ATX

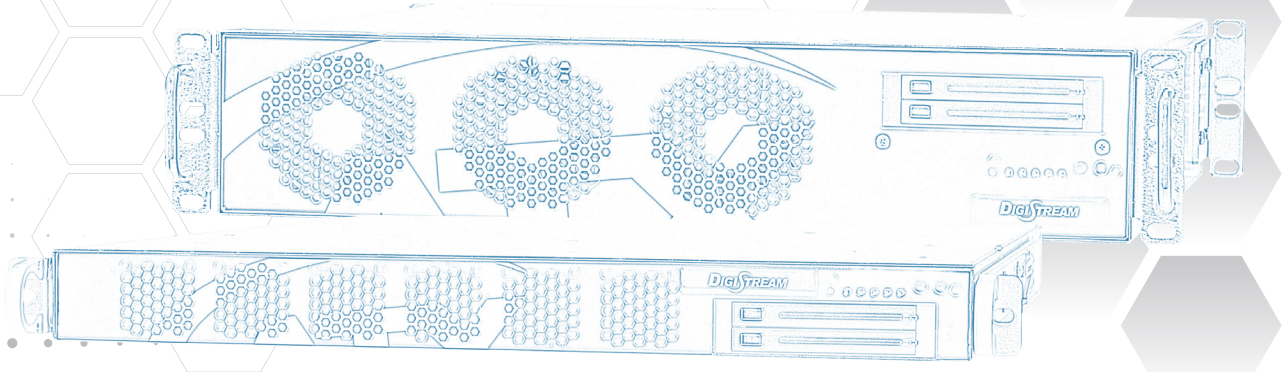
MDU Solutions®

End-of-Sale as of March 31, 2017

DIGISTREAM

DigiStream Content Streaming Solutions

Operation Manual



General Guide Notes

Guide Release Date: March 18 2015

Firmware Version

Some features described in this manual require the latest firmware to be installed on the DigiStream device. Check with ATX Networks technical support for the latest release of firmware. The firmware installed on your DigiStream may be found on the 'System' tab in the System Status section of the GUI. At the time of publication of this manual the most current released firmware version is:

OS Release	**12.04**
Firmware Release	**8587**
QAM	**2.22**

Organization of This Manual

This manual is generally organized based on the tabbed Management Interface with an individual chapter dedicated to describing the configurable features of each tab. Further chapters outline activities related to the DigiStream operation.

Cross Reference Hyperlink Usage

Hyperlinks are used liberally throughout the guide to assist the reader in finding related information if the reader is viewing the Adobe PDF file directly. Hyperlinks may be identified by their blue text. Most links are to related pages within the document, but some reference outside documents if the reader needs that additional information. The Table of Contents is entirely hyperlinked and bookmarks are available but the bookmark feature must be turned on in your Reader application.

Symbol Usage

Throughout the manual, some symbols are used to call the readers attention to an important point. The following symbols are in use:

NOTE: *This symbol usage will call the reader's attention to an important operation feature of the equipment which may be safety related or may cause a service outage.*

FYI: *This symbol indicates that there is helpful related information available in this note or elsewhere in the guide.*

TABLE OF CONTENTS

SAFETY

1. Safety

WARNING! FAILURE TO FOLLOW THE SAFETY PRECAUTIONS LISTED BELOW MAY RESULT IN PROPERTY DAMAGE OR PERSONAL INJURY. PLEASE READ AND COMPLY WITH THE FOLLOWING:

SAFETY GROUND: The connection to earth of the supplementary grounding conductor shall be in compliance with the appropriate rules for terminating bonding jumpers in Part V of Article 250 of the National Electrical Code, ANSI/NFPA 70, and Section 10 of Part I of the Canadian Electrical Code, Part I, CSA C22.1.

WATER AND MOISTURE: Care should be taken to prevent entry of splashed or dripping water, other liquids, and physical objects through enclosure openings.

DAMAGE: Do not operate the device if damage to any components is suspected.

POWER SOURCES: Only connect the unit to a power supply of the type and capacity specified in the operating instructions or as marked on the device.

NOTE: a) For 115 VAC operation, use the power cord supplied for operation from a 115 VAC source.
b) For 230 VAC operation, use the power cord supplied for operation from a 230 VAC source.

GROUNDING OR POLARIZATION: Electrical grounding and polarization means must not be defeated.

POWER CORD PROTECTION: Care must be taken during installation to route or arrange the power supply cord to prevent and avoid the possibility of damage to the cord by external objects. Pay particular attention to the exit point from the device and plug.

POWER SUPPLY CORD ROUTING: The power supply cord shall not be attached to the building surface, nor run through walls, ceilings, floors and similar openings in the building structure.

SERVICE: Do not attempt to service the device beyond procedures provided the operating instructions. All other servicing should be referred to qualified service personnel.

MODIFICATIONS: Modifications should not be made to the device or any of its components for applications other than those specified in the operating instructions.

SAFETY CODES AND REGULATIONS: The device should be installed and operated in compliance with all applicable local safety by-laws, codes and regulations.

BATTERY REMOVAL AND REPLACEMENT: Disconnect power (AC or DC) from the equipment before battery removal and replacement. This is accomplished by unplugging the power cord from the power outlet. Replace the battery with Sony part No. CR2032 or exact replacement only.

CAUTION: Use of a different battery type may present a risk of fire or explosion.

BATTERY DISPOSAL: Recycle or dispose of batteries in accordance with the battery manufacturer's instructions and local/national disposal and recycling regulations. Please call 1-800-8-BATTERY or go to the website at www.call2recycle.org for information on recycling or disposing of your used battery.

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SYSTEM DESCRIPTION

2. System Description

The DigiStream file & EPG streamer with local channel encoding cost-effectively delivers uploaded presentations, movies, electronic program guide (EPG) and locally generated content to all HD/SD TVs in a hospitality or bulk account environment. It supports streaming of up to 8 programs (combination of HD/SD programs), including 1 or more EPG channels. A built-in content playout scheduler allows users to define what content is streamed out at what time in each of the program slots designated for file streaming. The DigiStream device also supports the creation of a local channel lineup electronic program guide. Output can be delivered via QAM or IP. HTTP-based GUI allows for easy set-up & control, locally or from any remote location.

This on-premise system provides the guest or customer with a virtual channel lineup customized for the property and allows additional presentation media or 'Text/character generator' channels for local information announcements and general or property specific information or advertising. Live HD/SD local content encoding and insertion is available for advertising, information, instruction or live cameras with outputs in either QAM or IP.

Figure 2-1: DigiStream IP

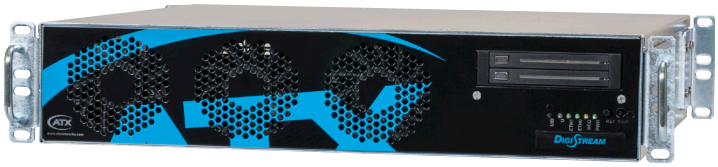

Figure 2-2: DigiStream QAM

2.1 Applications

Typical applications include any facility that requires a customized Electronic Program Guide, information display channels and live video channel creation. Supporting multiple frequency agile QAM channel output, the DigiStream is a single box solution and easily deployed without the need for external QAM modulators. Flexible mounting options include accommodation for standard 19"rack mounting as well as for wall panel mounting where racks are not available. Integrated cooling fans ensure reliable performance in widely varying installation environments.

Target applications include:

- Hospitality industry (Hotels, motels)
- Conference centers
- Retirement homes
- Sports stadiums
- Gated communities

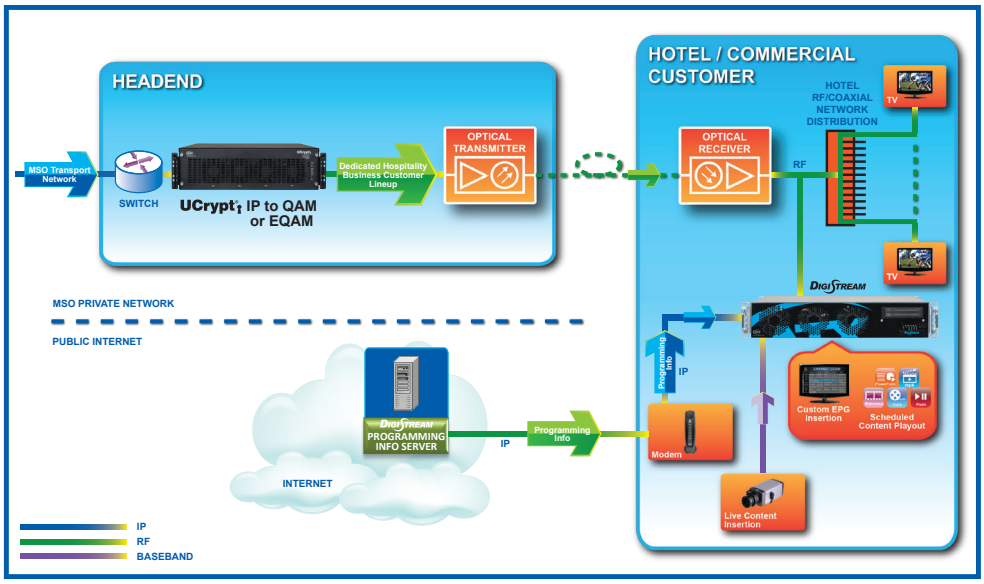

Figure 2-3: DigiStream Typical Application

2.2 Key Features

2.2.1 Custom Theme Based EPG Channel

The Electronic Program Guide (EPG) channel Theme may be customized for the property through insertion of logos and background image. Full configuration control is granted to make the display appear in any layout or color that is desired. The Theme can be either a default Basic Theme, which allows you to customize colors, fonts and spacings with built in tools, or an Advanced Theme, which provides full control over sizing, layout and display of the EPG components using Cascading Style Sheets (CSS) which may be externally created and imported.

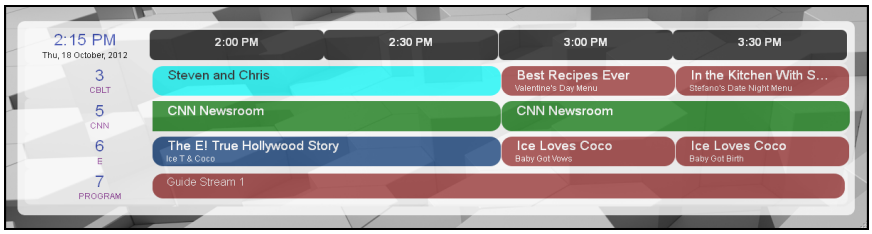

Figure 2-4: Theme Based Dynamically Updated Guide

2.2.2 Dynamically Updated EPG

The generated EPG guide channel can be configured to dynamically connect to an instance of ATX Networks 'Programming Info Server' for information and schedule acquisition. The server may be hosted locally by the cable service provider or by ATX Networks if desired. Without a dynamic 'Programming Info Server' connection, the EPG displays a virtual channel lineup that is not time-based.

2.2.3 Video Playout

Video files may be played on information or entertainment channels. Supported file types for playout include: Microsoft® PowerPoint®, Adobe® Flash® video (flv), Apple® QuickTime® (mov), mp4, Matroska (mkv), baseband inputs (i.e. camera feeds, etc.), HTTP Live Streaming using HLS.

2.2.4 Private Information Presentation Channels

Information or advertising channels can be encoded by the DigiStream and provided with content that is easily created by the operator of the property using presentation software which is then uploaded and displayed on a programmable schedule. Movie files may also be uploaded to the system and then displayed according to a schedule. If several movies or presentations are related and will be required to be displayed consecutively, a play list or even multiple play lists may be created to accommodate this requirement on a flexible schedule.

Figure 2-5: Inhouse Advertising or Information Channel

2.2.5 Real Time Video Channels Encoding

Live baseband video sources may be also encoded by the DigiStream. This may include such sources as cameras, DVD players, or anything with a baseband video and/or audio output. Depending on the optional accessory input card installed, SD programming with composite video input or HD programming with component or HDMI input may be encoded and transmitted via QAM or IP. The output channels may be used internally for the property owner's use or added to the EPG and distributed with the regular channel lineup.

2.2.6 Live Preview

At any time, a live preview of the content of any channel is accessible from the Status display. The content is rendered within a browser window for the convenience of viewing it anywhere. If desired, a 10 second recording of the program may be captured with an internal capture tool and exported for external review with most stream players.

2.2.7 QAM or IP Output Capability

The DigiStream may be factory configured for either IP or QAM output. Programs may be encoded in SD or HD formats using MPEG-2 or H.264 configurable on a program by program basis by the user. Following encoding, the EPG and local channels and programs are able to be output on up to eight integral agile QAM modulator channels for the QAM output version. The modulators support 256QAM constellation and are fully agile in groups of four channels in the downstream spectrum of 54-1000 MHz. Each QAM channel has a single program, video source or EPG multiplexed onto it configurable by the user.

2.2.8 Flexible IPv4 Configuration

IPv4 network addresses are supported and full address configuration may be performed on the eth0 Management Interface for deployment on a public or private network. Fixed addresses are supported along with a DHCP client mode selectable for automatic IP address provisioning. The ports auto negotiate connection speed as well as auto-sense connection type and come with factory default IP addresses.

2.2.9 HTTP Based GUI

The system is provided with a powerful Management Interface GUI which is accessible either locally or remotely with any web browser through an Ethernet network port. Local control is available for the field installation technician and configuration is simple with a Notebook or desktop PC. Remote access from anywhere is easily provided by connecting to a pre-existing Ethernet based network or to a residential or commercial cable modem. The Management Interface allows simple configuration of all operating parameters and uploading of presentations, movies and configuration files by the property management staff.

2.2.10 SNMP Network Monitoring

The DigiStream supports SNMP network monitoring through a built in MIB which may be downloaded and compiled into an external SNMP manager. Remote equipment monitoring of the DigiStream device and other related ATX equipment can be easily implemented for large and small MSOs who want to be proactive in monitoring their deployed systems.

2.2.11 SNMP Alert Support

The system supports sending SNMP traps to an SNMP element management system for remote alarm monitoring if this is part of the operators network. The operator may choose from a comprehensive list of SNMP alerts and either enable or disable them as required.

2.3 Support for IPMI

The Intelligent Platform Management Interface is an standards based interface used by some system administrators to remotely manage encoder hardware in an out of band fashion, that is irrespective of the installed operating system or BIOS of the sever. The encoder has a dedicated IPMI network port enabled with DHCP. IPMI Version 2.0 has been implemented on this product. More information may be obtained from the SuperMicro support site or the following links to the available IPMI software and manuals.

- SuperMicro IPMIview software ftp://ftp.supermicro.com/utility/IPMIView/
- The IPMI User Guides http://www.supermicro.com/manuals/other/Embedded_BMC_IPMI.pdf
  http://www.supermicro.com/manuals/other/SMT_IPMI_Manual.pdf
- IPMIView Software Manual http://www.supermicro.com/manuals/other/IPMIView20.pdf
- Command Line Interface tool ftp://ftp.supermicro.com/utility/SMCIPMITool/SMCIPMITool_User_Guide.pdf

2.4 Front and Rear Panels

2.4.1 IP Output Version

Figure 2-6: Front Panel

2.4.2 Controls & Indicators

Figure 2-7: Front Controls & Indicators

The DigiStream device is designed to be plug and play and will be in a powered on state when the power cord is plugged in. There may be instances where it is desired to reboot or power down the encoder manually and switches to enable that are located on the front panel. Indicator lights are provided to allow monitoring of errors and alarms, See Table 2.4a for functional descriptions of front panel controls and indicators.

Table 2.4a: Front Panel Controls and Indicators

Panel Label	Function	Description
UID	Button	Universal Identifier: A switch that will turn on the adjacent "**U**" light.
U	Indicator LED Blue	Universal Information LED: The Universal Information BLUE LED is used to indicate fan failure, power failure, overheat condition, or to identify the unit within a large rack installation. This may be activated by the IPMI or front panel button. State Indication: • Fast Blinking Red (1 per sec) - Fan Failure • Solid Red - CPU Overheated • Slow Blinking Red (1 per 4 sec) - Power Failure • Solid Blue - Local UID Button Depressed • Blinking Blue - IPMI Activated UID Note: Deactivating the UID LED must be performed in the same way it was activated. (If the UID LED was activated via IPMI, you can only turn the LED off via IPMI and not with the UID button.)
HDD	Indicator LED Green	Indicates SSD/HDD drive activity when flashing.
PWR	Indicator LED Green	Indicates power is being supplied to the system's power supply units. This LED should be illuminated when the system is operating.
RST	Recessed Button	Used to reboot the encoder.
PWR	Recessed Button	The main power switch is used to apply or remove power to the encoder. Activating this switch effectively turns the encoder off but keeps standby power supplied to the system. You must unplug the system before servicing. Press again to power up.

2.4.3 USB Ports

USB ports are provided to connect a keyboard and mouse if required to access the MKIP system shell. The front or rear USB ports may be used interchangeably for this purpose.

2.4.4 Rear Panel

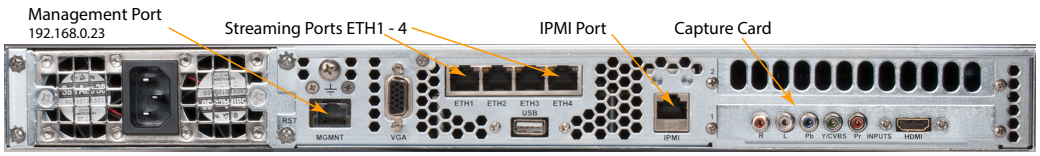

Figure 2-8: Rear Panel

Table 2.4b: Rear Panel Connections

Port	Description
MGMT	Management port eth0 used to configure the Device. Not used for streaming content.
VGA	Not Used
USB	Not Used
eth1	Streaming or publishing exclusively for IP based streaming content.
eth2	Streaming or publishing exclusively for IP based streaming content.
eth3	Streaming or publishing exclusively for IP based streaming content.
eth4	Streaming or publishing exclusively for IP based streaming content.
IPMI	DHCP enabled hardware level interface for Device management supporting IPMI LAN 2.0.

2.4.5 QAM Output Version

Figure 2-9: Front Panel

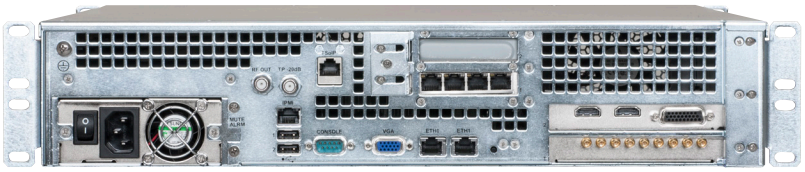

Figure 2-10: Rear Panel

2.4.6 Baseband Video Input Cards

Figure 2-11: DS-1HDA

Figure 2-12: DS-4SDA

PROGRAMMING GUIDE

3. Programming Guide

This chapter explains in a short summary format the fundamental steps needed to configure the DigiStream system. Detailed configuration information is contained in separate chapters, one for each tab of the Management Interface GUI.

3.1 Chapter Contents

3.2 DigiStream Functions

The DigiStream produces program channels which are referred to in the GUI as Streams, ultimately used for the information, education and enjoyment of guests to a property. It can produce the following channel types:

- Guide Streams (EPG)

  A Guide Stream is an Electronic Program Guide (EPG) which is a channel showing the virtual channel lineup of the property so guests will know where to tune a TV to get a desired program. It presents information similar to a printed channel guide or card but in a dynamic way if connected to a data server. There may be one or more Guide Streams depending on ordered configuration.
- Media Streams

  A Media Stream is a channel that can be used to show presentations or movie files. Play Lists may be created to show a set arrangement of movies, presentations or a combination of both, on a flexible schedule. There may be one or more Media Streams depending on ordered configuration.
- Capture Streams

  A Capture Stream is a channel that can be used to show a source of live video such as a camera or DVD player. There may be no Capture Streams in your unit depending on ordered configuration.

3.3 Connect and Access GUI

Performing DigiStream configuration requires a web browser and a PC connected to the management port.

1. Connect a PC that will be used to manage the DigiStream to the MGMT port on the rear panel.
2. Open a web browser session and enter the default IP address HTTPS://192.168.0.23 in the URL dialog.
3. A browser warning is presented due to the private security certificate in the DigiStream. Accept the risk and click through and accept any warnings presented. This is not a real risk. The DigiStream Login GUI opens.
4. Enter the username and password. Only the 'admin' user may completely configure the DigiStream.
   - Username: **admin**
   - Password: **atx_digistream_admin_password**

3.4 Guide Stream Configuration Overview

It is recommended that the following order of configuration be followed as some features have dependency upon other features.

1. Configure the System tab with IP addresses and EPG Data Server.
   - See Chapter "11. System Tab" on page 11-1
2. Configure the Themes tab. Define or create an appropriate Theme. Built-in themes may be used as is.
   - See Chapter "8.3 Create a New Basic Theme" on page 8-3
3. Configure the EPGs tab. Create an EPG with the channel lineup and assign a Theme.
   - See Chapter "7.4 Create an EPG" on page 7-6
4. Configure the Streams tab. Define the stream type (if applicable) encoding, EIA channel and assign an EPG.
   - See Chapter "5.4 Configure the Guide Stream" on page 5-2
5. Configure the MUX Details tab. Define a multiplex and add streams.
   - See "9.5 Add a New MUX (IP Models Only)" on page 9-3

3.5 Guide Stream Configuration Hierarchy

To better understand the relationship among the configurable elements of the Guide Stream, the diagram in Figure 3-1 shows how the Guide Stream, EPG and Themes are interrelated.

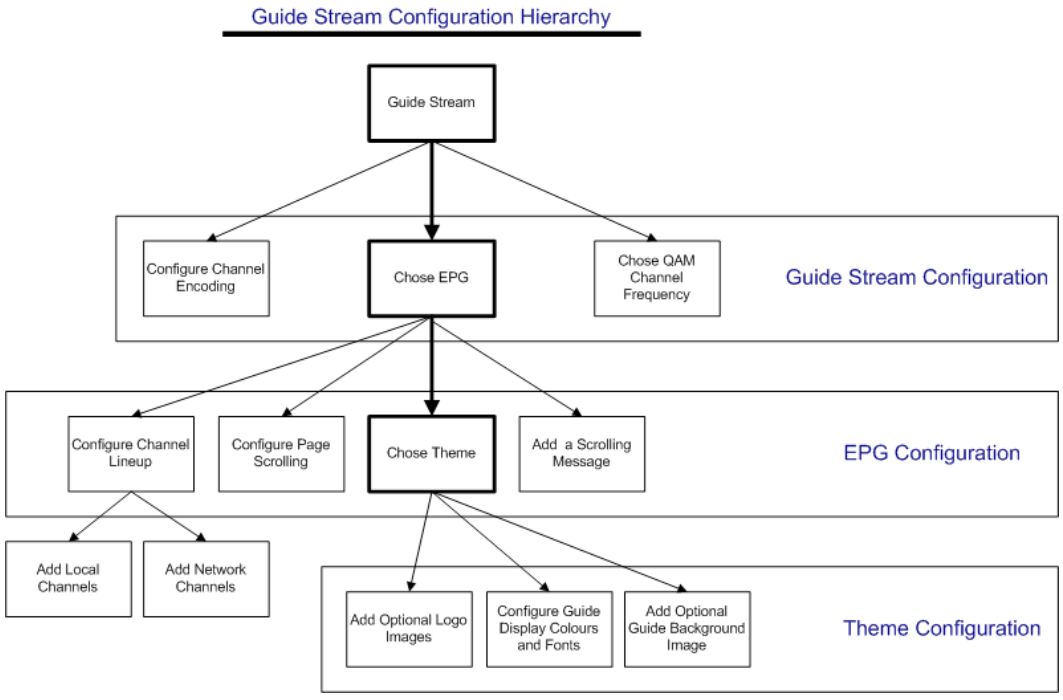

Figure 3-1: Guide Stream Configuration Hierarchy

STATUS TAB

4. Status Tab

This is the default page which can be seen by all users, Figure 4-1. It summarizes the available streams and content that is currently being displayed on the system and allows channel preview. This is the only page a GUEST user can see.

FYI: *Hovering the mouse pointer over the dialog boxes on configuration pages enables tool tips with helpful information.*

4.1 Chapter Contents

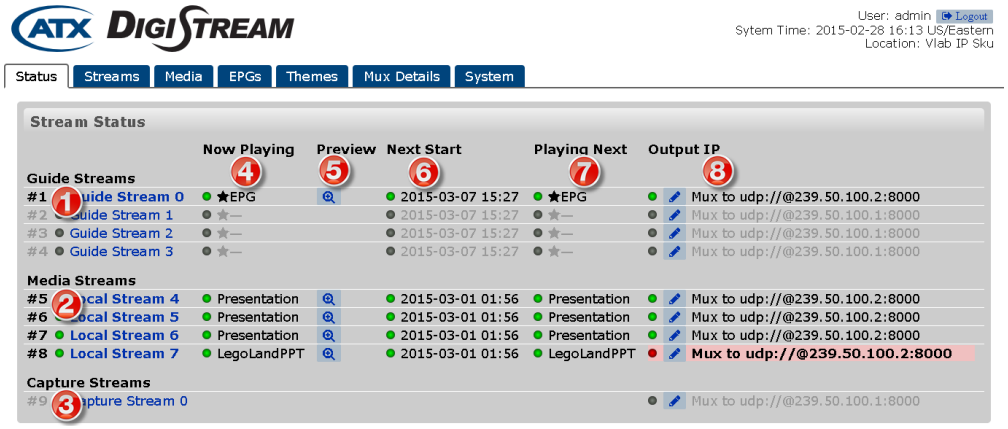

Figure 4-1: Stream Status Page

4.2 Stream Status Page

This Stream Status page, Figure 4-1, summarizes all of the available streams as well as what content is currently playing and what content is up next. An explanation of each field on the page is described in Table 4.2a.

Table 4.2a: Stream Status Fields

Reference Figure 4-1	Field	Description
1	Guide Streams	Guide Streams are channels with Electronic Program Guides as content. These channels display a list of available channels at a property for a guest to tune a TV. Click the **Name of the stream** to configure the stream. There may be only a single stream or multiple streams depending on your units ordered configuration.
2	Media Streams	Media Streams are channels with presentations, movies, multicasts or HTTP Live Stream as content. Click the **Name of the stream** to configure the content or schedule. There may be only a single stream or multiple streams depending on your units ordered configuration.
3	Capture Streams	Capture Streams are channels with live video such as cameras or a DVD player as content. Click the **Name of the stream** to configure the video or audio source properties. There may be no streams or multiple streams depending on your units ordered configuration.
4	Now Playing	This is the actual content or file currently being displayed on the associated channel. Click the **Name** of the content in this column to configure the content if desired.
5	Preview 	This is a link to preview the current stream content in a browser window; click the **Preview Icon**.

Reference Figure 4-1	Field	Description
6	Next Start	This is the scheduled start time of the next content or file.
7	Playing Next	This is the content or file that will be displayed after the current content ends. Click the **Name** to configure the content if desired
8	Output IP	The IP Multicast address carrying the content(IP Output Version). The channel may be assigned or disabled if required by clicking the **Edit Icon**.
8	Output Frequency	The EIA channel carrying the content(QAM Output Version. The channel may be assigned or disabled if required by clicking the **Edit Icon**

NOTE: *Modifying fields on this page is service affecting. The channel will restart with the new parameters.*

4.3 Preview the Streams

1. Click the **Status** tab, Figure 4-2.
2. Click the **Preview Icon** for the desired stream.
3. A 'Live' preview of the stream with content listed as 'Now Playing' is rendered in your web browser, Figure 4-3.

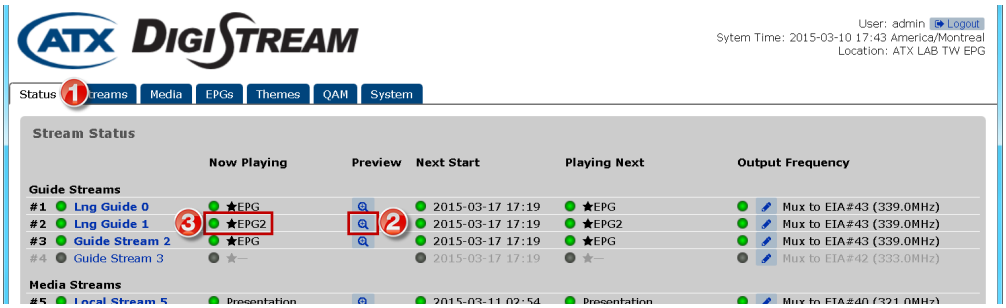

Figure 4-2: Select Stream for Preview

4. Click **Download MPEG**, Figure 4-3 if you wish to download a copy of the last 10 seconds of the stream for record

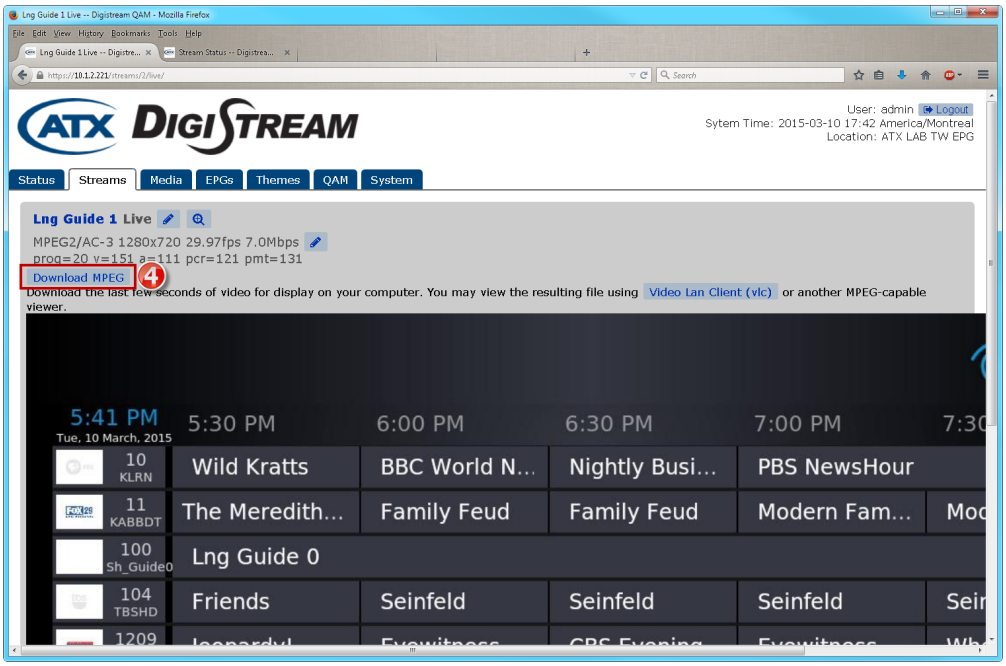

Figure 4-3: Content 'Now Playing' Previewed

keeping or analysis. The stream is automatically recorded by built-in capture tools.

5. The file is prepared for download, Figure 4-4, select to either save or open the file.

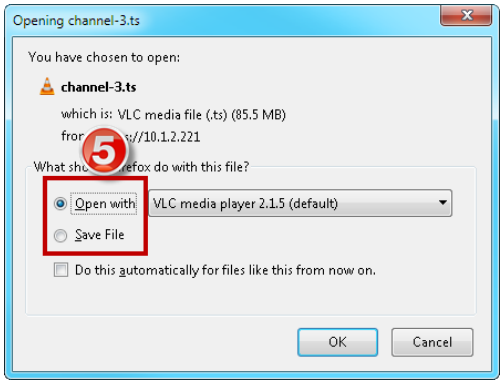

Figure 4-4: Capture File Download

- The prompt to save or open the file may differ depending on your browser or the file may play directly in your browser if it has the required plug-ins.

6. If you need a software player to play the recorded and downloaded files, click **Video Lan Client (vlc)** on the preview page, Figure 4-5, for a free MPEG player.

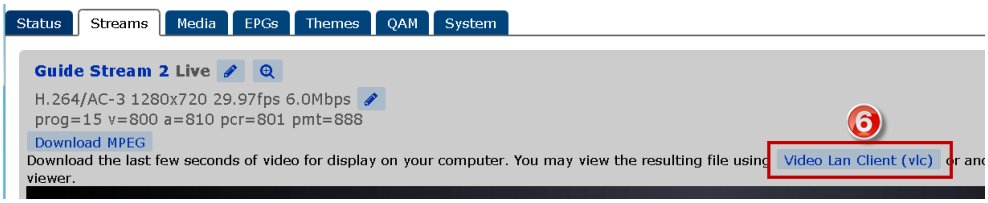

Figure 4-5: Download VLC Client

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STREAMS TAB

5. Streams Tab

The Streams tab consolidates the links and controls for configuring and enabling/disabling all streams within the system. Your DigiStream device will have been factory configured to provide a set number of output channels. The ordered configuration will determine options that are available. Some channels may be field configured as different types of media streams and those options may be configured here.

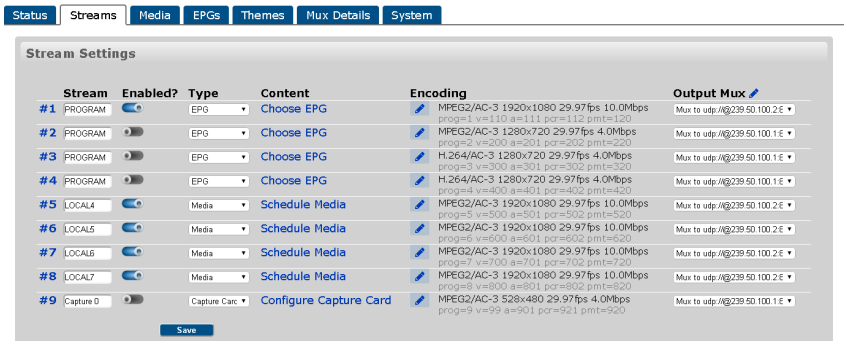

Figure 5-1: Streams Tab

5.1 Chapter Contents

5.2 Stream Settings

This page summarizes the available streams and their assigned type. Each stream row is comprised of links to the configuration pages for each parameter. Each field is described in Table 5.2a.

Table 5.2a: Stream Settings Fields

Field	Description
Stream	This is the Short Name assigned to the Stream. The name may be edited in the text box if required.
Enabled? 	This clickable toggle switch allows enabling/disabling a stream. This may be used to stop display of programming only intermittently required to be displayed. If enabled the switch is blue/light and if disabled the switch is grey/dark.
Type	Some streams may be configured for different media or content types, depending on the ordered configuration. If there are multiple stream types available for any given stream, it will be available in the drop down menu.
Content	If different content can be assigned to a given stream this may be selected here by clicking the link. For example: • Guide Streams will allow selection of a different EPG. • Media Streams will allow the Media schedule to be modified or media uploaded. • Capture Streams will allow configuration of the video parameters.
Encoding 	The encoding edit icon links to the encoding configuration pages.

Field	Description
Output Frequency	This selection is visible only on QAM output models. The selection of output frequency available by a drop down menu.
Output MUX	This selection is visible only on IP output models. The selection of output MUX is done here with a drop down menu.

5.3 Stream Identity

Stream Identity is the name under which a Guide, Media or Capture Stream appears in the **DigiStream GUI** and **EPGs**.

There are two names:

- **Name (Long or Full Name)**
  - Displayed under the list of streams on Status Tab; more fully describes it within the DigiStream GUI.
  - Displayed on-screen in the time line in an EPG when no schedule information is present.
  - When adding this stream to an EPG, there is an opportunity to change the Name for use in the EPG while the Name in the GUI stays the same.
- **Short Name (Station Call Sign)**
  - Appears in list of streams on Streams Tab.
  - Appears in the list of local channels on EPGs Tab.
  - Displayed on-screen below channel number in an EPG.
  - The short name is limited in a practical sense to about 7 characters due to EPG space constraints.
  - When adding this stream to an EPG, there is an opportunity to change the Short Name for use in the EPG while the Short Name in the GUI stays the same.

5.4 Configure the Guide Stream

The Guide Stream is the channel which displays the list of all the available TV channels at the property. This will be used by a guest or customer to enable tuning to or finding a desired program or TV channel.

1. Click **Status** Tab, Figure 5-2.
2. Click the **Guide Stream** to be configured, in this example **Guide Stream 1**(Note: This is the Long Name).

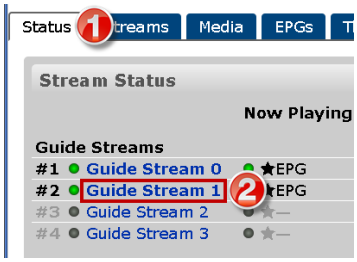

Figure 5-2: Edit Guide Identity

3. Select the **Electronic Program** guide from available choices in the drop down menu, Figure 5-3.
4. Click **Save.**
5. Click the **Guide Stream Edit** Icon.

Figure 5-3: Edit Guide Stream

6. Enter a **Short Name**(an abbreviated name, in this example, LOCAL CH) then edit or accept the full **Name**, Figure 5-4 (In this example, Guide Stream LOCAL).
7. Click **Save**. A banner showing the channel is updated appears above.

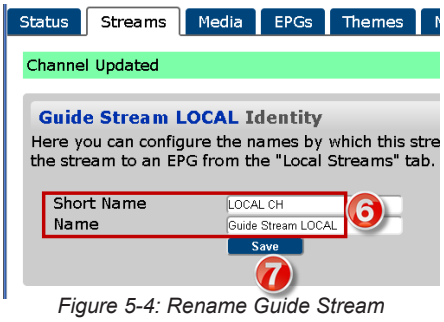

Figure 5-4: Rename Guide Stream

8. Click the **Status** Tab, Figure 5-5.
9. The Guide Stream name is changed to **Guide Stream LOCAL.**

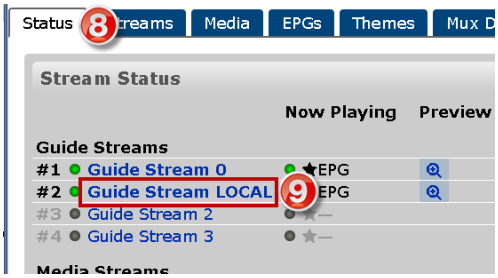

Figure 5-5: Guide Stream Name Changed

10. Click the **EPGs** Tab, Figure 5-6.
11. Click the **Local Lineup** tab near the page bottom.

- Observe that the Short Name of **LOCAL CH** is listed under the local channel Short Name.

12. Click the Local Channel name to add it to the EPG Lineup.

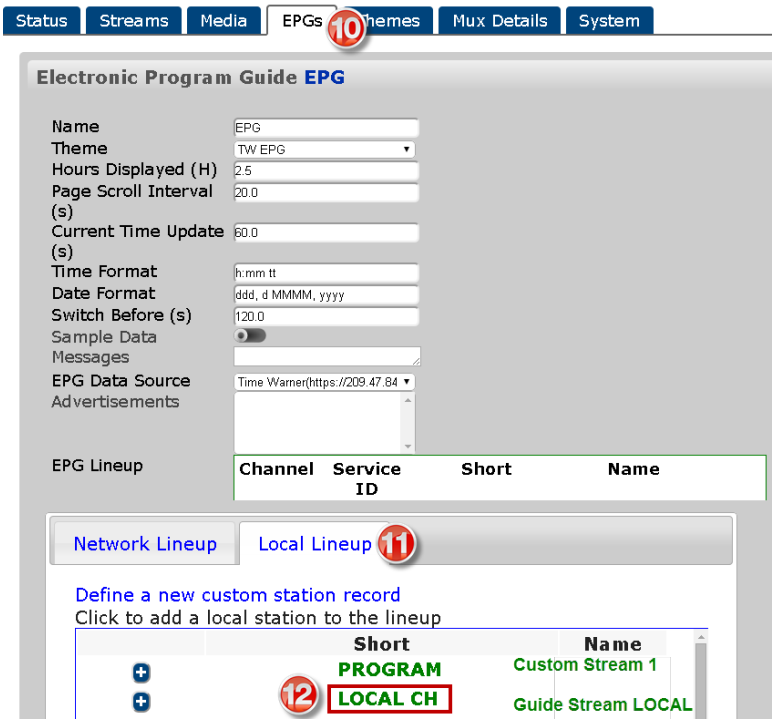

Figure 5-6: EPGs Tab - Select From Local Lineup

13. The Local channel is added to the EPG Lineup, Figure 5-7.
14. Click the **Edit Icon** beside the name.

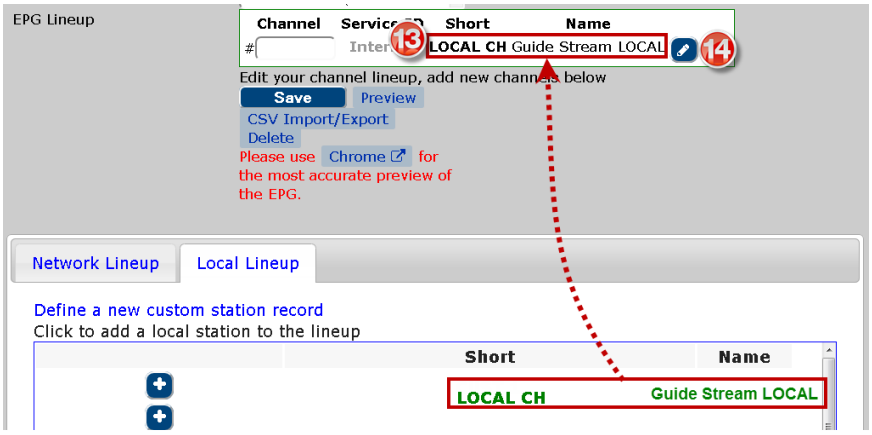

Figure 5-7: Local Channel Added to EPG Lineup

15. Within the dialog, optionally edit the names as they will appear on-screen in the EPG, Figure 5-8.
16. In this example, they were not edited. Click Save.

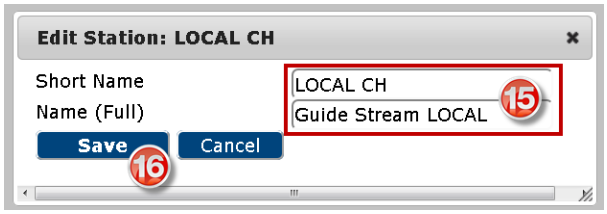

Figure 5-8: Edit Names for EPG Display

17. When the guide is previewed the Long (full) Name is displayed in the Time Line, Figure 5-9.
18. Short Name is displayed under channel number.

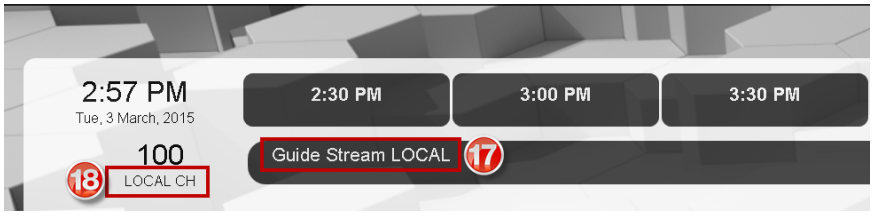

Figure 5-9: EPG Displays Long & Short Names

5.5 Schedule Media

Any of the Media that is listed on the Media Tab may be displayed on the **Media Stream** channels and may be used for advertisement, instruction or entertainment. Before Media may be scheduled it must first be added.

- To add media see "6.3 Add a New Presentation" on page 6-7 for the steps required. All media is added in the same manner.
- By default there is only a single time slot for each day and only one media will play for the entire day.
- If more than a single media file should play on any day, additional time slots may be added and the start time of each changed independently, see step 7.
- Any single media may be chosen to replace all media displayed on every day and at all times, see step 11.

Procedure

1. Click the Streams tab, Figure 5-10.
2. Click **Schedule Media** link beside the media stream to be scheduled.

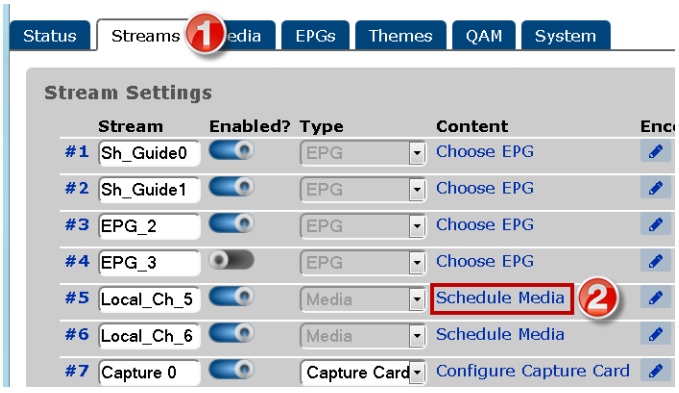

Figure 5-10: Schedule Media

3. It is possible to upload new media or create a playlist of media from links on the Media Content page, Figure 5-11.
4. If desired, change the time that sets the start of the day's programming by clicking on the **Drop Down Menu** arrows. Default is 02:00 AM.

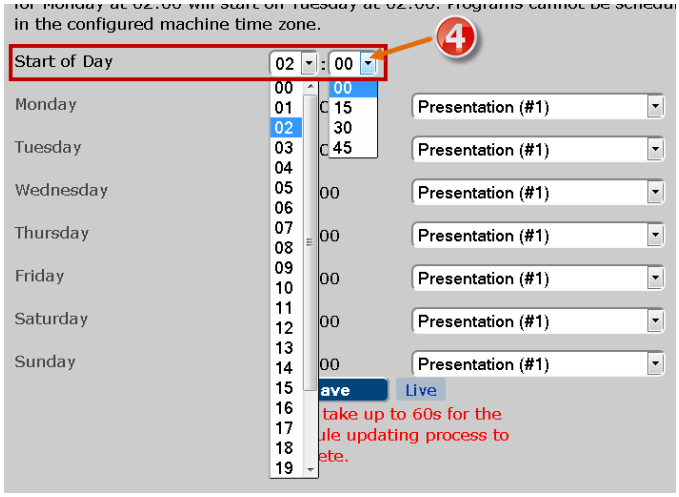

Figure 5-11: Set Programming Day Start

5. Click the **Drop Down Menu** arrow in the time slot for the days schedule to be changed, Figure 5-12.
6. Select the **desired media** from the list of available media.

- If this single selection is made and nothing else is added, the selected media will play for the entire day.

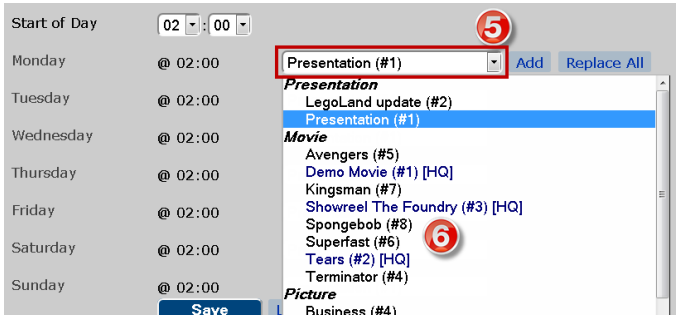

Figure 5-12: Chose Programming

7. With the mouse **over the day**, to add more media for the day, click **Add** (a control that appears with mouse over), Figure 5-13.

Figure 5-13: Add More Media

8. A new time period is added to the day, Figure 5-14.

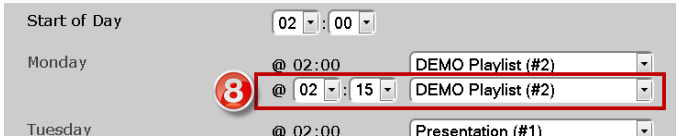

Figure 5-14: New Time Period Added

9. Click the **Media Name** to change the media, Figure 5-15.
10. Click the **Time** to change the start time for this new media.

- Any number of time periods may be added to change the display of media through the day as desired.

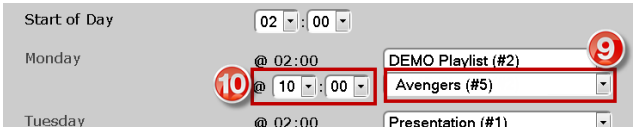

Figure 5-15: Change Media and Start Time

11. To replace all media displayed on every day and all time periods, click the **Replace All** link when mousing over the media, Figure 5-16.
12. Click **Save** to apply all changes when finished.

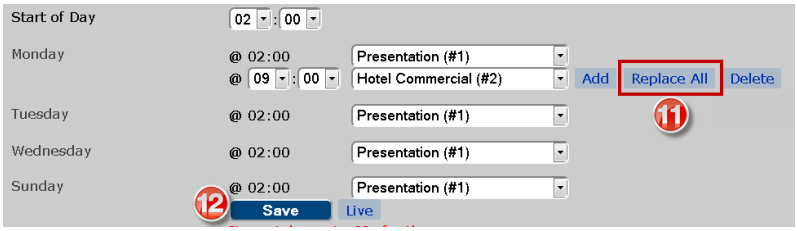

Figure 5-16: Replace All Media

5.6 Configure Stream Encoding

Stream Encoding defines the resolution, compression and bit rate among other characteristics for the channel. The correct setting depends on the output required. It is not possible to define here what the settings should be in any situation. The system is pre-configured with common HD encoding profiles to get you started so it may only be necessary to modify these.

- This is a generic process; each available stream is configured in the same manner but each may have its encoding parameters set independently.
- The editing pages may be accessed from the Streams tab or each individual stream configuration page.
- The only difference between IP Output and QAM Output models is in selection of Output Channel or IP Address.

5.6.1 Procedure

1. Click the **Streams** tab. See Figure 5-17. All available streams are displayed in a list, even disabled streams.
2. Click the **Encoding Edit Icon**  next to the **Stream Name** that is to have encoding configured.

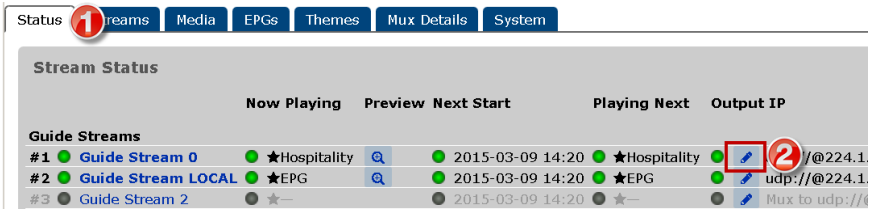

Figure 5-17: Select Edit Encoding Icon

3. In the **Encoding** configuration window, Figure 5-18, select the appropriate settings.
4. Set the **Output** Channel(QAM Output model) or Multicast IP Address(IP Output Model) for this program.
5. Click **Save** to apply any changes made. The channel restarts with the new parameters.

• Click the browser **Back** button to return to the previous page if you are not redirected automatically.

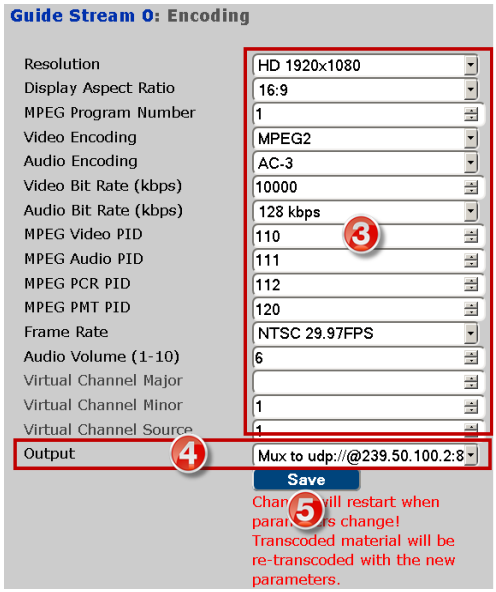

Figure 5-18: Configure Stream Encoding

5.6.2 Stream Encoding Parameters

Table 5.6a: Stream Encoding Parameters

Field	Description
Resolution	This is set to the video resolution of the output video. There are a wide range of choices available.
Display Aspect ratio	Set this value to 16:9 or 4:3 as appropriate.
MPEG Program Number	This is the MPEG program number of the encoded stream. It is also the Minor Channel Number of this program in a multiplex. The default value is 1. Multiple programs may be multiplexed on the output so there can be no duplication of MPEG numbers.
Video Encoding	This determines the video encoder used for the stream. Available choices: MPEG-2 and H.264.
Audio Encoding	This determines the audio encoding of the channel. Available choices: MPEG-2 and AC-3.
Video Bit Rate (kbps)	This determines the target video bit rate of the encoded stream. Available choices: 1000 - 15000 kbps.
Audio Bit Rate (kbps)	This determines the target audio bit rate of the encoded stream. The valid bit rates are listed but may vary depending on the firmware version installed. Available choices: 128 kbps and 192 kbps.
MPEG Video PID	This is the MPEG PID (Program Identifier) of the encoded video. The default value is 100.
MPEG Audio PID	This is the PID (Program Identifier) of the encoded audio. The default value is 101.
MPEG PCR PID	This is the PID (Program Identifier) of the PCR (Program Clock Reference) and is different than the video PID. The Video and PCR PIDs may not be the same number.
Frame Rate	This sets the frame rate of the output channel. Choices available: 29.97 fps (North American Standard) 59.94 fps (NTSC Interlaced) 23.98 fps (Film Standard) 24 fps (Film True 24 fps) 25 fps (PAL Standard) 50 fps (PAL Interlaced)

Field	Description
Audio Volume	If there is accompanying audio on a channel, the audio volume may be adjusted by assigning a number between 1 and 10.
Virtual Channel Major	This number will be displayed in the created program guide and transmitted in the PSIP tables and also will be the channel number (in combination with the Minor number) a customer enters in the TV remote control to tune to this program.
Virtual Channel Minor	This is the MPEG number of the program within the multiplex on the previously defined PSIP Major channel. This number will be transmitted in the PSIP tables and displayed in the created EPG and also will be the channel number (in combination with the Major number) a customer enters in the TV remote control to tune to this program.
Virtual Channel Source	A value that can be set in the PSIP tables. Not required in most applications. Leave at default value.
Output	Select from the drop down menu to choose the output EIA Channel(QAM Output Model) or pre-defined Multicast IP address(IP Output Model).
Save Button	Any changes need to be applied to the unit's working configuration. Click **Save** to apply the changes. Navigating away from this page without saving discards all changes.

5.7 Configure a Capture Stream

The system may be configured to encode Live Baseband Video inputs onto a local channel with optional baseband video input cards. Various card types with different input capabilities are available and may be selected based on the video to be encoded.

1. Click the **Status** tab
2. Click the **Capture Stream Name** that is to be configured, see Figure 5-19.

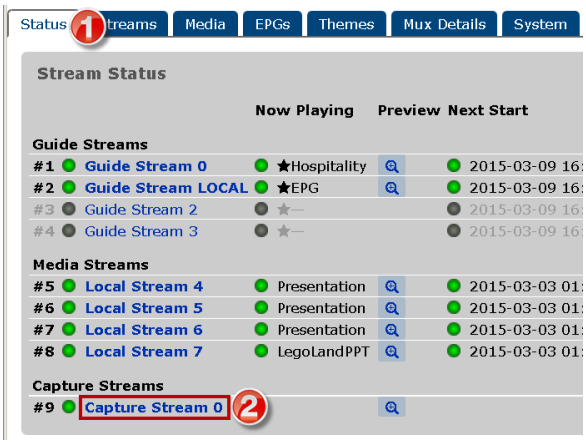

Figure 5-19: Configure Capture Card

3. Configure Video and Audio parameters, Figure 5-20.

- Click the **Video Input** Dialog. A drop down menu opens for selecting the physical video input port for that card. The listed items depends on the capabilities of the installed card. Select the input that the video appears on.
- Click the **Video Input Format** Dialog. A drop down menu opens for selecting the video format for that channel. Select the format of the **source video**.

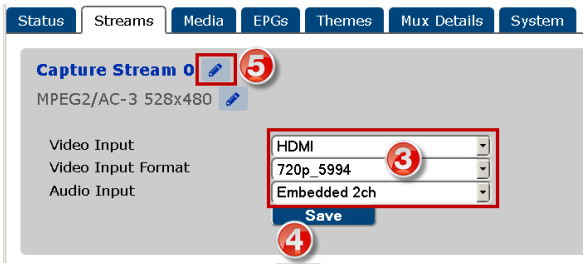

Figure 5-20: Configure Inputs

- Click the **Audio Input** Dialog. A menu opens for selecting the physical audio input port for that card. Select the format of the **source audio** channels.

4. Click the **Save** button to save and apply the changes.
5. Click the **Edit Icon** to change the Identity (Long and Short Name) of the stream.

- Click **Save** if any changes are made.
- Click the browser **Back** button to return to the previous page if you are not returned automatically.

5.8 Enable or Disable a Stream

Streams may need to be disabled for various reasons including that the information is only applicable intermittently but regularly. Once configured, the stream can be disabled with a clickable switch.

1. Click the **Streams** Tab, Figure 5-21.

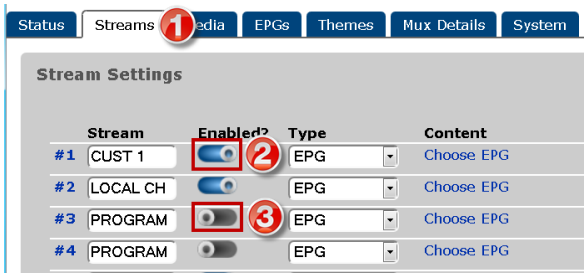

Figure 5-21: Enabled Streams

2. With the stream enabled the **Switch Icon** is Blue.
3. Single click the **Switch Icon** so it changes to Grey.
4. Click **Save**.

MEDIA TAB

6. Media Tab

The Media tab is used to upload, download, delete and otherwise manage all media (Movies Presentations) that will be used in the DigiStream device. Media Management consist of section categorized by all of the available media types. This page, Figure 6-1, is separated into sections described in this chapter.

FYI: *Hovering the mouse pointer over the dialog boxes on configuration pages enables tool tips with helpful information.*

Figure 6-1: Media Tab

6.1 Chapter Contents

6.2 Presentations

This section, Figure 6-2, displays the currently existing presentations, enables editing the names of the presentations that will appear in the DigiStream GUI or upload of new presentations.

1. Click New to upload a new presentation from your PC, Figure 6-2.
2. Click the **Presentation Name** or number to edit the name that appears in the GUI or upload a new presentation file.
3. Click the **File Name** to download the presentation to your PC (Your browser may treat this action differently; you may

Figure 6-2: Presentations Section

have to right click and select ‘Save File As’).

4. Click the **Trash Can Icon**  under **Actions** to delete the presentation.

6.2.1 Presentation File Support

PowerPoint® Presentations

Please use PowerPoint 2003-2007 file format to ensure full file compatibility. It is possible that later file formats may work but some features present in newer formats may cause unexpected problems with the play-out. You should install the Microsoft PowerPoint Viewer on your DigiStream device in order to provide better fidelity when rendering content if you wish to use PowerPoint presentations. To do so, you must accept the license agreements between you (or your company) and Microsoft Corporation, and then install the software on the machine yourself (the installation process is as simple as clicking a button to indicate your agreement). The files will be downloaded from the appropriate Microsoft site.

Note that the fonts installed with the PowerPoint 2007 viewer are stripped from the installation because the (separate) license for those fonts does not allow them to be used on Linux machines(the DigiStream). In its stead, the Microsoft Core TrueType font package is installed into the environment to provide the basic Windows fonts expected by most PowerPoint presentations.

LibreOffice® Presentations

If you cannot install the PowerPoint Viewer, you MUST use LibreOffice® 3.5+ to prepare your presentations for display in ODP format. As an alternative to PowerPoint, LibreOffice presentations saved in ODP file format are fully supported.

6.2.2 Presentation Loop

You must set your presentations to **Loop Continuously** for use with the DigiStream device. Even if your intention is that the presentation run a single time, you must use time-based limits to accomplish this. Failure to do will result in a screen saying the presentation has finished will be displayed until the next piece of content is scheduled to start.

Procedure for PowerPoint®:

1. Select **Slide Show** menu, Figure 6-3.
2. Select **Set Up Slide Show**

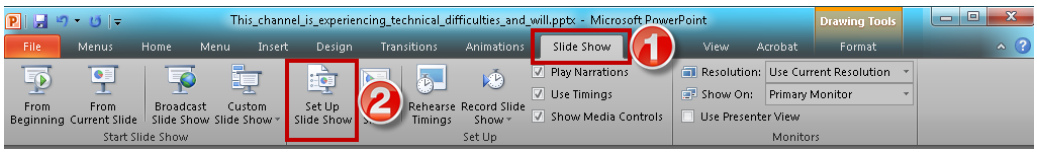

Figure 6-3: Select Set Up Slide Show

3. Select **Loop Continuously until Esc**, Figure 6-4.
4. Select **Using timings, if present.**

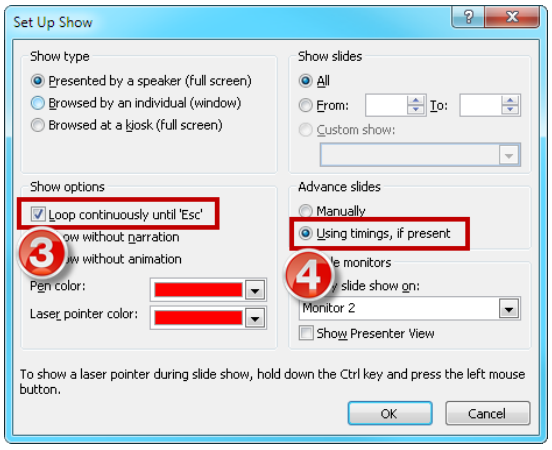

Figure 6-4: Set Options

6.3 Add a New Presentation

1. Click the **Media** Tab
2. Click **New** link beside Presentations.

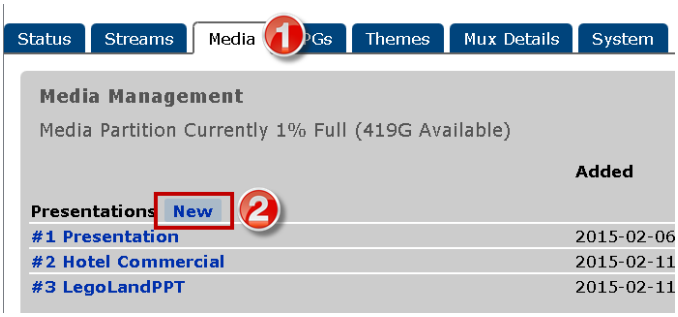

Figure 6-5: New Presentation

3. Enter a **Title** for the Presentation for use in the DigiStream GUI, Figure 6-6.
4. Click **Browse.**

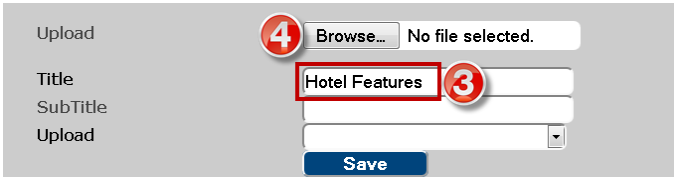

Figure 6-6: Name Presentation

5. Using the file browser **select the file** to be uploaded, Figure 6-7.
6. Click **Open.**

- The file automatically starts to transfer to the DigiStream hard drive.

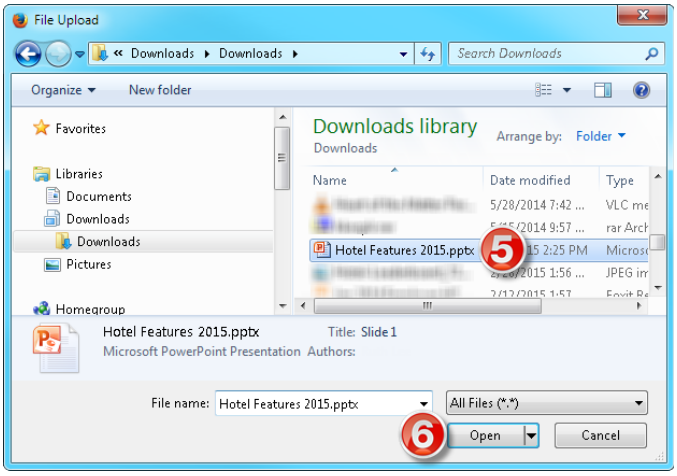

Figure 6-7: Select Presentation File

7. When complete, the file transfer indicator will be green and report 100%. This may take some time depending on your uplink speed.
8. Click **Save**

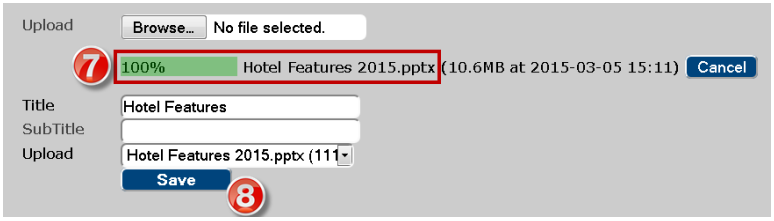

Figure 6-8: Presentation File Upload Complete

- If the file is not in the correct format or an incompatibility is found, an error will be reported, Figure 6-9. Despite the error, the file may still display adequately.

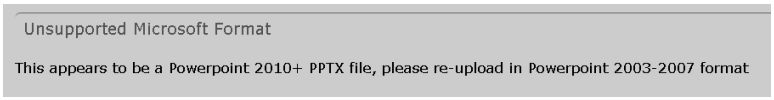

Figure 6-9: Presentation File Unsupported Error

9. Click the **Media** tab, Figure 6-10.
10. The new presentation and its associated file will appear on the list of presentations.

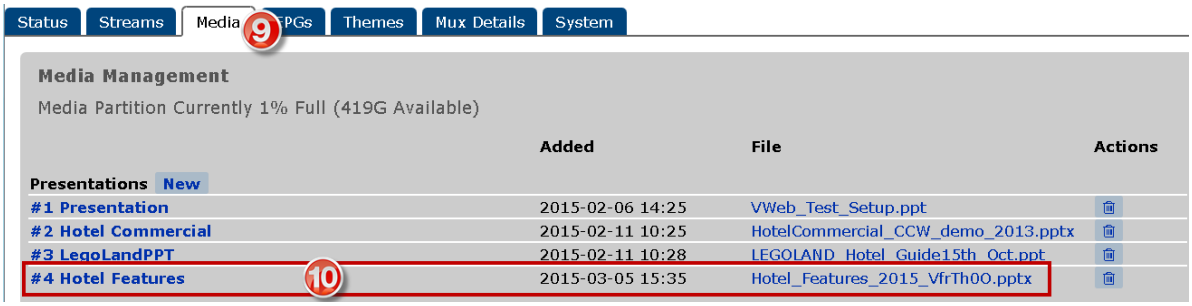

Figure 6-10: New Presentation In Media List

6.4 Movies

This section lists the currently existing movies and allows the editing the name of the movie that will appear in the DigiStream GUI.

1. Click **New** link beside Movies to upload a new movie from your PC.
2. Click the **Movie Name** or number to edit the name that appears in the GUI.
3. Click the **File Name** to view the movie. Right click the file name and chose '**Save Link As**' to download to your PC (Your browser may treat these actions differently or require different actions).
4. Click the **Trash Can Icon**  under **Actions** to delete the Movie.

Figure 6-11: Movies Section

6.4.1 Format Compatibility

Your content must be in a supported format with only supported codecs in order to be properly transcoded for native playback.

Supported Container Formats

- Quicktime® Video (MOV)
- MPEG 4 container (MP4)
- Matroska (MKV)
- Flash® Video (FLV)

Supported Video Codecs

- H264
- MPEG 4
- MPEG 2

Supported Audio Codecs

- MP3
- AAC
- AC3
- PCM

Disk Space

Because your content must be transcoded before playback, you will require disk space of 2-3 times the size of your uploaded files to hold both the originals and their transcoded versions.

6.5 Add a New Movie

Adding a Movie requires the same basic steps as adding a Presentation. See “6.3 Add a New Presentation” on page 6-3 for a step by step procedure.

6.6 Pictures

Pictures are used to support advertising or other promotions on the EPG. Displayed on the EPG Header, Figure 6-12, they have a constrained size of precisely 728 x 90 pixels and must be saved in a JPEG file type. If pictures adhering to the specifications are uploaded, they will be displayed on an internally predefined cycle on any EPG created on the machine. The display of the pictures is also part of Advanced Themes features.

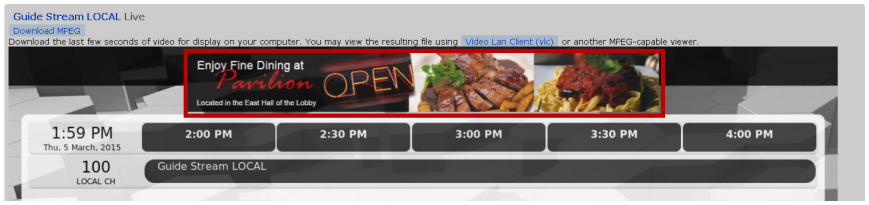

Figure 6-12: Pictures in EPG Header

Figure 6-13: Pictures Section

1. Click **New** link beside Pictures to upload a new Picture from your PC, Figure 6-13.
2. Click the **Picture Name** or number to edit the name that appears in the GUI.
3. Click the **File Name** to View the picture. Right click the file name and chose 'Save Link As' to download the picture to your PC (Your browser may treat these actions differently or require different actions).
4. Click the **Trash Can Icon** under **Actions** to delete the picture from the DigiStream hard drive.

6.7 Add a New Picture

Adding a Movie requires the same basic steps as adding a Presentation. See "6.3 Add a New Presentation" on page 6-3 for a step by step procedure.

6.8 Multicasts

Multicasts are streams which are captured on a defined Ethernet port. Streams ingested in this way may be used to provide media to be displayed as content on a DigiStream EPG Local Lineup channel. This section, Figure 6-14, lists the currently existing multicasts, allows the editing the name and properties of the multicast as well as adding new multicasts.

1. Click **New** link beside Multicasts to create a new multicast.
2. Click the **Multicast Name** or number to edit the multicast.
3. Click the **Multicast URL** to View the stream.
4. Click the **Trash Can Icon** under Actions to delete the multicast.

Figure 6-14: Multicast Section

6.9 HTTP Live Streams

HTTP Live Stream are HLS streams which are captured on a defined Ethernet port. Streams ingested in this way may be used to provide media to be displayed as content on a DigiStream EPG Local Lineup channel.

Figure 6-15: HTTP Live Stream Section

1. Click **New** link beside HTTP Live Streams to create a new Live Stream, Figure 6-15.
2. Click the **Live Stream Name** or number to edit the name that appears in the GUI and the source URL.
3. Click the **HTTP Link Name** to view the live video.
4. Click the **Trash Can Icon** under **Actions** to delete the Live Stream.

EPGs TAB

7. EPGs Tab

This page, Figure 7-1, lists a summary of previously created Electronic Program Guides (EPGs). All configuration of new and existing guides is done on other pages linked from this page. Any number of EPGs may be created.

FYI: *Hovering the mouse pointer over the dialog boxes on configuration pages enables tool tips with helpful information.*

FYI: *A theme must be created or exist first before a guide is created since the guide will need to be based on a theme. There are some pre-installed generic themes.*

Each EPG must be created using a Theme which defines the appearance of the guide but a guide may have its theme changed at any time after creation. To edit an existing guide, click the **Guide Stream Name** or create a new guide by clicking **New EPG** on the **EPGs** tab.

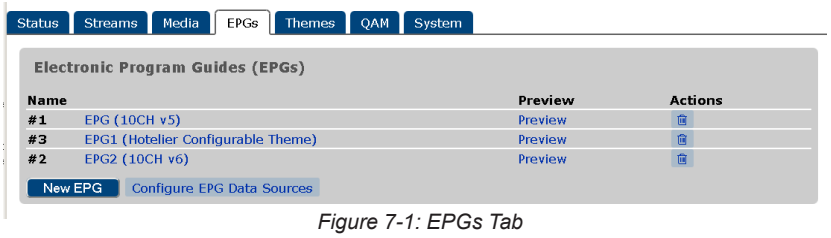

Figure 7-1: EPGs Tab

7.1 Chapter Contents

7.2 EPG Configuration Fields

To configure an EPG it is necessary to click an existing **EPG** in the 'Electronic Program Guides' list or click **New EPG**, see Figure 7-1. The configurable fields of the EPGs page, Figure 7-2, are fully described in "Table 7.2a: EPG Configuration Fields". All default values would be acceptable for a very functional EPG display and may be left at their default values.

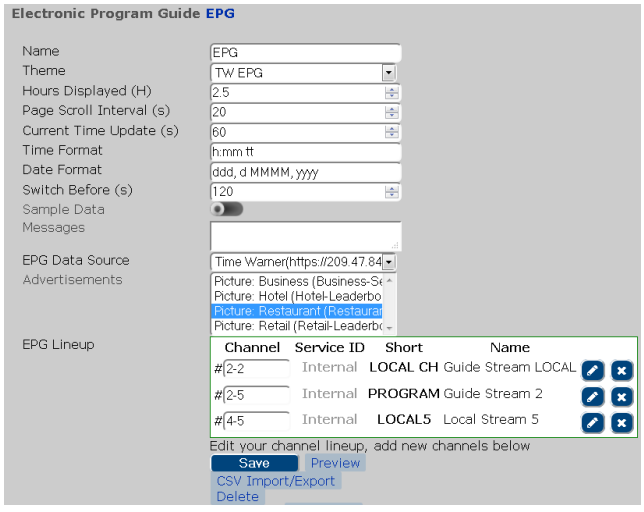

Figure 7-2: EPG Configuration Section

Table 7.2a: EPG Configuration Fields

Field	Description
Name	A text string of unlimited length may be entered to define the name of the guide. This name will appear in the DigiStream configuration pages to refer to the guide but the name does not appear on the guide display itself.
Theme	A drop down menu used to select the Theme that will be applied to this EPG. Themes define the appearance of the display.
Hours Displayed	This is the number of schedule hours which will show in the guide display rows. More hours will result in smaller display text size. This may be fractional, ie 3.5 hours. The optimum value may be between 2 and 3.5 hours, the default value is 2.5 hours.
Page Scroll Interval	This defines the dwell time for each page of a multi page EPG set. This value must be arrived at experimentally for the best effect based on the overall settings. It is suggested that 20 seconds is a good starting point but it must be 5 seconds or more.
Current Time Update	The current time is displayed in hh:mm format on the guide display for the convenience of viewers. This value is the number of seconds between time updates on the guide display. Since seconds are not displayed, this value may be set to update every 60 seconds or less.
Time Format	Defines time format in 12 Hour or 24 Hour format using date.js conventions. 12 Hr format is h:mm tt i.e 4:53 PM 24 Hr format is HH:mm i.e. 16:53
Date Format	Defines date format using date.js conventions. Leave empty for no date. Some format examples: ddd, d MMMM, yyyy => Mon, 9 March, 2015 d MMMM, yyyy => 9 March, 2015 d MMM, yyyy => 9 Mar, 2015 MM-dd-yy => 03-09-15
Switch Before	This defines the number of seconds before the half hour that the time display advances. The default value is 120 seconds.
Messages	This message is a text string that will be displayed on the bottom of the EPG guide page(s). All typeable text characters and symbols may be used. This could be used for announcements, contact information or phone numbers for users of the guide. Multiple messages are supported and are entered on multiple lines separated by a keyboard **Return** or **Enter**. Multiple messages will be displayed consecutively for about 15 seconds each. The dwell time for this display is not configurable and the practical limit is less than 190 characters per message if the whole message is to be displayed on a single HD display line.
EPG Data Source	This is the data source previously defined on the System tab. Chose here from multiple sources if multiple data servers were configured.
Advertisements	If Pictures were saved on the Media tab, these pictures will be inserted on the header of the EPG. Picture size is constrained to 780 x 90 pixels and .jpg file format. No other size or file type will be recognized by the system.
EPG Lineup	This section, Figure 7-2, is the channel lineup defined for this EPG and represents the virtual channel lineup for the property where this DigiStream system is installed. This example shows a lineup with some channels defined but a new EPG will have a blank list. The lineup may be built one channel at a time using the tabs **Network Lineup** and **Local Lineup** on this page.
CSV Import Export Link CSV Import/Export	The EPG lineup may be imported as a 'comma separated values' file (csv) if all of the required information is already known. A spreadsheet file of the current EPG lineup may be downloaded for use with this feature however some precautions need to be observed if **Microsoft Excel** is used to avoid channel numbers using **Major Ch-Minor Ch** format in the range of 1 to 12 being misinterpreted as dates. In this case use **DATA Import from TEXT** with comma delimiting for correct handing. This is strictly an Excel issue and a procedure is presented in "7.3 CSV Import/Export" on page 7-4.
Preview Link Preview	Click this link to see a preview of the EPG with current **SAVED** settings. After viewing, use the browser Back button to return to this page.
Save Button Save	After all changes are made, or at any time, click **Save** to apply the changes. Leaving this page without saving, except for Previewing, discards changes.

7.2.1 Network Lineup Tab

FYI: *A 'Network Info Server' must be pre-configured on the 'System' tab and available to the DigiStream on the MGMT IN port (eth0) for this feature. See* "11.7 EPG Data Sources" on page 11-4 *for more information.* If there is no server available, this tab is not used to add channels; click the **Define a new Custom Station Record** link accessible from the 'Local Lineup' tab.

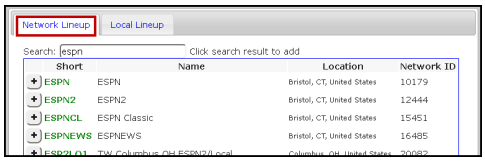

Figure 7-3: Network Lineup Section

With a properly configured and working 'EPG Data URL' connection, this tab is used to add the network channels required for this property. In the 'search' dialog box, enter the letters or numbers that will be used to find the first channel. The results will be dynamically displayed below. Entering more letters refines the search. There may be multiple similar looking entries but when the proper channel is found, click it to enter it into the channel line up. Channels are added in order of search and assigned a virtual channel number starting with #2. Channel numbers may be reassigned as required if they are not in the correct order, just edit the assigned number and click **Save**. There is no need for channels to be entered in order of virtual channel lineup, they will be reordered when saved and order can be edited later.

7.2.2 Local Lineup Tab

This tab is used to add the internally created channels to the lineup, if desired. This is optional. If there are presentation channels or video capture channels created, they will automatically be added to the list here. Clicking the channels in the list adds them to the EPG lineup. They may only be added once. After adding the channels, enter the virtual channel number then click **Save**.

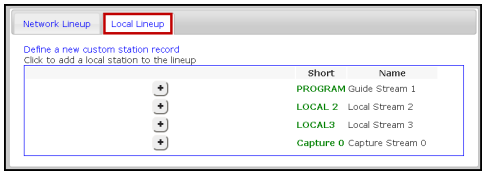

Figure 7-4: Local Lineup Tab

7.2.3 Define a new Custom Station Record

Add custom channels using the link **Define a new Custom Station Record** located on the Local Lineup tab. Custom channels to be added would includes any channels that are not created within the DigiStream but exist in the channel lineup at the property and need to be in the EPG. This could include instructional, advertising or information channels created by external systems. This would also include any channels that are not in the network schedule list maintained on the 'EPG Data Server'.

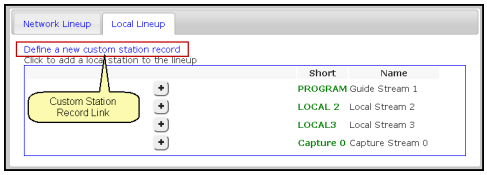

Figure 7-5: Custom Station Record

7.3 CSV Import/Export

This is a link to allow importing or exporting the channel lineup data for an EPG. If importing a 'comma separated values' (csv) file for the channel lineup, the parameters that need to be specified are explained in "Table 7.3a: Channel Lineup Upload Data File" on page 7-6. The current channel lineup (blank for a new EPG) may be downloaded as an example or blank form to use for this feature however some precautions need to be observed if **Microsoft Excel** is being used to avoid channel numbers using **Major Ch-Minor Ch** format in the range of 1 to 12 being misinterpreted as dates. In this case use **DATA Import from TEXT** for correct handing. A procedure for this follows. The first 6 values are ignored as they are the form headings so don't delete them.

Import CSV using Microsoft Excel

1. Click the **EPGs** tab, Figure 7-6.
2. Click on the name of an EPG or click **New EPG**.

- We assume there are channels already in an existing EPG for this example.

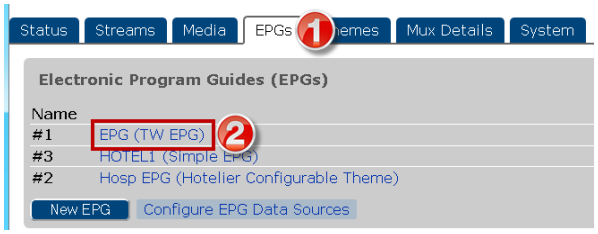

Figure 7-6: Open EPG

3. Click **CSV Import/Export** link, Figure 7-7.

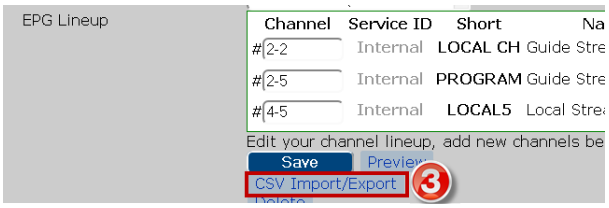

Figure 7-7: Click CSV Import/Export

4. Click **Download Current** link, Figure 7-8.

- Next, **Save** the file to your PC; don't open it at this point in Excel(however, opening in LibreOffice should be fine).

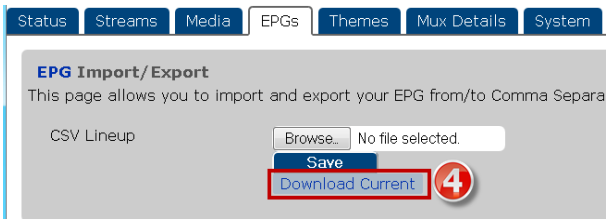

Figure 7-8: Click CSV Import/Export

5. With Excel opened; select **Data** tab, Figure 7-9.
6. Click to select **From Text**.

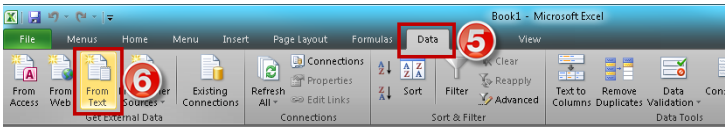

Figure 7-9: Select Import Data From Text

- Open the saved CSV file, Figure 7-10.

7. Select **Delimited Original Data Type**.

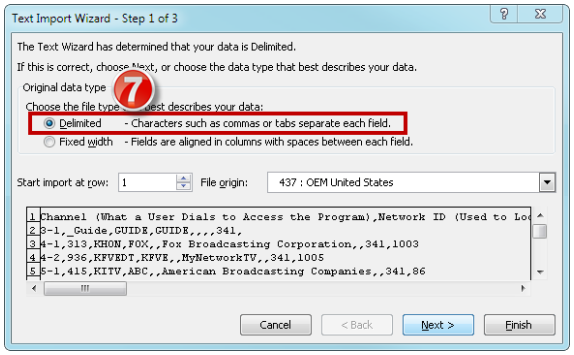

Figure 7-10: Select 'Delimited'

8. Select **Comma delimiters**, Figure 7-11.

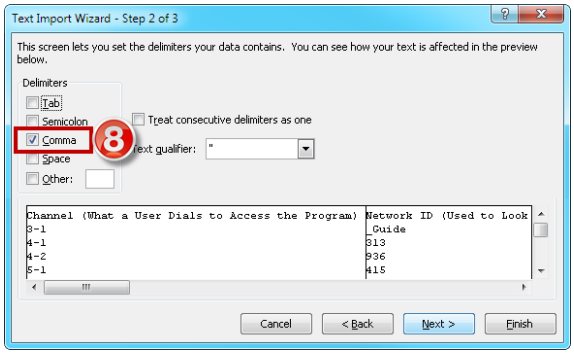

Figure 7-11: Select 'Comma'

9. Select **Text Column Data Format**, Figure 7-12.

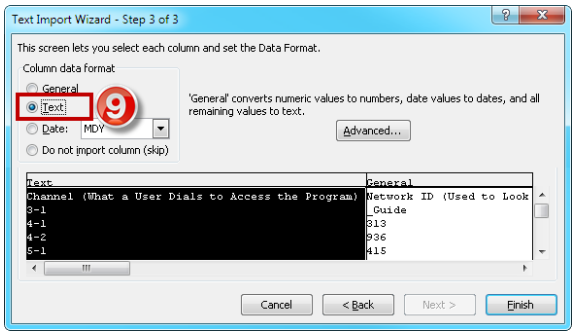

Figure 7-12: Select 'Text'

- When prompted, select worksheet to open as required.

10. Data imports into spreadsheet with Major-minor Channels correctly interpreted, Figure 7-13.

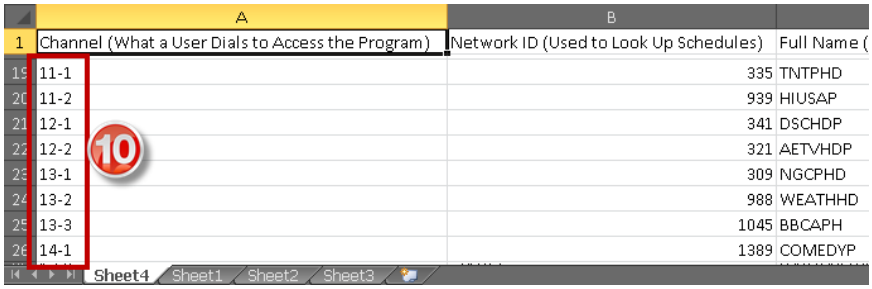

Figure 7-13: Data Imports with Channels Correct

11. This file shows the result of Excel opening the file and interpreting Major-minor Channels as Dates, Figure 7-14.

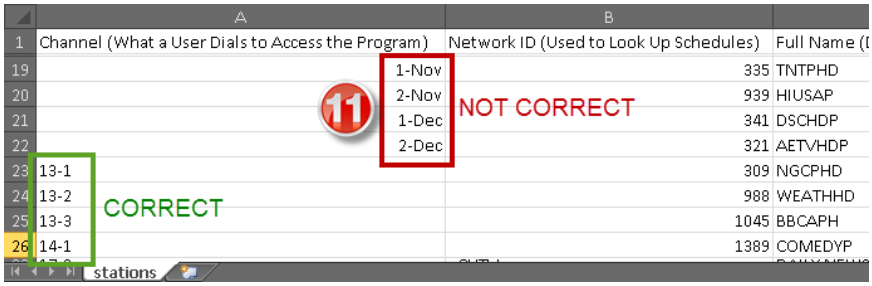

Figure 7-14: File Opens with Channels as Dates

Table 7.3a: Channel Lineup Upload Data File

Field	Description
Channel	This is the channel number on the cable system that a user of the guide would enter on the remote control to tune to the content.
Network ID	The network TMS ID that is used to lookup and access the program schedule data from the data server.
Full name	The full name of the channel or program which is displayed in the EPG if there are no schedules for the program. Alpha-numeric, unlimited length.
Short name	The short name or call sign of the channel or program. Alpha-numeric, should be no longer than 7 characters.
Language	The channel language which may be used for styling in some EPG themes.
Location	The name of the location for the program which may be used for styling in some themes. Alpha-numeric, unlimited length.

7.4 Create an EPG

1. Click the **EPGs** tab see Figure 7-15.
2. Click **New EPG**.

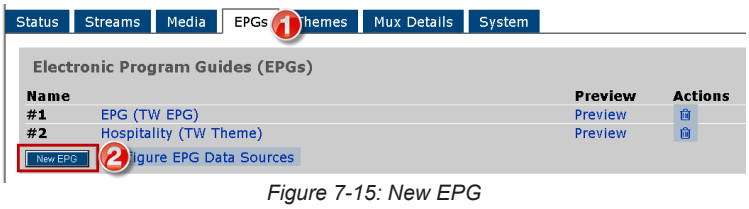

Figure 7-15: New EPG

3. In the new page that opens, enter a name for the EPG, see Figure 7-16. The given name will be used in the DigiStream GUI.
4. Select a theme for the EPG from the drop down menu of available themes.
5. Modify or refine the EPG display settings such as scrolling dwell time etc. as necessary.
6. Select the EPG data source from the available choices. These would have been previously defined on the System page, see "11.7 EPG Data Sources" on page 11-4.

- This manual assumes a 'Data Server URL' was previously configured, (ref. "11.7 EPG Data Sources" on page 11-4).

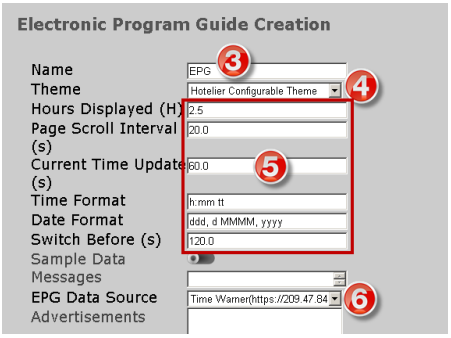

Figure 7-16: Refine EPG Settings

7. If the EPG data source is working, the available lineups will be listed on the Network tab below, see Figure 7-17.

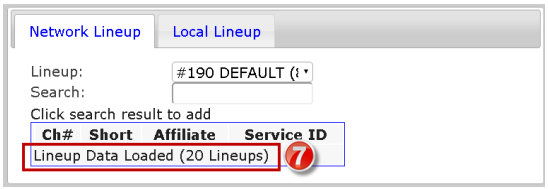

Figure 7-17: Lineups Loaded

8. Be sure that the **Network Lineup** tab is selected, see Figure 7-18. Click in the Lineup window to select the network lineup from available choices. This will determine the available channels for your market.

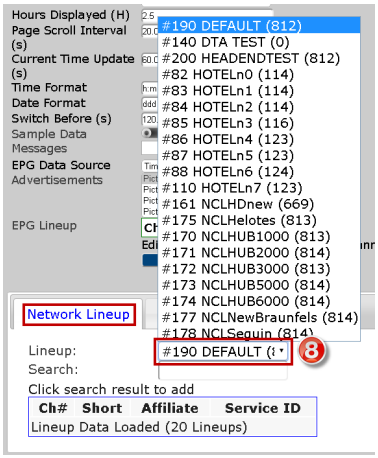

Figure 7-18: Select Network Lineup

9. The number of loaded stations are listed indicating that the data source is functioning, see Figure 7-19.
10. Enter letters or numbers to search the 'Network Lineup' channels. If there is no data server connection for guide data, all channels will be considered to be custom and are added manually.

- All of the stations matching the entered string appear in a list below, see example in Figure 7-19.

11. Click the **Plus Sign Icon** adjacent each station to add the required channels to the lineup.

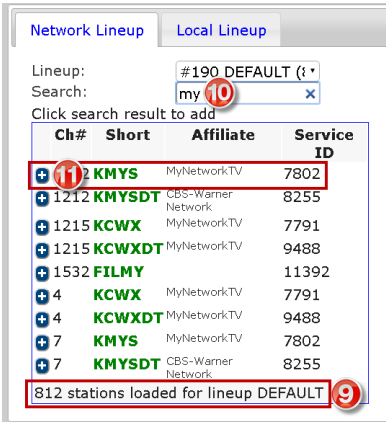

Figure 7-19: Search Network Lineup

12. Added channels appear in the **EPG Lineup**, Figure 7-20.

- Return to step 10 to search and add more channels.

13. Click **Save** to save the newly created EPG.

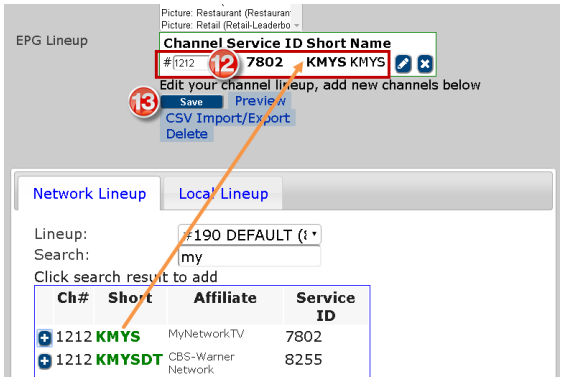

Figure 7-20: Channels added to EPG Lineup

14. Click the **EPGs** tab, Figure 7-21.
15. The newly created EPG appears in the EPGs list.

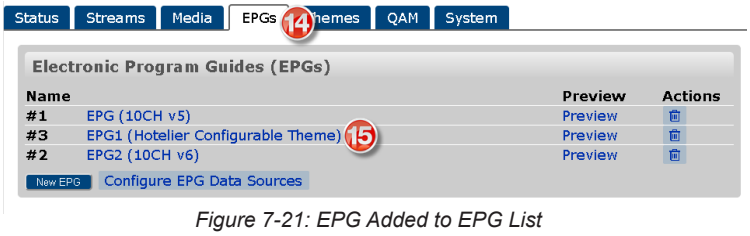

Figure 7-21: EPG Added to EPG List

7.5 Add Local Channels to an EPG

Local channels are channels generated internally by the DigiStream (EPGs, Presentations, Movies) or ingested by installed capture cards (DVD Players, Cameras). These channels are added to the EPG to help visitors to the property locate the information or entertainment channels by providing a list of the programming and the channel number to use to tune their TV remote control.

Procedure

1. Click the **EPGs** Tab, Figure 7-22.
2. Click the **EPG Name**.

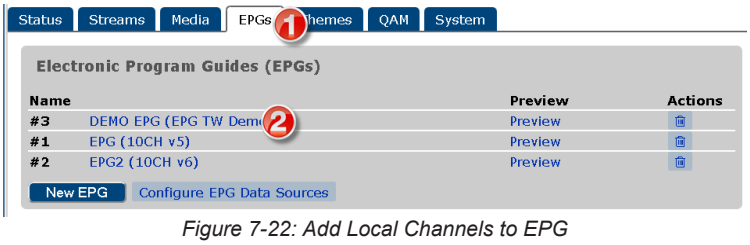

Figure 7-22: Add Local Channels to EPG

3. Notice in this example there are no channels yet in the EPG, Figure 7-23.
4. Click the **Local Lineup** tab.
5. Add locally generated channels to the EPG by clicking the **Plus Sign** **Icon** adjacent each name.

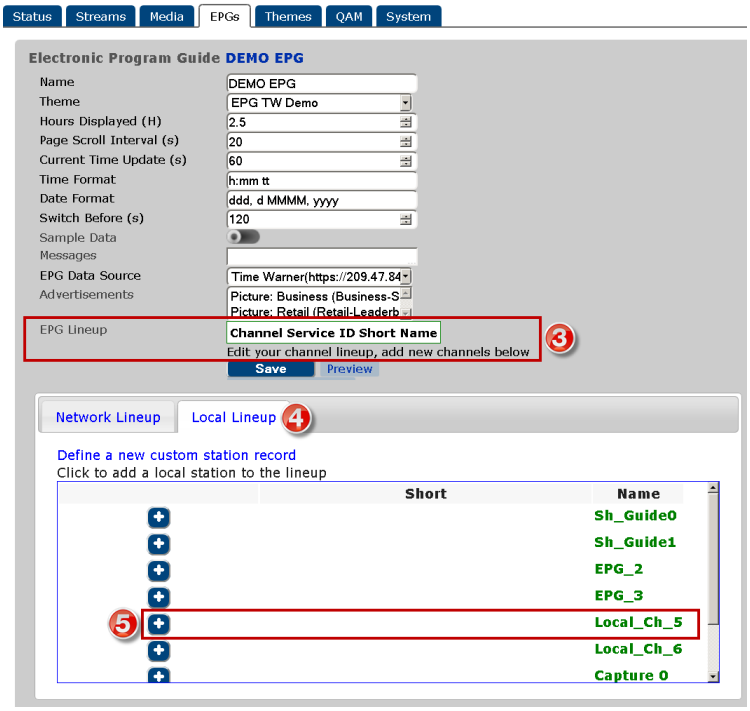

Figure 7-23: Select Local Lineup

6. The local channel is added to the **EPG Lineup**, Figure 7-24.
7. In the dialog box enter the TV **Channel** number that a user would select on their TV to view this program. This is the virtual channel number and is the channel number that will appear in the EPG.

- Return to step 5 to add more local channels.

8. Click **Save** when finished adding channels.

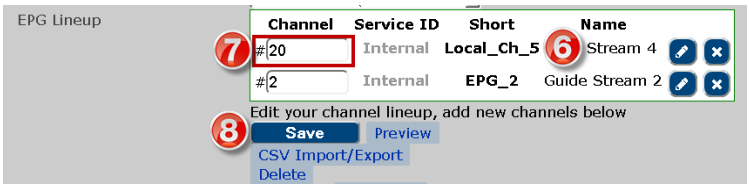

Figure 7-24: Local Channel added to Lineup

- Channels are arranged in numerical order of their virtual channel number. Re-number any channels in the lineup that are not in the correct virtual channel sequence by editing the virtual channel number then click **Save** again.
- Click the link **Define a new custom station record**, then add any local channels that are created externally to the DigiStream or have no schedule data on the 'Data Server'.
- Always click **Save** when finished.
- To view the saved results, click the Preview **Preview** Link beside the Save button**.** A 'Live' rendering of the channel is presented for preview in your browser.

THEMES TAB

8. Themes Tab

The Theme is the look of the guide as displayed on the end user's TV screen. Unlimited flexibility is allowed in designing a Theme and unlimited Themes may be created. Only one Theme may be applied to any guide though multiple similar guides may be created with differing Themes. A single Theme may be used in any number of guides. A limited number of tools are built in to the DigiStream to design a Theme but more flexibility may be achieved through importation of Cascading Style Sheets (CSS) files which are created manually or in external software which is not part of the DigiStream package. These externally uploaded themes are referred to as Advanced Themes.

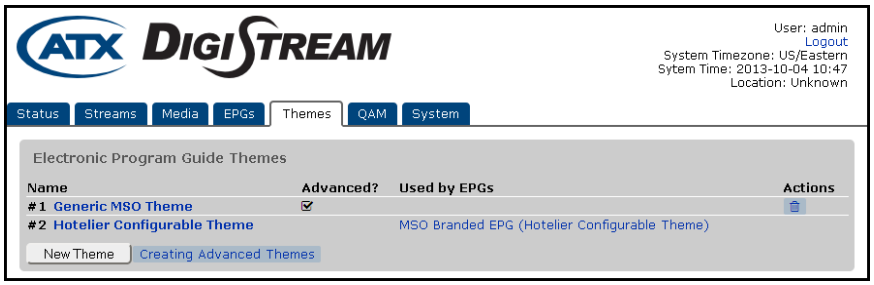

Figure 8-1: Themes Tab

8.1 Chapter Contents

8.2 Theme Configuration Fields

The built in themes provided may be used directly with the default values or they may be customized in many ways. The fields of the guide that may be customized are presented when a new theme is created. Each field has an accompanying tool tip which explains the function. Some fields apply only to programs with a genre defined in the database as News, Sports or Entertainment. For reference, a sample guide is shown in Figure 8-2 with labels for each configurable field. For details, see "Table 8.2a: Theme Configuration Fields" , see also Figure 8-5.

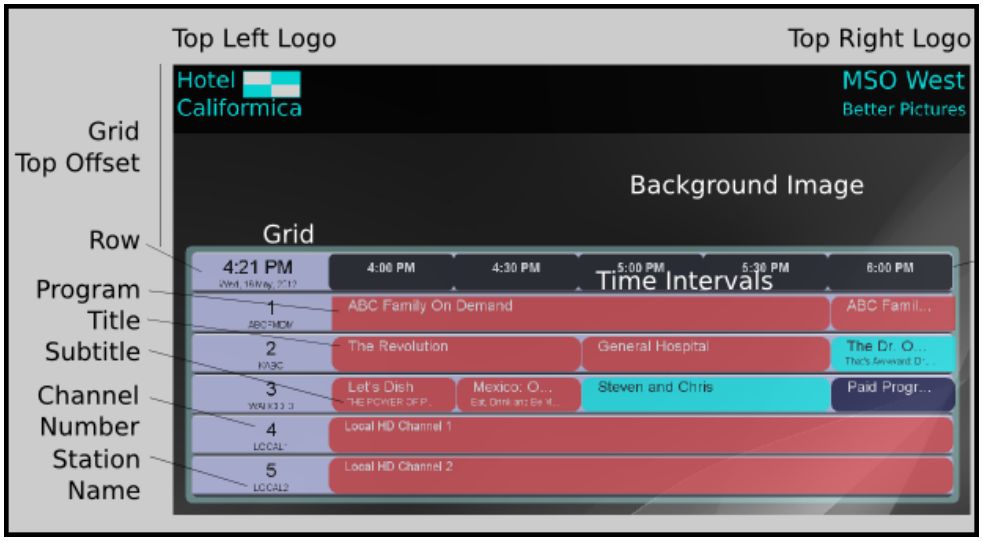

Figure 8-2: Configurable Theme Fields

Table 8.2a: Theme Configuration Fields

Field	Description
Background Image	A JPEG image file that may be uploaded to the system which will be the background of the EPG. Click the **Browse** button to point to where the file resides on the PC. A high resolution graphic file with aspect ratio that matches the encoding output of 16 x 9 for HD or 4 x 3 for SD output will fill the screen best.
Font Face	The font used throughout the EPG. Select from a limited drop down menu of fonts. The font size is pre-defined in the built-in theme as a size that will produce a usable EPG display. The size of fonts in each of the EPG fields may be adjusted larger and smaller in relation to this standard font size.
Top Left Logo	A JPEG file that may be uploaded to the system which will be displayed in the top left corner of the EPG. Click the **Browse** button to point to where the file resides.
Top Right Logo	A JPEG file that may be uploaded to the system which will be displayed in the top right corner of the EPG. Click the **Browse** button to point to where the file resides.
Grid Background	The color applied to the background of the main content schedule grid. Click the **Edit Icon** to the right of the value to chose a color from a grid or enter a hexadecimal HTML value between 000000 and FFFFFF.
Grid Opacity	The opacity applied to the background of the main content grid. A decimal value between 0 and 1 where 0 is not visible and 1 is no opacity (solid color). The uploaded or default background image shows behind the grid.
Grid Top Offset (px)	The distance in pixels from the top of the screen to the main content grid.
Row Background	The background color applied to all individual station rows in the main content grid. Click the **Edit Icon** to the right of the value to chose a color from a grid or enter the hexadecimal HTML color value between #000000 and #FFFFFF.
Row Opacity	The opacity applied to all individual station rows in the main content grid. This is a decimal value between 0 and 1 where 0 is not visible and 1 is no opacity (solid color). For opacities less than 1 the uploaded or default background image shows behind the row.
Time Interval Font Size	The 'Time Interval Block' font size as a percentage of the standard font. A value of 200 means the font is double the size of the standard font.
Time Interval Color	The color of the 'Time Interval' font. Click the **Edit Icon** to the right of the value to chose a color from a grid or enter the hexadecimal HTML value between #000000 and #FFFFFF.
Program Title Font Size	The 'Program Title' font size as a percentage of the standard font. A value of 200 means the font is double the size of the standard font.
Program Subtitle Font Size	The 'Program Subtitle' font size as a percentage of the standard font. A value of 200 means the time interval font is double the size of the standard font.
Channel Number Font Size	The 'Channel Number' font size as a percentage of the standard font. A value of 200 means the font is double the size of the standard font.
Channel Number Color	The color of the Channel Number font. Click the **Edit Icon** to the right of the value to chose a color from a grid or enter the hexadecimal HTML color value between #000000 and #FFFFFF.
Station Name Font Size	The Station Name appears under the channel number and the font size is a percentage of the standard font. A value of 200 means the font is double the size of the standard font.
Station Name Color	The color of the Station Name font. Click the **Edit Icon** to the right of the value to chose a color from a grid or enter the hexadecimal HTML color value between #000000 and #FFFFFF.
Program Text Color	The color of the Text for 'Default Program' titles and subtitles. Default programs are those which are not defined in the Database server. Click the **Edit Icon** to the right of the value to chose a color from a grid or enter the hexadecimal HTML color value between #000000 and #FFFFFF.
Program Background	The color applied to the background of 'Default Programs' in the grid. Default Programs are those which are not defined in the Database Server. Click the **Edit Icon** to the right of the value to chose a color from a grid or enter a hexadecimal value between #000000 and #FFFFFF
News Text Color	This color applies to 'News Channels' in the Database Server and is applied to the titles and subtitles in the grid. Click the **Edit Icon** to the right of the value to chose a color from a grid or enter the hexadecimal HTML color value between #000000 and #FFFFFF.
News Background	This color applies to News Channels in the Database Server and is applied to the background of the Channels in the grid. Click the **Edit Icon** to the right of the value to chose a color from a grid or enter the hexadecimal HTML value between #000000 and #FFFFFF.
Sports Text Color	This color applies to Sports Channels in the Database Server and is applied to the titles and subtitles in the grid. Click the **Edit Icon** to the right of the value to chose a color from a grid or enter the hexadecimal HTML color value between #000000 and #FFFFFF.

Field	Description
Sports Background	This color applies to Sports Channels in the Database Server and is applied to the background of the Channels in the grid. Click the **Edit Icon** to the right of the value to chose a color from a grid or enter a hexadecimal value between 000000 and FFFFFF.
Entertainment Text Color	This color applies to Entertainment Channels in the Database Server and is applied to the titles and subtitles in the grid. Click the **Edit Icon** to the right of the value to chose a color from a grid or enter the hexadecimal HTML color value between #000000 and #FFFFFF.
Entertainment Background	This color applies to Entertainment Channels in the Database Server and is applied to the background of the Channels in the grid. Click the **Edit Icon** to the right of the value to chose a color from a grid or enter the hexadecimal HTML color value between #000000 and #FFFFFF.
Save or Delete Buttons	Click **Save** to apply the changed settings or click **Delete** to delete the Theme.

8.3 Create a New Basic Theme

NOTE: For working with Advanced Themes, see "Advanced Themes" on page 12-1

The Theme defines the overall appearance of the DigiStream Guide channel by assigning colors, fonts and backgrounds to the schedule fields. Logos may be added to brand the EPG for a property owner. Any number of Themes may be created, each using different colors or fonts if desired for a different look and feel. Creation of a basic theme is covered here.

1. Click the **Themes** tab, Figure 8-3. The list of existing Themes is displayed.
2. Click the **New Theme** button.

Figure 8-3: Create a New Basic Theme

3. Enter a name for the Theme or accept the default name, see Figure 8-4.
4. Click **Save** to save the name and apply it.

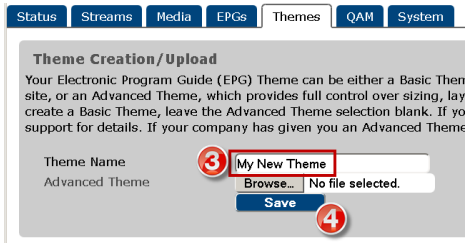

Figure 8-4: Name and Save the New Theme

5. Upload graphics files for Logos and Background(Optional), Figure 8-5.
6. Change colors and fonts(Optional).
7. Click **Save**.

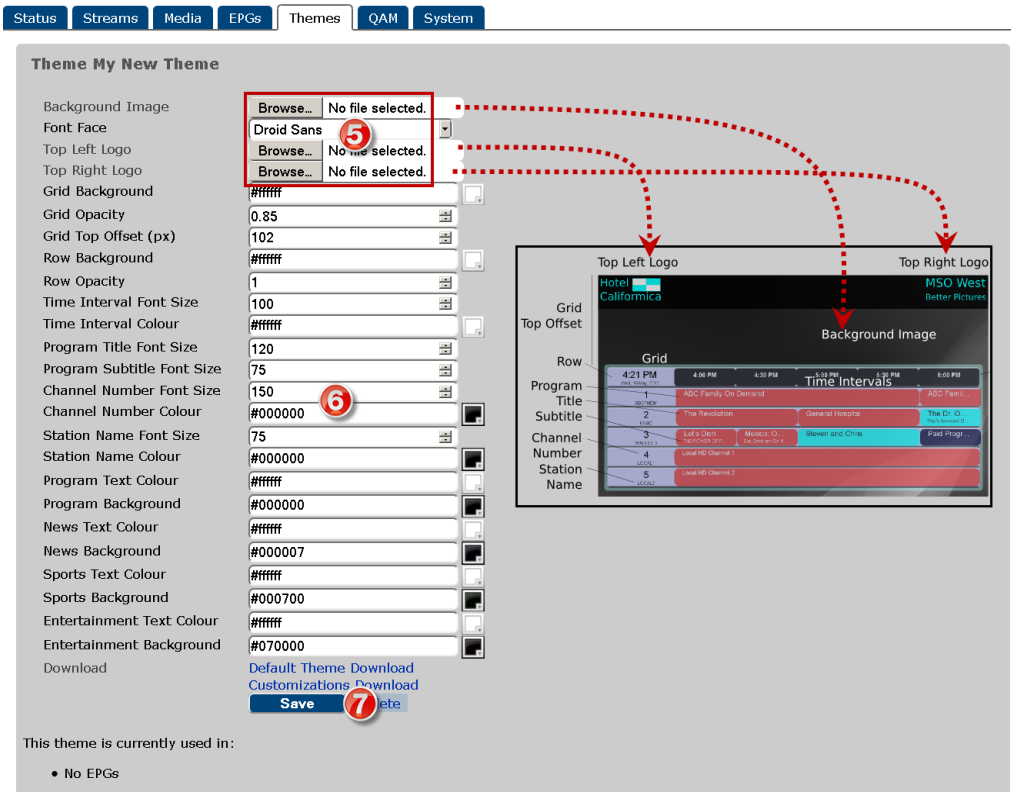

Figure 8-5: Configure the New Theme

- If this theme is associated with an EPG being displayed on a channel currently, the changes take effect immediately and the guide restarts with the new theme.
- From this page it is possible to download to your PC a file from which an advance theme may be defined. Click the link **Default Theme Download**. A file named **default.theme.zip** will be downloaded.
- If changes have been made in the theme, these changes may be viewed in a web page by clicking **Customizations Download** and the resulting page may be saved from your browser; chose in your browser **File>Save Page As**.

8.4 Preview a Theme

1. To preview the changes made to a Theme, click the **EPGs** tab, see Figure 8-6.
2. Click **Preview** adjacent to the **Theme Name** that was just created.

Figure 8-6: Preview The Theme

3. A live simulation of the Theme is presented which will cycle through all pages for the chosen EPG, see Figure 8-7.

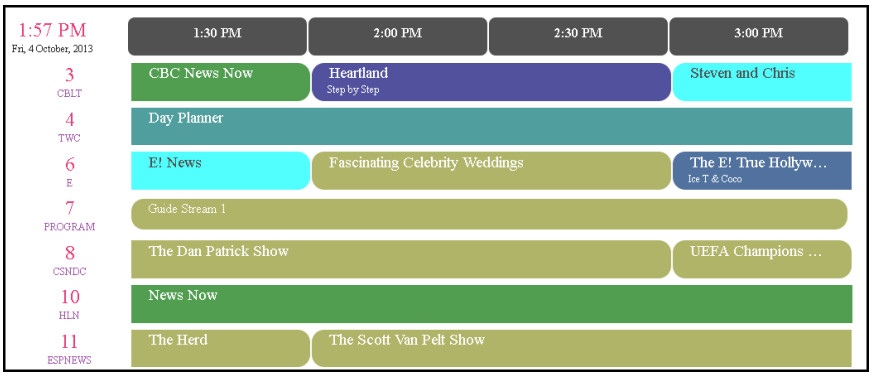

Figure 8-7: Theme Displayed in Preview

8.5 Advanced Themes

See “Advanced Themes” on page 12-1 for details about using advanced themes.

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MUX DETAILS TAB

9. MUX Details Tab (IP Ver.)

IP Output Version Only

The MUX Details tab, Figure 9-1, allows for the creation and configuration of output SPTS or MPTS IP Multiplexes. This tab is not available on the QAM output DigiStream versions. Multiplexes may contain content streams up to 200 Mb/s while there is no limit on the number of individual Multiplexes that may be created.

FYI: *Hovering the mouse pointer over indicator icons on the main page and the dialog boxes on configuration pages enables tool tips with helpful information.*

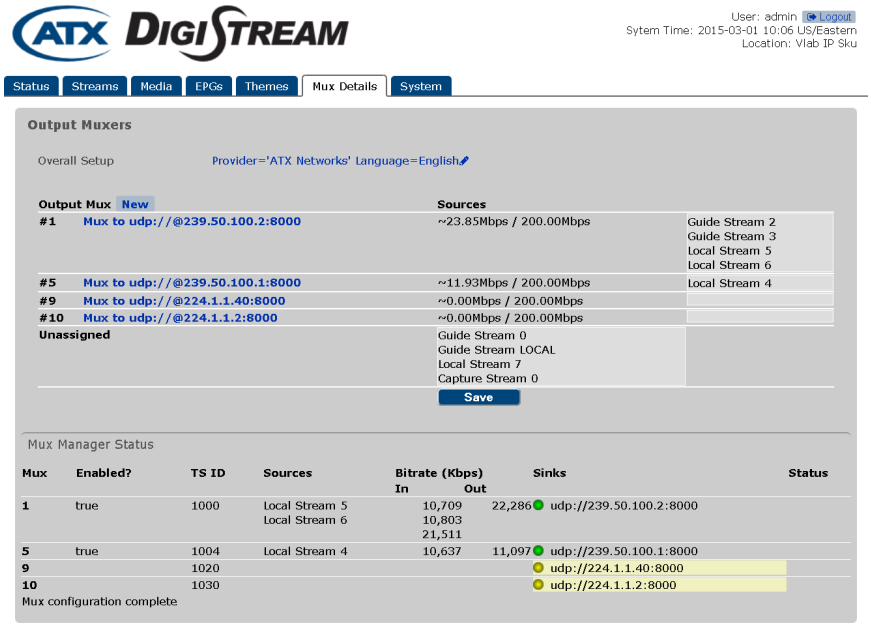

Figure 9-1: MUX Details Page

9.1 Chapter Contents

9.2 Output Muxers

In this section, you can do the following, Figure 9-2:

1. Setup global parameters such as Name, Language, Table Mode and Identifier.
2. Create new Muxes, modify or delete existing.
3. Review content and bitrate of each MUX.
4. Review unassigned streams.

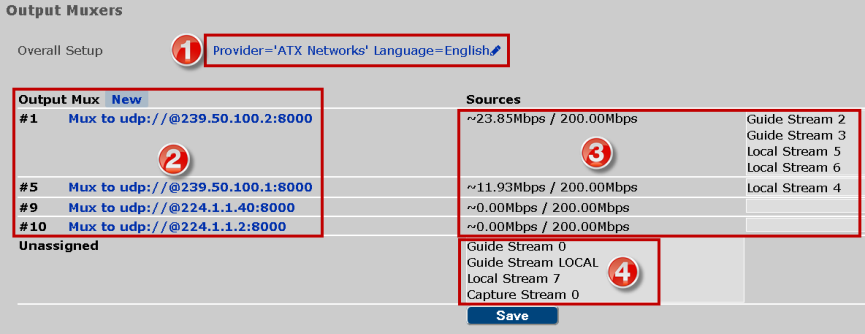

Figure 9-2: Output Muxers

9.3 MUX Manager Status

In this section, Figure 9-3 review a detailed summary of the streaming status of configured Muxes and any alarm conditions. Alarm conditions on streams or multiplexes may be yellow for warnings or red for failure conditions.

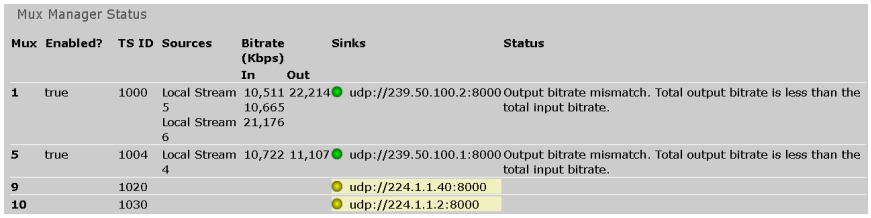

Figure 9-3: MUX Manager Section

9.4 Configure Overall Setup Settings

1. Click the **MUX Details** tab, Figure 9-4.
2. Click the **Overall Setup** Link.

- A summary of the current settings is displayed prominently as the name of the link.

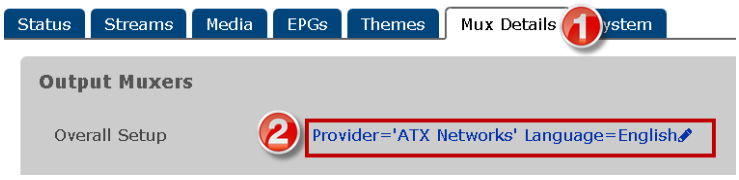

Figure 9-4: Overall MUX Setup

3. Enter **Provider Name**, Figure 9-5.
4. Select **Language** from the drop down menu.
5. Select **Table Mode** from the drop down menu.
6. Enter a **Network Identifier**.
7. Click **Save.**

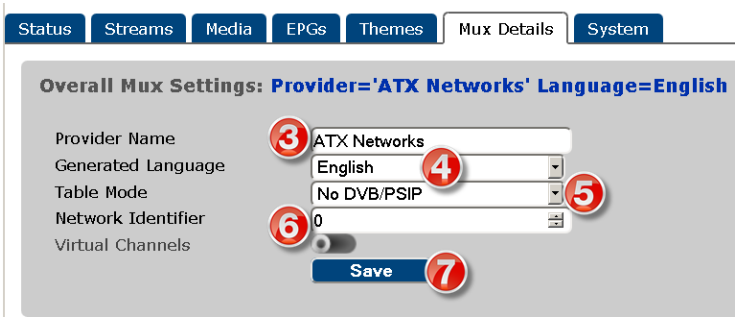

Figure 9-5: Configure Overall settings

9.5 Add a New MUX (IP Models Only)

1. Click the **MUX Details** tab, Figure 9-6.
2. Click **New**.

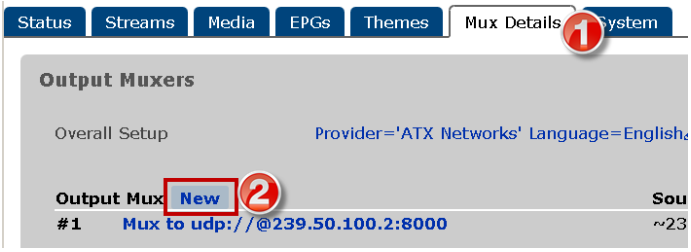

Figure 9-6: Add a New MUX

3. Select the **Protocol** from the drop down menu, Figure 9-7.
4. Select the **Target Interface** (physical Output Ethernet Port) from the drop down menu.
5. Enter the multicast **Target IP Address** (Unicast addresses are also acceptable) and **Port** number.
6. Enter a **MUX TS ID** number (This number must be unique on the DigiStream device).
7. Select the **Source** stream from available choices. Use familiar keyboard shortcuts to select multiple sources.

- Use **CONTROL+CLICK** to select multiple sources. Each selection will be solid blue field.

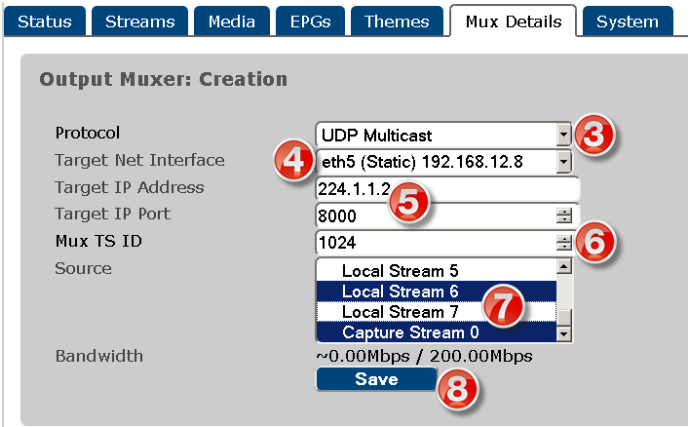

Figure 9-7: Configure New MUX

- Use **SHIFT+CLICK** to select multiple adjacent sources.

8. Click **Save**.

9.6 Modify or Delete an Existing MUX (IP Models Only)

1. Click the **MUX Details** tab, Figure 9-8.
2. Click the **Output MUX** to be modified.
3. Modify the MUX in the same manner as in “Add a New MUX (IP Models Only)” on page 9-3.

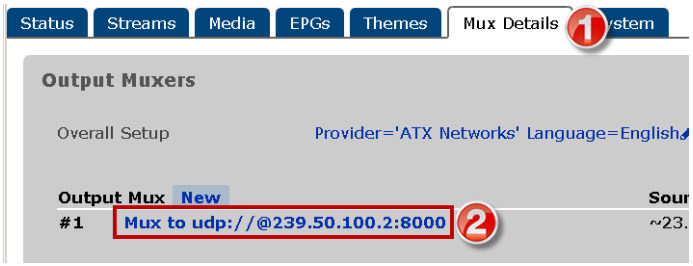

Figure 9-8: Modify MUX

QAM TAB

10. QAM Tab (QAM Ver.)

QAM Output Version Only

The QAM tab, Figure 10-1, shows the status (updated every 10 seconds) the configuration of output channels (frequencies) of the integrated QAM modulator module and provides a link to the configuration page. This tab is not available on the IP output DigiStream versions. The DigiStream supports STD, IRC and HRC channel frequency plans with a constellation of 256QAM and 64QAM.

FYI: *Hovering the mouse pointer over the dialog boxes on configuration pages enables tool tips with helpful information.*

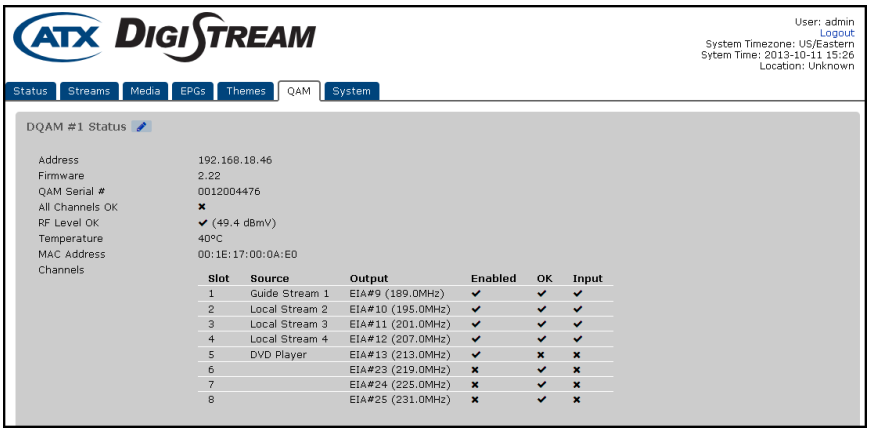

Figure 10-1: QAM Tab Showing Status

10.1 Chapter Contents

10.2 QAM Channel Allocation

QAM modulators are arranged in 2 banks of 4 adjacent channels. Each bank of 4 channels at 6 MHz spacing between center frequencies is frequency agile within the range of 54 to 1000 MHz, see Figure 10-2. Each bank's range may be defined by setting the center frequency of the first or lowest frequency channel in the bank. QAM channels within a group of four cannot be separated; they remain adjacent to one another. The frequency allocation between the 2 banks of four channels in each module is fully agile, however, there may be no overlapping channels in the final channel plan; two QAM carriers may not occupy the same frequency spectrum. If the operator attempts to assign overlapping channel frequencies or an assigned spacing less than 24 MHz, a warning will be displayed and the operation not allowed.

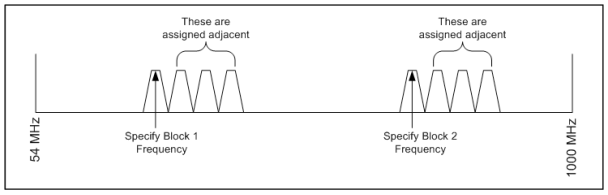

Figure 10-2: Agile Output QAM Channels

10.3 QAM Status Page

This page displays the overall status of the QAM modulator module, see Figure 10-3. The following parameters are reported:

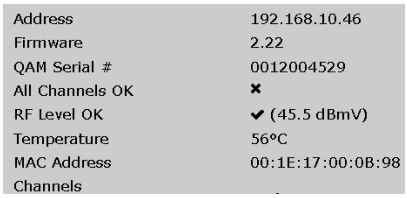

Figure 10-3: QAM Status Fields

Table 10.3d: QAM Status Fields

Field	Description
Address	This is the IP address of the QAM modules. This is used internally only and is programmed and fixed at the factory.
Firmware	This is the installed version of the QAM Module firmware. Updates of system firmware will automatically update this version when necessary.
QAM Serial #	The serial number of the QAM module for warranty and tracking purposes.
All Channels OK	A tick mark beside this item reports that there are no alarmed conditions on the module.
RF Level OK	A tick mark beside this item reports that there are no alarmed conditions related to the RF output level. The actual output level in dBmV is also reported here.
Temperature	This is the measured temperature of the output module.
MAC Address	The MAC address of the Ethernet input port of the QAM RF module. Again, this is fixed at the factory.
Channels	The QAM module can produce 8 channel outputs, each channel capable carrying multiple program streams. This status section, Figure 10-4, reports on the activated outputs and also if there are problems detected (an x instead of a ✓ indicates a detected problem). Details in “Table 10.3e: QAM Channels Fields”

Slot	Sources	Output	Enabled	OK	Input
1		EIA#39 (315.0MHz)	✖	✔	✖
2	Local Stream 5	EIA#40 (321.0MHz)	✔	✖	✖
3		EIA#41 (327.0MHz)	✖	✔	✖
4	Guide Stream 3	EIA#42 (333.0MHz)	✖	✔	✖
5	Lng Guide 0 Lng Guide 1 Guide Stream 2 Local Stream 6 Capture Stream 0 Capture Stream 1	EIA#43 (339.0MHz)	✔	✖	✖
6		EIA#44 (345.0MHz)	✖	✔	✖
7		EIA#45 (351.0MHz)	✖	✔	✖
8		EIA#46 (357.0MHz)	✖	✔	✖

Figure 10-4: QAM Channels Fields

Table 10.3e: QAM Channels Fields

Field	Description
Slot	This is the output channel of the 8 channel QAM module. This is programmed and fixed at the factory.
Sources	This is the output stream assigned to the QAM Channel. To assign a stream to a QAM, click the **Edit Icon** on the QAM page.
Output	The EIA RF Channel number assigned to this QAM output. To change a QAM channel, click the **Edit Icon** on the QAM page.
Enabled	A tick mark beside this item reports that this EIA RF output channel is enabled. The channel is automatically enabled if these is a stream assigned to it. To assign a stream to a QAM, click the **Edit Icon** on the QAM page.
OK	A tick mark beside this item reports that there are no alarmed conditions detected on this channel. For troubleshooting alarms, see the main Status Tab of the GUI where alarm conditions will be reported.
Input	A tick mark beside this item reports that there is a valid input to the QAM multiplexer.

10.4 QAM Settings

This page is where all QAM configurable settings are accessed. To find this page:

1. Click the **QAM** tab, Figure 10-5.
2. Click the **Edit Icon**.

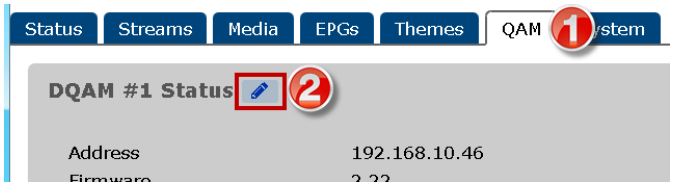

Figure 10-5: Go to QAM Settings

There are two blocks of QAM channels, each block containing 4 QAM carriers. Each block of carriers is contiguous. Only the first (lowest) frequency carrier needs to be specified. Settings described fully in “Table 10.4c: QAM Settings Fields”.

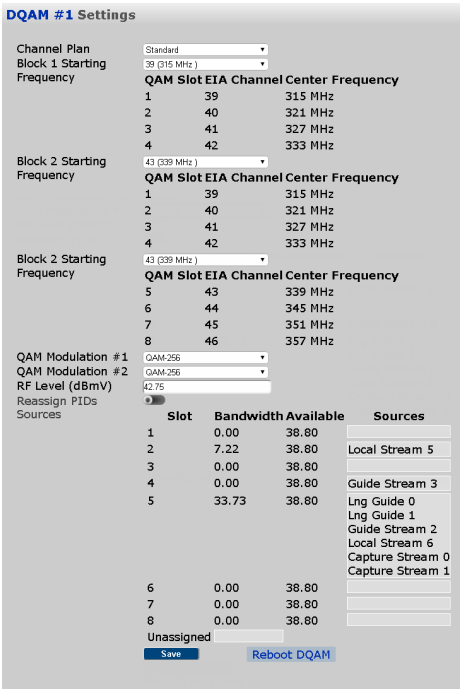

Figure 10-6: QAM Settings Section

Table 10.4c: QAM Settings Fields

Field	Description
Channel Plan	This drop down menu item selects the channel plan to be applied to the output frequencies. The most common and also the default value is STD (Standard). Other options are IRC (Incrementally Related Carriers) and HRC (Harmonically Related Carriers).
Block 1 Starting Frequency	The center frequency of the lowest channel in the first block of 4 carriers.
Block 2 Starting Frequency	The center frequency of the lowest channel in the second block of 4 carriers.
QAM Modulation #1	The QAM constellation; chose from 64QAM and 256QAM (Default).
QAM Modulation #2	The QAM constellation; chose from 64QAM and 256QAM (Default).

Field	Description
RF Level (dBmV)	The RF output of the DigiStream may be any value between 25.75 to 42.75 dBmV. Enter the required level here. The output level of the QAM carriers is self adjusting based on the number of activated QAM channels. All channels are maintained level with their adjacent channels and the absolute output level may be adjusted to between +25.75 and +42.75 dBmV +/- 2 dB per carrier.
Reassign PIDs 	This clickable toggle switch enables automatic reassigning of PIDs if conflicts arise. If enabled, the PIDs will be reassigned and the switch is blue/light; if disabled the switch is grey/dark.
Sources	A summary of streams assigned to each QAM and their total required bandwidth. To assign the sources **Drag & Drop** between channels here.

Slot	Bandwidth	Available	Sources
1	0.00	38.80	
2	7.22	38.80	Local Stream 5
3	0.00	38.80	
4	0.00	38.80	Guide Stream 3
5	33.73	38.80	Lng Guide 0
6	0.00	38.80	
7	0.00	38.80	
8	0.00	38.80	
Unassigned	Capture Stream 1 Capture Stream 0		

Figure 10-7: QAM Sources Fields

Table 10.4d: Sources Table Fields

Slot	This is the output channel of the 8 channel QAM module.
Bandwidth	The total bandwidth of the assigned streams in Mb/s
Available	The available bandwidth of the QAM channel; usually 38.8 Mb/s.
Sources	The list of sources assigned to the channel. **Click & Drag** to move streams between channels.
Unassigned	Any streams which are not assigned to an output QAM are listed here. **Click & Drag** to move streams to channels.

Save Button	After all choices are made, click the **Save** button to apply the changes.
Reboot DQAM link	This link to reboot the QAM modulator is provided to allow quick recovery if streams are not flowing as expected. It is quicker to reboot the QAM that to reboot the platform.  ***NOTE:*** *There will be a momentary service interruption while QAM carriers are configured with the changed settings.*

10.5 Assign a Stream to an Output

Streams are added to outputs by **Drag & Drop**.

1. Click the **QAM** tab, Figure 10-5.
2. Click the **Edit Icon**.

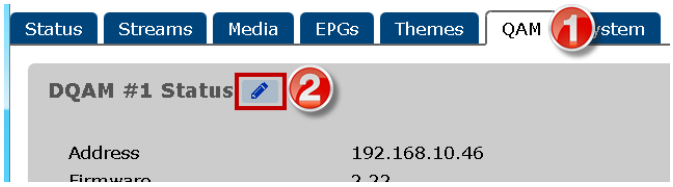

Figure 10-8: Go to QAM Settings

3. The Sources section lists assigned streams and unassigned streams, Figure 10-9.
4. Click & hold on an unassigned stream while dragging it to the desired output.
5. Release the stream in the box when the mouse pointer changes.

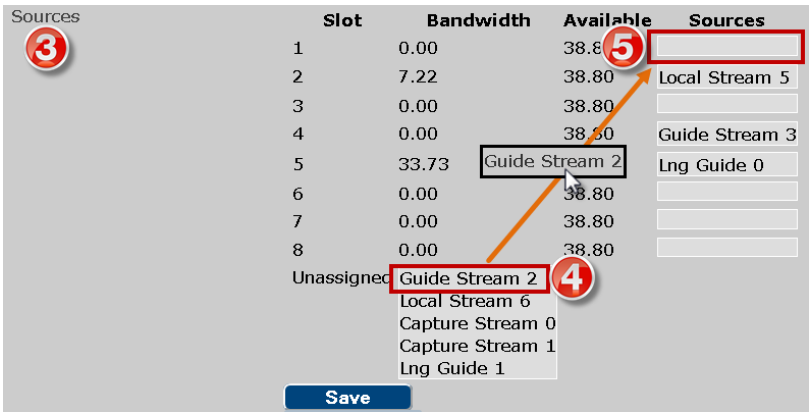

Figure 10-9: Drag & Drop Unassigned Source

6. The stream appears in the list under Sources, Figure 10-10.
7. Multiple streams may be assigned to any output in the same Drag & Drop manner.
8. Click Save to apply the changes.

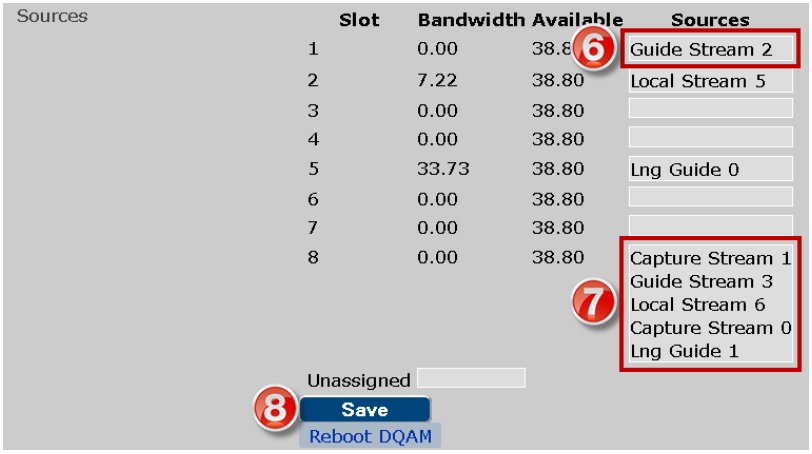

Figure 10-10: Drag & Drop Multiple Sources

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SYSTEM TAB

11. System Tab

The System tab is the configuration page for global settings, Figure 11-1 and Figure 11-2. The page is arranged in sections, each dealing with a separate category of settings or information.

11.1 Chapter Contents

FYI: *Hovering the mouse pointer over the dialog boxes on this page enables tool tips with helpful information about configuration.*

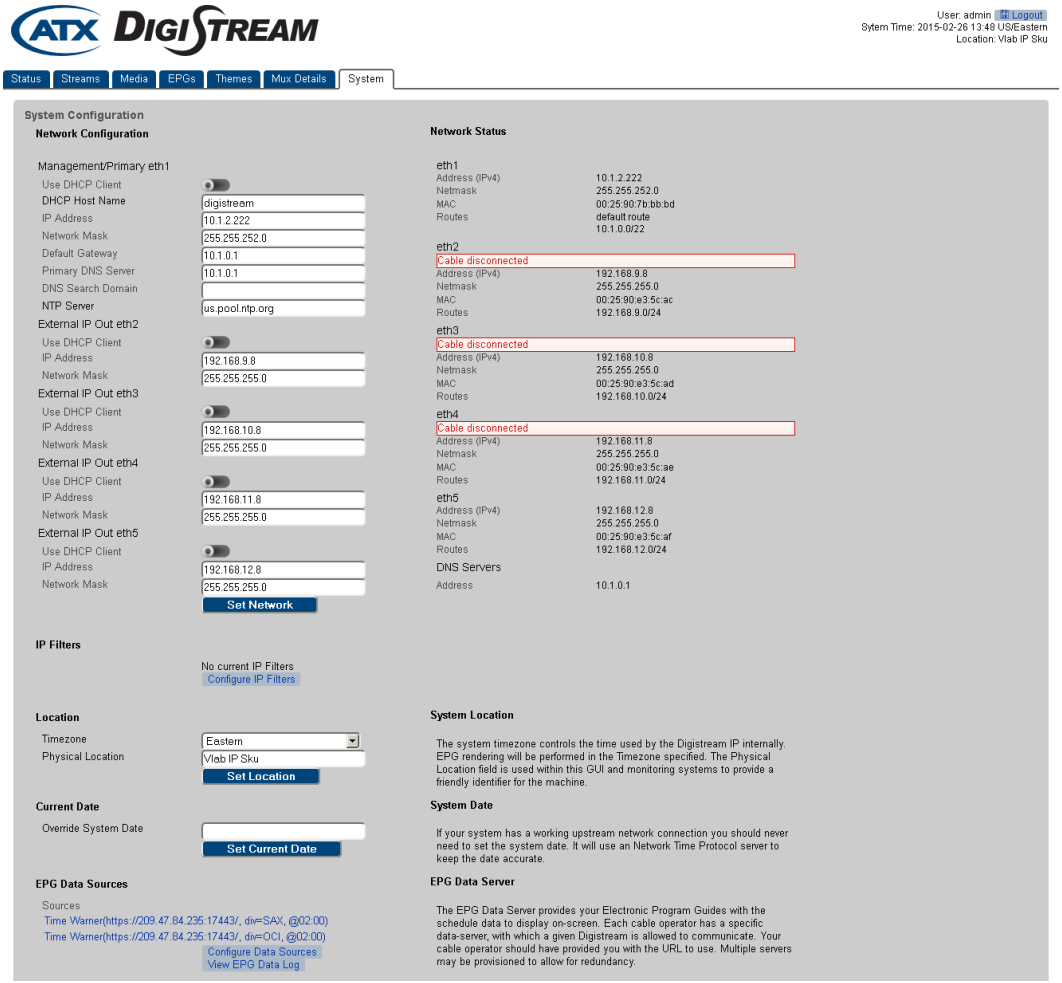


Figure 11-1: System Configuration Page - Part 1

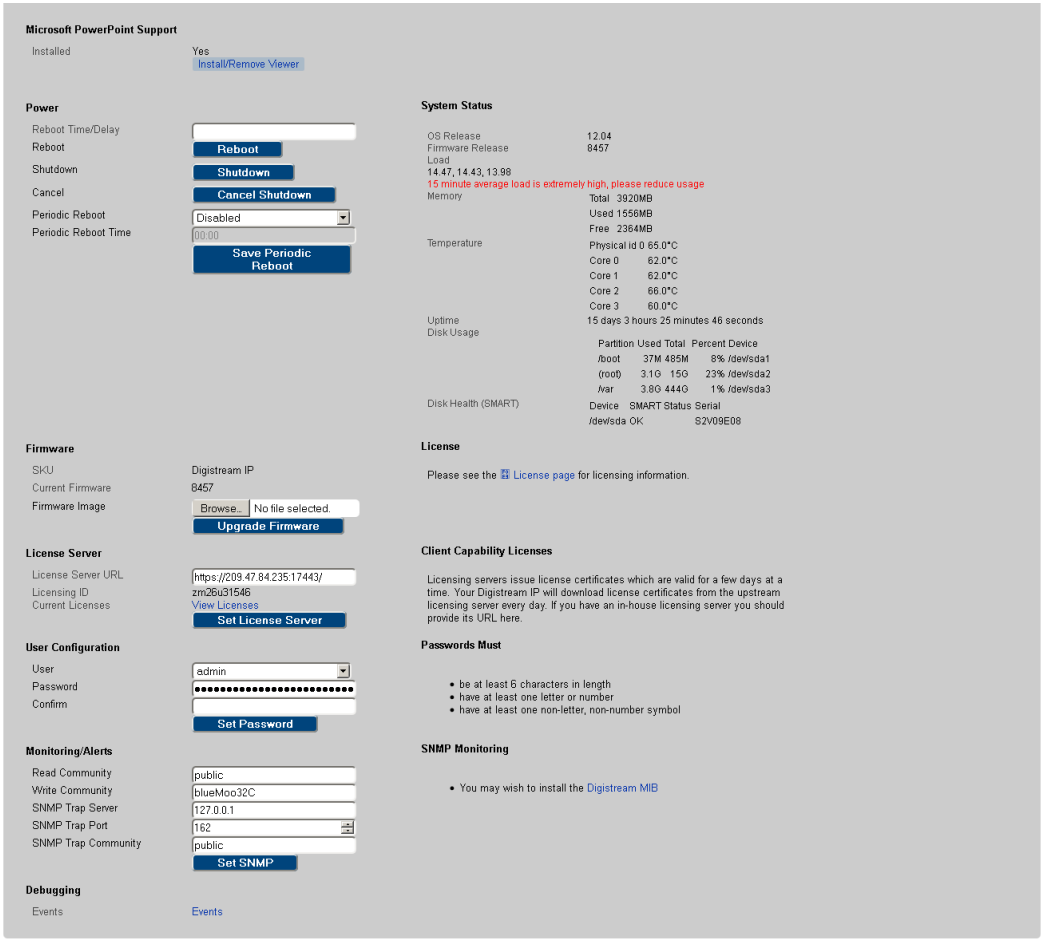


Figure 11-2: System Configuration Page - Part 2

11.2 Network Configuration

This section, Figure 11-3, allows configuration of all necessary network parameters to install the device on a public or private network. For details see “Table 11.3b: Network Configuration Fields”.

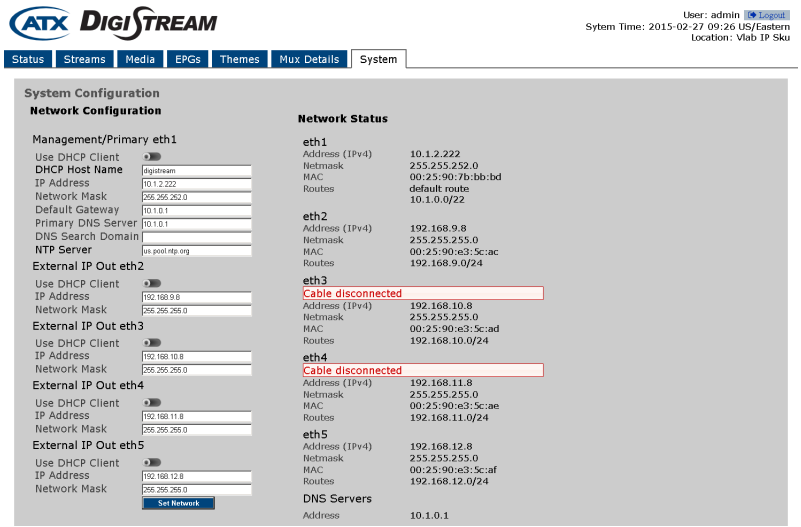


Figure 11-3: Network Configuration & Status Sections

11.3 Network Status

This area adjacent to the network settings section, Figure 11-3, outlines the current values applied to each of the two physical Ethernet ports.

Table 11.3a: Network Address Support

IP Address Ranges Supported		
IP Class	**Start Address**	**End Address**
A	10.0.0.0	127.255.255.255
B	128.0.0.0	191.255.255.255
C	192.0.0.0	223.255.255.255

Table 11.3b: Network Configuration Fields

Field	Value	Description
Management/Primary eth1		
Use DHCP Client	Switch	Click to toggle; Blue/bright is on, grey/dark is off.
IP Address	IP Address	The IP address assigned to this unit. Default is 192.168.0.23
Network Mask	IP Address	Set according to the portion of the IP address range required.
Default Gateway	IP Address	The local router address that provides network access to the unit.
Primary DNS Server	IP Address or URL	If Email alerts are configured on the Alerts page, a DNS server address needs to be specified to resolve the Email addresses. Also required if any URL is entered in any dialog in place of an IP address.
DNS Search Domain	String	The local DNS search domain address. Leave this value blank (default value) unless you know that a DNS search domain is required.
NTP Server	IP Address	The NTP server to use for system date/time. Precise control of schedules may be attained by specifying a Network Time Server. Internet access must be available for public servers or a local time server may be used. The address may be input as a URL or IP address.
External IP Out eth2 (All other available output Ethernet settings will be similar to eth2)		
Use DHCP Client	Switch	Click to toggle; Blue/bright is on, grey/dark is off.
IP Address	IP Address	The IP address assigned to this physical port. The second Ethernet Port is for the output streams. For IP output versions, the interface must be assigned a static or DHCP IP address. *For QAM output versions, this address is used internally only, assigned automatically.*
Network Mask	IP Address	Set according to the portion of the IP address range required.
Set Network	Button	After all changes required have been made to network settings, click the Set Network button to apply the settings. This button acts upon all 'Network Configuration' settings. Click the **Set Network** button before navigating away from this page or all changes will be discarded. Only the 'admin' user may make changes to network settings.

11.4 IP Filters

This feature, Figure 11-4, configuration of which is optional, can help control access to the web server front end of the

Figure 11-4: IP Filter Section

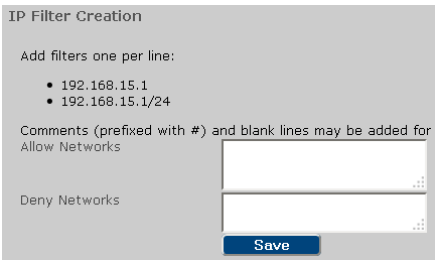


Figure 11-5: IP Filter Creation

DigiStream Device. If the IP address of the users that will get access is static and known, enter the IP addresses in the “allow” window. Addresses may be specified as an individual address as in 192.168.15.1 or subnet of addresses such as 192.168.15.1/24. If particular IP address or range of addresses should be denied enter those in the ‘Deny’ window in the same way; either individually or as subnet ranges. Comments (prefixed with #) and blank lines may be added for clarity and note-keeping.

Click the link **Configure IP Filters**, then click **New Filter** to access the configuration page, Figure 11-5.

11.5 Location

The Location, Figure 11-6, defines the system Time Zone which controls the time used by the device internally.

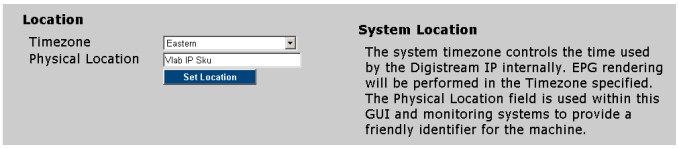


Figure 11-6: Set Location Section

11.5.1 Timezone

EPG rendering will be performed in the time zone specified. A drop down menu allows selection of the correct time zone for this equipment and is used for displaying the correct time on the EPG pages. This is not used for the date setting. The system time zone controls the times displayed on electronic program guides. It does NOT control the date displayed on the administrative GUI. The dates displayed in the GUI are presented in your local time zone and are derived automatically from an NTP server, if available.

11.5.2 Physical Location

The Physical Location field is used within this GUI and monitoring systems to provide a friendly identifier for the machine. The ‘Location’ field allows entry of a text string that is used solely within this GUI to allow for easily determining to which machine you have connected. This location string is displayed on the top right corner of the web page below the time zone and date and is always visible there, see Figure 11-7.

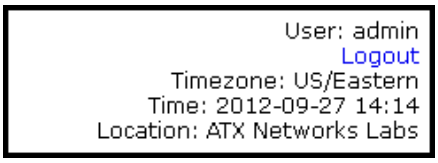


Figure 11-7: GUI Location Display

11.6 Current Date

If your system has a working internet network connection you should never need to set the system date. It will use an internal client to connect to a Network Time Protocol server to keep the date and time accurate.

Figure 11-8: Current Date Section

11.6.1 Override System Date

A date may be entered here to override the automatic date setting which is obtained from the NTP server by default. The format is **YYYY-mm-dd HH:MM:SS**

This should be used cautiously as overriding the date may affect the licences embedded in the DigiStream device.

11.7 EPG Data Sources

The EPG Data Server, Figure 11-9, provides your Electronic Program Guides with the schedule data to display on-screen. Each cable operator has a specific data-server, with which a given DigiStream Device is allowed to communicate. Your cable operator should have provided you with the URL to use. Multiple servers may be provisioned to allow for redundancy.

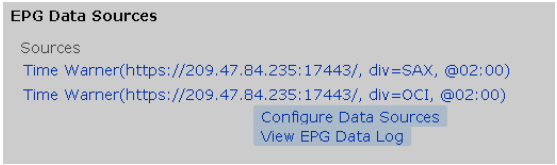


Figure 11-9: EPG Data Sources Section

An EPG Data Source Feed is the service which provides up-to-date programme data to your EPGs. Your service provider may

provide this data feed as part of your fees, or you may need to contract with an external provider. ATX Networks maintains such a data server. Configuration of data sources is preformed on the EPGs tab.

11.8 Power

Power options, Figure 11-10, allow power cycling of the device if it becomes necessary to re-boot the device in circumstances when the user is remotely located. For details see “Table 11.8a: Power Configuration Fields”.

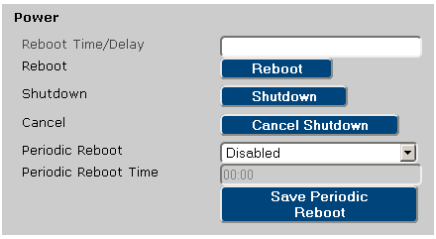


Figure 11-10: Power Section

11.8.1 IPMI Support

IPMI is a message-based, hardware-level interface specification. An IPMI sub-system operates independently of the operating system (OS) to allowing administrators to manage the system remotely in the absence of an operating system or the DigiStream Management Interface. While the device system board supports IPMI protocol, due to varying hardware used, there are no specifics that can be supplied or guaranteed about what can be controlled and monitored. The IPMI is supported on a dedicated Ethernet port which will require DHCP service to obtain an IP address. An IPMI management tool such as IPMIView available from SuperMicro, may be used to access the interface although any IPMI compliant tool may be used. Enter the Username **ADMIN** and Password **ADMIN** for the IPMI interface. IPMI is an internal system with no configuration settings or access to it in the device GUI. More information may be obtained from the SuperMicro support site or the following links to the available IPMI software and manuals.

- SuperMicro IPMIview software ftp://ftp.supermicro.com/utility/IPMIView/
- The IPMI User Guides http://www.supermicro.com/manuals/other/Embedded_BMC_IPMI.pdf
  http://www.supermicro.com/manuals/other/SMT_IPMI_Manual.pdf
- IPMIView Software Manual http://www.supermicro.com/manuals/other/IPMIView20.pdf
- Command Line Interface tool ftp://ftp.supermicro.com/utility/SMCIPMITool/SMCIPMITool_User_Guide.pdf

Table 11.8a: Power Configuration Fields

Field	Value	Description
Reboot Time Delay	Integer	The system may be configured to perform a reboot at the time specified in this dialog box. Time must be entered in HH:MM 24 hour format such as 15:45 (DigiStream GUI time in the following 24 hours) or +MM format (minutes in the future).
Reboot	Button	Reboots system immediately, performing a warm reboot of the system processor without cycling the power off allowing the system to re-start quickly.
Shutdown	Button	Schedule a shutdown to occur in **60 seconds.** Power off the system until it is manually power cycled. This takes a unit out of service until field personnel arrive for a power recycle. May be used if an errant system configuration is causing unintended channel outages and must be removed from service.
Cancel Shutdown	Button	Cancel pending shutdown or reboot if a shutdown was scheduled and it is decided to not to allow follow through. This button immediately cancels the pending action. There is a 60 second grace period when you can prevent a requested power cycle.
Periodic Reboot	Dropdown	The system may be configured to perform a reboot either daily or weekly.
Periodic Reboot Time	Integer	The system may be configured to perform a reboot at the time specified in the dialog box. Time must be entered in 24 hr format i.e.. HH:MM or 03:15
Save Periodic Reboot	Button	Save the changes to the **Power** settings. Failing to save the settings discards changes when navigating away from the System page. This is not service affecting.

11.9 System Status

This is for information only, Figure 11-11, and shows the following:

- OS Release
- Firmware Release
- CPU Load
- Memory Usage
- Core and System temperatures
- Uptime since the last reboot or power cycle
- Hard Disk Health (SMART)
- Hard Disk Usage

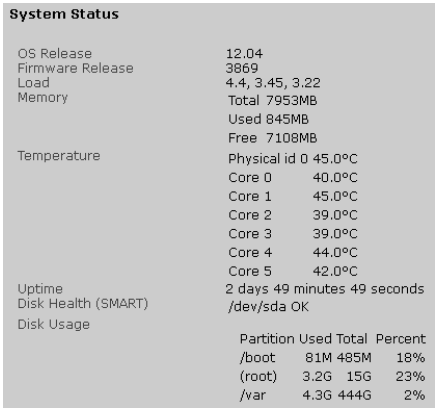


Figure 11-11: System Status Section

11.10 Firmware

This section, Figure 11-12, presents the installed version of firmware on the DigiStream platform and also the capability to upgrade the firmware when required. Firmware upgrade files are provided by ATX Networks from time to time to improve system performance and/or add new features. Files must first be downloaded to the Management Computer from ATX Networks Technical Support. The file must reside on a Management Computer local drive or on a local area network drive which is accessible to the Management Computer. The **Browse** button will allow navigating to the location of the upgrade file saved on the Management Computer. Clicking the **Upgrade Firmware** button will start the procedure.

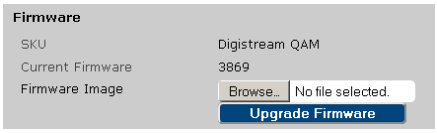


Figure 11-12: Firmware Section

NOTE: *Upgrading firmware is a service affecting operation and should only be initiated during a maintenance window on a device that is in service.*

Table 11.10a: Firmware Fields

Field	Description
SKU	The SKU (Stock Keeping Unit) is a unique identifier for each distinct product that can be purchased from ATX Networks. This is the name that ATX Networks has assigned to this particular product and may be used to identify the product when corresponding with the company.
Current Firmware	This is the current system firmware version installed on the product.
Firmware Image	This dialog is used to upgrade system firmware. Click the **Browse** button to point to the file on the management PC, then click the **Upgrade Firmware** button to upload the file to the device. New firmware will be released at the discretion of ATX Networks and will be posted to the ATX Support web site for this product when available.

11.11 Licence Server

Licensing servers issue certificates which are valid for a few days at a time. Your DigiStream Device downloads certificates from the licensing server every day. If you have an in-house licensing server you should provide its URL here.

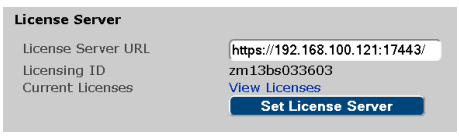


Figure 11-13: Licence Server Section

Table 11.11a: Licence Server Fields

Field	Value	Description
Licence Server URL	URL or IP Address	Server URL from which to pull licence bundles for this machine.
Licensing ID	Integer	The unique ID associated with this machine.
View Licenses	Link	Click to see a list of currently installed licences, see example Figure 11-14.
Set Licence Server	Button	Click to save changes to the Licence Server URL.

11.11.1 View Licences

Clicking the link opens a page, Figure 11-14, which lists current licence assignments. The licences may be pulled from the server by clicking the link **Refresh Licences**. Operation of licencing is intended to be transparent to the end user.

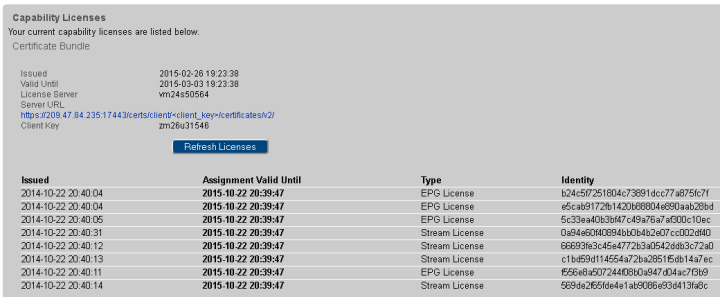


Figure 11-14: Capability Licences

11.12 User Configuration

Each user account password may be set independently. Once the passwords are set, the factory default values are overwritten and cannot be retrieved.

Figure 11-15: User Configuration Section

11.12.1 Setting Passwords

To set the user passwords:

1. Select the user that is to be changed from the drop down menu.
2. Enter the new password.
3. Re-enter the new password.
4. Click the **Set Password** button.

11.12.2 Password Properties

Passwords must have the following properties:

- Be at least 6 characters in length.
- Have at least one letter or number.
- Have at least one non-letter, non-number symbol (punctuation, white space, etc).

11.12.3 Read / Write Permissions

The access permissions for each user account are listed in Table 11.12a. These permissions are embedded values and cannot be changed.

Table 11.12a: User Access Permissions

Account Login	admin	user	guest
Factory Default Password	atx_digistream_admin_password	atx_digistream_user_password	atx_digistream_guest_password
Change Passwords	All Passwords	User & Guest Passwords	
Update Firmware	x		
Modify Output & Encoder Configuration Parameters	x		
Upload media files	x	x	
Create playlists	x	x	
Modify schedules	x	x	
View Stream Status Page	x	x	x
View Live Previews	x	x	x

11.13 Monitoring / Alerts

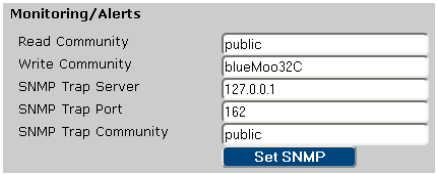


Figure 11-16: Monitoring/Alerts Section

The device can provide SNMP alerts about detected error events. These alerts are designed to assist in proactive diagnosis of problems that may occur on installed systems. The configuration of alerts, Figure 11-16, requires specifying information related to the SNMP manager, Table 11.13a.

Table 11.13a: SNMP Alerts Configuration

Field	Value	Description
Read Community	String	This is the dialog to define the read community. Default is **public**.
Write Community	String	This is the dialog to define the read community and this must be entered in the SNMP manager to write to the MIB. Writing to the MIB is disabled at this time.
SNMP Trap Server	IP Address	Enter the IP address of the SNMP manager computer. Only one address is supported.
SNMP Trap Port	Integer	The port associated with the trap server. This is usually set to 162, which is the default well known port for SNMP but this may be changed if required.
SNMP Trap Community	String	The default Alert Community is **public** and this must match the setting of the SNMP manager. It may be changed here if required.

11.14 Setting up SNMP Alerts

Figure 11-17: Download SNMP MIB

The device supports sending SNMP traps to a remote SNMP Management Console. The SNMP manager will require the MIB to be compiled into its MIB database. The MIB is stored on the internal drive and is accessible by clicking the **DigiStream MIB** hyperlink, Figure 11-17. Clicking the link opens a new web page or prompts to download the MIB, depending on the browser used. If a web page is presented, to create the MIB file simply select all the text on this web page including the END statement, right click the text and chose copy, then paste it to a simple text editor. Do not use a word processor as it may add undesirable formatting to the file. Save the file with a name ending with **.mib** such as **DigiStream.mib**. This file will need to be compiled into the MIB database of the SNMP manager.

Procedure

1. Download and save the MIB file from the device, Figure 11-17.
2. Compile the MIB into the SNMP Manager database.
3. Enter a single IP address of the SNMP Manager in the 'SNMP Trap Server' dialog box. Multiple IP addresses are not supported.
4. Enter public as the 'SNMP Trap Community' if it is not already.
5. Click the **Set SNMP** button.

11.15 Support for SNMP Deployment

11.15.1 SNMP Alerts (Traps) Supported

This is a summary of the supported SNMP Alerts.

- The temperature exceeds the maximum allowable.
- A problem with a fan has been detected.
- A channel is currently empty.
- Content rendering crashed.
- An exception occurred while attempting to pull new EPG schedule data.
- A program is indicating zero bitrate. Check unit for details.
- An output QAM is indicating 0 bitrate. Check unit for details.
- An output QAM is restarting. Check unit for details.
- Power Supply Failure.
- An SNMP trap test

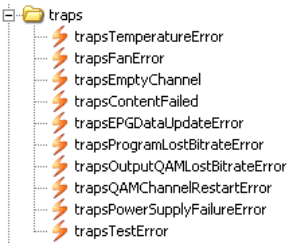


Figure 11-18: SNMP Traps

11.15.2 SNMP Walks

SNMP walks may be performed on branch nodes of the MIB. In order to perform walks, you must first ensure that the read community for the SNMP agent is set to the defined community in your MIB browser. Writing to the SNMP agent is disabled at this time.

Download the MIB from the link in the adjacent 'SNMP Monitoring' section and compile it into your MIB browser. Assuming that a graphical browser is used, the entire MIB structure should be visible. Select and perform walks on branch nodes of the MIB. Walks cannot be performed on the MIB itself as the MIB tree is access controlled all the way down to the DigiStream Device MIB.

11.15.3 SNMP Walk Support

The following parameters are available for SNMP monitoring requests via SNMP.

Server - device

- Device Type (ie DigiStream).
- Unique serial number of this device.
- The version number of the firmware.
- The version number of the hardware.
- Current device time; The format is 'YYYY/MM/DD-HH:MM:SS'.
- Description of the physical location of the unit.
- Bug-tracking commit ID from which firmware was produced.

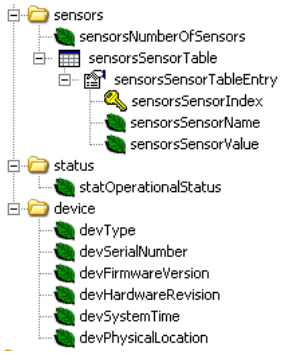


Figure 11-19: SNMP Server

EPGs table

- Total number of epgs defined on the device.
- Table with epg information.
- Entry of the channel table (Index).
- Index in epg table of this epg.
  - Name of this epg.

Figure 11-20: EPGs Table

Streams tables

- Total number of streams enabled on the device.
- Number of EPG-capable streams enabled on the device.
- Table with stream information.
- Entry of the channel table (Index).
- Index in stream table of this stream.
  - Name of this stream.
  - Configured resolution of this channel.
  - Whether the stream may stream EPG content.

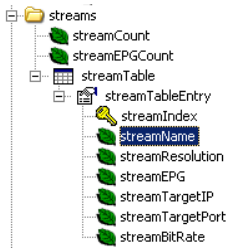


Figure 11-21: SNMP Streams

- Multicast IP address (IGMP group) to which stream is sent.
- Multicast IP port to which stream is sent.
- Target (video) bitrate in (bps).
- Title of the stream
- Subtitle of the stream

Output status information

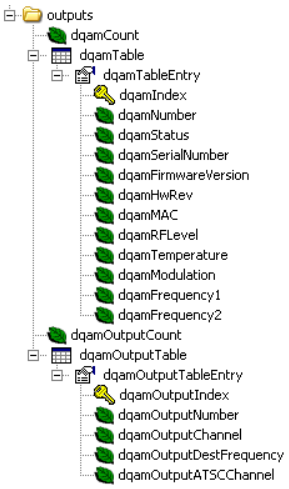


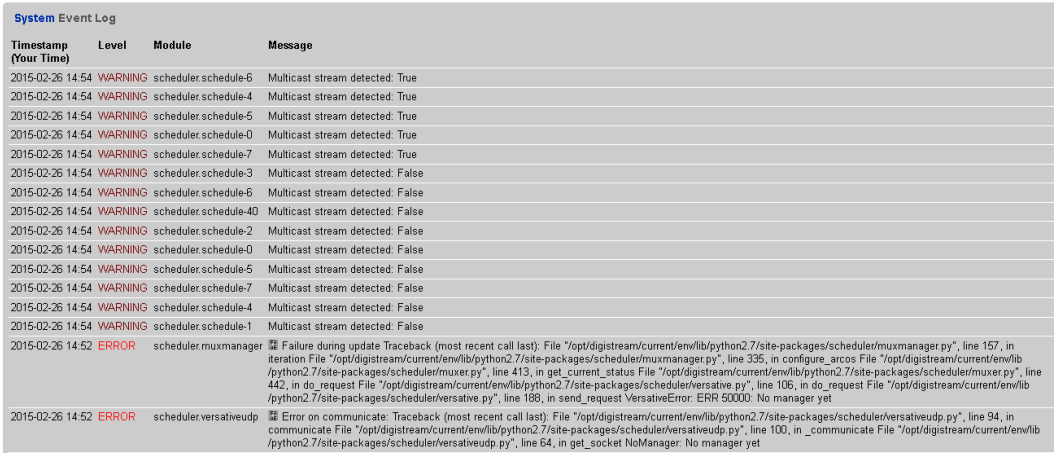
Figure 11-22: SNMP Outputs

- Number of active dqams in the server.
- Table containing status of all present dqams.
- Entry in dqam Table (Index).
- Index in dqam table of this dqam.
  - User visible number of this dqam.
  - Unique serial number of this dqam.
  - The version number of the firmware on this dqam.
  - The hardware revision of this dqam.
  - The ethernet MAC address of this dqam.
  - The RF output level setting in dBmW of this dqam.
  - The reported temperature of this dqam.
  - The current output modulation setting for this dqam.
  - The base frequency for the first 4 dqam channels on this dqam in KHz.
  - The base frequency for the second 4 dqam channels on this dqam in KHz.
- The number of outputs of type dqam that are configured.
- Table containing all outputs of type dqam.
- Entry in dqamOutputTable (Index).
- Index in dqam output table.
  - DQAM number of this output.
  - DQAM channel number of this output.
  - The output frequency of this dqam output in KHz.
  - The ATSC major channel number of this dqam output.

11.16 Debugging

For troubleshooting purposes, the system events log may be viewed. Click the **Events** link.

Figure 11-23: Debugging



System Event Log

Timestamp (Your Time)	Level	Module	Message
2015-02-26 14:54	WARNING	scheduler.schedule-6	Multicast stream detected: True
2015-02-26 14:54	WARNING	scheduler.schedule-4	Multicast stream detected: True
2015-02-26 14:54	WARNING	scheduler.schedule-5	Multicast stream detected: True
2015-02-26 14:54	WARNING	scheduler.schedule-0	Multicast stream detected: True
2015-02-26 14:54	WARNING	scheduler.schedule-7	Multicast stream detected: True
2015-02-26 14:54	WARNING	scheduler.schedule-3	Multicast stream detected: False
2015-02-26 14:54	WARNING	scheduler.schedule-6	Multicast stream detected: False
2015-02-26 14:54	WARNING	scheduler.schedule-40	Multicast stream detected: False
2015-02-26 14:54	WARNING	scheduler.schedule-2	Multicast stream detected: False
2015-02-26 14:54	WARNING	scheduler.schedule-0	Multicast stream detected: False
2015-02-26 14:54	WARNING	scheduler.schedule-5	Multicast stream detected: False
2015-02-26 14:54	WARNING	scheduler.schedule-7	Multicast stream detected: False
2015-02-26 14:54	WARNING	scheduler.schedule-4	Multicast stream detected: False
2015-02-26 14:54	WARNING	scheduler.schedule-1	Multicast stream detected: False
2015-02-26 14:52	ERROR	scheduler.muxmanager	Failure during update Traceback (most recent call last): File "/opt/digistream/current/env/lib/python2.7/site-packages/scheduler/muxmanager.py", line 157, in iteration File "/opt/digistream/current/env/lib/python2.7/site-packages/scheduler/muxmanager.py", line 335, in configure_arcos File "/opt/digistream/current/env/lib/python2.7/site-packages/scheduler/muxer.py", line 413, in get_current_status File "/opt/digistream/current/env/lib/python2.7/site-packages/scheduler/muxer.py", line 442, in do_request File "/opt/digistream/current/env/lib/python2.7/site-packages/scheduler/versative.py", line 106, in do_request File "/opt/digistream/current/env/lib/python2.7/site-packages/scheduler/versative.py", line 188, in send_request VersativeError: ERR 50000: No manager yet
2015-02-26 14:52	ERROR	scheduler.versativeudp	Error on communicate: Traceback (most recent call last): File "/opt/digistream/current/env/lib/python2.7/site-packages/scheduler/versativeudp.py", line 94, in communicate File "/opt/digistream/current/env/lib/python2.7/site-packages/scheduler/versativeudp.py", line 100, in _communicate File "/opt/digistream/current/env/lib/python2.7/site-packages/scheduler/versativeudp.py", line 64, in get_socket NoManager: No manager yet

Figure 11-24: Sample System Event log

ADVANCED THEMES

12. Advanced Themes

Electronic Program Guides displayed by the DigiStream Device may be fully customized using CSS. Every unit is pre-loaded with standard and very usable EPG formats and CSS customization is optional.

12.1 Authoring Advanced Themes

Creating an Advanced Theme is accomplished by writing Cascading Style Sheets (CSS) which modify the presentation of the HTML EPG files. If you do not already know how to write CSS, you should ask a skilled web developer to create the CSS files. The remainder of this document will assume that you are a skilled CSS developer.

12.1.1 Background

Your DigiStream Device EPG is generated by an embedded WebKit browser of approximately the same level of feature support as a Google Chrome™ v20 (approximately April 2012) browser. The EPG is always presented full-screen, at the full encoding resolution of the stream to which it is being targeted.

There are two levels of CSS involved in the EPG rendering for an advanced theme:

- Layout which is a static resource that cannot be modified by the theme. A theme with no CSS directives would solely be rendered with the Layout CSS, which would generate a plain black on white text grid. You SHOULD NOT override the Layout CSS properties unless you fully understand the implications of doing so.
- theme/theme.css which is the customization layer that provides all of the colors, gradients, icons, logos, and other visual flourishes involved in a pleasant display.

Your theme is uploaded as a .zip file containing a theme.css file and any number of static resources (images, secondary .css files imported with @import, and the like) required to make that .css file operational.

You may wish to upload an empty CSS file as a theme and then use a Live-editing CSS browser extension to work up your theme while on the preview page of an EPG.

12.1.2 Overall Structure

Feel free to load an EPG preview and examine the structure with your favorite web-browser dev tools (Chromium™, Firefox™ and Firebug are recommended). This summary attempts to describe the general structure of the EPG HTML so that you can easily create your first-draft CSS file.

- .overall-header top-of-display header for logos: .left-logo,.right-logo your .css should set the background and size for the element to display whatever header material you like
- .content .colorbox .epg create the floating relative-positioned box into which the EPG data will be rendered
- .epg .epg-header top row of the EPG with date and time information.
  - .epg-header .current-time current time display, note that this also has .channel class
  - .epg-header .current-date current date display, note that this also has .station-name class
- .epg .epg-body holds the set of fade blocks (sets of channels) which are presented to the user
  - .fade-block .epg-row individual station rows
  - .epg-row .station station identification on the left side of the display
    - .network-icon also has a class for .network-XXXX where XXXX is the value rendered as station name
    - .channel the user-assigned “channel”, that is, what the user should hit on a remote to view the station locally
    - .station-name the station name, values such as BRAVO, BBCHD, COMEDYP,
- .epg-row .schedules set of individual schedules presented to the user, each schedule is a “program” set to display for a period on the station
  - .no-schedule block presented when there is no explicit scheduling information available for the station
  - .schedule an actual schedule record
    - .program description of program which is scheduled to appear in this slot, where possible will have

an extra genre type assigned:

- .program.genre-adults-only
- .program.genre-shopping
- .program.genre-sitcom
- .program.genre-drama
- .program.genre-science-fiction
- .program.genre-documentary
- .program.genre-news
- .program.genre-public-affairs
- .program.genre-busfinancial
- .program.genre-weather
- .program.genre-children
- .program.genre-educational
- .program.genre-sports-nonevent
- .program.genre-sports-event
- .program.genre-talk

◦ .program .title program title

◦ .program .sub-title program sub title, often includes episode title and/or description

.epg .message-footer displays user-specified textual messages in rotation

12.2 Importing an Advanced Theme

The tools to create Advanced Themes are not built in to the DigiStream device , however Advanced Theme file that is created externally may be imported. Advanced themes must be applied to a newly created theme; they cannot be applied to an existing Hotelier defined theme. The procedure to import an advanced theme is outlined here. For more information about advanced Themes see “12.1 Authoring Advanced Themes” on page 12-1.

1. Click the **Themes** tab, Figure 12-1. The list of existing Themes is displayed.
2. Click the **New Theme** button.

Figure 12-1: Create a New Theme

3. Name the new Theme, see Figure 10-9, or accept the default name.
4. Click **Browse.**

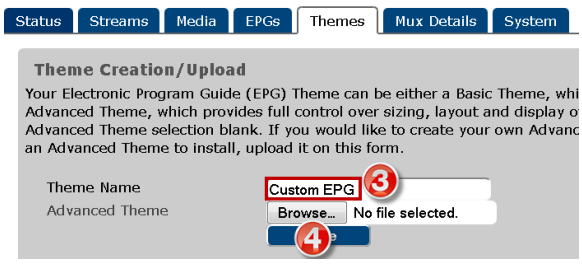


Figure 12-2: Import the Advanced Theme File

5. Use the explorer window to locate the CSS file on your PC or network, Figure 12-3.
6. Click **Open**.

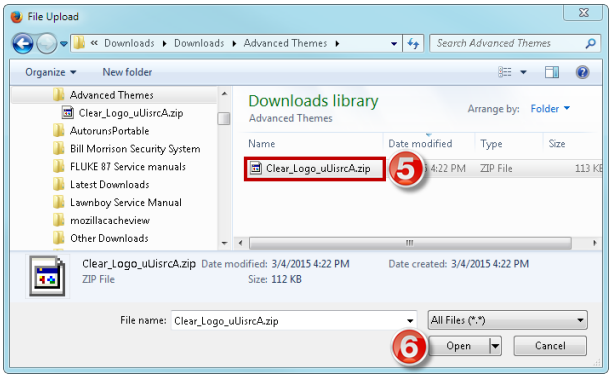


Figure 12-3: Select the Advanced Theme File

7. The file name is populated into the file dialog box, Figure 12-4.
8. Click **Save** to upload the CSS file.

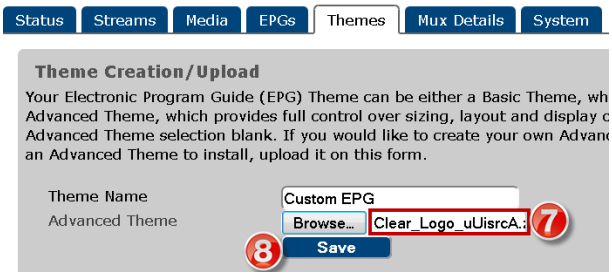


Figure 12-4: Theme File Loaded

- The Theme is displayed on the page as a preview, Figure 12-5.
- This new Theme may now be applied to any desired EPG.

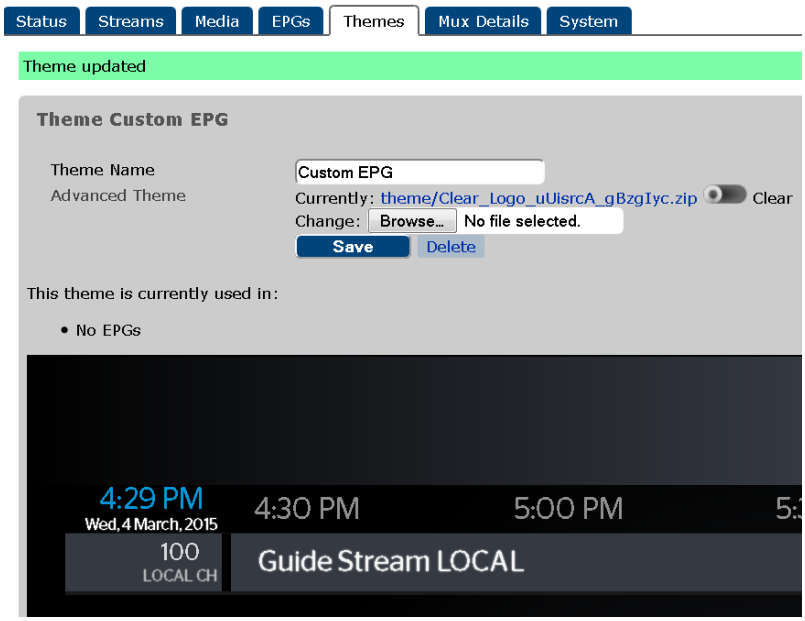


Figure 12-5: Theme in Preview

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SERVICE & SUPPORT

13. Service & Support

13.1 Contact ATX Networks

Please contact ATX Technical Support for assistance with any ATX products. Please contact ATX Customer Service to obtain a valid RMA number for any ATX products that require service and are in or out-of-warranty before returning a failed module to the factory.

DIGITAL VIDEO TECHNICAL SUPPORT
Tel: (905) 428-6068
Toll Free: (800) 565-7488 (USA & Canada only)
► Press *3 for **Technical Support**
►Then press 1 for **Digital Video Products (DVIS, DigiVu, UCrypt, VersAtivePro, DigiStream)**
Email: digitalvideosupport@atxnetworks.com

CUSTOMER SERVICE
ATX Networks
1-501 Clements Road West
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13.2 Warranty Information

All of ATX Networks' products have a 1-year warranty that covers manufacturer's defects or failures.

End-of-Sale as of
March 31, 2017

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Printed in Canada Rev. 01/17 (ANW1102)