BR-800

ProHD Broadcaster

Easy Set-Up Guide V 1.01

BR-800 EASY SET-UP GUIDE

BEFORE YOU BEGIN! Please determine the type of configuration by selecting the scenario that best describes the way you will be using your BR-800 Pro HD Broadcaster. Once you have determined your type of configuration please follow the related checklist to ensure that you have every component necessary to proceed.

Scenario 1. - Streaming via the internet to a BR-HD800 that shares an internet connection with your LAN.

In this scenario one ethernet port on your BR-HD800 is connected to your Local Area Network (LAN), while your camera(s) will be originating the video stream from outside of your LAN via the internet. The configuration will require other Non-JVC devices to complete a connection between the cameras originating the stream and the BR-800 that exists on your LAN. In order to complete this process as quickly as possible, please refer to the checklist on page 2, and distribute the information to the appropriate LAN related personnel for preparation.

Scenario 2 - Streaming via the internet to a BR-800 that is connected to a dedicated Internet service device.

In this scenario one ethernet port on your BR-800 is connected to a dedicated Internet Service device. A second ethernet port on your BR-800 is connected to your Local Area Network (LAN) for local network management. The configuration will require other Non-JVC devices to complete a connection between the cameras originating the stream and the BR-800 that exists on your LAN. In order to complete this process as quickly as possible, please refer to the checklist on page 3, and distribute the information to the appropriate LAN related personnel for preparation.
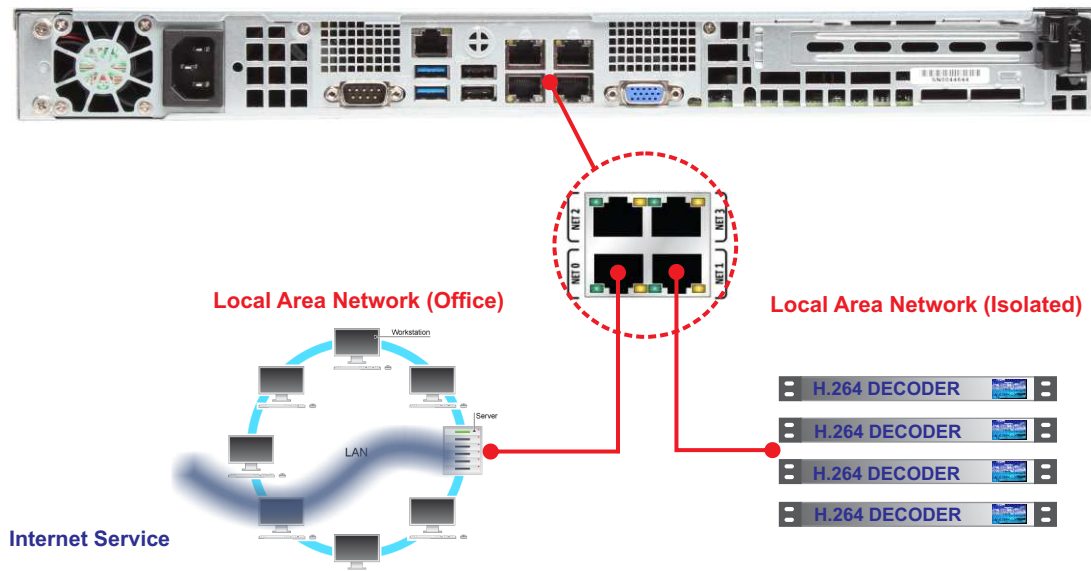
Scenario 3 - Streaming to a BR-800 that is connected to your LAN from within your LAN.

In this scenario your BR-800 is connected to your Local Area Network (LAN) for local network management, your camera(s) are also connected to your (LAN) using a Wireless Access Point or wired adapter. This configuration will require other Non-JVC devices in order to connect to Wireless Access Points or ethernet ports. In order to complete this as quickly as possible, please refer to the checklist on page 4, and distribute the information to the appropriate LAN related personnel for preparation.

Streaming via the internet to a BR-HD800 that shares an internet connection with your LAN.

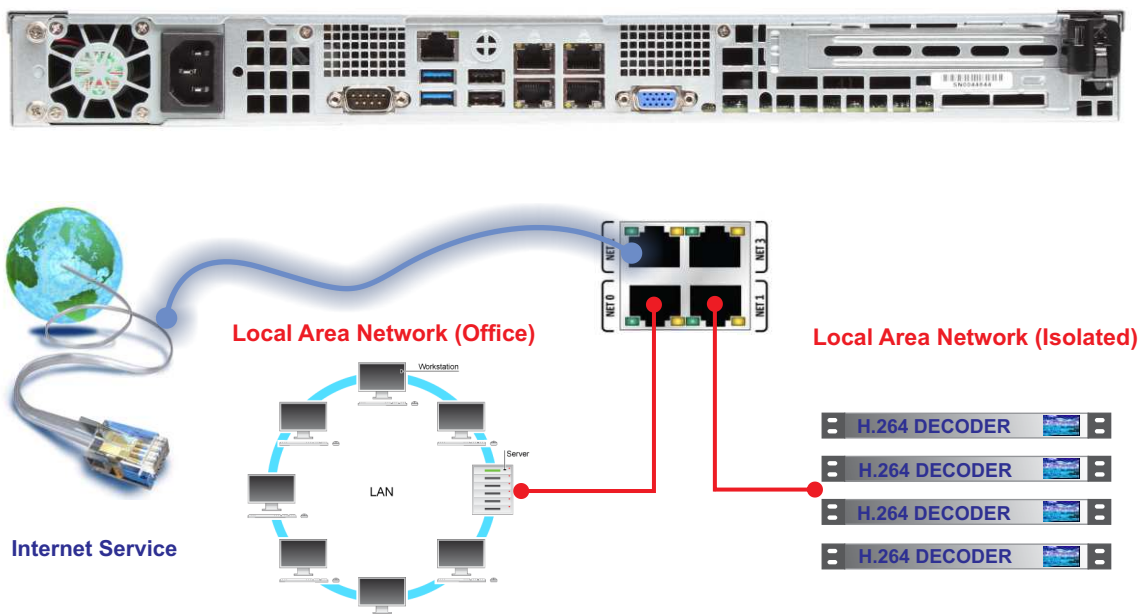**Step 1 - Determine LAN and outside connection parameters.**

- Choose a IP Address on your LAN that is not currently in use and not a part of an active DHCP pool range. This will be the address that you will use later for your BR-800.   **LOCAL IP ADDRESS_____**

- Determine the 'Public' IP Address. Your Internet Service Provider and/or IT Dept. should be able to provide this information for you. If your service provides a pool of IP Address, it is recommended that you select a Public IP Address that is not currently being used for another purpose on your LAN. **PUBLIC IP ADDRESS_____**

- Configure your Router/Firewall to translate your Public IP Address to your Local IP Address, and allow incoming connections to your Local IP Address. In addition to, or as an exception to network address translation you may need to use port forwarding from your Public IP to your Local IP. When using port forwarding please allow TCP/UDP in both directions on the following ports: 2088, 2077, 4444, and 8080 (These are defaults, if other ports are desired you may open them as well, and later they can be set in the BR-800). Depending on your router there may be other necessary parameters to set, please refer to your IT Department.

- Activate your third party USB Cellular Modem. Contact your modem supplier/carrier and ensure that your modem devices have been activated. There are mainly 2 types of services, Dynamic IP, or Static IP, keep in mind that either service will work to stream video back to the BR-800 via the internet, however if remote control of the camera is desired you must subscribe to dedicated IP service, or use a VPN service with your cellular modem to make the cameras act as an extension to your LAN (Please contact a cellular carrier to discuss VPN options with currently available modems).

- Prepare your decoders. You will need one decoder for each baseband output that you would like to supply to your video infrastructure. The BR-800 can receive and output several IP Video Streams simultaneously, but these streams will need to be converted to baseband video by a decoder in order to be distributed to a video router or switcher. The BR-800 has 4 Ethernet Ports, to reduce traffic on your office LAN it is recommended that one of its ethernet ports be configured on a separate (isolated) network along with the your decoders see below.

Streaming via the internet to a BR-800 that is connected to a dedicated Internet service device.

Step 1 - Determine LAN and outside connection parameters.

• Choose a IP Address on your LAN that is not currently in use and not a part of an active DHCP pool range. This will be the address that you will use later for your BR-800.   **LOCAL IP ADDRESS_____**

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Streaming to a BR-800 that is connected to your LAN from within your LAN.

Step 1 - Determine LAN parameters for the BR-800 and Camcorder(s)

- Choose a IP Address on your LAN that is not currently in use and not a part of an active DHCP pool range. This will be the address that you will use later for your BR-800.   **LOCAL IP ADDRESS**_____

- For each camera choose an IP Address on your LAN that is not currently in use and not a part of an active DHCP pool range. These will be that addresses that is used in your camcorders. Please refer to your camcorder's set-up instruction to configure the camcorders for access to your LAN. **CAMERA IP ADRESSES**

  _____
  _____
  _____
  _____
  _____
  _____
  _____

- Configure your access site. If you are connecting to your LAN via WiFi, please install your WiFi Access Point(s) around/within your intended broadcast areas. Determine your SSID's and Security Keys for your access point(s). If you are connecting using ethernet install necessary Ethernet switch(es) and cables in your intended broadcast location. Please obtain compatible USB to Ethernet adapters for use with JVC camcorders.

- Prepare your decoders. You will need one decoder for each baseband output that you would like to supply to your video infrastructure. The BR-800 can receive and output several IP Video Streams simultaneously, but these streams will need to be converted to baseband video by a decoder in order to be distributed to a video router or switcher. The BR-800 has 4 Ethernet Ports, to reduce traffic on your office LAN it is recommended that one of its ethernet ports be configured on a separate (isolated) network along with the your decoders see below.
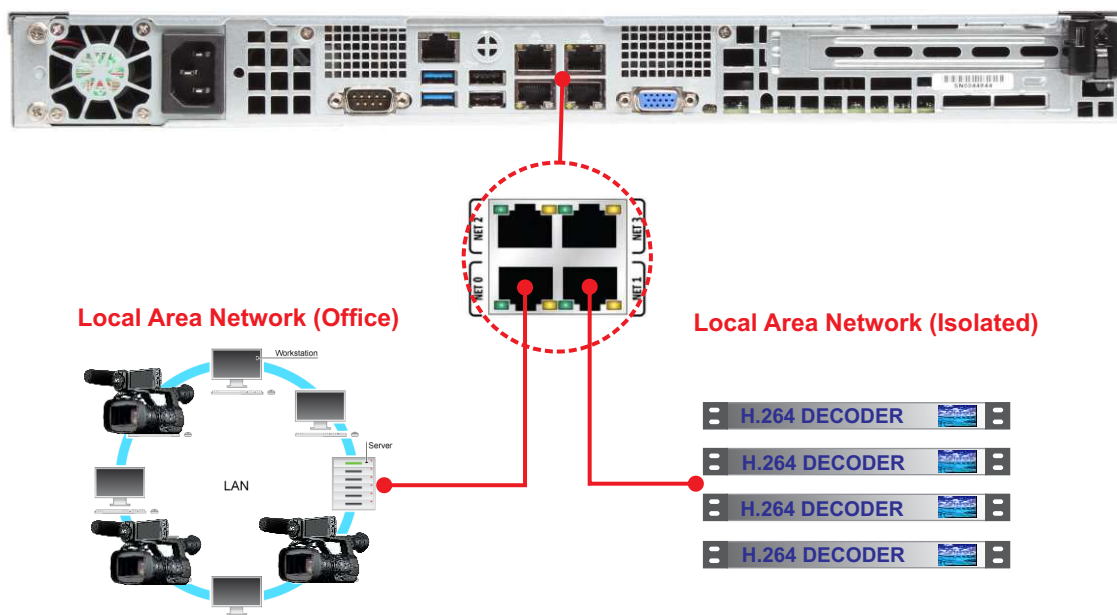
Organize your set-up parameter.

Let's assume we are installing a BR-800U at a site where cameras will be streaming to the BR-800U from the outside using a Cellular connection to the internet. While 2 other cameras will be hardwired with ethernet cable to the roof of the building for a traffic and a weather shot.

The site location has provided the following information to us to setup our devices.

The office LAN uses a 172.25.25.x network with a 255.255.255.0 subnet.
The gateway for this network is 172.25.25.1
The Primary/Secondary DNS for this network is 73.162.108.17/73.162.108.18
The rooftop weather cam is assigned an IP address of 10.1.10.41
The rooftop traffic cam is assigned an IP address of 10.1.10.42
Three field cameras are using USB cellular modems with the following IP Addresses from Horizon Cell.
      64.154.128.61
      64.154.128.62
      64.154.128.63
The dedicated service that will connect the BR-800 to the internet uses a static IP Address of 73.162.108.45 and uses a modem with no firewall.

For all this to work, we need to configure the BR-800 in the following fashion:

The BR-800U needs to have IP Address 73.162.108.45 assigned so that it can receive streams from the internet.
The BR-800U needs to have IP Address 172.25.25.61 assigned so that it can be managed by any computer on the office network.
The BR-800U needs to have IP Address 10.1.10.10 assigned so that it will be able to stream to the decoders on the same isolated network, and receive streams from the roof cameras.

Using 3 of the 4 available ports, we can assign port 0 to communicate on the office network, so we will configure it to 172.25.25.61 as indicated by the IT notes. Port 1 will be used for an isolated network between the BR-800U, 3 Decoders, 2 rooftop cameras, and a PC to manage the cameras and the decoders It should be assigned 10.1.10.10. And finally port 2 will handle the dedicated Internet Service Provider link to the internet, so we will assign it the IP Address 73.162.108.45 as indicated by the IT notes. When finished the ports on the BR-800 should be configured like the figure below.
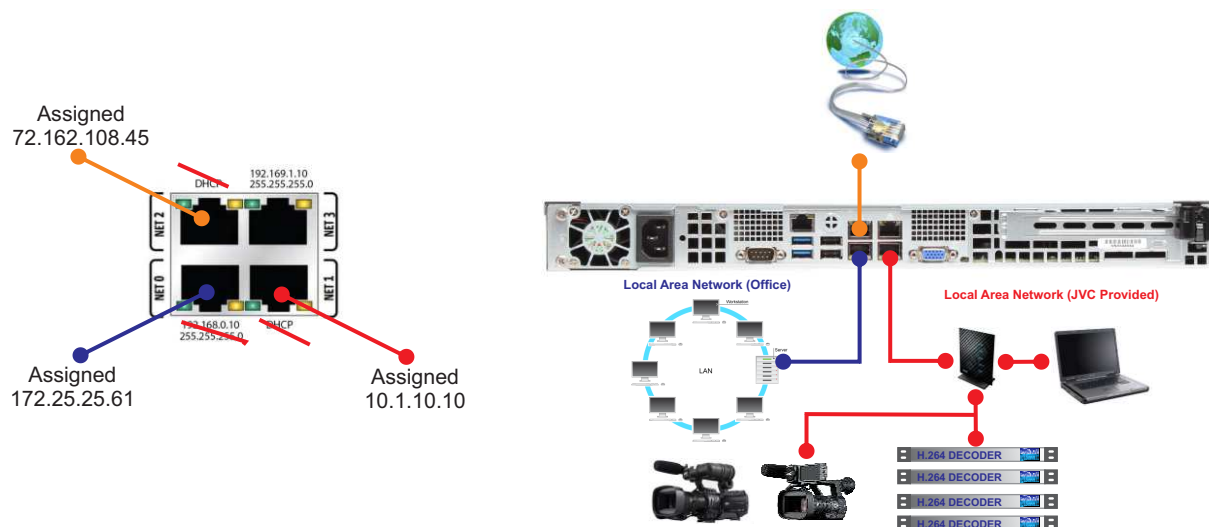

On the following page please use the worksheet to organize the parameters needed to configure the BR-800 for use on your network.

BR-800 NETWORK CONFIGURATION

Step 1 - Connect the BR-800 directly to a computer or laptop.

• The BR-800 has 4 Ethernet ports by which to receive/send streams or access the GUI management interface. Out of the box the 4 Ethernet ports are configured as follows:
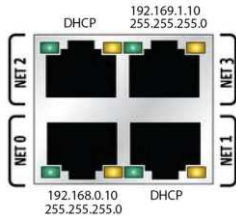
Ethernet Port 0 = 192.168.0.10 (255.255.255.0)
Ethernet Port 1 = DHCP
Ethernet Port 2 = DHCP
Ethernet Port 3 = 192.169.1.10 (255.255.255.0)

• For initial Set-Up configure your computer with a static IP Address that is on the same network as Ethernet Port 0. *Example: 192.168.0.1 (255.255.255.0).* Next connect an Ethernet cable between your computer and Ethernet Port 0 of the BR-800.

• Bring up your Web Browser on your computer and type in the Port 0 IP Address alon g with port 4444 to access the BR-800's GUI http://192.168.0.10:8080 you should be presented with a User Logon screen. Example below using Internet Explorer.
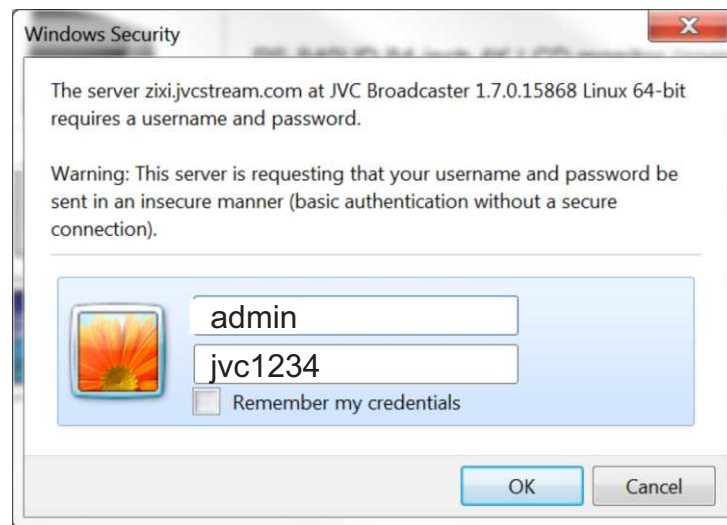
• After you log into the BR-800 server you should be taken to the servers main or "STATUS" page. Locate the **'Settings'** tab on the menu bar and select it. This takes you to the server's set up and configuration page (See Below). Use the data that we collected earlier to set up the BR-800U.

BR-800 NETWORK GROUP CONFIGURATION WORKSHEET

ETH0	IP/SUB	192.168.0.10/255.255.255.0	**WORKGROUP NOTES**
	GATE		
	DNS		
ETH1	IP/SUB	DHCP	**WORKGROUP NOTES**
	GATE	DHCP	
	DNS	DHCP	
ETH2	IP/SUB	DHCP	**WORKGROUP NOTES**
	GATE	DHCP	
	DNS	DHCP	
ETH3	IP/SUB	192.169.1.10/255.255.255.0	**WORKGROUP NOTES**
	GATE		
	DNS		

PORT REQUIREMENT (FIREWALL REQUIREMENTS)

SERVICE	PROTOCOL	DIRECTION	DEFAULT PORT RANGE	CONFLICT ALT PORT RANGE
ZIXI SERVICE	**TCP/UDP**	**IN/OUT**	**2077 - 2088**	PLEASE ASSGN
WEB MGMNT	**TCP**	**IN/OUT**	**8080**	PLEASE ASSGN
RTMP SERVICE	**TCP/UDP**	**IN/OUT**	**1935**	PLEASE ASSGN
HTTP SERVICE	**TCP**	**IN/OUT**	**7777**	PLEASE ASSGN
UDP SERVICE	**UDP**	**IN**	USER ASSGN	

BR-800 NETWORK CONFIGURATION

Step 2 - Configure the BR-800's IP Address(es) for use on your network.

- Click the "+" sign next to the 'Network settings' option and then the '+' sign next to eth0, eth1, and eth2 to access the network configuration section of each port. Click the edit symbol [✎] to open the edit network settings window, and enter the data for each port. Using the data from our earlier example. We would configure eth0, and eth1 as 172.25.25.61 and 101.1.10.10 respectively, eth2 (not shown in image below) would be configured as 73.162.108.45. Enter the rest of the necessary data and click the [Apply] button at the bottom of the screen to commit the changes. Use the data from your configuration worksheet to set-up your BR-800 for your network.

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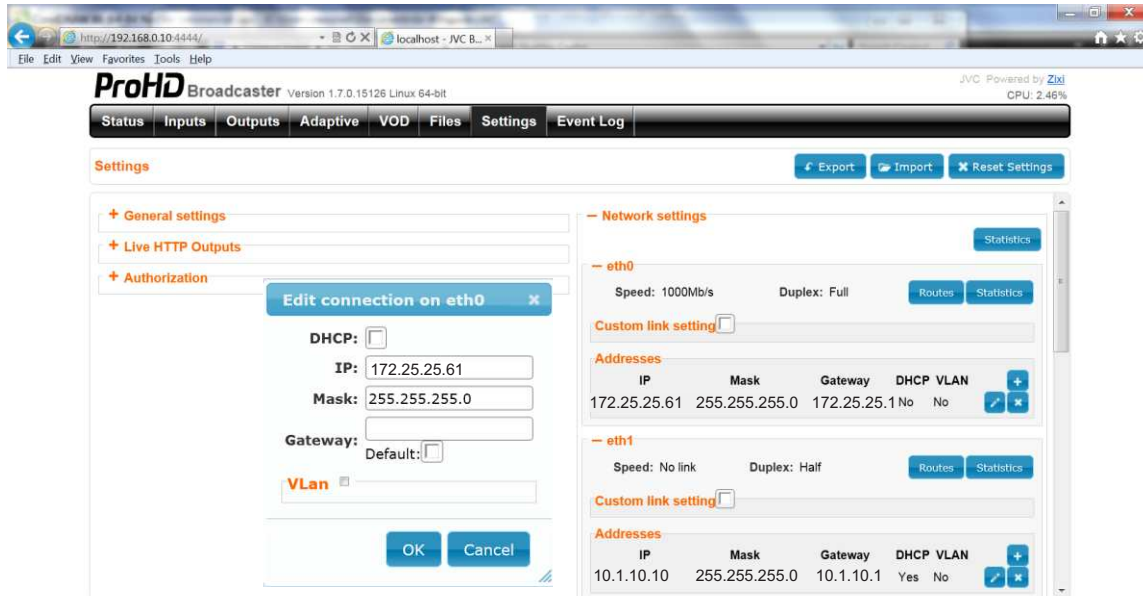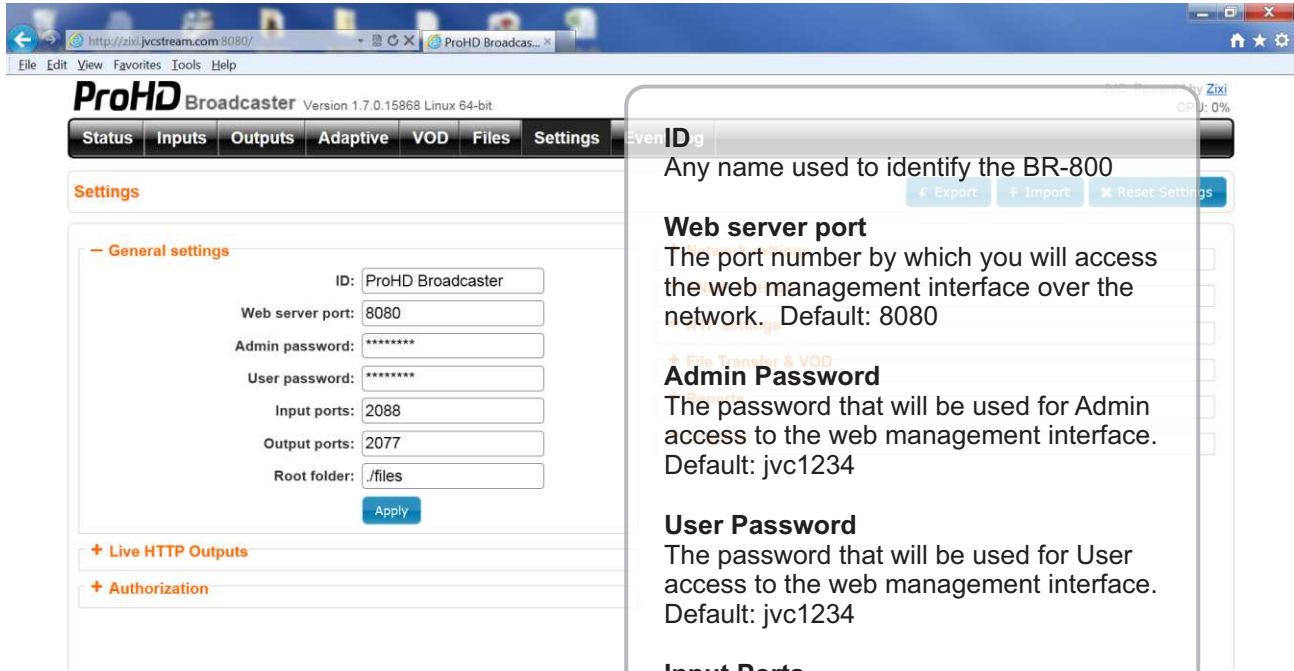
Other parameters in the Network settings configuration window.

- **DHCP** - If any of the networks that you are connecting your BR-800U assigns IP addresses automatically then you should enable DHCP for that particular port, when DHCP is checked no other information needs to be entered.
- *****IMPORTANT***** IP addresses that are provided to the BR-800 by a DHCP server can change, and therefore may cause a disruption of the streaming services provided by the BR-800 server. Unless it is absolutely necessary to have the IP Address assigned via DHCP, we recommend that a static IP Address(es) is pre-determined for use with the BR-800.

- **DNS Servers** - Later during source/destination set up in the input and output sections of the BR-800, you may need to define outputs using a URL instead of an IP Address. For example you might set up an output to another BR-800 at another location, and need to reference the unit with something like 'http://backup.broadcaster2.com' instead of an IP Address like '192.168.1.111'. In such a case where a URL is used instead of an IP Address, a DNS server needs to be entered so that the BR-800 can successfully reach the server destination.

BR-800 NETWORK CONFIGURATION

Step 3 - Configure the BR-800's ports for use within the connected network(s).

- From the **Settings** tab click the "+" sign next to the 'General settings' option to expand the section and access the parameters. Make the necessary changes according to your Network Group Configuration Worksheet. Using our network example the fields would be populate as follows.

-

-

After making all the necessary port changes to your BR-800, click the [Apply] button at the bottom of the window to commit the changes. If you have made a change to the Web server port, you will need to reconnect by entering the IP address with the updated port information into the browsers URL bar. Ex. http://192.168.1.10:**newport**

 *NOTE It is very important to write down your port parameters, in the event that the Web server port is forgotten, you will not be able to access the web management interface and will essentially be L**OCKED OUT** of the server.

ID
Any name used to identify the BR-800

Web server port
The port number by which you will access the web management interface over the network. Default: 8080

Admin Password
The password that will be used for Admin access to the web management interface. Default: jvc1234

User Password
The password that will be used for User access to the web management interface. Default: jvc1234

Input Ports
This is the port that the BR-800 receives streams from sources using the ZIXI protocol. You can enter several single ports and/or a port range.
Default: 2088

Output Ports
This is the port that the BR-800 transmits streams to decoders that use the ZIXI protocol. You can enter several single ports and/or a port range.
Default: 2077

Root folder
Folder where VOD files are stored on the BR-800.

BR-800 INSTALLATION

Step 4 - Installing to your network

Power down the BR-800 by holding down the red 'X' button on the front panel for 10 seconds. The unit is off once the front LCD is dark and you no longer hear the internal fan of the BR-800.

Remove the AC power cord and the ethernet cable from the port of your BR-HD800.

If your unit is not already mounted in a server rack, please install it now. When possible please allow 1U rack space above the BR-800 so that there is ample airflow to cool its internal components.

Connect the nodes from your network(s) to the appropriate ports on your BR-800 server according to your Network Configuration Worksheet. You may also make Keyboard Video Mouse (KVM) connections to the server at this time, (Please note that the output from the VGA connector of the BR-800 only displays the command line Linux OS screen, and not the configuration GUI that was used to set up your BR-800 in the previous steps) When using a multi-server KVM please make sure that they are compatible with servers that require USB type keyboard and mouse devices, as the BR-800 does not have PS/2 style connectors. There are some 3 rd party converters on the market that will convert the USB interface into a PS/2 interface if necessary.

Connect the AC power cord to the back of the BR-800, and plug it into a *UPS* with surge protection. The BR-800 will begin to boot, streaming services should be available and ready for use in about 2 mins.

If possible view each ethernet port on the back of the BR-HD800 that you have connected and verify that the status light is Green or Yellow, verifying that you have established a connection to your network(s) as indicated below.

Top left LED on the top row of the ethernet ports is the status/activity indicator, and will flash amber when data is being transmitted or received. The top right LED of the top row of the ethernet ports is the link indicator and will light up green when there is a 1000 mbps connection, and amber when there is a 100 mbps connection, this LED will not illuminate when a 10 mbs connection is made. The bottom row of ports are flipped over and the LED locations are reversed, Please check these LED status indicators before moving on to the testing steps of the next section, as these status indicators can alert you to a bad cable, and eliminate time consuming troubleshooting later on.
• .
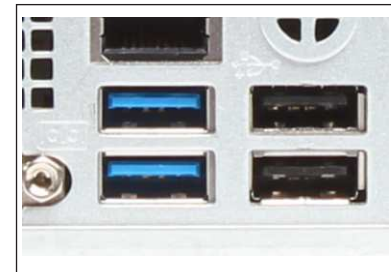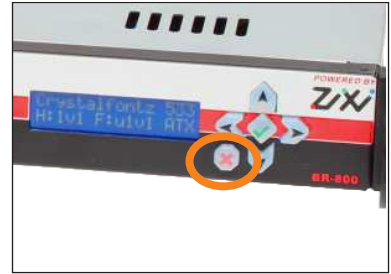
BR-800 TESTING

Step 5 - Testing communications to your BR-800

Using each Network connection one at a time try to connect to the BR-800's web GUI. If your BR-800 is connected to your office LAN, use a PC that is also connected to your office LAN, then enter the IP Address that was assigned to the ethernet port of the BR-800 indicated for connection to your LAN on your Network Configuration Worksheet. Remember to include Web server port number that was designated during network configuration. **Ex. http://192.168.1.10:8080**

If you are presented with the BR-800's log in screen you have successfully made a connection with via your office LAN.

Repeat the above tests with any other networks that your BR-800 is connected with, if you are unsuccessful please review the parameters with your IT department, and double check settings in the BR-800 with one of the other working connections. If none of the connections are working after installation. You will need to connect a PC or Laptop directly to the BR-800 like we did in our initial network configuration, earlier in the guide. If you are still unsuccessful please contact the JVC Engineering Support Group by calling 973-317-5158.
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BR-800 INPUT AND OUTPUT CONFIGURATION

Step 6 - Setting up streaming sources and destinations.

In this section we are going to configure the BR-800 to receive 2 different types of input streams from a camera source, and configure an output stream to a decoder so that the input stream can be viewed. Log into your BR-800 and select the 'Inputs' tab from the menu bar at the top of the screen. Choose '+ New Input' to bring up the 'Add new input' window. There are a few options for input types but in this guide we are only going to cover 2 types, Push and UDP. Push relates to a source that will send (push) a stream to the server, using the Zixi protocol, while UDP will send the stream to the BR-800 without Zixi protocol. Both are very simple to configure, and require very little information to get going.
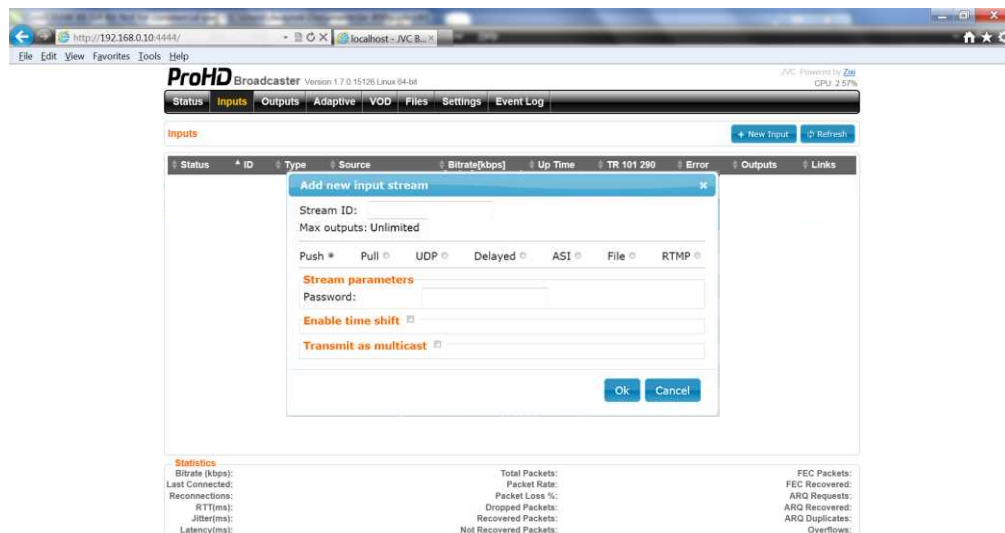
To set up a Push stream all that is required is the following:

Stream ID: Identifies the stream coming in and must match the stream id configured at the source.
Password: Used when you want password protect the input on the BR-800 server.
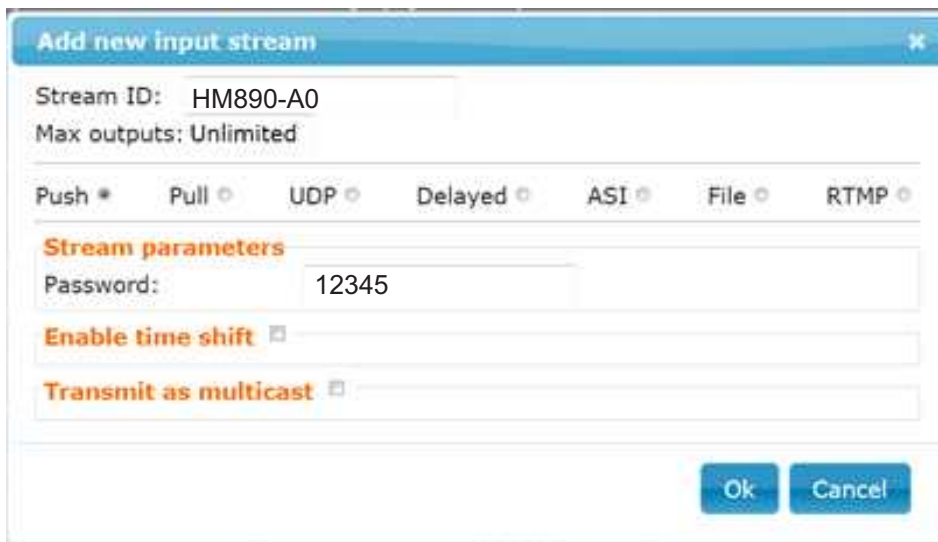
Enable time shift and Transmit as multicast are optional.

BR-800 INPUT AND OUTPUT CONFIGURATION

The information for the server configuration must match the information configured in the input source. Therefore if we were using a GY-HM890U camcorder as a streaming source, we would configure the camcorder with a streaming ID of our choice and enter it into its Zixi settings menu of the GY-HM890U camcorder. We also have the option to create a password to protect the stream input on the BR-800, without a password the BR-800 will allow any Zixi source that uses the Stream ID that is programmed to a push input of the BR-800.

As an example lets say we set up a GY-HM890U to stream using Zixi, and we assigned a stream id to the camera of 'HM890-A01' and a password of 12345.

Remember to click on Ok at the bottom of the 'Add new input stream' window to create the new input stream.

A UDP input has a few more parameters to configure but is still just as simple. See the description of the fields below.

Stream Id: Specifies the name for the input however this Stream ID is only used by the server for identifying the stream and it is not required to be input into the source ie. camera.
Port: Specifies the port that the BR-800 listens on for the UDP stream.
Multicast IP: Specifies a multicast port for the input stream.
SSM Source: Later edition.
Type: Sets the type of UDP stream (RTP or UDP).
Local Interface: Identifies which ethernet port the BR-800 looks at for the stream, when black the BR-800 looks for the stream on all ethernet ports. (If no port is identified packet lost can occur due to the extra time it takes for the BR-800 to find the stream).
Max bitrate (kbps): Sets the maximum bitrate that the BR-800 will accept for the UDP stream.
Encryption type: Sets the encryption type when used with the UDP source.

Other options covered in the complete BR-800 user guide.

As an example lets say we set up a GY-HM890U to stream using UDP, and we assigned a stream id HM60-A0-2 and a port to the camera of 6504, then our input configuration page would look like the screen below:

Remember to click on Ok at the bottom of the 'Add new input stream' window to create the new input. stream.

BR-800 INPUT AND OUTPUT CONFIGURATION

When we look at our 'Inputs Screen now we should now see our 2 inputs, one UDP and one Push input like the screcen below.

BR-800 INPUT AND OUTPUT CONFIGURATION

Now would be a good time to discuss some of the column headings on the 'Inputs' status screen and their meanings.

Status:
Offline - Means that the source is programmed but the source is not currently sending a stream.
Online - Means that the source is programmed and currently sending a stream.
Recording - Means that the source is currently streaming and being recorded by the BR-800 server.

ID:
Shows the current Stream ID of the input.

TYPE:
Shows the type of stream Push, Pull, UDP, RTMP, etc.

SOURCE:
Shows the IP Address/URL of the input. (Acts as hyperlink on supported devices and can be used for remote management of the input source ie. camcorder)

Bitrate [kbps]:
Shows the bitrate of the indicated connected input stream.

Up Time:
Shows how long the current source has been connected to the server.

TR 100 290:

Error:
Indicate any errors that occur with the indicated input stream.

Outputs:
Shows the total bitrate of all of the outputs associated with the indicated input.

Links:
Hyperlinks that allow you to view the associated input stream video using Adobe Flash, or VLC viewer.

More information about source inputs is available in the complete BR-800 user guide.

Output configuration is very similar to input configuration. The BR-800 can be set up to output a stream to a dedicated decoder, CDN, or other decoding device that is connected to your network, or a remote system. Click on the tab at the top of the screen labeled 'Outputs' and then click the 'New Input' button in the top right corner of the screen, just beneath the menu bar..

The 'New Output' window allows us to configure one of 4 types of outputs, UDP, RTMP, Pull, and Push. UDP and RTMP are standard streams without any error correction.

Pull and Push are technologies that stream utilizing Zixi protocol and must be used with a receiver that also uses Zixi protocol.

For the purpose of this guide we will configure a standard UDP output that connects to an decoder. For more detailed information about other output types, see the complete BR-800 users guide.

BR-800 INPUT AND OUTPUT CONFIGURATION

The screen below is an example of the output configuration.
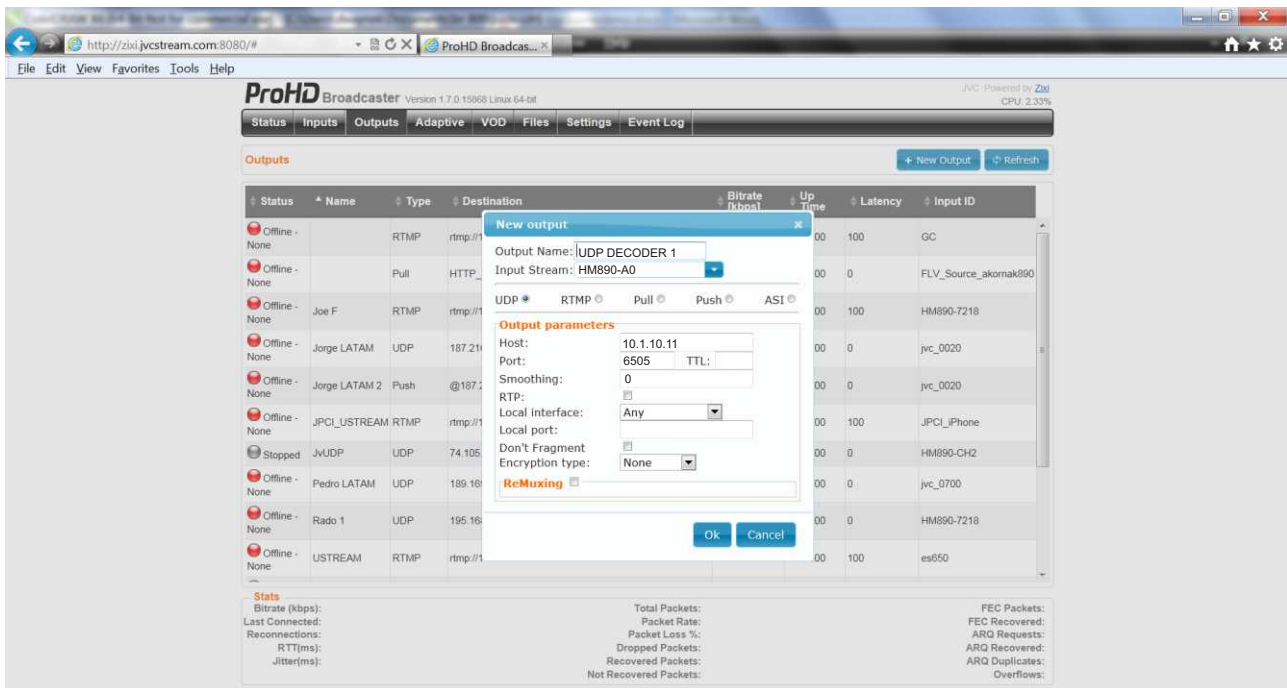
Output Name:
A name assigned to the output stream. This can be any name you decide, used to identify a single stream amongst several streams, and also to identify the stream for later decoding on decoder.

Input Stream:
Used to select one of the current input streams to be output.

Host:
Use to set the IP Address/URL of the decoding destination. In our example we using a decoder with an address of 10.1.10.11.

Port:
Use to set the port that the video stream will be delivered to at the decoding destination. In our example we have designated port 6505 as the receiving port. This number can vary, please consult the necessary IT personnel to determine port settings for your network.

TTL:
Used to set the amount of time a packet can be 'live' on the network. This setting can be left blank, consult your IT personnel about TTL rules that may be in place on your network.

Smoothing:
Used to 'smooth out' streams with varying bit rates, this may be necessary for some decoders to playback streams reliably. This field must be given a value, assign '0' initially and if necessary for stable playback, increase this value to increase the amount of smoothing.

RTP:
Check this box when creating an RTP stream output.

The other items are optional an discussed in more detail in the complete BR-800 User Guide.

BR-800 INPUT AND OUTPUT STATISTICS

The screen below represents the 'Stats' section of the 'Inputs' and 'Outputs' pages. You can refer to this section to troubleshoot or to determine the 'Health' of the active input and output streams.

To determine the quality of the incoming stream, click on the incoming stream's line; the line should turn blue. The bottom of the screen will display that input's bitrate and packet data. The system updates this data about every 5 seconds. For a typical camera setup using Zixi protocol at the 3 Mb/Sec bitrate, the actual bitrate observed with a good connection usually falls somewhere between a low of about 3 MB/Sec. and a high of around 4.5 Mb/Sec.