



Zixi Broadcaster User Guide

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Introduction to Zixi Broadcaster

The Zixi Broadcaster is the central component in the Zixi Video Network. Zixi Broadcaster takes video streams from Zixi Feeder, and can process the stream, enabling transcoding, transmuxing, recording, and distribution in multiple bit rates and protocols to any device anywhere. The Zixi Broadcaster is an intelligent and versatile video distribution component that may reside on premise at a customers' site or is offered by Zixi as a cloud service.

Zixi Broadcaster offers the following features:

- **Robust content delivery over IP** - communicates with Zixi Feeder and Zixi Receiver over UDP-based, video-optimized protocols on private and public IP networks for maximal quality at a predictable latency
- **Adaptive Bit Rate** - Dynamically adjusts stream rate to adapt to changing network conditions, using unicast or multicast, to meet specific application requirements
- **Transcoding** - transcodes to a variety of different profiles and bit rates
- **Format conversion** – supports Internet protocols: HLS/HDS/MPEG-DASH/RTMP/FLV
- **Recording** - store streams as MPEG-TS files.
- **Time-shifting** – records the stream to delay its broadcasting
- **Secure and rapid file transfer** – accelerated and secure file transfers delivered at wire speed and accelerated HTTP delivery including optimized playback of HLS and HDS over UDP
- **VOD** - stored files can be accessed on demand in multiple formats
- **Clustering and load balancing** – supports cluster architectures to provide continuous uptime
- **Transport Stream Analyzer** – MPEG-TS ETSI TR 101-290 analyzer (priorities 1 and 2)
- **Monitoring** - captures network and content specific statistical information in real-time
- **Supports many to many and any to any** - gateway platform between UDP (unicast/multicast), Zixi protected stream (unicast/multicast), RTMP, or other supported formats.
- **Network bonding with hit-less fail-over** – reunites divided streams coming from multiple network channels into a single stream, enabling simultaneous load balancing between multiple networks and ensuring high availability of the stream.
- **AES stream encryption and decryption** - UDP, File and RTMP input streams can be encrypted by Zixi Broadcaster using a fixed key (AES 128, AES 192, AES 256), which can be entered into the input settings or automatically generated. Zixi Broadcaster can also decrypt contribution streams using a matching key, or securely forward encrypted streams to receivers, without being able to see or analyze the traffic.

Zixi Technology

Zixi's transport stream protocol is a content and network-aware protocol that dynamically adjusts to varying network conditions and employs error correction techniques for error-free video streaming over IP. With minimum overhead to physical bandwidth, this dynamic mechanism provides low end-to-end latency, removes jitter, recovers and re-orders packets, smooths video delivery and regenerates video to its original form, all in real-time.

Zixi delivers outstanding performance (at low predictable latency), superior reliability (no packet loss) and broadcast-grade video quality (SD, HD, and UHD) with no tradeoffs to delay, resolution or stutter.

Streaming from one Zixi-enabled device/server to another Zixi-enabled device/server protects the stream from quality degradations along the path. It enables the streaming of high-quality video over any distance, while overcoming the varying network conditions of the public Internet, where the amount of network errors, packet loss, jitter and out-of-order packets fluctuate "every second".

The Zixi transport stream protocol can be also deployed on part of the path. For example, from a Zixi Feeder to a Zixi Broadcaster (Zixi protected path) and on to the end user through UDP or RTMP. In this case, the path that has challenging conditions (e.g. long distance or unstable wireless conditions) will be protected by Zixi and then delivered on to the end-user on a standard UDP or RTMP protocol.

Zixi's transport stream technology includes the following features for ultimate quality and security:

- Network sensing
- Dynamic de-jitter
- MPEG specific optimizations
- Z-ARQ error recovery
- Z-FEC - Dynamic content aware forward error correction
- Active multi-path error recovery
- Adaptive bitrate over UDP, unicast or multicast
- Rate control and congestion avoidance
- 256 bit AES transport encryption

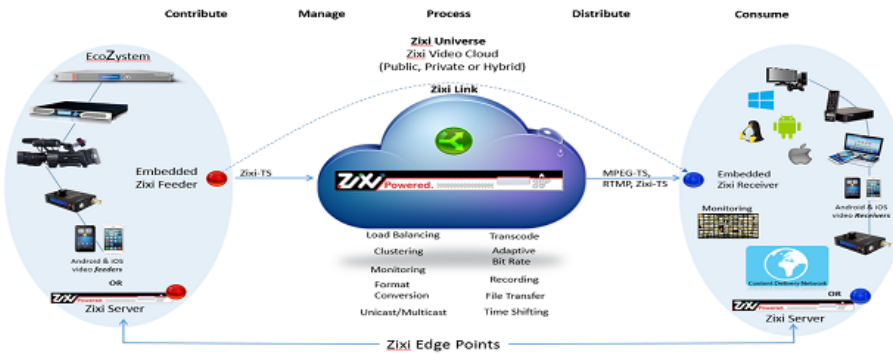
Zixi Platform Architecture

The Zixi Universe diagram shows how a Zixi embedded (Zixi EcoZystem OEM partners) device initiates a Zixi stream at Acquisition or how Zixi Feeder running on an appliance or mobile device enables non-Zixi embedded devices to initiate a live stream. Zixi Feeder encapsulates the stream in the Zixi transport protocol and delivers point to point or point to multi-point over standard IP connections. Zixi can be deployed on premise or in the cloud with the ability to monitor streams anywhere along the path. For management, processing and larger scale distribution capabilities, Zixi can support complex production workflows for live events capable

Introduction to Zixi Broadcaster

Supported Protocols

of transcoding, recording, and more in a clustered environment that supports reliability and scalability.



Supported Protocols

Input:

- Zixi protected transport
- MPEG-TS over UDP and/or RTP with SMPTE-2022
- RTMP pull from CDNs and/or other sources
- RTMP push
- RTMPS
- RTSP input
- Transport stream files from local file system

Output:

- Zixi protected transport
- MPEG-TS over UDP and/or RTP with SMPTE-2022
- RTMP push to CDNs and/or other media servers;
- Apple HTTP Live Streaming (HLS)
- Adobe HTTP Dynamic Streaming (HDS)
- FLV over HTTP (HTTP pseudo-streaming)
- MPEG-DASH (DASH264 profile)
- SHOUTcast
- Transport stream files to local file system
- Re-multiplex output streams to strict CBR for extensive compatibility with Integrated Receiver- Decoders (IRDs)

Transcoding Options

Zixi Broadcaster can transcode a single input stream using multiple profiles. The transcoder supports the following options:

- Video Decoding – MPEG2, H.264/AVC , H.265/HEVC
- Video Encoding – MPEG2, H.264/AVC , H.265/HEVC
- Audio Decoding – AAC, MPEG-1 Audio Layer I / II / III, MPEG-2 Audio Layer I / II / III
- Audio Encoding – AAC only, AAC only; Pass through – any audio codec (MPEG1/2 / AAC / AC-3)

Recording Options

Live stream inputs can be stored as MPEG-TS files to a local disk drive or mounted drive.

Multicast Options

Multicast streams can be received or be sent by the Zixi Broadcaster. Zixi Broadcaster serves as a gateway between Unicast and Multicast streams, while allowing reliable streaming over multicast.

Adaptive Options

Zixi Broadcaster can create an adaptive group, subsequently editing, recording, or playing it in conjunction with DASH, HLS, HDS or Zixi. You can also set a Pre-roll video/screen that will be played before the live streaming begins.

VOD Options

Zixi Broadcaster supports VOD (Video on Demand) playback of stored files in multiple formats such as TS, MP4, HLS, FLV.

Latency Considerations

Latency defines the delay in which the video stream will be delivered to the end point. This delay is essentially a buffer that is used for additional processing, thereby improving the quality of video stream. The latency should be considered based on the importance of immediacy. For example, if the video requires interaction (e.g. between a reporter in the field and an anchor in the studio), the latency should be set to a minimum so that the interaction does not suffer from any delay.

Latency can vary from tens of milliseconds to several seconds.

Zixi protocol can start benefit from one frame (30ms), while increasing the latency will provide more robustness for the error-recovery.

Latency Considerations

In low latency (below 1500ms) the error recovery is based on hybrid approach of FEC and ARQ. FEC will add overhead of up to 30%(adaptive–without congesting the network) .

For getting sufficient error-recovery we are recommending to set the Latency at least 3 times larger than the RTT (i.e. Latency $\geq 3 * RTT$)

Latency can be set to any value. Two common modes include:

1. Interactive mode - 500ms
2. Non-interactive mode – 4000ms

Latency below 1500ms will add an FEC overhead of up to 30%.

User Interface Elements

Each page has its own menu, bar and area/s. The pages include:

[Status](#) | [Inputs](#) | [Outputs](#) | [Adaptive](#) | [VOD](#) | [Files](#) | [Transcoder](#) | [Settings](#) | [Event Log](#) | [Matrix](#)

The screenshot shows the Zixi Broadcaster web interface. At the top, there is a navigation menu with tabs for STATUS, INPUTS, OUTPUTS, ADAPTIVE, VOD, FILES, SETTINGS, EVENT LOG, and MATRIX. A 'LOGOUT' button is located on the right side of this menu. Below the navigation menu is a 'Menu Bar' containing 'Network Test', 'Options', and 'Restart' buttons. The main content area is divided into several sections: 'General' (displaying system information like ID, Host ID, Start Time, Up Time, and network statistics), 'Network Status' (a line graph showing input and output kbps over time), 'License Information' (displaying product, key, expiration, and various enabled features like Bonding, Cluster, File Transfer, etc.), 'Machine Information' (displaying system model, processor, and core details), and 'OS Information' (displaying OS version, build, and architecture). Annotations with blue lines point to the 'Navigation Menu', 'Menu Bar', and 'Main Areas'.

Logging into the Broadcaster

➔ **To log in to Zixi Broadcaster:**

1. In the web browser, navigate to <http://localhost:4444>. A user authentication window opens.
2. In the **User Name** field, type **admin** and in the **Password** field, type '**1234**'.
3. Click **OK**.

Activating Your License

In order to start using Zixi Broadcaster, first activate your license. Zixi Broadcaster and its optional features are activated by license files. Before using Zixi Broadcaster, and when adding optional features, **activate** the appropriate license.


Broadcaster Status page - Activation Key

When logging in for the first time to a Zixi Broadcaster, you must activate the Zixi license.



Note: The following procedure requires connectivity to the Internet. If you are not able to connect, you can activate by [Loading License Files](#).

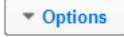
➔ To Activate the License:

1. In the Zixi Broadcaster **Status** page, click  **Options**. The various options are displayed.
2. Click **Activate License**. The Activate License window appears.
3. Enter your Activation Key and click **Activate**. Once entered, The Zixi Broadcaster is enabled.

Loading License Files

If you want to activate your license without an internet connection, you can upload a license file. To obtain a license file, please contact Zixi support.

➔ To Load the License File:

1. In the Zixi Broadcaster **Status** page click  **Options**. The Options menu is displayed.
2. Click **Load License**. The directory of the local drive opens.
3. Select the license file and click **Open**.

Reloading the License

In the event that your license expires, you must re-enter a new Zixi license key.

➔ To Reload the License:

1. In the Zixi Broadcaster **Status**, click  **Options**. The various options are displayed.
2. Click **Reload**. The license has been reloaded.

Viewing Status

The Status screen displays aggregated statistics on all the input and output streams and a graph representing the network utilization of active streams over time.

➔ To View the Status of the Streams:

In the Zixi Broadcaster **Status** page, the **General** area, **Network Status** area, **License Information** area, **Machine Information** area and **Operating System** area are displayed.

General Status

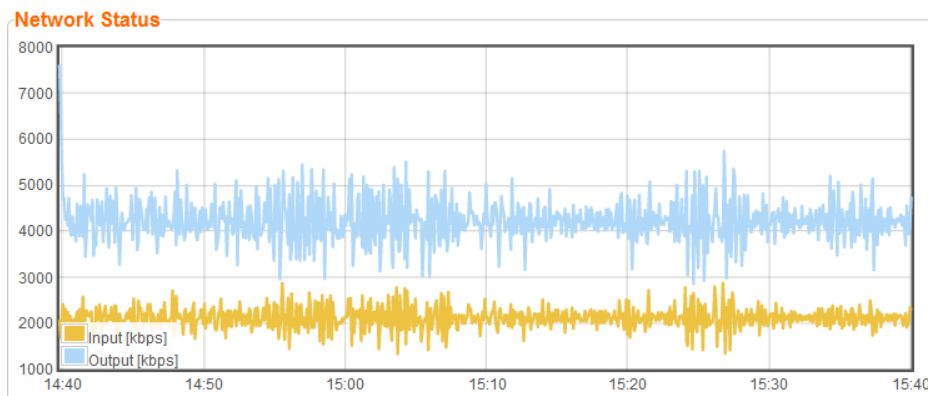
General	
ID	The Zixi Broadcaster ID number
Host ID	Displays the ID of Zixi Broadcaster host.
Start Time	Displays the time that the Zixi Broadcast began to actively stream content.
Up Time	The duration of time that the broadcast is running.
Inputs	The number of current active inputs
Outputs	The number of current active outputs
Remote In [kbps]	The current aggregate input bitrate from remote sources – Zixi Push/Pull (in Kbps)
Local In [kbps]	The current aggregate input bitrate from local sources – UDP streams (in Kbps)
Remote Out [kbps]	The current aggregate output bitrate to remote destinations (in Kbps)
Local Out [kbps]	The current aggregate output bitrate to local destinations (in Kbps)
Http Out [kbps]	The current aggregate output bitrate for HTTP streams - FLV/RTMP/HLS/HDS (in Kbps)
kBytes Sent	The cumulative traffic transmitted (in Kbps)
kBytes Received	The cumulative traffic received (in Kbps)
RTMP Server	Active – the RTMP server is enabled (See Settings > Live Protocols > RTMP Server section) Off – the RTMP server is disabled

Viewing Status

Network Status

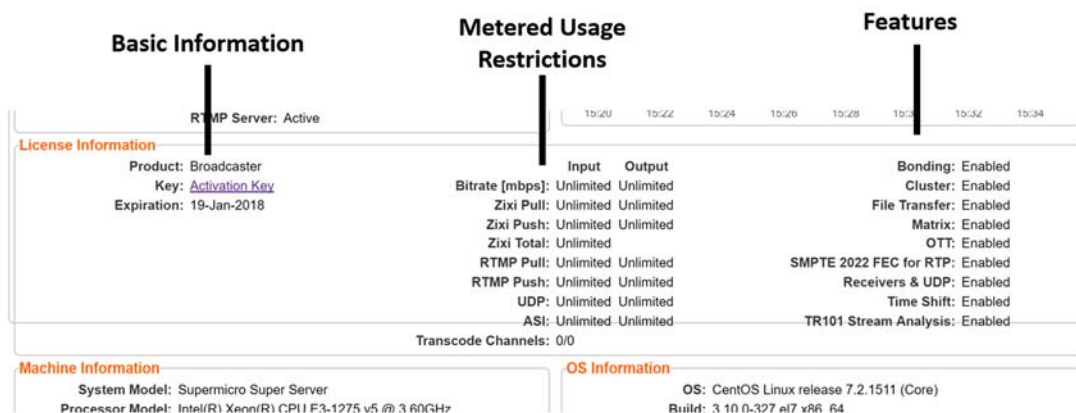
Network Status

The network status graph displays the total input/output bitrate during the last hour. The changes in the amplitude of both the input (gold) and output (blue) presented in 10 minute intervals.



Viewing Current License Information

You can view the current license information at the bottom of the **Status Screen** in the **License Information** section.



The section includes the following elements:

Element	Description
Basic Information	Product - the name of the product Key - a link to the license status page. Expiration - the expiration date of the license
Metered Usage Restrictions	License usage restrictions. Unlimited - no restrictions.

Viewing Status

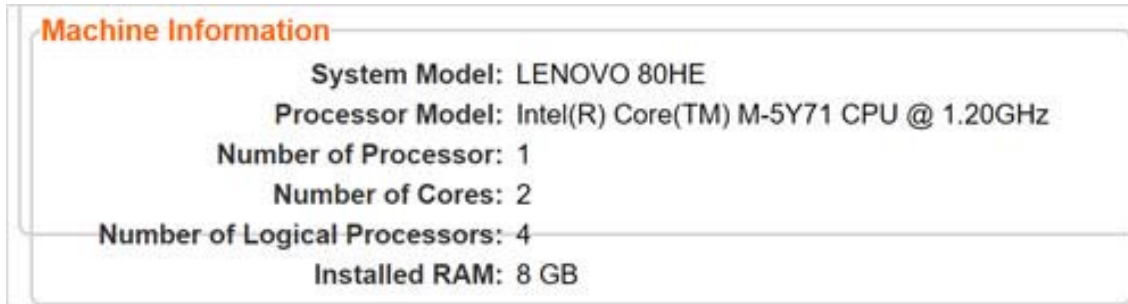
Machine Information

Features

List of enabled/disabled features.

Machine Information

This pane shows information about the machine on which the Broadcaster is installed.



The pane includes the following data:

Parameter	Description
System Model	The model of the machine on which the Broadcaster is installed.
Processor Model	The model and specifications of the machine's processor.
Number of Processor	The number of CPUs installed on this machine.
Number of Cores	The number of cores per processor (for each processor).
Number of Logical Processors	Total number of threads (calculated as Number of cores x thread(s) per core)
Installed RAM	The size of the RAM installed on the machine.

Operating System Information

This pane shows information about the operating system running on the machine.

Viewing Status

Network Cards (Linux only)



The pane Includes the following data:

Parameter	Description
OS	The operating system running on the machine.
Build	The operating system build (version) number.
Architecture	The system architecture of the operating system, number of bits.

Network Cards (Linux only)

This pane shows information about the network cards running on the machine. Each line represents another network card.



The screenshot shows a table titled "Network Cards" with the following data:

NIC	Link Speed	Duplex	IPs
eno2	1000Mb/s	Full	10.7.0.78
eno1	No link		
eno3	No link		
eno4	No link		

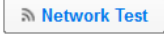
The pane Includes the following data:

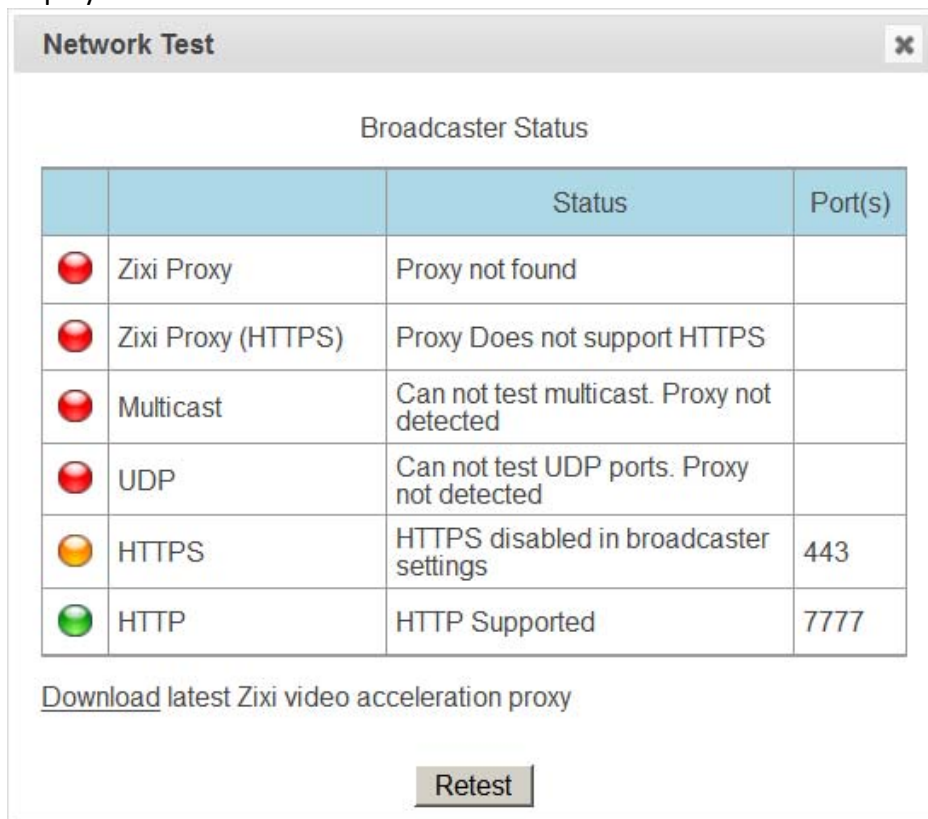
Parameter	Description
NIC	The name of the Network Interface Controller (a.k.a network card).
Link Speed	The link speed capability of the network card.
Duplex	Full - full duplex Half - half duplex
IPs	The IP of the network card.

Testing the Network







You can test the Zixi Broadcaster status, the status of the http or https connection with the relevant port, and the status of the Zixi proxy component. This can be accomplished remotely after the installation of the Broadcaster and subsequently any time after that.

➔ To Test the Network:

1. In the Zixi Broadcaster **Status** page, click . The **Network Test** screen is displayed:



The screenshot shows a window titled "Network Test" with a close button. Inside, there is a section titled "Broadcaster Status" containing a table with the following data:

		Status	Port(s)
	Zixi Proxy	Proxy not found	
	Zixi Proxy (HTTPS)	Proxy Does not support HTTPS	
	Multicast	Can not test multicast. Proxy not detected	
	UDP	Can not test UDP ports. Proxy not detected	
	HTTPS	HTTPS disabled in broadcaster settings	443
	HTTP	HTTP Supported	7777

Below the table, there is a link: [Download latest Zixi video acceleration proxy](#) and a **Retest** button.

The Broadcaster Status table lists the various components of the Zixi Broadcaster with the relevant ports and status (description) and the following health indicators:

- **Green** – component has been tested and was found available.
 - **Yellow** – component has been disabled.
 - **Red** – component was not found or is not available.
2. Click **Retest** to run an additional test on all the server's current connections and their relative ports.

Broadcaster Inputs

You can add input streams to Zixi Broadcaster from one of the following sources:

- **Zixi Feeder** – the Zixi feeder pushes the stream to the Zixi Broadcaster. Since both the Zixi Feeder and the Zixi Broadcaster use the Zixi protocol, the stream is protected by the Zixi protocol.
- **Another Zixi Broadcaster** – the Zixi Broadcaster can pull a stream from another Zixi Broadcaster. Since both components use the Zixi protocol, the stream can be protected by the Zixi protocol.
- **UDP streams** - the source is a UDP or RTP stream, over unicast or multicast.
- **Delayed** - input stream will be stored on the local disk, while a variant of the input is created and delayed according to the specified duration.
- **Local files (for VOD)** – the source in this case is a local transport stream file from your local computer or local network.
- **RTMP streams** - The source is an RTMP stream, pushed into the Zixi Broadcaster, or pulled by it.
- **RTSP** - The source is an RTSP stream, pushed into the Zixi Broadcaster, or pulled by it.
- **HLS** - The source is an HLS stream that is pulled by the Zixi Broadcaster.

Adding Input Streams

The Zixi Broadcaster enables you to add various types of streams. When you create a new stream, select the stream type and then fill in the fields that are applicable for that stream type.

Adding Push Streams

Typically, a Push Stream is transmitted from a Zixi Feeder. In this case, the stream is initiated by the Zixi Feeder while the Zixi Broadcaster remains in “listening mode” until the stream is initiated.

➔ To Add a Push Stream:

1. In the Zixi Broadcaster Navigation menu, click the **Inputs** tab.

Broadcaster Inputs

Adding Input Streams

2. In the **Menu** bar, click **New Input**. The **Add a new input stream** window is displayed.

The screenshot shows the 'Add new input stream' dialog box. It features a title bar with a close button. The main area contains several configuration options: a text field for 'Stream ID', a dropdown for 'Max Outputs' set to 'Unlimited', and a checked checkbox for 'Show in Matrix'. Below these are radio buttons for selecting the stream type: 'Push' (selected), 'Pull', 'UDP', 'Delayed', 'File', 'RTMP', 'RTSP', and 'HLS'. A section titled 'Stream parameters' includes a 'Password' text field, a 'Latency [ms]' dropdown set to 'Remote configuration', a 'Point to point' checkbox, and an 'ID of high priority source' dropdown set to 'None'. At the bottom of this section are five more checkboxes: 'Enable time shift', 'Transmit as multicast', 'Decrypt stream', 'Enable encryption', and 'Recording parameters', all of which are currently unchecked. The dialog concludes with 'Ok' and 'Cancel' buttons at the bottom right.

3. Enter the unique **Stream ID** for the Broadcaster.



Note: this must be identical (case sensitive) to the stream name configured in the Zixi Feeder.

4. Select the maximum concurrent connections to this stream from the **Max. Outputs** drop-down list. Default: Unlimited.
5. Select the **Show in Matrix** check box to display this stream in the Matrix (see [Using the Matrix](#)). Default: Selected.
6. Select **Push** for this input stream.
7. Specify the **Stream Parameters** (see Input Stream Parameter Table).
8. If you want to **Enable time shift**, select this checkbox (see Input Stream Parameter Table below). The stream will be recorded and broadcasted after the specified delay. The time shift feature is typically used to broadcast a live event across time zones (due to the time differences between locations).
9. If you want to **Transmit as multicast**, select this checkbox (see Input Stream Parameter Table).
10. If you want to record the stream, you can configure the **Recording Parameters** (see Input Stream Parameter Table).
11. You can decrypt an encrypted stream as it enters the Zixi Broadcaster. To decrypt a stream, select the **Decrypt Stream** checkbox and fill in the parameters as describes in

Broadcaster Inputs

Adding Input Streams

the Input Stream Parameter Table below. For more information, see [Decrypting an Input Stream in Zixi Broadcaster](#).

12. Click **OK**. The “Input added” message appears on the top of the screen. The Push Stream from the Zixi Feeder is added to the Zixi Broadcaster and now appears in the list of input streams available in the Zixi Broadcaster input UI.

Input Stream Parameters Table

Parameter	Description
Stream Parameters	
Password (Optional)	If desired, enter a password string to use for authentication (must be identical to the string configured on the Feeder)
Latency [ms]	Specify the maximal latency that will override the latency that was defined in the Feeder (in ms). Default: Remote configuration (i.e. use the latency was set in the Feeder). (See Latency Considerations)
Point to point only	Selecting this checkbox transmits the stream directly (point-to-point) from the Feeder to the Receiver, while only delivering messaging to the Broadcaster. In case there is a problem with the P2P connection, it will re-route the transmission through the Zixi Broadcaster.
Disable P2P Fallback	Selecting this checkbox will allow <u>only</u> P2P (disabling the option to re-route traffic though the Zixi Broadcaster)
ID of high priority source	Specify the ID of the Zixi Feeder for which you want to grant priority. The ID of the Zixi Feeder can be found in the ID field on the Zixi Feeder’s Status screen. Upon connection of the Zixi Feeder with this ID, all other existing sources will be disconnected.
Enable time shift	Select this checkbox to record the stream content and broadcast it after the specified delay.
Maximum delay [hh:mm:ss]	Specify the time of the delayed transmission of this stream. Maximum: 24 hours.
Transmit as multicast	Select this checkbox to enable the transmission of this stream’s outputs as multicast. A Zixi receiver that will pull the stream will receive it in multicast. By default Zixi Broadcaster is configured to allow transparent fallback to unicast if it is out of the LAN. Requires enabling Multicast Pull in the Settings.
Multicast Only	Selecting this checkbox will force the transmission of this stream only in multicast.

Broadcaster Inputs

Adding Input Streams

Decrypt stream	Select this checkbox to decrypt the Input stream. Please note that the stream will not be encrypted as it passes through the Zixi path. For more information, see Decrypting an Input Stream in Zixi Broadcaster .
-----------------------	--

Decryption type (for Decrypt stream enabled)	Specify the type of encryption that is being used in the stream.
---	--

Decryption key (for Decrypt stream enabled)	Specify the key for decryption.
--	---------------------------------

Enable Encryption	Select this checkbox to encrypt the Input stream. For more information, see Encrypting an Input Stream in Zixi Broadcaster .
--------------------------	--

Encryption type (for Encryption enabled)	Specify the type of Encryption (AES 128/192/256).
---	---

Encryption key (for Encryption enabled)	Click Generate to generate an encryption key. The generated encryption key must be sent to the end-user to decipher the received encoded stream.
--	--

Recording parameters	Select this checkbox to customize the recording parameters.
-----------------------------	---

Max recorded file duration [hours]	Specify the maximum time allotted for recording a video stream. Default: 2 hours
---	--

Keep recorded files for [hours]	Specify the maximum time for storing the recording. Default: 0 hours
--	--

Custom Path	Optionally specify a storage location for the recorded files that is relative to the root folder. This location bypasses the location specified as the root folder in the Settings > General screen.
--------------------	--

Broadcaster Inputs

Adding Input Streams

File Name Template	<p>Specify the file name pattern that Zixi will use to generate when saving the recorded content. A separate file will be generated for each recording up to the time specified in the Max recorded file duration parameter (see above). After this duration a new file will be generated.</p> <p>The file name pattern can include any string and up to five variables listed below. Only the %T=HH.MM.SS creation time is mandatory. You can change the order of these variables and add text as long as you maintain the legitimate structure of the file in Linux and Windows:</p> <ul style="list-style-type: none">• %S=stream id - optional.• %Y=year - optional• %M=month - optional• %D=day - optional• %T=HH.MM.SS creation time - mandatory <p>For example, the following pattern %Y_recording%T.ts will generate the following file name 2017_recording15:32:35.ts.</p>
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Adding Pull Streams

Typically a Pull Stream is transmitted from another Zixi Broadcaster. In this case, the stream is initiated by your Zixi Broadcaster.

➔ To Add a Pull Stream:

1. In the Zixi Broadcaster Navigation menu, click the **Inputs** tab.

Broadcaster Inputs

Adding Input Streams

2. In the Menu bar, click **New Input**. The **Add a new input stream** window is displayed.

Add new input stream

Stream ID:

Max Outputs:

Show in Matrix:

Push Pull UDP Delayed File RTMP RTSP HLS

Stream parameters

Host: +

Port:

Stream:

Password:

Latency [ms]:

Ignore TLS certificate:

Bind to IP:

Enable time shift

Transmit as multicast

Decrypt stream

Enable encryption

Recording parameters

Ok Cancel

3. Enter the unique **Stream ID**. for the Broadcaster.



Note: this must be identical (case sensitive) to the stream name configured in the Zixi Feeder.

4. Select the maximum concurrent connections to this stream from the **Max. Outputs** drop-down list. Default: Unlimited.
5. Select the **Show in Matrix** check box to display this stream in the Matrix (see [Using the Matrix](#)). Default: Selected.
6. Select **Pull** for the input stream.
7. Specify the **Stream Parameters** (see Input Stream Parameter table).
8. If you want to **Enable time shift**, select this checkbox (see Input Stream Parameter table). The stream will be recorded and broadcasted after the specified delay. The time shift feature is typically used to broadcast a live event across time zones (due to the time differences between locations).
9. If you want to **Transmit as multicast**, select this checkbox (see Input Stream Parameter table).
10. If you want to configure the **Recording Parameters**, specify them in the respective fields (see Input Stream Parameter table).

Broadcaster Inputs

Adding Input Streams

11. You can decrypt an encrypted stream as it enters the Zixi Broadcaster. To decrypt a stream, select the **Decrypt Stream** checkbox and fill in the parameters as describes in the Input Stream Parameter Table below. For more information, see [Decrypting an Input Stream in Zixi Broadcaster](#).
12. Click **OK**. The “Input added” message appears on the top of the screen. The Push Stream from the Zixi Feeder is added to the Zixi Broadcaster and now appears in the list of streams available in Zixi Broadcaster inputs UI.

Input Stream Parameters table

Parameter	Description
Stream Parameters	The general stream settings.
Host	Enter the IP Address of the remote Broadcaster server. Note that additional (failover) destinations can be added by clicking the adjacent “+” button
Port	Enter the port through which the Broadcaster receives the stream from another Broadcaster server. Default: 2088 The default input port for Zixi Broadcaster is UDP port 2088 . This port <i>must be open</i> on any firewalls between Zixi Broadcaster and other devices it is communicating with.
Stream	Enter the unique stream ID from another Broadcaster server.
Password (Optional)	If desired, enter the string for authentication. It must be identical to the string configured on the other Zixi Broadcaster.
Latency [ms]	Specify the maximum number of milliseconds that Zixi Broadcaster should protect the stream for. For example, 6000 milliseconds would ensure that the stream is protected for up to six seconds of delay in the network. This setting affects memory usage as higher levels of protection require more buffering. Default:6000.
Bind to IP	Selects a local IP address to use, or Any IP address if it can be sourced from any active NIC.
Enable time shift	Select this checkbox to record the stream content and broadcast it after the specified delay.
Maximum delay [hh:mm:ss] (for Time Shift enabled)	Specify the time of a delayed transmission of this stream. Maximum: 24 hours

Broadcaster Inputs

Adding Input Streams

<i>Transmit as multicast</i>	Select this checkbox to enable the transmission of this stream's outputs as multicast. A Zixi Broadcaster that will pull the stream will receive it in multicast. By default Zixi Broadcaster is configured to allow transparent fallback to unicast if it is out of the LAN. Requires enabling Multicast Pull in the Settings.
Multicast-Only (for multicast enabled)	If desired, specify multicast-only outputs.
<i>Decrypt stream</i>	Select this checkbox to decrypt the Input stream. Please note that the stream will not be encrypted as it passes through the Zixi path. For more information, see Decrypting an Input Stream in Zixi Broadcaster .
Decryption type (for Decrypt stream enabled)	Specify the type of encryption that is being used in the stream.
Decryption key (for Decrypt stream enabled)	Specify the key for decryption.
<i>Enable Encryption</i>	Select this checkbox to encrypt the Input stream. For more information, see Encrypting an Input Stream in Zixi Broadcaster .
Encryption type (for Encryption enabled)	Specify the type of Encryption (AES 128/192/256).
Encryption key (for Encryption enabled)	Click Generate to generate an encryption key. The generated encryption key must be sent to the end-user to decipher the received encoded stream.
<i>Recording parameters</i>	Select this checkbox to customize the recording parameters.
Max recorded file duration [hours]	Specify the maximum time allotted for recording a video stream. Default: 2 hours
Keep recorded files for [hours]	Specify the maximum time for storing the recording.
Custom Path	Optionally specify a storage location for the recorded files that is relative to the root folder. This location bypasses the location specified as the root folder in the Settings > General screen.

Broadcaster Inputs

Adding Input Streams

File Name Template

Specify the file name pattern that Zixi will use to generate when saving the recorded content. A separate file will be generated for each recording up to the time specified in the Max recorded file duration parameter (see above). After this duration a new file will be generated.

The file name pattern can include any string and up to five variables listed below. Only the %T=HH.MM.SS creation time is mandatory. You can change the order of these variables and add text as long as you maintain the legitimate structure of the file in Linux and Windows:

- %S=stream id - optional.
- %Y=year - optional
- %M=month - optional
- %D=day - optional
- %T=HH.MM.SS creation time - mandatory

For example, the following pattern **%Y_recording%T.ts** will generate the following file name: **2017_recording15:32:35.ts**.

Broadcaster Inputs

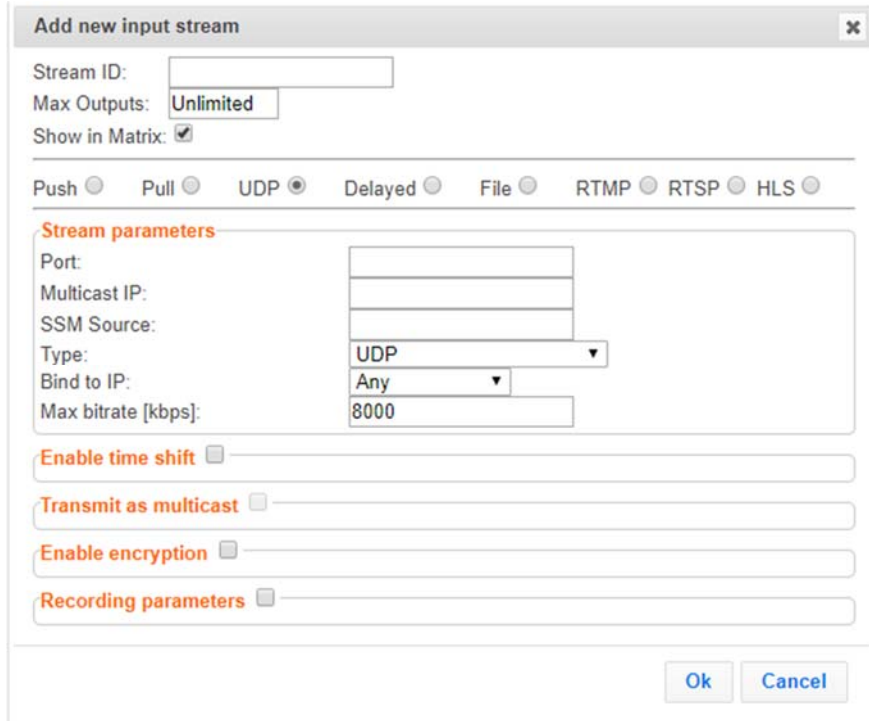
Adding Input Streams

Adding UDP Streams

This enables the Broadcaster to receive a UDP stream. The UDP stream is not protected by the Zixi protocol.

➔ To Add a UDP Stream:

1. In the Zixi Broadcaster Navigation menu, click the **Inputs** tab.
2. In the Menu bar, click **New Input**. The **Add a new input stream** window is displayed.



3. Enter the unique **Stream ID**.



Note this must be identical (case sensitive) to the stream name configured in the Zixi Feeder.

4. Select the maximum concurrent connections to this stream from the **Max. Outputs** drop-down list. Default: Unlimited.
5. Select the **Show in Matrix** check box to display this stream in the Matrix (see [Using the Matrix](#)). Default: Selected.
6. Select **UDP** for the input stream.
7. Specify the **Stream Parameters** (see Input Stream Parameters Table).
8. If you want to **Enable time shift**, select this checkbox (see Input Stream Parameters Table).
9. If you want to **Transmit as multicast**, select this checkbox (see Input Stream Parameters Table).

Broadcaster Inputs

Adding Input Streams

10. If you want to configure the **Recording Parameters**, specify them in the respective fields (see Input Stream Parameters Table).
11. If you want to **Enable encryption** select this checkbox (see Input Stream Parameters Table). For more information, see [Encrypting an Input Stream in Zixi Broadcaster](#).
12. Click **OK**.

The “Input added” message appears on the top of the screen. The UDP Stream from the Zixi Feeder is added to the Zixi Broadcaster and now appears in the list of streams available in the Zixi Broadcaster inputs UI.

Input Stream Parameters Table

Parameter	Description
Stream Parameters	
Port	Specify the port to listen on. This port must be open on all firewalls between the Zixi Broadcaster and other devices it is communicating with.
Multicast IP	If multicast, type the Multicast IP address (or leave blank in the case of Unicast).
SSM Source	Specify the source IP for a source-specific multicast.
Type	Select the appropriate protocol type from the drop-down list.
Bind to IP	Specify which of the local IP address should be used. Select one of the local IP addresses in the drop-down menu.
Max. bitrate [kbps]	Specify the maximum expected bitrate for memory allocation. Recommended: 2X the actual bitrate, which will prevent buffer overruns (especially with VBR streams). Default: 8000. Note – Overflows will typically occur when the Max Bitrate isn’t sufficient.
Enable time shift	Select this checkbox to record the stream content and broadcast it after the specified delay.
Maximum delay [hh:mm:ss] (for Time Shift enabled)	Specify the maximum time delay of this input.
Transmit as multicast	Select this checkbox to enable the transmission of this stream’s outputs as multicast. A Zixi receiver that will pull the stream will receive it in multicast. By default Zixi Broadcaster is configured to allow transparent fallback to unicast if it is out of the LAN. Requires enabling Multicast Pull in the Settings.
Multicast-Only (for multicast enabled)	Selecting this checkbox will force the transmission of this stream only in multicast.

Broadcaster Inputs

Adding Input Streams

Enable Encryption	Select this checkbox to encrypt the Input stream. For more information, see Encrypting an Input Stream in Zixi Broadcaster .
Encryption type (for Encryption enabled)	Specify the type of Encryption (AES 128/192/256).
Encryption key (for Encryption enabled)	Click Generate to generate an encryption key. The generated encryption key must be sent to the end-user to decipher the received encoded stream.
Recording parameters	Select this checkbox to customize the recording parameters.
Max recorded file duration [hours]	Specify the maximum time allotted for recording a video stream. Default: 2 hours
Keep recorded files for [hours]	Specify the maximum time for storing the recording.
Custom Path	Optionally specify a storage location for the recorded files that is relative to the root folder. This location bypasses the location specified as the root folder in the Settings > General screen .
	Specify the file name pattern that Zixi will use to generate when saving the recorded content. A separate file will be generated for each recording up to the time specified in the Max recorded file duration parameter (see above). After this duration a new file will be generated. The file name pattern can include any string and up to five variables listed below. Only the %T=HH.MM.SS creation time is mandatory. You can change the order of these variables and add text as long as you maintain the legitimate structure of the file in Linux and Windows:
File Name Template	<ul style="list-style-type: none">● %S=stream id - optional.● %Y=year - optional● %M=month - optional● %D=day - optional● %T=HH.MM.SS creation time - mandatory
	For example, the following pattern %Y_recording%T.ts will generate the following file name 2017_recording15:32:35.ts .

Broadcaster Inputs

Adding Input Streams

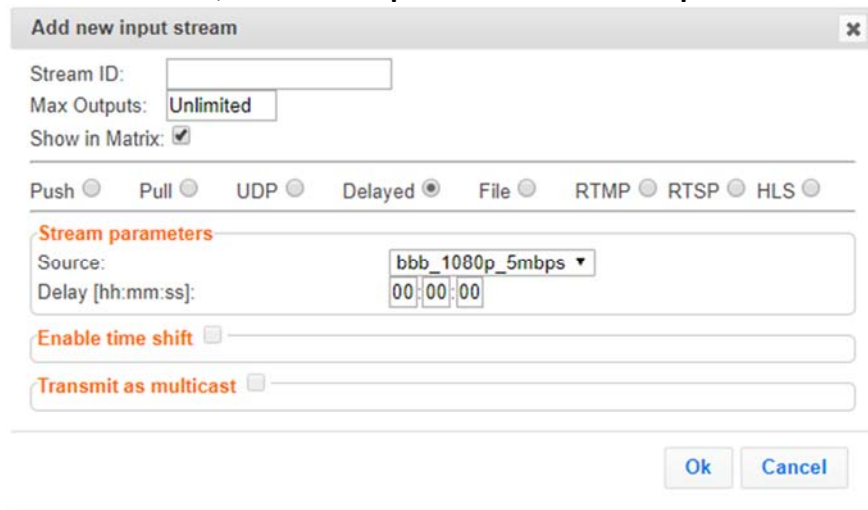
Adding Delayed Streams

You can delay the broadcasting of an input stream by enabling “time shifting”. In this case the input stream will be stored on the local disk, while a variant of the input is created and delayed according to the specified duration.

The duration of the delayed stream should be less or equal to the time shifted stream.

➔ To Add a Delayed Stream:

1. In the Zixi Broadcaster Navigation menu, click the **Inputs** tab.
2. In the Menu bar, click **New Input**. The **Add a new input stream** window is displayed.



3. Enter the unique **Stream ID**.



Note: this must be identical (case sensitive) to the stream name configured in the Zixi Feeder.

4. Select the maximum concurrent connections to this stream from the **Max. Outputs** drop-down list. Default: Unlimited.
5. Select the **Show in Matrix** check box to display this stream in the Matrix (see [Using the Matrix](#)). Default: Selected.
6. Select **Delayed** for the input stream.
7. Specify the **Stream Parameters** (see Input Stream Parameters Table).
8. If you want to **Enable time shift**, select this checkbox (see Input Stream Parameters Table).
9. If you want to **Transmit as multicast**, select this checkbox (see Input Stream Parameters Table).
10. Click **OK**.
11. The “Input added” message appears on the top of the screen. The Delayed Stream is added to the Zixi Broadcaster and now appears in the list of streams available in the Zixi Broadcaster inputs UI.

Broadcaster Inputs

Adding Input Streams

Input Stream Parameters Table

Parameter	Description
<i>Stream Parameters</i>	
Source	Select one of the input streams that were configured to enable "time shift".
Delay	Specify the delay period relative to the original stream.
<i>Enable time shift</i>	Select this checkbox to record the stream content and broadcast it after the specified delay.
Maximum delay [hh:mm:ss] (for Time Shift enabled)	Specify the maximum time delay of this input.
<i>Transmit as multicast</i>	Select this checkbox to enable the transmission of this stream's outputs as multicast. A Zixi receiver that will pull the stream will receive it in multicast. By default Zixi Broadcaster is configured to allow transparent fallback to unicast if it is out of the LAN. Requires enabling Multicast Pull in the Settings.
Multicast-Only (for Multicast enabled)	If desired, specify multicast only outputs.

Broadcaster Inputs

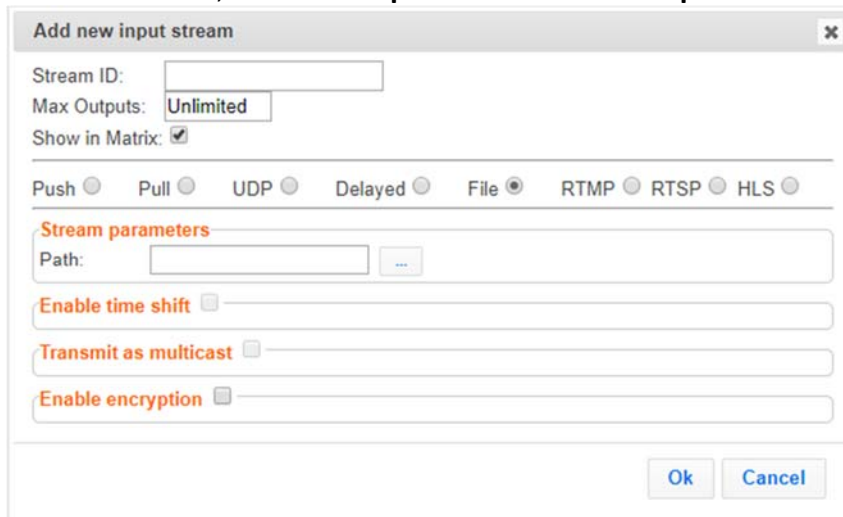
Adding Input Streams

Adding File Streams

This creates a file input for the broadcaster from a local or mounted disk and subsequently streams it to the end-user.

➔ To Add a File Stream:

1. In the Zixi Broadcaster Navigation menu, click the **Inputs** tab.
In the Menu bar, click **New Input**. The **Add a new input stream** window is displayed.



2. Enter the unique **Stream ID**.



Note: this must be identical (case sensitive) to the stream name configured in the Zixi Feeder.

3. Select the maximum concurrent connections to this stream from the **Max. Outputs** drop-down list. Default: Unlimited.
4. Select the **Show in Matrix** check box to display this stream in the Matrix (see [Using the Matrix](#)). Default: Selected.
5. Select **File** for the input stream.
6. Specify the **Stream Parameters** (see Input Stream Parameter table).
7. If you want to **Enable time shift**, select this checkbox (see Input Stream Parameter table). The stream will be recorded and broadcasted after the specified delay. The time shift feature is typically used to broadcast a live event across time zones (due to the time differences between locations).
8. If you want to **Transmit as multicast**, select this checkbox (see Input Stream Parameter table).
9. If you want to **Enable encryption**, select this checkbox (see Input Stream Parameter table). For more information, see

Broadcaster Inputs

Adding Input Streams

10. [Encrypting an Input Stream in Zixi Broadcaster](#).

11. Click **OK**. The “Input added” message appears on the top of the screen. The Push Stream from the Zixi Feeder is added to the Zixi Broadcaster and now appears in the list of streams available in the Zixi Broadcaster inputs UI.

Input Stream Parameters Table

Parameter	Description
Stream Parameters	
Path	Type the local or mounted (Linux) disk or click the adjacent browse button to select the desired one. The suffix .ts indicates a transmitted stream.
Enable time shift	Select this checkbox to record the stream content and broadcast it after the specified delay.
Maximum delay [hh:mm:ss] (for Time Shift enabled)	Specify the maximum time delay of this input.
Transmit as multicast	Select this checkbox to enable the transmission of this stream’s outputs as multicast. A Zixi receiver that will pull the stream will receive it in multicast. By default Zixi Broadcaster is configured to allow transparent fallback to unicast if it is out of the LAN. Requires enabling Multicast Pull in the Settings.
Multicast Only (for Multicast enabled)	If desired, specify force multicast-only outputs. A Zixi receiver will receive it in multicast (unless it is out of the LAN in which case it will relay in as unicast). You can also force Multicast only outputs.
Enable Encryption	Select this checkbox to encrypt the Input stream. For more information, see Encrypting an Input Stream in Zixi Broadcaster .
Encryption type (for Encryption enabled)	Specify the type of Encryption (AES 128/192/256).
Encryption key (for encryption enabled)	Click Generate to generate an encryption key. The generated encryption key must be sent to the end-user to decipher the received encoded stream.

Broadcaster Inputs

Adding Input Streams

Adding RTMP Streams

This enables you to create a Push or Pull RTMP input stream.

➔ To Add a RTMP Stream:

1. In the Zixi Broadcaster Navigation menu, click the **Inputs** tab.
2. In the Menu bar, click **New Input**. The **Add a new input stream** window is displayed.

The screenshot shows the 'Add new input stream' dialog box. It includes the following fields and options:

- Stream ID: [Text input field]
- Max Outputs: [Unlimited]
- Show in Matrix:
- Stream type selection: Push , Pull , UDP , Delayed , File , RTMP , RTSP , HLS
- Stream parameters section:
 - Type: Push , Pull
 - Disconnect if inactive:
 - Enable time shift:
 - Transmit as multicast:
 - Enable encryption:
 - Recording parameters:
- Buttons: Ok, Cancel

3. Enter the unique **Stream ID**.



Note: this must be identical (case sensitive) to the stream name configured in the Zixi Feeder.

4. Select the maximum concurrent connections to this stream from the **Max. Outputs** drop-down list. Default: Unlimited.
5. Select the **Show in Matrix** check box to display this stream in the Matrix (see [Using the Matrix](#)). Default: Selected.
6. Select **RTMP** for the input stream.
7. Specify the **Stream Parameters** (see Input Stream Parameters Table).
8. If you want to **Enable time shift**, select this checkbox (see Input Stream Parameters Table).
9. If you want to **Transmit as multicast**, select this checkbox (see Input Stream Parameters Table).
10. If you want to **Enable encryption**, select this checkbox (see Input Stream Parameters Table). For more information, see

Broadcaster Inputs

Adding Input Streams

11. [Encrypting an Input Stream in Zixi Broadcaster](#).
12. If you want to configure the **Recording Parameters**, specify them in the respective fields (see Input Stream Parameters Table).
13. Click **OK**. The “Input added” message appears on the top of the screen. The RTMP Stream is added to the Zixi Broadcaster and now appears in the list of streams available in the Zixi Broadcaster inputs UI.

Input Stream Parameters Table

Parameter	Description
Stream Parameters	
Type	Select the desired type for the RTMP stream: <ul style="list-style-type: none">• Push – the stream is pushed to the Zixi Broadcaster (not initiated by the Zixi Broadcaster). No additional connection parameters need to be filled.• Pull – Zixi Broadcaster will initiate the stream by accessing it through the following parameters:
URL	Type the Stream URL from which the Zixi Broadcaster will access. In Pull mode you can define RTMPS clients with the proven security of a secure socket layer (SSL), by using the rtmps:// url
Stream Name	Type the unique name for the stream that has been defined in the RTMP server.
User Name	Specify the User name to authenticate on the remote RTMP server
Password	Specify the string that is used for authorization on the remote RTMP server.
Disconnect if inactive	Disconnects if inactive.
Enable time shift	Select this checkbox to record the stream content and broadcast it after the specified delay.
Maximum delay [hh:mm:ss] (for Time Shift enabled)	Specify the maximum time delay of this input.
Transmit as multicast	Select this checkbox to enable the transmission of this stream’s outputs as multicast. A Zixi receiver that will pull the stream will receive it in multicast. By default Zixi Broadcaster is configured to allow transparent fallback to unicast if it is out of the LAN. Requires enabling Multicast Pull in the Settings.
Multicast Only (for Multicast enabled)	Select the check box to force only Multicast outputs.

Broadcaster Inputs

Adding Input Streams

Enable Encryption	Select this checkbox to encrypt the Input stream. For more information, see Encrypting an Input Stream in Zixi Broadcaster .
Encryption type (for Encryption enabled)	Specify the type of Encryption (AES 128/192/256).
Encryption key (for Encryption enabled)	Click Generate to generate an encryption key. The generated encryption key must be sent to the end-user to decipher the received encoded stream.
Recording Parameters	
Max recorded file duration [hours]	Specify the maximum time allotted for recording a video stream. Default: 2 hours
Keep recorded files for [hours]	Specify the maximum time for storing the recording.
Custom Path	Optionally specify a storage location for the recorded files that is relative to the root folder. This location bypasses the location specified as the root folder in the Settings > General screen .
File Name Template	<p>Specify the file name pattern that Zixi will use to generate when saving the recorded content. A separate file will be generated for each recording up to the time specified in the Max recorded file duration parameter (see above). After this duration a new file will be generated.</p> <p>The file name pattern can include any string and up to five variables listed below. Only the %T=HH.MM.SS creation time is mandatory. You can change the order of these variables and add text as long as you maintain the legitimate structure of the file in Linux and Windows:</p> <ul style="list-style-type: none">• %S=stream id - optional.• %Y=year - optional• %M=month - optional• %D=day - optional• %T=HH.MM.SS creation time - mandatory <p>For example, the following pattern %Y_recording%T.ts will generate the following file name 2017_recording15:32:35.ts.</p>

Adding RTSP Streams

This enables you to create RTSP streams.

Broadcaster Inputs

Adding Input Streams

➔ To Add RTSP Streams:

1. In the Zixi Broadcaster Navigation menu, click the **Inputs** tab.
2. In the Menu bar, click **New Input**. The **Add a new input stream** window is displayed.

The screenshot shows the 'Add new input stream' dialog box. The 'Stream ID' field is empty. 'Max Outputs' is set to 'Unlimited'. 'Show in Matrix' is checked. The 'RTSP' radio button is selected. In the 'Stream parameters' section, 'Video UDP port' is 5000, 'Audio UDP port' is 5001, and 'Bitrate [kbps]' is 2500. The 'TCP' checkbox is unchecked. The 'Enable time shift', 'Transmit as multicast', 'Enable encryption', and 'Recording parameters' checkboxes are also unchecked. 'Ok' and 'Cancel' buttons are at the bottom right.

3. Enter the unique **Stream ID**.



Note: this must be identical (case sensitive) to the stream name configured in the Zixi Feeder.

4. Select the maximum concurrent connections to this stream from the **Max. Outputs** drop-down list. Default: Unlimited.
5. Select the **Show in Matrix** check box to display this stream in the Matrix (see [Using the Matrix](#)). Default: Selected.
6. Select **RTMP** for the input stream.
7. Specify the **Stream Parameters** (see Input Stream Parameters Table).
8. If you want to **Enable time shift**, select this checkbox (see Input Stream Parameters Table).
9. If you want to **Transmit as multicast**, select this checkbox (see Input Stream Parameters Table).
10. If you want to **Enable encryption**, select this checkbox (see Input Stream Parameters Table).
11. If you want to configure the **Recording Parameters**, specify them in the respective fields (see Input Stream Parameters Table).

Broadcaster Inputs

Adding Input Streams

12. Click **OK**. The “Input added” message appears on the top of the screen. The RTMP Stream is added to the Zixi Broadcaster and now appears in the list of streams available in the Zixi Broadcaster inputs UI.

Input Stream Parameters Table

Parameter	Description
<i>Stream Parameters</i>	The general stream settings.
URL	Type the Stream URL from which the Zixi Broadcaster will access.
Video UDP Port	Specify the UDP port to be used for streaming the video.
Audio UDP Port	Specify the UDP port to be used for streaming the video.
<i>Enable time shift</i>	Select this checkbox to record the stream content and broadcast it after the specified delay.
Maximum delay [hh:mm:ss] (for Time Shift enabled)	Specify the maximum time delay of this input.
<i>Transmit as multicast</i>	Select this checkbox to enable the transmission of this stream’s outputs as multicast. A Zixi receiver that will pull the stream will receive it in multicast. By default Zixi Broadcaster is configured to allow transparent fallback to unicast if it is out of the LAN. Requires enabling Multicast Pull in the Settings.
Multicast Only (for Multicast enabled)	Select the check box to force only Multicast outputs.
<i>Enable Encryption</i>	Select this checkbox to encrypt the Input stream. For more information, see Encrypting an Input Stream in Zixi Broadcaster .
Encryption type (for Encryption enabled)	Specify the type of Encryption (AES 128/192/256).
Encryption key (for Encryption enabled)	Click Generate to generate an encryption key. The generated encryption key must be sent to the end-user to decipher the received encoded stream.
<i>Recording parameters</i>	Select this checkbox to customize the recording parameters.
Max recorded file duration [hours]	Specify the maximum time allotted for recording a video stream. Default: 2 hours

Broadcaster Inputs

Adding Input Streams

Keep recorded files for [hours]

Specify the maximum time for storing the recording.

Custom Path

Optionally specify a storage location for the recorded files that is relative to the root folder. This location bypasses the location specified as the root folder in the **Settings > General screen**.

File Name Template

Specify the file name pattern that Zixi will use to generate when saving the recorded content. A separate file will be generated for each recording up to the time specified in the Max recorded file duration parameter (see above). After this duration a new file will be generated.

The file name pattern can include any string and up to five variables listed below. Only the %T=HH.MM.SS creation time is mandatory. You can change the order of these variables and add text as long as you maintain the legitimate structure of the file in Linux and Windows:

- %S=stream id - optional.
- %Y=year - optional
- %M=month - optional
- %D=day - optional
- %T=HH.MM.SS creation time - mandatory

For example, the following pattern **%Y_recording%T.ts** will generate the following file name **2017_recording15:32:35.ts**.

Broadcaster Inputs

Adding Input Streams

Adding HLS Streams

This enables the Broadcaster to receive an HLS stream. The HLS stream is not protected by the Zixi protocol. The stream can be an adaptive bitrate stream. In this case, Zixi Broadcaster will pull the main playlist to adapt between bitrates. In addition, it is possible to pull multiple input streams with static individual bitrates.

➔ To Add an HLS stream:

1. In the Zixi Broadcaster Navigation menu, click the **Inputs** tab.
2. In the Menu bar, click **New Input**. The **Add a new input stream** window is displayed.

Add new input stream

Stream ID:

Max Outputs:

Show in Matrix:

Push Pull UDP Delayed File RTMP RTSP HLS

Stream parameters

URL:

Enable time shift

Transmit as multicast

Enable encryption

Recording parameters

Ok Cancel

3. Enter the unique **Stream ID**.



Note: this must be identical (case sensitive) to the stream name configured in the Zixi Feeder.

4. Enter the maximum concurrent connections to this stream from the **Max. Outputs** dropdown list. Default: Unlimited.
5. Select the **Show in Matrix** check box to display this stream in the Matrix (see [Using the Matrix](#)). Default: Selected.
6. Select **HLS** for the input stream.
7. Specify the **Stream Parameters** (see Input Stream Parameters Table below).
8. If you want to **Enable time shift**, select this checkbox (see Input Stream Parameters Table).
9. If you want to **Transmit as multicast**, select this checkbox (see Input Stream Parameters Table).

Broadcaster Inputs

Adding Input Streams

10. If you want to configure the **Recording Parameters**, specify them in the respective fields (see Input Stream Parameters Table).
11. If you want to **Enable encryption** select this checkbox (see Input Stream Parameters Table).
12. Click **OK**.

The “Input added” message appears on the top of the screen. The UDP Stream from the Zixi Feeder is added to the Zixi Broadcaster and now appears in the list of streams available in the Zixi Broadcaster inputs UI.

Input Stream Parameters Table

Parameter	Description
Stream Parameters	
URL	Specify the URL of the HLS stream.
Enable time shift	Select this checkbox to record the stream content and broadcast it after the specified delay.
Maximum delay [hh:mm:ss] (for Time Shift enabled)	Specify the maximum time delay of this input.
Transmit as multicast	Select this checkbox to enable the transmission of this stream’s outputs as multicast. A Zixi receiver that will pull the stream will receive it in multicast. By default Zixi Broadcaster is configured to allow transparent fallback to unicast if it is out of the LAN. Requires enabling Multicast Pull in the Settings.
Multicast Only (for Multicast enabled)	If desired, specify multicast only outputs.
Enable Encryption	Select this checkbox to encrypt the Input stream. For more information, see Encrypting an Input Stream in Zixi Broadcaster .
Encryption type (for Encryption enabled)	Specify the type of Encryption (AES 128/192/256).
Encryption key (for Encryption enabled)	Click Generate to generate an encryption key. The generated encryption key must be sent to the end-user to decipher the received encoded stream.
Recording parameters	Select this checkbox to customize the recording parameters.

Broadcaster Inputs

Adding Input Streams

Max recorded file duration [hours]	Specify the maximum time allotted for recording a video stream. Default: 2 hours
Keep recorded files for [hours]	Specify the maximum time for storing the recording.
Custom Path	Optionally specify a storage location for the recorded files that is relative to the root folder. This location bypasses the location specified as the root folder in the Settings > General screen .
File Name Template	<p>Specify the file name pattern that Zixi will use to generate when saving the recorded content. A separate file will be generated for each recording up to the time specified in the Max recorded file duration parameter (see above). After this duration a new file will be generated.</p> <p>The file name pattern can include any string and up to five variables listed below. Only the %T=HH.MM.SS creation time is mandatory. You can change the order of these variables and add text as long as you maintain the legitimate structure of the file in Linux and Windows:</p> <ul style="list-style-type: none">• %S=stream id - optional.• %Y=year - optional• %M=month - optional• %D=day - optional• %T=HH.MM.SS creation time - mandatory <p>For example, the following pattern %Y_recording%T.ts will generate the following file name 2017_recording15:32:35.ts.</p>

Broadcaster Inputs

Viewing Existing Input Streams

Viewing Existing Input Streams

The **Inputs** screen displays all the input streams that have been created. At the bottom of the screen you can also view accumulative utilization statistics for any connected streams selected. Hovering the cursor on the status indicator of a stream will provide you with the stream configuration information and basic utilization statistics, where applicable.

Zixi Broadcaster Version 1.11.0.27133 Linux 64-bit 62 Copyright (c) 2007-2017, Zixi LLC.
CPU: 1.46% GPU: 7% Disk: 15.23% Mem: 5.4% Clock: 10.00.53

STATUS INPUTS OUTPUTS ADAPTIVE VOD FILES TRANSCODER SETTINGS EVENT LOG MATRIX LOGOUT

Inputs ✕ 🔍 🔄 + New Input 🔄 Reload

Status	ID	Type	Source	Bitrate[kbps]	Up Time	TR 101 290	Error	Outputs	Actions
Connected	20	File	app_mezz_20170216-18.00.09.ts	2669	99:31:14	P1: P2:	None	0	⚙️

Transcoded sources

Status	ID	Bitrate[kbps]	Up Time	TR 101 290	Error	Outputs
Connected	2000	1728	01:27:16	Off	None	0
Connected	1200	1133	01:26:59	Off	None	0
Connected	500	482	01:26:48	Off	None	0

Statistics [reset]

Bitrate (kbps) [↓](#): 2658
Up Time: 99:31:17
Reconnections [↓](#): 2

Total Packets: 90592207
Packet Rate [↓](#): 252
Remuxing Resets: 0
Remuxing Overflows: 0
Smoothing Drops: 527

Any of the columns in the following table can be sorted in ascending/descending order by clicking on its heading. The Search text box in the upper left hand side of the screen can be used to search for a specific input stream by entering the desired Stream ID.

Field	Description
Status	Displays the status of input stream. The following colored indicators are displayed: <ul style="list-style-type: none">• Green = Connected• Yellow = Connecting• Red = Disconnected with an error condition• Blue = Offline with no connection attempts• Grey = Offline and stopped
ID	Displays the unique ID of the stream, as defined in the Zixi Broadcaster.
Type	Displays the type of input stream.

Broadcaster Inputs

Viewing Stream Statistics

Source	Displays the source host and port number.
Bitrate [kbps]	Displays bitrate of the connected input stream.
Uptime	Displays the amount of time the stream has been active.
TR 101 209	Displays if the Analyzer is active and the streams that are being analyzed according to the TR101 protocol. P1 and P2 are error priorities.
Error	Displays connection and transmission errors.
Outputs	Displays the amount of outputs currently configured for this input stream.
Actions	Provides access to various actions to be performed on this input stream (see Broadcaster Actions on Input Streams).

Viewing Stream Statistics

You can view all the accumulative statistics for a connected input stream in real-time.

➔ To View Stream Statistics:

1. On the Inputs page of Zixi Broadcaster, click the desired incoming stream for which you want to view statistics for. The stream's statistics are displayed on the bottom of the screen.

Field	Description
Bitrate (kbps)	Displays the current bitrate of the input stream.
Uptime	Displays the amount of time the stream has been active.
Reconnections	Displays the number of reconnection attempts.
RTT (ms)	Displays the Round Trip Time (RTT) from the source (in milliseconds).
Jitter (ms)	Displays the current Jitter, measured in milliseconds.
Latency (ms)	Displays the stream latency configured on the source Feeder.
Total Packets	Displays the total number of packets that have been transmitted.
Packet Rate	Displays the current number of packets per second.
Packet Loss %	Displays current percentage of the packets that were dropped on route from the source.


Broadcaster Inputs

Viewing Stream Statistics

Dropped Packets	Displays the total number of packets dropped between the Feeder and the Broadcaster since the beginning of the stream.
Recovered Packets	Displays the number of dropped packets that have been recovered since the beginning of the stream.
Non Recovered Packets	Displays the number of non-recovered packets.
FEC Packets	Displays the number of FEC packets transmitted.
FEC Recovered	Displays the number of FEC packets recovered.
ARQ Requests	Displays the number of requests for retransmission of dropped packets made with ARQ.
ARQ Recovered	Displays the number of dropped packets recovered via ARQ.
ARQ Duplicates	Displays the number of duplicate recovery packets received via ARQ.
Overflows	The number of packets lost due to buffer overflow. Note: Overflow is usually the result of the Max Bitrate being too low.

Searching for Input Streams

➔ To Search for an Input Stream:

1. In the **Inputs** page of Zixi Broadcaster, type in the specific input stream name in the search text box on the left-hand top of the screen and click .
2. The **Input** screen displays the requested output stream(s).

Broadcaster Actions on Input Streams


Every stream has a shortcut button that can be used to perform relevant actions on the stream. The following actions can be performed through the Actions button:

- Adding Analysis to the Input Stream
- Recording the Input Stream
- Stopping/Starting the Incoming Stream
- Deleting Input Streams from Broadcaster
- Editing Input Settings or Duplicating Input Streams
- Transcoding an Input Stream
- Playing Input Streams with Players
- Add Output

Stopping/Starting the Incoming Stream

If the input stream has been configured as Pull, you can start or stop the incoming stream at any time.

➔ To Stop/Start the Incoming Stream:

1. On the **Inputs** page of Zixi Broadcaster, click the desired row of the incoming stream that you want to stop.
2. Click the  button on the right end of the selected row and then **Stop**. The selected row which was a Connected Incoming Stream is no longer displayed and appears below as **Offline**.
To continue the Incoming Stream click **Start** from the same menu.


Editing Input Settings or Duplicating Input Streams

➔ To Edit the Configuration of an Input Stream:

1. In the Zixi Broadcaster **Inputs** page, click the desired incoming stream that you want to edit.

Broadcaster Inputs


Broadcaster Actions on Input Streams

2. Click  button on the right end of the selected row and then **Edit**. The Edit input stream name window is displayed. You can modify any of the settings.
3. Click **OK**. The new settings will take effect.

Broadcaster Inputs


Broadcaster Actions on Input Streams

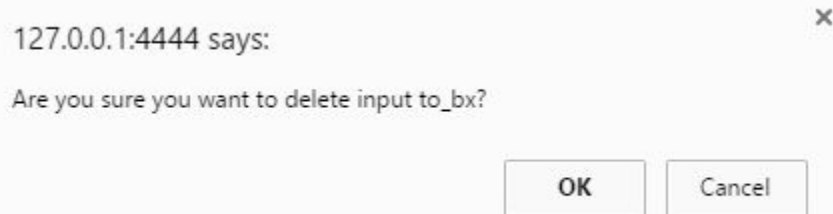
➔ To Duplicate the Configuration of an Input Stream:

1. In the Zixi Broadcaster **Inputs** page, click the desired incoming stream that you want to duplicate.
2. Click  button on the right end of the selected row and then **Duplicate**. The **Duplicate input stream name** window with the settings of the original input stream is displayed. You can modify any of these settings.
3. Click **OK**. The duplicate input stream with its new settings will be created.

Deleting Input Streams from Broadcaster

➔ To Delete an Input Stream from Broadcaster:

1. In the Zixi Broadcaster **Inputs** page, click the desired incoming stream that you want to delete.
2. Click the  button on the right end of the selected row and then **Delete**. The message "Are you sure you want to delete input?" is displayed.




3. Click **OK**. The selected row which was a Connected Incoming Stream will be deleted.

Recording the Input Stream

You can record an input stream, and store it as .TS file. The duration of the time the recording will be kept on the server is defined in the Input Stream configuration.

➔ To Record the Input Stream:

1. In the Zixi Broadcaster **Inputs** page, click the desired incoming stream that you want to record.
2. Click the  button on the selected row and then choose **Record**. A small red dot appears in the green circle at the left-hand side of the selected row indicating that the input stream is being recorded.
3. Clicking **Stop Recording** will stop the recording of the Input Stream and the newly recorded file will appear in the designated file directory in the **Files** page.


Broadcaster Inputs

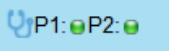
Broadcaster Actions on Input Streams

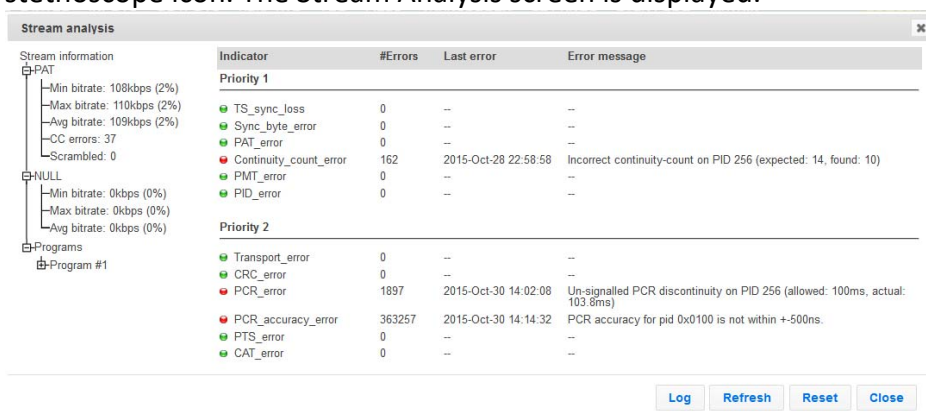
Adding Analysis to the Input Stream

A TR101 analysis can be added to the input stream for the monitoring of the TS while in operation. The analysis can be used to check the integrity of the TS and the most important elements of the stream. The analysis includes priority 1 and 2. To learn more about TR101 analysis see [TR 101 290 Technical Report](#).

➡ To Add Analysis to the Input Stream:

1. In the Zixi Broadcaster **Inputs** page, click the stream for which you want to analyze from the input streams UI.
2. Click the  button on the right end of the selected row and then select **Analyze**. The statuses of a **P1** (high priority error) and **P2** (low priority error) are indicated by an adjacent green or red button displayed in the Analyzer column.

You can view the detailed analysis by clicking on the adjacent  P1: P2: icon. The Stream Analysis screen is displayed.



Indicator	#Errors	Last error	Error message
Priority 1			
TS_sync_loss	0	--	--
Sync_byte_error	0	--	--
PAT_error	0	--	--
Continuity_count_error	162	2015-Oct-28 22:58:58	Incorrect continuity-count on PID 256 (expected: 14, found: 10)
PMT_error	0	--	--
PID_error	0	--	--
Priority 2			
Transport_error	0	--	--
CRC_error	0	--	--
PCR_error	1897	2015-Oct-30 14:02:08	Un-signalled PCR discontinuity on PID 256 (allowed: 100ms, actual: 103.8ms)
PCR_accuracy_error	363257	2015-Oct-30 14:14:32	PCR accuracy for pid 0x0100 is not within +-500ns.
PTS_error	0	--	--
CAT_error	0	--	--

The following can be done from the Stream Analysis screen:

- **Log**- start sending the events of this stream to the event log ('stop logging' will stop the reporting of events).
- **Refresh** – refreshes the data that is displayed.
- **Reset** – resets all the field's values to zero.

On the left-hand side of the screen is a stream information tree that displays accumulative statistics regarding the stream. Click the + icons to expand the tree.

3. Clicking **Stop Analysis** will discontinue the action.

Transcoding an Input Stream

Zixi Broadcaster offers live transcoding, enabling users to create multiple bitrate streams from a single input stream.

Supported Video and Audio formats include:

Broadcaster Inputs

Broadcaster Actions on Input Streams

- Video Decoding – MPEG2, H.264/AVC , H.265/HEVC
- Video Encoding – MPEG2, H.264/AVC , H.265/HEVC
- Audio Decoding – AAC, MPEG-1 Audio Layer I / II / III, MPEG-2 Audio Layer I / II / III
- Audio Encoding – AAC only, AAC only; Pass through – any audio codec (MPEG1/2 / AAC / AC-3)

The transcoder comes with pre-set common video profiles:


1080i60 / 1080i59.94, 1080p30 / 1080p25, 720p60, 720p50 / 720p30, 576i60 / 576p25, 480i60 / 480p29.97

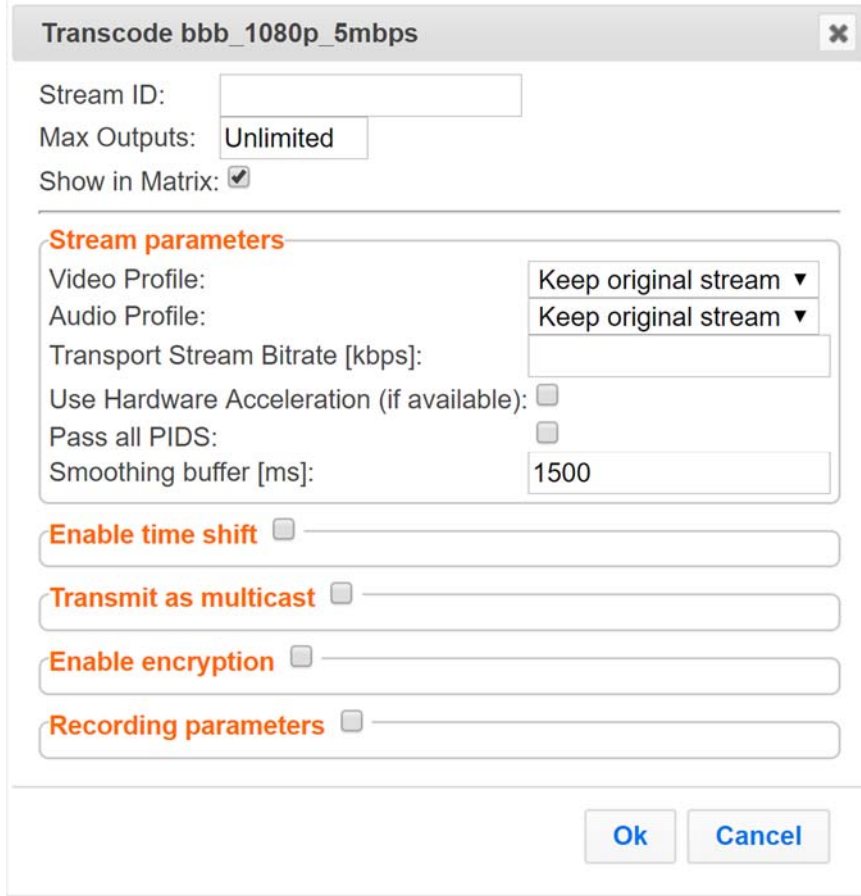
In order to transcode an input stream from the Inputs screen you must first configure the transcoding profiles in the Transcoder screen. For more information, see [Transcoder](#) section below.

Broadcaster Inputs

Broadcaster Actions on Input Streams

➔ To Transcode an Input Stream:

1. In the Zixi Broadcaster **Inputs** page, click the desired incoming stream that you want to transcode.
2. Click  button on the right end of the selected row and then **Transcode**. The **Transcode <input stream name>** window with the settings of the selected input stream is displayed.



Transcode bbb_1080p_5mbps

Stream ID:

Max Outputs:

Show in Matrix:

Stream parameters

Video Profile:

Audio Profile:

Transport Stream Bitrate [kbps]:

Use Hardware Acceleration (if available):

Pass all PIDS:

Smoothing buffer [ms]:

Enable time shift

Transmit as multicast

Enable encryption

Recording parameters

3. Enter the unique **Stream ID.**, which will correspond to the new transcoded input that will be added.
4. Under **Stream Parameters**, select one of the following options in **Video Profile**:
 - **Keep original stream** – the stream will not be modified.
 - **Remove stream** – the output will not include the video channel (audio only).
 - **Custom profile** – select one of the custom profiles that have been configured in the transcoder.
5. Under **Stream Parameters**, select one of the following options in **Audio Profile**:
 - **Keep original stream** – the stream will not be modified.
 - **Remove stream** – the output will not include the audio channel (video only).

Broadcaster Inputs

Broadcaster Actions on Input Streams

- **Custom profile** – select one of the custom profiles that have been configured in the transcoder.
6. If you have installed a GPU hardware accelerator on your transcoder you can select the **Use hardware acceleration** checkbox to enable acceleration.
 7. If you want to ensure all PIDs (which is used to distinguish between packets containing different types of information) are passed on through the transcoder, select the **Pass all PIDs** checkbox. To learn more about PIDs, see [Packet Identifiers \(PID\)](#).
 8. In the **Smoothing buffer** field, enter the buffering time in milliseconds. The buffering helps smoothen the stream, however it will delay its transfer by the duration that is specified in this field. Default: 1500 ms.
 9. Select the relevant additional parameters as described below.
 10. Click **OK**. The transcoded input stream is created and appears in an embedded window labeled Transcoded sources under the original input stream from which it was created.

Parameter	Description
Enable time shift	Enables a delayed transmission of this input.
Maximum delay [hh:mm:ss] (for Time Shift enabled)	Specify the maximum time delay of this input.
Transmit as multicast	Enables transmission of this stream's outputs as multicasts. A Zixi receiver will receive it in multicast (unless it is out of the LAN in which case it will relay in as unicast). You can also force Multicast only outputs. Requires enabling Multicast Pull in the Settings.
Multicast Only (for Multicast enabled)	If desired, specify multicast only outputs.
Enable Encryption	Encrypts the Input stream. For more information, see Encrypting an Input Stream in Zixi Broadcaster .
Encryption type (for Encryption enabled)	Specify the type of Encryption (AES 128/192/256).
Encryption key (for Encryption enabled)	Click Generate to generate an encryption key. The generated encryption key must be sent to the end-user to decipher the received encoded stream.
Recording Parameters	
Max recorded file duration [hours]	Specify the maximum time allotted for recording a video stream. Default: 2 hours
Keep recorded files for [hours]	Specify the maximum time for storing the recording.

Broadcaster Inputs

Broadcaster Actions on Input Streams

Custom Path	Optionally specify a storage location for the recorded files that is relative to the root folder. This location bypasses the location specified as the root folder in the Settings > General screen .
File Name Template	<p>Specify the file name pattern that Zixi will use to generate when saving the recorded content. A separate file will be generated for each recording up to the time specified in the Max recorded file duration parameter (see above). After this duration a new file will be generated.</p> <p>The file name pattern can include any string and up to five variables listed below. Only the %T=HH.MM.SS creation time is mandatory. You can change the order of these variables and add text as long as you maintain the legitimate structure of the file in Linux and Windows:</p> <ul style="list-style-type: none">• %S=stream id - optional.• %Y=year - optional• %M=month - optional• %D=day - optional• %T=HH.MM.SS creation time - mandatory <p>For example, the following pattern %Y_recording%T.ts will generate the following file name 2017_recording15:32:35.ts.</p>

Add Output


This is an alternative method (shortcut) to adding an output to a specific input stream instead of configuring it through the **Outputs** screen. The available types of outputs are:

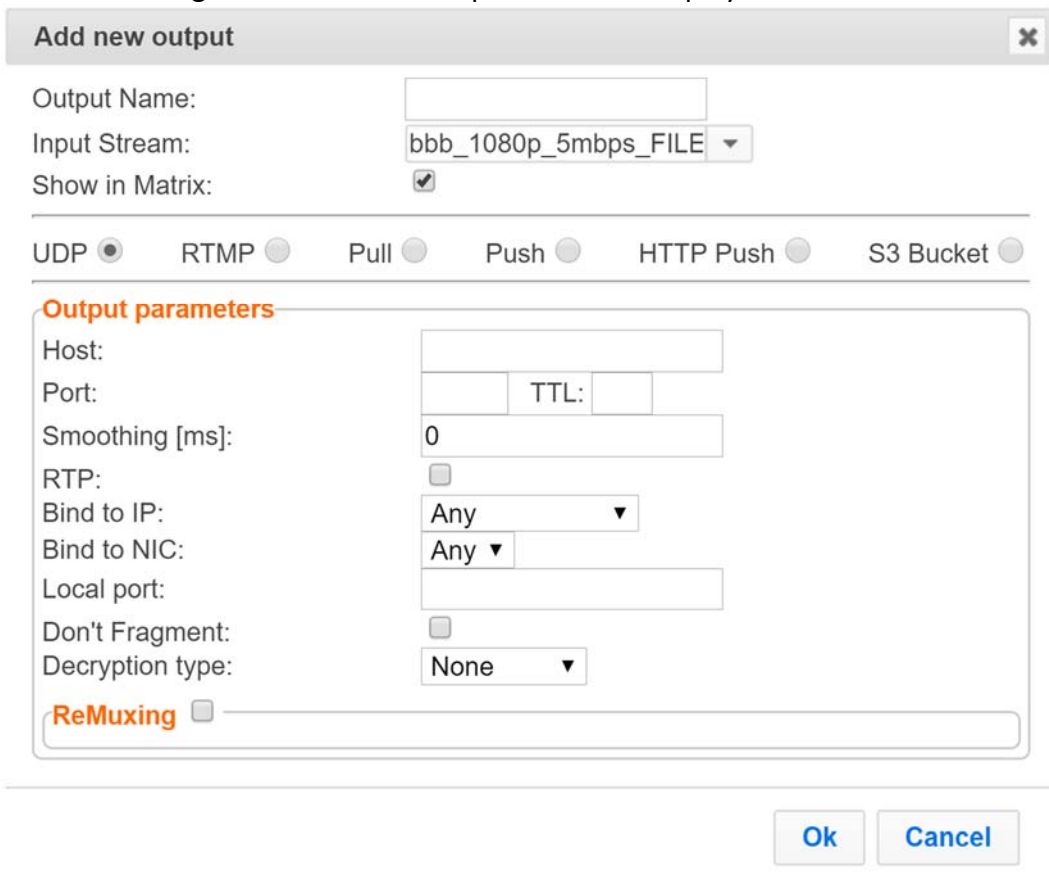
- **UDP** – Target is a UDP or RTP stream, over unicast or multicast.
- **RTMP** – Real Time Messaging Protocol streams can be played on systems that accept this protocol as input. Originally designed to enable Adobe® Flash® streams to be sent between a server and a client, RTMP has become a popular protocol for streaming into content-delivery networks (CDNs). As part of the RTMP output configuration process you can configure YouTube Live and Facebook Live streams.
- **Pull** – Pull streams are Zixi protocol streams destined for Zixi Receivers. In this case, the Zixi Broadcaster can offer status and statistics for a stream that is being pulled from it by another device.
- **Push** – Push streams are Zixi protocol streams destined for other Zixi Broadcasters.
- **HTTP Push** – The HTTP Push output stream can be encapsulated in HLS or DASH. The source of the output stream is a predefined adaptive group that has been configured in the [Adaptive Groups](#) screen. The configuration of the stream includes the option to delete outdated stream fragments on the server. Output streams can be pushed to one Zixi Broadcasters or Zixi Receiver.
- **S3 Bucket** – The HTTP output stream (HLS or DASH) can be pushed to an AWS S3 Bucket. The native S3 support includes the ability to configure the S3 authentication credential, including the Region, Access Key, and Secret Key.

Broadcaster Inputs

Broadcaster Actions on Input Streams

➔ To Add Output:

1. In the Zixi Broadcaster Navigation menu, click the **Inputs** tab.
2. Click the Settings button , and then click **New Output**. The **New Output** window with the settings of the selected output stream is displayed.



Add new output

Output Name:

Input Stream: bbb_1080p_5mbps_FILE ▾

Show in Matrix:

UDP RTMP Pull Push HTTP Push S3 Bucket

Output parameters

Host:

Port: TTL:

Smoothing [ms]:

RTP:

Bind to IP: Any ▾

Bind to NIC: Any ▾

Local port:

Don't Fragment:

Decryption type: None ▾

ReMixing

Ok **Cancel**

3. Follow the specific instructions of each output type from one of the following sections:
 - **Adding UDP Outputs**
 - **Adding RTMP Outputs**
 - **Adding Pull Outputs**
 - **Adding Push Outputs**
 - **Adding HTTP Push Outputs**
 - **Adding S3 Bucket Outputs**
4. Click **OK**. The **New Output** with its new settings takes effect.

Broadcaster Inputs

Broadcaster Actions on Multiple Inputs


Playing Input Streams with Players

You can preview the input streams through the following video players:

- VLC Player
- Flash Player
- Shoutcast


In order to preview an input stream you must first configure its output. See **Broadcaster Outputs** section for more details.

➔ To Play Input Streams with a VLC Player:

1. In the Zixi Broadcaster **Inputs** page, click the desired incoming stream that you want to play with VLC.
2. Click the  button on the right end of the selected row and then **Play with VLC**. The **Link Description** window with the directory path for the desired file is displayed.
3. Click **Run VLC**. The selected file is downloaded to the computer.
4. Double-click on the newly downloaded file. This configured file runs using the VLC player and appears on a new output line on the **Output** screen wherein it can be monitored. Alternatively, copy the path and send it to the user so it can be entered in the Network URL of the VLC player.


➔ To Play Incoming Streams with a Flash Player:

Flash Player enables playing the stream on a native browser with the Flash player.

1. In the Zixi Broadcaster **Inputs** page, click the desired incoming stream that you want to play with Flash Player.
2. Click the  button on the right end of the selected row and then **Play with Flash**. The **Link Description** window with the directory path and proxy path for the desired file is displayed.
3. Click **Run** to view the .flv file that appears on the first line of the window or **Run Accelerated** to run the file from the proxy server with better results.

➔ To Play Input Streams with a Shoutcast:

Shoutcast enables playing an audio file on a native browser.

1. In the Zixi Broadcaster **Inputs** page, click the desired incoming stream that you want to play with Shoutcast.
2. Click the  button on the right end of the selected row and then **Play with Shoutcast**. The **Link Description** window will open with the directory path for the desired file.

Broadcaster Actions on Multiple Inputs

Broadcaster Inputs

Broadcaster Actions on Multiple Inputs

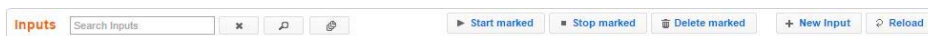
In the Inputs screen, you can perform actions on multiple or all input streams at once by selecting them using the check boxes.

Starting and Stopping Multiple Input Streams

You can use the Start and Stop Marked buttons to Start and Stop multiple streams

➔ To Start/Stop marked individual/multiple Incoming Streams:

1. In the Zixi Broadcaster **Inputs** page, select all Inputs by checking the Actions checkbox, or select individual Inputs by clicking them one, by one or a few at a time. The Inputs bar is displayed.



2. Click **Stop Marked** button or **Start Marked** button to stop and start Inputs Streams.

Deleting Marked Input Streams

➔ To Delete Input Streams:

1. In the Zixi Broadcaster **Inputs** page, select all Inputs by checking the Actions checkbox, or select individual Inputs by clicking them one, by one or a few at a time. The Inputs bar is displayed.



2. Click **Delete marked** button. The selected Input Streams are deleted.

Encrypting an Input Stream in Zixi Broadcaster

You can encrypt a specific input stream using static key AES scrambling encryption (AES 128, AES 192, AES 256). If the stream has been encrypted at the source, it can be encrypted by Zixi Broadcaster only after its decryption (See: [Decrypting an Input Stream in Zixi Broadcaster](#)). The stream encryption prevents any further processing, such analysis, transcoding, etc. It also possible to encrypt a UDP stream dynamically using DTLS. DTLS encryption can be configured on any Input or Output UDP port on the Zixi Broadcaster. This feature is activated and configured in the **Settings** page. For more information, see [Server Settings](#) section.

➔ To encrypt an input stream in Zixi Broadcaster:

1. In **Inputs** screen, click **+New Input**.
2. Select the relevant input type.
3. Fill in the stream parameters.
4. At the bottom, select the **Enable Encryption** checkbox.
5. In the **Encryption Type** field, select **AES 128**, **AES 192**, **AES 256** for fixed encryption.
6. In the **Encryption Key** field, enter your own key or click **Generate** to generate a key by the system. The exact key should be used to decrypt the stream on the other end.

The screenshot shows the 'Add new input stream' dialog box. The 'Enable encryption' checkbox is checked. The 'Encryption type' is set to 'AES 128'. The 'Encryption key' field contains the hexadecimal string '6ca6c1e5c6259e60c314ca7c56b0708f'. A 'Generate' button is visible next to the key field. The dialog also includes fields for Stream ID, Max Outputs (Unlimited), Show in Matrix (checked), and various input type radio buttons (Push, Pull, UDP, Delayed, File, RTMP, RTSP, HLS). The 'Stream parameters' section includes Port, Multicast IP, SSM Source, Type (UDP), Bind to IP (Any), and Max bitrate (8000). There are also checkboxes for 'Enable time shift', 'Transmit as multicast', and 'Recording parameters'. 'Ok' and 'Cancel' buttons are at the bottom right.

7. Click **OK**.

Decrypting an Input Stream in Zixi Broadcaster

Broadcaster Inputs

Decrypting an Input Stream in Zixi Broadcaster

Any stream that has been encrypted using standard AES static key can be decrypted in Zixi Broadcaster. You can configure the decryption of a specific stream by entering the decryption key.

➔ To decrypt an input stream in Zixi Broadcaster:

1. In **Inputs** screen, click **+New Input**.
2. Select **Push** or **Pull**.
3. Fill in the input details.
4. At the bottom, select the **Decrypt Stream** checkbox.
5. In the **Decryption Type** field, select **AES 128**, **AES 192**, **AES 256** for fixed key.
6. In the **Decryption Key** field, enter the exact same key that was used to encrypt the stream.

The screenshot shows the 'Add new input stream' dialog box. The 'Decrypt stream' checkbox is checked. The 'Decryption type' is set to 'AES 128'. The 'Decryption key' field contains the hexadecimal string '478594a4af40ad5f97249ee120159253'. The dialog also shows options for 'Stream parameters', 'Enable time shift', 'Transmit as multicast', 'Enable encryption', and 'Recording parameters'.

7. Click **OK**.

Broadcaster Outputs

Zixi Broadcaster supports the following output types:

- **UDP** – Target is a UDP or RTP stream, over unicast or multicast.
- **RTMP** – Real Time Messaging Protocol streams can be played on systems that accept this protocol as input. Originally designed to enable Adobe® Flash® streams to be sent between a server and a client, RTMP has become a popular protocol for streaming into content-delivery networks (CDNs).
- **Pull Stream** – Pull streams are Zixi protocol streams destined for Zixi Receivers. Zixi Broadcaster can offer status and statistics for a stream that is being pulled from it by another device. **You normally do not need to set up a Pull output stream in Zixi Broadcaster.** If your application uses Zixi Receiver, you should configure the stream as input on Zixi Receiver and point it to the IP address and output port (default 2077) of the Zixi Broadcaster. Zixi Receiver will pull the stream and automatically create the proper output definition in the Zixi Broadcaster.
- **Push Stream** – Push streams are Zixi protocol streams destined for other Zixi Broadcasters and “Accept mode” Zixi Receivers.
- **HTTP Push** - The HTTP Push output stream can be encapsulated in HLS or DASH. The source of the output stream is a predefined adaptive group that has been configured in the **Adaptive Groups** screen. The configuration of the stream includes the option to delete outdated stream fragments on the server. Output streams can be pushed to one Zixi Broadcasters or Zixi Receiver.
- **S3 Bucket** - The HTTP output stream (HLS or DASH) can be pushed to an AWS S3 Bucket. The native S3 support includes the ability to configure the S3 authentication credential, including the Region, Access Key, and Secret Key

When Zixi Receiver pulls a stream, a Pull stream definition is generated automatically in Zixi Broadcaster, the stream is identified in the Name and Destination columns of Zixi Broadcaster with the ID and IP address of the Zixi Receiver that pulls the stream.

Automated Output Configuration with Output Templates

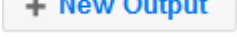
Instead of manually creating an output and then connecting the output to an input, you can define output templates with rules for automatic creation of outputs with predefined settings. The template includes an Input pattern. When an input pattern matches the pattern of an incoming input stream, the output is created automatically. For more information about Output Templates, see [Using Output Templates](#).

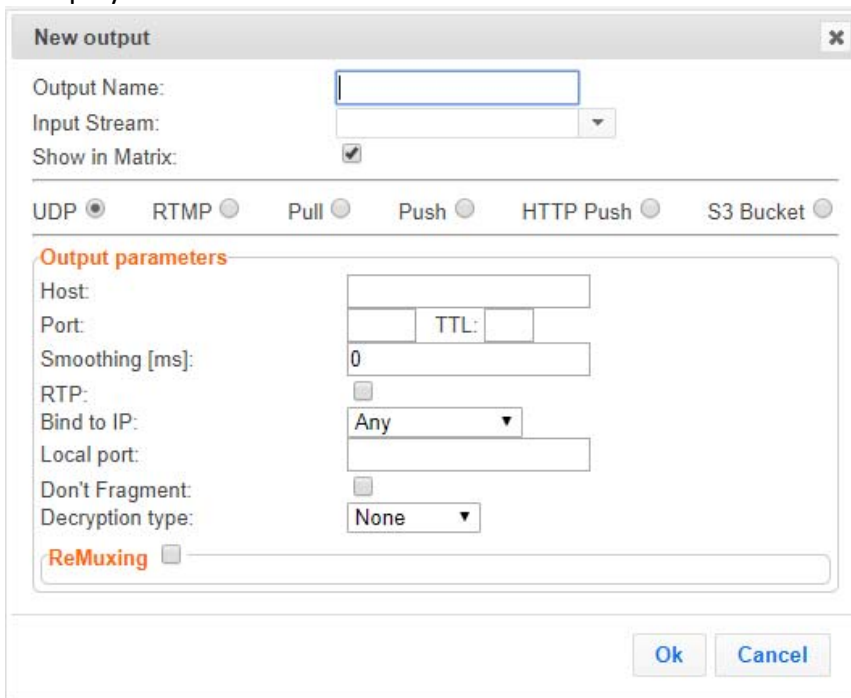
Adding Outputs

Zixi Broadcaster enables you to add various types of outputs. When you create a new output, select the output type and then fill in the fields that are applicable for that output type.

Adding UDP Outputs

➔ To Create a UDP Output:

1. In the Zixi Broadcaster **Outputs** page, click . The **New output** window is displayed.



2. Type in the unique identifier for this output in the **Output Name**.
3. Select an **Input Stream** to be made available on this output from the drop-down list.
4. Select the **Show in Matrix** check box to display this stream in the Matrix (see [Using the Matrix](#)). Default: Selected.
5. Select **UDP**.
6. Specify the **Output parameters** (see Output Stream Parameters Table).
7. In the **Host** field, specify the IP address or URL of the stream destination.
8. In the **Port** field, specify the port of the destination.
9. If you want to remux the stream to CBR (used for professional IRDs) in order to avoid bandwidth waste, select **Remuxing** and configure the respective parameters (see Output Stream Parameters Table).
10. Click **OK**.

Broadcaster Outputs

Adding Outputs

The new UDP Output with its settings is created and now appears on the **Outputs** screen.

Output Stream Parameters Table

Parameter	Description
Output Parameters	
Host	Specify the destination IP address or URL.
Port	Specify the target UDP port.
TTL	Specify the time-to-live (TTL). Used mainly to limit the range (or “scope”) of a multicast transmission. Leaving it as blank uses the default value specified by the operating system.
Smoothing [mms]	Enables transmission of the output at the correct rate. Required when the receiving device is sensitive and can’t lock on to the stream (in such a case, the recommended latency is 100 - 1000 ms).
RTP	Enables use of the Real-time Transport Protocol.
SMPTE 2022 FEC:	Disables the FEC or specify the type of FEC matrix to D1/ D2.
Bind to IP	Specify the local IP address to use, or any one which can be sourced from any active NIC. Select the local IP from the drop-down menu.
Local Port	Specify from which local port to source the stream, if desired (instead of randomly chosen by the operating system).
Don’t Fragment	Select this option if you do not want to fragment IP packets in a stream.
Decryption type	<p>If the stream has been encrypted, you can decrypt through the output by selecting this checkbox and specifying the type of encryption that was used.</p> <p>Select Automatic to decrypt a stream that has been encrypted using Automatic encryption.</p> <p>Only if the stream has not been encrypted, select None (default).</p> <p>Important Notice: if the stream has been encrypted you must decrypt it in the output.</p>
Decryption key	If the decryption type includes a key, enter the key to decrypt the stream during output.
Remuxing	Select this checkbox to enable remuxing from VBR MPEG-TS to MPEG-TS CBR (used for professional IRDs).

Broadcaster Outputs

Adding Outputs

Remux to bitrate [kbps]: Specify the CBR bitrate to target for a remuxed stream.

Adding RTMP Outputs

Real Time Messaging Protocol streams can be played on systems that accept this protocol as input. Originally designed to enable Adobe® Flash® streams to be sent between a server and a client, RTMP has become a popular protocol for streaming into content-delivery networks (CDNs). As part of the RTMP output configuration process you can configure YouTube Live and Facebook Live streams.

➔ To create an RTMP Output:

1. In the Zixi Broadcaster **Outputs** page, click [+ New Output](#). The New output window is displayed.

New output [X]

Output Name:

Input Stream:

Show in Matrix:

UDP RTMP Pull Push HTTP Push S3 Bucket

Output parameters

URL:

Backup URL:

Stream name:

Username:

Password:

Bitrate(kbps):

Reconnect(sec):

Send timecode:

Disconnect if inactive:

Ignore TLS certificate:

Decryption type:

Ok Cancel

2. Type the unique identifier for this output in the **Output Name**.
3. Select an **Input Stream** to be made available on this output from the drop-down list.
4. Select the **Show in Matrix** check box to display this stream in the Matrix (see [Using the Matrix](#)). Default: Selected.
5. Select **RTMP**.
6. Specify the **Output parameters** (see Output Stream Parameters Table).

Broadcaster Outputs

Adding Outputs

- To configure an RTMP stream using YouTube Live see [Creating RTMP Outputs Using You Tube Live](#).
- To configure an RTMP stream using Facebook Live see [Creating RTMP Outputs Using Facebook Live](#).

7. Click **OK**.

The new RTMP Output with its settings is created and now appears on the screen.

Output Stream Parameters Table

Parameter	Description
Output Parameters	
URL	Specify the destination Stream URL. You can define RTMPS clients with the proven security of a secure socket layer (SSL), by using the rtmps:// url
Backup URL	Enter a backup URL (fallback mode) – will be used in case the primary server is not responsive.
Stream Name	Specify the unique name for the stream that the RTMP server at the other end of the connection expects.
User Name	Specify the User name to authenticate on the remote RTMP server
Password	Specify the string that is used for authorization on the remote RTMP server.
Bitrate (kbps)	Specify the actual bitrate or the maximum stream bitrate in case of a VBR stream.
Reconnect (sec)	If the stream drops, this value represents the time between reconnection attempts (in seconds)Default: 5.
Send Timecode	Converts the MPEG-TS SEI section to RTMP ONFI command (pass the encoder timecodes to the RTMP server)
Disconnect if inactive	Select this checkbox to disconnect if the stream is not active after 30 seconds.
Ignore TLS certificate errors	Select this option when streaming to a trusted server that does not have a valid certificate. When this option is selected, Zixi Broadcaster will ignore the TLS certificate errors and transmit the stream to its destination.
Decryption type	If the stream has been encrypted, you can decrypt through the output by selecting this checkbox and specifying the type of encryption that was used. Select Automatic to decrypt a stream that has been encrypted using Automatic encryption. Only if the stream has not been encrypted, select None (default).

Broadcaster Outputs

Adding Outputs

Important Notice: if the stream has been encrypted you must decrypt it in the output.

Creating RTMP Outputs Using YouTube Live

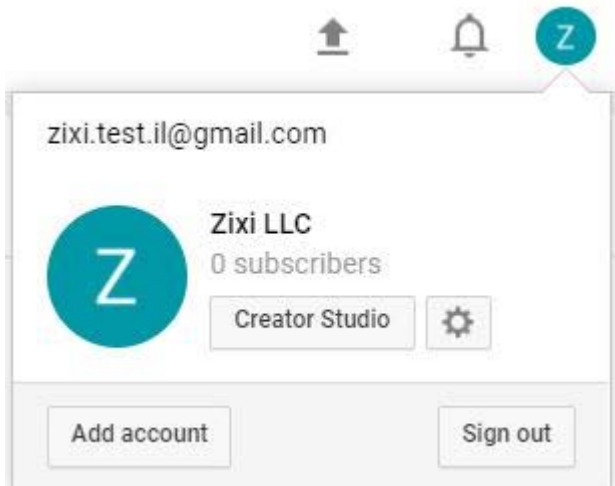
As part of the RTMP output configuration process, you can configure YouTube Live targets. This enables you to send an RTMP stream to YouTube Live using the your YouTube authorization/login and settings. Before you configure the YouTube Live output stream in Zixi Broadcaster, you need to set up an Event in your YouTube Live account. This process generates a Primary and Secondary URL for streaming the event. You can then create an RTMP output stream in your Zixi Broadcaster and select a YouTube Live event to which the stream will be sent. You then select either the Primary or Backup URL which is provided by YouTube to stream the event.



Note: you can increase stability by setting up two parallel output streams using both the Primary and Backup URLs.

➔ To set up an event in your YouTube Live account:

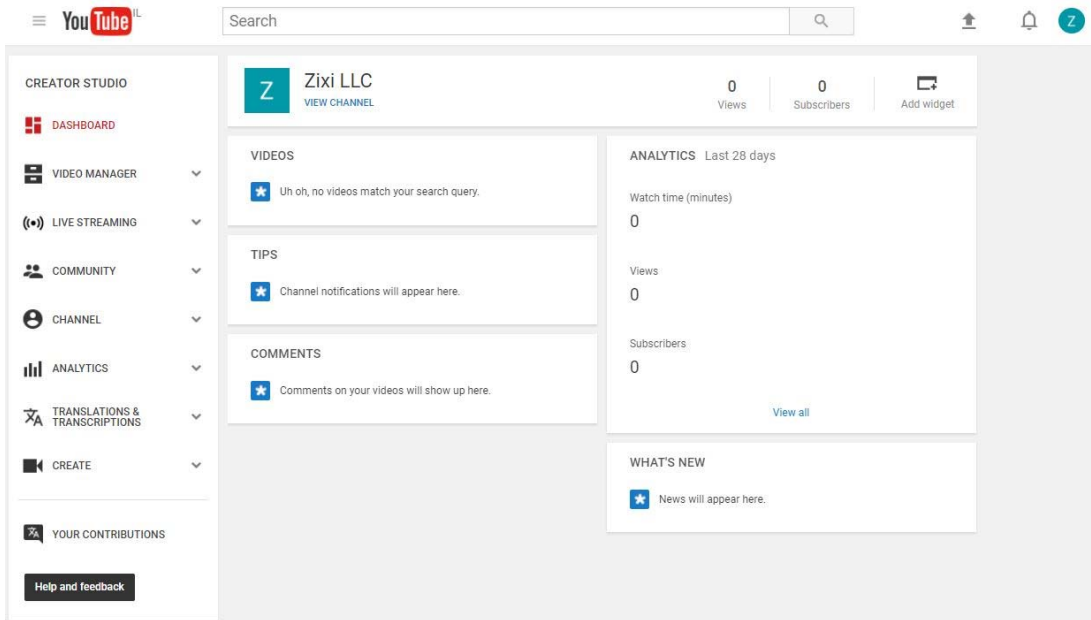
1. Log in to your YouTube account.
2. Click the **User** icon to display the user menu.



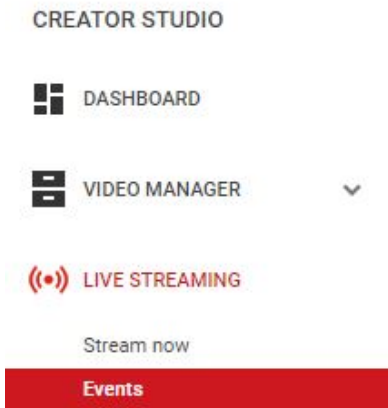
3. Click **Creator Studio**. Your **Creator Studio Dashboard** is displayed.

Broadcaster Outputs

Adding Outputs



4. In the Creator Studio menu panel, click **Live Streaming**. The drop-down list of Live Streaming options is displayed.



5. Click **Events**. The Events page is displayed.



You don't have any upcoming events.
[Schedule a new event.](#)

Adding Outputs

6. Click **New live event**. The Event setup page is displayed.

The screenshot shows the 'Event setup' page with the 'Basic info' tab selected. At the top right, there are 'Cancel' and 'Create event' buttons. Below the tabs, the 'Title' field is empty. The 'Date' field shows 'Today' and the 'Time' field shows '10:00 PM', with an 'Add end time' link. The time zone is set to 'Israel (GMT +03:00) Jerusalem' with an 'Edit' link. The 'Description' field is empty. The 'Tags' field contains the example text 'Tags (e.g., albert einstein, flying pig, mashup)'. On the right, the 'Public' access status is selected. There are checkboxes for 'Also share on' Google+ and Twitter. A 'Type' section has two radio buttons: 'Quick (using Google Hangouts On Air)' and 'Custom (more encoding options)'. A reminder at the bottom states: 'Reminder: You have agreed that you own the rights to, have properly licensed, or otherwise have the right to use, all content you live stream (including any music content). Learn more'. At the bottom right, a message says 'Some changes are not yet saved.' with 'Cancel' and 'Create event' buttons.

7. In the **Title** field, enter a title for the event.
8. In the **Date** field, enter a date for the event.
 - The default date is *Today*.
 - To select a different date, click on the date box (where *Today* is shown) to display a calendar, and select a date for the event.
9. In the **Time** field, enter a time for starting the event.
 - The default time is the beginning of the upcoming hour.
 - To select a different time, click the Time box (where the default time is shown). Either select a time from the drop-down list of times (every half hour) or type in a specific time for starting the event.
10. If you would like to set an end time for the event, click **Add end time** and select the time for the event to end.



Note: the time zone for which the time is selected is displayed below the Date and Time boxes. To change the time zone click **Edit** and select the correct time zone.

11. If you would like to add a Description and/or Tags for the event, enter them in the appropriate fields.
12. Select the access status (Public (default), Unlisted or Private).
13. If you would like to share the event on Google+ or Twitter, click the checkbox next to the icon.
14. In the **Type** section, click **Custom**.

Broadcaster Outputs

Adding Outputs

15. Click **Create Event**.

The Live Event Configuration page opens:

The screenshot shows the 'Live Event Configuration' page for 'Zixi Stream 2'. At the top, there are navigation tabs: 'Info and Settings', 'Ingestion Settings', 'Cards', and 'Live Control Room'. A 'View on Watch Page' button with a back arrow is on the right. Below the stream name, there are 'Cancel' and 'Save changes' buttons. The 'Main Camera' section has a 'Main Camera' tab and an 'Add a Camera' link. The 'Thumbnail' section contains instructions: 'Please upload as large an image as possible (suggested: 1280x720) since the image will also be used as the preview image when your event is embedded on other sites. You can upload a JPG, GIF, BMP, or PNG file. Maximum file size is 2MB.' and a 'Browse' button. Below this is the 'Choose maximum sustained bitrate of your encoder *' section, which says 'Select a range that corresponds to the maximum sustained output your encoder provides.' There are two radio buttons: 'Basic ingestion' (selected) and 'Custom ingestion'. Under 'Basic ingestion', there is a 'Select a bitrate' dropdown menu, an 'Enable 60fps' checkbox, and a help icon. The 'Custom ingestion' option also has a help icon.

16. Select **Basic ingestion** (default) and choose the maximum bitrate from the drop-down list. A notification at the top of the page shows that the event has been successfully saved.

This screenshot is identical to the previous one, but with a blue notification banner at the top that reads 'Event successfully saved.' with a checkmark icon on the left and a close 'X' icon on the right. The rest of the page content remains the same.

17. In the **Select your encoders** section, select **Other encoders** from the drop-down list. The event is set up in YouTube. You can now configure the event stream on your Zixi Broadcaster.

Broadcaster Outputs

Adding Outputs

➔ To create an RTMP Output on your Zixi Broadcaster using YouTube Live:

1. In the Zixi Broadcaster **Outputs** page, click **+ New Output**. The New output window is displayed.

New output

Output Name:

Input Stream:

Show in Matrix:

UDP RTMP Pull Push HTTP Push S3 Bucket

Output parameters

URL:

Backup URL:

Stream name:

Username:

Password:

Bitrate(kbps):

Reconnect(sec):

Send timecode:

Disconnect if inactive:

Ignore TLS certificate:

Decryption type:

Ok Cancel

2. Type the unique identifier for this output in the **Output Name**.
3. Select an **Input Stream** to be made available on this output from the drop-down list.
4. Select the **Show in Matrix** check box to display this stream in the Matrix (see [Using the Matrix](#)). Default: Selected.
5. Select **RTMP**.
6. Click the icon. An authorization window opens.

Youtube stream selection

Please authorize access to youtube account.

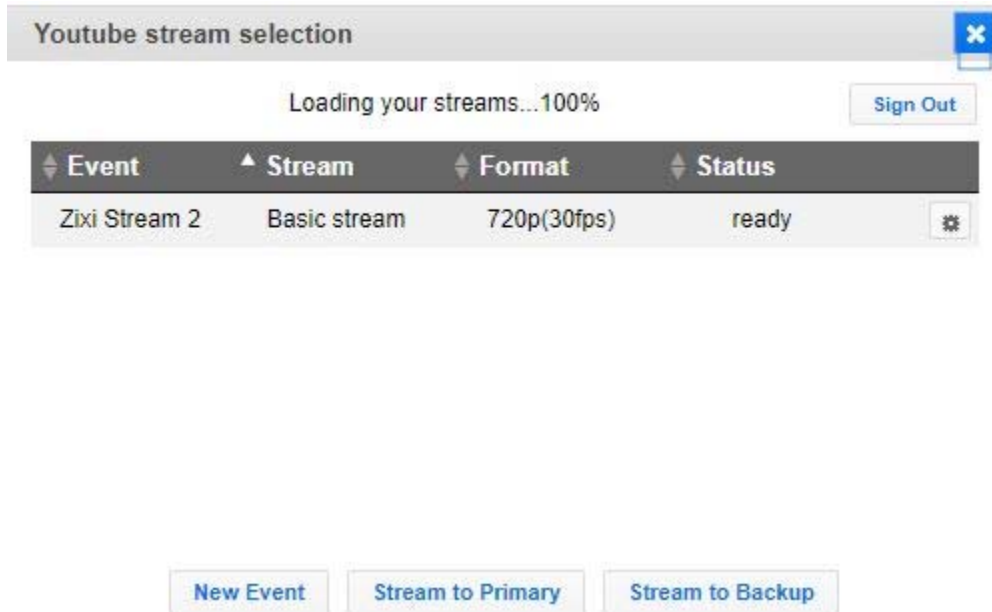
Authorize

7. Click **Authorize**.
- The YouTube login page opens in your browser.

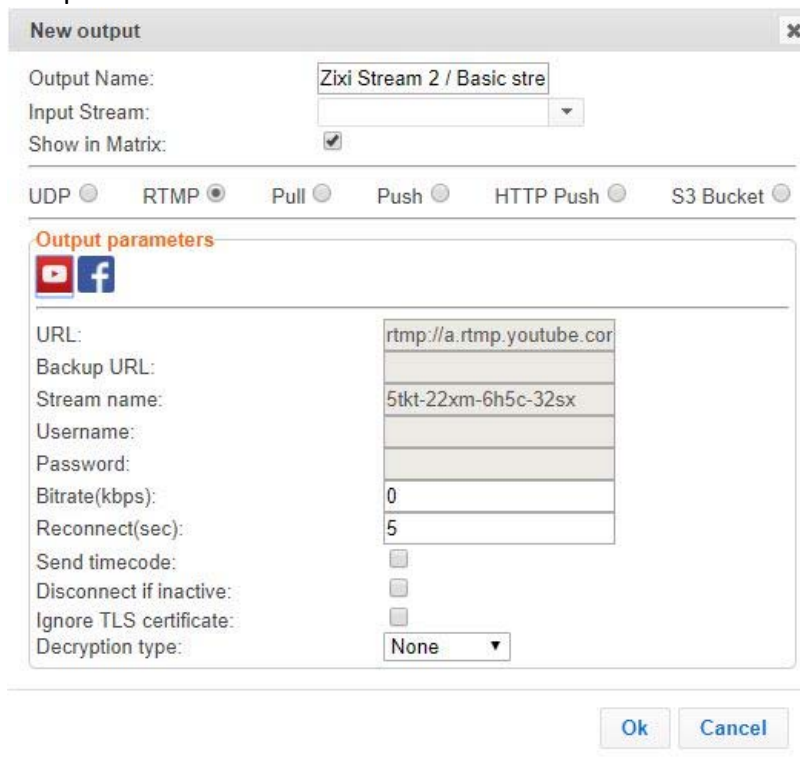
Broadcaster Outputs

Adding Outputs

- Log in to your account using your YouTube username and password. Your YouTube Events are displayed in the Events window.



- Click on an event.
- Click **Stream to Primary** or **Stream to Backup**. The Output configuration window is displayed with the **URL** and **Stream Name** fields completed.



- In the **Bitrate** field, enter the stream's bitrate.

Broadcaster Outputs

Adding Outputs


12. Click **OK**.

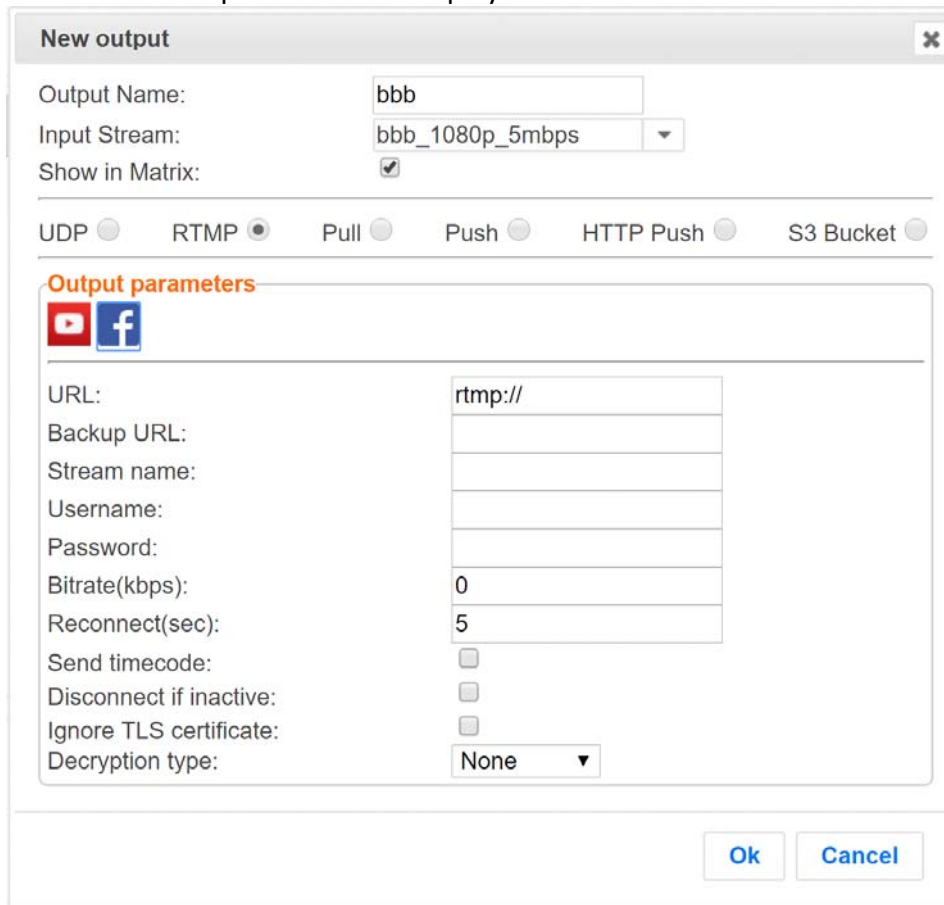
The new RTMP YouTube Live Output with its settings is created and now appears on the Outputs screen.

Creating RTMP Outputs Using Facebook Live

As part of the RTMP output configuration process, you can configure Facebook Live targets for your Zixi Broadcaster. This enables you to send an RTMP stream into Facebook Live using your Facebook authorization/login and settings. You can set the privacy authorization to determine who can access the stream. You can also configure how it will be posted to Facebook (e.g. User feed, Page, Event or Group). For *Regular Streams*, with a limited duration, you have the option of saving the stream as VOD to enable subsequent viewing.

➔ To creat an RTMP ouput using Facebook Live

1. In the Zixi Broadcaster Outputs page, click . The New output window is displayed.



New output



Output Name:

Input Stream:

Show in Matrix:

UDP RTMP Pull Push HTTP Push S3 Bucket

Output parameters

URL:

Backup URL:

Stream name:

Username:

Password:

Bitrate(kbps):

Reconnect(sec):

Send timecode:


Disconnect if inactive:

Ignore TLS certificate:

Decryption type:

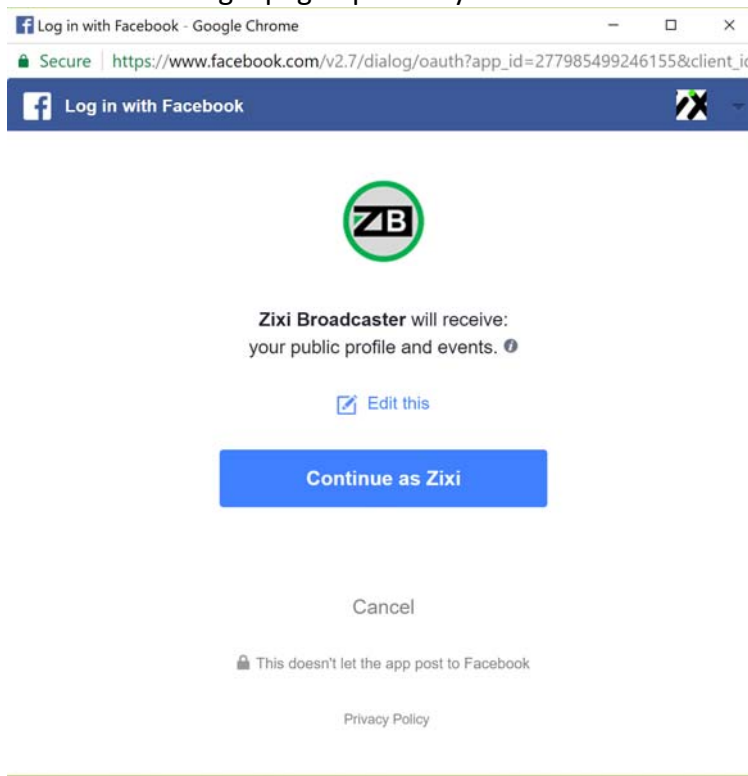
Broadcaster Outputs

Adding Outputs

2. Type the unique identifier for this output in the **Output Name**.
3. Select an **Input Stream** to be made available on this output from the drop-down list.
4. Select the **Show in Matrix** check box to display this stream in the Matrix (see [Using the Matrix](#)). Default: Selected.
5. Select **RTMP**.
6. Click the  icon.
An authorization window opens.



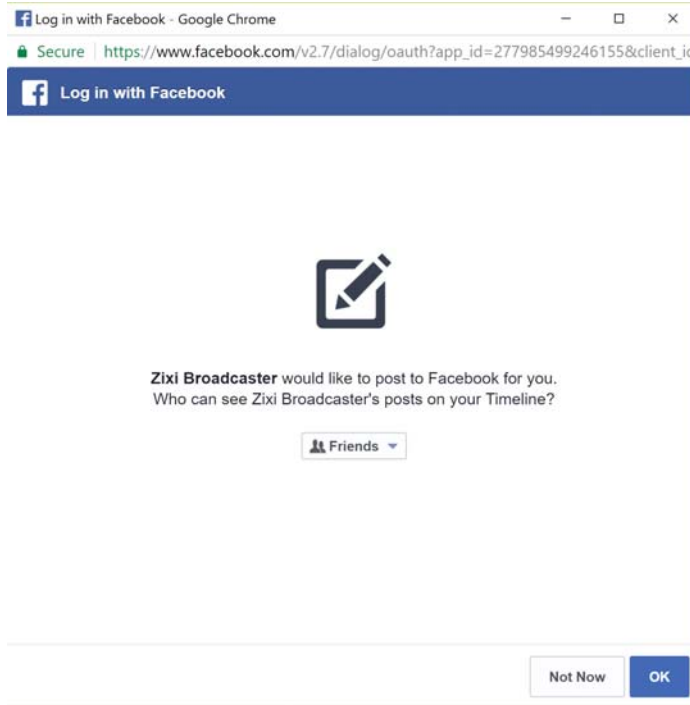
7. Click **Authorize**.
The Facebook login page opens in your browser.



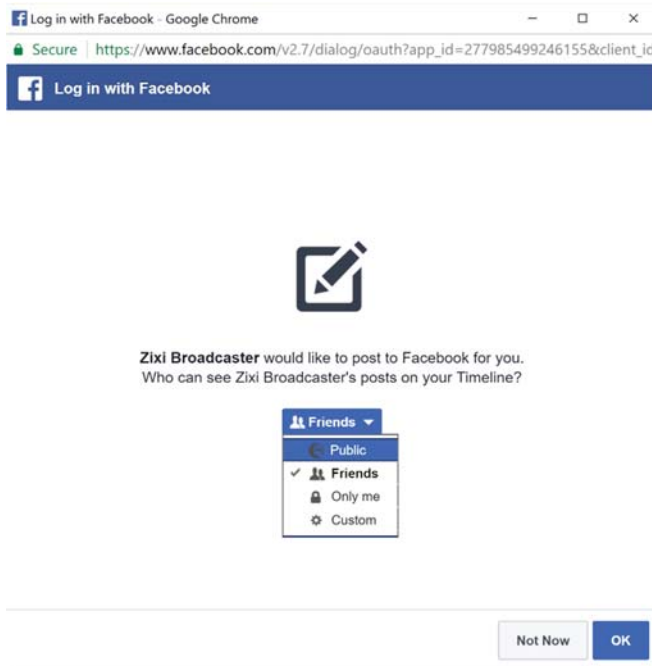
Broadcaster Outputs

Adding Outputs

8. Log in to your account using your Facebook username and password. The Facebook privacy authorization screen is displayed.



9. To set the privacy authorization for your Zixi Broadcaster posts, click the **Friends** button. A drop-down menu appears.



10. Select who is authorized to view your posts. The authorization options are:

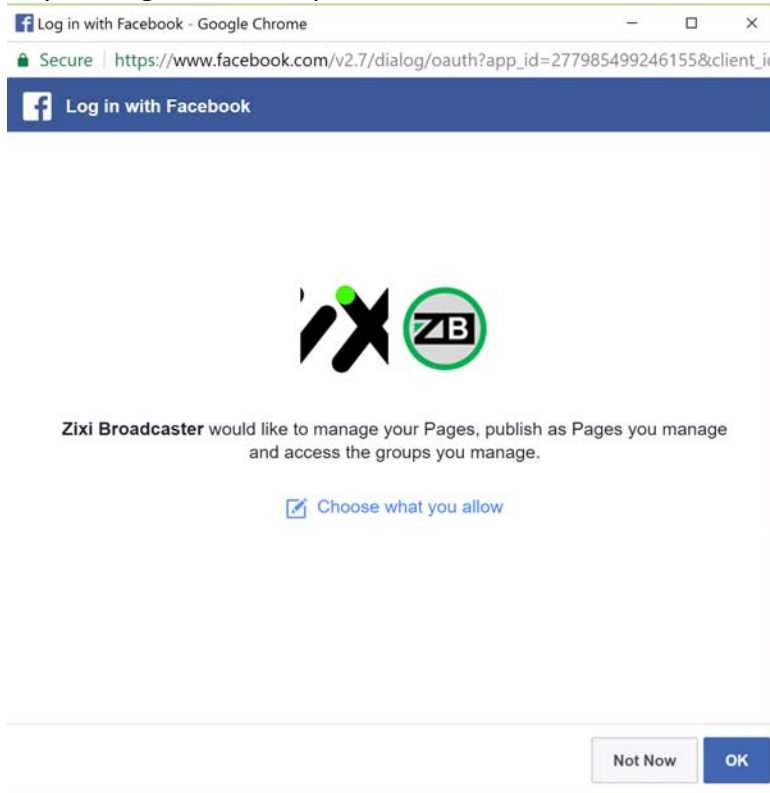
Broadcaster Outputs

Adding Outputs

- **Public** – Your post will be available to the general public and is visible to search engines.
- **Friends** – Only your Facebook *Friends* can view your post.
- **Only me** – No one else can view your post.
- **Custom** – You can specify which individuals or groups are able to view your post.

11. Click **OK**.

The **Manage Pages** screen is displayed. This enables Zixi Broadcaster to post the stream to your Pages and Groups.

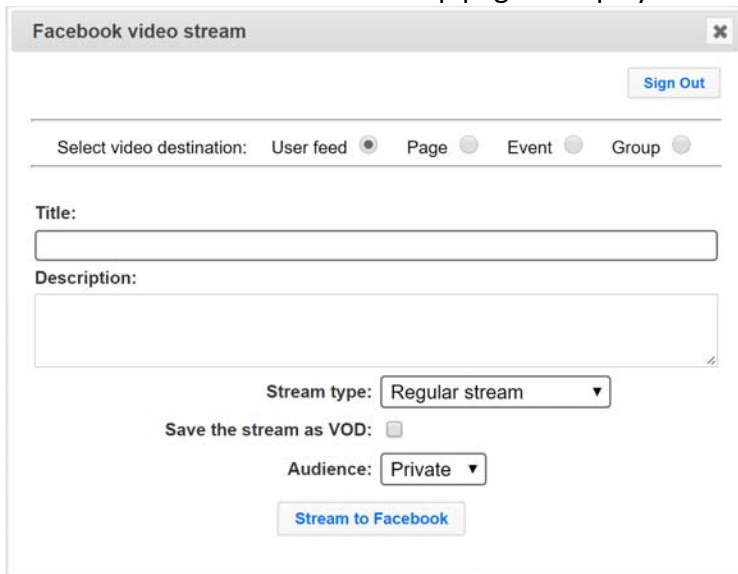


Broadcaster Outputs

Adding Outputs

12. Click **OK**.

The **Facebook Video Stream** setup page is displayed.



The screenshot shows a window titled "Facebook video stream" with a close button (X) in the top right corner. Inside the window, there is a "Sign Out" button in the top right. Below that, a section labeled "Select video destination:" has four radio buttons: "User feed" (selected), "Page", "Event", and "Group". Underneath, there are two text input fields: "Title:" and "Description:". Below the "Description:" field is a "Stream type:" dropdown menu set to "Regular stream". There is a checkbox for "Save the stream as VOD:" which is unchecked. Below that is an "Audience:" dropdown menu set to "Private". At the bottom of the form is a "Stream to Facebook" button.

13. Select the stream destination. The destination options are:

- **User feed** – The stream will be posted as part of your User feed.
- **Page** – The stream will be posted to a Facebook Page associated with your account.
- **Event** – The stream will be posted to a Facebook Event page associated with your account.
- **Group**. The stream will be posted to a Facebook Group to which you are authorized to post.

Broadcaster Outputs

Adding Outputs

14. If you selected **Page**, **Event** or **Group** as the destination, then a list of existing *Pages*, *Events* or *Groups* respectively are displayed. Select the relevant entity.



You can search for the relevant Page, Event or Group using the search box.

Facebook video stream

Sign Out

Select video destination: User feed Page Event Group

Search:

Page name

No pages found.

Title:

Description:

Stream type: Regular stream ▼

Save the stream as VOD:

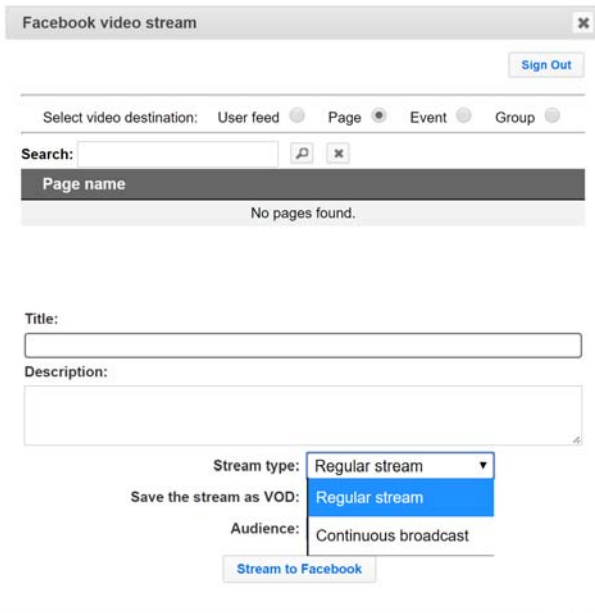
Audience: Private ▼

Stream to Facebook

15. In the **Title** field, enter a title for the event.
16. In the **Description field**, you can enter a description of the event (optional field).
17. Select the Stream type from the drop-down menu. The options are:
- **Regular stream** – A stream that has a limited duration that does not exceed the limits set by Facebook.
 - **Continuous broadcast** – A stream with an unlimited duration.

Broadcaster Outputs

Adding Outputs



Facebook video stream

Sign Out

Select video destination: User feed Page Event Group

Search:

Page name

No pages found.

Title:

Description:

Stream type: Regular stream ▼

Save the stream as VOD: Regular stream

Audience: Continuous broadcast

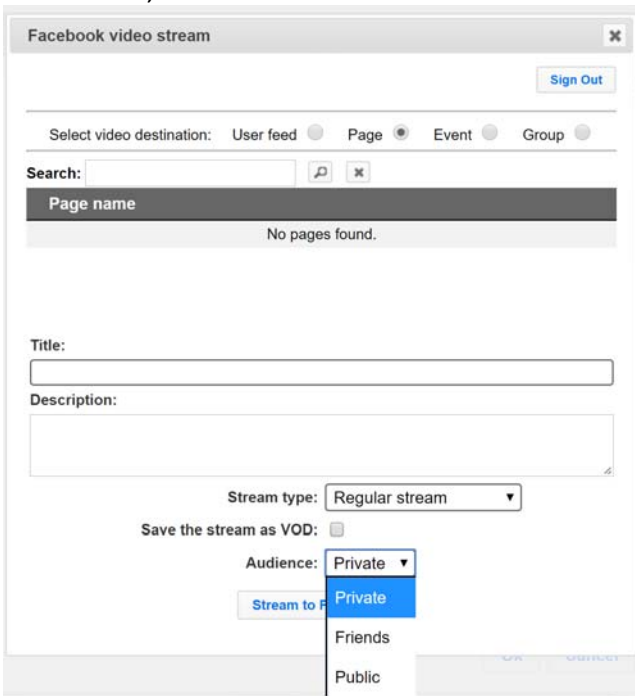
Stream to Facebook

18. For a **Regular Stream**, you have the option to select **Save this stream as VOD**, to enable subsequent viewing of the stream, by clicking the check-box.



If you selected **Continuous broadcast** then the **Save this stream as VOD** option is not available.

19. Select the privacy authorization for this stream from the dropdown menu. The options are **Private**, **Friends** or **Public**. Default: *Private*.



Facebook video stream

Sign Out

Select video destination: User feed Page Event Group

Search:

Page name

No pages found.

Title:

Description:

Stream type: Regular stream ▼

Save the stream as VOD:

Audience: Private ▼

Stream to Facebook

Private

Friends

Public

Broadcaster Outputs

Adding Outputs

20. Click **Stream to Facebook**.

The Output configuration window is displayed with the **URL** and **Stream Name** fields completed.

New output

Output Name: Zixi Stream 2 / Basic stre

Input Stream: [dropdown]

Show in Matrix:

UDP RTMP Pull Push HTTP Push S3 Bucket

Output parameters

URL: rtmp://a.rtmp.youtube.com

Backup URL:

Stream name: 5tk-22xm-6h5c-32sx

Username:

Password:

Bitrate(kbps): 0

Reconnect(sec): 5

Send timecode:

Disconnect if inactive:

Ignore TLS certificate:

Decryption type: None

Ok Cancel


21. In the **Bitrate** field, enter the stream's bitrate.

22. Click **OK**.

The new RTMP Facebook Live output with its settings is created and now appears on the Outputs screen.

Adding Pull Outputs

➔ **To Create a Pull Output:**

1. In the Zixi Broadcaster **Outputs** page click . The **New Output** window is displayed.

Broadcaster Outputs

Adding Outputs

The screenshot shows a 'New output' dialog box. It has a title bar with 'New output' and a close button. The main area contains the following fields and controls:

- Output Name:** A text input field.
- Input Stream:** A dropdown menu.
- Show in Matrix:** A checked checkbox.
- Protocol Selection:** Radio buttons for UDP, RTMP, Pull (selected), Push, HTTP Push, and S3 Bucket.
- Output parameters:** A section with a red header containing:
 - Stream ID:** A text input field.
 - Remote ID:** A text input field.
 - Password:** A text input field.
 - Latency [ms]:** A text input field with a 'Remote configuration' button next to it.
- Buttons:** 'Ok' and 'Cancel' buttons at the bottom right.

2. Type in the unique identifier for this output in the **Output Name**.
3. Select an **Input Stream** to be made available on this output from the adjacent drop-down list.
4. Select the **Show in Matrix** check box to display this stream in the Matrix (see [Using the Matrix](#)). Default: Selected.
5. Select **Pull**.
6. Enter the **Output Parameters** (see Output Stream Parameters Table).
7. Click **OK**.

The new Pull Output with its settings is created and now appears on the screen.

Output Stream Parameters Table

Parameter	Description
Output Parameters	
Stream ID	Specify the unique Stream ID that the remote receiver expects (recommended – identical to 'Input Stream').
Remote ID	Specify the Receiver ID (shown in the Receiver Status window) that will be allowed to pull the stream.
Password	Specify a string that can be used to authenticate that the Zixi Receiver is authorized to pull this stream (Optional).
Latency [ms]	Specify the buffer size that Zixi Broadcaster is keeping for error correction. For example, 6000 milliseconds would ensure that the stream is protected for six seconds of errors in the network.

Broadcaster Outputs

Adding Outputs

Default: Remote configuration.

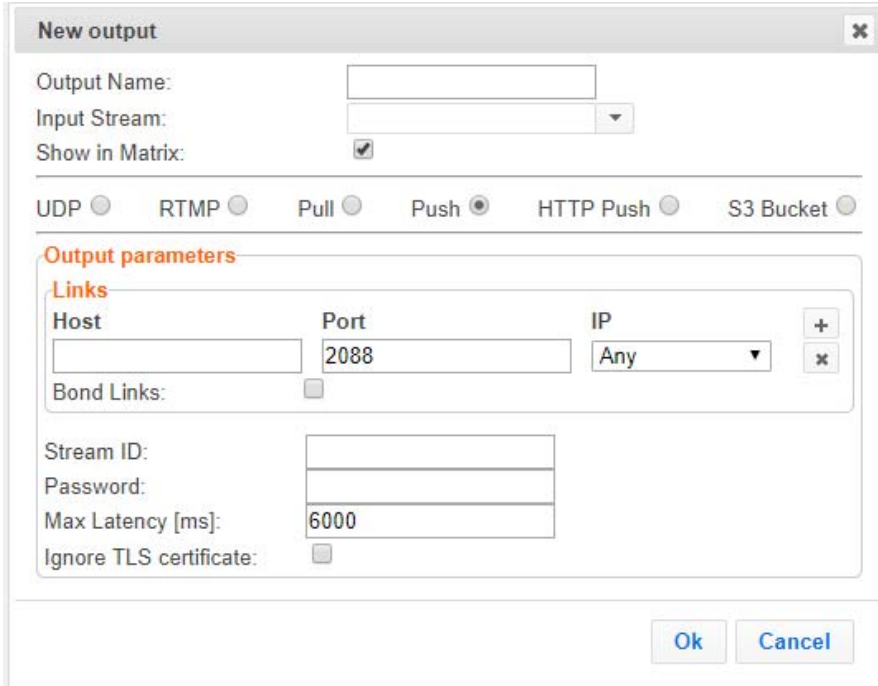
Remote configuration – use the latency configured in the Receiver. Otherwise use a value to override the value configured in the Receiver.

Adding Push Outputs

Output streams can be pushed to one or more Zixi Broadcasters and Zixi Receivers. You can specify multiple destinations (Broadcasters/Receivers) by adding them in the **Links** section. You can also split a single stream using multiple links and then bond them into a single stream in Zixi Broadcaster using the Bond Links feature. For each of these links, you can specify the max bitrate that can be used. In addition, some links may be specified as backups. The backup links will be used if the bandwidth across all the non-backup links are not enough for the stream (i.e. if a non-backup link is not available, it will not use the backup. Only if the accumulated bandwidth of non-backup links is not enough, then the Broadcaster will stream to a backup link).

➔ To Create a Push Output:

1. In the Zixi Broadcaster **Outputs** page, click . The **New Output** window is displayed.



2. Type in the unique identifier for this output in the **Output Name**.
3. Select an **Input Stream** to be made available on this output from the adjacent drop-down list.

Broadcaster Outputs

Adding Outputs

4. Select the **Show in Matrix** check box to display this stream in the Matrix (see [Using the Matrix](#)). Default: Selected.
5. Select **Push**.
6. Do one of the following:
 - **Stream to multiple destinations** - you can stream the same identical stream to multiple destinations by entering the destination parameters and then clicking the "+" button to add another destination (see **Output Stream Parameters Table**).
 - **Bonded link to a single destination** - you can split the stream into multiple links, which will be forwarded to a single Zixi Broadcaster by selecting the **Bond Links** checkbox (see **Using Network Bonding for Hitless Failover**).
7. Click **OK**. The new Push Output with its settings is created and now appears on the screen.

Output Stream Parameters Table

Parameter	Description
Output Parameters	
Links	
Host	The destination host for the push stream. Note: additional failover destinations can be added by clicking the adjacent "+" button.
Port	Specify the ports to listen on for Push streams. Default: 2088.
IP	Specify the local IP address.
Max Bitrate (for Bond Links enabled)	Relevant for Bond Links option. Specify the max bitrate in Kbps for the specific link.
Bond Links	Click this checkbox to split the stream into multiple links, which will be forwarded to a single Zixi Broadcaster.
Backup (for Bond Links enabled)	Relevant for Bond Links option. Select this checkbox to define the link as a backup. The backup will be used only if the accumulated bandwidth of the non-backup links is not sufficient.
Stream ID	Specify the unique Stream ID that the remote Zixi Broadcaster expects.

Broadcaster Outputs


Adding Outputs

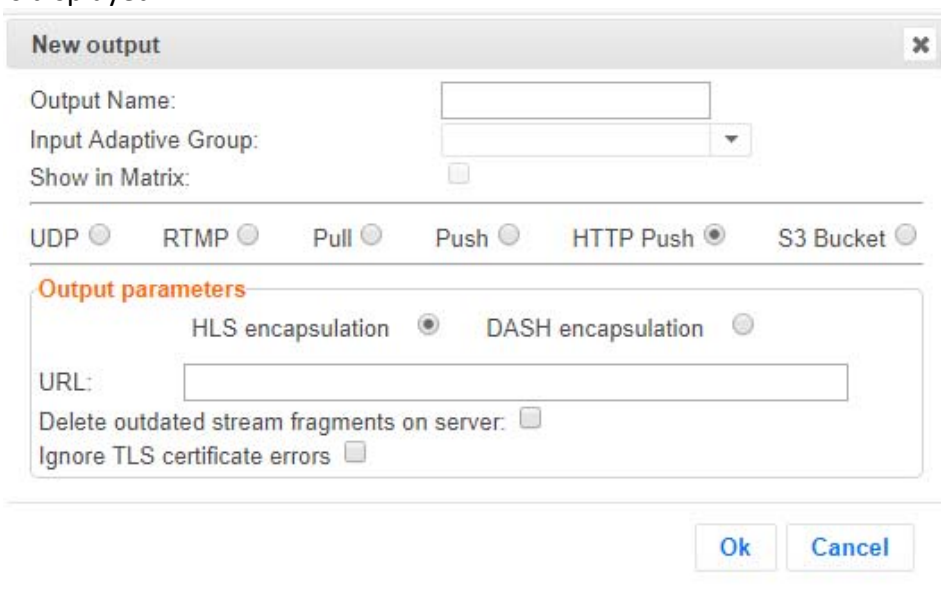
Password	Optional - Specify a string to be used at the receiving Zixi Broadcaster to authenticate that the pushing Broadcaster is allowed to push this stream.
Max Latency [ms]	Specify the buffer size that Zixi Broadcaster will keep for error correction. For example, 6000 milliseconds would ensure that the stream is protected for six seconds of errors in the network. Default:6000
Ignore TLS certificate errors	Select this option when streaming to a trusted server that does not have a valid certificate. When this option is selected, Zixi Broadcaster will ignore the TLS certificate errors and transmit the stream to its destination.

Adding HTTP Push Outputs

The HTTP Push output stream can be encapsulated in HLS or DASH. The source of the output stream is a predefined adaptive group that has been configured in the [Adaptive Groups](#) screen. The configuration of the stream includes the option to delete outdated stream fragments on the server. Output streams can be pushed to one Zixi Broadcasters or Zixi Receiver.

➔ To Create an HTTP Push Output:

1. In the Zixi Broadcaster **Outputs** page, click . The **New Output** window is displayed.



2. Select the **HTTP Push** option (radio button).
3. Type in the unique identifier for this output stream in the **Output Name**.
4. Select an **Input Adaptive Group** to be made available on this output from the adjacent drop-down list.
5. Select the **Show in Matrix** check box to display this stream in the Matrix (see [Using the Matrix](#)). Default: not selected.
6. Enter the **Output Parameters** (see Output Stream Parameters Table).
7. Click **OK**.

Broadcaster Outputs

Adding Outputs

Output Stream Parameters Table

Parameter	Description
Output Parameters	
Encapsulation Options	<ul style="list-style-type: none">• HLS Encapsulation - the output stream, which includes all the streams in the selected Adaptive group, will be encapsulated in HTTP Live Streaming format.• Dash Encapsulation - the output stream, which includes all the streams in the selected Adaptive group, will be encapsulated in MPEG DASH format.
URL	The URL address of the destination host for the push stream.
Delete outdated stream fragments on server	Select this checkbox to delete any outdated stream fragments from the server.
Ignore TLS certificate errors	Select this option when streaming to a trusted server that does not have a valid certificate. When this option is selected, Zixi Broadcaster will ignore the TLS certificate errors and transmit the stream to its destination.

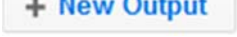
Broadcaster Outputs

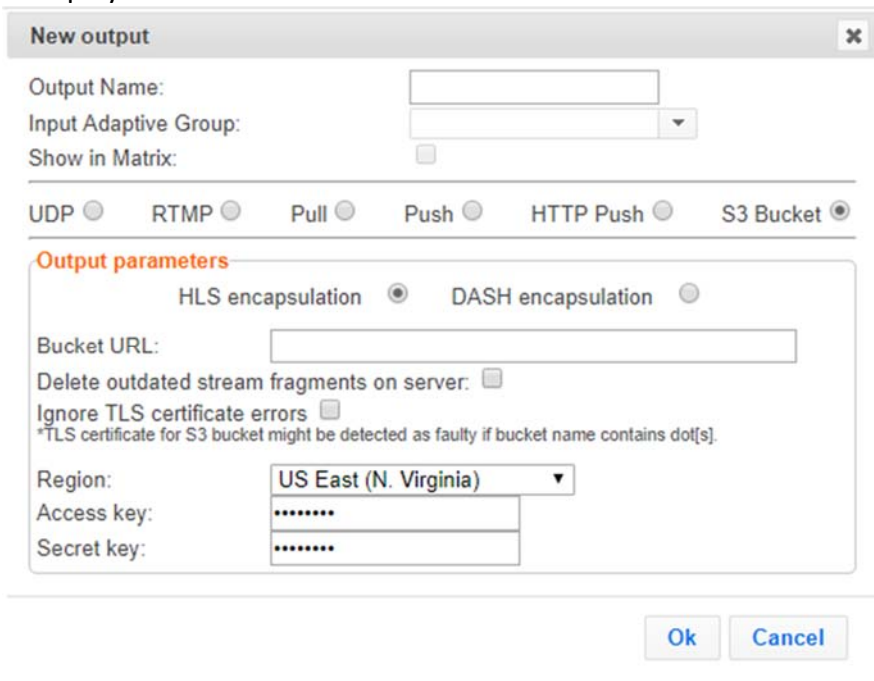
Adding Outputs

Adding S3 Bucket Outputs

The HTTP output stream (HLS or DASH) can be pushed to an AWS S3 Bucket. The native S3 support includes the ability to configure the S3 authentication credential, including the Region, Access Key, and Secret Key.

➔ To Create an S3 Bucket Output:

1. In the Zixi Broadcaster **Outputs** page, click . The **New Output** window is displayed.



2. Select the **S3 Bucket** option (radio button).
3. Type in the unique identifier for this output stream in the **Output Name**.
4. Select an **Input Adaptive Group** to be made available on this output from the adjacent drop-down list.
5. Select the **Show in Matrix** check box to display this stream in the Matrix (see [Using the Matrix](#)). Default: not selected.
6. Enter the **Output Parameters** (see Output Stream Parameters Table).
7. Click **OK**.

Broadcaster Outputs

Adding Outputs

Output Stream Parameters Table

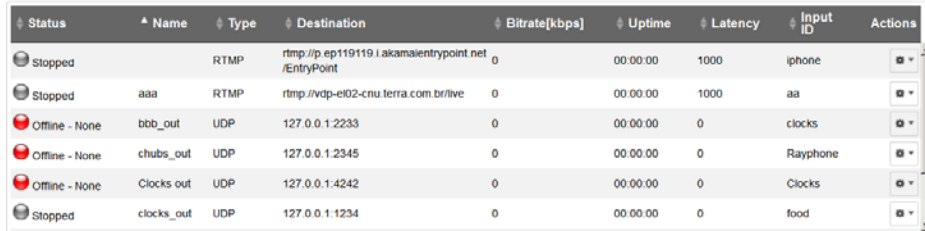
Parameter	Description
Output Parameters	
Encapsulation Options	<ul style="list-style-type: none">• HLS Encapsulation - the output stream, which includes all the streams in the selected Adaptive group, will be encapsulated in HTTP Live Streaming format.• Dash Encapsulation - the output stream, which includes all the streams in the selected Adaptive group, will be encapsulated in MPEG DASH format.
Bucket URL	The URL address of the destination host for the S3 Bucket.
Delete outdated stream fragments on server	Select this checkbox to send delete messages to S3 to delete the outdated stream fragments from the servers.
Ignore TLS certificate errors	Select this option when streaming to a trusted server that does not have a valid certificate. When this option is selected, Zixi Broadcaster will ignore the TLS certificate errors and transmit the stream to its destination.
Regions	Select the Amazon AWS Region.
Access key	Enter your AWS S3 Access key.
Security key	Enter your AWS S3 Security key.

Broadcaster Outputs

Viewing Existing Outputs

Viewing Existing Outputs

The Outputs screen displays all the output streams that have been created.



Status	Name	Type	Destination	Bitrate[kbps]	Uptime	Latency	Input ID	Actions
Stopped		RTMP	rtmp://p.ep1191191.akamaientrypoint.net/EntryPoint	0	00:00:00	1000	iphone	
Stopped	aaa	RTMP	rtmp://vdp-e02-cnu.terra.com.br/live	0	00:00:00	1000	aa	
Offline - None	bbb_out	UDP	127.0.0.1:2233	0	00:00:00	0	clocks	
Offline - None	chubs_out	UDP	127.0.0.1:2345	0	00:00:00	0	Rayphone	
Offline - None	Clocks out	UDP	127.0.0.1:4242	0	00:00:00	0	Clocks	
Stopped	clocks_out	UDP	127.0.0.1:1234	0	00:00:00	0	food	

Hovering the cursor on the status indicator of a stream shows the stream configuration information and basic utilization statistics, where applicable.

Any of the columns in the following table can be sorted in ascending/descending order by clicking on its heading. The **Search** text box in the upper left hand side of the screen can be used to search for a specific input stream by entering the desired Stream ID.

Field	Description
Status	Displays the status of output stream. The following colored indicators are displayed: <ul style="list-style-type: none">• Green = Connected• Yellow = Connecting• Red = Disconnected with an error condition• Blue = Offline with no connection attempts• Grey = Offline and stopped
Name	Displays the name of the output stream, as defined in the Zixi Broadcaster.
Type	Displays the type of output stream.
Destination	Displays the IP address of the host that will be receiving the stream.
Bitrate [kbps]	Displays bitrate of the connected output stream.
Uptime	Displays the amount of time the stream has been active.
Latency	Displays the configured latency
Input ID	The ID of the related Input stream.
Actions	Provides access to various actions to be performed on this output stream (see Performing Actions on Output Streams below).


Broadcaster Outputs

Viewing Existing Outputs

Stats Pane


The Stats pane on the bottom of the page shows data about the activity of the selected stream.

Stats		
Bitrate (kbps)  : 0	Total Packets : 0	FEC Packets  : 0
Last Connected:	Packet Rate  : 0	FEC Recovered  : 0
Send Errors  : 0	Packet Loss %  : 0	ARQ Requests  : 0
Reconnections: 0	Dropped Packets  : 0	ARQ Recovered  : 0
RTT(ms)  : 0	Recovered Packets  : 0	ARQ Duplicates  : 0
Jitter(ms)  : 0	Not Recovered Packets  : 0	Overflows  : 0

Click the  icon next to a parameter to show the graph of historical data for the specified parameter.

Searching for Output Streams

➔ To Search for an Output Stream:

In the Zixi Broadcaster **Outputs** page, type in the specific output stream name in the search text box on the left-hand top of the screen and click . The **Output** screen displays the requested output stream(s).


Performing Actions on Output Streams

Every stream has a shortcut button that can be used to perform relevant actions on the stream. The following actions can be performed through the Actions button:

- [Deleting Output Streams from Broadcaster](#)
- [Switching Input](#)


Deleting Output Streams from Broadcaster

➔ To Delete an Output Stream from the Broadcaster:

1. In the Zixi Broadcaster **Outputs** page, select the output stream you want to delete, and then click .
2. Click **Delete** to the selected stream. The selected input stream was deleted and is not displayed anymore.

Switching Input

➔ To change the input associated with the selected output:

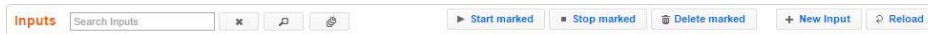
1. In the Zixi Broadcaster **Outputs** page, click  and select **Switch Input**. The **Switch source** window is displayed.
2. In the **New Input** drop-down, select the desired input, and click **OK**. The newly designated input is now associated with the selected output.

Performing Actions on Multiple Outputs

Delete Marked Outgoing Stream

➔ To Delete Output Streams:

1. In the Zixi Broadcaster **Outputs** page, select all Inputs by checking the Actions checkbox, or select individual Inputs by clicking them one, by one or a few at a time. The Outputs bar is displayed.

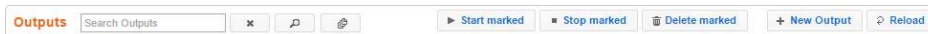


2. Click **Delete** button. The selected Output Streams are deleted.

Start and Stop Marked Individual and Multiple Outgoing Streams

➔ To Stop/Start an Output Stream:

1. In the Zixi Broadcaster **Outputs** page, select all Outputs by checking the Actions checkbox, or select individual Outputs by clicking them one, by one or a few at a time. The Outputs bar is displayed.




2. Click **Stop Marked** button or **Start Marked** button to stop and start Output Streams.

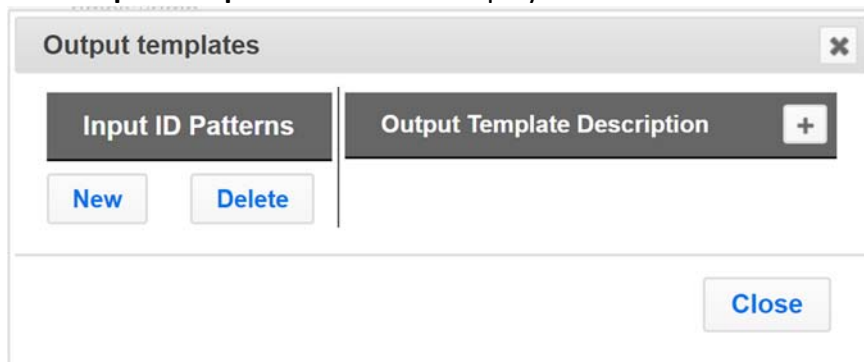
Using Output Templates

Instead of manually creating an output and then connecting the output to an input, you can define output templates with rules for automatic creation of outputs with predefined settings. The template includes an Input pattern. When an input pattern matches the pattern of an incoming input stream, the output is created automatically.

➔ To create a new Output template:

1. Click the **Outputs** tab at the top of the Zixi Broadcaster administrative screen.
2. In the **Menu** bar, click the **Templates** () button.

The **Output Templates** window is displayed:

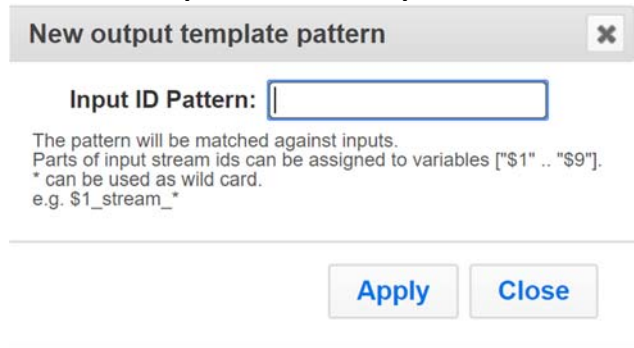


Broadcaster Outputs

Using Output Templates

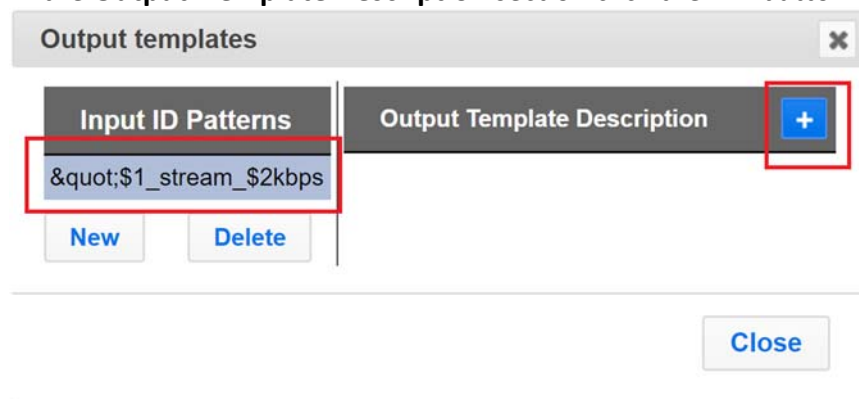
- Under **Input ID Parameters**, click **New**.

The **New Output Pattern Template** window is displayed:



The screenshot shows a dialog box titled "New output template pattern" with a close button (X) in the top right corner. It features a text input field labeled "Input ID Pattern:". Below the field, there is explanatory text: "The pattern will be matched against inputs. Parts of input stream ids can be assigned to variables ['\$1' .. '\$9']. * can be used as wild card. e.g. \$1_stream_*". At the bottom of the dialog, there are two buttons: "Apply" and "Close".

- In the **Input ID Pattern** field, enter a pattern for the Stream ID of the input stream for which an output will be automatically created. This pattern will be used to identify the input stream and can include variables that are marked with the "\$" sign followed by a number (e.g. \$1, \$2, etc.) and/or with an asterisk "*" wildcard. The patterns should also include a part of the string that requires an exact match. For example, the pattern "\$1_stream_\$2kbps" will match an input stream "talk_show_stream_600kbps".
- Click **Apply**. The newly created input ID pattern is added to the **Input ID Patterns** list.
- From the **Input ID Patterns** list, select a pattern for which you want to relate an output template.
- In the **Output Template Description** section click the "+" button.



The screenshot shows a dialog box titled "Output templates" with a close button (X) in the top right corner. It is divided into two main sections: "Input ID Patterns" and "Output Template Description". The "Input ID Patterns" section contains a list with one item: ""\$1_stream_\$2kbps". Below this list are "New" and "Delete" buttons. The "Output Template Description" section contains a blue button with a white "+" sign. At the bottom right of the dialog, there is a "Close" button.

Broadcaster Outputs

Using Output Templates

The **New Output Template** window is displayed:

New output template [X]

Input ID Pattern:
The pattern will be matched against inputs.
Parts of input stream ids can be assigned to variables ["\$1" .. "\$9"].
* can be used as wild card.
e.g. \$1_stream_*

Output Name:

Show in Matrix:

UDP RTMP Pull Push

Output parameters

Host:

Port: TTL:

Smoothing [ms]:

RTP:

Bind to IP: ▼

Bind to NIC: ▼

Local port:

Don't Fragment:

Decryption type: ▼

ReMixing

8. In the **Output Name** field, enter a name for the output that will be created. The name can include variables used in the **Input Pattern** field.
9. Select the desired output type and fill-in the relevant Output parameters according to the instructions of the relevant section:
 - UDP Output – Follow the instructions in the [Adding UDP Outputs](#) section.
 - RTMP Output – Follow the instruction in the [Adding RTMP Outputs](#) section.
 - Pull Output - Follow the instruction in the [Adding Pull Outputs](#) section.
 - Push Output - Follow the instruction in the [Adding Push Outputs](#) section.
10. Click **OK**. The template is added to the **Output Template Description** list. When an input pattern will match the pattern of an incoming input stream, the defined output is created automatically.

Broadcaster Network Bonding

Zixi's Network Bonding feature enables you to divide a stream into several network channels by utilizing multiple NICs and links and then subsequently reuniting them at the Zixi Broadcaster side. For example, a 5 Mbps stream can be streamed using two links, one 2 Mbps link that uses a mobile network and another 3 Mbps Wifi network. The stream is automatically bonded at the Zixi Broadcaster side without any special configuration (as long as the Push input is defined and the two NICs are setup in the machine running the Zixi Broadcaster). Network Bonding can be used for load balancing between multiple links in the following configurations:

- **Zixi Feeder with Multiple NICs to a single Zixi Broadcaster NIC** - the stream is divided at the Zixi Feeder end and then bonded at the Zixi Broadcaster end. This configuration requires configuring Network Bonding in the Zixi Feeder.
- **Zixi Feeder with Multiple NICs to multiple Zixi Broadcaster NICs** - the stream is divided at the Zixi Feeder end, sent to multiple IP addresses (each Zixi Broadcaster NIC has a separate IP address), and then bonded at the Zixi Broadcaster end. This configuration requires configuring Network Bonding in the Zixi Feeder. Each destination (i.e. each Broadcaster NIC is configured in a separate network bonding link by using a different Host IP address).
- **Zixi Feeder with single NIC to Multiple Zixi Broadcaster NICs** - the stream is sent to multiple IP addresses (each Zixi Broadcaster NIC has a separate IP address), and then bonded at the Zixi Broadcaster end. This configuration requires configuring Network Bonding in the Zixi Feeder. Each destination (i.e. each Broadcaster NIC is configured in a separate network bonding link by using a different Host IP address).
- **Zixi Broadcaster with multiple NICs to another Zixi Broadcaster with a single/multiple NICs** - a Zixi Broadcaster can transfer a stream to another Zixi Broadcaster through multiple NICs at the source Broadcaster and single/multiple NICs at the destination Broadcaster. This configuration requires configuring Network Bonding in the Zixi Broadcaster (see Broadcaster Output with Network Bonding).

Using Network Bonding for Hitless Failover

The Network Bonding feature can be used to ensure high availability of the stream. The feature ensures hit-less failover between multiple networks and network cards (i.e. network and hardware protection). As part of the configuration of the network bonding feature it is possible to set a NIC (which may be connected to a separate network) as a "Backup". In this case, the backup link will only be utilized if the stream has used all other available capacity. For example, a stream can be configured to be transferred on a WiFi network as the main link and a mobile network as a backup. If the WiFi link is compromised (either completely unavailable or limited bandwidth), the stream will be transferred, in full or partially through the backup mobile link and then bonded at the Zixi Broadcaster end, enabling uninterrupted streaming and high availability.

Broadcaster Outputs

Broadcaster Network Bonding

Broadcaster Output with Network Bonding

A Zixi Broadcaster can push a stream to another Zixi Broadcaster that has been divided into multiple network channels by utilizing multiple NICs. The Zixi Broadcaster at the destination will subsequently reuniting them into a single input stream.

➔ To add network bonding to a Push Output:

1. On the **Outputs** page of Zixi Broadcaster, click **+ New Output** on the upper- right end corner of the screen.
2. In the **Output Name**, enter a unique name that you want to configure on the Zixi Broadcaster.
3. In the **Input field**, select the relevant Input stream from the drop-down menu.
4. Select **Push** as the **Type** of output.

The following screen is displayed:

New output

Output Name: wdw

Input Stream: [dropdown]

Show in Matrix:

UDP RTMP Pull Push

Output parameters

Links

Host	Port	IP
	2088	Any

Bond Links:

Stream ID: [input]

Password: [input]

Max Latency [ms]: 6000

Ok Cancel

5. In the **Output Parameters** section, select the **Bond Links** checkbox. The Links section is displayed:

Output parameters

Links

Host	Port	IP	Max. Bitrate [kbps]	Backup
	2088	Any	Unlimited	<input checked="" type="checkbox"/>

Bond Links:

6. In the **Links** section, click the **+** button to add a second link:

Output parameters

Links

Host	Port	IP	Max. Bitrate [kbps]	Backup
	2088	Any	Unlimited	<input checked="" type="checkbox"/>
	2088	Any	Unlimited	<input type="checkbox"/>

Bond Links:

7. In the **Host** field, type the IP address of the destination Zixi Broadcaster.
8. In the **Port** field, type the destination port number of the Zixi Broadcaster to which you want to stream. Default: 2088
9. In the **NIC** field, select the NIC in the Zixi Broadcaster (source) that you want to use to stream.
10. In the **Bitrate Limit** field, do one of the following:


Broadcaster Outputs

Broadcaster Network Bonding

- If you want to limit the bitrate that will be used in this link, enter the limit value in Kbps.
 - If you DO NOT want to limit the bitrate, leave the default value - "0".
11. In the Backup field, do one of the following:
 - If you want to use this link only if there is not enough bandwidth in the other links, select the Backup checkbox.
 - If you want to use this link in parallel to other links, DO NOT select the Backup checkbox.
 12. Click **OK**.
 13. Repeat the steps above to configure additional links.
 14. Click **OK** to save the Zixi Broadcaster Output.

Adaptive Groups

Zixi Broadcaster features the ability to create multiple bitrate profiles for a single input stream and set it as an adaptive group that can be used by a supporting client. The client will automatically switch between the various bitrate profiles of the stream according to the network conditions during playback.

After creating a group with different bitrates you can test them all out by playing them with the different 3rd party players (via the  Actions menu).

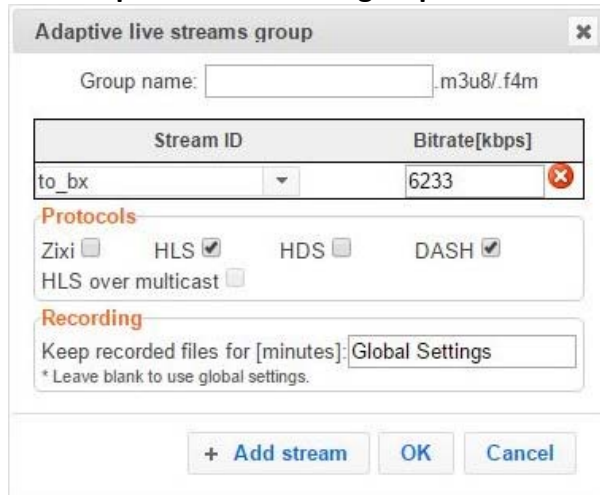
You can optionally create adaptive group templates that will automatically group streams in adaptive groups instead of defining groups in advance.

Creating New Adaptive Groups


➔ To Create a New Adaptive Group:

1. In the Zixi Broadcaster administrative screen, click the **Adaptive** tab.
2. Click **Add Group**.

The **Adaptive live streams group** window is displayed:



Stream ID	Bitrate[kbps]
to_bx	6233

3. In the **Group Name** field, enter the unique string as the adaptive group's name.
4. Under **StreamID**, select a stream from the drop-down list to create an adaptive bitrate.
5. Enter the desired **Bitrate[kbps]** for that stream in the adjacent field to **Stream ID**.
6. Click  to add as many streams as you want to include in the group and repeat steps 4 and 5 for every stream that is added to the group.
7. Select one or more **Protocols** that will be supported for this adaptive group.

Adaptive Groups

Creating New Adaptive Groups

- Specify the duration to **Keep recorded files for [hours]**. If the file is left as blank, the system will use the global settings, specified in the **Settings > Live Protocols** screen in the **HLS DVR Maximum Recording Duration** field.
- Click **OK**.




The new Adaptive Group is created and appears on the Adaptive screen.

Parameter	Description
Group Name	Specify the unique identifier for this group.
Stream ID	Specify the unique name for the stream.
Bitrate [kbps]	Specify the bitrate for selected stream.
Protocols	Zixi, HLS, HDS, DASH, HLS over multicast
Recording	
Keep recorded files for [minutes]	Specify the maximum time for storing the recording. If the file is left as blank, the system will use the global settings specified in the Settings > Live Protocols screen in the HLS DVR Maximum Recording Duration field.
File name template	<p>Specify the file name pattern that Zixi will use to generate when saving the recorded content. A separate file will be generated for each recording up to the time specified in the Max recorded file duration parameter (see above). After this duration a new file will be generated.</p> <p>The file name pattern can include any string and up to five variables listed below. Only the %T=HH.MM.SS creation time is mandatory. You can change the order of these variables and add text as long as you maintain the legitimate structure of the file in Linux and Windows:</p> <ul style="list-style-type: none">%S=stream id - optional.%Y=year - optional%M=month - optional%D=day - optional%T=HH.MM.SS creation time - mandatory <p>For example, the following pattern %Y_recording%T.ts will generate the following file name 2017_recording15:32:35.ts.</p>

Adding Streams to Existing Adaptive Groups

You can add additional streams to existing adaptive groups.


➔ To Add Streams to an Adaptive Group:

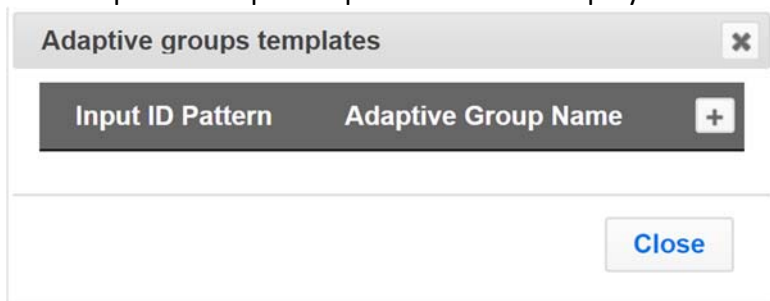
1. In the Zixi Broadcaster administrative screen, click the **Adaptive** tab.
2. Select the Group to which you want to add a stream, and click  button, and then **Edit**. The **Adaptive live streams group** window is displayed.
3. Click  button for as many streams as you want to include in the group. Another Stream row will be added in the above table to which a desired **Bitrate** must be specified. When clicking on the red  at the end of any of the stream rows, the stream will be deleted from the group.
4. Click **OK**. The group has been modified accordingly.

Adaptive Groups Templates

Instead of defining adaptive groups in advance and then relating specific input streams to these groups, you can define templates with rules for automatic grouping of streams in adaptive groups. Every time a new input stream, which matches the conditions of the template, is added, it will be automatically added to the adaptive group that was defined in the template. Specific streams are identified by naming patterns and added to the group by setting static naming patterns and bitrates or dynamic patterns.

➔ To create a new adaptive group template:

1. Click the **Adaptive** tab at the top of the Zixi Broadcaster administrative screen.
2. In the Menu bar, click the **Templates** () button.
The Adaptive Groups Templates screen is displayed:



Adaptive Groups

Adaptive Groups Templates

3. Click the + button.

The **Adaptive Group Template** window is displayed:

Adaptive group template

Input ID Pattern will be matched against inputs.
Parts of input stream ids can be assigned to variables ["\$1" .. "\$9"].
* can be used as wild card.
e.g. \$1_stream_profile_*

Input ID Pattern:

Adaptive Group Name:

Variables from Input ID pattern can be used to form adaptive group name.
e.g. \$1_adaptive_stream

Adaptive group properties

Zixi HLS HDS DASH

HLS over multicast

Record

Keep recorded files for [minutes]:

* Leave blank to use global settings.

File name template:

%G = Group Name; %N = Sequence Number; %T = Timestamp

Adaptive group stream patterns

Streams expected in adaptive group may connect later.

Dynamic streams acquisition Static streams set

Stream pattern	Bitrate [kbps]
	<input type="text"/> <input type="button" value="+"/>

4. In the **Input ID Pattern** field, enter a pattern for the Stream ID of the input stream that will be automatically added to newly created adaptive group. This pattern will be used to identify the input stream and can include variables that are marked with the "\$" sign followed by a number (e.g. \$1, \$2, etc.) and/or with an asterisk "*" wildcard. The patterns should also include a part of the string that requires an exact match. For example, the pattern "\$1_stream_\$2kbps" will match an input stream "talk_show_stream_600kbps". String parts that were matched against \$X variables, can be reused in other settings, however, string parts that were matched against an asterisk wildcard cannot be reused in other settings.
5. In the **Adaptive Group Name** field, enter a string that will be used as the name of the adaptive group. You can use the \$X variables that were used in the Input ID Pattern field above. For example, based on the above example, if you write "\$1_group", the group name will be "talk_show_group".

Adaptive Groups

Adaptive Groups Templates

- Under the **Adaptive Group Properties**, select the checkboxes of the protocols with which these streams will be transmitted (Zixi, HLS, HDS, DASH, HLS over multicast).
- If you want to record an HLS stream, select the **Record** checkbox and in the **Keep recorded files for [minutes]**, specify the maximum time (in minutes) to record. Default: the time defined in the global settings, specified in the **Settings > Live Protocols** screen in the **HLS DVR Maximum Recording Duration** field.
- Under **Adaptive Group Stream Patterns**, select the method in which the streams in the adaptive group will be created:
 - Dynamic Streams Acquisition:** this method will automatically add input streams that match the defined **Input ID Pattern** and give them a bitrate value based on the **Bitrate Pattern**. This option is based on the assumption that the bitrate value is part of the input stream's ID. Based on the example above, by entering the value "\$2" in the **Bitrate Pattern** field, the system will automatically add the incoming "talk_show_stream_600kbps" stream, while giving it a 600 Kbps Bitrate setting (according to the definition in the **Input ID Pattern** field, the \$2 was assigned a value of 600kps). If another stream that matches the input ID patterns comes in (e.g. talk_show_stream_700kbps") with a different bitrate, for example, 700kbps, this stream will be also added to the same adaptive groups, however the bitrate setting will be 700 kbps.

Adaptive group stream patterns
Streams expected in adaptive group may connect later.

Dynamic streams acquisition Static streams set

Any stream matching 'Input ID Pattern' will be added.

Bitrate pattern:

To add a Dynamic Streams Acquisition bitrate pattern:

- In the **Bitrate Pattern** field add the pattern as described above.
- Click **Apply**.

The new template is added to the **Adaptive Groups Templates** list:

Adaptive groups templates

Input ID Pattern	Adaptive Group Name	
\$1_stream_\$2kbps	\$1_adaptive_stream	<input type="text"/> <input type="text"/>

- Static Stream Set:** if the input streams do not have the bitrate value in their ID names, you can manually define the ID and the bitrate for each stream that will be included in the group. You can define streams that are not currently

Adaptive Groups

Adaptive Groups Templates

connected, but will be connected at a later stage.

Adaptive group stream patterns
Streams expected in adaptive group may connect later.

Dynamic streams acquisition Static streams set

Stream pattern	Bitrate [kbps]	
<input type="text" value="comedy_HD"/>	<input type="text" value="512"/>	<input type="button" value="+"/>
		<input type="button" value="x"/>

To add a Static Steam Set:

1. Click the + button
2. In the **Steam Pattern** field, enter a pattern for the stream ID (you can use the variables used in the Input ID Pattern field and add additional variables as needed). This pattern will be used to identify the stream and add it to the group (e.g. "comedy_HD").
3. In the **Bitrate [Kbps]** field, enter the Bitrate value of the stream.
4. Click the + button for as many streams as you want to include in the group and repeat the steps above for every stream that is added to the group.
5. Click **Apply** to save all changes.

The new template is added to the **Adaptive Groups Templates** list:

Adaptive groups templates		
Input ID Pattern	Adaptive Group Name	<input type="button" value="+"/>
\$1_stream_\$2kbps	\$1_adaptive_stream	<input type="button" value="edit"/> <input type="button" value="x"/>

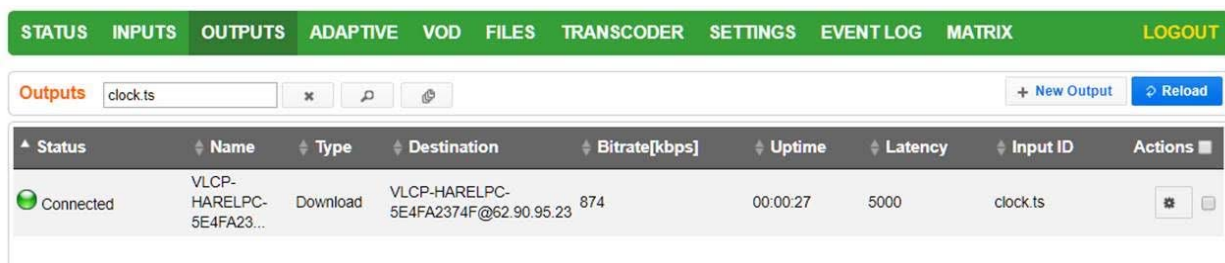


Note: the group will be active only when all the streams defined will be connected.

VOD (Video on Demand)

The VOD feature enables you to upload stream-able (.ts and mp4) files to the file system of the server on which Broadcaster is installed as well as make a previously recorded input stream available on demand (VOD). The VOD content is accessed through a local folder, where the Zixi Broadcaster is located. This local folder can be optionally mapped through a symbolic link or shortcut to a remote folder. The Broadcaster creates a unique URL for each file.

The streams can be played back using VLC (with Zixi Plugin for Zixi streams) and/or streamed to a Zixi Receiver or to a Zixi Broadcaster. During playback, an Output (with output type – Download) will be created automatically on the Source Zixi Broadcaster, as shown below.



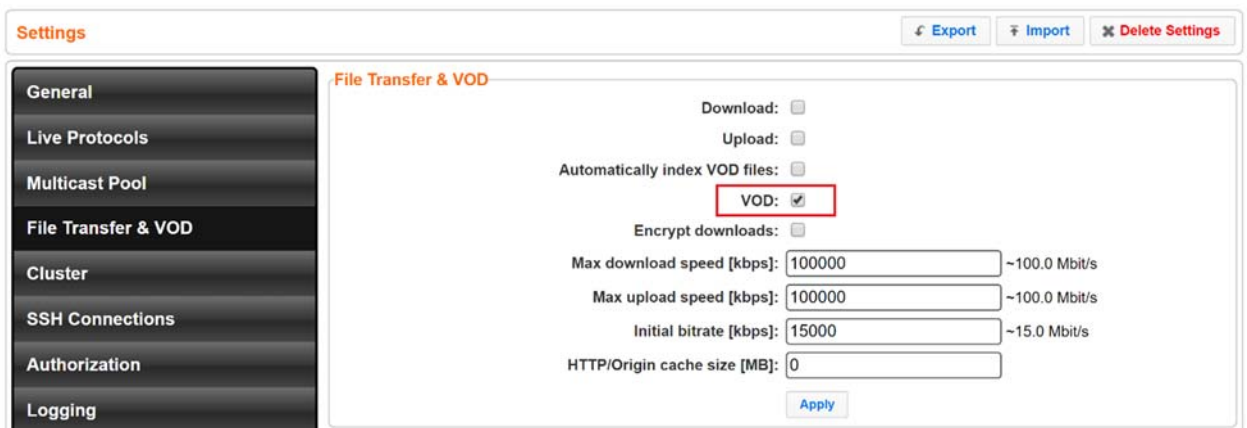
Status	Name	Type	Destination	Bitrate[kbps]	Uptime	Latency	Input ID	Actions
Connected	VLCP-HARELPC-5E4FA23...	Download	VLCP-HARELPC-5E4FA2374F@62.90.95.23	874	00:00:27	5000	clock.ts	[Settings] [Close]

VOD Configuration

If you have a VOD-enabled license you will still need to activate the VOD feature in the Settings screen.

➔ To activate the VOD feature:

1. In the **Settings** page, click **File Transfer & VOD**.
2. Select the VOD checkbox.



Settings

File Transfer & VOD

Download:

Upload:

Automatically index VOD files:

VOD:

Encrypt downloads:

Max download speed [kbps]: ~100.0 Mbit/s

Max upload speed [kbps]: ~100.0 Mbit/s

Initial bitrate [kbps]: ~15.0 Mbit/s

HTTP/Origin cache size [MB]:

Apply

3. Click **Apply**.

VOD (Video on Demand)

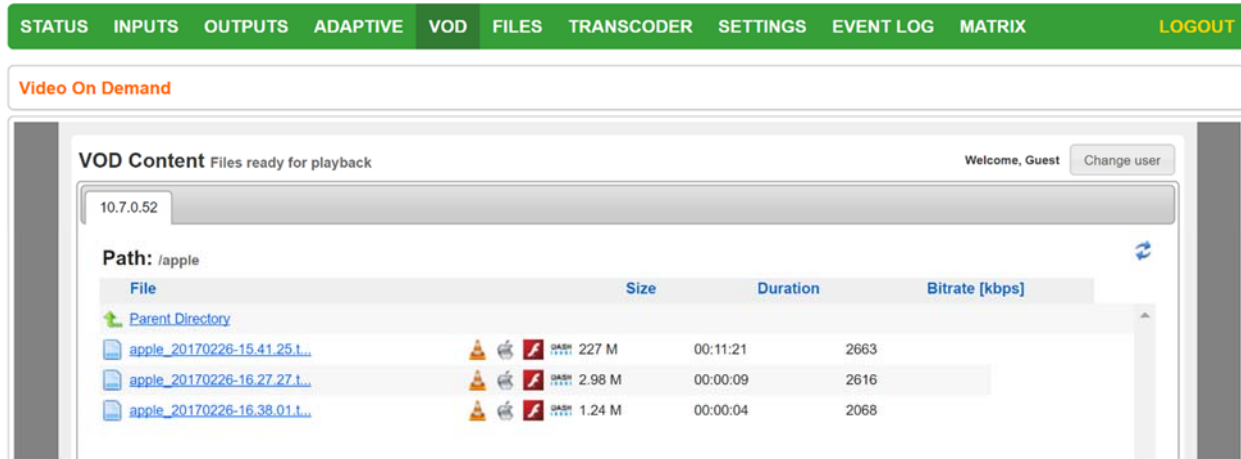
VOD Files Location

VOD Files Location

The VOD files are located in the following location by default -

<Broadcaster_Installation_Folder>\Zixi\Broadcaster\files

The contents of this folder are displayed in the **VOD** screen on the Zixi Broadcaster GUI –





The VOD screen displays the following information:


Parameter	Description
-----------	-------------


File	Name of the file or folder. If in file level (not folder level), click the file name to preview the stream in the Matrix screen.
-------------	--


The following icons are displayed:

 - **VLC Playback** – click this icon to see the VLC playback URL and additional details, such as VLC plugin download link, and link to stream the file.

 - **HLS Playback** – click this icon to see the following three HLS playback URLs: local HLS playback (not Zixi protected), HLS playback using Zixi Proxy (Zixi Protected), HLS playback using Zixi Proxy through HTTPS (Zixi protected). The Zixi Proxy links require the installation of Zixi Proxy software in the receiving device/machine. The dialog includes links for downloading the Zixi Proxy for Windows and Mac.

<Icons>  - **HDS Playback** – click this icon to see the Adobe HTTP Dynamic Streaming Protocol playback URL. The Play from server link, plays back the stream directly from the server.

 - **Flash Playback** – click this icon to see the following three Flash playback URLs: local Flash playback (not Zixi protected), Flash playback using Zixi Proxy (Zixi Protected), Flash playback using Zixi Proxy through HTTPS (Zixi protected). The Zixi Proxy links require the installation of Zixi Proxy software in the receiving device/machine. The dialog includes links for downloading the Zixi Proxy for Windows and Mac.

 - **Dash Playback** - click this icon to see the MPEG-DASH playback URL. The Play from server link, plays back the stream directly from the server.

VOD (Video on Demand)

Adding Files to VOD

Size	The size of the file.
Duration	The duration of the playback.
Bitrate [kbps]	The bitrate of the file in Kbps.

Changing the Files folder location

➔ To change the Files folder location:

1. In the Zixi Broadcaster installation folder (`<Broadcaster_Installation_Folder>\Zixi\Broadcaster\`) open the following file: **broadcaster-info.xml**.

2. Edit the `<Folder>` parameter with the desired path.

```
<?xml version="1.0" encoding="utf-8"?>
<ROOT_SETTINGS>
  <FOLDER>C:\Program Files\Zixi\Broadcaster\files</FOLDER>
  <MANAGED>>false</MANAGED>
  <MANAGEMENT-ENABLED>>false</MANAGEMENT-ENABLED>
</ROOT_SETTINGS>
<TUNNEL>
  <ALLOW>>false</ALLOW>
  <MANAGED>>false</MANAGED>
  <MANAGEMENT-ENABLED>>false</MANAGEMENT-ENABLED>
</TUNNEL>
```

3. Save the file.

Adding Files to VOD

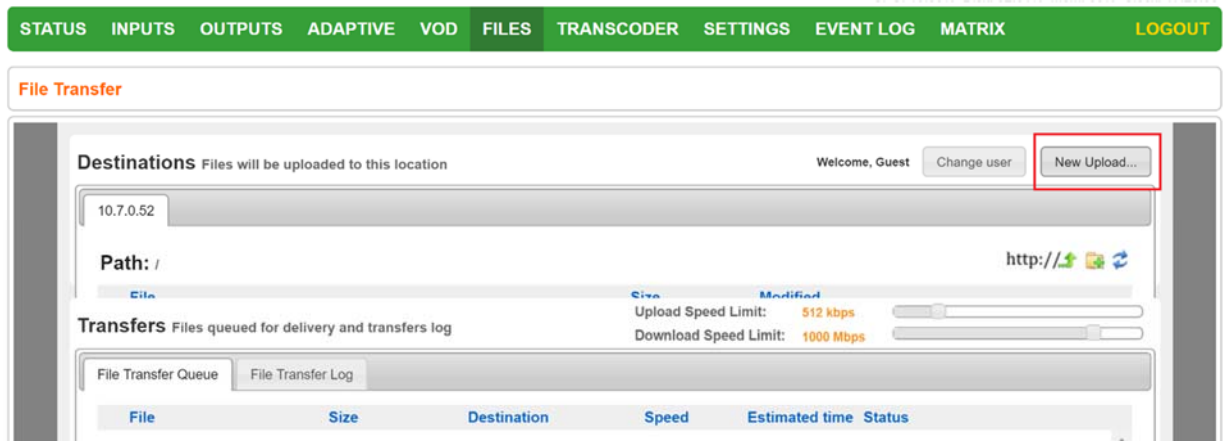
There are two ways to add files into the VOD Files folder:

- **Adding files to the folder** – using the operating system on which Zixi Broadcaster is installed, add the desired files to the Files folder (`<Broadcaster_Installation_Folder>\Zixi\Broadcaster\Files`)

VOD (Video on Demand)






Playing back VOD content

- **Uploading using the Broadcaster GUI** – on the **Files** screen, click the **New Upload** button, browse to the desired file location, select the file and click **Upload**.



Playing back VOD content

The VOD content can be played back using VLC (with Zixi Plugin for Zixi streams) and/or streamed to a Zixi Receiver or to a Zixi Broadcaster by using the following methods:

- **URL (Static)** – entering a specific URL of a file. To find the URL of a specific file, go to the VOD screen, navigate to the specific file, and click on the relevant playback icon:
 -  - **VLC Playback** – click this icon to see the VLC playback URL and additional details, such as VLC plugin download link, and link to stream the file.
 -  - **HLS Playback** – click this icon to see the following three HLS playback URLs: local HLS playback (not Zixi protected), HLS playback using Zixi Proxy (Zixi Protected), HLS playback using Zixi Proxy through HTTPS (Zixi protected). The Zixi Proxy links require the installation of Zixi Proxy software in the receiving device/machine. The dialog includes links for downloading the Zixi Proxy for Windows and Mac.
 -  - **HDS Playback** – click this icon to see the Adobe HTTP Dynamic Streaming Protocol playback URL. The Play from server link, plays back the stream directly from the server.
 -  - **Flash Playback** – click this icon to see the following three Flash playback URLs: local Flash playback (not Zixi protected), Flash playback using Zixi Proxy (Zixi Protected), Flash playback using Zixi Proxy through HTTPS (Zixi protected). The Zixi Proxy links require the installation of Zixi Proxy software in the receiving device/machine. The dialog includes links for downloading the Zixi Proxy for Windows and Mac.
 -  - **Dash Playback** - click this icon to see the MPEG-DASH playback URL. The Play from server link, plays back the stream directly from the server.

VOD (Video on Demand)

Playing back VOD content

- **API (Dynamic)** – you can use the Zixi API to implement dynamic access to the VOD content. For example, you can create an application that enables navigation throughout the VOD library (including folders and sub-folders) to access files in a dynamic fashion. The API GET request is: <http://<broadcaster location><web server port>/vod ls.json>

Accelerated File Transfer

Zixi Broadcaster features the ability to transfer files between two Zixi components (Zixi Broadcaster to Zixi Receiver or to another Zixi Broadcaster), using the Zixi protocol. The transfer can also be to a non-Zixi component with a Zixi Proxy or with a Zixi Plugin. This enables the reliable and fast transfer of large files over a wireless/wifi connections.

File Transfer Configuration

Before using the file transfer feature, you will need to activate the file transfer feature and configure the following file transfer settings.

➔ To activate and configure the file transfer feature:

1. In the **Settings** page, click **File Transfer & VOD**.

The screenshot shows the 'Settings' page with a sidebar on the left containing menu items: General, Live Protocols, Multicast Pool, File Transfer & VOD (selected), Cluster, SSH Connections, Authorization, Logging, and ASI. The main content area is titled 'File Transfer & VOD' and contains the following settings:

- Download:
- HTTP input:
- Upload:
- Automatically index VOD files:
- VOD:
- Encrypt downloads:
- Max download speed [kbps]: ~100.0 Mbit/s
- Max upload speed [kbps]: ~100.0 Mbit/s
- Initial bitrate [kbps]: ~15.0 Mbit/s
- HTTP/Origin cache size [MB]:

An 'Apply' button is located at the bottom right of the settings area.

2. Click the **Download** checkbox to enable the download of files from the current Zixi Broadcaster.
3. Click the **Upload** checkbox to enable the uploading of files by registered users to the current Zixi Broadcaster.
4. Specify additional optional **file transfer setting parameters** (see File Transfer Setting table below).
5. Click **Apply**.

File Transfer Settings

Parameter	Description
Download	Enables the file transfer download from this Zixi Broadcaster.

Accelerated File Transfer

Uploading Files for File Transfer

HTTP Input	Enables HTTP acceleration mode. In this mode, instead of specifying a file location on the server's hard disk, the Zixi Broadcaster receives an HTTP address from which it will retrieve the file and then transfer it to the Client.
Upload	Enables the file transfer upload to this Zixi Broadcaster server.
Encrypt Downloads	Enables the Zixi auto encryption for all file transfer downloads.
Max download speed [kbps]	Specifies the maximal download speed in Kbps for file transfer.
Max upload speed [kbps]	Specifies the maximal upload speed in Kbps for file transfer.
Initial bitrate [kbps]	Specifies the initial download bitrate. The recommended bitrate can be the bitrate of the stream.
HTTP/Origin cache size [MB]	This setting is relevant for HTTP acceleration mode and/or Origin/Edge architecture, where the Zixi Broadcaster retrieves the file from another Origin or HTTP server and then delivers it to the Client. This setting determines the cache size allocation on the Zixi Broadcaster. The cache is used to accelerate the delivery of files that have been previously requested.

Uploading Files for File Transfer

You can upload files to the server on which Zixi Broadcaster is installed to make them available for download using Zixi protocol. The location of the files that will be uploaded is relative to the Root folder that was specified in the **Settings > General** screen.



Before you upload a file, make sure Zixi Proxy is installed on your computer. If it is not installed, you will be prompted with a notification and a link for download and installation.

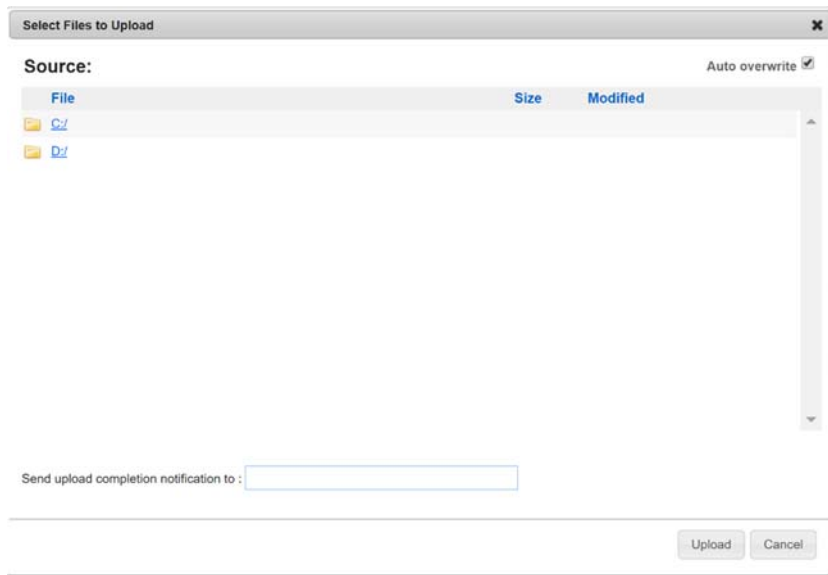
➔ To upload a file for file transfer:

1. In Zixi Broadcaster, click the **Files** tab.
2. Click **New Upload**.

The **Select Files to Upload** dialog opens:

Accelerated File Transfer

Downloading Files

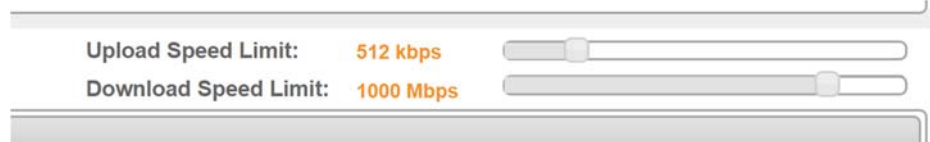


3. Navigate to the path in which the files is located and select the file.
4. For very large files, it is possible to receive an email notification when the upload process was completed. To enable this feature, type the desired email address, or multiple email addresses separated by commas in the **Send upload completion notification to** field.
5. Click **Upload**.

The file will be uploaded using the Zixi protocol. The upload process is displayed at the bottom of the screen (**Files Transfer Queue** tab). When the upload is complete, it will be recorded in the **File Transfer Log** tab.



You can limit the upload speed by dragging the **Upload Speed Limit** slider.



The overall maximal limit determined by the **Max upload speed [kbps]** setting in the **Settings > File Transfer & VOD** screen.

Downloading Files

The files can be downloaded using the Zixi Protocol, through the Zixi Broadcaster UI.

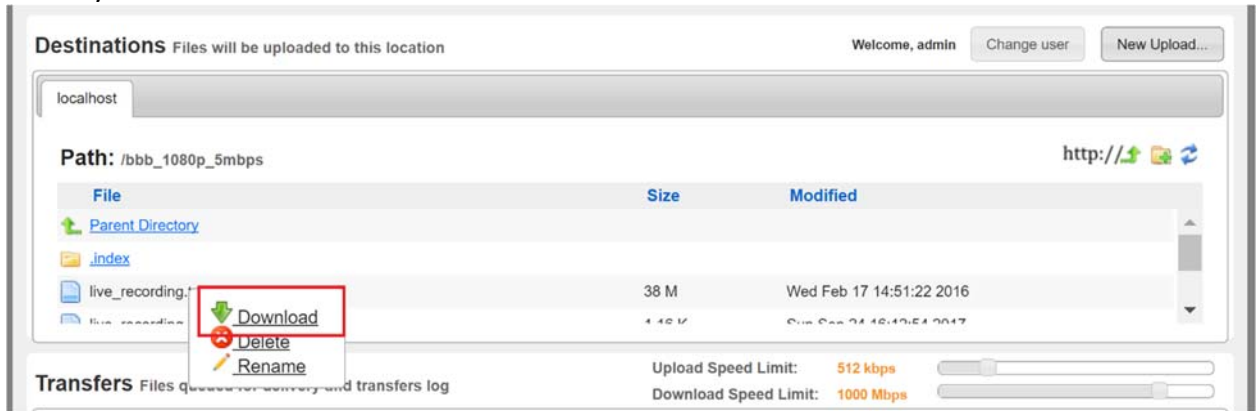
➔ To download a file:

1. In Zixi Broadcaster, click the **Files** tab.
2. Under **Destinations**, navigate to the desired file.


Accelerated File Transfer

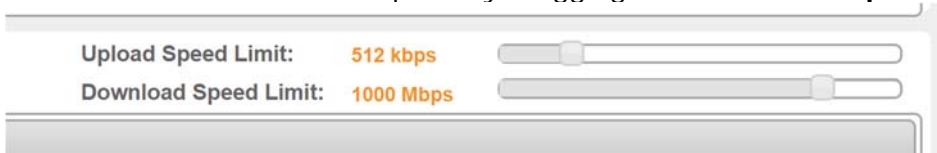
Generating Accelerated URLs

3. Hover your mouse over the desired file and click **Download**.



4. In the **Select Download Destination** window, select the local folder as a destination for the file download.
The file will be downloaded using the Zixi protocol. The download process is displayed at the bottom of the screen (**Files Transfer Queue** tab). When the download is complete, it will be recorded in the **File Transfer Log** tab.

 You can limit the download speed by dragging the **Download Speed Limit** slider.



Upload Speed Limit: 512 kbps
Download Speed Limit: 1000 Mbps

The overall maximal limit determined by the **Max download speed [kbps]** setting in the **Settings > File Transfer & VOD** screen.

Generating Accelerated URLs


Instead of downloading files from the server on which Zixi Broadcaster is installed, it is possible to use Zixi Broadcaster to retrieve the file from a remote HTTP server. Zixi Broadcaster converts the remote server URL to an Accelerated URL. By using this accelerated URL to download the file, Zixi Broadcaster will retrieve the file from the remote server and use the Zixi Protocol to transfer the file to the Client.

➔ To generate an accelerated URL:

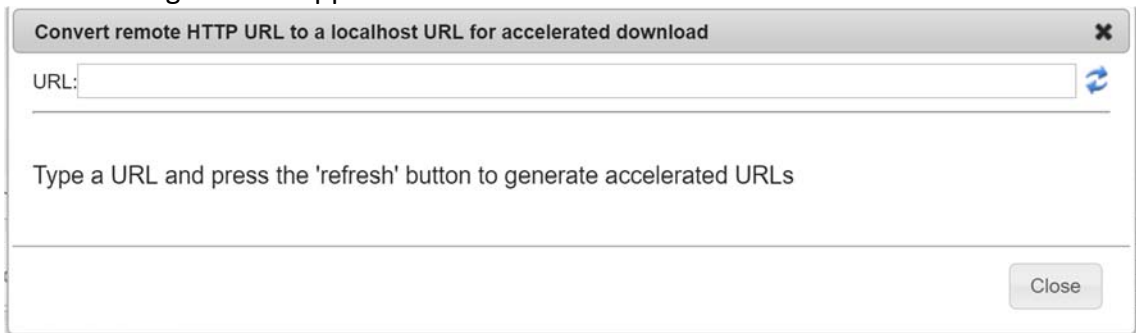
1. In Zixi Broadcaster, click the **Files** tab.

Accelerated File Transfer

Creating a New Folder

2. Under **Destinations**, click the  icon.

The following window appears:



3. In the **URL** field, type the URL of file in the remote HTTP server.
4. Click the  icon.

Two URLs are generated:




The top URL is an HTTP URL and the bottom is an HTTPS URL.

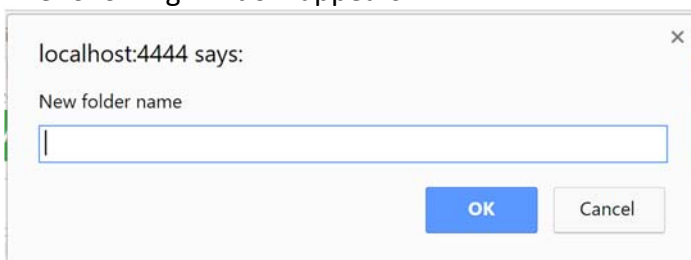
Creating a New Folder

You can use the Zixi Broadcaster UI to create folders in the server on which Zixi Broadcaster is installed.

➔ To create a new folder:

1. In Zixi Broadcaster, click the **Files** tab.
2. Under **Destinations**, click the  icon.

The following window appears:



Accelerated File Transfer

Renaming a File/Folder

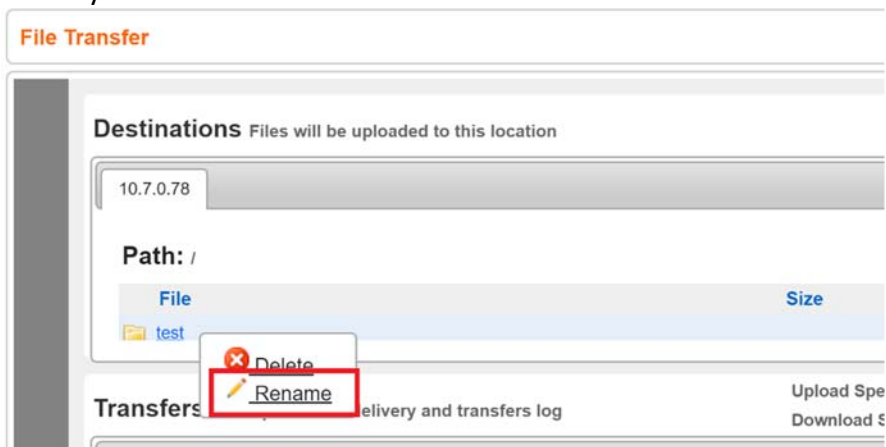
3. In the **New folder name** field, type a name for the folder.
The folder is created.

Renaming a File/Folder

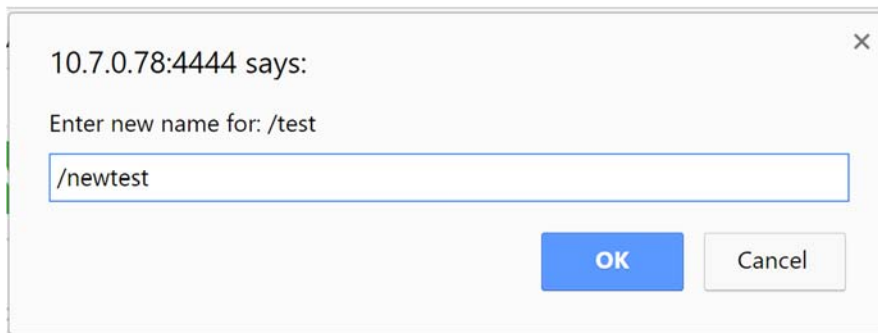
You can rename a folder or a file through the Zixi Broadcaster UI.

➔ To rename a folder/file:

4. In Zixi Broadcaster, click the **Files** tab.
 1. Under **Destinations**, navigate to the desired file.
 2. Hover your mouse over the desired file and click **Rename**.



3. In the field, enter the new folder/file name. The location of the files/folder is relative to the Root folder that was specified in the **Settings > General** screen.



4. Click **OK**.

Deleting an Existing File/Folder

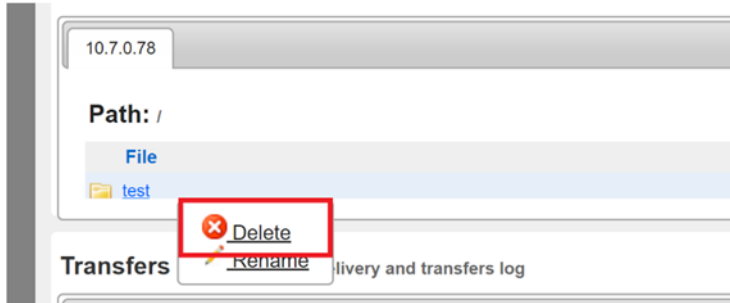
You can delete a folder or a file through the Zixi Broadcaster UI.

Accelerated File Transfer

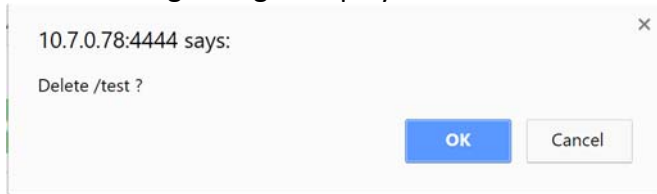
Deleting an Existing File/Folder

➔ To delete a folder/file:

1. In Zixi Broadcaster, click the **Files** tab.
2. Under **Destinations**, navigate to the desired file.
3. Hover your mouse over the desired file and click **Delete**.



The following dialog is displayed:



4. Click **OK**.

Transcoder

Zixi Broadcaster offers live transcoding, enabling users to create multiple bitrate streams from a single input stream. The transcoding converts the video and audio live streams to a variety of profiles and bitrates.

It is typically employed in the following cases:

- Where a target device does not support the format
- Where a target has limited storage capacity that requires a reduced file size
- To convert incompatible obsolete data to a better-supported or modern format.
- You can add video (H.264) and audio (AAC) profiles.

Instead of manually selecting input streams to be transcoded, you can optionally define templates with rules for automatic transcoding of input streams according to the settings of a pre-defined Transcoding Template.

Creating New Profiles

In order for the Broadcaster to switch from one encoding to another, different profiles must be configured first.

Supported Video and Audio formats include:

- Video Decoding – MPEG2, H.264/AVC , H.265/HEVC
- Video Encoding – MPEG2, H.264/AVC , H.265/HEVC
- Audio Decoding – AAC, MPEG-1 Audio Layer I / II / III, MPEG-2 Audio Layer I / II / III
- Audio Encoding – AAC only, AAC only; Pass through – any audio codec (MPEG1/2 / AAC / AC-3)

AC3 is supported as pass-through (no decoding and no encoding).

The transcoder comes with the following pre-set common video profiles:

1080i60 / 1080i59.94, 1080p30 / 1080p25, 720p60, 720p50 / 720p30, 576i60 / 576p25, 480i60 / 480p29.97

However, you can define your own custom profiles.

Transcoder

Creating New Profiles

➔ To Create a New Profile:

1. In the **Transcoder** page, click [+ New Profile](#). The **Add New Profile** window is displayed:

Add New Profile [X]

Codec type

H.265 H.264 MPEG2 AAC

Profile configuration

Preset: Custom ▼

Name:

Hardware Acceleration:

Encoding Profile: Main ▼

Resolution: X

Frames per Second: Original ▼

Bitrate Mode: CBR ▼

Average Bitrate (kbps):

Max Bitrate (kbps):

Performance: 4 (Balanced) ▼

Advanced options

Copy GOP from source:

GOP [frames]:

Closed: Fixed:

B-Frames: 0 ▼

Frame Type: Progressive ▼

Reference Frames:

HRD buffer length (seconds):

[Apply](#) [Close](#)

2. Select the desired **Profile type** - MPEG2, H.264, H.265 for video profile and AAC for audio profile.
3. Enter in the desired fields in the **Profile configuration** (see table below for additional parameters).
Selecting a specific configured **Preset** will fill in the settings automatically or alternatively leaving the default as **Custom** requires you to configure it by yourself.
4. If you want to configure the **Advanced options** for the video profiles, select **Advanced options** and fill out the respective fields (see table below for additional parameters).

Transcoder

Creating New Profiles

5. Click **Apply**.

The newly configured profile is created and appears on the screen.

Parameter	Description
Profile configuration	For Video - MPEG2, H.264, H.265
Preset	Displays list of preset configured profiles. Default: Custom
Name	Enter a unique name for the profile.
Hardware Acceleration	Select this checkbox to utilize hardware-based acceleration if it has been installed.
Encoding Profile	For video profiles (MPEG2, H.264, H.265): High / Main / Baseline Default: Main
Resolution	The new resolution, if resizing the video.
Frames per Second	Select a new frame rate, or select Original to use the original frame rate of the stream. Default: Original
Bitrate Mode	Specify the bitrate mode for the profile. Either the transcoder will strive for the optimum in VBR (Variable Bitrate) or the most constant in CBR (Constant Bitrate). Default: CBR
Average Bitrate (kbps)	Specify the average bitrate for the profile.
Max Bitrate (kbps)	Specify the maximum bitrate for the profile. Available only if the Bitrate Mode is set to VBR.
Performance	the performance of the transcoding will span between Fastest and the Best Quality with Balance in the middle. Default: 9 (Balanced)
Advanced Options	
Copy GOP from source	

Transcoder


Creating New Profiles

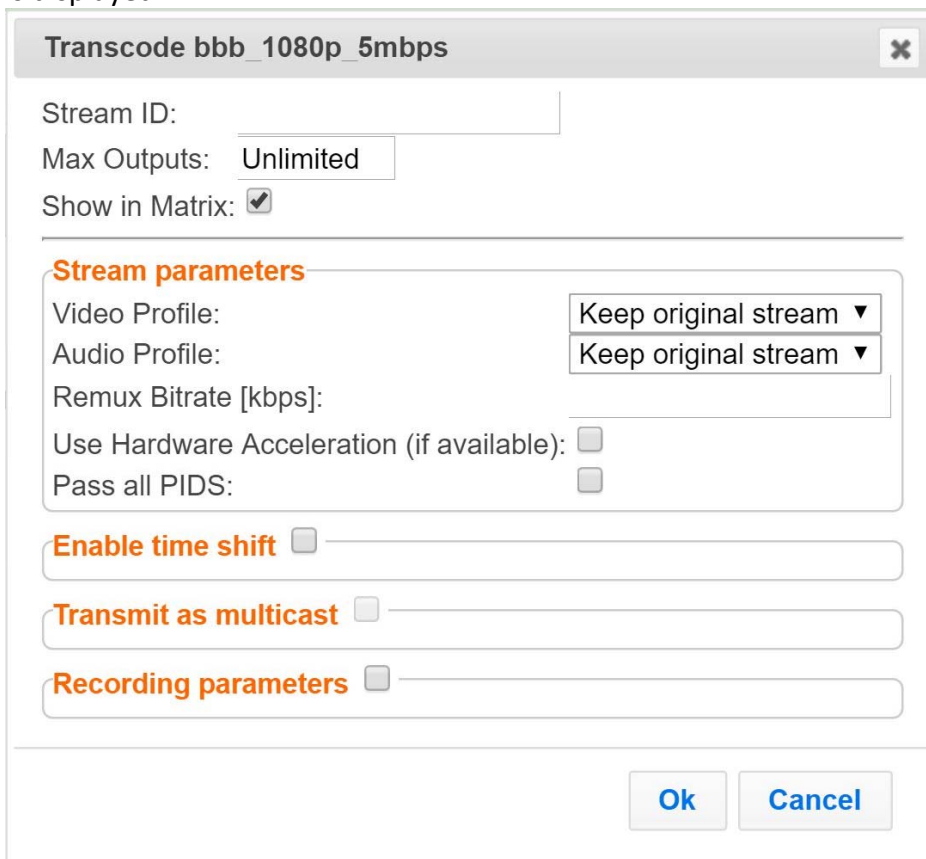
GOP [frames]	Specify the number of frames in a GOP (Group of Pictures). Default:60 Default settings: Closed, Fixed
B-Frames	Specify the maximal number of consecutive B frames in the GOP . Default: 0
Frame Type	Specify the frame type – progressive or interlaced. Default: Progressive
Reference Frames	Specify the number of frames that can be referenced for each frame. Default: 2
HRD buffer length (seconds)	Specify the length of the HRD buffer in MPEG-2.
Profile configuration	For Audio – AAC
Name	Enter a unique name for the profile.
Bitrate	Specify the bitrate for the profile
Encoding Profile	For audio profile (AAC): AAC Low Complexity / AAC High Complexity 1 / AAC High Complexity 2 Default: AAC Low Complexity

Transcoding the Input Stream

Once you have created the profile, you can use it to transcode an input stream.

➔ To Transcode an Input Stream:

1. On the **Inputs** page of Zixi Broadcaster, click the desired row of the incoming stream that you want to transcode.
2. Click the  button on the right end of the selected row and then **Transcode**. The **Transcode <input stream name>** window with the settings of the selected input stream is displayed.



Transcode bbb_1080p_5mbps

Stream ID:

Max Outputs:

Show in Matrix:

Stream parameters

Video Profile:

Audio Profile:

Remux Bitrate [kbps]:

Use Hardware Acceleration (if available):

Pass all PIDS:

Enable time shift

Transmit as multicast

Recording parameters

3. Enter the unique **Stream ID**. for the new transcoded input stream.
4. Under **Stream Parameters**, select the desired Video Profile and/or Audio Profile that you have configured. If you have not configured a video or audio profile you can select **Keep original stream**. In this case the video or audio input will not be transcoded. You can also set specific transcoding parameters for the specific stream (see table below for more details).
5. Click **OK**.

The transcoded input stream is created and appears in an embedded window labeled **Transcoded sources** under the original input stream from which it was created.

Transcoder

Transcoding the Input Stream

Parameter	Description
Advanced Options	
Video Profile	Select an existing profile or select Keep original stream if you do not wish to transcode the video stream.
Audio Profile	Select an existing profile or select Keep original stream if you do not wish to transcode the audio stream.
Transport Stream Bitrate (Kbps)	Specify the bitrate of the transport stream. This parameter is optional. If you do not specify a TS Bitrate, the stream will be VBR. If you specify a bitrate, the stream will be CBR.
Use Hardware Acceleration (if available)	Select this checkbox to use hardware acceleration component if it has been installed.
Pass all PIDs	Select this checkbox to pass-through all non-transcoded PIDs.
Enable time shift	
Maximum delay [hh:mm:ss]	Specify the time of the delayed transmission of this stream. Maximum: 24 hours.
Transmit as multicast	Selecting this checkbox enables the transmission of this stream's outputs as multicast. A Zixi receiver that will pull the stream will receive it in multicast. By default Zixi Broadcaster is configured to allow transparent fallback to unicast if it is out of the LAN. Requires enabling Multicast Pull in the Settings. This setting requires enabling Multicast Pool (Settings > Multicast Pool).
Multicast Only	Selecting this checkbox will force the transmission of this stream only in multicast.
Recording Parameters	
Max recorded file duration [hours]	Specify the maximum time allotted for recording a video stream. Default: 2 hours
Keep recorded files for [hours]	Specify the maximum time for storing the recording. Default: 0 hours


Transcoding Templates

Instead of manually selecting input streams to be transcoded, you can define templates with rules for automatic transcoding of input streams according to the settings of a pre-defined Transcoding Template. Every time a new input stream, which matches the conditions of the template, is added, it will be automatically transcoded into the transcoded streams defined in the template's settings. The input streams are identified by system according to naming patterns.

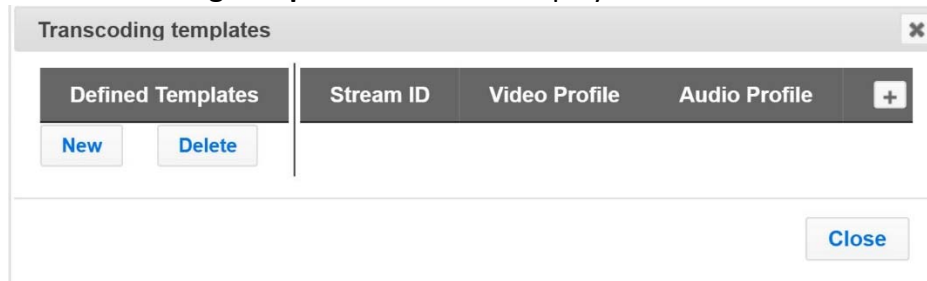


The transcoding profiles used in the transcoding templates have to be created in advance (for more information see [Creating New Profiles](#)).

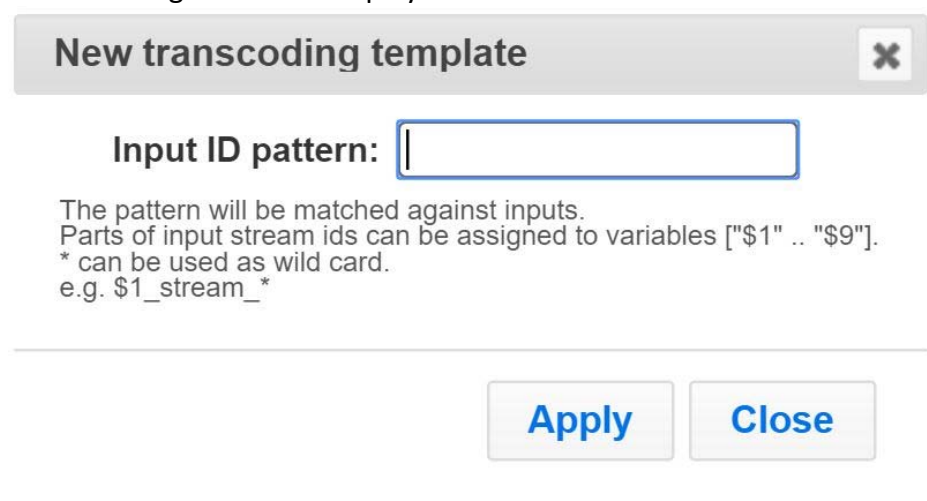
➔ **To create a new transcoding template:**

1. Click the **Inputs** tab at the top of the Zixi Broadcaster administrative screen.
2. In the Menu bar, click the Templates () button.

The **Transcoding Templates** window is displayed:



3. Click **New** to define a new template.
The following window is displayed:



4. In the **Input ID pattern** field, enter a pattern for the Stream ID of the input stream that will be automatically transcoded. This pattern will be used to identify the input stream and can include variables that are marked with the "\$" sign followed by a number (e.g.

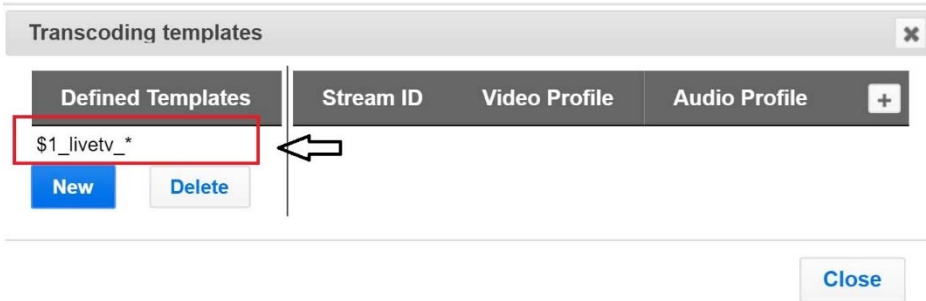
Transcoder

Transcoding Templates

\$1, \$2, etc.) and/or with an asterisk "*" wildcard. The patterns should also include a part of the string that requires an exact match. For example, the pattern "\$1_stream_\$2kbps" will match an input stream "talk_show_stream_600kbps".

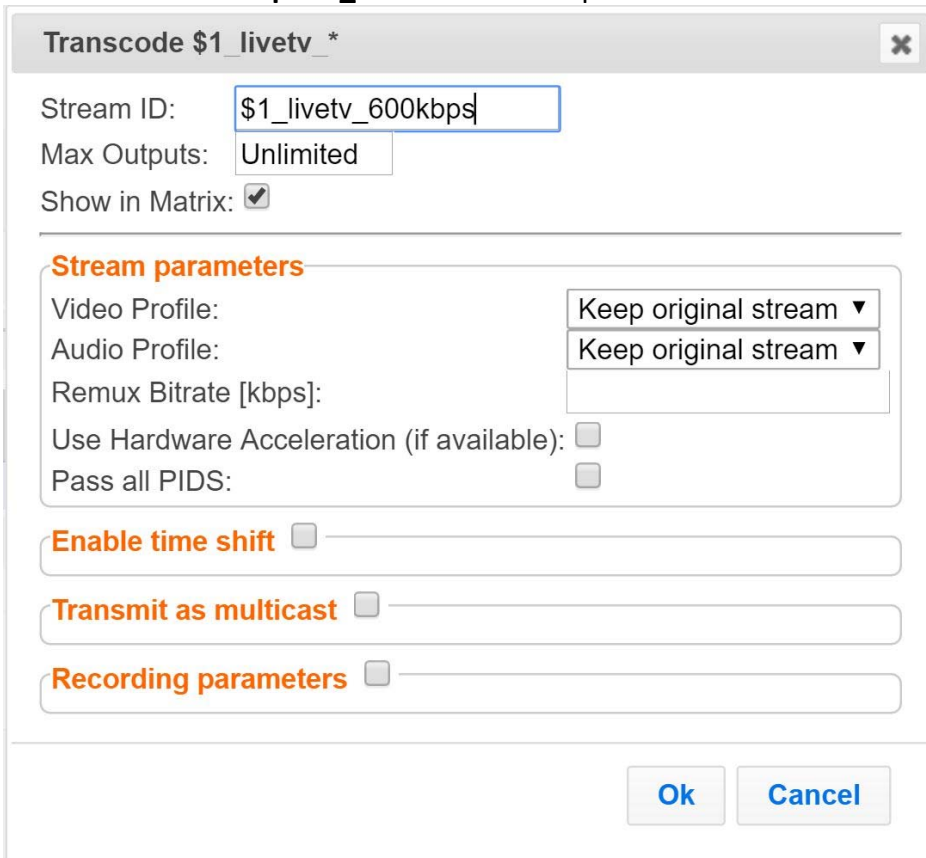
5. Click **Apply**.

The new template is added to the list of transcoding templates. However, the transcoding will not be active until you define transcoded stream rules.



6. Select the newly created template and click the **+** button, located at the right-hand corner to define a transcoded stream rule.

The **Transcode <template_name>** window opens:



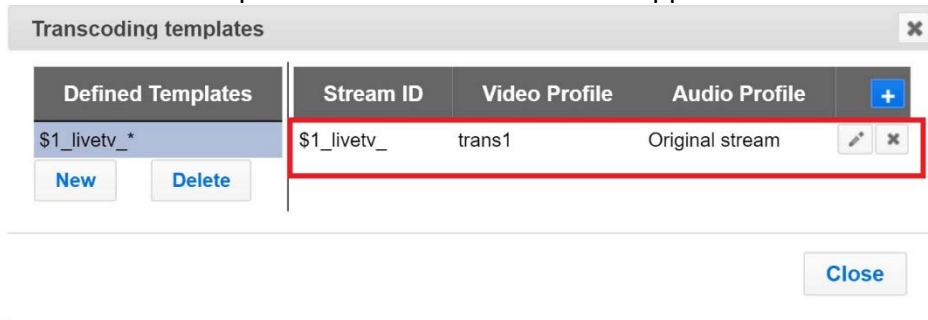
7. Enter the unique **Stream ID** for the transcoded stream.
8. In the **Max Outputs** field, define the maximal number of outputs that can be connected to the stream.

Transcoder

Transcoding Templates

- Under **Stream Parameters**, select the desired Video Profile and/or Audio Profile that you have configured. If you have not configured a video or audio profile you can select **Keep original stream**. In this case the video or audio input will not be transcoded. You can also set specific transcoding parameters for the specific stream (see table below for more details).
- Click **OK**.

The transcoded input stream rule is created and appears as follows:



If an input stream enters Zixi Broadcaster and matches the **Input ID pattern**, it will be transcoded according to all the transcoded input stream rules that were created.

Parameter	Description
Video Profile	Select an existing profile or select Keep original stream if you do not wish to transcode the video stream.
Audio Profile	Select an existing profile or select Keep original stream if you do not wish to transcode the audio stream.
Transport Stream Bitrate (Kbps)	Specify the bitrate of the transport stream. This parameter is optional. If you do not specify a TS Bitrate, the stream will be VBR. If you specify a bitrate, the stream will be CBR.
Use Hardware Acceleration (if available)	Select this checkbox to use hardware acceleration component if it has been installed.
Pass all PIDs	Select this checkbox to pass-through all non-transcoded PIDs.
Enable time shift	Select to enable delayed transmission.
Maximum delay [hh:mm:ss]	Specify the time of the delayed transmission of this stream. Maximum: 24 hours.

Transcoder

Transcoding Templates

Transmit as multicast	Selecting this checkbox enables the transmission of this stream's outputs as multicast. A Zixi receiver that will pull the stream will receive it in multicast. By default Zixi Broadcaster is configured to allow transparent fallback to unicast if it is out of the LAN. Requires enabling Multicast Pull in the Settings. This setting requires enabling Multicast Pool (Settings > Multicast Pool).
Multicast Only	Selecting this checkbox will force the transmission of this stream only in multicast.
Recording Parameters	
Max recorded file duration [hours]	Specify the maximum time allotted for recording a video stream. Default: 2 hours
Keep recorded files for [hours]	Specify the maximum time for storing the recording. Default: 0 hours

11. Repeat steps 6-10 above to create additional transcoded input stream rules.

Server Settings

Zixi Broadcaster is pre-configured with default settings, so generally there is no need to change the server settings. However, some users may want to change specific settings to meet their specific needs.

General

The General Settings screen includes basic configuration parameters for the server including the server's ID, access ports, authorizations, security, and storage.

Server Settings

General

General

ID:

Machine local time: 2017-07-16 09:34:57

Web server port:

Admin username:

Admin password:

Enable read / write user – except for settings screen:

Enable read only user + ability to switch streams:

Username:

Password:

Enable read only user:

Enable HTTPS:

HTTPS certificate uploaded: No

HTTPS private key uploaded: No

HTTPS private key passphrase:

Root folder: C:/Program Files/Zixi/Broadcaster/files
Set root folder in broadcaster-info.xml

Max disk quota [%]:

Enable DTLS

Certificate uploaded: No

Private key uploaded: No

Private key passphrase:

*Same certificate is used for HTTPS media streaming.

Input Ports

Port	IP	DTLS
<input type="text" value="2088"/>	<input type="text" value="Any"/>	<input checked="" type="checkbox"/>

Output Ports

Port	IP	DTLS
<input type="text" value="2077"/>	<input type="text" value="Any"/>	<input checked="" type="checkbox"/>

Limits

CPU [%]:

Memory [%]:

GPU [%]:

Input Bandwidth [kbps]:

Output Bandwidth [kbps]:

Field	Description
General	
ID	The unique (alphanumeric) name of the Zixi Broadcaster server. Typically: host name.
Machine local time	Shows the current time for the machine.

Server Settings

General

Web Server Port	The port number of the web server administration. You can configure this parameter to any legal port number which is supported by your Firewall. Default: 4444
Admin User Name	The user name of the administrator. The administrator is authorized to modify all parameters in the system as well as manage all the outputs and inputs on the server.
Admin Password	The password of the administrator.
Enable read / write user - except for settings screen	Select this checkbox to enable an "Operator" user. This type of user can read and write throughout all of the screens, except for the screens under the Settings menu. You can modify the user name (i.e. enter another name instead of Operator) and password.
Enable read-only user +ability to switch streams	Select this checkbox to enable a "User" user. This type of user can read throughout all of the screens as well as the ability to switch between existing streams. You can modify the user name (i.e. enter another name instead of User) and password.
Username	The account Username.
Password	The account password.
Enable read only user	Select this checkbox to enable an "Observer" user. This type of user can read throughout all of the screens. You can modify the user name (i.e. enter another name instead of Observer) and password.
Enable HTTPS	Enables secure HTTPS connection to the server. Enabling HTTPS requires the relevant certificates and private keys. To enable HTTPS, click on the checkbox and upload the required files.
HTTPS certificate uploaded (for HTTPS enabled)	If no certificate has been uploaded, click Upload and navigate to the file location.
HTTPS private key uploaded (for HTTPS enabled)	If no private key has been uploaded, click Upload and navigate to the file location.
HTTPS private key passphrase (for HTTPS enabled)	Enter the Private key passphrase for your HTTPS account.

Server Settings

General

Root folder	Displays the configured root folder. You can modify the root folder in broadcaster-info.xml
Max. disk quota [%]	Displays the maximum disk space percentage that will be allocated for storing recordings. When the amount is exceeded, Zixi Broadcaster will begin a rotation (deleting older content). Default: 85%
Enable DTLS	To enable DTLS automatic encryption, click on the checkbox and upload the required files.
Certificate uploaded (for DTLS enabled)	If no certificate has been uploaded, click Upload and navigate to the file location. Note: This is the same certificate as the HTTPS certificate.
Private key uploaded (for DTLS enabled)	If no private key has been uploaded, click Upload and navigate to the file location.
Private key passphrase (for DTLS enabled)	Enter the Private key passphrase for your DTLS account.
Input ports	
Port	The port that is used for Input streams. You can modify the port number and/or add additional ports by adding a “,” between them. Adding additional ports may be necessary when there is a chance that the ISP will block a certain port. Click '+' to add additional ports. Default: 2088
IP	Enter an IP address. The default enables Any IP address.
DTLS	Click the DTLS check box to activate DTLS automatic encryption of the streams.
+ (add ports)	Click + to add additional ports. Note: For each port you can select whether or not to activate DTLS encryption. This enables streaming of non-encrypted streams on one port and encrypted streams on a separate port.
Output ports	
Port	The port that is used for the Output streams. Displays the Output port(s). You can modify the port number and/or add additional ports by adding a “,” between them. Adding additional ports may be necessary when there is a chance that the ISP will block a certain port. Click '+' to add additional ports. Default: 2077
IP	Enter an IP address. The default enables Any IP address.

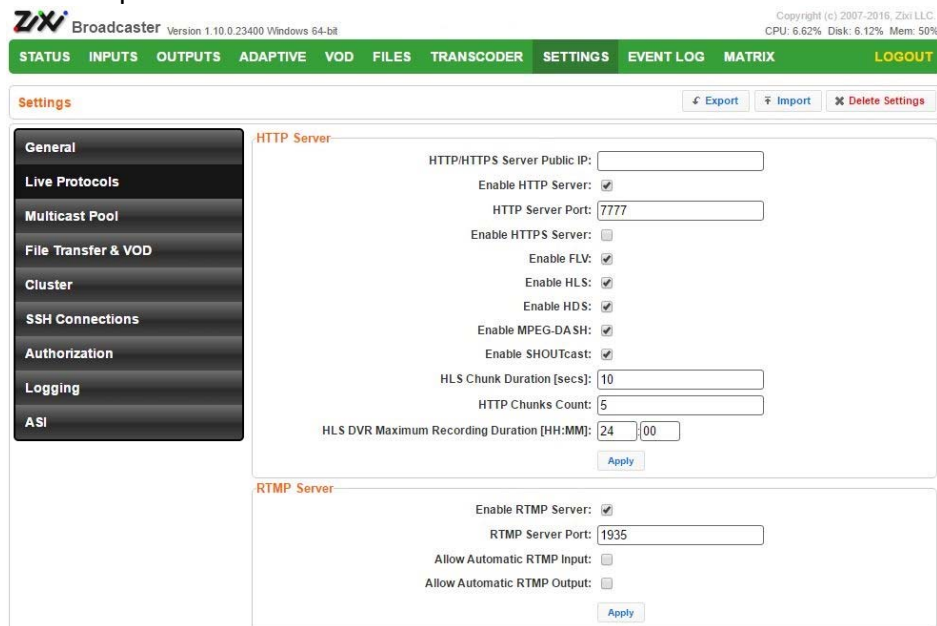
Server Settings

General

DTLS	Click the DTLS check box to activate DTLS automatic encryption of the streams.
+ (add ports)	Click + to add additional ports. Note: For each port you can select whether or not to activate DTLS encryption. This enables streaming of non-encrypted streams on one port and encrypted streams on a separate port.
Limits	Configuration of thresholds for generating an alarm.
CPU [%]	The CPU utilization threshold. If this limit is exceeded, the CPU indicator at the top of the screen will appear in red, and an alarm will be generated in the event log. Default: 90
Memory [%]	The memory utilization threshold. If this limit is exceeded, the Memory indicator at the top of the screen will appear in red, and an alarm will be generated in the event log Default: 90
GPU [%]	The GPU utilization threshold. If this limit is exceeded, the GPU indicator at the top of the screen will appear in red, and an alarm will be generated in the event log. Default: 0
Input Bandwidth [kbps]	Bandwidth utilization threshold for input streams. Default: Unlimited.
Output Bandwidth [kbps]	Bandwidth utilization threshold for output streams. Default: Unlimited.

Live Protocols

The Live Protocols screen enables the configuration of the HTTP/HTTPS/RTMP server that will broadcast the streams using live streaming protocols, particularly for adaptive streaming and internet protocols.



Field	Description
HTTP Server	
HTTP/HTTPS Server Public IP	Override the Zixi IP (e.g. download.Zixi.com) with a public IP.
Enable HTTP Server	Enable a non-secure connection over HTTP.
HTTP Server Port	Defines the HTTP Server Port. Default:7777
Enable HTTPS Server	Enable a secure connection over HTTPS.
Enable FLV	Enable the streaming via the FLV protocol.
Enable HLS	Enable the streaming via the HLS protocol.
Enable HDS	Enable the streaming via the HDS protocol.
Enable MPEG-DASH	Enable the streaming via the MPEG-DASH protocol.

Server Settings

Live Protocols

Enable SHOUTcast Enable the streaming via the SHOUTcast protocol.

HLS Chunk Duration [secs] Configuration of the duration in seconds of HLS chunks for adaptive streaming. Typically 2- to 4-seconds long.

HLS Chunk Count Defines how many chunks are in a playlist

HLS DVR Maximum Recording Duration [HH:MM] Defines the maximum recording duration for HLS DVR. Default: 24 hours.

RTMP Server

Enable RTMP Server Enables Zixi Broadcaster to handle incoming RTMP streams.

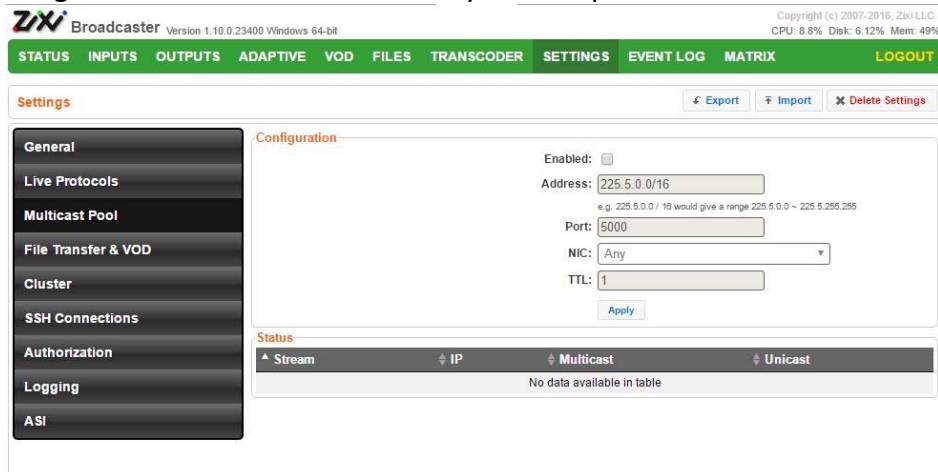
RTMP Server Port The port through which the RTMP stream will be transmitted. Default: 1935

Allow Automatic RTMP Input Automatically creates an RTMP input without the need to define it in the Input screen.

Allow Automatic RTMP Output Automatically creates an RTMP output without the need to define it in the Output screen. This works in tandem with Zixi Feeder (**Remote RTMP Output** setting, which enables sending a Zixi-protected stream to Zixi Broadcaster and then Zixi Broadcaster automatically outputs the stream as RTMP) and SDK (which includes a **zixi_rtmp_out_config** option). By enabling this option, the RTMP streams will be automatically created as they arrive into Zixi Broadcaster and displayed in the Output screen.

Multicast Pools

Multicast pool is a collection of multicast IP addresses which provides a multicast IP automatically when an input is being pulled out of the Zixi Broadcaster. When the “multicast pools” setting is enabled, you do not have to define a specific multicast IP address for every push stream. Instead, you simply enable the Multicast Only parameter and Zixi Broadcaster will assign the multicast IP automatically when it pulls the stream out.



Field	Description
Configuration	
Enabled	Enables multicast pool
Address	Specify the range of IP addresses (CIDR format).
Port	Specify the port that will be shared by all of the members of the pool.
NIC	Specify the network card to use for the outgoing multicast traffic.
TTL	Specify the Time To Live.

File Transfer & VOD

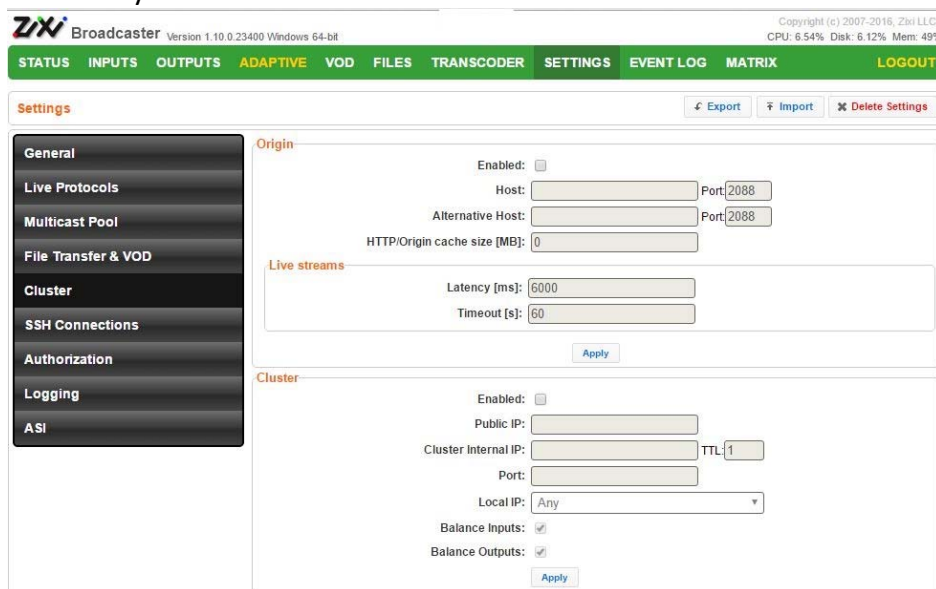
Field	Description
File Transfer & VOD	
Download	Enables download of files through the Files menu of the Zixi Broadcaster.
Upload	Enables upload of files through the Files menu of the Zixi Broadcaster
Automatically index VOD files	Indexes the VOD files in the various VOD folders. In some cases, the indexing of VOD files can affect performance. Using this control, you can decide when to index the VOD files in order to ensure optimal performance during peak times.
VOD	Enables the VOD feature.
Encrypt downloads	Encrypts files that are downloaded.
Max download speed [kbps]	Limits the amount of bandwidth used to download files
Max upload speed [kbps]	Limits the amount of bandwidth used to upload files
Initial bitrate [kbps]	Limits the amount of bandwidth used during initial download/upload (before cache)
HTTP/Origin cache size [MB]	Limits the amount of cache memory that can be used for cache

Cluster

Zixi Broadcaster enables two types of configurations:

Cluster configuration - a cluster of Zixi Broadcaster servers in a LAN for load balancing purposes. The different Zixi Broadcaster servers will communicate with each other and are “aware” of the Input/Output traffic of each node in order to redirect the streams to the least occupied Zixi Broadcaster instance.

Edge-Origin configuration - the cluster may be used to forward the stream from one Zixi Broadcaster server (origin) to other Zixi Broadcaster servers (edge) which are closer to the user or is located in a less sensitive environment. When the end-user connects to the edge server to view a certain stream, the edge server will retrieve the stream from the origin server and will seamlessly deliver it to the end-user.



Field	Description
Origin	
Enabled	Enables Edge-Origin configuration.
Host	The primary host IP address of the origin server.
Port	The port number in the origin server for transmitting the stream.
Alternative Host	The IP address for a secondary server. If the primary origin server is unavailable, the data will be retrieved from the secondary origin server.
Port	The port number for the secondary origin server.

Server Settings

Cluster

HTTP/origin cache size [MB]	The size of the cache that will be used to serve multiple users. The edge server will retrieve the data from the origin and cache it for additional users in order to save bandwidth and increase performance.
------------------------------------	--

Live Streams

Latency [ms]	Specify the buffer size between the edge and the origin.
---------------------	--

Timeout [s]	Specify the maximum amount of time in which the edge will attempt to connect to the origin. After the timeout period the edge server will attempt a connection with the secondary origin server.
--------------------	--

Cluster

Enabled	Enables Cluster configuration.
----------------	--------------------------------

Public IP	The public-facing IP address of this Zixi Broadcaster server for external access. A unique Public IP must be assigned to each broadcaster in the cluster.
------------------	---

Cluster Internal IP	The internal IP (multi-cast) address for communication between the various servers in the cluster. This address is used to communicate load information forwarding the streams within the cluster. The same multicast IP address should be used across all instances in the cluster.
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TTL	Specify the Time To Live parameter.
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Port	Specify the port that are used in all the participating Broadcaster servers in the cluster.
-------------	---

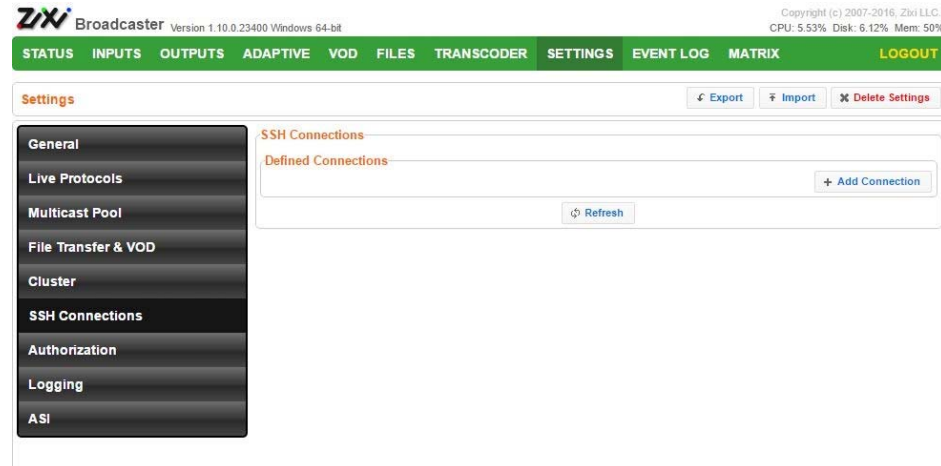
Local IP	Specify the local IP address which the network employs for internal communication.
-----------------	--

Balance Inputs	Enables the balancing of the inputs.
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Balance Outputs	Enables the balancing of the outputs.
------------------------	---------------------------------------

SSH Connections

SSH (Secure Shell) is a network protocol that allows a secure access over an encrypted connection. Reverse SSH is a technique that can be used to access systems (that are behind a firewall) from the outside world.



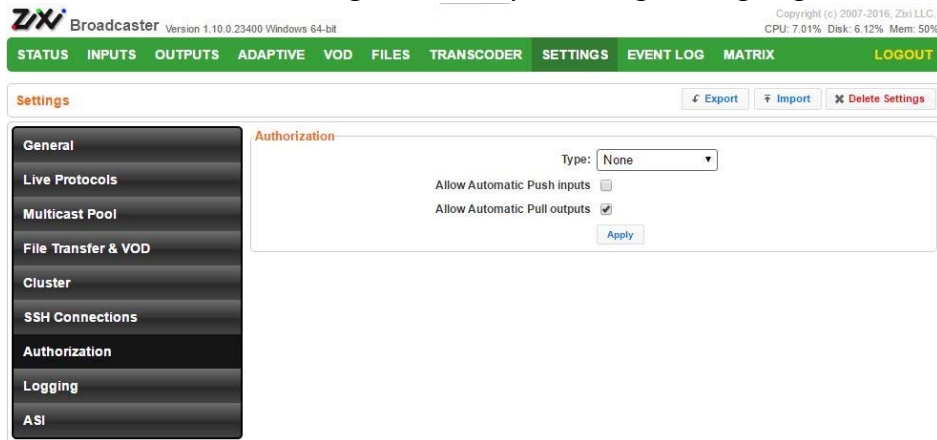
The screenshot shows the Zix Broadcaster software interface. At the top, there is a navigation bar with tabs for STATUS, INPUTS, OUTPUTS, ADAPTIVE, VOD, FILES, TRANSCODER, SETTINGS (selected), EVENT LOG, and MATRIX. A LOGOUT button is on the far right. Below the navigation bar, the 'Settings' window is open, showing a sidebar with various configuration categories: General, Live Protocols, Multicast Pool, File Transfer & VOD, Cluster, SSH Connections (selected), Authorization, Logging, and ASI. The main content area is titled 'SSH Connections' and contains a section for 'Defined Connections'. This section is currently empty and includes a '+ Add Connection' button and a 'Refresh' button. At the top right of the settings window, there are buttons for 'Export', 'Import', and 'Delete Settings'.

➔ To create an SSH connection:

1. Click the **Add Connections** button.
2. In the **Host** field, enter the IP address or host name of the host that you wish to access.
3. In the **Port** field, enter the port number to access the host.
4. Click **Apply**.

Authorization

Authorization can be configured for any incoming or outgoing streams.



Field	Description
Authorization	Default: None - authorization will be defined in the Input and Output streams. In this case, you will need to define the password in the Input and the Output streams.
Type	Text File – this option manages authorizations in a text file. This option is useful for large OTT operations, as it does not require configuration for every user. The text file contains pairs of stream name and password that are used for the input streams. For the outputs, it contains the stream name, user and password of the viewer. HTTP Server – Zixi Broadcaster will generate an HTTP request to an external server on every connection. Linux Server – uses the built-in authorization of the operating system. Global Password – a single password that will be used for all access requests. If you select this option, you must define the global password in the Parameter field below. Other override authorization techniques are available. For more information contact Zixi support.
Allow Automatic Push inputs	If this checkbox is selected the Zixi Broadcaster will automatically create an input stream each time it receives a push stream from a source. However, if this checkbox is not selected, only predefined Push Input streams with the defined credentials will be allowed in (this is the default setting and the behavior in previous versions). Default: not selected.

Server Settings

Authorization

**Allow Automatic
pull outputs**

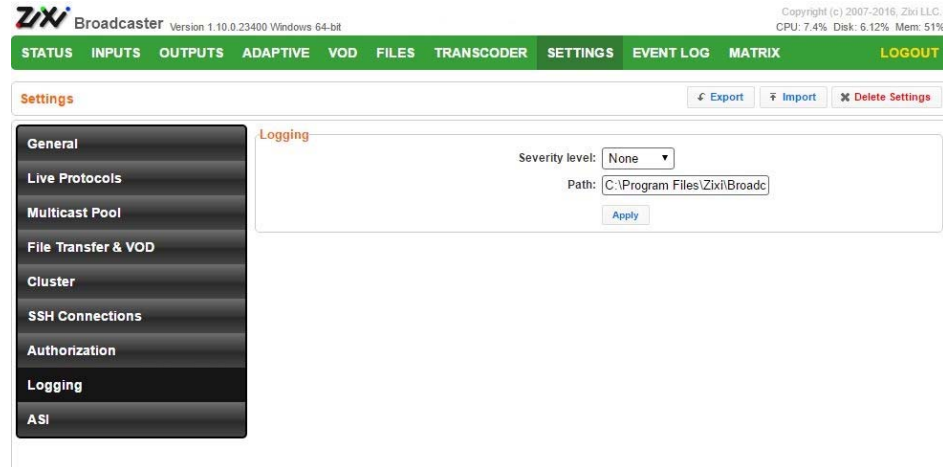
If this checkbox is selected, any Zixi Receiver that requests a Pull output will be granted access. In this case, a Pull output will be automatically created in the Zixi Broadcaster (this is the default setting and the behavior in previous versions).

However, if this checkbox is not selected, only predefined Pull output streams with the defined credentials will be pulled by the Zixi Receiver.

Default: selected.

Logging

The Logging screen defines a log for debugging purposes.



Field	Description
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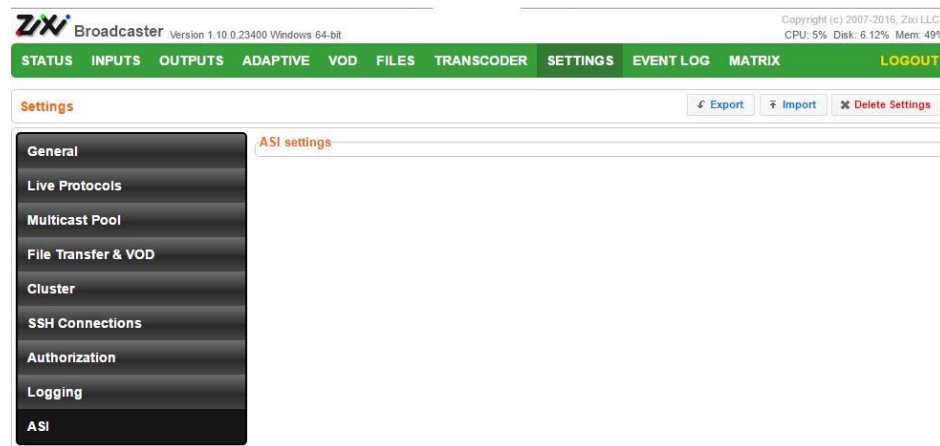
Logging

Severity Level	The Severity Level that will be collected in the log, from Info , Warning , Error , to Fatal . Default: None , since Logging is resource-intensive and only enabled when necessary.
-----------------------	--

Path	The log file name and path where the collected event information will be stored.
-------------	--

ASI

If there is an ASI card in the machine, you can reverse the direction of the Input to Output and vice versa.



➔ To Reverse the Direction of the Stream:

1. From the **Settings** page of the Zixi Broadcaster, click **ASI** on the left-hand side. The various **ASI settings** are displayed.
2. Click the desired **RESET** button to the right of the stream that you want to reverse. A confirmation window is displayed with the notification that the service must first be restarted before the direction is reversed.

Field	Description
Available ports	
Name	Specify the port number used by the ASI protocol.
Data Direction	Specify the direction of the data being transmitted by the ASI protocol.

SNMP (Linux Only)

The SNMP screen includes basic configuration parameters for the configuration of Simple Network Management Protocol, which enables monitoring and control of Zixi Broadcaster by a monitoring system. For further information on how to enable and configure SNMP on Zixi Broadcaster, see

Field	Description
Service	Click the button to Start/Stop the snmpd service.
SNMP V3 Users	For SNMPv3 monitoring systems, click the + button to add authentication credentials and fill-in the following fields: User name - enter the SNMP user name Write access - select the checkbox to allow Read-Write access rights. If the checkbox is not selected, the user will have Read-only access rights. Password - enter the SNMP user's password.
Trap Receivers	Specify SNMP Trap receivers that will listen to the SNMP Traps that will be sent by Zixi Broadcaster. Click the + button to add authentication credentials of the Trap Receiver, by filling-in the following fields: Community - Specify the community name for access.

Server Settings

SNMP (Linux Only)

Field	Description
	Host - Specify the IP address to which the Trap messages will be transmitted. Port - Specify the Port number to which the Trap messages will be sent transmitted.
Read-only Community Name	Used in SNMPv1 and SNMPv2 , this parameter is used to specify the Community Name to enable read-only access to the Zixi Broadcaster monitored information. If the community string is correct, Zixi Broadcaster will respond with the requested information. If the community string is incorrect, Zixi Broadcaster will simply ignores the request and will not respond.
Read-write Community Name	Used in SNMPv1 and SNMPv2 , this parameter is used to specify the Community Name to enable read-write access to Zixi Broadcaster. Read-write objects include, for example, zbiActive, which indicates and/or sets the Active state of an Input stream

Viewing Events Log

The Event Log screen displays all the events (errors, connections, configuration changes, analysis events etc.) that occurred in the Zixi broadcaster. The logs are displayed in the server time (not local time) and can be exported as a .cvs file.

In Linux, the event log is written to a file located in the following location on the disk:

`/log/var/messages`

➔ To Clear the Log:

In the **Event Log** screen, click **Clear** on the upper right-hand corner. The events on the log screen are deleted.

➔ To Save the Log as a File:

In the **Event Log** screen, click **Save** on the upper right-hand corner. A .cvs file is created and saved to the local destination.

➔ To Refresh the Screen:

In the **Event Log** screen, click **Refresh** on the upper right-hand corner. The data on the screen is updated.

Using the Matrix

The Zixi Matrix view provides a visual-based alternative to managing the streams, by previewing the input and output streams with their current status. Matrix offers drag and drop capabilities to connect input streams to outputs as well as some of the actions that were covered in the Performing Actions on Input Streams and Performing Actions on Output Streams sections above.

Connecting Input to Output

An easier method of connecting inputs to outputs.

➡ To Connect an Input to an Output:

Drag the desired input thumbnail and drop it over a specific output thumbnail. The desired input is connected to the selected output.

Disconnecting Output from Input

➔ Disconnect an Input to an Output:

1. Click on the To connected stream that you want to disconnect.
The **Input stream data** window is displayed.
2. Click **Unlink**.
A confirmation window is displayed.
3. Click **Confirm**.
The Output is disconnected from the Input.

Matrix Interface Elements

The Matrix view displays preview thumbnails of the Input and Output streams. Preview thumbnails of input streams are presented in the Inputs pane and preview thumbnails of output streams are presented in the Outputs pane.

- If the stream is active - the live video will be shown in the preview thumbnail.
- If an input stream is not active – the preview thumbnail will include an “Offline” message.
- If an output stream has been created, but has not been connected to an input – the preview thumbnail will include the following message - “Drag Input Here”.
- If a connected output stream does not receive a live stream - the preview thumbnail will include a “No Video” message.



Changing Matrix View

You can modify the size of the panes, the size of the preview thumbnails, and re-arrange the order the preview thumbnails.

➔ To modify the size of the panes:

Click on one of the rounded **pane size anchors** (see screenshot above)

➔ To modify the size of the preview thumbnails:


Click on one of the sizes in the **preview size controller** (see screenshot above).

➔ To re-arrange the order the preview thumbnails:

Drag and drop the preview thumbnail to the desired position within the pane.

Searching for Specific Streams

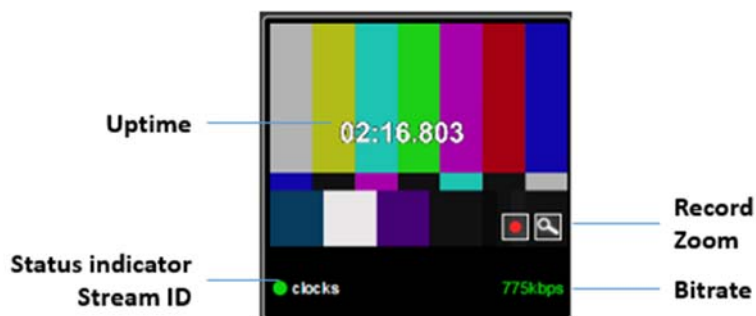
➔ To Search for a Specific Stream:

Type in the specific stream name in the appropriate (Input or Output) search text box on the top of the console and click .

The relevant stream will be the only one to be displayed in the pane.

Preview Thumbnail Elements

The preview thumbnail includes the following elements:



Using the Matrix

Viewing Stream Details

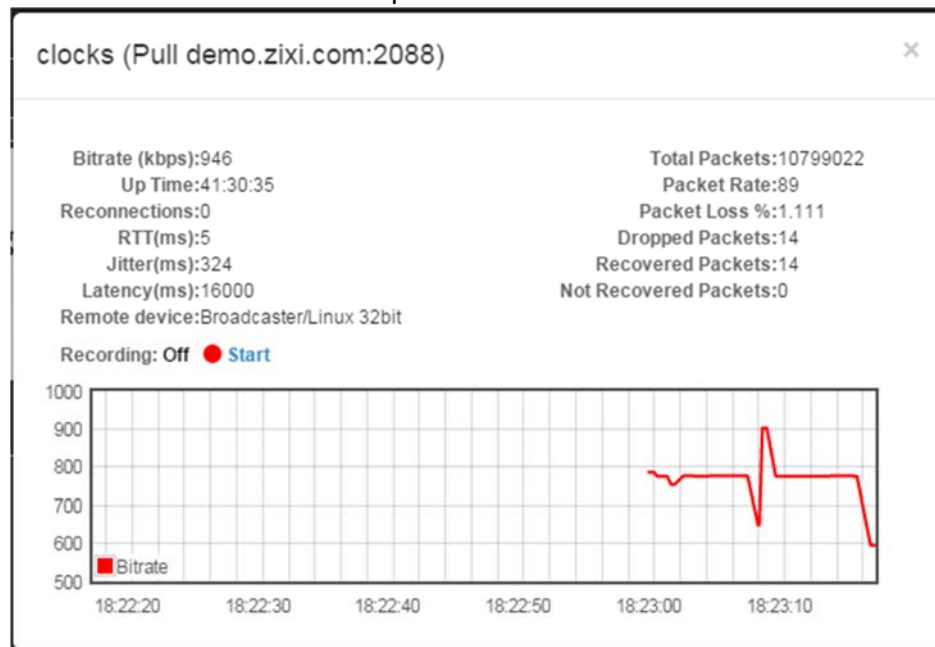
Element	Description	Action
Status Indicator	Displays the unique identifier for this group.	
Stream ID	Displays the unique name for the stream.	
Bitrate [kbps]	Displays the bitrate of the active stream.	
Uptime	Displays the amount of time the stream has been active.	
Record	Stream recording	Click the record button to start recording. Click again to stop recording
Zoom	Opens the stream in a larger preview window with sound	Click the Zoom icon to open the larger preview screen.

Viewing Stream Details

➔ To View Stream Details:

Click anywhere on the preview thumbnail.

The Stream Details window opens:



Configuring SNMP

Zixi Broadcaster enables monitoring and control via SNMP (on Linux only). The monitoring system can receive SNMP Trap messages from Zixi Broadcaster as well as access monitored objects with read-only and read-write access privileges (objects and their access permissions are defined in the MIB). Zixi Broadcaster supports SNMPv1, SNMPv2, and SNMPv3. Before using SNMP you need to ensure that SNMP is enabled in your Zixi Broadcaster license, run a script, as described below, and configure the SNMP settings in the Settings >SNMP screen.

Activating SNMP

➔ To Activate SNMP:

Run the script file `./install_snmp.sh`, located in the Broadcaster folder, where Zixi Broadcaster was installed. The events on the log screen are deleted.



Note: Running the script may cause Zixi Broadcaster to restart.

Configuring SNMP Settings

➔ To configure SNMP:

1. In Zixi Broadcaster UI, go to **Settings > SNMP**.

SNMPv3 Users	
User	Write access

Trap receivers	
Host	Port
10.7.0.23	162

2. In the **Service** field, click the button to activate the service.

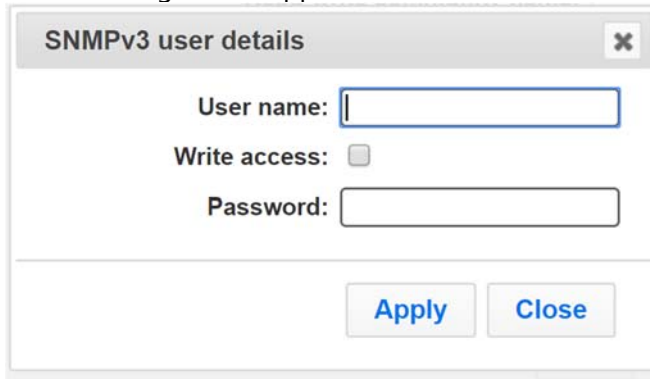
3. Do one of the following:

Configuring SNMP

Configuring SNMP Settings

- For SNMPv1 or SNMPv2, fill in the read-only and/or read-write community name in the **Read only community name**, and **Read-write community name** fields.
- For **SNMPv3**, under the SNMPv3 Users section, click the + button.

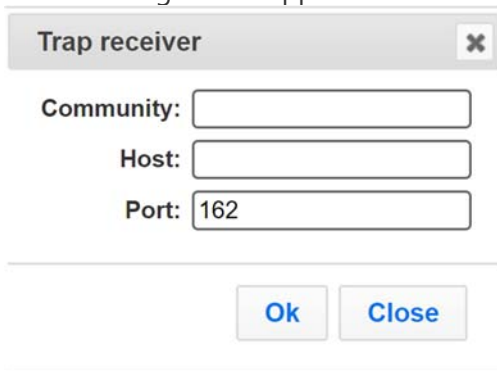
The following screen appears:



The image shows a dialog box titled "SNMPv3 user details" with a close button (X) in the top right corner. It contains three input fields: "User name:" with an empty text box, "Write access:" with an unchecked checkbox, and "Password:" with an empty text box. At the bottom, there are two buttons: "Apply" and "Close".

- In the **User Name** field, enter the SNMP user name.
 - In the **Write Access** field, select the checkbox to allow **Read-Write** access rights. If the checkbox is not selected, the user will have **Read-only** access rights.
 - In the **Password** field, enter the SNMP user's password.
4. Under the **Trap Receivers** section, specify SNMP Trap receivers that will listen to the SNMP Traps that will be sent by Zixi Broadcaster, by clicking the + button to add a trap receiver.

The following screen appears:



The image shows a dialog box titled "Trap receiver" with a close button (X) in the top right corner. It contains three input fields: "Community:" with an empty text box, "Host:" with an empty text box, and "Port:" with a text box containing the value "162". At the bottom, there are two buttons: "Ok" and "Close".

5. In the **Community** field, specify the community name for access.
6. In the **Host** field, specify the IP address to which the Trap messages will be transmitted.
7. In the **Port** field, specify the Port number to which the Trap messages will be sent transmitted.
8. Click **Apply**.

Viewing MIB Information

You can view the "Root MIB" (which defines the Zixi Broadcaster tree root definitions) and the "Broadcaster MIB" (which describes the Zixi Broadcaster MIB tree definition, including all its objects).

➔ To view MIB information:

1. In Zixi Broadcaster UI, go to **Settings > SNMP**.
2. At the upper right-hand corner click the **Root MIB** and/or **Broadcaster MIB** links.

The screenshot shows the 'Settings' page for SNMP configuration. On the left is a sidebar with menu items: General, Network, Time, **SNMP**, Live Protocols, Multicast Pool, File Transfer & VOD, Cluster, SSH Connections, Authorization, Logging, and ASI. The main area is titled 'Settings' and includes buttons for 'Export', 'Import', and 'Delete Settings'. The configuration is as follows:

- Service: On
- Read only community name: [Redacted]
- Read-write community name: [Redacted]
- SNMPv3 Users** table:

User	Write access	
		+
- Trap receivers** table:

Host	Port	
10.7.0.23	162	+ ✎ ✕

An 'Apply' button is located at the bottom of the configuration area. In the top right corner, a red box highlights the links for 'Root MIB' and 'Broadcaster MIB'.

- License for OpenSSL

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