Internet Remotes:
Comrex ACCESS & BRIC Technology

By The Codec Answer Guy

Part 1: About BRIC

ISDN is not a long term solution.

The telephone network is changing.

Transition to IP is inevitable.

Resistance is futile.

Q: Why should I care about audio over IP?

A: Because ISDN is going away fast and GSM is troublesome at best. Many radio stations and networks have relied on these technologies for remote broadcasts. The telephone company is making ISDN more difficult or impossible to get, and there are limited alternatives. For GSM, Cingular has made it difficult or impossible to get new data accounts to work with codecs, and T-mobile is showing signs of obsolescing the service as well. We are advising new GSM customers to proceed with caution.

Q: What about POTS codecs?

A: We expect POTS codecs to become more popular as ISDN sunsets. But POTS codecs depend on modem connections, and as the telephone network changes to an IP-based system, we expect increasing troubles in making modem connections, especially long-distance.

Q: OK, I'm worried. What's the solution?

A: The future clearly points in the direction of Internet-based connections for remote broadcasts. Internet access is becoming easier to get than dial-tone and certainly has a better outlook than ISDN.

Q: I see lots of companies talking about IP audio—What's Comrex's spin?

A: First, let's define the scope of our solution—We're the remote broadcast guys. Our solution is fundamentally different than systems like Axia (and others), who are concerned with Ethernet audio transfer within a facility, and Harris/Intraplex (and others) who are concerned with moving audio over managed LANs and WANs. These solutions assume you have control over the network at both ends (and in-between). Remote broadcasters don't have that luxury. We need to work on the public Internet. Of course, because our system is "hardened" for the Internet means it will work even better on managed networks.

BRIC is the answer

Q: I've talked to folks who've tried this IP audio on the Internet thing, with mixed results. Is it "ready-for-prime-time"?

A: It's pretty easy to build an IP audio codec that works well over an Ethernet cable. These systems will have their good and bad days on the public Internet. We've spent the last few years developing Comrex BRIC technology, which moves Internet audio closer to the ISDN experience. BRIC stands for Broadcast Reliable Internet Codec.

Q: Can I get an executive summary of BRIC?

A: BRIC uses very small data streams, because the less network data you use the kinder the network is to you. It also is super-smart about how to cover up the failures of the Internet. Next, it automatically applies only the minimum delay needed to keep the connection stable. Finally, it makes the system easy to set-up and use, so you can give it to your remote kid and he can figure it out quickly. BRIC technology is an excellent choice for any application currently served by ISDN—Voiceover, Studio-to-Studio, backup STL, weather, sports and talk syndication, etc.

Q: Are there any other advantages to this BRIC stuff?

A: Using BRIC codecs can be a liberating experience! Because Internet is now available in so many ways at so many places, you can leverage this to get truly mobile. Besides DSL and cable modem access, many retail outlets now provide Wi-Fi service, so you can use that for your broadcast. 3G cellular services are widely deployed that bring Internet virtually anywhere. New, low-cost satellite services are now available. We've literally run BRIC codecs from planes, trains and automobiles.

Part 2: Comrex ACCESS codecs

Q: So do I just go buy a BRIC?

A: BRIC is the name of the underlying technology, kind of like Pentium is to a PC. We utilize BRIC in our products called ACCESS codecs and they are available in two packages (like all remote equipment should be): Rack mount (for the studio) and portable (for the road). Both move full-duplex, real-time mono or stereo audio over the Internet. An ACCESS codec is required at each end of the audio link, but Portables and Racks are interchangeable.

ACCESS is remarkably adaptable thanks to BRIC's core technology

Q: What's the difference?

A: *ACCESS Rack:*

- Designed for in-studio use.
- No user controls, and you "drive" it from a web page served from the ACCESS using any web-browser.
- Line-level analog and digital audio ports, and connects only to an Ethernet network.

ACCESS Portable:

- Battery or AC Powered hand-held unit, about the size of a camcorder.
- PDA-style touch screen user.
- Single audio in/out, but can be "docked" with a clip-on mixer to provide a six channel stereo system with six headphone ports.
- Built-in Ethernet.
- Laptop-style card slot for connection to other networks like dial-up, Wi-Fi, and 3G cellular.

Q: Can I buy them now?

A: ACCESS Rack has been available since Jan '06. ACCESS Portable will be available around the end of '06.

Q: Wireless IP remotes sound fantastic! How do I get started?

A: In advance of the delivery of ACCESS Portable, you can use an ACCESS Rack in the field as well as the studio. You'll need your laptop which essentially connects to the Internet using Wi-Fi or 3G Cellular, and "shares" the link with ACCESS via its Ethernet port. There's an application note available on our website that explains this.

Imagine remotes from anywhere... and we mean ANYWHERE!

Q: Sounds a little messy

A: Yes, we agree. The forthcoming portable will make this a lot simpler, since your wireless card will plug directly into the codec, and the simple user interface will allow you to make connections quickly. The portable even includes a web-browser so you can "log in" to commercial Wi-Fi accounts.

Q: Are there any options to buy?

A: ACCESS is delivered ready to work on the Internet or POTS lines using a range of coding algorithms--from stuff that will work on "barbed wire", to uncompressed audio that requires a very fat network. One option available is a software upgrade to enable an additional four encoding algorithms, all based on the well regarded AAC (licensed by Fraunhofer IIS) family of audio compression tools*. We consider this our "audiophile" upgrade, since the AAC modes deliver audio preferable to "golden ears", but generally require a better network than the default encoders. The upgrade provides AAC, AAC-LD, HE-AAC, and HE_AACv2.

Another option is the "docking" mixer for the portable, when available.

Q: What about all of my existing POTS codecs?

A: Both ACCESS Rack and Portable are POTS codecs too. They will talk to all your older Comrex codecs (excluding Hotline). So you can replace your Studio POTS codec with ACCESS rack, and take calls from either POTS or IP users. POTS codec mode has one added feature—when dialing between ACCESS, stereo audio is available on a single POTS line.

Q: Will you be able to talk to other manufacturers IP codecs?

Comrex is working hard within the industry to establish compatible modes using the AAC-based encoders we provide as an option. When used with other manufacturers systems, some of the BRIC enhancements won't be available. Standard BRIC encoders are proprietary to Comrex and will not likely be compatible with other codec offerings.

Q: Thanks, Codec Answer Guy! Anything else I should know?

A: Here are some additional points about ACCESS:

ACCESS Portable uses a standard camcorder battery that supplies 7 hours talk-time on the system. The codec has a built-in charger, but can also use external Camcorder battery chargers. If AC power fails, ACCESS will switch to battery.

ACCESS delivers four contact closures end-to-end, as well as a serial data stream. There's even a chat utility included to allow text messaging across the link.

An ACCESS encoder can deliver the same mono or stereo stream to up to nine ACCESS decoders, assuming bandwidth is sufficient

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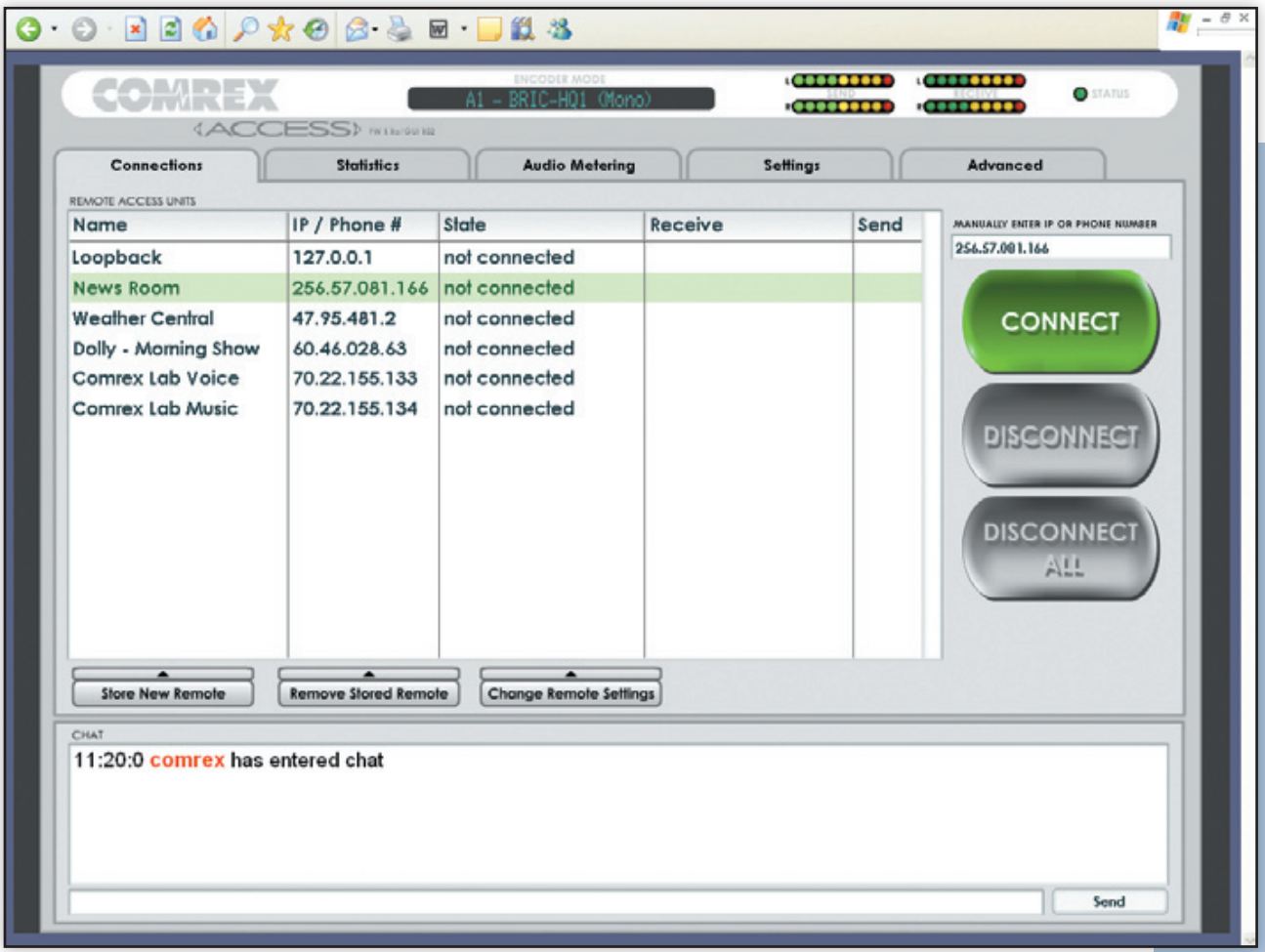
Codec Answer Guy



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Because ACCESS Rack interface is via Web Page, this can be delivered to the public Internet so the unit can be controlled from anywhere.

ACCESS user interface gives status information like audio levels in each direction, network status including frame loss, and delay buffering information.

ACCESS decoders adapt to the incoming encoder mode. Different modes are possible in each direction.

ACCESS can be configured to dial a POTS or IP location on a contact closure and switch between two locations based on availability.

An in-depth technical article on BRIC is available at www.comrex.com, as well as application notes describing experiences on different networks, usage tips and user reports.

Got a web browser? You've got control of ACCESS.