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VBrick 6000 Series Video Appliances

VBrick v4.5 MPEG-4 Appliance Admin Guide

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About VBrick Systems

Founded in 1997, VBrick Systems, an ISO 9001 certified vendor, is a privately held company that has enjoyed rapid growth by helping our customers successfully introduce mission critical video applications across their enterprise networks. Since our founding, VBrick has been setting the standard for quality, performance and innovation in the delivery of live and stored video over IP networks—LANs, WANs and the Internet. With thousands of video appliances installed world-wide, VBrick is the recognized leader in reliable, high-performance, easy-to-use networked video solutions.

VBrick is an active participant in the development of industry standards and continues to play an influential role in the Internet Streaming Media Alliance (ISMA), the MPEG Industry Forum, and Internet2. In 1998 VBrick invented and shipped the world's first MPEG Video Network Appliance designed to provide affordable DVD-quality video across the network. Since then, VBrick's video solutions have grown to include Video on Demand, Management, Security and Access Control, Scheduling, and Rich Media Integration. VBrick solutions are successfully supporting a broad variety of applications including distance learning and training, conferencing and remote office communications, security, process monitoring, traffic monitoring, business and news feeds to the desktop, webcasting, corporate communications, collaboration, command and control, and telemedicine. VBrick serves customers in education, government, healthcare, and financial services markets among others.

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MPEG-4 Admin Guide

This **VBrick MPEG-4 Appliance Admin Guide** is written for anyone who will be using or configuring a VB6000 Series MPEG-4 appliance. This includes system administrators, network technicians, and anyone who will be using or configuring a VBrick network video appliance. VBrick encoder and decoder appliances are available in industry standard formats. MPEG-4 appliances are used for delivering low delay television quality video over low and medium bandwidth networks. These products are available in one and two channel configurations, as well as a combination encoder/decoder that delivers two-way interactive video.

Organization

Introduction	Explains the basics. Provides general configuration recommendations as well as how to cable the appliance and connect it to the network.
MPEG-4 Configuration	Explains how to configure MPEG-4 video appliances using the IWS web interface.
System Status	Explains all of the detailed status information available about the network, the encoder, the decoder, the hard drive, etc.
Diagnostics	Explains how to run a variety of onboard diagnostics including ping, traceroute, and decoder color bars.
Maintenance	Explains how to use various maintenance functions. These reading and saving all configuration parameters and changing user names and passwords.
Maintenance Mode	Explains maintenance mode and how it is used to recover if errors occur during of after a firmware download

Getting Help

If you need help, or more information about any topic, use the online help system. The online help is cross-referenced and searchable and can usually find the information in a few seconds. Use the tree controls in the left pane to open documents and the up and down arrows to page through them. Use the **Search** box to find specific information. Simply enter one or more words in the box and press Enter. The search results will return pages that have all of the words you entered—highlighted in yellow (Internet Explorer only). The **Search** box is not case-sensitive and does not recognize articles (a, an, the), operators (+ and –), or quotation marks. You can narrow the search by *adding* words.

If you can't find the information you need from the online help, or from your certified VBrick reseller, you can contact VBrick Support Services on the web. Support Services can usually answer your technical questions in 24 business hours or less. Also note that our publications team is committed to accurate and reliable documentation and we appreciate your feedback. If you find errors or omissions in any of our documents, please send e-mail to documentation@vbrick.com and let us know. For more information about any VBrick

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products, all of our product documentation is available on the web. Go to www.vbrick.com/documentation to search or download VBrick product documentation.

Getting the Best Video

VBrick recognizes that video quality is a subjective concept that ultimately depends on a variety of factors. VBrick's philosophy is to make our network appliances as flexible as possible so they can be used effectively in different applications on a wide variety of networks. This means you can configure an appliance for maximum performance but you can also configure it in such a way that it will only work well in a very limited environment. Video quality is also relative. What is acceptable quality for a surveillance application on a low-bandwidth network is most likely unacceptable for a corporate presentation or a two-way video conference on a high-speed LAN. Much depends on your network, the bandwidth you have available, and the audience you are trying to reach.

VBrick tries to anticipate as many obstacles and limitations as possible and provides custom-designed MPEG-4 and WM (Windows Media) templates for a variety of applications. These templates are designed to provide the highest quality audio and video—using bit rate, frame rate and resolution settings that are tailored for a variety of common network environments. We encourage you to override specific template settings in order to meet the unique requirements of your own site, but in doing so, be aware that you can also degrade the quality and/or performance of the audio and video you are trying to deliver.

For best results, start with a pre-built template and then adjust the bit rate, frame rate, resolution, and other parameters with care. Experiment with different settings to see the trade-offs in quality and performance. You can track your changes by periodically saving the configuration file using the **Read/Write** option on the Maintenance page in IWS. If the audio and video quality is still less than you would expect, re-apply one of the standard templates and try again. Keep in mind that the VBrick appliance is stable, reliable and flexible. In most cases a small amount of experimentation will help you find the configuration settings that will deliver the best audio and video your network can support. For more information, or help configuring your appliance, contact VBrick Support Services.

Note VBrick has made every effort to ensure that the information in this document is accurate at the time of publication. However if we find are errors or omissions, VBrick reserves the right to make changes without notice. To see the latest documentation for this product go to www.vbrick.com/documentation

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Font Conventions

Arial bold is used to describe dialog boxes and menu choices, for example: **Start > All Programs > VBrick**

`Courier fixed-width font` is used for scripts, code examples, or keyboard commands.

`Courier bold fixed-width font` is used for user input in scripts, code examples, or keyboard commands.

This bold black font is used to strongly emphasize important words or phrases.

`Folder names and user examples in text` are displayed in this sans serif font.

`User input in text` is displayed in this bold sans serif font.

Italics are used in text to emphasize specific words or phrases.

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VBrick MPEG4 Appliance Admin Guide

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Chapter 1

Introduction

Topics in this chapter

Overview 1
VBSSM. 1

Overview

Congratulations on your purchase of VBrick System's MPEG-4 video networking product. VBrick Systems provides high-quality video and audio encoders and decoders. VBrick also provides software decoding on any PC through StreamPlayer or StreamPlayer Plus software. The result is video that can be obtained from any source—whether a live camera feed, DVD or VCR—and sent over a network (or LAN). This video can then be decoded by a hardware appliance or Set Top Box and displayed on a television monitor, or it can be decoded through StreamPlayer Plus software and displayed on any PC connected to the same network. The VBrick appliance is based on a modular platform that allows a variety of models consisting of MPEG-2 and MPEG-4 compression algorithms along with optional network interfaces (such as SDI, OC-3 ATM and hard drive for storage). This user guide is intended to cover all models and provide instructions on initial setup and advanced parameter configuration.

VBSSM

VBrick Security and Surveillance Monitoring devices are video only—no audio. The VBSSM-MP2 (MPEG-2) and VBSSM-MP4 (MPEG-4) encoders are ideal for security and surveillance applications where full motion, high-quality video is required in a cost effective product. The VBSSM is a compact, rugged and reliable video network appliance that supports temperature ranges from -20 to 70°C. The VBSSM encoder accepts NTSC/PAL video, compresses it in realtime and transmits the video digitally over an IP network. The video is then displayed on TV monitors using numerous MPEG decoders, Set Top Boxes or on PCs through desktop decoder software such as VBrick's StreamPlayer. VBSSM devices provide the following features:

- Full motion, high resolution DVD quality video.
- IP Unicast or Multicast for streaming applications.
- Integral web server for configuration and management.
- Low delay encoding for end-to-end camera control - pan, tilt and zoom.
- Utilizes Layer III QoS – Diff Serv for prioritizing video over IP networks.
- Video encoding rates configurable from 8 Kbps to 15 Mbps.
- Transport and Elementary stream support.
- Optional – video camera with pan, tilt and zoom.
- Optional – 19 in. rack mount adapter (holds two across).

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Table 1. VBSSM Models

Model †	VBSSM Configuration	Description
9170-4200-000x	MPEG-2	Ruggedized single channel MPEG-2 encoder.
9171-4200-000x	MPEG-4	Ruggedized single channel MPEG-4 encoder with audio. Same enclosure as VBSSM-MP2.
9172-4400-000x	MPEG-2/MPEG-4	MPEG-2 or MPEG-4. This device has a different enclosure with a single video input that supports two channels. It also supports RS-422 passthrough. MPEG-2 does not.
9174-4200-000x	MPEG-4	No audio.
9175-4200-000x	MPEG-4	With audio.
9110-4200-200x	MPEG-2	MPEG-2 encoder with solid-state hard drive.
9110-4300-200x	MPEG-2	Dual MPEG-2 encoder with solid-state hard drive.
9130-4300-200x	MPEG-2	MPEG-2 and MPEG-4 encoder with solid-state hard drive.
9190-4200-200x	WM	WM encoder with solid-state hard drive.
9180-4300-200x	MPEG-2/WM	MPEG-2 and WM encoder with solid-state hard drive.
9150-4300-200x	MPEG-4/WM	MPEG-4 and WM encoder with solid-state hard drive.

† See the *VBrick Appliance Getting Started Guide* for VBSSM rear panel drawings.

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Chapter 2

MPEG-4 Configuration

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Introduction

Screens vary with individual hardware configurations. This list contains items that do not appear on every unit; for instance, the screens that appear with a model containing dual encoders will not be the same as a model containing an encoder with one MPEG-2 decoder, etc. Configurations may include:

- Network – All VBrick models
- Billboard – Only on models which contain Decoders (Include MCS future feature extensions)
- Decoder – Single or dual or Hybrid MPEG-2/MPEG-4 models
- Encoder – Single or dual
  - Hybrid MPEG-2/MPEG-4 or WM/MPEG-4 models
  - MPEG-4
  - RTP Network (Realtime Transport Protocol Network)
  - RTSP Server (Realtime Streaming Protocol Server)

MPEG-4 Overview

MPEG-4 is a method for packaging pictures (video) and sounds (audio) so they can be sent from a computer or VBrick to another computer over a network connection. The VBrick approach provides quality video while using fewer resources than other methods. Also, since MPEG-4 is an internationally recognized standard, it can be viewed by many hardware and software products available on the market, including many free video player products. The encoder conforms to the MPEG-4 standard, and in addition supports the Internet Streaming Media Alliance (ISMA) implementation specification for MPEG-4. This specification makes it easier for MPEG-4 products from different companies to work together. An MPEG-4

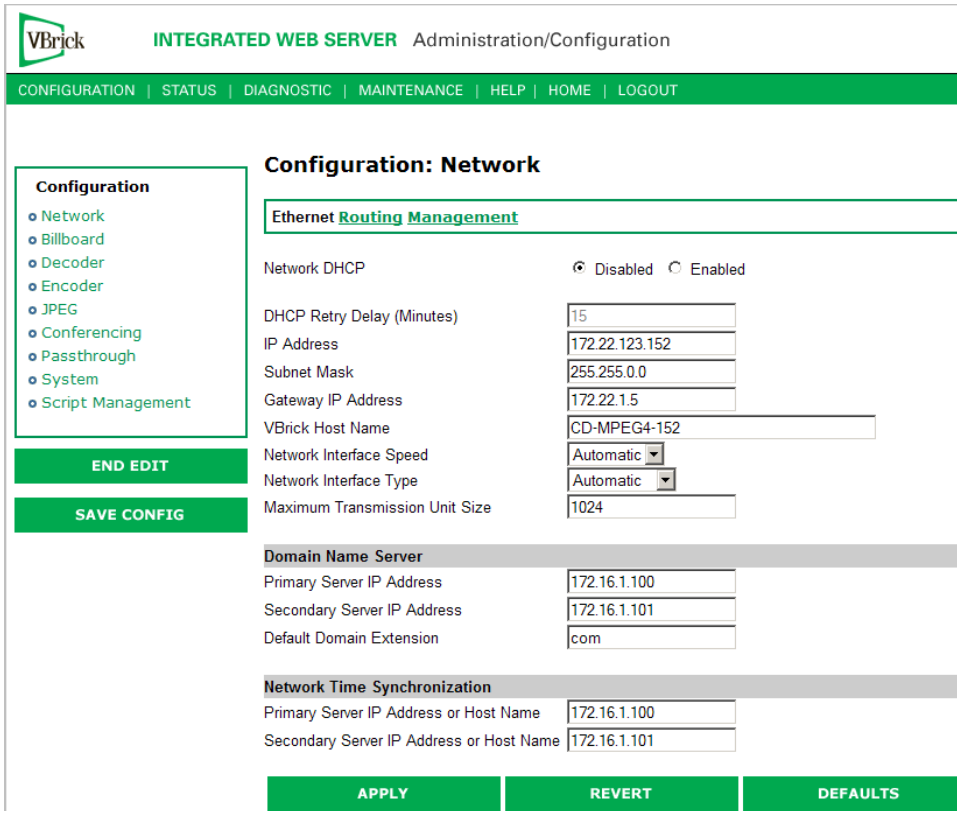
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encoder interoperates using ISMA Profile 0 when it is set up to do so, in order to provide this broad compatibility. If desired, the profile can be changed to enable the encoder to produce better quality pictures and sound than can be achieved using ISMA Profile Level 0. Profiles are set in the Configuration: Encoder > Video section of IWS.

In order to provide the ability to see the video and hear the audio using MPEG-4, there has to be a delivery method. VBrick uses the industry standard delivery method called RTP/RTCP (Realtime Transport Protocol/Realtime Transport Control Protocol) to transport MPEG-4 audio and video information. The design behind delivering MPEG-4 through RTP/RTCP requires that the audio/video presentation be divided into three different information streams (one for video, audio and closed captioning) that are re-combined when received by an MPEG-4 player to recreate the original presentation. Sending information from a video camera, or any video source, across the country over the Internet is easy using MPEG-4. After the video and audio is packaged and the RTP/RTCP delivery method is determined, the final requirement is that the destination location be set to receive the information or stream. The following section suggests four ways that users can accomplish this using VBrick software and a VBrick encoder appliance.

Configuration: Network

Configuration: Network > Ethernet



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Network DHCP	Dynamic Host Configuration Protocol – (Enable, Disable). On Ethernet models, if DHCP is enabled, the VBrick gets its IP Address or Network Timer Server and Subnet Mask from the DHCP server. If the DHCP server supplies the Gateway Address or DNS server address, these parameters will replace the user entered Gateway and DNS Time Server settings. If DHCP is enabled and the VBrick cannot obtain an IP address from the server, the VBrick will start in limited run mode after two minutes, using its default IP Address of 172.17.5.5. After 15 minutes, it will automatically reset and again attempt to acquire an address. The LCD screen on the front of the VBrick will indicate a DHCP failed message. Note: The VBrick appliance requires a minimum DHCP lease length of 8 minutes to work, however it is recommended to extend the lease time to what is maximally available via the network to avoid disruptions.
DHCP Retry Delay	See above. Use to adjust the time before the appliance will reset and attempt to acquire an IP address. Range 3–15. Default = 15.
IP Address	IP Address of the VBrick.
Subnet Mask	Subnet mask for the VBrick address.
Gateway IP Address	Valid gateway IP Address for communicating across distinct network segments. A valid gateway IP address is essential even though the VBrick will operate without one in some cases. When no gateway is configured, the VBrick may be unable to communicate with off-net IP hosts, for example, a foreign host which is used for configuration management via IWS.
VBrick Host Name	The Host Name defaults to the Media Access Control (MAC) address, a hardware address that uniquely identifies each node of a network. The VBrick's Host Name acts to identify the VBrick to various network applications including DHCP, SNMP and VBrick application tools. Note: *The Host Name syntax can be a maximum of 18 characters, the first character must be a letter and the rest can be letters, numbers or hyphens.*

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Network Interface Speed	Note: The settings for **Interface Speed** and **Interface Type** are interdependent. They must both be set to Automatic or they must both be set manually. Manual settings should be used only in the rare case when the VBrick is attached to network equipment that does not support auto negotiation. The VBrick's capabilities may be limited when its Ethernet link is at 10 Mbps and/or Half Duplex. If auto negotiation fails, the VBrick defaults to 10Mbit, half duplex and attempts "parallel detection," an alternative way to sense speed. Status parameters are available on the network status screen to indicate the state of the link and the current configuration of the Ethernet hardware. In auto mode, they reflect the results of the negotiation and in manual mode they follow the configuration options. (10Mb, 100Mb, Automatic). This allows the Ethernet interface of the VBrick to be manually forced to 100 Mbps or 10 Mbps. The default setting is **Automatic** which enables auto negotiation in the VBrick so it will automatically match its speed setting to the speed of the switch or hub to which it is attached. **Automatic** is the default and recommended setting.
Network Interface Type	Half-Duplex/Full-Duplex/Automatic. This allows the Ethernet interface of the VBrick to be manually forced to Full Duplex or Half Duplex. The default setting is "Automatic" which enables auto negotiation in the VBrick so it will automatically match its duplex setting to that of the switch or hub that it is attached to. **Automatic** is the default and recommended setting. In order for the Network Auto Negotiate feature to work effectively, the Ethernet switch must also support auto negotiation. A manually configured switch will only allow the VBrick to discover the connection speed—not the mode (full or half duplex).
Maximum Transmission Unit Size	Range 1024–1500 (default = 1500). The MTU is used for all network traffic from the VBrick and defines the largest network packet size that will be transmitted. A higher MTU brings higher bandwidth efficiency and VBrick recommends using the default. However you may wish to reduce MTU size to meet the requirements of some networks with VPN or other security tunnels that cannot tolerate 1500-byte packets.

Domain Name Server

Primary Server IP Address	This is the primary server used for DNS.
Secondary Server IP Address	This is the secondary server used for DNS.
Default Domain Extension	This is the domain name used for DNS**.** Note that you can use the default (blank) values for these items.

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Network Time Synchronization

These fields are used to synchronize network time using the host name or IP address of a known server to provide a synchronized time for all appliances in the network. To enable **Network Time Synchronization** after these parameters are set, go to Configuration: System > General on page 47 and check the box.

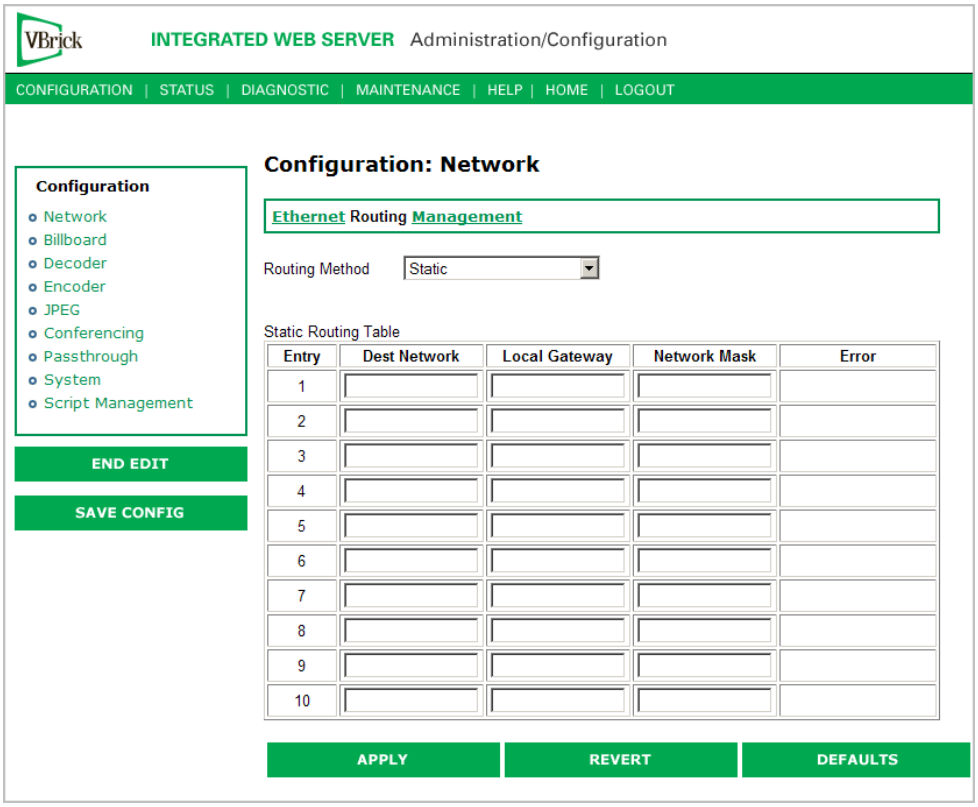
Note To Network Administrators. DHCP Option 4 is used by the DHCP server to return SNTP server addresses. This option must be enabled in the DHCP server for these addresses to be returned to the VBrick. If the DHCP server configuration is unknown, it is recommended that the address(es) be manually entered since the DHCP server-supplied address will always override a manually-entered address.

Primary Server IP Address or Host Name	Primary host name (VBrick Host Name or DNS Host Name) or IP address of valid SNTP server providing time synchronization. A blank field indicates the server address will be acquired via the DHCP server only if the **Network DHCP** field above is checked.
Secondary Server IP Address or Host Name	Secondary host name (VBrick Host Name or DNS Host Name) or IP address of valid SNTP server providing time synchronization. A blank field indicates the server address will be acquired via the DHCP server only if the **Network DHCP** field above is checked.

Configuration: Network > Routing

The MPEG-4 Appliance requires no routing configuration for the vast majority of network uses. Use these settings only in those rare cases when your network requires advanced routing features in the appliance.

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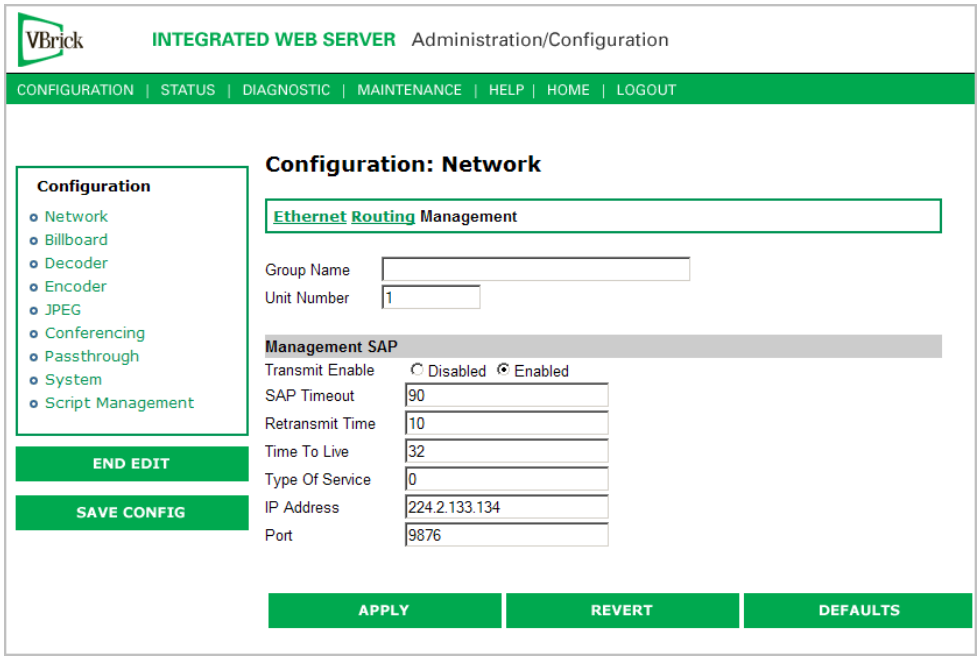
Routing Method	This selects which routing method will be used: Changes made to the Routing Method will require a reset of the box. • Static – Allows routes entered in the static routing table to be automatically applied to the internal routing tables, after a power-up. • RIP Version 1 – Configures the VBrick to listen to RIP announcements. Routes are dynamically added per RIP specification. • RIP Version 2 Broadcast – Configures the VBrick to listen to RIP version 2 announcements. In this mode, RIP will perform classless routing based upon subnet mask. • RIP Version 2 Multicast – Configures the VBrick to listen to RIP version 2 announcements that are sent in multicast mode. Both broadcast and multicast announcements are processed.
Static Routing Table	This table provides for user defined routing entries. • Destination Network – Enter the destination address to be manually routed. • Local Gateway IP – Enter the Gateway to be used, when the forwarding destination address is as specified. • Network Mask – Sets the network mask to be associated with the destination address. • Error – This read-only field is used to report field entry error related to the route.

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Configuration: Network > Management

These parameters define information used in the SAPs emitted by the VBrick, which are received by the VBDirectory management tool (see the *VBDirectory User Guide*) and other VBrick applications such as the ETV Portal Server.

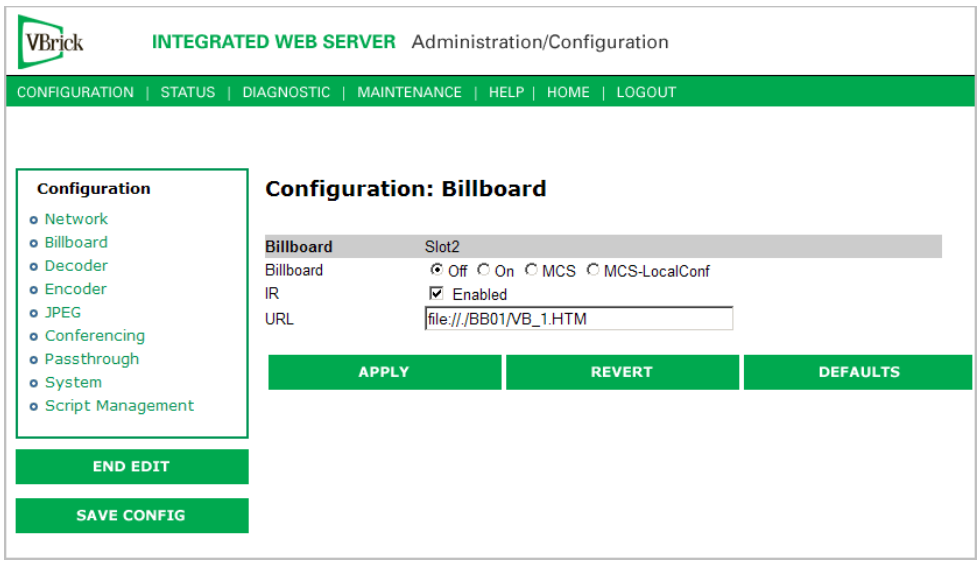


Group Name	Optional. This parameter defines the Group Name. It is included in the Management SAPs used by VBDirectory. It is used for organizing VBricks into groups to simplify use of VBDirectory.
Unit Number	Optional. The appliance unit number (range 0–2147483647) is used to identify each VBrick in a group.
Management SAP	Used by VBDirectory or MCS to detect the unit for the purpose of remote management. The following parameters apply.
Transmit Enable	This parameter controls the transmission of the Management SAPs (Enable or Disable).
Retransmit Time	This parameter defines the Management SAP Retransmit Time.
Time to Live	The number of hops (between routers) for which a Management SAP is valid on the network.
Type of Service	The TOS (Type of Service) can be configured in the IP header to establish packet priority in the network.
IP Address	This parameter defines the Destination IP Address for Management SAPs.
Port	This parameter defines the Destination Port for Management SAPs.

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Configuration: Billboard

The Billboard feature allows you to display text and/or graphics on a TV monitor. The displayed billboard can span multiple pages with each page displayed for a specified period of time. Some uses of the billboard feature are to announce a daily calendar of events, directions to a particular conference room or even a slide presentation in conjunction with displayed video. VBrick models 62xx, 52xx and 53xx have a built in mini-browsers that support viewing limited HTML pages. The pages can either be kept inside the VBrick as part of the file system, or can be located on a remote HTTP server. Each page of the billboard is built using an HTML page with text and graphics created using the HTML tags supported. If billboard is to be supported on a remote server, the appliance requires read access to the HTTP server and may need to be configured. The following URL example shows the default page pre-configured by VBrick.



On/Off	Turn Billboard on or off.
MCS	Reserved for future use; MPEG-4 only. Sends all IR Remote commands to the browser for processing except for Reset, Slot1 and Slot2.
MCS-LocalConf	Reserved for future use; MPEG-4 only. Sends all IR Remote commands to the browser for processing except for Reset, Slot1, Slot2, Previous, Ans Call, Rej Call, Ring-RMT, Ring-DIS, Ring-ENB, and Hang Up.

Using the Billboard

Billboard may be invoked in several ways. Either use the PC browser to communicate with the VBrick Integrated Web Server (see separate section) to apply the billboard and turn it on and off, or press the Billboard key on the optional remote control to toggle it on and off. Use of the remote can be enabled or disabled through the configuration. Using IWS (or the VBrick SDK) an administrator can turn on a particular billboard remotely, and prevent anyone else from using a remote to toggle it on/off. If you have a dual decoder system, the remote has keys to select between two decoders.

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By turning the billboard on/off, the saved URL is invoked and the browser will attempt to display the resulting page. The URL can be configured to be a local file with the prefix 'file://' or point to remote server with the prefix http://. The default billboard is assumed to be a file located within the VBrick file system, file://./BB01/VB_1.HTM. If the billboard URL points to a file within the VBrick, the filename has to follow the DOS 8.3 filename convention (i.e. limited file name length). The valid extensions supported by the billboard are .HTM, .JPG, .GIF, and .BMP. It is common for the billboard pages to have an .HTM extension. Remote URLs are restricted to 255 characters.

Billboard FTP

It is possible to use FTP (File Transfer Protocol) to modify the contents of one of the pre-configured Bulletin Board files resident on the VBrick. Use the browser to FTP files, or any of the many FTP applications. Enter in the browser window:

`FTP://xxx.xxx.xxx.xxx` (where x is the IP address of the VBrick appliance).

Use the Username and Password (default is case sensitive admin, admin) to login to the VBrick. BB01 through BB16 are directories established to receive Billboard content. It is possible to cut and paste new contents to a Billboard location from a file located anyplace on the network or on the computer. To view the contents on the VBrick, change the URL in the Billboard Section of the Integrated Web Server. In this example, the URL for the new file in IWS Configuration: Billboard would read: `file://./BB03/atm.gif.`

Billboard URLs

A URL for the billboard is much like a URL on the Internet. URLs can be local or remote, and typically point to the source of the billboard to be displayed.

Local URL

A local URL points to a file within the VBrick, which can be downloaded to the VBrick using a FTP utility program. All local URLs begin with: file://. There are sixteen pre-configured directories to place custom billboards inside the VBrick. The billboard directories are named BB01 to BB16.

Example 1

A single page billboard is placed in BB01. It requires one image file. The billboard page is named VB_1.HTM. The URL, which is not case sensitive, to enter in the Billboard URL box is: `file://./BB01/VB_1.HTM`

Example 2

A multi-page billboard is placed in BB01. It requires four image files, one for each page. The billboard pages are named VB_1.HTM, VB_2.HTM, VB_3.HTM, and VB_4.HTM. Each file is connected to the next page within the html file using the legal syntax. The URL to enter in the Billboard URL box is: `file://./BB01/VB_1.HTM`

Remote URL

Example 1

A single page billboard on a remote server with IP Address 172.16.2.79. The name of the billboard file is VB_1.HTM. The resulting URL is therefore: `http://172.16.2.79/VB_1.HTM`

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Example 2

A single page on a remote server called www.VBrick.com. The folder name is "billboards". The name of the billboard file is VB_1.HTM. The resulting URL is therefore:

`http://www.VBrick.com/billboards/VB_1.HTM`

Billboard File Types

The file types supported are html (.htm), JPEG (.jpg), GIF (.gif) and windows bitmap (.bmp). Progressive GIF and JPEG are not supported. For the mini-browser to display the images, the images have to be BMP, GIF, or JPG. Dynamically generated web pages are supported as long as the output is pure HTML and uses HTML tags that are part of the set as described below. The server side engine must generate the page. JavaScript and VBScript are not yet supported. Functions that require these features, like "mouseover", or "onclick" are not supported.

Creating a Billboard

A billboard that fits on one screen (640 x 480 resolution) can be created using the following HTML tags:

A	DIR	H3	IMG	PRE
AREA	DL	H4	INPUT	SCRIPT
B	DT	H5	LI	SELECT
BASE	EM	H6	MAP	SMALL
BIG	FONT	HR	MENU	STRONG
BLOCKQUOTE	FORM	HTML	META	STYLE
BODY	FRAME	TH	NOBR	TABLE
BR	FRAMESET	TITLE	NOFRAMES	TD
CAPTION	HEAD	TR	OL	TEXTAREA
CENTER	H1	U	OPTION	UL
DD	H2	I	P	

The billboard text generated by the browser is Times Roman. The Font sizes supported are `<Font Size = 1>` to `<Font size = 7>`. Background color and images are also supported. The standard HTML 16 color palette can be referred to by name, and other colors will be matched to the nearest color of a standard 232-color template. When creating billboards, please test your billboard for effect on all types of monitors on which it is going to be presented. S-Video output and Composite output from the V-Brick are supported.

Video Input

S-Video output from the VBrick to S-Video Input on the television yields the best picture to the TV monitor. If you do have S-Video input into your television set, it is recommended you use the S-Video output from the VBrick to the television. Most televisions also support composite input. The overlay image as used in the billboard can sometimes have the effect of "flicker" if the font is too small and used on a regular television. This is a product of the output video signal and the television. On higher-grade monitors, the effect is significantly reduced.

Font Sizes

It is recommended that font size 5 be used on the billboard. The VBrick has two types of video output signals. If S-Video out is used, the picture is significantly better than the

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Composite out. Text and graphics tend to appear sharper and do not flicker in S-Video as much as they do in the composite out. If a flickering effect makes your font unreadable, make it larger. Making the font bold or `<STRONG>` will reduce the effect of the flicker.

- The drawing area for Billboard is about 600X400 pixels.
- With a font size of 7, 8 lines of text fit on the screen.
- With a font size of 6, 13 lines of text lines fit on the screen.
- With a font size of 5, 18 lines of text fit on the screen.

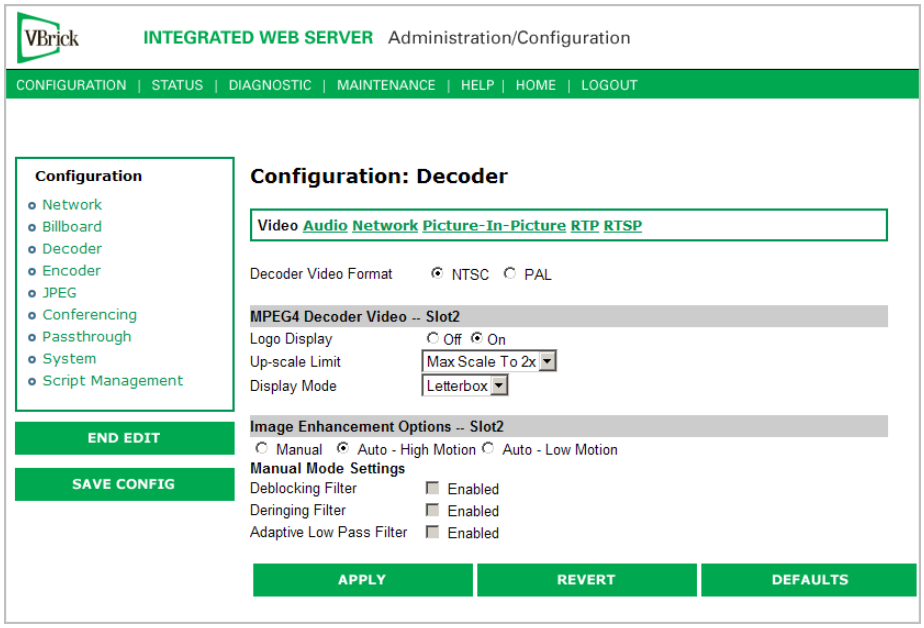
Transparent Background

A web page can be created with a transparent background. The video will show through and any text or images will appear on top of the video. A custom `META` tag is used to support this feature. In the `<HEAD>` portion of the HTML page, enter the following. The chosen background color will then be overwritten by the transparent color.

```
<META HTTP-EQUIV="TRANSPARENT" CONTENT="YES">
```

Configuration: Decoder

Configuration: Decoder > Video



MPEG4 Decoder Video

Decoder Video Format	The format can be configured to be NTSC (30fps) or PAL (25fps).
Logo Display	Allows the user to display the VBrick logo on the decoder output (monitor). The `logo.htm` file located in the `Logo` directory in flash allows the user to configure a customized logo. The file is simple HTML and supports local or remote .gif and .jpg files. HTML is used to provide transparency, blending and placement of the logo. See Changing the Logo below for details.

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Upscale Limit	The decoder can resize (scale) the received video image from the encoder to one of 3 choices – full screen, max scale to 2X and max scale to 4X.
Display Mode	The decoder can display the received video in one of three modes: Letterbox, Crop, Stretch. This option is rarely used as VBrick encoded video is produced in 4:3 format.
Image Enhancement Options	There are several auto enhancement options that the decoder can apply to help improve the quality of the video being displayed. The auto modes will remove filtering for higher rate streams where the filtering will reduce detail. A manual mode is also provided to allow the user to fine-tune the video. The de-blocking filer reduces macro-blocking, the de-ringing filter reduces the noise commonly seen around the edges of a video object and the low pass filter reduces high frequency noise. A combination of **Deblocking** and **Deringing**, and **Adaptive Low Pass Filter** can only be set in manual mode.

Changing the Logo

VBrick MPEG-4 decoders provide an option to superimpose a logo over the output stream in the lower-right corner of the display. If the logo option is selected, the decoder will output the default VBrick logo. You can also replace the default image with a customized logo as explained here. For reference, the default VBrick logo has the following parameters:

Size	151 x 81 pixels
Blending	50 percent
Transparent (background) color	black
Location	lower-right corner of screen

If you use the parameters shown above, the customization process is relatively easy and you can go to Step 2 below. If you need to change any of these parameters, however, you must follow all of the steps listed below.

▼ To change the logo image

1. Create a new `logo.htm` page (this page acts as a frame for the logo image). Create the new file by using the template and instructions provided below in the Modifying the logo.htm File. You can use any text editor to create this page.
2. Create a new `logo620.gif` file. You can use any image processing software as long as you observe the following guidelines.

File name	logo620.gif
File type	.gif
Size	Modify as necessary. Use the default logo (151x81 pixels) as a reference.
Color	It is a good idea to keep black as the background color if the new logo does not contain any black elements. If you change the background color, you need to change the corresponding settings in `logo.htm`.

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Background	Do not use anti-aliasing on the background of the image. There should be no smoothing of the edges on the lines that meet the background.

3. Upload the new logo to the decoder. The file(s) created in the previous step(s) have to be FTPed to the VBrick decoder as follows:
   a. Open an FTP application, point to the IP address of the VBrick decoder, and login using the admin user name and password.
   b. Copy the file(s) created in the previous step(s) to the `Logo` folder on the appliance. Be sure to keep the existing filename(s).
4. Activate by setting the **Logo Display** to **On** and check the result. To display and verify the new logo, reboot the decoder as follows:
   a. Log into the decoder with a valid user name and password.
   b. In IWS, go to **Diagnostics**, then click **Begin Edit** and **Reset Box**.
   c. Wait until the decoder reboots and verify that the image and location are ok.
   d. If you need to make changes, go back to Steps 1 or 2, as appropriate, modify the file(s) accordingly, then repeat steps 3 and 4.

Modifying the logo.htm File

The content of the logo.htm file is shown below. You can get this file, via FTP, from the `Logo` folder in the appliance. The only values you may need to edit are highlighted as follows. The coordinates of the top-left corner of the logo are shown by the numbers highlighted in **Red for NTSC** or `Blue for PAL`. The first number (**420**/`380`) is the default vertical Offset (from the top edge of the screen); the second number (**489**/`489`) is the default horizontal offset (from the left edge of the screen).

The value highlighted in `Magenta` sets the blending factor. The valid range is 0–255 with the default setting being at about 50 per cent. The values highlighted in `Black` set the transparent color. The default value is (0, 0, 0) for Black. This setting appears in two places: in numeric format for the transparent color of the logo image, and in text format where the background color of the html page is set.

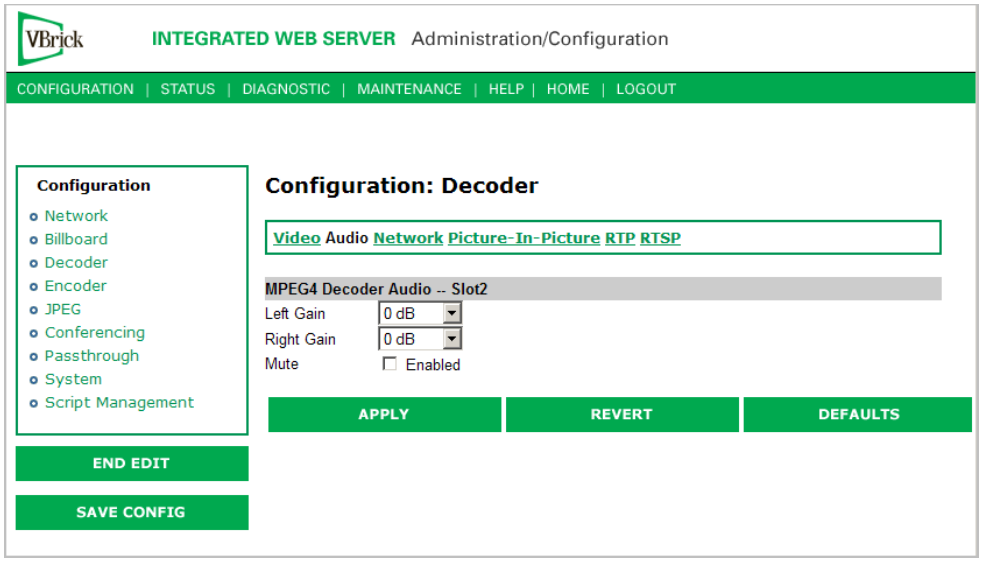
Note When you reload or upgrade the appliance software, a customized logo will be replaced with the standard VBrick logo. Save your custom logo files in a protected folder. You will need to replace the logo after a software upgrade.

```
<html>
<head>
<title>Logo</title>
<meta http-equiv="Content-Type" content="text/html; charset=iso-8859-1">
<style type="text/css"></style>
<script language="JavaScript">
function setupTvScreen()
{
  var reso;
  reso = GetResolution();
  if (reso == 'pal')
  {
    document.getElementById("PALLogo").style.top = "420px";
    document.getElementById("PALLogo").style.visibility = "show";
  }
  else
  {
    document.getElementById("NTSCLogo").style.top = "380px";
    document.getElementById("NTSCLogo").style.visibility = "show";
  }
    NavMode('TAB');
```


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```
    SetFullScreen();
    SetFlickerFilter (1);
    SetBlend (100, 125, 0);
    SetTransparentColor (0, 0, 0);
    SetTransparentColorOn ();
}
</script>
</head>
<body  BGCOLOR="Black" ONLOAD="setupTvScreen()">
<div id="PALLogo" style="position:absolute;  z-index:1; top: 0px; left: 489px;
visibility: hidden;"><img src="logo620.gif"></div>
<div id="NTSCLogo" style="position:absolute; z-index:1; top: 0px; left: 489px;
visibility: hidden;"><img src="logo620.gif"></div>
</body>
</html>
```

Configuration: Decoder > Audio



Left Gain	Used to adjust audio output gain (volume). Range is +12 to –34.5. Default is 0.
Right Gain	Used to adjust audio output gain (volume). Range is +12 to –34.5. Default is 0.
Mute	Used to mute the audio output to the TV or monitor.

Note When receiving streamed audio from a VBrick encoder, the audio level at the decoder output may differ from the level presented to the encoder by a factor of 4.5dB. Set the Audio Input Level on the encoder to Alternate if this is an issue.

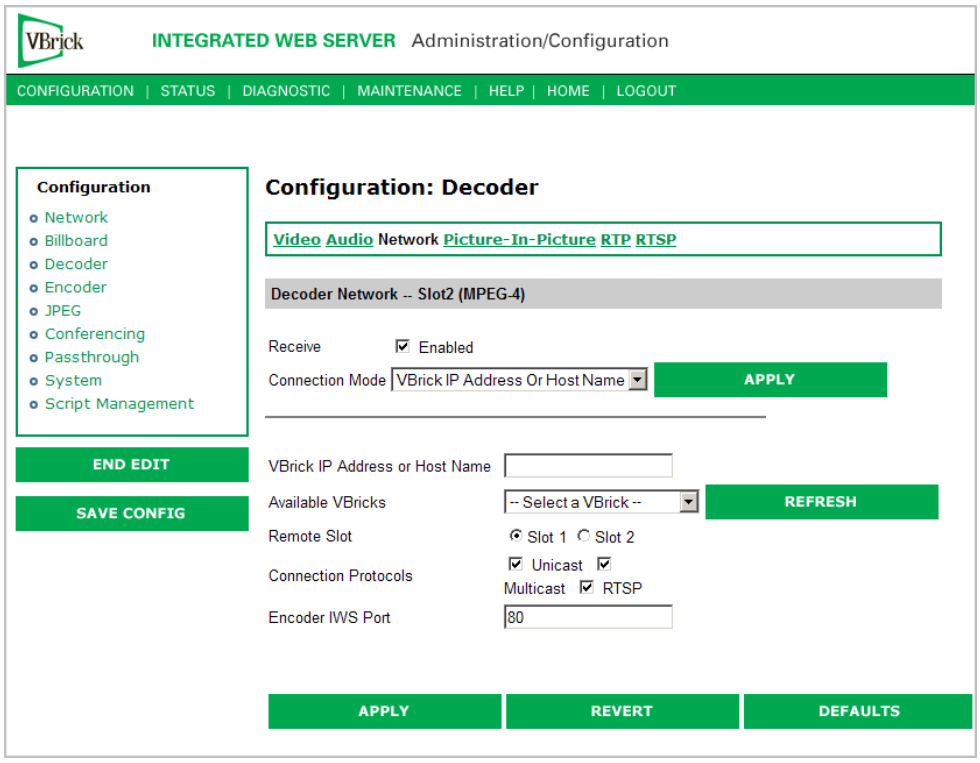
Configuration: Decoder > Network

The decoder connection mode automatically configures the page to display the appropriate options for each of the modes. The one shown below reflects **VBrick IP Address or Hostname** mode and its associated settings. All connection modes include the ability to disable reception via the **Receive** checkbox.

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Note Source-specific multicast is enabled by IGMPv3 and provides a way to share a limited number of multicast addresses on IGMPv3 networks. It lets your decoder associate a multicast address with a specific source encoder IP address. Source-specific multicast is designed for multicasting across networks and has no benefit when sharing multicast addresses on the same subnet (unless your router supports IGMPv3 snooping). Multicast addresses in the 232/8 (232.0.0.0 to 232.255.255.255) range are reserved for source-specific multicast. Enter the multicast address as the "Destination IP Address or Host Name" parameter on the Configuration: Encoder > Destination IWS page. There is no other configuration for source-specific multicast on MPEG-4 encoders or decoders.

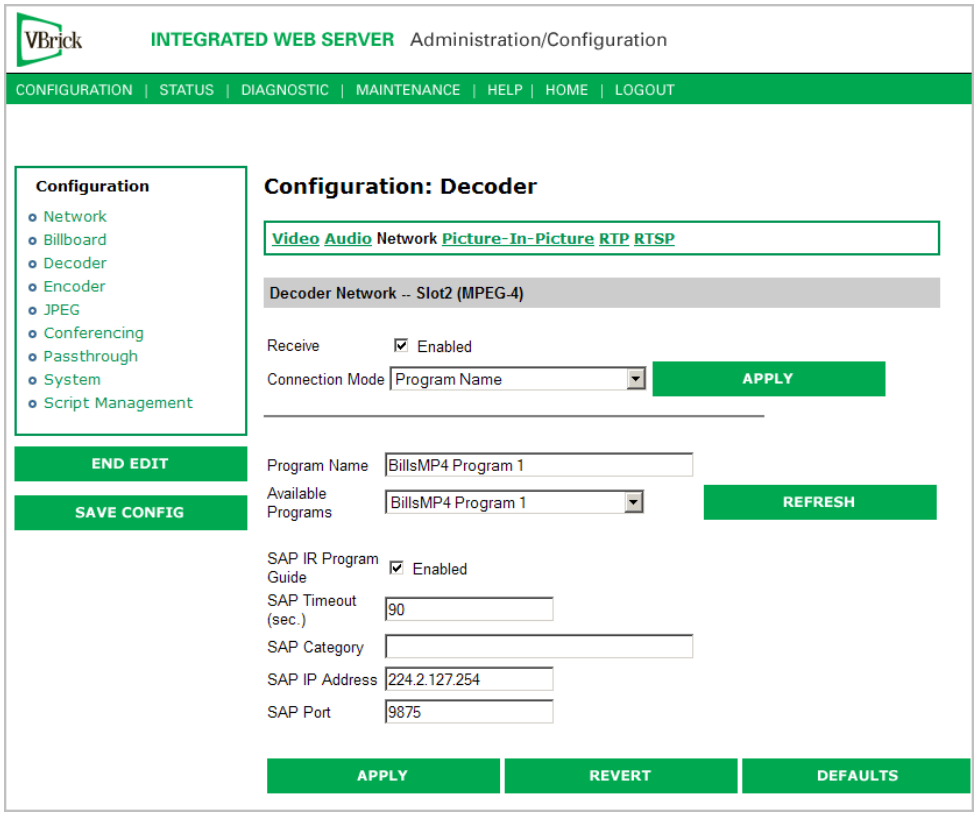


Receive	This option enables or disables the decoder.
Connection Mode	There are several choices for telling the decoder how to connect to a stream. In order to make other options visible you will need to select the Connection Mode you want to use and click **Apply**. The **VBrick IP Address or Hostname** mode when applied gives you a drop-down list called Available VBricks that will list all available encode sources. See examples that follow for other Connection Modes.
Remote Slot	The unit may contain dual decoders so you must select the appropriate slot which represents decoder #1 or decoder #2.

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Connection Protocols	The VBrick can connect to the encode source in three ways: Unicast, Multicast, RTSP. The VBrick decoder will attempt to connect in this order. Once the connection is established, if for some reason the connection is lost, the decoder will attempt to reconnect automatically. Note: When tuning to an encoder that is unicasting to this decoder via a Firewall/ NAT, only the unicast option should be enabled. Address resolution behind a NAT/Firewall may make it difficult for the decoder to match the sender's IP address. Selecting only Unicast will help alleviate the issue.
Encoder IWS Port	The decoder will try to extract the SDP information from the host using an HTTP get. The host may not be running on port 80 to supply the HTTP based SDP and may be running on a different port. Management SAP information may contain the host's HTTP port. The port value in the SAP overrides the configured HTTP port through this parameter when requesting HTTP data from the device.

Connection Mode: Program Name



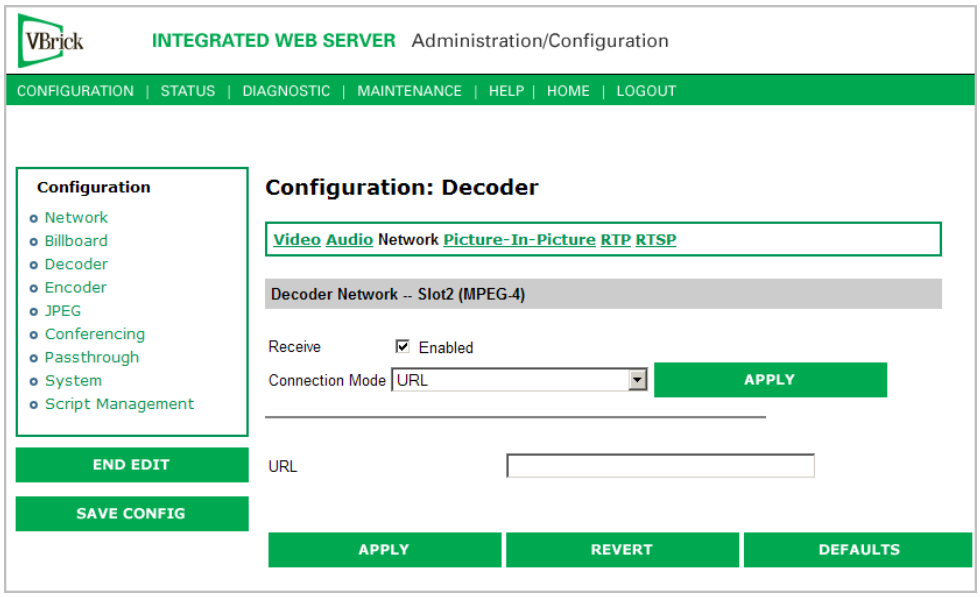
Connection Mode	Program Name. In this example the decoder will try to connect to the encoder with the program name "BillsMP4 Program 1."
Available Programs	A drop-down list for available programs is automatically created from other active devices on the network.
SAP IR Program Guide	A program guide of available streams can be displayed on the TV or monitor using the IR remote.

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SAP Timeout	This is the amount of time before a transmitted SAP will automatically timeout on the network.
SAP Category	Certain streams can be protected by being transmitted with a category string e.g. "financial." VBrick decoders will not see these protected streams unless this unique string is entered in the SAP category field. Note: Characters are ASCII and are case sensitive. The total of all keywords in the string is 36 characters including spaces.
SAP IP Address	This will be the address that the SAP information is transmitted on.
SAP Port	This will be the port that is associated with the SAP IP address.

Connection Mode: URL

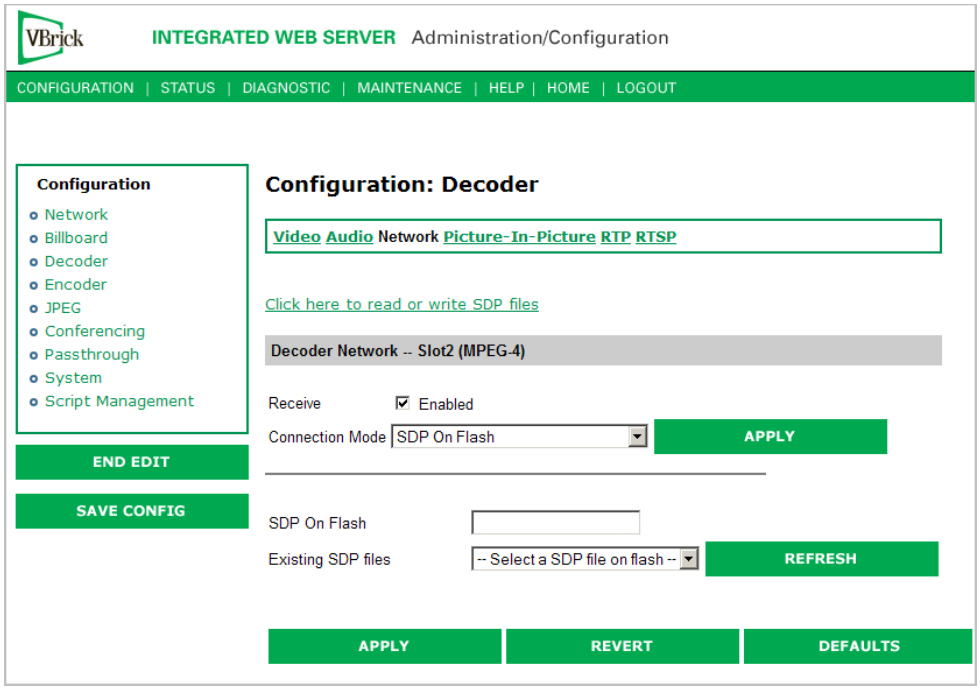


Connection Mode	URL. In this example the decoder will try to connect to the server according to the URL defined here. This URL could be that of the MP4 VBrick encoder or a Darwin server (for example). The encoder needs to be specified by its IP Address or Fully Qualified Domain Name. If you point this to an NXG Server the RTSP Location is case sensitive (i.e. /brian/The-Others). Some Legal URL examples include:
	`rtsp://192.168.1.4/vbrickvideo1`
	`rtsp://frodo.vb.loc/brian/The-Others`
	`http://192.168.1.4/vbs1d1.sdp`

Connection Mode: SDP on Flash

SDP (Session Description Protocol) files contain information about the format, timing, and authorship of the streamed media. SDP files are created on the VBrick appliance during streaming. In most cases the SDP file should not be modified manually; however, under some circumstances that might be necessary. If the streamed file changes, the SDP file can be deleted and re-created. An SDP file is not saved with an extension (*.sdp) so that Internet Explorer will *run* the file rather than allowing it to be saved. You can add the .sdp extension manually if it needs to be recognized by non-VBrick decoders.

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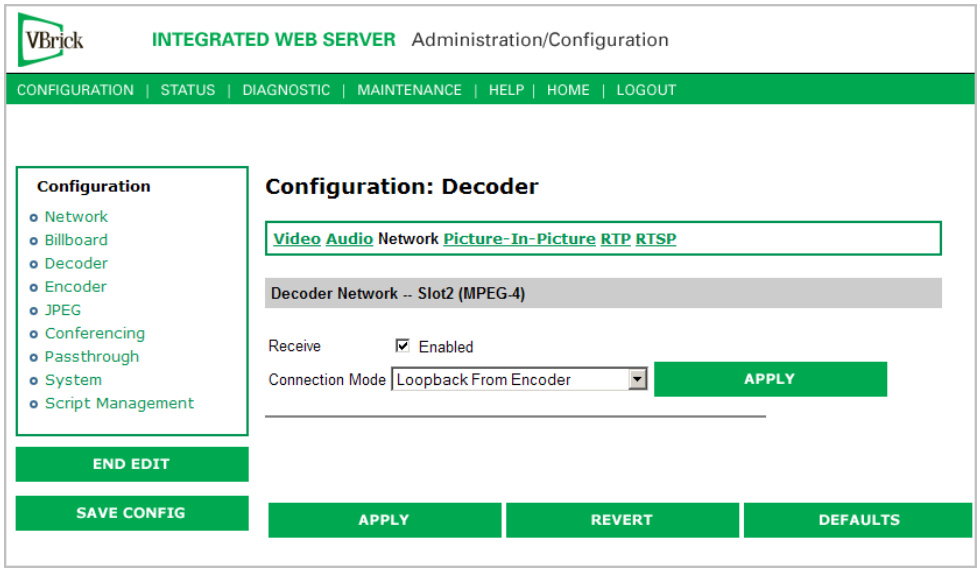


Connection Mode	SDP on Flash. In this example the decoder will try to connect to the encoder defined in the SDP file located in the decoder's flash memory.
Existing SDP Files	The user/administrator can browse the SDP files that are located in the decoder's flash memory and selects one to use from the drop-down list.
Click here to read or write SDP files	This will launch an external FTP window used to access the flash memory SDP files in the decoder's flash memory. Username and password are both "admin" by default.

Connection Mode: Loopback from Encoder

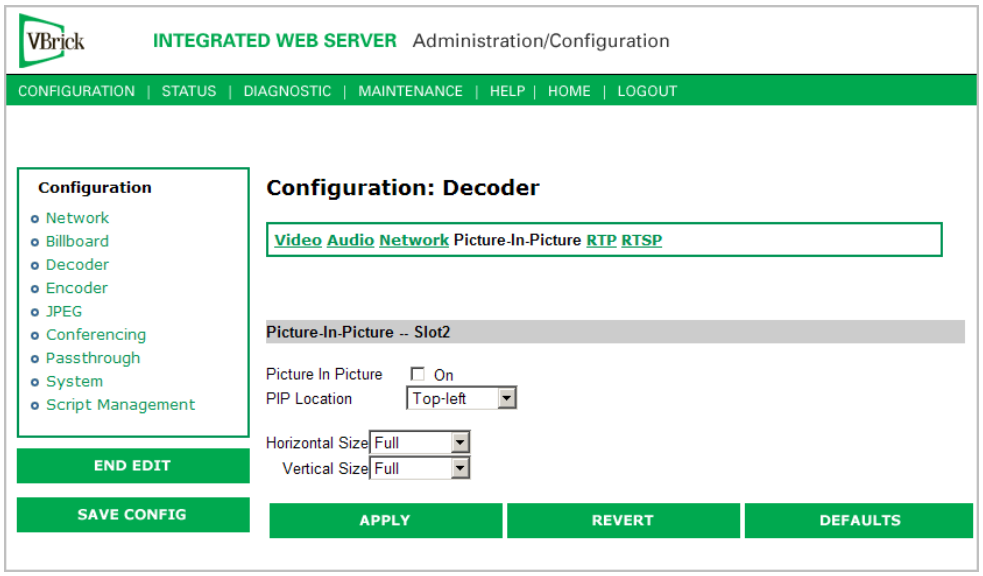
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Connection Mode	Loopback from Encoder - In this example the decoder will display video from the local encoder (option only valid if encoder is present, i.e. VB6200 encoder/decoder model).

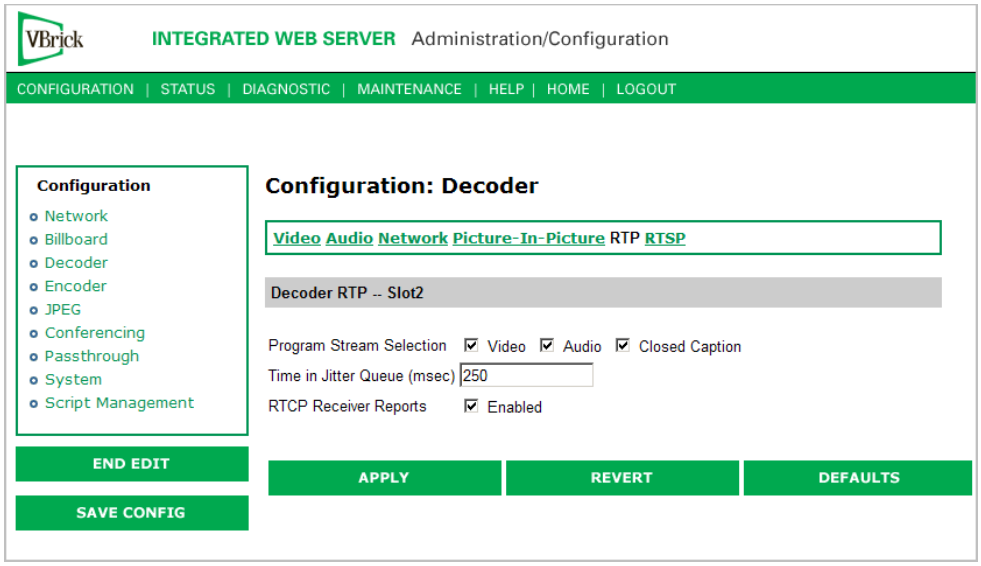
Configuration: Decoder > Picture-In-Picture



Picture in Picture	On/Off. This will enable or disable the Picture-In-Picture display.
PIP Location	Picture-In-Picture can be any of the following 5 locations - top left, top right, bottom left, bottom right and center.
PIP Horizontal Size	The Picture-In-Picture horizontal size can be changed to any of the following 4 sizes – full, half, quarter, thumbnail.
PIP Vertical Size	The Picture-In-Picture vertical size can be changed to any of the following 4 sizes – full, half, quarter, thumbnail.

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Configuration: Decoder > RTP

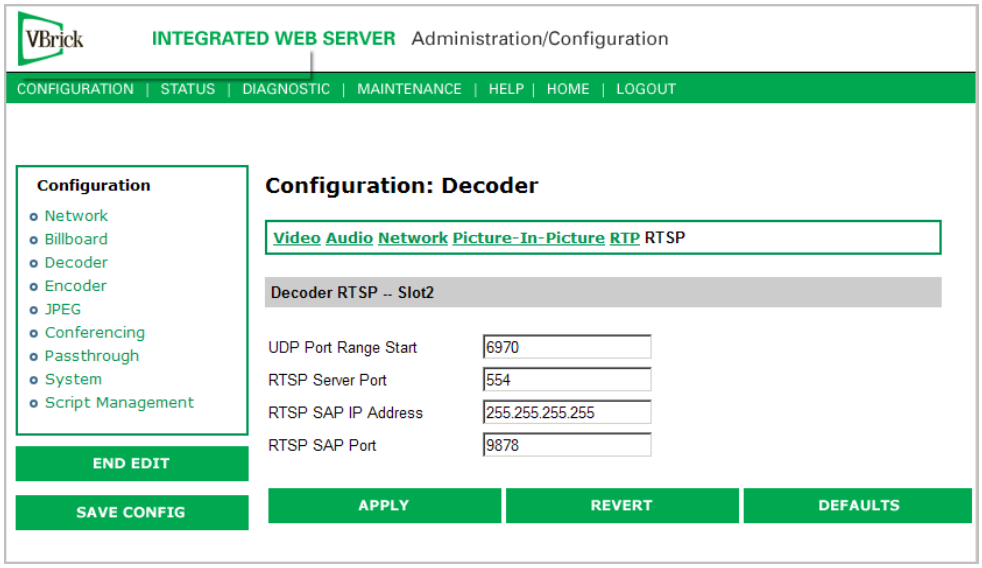


Program Stream Selection	The decoder can be configured to request an audio-only, video-only or closed caption stream.
Time in Jitter Queue	The jitter queue is a buffer which will fill up in case of network latency. This is helpful when connecting over networks which exhibit non-linear data transmission such as the public internet. The jitter queue is adjustable. The higher the value, the more jitter the decoder can handle but at the cost of overall latency (delay). The range is from 0 to 5000 milliseconds. Default is 250ms. See Status: Decoder Status > Network on page 69 for details about **Jitter Queue Underflow** and **Jitter Queue Overflow**.
RTCP Receiver Reports	When enabled, the decoder client will send RTCP receiver reports to the server. This is sometimes used as a keep-alive for the server.

Configuration: Decoder > RTSP

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UDP Port Range Start	The decoder will negotiate with the server which ports are to receive multimedia presentation material. To receive a presentation which has audio, video and cc, 6 ports are required, (two ports for each media type). The start range is 6970 (default) and can be modified by via this setting.
RTSP Server Port	The decoder uses this TCP port when initiating an RTSP session to an RTSP video server. Normally, this port called the control port and is 554.
RTSP SAP IP Address and Port	The decoder listens for RTSP URL information advertised in SAP format, on the address specified by this parameter. Generally, the encoders send out SAPs with their RTSP URL information using the address 255.255.255.255 (broadcast to the local subnet). Included with RTSP SAP IP Address configuration, is a Port parameter, also configurable. The SAPs received on this IP address/port are included in the list of program names on the decoder network page when in program name mode, as well as on the program guide as displayed on the TV monitor.

Configuration: Encoder

Configuration: Encoder > Template

Selectable templates have been preconfigured to fit many applications. There are always trade offs when selecting encoder settings. In general, the finer the resolution detail and smoother the motion, more resources are used and the larger the file (when stored). The optimum is to display the finest detail and smoothest motion possible given the amount of network resources available to both the sender and to the viewer who is receiving the video streams.

Note When choosing a Template, if the parameters of the Template don't match the current video parameter settings, there will be a note to that effect under the selection box stating, Parameters do not match template.

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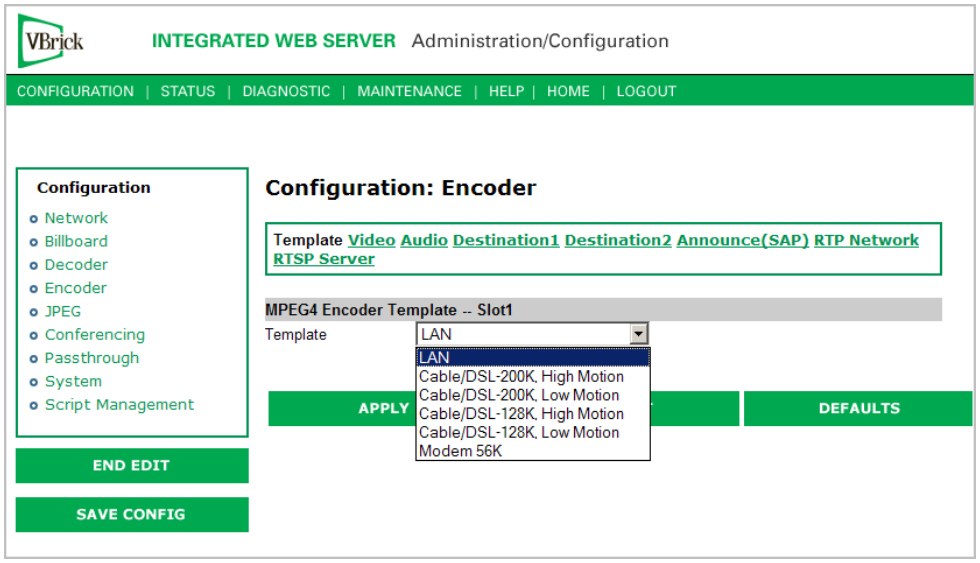


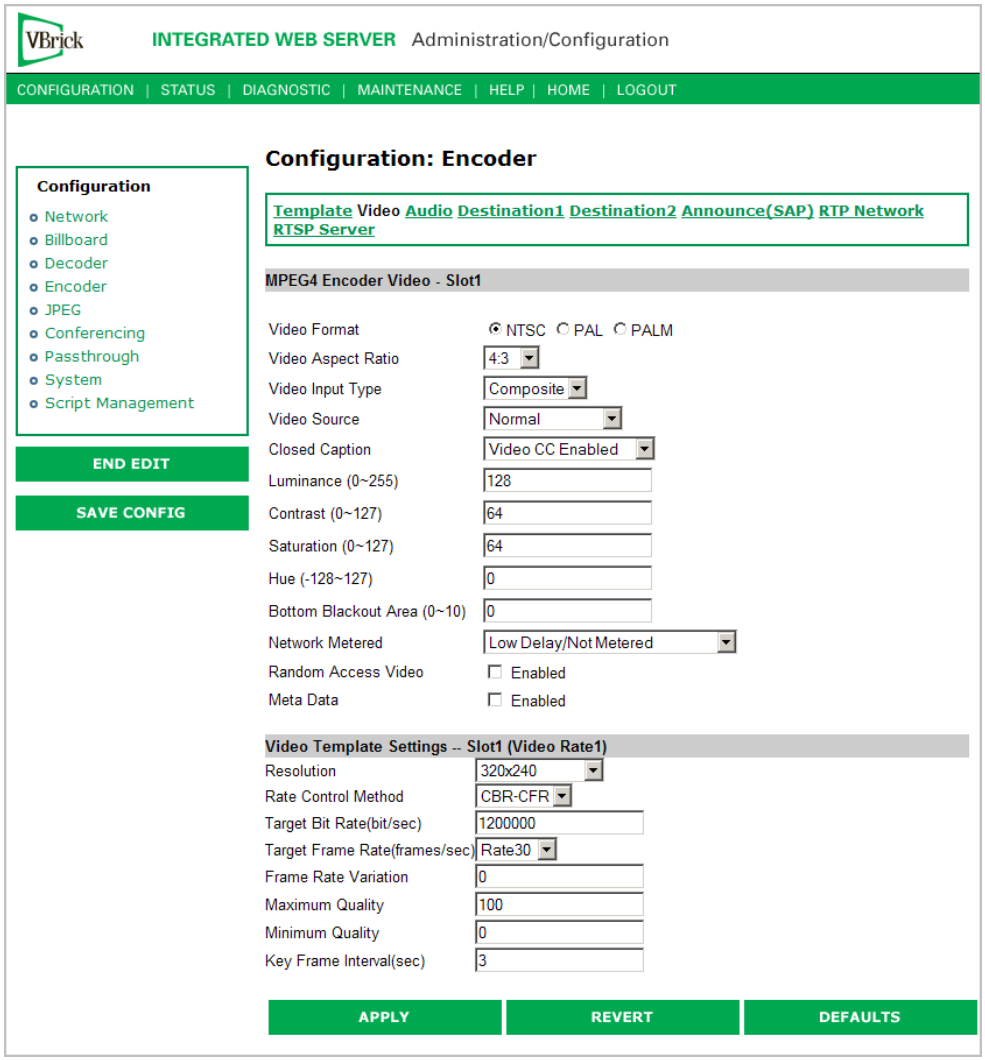
Table 1. Templates Table

Template Name	Total System Bit Rate (Kbps)	Video Target Bit Rate (Kbps)	Major Video Encoding Settings	Key Frame Interval	Audio Target Bit Rate (Kbps)	Major Audio Encoding Settings
LAN	1500	1200	CBR-CFR, SIF, 30 FPS	3	128	48 kHz 2 channels
Cable/DSL 200K High Motion	200	150	CBR-VFR, 256x192, 15 FPS	5	32	24 kHz 1 channels
Cable/DSL 200K Low Motion	200	148	CBR-VFR, 256x192, 10 FPS	5	32	24 kHz 1 channels
Cable/DSL 128K High Motion	128	78	CBR-VFR, 192x144, 15 FPS	6	32	24 kHz 1 channels
Cable/DSL 128K Low Motion	128	80	CBR-VFR, 256x192, 7.5 FPS	6	32	24 kHz 1 channels
Modem 56K	50	20	CBR-VFR, 128x96, 5 FPS	10	8	8 kHz 1 channel

Configuration: Encoder > Video

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MPEG4 Encoder Video

Video Format	The format can be configured to be NTSC (30fps) ,PAL (25fps) or PALM (30fps). PAL-M is a video format standard used in Brazil. The main difference between PAL and PAL-M is a lower resolution (525 lines instead of 625) and a higher frame count (30 frames per second at 60Hz versus 25 frames per second at 50Hz).
Video Aspect Ratio	Aspect ratio is the ratio of the width of the image to the height of the image. Standard TV images generally use an aspect ratio of 4:3; DVD players and some camera can produce 16:9. Set this value to match the video input source, either 4:3 or 16:9.
Video Input Type	The input can be changed to accept either S-video or composite (BNC). Note that model 9174-4200 (VBSSM) does not support S-Video.

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Video Source	This enables the user to select the bandwidth for tracking the video input. • Normal – Select for stable sources such as Cable, DVD or camera. • High Jitter – Select for unstable sources such as VCR or VTR.
Closed Caption	This setting enables closed captioning. • Video CC Enabled – Reads the embedded video closed captioning text. • Inserted CC Enabled – Inserts the user defined text set in the Closed Caption Text field.
Inserted CC Update Rate	Displayed when Inserted CC Enabled is set. This sets the rate with which the closed captioning field gets updated for the box (default is medium). Only works when Inserted CC Enabled is selected for Closed Caption above. • Slow – When set to slow, the inserted closed captioning field will be updated every 60 seconds. • Medium – When set to medium, the closed captioning field will update every 20 seconds. • Fast – When set to fast, the closed captioning field will update every 5 seconds.
Inserted CC Text	Displayed when Inserted CC Enabled is set.Sets the text that is inserted into the closed captioning field of the encoded stream (default is "inserted string" \h \d \t \c). Only works when Inserted CC Enabled is selected for Closed Caption above. Enter any string up to a maximum of 32 characters (including the Host Name, Date and Time). No double quotes, less than <, or greater than > symbols are allowed. Special codes can be substituted for the text in a string as follows: • \h or \H – Host Name. • \d or \D – Current Date. • \t or \T – Current Time. • \c# or \C# – Set Color (where # = the number corresponding to color). 0 = White, 1 = Green, 2 = Blue, 3 = Cyan, 4 = Red, 5 = Yellow, 6 = Magenta
Inserted CC Row	Displayed when Inserted CC Enabled is set. Sets the position on the screen where the text defined in the Closed Caption Text field will appear in the decoded video. Can be set from 1 through 15, where 1 indicates the top of the screen and 15 indicates the bottom of the screen (default is 15), when Inserted CC is enabled.
Luminance	0–255. Default = 128. The luminance is the information about the varying light intensity of an image, which is best described as brightness.
Contrast	0–127. Default = 64. The contrast is the range of light-to-dark values of an image that are proportional to the voltage differences between the black and white levels of the signal.
Saturation	0–127. Default = 64. The saturation is the spectral purity or intensity of a color.

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Hue	128–127. Default = 0. The hue is the attribute by which a color may be identified within the visible spectrum. Hue refers to the spectral colors of red, orange, yellow, green blue and violet. Note that adding hue reduces the saturation.
Network Metered	If you select **Low Delay/Not Metered**, frames of audio/video/CC are sent as soon an they are encoded. This may result in substantial network traffic burstiness since certain encoded frames such as video key frames are much larger than other frames. If **Medium Delay/ Network Metered** is selected, the encoder smooths the transmission of the audio/video/CC resulting in less burstiness from a network traffic perspective. However, this results in jitter, that is, relative displacement of the content from a timing perspective. This forces end-to-end latency to increase. Note that for VBrick decoders, even if the **Time in Jitter Queue** is set low, the fact that the encoder is metering the data results in an automatic increase in the target latency to three seconds. Also, the jitter queue may automatically be adjusted to almost 3 seconds, if the encoder that it is tuned to is experiencing heavy RTSP client utilization. The encoder automatically informs the decoder to adjust the jitter queue upwards to accommodate the additional traffic load. Once the traffic load diminishes the encoder will re-inform the decoder to reduce the jitter queue delay, automatically. The VBrick StreamPlayer PC decoders also increase buffer/latency if the encoded stream is metered. We recommend use of the Low Delay setting if interactive end-to-end behavior is required. We recommend the use of metering if the bandwidth in transmission path is constrained.
Random Access Video	If this option is enabled; additional header fields are added to the encoded stream providing the capability for certain third-party video-only decoders to decode the video stream without externally supplied SDP information.
Meta Data	When Metadata is enabled a new field will appear on the screen allowing the operator to insert metadata strings into the video as User Data. The normal use of metadata is to allow accompanying synchronized URL references to displayed in rich media applications. The VBrick StreamPlayer has the capability of extracting the metadata references and presenting them to an appropriate application. Contact VBrick for details.
Meta Data	Shown if Meta Data is enabled. Maximum 250 characters. Click Insert Now to insert the meta data string into the stream.

Video Template Settings

The following video settings are affected by choosing a Template in the Configuration: Encoder > Template section of IWS. For more about templates, see Table 1 on page 24. The following video settings are affected by a Template setting.

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Resolution	The pixel Width and Height of viewed video on the PC screen (Width by Height). Regardless of whether the transmission is NTSC or PAL, the following resolutions are possible: • 320 x 240 • 256 x 192 • 192 x 144 • 128 x 96 • 64 x 48 If NTSC or PAL-M is selected, the following resolutions are available: • 352 x 240 (SIF) • 176 x 128 (QSIF) If PAL is selected, the following resolutions are available: • 384 x 288 • 352 x 188 (CIF) • 176 x 144 (QCIF)
Rate Control Method	The selections are shown below. The interrelations between these terms are complex. Use of VBR should be restricted to controlled environments where significant burstiness in the achieved bit rate is acceptable. Not all players and/or networks may handle high levels of burstiness. Default is CBR-CFR. The abbreviations refer to: • CBR – Constant Bit Rate. • VBR – Variable Bit Rate. • CFR – Constant Frame Rate. • VFR – Variable Frame Rate.
Target Bit Rate	Bits/second. This number represents how much data the VBrick will send out each second to carry video to an MPEG-4 player. The word target is used because the VBrick can vary its bit rate slightly in response to the amount of detail in the movie or camera output. The discussion of Rate Control Method has more detail. Note that bit rate determines how much data the VBrick sends in one second to contain one second of the video or camera output. The more data the VBrick sends in one second, the more clearly the details of the movie will be seen on an MPEG-4 player. It is not always possible to send the most possible data, since that requires a large network "pipe" (connection). The trade off is the level of detail in the video with the use of smaller network connections. The difference between "constant" and "variable" bit rate is that if "constant" is chosen, then the VBrick will make a strong effort to ensure that the chosen bit rate is reached as often as possible. The "variable bit rate" setting allows the VBrick to change how much data it uses in a second (within limits of course), so that less complex scenes can be sent using fewer bits.

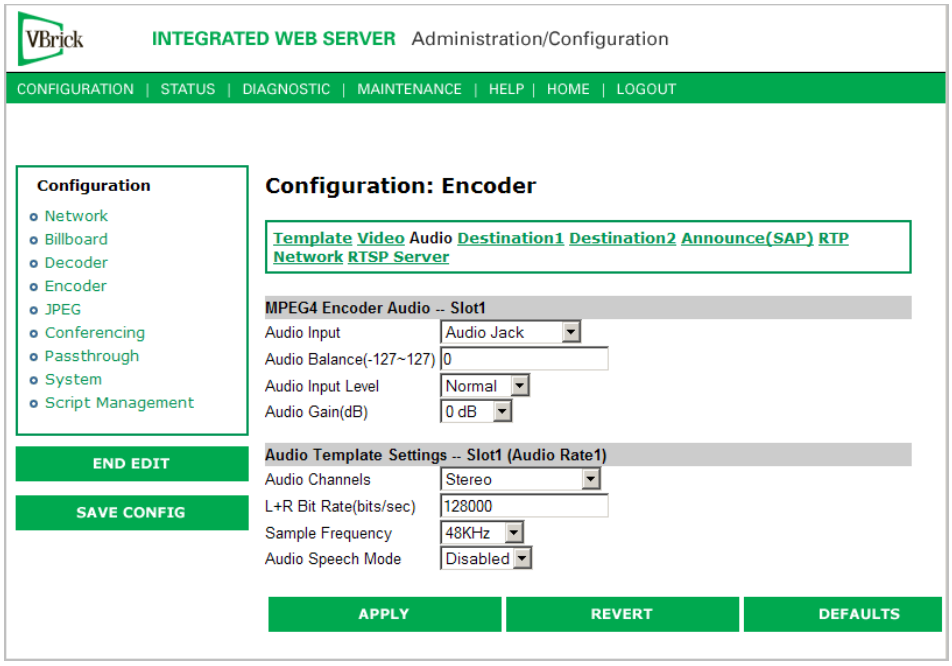
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Target Frame Rate	• NTSC: Rate30, Rate20, Rate15, Rate10, Rate7.5, Rate6, Rate5, Rate3, Rate2 and Rate1. Default = Rate30. • PAL**:** Rate 25, Rate20, Rate12.5, Rate10, Rate5, Rate2.5, Rate1. Default = Rate25. This number represents how many frames the VBrick will send out each second to carry the video to an MPEG-4 player. The word target is used because the VBrick can vary its frame rate slightly in response to the amount of motion in the movie or camera output. The discussion of Rate Control Method goes into this in more detail. Frame rate is the number of "frames" the VBrick sends in a second for an MPEG-4 player to display. Moving pictures are made up of a rapid series of "still" pictures that move so fast that the "illusion" of motion is produced. A frame is one such "still" picture. Regular TV programs in the U.S. run at about 30 frames in a second; and the more frames presented in a second; the smoother the motion contained within the video will appear. Encoding and transmitting a frame requires the use of data, so that, when considering a particular bit rate, sending more frames demands that each frame contain fewer fine details. Similar to bit rate, the difference between "constant" and "variable" frame rate is that if "constant" is chosen, then the VBrick will make a strong effort to ensure that the chosen frame rate is reached as often as possible. The "variable frame rate" setting allows the VBrick to change how many frames it uses in a second (within limits of course), so that rapid motion can play more smoothly.
Frame Rate Variation	Default = 0 (maximum smoothness). This number indicates to the VBrick exactly how much it is allowed to vary its frame rate in trying to reach its target bit rate. Decreasing this number means that motion will appear smoother, but that the target bit rate will not be met as closely. This option is used only VFR mode.
Minimum Quality	This number tells the VBrick appliance never to lose details in the video beyond a certain level. Increasing the minimum quality ensures that more detail will be seen, but that the trade off is that the target bit rate and frame rate will not be met as closely.
Maximum Quality	This number tells the VBrick appliance never to include details finer than a given level. Lowering the number can be useful for sending less data when the subject matter of the video has little need for very high "fidelity".
Key Frame Interval	In seconds. This interval allows an MPEG-4 player to "sync up" with a video stream already in progress by providing basic anchoring and orienting data. If "key frames" are sent less frequently, it will take longer for the video to begin playing after an MPEG-4 player is started on a PC. Key Frames use up a lot of data, lowering the amount of data available to carry the details of the video, so VBrick appliances are often set up to send key frames at infrequent intervals.

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Configuration: Encoder > Audio



Note In Edit mode, the settings that are affected through template settings (set in the Configuration: Encoder > Template) are set apart on the bottom portion of the screen.

MPEG4 Encoder Audio

Audio Input	Input can be from an Audio Jack (1/8" mini-phono jack) or from Microphone DIN (AudioMate microphone). Note that audio attenuation is relevant only if the 1/8" mini-phono jacks are used. Note that model 9174-4200 (VBSSM) does not support audio.
Audio Balance	-127 to 127. Default = 0. This setting controls the balance the output level between the left and right audio channels, a value of -127 mutes the right channel and a value of 127 mutes the left. A value of 0 distributes audio levels equally between the left and right channels.
Audio Input Level	Normal or Alternate. Default = Normal. Sets the audio level for the encoder audio jack input. When set to normal, the audio inputs accept a 4-volt peak-to-peak maximum signal. When set to alternate, the audio inputs accept an 8-volt peak-to-peak maximum signal.
Audio Gain	This setting controls the audio level of the encoder. When the Audio Input Level is set to Normal, the settings are from 7 to –53 dB and mute. The default is 0 dB. A setting of 7 is full volume and –53 effectively mutes the encoder. When the Audio Input Level is set to Alternate, the settings are from 12 to –48 dB and Mute. The default is 0 dB. A setting of 12 is full volume and –48 effectively mutes the encoder.

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Audio Template Settings

The following audio settings can be changed by choosing a Template setting in the Configuration: Encoder > Template section of IWS. For more about templates, see Table 1 on page 24. The following settings are affected by a Template setting.

Audio Channels	The audio output mode can be configured to 1 of 3 possible settings: • Stereo – Stereo directs the input left channel to the left channel in the audio stream and the input right channel to the right channel in the audio stream. In this mode, the encoder expects that the two channels are *not* totally discrete and have audio components that are common to both the left and right channels. In Stereo mode, the encoder can compress the audio more efficiently and achieve higher performance with lower bitrates. Always select Stereo for DVD/VCR reproduction. • Mono (left to stereo) – Mono directs the left input channel to both the left and right channel. • Dual – Each channel is compressed independently. Two totally separated channels are compressed and decompressed. Dual is ideal for voice applications where the microphone input from two channels is separated to avoid crosstalk. • Mono (left only) – This option allows only the left input channel to be carried in the stream. Output is to the left channel only.
L+R Bit Rate (bits/sec)	The value can be set in 2 K increments from 8K to 320K (8000 to 320000 in increments of 2000). The default value is 256,000 bps. This is the audio encoding bit rate of the audio stream. If the Encoder Audio Output is set to stereo or mono, the value can be set from 16000 to 320000. The sampling rate is based on the per channel bit rate: • Up to 12000, the sampling rate is set to 8kHz. • 12000 to 30000, the sampling rate is set to 16kHz. • 30000 to 40000, the sampling rates is set to 24kHz. • Greater than 42000, the sampling rate is set to 48kHz. Example. A stereo output bit rate of 48000 uses a sampling rate of 16kHz (the per channel bit rate is 24000). A mono output bit rate 48000 uses a sampling rate of 48k; only one channel is being transmitted.
Sample Frequency	Frequency at which the audio is sampled at the encoder. Settings include 8, 16, 24, 44.1 and 48 KHz. The default is 48 KHz.
Audio Speech Mode	Applications that are low-bit rate (8 to 12kbps) voice only will benefit from speech mode enabled. This will help reduce any reverb effects. In all other applications (such as music or voice bit-rates greater than 12kbps) this mode should be disabled.

Configuration: Encoder > Destination 1 & 2

Using Unicast

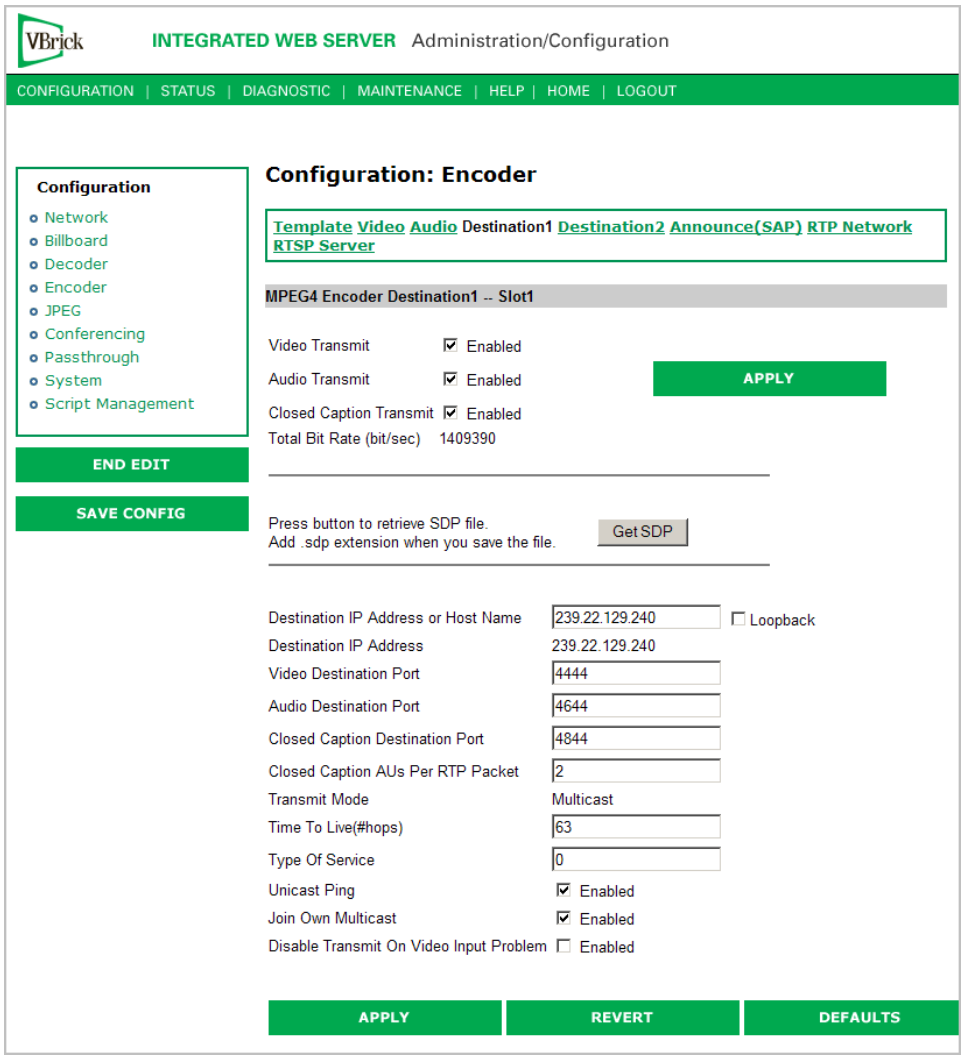
With one encoder, it is possible to send unicast video and audio to two separate locations using the Configuration: Encoder > Destination 1 and/or Destination 2 parameters. The

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parameters on these two pages allow the same video and audio streams to be sent to two independent destinations. Each destination is configured for a pair of ports, one for video and another for audio. To send Unicast, enter the IP Address of the computer to which video is sent into the **Destination IP Address** field.

Using Multicast

To send Multicast, use the same Destination1 and Destination2 settings, but enter a valid Multicast address in the "Destination IP Address" field.



Video Transmit Enable	Controls whether the primary encoder video output is to be transmitted to the network.
Audio Transmit Enable	Controls whether the primary encoder audio output is to be transmitted to the network.
Closed Caption Transmit Enable	Controls whether the primary encoder closed captioning is to be transmitted to the network.

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Total Bit Rate	Bits per second. This parameter reports the calculated total system bit rate, in bits per second. It includes video and audio (if enabled) along with packet header overhead.
Get SDP	SDP, or Session Description Protocol files, contain information about the format, timing, and authorship of the streamed media. SDP files are created on the VBrick appliance during streaming. In most cases the SDP file should not be modified manually; however, under some circumstances that might be necessary. If the steamed content changes, the SDP file can be deleted and re-created. When the SDP file is saved, it is not saved with an extension (*.sdp). The reason is that if the file has an extension, Internet Explorer will run the file instead of allowing it to be saved. If it is necessary for the file to be recognized by non-VBrick decoders, the .sdp extension can be added manually.
Destination IP Address or Host Name	This is the Destination IP Address or DNS Host Name of the encoded video. When Loopback is enabled the IP Address is set to 127.0.0.1, disable Loopback in order to change this field. The Host Name should be the Fully Qualified Domain Name. If the name is not available to the system it will use the Destination IP Address of 127.0.0.1. When this is a Multicast address, the transmit mode reports Multicast. Similarly, if this is a Unicast address, the transmit mode reports Unicast. Note that multicast addresses in the 232/8 (232.0.0.0 to 232.255.255.255) range are reserved for source-specific multicast. Note: The Host Name is resolved using the primary or secondary domain name server set in Network: Configuration. 127.0.0.1 is used if it cannot be resolved, or if the entry for DNS is blank.
Destination IP Address	This read-only parameter informs the operator of the IP Address for the DNS Host Name input into the Destination IP Address or Host Name Field.
Video Destination Port	This is the destination IP port of the network device that will be receiving the encoded video.
Audio Destination Port	This is the destination IP port of the network device that will be receiving the encoded audio.
Closed Caption Destination Port	This is the destination IP port of the network device that will be receiving the encoded closed captioning.
Closed Caption Aus per RTP packet	This is the number of frames of closed caption frames (access units) that are placed in each RTP packet. Since each closed caption frame is small, if multiple Aus are placed in a single RTP packet the bandwidth efficiency is improved at the cost of additional latency.
Transmit Mode	This read-only parameter (derived from the Destination IP Address) tells you whether the encoder is transmitting the video stream in Unicast or Multicast mode. In Unicast mode, if the network portion of the IP address is outside the scope of the local area network, the Unicast address is presumed to be outside the network.
Time to Live	The number of hops (between routers) for which an IP packet is valid on the network.

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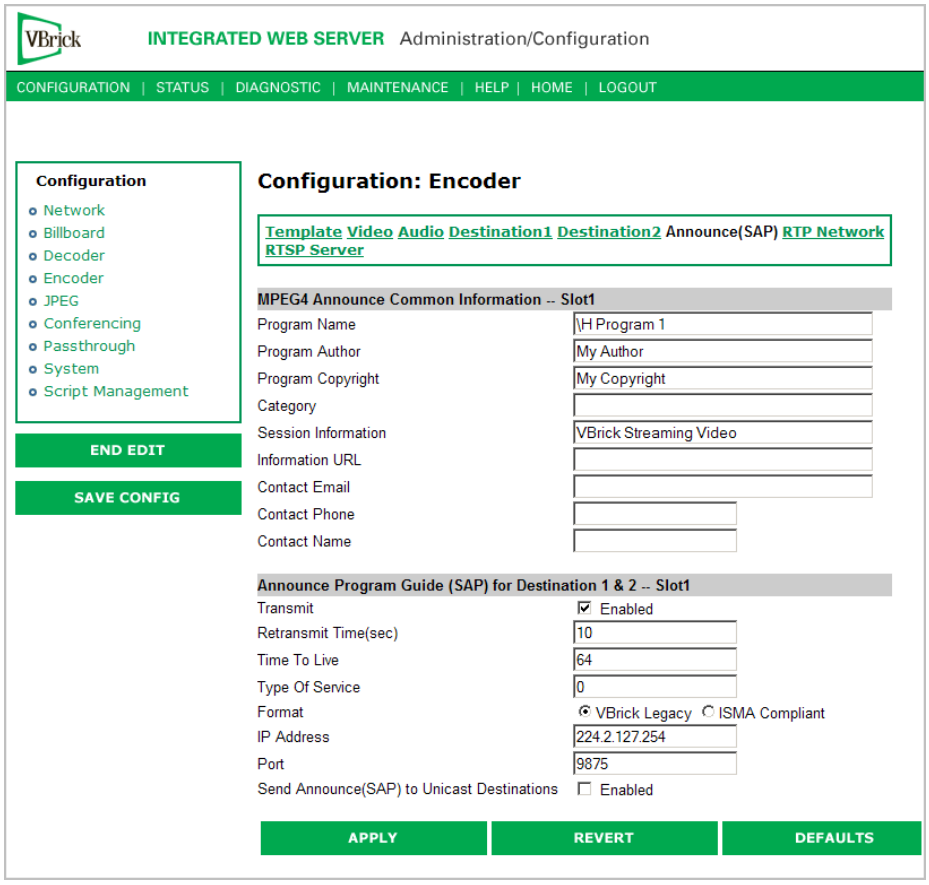
Type of Service	The TOS (Type of Service) can be configured in the IP header to establish packet priority in the network.
Unicast Ping	Feature for primary destination can be enabled, disabled. If the VBrick is designated to transmit a transport stream to any destination (whether another VBrick or not) in Unicast mode, this parameter is used to instruct the VBrick to ping the destination periodically to test connectivity before sending the stream. If Unicast Ping is not enabled, and the destination goes off-line, the Unicast stream may be broadcast to all destinations on the network, flooding the network. This feature should only be disabled if the network has a particular requirement that makes it unworkable.
Join Own Multicast	Some network equipment requires that a Multicast source (such as a VBrick encoder) join its own Multicast group. This feature is enabled by default and has no adverse affect on equipment that is fully multicast-supported.
Disable Transmit on Video Input Problem	Stop sending and free up bandwidth if there is an interruption for any reason in video input.

Configuration: Encoder > Announce (SAP)

Contains parameters used to change the SAP (Session Announcement Protocol) advertisements. SAPs are advertisement packets that are transmitted by VBrick appliances to other VBrick appliances and VBrick applications such as the Portal Server and StreamPlayerPlus. They are used to identify streams present in the network.

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MPEG4 Announce Common Information

Program Name	The string providing the name of the stream associated with this Session Announcement Protocol, or SAP. This SAP text shows up in the Program Guide for other VBrick products. Default is \H Program x, (1 or 2, for slot1 or slot2). Both Program Name and Session Information allow special character strings to be inserted automatically into these fields. This is true for encoding entries, Slot1 encoders, Slot2 encoders and, when installed, the Hard Drive Pump. The symbol "\" followed by any other letter is dropped and replaced by the letter. • \H or \h – Host Name of Vbrick appliance. When the default entry is used, the Vbrick is identified by the default Host Name, and will be identified as such on the network, see the StreamPlayer software example below.
Program Author	A string in the SAP that can be used to identify the author. This appears in the Windows Media player and others. Default is "My Author."
Program Copyright	A string in the SAP that can be used to identify the copyright information. Default is "My Copyright."

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Category	An encoder can have a SAP Category string. This string consists of one or more keywords separated by spaces. Each category keyword represents a tag associated with the Encoder's video stream. Decoders can be configured to display in their Program and Conferencing guides only video streams tagged by specific category keywords or those containing no keyword. The string(s), used by the Decoder, is set on the Decoder/Network screen. Characters are printable text and are case sensitive. The total of all keywords in the string is 36 characters including spaces. You can also use this field to filter the live streams shown in the ETV Portal Server by source and client IP address by using the following string: IPMask=xxx.xxx.xxx.xxx where xxx.xxx.xxx.xxx represents a bit mask. (This string is simply another keyword you can use in addition to those described above.) The Portal Server will parse the bitmask and send the live stream only to clients with a masked IP address that matches the masked IP address of the source VBrick. For example, a stream with a category IPMask=255.255.0.0 from a VBrick with an address of 172.22.6.67 will be available to a client with an IP address 172.22.3.4 but not to a client with an IP Address 172.16.3.4. There is no admin interface to this feature on the Portal Server; you can use this filtering in addition to the standard authorization features provided by the Portal Server.
Session Information	A string identifying VBrick SAP Session Information that appears on Program Guide. Default is "VBrick Streaming Video".
Information URL	Informational text.
Contact Email	Informational text.
Contact Phone	Informational text.
Contact Name	Informational text.

Announce Program Guide (SAP) for Destination 1 & 2

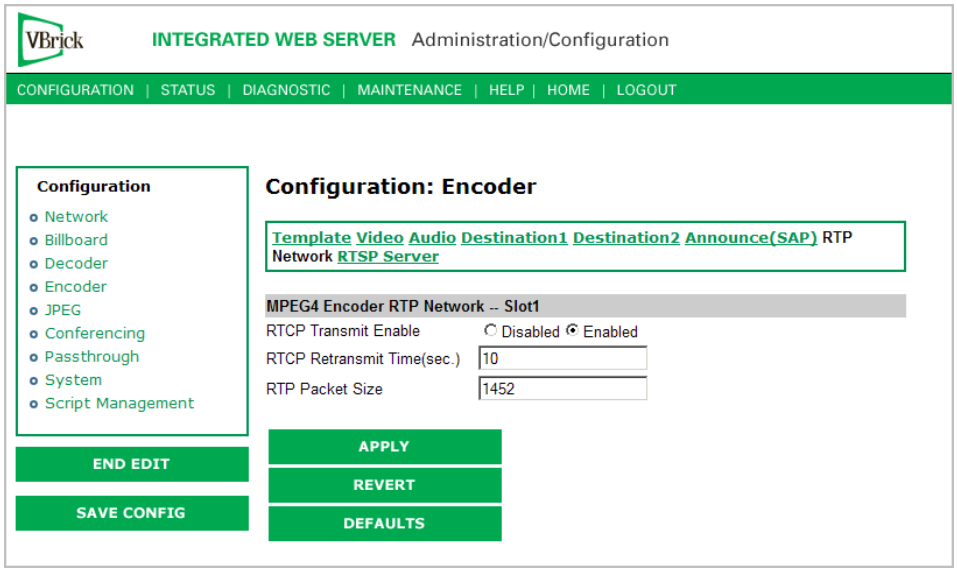
Transmit	Enables or disables SAP transmission. Default = enabled.
Retransmit Time	Seconds. 1 – 9999. Default = 10. If SAP Timing is fixed, this is the time in seconds between SAP transmissions. If SAP Timing is variable, the actual retransmit time, as per RFC 2974, is reported. Please refer to Configuration: System > General.
Time to Live	The number of hops (between routers) for which an IP packet is valid on the network.
Type of Service	The TOS (Type of Service) can be configured in the IP header to establish SAP packet priority in the network.

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SAP Format	Legacy, or ISMA Compliant. Default is Legacy. Note that transmitted SAPs can be compressed or uncompressed. When set to Legacy, the SAP message is not compressed and does not contain an initial object descriptor. This setting is optimized to be compatible with previously released VBrick SAP transmissions. The ISMA Compliant setting contains iod and is compressed. SAPs are optimized for compliance with ISMA standards. When set to ISMA Compliant, the program guide will not operate correctly on MPEG-1 version 2.5.0 or earlier and MPEG-2 VBricks version 2.1.0 or earlier.
IP Address	The IP address SAP information is sent out to the network.
Port	The port SAP information is sent out to the network.
Send Announce (SAP) to Unicast Destinations	Forward SAP announcements to all unicast destination addresses which are configured on the Encoder > Network pages (i.e. Destination 1 & 2)

Configuration: Encoder > RTP Network



RTCP Transmit Enable	Default = Enable. The RTP standard protocol contains an RTCP, or Real-time Transport Control element allowing both a VBrick and the PCs that are receiving video from that VBrick to carry on communication concerning the quality and stability of the video that is being sent. Enable allows RTCP sender reports to be sent from the VBrick.
RTCP Retransmit Time	If the RTCP Transmit is enabled, this setting tells the VBrick how often (in seconds) to send the reports.
RTP Packet Size	When choosing an RTP Packet Size, special attention must be paid to the network capability and topology. The allowed range is 1000 to 1472 bytes per packet, in four byte increments only.

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Configuration: Encoder > RTSP Server

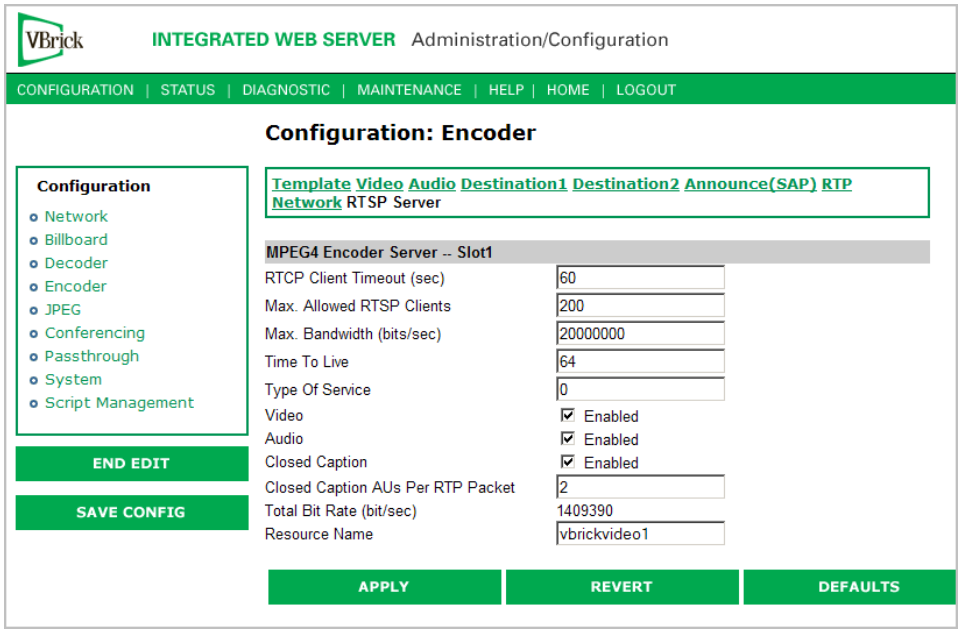


Figure 1. Configuration: Encoder > RTSP Server – Part 1

RTCP Client Timeout	This is the number of seconds that the VBrick will wait before it decides that an MPEG-4 player that was playing its video or audio is no longer viewing or listening. Zero means wait forever—no timeout.
Max. Allowed RTSP Clients	This is maximum number of MPEG-4 players that can view video or audio from the same VBrick at the same time using the RTSP method. Default for the allowed RTSP clients is 50. This may be increased, but overall system performance may degrade as this number is increased. It is recommended that if the Max Allowed Clients is increased, the configuration should be tested to assure proper operation. Although a maximum of 200 clients can be configured, only 100 HTTP tunneled clients are supported because each tunneled client requires 2 TCP sessions.
Max. Bandwidth	This is the maximum amount of data that the VBrick will generate at any time using RTSP. If the total calculated by adding together the data in all the video and audio streams that have been started using RTSP. When this maximum is reached, no additional MPEG-4 players will be allowed to use the RTSP method. Default for the allowed RTSP bandwidth is 20MBits/second. This may be increased, but overall system performance may degrade as this number is increased. It is recommended that if the max bandwidth is increased, the configuration should be tested to assure proper operation.
Time to Live	The number of hops (between routers) for which an IP packet is valid on the network.
Type of Service	The TOS (Type of Service) can be configured in the IP header to establish packet priority in the network.

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Video	If this is disabled no video can be seen using RTSP.
Audio	If this is disabled no audio can be heard using RTSP.
Closed Caption	If this is disabled no closed captioning can be seen can be heard using RTSP.
Closed Caption AUs Per RTP Packet	This is the number of frames of closed caption frames (access units) that are placed in each RTP packet. Since each closed caption frame is small, if multiple Aus are placed in a single RTP packet the bandwidth efficiency is improved at the cost of additional latency.
Total Bit Rate	This is the maximum amount of data the VBrick will generate at any time using RTSP. It's the total calculated by adding together the data in all the video/audio/cc streams (including network overhead) that have been started using RTSP. When this maximum is reached, no additional MPEG-4 players will be allowed to use the RTSP method.
Resource Name	The name used in an RTSP URL to locate a particular stream.

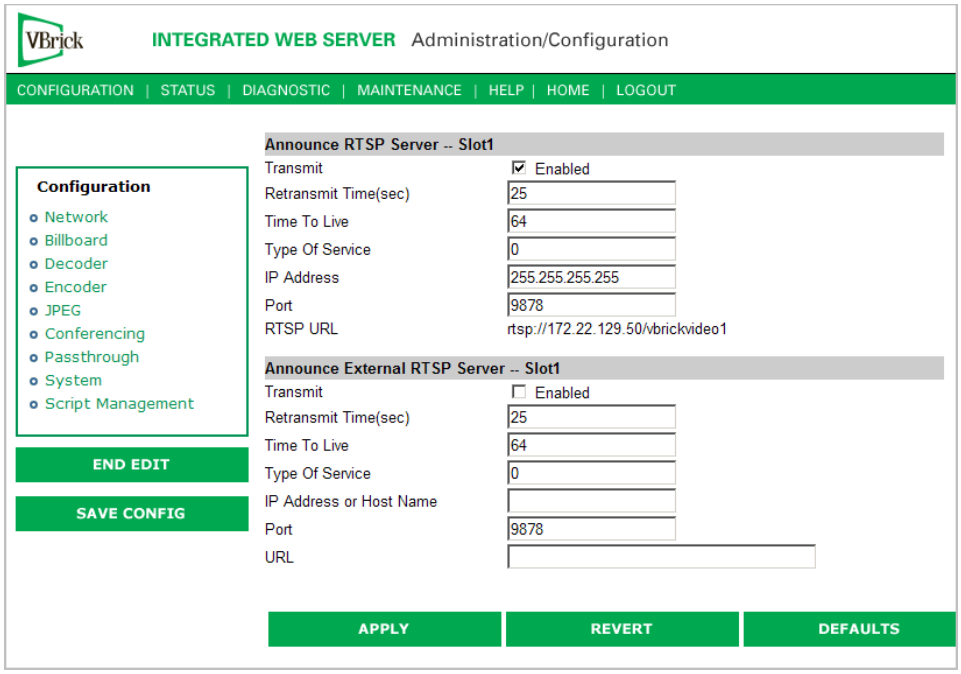


Figure 2. Configuration: Encoder > RTSP Server – Part 2

Announce RTSP Server	This section is used to announce the RTSP streams to the local network allowing viewable RTSP SAPs in programs like StreamPlayer Plus. The unit must be on the same segment of the network or the Router must be configured to retransmit broadcast in order for the SAPs to be accessible using the IP Address 255.255.255.255.
Announce External RTSP Server	This section is used to announce RTSP streams to a Network device outside of the broadcast domain.

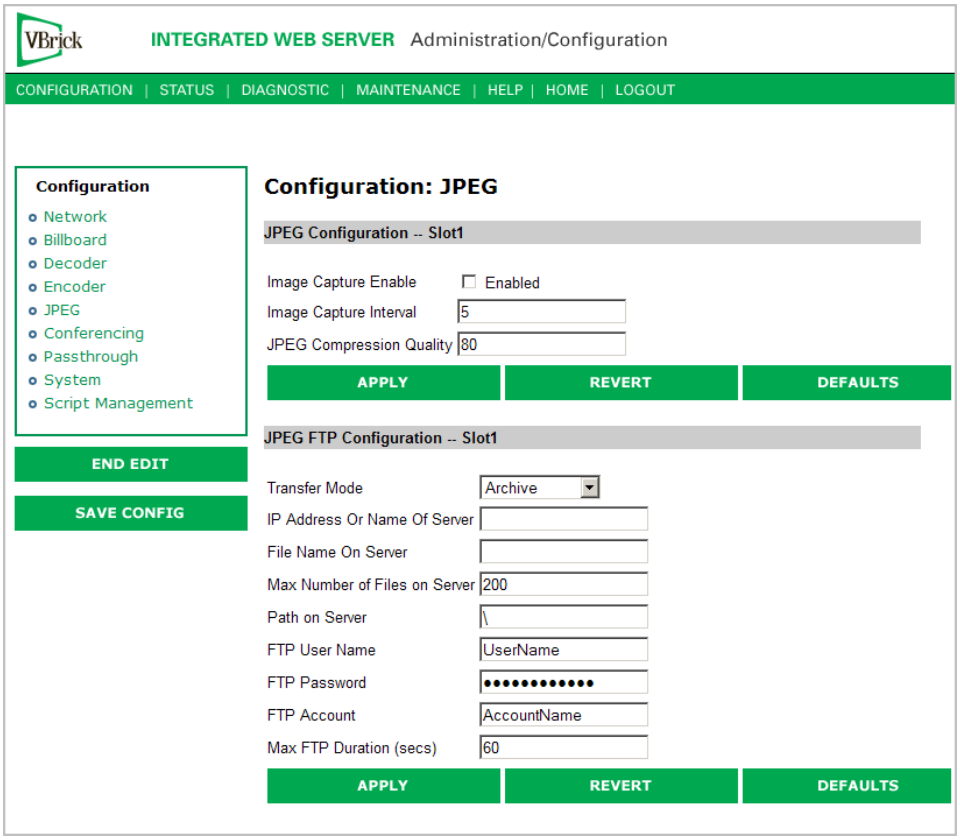
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Configuration: JPEG

This windows lets you configure a WM encoder with an attached video source (such as a camera) in order to take JPEG snapshots at a specified interval. Depending on the application, the snapshot can be displayed in a web page in realtime or FTPed to a server for archive storage. Type the following URL in a browser to display the captured image in a web page. The following URL example contains the folder location of the JPEG file for each encoder (if there are dual encoders). `vbs1` or `vbs2` indicates the slot number of the encoder. Click **F5** to refresh image.

`http://172.22.123.23/vbs1SnapShot.jpg`





JPEG Configuration

The following fields enable image capture and specify the capture interval and compression quality. Note that if you change any of these parameters for a live encoder stream, there will be a momentary (10 seconds or less) loss of video. (For JPEG capture status, see Status: JPEG Status on page 72.)

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Image Capture Enable	Check this box to enable image capture. Default = disabled. Note that toggling this parameter on or off will reboot the appliance.
Image Capture Interval	1–600 seconds. Specify the interval at which images are captured. Default = 5.
JPEG Compression Quality	0–100. Values over 80 marginally affect image quality and may impact other system resources. For best results, experiment with the output and choose the lowest value that provides acceptable image quality. Default = 80.

JPEG FTP Configuration

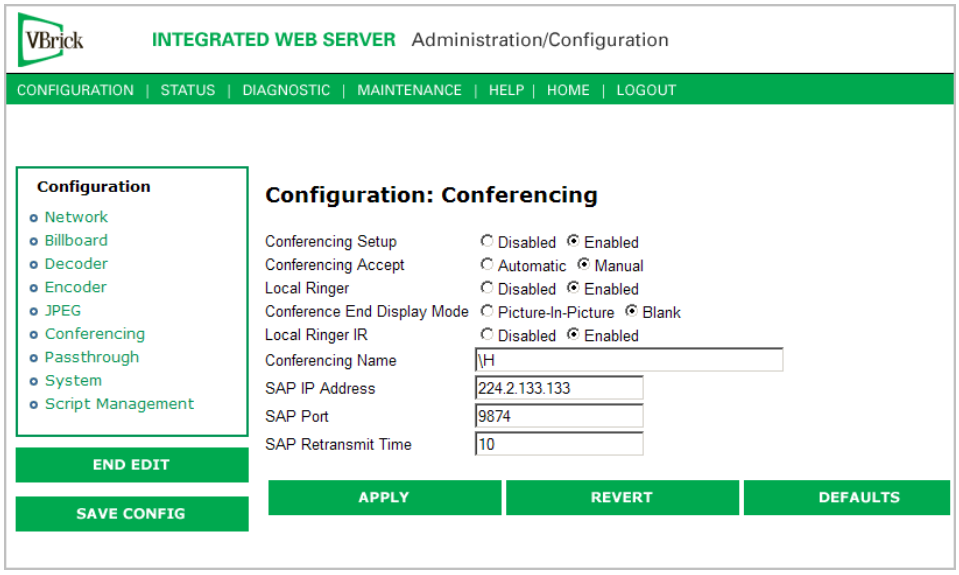
The following fields determine how the JPEG images are handled with respect to an FTP server.

Transfer Mode	• Archive – Default mode. Each image is saved as a separate file up to the value in Max Number of Files on Server. After the maximum, the files begin to overwrite. • Single Image – Only one image is saved and overwritten on the server.
IP Address or Name of Server	IP address or machine name of FTP server. Default = blank.
File Name on Server	Archive mode – This is the base file name to which incremental numbers are appended. If the base file name is `VBrick1-` for example, the captured images will be named `VBrick1-1`, `VBrick1-2`, and so on. Single Image – A .jpg extension will be appended to the base file name. Default = blank.
Max Number of Files on Server	1–1000000. The maximum number of files that will be saved on the FTP server. Default = 200.
Path on Server	Folder name where images are saved on FTP server. Default = root.
FTP User Name	FTP user name. Default = UserName.
FTP Password	FTP password. Default = UserPassword (hidden).
FTP Account	FTP server account login. Default = AccountName.
Max FTP Duration	1–60 seconds. Default = 60. After a server interruption, the time to wait before closing the connection and trying again.

Configuration: Conferencing

Conferencing is a feature that allows a user to set up a two-way video conference using the IR Remote Control. This screen provides the configuration of the necessary parameters.

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Conferencing Setup	This option enables/disables the ability of a user to initiate a conference using an IR remote control unit. Disabled prevents this VBrick from appearing on the Conference Guide of other VBricks.
Conferencing Accept	If **Manual**, the called party on this VBrick must explicitly accept the call with the IR remote control. If automatic, the call will be accepted without any action on the part of the called party.
Local Ringer	Used to enable/disable the ringer.
Conference End Display Mode	Allows the choice of what is displayed when the conference ends. Display either Picture-in-Picture (with the local encoder view) or a Blank Screen.
Local Ringer IR	If Enabled, the ringer may be enabled or disabled via the IR remote by the user (operator) of this VBrick. If disabled, the local operator cannot change the state of the ringer. It will remain as set above in "local ringer".
Conferencing Name	Used to configure the name of the user (operator) of this VBrick. This is the name, which will appear on the conference guide screen used to set up the conference. The default entry is \h or \H, which identifies the unit by the Host Name of VBrick appliance.
SAP IP Address	The SAPs for Conference Call setup are sent to this destination IP Address.
SAP Port	The SAPs for Conference Call setup are sent to this destination IP/ UDP port.
SAP Retransmit Time	Allows setting the SAP retransmit time.

Configuration: Passthrough

The TCP/IP network can serve as an intermediary between two VBricks and their serial ports or between a PC application sending IP packets and a VBrick's serial port. Passthrough

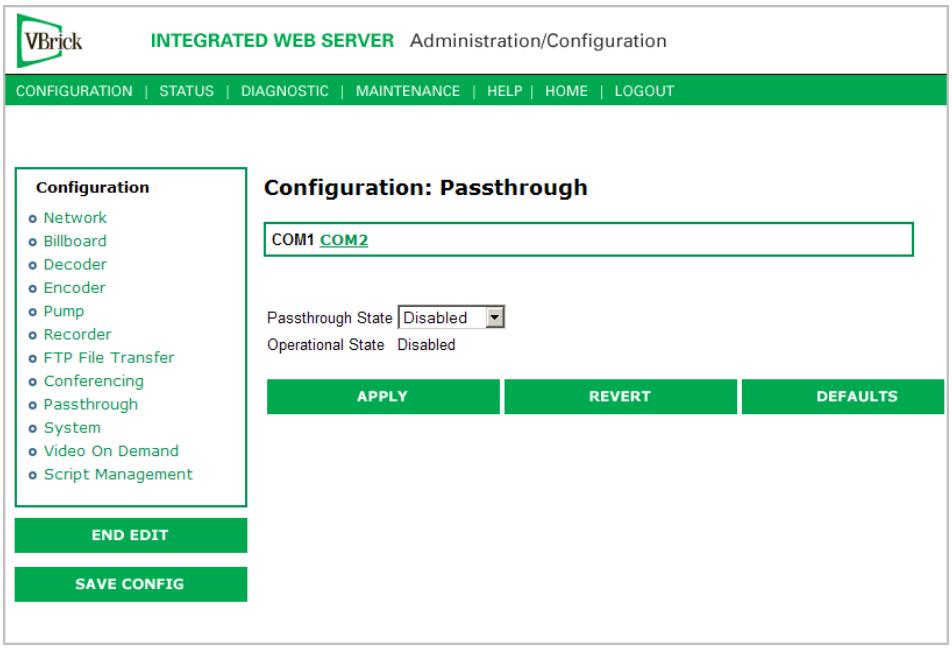
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can be configured using addresses on Ethernet or using addresses on ATM. Passthrough on COM2 is only available on VBricks with a CPLD (programmable logic device) Version greater than 21. (To check the CPLD , go to **Status > System Information > CPLD Version**.) *If the IWS screens do not provide a COM1 or COM2 selection at the top of the Passthrough screen, the VBrick defaults to COM1*. This feature supports a wide range of serial applications. See "Serial Port Passthrough" in the *VBrick Appliances Getting Started Guide* for more information. Note that RS-232/422/485 end-to-end control is initiated by enabling or disabling Passthrough. The Passthrough port for COM1 is 4439; the port for COM2 is 4414.

Note COM2 is a dual purpose interface. At the factory default it can be used as a serial connection to the VBrick Command Line Interface (CLI) tool for configuration purposes. When configured for Passthrough, the CLI feature is used for camera control.

Configuration: Passthrough > COM1

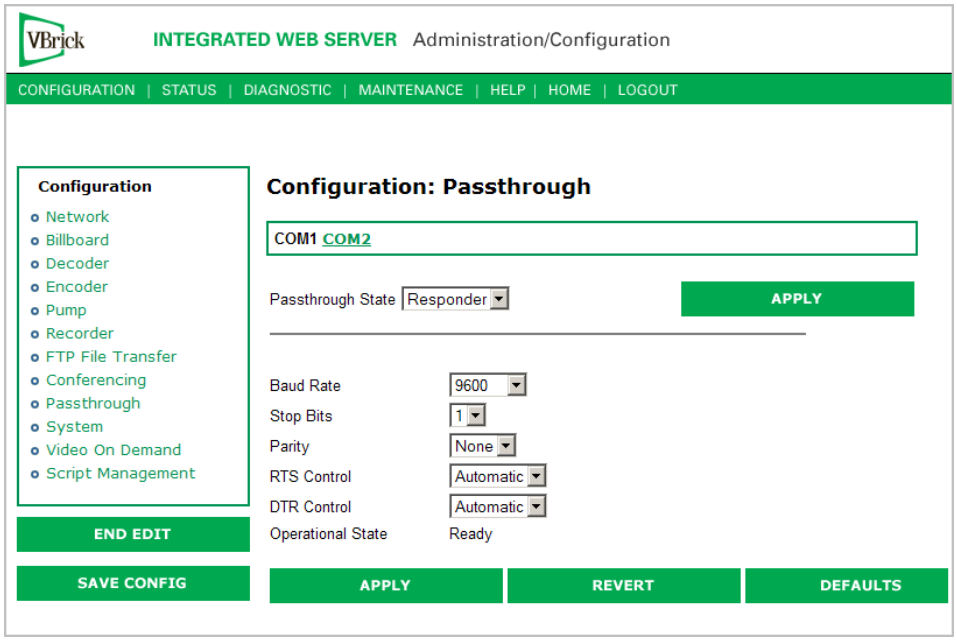


Passthrough State	Used to enable/disable Passthrough. Three states are possible: • Disabled – The VBrick will neither initiate nor respond to Passthrough setup requests. • Responder – In this case the VBrick will accept a connection request (up to 64 connection requests) from another VBrick set as an Initiator or from a PC camera control application. • Initiator – In this case it will continuously attempt to automatically initiate a Passthrough connection to the remote destination.
Operational State	Describes the current status of a Passthrough connection, including error conditions, if any. Refer to the Network Status Section. This will display "Active" if in Passthrough mode.

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COM Interface Type	Describes the COM interface connector. (RS422/485 options are displayed only if main board has a Part Number ending in xxx3. See Status: User Information > Main Board.) • RS232 – standard RS-232 serial port connector. • RS422/485 – RS-422/485 4-wire serial port connector. • RS422/485 (Terminated) – RS-422/485 terminated.

Passthrough State: Responder



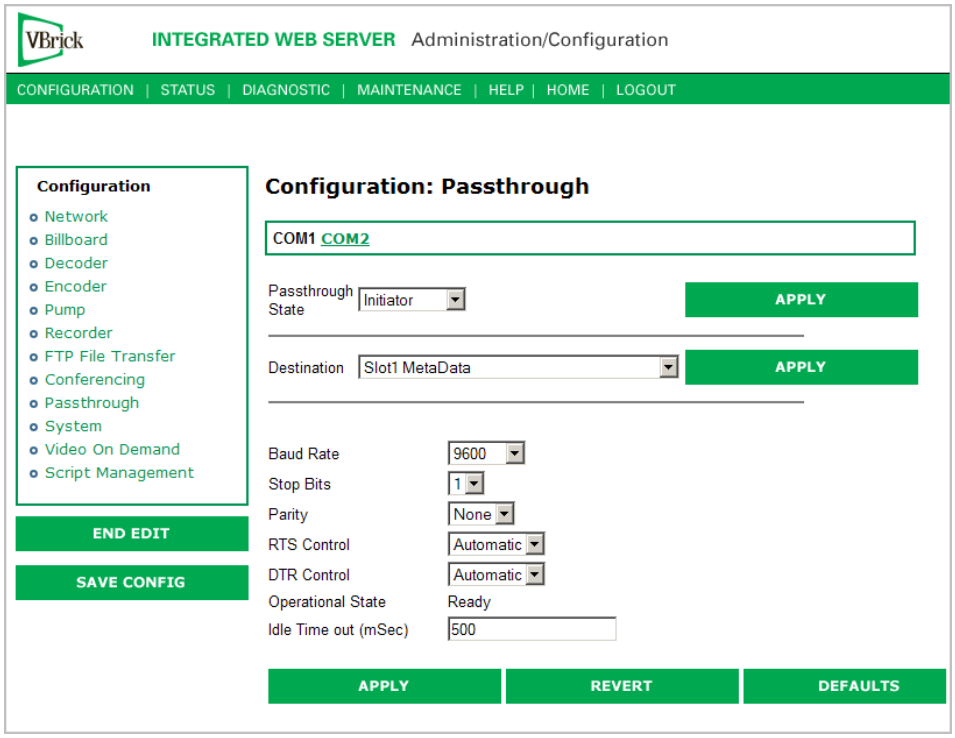
Baud Rate	Rate can be set to the following (Default = 9600): 110, 300, 600, 1200, 2400, 3600, 4800, 7200, 9600, 14400, 19200, 28800, 38400, 57600, 115200.
Stop Bits	Number of stop bits for Passthrough port (1 or 2).
Parity	None, Even, Odd.
RTS Control	Force Off, Force On or Automatic. If automatic, the control will be on when Passthrough is active. DTR and RTS are available for COM2 only for those VBrick models whose last digit is 3 or higher. Under no conditions are RTS or DTR controls passed through end-to-end. All control handling is local.
DTR Control	Force Off, Force On or Automatic. If automatic, the control will be On when Passthrough is active. See note above.
Operational State	Describes the current status of a Passthrough connection, including error conditions, if any. Refer to the Network Status Section. This will display "Active" if in Passthrough mode.

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COM Interface Type	Describes the COM interface connector. (RS422/485 options are displayed only if main board has a Part Number ending in xxx3. See Status: User Information > Main Board.) • RS232 – standard RS-232 serial port connector. • RS422/485 – RS-422/485 4-wire serial port connector. • RS422/485 (Terminated) – RS-422/485 terminated.

Passthrough State: Initiator



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Destination	• Remote COM1 using Slot1 Video Endpoint. This means that all serial data originating at the COM1 port being configured is sent to the COM1 port of the VBrick identified as the Slot1 video source (if Slot1 is a decoder) or to the Slot1 video destination VBrick (if Slot1 is an encoder). • Remote COM2 using Slot1 Video Endpoint. Slot1 Destination 1 only. Same as above except Initiator destination is COM2. • Dedicated. When Passthrough State is set as Initiator and the Destination is Dedicated, the VBrick appliance (whose serial port is the destination of this COM port) can be configured and identified using either an IP address or a host name. • Slot1 MetaData. If Meta Data is enabled on the Encoder > Video page, the appliance captures incoming data from the serial port and inserts it into the stream as metadata. In a typical application, a GPS receiver connected to a VBrick can insert ASCII strings representing map coordinates into a stream. This information is saved and sent as metadata with the video. For this feature to function properly, captions must be enabled in the player (**Play > Captions and Subtitles**). This feature is disabled when the appliance is in Edit mode. The data is inserted when it reaches the maximum number of characters (250 for MPEG-4) or when the Idle Timeout (see below) between characters is reached. Note that a four-character `TEXT` command and a trailing space are auto-inserted before any metadata. The Media Player recognizes the `TEXT` command and displays the metadata. This feature works for all passthrough port baud rates but can only accept continuous serial data at rates up to 9600 baud; at higher rates there must be some idle time between metadata strings. • Slot2 MetaData. Same as above except the serial port data is inserted as metadata in the video stream from the Slot2 encoder.
Baud Rate	Rate of Passthrough port. Rate can be set to the following (Default = 9600): 110, 300, 600, 1200, 2400, 3600, 4800, 7200, 9600, 14400, 19200, 28800, 38400, 57600, 115200.
Stop Bits	Number of stop bits for Passthrough port (1 or 2).
Parity	None, Even, Odd.
RTS Control	Force Off, Force On or Automatic. If automatic, the control will be on when Passthrough is active. DTR and RTS are not available for COM2. Under no conditions are RTS or DTR controls passed through end-to-end. All control handling is local. DTR and RTS are not available for COM2.
DTR Control	Force Off, Force On or Automatic. If automatic, the control will be On when Passthrough is active. Not available on COM2. See note above.

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Operational State	Describes the current status of a Passthrough connection, including error conditions, if any. Refer to the Network Status Section. This will display **Active** if in Passthrough mode.
Idle Time out	5–2000 milliseconds. Default = 500. The interval between characters at which metadata is inserted into the stream.
COM Interface Type	Describes the COM interface connector. (RS422/485 options are displayed only if main board has a Part Number ending in xxx3. See Status: User Information > Main Board.) • RS232 – standard RS-232 serial port connector. • RS422/485 – RS-422/485 4-wire serial port connector. • RS422/485 (Terminated) – RS-422/485 terminated.

Dedicated Address Mode

When the Passthrough State is set as Initiator and the Destination is Dedicated, the VBrick appliance can be configured and identified using either an IP address or Host Name.

Configuration: Passthrough > COM2

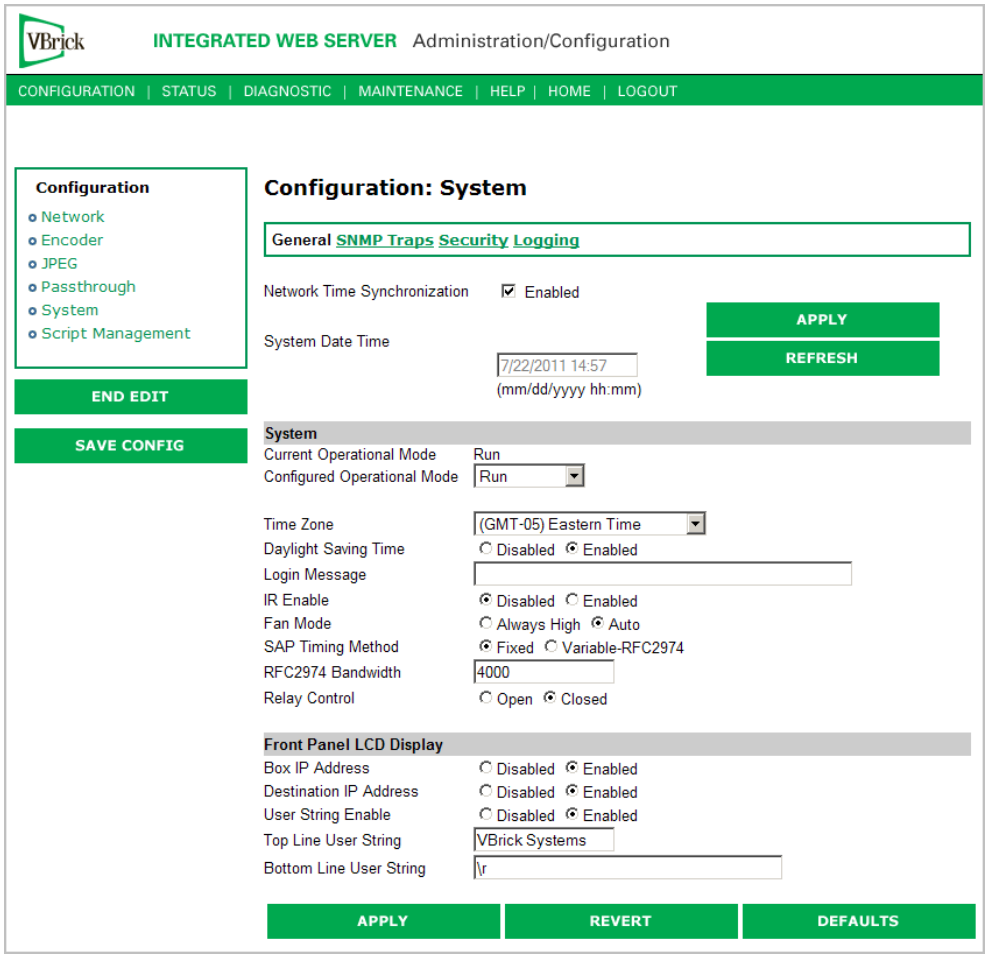
Passthrough settings for COM2 are a subset of COM1. See Configuration: Passthrough > COM1 for complete details. As noted, DTR and RTS are not available for COM2. Under no conditions are RTS or DTR controls passed through end-to-end. All control handling is local.

Configuration: System

This menu allows the user to set system-related parameters.

Configuration: System > General

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Network Time Synchronization	Enabled or Disabled. If enabled, the **System Date Time** field is inactive. See Network Time Synchronization on page 7 to set host name or IP address of time server. *You must set these parameters before you can enable Network Time Synchronization on this window.*
System Date Time	Set system date and time in mm/dd/yyyy hh:mm format.

System

Current Operational Mode	Indicates the current operational mode of the VBrick. The following modes are supported. Note: Changing the Operational Mode automatically reboots the VBrick.
Configured Operational Mode	Indicates the configured operational mode of the VBrick. The following modes are supported: • Run Mode – Normal operation. • Diagnostics – User selected mode for running certain VBrick diagnostics.
Time Zone	Select from list: (GMT-12) Eniwetok – (GMT +12) Auckland.
Daylight Savings Time	Enabled or Disabled.

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Login Messsage	Enter up to 300 characters of alphanumeric text and special characters (except quotation marks) that will be displayed on the IWS login page.
IR Enable	Enable or Disable the IR remote control. This is the master enable and disable for the IR across all functions.
Fan Mode	This option allows a user to either force the fan always high or to automatically cycle on and off based on measured temperature. Default = Automatic. Note: This option is only available on VBrick models with a main board assembly whose last four digits are 0206 or higher.
SAP Timing Method	Fixed or Variable - If fixed, the SAP timing will operate as defined in the encoder, decoder and pump screens with fixed SAP transmission and timeouts. If variable is selected, the entire VBrick will use SAP timing as defined in RFC 2974. For most applications, Fixed Timing should be used.
RFC2974 Bandwidth	Allows setting the SAP bandwidth allocation in Bits per second. This setting is used only when the Timing Method is set to Variable.
Relay Control	This option allows forcing the relay connection to Open or Closed. Note: This option is only available on VBricks with a main board assembly whose last four digits are 0205 or higher.

Front Panel LCD Display

These settings will be displayed for approximately six seconds. After six seconds the LCD will display the current release, IP address, hostname plus transmit and receive addresses.

Box IP Address	Enable or Disable the Box IP Address display on the Front Panel Display.
Destination IP Address	Enable or Disable the Destination IP Address display on the Front Panel Display.
Receive IP Address	Enable or Disable the Receive IP Address display on the Front Panel Display.
User String Enabled	Enable or Disable the text displayed on the front panel LCD of the VBrick appliance can be user defined.
Top Line User String	The top line can support up to 16 characters. (Characters in excess of 16 will scroll across the display for the bottom line.)
Bottom Line User String	The bottom line up to 40 characters.

Configuration: System > SNMP Traps

SNMP Traps are a subset of the SNMP management component of the VBrick. Use of any element of the SNMP management system requires use of an SNMP browser or SNMP manager application (not supplied). The SNMP MIB, which formally defines the SNMP interface to the VBrick, is contained within the install directory of the VBrick release or from

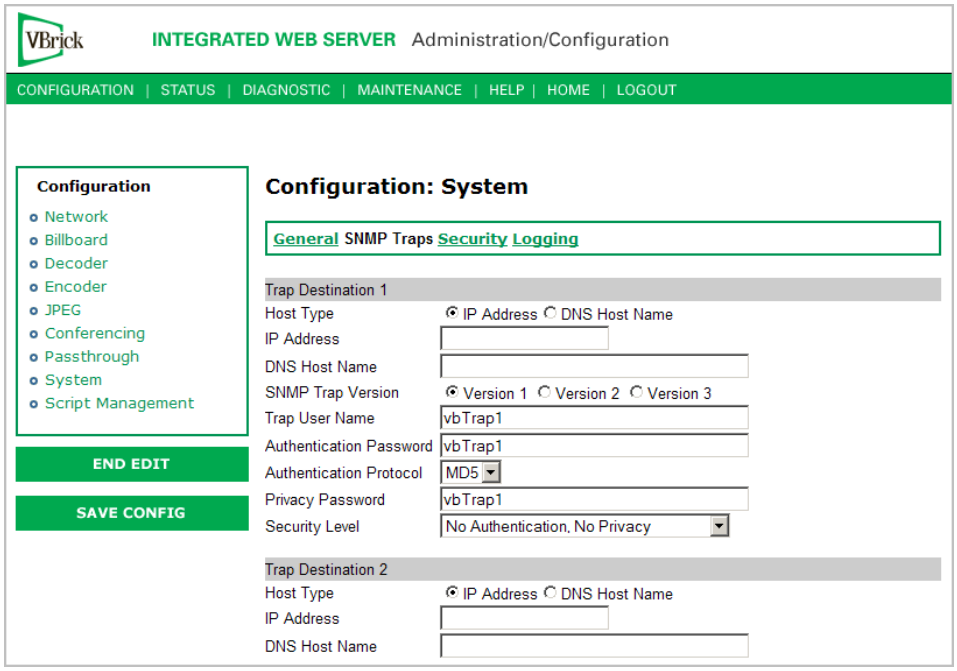
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the VBrick. The two MIB files are `VBrick_box2.mib` and `VBrick_reg.mib`. *The default installation directory is:*

```
Program Files\VBrick\VB6000\Download\ReleaseVxx_xx_xx
```

Traps are SNMP base messages used by SNMP elements to report changes in status or alarm conditions to remote SNMP management entities. Traps are generally used to alert network administrators of potential equipment problems or other noteworthy events. Two types of information are conveyed in the trap mechanism: Events and Alarms. Events Traps are sent every time the monitored event occurs. Events have only one state. Alarms are events having two states, Active and Clear. When the alarm condition is first detected, an alarm active trap is emitted. Alarms are considered active until the condition cleared and the alarm clear trap is emitted.

Note VBrick supports SNMPv3 in addition to SNMP v1/v2. SNMP v3 is a "Secure SNMP implementation" as defined in Section 11.3 of RFC 3414. It provides initial configuration in accordance with Appendix A.1 of RFC 3414 and also implements the Privacy Protocol (DES Encryption) as described in RFC 3414.



Trap Destination IP Address (1–4)	The IP Addresses of SNMP management stations to which traps are to be sent. The SNMP management application should be active on these stations in order to receive a number of SNMP Traps, which are supported by the VBrick. Enterprise-specific traps listed in order of trap identification number are shown in Table 2.
Host Type	IP Address or DNS Host Name.
IP Address	Complete if Host Type = IP address.
DNS Host Name	Complete if Host Type = DNS Host Name.

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SNMP Trap Version	Select Version number.
Trap User Name	User assigned trap name.
Authentication Password	Enter password. Cannot exceed 20 characters. May include any combination of alphanumeric characters but only the following special characters: ~ ! # $ ^ * + & [ ] { } | < > See Table 3 on page 91 for defaults.
Authentication Protocol	Select protocol: MD5 or SHA to validate the transaction between a given host and client
Privacy Password	Required. Hides traffic using DES encryption.
Security Level	No Authentication, No Privacy (default). No Privacy. Authentication and Privacy.

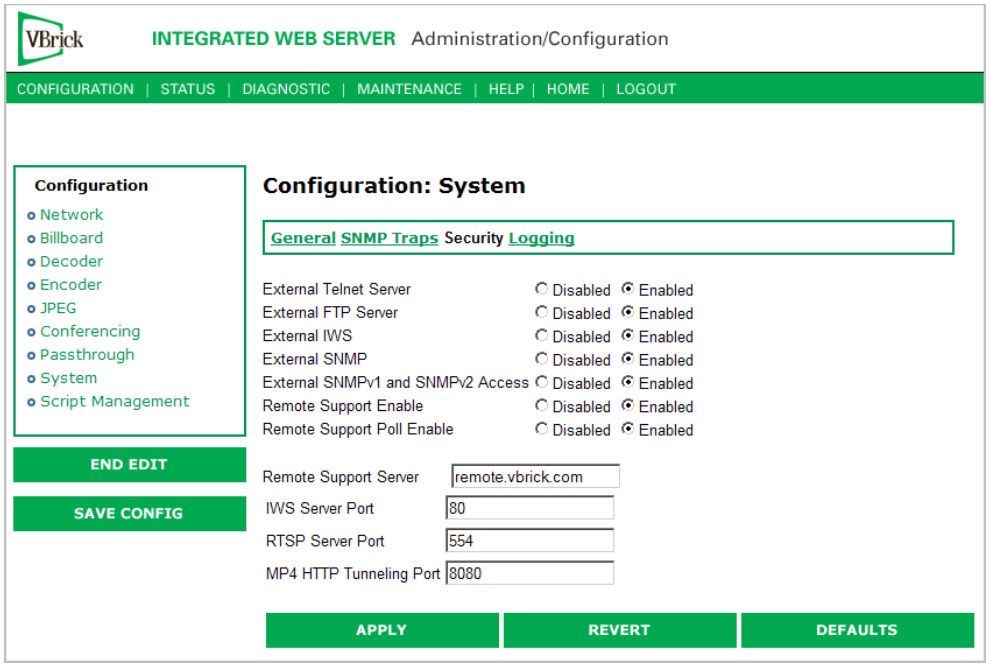
Table 2. Trap Summary Tables

Number	Event Description
1	There is loss of video input on slot1 Encoder.
2	The loss of video input on slot1 Encoder failure has cleared.
3	There is loss of video input on slot2 Encoder.
4	The loss of video input on slot2 Encoder failure has cleared.
5	The box has started up in Run mode.
6	The box has started up in Diagnostics mode.
7	The box has started up in Limited Run mode.
8	The box has received a reset request from an administrator.
9	There is a fan failure.
10	The fan failure is recovered.
11	The temperature of the unit is out of range. Will be sent when the unit's internal temperature becomes too high or too low.
12	The temperature out of range condition has cleared.
13	The 24 volts power supply failed.
14	The 24 volts power supply failure has cleared.
15	The 12 volts power supply failed.
16	The 12 volts power supply failure has cleared.
17	The 5 volts power supply failed.
18	The 5 volts power supply failure has cleared.
19	The 3.3 volts power supply failed.
20	The 3.3 volts power supply failure has cleared.
21	The 2.5 volts power supply failed.

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Number	Event Description
22	The 2.5 volts power supply failure has cleared.
23	There is a Real Time Clock battery failure.
24	The unit has been configured to transmit and/or receive video streams beyond its capability.
25	Signifies the overloaded unit is recovered to normal.
26	A component on the main board failed Power On Self Test (POST).
27	The encoder card in Slot1 failed Power On Self Test (POST).
28	The encoder card in Slot1 failed Power On Self Test (POST).

Configuration: System > Security



External Telnet Server	Enabled, Disabled. Default = Enabled.
External FTP Server	Enabled, Disabled. Default = Enabled.
External IWS	Enabled, Disabled. Default = Enabled.
External SNMP	Default = Enabled. Disabled will prevent you from using an external MIB browser to view or write parameters.
External SNMPv1 and SNMPv2 Access	Default = Enabled. You can use both SNMP v1/v2, and v3. For tightest security, set parameter to Disabled and use SNMPv3 only.
Remote Support Enable	Default = Disabled. Check to enable remote support by VBrick Support Services. *Note: Any change to this parameter will reboot the appliance.*

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Remote Support Poll Enable	Default = Enabled. The default enables continuous polling through the firewall. If desired, you can enable polling only when you need to establish a remote connection. *This will not reboot the appliance.*
Remote Support Server	Default = `remote.vbrick.com`. Use the default if a DNS server is defined on the Configuration: Network > Ethernet page. If a DNS server is not defined, you must enter an IP Address in this field. Contact Support Services for details.
IWS Server Port	Specifies the listener port for management and HTTP connections. Default = 80. When the remote IWS user (client) specifies the http syntax, the port value is generally omitted. Typically port 80 is the default value used by browsers. As a matter of consistency, the VBrick default IWS Server Port value is also defaulted to 80. To access a different HTTP port, the remote IWS client user would specify the URL as follows: `http://IPaddress:port` where IPaddress = VBrick IP address or hostname, and port. This feature is often useful for an MPEG-4 system, where HTTP tunneling is used to traverse firewalls. The IWS server port is moved to another location (ex. 8080) and the HTTP Tunneling port is set to 80.
RTSP Server Port	Specifies the listener port for RTSP connections. Default = 554.
MP4 HTTP Tunneling Port	Specifies the port used for HTTP Tunneling. This feature allows RTSP connections to be sent as TCP rather than UDP, it is recommended to use port 80 when doing this. Default = 8080. Note that the MPEG4 encoder supports tunneling, as do StreamPlayer and Quicktime. However the MPEG-4 *decoder* does not support HTTP tunneling.

Improving Security

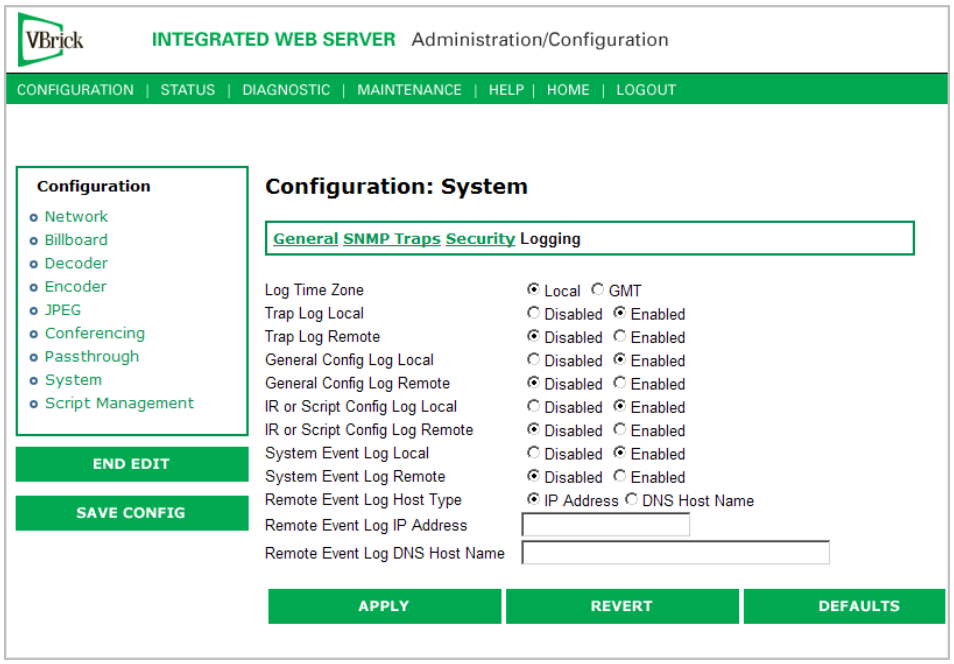
You can improve security by (1) blocking unauthorized attempts to login and access a device and (2) by reducing exposure to malicious software attacks. The most common vulnerability is related to user accounts and passwords. After a successful installation, you should immediately change the default passwords. Many attacks come from within an organization and this helps to minimize the risk. The IWS login is generally secure since it utilizes encryption techniques to hide usernames and passwords from network spyware.

Malicious software covertly attaches itself to unsuspecting devices. These programs are generally designed to compromise personal information or to create system havoc. Since the VBrick appliance uses an industrial-grade operating system, it is less susceptible to malicious software and unlikely to be a target of programs designed to attack PC-based systems like Microsoft, Linux, and others. However, you can still take additional steps to minimize risk. VBrick tries to make installation as simple and quick installation and many features are automatically enabled by default even though you may not need them. You can selectively disable unneeded features to reduce vulnerability. Another common problem is Denial of Service (DoS) attacks. A DoS sends floods of packets to an unsuspecting remote system in an attempt to disrupt or stop normal operation. These unsuspecting remote systems are typically discovered using ICMP or ping. It is standard industry practice to block all ICMP and ping requests from off-net foreign hosts. This is typically done in a centralized location using router/firewall technology which is more successful and cost effective than resolving the issue at each host.

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Configuration: System > Logging

Certain log events are captured and can be viewed locally. This local log is saved in volatile memory and hold the most recent 20 entries. See Status: System Log on page 75 for examples of log information. To save log information indefinitely, it is recommended that remote logging be utilized. Remote servers generally offer ample storage and offer the additional benefit of collecting log information from several VBricks simultaneously. When logging externally, specify either the IP address or hostname a server that is configured to receive SNMP traps on port 162 into the Remote Event Log IP Address or Remove Event Log DNS Host Name fields.



Log Time Zone	Specifies the time zone (Local or GMT) that is used for logged events.
Trap Log Local	If Enabled, displays trap events in the local log.
Trap Log Remote	If Enabled, sends trap event notices to a remote host.
General Config Log Local	If Enabled, displays configuration changes in the local log.
General Config Log Remote	If Enabled, sends configuration change notices to a remote host.
IR or Script Config Log Local	If Enabled, displays IR or script-generated configuration changes in the local log.
IR or Script Config Log Remote	If Enabled, sends IR or script-generated configuration changes to a remote host.
Remote Event Log Host Type	Identify remote event log server by host name.
Remote Event Log IP Address	Identify remote event log server by IP address.

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Remote Event Log DNS Host Name	Host name of remote event log server.

Configuration: Script Management

Configuration: Script Management > Event Triggering

You can create and run scripts to activate certain functions on a VBrick appliance. There are three ways to run scripts on an appliance. (1) You can run scripts for test purposes using the **Run Script** button in IWS; (2) you can use the IR Remote Control; and (3) you can use an external event trigger (see "Event Triggering" in the *VBrick Appliance Getting Started Guide*).

The VBrick appliance can be set up to use serial (COM1) Pins 7 and 8, or 0 through 9 on the IR Remote as input events to trigger the VBrick to run scripts. The script files execute certain commands using VBrick SDK parameters to activate certain functions within the VBrick appliance. There are a total of four possible input events (COM1 Pin8 Low, COM1 Pin8 High, COM1 Pin7 Low, COM1 Pin7 High) and ten possible input events using the IR Remote (each has one associated script file).

VBrick SDK parameters are explained in detail in the *VBrick SDK User Guide*. The VBrick SDK is available for customers who wish to build custom applications to control VBrick appliances. It also explains how to configure and control VBrick appliances via command line scripts. For more information about the VBrick SDK, contact your certified VBrick reseller or VBrick Support Services. To purchase the SDK directly from VBrick, go to: www.vbrick.com/products/purchase.asp.

Note You cannot execute a script either with the IR Remote Control or using an event trigger if IWS is currently running in **Edit** mode. If you run a script directly from IWS, it automatically exits **Edit** mode and terminates the active editing session.

Run Scripts Using IWS

You can run scripts that were previously created with the VBrick SDK using the **Run Script** button in IWS. This button is only available in **Edit** mode and is basically used for test purposes. See Sample Script below.

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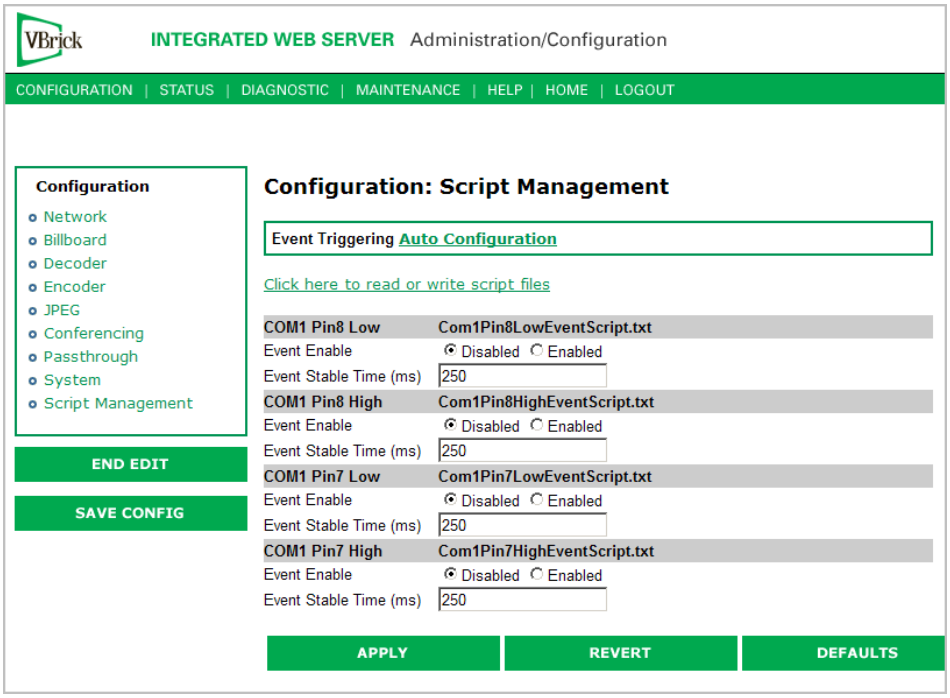
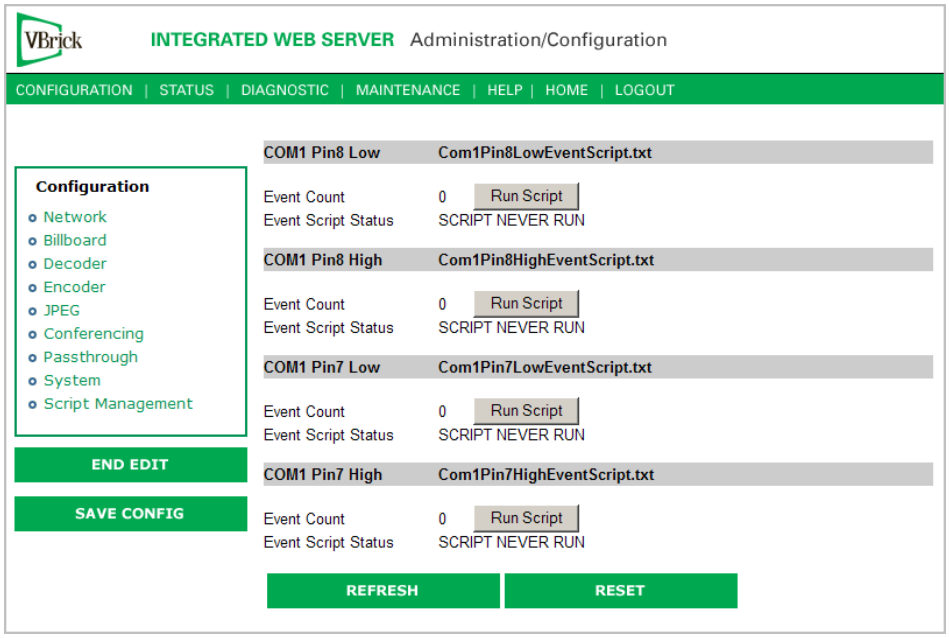


Figure 3. Script Management – Part 1

Click here to read or write script files	Login to the VBrick via FTP and manage script files. Requires a valid user name and password.
Event Enable	Allows the user to Enable/Disable Event Triggering for each input event.
Event Stable Time	Allows the user to enter the amount of time in milliseconds that each input event has to be stable at the active level before the script will be executed.



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Figure 4. Script Management – Part 2

Event Count	Displays the number of times each input event has occurred.
Event Script Status	Displays current status information for each event script.
Run Script	These buttons allow the user to run each script without needing the input event. Use this method to test the script.
IR Remote Scripts	are enabled by simply placing a file named `irNScript.txt` (where `N` is a number from `0-9`) in the script directory of the unit. For example naming the following script `ir0Script.txt` will enable the `0` on the IR remote to trigger the unit to run the script.

Run Scripts Using the IR Remote Control

IR Remote Control scripts are enabled by simply placing a file named `irNScript.txt` (where `N` is a number from 0–9) in the script directory of the unit. For example naming the following script `ir0Script.txt` will enable the `0` on the IR remote to trigger the unit to run the script.

Run Scripts Using Event Triggers

The event triggering feature lets you use an external switch or power source to control the functions of the VBrick appliance. See "Event Triggering" in the *VBrick Appliance Getting Started Guide* for detailed examples.

Sample Script

```
vbrickSlot2EncoderNetworkTransmitEnable = 2 // set enable slot 2 encoder transmit
vbrickSlot2EncoderNetworkApplySet = 2 // apply above encoder network set
* // end of a group

vbrickHDRecorderControlMode = 1 // set recorder to user controlled mode
vbrickHDRecorderControlIrEnable = 1 // disable recorder ir control
vbrickHDRecorderControlName = event1record.mpg  // set recorder file name
vbrickHDRecorderControlDuration.value = 30 // set recorder duration to 30 seconds
vbrickHDRecorderControlBatchEnable = 1 // set recorder batch to disabled
vbrickHDRecorderControlApplySet = 2 // apply above recorder control sets
* // end of a group

vbrickHDRecorderControlFtpEnable = 1 // disable auto ftp after record
vbrickHDRecorderControlApplySet = 2 // apply above recorder control set
vbrickHDRecorderNetworkReceiveType = 1 // set recorder receive type to ip address
vbrickHDRecorderNetworkReceiveIpAddr = 239.22.129.3  // set recorder receive ip address
vbrickHDRecorderNetworkReceivePort = 4443 // set recorder receive port
vbrickHDRecorderNetworkApplySet = 2 // apply above recorder network sets
* // end of a group

vbrickHDRecorderOperationStart = 2 // start recording
* // end of a group

wait = 5000 // wait for 5000 milliseconds
* // end of a group

vbrickSlot1EncoderNetworkTransmitEnable = 2 // set enable slot 1 encoder transmit
vbrickSlot1EncoderNetworkApplySet = 2 // apply above encoder network set
* // end of a group
```


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Scripting Notes

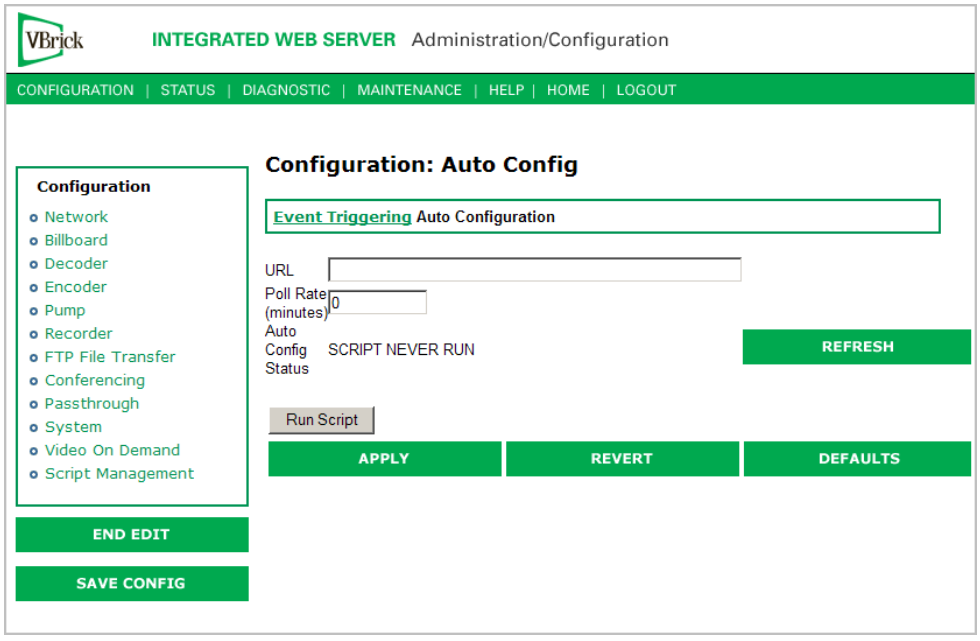
- * denotes end of group.
- Each group can have a maximum of six sets.
- Each group must have apply sets for all normal sets.
- Wait state will be alone in a group.
- There is no clear command.
- Script commands must start in column 1.
- There is no chaining of scripts.
- Comments will start with / and can be a line or the end of a command.
- All scripts are executed in a strictly serial manner by a single task.
- While executing a script it is possible to miss a double change of any event.

Configuration: Script Management > Auto Configuration

Auto Config lets you perform an auto-configuration via a URL script file. It is typically used for remote configuration and troubleshooting or to configure VBrick appliances that are behind a firewall. To configure a parameter on an appliance (or more likely a set of parameters) you simply point the URL to a server with an .xml configuration file. This is useful, for example, to change a reflector URL, set the audio and video rates, etc. when the VBrick appliances are behind a firewall and cannot be accessed remotely.

The VBrick reads the URL field (e.g. www.myserver.com/config.xml) via HTTP protocol and executes the script depending on the EXECUTE tag. If a VBEXECUTEFORCE tag is present in the .xml file (see example below), the script runs every time at the poll interval even if it has not changed. If a VBEXECUTEIFDIF tag is present the script runs only if it is different from the last executed file. One of these tags is required.

If the VBrick is in **Edit** mode, the script file will not run until the edit session is ended. The auto config script will run *before* any waiting IR scripts or external event scripts. In **Edit** mode, you can press **Run Script** to execute the script on demand. After a reboot, the VBrick checks for a script URL and will run the script immediately, regardless of the VBEXECUTE tag value.



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URL	Valid path to a URL script file, for example: www.myserver.com/config.xml. Default = blank.
Poll Rate	The rate at which the appliance checks the config file. 0–1440 minutes (default = 0).
Auto Config Status	Shows auto config status including when the script was last run, URL connection errors, etc. Press Refresh to update.
Run Script	Edit mode only. Run the script now.

Sample Script

The auto config script file (config.xml) is an .xml file with the following syntax. It can set any VBrick parameters and force an "apply" as needed. This example shows how to set various recorder parameters. Note that a VBEXECUTE task is required.

```
<XML Header>
<?VBEXECUTEFORCE?> or <?VBEXECUTEIFDIF?>
<VBRICK>
vbrickHDRecorderControlMode = 1
vbrickHDRecorderControlIrEnable = 1
vbrickHDRecorderControlName = event1record.mpg
vbrickHDRecorderControlDuration.value = 30
vbrickHDRecorderControlBatchEnable = 1
vbrickHDRecorderControlApplySet = 2
</VBRICK>
```

Note Text files created on Windows machines have different line endings than those created on Unix or Linux machines. Windows machines use a carriage return and line feed (\r\n) whereas Unix machines use line feed (\n) only. A script created on a Windows machine must be modified in order to work properly on a Unix machine.

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Chapter 3

System Status

The Status menu lets you view information and status relative to the VBrick appliance. The **Refresh** button allows the user to update the statistics to display the most current values. A **Reset** button is also present on some screens. This lets you reset all statistic counters.

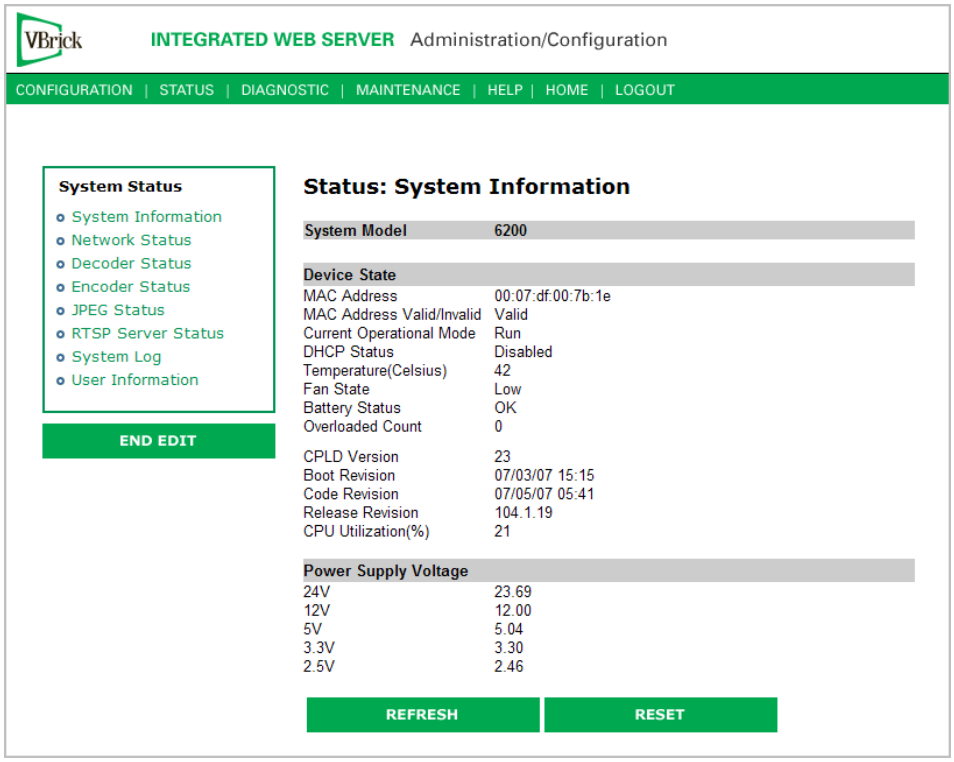
Topics in this chapter

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Status: Decoder Status 66
Status: Encoder Status 70
Status: JPEG Status 72
Status: RTSP Server Status 73
Status: System Log 75
Status: User Information 77

Status: System Information

This menu allows the user to view vital system information. Some of this information represents parameters describing the VBrick as shipped; others provide information concerning the current VBrick operation.

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System Model	Displays the model number of the appliance.
MAC Address	Displays the MAC (Media Access Control) address of the appliance.
MAC Address Valid	Verifies that the MAC address is valid.
Current Operational Mode	Indicates the current operational mode of the VBrick. The following modes are supported: • Run Mode – Normal operation. • Diagnostics – User selected mode for running certain VBrick diagnostics. • Limited Run Mode – Limited operational mode (not selectable). Normally occurs if a hardware problem exists within the VBrick but it can still partially operate. • Overloaded Mode – Limited operational mode (not selectable). This mode occurs when the VBrick is configured to handle more video than its operational capacity. It automatically reconfigures itself to allow continued remote and local management. If this occurs, the VBrick needs to be reconfigured to reduce the number of streams and/or data rates. Under this condition, the appliance temporarily reduces video traffic in order to maintain IWS functionality.

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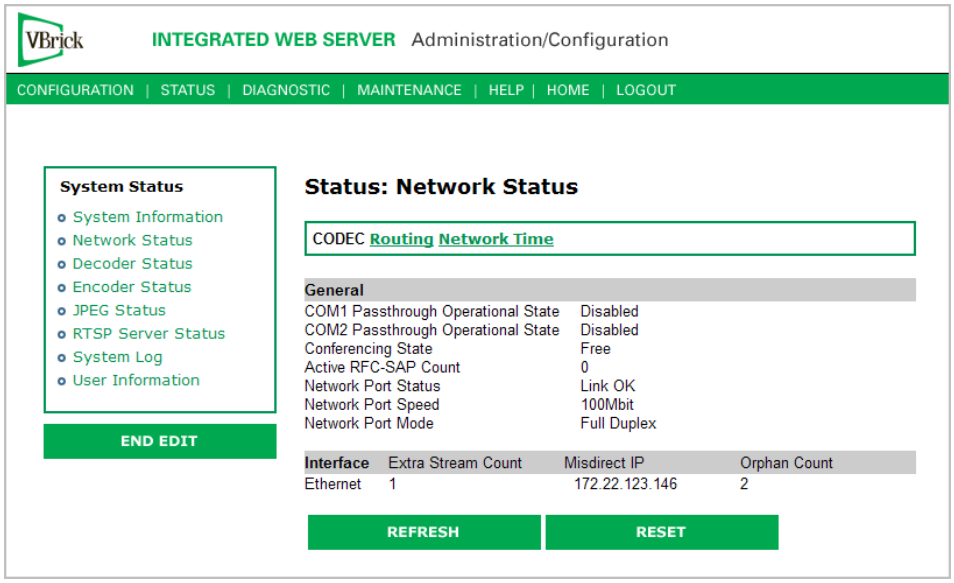
DHCP Status	Dynamic Host Configuration Protocol – Ethernet models only. Enabled/Disabled. Possible DHCP Status values: • Disabled • Succeeded • Failed • Succeeded without Subnet Value – No subnet value given; generated from IP address. • Succeeded with Invalid Subnet Value – Invalid subnet value given; generated from IP address. • Failed over Backplane – Device number invalid in backplane. • Failed, Invalid Device Unit – Network interface device number invalid. • Failed Invalid Cookie – Network interface inoperable. • Failed, Bind Failed – DHCP server not available or appliance not connected to network. • Failed, Out of Memory – Appliance is out of memory. Indicates a severe condition. • Failed, Parameter Get Failed – Couldn't retrieve a DHCP parameter needed/requested. • Failed, Invalid Boot File – Invalid boot file specified. Indicates a severe condition. • Failed, Invalid Retrieved IP address assigned by the server is not a valid unicast address.
Temperature	Displays the temperature of the appliance (Celsius).
Fan State	Displays the state of the fan as **Not Operational**, **High** or **Low**.
Battery Status	OK or Failed.
Overloaded Count	Provides a count of the number of times the box has entered the Overloaded state.
CPLD version	Displays the Main Board programmable device version number.
Boot Revision	Displays the date of the last boot revision.
Code Revision	Displays the date of the last code revision.
Release Revision	Displays the release version number.
CPU Utilization%	The percentage of the Central Processor in use at this time.
Power Supply Voltage	Displays the measured voltages present and provided to the VBrick (24V, 12V, 5V, 3.3V 2.5V). The tolerance range for 24V is minimum 18V to maximum 25V. The range for all other voltages is plus or minus 5%.

Status: Network Status

Status: Network Status > Codec

This menu allows the user to view various network-level conditions.

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General

COM1/COM2 Passthrough Operational State	The current operational state of COM1/COM2 serial Passthrough port. There will be a conflict if the slot selected through the Passthrough Destination parameter has neither an encoder nor a decoder present; or has an encoder with a multicast destination; or has an encoder with no configured destination. The possible values are: • Disabled • Enabled Active • Enabled Conflict No Enc Or Dest • Enabled Conflict Enc Multi Dest • Enabled Conflict Enc No Dest • Enabled Internal Error • Enabled Rejected • No Dedicated IP Addr
Conferencing State	This setting indicates the unicast call state of the encoder. • Free – Available for a conference. • Busy – The VBrick is currently engaged in a conference. • Disabled – The conference feature has been disabled. • Unknown – The VBrick is in a transition state.
Active RFC-SAP Count	This is the number of SAP sessions the appliance is currently listening to for the purpose of RFC 2974-compliant SAP timing. This field displays values when SAP timing is configured for RFC 2974 mode.
Network Port Status	The status of the Ethernet network interface: **Link OK** or **No Link**.
Network Port Speed	The speed of transmission for the Ethernet network interface: **10Mbit** or **100Mbit**.
Network Speed Mode	The mode of transmission for the Ethernet network interface: **Full Duplex** or **Half Duplex**.

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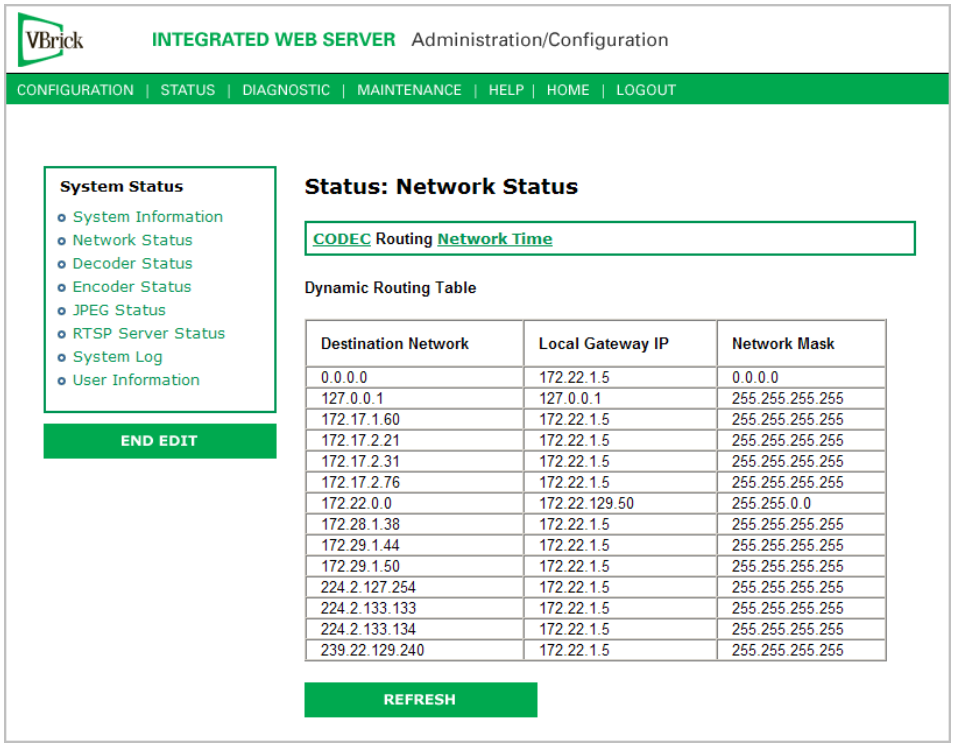
Interface

This section reports the existence of any undesired (and unrequested) video streams being received by the VBrick. Unrequested streams greater than 1.5 Mbps are automatically flagged and dropped. The reporting is made for each IP interface individually. On Ethernet models, only one interface exists.

Extra Stream Count	Number of unexpected video streams being received on this interface.
Misdirect IP Address	The IP Address of the appliance transmitting one of the extra video streams received on this interface.
Orphan Count	Orphans are packet fragments received that do not have corresponding head PDUs.

Status: Network Status > Routing

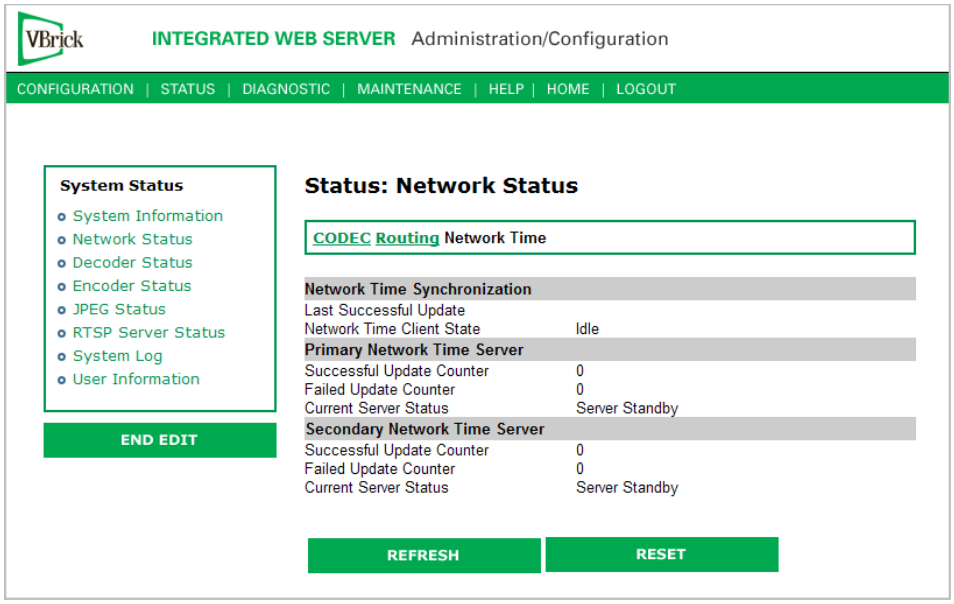
This display screen allows the user to view the Internal Routing Tables.



Destination Network	Defines a target network (or device) that can be contacted via the system. A value of 0.0.0.0, is used to indicate a default routing entry. The 127.0.0.1 is always present and identifies the loopback route.
Local Gateway IP	Defines the intermediary network device (or entity) which is responsible for IP forwarding to the given destination network specified in the first column.
Network Mask	Defines the destination network's address scope specified in the first column. Mask bits which are zeros, identify the host portion of the address space. Bits that are "ones" identify the network portion.

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Status: Network Status > Network Time



Last Successful Update	The last time the appliance successfully acquired the time.
Network Time Client State	Status of client.
Successful Update Counter	The number of times the time was reset from the server.
Failed Update Counter	The number of times the appliance failed to read the time from the server.
Current Server Status	Status of server.

Status: Decoder Status

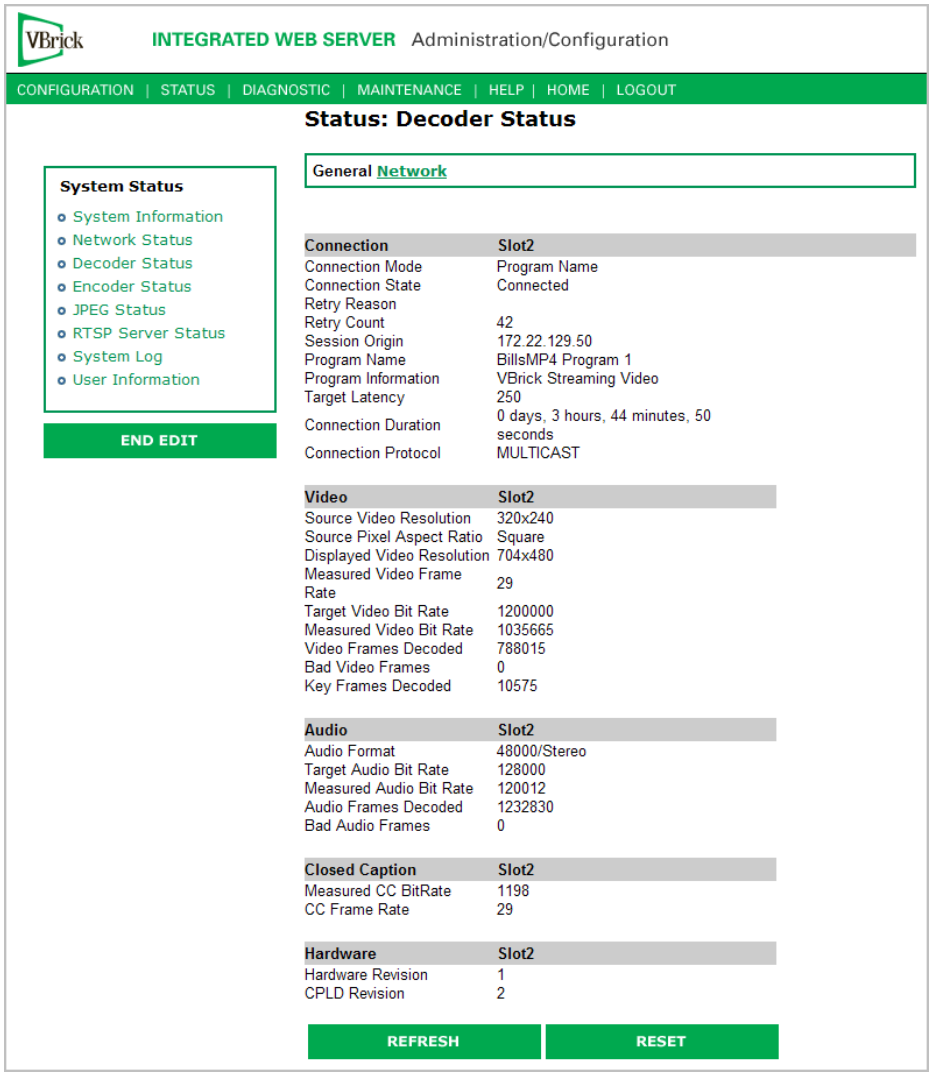
This window shows the general status of decoder's connection mode, video and audio.

Status: Decoder Status > General

Use this status window to verify your connection between an encoder and a decoder.

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Connection

Connection Mode	Set in Configuration: Decoder > Network.
Connection State	Indicates the state of the connection to the encoder: • Connected – The decoder is connected to the encoder and is receiving packets associated with the program. • Connecting – The decoder is in the process of connecting to the encoder. • Disabled – The decoder is disabled. **Receive** is not enabled on the Configuration: Decoder > Network page. • Stopped – A user has stopped or paused the decoder.
Retry Reason	If the decoder is not connected, a connection to the encoder was not established or has failed. See Status: System Log > Config on page 75 for more details.
Retry Count	Total attempted retrys. For a failed connection, the decoder will automatically attempt a reconnect every five seconds.

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Session Origin	Derived from SDP file. The IP address, VBrick Host Name, or DNS name of the encoder. If the **Connection Mode** is **VBrick IP Address or Hostname**, the slot number is appended.
Program Name	Derived from SDP file. The program name for the stream this decoder is receiving.
Program Information	The program information in the SDP file for the stream this decoder is receiving. Default is "VBrick Streaming Video."
Target Latency	Defines the decoder latency which the software is attempting to maintain. A primary factor in determining the target latency is the configured **Time in Jitter Queue** (see Configuration: Decoder > RTP on page 22.) The entered value may be increased by the decoder software if it determines that an unacceptable viewing experience will result from maintaining that target latency. Any of the following factors may result in an increased target latency: a metered VBrick encoder source, difficulty in synchronizing audio and video, or excessive jitter of the encoded stream.
Connection Duration	Length of time the current connection has been active.
Connection Protocol	The protocol being used for this connection: Multicast, Unicast, or RTSP.

Video

Source Video Resolution	The source video resolution for the video stream this decoder is receiving.
Source Pixel Aspect Ratio	The source pixel aspect ratio for the video stream which this decoder is receiving. Possible values are PAL, NTSC, Square, 4:3, and 16:9.
Displayed Video Resolution	The video resolution for the video stream, after scaling, being displayed by this decoder.
Measured Video Frame Rate	The video frame rate for the video stream being displayed by this decoder.
Target Video Bit Rate	The estimated video bit rate from the encoder for the video stream this decoder is receiving. If the video stream is metered by the encoder, there will be an indication (metered, jittered, or unspecified) appended to the end of the bit rate.
Measured Video Bit Rate	The measured bit rate for the video stream being displayed by this decoder.
Video Frames Decoded	The number of frames decoded for the video stream being displayed by this decoder.
Bad Video Frames	The number of video frames that could not be decoded.
Key Frames Decoded	The number of key frames decoded.

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Audio

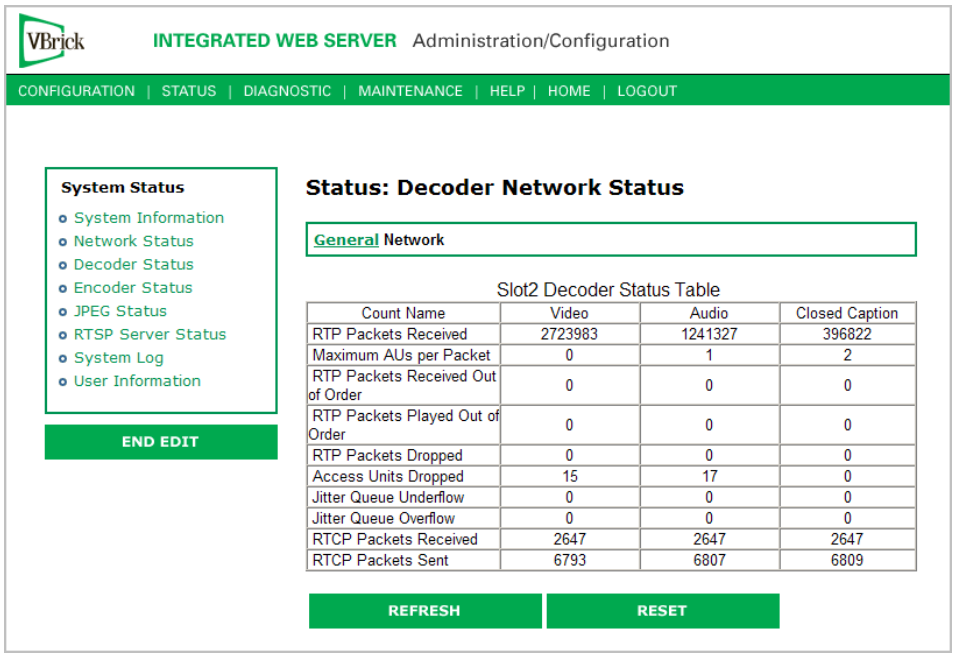
Audio Format	The format for the audio stream this decoder is receiving in the format: `xxx/<Stereo, Mono>` where `xxx` is the **Sample Frequency** (see Audio Template Settings). For example: 48000/Stereo
Target Audio Bit Rate	The estimated audio bit rate from the encoder for the audio stream this decoder is receiving.
Measured Audio Bit Rate	The measured bit rate for the audio stream being played by this decoder.
Audio Frames Decoded	The number of frames decoded for the audio stream being played by this decoder.
Bad Audio Frames	The number of audio frames that could not be decoded.

Closed Caption

Measured CC Bit Rate	Reports the measured bit rate for the closed caption stream displayed by the decoder.
CC Frame Rate	Reports the frame rate for the closed caption stream displayed by the decoder

Status: Decoder Status > Network

This status window provides packet statistics for the connection.



RTP Packets Received	The number of RTP packets received.
Maximum AUs per Packet	Maximum access units per RTP packet. The video maximum is 0 or 1; the audio maximum varies by source; the closed caption maximum is set in the encoder.

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RTP Packets Received Out of Order	The number of RTP packets received that were out of order.
RTP Packets Played Out of Order	The VBrick decoder also uses the Jitter Queue to correct packets that are received out of order. If the packet statistics indicate a significant number of **RTP Packets Played Out of Order** you may be able to improve video and audio quality by increasing the setting in Configuration: Decoder > RTP > Time in Jitter Queue. If you see **RTP Packets Played Out of Order**, even with a large **Time in Jitter Queue** setting, the network is losing packets.
RTP Packets Dropped	The number of RTP packets dropped.
Access Units Dropped	The number of access units dropped by the RTP receiver. AU packets may be automatically adjusted to account for differences in timing between the encoder and decoder.
Jitter Queue Underflow	The VBrick decoder has an adjustable **Time in Jitter Queue** to protect against depletion by network jitter (see Configuration: Decoder > RTP on page 22). If the packet statistics indicate a significant number of **Jitter Queue Underflow** counts you should increase the setting in Configuration: Decoder > RTP > Time in Jitter Queue to allow the decoder to handle more network jitter.
Jitter Queue Overflow	An overflow occurs when there is an overflow in the buffer capacity of the VBrick.
RTCP Packets Received	The number of RTCP packets received.
RTCP Packets Sent	The number of RTCP packets sent.

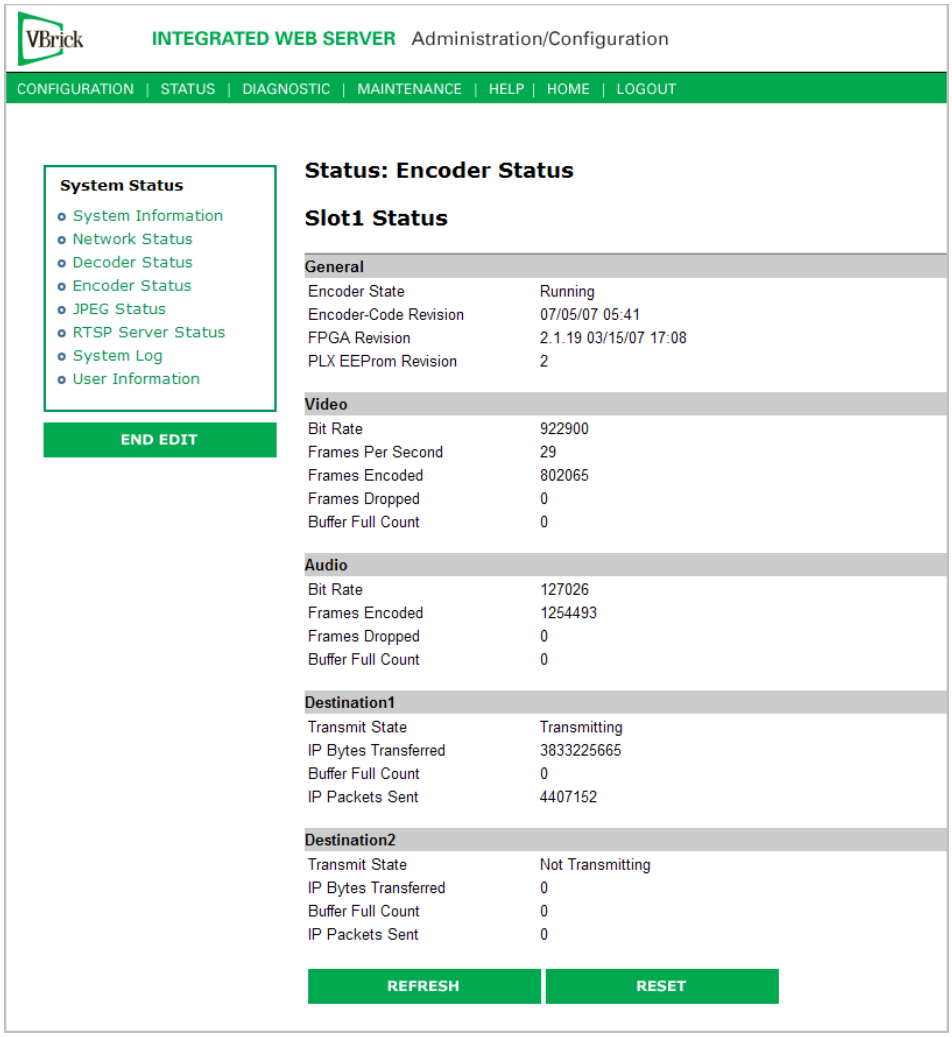
Status: Encoder Status

This menu allows users to view vital Encoder statistics. As you **Refresh** you should see **Transmit State – Transmitting** and the **IP Bytes Transferred** count should increment. If this does not happen check your VBrick's encoder configuration or network.

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Slot1 Status



General

Encoder State	Displays encoder state as running or not running.
Micro-Code Revision	Displays the encoder micro-code revision.
FPGA Revision	Displays the FPGA revision number.
PLX EEProm Revision	Displays the EEProm revision number.

Video

Bit Rate	Displays the video bit rate.
Frames per Second	Displays the number of frames per second.
Frames Encoded	Displays the number of frames encoded.

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Frames Dropped	Displays the number of frames dropped in the counted frames.
Buffer Full Count	Displays how many times the buffer full count has been reached.

Audio

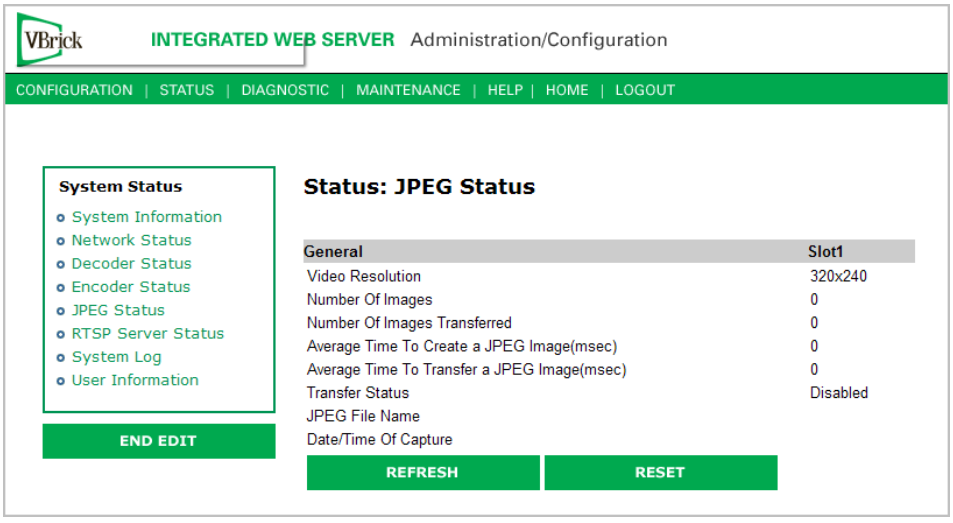
Bit Rate	Displays the audio bit rate.
Frames per Second	Displays the number of frames per second.
Frames Encoded	Displays the number of frames encoded.
Frames Dropped	Displays the number of frames dropped in the counted frames.
Buffer Full Count	Displays how many times the buffer full count has been reached.

Destination and Slot

Transmit State	Transmitting, not transmitting.
IP Bytes Transferred	Number of bytes transferred from the encoder daughter card to the main board.
Buffer Full Count	Displays any full buffer counts that occur.
IP Packets Sent	Displays the number of packets sent.
Refresh	The screen is static. Use the **Refresh** button to updates the screen to display current information.

Status: JPEG Status

Displays JPEG image capture status if enabled. See Configuration: JPEG on page 40 for more about configuration.



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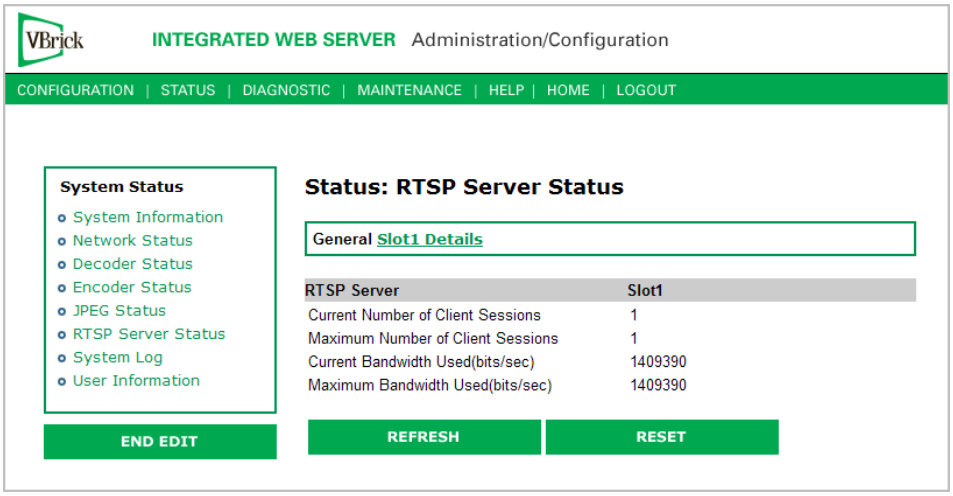
Video Resolution	Resolution of snapshots determined by the configuration of the associated MPEG-4 encoder. One of the following: SIF (352x240) QSIF (160x120) CIF (352x288) QCIF (176x144) 384x288 320x240 256x192 192x144 128x96 64x48
Number of Images	Number of images captured since capture was enabled.
Number of Images Transferred	Number of images transferred since capture was enabled. If the number of snapshot transfers is lower than the number of snapshots, the create time plus the transfer time is likely greater than the configured snapshot interval.
Average Time to Create ...	Milliseconds. Average time to create each snapshot over the last 10 snapshots.
Average Time to Transfer ...	Milliseconds. Average time to transfer the snapshots from the VBrick to the server over the last 10 transfers.
Transfer Status	• Success – compressed snapshot successfully transferred to the server. Waiting to capture another image. • Transfer in progress. • Timeout – Transfer failure due to timeout. Indicates a network error, server error, or error in configuring the snapshot FTP page. • Rejected – Transfer failure due to invalid user name or password. • Aborted – Not enough space on server. • Disabled – Snapshot capture is disabled.
JPEG File Name	Name of .jpg file being transferred to server.
Date/Time of Capture	Date and time of last successful capture.

Status: RTSP Server Status

Status: RTSP Server Status > General

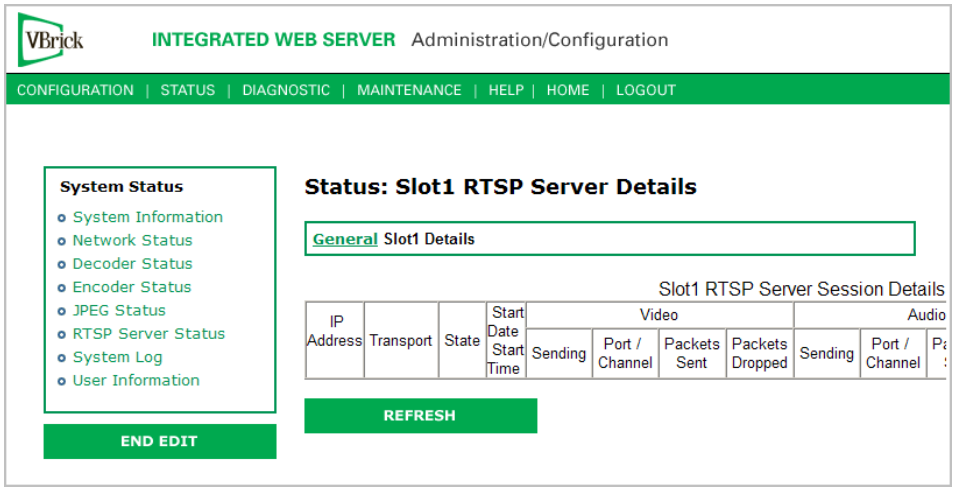
MPEG-4 only.

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Current Number of Client Sessions	Displays current number of sessions.
Maximum Number of Client Sessions	Displays the maximum number of sessions that have been simultaneously operating since the status was reset. This setting enables control of the maximum number of RTSP clients allowed. Currently a unit can support up to 120. A value of 0 disables the RTSP server.
Current Bandwidth Used	Displays the current bandwidth used in bits per second.
Maximum Bandwidth Used	Displays the maximum bandwidth used at any point in time since status was reset.

Status: RTSP Server Status > Slot1 Details



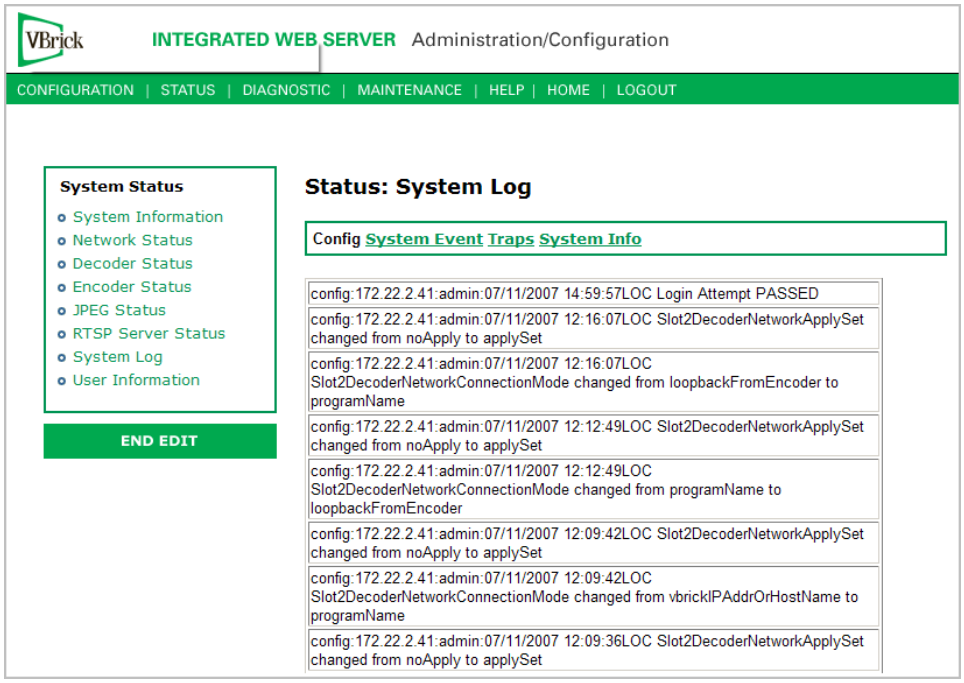
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Status: System Log

Status: System Log > Config

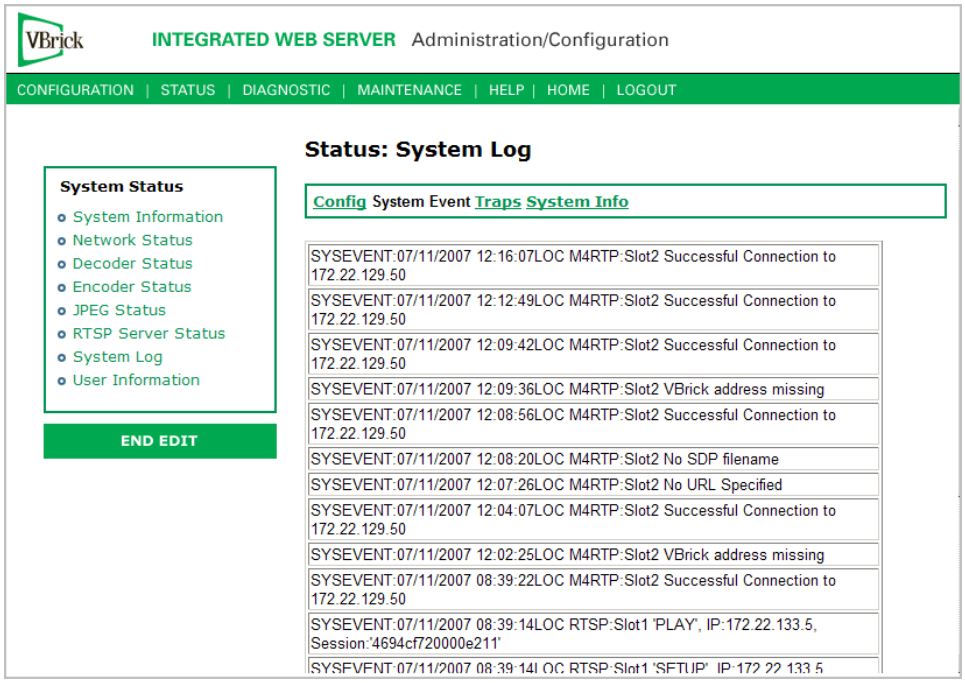
This log contains a list of the latest VBrick configuration changes.



Status: System Log > System Event

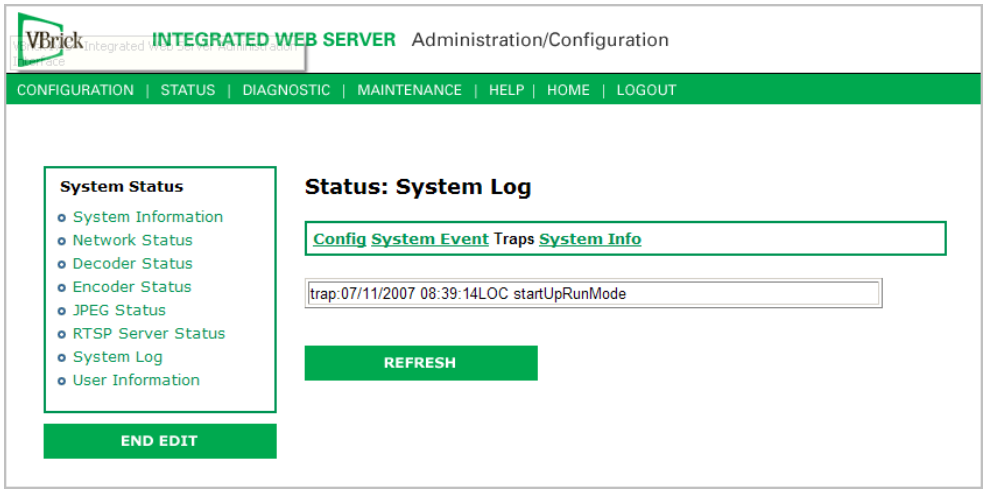
The system event log contains reports of system events within the VBrick. These events may occur during normal operation and include reports of successful and unsuccessful attempts to access video sources by the local decoder and access to the local encoder using RTSP.

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Status: System Log > Traps

This log contains all of the SNMP traps generated by the box whether or not the traps have been emitted.

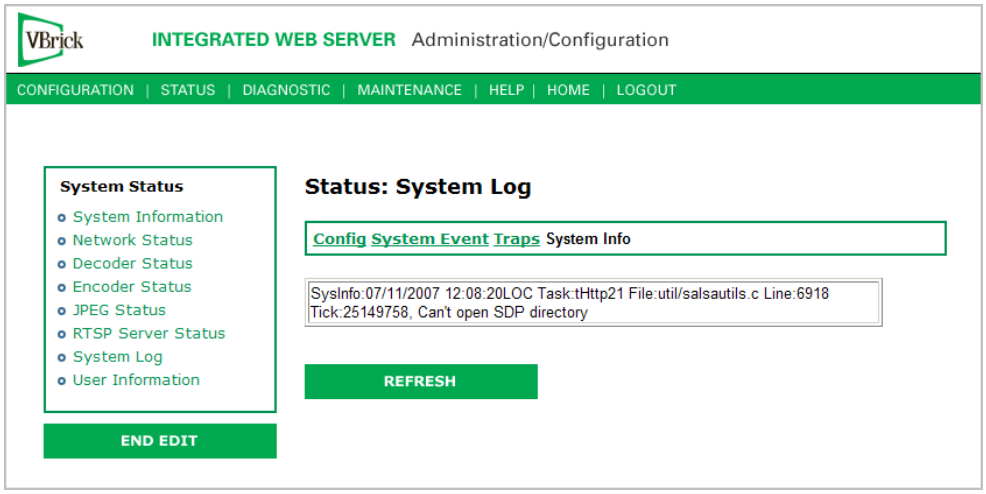


Status: System Log > System Info

This log contains unexpected behaviors detected by the VBrick software. Normally this log is used by VBrick Customer Support to help debug possible system malfunctions.

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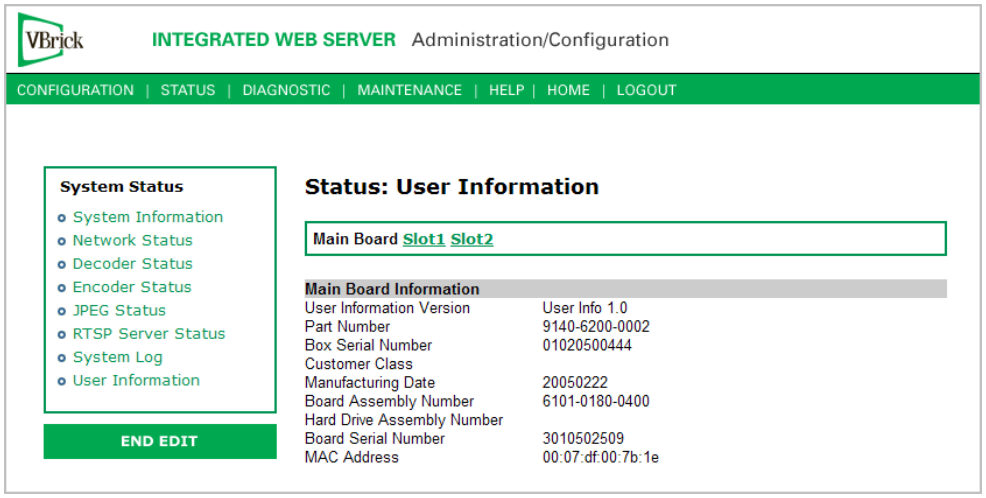
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Status: User Information

Status: User Information > Main Board

This menu allows the user to view factory-set information regarding the main board.

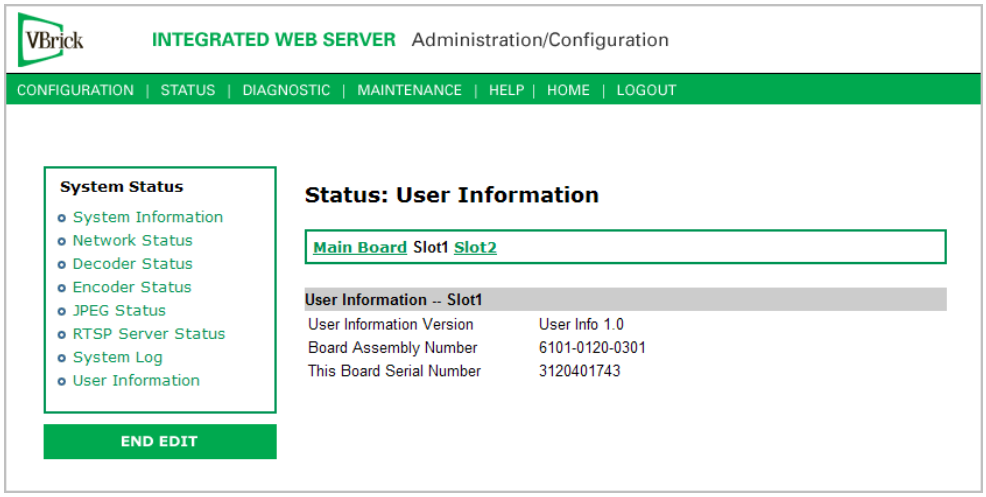


User Information Version	As displayed.
Part Number	As displayed.
Box Serial Number	As displayed.
Customer Class	As displayed if any.
Manufacturing Date	As displayed.
Board Assembly Number	As displayed if any.
Hard Drive Assembly Number	As displayed if any.
Board Serial Number	As displayed.
MAC Address	As displayed.

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Status: User Information > Slot1/Slot2

This menu allows the user to view factory set information relative to the slots in the appliance.



User Information Version	As displayed.
Board Assembly Number	As displayed.
Lot Number	As displayed if any.
Main Board Serial Number	As displayed.
This Board Serial Number	As displayed.

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Chapter 4

Diagnostics

Topics in this chapter

Overview 79
Diagnostics: Network Tests 80
Diagnostics: Device Test 82
Diagnostics: Decoder Color Bars 83

Overview

There are two groups of diagnostics: Low Level Hardware Diagnostics and User Diagnostics. Low Level diagnostics are run in **Diagnostics** mode. User diagnostics are run in normal **Run** mode. (The **Configured Operational Mode** is set in Configuration: System as described below.) You must be in **Diagnostics** mode to run Hard Drive Check Disk and Device Test POST Tests. You can run all other tests from Run mode.

Note Since running in **Diagnostics** mode interrupts the passing of video, be sure to return the appliance to the **Run** mode in order to return the appliance to its normal operational state.

▼ To change between normal **Run** mode and **Diagnostics** mode

1. Log in with Administrator or Operator Privilege. The default login Username and Password is **admin**/**admin** or **operator**/**operator** (case sensitive).
2. Go to the **Configuration: System** screen.
3. Click **Begin Edit**.
4. Set **Configured Operational Mode** as required.
5. Click **Apply Changes**.
6. The VBrick will then automatically save the changes and reset.

Low-Level Hardware Diagnostics

These are tests that test the hardware integrity of the VBrick appliance board and are not often used. If they are necessary, the tests can be set for continuous operation or for a certain number of test loops, and run at low or high intensity. Note that depending on the model, a low intensity test sequence may take 5-15 seconds per test sequence; a high intensity test sequence can take 5-15 minutes or more.

User Diagnostics

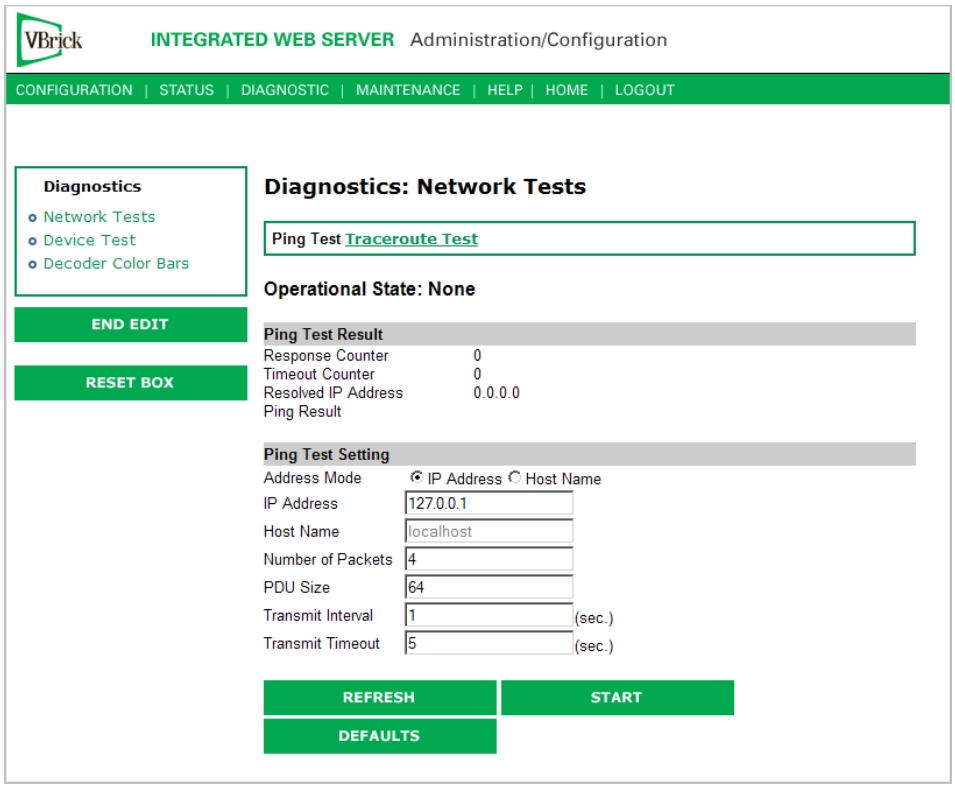
There are three user diagnostics: Network Test, Device Test, and Decoder Color Bar.

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Diagnostics: Network Tests

Diagnostics: Network Tests > Ping Test

This menu allows the user to initiate a data test from one VBrick to another. To Ping another VBrick, it's necessary to enter Edit mode. Enter the IP address and Test Settings and select the **Start** button. The Operational State will read **Ping Test**. After the test is completed, use the **Refresh** button to display the results of the test. The results of the test will be displayed in the top portion of the screen. If the test is interrupted by pressing the Stop button, the results of the test prior to termination will be displayed.



Address Mode	Select IP Address or Host Name and enter a corresponding value.
Number of Packets	Number of packets to send for the test (default is 4).
PDU	Protocol Description Unit size of packets, in bytes (default is 64).
Transmit Interval	In seconds (default is sending the packets in 1 second intervals).
Transmit Timeout	The length of time, in seconds, before the test times out, in the event the target device fails to respond.

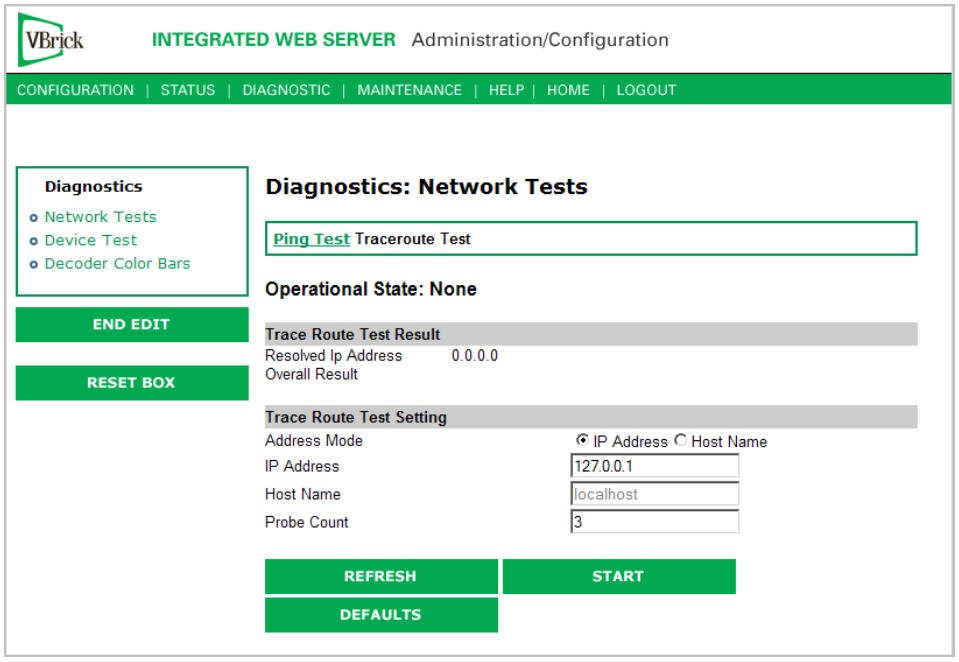
Diagnostics: Network Tests > Traceroute Test

The Internet is a large and complex aggregation of network hardware, connected together by gateways. Tracking the route packets follow or finding a gateway where the packets are being discarded is difficult. The Trace Route test attempts to trace the route an IP packet follows to a specified Internet host. This test utilizes the Time To Live (TTL) field in the IP header to allow intermediate nodes to be "discovered" via Internet Control Message Protocol (ICMP).

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Intermediate hops are discovered by launching probe packets with a small TTL and then listening for an ICMP Time Exceeded reply from a gateway. Use **Refresh**, **Start**/**Stop**, and **Default** to run the test.

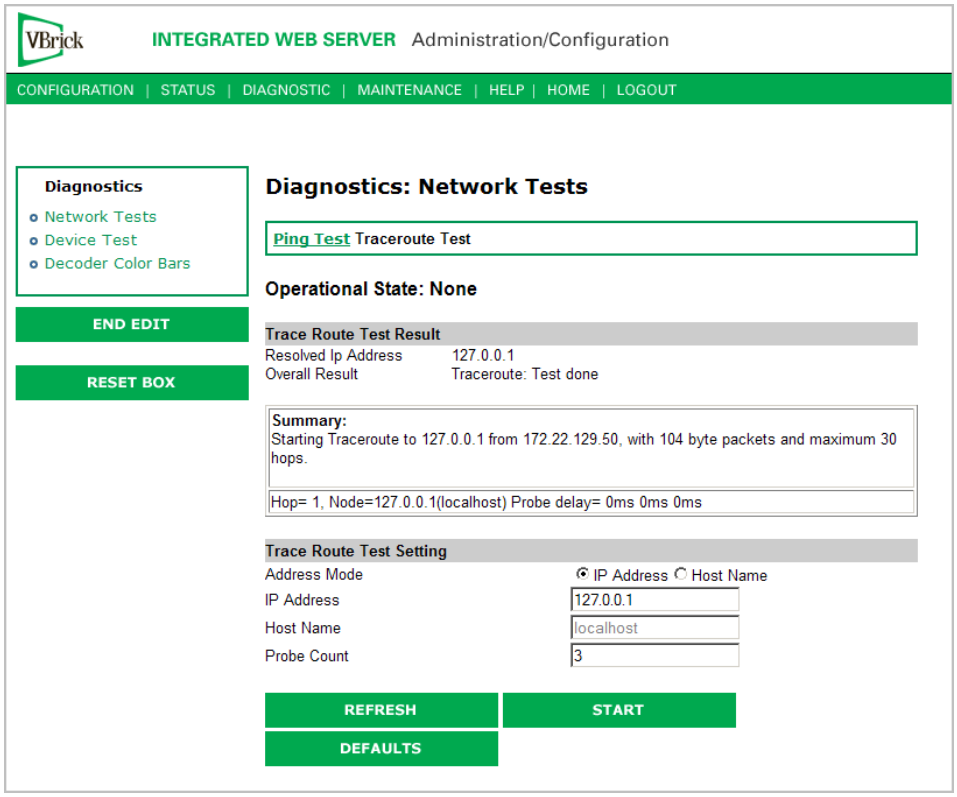


Operational State	The currently selected test.
Address Mode	Select IP Address or Host Name and enter a corresponding value.
IP Address or Host Name	Enter the information in the corresponding box.
Probe Count	Can be set from 3 to 20. The default setting is 3. This setting is the number of probe packets sent to a host at each hop.

Traceroute Test Results

The results of the test appear at the top of the screen. The results include the Resolved IP Address of the Destination Host Name. When the test is finished or stopped, the Overall Result will display the result of the test, such as "Test Done," or "Max hops (=30) Finished," or "Test Stopped," etc. An entry shows the hop number, which is equal to the TTL, IP address (and Host Name if available) of the gateway, and round trip time of each probe. If the probe answers are received from different gateways, the address of each responding system will be shown. If there is no response within a 5 second timeout interval, a "*" is printed for that probe. If the result string exceeds 255 characters, the string will be terminated by ending it with "Too Long."

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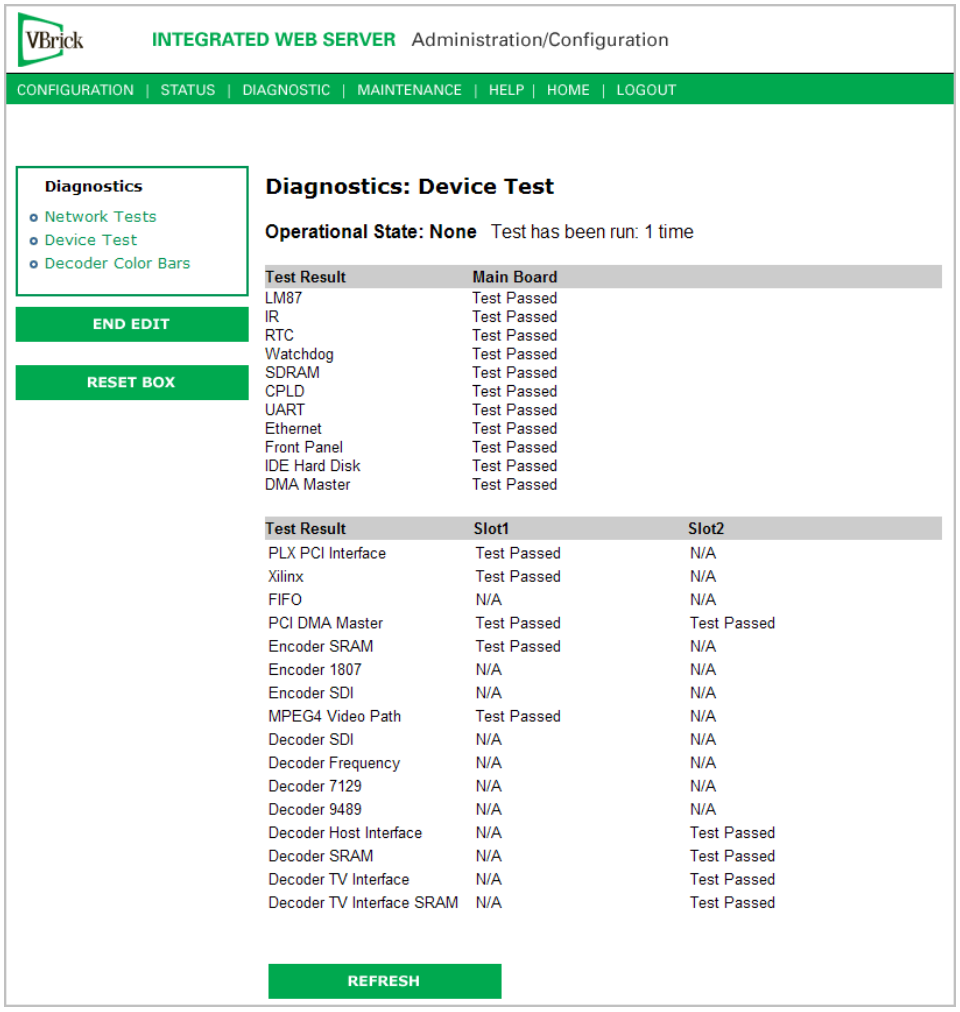


Diagnostics: Device Test

This screen shows the results of the Power-On Self Test, which is automatically run when the VBrick is reset or powered on. Other than that, running this test allows the operator to test the hardware integrity of the VBrick appliance board by running the test one or more times or by setting the test for continuous operation or for a certain number of test loops. This test is not often used. It is necessary to be in Diagnostic mode before running these tests. Enter Diagnostic mode from the **Configuration > System** screen. Don't forget to return to **Run** mode after the tests are run. You must be in **Edit** mode before you can run this test. Test Results include **Pass**, **Fail**, **Not Present**.

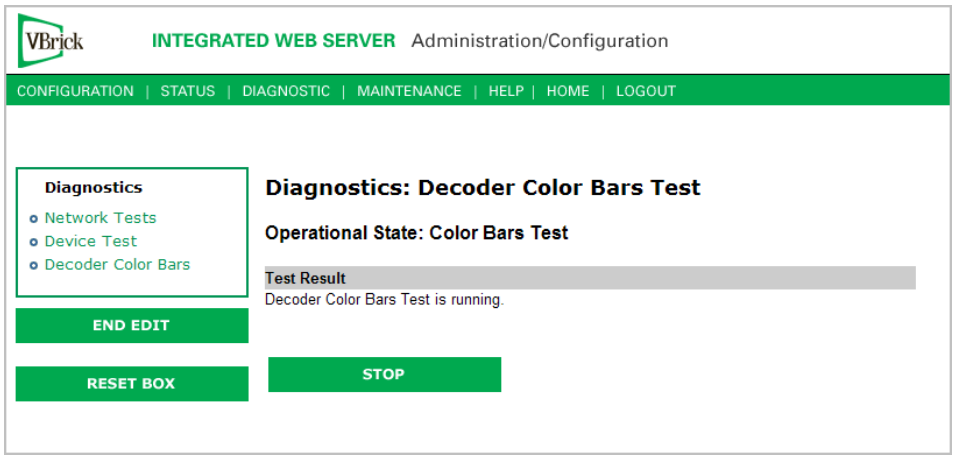
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Diagnostics: Decoder Color Bars

The Decoder Color Bar test is a simple test that generates color bars at the video decoder and outputs them in the place of video. It can be used to test basic decoder operation and the monitor.



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Chapter 5

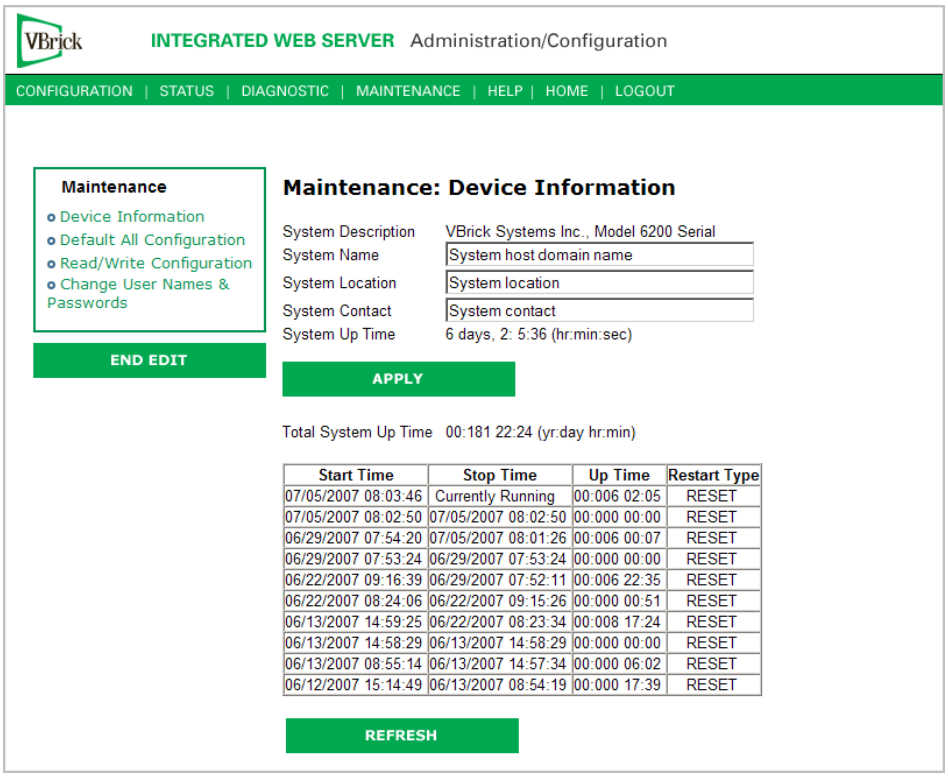
Maintenance

Topics in this chapter

Maintenance: Device Information 85
Maintenance: Default All Configuration 86
Maintenance: Read/Write Configuration 86
Maintenance: Change Usernames & Passwords 89

Maintenance: Device Information

The device information menu allows the user to set various system information. These parameters are often used in SNMP managed networks.



System Description	Company name, model and serial number of appliance.
System Name	Name of the system (for example Hall 23-B).
System Location	Location of system (for example Washington Building).
System Contact	Contact name.
System Up Time	Displays the time elapsed since the last system reset or power cycle.

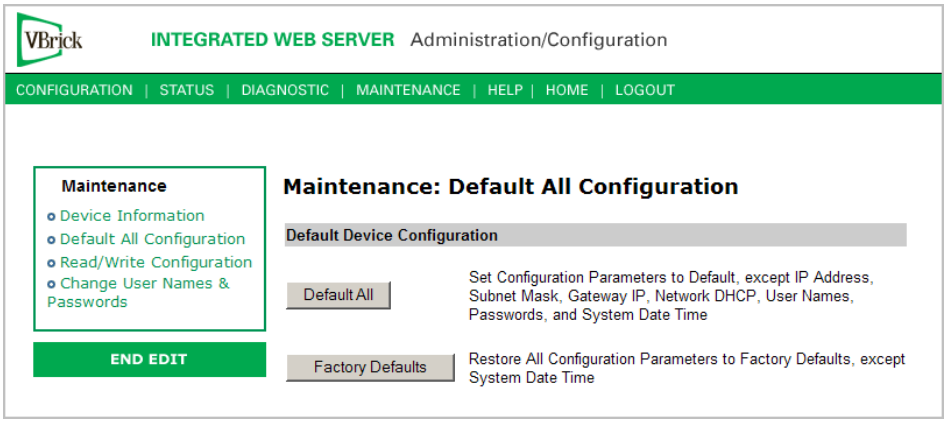
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Total System Up Time	Displays the total time that the unit has been powered up.

Note The Device Information table creates a date and time stamp for every power or reset event. When SNTP is enabled, the unit must reboot to synchronize time with the SNTP server time. If the time moves dramatically forward (or backward), a discontinuity may appear in the device table because of the SNTP time correction.

Maintenance: Default All Configuration

This menu allows the user to default all the configuration parameters of the VBrick.



Default All	Sets all parameters except IP address, Subnet Mask, Gateway IP, User Names, Passwords and System Date Time.
Factory Defaults	Sets all parameters to factory defaults with the exception of System Date and Time.

Maintenance: Read/Write Configuration

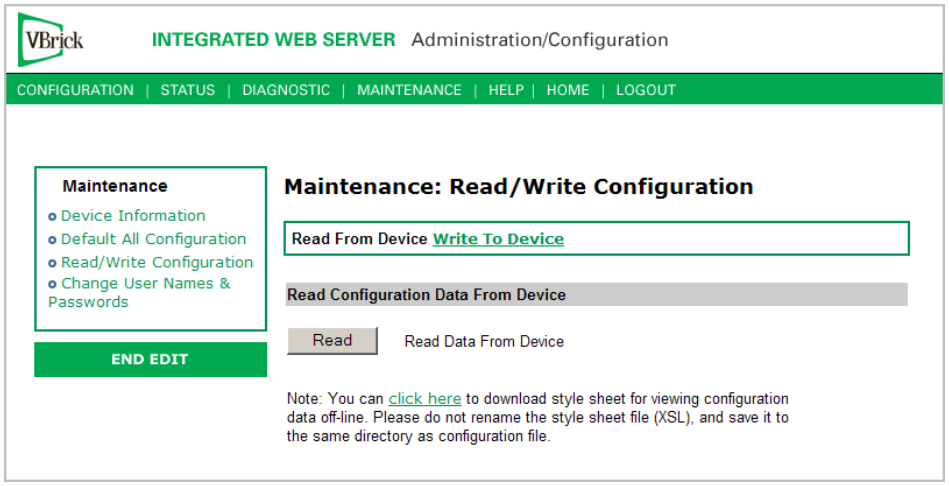
Maintenance: Read/Write > Read From Device

The Read/Write Configuration page allows you to read configuration parameters from the VBrick to a file, as well as write configuration parameters from a file to the VBrick. The file is an .xml file and Internet Explorer is the assumed browser.

Note The VBrick appliance the .xml file is read *from*, and VBrick appliance the .xml file is written *to*, must be running the same version of code.

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Read Configuration Data from Device

You can read the configuration parameters from the VBrick by clicking the **Read** button on the page. After clicking on the button, an xml document with all the configuration parameters will pop up (see Figure 5). The .xml document can then be saved to your PC as an .xml file using **File > Save As**. To view this file offline, you must download the style sheet (see **click here** on the screen) to the same directory as the saved file. Do not change the name of the style sheet. It should always be saved as `cfgdata.xsl` and the first line at the top of the configuration file must always be: `<?xml-stylesheet type="text/xsl" href="cfgdata.xsl"?>`

Note **Firefox users**: To view and/or save the configuration file, click **Read** and then **Save to Disk**. Then use **click here** and save the stylesheet to disk. This will copy both items to your desktop so you can view the configuration file using the stylesheet.

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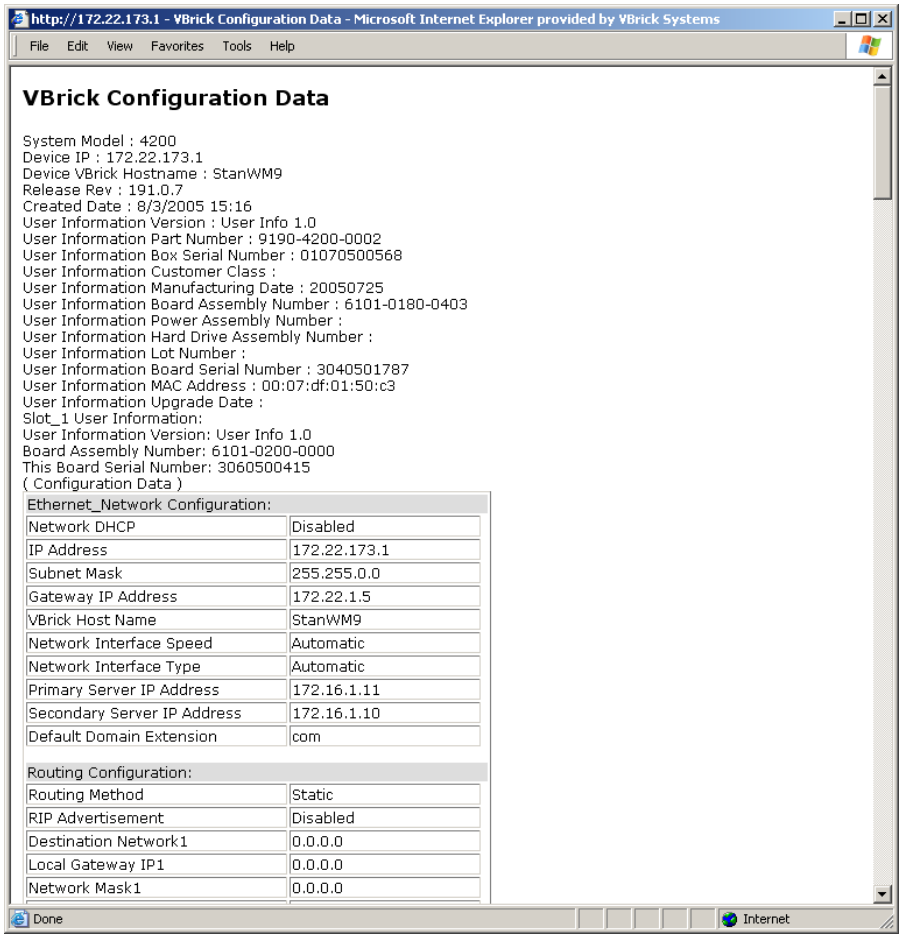


Figure 5. Sample VBrick Configuration File

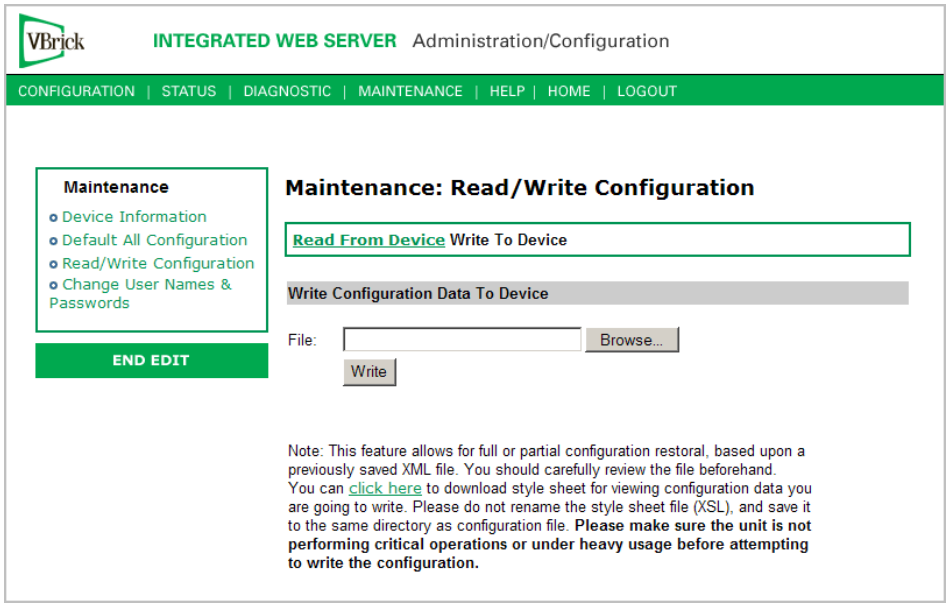
Maintenance: Read/Write > Write To Device

This page lets you write configuration parameters from an .xml file to the VBrick. On a successful write, all parameters will be saved to Flash and the appliance will reboot. Only administrator level users and above have **Write** privileges.

Note The VBrick appliance that the configuration file is read *from*, and VBrick appliance that the configuration file is written *to* must be running the same version of code.

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Write Configuration Data to Device

▼ To write configuration parameters to the VBrick from an .xml file

1. Click the **Browse** button and navigate to the configuration file you want to write to the appliance.
2. Click on the **Write** button to write the selected file to the VBrick. The configuration parameters will be saved to Flash memory and the appliance will reboot. In the event of a validation error, a message will appear on the screen. Click on **Errors** to view error messages that might have caused the validation failure. The error list is not generated for all types of write configuration failures so you may need to locate the error(s) manually by clicking through the IWS pages in Edit mode and looking for error messages highlighted in red.

▼ To create a configuration file

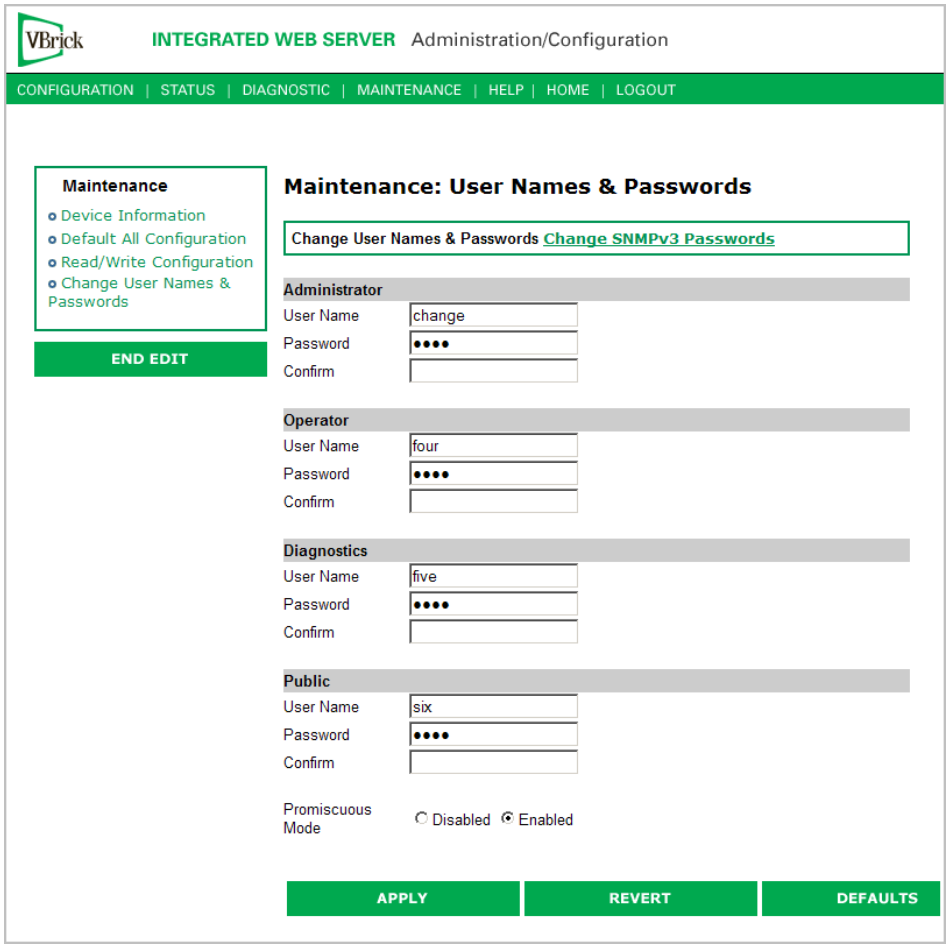
1. Read the configuration from the VBrick and save as an .xml file. See Read Configuration Data from Device above.
2. Use any text editor, preferably an .xml editor to make changes to the file. You can change the "values" field as well as delete objects as necessary. Make sure the right data types are used. For example if a parameter takes integer values, do not enter a string. Also IP Address parameters must have the right IP syntax. Enter "0.0.0.0" to enter a null IP address. Blanks and null strings are not valid IP Addresses.

Maintenance: Change Usernames & Passwords

Maintenance: Usernames & Passwords > Change Usernames and Passwords

This page lets an Administrator change usernames and passwords for security purposes.

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User Name	Enter desired user name. Cannot exceed 20 characters. It may include any combination of alphanumeric characters and only the following special characters: ~ ! # $ ^ * + & [ ] { } | < >
Password	Enter desired password. Cannot exceed 20 characters. It may include any combination of alphanumeric characters and only the following special characters: ~ ! # $ ^ * + & [ ] { } | < >
Confirm	Confirm new password entry. Note: Appliance will then inform the user and perform a reboot.
Promiscuous Mode	This mode is used in conjunction with VBrick supplied ActiveX controls. In promiscuous mode, no login or password is required. When using the associated ActiveX components in this mode, either the login password should be set to blank, (" ") or to the legal administrated login/password. If promiscuous mode is disabled, the legal administrator login/password must be entered when configuring or using these controls.

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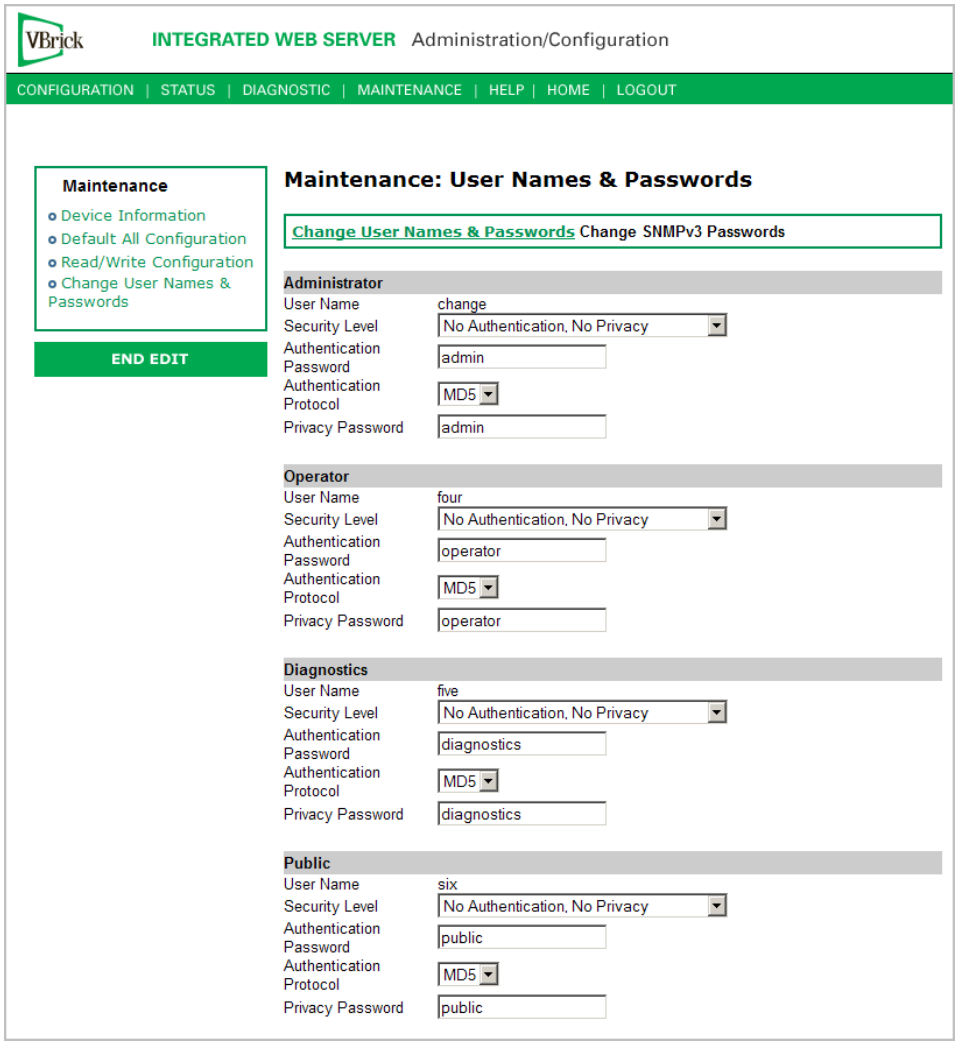
Table 3. Default User Names and Passwords

User Level	Default User Name	Default Password	Authority
Administrator	admin	admin	Read, diagnostics, edit, change password, network and routing.
Operator	operator	operator	Read, diagnostics, edit.
Diagnostics	diagnostics	diagnostics	Read, diagnostics.
Public	public	public	Read

Maintenance: Usernames & Passwords > Change SNMPv3 Passwords

SNMPv3 provides additional security that exceeds that available with SNMPv2. SNMPv3 authentication provides the ability to validate the transaction between host and client and hides the traffic with secure (DES) encryption. It also provides a user-based security model rather than a community-based model. VBrick's implementation allows you to use both v1/v2 and v3. For the highest security, disable SNMP v1/v2 (see Configuration: System > Security on page 52).

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User Name	Read-only. Set user name on previous page.
Authentication Password	Enter password. Cannot exceed 20 characters. May include any combination of alphanumeric characters but only the following special characters: ~ ! # $ ^ * + & [ ] { } | < > See Table 3 for defaults.
Authentication Protocol	Select protocol: MD5 or SHA.
Privacy Password	Required.
Security Level	No Authentication, No Privacy (Default). No Privacy. Authentication and Privacy.

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Chapter 6

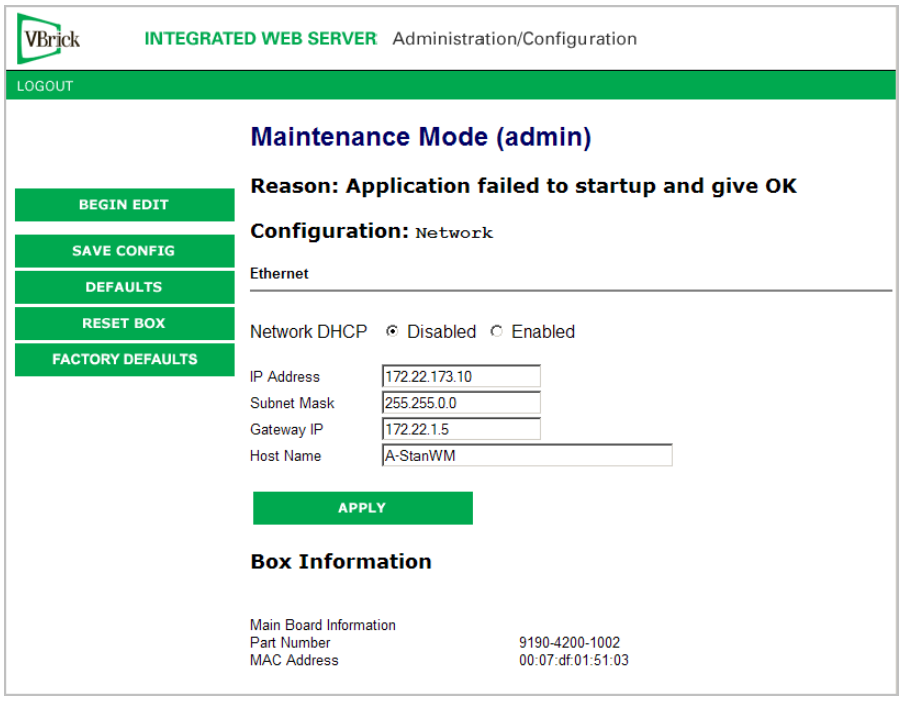
Maintenance Mode

Topics in this chapter

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Maintenance Mode CLI Operation 95

Overview

Maintenance Mode is automatically launched when the software on the VBrick does not boot. Maintenance Mode runs from a reduced functioning kernel that provides a limited CLI and IWS interface. The Maintenance Mode interfaces provide minimal configuration capabilities. Maintenance Mode can also be used as a means of downloading new firmware. *If your appliance enters maintenance mode during or after a firmware download you can simply rerun the download and reset the appliance to return to normal run mode.* Maintenance Mode is an operational mode that in which a VBrick runs with a reduced subset of code. It normally happens only when a power failure occurs during a software download. It provides limited capacity of the IWS interface to manage some parameters of the VBrick appliance. Note that security is maintained in Maintenance Mode, so the user must be at administrator level to change the parameters.



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DHCP Enable/ Disable	If DHCP is enabled the VBrick must get it's IP address and Subnet Mask from the DHCP server. If the DHCP server supplies the Gateway address or DNS server address, these parameters will replace user-entered parameters.
IP Address	IP address associated with the Ethernet interface of the VBrick.
Subnet Mask	Subnet mask for the VBrick Ethernet IP address.
Gateway IP Address	Gateway IP address for communicating across the Ethernet segment attached to the VBrick.
Host Name	On Ethernet models, this is used for DHCP Client Host Name. The Host Name defaults to the Media Access Control address, a hardware address that uniquely identifies each node of a network. Host Name can be 18 characters maximum and the first character must be a letter. The remaining characters can be letters, numbers or hyphens.

Maintenance Mode Features

- Provides support for the download and upgrade of software via VBDownload.
- Supports limited IWS and CLI for configuration and diagnosis.
- Local access of the VBrick is supported through COM 2 on the rear of the box, refer to the section on Command Line Interface (CLI) in Chapter 10 for details.
- Remote configuration is supported over Ethernet or IP over ATM. In addition, Maintenance mode will configure these interfaces according to the parameters specified in Full Feature Mode.
- Previously configured Usernames and Passwords are remembered in Maintenance Mode.
- Maintenance Mode contains the ability to change the IP parameters for the Ethernet port.
- Maintenance Mode contains the ability to set the configuration parameters to defaults.
- Maintenance Mode contains the ability to reboot the VBrick.

Maintenance Mode Limitations

- Neither video nor audio can be sent or received while in Maintenance Mode.
- Only the Ethernet IP parameters can be changed while in Maintenance Mode.
- SNMP is not supported.
- Unlike IWS and CLI operations in Full Feature Mode, Maintenance Mode IWS and CLI do not automatically save and reboot when the network parameters are changed. In Maintenance Mode, after the user initiates changes and then applies them, it is necessary to manually save and reboot the appliance. Command Line Interface (CLI) in Maintenance Mode does not support the Global Editing Commands: be, en and sh.

Maintenance Mode Indicators

There are three indicators that show when you are in Maintenance Mode:

- If you enter Maintenance Mode, the front panel display (LCD screen) will read Maintenance Mode xx", on the top line and the IP Address in the second line, "xx" indicating the reason for being in Maintenance Mode.

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- If you log into the Integrated Web Server (IWS), the screen indicates the appliance is in maintenance mode and the reason.
- The Telnet and/or Command Line Interface (CLI) prompt after you login is `VBMaintMode>` and displays one of t he following codes.

Code 10	Operating system failed to load or the flash is corrupted.
Code 20	Critical system files are missing or corrupted.
Code 30	The Hardware Watchdog has failed.
Code 50	Invalid Flash parameters found, defaults used.
Code 60	Corrupted Bootline, default used.
Code FF	Application failed to start up successfully either because of the configuration or another problem. The VBrick appliance will enter Maintenance Mode if the appliance does not boot properly on four consecutive attempts.

Maintenance Mode CLI Operation

After logging into Maintenance Mode as the Administrator, the `VBMainMode>` prompt is displayed and one or more of the following command sequences can be issued from the Command Line Interface. By design, in Maintenance Mode, after the user initiates changes and applies, it is necessary to manually save and reboot. For more about the Command Line Interface, see the *VBrick Appliance Getting Started Guide*.

▼ To use CLI commands in Maintenance Mode

1. Make all desired changes, in any sequence, using the commands in Table 4.
2. When done type **`c nt a`** to apply the changes.
3. Type **`sv`** to save the configuration.

Table 4. CLI Commands

Command	Description	Entry
`e 2`	To start the editor mode. This command must be entered prior to any other command.	Type e 1 to display editor status.
`ex or exit`	To leave the current menu level and move up through the menu system.	
`rb`	Reset the VBrick	Enter y (yes to reset).
`sd`	Set the configuration parameters to factory defaults, except the Ethernet IP parameters	Confirmation is requested.
`sfd`	Set the configuration parameters to factory defaults, including the Ethernet IP parameters	Confirmation is requested.
`c nt 5 x`	To enable or disable DHCP	1 – Disable DHCP 2 – Enable DHCP

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Command	Description	Entry
`c nt 6 xxx`	To edit the IP Host Name. The default is the Media Access Control (MAC) address, a hardware address that uniquely identifies each node of a network.	The Host Name can be a maximum of 18 characters; the first character must be a letter and the last character a number. The middle characters can be letters, numbers or hyphens.
`c nt 2 yy.yy.yy.yy`	To edit the IP address	Where yy.yy.yy.yy is the new IP address.
`c nt 3 zz.zz.zz.zz`	To edit the Sub Net Mask	Where zz.zz.zz.zz is the new subnet mask associated with the Ethernet interface.
`c nt 4 vv.vv.vv.vv`	To edit the IP Gateway address	Where vv.vv.vv.vv is the IP address of the IP gateway.
`c nt 1`	Displays the IP parameters	
`s ui m 1`	Displays Board User Information.	The User Information contains the part number and Ethernet MAC address of the VBrick.
`c nt a`	Apply the changes	Must be issued prior to save.
`sv`	To save the configuration	Enter y (yes to save).

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