

How To

Instreamer to Exstreamer connection

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1 Introduction

1.1 About This Document

This document describes how to configure a Barix Instreamer and Exstreamer pair in order to be able to stream audio across an IP network. The document covers both LAN and Internet use cases.

The document assumes an Instreamer as the encoder and an Exstreamer of the 1xx or 2xx series, or an Exstreamer P5, as the decoder. Each device is assumed to have their factory-loaded firmware installed: Instreamer and Streaming Client respectively.

1.2 Connection types

There are several ways (protocols) that can be used to make the connection between the devices, each has it's own advantages. This document will cover:

RTP – Send audio from the encoder to the decoder (a 'Push' protocol). Low delay (latency) can be achieved.

BRTP – Barix RTP extended protocol, in this the decoder requests the audio stream from the encoder, which can have advantages when there are firewalls sitting between the encoder and decoder (a 'Pull' protocol).

HTTP – the listener (decoder) requests the stream from the encoder; HTTP streaming is based on the TCP protocol (a 'Pull' protocol) and typically uses larger buffers than RTP / BRTP, which introduces delay in the signal (latency). Also known as Internet Radio.

Select a connection type that best suits the environment that the devices will be used in. When connecting the devices over the internet, firewall and router configuration influences the connection protocol. Being able to configure one end of a link more easily than another is often the case:

- if the firewall/router at the Instreamer end cannot be easily configured, perhaps because it is maintained by a third party, then RTP mode where the Instreamer sends OUT through the firewall may be best, as there are typically fewer controls on outgoing traffic.
- if the firewall/router at the Exstreamer end cannot be easily configured, then BRTP or HTTP modes are better.

2 Setting up the link between devices on local networks

The Instreamer must be configured to tell it where to send it's audio, or how to respond to requests for audio, depending upon the desired connection type.

By default the Exstreamer listens for a local RTP broadcast on port 4444 and if it finds nothing there, it will look to play Barix radio, if it can't access Barix Radio for any reason, it will then look for music files on locally attached storage. By this sequence, a user can confirm that the Exstreamer can function in their environment. To set up a different connection type with an Instreamer, the Exstreamer will need further configuration.

Configure the devices according to one of the following sections, depending upon which connection type best suits your requirements.



2.1 **RTP Connection**

Instreamer:

- 1 On the Instreamer web UI, the 'Configuration' button gives access to pages that control the device's behaviour.
- 2 Select the 'Advanced Settings' menu, then 'Audio'
- 3 Make sure that the "Bit reservoir mode" is set to "kept empty"
- 4 If you made a change, "Apply" it; the device will reboot
- 5 Select the 'Advanced Settings' menu, then 'Streaming'
- 6 In the "Streaming Destinations" section
 - 6.1 set the "Conn. Type" to "RTP"
 - 6.2 the address(es) and port number(s) for the target Exstreamer(s) must be input; these can be unicast, multicast, broadcast or DNS. The example below is using a unicast address for a single Exstreamer.
- 7 "Apply" the changes, the Instreamer will reboot

		Instreamer MAC: 00:08:E1:02:D5:00 FW V04.02
INSTREAMER		THE VOICE OF SIMPLICITY
Basic Settings STREAMING SETTINGS Advanced Settings Streaming Mode send always 2 Audio Buffer Underrun Mode (TCP) skip 2 Streaming I/O & Serial UDP Tx Source Port 0 Control & SNMP SHOUTCAST/ICECAST SETTINGS Security SHOUTCAST/ICECAST SETTINGS Apply Cancel Own Name Instreamer Radio Path /xstream icy-genre genre Shoutcast stream public ± STREAMING DESTINATIONS # Conn. type # Conn. type Enter IP Address or Domain Name 1 RTP ± 192.168.11.200 2 not used ± 1	Port	Help STREAMING SETTINGS These settings adjust the streaming mode, streaming parameters and lestinations. Streaming mode "send alwayse" will stream always "send on CTS" will stream depending on the state of the CTS input "send on I/O" (only available on devices with GPI) the device will stream audio depending upon the state of the nominated GPI "send alwaye" will stream if the incoming audio signal is above the Trigger evel For send on CTS, send on I/O or send on Level, streaming can also be controlled via the SEND and STOP buttons on the HOME page. Default setting is "send on CTS". Trigger level So only used when Streaming mode is "on Level". Set to a value between -63 and 0 dB. Dpen the Device home page and look for the Input peak value to get a hint for the trigger value. This page refreshes itself every second. Default setting is "-24dB". Pre Trigger Start Pre Trigger Start can be adjusted to prevent cut offs when audio should be sent earlier than detected. It defines the amount of time that will be
Illustration 2: Instreamer RTP to specific Exstreamer over LAN		

Exstreamer:

- 1 On the Exstreamer web UI, the 'Configuration' button gives access to pages that control the device's behaviour.
- 2 Select the 'Advanced Settings' menu, then 'Streaming'
- 3 Set the URL entries 1 3 as required, then 'Apply' the changes; the device will reboot.

The URL entry is formatted such that it defines the connection type and source IP:Port e.g. rtp://0.0.0.0:4444 tells the Exstreamer to accept any RTP stream incoming on port 4444.

To link the Exstreamer to a specific source, enter its IP address e.g. rtp://192.168.11.100:4444 means that the Exstreamer will only accept an RTP stream on port 4444 from a device with the IP address 192.168.11.100 Addresses can be unicast, multicast, broadcast or DNS.

URL 1 is the primary link, if it is unavailable, the Exstreamer will automatically failover to URL 2, then 3; in this way a more robust system can be implemented. See the Streaming Client firmware manual for full details.

Make sure that the port on the Exstreamer URL matches that set on the Instreamer.

STREAMING C	LIENT		BARIX THE VOICE OF SIMPLICITY
Basic Settings Advanced Settings Network Streaming Audio & Playback Priority District Construction Illustration 3: Setting URL on Exstr	STREAMING SETTINGS 1. URL 2. URL 3. URL Stream Check Period eamer	rtp://0.0.0.0:4444 http://www.barix.com/radio.m3u playlist.m3u 1 seconds	Help STREAMING SETTINGS 1. URL 3. URL Up to three independent audio sources (URLs) can be set. Each may contain a full address of a playlist, file or a stream. The three entries have different priorities. the first one has the highest

2.2 BRTP Connection

BRTP is a 'pulling mode' – the Instreamer only sends a stream when it is requested by the Exstreamer and can support up to 32 simultaneous connections in this mode (at a maximum of 128 kbps per stream)

Instreamer:

- 1 On the Instreamer web UI, the 'Configuration' button gives access to pages that control the device's behaviour.
- 2 Select the 'Advanced Settings' menu, then 'Audio'
- 3 Make sure that the "Bit reservoir mode" is set to "kept empty"
- 4 "Apply" the change, the device will reboot
- 5 Select the 'Advanced Settings' menu, then 'Streaming'
- 6 In the "Streaming Destinations" section
 - 6.1 set the "Conn. Type" to "BRTP": BRTP must be set in the first entry, no others.
 - 6.2 The IP address for the Streaming Destinations is not required. The port number should be set e.g. 4444 and this value should be used also by the Exstreamers requesting the stream.
- 7 "Apply" the changes, the device will reboot

HOME CONFIGURATION	STATUS DEFAULTS UPDATE	REBOOT		Instreamer MAC: 00:08:E1:02:D5:00 FW V04.02
INSTREAMER				BARIX
Basic Settings Advanced Settings Network Audio Streaming VO & Serial Control & SNMP Security Apply Cancel	STREAMING SETTINGS Streaming Mode Buffer Underrun Mode (TCP) Stream Packet Strategy UDP Tx Source Port SHOUTCAST//CECAST SETTIN Own Name Radio Path icy-url / SIP user icy-genre Shoutcast stream	send always ÷ skip ÷ optimal package ÷ 0 IGS Instreamer /xstream url genre public ÷		Help STREAMING SETTINGS These settings adjust the streaming mode, streaming parameters and destinations. Streaming mode "send always" will stream always "send on ICS" will stream depending on the state of the CTS input "send on ICS" will stream depending on the state of the CTS input "send on ICS" will stream if the incoming audio signal is above the Trigger level For send on CTS, send on I/O or send on Level, streaming can also be controlled via the SEND and STOP buttons on the HOME page. Default setting is "send on CTS". Trigger level Send yu used when Streaming mode is "on Level". Any Streaming mode is "on Level".
	STREAMING DESTINATIONS # Conn. type Enter IP / 1 BRTP +	Address or Domain Name	Port	Open the <u>Device home page</u> and look for the Input peak value to get a hint for the trigger value. This page refreshes itself every second. Default setting is "-24dB". Pre Trigger Start
	2 not used \$		0	Pre Trigger Start can be adjusted to prevent cut offs when audio should be sent earlier than detected. It defines the amount of time that will be
Illustration 4: Instreamer BR	TP settings on LAN			

Exstreamer:

- 1 On the Exstreamer web UI, the 'Configuration' button gives access to pages that control the device's behaviour.
- 2 Select the 'Advanced Settings' menu, then 'Streaming'
- 3 Set the URL entry 1 to the IP of the Instreamer, specifying the protocol e.g. brtp://192.168.11.100:4444

'Apply' any changes. The URL entry is formatted such that it defines the connection type and source IP:Port

HOME CONFIGURATION	I STATUS DEFAUL	IS UPDATE REBOOT	Exstreamer 120 MAC: 00:08:E1:01:88:74 FW VB3.08	
STREAMING C	LIENT			BARIX THE VOICE OF SIMPLICITY
Basic Settings Advanced Settings	BASIC SETTING	s	Help Streaming	
Apply Cancel	STREAMING 1. URL 2. URL 3. URL	brtp://192.168.11.100:4444 http://www.barix.com/radio.m3u	1. URL 3. URL Up to three indep can be set. Each playlist, file or a s different priorities priority and the la The Barix Exstrem	pendent audio sources (URLs) may contain a full address of a stream. The three entries have s, the first one has the highest sit one has the lowest priority. amer processes the sources in
Illustration 5: Exstreamer BRTP se	ettings			

2.3 HTTP Connection

Instreamer:

- 1 On the Instreamer web UI, the 'Configuration' button gives access to pages that control the device's behaviour.
- 2 Select the 'Advanced Settings' menu, then 'Streaming'
- 3 Set the 'Radio Path' to /xstream (for example, this setting must match that used in the Exstreamer later)
- 4 In the "Streaming Destinations" section
 - 4.1 set the "Conn. Type" to "Internet Radio".
 - 4.2 The IP address is not required. The port number should be set, default port 80 and this value should be used also by the Exstreamers requesting the stream if it is changed from the default 80.
- 5 "Apply" the changes, the device will reboot
 - the Instreamer can support a maximum of 6 Internet Radio connections.
 - HTTP streaming (Internet Radio) is based on TCP and has a higher latency than RTP.

HOME CONFIGURATION STATUS DEFAULTS UPDATE REBOOT	Instreamer MAC: 00:08:E1:02:D5:00 FW V04.02
INSTREAMER	BARIX
HOME CONFIGURATION STATUS DEFAULTS UPDATE REBOOT INSTREAMER Basic Settings STREAMING SETTINGS Advanced Settings Streaming Mode send always ‡ Audio Buffer Underrun Mode (TCP) skip ‡ Streaming Stream Packet Strategy optimal package ‡ I/O & Serial UDP Tx Source Port 0 Control & SNMP SHOUTCAST/ICECAST SETTINGS Security SHOUTCAST/ICECAST SETTINGS Own Name Instreamer Radio Path /xstream icy-genre genre Shoutcast stream public ‡ STREAMING DESTINATIONS # Conn. type Enter IP Address or Domain Name Port	Help STREAMING SETTINGS These settings adjust the streaming mode, streaming parameters and destinations. Streaming mode "send always" will stream always "send on I/O" (only available on devices with GP) the device will stream audio depending upon the state of the CTS input "send on I/O" (only available on devices with GP) the device will stream audio depending upon the state of the nominated GPI "send on LCTS", send on I/O" or send on Level, streaming can also be controlled via the SEND and STOP buttons on the HOME page. Default setting is "send on CTS". For send on CTS, send on I/O or send on Level, streaming can also be controlled via the SEND and STOP buttons on the HOME page. Default setting is "send on CTS". Stop a value between 63 and 0 dB. Only used when Streaming mode is "on Level". Set to a value between 63 and 0 dB. Only used when Streaming mode is "on Level". Set to a value between 63 and 0 dB. Only used when Streaming mode is "on Level". Set to a value between 63 and 0 dB. Operault setting is "-24dB".
1 Internet Radio ‡ 80 2 not used ‡ 0	Pre Trigger Start Pre Trigger Start can be adjusted to prevent cut offs when audio should be sent earlier than elected. It defines the amount of time that will be
Illustration 6: Instreamer Internet Radio settings	

Exstreamer:

- 6 On the Exstreamer web UI, the 'Configuration' button gives access to pages that control the device's behaviour.
- 7 Select the 'Advanced Settings' menu, then 'Streaming'
- 8 Set the URL entry 1 to the IP of the Instreamer, specifying the protocol e.g. http://192.168.11.100/xstream

HOME CONFIGURATI	on status def CLIENT	AULTS UPDATE REBOOT Exs	treamer 120 MAC: 00:08:E1:01:88:74 FW VB3.08
Basic Settings Advanced Settings	BASIC SETT	NGS	Help Streaming
Apply Cancel	STREAMING 1. URL 2. URL 3. URL	http://192.168.11.100/xstream http://DHCPname/xstream	1. URL 3. URL Up to three independent audio sources (URLs) can be set. Each may contain a full address of a playlist, file or a stream. The three entries have different priorities, the first one has the highest priority and the last one has the lowest priority. The Barix Exstreamer processes the sources in a loop and tries to connect to the highest priority.
Illustration 7: Exstreamer inter	net radio settings		

The URL entry is formatted such that it defines the connection type and source IP:Port.

In the illustration above, the network supports WINS / DHCP conversion, this allows the DHCP name of the Instreamer to be used - see URL2

3 Streaming connections over internet

The same 3 methods used on a LAN can also be used across public internet, but require extra configuration. In the majority of cases RTP/BRTP are best suited to make connections ,as the protocols are specifically designed for streaming audio.

Streaming across the internet means that we must pay attention to the routers and firewalls, which are a necessary part of the connections. Normally sending a stream OUT through a firewall is allowed without any special configuration (unless the security on site is especially strict) and similarly any REPLIES to an earlier outgoing message are passed through. It is INCOMING connections that are typically blocked, and this gives us some flexibility to choose which router we will configure:

- If the firewall/router on the Instreamer end of the connection cannot be easily configured, then it is best to use RTP for the connection, meaning that the Instreamer will be sending OUT through the firewall.
- If the firewall/router on the Exstreamer end of the connection cannot be easily configured, then it is best to
 use BRTP or HTTP for the connection, as with these protocols the Exstreamer sends a request OUT through
 the 'problem firewall' to the Instreamer, and since the Instreamer is replying to an earlier message, most
 firewalls will let the reply through, establishing the connection.

If one of the sites does not have a fixed IP address / DNS name, the same logic applies.



The following pages will be based upon the example shown in illustration 8 above.

It is important to define a valid internet gateway in the Instreamer/Exstreamer configuration, so that they are able to access the internet. Also, if DNS names are being used, a DNS server must be configured.

If you are using DHCP on your networks, this is typically handled by the existing network infrastructure, but where static IP addresses are used, these details must also be configured.

3.1 **RTP** over Internet

Instreamer: (192.168.110.175)

- 1 On the Instreamer web UI, the 'Configuration' button gives access to pages that control the device's behaviour.
- 2 Select the 'Advanced Settings' menu, then 'Audio'
- 3 Make sure that the "Bit reservoir mode" is set to "kept empty"
- 4 "Apply" the change, the device will reboot
- 5 Select the 'Advanced Settings' menu, then 'Streaming'
- 6 In the "Streaming Destinations" section
 - 6.1 set the "Conn. Type" to "RTP"
 - 6.2 the public address and port number for the target Exstreamer's firewall must be input; this can be unicast, multicast, broadcast or DNS. In our example: 84.29.3.105:4444
- 7 "Apply" the changes, the device will reboot

Router at Exstreamer site (84.29.3.105)

1 The router at the Exstreamer will also require configuration; the firewall must be opened to the Instreamer's stream and a UDP port forwarding from the firewall to the Exstreamer must be set up – this is explained later in this document.

Exstreamer: (192.168.1.20)

- 1 On the Exstreamer web UI, the 'Configuration' button gives access to pages that control the device's behaviour.
- 2 Select the 'Advanced Settings' menu, then 'Streaming'
- 3 Set the URL entries 1 3 as required, then 'Apply' the changes; the device will reboot.

The URL entry is formatted such that it defines the connection type and source IP:Port e.g. rtp://0.0.0.0:4444 tells the Exstreamer to accept any RTP stream incoming on port 4444.

URL 1 is the primary link, if it is unavailable, the Exstreamer will automatically failover to URL 2, then 3; in this way a more robust system can be implemented. See the Streaming Client firmware manual for full details.

Make sure that the port on the Exstreamer URL matches that set on the Instreamer.

3.2 BRTP over Internet

Router at Instreamer site (71.42.85.19)

1 The router at the Instreamer requires the firewall to be opened for traffic from the Exstreamer (from its public IP address 84.29.3.105), and to make a UDP port forwarding from the firewall to the Instreamer.

BRTP is based on the UDP protocol and in this instance every listener requests the stream from the Instreamer, which means that a single configuration at the Instreamer is all that is required to support multiple Exstreamers, reducing the administrative overhead.

Instreamer: (192.168.110.175)

- 1 On the Instreamer web UI, the 'Configuration' button gives access to pages that control the device's behaviour.
- 2 Select the 'Advanced Settings' menu, then 'Audio'
- 3 Make sure that the "Bit reservoir mode" is set to "kept empty"
- 4 "Apply" the change, the device will reboot
- 5 Select the 'Advanced Settings' menu, then 'Streaming'
- 6 In the "Streaming Destinations" section
 - 6.1 set the "Conn. Type" to "BRTP": BRTP must be set in the first entry, no others.
 - 6.2 The IP address for the Streaming Destinations is not required. The port number should be set e.g. 4444 and this value should be used also by the Exstreamers requesting the stream.
- 7 "Apply" the changes, the device will reboot

Exstreamer: (192.168.1.20)

- 1 On the Exstreamer web UI, the 'Configuration' button gives access to pages that control the device's behaviour.
- 2 Select the 'Advanced Settings' menu, then 'Streaming'
- 3 Set the URL entry 1 to the public IP of the Instreamer's router, specifying the protocol, In our example: brtp://71.42.85.19:4444

71.42.85.19 is the public IP address of the router at the Instreamer site and 4444 is the port number that must be forwarded from the router to the Instreamer on the LAN (192.168.110.175).

In this example we are using the same port on the Router and on the Instreamer (4444), most routers can also support "cross" port forwarding, which helps when the port number we want to use on the Instreamer is already being used on the Router by a different application. With cross port forwarding the router maintains a table that allows it to translate the incoming port traffic from the internet to the appropriate IP address and port on the local network (and vice versa). So, for example, traffic to the Instreamer's Router 71.42.85.19:3030 can be automatically forwarded to the Instreamer 192.168.110.175:4444

The URL entry is formatted such that it defines the connection type and source IP:Port

3.3 HTTP connection over Internet

Router at Instreamer site (71.42.85.19)

1 The router at the Instreamer requires the firewall to be opened for traffic from the Exstreamer (from the Exstreamer's Router's public IP address 84.29.3.105), and to make a TCP port forwarding from the firewall to the Instreamer.

Instreamer: (e.g. 192.168.110.175)

- 1 On the Instreamer web UI, the 'Configuration' button gives access to pages that control the device's behaviour.
- 2 Select the 'Advanced Settings' menu, then 'Streaming'
- 3 Set the 'Radio Path' to /xstream (for example, this setting must match that used in the Exstreamer later)

Note: the 'Own Name' will be displayed on the Exstreamer as the 'Stream Title'

- 4 In the "Streaming Destinations" section
 - 4.1 set the "Conn. Type" to "Internet Radio".
 - 4.2 The IP address for the Streaming Destinations is not required. The port number should be set, typically this stays at port 80 and this value should be used also by the Exstreamers requesting the stream if it is changed from the default 80.
- 5 "Apply" the changes, the device will reboot

Exstreamer: (e.g. 192.168.1.20)

- 1 On the Exstreamer web UI, the 'Configuration' button gives access to pages that control the device's behaviour.
- 2 Select the 'Advanced Settings' menu, then 'Streaming'
- 3 Set the URL entry 1 to the IP of the Instreamer's router, specifying the protocol, In our example: http://71.42.85.19/xstream

71.42.85.19 is the public IP address of the router at the Instreamer site

DNS names can also be used.

Note:

- the Instreamer can support a maximum of 6 internet radio connections.
- HTTP streaming is based on TCP and has a higher latency than RTP.

- HTTP assumes a default port 80. If a different port number is being used, it must be included here e.g. on the Exstreamer http://71.42.85.19:5555/xstream, and the same port must also be configured at the Instreamer's router / Instreamer.

4 Configuring routers & firewalls

Most ports on routers and firewalls are closed to incoming connections, which means that they must be configured to allow through the traffic of the Instreamer / Exstreamer connection; this is achieved via:

- a port forwarding: incoming traffic on a specific port (range) is passed to a specific IP address:port
- setting a DMZ (de-militarised zone) : all traffic is passed to a specific device; this option is NOT recommended.

To do either method, you must have access to the router's configuration UI.

4.1 Setting up port forwarding

The illustration below, shows how to set up port forwarding for both BRTP and HTTP use cases at the INSTREAMER site using the IP addresses and port numbers from the earlier connection configuration examples:

			-	_				Firmware	Version: 2 00 0
Applications & Gaming	Setup V	Vireless		Securi	ity Re	Access strictions	Applications & Gaming	Administration	Status
	Port Range Forw	ard		Port Trigg	gering	DMZ I	QoS		
Port Range Forward							8	Port Pange For	warding
				Por	t Range			Certain applicatio	ns may require
	Application	Star	rt	End	Protocol	IP Addres	s Enable	for it to function of	orts in order orrectly.
	RTP to instream	4444	to	4444	UDP 💌	192.168.110.	75 🔽	Examples of thes include servers a	e applications nd certain
	HTTP to Instrea	80	to	80	TCP 💌	192.168.110.	75 🔽	for a certain port	en a request comes in fron outer will rout
		0	to	0	тср 💌	192.168.110.0		the data to the co specify. Due to s	mputer you ecurity
		0	to	0	ТСР 💌	192.168.110.0		concerns, you ma port forwarding t	ay want to lim o only those
		0	to	0	ТСР 💌	192.168.110.0		uncheck the Enal	ng, and ble checkbox shed
		0	to	0	ТСР 💌	192.168.110.0		More	
		o	to	0	ТСР 💌	192.168.110. 0			
		0	to	0	TCP 💌	192.168.110.0			LISCO SYSTEMS

Illustration 9: Configuring port forwarding at Instreamer site

In the first entry, any incoming RTP connection on port 4444 is forwarded to the internal LAN address 192.168.110.175, which is the Instreamer. BRTP requests from Exstreamers are seen at the Instreamer end as an incoming RTP packet.

In the second entry any HTTP request on port 80 is forwarded to the internal LAN address 192.168.110.175 - the Instreamer

4.2 Setting up a DMZ

Using a DMZ, all UDP and TCP ports for a device are exposed to the internet and it is excepted (excluded) from the router's built in firewall security leaving it vulnerable to attack from the internet. For this reason, a DMZ is NOT recommended.

Barix devices can be set up with passwords, which then provides some measure of protection.

A Division of Cisco Systems, Inc.							Firmware	Version: 2.00.05
Anniantiana O							۷	VRT54GX-v2
Gaming	Setup	Wireless	Security	Acce Restric	ss tions	Applications & Gaming	Administration	Status
	Port Range	Forward	Port Triggering	I DN	IZ	QoS		
DMZ	€ En DMZ	able C Disabl Host IP Addres	e 192.168.11	10. 175			DMZ: Enabling th expose your rout internet. All ports accessible from t More	is option will er to the will be he Internet CISCO SYSTEMS
Illustration 10: setting up a DMZ			Save Settin	gs	Cance	l Changes		ուլլլուն

In the illustration the device 192.168.110.175 has been exposed to the internet and would be reachable via the public IP of the router -71.42.85.19 in the earlier examples.

When using a DMZ, port forwarding should NOT be active on the same router.

4.3 Setting DNS

Unless specifically set up, most routers do not have a fixed internet-facing IP address. Typically an ISP will provide its customers with dynamic IP addresses, that change periodically, which would mean that to keep the Instreamer-Exstreamer connection, they would need to be continually re-configured.

This is clearly unacceptable.

Either one end of the connection should have a static internet IP address assigned (which typically costs a monthly fee), or the connection should be configured using DNS names. DNS names are registered by the user with a DNS registration authority and the chosen DNS name is associated with a dynamic IP address by the DNS authority and as the IP address changes, the association is updated. Devices do a look-up at the DNS authority to find the current IP address to use when communicating with the device using the DNS name.

DNS services are operated by many organisations, for example dyndns.org, easyDNS.com, no-IP.com, freeDNS.afraid.org etc; users must create an account and register their required DNS name, which must be unique.

Once an account has been created, the DNS name registered must be configured into the router e.g. at the Instreamer end.

LINKSYS [®] A Division of Cisco Systems, Inc.						Firmware	Version: 2.00.05
						W	RT54GX-v2
Setup	Setup Wire	less	Security	Access Restrictions	Applications & Gaming	Administration	Status
DDNS	Basic Setup E	DNS	MAC Address	Clone Advand	ced Routing		
	DDNS Service: User Name:	UserA	NS.org 💌			UDNS Service: D you to access you using domain nam IP addresses. The manages changin	DNS allows ur network es instead of service g IP address
	Password: Host Name:	myhor	* ne.dyndns.org			and updates your information dynam must sign up for s through DynDNS.	domain nically. You ervice org.
	Internet IP Addres: Status:	s: 71.42. DDNS	.85.19 function is disable	d		More	ISCO SYSTEMS
			Save Setting	js Canc	el Changes		ողիրուսուրիրութ

5 Legal Information

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