GLOBAL LEADER IN BROADCAST QUALITY LIVE VIDEO OVER IP

Zixi On Air Guide

Software Version 1.11
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Overview

Zixi's OnAir mobile app provides a mobile entry point to the Zixi Internet video transport architecture. The application allows users to stream live from an iOS or Android device (phone or tablet), while using the device's built-in camera to encapsulate the encoded video and audio and prepare them for transmission over standard Internet connections using Zixi's UDP-based transmission protocol, RTMP, or RIST.

The application works exclusively with a Zixi Broadcaster, which enables high quality streaming and format conversion to HLS, HDS, MPEG-DASH, MPEG-TS and RTMP, and RIST so the live video can be watched on any device, decoded on professional decoder or published to a CDN. There is also an option to send the stream using RTMP or RIST protocol. You can also add an **additional** RTMP target while streaming to a Zixi Broadcaster with Zixi protocol.

Zixi's Transport Stream architecture deploys monitoring, control, and intelligence along the entire transmission path. It is uniquely designed to deliver the quality and reliability that enables live contribution from any device to a cloud or on-premise version of Zixi Broadcaster.

Zixi On-Air can bond cellular and Wi-Fi connections to send the highest bit rate possible. Zixi's Software bonding capability (iOS only) delivers a high-quality stream even in degraded network conditions.

There are two modes of operation:

- **Live Streaming** – streams content to the broadcaster in real time. The stream quality may be somewhat degraded based on the constraints of your network connection.

- **Store and Forward** – records high quality video on your device and uploads it to the broadcaster without degrading the video quality. In this mode, the stream is not available for viewing in real time.

The Zixi On-Air mobile app is ideal for live event producers and ENG workflows (sports/news) who are looking to capture a breaking news story or alternative views of concerts, sports events, theater, or fan cutaways during live broadcast.

Features

- Uses internal mobile device camera (for Android, can also use external camera via USB)
- Full HD up to 1080p 6mbps (iOS), 1080p 5mbps (Android)
- Aspect ratio selection (iOS supported device only)
- Fixed capture frame rate in SD resolutions
- Multiple resolution options - up to 1920x1080 30fps (available options are device dependent)
- Configurable video resolution, quality and transmission latency
- In-camera video information and transmission statistics display
- Torch mode, using the on-board camera light when shooting
- Transmit using Zixi Protected Transport Protocol, RTMP or RIST
- HW encoder feedback (available on supported Android devices running Android (4.3) Jelly Bean MR2 or newer)
- WiFi + Cellular bonding (available on iOS and on supported Android devices running Android (5.0) Lollipop or higher)
- Set transmission latency
- External Device Camera via USB - (Android Only – Contact Zixi Support for details)
- Live Streaming and Store and Forward modes.

About this guide

This document explains the initial setup as well as operation of the OnAir app. The procedures described in Configuring the Broadcaster are intended specifically for the administrator of the Zixi Broadcaster administrator. The other sections of the document are relevant also for the end user who will run OnAir on his/her mobile device.

Requirements

Device Requirements

iOS
iOS 8.0 or later. It is compatible with iPhone and iPad his document is for running OnAir Version 13.1.35626 or later.

Android
Android 4.4 or later. This document is for running Zixi OnAir Version 1.11.0.27631.

Operational Requirements

The Zixi OnAir mobile application is designed to transmit live video to a pre-configured Zixi Broadcaster. In order to stream video from your device using OnAir, your device needs to have either a cellular network or Wi-Fi connection and you must have access to a Zixi Broadcaster that is running. If you have both a Wi-Fi and cellular connection, then you can use *Bonding* to use both connections for the stream transmission.

Preparing for Use

Before you can start using OnAir you need to configure your broadcaster to receive an input stream from your OnAir app. Then, you must configure the app to send the stream to your broadcaster. It is possible to send the OnAir stream directly to an external RTMP server, in which case you don't need to set up a broadcaster.

Configuring the Broadcaster

In order to stream content from the OnAir app to your broadcaster, you must first configure the broadcaster to receive the input from OnAir. There are two methods for doing this:

- **Automatic Method** - You can enable your broadcaster to automatically accept Push inputs from **any** device that tries accessing the broadcaster. OR
- **Manual Method** – You can manually configure an Input specifically for your OnAir app. For this method, you will specify a *Stream ID* for the input which you will then enter into the OnAir app's settings (as the *Channel ID*) to identify the incoming stream.

> You must have access to a Zixi Broadcaster that is running. If you are activating your broadcaster for the first time, see **ZIXI INSTALLATION GUIDE**.

Automatic Method

The following procedure applies to broadcasters for which authorization is not controlled by ZEN Master. If authorizations for your broadcaster are controlled by ZEN Master, then you can allow automatic Push Inputs by editing the Broadcaster Cluster authorization settings in ZEN Master.

➡ **To enable your broadcaster to allow automatic Push Input:**

1. In Zixi Broadcaster, go to **Settings > Live Protocols**.
2. Select **Allow automatic HTTP push input**.

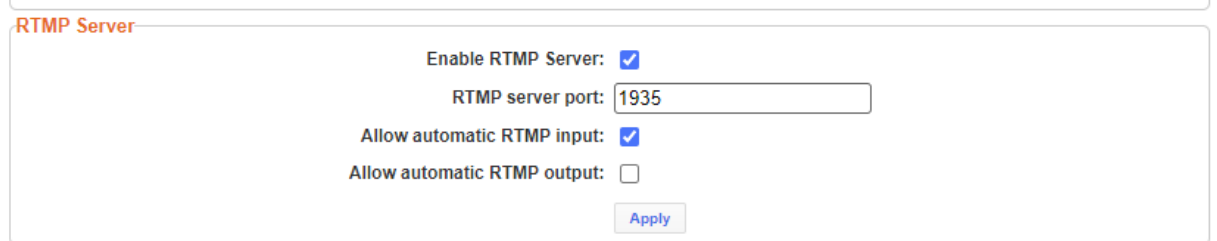|	
Sub-GOP HLS fast playback:	☐
HLS DVR maximum recording duration [HH:MM]:	24 : 00
Allow automatic HTTP push input:	☑
Allow automatic HTTP pull output:	☐

Apply

3. Click **Apply**.
   Your Broadcaster is ready to receive input streams from OnAir.

➡ **To enable your broadcaster to allow automatic RTMP input:**

1. In Zixi Broadcaster, go to **Settings > Live Protocols**.

2. Under **RTMP Server** section, select **Enable RTMP** and **Allow automatic RTMP input**.

3. Click **Apply**.
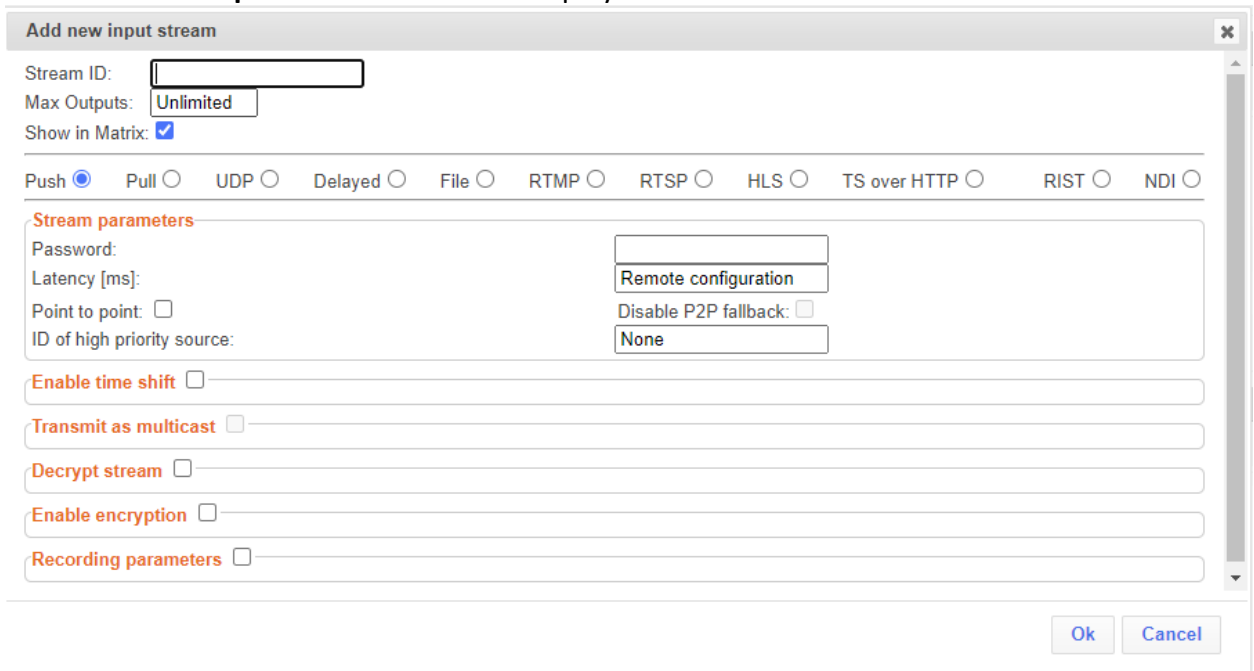   Your Broadcaster is ready to receive input streams from OnAir.

Manual Method

You can create either a *Push* input which uses Zixi protocol, or an *RTMP* input which uses RTMP protocol.

➡ **To add a Push Input to the Broadcaster:**

1. In Zixi Broadcaster, go to **Inputs**.
2. On the **Inputs** screen, click the **+ New Input** button.
   The **Add a new input stream** window is displayed.

3. In the **Stream ID** field, enter a name that you will use to identify the stream sent from your OnAir app. (Make a note of the precise Stream ID (case sensitive). You will enter this as the *Channel ID* in the OnAir settings.)
3. In the stream type selection, select the **Push** radio button (default).
5. In the **Stream Parameters** section, if you would like to add a password in order to increase security, enter a password in the **Password** field. (Make a note of the precise Password (case sensitive). You will enter this as the *Password* in the OnAir settings.)
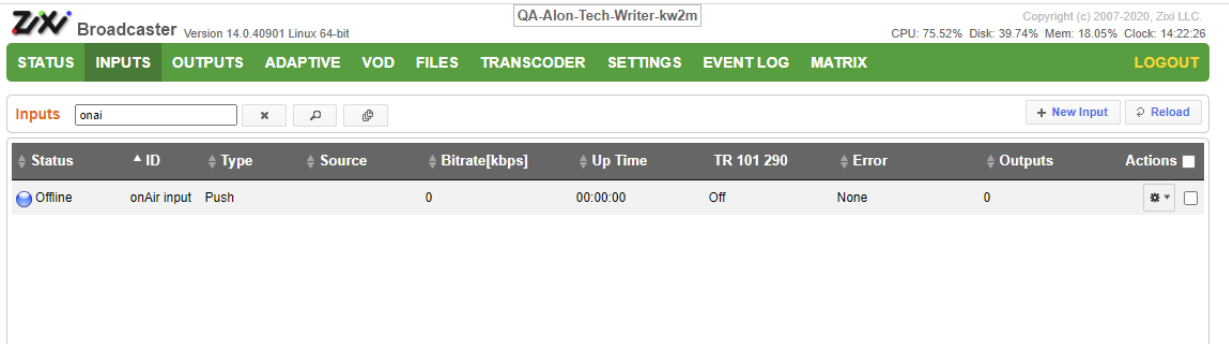
6. Configure additional settings as necessary.
7. Click **OK**.
   The "Input added" message appears on the top of the screen.
   The new Input is added to the Zixi Broadcaster and now appears in the list of streams available on the Inputs screen. The **Status** should be *Offline* (blue).

➡ **To add an RTMP Input to the Broadcaster:**

1. In Zixi Broadcaster, go to **Inputs**.
2. On the **Inputs** screen, click the **+ New Input** button.
   The **Add a new input stream** window is displayed.
4. In the **Stream ID** field, enter a name that you will use to identify the stream sent from your OnAir app. (Make a note of the precise Stream ID (case sensitive). You will enter this as the *Channel ID* in the OnAir settings.)
3. In the stream type selection, select the **RTMP** radio button.
4. In the **Type** field, select **Push**.
5. Configure additional settings as necessary.
6. Click **OK**.
   The new Input is added to the Zixi Broadcaster and now appears in the list of streams available on the Inputs screen. The **Status** should be *Offline* (blue).
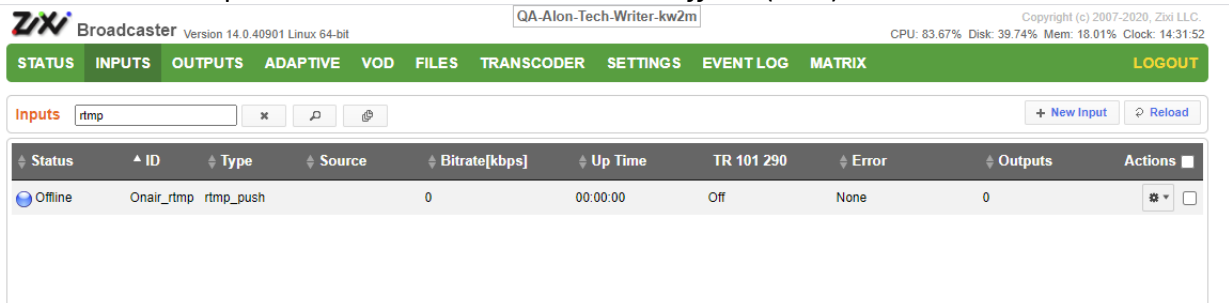
Downloading the App

iOS

Zixi OnAir for iOs is available at the AppStore

You can download it from:

https://itunes.apple.com/us/app/zixi-onair/id859954998?mt=8

> During the installation, pop-up windows will ask you to allow Zixi OnAir to use your device's camera and audio input. You must allow access in order for the app to run.

Android

Zixi OnAir for Android is available at the Google Play Store

You can download it from:

https://play.google.com/store/apps/details?id=com.zixi.feeder&hl=en

> During the installation, pop-up windows will ask you to allow Zixi OnAir to use your device's camera and audio input. You must allow access in order for the app to run.

Quick Start

This quick start provides basic instructions on how to stream a Zixi-protocol video using your device's camera.

➡ **To stream a video using your device's camera:**

1. Ensure you have a Wi-Fi/cellular connection to the internet.
2. Ensure you have created a **Push Input** in **Zixi Broadcaster**.
3. Open the Zixi OnAir app.
4. Tap **Allow** to allow Zixi OnAir to record audio and video.
   The **Settings** screen is displayed.
5. In the **Broadcaster Name** field, enter the Name or IP Address of the target Broadcaster.
6. In the **Channel Name** field, enter the name of the Input that you have setup on the target Broadcaster.
7. Tap **Save**.
8. Tap the **Green** circle (Shoot button) on the right-hand side to stream live video to your target Broadcaster.

Camera Screen

The application Camera screen shows the view of the device camera, and presents several controls for shooting video.

Zoom Control Slider (iOS only)

Slide the silver zoom circle up to zoom in, and down to zoom out.

Camera Flip Button

Tap the camera flip button to switch between the front and the back camera (if one is available).

Lightning Button (Torch Mode)

Tap the lighting icon to turn the cameras flash light on and off.

Record Button

When in 'Ready' mode, tap the green circle to enter 'Shoot' mode and begin streaming. The circle will turn red.

Tap the red circle to stop shooting, the button will return to green.

> Ensure the target settings are correct before shooting. See **Settings Screen**.

Settings Button

Tap the Settings cog-wheel to access the settings page.

> If the camera is in Shoot mode, the active stream will not be affected.

Upload

The Upload button displays a list of files that have been uploaded, including Store and Forward streams.

Status Bar

The status bar displays the following statistics and information when the device is in 'Shoot' mode

- Current Stream uptime
- Connection status
- Current video Quality
- Current Video Frame Rate
- Zoom level (iOS only)
- Current Video Bitrate

> When using a bonded connection (wifi + cellular), click on the Bit-rate label to view the stream statistics.

Settings Screen

The application **Settings** screen provides entry fields for camera and streaming settings. Tap each required row to enter a text value with the built-in keyboard or select from the scrollable list of available options provided.

Setting	Description
Connection Settings	
Protocol	Select one of the following protocols: • Zixi • RTMP • RIST (iOS)
Zixi Protocol Settings	
Broadcaster Name	Specify the Zixi Broadcaster server name or URL.
Port	Specify the destination port (to listen on for Push streams). Default: 2088.
Channel Name	Specify the name of the channel, which will be displayed as an Input name in Zixi Broadcaster. If you have already specified the stream as an Input in Zixi Broadcaster, use the Input name as the Channel Name.
Password	Optional. Specify a password string that can be used to authenticate that you are allowed to push this stream to the configured Zixi Broadcaster.
Latency	Specify the maximum latency (delay) in milliseconds that is allowed. Larger values provide additional protection against network loss Available options: 100, 200, 300, 500, 1000, 1500, 2000 (default), 3000, 4000, 6000, 8000
WiFi + Cellular Bonding (iOS)	• If disabled – the stream will be transmitted using one of the available methods (Wifi (preferred)/Cellular). • If enabled – the stream will be transmitted using both Wifi and cellular.
Store and Forward (iOS)	Enable this setting to record the stream to the mobile device and then upload it to Zixi Broadcaster as a file. This allows you to configure a higher bitrate and transmit it (while recording) to the Zixi Broadcaster.
RTMP Protocol Settings	

URL	Specify the Stream URL of the RTMP server.
Stream Name	Specify the unique name for the stream that the RTMP server expects at the other end of the connection.
Username	Specify the username to authenticate on the RTMP server.
Password	Specify the string that is used for authorization on the RTMP server.
RIST Protocol Settings	
Broadcast Address	Specify the Zixi Broadcaster IP address/URL.
Port	Specify the destination port (to listen on for Push streams). Default: 2088.
Video Settings	
Video Codec (iOS)	Select one of the following video codecs: • H.264 • HEVC (appears on supported devices only - iPhone 7 and above)
Camera Source	Select one of the following camera options: • **Internal** – the mobile phone's internal camera. • **External – USB** - the camera is an external USB camera which is connected to the mobile device.
Frame Rate (Back)	Select the frame rate in which video will be captured through the back camera of the device. The options labeled (varying) mean a range from 0 to the number indicated. For example, 30 FPS, is 30 frames per second, while 30 FPS (varying) is 0-30 frames per second.
Frame Rate (Front)	Select the frame rate in which video will be captured through the front camera of the device. The options labeled (varying) mean a range from 0 to the number indicated. For example, 30 FPS, is 30 frames per second, while 30 FPS (varying) is 0-30 frames per second.

Quality	The level of detail and video bitrate of recorded video. Possible options: • 240p 300kbps • 360p 700kbps • 480p 1300kbps • 720p 3000kbps • 1080p 5000kbps
Store and Forward	*Enable this setting to record the stream to the mobile device and then upload it to Zixi Broadcaster as a file. This allows you to configure a higher bitrate and transmit it (while recording) to the Zixi Broadcaster.* *Note: This feature is not supported in Android Lollipop (5.0 – 5.1.1) or higher.*
Bonding	Select one of the following network bonding options: • No bonding – the stream will be transmitted using one of the available methods (Wifi (preferred)/Cellular). • Bonding – the stream will be transmitted using both Wifi and cellular.
Forward RTMP	This setting allows sending a Zixi-protected stream to Zixi Broadcaster and then Zixi Broadcaster automatically creates an RTMP output to the remote RTMP Server in the specified destination. **Note:** Allow automatic RTMP option must be enabled on the Broadcaster.
URL	Specify the Stream URL of the remote RTMP server.
Stream Name	Specify the unique name for the stream that the RTMP server expects at the other end of the connection.
User Name	Specify the username to authenticate on the remote RTMP server.
Password	Specify the string that is used for authorization on the remote RTMP server.
Advanced Settings	
Sampling Rate	Specify the digital resolution of audio date sampled via the on-board microphone Possible options: • 48000 Hz • 44100 Hz

Audio Bitrate	Specify the maximum bitrate for the audio in kbps. The bitrate should be set after checking your available bandwidth. Possible options: • 256 kbps • 160 kbps • 128 kbps • 96 kbps
Bitrate (kbps)	Specify the maximum bitrate for the video in kbps. The bitrate should be set after checking your available bandwidth.
GOP Size (sec)	Specify the GOP (Group of Pictures) length in seconds. Possible options: 1-6 seconds. Default: 2 seconds.
Time Code Insertion	Specify whether to insert a time code into the stream.

Capturing a Live Stream

The following instructions explain how to stream live video using the various protocols. The procedure does not include all the options that are available in the Settings screen. To learn more about all the configuration options, see the **Settings Screen** section.

Capturing a live stream

➥ **To capture a live stream:**

1. In the target **Zixi Broadcaster**, do one of the following:
   - Create a **Push Input** which will be used to stream from the OnAir app. The details of this input stream will be entered into the OnAir Settings, as described below.
   - If you don't want to create the Push Input in advance, go to **Settings > Live Protocols** and select the **Allow Automatic HTTP Push input** for Zixi streams and **Allow Automatic RTMP Input** for RTMP streams.
2. In the **Setting Screen**, in the **Protocol** field, select one of the following protocols:
   - Zixi
   - RTMP
   - RIST (iOS)
3. Specify the target server details:
   - **For Zixi protocol** – specify the Zixi Broadcaster server name or URL in the **Broadcaster name** field, and **Port** number (default: 2088).
   - **For RTMP** – specify in the URL field, the Stream URL of the RTMP server.
   - **For RIST** - specify the Zixi Broadcaster IP address in the **Broadcast address** field, and **Port** number (default: 2088).
4. Specify the stream details:
   - **For Zixi protocol** - in the **Channel Name** field, if you have already created a stream in Zixi Broadcaster, specify the stream name. If you enabled the "Allow automatic connection", you can specify any name.
   - **for RTMP** – specify the stream name in the Stream Name field.
5. If the stream is protected by a username/password, specify the credentials in the appropriate field to connect to the server.
6. If you have challenging network conditions, consider combining Wifi and Cellular links by selecting **Bonding** (Android) or **WiFi + Cellular Bonding** (iOS).
7. Specify the camera that you want to use:
   - For the device's internal camera, select **Internal** in the **Camera Source** field.
   - For a USB-attached camera, select **External-USB** in the **Camera Source** field.
8. Specify additional stream quality-related parameters.
9. Tap **Save**.
   You are ready to capture the live video.
10. On the main screen, tap the **Camera Flip** button to select the front/back camera.

Capturing a "Store and Forward" stream

11. Tap the **Record** (green) button.
The button will turn red and after a few seconds the Status bar will indicate the quality of the stream (e.g. Quality 100%).
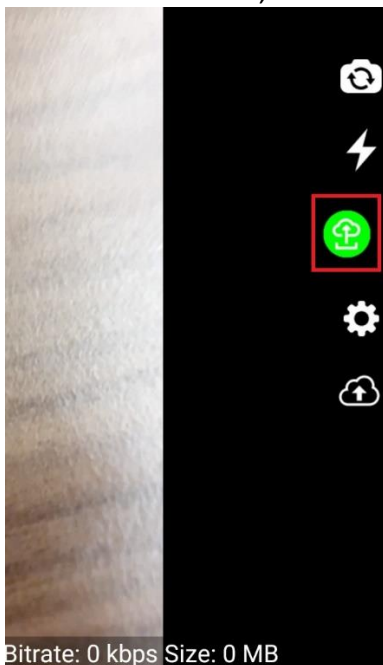
Capturing a "Store and Forward" stream

Store and Forward records the stream to the mobile device's storage and then uploads it to Zixi Broadcaster as a file (not as a live stream). This allows you to configure a higher bitrate stream and transmit it (while recording) to the Zixi Broadcaster.

> This feature is not supported in Android Lollipop (5.0 – 5.1.1) or higher.

➡ **To capture a Store and Forward stream:**

1. In the target **Zixi Broadcaster**, do one of the following:
   - Create a **Push Input** which will be used to stream from the OnAir app. The details of this input stream will be entered into the OnAir Settings, as described below.
   - If you don't want to create the Push Input in advance, go to **Settings > Live Protocols** and select the **Allow Automatic HTTP Push input** for Zixi streams and **Allow Automatic RTMP Input** for RTMP streams.
2. Specify the target server details as described in the **Capturing a live stream** section.
3. In the **Settings** screen, enable the **Store and Forward** setting.
4. Specify additional settings as described in the **Settings Screen** section.
5. On the main screen, click the **Store and Forward record** button.

Streaming a file from your device (iOS only)

> The stream will be upload while it is recording.
6. If you have stopped the recoding while the stream is in progress of uploading, the **Uploads** screen will open and you will be able to see the upload progress.
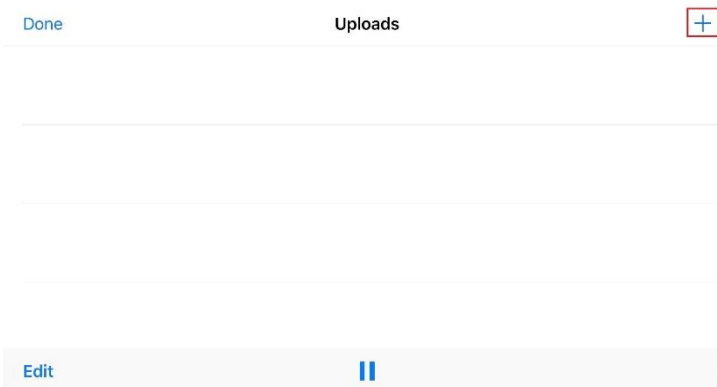
Streaming a file from your device (iOS only)

You can stream a file (photo or video) from your device's gallery.

➡ **To stream a file:**

1. On the main screen, click the **Upload** button.

2. In the **Uploads** screen, click the **+** button.

3. Select the photo/video from the gallery.
   The file is upload immediately. You can pause the upload, by clicking the **Pause** button.

Viewing a Live Video Stream

There are several ways to view the output of your Zixi On Air live video stream:

- Using the Zixi VLC Plug-in
- Using HLS

Viewing your Video Feed with the Zixi VLC Plug-In

The outbound video stream can be viewed by pulling the stream directly from the target Zixi Broadcaster. To do this, you require both the VLC Media Player and the Zixi VLC Plug-In.

➡ **To play a Zixi-enabled stream:**

1. Download the VLC player from the following URL
   - http://www.videolan.org/vlc/#download.
2. Run installer and follow the default Installation settings.
3. Ensure that VLC is not running before installing the Zixi VLC Plug-In.
4. Double click the Zixi VLC plug-In executable (e.g. zixi_vlc_plugin-win32-1.9.0.21770.exe)
   The setup wizard automatically installs and configures the Zixi VLC Plug-In.
5. Click 'Close' when the setup wizard completes.
6. Open VLC Player.
7. On the Main Menu, click **Media**.
   Sub-menu options are displayed.
8. Click **Open Network Stream**.
9. In the URL field, enter a Zixi stream URL, which includes the Zixi Broadcaster details and channel name, provided by your administrator (e.g. zixi://demo.zixi.com/clocks)
10. Click **Play**.
    Your video stream should begin after a short pause.

See the *Zixi VLC Plugin Setup Guide* for more details.

Viewing Zixi HLS Directly from the Target **Broadcaster**

If the target Broadcaster has been configured as an HLS Adaptive Group server and you have the HLS group name (provided by your administrator), you can pull the resulting HLS stream directly back you to a local device or system for live playback. An HLS capable player will be able to play the HLS using a URL of the following format:

http://broadacster_details:7777/HLS_group_name.m3u8

Example:

zixi://mybxdemo.zixi.com:7777/livetest.m3u8

Viewing HLS Delivered by Zixi from a CDN Directly from the Target Broadcaster

Recommended players include:

- Apple's Safari browser
- A freely available online HLS player, such as http://osmfhls.kutu.ru/

> This is intended for a test scenario, not for large-scale distribution, unless stated by your administrator.

Viewing HLS Delivered by Zixi from a CDN Directly from the Target Broadcaster

If a CDN has been configured for large scale video distribution, your CDN provider or Administrator will present a standard HLS playback URL for testing or inserting into an app or web-based player.

See the *Zixi Broadcaster User Guide* for more details on configuring your Broadcaster as a CDN origin server.