Makito™ / Zixi™ Configuration

Integrated Encoder-Decoder Solution to Achieve End-to-End QoS

In order to provide end-to-end Quality of Service (QoS) using Internet streaming, Version 2.3 of the Makito Encoder together with Version 1.3 of the Makito Decoder provides an integrated encoder/decoder solution using the latest Zixi protocol over a TCP connection.

This Zixi Configuration Addendum applies only to proprietary Makito-SDI Encoders and Makito Decoders that support the TS Over Zixi protocol to enable reliable communications between Makito end-points. The Zixi protocol adds redundant information to a video stream to "harden" it against packet drops to improve video quality. The Zixi protocol also enhances the Forward Error Correction (FEC), encryption, and packet loss replay capabilities of the Makito.

Overview

This Addendum supplements the Makito User's Guide and Makito Decoder User's Guide with the information required to configure Makito Encoder streams to use the Zixi protocol and to configure Makito Decoders to receive these streams. For general information on the Makito Encoder or the Makito Decoder, please refer to the respective User's Guide, Quick Start Guide, or the online help available from the Web Interface.

In order to use Makito Encoders and Decoders in a Zixi configuration as described in this addendum, you must upgrade the Encoder firmware to Version 2.3 and the Decoder firmware to Version 1.3. Upgrades of the firmware are issued through Haivision's Download Center on our website at: http://www.haivision.com/download-center

Please note that you may download the latest firmware and documentation by registering via the Haivision Support Portal. When a firmware upgrade becomes available, you can easily install it from the Web interface. You will first need to copy the upgrade file to your local computer or network. The firmware upgrade comes in the form of a file with the extension `.hai` (for example: `haios_zixi.hai` or `haios_dec_zixi.hai`), which when loaded will replace the application on your Encoder or Decoder. For more information, please refer to "Installing Firmware Upgrades" in the respective User's Guide.

The current release supports the following three operation modes: Point-to-Multipoint, Point-to-Point With Server, or Point-to-Point Standalone.

- **Point-to-Multipoint:** Makito Encoder to Makito Decoder multi-cast with broadcast server.
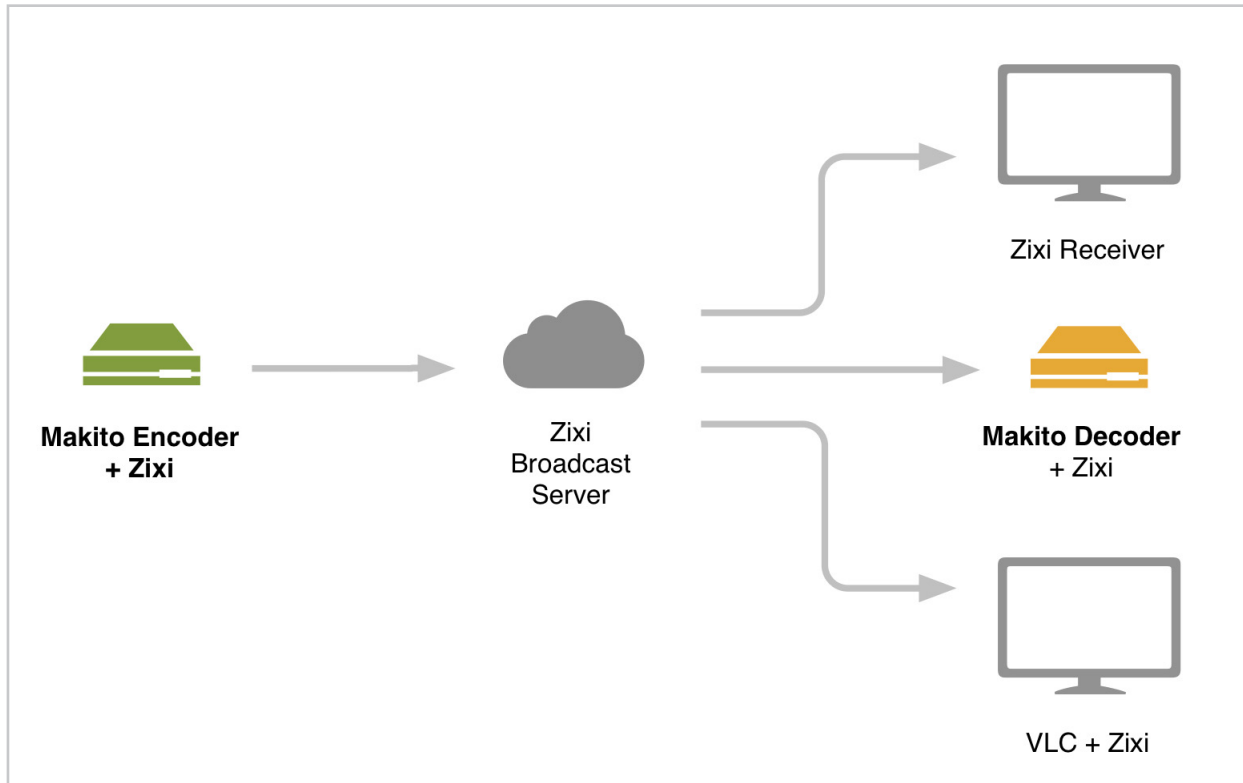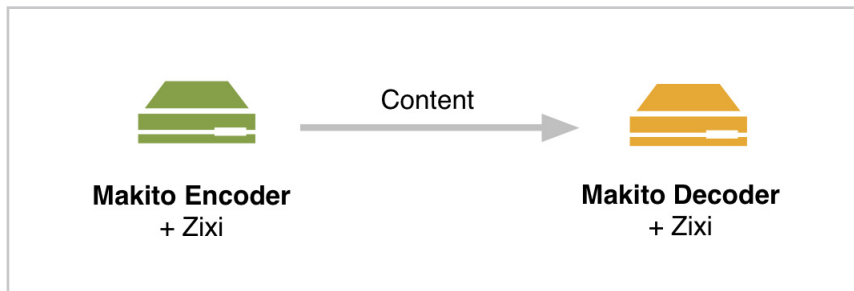

- **Point-to-Point-With Server:** Makito Encoder to Makito Decoder direct unicast with broadcast server.
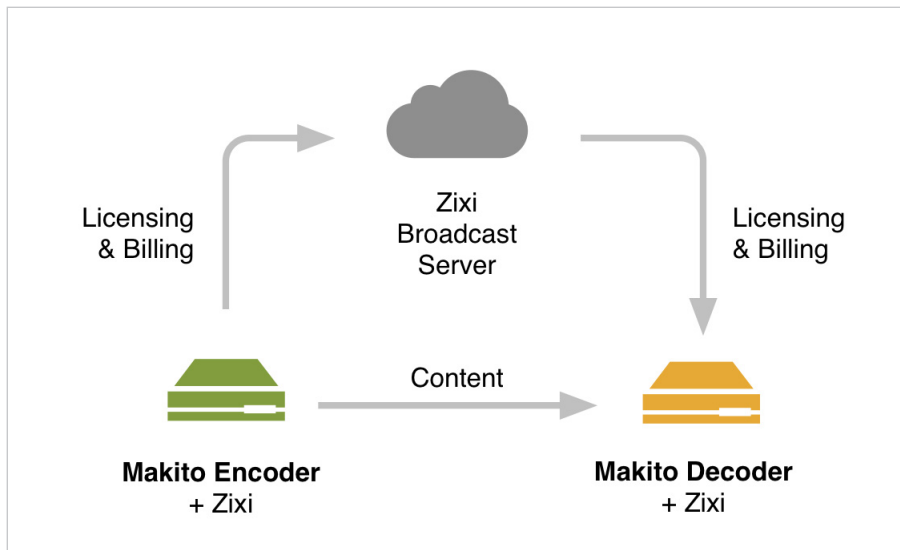
NOTE: Communications with the Zixi Broadcast server are still required for purposes of licensing and usage billing.

- **Point-to-Point-Standalone:** Makito Encoder to Makito Decoder standalone direct unicast.


> NOTE: The bitrate must be at least 1-8 Mbps for the stream bitrate for a single Zixi stream instance. You may optionally stream another stream type (such as TS/UDP) to a local server for recording.

To set up streaming from the Encoder using the Zixi Broadcast Protocol

1. Open a Web Browser and log in to the Makito Encoder Web Interface.

   The steps to configure a Zixi stream are the same as any for other stream, with only a few additional parameters on the ENCODER>STREAMS page (shown below).
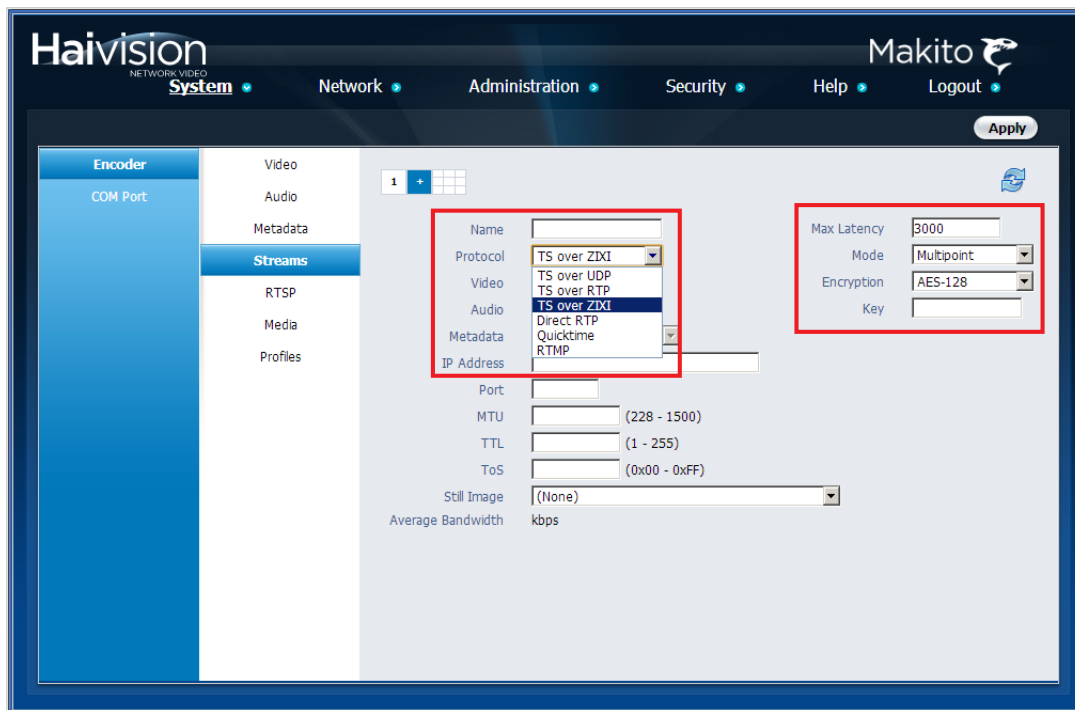
> ℹ️ NOTE Traffic shaping is not available with TX over Zixi protocol.

2. For the Protocol Type, select **TS over ZIXI**.

3. Enter the IP Address, Port, and other general stream settings. For details, refer to the User's Guide or the online help.

4.   Configure the following Zixi-specific parameters:

Max Latency	(Optional) Enter the maximum latency to allow. Ranges from `0` to `8000` milliseconds. This specifies how much "history" the Encoder will keep in its output buffer for retransmission if requested by the Zixi Broadcast Server.
Mode	Choose the operation Mode, either: • **Multipoint** (default): Makito Encoder to multicast with Zixi Broadcast Server • **P2P With Server:** Makito Encoder to Makito Decoder direct unicast with Zixi Broadcast Server • **P2P No Server:** Makito Encoder to Makito Decoder standalone direct unicast
Encryption	Choose an Encryption level: **None, AES-128, AES-192** or **AES-256**. The AES encryption levels correspond to FIPS-197 Advanced Encryption Standard.

5.   The Key field appears when one of the AES encryption levels is selected. Specify a string in this field using a combination of digits (0 to 9), lower case letters (a to f) and upper case letters (A to F). The length of the key depends on the encryption level selected:

   •   AES-128: 32 character hexadecimal key

   •   AES-192: 48 character hexadecimal key

   •   AES-256: 64 character hexadecimal key

6.   Re-enter the key string in the Confirmation field.

7.   When you have completed all settings required for the stream, click **Apply**.

   NOTE: The stream CLI command has also been extended to allow these selections.

To configure the Decoder to receive streams from Zixi-capable Makito-SDI Encoders

1. Open a Web browser and log in to the Makito Decoder Web Interface.

    The steps to configure a Zixi stream are the same as any for other stream, with only a few additional parameters on the DECODER>STREAMS page (shown below).
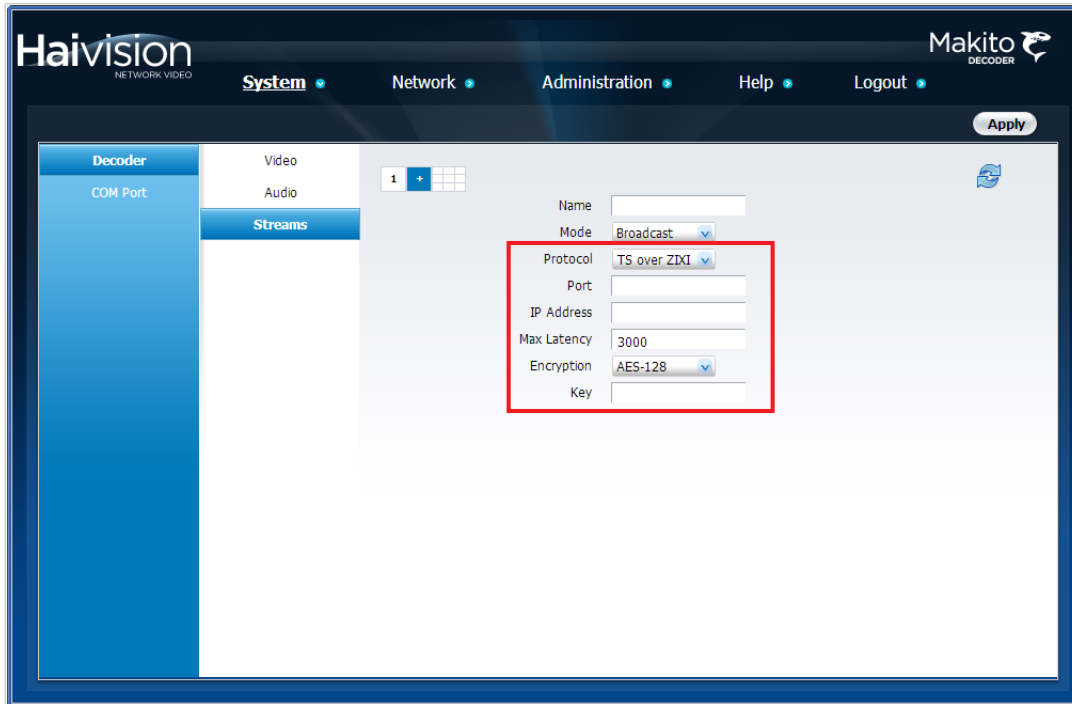
2. For the Protocol Type, select **TS over ZIXI**.

    Mode becomes available once you select TS over Zixi.

3. For the Mode, select either **Broadcast** or **Direct**.

    • **Broadcast:** Select for either Point-to-Multipoint or Point-to-Point with Server.

    • **Direct:** Select for Point-to-Point Standalone.

4. Enter the Port.

5. (**Broadcast** Mode only) For the IP Address, type in the URL address of the broadcast server. The Makito Decoder endpoint address will be distributed by the broadcast server.

    NOTE: When **Direct** mode is enabled, the IP Address is not required; you only need to specify the Port.

6. (Optional) Enter the Maximum Latency (from 0 to 8000 milliseconds).

7. Select the Encryption level, either: **None, AES-128, AES-192** or **AES-256**.

    NOTE: The Max Latency and Encryption level on the Decoder must match the Encoder settings. For more information see Step #4 on page 4.

8. (When Encryption is enabled) Specify a string in the Key field, and re-enter the key string in the Confirmation field. For more information see Step #5 on page 4.

9. Click **Apply**.

For More Information

Contact Haivision Technical Support via our Support Portal on our website at: http://www.haivision.com/support/

Or you may use the phone number or email address listed below:

North America:	Toll Free: 1.877.224.5445 (option 4)
International:	Tel: 1-514-334-5445 (option 4) Fax: 1-514-334-0088
Technical Support email:	tickets@haivision.com
Product Information email:	info@haivision.com

You may download the firmware, Readme file, and PDF versions of the User's Guide and Zixi Configuration Addendum through our Download Center at: http://www.haivision.com/download-center/