



# VB4000-5000-6000 Series Network Video Appliances

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VBrick v4.2 WM 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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# WM Admin Guide

This **VBrick WM Admin Guide** is written for anyone who will be using or configuring a VB6000 Series WM appliance. This includes system administrators, network technicians, and anyone who will be using or configuring a VBrick network video appliance. The VBrick WM Appliance is compatible with Microsoft Windows Media and converts analog video and audio from any source into digital Windows Media streams. It attaches to your network and delivers the streaming video and audio directly to any Windows Media-compatible player or server. The VBrick can deliver the streams via multicast to any number of players on the network and it can serve the stream via unicast to up to 200 players or servers. The WM Appliance is part of VBrick's award winning VB6000 series of products with a proven track record of quality, reliability and flexibility.



VBrick's WM Appliance is an industrial strength, versatile, and reliable video appliance for one-way communication over low and medium bandwidth IP networks using the widely deployed Windows Media format. The WM Appliance can be deployed in a variety of ways and integrates seamlessly into existing Windows Media deployments. This powerful, yet inexpensive product can reach thousands of people on your enterprise network, VPN, or the Internet. The Windows Media appliance provides both Windows Media encoder functionality and Windows Media server functionality for live video. A key benefit is its compatibility with the Windows Media Player, thus eliminating the need for a desktop player installation.

## Organization

<u>Introduction</u>	provides an overview of the WM Appliance and typical VBrick applications. It explains how to optimize performance and how to deliver multiple bit rate streams.
<u>WM Configuration</u>	explains all configuration windows for the encoder. These include encoder audio and video settings as well as passthrough, SNMP traps, script management, etc.
<u>Status</u>	explains the status screens that provide information about the system, the encoder, the server. It also explains how to view the system and event logs and traps.
<u>Diagnostics</u>	explains how to run various diagnostic tests. These include ping, traceroute, and loopback.
<u>Maintenance</u>	explains how to manage device information and reset all configuration parameters to the defaults. It also explains how to save configuration data and/or rewrite it back to the encoder.
<u>Maintenance Mode</u>	explains how to use a limited subset of the IWS interface to manage appliance configuration parameters when there is a firmware download failure.
<u>WM Templates</u>	shows each setting on the pre-configured audio and video templates that are provided for common encoder configurations.

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<u>Stream Prioritization</u>	describes the Windows Media Player logic that determines what stream the player will select and play when multiple bit rates are configured.
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## 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](mailto:documentation@vbrick.com) and let us know. For more information about any VBrick products, all of our product documentation is available on the web. Go to [www.vbrick.com/documentation](http://www.vbrick.com/documentation) to search or download VBrick product documentation.

## Getting the Best Video

Video quality is a subjective concept that 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 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](#).



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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 code elements (C++, HTML) as well as filenames, directories, etc.

**Black Courier fixed-width font** is used to indicate user input in keyboard commands, scripts, etc.

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

**Folder names and user input are displayed in this bold sans serif font.**

*Italics are used to emphasize specific words or phrases.*

## Printer-Friendly

VBrick WM Appliance Admin Guide

▼ To save or **print** a PDF document:

1. Click once to open the PDF document in Acrobat Reader.
2. To save or print a PDF document, right-click and select **Save Target As** or **Print Target**.



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## Introduction

### Topics in this chapter

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### Overview

Live and stored video-on-demand are among the most compelling and efficient forms of human communication and removes the barriers of time and distance. Microsoft Windows Media is a ubiquitous technology that makes it easier for VBrick customers to deploy video for one-way video delivery to millions of PCs and multimedia-equipped devices worldwide. "Windows Media" describes Microsoft's multimedia product technologies for Windows. It includes (1) Windows Media Format tools for encoding and decoding audio and video, (2) Window Media Services for publishing streaming audio and video on a server, and (3) Windows Media Player, which is the client program that plays Windows Media and other multimedia formats. The Windows Media Player is typically installed with the operating system on most desktop PCs so no player-side installation is necessary, eliminating a common IT concern when deploying a streaming audio/video solution. VBrick has licensed Windows Media encoding and server technology from Microsoft and created the VBrick WM Appliance to interoperate with other Windows Media compatible products including all versions of Windows Media Player and all versions of Windows Media Server.

### System Requirements for Windows Media Player

- Ethernet LAN.
- Multicast IGMP Version 2.
- Windows 98, 2000, XP (Windows XP Service Pack 1 or above (Service Pack 2 recommended)).
- 500 MHz Pentium III processor for Windows Media streams (750 MHz recommended).
- 128 MB RAM.
- SVGA video card 640x480, 256 colors (video card acceleration recommended).
- Windows-compatible sound device.
- Minimum 15 MB hard disk space for installation.
- Microsoft Internet Explorer 6.0 or higher.
- Microsoft DirectX Media 8.1 or higher (9.0 recommended).

- Microsoft Windows Media Player 7.1 (Windows 98 or 2000 only); Media Player 9, 10, or 11 (Windows XP only).

## Standard Features

The VB6000 WM Appliance supports approximately 40 Mbits/sec total throughput via the Ethernet/IP connection. This bandwidth can be used for any of the standard features shown in Table 1 but the overall performance of any one of these features can be affected by the sum total. For example, you can download more content from the hard drive when the encoder(s) are not streaming, pushing, and/or multicasting. In a typical scenario, the hard drive will support the progressive download of a video file to a maximum of 20 simultaneous viewers, or 20 Mbits/sec—whichever comes first.

**Table 1.** Encoder and Reflector Features

Standard Feature	Encoder	Reflector
Accepts composite or S-Video input.	X	
Available as single or dual channel.	X	
Multiple bit rate support.	X	
Windows Media Audio 8 encoding (5 Kbps–192 Kbps).	X	
Windows Media Video 9 encoding (20 Kbps–4 Mbps).	X	
Optional 60 GB hard drive for local archiving.	X	X
8-bit 4:2:0 color format.	X	
Up to 640x480 resolution.	X	
Initiate HTTP Pull from a WM appliance or a WM server/encoder.		X
Receive HTTP Push from a WM appliance or Microsoft encoder.		X
Progressive download (20 simultaneous viewers).	X	X
Multicast streaming (UDP).	X	X
† Any combination of up to 200 clients including: <ul style="list-style-type: none"> <li>• Unicast RTSP Streaming (UDP).</li> <li>• Unicast HTTP Streaming (TCP).</li> <li>• Stream Push (25 maximum) to a VBrick Reflector, a Microsoft Windows Media Server, or RealNetworks Helix Server via HTTP (TCP).</li> <li>• Stream Pull from Microsoft Windows Media Server or RealNetworks Helix Server via HTTP.</li> </ul>	X	X

† The total number of supported clients will be reduced if you are using the JPEG capture feature. See [JPEG Capture Constraints](#) on page 68 for details.

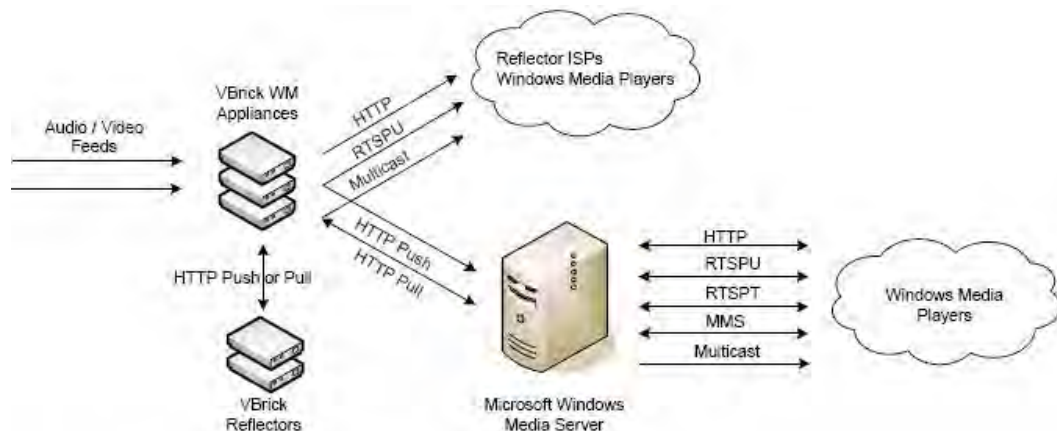
## Typical VBrick Applications

The following scenarios describe typical applications for the VBrick WM Appliance. These applications can be LAN-based, WAN-based, or a combination of both LAN and WAN network topologies. Note that the VBrick WM Appliance can support all of these

applications at the same time. One of the major benefits of the VBrick WM Appliance is its compatibility with the Microsoft ecosystem; this makes it easy to integrate with existing Windows Media installations.

**Table 2.** Typical VBrick Applications

Application	Description
Standalone Multicast	Streaming video and audio can be multicast from the VBrick WM Appliance directly to Microsoft's Windows Media Player on an unlimited number of PCs.
Standalone Unicast	Streaming video and audio can be unicast from the VBrick WM Appliance via HTTP or RTSP (UDP) directly to Microsoft's Windows Media Player on up to 200 PCs depending on bit rate.
Pull Reflection via Microsoft Windows Media or RealNetworks Helix Servers	Streaming video and audio can be pulled from the VBrick WM Appliance by a publishing point on a Microsoft Windows Media or RealNetworks Helix server. The stream is then reflected by the server to players and other servers using any protocol supported by the server.
Push Reflection via Microsoft Windows Media or RealNetworks Helix Servers	Streaming video and audio can be pushed from the VBrick WM Appliance to a publishing point on up to 25 Microsoft Windows Media or RealNetworks Helix servers. The stream is then reflected by the servers to players and other servers using any protocol supported by the server.
HTTP Push to a VBrick Reflector	Streaming video and audio can be pushed via HTTP from a local WM VBrick to up to 25 reflectors on remote WM VBricks. From each reflector, the stream can then be multicast over the remote LAN, unicast to a maximum of 200 PCs, or be pushed again to other reflectors.
HTTP Pull to a VBrick Reflector	Streaming video and audio can be pulled via HTTP from a local VBrick WM Appliance to a remote VBrick Reflector. From the Reflector, the stream can be then multicast over the remote LAN, unicast to a maximum of 200 PCs, or be pushed or pulled again to other server or VBrick reflectors.



**Figure 1.** VBrick's Streaming Ecosystem

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The Microsoft Windows Media 9 product suite divides transport functionality between two distinct products—the encoder and the server. In some applications the VBrick WM Appliance provides the same functionality as the Microsoft encoder in that it can encode live video and audio and provide a unicast stream to a Microsoft Windows Media server which then may relay the stream to the many players using various transport protocols. In other applications, the VBrick WM Appliance replaces both the Microsoft encoder and the server. It can directly support a large number of players connected via unicast (maximum 200) and it can multicast to an unlimited number of players. The VBrick WM Appliance supports direct player unicast connections, server unicast connections, and direct player multicast connections—all at the same time.

## Multicasting

The VBrick WM Appliance can multicast to any number of players directly after using the **Configuration: Encoder > Multicast** settings to enter a multicast address and port for the session. There are many ways for a Windows Media player to access the multicast stream from a VBrick WM Appliance but here are some of the most common. (For more detailed information, see [Multicast Playback](#) on page 37.)

- ▼ To access a Windows Media multicast:
  - *Distribute the Windows Media .asx file.* You can get an "announcement file" (\*.asx) from the VBrick by right-clicking on the playback hyperlinks in IWS. Once moved to a Windows computer, the user can double-click the .asx file to launch the Windows Media Player and view the multicast. (A standard Windows system associates the .asx extension with the Windows Media Player.)
  - *Use an HTTP URL to access the .asx file on the VBrick.* You can create a web page that contains an HTTP link to the multicast asx file on the VBrick or you can open the multicast asx URL using Windows Media Player or a web browser.
  - *Use VBrick StreamPlayer Program Guide.* VBrick's StreamPlayer product adds an automatic program guide to Windows Media Player. Each WM Appliance on your network is automatically listed in the program guide on the player. You simply click on the entry in the program guide to play the stream.
  - *Use VBrick's EtherneTV Portal Server (v3.2 or later).* The Portal Server is a fully integrated video solution with automatic program guides and an integrated player for live streams from all types of VBrick appliances as well as on-demand streams from video servers. EtherneTV offers many advanced features such as scheduling, recording, and access control.

## Unicasting

The WM Appliance can support up to 200 simultaneous unicast destinations depending on bit rate and other configuration options. There are many ways for a Windows Media player to access the unicast stream from a VBrick WM Appliance but here are some of the most common. (For more detailed information, see [Unicast Playback](#) on page 44.)

- ▼ To access a Windows Media unicast:
  - *Distribute a Windows Media .asx file.* You can get an "announcement file" (\*.asx) from the VBrick by right-clicking on the playback hyperlinks in IWS. Once moved to a Windows computer, the user can double-click the .asx file to launch the Windows Media Player and view the unicast. (A standard Windows system associates the .asx extension with the Windows Media Player.)

- *Use an HTTP or RTSP URL to get the unicast stream.* You can create a web page that links to the HTTP or RTSP stream directly or you can open the HTTP URL or RTSP URL using Windows Media Player or a web browser.
- *Use an HTTP URL to access the .asx file on the VBrick.* You can create a web page that contains an HTTP link to the HTTP or RTSP asx file on the VBrick or you can open the asx URL using Windows Media Player or a web browser.
- *Use VBrick StreamPlayer Program Guide.* VBrick's StreamPlayer product adds an automatic program guide to Windows Media Player. Each WM Appliance on your network is automatically listed in the program guide on the player. You simply click on the entry in the program guide to play the stream.
- *Use VBrick's EtherneTV Portal Server (v3.2 or later).* The Portal Server is a fully integrated video solution with automatic program guides and an integrated player for live streams from all types of VBrick appliances as well as on-demand streams from video servers. EtherneTV offers many advanced features such as scheduling, recording, and access control.

## Reflecting

VBrick supports the concept of reflecting wherein a WM stream is redistributed to other network devices. Reflecting is supported by two models: (1) a single channel WM Encoder device, and (2) a standalone reflector model. A variant of the models can have hard drives. Streams are acquired either via push or pull. The reflector can be configured to receive a stream pushed from another WM appliance or a Reflector, or pushed from a Microsoft Windows Media Encoder. The Reflector can also be configured to pull a stream from another VBrick WM Appliance, a Microsoft WM server, or a Microsoft WM Encoder.

## VBrick Reflecting

Reflecting involves an "encoder" which creates a video stream and sends it over the network and a "reflector" which receives the network stream from the encoder and retransmits the stream to players or other reflectors. In many applications, VBrick appliances are used both as the encoders and as the reflectors, but since VBricks are compatible with other devices in the Microsoft Windows Media ecosystem so you can just as easily use a VBrick as the encoder and a Microsoft or Real Helix Server as the reflector, or you can use a Microsoft Encoder or Microsoft Server as the source of a stream for a VBrick Reflector.

There are two types of VBrick Appliances that can do reflecting. One type is the Single Channel WM Encoder Appliances (part numbers 9190-4200-xxxx) which have both encoder and reflector features in the same unit. The other type is the VBrick WM Reflector Appliances (part numbers 9190-0200-xxxx) which contain only reflector features. Both types of reflectors can optionally include an internal hard drive for archiving.

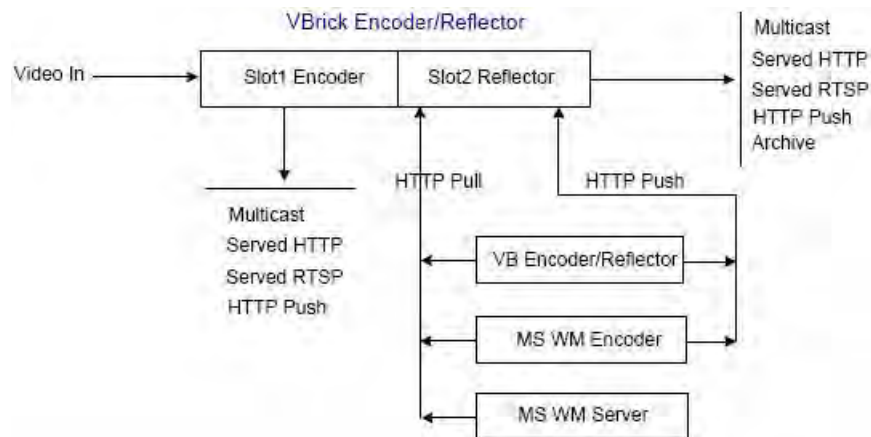
Regardless of the mix of VBrick or Microsoft products for encoding and reflecting, the transmission of the stream over the network from the encoder to the reflector can be done either by "push" or by "pull." Although they accomplish essentially the same thing, there are various reasons to choose one or the other but the most important factor is what kind of firewalls exist between the devices. For example, if an encoder behind a firewall needs to distribute its stream through a public reflector, then pushing from the encoder to the reflector works well. Conversely, if a reflector behind a firewall needs to acquire a stream from a public encoder or server, then pulling from the source to the reflector works better.

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## Reflecting from VBrick Appliances

This section provides more information about how to use VBrick appliances in reflecting applications. For more about the specific configuration settings on the VBrick, see [Configuration: Encoder](#) on page 23 and [Configuration: Reflector](#) on page 57.

A VBrick Reflector can reflect an HTTP Push from a VBrick Encoder, a VBrick Reflector, or Microsoft Encoder or it can pull an HTTP stream from a Microsoft Server, a Microsoft Encoder, a VBrick Encoder, or a VBrick Reflector. The VBrick Reflector supports a variety of destinations including multicast, Served HTTP, Served RTSP, and HTTP Push—all at the same time. Each VBrick Reflector supports a single pull or push source for the Windows Media stream. Note that only one source can be active at a time for a given Reflector and the *same* source stream is reflected to each of the enabled destinations. The reflector source option is currently available on single encoder and standalone VBrick reflector models. In all cases the reflector source connects to the Slot2 destinations and the Slot1 encoder features are not affected. For example, in the VBrick Encoder/Reflector model, the Slot1 multicast can be sending an encoded stream at the same time the Slot2 multicast is sending a reflected stream. Note that the reflector always sends exactly what is received. For this reason, there are no video or audio configuration fields on the reflector configuration pages nor do the destination pages let you select different video and audio rates.



**Figure 2.** WM Appliance Encoder/Reflector

## Push Reflecting

For push reflecting, there are basically two steps to starting a reflection. First you configure a reflector to receive the push and then you configure an encoder to initiate a push to the reflector. VBrick Appliances support up to 25 concurrent pushes, so many destinations (any mixture of VBrick Reflectors and Microsoft or Real Helix Servers) can receive the push at the same time and each of the servers or VBrick Reflectors can then reflect the stream using any or all of their supported protocols. This multiple push feature is unique to VBrick and is useful for stream distribution from a single encoder in a central office to many remote offices over WANs because you can push a stream over the low bandwidth WAN links to a reflector at each of the remote offices, and the reflector can then multicast or unicast to many viewers on the remote LAN.



## Push Reflecting from a Windows Media Server

The VBrick WM Appliance can push its Windows Media stream to a Microsoft Windows Media Server or to a RealNetworks Helix Server which can then reflect the stream to players or other servers using any of the protocols supported by the server.

- ▼ To reflect a *pushed* stream through a Windows Media or Helix server:

Create a broadcast publishing point on the Windows Media or Helix Server and configure it for a "Push" source. In the WM Appliance [Configuration: Encoder > Push](#) options configure the VBrick to push the stream to the publishing point on the server or to a copy of the publishing point on the server. When the appliance push is active, the server makes the stream available to players or other servers via unicast and/or multicast, based on the configured publishing point options on the server. The Push feature is useful in cases where it is advantageous to have the VBrick send to the server instead of having the server request from the VBrick (for example when the encoder is behind a firewall and the server is not). For more information, see [Creating Publishing Points](#) on page 48.

## Pull Reflecting

For pull reflecting, the reflector is simply configured to act as a client that pulls the stream from the source. A VBrick Reflector—either in the dedicated reflector model (9190-0200-xxxx) or in the encoder/reflector model (9190-4200)—can pull from a VBrick Encoder, a Microsoft Encoder, or it can pull live or stored content from a Microsoft Server.

**Table 3.** Typical Pull Reflecting URLs

Pull Reflector Type	URL
VBrick Reflector pull URL for pulling an HTTP stream from another VBrick:	<a href="http://vbrick_ipaddress:8080/vbrickvideo1">http://vbrick_ipaddress:8080/vbrickvideo1</a>
Pull from an .asx file served from a VBrick or any HTTP server:	<a href="http://ipaddress/vbs1http.asx">http://ipaddress/vbs1http.asx</a>
Pull from a Microsoft Encoder:	<a href="http://microsoft_encoder_ipaddress:port">http://microsoft_encoder_ipaddress:port</a>
Pull from a broadcast publishing point on a Microsoft Server:	<a href="http://microsoft_server_ipaddress/LiveStream">http://microsoft_server_ipaddress/LiveStream</a>
Pull from an on-demand publishing point on a Microsoft Server:	<a href="http://microsoft_server_ipaddress/videofolder/storedvideo.wmv">http://microsoft_server_ipaddress/videofolder/storedvideo.wmv</a>
Pull from a dynamically-generated or load-distributed publishing point that redirects the client to an .asx file or a WM HTTP stream:	<a href="http://myserver.com/findURL.dll?myplaylist">http://myserver.com/findURL.dll?myplaylist</a>

- ▼ To reflect a *pulled* stream through a Windows Media or Helix server:

Create a broadcast publishing point on the Windows Media or Helix Server and use the VBrick HTTP URL (i.e. <http://172.22.113.9:8080/vbrickvideo1>) as the source of the publishing point. The server requests the stream from the VBrick via HTTP and makes the stream available to players or other servers via unicast and/or multicast based on the configured publishing point options on the server. For more information, see [Creating Publishing Points](#).

---

## ***Other Considerations***

Keep in mind these additional details. The VBrick Pull Reflector:

- Supports up to five redirects.
- Supports the first (or only) HREF entry in an .asx file. Additional entries in the file are ignored.
- Only pulls streams via HTTP. It will accept an MMS URL but will use HTTP for streaming from that URL.
- Cannot pull multicast.
- Cannot pull from a server-side playlist.

## **Using Multiple Bit Rate Streams**

A VBrick WM Appliance (v4.0 or higher) has three internal video encoders and three internal audio encoders that each produce a separate output stream as shown in Figure 3. These streams can have different rates and characterizations and consequently can be used for different applications. This feature allows these multiple applications to be served in a cost-efficient manner. Some sample applications are listed below. All of these applications can be simultaneously supported by a single WM Appliance.

---

**Note** System performance, particularly when using multiple bit rate streams, is directly affected by configuration selections. See [Optimizing System Performance](#) on page 14 for guidelines and suggestions.

---

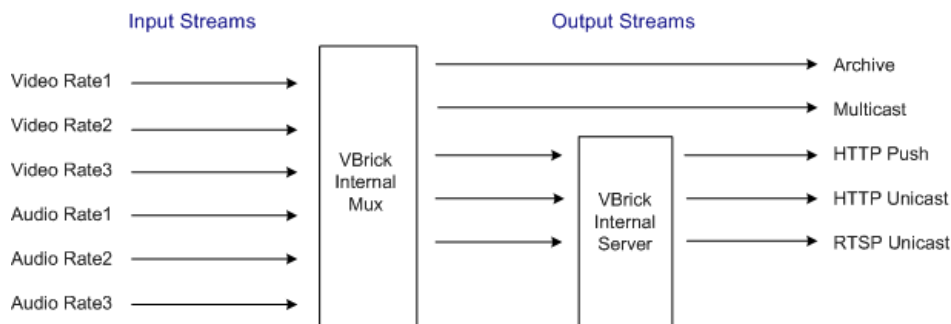
- **Multicast** – Typically a multicast stream is high bandwidth since multicast is normally supported only on high-bandwidth networks.
- **Unicast** – Often unicast clients, who may be located on the Internet, are offered lower bandwidth streams.
- **Archive** – It may be useful to archive content containing multiple data rates. This archived stream can be transferred to an appropriate VOD system such as VBrick's EtherneTV Portal Server for serving at different data rates to different clients.
- **Reflection** – For an organization that has a distributed infrastructure with multicast-capable offices connected by lower bandwidth non-multicast enabled links, it may be useful to push/pull a unicast stream to a reflector for redistribution and/or archiving at the remote site. The reflector can be provided by a Windows Media Server or by the reflecting capability of VBrick's WM appliance.
- **Multiple Bit Rate** – These differently formatted video and audio streams can be served simultaneously and the Windows Media Player will select and play the best stream—based on bandwidth and other factors—from among the multiple streams that are available. In the Microsoft world, this concept is generally called *multiple bit rate*. With multiple bit rate, the *player* automatically selects the highest quality version of the stream that fits the limitations of the network, and end users receive a continuous flow of content that matches their specific connection speeds.

## **MBR Output Streams**

The VBrick WM Appliance implementation of MBR lets you optionally enable and independently configure up to three video encoders (Video Rates 1, 2, and 3) and up to three audio encoders (Audio Rates 1, 2, and 3). They all run different encoding algorithms at the same time on a single WM appliance. Various configuration options let you select different

combinations of audio and video rates for multicasting, HTTP and RTSPU serving, HTTP Push, and Archiving. See the [Configuration: Encoder](#) pages for more information.

The following drawing shows the selectable output streams from a WM appliance. (Note that the Archive output on the right is actually a .wmv file rather than a stream.) Depending on your requirements and what you select, the VBrick will produce any or all of these outputs. Each output can be configured with different audio and video rates. A multicast stream, for example, can be substantially different from the served, pushed, or archived streams.



**Figure 3.** Configurable Input/Output Stream Rates

**Table 4.** WM Output Streams

Output	Description
Archive	An archive .wmv file is automatically created if the Archiver is running on the <a href="#">Configuration: Encoder &gt; Archiver</a> page. There are no restrictions on the "includes". This means you can select Video Rates 1, 2, and 3, and Audio Rates 1, 2, and 3. All included streams are multiplexed into a single archive file. A WM Appliance configured with a VBStar hard drive lets you create and save a .wmv file archive of the streams directly from the encoder. The file can be FTPed to a Windows Media Server or moved to a Windows system and played locally by a Media Player. (It can also be accessed locally via <a href="#">Using On Demand Playback</a> .) In a mixed VBStar model with an MPEG-2 encoder and a WM encoder, the MPEG-2 encoder can archive the MPEG-2 stream and the WM encoder can archive the WM stream. In a mixed model with an MPEG-2 <i>decoder</i> and a WM encoder, only the WM encoder stream can be archived to disk.
Multicast	A multicast stream is typically used on a local intranet. It has only one video rate and one audio rate and is produced when <b>Transmit</b> is enabled on the <a href="#">Configuration: Encoder &gt; Multicast</a> page.
HTTP Push	An HTTP Push is a unicast stream that can be pushed to a maximum of 25 different destinations. These destinations are typically VBrick Reflector Appliances or Microsoft Windows Media Servers. There is one set of configuration parameters to set address, publishing point name, user name, password, etc. for each destination. There are no restrictions on the "includes." This means you can select Video Rates 1, 2, and 3, and Audio Rates 1, 2, and 3. <i>All included streams are multiplexed into one stream, and all destinations receive the same stream (with the same MBR combination).</i>

Output	Description
HTTP/RTSP Unicast	Unicast streams are provided via the VBrick internal server. In order to use this feature, you first create up to three groups, each of which consists of an audio stream at a selected rate and video stream at a selected rate, and optionally closed captioning and metadata. Some or all of these groups are <b>Enabled</b> on the Configuration: Encoder > Server page. The end-user client then determines whether to pull a specific group from the server or to negotiate with the server in order to pull the best quality stream based on available network bandwidth. To allow the player/server negotiation, you can open a Windows Media Player and enter the <b>HTTP URL</b> shown on the Server page, for example <a href="http://172.22.173.10:8080/vbrickvideo1">http://172.22.173.10:8080/vbrickvideo1</a> . Alternately, you can request a specific group by appending a known group number, for example <a href="http://172.22.173.10:8080/vbrickvideo1/group1">http://172.22.173.10:8080/vbrickvideo1/group1</a> .

**Note** The WM appliance *reflector* feature does not currently support multiple bit rates. If the source of a push/pull to a reflector contains multiple video and/or audio streams, the reflector will reflect the *entire* stream with all video and audio included. This is only useful if there is a Microsoft Windows Media Server downstream from the reflector.

## MBR Output Settings

The three concurrent video encoders all use the same video input. The following table shows the configuration output settings that are shared between all video encoders, and the output settings that can be configured independently for each one. See [Configuration: Encoder > Video](#) on page 24 for more details.

**Table 5.** Video Rate Settings

Shared Video Settings	Independent Video Settings
<ul style="list-style-type: none"> <li>• Video Format</li> <li>• Video Input Type</li> <li>• Video Source</li> <li>• Closed Caption</li> <li>• Inserted CC Update Rate</li> <li>• Inserted CC text</li> <li>• Inserted CC Row</li> <li>• Luminance</li> <li>• Contrast</li> <li>• Saturation</li> <li>• Hue</li> <li>• Meta Data Enable</li> <li>• Metadata String</li> </ul>	<ul style="list-style-type: none"> <li>• Resolution</li> <li>• Rate Control Method</li> <li>• Target Bit Rate</li> <li>• Target Frame Rate</li> <li>• Key Frame Interval</li> <li>• Smoothness</li> <li>• Picture Center Quality Difference</li> <li>• Buffer size</li> </ul>

The following table shows configuration output settings that are shared between all audio encoders, and the output settings that can be configured independently for each one. See [Configuration: Encoder > Audio](#) on page 32 for more details.

**Table 6.** Audio Rate Settings

Shared Audio Settings	Independent Audio Settings
<ul style="list-style-type: none"> <li>• Audio Input Level</li> <li>• Audio Gain</li> <li>• Sample Frequency</li> </ul>	<ul style="list-style-type: none"> <li>• L+R Bit Rate</li> <li>• Audio Channels</li> </ul>

## MBR Groups

VBrick's implementation of multiple bit rate supports the concept of groups. *Groups are used in a unicast environment where the VBrick WM appliance is being used as a server.* The appliance provides the option of serving one, two, or three groups of streams. A group is one set of parameters for video, audio, and script data (script data includes **Closed Caption** and/or **Meta Data**). One group must always be enabled; the other groups are optional and are enabled only when you want to serve multiple bit rates. For example, you can create three separate groups with different combinations of audio, video, and closed caption settings. The primary (or default) group is always available. The following screenshot shows how you can enable and configure different audio and video settings for **MBR Group2**.

The screenshot shows the VBrick Integrated Web Server Administration/Configuration page. The main content area is titled "Configuration: Encoder" and includes a navigation menu on the left with options like Network, Encoder, Reflector, FTP File Transfer, Passthrough, System, and Script Management. The main configuration area is for "Windows Media Encoder Server -- Slot1" and includes fields for HTTP URL, RTSPU URL, Select Video Rate, Select Audio Rate, Closed Caption and Metadata, HTTP Estimated Bit Rate for group 1, RTSP UDP Estimated Bit Rate for group 1, HTTP URL for group 1, and RTSPU URL for group 1. There are also buttons for "END EDIT", "SAVE CONFIG", and "REFRESH".

**Figure 4.** Configuring MBR Groups

When serving multiple bit rate streams, it is the *player* that determines which group to request and play based on the bandwidth available or on the measured network performance between the player and the appliance. In this case, the appliance sends a stream to the player containing only the requested group. When using groups, you can also use a special URL in the player or server to request a specific group from a WM appliance that is configured with multiple bit rates. For example,

- ▼ To instruct the appliance to make available and send only **MBR Group2** use this URL:  
<http://172.22.113.9/vbrickvideo1/Group2>

---

This feature is useful when you want to configure MBR on the appliance with a high bit rate group for LAN HTTP access and at the same time have a server pull a low bit rate group for reflecting. You can also use it to test playback for a particular group. MBR groups are configured on the [Configuration: Encoder > Server](#) pages. When configuring audio and video MBR groups on the Configuration: Encoder > Server page (Figure 4), keep the following group configuration rules in mind.

**Table 7.** Group Configuration Rules

- 
- The first video encoder (**Video Rate1**) is always enabled and available for selection; the first audio encoder (**Audio Rate1**) is always enabled and available for selection.
  - Different enabled audio encoders must have different audio rates. Different enabled video encoders must have different video rates.
  - An enabled group must have at least one stream selected.
  - All enabled groups must have the same combination of audio and video. For example, if one group is configured for video and no audio, they must all be configured for video and no audio. There are three ways to configure the groups:
    - audio and video
    - audio, no video
    - video, no audio
  - A particular video or audio rate may appear in more than one group but two groups cannot have the *same* audio, video, and closed caption selections.
  - **Closed Caption and Meta Data** can be selectively turned on or off for each group but a group cannot contain only **Closed Caption and Meta Data**.
  - Group1 is the *default* group which will be played by older versions of the Windows Media Player that do not support MBR serving.
- 

**Note** The Windows Media Player determines which bit rate stream to use and communicates this information back to the appliance or the server in a negotiation process that is transparent to end users. With MBR intelligent streaming enabled, the Windows Media Player generally responds to insufficient bandwidth by requesting a lower bit rate from the server. Window Media Player Version 7.1 or higher is required to play MBR streams or files. Older versions of the player may not support MBR but will be generally able to play the default group from an MBR stream or an archived .wmv file.

---

## MBR Troubleshooting

The Windows Media Player does not support ASF Group Exclusion or Mutual Exclusion mechanisms so the VBrick Appliance cannot guarantee that the player will always make stream selections that match up with the configured groups. To work around this player issue, the VBrick uses a "closest match" approach to avoid playback problems whenever possible. For example, if the VBrick is configured with Groups that are all video+audio and the player requests video-only, the VBrick will send the lowest rate group that contains the video rate the player requested. When this happens, the player will accept and play the closest match stream, even though the rate of the stream is higher than the player expected and the viewer will hear audio along with the video. This closest match approach is used by the VBrick anytime the player requests video-only, audio-only, or CC/metadata-only and there is no

Group to match the request exactly. This closest match approach is also used when the player requests a "thinned" video stream, because the VBrick does not support video thinning.

Unfortunately, there may also be situations when the selection algorithm in the player causes it to request a pair of audio and video streams that are not available in *any* MBR group. This only happens when you use an "unqualified" URL such as <http://172.22.173.10:8080/vbrickvideo1> that does not specify a particular Group. When this type of mismatch happens, no stream will play, the player will display an error window, and a message similar to the following will be written to the Status: System Log > System Event page on the VBrick appliance.

```
SYSEVENT:12/07/2006 17:52:05LOC WM MBR Client Rejected, Buffer containing
:Audio1:Video2:not found
```

Use the following recommendations to reduce the possibility that a stream will not play. Note that closed captions and metadata have no effect and are not relevant in this context.

▼ To reduce the possibility that an MBR stream may fail to play:

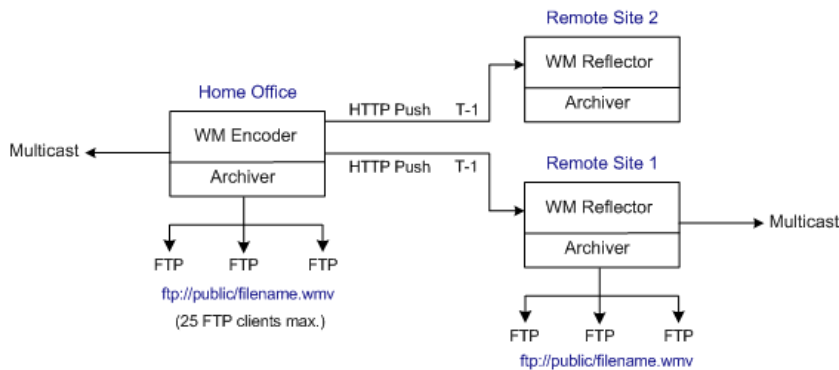
1. Use groups that are collectively video-only.
2. Use groups that are collectively audio-only.
3. Configure the groups so that they share either one common audio stream or one common video stream.
4. Use two audio encoders and two video encoders and configure three MBR groups as follows:
  - a. One group is the low-rate audio stream and the low-rate video stream.
  - b. One group is the low-rate audio stream and the high-rate video stream.
  - c. One group is the high-rate audio stream and the high-rate video stream.

If none of these options are possible, configure the group with the *lowest* rate audio stream to also have the lowest rate video stream; and configure the group with the *highest* rate audio stream to have the highest rate video stream. By carefully selecting audio and video rates, you can reduce the likelihood that the Media Player will ask for unavailable audio and video rate pairs. For more about the stream selection algorithm, see [Stream Prioritization](#) on page 137.

## Using On Demand Playback

On Demand Playback, sometimes called *timeshifting*, is a feature that lets remote viewers access previously-recorded streams using a combination of FTP and progressive download. *This feature is only available when the saved content is stored on WM appliances with a VBStar hard drive.* In a typical scenario, a video presentation from a central location is streamed to a VBrick reflector at a remote site over a low-bandwidth T-1 connection. It is also archived as a .wmv file on the VBStar hard drive *at the remote site*. Remote viewers can then watch the stream live via multicast, or if there is a shift in time zones that makes the live broadcast inconvenient, they can view the archived .wmv file locally during normal business hours. This same scenario applies at the central location, or at any other networked locations, where the stream can be multicast and archived in the same manner.

On Demand Playback can also be used to deliver high-quality video to a remote site, even if there is a low bandwidth connection to that site, by using a "store and forward" strategy. In this scenario, the WM encoder appliance is configured to archive the video to its internal hard drive *locally* and then automatically FTP the file to a remote WM Appliance hard drive so that it is available for high-quality on demand viewing at the remote location.



**Figure 5.** On Demand Playback

It is important to note that on demand playback uses FTP and progressive download for playback, and the viewing experience is sub-optimal compared with content from a dedicated VOD server. See [Progressive Download](#) on page 54 explains how to create and view these files.

## Optimizing System Performance

VBrick appliances are designed to accommodate a variety of configurations. VBrick configuration choices enable the widest range of features and capabilities and are designed to provide the user with a high degree of flexibility. In some extreme cases, users can create configurations that exceed the normal processing capacity of the unit causing it to not perform optimally. VBrick units provide statistical counters and status variables indicating current device utilization and can even be configured to report SNMP trap alarm conditions when these situations occur. Corrective action usually involves reducing a video rate or disabling a channel. In general, video quality improves when video rate is increased toward the maximum of 4 Mbps. In short, video quality is subjective and relates to other components such as the response of the human eye, the quality of the original content and signal, and the quality of the decoder and monitor. As a general rule, use the lowest video rate that best suits the application.

When configuring VBrick units, pay close attention to the total bit rate of all streams exiting the unit. The sum of all streaming traffic should be closely monitored and kept to a minimum whenever possible. Once you have selected and applied a configuration to the unit, you can check the status of the processor and device load via the IWS or CLI. The CPU utilization and overloaded status variables are an excellent indication on the unit's overall health. If the CPU utilization is high or an overloaded condition is occurring, you can simply reduce bit rates, reduce the number of clients, and re-run the test. As a part of regular maintenance, you should periodically check the CPU utilization and the overloaded and "buffer full" count status variables to ensure the unit remains within normal operating limits.

## Mixed Model Appliances

In addition to dual devices (for example two encoders, or an MPEG-2 encoder and MPEG-2 decoder), VBrick supports mixed model appliances (for example a WM encoder and an MPEG-4 encoder). VBrick appliance v4.1 software supports almost any combination of VBrick devices in Slots 1 and 2 so you can mix and match as necessary. For example, you can have a WM encoder in Slot1 and an MPEG-4 encoder in Slot2, or you can have an MPEG-2 encoder in Slot1 and MPEG-4 decoder in Slot2. *The only exception is that you cannot have a*



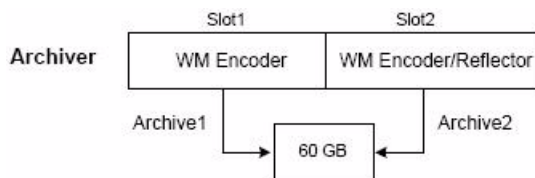
*WM encoder and an MPEG-4 decoder in the same appliance.* In general, encoders are installed in Slot1; decoders are installed in Slot2. WM encoders, if present, are always installed in Slot1.

**Note** VBrick WM, MPEG-2, and MPEG-4 appliances all run the same codebase. The configurable options and user interface vary according to the type of appliance (e.g. MPEG-2, MPEG-4, etc.) on which the code is installed.

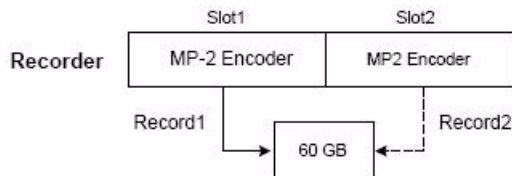
## Archiver and Recorder Functionality

Archiver/Recorder functionality may be different in mixed model appliances depending on how the slots are populated. In other words, the behavior of the device in a given slot may change depending on what combination of appliances are installed. See Figure 6 below and note the following distinctions:

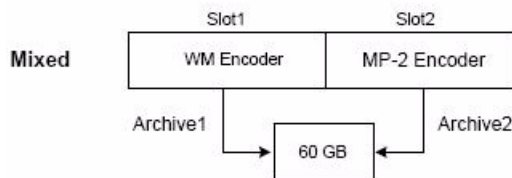
- An *archiver* only records from an associated encoder. For example, a WM Archiver is associated with a specific WM encoder.
- A *recorder* is not associated with any encoder. It independently records one stream at a time from an encoder, a decoder, or from the network.
- On MPEG-4 appliances, there is no archiving *or* recording.



With this model, you can archive both slots at once.



With this model, you can only record from one slot at a time.



- In mixed models (with MP-2 and WM), the MP-2 recorder becomes an archiver and you can archive both slots at once.
- In mixed models (with MP-2 and MP-4), the recorder only supports MP-2 recording.

**Figure 6.** Archiver/Recorder Functionality

---

## WM Configuration

WM Appliances may be configured differently, for example with a single encoder or with dual encoders and a hard drive. *As a result, the screens you see in IWS will vary depending on the configuration of your specific device.* The images in this document show an encoder configured with one slot and the parameters apply to **Slot1**; in appliances with two slots you may need to scroll down in IWS to see the values for **Slot2**. The second slot may also have a different device, for example MPEG-2 encoder, in which case you will need to refer to the *VBrick MPEG-2 Appliance Admin Guide*. For a detailed introduction to IWS (VBrick's Integrated Web Server), see the *VBrick Appliance Getting Started Guide*.

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# Configuration: Network

## Configuration: Network > Ethernet

**Configuration: Network**

**Ethernet Routing Management**

Network DHCP  Disabled  Enabled

IP Address

Subnet Mask

Gateway IP Address

VBrick Host Name

Network Interface Speed

Network Interface Type

Maximum Transmission Unit Size

**Domain Name Server**

Primary Server IP Address

Secondary Server IP Address

Default Domain Extension

**Network Time Synchronization**

Primary Server IP Address or Host Name

Secondary Server IP Address or Host Name

**END EDIT**

**SAVE CONFIG**

**APPLY** **REVERT** **DEFAULTS**

Network DHCP	Default - Enabled. Dynamic Host Configuration Protocol – (Enable, Disable). On Ethernet models, if DHCP is enabled, the VBrick gets its 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 the user entered Gateway and DNS 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.
IP address	IP Address of the VBrick.
Subnet Mask	Subnet mask for the VBrick address.
Gateway IP Address	Gateway IP Address for communicating across distinct network segments.

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. <i>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.</i>
Network Interface Speed	The settings for <b>Interface Speed</b> and <b>Interface Type</b> 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, or 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.
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. Note that WM video playback on Vista PCs may be suboptimal with small MTU settings.

### ***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. <i>Note: You can keep the default (blank) values.</i>

---

## ***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 76 and check the box.

---

**Note** Network Administrators please note. 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 <b>Network DHCP</b> 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 <b>Network DHCP</b> field above is checked.

## **Configuration: Network > Routing**

The WM 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.

**VBrick INTEGRATED WEB SERVER Administration/Configuration**

CONFIGURATION | STATUS | DIAGNOSTIC | MAINTENANCE | HELP | HOME | LOGOUT

**Configuration: Network**

**Ethernet Routing Management**

Routing Method:

Static Routing Table

Entry	Dest Network	Local Gateway	Network Mask	Error
1	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
2	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
3	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
4	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
5	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
6	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
7	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
8	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
9	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
10	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

<p>Routing Method</p>	<p>This selects which routing method will be used: Changes made to the Routing Method will require a reset of the box.</p> <ul style="list-style-type: none"> <li>• Static – Allows routes entered in the static routing table to be automatically applied to the internal routing tables, after a power-up.</li> <li>• RIP Version 1 – Configures the VBrick to listen to RIP announcements. Routes are dynamically added per RIP specification.</li> <li>• 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.</li> <li>• 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.</li> </ul>
<p>Static Routing Table</p>	<p>This table provides for user defined routing entries.</p> <ul style="list-style-type: none"> <li>• Destination Network – Enter the destination address to be manually routed.</li> <li>• Local Gateway IP – Enter the Gateway to be used, when the forwarding destination address is as specified.</li> <li>• Network Mask – Sets the network mask to be associated with the destination address.</li> <li>• Error – This read-only field is used to report field entry error related to the route.</li> </ul>

## Configuration: Network > Management

These parameters define information used in the SAPs emitted by the VBrick, which are received by the VBDirectory management tool and other VBrick applications. See the *VBDirectory User Guide* for more information.

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 ETV Portal Server to detect the unit for the purpose of remote management. The following parameters apply.
Transmit Enable	Controls the transmission of the Management SAPs (Enable or Disable).
Retransmit Time	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	Defines the Destination IP Address for Management SAPs.
Port	Defines the Destination Port for Management SAPs.



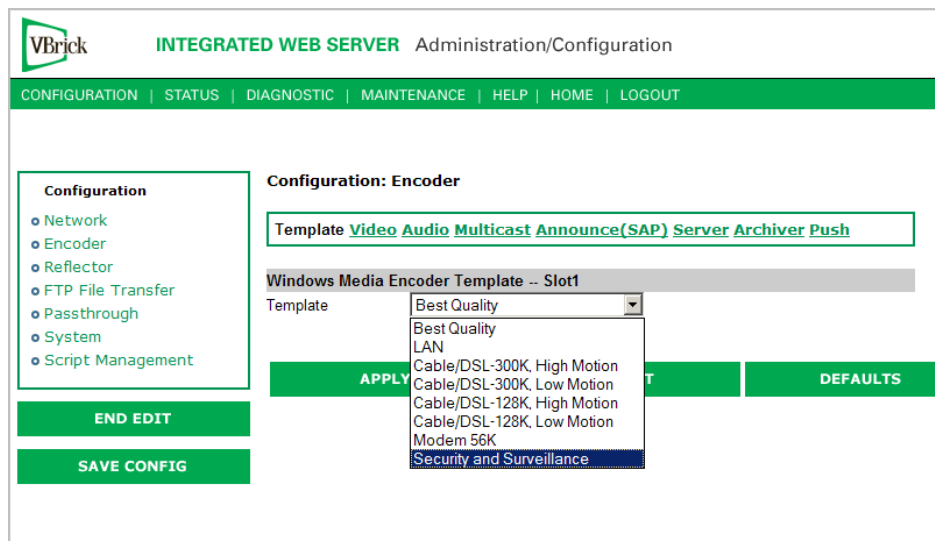
## Configuration: Encoder

### Configuration: Encoder > Template

Seven selectable templates have been preconfigured for many common applications. There are always trade-offs when selecting encoder settings. In general, finer resolution detail and smoother motion will require more resources and more network bandwidth. The optimum is to display the finest detail and smoothest motion possible given the network resources available to both the WM Appliance sender and to the viewer who is receiving the WM Appliance video streams. *The Cable/DSL 128K High Motion template is the default template for the WM Appliance.* The appliance is configured and shipped with this template installed and the values you initially see in IWS are those defined by this template. The templates are briefly described in Table 8 below; they are described in detail in [WM Templates](#) on page 131.

Templates apply to **Video** and **Audio** settings only. If, after applying a template, you override any audio or video settings, the note **Parameters do not match template** will be displayed on the Template page. A change on the template page also causes an interruption in the video and audio output of all video and audio encoders and all transmissions including multicast, HTTP, RTSPU, and Push. If an archive is in process, a template change causes the current archive to be closed.

**Note** You cannot select and use a template when configuring multiple bit rate streams. In order to select a template, Video Rate2, Video Rate3, and Audio Rate2, Audio Rate3 must be disabled on the Configuration: Encoder > Video and Audio pages.



**Table 8.** Preconfigured WM Appliance Templates

Template Name	Description
Best Quality	Approximately 4.2 Mbps with highest rate stereo audio and highest resolution video at 30 frames per second.
LAN	Approximately 1.2 Mbps with high rate stereo audio and high resolution video at 30 frames per second.

---

Template Name	Description
Cable/DSL 300K High Motion	Approximately 300 Kbps with medium rate mono audio and medium resolution video at 30 frames per second.
Cable/DSL 300K Low Motion	Approximately 300 Kbps with medium rate mono audio and high resolution video at 15 frames per second.
Cable/DSL 128K High Motion †	Approximately 128 Kbps with medium rate mono audio and lower resolution video at 15 frames per second.
Cable/DSL 128K Low Motion	Approximately 128 Kbps with medium rate mono audio and medium resolution video at 10 frames per second.
Modem 56K	Approximately 56 Kbps with low rate mono audio and low resolution video at 7.5 frames per second.
Security & Surveillance	Approximately 170 Kbps with very low rate mono audio and high resolution video at 1 frame per second.

† Default template. The appliance is configured and shipped with this template installed and the values you initially see in IWS are those defined by this template.

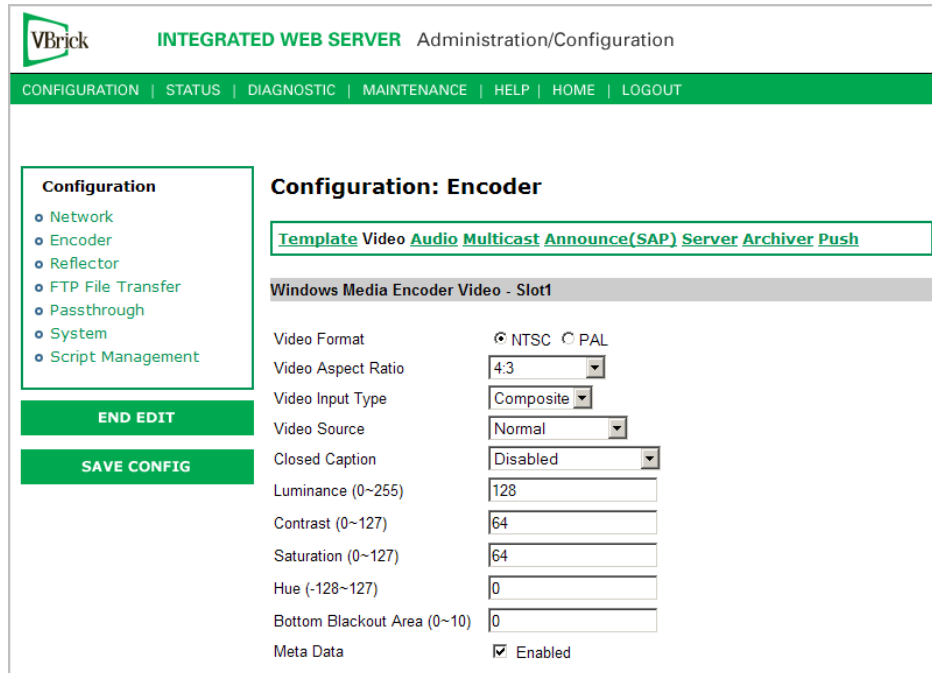
## Configuration: Encoder > Video

The WM appliance supports multiple bit rate (MBR) whereby several streams are encoded at different bit rates. In this encoding strategy, the Windows Media Player negotiates with the appliance (or with a Windows Media Server) to select and play the stream that is most appropriate for current bandwidth conditions. Many of the configuration settings in this section are MBR-specific. For more about MBR, see [Using Multiple Bit Rate Streams](#) on page 8. Note that you can over subscribe the WM appliance by configuring multiple video rates using resolutions and frame rates and/or bit rates that are too high. The exact combinations that are too high will vary depending on the video content you are encoding. Monitor the [Status: Encoder Status](#) page for **Unexpected Frames Dropped** which indicates the encoder is over subscribed.

---

**Note** Any change in the configuration settings for any of the video encoders will cause a brief interruption of video and audio for all three encoders. All streams being sent from the unit (including multicast and push) are interrupted. Any active HTTP or RSTP clients will be dropped and any archive file in progress will be closed.

---



**Figure 7.** Configuration: Encoder > Video – Part 1

**Note** In **Edit** mode, the parameters affected by template settings (set in the Configuration: Encoder > Template) are shown at the bottom of the screen. *These settings override the template; they do not change the template.*

***Windows Media Encoder Video -- Slot1***

Video Format	The format can be configured as NTSC (30 fps) or PAL (25 fps).
Video Aspect Ratio	The WM appliance will offer different choices for resolutions and frame rates depending on the selected 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. Use <b>Zoom to 16:9</b> to have standard 4:3 cameras produce streaming video that fits on 16:9 monitors. <b>Zoom to 16:9</b> is selectable for NTSC only at resolutions of 640x360 and 640x180. When using multiple bit rates, <ul style="list-style-type: none"> <li>• if Video Rate1 is 640x480 then Video Rate2 and Video Rate3 must be 320x240.</li> <li>• If Video Rate1 is 320x480 then Video Rate2 and Video Rate3 cannot be encoded.</li> <li>• If Video Rate1 is 640x360 then Video Rate2 and Video Rate3 must be 320x180.</li> </ul>
Video Input Type	The input can be changed to accept either Composite or S-Video (SVID).

Video Source	<p>Enables the user to select the bandwidth for tracking the video input.</p> <ul style="list-style-type: none"> <li>• Normal – Select for stable sources such as cable, DVD, or camera.</li> <li>• High Jitter (VCR) – Select for unstable sources such as VCR or VTR.</li> </ul>
Closed Caption	<p>Use to enable closed captions and select embedded or user-defined text. (To view closed captions in the Windows Media player, be sure you have <b>Captions and Subtitles</b> enabled on the <b>Play</b> menu.) See note below regarding closed captions in Full Screen mode on the Windows Media Player.</p> <ul style="list-style-type: none"> <li>• Disabled – Default. Related Closed Caption fields not shown.</li> <li>• Video CC Enabled – Reads the embedded video closed caption text from the video source.</li> <li>• Inserted CC Enabled – Inserts the user-defined text set in the closed caption text field.</li> </ul>
Inserted CC Update Rate	<p>Sets the rate at which the closed captioning field is updated (default = Medium) when you select Inserted CC Enabled (see above).</p> <ul style="list-style-type: none"> <li>• Slow – The inserted closed caption field is updated every 60 seconds.</li> <li>• Medium – The inserted closed caption field is updated every 20 seconds.</li> <li>• Fast – The inserted closed captioning field is updated every 5 seconds.</li> </ul>
Inserted CC Text	<p>Defines the text inserted into the closed caption field of the encoded stream (default is \h \d \t. ) 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 &lt;, or greater than &gt; symbols are allowed. Special codes can be substituted for the text as follows:</p> <ul style="list-style-type: none"> <li>• \h or \H – Host Name.</li> <li>• \d or \D – Current Date.</li> <li>• \t or \T – Current Time.</li> </ul>

Closed Caption Max BitRate	<p>Available when you select Video CC Enabled for Closed Caption. Defines the maximum bit rate at which closed captions are displayed. A higher bit rate is smoother because a smaller number of new characters are displayed each time the captions are refreshed—but the entire field is refreshed more often. This provides a better user experience but requires more bandwidth. The recommended default value of 13 kbps generally provides a good compromise between high quality closed caption display and bandwidth. Use a lower setting where bandwidth is an issue, keeping in mind that data will be lost if you exceed available bandwidth; use the highest setting for the best user experience if bandwidth is not an issue. All scrolling settings display a maximum of four lines at a time.</p> <ul style="list-style-type: none"> <li>• No Scroll – only one line is displayed at a time. Difficult to read but recommended for use with third-party indexing applications.</li> <li>• 2.5 kbps.</li> <li>• 3.7 kbps.</li> <li>• 5.6 kbps.</li> <li>• 13 kbps (default).</li> <li>• 50 kbps.</li> </ul>
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.
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. <i>Note: Adding hue reduces the saturation.</i>
Bottom Blackout Area	Some files include additional information that results in undesirable artifacts at the bottom of the video frame. This option blacks out an <i>area</i> at the bottom of the player window—not a certain number of lines. Be sure to test your results when using this option.
Meta Data Enable	When metadata is enabled a new field will appear on the screen allowing the operator to insert metadata strings into the video as Script commands. The normal use of metadata is to allow accompanying synchronized URL references to be displayed in rich media applications. The Microsoft Windows Media player has the capability of extracting the metadata references and presenting them to an appropriate application. See the Meta Data String examples below. Meta Data must be enabled if you are using your WM Appliance with VBrick's VBPresenter application. See the <i>VBPresenter User Guide</i> for more information.

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Meta Data String	<p>Shown if <b>Meta Data</b> is enabled. Maximum 250 characters. Click <b>Insert Now</b> to insert the meta data string into stream. The player supports the following commands that are entered at the beginning of the metadata string. Note that you must type <b>Text</b>, <b>URL</b>, or <b>Filename</b> and a space before the meta data string.</p> <ul style="list-style-type: none"><li>• Text – used to have the Windows Media player show a text caption under the video. Be sure you have captions enabled in the player (<b>Play &gt; Captions and Subtitles</b>) and then insert metadata at the encoder with a string like this: <b>Text</b> <code>This is a caption</code></li><li>• URL – used to have the player launch Internet Explorer and display a web page. Be sure you configure your player security settings to allow this (<b>Tools &gt; Options &gt; Security &gt; Run Script Commands when present</b>). Insert metadata at the encoder with a string like this: <b>URL</b> <code>http://www.vbrick.com</code></li><li>• Filename – used to have the player stop playing your stream and play a file instead. (You may also need to enable <b>Run Script Commands when present</b>.) Insert metadata at the encoder with a string like this: <b>Filename</b> <code>c:\video\Myvideo.wmv</code></li></ul>
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**Note** Windows Media Player. Depending on your computer's operating system (Windows 2000 or Windows XP) and on the Media Player version, Windows Media closed captions may not be displayed at all (for example with Media Player 9 on Windows 2000) or may be displayed at the bottom of the screen where they replace a certain portion of the video. This is only an issue in Full Screen mode and happens because Windows Media closed captions are not superimposed on the stream but are displayed at the bottom of the window in a separate area that occupies approximately 15 per cent of the space normally used by the video. This is a known issue with the Microsoft Windows Media Player.

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**VBrick INTEGRATED WEB SERVER Administration/Configuration**

CONFIGURATION | STATUS | DIAGNOSTIC | MAINTENANCE | HELP | HOME | LOGOUT

**Configuration**

- Network
- Encoder
- Reflector
- FTP File Transfer
- Passthrough
- System
- Script Management

**Video Template Settings -- Slot1 (Video Rate1)**

Resolution: 640x480  
 Rate Control Method: CBR-CFR  
 Target Bit Rate(bit/sec): 4000000  
 Target Frame Rate(frames/sec): Rate30  
 Key Frame Interval(sec): 3  
 Smoothness: 0  
 Picture Center Quality Difference: 0  
 Buffer Size(msec): 1000

**Video Rate2 Settings -- Slot1**

Video Rate2:  Enabled  
 Resolution: 320x240  
 Rate Control Method: CBR-CFR  
 Target Bit Rate(bit/sec): 92000  
 Target Frame Rate(frames/sec): Rate15  
 Key Frame Interval(sec): 6  
 Smoothness: 0  
 Picture Center Quality Difference: 0  
 Buffer Size(msec): 8000

**Video Rate3 Settings -- Slot1**

Video Rate3:  Enabled

**APPLY** **REVERT** **DEFAULTS**

Meta Data String: URL http://172.22.173.10  
 Insert Now

**Figure 8.** Configuration: Encoder > Video – Part 2

### ***Video Template Settings -- Slot1 (Video Rate1)***

The video settings can be changed on this page or by modifying a template setting on the **Configuration: Encoder > Template** page of IWS. Any changes you make on this page override the template; they do not change it. If you are using only one video rate you can choose any resolution from the complete list of supported resolutions (with minor exceptions). However when you enable **Video Rate2** or **Video Rate3** the selections are restricted. Tables 9 and 10 below show the resolution combinations that are allowed. For example, 640x480 can be configured on one video encoder and 320x240 can be configured on another video encoder, but 320x240 and 240x180 are not allowed together. Once **Video Rate2** and/or **Video Rate3** are enabled they will be available for selection on the Multicast, Server, and Archiver pages. If they have been selected for inclusion on the those pages an error will appear on *this* page if you attempt to disable them. The resolutions available for NTSC and PAL are basically identical. The only difference is in 16:9 mode (Table 10) where NTSC has 384x216 and PAL has 512x288.

**Table 9.** Supported 4:3 Video Encoding Resolutions (in pixels)

Video Rate1	Video Rate2	Video Rate3
160x120	160x120	160x120
240x180	240x180	240x180

Video Rate1	Video Rate2	Video Rate3
320x240	320x240	320x240
320x480	†	†
400x300	320x240	320x240
512x384	256x192	256x192
640x240	640x240	640x240
640x480	320x240	320x240

† Cannot be encoded.

**Table 10.** Supported 16:9 Video Encoding Resolutions (in pixels)

Video Rate1	Video Rate2	Video Rate3
640x360	320x180 †	320x180
640x180	640x180	640x180
384x216	384x216	384x216
256x144	256x144	256x144
128x72	128x72	128x72

† 320x180 is only allowed for **Video Rate2** and **Video Rate3** and only when **Video Rate1** is 640x360.

Resolution	Sets the video encoding resolution. The values differ depending on the Video Aspect Ratio. When Video Aspect Ratio = 4:3, the values available for Resolution are shown in Table 9. The Resolution for Video Rate2 and Rate3 are automatically set equal to Video Rate1 except when the height (the number of lines of resolution) is 480. (If the height equals 480, the corresponding values for Video Rate2 and Video Rate3 are set to 1/4 of the Video Rate1 resolution). When Video Aspect Ratio = 16x9, the values available for Resolution are shown in Table 10.
Rate Control Method	The selections are CBR-CFR or CBR-VFR. Default = CBR-CFR. The abbreviations refer to: <ul style="list-style-type: none"> <li>• CBR – Constant Bit Rate specifies a fixed bit rate so that data is sent in a steady stream.</li> <li>• CFR – Constant Frame Rate specifies a fixed frame rate for the stream.</li> <li>• VFR – Variable Frame Rate means the encoder may drop frames in order to maintain better quality.</li> </ul>




Target Bit Rate (bits per second)	<p>This number represents how much data the VBrick will send out each second to carry video to a player. The word target is used because the appliance can vary its bit rate slightly in response to the amount of detail in the movie or camera output. Bit rate determines how much data the appliance 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 video will be seen on a 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 encoder tries to encode the video at a quality that will (on average) match the Target Bit Rate. <i>The larger the number, the better the quality but this can potentially limit the number of clients that can connect to the encoder.</i> Note that Video Rates 1, 2, and 3 must have different Target Bit Rates.</p>
Target Frame Rate	<p>Sets the video target frame rate in frames per second, for a VBrick WM Appliance. For a WM Appliance in NTSC mode the supported values are 30, 15, 10, 7.5, and 1. For a WM Appliance in PAL mode the supported values are 25, 12.5, 10, 5, and 1. This number represents how many frames the VBrick will send out each second to carry the video to a player. The word target is used because in VFR mode the VBrick can vary its frame rate slightly in response to the amount of motion in the movie or camera output.</p> <p>Frame rate is the number of "frames" the VBrick sends in a second for a Windows Media 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 ensure that the chosen frame rate is maintained by reducing the quality of the frames if necessary. The "variable frame rate" setting allows the VBrick to change how many frames it uses in a second (within limits), so that frame quality is maintained.</p>
Key Frame Interval (in seconds)	<p>A key frame is guaranteed to be sent at this interval although it may be sent more frequently depending on the content being encoded. This interval allows a 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 a player is started on a PC. Key Frames create overhead, lowering the amount of data available to carry the details of the video. As a result, VBrick appliances are often set to send key frames at infrequent intervals. You can set the Key Frame Interval to zero which will provide all key frames but for most content this will result in an actual bit rate far above the target.</p>
Smoothness	<p>Range 0–100. Default = zero. Use the default except as directed.</p>

Picture Center Quality Difference	Sets the quality difference between the center of the image and the edges. By reducing quality on the edges the encoder may be able to improve the quality of the center of the image at a given bit rate.
Buffer Size	Sets the rate control buffer depth in milliseconds. Larger buffer sizes may improve video quality and make the encoder's rate control more consistent. This value is also used as the .wmv pre-roll for the stream header so the player generally buffers at least this amount of data and as a result larger buffer size values will increase end-to-end latency.
Video Rate2	Use to configure multiple bit rates. Check <b>Enabled</b> to display the configuration settings for Video Rate2. Once enabled, VideoRate2 and VideoRate3 are available for selection on the Multicast, Server, and Archiver pages. If selected on those pages, an error will display if you attempt to disable them on this page. Video Rates1, 2, and 3 must have different Target Bit Rates.
Video Rate3	Use to configure multiple bit rates. Check <b>Enabled</b> to display the configuration settings for Video Rate3. Video Rates1, 2, and 3 must have different Target Bit Rates.

## Configuration: Encoder > Audio

If configuring audio for multiple bit rate, you can specify separate encoder settings for up to three audio encoders. When Audio Rate2 or 3 is enabled, the **Sample Frequency** must be 44.1 KHz and only bit rates compatible with 44.1 KHz can be selected. As with video, any change in the settings for any of the audio encoders will cause a brief interruption of video and audio for all three encoders. All streams being sent from the unit (including multicast and push) are interrupted. Any active HTTP or RSTP clients will be dropped and any archive file in progress will be closed.


**INTEGRATED WEB SERVER** Administration/Configuration

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**Configuration**

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- o Passthrough
- o System
- o Script Management

**Configuration: Encoder**

[Template](#) [Video](#) [Audio](#) [Multicast](#) [Announce\(SAP\)](#) [Server](#) [Archiver](#) [Push](#)

**Windows Media Encoder Audio -- Slot1**

Audio Input Audio Jack ▾

Audio Input Level Normal ▾

Audio Gain(dB) 0 dB ▾

**Audio Template Settings -- Slot1 (Audio Rate1)**

Audio Channels Stereo ▾

L+R Bit Rate(bits/sec) 128000 ▾

Sample Frequency 48KHz ▾

**Audio Rate2 Settings -- Slot1**

Audio Rate2  Enabled

**Audio Rate3 Settings -- Slot1**

Audio Rate3  Enabled

APPLY
REVERT
DEFAULTS

END EDIT

SAVE CONFIG

Audio Input	<ul style="list-style-type: none"> <li>• Audio Jack – Input from standard audio source. like a DVD player.</li> <li>• Microphone DIN – Input from VBrick's AudioMate microphone.</li> </ul> <p>Note: When you select <b>Microphone DIN</b> as the encoder Audio Input, the left audio jack input is switched off but the right audio jack input remains connected. This means that if there is an audio source connected to the right audio jack input, you can mix this input with the Microphone DIN input by setting the encoder <b>Audio Channels</b> value to either <b>Stereo</b> or <b>Mono (L+R)</b>.</p>
Audio Input Level	Normal or Alternate. Default = Normal. Sets the audio level for the encoder audio jack or microphone 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	<p>This setting controls the audio level of the encoder:</p> <ul style="list-style-type: none"> <li>• When the Audio Input Level is set to Normal, the settings are from 49 to -53 dB and mute. Default = 0 dB. A setting of 7 is full volume and -53 effectively mutes the encoder. Use the high gain settings labeled (mic) when using a standard microphone through the Audio Jack inputs.</li> <li>• When the Audio Input Level is set to Alternate, the settings are from 12 to -48 dB and mute. Default = 0 dB. A setting of 12 is full volume and -48 effectively mutes the encoder.</li> </ul>

### ***Audio Template Settings***

**Note** In **Edit** mode, the parameters affected by template settings (set in the **Configuration: Encoder > Template**) are shown at the bottom of the screen. *These settings override the template; they do not change the template.*

The following audio settings can be changed by modifying a template setting in the **Configuration: Encoder > Template** section of IWS. Any changes you make on this window override the template; they do not change it. See [Table 11, Audio Channels: Stereo/Mono †](#) for Bit Rate and Sample Frequency matrix.

Audio Channels	<p>Audio Channels – The audio output mode can be configured to one of three possible settings:</p> <ul style="list-style-type: none"> <li>• 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.</li> <li>• Mono (L+R) – A combination of both the left and right channel is encoded to a single channel. The Media Player will play the audio through both speakers.</li> <li>• Mono (left only) – Only the left input channel is carried in the stream. The Media Player will play the audio through both speakers.</li> </ul>
L+R Bit Rate	See <a href="#">Bit Rate and Sample Frequency</a> for all settings. The value can be 5000–192000 bits/sec. Default = 128000. This is the audio encoding bit rate of the audio stream.

Sample Frequency	See <a href="#">Bit Rate and Sample Frequency</a> for all settings. Frequency at which the audio is sampled at the encoder. Range 8–48 KHz. Shown for Audio Rate1 only. Audio Rates2 and 3 share this common value. If Audio Rate2 or Audio Rate3 s enabled, the Sample Frequency is automatically set to 44.1 KHz.
Audio Rate2	Use to configure multiple bit rates. Check <b>Enabled</b> to display configuration settings for Audio Rate2. Once enabled, AudioRate2 and AudioRate3 are available for selection on the Multicast, Server, and Archiver pages. If selected on those pages, an error will display if you attempt to disable them on this page.
Audio Rate3	Use to configure multiple bit rates. Check <b>Enabled</b> to display configuration settings for Audio Rate3.

### ***Bit Rate and Sample Frequency***

The following are the allowed combinations of **Bit Rate** and Sample **Frequency** when Audio Channels is **Stereo** or **Mono (left only)** or **Mono (L+R)**.


**Table 11.** Audio Channels: Stereo/Mono †

<b>Stereo</b>		<b>Mono</b>	
Bit Rate (bits/sec)	Sample Frequency (KHz)	Bit Rate (bits/sec)	Sample Frequency (KHz)
192000	48	48000	44.1
192000	44.1	32000	44.1
160000	48	20000	32
160000	44.1	20000	22.05
128000	48	16000	22.05
128000	44.1	16000	16
96000	44.1	12000	16
80000	44.1	10000	16
64000	44.1	10000	11.025
48000	44.1	8000	11.025
48000	32	8000	8
40000	32	6000	8
32000	44.1	5000	8

Stereo		Mono	
Bit Rate (bits/sec)	Sample Frequency (KHz)	Bit Rate (bits/sec)	Sample Frequency (KHz)
32000	32		
32000	22.05		
22000	22.05		
20000	22.05		
20000	16		
16000	16		
12000	8		

† If Audio Rate2 or Audio Rate3 is enabled on the Configuration: Encoder > Audio page, the **Sample Frequency** is automatically set to 44.1 KHz and only the bit rates compatible with 44.1 KHz are available.

## Configuration: Encoder > Multicast


**INTEGRATED WEB SERVER** Administration/Configuration

CONFIGURATION
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**Configuration**

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- Encoder
- Reflector
- FTP File Transfer
- Passthrough
- System
- Script Management

### Configuration: Encoder

[Template Video Audio Multicast Announce\(SAP\) Server Archiver Push](#)

**Windows Media Encoder Multicast -- Slot1**

[Click here to play multicast](#) (Right-click to save the multicast ASX file)

Select Multicast Video Rate

Video Rate1 ▾

Select Multicast Audio Rate

Audio Rate1 ▾

Closed Caption and Metadata

Enabled

Multicast URL

http://172.22.173.10/abs1multi.nsc

Transmit

Enabled

Multicast destination IP Address

239.22.173.10

Destination Port

4444

Time To Live

63

Type Of Service

0

Join Own Multicast

Enabled

Maximum Packet Size

5588

Estimated Total Bit Rate

1205119

**NSC File Information -- Slot1**

Press button to save NSC file. GetNSC

---

Unicast Rollover URL

Allow Stream Splitting

Allow Fast Caching

Cache Expiration Time (sec)

86400

Network Buffer Time (msec)

500

APPLY

REVERT

DEFAULTS

END EDIT

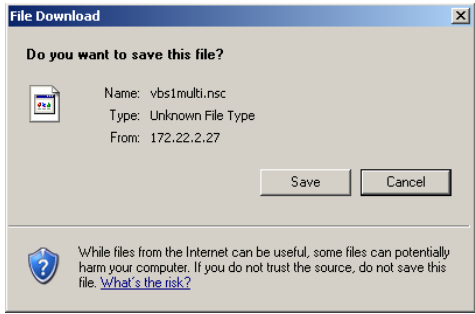
SAVE CONFIG

---

## ***Windows Media Encoder Multicast -- Slot1***

Click here to play multicast	Click to trigger Windows Media Player to initiate streaming via multicast. Right-click and select <b>Save Target As</b> to save the .asx and send to others for viewing. This is a good way to view the stream when adjusting various encoder parameters via the IWS.
Select Multicast Video Rate	Select from the configured video rates or choose None to multicast audio only. Default = Video Rate1.
Select Multicast Audio Rate	Select from the configured audio rates or choose None to multicast video only. Default = Audio Rate1.
Closed Caption and Metadata	Controls whether or not script data is included in the multicast. Script data includes <b>Closed Caption</b> data and/or user <b>Meta Data</b> depending on what is enabled on the video configuration page.
Multicast URL	Use this URL in a player or browser (or on a web page with an embedded player) to view the stream via multicast.
Transmit	Controls whether the encoded video and audio is to be transmitted to the network via multicast.
Multicast destination IP Address	This is the destination IP Address of the encoded video. By default the IP Address is set to 127.0.0.1 (the localhost address) which disables multicast transmission. The multicast address must be a Class D IP address.
Destination Port	Sets the UDP video destination port.
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.
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-compliant.
Maximum Packet Size	The Windows Media packet size is automatically set to the smallest possible value based on various parameter settings. The audio <b>Bit Rate</b> and <b>Sample Frequency</b> (see <a href="#">Audio Template Settings</a> ) are the primary factors controlling packet size. Lower audio Bit Rates and Sample Frequencies will generally result in smaller packet sizes. If you change this setting, click <b>Refresh</b> to see the re-calculated packet size.
Estimated Total Bit Rate	Reports the calculated estimated maximum bit rate for the multicast stream including network overhead. Click <b>Refresh</b> when you change settings. It may take a few moments before new values are displayed.

## NSC File Information -- Slot1

Get NSC		Press button to save NSC file. NSC files are only needed to create a publishing point on a Microsoft Windows Media Server that receives the multicast from a VBrick WM Appliance.
Unicast Rollover URL	When present, the player will try to use the rollover URL to play the stream if it cannot receive the multicast.	
Allow Stream Splitting	Tells receivers of the multicast stream whether they should be allowed to replicate the stream to multiple clients.	
Allow Fast Caching	Tells receivers of the multicast stream whether they should be allowed to cache the stream to disk.	
Cache Expiration Time	The cache expiration time in seconds. Tells receivers of the multicast how long a cache of the stream is valid.	
Network Buffer Time	The buffer time in milliseconds. Adjusts the depth of the player's network buffer.	

## Multicast Playback

There are several ways to play the multicast stream from your VBrick WM Appliance on Windows Media player. The following playback options all use the .asx file and therefore offer all the .asx features including Program Name, Author, Copyright, Banner, and Log URL that are configured on the Announce (SAP) screen. The .asx file uses a URL reference to the NSC file on the WM Appliance so these playback methods also offer all the features of the NSC file including the Unicast Rollover URL, Allow Stream Splitting, Allow Fast Caching, Cache Expiration Time, and Network Buffer Time.

### ▼ To play back a multicast stream:

- Launch the player directly from the IWS by clicking **Click here to play multicast**. This is a good way for the WM Appliance administrator to easily view the stream when adjusting various encoder parameters via the IWS.
- Right-click on **Click here to play multicast** and select **Save Target As** to save the .asx file on your computer. You can then double click the .asx file to launch the player and play the multicast stream. E-mail the .asx file or make it available on a shared network drive to allow other viewers on your network to play the multicast stream.
- Play the multicast stream from a browser or from a standalone player using the URL <http://vbrickipaddress/vbs1multi.asx>. (The WM Appliance serves the .asx file via HTTP.) The URL to the multicast .asx for Slot2 of a dual WM Appliance is <http://vbrickipaddress/vbs2multi.asx>.
- Use VBrick's StreamPlayer product to add an automatic program guide to Windows Media Player so when you run StreamPlayer it will automatically list all the multicast programs available on your network. The user can then click on a program to launch Windows Media Player to play the stream. (The WM Appliance can send network

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announcements of the multicast stream using SAP (Session Announcement Protocol.) Announcements can also be sent to the Portal Server to allow access to these streams to selected Portal Server clients.


The WM Appliance also serves the NSC file via HTTP so if you don't need the features of the .asx file, you can have viewers play the multicast stream via a URL directly to the NSC file on the VBrick. The URL can be used in a web page or embedded player or the URL can be opened by a standalone player. The URL for the Slot1 multicast is <http://vbrickipaddress/vbs1multi.nsc> and for Slot2 the URL is <http://vbrickipaddress/vbs2multi.nsc>. You can also copy and paste the URL from IWS.

## **Configuration: Encoder > Announce (SAP)**

You can optionally send network announcements using SAP (Session Announcement Protocol) about the multicast and unicast streams created by your VBrick WM Appliance. Other VBrick products such as EtherneTV and StreamPlayer can use the SAP announcements to automatically create program listings to allow viewers easy access to the streams from the VBrick (or to filter the streams by IP address). Use this IWS configuration page to set information sent in the announcement and to control the destination address and other parameters for the announcement network packets.

Some of the information used in the SAP announcements is also used in .asx files and/or the .wmv header for the Windows Media streams sent from the appliance so you may wish to configure these options even if you are not using the optional SAP transmission feature. The settings that are used in the .asx file and/or .wmv header are **Program Name, Program Author, Program Copyright, Banner, Rating, and Log URL.**




**INTEGRATED WEB SERVER** Administration/Configuration

[CONFIGURATION](#) | [STATUS](#) | [DIAGNOSTIC](#) | [MAINTENANCE](#) | [HELP](#) | [HOME](#) | [LOGOUT](#)

**Configuration**

- o Network
- o Encoder
- o Reflector
- o FTP File Transfer
- o Passthrough
- o System
- o Script Management

END EDIT

SAVE CONFIG

### Configuration: Encoder

[Template](#) [Video](#) [Audio](#) [Multicast](#) [Announce\(SAP\)](#) [Server](#) [Archiver](#) [Push](#)

**Windows Media Announce Common Information -- Slot1**

Program Name	<input type="text" value="A-StanWM"/>
Program Author	<input type="text" value="My Author"/>
Program Copyright	<input type="text" value="My Copyright"/>
Category	<input type="text"/>
Session Information	<input type="text" value="VBrick Streaming Video"/>
Information URL	<input type="text"/>
Contact Email	<input type="text"/>
Contact Phone	<input type="text"/>
Contact Name	<input type="text"/>
Banner	<input type="text" value="DefaultBanner"/>
Rating	<input type="text"/>
Log URL	<input type="text"/>

**Announce Program Guide (SAP) for Multicast -- Slot1**

Transmit	<input checked="" type="checkbox"/> Enabled
Retransmit Time(sec)	<input type="text" value="10"/>
Time To Live	<input type="text" value="64"/>
Type Of Service	<input type="text" value="0"/>
IP Address	<input type="text" value="224.2.127.254"/>
Port	<input type="text" value="9875"/>

APPLY

REVERT

DEFAULTS

### *Windows Media Announce Common Information -- Slot1*

**Note** The total number of characters for the first nine fields below (ending with Contact Name) cannot exceed 187 characters. A validation error will display if you exceed this number.

Program Name	The string providing the name of the stream associated with this Session Announcement Protocol. This SAP text shows up in the Program Guide for other VBrick products. Default = \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.  \H or \h – Host Name of VBrick appliance. When the default entry is used, the program is identified by the default VBrick Host Name (see <a href="#">Configuration: Network &gt; Ethernet</a> ).
Program Author	A string in the SAP that can be used to identify the author. This appears in Windows Media Player. Default = "My Author."
Program Copyright	A string in the SAP that can be used to identify the copyright information. This appears in Windows Media Player. Default = "My Copyright."

Category	<p>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. VBrick EtherneTV and players 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 characters are ASCII and case sensitive. The maximum number of characters for all keywords in the string cannot exceed 36 including spaces.</p> <p>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: <code>IPMask=xxx.xxx.xxx.xxx</code> where <code>xxx.xxx.xxx.xxx</code> 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 <code>IPMask=255.255.0.0</code> from a VBrick with an address of <code>172.22.6.67</code> will be available to a client with an IP address <code>172.22.3.4</code> but not to a client with an IP Address <code>172.16.3.4</code>. 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.</p>
Session Information	String identifying VBrick SAP Session Information that appears on Program Guide. Default = <b>VBrick Streaming Video</b> .
Information URL	Sets the URL advertised in SAP URI field. It should be a pointer to additional information about the session. Maximum 64 characters.
Contact Email	Sets the email address advertised in SAP email field. It should be an email address of the person responsible for the session. Maximum 50 characters.
Contact Phone	Sets the phone number advertised in SAP phone number field. It should be the contact number of the person responsible for the session. Maximum 20 characters.
Contact Name	Sets the contact name in SAP contact name field. It should be the contact name of the person responsible for the session. Maximum 20 characters.
Banner	Allows you to specify a banner reference to be included in the .asx file. The banner image is displayed below the video window during playback. When set to the special <b>DefaultBanner</b> string the reference in the .asx file is set to the banner.gif file on the VBrick. If you do not wish to use a banner, leave this setting empty. To use your own banner you can create an image file and place it on a server or shared drive on your network and enter the URL or path to your banner file (for example <code>http://myserver/mybanner.gif</code> or <code>\\corpserver\images\mybanner.gif</code> .) The location of the banner file must be accessible by all the player PCs that will be viewing your stream. Windows Media player will display a banner image up to 32 pixels high by 640 pixels wide.
Rating	Allows the operator to set the rating string to be included in the content description object in the .wmv header.

Log URL	Allows the operator to set a log URL for the .asx file. The log URL is used by the player to access a server for logging playback statistics.
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### ***Announce Program Guide (SAP) for Multicast -- Slot1***

See [Multicasting](#) on page 4 for more information about accessing a multicast.

Transmit	Enables or disables SAP transmission. Default = Enabled.
Retransmit Time (sec)	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. See <a href="#">Configuration: System &gt; General</a> for more information.
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.
IP Address	The destination IP address for the SAP packets.
Port	The destination port for the SAP packets.

## **Configuration: Encoder > Server**

Use this page to configure the encoder server. For multiple bit rate applications you can configure *groups* of stream parameters. If you are not using multiple bit rates, simply ignore the parameters for **MBR Group2** and **MBR Group3**. If configuring for multiple bit rates, you have the option of serving one, two, or three groups of streams. A group is one set of parameters for video, audio, and script data (script data includes **Closed Caption** and/or **Meta Data**). One group must be enabled; the other groups are optional and are enabled only when you want to serve multiple bit rates. For a broad overview of MBR, see [MBR Groups](#) on page 11.

When serving multiple bit rate streams, the WM appliance offers all enabled groups to the Windows Media player and the *player* determines which group to request and play based on its bandwidth configuration or based on measured of network performance between the player and the appliance. The appliance sends a stream to the player containing only the requested group.

When a Microsoft server publishing point is configured to pull from an MBR-configured WM appliance, the Microsoft server will receive all video, audio, and script data from all enabled MBR groups. The server clients however, receive only the video, audio, and script streams that meet their bandwidth limitations. In this case it is important to note that the network between the appliance and the WM server must be able to handle the combined bit rate of *all* enabled groups because the pulled stream contains *all* enabled groups.

The WM appliance also provides a special URL that forces the Windows Media Player or Windows Media Server to pull only a single group even when the appliance is configured to serve multiple bit rates. This is a good way to force a particular group to be played without using the MBR decision process in the player; it is also a good way to limit the bandwidth used for a server pull. You create a group-specific URL by appending */GroupN* to the end of the standard URL. For example, to specifically request **MBR Group3**, you type:

**<http://172.22.5.5/vbrickvideo1/Group3>**

When configuring multiple bit rate groups, note that Group1 is the *default* group which will be played by older versions (prior to Version 9) of the Windows Media Player that do not support multiple bit rates. Also, an enabled group must have at least one stream selected and all enabled groups must have the same combination of audio and video. For example, if one group is configured for video and no audio, they must all be configured for video and no audio. See Table 7 on page 12 for a complete list of guidelines.

**Configuration: Encoder**

[Template](#) [Video](#) [Audio](#) [Multicast](#) [Announce\(SAP\)](#) [Server](#) [Archiver](#) [Push](#)

**Windows Media Encoder Server -- Slot1**

[Click here to play HTTP](#) (Right-click to save the HTTP ASX file)  
[Click here to play RTSPU](#) (Right-click to save the RTSPU ASX file)

HTTP URL	http://172.22.173.10:8080/vbrickvideo1
RTSPU URL	rtspu://172.22.173.10/vbrickvideo1
Select Video Rate	Video Rate1
Select Audio Rate	Audio Rate1
Closed Caption and Metadata	<input type="checkbox"/> Enabled
HTTP Estimated Bit Rate for group 1	1223019
RTSP UDP Estimated Bit Rate for group 1	1222372
HTTP URL for group 1	http://172.22.173.10:8080/vbrickvideo1/group1
RTSPU URL for group 1	rtspu://172.22.173.10/vbrickvideo1/group1
MBR Group2	<input type="checkbox"/> Enabled
MBR Group3	<input type="checkbox"/> Enabled
Client Timeout (sec)	60
Max. Allowed Clients	50
Max. Bandwidth (bits/sec)	20000000
Time To Live	64
Type Of Service	0
Max. RTP Packet Size	1452
Resource Name	vbrickvideo1
HTTP Estimated Bit Rate for all groups	1223019
RTSP UDP Estimated Bit Rate for all groups	1222372

**Figure 9.** Configuration: Encoder > Server – Part 1

**Note** When configuring groups for multiple bit rate, all enabled groups must have some video or all enabled groups must have no video—you cannot mix and match. The same applies to audio. All groups must have some audio or all groups must have no audio. See Table 7 on page 12 for additional rules and guidelines.

### ***Windows Media Encoder Server -- Slot1***

Click here to play HTTP	Click to trigger Windows Media Player to initiate streaming via HTTP. Right-click and select <b>Save Target As</b> to save the .asx and send to others for viewing.
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Click here to play RTSPU	Click to trigger Windows Media Player to initiate streaming via RTSPU. Right-click and select <b>Save Target As</b> to save the .asx and send to others for viewing.
HTTP URL	Use this URL in a player, browser, or web page to view the stream via HTTP.
RTSPU URL	Use this URL in a player or web page to view the stream via RTSPU.
Select Video Rate	Select a Video Rate for the selected group or None. Only those Video Rates that are enabled on the Video page are selectable here. Default = Video Rate1 for Group1; None for Group2 and Group3.
Select Audio Rate	Select an Audio Rate for the selected group or none. Only those Audio Rates that are enabled on the Audio page are selectable here. Default = Audio Rate1 for Group1; None for Group2 and Group3.
Closed Caption and Metadata	Specifies whether script data is included in group. Script data consists of Closed Caption and Meta Data depending on what is enabled on the Video page. Default = disabled for all groups.
HTTP Estimated Bit Rate for group 1	Read-only. Click <b>Refresh</b> to recalculate estimated bit rate when you change settings. It may take a few moments before new values are displayed.
RTSP UDP Estimated Bit Rate for group 1	Read-only. Click <b>Refresh</b> to recalculate estimated bit rate when you change settings. It may take a few moments before new values are displayed.
HTTP URL for group 1	Read-only. Use this URL to force the Windows Media Player or Windows Media Server to pull only the specified group. <a href="http://172.22.173.10:8080/vbrickvideo1/group1">http://172.22.173.10:8080/vbrickvideo1/group1</a>
RTSPU URL for group 1	Read-only. Use this URL to force the Windows Media Player or Windows Media Server to pull only the specified group. <a href="rtspu://172.22.173.10/vbrickvideo1/group1">rtspu://172.22.173.10/vbrickvideo1/group1</a>
MBR Group2	Check to enable group 2. Default = disabled.
MBR Group3	Check to enable group 3. Default = disabled.
Client Timeout	The number of seconds the VBrick will wait before it decides that a player that was playing its video or audio is no longer viewing or listening.
Max. Allowed Clients	Maximum number of players that can view video or audio from the same VBrick at the same time using the RTSP or HTTP method. Default = 50. This may be increased (maximum 200 clients) 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. To disable HTTP and RTSP serving, set to zero.

Max. Bandwidth (bits/sec)	Maximum amount of data that the VBrick will generate at any time using RTSP and HTTP. The total is calculated by adding together the data in all the video and audio streams that have been started using RTSP or HTTP. When this maximum is reached, no additional players will be allowed to use the RTSP or HTTP method. Default for the allowed RTSP bandwidth is 20 Mbps. This may be increased (maximum 100 Mbps) 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	Number of hops (between routers) for which an IP packet is valid on the network.
Type Of Service	RTSPU only. The TOS (Type Of Service) can be configured in the IP header to establish SAP packet priority in the network.
Max. RTP Packet Size	When choosing packet size, special attention must be paid to the network capability and topology. The allowed range is 1000–1472 bytes per packet. RTP packet size is only relevant to RTSPU streaming.
Resource Name	Title used as part of the RTSP and HTTP location name or URL for the video or audio.
HTTP Estimated Bit Rate for all groups	Estimated maximum bit rate for an HTTP stream including network overhead that will be pulled by a Microsoft server.
RTSP UDP Estimated Bit Rate for all groups	Estimated maximum bit rate for an RTSP UDP stream including network overhead that will be pulled by a Microsoft server.

## Unicast Playback

There are several ways to play the unicast streams from your VBrick WM Appliance on Windows Media player. You should first decide whether to use HTTP or RTSPU for playback. This decision is primarily based on the type of network connection that exists between your WM Appliance and your players. HTTP uses TCP/IP networking which may work better when your appliance and your players are separated by a firewall. RTSPU uses UDP networking which has less network latency so it may be your best choice if you are on a reliable LAN and are interested in low latency. VBrick recommends you run tests at your target bit rates to determine which protocol works best in your network situation. (Of course you may decide to use HTTP for some of your viewers and RTSPU for others which is supported by the WM Appliance.) You should also decide whether you want to use Windows Media .asx features like Program Name, Author, Copyright, Banner, and Log URL. If you want to use .asx features, you will use an .asx file or a URL to an .asx file. If you do not want to use .asx features, you would use a direct HTTP or RTSPU URL to the WM Appliance. *Note that .asx files are not available for group-specific URLs.*

- ▼ To play back an HTTP stream without using .asx:
  - You can use the HTTP URL shown in IWS (for example <http://vbrickipaddress:8080/vbrickvideo1>). You can use **File > Open URL** in Windows Media Player to play the URL. You can create a web page with a link to the HTTP URL or you can enter the URL directly in your browser.

- ▼ To play back an HTTP stream using .asx:
  - Launch the player directly from the IWS by clicking the **Click here to play HTTP**. This is a good way for the WM Appliance administrator to easily view the stream when adjusting various encoder parameters via the IWS.
  - Right-click on **Click here to play HTTP** and select **Save Target As** to write the HTTP .asx file to your computer. You can then double click the .asx file to launch the player and play the HTTP stream. E-mail the HTTP .asx file or make it available on a shared network drive to allow other viewers to play the HTTP stream.
  - Play the HTTP stream from an embedded player in a web page or from a standalone player or browser using the URL `<http://vbrickipaddress/vbs1http.asx>`. (The WM Appliance serves the HTTP .asx file via HTTP.) The URL to the multicast .asx for Slot 2 of a dual WM Appliance is `<http://vbrickipaddress/vbs2http.asx>`.
  - Use VBrick's StreamPlayer product to add an automatic program guide to Windows Media Player so when you run StreamPlayer it will automatically list all the WM programs available on your network. The user can then click on a program to launch Windows Media Player to play the stream. (The WM Appliance can send network announcements of the HTTP stream using SAP (Session Announcement Protocol).)
- ▼ To stream RTSPU without using .asx:
  - Use the RTSPU URL shown in IWS (for example `rtspu://vbrickipaddress/vbrickvideo1`). You can use **File > Open URL** in Windows Media Player to play the URL or you can create a web page with an embedded player and a link to the RTSPU URL.
- ▼ To stream RTSPU using .asx:
  - Launch the player directly from the IWS by clicking **Click here to play RTSPU**. This is a good way for the WM Appliance administrator to easily view the stream when adjusting various encoder parameters via the IWS.
  - Right-click on **Click here to play RTSP** and select **Save Target As** to write the RTSPU .asx file to your computer. You can then double click the .asx file to launch the player and play the RTSP stream. E-mail the RTSP .asx file or make it available on a shared network drive to allow other viewers to play the RTSP stream.
  - Play the RTSP stream from an embedded player in a web page or from a standalone player using the URL `<http://vbrickipaddress/vbs1rtsp.asx>`. (The WM Appliance serves the RTSP .asx file via HTTP.) The URL to the multicast .asx for Slot2 of a dual WM Appliance is `<http://vbrickipaddress/vbs2rtsp.asx>`.
  - Use VBrick's StreamPlayer product to add an automatic program guide to Windows Media Player so when you run StreamPlayer it will automatically list all the WM programs available on your network. The user can then click on a program to launch Windows Media Player to play the stream. (The WM Appliance can send network announcements of the HTTP stream using the Session Announcement Protocol.)

### ***Announce HTTP and RTSPU Server***

You can optionally send network announcements using a SAP (Session Announcement Protocol) that provides information about the multicast and unicast streams created by your VBrick WM Appliance. Other VBrick products such as EthernetTV and StreamPlayer can use the SAPs to automatically create program listings to allow viewers easy access to the streams from the VBrick. Use the Announce HTTP and RTSPU section to enable/disable SAPs and to control the destination address and other parameters for the announcement

network packets. The HTTP, RTSPU, and External Server SAPs controlled here all share the **Announce Common Information** that is shown read-only on this page but can be changed on the [Configuration: Encoder > Announce \(SAP\)](#) page.

**Figure 10.** Configuration: Encoder > Server – Part 2

HTTP SAP Transmit	Enables/disables the transmission of SAPs to advertise the HTTP URL for this encoder.
RTSPU SAP Transmit	Enables/disables the transmission of SAP packets to advertise the RTSP URL for this encoder.
Retransmit Time	If Transmit is enabled, this setting tells the VBrick how often (in seconds) to send a SAP.
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.
IP Address	The IP address to which SAP information is sent out onto the network. To have a WM encoder announce the stream to a Portal Server, use the Portal Server IP address and default Port (9878).
Port	The port SAP to which information is sent out onto the network. To have a WM encoder announce the stream to a Portal Server, use the Portal Server IP address and default Port (9878).
RTSP URL	The RTSP URL that is advertised in RTSP SAPs.



Click here to play the external URL	Click to trigger Windows Media Player to initiate streaming via the external URL. Right-click and select <b>Save Target As</b> to save the .asx and send to others for viewing.
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The HTTP and RTSPU SAPs described above automatically advertise a URL that contains the VBrick's configured IP address. There are some situations when those URLs won't work for players—for example when your VBrick is behind a firewall with Network Address Translations (NAT) or when you are reflecting your VBrick's stream through a server. In those cases you may wish to send SAPs to advertise a custom URL for your stream that uses the NATed address of your VBrick or the address of the reflecting server. The **Announce External Server** configuration gives you the flexibility to advertise any URL for your stream.

### ***Announce External Server -- Slot1***

Transmit	Enables/disables the transmission of SAPs to advertise the external URL for this encoder.
Stream Advertisement	The external announcement includes the video and audio bit rates selected in the reflected stream; use this setting to indicate what type of reflection is being used. For example, select Push Microsoft Reflector to advertise a publishing point that is receiving a push from this WM appliance. <ul style="list-style-type: none"> <li>• Multicast Microsoft Reflector.</li> <li>• Push Microsoft Reflector.</li> <li>• Pull Group1 Microsoft Reflector (default).</li> <li>• Pull Group2 Microsoft Reflector.</li> <li>• Pull Group3 Microsoft Reflector.</li> <li>• Pull All Groups Microsoft Reflector.</li> </ul>
Retransmit Time (sec)	If Transmit is enabled, this setting tells the VBrick how often (in seconds) to send a SAP.
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.
IP Address or Host Name	The IP address or DNS host name to which the SAP information is sent.
Port	The port SAP information is sent out onto the network.
RTSP URL	Sets the URL that is advertised in the SAP. It can be RTSP, HTTP, or any other URL.
Click here to play the external URL	Click to play or right-click to save the external URL .asx file. The play option may not work on older versions of Internet Explorer and/or older versions of Windows operating systems. If necessary, right-click and save.

## **ASX Rollover**

In addition to the dedicated multicast-to-unicast rollover mechanism available via the **Unicast Rollover URL** in the NSC file (see [Configuration: Encoder > Multicast](#)), Windows

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Media .asx files can also be used to create more general rollover behavior. Using an .asx file, you can list any combination and any ordering of unicast and/or multicast URLs and when the first one on the list is not available, the Windows Media Player will automatically try the next one. One way to create a rollover .asx file is to start with an .asx file you have saved from your VBrick and use a text editor to add additional "**ref href**" lines. Here is an example of an .asx file that offers the player a second multicast stream (sourced from a second VBrick) in case the first is not available, and then a unicast stream (from one of the same VBricks) if neither multicast is available.

```
<asx version = "3.0">
  <entry>
    <ref href = "http://172.22.113.9/vbs1multi.nsc"/>
    <ref href = "http://172.16.2.30/vbs1multi.nsc"/>
    <ref href = "http://172.22.2.30:8080/vbrickvideo1"/>
    <Title>VBrick WM Encoder</Title>
    <Author>My Author</Author>
    <Copyright>My Copyright</Copyright>
    <Banner href = ""></Banner>
  </entry>
  <Title>VBrick WM Encoder</Title>
  <Author>My Author</Author>
  <Copyright>My Copyright</Copyright>
  <Banner href = ""></Banner>
  <LogURL href = ""/>
</asx>
```

---

**Note** The time it takes for the player to decide that a particular stream is unavailable and move to the next can vary from less than a second to more than 60 seconds depending on the type of stream and the type of failure. It is important for viewers to be patient and not close the player while a rollover is taking place.

---

## Creating Publishing Points

### *Creating Publishing Points on Windows Media Servers*

The WM Appliance supports both authenticated and non-authenticated push publishing points for the Microsoft Windows Media Server. Depending on how you configure the Windows Media Server, authentication can be the default setting for all push publishing points, it can be required on a per-publishing-point basis, or not required at all. A typical deployment of the Windows Media Server will most likely have the authentication setting on to force a push device to authenticate itself before it can send data to the publishing point.

▼ To verify and enable or disable authentication:

1. Go to the **Windows Media Services Manager**. The first device directly under **Windows Media Services** in the left pane is the name of the Windows Media server.
2. Select the named Windows Media server and click **Properties** in the right pane. This displays two additional panes.
3. In the left pane, select **Authorization** and right-click **WMS Publishing Points ACL Authorization**.

In the right pane click **Properties**. If there are user names in the list, click the username to view the allowed function. The named user will have a combination of read/write/create permissions as follows:

- Read – will allow the user to read from the publishing point.
- Write – will allow the user to write (push) to the publishing point.

- Create – at the server level will allow a user to create publishing points, or at the individual publishing point level it will allow a user to create **Copy From Points**.

Adding users and privileges at the server level will allow all inherited publishing points to acquire the same security privileges. To add individual privileges for a specific publishing point, select the **Publishing Point**, click **Properties**, select **Authorization**, and right-click **WMS Publishing Points ACL Authorization**. To add users and subsequently, permissions, the user must already exist as a domain user or as a local user on the server. The user name will be listed and can be given the desired privileges.

▼ To Create Authenticated Push Publishing Points:

On the **WMS Publishing Points ACL Authorization** screen from above, uncheck **Allow Write Permission** for the **Everyone** user if already checked, and add write permission for a selected user or set of users by adding the user. Click **Ok** to apply the change to the server. Only the named users will be allowed to push to the server after being authenticated. If this change is done at the server level, the changes must be propagated to the publishing point level to be effective.

▼ To Create Non-Authenticated Push Publishing Points:

Either disable **WMS Publishing Points Authorization**, or keeping the default policy of authorization always on, and selectively allowing authentication to be bypassed for some, on the **WMS Publishing Points ACL Authorization** at the publishing point level, select **Allow Write Permission** for the **Everyone** user (if already on the list or add to the list if necessary). Click **Ok** to apply the change to the server. If this change is done at the server level, and the change is propagated to all publishing points, all publishing points will allow push without authentication.

▼ To Create Pull Publishing Points:

Create a broadcast publishing point on the server and use the WM Appliance's **HTTP URL** as the source for the publishing point. When you start the publishing point it pulls the stream from the appliance and you can see the server listed in the client table on the VBrick's [Status: Server Status > Encoder Details](#) page in IWS. You can optionally enable the **Start publishing point when first client connects** feature in the publishing point's general properties to have the server wait for a client to connect before it starts the pull from the appliance.

The Windows Media Server must have the HTTP control protocol enabled to accept a push. Go to **Server Properties** and select **Control Protocol** in the left pane and in the right pane enable **WMS HTTP Server Control Protocol** to enable HTTP Control Protocol on your server. The HTTP control protocol uses port 80 by default so make sure you do not have other services running that also use that port. Also, the **WMS Negotiate Authentication** must be enabled at the server or Publishing Point level.

### *Creating Publishing Points on Helix Universal Servers*

The RealNetworks Helix Universal Server allows both Push and Pull from a Microsoft Windows Media encoder and auto-detects for the source method. Currently, only non-authenticated push publishing points are currently supported by the VBrick WM Appliance for the Real Helix Universal Server.

### **Creating Non-Authenticated Push Publishing Points**

Using the Helix Administrator interface in the Helix Server, login and on the left pane click on **Broadcasting** and then click **Windows Media Encoding**. The Windows Media Sources pane lists all the publishing points that are configured. *Note that Helix does not separate Push*

---

*and Pull publishing points.* Also, authentication support is not individually controlled at the publishing point level. Either all or none are required to be authenticated.

Click on the "+" to add a publishing point name. Rename it to a name of your choice in the **Source Description** field. Helix does not allow the **Host** and **Port** fields to be blank, so if this is a push only publishing point, the information in the fields need not be accurate. Otherwise enter the host IP address and port number of the VBrick appliance. If a client tunes into the publishing point, and a push to the publishing point is not active, the Helix server will try to initiate a pull using the information provided in the fields. You can now setup the VBrick WM Appliance to push to the new Helix server publishing point. Remember to use the port number configured in the Helix server in the IWS **Server Name or IP Address** field on the appliance configuration. Helix employs a first come first served scheme, where the first client to push wins. In a Push/Pull scenario, if a Pull is in progress, the push status on the appliance may indicate successfully pushing but the Helix server will serve information from the pull session.

### **Creating Pull Publishing Points**

Since Helix does not differentiate between push or pull publishing point, follow the instructions above for [Creating Non-Authenticated Push Publishing Points](#), and enter accurate **Host** and **Port** fields. Note that for dual encoder WM Appliance models, the Helix server can only pull from a Slot1 encoder source. *Slot2 sources cannot be used to pull from using a Helix server.*

## **Configuration: Encoder > Archiver**

If the WM Appliance is configured with a 60 GB hard drive, you can create a .wmv file archive of any stream(s) from the encoder or reflector. You can select any or all enabled video, audio, and script streams to be included in the archive. When an archive file contains multiple video or audio streams, it can be used for MBR on-demand from a server. The WM Archiver creates an indexed .wmv file on the hard drive as the WM stream is encoded. Once the archiving is complete, the file can be transferred to a Windows Media Server via FTP to make it available for on-demand streaming from a publishing point on the server. The file can also be transferred to a Windows system and played locally by Windows Media Player. When a Microsoft server serves a file that was encoded with multiple bit rates, the Media Player can select and play only those streams that meet its available bandwidth profile.

---

**Note** The WM Archiver can only archive from the local WM encoder or reflector and (unlike an MPEG-2 VBSStar) it cannot record streams from the network.

---

Dual WM encoder models have two archivers to allow both encoders to save their stream to disk at the same time. In the case of a dual mixed encoder model with WM and MPEG-2, the MPEG-2 archiver also allows only encoder recording. It cannot record from the network. The archiver can be stopped and started without affecting multicast, RTSP, or HTTP streaming.

Note that any change in the configuration settings for any of the video encoders (or a stream disruption such as when a reflector is archiving and the push source stops) will cause a brief interruption of the video and audio stream. All streams being sent from the encoders (including multicast and push) are interrupted and any active HTTP or RTSP clients are dropped. If an archive is in progress, the file will be closed—but not stopped. When the stream restarts after a disruption, the archiver will automatically open a new file and continue recording the stream.

When this happens, the archiver tracks the combined time and size of all open and closed files, compares the total to the configured **Archive Duration** and **Archive Maximum File Size**, and continues recording until the limits are reached. For example, if you configure the archiver for a two-hour duration, and there is a disruption that forces it to close one file and open another, the time in file1 plus the time in file2 will equal two hours regardless of how long the disruption lasted. When the archiver is configured with a duration and a file size set to 0 (Maximum), the archiver limits are 4 GB or 12 hours, whichever comes first, no matter how many disruptions occur and how many files are created.

**Note** Although a 60 GB hard drive can store thousands of files, it is important to understand that there are certain practices that can adversely affect overall encoder performance. For example, a large number of small files can consume excessive memory and therefore limit other encoder functionality. For example, if the hard drive is nearly full of small files and you have 20 progressive downloads in progress, the total number of push and pull clients (approximately 200) that can be effectively supported via HTTP may be significantly reduced. For best results, purge unnecessary files from your hard drive, avoid creating large numbers of small video files, and periodically run the Check Disk and Format utilities (see [Diagnostics: Hard Drive](#) on page 117) for more information.

**INTEGRATED WEB SERVER** Administration/Configuration

CONFIGURATION
STATUS
DIAGNOSTIC
MAINTENANCE
HELP
HOME
LOGOUT

**Configuration**

- Network
- Encoder
- Reflector
- FTP File Transfer
- Passthrough
- System
- Script Management

### Configuration: Encoder

[Template Video Audio Multicast Announce\(SAP\) Server Archiver Push](#)

[Click here to examine hard drive content](#)

Archiver -- Slot1

Archiver Mode	User Controlled	
IR Control	<input checked="" type="checkbox"/> Enabled	
Archiver File Name	archiveS1_>D>T	
Archiver Existing File Mode	New Name	
Archiver Duration(sec)	0	<input checked="" type="checkbox"/> Maximum
Archiver Maximum File Size (bytes)	0	
Auto FTP after archive	<input type="checkbox"/> Enabled	
Archiver State	Disabled	<span style="background-color: #008000; color: white; padding: 2px 10px; font-weight: bold;">REFRESH</span>
Include Video Rate1	<input checked="" type="checkbox"/>	
Include Audio Rate1	<input checked="" type="checkbox"/>	
Include Closed Caption and Metadata	<input checked="" type="checkbox"/>	

Start Archiver
Stop Archiver

FTP Server

Server 1 <input checked="" type="checkbox"/> Enabled	Server 5 <input type="checkbox"/> Enabled
Server 2 <input type="checkbox"/> Enabled	Server 6 <input type="checkbox"/> Enabled
Server 3 <input type="checkbox"/> Enabled	Server 7 <input type="checkbox"/> Enabled
Server 4 <input type="checkbox"/> Enabled	Server 8 <input type="checkbox"/> Enabled

APPLY
REVERT
DEFAULTS

---

Note Internet Explorer 7.0 only. When using [Click here to examine hard drive content](#) on the **Archiver** page, a web page is displayed and you can't open the links. To work around this issue, go to **Page > Open FTP Site in Windows Explorer**, close the error window, and then go to **File > Login As** and enter [admin/admin](#) as the user name and password.

---

### ***Windows Media Archiver -- Slot1***

Click here to examine ...	Click on this link to examine hard drive content. You must know the user name and password to login to the FTP server and view content. You can use any FTP client application to access the hard drive using a URL like this: <a href="#">ftp://admin@&lt;IP_Address&gt;/D:</a> Be sure to login to the D: drive as shown. Do not modify or store files on the C: drive. <i>The C: drive has limited space and is reserved for VBrick firmware.</i>
Archive Mode	<ul style="list-style-type: none"> <li>• User Controlled – Default. The user controls which files to record and send to which configured server using IWS, SDK, and/or the IR remote.</li> <li>• Start Record on Power-up – When the appliance is powered up the WM Archiver will automatically start.</li> <li>• Scheduled – The archive is started automatically at the configured time and date.</li> </ul>
IR Control	The Infrared Remote control is enabled by default. If enabled, press <b>Record</b> on the remote control to start archiving a file; press <b>Record</b> again to stop. Check the front panel on the VBrick for a corresponding message. Press <b>Send</b> to FTP the last recorded file if <b>Auto FTP after archive</b> is disabled.

Archive File Name	<p>The name of the file to be recorded. The default file name for Slot 1 is <code>archiveS1_&gt;d&gt;t.wmv</code>. The default file name for Slot 2 is <code>archiveS2_&gt;d&gt;t.wmv</code>. The directory on the appliance's hard disk can also be prepended to the file name. The general format of the file name is <code>[/path/] filename.ext</code>. The default path will place the recorded files in the root directory of the hard drive.</p> <p>Use the <code>/public</code> folder to enable .wmv files to be streamed on-demand via progressive download using anonymous FTP. Any files in the <code>public</code> folder can be accessed (read-only) via FTP without the need for a user name or password.</p> <p>The archiver can automatically add current date, current time, and/or host name to the file name when it creates a new file by configuring it to contain any of the following special strings:</p> <ul style="list-style-type: none"> <li>• <code>&gt;H</code> – Host name as specified in Configuration: Network &gt; VBrick Host Name.</li> <li>• <code>&gt;D</code> – Current date inserted as <code>ddmmyy</code>.</li> <li>• <code>&gt;T</code> – Current time inserted as <code>hhmm</code>.</li> </ul> <p>These special strings may be inserted anywhere in the file name and more than one string may be used. The following rules also apply:</p> <ul style="list-style-type: none"> <li>• No leading or trailing blank spaces.</li> <li>• A period after the filename must be followed by an extension.</li> <li>• The path can only be one directory deep and any named folders will be auto-created on disk.</li> <li>• Filename, including expanded special strings, cannot exceed 25 characters.</li> <li>• Except for special strings, the following characters are illegal: " : * ? &lt;   [ ]</li> <li>• File name, including path, special strings, and extension cannot exceed 58 characters.</li> </ul>
Archive File Mode	<ul style="list-style-type: none"> <li>• New Name – Default. The archiver will create a new name for each file and will never overwrite existing files. For example, if the file <code>CorporatePresentation.wmv</code> currently exists, the new file will be named <code>CorporatePresentation_1.wmv</code> and so on.</li> <li>• Overwrite – The archiver will automatically overwrite an existing file with the same name.</li> </ul>
Archive Schedule	<p>Specify the begin date and time for the archive in <code>mm/dd/yyyy hh:mm</code> format (with <code>hh:mm</code> in 24-hour format).</p>

Archive Duration (sec)	Length of recorded file. Range 0–43200. Default = 0 (implies manual Start/Stop). Maximum = 43200 (12 hours). Set to zero for continuous recording. This will auto-select Maximum. For best results and usable video, set the archive duration to 10 seconds or more.  Note: Archive Duration and Archive Maximum File Size are mutually exclusive. The archiver uses the first parameter that exceeds its configured threshold. Also note that the values you set are approximate; the actual Duration or File Size may vary slightly depending on bit rate, content, and other factors.
Archive Maximum File Size (bytes)	The maximum size file that can be recorded. Range 0–4294967295 (approx. 4 GB). Default = 0 (implies a maximum file size of 4 GB). If set to zero, the maximum file size is auto-selected.
Auto FTP After Archive	If Enabled, the file is auto FTPed to all enabled servers when the recorded file is completed.
Archive State	<ul style="list-style-type: none"> <li>• Disabled.</li> <li>• Scheduled.</li> <li>• Preparing File.</li> <li>• Archiving.</li> <li>• Indexing.</li> <li>• Schedule Complete.</li> </ul>
Include Video Rate1, Video Rate2, Video Rate3	Configured independently. Default = Enabled. Select the video rates to include in the archive file.
Include Audio Rate1, Audio Rate2, Audio Rate3	Configured independently. Default = Enabled. Select the audio rates to include in the archive file.
Include Closed Caption and Metadata	Configured independently. Default = Enabled.
Start Archiver	Begin recording the encoder stream.
Stop Archiver	Stop recording the encoder stream.

### ***FTP Server Enable***

1–8 servers are available for FTP. When more than one server is enabled, the appliance will transfer the newly recorded file to each enabled server. Since FTP transfer can be a slower process than the recording process, it is possible to overrun the FTP queue if too many servers are enabled. The server parameters are set in [Configuration: FTP File Transfer > Servers](#).

## **Progressive Download**

A WM Appliance configured with a hard drive also supports progressive download. Progressive download (or On Demand Playback) is a method of delivering audio and video that involves caching and playing the downloaded portion of a file while a download is still in progress via FTP. Progressive download is "bursty"—unlike streaming video which is delivered in a metered and continuous flow to end users—and there is also a suggested



limitation of 20 simultaneous FTP clients at any site. See [Using On Demand Playback](#) on page 13 for more about progressive download.

---

**Note** For best results and to avoid impacting performance, do not exceed a maximum of 20 simultaneous progressive downloads regardless of data rate. Also, if higher data rate files are accessed via progressive download, the maximum *total* data rate of these files should not exceed 20 MBits/sec. This means, for example, that up to 20 users can access a 500 KBits/sec file; up to 5 users can access a 4 MBits/sec file.

---

▼ To create a file for progressive download:

1. Open IWS and go to the [Configuration: Encoder > Archiver](#) page.
2. In the **Archive File Name** field, enter a valid file name preceded by **public** as shown in the following example. (The **public** folder is automatically created and all .wmv files in this folder are recognized as on demand files that can be viewed via progressive download.)

`public/filename.wmv`

3. Click **Start Archiver** to create the file.
4. Click **Stop Archiver** when done.

▼ To view a file via progressive download:

1. Open a browser and view an archived .wmv file via anonymous FTP by double-clicking on a valid link that has the FTP URL in the following format:

`ftp://<VBrickIPAddress>/filename.wmv`

2. Alternately, you can open a browser, type the FTP URL in the follow format, and select any .wmv file in the folder.:

`ftp://<VBrickIPAddress>`

## Configuration: Encoder > Push

The WM Appliance supports up to 25 push destinations per slot (for a total of up to 50 push destinations in a dual encoder or encoder/reflector model) with independent configuration parameters and enable/disable control for each push destination. All push destinations receive the same stream. Resources are shared between pull clients and push destinations so the configured maximum number of pull clients *and* the configured maximum number of push destinations cannot exceed 202. The actual number of pushes that can run at the same time depends on the configured bit rates. The **Maximum Push Destinations** field determines how many lines (1–25) are shown on the page. The default is one line for one push destination.

---

**Note** When an v1.x WM appliance is updated to a current WM release that supports multiple push destinations, the first row on this page is populated with the previously configured push destination.

---

### *HTTP Push - Slot1*

HTTP Push lets a VBrick encoder connect to a VBrick Reflector, a Windows Media Server, or Real Helix Universal Server that will receive an encoded stream from the VBrick.

Depending on the security settings on the server, a Publishing Point on the server (with specific security settings) may need to be configured *before* the VBrick can successfully push the stream. The VBrick continues to push to the server even after encountering an error

(unlike the Microsoft encoder). See [Creating Publishing Points](#) and [Creating Publishing Points on Helix Universal Servers](#) for more information.

When configuring for multiple bit rates, any combination of video, audio, or script streams can be pushed to a reflector server. The server can then reflect multiple bit rates so that clients connecting to the publishing point can negotiate and select optimum values. Only those audio/video rates that are enabled on the [Configuration: Encoder > Video](#) are selectable. By default only **Video Rate1**, **Audio Rate1**, and **Include Closed Caption and Meta Data** are enabled on the Push page, but you can select additional audio/video rates to send multiple bit rate streams to a Microsoft Windows Media Server. Since a VBrick reflector cannot serve multiple bit rates, you would typically select only a single video rate and a single audio rate when pushing to a VBrick.

**Configuration: Encoder**

Template Video Audio Multicast Announce(SAP) Server Archiver Push

HTTP Push - Slot1

Maximum Push Destinations: 1  
 Estimated Push Bit Rate: 1219784  
 Total Estimated Push Bit Rate 0 [REFRESH]

Include Video Rate1   
 Include Audio Rate1   
 Include Closed Caption and Metadata

[APPLY] [REVERT] [DEFAULTS]

Index	Enable	Server:Port	Publishing/Mount Point	CopyFromPublishingPoint	Auto Remove
1	Disabled				Disabled

[APPLY] [REVERT] [DEFAULTS]

Maximum Push Destinations	Maximum number (1–25) of destinations for the pushed stream. Default = 1. Note that the <b>Maximum Push Destinations</b> plus the <b>Max. Allowed Clients</b> (on the <a href="#">Configuration: Encoder &gt; Server</a> page) cannot exceed 202.
Include Video Rate1, VideoRate2, Video Rate3	Default = Enabled. Select additional video rates to send MBR to a Microsoft Windows Media server.
Include Audio Rate1, AudioRate2, Audio Rate3	Default = Enabled. Select additional audio rates to send MBR to a Microsoft Windows Media server.
Include Closed Caption and Metadata	Default = Enabled.
Enable	Use to enable HTTP Push. Default = Disabled.

Server	DNS server name or IP address of push destination. Include the port number if the number is not port 80, for example: <b>ip:port</b> or <b>name:port</b> . A VBrick Reflector uses port 7070 by default. For example: <b>172.22.2.112:7070</b>
Publishing/Mount Point	Sets the name of the publishing point on the WM appliance to accept the push. It can be a publishing point that already exists on the server or it can be a new publishing point that is a duplicate of an existing publishing point.  Must match the Reflector publishing point. See <a href="#">Configuration: Reflector</a> on page 57.
Copy From Publishing Point	This object sets the name of an existing publishing point on the Windows Media Server that will be duplicated to create a publishing point to accept the push. This parameter is not meaningful if the reflector is a WM appliance.
Auto Remove	When the push publishing point is a new copy of an existing publishing point, this instructs the server to delete the copy after the push is complete. The publishing point will be created when the push is enabled on the WM Appliance and the publishing point will be deleted when the push is disabled on the WM Appliance. Publishing points can only be created and deleted on a Windows Media Server with certain security settings. See the Microsoft Windows Media Services documentation or talk to your server administrator for more information. This parameter is not meaningful if the reflector is a WM appliance.
User Name	Local user name or domain/active directory user name. Must match the Reflector user name if the Reflector has authentication enabled. See <a href="#">Configuration: Reflector</a> on page 57.
Password	Password associated with the user name. Must match the Reflector password if the Reflector has authentication enabled. See <a href="#">Configuration: Reflector</a> on page 57.
Domain Name	Domain name of the server or leave blank if server is not on a domain. If the server is on a domain but a local name will be used for authentication, enter the server name. Not meaningful if the reflector is a VBrick appliance.

Each Push can be enabled or disabled without affecting multicast, RTSP, HTTP streaming, or other active pushes. However, changing the "include" settings will cause a brief interruption of video and audio for all three encoders. All streams being sent from the unit (including multicast and push) are interrupted. Any active HTTP or RSTP clients will be dropped and any archive file in progress will be closed.

## Configuration: Reflector

As shown in Table 12, the WM appliance supports one independent *source* for a Windows Media stream and four independent and concurrent *destinations*. The possible sources are the live encoder or the incoming reflected stream. For any source, the appliance supports the same four options for concurrent destinations—including multiple push. Note that only one source can be active at a time for a given set of destinations and this same source stream goes

---

to each of those destinations. *After you define a reflector source, you must define a destination for the reflected stream.* Each of the destination options shown in Table 12 is explained on the following pages.

**Table 12.** Reflector Sources and Destinations †

Source	<ul style="list-style-type: none"><li>• Live stream HTTP <i>push</i> from a VBrick WM appliance or a Microsoft encoder.</li><li>• Live stream HTTP <i>pull</i> from a VBrick appliance, a Microsoft encoder, or a Windows Media server (live or stored).</li></ul>
Destination	<ul style="list-style-type: none"><li>• Multicast.</li><li>• Served HTTP and RTSP Unicast (Pull).</li><li>• Archive to a File.</li><li>• HTTP Push (1–25 destinations).</li></ul>

† The configured maximum number of pull clients *and* the configured maximum number of push destinations cannot exceed 202.

It is important to note that the reflector always sends exactly what is received. For this reason, there are no video or audio configuration fields on the reflector pages nor do the destination pages let you select different video and audio rates. The default **Reflector Source** is **None** which means the reflector features are disabled.

## Configuration: Reflector > Source

**Use this page to configure a reflector source.** Reflector sources are shown in Table 12. The source screen varies on whether you configure a **Push Receiver** or a **Pull Receiver**.

### *Push Receiver*

The push receiver is similar to a publishing point on a Microsoft Windows Media Server. You must configure a name and can optionally enable authentication and configure a user name and password. One important difference between the VBrick push reflector and a Microsoft Server Publishing point is that the VBrick WM appliance cannot re-mux a multiple bit rate push. *This means that if the source of the push contains multiple video and/or audio streams, the reflector will send the complete stream with all video and audio included to all destinations.* This will only be useful if there is a Microsoft Windows Media Server downstream from the VBrick reflector appliance. Note that all push attempts, successful or unsuccessful, are logged on the Reflector Status page. See [Status: Reflector Status](#) on page 99.

---

**Note** The push reflector does not support buffering or metering. VBrick recommends that the number of re-reflections be limited. In some cases it may be necessary to increase the Buffer Size on the source encoder's Configuration: Encoder > Video page.

---

Reflector Source	Push Receiver – The reflector is enabled and ready to receive a live pushed stream.
Push Receiver Address	Informational. The complete address (IP address and port number) to which a stream can be pushed for reflecting.
Publishing Point	User-defined name. Must match the Encoder Push publishing point. See <a href="#">Configuration: Encoder &gt; Push</a> on page 55.
Publishing Point Authentication	Check to enable. Default = Disabled. If enabled, you are prompted for Publishing Point User Name and Publishing Point Password.
Publishing Point User Name	User defined. Must match Encoder Push user name if authentication is enabled. See <a href="#">Configuration: Encoder &gt; Push</a> on page 55.
Publishing Point Password	User defined. Must match Encoder Push password if authentication is enabled. See <a href="#">Configuration: Encoder &gt; Push</a> on page 55.

**Note** The VBrick WM appliance supports pushing from a Microsoft WM Encoder. When setting up a push from a Microsoft WM encoder, the two steps are usually to configure the push, and then to start encoding which initiates a push to the network device. After configuring the push, the VBrick appliance will wait for up to 60 seconds for the push to begin. *If you wait longer than 60 seconds to start encoding from the encoder, you may encounter an error similar to the following when trying to push to the VBrick appliance: **The specified push template is invalid.** Restarting the push will usually clear the error. Also, when you stop encoding, you may receive an error indicating: **The publishing point on the server is no longer available.** This error occurs when the encoder and the appliance are both shutting down and can be safely ignored.*

### ***Pull Receiver***

The Pull option provides persistent pulling of an HTTP stream via a TCP connection from a VBrick appliance, a Microsoft encoder, or a Windows Media server. The source URL must contain the port number if the source is from a port other than port 80. If the URL contains a host name and not an IP address, the name will be resolved by the DNS server. Depending

on the mode, a pull feature will do nothing, continuously try to pull a stream from the configured source, or will pull the header from the configured source and wait for a client to connect before it tries to get the stream. A client in this case is an enabled multicast destination, a server RTSP or HTTP client, at least one enabled push from the reflector, or enabled archiving of the stream in the local archiver. In the event of failure, the reflector will retry the pull every second. The reflector forwards packets exactly as received from the source URL—transparently without modification.

Reflector Source	Pull Receiver – The reflector is enabled for a Pull Receiver source.
Source URL	<p>Complete path to source stream. The following examples show different types of URLs that the pull receiver supports:</p> <ul style="list-style-type: none"> <li>• <a href="http://172.22.113.9:8080/vbrickvideo1">http://172.22.113.9:8080/vbrickvideo1</a> – VBrick Appliance direct HTTP.</li> <li>• <a href="http://172.22.113.9/vbs1http.asx">http://172.22.113.9/vbs1http.asx</a> – VBrick Appliance HTTP via ASX.</li> <li>• <a href="http://MyWindowsServer/PublishingPointName">http://MyWindowsServer/PublishingPointName</a> – Microsoft Server broadcast.</li> <li>• <a href="mms://MyWindowsServer/PublishingPointName">mms://MyWindowsServer/PublishingPointName</a> – VBrick will accept MMS URL but will actually play via HTTP.</li> <li>• <a href="http://MyWindowsServer/PublishingPointName/movie.wmv">http://MyWindowsServer/PublishingPointName/movie.wmv</a> – Microsoft Server on-demand.</li> <li>• <a href="http://MyMicrosoftEncoder:8080">http://MyMicrosoftEncoder:8080</a> – Microsoft Encoder live.</li> <li>• <a href="http://WebServerName/FileName.asx">http://WebServerName/FileName.asx</a> – HTTP of ASX file from any web server. ASX file must contain MMS or HTTP reference URL.</li> </ul>

Mode †	On	<p><b>Live streams</b> – the pull receiver continuously pulls a live stream (if available) from the configured source.</p> <p><b>Stored streams</b> – the pull receiver plays the same VOD file over and over. Any clients tuning in join the stream in progress. <i>Note that even though the reflector will automatically restart the pull of a stored file, the client player must be manually restarted at file end.</i></p>
	Off	The Pull receiver is off and will not pull any live streams or stored files.
	On with Bandwidth Save	<p><b>Live streams</b> – a pull starts when the first client connects. Any additional clients tuning in join the stream in progress. The pull stops when the last client disconnects.</p> <p><b>Stored streams</b> – a pull starts when the first client connects. The file plays from the beginning and stops at the end. Any additional clients tuning in join the stream in progress. If all clients disconnect before end of file, the pull stops and the next client initiates a pull from the beginning.</p> <p>Note: It is not useful to have multicast enabled and the Mode set to Bandwidth Save because the active multicast destination will act like a perpetually active client and will never allow the Pull feature to pause to wait for a client to connect. For best results, if multicast is enabled, set the Mode to On.</p>
Authentication	Check to enable. If enabled you are prompted for User Name, Password, and Domain. Authentication may be required by a Microsoft WM server. Streams pulled from a VBrick reflector or a VBrick encoder do not require authentication.	
User Name	User name for the publishing point on a Microsoft WM server.	
Password	Password for the publishing point a on Microsoft WM server.	
Domain	The domain on which the Microsoft WM server should authenticate.	

† In the context of Pull Receiver Mode, "clients" are multicast destinations, server clients (HTTP and RTSP), push destinations, and archiver.

### Pulling MBR Streams

The Pull option does not distinguish between individual MBR streams and will request all streams from the source—effectively pulling the aggregate MBR set. The bandwidth required to pull the stream is the total rate for the aggregate stream and may be considerable. To reduce bandwidth usage, you can configure the URL to pull specific groups from a VBrick WM Appliance to select specific MBR combinations resulting in a single streams. This is not an option when pulling from Microsoft servers and encoders.

### Pulling VOD Files from a Microsoft WM Server

Live or stored streams can be pulled from a Microsoft WM Server. There is no fast caching for buffering because the reflector does not support buffering. The pull feature of VOD streams does not support FF, REW, or seek functions. The reflector pull does not support server-side play lists, FTP download, HTTP download, or VOD files from a WM Appliance VBStar.

---

**Note** Support for HTTP pull from a URL includes support up to five HTTP 301 or HTTP 302 messages to redirect the requesting client to another server as sometimes required for load balancing or Content Delivery Network (CDN) environments.

---

## Configuration: Reflector > Multicast

Use this page to configure a Multicast destination. As noted, the Reflector sends exactly what is received, and for this reason, the configured destinations do not let you select different video and audio rates. The Reflector will only transmit multicast when the source stream is being received. See [Configuration: Encoder > Multicast](#) on page 35 for a description of the fields on this page.

The screenshot shows the VBrick Integrated Web Server Administration/Configuration interface. The page title is "Configuration: Reflector" and the breadcrumb is "Source Multicast Announce(SAP) Server Archiver Push". The left sidebar shows a "Configuration" menu with options: Network, Encoder, Reflector, FTP File Transfer, Passthrough, System, and Script Management. The main content area is titled "Configuration: Reflector" and contains the following fields and controls:


- Reflector Multicast** section with a link: [Click here to play multicast](#) (Right-click to save the multicast ASX file)
- Multicast URL: http://172.22.173.10/vbs2multi.nsc
- Transmit:  Enabled
- Multicast destination IP Address:
- Destination Port:
- Time To Live:
- Type Of Service:
- Join Own Multicast:  Enabled
- Maximum Packet Size: 0
- Estimated Total Bit Rate: 0
- NSC File Information** section with a button:
- Unicast Rollover URL:
- Allow Stream Splitting:
- Allow Fast Caching:
- Cache Expiration Time (sec):
- Network Buffer Time (msec):

Buttons at the bottom include "END EDIT", "SAVE CONFIG", "REFRESH", "APPLY", "REVERT", and "DEFAULTS".

## Configuration: Reflector > Announce (SAP)

Use this page to configure a session announcement. Reflector announcements automatically start and stop depending on the availability of the Reflector source stream. See [Configuration: Encoder > Announce \(SAP\)](#) on page 38 for a description of the fields on this page.




**INTEGRATED WEB SERVER** Administration/Configuration

CONFIGURATION
STATUS
DIAGNOSTIC
MAINTENANCE
HELP
HOME
LOGOUT

**Configuration**

- o Network
- o Encoder
- o Reflector
- o FTP File Transfer
- o Passthrough
- o System
- o Script Management

END EDIT

SAVE CONFIG

### Configuration: Reflector

Source Multicast
Announce(SAP)
Server Archiver Push

**Announce Common Information**

Program Name	<input type="text" value="VH Program 2"/>
Program Author	<input type="text" value="My Author"/>
Program Copyright	<input type="text" value="My Copyright"/>
Category	<input type="text"/>
Session Information	<input type="text" value="VBrick Streaming Video"/>
Information URL	<input type="text"/>
Contact Email	<input type="text"/>
Contact Phone	<input type="text"/>
Contact Name	<input type="text"/>
Banner	<input type="text" value="DefaultBanner"/>
Rating	<input type="text"/>
Log URL	<input type="text"/>

**Announce Program Guide (SAP) for Multicast**

Transmit	<input checked="" type="checkbox"/> Enabled
Retransmit Time(sec)	<input type="text" value="10"/>
Time To Live	<input type="text" value="64"/>
Type Of Service	<input type="text" value="0"/>
IP Address	<input type="text" value="224.2.127.254"/>
Port	<input type="text" value="9875"/>

APPLY

REVERT

DEFAULTS

## Configuration: Reflector > Server

Use this page to configure a Served HTTP and RTSP Unicast (pull) destination. The Reflector will only send streams when the source stream is being received. See [Configuration: Encoder > Server](#) on page 41 for a description of the fields on this page.

VBrick INTEGRATED WEB SERVER Administration/Configuration

CONFIGURATION | STATUS | DIAGNOSTIC | MAINTENANCE | HELP | HOME | LOGOUT

**Configuration**

- o Network
- o Encoder
- o Reflector
- o FTP File Transfer
- o Passthrough
- o System
- o Script Management

END EDIT

SAVE CONFIG

### Configuration: Reflector

[Source Multicast Announce\(SAP\)](#) Server [Archiver Push](#)

**Reflector Server**

[Click here to play HTTP](#) (Right-click to save the HTTP ASX file)  
[Click here to play RTSPU](#) (Right-click to save the RTSPU ASX file)

HTTP URL	http://172.22.173.10:8080/vbrickvideo2
RTSPU URL	rtspu://172.22.173.10/vbrickvideo2
Client Timeout (sec)	<input type="text" value="60"/>
Max. Allowed Clients	<input type="text" value="50"/>
Max. Bandwidth (bits/sec)	<input type="text" value="20000000"/>
Time To Live	<input type="text" value="64"/>
Type Of Service	<input type="text" value="0"/>
Max. RTP Packet Size	<input type="text" value="1452"/>
Resource Name	<input type="text" value="vbrickvideo2"/>
HTTP Estimated Bit Rate	0
RTSP UDP Estimated Bit Rate	0

APPLY
REVERT
DEFAULTS

## Configuration: Reflector > Archiver

Use this page to configure an Archive to a File destination. See [Configuration: Encoder > Archiver](#) on page 50 for a description of the fields on this page. The Archiver will only write data to the file when the source stream is being received. If you start the Archiver before the stream is received, it will wait and automatically start recording when the stream is received. Use the **Start Archiver** and **Stop Archiver** buttons on this page to start and stop recording. (Note that the Encoder Archiver and the Reflector Archiver can both be running at the same time and are started and stopped independently.)

**VBrick** INTEGRATED WEB SERVER Administration/Configuration

CONFIGURATION | STATUS | DIAGNOSTIC | MAINTENANCE | HELP | HOME | LOGOUT

**Configuration**

- Network
- Encoder
- Reflector
- FTP File Transfer
- Passthrough
- System
- Script Management

**Configuration: Reflector**

[Source](#) [Multicast](#) [Announce\(SAP\)](#) [Server](#) [Archiver](#) [Push](#)

[Click here to examine hard drive content](#)

**Reflector Archiver**

Archiver Mode: User Controlled

IR Control:  Enabled

Archiver File Name: archiveS2\_>D>T

Archiver Existing File Mode: New Name

Archiver Schedule: (mm/dd/yyyy hh:mm)

Archiver Duration (sec): 0  Maximum

Archiver Maximum File Size (bytes): 0

Auto FTP after archive:  Enabled

Archiver State: Disabled

REFRESH

Start Archiver Stop Archiver

**FTP Server**

Server 1 <input checked="" type="checkbox"/> Enabled	Server 5 <input type="checkbox"/> Enabled
Server 2 <input type="checkbox"/> Enabled	Server 6 <input type="checkbox"/> Enabled
Server 3 <input type="checkbox"/> Enabled	Server 7 <input type="checkbox"/> Enabled
Server 4 <input type="checkbox"/> Enabled	Server 8 <input type="checkbox"/> Enabled

APPLY REVERT DEFAULTS

## Configuration: Reflector > Push

Use this page to configure HTTP Push destinations. Even if enabled, the Reflector HTTP Push is only active when the source stream is being received. See [Configuration: Encoder > Push](#) on page 55 for a description of the fields on this page.

VBrick **INTEGRATED WEB SERVER** Administration/Configuration

CONFIGURATION | STATUS | DIAGNOSTIC | MAINTENANCE | HELP | HOME | LOGOUT

### Configuration: Reflector

[Source](#) [Multicast Announce\(SAP\)](#) [Server Archiver](#) [Push](#)

**HTTP Push**

Maximum Push Destinations

Estimated Push Bit Rate

Total Estimated Push Bit Rate 0

Index	Enable	Server:Port	Publishing/Mount Point	CopyFromPublishingPoint
1	Disabled			

## Configuration: JPEG

This window 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 100.)

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.
Deinterlaced Image Enable	Vertical resolutions above 288 lines are deinterlaced to provide higher vertical resolutions. Deinterlacing while there is motion on the encoded video can cause visual artifacts on the captured JPEG image. <i>Be aware that disabling interlacing removes the visual artifacts but creates a JPEG image that is one half the height and one half the width of the original resolution.</i> For example, a 640x480 video resolution will be encoded as a 320x240 JPEG file. Default = Disabled. Note that toggling this parameter on or off will reboot the appliance.

---

## ***JPEG FTP Configuration***

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

Transfer Mode	<ul style="list-style-type: none"><li>• 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.</li><li>• Single Image – Only one image is saved and overwritten on the server.</li></ul>
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 <b>vBrick1-</b> for example, the captured images will be named <b>vBrick1-1</b> , <b>vBrick1-2</b> , 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.

## **JPEG Capture Constraints**

Due to memory requirements, JPEG capture can reduce the maximum number of supported clients a dual WM encoder (with archiver), or dual WM and MPEG-2 encoder (with archiver) can support. The following table shows how the configuration for JPEG capture affects the maximum number of supported clients. *Also be aware that JPEG capture on a WM encoder will consume significant CPU resources. This can degrade the streaming video—especially with higher video resolutions and frequent image captures.*

**Table 13.** Supported Clients with JPEG Capture

Model	JPEG Configuration	Max Clients †
Dual WM/WM encoder (with archiver)	JPEG disabled on both slots.	180
	JPEG enabled on one slot.	140
	JPEG with deinterlace enabled on one slot.	100
	JPEG enabled on both slots.	100
	JPEG enabled on both slots; JPEG deinterlace enabled on one slot.	60
	JPEG with deinterlace enabled on both slots.	20
Dual WM/MPEG-2 encoder (with archiver)	JPEG disabled on slot1.	200
	JPEG enabled on slot1.	200
	JPEG with deinterlace enabled on slot1.	170

† The actual number of supported clients will generally vary slightly depending on your hardware configuration, network constraints, and other variables.

## Configuration: FTP File Transfer

### Configuration: FTP File Transfer > Servers

Up to eight servers are available and can be simultaneously selected. When more than one server is enabled, the appliance will transfer the newly recorded file to *each* enabled server. Since FTP transfer can be a slower than the recording process, it is possible to overrun the FTP queue if too many servers are enabled. Failure conditions during FTPs are noted on [Status: Hard Drive > Archiver](#) page.

### FTP Server 1–8

Name	FtpServer1–FtpServer8.
Type	<p>VBrick or Non-VBrick Appliance.</p> <ul style="list-style-type: none"> <li>VBrick Appliance – When sending to a VBrick appliance, the serving VBrick must select the D: directory. The configuration of VBrick Appliance automatically adds D: to the path name or to any other configured folder or as part of the Directory entry. If no folder is specified, all files will be transferred to the D: directory. Additionally, subfolders may be specified.</li> <li>Non-VBrick Appliance – A non-VBrick appliance setting allows a destination server to select its own path name, based on account user name and password. In this case, the Directory setting may be used to specify any sub-folder on the server.</li> </ul>
DNS Name/IP	DNS server name or IP address for the FTP server. It accepts up to 20 characters. The Host Name/IP must be a DNS Host Name.
User Name	FTP server user's account name.
Password	Optional. Password required to access the FTP server. Accepts up to 20 characters. The FTP User Name and Password must be set up properly on the remote FTP server. If they are not entered the same as what is set up on the server, the VBrick will be unable to connect and perform the transfer.
Account	Optional. Account name required to access the FTP server.



Directory	Optional. Allows a manager to switch to a different directory within the FTP server after login. Accepts up to 64 characters. Anonymous FTP is not supported.
-----------	---

## Configuration: FTP File Transfer > Transfers

Use this page to manually initiate FTP transfers to any of the configured servers. You can separately setup and use eight servers for FTP File Transfer. Enter the server parameters in the **Configuration: FTP File Transfer > Servers** screen of IWS. During the file transfer, the front panel LCD on the appliance shows the current file actually being transferred.

### FTP Status

Current File	The filename of the current file being FTPed.
Destination	FTP server name from server configuration page.

State	The current state of the hard drive. Values can be: <ul style="list-style-type: none"> <li>• Transfer in Progress.</li> <li>• Idle.</li> <li>• Invalid FTP Server.</li> <li>• Invalid User Name.</li> <li>• Invalid User Password.</li> <li>• Local File Open Error.</li> <li>• Socket Open Failure.</li> <li>• Transfer Failure.</li> <li>• Socket Quit Failure.</li> </ul>
Size	Size of the file to be sent.
Rate	Transmitted data rate of the file being FTPed.
Transfer	Current amount transferred.
Last Queue Operation	File added OK, File removed OK, or blank.

### ***FTP Queue Operation***

Changes to the entries on the screen do not take effect until you select an action button: **Add to FTP Queue**, **Remove from FTP Queue** or **Flush Queue**.

Directory	Choose the directory on the hard drive that contains the file you want to send.
File	File name on the hard drive.
Destination	Server to which the file or files is to be transferred. Servers are configured in the Servers section of the same page.
Add to FTP Queue	Adds the selected file to the FTP queue. The FTP transfer starts immediately.
Remove from FTP Queue	Remove the selected file from the FTP queue.
Flush Queue	Removes all the current files from FTP queue.

### **Hard Drive Status**

For a description of hard drive status screens, see [Status: Hard Drive](#) on page 102.

## **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. This feature supports a wide range of serial applications. Contact VBrick support for details and restrictions. RS-232 end-to-end control is initiated by enabling or disabling Passthrough. For more about passthrough, and how it can be used, see the *VBrick Appliance Getting Started Guide*.

## Configuration: Passthrough > COM1

VBrick INTEGRATED WEB SERVER Administration/Configuration

CONFIGURATION | STATUS | DIAGNOSTIC | MAINTENANCE | HELP | HOME | LOGOUT

**Configuration**

- Network
- Encoder
- Reflector
- FTP File Transfer
- Passthrough**
- System
- Script Management

**Configuration: Passthrough**

COM1 COM2

Passthrough State

Operational State Disabled

APPLY REVERT DEFAULTS

END EDIT

SAVE CONFIG

Passthrough State

Used to enable/disable Passthrough. You must be the Active Editor to enter a Passthrough state. 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).
- Initiator – In this case it will continuously attempt to automatically initiate a Passthrough connection to the remote destination. This mode also offers metadata destination options.

### *Passthrough State: Responder*

VBrick INTEGRATED WEB SERVER Administration/Configuration

CONFIGURATION | STATUS | DIAGNOSTIC | MAINTENANCE | HELP | HOME | LOGOUT

**Configuration**

- Network
- Encoder
- Reflector
- FTP File Transfer
- Passthrough**
- System
- Script Management

**Configuration: Passthrough**

COM1 COM2

Passthrough State  APPLY

---

Baud Rate

Stop Bits

Parity

RTS Control

DTR Control

Operational State Ready

APPLY REVERT DEFAULTS

END EDIT

SAVE CONFIG

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 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. When using a VBrick VCC-3 or VCC-4 camera, set this control to Automatic; when using a VBrick VCC-50i camera, set this control to Force ON.
DTR Control	Force OFF, Force ON or Automatic. If automatic, the control will be ON when Passthrough is active. Under no conditions are RTS or DTR controls passed through end-to-end. All control handling is local. When using a VBrick VCC-3 or VCC-4 camera, set this control to Automatic; when using a VBrick VCC-50i camera, set this control to Force ON.
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.

### *Passthrough State: Initiator*

The screenshot shows the VBrick Integrated Web Server Administration/Configuration interface. The page title is "INTEGRATED WEB SERVER Administration/Configuration". The navigation menu includes CONFIGURATION, STATUS, DIAGNOSTIC, MAINTENANCE, HELP, HOME, and LOGOUT. The main content area is titled "Configuration: Passthrough" and shows the following settings:

- COM1 COM2** (selected)
- Passthrough State:** Initiator (dropdown menu) [APPLY]
- Destination:** Slot1 MetaData (dropdown menu) [APPLY]
- Baud Rate:** 9600 (dropdown menu)
- Stop Bits:** 1 (dropdown menu)
- Parity:** None (dropdown menu)
- RTS Control:** Automatic (dropdown menu)
- DTR Control:** Automatic (dropdown menu)
- Operational State:** Ready
- Idle Time out (mSec):** 500 (text input)

Buttons for configuration include "END EDIT", "SAVE CONFIG", "APPLY", "REVERT", and "DEFAULTS".

Destination	<ul style="list-style-type: none"> <li>• 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.</li> <li>• Slot1 MetaData. If Meta Data is enabled on the Encoder &gt; 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. To view the metadata strings in Windows Media player you must enable display of captions (<b>Play &gt; Captions and Subtitles</b>). This feature is disabled when the appliance is in Edit mode.</li> </ul> <p>The data is inserted when it reaches the maximum number of characters (245 for WM) or when the Idle Timeout (see below) between characters is reached. Note that a four-character <b>TEXT</b> command and a trailing space are auto-inserted before any metadata. The Media Player recognizes the <b>TEXT</b> 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.</p> <ul style="list-style-type: none"> <li>• Slot2 MetaData. Same as above except the serial port data is inserted as metadata in the video stream from the Slot2 encoder.</li> </ul>
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. Note: 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 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 <a href="#">Status: Network Status &gt; Codec</a> on page 94 for more information. This will display <b>Active</b> if in Passthrough mode.
Idle Time out	5–2000 milliseconds. Default = 500. The interval between characters at which metadata is inserted into the stream.

## Configuration: Passthrough > COM2

Passthrough settings for COM2 are a subset of COM1. See [Configuration: Passthrough > COM1](#) for complete details.

## Configuration: System

### Configuration: System > General

**VBrick INTEGRATED WEB SERVER Administration/Configuration**

CONFIGURATION | STATUS | DIAGNOSTIC | MAINTENANCE | HELP | HOME | LOGOUT

**Configuration:**

- Network
- Encoder
- Reflector
- FTP File Transfer
- Passthrough
- System
- Script Management

**Configuration: System**

General **SNMP Traps Security Logging**

Network Time Synchronization  Enabled

System Date Time  (mm/dd/yyyy hh:mm)

**APPLY**

**REFRESH**

**END EDIT**

**SAVE CONFIG**

**System**

Current Operational Mode Run

Configured Operational Mode

Time Zone

Daylight Saving Time  Disabled  Enabled

IR Enable  Disabled  Enabled

Fan Mode  Always High  Auto

SAP Timing Method  Fixed  Variable-RFC2974

RFC2974 Bandwidth

Relay Control  Open  Closed

**Front Panel LCD Display**

Box IP Address  Disabled  Enabled

Destination IP Address  Disabled  Enabled

User String Enable  Disabled  Enabled

Top Line User String

Bottom Line User String

**APPLY** **REVERT** **DEFAULTS**

Network Time Synchronization

Enabled or Disabled. If enabled, the **System Date Time** field is inactive. See [Network Time Synchronization](#) on page 20 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**

This menu lets you set system-related parameters.

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: <ul style="list-style-type: none"> <li>• Run Mode – Normal operation.</li> <li>• Diagnostics – User selected mode for running certain VBrick diagnostics.</li> </ul>
Time Zone	Select from list: (GMT-12) Eniwetok – (GMT +12) Auckland.
Daylight Savings Time	Enabled or Disabled.
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.
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.

### ***Front Panel LCD Display***

These settings will be displayed for approximately 6 seconds. After 6 seconds the LCD will display the current release, IP address, hostname, plus transmit and receive addresses and other status information.

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.
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 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.

The screenshot shows the VBrick Integrated Web Server Administration/Configuration interface. The main heading is "Configuration: System". On the left, there is a "Configuration" menu with options: Network, Encoder, Reflector, FTP File Transfer, Passthrough, System, and Script Management. Below the menu are "END EDIT" and "SAVE CONFIG" buttons. The main content area is titled "General SNMP Traps Security Logging". It contains two sections: "Trap Destination 1" and "Trap Destination 2". Each section has fields for Host Type (radio buttons for IP Address and DNS Host Name), IP Address, DNS Host Name, SNMP Trap Version (radio buttons for Version 1, Version 2, and Version 3), Trap User Name, Authentication Password, Authentication Protocol (a dropdown menu showing MD5), Privacy Password, and Security Level (a dropdown menu showing No Authentication, No Privacy).

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 14.
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.
SNMP Trap Version	Select Version number.
Trap User Name	
Authentication Password	Enter password. Cannot exceed 20 characters. May include any combination of alphanumeric characters but only the following special characters: ~ ! # \$ ^ * + & % [ ] { }   < > See Table 15 on page 125 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 14.** 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.

Number	Event Description
21	The 2.5 volts power supply failed.
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

The screenshot shows the 'Configuration: System' page with the 'Security Logging' tab selected. The page includes a navigation menu with options like 'CONFIGURATION', 'STATUS', 'DIAGNOSTIC', 'MAINTENANCE', 'HELP', 'HOME', and 'LOGOUT'. A sidebar on the left lists configuration categories: Network, Encoder, Reflector, FTP File Transfer, Passthrough, System, and Script Management. The main content area shows several settings with radio buttons for 'Disabled' and 'Enabled':

- External Telnet Server:  Disabled  Enabled
- External FTP Server:  Disabled  Enabled
- External IWS:  Disabled  Enabled
- External SNMP:  Disabled  Enabled
- External SNMPv1 and SNMPv2 Access:  Disabled  Enabled
- No Login For Viewer Files:  Disabled  Enabled
- Allow Load Simulator:  Disabled  Enabled

Below these are input fields for ports:

- RTSP Server Port: 554
- IWS Server Port: 80
- Windows Media HTTP Port: 8080
- Push Receive Port: 7070

At the bottom, there are three buttons: 'APPLY', 'REVERT', and 'DEFAULTS'. There are also 'END EDIT' and 'SAVE CONFIG' buttons in the sidebar.

**Note** If you disable Telnet, FTP, IWS, and SNMP, the only way to manage (and re-enable) these parameters is to connect a PC to the VBrick with a serial cable and use the Command Line Interface (CLI). You should never disable all the network management interfaces if you are using COM2 for serial passthrough.

External Telnet Server	Default = Enabled. Disabled will prevent Telnet sessions to the server.
External FTP Server	Default = Enabled. Disabled will prevent FTP sessions to the server including downloading to the VBrick. Note that this feature must be enabled to upgrade the appliance firmware using VBDownload.

External IWS	Default = Enabled. Disabled will prevent you from managing the VBrick from a web browser using the IWS application.
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.
No Login For Viewer Files	Default = Enabled. Various files available for use by players and decoders including SDP, ASX, and NSC files. When enabled, access to these files does not require login with username and password.
Allow Load Simulator	Default = Disabled. Allows a Microsoft Load Simulator to connect to the VBrick WM Appliance (server) for testing. The Windows Media Load Simulator 9 Series is a GUI-based tool that simulates a large number of client requests on a Windows Media server. If you are testing a WM appliance with this simulator, be aware that VBrick v4.0 or later WM Appliances are only compatible with Release 9.0.0.2939 or higher of the Windows Media Load Simulator. For more information go to <a href="http://www.microsoft.com/technet/prodtechnol/netshow/downloads/loadsim.msp">http://www.microsoft.com/technet/prodtechnol/netshow/downloads/loadsim.msp</a>
RTSP Server Port	Default = 554. Sets the RTSP server port.
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: <a href="http://IPaddress:port">http://IPaddress:port</a> where <b>IPaddress</b> = VBrick IP address or hostname, and port. This feature is often useful for an system where HTTP is used to traverse firewalls. The IWS server port is moved to another location (for example 8080) and the HTTP Tunneling port (or the Windows Media HTTP port) is set to 80.
Windows Media HTTP Port	Sets the port to be used to serve Windows Media HTTP streams. Default is 8080 but if you are streaming HTTP directly from a VBrick via the Internet, it is common practice to change this to 80 and to set the IWS server port to something other than 80.
Push Receive Port	Default = 7070. Sets the port used by the Reflector push receiver.

### *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.

## Configuration: System > Logging

Logging of certain events can be stored both locally (within the VBrick device) or externally (for example, to a server). Local logs are preserved in non-volatile memory. For preservation of information, 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 of the actual server using the **Remote Event Log IP Address** or **Remote Event Log DNS Host Name** fields. If remote logging is enabled, the log information is sent via SNMP traps.

The screenshot shows the VBrick Integrated Web Server Administration/Configuration interface. The page title is 'Configuration: System'. On the left, there is a 'Configuration' menu with options: Network, Encoder, Reflector, FTP File Transfer, Passthrough, System (selected), and Script Management. Below the menu are 'END EDIT' and 'SAVE CONFIG' buttons. The main content area is titled 'Configuration: System' and contains a sub-section 'General SNMP Traps Security Logging'. The settings are as follows:

Log Time Zone	<input checked="" type="radio"/> Local <input type="radio"/> GMT
Trap Log Local	<input type="radio"/> Disabled <input checked="" type="radio"/> Enabled
Trap Log Remote	<input type="radio"/> Disabled <input checked="" type="radio"/> Enabled
General Config Log Local	<input type="radio"/> Disabled <input checked="" type="radio"/> Enabled
General Config Log Remote	<input type="radio"/> Disabled <input checked="" type="radio"/> Enabled
IR or Script Config Log Local	<input type="radio"/> Disabled <input checked="" type="radio"/> Enabled
IR or Script Config Log Remote	<input type="radio"/> Disabled <input checked="" type="radio"/> Enabled
System Event Log Local	<input type="radio"/> Disabled <input checked="" type="radio"/> Enabled
System Event Log Remote	<input type="radio"/> Disabled <input checked="" type="radio"/> Enabled
Remote Event Log Host Type	<input checked="" type="radio"/> IP Address <input type="radio"/> DNS Host Name
Remote Event Log IP Address	<input type="text"/>
Remote Event Log DNS Host Name	<input type="text"/>

At the bottom of the configuration area are three buttons: 'APPLY', 'REVERT', and 'DEFAULTS'.

Log Time Zone	Determines the time zone where the unit is located. The time which is included in the logged event displays time in this format.
Trap Log Local	Will store logs locally within the unit. The log file will wrap after 20 events.
Trap Log Remote	Will send log file to an external server.
General Config Log Local	Will store the log of user initiated configuration changes traps locally within the unit. The log file will wrap after 20 events.

General Config Log Remote	Will send the log of user initiated configuration changes to an external server.
IR or Script Config Log Local	Will store the log of IR or script generated configuration changes locally within the unit. The log file will wrap after 20 events.
IR or Script Config Log Remote	Will send the log of the log of IR or script generated configuration changes to an external server.
Remote Event Log Host Type	External server can be identified by IP address or host name.
Remote Event Log IP Address	IP address of external log server.
Remote Event Log DNS Host Name	Host name of external 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](http://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 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

**Configuration: Script Management**

**Event Triggering Auto Configuration**

[Click here to read or write script files](#)

COM1 Pin8 Low	Com1Pin8LowEventScript.txt
Event Enable	<input checked="" type="radio"/> Disabled <input type="radio"/> Enabled
Event Stable Time (ms)	250
COM1 Pin8 High	Com1Pin8HighEventScript.txt
Event Enable	<input checked="" type="radio"/> Disabled <input type="radio"/> Enabled
Event Stable Time (ms)	250
COM1 Pin7 Low	Com1Pin7LowEventScript.txt
Event Enable	<input checked="" type="radio"/> Disabled <input type="radio"/> Enabled
Event Stable Time (ms)	250
COM1 Pin7 High	Com1Pin7HighEventScript.txt
Event Enable	<input checked="" type="radio"/> Disabled <input type="radio"/> Enabled
Event Stable Time (ms)	250

**APPLY** **REVERT** **DEFAULTS**

**Figure 11.** 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.

**Configuration: Script Management**

COM1 Pin8 Low	Com1Pin8LowEventScript.txt
Event Count	0 <input type="button" value="Run Script"/>
Event Script Status	SCRIPT NEVER RUN
COM1 Pin8 High	Com1Pin8HighEventScript.txt
Event Count	0 <input type="button" value="Run Script"/>
Event Script Status	SCRIPT NEVER RUN
COM1 Pin7 Low	Com1Pin7LowEventScript.txt
Event Count	0 <input type="button" value="Run Script"/>
Event Script Status	SCRIPT NEVER RUN
COM1 Pin7 High	Com1Pin7HighEventScript.txt
Event Count	0 <input type="button" value="Run Script"/>
Event Script Status	SCRIPT NEVER RUN

**REFRESH** **RESET**

**Figure 12.** 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 <code>irNScript.txt</code> (where <b>N</b> is a number from <b>0-9</b> ) in the script directory of the unit. For example naming the following script <code>ir0Script.txt</code> will enable the <b>0</b> 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 a script file as `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***

```
// This example basically starts push and archive sessions; waits for 2 minutes and stops both sessions.
```

```
// It assumes that the archiver and Push parameters have been properly configured
```

```
// set up some basic archiver parameters
vbrickSlot1ArchiveMode = 1 // set archiver to user controlled mode
vbrickSlot1ArchiveFileName = event1record.wmv
vbrickSlot1ArchiveApplySet = 2
* // end of group

vbrickSlot1ArchiveStart = 2 // start archiving
* // end of group

vbrickSlot1EncoderHttpPushEnable.1 = 2 // start Push
vbrickSlot1EncoderHttpPushTableApplySet = 2
* // end of group

wait = 120000 // wait 2 minutes (120000 milliseconds)
* // end of group

vbrickSlot1ArchiveStop = 2 // stop archiving
* // end of group

vbrickSlot1EncoderHttpPushEnable.1 = 1 // stop Push
vbrickSlot1EncoderHttpPushTableApplySet = 2
* // end of group
```

---

### *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.

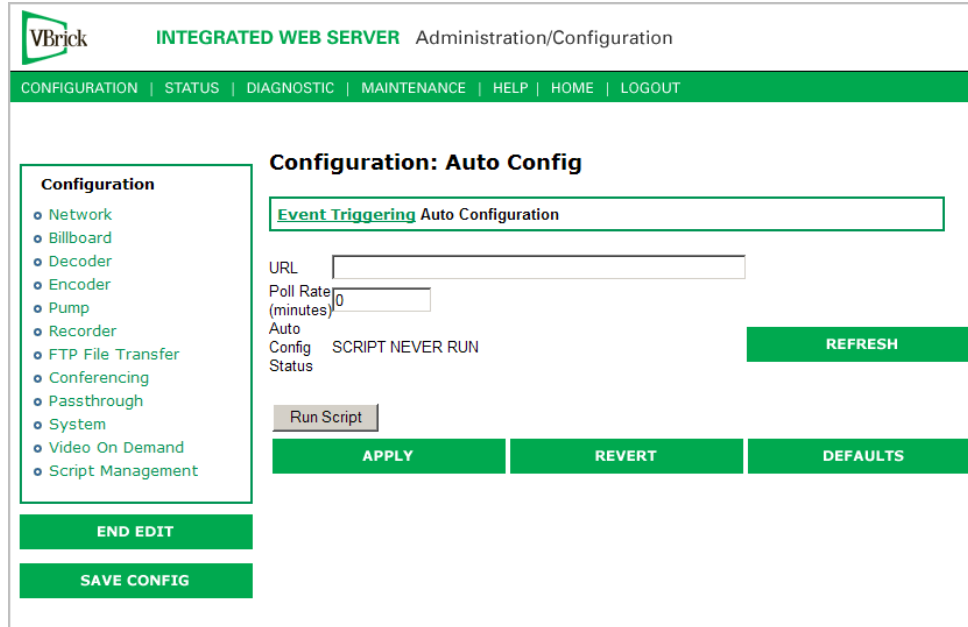
### **Configuration: Script Management > Auto Configuration**

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](http://www.myserver.com/config.xml)) via HTTP protocol and executes the script depending on the **VBEXECUTE** 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.





URL	Valid path to a URL script file, for example: <a href="http://www.myserver.com/config.xml">www.myserver.com/config.xml</a> . 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 `VBEXECUTEFORCE` tag is required.

```
<XML Header>
<?VBEXECUTEFORCE?> or <?VBEXECUTEIFDIF?>
<VBRICK>
vbrickHDRRecorderControlMode = 1
vbrickHDRRecorderControlIrEnable = 1
vbrickHDRRecorderControlName = event1record.mpg
vbrickHDRRecorderControlDuration.value = 30
vbrickHDRRecorderControlBatchEnable = 1
vbrickHDRRecorderControlApplySet = 2
</VBRICK>
```



## SDI Configuration

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### Introduction

Serial Digital Interface, or SDI, is mainly used in the professional industry and is based on the principal standard for broadcast television and the motion picture industries. Reliable, flexible and cost-effective video transport is critical to the video transmission industry, which provides state-of-the-art transport services for broadcast networks, content producers, entertainment programmers, news agencies and sportscasters throughout the world. SDI provides users the best available video quality with virtually no latency.

The Serial Digital Interface version of the WM Encoder includes an extra hardware module that plugs into the encoder card, allowing the broadcast industry standard 270 Mbps serial signal to be converted to Windows Media. The Serial Digital Interface input module accepts the Society of Motion Picture and Television Engineers industry-standard, SMPTE 259M-C compliant signals at 270 Mbps. The standard specifies a Serial Digital Interface (SDI) for digital video equipment operating at either the 525-line, 60 Hz or 625-line, 50 Hz video standard. After VBrick's Windows Media conversion, the compressed video can be transported and utilized over a standard IP network.

The SDI module extracts AES/EBU or non-AES/EBU audio from Group 1 channels 1–4 from the incoming 270 Mbps data stream. These audio channels are embedded into the SDI video stream and occupy space in the horizontal and vertical blanking interval. These four channels are extracted into two SDI stereo streams of audio. **SDI 1-2** contains the stereo channels 1 and 2 from Group 1 of the embedded audio. **SDI 3-4** contains the stereo channels 3 and 4 from Group 1 of the embedded audio. The VBrick's SDI module can capture and encode either channels 1 and 2, or channels 3 and 4 from the SDI stream. Audio embedded in Groups 2, 3, and 4 of the SDI stream cannot be utilized by the VBrick. If desired, the VBrick can be configured to ignore any embedded SDI audio and instead encode audio from its analog audio inputs at the same time it encodes video from SDI.

### SDI Configuration

WM SDI encoders have nearly identical configuration parameters and IWS pages as standard WM encoders (see [Configuration: Encoder](#) on page 23) except that the WM SDI encoder has an additional **Video Input Type** selection for SDI and it has additional Audio Input selections for **SDI 1-2** and **SDI 3-4**.

## Configuration: Encoder > Video

The screenshot shows the VBrick Integrated Web Server Administration/Configuration interface. The top navigation bar includes links for CONFIGURATION, STATUS, DIAGNOSTIC, MAINTENANCE, HELP, HOME, and LOGOUT. A left sidebar menu lists Configuration options: Network, Encoder, JPEG, FTP File Transfer, Passthrough, System, and Script Management. The main content area is titled "Configuration: Encoder" and features a breadcrumb trail: [Template](#) > [Video](#) > [Audio](#) > [Multicast](#) > [Destination1](#) > [Destination2](#) > [Announce\(SAP\)](#) > [RTP](#) > [Network](#) > [Server](#) > [Archiver](#) > [Push](#). Below the breadcrumb is a table with three columns: Encoder Video, Slot1 (Windows Media), and Slot2 (MPEG4). The table lists various video parameters and their values for each slot.

Encoder Video	Slot1 (Windows Media)	Slot2 (MPEG4)
Video Format	NTSC	NTSC
Video Aspect Ratio	16:9	4:3
Video Input Type	SDI	Composite
Video Source	Normal	Normal
Closed Caption	Disabled	Video CC Enabled
Luminance	128	128
Contrast	64	64
Saturation	64	64
Hue	0	0
Bottom Blackout Area	0	0
Network Metered	N/A	Low Delay/Not Metered
Random Access Video	N/A	Disabled
Meta Data	Enabled	Disabled
Meta Data String		

At the bottom of the configuration area are two buttons: "END EDIT" and "SAVE CONFIG".

## Configuration: Encoder > Audio

The encoder video and audio configurations for an SDI-equipped appliance are only available on certain models. To see if an appliance supports SDI, check for an SDI connector on the VBrick rear panel or go to IWS and check the **Video Input Type** parameter (see above) for the SDI option. The following unique parameters are used for SDI Encoder Audio Input.

The screenshot shows the VBrick Integrated Web Server Administration/Configuration interface for Encoder Audio settings. The top navigation bar and left sidebar are identical to the previous screenshot. The main content area is titled "Configuration: Encoder" and features the same breadcrumb trail. Below the breadcrumb is a section for "Windows Media Encoder Audio -- Slot1" with a "Slot2 End" link. The "Audio Input" is set to "SDI 1-2". Below this is the "Audio Template Settings -- Slot1 (Audio Rate1)" section, which includes dropdown menus for "Audio Channels" (set to Stereo), "L+R Bit Rate(bits/sec)" (set to 192000), and "Sample Frequency" (set to 48KHz). There are also sections for "Audio Rate2 Settings -- Slot1" and "Audio Rate3 Settings -- Slot1", both with "Audio Rate2" and "Audio Rate3" checkboxes that are currently unchecked. At the bottom of the configuration area are three buttons: "APPLY", "REVERT", and "DEFAULTS".

SDI Audio Input	Input can be through 1/8" mini-phonon jack, from AudioMate, or from within the SDI data using SDI 1-2 or SDI 3 -4.
Audio Gain	If SDI 1-2 or SDI 3-4 is chosen as the audio input, the audio gain settings have no effect.

## SDI Limitations

Although most of the WM encoder's compression, streaming, and serving capabilities are the same when using SDI video as they are when using analog video, there are certain limitations when the encoder is configured for SDI video input.

---

### Video Limitations with SDI Video Input

- Video Closed Caption is not supported. (Only Inserted Closed Caption is supported.)
- Encoder Video Hue control has no effect.

---

### Audio Limitations with SDI Video Input and SDI Audio Input

These limitations are imposed when the Audio Input selection is SDI 1-2 or SDI 3-4:

- MBR Audio is not available. (Only one audio rate is supported.)
- Audio Gain settings have no effect.
- Bit rate selections are limited to the following:

192,000 (Stereo)

160,000 (Stereo)

128,000 (Stereo)

---

### Audio Limitations with SDI Video Input and Analog Audio Input

These limitations are imposed when the Audio Input selection is Audio Jack or Microphone DIN.

- MBR Audio is not available. (Only one audio rate is supported.)
- Bit rate selections are limited to the following:

192,000 (Stereo)

160,000 (Stereo)

128,000 (Stereo)

12,000 (Stereo)

8,000 (Mono)

6000 (Mono)

5000 (Mono)

---



## Status

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Status: User Information . . . . .	110

### Status: System Information

**System Status**

- System Information
- Network Status
- Encoder Status
- Reflector Status
- Hard Drive Status
- Server Status
- Push Status
- FTP Server Status
- System Log
- User Information

**Status: System Information**

**System Model** 4200

**Device State**

MAC Address	00:07:df:01:51:03
MAC Address Valid/Invalid	Valid
Current Operational Mode	Run
DHCP Status	Disabled
Temperature(Celsius)	36
Fan State	Low
Battery Status	OK
Overloaded Count	0
CPLD Version	23
Boot Revision	06/12/07 16:57
Code Revision	06/13/07 12:24
Release Revision	104.1.15
CPU Utilization(%)	3

**Power Supply Voltage**

24V	23.98
12V	11.94
5V	5.02
3.3V	3.32
2.5V	2.44

Device State	Provides user with a "snapshot" of firmware and hardware including the MAC address of the VBrick unit.
--------------	--

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 page lets you view various network-level parameters.

The screenshot shows the VBrick Integrated Web Server Administration/Configuration interface. The main navigation bar includes CONFIGURATION, STATUS, DIAGNOSTIC, MAINTENANCE, HELP, HOME, and LOGOUT. The left sidebar lists System Status options: System Information, Network Status, Encoder Status, Reflector Status, Hard Drive Status, Server Status, Push Status, FTP Server Status, System Log, and User Information. The main content area is titled 'Status: Network Status' and features a 'CODEC Routing Network Time' section. Below this is a 'General' section with the following parameters:

COM1 Passthrough Operational State	Disabled
COM2 Passthrough Operational State	Disabled
Active RFC-SAP Count	0
Network Port Status	Link OK
Network Port Speed	100Mbit
Network Port Mode	Full Duplex

Below the General section is an 'Interface' table:

Interface	Extra Stream Count	Misdirect IP	Orphan Count	CBR Overbooked
Ethernet 0			50	N/A

At the bottom of the page are buttons for END EDIT, REFRESH, and RESET.

### General

COM1/COM2 Passthrough Operational State	The current operational state of COM1/COM2 serial passthrough port. The possible values are: <ul style="list-style-type: none"> <li>• Disabled.</li> <li>• Enabled Active.</li> <li>• Enabled Internal Error.</li> <li>• Enabled Rejected.</li> <li>• No Dedicated IP Addr.</li> </ul>
Active RFC-SAP Count	Number of SAP sessions the appliance is currently listening to for the purpose of RFC 2974-compliant SAP timing.
Network Port Status	Status of the Ethernet network interface.
Network Port Speed	Speed of transmission for the Ethernet network interface.
Network Port Mode	The mode of transmission for the Ethernet network interface.

### 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	Not applicable (always 0) on WM models.
CBR Overbooked	The reported overbooked condition for ATM circuits. Not applicable on Ethernet models.

## Status: Network Status > Routing

This screen lets you view the internal routing tables.

**VBrick INTEGRATED WEB SERVER Administration/Configuration**

CONFIGURATION | STATUS | DIAGNOSTIC | MAINTENANCE | HELP | HOME | LOGOUT

**System Status**

- System Information
- Network Status
- Encoder Status
- Reflector Status
- Hard Drive Status
- Server Status
- Push Status
- FTP Server Status
- System Log
- User Information

**END EDIT**

**Status: Network Status**

[CODEC Routing](#) [Network Time](#)

**Dynamic Routing Table**

Destination Network	Local Gateway IP	Network Mask
0.0.0.0	172.22.1.5	0.0.0.0
127.0.0.1	127.0.0.1	255.255.255.255
172.16.2.180	172.22.1.5	255.255.255.255
172.17.1.60	172.22.1.5	255.255.255.255
172.17.2.21	172.22.1.5	255.255.255.255
172.17.2.31	172.22.1.5	255.255.255.255
172.22.0.0	172.22.173.10	255.255.0.0
172.29.1.44	172.22.1.5	255.255.255.255
172.29.1.50	172.22.1.5	255.255.255.255
224.2.133.134	172.22.1.5	255.255.255.255

**REFRESH**

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.

## Status: Network Status > Network Time

The screenshot displays the VBrick Integrated Web Server Administration/Configuration interface. The page title is "Status: Network Status". On the left, a "System Status" sidebar lists various system components, with "Network Status" selected. The main content area shows "CODEC Routing Network Time" settings. It includes sections for "Network Time Synchronization", "Primary Network Time Server", and "Secondary Network Time Server", each with associated status and counter information. At the bottom, there are "REFRESH" and "RESET" buttons.

Network Time Synchronization	
Last Successful Update	
Network Time Client State	Idle

Primary Network Time Server	
Successful Update Counter	0
Failed Update Counter	0
Current Server Status	Server Standby

Secondary Network Time Server	
Successful Update Counter	0
Failed Update Counter	0
Current Server Status	Server Standby

## Status: Encoder Status

Many of the status values (for example Frames per Second, IP Bytes Transferred, etc.) on the following window are re-measured and updated periodically. Use the **Refresh** button on the IWS page to update with new values. Status counters can be set to zero using the **Reset** button on the page which is available only in **Edit** mode.

**INTEGRATED WEB SERVER** Administration/Configuration

[CONFIGURATION](#) | [STATUS](#) | [DIAGNOSTIC](#) | [MAINTENANCE](#) | [HELP](#) | [HOME](#) | [LOGOUT](#)

### Status: Encoder Status

**System Status**

- System Information
- Network Status
- Encoder Status
- Reflector Status
- Hard Drive Status
- Server Status
- Push Status
- FTP Server Status
- System Log
- User Information

END EDIT

#### Slot1 Status

General	
Encoder State	Video Input Problem
FPGA Revision	1.3.2 05/01/07 08:42
PLX EEPROM Revision	1

Video	Video1	Video2
Bit Rate	10824	0
Frames Per Second	28	0
Frames Encoded	5419614	0
VFR Frames Dropped	0	0
Unexpected Frames Dropped	0	0
Buffer Full Count	0	0

Audio	Audio1	Audio2
Bit Rate	127978	0
Frames Encoded	4238464	0
Frames Dropped	2	0
Buffer Full Count	0	0

Close Captioning	
Buffer Full Count	0

ASF	Multicast	Group1	Group2	Group3	Pus
Packets Created	1198	4928	0	0	0
Buffer Full Count	0	0	0	0	0

Multicast	
Transmit State	Not Transmitting
IP Bytes Transferred	1932686370
IP Packets Sent	4169450

REFRESH
RESET

**General**

Encoder State	<p><b>Running</b> indicates normal operation. <b>Video Input Problem</b> indicates a problem with the video source. Verify that the video source is working correctly and that your video cable is good. Verify that the Configuration: Encoder &gt; Video &gt; Video Input Type is properly set to Composite or S-Video to match your source connection. Verify that Configuration: Encoder &gt; Video &gt; Video Format is properly set to NTSC or PAL to match your source format. Note that the WM encoder will transmit black video when there is an input problem.</p>
FPGA Revision	Used by VBrick Support to identify encoder hardware version.
PLX EEPROM Revision	Used by VBrick Support to identify encoder hardware version.

**Video**

Bit Rate	Measured rate in bits per second of the encoded video stream being created by the appliance.
----------	--

Frames Per Second	Measured rate in frames per second of the encoded video frames being created by the appliance.
Frames Encoded	Increments as compressed frames are produced by the appliance.
VFR Frames Dropped	When Configuration: Encoder > Video > Rate Control Method is configured for Variable Frame Rate (VFR) the encoder may drop frames to maintain quality and this counter will increment for each dropped frame. If you experience an unacceptable number of dropped frames your content is too difficult for your encoder settings. To improve VBR behavior you can increase the Video Buffer and/or Target Bit Rate, decrease the Resolution and/or Target Frame Rate.
Unexpected Frames Dropped	Increments if the encoder is forced to drop a frame for unexpected reasons. This status indicator is particularly important when encoding multiple video rates. An excessive number of frame drops indicates that your combination of resolutions, frame rates, and bit rates is too difficult for the content you are encoding. See <a href="#">Configuration: Encoder &gt; Video</a> on page 24 for more information.
Buffer Full Count	Increments when the appliance is in an overloaded condition. Reduce the load by lowering bit rates or reducing the number of RTSP and/or HTTP clients.

### ***Audio***

Bit Rate	Measured rate in bits per second of the encoded audio stream being created by the appliance.
Frames Encoded	Increments as compressed frames are produced by the appliance.
Frames Dropped	Increments if the encoder is forced to drop a frame for unexpected reasons. Contact VBrick support if your encoder reports an excessive number of dropped audio frames.
Buffer Full Count	Increments when the appliance is in an overloaded condition. Reduce the load by lowering bit rates or reducing the number of RTSP and/or HTTP clients.

### ***Close Captioning***

Buffer Full Count	Increments when the appliance is in an overloaded condition. Reduce the load by lowering bit rates or reducing the number of RTSP and/or HTTP clients.
-------------------	--

### ***ASF***

Packets Created	
Buffer Full Count	Increments when the appliance is in an overloaded condition. Reduce the load by lowering bit rates or reducing the number of RTSP and/or HTTP clients.

## Multicast

Transmit State	Transmitting/Not Transmitting.
IP Bytes Transferred	Total IP Bytes Transferred since last Reset.
IP Packets Sent	Total IP Packets Sent since last Reset.

## Status: Reflector Status

### Status: Reflector Status > General

The Reflector Status page displays status based on the selected source. If you select **Push Receiver** as the **Reflector Source** on the [Configuration: Reflector](#) page, you will see "push" information; if you select **Pull Receiver**, you see the corresponding "pull" information.

The screenshot shows the VBrick Integrated Web Server Administration/Configuration interface. The main content area is titled "Status: Reflector Status" and is divided into several sections:

- General**: A section with a "General" header.
- Push Receive**: A section with a "Push Receive" header, containing the following data:
 

Push Receiver Status	
Receiver Source Ip	
Bytes Received	0
Elapsed Time	- none -
Success Count	0
Failed Count	0
Last Failed Login Ip	
Estimated Receive Rate	0
- ASF**: A table with columns for Multicast, Server, Push, and Archive.
 

	Multicast	Server	Push	Archive
Packets Created	0	0	0	0
Buffer Full Count	0	0	0	0
- Multicast**: A section with a "Multicast" header, containing the following data:
 

Transmit State	Not Transmitting
IP Bytes Transferred	0
IP Packets Sent	0

The interface also includes a "System Status" sidebar with a "BEGIN EDIT" button and a "REFRESH" button at the bottom of the main content area.

### Push Receive

Push Receiver Status	Indicates the current state of the reflector receiver. <b>Started/Receiving</b> means that the reflector is receiving a stream.
Pull Receiver Status	
Receiver Source IP	The address of the push source currently sending to this reflector.
Bytes Received	Increments as data is successfully received.
Elapsed Time	The duration of the currently active push receiver connection.
Success Count	Increments each time a push sender initiates a new connection with this push receiver.

Failed Count	Increments each time a push sender tries to connect but fails. Common reasons for failed attempts are incorrect publishing point name, user name, or password. Note: A successful push that is active and incrementing the Failed Count usually indicates that another source is trying to push to this server.
Last Failed Login IP	The address of the last push sender that failed a connection attempt.
Estimated Receive Rate	The calculated rate of the incoming reflected stream.

### ***ASF***

Packets Created	Packets created for Multicast, Server, Push, or Archive. If any destination is not active, the counts are not incremented even though the reflected stream is active.
Buffer Full Count	Count of packets dropped because the destination was busy.

### ***Multicast***

Transmit State	Transmitting/Not Transmitting. Indicates whether or not a multicast is active.
IP Bytes Transferred	Number of bytes multicast.
IP Packets Sent	Number of packets multicast.

## Status: JPEG Status

Displays JPEG image capture status if enabled. See [Configuration: JPEG](#) on page 66 for more about configuration.

The screenshot shows the VBrick Integrated Web Server Administration/Configuration interface. The top navigation bar includes links for CONFIGURATION, STATUS, DIAGNOSTIC, MAINTENANCE, HELP, HOME, and LOGOUT. The main content area is titled "Status: JPEG Status" and is divided into two columns. The left column contains a "System Status" menu with options like System Information, Network Status, Encoder Status, Reflector Status, JPEG Status (highlighted), Hard Drive Status, Server Status, Push Status, FTP Server Status, System Log, and User Information. Below this menu is an "END EDIT" button. The right column displays the "Status: JPEG Status" configuration table, which has two columns: "General" and "Slot1 (Windows Media)". The table lists various parameters such as Video Resolution (320x240), Number Of Images (0), Average Time To Create a JPEG Image(msec) (0), Average Time To Transfer a JPEG Image(msec) (0), Transfer Status (Disabled), JPEG File Name, and Date/Time Of Capture. Below the table are two buttons: "REFRESH" and "RESET".

General	Slot1 (Windows Media)
Video Resolution	320x240
Number Of Images	0
Number Of Images Transferred	0
Average Time To Create a JPEG Image(msec)	0
Average Time To Transfer a JPEG Image(msec)	0
Transfer Status	Disabled
JPEG File Name	
Date/Time Of Capture	

Video Resolution	Resolution of snapshots determined by the configuration of the associated WM encoder. One of the following: 640x480            384x216 640x360            320x480 640x240            320x240 640x180            256x144 512x384            240x180 512x192            160x120 400x300            128x72
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	<ul style="list-style-type: none"> <li>• Success – compressed snapshot successfully transferred to the server. Waiting to capture another image.</li> <li>• Transfer in progress.</li> <li>• Timeout – Transfer failure due to timeout. Indicates a network error, server error, or error in configuring the snapshot FTP page.</li> <li>• Rejected – Transfer failure due to invalid user name or password.</li> <li>• Aborted – Not enough space on server.</li> <li>• Disabled – Snapshot capture is disabled.</li> </ul>
JPEG File Name	Name of .jpg file being transferred to server.
Date/Time of Capture	Date and time of last successful capture.

## Status: Hard Drive

### Status: Hard Drive > General

The screenshot shows the VBrick Integrated Web Server Administration/Configuration interface. The top navigation bar includes links for CONFIGURATION, STATUS, DIAGNOSTIC, MAINTENANCE, HELP, HOME, and LOGOUT. The main content area is titled "Status: Hard Drive Status" and features a "General Archiver" sub-section. A sidebar on the left lists "System Status" options: System Information, Network Status, Encoder Status, Reflector Status, Hard Drive Status (selected), Server Status, Push Status, FTP Server Status, System Log, and User Information. The main content displays the following data:

Disk Type	HTS726060M9AT00
Free Space	53866 (MegaBytes)
Video File Count	5
Read Errors	0
Write Errors	0
Open Errors	0
Write Retries	0
Read Retries	0
Failed Retries	0

At the bottom of the main content area, there are three buttons: END EDIT, REFRESH, and RESET.

### Status: Hard Drive > Archiver

The screenshot shows the VBrick Integrated Web Server Administration/Configuration interface. The top navigation bar includes links for CONFIGURATION, STATUS, DIAGNOSTIC, MAINTENANCE, HELP, HOME, and LOGOUT. The main content area is titled "Status: Archiver Status" and features a "General Archiver" sub-section. A sidebar on the left lists "System Status" options: System Information, Network Status, Encoder Status, Reflector Status, Hard Drive Status, Server Status, Push Status, FTP Server Status (selected), System Log, and User Information. The main content displays the following data:

General	Slot1	Reflector
Archiver State	Disabled	Disabled
File in Progress	--none--	--none--
Data Recorded in Current File(Bytes)	0	0
File Start Time	--none--	--none--
Buffer Full Count	0	0
Last Complete File	--none--	--none--
Total Bytes Archived	0	0

FTP Status	
FTP Status	Idle
FTP File in Progress	--none--
Last Completed FTP File	

At the bottom of the main content area, there are two buttons: REFRESH and RESET.



**General**

Archiver State	Status of the Archiver as follows: <ul style="list-style-type: none"> <li>Failed.</li> <li>Stopped, never started.</li> <li>Stopped, by user.</li> <li>Stopped, Disk Full (less than 100 MBytes remains)</li> <li>Stopped, File Size Limit (approximately 4 GB).</li> <li>Stopped, FTP Overrun.</li> <li>Stopped, Duration Complete.</li> <li>Stopped, File Full.</li> <li>Stopped, Unformatted.</li> <li>Stopped, IO Error.</li> <li>Running, From Power Up.</li> <li>Running, Scheduled.</li> <li>Running, User Initiated.</li> </ul>
File in Progress	File currently being archived.
Data Recorded in Current File	Reports the number of bytes currently recorded.
File Start Time	Starting time of the current recording.
Buffer Full Count	Increments when the appliance is in an overloaded condition. Reduce the load by lowering bit rates or reducing the number of RTSP and/or HTTP clients.
Last Complete File	Last file archived.
Total Bytes Archived	Total bytes archived in all files on hard drive since last status reset.

**FTP Status**

FTP Status	Status of hard drive FTP send as follows: <ul style="list-style-type: none"> <li>Idle.</li> <li>Invalid FTP Server.</li> <li>Invalid User Name.</li> <li>Invalid User Password.</li> <li>Local File Open Error.</li> <li>Transfer Failure.</li> <li>Transfer in Progress.</li> <li>Socket Open Failure.</li> <li>Socket Quit Failure.</li> </ul>
FTP File in Progress	Name of file currently being sent to the FTP destination server(s).
Last Completed FTP File	Name of last completed file sent via FTP.

## Status: Server Status

### Status: Server Status > General

**System Status**

- System Information
- Network Status
- Encoder Status
- Reflector Status
- Hard Drive Status
- Server Status
- Push Status
- FTP Server Status
- System Log
- User Information

**Status: Server Status**

General [Encoder Details](#) [Reflector Details](#)

HTTP/RTSP Server	Encoder	Reflector
Current Number of Client Sessions	0	0
Maximum Number of Client Sessions	1	0
Current Bandwidth Used(bits/sec)	0	0
Maximum Bandwidth Used(bits/sec)	1223297	0

REFRESH RESET

END EDIT

### *HTTP/RTSP Server*

Current Number of Client Sessions	Current number of HTTP and/or RTSP clients connected to the server.
Maximum Number of Client Sessions	Highest number of HTTP and/or RTSP clients that were concurrently connected since the last time these parameters were Reset.
Current Bandwidth Used	The approximate calculated bandwidth being used by all currently connected clients.
Maximum Bandwidth Used	The highest approximate calculated bandwidth used by all connected clients since the last time these parameters were Reset.
Refresh	This page is not auto updated. Click Refresh to update the page.
Reset	Resets Maximum Number of Client Sessions, Maximum Bandwidth Used, and HTTP Push Retry Count.

### Status: Server Status > Encoder Details

This window has details for every client (up to 202) currently receiving an HTTP or RTSP stream from the VBrick appliance.

The screenshot shows the VBrick Integrated Web Server Administration/Configuration interface. At the top, there is a navigation bar with links for CONFIGURATION, STATUS, DIAGNOSTIC, MAINTENANCE, HELP, HOME, and LOGOUT. The main content area is titled "Status: Slot1 HTTP/RTSP Server Details". On the left, there is a "System Status" sidebar with a list of menu items: System Information, Network Status, Encoder Status, Reflector Status, Hard Drive Status, Server Status, Push Status, FTP Server Status, System Log, and User Information. Below the sidebar is an "END EDIT" button. The main content area has a sub-header "Encoder HTTP/RTSP Server Session Details (0)" and a table with the following columns: IP Address, Transport, State, Start Date Start Time, Port/Channel, Packets Sent, Packets Dropped, Group Requested Group Served, and Negotiated Link Bandwidth. Below the table is a "REFRESH" button. There are also links for "General", "Encoder Details", and "Reflector Details".

**Note** For best results, always click the **Refresh** button when you first access this page.

## Status: Server Status > Reflector Details

This window has details for every client (up to 202) currently receiving an HTTP or RTSP stream from the VBrick appliance.

The screenshot shows the VBrick Integrated Web Server Administration/Configuration interface. At the top, there is a navigation bar with links for CONFIGURATION, STATUS, DIAGNOSTIC, MAINTENANCE, HELP, HOME, and LOGOUT. The main content area is titled "Status: Reflector Details". On the left, there is a "System Status" sidebar with a list of menu items: System Information, Network Status, Encoder Status, Reflector Status, Hard Drive Status, Server Status, Push Status, FTP Server Status, System Log, and User Information. Below the sidebar is an "END EDIT" button. The main content area has a sub-header "Reflector HTTP/RTSP Server Session Details (0)" and a table with the following columns: IP Address, Transport, State, Start Date Start Time, Port/Channel, Packets Sent, Packets Dropped, Group Requested Group Served, and Negotiated Link Bandwidth. Below the table is a "REFRESH" button. There are also links for "General", "Encoder Details", and "Reflector Details".

## Status: Push Status

The number of rows on this page matches the number of configured push destinations for each slot. In dual encoder models, both sets of push status are shown on the same page and each slot has a **Refresh** button.

**VBrick** INTEGRATED WEB SERVER Administration/Configuration

CONFIGURATION | STATUS | DIAGNOSTIC | MAINTENANCE | HELP | HOME | LOGOUT

**System Status**

- System Information
- Network Status
- Encoder Status
- Reflector Status
- Hard Drive Status
- Server Status
- Push Status
- FTP Server Status
- System Log
- User Information

**END EDIT**

**Status: HTTP Push**

Encoder Push Details (1)

Index	State	Information	Retry Count	Packets Sent	Packets Dropped	Elapsed Time
1		Disabled	0	0	0	- none -

**REFRESH**

Reflector Push Details (1)

Index	State	Information	Retry Count	Packets Sent	Packets Dropped	Elapsed Time
1		Disabled	0	0	0	- none -

**REFRESH**

### *HTTP Push Status*

State	Packet Sender (the encoder) Ready to Send or Not Ready to Send.
Information	If enabled, Push information is shown here (and written to the System Event log) whenever it changes.
Retry Count	Increments for each retry. The appliance will automatically retry the push every 2–10 seconds until the connection is successful. Retries may occur due to incorrect push configuration, networks problems, or server resets.
Bytes Sent	Total byte count since the push connection was established.
Elapsed Time	Total elapsed time since the push connection was established.

## Status: FTP Server Status

The screenshot shows the VBrick Integrated Web Server Administration/Configuration interface. The top navigation bar includes links for CONFIGURATION, STATUS, DIAGNOSTIC, MAINTENANCE, HELP, HOME, and LOGOUT. The main content area is titled "Status: FTP Server Status" and contains a "Server Status" section with the following metrics:

- Current Client Sessions: 0
- Max. Client Sessions: 0
- Total Client Sessions: 0
- Max. Bandwidth: 0
- Current Bandwidth: 0

Below these metrics is a table with the following columns: Index, IP Address, Filename, Start Date/Time, Bytes Sent, Percent, File Size, File Bandwidth, and Average Bandwidth. The table is currently empty. At the bottom of the page, there are two buttons: "REFRESH" and "RESET".

**Note** Bandwidth measurements are only calculated for file transfers that take longer than one second. If less than one second, the Max. Bandwidth and Current Bandwidth fields will remain at zero.

## Status: System Log

System logs can give you more information about the status of your appliance. Each log can hold up to 20 of the latest informational messages. All logs are emptied when the appliance is powered down or reset.

### Status: System Log > Config

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

**VBrick**    **INTEGRATED WEB SERVER** Administration/Configuration

CONFIGURATION | STATUS | DIAGNOSTIC | MAINTENANCE | HELP | HOME | LOGOUT

**System Status**

- System Information
- Network Status
- Encoder Status
- Reflector Status
- Hard Drive Status
- Server Status
- Push Status
- FTP Server Status
- System Log
- User Information

**END EDIT**

**Status: System Log**

Config [System Event Traps](#) [System Info](#)

config:172.22.2.41:admin:06/22/2007 09:48:40LOC Login Attempt PASSED
config:172.22.2.41:operator:06/20/2007 09:27:01LOC Slot1EncoderServerHttpPushApplySet changed from noApply to applySet
config:172.22.2.41:operator:06/20/2007 09:27:01LOC Slot1EncoderVideoApplySet changed from noApply to applySet
config:172.22.2.41:operator:06/20/2007 09:27:01LOC Slot1EncoderNetworkApplySet changed from noApply to applySet
config:172.22.2.41:operator:06/20/2007 09:27:01LOC Slot1EncoderNetworkApplySet changed from noApply to applySet
config:172.22.2.41:operator:06/20/2007 09:27:00LOC Slot1EncoderNetworkTransmitEnable changed from enabled to disabled
config:172.22.2.41:operator:06/20/2007 09:27:00LOC Slot1EncoderServerApplySet changed from noApply to applySet
config:172.22.2.41:operator:06/20/2007 09:27:00LOC Slot1EncoderServerMaximumRTSPClients changed from 100 to 0
config:172.22.2.41:operator:06/20/2007 09:27:00LOC Slot1EncoderServerHttpPushEnable changed from enabled to disabled
config:172.22.2.41:operator:06/20/2007 09:27:00LOC Login Attempt PASSED
config:172.22.2.41:operator:06/20/2007 09:02:58LOC Slot1EncoderServerHttpPushApplySet changed from noApply to applySet

### Status: System Log > System Event

This log contains reports of system events within the VBrick. These events may occur during normal operation and include some details of successful and unsuccessful attempts to access the HTTP and RTSP server as well as a some details concerning server push retries.

**VBrick INTEGRATED WEB SERVER Administration/Configuration**

CONFIGURATION | STATUS | DIAGNOSTIC | MAINTENANCE | HELP | HOME | LOGOUT

**System Status**

- System Information
- Network Status
- Encoder Status
- Reflector Status
- Hard Drive Status
- Server Status
- Push Status
- FTP Server Status
- System Log
- User Information

**END EDIT**

**Status: System Log**

[Config System Event](#) [Traps](#) [System Info](#)

SYSEVENT:06/20/2007 09:27:10LOC WM HTTP:Slot1 'Client Rejected', IP:172.22.2.41, BandWidth/Client Limit Reached
SYSEVENT:06/20/2007 09:03:15LOC WM HTTP:Slot 1 'GET', IP:172.22.2.41, url:'vbrickvideo1'
SYSEVENT:06/20/2007 09:03:12LOC WM HTTP:Slot 1 'GET', IP:172.22.2.41, url:'vbrickvideo1'
SYSEVENT:06/14/2007 09:07:12LOC WM HTTP:'POST', IP:172.22.2.41, url:'vbrickvideo1' Stream Stats
SYSEVENT:06/14/2007 09:07:11LOC WM HTTP:'POST', IP:172.22.2.41, url:'vbrickvideo1' STOP Stream
SYSEVENT:06/14/2007 09:07:02LOC WM HTTP:Slot 1 'GET', IP:172.22.2.41, url:'vbrickvideo1'
SYSEVENT:06/14/2007 09:06:59LOC WM HTTP:Slot 1 'GET', IP:172.22.2.41, url:'vbrickvideo1'
SYSEVENT:06/13/2007 14:55:54LOC WM HTTP Push Slot 2: Push Num: 1 Disabled
SYSEVENT:06/13/2007 14:55:54LOC WM HTTP Push Slot 1: Push Num: 1 Disabled

**REFRESH**

## Status: System Log > Traps

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

**VBrick INTEGRATED WEB SERVER Administration/Configuration**

CONFIGURATION | STATUS | DIAGNOSTIC | MAINTENANCE | HELP | HOME | LOGOUT

**System Status**

- System Information
- Network Status
- Encoder Status
- Reflector Status
- Hard Drive Status
- Server Status
- Push Status
- FTP Server Status
- System Log
- User Information

**END EDIT**

**Status: System Log**

[Config System Event](#) [Traps](#) [System Info](#)

trap:06/20/2007 09:04:12LOC slot1EncoderLossOfVideolnputActive
trap:06/20/2007 09:03:08LOC slot1EncoderLossOfVideolnputCleared
trap:06/15/2007 09:15:04LOC slot1EncoderLossOfVideolnputActive
trap:06/14/2007 09:08:04LOC slot1EncoderLossOfVideolnputCleared
trap:06/13/2007 14:57:03LOC slot1EncoderLossOfVideolnputActive
trap:06/13/2007 14:55:54LOC startUpRunMode

**REFRESH**

## Status: System Log > System Info

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

**VBrick** INTEGRATED WEB SERVER Administration/Configuration

CONFIGURATION | STATUS | DIAGNOSTIC | MAINTENANCE | HELP | HOME | LOGOUT

**System Status**

- System Information
- Network Status
- Encoder Status
- Reflector Status
- Hard Drive Status
- Server Status
- Push Status
- FTP Server Status
- System Log
- User Information

**END EDIT**

**Status: System Log**

[Config System Event Traps](#) System Info

Log is empty

**REFRESH**

## Status: User Information

User information includes detailed hardware-level information about the printed circuit boards in the VBrick appliance.

### Status: User Information > Main Board

**VBrick** INTEGRATED WEB SERVER Administration/Configuration

CONFIGURATION | STATUS | DIAGNOSTIC | MAINTENANCE | HELP | HOME | LOGOUT

**System Status**

- System Information
- Network Status
- Encoder Status
- Reflector Status
- Hard Drive Status
- Server Status
- Push Status
- FTP Server Status
- System Log
- User Information

**END EDIT**

**Status: User Information**

Main Board [Slot1](#)

**Main Board Information**

User Information Version	User Info 1.0
Part Number	9190-4200-1002
Box Serial Number	01070500569
Customer Class	
Manufacturing Date	20050725
Board Assembly Number	6101-0180-0403
Hard Drive Assembly Number	
Board Serial Number	3040501882
MAC Address	00:07:df:01:51:03



## Status: User Information > Slot1

The screenshot displays the VBrick Integrated Web Server Administration/Configuration interface. The top navigation bar includes the VBrick logo and the text 'INTEGRATED WEB SERVER Administration/Configuration'. Below this is a green navigation menu with the following items: CONFIGURATION | STATUS | DIAGNOSTIC | MAINTENANCE | HELP | HOME | LOGOUT.

The main content area is divided into two sections. On the left is a 'System Status' sidebar with a list of menu items: System Information, Network Status, Encoder Status, Reflector Status, Hard Drive Status, Server Status, Push Status, FTP Server Status, System Log, and User Information. The 'User Information' item is selected.

The right section is titled 'Status: User Information' and contains a sub-section for 'Main Board Slot1'. Below this, there is a table titled 'User Information -- Slot1' with the following data:

User Information -- Slot1	
User Information Version	User Info 1.0
Board Assembly Number	6101-0200-0100
This Board Serial Number	3060500453

At the bottom of the sidebar, there is a green button labeled 'END EDIT'.

---

## Diagnostics

### Topics in this chapter

Diagnostics: Network Tests .....	113
Diagnostics: Device Test .....	115
Diagnostics: Hard Drive .....	117

## 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.

The screenshot shows the VBrick Integrated Web Server Administration/Configuration interface. The top navigation bar includes links for CONFIGURATION, STATUS, DIAGNOSTIC, MAINTENANCE, HELP, HOME, and LOGOUT. The main content area is titled "Diagnostics: Network Tests" and features a sidebar with "Diagnostics" options: Network Tests, Device Test, and Hard Drive. The "Ping Test" section is active, showing the "Operational State: Ping Test". Below this, the "Ping Test Result" is displayed as follows:

Response Counter	0
Timeout Counter	0
Resolved IP Address	0.0.0.0
Ping Result	

The "Ping Test Setting" section includes the following fields:

- Address Mode:  IP Address  Host Name
- IP Address: 127.0.0.1
- Host Name: localhost
- Number of Packets: 4
- PDU Size: 64
- Transmit Interval: 1 (sec.)
- Transmit Timeout: 5 (sec.)

At the bottom, there are buttons for REFRESH, STOP, and DEFAULTS. An "END EDIT" button is also visible in the sidebar area.

Address Mode	IP Address or Host name. Cannot be blank even if the Address mode is set to Host <ul style="list-style-type: none"> <li>• IP Address – Enter IP Address, if desired,</li> <li>• Host Name – Enter Host Name.</li> </ul>
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 > Trace Route 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). 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.

VBrick INTEGRATED WEB SERVER Administration/Configuration

CONFIGURATION | STATUS | DIAGNOSTIC | MAINTENANCE | HELP | HOME | LOGOUT

**Diagnostics**

- Network Tests
- Device Test
- Decoder Color Bars
- Hard Drive

**Diagnostics: Network Tests**

[Ping Test](#) [Traceroute Test](#) [Data Tests](#)

**Operational State: Trace Route Test**

**Trace Route Test Result**

Resolved Ip Address 0.0.0.0  
Overall Result

**Trace Route Test Setting**

Address Mode  IP Address  Host Name

IP Address

Host Name

Probe Count

**REFRESH** **STOP**

**DEFAULTS**

Operational State	The currently selected test.
Address Mode	Check the box indicating whether the target address is an IP Address or Host Name.
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.
-------------	--

### *Trace Route 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."

**VBrick INTEGRATED WEB SERVER Administration/Configuration**

CONFIGURATION | STATUS | DIAGNOSTIC | MAINTENANCE | HELP | HOME | LOGOUT

**Diagnostics**

- Network Tests
- Device Test
- Decoder Color Bars
- Hard Drive

**END EDIT**

**RESET BOX**

**Diagnostics: Network Tests**

[Ping Test](#) [Traceroute Test](#) [Data Tests](#)

**Operational State: None**

**Trace Route Test Result**

Resolved Ip Address 127.0.0.1  
Overall Result Traceroute: Test done

**Summary:**  
Starting Traceroute to 127.0.0.1 from 172.22.123.249, with 104 byte packets and maximum 30 hops.  
Hop= 1, Node=127.0.0.1(localhost) Probe delay= 1ms 0ms 0ms

**Trace Route Test Setting**

Address Mode  IP Address  Host Name  
IP Address   
Host Name   
Probe Count

**REFRESH** **START**

**DEFAULTS**

## Diagnostics: Device Test

The WM Appliance automatically performs a full POST (Power On Self Test) hardware test at power-on or reset. The results are shown on this page.

▼ To run the Device Test:

- Go to **Configuration: System > General**.
- Set the **Configured Operational Mode** to **Diagnostics**. (After you press **Apply**, the appliance will reboot. Wait until the front panel displays "Diagnostic Mode.")
- Go to **Diagnostic: Device Test** and click **Begin Edit**.
- Set test parameters (see below).
- Click **Start**, then wait a few seconds and click **Refresh** to see the test results.

6. When done, reset **Configured Operational Mode** to **Run**.

**VBrick INTEGRATED WEB SERVER Administration/Configuration**

CONFIGURATION | STATUS | DIAGNOSTIC | MAINTENANCE | HELP | HOME | LOGOUT

**Diagnostics**

- Network Tests
- Device Test**
- Hard Drive

**END EDIT**

**RESET BOX**

### Diagnosics: Device Test

**Operational State: None** Test has been run: 0 time

Test Result	Main Board
LM87	Test Not Run
IR	Test Not Run
RTC	Test Not Run
Watchdog	Test Not Run
SDRAM	Test Not Run
CPLD	Test Not Run
UART	Test Not Run
Ethernet	Test Not Run
Front Panel	Test Not Run
IDE Hard Disk	Test Not Run
DMA Master	Test Not Run

Test Result	Slot1	Slot2
PLX PCI Interface	Test Not Run	N/A
Xilinx	Test Not Run	N/A
FIFO	N/A	N/A
PCI DMA Master	Test Not Run	N/A
Encoder SRAM	Test Not Run	N/A
Encoder 1807	N/A	N/A
Encoder SDI	N/A	N/A
MPEG4 Video Path	N/A	N/A
Decoder SDI	N/A	N/A
Decoder Frequency	N/A	N/A
Decoder 7129	N/A	N/A
Decoder 9489	N/A	N/A
Decoder Host Interface	N/A	N/A
Decoder SRAM	N/A	N/A
Decoder TV Interface	N/A	N/A
Decoder TV Interface SRAM	N/A	N/A

Loop Count   Continuous

Test Intensity

**REFRESH** **START**

Loop Count	Number of times to run test.
Continuous	Click to run in continuous loop.
Test Intensity	Low intensity is faster but runs fewer tests. High intensity runs all tests and may take up to 10 minutes.

## Diagnostics: Hard Drive

The screenshot shows the VBrick Integrated Web Server Administration/Configuration interface. The top navigation bar includes links for CONFIGURATION, STATUS, DIAGNOSTIC, MAINTENANCE, HELP, HOME, and LOGOUT. The main content area is titled 'Diagnostics: Hard Drive Test' and shows 'Operational State: None'. There are two main sections: 'Hard Drive Format' and 'Check Disk'. The 'Hard Drive Format' section shows a 'Format Result: None' and has buttons for 'END EDIT', 'REFRESH', and 'START'. The 'Check Disk' section shows a 'Check Disk Result: None' and has a 'REFRESH' button. A note at the bottom states 'You must be in Diagnostics Mode to start check disk'.

Hard Drive Format	<b>Use carefully.</b> Removes all content and reformats the hard drive.
Check Disk	Runs the Check Disk utility. You must be in Diagnostic Mode to start Check Disk. See below.

▼ To run Check Disk:

1. Go to **Configuration: System > General**.
2. Set the **Configured Operational Mode** to **Diagnostics**. (After you press **Apply**, the appliance will reboot. Wait until the front panel displays "Diagnostic Mode.")
3. Go to **Diagnostic: Hard Drive** and click **Begin Edit**.
4. Click **Start** to run the utility. (Note that the **Start** button is only shown in Diagnostic Mode.)
5. Click **Refresh** to see the results.
6. When done, reset **Configured Operational Mode** to **Run**.

---



## Maintenance

### Topics in this chapter

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Maintenance: Default All Configuration . . . . .	120
Maintenance: Read/Write Configuration . . . . .	120
Maintenance: Usernames & Passwords . . . . .	123

### Maintenance: Device Information

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

**Maintenance: Device Information**

System Description: VBrick Systems Inc., Model 6200 Serial

System Name:

System Location:

System Contact:

System Up Time: 6 days, 2: 5:36 (hr:min:sec)

Total System Up Time: 00:181 22:24 (yr.day hr:min)

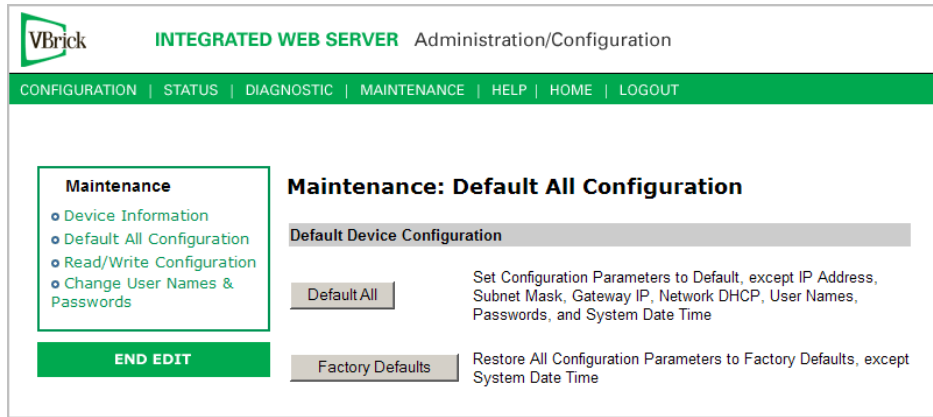
Start Time	Stop Time	Up Time	Restart Type
07/05/2007 08:03:46	Currently Running	00:006 02:05	RESET
07/05/2007 08:02:50	07/05/2007 08:02:50	00:000 00:00	RESET
06/29/2007 07:54:20	07/05/2007 08:01:26	00:006 00:07	RESET
06/29/2007 07:53:24	06/29/2007 07:53:24	00:000 00:00	RESET
06/22/2007 09:16:39	06/29/2007 07:52:11	00:006 22:35	RESET
06/22/2007 08:24:06	06/22/2007 09:15:26	00:000 00:51	RESET
06/13/2007 14:59:25	06/22/2007 08:23:34	00:008 17:24	RESET
06/13/2007 14:58:29	06/13/2007 14:58:29	00:000 00:00	RESET
06/13/2007 08:55:14	06/13/2007 14:57:34	00:000 06:02	RESET
06/12/2007 15:14:49	06/13/2007 08:54:19	00:000 17:39	RESET

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.

Total System Up Time	Displays the total time that the unit has been powered up.
Reset Table	Displays a history of the last 10 times the VBrick restarted. The table includes the start time, stop time and run time for each restart and also includes an indication of whether the restart was caused by a power loss or by a reset request from an administrator or operator.

## 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

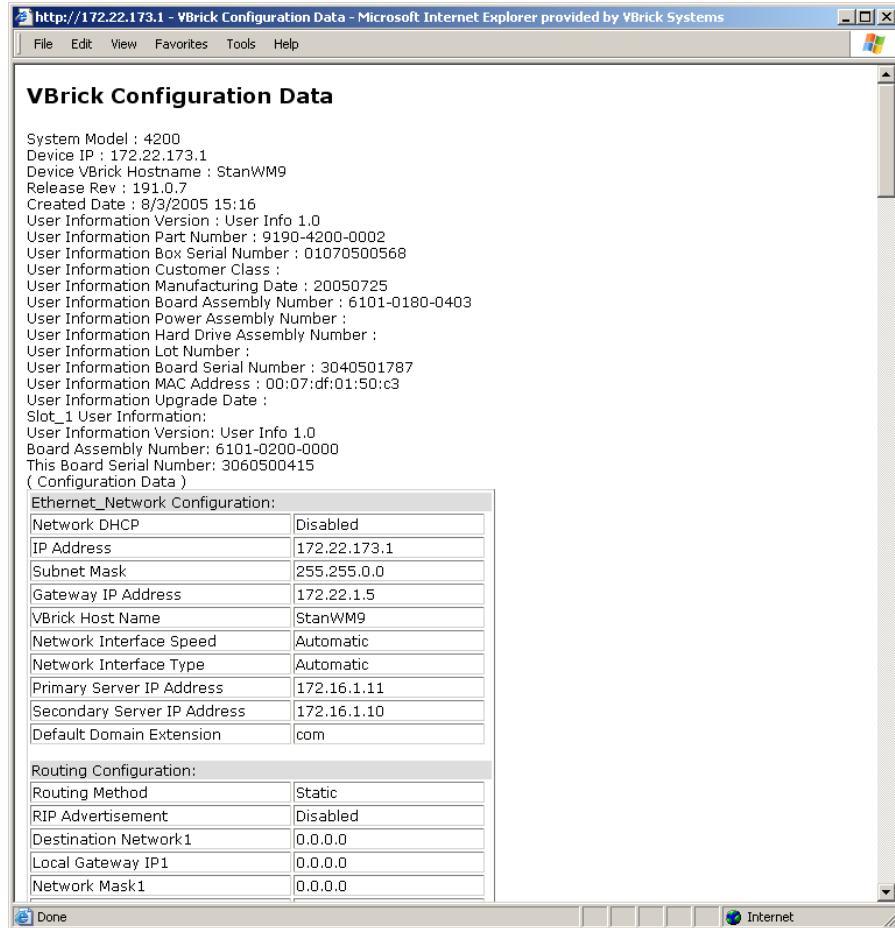
The Read/Write Configuration page allows you to read configuration parameters from the VBrick to a file, as well as write configuration parameters from a file to the VBrick. The file is an .xml file and Internet Explorer is the assumed browser. Note that the VBrick appliance the .xml file is read *from*, and VBrick appliance the .xml file is written *to*, must be running the same version of code.

The screenshot shows the VBrick Integrated Web Server Administration/Configuration interface. At the top, there is a navigation bar with the VBrick logo and the text 'INTEGRATED WEB SERVER Administration/Configuration'. Below this is a green navigation menu with links for CONFIGURATION, STATUS, DIAGNOSTIC, MAINTENANCE, HELP, HOME, and LOGOUT. The main content area is titled 'Maintenance: Read/Write Configuration'. On the left, there is a 'Maintenance' sidebar with a list of options: Device Information, Default All Configuration, Read/Write Configuration (which is highlighted), and Change User Names & Passwords. Below the sidebar is a green 'END EDIT' button. The main content area contains a 'Read From Device' button with a 'Write To Device' link next to it. Below that is a 'Read Configuration Data From Device' button. At the bottom of the main content area, there is a 'Read' button and the text 'Read Data From Device'. A note at the bottom of the page states: 'Note: You can [click here](#) to download style sheet for viewing configuration data off-line. Please do not rename the style sheet file (XSL), and save it to the same directory as configuration file.'

### *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 13). 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.



**Figure 13.** 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 that 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.

The screenshot shows the VBrick Integrated Web Server Administration/Configuration interface. The page title is "Maintenance: Read/Write Configuration". On the left, there is a "Maintenance" sidebar with a list of options: "Device Information", "Default All Configuration", "Read/Write Configuration" (which is selected), "Change User Names & Passwords", and an "END EDIT" button. The main content area has a header "Maintenance: Read/Write Configuration" and a sub-header "Read From Device Write To Device". Below this, there is a section titled "Write Configuration Data To Device" with a "File:" label, an input field, a "Browse..." button, and a "Write" button. A note at the bottom states: "Note: This feature allows for full or partial configuration restoral, based upon a previously saved XML file. You should carefully review the file beforehand. You can [click here](#) to download style sheet for viewing configuration data you are going to write. Please do not rename the style sheet file (XSL), and save it to the same directory as configuration file. **Please make sure the unit is not performing critical operations or under heavy usage before attempting to write the configuration.**"

### *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: Usernames & Passwords

### Maintenance: Usernames & Passwords > Change Usernames & Passwords

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

**VBrick** INTEGRATED WEB SERVER Administration/Configuration

CONFIGURATION | STATUS | DIAGNOSTIC | MAINTENANCE | HELP | HOME | LOGOUT

**Maintenance**

- o Device Information
- o Default All Configuration
- o Read/Write Configuration
- o Change User Names & Passwords

**END EDIT**

### Maintenance: User Names & Passwords

Change User Names & Passwords [Change SNMPv3 Passwords](#)

**Administrator**

User Name

Password

Confirm

**Operator**

User Name

Password

Confirm

**Diagnostics**

User Name

Password

Confirm

**Public**

User Name

Password

Confirm

Promiscuous Mode  Disabled  Enabled


**APPLY**
**REVERT**
**DEFAULTS**

User Name	Enter desired user name. Cannot exceed 20 characters. It may include any combination of alphanumeric characters and only the following special characters: ~ ! # \$ ^ * + & % [ ] { }   < > See Table 15 below for defaults.
Password	Enter password. Cannot exceed 20 characters. May include any combination of alphanumeric characters but only the following special characters: ~ ! # \$ ^ * + & % [ ] { }   < > See Table 15 for defaults.
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.

**Table 15.** 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


**INTEGRATED WEB SERVER** Administration/Configuration

CONFIGURATION
STATUS
DIAGNOSTIC
MAINTENANCE
HELP
HOME
LOGOUT

**Maintenance**

- Device Information
- Default All Configuration
- Read/Write Configuration
- Change User Names & Passwords

### Maintenance: User Names & Passwords

Change User Names & Passwords
Change SNMPv3 Passwords

**Administrator**

User Name:

Security Level:

Authentication Password:

Authentication Protocol:

Privacy Password:

**Operator**

User Name:

Security Level:

Authentication Password:

Authentication Protocol:

Privacy Password:

**Diagnostics**

User Name:

Security Level:

Authentication Password:

Authentication Protocol:

Privacy Password:

**Public**

User Name:

Security Level:

Authentication Password:

Authentication Protocol:

Privacy Password:

END EDIT

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 15 for defaults.
Authentication Protocol	Select protocol: MD5 or SHA.
Privacy Password	Required.
Security Level	No Authentication, No Privacy (Default). No Privacy. Authentication and Privacy.



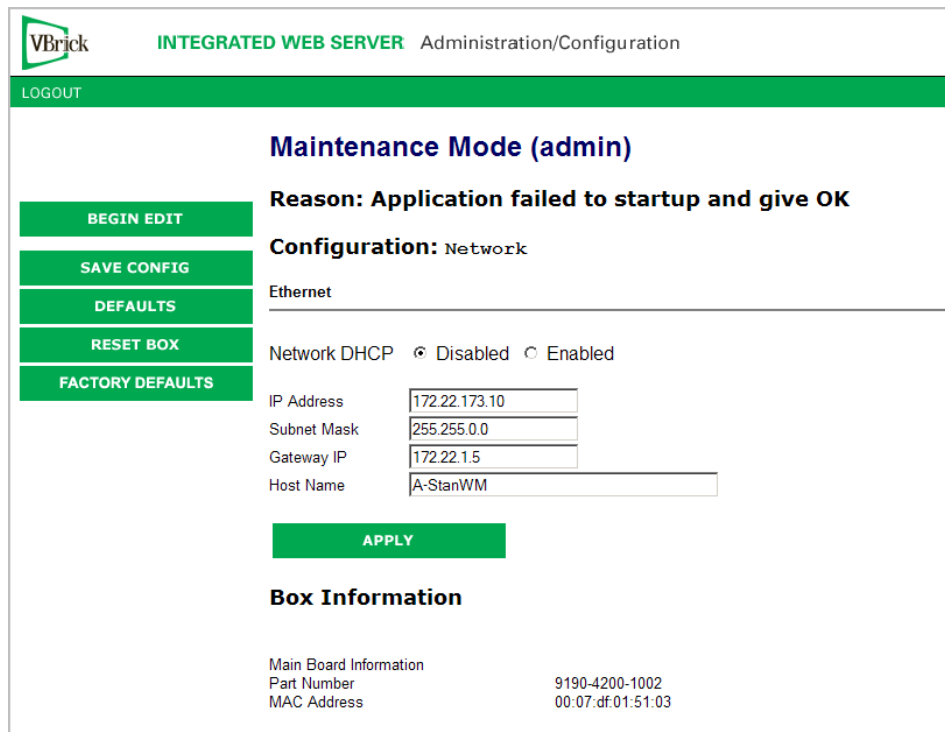
## Maintenance Mode

### Topics in this chapter

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Maintenance Mode CLI Operation .....	129

### 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 are a subset of those provided for Full Feature Mode, allowing for minimal configuration and diagnostic 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 occurs when a VBrick is running 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. Security is maintained in maintenance mode, so the user must be at administrator level to change the parameters.



**VBrick** INTEGRATED WEB SERVER Administration/Configuration

LOGOUT

### Maintenance Mode (admin)

**Reason: Application failed to startup and give OK**

**Configuration: Network**

Ethernet

Network DHCP  Disabled  Enabled

IP Address

Subnet Mask

Gateway IP

Host Name

**APPLY**

### Box Information

Main Board Information

Part Number	9190-4200-1002
MAC Address	00:07:df:01:51:03

Network DHCP	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	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.

- 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 `VBMainMode>` and displays one of the 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. Unlike normal Integrated Web Server (IWS) and Command Line Interface (CLI) operations, Maintenance Mode IWS and CLI does not automatically save and reboot when the network parameters are changed. Purposely, in Maintenance Mode, after the user initiates changes and applies, it is necessary to manually save and reboot.

**Table 16.** CLI Commands

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

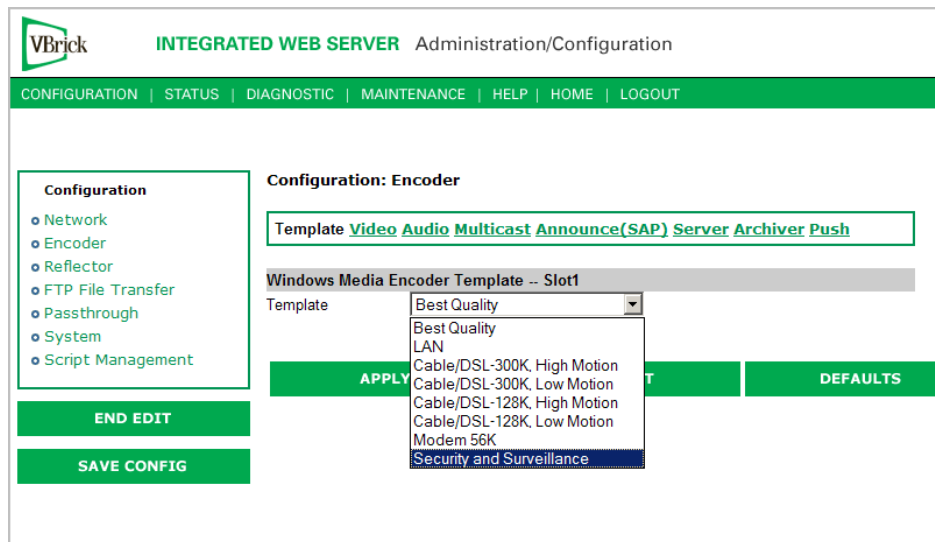
<b>Command</b>	<b>Description</b>	<b>Entry</b>
<code>c nt 6 xxx</code>	To edit the IP Host Name. The default is the Media Access Control (MAC) address, a hardware address that uniquely identifies each node of a network.	The Host Name can be a maximum of 18 characters; the first character must be a letter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

## WM Templates

Seven selectable templates have been preconfigured for many common applications. Templates apply to **Video** and **Audio** settings only. There are always trade-offs when selecting encoder settings. In general, finer resolution detail and smoother motion will require more resources and more network bandwidth. The optimum is to display the finest detail and smoothest motion possible given the network resources available. *The Cable/DSL 128K High Motion template is the default template for the WM Appliance.* You select the template on the Configuration: Encoder > Template page as shown below.

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**Table 17.** Preconfigured WM Appliance Templates

Template Name	Description
Best Quality	Approximately 4.5 Mbps with highest rate stereo audio and highest resolution video at 30 frames per second. Resolution 640x480. <i>This template does not support multiple bit rate (MBR).</i>
LAN	Approximately 1.2 Mbps with high rate stereo audio and high resolution video at 30 frames per second. Resolution: 320x240.
Cable/DSL-300K, High Motion	Approximately 300 Kbps with medium rate mono audio and medium resolution video at 30 frames per second. Resolution: 240x180.
Cable/DSL-300K, Low Motion	Approximately 300 Kbps with medium rate mono audio and high resolution video at 15 frames per second. Resolution: 320x240.
Cable/DSL-128K, High Motion †	Default template. Approximately 128 Kbps with medium rate mono audio and lower resolution video at 15 frames per second. Resolution: 160x120.
Cable/DSL-128K, Low Motion	Approximately 128 Kbps with medium rate mono audio and medium resolution video at 10 frames per second. Resolution: 240x180.
Modem 56K	Approximately 56 Kbps with low rate mono audio and low resolution video at 7.5 frames per second. Resolution: 160x120.
Security & Surveillance	Approximately 170 Kbps with very low rate mono audio and high resolution video at 1 frame per second. Resolution: 320x240.

† Default template. The appliance is configured and shipped with this template installed and the values you initially see in IWS are those defined by this template.

## Best Quality

Video Encoder Parameter	Setting
Resolution	640x480
Rate Control Method	CBR/CFR
Target Bit Rate	4000000
Target Frame Rate	30 NTSC, 25 PAL
Key Frame Interval	3
Smoothness	0
Picture Center Quality Difference	0
Buffer Size	1000

Audio Encoder Parameter	Setting
Audio Channels	Stereo
L+R Bit Rate	192000
Sample Frequency	48 KHz

## LAN

Video Encoder Parameter	Setting
Resolution	320x240
Rate Control Method	CBR/CFR
Target Bit Rate	1000000
Target Frame Rate	30 NTSC, 25 PAL
Key Frame Interval	3
Smoothness	0
Picture Center Quality Difference	0
Buffer Size	1000
Audio Encoder Parameter	Setting
Audio Channels	Stereo
L+R Bit Rate	128000
Sample Frequency	48 KHz

## Cable/DSL-300K, High Motion

**This is the default template.** The WM appliance is configured and shipped with these template settings applied.

Video Encoder Parameter	Setting
Resolution	240x180
Rate Control Method	CBR/CFR
Target Bit Rate	260000
Target Frame Rate	30 NTSC, 25 PAL
Key Frame Interval	5
Smoothness	0
Picture Center Quality Difference	0
Buffer Size	5000
Audio Encoder Parameter	Setting
Audio Channels	Mono (L+R)
L+R Bit Rate	32000

Sample Frequency	44.1 KHz
------------------	----------

## Cable/DSL-300K, Low Motion

Video Encoder Parameter	Setting
Resolution	320x240
Rate Control Method	CBR/CFR
Target Bit Rate	257000
Target Frame Rate	15 NTSC, 12.5 PAL
Key Frame Interval	5
Smoothness	0
Picture Center Quality Difference	0
Buffer Size	1000
Audio Encoder Parameter	Setting
Audio Channels	Mono (L)
L+R Bit Rate	32000
Sample Frequency	44.1 KHz

## Cable/DSL-128K, High Motion

Video Encoder Parameter	Setting
Resolution	160x120
Rate Control Method	CBR/CFR
Target Bit Rate	92000
Target Frame Rate	15 NTSC, 12.5 PAL
Key Frame Interval	6
Smoothness	0
Picture Center Quality Difference	0
Buffer Size	8000
Audio Encoder Parameter	Setting
Audio Channels	Mono (L+R)
L+R Bit Rate	32000
Sample Frequency	44.1 KHz

## Cable/DSL-128K, Low Motion

Video Encoder Parameter	Setting
-------------------------	---------



Resolution	240x180
Rate Control Method	CBR/CFR
Target Bit Rate	90000
Target Frame Rate	10 (NTCS and PAL)
Key Frame Interval	6
Smoothness	0
Picture Center Quality Difference	0
Buffer Size	5000
<b>Audio Encoder Parameter</b>	<b>Setting</b>
Audio Channels	Mono (L)
L+R Bit Rate	32000
Sample Frequency	44.1 KHz

## Modem 56K

<b>Video Encoder Parameter</b>	<b>Setting</b>
Resolution	160x120
Rate Control Method	CBR/CFR
Target Bit Rate	41000
Target Frame Rate	7.5 NTSC, 5 PAL
Key Frame Interval	10
Smoothness	0
Picture Center Quality Difference	0
Buffer Size	10000
<b>Audio Encoder Parameter</b>	<b>Setting</b>
Audio Channels	Mono (L)
L+R Bit Rate	12000
Sample Frequency	16 KHz

## Security & Surveillance

<b>Video Encoder Parameter</b>	<b>Setting</b>
Resolution	320x240
Rate Control Method	CBR/CFR
Target Bit Rate	150000
Target Frame Rate	1 (NTSC and PAL)

---

Key Frame Interval	10
Smoothness	0
Picture Center Quality Difference	0
Buffer Size	10000
<b>Audio Encoder Parameter</b>	<b>Setting</b>
Audio Channels	Mono (L)
L+R Bit Rate	8000
Sample Frequency	8 KHz

## Stream Prioritization

### Topics in this chapter

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### Overview

This section is written for network administrators who are configuring MBR (Multiple Bit Rate) streams on a VBrick encoder. It explains what streams and groups a WM player will play under certain predictable circumstances. It also provides details about how Groups should be configured. In particular, this document explains how to create a priority list in a Stream Prioritization Object. Depending on the streams being delivered, a Stream Prioritization Object may be created for a given server application whenever there are two or more streams present. The Windows Media server and VBrick appliances use priority lists in different ways to play streams:

- Windows Media server – the streams can be (1) pulled by the server from a VBrick, (2) pushed from the VBrick to the server, or (3) transferred in an archived file to a VOD publishing point on the server.
- VBrick Appliance – the streams are packaged in MBR Groups 1, 2, and 3.

---

**Note** The Stream Prioritization Object is defined in the Microsoft ASF specification. This discussion is based on VBrick's understanding of how the Stream Prioritization Object is designed to work.

---

### Stream Prioritization

To select streams offered by a server, the WM Player (the "client") uses an item known as a Stream Prioritization Object. The Stream Prioritization Object is one of the many ASF protocol items sent from a server to its clients and this section describes VBrick's usage of the Stream Prioritization Object. The Stream Prioritization Object contains a list of offered streams, in which the order of the streams indicates priority: the first stream in the list has the highest priority and the last stream has the lowest priority. We will refer to the list of streams just mentioned as the "priority list," even though *bitrate* rather than priority is the vital consideration. To see how the priority list is utilized, we will consider a series of examples, starting with the situation in which no bitrate constraint is imposed by the WM Player.

---

**Note** The Stream Prioritization Object is automatically created by a VBrick appliance and sent to downstream WM players. It can also be created by a Windows Media Server.

---

---

## Non Bitrate Constrained

### *Example 1 – Priority List*

Suppose that the priority list is video<sub>1</sub>, audio<sub>1</sub>, video<sub>2</sub>, audio<sub>2</sub>, video<sub>3</sub>, audio<sub>3</sub> (do not confuse the subscripts used here with Encoder MBR Selections). The WM Player identifies these five pairs: video<sub>1</sub>, audio<sub>1</sub>; audio<sub>1</sub>, video<sub>2</sub>; video<sub>2</sub>, audio<sub>2</sub>; audio<sub>2</sub>, video<sub>3</sub>; video<sub>3</sub>, audio<sub>3</sub>. This approach to parsing a list is an example of what is sometimes called a *sliding window*. The WM Player selects the pair with the highest total bitrate. If the priority list is audio<sub>1</sub>, video<sub>1</sub>, audio<sub>2</sub>, video<sub>2</sub>, audio<sub>3</sub>, video<sub>3</sub>, then the WM Player identifies the five pairs audio<sub>1</sub>, video<sub>1</sub>; video<sub>1</sub>, audio<sub>2</sub>; audio<sub>2</sub>, video<sub>2</sub>; video<sub>2</sub>, audio<sub>3</sub>; audio<sub>3</sub>, video<sub>3</sub>, and selects the pair with the highest total bitrate.

In these examples, the priority list contains an equal number of audio and video streams. This is not always the case, however. There can be fewer or more audio streams than video streams, and without further explanation, the term "sliding window" stops being appropriate.

### *Example 2 – Redundant List*

Suppose that the priority list is video<sub>1</sub>, audio<sub>1</sub>, video<sub>2</sub>, audio<sub>2</sub>, audio<sub>3</sub>. How the WM Player parses this list can be illustrated by replacing the priority list with this redundant list: video<sub>1</sub>, audio<sub>1</sub>, video<sub>2</sub>, audio<sub>2</sub>, video<sub>2</sub>, audio<sub>3</sub>. The sliding window mechanism, applied to the redundant list, defines which pairs the WM Player identifies: video<sub>1</sub>, audio<sub>1</sub>; audio<sub>1</sub>, video<sub>2</sub>; video<sub>2</sub>, audio<sub>2</sub>; video<sub>2</sub>, audio<sub>3</sub> (the pair audio<sub>2</sub>, video<sub>2</sub> has been omitted, since it is the same as video<sub>2</sub>, audio<sub>2</sub>). Among the four pairs just mentioned, the WM Player selects the one with the highest total bitrate.

As another example, the redundant list corresponding to the priority list audio<sub>1</sub>, video<sub>1</sub>, video<sub>2</sub>, video<sub>3</sub>, is audio<sub>1</sub>, video<sub>1</sub>, audio<sub>1</sub>, video<sub>2</sub>, audio<sub>1</sub>, video<sub>3</sub>. The WM Player identifies the three pairs audio<sub>1</sub>, video<sub>1</sub>; audio<sub>1</sub>, video<sub>2</sub>; audio<sub>1</sub>, video<sub>3</sub>, and it selects the pair with the highest total bitrate. In the case of a video-only or audio-only priority list, the highest-bitrate stream is selected.

### *Example 3 – Script Stream*

There is one more stream to be considered: the script stream. The script stream includes metadata and closed captioning if they are enabled on the **Video** page, and if **Closed Caption and Metadata** is checked on the **Server** page. If the server offers the script stream, then the WM Player will consider it.

## Bitrate Constrained

So far, we have described the situation in which no bitrate constraint is imposed by the WM Player. Now we turn our attention to what happens when the WM Player imposes a bitrate constraint. The discussion will assume that the WM Player considers the script stream, when it is offered. The broad statement to be made is that the WM Player traverses the priority list, starting at the highest-priority stream, and stops immediately before the bitrate constraint is exceeded. (Note: the bitrate constraint imposed by the WM Player is, in general, slightly smaller than the value appearing in the URL modifier.) One particular consequence is that the WM Player might not select one stream of each type offered, where "type" means audio, video, or script.

### ***Example 4 – Sliding Window Behavior***

As an example, consider this priority list: audio<sub>1</sub>, script, video<sub>1</sub>, audio<sub>2</sub>, video<sub>2</sub>, audio<sub>3</sub>, video<sub>3</sub>. Depending on the value of the bitrate constraint, the WM Player might select no stream; or it might select audio<sub>1</sub>, and no other stream; or it might select audio<sub>1</sub>, script, and no video stream. In this priority list, the WM Player's sliding window mechanism identifies these seven possibilities: audio<sub>1</sub>; audio<sub>1</sub>, script; audio<sub>1</sub>, script, video<sub>1</sub>; script, video<sub>1</sub>, audio<sub>2</sub>; script, audio<sub>2</sub>, video<sub>2</sub>; script, video<sub>2</sub>, audio<sub>3</sub>; script, audio<sub>3</sub>, video<sub>3</sub>. The WM Player examines these possibilities in the order they are shown, and stops either when it has exhausted all seven possibilities, or immediately before it encounters one that exceeds the bitrate constraint—whichever comes first. Among the seven possibilities just mentioned, the WM Player selects the one with the highest total bitrate.

It is clear how sliding a window, with room for one audio stream and one video stream, through the priority list, generates the audio and video components in the possibilities shown above. What is problematic is reconciling the presence of the script stream in these possibilities with a *sliding* window. This can be done by regarding the window as having room for one audio stream, one video stream, and for the script stream, but with this proviso: once the script stream enters the window, it stays there—sliding the window changes only its audio and video occupants, once the script stream enters the window. The issues of there being fewer or more audio streams than video streams, and video-only or audio-only priority lists, are dealt with in the manner described above.

## **How the WM Appliance Creates Priority Lists**

### **For Group Serving**

To simplify the explanation, we regard an MBR Group as having bitrate = 0, if the Group is disabled. The algorithm for creating the priority list consists of these steps.

1. Put the Groups in bitrate order, lowest bitrate first. Index the resulting list of groups as group(0), group(1), group(2).
2. First, for index  $i=0$ , then for index  $i=1$ , then for index  $i=2$ , do this: if group( $i$ ) is enabled and contains a video stream that's not already in the priority list, then make the video stream the next entry in the priority list; if group( $i$ ) is enabled and contains an audio stream that's not already in the priority list, then make the audio stream the next entry in the priority list.
3. If the script stream is present in some enabled Group, then insert the script stream as the highest-priority stream in the priority list.

### **For Archiving, and Pushing to or Pulling from a WM Server**

Archiving, pushing to a WM Server, and pulling from a WM Server employ three independent multiplexing applications in the VBrick software. They use the same algorithm for making their priority lists. It consists of these steps.

1. Make an "A" list of streams, by performing this pair of operations on the streams included in the multiplexing application, for as long as there is a stream included in the multiplexing application that's not yet been put into the A list: make the lowest-bitrate audio stream not yet in the A list—if there is one—be the next stream in the A priority list; make the lowest-bitrate video stream not yet in the A list—if there is one—be the next stream in the A list.

- 
2. Make a "V" list of streams, by following the same procedure used for making the A list, but with the terms "audio" and "video" swapped.
  3. Make the priority list be the A list, if the lowest-bitrate audio stream included in the multiplexing application has bitrate less than the lowest-bitrate video stream included in the multiplexing application; otherwise, make the priority list be the V list.
  4. If the script stream is included in the multiplexing application, then insert the script stream as the second-highest priority stream in the priority list.

## Configuring Groups

In the case when all enabled MBR Groups contain both audio and video streams, it is highly preferable for the MBR Groups to be configured so that the Groups' audio bitrate and video bitrate are in the same order. For instance, if Group 2 has the highest video bitrate, Group 1 has the next highest video bitrate, and Group 3 has the lowest video bitrate, then Group 2 should have the highest audio bitrate, Group 1 should have the next highest audio bitrate, and Group 3 should have the lowest audio bitrate. (Ties are allowed.) Given the "greedy" nature of the Player's stream selection algorithm, results become unpredictable otherwise. As an example, suppose that MBR Group1 and Group2 are enabled, with rates—in Kbps—selected this way.

**Group1:** audio rate is 192, video rate is 200.

**Group2:** audio rate is 128, video rate is 300.

The priority list is 200, 192, 300, 128. The Player asks for the 192Kbps audio stream and the 300Kbps video stream; i.e., Group1's audio stream together with Group2's video stream. As a result, the VBrick Server transmits nothing to the Player. On the other hand, suppose that the Groups are

**Group1:** audio rate is 192, video rate is 260.

**Group2:** audio rate is 128, video rate is 300.

The priority list is 300, 128, 260, 192. In this case, the Player asks for (and receives) Group1 from the VBrick Server—even though Group2's video rate is larger than Group1's video rate. Next, consider a case in which audio bitrates and video bitrates are in the same order.

**Group1:** audio rate is 128, video rate is 400.

**Group2:** audio rate is 192, video rate is 600.

The priority list is 400, 128, 600, 192. If the Player imposes a bandwidth restriction which is (roughly speaking) inside the range between 728 Kbps and 792 Kbps, then it will ask for Group1's audio stream and Group2's video stream. In this case, the Player will receive nothing from the VBrick Server.

## Safe Group Configurations

The ambiguity problems described above do not exist when the MBR Groups are collectively video-only, or when they're collectively audio-only. They also do not exist when all MBR Groups share either one common audio stream, or one common video stream. There is also this configuration, based on using a low-rate audio encoder and a high-rate audio encoder, a low-rate video encoder and a high-rate video encoder.

**Group1:** low-rate audio, low-rate video.

**Group2:** low-rate audio, high-rate video.

**Group3:** high rate audio, high-rate video.

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