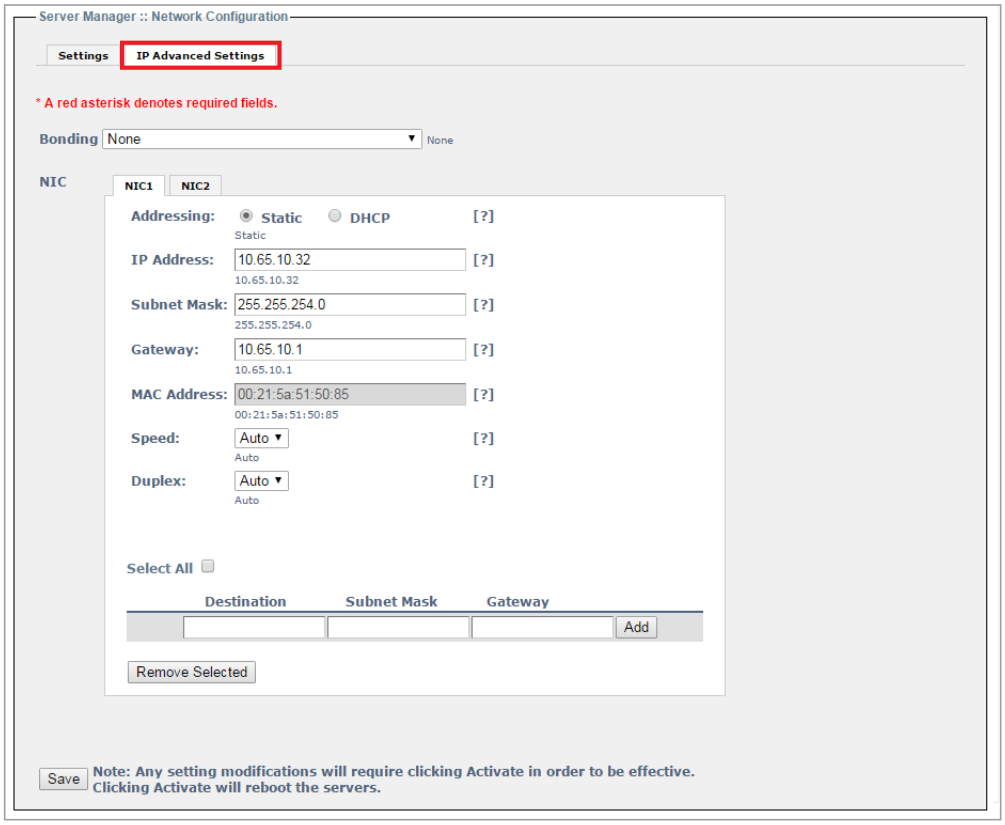
Advanced IP Settings

The Server Manager allows you to configure advanced IP settings for the Portal Server or an NVR server in your realm. This includes setting up multiple network interfaces, NIC bonding, and link negotiation settings, as well as static routes.

To configure advanced IP settings:

1. From the Server Manager page, open the Network Configuration page (see "Configuring Network Settings" on page 86).
2. Click the IP Advanced Settings tab.

   The IP Advanced Settings page opens (shown in the following example).



NOTE The basic IP settings (from the Network Settings page) are mirrored on the IP Advanced Settings page (under NIC1).

3. (Optional) To configure bonding, select the option appropriate for your network. See "Bonding" on page 89.

TIP 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.

Once Bonding is enabled, *all* available NICs are bonded. You cannot, for example, bond NIC1 and NIC3, leaving NIC2 unbonded.

Make sure the appropriate Ethernet cables are physically connected to each of the NICs that are bonded.

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4. For each destination to add, type in the IP address, Subnet Mask, and Gateway and click Add.
5. To configure additional NICs (Network Interface Cards) for the server, click the next available NIC tab and configure the required settings.

NOTE Network Interface names for Ethernet interfaces may vary, such as NIC1/NIC2/…, eth0/eth1/…, or em1/em2/…

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6. Click Save.
7. On the Server Manager page, click Activate Changes.

   This causes all saved changes to be "synced" to the servers that required reconfiguration. Clicking Activate Changes will reboot the selected servers.

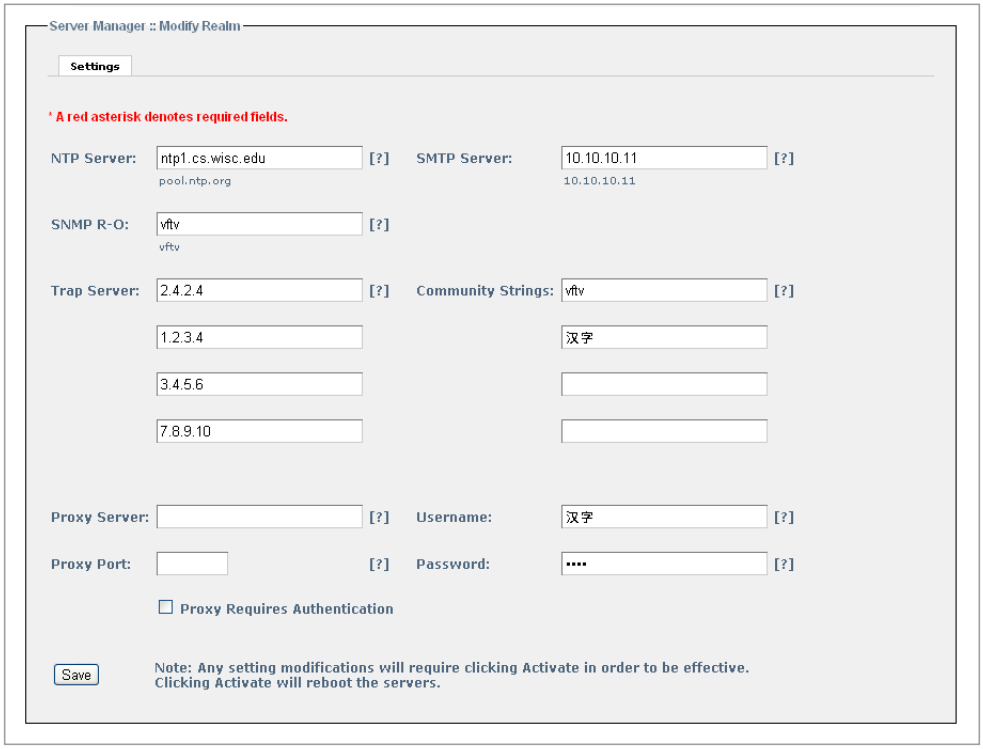
Configuring Realm Settings

The Server Manager also allows you to configure the extended network settings for your realm, such as the NTP server, SMTP server, SNMP settings, and Proxy server settings.

To configure the Realm Settings:

1. On the Server Manager page, click Modify Realm.

   The Realm Settings page opens (shown in the following example).



2. Make the required modifications. See the following section "Realm Settings".
3. Click Save.
4. On the Server Manager page, click Activate Changes.

Realm Settings

The following table lists the configurable Furnace Realm 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.

Realm Setting	Description
NTP Server	The IP or FQDN (Fully Qualified Domain Name) of the NTP (Network Time Protocol) Server for Furnace servers to use. Setting this allows Furnace servers to keep the date and time in sync with an NTP server. For example: 0.pool.ntp.org Although this setting is not required, it is highly recommended to use this.
SMTP Server	The SMTP server to send outbound mail alerts through. This is an IPv4 or FQDN of an SMTP Mail server. For example: mail.mycompany.com Setting this allows Furnace servers to send out email notifications to users of the system. Although this setting is not required, if it is not filled out with a valid server, email notifications will not be sent.
SNMP R-O	The SNMP (Simple Network Management Protocol) string to be used when making a query. This is the string for Read-Only information requests to the Furnace servers. For example: Furnace
Trap Server	The SNMP (Simple Network Management Protocol) servers to send SNMP Traps to. This is an IPv4 or FQDN of an SMTP Trap server listening for traps via SNMP. For example: SNMP1.mycompany.com
Community Strings	The SNMP (Simple Network Management Protocol) community strings associated with the SNMP Trap Servers. This is the string to use when sending a trap to an SMTP Trap server. For example: Furnace

Realm Setting	Description
Proxy Server	The Proxy server to use for access to the Internet for HTTP and HTTPS requests. These requests are typically only for obtaining updated software/licenses and for current guide data on broadcast channels. This is an IPv4 or FQDN of a Proxy server. For example: Proxy01.mycompany.com Please contact your Network Administrator if you are unsure whether this field is required on your network.
Username	The username to use for access to the Internet for HTTP and HTTPS requests through a proxy server. These requests are typically only for obtaining updated software/licenses and for current guide data on broadcast channels. This is the username used for authenticating with the proxy server. This may or may not be required on your network. For example: bob.smith Please contact your Network Administrator if you are unsure whether this field is required on your network. Be sure to check the Proxy Requires Authentication (checkbox) if you want to use a user/password for proxy authentication.
Proxy Port	The Proxy port to use for access to the internet for HTTP and HTTPS requests. These requests are typically only for obtaining updated software/licenses and for current guide data on broadcast channels. This is the Port of the proxy server. For example: 3128
Password	The password to use for access to the Internet for HTTP and HTTPS requests through a proxy server. These requests are typically only for obtaining updated software/licenses and for current guide data on broadcast channels. This is the password used for authenticating with the proxy server. This may or may not be required on your network. For example: mypassword Please contact your Network Administrator if you are unsure whether this field is required on your network. Be sure to check the Proxy Requires Authentication (checkbox) if you want to use a user/password for proxy authentication.
Proxy Requires Authentication (checkbox)	Check this box if your proxy server requires authentication. If you check this box, you need to fill out the Username and Password as well.

Installing System Upgrades

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

Please note that you may download the latest software and documentation by registering via the Haivision Support Portal.

When a system upgrade becomes available, you can install it from the Server Manager page. You will first need to copy the upgrade file to your local computer or network. Depending on the revision, you may need to contact Haivision Technical Support to obtain an updated license.

The upgrade comes in the form of a software package entitled furnace-bundle-xxxxx.hai, which when loaded will replace the application on your Furnace.

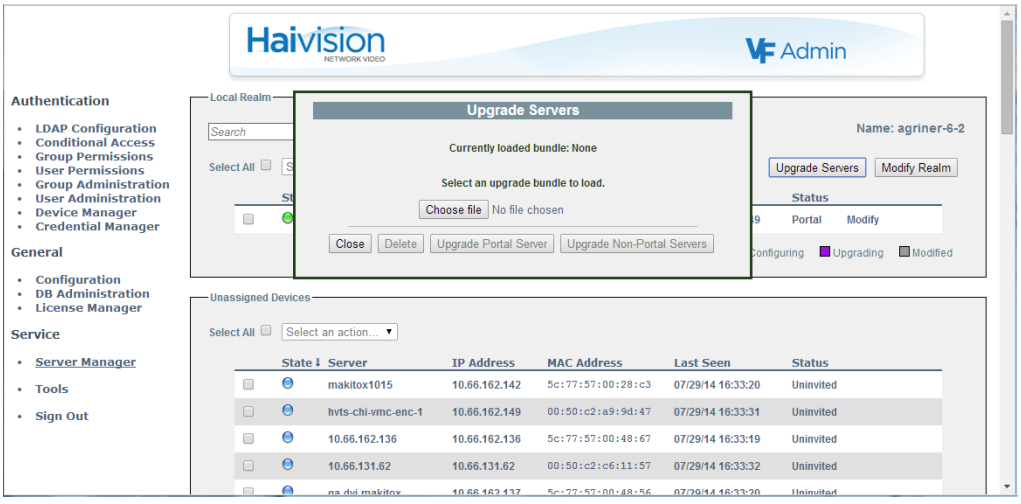
This section provides instructions to install a system upgrade from the Server Manager.

IMPORTANT The Portal Server must be upgraded first. Any other non-portal servers in the realm may then all be updated in parallel.

To install a system upgrade:

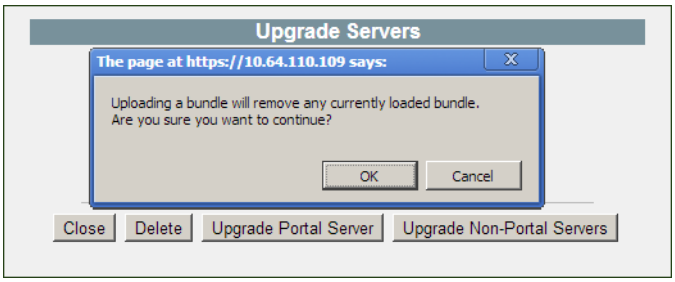
1. On the Server Manager page, click Upgrade Servers.

   The Upgrade Servers dialog opens (shown in the following example).



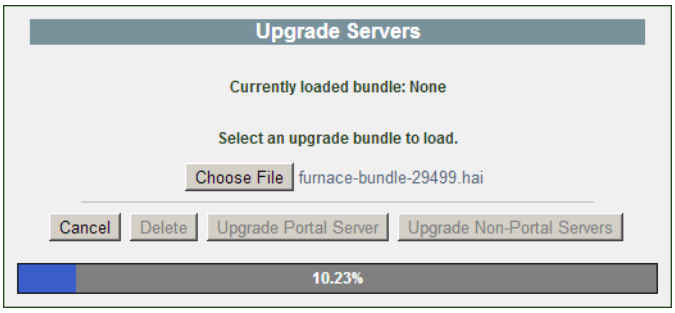
2. Click Choose File to select the upgrade bundle to load.

After you select the bundle, you will see the following confirmation dialog.

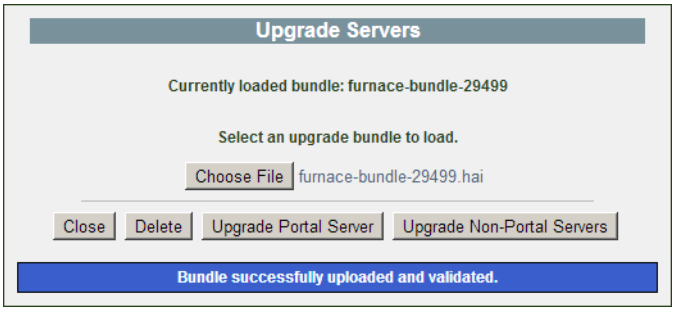


3. Click OK to continue.

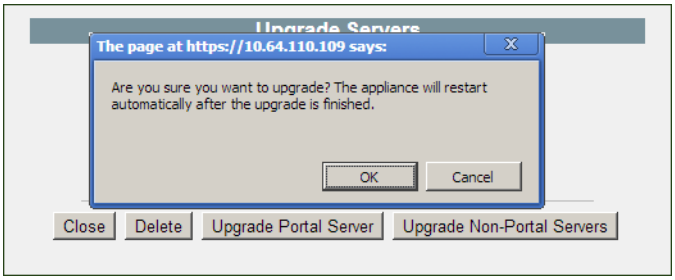
   The Upgrade Servers dialog shows the progress of the upload.



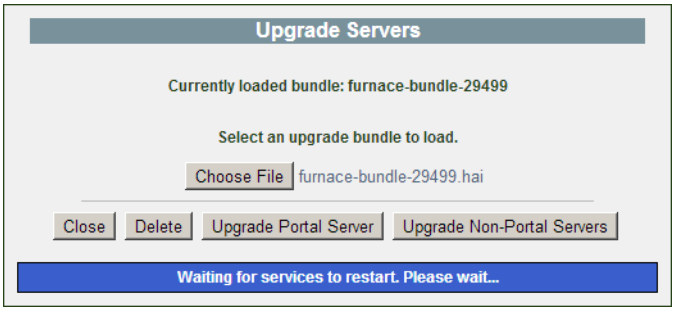
4. Wait until the bundle has been uploaded and validated, as shown in the following example.



5. Click Upgrade Portal Server.
6. When you will see the following upgrade confirmation dialog, click OK to continue.



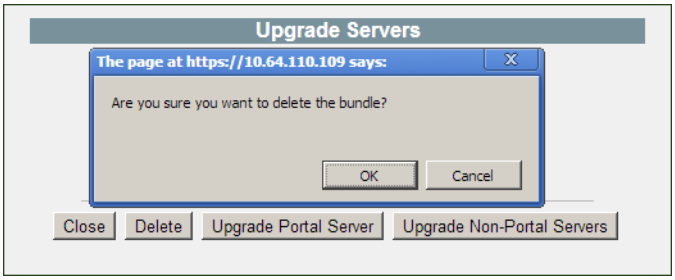
7. Wait until the upgrade is complete and the appliance restarts.



IMPORTANT Remain on this page and do *not* click anything else in the Furnace window during the upgrade.

Once the appliance has restarted, the browser will display the Furnace Launch portal (depending on your Web browser and settings). If not, reload the Launch portal.

8. Sign in again in order to access the Furnace. For more information, see "Accessing the Administration Tools Portal" on page 28.
9. Return to the Server Manager page and click Upgrade Servers.
10. If your system has other servers, click Upgrade Non-Portal Servers. Repeat Steps #6 through #9.
11. When all upgrades have completed, return to the Server Manager page and click Upgrade Servers.
12. Click Delete to remove the bundle from the server.
13. When you will see the following delete confirmation dialog, click OK to continue.



14. Once the bundle has been deleted, click Close.

CHAPTER 5: Managing Live Video

Furnace provides a full suite of remote administration tools via the Tools portal. This chapter describes the tools available to system administrators to manage live video.

Topics In This Chapter

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- Live Channels - Adding a Channel 101
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  - VF-FEC Notes 108
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Channel Editor - Configuring Channels

VF Channel Manager is used to manage channels and schedules. This section focuses on Channel Editor, which is a sub-module of VF Channel Manager and displays the list of defined channels.

The Channel Editor is used to add a channel or link to the available channel lineup and to activate channels.This involves either configuring live channels (by associating an encoder with one or two channels), or configuring scheduled playback channels.

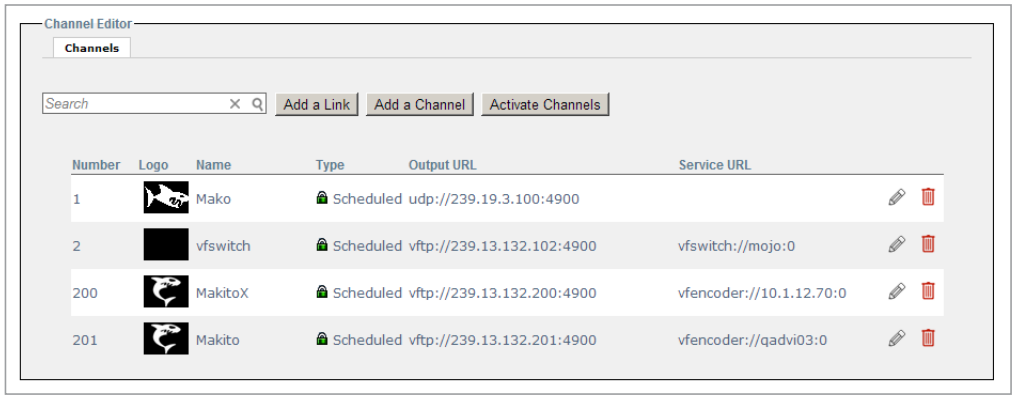
The Channel Editor is also used to edit or delete channel configurations, for example, to assign the default asset for a scheduled playback channel or to make routine changes such as the Channel Number, Call Sign, and Private Number (i.e., TMS ID for live channels).

To display the channel list:

1. On the Tools page, click the VF Channel Manager icon.

2. Click Channel Editor on the left side of the VF Channel Manager Welcome page.

The Channel List (shown in the following example) displays the master list of channels and Output URL links that are defined on the license server.



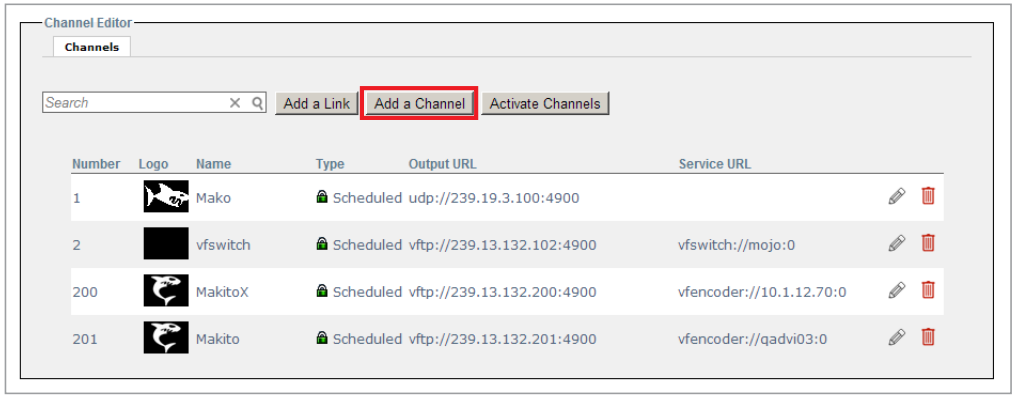
Live Channels - Adding a Channel

This section describes how to add a channel to the available channel lineup. For example, you may have a Makito encoder that you wish to associate with one or two channels. (Note that the encoder must have already been invited to the realm and given a name. See "Server Manager" on page 80.)

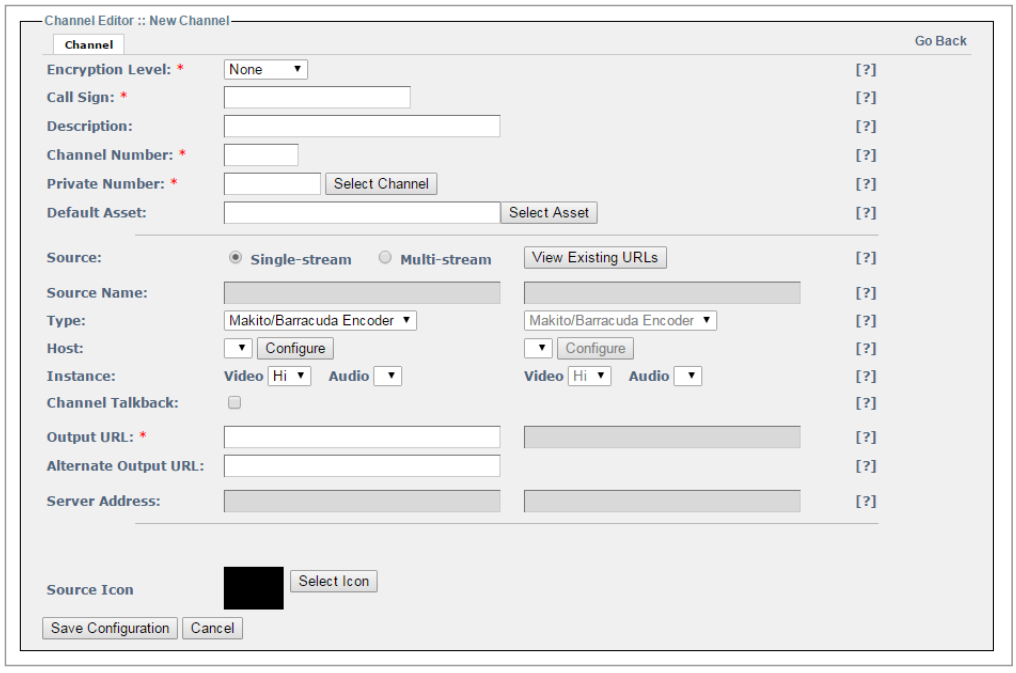
Or you may want to incorporate an existing video stream on your network into the Furnace. (Note that you must know the Multicast address and port of the existing stream, e.g., 239.x.x.x:yyyy.)

To add a channel to the available channel lineup:

1. On the Channel List page, click Add a Channel.



The Channel Editor page opens.



2. Follow these steps to configure the channel. For details, see "Channel Editor Settings" on page 105.

3. Select the Encryption Level for the stream (available for Makito/Barracuda/Makito X Series only): [AES refers to Advanced Encryption Standard.]
   - None: Encryption is disabled.
   - AES-128: 10 cycles of repetition for 128 bit keys.
   - AES-256: 14 cycles of repetition for 256 bit keys.

NOTE Select None for External Streams since Encryption is not available.

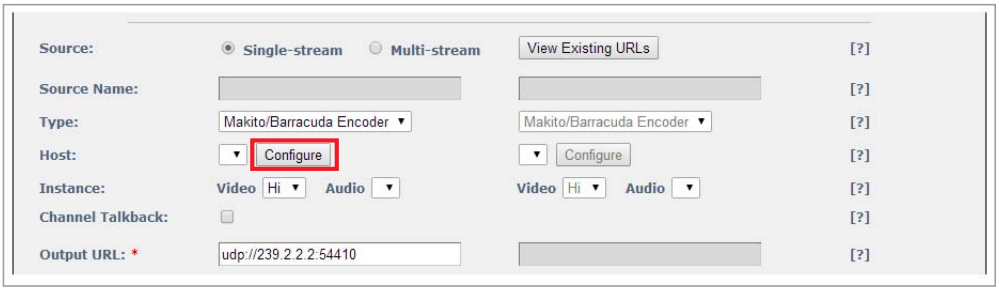
4. Enter unique values for:
   - Call Sign Name
   - Channel Number
   - Private Number

   TIP: Click Select Channel if you want the channel to have the data for a TV channel (for which program schedules are provided via TMS).

NOTE To display the stream on Mantaray Version 1.0 set-top boxes, it was necessary to select “Display in Mantaray”. As of Furnace Version 6.5 (Mantaray Version 1.0.2), this is no longer required. For information on managing Mantarays from Furnace, see “Managing Mantaray STB Devices” on page 211.

5. For the Source, select either Single-stream or Multi-stream.
6. Select the source Type:
   a. Makito: Makito/Barracuda Encoder
   b. Makito X Series: Makito X Encoder
   c. Viper Streaming & Recording Appliance
   d. External Stream: Other
7. Select the Host and Instance (Makito/Barracuda/Makito X Series only):
   a. Select the host name for the device.
   b. Select the encoder instance for the channel:
      - Makito/Barracuda: Hi or Lo
      - Makito X Series: Video Encoder 0-3 and Audio Encoder 0-3

8. To navigate to the Web configuration interface for Makito and Barracuda encoders in the local realm, click Configure next to the Host drop-down list.



For more information, see Configure on page 106.

NOTE Makito X Series encoders must be configured and started from the encoder UI (Web Interface or CLI). This is unlike Makito and Barracuda encoders, which may be configured from the Furnace using VF Pilot and started automatically by VF Pilot.

9. To enable Audio Talkback to the Makito/Barracuda that is encoding the content that InStream users are viewing, check the Channel Talkback checkbox. For more information, see "Setting Up InStream Talkback" on page 115.

10. Enter the Output URL(s):

    a. Makito:

        i. Click View Existing URLs to review the URLs currently in use by the system.

        ii. Choose a new multicast address and port compatible with the local network, not in use by any other channels.

        iii. Enter the address and port in one of the supported formats. See "Output URLs" on page 107.

    b. External Stream:

        i. Enter the stream's existing address in one of the supported formats. See "Output URLs" on page 107.

11. Click Select Icon to assign the channel logo for the source.

12. When you are finished configuring the channel, click Save Configuration.

13. On the Channel Editor page, click Activate Channels.

The channel must be added to the default lineup (Current Lineup column) before it will appear in players. (See "Lineup Editor - Managing the Channel Lineup" on page 120.)

Channel Editor Settings

The following table lists the Channel Editor fields:

Channel Editor Field	Description
Encryption Level	The encryption level for the channel. Select either None, AES-128 or AES-256. NOTE: AES-256 encryption requires Makito v1.5 firmware or newer, and is not compatible with Stingray or Stingray 2 STBs.
Call Sign	Type in a short channel name that will appear in the InStream channel guide (Channel Lineup).
Description	(Optional) Enter a short description for the channel.
Channel Number	The channel number shown in Guide mode (i.e., a channel assigned 100 shows as 100, channel 101 as 101, and so on).
Private Number	The Private Number is the unique ID assigned to each program guide channel and displayed in the TMS Channels page. (See "TMS Display - Finding a Channel ID" on page 113.) For any channel with guide data, e.g. CNN or CNBC, click Select Channel and select the TMS ID from the TMS Channels list. TIP: User 9xxxx for local channels.
Default Asset	(Optional) Select an asset to loop when a scheduled channel currently has nothing scheduled. NOTE: See "Scheduled Playback Channels - Assigning a Default Asset" on page 110.
Source	Select either Single-stream or Multi-stream. A Multistream channel will combine the output of two encoders. (Multistream channels can only be used with encoder services.) TIP: Clicking View Existing URLs opens the Channel Display list. From here you can check the URLs currently in use by the system, which is helpful when entering the Output URLs.
Source Name	(Multistream channels only) Type in a unique name for each Multistream source. NOTE: These names will be listed on the InStream Channel Lineup, the VF Editor Login list, and the VF NVR Guide and Record list to allow selection of one track or the other.

Channel Editor Field (Cont.)	Description
Type	Select the device type, either Makito/Barracuda encoder, Makito X Series encoder, Viper, or Other (i.e., use for an external stream). NOTE: Multistream channels should only be used with Makito/Barracuda or Makito X Series encoder services.
Host	(Makito/Barracuda/Makito X Series only) Select the host name from the list of connected servers in the realm that provide the desired service.
Configure	Click to navigate to the Web configuration interface for Makito classic devices in the local realm (i.e., Makito, and Barracuda encoders). The Login page for the device will open in a separate tab. This is useful to start and stop video/audio encoders as well as configure encoding parameters. For details, please refer to the user's guide for the device. NOTE: Makito X Series encoders must be configured from the encoder UI (Web Interface or CLI). Also, the Makito X Series' encoding engines must be started from the encoder UI before tuning to the channel from the InStream player or Stingray STB. This is different from Makito and Barracuda encoders, which may be configured from the Furnace using VF Pilot and started automatically by VF Pilot based on the configuration. Makito and Barracuda encoders may still be managed from the Furnace using VF Pilot.
Instance	(Makito/Barracuda/Makito X Series only) Select the encoder Instance to use for the service assignment: • Makito/Barracuda: either Hi or Lo. • Makito X Series: Video Encoder 0-3 and Audio Encoder 0-3
Channel Talkback (checkbox)	(Makito/Barracuda only) Check to enable Audio Talkback to the Makito/Barracuda that is encoding the content that InStream users are viewing. For more information, see "Setting Up InStream Talkback" on page 115.
Output URL	Defines the multicast output address and stream parameters for this service. Sample formats include:

Channel Editor Field (Cont.)	Description
	• vftp multicast URL to use VF-FEC (e.g., vftp://239.1.1.100:4900). • udp URL for 3rd party streams without VF-FEC (e.g., udp://239.1.1.100:4900). NOTE: For a complete list, see "Output URLs" and "VF-FEC Notes" below. (Multistream channels) Enter a secondary output URL.
Alternate Output URL	Enter an additional channel output address.
Server Address	(Only available if Type is Other (Non-Encoder)) The channel's service assignment. Either an encoder from the drop-down list or a manual entry, e.g.: vfswitch://server_name:0

Output URLs

The following table lists the supported Furnace Output URLs:

URL Type	Description	Example
URLs for External Streams		
udp://	Use for UDP streams that are not Furnace unique. NOTE: In previous Furnace releases, required /;raw=1 at the end.	udp://239.100.100.100:5000
tcp://	Use for TCP streams that are not Furnace unique. NOTE: In previous Furnace releases, required /;raw=1 at the end.	tcp://:5000
URLs for Furnace Sourced Streams		
vfudp://	Use for Furnace-sourced UDP streams with encryption but not FEC. NOTE: vfudp does not supply FEC.	vfudp://239.100.100.101:4900

URL Type	Description	Example
vftp://	Use for Furnace-sourced streams with FEC, and optionally with encryption.	vftp://239.100.100.102:4900
vftcp://	Use for Furnace-sourced tcp streams with FEC.	vftcp://:4990//

NOTE In previous Furnace versions, the udp:// and tcp:// formats required a /;raw=1 at the end; however, this is no longer required.

VF-FEC Notes

The Forward Error Correction (FEC) currently implemented is called “VF-FEC”. VF FEC is a proprietary FEC and is not interoperable with devices outside of the Haivision family.

VF-FEC is currently only available when a Makito or Barracuda encoder is controlled by the Furnace’s Channel Manager.

VF-FEC is turned on from the Channel Editor page by setting the protocol of Output URL to “vftp”. To turn off VF-FEC on the stream, set the Output URL protocol to “udp” for unencrypted streams or “vfudp” for AES-encrypted streams.

VF-FEC cannot be turned on when an encoder is in a stand-alone mode. The only way to use VF-FEC is to pair up the encoder with a Furnace server.

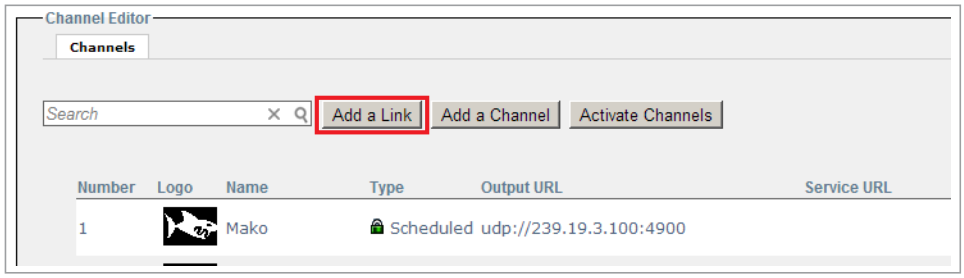
URL Referral Channels - Adding a Link Channel

Setting up a URL referral channel causes InStream to launch the user's browser to a specific URL when the user clicks on a URL Referral channel in Guide mode. Any valid Web Internet/URL can be assigned (e.g., course management portals, support pages, streaming media portals, etc.) allowing you to consolidate access to various services to OnGuide.

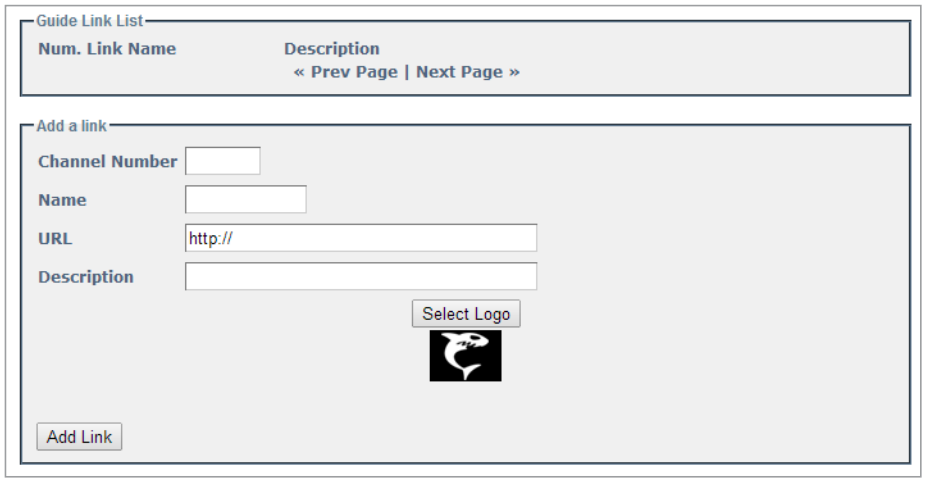
This is particularly useful if you have other streaming media materials normally used outside Furnace, for example, for training or compliance testing. Now you can provide a consolidated OnGuide interface to extend access to your other media, training, support and informational pages. From Channel Editor, you can add one or more URL referral channels to enable your users to access those sites by clicking the channel in Guide mode.

To add a URL Referral channel:

1. On the Channel List page, click Add a Link.



2. In the Add a Link fields, enter the Channel Number, Name, URL and Description for the link.



3. Select a logo, and click Add Link.
4. To activate the channel, return to the Channel List page and click Activate Channels.

TIP To include the new URL Referral channel in an active channel lineup, see "Lineup Editor - Managing the Channel Lineup" on page 120.

Scheduled Playback Channels - Assigning a Default Asset

You can also define a scheduled playback channel, which when active will be available for scheduling of assets.

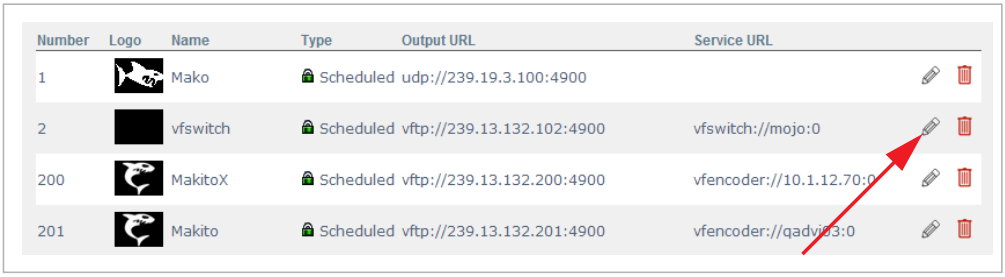
Generally, the schedule will have "free time" between scheduled programs. This free time can be filled with what is referred to as *interstitial* content (i.e., content that shows during gaps between scheduled programs). To accomplish this, you can assign a default asset from the database that will automatically broadcast during gaps between scheduled programming. This could also be a live feed referenced by an on-line asset (although this example uses an off-line asset (pre-encoded data) from the asset library).

The following example shows how to edit the default asset field for a scheduled playback channel. Note that VF-Live channels do not play default assets; hence, this example is only valid for a scheduled playback channel if configured for your system.

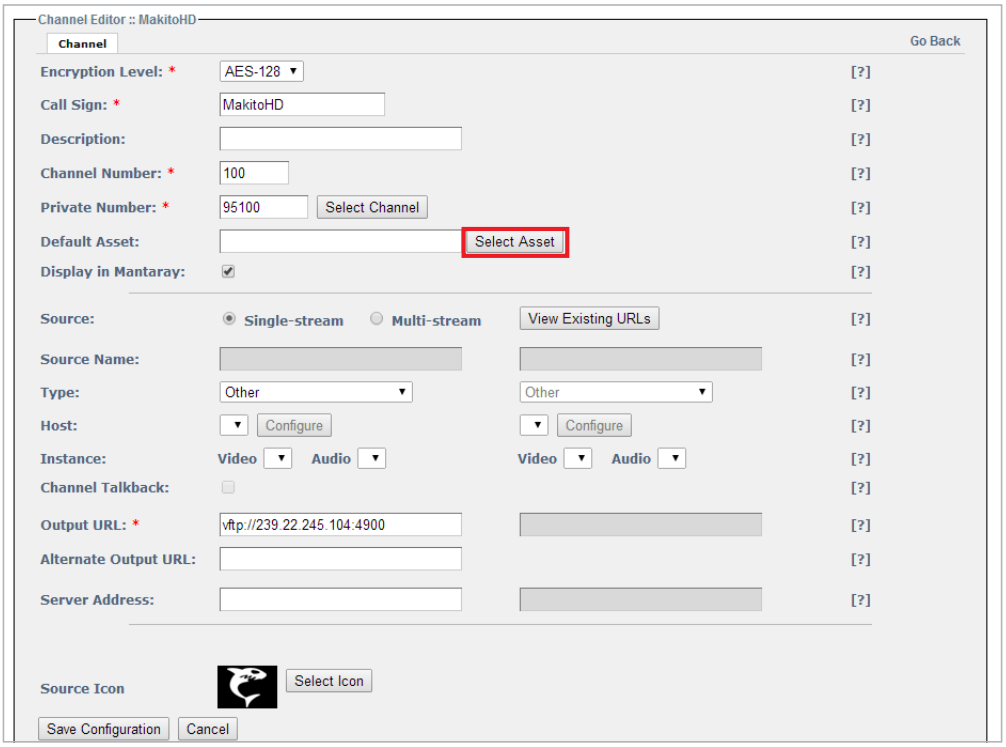
CAUTION When assigning a default asset, avoid changes to Channel Editor fields other than those described in the following example. To set up a new playback channel, see "Live Channels - Adding a Channel" on page 101."

To assign the default asset for a scheduled playback channel:

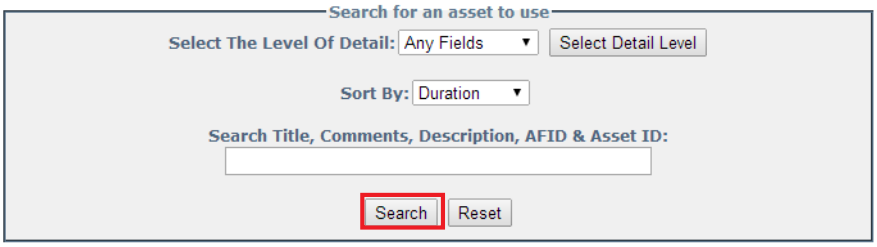
1. On the Channel List page, locate the channel and click the Edit icon .



2. On the Channel Editor page, click Select Asset.



3. On the Search Asset dialog box, click Search to show all assets.



4. On the Asset List, click the asset to assign to the channel.

The Asset List closes and you are returned to the Channel Editor page.

5. Click Save Configuration.

This enables the asset you assigned as the default asset to play on the playback channel during times when no other programs are scheduled.

6. When you have completed your changes, on the Channel List page, click Activate Channels.

7. To observe this change, click Sign Out and close this browser session.

8. Click the InStream tune-in button from the main demo launch portal and tune in to the playback channel you just modified.

You will now see your asset playing on the channel when the program schedule is empty for the current time on that channel. The default asset will continue looping only to be interrupted when a scheduled program begins.

TMS Display - Finding a Channel ID

The TMS Display table provides a listing of TMS IDs, Call Signs, and other information for the channels that are defined on the license server.

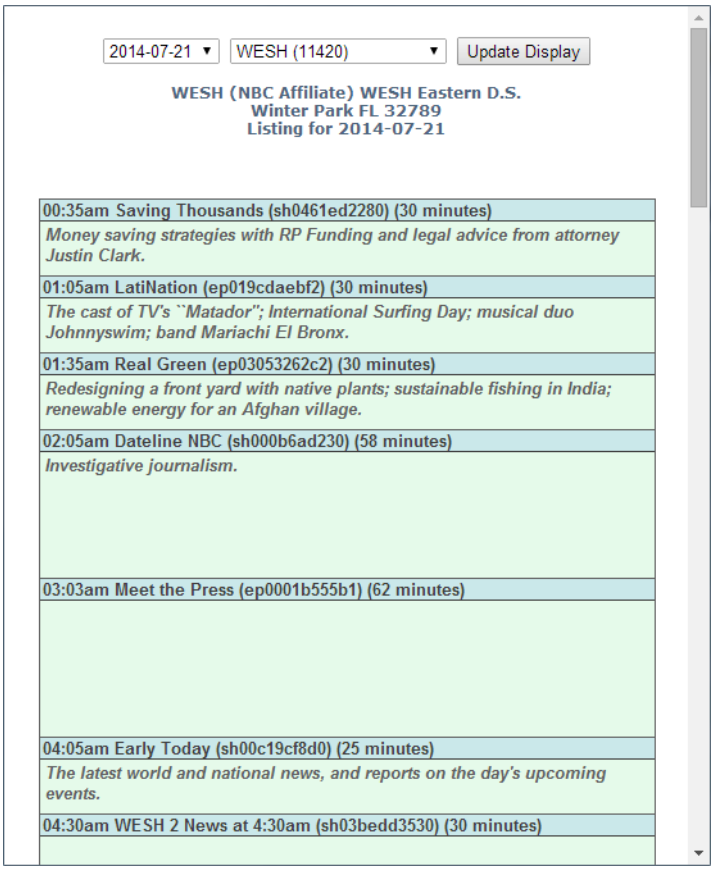
TIP A Tribune Media Services (TMS) ID is a unique identifier assigned to movies, sporting events, series and other programs.

To find the TMS ID number for a channel:

1. Click TMS Display on the left side of the VF Channel Manager page.
2. On the TMS Channels page, if required, scroll down the table to find the channel.

TMS ID	Call Sign	Affiliate	Description	Time Zone
42949	KAZDDT	Azteca America Affiliate	KAZDDT (KAZD-DT)	Central D.S.
10398	KDAF	CW Affiliate	KDAF	Central D.S.
10401	KDFI	MyNetworkTV Affiliate	KDFI	Central D.S.
10402	KDFW	Fox Affiliate	KDFW	Central D.S.
10436	KERA	PBS Affiliate	KERA	Central D.S.
10469	KFWD	MundoFOX Affiliate	KFWD	Central D.S.
12726	KMPX	EstrellaTV Affiliate	KMPX	Central D.S.
18726	KPXD	ION Affiliate	KPXD	Central D.S.
10504	KSTR	UniMas Affiliate	KSTR	Central D.S.
10759	KTVT	CBS Affiliate	KTVT	Central D.S.
10765	KTXA	Independent	KTXA	Central D.S.
15701	KTXD	Independent	KTXD	Central D.S.
10787	KUVN	Univision (SI) Affiliate	KUVN	Central D.S.
82547	FS1HD	Sports Satellite	Fox Sports 1 HD	Eastern D.S.
11420	WESH	NBC Affiliate	WESH	Eastern D.S.
11751	WOFL	Fox Affiliate	WOFL	Eastern D.S.
16619	HBOFP	PAY	HBO Family (Pacific)	Pacific D.S.

3. To view schedule details for the channel, click anywhere in the row.



4. From the TMS popup window, you can select a different channel from the drop-down list to view the schedule and other information for that channel.

NOTE You can assign a default asset for scheduled playback channels. For more information, see "Scheduled Playback Channels - Assigning a Default Asset" on page 110.

Setting Up InStream Talkback

NOTE Talkback is licensed separately as a software add-on to a Furnace system. It is licensed per Furnace realm. Talkback is enabled on a per Channel basis.

Talkback allows InStream users to talk directly to individuals at the video source. The user simply clicks a button in the player window and starts speaking into the microphone, like using a walkie-talkie.

The audio will be encoded and sent via unicast UDP to the Haivision encoder sourcing the stream they are viewing (as shown in the following diagram). The audio will play out of the encoder's audio output device. Talkback is "First-In/First Served", meaning that only one user can use the return audio channel at a time.

The audio is only sent to the source encoder. It is *not* distributed to other viewers of the stream.

Talkback features and requirements include:

- Support for Haivision encoders (i.e., Makito X, Makito, or Barracuda) only.
- Supported by InStream on Windows 7, Vista, and XP. (Linux, Mac OS X and Stingray STBs are not supported.)
- InStream users must have direct network access to the encoder sourcing the stream, over UDP port 9177. Note that InStream does not allow for port changes. Also, the Talkback feature needs to be enabled on the encoder (using the CLI `talkback` command).
- Entitlement for Talkback use can be restricted to certain groups or users by an administrator using VF Admin. (Groups/users with Talkback permissions are authorized to talk back on any Talkback-configured Channel they are entitled to view.)

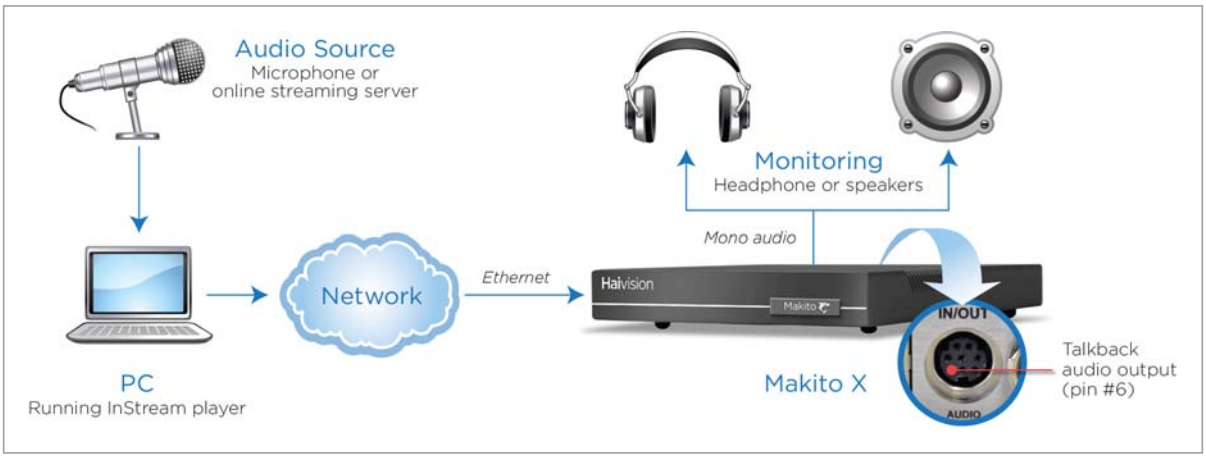
To Set Up InStream Talkback:

1. Ensure that Talkback has been licensed for the Furnace system.
2. Turn on Talkback on the encoder. (Log in to the CLI, and enter the `talkback start` command. For details, refer to the encoder User's Guide or online Help.)
3. Make sure Furnace users are entitled for Talkback. (Open VF Admin and modify the relevant User or Group Permissions: under Applications> INSTREAM PLAYER, check the Channel Talkback checkbox.)
4. Enable Talkback on the Channel. (In VF Channel Manager, edit the Channel defined for the encoder and check the Channel Talkback checkbox.) Note that if with dual-track Channels, Talkback will only operate with the primary encoder, i.e., the one on the left on the Channel Editor page.

5. Connect a speaker or headphones to the encoder's audio output.

   The following picture illustrates a sample signal path from the Audio Source through the encoder's audio output when using the InStream Talkback feature.

Figure 5-1 Audio Talkback Signal Path



CAUTION Unplugging or disabling the microphone while using InStream Talkback could cause InStream stability issues. Users should not unplug or disable their microphones while holding down the Talkback button (on the InStream player window). However, there is no problem with unplugging the microphone while using InStream as long as they are not actively using Talkback.

TIP (Windows only) Starting with Furnace v6.6, InStream users can activate and de-activate Talkback by double-clicking the Talkback button (on the InStream player window) and pressing CTRL+spacebar. Previously users had to keep pushing the Talkback button to use the Talkback channel.

Icon Manager - Managing Channel Icons

The Icon Manager provides a tool to view, add, replace and delete your own custom Channel icons.

The required resolution for each channel icon is 56 pixels wide by 40 pixels high, and the required icon file type is portable network graphics (PNG) format. The file size must be less than 300 kilobytes.

The Icon Manager provides options to replace an existing image or resize a larger image to the required dimensions. If greater control over image quality is desired, scale the image to the proper dimensions with an image editor before uploading.

To view the Channel icons for your system:

1. Click Icon Manager on the left side of the VF Channel Manager page.

   The Icon Manager page opens.

To upload a new icon:

1. Type in a name for the icon in the Icon Name field.
2. Click Browse to select a valid icon file.

TIP If your icon file image resolution is different than 56 x 40px or unknown, check the Resize Image checkbox to enable the Icon Manager to scale the image to the required size.

3. Click Upload to upload your icon.

When the icon has been successfully uploaded, an "Icon uploaded successfully" status message appears at the top of the page and the icon appears in the Channel Icons list.

The Icon Manager lists custom icons ahead of the default system icons in the Channel Icons grid. The icon is now available for assignment to a channel using Channel Editor.

When your icon has been uploaded properly, the Icon Manager displays a success message, as shown in the previous image. Otherwise an error message displays (list of possible error messages shown in the following section "Icon Manager Error Messages").

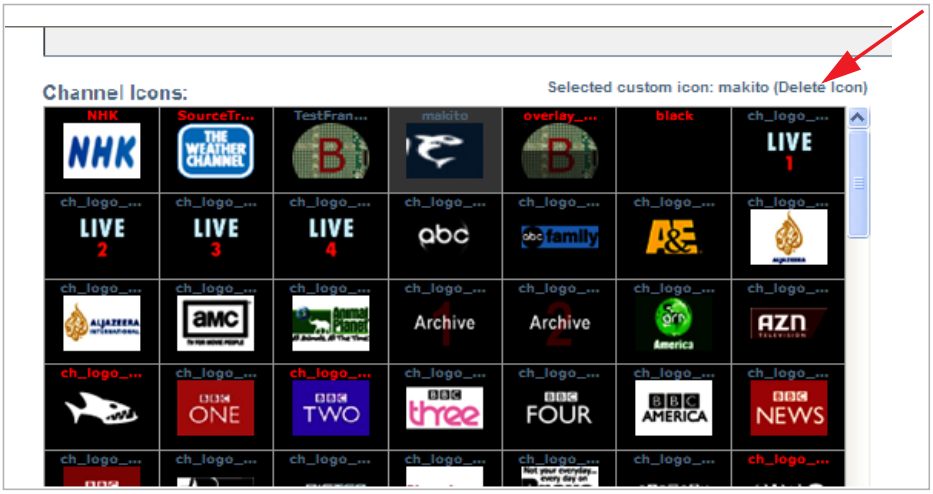
The Icon Manager prevents you from overwriting the default system icons.

To delete an icon:

On the Channel Icons grid, the selected icon is blue, as shown in the following image. Above the grid, a prompt displays the icon name and whether it is in use.

Icons that are assigned to a channel may not be deleted until they become unassigned. If the icon is unassigned, the prompt displays the icon name and a Delete Icon link.

1. To delete an unassigned icon, click the associated Delete Icon link.



2. On the confirmation dialog, click Delete Icon to delete the icon from the system.

If an error occurs during deletion, an error message displays at the top of the page.

The Icon Manager prevents you from removing default system icons.

Icon Manager Error Messages

The following table lists the Icon Manager error messages:

Icon Manager Error Message	Description
Error: Empty Icon Name Field	The Icon Name field was empty when the Upload button was clicked.
Error: Icon File unspecified	The Icon File field was empty or contains a bad filename.
Error: Icon File is invalid	The Icon File field contained an irresolvable file path or URL.
Error: Icon File must be PNG format	The icon file provided was not a PNG formatted file.
Error: Icon File is larger than 300KB	The icon file is larger than 300KB (the maximum size allowed).
Error: Icon File exists, no overwrite specified	The Icon already exists.
Error: Icon File is empty	The icon file itself is empty or truncated.
Error: Incorrect resolution in icon file	The icon file resolution is not correct.

Lineup Editor - Managing the Channel Lineup

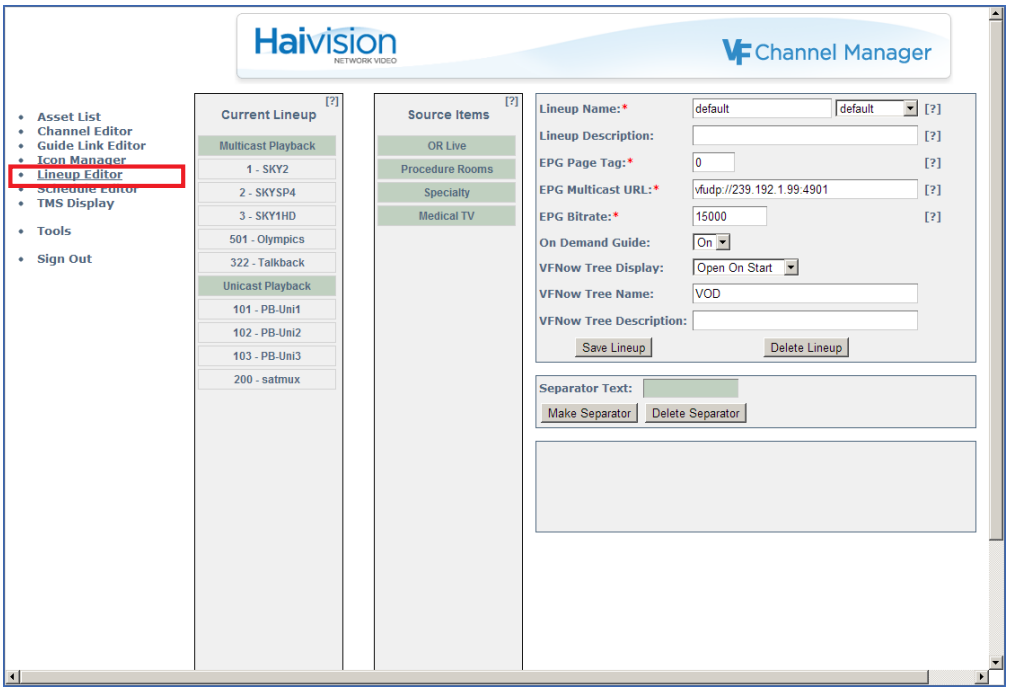
The Lineup Editor is used to create and modify lineups. This includes adding or removing channels from the Current Lineup, adjusting the order of the channels in the lineup, and inserting lineup separators. You can also change the lineup multicast output address for EPG data, as well as enable VF Now entries to show in the lineup for STBs.

Creating Channel Lineups

To create the Current Lineup:

1. Click Lineup Editor on the left side of the VF Channel Manager page.

   The Lineup Editor page opens with the "default" lineup selected.



2. To create another lineup, select New Lineup from the Lineup Name drop-down list and type the new name in the text box.

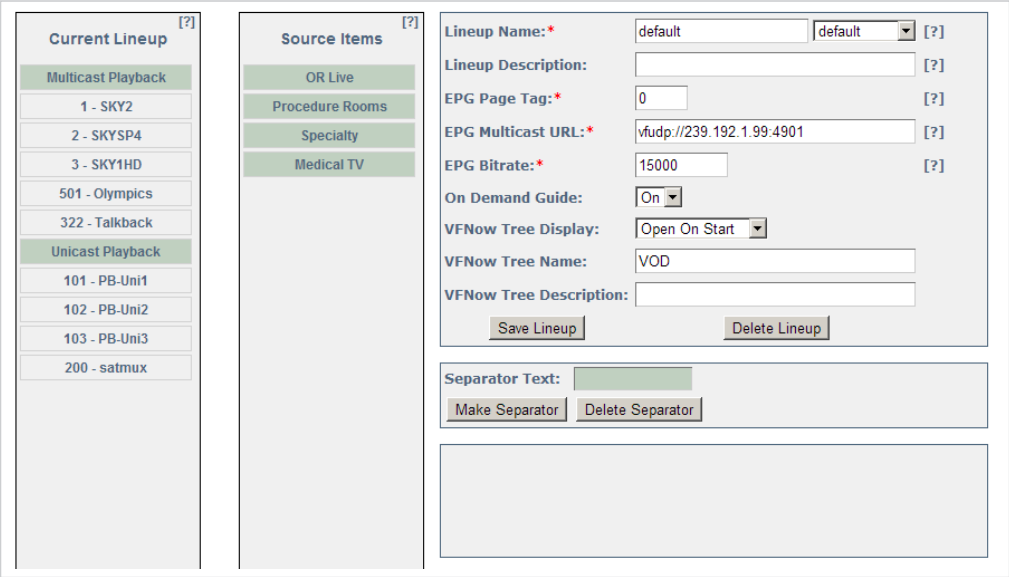
3. Fill in the fields to configure or modify the lineup. See the following section "Channel Lineup Fields" for details.

The Lineup Editor page contains two columns: Current Lineup and Source Items.

- Current Lineup is the list of channels that will be available to InStream viewers (i.e., will appear in the InStream Guide Channel Lineup).
- Source Items are channels that have been added to your system (from the Channel Editor page) but are not included in the Current Lineup.

Channels must be added to the Current Lineup (i.e., moved from the Source Items column) before they will appear in the player lists. You can click and drag channels between the two columns to add/remove channels from the lineup or rearrange items.

4. To add a channel to the Current Lineup, click the channel in the Source Items column and then drag it to the Current Lineup.



5. To adjust a channel's position in the Current Lineup, click the channel and drag it up or down.
6. To remove a channel from the Current Lineup, click the channel and drag it back to the Source Items column.
7. When you are finished editing the lineup, click Save Lineup.

Channel Lineup Fields

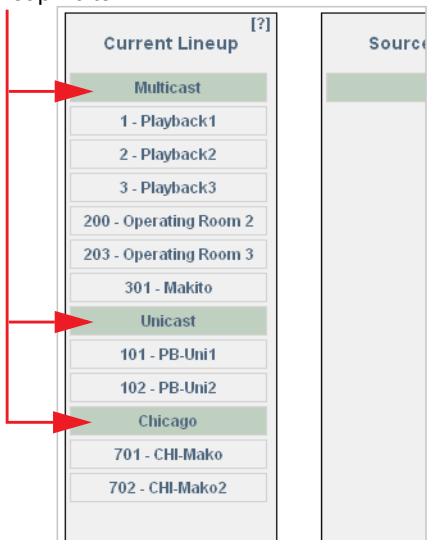
The following table lists the Channel Lineup fields:

Channel Lineup Field	Description
Lineup Name	A unique name to identify the lineup. To create a new lineup, select New Lineup from the drop-down list and type in a short name for the lineup.
Lineup Description	Type in additional information describing the lineup.
EPG Page Tag	Type in a number to identify the lineup. When creating additional lineups, page tags are used to refer to each lineup. The page tag can be any numeric value, but each lineup *must* have a unique page tag. Page tags are generally sequential starting with 0. NOTE: The EPG Page Tag is used with the -pt <pagetag> command line argument to specify the lineup to InStream.
EPG Multicast URL	Defines the multicast URL to output lineup EPG data on (e.g., vfudp://239.100.100.100:4901).
EPG Bitrate	The bitrate to broadcast lineup EPG data (in bps). TIP: A higher bitrate populates Guide data faster. 50000 is recommended (50 kbps).
NOTE: The remaining fields are used to add VF Now titles to the channel lineup displayed by the Guide on STBs. For more information, see "Adding VF Now On-Demand Titles to the Channel Lineup (STBs only)" on page 124.	
On Demand Guide	Select On to enable the Guide for VOD assets.
VF Now Tree Display	Select either "Open on Start", "Closed on Start" or "No Now Display" (typically "Closed on Start") to suit your environment.
VF Now Tree Name	Type in a short name which will appear in the VOD section of the Guide.
VF Now Tree Description	Type in additional information describing the VF Now Tree.

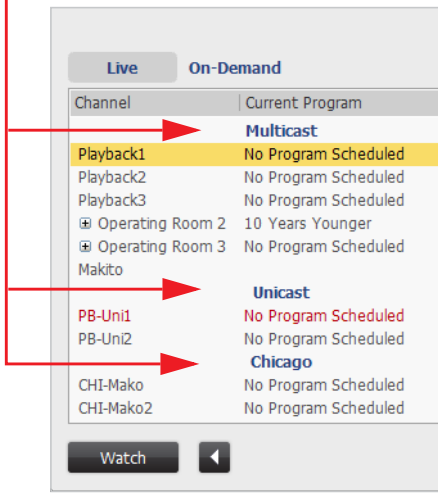
Adding Separators to the Channel Lineup

Separators are text strings that you can add to label and separate sections of the channel lineup. The following examples show separators ("Multicast", "Unicast", and "Chicago") that were created in the Lineup Editor and then displayed in the InStream Guide channel lineup.

Separators created in Lineup Editor

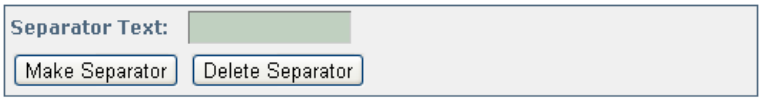


Separators displayed in InStream Guide



To add separators to the channel lineup:

1. On the Lineup Editor page, type the name of your separator text in the text box and then click Make Separator.



2. To move the separator to the Current Lineup column, click on it in the Source Items column and then drag it into the Current Lineup column.
3. To move the separator to the appropriate location in the lineup, click and drag it to move it up or down.
4. When you are finished with channel lineup changes, click Save Lineup.

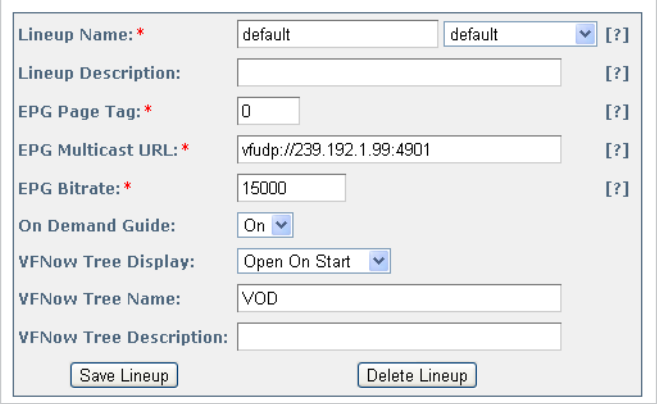
Adding VF Now On-Demand Titles to the Channel Lineup (STBs only)

NOTE In order to get VF Now links to display on the STB, you need to enable On Demand Guide and VF Now Tree Display on the Lineup Editor page.

This section shows how to add VF Now titles to the channel lineup displayed by the Guide on STBs.

To add VF Now titles to the STB channel lineup:

1. On the Lineup Editor page, set On Demand Guide to "On" as shown in the following image.



2. Set the VF Now Tree Display to either "Open on Start", "Closed on Start" or "No Now Display" (typically "Closed on Start").
3. (Optional) Enter a VF Now Tree Name, for example, "VOD".
4. (Optional) Enter a VF Now Tree Description.
5. Click Save Lineup.

A VF Now entry must also be configured for the channel lineup (see "Adding a VF Now Link" on page 176).

NOTE On the Adding Link page (VF NowAdmin), there is an option to show the link in the InStream Guide.

- If you only have the default lineup on your system, you will be given the options for "Default" and "All Lineups". Both options in this instance will do the same thing.
- However, if you have added another lineup, you can make this VOD link visible in just one of your lineups, or both. This will apply for each properly created lineup on the system.

VF Pilot - Managing Live Video Encoders

VF Pilot

VF Pilot is a graphical interface used to verify and adjust the Furnace live channel encoding environment.

Using VF Pilot, administrators can control the Makito or Barracuda encoders in their "local realm" remotely from Windows, Mac OS X, and Linux clients. VF Pilot enables administrators to view the live stream as multicast or unicast enabling the use of VPN connections.

IMPORTANT The Furnace workflow varies depending on whether you are using Makito X Series encoders as compared to Makito and Barracuda encoders.

- Makito X Series encoders must be configured from the encoder Web Interface or CLI. This is unlike Makito and Barracuda encoders, which may be configured from the Furnace using VF Pilot.
- The Makito X Series' encoding engines must be started from the encoder Web UI or CLI before tuning to the channel from the InStream player or Stingray STB. This is different from Makito and Barracuda encoders, which are started automatically by VF Pilot based on the configuration.
- Furnace administrators may navigate directly from either the Server Manager or the Channel Editor to the Web configuration interface for Makito-class devices in the local realm. This is useful to start and stop video/audio encoders as well as configure encoding parameters.

For details on the Makito X Series, please refer to the Makito X User's Guide. For details on Makito and Barracuda encoders, please refer to Appendix B: "Encoder Controls and Adjustments" later in this guide.

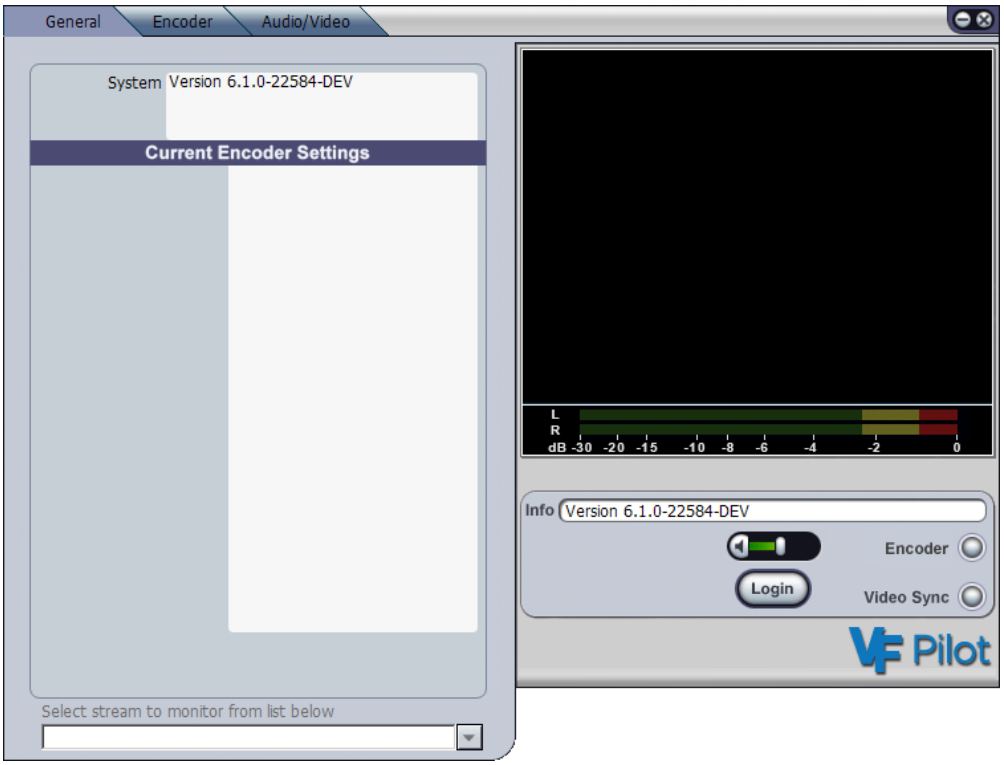
NOTES:

VF Pilot is used solely to configure and access the encoder devices in your system. These devices may, or may not, be associated with channels (a choice made by an administrator through the VF Channel Manager tool). On the other hand, you can have channels in your system that are not related to encoder devices.

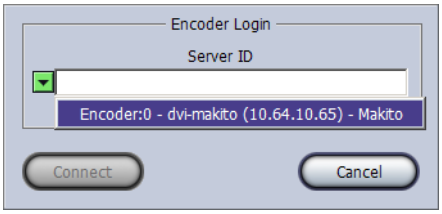
As such, the list you see in VF Pilot is the list of encoder devices in your system, and does not indicate anything about the state of your "channels".

To get started using VF Pilot:

1. On the Tools page, click the VF Pilot icon under the Administration section.
2. When you see the VF Pilot application, click the Login button.



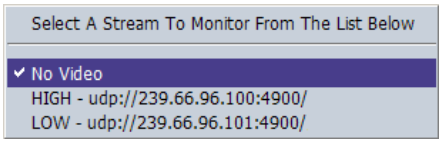
3. On the Encoder Login, click the drop-down arrow to select the encoder to administer as shown in the following example.



4. Click Connect.

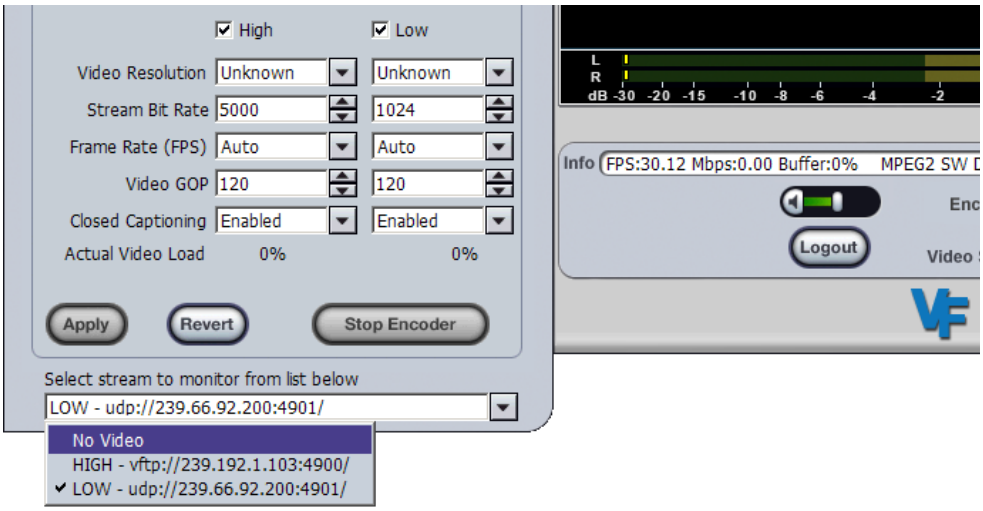
NOTE Individual encoder cards within a single server chassis are addressed by unique port numbers, beginning at 4960. When you select a ServerID from the drop-down list, you will see that this number is appended to the server IP address. For example, “10.1.150.50:4960” refers to the first encoder in the chassis, “:4961” refers to the second encoder, and so on.

As soon as the connection is made, a popup will appear listing choices of video streams, as shown in the following example.



5. Select the stream you wish to monitor during your administrative session.

TIP If you do not see the popup, click the Select Stream drop-down arrow at the bottom of the pane to select the desired stream.



6. After choosing the stream to monitor, you will see the video output stream from the encoder (see following example).

For a complete list of the settings, buttons and their functions for VF Pilot and VF Editor encoder control, refer to Appendix B: “Encoder Controls and Adjustments”.

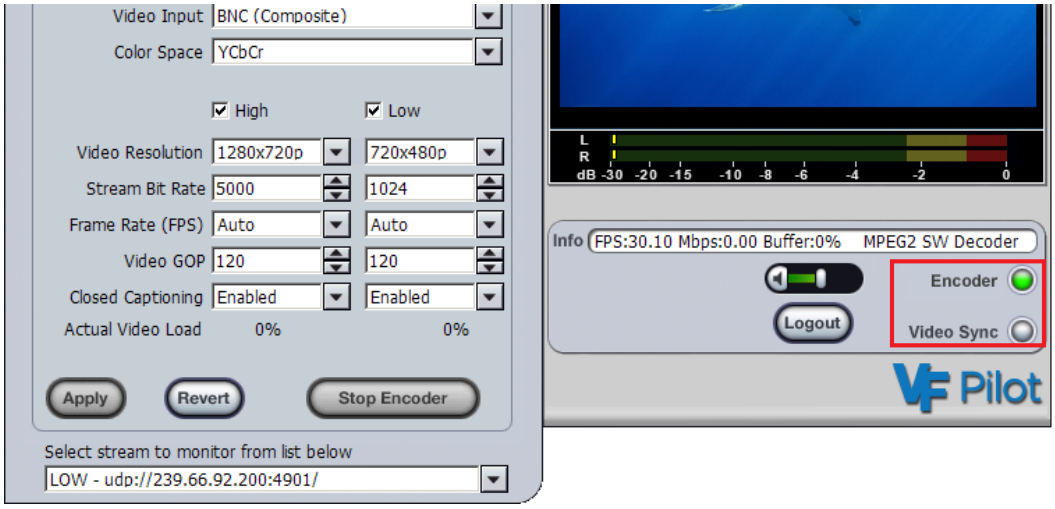
TIP In VF Pilot, you can change streams at any time by right-clicking the mouse to the left of the video window. Right-clicking over the video window shows the Closed Captioning menu.

Verifying the Video Signal

The VF Pilot interface has two LED status indicators:

Abbreviation	Indication	LED Color	Function
Encoder	Encoder Active	• Green	• Illuminated green when the encoder is active and working correctly.
		• Gray	• When the encoder is "stopped". See "Encoder Stopped" (below).
Video Sync	Video Vertical Synchronization	• Green	• Illuminated green when a valid signal is detected.
		• Red	• Flashes red when the encoder fails to detect a proper input video signal that matches the selected Input Type for the encoder. See "Missing Video Sync" on page 130.

When both indicators are green (as shown in the following example), the encoder generates digital video from the video signal provided at its input.



Encoder Stopped

If the encoder status light is not green, the Makito encoding service may have been stopped. To verify this:

1. Click the Encoder tab.
2. Check that the button near the bottom of the left pane says Stop Encoder.

   If it says Start Encoder, then the Makito's encoding functions have been stopped previously via VF Pilot's Stop Encoder button or due to errors on the Makito.

3. Click Start Encoder, and then ensure that the High / Low instances are correctly enabled.

Missing Video Sync

If the "Video Sync" indicator on the VF Pilot interface is red, this means that the encoder cannot detect a "good" video signal compatible with the selected Input Type. Following are the main reasons for missing video sync:

- An input video signal is not connected or not present on the proper video input connector, or the connector may not be seated firmly, or the selected Video Format may not be compatible with the video signal attached (e.g., PAL vs. NTSC or vice versa).
- The option selected for the Input Type drop-down menu may be set to an incorrect type relative to the attached video signal. As an example, the input type may be set to Composite or another menu entry and the actual video signal connected is S-video. If so, select the input type that matches the attached video signal, and then click Apply (e.g., change the input type to S-Video, as per this example). The Video Sync indicator will turn green when a valid S-Video signal is attached.
- Make sure the desired High / Low encoder instances are checked and active (on the Encoder tab).

For details regarding encoder control, refer to Appendix B: "Encoder Controls and Adjustments".

Changing the Stream Bit Rate

VF Pilot starts at the General information tab after successful login. The General tab displays the application version, build date, server address and current encoder settings. The following steps show how to change the stream bit rate.

TIP Check the Channel Editor to determine which Makito and which encoder instance (High/Low if applicable) is associated with the stream that needs to be adjusted.

This section describes how to change the stream bit rate (VF Pilot).

To change to stream bit rate:

1. Check the Channel Editor to determine which Makito/Barracuda and which encoder instance (High/Low) is associated with the stream that needs to be adjusted. (See "Live Channels - Adding a Channel" on page 101.)
2. Follow the steps in "Verifying the Video Signal" on page 129 to launch VF Pilot, log in, and select the Makito/Barracuda.
3. Ensure the MakitoBarracuda is online and properly configured.
4. Click the Encoder tab and locate the column of encoding parameters underneath the correct instance (High/Low).
5. Increase or decrease the Stream Bit Rate value for the desired encoder.
   - The bit rate is measured in kbps, so 1000 = 1 Mbps
   - Stream Bit Rate is the entire stream, including audio, so:

     Stream Bitrate = Video Bitrate + Audio Bitrate
6. Click Apply.

   Changes will be applied within a few seconds. Results may not be visible in players for up to 30 seconds, depending on the current stream bit rate.

NOTES:

- As the Stream Bit Rate is set lower, video quality will decline notably. Low Bit Rate is a compromise between quality and network load. It is also important to note that below a certain threshold, the encoder will not have enough of a buffer to encode at the desired resolution. This can result in loss of stream or visible errors.
- Stream Bit Rate is not the only factor related to streaming video quality; it is also affected by Resolution, GOP, and Frame Rate.
- For a typical environment, the following settings are a good starting point before beginning to "tune" the stream settings:
  - Stream Bit Rate: 4000

- Frame Rate: Auto
- Video GOP: 60

VF EPG Update - Updating Your Guide Data

Clicking this icon updates your guide data.

While the system is retrieving the updated data, you will get the following message:

CHAPTER 6: Editing and Managing Assets

This chapter describes the VF Editor utility available to system administrators to digitize and manage assets for scheduled channels or for on-demand viewing with VF Now.

VF Editor allows administrators to record content from Haivision Makito and Barracuda encoders. VF Editor also provides basic editing and metadata tools as well as the ability to import third party MPEG assets.

Topics In This Chapter

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- Creating Off-line Assets (Digitizing Assets) 135
  - Inserting Hotmarks 144
- Merging Assets 146
- Loading Assets 151
- Exporting Assets 153
- Deleting Assets 154
- Creating On-line Assets (Assets used to Schedule Live Streams) 155
- Publishing Assets 157

VF Editor - Digitizing and Managing Assets

VF Editor is the asset creation and editing application for the Furnace tools. VF Editor provides features such as the ability to digitize analog assets while adding user metadata (i.e., information about the asset, tags, or a thumbnail image), or to edit an existing asset and post it to the master digital asset library. It also includes a real-time video "clipper" feature for cleaning up the front and back of video assets or clipping a portion of video from a larger asset and making a new asset.

Only single-stream assets can be recorded in VF Editor. However, VF Editor supports editing of dual-stream assets, along with exporting of dual-stream assets to standard transport streams.

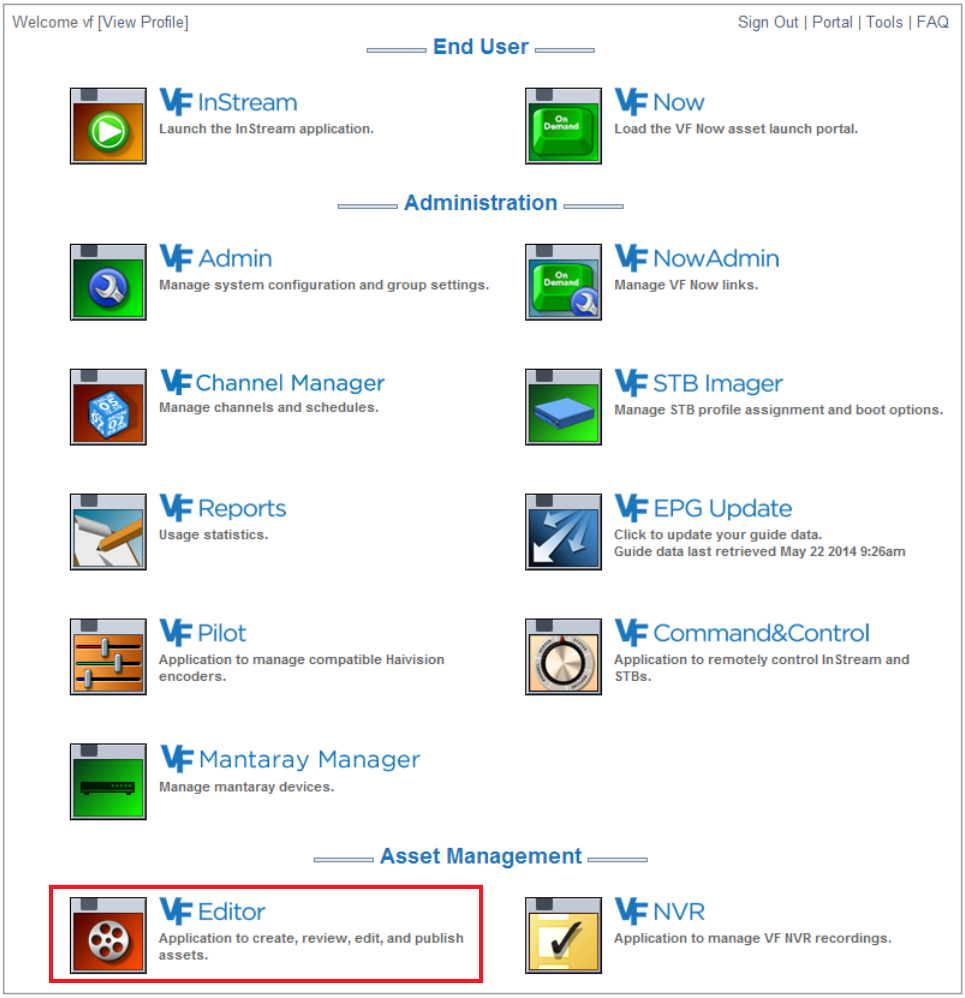
Creating Off-line Assets (Digitizing Assets)

This section walks through a simple four-step approach to digitizing and publishing an asset that can be scheduled on a "Scheduled" playback channel for multicast broadcasting and/or available for on-demand viewing (VF Now).

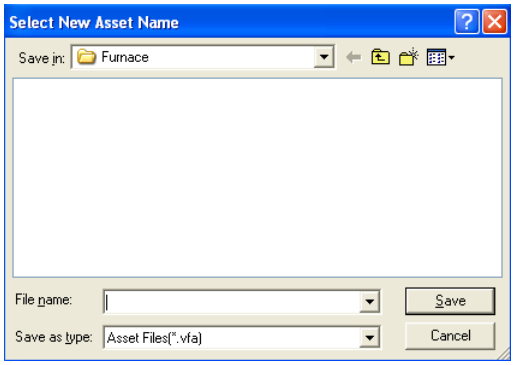
- Step 1: Connect your video and audio source to the encode channel.
- Step 2: Log in to the encoder and record the audio/video stream.
- Step 3: Review and edit your recording.
- Step 4: Publish the digitized video asset to the Asset Manager.

Step 1: Connect your video and audio source to the encode channel.

1. On the Tools page, click the VF Editor icon under the Asset Management section.

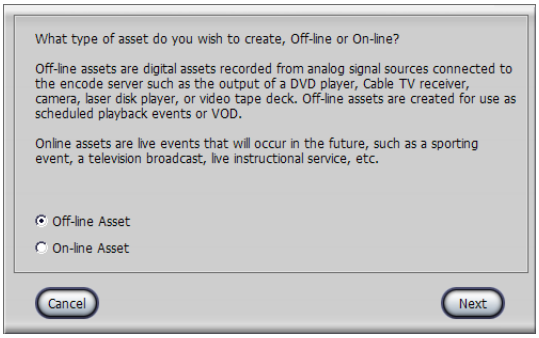


2. On the VF Editor dialog box (shown below left), click New Asset.



3. In the Select New Asset Name dialog box (shown above right), select a folder, type in a filename for the asset, and click Save.

4. On the Asset Type dialog box, check Off-line Asset (meaning it is stored off-line) and click Next.

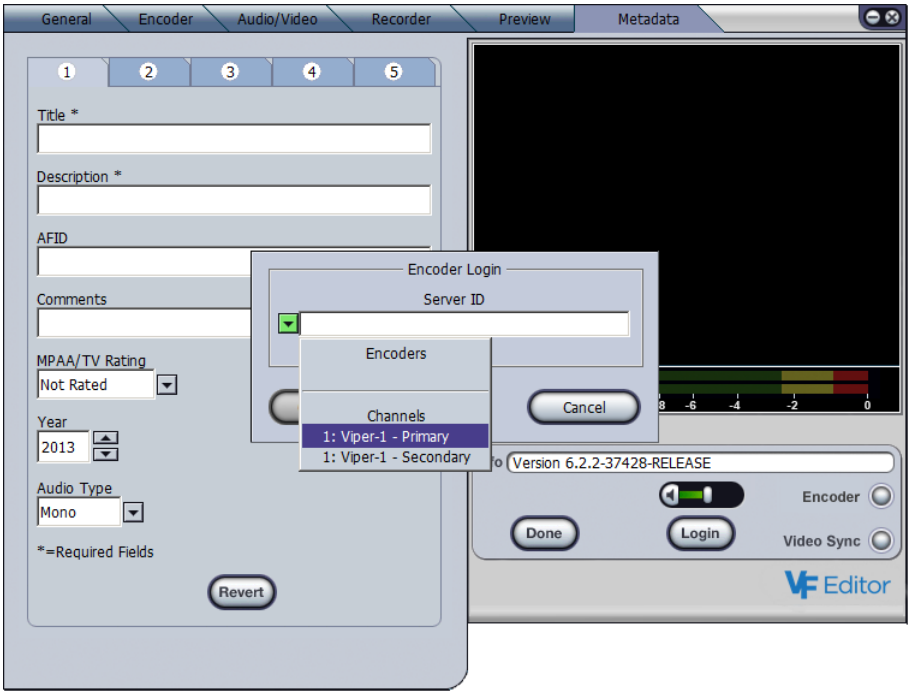


The VF Editor window opens displaying the Metadata tab.

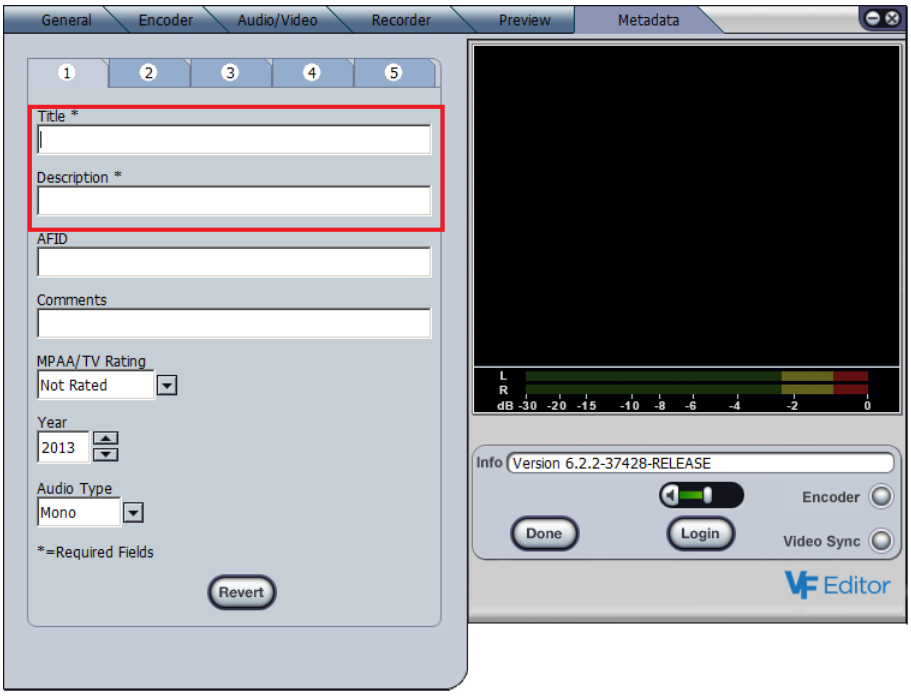
NOTE An “on-line asset” is defined as a live event that occurs in the future. For more information, see “Creating On-line Assets (Assets used to Schedule Live Streams)” on page 155.

Step 2: Log in to the encoder and record the audio/video stream.

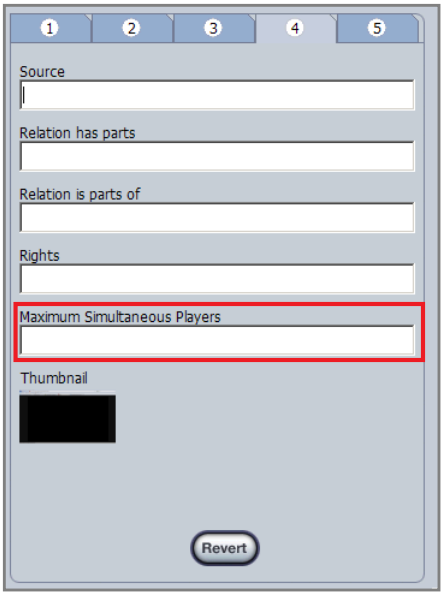
1. On the VF Editor window, click Login, select the Viper channel from the Encoder Login drop-down list, and click Connect.



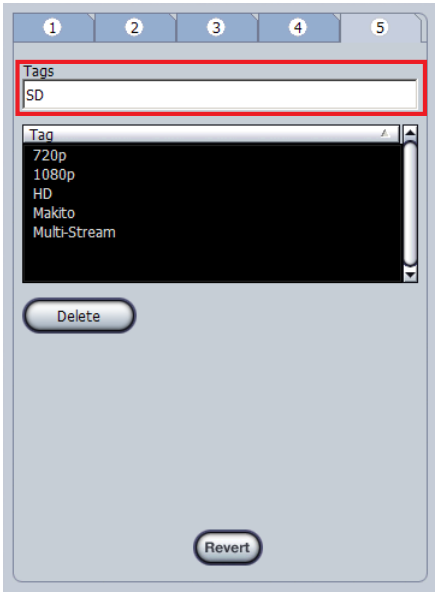
2. Complete the required Metadata fields (Title and Description).



3. If concurrent player limits are required, click tab 4 and type in the number of Maximum Simultaneous Players (shown below).



4. To assign Tags to the asset (which users can use to categorize and search for the asset), click tab 5, type the word or phrase in the **Tags** field (shown below), and press ENTER.



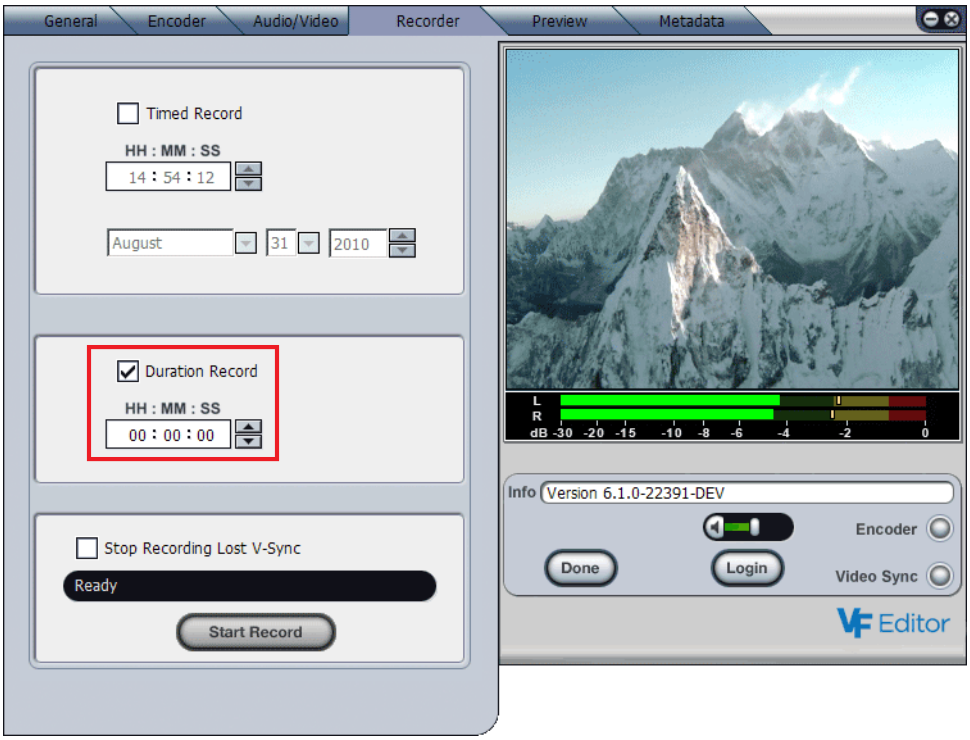
5. If encoder changes are required, click the **Encoder** tab on the VF Editor window and make appropriate changes. (For details regarding encoder control, refer to Appendix B.)

NOTE You cannot record multi-track assets directly from VF Editor. Recording of multi-track assets can only be done using VF NVR. For details, see "Setting Up a Multi-Stream Recording" on page 169.

CAUTION If you record over a multi-track asset with a single track tool such as VF Editor, it will overwrite the primary stream of the multi-track asset, resulting in a multi-track asset.

6. Click the Recorder tab.

7. Check the Duration Record checkbox, and set the duration to at least 1 minute by double-clicking in the minute field (under ":MM") and entering 1.



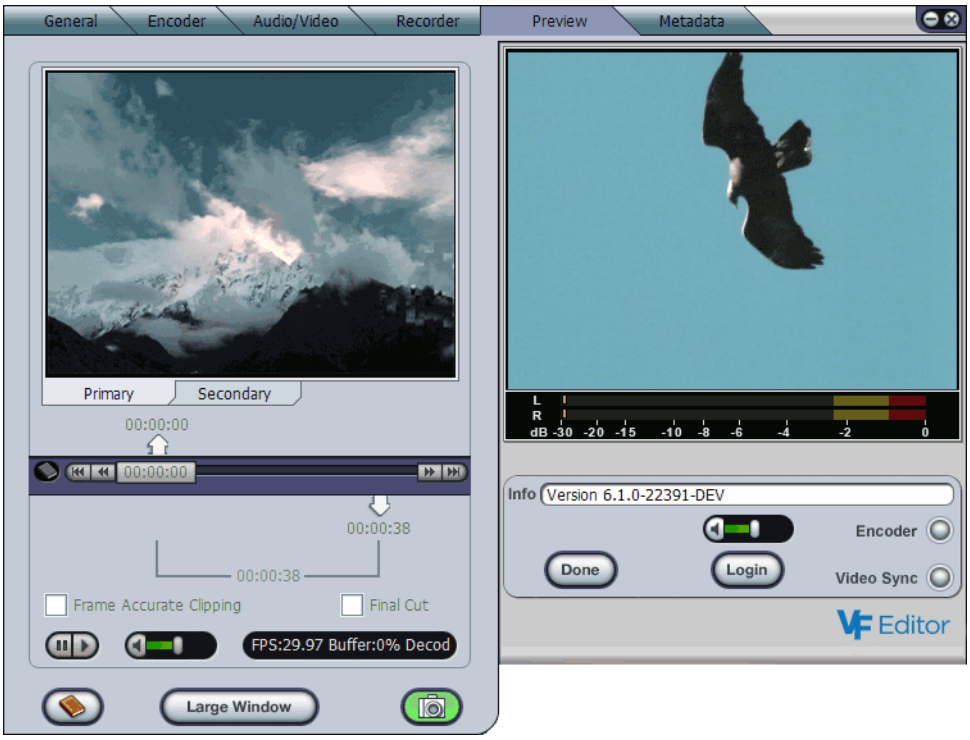
8. Click Start Record.

When the duration counts down to 0, recording will terminate automatically (you may stop the recording any time before that if desired).

Step 3: Review and edit your recording.

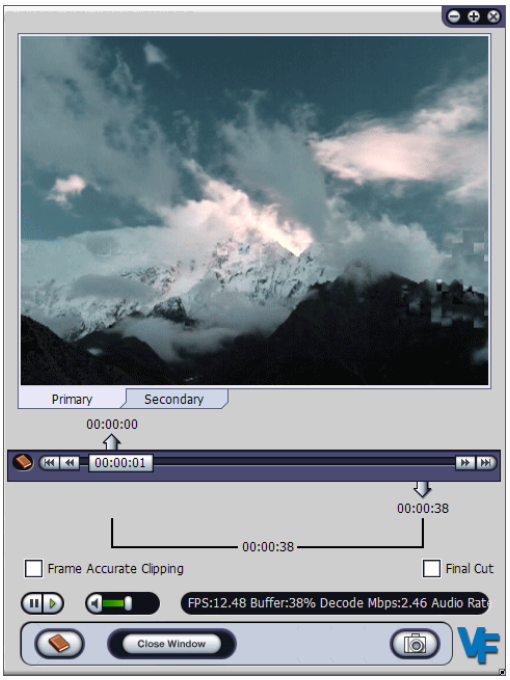
This step also applies to editing any single-track or multi-track asset loaded into VF Editor.

1. Click the Preview tab.



2. If the asset is multi-stream, choose which track to edit by clicking either the Primary or Secondary tab below the viewing pane.

3. (Optional) Launch the "clipper" window by clicking Large Window (shown in the following example), or you may edit the video start and end points directly from the Preview viewing pane.



The Large Window or "clipper" mode allows you to stretch the size of the clipper work area with your mouse. Or you can press the + or - key on the numeric keypad to increase or decrease the clipper window size.

NOTE For a list of shortcut keys available in VF Editor, see "VF Editor Keyboard Shortcuts" on page 261.

4. From either the **Preview** tab on the VF Editor window or the clipper window, click the Pause button, and then move the scrub bar 00:00:00 where you want your video to start.

   If a fine scrub bar adjustment is needed to position the video more precisely, press and hold the SHIFT key, then click and drag the scrub bar.

   Or click the or button to step the video frame forward or in reverse.

5. When the video is positioned properly, double-click the **start marker** (up arrow) to move it to the scrub bar position (the start marker will position itself to the closest MPEG I-Frame).

6. Now position the scrub bar to the video frame where you want your video clip to end. Double-click the **end marker** (down arrow) to move it to the scrub bar position.

7. When you are finished adjusting the start and end clip markers, check the Final Cut checkbox.

   You have successfully specified a clipped segment of the video delineated by the start and end clip markers.

8. To review your changes, click the Play button.

   To return to the VF Editor **Preview** tab from the clipper window, click Close Window or the X button in the upper right corner.

NOTE Clicking Logout to log out of the encoder does not affect the Preview window for the editing session.

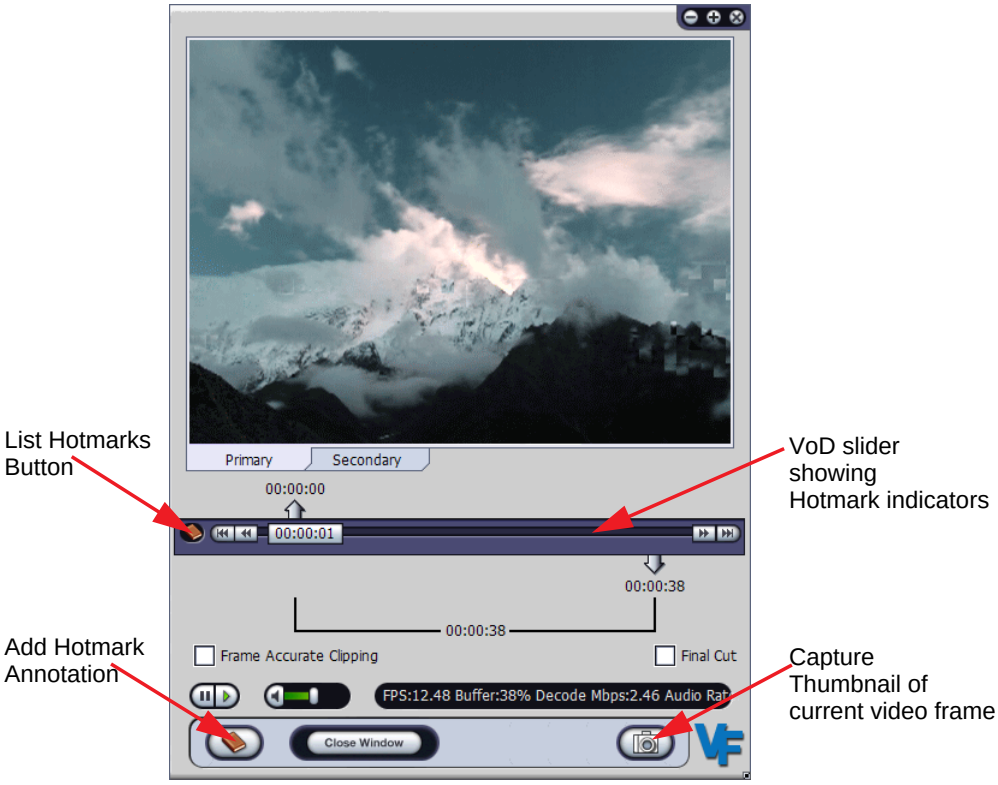
Inserting Hotmarks

From either the **Preview** tab or the clipper window, you can insert "Hotmarks" with annotations to index and store reference points in the video.

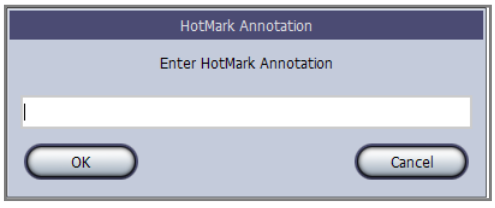
To insert a Hotmark reference point:

1. Load either a single-track or multi-track asset into VF Editor and click the Preview tab.

2. Click the Add Hotmark button (lower left).



3. In the Annotation dialog, type in the Hotmark description and click OK.

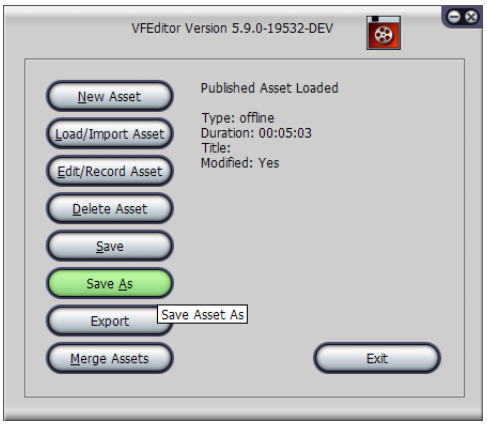


The Hotmark is inserted in the clip and added (along with the annotation) to the Hotmarks menu.

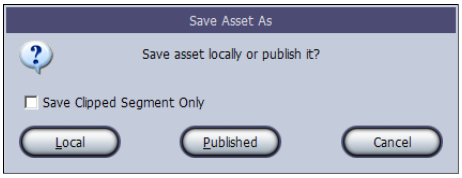
4. To view, edit the annotation, or delete Hotmarks previously saved in the asset, click the List Hotmarks button.
   - Selecting one of the Hotmark entries from the list shows a yellow Hotmark locator icon on the VoD slider corresponding to the video index location saved for the Hotmark.
   - Clicking the Hotmark locator icon positions the video scrub bar to the video corresponding to the Hotmark index location.
5. To capture a thumbnail snapshot of the current video frame to include as metadata for the asset, click the Capture Thumbnail button.
6. When you have completed editing the metadata and/or video, click Done to close the window and return to the VF Editor dialog box.

Step 4: Publish the digitized video asset to the Asset Manager.

1. On the VF Editor dialog box, click Save As.



The Save Asset As dialog opens.

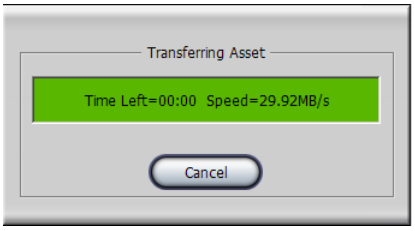


2. To save only the video portion between your clipping points, check the "Save clipped segment only" checkbox.

   To save the *whole* asset including the clipped segment, leave the checkbox unchecked.
3. Click Published.

   Asset publishing across the network begins immediately, and the list of asset servers is automatically filled out and selectable.

A progress dialog opens showing the publish status.



You have successfully digitized an analog asset to the MPEG digital format of your choice and tagged the digital asset with metatext that can be used for a variety of purposes (e.g., information for an electronic guide, searchable fields for large scale database lookups and inquiries). You have edited the video for proper playback start and end points, and published the video over an IP network to a storage device that does not necessarily reside on your local network.

This asset is now available to the VF Channel Manager and will available for viewing on the Furnace portal using InStream and VF Now systems. You can either schedule the asset on "Scheduled" playback channels for multicast broadcasting or you can create a VF Now resource link in the VF Now system to enable on-request viewing of this asset.

Merging Assets

VF Editor provides the option to merge a collection of local or published assets to one monolithic asset. Merging smaller assets to one larger asset provides two main advantages:

- Merging commercials, public service announcements and other *interstitial* content (i.e., content that shows during gaps between scheduled programs) with the core asset enables you to create one program in the Schedule Editor (see "Schedule Editor - Scheduling Assets" on page 186) rather than one for each of the component pieces.
- Merging smaller assets, as described above, hides the individual clip program titles and descriptions in OnGuide. You can then instruct the Merge utility to use the metadata assigned to the core asset and OnGuide will use that.

The process of merging assets requires that you first select or create a target asset to accept the resulting merged list of assets. Merging assets replaces the media contents of the asset to which the other assets are merged.

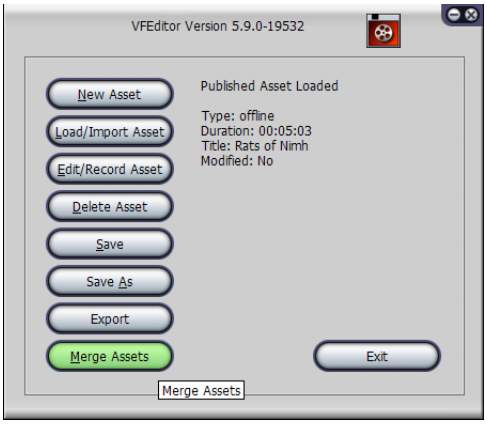
NOTE Merging is not currently supported for dual-stream assets.

To merge assets:

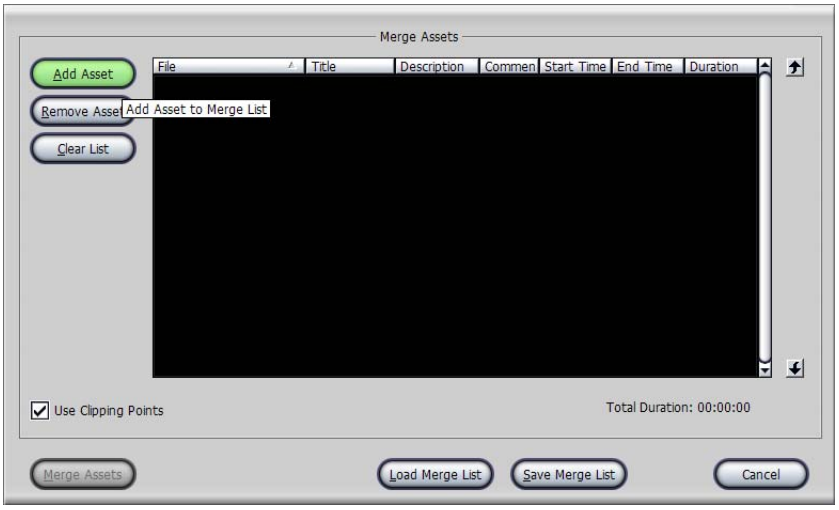
1. Create a new target asset, following the steps in "Creating Off-line Assets (Digitizing Assets)" on page 135. Or you may also use an existing asset as the target asset.

NOTE Do not load the asset.

2. On the VF Editor dialog box, click Merge Assets.



3. On the Merge Assets dialog, click Add Asset to select the first asset to merge.



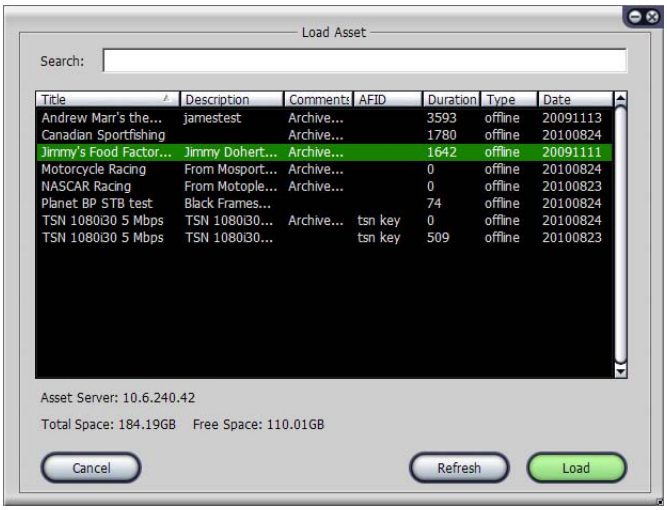
The Add Asset dialog opens.

4. To select an asset from the local hard drive (or mapped network drive storage listed by your file manager), click Local and then select the asset from the list.

   -or-

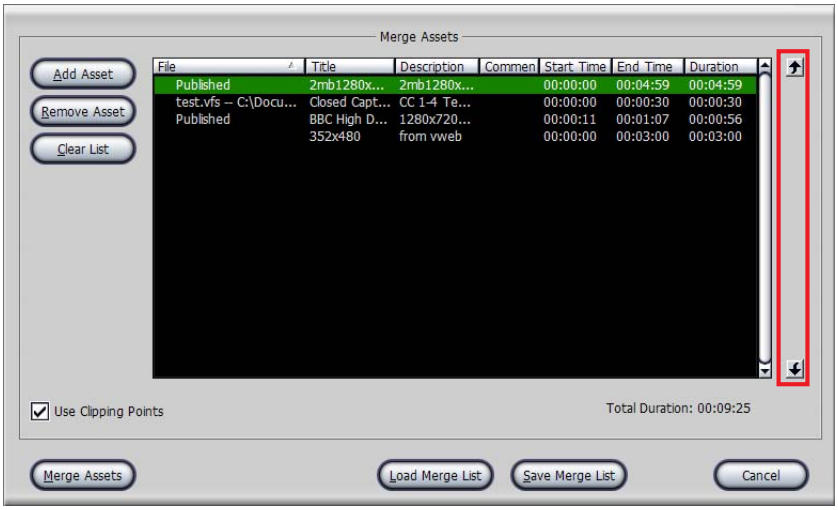
   To select a published asset from the server, click Published.

5. On the Load Assets list dialog, highlight the asset in the list and click Load.



6. Repeat this process (i.e., Steps #3 through #5) until you have selected all of the assets you wish to merge together.

TIP To change the order of the assets, click an asset and then click the Move Asset Up or Down arrows to the right of the list (as shown in the following example).

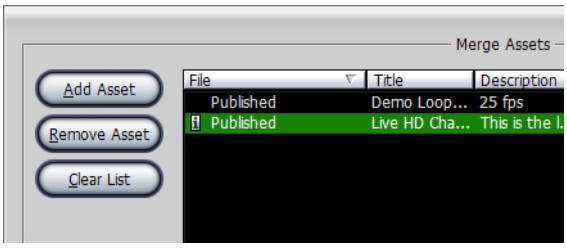


7. (Optional) To overwrite the metadata that you entered for the "merged asset" with the metadata from one of the assets in the merge list, double-click the preferred asset to select it.

   -or-

   Right-click the preferred asset and select "Use this Asset's Metadata" from the pop-up menu. You can also select "Edit Clipping" to launch the "clipper" window to edit the asset.

   The "info" icon will appear to indicate the Metadata selection as shown in the following image.



8. To deselect the Metadata assignment, double-click the asset again or double-click another asset to choose its Metadata.

   Remember that the Guide will use this Metadata, so be certain to assign Metadata from the appropriate asset or manually enter the correct text.

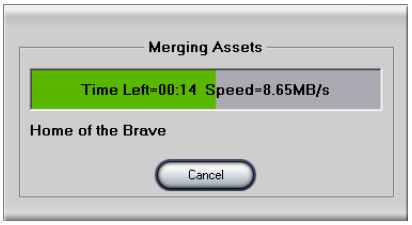
TIP You can change the Metadata after the merge by clicking Edit/Record Asset on the VF Editor dialog box.

---

9. To merge each asset according to the start and end clip points saved in the asset, check the Use Clipping Points check box.

10. To save the merge list for future use, click Save Merge List.
11. To load a previously saved merge list, click Load Merge List and select the list in the Select List dialog box.
12. When you have completed arranging your list of assets in the preferred order, click Merge Assets.

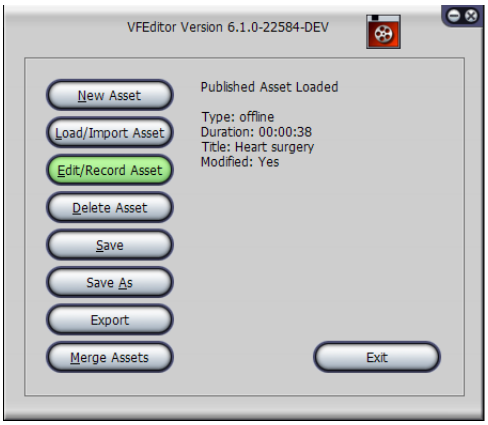
A progress dialog opens showing the merge status.



After merging has completed, VF Editor returns to the main dialog box that shows the asset file name, asset title, and duration.

To change the Metadata:

1. Click Edit/Record Asset.



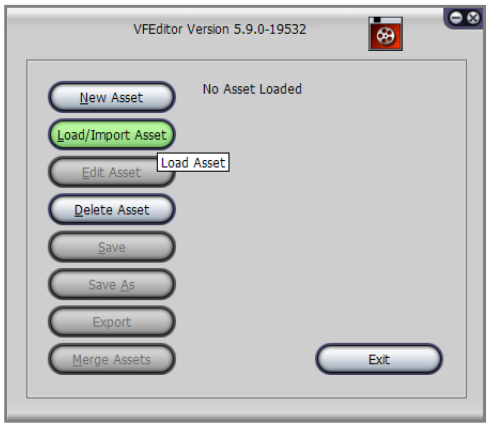
Merged assets can be viewed, edited, exported or published the same as any other asset.

TIP To add interstitial black video between your assets (see "Scheduled Playback Channels - Assigning a Default Asset" on page 110), simply create a 2 or 3 second long asset that shows black video and insert it in the appropriate places. Assets shorter than 10 seconds are not suitable for playback by themselves, so use these only when merging assets or to round out the GOP in an asset to an even 1 sec. (30 frames for NTSC, 25 frames for PAL).

Loading Assets

To load an asset for review:

1. On the VF Editor dialog box, click Load/Import Asset.

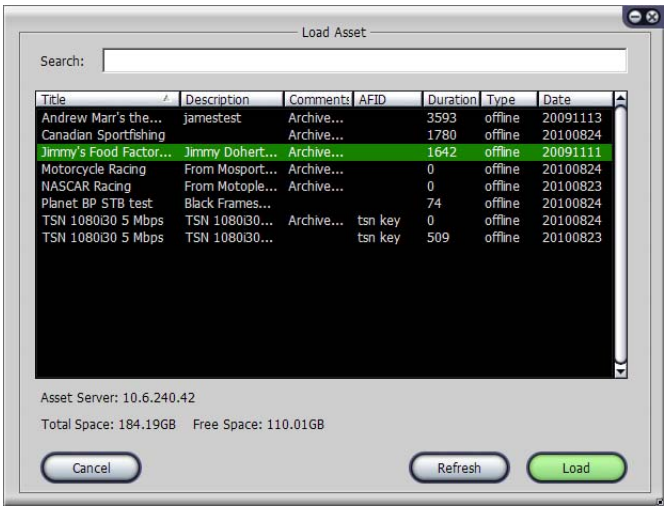


The Load Asset dialog opens.

2. To load an asset from your local hard drive (or mapped network drive storage), click Local and then select the asset from the list.

-or-

To select a published asset from the server, click Published, click an asset in the list, and then click Load or double-click the asset.



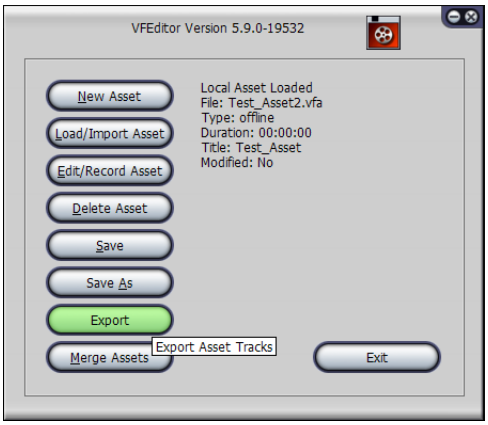
The asset loads to VF Editor and is now available for editing, publishing, export or review.

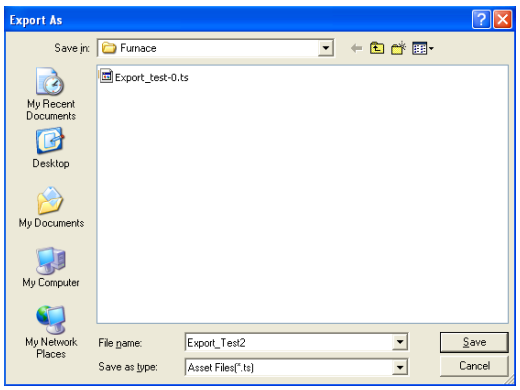
Exporting Assets

VF Editor provides the option to export a single-stream or dual-stream asset to standard transport stream(s) in a folder on your desktop (each track of a multi-stream is exported as a separate .ts in a folder).

To export an asset to a standard transport stream:

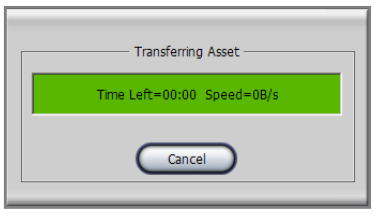
1. Create a new target asset, or load an existing asset.
2. On the VF Editor dialog box (shown below left), click Export.





3. In the Export As dialog box (shown above right), select a folder, type in a filename for the stream, and click Save.

   The export begins immediately, and a progress dialog opens showing the export status.

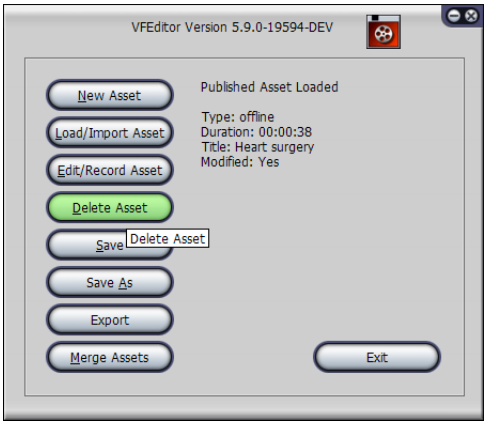


Deleting Assets

CAUTION To delete an asset, the asset must not be in use as the default asset on a channel or scheduled on a scheduled channel. If VF Editor fails to delete the asset, double-click the asset in the Asset List of the VF Channel Manager portal to identify whether the asset is referenced by the system. When all references have been removed, click Update Guide Schedules in the Schedule Editor to remove the reference links from the system.

To delete an asset and associated storage:

1. On the VF Editor dialog box, click Delete Asset.



The Delete Asset dialog opens.

2. To delete an asset from the local hard drive (or mapped network drive storage), click Local and then select the asset from the list on the Select Asset dialog box.

   -or-

   To delete a published asset from the server, click Published, click an asset in the list, and then click Delete or double-click the asset.

3. On the warning dialog, click Yes to delete the asset.

   The asset is deleted and you are returned to the VF Editor dialog box.

Creating On-line Assets (Assets used to Schedule Live Streams)

On-line assets are used to schedule live events that will occur in the future and are normally used to interleave a live stream produced by a Portable Encoder from a remote environment. Using On-line assets, the live streams generated by portable (or other Furnace encoders) are included in the OnGuide electronic program guide on one of your scheduled playback channels enabling your end-users to tune in and watch.

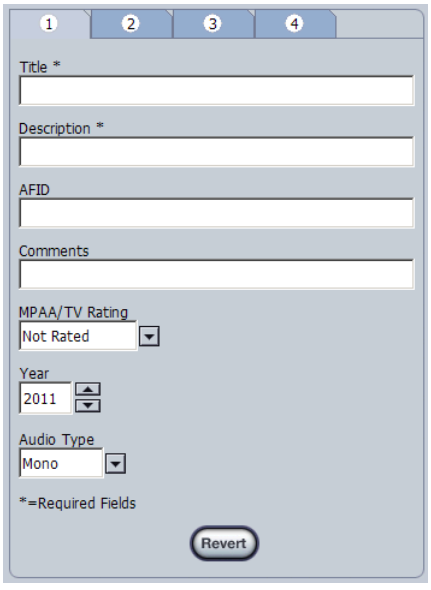
The components of on-line assets are:

Metadata	Fields that describe the purpose of the asset such as title, description, thumbnail.
Duration	The default length of time that the asset will play.
URL	Identifies the live network source address that this asset refers to when scheduled in a program.

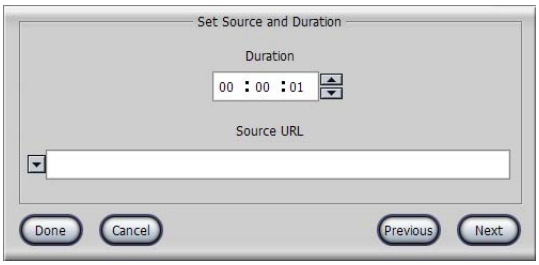
The following example summarizes a simple approach to creating and publishing an on-line asset to the Asset Manager.

To create an online asset:

1. On the VF Editor dialog box, click New Asset.
2. In the Select Asset dialog box, enter a filename for the asset and click Save.
3. On the Asset Type dialog box, check On-line Asset and then click Next.
4. Complete the required Metadata fields (Title and Description) and then click Next.



The Set Source and Duration dialog opens.



5. To enter the URL, click the drop-down at the left of the URL field to view the valid sources available to you.

   Select a source from the drop-down list or enter a properly formatted URL that identifies the appropriate live source (e.g., “Station - Live” or vftp://239.50.50.101:4900).

   VF TP streams refer to multicast streams on the network, so you must provide the multicast address rather than a host name.

6. To enter the duration, double-click the hours, minutes or seconds field(s) under the Duration heading. The maximum duration is 23 hours, 59 minutes, 59 seconds (23:59:59).

TIP When scheduling on-line assets with the Schedule Editor, you can shorten the duration of the program to more closely match the bounds of the anticipated live event. However, the duration may not be lengthened beyond the stored duration of the on-line asset.

---

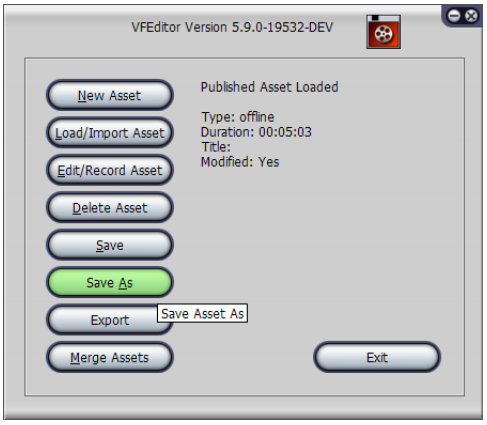
7. Click Next to return to the VF Editor dialog box.

Publishing Assets

To publish the on-line asset:

NOTE This assumes you have already saved the asset as a Published Asset to the Asset Manager (covered in "Step 4: Publish the digitized video asset to the Asset Manager." on page 145).

1. On the VF Editor dialog box, click Save As.



2. On the Save Asset As dialog, click Published.

   A progress dialog shows the transfer of your asset to the Asset Manager, and your asset is now ready for use.

3. When the transfer has completed, close the VF Editor application by clicking Exit or the X button in the upper right corner.

CHAPTER 7: Recording Video

This chapter describes VF NVR, the Furnace's stand-alone Network Video Recorder.

Topics In This Chapter

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Inserting HotMarks and ChapterMarks 171
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VF NVR - Recording Broadcast Events

VF NVR - Network Video Recorder

VF NVR is a network recording device designed to give administrators the ability to record live broadcasts in real time. VF NVR may be used to record either single-track or multi-track assets. When the recording is finished, the asset is ready for use as VF Now on-demand or scheduled playback.

VF NVR offers two distinct recording modes (depending on your hardware configuration). Your system will be configured for *one* at setup, and only one recording tab will be displayed in the VF NVR window:

- OnGuide (Scheduled) Recordings: You schedule recordings in advance from the Guide tab. OnGuide recordings are recorded directly to the Asset Manager, so no publishing step is required.

  -or-

- Crash Recordings: You set up recordings to begin immediately from the Record tab. You can insert real-time metadata (HotMarks™ and ChapterMarks) during the recording process. HotMarks allow users to search their video assets for particular events or references points of interest. Once recorded, the video assets are available for immediate review and publishing to the Furnace Media Server (Asset Manager).

From the VF NVR window, you can also search for available programs to record (Search tab), view a list of the assets that have previously been recorded (Assets tab), and view a list of the shows that are scheduled to be recorded (To-Do List tab).

NOTE VF NVR is not assigned to a channel and may not be used to record assets from the past.

Dual-stream Recordings

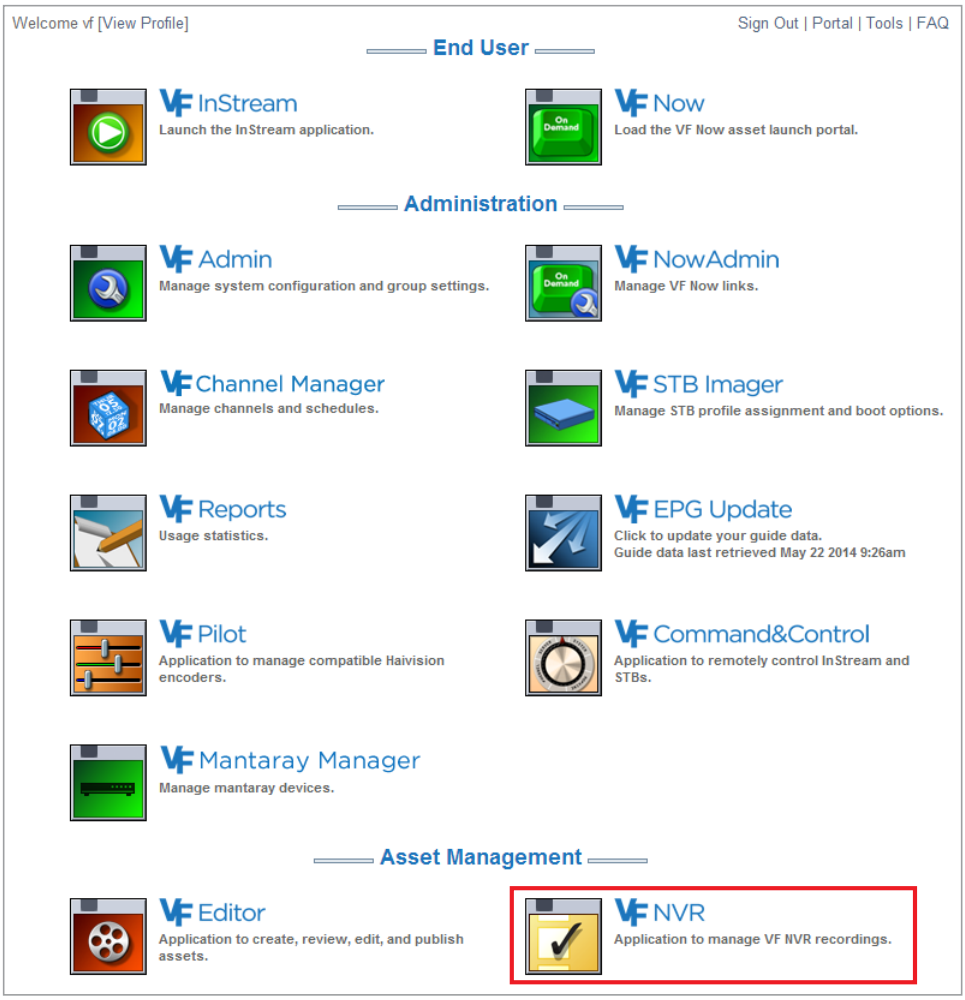
With multi-track assets, users may select one or both streams to record (provided their system has enough available instances and NVR licenses for NVR Guide or Crash modes).

Selection of a multi-stream channel from the Channel drop-down list automatically reserves two recorder instances. If there are not enough resources available for either stream or both, a warning message will be displayed.

Selection of a multi-stream channel also modifies the Preview pane to allow users to select and preview either source of the dual-stream channel.

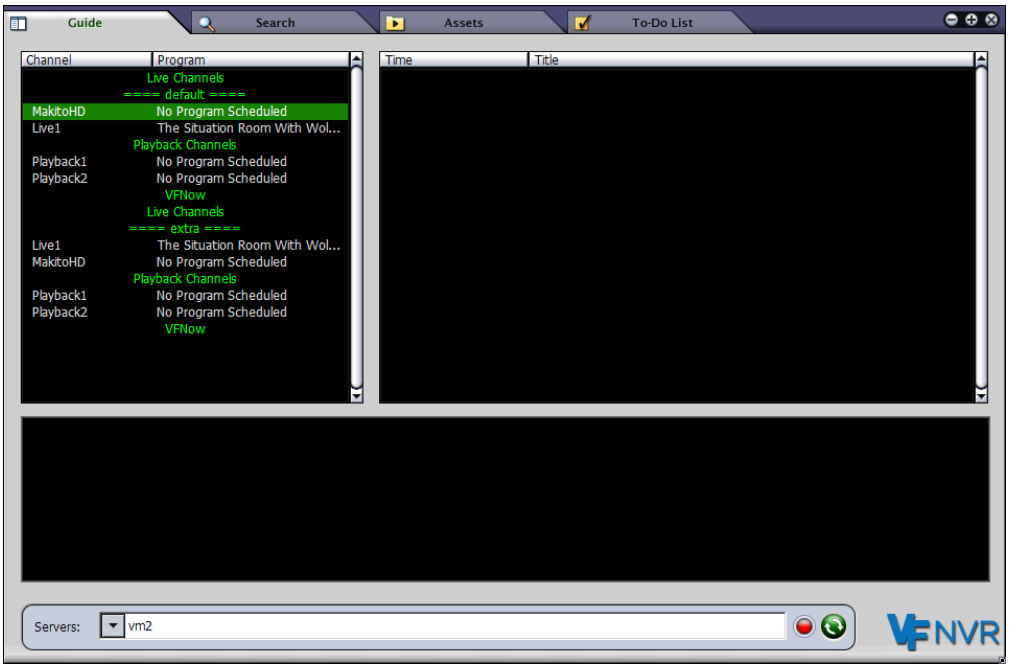
To launch VF NVR:

1. On the Tools page, click the VF NVR icon under the Asset Management section.



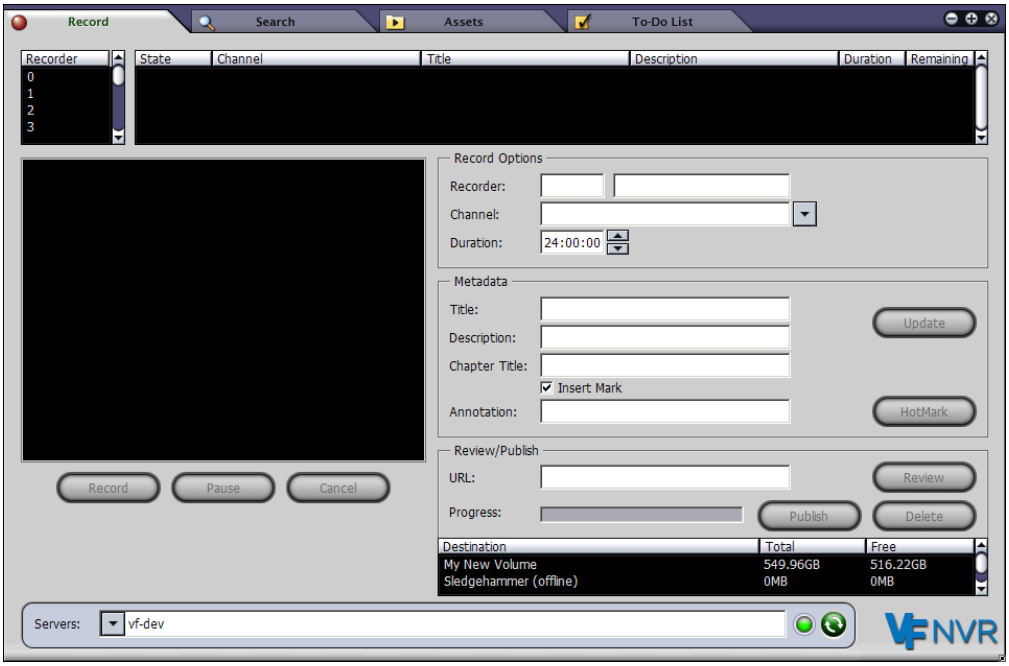
Once the application has launched, the VF NVR window opens.

If your system is configured for OnGuide recording, you will see the Guide tab (shown following).



The Guide tab provides Channel Lineup, Program Listings, and Program Description panels, standard to InStream.

If your system is configured for crash recording, the VF NVR window opens to the Record tab (shown below).



On all VF NVR window tabs, the Servers drop-down list displays the list of NVR servers to which you can connect. The server active indicator is illuminated green when the connection to the server is active. If the indicator is red, the connection has been lost.

To refresh the list of servers, click the Refresh button.

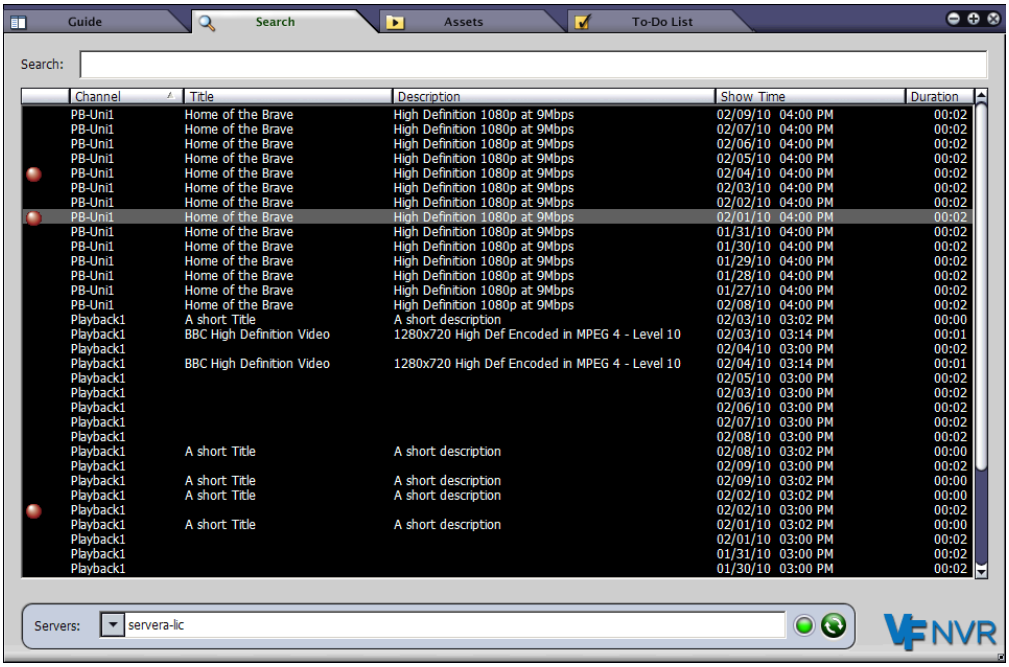
Searching for Assets to Record

From the Search tab, you can filter the list of available programs using text from any of the columns, i.e., Channel Description, Title, Program Description, Show Time, or Duration.

To search for assets to record:

1. Click the Search tab.

   The Search window initially lists all the available channels and titles.



TIP You can click any of the column headers to sort the list by that header type (each click toggles between ascending or descending order).

2. To search for programs, type a word or phrase in the Search field.

IMPORTANT VF NVR searches are *incremental*, meaning that the system progressively searches for and filters through text. As you type in text, matches for the text are found and immediately presented in the list. This immediate feedback saves you time and allows you to adjust your search strategy if necessary.

The Search window now only lists programs that contain the search text.

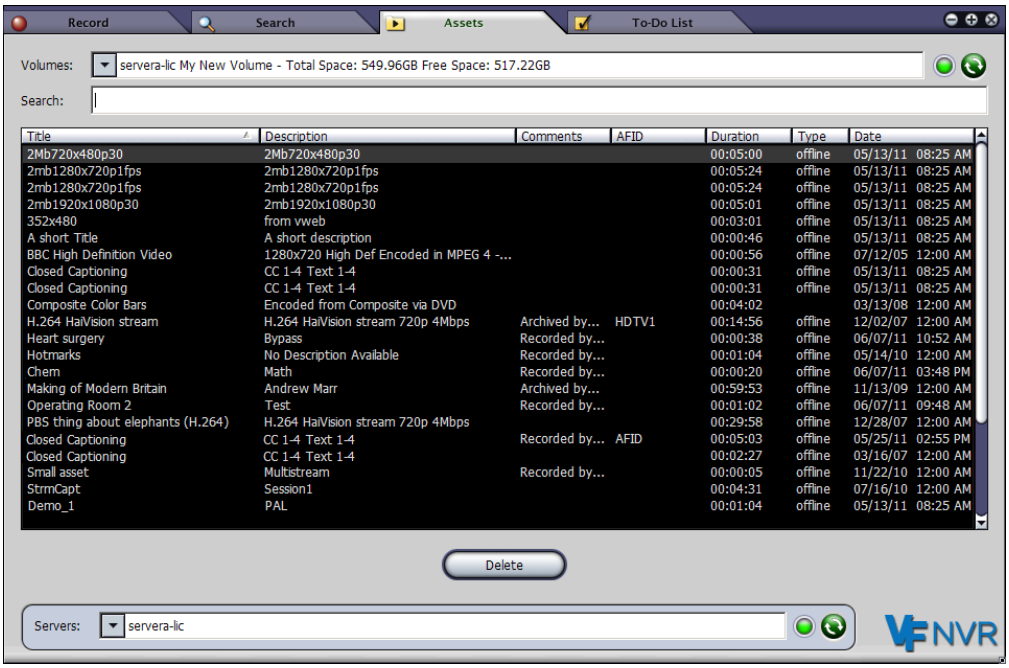
Viewing Recorded Assets

From the Assets tab, you can view a list of the assets or shows that have previously been recorded. You can search the list to find a previously recorded asset, as well as delete assets from the list.

To view the previously recorded assets:

1. Click the Assets tab.

   The Assets tab also displays the list of volumes that contain assets as well as the contents of the volume on the NVR server.



TIP If an asset that has recently been recorded has not yet shown up in the Asset List, click the Assets Refresh button (next to the Volumes).

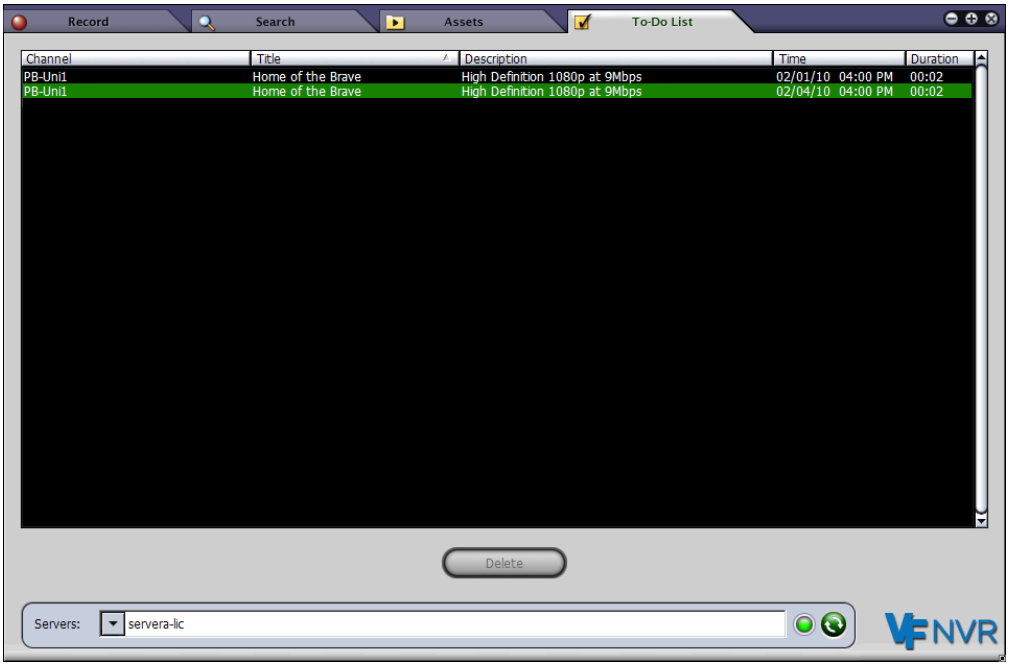
2. To delete an asset from the list, highlight the asset and click Delete.

Viewing Scheduled Assets

From the To-Do List tab, you can view a list of the shows that are scheduled to be recorded (OnGuide recordings only). You can also delete a show from the list if you no longer wish to record it.

To view the shows that are scheduled to be recorded:

1. Click the To-Do List tab.



2. To cancel a recording, highlight the show and click Delete.

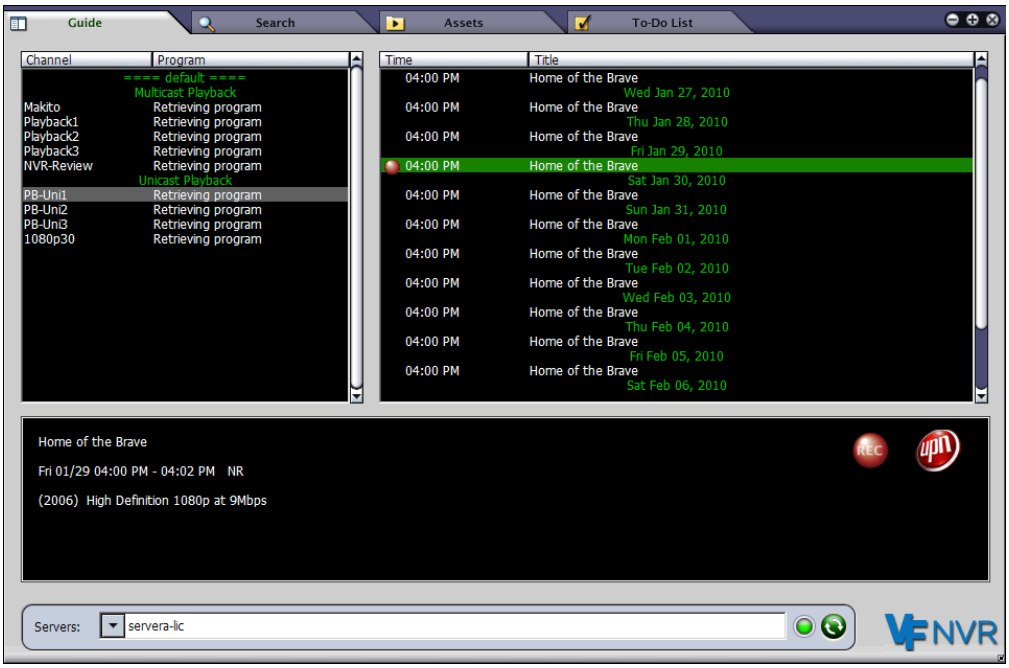
OnGuide (Scheduled) Recordings

If your system is configured for OnGuide recording, you can schedule recordings in advance. OnGuide recording are recorded directly to the Asset Manager.

To schedule a recording:

1. Click the Guide tab.
2. Select the channel on which the show will be aired in the Channel Lineup.

3. Then double-click the show(s) you wish to record in the Program Listings panel.



A small red ball will mark the show(s) that are scheduled to be recorded.

TIP To “filter” the list of available programs, click the Search tab. For details, see “To search for assets to record:” on page 163.

4. When you have finished, click the X button in the upper right corner to exit VF NVR.

Crash Recordings

If your system is configured for "Crash recordings", you can set up recordings to begin immediately rather than being scheduled in advance. Crash recordings are not recorded directly to the Asset Manager, so you are able to review them before publishing to the Asset Manager.

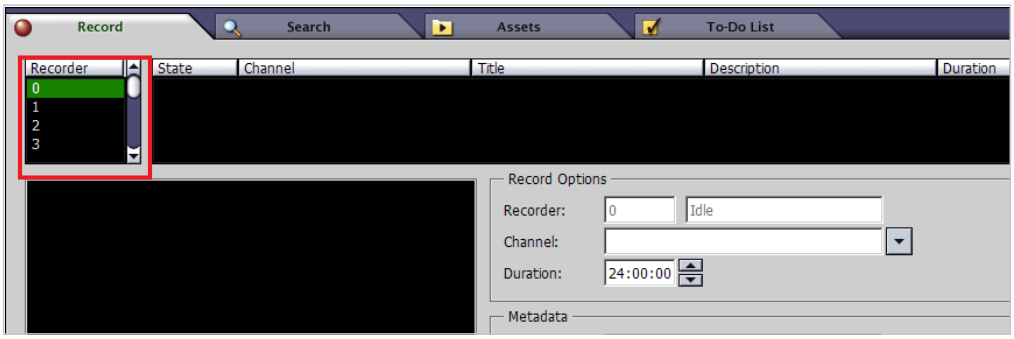
During the crash recording, you can insert HotMarks with annotations as reference points. You can also insert ChapterMarks at break points with optional titles. During playback, these markers will allow viewers to skip directly to pre-defined scenes or sequences within the video, or pick up where they last left off watching.

NOTE The number of concurrent recordings allowed on your VF NVR network recording device is determined by your licensing agreement.

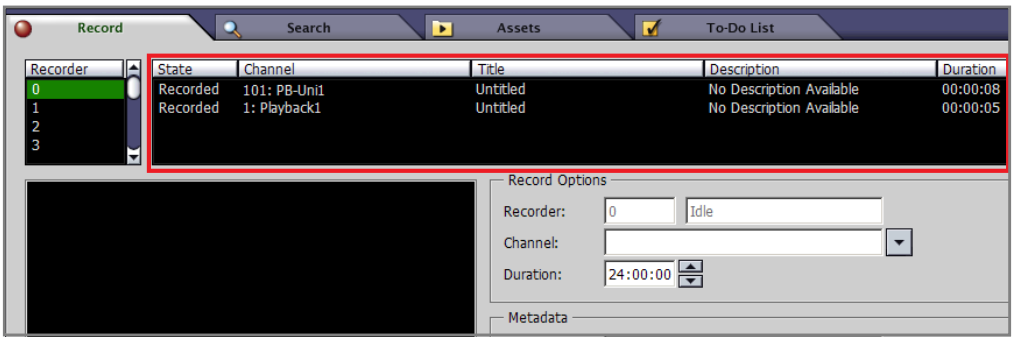
Setting up a Crash Recording

To set up a crash recording:

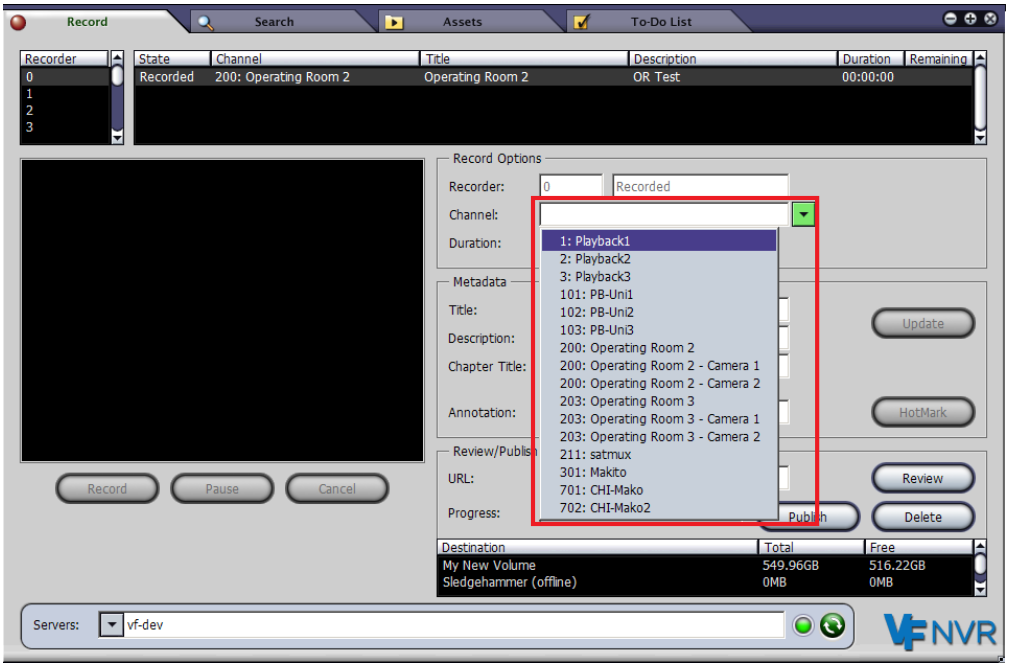
1. Click the Record tab.
2. Select the recorder from the Recorder list.



When you select a recorder, any previously defined crash recordings for that recorder will be shown in the Asset List. Possible states for assets include Recording, Paused, Recorded or Reviewing.



3. From the drop-down list of available Channels within the Furnace realm, select the channel to record from.



The selected stream will be listed in the Channel field by the Channel Number and Call Sign as defined in the Channel Editor.

Once you select the stream, it will be played in the Preview pane.

4. (Optional) Type in or select the recording Duration. The default maximum is 24 hours.

5. (Optional) Under Metadata, type in a Title and Description for the recording.

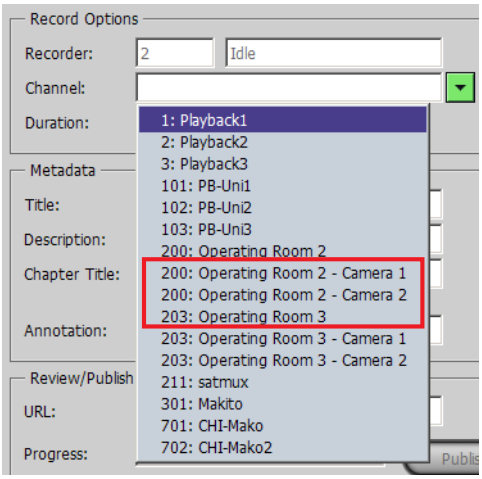
6. Click Record.

The recording will start immediately, and a new asset will be added to the Asset List.

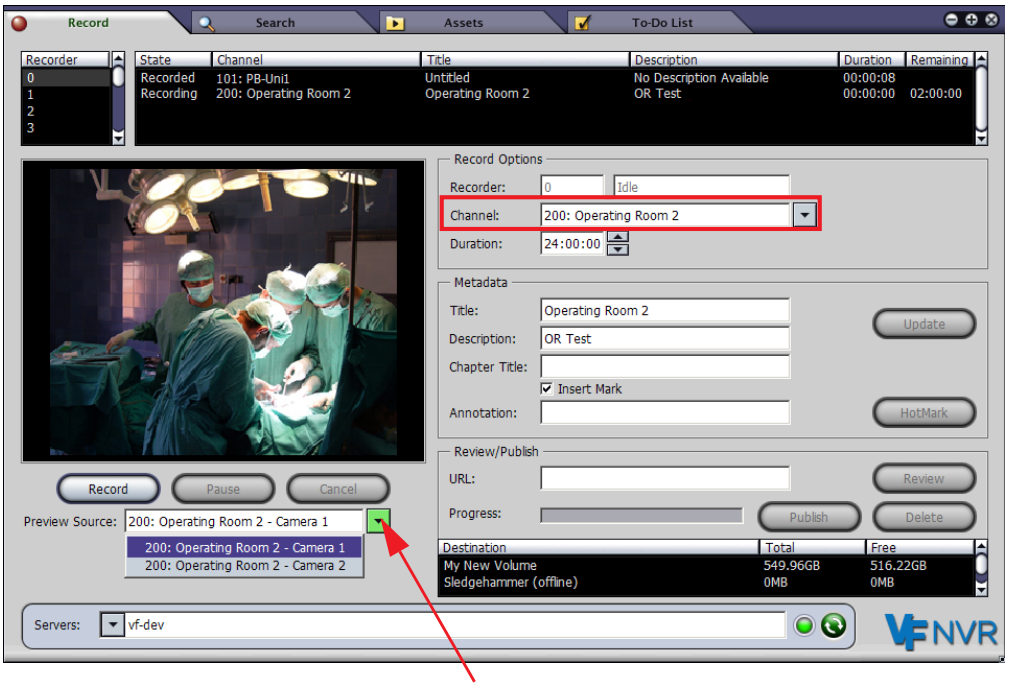
NOTE In the Asset List, “Duration” is time elapsed since recording started, and “Remaining” is time left to complete recording. Therefore, the Duration value counts up (stopping when it reaches the specified duration), and the Remaining value counts down until it reaches 0.

Setting Up a Multi-Stream Recording

The following guidelines apply when recording a multi-stream channel (such as "Operating Room 2" in the following example):



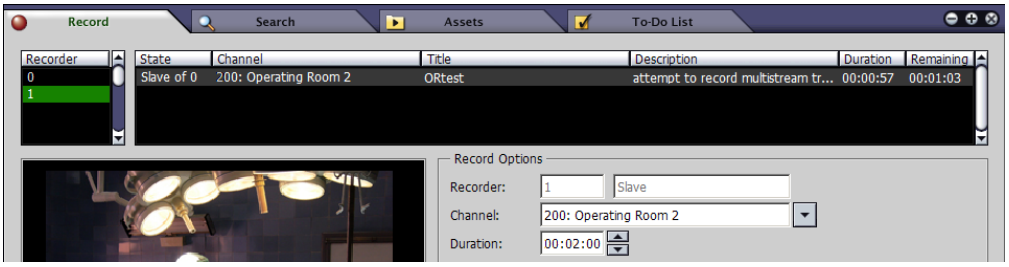
- You can either select the channel or tune into one of the cameras or "tracks" of the multi-stream channel (e.g., "Camera 1" or "Camera 2").
- If you select the channel (rather than one of the tracks), the Preview Source selection list becomes available, as shown in the following example.



Select which source or camera shows in the Preview

- If you select the channel (rather than one of the tracks), VF NVR allocates two recorders to the recording. The second becomes the "slave" of the first (as shown in

the example below) and is not available for other recordings until the multi-stream recording is complete.



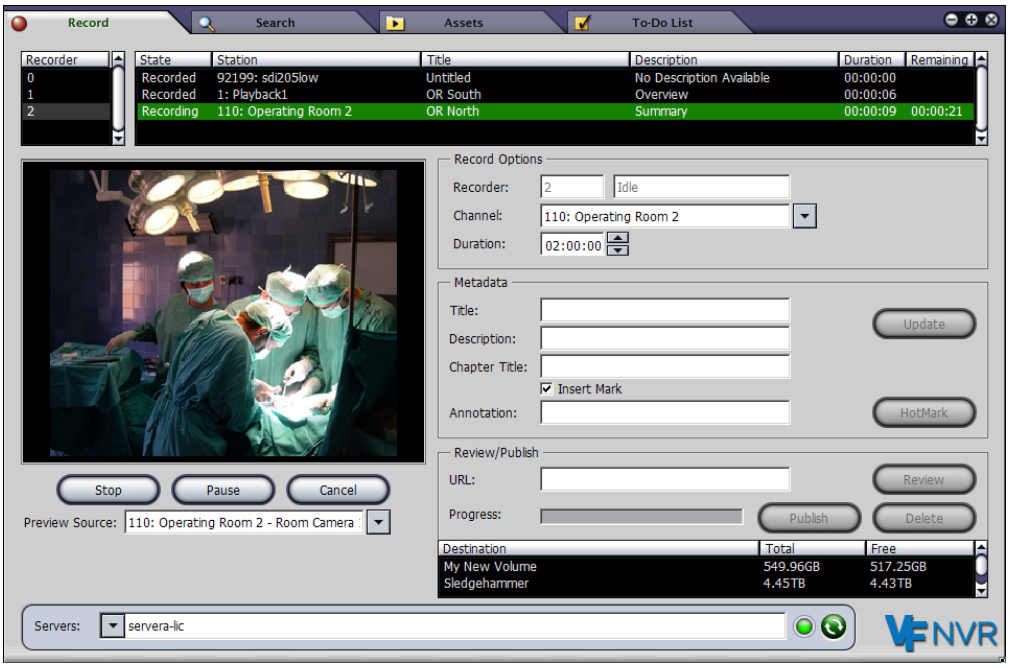
NOTE You cannot stop the “slave”, only the main recording (i.e., the channel).

Modifying an Active Recording

To modify an active recording:

You can modify the asset’s Duration, Title or Description while recording. You can also stop or cancel the recording, or pause and resume it (with or without ChapterMarks and titles).

1. Select the recording to modify in the Asset List (its State must be “Recording”).



2. Make your changes to either the Duration, Title or Description, and click Update.

3. To pause the current recording, select the recording and click Pause.

   To insert a ChapterMark at the break, check the Insert Mark checkbox. For more information, see "Inserting HotMarks and ChapterMarks" on page 171.

   Click Resume when you are ready to start recording again.

4. To stop the current recording, select the recording and click Stop. This still keeps the recording in the Asset List.

TIP With a multi-track channel, you cannot stop the "slave", only the main recording (see "Setting Up a Multi-Stream Recording" on page 169).

NOTE Once a recording has been stopped, it cannot be resumed. However, you can select a stopped recording and click Start to begin a new recording with the same configuration.

5. To stop the current recording and remove it from the Asset List (as well as clear the fields), click Cancel.

TIP To remove a completed recording from the Asset List, select the recording and click Delete.

Inserting HotMarks and ChapterMarks

To insert HotMarks:

HotMarks, with optional annotations or notes, are typically used to create shortcuts to selected points in the recording. During playback, HotMarks will be shown as yellow indicators on the VoD slider. (See the following section "Reviewing Crash Recordings".)

1. Select an active recording from the Asset List (its State must be "Recording").
2. To annotate the marker, type a note in the Annotation text box.
3. At the appropriate point in the recording, click HotMark.
4. Repeat as required for each HotMark throughout the recording.

To insert ChapterMarks:

ChapterMarks, with optional titles, are typically used to mark breaks in the recording. During playback, ChapterMarks will be shown as white indicators on the VoD slider. (See the following section "Reviewing Crash Recordings".) If you do not insert ChapterMarks, there will simply be a cut or splice at breaks in the recording.

1. Select an active recording from the Asset List (its State must be "Recording").
2. To mark breaks, check the Insert Mark checkbox.
3. To associate a title with the marker, type a keyword in the Chapter Title text box.
4. At the first break point in the recording, click Pause.
5. At the end of the break, click Resume.
6. Repeat as required throughout the recording.

Reviewing Crash Recordings

During playback, you can use features such as scrubbing, fast forward, and the various FF modes to review the recording. As you move the cursor over the VoD slider (shown below), you will see the HotMarks and ChapterMarks fade in and out. You can click any marker to jump to that spot in the video. You can also select items from the HotMark menu, or use shortcut keys (SHIFT+LEFT ARROW or RIGHT ARROW) to cycle through the markers.

To review a crash recording:

Follow these steps to review a recording in the VF NVR-Review window (i.e., without providing a URL):

1. Select a completed recording from the Asset List (its State must be "Recorded").
2. Click Review.

   This opens the VF NVR-Review window and starts the playback.
3. If the recording is a multi-track asset, click either Primary or Secondary to select the track.
4. To view any HotMarks and ChapterMarks, as well as annotations and titles, move the cursor over the VoD slider.

   The example below shows (blue) ChapterMarks and (yellow) HotMarks (showing the selected HotMark annotation, "Expert Witness A").

5. To view a list of ChapterMarks and HotMarks for the recording, click the List HotMarks button.

   The HotMarks menu lists ChapterMarks and HotMarks according to the starting time (minutes and seconds) with title or annotation, if specified.

6. You can select any item from the HotMark menu to jump to that spot in the video.

   Or you can click the indicator on the VoD slider.

TIP You can also use shortcut keys to cycle through the markers, by typing Shift + Left or Right arrow keys. For a list of shortcut keys available in the VF NVR-Review window, see "All Video Player Keyboard Shortcuts" on page 260.

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7. To adjust the player window size, you can either stretch the window with the mouse or switch to Full Screen mode (right-click and select Full Screen from the options menu).

8. To stop the review, click Stop Review in the Record window or click the X in the VF NVR-Review window.

To review a crash recording in a player outside VF NVR:

Follow these steps to review a recording by providing a player URL.

1. Select a completed recording from the Asset List (its State must be "Recorded").

2. Type (or copy in) the destination address in the URL field and click Review.

   If the multicast address has been configured as a viewable channel in the VF Channel Editor, it may be viewed with the InStream Player. Alternatively, the address could be directed at an STB or other video viewing application using a unicast address.

3. To stop the review, click the X in the player window.

To publish a "crash" recording:

1. Select a completed recording from the Asset List (its State must be "Recorded").

2. Click Publish to publish the recording from the local disk to the media server Asset List.

To delete a "crash" recording:

1. Select a completed recording from the Asset List (its State must be "Recorded").

2. Click Delete.

3. When you have finished, click the X button in the upper right corner to exit VF NVR.

CHAPTER 8: Managing Video on Demand

This chapter describes the VF NowAdmin Web interface tool available to system administrators to manage system-wide VF Now (Video on Demand) resources.

Topics In This Chapter

VF NowAdmin - Making Assets Available On-Demand 176
- Adding a VF Now Link 176
  - VF Now Resource Link Fields 181
- Adjusting VF Now Server Configuration Settings 183
  - VF Now Global Options Fields 184

VF NowAdmin - Making Assets Available On-Demand

VF NowAdmin is an asset management tool used to make video assets available for on-request viewing.

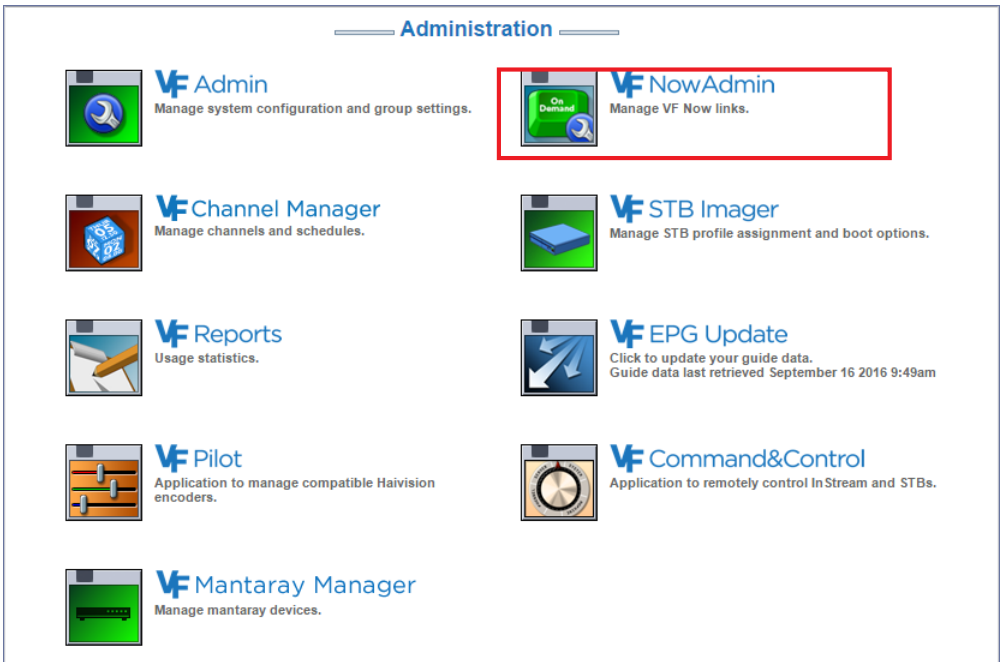
Assets stored in the system are not made available to users for viewing from VF Now by default. Assets published to Furnace still appear in the portal's Video on Demand Library. However, they will not appear in the STB's VoD list unless they have a VF Now link created.

To enable a user to see the video on-demand, the asset must be assigned to a unique "link" which users can visit to launch and view the asset. This link can be edited, disabled or deleted at any time via the VF NowAdmin tool to better control access to the asset.

Adding a VF Now Link

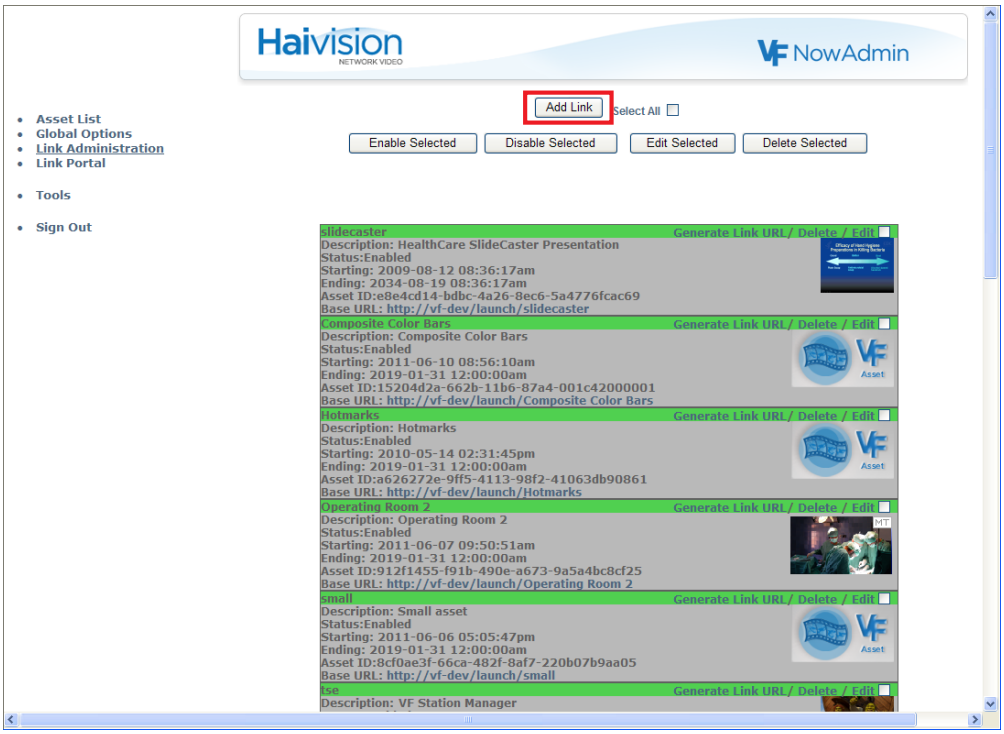
To add a VF Now Link

1. On the Tools page, click the VF NowAdmin icon under the Administration section.

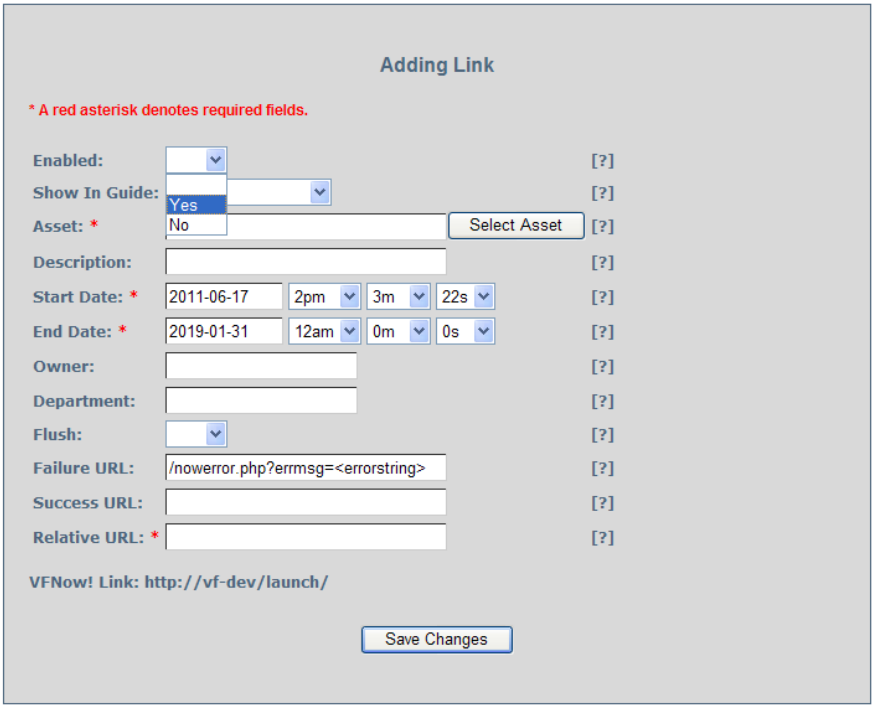


2. Click Link Administration on the left side of the VF NowAdmin Welcome page.

3. On the Link Administration page, click Add Link.

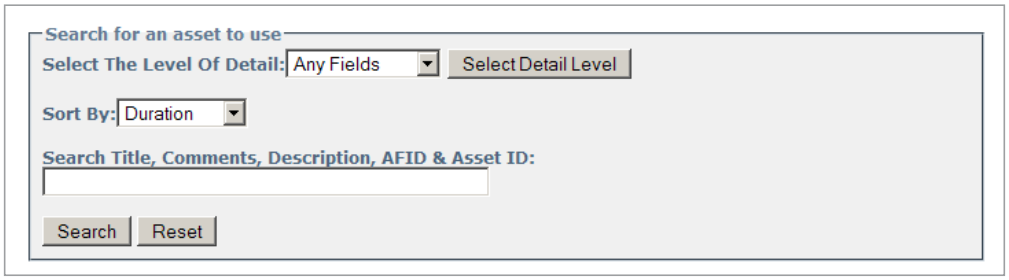


The Adding Link page opens with fields for you to define the link.



TIP For information on the Adding Link fields, see "VF Now Resource Link Fields" on page 181.

4. Select Yes for Enabled to enable the link. (If set to Disabled, viewers will be directed to the Failure URL when they attempt to launch the link.)
5. Show In Guide controls whether the asset is shown in the InStream Guide or STB program listings. Assets may be available on the VF Now page without being shown for on-demand launching within the live InStream player.
   - Select No to limit it to the VF Now page only.
   - Select All Lineups to allow all users to launch the video from the InStream player's listing.
   - If your system contains multiple lineups, you may select one particular lineup (if available on your system) to which the link will be limited. (See "Lineup Editor - Managing the Channel Lineup" on page 120.)
6. Click Select Asset to choose the asset. (See "Scheduled Playback Channels - Assigning a Default Asset" on page 110.)
7. On the Search Asset window (shown below), you can either click Search to show all defined assets or you can filter your search.



You can also sort the display of your search results. For example, select a criterion such as Title from the Sort By drop-down list and then click Search (still leaving the Search field empty to show all assets in the database).

8. On the Asset List page, scroll down the list until you find the asset to assign and click that asset to select it.

This asset is now assigned to the VF Now resource link that you are creating. The Asset List page closes and you are returned to the Adding Link page.

9. In the Description field, type a short descriptive name.

10. (Optional) To change the end date to your preferred expiration date, adjust the date and time of the End Date fields. (The default "End" date of the VF Now link is one week in the future.)

    Regardless of where it is referenced (i.e., your own or a third party portal), the link will only be active and will only be displayed in the VF Now demo portal between the start and end dates you specify.

11. Type the name of the asset in the Relative URL field, and press the ENTER key (or click elsewhere on the page). This is a name for the URL that VF NowAdmin will use in generating the VF Now resource link to refer to the selected asset.

    The URL below the input fields will update automatically as you type to include this name to complete the URL. As long as the VoD Link has not been deleted, the system will either launch the video or display the appropriate failure page when users attempt to visit that link.

12. To activate the link for use per the configured start and end dates, click Save Changes.

NOTE After you save your new link, the portal shows the list of active links with your new link at the top of the list as shown in the following image. Observe that the link name, status, creator, start/end dates, asset ID, and the URL are displayed here too. The URL displayed here is the same as the URL shown in the Add a Now Link dialog box above and may be copied and pasted to your own custom web portal. This is the same link used in the Now launch portal shown on the following page. Only the creator of the link may edit or delete it.

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13. Click Sign Out at the left of the page and close the browser session.

The VF Now portal shows the new link you created to make your video available for on request viewing. The link shows in this portal until you delete it or it expires.

NOTE The VF Now portal displays only active resource links. If the current time is outside the bounds of the configured Start and End Date for the link, it will be absent from the portal. When links have expired, viewers who try to reach the link are directed to an error page which states that the link has expired. The VF Now server settings must be correct to enable launching and playing of the titles from the established links.

For information on the proper VF Now server settings, refer to "Adjusting VF Now Server Configuration Settings" on page 183.

TIP To customize the VF Now viewing experience for your end users, click Generate Link URL on any existing VF Now link as shown below and then click the **(help)** link on the VF Now URL Generator page.

VF Now Resource Link Fields

The following table describes the fields and drop-down lists displayed while creating or editing a VF Now link.

Field Name	Description
Enabled	Enables or disables the link. The link will launch InStream to play the asset only if enabled. Selecting **[No]** disables the link from end-user access.
Show In Guide	Specifies whether to enable the link for access directly in the Guide. Select **[All Lineups]** to include the link in the Guide. TIP: Show In Guide must be enabled to make a VF Now asset available to STBs for VoD viewing.
Created by	Indicates the user who created the link.
*Asset	Asset ID assigned to the VF Now link. This is a required field.
Start Date	The first date and time that the link will be enabled to allow end users to launch the assigned asset.
End Date	The last date and time that the link will be enabled to allow end users to launch the assigned asset.
Owner	Text field to enter the name of the person who created the link.
Department	Text field to enter the department to which the link belongs, if any.
Flush	When set to **[Yes]**, the VF Now link will be removed from the system when the date and time specified for the End Date occurs.
Failure URL	A fully qualified URL to which the end-user's Web browser will be directed upon a failure condition detected by the system. This provides the site with the ability to direct its users to a support web page tailored to the needs of the site for VF Now session inaccessibility (such as bandwidth license exceeded). When left empty, the browser will return to the same portal page from which the VF Now session was originally launched.
Success URL	A fully qualified URL to which the end-user's Web browser will be directed upon successful commencement of a VF Now session. When left empty, the browser will return to the same portal from which the VF Now session was launched.

Field Name	Description
*Relative URL	Type the text label that you wish to uniquely assign to the link created for this asset. Text typed in this field will be appended to the VF Now link.
VF Now Link	Read-only field that displays the URL that you need to put in your site's HTML portal if you would like to launch VF Now services for this link outside of the VF Now prototype portal. Simply copy and paste this link in your portal.
Save Changes	Clicking this button instructs the VF Now system to create the link according to the configuration present when the button was clicked. Then changes are activated immediately and the link is made available per the configured start and end times identified.
Cancel	Clicking this button instructs the VF Now system to abandon creation or modification of the link VF Now link.

Please refer to "Adjusting VF Now Server Configuration Settings" on page 183 for additional configuration details.

Adjusting VF Now Server Configuration Settings

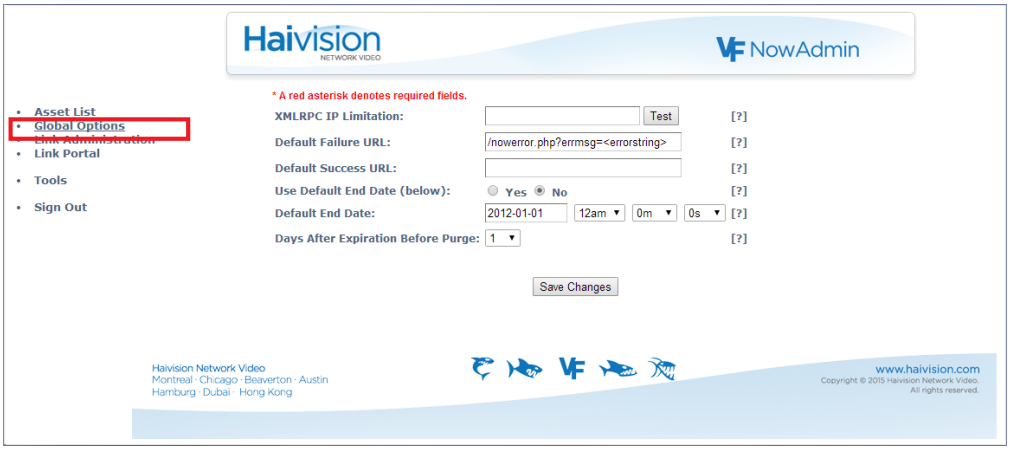
This section describes the Now server settings found in the VF Now administration portal. These settings must be correct for a properly functioning VF Now system.

If your VF Now service seems unresponsive when you click a link on the Now launch page (e.g., 10.1.50.50/now), check whether the server settings match the syntax of those described below. Make necessary adjustments to your settings where they depart from the syntax below, keeping in mind that your server may have a different address than the examples that use "10.1.50.50".

CAUTION Changing these settings to improper values will disable the Now service. This section uses a sample server address of "10.1.50.50" for the examples. Please refer to your site survey for the address of your Now server.

To adjust the VF Now server settings:

1. Click Global Options on the left side of the VF NowAdmin Welcome page.



The Global Options page opens displaying the server settings.

Under certain circumstances, server settings may need to be initialized or changed. However, do *not* make other changes without consulting Haivision Technical Support.

2. You may safely modify the Default Failure and Success URL fields, and the Default End Date and Time to suit your system.

3. To apply your changes to the server settings, click Save Changes.

CAUTION Please contact Haivision before changing any other settings. Changing these settings to erroneous values will disable VF Now services.

VF Now Global Options Fields

The following table lists the default settings and provides a description of each Global Options field.

SettingInStream	Description
XMLRPC IP Limitation	Controls which IPs can call the XML-RPC interface. IP and masks must be comma separated in CIDR notation (i.e., slash notation). An exclamation mark in the front will exclude access. NOTE: The XML-RPC interface is an API which can be used to build a custom VF Now presentation portal by the customer. For documentation for this interface, contact your sales representative or Haivision Technical Support.
Default Failure URL	The URL the browser is sent to if there is an error. May contain any URL even one of your own branded URLs. It is initialized to a Haivision error URL (e.g., /nowerror.php?errmsg=<errorstring>).
Default Success URL	The URL the browser is sent to after a successful launch.
Use Default End Date (below)	Enables or disables use/enforcement of default end date. If enabled, new assets will have their End Date pre-set to the Default End Date specified below. If this is not enabled, new links will default to expiring after 1 week (7 days).
Default End Date	Sets the default end date.
Days After Expiration Before Purge	The number of days to wait before removing expired links from the database.

CHAPTER 9: Scheduling Assets

This chapter describes how to schedule assets using the Schedule Editor. (The Schedule Editor is a sub-module of VF Channel Manager.)

Topics In This Chapter

Schedule Editor - Scheduling Assets 186
- Scheduling a Published Asset 186
- Verifying the Schedule Change 189
- Importing Schedules from a Template 189
  - Import Schedule File Format 192
  - Back-to-Back Scheduling 192
- Locating the AFID for the Asset 193
- Scheduling Live Streams - On-line Assets 194

Schedule Editor - Scheduling Assets

The Schedule Editor is a scheduling system that allows for recurring broadcasts. It supports the concept of broadcasting an asset once, daily, specific days of the week, and weekly. Recurring programs repeat until your specified expiration date occurs.

NOTE Most of the scheduling features described in this section are applicable to both off-line and on-line assets – the creation of which is described previously in "VF Editor - Digitizing and Managing Assets" on page 135.

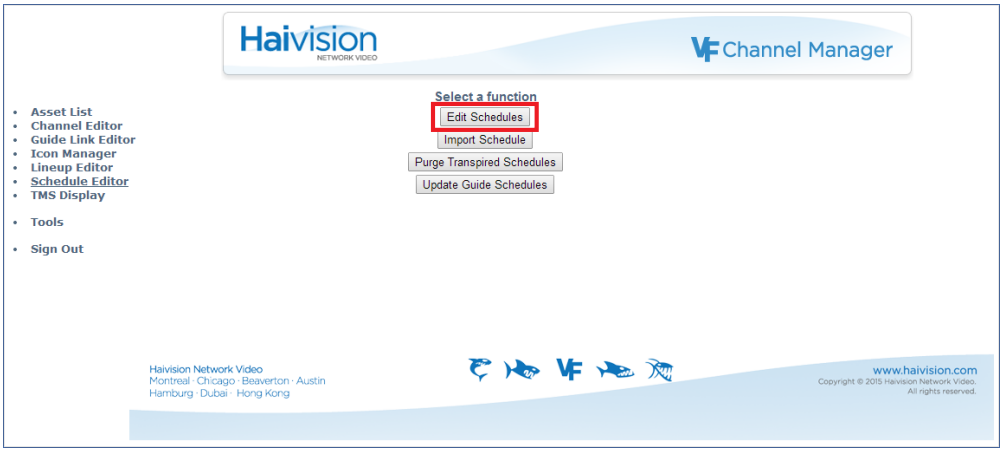
Multi-track assets are not supported for scheduled playback as of the current release.

Scheduling a Published Asset

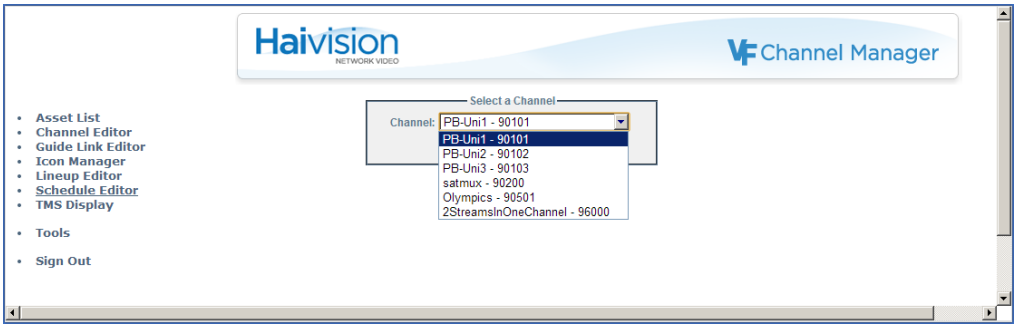
This section demonstrates how to assign previously published assets to scheduled programs on your playback channels.

To schedule a published asset:

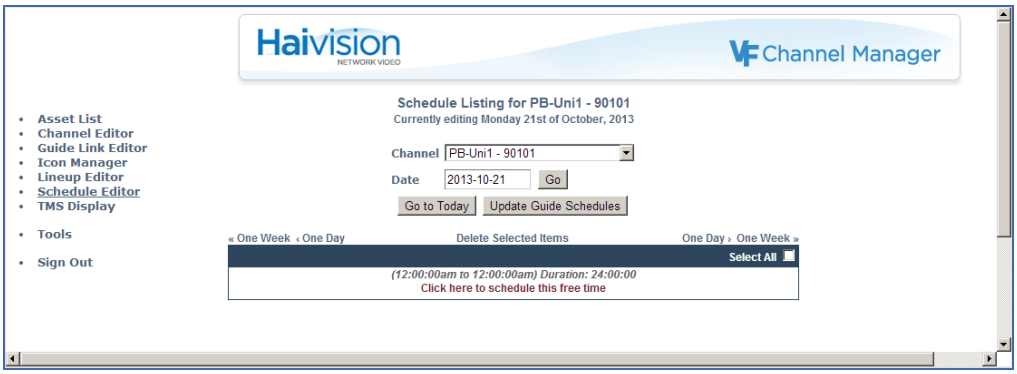
1. On the Tools page, click the VF Channel Manager icon under the Administration Section.
2. Click Schedule Editor on the left side of the VF Channel Manager Welcome page.
3. On the Schedule Editor page, click Edit Schedules.



4. Select your scheduled channel from the drop-down list and click Select.



The Schedule Editor now shows the program schedule for the scheduled playback channel starting with today's date and time.



The schedule view shows a 24 hour vertical format to list programs that are scheduled to broadcast throughout the day, as well as any blocks of free time. If you have an asset that is the same or shorter duration as a free block, you can click on that "free time" to schedule a broadcast. If you try to schedule a program that overlaps with an existing broadcast, the system will inform you of the conflict.

5. Click the free time block that you would like to schedule.

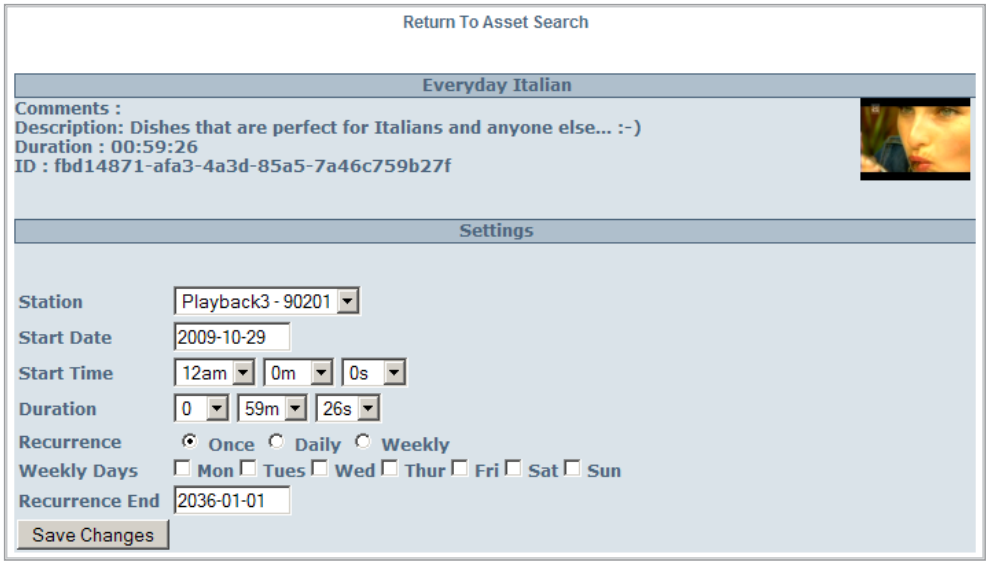
   The Asset Search dialog box appears.

6. To show all assets, click Search, or you can enter search text in the field provided and then click Search.

   The Schedule Editor displays the list of all assets or a subset if you provided search text.

NOTE The Asset Search dialog box lists all assets indexed to the database that match your search criteria. Some of these assets may or may not fit within the available free time and you may have to shorten the program duration to avoid scheduling conflicts.

7. Click an asset in the list to assign it to the program you are creating. After an asset has been selected, the program dialog box appears as shown in the following image.



The program dialog box presents options to refine the program (if needed) such as Start Date, Start Time, Playback Duration, and Recurrence settings.

- To change the start date and/or time to different values, use the calendar pop-up and drop-down menus.
- For a recurring program, select the recurrence attribute (Once, Daily, Weekly, or Weekly Days) and the Recurrence End date – the last date on which this event will play. Note that setting the expiration date to Jan. 1st, 2036 implies that the event should reoccur forever.

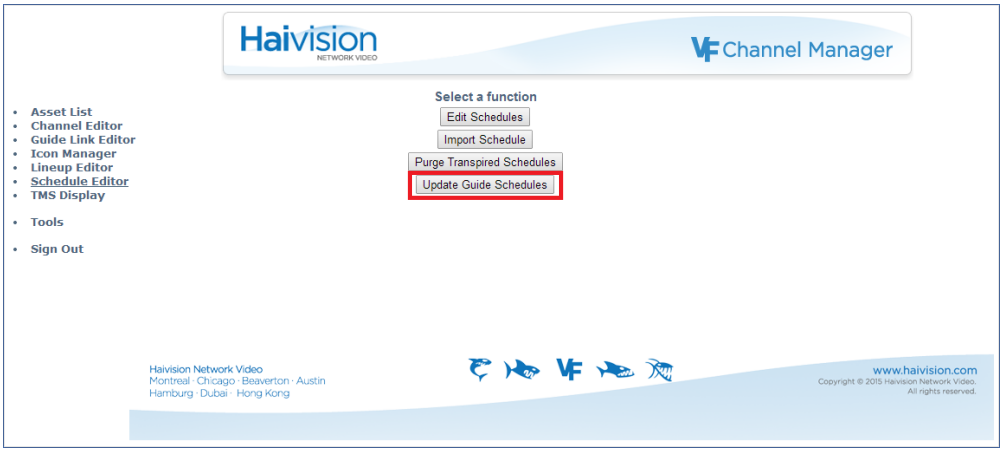
TIP To select recurring playback during specific days of the week, select Weekly, then select specific days Monday through Sunday as the days of the week to broadcast the event.

8. Click Save Changes to save the program to the system schedule.

The Schedule Editor updates then show the schedule changes. You can scroll down the list to verify that the asset is scheduled as specified.

To activate and make your scheduling changes available to all InStream players, you must post the changes to the OnGuide system.

9. Either click Update Guide Schedules located above the program list, or return to the Schedule Editor page (shown below) and then click Update Guide Schedules.



The Schedule Editor compiles the program guide with all the schedule changes since the last time the guide was compiled. Progress messages display on the page.

When compilation is complete, the system sends the new guide information over the network for every viewer to receive. The new program(s) appear in the OnGuide feature of the InStream players.

10. When the update is finished, click Sign Out at the left of the page to end the administrative session.

Verifying the Schedule Change

To verify the schedule change:

1. Launch the InStream player from the main Tools page.
2. Click the Playback channel and verify that your program appears in OnGuide.

   Keep in mind that existing instances of InStream may take up to five minutes to receive the changes.

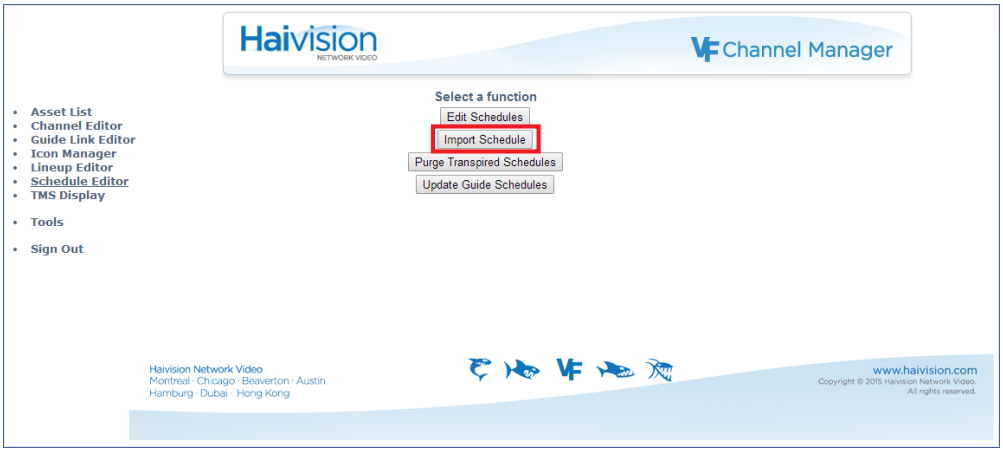
Importing Schedules from a Template

The Schedule Editor provides the ability to import previously prepared schedule templates from tab delimited text files. This section describes the process of importing schedules from a template.

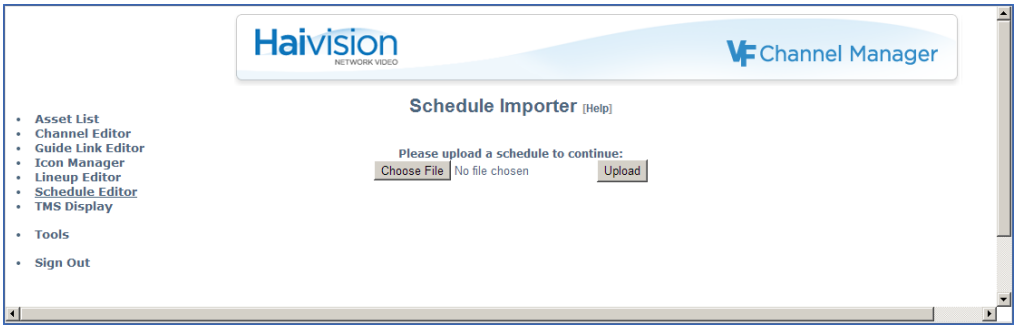
TIP See "Import Schedule File Format" on page 192.

To import schedules from a template:

1. On the Schedule Editor page (shown below), click Import Schedule.

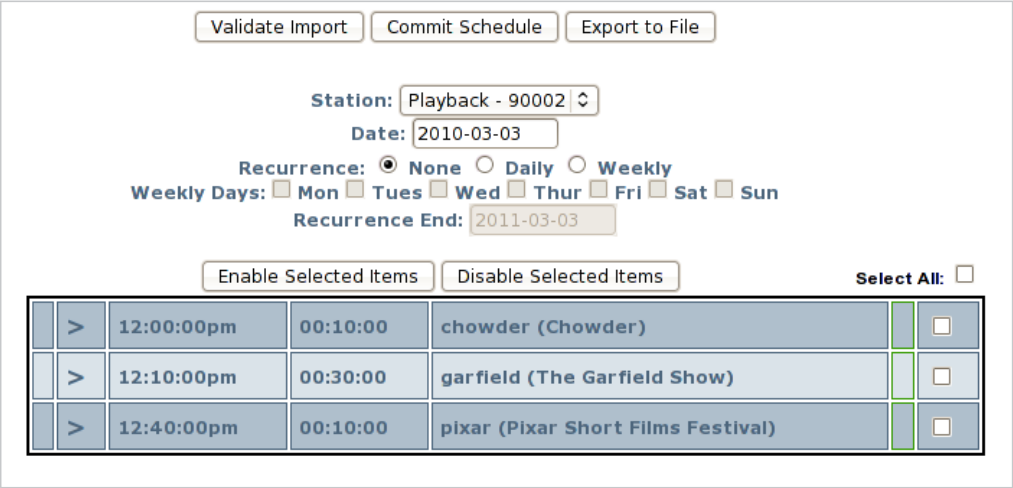


2. On the Schedule Importer window, click Browse to select the import file.



3. Click Upload.

4. Review the schedule entries and start times. If the schedule appears to be imported properly (i.e., without red or pink warnings), click Commit Schedule. Note that doing so commits your changes to the schedule for the selected date.



A confirmation prompt asks whether you are sure.

5. If so, click Import Schedule.

Your items are now scheduled on the channel for the date and times specified.

If changes are required, make the changes to your import file and re-import or make changes manually in this page. If any of the imported programs have a red or pink color, move the mouse cursor over the red icon to review the problem and make corrections.

6. Access the Schedule Editor to see your updated schedule for the channel and the free-time that might surround your events. You may also change the recurrence settings for each event by clicking the Edit link for the program.

TIP Remember that to enable scheduled playback of your assets and to publish your updated schedule to InStream's OnGuide view, you must click Update Guide Schedules on the Schedule Listing page or on the first page after clicking the Schedule Editor button at the left of the page.

Within minutes of publishing your schedule, the changes are reflected in the InStream OnGuide view.

Import Schedule File Format

Import schedule files must be tab-delimited "plain text" files with a specific format. It must start with a "start time" followed by a TAB character, followed by the "asset duration" of the asset, followed by the "AFID" text, assigned to the AFID (Asset Field IDentifier) metadata field, of the asset as shown in the following example ImportSchedule.txt.

09:00:00	00:14:05	Accounting307
09:14:05	00:26:50	Algebra104
09:40:55	00:07:28	Computers
09:48:23	00:07:28	Production
09:55:51	00:00:31	PSA
09:56:22	00:14:05	Accounting307

NOTE (When signed in with administrative permissions) You can use the Asset Field IDentifier to hide data you may wish to search for in the future without users being able to see this data.

Back-to-Back Scheduling

This file shows an example starting at 9 a.m. with six assets scheduled back-to-back. The import process calculates the start time for each asset based on the single start time provided, then calculates the start time of the next asset based on the duration of the prior asset in the list.

09:00:00	Tab	Accounting307
Tab	Tab	Algebra104
Tab	Tab	Computers
Tab	Tab	Production
Tab	Tab	PSA
10:00:00	Tab	Accounting307

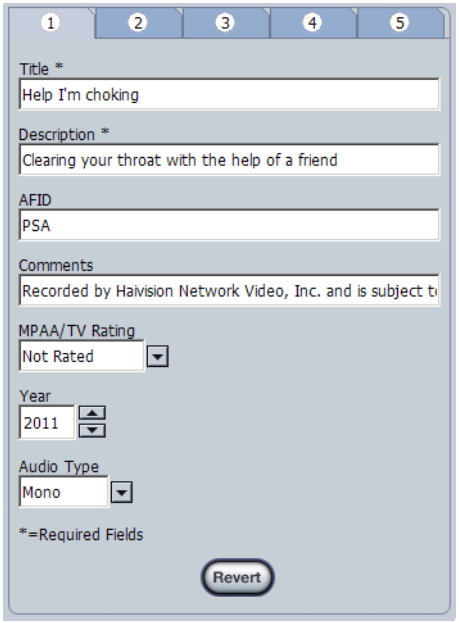
NOTE When scheduling assets back-to-back, the start time and duration for subsequent assets need not be specified. Furnace provides an "immediate following" feature in which the scheduling system calculates the start time of each asset based on its stored duration.

Notice that the intervening tabs are still required as placeholders to inform the scheduling system that the field has been intentionally skipped. Similarly, as shown in the preceding example, you may specify start times without specifying the asset duration. In the example, 10 a.m. specifies the start time of Accounting307 rather than allowing the scheduler to assign the back-to-back scheduling time of 09:56:14, for example. The 3 minute 46 second gap may be filled by the default asset assigned to the channel or a specific asset or assets can be assigned if desired to fill the free-time left in the schedule.

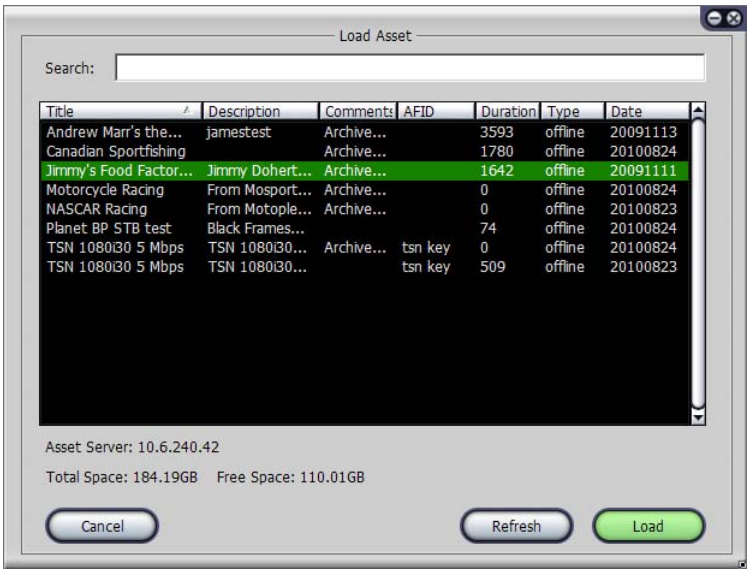
Locating the AFID for the Asset

The AFID (Asset Field IDentifier) is a Metadata field that can be edited by the system administrator using the VF Editor tool. The AFID may be located in a number of ways:

- It is accessible on the VF Editor Metadata tab:



- The AFID is accessible in the VF Editor Load Asset view:



Scheduling Live Streams - On-line Assets

On-line assets refer to live streams that will be available on the network at the time the asset is referred to by a program in the program schedule. On-line assets are commonly used on scheduled channels to schedule live broadcasts from remote venues using Haivision encoders.

The process of scheduling a live stream from a Haivision encoder is similar to scheduling an off-line asset. The primary difference is that you must first create and publish an on-line asset, and then select the on-line asset from the Asset List. This is described in "Creating On-line Assets (Assets used to Schedule Live Streams)" on page 155.

On-line assets have three main components: Metadata, duration and a URL.

- Metadata is information about the asset.
- The duration identifies the default playback length for the asset – the scheduling system will use this as a starting duration when this asset is referred to by a program.
- The URL field identifies a valid Furnace network stream that will be available any time this asset is scheduled. Recall that on-line assets refer to a live stream that the scheduled playback server must be able to receive from the network in order to play it on your scheduled channel.

CHAPTER 10: Remotely Controlling the System

This chapter describes the VF Command & Control (VF C2)™ utility available to system administrators to remotely control active Furnace clients (InStream desktop players and Stingray set-top boxes).

NOTE You can also use the VF C2 utility to change the channels on a Makito Decoder that has been added to the Furnace realm as a device.

Topics In This Chapter

VF Command & Control Utility 196
- Creating a New Command 198
- Command Selection 201
- Command Routing 202
- Message Configuration 204
  - Message Configuration Fields 205
- Command Scheduling 207
  - Creating a Command Template 208

VF Command & Control Utility

VF Command & Control

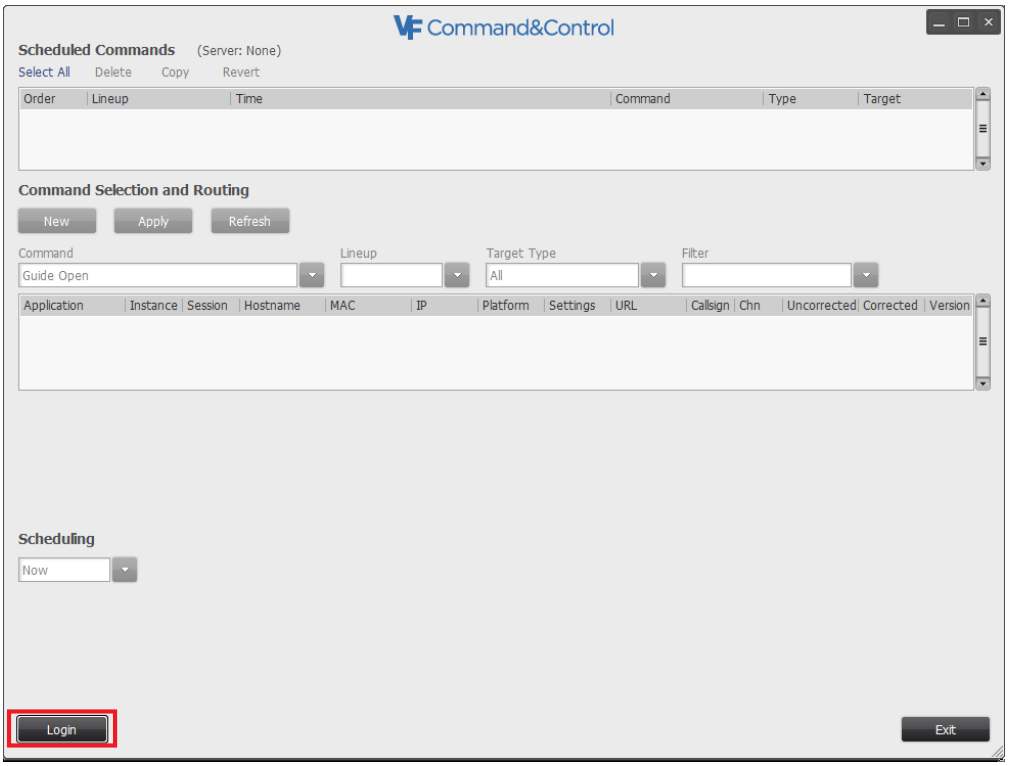
The VF Command & Control (VF C2) utility includes the following features:

- Control of end point devices.
- Changing the tuned channel on an InStream client, Stingray STB or Makito Decoder.
- Playing Stingray STBs in and out of standby.
- Sending other commands to control end devices (e.g., volume, channel change, screen size, display of messages).
- Terminating open viewers.

VF C2 provides a flexible method to address messages and commands to all clients, subsets of clients, or a single client tuned to Furnace services on the network.

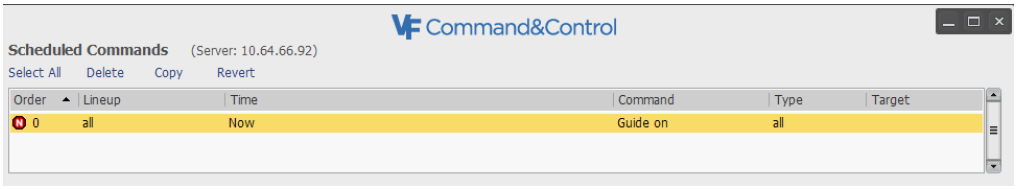
To access VF C2:

1. On the Tools page, click the VF C2 icon under the Administration Section.
2. On the VF C2 window, click Login to activate the command buttons.

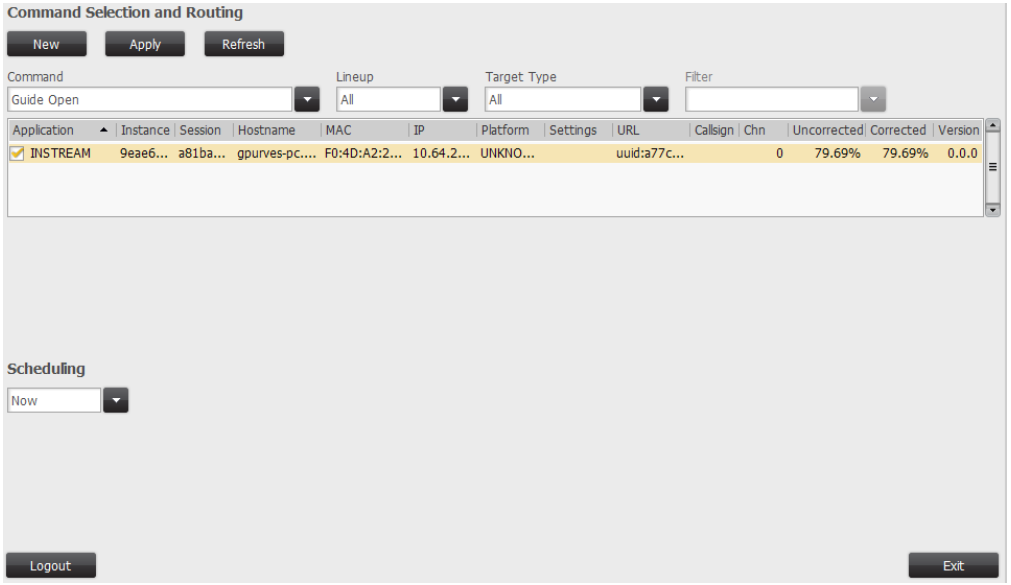


The VF C2 window is divided into two sections:

- The **Scheduled Commands** pane (top section) shows the list of active commands. This section is used to create new commands and edit, delete, or revert existing commands in the list.



- The **Command Scheduling and Routing** pane (bottom section) is used to select, route, and schedule commands. Once you log in, the Application list shows any active InStream or STB instances that are part of your Furnace realm.



The following command buttons are used to manage the Scheduled Command List:

Command Button	Description
New	Creates a new command template in the Scheduled Commands list, opens the template for editing, and places an “N” at the left of the command in the list to show that it is new and changes have not been applied yet.
Apply	Applies the selected command in the Scheduled Commands list. If the command is scheduled “Now”, it also removes it from the list.
Refresh	Refreshes the list of active InStream or STB instances.

Command Button	Description
Select All	Selects all commands in the Scheduled Commands list.
Delete	Removes the selected command from the Scheduled Commands list.
Copy	Copies the selected command to a new command template and adds it to the Scheduled Commands list. It then places an "N" next to it to show that it is a new command template that has not yet been configured or had changes applied.
Revert	(When changes have not been applied) Cancels the changes and reverts the command settings back to the values assigned before changes were made.

Creating a New Command

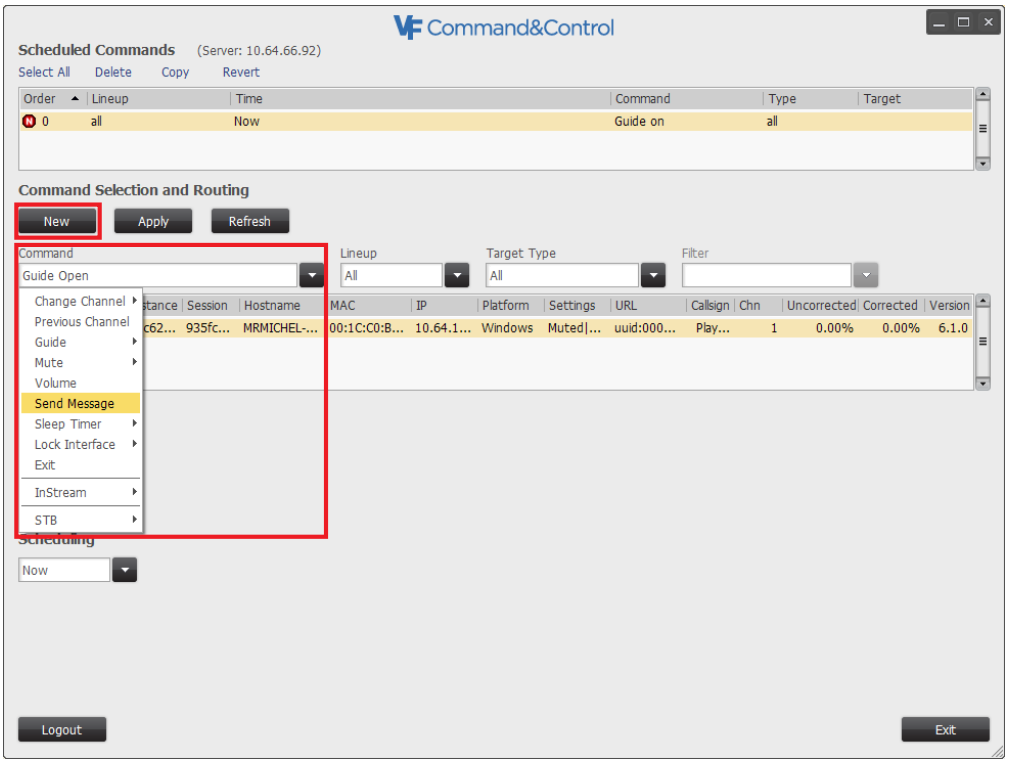
This section describes the process of creating a VF C2 command.

To create a new command:

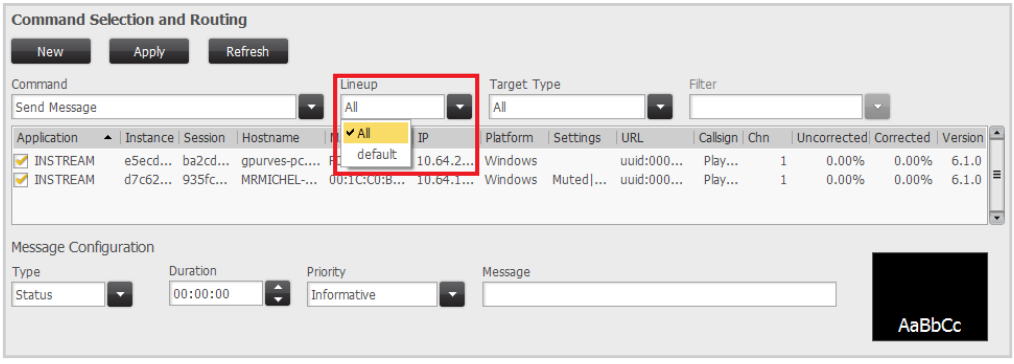
1. Click New to get started.

   This creates a new command template that you can adjust to meet your control and messaging needs.

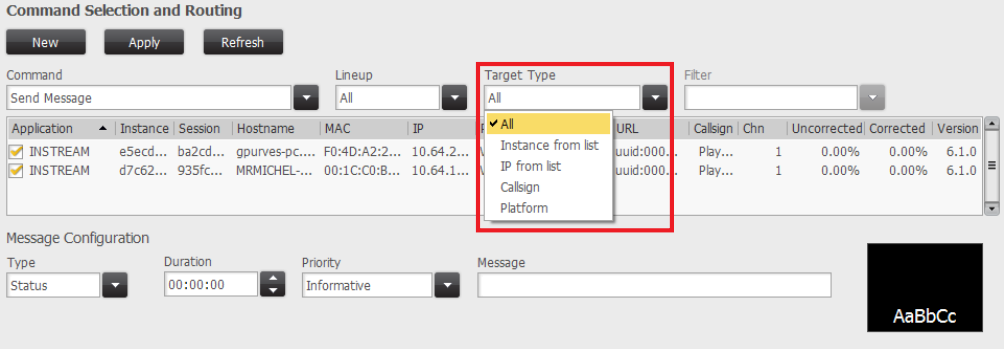
2. Select the command type from the Command drop-down menu. For this example, select the **Send Message** command. (For the list of commands, see "Command Selection" on page 201.)



3. To route the command to all active clients (i.e., InStream and Stingray set top box users), select **All** under Lineup. (For details on the Channel Lineup selections, see "Command Routing" on page 202.)



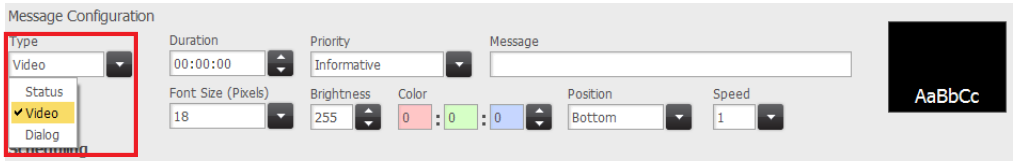
4. To target all clients rather than a subset, select **All** under Target Type. (For details, see "Target Type Fields" on page 204.)



Depending on the command you select, the Message Configuration and Command Scheduling panes are enabled. To continue the above example, the following steps show how to send a video message.

To send a video message:

1. To display the message over video, select the **Video** message type.



2. Then select the duration (HH:MM:SS) for this message to be sent, for example, 1 hour (1:00:00).
3. Type your message text in the **Message** field (e.g., "Severe weather advisory."). (For details, see "Message Configuration" on page 204.)
4. Select the Font Size, Brightness, Color (R,G,B) screen Position (e.g., **Bottom**), and Speed (e.g., **1**). (For details, see "Message Configuration Fields" on page 205.)
5. To send the message command immediately, under Command Scheduling, select **Now** and click Apply.

   -or-

   To create a recurring message, see "Command Scheduling" on page 207 for details.
6. To verify your message, launch InStream and view the message scrolling across the bottom of the viewing window.

Command Selection

Following are the Command menu options for configuring commands and targeting those commands to all or subsets of clients. The ▶ character indicates menu options with submenus (e.g., **InStream ▶ Closed Captioning ▶ Off**).

Command	Description
All Clients (InStream, Stingray or Makito Decoder*)	
Change Channel ▶	Tunes the targeted clients to the specified channel. NOTE: * In addition to InStream desktop players and Stingray STBs, you can also use this command to change channels on the Makito Decoder. This is the only VF C2 command applicable to the Makito Decoder.
Previous Channel	Tunes the selected client(s) to their previously tuned channel.
Guide ▶	Opens or Closes the Guide window on the selected client(s).
Mute ▶	Mutes or Un-mutes the selected client(s).
Volume	Displays a slider to set the audio level of the selected client(s).
Send Message	Creates and sends a message to the selected client(s). The message types are **Status**, **Video**, and **Dialog**. NOTE: For more information, see "Message Configuration Fields" on page 205.
Sleep Timer ▶	Terminates the selected client(s) after the specified time. Choose from Off, 15, 30, 45, 60 or 90 minutes.
Lock Interface ▶	Locks access to the player dashboard, control bar, and Player Settings menu.
Exit	Terminates the selected client(s).
InStream Only ▶	
Video On Top ▶	Enables/disables Always on Top mode for the selected client(s).
Dashboard ▶	Enables/disables the dashboard for the selected client(s).
Thumbnail ▶	Enables/disables the thumbnail view for the selected client(s).
Show ▶	Enables/disables minimized mode for the selected client(s).
Minimize ▶	Enables/disables minimized mode for the selected client(s).

Command	Description
Bring Window to Front	Brings InStream to the front of other desktop applications when important messages need to be sent out, such as Emergency Alert System (EAS) messages.
Full Screen ▶	Enables/disables Full Screen mode for the selected client(s).
Closed Caption ▶	Enables/disables Closed Caption support for the selected client(s).
STB Only ▶	
HDTV ▶	Enables/disables HDTV capability on the STB.
Power ▶	Places STB(s) in stand-by (Off) or brings it out of stand-by (On).
Set IP Address	Sets the STBs for DHCP or a single STB to a static network configuration. TIP: Use caution, since incorrect network settings may prevent the STB from provisioning.
Set Provisioning Address	Sets the STB provisioning the selected STBs. TIP: Use caution, since incorrect network settings may prevent the STB from provisioning.
Set STB TV Format	Sets the TV output format of the STB to the selected format.

Command Routing

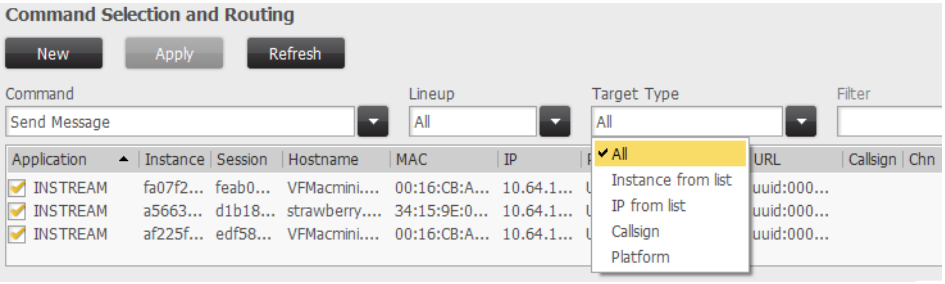
When creating a VF C2 command, you can direct or route the command to specific clients by selecting the Channel Lineup and Target Type.

To configure the routing options for the command:

1. Select the Channel Lineup to which the client(s) you are targeting belong (select **All** if unknown).

TIP Channel Lineups are defined from the Lineup Editor, which is a sub-module of VF Channel Manager. For more information, see "Lineup Editor - Managing the Channel Lineup" on page 120.

2. Next select the group of clients to target.



For example, selecting **Lineup** = **All** and **Target Type** = **All** sends the message to all connected clients (i.e., InStream running on Windows, Mac OS X, Linux, and Stingray STBs).

3. You can also send the command to a single client or group of clients. For example, to select a single Windows client to receive the message, select either **Instance from list** or **IP from list** as the Target Type, and then click the client row in the list.

   The command is only sent to the selected InStream client.

4. For **Call Sign** or **Platform** Target Types, you can filter the range of clients that will receive the command. (For details on the Target Types, see "Target Type Fields" on page 204.)

NOTE Clicking on any column header sorts the list by that column; clicking again sorts in reverse.

Target Type Fields

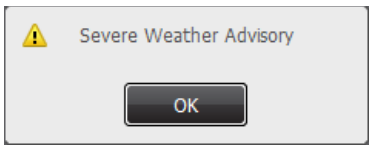
The following table explains the Target Type options.

Target Type	Description
All	Directs the command to all eligible clients per Channel Lineup selected.
Instance from list	Directs the command to the client instance selected from the list of active client sessions. Double-click to select the single client session from the list.
IP from list	Directs the command to all InStream sessions running on the client at the IP address selected from the list of active sessions. Click to select a client session running on the IP address to target.
Call Sign	Directs the command to clients tuned to the selected channel of the selected **Lineup**. Use the **Filter** menu to refine the selection further.
Platform	Selects the hardware platform type: Windows, Mac OS X, Linux, Solaris, STB or Makito. Use the **Filter** menu to refine the selection further.

Message Configuration

To send the message as a popup message, change the message type to **Dialog** as shown in the following image. Then click Apply.

A popup message displays on end-user desktops and STBs as shown in the following image.



A **Dialog** message type will take precedence over access to InStream controls; the user must acknowledge the message before access to InStream controls is re-enabled.

Setting the message type to **Status** displays the message in the information field of the InStream dashboard and scrolls on the STB. (For details on the Message Types, see "Message Configuration Fields" on page 205.)

Because there is no InStream style dashboard status field on the Stingray STB, the **Status** message type scrolls a translucent message over the bottom of the video as shown below.

Message Configuration Fields

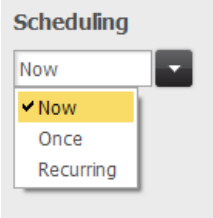
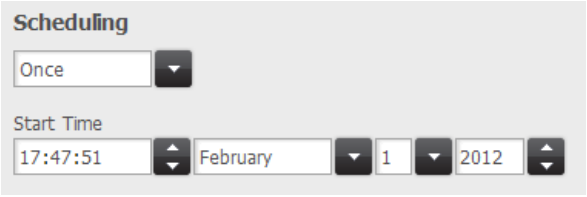
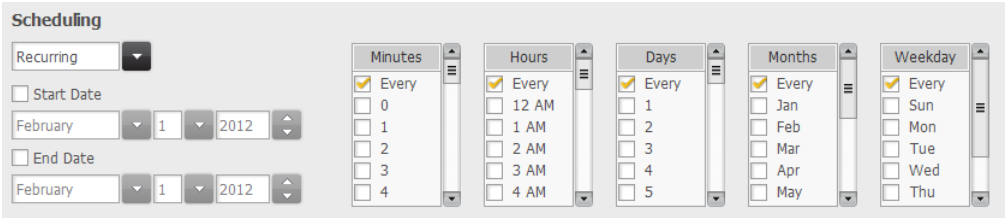
All message types display similarly on both InStream and Stingray STB clients. The following table describes the message configuration options:

Message Field	Description
Type:	
Video	Displays the text message over the video at the position specified in the Position menu. InStream must be actively decoding video to show this type of message. The following special characters are supported for the message text: • %D = date and time • %I = IP address • %M = MAC address • %U = username
Status	Displays the message in the status field of the InStream dashboard or a translucent message at the bottom of the STB video.

Message Field	Description
Dialog	Displays a popup message on the desktop of the InStream client host or on the STB, regardless of whether InStream is currently tuned to and playing video. This popup message type prevents the user from accessing InStream controls before clearing the message by clicking OK.
Duration (HH:MM:SS)	Specifies the duration of time that the message should remain persistent in the system. NOTE: A message duration of 00:00:00 will continue to send the message indefinitely.
Priority	Specifies the priority of the message (e.g., Informative, Local Test, Local Advisory, Local Warning, or Local Emergency).
Message	Enter the text message in this field.
Font Size	Specifies the font size used for the message.
Brightness	Specifies the brightness setting used for the message when displayed over video. Ranges from 0 to 255, with 0 being completely transparent.
R G B	Specifies the message color when displayed over video.
Position	Specifies the message position when displayed over video (e.g., Top Left, Top, Top Right, Middle Left, Middle, Middle Right, Bottom Left, Bottom, Bottom Right). NOTE: The preview window shows the message position and size. If the complete message is too long to fit over the video window, due to font size and message text length, InStream scrolls the message horizontally.
Speed	¼, ½, ¾, 1, 1 ¼, 1 ½, 1 ¾, 2 – a higher number provides a faster horizontal scroll speed.

Command Scheduling

This section describes the scheduling of VF C2 commands. A command can be sent once immediately, once at a future scheduled date and time, or occurring periodically, either forever or within the bounds of a start and end time. The following table describes the Command Scheduling options:

Scheduling Option	Description
Now	Sends the command immediately when the Apply button is clicked. The command then disappears from the Scheduled Commands list. 
Once	Schedules the command to be sent once at a scheduled future time and date. Select **Once**, and then configure the time (24 hr. clock, HH:MM:SS) and date using the calendar menu as shown below. 
Recurring	Schedules the command to be sent on a recurring basis for any minute, hour, day, month, year or combinations thereof. Select **Recurring** and then select the **Start Date** and **End Date** for circulation. Then select the checkboxes to configure the minute(s) of each hour, the hour(s) of each day, the day(s) of each week, the month(s) of each year, and the applicable week days if only a subset is desired. The command will be sent according to the times and days selected.
	

Recurrence Configuration Fields

The table below describes the fields used in setting up a recurring schedule:

Recurrence Field	Description
Minutes	Select **Every** or each minute of the hour (0 - 59) during which you wish to send the command. **Every** implies every minute of each hour selected.
Hours	Select **Every** or each hour (0 - 23) of the day during which you wish to send the command. **Every** implies every hour of each day selected.
Days	Select **Every** or each day (0 - 31) of the month during which you wish to send the command. **Every** implies every day of each month selected.
Months	Select **Every** or each month (Jan - Dec) of every year during which you wish to send the command. **Every** implies every month of each year.
Week Day	Refines the overall configuration to restrict the command schedule to specific days of the week (e.g., weekdays, Monday through Friday, Wednesday only, and so on).

NOTE When the end date of a recurring command arrives, the command is removed from the Scheduled Commands list. Commands configured to be sent **Now** without recurrence are removed from the Scheduled Commands list immediately after being sent.

Creating a Command Template

You can store command templates that you use periodically such as weather warnings or organizational announcements. This allows you, for example, to send the same message periodically at times and dates to be determined, or to send a standard severe weather advisory, when required.

To create a command template for future use:

1. Create the command and set the scheduled send time to be years into the future.
2. Click Apply to activate the command.

This command template will stay in the list until it is deleted or that future date arrives.

To use this command template (any time before it expires):

1. Click the command in the Scheduled Commands list to select it.
2. Click Copy and adjust the copied command to suit your immediate needs. For example, adjust the schedule to **Now** to send the preconfigured command immediately.
3. Click Apply to activate the command.

The copied command will be sent as specified and then will be removed from the Scheduled Commands list. The command template will remain in the list until it is deleted or that future date arrives.

CHAPTER 11: STB Management and Image Provisioning

This chapter describes the Furnace modules available to manage set-top boxes (STBs) in the Furnace domain.

- The VF Mantaray Manager module is used to manage one or more Mantaray STB devices from a Furnace server.
- The VF STB Imager provisioning utility is used to create profiles that are unique to one or more Stingray STB applications.

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- Creating a New Profile Assignment 237
- Deleting a Profile Assignment 238

Managing Mantaray STB Devices

When you connect a Mantaray Set-Top Box (STB) to your network, you need to register it as a device in the Furnace domain. This is done from the Mantaray using the Mantaray STB Settings application.

NOTE Please refer to the Mantaray Quick Start Guide for basic steps to set up, register, and configure your Mantaray. For detailed information, see the Mantaray Administrator's Guide.

Once the connection is established, the Mantaray will automatically provision itself with an application from the network via the Furnace. Whenever power is applied to the STB, it remembers the last system with which it was provisioned.

You can then manage the STB along with other Mantaray STBs from the Furnace Admin Web portal, using the VF Mantaray Manager module. From here you can select one or more devices (STBs) and edit device settings, send commands to control device(s), and schedule control command events. You can manage devices individually and via customizable tags; tag-based filtering makes it easy to find and select devices for actions or bulk editing.

You can also configure the device default settings to apply to new Mantarays and create tags for tag-based configuration of Mantarays.

IMPORTANT As of Furnace Version 6.6, Mantaray Manager and STBs no longer support the notion of "groups"; this has been replaced by tag-based configuration of devices. For details, see "Tagging Devices" on page 231.

If you are upgrading from Furnace Version 6.5, existing groups will be converted to tags and Mantaray will apply tags based on previous group membership of devices.

The remainder of this section covers tasks you can perform from the Mantaray Manager Devices list.

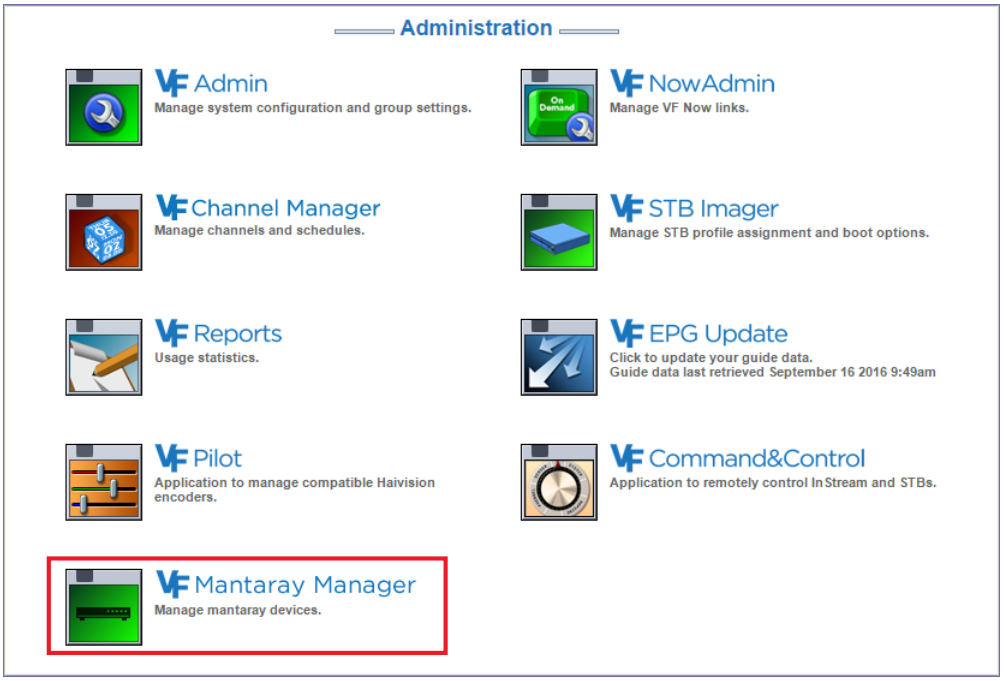
To schedule control command events, see "Scheduling Mantaray STBs" on page 225.

To configure device default settings and create tags for tag-based configuration, see "Mantaray STB Administration" on page 228.

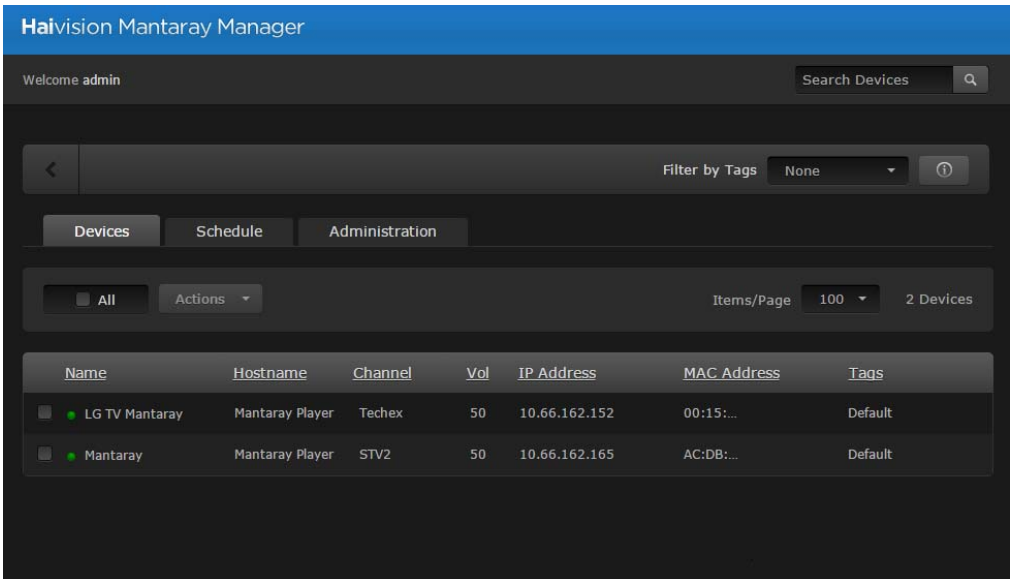
Accessing Mantaray Manager

To access Mantaray Manager:

1. On the Tools page, click the VF Mantaray Manager icon under the Administration Section.



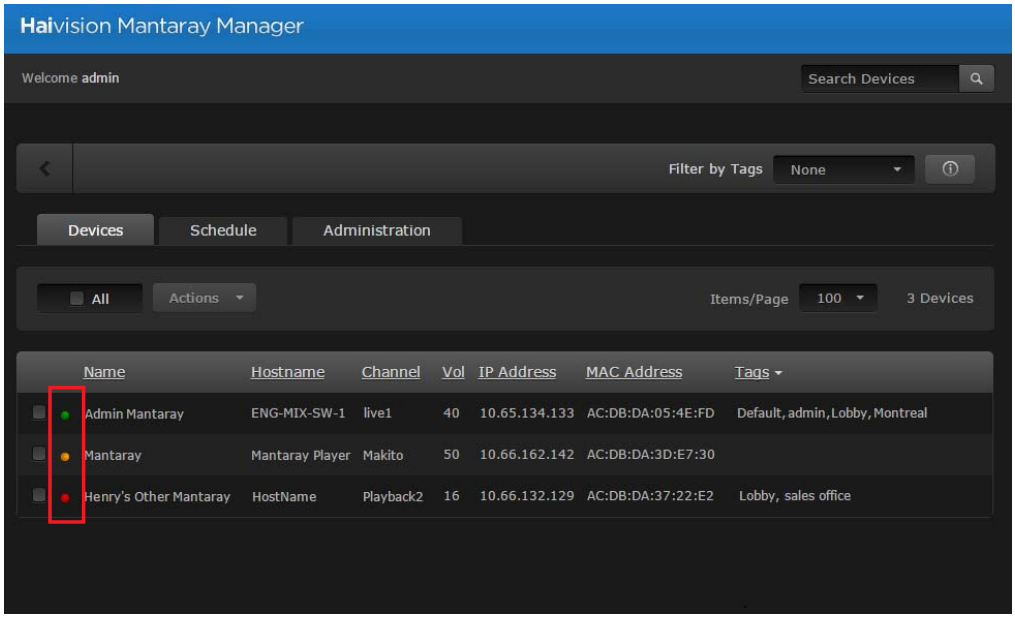
Mantaray Manager opens to the Devices list (shown following), which lists the Mantaray devices (STBs) registered in this Furnace domain.



Viewing and Managing Devices

To view and manage Mantarays registered in this domain:

The Devices list displays summary information for each Mantaray, including the status, name, hostname, current channel and volume, IP address, MAC address, and assigned tags.

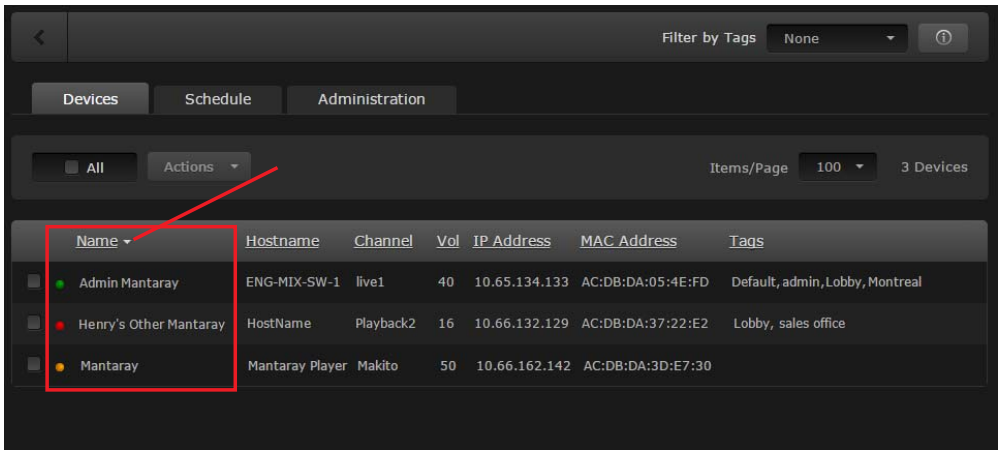


Four LED colors indicate the device's connection status:

Status LED Color	Indication
Green	The device is On, connected, and displaying video.
Blue	The device is locked, awaiting PIN entry.
Red	The device is disconnected.
Yellow	The device is powered Off.

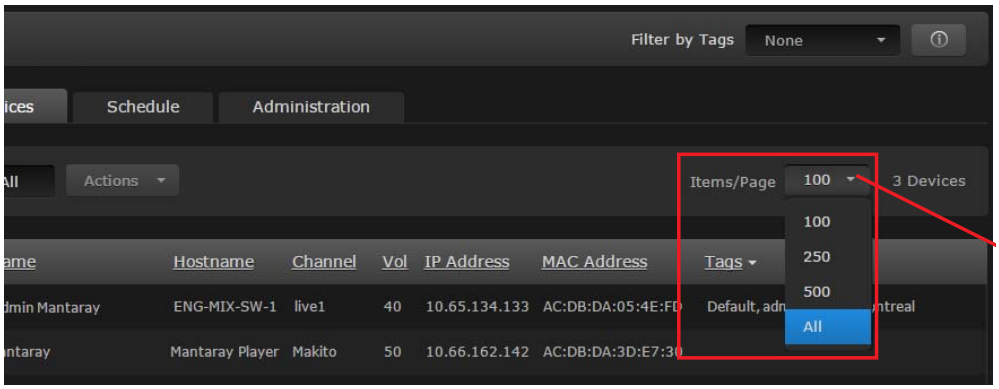
Sorting the List

You can click a column heading to select the column to sort by and click again to toggle the sort order between ascending and descending. For example, in the previous example, the list is sorted by tags, and in the following example, by device name.



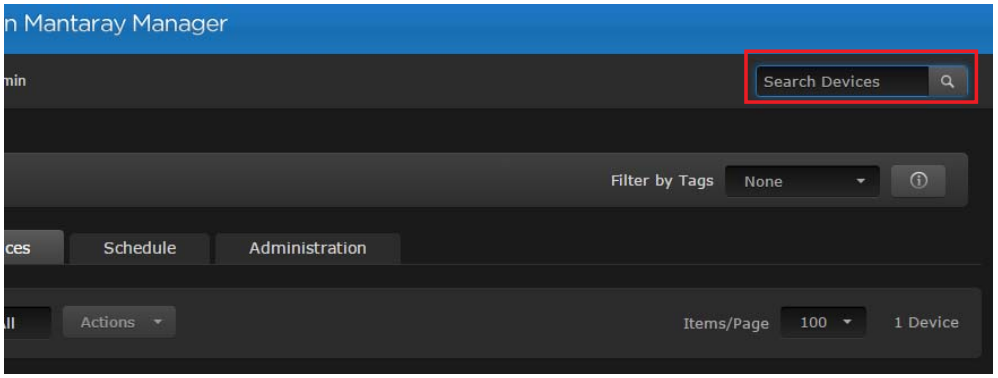
Items per Page

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



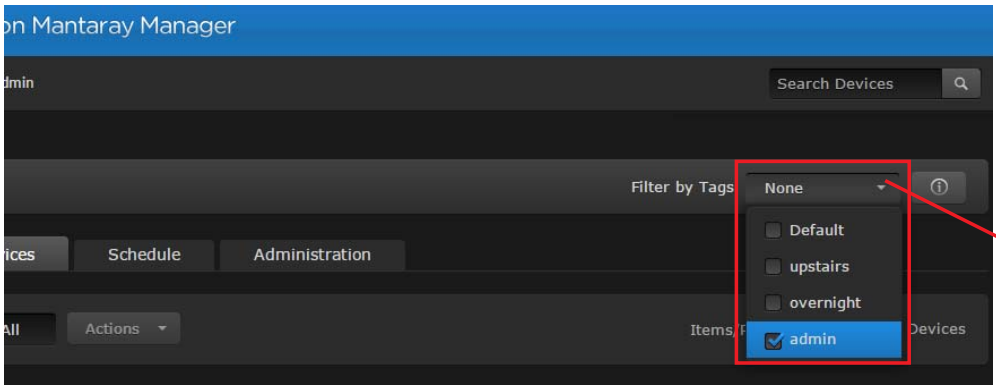
Searching

To search for devices, enter the name or IP address in the Search field.

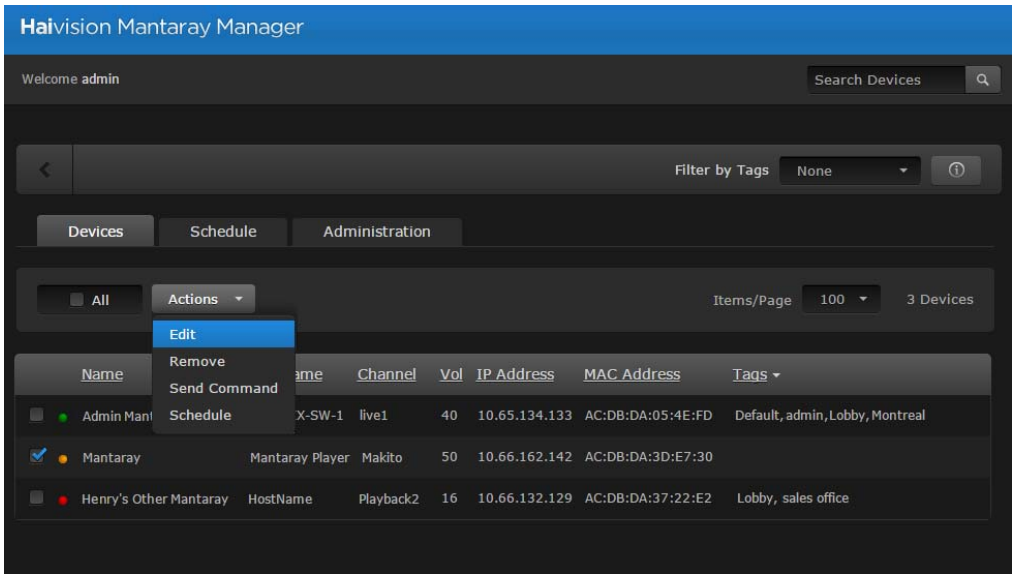


Filter by Tags

You can also filter the displayed list by tags. Simply click in the Filter by Tags text box and select the tag to filter by. This is useful to narrow down and manage a long list of devices. To add or delete tags, see "Tagging Devices" on page 231.



From the Devices list, you can select one or multiple devices and perform these actions:



- Edit the device name and settings. You can bulk-edit some but not all device settings. See "Editing Device Settings" on page 216.
- Remove (inactive) devices from the Furnace domain. See "Removing Devices" on page 219.
- Send commands to control device(s). See "Controlling Devices" on page 220.
- Schedule control command events (either one-time or recurring) on device(s). See "Scheduling Mantaray STBs" on page 225.

To specify the default settings assigned to new devices, as well as create tags for tag-based configuration of Mantarays, see "Mantaray STB Administration" on page 228.

For the list of keyboard shortcuts, see "Keyboard Shortcuts" on page 224.

Editing Device Settings

When you register a new STB, the default settings are assigned to the new device. (To specify the default settings, see "Setting Defaults" on page 228.)

From the Devices list, you can select a device and enter unique information such as the name and hostname, as well as adjust the settings assigned by default. You can also select multiple devices and bulk-edit some but not all device settings.

TIP If the Devices list is long and you have created tags, you may choose to filter the display by tags. See "Filter by Tags" on page 215.

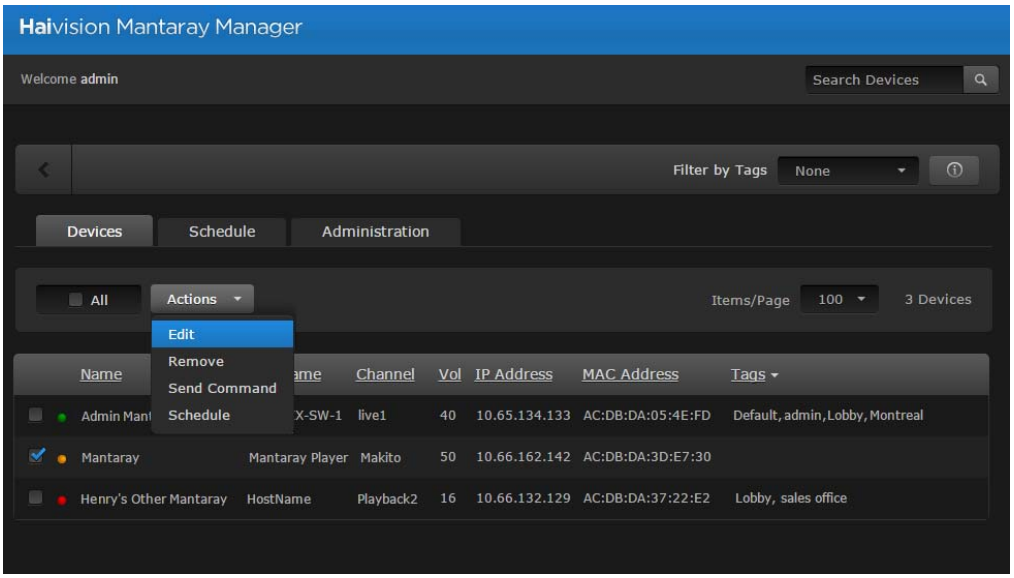
To edit device settings:

1. On the Devices list, select the device(s) to edit: either click the device name(s), check the checkbox next to the device(s), or check All.

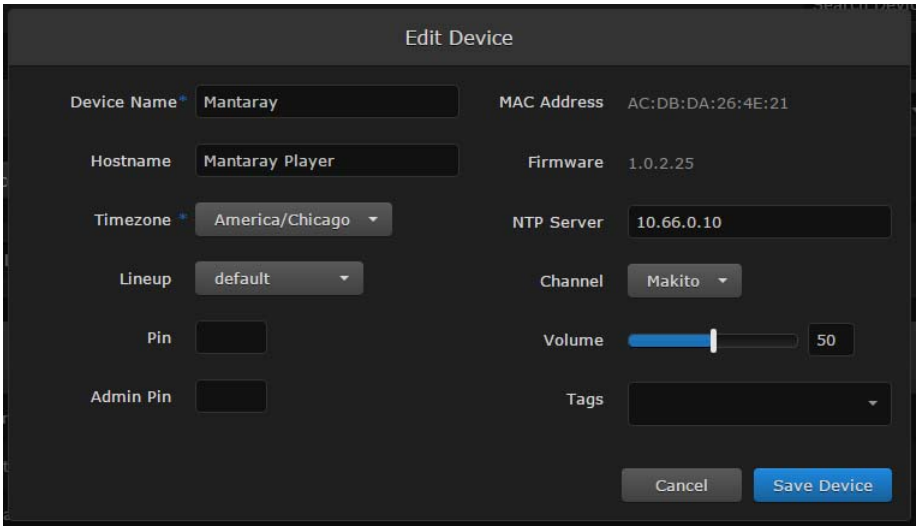
NOTE Clicking a device name selects it; while clicking the channel or volume in the device row opens the Send Command dialog with either the Channel or Volume selection enabled.

To use keyboard shortcuts, see "Keyboard Shortcuts" on page 224.

2. Select Edit from the Actions drop-down menu. (This menu is available when one or more items are checked.)

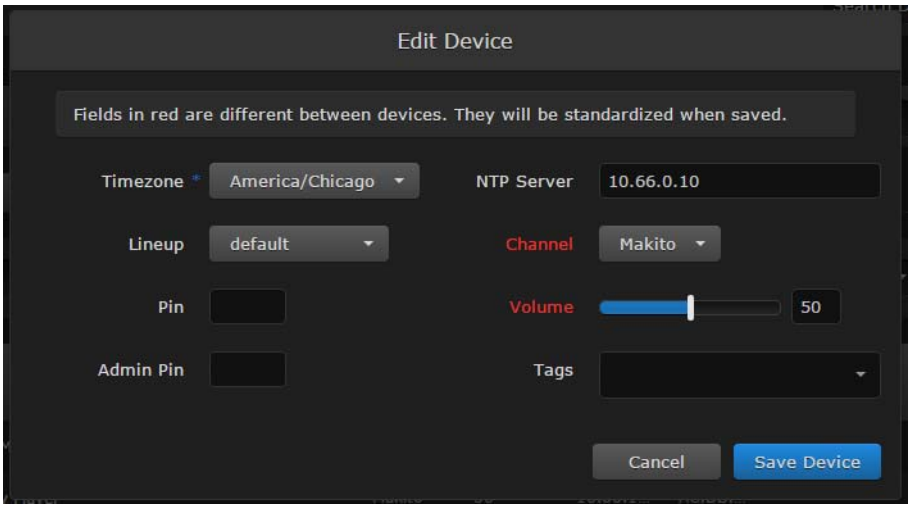


3. On the Edit Device dialog, enter or select the value(s) to modify the device. See "Device Settings" on page 218. The MAC Address and Firmware are read-only.



IMPORTANT If you select multiple devices (or check All), the Edit Device dialog only includes settings that can be bulk-edited (as shown in the following figure). If device settings have been configured differently (i.e., with conflicting or "mixed" values), you will see a warning across the top of the list and settings with mixed values will be displayed in red.

You can either assign the values shown to *all* the selected devices (by clicking Save Device), or retain the current (i.e., different) settings (by clicking Cancel).



4. Click Save Device.

The changes take effect immediately and will be reflected in the Devices list.

Device Settings

The following table lists the Mantaray Device settings (for individual devices, Edit Device dialog):

Device Setting	Description/Values
Device Name	Enter a unique name for the STB. NOTE: The Device Name, Hostname, Timezone and NTP Server settings are also stored in STB Flash memory.
Hostname	Enter a unique hostname for the STB. TIP: This is an additional label that can be used to further identify the physical location of the STB in the Furnace domain.
MAC Address	(read-only) The MAC address for the STB. TIP: This is also displayed on the Mantaray's STB Settings Information page.
Firmware	(read-only) The firmware version for the STB. TIP: This is also displayed on the Mantaray's STB Settings Information page.
*Initially set to Default Settings specified for Mantaray Manager	
Timezone	To modify, select the desired time zone and corresponding city.
NTP Server	To modify, enter the IP address of the NTP (Network Time Protocol) Server for the Mantaray.
Lineup	Select the channel lineup from the drop-down list. The default is None. NOTE: This is the list of channel lineups defined for the Furnace server. For more information, see "Lineup Editor - Managing the Channel Lineup" on page 120.
Channel	Select the channel from the drop-down list of channels in the selected lineup.

Device Setting (Cont.)	Description/Values (Cont.)
Pin	To set the PIN code, type in the PIN (4-8 digits). This functions as a security mechanism for the device. Once this is set, users must enter the PIN to unlock the STB whenever it is powered up, or comes back out of standby mode. The PIN may be entered from VF Mantaray Manager or directly on the STB using the remote control. NOTE: A PIN code set or removed (here) for a specific device takes precedence over the default PIN entered on the Administration page.
Volume	To raise or lower the volume, move the volume slider right or left. Or type in the volume level in the text box.
Admin Pin	To set the Admin PIN code, type in the PIN (4-8 digits). When this is set, users must enter this PIN to access the STB Settings application. NOTE: An Admin PIN code set or removed (here) for a specific device takes precedence over the default Admin PIN entered on the Administration page.
Tags	Type in one or more tags to assign to this device. Tags must be previously created from the Administration page. See "Tagging Devices" on page 231.

Removing Devices

To remove devices from the Furnace domain:

1. Select the device(s) in the Devices list.
2. Select Remove from the Actions drop-down menu and click Confirm.

   Inactive devices (i.e., no longer registered) will be removed from the Devices list and the Furnace domain. Active devices will be removed from the Devices list but will eventually reappear in the Devices list.

NOTE The default settings will be applied to devices once they reappear, but the settings stored in STB Flash memory (i.e., Name, Hostname, Timezone and NTP Server, if set) will take priority over default settings.

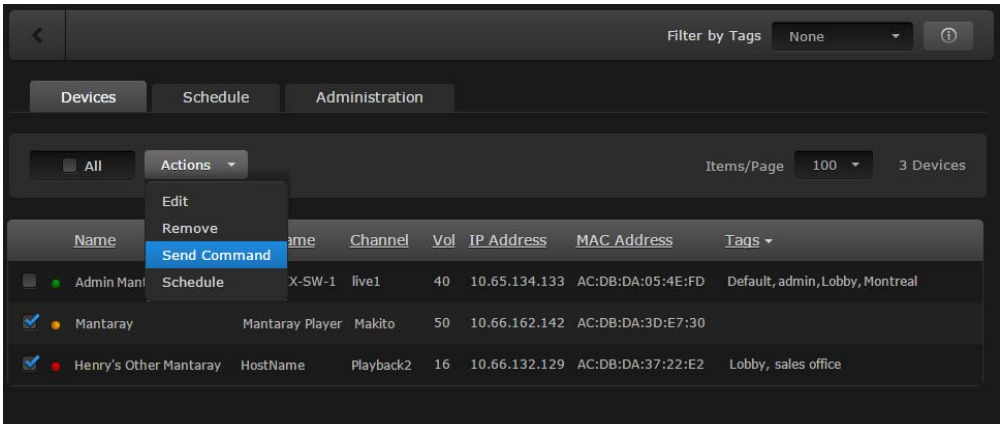
Controlling Devices

From the Devices list, you can select devices and send control commands, such as setting the channel and volume; muting/unmuting, powering On/Off, or rebooting device(s); and setting PIN codes.

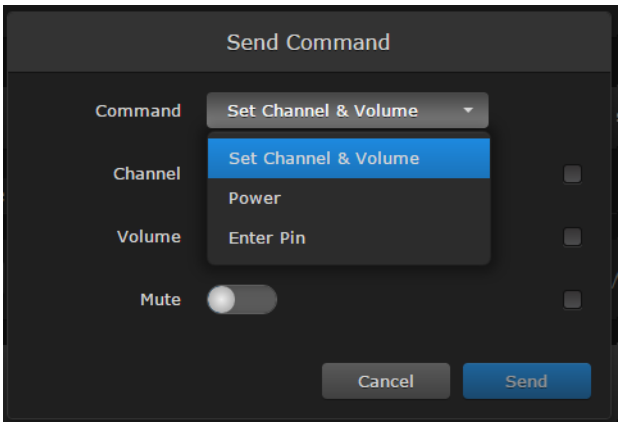
Control commands take effect immediately and (where applicable) will be reflected in the Devices list.

To send control commands to devices:

1. Select the device(s) in the Devices list.
2. Select Send Command from the Actions drop-down menu.

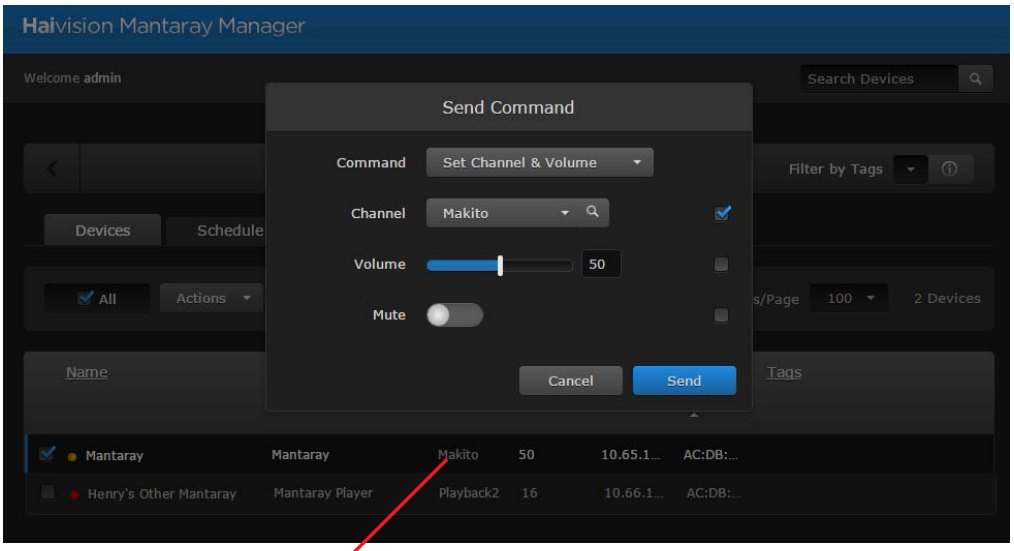


3. On the Send Command dialog, select the command: either Set Channel & Volume, Power, or Enter PIN.



TIP You can click the channel or volume in the device row (on the Devices list, as shown in the following figure) to directly open the Send Command dialog with either the Channel or Volume selected.

Or you can use keyboard shortcuts such as “C” (Set Channel) or “V” (Set Volume). See “Keyboard Shortcuts” on page 224.



Set Channel & Volume

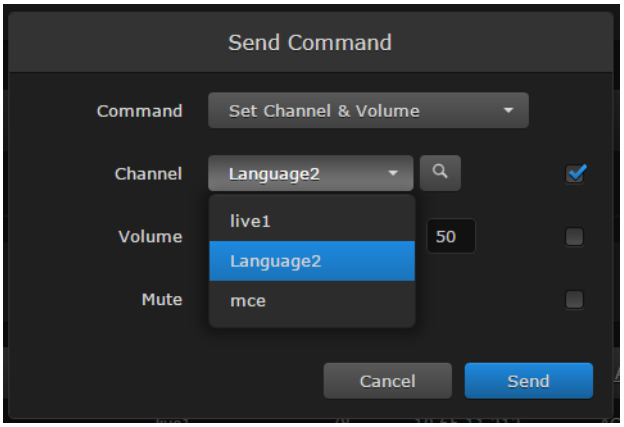
1. Select Set Channel & Volume from the Command drop-down menu (Send Command dialog).

   -or-

   Click the channel or volume for the device in the Devices list.

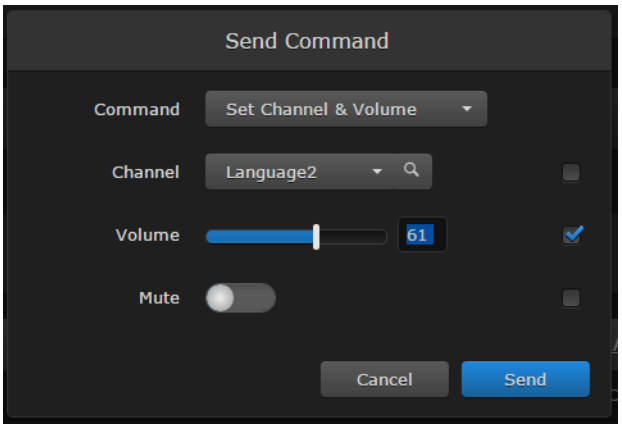
   Or you can set the channel and/or volume from the Edit Device dialog.

2. To change the tuned channel, select the channel from the Channel drop-down list.



When you adjust the channel or volume, or mute/unmute the volume, the checkbox beside the selector is automatically checked to indicate which settings will be affected.

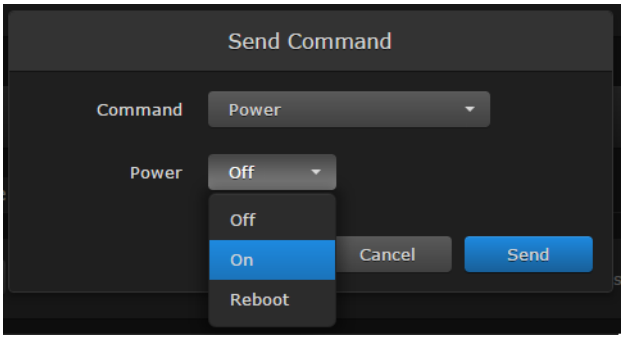
3. To adjust the volume, move the volume slider right or left to raise or lower the volume. Or type the volume level into the text box.



4. To mute or unmute the volume, toggle the Mute button On or Off.
5. Click Send.

Power

1. To power the selected device(s) On/Off or to reboot the device(s), select Power from the Command drop-down menu (Send Command dialog).
2. Select On/Off or Reboot, as applicable.

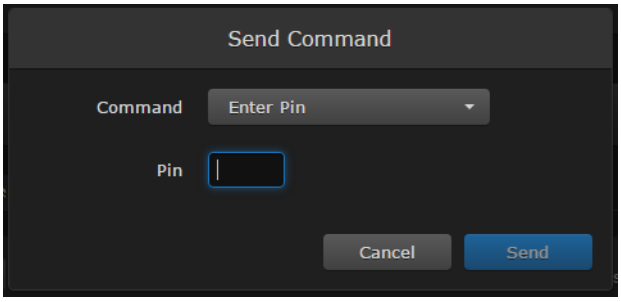


3. Click Send.

Enter PIN

When the PIN code is set, users must enter it to unlock the STB(s) whenever the device(s) are powered up or come back out of standby mode. For more information, see "Pin" on page 230.

1. To set the PIN code, select Enter Pin from the Command drop-down menu.
2. Type in the new PIN code (4-8 digits).



3. Click Send.

   The command takes effect immediately.

4. To exit the Mantaray Manager and return to the Tools page, click .

Keyboard Shortcuts

The following keyboard shortcuts are available for the Mantaray Manager:

Description/Task	Shortcut
Global Hotkeys	
Hotkey Info	?
Form Submit	Enter
Cancel	Escape
Search Hotkeys	
Search	Enter
Clear Search	Escape
Device Hotkeys	
Select/unselect all devices	A
Send command / Set Channel on selected device(s)	C
Edit selected device(s)	E
Mute selected device(s)	M
Unmute selected device(s)	U
Set Pin on selected device(s)	P
Set Volume on selected device(s)	V

Scheduling Mantaray STBs

From the Schedule page, you can select STBs and schedule control command events. Command events are either one-time or recurring and are the same as the (unscheduled) commands available when you select Send Command from the Devices list.

TIP If you have filtered the Devices list by tags, when you open the Schedule page, you still see the filtered list.

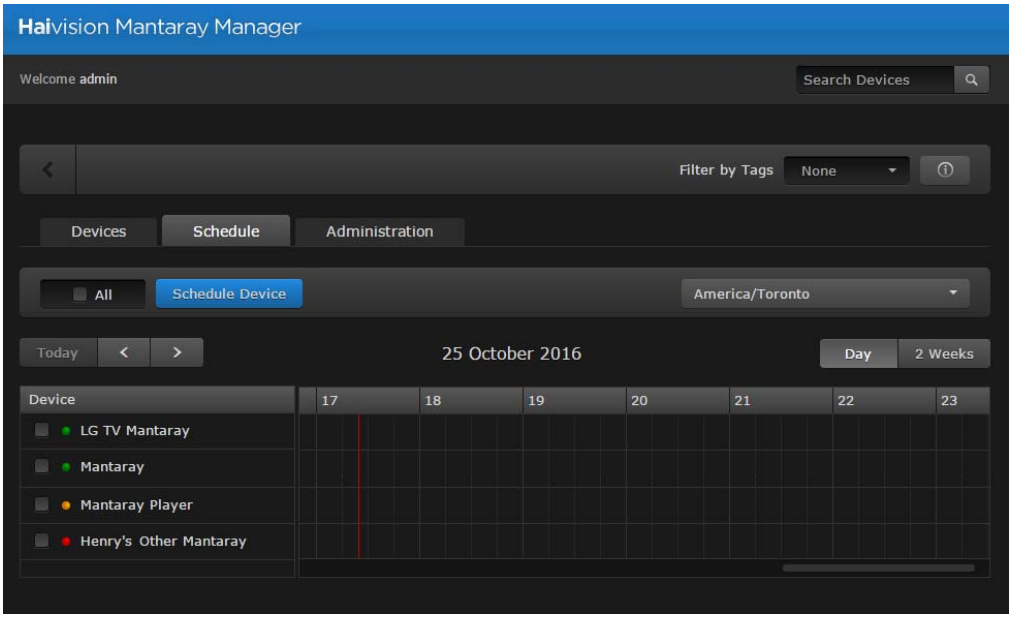
NOTE Events do not have end times. Each one continues indefinitely until another event changes/ends it. For example, the Set Channel command changes channels from one to the other, and no stop time is required.

Mantaray Manager shows the last command until the end of the current day. However, STBs do not automatically switch off or go into low-powered standby mode. These events would have to be scheduled by customers.

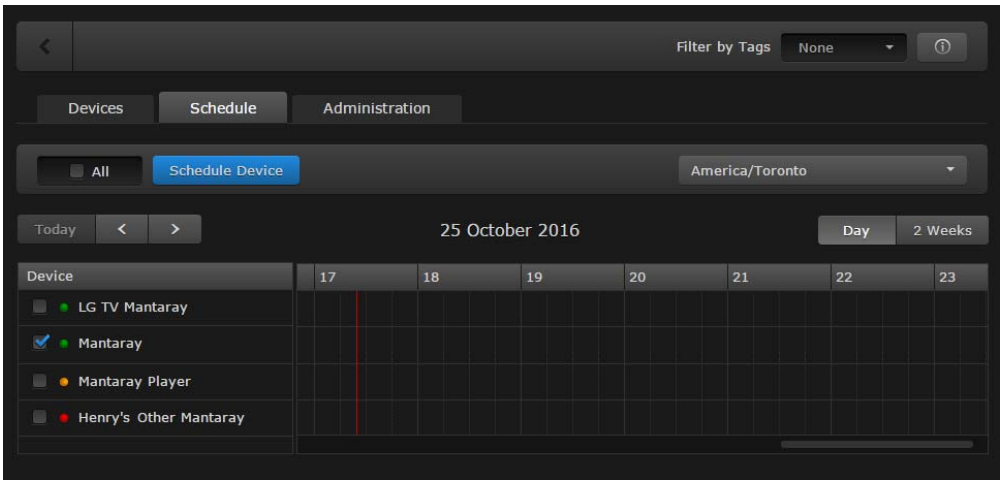
To schedule STBs:

1. On the Mantaray Manager page, click the Schedule tab.

   The Schedule page opens, displaying your Mantaray devices as cells on a grid, with a row for each device and a column for each quarter or half hour of the time period. The time period is either the current day or a 2-week range (the following example has the current day selected).



2. If necessary, switch the view either from the current Day to 2 Weeks, or vice versa.
3. Select the device(s) to schedule in the Device column (if not already selected).

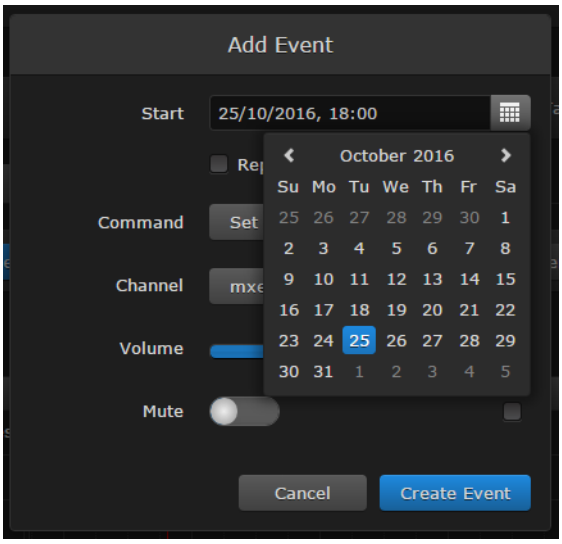


4. Click Schedule Event.

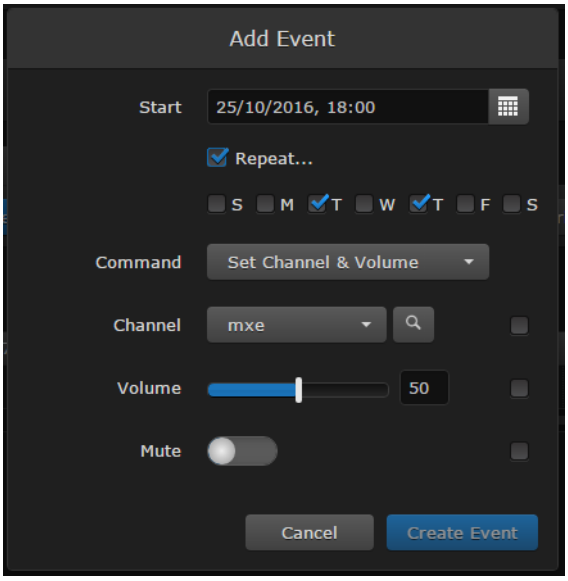
   -or-

   Click an empty time slot for the event.

5. On the Add Event dialog, adjust the date and time (if required).



6. To set up a recurring event, check the Repeat checkbox and select the days on which to repeat the event.

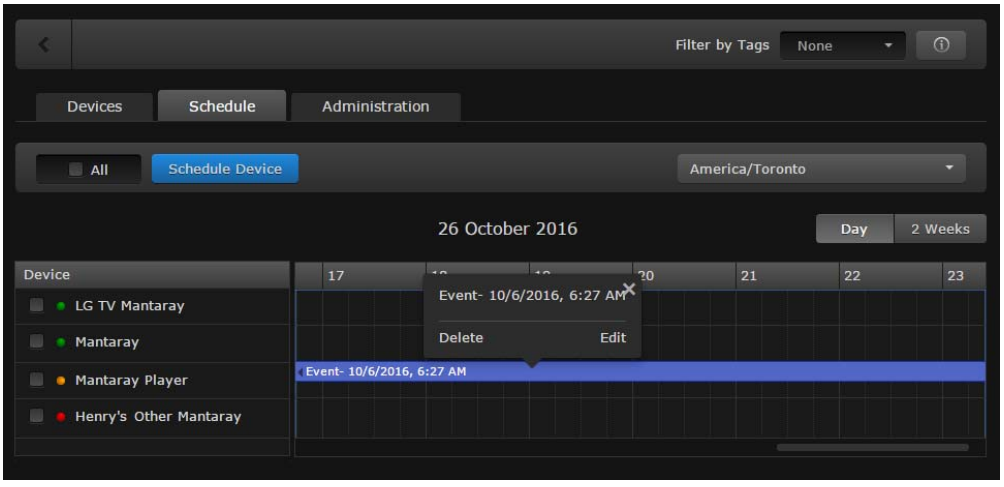


7. Select the command settings. For information, see "Controlling Devices" on page 220.

8. Click Create Event.

   The event(s) will be added to the schedule grid for the selected devices.

9. To delete or edit the event, click in the event slot and select Delete or Edit.



Mantaray STB Administration

From the Administration page, you can configure default settings to assign to new STBs registered in the Furnace domain. You can also create tags for tag-based configuration of devices.

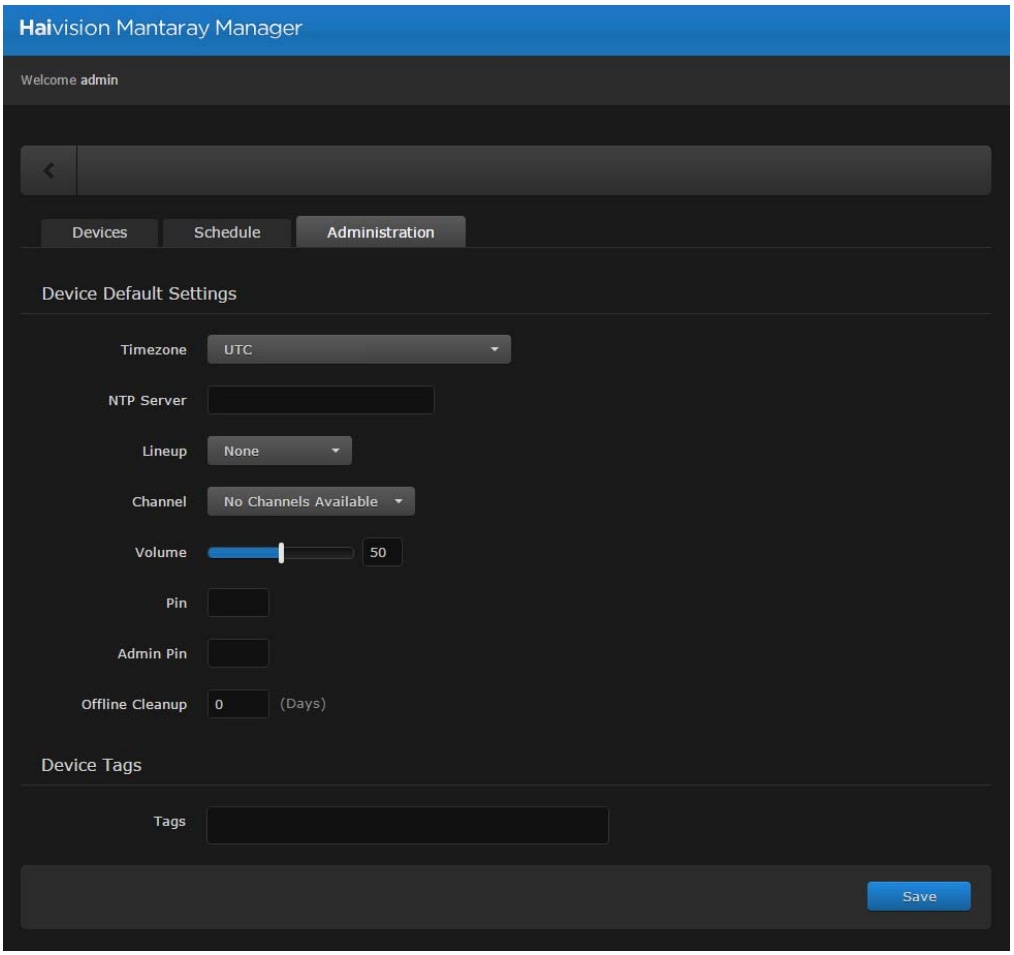
Setting Defaults

When a new Mantaray is registered as a device in a Furnace domain, it is assigned the default settings. This is useful to control settings such as the channel lineup, volume level, NTP server, and Timezone, the first time the device boots up.

To configure device default settings:

1. On the Mantaray Manager page, click the Administration tab.

   The Administration page opens showing the device default settings (as shown in the following example).



2. Enter or select the value(s) to serve as default device settings. See the following section, "Default Settings".
3. Click Save.

   The changes take effect immediately and will apply to new STBs registered with the Furnace.

Default Settings

The following table lists the Mantaray Device Default settings:

Device Default Setting	Description/Values
Timezone	Initially set to UTC. To modify, select the desired time zone and corresponding city. NOTE: The times are based on hours added to or subtracted from Greenwich Mean Time (GMT).
NTP Server	This is blank the first time you open Mantaray Manager after a Furnace upgrade. Once the default is set, it is applied to new STBs registered. To modify, enter the IP address of the NTP (Network Time Protocol) Server for the Mantaray. Setting this allows the Mantaray to keep the date and time in sync with an NTP server. TIP: Generally, it is recommended to use the same NTP server as the Furnace.
Lineup	Select the channel lineup from the drop-down list. The default is None. NOTE: This is the list of channel lineups defined for the Furnace server. For more information, see "Lineup Editor - Managing the Channel Lineup" on page 120.
Channel	Select the channel from the drop-down list of channels in the selected lineup. NOTE: You cannot select channels if you have not selected a Lineup.
Volume	To raise or lower the volume, move the volume slider right or left. Or type in the volume level in the text box.

Device Default Setting	Description/Values (Cont.)
Pin	To set the PIN code, type in the PIN (4-8 digits). This functions as a security mechanism for the player. Once this is set, users must enter the PIN to unlock the STB whenever it is powered up, or comes back out of standby mode. The PIN may be entered from VF Mantaray Manager or directly on the STB using the remote control. TIP: Entering the PIN from VF Mantaray Manager is useful to enter or override PINs remotely. Once you save the Administration page, this becomes the default PIN for any Mantaray STBs registered in this Furnace domain.
Admin Pin	To set the Admin PIN code, type in the PIN (4-8 digits). This locks down Settings screen, and is used more often. When an Admin PIN is set, users must enter this PIN to access the STB Settings application. Once you save the Administration page, this becomes the default Admin PIN for any Mantaray STBs registered in this Furnace domain.
Offline Cleanup	To set the offline cleanup period, enter the number of days. Mantarays offline for more than the specified cleanup period will be removed from the Devices list. To disable automatic cleanup, set to 0 (default). NOTE: Prior Mantaray Manager versions automatically removed STBs if offline for more than 2 weeks; the time period is now configurable and cleanup may be disabled altogether.
Device Tags	See the following section, "Tagging Devices".

Tagging Devices

IMPORTANT As of Furnace Version 6.6, Mantaray Manager and STBs no longer support the notion of “groups”; this has been replaced by tag-based configuration of devices.

If you are upgrading from Furnace Version 6.5, existing groups will be converted to tags and Mantaray will apply tags based on previous group membership of devices.

Tag-based configuration facilitates online management of large installations of Mantarays. It provides a helpful way to sort, manage and schedule Mantarays with a high degree of control over content being sent to individual or groups of Mantarays.

Tags are similar to, but more specific than groups and are generally used to describe and manage devices with more granularity.

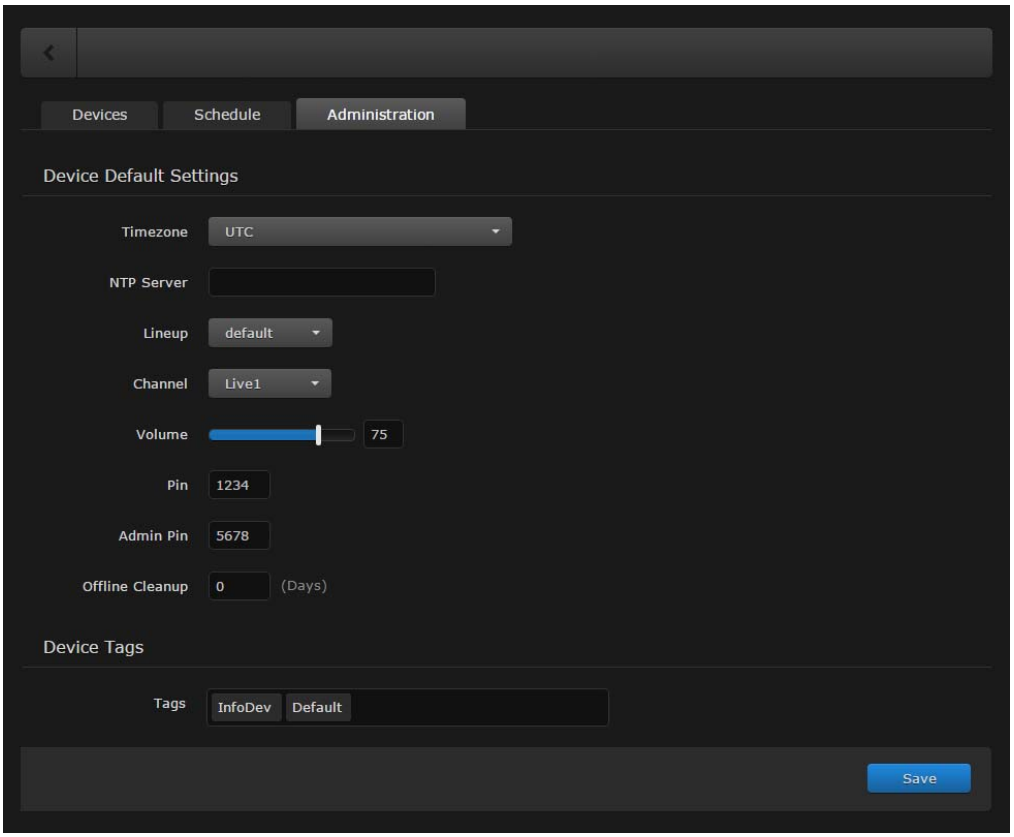
Tag-based configuration is also more powerful than groups because a single device can have more than one tag. In the previous Mantaray release, devices could only be associated with one group, which proved challenging when different layers of common settings applied to different groups and therefore had to be set for each group. Tag-based configuration allows devices to essentially be in more than one group.

Once devices are tagged, you can filter by tags to view, edit or schedule only devices that share selected tags. This is useful to narrow down and manage long lists of devices and also makes it easier to locate devices in large installations. (See “Filter by Tags” on page 215)

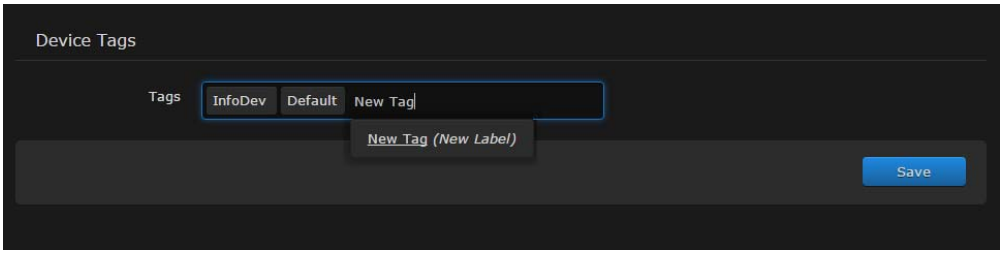
To add or delete tags:

1. On the Mantaray Manager page, click the Administration tab.

   The Administration page opens showing the defined tags for the Furnace domain (as shown in the following example).



2. To add a new tag, click in the Tags text box, type in the tag name, and press Enter.



3. To remove a tag, mouse over the name and click X.
4. Click Save.

   Keep in mind that the Save button applies to both default settings and tags.

   The newly created tags are now available to assign to devices and then to filter the displayed list.

Managing Stingray STB Image Profiles

VF STB Imager

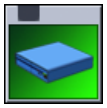
Stingray STBs automatically provision themselves from the network and accept an operating image and configuration based on the image profile assigned to the MAC address of the STB. In most cases, the default profile is used.

The STB Imager provisioning utility is used to create profiles that are unique to one or more STB applications. A profile sets up specific behaviors for certain applications such as kiosks, conference rooms, or digital signage.

The VF Command & Control (VF C2) utility may be used to remotely control active Stingray set-top boxes. For more information, see "VF Command & Control Utility" on page 196.

Adding a New STB Image Profile

This section explains how to create an STB Imager profile.

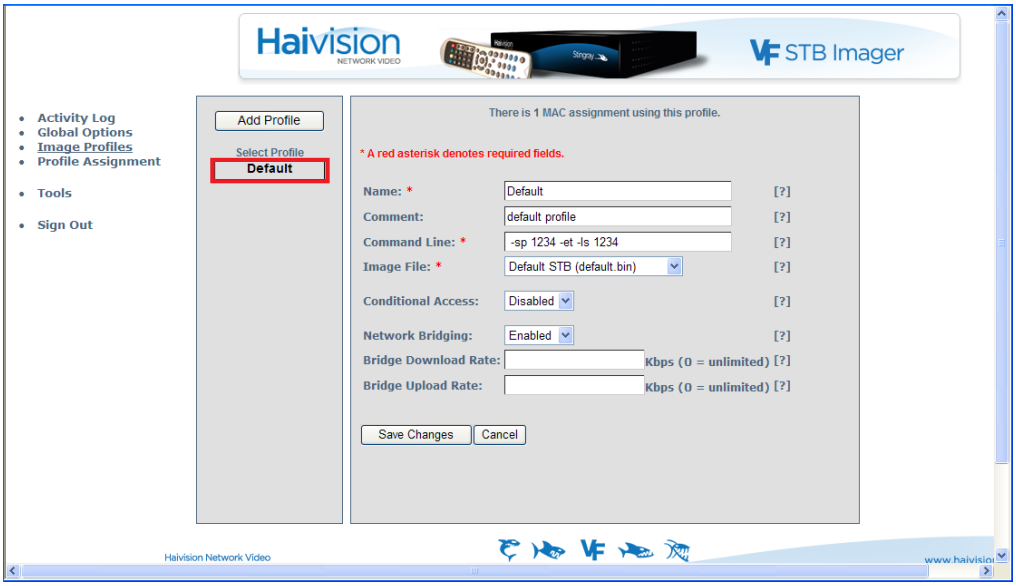


To add a new STB Image Profile:

1. On the Tools page, click the VF STB Imager icon under the Administration Section.

2. Click Image Profiles on the left side of the STB Imager Welcome page.

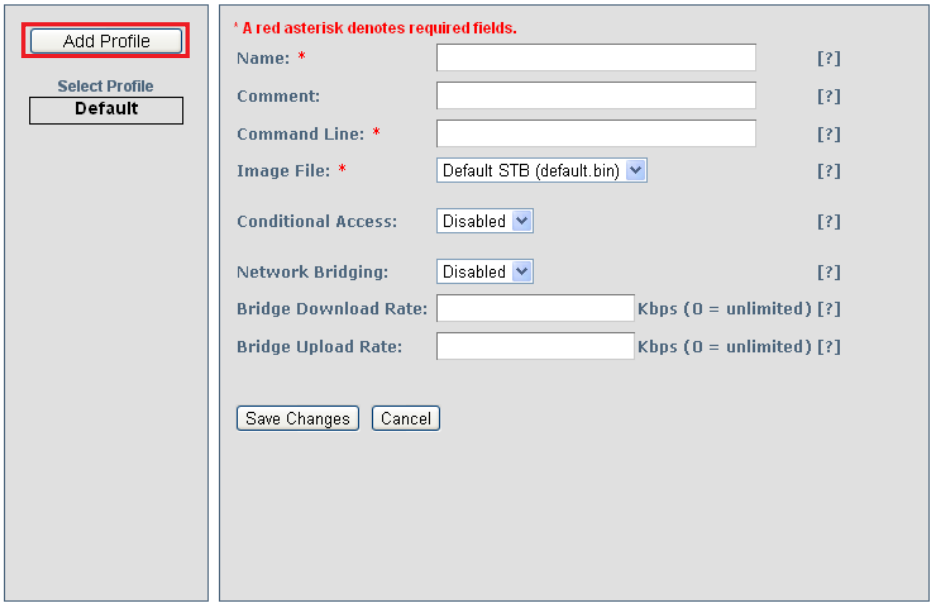
3. To view the default profile, click Default.



The default profile details are displayed in the Profiles pane (right side).

4. To add a new profile, click Add Profile.

   The Profile fields are cleared for you to enter the new information.



5. Enter the Name for the profile and (optionally) a comment that describes the purpose of the profile.

6. Specify a command line, for example:

   ```
   -l udp://10.1.3.104:4902 -sp 1234 –et
   ```

   This sample command line string specifies the license server to which the STB should communicate, sets the setup password to 1234, and instructs the STB to show and use the system time broadcast in the EPG rather than its real-time clock.

7. Select the default image file.

8. To enable Conditional Access, select Enabled.

   When Conditional Access (CA) is enabled on an STB profile, you can assign specific STBs to groups and then use CA to control what Video on Demand assets those groups can view. This requires a Furnace license with CA entitlement. For more information, see "Using Conditional Access for User Authentication" on page 53 and "Managing Device Entitlements" on page 58.

9. To enable the network bridge on dual NIC Set Top Boxes, select Enabled for Network Bridging.

   Network bridging allows you to daisy-chain multiple devices off a single network drop: main network <=[STB eth0]=> STB <=[STB eth1]=> local switch or other device.

10. To specify the Network Bridge Download and Upload Rates (i.e., the upload and download rates when bridging is enabled, enter the rates in Kbps (range is 0 to unlimited).

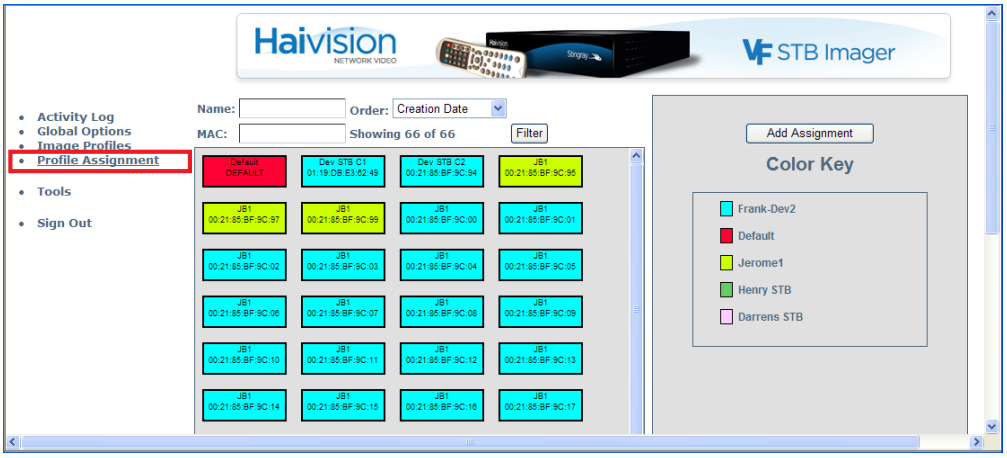
    This allows you to rate-limit the traffic bridged through the STB when Network Bridging is enabled.

11. Click Save Changes to save the profile.

Assigning a Profile to a STB

This section explains how to assign your new profile to one of your STBs:

1. Click Profile Assignment on the left side of the STB Imager page.
2. From the list of STBs, click the green box that matches the STB to be assigned a new profile.



NOTE If your system has many STBs listed with unique profiles, you can use the Filter to refine the list.

You can either type a string in the **Name** field, or type the MAC address for the STB in the **MAC** field, and then click Filter.

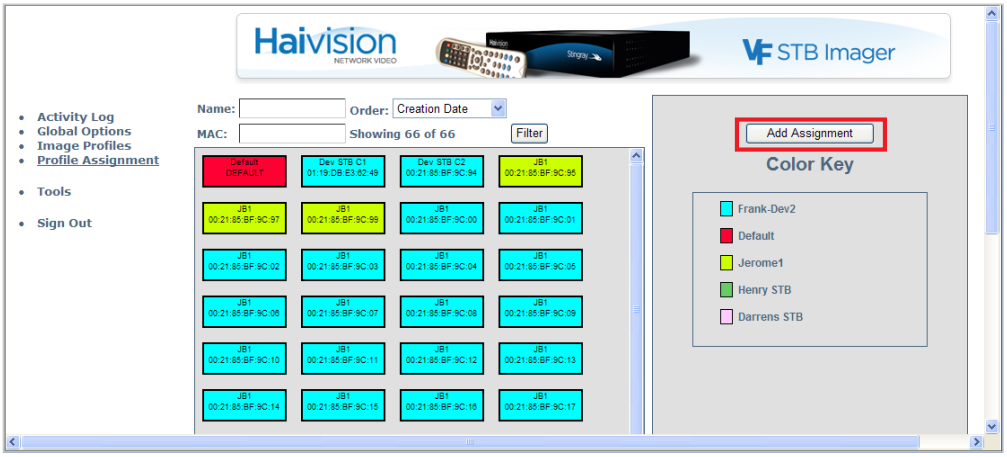
The selected profile details are displayed in the Profiles pane (right side).

3. Click Save Changes.

Creating a New Profile Assignment

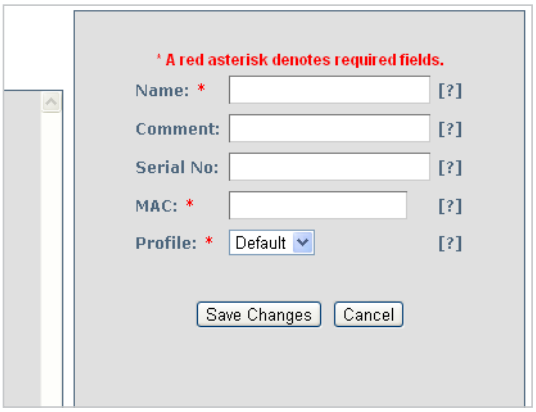
This section explains how to assign a profile for an STB.

1. On the STB Profile Assignment page, click Add Assignment.



The Profile Assignment fields appear in the right pane.

2. In the Name field, enter a name for this STB.



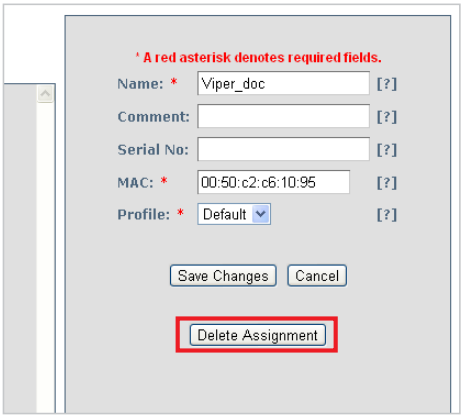
3. (Optional) For future reference, type a comment in the Comment field that describes the purpose of the STB.
4. (Optional) Type the Stingray STB serial number in the Serial No. field.
5. Enter the Stingray MAC address in the MAC field (e.g., 00:22:19:58:6A:03). A value of default is used for all MAC addresses without an entry.
6. Select the profile to assign from the Profile drop-down list.
7. Click Save Changes to assign the profile.

Deleting a Profile Assignment

When a specific STB is relocated or the unique profile is no longer relevant to the STB, deleting the profile assigned to the STB will enable the STB to become provisioned with the default system profile when the STB is power cycled (either by unplugging it or holding the front panel power button pressed for approximately five seconds).

To delete a profile assignment:

1. On the STB Profile Assignment page, click the profile assignment box for the STB for which the profile assignment should be deleted.
2. Then click Delete Assignment.



CHAPTER 12: Managing Reports

This chapter describes the VF Reports tool available to system administrators to enable real-time and past usage reporting.

Topics In This Chapter

VF Reports - Accessing Usage Statistics 240
- Live Channel Stats Report 242
- Past Channel Stats Report 243
  - Refining the Report 243
  - Viewing Daily and Hourly Usage 245

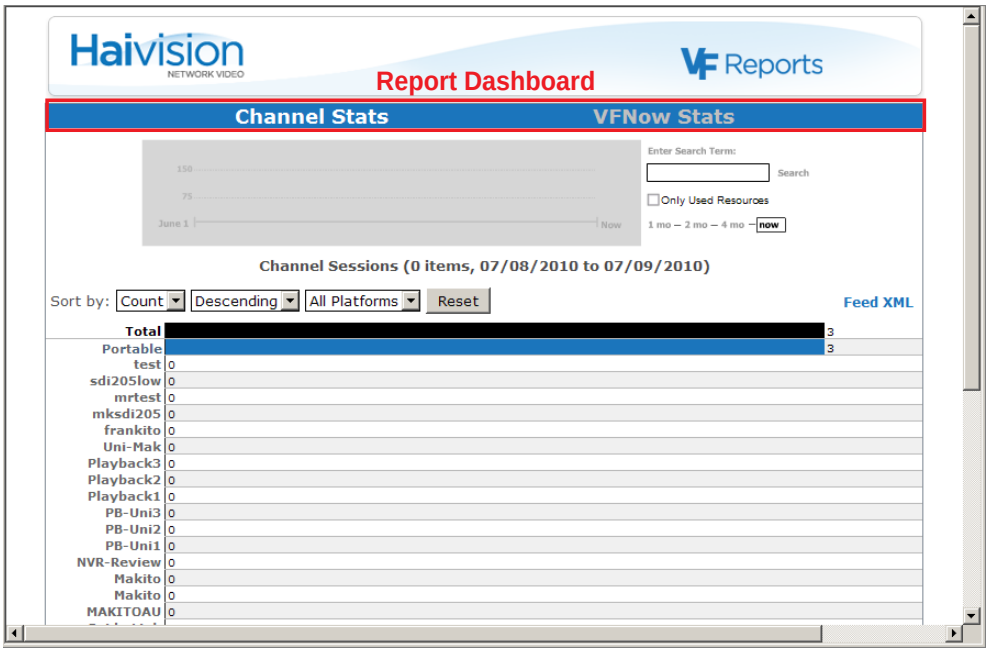
VF Reports - Accessing Usage Statistics

Furnace provides a Reports portal to enable access to real-time and past usage data. Usage details are separately available for both channel usage and VF Now on-demand usage by InStream and Stingray STB users. For each type of report, both real-time usage and past usage reporting is available.

To access the VF Reports portal:

1. On the Tools page, click the VF Reports icon under the Administration Section.

The Reports portal opens as shown in the example below.



When you access the VF Reports portal, it displays the current aggregate real-time viewing statistics for channels. The start page shows the aggregate usage per channel for all InStream and Stingray STB clients and provides the ability to customize or filter the report by platform and sort order as well as show hourly details for past usage.

Two types of reports are available in the Reports Portal: Channel Stats and VF Now Stats. The following sections explain how to display these reports.

NOTE The features described in the following sections work the same way for both Channel Stats and VF Now Stats.

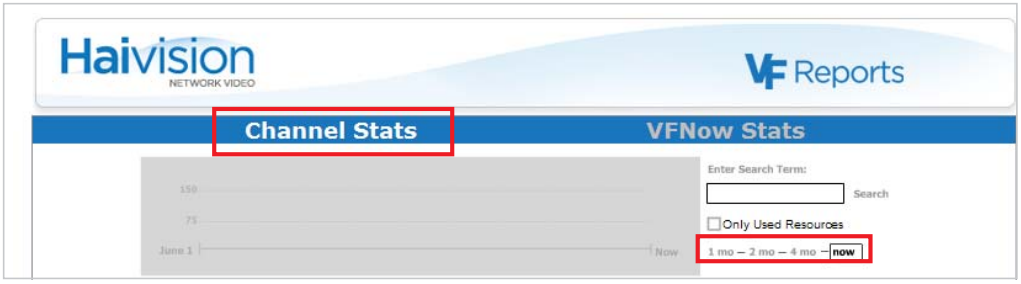
Live Channel Stats Report

To generate a live Channel Stats report:

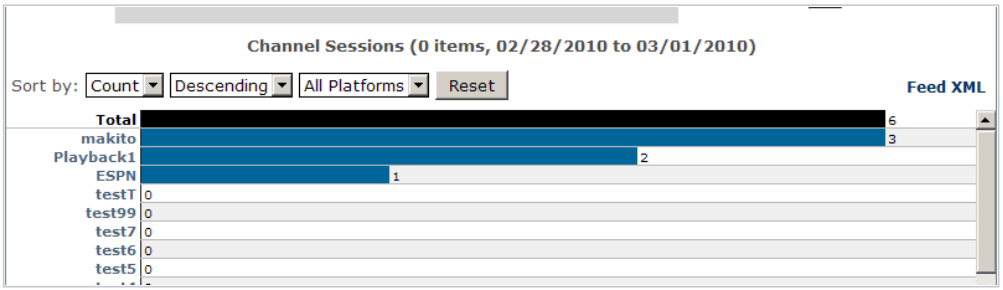
1. First, select the report type by clicking either Channel Stats or VF Now Stats in the VF Reports dashboard.

Channel Stats	Shows usage data for the live and scheduled playback channels in your system.
VF Now Stats	Shows usage of the VF Now assets in your system.

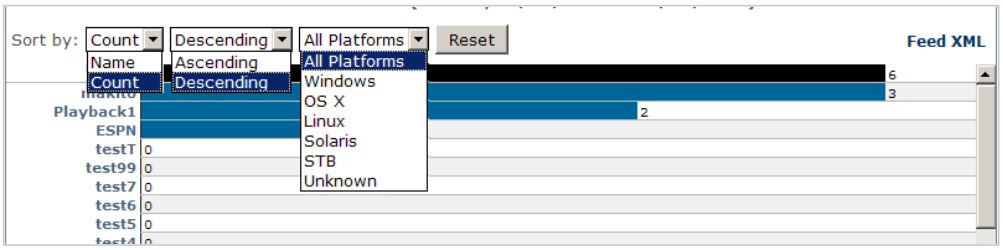
2. Next, select the time frame by clicking either now to report real-time usage from active clients, or 1 mo, 2 mo, or 4 mo to show statistics of past usage for up to 4 months in the past.



For example, to show active real-time usage of multicast channels, select Channel Stats and now. This will produce a report similar to the image shown below.



TIP You can click the drop-down lists to sort the reports by [Count] or [Name], in [Ascending] or [Descending] order. You can also filter the results by platform.



Sorting by [Name] performs an alpha sort by channel name in either ascending or descending order depending on the menu selection.

Past Channel Stats Report

To generate a past Channel Stats report:

1. Select either a 1 mo, 2 mo, or 4 mo activity window to report on viewing statistics up to 4 months in the past.

   The figure below shows that a 1 month activity window was selected.

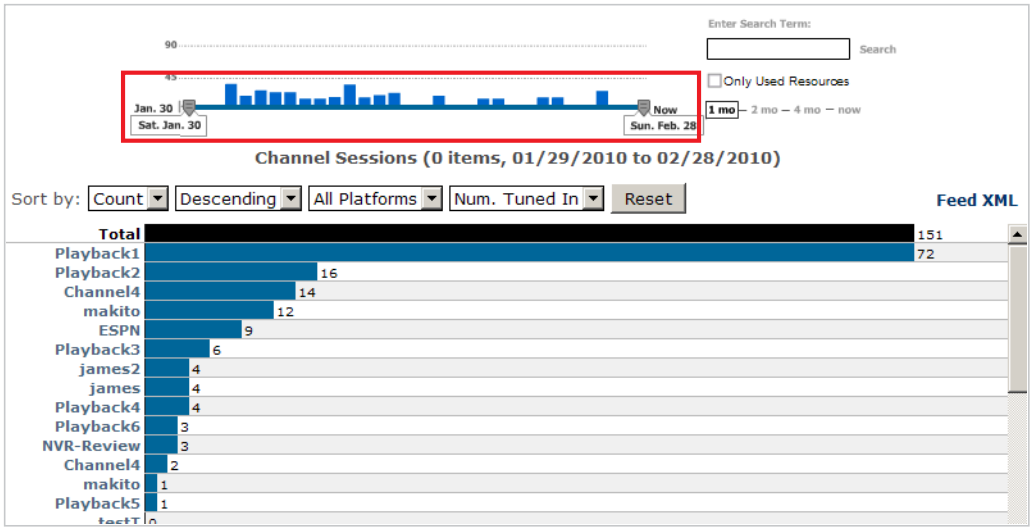
Refining the Report

This section discusses options to refine the report.

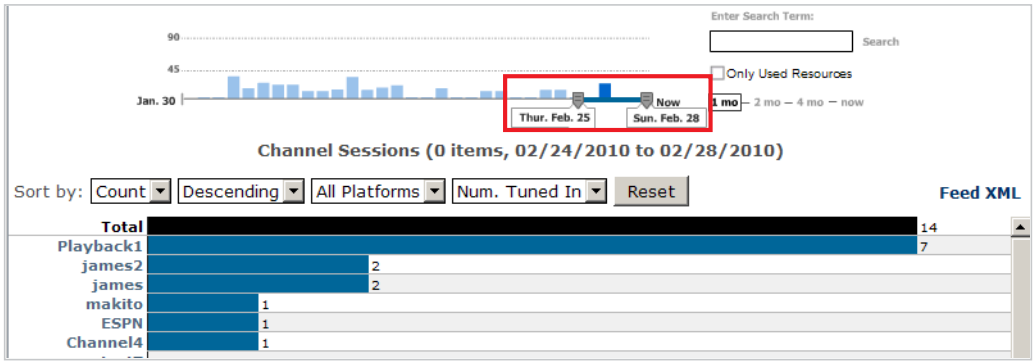
Option	Description
Enter Search Term	Type an optional search term to include only resources that contain this text in the report.
Only Used Resources	Click this checkbox to report only resources that had been watched during the report period. Changing this criterion generates a new report.
1 mo – 2 mo – 4 mo – now	Click the **1 mo**, **2 mo**, or **4 mo** activity window to report on past usage. Changing this criterion generates a new report. Click **now** to report real-time usage from active clients.

After selecting the activity window, you can modify the window to a single day or multiple days by clicking the calendar bar and moving the adjustment handles to frame the activity window to the range of interest.

The example below shows the adjustment handles moved to include the whole one month range: Saturday, January 30 through Sunday February 28.



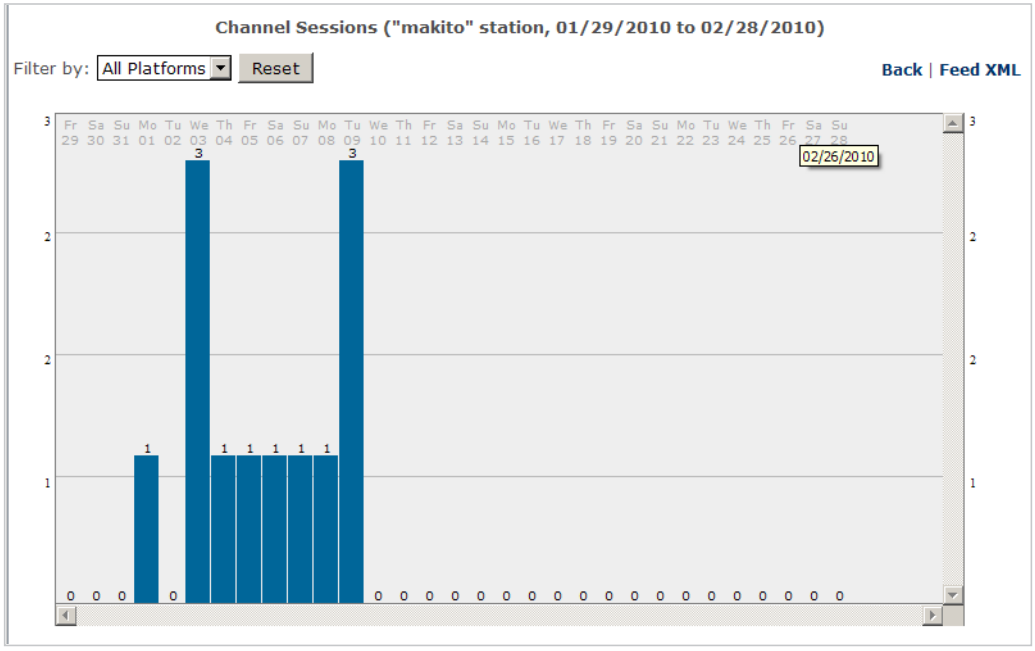
To move the adjustment handles, click the handle and drag to the desired day. The reporting activity range then covers those days between the two handles. Notice that the usage report histogram changes immediately to reflect the aggregate usage during the time period selected, as shown below.



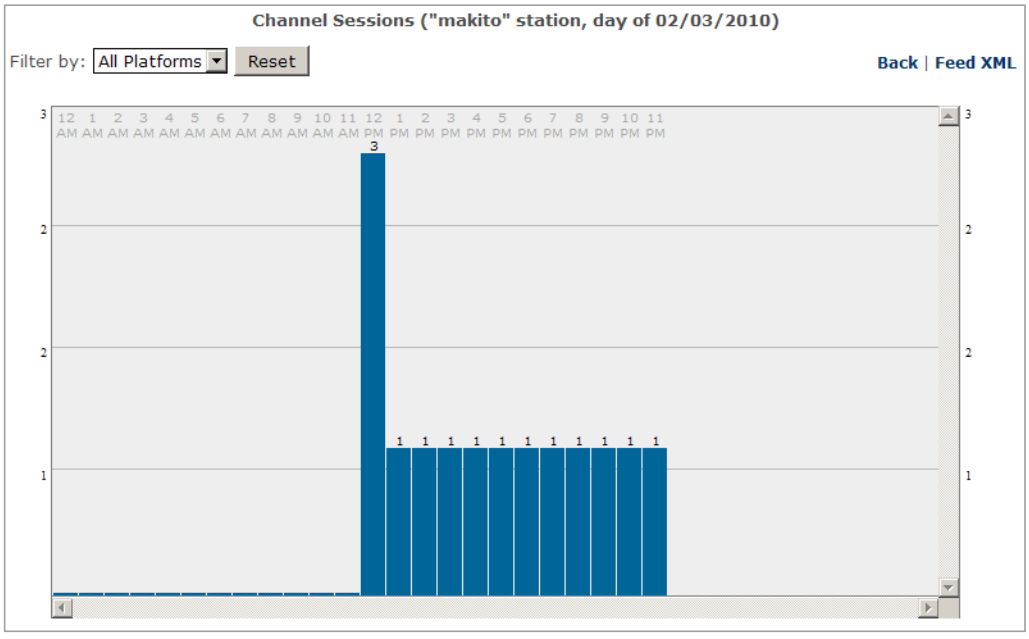
Viewing Daily and Hourly Usage

To see the daily usage for a particular service, click that histogram bar (e.g., “makito” in the previous image).

A page appears, similar to that shown in the following image. This page shows the daily usage for the channel selected.



To see the hourly usage for a specific day, click the histogram bar for that day. The example below shows hourly usage.



CHAPTER 13: Accessing the Console UI

This chapter provides the information you need to know to use the Console UI on Furnace appliances. The Console UI provides a non-Web interface to perform basic system administration tasks and network tests.

You can access the Console UI either directly by connecting a keyboard and monitor to the Furnace appliance, or by using Secure Shell (SSH).

Topics In This Chapter

Logging in to the Console UI 247
Console UI Menus 249
System Status 250
Network Settings 251
Test Network 253
System Logs 255
Change Password 256
Reboot/Shutdown 257
Log Out 258

Logging in to the Console UI

NOTE To connect to the Console UI directly, make sure the keyboard and monitor are correctly connected to the Furnace appliance. See "Connecting the Furnace Console UI" on page 21.

To log in to the Console UI:

1. If you have connected with a keyboard and monitor to the Furnace, you will see the Login screen for the Console UI.

   -or-

   Initiate a Secure Shell (SSH) connection to the server with the User "hvroot".

   The Furnace will display the Login screen for the Console UI.

2. Log in using the default Console UI Username and Password:

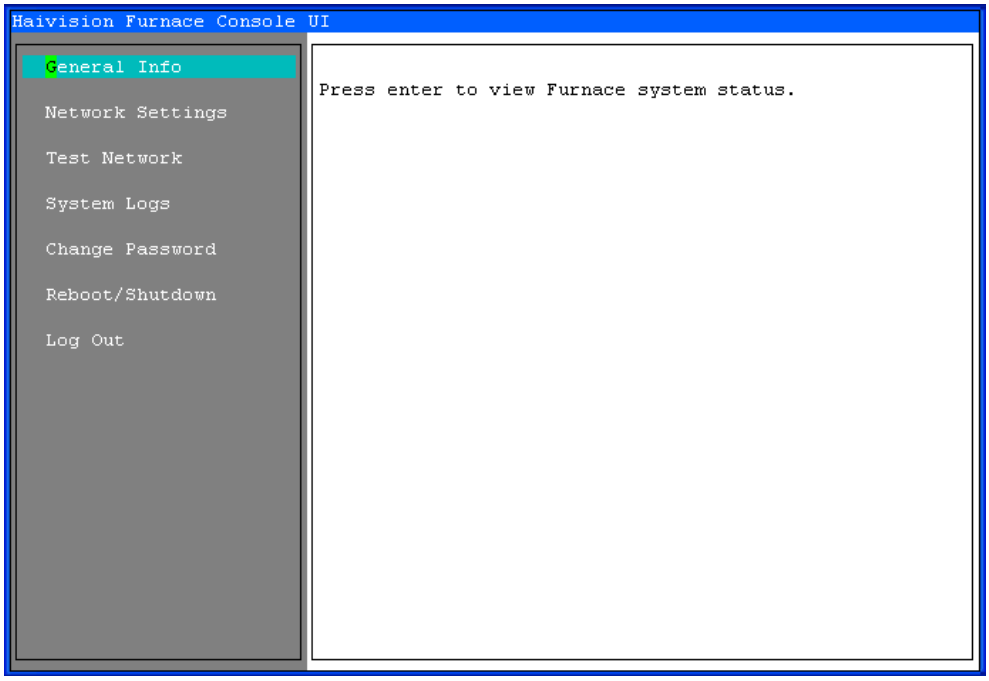
   Username: hvroot
   Password: hairoot

   You may change the password; however, there is only one user account. See "Change Password" on page 256.

IMPORTANT Use the arrow keys on the keyboard to navigate in the Console UI. There is no mouse support. For details, see the following section, "Console UI Menus".

Console UI Menus

After logging in, you will have access to the Console UI starting with General Information screen (shown in the figure below).



The left pane is the list of menu items. The right pane provides a detailed view of the selected item.

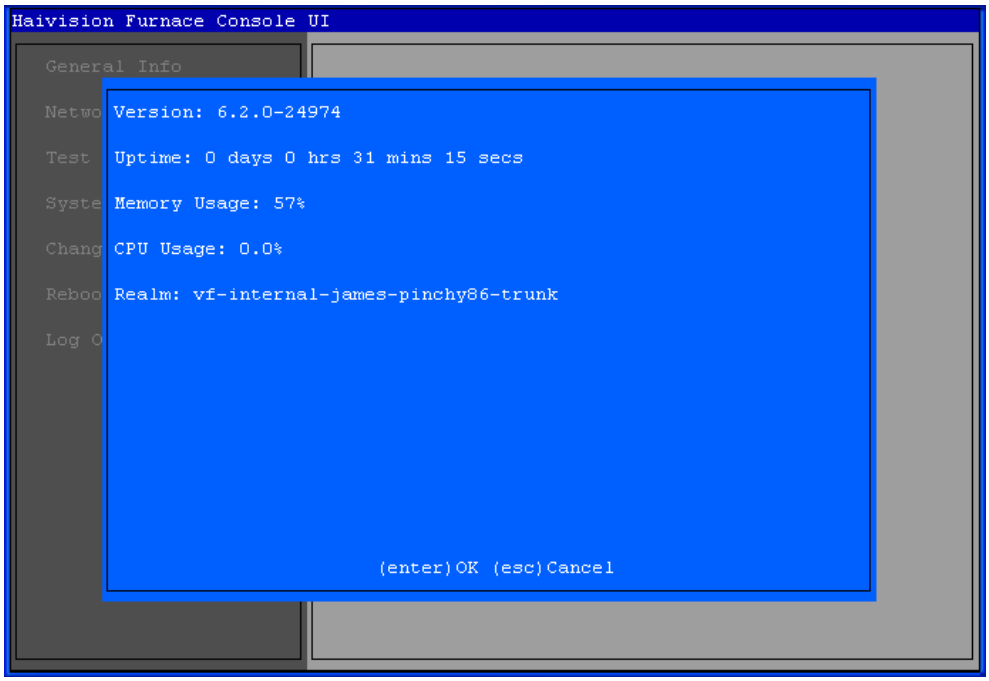
Unlike the Web Interface, the Console UI is operated via keyboard input: (There is no mouse support.)

- Use the Up and Down Arrow keys to scroll through the menu items. Press ENTER to select the current item.
- To modify settings, scroll down to the line to change, (if necessary) backspace to delete existing settings, and then type in your modifications.
- Press ENTER to save your changes or ESCAPE to cancel and close the screen.

To display system status information about the Furnace appliance, press ENTER while the General Info menu line is highlighted (as shown in the figure above).

System Status

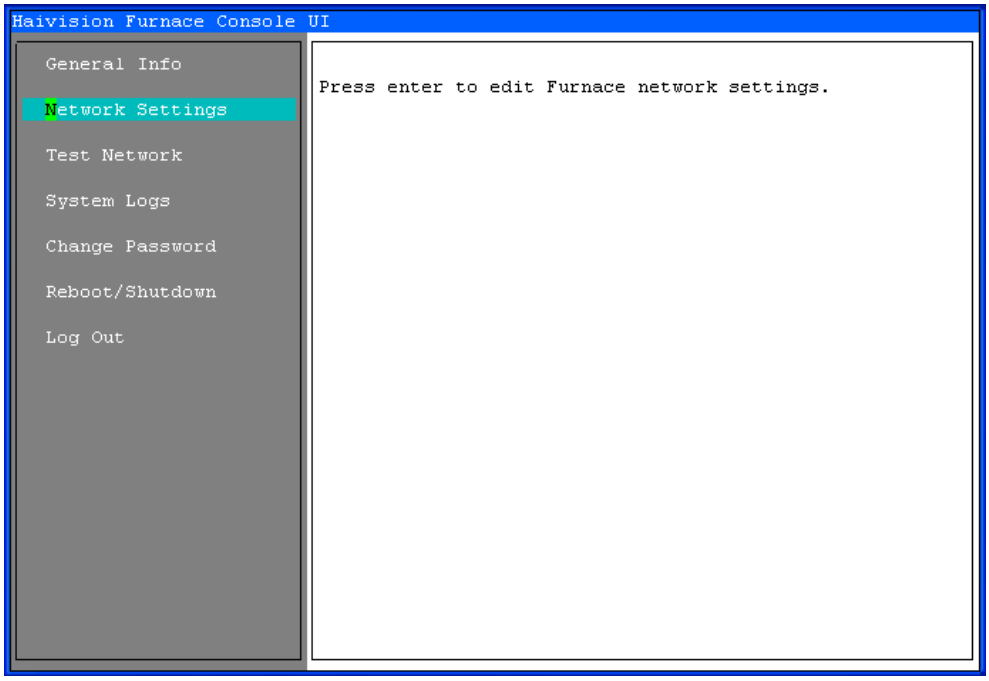
The General Info screen displays system status information about the Furnace appliance, such as the software Version, system Uptime, Memory Usage, CPU Usage, and Furnace realm (as shown in the following example). This is a read-only screen.



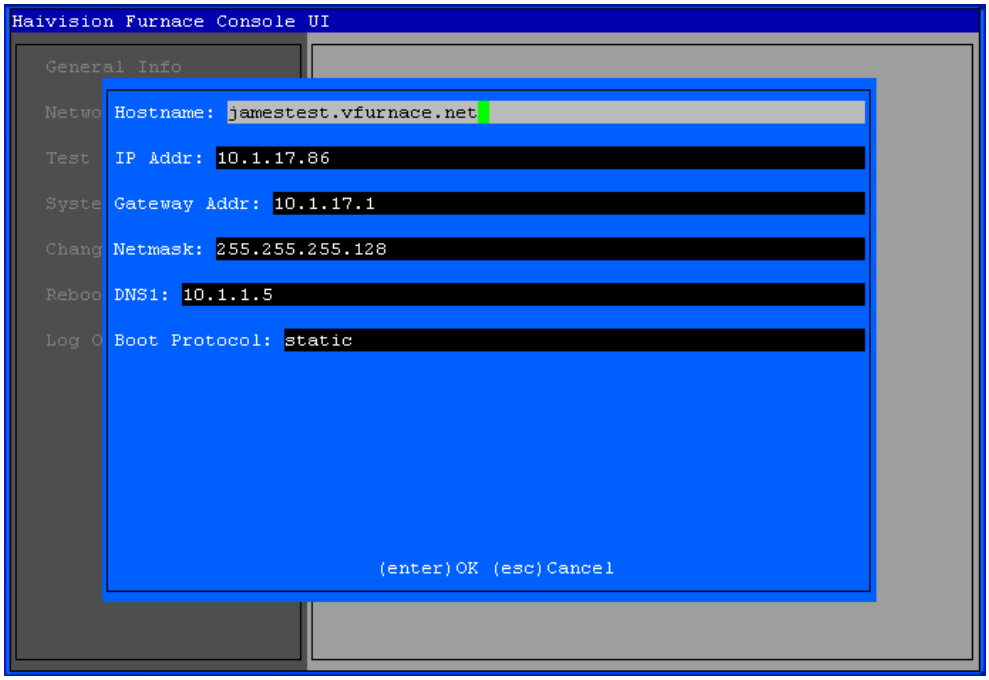
When you are finished viewing this information, press ENTER or ESCAPE to close this screen.

Network Settings

To display the network interface settings for the Furnace appliance, scroll down to the Network Settings menu line (as shown in the figure below).



To display and edit the network settings, press ENTER.



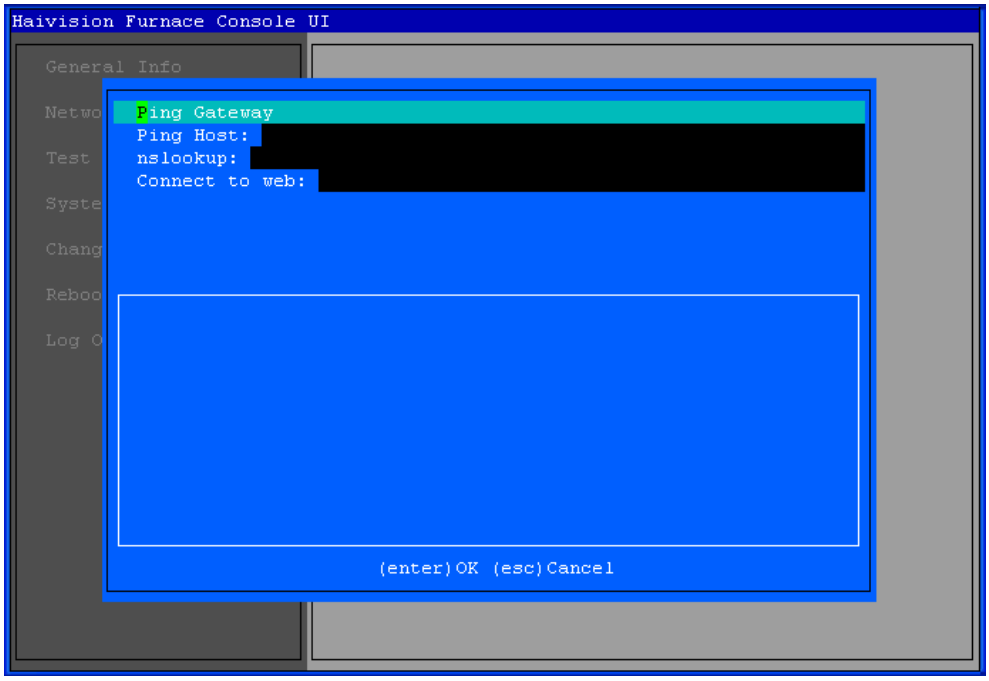
The Network Settings screen displays the unit's Hostname, IP address, default gateway address, netmask, DNS server address, and Boot protocol (DHCP or static).

TIP For descriptions of the network settings, please see "Network Settings" on page 88.

1. Use the Up and Down Arrow keys to scroll through the lines.
2. For each setting to change, backspace to delete existing settings and then type in your modifications.
3. Press ENTER to save your changes and close the screen.

Test Network

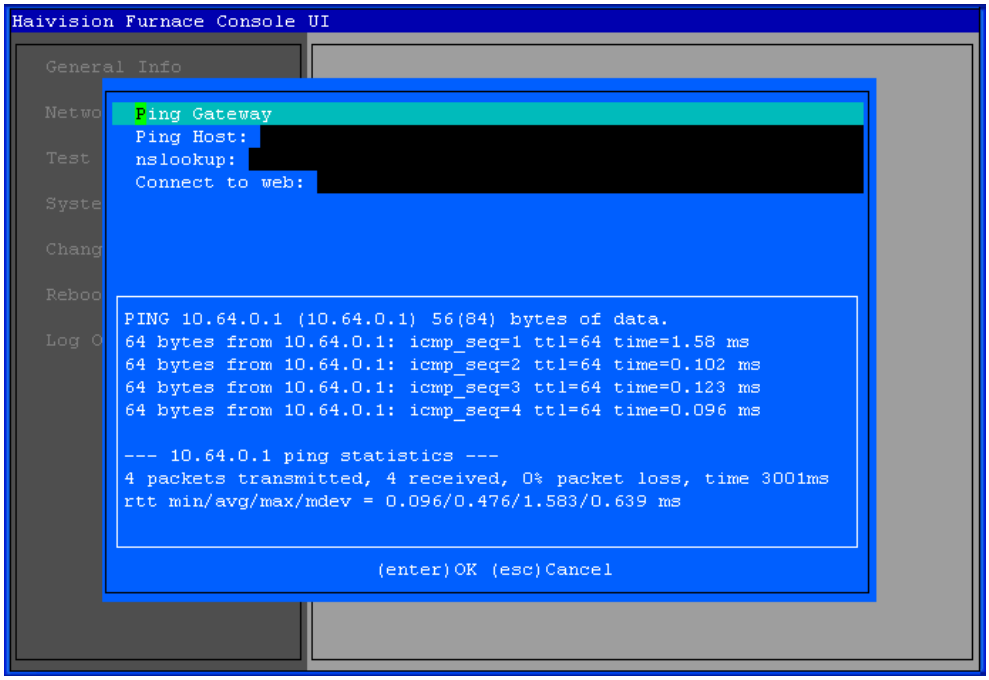
To test the network connectivity for the Furnace, scroll down to the Test Network menu line and press ENTER.



Use the Up and Down Arrow keys to scroll through the lines. The Test Network screen provides four possible network tests (described in the following table).

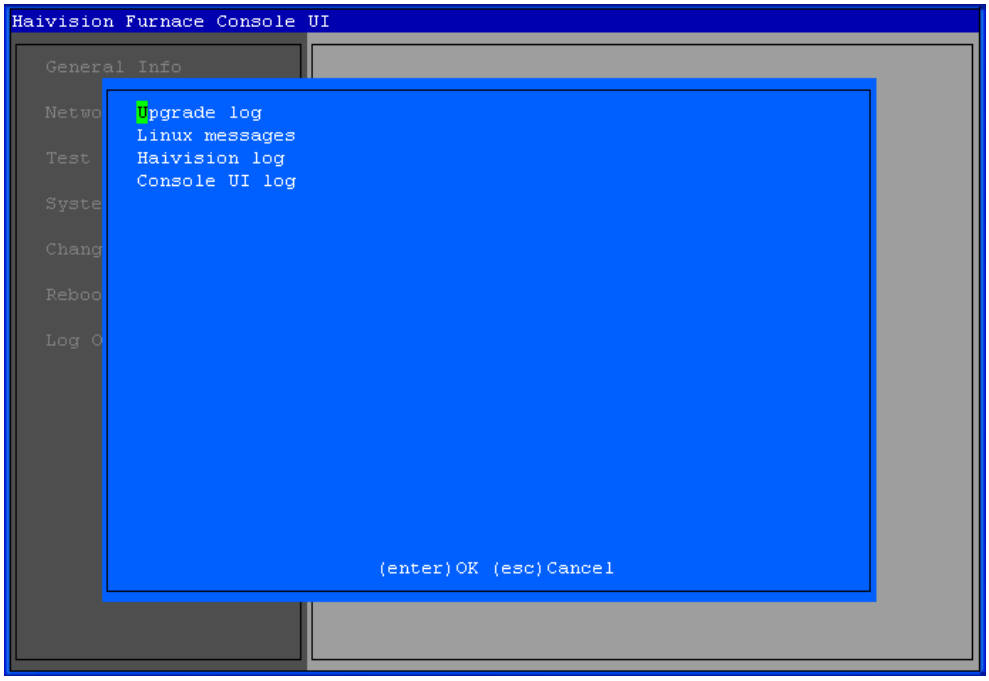
Test	Description
Ping Gateway	Press ENTER to ping (i.e., send echo request packets to) the defined gateway IP.
Ping Host	Type in the host IP address and press ENTER.
nslookup	(Name Server Lookup) Type in a Fully Qualified Domain Name (FQDN) and press ENTER.
Connect to web	Type in a valid URL and press ENTER.

The ping results will be displayed on the screen (as shown on the following example):



System Logs

To view the system logs for the Furnace appliance, scroll down to the System Logs menu line and press ENTER.

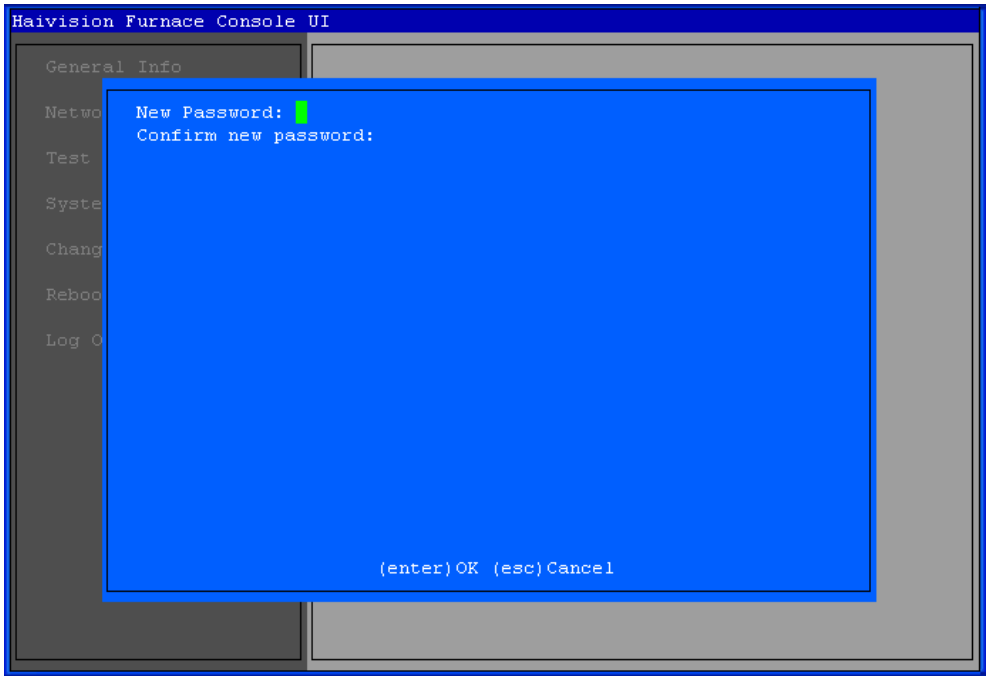


The available System Logs include the Upgrade log, Linux messages, Haivision log, and Console UI log.

1. Use the Up and Down Arrow keys to scroll through the lines.
2. Press ENTER to display the selected log.
3. Press ESCAPE to close the log.

Change Password

To change the password for the Furnace Console UI current user, scroll down to the Change Password (Current User) menu line and press ENTER.



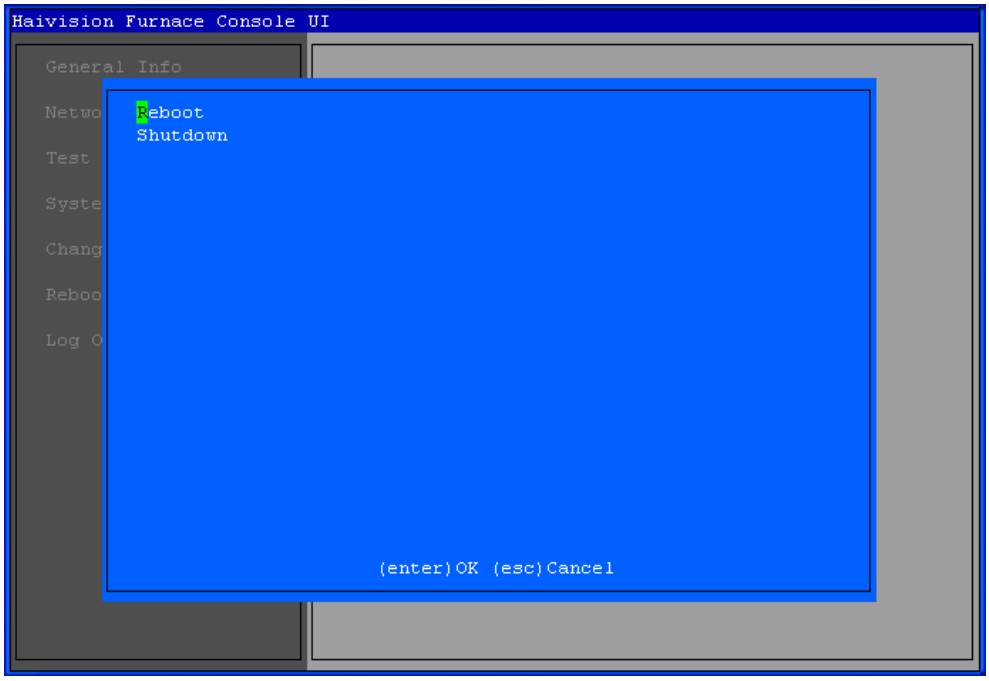
1. Type in the new password.
2. Press TAB or the Down Arrow and type the password again in the Confirm new password line.
3. Press ENTER.

TIP To change the haiadmin password, scroll down to the Change haiadmin Password menu line and press ENTER.

The default admin username/password is haiadmin/manager. For information, see "VF Admin" on page 33.

Reboot/Shutdown

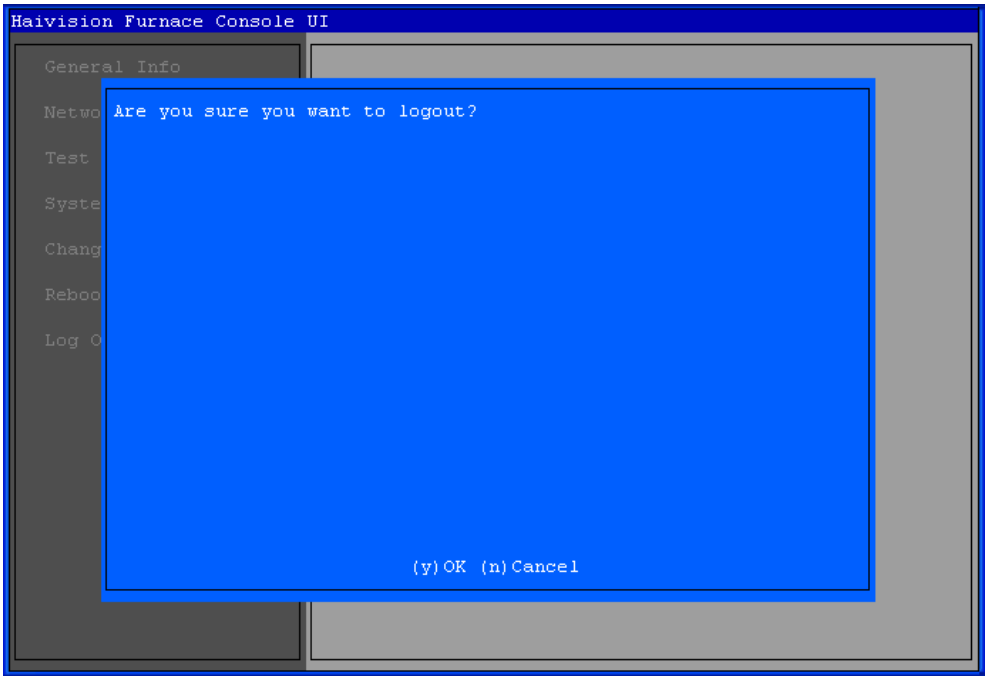
To reboot or shut down the Furnace appliance, scroll down to the Reboot/Shutdown menu line and press ENTER.



- To reboot the appliance, press ENTER while the Reboot menu line is highlighted.
- To shut down the appliance, scroll down to the Shutdown line and press ENTER.

Log Out

To log out of the Console UI, scroll down to the Log Out menu line and press ENTER.



To confirm that you want to log out, type y. Or type n to cancel.

APPENDIX A: Keyboard Shortcuts

This appendix lists the menu options and keyboard shortcuts available for the Furnace tools.

NOTE Please see the InStream User's Guide for keyboard shortcuts available to InStream users.

Topics In This Appendix

All Video Player Keyboard Shortcuts 260
VF Editor Keyboard Shortcuts 261

All Video Player Keyboard Shortcuts

The following table lists the available shortcuts for the Furnace video player windows.

These shortcuts apply to the player window only and have no function or a different function when in the Guide window. For example, pressing the UP ARROW, DOWN ARROW, HOME, and END moves the focus up and down the channel listing (without changing channel) in the Guide window.

Furthermore, with the exception of "Play Video" (UP ARROW), these shortcuts only apply to watching VoD (and not live) video.

Furnace Video Players (i.e., VF Editor and VF NVR-Review) Keyboard Shortcuts (for Mac OS X - substitute CMD key for CTRL key, except where indicated)	
Feature	**Shortcut**
Play Video	UP ARROW
Pause Video	DOWN ARROW
Pause/Play Video	SPACEBAR
Fast Forward (Video playing)	RIGHT ARROW
Frame Forward (Video paused)	RIGHT ARROW
Fast Reverse (Video playing)	LEFT ARROW
Frame Reverse (Video paused)	LEFT ARROW
Goto Start	HOME
Goto End	END

VF Editor Keyboard Shortcuts

The following table shows a list of available shortcuts for VF Editor:

VF Editor "Clipper" Mode Keyboard Shortcuts (for Mac OS X - substitute CMD key for CTRL key, except where indicated)	
Feature	**Shortcut**
Time/Frame Display	CTRL+B
Exit	CTRL+Q

NOTE See also "All Video Player Keyboard Shortcuts" on page 260.

APPENDIX B: Encoder Controls and Adjustments

This appendix lists the drop-down menus and controls used in the VF Pilot and VF Editor applications for the Makito and Barracuda encoder.s

NOTE References to the “Makito” can be taken to include the Makito Compact HD H.264 Video Encoder with DVI (B-290E-DVI) and the Makito-SDI Compact HD H.264 Video Encoder with SDI (B-290E-HDSDI) unless specifically stated otherwise.

TIP When the video is running, it is not necessary to first stop the encoder to change the video or audio modes, resolution, bit rate, etc. Make the necessary changes and then click Apply. Your encoder settings changes are saved when you click Logout.

Topics In This Appendix

General Tab 263
Encoder Tab 264
Makito Encoder Controls 265
Barracuda Encoder Controls 267
Audio/Video Tab 269

General Tab

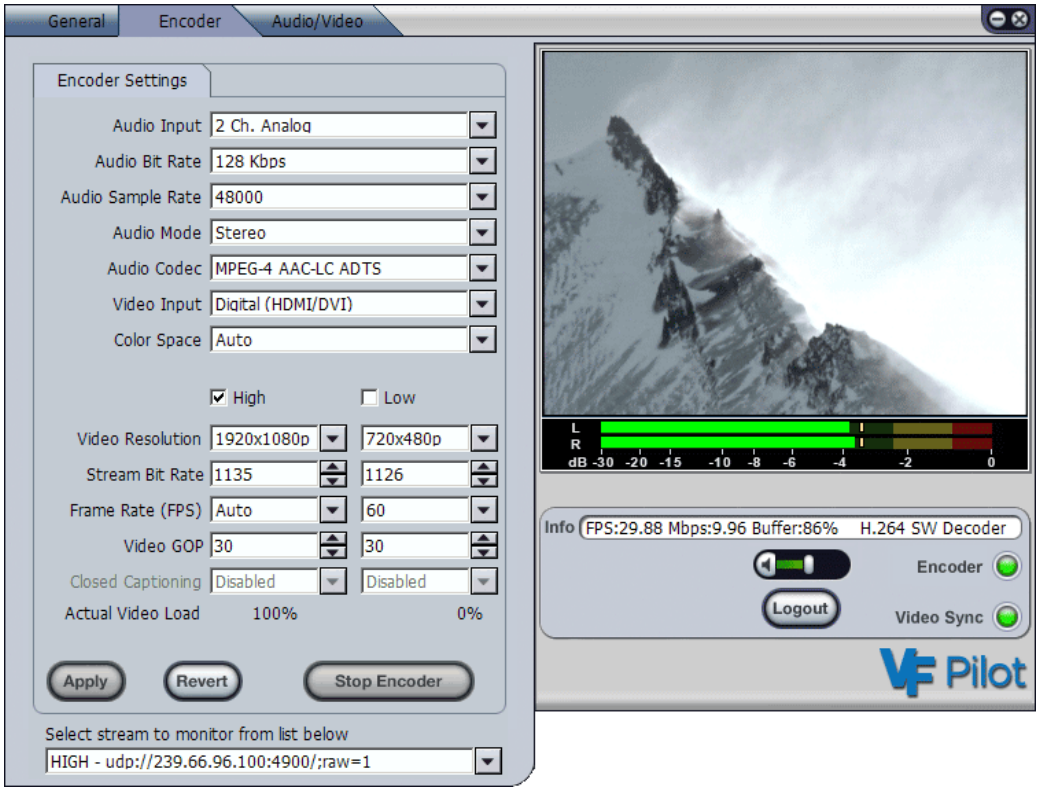
The General information tab shows the Furnace software version/build date and server IP address. It also shows the current encoder settings and plays the live video and audio for the stream type selected at login.

The General tab displays Makito or Barracuda values such as the Stream Bit Rate, Video Bit Rate, Out Video Resolution, Frame Rate, Video GOP, and Closed Captioning setting for both the High and Low streams. These settings and values can be adjusted on the Encoder tab.

NOTE The green bars under the video represent the strength of the left and right input audio signals for each channel. Make sure your audio signals bars are not red. This will create distortion on the digitized version. Each of the controls may be reset by pressing the Control key while clicking the control.

Encoder Tab

The Encoder tab controls the Encoder input and output options, including the High and Low streams generated by the Makito or Barracuda.



Apply/Revert buttons	To apply the changes to the live encoder, click Apply. To go back to the last applied configuration and cancel your changes, click Revert.
Start/Stop Encoder button	Stops the encoder for the server connected to the Pilot/Asset Editor recorder software. To begin streaming the live video feed from the selected server, click Start. Click Stop to halt the encoder. The button name changes to match the encoder state.
Audio Volume Control/ Mute	Clicking the speaker icon allows the administrator to hear the audio portion of the stream or mute the audio. (This control has no bearing on the audio level in the recording.)
Logout/Login button	Click to log the user in or out of the configuration session.

For Makito or Barracuda-specific details, refer to the following sections.

Makito Encoder Controls

Makito Encoder control	Description
Audio Input	Selects the appropriate input type for the source audio signal. Selectable values are: • Makito (B-290E-DVI): 2 Ch. Analog only -or- • Makito-SDI: 2 Ch. Analog, 2 Ch. SDI (1-2) or 2 Ch. SDI (3-4).
Audio Bit Rate	Selects the audio bit-rate. Selectable values are: • For Mono: 32 Kbps – 384 Kbps • For Stereo: 128 Kbps – 384 Kbps
Audio Sample Rate	Set to 48000, not adjustable currently with the Makito.
Audio Mode	Selects the audio mode: • Mono, or Stereo.
Audio Codec	Selects the audio encoding format: • MPEG-2 AAC-LC ADTS or • MPEG-4 AAC-LC ADTS format.
Video Input	Selects the appropriate input type for the source video signal: • Makito (B-290E-DVI): Digital (HDMI/DVI) or Component Analog -or- • Makito-SDI: BNC (Composite), SVideo or BNC (SDI).
Color Space	(Makito #B-290E-DVI only) Selects the color space to use while capturing the content. Adjusting the encoder input color space to match the source provides true and optimized color reproduction. This is useful when using some specific source formats such as graphics cards outputting HDTV resolutions. Selectable values are: • Auto: The encoder determines the appropriate color space to use • YCbCr: Forces the encoder to use Y,Cb,Cr • RGB Full Range: Forces the encoder to use RGB Full Range [0..255] • RGB Limited Range: Forces the encoder to use RGB Limited Range [16..235]
High Low (checkboxes)	Selects one or both of the streams to enable the output.

Makito Encoder control	Description
Video Resolution	Selects the dimensions of encoded video in pixels for both the High and Low streams. NOTE: Available options depend on the resolution of the input video and the chosen encoder (High or Low). Higher resolutions are only available on the High encoder.
Stream Bit Rate	Selects the combined bit-rate shared by audio and video streams. Selectable values range from: • 150 Kbps to 15.0 Mbps, or more for certain applications. NOTE: Selectable values are dependent upon the Video Codec and Resolution settings.
Frame Rate	Select full frame-rate encoding or partial frame-rate encoding depending on your video input. Selectable values include: • Auto, or 60, 55, 50, 45, 40, 35, 30, 25, 20, 15, 10, 5, 4, 3, 2 or 1 FPS NOTE: Available options depend on the frame rate of the input video and the chosen encoder (High or Low). Lower frame-rates may be necessary when ultra low bit-rate encoding is used (i.e., 300kbps).
Video GOP (Group of Pictures)	Changes the spacing between each I-Frame. Select: • between 0 and 1000 NOTE: In most cases 60, 90 or 120 works best. A higher number increases quality but also increases the tuning delay.
Closed Captioning	Select **Disabled** or **Enabled** to turn Off or On the inclusion of Closed Caption data in each stream.
Actual Video Load	These two percentages show how the actual load on the codec being pushed by both the High and Low streams.

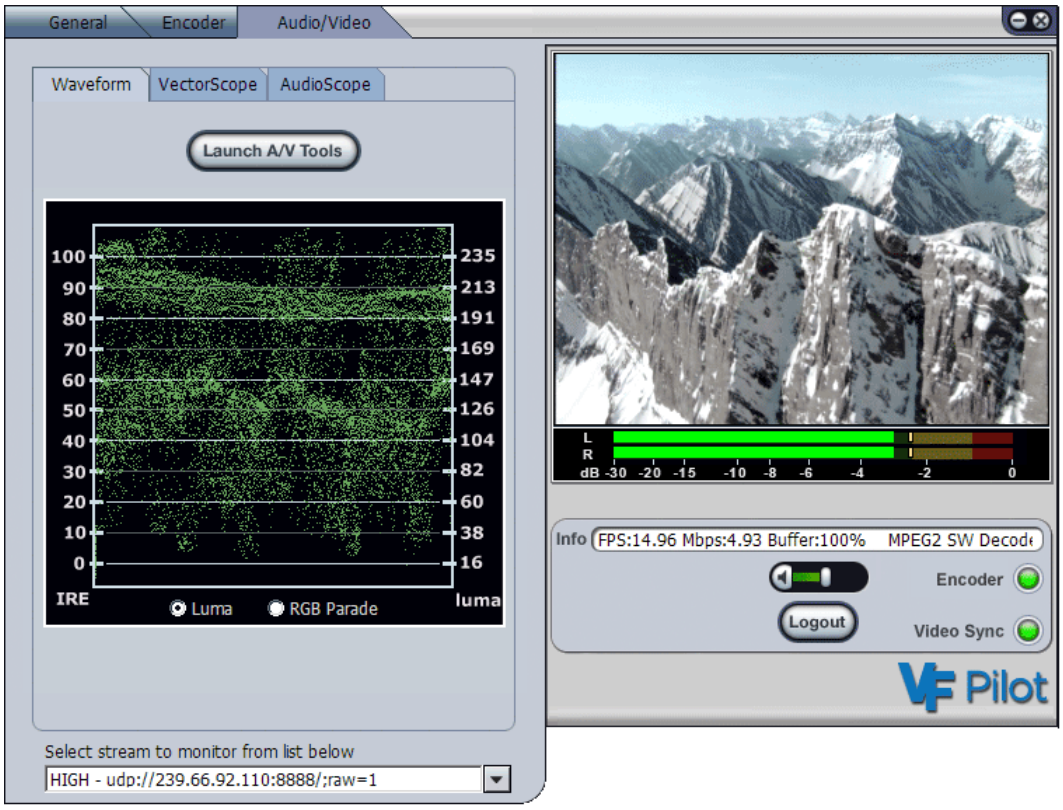
Barracuda Encoder Controls

Barracuda Encoder control	Description
Audio Input	Selects the appropriate input type for the source audio signal. Selectable values are: • 2 Ch. Analog, 2 Ch. SDI (1-2) or 2 Ch. SDI (3-4).
Audio Bit Rate	Selects the audio bit-rate. Selectable values are: • For Mono: 32 Kbps – 384 Kbps • For Stereo: 128 Kbps – 384 Kbps
Audio Sample Rate	Set to 48000, not adjustable currently with the Barracuda.
Audio Mode	Selects the audio mode: • Mono or Stereo.
Audio Codec	Selects the audio encoding format: • MPEG-2 AAC-LC ADTS or MPEG-4 AAC-LC ADTS format.
Video Input	Selects the appropriate input type for the source video signal: • BNC (Composite), SVideo or BNC (SDI).
High Low (checkboxes)	Selects one or both of the streams to enable the output.
Video (Output) Resolution	Selects the dimensions of encoded video in pixels for both the High and Low streams. Available options depend on how your input resolution is split between the High and Low streams. NOTE: Available options depend on the resolution of the input video and the chosen encoder (High or Low). Higher resolutions are only available on the High encoder.
Stream Bit Rate	Selects the combined bit-rate shared by audio and video streams. Selectable values are dependent upon the resolution. They range from: • 150 Kbps to 8 Mbps or more for certain applications. NOTE: The values are bounded by the **video codec** and **resolution** settings.

Barracuda Encoder control	Description
Frame Rate	Select full frame-rate encoding or partial frame-rate encoding depending on your video input. Selectable values include: • 30, 25, 20, 15, 10, 5, 4, 3, 2 or 1 FPS. NOTE: Lower frame-rates may be necessary when ultra low bit-rate encoding is used (i.e., 300kbps).
Video GOP (Group of Pictures)	Changes the spacing between each I-Frame. Select: • between 0 and 1000, but for more cases 60, 90 or 120 works best. NOTE: A higher number increases quality but also increases the tuning delay.
Closed Captioning	Select **Disabled** or **Enabled** to turn Off or On the inclusion of Closed Caption data in each stream.
Actual Video Load	These two percentages show how the actual load on the codec being pushed by both the High and Low streams.

Audio/Video Tab

The Audio/Video tab provides tools to adjust and monitor the audio and video.



Clicking the Select Stream down arrow displays a drop-down list of the currently active High and Low streams. You can then pick which stream to monitor with the above tools.

Clicking Launch A/V Tools launches the Video Waveform, Vector Scope and Audio-Scope monitoring tools in a separate window.

Makito A/V Tools control	Description
Waveform Monitor	The Waveform tab displays an approximation of the video waveform amplitude and time parameters. • Luma represents the brightness in an image (the "black and white" or achromatic portion of the image). • RGB Parade is the luminance (a photometric measure of the luminous intensity per unit area of light traveling in a given direction). This tool presents more meaningful video information and supports encoder video calibration when used in conjunction with an SMPTE standard color bar signal.
VectorScope	The VectorScope tab displays an approximation of video chrominance gain and phase information. (See figure below.) This tool presents more meaningful video information and supports encoder video calibration when used in conjunction with an SMPTE standard color bar signal.
AudioScope	The AudioScope tab displays the audio waveform in peak-to-peak voltage.

APPENDIX C: Command Line Arguments

This alphabetical command reference lists and describes the available command line arguments that can be used with the Furnace client applications.

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Syntax Conventions

The following syntax conventions are used in this appendix:

Convention	Description
Courier font	Indicates command names and options, filenames and code samples.
italic font	Indicates variables that you replace with a user-defined value or name.
< >	Same as italics. Variables are enclosed in angle brackets in contexts that do not allow italics.
[ ]	Square brackets indicate optional items or parameters.
a | b	A vertical bar separates items in a list of options from which you must select one. If options are not separated by |, you may use combinations.
a - b	Items separated by a hyphen indicate a range of options from which you must select one.

Introduction

This command reference lists the command line arguments (CLA) that can be used with the Furnace client applications: InStream (Desktop and STB), VF Editor, VF NVR, and VF Command & Control (VF C2).

In most situations, it is not practical or advisable to launch the Furnace applications directly from the command line. It is generally preferable to access the Furnace software via the Web portal or Tools page, as this is the only way to be sure that the software will work correctly with the system.

CLA items may be set per user group, or for unauthenticated users launching Furnace via the Launch Portal. These items are managed via the VF Admin module. This is the recommended method to utilize these command line arguments.

NOTE In the case of the Stingray Set Top Box (STB), these arguments are supplied to the STB via the "Command Line" field of the associated profile in the VF STB Imager tool. See "Using Command Line Arguments to Manage Launch Preferences" on page 47.

All Applications

Arguments	Description & Usage
-cu <URL>	Specifies the URL of a plain text file that contains additional command line options.
--date-format <0-5>	Sets the date and time format: NOTE: Date format is one of: • 0: 2011-01-25 • 1: 11-01-25 • 2: 25/01/11 • 3: 25/01/2011 • 4: 01/25/11 • 5: 01/25/2011 NOTE: Does not apply to VF NVR.
--date-long-format <0-3>	Sets the date and time format to one of the following long date formats: • 0: Wednesday, January 25 • 1: Wednesday, 25 January • 2: Wednesday 25 January • 3: Wednesday, 25.January NOTE: Does not apply to VF NVR.
-l <URL>, --license <URL>	Specifies the vfclam license server URL. NOTE: License server is typically at udp://<IP>:4902.
-pt <pagetag>, --page-tag <pagetag>	Loads the assigned channel lineup if available. When creating additional lineups, page tags are used to refer to each lineup. The page tag can be any numeric value, but each lineup *must* have a unique page tag in order to be used.
-u <ID>, --uuid <ID>	Specifies session or user UUID. NOTE: Normally done by PHP or part of CA integration.
-z <encoded text>	Encrypts the command line argument text for use in launch parameters. Makes the command line arguments unreadable for anyone watching packet traffic. NOTE: Custom text can be encrypted upon request.

InStream

Arguments	Description & Usage
-24	Sets the time display to 24-hour clock.
-at <asset-id> <track-id>	Plays the specific track of the asset specified. The first argument is the <asset-id> (identical to -a). The second is the <track-id> which usually starts at 0 (not guaranteed).
--bottomclip <val>, --leftclip <val>, --rightclip <val>, --topclip <val>	Specifies how much to clip off the video's border to hide overscan. NOTE: <val> specifies pixels. Default values are typically fine.
-cc <0-4>, --closed-caption-mode <0-4>	Sets Closed-Captioning display mode on startup. NOTE: Mode is one of: • 0 Off • 1 CC1 • 2 CC2 • 3 CC3 • 4 CC4
-cl --customer-logo-url	Specifies the URL of the PNG file containing a logo that will be displayed in upper left corner of the player. Can be used instead of Furnace Branding options (see "Re-Branding the InStream Interface" on page 72). TIP: If you specify an invalid logo, e.g., "invalid_logo.png", the Haivision branding will be removed from the dashboard.
-ccd --closed-caption-disable	Disables access to the closed captioning controls.
--controls-disable	Disables all UI controls as well as mouse and keyboard interaction. NOTE: Should be used in conjunction with -x, -y, -w, -h to place to viewer window, as well as optionally --vubars and --status to monitor stream information.

Arguments	Description & Usage
-dc <cols>, --display-columns <cols> -dr <rows>, --display-rows <rows>	Changes the tiling patterns used for displaying streams. NOTE: Tiling pattern refers to the layout of rows and columns in the Multi-viewer grid.
--default-size <0-1>	Sets the window size on startup. NOTE: Size is one of: • 0 Minimized • 1 Fullscreen
-dip <param>, --decoder-init-parms <param>	Specifies decoder-specific parameters. NOTE: "D3D" is currently the only valid parameter – use Direct3D for video surfaces.
-et, --epg-time	Sets the current time/timezone of the player to sync with the time of provided EPG data. NOTE: Typically set on STB profile command lines.
-g <URL>, --guide <URL>	Specifies the URL of the continuous guide data feed. NOTE: Typically a multicast address (udp://239.x.x.x:4901).
-gcl <0-4>, --guide-channels-layout <0-4>	Specifies the layout (columns) of the channel list in the Guide. NOTE: Layout is one of: • 0 Callsign, Current Program • 1 Channel Number, Callsign, Current Program • 2 Callsign • 3 Channel Description, Current Program • 4 Channel Description
-gd, --guide-disable	Disables access to the Guide.
-gl <URL>, --epg-preload <URL>	Specifies the URL of the EPG data "preload" files. NOTE: -gl is the load path for the 2-hour data file that Furnace players load. Default specified in vfclamdcmdline.xml.

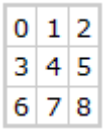
Arguments	Description & Usage
-glm <0-1> --guide-lock-mode <0-1>	Locks the Guide in either Compact or Expanded mode. NOTE: Mode is one of: • 0 Expanded • 1 Compact
-go --guide-open	Forces the Furnace Guide to be open on launch. NOTE: This is useful in applications where users may not adapt to the disappearing and unlabeled Guide button.
-h <val>, -w <val>	Sets the size of the window in pixels.
-hd --help-disable	Disables access to the Furnace online Help (selectable from the Player Settings menu).
--hide	Hides the player window upon startup.
-hu <URL>, --help-url <URL>	Specific URL will launch in a Web browser if the "Technical Support" option is selected. NOTE: The "Technical Support" option is in the right-click context menu.
--layout <0-2>	Sets the multi-viewer layout. NOTE: Layout is one of: • 0 Normal • 1 Main Left • 2 Main Top
-ll <val>, --low-latency <val>	Adjusts latency response by setting buffer size. NOTE: Reasonable values are 0-2000. Correlates to "/;latency=" setting for stream URL.
-loop	Loops playback of stream/videos.
-m, --mute	Mutes audio on startup.
-ml, --mute-onlock	Mutes audio when locking the system. NOTE: Applies to: • Screensaver, power save, or screen lock (Windows); • Screensaver, or sleep from Apple menu (OS X).

Arguments	Description & Usage
-na, --no-audio	Disables audio.
-nd, --no-dashboard	Turns off the dashboard display on startup. NOTE: Hotkeys/menus are still accessible.
-ncc, --no-channel-changing	Channel cannot be changed by user. NOTE: The channel that is launched on startup will be the only channel visible in the guide for the duration of the player. Channels can be changed remotely via VF Command & Control.
-nodnd, --no-drag-n-drop	Prevents the ability to drag-and-drop supported media files onto the player application for playback. NOTE: Typically configured by default at all installations in vfclamdcmdline.xml.
-oo, --overlay-on	Enables hardware overlays on startup. NOTE: Overlays are off by default.
-ot <pos> <size> <lum> <alpha> <text>, --overlaytext <pos> <size> <lum> <alpha> <text>	Starts the player with a text message being displayed as a video message. **Item: Meaning & Values:** • pos Screen position: 0-8 (see grid below) • size Text pt. size: 8-10 is a good range • lum Text brightness: 0-255 • alpha Text transparency: 0 (transparent) -255 (opaque) • text Message text: Special characters: %i = client IP, %m = client MAC address %D = date and time %I = IP address %M = MAC address %U = username NOTE: Screen positions correspond to the following locations: 0 1 2 3 4 5 6 7 8

Arguments	Description & Usage
-prd --preferences-disable	Disables the saving of player preferences that affect the layout. These include the location and size, layout, etc.
-r <URL>, --read <URL>	Tunes into specified URL on startup instead of a channel. NOTE: Typically a multicast stream (vftp://239.x.x.x:4900). May also be a published asset (uuid:<id>), or a local file: • absolute path (Windows): file:/C:/file.vfs • absolute path (linux): file:////home/user/file.vfs
-re <URL>, --read-exit <URL>	Launches InStream tuned to the specified asset at <URL>. Exits when the end of the video is reached. NOTE: Only applies to video assets that are launched as VoD. Typically a multicast stream (vftp://239.x.x.x:4900). May also be a published asset (uuid:<id>), or a local file: • absolute path (Windows): file:/C:/file.vfs • absolute path (linux): file:////home/user/file.vfs
-sap	Enables SAP (Secondary Audio Programming) mode upon startup.
-sm <0-9>	Specifies the monitor display to which the application will launch.
--station-logo	Enables the display of channel logos on top of the video feeds.
--status	Enables the text “status” line for stream display on startup.
-top	Enables “Video On Top” option on startup. The player window stays on top of other applications. NOTE: Does not apply to Mac OS X.
-url1	Tunes into the primary URL of channels as specified in Channel Editor. NOTE: This is the default behavior.

Arguments	Description & Usage
-url2	Tunes into the secondary URL of channels as specified in Channel Editor. NOTE: If there is no secondary URL configured, the player will present an error.
-v <0-100>, --volume <0-100>	Sets the volume level on startup.
--video-fullspeed <param>	Sets the behavior of stream playback upon startup. NOTE: <param> is one of: • all All streams play at full speed • active Only selected stream plays at full speed. Others show I-frames only • none No streams play at full speed - show I-frames only
-vot <time>, --vod-inactive-timeout <time>	Sets the VOD Idle timeout duration. NOTE: <time> specifies seconds.
--vubars	Enables the audio (Volume Unit) bars for stream display on startup.
-x <val>, -y <val>	Sets the startup position in pixels. NOTE: Top left corner of the screen is (0,0). Linux desktops: The player will not move past the boundaries of the screen with this option. May not work on Compiz-enabled Linux desktops.
-xp <0-100>, -yp <0-100>	Sets the startup position percentage. NOTE: Top left corner of the screen is (0,0). Linux desktops: The player will not move past the boundaries of the screen with this option. May not work on Compiz-enabled Linux desktops.

InStream Multi-Stream Viewing

Arguments	Description & Usage
-pd --pip-disable	Forces display of a multitrack stream using two viewers instead of display in a Picture-in-Picture window. NOTE: Only disables PIP for channels launched with -s. However, if a VoD asset is launched with -a, or if a VoD asset or a channel is selected from the Guide, it still launches with the PIP.
-ph, --pip-hide	Hides the Picture-in-Picture window on startup.
-pp <0-8>, --pip-position <0-8>	Sets the Picture-in-Picture window default position. NOTE: Window positions correspond to the following locations: 
-ps <1-3>, --pip-size <1-3>	Sets the default Picture-in-Picture window size. NOTE: Size is one of: • 1 Small • 2 Medium • 3 Large
-pw, --pip-swap	Swaps the Primary and Picture-in-Picture windows on startup.
-s <callsign>, --station <callsign>	Loads the specific channel as the default channel on startup. NOTE: Can be specified multiple times. <callsign> must be the exact call sign of a channel as specified in the Channel Editor. Example: “ESPN”.

VF STB (Set Top Box)

Arguments	Description & Usage
-24	Sets the time display to 24-hour clock.
-a <asset-id>	Plays the specific asset id on startup. NOTE: <asset-id> is a UUID of a published asset that also is available as a current VOD link.
-cgmsa <0-3>	Copy Generation Management System Analogue level.
--disable-hdcp	Disables HDCP on the Stingray STB HDMI output port.
--disable-truetype-scroll	Disables TrueType scrolling text. TIP: Recommended for customers using Stingrays with Furnace 6.5.3 and later. New Font Rendering features consume higher CPU on the Stingray resulting in freezing and rebooting. This command instructs the Stingrays to use the legacy rendering.
-dog, --dont-open-guide	Launches into "TV" mode by default, instead of "Guide" mode.
-dr	Disables remote control input.
-et, --epg-time	Sets the current time/timezone of the player to sync with the time of provided EPG data. NOTE: Typically set on STB profile command lines.
-g <URL>, --guide <URL>	Specifies the URL of the continuous guide data feed. NOTE: Typically a multicast address (udp://239.x.x.x:4901), specified in vfclamdcmdline.xml
-gl <URL>, --epg-preload <URL>	Specifies the URL of the EPG data "preload" files. NOTE: -gl is the load path for the 2-hour data file. Default specified in vfclamdcmdline.xml.

Arguments	Description & Usage
-ll <val>, --low-latency <val>	Adjusts latency response by setting buffer size. NOTE: Reasonable values are 0-2000. Correlates to "/;latency=" setting for stream URL.
-loop	Loops playback of VoD video title.
-ls <pin>, --lock-screen <pin>	Locks screen on startup. NOTE: Accepts a 4-digit numeric pin code. The pin code must be entered in order to view content on a Stingray STB.
-m, --mute	Mutes audio on startup.
-mv <0-3>	Turns on Macrovision output for video display.
-r <URL>, --read <URL>	Tune into specified URL on startup instead of a channel. NOTE: Typically a multicast stream (vftp://239.x.x.x:4900). May also be a published asset (uuid:<id>).
-s <callsign>, --station <callsign>	Loads the specific channel as the default channel on startup.
-sap	Enables SAP (Secondary Audio Programming) mode upon startup.
-sp <password>, --setup-password <password>	Sets the password for accessing system setup menus. NOTE: Specified in the VF STB Imager Image Profiles Command Line field. Default is typically "1234".
-url1	Tunes into the primary URL of channels as specified in Channel Editor. NOTE: This is the default behavior.
-url2	Tunes into the secondary URL of channels as specified in Channel Editor. NOTE: If there is no secondary URL configured, the player will present an error.
-v <0-100>, --volume <0-100>	Sets the volume level on startup.

Arguments	Description & Usage
-vf <format>, --video-format <format>	Sets the output video format upon startup. NOTE: Typically used for configuring the STB for high definition televisions. Contact Haivision Technical Support for valid options.
-vot <time>, --vod-inactive-timeout <time>	Sets the VOD Idle timeout duration. NOTE: <time> specifies seconds.

VF NVR

Arguments	Description & Usage
-et, --epg-time	Sets the current time/timezone of the player to sync with the time of provided EPG data. NOTE: Typically set on STB profile command lines.

VF Editor

Arguments	Description & Usage
-dip <param>, --decoder-init-parms <param>	Specifies decoder-specific parameters. NOTE: "D3D" is currently the only valid parameter; use Direct3D for video surfaces.
-dp <path>, --default-path <path>	Specifies the file path that file selection dialogs will default to (open / save, etc.)
-scd, --save-clipped-default	"Saved Clipped Segment" is checked by default for "Save" functionality.

Utilities

NOTE Utilities are executables residing on the Furnace servers. They must be run with administrator privileges.

vfepg-command

SYNOPSIS

```
vfepg-command [-r <speed>] -d <fourcc> <duration> <dataURL>
```

DESCRIPTION

To support Emergency Alert Systems (EAS) systems, the utility vfepg-command can be used to issue an audio override to the Furnace and STB players.

Note that the audio needs to be MPEG-1 Layer 2.

OPTIONS

-r,--rate <speed>

Specifies the speed to broadcast the data at in bits per second.

Default is 160000. The speed should not exceed 800000.

-d,--data <fourcc> <duration> <dataURL>

Specifies the data format, as follows:

<fourcc>	The type of data: easa - Emergency Alert Service MPEG-1 Layer 2 Audio
<duration>	(In seconds) How long the data will be broadcast.
<dataURL>	The URL to the data to be sent.

EXAMPLE:

```
vfepg-command -r 400000 -d easa 10 file:///sysdown-44k-32kbps.mp2
```

APPENDIX D: Warranty Information

Haivision One (1) Year Limited Warranty

Haivision warrants its hardware products against defects in materials and workmanship under normal use for a period of ONE (1) YEAR from the date of equipment shipment ("Warranty Period"). If a hardware defect arises and a valid claim is received within the Warranty Period, at its option and to the extent permitted by law, Haivision will either (1) repair the hardware defect at no charge, or (2) exchange the product with a product that is new or equivalent to new in performance and reliability and is at least functionally equivalent to the original product. A replacement product or part assumes the remaining warranty of the original product or ninety (90) days from the date of replacement or repair, whichever is longer. When a product or part is exchanged, any replacement item becomes your property and the replaced item becomes Haivision's property.

EXCLUSIONS AND LIMITATIONS

This Limited Warranty applies only to hardware products manufactured by or for Haivision that can be identified by the "Haivision" trademark, trade name, or logo affixed to them. The Limited Warranty does not apply to any non-Haivision hardware products or any software, even if packaged or sold with Haivision hardware. Manufacturers, suppliers, or publishers, other than Haivision, may provide their own warranties to the end user purchaser, but Haivision, in so far as permitted by law, provides their products "as is".

Haivision does not warrant that the operation of the product will be uninterrupted or error-free. Haivision does not guarantee that any error or other non-conformance can or will be corrected or that the product will operate in all environments and with all systems and equipment. Haivision is not responsible for damage arising from failure to follow instructions relating to the product's use.

This warranty does not apply:

4.a to cosmetic damage, including but not limited to scratches, dents and broken plastic on ports;

4.b to damage caused by accident, abuse, misuse, flood, fire, earthquake or other external causes;

4.c to damage caused by operating the product outside the permitted or intended uses described by Haivision;

4.d to a product or part that has been modified to alter functionality or capability without the written permission of Haivision; or

4.e if any Haivision serial number has been removed or defaced.

TO THE EXTENT PERMITTED BY LAW, THIS WARRANTY AND REMEDIES PROVIDED ABOVE ARE EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES, REMEDIES AND CONDITIONS, WHETHER ORAL OR WRITTEN, STATUTORY, EXPRESS OR IMPLIED. AS PERMITTED BY APPLICABLE LAW, HAIVISION SPECIFICALLY DISCLAIMS ANY AND ALL STATUTORY OR IMPLIED WARRANTIES, INCLUDING, WITHOUT LIMITATION, WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND WARRANTIES AGAINST HIDDEN OR LATENT DEFECTS. IF HAIVISION CANNOT LAWFULLY DISCLAIM STATUTORY OR IMPLIED WARRANTIES THEN TO THE EXTENT PERMITTED BY LAW, ALL SUCH WARRANTIES SHALL BE LIMITED IN DURATION TO THE DURATION OF THIS EXPRESS WARRANTY AND TO REPAIR OR REPLACEMENT SERVICE AS DETERMINED BY HAIVISION

IN ITS SOLE DISCRETION. No Haivision reseller, agent, or employee is authorized to make any modification, extension, or addition to this warranty. If any term is held to be illegal or unenforceable, the legality or enforceability of the remaining terms shall not be affected or impaired.

EXCEPT AS PROVIDED IN THIS WARRANTY AND TO THE EXTENT PERMITTED BY LAW, HAIVISION IS NOT RESPONSIBLE FOR DIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES RESULTING FROM ANY BREACH OF WARRANTY OR CONDITION, OR UNDER ANY OTHER LEGAL THEORY, INCLUDING BUT NOT LIMITED TO LOSS OF USE; LOSS OF REVENUE; LOSS OF ACTUAL OR ANTICIPATED PROFITS (INCLUDING LOSS OF PROFITS ON CONTRACTS); LOSS OF THE USE OF MONEY; LOSS OF ANTICIPATED SAVINGS; LOSS OF BUSINESS; LOSS OF OPPORTUNITY; LOSS OF GOODWILL; LOSS OF REPUTATION; LOSS OF, DAMAGE TO OR CORRUPTION OF DATA; OR ANY INDIRECT OR CONSEQUENTIAL LOSS OR DAMAGE HOWSOEVER CAUSED INCLUDING THE REPLACEMENT OF EQUIPMENT AND PROPERTY, ANY COSTS OF RECOVERING, PROGRAMMING, OR REPRODUCING ANY PROGRAM OR DATA STORED OR USED WITH HAIVISION PRODUCTS AND ANY FAILURE TO MAINTAIN THE CONFIDENTIALITY OF DATA STORED ON THE PRODUCT. THE FOREGOING LIMITATION SHALL NOT APPLY TO DEATH OR PERSONAL INJURY CLAIMS, OR ANY STATUTORY LIABILITY FOR INTENTIONAL AND GROSS NEGLIGENT ACTS AND/OR OMISSIONS.

OBTAINING WARRANTY SERVICE

Before requesting warranty service, please refer to the documentation accompanying this hardware product available on our Download Center at https://support.haivision.com. If the product is still not functioning properly after making use of these resources, please contact your Authorized Reseller or Haivision at http://support.haivision.com using the information provided in the documentation. The Authorized Reseller or Haivision will help determine whether your product requires service and, if it does, will inform you how Haivision will provide it. You must assist in diagnosing issues with your product and follow Haivision's warranty processes.

Haivision may provide warranty service by providing a return material authorization ("RMA") to allow you to return the product in accordance with instructions provided by Haivision or Authorized Reseller. You are fully responsible for delivering the product to Haivision as instructed, and Haivision is responsible for returning the product if it is found to be defective. Your product or a replacement product will be returned to you configured as your product was when originally purchased, subject to applicable updates. Returned products which are found by Haivision to be not defective, out-of-warranty or otherwise ineligible for warranty service will be shipped back to you at your expense. All replaced products and parts, whether under warranty or not, become the property of Haivision. Haivision may require a completed pre-authorized form as security for the retail price of the replacement product. If you fail to return the replaced product as instructed, Haivision will invoice for the pre-authorized amount.

APPLICABLE LAW

This Limited Warranty is governed by and construed under the laws of the Province of Quebec, Canada.

This Limited Hardware Warranty may be subject to Haivision's change at any time without prior notice.

Software End User License Agreement

READ BEFORE USING

THIS SOFTWARE END USER LICENSE AGREEMENT ("AGREEMENT") IS FOR ANY OR ALL OF THE HAIVISION SOFTWARE PRODUCT(S) LICENSED, DOWNLOADED, INSTALLED AND/OR ACTIVATED BY YOU ("PRODUCT"). THE PRODUCT IS PROTECTED BY NATIONAL AND INTERNATIONAL COPYRIGHT LAWS AND TREATIES.

READ THE TERMS OF THE FOLLOWING AGREEMENT CAREFULLY. BY CLICKING THE ACCEPT BUTTON ON THIS AGREEMENT, OPENING THE SHRINKWRAP AROUND OR USING THE PRODUCT OR ANY PORTION THEREOF, OR BY USING OR DISTRIBUTING ANY VIDEO INFORMATION ENCODED BY, DECODED BY OR OTHERWISE MANIPULATED OR PASSED THROUGH THE PRODUCT, YOU CONFIRM YOUR ACCEPTANCE OF THIS AGREEMENT.

THIS AGREEMENT IS A LEGAL AGREEMENT BETWEEN YOU (A SINGLE CORPORATE ENTITY) AND HAIVISION. IF YOU DO NOT AGREE TO THESE TERMS, HAIVISION IS UNWILLING TO LICENSE THE PRODUCT TO YOU AND YOU ARE NOT AUTHORIZED TO INSTALL OR USE THE PRODUCT.

NOTWITHSTANDING SECTION 6.5 BELOW, THIS AGREEMENT ONLY GOVERNS THE PRODUCT(S) IF A SEPARATE SOFTWARE END USER LICENSE AGREEMENT HAS NOT BEEN SIGNED PRIOR TO THIS AGREEMENT FOR THE PRODUCT OR THE AGREEMENT IS NOT SUPERCEDED BY A SEPARATE SOFTWARE END USER LICENSE AGREEMENT FOR THE PRODUCT AT A LATER DATE.

1. DEFINITIONS

1.1. Entitlement. The collective set of applicable documents (e.g., warranty, support and maintenance documents, data sheets, etc.) authorized by Haivision Network Video or its affiliate Haivision (collectively, "Haivision") evidencing your obligation to pay associated fees (if any) for the license, associated Services, and the authorized scope of use of Product under this Agreement.

1.2. License Fee. License Fee shall mean the consideration paid to Haivision for use of the Product. The License Fee is part or all of the price paid for the relevant Product.

1.3. Product. Product shall mean the executable version of Haivision's computer software, program or code, in object code format (specifically excluding source code), together with any related material including, but not limited to the hardware, Reference Manuals or database schemas provided for use in connection with the Product and including, without limitation, all Upgrades through the date of installation.

1.4. Reference Manuals. Reference Manuals shall mean the most current version of the documentation for use in connection with the Product provided by Haivision to You.

1.5. Third-Party Content. Services or materials, which are not proprietary to Haivision or may not be part of the materials of the company, entity or individual using the Product.

1.6. Updates. Updates shall mean any periodic software releases, additions, fixes, and enhancements thereto, release notes for the Product and related Reference Manuals, (other than those defined elsewhere in this section as Upgrades) which have no value apart from their operation as part of the Product and which add minor new functions to the Product, but none so significant as to warrant classification as an Upgrade, which may be provided by Haivision to fix critical or non-critical problems in the Product on a scheduled, general release basis. Updates to the Product ("Version") are denoted by number changes to the right of the decimal point for a version and revision number (for example, going from 2.0.0 to 2.1.0).

1.7. Upgrades. Upgrades shall mean any modification to the Product made by Haivision, which are so significant, in Haivision's sole discretion, as to warrant their exclusion under the current license grant for the Product. Upgrades of Product are denoted by number changes to the left of the decimal point for a release number (for example, going from 2.0 to 3.0).

1.8. You (or Your). The legal entity specified in the Entitlement, or for evaluation purposes, the entity performing the evaluation.

2. RIGHTS AND RESTRICTIONS

2.1. License to Use. Subject to the terms and conditions set forth herein and subject to the terms of your Entitlement, Haivision hereby grants to You a non-exclusive, personal, limited and nontransferable right and license to use the Product in accordance with the terms of this Agreement. This license is granted to You and not, by implication or otherwise, to any parent, subsidiary or affiliate of Yours without Haivision's specific prior written consent. This license is for the limited use of the Product by You for the purpose of creating, managing, distributing and viewing IP Video assets. This license does not grant any license for content whatsoever. All rights not expressly granted to You by this Agreement are reserved by Haivision.

2.2. Restrictions.

(a) Reproduction. You shall not copy, modify, distribute, use or allow access to any of the Product, except as explicitly permitted under this Agreement and only in the quantities designated in the Entitlement. However, You have the right to make copies of the Product solely for archival purposes, but only in quantities necessary and typical for your Organization. You shall not modify, adapt, translate, export, prepare derivative works from, decompile, reverse engineer, disassemble or otherwise attempt to derive source code, hardware designs or other proprietary information from the Product or any internal data files generated by the Product, or use the Product embedded in any third party hardware or software. You shall also not use the Product in an attempt to, or in conjunction with, any device, program or service designed to circumvent technological measures employed to control access to, or the rights in other work protected by copyright laws. You shall not remove, modify, replace or obscure Haivision's copyright and patent notices, trademarks or other proprietary rights notices affixed to or contained within any Product. No right is granted hereunder for any third party who obtains access to any Product through You to use the Product to perform services for third parties. Most sublicensing arrangements are prohibited under this Agreement. However, if You are a Reseller, You are permitted to sublicense the Product to single end-users under terms and conditions similar to the provisions of this Agreement; however, You are responsible and liable pursuant to the terms and conditions of this Agreement for Your sublicensees' actions and failures to take required actions with respect to the Product.

(b) **Ownership**. The Product is conditionally licensed and not sold. As between the parties, Haivision and/or its licensors owns and shall retain all right, title and interest in and to all of the Product, including all copyrights, patents, trade secret rights, trademarks and other intellectual property rights therein, and nothing in this Agreement shall be deemed to transfer to You any ownership or title to the Product. You agree that you will not remove, alter or otherwise obscure any proprietary rights notices appearing in the Product. All Haivision technical data and computer software is commercial in nature and developed solely at private expense.

3. TERM AND TERMINATION

3.1. Term. The license and service term are set forth in your Entitlement(s). Additionally, this Agreement may be terminated without cause by You upon thirty (30) days written notice to Haivision.

3.2. Termination for Breach. Your rights under this Agreement will terminate immediately without notice from Haivision if You materially breach this Agreement or take any action in derogation of Haivision's rights to the Product. Haivision may terminate this Agreement should any Software become, or in Haivision's reasonable opinion likely to become, the subject of a claim of intellectual property infringement or trade secret misappropriation.

3.3. Termination for Bankruptcy. Haivision may terminate this Agreement, effective immediately, if You file, or have filed against You, a petition for voluntary or involuntary bankruptcy or pursuant to any other insolvency law, makes or seeks to make a general assignment for the benefit of its creditors or applies for, or consents to, the appointment of a trustee, receiver or custodian for a substantial part of its property.

3.4. Termination; Effect; Survival. Upon the termination of this Agreement for any reason:

(a) All license rights granted hereunder shall terminate;

(b) You shall immediately pay to Haivision all amounts due and outstanding as of the date of such termination or expiration; and

(c) You shall return to Haivision all Product and all Haivision Reference Manuals or certify that all such Product and Reference Manuals have been destroyed. Notwithstanding any termination of this Agreement, the following provisions of this Agreement shall survive for the relevant period of time set forth therein, if any: Sections **2.2**, **4**, **5** and **6**.

4. REPRESENTATIONS, DISCLAIMER AND LIMITATION OF LIABILITY

4.1. Limited Warranty. Haivision warrants that: (i) the Product will operate substantially in accordance with the Reference Manuals provided and (ii) any media on which the Product is provided will be free of material damage and defects in materials and workmanship under normal use for a term of ninety (90) days (the "Warranty Period") after its delivery date. As Your sole and exclusive remedy for any breach of this warranty, Haivision will use its commercially reasonable efforts to correct any failure of the Product to operate substantially in accordance with the Reference Manuals which is not the result of any improper or unauthorized operation of the Product and that is timely reported by You to Haivision in writing within the Warranty Period, provided that in lieu of initiating commercially reasonable efforts to correct any such breach, Haivision may, in its absolute discretion, either: (i) replace the Product with other software or technology which substantially conforms to the Reference Manuals or (ii) refund to You a portion of the fee paid for the relevant Product, whereupon this Agreement shall terminate. This warranty shall immediately terminate if You or any third party makes or attempts to make any modification of any kind whatsoever to the Product, engages in any improper or unauthorized operation of the Product, including uses prohibited by the Entitlement or installs or uses the Product on or in connection with any hardware or software not specified in the Entitlement or product data sheets.

4.2. Warranty Disclaimers. THE EXPRESS WARRANTIES SET FORTH IN SECTION **4.1** ABOVE IN RESPECT TO THE PRODUCT ARE IN LIEU OF ALL OTHER WARRANTIES, WHETHER EXPRESS OR IMPLIED, OR STATUTORY, REGARDING THE PRODUCT, OR ITS OPERATION, FUNCTIONALITY, PERFORMANCE, MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE, INCLUDING ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE AND NON-INFRINGEMENT OF THIRD PARTY RIGHTS (ALL OF WHICH ARE DISCLAIMED). HAIVISION DOES NOT WARRANT THAT ANY OF THE PRODUCT(S) WILL MEET ALL OF YOUR NEEDS OR REQUIREMENTS, OR THAT THE USE OF ANY OF THE PRODUCT(S) WILL BE UNINTERRUPTED OR ERROR-FREE, OR THAT ALL ERRORS WILL BE DETECTED OR CORRECTED.

4.3. Liability Limitation. IN NO EVENT SHALL HAIVISION OR ITS OFFICERS, EMPLOYEES, AGENTS, REPRESENTATIVES, OR MEMBERS, NOR ANYONE ELSE WHO HAS BEEN

INVOLVED IN THE CREATION, PRODUCTION OR DELIVERY OF THE PRODUCT, BE LIABLE TO YOU, YOUR CUSTOMERS OR TO ANY OTHER THIRD PARTY FOR CONSEQUENTIAL, INDIRECT, INCIDENTAL, PUNITIVE OR SPECIAL DAMAGES, LOST PROFITS, LOSS OF USE, INTERRUPTION OF BUSINESS OR FOR ANY DAMAGES FOR ANY BREACH OF THE TERMS OF THIS AGREEMENT OR FOR LOST OR CORRUPTED DATA ARISING FROM ANY CLAIM OR ACTION HEREUNDER, BASED ON CONTRACT, TORT OR OTHER LEGAL THEORY (INCLUDING NEGLIGENCE)AND WHETHER OR NOT SUCH PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. HAIVISION SHALL NOT BE LIABLE FOR DAMAGES FOR ANY CAUSE WHATSOEVER IN AN AMOUNT IN EXCESS OF THE FEE PAID TO HAIVISION BY YOU FOR THE RELEVANT PRODUCT.

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 conferment que c'est leur volonte expresse que ce contrat et tous documents y etant relative, y compris les bons de commande, le avis, le anneses, les autorisations, les pieces jointes et les amendments solent rediges en langue anglais 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.