# ACCESS NX·RACK

## Rackmount IP Audio Codec

COMREX


Since it was released in 2005, the Comrex ACCESS Rackmount has become an industry standard. Now, it's been updated to incorporate the latest technological advances.

ACCESS NX Rack features completely redesigned hardware, allowing for AES67, AES3 or analog audio I/O. NX Rack can connect to Wi-Fi and 4G modems, and supports a wide range of connection protocols and audio encoders. It's driven via a new HTML5-based web user interface. ACCESS NX Rack is backward-compatible with all Comrex IP audio codecs and the Comrex FieldTap smartphone app.

### Applications

ACCESS NX Rack is the perfect studio counterpart to ACCESS remote codecs. With robust encoding algorithms and CrossLock, the most sophisticated network management technology on the market, ACCESS NX Rack provides solid and reliable connections over Ethernet, Wi-Fi, and 3G/4G networks.

ACCESS NX Rack is also a reliable point-to-point IP audio codec. For connecting from studio to studio, or maintaining a 24/7 connection, ACCESS NX Rack provides a reliable connection for long-term broadcasts.

### Switchboard

Comrex Switchboard Traversal Server was created to make it easy to make connections between Comrex IP codecs. 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

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.

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## Connections & Features

- 1U 19" rackmount chassis

### Inputs

- Balanced XLR line-level audio inputs 0dBu nominal, +20dBu peak
- AES3 XLR Digital audio input
- Analog/AES3 switch
- AES67 audio input

### Outputs

- Balanced XLR line-level audio outputs 0dBu nominal, +20dBu peak
- AES3 XLR Digital audio output
- AES67 audio output

### Network

- 2 USB connections
- Primary Ethernet Port
- Secondary Ethernet Port

### Communications

- Contact Closures: DB-9 male
- Serial Port: DB-9 female

### Operation

- HDMI
- DisplayPort

### Control

Make connections with ACCESS NX Rack via a new HTML5-based web user interface. No more Flash! Codec Commander is also an optional Windows-based user interface, while Fleet Commander lets you manage your fleet of codecs.

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## HotSwap

ACCESS NX Rack is equipped with HotSwap, a feature that allows users to back-up dedicated links with a wireless modem. With HotSwap, users can select a network that will only be engaged if the primary network fails. Fall-over to backup happens in a fraction of a second, and fallback is seamless.

## Audio Coding

For users with a lot of bandwidth, ACCESS NX Rack includes Mono or Stereo Linear PCM mode, an audio coding format that does not compress audio. ACCESS NX Rack also includes FLAC, an encoder that compresses audio with a lossless algorithm.

For users with more limited bandwidth, ACCESS NX Rack includes AAC and HE-AAC encoding algorithms as standard. These algorithms preserve audio quality while reducing the data load significantly. For compatibility with mobile phone or web apps (like FieldTap), ACCESS NX Rack includes Opus along with G.722 (a standard for VoIP phones and codecs).

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

## For the Field: ACCESS NX

ACCESS NX is a portable IP audio codec that's made to go anywhere. Whether you want to go live from the sidelines or do your talk show from the road, ACCESS NX is designed with the user in mind. Use CrossLock in bonding mode to take advantage of marginal networks like cellular and Wi-Fi.

## Additional Compatibility

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

ACCESS NX Portable & Mixer

| 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