



AS-2600, VS-2600
Streaming Systems

User's Guide

Version 2.10

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Rev C


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WELCOME!

Congratulations! Your new MediaBox is about to change the way you broadcast to large audiences to the Internet. With advanced features such as web control, encoding, scheduling and multiple input devices, the MediaBox places you in control of your broadcast. Thank you for purchasing the MediaBox!

About Ituner Networks Corp

Ituner Networks is a privately owned Corporation, located in San Jose, California. Ituner Networks Corp (formerly known as Ituner Internet Broadcasting Services) was founded in 1996 by two senior Network engineers from Sun Microsystems. Currently Ituner is broadcasting Radio and TV stations from more than 20 countries, making Ituner a leader in the International Broadcast Arena.

In late 1996 Ituner was the first company to successfully deploy use splitting technologies, gathering live signal from multiple sources around the world. This method is currently used by most remote Internet broadcasts where bandwidth is not abundant at the source.

Why Streamed Media?

Internet streaming media changed the Web as we knew it-- changed it from a static text- and graphics-based medium into a multimedia experience populated by sound and moving pictures. Now streaming media is poised to become the *de facto* global media broadcasting and distribution standard, incorporating all other media, including television, radio, and film. The low cost, convenience, worldwide reach, and technical simplicity of using one global communications standard makes web broadcasting irresistible to media publishers, broadcasters, corporations, and individuals. Businesses and individuals once denied access to such powerful means of communication are now using the Web to connect with people all over the world. The MediaBox will help encode and deliver your content to the world.

What We Offer

iTUNER is the only company to deliver a full end-to-end broadcasting solution, from dedicated hardware to broadcast servers and clients.

Whether you are interested in hosting an entire array of live audio and video from your site, or simply want to broadcast a single event over the Internet, iTUNER offers a full range of service options that can be tailored to meet individual needs.

You receive all of the benefits of redundant gateways to the Internet, 24x7 support, and state-of-the-art hardware, facilities and software and the best technicians to support your needs.

Complete, end to end, live audio and video streaming capabilities.

- Archiving for audio/video files for automatic play lists and simulcast
- Stream splitting archive replication to multiple servers
- Single or multiple live-event broadcasting.
- Station-to-iTUNER private access (password protected) feed via Internet and dedicated connections.

We provide full installation service, consulting and support. If you need to implement any of the iTUNER solutions within your organization, we provide implementation guidelines and many other resources at no cost. We are committed to providing a low-cost solution for advancement of free speech and information.

For more information regarding Ituner Services, please go to <http://www.ituner.com/services.htm> or order a brochure at staff@ituner.com

How Your MediaBox Works

General Overview

The MediaBox enables professionals or entry-level broadcaster to start streaming on the Internet in a matter of minutes.

The MediaBox can be used to transmit data in between radio stations (encode and playback) , archive events and news and perform simulcasts or broadcast, live, directly to the listeners in multiple streaming formats using a single or multiple audio or video sources.

The box can operate without a monitor and keyboard as most of the settings and operations are done over the web.

In situations where bandwidth is not available in great quantities, the box can send a tiny stream to our servers for re-broadcasting. The MediaBox can be configured with an analog modem and it comes with a 10/100Mbps Ethernet interface.

Furthermore, the box will be able to handle multiple television channels as well as radio feeds: It is not necessary to have an encoder for every station: Certain MediaBox models can encode multiple inputs at once. Check <http://www.ituner.com> for more information on various MediaBox configurations and options.

Selected MediaBox models are equipped with a powerful computer controlled radio that can pick up any frequency in between 0-1,300 MHz, allowing the box operator to re-broadcast instantly any radio station available on the air: For example, the MediaBox can be programmed to pick up and archive the 7:00am news from station A and at 8:00am it will switch to Station B to record its news program. It can do so all day long, gathering a great deal of news and information.

What is in the MediaBox Package

Contents of the MediaBox package

- MediaBox™ main system (hardware unit)
- Additional Sound and Video Cards (depending on your model configurations)
- Power cables US or Europe Country kit
- Misc. audio and video cables (optional)
- Documentation: Installation and Administration Guide
- Documentation: Quick Installation Guide
- Documentation: Login and Password Information Card
- Documentation: (optional) RealProducer+ administration manual

Getting Started

Before you start

The MediaBox runs a customized version of Linux, MediaBoxOS. While Linux might sound intimidating for many people, it is not as difficult as one might think. If you carefully read the installation instructions and follow each install step, you should be able to configure your box in less than 5 minutes!



The MediaBox is a fully networked device. Since all controls, with the exception of the initial setup, are executed over the network with a web browser, the MediaBox will not operate if it is not properly connected to the network.

Quick Network Setup

Required items for network configuration:

Hardware: Keyboard, PC monitor, MediaBox, network cables, network hub.

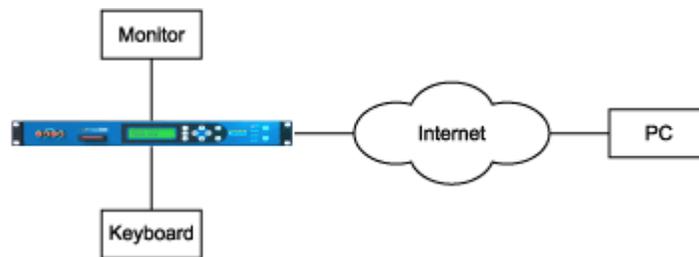
Network: I.P. Address, Netmask, Default Gateway, primary and secondary DNS server address. (If you don't have an I.P. address, contact your system administrator or your ISP and ask for a static IP address)

Note: The network cable provided with the MediaBox will not work if you are connected to the MediaBox directly from another computer. You will need a network hub (not included) in order to connect to the MediaBox. If you don't have a network hub, you may use a 'twisted' or 'rolled' network cable.



The MediaBox is set for 110V AC. If you live outside the US, please make sure you have the proper voltage settings. Improper settings will damage your unit. The power selector switch should be located next to the power supply. If you cannot locate one by performing a visual inspection, your MediaBox is equipped with an auto-sensing power supply.

Step 1 Hook up your MediaBox into your network as in *Fig 1.1*.



Step 2 Turn ON the MediaBox.



Do not turn off or on your machine during the booting process. Wait approximately 10-15 seconds for the system to boot.

Step 3 After the machine boots up, login as "admin". (Please consult your password card for the password).

Example:

```
iMedia Embedded Linux OS release 2.1.16
```

```
login: admin
```

```
password: *****
```

Assign Network and Host Information

In this example we use the following names/numbers:



Do not use these numbers for your MediaBox!

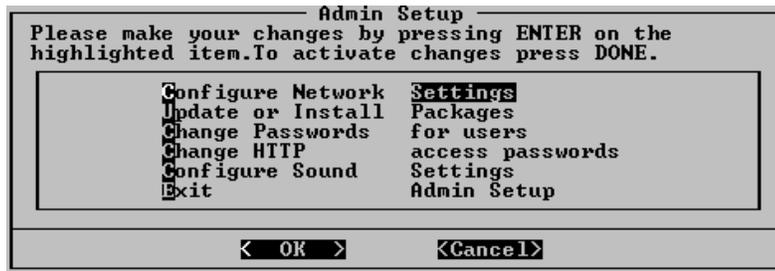
If you don't have an I.P. address, contact your system administrator or your ISP.

Hostname	mediabox
name + domain	adrian.ituner.com
I.P. address	216.15.84.187
Netmask	255.255.255.0
Nameserver 1	200.200.200.15
Nameserver 2	200.200.200.20
Gateway	200.200.200.1

Setting the Basic Host Information

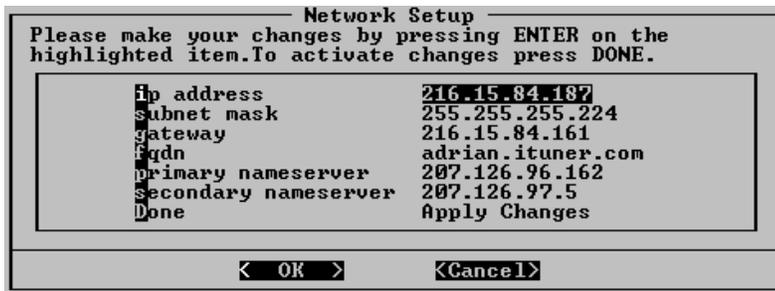
If logged in successfully, you should be able to see the following menu.

Note: Set your terminal settings to vt100 to properly display the admin menus.



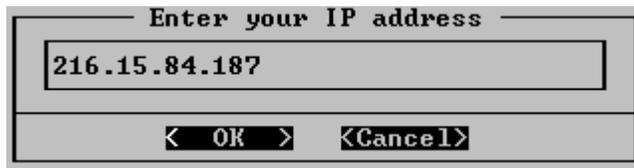
Using TAB and the arrow keys, navigate to the correct options.

From the main menu, go to: "Network Setup"



Assign the correct IP address, Subnet Mask, Gateway, and Name Server information. When done, select "Done". (If you don't have an I.P. address, contact your system administrator or your ISP and ask for a static IP address)

Example:



When done, activate your changes. If this is the only change you want to make to your system, please make sure you reboot your system.

Rebooting your MediaBox

To reboot the Mediabox, exit the admin screen and as root, type:

```
root@mediabox: reboot
```

Congratulations! You are now on the network. Disconnect your monitor and keyboard and use any browser to operate your MediaBox.

Go to: <http://adrian.ituner.com> or use the IP address of the MediaBox.



Do not use the above addresses for your MediaBox!
If you don't have an I.P. address, contact your system administrator or your ISP to obtain a fixed IP address.

Testing the MediaBox

In order to test the network connection, try to ping the MediaBox.

```
system% ping mediabox.ituner.com
```

```
mediabox.ituner.com.com is alive
```

or use I.P. address (alternate and always reliable testing method)

```
system% ping 216.15.84.187
```

NOTE: The names and I.P. addresses used in this manual are just examples. Use your own names/IPs.

If you are not getting a response, please check your configurations, cable connections and if necessary, login as 'admin' again and re-check your network settings.

You are doing excellent! Disconnect your keyboard, mouse and monitor from the MediaBox, you won't be needing it anymore.

Accessing the system using a browser

The MediaBox was primary designed to operate over the web, from any web browser (Netscape 4.x and higher, Internet Explorer 5.0 or higher). You can access your MediaBox from any PC connected to the Internet. Simply point your browser to: <http://adrian.ituner.com> .

After successfully logging in (see your password card for login/password information) you should be able the view the following screen:



Select an appropriate option to get into the one of the following screens:

- 1) Encoders: Helps you Start/Stop and schedule media encoders.
- 2) Decoders: Playback of MP3, Real or Vorbis streams.
- 3) Servers: Start/Stop and configure servers.
- 4) SysAdmin: Administer or configure system related options.
- 5) Statistics: View realtime and historical network statistics.
- 6) Help: MediaBox help.

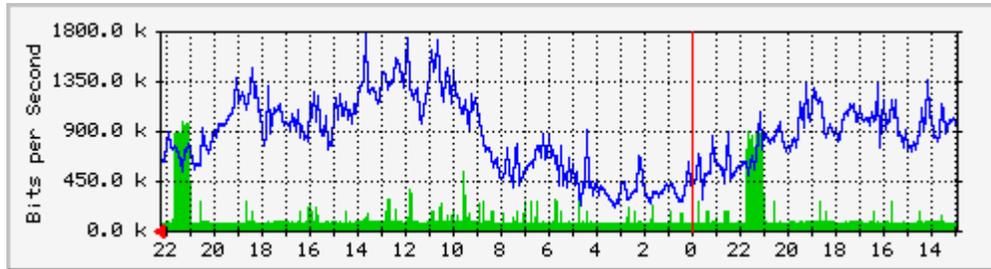
System Monitoring and System Administration

From the main page (<http://mediabox.ituner.com>) you can click on "Statistics" or "System Admin" to monitor or configure your MediaBox.

Bandwidth Monitoring

The Mediabox bandwidth consumption can be visualized in realtime or archived with RRDTool. RRD is the Acronym for Round Robin Database. RRD is a system to store and display time-series data (i.e. network bandwidth, machine-room temperature, server load average). It stores the data in a very compact way that will not expand over time, and it presents useful graphs by processing the data to enforce a certain data density.

Under the Statistics button click on "1 year statistics". You will get a series of graphics representing your incoming or outgoing bandwidth. Example:

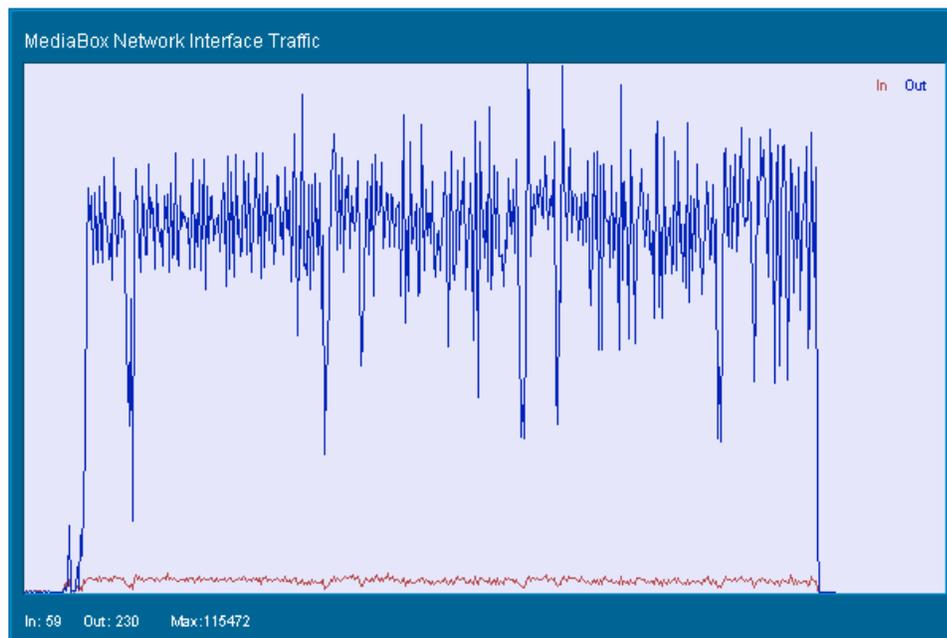


In this case, the traffic is measured in Kbits per second. The max traffic for this particular day was 1.8Mbps.

For realtime statistics, click on "realtime stats". You will be getting a Java graph representing realtime IN and OUT packets per second. As soon as your realtime stats window is closed, the stats are cleared. However, 5 minute averages are saved in the "1 year statistics" page (see previous page).

Here is an example:

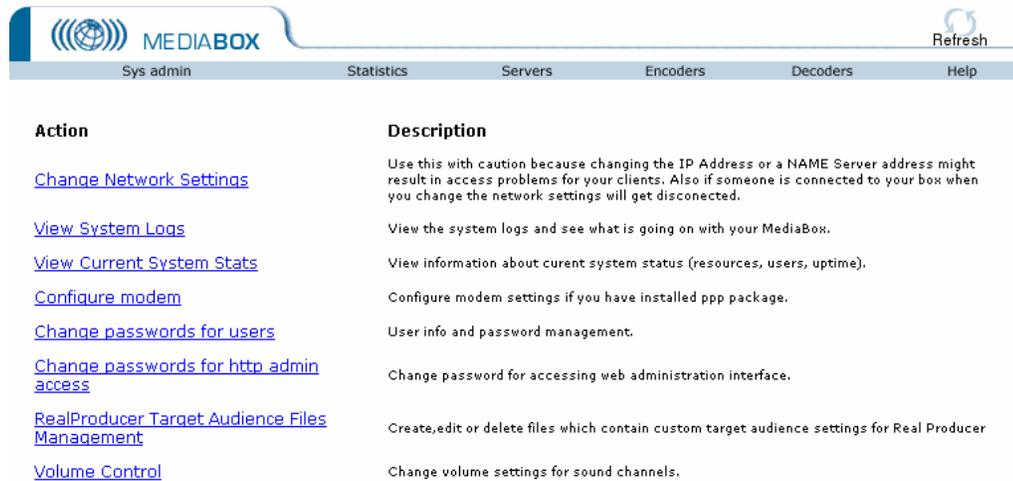
iTuner MediaBox Monitoring Page



Note: To properly display this Java Application you would need to have Internet Explorer 5.0 or higher or the latest versions of Netscape 6.0. It will not work under Netscape 4.x.

System Administration

This is a screenshot of your system administration screens. See below a more detailed description for each section.



Action	Description
Change Network Settings	Use this with caution because changing the IP Address or a NAME Server address might result in access problems for your clients. Also if someone is connected to your box when you change the network settings will get disconnected.
View System Logs	View the system logs and see what is going on with your MediaBox.
View Current System Stats	View information about curent system status (resources, users, uptime).
Configure modem	Configure modem settings if you have installed ppp package.
Change passwords for users	User info and password management.
Change passwords for http admin access	Change password for accessing web administration interface.
RealProducer Target Audience Files Management	Create,edit or delete files which contain custom target audience settings for Real Producer
Volume Control	Change volume settings for sound channels.

Change Network Settings

Same as the character based “Network Setup” menu. This screen allows you to change the network settings via an http interface.

IP Address:	<input type="text" value="216.15.84.187"/>
NetMask	<input type="text" value="255.255.255.224"/>
Gateway	<input type="text" value="216.15.84.161"/>
FQDN Fully Qualified Domain Name	<input type="text" value="adrian.ituner.com"/>
Primary Name Server Enter a IP Address	<input type="text" value="207.126.96.162"/>
Secondary Name Server Enter a IP Address	<input type="text" value="207.126.97.5"/>

When done, click on change.

NOTE: Since the MediaBox IP settings have changed your browser will stop responding. Please ensure you are using the correct IP and name information.

View system logs

This option allows the system administrator to monitor various system logs.

Note about system logs: The system logs are circular system logs. As a result the size of your logs will never grow beyond 32Kb each. This option prevents filling up your system partitions.



The following logs can be viewed over a browser:

- main system log (contains booting and system information)
- apache http (web server error logs)
- shoutcast server log (log information about your shoutcast servers)
- darwin administration server log (QTSS/Darwin logs)
- sound configuration logs (OSS sound drivers configuration logs)
- OSS start-up logs (OSS startup logs)
- real server error log (Optional: RealServer error log)
- Icecast error log (Icecast server error log)
- Icecast access log (Icecast user access log)

View Current System Stats

This option allows you to view the system stats, ‘top’ style. Monitor the health of your system by selecting from the following options: General, Memory, File System, User, Processes, and Network Statistics.

Top displays the top processes on the system and periodically updates this information. If standard output is large terminal window (see below) then as many processes as will fit on the terminal screen are displayed by default. Otherwise, a good number of them are shown (around 20).

Here is an example:

```

(( )) MEDIABOX
Sys admin      Statistics    Servers      Encoders     Decoders

[General | Memory | File System | Users | Processes] Network Statistics]

Status for localhost as of 12:48 on December 11, 2001

System status 12:48pm up 28 min, 2 users, load average: 16.64, 13.34, 10.19

Memory Usage 70% memory used, 33776 K free
              (shared: 0, buffers: 1120, cached: 27212).

Filesystem      Size  Used Avail Use% Mounted on
/dev/hda1       61M  42M  19M  68% /
tmpfs           32M  4.9M  27M  16% /tmp

USER  TTY      FROM          LOGIN@  IDLE   JCPU   PCPU   WHAT
mediabox pts/0    dnai-216-15-84-1 12:22pm 26:08   2.13s  1.99s  dialog --title

```

Configure Modem

In case your MediaBox is operating in an environment where direct network access is not an option, you can select your modem configurations in this window. The PPP daemon can be stopped or started from this window.

Here is an example:

Telephone number The telephone number for the connection	<input type="text" value="222222"/>
Account The account name for logon	<input type="text" value="account"/>
Password The password for this account	<input type="text" value="password"/>
Local IP Local IP address if known. Dynamic 0.0.0.0	<input type="text" value="0.0.0.0"/>
Remote IP Remote IP address if desired. Normaly 0.0.0.0	<input type="text" value="0.0.0.0"/>
Netmask The proper netmask if needed	<input type="text" value="255.255.255.0"/>
Modem device The device where modem is located	<input type="text" value="/dev/modem"/>
Modem speed Connection speed in bps	<input type="text" value="33600"/>

Start/Stop PPP Daemon:

Status: **Idle**

Change password for users

In this screen you can change the settings for your Mediabox accounts. Select change to change passwords, permissions and userids.

Please make sure you made of note of the new passwords.

USER	Real Name	Home Directory	UID	GID	
root	Full Access Account	/root	0	0	change
bin	bin	/bin	1	1	change
daemon	daemon	/sbin	2	2	change
adm	adm	/var/adm	3	4	change
lp	lp	/var/spool/lpd	4	7	change
sync	sync	/sbin	5	0	change
shutdown	shutdown	/sbin	6	0	change
halt	halt	/sbin	7	0	change
mail	mail	/var/spool/mail	8	12	change
nobody	Nobody	/	99	99	change
admin	Administration Account	/home/admin	0	0	change
apache	Apache Server User	/home/apache	502	502	change
mediabox	Mediabox User	/home/mediabox	503	503	change

IMPORTANT NOTE: Do not change or delete system userids such as: bin, daemon, adm, lp, sync, shutdown, halt, main or nobody. These userids are needed by the operating system.

Change passwords for http admin access

This screen allows you to change the password for the MediaBox embedded web server. Please consult the MediaBox password card for the default passwords shipped with your unit.

If you decide to change the password, please make sure you remember the new password.

USER	admin
New Password	<input type="text"/>
Retype New Password	<input type="text"/>

NOTE: Your browser will re-prompt you for a login and password. Please use the new login and password information. In case you loose contact with your MediaBox, restart your browser and try logging in again.

RealProducer Target Audience File Management

This section allows you to change the default settings for various target audiences. This option is also available in the RealProducer templates. For more information on RealProducer Target Audience file management, the encoding section.

File Name	Settings	Actions
	TARGET=0 TOTAL_BIT_RATE=20 AUDIO_CODEC=sipr2 VIDEO_CODEC=RV300 MAX_FRAME_RATE=5	
surestream_sample_settings	TARGET=3 TOTAL_BIT_RATE=64 AUDIO_CODEC=cook10 VIDEO_CODEC=RV300 MAX_FRAME_RATE=10	edit delete
	TARGET=8 TOTAL_BIT_RATE=500 AUDIO_CODEC=atrc6 VIDEO_CODEC=RV300 MAX_FRAME_RATE=30	
sample_minimum_settings	TARGET=0 TOTAL_BIT_RATE=20 AUDIO_CODEC=sipr2 VIDEO_CODEC=RV200 MAX_FRAME_RATE=7	edit delete

Click on a specific file name to delete or edit your target audience. (see next page)

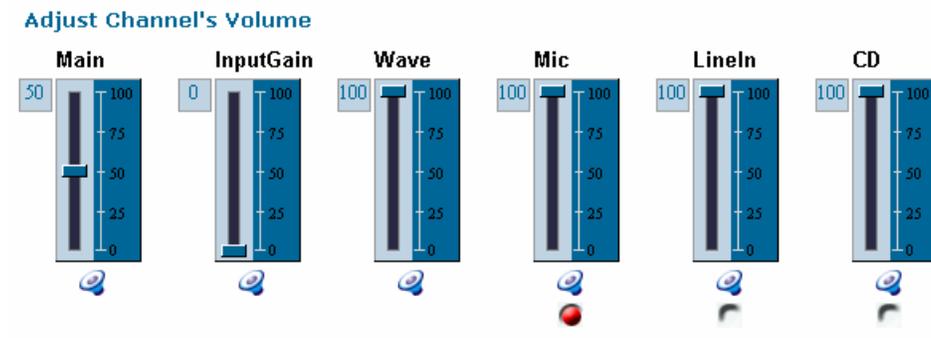
Once in this screen selected, edit your settings as needed. Make sure you select the targets you want by enabling the checkbox. In this example, 3 targets audiences are used: 28 Kbps modem, Dual ISDN and 512 DSL cable modem. Refer to the RealProducer manual for more information on specific codecs.

Target Target audience category	Total Bit Rate Total bit rate for the target audience	Maximum Frame Rate Maximum frames per seconds	Audio Codec Audio Codec used for target audience Different audio codecs can be selected for different target audience	Video Codec Video Codec used for target audience All target audience must share same video codec.
<input checked="" type="checkbox"/> 28 Kbps Modem	<input type="text" value="20"/>	<input type="text" value="5"/>	<input type="text" value="5 Kbps Voice 4 kHz"/>	<input type="text" value="RealVideo 8.0 Codec"/>
<input type="checkbox"/> 56 Kbps Modem	<input type="text"/>	<input type="text"/>	<input type="text" value="5 Kbps Voice 4 kHz"/>	<input type="text" value="Older RealVideo Codec"/>
<input type="checkbox"/> Single ISDN	<input type="text"/>	<input type="text"/>	<input type="text" value="5 Kbps Voice 4 kHz"/>	<input type="text" value="Older RealVideo Codec"/>
<input checked="" type="checkbox"/> Dual ISDN	<input type="text" value="64"/>	<input type="text" value="10"/>	<input type="text" value="32 Kbps Stereo Music 8 kHz"/>	<input type="text" value="RealVideo 8.0 Codec"/>
<input type="checkbox"/> DSL/Cable Modem	<input type="text"/>	<input type="text"/>	<input type="text" value="5 Kbps Voice 4 kHz"/>	<input type="text" value="Older RealVideo Codec"/>
<input type="checkbox"/> Corporate LAN	<input type="text"/>	<input type="text"/>	<input type="text" value="5 Kbps Voice 4 kHz"/>	<input type="text" value="Older RealVideo Codec"/>
<input type="checkbox"/> 256K DSL/Cable Modem	<input type="text"/>	<input type="text"/>	<input type="text" value="5 Kbps Voice 4 kHz"/>	<input type="text" value="Older RealVideo Codec"/>
<input type="checkbox"/> 384K DSL/Cable Modem	<input type="text"/>	<input type="text"/>	<input type="text" value="5 Kbps Voice 4 kHz"/>	<input type="text" value="Older RealVideo Codec"/>
<input checked="" type="checkbox"/> 512K DSL/Cable Modem	<input type="text" value="500"/>	<input type="text" value="30"/>	<input type="text" value="264 Kbps Stereo Music 22 kHz"/>	<input type="text" value="RealVideo 8.0 Codec"/>

File Name:
Name of the file in which settings will be saved.
This should be entered in Custom File Name from RealProducer Encoders.

Volume Control

For selected sound cards this option will allow you to change the input and output volume settings of your MediaBox. Hit the “Apply Changes” button when done.



NOTE: Some encoder applications ignore the OpenSound (OSS) volume settings and they use preset values (RealProducer) or they have their own volume settings (MP3 encoders). Please refer to the encoder templates for more information.

Select from Mic, Line IN or CD for your desired input device.

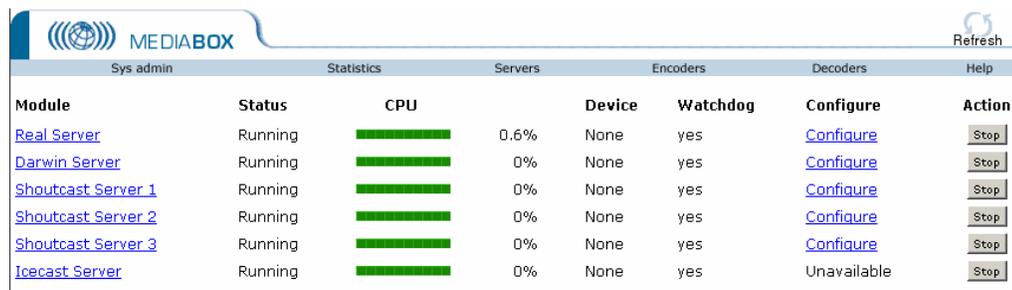
When using IMUX, the same setting will apply for all 16 devices. Please note that all application must encode from the same source. You cannot have some application encode from Mic while others encode from Line IN.

Servers

Starting a server

Before starting encoders, the streaming servers must be running as the MediaBox is shipped with all servers stopped. Select the server you want to start and click on the start button. You can also click on the server name and change server properties before starting.

Here is an example of the main Server screen.



Module	Status	CPU	Device	Watchdog	Configure	Action
Real Server	Running	<div style="width: 100%; height: 10px; background-color: green;"></div> 0.6%	None	yes	Configure	<input type="button" value="Stop"/>
Darwin Server	Running	<div style="width: 100%; height: 10px; background-color: green;"></div> 0%	None	yes	Configure	<input type="button" value="Stop"/>
Shoutcast Server 1	Running	<div style="width: 100%; height: 10px; background-color: green;"></div> 0%	None	yes	Configure	<input type="button" value="Stop"/>
Shoutcast Server 2	Running	<div style="width: 100%; height: 10px; background-color: green;"></div> 0%	None	yes	Configure	<input type="button" value="Stop"/>
Shoutcast Server 3	Running	<div style="width: 100%; height: 10px; background-color: green;"></div> 0%	None	yes	Configure	<input type="button" value="Stop"/>
Icecast Server	Running	<div style="width: 100%; height: 10px; background-color: green;"></div> 0%	None	yes	Unavailable	<input type="button" value="Stop"/>

Select a server template and start it. Here is an example showing the RealServer configuration details.

The screenshot shows the MediaBox configuration interface. At the top, there is a navigation bar with the MediaBox logo and a 'Refresh' button. Below the navigation bar, there are tabs for 'Sys admin', 'Statistics', 'Servers', 'Encoders', 'Decoders', and 'Help'. The 'Servers' tab is selected, displaying the following configuration details:

RTSP Port	<input type="text" value="554"/>	PNA Port	<input type="text" value="7070"/>	HTTP Port	<input type="text" value="8080"/>
Monitor Port	<input type="text" value="9090"/>	Admin Port	<input type="text" value="8888"/>	Monitor Password	<input type="text" value="*****"/>
G2 Encoder Port	<input type="text" value="4040"/>	Pre-G2 Encoder Port	<input type="text" value="5050"/>		

Below the configuration details, there are options for enabling a watchdog and scheduling events:

Enable Watchdog: Check Interval:

Status: **Idle**

Schedule Event:

	Month	Day	Weekday	Hour	Minute
start <input type="checkbox"/>	<input type="text" value="Every"/>	<input type="text" value="Every"/>	<input type="text" value="Every"/>	<input type="text" value="Every"/>	<input type="text" value="0"/>
stop <input type="checkbox"/>	<input type="text" value="Every"/>	<input type="text" value="Every"/>	<input type="text" value="Every"/>	<input type="text" value="Every"/>	<input type="text" value="0"/>

NOTE: Watchdog and Schedule event can be enabled to automatically restart a server in case of server failure or to start or stop a server based on a predetermined scheduled.

Encoding

Depending on the number of audio cards and software configurations, the MediaBox will display the correct number of audio/video encoder options. Here is an example:

Module	Status	CPU	Device	Watchdog	Play	Action
Real Audio + Video Encoder	Idle	0%	/dev/imux1, /dev/video0	yes		<input type="button" value="Start"/>
Real Audio Encoder 1	Idle	0%	/dev/imux2	yes		<input type="button" value="Start"/>
Real Audio Encoder 2	Idle	0%	/dev/imux3	yes		<input type="button" value="Start"/>
MP3 Encoder 1	Idle	0%	/dev/imux4	yes		<input type="button" value="Start"/>
MP3 Encoder 2	Idle	0%	/dev/imux5	yes		<input type="button" value="Start"/>
Vorbis Encoder 1	Idle	0%	/dev/imux6	yes		<input type="button" value="Start"/>

Here are the encoder main screen functions explained:

Module	The name of the Audio or Video encoder
Status	The status of the Audio or Video encoder
CPU	CPU utilization for a specific encoder
Device	The device used by this encoder
Watchdog	Restart automatically the encoder in case failure
Play	Click on this link to test, player will spawn
Action	Start or Stop the encoder

Starting encoders

The easiest way to get encoding up and running is to click on the start button from the main encoder template. However, if you want to set one or more encoder options, click on the encode link.

Here is an example taken from a MP3 encoder screen.

The screenshot shows the MediaBox MP3 encoder configuration page. The interface is organized into a header with navigation links (Sys admin, Statistics, Servers, Encoders, Decoders, Help) and a main configuration area. The configuration area is split into two columns of settings. The left column includes 'Save to File' (No), 'Input' (Line In), 'Stream Bitrate' (MONO-16,000), 'Server Name' (localhost), 'Mount Point' (liveice1), and 'Quality' (9 - Lowest quality, fastest speed). The right column includes 'File Name' (empty), 'Sample Rate' (22,050), 'Stream Info' (Shoutcast live MP3 strea), 'Port' (8001), 'Password' (*****), and 'Use VBR' (No). Below these columns are 'Audio Device' (/dev/imux4), 'Enable Watchdog' (Yes), and 'Check Interval' (30). The status is 'Idle' with 'START' and 'Defaults' buttons. A 'Schedule Event' section has checkboxes for 'start' and 'stop', each with dropdowns for Month, Day, Weekday, Hour, and Minute, all set to 'Every' and '0'. A 'Schedule' button is at the bottom.

Step 1: Click on start to start the encoder. After few seconds, the command line will be displayed and you will be able to return to the main page.

NOTE: At times, you might experience slow web page response. This is because the MediaBox gives the lowest priority to the web management interface so that the sound quality is not compromised by abnormal CPU usage. This is normal behavior.

Step2: Click on the "Back to the main page"

Command: /home/httpd/mediabox/cgi-bin/liveice_lame_mp3.nobody '''' -s localhost -p 8001 -P live2me -m liveice1 -c 1 -b 16000 -r 22050 -i line -d /dev/imux4 -q 9 -V 0 -n \"Shoutcast live MP3 streaming \\\(lame_mp3, channel 1)\\\"

Module started successfully.

Waiting 3 seconds to get some output from the started module...done.

[BACK](#)

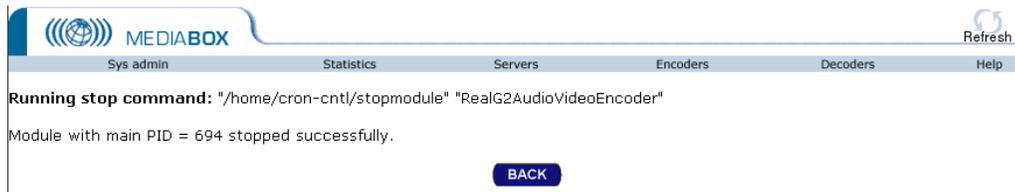
Step 3: On the main page you will notice that a "Play" is now active. Click on the link to launch your favorite player. This link is

Module	Status	CPU	Device	Watchdog	Play	Action
Real Audio + Video Encoder	Idle	<div style="width: 100%; height: 10px; background-color: green;"></div>	0%	/dev/imux1, /dev/video0	yes	<input type="button" value="Start"/>
Real Audio Encoder 1	Idle	<div style="width: 100%; height: 10px; background-color: green;"></div>	0%	/dev/imux2	yes	<input type="button" value="Start"/>
Real Audio Encoder 2	Idle	<div style="width: 100%; height: 10px; background-color: green;"></div>	0%	/dev/imux3	yes	<input type="button" value="Start"/>
MP3 Encoder 1	Running	<div style="width: 100%; height: 10px; background-color: green;"></div>	10.9%	/dev/imux4	yes	Play <input type="button" value="Stop"/>
MP3 Encoder 2	Idle	<div style="width: 100%; height: 10px; background-color: green;"></div>	0%	/dev/imux5	yes	<input type="button" value="Start"/>
Vorbis Encoder 1	Idle	<div style="width: 100%; height: 10px; background-color: green;"></div>	0%	/dev/imux6	yes	<input type="button" value="Start"/>

Congratulations! You are now broadcasting!

You may start other encoders in order to provide your content in multiple formats at the same time.

Stopping Encoders



From the main encoder page, click on an appropriate STOP button in order to stop a running encoder. You can also click on a specific encoder template and select hit the stop button on that page.

Scheduling Events

Select an encoder and input the desired settings. At the bottom of the page, under "Schedule Event", set the correct time and check "START" and "STOP".

Schedule Event:

		Month	Day	Weekday	Hour	Minute
start <input checked="" type="checkbox"/>	start <input type="checkbox"/>	<input type="text" value="Every"/>	<input type="text" value="Every"/>	<input type="text" value="Every"/>	<input type="text" value="Every"/>	<input type="text" value="0"/>
stop <input checked="" type="checkbox"/>	stop <input type="checkbox"/>	<input type="text" value="Every"/>	<input type="text" value="Every"/>	<input type="text" value="Every"/>	<input type="text" value="Every"/>	<input type="text" value="0"/>

Click on "Back to Main Page" in order to see the scheduled events.

Deleting Scheduled Events

From the main page check the scheduled jobs you want to delete and click on "Delete". The job will be deleted and a success message will be printed.

Currently scheduled events:

System date: Mon Jan 21 17:31:02 2002

Module	Action	Month	Day	wDay	Hour	Min	Command	Delete
G2AudioEncoder-1	Start	Every	Every	Mon	13	0	details	<input type="checkbox"/>
G2AudioEncoder-1	Stop	Every	Every	Mon	12	0	details	<input type="checkbox"/>
G2AudioEncoder-1	Start	Every	Every	Tue	13	0	details	<input type="checkbox"/>
G2AudioEncoder-1	Stop	Every	Every	Tue	12	0	details	<input type="checkbox"/>
G2AudioEncoder-1	Start	Every	Every	Wed	13	0	details	<input type="checkbox"/>
G2AudioEncoder-1	Stop	Every	Every	Wed	12	0	details	<input type="checkbox"/>
G2AudioEncoder-1	Start	Every	Every	Thu	13	0	details	<input type="checkbox"/>
G2AudioEncoder-1	Stop	Every	Every	Thu	12	0	details	<input type="checkbox"/>
G2AudioEncoder-1	Start	Every	Every	Fri	13	0	details	<input type="checkbox"/>
G2AudioEncoder-1	Stop	Every	Every	Fri	12	0	details	<input type="checkbox"/>

Delete

A confirmation message will be printed upon a successful job removal.

MP3 Advanced Encoder Features

By clicking on a MP3 Encoder template, you can bring up a detailed Encoder Setting page. Here is an example:

Save to File	No	File Name	
Input	Line In	Sample Rate	44,100
Stream Bitrate	MONO-128,000	Stream Info	Shoutcast live MP3 strea
Server Name	localhost	Port	8001
Mount Point	liveice1	Password	*****
Quality	9 - Lowest quality, fastest speed	Use VBR	No

Audio Device: **/dev/imux4**

Watchdog: yes Check Interval: 30

Status: **Running**

Save to File

Save to file (yes, no). Specify a file name to save the output while encoding and servicing the stream.

Input

Select the input type from Line IN, Mic, or CD.

Stream BitRate

Select the encoding stream rate. (from Mono at 8Kbps to Stereo at 320Kbps). Please note that not all stream types can be decoded by Winamp or other MP3 players. Consult the MP3 encoding bitrates before you start an encoder.

Recommended encoding rates: 32Kbps Mono for low quality streams and 128Kbps stereo for high quality streams.

Quality

Select the encoding quality, from 5 to 9. 5 is the normal quality, highest, normal speed and 9 represents the lowest quality at the lowest CPU speed. If your CPU is performing many other tasks, Quality=9 will help reducing your CPU load.

Sample Rate

Sample rate of your audio card. Do not change this value unless you know what you are doing. The Mp3 template automatically selects the best sample rate according to your bit rate.

Stream Info

Stream information to be displayed by Winamp, RealPlayer or other players.

Server name

This is the Shoutcast server name. If the server is installed on the same unit, specify 'localhost'.

Port

This is the port number where the server receives the encoded stream. Leave defaults of the server is installed locally.

Password

Password used to connect to the server. If connecting locally, leave the default password unchanged.

Mount name

If running locally, please do not change this value, unless you know what mount point to use.

Use VBR

Use Variable Bit Encoding. Yes/No.

Vorbis Advanced Encoder Features

Ogg Vorbis is non-proprietary, patent-and-royalty-free, general-purpose compressed audio format for mid to high quality (8kHz-48.0kHz, 16+ bit, polyphonic) audio and music at fixed and variable bitrates from 16 to 128 kbps/channel. This places Vorbis in the same competitive class as audio representations such as MPEG-4 (AAC), and similar to, but higher performance than MPEG-1/2 audio layer 3, MPEG-4 audio (TwinVQ), WMA and PAC.

By clicking on a Vorbis Encoder template, you can you bring up a detailed Encoder Setting page. Here is an example:

The screenshot shows the MediaBox web interface for configuring a Vorbis encoder. The navigation bar includes 'Sys admin', 'Statistics', 'Servers', 'Encoders', 'Decoders', and 'Help'. The 'Encoders' section is selected. The configuration form is divided into two columns. The left column contains: 'Save to File' (No), 'Volume and Input' (Line In), 'Stream Bitrate' (MONO-16,000), 'Server Name' (localhost), and 'Mount Point' (icecast1.ogg). The right column contains: 'File Name' (empty), 'Sample Rate' (22,050), 'Stream Info' (Icecast live OGG stream), 'Port' (8040), and 'Password' (*****). Below the form, the 'Audio Device' is set to /dev/imux6, 'Watchdog' is enabled with a 'Check Interval' of 30, and the 'Status' is 'Running' with a 'Stop' button.

Save to File

Save to file (yes/no). Specify a file name to save the output while encoding the stream.

Input

Select the input type from Line IN, Mic, or CD.

Stream BitRate

Select the encoding stream rate from Mono 16Kbps to Stereo 128Kbps.

Sample Rate

Select the audio card sample rate. Allowed values are from 8Khz to 44Khz.

Stream Info

Stream information to be displayed by Winamp, RealPlayer or other players.

Server name

This is the Icecast server name. If the server is installed on the same unit, specify 'localhost'.

Port

This is the port number where the server receives the encoded stream. Leave defaults of the server is installed locally.

Password

Password used to connect to the server. If connecting locally, leave the default password unchanged.

RealProducer Advanced Encoder Features

For the RealProducer command line options, more advanced features and Recording tips please read the RealProducer documentation included in your MediaBox package.

Audio Quality

Select from Voice, Voice with Background Music, Music or Stereo Music based on your source type.

- 0 - Voice Only
- 1 - Voice with Background Music
- 2 - Music
- 3 - Stereo Music

SureStream

- 0 - Single Rate
- 1 - SureStream (selected)

NOTE: CPU usage can be very high when SureStream is selected. Please use this feature with caution. Always monitor the CPU levels when using this feature.

Save To File

Use this option only when you need to archive your content. Select "Save to File" and type in the path and filename you wish.

Encode Audio

Select from Microphone, Line In or AUX/CD depending on your source type.

Port 0: Microphone

Port 1: Line In (selected)

Port 2: CD

Target Audience

Select from the following target audiences or build your custom target audience settings from the Target Audience Editor.

- 0 - 28 Kbps Modems
- 1 - 56 Kbps Modems
- 2 - Single ISDN
- 3 - Dual ISDN
- 4 - DSL/Cable Modem
- 5 - Corporate LAN
- 6 - 256K DSL/Cable Modem
- 7 - 384K DSL/Cable Modem
- 8 - 512K DSL/Cable Modem

Mobile Play

Enables or disables mobile play. (The default is NO Mobile Play)

Selective Record

Enables or disables Selective Record. (The default is NO Selective Record)

Live File Name

This is the live file name. If your MediaBox has the RealServer installed, the file will appear under `rstp://adrian.ituner.com/encoder/yourfilename.rm`

Title

Title information.

TIP: If you put the word `_DATE_` inside this box, a date stamp will be automatically appended to your Title information.

Author

Author information.

TIP: If you put the word `_DATE_` inside this box a date stamp will be automatically appended to your Title information.

Copyright

Copyright information.

TIP: If you put the word `_DATE_` inside this box a date stamp will be automatically appended to your Title information.

Server Name

Server name information (DNS or IP address)

Example: `realserver.encodinglab.com`

If your MediaBox has the RealServer installed, you can simply use “localhost” (default)

Port

The port number where the Encoder can connect. The default is 4040.

User

The user name used by the Encoder to connect to the RealServer. Default is set to “broadcast”.

Password

The password used by the Encoder to connect to the RealServer. Default password is “live2me”.

Video Quality

Select from the following options to achieve best results based on your source type.

- 0 - Normal Motion Video (default)
- 1 - Smoothest Motion Video
- 2 - Sharpest Image Video
- 3 - Slide Show

Image Size

Select from multiple image size ratio

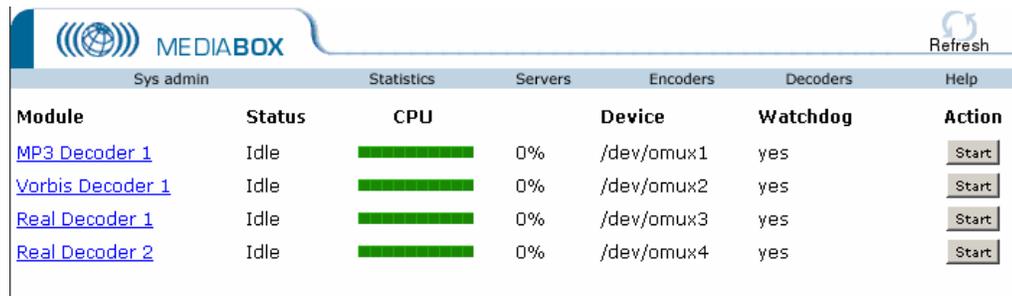
Decoders

Selected MediaBox models are equipped with audio decoding capabilities. The decoded stream is then streamed to the sound card's analog output. The MediaBox product line, based on model type, can decode the following audio stream types:

MP3, any bit rate
 RealAudio 1.0-8.0 and RealOne
 Vorbis, any bit rate.

Depending on configurations, there are several decoder templates for each decoder type. You can decode multiple streams at the same time.

NOTE: The sound will output become mixed when using more than 1 decoder at the same time.



Module	Status	CPU	Device	Watchdog	Action
MP3 Decoder 1	Idle	<div style="width: 100%; height: 10px; background-color: green;"></div> 0%	/dev/omux1	yes	<input type="button" value="Start"/>
Vorbis Decoder 1	Idle	<div style="width: 100%; height: 10px; background-color: green;"></div> 0%	/dev/omux2	yes	<input type="button" value="Start"/>
Real Decoder 1	Idle	<div style="width: 100%; height: 10px; background-color: green;"></div> 0%	/dev/omux3	yes	<input type="button" value="Start"/>
Real Decoder 2	Idle	<div style="width: 100%; height: 10px; background-color: green;"></div> 0%	/dev/omux4	yes	<input type="button" value="Start"/>

Mp3 Decoder

The MP3 decoder can decode MP3 streams delivered via the HTTP protocol at rates from 8Kbps to 320Kbps stereo.

MEDIABOX Refresh

Sys admin Statistics Servers Encoders Decoders Help

Decode Both Channels Mix both channels Off

Downsampling Off **Buffer size** 0 KB

Skip first 0 frames **Speed** Normal

Audio Output Speaker **File(URL)**

Proxy URL none **Force Stereo** No

Shuffle No **Force 9Bit Stereo** No

Force reopen No **Resync** Off

Random play No

Audio Device: /dev/omux1

Enable Watchdog: Yes **Check Interval:** 30

Status: Idle

Schedule Event:

	Month	Day	Weekday	Hour	Minute
start <input type="checkbox"/>	Every <input type="checkbox"/>	Every <input type="checkbox"/>	Every <input type="checkbox"/>	Every <input type="checkbox"/>	0 <input type="checkbox"/>
stop <input type="checkbox"/>	Every <input type="checkbox"/>	Every <input type="checkbox"/>	Every <input type="checkbox"/>	Every <input type="checkbox"/>	0 <input type="checkbox"/>

You can set the Proxy URL, Audio options, File(URL) as well as schedule when to play a certain URL using the “Schedule Event” options. Refer to Schedule Event section of this manual for more information.

Real Decoder

The Real Decoder can decode and play any Real streams delivered over the HTTP, proprietary PNA or RTSP protocol. Various decoders flavors are available for this platform.

The screenshot displays the configuration page for the Real Decoder in the MediaBox 2600 Series. The page has a navigation bar with tabs for 'Sys admin', 'Statistics', 'Servers', 'Encoders', 'Decoders', and 'Help'. The 'Decoders' tab is active. The configuration is organized into two columns of settings:

- Left Column:**
 - Autoconfigure Network Transport: No
 - Compact: No
 - Use RTSP Proxy: No
 - Use PNA Proxy: No
 - Use HTTP Proxy: No
 - Normal Bandwidth: T1/LAN
 - Volume: 80
 - Supply Connection: No
 - Connection Timeout: 20 seconds
- Right Column:**
 - Specific UDP port(s): none
 - File(URL):
 - Proxy Server Proxy Port: 554
 - Proxy Server Proxy Port: 1090
 - Proxy Server Proxy Port: 8080
 - Maximum Bandwidth: T1/LAN
 - Quality: 4.00 (Between 0.00 and 4.00)
 - Supply GUID: No
 - Server Timeout: 90 seconds

At the bottom of the configuration area, there are additional controls:

- Audio Device: /dev/omux3
- Enable Watchdog: Yes
- Check Interval: 30
- Status: Idle
- Buttons: START, Defaults

You can set HTTP PNA or RTSP proxy options, File (URL), UDP or TCP operation, Maximum bandwidth, Connection timeout or the Audio Device. You can also schedule when to play a certain URL using the “Schedule Event” options. Refer to Schedule Event section of this manual for more information.

Vorbis Decoder

The Vorbis decoder lets you decode and play OGG-Vorbis encoder streams over the HTTP protocol.

The screenshot shows the MediaBox web interface for the Vorbis Decoder configuration. The page has a header with the MediaBox logo and navigation links: Sys admin, Statistics, Servers, Encoders, Decoders, and Help. A Refresh button is also present. Below the header, there is a Shuffle dropdown menu set to 'No' and a File(URL) input field. The Audio Device is set to '/dev/omux2'. The Enable Watchdog is set to 'Yes' and the Check Interval is set to '30'. The Status is 'Idle', with buttons for START and Defaults. A Schedule Event section includes checkboxes for start and stop, and dropdown menus for Month, Day, Weekday, Hour, and Minute, all set to 'Every' or '0'. A Schedule button is located below the event scheduling options.

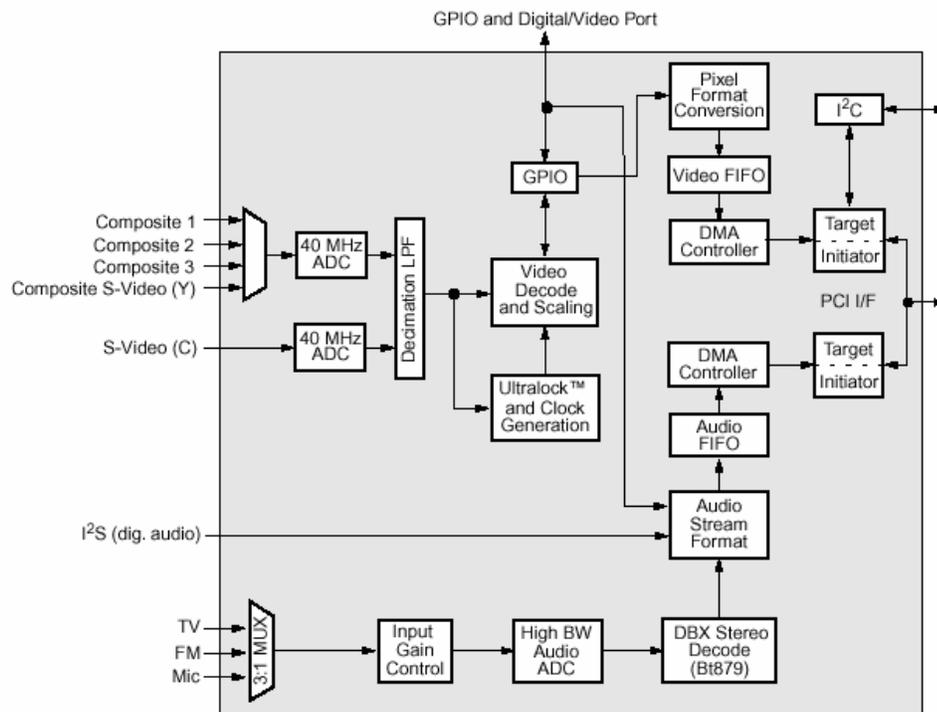
The Vorbis decode template lets you set the File URL, set the Audio Device or Schedule an Event.

Video Card layout

Your video card has 3 RCA video in ports and one S-Video input. This card is fully compliant with the PCI 2.1 standard. The card supports NTSC/PAL/SECAM video decoding, complex video clipping of the video source.

Here is a functional diagram of your BT-878 video driver.

Functional Block Diagram



Troubleshooting Guide

The MediaBox doesn't turn ON

Check the power connectors, make sure you have the correct power settings. Unplug your MediaBox, plug it back in and then try again. For further assistance contact Ituner Technical Support.

The MediaBox is running but I cannot ping it or access the machine via a browser

- Check your network cables.
- If your network HUB has a light, make sure the connect light is ON.
- Make sure that your MediaBox is properly configured. Make sure your netmask is setup properly.
- Always troubleshoot using I.P. addresses instead of names.
- Reboot the machine, if necessary, using 'shutdown now -r'. Try again.
- For further assistance contact Ituner Technical Support.

The MediaBox is up but I cannot access it from places other than my office

- Make sure your MediaBox has the correct gateway information.
- Make sure you don't have firewalls in between your MediaBox and your administration computer.

I can start the encoder, but I can't hear anything.

- Most likely you are plugged into the wrong jack. Always use Line in.
- Make sure you are using the correct card.
- Also, make sure that your audio source is OK and that you have enough volume.
- If you are using a MIC, please make sure you are connected into the microphone jack and that you have the correct encoder settings. Please note that all encoders default to 'Line In'.

I can start my encoder by the sound is distorted

- Check the volume. Use higher encoding rates.

The sound is not distorted, it sounds rather choppy

If you are running multiple cards please keep in mind that your CPU resources are limited.

- Try lowering the encoding speed or use different settings.
- If this problem persist, log into your machine and check your CPU availability. For realtime CPU usage, check execute the 'vmstat 1' command. The output will be produced every second. The last 3 columns of the vmstat contain CPU information.

When using the encoder with remote RealServers, the encoder dies after few seconds.

- Make sure you can reach your remote RealServer.
- Try pinging the remote RealServer.
- Make sure you are using the correct port, username and password.

- Make sure that the remote RealServer accepts streams from ReaProducer 8.51 or higher.

If everything else fails and you have purchased upgrades and support contract, please contact Ituner via email at support@ituner.com.

NOTES

