





Operation Manual



General Guide Notes

Manual Release Date July 30 2015

Firmware Version

Some features described in this manual require the latest firmware to be installed on the hardware platform. Check with ATX Networks Technical Support for the latest release of firmware. The firmware installed on your Device may be found in the GUI. At the time of publication of this manual the most current released firmware versions are:

Firmware Version	VA1.0.3.124_VMS1.0.3.703
Mkip System Menu Version	0.5.5

Organization of This Manual

This manual is generally organized based on the main functions of Encoding and Transcoding with individual chapters dedicated to describing the configurable features and monitoring. Further chapters outline activities related to the GUI operation and configuration.

Cross Reference Usage

Hyperlinks are used throughout the guide to assist the reader in finding related information if the reader is viewing the PDF file directly. Hyperlinks may be identified by their blue text. Most links are to related pages within the document, but some may 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:



WARNING: 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.



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

Although every effort has been taken to ensure the accuracy of this document it may be necessary, without notice, to make amendments or correct omissions. Specifications subject to change without notice.

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TABLE OF CONTENTS

GE	NERA	L GUIDE NOTES
1.	<u>GUI I</u>	<u>ENVIRONMENT</u>
	1.1	Chapter Contents
	1.2	Port Opening - Switch and Firewall
	1.3	Launch the GUI and Log in 1-2
	1.4	Configuring the Device - Quick Summary
	1.5	<u>The GUI</u>
	1.6	Application Terminology
	1.7	Descriptive Icons
	1.8	Context Sensitive Menus 1-5
	1.9	<u>Copy & Paste</u>
2.	<u>GEN</u>	ERAL (GLOBAL) CONFIGURATION
	2.1	Chapter Contents
	2.2	Firmware Upgrade
	2.3	NTP System Time
	2.4	User Management
	2.5	Licence
	2.6	<u>SNMP</u>
3.	DEVI	CE CONFIGURATION
	3.1	Chapter Contents
	3.2	Basic Information
	3.3	Ethernet Network Settings
	3.4	Capture/Demod Cards
	3.5	Licence Information
	3.6	QAM Output Devices
4.	ENC	DDING APPLICATION
	4.1	Chapter Contents
	4.2	Capture Card Resources
	4.3	SPTS Encoding Application
	4.4	Adaptive Encoding Application
	4.5	Start the Encoding Process
5.	TRA	NSCODING APPLICATION
	5.1	Chapter Contents
	5.2	Ethernet Resources
	5.3	SPTS Transcoding
	5.4	Adaptive Transcoding
	5.5	Start the Stream
6.	<u>SESS</u>	SION SETTINGS
	6.1	Chapter Contents
	6.2	<u>SPTS Stream Settings</u>
	6.3	Adaptive Session Settings 6-4

7.	PUBL	<u>LISH SETTINGS</u>	7-1
	7.1	Chapter Contents	7-1
	7.2	SPTS Publish Settings	7-1
	7.3	HLS Publish Settings	7-2
	7.4	Adobe [®] Flash [®] Publish Settings	7-4
8.	<u>QAM</u>	MULTIPLEXER	8-1
	8.1	Chapter Contents	8-1
	8.2	Setup a QAM Modulator	8-1
	8.3	Create a QAM Multiplex	8-2
	8.4	Create A TS Source	8-3
	8.5	Adding TS Source Programs	8-4
	8.6	Adding Multiple 1S Sources	8-5
9.	ETHE	ERNET MULTIPLEXER	9-1
	9.1	Chapter Contents	9-1
	9.2	Create an Ethernet MUX	9-1
	9.3	Create a 15 Source	9-3
	9.4 0.5	Adding Multiple TS Sources	9-4
	9.0		9-5
10.	ALAF	<u>RMS & EVENTS</u>	10-1
	10.1	<u>Alarms</u>	10-1
	10.2	<u>Events</u>	10-2
11.	MON	ITORING	11-1
	11.1	Chapter Contents	11-1
	11.2	Monitoring the Device	11-1
	11.3	Monitor Resources	11-3
	11.4	Monitoring a Multiplex.	11-5
	11.5	Displaying Stream Information	11-6
12.	VLAN	N TAGGING	12-1
	12.1	Chapter Contents	12-1
	12.2	VLAN General Information	12-1
	12.3	Support for VLANs	12-1
	12.4	Create a VLAN Using the Device GUI	12-2
	12.5	Create VLAN with MKIP Interface	12-3
	12.6	Application of VLANS	12-7
13.	MKIP	<u>SYSTEM SHELL</u>	13-1
	13.1	Chapter Contents	13-1
	13.2	SSH Clients Supported	13-1
		Connect Using Monitor, Keyboard and Mouse	40.0
	13.3		13-2
	13.3 13.4	Connect Using SSH Client	13-2
	13.3 13.4 13.5	Connect Using SSH Client <u>MKIP Shell Menu</u> M	13-2 13-2 13-3
	13.3 13.4 13.5 13.6	Connect Using SSH Client MKIP Shell Menu Menu - Display Manu - Set Network	13-2 13-2 13-3 13-4
	13.3 13.4 13.5 13.6 13.7 13.8	Connect Using SSH Client MKIP Shell Menu Menu - Display Menu - Set Network.	13-2 13-2 13-3 13-4 13-5

13.9	<u>Menu - TCP Dump</u>
13.10	Menu - Eth0 Set Default
13.11	<u>Menu - Date/Time</u>
13.12	8 Menu - Set Time by NTP
13.13	8 <u>Menu - Restart</u>
13.14	• <u>Menu - Shutdown</u>
13.15	Menu - Authentication Mode
14. <u>SER\</u>	/ICE & SUPPORT
14.1	Contact ATX Networks 14-1
14.2	Warranty Information

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GENERAL CONFIGURATION

1. GUI Environment

The GUI is the Device interface (Graphical User Interface) used to manage the VersAtivePro transcoder, DigiVuII and DigiVuII Micro encoders. In this manual these encoders and transcoders will be referred to as **Devices** since the GUI is common to all three products.

1.1 Chapter Contents

- "Port Opening Switch and Firewall"
- "The GUI"
- "Application Terminology"
- "Descriptive Icons"
- "Context Sensitive Menus"
- "Copy & Paste"
- "Configuring the Device Quick Summary"
- "Launch the GUI and Log in"

1.2 Port Opening - Switch and Firewall



NOTE: Any Management Switch used between Devices and the Management Computer will require the following ports to be opened both Inbound and Outbound.

Port Number	Transport	Protocol	Description
80	TCP	RTMP, RTMPT,	File Upload (Licence, VersAtive Software) By default, Flash Player clients make RTMP connections over port 1935 using TCP.
		HTTP	To communicate over the RTMP protocol, clients attempt to connect to ports in the following order: 1935, 80 (RTMP), 80 (RTMPT).
8080	TCP	HTTP	HTTP Communications
8111	TCP		Communication
8112	UDP		Communications
8113	UDP		Messaging
8118			Communications
1935	TCP	RTMP/E	Adobe [®] Flash [®] (Previewing, Monitoring) Flash Media Server listens for RTMP/E requests on port 1935/TCP. Flash Player and AIR clients attempt to connect over ports in the following order: 1935, 80 (RTMP), 80 (RTMPT).
1935	UDP	RTMFP	Adobe Flash (Previewing, Monitoring) Flash Media Server listens for RTMFP requests on port 1935/UDP
8443	TCP	HTTPS	HTTPS Communications

1.2.1 Notes on Opening Fire Wall Port 1935 for Monitoring

Some firewalls reject traffic that doesn't use the HTTP protocol. This behavior can prevent communication over RTMP even if port 1935 is open. Consult the documentation for the firewall to determine how to configure it to allow RTMP traffic. To use RTMP and RTMFP, any switch or firewall between the server and clients must allow inbound and outbound traffic on port 1935.

If it is not possible to open port 1935 inbound and outbound then monitoring will not work. In this case it is best to disable monitoring altogether within the GUI, see Figure 1-4.

The resource contains both the actual publish and the preview. When the preview can not connect the whole pipeline of the stream will stop and retry and not publish. The events log will report "Cannot connect to RTMP server". The resource will show "Resource is retrying" at the events tab. Disabling 'Preview' will prevent events from being detected when the streams cannot connect during monitoring.

The Preview function for each Resource is on by default, Figure 1-4, but may be disabled at each individual Resource by unticking the Preview On box and then clicking **Save**.

VMS (ATX	🎯 VMS 🕨 🏦 CLUST	TER 🕨 🚺 24	40 🕨 🚹 CTVHD	
¢vms G→	骂 Settings and Info.	📫 Moni	toring 🛛 🖼 De	wice
search here	► Start	× Delete	+ New Adaptive Session	+ New SPTS Stream
	Resource Input:	CTVHD		Incoming SP
240	Туре	E	Ethernet	Program
[∟] . ет∨нр	IP	2	39.90.1.5	Program
- 249	Port	6	000	- Program
L.♣B CTVHD	Multicast	t	rue	≱ ■PID-Vi
_	Source Name	e	th1	- Width
	Redundancy Con	figuration r	naster	- Fram
	Redundancy Stat	e i	alle	Conte
	Braview On E	2		Aspec
	L LEWICK ON L	× (Save	🔺 🖥 PID-A

Figure 1-1: Preview Enabled

1.3 Launch the GUI and Log in

- 1. Open the web browser of your choice, Figure 1-2.
- 2. Enter the IP address of the Management Port; factory default 192.168.0.23
- 3. Login with credentials, Figure 1-3, (case sensitive): Us

User Name: vms Password: VMS

4. The GUI will open as shown in Figure 1-4.



Figure 1-2: GUI Address

ww.abnetworks.com

Figure 1-3: GUI Login

1.4 Configuring the Device - Quick Summary

These are the key steps required to set up the Device.

1.4.1 Covered in this Chapter:

- GUI Overview
- Open the GUI and log in.

1.4.2 Covered in General Configuration Chapter

- Managing Firmware
- Managing Users
- SNMP

1.4.3 Covered in Device Configuration Chapter

- Configure Ethernet Input & Output Streaming Ports
- Configure QAM Output Modulators

1.4.4 Covered in Encode, Transcode & Publish Chapters

Create Resources

The resource may come from an analog or digital program on a Capture Card or an Ethernet IP stream address (Devices may have multiple physical Ethernet ports on which Resources may be present).

Create SPTS Streams

The stream defines the resolution, bitrate, audio codec, and CBR/VBR for the stream. Multiple streams may be added to the session. In the case of the SPTS Stream instance, there cannot be any other streams added.

Create Adaptive Sessions

A session is intended for MBR applications and defines the codec to be used for the series of output streams. Multiple sessions may be added to any resource. SPST Stream is for IPTV applications.

Create Publish Points

The publish defines the output protocol, SPTS, HLS etc, the output IP and interface. Multiple Publish Points may be added to the stream.

Start Encoding or Transcoding Streaming from the Resource icon.

1.4.5 Covered in Ethernet Multiplexer Chapter

- Create an Ethernet Multiplex.
 - If a number of programs will be aggregated into a single MPTS stream, first create a MUX instance.
- Create TS Sources to the MUX.
- Create a program to the TS source.

1.4.6 Covered in QAM Multiplexer Chapter

- Create a QAM Multiplex to the Device icon.
 - If a number of programs will be aggregated into a single MPTS stream, first create a MUX instance.
- Create TS Sources to the MUX.
- Create a program to the TS source.

1.5 The GUI

The GUI is based on a familiar Tree and Tabbed Pane design, Figure 1-4. The main parts are:

- 1. Tree View of Managed Elements.
- 2. Pane View of the Selected Element.
- 3. Tool Bar.
- 4. Path of Selected Element.
- 5. Context Sensitive Right Click Menu.
- 6. Tree View Search Tool.
- 7. Details View for Selected Element.
- 8. Alarms Notification Area.
- 9. Events Notification Area.



Figure 1-4: The GUI

Managed Elements are displayed in their relationships to each other in the Tree View, see Figure 1-4(1), and details pertaining to the elements are displayed in the Pane View (2) when the element is selected. Further details about the selected element and configuration dialogs are accessed within the Pane View with Navigation Tabs.

1.6 Application Terminology

A review of the application terminology used in the GUI and for the encoding & transcoding applications:

1. Resource

The external video and/or audio source content attached to the Capture Card or IP Port.

2. SPTS Stream

> The SPTS Stream defines the resolution, bitrate (constant or variable), and audio codec of the session for IPTV applications.

3. Adaptive Session

An Adaptive Session defines the parameters to be used for encoding & transcoding multi-bitrate Streams.

4. Publish

The Publish defines the output protocol; SPTS, HLS, Flash; the output URL and Physical Interface.

1.7 **Descriptive Icons**

The icons used in the Tree View are designed to be as descriptive as possible to identify each element's function but each element may also be named by the user with a flexible descriptor.

1.7.1 General

An icon of a Globe representing the Device Hardware Platform.



Platform Frror

Device Error

1.7.2 Device

An icon representing a computer server. This is the managed VersAtivePro, DigiVu II, or DigiVu II Micro Device.











Device

Device Warning

Device Streaming



1.7.3 Resource

An icon showing content downloaded. Resources are from Capture Card or IP sources without distinguishing between the two.



Resource





Resource Warning



Resource Streaming



Resource Monitoring

A single Resource may be used to create multiple Sessions.

1.7.4 Session





Resource Error







Session

Session Error

Session Warning

Session Streaming Session Disabled

An icon of a TV or Media Player representing a TV Program. Outgoing Programs are created here.

1.7.5 Stream

In icon of a Media Player or a Media Stream to be played out.













Stream

Stream Error

Stream Warning Stream Streaming Stream Disabled

1.7.6 Publish

An icon of the Globe again, this time with an encircling arrow showing output to a broad area 'around the Globe'.









Publish Streaming

1.7.7 **Configuration Icons**

Some Icons in the GUI are for configuration and operation purposes.

Log Out

User Settings

1.8 **Context Sensitive Menus**

These are menus that appear on Right Click and are different depending on the element that was first selected.

1.8.1 **Device Menu & Tool Bar**

Device Configuration options are available on both the Right Click menu and the Tool Bar, Figure 1-5.



Figure 1-5: Device Right Click Menu & Tool Bar

1. Add Resource

Add to this Device a Capture Card Resource for encoding content or an Ethernet Resource for transcoding content.

2. Add MPTS Multiplexer

Multiplexes may be built for Ethernet streaming to remote Edge QAMs or output directly to MQAMs (if QAM Output equipped).

3. Stop All

May be used to stop all resources simultaneously. (Resources may also be stopped individually from the resource itself).

4. Paste

A powerful feature used along with the Copy feature to quickly replicate Resources.

5. Disable

Disables the Device Platform.

6. Upgrade Version

Device firmware may be upgraded from here.

1.8.2 Resource Menu & Tool Bar

Resource operations are available on both the Right Click menu and the Tool Bar, Figure 1-6.



Figure 1-6: Resource Right Click Menu & Tool Bar

1. Start

Starts the associated sessions and streams created on the selected resource.

2. Preview

Displays a 5 frames/sec video window for verification of the resource presence and quality.

3. Delete

Deletes the selected Resource

4. Copy

A powerful feature used along with the Paste feature to quickly replicate Resources. Will copy all streams created on the selected resource.

5. Paste

A powerful feature used along with the Copy feature to quickly replicate Streams, Sessions and Publishes.

6. Settings

A shortcut to basic Info tab.

7. New Adaptive Session

Used to create a new Adaptive session. Multiple sessions may exist on any single Resource.

8. New SPTS Stream

Used to create SPTS streams for IPTV applications.

1.9 Copy & Paste

This section shows a few examples of copying and pasting to replicate Streams, Sessions and Publish Points in the Tree View. Once a Resource and it's related Sessions, Streams and Publishes are defined, the Sessions, Streams and Publishes may be replicated any number of times in any location in the Tree View. All pasted objects represent exact images of the copied source and will require some editing to avoid duplication within the Device. The process is the same for all Copy & Paste operations whether Sessions, Streams or Publish Points are being copied.



NOTE It is not possible to rename a Resource once it is created so it is not highly recommended to use this feature to replicate Resources. The Copy & Paste feature was intended to replicate Streams, Sessions and Publish Points only. Copying a Resource will result in the Resource Name being appended with a sequential number to ensure it is unique.

1.9.1 Copy & Paste Sessions

- 1. Create the Donor Resource with a Session and Publish Points that it is desired to replicate, Figure 1-7.
- 2. Create a Recipient Resource or multiple Resources that will have Sessions copied to them.

Ver Mai	sAtive nagement s Gr
se	arch here
⊟″⊗	General
E	Device
ĺ	Ethernet-239.100.254.1-8000_CNNHD
I	Comedy H264
I	Stream-480x320
	Publish-SPTS
	2CE_SDI-1-SDI
	Ethernet-239.100.254.2-8000
	Ethernet-239.100.254.6-8000
	9

Figure 1-7: Create Donor Resource

3. Right click the **Session** on the **Donor** Resource and select Copy from the menu, Figure 1-8.

VersAtive Management
÷ 1113
search here
🖃 🍥 General
Device
Ethernet-239.100.254.1-8000_CNNHD
Adaptive Session
E St 🗙 Delete
🤍 🔓 Copy (3)
2CE_SDI
Ethernet-239.100.254.2-8000
Ethernet-239.100.254.6-8000
Figure 1-8: Select Copy

4. Right click the Recipient Resource and select Paste from the menu, Figure 1-9.



Figure 1-9: Select Paste

5. An exact copy of the session is replicated on the new Resource, Figure 1-10.



Figure 1-10: SessionReplicated



NOTE The replicated Session will have identical properties to the copied Session so conflicting properties must be edited manually before the session may be streamed.

- 6. Click to select the **Session** in the Tree View then rename the Session to a meaningful name such as the service name, Figure 1-11.
- 7. Click Save to save the new session name in Tree View.



Figure 1-11: Copied Session Renamed

- 8. Click the Stream in Tree View to open the stream parameters window, Figure 1-12.
- 9. Edit Video, Audio & Video Pre-processing Parameters as required.
- 10. Click Save to save and add the session to the Tree View.

VersAtive	📲 Settings and Info	o. 📫 Monitoring 📑 Devic	e	
Management	×	+		
¢ vms ⊡+	Delete Stream Ne	w Publish		
search here Q ⊡ [®] ⊗ General ⊡ [®] Device	Codec: H264 Fr	Session Param ame Rate(fps): Use Original Top Field I	eters First: Auto Keyframe Durat	tion(sec): 2 De-Interlace: none
Ethernet-239.100.254.1-8000_CNNHD	Edit Adaptive S	Stream		
Comedy_H264	Name	Stream-480x320		
	Use Audio	V		
	Codec	AAC	AC3 Pass Through	Image: Contract of the second seco
Ethernet-239.100.254.2-8000	Bit Rate (kbps)	40	Sample Rate (Hz)	48000 💌
Comedy_H264	Delay (msec)	0	Channels	2
🖃 🗈 Stream-480x320 🔞				
Publish-SPTS	Use Video		9	
Ethernet-239.100.254.6-8000	Codec Profile	Main	Codec Speed	Very Fast
	Bit Rate (kbps)	450	VBR	
		Main	Cabac	V
	Video Pre-proccess	ing Parameters		
	Resolution	480×320 -	Aspect Ratio	Use Original 🔹
	Left	N Right	Тор	Bottom (D) Cancel Save

Figure 1-12: Update Copied Stream Parameters

- 11. Click the **Publish** in the Tree View to open the Publish parameters window, Figure 1-13.
- 12. Next, **Tick** the box of the **Connection** to be edited.
- 13. Click Edit to enable changing the IP address.
- 14. Next, Edit the IP address to the correct value for this publish.
- 15. Click **Apply** to apply the change to the connection.
- 16. Click Save to save the changes.

ice	Edit Publish					
Ethernet-239.100.254.1-8000_CNNHD	Name	Publish	-SPTS	Connections		
Comedy_H264		SPTS		Interface	URL	Auth.
E Stream-480x320				eth1	UDP://239.1.1.1:8000	no
Vublish-SPTS	With CC		<u>v</u>			
2CE_SDI-1-SDI		671	🛛 🗷 Automatic 🚯			
Ethernet-239.100.254.2-8000	Program Nº 2308	1			Delete	Edit
Comedy_H264	PCR PID 49	49		Edit Connection		
- Stream-480x320	PMT PID 48	48		Protocol	UDP	•
even Publish-SPTS		51	A	URL	(4) 239.1.1.1	
Ethernet-239.100.254.6-8000	Audio PID 50	50		Port	8000	
	Video PID 49	19		Interface	eth1: 192.168.10.1	-
	100011010	42	U	Multicast 🗵	Cancel	Apply
					_	
					Cancel	Save 🤇

Figure 1-13: Update Copied Publish Parameters

GENERAL (GLOBAL) CONFIGURATION

2. General (Global) Configuration

General level configuration represents the Platform Global settings. This is the top level of the Tree View of the Device and includes the categories of Firmware Upgrades, NTP, User Management, SNMP & Licencing.

To configure Global Platform settings:

- 1. Click the General icon at the top level of Tree View, Figure 2-1.
- 2. Tabs are then presented in the Pane View for specific system configuration.



Figure 2-1: General Configuration Tabs

2.1 Chapter Contents

- "Firmware Upgrade"
- "System Time"
- "User Management"
- "Licence"
- "SNMP"

2.2 Firmware Upgrade

Firmware upgrades, when available, are obtained from ATX Networks Technical Support group. Obtain the file and save it to your Management Computer before beginning this upgrade.



Warning Before proceeding, you must stop any configured streams before upgrading the Device.

2.2.1 Upgrade Procedure

- 1. Login to the system to be upgraded.
- 2. Click on the General icon in Tree View, Figure 2-2.
- The Settings & Info upper level tab and the Products Upgrade sub-tab will be selected by default, Figure 2-2. The
 page shows saved firmware versions, allows reinstalling previous versions or deletion of versions no longer needed.
 A pin icon on the right marks the currently installed version.



Figure 2-2: Upload Version

- 3. Click Upload Version on the Tool Bar.
- 4. In the Dialog box that opens, click Choose File then browse to locate the file stored on your computer, Figure 2-3.
- 5. Click Upload to begin the process.



Figure 2-3: Select File

When the upload is complete, the new version will be listed below any previous versions, Figure 2-4.

ve	ersa	tive Standalone			
		Version	File Name	Release Date	Current
	\bigcirc	VA1.0.2.34_VMS1.0.2.653	VAStandaloneInstall_VA1.0.2.34_VMS1.0.2.6 53.tar.gz	08.12.14	
	\bigcirc	VA1.0.3.60_VMS1.0.3.675	VAStandaloneInstall_VA1.0.3.60_VMS1.0.3.6 75.tar.gz	05.01.15	у Р
	۲	VA1.0.3.67_VMS1.0.3.677	VAStandaloneInstall_VA1.0.3.67_VMS1.0.3.6 77.tar.gz	14.01.15	

Figure 2-4: New Uploaded Version

- 6. Click the selector **Button** to select the firmware you just uploaded, Figure 2-5.
- 7. Click Install Version.

VersA	tive Standalone			
	Version	File Name	Release Date	Current
\odot	VA1.0.2.34_VMS1.0.2.653	VAStandaloneInstall_VA1.0.2.34_VMS1.0.2.6 53.tar.gz	08.12.14	
•	VA1.0.3.60_VMS1.0.3.675	VAStandaloneInstall_VA1.0.3.60_VMS1.0.3.6 75.tar.gz	05.01.15	х Р
6)•	VA1.0.3.67_VMS1.0.3.677	VAStandaloneInstall_VA1.0.3.67_VMS1.0.3.6 77.tar.gz	14.01.15	

Figure 2-5: Install Version

The firmware upgrade process will begin and a progress screen is presented, Figure 2-6.

]
Software End User Licence Agreement	
Redistribution or Rental Not Permitted These Terms apply to the Versichte Software (the "Product"). BY CLICKING THE ACCEPTANCE BUTTON OR INSTALLING OR USING THE PRODUCT THE INDIVIDUAL OR ENTITY LICENSIES THE PRODUCT ("LICENSEE") IS CONSENTING TO BE BOUND BY AND IS BECOMING A PARTY TO THIS AGREEMENT. IF LICENSEE DOES NOT AGREE TO ALL OF THE TERMS OF THIS AGREEMENT, THE BUTTON INDICATING NON-ACCEPTANCE MUST BE SELECTED, AND LICENSEE MUST NOT INSTALL OR USE THE SOFTWARE.	
1. Licence Agreement. In this Agreement "Licensor" shall mean ATX Networks except under the following circumstances: (a) if Licensee acquired the Product as a bundled component of a third party product or service, then such third party shall be Licensor, and (b) if any third party software is included as part of the default installation and no licence is presented for acceptance the first time that third party software is included as part of the default installation and no licence is presented for acceptance the first time that third party software is included and party software shall be governed by this Agreement, but the term 'Licensor', with respect to such third party software is moviace, there are a software and not the Licence agreement is presented for acceptance the first time that the direct party software is invoked, is included in and not by this Agreement, whether that licence agreement is and not by the acceptance the first time that the third party software is invoked, is included in a file in electronic form, or is included in the package in presented form. If more than one licence agreement available for review on the Licensor vebsite, a printed or electronic agreement is as follows: a signed agreement, a licence agreement evolve on the Product, and the Product agreement that states clearly that it supersedes other agreements.	
2. Licensee Grant Licensor grants Licensee a non-exclusive and non-transferable licence to reproduce and use for personal or internal business purposes the executable code version of the Product, provided any copy must contain all of the original proprietary notices. This licence does not entitle Licensee to receive from the Licensor hard-copy documentation, lechnical support, lelephone assistance or enhancements or updates to the Product. Licensee may not redistinuite the Product unless Licensee has separately entered into a distinuition agreement with the Licensor.	
Soon, the St I Agree	

Figure 2-7: Accept SEULA Agreement

- 8. Click the I Agree box.
- 9. Click Accept.

Login to the GUI and check that the firmware is installed. The pin icon identifies the firmware just installed, Figure 2-8.

VA1.0.2.34_VMS1.0.2.653 VAStandaloneinstall_VA1.0.2.34_VMS1.0.2.6 53tar.gz VA1.0.3.60_VMS1.0.3.675 75 tar.gz 0.0000000000000000000000000000000000	
VA1.0.3.60_VMS1.0.3.675 VAStandaloneInstall_VA1.0.3.60_VMS1.0.3.6 05.01.15	
VA1.0.3.67_VMS1.0.3.677 VAStandaloneinstall_VA1.0.3.67_VMS1.0.3.6 14.01.15	se la companya de la companya

Figure 2-8: New Version is Now Current

2.3 System Time

System time is set by default to be automatically updated by an internally defined NTP server. This setting may be changed to setting the time and date manually or an alternate NTP server may be specified.

2.3.1 Change Time Zone & NTP Server

- 1. Click General Icon at top of Tree View.
- 2. Click System Time tab, Figure 2-9.
- 3. Select the appropriate **Time Zone** from the dropdown menu.
- 4. Click the adjacent Apply button.
- 5. Enter the IP Address of the desired NTP server (do not enter the URL)
- 6. Click the adjacent **Apply** button.

VersAtive Management	Seneral
¢vms G→	🖏 Settings and Info. 📫 Monitoring 📟 Device
search here	Restart VMS Application Products Upgrade System Time Management SNMP License
Device	Server IP: 129.6.15.30
Proporté	© Set Time Manually
	Time ↓ ↑ :↓ ↑ Current: 16:58
Property	Day 2 V Month 4 Vear 2015 V
	Арру
	Time Zone GMT-05:00 America/Tord Canada) Apply

Figure 2-9: NTP Time Server Configuration



Note While it is possible to manually change the date on the System, do so with the caution that Licensing may be adversely affected. This is to ensure that dates are not changed to defeat licence expiry dates. Contact ATX Networks Technical Support if the date on the System needs to be manually changed.

2.4 User Management

A single user is defined by default but users may be added or managed as required. Further, Radius authentication may be implemented.

2.4.1 GUI Authentication

Add User

1. Click **General** Icon at top of Tree View to select it, Figure 2-10.



Figure 2-10: Add New User

- 2. Click the User Management tab.
- 3. Click New.
- 4. Enter Username for new user, Figure 2-11 (a user's actual name may also be entered, optional).
- 5. Select the Access Level for new user.
- 6. Enter Password for new user (password will be masked by default).
- 7. Click abc to show password momentarily.
- 8. Click Save.

New User	×
Username 🗿	Engineering1
First Name	Engineering
Last Name	Employee
Access Level	Administrator
Password 6	12345
Confirm Password	
	C8 Save

Figure 2-11: New User Configuration

2.4.2 Radius Server Authentication

- 1. Click **General** Icon at top of Tree View to select it, Figure 2-12.
- 2. Click the User Management tab.
- 3. Select Radius Server from the menu.
- 4. Enter the appropriate information and choose the Radius Authentication Type from the drop down menu.
- 5. Click Save.



Figure 2-12: Radius Configuration

2.5 Licence

This page is for information only and displays the licence level installed on the platform. Licences may be updated with a licence file.



Figure 2-13: Licence Page

2.5.1 Licence Update

The licence on the machine may be updated from a file provided by ATX Networks and this needs to be obtained and stored on the management computer first.

Procedure

- 1. In the Tree View, click the **General** icon to select it, Figure 2-14.
- 2. Click Licence Update on the Tool Bar.



Figure 2-14: Licence Update

- 3. Click Browse to locate the file on the management computer, Figure 2-15.
- 4. Select the file with the explorer window.
- 5. Click Open.
- 6. Click Upload.
- The licence file is uploaded and updated.

Eile Lipland		23	
Color Desktop	✓ 4y Search Desktop	٩	
Organize - New folder	•= ₩= ▼		⊽ C Q, ui
🚖 Favorites	Libraries System Folder	A II	
 Libraries Documents Downloads 	Homegroup System Folder		evice
E Pictures	Steve System Folder	Ŧ	VMS License Update ×
18 items	▼ € [III	F	Browse
File name:		▼ ncel	STANDAL anent Ojoad Cancel

Figure 2-15: Upload Licence File

2.6 SNMP

The platform may be configured to sent SNMP traps to a remote SNMP manager. At this time, the Port is fixed at **162** which is the well known port for SNMP and community is **Public**.

2.6.1 Add SNMP Remote Manager

Multiple SNMP managers may be added to receive traps.

- 1. Click General Icon at top of Tree View to select it, Figure 2-16.
- 2. Click the SNMP tab.
- 3. Enter the IP Address of the remote SNMP manager.
- 4. Click Add IP button to add this IP address to the list.

E 🛞 General	Application			
Device	Products Upgrade	System Time	User Management	SNMP
 MUX3 MUX4 MUX3_1 Ethernet-239.90.1.1-5000 Program4 Program 5 Program 1 	SNMP Version Trap Port Trap Commun Add IP Remove	SNMPv2c 162 ity public	×	۷
	Download MIBs		Save	

Figure 2-16: Add SNMP Manager

- 5. Click **Save** to apply the changes.
- Repeat to add more SNMP Managers.

2.6.2 Download and Compile the MIB

The MIB will need to be compiled to the SNMP Manager and it is stored locally on the Device hard drive. It may be obtained from the link on the SNMP tab.

- 1. Click General Icon at top of Tree View to select it, Figure 2-17.
- 2. Click the **SNMP** tab.
- 3. Click the link **Download MIBs**.
- 4. Open the downloaded zip file with any zip file client.
- 5. Extract the two .txt files and compile the files into the SNMP Manager.

E 🛞 General	Application			<u> </u>
Device	Products Upgrade	System Time	User Management	SNMP 🕗 ise
 ➡ MUX3 ➡ MUX4 	SNMP Version	SNMPv2c	-	
⊕ ⇒- MUX3_1	Trap Port	162		
Ethernet-239.90.1.1-5000	Trap Communit	/ public		
Program4	Add IP			
Program 5	Remove		*	
Program1				
	Download MIBs	L	Save	

Figure 2-17: Download MIB

2.6.3 System Traps

The traps listed in Table 2.6a are sent by the system to the remote SNMP Managers.

Table 2.6a: System Traps

Trap Name	Description	
vmsVersionSupportTrap	"Error: This trap appears when VMS version doesn't support the version of the VersAtive "	
vmsLicenseUpdateTrap	This trap can be an error or info Error trap appears when the license update fails Info trap appears when the license is updated successfully.	
vmsLicenseExpirationTrap	"This trap can be an error or a warning Error trap appears when the license is expired. - Warning trap starts to appear 7 days before the VMS license expires. "	
VMS DB Traps		
treeEditTrap	This trap can be an error, info or edit. This trap appears when the user edits the VMS tree	
treeEnableTrap	"This trap appears when the user enables/disables the tree in the VMS. "	
mysqlUnusedTablesDeletedTrap	"This trap appears when one of the unused tables was deleted from MySQL. "	
userAddTrap	"This trap appears when a new user is added to VMS successfully. "	
userDeleteTrap	"This trap appears when a user is deleted from VMS successfully. "	
userUpdateTrap	"This trap appears when the user is updated in the VMS. Update can be in the user nan password or permissions."	
userLoginTrap	"This trap appears in two situations: When the user logs in to the VMS successfully unsuccessfully."	
userLogoutTrap "This trap appears when the user successfully logs out. "		
VersAtive Communication Traps		
versativeConnectTrap	"This trap appears when the VersAtive connects successfully to the VMS. "	
versativeTimeoutTrap	"This trap appears when there is no response from the VersAtive. "	
versativeTakenToOtherVmsTrap	"This trap appears when the VersAtive is taken to another VMS. The VersAtive becomes disabled on the current VMS. "	
versativeTakenFromOtherVmsTrap	"This trap appears when the VersAtive is taken from another VMS. The Versative becomes disabled on the other VMS. "	
VersAtive General Traps		
versativeGeneralExternTrap	"This trap appears when a non-handled by VMS event received from VersAtive. "	
versativeGeneralErrorTrap	"ERROR - This trap appears when the VMS receives a 'General Error' event from the VersAtive."	
versativeSwUpgradeTrap	"This trap appears when the Versative software is upgraded. This trap can be an error or info. The error indicates that the software upgrade failed. "	
versativeSetConfigurationTrap	"This trap appears when the VersAtive configuration is set successfully or unsuccessfully. This trap is only info. There are two messages: 'Configuration set Successfully' or 'Failed to Set Configuration' "	
versativeVersionTrap	"This trap appears when the VMS performs sync with VersAtive, and VersAtive Version is Changed. This trap can be error or info Info: VersAtive Version OK Error: VersAtive Runs NOT Supported Version. "	
versativeDuplicateHostidTrap	This trap appears when two VersAtive machines has the same Host ID.	
VersAtive Streaming Traps		

Trap Name	Description
versativeFrameRateDropTrap	"Frame Rate dropped to more then 10% from configuration. "
versativeResourceStartTrap	"This trap appears when the Resource Starts playing. This trap can be either an Error or Info Error: says that the Resource failed to start and the reason for the failure Info: says that the resource is started. "
versativeResourceStopTrap	"This trap appears when the resource stops playing. This trap can be either an Error or Info Error: says that the resource failed to stop and the reason for it Info: says that the resource is stopped. "
versativeDeleteSessionErrorTrap	"This trap appears when the Versative fails to delete a session XML file. This trap can be only an Error. "
versativeTsAnalyzeErrorTrap	"This trap appears when the VersAtive fails to analyze a transport stream. This trap can only be an error. "
versativePipelineEventTrap	"This trap appears when the VersAtive has a problem with the pipeline and cannot start playing. This trap can only be an error. "
versativeMonitorSignalStateTrap	"This trap appears when the VersAtive doesn't detect a video signal. This trap can only be an error. The message says that the VersAtive can not detect a video signal. "
versativeMonitorConnectionErrorTrap	"This trap appears when the VersAtive has no connection to publish point or VersAtive cannot publish the stream. This trap can be only an Error."
versativeMonitorResourceStatusTrap	"This trap appears when there is no input for the resource and the VersAtive retries to connect. This trap can be a warning or info Warning: indicates the name of the resource and that the VersAtive is retrying Info: indicates the name of the resource and that the streaming is OK. "
versativeResourceRedundancyStopTrap	"This trap appears when no redundancy for the resource is found. This trap can only be an error. The message indicates that the resource is stopped and that no backup for the resource is found. "
versativeResourceRedundancySwitchTrap	"This trap appears when the resource redundancy switched to backup. This trap can only be a warning. The message says that the Resource switched to the backup resource."
versaFtiveNoSignalTrap	"This trap appears there is no signal at the input side - Only for encoding. "
versativeInternalDataFlowErrorTrap	"This trap appears when the VersAtive has a problem with internal data flow. This trap can only be an Error. "
versativeFailToOpenAudioDeviceTrap	"This trap appears when audio device cannot be open - Only for encoding. "
versativeDataTimeoutTrap	"This trap appears when the Resource receive Input Data timeout. "
versativeStreamEndedTrap	"This trap appears when Stream is close due to an internal server error. "
versativeFailedToConnectToDrmSrvrTrap	"This trap appears when the VersAtive fails to connect to the DRM server. "
versativeProgressReportTrap	"This trap is holding progress of offline transcoding. "
versativeVideoBitrateTrap	"This trap appears when the video bit rate changes in the monitor of the resource. "
versativeFramerateTrap	"This trap appears when the video frame rate changes in the monitor of the resource. "
versativeFrameDropTrap	"This trap appears when the video frame rate drops in the monitor of the resource. "
versativeAudioBitrateTrap	"This trap appears when the audio bit rate changes in the monitor of the resource. "
versativeConnectToPublishServerTrap	No Description available.
versativeSrcInputTimedOutTrap	"This trap appears when the source has a data timeout "
versativeMissingPtsDataTrap	"This trap appears when there is no PTS in PES header. "

Trap Name	Description	
versativeRolloverTrap	"This trap appears when PTS of elementary streams overlaps. "	
versativePtsDiscontinuityTrap	"This trap appears when the program time stamp is changed. this can happen when the transport stream changes. "	
versativeCantRecordAudioFastEnoughTrap	"This trap appears when the VersAtive can't record audio fast enough. "	
versativeFailToStartRtmpServerTrap	"This trap appears when the VersAtive fails to connect to the RTMP server. "	
versativeOvfFifoSizeTrap	"This event appears when the SPTS MUX gets overflowed. "	
versativeAc3AudioChangedTrap	"This trap appears when the AC3 audio changes. "	
versativeDelayCalculationTrap	"This trap appears when the multiplexer loses sync. "	
versativeAliveAfterEosTrap	"This trap appears when file transcoding is almost complete - Offline. "	
versativeNoInputDataTrap	"This trap appears when no input data for the resource is detected. "	
versativeExternalStopSignalReceivedTrap	"This trap appears when User initiates 'stop resource'. "	
versativeEvntPsiMonitoringTrap	"This trap appears when there is a PSI change at the input. "	
versativeEvntCcErrorTrap	"This trap appears when the resource has a continuity count error. "	
versativeCapcardInputChangedTrap	"This trap appears when the capture card format changes. "	
versativeMcEncValidationErrorTrap	This trap appears when there is an MPEG2 configuration error. This trap can only be an Error.	
versativeClosingConnectionsTrap	"This trap appears when the VersAtive closes all the streams. "	
versativeFailedToPutFileTrap	This trap appears when an HLS or RTMP stream fails to publish.	
versativeSignalDetectedTrap	"This trap appears when a signal for resource is detected. "	
versativeReconnectTrap	"This trap appears when the VersAtive reconnects successfully to RTMP server. "	
versativePipeEvntNoUdpInput	"This trap appears when there is no UPD input for the pipeline. "	
VersAtive Hardware Traps		
versativeMonitorCpuHeatTrap	"This trap appears when the CPU heat nears it's maximum operation temperature. This trap can be an error or info Info message indicates that the CPU heat is at 70C degrees Error message indicates that the CPU heat is at 75C degrees. "	
versativeMonitorCpuLoadTrap	"This trap appear when the CPU usage nears it's maximum capacity. This trap can an error or info Info message indicates that the CPU usage is at 75 percent Er message indicates that the CPU usage is at 85 percent. "	
versativeMonitorMemoryUsageTrap	"This trap appears when the memory usage nears it's maximum capacity. This trap can be an error or info Info message indicates that the memory usage is at 85 percent Error message indicates that the memory usage is at 92 percent. "	
versativeMonitorEthLimitTrap	"This trap appears when the Ethernet card nears it's maximum capacity. This trap can be an error or info Info message indicates that the Ethernet card is at 80 percent of it's capacity Error message indicates that the Ethernet card is at 90 percent of it's capacity."	
versativeMonitorDemodStatusTrap	This trap shows the status of the demod card (enabled/disabled or locked/not locked). This trap can be an error or info Error message indicates that the demod card is not locked Info message indicates that the demod card is locked, enabled or disabled.	

Trap Name	Description		
VersAtive MPTS MUX and MQAM Traps			
versativeMuxStartTrap	"This trap appears when the mux is started. This trap can be an error or info Error message indicates that the mux didn't start Info message indicates that the mux started successfully. "		
versativeMuxStopTrap	"This trap appears when the mux is stopped. This trap can be an error or info. Error message indicates that the mux didn't stop. Info message indicates that the mux stopped successfully. "		
versativeMuxMonitorTrap	"This trap appears when the mux monitor sends a trap. This trap can be an error or info Error message indicates that multiplexer monitor received time-out Info message indicates that the mux monitoring is OK. "		
versativeMuxStillNoTsTrap	"Not Used. "		
versativeMuxEventLostTsTrap	"This trap appears when the input transport stream for the mux is lost. "		
versativeMuxEventBitrateMismatchTrap	"This trap appears when the output bit rate is less than the sum of input bit rates. This trap can only be an Error. "		
versativeMqamSyncErrorTrap	"This trap appears when MQAM receives an error. This trap can only be Error. "		

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DEVICE CONFIGURATION

3. Device Configuration

Device Configuration centers on setting up the input and output interfaces of the hardware platform.

3.1 Chapter Contents

- "Basic Information"
- "Ethernet Network Settings"
- "Capture/Demod Cards"
- "Licence Information"
- "QAM Output Devices"

3.2 Basic Information

This tab specifies the actual hardware model such as VersAtivePro, DigiVu II or DigiVu II Micro. This model number/name is shown on the Basic Info tab, Figure 3-1.

VersAtive	🎯 General 🕨 🔋 Device
¢ vms G→	🏁 Settings and Info. 📫 Monitoring 🛛 🖼 Device 🚽
search here	+ + X Add Resource Add MPTS Restart VersAtive multiplexer
General Device	Basic Info Ethernet Cards Capture/Demod Cards Lice
Ethernet-239.90.1.1-5000	Version VersAtivePro Type 1.0.3.103 Small
2CE_SDI-1-SDI	Name Device
	Save

Figure 3-1: Basic Info Page

3.3 Ethernet Network Settings

The Management Port IP address and Streaming Port addresses are defined on the Ethernet Cards tab. There may be more or less Ethernet ports depending on the model and there may even be Virtual ports if a VLAN has previously been defined.



NOTE Changes to the Management Port address will result in a platform reboot. You will need to login on the new IP address.

Change an ETH Port Address

- 1. Click on the **Device** icon to select it, Figure 3-2.
- 2. Select Settings and Info tab.
- 3. Select Ethernet Cards tab.
- 4. Select the **Pencil Icon** for the ETH port to be changed.
- 5. Edit settings as required.
- 6. Click **Save** to apply the changes.

VersAtive	ATX	🎯 General 🕨 🚺 Dig	ai∕ull_MQAM				Sever clea
⇔ vms	G	3 Settings and Info	. OMnitoring	E Device			
search here	٩	+ Add Resource	+ + Add MPTS Add V-L	AN Restart VersA	tive		
Device		Basic Info Etherne DNS Server	t Cards 3 re/Demo	d Cards License Info	mation QAM Ou	tput Devices	
			eth0			eth1	
	IP Address MAC Subnet Mask Gateway Duplex Speed State	10 1 0 34 0C:C4:7A:09 EF:94 255 252 0 10 50 1 1 Full 1000 1 1 1 1	(default)	IP Address MAC Subnet Mask Gateway Duplex Speed State	10 0 0 100 00:04/7A/09:EF 95 255 255 0 255 255 55 0 Full 1000 1/100 Irue 1/100 1/100) C (default)	
			eth2	Mana	igement Interface:	eth0 change 6	Save

Figure 3-2: Configure Network Settings

3.3.1 Create a VLAN

NOTE For more about management network VLANs, see "VLAN TAGGING" on page 12-1.

3.3.2 Change the Default Management Port ETH0

The Management Port may be set to a different physical port than the default ETH0. It may also be set to a VLAN port that has previously been defined. The current management port is shown at the bottom of the Settings and Info tab, Figure 3-3.

Change the Management Port Assignment

- 1. Click on the **Device** icon to select it, Figure 3-3.
- 2. Select Settings and Info tab.
- 3. Select Ethernet Cards tab.
- 4. Click Management Interface: eth0 change link.

VersAtive Management	ATX Seneral > 1	Digi/ull_MQAM				Ser Cl	enty St Sar k
¢ vms	GO Settings and	Info. 📫 Monitoring 🛤	Device				
search here	Add Resource	+ + Add MPTS Add V-LAN	× Restart Ven	sAtive			
I Device	Basic Info Eth DNS Server	ernet Cards 3 ure/Demod	Cards License Inf	formation Co Man is	agement Port shown here		
		eth0	1		eth1		
	IP Address MAC Subnet Mas Gateway Duplex Speed State	10 .1 .0 .34 10:::04:7A:09:EF:94 .255:.255:.0 .0 10:::1::00::1 .1 .0 .1 Full .000 .000 .000 frue .000 .000 .000	C (default)	IP Address MAC Subnet Mask Gateway Duplex Speed State	10 0 .100 0C:C4.72 EEF.95 .255 .0 255 .25 .255 .0 Full 1000	C (default)	
	IP Address MAC	eth4 172 . 168 . 4 . 23		Management Inte	eth5 erface: eth0 change		Save

Figure 3-3: Configure Management Port

5. In the dialog that opens, select the physical or VLAN port, Figure 3-4.



Figure 3-4: Select Port

6. Click **Set** to select the chosen interface, Figure 3-5.

Change Ma	nagement Interface	×
Managment Interface:	eth0: 10.1.0.34	•
	Cancel	1 6

Figure 3-5: Click Set

7. Click Save to apply the changes and return to the GUI, Figure 3-6.



Figure 3-6: Click Save

3.3.3 Configure a DNS Server

A DNS server will be required only if a Publish URL (HLS or Flash) is entered on the platform needing to be resolved.

Set DNS Server

- 1. Click on the **Device** icon to select it, Figure 3-7.
- 2. Select Settings and Info tab.
- 3. Select Ethernet Cards tab.
- 4. Enter the IP Address of the DNS server.
- 5. Click Save.

VersAtive	🎯 General 🕨 📘 Di	gi∨ull_MQAM				Severity Clear idle
¢ vms G•	2 Settings and Info	o. 📫 Monitoring 🔤 [Device			
search here	+ Add Resource	+ + Add MPTS Add V-LAN	× Restart Ve	rsAtive		
General	Basic Info Etherne	et Cards	ards License I	nformation QAM Ou	utput Devices	
		eth0			eth1	
	IP Address MAC Subnet Mask Gateway Duplex Speed State	10 . 0 .34 0C:C47A:09:EF:94	(default)	IP Address MAC Subnet Mask Gateway Duplex Speed State	10 0 0 100 0C:C47A.09.EF 95 255 255 0 255 255 255 0 Full . . . 1000 . . .) C (defaul)
	IP Address	eth4		Management Inte	eth5 rface: eth0 change	Save
				1 11010		

Figure 3-7: Configure DNS Server

3.4 Capture/Demod Cards

View installed Demodulator and Capture cards in platform.

VersAtive	Seneral ▶ 🚦 Device
¢ vms G→	Settings and Info.
search here	Add Resource Add MPTS Restart VersAtive multiplexer
General Device Image: Bit	Basic Info Ethernet Cards License Information QAM Output Devices Capture Cards 2CE_SDI 1 Demod Cards Image: Capture Cards found ATX Capture Cards No atx-capture cards found Image: Capture Cards found Image: Capture Cards found

Figure 3-8: Platform Interface Cards

3.5 Licence Information

This tab displays installed encoding licences.

Vars Ativa	General M Bovice
Management	
¢vms G→	Settings and Info. 📫 Monitoring 🗳 Device
search here	+ + • • • ×
	multiplexer
🖃 🎯 General	
🖃 🚦 Device	Basic Info Ethernet Cards Capture/Demod Cards License Information
Ethernet-239.90.1.1-5000	Host Id Serial Id
中 🛃 Program9	0CC47A09EF94 none
🛨 💺 2CE_SDI-1-SDI	Licenses Description:
	Feature Expires Amount Availability
	AAC 1 Unlimited
	General License 1 Unlimited
	AC3 1 Unlimited
	HD 1 Unlimited

Figure 3-9: Platform Encoding Licences

3.6 QAM Output Devices

This page allows configuration of QAM modulator for QAM output models.

VersAtive	🥘 General 🕨 🔋 DigiVull_MQAM						Severity St clear id	ate Br Ne 3
Wanagement	🧮 Settings and Info. 🛛 🛤 Mor	nitoring 🛛 🖾 Device						
search here	+ +	+ + x						
	Add Resource Add MPTS multiplexer	Restart VersAtive						
E W General	Basic Info Ethernet Cards C	apture/Demod Cards	ense Information	QAM Output De	vices			
	PINF							
	Serial Number: MQ153	3600607 FW Version:	2.0-0.17-1.0					
	Group 1				-			05.1
239 100 254 2 P8000	Frequency (KHz)	400000	Enable	Name	(KHz)	Standard	QAM Mode	(dBm/ch
	Modulation Standard	j83-annex-b	•	PINF-ch1	400000	j83-annex-b	256	-6
	QAM Mode	256 -	V	PINF-ch2	406000	j83-annex-b	256	-6
	DE Louis (dDm(ab)	6		PINF-ch3	412000	j83-annex-b	256	-6
	RF Lever (ubili/cit)					100	250	-6
	RP Level (ubliviti)		9	PINF-ch4	418000	J83-annex-b	250	
	Group 2			PINF-ch4	418000	J83-annex-b	200	
	Group 2 Frequency (KHz)	622000	Enable	PINF-ch4 Name	418000 Frequency (KHz)	Modulation Standard	QAM Mode	RF Leve (dBm/cf
	Group 2 Frequency (KHz) Modulation Standard	622000	Enable F	PINF-ch4 Name PINF-ch5	418000 Frequency (KHz) 622000	Modulation Standard	QAM Mode 256	RF Leve (dBm/cl
	Group 2 Frequency (KHz) Modulation Standard QAM Mode	622000 1 [83-annex-b	Enable T	PINF-ch4 Name PINF-ch5 PINF-ch6	418000 Frequency (KHz) 622000 628000	J83-annex-b Modulation Standard J83-annex-b J83-annex-b	236 QAM Mode 256 256	RF Leve (dBm/ct -6 -6
	Group 2 Frequency (KHz) Modulation Standard QAM Mode RF Level (dBm/ch)	622000 1 [83-annex.b 256 ▼	Enable F F	PINF-ch4 Name PINF-ch5 PINF-ch6 PINF-ch7	418000 Frequency (KHz) 622000 628000 634000	J83-annex-b Modulation Standard J83-annex-b J83-annex-b J83-annex-b	QAM Mode 256 256 256	RF Leve (dBm/ct -6 -6

Figure 3-10: QAM Output Configuration Page

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ENCODING APPLICATION

4. Encoding Application

This chapter describes setting up a Source Capture Card to ingest and encode live Analog or SDI video and/or audio for SPTS and Adaptive encoding applications.

4.1 Chapter Contents

- "Capture Card Resources"
- "SPTS Encoding Application"
- "Adaptive Encoding Application"
- "Start the Encoding Process"

4.2 Capture Card Resources

A Capture Card Resource is an input to the platform which exists on one of the physical analog card interfaces as analog or SDI content. These resources are used as source content for subsequent encoding.

4.2.1 Capture Card Audio Options

This section outlines multi-channel mapping options. For content derived from baseband input cards such as HD-SDI and SD-SDI, embedded audio programs are handled differently depending on the audio port selected when creating a resource so it is important to make the correct selection since this cannot be changed afterward. If an incorrect selection is made, delete the resource and re-create it. See the following tables for audio channel processing for each audio port selection.



Note: Currently, in this firmware release, the 16 embedded channels cannot be fully utilized for either of the 16 channel selections. It is recommended that only the 8 channel selections be used for either Dolby Digital 5.1 encoding or for multi-language support.



Note: Currently, in this firmware release, for 'Embedded 8 ch' selection (not 'Embedded ML 8ch'), embedded channels 7 and 8 cannot be utilized even if they appear on the input program. For the 'Embedded 8ch' selection, it is assumed that the input conforms to the industry recognized standard channel plan shown in *Table 4.2c* for Dolby Digital 5.1 encoding.

Selection	Audio Channels	Description
Embedded 2ch	2 (single Stereo)	Used to ingest audio that is a single stereo program. With this selection, there is support for 1 output PID.
Embedded 8ch	6 (single Dolby 5.1)	Used to ingest audio that is a Dolby Digital 5.1 source program with channels arranged in the industry standard form shown in Table 4.2c. With this selection, encoder supports 1 output PID which may be configured in Video & Audio Stream Session/Encoding Session/Advanced, as shown in Figure 1-26. Only the first 6 embedded channels may be used.
Embedded ML 8ch	8 (up to 4 stereo Multi-language)	Used to ingest up to 8 audio channels consisting of up to 4 multi-language stereo programs arranged in pairs; 1+2, 3+4, 5+6, 6+8 and as shown in Table 4.2b. With this selection there is support for up to 4 output PIDs which may be configured. Leave blank any PIDs not required.
Embedded 16ch	8 (single Dolby 5.1)	Same as 'Embedded 8ch' but 16 channels.
Embedded ML 16ch	8 (up to 4 stereo Multi-language)	Same as 'Embedded ML 8ch' but 16 channels.

Table 4.2a:	Capture Card	Audio Port	Selection	Options
10010 4.20.	ouplaid oura	Addie i oit	0010011011	optionio

Embedded Channel	Channel Content	PIDs Available
Ch 1	English Left	Audio PID #1
Ch 2	English Right	
Ch 3	French Left	Audio PID #2
Ch 4	French Right	
Ch 5	Spanish Left	Audio PID #3
Ch 6	Spanish Right	
Ch 7	Descriptive Audio Left	Audio PID #4
Ch 8	Descriptive Audio Right	

Table 4.2b: Multi-language Channels Example

Table 4.2c: Dolby Digital 5.1 Embedded Channels

Embedded Channel	Channel Content	Abbreviation	PID Available
Ch 1	Front Left	FL	Audio PID #1
Ch 2	Front Right	FR	
Ch 3	Front Center	FC	
Ch 4	Low Frequency Effects	LFE	
Ch 5	Surround Left	SL	
Ch 6	Surround Right	SR	
Ch 7			Not currently
Ch 8			available for use.

Table 4.2d: Embedded Channel Name Abbreviations

Abbreviation	Channel Content
Dis	Discard
FM	Front Mono
FL	Front Left
FR	Front Right
RC	Rear Center
RL	Rear Left
RR	Rear Right
LFE	Low Frequency Effects
FC	Front Center
FLC	Front Left Center
FRC	Front Right Center
SR	Surround Right
SL	Surround Left



Figure 1-1: Audio Channels Map
4.2.2 Create a Capture Card Resource

A Capture Card Resource is an input ingested to the Device platform using analog or digital capture cards.

- 1. Click on the **Device** in the Tree View to select it, Figure 1-2.
- Shown as **Device** here, this is a generic label but may also be VersAtivePro, DigiVu II or DigiVu II Micro to match the
 actual physical unit or it may be a name you have assigned to this Device.
- 2. Select the Capture Source tab.
- 3. Click Add Resource on the Tool Bar (or Right Click menu).



Figure 1-2: Add Capture Resource

- 4. Select Capture from the Type drop down choices, Figure 1-3.
- 5. Select Card Input Port from available choices depending on the installed cards (multi-input cards only).

Add Resource	e - General	×
Туре	capture	4.
Card	2CE_SDI 2	5.
		Next

Figure 1-3: Select Capture Resource

- 6. Give the Resource a meaningful Name, select the Video Format for the incoming video stream (must match what it actually is, not what it will be on the output as that will be set later), Figure 1-5.
- To customize the output audio channel lineup, select one of the options in the Audio Input drop down menu (Figure 1-6) then either select Customize or a known profile from the Audio Input Profile menu (Figure 1-7). In this example we select Customize to show the channel mapping procedure.
- Only in the case of selecting **Embedded 2ch** (Stereo) as the input, there is an option to specify the language descriptor; select the Audio Language from the drop down menu, Figure 1-5.

Add Resource	- TS Information
Name 🧕	SDI1_1080i_5994
Video Input	SDI
Video Format	NTSC
Audio Input	Embedded ML 8ch 💌
Audio Input Profile	Customize 🔹
	Back Next

Figure 1-4: Refine Resource Properties

Add Pasource TS Infor	mation
Add Resource - 15 mor	mauon
Name	SDI-1-1080i_5994
Video Input	SDI 🔹
Video Format	HD_1080i_5994 •
Audio Input	Embedded 2ch 🔹
Audio Map	2 Channels Stereo
Audio Language	English
	Back Add

Figure 1-5: Stereo Audio Language

Embedded 2ch
Embedded 8ch
Embedded ML 8ch
Embedded 16ch
Embedded ML 16ch

Figure 1-6: Audio Input Options

Customize
1 Channel Mono
2 Channels Stereo
3 Channels (2.1)
3 Channels (3.0)
5 Channels
6 Channels (5.1)
7 Channels
8 Channels (7.1)

Figure 1-7: Audio Input Profile

- In the audio Channel Mapping window that opens, Figure 1-8, select New once to create an audio channel which will be assigned to a PID. Select New multiple times to create the desired number of audio channels, each of which will be assigned a unique PID.
- 9. Individual output Audio Channels are created (six shown in this example but could be more or less).
- 10. Customize each channel lineup with the tick boxes and drop down menus. Ticking means the incoming channel across the top is mapped to the corresponding output, left side.
- For help with channel mapping, click the Channels Map button, (see it's position in Figure 1-8) for a display of the channel abbreviations, Figure 1-1.
- 11. When finished click Save to create the Resource with customized audio channels, Figure 1-8.

	Name	Langauge	Ch#1	Ch#2	Ch#3	Ch#4	Ch#5	Ch#6	Ch#7	Ch#8
	Layout		FL 💌	FR 💌	FC 💌	LFE	SL 💌	SR 💌	Dis. 💌	Dis. 💌
[""]	track1	English 💌	V						Dis. FM	3
	track2	English 💌		V					FL	5
	track3 😕	English 💌							RC	3
	track4	English 💌				v			RR	3
	track5	English 💌					V		LFE FC	
	track6	English 💌						V	FLC FRC	3
									SL None	

Figure 1-8: Customize Audio Channel Mapping

- 12. The Capture Card Resource is added to the Tree View, Figure 1-9.
- 13. With the Capture Card Resource selected in the previous step, Properties are displayed in adjacent window.
- 14. The 'Preview ON' tick box is selected by default. Untick the box to disable Preview for this resource only and click **Save** if a change was made.
- The Preview function requires a small amount of Device CPU cycles. If the Device is running close to 100% CPU utilization as witnessed by the Device Monitoring page, see "11.2 Monitoring the Device" on page 11-1, disabling preview can help with that condition. Each Resource Preview function must be disabled individually so click each active resource in the Tree View to access this control.
- 15. Audio Channel Mapping is displayed if it was customized.

VersAtive	🍭 General 🕨 🚺 Device	• 🚹 s	SDI-1-1080i_5	994							
¢ vms	Settings and Info.	📫 Mor	nitoring	🗏 Dev	ice						
search here	► Start 0	× Delete	+ New Ada Sessio	otive N	New SP	+ TS Stream					
General	Resource Input: S	DI-1-10	80i_5994								
🛨 💺 Ethernet-239.90.1.1-5000	Туре		Capture								
🕂 🚦 Program9	Source Name		2CE_SDI 1								
E + 2CE_SDI-1-SDI	Audio Input		Embedded I	1L 16ch							
5994 P	Audio Language		B								
	Video Input		SDI								
	Video format		HD_1080i_5	994							
	Redundancy Config	uration	none								
	Redundancy State		none								
	Preview On 🛛	4	Save								
	Audio Channel N	Aapping	g								
	Name	Langua	age Ch	#1 0	Ch#2	Ch#3	Ch#4	Ch#5	Ch#6	Ch#7	Ch#8
	Layout		F	-	FR	FC	LFE	SL	SR	Dis.	Dis.
	track1	Englis	sh 🕻	•							
	track2	Englis	sh		•						
	track3	Englis	sh			•	(b)				
	track4	Englis	sh				•				
	track5	Englis	sh					•			
	track6	Englis	sh						•		

Figure 1-9: Capture Resource Added to Tree View

4.3 SPTS Encoding Application

4.3.1 Create an SPTS Stream

Multiple SPTS Streams with different parameters may be created for the Resource by repeating these following steps.

- 1. Click to select the previously created **Resource** in the Tree View, Figure 1-10.
- 2. Select New SPTS Stream on the Tool Bar (or Right Click menu).



Figure 1-10: Add New SPTS Stream

- 3. On the page that opens, Figure 1-11, give the stream a meaningful Name such as the service name.
- 4. Edit Video, Audio & Video Pre-processing Parameters. For details, see "Session Settings" on page 6-1.

Edit SPTS Stream	l				
Name	CNN-HD				
Use Audio	V				
Codec	AAC	•	AC3 Pass Through		
Bit Rate (kbps)	40	•	Sample Rate (Hz)	48000	-
Delay (msec)	0	•	Channels	2	
Use Video	V				
Codec	H264	•	Codec Profile	Main	
Bit Rate	15000		Codec Speed	Very Fast	1
Subtitles Method	On Separate Pids	ŀ	VBR		
Keyframe Duration(sec)	2	•	Badapt	V	
		¥	No Scenecut		
Bframes	2	•	Cabac		
Video Pre-proccessing	Parameters				
Frame Rate (fps)	Use Original	-	Resolution	1920×1080	
Top Field First	Auto	•	Aspect Ratio	Use Original	
De-Interlace					
Cropping	Right		Тор	Bottom	
				Cancel Sav	e

Figure 1-11: Refine SPTS Stream Settings

5. Click Save to apply the changes and add the session to the Tree View, Figure 1-16 (1).

4.3.2 Publishing an SPTS Stream

A Publish defines the Output IP Address of the SPTS Stream. Multiple Publish Points may be created for any Stream.

- 1. Select a previously created SPTS Stream by clicking it in Tree View, Figure 1-12.
- 2. Select **New Publish** on the Tool Bar.



Figure 1-12: Add New Publish to SPTS Stream

- 3. Give the Publish a meaningful Name such as the IP Address, Figure 1-13.
- Define the Connection with IP address and port number then choose physical output Ethernet Interface(Choices available will differ between models and could include VLANs if previously created).
- 5. Tick the Multicast box if a multicast IP address was entered(default is unticked unicast).

VersAtive	Root1 🕨 🔋 VersAtive 🕨	🚦 2CE_SDI-2-SDI 🕨 🗰 CNN-HD			
¢ vms □	🤏 Settings and Info.	📫 Monitoring 🔤 Device			
search here					
General					
E Device	New Publish				
Ethernet-239.90.1.5-5000	Name 援	Publish-239.101.90.1:80	Connections		
CNNHD_SPTS	Format	SPTS •	Interface	URL	Auth.
Publish_239.101.90.1.8000			eth4	UDP://239.101.90.1:8000	no
CNNHD_Session	With CC	8		001320210130210000	110
E 2CE_SDI-1-SDI	CBR Out (kbps)	16239 🛛 🗹 Automatic 🚯			
The mets_mux_1	Program Nº	100		Delete	Eolt
E 🕴 2CE_SDI-2-SDI	PCR PID	101	Edit Connection		
CNN+HD	DMT DID	102	Protocol	UDP	
	Video DID	102	URL	239.101.90.1	_
	VIGEO PID	200	Port	8000	5
	AUDIO TRACK 1	210 🛛 🕄 🚯	Interface	eth4: 192.168.40.1	
		G	Ab diversal IV		
			Mulucase 🕅	6	Add

Figure 1-13: Refine Publish Properties

- 6. Click Add to create and add the connection to the Tree View.
- 7. Connection is created, Figure 1-14, and may be edited by selecting the adjacent tick box then click Edit.

Connections		
Interface	URL	Auth.
eth1	ODP:#239.101.90.1:8000	no
	Delete	Edit

Figure 1-14: Connection Created

- 8. After the Connection is created or edited, click **Save** to apply the changes, Figure 1-15.
- 9. The **Publish** is added to the SPTS Stream and displayed in Tree View.

VersAtive	Root1 🕨 🚺 VersAtive 🕨	🕴 2CE_SDI-2-SDI 🕨 🧰 CNN-HD 🕨 🗵 P	ublish-239.101.90.1		
¢ vms G	🦷 Settings and Info	. 📫 Monitoring 🔤 Device			
search here	X Delete Publish Nev	+ Publish			
General	Edit Publish				
Ethernet-239.90.1.5-5000	Name	Publish-239.101.90.1:80	Connections		
E 2CE_SDI-1-SDI		SPTS	Interface	URL	Auth.
PTS_MUX_1			eth1	UDP://239.101.90.1:8000	no
E 🝷 2CE_SDI-2-SDI	With CC				
E 🛅 CNN-HD	CBR Out (kbps)	16239 🛛 🖾 Automatic 👔		_	
Publish-239.101.90.1.8000	Program Nº	100		Delete	Edit
	PCR PID	101	Add New Connectio	n	
	PMT PID	102	Protocol	UDP	•
	Video PID	200	URL		
	Audio Track 1	210 0 4	Port		
		210	Interface	eth1: 192.168.10.1	-
			Multicast 🗐		Add
				Cancel	Save

Figure 1-15: Publish Added to SPTS Stream

4.4 Adaptive Encoding Application

4.4.1 Create Adaptive Sessions

An Adaptive Session defines the Codec and Encoding parameters of the encoding. Multiple Adaptive Sessions with differing resolutions and bitrate may be created.

- 1. Highlight the **Resource** that will have a new Adaptive Session, Figure 1-16.
- 2. Click New Adaptive Session on the Tool Bar.



Figure 1-16: Create Adaptive Session

3. Give the session a Name and refine parameters such as choice of Codec, Figure 1-17.

New Adaptive Session	
Name	2CE_SDI-2-SDI-Session-H2
Codec	H264 🚯 🗖
Frame Rate (fps)	Use Original
Keyframe Duration(s)	2
Bframes	2
Badapt	
	1
Subtitles Method	On Separate Pids
Top Field First	Auto
De-Interlace	
	Auto
	Cancel Apply

Figure 1-17: Refine Adaptive Session Parameters

- 4. Click **Apply** to save and add the session.
- 5. The Session is added to the Tree View, Figure 1-18. More Adaptive Sessions may be added in the same way.
- 6. Sessions may be edited; just click to select the Session in Tree View then make changes and click Save.



Figure 1-18: Adaptive Session Created

4.4.2 Create Adaptive Streams

An Adaptive Stream defines the output Resolution and Bit Rate of the Adaptive Session.

- 1. Click to select the Adaptive Session that will have the stream added, Figure 1-19.
- 2. Click New Adaptive Stream on the Tool Bar.



Figure 1-19: Add Adaptive Stream

- 3. Give the Stream a meaningful name such as the Output Resolution size, Figure 1-20.
- 4. Refine the Audio and Video Codec parameters.
- 5. Select the Resolution and Aspect Ratio.
- 6. Click **Apply** to save the changes and create the stream.

Settings and Info. Monitoring Device Session Parameters Codec: H264 Prame Rate(fps): Use Original Top Paid Prst: Auto New Adaptive Stream Name Stream-480x320 Use Audo Use Audo Use Audo Use Audo Use Video	leyframe Duration(sec): 2 De-Interlace: none
Session Parameters Codec: H264 Prame Rate(fps): Use Original Top Field Frst: Auto Name Stream-480/X320 Use Audo Use Audo Ø Codec AAC AC3 PB Bit Rate (kbps) 40 © Delay (msec) 0 Channe Use Video Ø Codec Dise Video Ø Codec Bit Rate (kbps) 450 VBR MPEG2 Level Marrin Cabac Video Pre-proccessing Parameters	(eyframe Duration(sec): 2 De-Interlace: none
Session Parameters Codec: H264 Frame Rate(fps): Use Orginal Top Field Frst: Auto New Adaptive Stream Name Stream-480x320 Use Audo Codec AAC AC AC	(eyframe Duration(sec); 2 De-Interlace; none
Bession Parameters Codec: H264 Frame Rate(fps): Use Organil Top Field First: Auto New Adaptive Stream Stream-480x320 Name Image: Stream-480x320 Use Audo Image: Stream-480x320 Use Video Image: Stream-480x320 Video Image: Stream-480x320 Video Image: Stream-480x320 Use Video Image: Stream-480x320 Use Video Image: Stream-480x320 </th <th>(eyframe Duration(sec): 2 De-Interlace: none</th>	(eyframe Duration(sec): 2 De-Interlace: none
Session Parameters Code:: H264 Frame Rate(fpc): Use Organi Top Feld Prst: Auto New Adaptive Stream Name Stream-480x320 Use Audo Audo Audo Audo Audo Audo Audo Audo	(eyframe Duration(sec): 2 De-Interlace: none
Codec: H264 Prame Rate(fpp): Use Original Top Reid Prist: Auto Name Stream-480x320 Use Audo Codec Codec AAC AC3 Pa Bit Rate (kbps) 40 Sample Delay (msc) 0 Codec Use Video Codec Codec Bit Rate (kbps) 450 VBR PEG2 Level Marin Codec Video Pre-processing Parameters Benetition Cabac	Keyframe Duration(sec.): 2 De-Interlace: none
New Adaptive Stream Name Stream-480x320 Use Audo Image: Codec Codec AAC Bit Rate (kbps) 40 Delay (msec) 0 Use Video Image: Codec Codec Profile Main Dis Rate (kbps) 450 Vise Video Vise PFEG2 Level Main Vise OPre-processing Parameters	
Name Stream-480x320 Use Audo Codec AAC AC3 Pa Bit Rate (kbps) 40 Edda Codec AAC Code	
Use Audo Use Audo Use Audo Use Audo Use Audo Use Audo Use Video Us	
Use Audo Codec AAC ACS Pa Bit Rate (kbps) 40 Codec Co	
Codec AAC AC3 Pa Bit Rate (kbps) 40 Sample Delay (msec) 0 Channe Use Video Codec Profile Codec Bit Rate (kbps) 450 VBR Bit Rate (kbps) 450 VBR Video Profile Marn Codec Bit Rate (kbps) 450 VBR Perceptocessing Parameters	
Bit Rate (kbps) 40 Sample Delay (msec) 0 Channe Use Video 2 Codec Profile Bit Rate (kbps) 450 VBR FEG2 Level Marn Codec Video Pre-processing Parameters	: Through 🔲 🚯
Delay (msec) 0 v Channe Use Video v Codec Elit Rate (kbps) 450 v VBR MFEG2 Level Mann v Cabac Video Pre-processing Parameters	Late (Hz) 48000 -
Use Video Codec Profile Main Codec Bit Rate (kbps) 450 VBR WFEG2 Level Main Codec Video Pre-processing Parameters Rechtlon	2
Use Video Pro-processing Parameters	
Codec Profile Main Codec Bit Rate (kbps) 450 VR MFEG2 Level Main Cabac Video Pre-processing Parameters	
Bit Rate (kbps) 450 VBR MFEG2 Level Main Cabac Video Pre-processing Parameters Pacel thm	very Fast
MPEG2 Level Main Cabac Video Pre-processing Parameters Resolution Aspect	
Video Pre-proccessing Parameters	
Resolution Aspect	
480x320 (5)	
Cropping	atio Use Original 💌
Left Right Top	atto Use Original 💌
	ato Use Original .
	atto Use Original

Figure 1-20: Refine Adaptive Stream Parameters

- 7. The Adaptive Stream is added to the Session and is displayed on the Tree View, Figure 1-21.
- 8. The Adaptive Stream is also displayed on the Path Bar when the Stream is selected.



Figure 1-21: Adaptive Stream is Added to Session

4.4.3 Publishing an Adaptive Stream

A Publish defines the Output IP Address and Format as well as providing any authentication of the Adaptive Stream.

- 1. Select the Adaptive Session by clicking it in Tree View, Figure 1-22.
- 2. Click **New Publish** on the Tool Bar.



Figure 1-22: Add New Publish

- 3. Give the **Publish** point a meaningful **Name** such as the Format & IP Address, Figure 1-23.
- 4. Select the Publish point Format from the dropdown menu choices (SPTS, HLS & Flash).





- 5. Enter the Connection URL address, Figure 1-24.
- Chose the physical output Interface from the dropdown menu (Ports available may differ between models and could include VLANs if previously configured).
- 7. Click Add to create the connection. Multiple connections may be added.
- 8. The Connection is created and may be further edited by selecting the adjacent tick box and click Edit.



Figure 1-24: Refine Publish Parameters

- 9. Click Apply to save the changes and add the Publish to the Adaptive Stream.
- 10. The Publish is Added and is displayed on the Tree View, Figure 1-25.
- 11. The Publish is also displayed on the Path Bar when the selected in Tree View.



Figure 1-25: Publish is Added to Adaptive Stream

4.5 Start the Encoding Process

The Streaming process is started from the Resource icon and each Resource is started individually.

- 1. Click to select the **Resource** to be started In the Tree View, Figure 1-26.
- 2. Click the **Start** button on the Tool Bar (or Right Click menu).
- 3. The Streaming starts and is indicated on the Tree View by small triangles in the lower right corner of all streaming Element Icons, Figure 1-27.



Figure 1-26: Start the Streaming Process



Figure 1-27: Streaming Started

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TRANSCODING APPLICATION

5. Transcoding Application

This chapter describes how to set up an IP stream from an Ethernet port for Transcoding an SPTS stream.

5.1 Chapter Contents

- "Ethernet Resources"
- "SPTS Transcoding"
- "Adaptive Transcoding"
- "Start the Stream"

5.2 Ethernet Resources

An Ethernet Resource is an input to the platform which exists on one of the Ethernet interfaces as an IP stream. These resources are used as source content for subsequent transcoding.

5.2.1 Create an Ethernet Resource

- 1. Click on the **Device** icon, Figure 1-1.
- 2. Click Add Resource on the tool bar (or Right Click menu).



Figure 1-1: Add New IP Resource to Device

- 3. In the window that opens, select Ethernet from the Type drop down choices, Figure 1-2,
- 4. Choose the physical rear panel Ethernet port that the stream appears on from the **Card** choices, eth1, eth2, eth3 or eth4. (Depending on the model ordered, there may be more or less Ethernet port choices).
- 5. Enter the IP address, Port and Protocol of the IP stream to be ingested, Figure 1-3.
- 6. Tick the Multicast box if this is a multicast stream with an address in the multicast range.
- 7. If the Stream is a Source Specific Multicast (SSM), enter the Source IP Address.
- 8. Click Analyze.



Figure 1-2: Select Input and Output Ports



Figure 1-3: Enter Input IP Address and Port

- The streams that are read from the PMT table on that stream will be displayed, Figure 1-4.
- 9. Click to select the Program, Figure 1-4 (also Figure 1-5).
- 10. Then, Drag and Drop the program onto the Resource, releasing when the green check mark appears.

Add Resource - PID Selection	×
Add Resource Resource Rename	
Reset Back Add	J

Figure 1-4: Drag & Drop Program to Resource

- Arrow controls may also be used to move programs both ways, Figure 1-5.
- 11. Click Add to add this stream and create the Resource.



Figure 1-5: Arrow Controls Move Program to Resource

12. The Program is added to the Resource and are shown in the Tree View under the Device with the included SPTS Incoming stream PIDs detailed in the adjacent Pane View, Figure 1-6.

VersAtive	Root1 🕨 🖡 VersAtive 🕨 🍷 Ethernet-239.100.254.1-8000
¢ vms G→	🤫 Settings and Info. 📫 Monitoring 🖳 Device
search here	Start Delete New Adaptive New SPTS Stream Session
Ceneral	Resource Input: Ethernet-239.100.254.1-8000 Incoming SPTS
CE_SDI-1-SDI	IP: 239.100.254.1 Port: 8000 Multicast: true Source Name: eth1 Redundency State: none Program PCR Pid: 48 Program PCR Pid: 48
	Preview On V (B) Save Height 480 px Height 480 px Frame Rate: 29.970 fps

Figure 1-6: Resource Added to Tree View

- 13. The 'Preview ON' tick box is selected by default. Untick the box to disable Preview for this resource only and click **Save** if a change was made.
- The Preview function requires a small amount of Device CPU cycles. If the Device is running close to 100% CPU utilization as witnessed by the Device Monitoring page, see "11.2 Monitoring the Device" on page 11-1, disabling preview can help with that condition. Each Resource Preview function must be disabled individually so click each active resource in the Tree View to access this control.

5.3 SPTS Transcoding

Any number of SPTS Streams may be created for any Ethernet resource. The Ethernet Resource must be created first.

5.3.1 Create an SPTS Stream

Multiple Streams with different parameters may be created for the Ethernet Resource by repeating these steps.

- 1. Click to select the Ethernet Resource icon in the Tree View, Figure 1-7.
- 2. Select New SPTS Stream on the Tool Bar.



Figure 1-7: Add New SPTS Stream

- 3. On the new page that opens, Figure 1-8, give the stream a meaningful Name such as the service name.
- 4. Edit Video, Audio & Video Pre-processing Parameters as required. For details, see "Session Settings" on page 6-1.

New SPTS Strea	m		
Name 📀	CNNHD_H264		
Use Audio	V		
Codec	AAC	AC3 Pass Through	
Bit Rate (kbps)	40 💌	Sample Rate (Hz)	48000
Delay (msec)	0	Channels	2
Use Video			
Codec	H264	Codec Profile	Main
Bit Rate	450	Codec Speed	Very Fast
Subtitles Method	On Separate Pids 🔹	VBR	
Keyframe Duration(sec)	2	Badapt	
Mpeg2 Level	Main	No Scenecut	
Bframes	2	Cabac	\checkmark
Video Pre-proccessin	g Parameters		
Frame Rate (fps)	Use Original	Resolution	480x320
Top Field First	Auto	Aspect Ratio	Use Original
De-Interlace		Interlace Method	Auto
Cropping			Bottom 5 Cancel Apply

Figure 1-8: Refine SPTS Stream Settings

5. Click Apply to save and add the session to the Tree View, Figure 1-9 (1).

5.3.2 Publishing an SPTS Stream

A Publish defines the Output IP Address of the SPTS Stream. Any Stream may have any number of Publishes added by repeating these step for each.

- 1. Select the SPTS Stream by clicking it, Figure 1-9.
- 2. Select New Publish on the Tool Bar.

VersAtive	Root1 🕨 📗 Device	🕨 🚦 2CE_SDI-2-SDI 🕨 🖾 CNN-HD	
¢ vms G	🕫 Settings and In	ifo. 📫 Monitoring 🗖 Device	
search here	Delete Stre	+ New Publish	
🖃 🎯 General			
Device	Edit SPTS Stre	eam	
Ethernet-239.90.1.5-5000	Name	CNN-HD	
Publish_239.101.90.1:8000	Use Audio	V	
E CNNHD_Session	Codec	AAC	AC3 Pass Thr
E 2CE_SDI-1-SDI	Bit Rate (kbps)	40	Sample Rate
E MPTS_MUX_1	Delay (msec)		Channels
2CE_SDI-2-SDI		0	
CNN-HD	Use Video	V	

Figure 1-9: New SPTS Publish

- 3. Give the Publish point a meaningful Name such as the IP Address and the type of publish, Figure 1-10.
- 4. Define the **Connection** with IP address and port number then choose the physical Output Ethernet **Interface** (Ports available may differ between models and could include VLANs if previously configured).
- 5. Tick the Multicast box if this is a multicast IP address(default is unticked unicast).
- 6. Click Add to create and add the connection to the Tree View.

Root1 🕨 🚺 VersAtive 🕨 🌻	2CE_SDI-2-SDI > 👛 CNN-HD			
🧏 Settings and Info.	Monitoring Device			
New Publish				
Name 🚯	Publish-239.101.90.1:80	Connections		
Format	SPTS 🔹	Interface	URL	Auth.
with CC		E eth4	UDP://239.101.90.1:8000	no
(RR Out (kboc)	L COOD			
Drogram N/9	16239 M Adubinatic 🕤		Delete	Edit
	100	Edit Connection		
POR PID	101	Protocol	UDP	ล
Video PID	202	URL	239.101.90.1	1
Audio Track 1	200	Port	8000	j
FIGURE FIGURE	210	Interface	eth4: 192.168.40.1	0
	6	Multicast 🗹	6	Add

Figure 1-10: Refine Publish Properties

- 7. Connection is created, Figure 1-11.
- Connection may be edited by selecting the adjacent tick box then click Edit.



Figure 1-11: Connection Created

- 8. After the Connection is created or edited, click **Save** to apply the changes, Figure 1-12.
- 9. The **Publish** is added to the SPTS Stream and displayed in Tree View.

VersAtive	Root1 🕨 🚺 VersAtive 🕨	🕴 2CE_SDI-2-SDI 🕨 🖾 CNN-HD 🕨 🗵 Pu	ublish-239.101.90.1		
¢ vms G→	🤏 Settings and Info	. 📫 Monitoring 🔤 Device			
search here	X Delete Publish New	+ Publish			
E General	Edit Publish				
Ethernet-239.90.1.5-5000	Name	Publish-239.101.90.1:80	Connections		
E 2CE_SDI-1-SDI	Format	SPTS	Interface	URL	Auth.
P- MPTS_MUX_1			eth1	UDP:#239.101.90.1:8000	no
2CE_SDI-2-SDI	With CC				
CNN-HD	CBR Out (kbps)	16239 🗹 Automatic 🚯		Delete	Edt
W Publish-239.101.90.1:8000	Program Nº	100			
(\mathbf{S})	PCR PID	101	Add New Connectio	n	
	PMT PID	102	Protocol	UDP	•
	Video PID	200	URL		
	Audio Track 1	210	Port		
			Interface	eth1: 192.168.10.1	•
			Multicast 🗐		Add
				Cancel	Save

Figure 1-12: Publish is Added to SPTS Stream

5.4 Adaptive Transcoding

5.4.1 Create Adaptive Sessions

An Adaptive Session defines the Codec and transcoding parameters. Multiple Adaptive Sessions with differing resolutions and bitrate may be created.

- 1. Highlight the **Resource** that will have a new Adaptive Session, Figure 1-13.
- 2. Click **New Adaptive Session** on the Tool Bar.



Figure 1-13: Create Adaptive Session

- 3. Give the session a Name and refine parameters such as choice of Codec, Figure 1-14.
- 4. Click **Apply** to save and add the session.

New Adaptive Session	n
Name	2CE_SDI-2-SDI-Session-H2
Codec	H264 🚯 🔹
Frame Rate (fps)	Use Original
Keyframe Duration(s)	2
Bframes	2
Badapt	
	V
Subtitles Method	On Separate Pids
Top Field First	Auto
De-Interlace	
	Auto
	Cancel Apply

Figure 1-14: Refine Adaptive Session Parameters

- 5. The Session is added to the Tree View, Figure 1-15. More **Adaptive Sessions** may be added in the same way.
- 6. Sessions may be edited; just click to select the Session in Tree View then make changes and click Save.

VersAtive Management	Root1 🕨 🚺 VersAtive 🕨 📍	2CE_SDI-2-SDI >
⇔vms G+	🥦 Settings and Info.	📫 Monitoring 🛛 🖼 Device 👘
search here	× + Delete Session New Ad. Stree	aptive
General		
Device	Edit Adaptive Session	
Ethernet-239.90.1.5-5000	Name	2CE_SDI-2-SDI-Session-H2
E 2CE_SDI-1-SDI	Codec	H264
PTS_MUX_1	Frame Rate (fps)	Use Original
E 🚦 2CE_SDI-2-SDI	Keyframe Duration(s)	2
🕀 🛅 СМА-НО	Bframes	2
CE_SDI-2-SDI-Session-H264	Badapt	
6		V
	Subtitles Method	On Separate Pids
	Top Field First	Auto
	De-Interlace	
		Advanced Detect (
		Cancel Save

Figure 1-15: Adaptive Session Created

5.4.2 Create Adaptive Streams

An Adaptive Stream defines the output Resolution and Bit Rate of the Adaptive Session.

- 1. Click to select the Adaptive Session that will have the stream added, Figure 1-16.
- 2. Click **New Adaptive Stream** on the Tool Bar.



- 3. Give the Stream a meaningful name such as the Output Resolution size, Figure 1-17.
- 4. Refine the Audio and Video Codec parameters.
- 5. Select the Resolution and Aspect Ratio.
- 6. Click **Apply** to save the changes and create the stream.

Root1 🕨 📘 VersAtive	▶ 🚹 2CE_SDI-2-SDI ▶ 🚞 :	2CE_SDI-2-	SDI-Session-H264		
🤏 Settings and In	fo. 📫 Monitoring	Device			
Codec: H264	Sessi Frame Rate(fps): Use Original	on Paramet Top Field Fir:	t ers st: Auto Keyframe Duraf	tion(sec): 2 De-Interlace: nor	18
New Adaptive	Stream	_			
Name 3	Stream-480×320				
Use Audio	V				
Codec	AAC	•	AC3 Pass Through	Image: Contract of the second seco	
Bit Rate (kbps)	40	•	Sample Rate (Hz)	48000	•
Delay (msec)	0	•	Channels	2	•
Use Video					
Codec Profile	Main	-	Codec Speed	Very Fast	
Bit Rate (kbps)	450		VBR		
MPEG2 Level	Main	*	Cabac	V	
Video Pre-procces	sing Parameters				
Resolution	480×320		Aspect Ratio	Use Original	•
Croppin	ngi				
				Bottom	
					2
				Cancel Ar	oply

Figure 1-17: Refine Adaptive Stream Parameters

- 7. The Adaptive Stream is added to the Session and is displayed on the Tree View, Figure 1-18.
- 8. The Adaptive Stream is also displayed on the Path Bar when the Stream is selected.



Figure 1-18: Adaptive Stream is Added to Session

5.4.3 Publishing an Adaptive Stream

A Publish defines the Output IP Address and Format as well as providing any authentication of the Adaptive Stream.

- 1. Select the Adaptive Session by clicking it in Tree View, Figure 1-19.
- 2. Click **New Publish** on the Tool Bar.



Figure 1-19: Add New Publish

- 3. Give the **Publish** point a meaningful **Name** such as the Format & IP Address, Figure 1-20.
- 4. Select the Publish point Format from the dropdown menu choices (HLS, SPTS & Flash).



Figure 1-20: Select Publish Format

- 5. Enter the Connection URL address, Figure 1-21.
- Chose the physical output Interface from the dropdown menu (Ports available may differ between models and could include VLANs if previously configured).
- 7. Click Add to create the connection. Multiple connections may be added.
- 8. The Connection is created and may be further edited by selecting the adjacent tick box and click Edit.
- 9. Click Apply to save the changes and add the Publish to the Adaptive Stream.

Jame	Publish-FLASH	1_239.101	Connections		
ormat	FLASH	•	Interface	URL	Aut
Audio Track 1	۲	0	E eth1 R	TMP://239.101.90.1/Stream-480x	no
				Delete	Edi
			Add New Connection		
			Protocol	RTMP	*
			URL 🤘	239.101.90.1	
			Interface	eth1: 192.168.10.1	-
			Authentication	eth1: 192.168.10.1 eth2: 192.168.20.1	6
				eth3: 192.168.30.1	
				eth4: 192.168.40.1	
				_	
				· · · · · · · · · · · · · · · · · · ·	Add

Figure 1-21: Refine Publish Parameters

- 10. The Publish is Added and is displayed on the Tree View, Figure 1-22.
- 11. The Publish is also displayed on the **Path Bar** when the selected in **Tree View**.

VersAtive Management	VersAtive	† 2CE_SDI-2-SDI ▶ ⊂	2CE_SDI-2-SDI-S	ession+H264 🕨 🔳
search here	X Delete Publish Nev	+ Publish		
General Jevice	Edit Publish			
Ethernet-239 80 1.5-5000 CE_SDI-1-SDI CE_SDI-1-SDI MPTS_MUX_1 CE_SOL-2-SDI CON+HD CON+HD CON+HD CON+HD CON+HD	Name Format Audio Track 1	Publish-FLASH FLASH	1_239.101 v	Connections Interface eth1
Stream-480x320 Stream-480x320 Publish-FLASH_239.101;]			Add New Conn Protocol URL

Figure 1-22: Publish is Added to Adaptive Stream

5.5 Start the Stream

The streaming process is started from the Resource icon and each Resource is started individually.

1. In the Tree View, click to select the **Resource** to be started, Figure 1-23.



Figure 1-23: Start the Streaming Process

- 2. Click the Start button on the Tool Bar (or the Right Click menu).
- 3. The Streaming starts and is indicated in the Tree View by small triangles in the lower right corner of all streaming Element Icons, Figure 1-24.



Figure 1-24: Streaming Started

5.5.1 Streaming Icon Indicators

When streaming starts, the icon for each element changes to show a small triangle to indicate that.

Before the streaming is started the icons appear without triangle indicator, Figure 1-25.,Once streaming has begun, the triangle appears in each icon, Figure 1-26.

VersAtive Management vms 🌣	VersAtive Management vms *
🖂 🎯 General	🖂 🎯 General
🖃 🚦 Device	Device
- Ethernet-239.90.1.4-5000_CTVHD	Ethernet-239.90.1.4-5000_CTVHD
тунр	El 📺 CTVHD
Publish-spts_CTVHD	Publish-spts_CTVHD
Figure 1-25: Streaming Stopped	Figure 1-26: Streaming Started

SESSION SETTINGS

6. Session Settings

This chapter describes the configuration variables for SPTS and Adaptive encoding and transcoding.



Note: See "Encoding Application" on page 4-1 and "Transcoding Application" on page 5-1 for programming and setup procedures.

6.1 Chapter Contents

- "SPTS Stream Settings"
- "Adaptive Session Settings"

6.2 SPTS Stream Settings

Name	0-Stream-720x48	0			
Use Audio	▼				
Codec	AAC	•	AC3 Pass Through		
Bit Rate (kb/s)	192	•	Sample Rate (Hz)	48000	•
Delay (msec)	0	•	Channels	2	1
Use Video	V				
Codec	H264	-	Codec Profile	Main	•
Bit Rate (kb/s)	3000		Codec Speed	Very Fast	ŀ
Subtitles Method	On Separate Pids	•	VBR		
Keyframe Duration(sec)	2	•	Badapt	V	
		*	Scenecut	V	
Bframes	2	-	Cabac	V	
Video Pre-proccessing	Parameters				
Frame Rate (fps)	Use Original	-	Resolution	720×480	•
Top Field First	Auto	•	Aspect Ratio	Use Original	•
De-Interlace					
Cropping					

Figure 1-1: SPTS Stream Properties

Table 6.2a: SPTS Stream Settings

Setting	Value	Description
Name	String	The alpha numeric identifier that you can assign. This should be a meaningful name which clearly identifies the stream or it's purpose.
		Audio Encoding Parameters
Use Audio	Tick Box	Tick to enable the Audio stream in the output.
Codec	Dropdown menu	Choices, MPEG2, MP3, AAC, AC3, EAC3, HEAAC.
AC Passthrough	Tick Box	Only used for AC3 or EAC3. Tick to enable using the original audio configuration.
Bit Rate	Dropdown menu	Audio bitrate. Choices available depend on Codec choice.
Sample Rate	Dropdown menu	Audio sample rate, choices available depend on codec selected; default 48000Hz .
Delay	Dropdown menu	Specifies the delay of the audio channel compared to Video between -1000 and +1000 mS in 10 mS steps; default is 0 .
Channels	Dropdown menu	Number of audio channels. Choices 1, 2 or 5.1 channels.

Setting	Value	Description
	•	Video Encoding Parameters
Use Video	Tick box	Tick to enable the Video stream in the output.
Codec	Dropdown menu	Choice between MPEG2 & H.264. Some following settings depend on this choice.
Codec Profile	Dropdown menu	Choices of Baseline, Main, High, Low Latency.
Bit Rate	Integer	Enter encoding rate in kbps.
Codec Speed	Dropdown menu	Adjust for best performance based on scene action. Recommended to use default setting for most streams.
Subtitles Method	Dropdown menu	 Determines how subtitles (closed captions) are handled; default is On Separate PIDs. On Separate PIDs: Subtitles are placed on PIDs separate from video and audio streams. Overlay in video: Subtitles are added into the video stream.
		Ignore Subtitles: Subtitles are not passed through.
VBR	Tick box	Tick to enable variable Bit Rate output; default is Constant Bit Rate (Un-ticked)
Keyframe Duration	Dropdown menu	The time period in seconds between IDR keyframes; default is 2 seconds .
Badapt	Tick Box	Turn on the adaptive B-frame placement decision algorithm. This setting controls how H.264 decides between placing a P or B-frame. Choice is true (Ticked) or false (not ticked), default is Box Ticked .
MPEG2 Level	Dropdown menu	Only in effect for MPEG2 codec. Choice is Main & High.
Scenecut	Tick Box	Selected (enabled) by default (and cannot be disabled in MPEG2 Codec), adaptive I-frame decisions are enabled. Disabling Scenecut prevents H.264 from generating a key frame when there is a scene cut in the video; important to keep key frames consistent for multi-bitrate videos. See Figure 1-4 & Figure 1-3 and description below.
Bframes	Dropdown menu	Specifies the maximum number of concurrent B Frames that H.264 can use; default is 2 .
CABAC	Tick box	Enables CABAC (Context Adaptive Binary Arithmetic Coder) stream compression and reverts to CAVLC (Context Adaptive Variable Length Coder) system if un- ticked, which significantly reduces efficiency and the decoding requirements. Default CABAC (Ticked).
		Video Pre-processing Parameters
Frame Rate	Dropdown menu	Encoded frames per second; default is use original. Choices between 1 and 60.
Resolution	Dropdown menu	Select from many choices for the appropriate resolution.
Top Field First	Dropdown menu	Ordering of fields either Top or Bottom field first. Default is Auto.
Aspect ratio	Dropdown menu	Choice between 1:1, 4:3 and 6:9 or Use Original; default is Use Original.
De-Interlace	Tick Box	Allows de-interlacing of video frames to convert from Interlace to Progressive if box is ticked; default is not ticked (no de-interlace).
Interlace Method	Dropdown menu	Only effective if De-Interlace is selected. De-interlace choices between Simple and Advanced detect (with and without Double Frame rate) and Linear; default is Linear .
Cropping	Integer	If box ticked, enter number of Pixels to be cropped from each side of the picture.

6.2.1 SPTS Scenecut Setting

The Scenecut setting is found only in SPTS Stream settings, Figure 1-2.



Figure 1-2: SPTS Scenecut Setting

Enabling this setting (box is ticked) allows adaptive I frame decisions based on scene changes and placement of new I/IDR frames as illustrated in Figure 1-3 where we see the irregular timing of the I/IDR frames (the red blocks) indicative of an open GOP structure. When Scenecut is disabled (box is un-ticked), illustrated in Figure 1-4, the red blocks representing I/IDR frames occur in a timed interval based on the Keyframe Duration setting.



Figure 1-3: Scenecut Ticked - Open GOP



6.3 Adaptive Session Settings

Name	Ethernet-239.100.254.1-80
Codec	H264
Frame Rate (fps)	Use Original 💌
Keyframe Duration(s)	2
Bframes	2
Badapt	
Scenecut	
Subtitles Method	On Separate Pids 🔹
Top Field First	Auto
De-Interlace	
	Cancel Apply

	Ses	sion maralleters			
Codec: H264	Frame Rate(fps): Use Original	Top Field First: Aut	o Keyframe Dura	tion(sec): 2 De-Interlace: none	3
New Adaptiv	e Stream				
Name	0-Stream-720x480				
Use Audio					
Codec	AAC	 AC: 	Pass Through	1	
Bit Rate (kb/s)	192	▼ Sar	nple Rate (Hz)	48000	
Delay (msec)	0	Cha	innels	2	
Use Video	7				
Codec Profile	Main	 Cool 	lec Speed	Very Fast	
Bit Rate (kb/s)	3000	VBF	l.		
		⊸ Cab	ac	V	
Video Pre-procc	essing Parameters				
Resolution	720×480	 Asp 	ect Ratio	Use Original	
– E Crop	Right				
				Concol	

Figure 1-6: Adaptive Stream Properties

Setting	Value	Description		
Name	String	The alpha numeric identifier that you can assign. This should be a meaningful name which clearly identifies the stream or it's purpose.		
Codec	Dropdown menu	Default H.264 encoder for adaptive encoding.		
Frame Rate	Dropdown menu	Encoded frames per second; default is use original. Choices between 1 and 60.		
Keyframe Duration	Dropdown menu	The time period in seconds between IDR keyframes; default is 2 seconds .		
Bframes	Dropdown menu	Specifies the maximum number of concurrent B Frames that H.264 can use; default is 2.		
Badapt	Tick box	Turn on the adaptive B-frame placement decision algorithm. This setting controls how H.264 decides between placing a P or B frame. Choice is true (Ticked) or false (not ticked), default is not ticked .		
Scenecut	Tick box	Not selected by default (and cannot be enabled), adaptive I-frame decisions are disabled. Disabling Scenecut prevents H.264 from generating a key frame when there is a scene cut in the video; important to keep key frames consistent for multi-bitrate videos. See Figure 1-3 & Figure 1-4.		
Subtitles Method	Dropdown menu	Determines how subtitles (closed captions) are handled; default is On Separate PIDs. • On Separate PIDs: Subtitles placed on PIDs separate from video and audio streams. • Overlay in video: Subtitles are added into the video stream. • Ignore Subtitles: Subtitles are not passed through.		
Top Field First	Dropdown menu	Ordering of fields either Top or Bottom field first. Default is Auto.		
De-Interlace	Tick box	Allows de-interlacing of video frames to convert from Interlace to Progressive if box is ticked; default is not ticked (no de-interlace).		
Interlace Method	Dropdown menu	De-interlace choices between Simple and Advanced detect (with and without Double Frame rate) and Linear; default is Linear .		

Table 6.3a: Adaptive Session Settings

Setting	Value	Description			
Name	String	The alpha numeric identifier that you can assign. This should be a meaningful name which clearly identifies the stream or it's purpose.			
	Audio Encoding Parameters				
Use Audio	Tick Box	Tick to enable the Audio stream in the output.			
Codec	Dropdown menu	Choices, MPEG2, MP3, AAC, AC3, EAC3, HEAAC.			
AC Passthrough	Tick Box	Only used for AC3 or EAC3. Tick to enable using the original audio configuration.			
Bit Rate	Dropdown menu	Audio bitrate. Choices available depend on Codec choice.			
Sample rate	Dropdown menu	Audio sample rate; default 48000Hz.			
Delay	Dropdown menu	Specifies the delay of the audio channel compared to Video between -1000 and +1000 mS in 10 mS steps; default is 0 .			
Channels	Dropdown menu	Number of audio channels. Choices 1, 2 or 5.1 channels.			
	Video Encoding Parameters				
Use Video	Tick box	Tick to enable the video stream in the output.			
Codec Profile	Dropdown menu	Choices of Baseline, Main, High, Low Latency.			
Codec Speed	Dropdown menu	Adjust for best performance based on scene action. Default setting is best for most streams.			
Bit Rate	Integer	Enter video encoding rate in kbps.			
VBR	Tick box	Tick to enable VBR output; default is Constant Bit Rate (Un-ticked).			
CABAC	Tick box	Enables CABAC (Context Adaptive Binary Arithmetic Coder) stream compression and reverts to CAVLC (Context Adaptive Variable Length Coder) system if un- ticked, which significantly reduces efficiency and the decoding requirements. Default is CABAC (Ticked).			
		Video Pre-processing Parameters			
Resolution	Dropdown menu	Select from many choices for the appropriate resolution.			
Aspect ratio	Dropdown menu	Choice between 1:1, 4:3 and 6:9 or Use Original; default is Use Original .			
Cropping	Integer	If box ticked, enter number of Pixels to be cropped from each side of the picture.			

Table 6.3b: Adaptive Stream Settings

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PUBLISH SETTINGS

7. Publish Settings

This chapter describes the configuration variables for SPTS, HLS and Flash publishing dialogs.



Note: See "Encoding Application" on page 4-1 and "Transcoding Application" on page 5-1 for programming and setup procedures.

7.1 Chapter Contents

- "SPTS Publish Settings"
- "HLS Publish Settings"
- "Adobe® Flash® Publish Settings"

7.2 SPTS Publish Settings

This page is used to establish publish parameters for publishing an SPTS stream. The procedure to use this is explained in "4.3 SPTS Encoding Application" on page 4-5.



Figure 1-1: SPTS Publish Settings

Table 7.2a: SPTS Publish Settings

Setting	Value	Description
Name	String	The alpha numeric identifier that you can assign. This should be a meaningful name which clearly identifies the Publish or it's purpose.
Closed Captioning	Tick Box	Tick to include the closed caption (Subtitles) if existing.
CBR Out	Integer	Un-tick 'Automatic' to enable entering a CBR bitrate for the Video stream.
Automatic	Tick Box	Tick to turn on Variable Bit Rate output. Un-tick to set to CBR then enter an integer in CBR Out. Default is ticked, VBR .
Program No. xxxx	Integer	Enter the MPEG program number to change default value.
PCR/PMT PID xx	Integer	Change default values if required. Default PCR PID always follows Video PID.
Video PID xx	Integer	Change default value if required.
Audio PID xx	Tick Box / Integer	Input audio PIDs detected are listed along with their PID number and language. Tick to include this language in the output. Mouse over Info icon (1) to see the language of the audio stream.
		Add New Connection
Protocol	Dropdown menu	Choice between UDP & RTP; default is UDP .

Setting	Value	Description
URL	IP Address	Enter the IP address or URL for the publish. Entry of URL requires a DNS entry defined on the management port IP settings.
Port	Integer	Enter the port number associated with the URL.
Interface	Dropdown menu	Select the output physical Ethernet port the stream will appear on; choices are eth1, eth2, eth3 or eth4 (Ports available may differ between models and could include VLANs if previously configured).
Multicast	Tick Box	Tick this box if the IP address is within the multicast address range.

7.3 HLS Publish Settings

7.3.1 HLS Introduction

HTTP Live Streaming lets you send audio and video over HTTP from an ordinary web server for playback on iOS-based devices—including iPhone, iPad, iPod touch, and Apple TV—and on desktop computers (Mac OS X). HTTP Live Streaming supports both live broadcasts and prerecorded content (video on demand), multiple alternate streams at different bit rates, and the client software can switch streams intelligently as network bandwidth changes. HTTP Live Streaming also provides for media encryption and user authentication over HTTPS, allowing publishers to protect their work. An overview of the HLS topography is shown in Figure 1-2, courtesy of Apple.



Figure 1-2: HLS Overview

	C	
		/
1	-	

NOTE: We receive lots of questions regarding setup of VersAtivePro and DigiVu II encoders for use with HLS Distribution Servers. In order to provide some self-help for those who are need, please refer to the following link for background information on HLS.

https://developer.apple.com/library/ios/documentation/NetworkingInternet/Conceptual/ StreamingMediaGuide/Introduction/Introduction.html

7.3.2 HLS Publish Settings Page

This page is used to establish publish parameters for publishing an HLS stream within an adaptive session. The procedure to use this is explained in "4.4 Adaptive Encoding Application" on page 4-7.

New Publish				
Name	Publish-HLS	Connections		
Format	HLS	Interface	URL	Auth.
Index Name	index .m3u8			
Segment Duration	3 •			
Program Nº 1	10			
PCR PID 49	100 Mayoo aya	- +-		
PMT PID 48	101 view langua	age	Dele	ie Edit
Video PID 49	49	Add New Connection		
Audio		Protocol		Y
The state DID FO	default	URL		
MADUO PID 50	50 0 0	Interface	eth1: 192.168.10.1	•
		HTTP Managment	WebDav	•
		Authentication		
		User Name		
				Add

Figure 1-3: GUI HLS Publish Settings

Table 7.3a: HLS Publish Settings

Setting	Value	Description
Name	String	The alpha numeric identifier that you can assign. This should be a meaningful name which clearly identifies the Publish or it's purpose.
Format	Dropdown menu	Select HLS format.
Index name	String	Enter the index name if different from default value; default is index.m3u8.
Segment Duration	Dropdown menu	Select the duration values between 3 & 22 seconds in 1 second increments, default is 3 seconds .
Program Number xxxx	Integer	Enter the MPEG program number to change default value.
PCR/PMT PID xx	Integer	Change default values if required. Default PCR PID always follows Video PID.
Video PID	Integer	Change default value if required.
Audio PID xx	Tick Box / Integer	Input audio PIDs detected are listed along with their PID number and language. Tick to include this language in the output. Mouse over Info icon () to see the language of the audio stream.
		Add New Connection
Protocol	Fixed Value	HTTP by default.
URL	IP Address	Enter the IP address or URL for the publish. Entry of URL requires a DNS entry defined on the management port IP settings.
Interface	Dropdown menu	Select the output physical Ethernet port (eth1 thru eth6) the stream will appear on. Choice of ports available differs between models and could include VLANs if previously configured.
HTTP Management	Dropdown menu	Defines the HTTP document management protocol; WebDAV by default.
Authentication	Tick Box	Tick this box to enable the authentication dialogs then enter the username and password.

7.3.3 Example HLS Publish Configuration

An example Device configuration for HLS publishing.

General	Edit Dublich				
VersAtive VersAtive VersAtive Mc MC MC MC VersAtive MC MC VersAtive MC MC MC VersAtive MC MC VersAtive MC MC VersAtive VersAtive MC MC VersAtive Vers	Name Format Index Name Segment Duration (sec) Program N° 2 PCR PID 49 PMT PID 48 Video PID 49	Publish-HLS-AMC-640x3 HLS • index	Connections interface emb HTTP-	URL //0.1.2.2387500/AMC/AMC-840x360 // Delete	Auth. no Edit
	Audio PID 50	50 ⊕ € 51 ⊕ €	Protocol URL Interface HTTP Managment	HTTP	•

Figure 1-4: Example HLS Publish Configuration

7.4 Adobe® Flash® Publish Settings

This page is used to establish publish parameters for publishing an Adobe Flash stream within an adaptive session. The procedure to use this is explained in "4.4 Adaptive Encoding Application" on page 4-7.

ame	Publish-FLASH		Connections		
Format	FLASH	•	Interface	URL	Auth
Audio PID 51 (spa) Audio PID 50 (eng)	0 0	0			
				Del	ete Edit
			Add New Connection		
					Ţ
			URL		
			Interface	eth1: 192.168.10.1	-
			Authentication		
			User Name		
					Add

Figure 1-5: Adobe® Flash® Publish Settings

Table 7.4a: Flash Publish Settings

Setting	Value	Description
Name	String	The alpha numeric identifier that you can assign. This should be a meaningful name which clearly identifies the Publish or it's purpose.
Format	Dropdown menu	Select Flash.
Audio PID xx	Tick Box / Integer	Input audio PIDs detected are listed along with their PID number and language. Tick to include this language in the output. Mouse over Info icon (1) to see the language of the audio stream.
		Add New Connection
Protocol	Fixed Value	RTMP by default.
URL	IP Address	Enter the IP address or URL for the publish. Entry of URL requires a DNS entry defined on the management port IP settings.
Interface	Dropdown menu	Select the output physical Ethernet port the stream will appear on; choices are eth1, eth2, eth3 or eth4 (Ports available may differ between models and could include VLANs if previously configured).
Authentication	Tick Box	Tick this box to enable the authentication dialogs then enter the username and password.

QAM MULTIPLEXER

8. QAM Multiplexer

Multiplexes comprised of one or many programs may be created with outputs on QAM modulators(if equipped) (M-QAM is the hardware model used by ATX Networks and is an industry standard modularized QAM Modulator).

- M-QAM hardware module input is fed externally from ETH1 so all QAM traffic will be reported on ETH1 port.
- QAM channels are provided in adjacent frequency related groups of four.
- Center frequency of the first (lowest frequency) channel may be specified for each group of four.
- Each adjacent channel center frequency is incremented by 6 MHz from the first specified frequency.

8.1 Chapter Contents

- "Setup a QAM Modulator"
- "Create a QAM Multiplex"
- "Create A TS Source"
- "Adding TS Source Programs"
- "Adding Multiple TS Sources"

8.2 Setup a QAM Modulator

This setup is required only if QAM modulators are provided as a hardware option.

- Click to select the **Device** in Tree View, Figure 1-1.
- 1. Click the **QAM Output Devices** tab.
- 2. Edit the Frequency of the lowest RF channel, then select the QAM mode from the drop down(default is 256).

VersAtive	🧕 General 🕨 🔋 DigiVull_MQAM					[Severty later	ne Brat Le ye
© vms	🤏 Settings and Info. 🛛 🛍 Monit	oring 🗳 Device						
search here	+ + Add Resource Add MPTS multiplexer	Restart VersAtive						
Oeneral O	Basic Info Ethernet Cards Cap PINF Serial Number: MQ1536	ture/Demod Cards Lic	ense Information 2.0-0.17-1.0	QAM Output De	vices 🚺			
De MUX3	Group 1							
239.100.254.1_P8000	Frequency (KHz)	400000	Enable	Name	Frequency (KHz)	Modulation Standard	QAM Mode	RF Level (dBm/ch)
	Modulation Standard		9	PINF-ch1	400000	j83-annex-b	256	-6
	QAM Mode 🕗	256 •	N.	PINF-ch2	406000	j83-annex-b	256	-6
	RF Level (dBm/ch)	-6		PINF-ch3	412000	j83-annex-b	256	-6
			R 🦉	PINF-ch4	418000	j83-annex-b	256	-6
	Group 2							
	Frequency (KHz)	622000 Mai	ise over icon valid range	Name	Frequency (KHz)	Modulation Standard	QAM Mode	RF Level (dBm/ch)
	Modulation Standard	j83-annex-b		PINF-ch5	622000	j83-annex-b	256	-6
	QAM Mode	256 •		PINF-ch6	628000	j83-annex-b	256	-6
	RE Level (dBm/	-6	/ -	PHEPCHA	634000	j83-annex-b	256	-6
	the poster (april -							

Figure 1-1: Setup QAM Output Device

- 3. Tick the boxes adjacent to QAM channels to enable or untick to disable individual QAM outputs.
- 4. Edit **RF Level** to set output RF level per channel in dBm. Mouse over the information icon for valid RF level range.
- 5. Click **Save** to apply the changes when finished.

8.3 Create a QAM Multiplex

- 1. Click to select the **Device**, Figure 1-2.
- 2. Click Add MPTS Multiplexer on the Tool Bar (or Right Click menu).



- 3. Give a Name to the MUX(Optional), Figure 1-3.
- 4. Select **M-QAM** from the **Output Type** drop down.
- 5. Select the desired RF output channel from the QAM Channel drop down.
- 6. Enter the TS (Transport Stream) ID number.

Add MPTS Multiplexer	×
Name	MUX3 🔇
Output Type	M-QAM
QAM Channel	PINF-ch1 - 400
Frequency (MHz)	400
Modulation Standard	j83-annex-b
QAM Mode	256
RF Level (dBm/ch)	-6
TS ID	345 6
	Next Cancel

Figure 1-3: Edit QAM Multiplex

7. Tick PSIP Enable if the PSIP should be active on this channel(alternately DVB SI Enable or None), Figure 1-4.

Add MPTS Multiplexer		×
- 🗹 PSIP Enable 🕜		
Modulation Mode	256-QAM	
DVB SI Enable		
Network ID		
Network Name		
Service Provider Name		
Back	Cancel Add	

Figure 1-4: Select PSIP for Multiplex

- 8. Once added, the MUX will be in the Tree View under the Device it was added to, Figure 1-5. No need to click Save.
- If any changes are required, select the MUX in the Tree View then edit any parameters of the multiplex as required. 9.
- 10. Click Save to apply the changes made.

VersAtive	General > DigiVul_MQAM I	🕨 🍽 MUXS
¢ vms G+	🧮 Settings and Info. 🛛 📫 Monit	toring 🖾 Device
search here	Start Delete Multiplexer	+ New TS Source
🖃 🎯 General	∠Edit Multiplexer	
Device		
E D MUX1	Name	MUX3
Ф =>- MUX2	Output Type	M-QAM
Б михз (В)	QAM Channel	PINF-ch1 - 400
	Frequency (MHz)	400
	Modulation Standard	j83-annex-b
	QAM Mode	256
	RF Level (dBm/ch)	-6
	tsid 🕑	345
	PSIP Enable	
	Modulation Mode	256-QAM
	DVB SI Enable	
	Network ID	
	Network Name	
	Service Provider Name	
		Cancel Save

Figure 1-5: Multiplex Added to Device

8.4 **Create A TS Source**

1. Click to select the MUX in Tree View, then click New TS Source on the Tool Bar, Figure 1-6.

VersAtive		🎯 General ▶ 🔋 DigiVull_MQAM ▶	MUX3
¢ vms	G	🤲 Settings and Info. 🛛 🛤 Monito	ring 🗳 Device
search here		Start Delete Multiplexer	+ New TS Source
General		Edit Multiplexer	
± =)- MUX1		Name	MUX3
		Output Type	M-QAM
		QAM Channel	PINF-ch1 - 400

Figure 1-6: Select New TS Source

- Name the Source (Suggestion: Use a meaningful name), Figure 1-7. 2.
- Tick or untick Multicast then enter the appropriate IP address and port number. 3.
- Select the physical Interface (Ethernet port) that the stream appears on from the drop down menu. 4.
- Click Add to add the Source. 5.



Figure 1-7: Select New TS Source

6. The new TS Source is added to the MUX in Tree View, Figure 1-8.

search here
🖃 🋞 General
Device
ф =)- мUX1
- MUX2
- MUX3
239.101.90.1_P1234

Figure 1-8: New TS Source Added

- 7. To add multiple TS sources to a MUX return to step 1.
- Multiple TS sources may be added to a MUX to aggregate content.
- One or more programs may be added from any TS Source.
- Programs may be added up to the specified bitrate of the MUX but there is no mechanism to limit the bitrate so be careful to not overfill the MUX.

8.5 Adding TS Source Programs

Each TS Source may have one or many programs available as it may be an SPTS or MPTS. Select programs from the added TS sources to fill the MUX.

1. With the **TS Source** selected in Tree View, click **Analyze**, Figure 1-9.

search here	× Delete TS Source		
© General ■ Device ■ MUX1 ■ MUX2 ■ MUX2 = MUX3 = - 238.101.90.1_P1234	Petete 15 Source Edit TS Source Name Multicast IP Port Protocol Interface PSI Monitoring Enable Analyze	239.101.90.1_P1234 239.101.90.6 1234 UDP eth2:172.168.2.23	MUX3 239.101.90.1_P1234

Figure 1-9: Add Program to TS Source

- 2. Click to select the **Program** to be added in the left MPTS Results window, Figure 1-10.
- 3. Click the **Source Multiplex** in the right MUX window.
- 4. Click the **Right Arrow** to add the program to the MUX.
- Repeat to add more required programs from this TS Source to the MUX if there are multiple.
- Programs may be deleted by selecting them in the MUX window then click the Left Arrow.



Figure 1-10: Select Program & Source

- 5. The **Program** is added to the output MUX, Figure 1-11.
- 6. Click **OK** to save this result.

MPTS Results of - UDP://239 100 254 1:8000	MUX3
e IIII Program 10-1 por pid. 49 IIII PID 49 mpeg-2 video IIIII PID 49 mpeg-2 video IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	

Figure 1-11: Program Added to TS Source

7. With input source selected in Tree View, added program is displayed under the MUX, Figure 1-12.

VersAtive	@ General ▶ ☐ Digi/Vull_MOAM ▶ ▶ MUX3 ▶ ₽ 239.100.254.1_P8000			
¢ vms G→	Settings and Info.			
search here	X Delete TS Source			
Ceneral Device Devic	Edit TS Source MUX3 Name 239 100 254 1_P8000 Multicest # IP 239 . 100 . 254 . 1 Port 8000 Protocol UDP Interface emble 233 PSI Monitoring # Enable # Cancel Reset Delete	Edit		

Figure 1-12: Program Displayed under TS Source

8.6 Adding Multiple TS Sources

Multiple input TS sources and programs may be added to any MUX up to the bitrate specified for the MUX, Figure 1-13.

- 1. Add more new TS Sources to a MUX, see "Create A TS Source" on page 8-3.
- 2. For each TS Source, add program(s) to the source, see "Adding TS Source Programs" on page 8-4.
- Only the bitrate of added programs counts toward filling the output MUX.

General	Edit Multiplexer		MUX3
Device → MUX3 → 238 90.11_P5000 → 238 90.13_P5000 → 238 90.13_P5000	Name Output Type QAM Channel Frequency (MHz) Modulation Standard QAM Mode RF Level (dBm/ch) TS ID F PSIP Enable Modulation Mode OVB SI Enable Network ID Network ID Network Name Service Provider Name	MUX3 M-QAM PINF-ch8-640 (83-annex-b 256 -6 345 256-QAM 256-QAM	

Figure 1-13: Added Program Displayed under TS Source

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ETHERNET MULTIPLEXER

9. Ethernet Multiplexer

Multiplexes comprised of one or many programs (SPTS or MPTS) may be created with outputs on Ethernet ports.

- · Unicast or multicast addresses may be specified.
- SPTS or MPTS streams may be used as source.
- Output MUX maximum bitrate may be specified (however, there is no internal mechanism to limit bitrate).

9.1 Chapter Contents

- "Create an Ethernet MUX"
- "Create a TS Source"
- "Adding TS Source Programs"
- "Adding Multiple TS Sources"

9.2 Create an Ethernet MUX

- 1. Click to select the **Device** in the Tree View, Figure 1-1.
- 2. Click Add MPTS Multiplex on the tool bar.



Figure 1-1: Create Ethernet Multiplex

- 3. Give a Name to the MUX(optional), Figure 1-2.
- By default, Ethernet is selected in Output Type.
- 4. Enter the output IP address and port.
- If a multicast IP address is entered, tick the Multicast box.



Figure 1-2: Edit Ethernet Multiplex

5. From the **Interface** dropdown, select the physical output Ethernet port that the stream should appear on (Ports available may differ between models and could include VLANs if previously configured).



NOTE: The default management port is ETH0 and if Device is M-QAM equipped, the M-QAM is using ETH1 so these two ports should not be used for streaming an Ethernet MUX.

- 6. Enter the TS (Transport Stream) ID number.
- 7. Tick DVB SI Enable only if required for the application, Figure 1-3.
- If this box is ticked then enter Network ID, Name and Service Provider as well.

Add MPTS Multiplexer		×
PSIP Enable		
Modulation Mode	256-QAM	
DVB SI Enable Network ID Network Name Service Provider Name		
Back	Cancel Add	

Figure 1-3: Select PSIP for Multiplex

- 8. Once added, the MUX will be in the Tree View under the Device, Figure 1-4. No need to click Save.
- 9. If any changes are required, select the MUX in the Tree View then edit any parameters of the multiplex as required.
- 10. Click Save to apply any changes made.



Figure 1-4: Multiplex Added to Device

9.3 Create a TS Source

1. With the MUX selected in Tree View, click New TS Source on the Tool Bar, Figure 1-5.

VersAtive	Seneral ▶ 📗 DigiVull_MQAM ▶ 🕩 MUX3					
¢ vms G	Settings and Info. 🎽 Monitoring 🖾 Device					
search here	Start Delete Multiplexer New TS Source					
🕞 🎯 General	Edit Multiplexer					
🖃 🚦 Device	·					
ф 🌗 мUX1	Name MUX3					
- MUX2	Output Type M-QAM					
L	QAM Channel PINF-ch1 - 400					

Figure 1-5: Select New TS Source

- 2. Name the Source using a meaningful name, Figure 1-6.
- 3. Enter the appropriate IP address and port number, then tick Multicast if the IP address is in the multicast range.
- 4. Select the input Ethernet port from the drop down that the stream appears on.
- 5. Click Add to add the Source.

Add TS Source		
Name	239.101.90.1_P1234	
Multicast	₹ 239 101 90 6	
Port	1234	
Protocol	UDP	
Interface	eth2: 172.168.2.23	
PSI Monitoring Enable		5
Analyze	Cancel Reset	Add

Figure 1-6: Select New TS Source

6. The new TS Source is added to the MUX in Tree View, Figure 1-7.



Figure 1-7: New TS Source Added

- To add multiple TS sources to a MUX return to step 1.
- Multiple TS sources may be added to a MUX to aggregate content.
- One or more programs may be added from any TS Source.
- Programs may be added up to the specified bitrate of the MUX.

9.4 Adding TS Source Programs

Each TS Source may have one or many programs available as it may be an SPTS or MPTS. Select programs from the added TS sources to fill the MUX.

1. With the TS Source selected in Tree View, click Analyze, Figure 1-8.

search here	× Delete TS Source		
© General ■ Device ■ MUX1 ■ MUX2 ■ MUX3 ■ - 239.101.90.1_P1234	Edit TS Source Name Multicast IP Port Protocol Interface PSI Monitoring Enable Analyze	239.101.90.1_P1234 Image: Constraint of the second seco	MUX3 239.101 50 1_P1234 Delete Edit
(PSI Monitoring Enable Analyze	Cancel Reset Save	Delete Edit

Figure 1-8: Add Program to TS Source

- 2. Click to select the Program to be added in the left MPTS Results window, Figure 1-9.
- 3. Click the Source Multiplex in the right MUX window.
- 4. Click the Right Arrow to add the program to the MUX.
- Repeat to add more required programs from this TS Source to the MUX if there are multiple.
- Programs may be deleted by selecting them in the MUX window then click the Left Arrow.



Figure 1-9: Select Program and Source

- 5. The Program is added to the output MUX, Figure 1-10.
- 6. Click OK to save this result.

MPTS Results of - UDP://239.100.254.1:8000	MUX3
e) IIII Program 1 0-1 prr pid: 48 prr pid: 49 pr PID: 49 mpeg-2 video	
	Delete Cancel OK

Figure 1-10: Program is added to TS Source

7. With input source selected in Tree View, added program is displayed under the MUX, Figure 1-11.

VersAtive Management	Seneral ▶ ☐ DigiVull_MOAM ▶ 콰 MUX3 ▶ 콰 239.100.254.1_P8000	Severty clear
¢ vms G•	5 Settings and Info. Monitoring Device	
search here	X Delete TS Source	
● General ● Device ● MUX1 ● MUX2 ● MUX3	Edit TS Source Name 239 100 254 1_P8000 Multicast IP 1P 239 100 254 1 Port 8000 Protocol UDP Interface eth2: 172.168 2.23 PSI Monitoring IX Enable IX Analyze Cancel Reset	MUX3 239.100.254.1_P6000 1 = Program 10-1 + protet 40 ⇒ ■ PD 49 mpeg-2 video ⇒ ■ PID 50 ac3 audio

Figure 1-11: Added Program is Displayed under TS Source

9.5 Adding Multiple TS Sources

Multiple input TS sources and programs may be added to any MUX up to the bitrate specified for the MUX, Figure 1-12.

- 1. Add more new TS Sources to a MUX, see "9.3 Create a TS Source" on page 9-3.
- 2. For each TS Source, add program(s) to the source, see "9.4 Adding TS Source Programs" on page 9-4.
- Only the bitrate of added programs counts toward filling the output MUX.

General	Edit Multiplexer		MUX3
→ MUX3 → 238.90.11_P5000 → 238.90.12_P5000 → 238.90.13_P5000 → 238.90.13_P5000	Name Output Type QAM Channel Frequency (MHz) Modulation Standard QAM Mode RF Level (dBm/ch) TS ID	MUX3 M-QAM PINF-ch8-640 640 (83-annos-b (256 -6 (345	239 - 90.1 1, P6000
	Modulation Mode	256-QAM	PID 55 ac3 audio () ● PID 55 ac3 audio () ● PID 54 ac3 audio () ● PID 54 ac3 audio () ● PID 53 mpeg-2 video () 239 90.1.3_P5000
	DVB SI Enable Network ID Network Name Service Provider Name		 D I Program 7 Program 7 per pid. 52 per pid. 53 PID 55 ac3 audio D PID 54 ac3 audio D PID 54 ac3 audio D PID 54 ac3 audio

Figure 1-12: Added Program Displayed under TS Source

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ALARMS & EVENTS

10. Alarms & Events

10.1 Alarms

Alarms are current issues that exist with the Device and are not persistent; these are cleared over time as issues are resolved. Alarms are of a minor nature and do not affect or report on the streaming operation of the Device platform. Alarms are presented in the GUI, see Figure 1-1 and Figure 1-2.

- 1. Severity Indication of the severity of the current alarm condition.
- 2. State Reports on the state of the Device platform, either Active (Streaming) or Idle.
- 3. Enabled Reports on the Device. Enabled or Disabled.
- 4. Alarms Button Opens the alarms window for review and deletion of reported alarms.



Figure 1-2: Alarms Notifications - Streaming

10.1.1 Reviewing Alarms

Open the Alarms window by clicking the Alarms Button, top right corner of the GUI, Figure 9-8 (4). The Alarms window opens and displays the current alarms, Figure 9-9.

- 1. Select the desired action from the actions list. "Clear All Alarms" action will directly delete all alarms with a warning.
- 2. Item's selection boxes become ticked or manually select each item for action.
- 3. Review a long list of alarms with the "Previous/Next" action controls.
- 4. Search an alarm condition with criteria. The list is dynamically refreshed with the items matching the entered string.

1	Alar Sele	rms for Device	e Clear Sel	lected Clea	r All Alai	ms			SI	earch:	Show 10 entries
	_	Date 🔶		Name	\$	Component	$\stackrel{\wedge}{=}$	Device	\$	Severity 🕴	De
	7	23.10.2014 19:24:00	Add Error			VersAtive (Live-VersAtive)		VersAtive (Live-VersAtive)			Fail to Add: Error: VersAtive Response: 'Live-Vers RFU value is used in Capture Card Audio Multi C
2		23.10.2014 17:31:06	Add Error			VersAtive (Live-VersAtive)		VersAtive (Live-VersAtive)			Fail to Add: Error: VersAtive Response: "Live-Vers Resource: 'searchthis' Already Exist'
	▼	23.10.2014 17:16:28	Add Error			VersAtive (Live-VersAtive)		VersAtive (Live-VersAtive)			Fail to Add: Error: VersAtive Response: 'Live-Vers Resource: 'Ethernet-239.90.1.5-5000' Already Ex
	Showi	Ing 1 to 3 of 3 entrie	s			m					Previous Next

Figure 1-3: Reviewing Alarms

10.2 Events

Events are reported on issues of a higher degree and are persistent; being saved until they are manually deleted. The Events Indictor/Button in the GUI is at the lower right corner, Figure 1-4, clicking of which opens the Events window in the GUI.



Figure 1-4: Events Notifications

10.2.1 Reviewing Events

Open the Events window shown in Figure 1-5, by clicking the GUI Events Button, Figure 1-4 (1).

- 1. Events are displayed by default in chronological order, most recent first. Use scroll bars or mouse wheel to view list extents.
- 2. The sort ordering can be changed by clicking the column header. All headers toggle and sort the list between 'top down' & 'bottom down' when clicked.
- 3. Click the control actions to clear events or open "Events History" window.
- 4. Search an alarm condition with criteria. The list is dynamically refreshed with the items matching the entered string.
- 5. Review a long list of alarms with the "Previous/Next" action controls.
- 6. Severity Information Only. Does not affect streaming
- 7. Severity Warning. Potentially affects streaming.
- 8. Severity Error. Event affecting streaming.

	3	Eve	nts		3
Clear Events Refresh	Events History	utomatic Refresh		Search:	Show 150 💽 entries
🕗 Date 🦟	Name	Component	Device	Severity 🔶	Desc
30-19-2014-08:19:56	Closing Connections	2CE_SDI-1-SDI (Live-Resource- Capture)	VersAtive (Live-VersAtive)		Machine Time: 30/10/14 08:19:56: Closing All Col
30-10-2014 08:19:56	General WARNING	2CE_SDI-1-SDI (Live-Resource- Capture)	VersAtive (Live-VersAtive)	4	Machine Time: 30/10/14 08:19:56: Resource was 202)
30-10-2014 08:20:01	Multiplexer Monitor Error	MPTS_MUX_1 (Mpts-Mux-Session)	VersAtive (Live-VersAtive)		Multiplexer Monitor Received Time Out
30-10 1.8:20:26	Multiplexer Monitor Error	MPTS_MUX_1 (Mpts-Mux-Session)	VersAtive (Live-VersAtive)		Multiplexer Monitor Received Time Out
30-10-2014 08:20:46	Closing Connections	2CE_SDI-1-SDI (Live-Resource- Capture)	VersAtive (Live-VersAtive)	6	Machine Time: 30/10/14 08:20:46: Closing All Col
30-10-2014 08:20:46	General WARNING	2CE_SDI-1-SDI (Live-Resource- Capture)	VersAtive (Live-VersAtive)		Machine Time: 30/10/14 08:20:46: Resource was 202)
30-10-2014 08:20:52	Multiplexer Monitor Error	MPTS_MUX_1 (Mpts-Mux-Session)	VersAtive (Live-VersAtive)	80~	Multiplexer Monitor Receiver
Showing 451 to 600 of	1,000 entries		Previous Next		

Figure 1-5: Reviewing Events

10.2.2 Events History

Clicking "Events History" in the Events window, Figure 9-11 (3) opens a new browser window or tab, Figure 9-12, in which the alarm history may be manipulated or searched.

- 1. Choose a date range by clicking the "From/To" dialogs to open a date selector in which the desired date range may be specified.
- 2. Select desired 'Severity', 'Device' or 'Component' levels to be displayed.
- 3. Clicking **Apply** button initiates the action. All filter settings require Apply button to initiate action.
- 4. Events are displayed by default in chronological order, most recent first. Use scroll bars or mouse wheel to view list extents.
- 5. The sort ordering can be changed by clicking the column header. All headers toggle and sort the list between 'top down' & 'bottom down' when clicked.
- 6. Search an alarm condition in the current displayed list with a string. The list is dynamically refreshed with the items matching the entered string.
- 7. Review a long list of alarms with the "Previous/Next" action controls.
- 8. Download a copy of the current visible records in a spreadsheet compatible file.



Figure 1-6: Reviewing Events

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MONITORING

11. Monitoring

Monitoring may be implemented on specific entities, Resources, Multiplexes and Streams. Monitoring the Device displays a series of histograms of the performance and load factors of the system hardware. Monitoring Streams shows the stream parameters and a video presentation. Monitoring a multiplex shows the aggregate bitrate of the MUX.

11.1 Chapter Contents

- "Monitoring the Device"
- "Monitor Resources"
- "Monitoring a Multiplex"
- "Displaying Stream Information"

11.2 Monitoring the Device

The Device may be monitored at a Hardware level, which is the underlying machine motherboard.

- 1. In Tree View, click the **Device** icon, Figure 1-1.
- 2. Click to select the **Device** tab.

Performance factors monitored include:

- 3. CPU Load The histogram of average CPU load over the last 30 seconds displayed in Green.
- 4. RAM The histogram of average RAM usage over the last 40 seconds.
- 5. CPU Heat The histogram of average CPU temperature over the last 40 seconds.
- 6. Network Traffic Input- Network Interface input traffic load is displayed in Blue.
- 7. Network Traffic Output- Network Interface output traffic load is displayed in Red.



Note: The Monitoring page only starts recording when the Device tab is selected In the Tree View.



Figure 1-1: Monitoring the Device

11.2.1 Longer Term Device Monitoring

The default view for the monitor period is the last 40 seconds, but a longer term histogram is saved in each Device. This is accessed from the Device tab by clicking the **History** link shown in Figure 1-2.

- 1. In Tree View, click the **Device** Icon.
- 2. Click to select the **Device** tab.
- 3. Click the **See History** tab.



Figure 1-2: Monitor the Device History

A number of options may be selected to determine the length of history. The exact dates may be selected from the calendar by clicking in the **From** and **To** windows, Figure 1-3. Preset time periods of from the last hour up to 2 weeks may also be selected.



Figure 1-3: Monitor a Device Histogram

11.3 Monitor Resources

The Preview monitoring function for each Resource is enabled by default, Figure 1-4, but may be disabled at each individual Resource by unticking the Preview On box and then clicking **Save**.



Figure 1-4: Preview Enabled

Previewing resources uses some of the platform CPU cycles although usually an insignificant amount. It is however possible that the encoding functions are running low on CPU cycles witnessed by high CPU load on a Device, see "Monitoring the Device" on page 11-1, and it may be judged that Preview functionality can be sacrificed in order to maximize encoding power. In this case a user may disable Preview to lower CPU load.

11.3.1 Single Resource Preview

Any single Resource may be Previewed to determine the content or quality of the ingested video and audio before the content encoding/transcoding is started. Video is displayed at 5 frames/sec. The resource may be from Capture Cards or Ethernet input. A resource may also be previewed to hear its audio quality if it already has streams created for it but the streaming for this resource must first be stopped.



Note: Audio is only available during Preview and is not available after encoding/transcoding is started.

- 1. Click to select the Monitoring tab, Figure 1-5.
- 2. From the Tree View, Right Click the Resource to be Previewed
- 3. Select **Preview** in the menu.
- 4. Properties of the Resource are displayed in the Pane View window.

								()) () () () () () () () () (
VersAtive	🥘 General 🕨 🚺 Device	e 🕨 🍷 2CE_SDI-1-SDI					Severity clear	State idle	Enabled yes	🔺 Alarm
¢ vms ⊡	Settings and Info.	Monitoring Device								
search here	2CE_SDI-1-SDI		Source Name	: 2CE_SI	Audio Input	Embedde	Vide	o Forma	: HD_1080i_5994	4 Video Input: SDI
🕞 🎯 General						troom Infor	nation			
Device	ATX				-	0 Stream	1020+10	80		
Ethernet-239.90.1.1-5000			Video Bi	Data: Di	hh (n.) Video Fromo	Dete: D fee	Audia D	Dete: 0	lub fa	last .
Program9			41060 DI	rtate. U	KD/S YIGEO FTAITIE	reate. U the	AUGIO D	t reate. U	KU/S	
20E_SDH-ISD Costeam-1 Costeam-1 Start Copy			Video Codec: Frame Rate Resolution: Bit Rate (kb Top Field Fi De-Interlace Close Capti	(fps): /s): st: Method: an:	H264 Use Original 1920x1060 5000 Auto none Inactive	Audio Codec: Sample F Bit Rate	Rate (Hz): (kb/s) :	AC3 4800 192	0	
× Disable	-		Publish Co	nections						
			Format	Protocol	URL			Interfac	e P	ort
			spts	UDP	239.101.1.3		eth2		12	54
								Save]	

Figure 1-5: Select a Resource to Preview

- 5. The video is soon presented in a window with accompanying audio, Figure 1-6.
- 6. Stream parameters are displayed in the Pane View window.
- 7. The Resource in Tree View shows a purple triangle indicating monitoring is active, Figure 1-6. This must be manually stopped before adding Sessions or Streams or starting encoding/transcoding.

VersAtive Management	General ▶ ■ Device ▶ 2CE_SDI-1-SDI SDI-1-SDI		Severity State Enabled Clear previewal yes	Alarms
¢vms C+	Settings and Info. Monitoring Device			
search here	2CE_SDI-1-SDI	Source Name: 2CE_SDI 1 Audio Input: Embed	ded 2ch Video Format: HD_1080i_5994	4 Video Input: SDI
General	25	Stream	Information	
- Device	20 PH (T	0-St	ream-1920x1080	
		Video Bit Rate: 4884 kb/s Video Frame Rate	29.97 fps Audio Bit Rate: 187 kb/s	less 🔺
Program Social		Video Au Codet: H264 Co Frame Rete (fps): Use Original Sa Resolution: 1920/1080 Bit Bit Rete (b/s): 5000 Bit O Field First: Auto Go De-Introfice Wethod: note Go Close Caption: inactive Inactive	tdio AC3 dec: AC3 Rate (H2): 48000 Rate (kb/s): 192	
		Publish Connections		
	U	Format Protocol URL	Interface P	ort
		spts UDP 239.101.1.3	eth2 12	34

Figure 1-6: Resource Monitor Indicator

- 8. To stop the Preview, Right Click the Monitored Resource to open the menu, Figure 1-7.
- 9. Click to select **Stop** in the menu.
- The Resource stops streaming to the monitor window.



Figure 1-7: Stop Resource Monitoring

11.3.2 Multiple Resource Monitoring

All available Resources may be monitored on a single page but audio output will not be available. Video is displayed at 5 frames/sec. For audio monitoring, see "11.3.1 Single Resource Preview".

- 1. Click to select the Monitoring tab, Figure 1-8.
- 2. From the Tree View, click the Device.
- 3. All Resources which have active output streams are displayed in the Pane View window.
- There is no accompanying audio.
- To stop the monitoring, click away from the Device Or Monitor tab.



Figure 1-8: Monitor Device Resources

11.4 Monitoring a Multiplex

Any multiplex may be monitored to determine operating parameters such as bitrate and payload of the MUX over time.

- 1. In the Tree View, click to select the **MUX** to be monitored.
- 2. Click to select the Monitoring tab, Figure 1-9.
- 3. The output bitrate of the MUX and the average payload is displayed.
- 4. A histogram of the output bitrate and payload of the MUX are charted below.

VersAtive Management	🎯 General ▶ 🚦 Device ▶ 連 MUX3				Severity clear	State Enat idle ye	bled IS	🔒 Alarms 🄶
¢ vms ⊡	Settings and Info. Monitoring 20	evice						
search here	⊨ MUX3	михз						
🖃 🥘 General	B 239.90.1.1_P5000 B ■ Program 2	Total Bitrat	e	n/a				
Device	- 🖥 pid 51 ac3 audio	Total Paylo	ad Bitrate	n/a				
	bid 50 ac3 audio bid 49 mpeq-2 video	Output NU	L Bitrate	n/a				
238.90.1.1_P5000	© 239.90.1.2_P5000	Output PA	l Bitrate	n/a				
239.90.1.3_P5000	B	Output NIT	Bitrate	nia				
- MUX3_1	- 🖥 pid 54 ac3 audio	output SD	- Division C	104				E
Ethernet-239.90.1.1-5000	pid 53 mpeg-2 video							
Program4	e III Program 7							
Program 5	- bi pid 55 ac3 audio							
Program9	⊨ i pid 54 ac3 audio i							
TCE_MINI_RECORDER-1-HDMI					Bitrates	(kb/s)		
🖃 🛅 0-Stream-1280x720		total						40740.00
Publish-SPTS-0-Stream-1280	t	(38801 kb/s)						36666.00
		(22654 kb/s)		•				31234.00
				4				28518.00
								25802.00
								23086.00
			-					20370.00
								14938.00
								12222.00
< +	•							
							Events 5 1	13:00

Figure 1-9: Monitor a Multiplex

5. The resource in Tree View shows a Purple triangle indicating monitoring, Figure 1-6. This must be manually stopped before adding Sessions or Streams.



Figure 1-10: Resource Monitoring Indicator

- 6. To stop the monitor stream, Right Click the Monitored Resource to open the menu, Figure 1-11.
- 7. Click to select **Stop** in the menu.
- 8. The resource stops streaming to the monitor window.



Figure 1-11: Resource Monitoring Stopped

11.5 Displaying Stream Information

During monitoring, there is full stream information available that is displayed by default but this may be turned off.

11.5.1 View Less Stream Information

Expanded stream information shown in the Pane View window is the default setting.

Turning off Expanded Information

- 1. From the Tree View, click to select the **Resource** to be monitored, Figure 1-12.
- 2. Click Less.
- 3. Expanded Stream Information is not displayed (example shows before clicking Less).



Figure 1-12: View Expanded Resource Stream Information

VLAN TAGGING

12. VLAN Tagging

Using a VLAN and VLAN tagging is an advanced application for use in networks where the web GUI interface must be accessed remotely over the streaming network facilities and where local physical access to the Device or a dedicated management network is not practical.

12.1 Chapter Contents

- "VLAN General Information"
- "Support for VLANs"
- "Create a VLAN Using the Device GUI"
- "Create VLAN with MKIP Interface"
- "Application of VLANs"

12.2 VLAN General Information

12.2.1 What is a VLAN?

In computer networking, a single layer-2 network may be partitioned to create multiple distinct broadcast domains, which are mutually isolated so that packets can only pass between them via one or more routers; such a domain is referred to as a virtual local area network, virtual LAN or VLAN (Wikipedia).

12.2.2 What is VLAN Tagging?

IEEE 802.1Q is the networking standard that supports Virtual LANs (VLANs) on an Ethernet network. The standard defines a system of VLAN tagging for Ethernet frames and the accompanying procedures to be used by bridges and switches in handling such frames. (Wikipedia).

12.2.3 What is the VLAN Numbering Range?

VLANs may be assigned a decimal number from 0 to 4096.

12.3 Support for VLANs

The Device supports VLAN tagging to enable the Management MGMNT physical port to be accessed across the streaming GbE network on a configured switch. This allows remote management of the Device without the problems associated with connecting the management port to an already congested network. Data packets intended for the management process are effectively partitioned from the streaming data.

Each of the Ethernet streaming ports support the creation of multiple virtual Ethernet ports which may be used to create VLANs. This feature may be used to allow both routing the streaming of the input and output video and management access to the GUI on separate virtual networks as if there were two separately wired physical networks installed. In VLAN tagging, the broadcast domain is extended across the VLAN as if the Devices in the group were all locally connected together.

By using VLANs, the video content and management access streams, while arriving together, are separated at the destination switch into two distinct VLAN groups, each routed to a specific physical port defined by the VLAN. In this way all streaming video will be routed to the video receiving Device and the management access will be routed to the management computer(s). In this way, only traffic intended for a given receiving Device will receive it. Since broadcast domains are extended over VLANs, all of the features of a broadcast domain are extended across the VLAN as well.

12.4 Create a VLAN Using the Device GUI

There are two ways to create the VLAN. This procedure shows using the Device GUI. The VLAN can also be created by MKIP, see "12.5 Create VLAN with MKIP Interface" To start, open the GUI and login, refer to Figure 1-1.

- 1. Click on the **Device** in Tree View to select it, Figure 1-1.
- 2. Click on Ethernet Cards tab.
- 3. Click Add V-LAN button on Tool Bar.

VersAtive	Root1 🕨 🔋 Device	
¢ vms G→	[™] Settings and Info. ■ Monitoring ■ Device	
search here	Add Resource Add V-LAN	
General Device Device Ethernet-239.100.254.1-8000_CNNH(Basic Ethernet Cards Capture Source License In	nformation
	IP Address 10 . 1 . 2 . 9	IP Addre MAC
Ethernet-239.100.254.6-8000	Subnet Mask 255 , 255 , 255 , 257 .	Subnet N
	Default Gateway 10 1 0 1 DNS Server 8 8 8 8 8	Default C
	Duplex	Duplex
	Speed 1000 State true	Speed State

Figure 1-1: Adding New VLAN from GUI

- 4. In the new dialog that opens, enter the VLAN Number(VLAN tag) in the 'name' window, Figure 1-2. The full name will comprise the selected Ethernet port number plus the VLAN number or tag. In the example the selected physical port is eth1 and we entered 666 with the resulting full name in the GUI being eth1.666
- 5. Chose the output Ethernet Interface that the VLAN should appear on. Changing the phy port changes the name.
- 6. Enter the VLAN Ethernet address, mask and gateway.
- 7. Click Add button to add this interface but it is not added immediately in the GUI.

VersAtive Add V-Lan	×
Name eth1.666 Interface eth1:192.168.10.1	* II
IP Address 192 . 168 . 20 . 250 MAC 00:25:0 Subnet Mask 255 255 255 0	
255.255.0 Default Gateway 192.168.20.1	

Figure 1-2: Edit VLAN Properties

8. Log out of the GUI then log back in again.

9. The new VLAN is listed with the other physical interfaces, Figure 1-3.

VersAtive	Root1 🕨 🔋 Device				Severity State Clear idle	Enabled yes
¢ vms G→	🕫 Settings and Info.	📫 Monitoring 📔 💷 Device				
search here Q Ad Resource Add V-LAN						
General	Basic Info Ethernet Ca	rds Capture Source Licens	se Information QAM Outp		New VI	
Ethernet-239.100.254.1-8000_CNNHI	Mar	nagement 🕑 🗊	eth	1	eth	1.666
2CE_SDI-1-SDI	IP Address	10 . 1 . 2 . 9	IP Address	192 . 168 . 10 . 1	IP Address	192 . 168 . 16 . 250
🕂 🛃 Ethernet-239.100.254.2-8000	MAC		MAC		MAC	
🕂 🚦 Ethernet-239.100.254.6-8000	Subnet Mask	255 . 255 . 252 . 0	Subnet Mask	255 . 255 . 255 . 0	Subnet Mask	255 . 255 . 255 . 0
	Default Gateway	10 . 1 . 0 . 1	Default Gateway	17 . 245 . 255 . 1	Default Gateway	192 . 168 . 020 . 1
	DNS Server	8.8.8.8	DNS Server		DNS Server	
	Duplex		Duplex		Duplex	
	Speed		Speed		Speed	
	State		State		State	

Figure 1-3: Newly Added VLAN displayed in GUI

12.5 Create VLAN with MKIP Interface

There are two ways to create the VLAN. This procedure shows using the MKIP Interface. The MKIP interface is accessed using an SSH client such as **PuTTY** which is shown here.

The VLAN can also be created in the GUI, see "12.4 Create a VLAN Using the Device GUI".

Procedure

- 1. Install and run PuTTY (or another ssh client).
- 2. Configure PuTTY (or other ssh client) with the IP address of the Device and use the default SSH port 22.
- 3. Log in with user: mkip and password: 123456

🖞 10.1.1.9 - PuTTY					
ATX VersAtive mkip Ver 0.5.5 :	: Dialog - Main Menu				
Select menu with [UP] [DO	Configuration Settings j				
Select mend with [0r], [bo	www.j and [Enter] Keys				
Display	Display System Information				
Set Network	Set Network Configuration				
Ping	Test Connectivity with Ping				
Tcp Dump	Check Interface				
eth0 set Default	Restore eth0 Default settings				
Date/Time	Update new Date & Time				
Set Time By NTP	Use NTP server to update Date & Time				
Restart	Restart this Machine				
Authentication Mode	Set Apache Authentication mode				
905	(+) "t)				
		4			
	< <mark>ck</mark> >				
l					
		-			

Figure 1-4: Select 'Set Network'

- 4. Once connected and access to the menu is attained, arrow down to Set Network, then click OK, Figure 1-4.
- 5. Select the Streaming Ethernet Port that a virtual port will be created on. Select eth1, eth2, eth3 or eth4.
- 6. Click **OK** when the **eth'x'** is selected, Figure 1-5.



Figure 1-5: Select a streaming port

7. Arrow down to select Add Vlan, then click OK, Figure 1-6.



Figure 1-6: Select 'Add VLAN'

8. A new page opens where a virtual interface can be named, Figure 1-7. (vlan name and vlan tag are synonymous).

20111.9 - PuTTY	- • ×
	Î
ATX VersAtive mkip Ver 0.5.5 Network Setting- eth1: Enter Vlan Name	
eth1.1234	
< OK > <cancel></cancel>	
	Į

Figure 1-7: Enter vlan tag (name)

- 9. Enter the vlan tag in the format ethx.xxxx where the **Ethernet port** is typed followed by a **dot** then the **vlan tag** in up to 4 numeric digits ranging from 0 to 4096. ie. **eth1.1234** shown in Figure 1-7. Alphabetic characters are not allowed.
- 10. Click OK to accept, opening a new page for the IP address, (Figure 1-8). Enter the IP address and click OK.

₽ 10.1.1.9 - PuTTY	- • •
ATX VersAtive mkip Ver 0.5.5 Network Setting - eth1.1234: Enter IF address (current is)	
192.168.100.100	
	- -

Figure 1-8: Enter VLAN IP Address

11. A new page opens to set the vian IP mask. Enter the mask (Figure 1-9) and click OK.

∰ 10.119 - PuTTY	
ATX VersAtive mkip Ver 0.5.5 Network Setting- eth1.1234: Enter IP mask 255.255.255.0	
Cancel>	
	-

Figure 1-9: Enter VLAN IP Mask

12. A new page opens to set the default gateway. Enter the IP address of the gateway (Figure 1-10). Click **OK**.

₽ 10.1.1.9 - PuTTY	- • 💌
	^
ATX VersAtive mkip Ver 0.5.5 Network Setting eth1.1234: Enter Gatway IP (Optional)	
192.168.100.1	
< OK > <cancel></cancel>	
	•

Figure 1-10: Enter Default Gateway IP

13. Before creating the VLAN check that the settings are correct then click OK, Figure 1-11.



Figure 1-11: Check Settings then accept

14. After the VLAN is created, the VLAN will show in the network list for eth1 branch (in this example), Figure 1-12.



Figure 1-12: Added VLAN shows in list

15. The new configuration may be viewed with the **Display** menu item, Figure 1-13.

🔗 10.1.1.9 - PuT	ттү			- 0 🔀
	ATX VersAtive mk:	ip Ver 0.5.5 - S	stem Information	1^
Sat Mar 2	2 22.20.46 TST 2014			
I/F	Address	Mask	Gateway	MAC
eth0(MP)	10.1.1.9	255.255.252.0	10.1.0.1	
00:24:9b:	06:cb:b1			
eth1	192.168.10.1	255.255.255.0	0.0.0.0	
00:25:90:	c6:5e:dc			
eth1.111	192.168.100.100	255.255.255.0	192.168.100.1	
00:25:90:	c6:5e:dc			
eth2	192.168.20.1	255.255.255.0	0.0.0.0	
00:25:90:	c6:5e:dd			
eth3	192.168.30.1	255.255.255.0	0.0.0.0	
00:25:90:	c6:5e:de			
eth4	192.168.40.1	255.255.255.0	0.0.0.0	
00:25:90:	c6:5e:df			
eth5	0.0.0.0	0.0.0.0	0.0.0.0	
00:25:90:	a7:61:62			=
				59% -
		< ok >		

Figure 1-13: 'Display' shows new VLAN

- 16. When completed filling the requests a reboot from the main menu is required; select **Restart** and click **OK**.
- 17. After the restart of the server, the new VLAN will be displayed in the GUI on the Device>Ethernet Cards page as shown in Figure 1-14.

VersAtive	Root1 🕨 📕 Device				Severity State clear idle	Enabled yes
¢ vms G→	骂 Settings and Info.	🞽 Monitoring 🛛 🖼 Device				
search here Add Resource Add V-LAN						
Basic Info Ethermet Cards Capture Source License Information QAM Output Devices				New VLAN		
Ethernet-239.100.254.1-8000_CNNHI	Mar	nagement 🕑 🗎	eth	1	eth	1.666
2CE_SDI-1-SDI	IP Address	10 . 1 . 2 . 9	IP Address	192 . 168 . 10 . 1	IP Address	192 . 168 . 16 . 250
Ethernet-239.100.254.2-8000	MAC		MAC		MAC	
🕀 💺 Ethernet-239.100.254.6-8000	Subnet Mask	255 . 255 . 252 . 0	Subnet Mask	255 . 255 . 255 . 0	Subnet Mask	255 . 255 . 255 . 0
	Default Gateway	10 . 1 . 0 . 1	Default Gateway	17 . 245 . 255 . 1	Default Gateway	192 . 168 . 020 . 1
	DNS Server	8.8.8.8	DNS Server		DNS Server	
	Duplex		Duplex		Duplex	
	Speed		Speed		Speed	
	State		State		State	

Figure 1-14: Newly Added VLAN displayed in GUI

12.6 Application of VLANs

12.6.1 No VLAN

Without the use of a VLAN it is necessary to connect a Management PC directly to the MGMNT port, eth0, of the Device for configuration. This situation can be inconvenient if the Device is remotely located. This scenario is shown in Figure 1-15.



12.6.2 Management MGMNT VLAN



To overcome this limitation, a VLAN for the eth0 port may be created and the management GUI accessed anywhere in the streaming network. The VLAN tag assigned to the Device is likewise assigned to a convenient switch port. In the example in Figure 1-16, the streaming port eth4 is assigned a new virtual port name or **Tag** of 123. The physical switch port in the streaming network has a port tagged with the same Tag name 123 and thus any PC connected to this specific switch port may access the Device on the address assigned for it, which in this example is 192.168.0.23, the usual default address. Traffic of the streaming network is not sent to the port tagged 123 and likewise, traffic for management is only routed to the port tagged 123.

12.6.3 Streaming Network VLAN

In the same way that management traffic is partitioned to appear only on the management VLAN switch port, VLANs may be created to partition streaming traffic segments also. An example is shown in Figure 1-17. Three VLANs are created and all stream from the same Ethernet port eth1. Network trunk ports pass the streams and they exit from the predefined switch which is 'tagged' with the assigned VLAN tags.

Procedure

- 1. The virtual IP address is configured using the mkip SSH shell menus.
- 2. Streaming content is assigned to the created virtual interface.
- 3. The switch port is tagged with the VLAN tag name or number.
- 4. The content that is assigned to the virtual interface is 'tagged' with the name/number and then only appears at the switch port with a corresponding tag.



MKIP SYSTEM SHELL

13. Mkip System Shell

The Device encoding/transcoding platform IP Addresses may be configured within the GUI but some features may also be configured with the built in shell interface which is called **mkip**. The mkip interface is accessed through an SSH protocol client such as PuTTY or by connecting a mouse, keyboard and monitor physically to the server. This chapter explains the configuration available within the mkip shell and assumes the connection is by SSH client PuTTY rather than physical connections.

13.1 Chapter Contents

- "SSH Clients Supported"
- "Connect Using Monitor, Keyboard and Mouse"
- "MKIP Shell Menu"
- "Menu Display"
- "Menu Set Network."
- "Menu Ping"
- "Menu TCP Dump"
- "Menu Eth0 Set Default"
- "Menu Date/Time"
- "Menu Restart"
- "Menu Shutdown"
- "Menu Authentication Mode"

13.2 SSH Clients Supported

Any ssh client may be used to access the shell menu, shown in Figure 1-1. Remember to set translation to **ISO-8859-1:1998** (Latin-1, West Europe) otherwise lines may not be drawn properly. The SSH client may be installed on any convenient platform.

Use the following when logging in:

Username:

mkip

.0.1.1.9–PuTTY X VersAtive mkip Ver 0.5	.5 :: Dialog - Main Menu
[Sys	tem Configuration Settings]
Select menu with [UP],	[DOWN] and [Enter] Keys
Set Network	Set Network Configuration
Ping	Test Connectivity with Ping
Tep Dump	Check Interface
eth0 set Default	Restore eth0 Default settings
Date/Time	Update new Date & Time
Set Time By NTP	Use NTP server to update Date & Time
Restart	Restart this Machine
Shutdown	Shutdown this Machine
Authentication M	ode Set Apache Authentication mode
90%	
	< <mark>o</mark> K >

Figure 1-1: Mkip Shell Main Menu

13.3 Connect Using Monitor, Keyboard and Mouse

- 1. With the Device turned off, connect a VGA monitor to the rear panel VGA port.
- 2. Connect a USB keyboard and mouse to any of the Device USB ports.
- 3. Turn on the Device.

The monitor screen will display messages from the Device boot-up application. Once the boot process has finished and no further messages are scrolling up the screen, use the following key combination to access the IP settings screen: Ctrl+Alt+F2

- The monitor screen will display login as:
- 4. Use the following:

Username: mkip Password: 123456

You will be presented with the MKIP System Settings menu on the monitor which will be similar to Figure 1-4.

13.4 Connect Using SSH Client

It may be more convenient to use SSH than to connect a monitor. In this manual we demonstrate using PuTTY, an SSH client. A free copy of PuTTY is obtainable at http://www.chiark.greenend.org.uk/~sgtatham/putty/download.html.

- 1. Start PuTTY and enter the Device default IP address (192.168.0.23) and SSH port number (22), Figure 1-2. If the address and port have been changed from default, use the applicable address and port.
- 2. Optionally, for the best display of line drawing, in the Window>Translation section, choose ISO-8859-1:1998 (Latin-1, West Europe)

į	PuTTY Configuration		×	
	Category:			
		Basic options for your PuTTY session		
	Eoggn:g ⊡-Terminal	 Specify the destination you want to connect to Host Name (or IP address) 		
	- Bell	192.168.0.23 22		
	Features ⊡Window	Connection type: ◯ Raw ◯ Telnet ◯ Rlogin ☉ SSH ◯	Serial	
	Appearance Behaviour Translation	Load, save or delete a stored session Saved Sessions		
	Selection	VersAtive		
	E- Connection	Default Settings	.oad	
	Data	Freenas S VersAtive	jave	
	- Telnet	D	elete	
	⊞ SSH			
	Serial	Close window on exit: O Always O Never O Only on clean e	xit	
	About	Open Ca	ancel	

Figure 1-2: PuTTY Session

3. Click **Open**. You are presented with a login screen, Figure 1-3.



Figure 1-3: mkip Shell Login Screen

4. Use the following:

Username: mkip Password: 123456



After a short delay, you will be presented with the MKIP System Settings menu, Figure 1-4.

Figure 1-4: mkip System Menu

- 5. Navigate the shell menu in three ways:
 - Type the letter appearing in red font
 - Use the keyboard up/down arrows
 - Use a mouse left click
 - To select, either click OK or use keyboard Return/Enter

13.5 MKIP Shell Menu

There are a number of operations that may be performed at the mkip system shell menu as described in Table 13.5a.

Setting	Keyboard shortcut	Description	
Display	D	Displays system information such as all the IP addresses (including virtual addresses), subnet masks, gateways and physical MAC addresses.	
Set Network	S	The IP address settings of eth0, eth1, eth2, eth3 and eth4. Also enables the addition of virtual interfaces, which are most notably used for VLAN tagging.	
Ping	Р	PING is a network interface utility to test connectivity to other network Devices.	
TCP dump	Т	Allows the user to check source multicasts on each of the ETH ports.	
eth0 set Default	е	Restores all eth0 settings to their Factory Setting with the management IP add (eth0) set to 192.168.0.23.	
Date and Time	D	Enter date and time manually. This disables NTP updates.	
Set Time by NTP	S	Enter NTP server address to automatically set date and time and over-ride any manual settings. Time zone locale is set here also.	
Restart	R	Causes the server to reboot.	
Shutdown	S	Causes the server to immediately shutdown and not restart.	
Authentication Mode	A	Sets the Apache Authentication mode between Local Authentication (Default) and use of a RADIUS Server.	

Table 13.5a: MKIP System Shell Menu Choices

13.6 Menu - Display

1. Click **Display** to choose to display system IP addresses, Figure 1-5.



Figure 1-5: MKIP System Configuration Settings Menu

2. Click or select **OK** to open the information window, Figure 1-6.

10.1.1.9 - PuTTY			
ATX VersAtive	mkip Ver 0.5.5 -	System Information	
Mon Man 17 01.15.47 TST 20	1.4		
I/F Address	Mask	Gateway	MAC
eth0(MP) 10.1.1.9	255.255.252.0	10.1.0.1	
00:24:9b:06:cb:b1			
eth1 192.168.10.1	255.255.255.0	0.0.0.0	
00:25:90:c6:5e:dc			
eth2 192.168.20.1	255.255.255.0	0.0.0.0	
00:25:90:c6:5e:dd			
eth3 192.168.30.1	255.255.255.0	0.0.0.0	
00:25:90:c6:5e:de			
eth4 192.168.40.1	255.255.255.0	0.0.0.0	
00:25:90:c6:5e:df			
eth5 0.0.0.0	0.0.0.0	0.0.0.0	
00:25:90:a7:61:62			
eth6 0.0.0.0	0.0.0.0	0.0.0.0	
00:25:90:a7:61:63			
			63% -
	< <mark>o</mark> k >		

Figure 1-6: Display System Information

3. Click OK again to return to the **System Configuration Settings** Menu.

13.7 Menu - Set Network.

Set all network IP addresses here including creation of virtual addresses for VLAN tagging.

Setting the MGMNT IP address

- 1. Arrow down to Set Network, Figure 1-7.
- 2. Click **OK** to open the Network Configuration Settings page, Figure 1-8.



Figure 1-7: Set Network

3. The eth0 network is selected; click **OK** to set the eth0 IP Address (the MGMNT port), . This is a series of pages. Click **OK** each time to proceed to the next page in the series.

🛃 10.1.1.9 - PuTTY		
ATX VersAtive mkip Ver 0.5.5 :	: Dialog - Network Menu	<u> </u>
[Network C	Configuration Settings]	1_
Select menu with [UP], [DOW	[N] and [Enter] keys	
eth0	10.1.1.9	
eth1	192.168.10.1	
eth2	192.168.20.1	
eth3	192.168.30.1	
eth4	192.168.40.1	
eth5	0.0.0.0	
eth6	0.0.0.0	
Exit	Return to Main Menu	
-		

Figure 1-8: Choose Network

4. A new page opens where a virtual interface could be added. Again select the physical **eth0** port and click **OK** to change the IP address settings, Figure 1-9.

₽	10.1.1.9 - PuTTY	
	ATX VersAtive mkip Ver 0.5.5 - eth0 Configuration Menu Select Operation on eth0 Branch	
	Exit Go back to previous menu Add Vlan Add New Vlan to eth0 NIC ath0 10.1.1.9	

Figure 1-9: Set eth0 Network

5. Enter the desired IP address, Figure 1-10.

ATX VersAtive mkip Ver 0.5.5 Enter IP address	
< OK > <cancel></cancel>	

Figure 1-10: Set IP Address

6. Set Subnet mask, Figure 1-11.

🛃 10.1.1.9 - PuTTY	
	-
AIX VersAtive mkip Ver 0.5.5 Network Setting eth0: Enter IP mask	
255.255.252.0	
Cancel>	
	-

Figure 1-11: Set Subnet Mask

7. Setting the Gateway IP address is optional, Figure 1-12. This is usually the router providing internet access but if there is no router, do not enter any IP address.

ATX VersAtive mkip	Ver 0.5.5 Network Se	tting -
eth0: Enter Gatwa	ay IP (Optional)	- T
10.1.0.1		
L		
< OK	> <cancel></cancel>	
·		

Figure 1-12: Set Gateway

8. If the default gateway IP address was set and this interface default gateway is not already the current machine default gateway, you are prompted next to set that, Figure 1-13. Select yes to set it as the machine default or no.

🛃 10.1.1.9 - PuTTY		- D ×
		<u> </u>
	Default Gateway Dialog	
	Set '10.1.0.1' as	
	Vers&tive Default Gateway?	
	< Yes > < No >	
		-

Figure 1-13: Set as Machine Default Gateway

9. When finished and you accept the changes, Figure 1-14, the server will reboot.

<mark>д⁸ 10.1.1.9 - РиТТУ</mark>	<u>×</u>
ATX VersAtive mkip Ver 0.5.5 IP Address Settings for eth0 IP Address: 10.1.1.9	
Mask: 255.255.0 Gateway: 10.1.1.8 changing will take place only after reboot from the main menu ! Do you want to save the new setting?	
< Ves > < No >	

Figure 1-14: Save Settings

10. Reconnect on the new IP address, if changed.

13.8 Menu - Ping

The Ping command may be used to test connectivity between the Device and a remote machine. This is helpful when managing the Device remotely.

1. Arrow down to Ping menu item and click **OK**, Figure 1-15.



Figure 1-15: Ping

2. Enter a target address on the network or VLAN, Figure 1-16.

🛃 10.1.1.9 - PuTTY		× •
	ATX VersAtive mkip Ver 0.5.5 Enter IP address	
	10.0.85	
	< OK > <cancel></cancel>	
		=
		~

Figure 1-16: Enter target IP

Depending on the ability to reach the destination target address, one of the following results will be obtained.
 If target is not reachable, Figure 1-17.



Figure 1-17: Output for no Connectivity

• If target is reachable, Figure 1-18.

Terminal
File Edit View Search Terminal Help
PING 10.0.0.85 (10.0.0.85) 56(84) bytes of data. 64 bytes from 10.0.0.85: icmp_req=1 ttl=64 time=0.459 ms 64 bytes from 10.0.0.85: icmp_req=2 ttl=64 time=0.347 ms 64 bytes from 10.0.0.85: icmp_req=3 ttl=64 time=0.212 ms 64 bytes from 10.0.0.85: icmp_req=4 ttl=64 time=0.459 ms 64 bytes from 10.0.0.85: icmp_req=5 ttl=64 time=0.359 ms
10.0.0.85 ping statistics 5 packets transmitted, 5 received, 0% packet loss, time 3999ms rtt min/avg/max/mdev = 0.212/0.367/0.459/0.091 ms
= strike any key to continue =

Figure 1-18: Output for Connectivity

4. Strike any key to return to the menu.

13.9 Menu - TCP Dump

Use this option to obtain a TCP protocol dump for troubleshooting interface issues and connectivity.

1. Select TCP Dump from the menu, Figure 1-19

ATX VersAtive mkip Ver 0.5.5 :	: Dialog - Main Menu	<u>_ </u>
-[System Select menu with [UP], [DO	Configuration Settings] WN] and [Enter] keys	1
Display Set Network Ping Top Dump eth0 set Default Date/Time Set Time By NTP Restart Shutdown Authentication Node 90%	Display System Information Set Network Configuration Test Connectivity with Ping Check Interface Restore eth0 Default settings Update new Date & Time Use NIP server to update Date & Time Restart this Machine Shutdown this Machine Set Apache Authentication mode (+) The	1
		T

Figure 1-19: Select 'TCP Dump'

2. Specify a target interface by typing the interface name, Figure 1-20. Click OK.

🛃 10.1.1.9 - PuTTY		
	ATX VersAtive mkip Ver 0.5.5 Choose Interface eth0,eth1,	
	eth0	
		▼

Figure 1-20: Select an Interface

3. A time limit for this dump must be specified in seconds, Figure 1-21. Click OK.

<u>и</u> 10.1.1.9 - РиТТҮ	
ATX VersAtive mkip Ver 0.5.5	
For how long? Insert time in Seconds	
20	
<pre>< OK > <cancel></cancel></pre>	
	-

Figure 1-21: Enter a time limit

4. Receive the output of the TCP dump on your terminal session screen, Figure 1-22.



Figure 1-22: View the Dump Data

13.10 Menu - Eth0 Set Default

The current settings of the MGMNT management Interface eth0 may be set to factory default 192.168.0.23 with this option.

1. Select **eth0 Set Default** from the menu, Figure 1-23.

🛃 10.1.1.9 - PuTTY		
ATX VersAtive mkip Ver 0.5.5 :	: Dialog - Main Menu	
	Configuration Settings 1	
Select menu with [UP], [DO	WN] and [Enter] keys	
		- I
Display	Display System Information	
Set Network	Set Network Configuration	
Ping	Test Connectivity with Ping	
Tcp Dump	Check Interface	
eth0 set Default	Restore eth0 Default settings	
Date/Time	Update new Date & Time	
Set Time By NTP	Use NTP server to update Date & Time	
Restart	Restart this Machine	
Shutdown	Shutdown this Machine	
Authentication Mode	Set Apache Authentication mode	
90%		
	< <mark>ok ></mark>	
		Ţ

Figure 1-23: Select 'eth0 Set Default'

2. Confirm action, click Yes, Figure 1-24.

ј ²¹ 10.1.1.9 - РиТТҮ	
ATX VersAtive mkip Ver 0.5.5	
This action will clear all current IP setting Are you sure?	
< Yes > < <mark>Yo</mark> >	
	•

Figure 1-24: Confirm Restore eth0 to Default

3. The change takes place after a reboot. Log in again using 192.168.0.23.

13.11 Menu - Date/Time

The Device time may be set manually from this option. If a date and time is entered, the NTP server IP address, if entered, will be removed.

1. Select Date/Time from the menu, Figure 1-25.

🛃 10.1.1.9 - PuTTY		_ 🗆 🗙
ATX VersAtive mkip Ver 0.5.5 :	:: Dialog - Main Menu	
[System	Configuration Settings]	-1
Select menu with [UP], [DO	DWN] and [Enter] keys	
Display	Display System Information	1
Set Network	Set Network Configuration	
Ping	Test Connectivity with Ping	
Tcp Dump	Check Interface	
eth0 set Default	Restore eth0 Default settings	
Date/Time	Update new Date & Time	
Set Time By NTP	Use NTP server to update Date & Time	
Restart	Restart this Machine	
Shutdown	Shutdown this Machine	
Authentication Mode	Set Apache Authentication mode	
90%		
		-
		Ē

Figure 1-25: Select 'Date/Time'

2. Enter the time and date in the format: Day Month Year HH:MM:SS (Example 3 mar 2013 11:22:00), Figure 1-26. Click OK.

🚰 10.1.1.9 - Pu	ттү	_ 🗆 🗙
ATX VersAt:	ive mkip Ver 0.5.5 :: Dialog - Date & Time	<u> </u>
	[Date&Time Settings]	
	Enter Time & Date Current Date: Mon Mar 17 18:59:36 IST 2014	
	Format: Day Month Year HH:MM:SS Example: 3 mar 2013 11:22:00	
	Months: Jan feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec	
	Update time will clear NTP parameters !!	
	17 mar 2014 13:30:45	

Figure 1-26: Enter Date/Time in correct format

3. Time will be set to the specified time and any NTP server IP addresses will be cleared.
13.12 Menu - Set Time by NTP

The Device time may be set to be updated by an NTP server. This is the only way to define the NTP server. It cannot be set from the GUI.

1. Select Set Time By NTP from the menu, Figure 1-27.

🖉 10.1.1.9 - PuTTY												
AT	X VersAtive mkip Ver 0.5.5 :	: Dialog - Main Menu										
	[System	Configuration Settings 1										
	Select menu with [UP], [DOWN] and [Enter] keys											
	Display	Display System Information										
	Set Network	Set Network Configuration										
	Ping	Test Connectivity with Ping										
	Tcp Dump	Check Interface										
	eth0 set Default	Restore eth0 Default settings										
	Date/Time	Update new Date & Time										
	Set Time By NTP	Use NTP server to update Date & Time										
	Restart	Restart this Machine										
	Shutdown	Shutdown this Machine										
	Authentication Mode	Set Apache Authentication mode										
	90%		+) "ta									
LT												
		< <mark>o</mark> k >										

Figure 1-27: Select 'Set Time By NTP'

2. Enter the IP address of the NTP server. Do not use the url, Figure 1-28. Click OK.

🛃 10.1.1.9 - PuTT	
ATX VersAtiv	e mkip Ver 0.5.5 :: Dialog - NTP server definition & Time Zone 🔺
	['NTP'/'Time Zone' Settings] Select menu with [UP], [DOWN] and [Enter] keys
	MTP Server Set NTP server IP Time Zone Set Time Zone Back Back to Main Menu

Figure 1-28: Choose 'Set NTP Server IP'

3. In the open dialog shown in Figure 1-29, note the time zone that is currently set. If this time zone is incorrect then after setting the NTP IP address, you must also set the Time Zone from the menu next.

🛃 10.1.1.9 - PuTTY 👝 💷 🗠
ATX VersAtive mkip Ver 0.5.5 :: Dialog - NTP server definition & Time Zone
<pre>{ NTP-Server } Current Date: Wed Mar 19 01:17:01 IST 2014 Current NTP Server IP: [] Current TimeZone: [Asia/Jerusalem] Ubuntu server: 91.189.94.4 Or find one in www.pool.ntp.org Enter NTP Server IP</pre>
91.189.94.4 < OK > <cancel></cancel>

Figure 1-29: Enter the IP address

- 4. If the time zone was incorrect, select **Set Time By NTP** again from the menu, Figure 1-27. This time choose **Time Zone**, Figure 1-28.
- 5. Choose the geographic region for the time zone of the Device, Figure 1-30, then click OK.

الم	
Package configuration	^
Configuring tzdata ×	
Please select the geographic area in which you 1	ive. Subsequent 1
configuration questions will narrow this down by prese	nting a list of 1
 .cities, representing the time zones in which t 	hey are located 1
1 :	Geographic area 1
1 Antarctica	4
a Su Australia	1
1 Arctic	1
1 Asia	2 L
1 Atlantic	1
1 I Europe	1
1	1
	1
	1
	*

Figure 1-30: Chose Geographic Area

6. Choose the local region of the Device, Figure 1-31. Click **OK**.

	Confi	iguring tzdata 81111		111111
. Please sele	ct the city or	region correspondin	a to your time	zone i
1		region ourrespondi	.g oo jour orme	
1			:Time	zone i
1				
1	1	Harbin		1
1	1	Hebron		1
1	1	Ho Chi Minh		1
1	81	Hong Kong		1
1	1	Hovd		1
1	1	Irkutsk		1
1	1	Istanbul		1
1	1	Jakarta		1
1	1	Jayapura		1
1	1	Jerusalem		1
1				1
1	_			1
1	< <mark>Ok</mark> >	<cano< td=""><td>el></td><td>1</td></cano<>	el>	1
ı				1

Figure 1-31: Choose Local Region

7. Time will be automatically updated from the defined server.

13.13 Menu - Restart

Shutdown and restart the Device server from this option.

13.14 Menu - Shutdown

Shutdown the Device server from this option. The server will not restart.

13.15 Menu - Authentication Mode

Remote Authentication Dial In User Service (RADIUS) is a networking protocol that provides centralized Authentication, Authorization, and Accounting (AAA) management for users that connect and use a network service. RADIUS was developed by Livingston Enterprises, Inc. in 1991 as an access server authentication and accounting protocol and later brought into the Internet Engineering Task Force (IETF) standards. (Wikipedia).

Implementation

RADIUS Authentication is implemented in the GUI (Web and SSH). In this mode the Username and Password of the Web server will be defined on a RADIUS server. Mkip password for log-in through SSH will be defined also on the remote radius server. In this mode the Operator must configure, through 'mkip', several parameters for identification against the Remote RADIUS Server.

Local Authentication

GUI current and default mode.

In this mode The User name and the Password are as Usual and hard coded(Both the Apache2 username/password and mkip password).

Radius Authentication

In this mode the Operator needs to configure the parameters that mentioned above.

After the configuration done:

Web Username and Password are as configured on the Radius server.

Mkip password is as configured on the radius server.

Configurable Parameters

- Radius Server IP RADIUS Server port
- Port number
- Secret Key Secret key given by the RADIUS Server
- · Time-Out Interval Number of seconds trying to access RADIUS server before giving up
- Cookie-time Number of minutes for which the cookie exists.



Figure 1-32: Configure RADIUS Settings

The Operator will need to add 2 Users to his RADIUS server.

- 1. mkip (the hard coded username) with password For SSH access mkip login.
- 2. Username and Password For Web authentication.

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SERVICE & SUPPORT

14. Service & Support

14.1 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.

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 ▶ Then prove 1 for Digital Video Products (DVIS, DigitVu, UCrupt, V

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14.2 Warranty Information

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

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