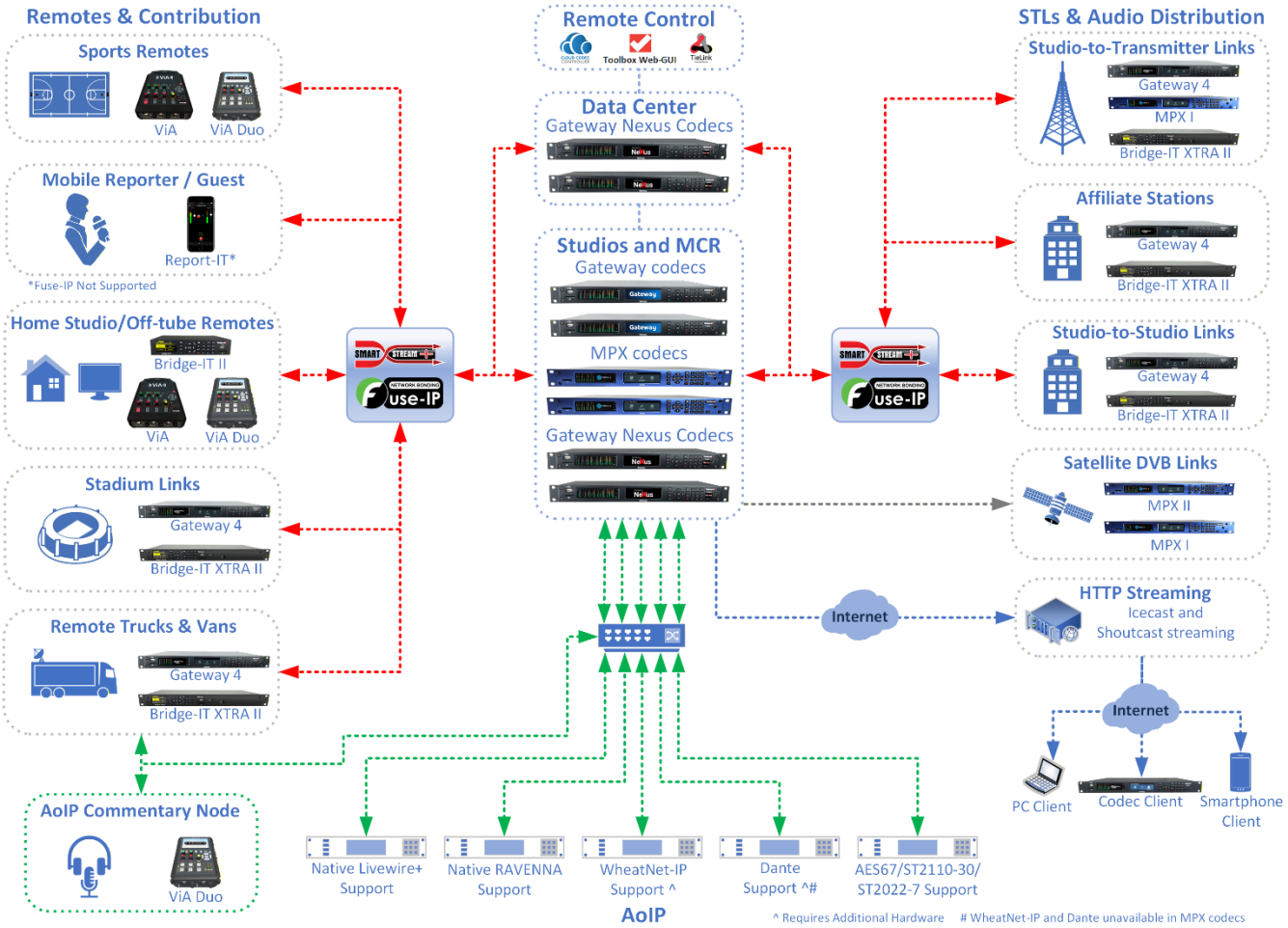
Tieline®
The Codec Company

Codec Applications and Solutions



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INTER-STUDIO LINKS AND STUDIO TO TRANSMITTER LINKS

Tieline Studio-to-Transmitter Link (STL) codecs are designed for continuous operation over mission critical point-to-point audio paths throughout broadcast IP networks. Tieline has a range of codecs to suit every budget designed for STL use, or studio-to-studio (SSL) links.

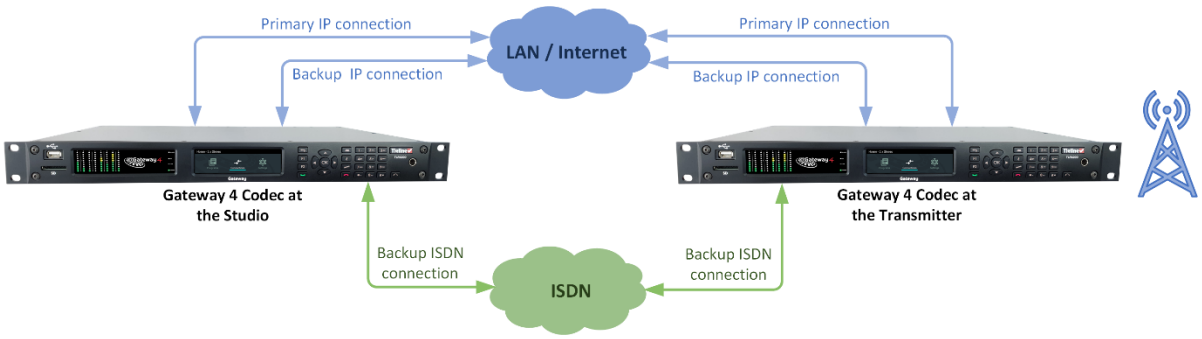
GATEWAY 4 IP AUDIO CODEC

The Gateway 4 delivers superior quality over wired and wireless IP networks. The Gateway 4 also features a module slot supporting an optional Euro ISDN module for backup connections, or to interface with existing infrastructure as your network transitions to IP. The Gateway 4 includes native support for AES67, ST 2110-30, ST 2022-7, RAVENNA, Livewire+, NMOS IS-4, IS-5 and IS-07, Ember+, AES3 and analog I/O as standard. Order an optional WheatNet-IP card at purchase for interoperability with Wheatstone's WheatNet-IP Environment. This allows sources and destinations to be controlled using Navigator software. An optional Dante card installed at purchase supports Dante networking.

This means the Gateway 4 can operate as a media converter with support for more proprietary and open AoIP protocols than other codec manufacturers.

The Gateway 4 supports:

1. Bidirectional mono, stereo, and dual mono connections
2. Bidirectional stereo plus 2 bidirectional mono connections
3. 2 bidirectional stereo connections
4. 4 bidirectional mono connections
5. HTTP Icecast or Shoutcast streaming



Gateway codec using IP with ISDN as backup

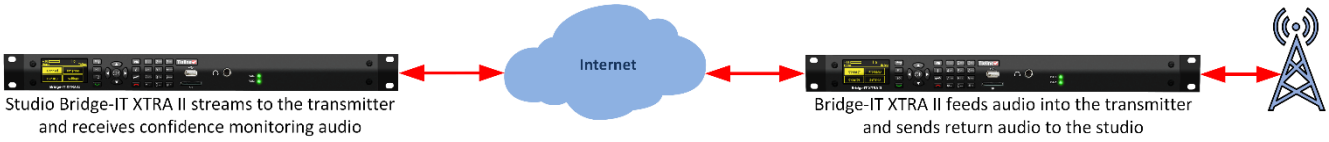
Key features:

- Up to 4 bidirectional mono or 2 bidirectional stereo IP streams
- Bidirectional stereo plus dual mono IP streams
- 8 assignable GPIOs, plus SLIOs (Tieline and WheatNet-IP)
- Ideal for contribution/remotes, STL, and Studio-to-Studio Link applications
- Stream IP audio over WANs using dual Ethernet ports
- Native support for RAVENNA and Livewire+; AES67, ST 2110-30 and ST 2022-7 compliant for AoIP streaming

- WheatNet-IP card or Dante card available at purchase. Note: Dante redundancy not currently supported
- Compliant with AMWA NMOS IS-04, IS-05 and IS-07 standards
- Support for the Ember+ control protocol
- Supports multicasting and multi-unicasting to 20 endpoints
- Dual DSP based platform with dual internal power supplies, dual Ethernet ports, dual AoIP ports, and dual USB ports.
- Supports uncompressed audio or a huge range of encoding options
- Supports 4 channels of phase-aligned audio streaming
- Dynamic range compressor, EQ, noise gate and expander on all inputs
- SD card slot for firmware upgrades and memory options
- Fully SIP EBU N/ACIP 3326, 3368 and 3347 compliant to operate with 3rd party codecs
- Module slot for optional ISDN module, future technologies, and hardware upgrades
- Fully remote control using the Toolbox HTML5 Web-GUI, or the Cloud Codec Controller, plus SNMP support
- Connect simply using the TieLink Traversal Server

BRIDGE-IT XTRA II IP AUDIO CODECS

Bridge-IT XTRA II is the ultimate affordable, high-performance, stereo IP audio codec which can be used over a range of wired and wireless IP data networks.



Affordable Point-to-Point Audio over IP

Bridge-IT XTRA II is ideal for low-cost STL connections. It includes a wide range of algorithms as standard, plus dual internal IEC power supplies, a front panel stereo headphone output and 4 GPIOs.

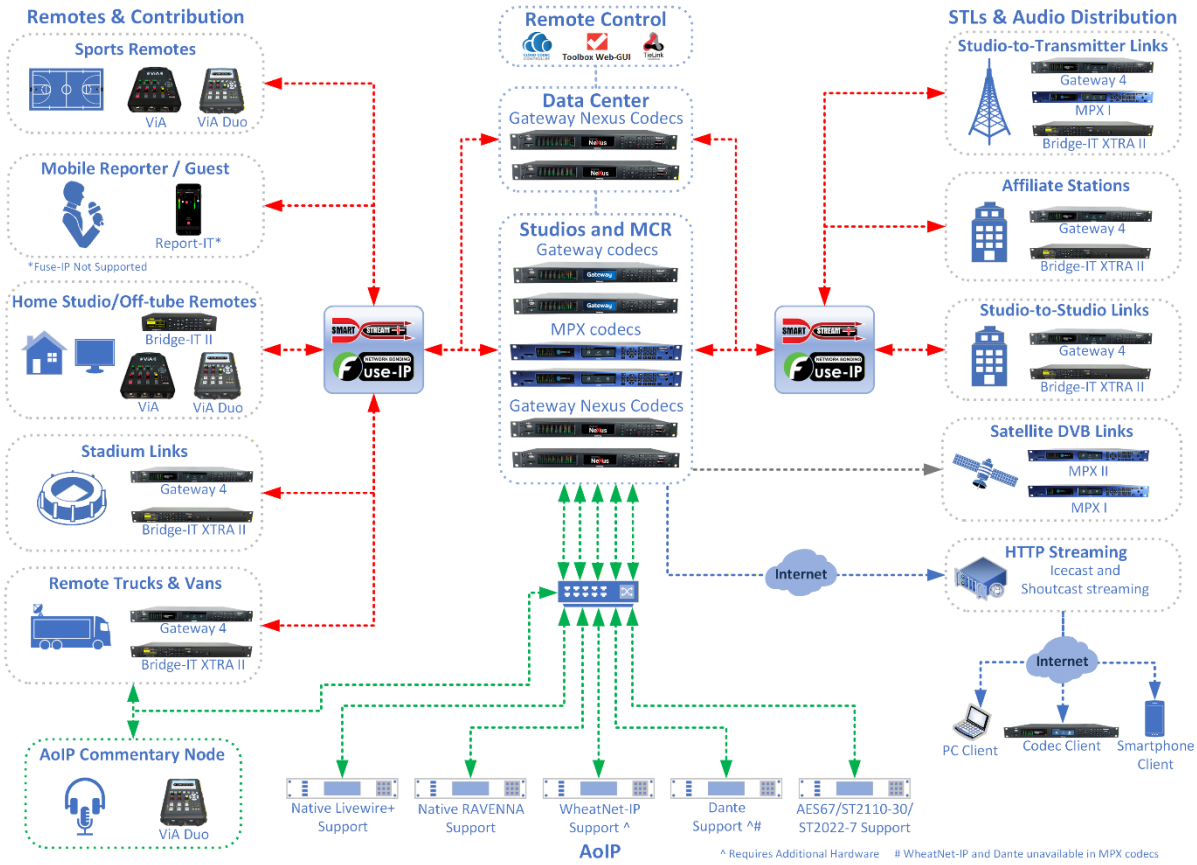
Key features:

- Native support for AES67, ST2110-30, ST 2022-7, Livewire, RAVENNA and AMWA NMOS IS-04, IS-05 and IS-07
- Two full-duplex mono connections, or full duplex stereo
- Dual Ethernet and dual AoIP ports
- XLR analog and digital AES inputs
- SmartStream PLUS redundant streaming and Fuse-IP data aggregation
- Failover to another connection, HTTP stream, or audio file playback
- Front panel OLED screen and keypad for simple menu navigation
- Support for HTTP streaming (Icecast and Shoutcast), SIP and wireless cellular modems
- Multi-unicast to up to 10 different endpoints, or multicast to unlimited endpoints
- Full remote control using HTML5 Toolbox Web-GUI or Cloud Codec Controller.

AUDIO DISTRIBUTION

Tieline has a comprehensive range of IP audio codecs designed for a range of audio distribution solutions over broadcast networks. Options include:

1. Gateway Nexus (32 channel IP codec)
2. Gateway (8-16 channel IP codec)
3. Gateway 4 (4 channel IP codec)



Overview of Tieline Codec Solutions

GATEWAY NEXUS HIGH-DENSITY IP CODEC

The Gateway Nexus is a powerful and flexible 32-channel, high-density AoIP codec delivering deterministic, low-latency multichannel audio transport using dedicated and reliable hardware. The Nexus speaks the language of AES67, ST 2110-30, ST 2022-7, RAVENNA, Livewire+, NMOS, Ember+, AES3 and analog I/O as standard. An optional Dante card can also be installed at purchase. Compliance with these standards ensures seamless integration into IP-based audio with vendors supporting these protocols.

The Gateway Nexus is ideal for a wide range of deployments and stands out as a compact, powerful and cost-effective alternative to virtualized codec and server-based systems. It can be installed at the broadcast plant, or in hosted data center environments.

Applications

Gateway Nexus is perfect for:

- Hosted or data center environments requiring high channel density and low latency connections for live programming and communications applications
- Audio contribution and managing multiple remotes
- Network syndication of programming
- Multiple Studio-to-Transmitter Links
- Multi-channel links to remote studios (inter-studio links)

As the broadcast industry shifts towards centralized and remote production models for live broadcast applications, the codec's DSP-based platform allows broadcasters to upscale infrastructure efficiently. The Nexus is purpose-built for hosted data center deployments, delivering 32 channels of full-duplex high-density AoIP audio. Unlike virtual codec solutions, it provides fully deterministic performance that is predictable, low-latency, and fully hardware-based. The Gateway Nexus will expand your encoding capabilities by providing a centralized hub for all your AoIP streams.

Gateway Nexus with 16 full-duplex stereo connections

The Gateway Nexus supports encoding 32 simultaneous streams of Opus. The codec is also capable of streaming multiple algorithms simultaneously at different sample rates and bit-rates.

Key Features

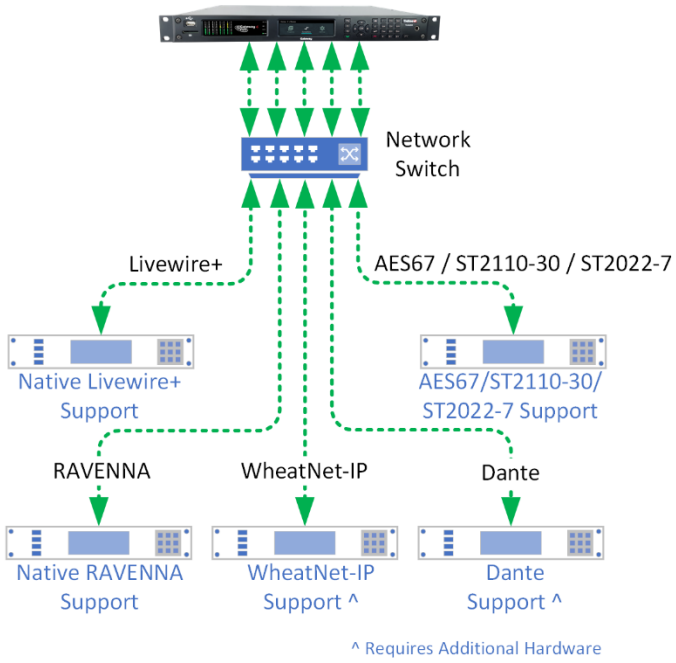
- High channel density with 32 bidirectional mono or 16 bidirectional stereo IP streams
- 16 hardware GPIOs, plus 3 virtual inputs, 48 logical outputs, 64 WheatNet or Livewire Logic Inputs/Outputs and 64 Ember+ GPIOs
- 10 band EQ, compressor, noise gate and expander, plus IGC Limiting on all analog inputs
- Ideal for data centers, studio headend distribution, managing multiple remotes and contribution
- Stream IP audio over WANs using dual Ethernet ports
- Natively AES67, ST 2110-30, ST 2022-7, Livewire+ and RAVENNA compliant for AoIP streaming and supports a huge range of encoding options
- Optional Dante card at purchase supports Dante
- Interoperable with Dante (if no card installed) and WheatNet-IP in AES67 compatibility mode
- Support for Ember+ and NMOS IS-04, IS-05 and IS-07
- Supports multicasting and multi-unicasting, multi-multicasting & multiple multi-unicasts

- Supports HTTP Icecast or Shoutcast streaming
- Dual DSP based platform with dual internal power supplies, dual Ethernet ports, dual AoIP ports, and dual USB ports
- Supports uncompressed audio and a huge range of encoding options
- SD card slot for firmware upgrades and memory options
- Fully SIP EBU N/ACIP 3326, 3368 and 3347 compliant to operate with 3rd party codecs
- Fully remote control using the Toolbox HTML5 Web-GUI, or the Cloud Codec Controller, plus SNMP support

GATEWAY MULTICHANNEL IP CODEC

The Tieline Gateway is a powerful DSP-based 1RU IP codec enabling transport of multiple channels of mono or stereo audio across any QoS-enabled IP network, including T1 and T3 connections and private WANs with MPLS. The Gateway streams up to 16 IP audio channels with native support for AES67, ST 2110-30, ST 2022-7, RAVENNA, Livewire+, NMOS IS-4, IS-5 and IS-07, Ember+, AES3 and analog I/O as standard. Order an optional WheatNet-IP card at purchase for interoperability with Wheatstone's WheatNet-IP Environment. This allows sources and destinations to be controlled using Navigator software. An optional Dante card installed at purchase supports Dante networking.

This means the Gateway can operate as a media converter with support for more proprietary and open AoIP protocols than other codec manufacturers.



The Gateway and Gateway 4 AoIP codecs support connecting with a variety of AoIP protocols

Applications

It is perfect for large-scale audio distribution to single or multiple locations, as well as managing multiple incoming remotes at the studio using SmartStream PLUS and Fuse-IP technologies over internet connections. It supports 16 bidirectional mono or 8 bidirectional stereo streams of IP audio in 1RU to increase channel density and reduce rack space requirements. Its feature-rich and compact

design is interoperable with all Tieline IP codecs and compatible over SIP with all EBU N/ACIP Tech 3326 and 3368 compliant codecs and devices. The Gateway is ideal for:

- Audio contribution and managing multiple incoming remotes.
- Studio-to-Transmitter Links.
- Network syndication of programming.
- Multi-channel links to remote studios.
- HTTP Icecast or Shoutcast streaming.

A Flexible Upgrade Path

The Gateway has two standard versions:

- Gateway supporting 8 Channels in/out (8 Mono or 4 Stereo)
- Gateway supporting 16 Channels in/out (16 Mono or 8 Stereo)

The codec also supports a flexible upgrade path that allows you to buy a Gateway with 8 channels and upgrade the codec over time as needs change or your network expands.

Order 8 Channels Now and Upgrade Later…

Order a Gateway with 8 channels and immediately have access to 8 input and output channels and stream up to 8 mono or 4 stereo streams of IP audio. If you need to expand channel and stream capacity, simply purchase an upgrade license and expand capacity in pairs up to 16 channels in total.

A Gateway with 8 channels in/out features the following licence options:

- 2 Channel Upgrade: TLR6200-LIC1ST
- 4 Channel Upgrade: TLR6200-LIC2ST
- 8 Channel Upgrade: TLR6200-LIC4ST

Contact Tieline or your favorite dealer for pricing and to purchase an upgrade license.

Key Features:

- High channel density with 16 bidirectional mono or 8 bidirectional stereo IP streams
- 16 assignable GPIOs, plus SLIOs (Tieline, WheatNet-IP, Livewire)
- Ideal for contribution/remotes and audio distribution applications
- Stream IP audio over WANs using dual Ethernet ports
- Native support for RAVENNA and Livewire+; AES67, ST 2110-30 and ST 2022-7 compliant for AoIP streaming
- WheatNet-IP card option available at purchase
- Dante AoIP card option available at purchase. Note: Dante redundancy not currently supported
- Support for Ember+ and NMOS IS-04, IS-05 and IS-07
- Supports multicasting and multi-unicasting, multi-multicasting & multiple multi-unicasts
- Internal Solid-State Drive for record and playback
- Dual DSP based platform with dual internal power supplies
- Dual Ethernet and AoIP ports, dual USB ports

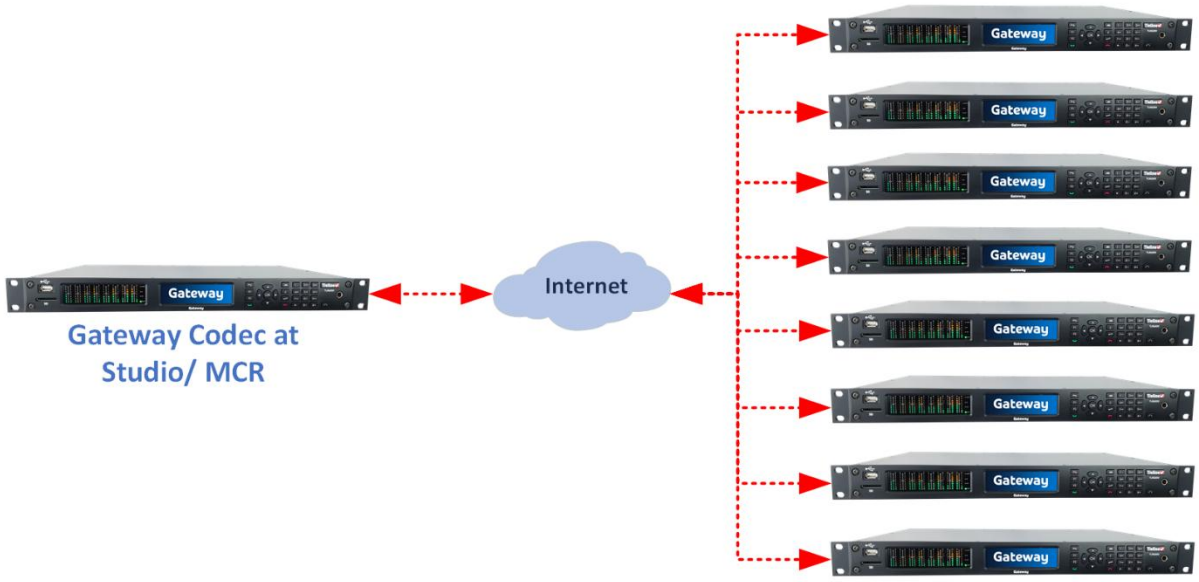
- Supports uncompressed audio and a huge range of encoding options
- Supports streaming up to 8 channels of digital phase-aligned multichannel and surround sound audio: 6 channel (5.1 or 6.0), 8 channel (7.1 or 8.0), or 4 channel streams
- Dynamic range compressor, EQ, noise gate and expander on all inputs
- SD card slot for firmware upgrades and memory options
- Fully SIP EBU N/ACIP 3326, 3368 and 3347 compliant to operate with 3rd party codecs
- Module slot for future technologies and hardware upgrades
- Fully remote control using the Toolbox HTML5 Web-GUI, or the
- Cloud Codec Controller, plus SNMP support
- Connect simply using the TieLink Traversal Server

GATEWAY IP AUDIO DISTRIBUTION SOLUTIONS

The Gateway is ideally suited to network audio syndication and perfect for STL, studio-to-studio, and audio distribution applications, with support for multicasting and multiple unicasting technologies. It is also perfect for managing multiple incoming remotes at the studio. Gateway seamlessly integrates with AES67 studio LANs and is ideal for:

- Studio-to-Transmitter Links.
- Network syndication of programming.
- Multi-channel links to remote studios.
- HTTP Icecast or Shoutcast streaming

The Gateway 16 supports up to 8 stereo studio-to-transmitter link connections.

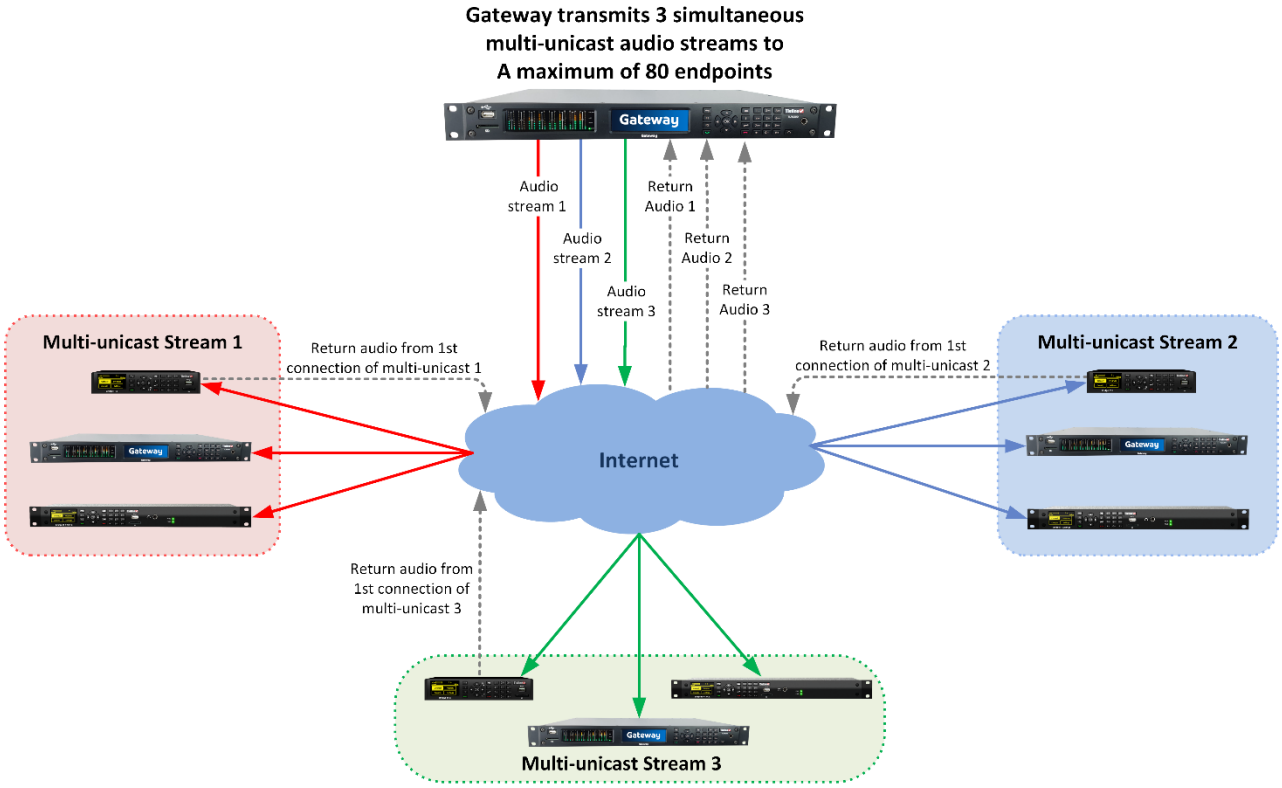


An optional Euro ISDN module can be used to create a backup connection, or to interface with existing infrastructure as your network transitions to IP.

The Gateway supports encoding 16 simultaneous streams of Opus. The codec is also capable of streaming multiple algorithms simultaneously at different sample rates and bit-rates.

GATEWAY: MULTI-UNICASTING OPTIONS

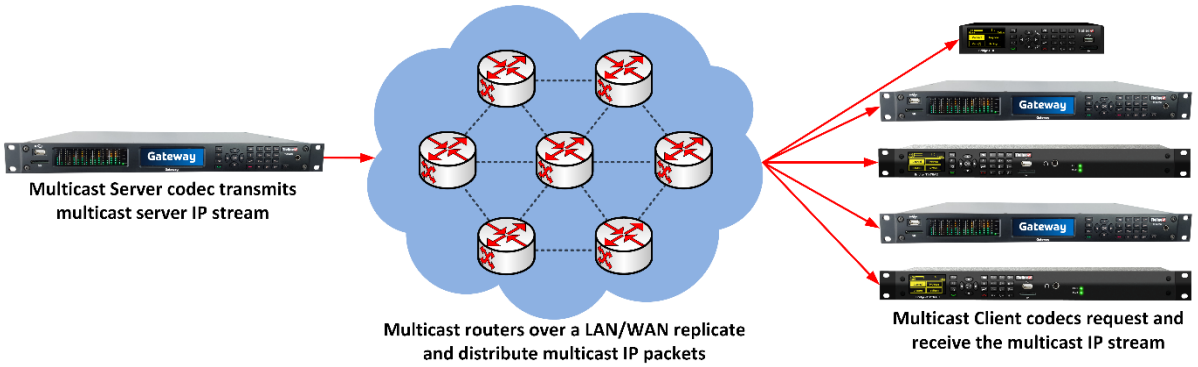
The Gateway can distribute a stereo IP audio stream to up to 80 individual multi-unicast endpoints. The Gateway 16-channel codec can also simultaneously send up to 16 different multi-unicast audio streams to a maximum of 80 endpoints in total. In a 3 x stereo multi-unicast example, the first stream could be sent to 40 endpoints, the second stream to 15 endpoints and the last stream could be sent to 25 endpoints.



Multi-unicasting to up to 80 end points

GATEWAY MULTICASTING

The Gateway can operate in multicast server and client modes. In multicast server mode it can distribute stereo audio to unlimited endpoints over compatible IP networks.

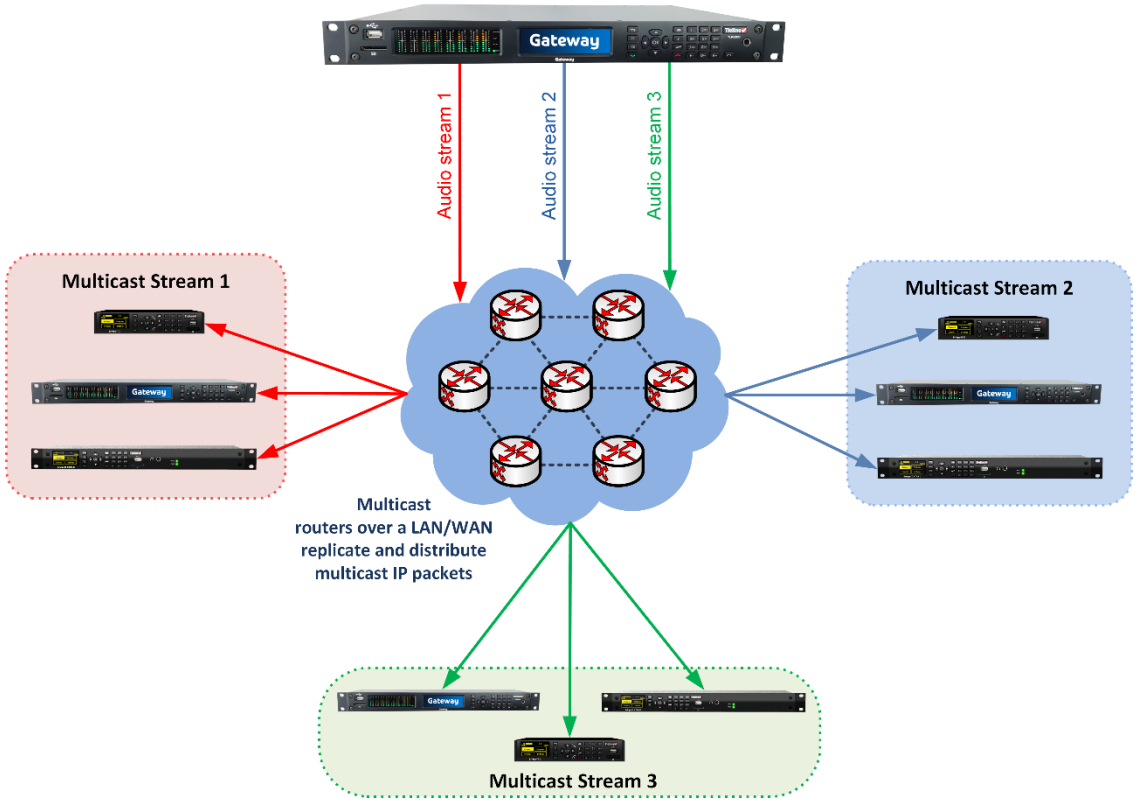


Gateway Multicast Example over IP

SIMULTANEOUS MULTICASTS WITH GATEWAY

The Gateway can simultaneously broadcast separate streams in multicast server mode and distribute each stream to unlimited endpoints. The Gateway 16 supports:

- Up to 16 mono multicasts (server or client mode).
- Up to 8 stereo multicasts (server or client mode).



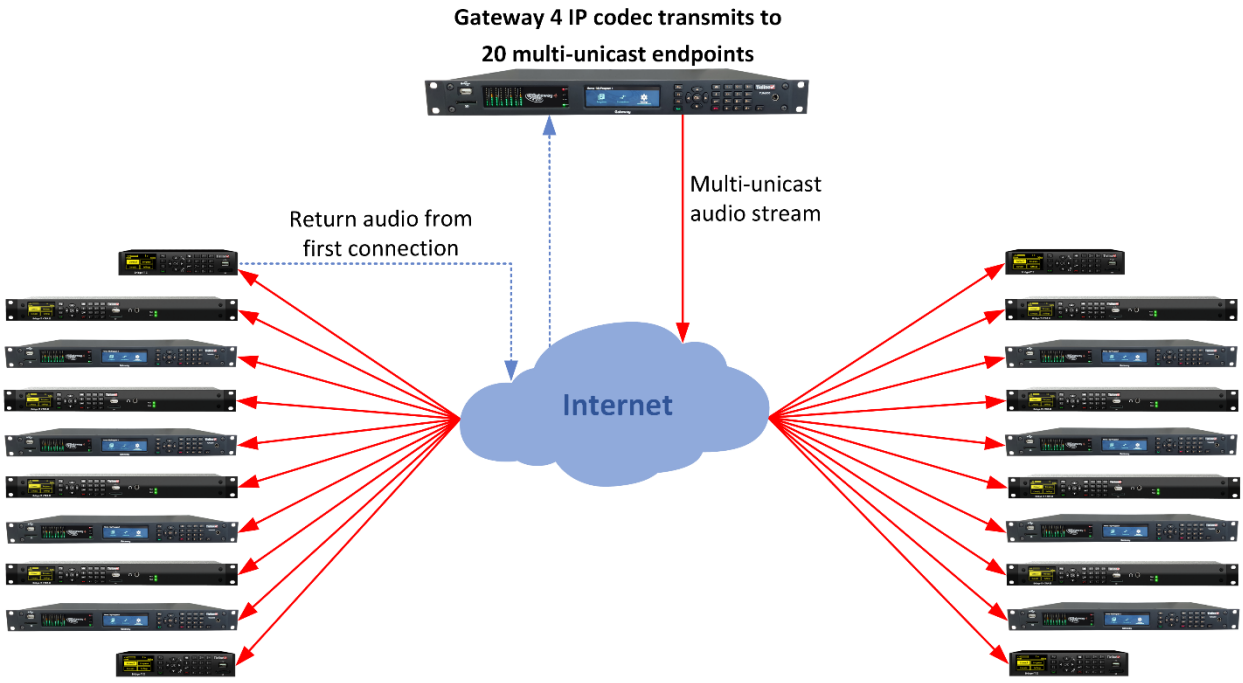
3 Simultaneous Multicasts

Note: Gateway 8 codecs support up to 8 mono multicasts or up to 4 stereo multicasts in server or client mode.

GATEWAY 4 IP AUDIO DISTRIBUTION SOLUTIONS

GATEWAY 4 MULTI-UNICASTING

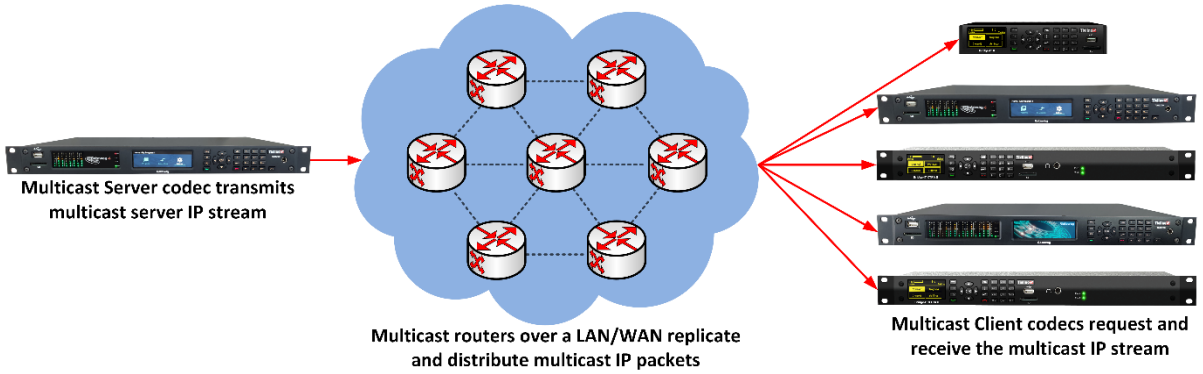
The Gateway 4 can distribute a single stereo IP multi-unicast to up to 20 multi-unicast endpoints in total. Two IP multi-unicast streams can also be configured (20 endpoints total, e.g. 10 endpoints in each multi-unicast).



20 Multi-unicast connections with Gateway 4

GATEWAY 4 MULTICASTING

Multicast server mode in the Gateway 4 allows you to multicast in mono or stereo to unlimited numbers of IP codecs over compatible IP networks.

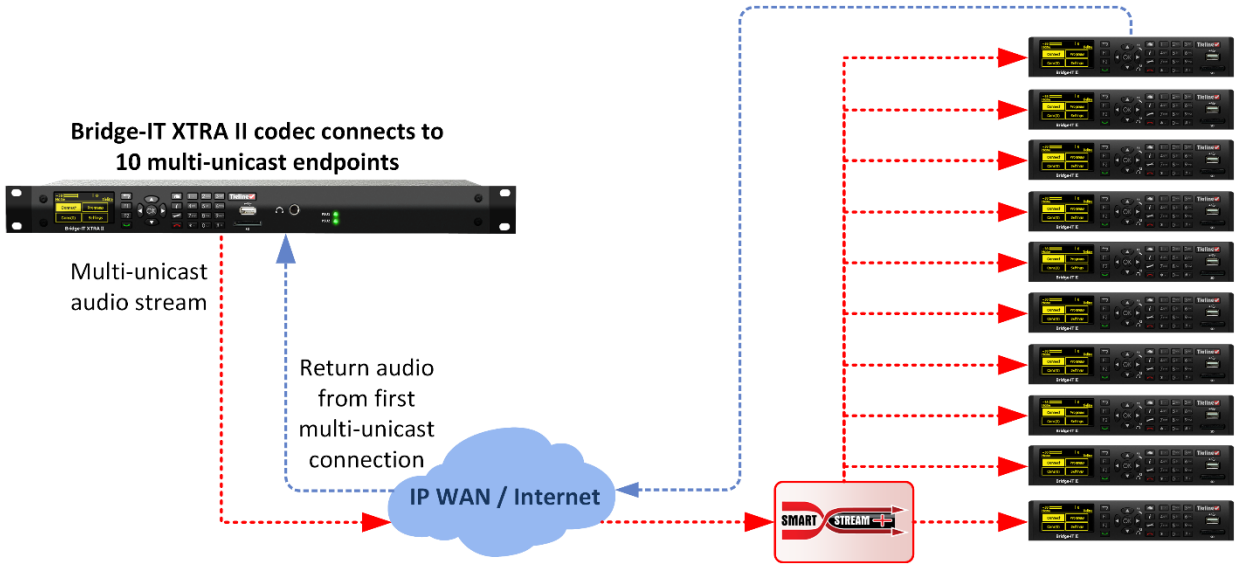


Gateway 4 Broadcasts in Multicast Server Mode

BRIDGE-IT II AND BRIDGE-IT XTRA II AUDIO DISTRIBUTION SOLUTIONS

MULTI-UNICASTING WITH BRIDGE-IT II AND BRIDGE-IT XTRA II

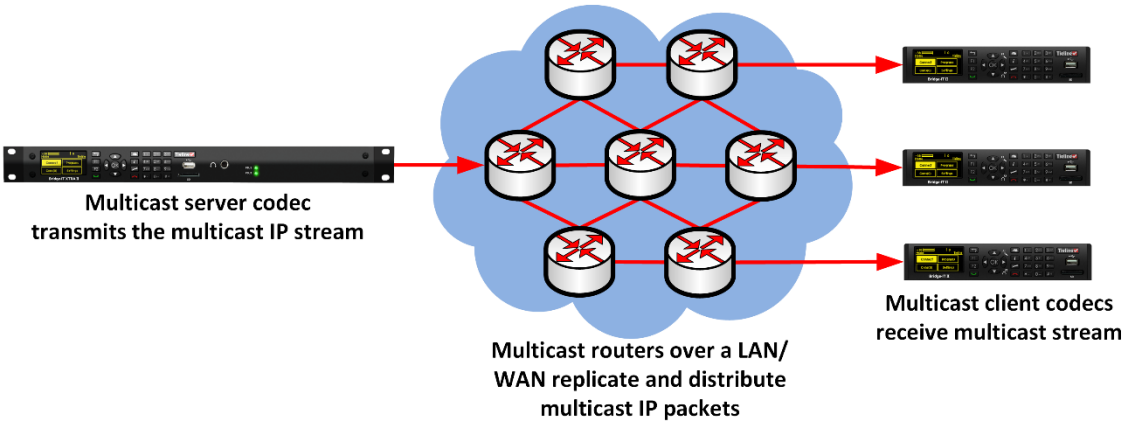
Bridge-IT II and Bridge-IT XTRA II can distribute a stereo IP audio stream to up to 10 individual multi-unicast endpoints.



10 Multi-unicast connections with Bridge-IT II or Bridge-IT XTRA II

MULTICASTING WITH BRIDGE-IT II AND BRIDGE-IT XTRA II IP AUDIO CODECS

Multicast server mode in Bridge-IT II or Bridge-IT XTRA II audio codecs allows multicasting to unlimited numbers of IP codecs over compatible IP networks.

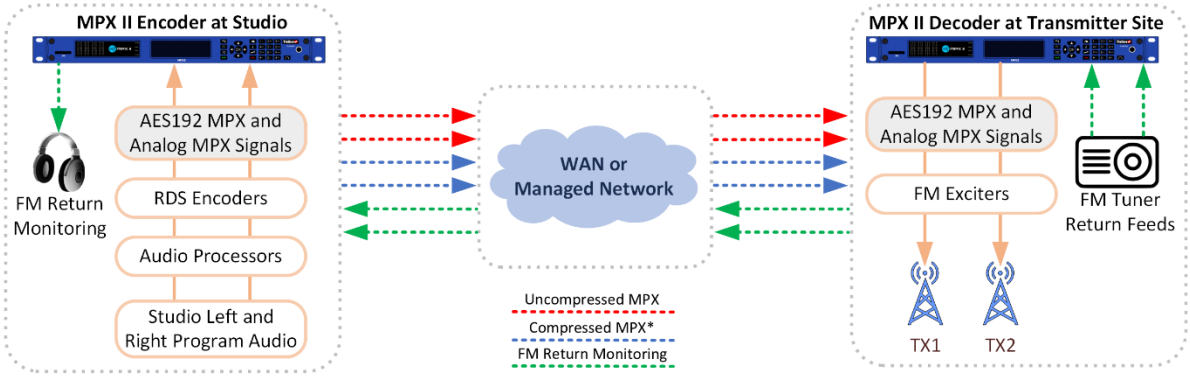


Multicasting with Bridge-IT XTRA II and Bridge-IT II

MPX COMPOSITE SOLUTIONS

Tieline's MPX I and MPX II codecs deliver composite FM multiplex (MPX) codec solutions for real-time network distribution of FM-MPX or MicroMPX (MicroMPX optional purchase) signals to transmitter sites. The MPX I is ideal for transmitting a composite STL signal from a single station with return monitoring, whereas the Tieline MPX II can transport two discrete composite FM-MPX signals from the studio to transmitters with return monitoring.

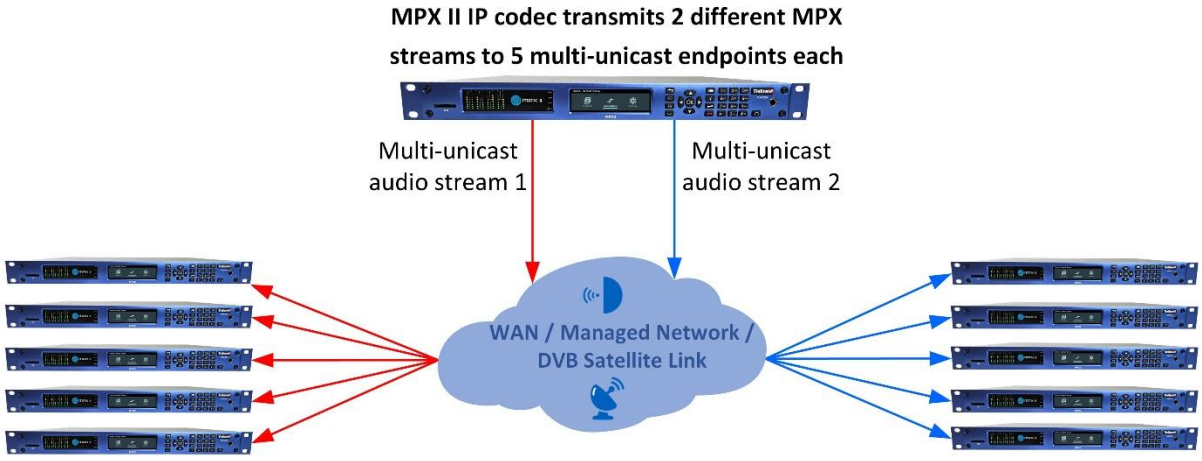
Both the MPX I and MPX II support sending the full uncompressed FM signal, or compressed µMPX to deliver high-quality multiplexed FM signals at lower bit-rates. They support analog MPX (BNC) or MPX over AES192 to deliver a wide range of flexible composite encoder and decoder configurations for many different applications. Order an optional satellite tuner card at purchase to support decoding DVB-S or DVB-S2 signals.



Compressed µMPX and uncompressed FM-MPX encoding and decoding with FM return monitoring

MULTI-UNICASTING WITH THE MPX I OR MPX II CODEC

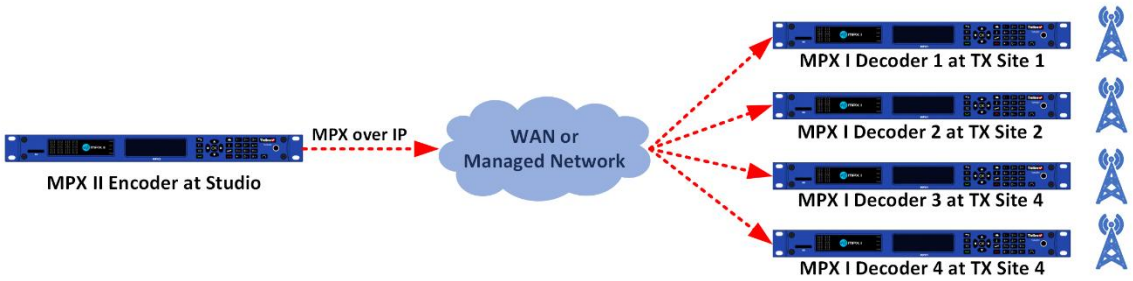
Distribution of MPX composite signals from the studio or playout center eliminates expensive audio processing and RDS generation requirements at STL sites. Multipoint distribution via multicast or multi-unicast technologies reduces costs even further, by affordably replicating MPX composite streams using a single MPX I or MPX II encoder, similar to how baseband IP audio streams are replicated in audio codecs. Compressed µMPX composite signals can be distributed over WANs like the internet at bitrates as low as 320kbps to reduce bandwidth requirements.



MPX II codec distributing 10 MPX multi-unicast streams

MULTICASTING WITH THE MPX I OR MPX II CODEC

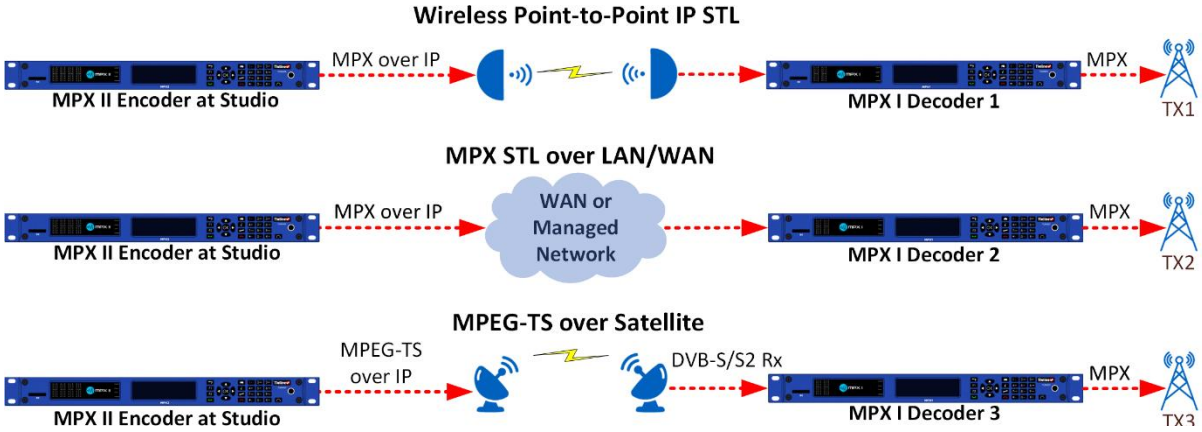
A single MPX I or MPX II encoder can distribute MPX composite multicast signals to MPX decoders located at transmitter sites.



Multicasting MPX composite signals

MPX TRANSPORT OPTIONS

MPX composite signals can be transmitted using a range of IP network options.



MPX Transport Options

REMOTES

Tieline offers a wide range of codec and smartphone app solutions for remotes. Codecs offering optional USB, cellular, Wi-Fi, and ISDN network options deliver connectivity over the full spectrum of wireless and wired connection transports. Tieline remote codecs include:

1. ViA Duo Remote Codec
2. ViA Remote Codec
3. Gateway Nexus (Studio codec to receive up to 32 remote feeds)
4. Gateway (Studio codec to receive up to 16 remote feeds)
5. Gateway 4 (Studio codec to receive up to 4 remote feeds; rack mounted remote solutions)
6. Report-IT Enterprise app for iOS or Android

VIA DUO CODEC: ONE DEVICE UNIFYING IP WORKFLOWS

ViA Duo is the new generation of trusted ViA technology that truly bridges the gap between field reporting and commentary. Built for reporters and commentators alike, it is an ultra-portable broadcast platform that can operate as an IP codec, AoIP commentary node, or facilitate off-tube broadcasting through support for audio and video feeds.

Simply take the codec to the remote site, power it up, and connect to your preferred network and start broadcasting. There's no need for additional outboard gear like mixers, equalizers, compressors, noise gates, expanders, recorders and playback machines – with ViA Duo it is all-in-one and ready to go!

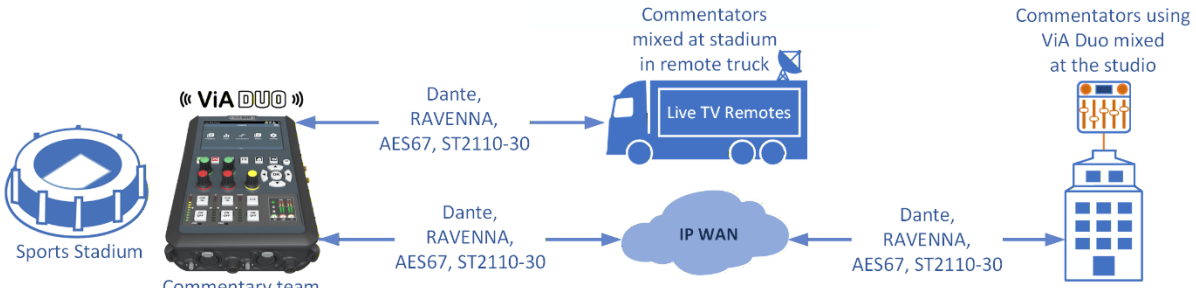
ViA Duo supports HDMI video out, multiple AoIP protocols, plus IP streaming over multiple interfaces. It delivers an all-in-one solution consolidating your remote broadcast, commentary and off-tube broadcasting requirements into a single compact and lightweight box. It is ideal for:

- Reporters to use with a guest
- Two commentators broadcasting sports events
- Announcers working from home
- Talk show and other radio show hosts on the road
- Off-tube commentary, or use as a sports commentary unit over AES67, ST2110-30, Livewire, RAVENNA, or Dante (AoIP and Dante card is optional)

ViA Duo remote codec

STADIUM TV COMMENTARY

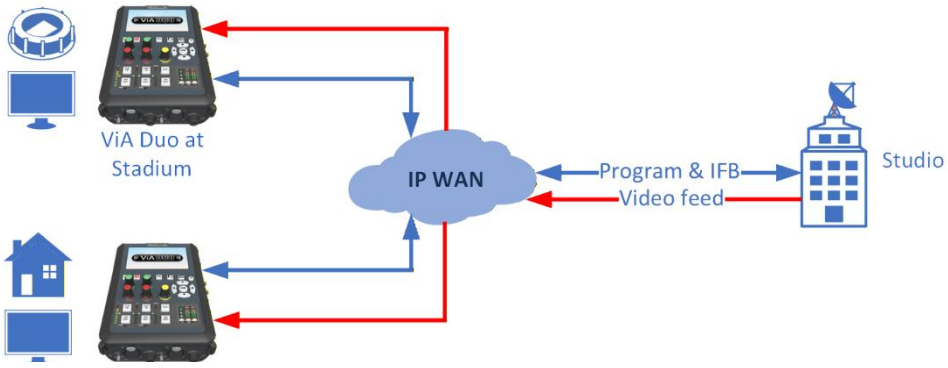
The ViA Duo can be used in a variety of broadcast commentary roles for radio and TV broadcasts. Optional support for AoIP protocols like RAVENNA, Dante, AES67, ST2110-30, Livewire and NMOS facilitates using ViA Duo as an AoIP node in stadium commentary booths or on the sideline. Flexible options include connecting over a LAN to a remote truck at a venue, or over a WAN with a REMI (Remote Integration) use case back to a mixing console at a studio hub.



Stadium TV Commentary with ViA Duo as an AoIP network node

OFF-TUBE COMMENTARY

ViA Duo supports off-tube commentary so your commentary team can get a live game day feed and call live from wherever they are in the world – even from the comfort of their own home. You can even use the codec at a stadium and receive a video return feed from the studio including stats and other live or recorded elements of the broadcast. Paired with a real-time mix-minus comms feed, your commentary team will get the full picture.



Off-tube remote broadcast options with ViA Duo

RADIO COMMENTARY USING DANTE

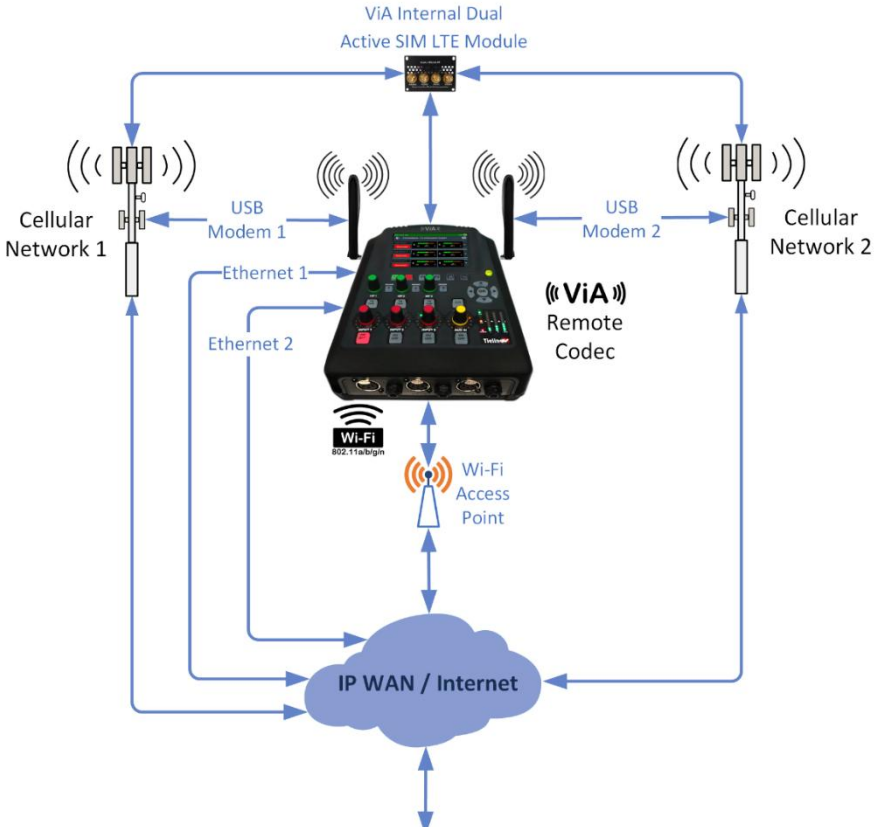
ViA Duo seamlessly integrates with existing analog and AES3 digital infrastructure with optional support for Dante to deliver unprecedented flexibility for radio remotes. Featuring functionality for one or two commentators, you can also integrate Dante audio in/out to expand production possibilities. For example, use ViA Duo to integrate with other equipment like mixers, sound effects mics and more, and send full duplex stereo program audio back to the studio.

Remote radio commentary with integrated Dante devices

VIA CODEC: MONO/STEREO CONNECTIONS PLUS IFB OVER LAN, CELLULAR & WI-FI

The ViA portable remote codec delivers more IP choices and backup options than ever before with up to 7 IP interface options available. Connect using:

- Dual Ethernet LAN ports, or
- 2 USB modems, or
- Use built-in Wi-Fi (no external modem required), or
- Use an optional dual active SIM LTE module.



The 7 IP interface options with ViA

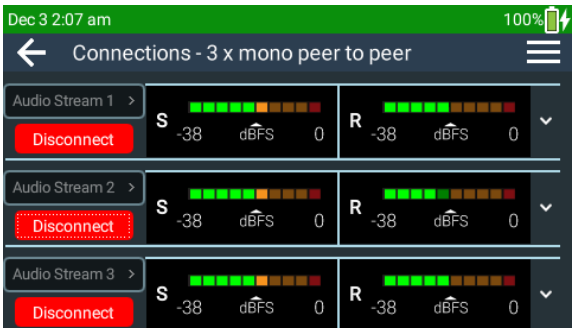
Use the touch screen to add Wi-Fi access points in seconds. Stream using a cell-phone Wi-Fi hotspot or connect to hotels and other public Wi-Fi access points using the touch screen web-browser in a snap!

ViA with a Dual Active SIM Module supporting 2 different cellular networks for live streaming

Key Features:

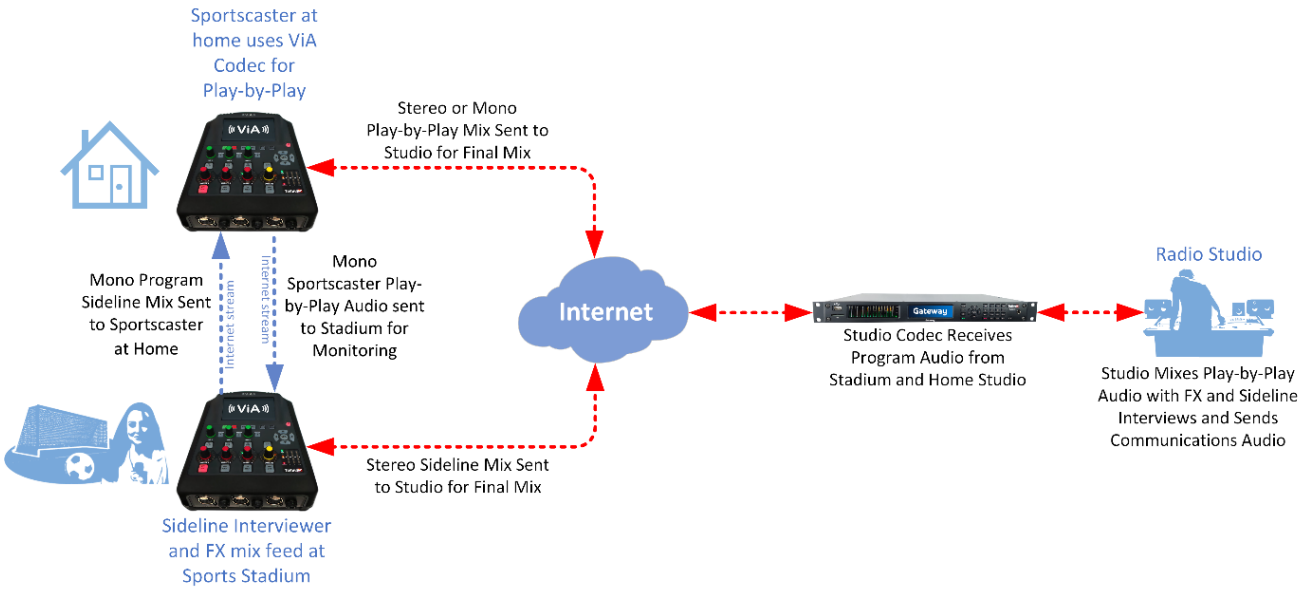
- Intuitive, simple to connect LCD touch screen
- Supports 2 mono connections, 3 mono connections, stereo, or stereo plus a separate IFB circuit (all connections bidirectional)
- Support for simultaneous record and playback and FTP uploads for voice tracking/podcasts
- Dual Gigabit LAN ports
- Optional ViA Dual Active SIM LTE module, or ISDN module
- Built-in Wi-Fi (no modem required) and 2 x USB cellular options
- Bonding of multiple IP interfaces with Fuse-IP data aggregation
- Includes SmartStream PLUS as standard; supports primary and 3 redundant streams per connection
- Automated backup over IP and ISDN
- Touch screen matrix editor routes any input to any output: includes customized cue/talkback routing for all announcers; save, rename, and recall custom matrices.
- Customize headphone mixes via the touch screen for 3 headphone outputs.
- EQ, compressor, noise gate, expander and limiting on all inputs.
- Touch screen adjustments to digital and XLR output routing, audio levels, send/return balance, plus output mute buttons
- Linear audio: encoding options Opus, Tieline Music & Music PLUS, aptX Enhanced, MPEG1 Layer 2, MPEG 3, LC-AAC, HE-AACv1 & v2, AAC-LD, AAC-ELD, G.711 & G.722
- Features added with periodic updates
- Ships with a road case, battery, and power supply as standard

TRIPLE MONO WITH VIA



The ViA codec supports streaming 3 separate bidirectional mono connections to different endpoints. This delivers flexibility to distribute audio to multiple studios or incorporate multiple external sources into a broadcast.

This also provides the flexibility to support remote work from home situations. For example, a broadcaster can call play-by-play sports coverage while also integrating with sideline commentary teams, or even other announcers calling the game from elsewhere for the same broadcast.

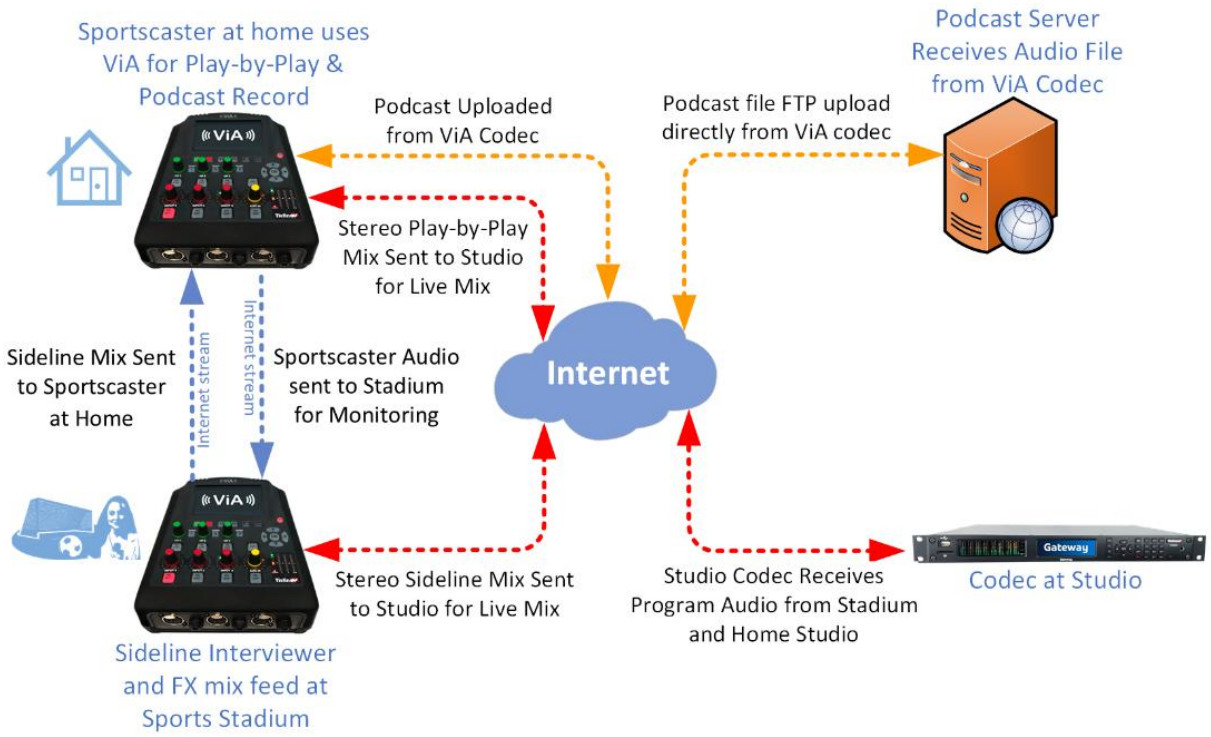


BROADCAST FROM HOME AND PODCAST WITH VIA

The Tieline ViA supports voice tracking, FTP, and podcasting capability directly from the codec in the field. This revolutionizes live streaming with record and playback capability, so the codec can be a fully integrated podcast production studio!

With the Tieline ViA you can simultaneously record and play back audio files. This means you can create a podcast on the go while broadcasting live from home or a remote site, or even record a post-game show, complete with post-game interviews and sponsors' messages – all without entering the studio!

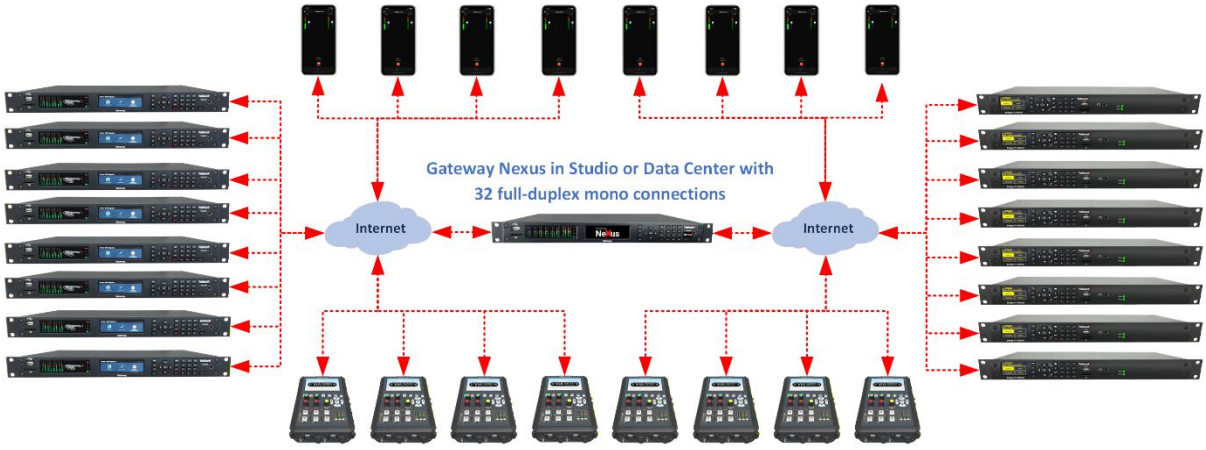
Flexibility is assured as a second and third announcer can even dial in using another codec or SIP device and go live, and at the same time be integrated and recorded as part of the podcast.



ViA used for live play-by-play with simultaneous podcast recording

GATEWAY NEXUS: 32 MONO OR 16 STEREO REMOTE CONNECTIONS WITH IFB

As the broadcast industry shifts towards centralized and remote production models for live broadcast applications, Gateway Nexus' high-density DSP-based platform allows broadcasters to upscale infrastructure efficiently. The Nexus is purpose-built for hosted data center deployments, delivering 32 full-duplex channels of deterministic, low latency AoIP audio using dedicated and reliable hardware.



32 full-duplex mono codec connections to a Gateway Nexus

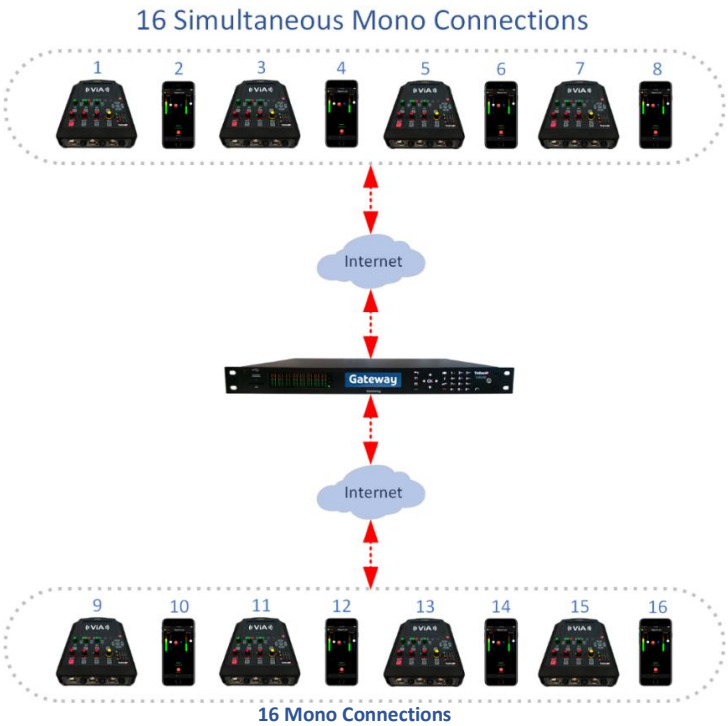
The Gateway Nexus is perfect for managing high numbers of incoming remote broadcast audio contribution streams at the studio. It delivers rock-solid, high-fidelity mono or stereo IP audio connections, as well as managing separate bidirectional communications circuits. It supports up to 32 full-duplex mono connections or 16 full-duplex stereo connections and up to 32 simultaneous streams of Opus. The Gateway Nexus will expand your encoding capabilities by providing a centralized hub for all your AoIP streams.

GATEWAY IP AUDIO CODEC: 16 MONO OR 8 STEREO CONNECTIONS PLUS IFB

Like the Gateway Nexus, the Tieline Gateway is perfect for managing incoming remote broadcast contribution streams at the studio. It is capable of rock-solid, high-fidelity mono or stereo IP audio connections, as well as managing separate bidirectional communications circuits.

The Gateway can receive and manage up to 16 bidirectional mono remote connections. It's like having 16 codecs in one box!

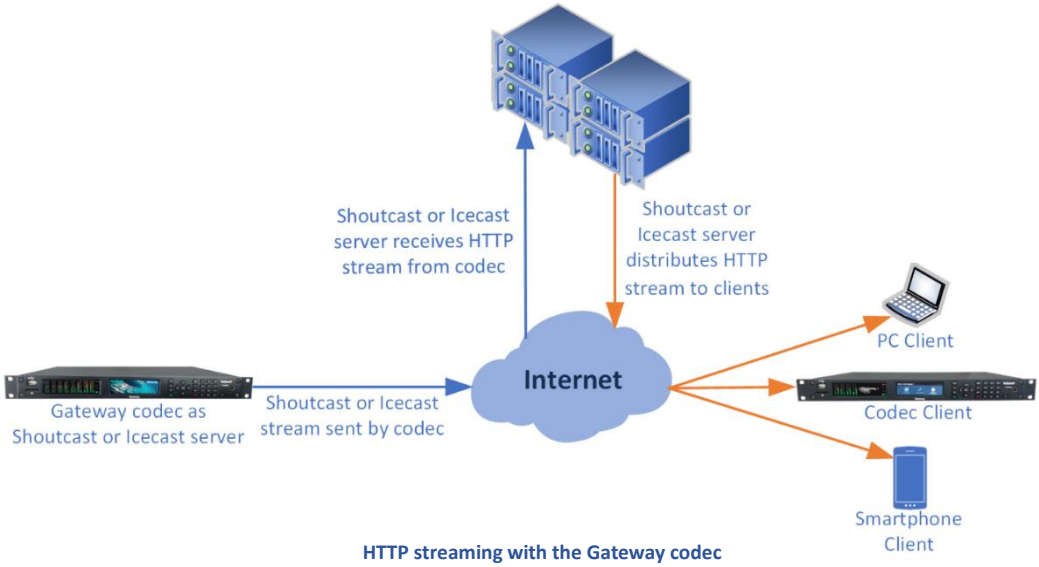
Gateway supports encoding 16 simultaneous streams of Opus. The codec is also capable of streaming multiple algorithms simultaneously at different sample rates and bit-rates.



16 Mono Connections

HTTP STREAMING WITH ICECAST OR SHOUTCAST

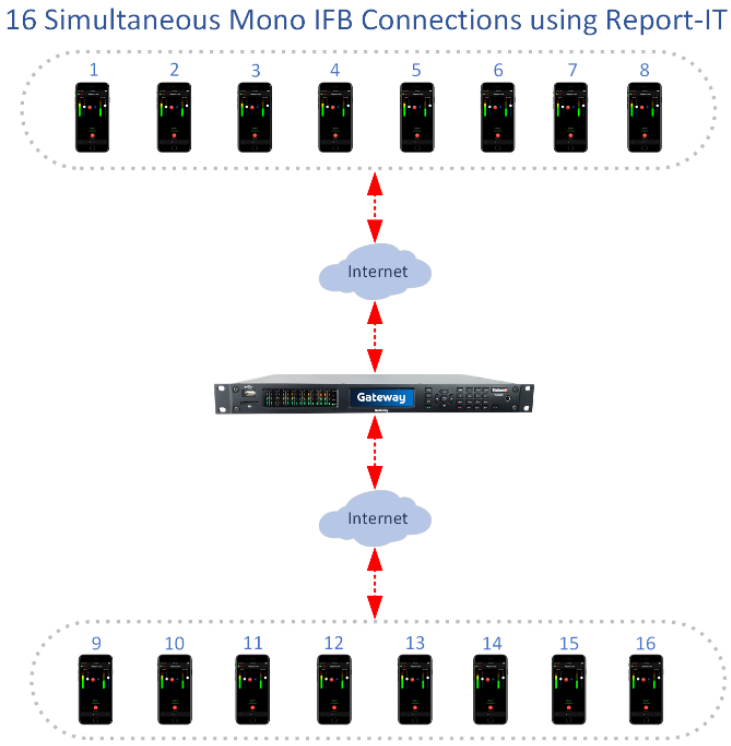
Gateway Nexus, Gateway and Gateway 4 support a single Icecast or Shoutcast HTTP server encode stream which is configured as a connection within a program. As displayed in the following image, two major components are involved: an Icecast or Shoutcast streaming server and source client/s.



HTTP streaming with the Gateway codec

GATEWAY OR GATEWAY NEXUS FOR MULTIPLE TELEVISION IFB FEEDS

Replace your old POTS phone couplers with the Tieline Gateway and discover how television networks can configure up to 16 discrete mono IFB mixes to replace your old POTS and ISDN lines. Up to 16 talent in the field can simultaneously use Tieline's Report-IT Enterprise app on their cell-phones to receive discrete IFB audio feeds from a Gateway codec at the studio. Gateway codecs also have a Matrix Editor allowing the creation of individually tailored mix-minus feeds from within the unit.



Gateway codec delivers 16 discrete mono IFB feeds using the Report-IT app.

HIGHER CHANNEL DENSITY REQUIREMENTS

If you require more than 16 channels, the Gateway Nexus offers up to 32 discrete mono IFB feeds with the same IFB capabilities.

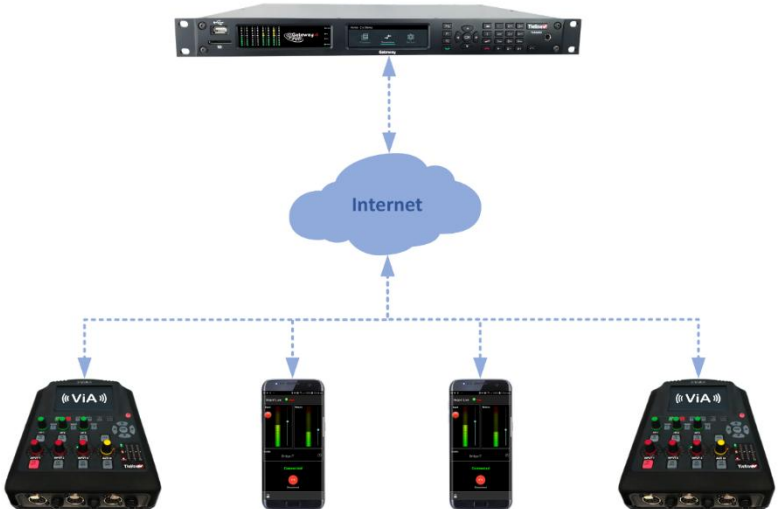
The 32 channel Gateway Nexus codec

GATEWAY 4

The Gateway 4 is designed for solutions requiring up to 4 audio streaming channels with advanced redundancy features and remote configuration and control. It is ideal for remote trucks, rack mounted remote kits, or for receiving multiple remote audio streams at the studio.

GATEWAY 4 AUDIO CODEC: 4 SIMULTANEOUS MONO REMOTES

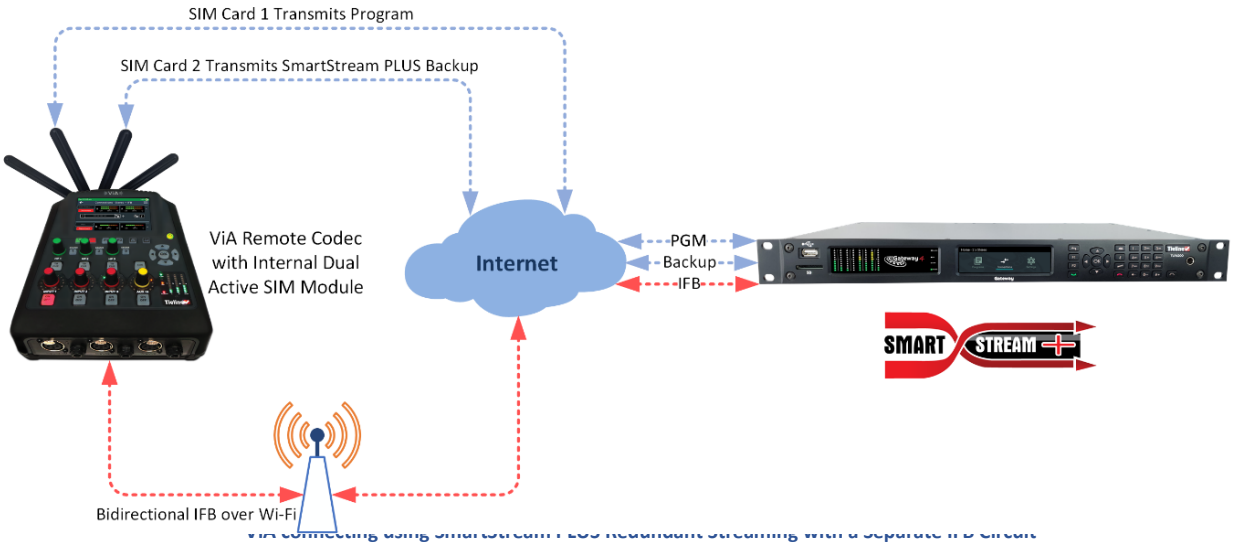
The Gateway 4 supports 4 simultaneous mono peer-to-peer bidirectional audio stream connections with codecs or smartphones using the Report-IT app.



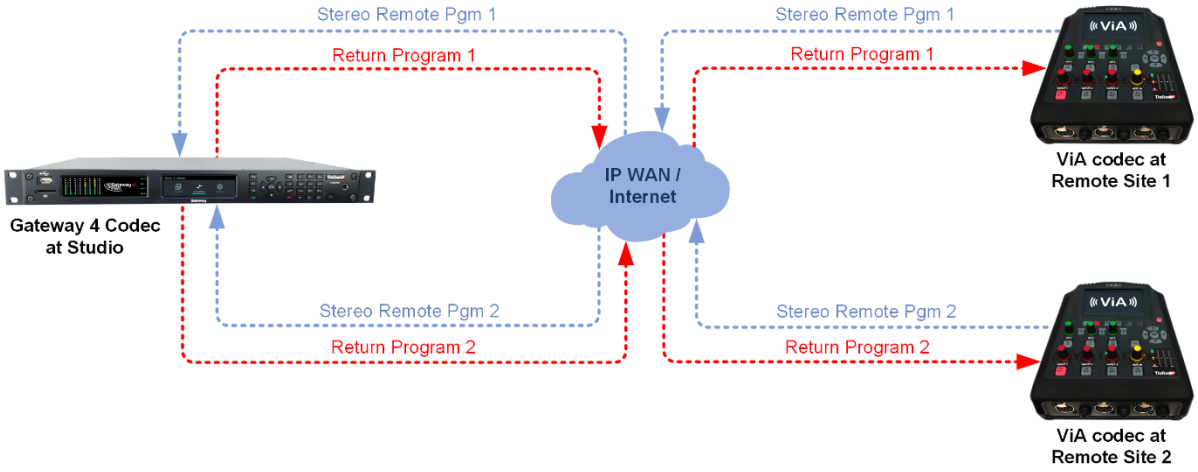
Gateway 4 Supports 4 Bidirectional Mono Peer-to-Peer Connections

GATEWAY 4 AND VIA FOR REMOTES

The Gateway 4 has 4 inputs and outputs, so it is ideal to pair with a ViA remote codec featuring 3 inputs/outputs. This allows the ViA to stream in mono or stereo back to the studio and incorporate a separate bidirectional IFB communications channel into the broadcast.



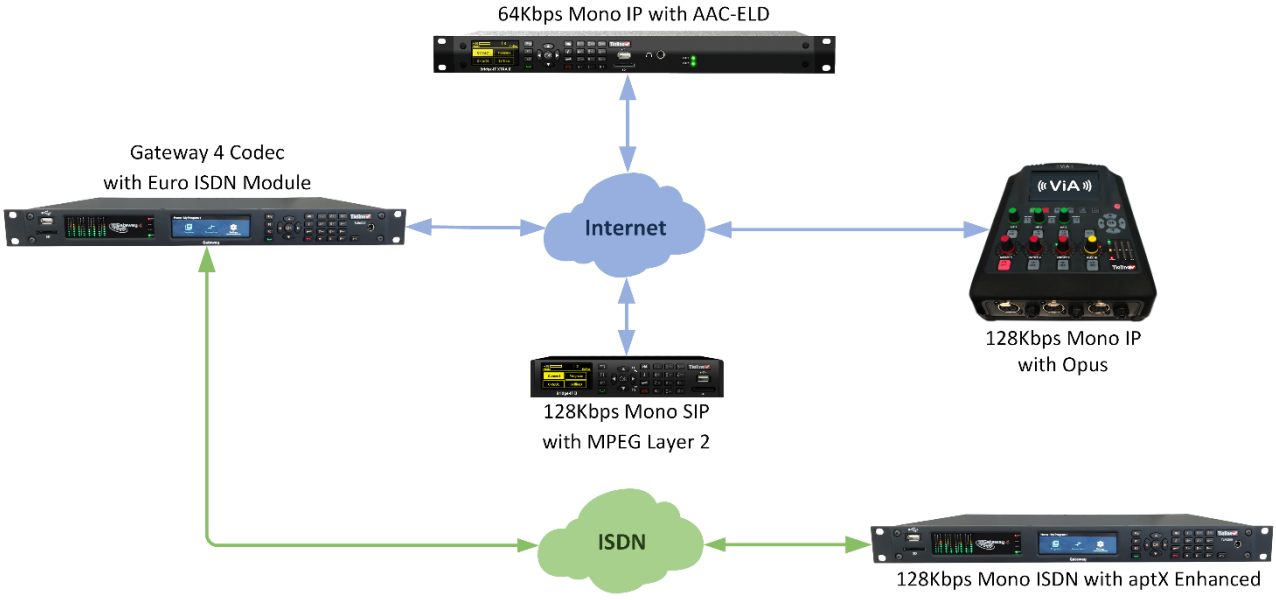
The Gateway 4 is also capable of connecting two bidirectional stereo remote audio streams.



Gateway 4 Supports 2 Bidirectional Stereo Peer-to-Peer Connections

GATEWAY 4 ENCODING FLEXIBILITY

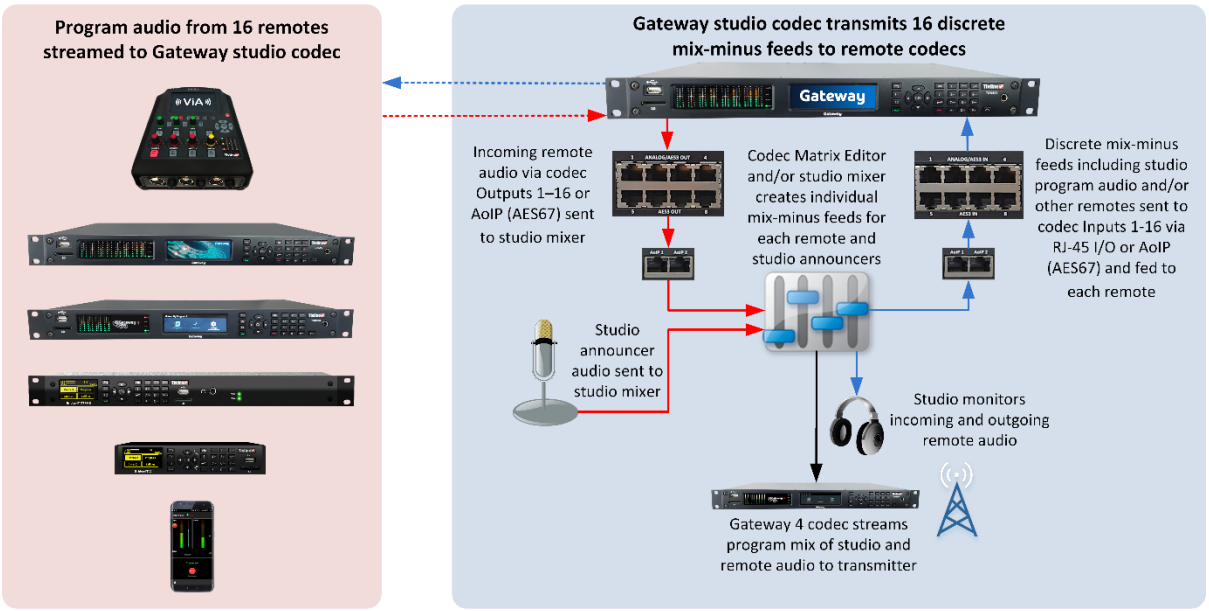
The Gateway 4 supports encoding multiple simultaneous streams of Opus and can stream multiple algorithms simultaneously at different sample rates and bitrates. Plus, Gateway 4 supports two Euro ISDN B-Channels when an optional Gateway Euro ISDN module is installed.



Gateway 4 codec connecting with different algorithms and bit-rates

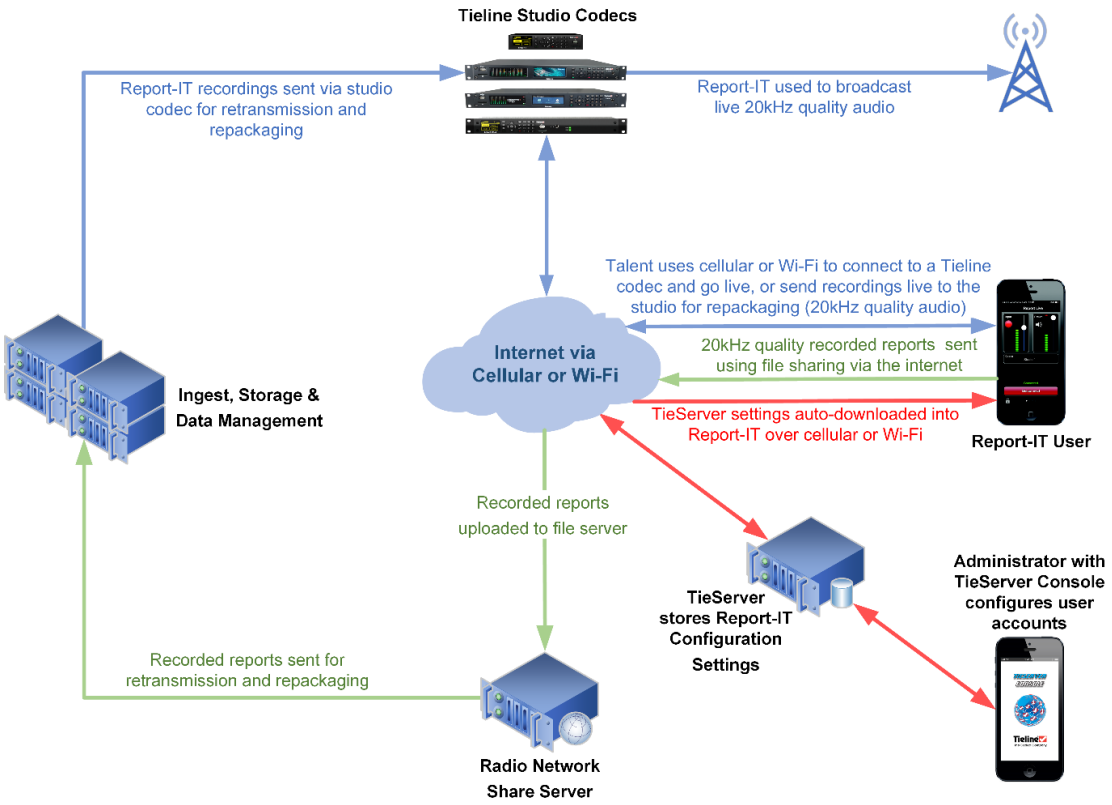
GATEWAY IP AUDIO CODEC: 16 SIMULTANEOUS MONO REMOTES

A Gateway 16 codec at the studio can facilitate 16 simultaneous bidirectional mono audio stream connections with different remote codecs or smartphones using the Report-IT application.



Gateway supports 16 simultaneous mono remotes

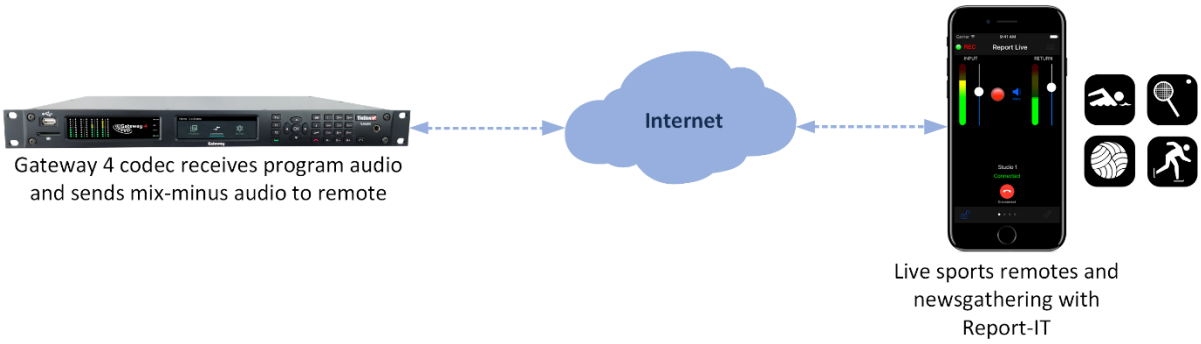
HOW REPORT-IT ENTERPRISE WORKS



Report-IT Enterprise Workflow

REPORT-IT ENTERPRISE SMARTPHONE APPLICATION REMOTES

The multi award-winning Report-IT Enterprise app turns your iPhone® or Android™ smartphone into a pocket-sized portable 20kHz live IP audio codec and ultra-slim high fidelity 20kHz audio recorder. The app connects to all Tieline IP audio codecs and is available for iPhone and Android smartphones.



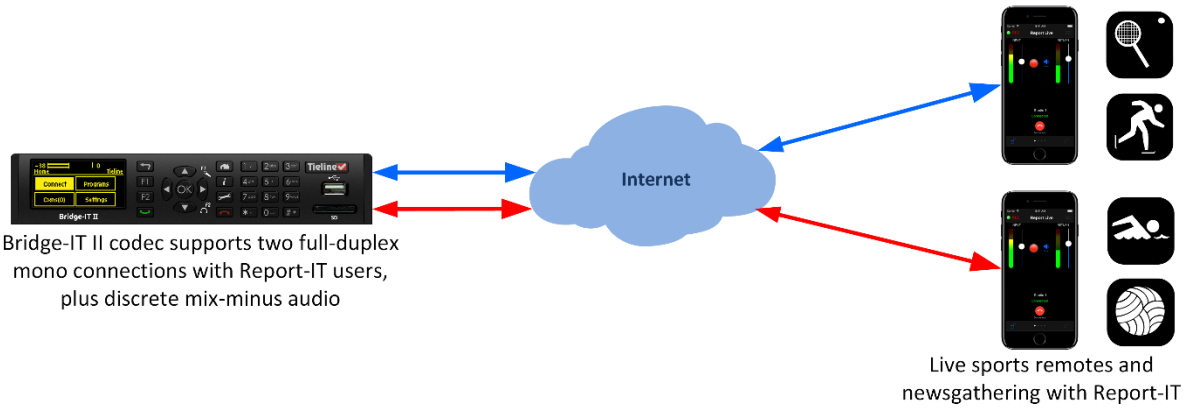
Report-IT Connects Live to Gateway 4 Codec

Key features:

- Cloud-based solution with an emphasis on simplicity for users
- Manage all users in the cloud from anywhere using the free iPhone or Android TieServer Console apps
- HTML TieServer Web Console available for an additional low annual subscription fee
- Reporters and contributors install the free app from the App Store or Google Play; enter a username and password and go live in seconds!
- Scalable to suit the specific needs of small, medium, or large organisations
- A one-time establishment fee which includes the first year's subscription for 10 users, without device restrictions. Users can install and use Report-IT on multiple devices (subject to fair usage policy)
- SmartStream PLUS dual redundant IP streaming
- Two relay GPIOs on Report Live screen for showing when GPIs are activated/deactivated; plus activate and deactivate GPOs using the smartphone touchscreen
- Purchase additional user subscriptions in blocks of 10 to suit requirements
- Powered by Tieline's globally redundant TieServer network
- VIP-Connect (with HTML TieServer Web Console subscription)
- SIP for Report-IT Enterprise (upgrade option allows connections with non-Tieline N/ACIP compatible codecs)

AFFORDABLE REMOTES WITH BRIDGE-IT II AND REPORT-IT

Pairing Bridge-IT II with Report-IT Enterprise delivers affordable remote broadcasting opportunities. Ideal for high schools, colleges, community stations and as backup remote audio paths, the affordable Bridge-IT II codec provides mono or stereo connections and with Report-IT is a simple and affordable remote solution. The compact half rack unit width Bridge-IT II uses a 12v power supply and two can sit side-by-side in a 1RU rack frame tray. Bridge-IT II and Report-IT deliver high quality audio with low latency using Tieline's Music algorithm or Opus encoding.



Report-IT app connects to Bridge-IT II codec for affordable remotes

Key features:

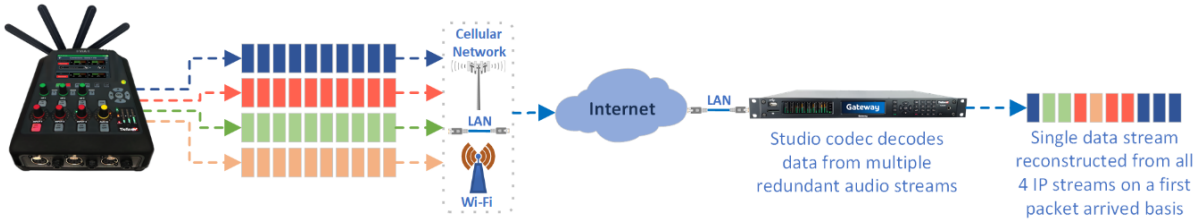
- Native support for AES67, ST2110-30, Livewire, RAVENNA and AMWA NMOS IS-04, IS-05 and IS-07
- Two full-duplex mono connections, or full duplex stereo
- Dual LAN ports; LAN2 switchable to AoIP
- XLR analog and digital AES inputs
- SmartStream PLUS redundant streaming and Fuse-IP data aggregation
- Failover to another connection, HTTP stream, or audio file playback
- Front panel OLED screen and keypad for simple menu navigation
- Support for HTTP streaming (Icecast and Shoutcast), SIP and wireless cellular modems
- Multi-unicast to up to 10 different end-points, or multicast to unlimited endpoints
- Full remote control using HTML5 Toolbox Web-GUI or Cloud Codec Controller

SMARTSTREAM PLUS: THE INDUSTRY STANDARD FOR INTERNET BROADCASTING

REDUNDANT IP STREAMING

Redundancy is critical for studio-to-transmitter links and other mission critical broadcast connections. Tieline's SmartStream PLUS has revolutionised IP broadcasting by delivering the rock solid and reliable STL-grade audio quality you would expect over a T1/E1 link, by using inexpensive unmanaged IP networks like the internet for STLs, audio distribution and remotes.

Tieline codecs incorporate hitless packet switching using Tieline's renowned SmartStream PLUS redundant streaming. Up to 4 identical packet streams can be transmitted for each IP connection. Packets are realigned at the receiving codec using an adaptive jitter buffer to maintain error-free streaming and minimize latency.



Example of hitless packet switching with ViA codec streaming 4 identical IP streams to the Gateway codec

SmartStream PLUS saves money for broadcasters as they can use inexpensive IP links with SmartStream PLUS to deliver seamless redundancy when streaming over IP. Some other manufacturers charge thousands of dollars for IP software like SmartStream PLUS as if it's an optional extra. Tieline believes high performance and rock-solid reliability is an essential part of each and every broadcast and delivers SmartStream PLUS IP streaming software for free.

1. Huge cost savings: use SmartStream PLUS over inexpensive IP links to transport rock solid, high fidelity audio at a fraction of the cost of satellite links or synchronous leased lines.
2. Continuous rock-solid reliability: stream simultaneous redundant data streams and deliver seamless redundancy if packets are lost.
3. High fidelity audio: Tieline's renowned suite of high-quality algorithms will all work using SmartStream PLUS.

NATIVE AES67, ST 2110-30, ST 2022-7, NMOS AND EMBER+ SUPPORT

Tieline Gateway Nexus, Gateway, Gateway 4, Bridge-IT II, Bridge-IT XTRA II and ViA Duo codecs include native support for AES67, ST 2110-30, NMOS IS-4, IS-5 and IS-07. All codecs except Bridge-IT II and ViA Duo also support ST 2022-7.

Gateway Nexus, Gateway, Gateway 4, ViA and ViA Duo codecs also include support for Ember+.

NATIVE LIVEWIRE+ AND RAVENNA SUPPORT

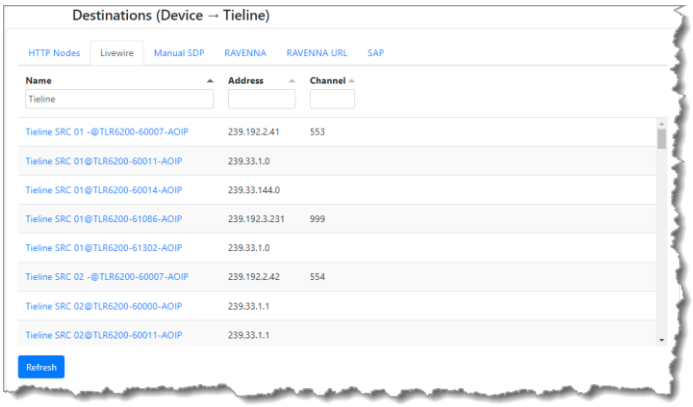
Native RAVENNA and Livewire+ AoIP support is included free in Gateway Nexus, Gateway, Gateway 4, Bridge-IT II, Bridge-IT XTRA II and ViA Duo codecs.

LIVEWIRE+

Native support for Livewire+ facilitates codecs being integrated seamlessly into the large number of networks that have deployed Livewire networks and that use Axia consoles and Pathfinder for routing control.

Tieline codecs with Livewire+ include features such as:

- Creation of Livewire+ compliant Sources and Destinations.
- Simple discovery of advertised Livewire+ sources across an AoIP network.
- Configuration and activation of Livewire GPIOs (64 Livewire GPIO ports supported).



Codec Destinations panel displaying Livewire+ source streams

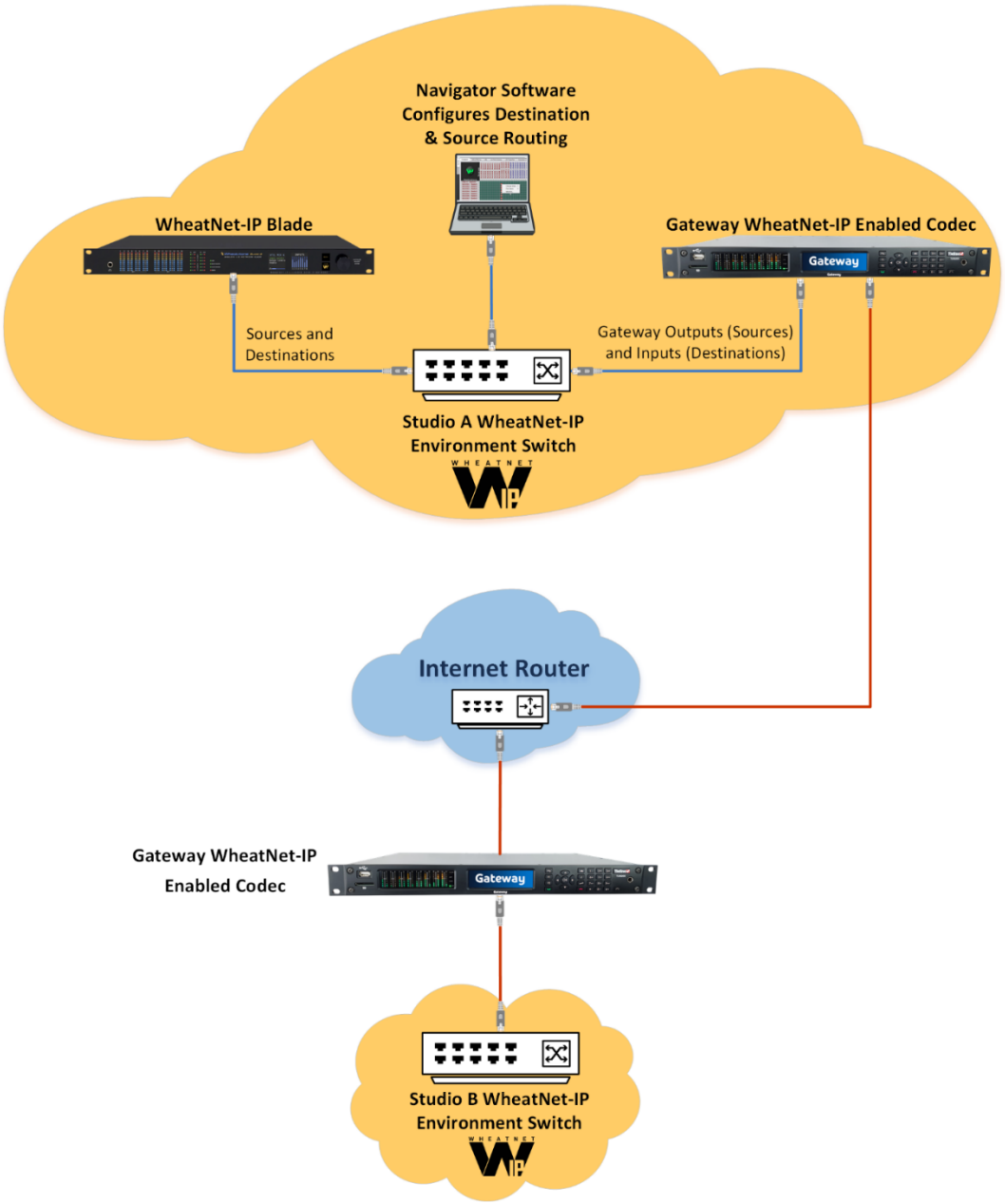
RAVENNA

RAVENNA is used widely by broadcasters around the world for discovery and advertisement when streaming real-time IP audio. RAVENNA support facilitates interfacing easily between Gateway Nexus, Gateway, Gateway 4, Bridge-IT II, Bridge-IT XTRA II and ViA Duo and RAVENNA devices over AoIP networks.

WHEATNET-IP OPTION

GATEWAY, GATEWAY 4, AND WHEATNET-IP

Order an optional WheatNet-IP card when you purchase Gateway and Gateway 4 codecs to seamlessly integrate IP audio streams between external IP networks and the WheatNet-IP environment. Codecs with WheatNet-IP cards appear as Blades and seamlessly support stream discovery, advertisement and control using Wheatstone's Navigator software. Codec sources and destinations can be easily configured and monitored using Navigator software.



DANTE OPTION

Order an optional Dante card when you purchase Gateway Nexus, Gateway, Gateway 4 and ViA Duo codecs to seamlessly integrate IP audio streams between external IP networks and Dante AoIP networks. A Tieline codec with an optional Dante card on-board can interface directly and seamlessly with other Dante compatible devices. Audio stream source and destination routing can be directly configured using Dante Controller software.