The Comrex BRIC-Link II is a low-cost, high-performance solution for audio-to-IP conversion. Leveraging many of the core technical aspects of Comrex's successful IP audio codecs, BRIC-Link II provides an elegant way of moving linear or compressed audio with very low delay.

BRIC-Link II is very simple to use, and can be deployed over a wide range of IP links. While it carries an entry-level cost, BRIC-Link II maintains superb audio specifications and hardware reliability, making the system suitable for STLs and other mission critical functions without the expense of more full featured codecs.

Applications

Like its predecessor, BRIC-Link II is uniquely suited to point-to-point "nailed up" high-quality audio links over a variety of data networks, like ISM band IP radios, T1/E1s, satellite, WANs, and LANs. It can also use 4G with HotSwap and a Comrex Connect Modem. The robustness of CrossLock technology allows the system to perform well on the public Internet using AAC compression modes.

BRIC-Link II is capable of "multi-streaming" – BRIC-Link II has the ability to run one encoder per box, but this single encoder stream may be sent to up to three destinations simultaneously. Additionally, BRIC-Link II can act as a streaming server, delivering AAC and HE-AAC to compatible PC-based media players.

Switchboard

Comrex Switchboard Traversal Server makes connections between Comrex IP codecs easy. This is especially important when broadcasting over networks that have firewalls and routers and other IT snags. Switchboard allows your codec to sync with a cloud-based server, making it possible to connect without having to know the IP addresses on either end of the link.

Switchboard saves all the details of the codecs subscribed to the server. This means that when it's time to connect, you don't have to enter any information - you can simply choose the codec you want to connect to from a menu, and hit a button.

CrossLock Technology

Quite simply the most advanced network management tool on the market today. When used in "bonding" mode, CrossLock gives users the ability to manage and bond multiple data connections together simultaneously. When a new network is introduced, CrossLock will immediately evaluate how much bandwidth is available, while factoring in latency and jitter information, and combine the two connections to take advantage of all available bandwidth. In Redundant mode, all data will be sent over all networks. CrossLock can also monitor each data connection individually and, when necessary, apply appropriate error correction, recovery, or concealment techniques.

Connections & Features

- 1/2U rackmount chassis

Inputs
- Balanced XLR audio inputs 0dBu nominal, +20dBu peak
- AES3 XLR Digital audio input
- Analog/AES3 switch

Outputs
- Balanced XLR audio outputs 0dBu nominal, +20dBu peak
- AES3 XLR Digital audio output

Network
- USB connection
- Ethernet Port

Communications
- Contact Closures: 9-pin mini DIN
- Serial Port: 8-pin mini DIN

Other
- Headphone jack
- Card slot (for future use)

HotSwap

BRIC-Link II is equipped with HotSwap, a feature of CrossLock "Dual Network" mode that allows users to designate one network as primary and another network as secondary. 4G networks can be used only as a secondary network on BRIC-Link II and only when used with Comrex Connect Modems (SIM not included). Fall-over to backup happens in a fraction of a second, and fallback is seamless.

Audio Coding

For users concerned about delay and coding artifacts, BRIC-Link II offers a robust stereo or mono linear mode that does not compress audio. In addition, BRIC-Link II is the only real-time audio codec to offer FLAC lossless compression, which reduces network throughput by 30–40% with absolutely transparent coding and no tandem coding concerns.

For situations where more reduced bandwidth is desired, BRIC-Link II offers AAC/HE-AAC modes as standard, allowing superb audio quality at dramatically reduced data rates. For compatibility with mobile phone and web apps, BRIC-Link II also implements Opus audio compression, along with VoIP standards G.722 and G.711.

The chart to the right represents a sampling of the algorithms available as well as corresponding encode rates, network rates, bandwidth, and delay.

Transmission Modes and Delays

BRIC-Link II is a true codec, offering a full-duplex stereo encoder and decoder in each box. Where two-way transmission is not required, the reverse channel may be disabled. The CrossLock technology incorporated includes a jitter buffer manager that automatically balances delay and stability, dynamically increasing and decreasing delay based on network performance.

For networks where the QoS is known, these parameters may be set so that a consistent level of jitter buffer is maintained. End-to-end coding delay in linear modes is less than 25mS and FLAC modes are less than 30mS. AAC modes incorporate around 100mS total end-to-end delay and HE-AAC modes deliver around 220mS.

In addition to coding delay, network propagation and jitter buffers will add delay to any IP link and are network dependent.

Control

Make connections with BRIC-Link II via a new HTML5-based web user interface. No more Flash!

The standard Flash interface is still available. Codec Commander is also an optional Windows-based user interface, while Fleet Commander lets you manage your fleet of codecs.

Accessories

Ask about our dual rackmount kit.

Additional Features

BRIC-Link II provides for four end-to-end contact closures to be delivered along with the audio stream in each direction.

Alternately, the contact closure inputs may be configured to initiate connections. An ancillary data stream is available via RS232 along with the audio stream. In AAC modes, the system is capable of sending up to 3 one-way encode streams to separate decoders (requiring additional bandwidth). In addition, BRIC-Link II supports IP Multicast on capable networks.

Compatibility

BRIC-Link II is compatible with all ACCESS codecs, including ACCESS NX, ACCESS Portable Classic, ACCESS 2USB, ACCESS MultiRack, and ACCESS Rackmount. BRIC-Link II is also compatible with other BRIC-Link and BRIC-Link IIs as well as the free smartphone app FieldTap, available for Android and iOS.

ALGORITHM	ENCODE RATE	NETWORK RATE	BANDWIDTH	DELAY
Linear 48 kHz Mono	768Kb/s	818Kb/s	22 kHz	25mS
Linear 48 kHz Dual Mono	1.536Mb/s	1.586Mb/s	22 kHz	25mS
Linear 44.1 kHz Mono*	705.6Kb/s	751.6Kb/s	20 kHz	27mS
Linear 44.1 kHz Dual Mono*	1.4112Mb/s	1.4572MB/s	20 kHz	27mS
Linear 32 kHz Mono*	512Kb/s	546Kb/s	15 kHz	31mS
Linear 32 kHz Dual Mono*	1.024Mb/s	1.058Mb/s	15 kHz	31mS
FLAC 48 kHz Mono	~540Kb/s	~572Kb/s	22 kHz	30mS
FLAC 48 kHz Dual Mono	~1.08Mb/s	~1.112Mb/s	22 kHz	30mS
FLAC 44.1 kHz Mono*	~500Kb/s	~530Kb/s	20 kHz	32mS
FLAC 44.1 kHz Dual Mono*	~1Mb/s	~1.03Mb/s	20 kHz	32mS
FLAC 32 kHz Mono*	~360Kb/s	~382Kb/s	15 kHz	36mS
FLAC 32 kHz Dual Mono*	~720Kb/s	~752Kb/s	15 kHz	36mS
AAC Mono	56-64Kb/s	72-80Kb/s	20 kHz	100mS
AAC Stereo	96-256Kb/s	112-272Kb/s	20 kHz	100mS
HE-AAC Mono	18-48Kb/s	26-56Kb/s	15-20 kHz	210mS
HE-AAC Stereo	64-96Kb/s	72-104Kb/s	20 kHz	210mS
HE-AAC Stereo v2	24-48Kb/s	32-56Kb/s	15 kHz	250mS
OPUS 48kbps Mono	48Kb/s	64Kb/s	20 kHz	46ms
OPUS 56kbps Mono	56Kb/s	72Kb/s	20 kHz	46ms
OPUS 64kbps Mono	64Kb/s	80Kb/s	20 kHz	46ms
OPUS 64kbps Stereo	64Kb/s	80Kb/s	20 kHz	46ms
OPUS 96kbps Stereo	96Kb/s	112Kb/s	20 kHz	46ms
OPUS 128kbps Stereo	128Kb/s	144Kb/s	20 kHz	46ms

• *44.1 kHz and 32 kHz modes are only supported via AES3 digital audio I/O on both ends of link

• FLAC bandwidth is variable and based on audio input