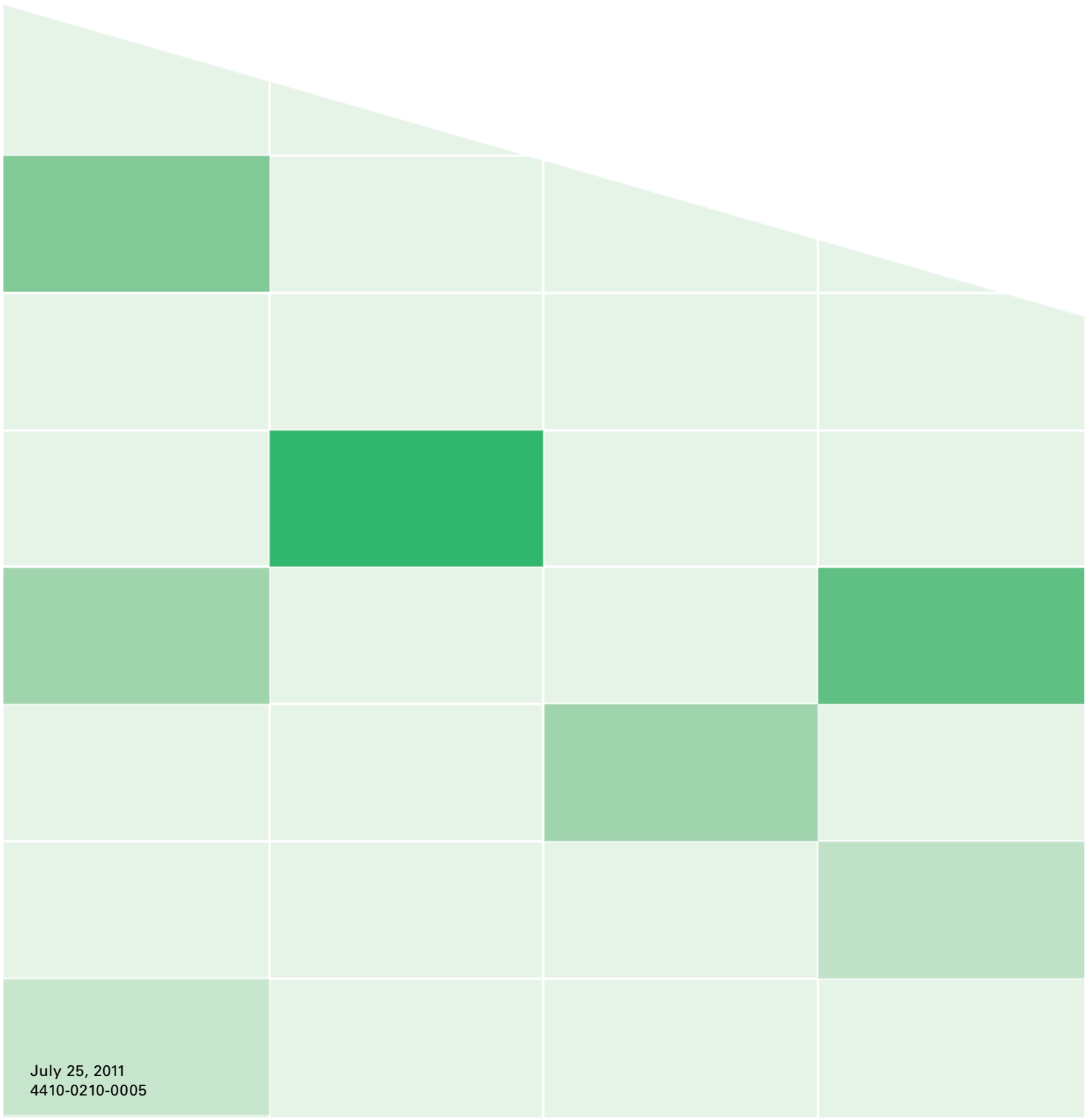




# VBrick 6000 Series Video Appliances

## VBrick v4.5 Appliance Getting Started 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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# Getting Started Guide

This document explains how to set up and configure a VBrick network video appliance. It explains the management tools available and describes some of the fundamental concepts behind the technology. It also explains how to use the Integrated Web Browser to configure the appliance and the IR Remote Control to control appliance functions. Your appliance has two available slots. Depending on what options you purchased, you may have a single encoder, a dual encoder, or a mixed model (e.g. one encoder and one decoder). You can also mix and match encoding formats with an MPEG-2 encoder, for example, in Slot1 and a WM encoder in Slot2. **Once your appliance is set up and configured with an IP address, refer to the following documents as necessary for additional configuration options.**

## *For More Information*

[VBrick MPEG-2 Appliance Admin Guide](#)

[VBrick MPEG-4 Appliance Admin Guide](#)

[VBrick WM Appliance Admin Guide](#)

## Organization

<a href="#"><u>Appliance Setup</u></a>	Explains the basics. Provides general configuration recommendations as well as how to cable the appliance and connect it to the network.
<a href="#"><u>Appliance Upgrade</u></a>	Explains how to update the appliance's flash memory when software updates are available. You can use VBDownload or VBDirectory to perform the update.
<a href="#"><u>Management Tools</u></a>	Explains how to configure the appliance using a variety of management tools. These include the IWS web interface, Telnet, SNMP, the command line, and the IR remote control.
<a href="#"><u>Streaming Video Basics</u></a>	Explains some of the fundamentals behind the technology including compression techniques, network concepts, serial port passthrough, and other video basics.
<a href="#"><u>Integrated Web Server</u></a>	Explains how to use the Integrated Web Server application to manage VBrick configuration from an external browser.
<a href="#"><u>Using the IR Remote</u></a>	Explains how to access VBrick appliance functions and control functions using an optional hand held IR (infrared) remote control.
<a href="#"><u>Command Line Interface</u></a>	Explains how to configure an appliance from the command line using HyperTerminal or Telnet when an Internet connection is not available.
<a href="#"><u>VB6000 Reference</u></a>	Provides back panel drawings, COM port pinouts, LED descriptions, and other miscellaneous information.

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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.

## Font Conventions

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

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

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

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

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

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

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

## Printer-Friendly

[VBrick Appliance Getting Started 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**.





## Appliance Setup

### Topics in this chapter

Setup Overview .....	1
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This chapter explains how to set up and configure all VBrick MPEG and WM network appliances. The information here is more detailed than the *Quick Start Guide* that came with the appliance. **You can use this document or the Quick Start Guide to set up and configure an appliance.** Before you do anything else, be sure to unpack and inspect the VBrick appliance. Each shipment comes with:

- MPEG-2, MPEG-4, or WM network appliance.
- MPEG-2/MPEG-4 and WM *Quick Start Guide*.
- Power supply.
- Product CD that introduces the appliance and has all documentation.
- Serial port cable and adapter.
- IR Remote Control unit.
- A cable and adapter kit, which includes an Ethernet cable.

### Setup Overview

The VBrick Appliance is shipped with all appropriate cables and a handheld IR remote control unit. Your appliance has two available slots. Depending on what options you purchased, you may have a single encoder, a dual encoder, or a mixed model (for example one encoder and one decoder). You can also mix and match formats with an MPEG-2 encoder, for example, in Slot1 and a WM encoder in Slot2. *The following picture shows an appliance configured with Slot1 on the upper left side.* A second encoder or decoder slot would be configured in Slot2 on the right. The appliance(s) you actually purchased may vary from this illustration depending on the type and configuration but the basic elements listed below are common to all appliances. See [VBrick Appliance Models](#) on page 67 for more information.



**Figure 1.** VBrick Network Appliance – Rear Panel (Left to Right)

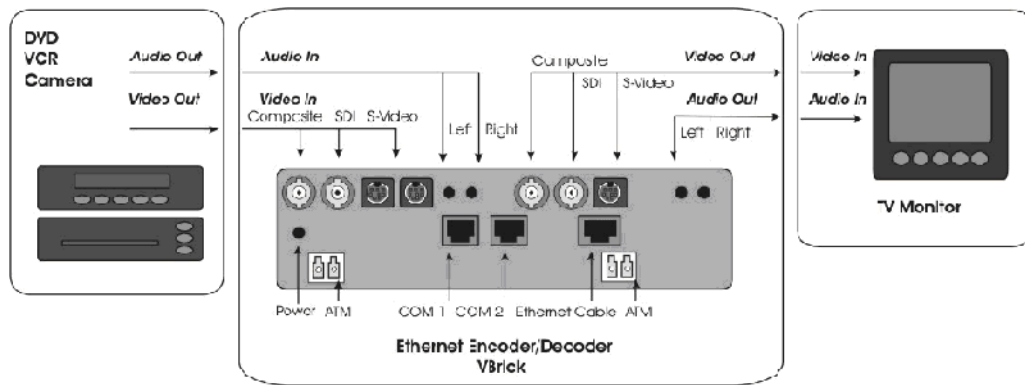
Composite In	Composite video cable in.
S-Video In	S-Video cable in.
Mic In	AudioMate microphone connection.

Audio In Left/Right	Audio in left and right channels.
Power In 24VDC	Power input. LED illuminates when power is applied.
COM 1	Dedicated serial port for Serial Port Passthrough.
COM 2 (Term)	Use to connect a terminal (or a PC running terminal emulation software) in order to manage the appliance using HyperTerminal (see <a href="#">Connecting with HyperTerminal</a> on page 51). Optional serial port for Serial Port Passthrough.
Relay	Use to control external devices.
Ethernet	Connect to the network.
LEDs	Activity – indicates there is activity on the network. Link – indicates the appliance is connected to the network. 10/100 – On indicates the link is running at 100 Mbps. Off indicates the link is running at 10 Mbps.
Power Out 12VDC	Power output. Connect external devices such as a camera.



**Figure 2.** VBrick Network Appliance – Front Panel (Left to Right)

LCD Display	Shows IP Address, system status, error messages, and Edit state. Also used with <b>Local Edit</b> on IR remote control.
Infrared Sensor	Located between LCD and fan housing. Used for IR remote control.



**Figure 3.** Appliance Setup Schematic

## Using the Quick Start Guide

A *Quick Start Guide* that explains how to set up the appliance is shipped with each device. The *Quick Start Guides* explain how to setup the appliance so you can quickly verify that you can stream audio and video from your appliance over your local network. (Your actual

production setup may be different.) Make sure you are using the right MPEG-2/MPEG-4 or WM Quick Start Guide when setting up the appliance. Use the steps on the following pages for reference or if you need additional information. The *Quick Start Guides* are also available on the Product CD in .pdf format. *For best results, print these document in color on 11x17 paper.*

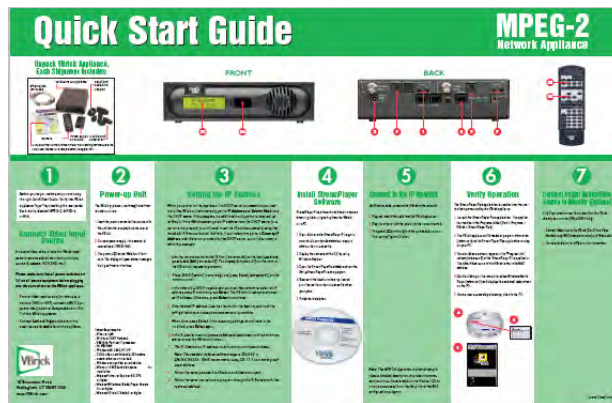


Figure 4. MPEG-2/MPEG-4 Quick Start Guide



Figure 5. WM Quick Start Guide

## Appliance Setup

### *Step 1. Connect Output to a Video Monitor*

*Optional: MPEG appliances only.* Connect a video monitor to the **Video Out** BNC, **S-Video** or **SDI** connector on the rear of the VBrick (Slot2). Make sure the TV monitor is set to Video mode. To see if the TV monitor is in the correct mode, you can connect the video source directly to the TV monitor. Also connect the Left and Right **Audio Out** connectors to the monitor or to amplified external speakers.

### *Step 2. Connect an Audio/Video Input Source*

An audio/video cable allows the VBrick appliance to receive audio/video from your input source (a camera, VCR, DVD, etc.).

- ▼ To connect the input audio/video to the appliance
  1. From a video input source (for example, a camera, DVD, or VCR), connect a BNC (composite video) cable to **Composite In** on Slot1 of the VBrick appliance.

- 
2. Connect **Left** and **Right** cables from the audio source to **Audio In** on the appliance.

### ***Step 3. Connect to the IP Network***

Use an Ethernet cable to connect the appliance to the IP network.

- ▼ To connect to the IP network
  1. Plug one end of the Ethernet cable into the Ethernet port on the VBrick appliance.
  2. Plug the other end of the Ethernet cable into the network switch.
  3. When the appliance is powered on, the green LEDs to the right of the Ethernet port will illuminate and the **Activity** light will flicker.

### ***Step 4. Power-on the Appliance***

- ▼ To power-up the unit
  1. Insert the power connector that comes with the unit into the power receptacle on the rear of the appliance.
  2. Connect the other end to a conventional 110/220 VAC power source.
  3. The green **Power In** LED on the back of the VBrick will illuminate and the front panel will display status messages during self-test and reboot. This can take several minutes. You should see a solid network **Link** light and a blinking **Activity** light.
  4. *MPEG decoder appliances only.* During a portion of the initial power-on sequence, a color bar test will appear on the monitor.

### ***Step 5. Set the IP Address***

All VBrick appliances are configured by default with DHCP (Dynamic Host Configuration Protocol) enabled. This means that when you power on the appliance on, if a DHCP server is present on your network, the VBrick will automatically get its **IP Address** and **Subnet Mask** from the DHCP server. If the VBrick cannot get an IP address from the DHCP server (or a server is not present), you will need to set the IP address manually using either the handheld IR Remote Control or HyperTerminal as explained below. *Once the IP Address is set, you can use the Integrated Web Server (IWS) to configure and manage the appliance.*

#### **Get the IP Address from a DHCP Server**

- ▼ To get an IP address from the DHCP server
  1. Connect the appliance to the network and power it on as explained above. All VBrick appliances are configured by default with DHCP enabled. This means that when you power on the appliance on, if a DHCP server is present on your network, the VBrick will automatically get its **IP Address** and **Subnet Mask** from the DHCP server. If this happens you are done. Go to [Step 6. Install StreamPlayer Plus](#) on page 6.
  2. If the VBrick cannot connect to a DHCP server, it will wait two minutes and then start in limited run mode using the default IP Address of **172. 17. 5. 5**. After 15 minutes, it will automatically reset and again try to obtain a DHCP address. The LCD screen on the front panel will display a **DHCP failed** message and then read **VBrick Systems** and continue to cycle through screens, one of which is the configured IP Address.

If you want to configure a static IP address, you must do it while the unit is operating in limited run mode. You cannot access the appliance while it is searching for DHCP server. You can set a static IP address with the Remote Control or with HyperTerminal as explained below.

3. If DHCP is successful, the monitor (MPEG appliances only) will display the VBrick logo in the lower right corner, and audio and video will be present. If the DHCP server supplies the **Gateway IP Address** or DNS server address, these parameters will replace the user-entered Gateway and DNS settings. If the DHCP server does not provide Gateway information, and if a Gateway is required for your network, you will need to manually enter a **Gateway IP Address**.
- ▼ To configure a gateway with the remote control
    1. Enter a **Subnet Mask** and press **Select**.
    2. Enter a **Gateway IP Address** (see note below) and press **Select**. The appliance will reboot with the IP address, subnet mask, and gateway configured.
    3. *MPEG appliances only.* Connect the VBrick to another VBrick over the network using an Ethernet switch. For unicast, the destination IP Address of the encoding VBrick should be the IP Address of the decoding VBrick. Make sure the respective destination and receive ports also match.

---

**Note** If the DHCP server supplies the Gateway Address or DNS server address, these parameters will replace any user-entered Gateway and DNS settings. If the DHCP server does not provide Gateway information, and if a Gateway is required for your network, you will need to enter it manually.

---

### Set the IP Address with the Remote Control

As noted, VBrick WM Appliances are shipped with a factory default address of **172.17.5.5**. If necessary, you can change this IP address using the handheld IR Remote control. *Remember that you cannot have multiple VBricks with the same IP address.* Use the **\*** button for the decimal point and the **Left** and **Right** buttons to erase.

- ▼ To set the IP Address with the IR Remote control
  1. Aim the remote control at the IR port on the front panel and press **Local Edit**. The display on the front panel of the VBrick will request the password.
  2. Press **23646** ("admin" numerically) and press **Select** on the remote control.
  3. If the network is DHCP-capable and you want the network to select an IP address, press "Y" and then press **Select**. The VBrick will reboot and obtain an IP address. Otherwise press **Select** to continue.
  4. Enter desired IP address. (Use the **\*** button for the decimal point and the left/right buttons to erase characters entered by mistake.)
  5. When done, press **Select**. If the remaining settings do not need to be modified press **Select** again.
  6. If the IP, subnet mask or gateway addresses have been modified and there are no errors, the VBrick will reboot.

### Set the IP Address with HyperTerminal

- ▼ To set the IP Address with HyperTerminal
  1. Connect an ASCII terminal (e.g. HyperTerminal, shipped with Windows 95/98/2000/NT/XP) from the RJ-45 serial port (**COM2**) on the rear of the VBrick to the COM port of the computer or terminal device (usually **COM1**) using the provided cable. See [Connecting with HyperTerminal](#) on page 51 for more information.
  2. From the Windows start menu, go to: **Start > Programs > Accessories > Communications > HyperTerminal**.

- 
3. The port setting is 9600, 8-bit, 1-stop, no parity, flow control = none. The VBrick is a DTE and the provided serial adapter cable and connector provide connectivity from the VBrick **COM2** to the PC **COM1** or **COM2**.
  4. Press Enter to see Login.
  5. The default Login and Password is **admin** (case sensitive). Type **admin** and press Enter for both Login and Password.
  6. Type **be** to become the active Editor. Pressing **?** displays the VBrick menu. Make configuration changes as desired.
  7. Change the IP Address of the device manually so that it will be recognized on the network to which it is connected: If the network is not running DHCP,
  8. Type **c nt 3 xxx.xxx.xxx.xxx** where xxx is the IP Address.
  9. Enter a subnet mask:
  10. Type **c nt 4 xxx.xxx.xxx.xxx**
  11. Enter a gateway address if required:
  12. Type **c nt 5 xxx.xxx.xxx.xxx**
  13. Enter **Apply** to implement these changes and confirm with **y**. The box reboots with IP address, subnet mask, and Gateway configured.
  14. *MPEG appliances only*. Connect the VBrick to another VBrick over the network using an Ethernet switch. For unicast, the destination IP Address of one VBrick should be the IP Address of the other VBrick. Make sure the respective destination and receive ports also match.

## ***Step 6. Install StreamPlayer Plus***

StreamPlayer Plus is used to view streams and verify operation. WM appliance operation can be verified using StreamPlayer *or* Windows Media player. MPEG-2 or MPEG-4 appliances can be verified *only* with StreamPlayer.

▼ To install StreamPlayer

1. If you did not purchase StreamPlayer go to [www.vbrick.com/products/software.asp](http://www.vbrick.com/products/software.asp) web page to download a 30-day evaluation copy and get a demo license file.
2. If you did purchase StreamPlayer, display the contents of the Product CD with Windows Explorer.
3. Open the StreamPlayerPlus folder and run the **SetupStreamPlayerPlus.exe** program.
4. Browse to the location where you saved your license file or demo file when prompted.
5. Finish the installation.

## ***Step 7. Verify Operation***

Use one of the methods below, depending on the type of VBrick you are installing, to verify it is set up and operating properly.

### **Verify MPEG 2 Operation**

▼ To verify MPEG-2 operation using StreamPlayer

1. Launch the StreamPlayer Plus application from the **All Programs** folder. Go to **Start > All Programs > VBrick > StreamPlayer Plus**.
2. The VBrick appliance will broadcast program information to the StreamPlayer Plus application running on your PC.



3. You should see a stream appear in the **Program Info** column of the StreamPlayer Plus application. The default stream name from the VBrick is the unit's MAC address.
4. Double-click on this stream to launch Windows Media Player and display the selected video stream on your PC.
5. You are now successfully streaming video to the PC.

### Verify MPEG 4 Operation

▼ To verify MPEG-4 operation using StreamPlayer

1. Launch the StreamPlayer Plus application from the **All Programs** folder. Go to **Start > All Programs > VBrick > StreamPlayer Plus**.
2. To request the audio/video stream enter the following command in the **IP Address** field in StreamPlayer.

**RTSP://actual IP address of VBrick appliance/VBrickvideo1**

The RTSP command consists of the VBrick's network IP address and a user-supplied program name. The default program name is **VBrickvideo1**. You should be able to use the same RTSP command with other media players.

3. Click the **Play** button (lower left icon) to launch Windows Media Player and display the video stream on your PC.
4. You are now successfully streaming audio and video to the PC.

### Verify WM Operation

Windows Media Player lets you receive streaming video originating from the VBrick appliance on a PC. As explained below, you can verify a WM appliance is working properly by using *either* HTTP/Unicast or VBrick's StreamPlayer application.

▼ To verify operation via HTTP/Unicast

1. Login to the VBrick IWS configuration utility (e.g. <http://ipaddressofvbrick>) using the default user name and password (**admin/admin**).
2. Go to **Configuration: Encoder > Server**.
3. Press the **Begin Edit** button to become the active editor.
4. Press **Click here to play HTTP** to launch a stream in Windows Media Player (assuming you connected to an Audio/Video Input Source in Step 2 above).
5. If the stream runs in Windows Media Player you are successfully streaming audio and video to the PC.

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**Note** The default **Cable/DSL-128K, High Motion** template for the WM Appliance transmits at approximately 128 Kbps. If you have a limited bandwidth network connection, or encounter other network-related problems, trying using a template with a lower rate bit rate.

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▼ To verify operation using StreamPlayer

1. Launch the StreamPlayer Plus application. Go to **Start > Programs > VBrick > StreamPlayer Plus**.
2. The VBrick appliance automatically broadcasts program information to the StreamPlayer application running on your PC.
3. You should see a stream appear in the **Program Info** column of the StreamPlayer application. The default stream name from the VBrick is the unit's MAC address.

- 
4. Double-click on VBrick's MAC address (or host name) to launch the stream in Windows Media Player and display the selected video stream on your PC.
  5. You are now successfully streaming video to your PC.



# Appliance Upgrade

### *Topics in this chapter*

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## Overview

VBrick appliances are shipped with PC applications to allow for easy upgrade (All release material should be installed on a PC running Internet Explorer 6.0 and using Service Pack 2 or higher.) Once the release is installed, the upgrade tools become available in the VBrick program group, located under Start > Programs. **The upgrade procedure can be invoked by using either the VBDownload application or the VBDirectory application.** Either application can be used as the starting point for updating the appliance's flash memory. (TCP/IP FTP transport services are used for this.) Using VBDirectory is an easier method as it allows users to choose the appliances by name instead of IP addresses. When VBrick appliances are not accessible to VBDirectory, the VBDownload application must be used. All saved configuration parameters are preserved when you upgrade your VBrick. There is no need to reconfigure the unit after the upgrade other than to take advantage of new features in the release. The upgrade process does require the unit to be reset, so it is important that your configuration be saved prior to the upgrade if you want to preserve the settings.

Part of the process takes place during the first boot after the upgrade of a new release. During this time you must avoid powering off the unit. This process may take 2-15 minutes and may include an automatic reboot of the unit. You can tell that the VBrick is ready for operation when you are able to login via IWS or CLI. VBrick recommends against loading a previous version of code. Some new features can cause problems for old code versions. For example, if DHCP is enabled and you load a previous version of code that does not support DHCP, the VBrick will fail to start and you will need to return the unit to the factory for repair. Before loading a previous version of code, it is highly recommended that all parameters be set to defaults.

## Installing a System Upgrade

- ▼ To upgrade a VBrick
  1. Double-click on the release executable (`SetupVB6000_x_x_x.exe`) to install the release on your PC. It is recommended that you accept the default destination folder for the release which is `Program Files\VBrick\VB6000\download\ReleaseVx_x_x`.
  2. The setup programs for VBDownload and for VBDirectory will automatically run after the release files have been extracted. Click **Next** and follow the on-screen instructions. Use the default folders if possible.
  3. When the **Maintenance Complete** page is displayed, click **Finish**.

- 
4. Go to **Start > All Programs > VBrick > VBDirectory** to start the management utility. The VBDirectory program should launch in a new window showing all VBrick appliances that are available for upgrade.
  5. Select the device to be updated by highlighting the name and then click the **Upgrade** button. (If the user name and password are not set, a dialog box will appear and you will need to configure the appliances's username and password using the **Enter Username/Password** button.)
  6. In the VBDownload window, if you installed the release to the default directory, that directory will be auto-selected in the **Revision Folder**. If not, **Browse** to the directory that contains the unzipped files from the release package.
  7. Select a **Revision** and press **OK** to start the download. Since the default mode of VBDownload is **Intelligent Download** the utility will query the VBrick to determine which release components need to be downloaded. When prompted, press **OK** to allow VBDownload to upgrade the suggested components. This may take several minutes.
  8. When you receive a **Download Complete** window, reboot the appliance by using the **Reset Unit** radio button and following the prompts (or use the **Reset** button on the IR remote).
  9. Note that part of the upgrade takes place during the first boot after the download and may take up to 15 minutes. You can tell the update is complete when you can login via IWS or CLI or when the device name entry re-appears in VBDirectory.
  10. When done close the window or click **Exit**.

---

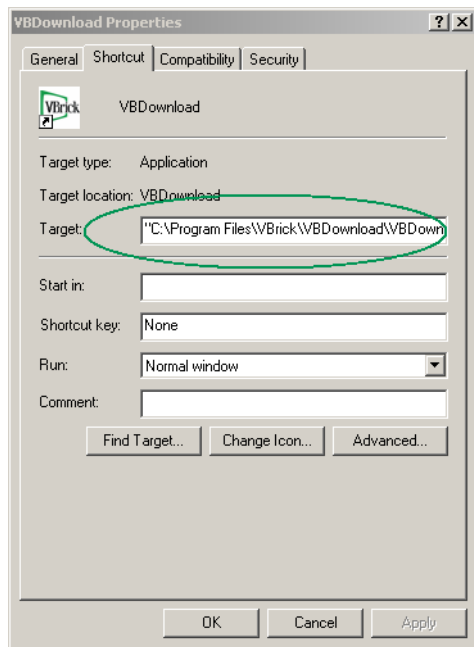
**Note** To verify the download has successfully installed, check the **Release Revision** in IWS. Go to **Status > System Information > Release Revision**.

---

## *Configuring VBDownload*

The VBDownload application is used to upgrade VBrick appliances. When you click on the setup executable, the application files are automatically installed in **Program Files/VBrick / VB6000** or **VBrick 7000-8000-9000**. If you have both VB6000 Series devices and VBrick 7000-8000-9000 devices present, the application will default to the **VBrick 7000-8000-9000** folder. Experienced VBrick users can modify this default behavior by creating a new shortcut for VBDownload that uses **VB6000** as the default folder.

- ▼ To configure the **VB6000** folder as the default folder
  1. Go to **Start > All Programs > VBrick**.
  2. Highlight **VBDownload** then right-click and select **Create Shortcut**. Then highlight the new shortcut and select **Rename**.
  3. Enter a meaningful name, highlight it, then right-click and select **Properties**.
  4. In the **Target** field, append the following text, beginning with a space, to the existing path. (Note that question marks are required for any spaces in the path.)  
**-i "" -f C:\Program?Files\VBrick\VB6000\Download\ReleaseVx\_x\_x**
  5. Replace **ReleaseVx\_x\_x** with the actual version number of the setup file and click **OK** when done.





# Management Tools

## Overview

The Integrated Web Server (IWS) configuration tool is an intuitive GUI based management tool and VBrick recommends using IWS as the primary means of managing VBrick appliances. You can also use any of the following tools to manage a VBrick:

**Table 1.** VBrick Management Tools

VBrick Tool	Description
IWS	The IWS Integrated Web Server allows quick and secure control through the VBrick's IP interface. See <a href="#">Integrated Web Server</a> on page 35.
Front Panel Edit	Front Panel Editing with the use of the IR remote control device. See <a href="#">Front Panel Edit</a> on page 14.
VBDirectory	VB6000 software ships with VBDirectory, an application that facilitates finding and accessing all VBricks on a network. A major feature of this application is that it acts as a user-friendly front-end for IWS. For more information, see the <i>VBDirectory User Guide</i> .
Command Line	CLI Command Line Interface management through the VBrick's COM2 serial port. See <a href="#">Connecting with HyperTerminal</a> on page 51 or through Telnet. See <a href="#">Connecting with Telnet</a> on page 52.
SNMP	SNMP commands through VBrick's IP interface, including SNMP Traps.
VBSDK	VBrick provides an SDK that lets third-party developers build custom applications to manage VBricks using HTML or compiled applications. See the <i>VBrick SDK User Guide</i> for detailed information.

**Note** There is only one active editing session allowed at any time in a single appliance. In IWS it is possible to exit a session which still in Edit mode. Other users then must determine whether or not to log off the previous editor. For that reason, it is recommended that all editing sessions be ended directly. Telnet, CLI and SNMP automatically log the Editor off when you exit the program.

### *Integrated Web Server*

The main card has an embedded Web Server that allows the user to manage VBricks by configuring appliances from an external browser. This allows network managers to remotely configure and monitor the appliances from virtually anywhere in the world. Currently, only Microsoft Internet Explorer is supported and other browsers may not give acceptable results. Netscape is not actively supported though many of the features may work. VBrick Systems recommends using Internet Explorer 5.5, Service Pack 2 or better. The user connects to IWS

by pointing to the IP Address (e.g. <http://172.17.5.5>) of the VBrick appliance and logging in. IWS is one of several ways a user can manage the VBrick appliance; however it is the intuitive and easiest to use. IWS Menus and parameters are described in [Integrated Web Server](#) on page 35.

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 "Configuration: Network" and is divided into three sections: Ethernet Routing Management, Domain Name Server, and Network Time Synchronization. Each section contains various configuration fields and buttons.

Ethernet Routing Management	
Network DHCP	<input checked="" type="radio"/> Disabled <input type="radio"/> Enabled
IP Address	<input type="text" value="172.22.173.10"/>
Subnet Mask	<input type="text" value="255.255.0.0"/>
Gateway IP Address	<input type="text" value="172.22.1.5"/>
VBrick Host Name	<input type="text" value="A-StanWM"/>
Network Interface Speed	<input type="text" value="Automatic"/>
Network Interface Type	<input type="text" value="Automatic"/>
Maximum Transmission Unit Size	<input type="text" value="1500"/>
Domain Name Server	
Primary Server IP Address	<input type="text" value="172.16.1.100"/>
Secondary Server IP Address	<input type="text" value="172.16.1.101"/>
Default Domain Extension	<input type="text" value="com"/>
Network Time Synchronization	
Primary Server IP Address or Host Name	<input type="text" value="172.16.1.100"/>
Secondary Server IP Address or Host Name	<input type="text" value="172.16.1.101"/>

Buttons: END EDIT, SAVE CONFIG, APPLY, REVERT, DEFAULTS

### Front Panel Edit

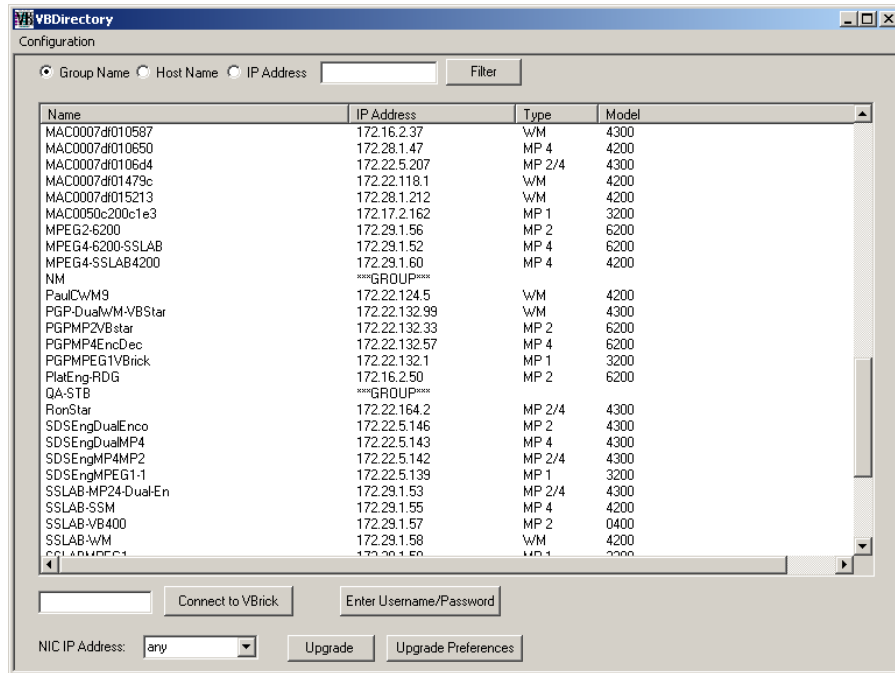
The Front Panel Edit feature allows you to use the remote control and the front panel display to change the following parameters: DHCP Enable/Disable, Codec IP, Subnet Mask, Gateway IP, Receive IP, Receive Port, Destination IP, Destination Port and Show/Hide the IP Address. This is the easiest way to get a VBrick parameters up and running on a network. See [Front Panel Edit](#) on page 43 for details.



### VBDirectory

VBrick provides a management application called VBDirectory that provides quick reference and access to all VBrick Appliances on a network. VBDirectory is installed with each new software release and is also available as a free download from the [VBrick](#) website. To access VBDirectory, go to **Start > Programs > VBrick > VBDirectory**. This directory tool will identify VBricks on the network running code 2.0.0 and higher. It is not backwards compatible with

previous versions of code. For more information about this tool, please refer to the *VBDirectory User Guide*.



## Command Line Interface

VBrick network appliances can be configured using a standard ASCII terminal or terminal emulator program connected to the serial port (COM 2) on the rear of the appliance. Simple commands are used to configure all functions and features. VBrick currently supports two command line interfaces: a menu-based CLI and a MIB-based CLI (recommended). The menu-based CLI can only be used to access VBrick parameters for WM v1.1 and VBDNA v3.3 or earlier. The MIB-based CLI can be used to access *all* VBrick parameters—past and present. (Keep in mind that all parameters that are available in the MIB-based CLI are also available in the web-based IWS application. Always use IWS unless you have a compelling reason to use the command line.) You can use Telnet, HyperTerminal, or other interfaces to run the CLI. For more information see [Command Line Interface](#) on page 51.

```
Telnet 172.22.173.1
Login:adminadmin
Password:
Login:admin
Password:
VBrick>
C      : Configuration
D      : Diagnostics
E      : Begin or End Editing
M      : Maintenance
S      : Status
VBrick> c
Options:
CF     : Conferencing Options
ET1    : Slot1 Encoder Options
ET     : Event Triggering Options
LG     : Logging options
MS     : Management SAP Options
NT     : Ethernet Network Options
P1     : COM1 Passthrough Options
P2     : COM2 Passthrough Options
RT     : Routing Table Options
SC     : Security Options
SS     : System Options
ST     : SNMP Trap Options
SU     : Save configuration to flash
VBrick:Config > █
```

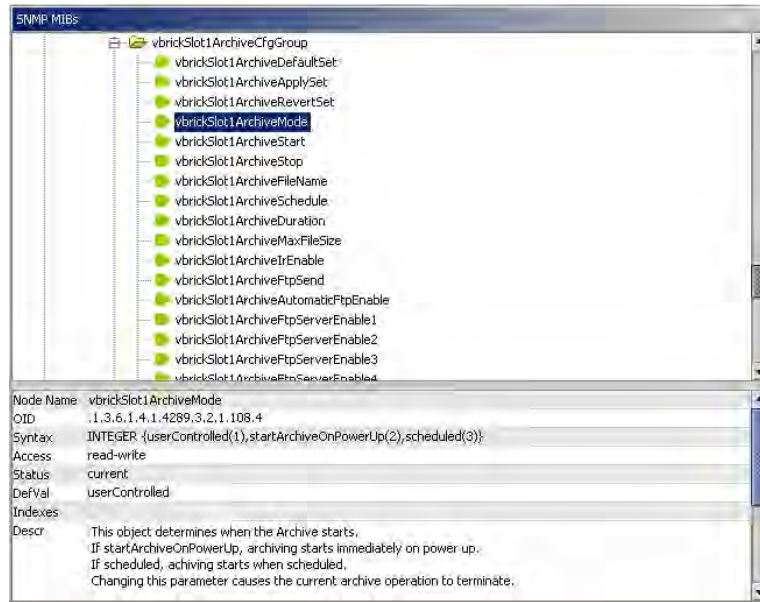
## *Telnet*

Ethernet VBricks can be managed remotely via industry-standard Telnet. The same suites of menus that are displayed on a local terminal are instantly available over an IP network. VBrick uses the standard Telnet port (23). Telnet uses the same commands as Command Line Interface (CLI). Both the Telnet and HyperTerminal interfaces are referred to as CLI or Command Line Interface. For more information see [Command Line Interface](#) on page 51.

## *Simple Network Management Protocol*

The VBrick appliance can also be configured and managed through its MIB, which is provided on request. Various SNMP management tools are available to issue SNMP based commands to the appliance. The command structure is similar to CLI and Telnet. It is necessary to become the active editor and apply the changes before they take effect in the appliance. Note that the SNMP community strings are the usernames. The following screen shows a typical, freeware MIB browser.





## VBrick SDK

The VBrick Software Development Kit enables individuals having a wide variety of abilities to build applications around VBrick appliances to schedule, record, store, forward, manage, and control VBrick appliance features. Advanced programming skills are not required in order to utilize the functionality of the SDK. A basic knowledge of HTML and web development is enough to create programs that address a specific need. Developers may easily create applications using popular program languages such as Visual C++, Visual Basic, VBScript, Javascript, or through the command line interface. The SDK comes with specific source code examples. VBrick has SDKs for the following devices:

- VB1000-2000-3000 SDK – for MPEG-1 devices.
- VB4000-5000-6000 SDK– for MPEG-2, MPEG-4, and WM devices
- ETV Set Top Box SDK – for VBrick's EtherneTV Set Top Box.
- ETV Portal Server SDK – for VBrick's EtherneTV Portal Server.



## Streaming Video Basics

### *Topics in this chapter*

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### **Video Basics**

It is important that the source of the video to be encoded and networked be of the highest possible quality in order to avoid using unnecessary bandwidth to transport source video artifacts, distortion, etc. If using a camera, exercise common sense; good lighting and a steady camera will improve overall performance. Cameras, VCR tape players, DVD players, and live television broadcast feeds from a TV tuner can all be used as video sources. VBrick supports standard video via BNC connectors, or S-Video via mini-DIN connectors. BNC-to-RCA adapters are readily available if RCA type cables are used.

---

**Note** Where possible VBrick recommends using S-Video or optional SDI. S-Video output from the VBrick to S-Video Input on the monitor yields the best video quality and the Billboard, Program and Conference Guides will be much clearer.

---

### ***MPEG-2***

MPEG-2 (Moving Picture Experts Group) is a standard method of transmitting digital video and sound in a compressed format that uses less bandwidth than the traditional analog method. MPEG-2 is the de-facto standard in the digital TV world. MPEG-2 gives high resolution, scalability and handling of interlaced video for digital video above approximately 2 Mbps. It allows for an excellent picture and allows multiple channels at various bit rates to be multiplexed into a single data stream. It was officially adopted by ISO and has the catalog number ISO 13818-1.

### **MPEG-2 Encoder Compression**

#### ***Understanding I, B, P Frames, Delay, and Synchronization***

In compressed video, each frame is compressed using a "lossy" compression scheme that takes advantage of the fact that the human eye does not detect certain types of visual information loss. MPEG compresses files based on I, B, P frames, which contain information from previous pictures and predictions about future pictures in a Group of Pictures (GOP). An **I-Frame** is a full video picture. Because it is likely that a future frame will be similar to a

past frame (for example, it is likely that the sky will still be on the top of the frame and that it will still be blue), it is possible to predict portions of a future frame. **P-Frames (Predictive)** reference the nearest previous I-frame. Video data that contains only I and P frames requires less bandwidth than video that contains only I-Frames for comparable quality.

With I-Frames and P-Frames being generated, it is possible to place the P-Frame some number of frames away from its reference I-Frame, and calculate the contents of the frames in between using both the I-Frame and the P-Frame as references. These frames are called **B-Frames** and are bi-directional (i.e. they are based on a predicted future frame and on a past frame). Also note that B-Frames are based only on I-Frames and P-Frames, never on past B-Frames, so errors are not propagated. VBricks can be configured to produce I-Frames only, I and P-Frames only, or I, B and P-Frames. In terms of bandwidth usage, I-Frames use the most, B-Frames require the least. It follows then that I-Frames contain the most information and B-Frames contain the least information.

### *Group of Pictures (GOP)*

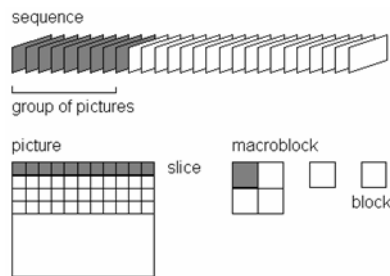
The collection of I, B, and P frames makes up a Group of Pictures (GOP). The selection of GOP parameters is a trade-off between bandwidth usage, picture quality, sensitivity to transmission errors, and delay. An extended GOP will be more sensitive to transmission errors than a small GOP because any error can affect the entire GOP. It is possible to configure the GOP several ways, for example, I only, IP, IBP, IBBP, etc.

### *Reference Distance*

Reference Distance and Intrapicture Distance are set in Configuration: Encoder > Video. The **Reference Distance** defines the number of consecutive B pictures there are between an I or P picture and then next I or P picture:

1. No B picture
2. One B picture between I or P pictures
3. Two B pictures between I or P pictures

The **Intrapicture Distance** can be set between 1 and 19 (default is 15) for MPEG-2. The value refers to the number of P or B frames between I frames and defines the Group of Pictures (GOP).



### *Interrelationship*

Table 2 [Reference Distance Settings](#) illustrates various combinations Reference Distance settings (up to 3) and GOP Length (up to 19). The GOPs are shown in display order. More P and B frames increase the compression ratio; however, B frames increase the overall delay. In general, it is best to choose the highest compression ratio and then try lower ratios (e.g. lower reference distance) if the video experiences transmission problems.

In operation, a P-Frame will be generated and transmitted before the B-Frame. An MPEG decoder must, therefore, reorder the incoming frame to display the I-B-P frames in the correct order. This is done using "presentation time stamps" created by the MPEG encoding and multiplexing process. This reordering process requires one or more frames be held in the decoder buffer, waiting it's turn for display, therefore increasing the delay. At 30 frames per second, each frame requires approximately 33 milliseconds. Synchronized audio is also compressed using MPEG, and is multiplexed with the video to create an MPEG Transport Stream.

**Note** Operation with the DSL4000 requires B frames for correct audio/video synchronization.

**Table 2.** Reference Distance Settings

GOP Length (N)	Reference Frame Distance		
	1	2	3
1	†	††	††
2	IP	††	††
3	IPP	IBP	††
4	IPPP	BIBP	IBBP
5	IPPPP	IBPBP	††
6	IPP . . PP	BIBPBP	BBIBBP
7	IPP . . PP	IBP . .BP	IBBPBBP
8	IPP . . PP	BIBP . .BP	††
9	IPP . . PP	IBP . .BP	BBI . .BBP
10	IPP . . PP	BIBP . .BP	IBBP . .BBP
11	IPP . . PP	IBP . .BP	††
12	IPP . . PP	BIBP . .BP	BBI . .BBP
13	IPP . . PP	IBP . .BP	IBBP . .BBP
14	IPP . . PP	BIBP . .BP	††
15	IPP . . PP	IBP . .BP	BBI . .BBP
16	IPP . . PP	BIBP . .BP	IBBP . .BBP
17	IPP . . PP	IBP . .BP	††
18	IPP . . PP	BIBP . .BP	BBI . .BBP
19	IPP . . PP	IBP . .BP	IBBP . .BBP

† All I frames.

†† Undefined.

### MPEG-2 Delay

This discussion is relevant only for encoder models ending in -xxx1/-xxx2. Low delay mode is primarily recommended for conferencing applications. Various video artifacts appear when

content with rapid scene changes is encoded at low data rates in low delay mode. The reference distance is restricted to 1 (no B frames) in low and medium delay modes. If the Intrapicture distance is set to 1 (all I frames), video disruptions are minimized, but picture quality is degraded. With other GOP settings, picture quality is improved, but video disruption may occur on scene changes. At approximately 6 Megabit video rates and above, video disruption will not occur, depending on content. In low delay mode, delay will be in the range of 180–190 milliseconds. Video instability is eliminated at medium and high delay modes regardless of settings. Delay is approximately 350 milliseconds in medium delay mode and 450 milliseconds in high delay mode. Delay is set in the Configuration: Encoder > Transport. The default setting for **Delay Mode** is set to **High**.

## MPEG-2 Audio

High quality Stereo or Mono audio, fully synchronized with video, may instantly be transported across the network. VBrick supports 44.1 and 48 kHz sample rates, and data rates between 192 and 384 Kbps. If the model number ends in -xxx0, the sampling rate can be 44.1 kHz or 48 kHz. If the model number ends in -xxx1/-xxx2 the sampling frequency is set at 48 kHz. If the model ends in -xxx0, the transmission rate can be 192, 256 and 384 Kbps. If the model ends in -xxx1/-xxx2 the audio bit rate can be 256 or 384 Kbps. Audio input and output is standard line-level, as would be found on a conventional VCR. VBrick offers AudioMate microphone for high quality conference room audio with integral echo cancellation. For video conferencing applications, appropriate audio conference equipment such as amplifiers, microphones, and echo control equipment is required.

**Table 3.** MPEG-2 Optical Loss Budget

MPEG-2	Receiver Sensitivity	Transmit Power
MM (maximum reach 3 km)	-32 dBm	-19 to -14 dBm
SM (intermediate reach 15 km)	-28 dBm	-15 to - 8 dBm
SM (long reach 1310nm 40 km)	-34 dBm	-5 dBm
SM (long reach 1550nm 80 km)	-34 dBm	-5 dBm

## MPEG-4

Moving Picture Experts Group MPEG is a standard method of transmitting digital video and sound in a compressed format that uses less bandwidth than the traditional analog method. MPEG-4 Part 2 is widely used for distribution of video in the enterprise, on the Internet, and in mobile applications. VBrick supports a subset of the MPEG-4 Part 2 standard called Simple Profile. Simple Profile offers optimal interoperability with MPEG-4 from multiple vendors. MPEG-4 provides moderate resolution and offers scalability for digital video up to approximately 2 Mbps.

## MPEG-4 Encoder Compression

MPEG-4 Part 2 Simple Profile video compression uses many of the same basic compression features as MPEG-2 discussed above. There are several significant differences worth mentioning. This protocol does not support B frames. Although B frames offer some compression benefits, more modern compression schemes such as MPEG-4 gain only marginal benefits from B frames. In addition B frames always add additional latency since reordering is required on transmission. This protocol does not have a fixed GOP structure. I

frames are inserted either at a configured rate or when the protocol itself determines that the scene has changed sufficiently such that it is more efficient to insert an I frame.

## MPEG-4 Audio

VBrick's MPEG-4 appliances offer AAC-LC compressed audio. This compression algorithm is the industry-standard method for audio to accompany MPEG-4 video streams. VBrick supports Stereo, Mono, and Dual audio for MPEG-4. Sample rates between 8 kHz and 48 kHz and data rates between 8000 and 320000 bits/sec are supported to allow transmission over a wide variety of media ranging from low-speed Internet delivery to high-speed LANs.

## WM

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 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.

## 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: Read/Write Configuration 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,

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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](#).

**Table 4.** Video Resolution

Video Resolution	NTSC	PAL
Full D1	720 x 480	720 x 576
2/3 D1	480 x 480	480 x 576
1/2 D1	352 x 480	352 x 576
SIF	352 x 240	352 x 288

## Network Considerations

A number of features that address video stream handling across networks are described below. These include:

[Assigning Multicast Addresses](#)

[IP Address Configuration using Host Names](#)

[IP Differentiated Services \(Diffserv\)](#)

[VBrick Video Stream Handling](#)

[Network Jitter](#)

### *Assigning Multicast Addresses*

Many factors must be considered when designing a multicast address infrastructure since Ethernet switch implementations can significantly vary between vendors. Furthermore, multicast addressing techniques rely on an Ethernet to IP Address mapping rule, which does not guarantee a unique physical address. In fact, it is possible to create multicast addresses that differ from an IP perspective, but overlap when presented to the Ethernet network. Addresses created in this situation can cause significant network and operational problems.

Specifically, multiple IP Addresses are mapped into the same physical layer address. For example, all IP multicast addresses with the same or differing first octet, and the second octet differing by exactly 128, map to the same physical address (226.5.5.4, 227.5.5.4, and 228.133.5.4 all map to the same physical address).

Another factor to keep in mind when assigning multicast addresses is that 224.x.x.x is a range containing reserved addresses, particularly in the range 224.0.0.x. For example, 224.0.0.1 is the 'all hosts' multicast address and 224.0.0.2 is the 'all routers' reserved address. Other 224.0.0.X numbers are reserved for RIP, OSPF, DVMRP, etc. Here are some recommended rules for multicast IP Address assignment:

1. Do not use 224 in the first octet since many of these are reserved.
2. Use a digit between (225–239) for the first octet and standardize on it for each network.
3. In the second octet, either use numbers from 1–127, or 129–255, do not mix ranges on a given network.



## *IP Address Configuration using Host Names*

This feature provides VBricks the ability to unicast to one another, recognizing each other by Host Name instead of IP address. This is especially useful when appliances are running DHCP, since IP addresses can change between being rebooted, whereas Host Names remain the same unless manually changed by the user. Each IP address that can be configured using Host Names has an **Address Mode** parameter. This configuration parameter allows the user to specify how the address is to be configured: IP Address or Host Name. If **Address Mode** is set to "Host Name," the IP address field becomes a status field and is used to report the IP Address of the configured Host Name. Likewise, if **Address Mode** is set for "IP Address," the Host Name field is used to report the Host Name of the configured IP Address. If the configured IP address is multicast, the Host Name field will be blank. The following rules apply:

- The following addresses can be configured using Host Names:
  - Encoder network destination address
  - Pump network destination address
  - Decoder network receive address
  - Recorder network receive address
  - Passthrough dedicated address
- Multicast addresses cannot be configured using Host Names.
- The **Management SAP Transmit** parameter of the referenced VBrick has to be set to **Enabled** for this feature to work.
- The Host Name feature does not work if the appliance is in edit mode. Please exit Edit mode when finished configuring the appliance.

## *IP Differentiated Services (Diffserv)*

Type of Service settings control the level of priority a service or source receives while traveling through a network. VBrick supports setting the IP TOS (Type of Service) in accordance with RFC-791, RFC-1112 and RFC-2474 (Differentiated Services Field in the IPv4 Header). You can set the Type of Service field in the IP header to any value, decimal 0 to 255.

**Table 5.** TOS Settings

Priority Level	Type of Service
111	Network Control
110	Internetwork Control
101	CRITIC/ECP
100	Flash override
011	Flash
010	Immediate
001	Priority
000	Routine

Bit 3	0 = Normal delay 1 = Low delay
Bit 4	0 = Normal throughput 1 = High throughput
Bit 5	0 = Normal reliability 1 = High reliability
Bits 6–7	Reserved for future use.

### *Example*

To set the Type of Service to all 0's enter 0. To set the Type of Service to all 1's, enter 255. IP Differentiated Services redefine how the historical TOS field is used. Diffserv allows IP networks to provide certain Quality of Service features. Note: If uncertain as to whether the network supports TOS or Diffserv, VBrick recommends setting the TOS to the default value of 0.

### *VBrick Video Stream Handling*

Packet Ordering is the process of accommodating video packets that are arranged "out of sequence" when they arrive. This feature optimizes the quality of video in networks that are less stringently engineered. The condition of packets arriving "out of sequence" can occur for several reasons. These might include networks having redundant or overlapping routes, routing table instability problems, local area networks that are not properly switched, or excessive wide area networking (WAN) delays. Through buffering, the VB6000 rearranges the delivery of packets to the decoder, so they are received as an ordered set. Enabling the Packet Ordering feature adds up to 85 milliseconds of additional delay between the encoded stream and the decoded stream. Packet Ordering can be enabled or disabled in Configuration: Decoder > Network section of IWS.

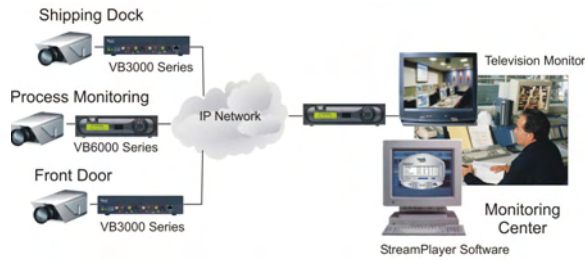
### *Network Jitter*

The Jitter Queue compensates for IP network jitter conditions by imposing a slight delay between the arrival of video packets at the VB6000 and rendering of packets to the decoder. The process of jitter compensation involves the creation of a buffer that temporarily stores all packets before they are presented to the decoder. The Jitter Queue uses elastic storage capability within the buffer, which allows for up to 85 milliseconds of delay variation between video packets. Enabling the Jitter Queue feature adds 85 milliseconds of additional delay between the encoded stream and the decoded stream. The Jitter Queue is enabled or disabled in Configuration: Decoder > Network section of IWS.

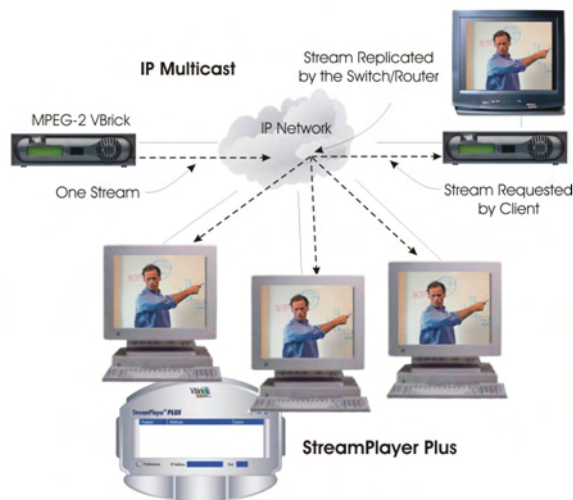
## Typical Applications

### *Ethernet IP*

Ethernet VBricks operate over standard 100Base-T Ethernet. It is important that the network is engineered to accommodate the constant payload such that data is delivered between VBricks without delay, and that the load does not degrade network performance. In general, operating over Ethernet Switches that are not oversubscribed provides adequate bandwidth and QoS. For streaming video (e.g. one-way "broadcast") applications, latency in the network is much less of an issue than for two-way full duplex conference applications.



VBricks send and receive MPEG video via UDP/IP at 1 to 15 Mbps (plus audio and overhead). Assuming each VBrick is on a separate 100Base-T segment, less than 10% of the segment's capacity can be used. Video can be transmitted point-to-point between VBricks for two-way conferencing or video can, using IP multicast, be broadcast to an unlimited number of TV's connected to VBricks; and to an unlimited number of PC's that are using the VBrick StreamPlayer or StreamPlayer Plus software. Note: the network must be IP Multicast capable for multicast streaming applications.



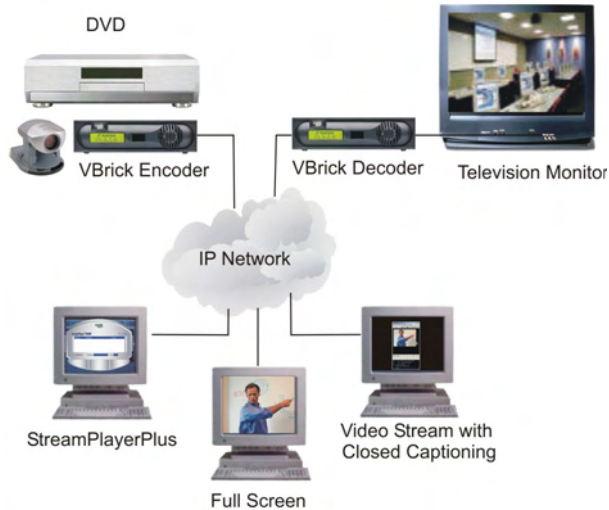
### *One-Way Broadcast and Desktop Streaming*

VBrick 4xxx and 62xx models provide a powerful streaming broadcast and desktop streaming solution. Each VBrick is capable of multicasting live video IP streams to an unlimited number of desktop clients in a given network. "Live" VBricks in the network automatically announce a user-definable program name of the video source to all of the VBricks and StreamPlayer or StreamPlayer Plus™ applications that are operational across the network. A VBrick announcement is known as a SAP, or Session Announcement Protocol, as defined by the IETF standard committee and set forth in RFC 2974. The StreamPlayer or StreamPlayer Plus applications allow users to view content using an ordinary PC. Each StreamPlayer or StreamPlayer Plus application identifies the program name by the transmitted SAP, which displays all currently available VBrick video. With StreamPlayer, the user selects a stream for viewing by selecting the transmitted SAP from the VBrick, which identifies the video in the program guide. On a television monitor, a user can select the appropriate VBrick SAP program name through the use of the provided remote control device.

This illustration shows a VBrick in a network multicasting live video traffic to other VBrick appliances as well as to the desktop clients using StreamPlayer or StreamPlayer Plus. The

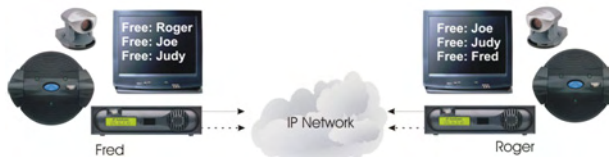
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program stream is displayed on the desktop client and the user can view the stream in real time. This application can be expanded to include previously recorded material such as training tapes and pre-recorded VHS tapes. Since the Session Advertisement Protocol, or SAP, containing the name of each program are small and are only sent periodically, they have practically little or no impact on the network bandwidth.

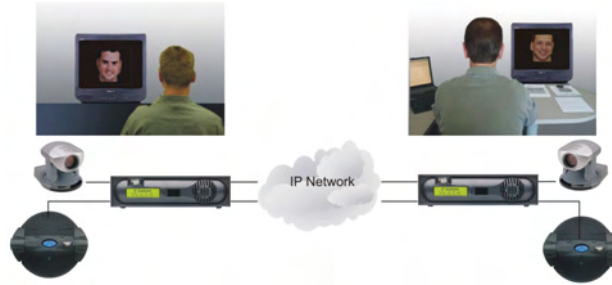


### *Two-Way Interactive Conferencing*

For two-way interactive conferencing applications, appropriate audio conference equipment such as amplifiers, microphones, and echo control equipment is required. Contact VBrick for accessories. VBrick 6200's enable automatic two-way television via IP unicast. Each VBrick in the network automatically announces its "name" to other VBricks in the network and displays a conference guide on a TV screen. The conference guide indicates who is available for a conference. It is only necessary to select from the list of names to establish a two-way video communications.



These illustrations show how the conference system works. In the example, two VBricks are connected to an IP network, with each VBrick assigned a Calling Name. Each VBrick sends its name, along with IP Address information, onto the network. Each VBrick also receives a list of available names from the network. Using the IR Remote Control, each VBrick can see a list of the available names, plus whether they are free or busy. To place a call, select the party and when the call is answered, a two-way, private, unicast video conference is established.



Because the name advertisements are small and only sent periodically, they have practically no impact on the network. These advertisements are typically sent to a default multicast address, but may be configured to be broadcast or configured to be sent to any valid IP Address. Once the call is established, the calling party may "ring" the other end to get their attention, if desired.

- Several configuration options are available:
- Enable/Disable Conference.
- Enable/Disable Ringer.
- Auto answer – the party receiving the call does not have to answer. The VBrick automatically receives the call and two-way video is instantly available.
- Manual Answer – the party receiving the call must answer it before the call is established.
- How often to advertise the Call Name.
- The address on which to advertise the Call Name.
- Two-way interactive conferencing may be initiated from the IR remote handheld device.

## VBrick Accessories

VBrick units have a number of optional hardware accessories, including the AudioMate microphone, remote control devices and cameras. These work directly with VBrick appliances or through the use of ActiveX control software, also available from VBrick. For information about microphones, cameras and other VBrick hardware accessories, please contact VBrick directly. ActiveX controls for cameras and other software accessories are also available from VBrick.

## Serial Port Passthrough

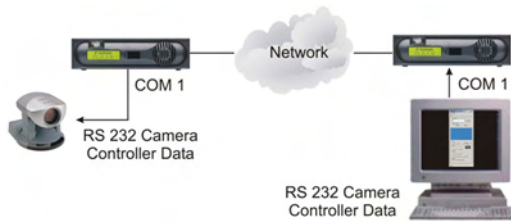
When configured properly, VBricks provide full duplex, end-to-end transparent passthrough of user data from one VBrick to another, or to other IP devices. Two serial ports are provided, each independently supporting this feature. COM1 is dedicated to Passthrough. COM2 is normally used for management control, but may be configured to support Passthrough, depending on the VBrick hardware revision. Each serial port operates at its configured baud rate (e.g. 110 to 115.2K bps). See the MPEG-2 or MPEG-4 Admin Guide for configuration details. Some common applications include:

- Remote control of a camera, pan-tilt-zoom.
- Remote control of a security door lock.
- Low speed data transport.
- Data collaboration between PCs.

---

**Note** Passthrough mode is used to send control information from one VBrick to another and may not support sustained data at higher data rates.

---



### *How Passthrough Works*

VBrick appliances are able to receive data on a particular TCP/IP port and transparently output that data to a serial port. Conversely, any data input to a serial port can be passed through to other devices connected to that TCP/IP port. Devices include other VBricks or special applications connected to the appropriate TCP/IP port. This feature is called "Serial Port Passthrough." COM1 is assigned port 4439 while COM2 uses port 4414. A typical application is for two VBricks connected to each other's TCP/IP port 4439. In this case, characters typed into a terminal program attached to one VBrick's serial port appear on a terminal program attached to the other VBrick's serial port. In this case, the TCP/IP network serves as an intermediary between the serial ports of two VBrick appliances.

You must select configuration settings to enable Serial Port Passthrough. First it is necessary to decide if the appliance will be designated as an **Initiator** or **Responder** of Passthrough connections. If configured as an **Initiator** it will continuously attempt to setup a Passthrough connection to other devices. When configured as a **Responder** it will accept up to 64 connections from **Initiator** appliances. It is possible to Disable Passthrough Mode, so that the VBrick neither initiates nor responds to Passthrough requests. If a VBrick is set to be an **Initiator**, a **Destination** must be selected. The appliance will use the destination information when trying to establish a connection. The destination can be configured as follows:

- Dedicated
- Remote COM1/COM2 using Slot1 Video endpoint
- Remote COM1/COM2 using Slot2 Video endpoint
- Slot1/Slot2 MetaData

Dedicated	means that the initiator will attempt to make a Passthrough connection to the Dedicated Address and Port configured by the user. Please note that the Dedicated Address Port configuration parameters are used only when the initiator destination is set to Dedicated. The Dedicated Address can either be configured using IP Address or Host Name. The Dedicated Address Mode parameter is used to specify whether the IP Address or Host Name will be used. If the Dedicated Address Mode is set to Host Name, the Dedicated Address is configured using the Dedicated Host Name parameter. Likewise, if the Dedicated Address Mode is set to IP Address, the Dedicated Address is configured using the Dedicated IP Address parameter.
-----------	---

Slot1 Video Endpoint Slot2 Video Endpoint	use address information that is configured for the device in that slot. If the device in that slot is an encoder, the initiator will attempt to establish a Passthrough connection to the unicast Destination IP Address configured as Destination 1 for that slot. Note: Passthrough is supported using Destination 1 only; Destination 2 has no meaning for the Passthrough operation. If the device is a decoder, the initiator will attempt to establish a Passthrough connection with the address configured as the Decoder Receive IP Address and Port. The receive address can be either multicast or unicast.
Remote COM1 Remote COM2	are as implied. This selection determines which serial port will be accessed on the Responder appliance. In "Slot1 or Slot2 Video Endpoint" cases, the Passthrough port for the Remote/ Responder appliance's COM1 port is 4439. Access to the remote appliance's COM2 uses port 4414.
Slot1 MetaData Slot2 MetaData	specifies the slot into which you will insert incoming serial data as metadata.

Since the medium used for setting up Passthrough connections is a generic TCP/IP port, any IP device that is prepared to connect to a VBrick's port can be considered as a Passthrough Initiator. The VBrick Responder appliance will not know the exact nature of the device at the other end of the port. For example, a generic Telnet client configured to connect to a VBrick on port 4439 will cause a VBrick **Responder** to start sending data from it's serial port, using the connection it accepted from the Telnet client.

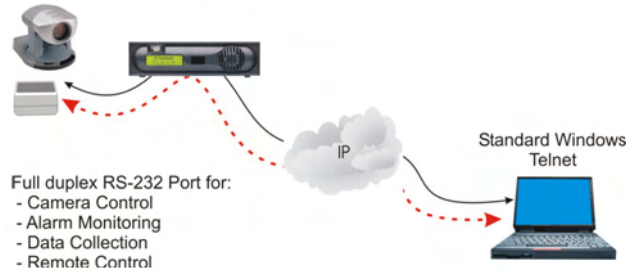
If the appliance is configured as an **Initiator** and the **Responder** appliance has Passthrough disabled or is not on the network it will continue to try to establish a connection. A VBrick appliance must be configured as a **Responder** to accept Passthrough connections initiated by other devices. In addition to the Initiator versus Responder selection, the serial port operation settings must be entered to establish a connection, baud rate, stop bits etc.

**Note** Once a Passthrough connection is established between VBricks the actual flow of data is symmetric between the ends of the connection. That is, the behavior of the serial ports with respect to typed characters will appear to be the same at both ends, Initiator and Responder.

### *Serial Port Passthrough Using Telnet*

As mentioned in the previous section, either serial port can be accessed over Ethernet via a Telnet client. A VBrick appliance configured as a Passthrough Responder will accept a connection request to TCP ports 4439 (COM1) and 4414 (COM2). The request can come from a Telnet client or other PC application. Any data sent by the PC to TCP ports 4439 and 4414 will be delivered out of the VBrick serial ports and any data present on the VBrick serial port will be sent to the connected PC.





If multiple Telnet sessions are active on one VBrick (each VBrick supports up to 64 sessions), the data from the VBrick will be sent to all connected PC's, and the data received by the VBrick from the PC's will be delivered on the serial port. If multiple Telnet sessions are active and each is sending data to the VBrick, the data delivered by the RS-232 port will be a mix of characters presented in the order they were received (e.g. the data from all the senders is bridged together). This feature provides a method to broadcast alarm status or other information to multiple locations.

## MPEG Features

### *Billboard*

The Billboard feature allows you to display text and/or graphics on a TV monitor. The displayed billboard can span multiple pages with each page displayed for a specified period of time. Some uses of the billboard feature are to announce a daily calendar of events, directions to a particular conference room or even a slide presentation in conjunction with displayed video. VBrick models 62xx, 52xx and 53xx have a built in mini-browsers that support viewing limited HTML pages. The pages can either be kept inside the VBrick as part of the file system, or can be located on a remote HTTP server. Each page of the billboard is laid out as an HTML page with text and graphics created using the HTML tags supported. If billboard is to be supported on a remote server, the appliance requires read access to the HTTP server and may need to be configured. See the MPEG-2 or MPEG-4 Admin Guide for configuration details.

### *Picture-in-Picture*

(PIP) VBrick Decoder Picture-in-picture (PIP) is a video display mode in which a small video image is superimposed on a quadrant or smaller area of a video screen. This small image or window can be opened in order to display a second video input source on a monitor. The MPEG-2 decoder provides picture-in-picture capability, which allows the input from the local encoder to be displayed on the local decoder's output. This is a useful capability when using the appliances in video-conferencing mode by allowing the near-end user to view him/herself in a small window while simultaneously viewing the far end. *Note that PIP can only be used to display local encoder input and is available for encoder/decoder models only.* PIP does not operate when closed captioning is enabled.

---

**Note** If closed captioning is enabled while PIP is enabled, closed captioning will not be displayed on the monitor until PIP is disabled.

---



## *Embedded Web Browser*

VBrick appliances have an embedded Web Browser that allows users to display HTML pages on the decoder's output (i.e: a monitor). This is a powerful tool that can be used for data collaboration across a network during video conferences. The web browser is a great tool for allowing data collaboration between remote sites. Benefits and features include:

- It allows for exchange of .jpg, and .gif images and .html pages.
- Images or pages can reside inside the box (in flash memory) or on an external web server.
- It can be turned On or Off through **Billboard** key in both the IWS and on the remote control.
- It operates with VBrick's SCAT program, allowing instant capture of Windows desktops and transferring that image to a VBrick (or to any Web server).

### *Example 1*

An HTML page and graphic image resides in flash. This is by default and when shipped from the factory an HTML page example is loaded into flash memory. It will display several .JPG images automatically when the billboard is turned On. There are 4 HTML pages with each having a JPG image inside of it. HTML page 1 points to page 2, page 2 points to page 3, etc. This is how the "page flipping" effect is created. The URL to enter that will make this happen is:

**-File://./BB01/VB\_1.HTM**

### *Example 2*

An HTML page or image can reside on a PC. Your PC must be set up as a Web Server. This is actually easier than you think since Microsoft provides a PWS (Personal Web Server) application that takes five minutes to install. Once installed you can place either an HTML page or image (JPG, BMP, GIF, etc) into the web server directory (wwwroot) on the PC and point the MPEG-2 browser to it. An example of a URL is that makes this happen is:

**-http://172.16.3.148/image.jpg (example, use your own IP Address)**

### *Example 3*

An HTML page can reside on the WWW. You must enter a Gateway IP Address, primary server IP Address and default domain extension in the Configuration: Network page on the IWS. Note that many WWW HTML pages use java that the VBrick browser does not understand. In this case the billboard will display an error message and may (or may not) display some of the HTML page. Examples of URL's that make this happen are:

<http://www.VBrick.com> or <http://www.yahoo.com>

<http://www.VBrick.com> or </billboard/navigation.htm>

## **WM Features**

The VBrick WM Appliance 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 VB6000 WM Appliance has the following standard features:

- Accepts composite or S-Video input.

- 
- Available as single or dual channel.
  - Multiple bit rate support.
  - Windows Media Video 9 encoding (bit rates 20 Kbps–4 Mbps).
  - Windows Media Audio 8 encoding (bit rates 5 Kbps–192 Kbps).
  - Optional 60 GB hard drive for local archiving.
  - HTTP Push from a WM appliance reflector source to any of the following destinations:
    - Multicast.
    - Served HTTP and RTSP unicast (Pull)
    - Archive to a File.
    - HTTP Push.
  - Multicast Streaming (UDP).
  - Any combination of up to 200 clients including:
    - Unicast RTSP Streaming (UDP).
    - Unicast HTTP Streaming (TCP).
    - Stream Push (25 maximum) to Microsoft Windows Media Server or RealNetworks Helix Server via HTTP (TCP).
    - Stream Pull from Windows Media Server or RealNetworks Helix Server via HTTP.

## Integrated Web Server

### *Topics in this chapter*

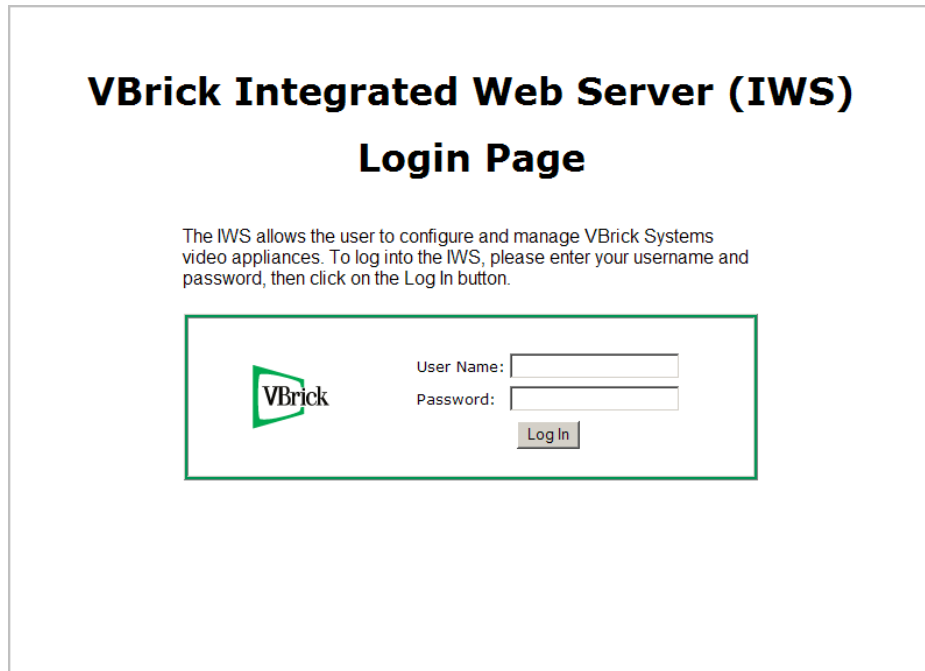
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### Using IWS

The VBrick WM Appliance has an Integrated Web Server (referred to throughout this document as IWS) that lets you manage VBrick configuration from an external browser. This allows network managers to remotely configure and monitor the appliances from virtually anywhere. **Currently, only Microsoft Internet Explorer is supported.** Other browsers (for example Netscape) may not give acceptable results. VBrick recommends using Internet Explorer 6.0 or higher. You connect to IWS by pointing to the IP Address (for example: <http://192.168.5.5>.) of the VBrick appliance and logging in. (Note that passwords passed between client and server are encrypted.) IWS is one of several ways you can manage the VBrick encoder (you can also use VBDirectory or the [Command Line Interface](#) Interface) but it is the most intuitive and easiest to use.

To login to a VB6000 Series VBrick with Microsoft Internet Explorer, you must have **Session Cookies** and **Active Scripting** enabled. Depending on your browser version, these settings are in the **Security** or **Privacy** tabs in **Internet Options**. If either option is disabled, a correct username and password will refresh the screen without login. If **Active Scripting** cannot be enabled, check with your system administrator to see if it was disabled at the server level. To avoid having the IWS window closed when accessing a different VBrick, go to Tools > Internet Options > Advanced and *uncheck* the **Reuse windows for launching shortcuts**.


## Login Page



**VBrick Integrated Web Server (IWS)**

**Login Page**

The IWS allows the user to configure and manage VBrick Systems video appliances. To log into the IWS, please enter your username and password, then click on the Log In button.

 User Name:

Password:

**Figure 4.** Login Page

▼ To login to IWS

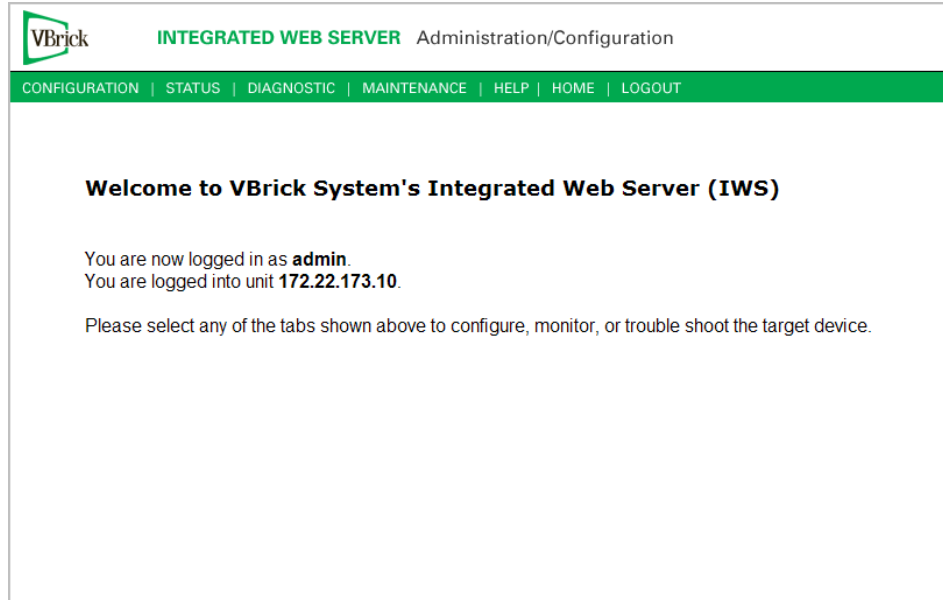
1. Enter the IP address of the VBrick in the address bar.
2. Login to IWS with a valid user name and password (case-sensitive), and then click the **Log In** button. The default user name and password is **admin** and **admin**. Use the **Maintenance** pages in IWS to change the user name and password. The user name and password cannot exceed 20 characters. It may include any combination of alphanumeric characters and only the following special characters: ~ ! # \$ ^ \* + & [ ] { } | < >

**Table 6.** Levels of Authority

User Level	Default User Name	Default Password	Privileges
Administrator	admin	admin	Read, diagnostics, edit, change passwords.
Operator	operator	operator	Read, diagnostics, edit.
Diagnostics	diagnostics	diagnostics	Read, diagnostics.
Public	public	public	Read.

## Welcome Screen

A successful Login displays the Welcome screen shown below which indicates the login name and the appliance IP address.



**Figure 5.** Welcome Page

Network appliances may be configured with a single encoder or with dual encoders. Consequently the screens you see in IWS will vary depending on whether the encoder has one or two slots. The images in this document show an encoder configured with one slot.

## Menu Options

The basic menu options are shown below. The top menu bar is available at all times. The left column contains configuration options. Configuration Options affect selection of individual pages. *Different configurations appear depending on how the appliance is configured.* Selections are hardware dependent. For instance, dual decoders do not have an encoder selection. SDI and MPEG-4 equipped units have some differences for encoders, decoders, or both. Network Appliances may be configured with a single encoder or with dual encoders. Consequently the screens you see in IWS will vary depending on whether the encoder has one or two slots. A appliance includes Configuration options unique to the hard drive, including Pump, Recorder and FTP options. It also contains different Status pages and Diagnostic settings.

Option	Description
Configuration	Used to configure all appliance settings.
Status	Used to monitor status of main board and the encoder.
Diagnostic	Used to troubleshoot appliances.
Maintenance	Used for providing overall appliance information, managing usernames and passwords, and reading or writing configuration files from or to the VBrick appliance.
Help	Provides on-line help. Internet access is necessary to use this function.
Home	Hot button to return to Home page.
Logout	Logs you out of the system.

## Making Changes

In order to change configuration settings in the VBrick encoder, you must log in so that multiple users cannot change parameters simultaneously. By clicking on the button labeled **Begin Edit**, you become the editor and the message Edit Session In Progress is displayed on the front panel of the appliance. *Only one user may be in Edit mode at any time.* Any user may end the editing session of any other user using IWS or CLI, regardless of login level—admin or operator. As a best practice, you should click **Begin Edit**, make changes and then **Save Config** and **End Edit** so as not to interfere with other users.

**Note** All configuration screens have a **View** mode and an **Edit Mode**. All screens in this document are shown in **Edit Mode**, that is *after* you click **Begin Edit**.

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 left sidebar contains a 'Configuration' menu with options: Network, Encoder (selected), Reflector, FTP File Transfer, Passthrough, System, and Script Management. Below the menu is a green 'BEGIN EDIT' button. The main content area is titled 'Configuration: Encoder' and features a breadcrumb trail: [Template](#) [Video](#) [Audio](#) [Multicast](#) [Announce\(SAP\)](#) [Server](#) [Archiver](#) [Push](#). The settings are organized into several sections:

Encoder Audio	
Audio Input	Slot1 (Windows Media)
Audio Input Level	Audio Jack
Audio Gain(dB)	Normal
	0 dB

Audio Template Settings (Audio Rate1)	
L+R Bit Rate(bit/sec)	128000
Sample Frequency	48KHz
Audio Channels	Stereo

Audio Rate2 Settings	
Audio Rate2	Disabled

Audio Rate3 Settings	
Audio Rate3	Disabled

Figure 6. View Mode

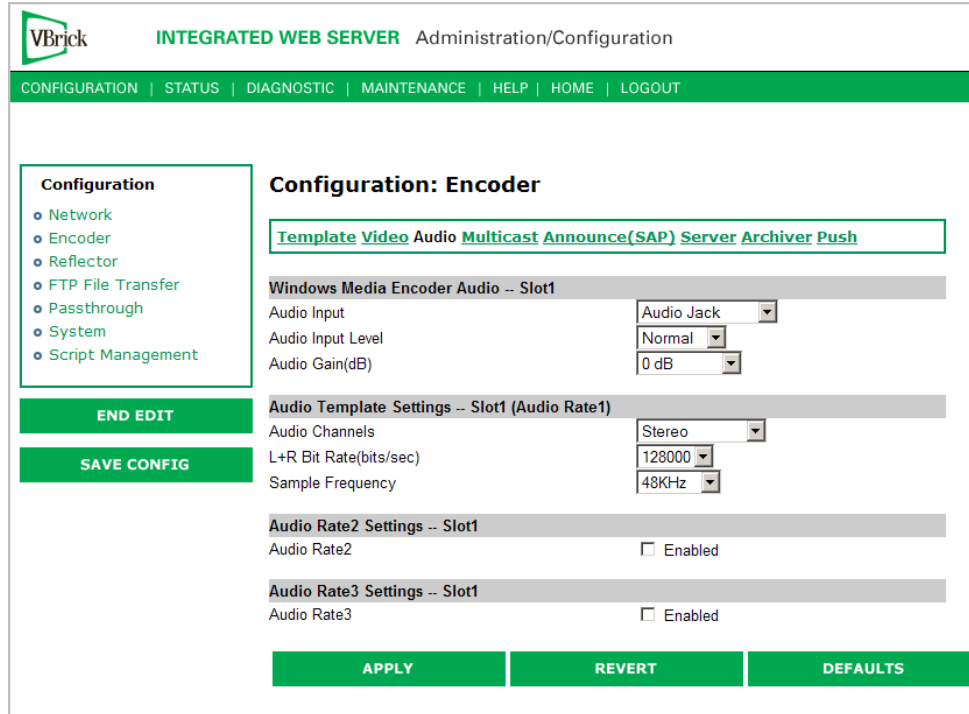



Figure 7. Edit Mode

End Edit	Ends the editing session and displays View mode.
Save Config	 <p>Writes all applied changes to flash memory. If you do not click Save Config after editing, any changes you made are lost if the appliance loses power or is reset.</p>

If the browser is closed after entering the Edit Mode, Editing will not be ended. Therefore, a second user can't know if the first user has simply forgotten to log off or is still engaged in editing. After an hour of inactivity, Edit Mode times out, whether the browser is open on the desktop or closed without ending the Edit session. In IWS, the **Logout** button on the right side of the menu bar ends editing and logs you out of the application.

### Rebooting

- ▼ To to reset the VBrick appliance do one of the following
  1. Power the VBrick appliance up and down by removing and reinserting the power cord.
  2. Press the **Reset Box** button on the Integrated Web Server in any of the selections under **Diagnostic**. This button is only available while in the **Edit** mode.

- Use the **Reset** button on the optional IR remote control device if the IR feature has been enabled in the Configuration: System section of IWS.

## Logout

Pressing **Logout** on the navigation bar exits from IWS and ends any editing sessions. If you have purchased a VBStar appliance, the link to view the hard drive content from the Integrated Web Server launches an additional Internet Explorer window. After logging out of the IWS, it is a good idea to close all Internet Explorer windows and exit Internet Explorer.

## Using Apply, Revert, and Defaults

Depending on screen resolution, the **Apply**, **Revert** and **Defaults** buttons may not be visible on the screen. It may be necessary to scroll down to view the selection buttons or to view second slot features.

Apply	Applies the changes made on the screen to the appliance. Note that these changes will not be stored in the appliance's flash memory until you click <b>Save Config</b> . This means if the appliance is powered down the changes will be lost. Don't forget to save the configuration.
Revert	Aborts all changes made on the screen and returns to the values that were present prior to the first change that was made. Note that this only applies to changes made prior to the last "apply."
Defaults	Returns to the default settings for the parameters on that page. Using Apply is necessary for those settings to take effect.



## Multiple Applies

In Edit mode, on some screens it is possible to have more than one **Apply** button. It is necessary to make sure the correct **Apply** is used for the section of the screen in which the change is made. Using **Apply** on one section of the screen may change which settings are available in other sections of that screen. Also, be sure to scroll down to the bottom of the screen, to make sure all selections are visible. *When there are dual encoders, each slot is configured independently of the other.*

## Serving Custom ASX and HTML Files

VBrick WM appliances create and serve built-in .asx files that are used to launch streams. VBrick appliances can also serve custom .html or .asx files that *you* create and store in Flash memory on the VBrick's C: drive. For example, you may want to use the VBrick as a web server to launch custom .html or .asx files. Custom .asx files are typically used for playlists; custom .html files are useful for web pages that have an embedded media player. To support this functionality, the appliance recognizes the following special file names. These special files can be stored in Flash memory at [ftp://admin@<VBrick\\_IP\\_Address>/WEB/](ftp://admin@<VBrick_IP_Address>/WEB/) and can be customized and served as necessary.

Custom1.asx	Custom1.html
Custom2.asx	Custom2.html
Custom3.asx	Custom3.html
Custom4.asx	Custom4.html
Custom5.asx	Custom5.html

For example, you can create and save a file called **Custom1.html** that is recognized as a special file name and will be available from the VBrick web server. The file **Custom6.html** is not recognized and will not be served. Note that .asx files are text files that manage the streaming of .asf files. They are very small (less than 1K) because they contain instructions and no data. When you click a link to an .asx file, the browser downloads it to the browser cache, launches the Windows Media Player, and then starts streaming the file. When the Player interprets the .asx file, it accesses the streaming media specified in the .asx file. The following snippet shows typical content *inside* an .asx file:

```
<ASX VERSION="3">
  <ENTRY>
    <REF HREF="http://<Server_IP_Address>/videofile.wmv"/>
    <REF HREF="http://<VBrick_IP_Address>:8080/vbrickvideo1"/>
  </ENTRY>
</ASX>
```

---

## Using the IR Remote

VBrick appliances support features provided through an optional hand held IR (infrared) remote control. The IR remote enables users to access VBrick appliance functions and control functions with simple program commands. Front Panel Edit options are model dependent. For example, a dual encoder will allow editing of two destination IP Addresses and ports. The IR remote control has limited functionality. If enabled, you can use the IR remote control to set the IP address and perform certain other functions. Use the \* button for the decimal point and the Left and Right buttons to erase entries. Aim the remote at the sensor on the front panel IR Port of the encoder. To enable or disable the IR remote, go to Configuration: System > General > IR Enable. The remote is enabled by default.

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## Front Panel Edit

The Front Panel is the LCD display on the front of the unit. Certain keys (see below) on the IR remote control can be used to set configuration parameters. Front Panel Edit can be invoked by pressing **Local Edit** key on the remote control. The default password is **23646** (which is admin, numerically). Press the **Select** key to enter. IR remote control of Local Edit is set in IWS under **Configuration: System > General > IR Enable**. Entering the operator password (default = **operator**) will not allow changing the IP Address, Subnet Mask, or Gateway IP. Entering the administrator password (default = **admin**) allows changing all of the configurable parameters.

**Table 7.** Front Panel Edit Keys

Key	Description
Up	Terminate string from cursor
#	Terminate string from cursor.
*	Period (.) used in IP addresses.
Down	Backspace.
Left	Shift cursor to the left.
Right	Shift cursor to the right.
Select	Change current setting and continue to next setting.
Next Page	Don't change current setting and continue to next setting.
Numbers	Numbers for editing.

Key	Description
Letters	Letters for password and for responses. "6" corresponds to "n" for a no response, "9" corresponds to "y" for a yes response.

**Table 8.** Front Panel Error Messages

Error Message	Description
Edit in Progress	Edit session in progress; Sign off any SNMP/CLI/IWS edit sessions.
Syntax Err 1	Syntax error.
Syntax Err 2	Syntax error.
Out of Range	Value out of range.
Invalid Gateway	Invalid Gateway Address or conflict with Gateway Address.
Invalid IP16	Attempt to enter IP with host ID equal to 0.
Invalid IP17	Attempt to enter broadcast address as IP.
Used Port	Port in use.
Assigned Port	Port has been assigned.
Invalid Mask23	Subnet mask makes IP Address a broadcast address.
Invalid Mask24	Subnet mask makes Gateway Address a broadcast address.
Invalid Mask25	Subnet mask makes Gateway Address invalid.
Other Errors	Retry later. If error persists, contact VBrick Support Services.

**Table 9.** Front Panel Dialog Windows

Dialog Window	Description
Password	At this screen use the letter keys to enter in the current password followed by the select key. Entering the operator password will not allow you to change the IP Address, Subnet Mask, or Gateway IP. Entering the case sensitive administrator password (admin) allows you to change all of the configurable parameters.
DHCP	Enable/Disable. If you enable DHCP (Dynamic Host Configuration Protocol) the VBrick will reboot and attempt to obtain a dynamic IP Address (6 = no, disable; 9 = yes, enable).
Box IP Addr	This screen will display the current IP Address of the VBrick. If the current setting does not need to be modified press the select key. Otherwise enter in the correct value followed by the select key.
Subnet Mask	This screen will display the current Subnet Mask of the VBrick. If the current setting does not need to be modified press the select key. Otherwise enter in the correct value followed by the select key.

Dialog Window	Description
Gateway	This screen will display the current Gateway of the VBrick. If the current setting does not need to be modified press the select key. Otherwise enter in the correct value followed by the select key. If the Box IP, Subnet Mask or Gateway IP has been modified and there are no errors reported on the front panel, the VBrick will now reboot.
Slot x Dest IP	This screen will display the current Destination IP Address for Slot x of the VBrick. If the current setting does not need to be modified press the select key. Otherwise enter in the correct value followed by the select key.
Slot x Dest Port	This screen will display the current Destination Port for Slot x of the VBrick. If the current setting does not need to be modified press the select key. Otherwise enter in the correct value followed by the select key. If the Destination IP or Destination Port has been modified and there are no errors reported on the front panel, the VBrick is now using the new settings.
Slot x Rcv IP Addr Screen	<i>MPEG appliances only.</i> This screen will display the current Receive IP Address for slot x of the VBrick. If the current setting does not need to be modified press the select key. Otherwise enter in the correct value followed by the select key.
Slot x Rcv Port Screen	<i>MPEG appliances only.</i> This screen will display the current Receive Port for slot x of the VBrick. If the current setting does not need to be modified press the select key. Otherwise enter in the correct value followed by the select key. If the Receive IP or Receive Port has been modified and there are no errors reported on the front panel, the VBrick is now using the new settings.
Show BoxIP	This will allow the enabling or disabling of the scrolling IP Address on the Front Panel Display of the VBrick appliance for security (6 = no, 9 = yes).

## MPEG-2/MPEG-4 Remote Control

VBrick appliances support features provided through an optional hand held IR (infrared) remote control. The IR remote enables users to access VBrick appliance functions and control functions with simple program commands. Front Panel Edit options are model dependent. For example, a dual encoder will allow editing of two destination IP Addresses and ports. The IR remote control has limited functionality. If enabled, you can use the IR remote control to set the IP address and perform certain other functions. Use the \* button for the decimal point and the **Left** and **Right** buttons to erase entries. Aim the remote at the sensor on the front panel IR Port of the encoder. To enable or disable the IR remote, go to Configuration: System > General > IR Enable. The remote is enabled by default.



- Reset – Press twice within five seconds to reset the VBrick. The appliance will reboot.
- Encoder Off/On – Turns the encoder off for privacy.
- Slot1, Slot2 – Selects which slot is to be controlled via the remote. This is relevant for dual encoder and dual decoder models only.
- PIP – Turns PIP Off/On. This is relevant for encoder/decoder models only.
- Local Edit – Used for Front Panel Edit.
- Camera – Used for Camera control, when applicable. Not supported in current release.
- Hard Drive – Displays the "Play" guide.
- Billboard – Displays the Billboard.
- Con Guide – Displays the Conference Guide.
- Pro Guide – Displays the Program Guide.
- Up – Function Dependent.
- Down – Function Dependent.
- Left – Function Dependent.
- Right – Function Dependent.
- Select – Function Dependent.
- Zoom In / Prev Page – Function Dependent.
- Zoom Out / Next Page – Function Dependent.
- <<, n, > ||, >> – Rewind, fast Forward, etc.
- Record – Starts recording to the hard drive. Screen indication is a red record icon.
- Send – Initiates an FTP transfer to a pre-configured destination.
- Conference
- Previous – Toggle to previous call.
- Ans Call – Answer a call.
- Rej Call – Reject a call.
- Ring RMT – Ring the remote.
- Ring DIS – Disable local ringer.
- Ring ENB – Enable local ringer.
- Hang Up – Disconnect a conference.
- Aux 1 – 4 Unused.

### *Controlling a VBStar*

A VBStar is an MPEG-2 appliance which can record incoming streams for store and forward use on an included 60 GB hard drive. The following functions are available using the handheld IR Remote Control when you have an MPEG-2 VBStar with a decoder:

**Table 10.** Using the IR Remote with a VBStar Decoder

Button	Description
Record	Press the Record button to start recording the stream that is currently playing on the TV. Press the Record button again to stop recording.
Send	Press the Send button to start an FTP transfer of the last recorded file.
Hard Drive	<p>Press the Hard Drive button to access the Play Guide. The Play Guide shows a list of files available on the VBStar for playback. When the Play Guide is displayed the following buttons are available:</p> <ul style="list-style-type: none"> <li>• Select – Start local TV playback of the highlighted file or move to the highlighted directory.</li> <li>• Up – Scroll up through the selections.</li> <li>• Down – Scroll down through the selections.</li> <li>• Prev Page – Scroll up one page.</li> <li>• Next Page – Scroll down one page.</li> <li>• Hard Drive – Press the Hard Drive button to hide the Play Guide.</li> </ul>
Pro Guide + Record	<p>Press the Pro Guide Button to access the Program Guide. When the Program Guide is displayed press the Record button to access the Record Guide. The Record Guide lists all programs emitting program guide advertisements that are available on the network. When the Record Guide is displayed the following buttons are available:</p> <ul style="list-style-type: none"> <li>• Select – Start a dedicated record of the highlighted program. (The program playing on the TV is not affected.)</li> <li>• Up – Scroll up through the selections.</li> <li>• Down – Scroll down through the selections.</li> <li>• Prev Page – Scroll up one page.</li> <li>• Next Page – Scroll down one page.</li> <li>• Record – Press the Record button to hide the Record Guide.</li> </ul>
Hard Drive + Send	<p>Press the Hard Drive button to access the Play Guide. When the Play Guide is displayed press the Send button to access the FTP Guide. The FTP Guide shows a list of files available on the VBStar for FTP. When the FTP Guide is displayed the following buttons are available:</p> <ul style="list-style-type: none"> <li>• Select – Start an FTP transfer of the highlighted file or move to the highlighted directory or choose FTP servers.</li> <li>• Up – Scroll up through the selections.</li> <li>• Down – Scroll down through the selections.</li> <li>• Prev Page – Scroll up one page.</li> <li>• Next Page – Scroll down one page.</li> <li>• Send – Press the Send button to hide the FTP Guide.</li> </ul>

The following IR functions are available on an MPEG-2 VBStar model without a decoder:






**Table 11.** Using the IR Remote *without* a VBStar Decoder

Button	Description
Record	Press the Record button to start recording. The recorder must have been preconfigured with an address and port. Press the Record button again to stop recording.
Send	Press the Send button to start an FTP transfer of the last recorded file.

## Controlling VBrick Features


When the VBrick is operational, you can use the IR Remote to control certain VBrick features such as VBStar Record, Picture in Picture, the Billboard, the Conference Guide, and the Program Guide. There are five icons displayed on the screen with Billboard, Conference Guide, and Program Guide.

**Table 12.** VBrick Feature Icons

Icon	Description
	Handcuffs – Indicates there is a user in Edit mode.
	Smiley face – Waiting for display.
	Traffic Light – Too much activity. Pause and try again
	Red Circle – Record.
	Yellow Square – Stop.

## Picture In Picture

PIP can be turned on and off on the Configuration: Decoder > Picture in Picture page in IWS.

	<p><b>PIP</b> – Displays Picture-in-picture. Toggles between display off and on. When the PIP is on the screen and neither the Program Guide, Conference Guide, or Front Panel Edit Functions are in use, the following function dependent keys are enabled on the IR remote control:</p> <ul style="list-style-type: none"><li>• Up – PIP to upper left corner</li><li>• Down – PIP to lower right corner</li><li>• Left – PIP to lower left corner</li><li>• Right – PIP to upper right corner</li><li>• Select – PIP to center Conferencing</li></ul>
---	--

## Billboard

Billboard can be enabled or disabled through IWS (Configuration: Billboard). For information on how to create and use Billboard pages, see the MPEG-2 or MPEG-4 Admin Guide.





**Billboard** – Display listing of .htm "billboard" pages available in the VBrick appliance. Files must be FTPed to the correct folder in order to be seen. Pressing Billboard again toggles to start/stop display.

## Conference Guide

The IR remote control of Conferencing can be enabled or disabled on the Configuration: Conferencing > Conferencing Setup page in IWS.



**Conference** – Lists the VBricks set up to receive video conferencing. Pressing Conference Guide again toggles to start/stop display. There are two modes for Conference Guide. The first brings up a list of users on the monitor. The following actions are possible in that mode:

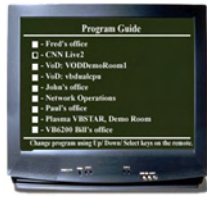
- Up – Scroll up through the selections.
- Down – Scroll down through the selections.
- Prev Page – Page up.
- Next Page – Page down.
- Select – Attempt to connect to the highlighted user.

Once a connection is made, the second mode makes the following selections possible:

- Previous – Toggle to previous call.
- Ans Call – Answer a call.
- Reject Call – Reject a call.
- Ring Rmt – Ring the remote.
- Ring-DIS – Disable local ringer.
- Ring-ENB – Enable local ringer.
- Hang Up – Disconnects a conference.

---

## Program Guide



**Pro Guide** – Lists all programs emitting Program Guide advertisements and currently available on the network. Pressing Pro Guide again toggles to start/stop display.

**Pro Guide + Select** – Chooses the program to play. Pressing Pro Guide again toggles to start and stop the display.

- Selecting Pro Guide allows you to make the following selections. Once you have made a selection, depressing the Program Guide button removes the menu from the screen.
- Up/Down – Scroll up or down through the selections.
- Select – Plays the selected program.
- Left – Plays the previous program selection in the Program Guide list.
- Right – Plays the next program selection in the Program Guide.
- Prev/Next Page – Page up/Page down.
- Record – Selects Record Guide.

---

## WM Remote Control

The IR remote shown below works with multiple VBrick products. The following text does not describe all of the functions and controls. *It describes only those controls which are functional with the VB6000 WM Appliance.*



- Reset – Press twice within five seconds to reset the VBrick. The appliance will reboot.
- Encoder Off/On – Turns the encoder off for privacy. Turns off multicast and push; does not affect HTTP or RTSP server functions.
- Local Edit – Enter or exit Front Panel Edit.
- Record – Starts/stops hard drive archiving. *You cannot use this command when IWS is in Edit mode.*
- Send – Initiate an FTP transfer of the last archived file. *You cannot use this command when IWS is in Edit mode.*
- Up – Function dependent.
- Down – Function dependent.
- Left – Function dependent.
- Right – Function dependent.
- Select – Function dependent.
- Prev Page – Function dependent.
- Next Page – Function dependent.

## Command Line Interface

### Topics in this chapter

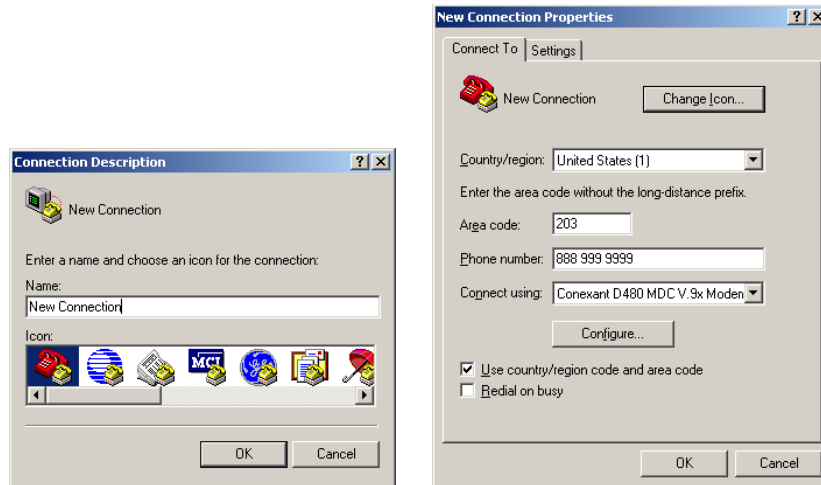
Connection Modes . . . . .	51
MIB-Based Command Line Interface . . . . .	53
Menu-Based Command Line Interface . . . . .	63

### Connection Modes

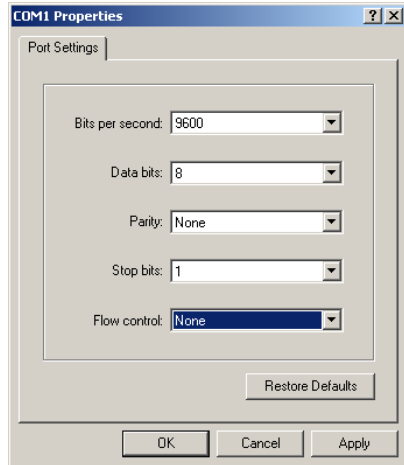
Telnet (as well as FTP, IWS, and SNMP) can be disabled for security purposes. If you cannot login to the appliance, check that Telnet is enabled. Go to Configuration: System > Security > External Telnet Server.

### Connecting with HyperTerminal

VBrick's command line interface is simple, intuitive, and menu driven. To manage an appliance with HyperTerminal, connect the included cable (which provides a standard 9-pin serial connection) from the serial port on the computer to the VBrick's COM2 RJ-45 connector. To access the VBrick using HyperTerminal go to **Start > Programs > Accessories > Communication > HyperTerminal**. Connect through your computer's Communications Port (usually COM1).



Upon connection to a terminal (9600 bps Async, 8-bit, no parity, flow control = none), a prompt for login (username) and password will be displayed. (Ethernet VBricks also support Telnet. The display is identical to that of a local terminal.) Login and password are case sensitive (admin). Once logged in, the main menu will appear by typing a question mark (?) at the **VBrick>** prompt.

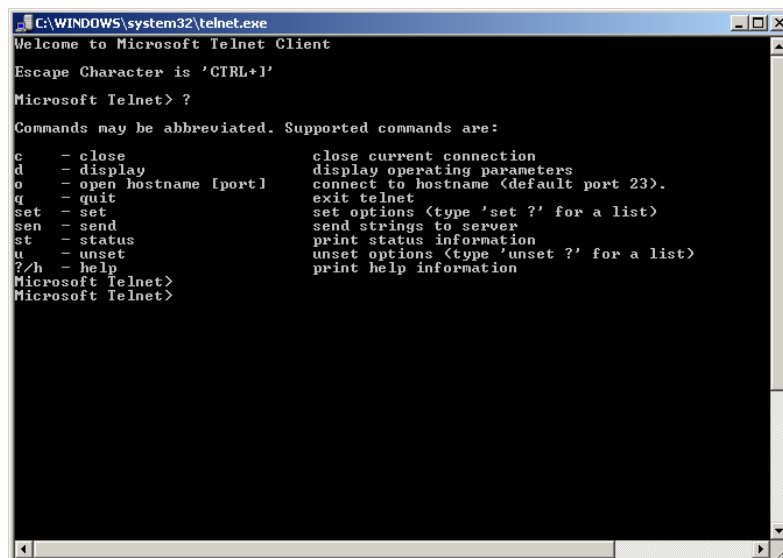


## Connecting with Telnet

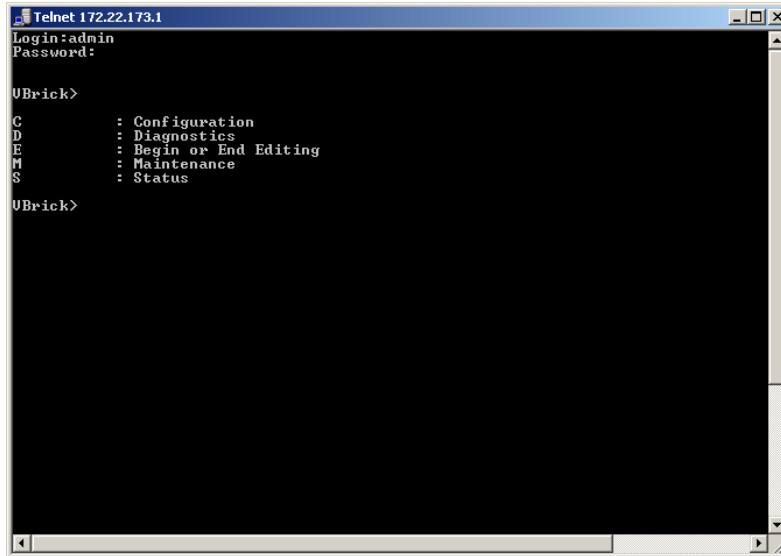
Ethernet VBricks can be managed remotely via industry-standard Telnet. The same suites of menus that are displayed on a local terminal are instantly available over an IP network. VBrick uses the standard Telnet port.

▼ To login using Telnet

1. Go to **Start > Run** and type `telnet` to open a Telnet window.
2. Type `?` and press Return to display the menu options.



3. Type `open <ip_address>` using the IP address of the VBrick Appliance.
4. Enter the Login name and Password. Default is admin and admin.
5. At the VBrick prompt, type `?` to display the top-level commands.



```

Telnet 172.22.173.1
Login:admin
Password:

VBrick>
C      : Configuration
D      : Diagnostics
E      : Begin or End Editing
M      : Maintenance
S      : Status
VBrick>

```

---

**Note** There are some Global Commands that can be used with both CLI and Telnet. Global Commands are accepted at any menu level. For example, to browse to a menu selection and make a change, you can type **be** or **beginedit** command instead of navigating back to the editing menu. Note that the reset control is in the Diagnostic menu (**D/RB**).

---

## MIB-Based Command Line Interface

All VBrick appliance parameters are accessible via an industry-standard SNMP Management Information Base (MIB). This section explains how to access VBrick appliance parameters using the COM2 serial port or over an IP network. You can use HyperTerminal or ProComm with the serial port for example, or Telnet or PuTTY over an IP network. The VBrick 4000-5000-6000 Series was originally designed with a menu-based Command Line Interface that was used for control. This functionality is still in place for backward compatibility but has been superseded by the MIB-based CLI, a syntactically simpler interface which is more suitable for computer-to-computer interfaces. The syntax for each VBrick parameter is documented in the SNMP MIB for the appliance. The MIB-based CLI is also suitable for users who cannot use the alternative SDK or SNMP interfaces because of their development environments or tools. All subsequent CLI references in this document refer to the MIB-based CLI.

You can use a variety of tools to create scripts that use the CLI. Some common examples are ProComm, HyperTerminal, Telnet, and PuTTY. In short, to send input commands to a VBrick appliance, you can use ProComm, Telnet, scripts, cut-and-paste, or any program that supplies text-based input via the get and set commands described here. The command set for the CLI includes **SVAR**, **GVAR**, **STAB**, **GTAB**. Note that newer appliance features such as multiple bit rate are not available on the menu-based CLI and can only be accessed via the MIB-based CLI.

---

**Note** The menu-based Command Line Interface (CLI) can be used to access VBrick parameters for WM v1.1 and VBDNA v3.3 *or earlier*. VBrick parameters added to subsequent releases may not be available in the menu-based CLI. You *must* use the MIB-based CLI to access these new features.

---

- ▼ Use these steps to find and set VBrick appliance parameters with the CLI
  1. Find the parameter you want to set or change. You can do this with a variety of methods. See [Finding VBrick Parameters](#) on page 54.
  2. Set the parameter using valid values obtained from the MIB. See [Setting VBrick Parameters](#) on page 55.
  3. Apply the changed value(s) using the [ApplySet](#) command for that group as specified in the MIB. See [Applying Changes](#) on page 58.
  4. Optional. Save the configuration file. See [Saving Changes](#) on page 58.

All CLI commands are shown in the following table. You will need to login to the VBrick and begin an edit session before you can make any changes. Once the parameters have been set to the correct values, you must do an [ApplySet](#). If the response to any [ApplySet](#) does not match the value of the set, an error message is displayed. Use care when typing commands. **All commands and parameter names used with the CLI are case sensitive.**

**Table 13.** CLI Command Syntax

Command	Response
SVAR vbrickMIBNAME=value	! <code>MIBNAME=value</code> or <code>!ERROR=errorstring</code>
GVAR vbrickMIBNAME	! <code>MIBNAME=value</code> or <code>!ERROR=errorstring</code>
STAB vbrickMIBNAME.row=value	! <code>MIBNAME.row=value</code> or <code>!ERROR=errorstring</code>
GTAB vbrickMIBNAME.row	! <code>MIBNAME.row=value</code> or <code>!ERROR=errorstring</code>

**Note** The serial port is also used by the VBrick appliance to emit system messages. In order to allow the script writer to distinguish between direct responses to commands and other output, all CLI response messages have `$!` as leading characters. *Any responses that do not begin with these characters can be safely ignored.*

It is important to note that some commands also cause a reboot of the VBrick. In order to notify the command initiator when this happens, the string `$!Rebooting ...` is emitted from the VBrick. In this case the commanding entity must be prepared to wait before continuing the editing session. In practice, it is unlikely that any automated program will be tasked with initiating any tasks that will cause a spontaneous reboot.

## Finding VBrick Parameters

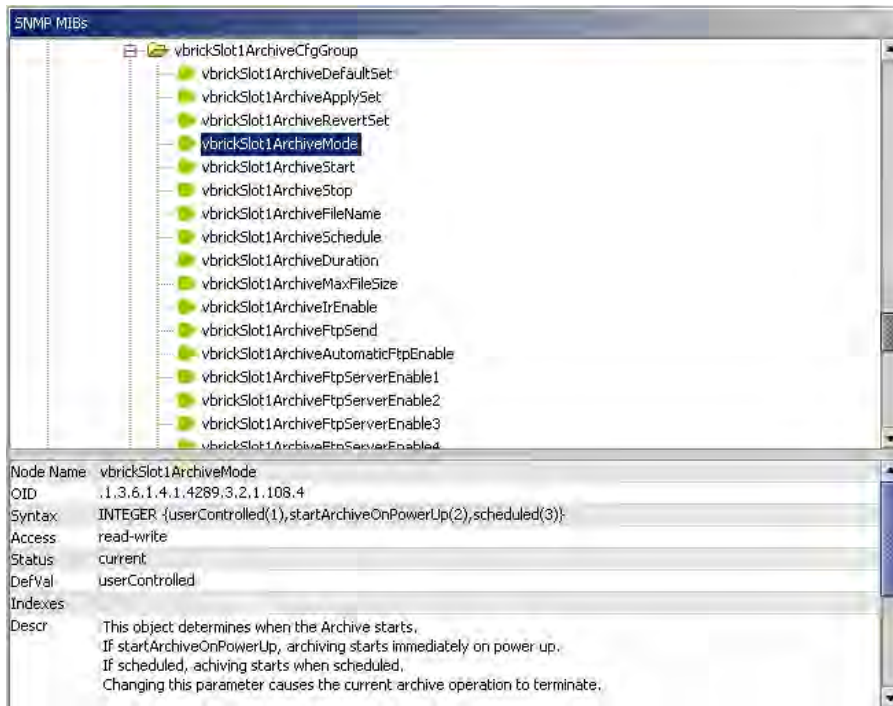
There are multiple ways to locate and verify VBrick parameters. Two of the easiest are explained here. Use whichever method is most convenient for you. Once you find the parameter name, check the MIB to verify the definition and usage.

- ▼ To locate a parameter name using the System Log
  1. You can get the name of any parameter from the System Log in IWS.
  2. Use IWS to set or change a parameter and click **Apply**.
  3. Then go to **Status: System Log > Config** and examine the log. You will see a config log message reporting the exact name of the parameter you just changed. Use this parameter name in your script.

- ▼ To locate a parameter name by viewing the source code
  1. Find the parameter in the Integrated Web Server (IWS) page.
  2. Then locate the parameter name by viewing the source code of the page in an editor or a MIB browser.
- ▼ To verify the definition/usage of the parameter
  1. Locate the parameter name using one of the methods described above.
  2. Verify the definition and usage of the parameter by examining the MIB file with either a standard MIB browser or a text editor.

## Using a MIB Browser

The easiest way to visualize VBrick's control structure is to understand the relationship between the IWS and the MIB. To get started, open the `vbrick_box2.mib` file in an editor or a MIB browser. For the most part, parameters are grouped according to where they appear on the Integrated Web Server pages. Once you find the parameter, other related parameters are usually contained in the same group. Each of the top-level groups comprises a page in IWS. Where there are dual encoders or dual decoders, the entries are repeated for `Slot1` and `Slot2`. The following screenshot shows a typical MIB browser. Note that valid values for the selected parameter are shown next to the **Syntax** column in the lower left area of the window.



## Setting VBrick Parameters

### Logging In

The first step is to connect to the VBrick appliance using whatever method is appropriate at your site (e.g. Telnet, HyperTerminal, etc.). When logging in, you are prompted for a login name and password. These credentials give you access to the VBrick and are typically provided by an administrator. When the `VBrick>` prompt is displayed, you are successfully

---

logged in. Note that only one editor is allowed per session. If you have trouble logging in, make sure no one else is actively editing the IWS page for the appliance.

Login: <username>  
Password:<password>  
VBrick>

## Beginning or Ending an Edit Session

To begin a CLI edit session, first login as explained above, and then enter the first two commands shown below *using the same username you used to login to the VBrick*. You only need to do this at the start of an edit session or if someone has ended your edit session. Also, you only need to begin an edit session to *set* variable and table parameters—not to *get* parameters. You can *get* parameters without starting an edit session. When your edit session is done, and after you have applied or saved your changes, do an end edit.

- ▼ To begin an edit session  
VBrick> SVAR vbrickEditName=  
VBrick> SVAR vbrickEditName=<username>
- ▼ To end an edit session  
VBrick> SVAR vbrickEditName=

---

**Note** To use the MIB-based CLI, you must be the MIB-based CLI editor—not the menu-based CLI editor. If you initially used **Begin Edit (be)** to launch the menu-based CLI, you must begin an edit session as shown here before you can use the MIB-based CLI.

---

## Using Get/Set Variable Commands

Use the following format to get or set a variable. Note that this is only an example. Use the actual parameter name and value as shown in the MIB. [Finding VBrick Parameters](#) on page 54 explains how to do this.

VBrick> SVAR vbrickSlot1ArchiveMode=1

*Valid* system commands display a response in the following format:

!vbrickSlot1ArchiveMode=1

*Invalid* system commands display an error response in the following format:

!ERROR=Value out of range

---

**Note** Double quotes (" ") *may* be used for any strings but they *must* be used if the string contains spaces. For example, use the following syntax in the MIB-based CLI to set the Encoder SAP text: SVAR "vbrickSlot1EncoderSapText=John Hancock"

---

## Using Get/Set Table Commands

The following images show how to set table parameters using the CLI. This particular example shows how to set the **Enable** variable in the **vbrickSlot1EncoderHttpPushConfigTable** but the steps are the same for *any* parameters embedded in tables on IWS web pages. First find the **Enable** table parameter name shown in the following window using the System Log, by viewing the source code of the IWS web page, or by checking the MIB file. Once you have the parameter name, you can set or change the value, *for Row 3 in this example*, using a **STAB** command with the following format. As shown in the **Syntax** column of the MIB browser



(next window), the valid values for this variable are (1) **disabled** and (2) **enabled**. If the syntax calls for an integer, use a numeric value; if the syntax calls for a string, use an alpha value.

**VBrick> STAB vbrickSlot1EncoderHttpPushEnable.3=2**

**Configuration: Reflector**

Source **Multicast Announce(SAP) Server Archiver** Push

**HTTP Push**

Maximum Push Destinations

Estimated Push Bit Rate 0

Total Estimated Push Bit Rate 0 **REFRESH**

**END EDIT** **APPLY** **REVERT** **DEFAULTS**

**SAVE CONFIG**

Index	Enable	Server:Port	Publishing/Mount Point	CopyFromPublishingPoint
1	Disabled			
2	Disabled			
3	Disabled			
4	Disabled			
5	Disabled			

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

SNMP MIBs

- vbrickSlot2EncoderHttpPushTableCfgGroup
  - vbrickSlot1EncoderHttpPushTableDefaultSet
  - vbrickSlot1EncoderHttpPushTableApplySet
  - vbrickSlot1EncoderHttpPushTableRevertSet
  - vbrickSlot1EncoderHttpPushConfigTable**
    - vbrickSlot1EncoderHttpPushConfigEntry
      - vbrickSlot1EncoderHttpPushIndex**
        - vbrickSlot1EncoderHttpPushEnable**
        - vbrickSlot1EncoderHttpPushAutoRemoveEnable
        - vbrickSlot1EncoderHttpPushServerName
        - vbrickSlot1EncoderHttpPushPublishingPoint
        - vbrickSlot1EncoderHttpPushCopyFromPublishingPoint
        - vbrickSlot1EncoderHttpPushUserName
        - vbrickSlot1EncoderHttpPushPassword
        - vbrickSlot1EncoderHttpPushDomainName
- vbrickSlot2EncoderHttpPushTableCfgGroup
- vbrickSlot1EncoderHTTPPushStatusGroup
- vbrickSlot2EncoderHTTPPushStatusGroup
- vbrickSlot1EncoderSourceCfgGroup

Node Name vbrickSlot1EncoderHttpPushEnable  
 OID .1.3.6.1.4.1.4289.3.2.1.120.4.1.2  
 Syntax INTEGER {disabled(1),enabled(2)}  
 Access read-write  
 Status current  
 DefVal  
 Indexes  
 Descr This object allows the operator to enable/disable a push of the stream to a server.

---

## Applying Changes

The **ApplySet** command is used to apply changes. There is one **ApplySet** command per program group in the MIB and the syntax varies slightly according to the group. Use this command, for example **vbrickSlot1ArchiveApplySet**, to actually apply the change(s) you made with an **SVAR** or a **STAB**. An **ApplySet** is always written in the following format with the trailing **=2**.

```
VBrick> SVAR vbrickSlot1ArchiveApplySet=2
```

It is important to note that some ApplySets can cause the VBrick appliance to send unsolicited messages. For example, the appliance may reboot with the following message: **!Rebooting ...**

## Saving Changes

Once you are done, you must save to persistent storage if you want your edits saved in the configuration file. Unless you save the configuration, any changes you have made will be lost if the appliance reboots. A save is always written in the following format with the trailing **=2**. Note that some changes to the configuration will reboot the VBrick in which case you must wait for it to reset.

```
VBrick> SVAR vbrickSysSaveConfiguration=2
```

## *Error Handling*

Programming errors, for example syntax errors, illegal values, etc. display informational messages in the CLI, for example **!ERROR=Value out of range**. Other system or network issues, for example a dropped connection or a failed save (see below) are shown in the System Log (open IWS and go to **Status: System Log > Config** to see the log). You can also detect potential errors in advance by getting the value of various status parameters in the VBrick. For example, if you are writing a script, you might want to check **Archiver State** or **FTP Status** before you set parameters for a related task.

**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:172.16.5.88:admin:02/20/2007 11:42:48LOC SysSaveConfiguration set to 0 failed
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

## CLI Examples

The following examples show various VBrick configuration tasks. User input commands are shown in bold text; VBrick responses are non-bold. **Example 1** shows the entire command sequence used to set a parameter, including how to login and begin and end an edit session. *For clarity, the other examples are abbreviated and show only the actual get and set commands.* Remember that you only need to begin an edit session at the start of an edit session or if someone has ended your edit session. You only need to end an edit session when you are done, and after you have applied or saved your changes.

### Example 1 – Set Variable

- ▼ To enable Slot1 Transmit

1. Login to the appliance.

Login: **<username>**

Password: **<password>**

2. Start an edit session.

VBrick> **SVAR vbrickEditName=**

VBrick> **SVAR vbrickEditName=<username>**

3. Make your changes.

VBrick> **SVAR vbrickSlot1EncoderNetworkTransmitEnable=2**

\$!vbrickSlot1EncoderNetworkTransmitEnable=2

VBrick> **SVAR vbrickSlot1EncoderNetworkApplySet=2**

\$!vbrickSlot1EncoderNetworkApplySet=2

4. Save the configuration.

VBrick> **SVAR vbrickSysSaveConfiguration=2**

- 
5. End the edit session.

```
VBrick> SVAR vbrickEditName=
```

### *Example 2 – Get Variable*

- ▼ To check Slot1 Transmit state

1. Login to the appliance.
2. Get the parameter.

```
GVAR vbrickSlot1EncoderNetworkTransmitEnable  
$!vbrickSlot1EncoderNetworkTransmitEnable=2
```

### *Example 3 – Set Multiple Variables*

- ▼ To change Slot2 Receive IP and Port

1. Login to the appliance.
2. Start an edit session.
3. Make your changes.

```
SVAR vbrickSlot2DecoderNetworkReceiveIpAddr=239.16.129.102  
$!vbrickSlot2DecoderNetworkReceiveIpAddr=239.16.129.102  
SVAR vbrickSlot2DecoderNetworkReceivePort=4444  
$!vbrickSlot2DecoderNetworkReceivePort=4444  
SVAR vbrickSlot2DecoderNetworkApplySet=2  
$!vbrickSlot2DecoderNetworkApplySet=2
```

4. End the edit session.

### *Example 4 – Get Table Variables*

- ▼ To get Restart Table row 1

1. Login to the appliance.
2. Get the parameters.

```
GTAB vbrickSysRestartInfoStartTime.1  
$!vbrickSysRestartInfoStartTime.1=11/02/2006 08:35:27  
GTAB vbrickSysRestartInfoStopTime.1  
$!vbrickSysRestartInfoStopTime.1=11/02/2006 08:37:36  
GTAB vbrickSysRestartInfoUpTime.1  
$!vbrickSysRestartInfoUpTime.1=00:000 00:02  
GTAB vbrickSysRestartInfoRestartType.1  
$!vbrickSysRestartInfoRestartType.1=POWER
```

### *Example 5 – Set Table Variables*

- ▼ To set Http Push Table row 1

1. Login to the appliance.
2. Start an edit session.
3. Make your changes.

```
STAB vbrickSlot1EncoderHttpPushUserName.1=BillOne  
$!vbrickSlot1EncoderHttpPushUserName.1=BillOne  
STAB vbrickSlot1EncoderHttpPushPassword.1=pass24  
$!vbrickSlot1EncoderHttpPushPassword.1=pass24
```

```

STAB vbrickSlot1EncoderHttpPushDomainName.1=dom
!vbrickSlot1EncoderHttpPushDomainName.1=dom
SVAR vbrickSlot1EncoderHttpPushTableApplySet=2
!vbrickSlot1EncoderHttpPushTableApplySet=2

```

4. End the edit session.

### *CLI Sample Script*

The following sample script shows various VBrick configuration tasks and was created with ProComm. It includes several intentional errors to show how errors are reported. Note that in some places, after an **ApplySet**, there is a 15 second wait to allow the VBrick to process the previous command.

```

;Recorded script. Editing may be required.
proc main
; integer loops

waitfor "Login:" FOREVER
transmit "admin^M"
waitfor "Password:" FOREVER
transmit "admin^M"
waitfor "VBrick> " FOREVER

; for loops = 0 upto 10

while 1

transmit "SVAR vbrickEditName=^M"
waitfor "^J!vbrickEditName" FOREVER
waitfor "^JVBrick> " FOREVER
transmit "SVAR vbrickSlot1EncoderVideoTargetBitRate=2000000^M"
waitfor "^J!ERROR=Session Edit Name Not Correct" FOREVER
waitfor "^JVBrick> " FOREVER
transmit "SVAR vbrickEditName=admin^M"
waitfor "^J!vbrickEditName=admin" FOREVER
waitfor "^JVBrick> " FOREVER

transmit "SVAR vbrickSlot1EncoderVideoTargetBitRate=2000000^M"
waitfor "^J!vbrickSlot1EncoderVideoTargetBitRate=2000000" FOREVER
waitfor "^JVBrick> " FOREVER
transmit "SVAR vbrickSlot1EncoderVideoHue=500^M"
waitfor "^J!ERROR=Value out of range" FOREVER
waitfor "^JVBrick> " FOREVER
transmit "SVAR vbrickSlot1EncoderVideoHue=-50^M"
waitfor "^J!vbrickSlot1EncoderVideoHue=-50" FOREVER
waitfor "^JVBrick> " FOREVER
transmit "SVAR vbrickSlot1EncoderVideoApplySet=2^M"
waitfor "^J!vbrickSlot1EncoderVideoApplySet=2" FOREVER
waitfor "^JVBrick> " FOREVER

waitquiet 15 FOREVER

transmit "GVAR vbrickSlot1EncoderVideoTargetBitRate^M"
waitfor "^J!vbrickSlot1EncoderVideoTargetBitRate=2000000" FOREVER

```

```

waitfor "^JVBrick> " FOREVER
transmit "GVAR vbrickSlot1EncoderVideoHue^M"
waitfor "^J$!vbrickSlot1EncoderVideoHue=-50" FOREVER
waitfor "^JVBrick> " FOREVER

transmit "STAB vbrickSlot1EncoderHttpPushUserName.1=^M"
waitfor "^J$!vbrickSlot1EncoderHttpPushUserName.1=" FOREVER
waitfor "^JVBrick> " FOREVER
transmit "STAB vbrickSlot1EncoderHttpPushPassword.1=helpMe^M"
waitfor "^J$!vbrickSlot1EncoderHttpPushPassword.1=helpMe" FOREVER
waitfor "^JVBrick> " FOREVER
transmit "STAB vbrickSlot1EncoderHttpPushDomainName.1=Domain1^M"
waitfor "^J$!vbrickSlot1EncoderHttpPushDomainName.1=Domain1" FOREVER
waitfor "^JVBrick> " FOREVER
transmit "SVAR vbrickSlot1EncoderHttpPushTableApplySet=2^M"
waitfor "^J$!ERROR=Push username cannot be blank if password or domain name is NOT blank"
FOREVER
waitfor "^JVBrick> " FOREVER
transmit "STAB vbrickSlot1EncoderHttpPushUserName.1=Bills^M"
waitfor "^J$!vbrickSlot1EncoderHttpPushUserName.1=Bills" FOREVER
waitfor "^JVBrick> " FOREVER
transmit "SVAR vbrickSlot1EncoderHttpPushTableApplySet=2^M"

waitfor "^J$!vbrickSlot1EncoderHttpPushTableApplySet=2" FOREVER
waitfor "^JVBrick> " FOREVER
transmit "STAB vbrickSlot1EncoderHttpPushPassword.1=^M"
waitfor "^J$!vbrickSlot1EncoderHttpPushPassword.1=" FOREVER
waitfor "^JVBrick> " FOREVER
transmit "SVAR vbrickSlot1EncoderHttpPushTableApplySet=2^M"
waitfor "^J$!ERROR=Push password cannot be blank if username or domain name is NOT blank"
FOREVER
waitfor "^JVBrick> " FOREVER
transmit "STAB vbrickSlot1EncoderHttpPushPassword.1=helpMe^M"

waitfor "^J$!vbrickSlot1EncoderHttpPushPassword.1=helpMe" FOREVER
waitfor "^JVBrick> " FOREVER
transmit "SVAR vbrickSlot1EncoderHttpPushTableApplySet=2^M"
waitfor "^J$!vbrickSlot1EncoderHttpPushTableApplySet=2" FOREVER
waitfor "^JVBrick> " FOREVER

transmit "GTAB vbrickSlot1EncoderHttpPushUserName.1^M"
waitfor "^J$!vbrickSlot1EncoderHttpPushUserName.1=Bills" FOREVER
waitfor "^JVBrick> " FOREVER
transmit "GTAB vbrickSlot1EncoderHttpPushPassword.1^M"
waitfor "^J$!vbrickSlot1EncoderHttpPushPassword.1=helpMe" FOREVER
waitfor "^JVBrick> " FOREVER
transmit "GTAB vbrickSlot1EncoderHttpPushDomainName.1^M"
waitfor "^J$!vbrickSlot1EncoderHttpPushDomainName.1=Domain1" FOREVER

waitquiet 15 FOREVER

transmit "GVAR vbrickSlot1EncoderVideoBitRate^M"
waitfor "^J$!vbrickSlot1EncoderVideoBitRate=1000000" FOREVER
waitfor "^JVBrick> " FOREVER
transmit "GVAR vbrickSlot1EncoderVideoHue^M"

```

```

waitfor "^J$!vbrickSlot1EncoderVideoHue=100" FOREVER
waitfor "^JVBrick>" FOREVER

transmit "SVAR vbrickSlot1EncoderNetworkDestinationIpAddr=239.22.129.11^M"
waitfor "^J$!vbrickSlot1EncoderNetworkDestinationIpAddr=239.22.129.11" FOREVER
waitfor "^JVBrick>" FOREVER
transmit "SVAR vbrickSlot1EncoderNetworkApplySet=2^M"
waitfor "^J$!vbrickSlot1EncoderNetworkApplySet=2" FOREVER
waitfor "^JVBrick>" FOREVER

waitquiet 15 FOREVER

transmit "SVAR vbrickSlot1EncoderAudioInput=3^M"
waitfor "^J$!ERROR=Invalid value because SDI is not present" FOREVER
waitfor "^JVBrick>" FOREVER
transmit "SVAR vbrickSlot1EncoderAudioInput=1^M"
waitfor "^J$!vbrickSlot1EncoderAudioInput=1" FOREVER
waitfor "^JVBrick>" FOREVER
transmit "SVAR vbrickSlot1EncoderAudioApplySet=2^M"
waitfor "^J$!vbrickSlot1EncoderAudioApplySet=2" FOREVER
waitfor "^JVBrick>" FOREVER

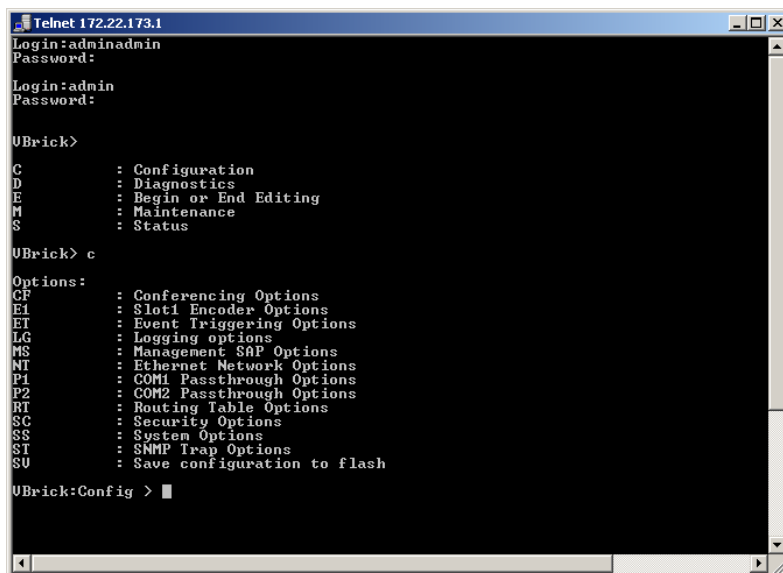
; endfor
endwhile

endproc

```

## Menu-Based Command Line Interface

The Command Line Interface is a VBrick program used to manage configuration parameters for the appliance. It is based upon the same command structure as the IWS. Regardless of whether CLI is accessed through HyperTerminal (shipped with Windows) or through Telnet, the command structure is the same. This section gives a brief overview of the CLI operation assuming most users will typically use IWS for configuration.



```

Telnet 172.22.173.1
Login:adminadmin
Password:
Login:admin
Password:
UBrick>
C      : Configuration
D      : Diagnostics
E      : Begin or End Editing
M      : Maintenance
S      : Status
UBrick> c
Options:
CF     : Conferencing Options
EI     : Slot1 Encoder Options
ET     : Event Triggering Options
LG     : Logging Options
MS     : Management SAP Options
NT     : Ethernet Network Options
P1     : COM1 Passthrough Options
P2     : COM2 Passthrough Options
RT     : Routing Table Options
SC     : Security Options
SS     : System Options
ST     : SNMP Trap Options
SU     : Save configuration to flash
UBrick:Config >

```

---

The general format is **Command /Option/ Option** (not case-sensitive). Entering a question mark (?) at any level will display available options. First level command options are:

- C** – Configuration
- D** – Diagnostics
- E** – Begin or End Editing
- M** – Maintenance
- S** – Status

For example, entering **c** will display available **Configuration Options**. Entering **s** will display available status options, etc. To exit from any level to the previous level, type **exit** or **ex** at the prompt. **Ctrl-Z** will always take you to the top level; **?** or **dir** will display the available options.

### *Editing Configuration Parameters*

Only one user can be in Edit mode at any time. It is advised that users Begin Edit, make changes and End Edit so as not to interfere with other users. It is possible for a user to leave IWS while still in the edit mode which leaves a subsequent user with the dilemma of choosing whether or not to log off the first user. A second user may log off the first individual without knowing if the first user is still engaged in editing or has simply forgotten to log off. At the top level you may enter **e** for available options and enter the selection on a separate line or if you know the option number, you can enter the selection and option with a space. After a **Return** the system will respond with **Command Complete**.

**VBrick> e 1** – Displays editing status.

**VBrick> e 2** – Begin/End editing.

If the appliance is being edited through a different interface, you will get a **Command Complete** response even though you did not become the active editor. The only way you can make sure you are the active editor is when you display **Editing Status** and the display is **admin**. If the field is blank you are not the active Editor. In Edit mode **Command Complete** means the command has been executed. When changing other parameters, it is necessary to apply the command before the parameter will be changed in the VBrick. There are also global commands that enable editing for use when you are within the file structure.

**be** – Begin edit

**en** – End edit

**sh** – Show editing status

### *Setting and Changing Parameters*

When entering and changing parameters, (other than the Edit command), **Command Complete** indicates that the user has entered an appropriate command **not** that the command has been carried out. In order to initiate the change it is necessary to use **Apply** and it **must** be used at the correct Command Level. The system will then respond **Command Complete**, this time meaning that the command has been executed. It is necessary to enter the parameter being changed along with the entry. Don't forget that the command will not be executed until it is "applied".

Users may navigate to lower level commands through the correct command line entries and change parameters if you enter **Apply** at the correct level. For example, if you are changing the Logo display off or on, you may progress through menu entries to the correct level:



1. ?
2. **d2** (Slot2 decoder options)
3. **v** (Slot2 decoder video options)
4. **slot 2 decoder video options** (1 off, 2 on)
5. **Apply**

or if you know precisely which parameter to alter, you can enter a single line command string to accomplish the same action as in the steps above:

VBrick> **c d2 v 4 2** – enters the command to turn the Logo on.

VBrick> **c d2 v Apply** – Executes the command.

**Note** **Apply** must be entered at the correct level. The user has entered the correct Command String, the Command appears to be completed. In reality, the Logo still appears on the screen until apply is entered. Again, **Apply** cannot be entered as part of the command line. The exception to this is entries being toggled, as the Edit entry. You can either Begin or End Editing. There are no other valid states.

## Selecting Parenthetical Items

Where applicable in changing parameters, the acceptable entries are in parenthesis. The correct text string or number to enter corresponding to the parameter to change is given first. To see what it is currently set at, check display In the following example, the audio sampling frequency can be set to either 44.1 KHz or 48 KHz.

```

Telnet 172.22.173.1
TM      : Slot1 encoder template options
U      : Slot1 encoder video options
VBrick:Config:Encoder Slot1 > a
Options:
1      : Display slot1 encoder audio options
2      : Set slot1 encoder audio sampling frequency
3      : Set slot1 encoder audio bit rate
4      : Set slot1 encoder audio target bit rate
5      : Set slot1 encoder audio channels
6      : Set slot1 encoder audio input
7      : Set slot1 encoder audio input level
8      : Set slot1 encoder audio gain
9      : Set slot1 encoder audio balance
10     : Set slot1 encoder audio speech mode
Apply  : Apply slot1 encoder audio options
Default: Set slot1 encoder audio options to default
Revert : Revert slot1 encoder audio options
VBrick:Config:Encoder Slot1:Audio > 1
Slot1 Encoder Audio --
Audio Input Level   : Normal
Audio Gain          : 0 dB
L+R Bit Rate(bit/sec): 128000
Sampling Frequency  : 48KHz
Audio Channels      : Stereo
VBrick:Config:Encoder Slot1:Audio > 2
Options:
Encoder audio sampling frequency <48-48KHz, 44-44.1KHz>
VBrick:Config:Encoder Slot1:Audio > 2
VBrick:Config:Encoder Slot1:Audio >

```

## Setting System Date and Time

The system date and time is set under Configuration, System Options. To set the System Date and Time in CLI, you must enclose the changes with double quotes (" "), such as "3/15/2002 13:53" otherwise the changes are ignored. You can change the system date and time through the menu entry: Configuration (c), System Options (ss), 3, and entering: **"mm/dd/yyyy hh:mm"** or as a one line entry: **c ss 3 "mm/dd/yyyy hh:mm"**

---

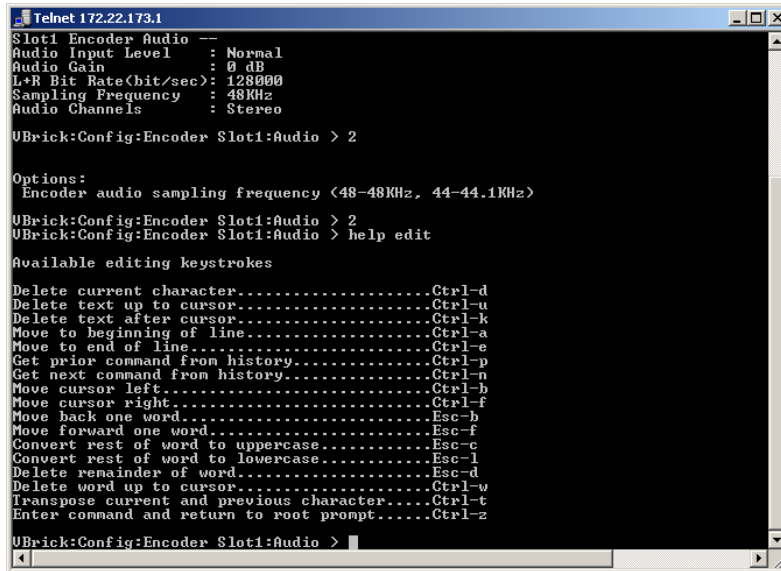
## Using Spaces

Double quotes (" ") *may* be used for any strings but *must* be used if the string contains spaces. For example, use the following syntax in the Menu-based CLI to set the Encoder SAP text:

```
c e l s 7 "John Senior"
```

## Other Editing Keys

Type `help edit` to display a list of other editing keys.



```
Telnet 172.22.173.1
Slot1 Encoder Audio --
Audio Input Level   : Normal
Audio Gain          : 0 dB
L+R Bit Rate(bit/sec): 128000
Sampling Frequency  : 48KHz
Audio Channels      : Stereo

UBrick:Config:Encoder Slot1:Audio > 2

Options:
Encoder audio sampling frequency <48-48KHz, 44-44.1KHz>

UBrick:Config:Encoder Slot1:Audio > 2
UBrick:Config:Encoder Slot1:Audio > help edit

Available editing keystrokes
Delete current character.....Ctrl-d
Delete text up to cursor.....Ctrl-u
Delete text after cursor.....Ctrl-k
Move to beginning of line.....Ctrl-a
Move to end of line.....Ctrl-e
Get prior command from history.....Ctrl-p
Get next command from history.....Ctrl-n
Move cursor left.....Ctrl-b
Move cursor right.....Ctrl-f
Move back one word.....Esc-b
Move forward one word.....Esc-f
Convert rest of word to uppercase.....Esc-c
Convert rest of word to lowercase.....Esc-l
Delete remainder of word.....Esc-d
Delete word up to cursor.....Ctrl-w
Transpose current and previous character.....Ctrl-t
Enter command and return to root prompt.....Ctrl-z

UBrick:Config:Encoder Slot1:Audio >
```

## VB6000 Reference

### Topics in this chapter

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### VBrick Appliance Models

VBrick network appliances come in a variety of models and configurations. In general, the first four digits in the model series indicate the appliance type as follows:

**Table 14.** VBrick Appliance Models

4000 Series – Encoder Models		
	4200 Series	Single encoder
	4300 Series	Dual encoder
5000 Series – Decoder Models		
	5200 Series	Single decoder
	5300 Series	Dual decoder
6000 Series – Encoder/Decoder Models		
	6200 Series	Encoder/Decoder

### VB6000



**Figure 8.** Model 6200 – Rear View

## VB6000 VBSSM

VBrick Security and Surveillance Monitoring appliances are video only and are ideal for security and surveillance applications where full motion, high-quality video is required in a cost effective product. The VBSSM is a compact, rugged and reliable video network appliance that supports temperature ranges from -20 to 70°C. For more about the Security and Surveillance, and Monitoring appliance, see "VBSSM" in the *VBrick MPEG-2 Appliance Admin Guide*.

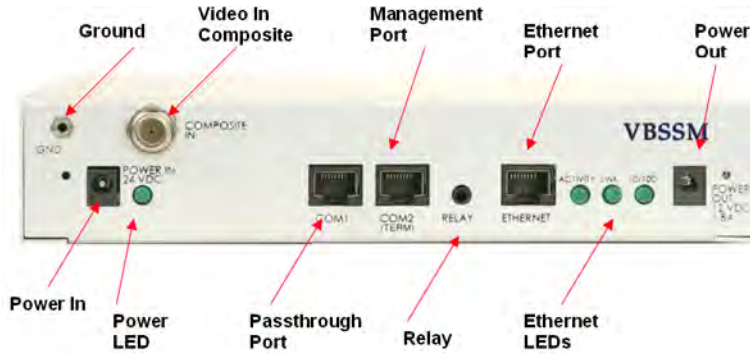


Figure 9. Model 9174-4200-xxxx VBSSM – Rear View

## VB6000 Expanded VBSSM

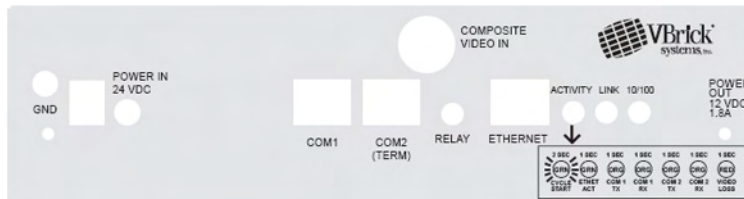


Figure 10. Model 9172-4400-0023 Expanded VBSSM – Rear View

### Expanded VBSSM Activity LED

On the Expanded VBSSM, the **Activity** LED has expanded functionality. The **Activity** LED on this model is used to indicate the status of four different ports on the appliance including: **COM1**, **COM2**, **Video In**, and **Ethernet**. The graphic label located at the bottom right of the unit explains the color-coded sequence used to monitor activity on these ports. As explained below, the **Activity** LED will cycle through the following color sequence at one second intervals.

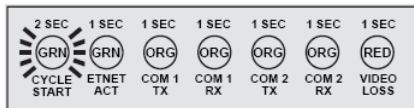


Table 15. Expanded VBSSM Activity LED Color Codes (left to right)

Sequence	Color	Description
1	Green	Blinking. Indicates cycle start (two seconds).
2	Green	Solid. Indicates <b>Ethernet</b> activity (otherwise the LED is off).

Sequence	Color	Description
3	Amber	Solid. Indicates <b>COM1</b> Tx activity (otherwise the LED is off).
4	Amber	Solid. Indicates <b>COM1</b> Rx activity (otherwise the LED is off).
5	Amber	Solid. Indicates <b>COM2</b> Tx activity (otherwise the LED is off).
6	Amber	Solid. Indicates <b>COM2</b> Rx activity (otherwise LED is off).
7	Red	Solid. Indicates no <b>Video In</b> (otherwise the LED is off).

## Device Interfaces

### *RS-232/422/485 COM Port Pinouts*

The COM 1 Passthrough Port is used to pass control information between VBrick appliances over the network. The COM 1 port presents a standard DTE interface on an RJ-45 connector. The serial port operates at a default rate of 9.6 Kbps, Async, 8-Bit, No Parity, Controls = None. On some appliances, the pins on the passthrough port can be set for RS-232 *or* RS-422-485 (see below) using the **COM Interface Type** parameter on the Passthrough page in IWS. This option is available on only devices where the Part Number on the Main Board ends in 3. To determine part number, open IWS and go to **Status: User Information > Main Board > Part Number**.

**Note** See Configuration: Passthrough in any of the VBrick Appliance *Admin Guides* for detailed information about Passthrough configuration.

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 left sidebar shows the Configuration menu with options: Network, Billboard, Decoder, Encoder, FTP File Transfer, Passthrough (selected), System, Video On Demand, and Script Management. The main content area is titled "Configuration: Passthrough" and features a search bar for "COM1" and "COM2". The Passthrough State is set to "Responder" with an "APPLY" button. The configuration parameters are: Baud Rate (9600), Stop Bits (1), Parity (None), RTS Control (Force On), DTR Control (Force On), Operational State (Ready), and Com Interface Type (RS422/485 (Terminated)). A dropdown menu for Com Interface Type is open, showing options: RS232, RS422/485, and RS422/485 (Terminated). The "APPLY" button is highlighted, and a "DEFAULTS" button is also visible.

**Table 16.** RS-232 Pinouts

Pin	Function	Direction
1 †	RTS Request to Send	Output
2 †	DTR Data Terminal Ready	Output
3	TXD Send Data	Output
4	Ground	Common
5	Ground	Common
6	RXD Receive Data	Input
7 †	DSR Data Set Ready	Input
8 †	CTS Clear to Send	Input

† COM2 for –xxx3 boards have control signals RTS, DTR, DSR, and CTS.

The COM 2 port presents a standard DTE interface on an RJ-45 connector. This port may be used for management *or* for Passthrough. An RJ-45 to DB9 straight-through cable may be used to connect directly to most serial ports on laptop PCs. The serial port operates at a rate of 9.6Kbps Async, 8-Bit, No Parity. The VBrick appliance comes with a cable to attach this port to a standard 9-pin serial adapter.

**Table 17.** RS-232-422/485 Pinouts

Pin	Description
1	TD(+)
2	N/C
3	TD(-)
4	Optional gnd/common or n/c (GND connected to cable shielded)
5	Optional gnd/common or n/c (GND connected to cable shielded)
6	RD(-)
7	N/C
8	RD(+)

### ***Ethernet Port***

The Ethernet port is a standard 10/100Base-T RJ-45 that is auto-sensing.

### ***Power In Entry Interface***

The power entry interface supplies 24VDC to the VBrick from an external power supply.

### ***Power Out Exit Interface***

The power exit interface supplies 12VDC from the VBrick for the purpose of camera power.

### *Video-In and Video-Out (Composite)*

The composite interface is a standard BNC connector.

Pin	Description
1	Luma/Chroma
2	Ground

### *Video-In and Video-Out (S-Video Interface)*

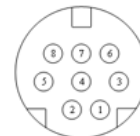
The S-Video interface is a standard mini-DIN connector.

Pin	Description
1	Ground
2	Ground
3	Luma
4	Chroma
5	Ground
6	Ground

### *AudioMate In*

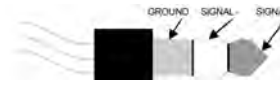
The AudioMate port (labelled **MIC IN**) is designed for use with VBrick's Echo cancellation Microphone (ECM). It uses a special 8-pin mini-DIN connector and cable available from VBrick. The **MIC IN** internal pinouts are shown below.

Pin	Description	I/O Type
1	No Connect	N/C
2	No Connect	N/C
3	Ground	GND
4	Ground (Shield)	GND
5	+12V DC Power	Output
6	Optional Mic input (not used)	Input
7	Mic Input	Input
8	Speaker Reference	Output

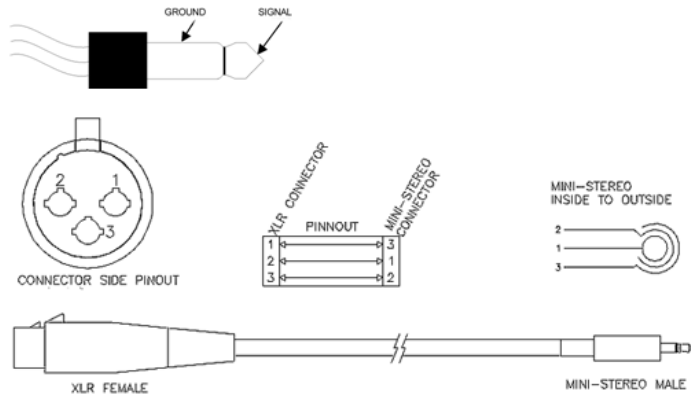


### *Audio In and Audio Out*

The **Audio In** ports are designed for use with a 1/8" mini plug. Cables are available for both balanced and unbalanced applications from electronics specialty stores (e.g. Radio Shack) and from VBrick. For balanced operation, use a cable (see Figure 11) with a mini stereo plug (Ground, - Signal, +Signal, High Impedance Input, 600 Ohm Output).



For standard, unbalanced, operation use a cable with a mini mono plug (Ground and + Signal, High Impedance).



**Figure 11.** Balanced Audio Cable

**Table 18.** Analog Input for MPEG-2, MPEG-4 and WM Encoders

Configuration	Two channel Stereo	
Input Connectors	2X TRS Stereo mini-jacks (L + R)	
Input Configuration	Balanced or Unbalanced	
	Normal Mode	Alternate Mode (High Headroom)
Input Load Impedance	100k Ohms	100k Ohms
Nominal Input level	1.0 Vpp - Unbalanced	1.0 Vpp - Unbalanced
	0.5 Vpp - Balanced	0.5 Vpp - Balanced
Maximum Input level	4.0 Vpp - Unbalanced	8.0 Vpp - Unbalanced
	2.0 Vpp - Balanced	4.0 Vpp - Balanced
Dynamic Range	94dB	88dB
Encoder Gain Range	+7 to -53dB	+12 to -48dB Note: Depending on the input level for certain gain adjustments, the signal could be distorted at the input to the analog-to-digital converter.
Channel Separation	83dB	83dB
Head Room	12dB	18dB
Noise Floor (Input Grounded)	-92dB	-92dB

The **Audio Out** ports are also designed for use with a 1/8" mini plug. Cables are available for both balanced and unbalanced applications from electronics specialty stores (e.g. Radio Shack) and from VBrick. Table 19 and Table 20 outline the specifications of the output audio levels.



**Table 19.** Analog Audio Output for MPEG-2 Decoders (ENDEC configuration)

Configuration	Two channel Stereo	
Output Connectors	2X TRS Stereo mini-jacks (L + R)	
Output Configuration	Balanced or Unbalanced	
	Normal Mode	Alternate Mode (High Headroom)
Output Impedance	50 Ohms +-10%	50 Ohms +-10%
Nominal Output Level	1.0 Vpp - Unbalanced 1.0 Vpp - Balanced	1.0 Vpp - Unbalanced 1.0 Vpp - Balanced
Maximum Output Level	+-12 Vpp Balanced or Unbalanced	
Dynamic Range	94dB	88dB
Decoder Gain Range	+14dB to -48dB and Mute	+8dB to -54dB and Mute
End-to-end Gain	a. Encoder/Decoder in Normal mode: Gain = unity @ 0dB level b. Encoder/Decoder in Alternate mode: Gain = unity @ 0dB level	
Maximum Load	600 Ohms	600 Ohms
SNR (Signal to Noise)	76dB @ 1kHz	72dB @ 1kHz
Noise Floor (No signal, Input grounded)	-92dB	-92dB
Balanced Output Voltage Offset	15 mV typical	15 mV typical

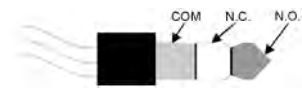
**Table 20.** Analog Audio Output for MPEG-4 Decoder (ENDEC configuration)

Configuration	Two channel Stereo	
Output Connectors	2X TRS Stereo mini-jacks (L + R)	
Output Configuration	Balanced or Unbalanced	
Output Impedance	50 Ohms +-10%	
Nominal Output Level	1.0 Vpp - Unbalanced 1.0 Vpp - Balanced	
Maximum Output Level	+-12 Vpp Balanced or Unbalanced	
Dynamic Range	a. Encoder in Normal mode: Dynamic Range = 91dB b. Encoder in Alternate mode: Dynamic Range = 88dB	
Decoder Gain Range	+12dB to -34.5dB	
End-to-end Gain	a. Encoder in Normal mode: Gain = +4.5dB @ 0dB level b. Encoder in Alternate mode: Gain = unity @ 0dB level	
Maximum Load	600 Ohms	

SNR (Signal to Noise)	76dB @ 1kHz
Noise Floor (No signal, Input grounded)	-92dB
Balanced Output Voltage Offset	15 mV typical

### Relay Port

The Relay port is designed for use with a 1/8" balanced mini plug. Cables are available from electronics specialty stores (e.g. Radio Shack) and from VBrick Systems. The relay is controlled via IWS. In IWS go to **Configuration: System > General** to set **Relay Control** Open or Closed. The Relay port specification is dry contact, 75mOhms, 2A @ 30VDC, 0.5A @ 125VAC. The mini stereo plug should be wired as shown in the following diagram.



### Activity LED

The **Activity** LED behaves differently depending on the Part Number of the Main Board. On appliances where the Part Number ends in 2, the **Activity** LED blinks green when there is Ethernet activity. On appliances where the Part Number ends in 3 or higher, the appliance has a tri-color LED that shows different status activities as shown in the table. (To determine part number, open IWS and go to **Status: User Information > Main Board > Part Number**.) The tri-color **Activity** LED blinks at one-second intervals in the following sequential order:

**Table 21.** Tri-Color Activity LED

Clear	Off; no activity
Green	Ethernet activity
Red	If there is TX or RX activity on COM1
Orange	If there is TX or RX activity on COM2

## Event Triggering

The VB6000 event triggering feature lets you use an external switch to control the function of the VBrick. This section provides some examples of how to use this feature. In all the examples, a high event is triggered when the switch is closed and a low event is triggered when the switch is opened. The event trigger inputs on the VBrick recognize a *high* voltage anywhere above +8 volts DC with an upper limit of +12 volts. A *low* voltage is anything at or below 0 volts DC with a lower limit of -12 volts. The event can also be configured to run a script on Pin 7 or Pin 8 depending on how the connection is configured. See "Configuration: Script Management" in the VBrick *MPEG-2/4 Appliance Admin Guide* for configuration details; see [RS-232/422/485 COM Port Pinouts](#) for pinout details.

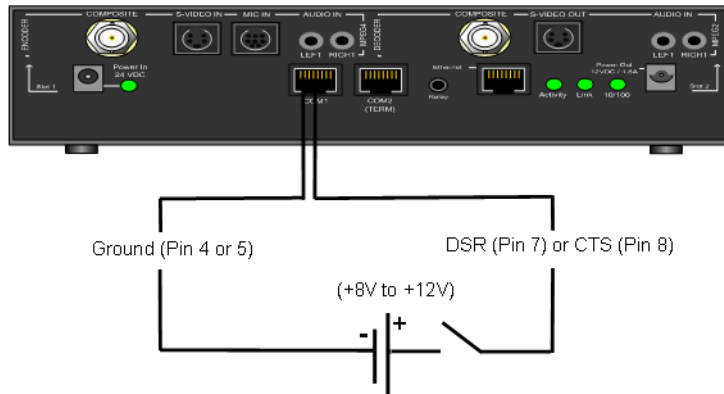
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**Note** You cannot execute a script either with the IR Remote Control or using an event trigger if IWS is currently running in **Edit** mode. If you run a script directly from IWS, it automatically exits **Edit** mode and terminates the active editing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

---

### Example 1

Connect an external power supply (+8V to +12V) and a switch directly to the ground pin and an event pin of the COM1 port on the VBrick.



### Example 2

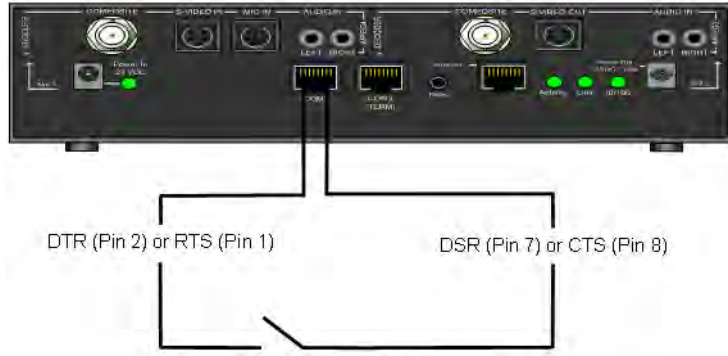
Connect the +12V Power Output of the VBrick through a switch to the event pin on the COM1 port.



### Example 3

Connect COM1 output pin (pin1 RTS or pin2 DTR) through a switch to a COM1 event pin. For this method to work, you must force the desired output pin (RTS or DTR) to On via IWS:

- ▼ To force the desired output pin to On
  1. Go to the **Configuration: Passthrough** page in IWS.
  2. Change COM1 **Passthrough State** to **Responder** and click **Apply**.
  3. Change **RTS/DTR Control** to **Force On** and click **Apply**.
  4. Change COM1 **Passthrough State** to **Disabled** and click **Apply**.
  5. Click **Save Config** when done.







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