

Serpent Story

Confessions of an audio herpetologist

By Bruce Main

We've all spent more than enough time dealing with snakes. You know, microphone snakes, drive snakes, sub snakes, unscrupulous promoters...

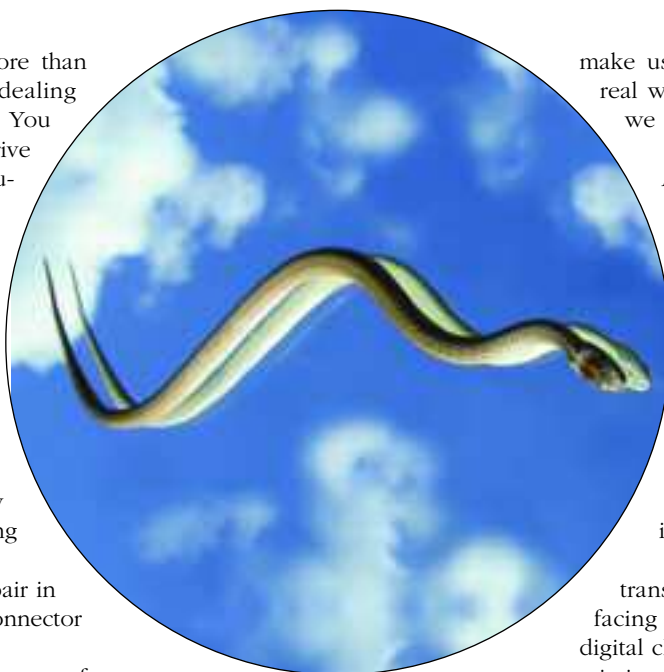
The most dreaded job in sound reinforcement is peeling up and stowing a snake after a three-day metal festival where it runs right along the fence next to the beer garden. By the end of a regional tour, snakes can swell to twice their normal size with sticky duct tape and used chewing gum.

And why is it always the pair in the middle of the multipin connector that fails?

Snakes have always been one of the difficult parts of live audio. The snake trunk is the third-heaviest box in the truck pack behind rigging and distro cabling. Transformer splits are expensive and heavy.

Many of the packaging issues we face revolve around connector choices, grounding schemes and signal flow paths. Sending analog audio signals to multiple locations requires serious attention to load impedances, ground loops, drive levels, phantom power sources and multiple input sensitivities.

In the early 1990s, the sound company I worked for started a serious investigation of alternatives to the copper snake. We were moving into DSP front ends for our systems, and since we had some experience in the digital recording world (which led the way on digital audio in many ways),



we knew that multiple A/D and D/A conversions left artifacts that were not good for the audio signal quality. We wanted to maintain a digital signal flow for as much of the signal path as possible.

The technology available at the time for digital audio transmission was based on fiber-optic transmission of AES/EBU signals at 16 bits and 44.1/48 kHz. We soon found that the dynamic range was inadequate for live performance audio, and the inability to control remote mic pre-amps made the system unworkable for front-end applications.

On the drive side it was barely passable but the killer there was that the system was not robust enough to

make us comfortable deploying it in real world applications. As a result, we passed.

Cut to 2005. The quality of A/D and D/A conversion has reached analog proportions. The signal chain is digital from the mic preamp to the amplifier input (beyerdynamic and Neumann are moving the digital threshold back to the microphone diaphragm). Digital consoles have come to the fore. Transducers are still analog – everything else is digital.

The new Ethernet-type transport topologies that are surfacing are one of the last links in the digital chain. The packet-based transmission method utilized by Ethernet requires that the data packets be reassembled in a buffer on the receiving end and then spooled out.

This has always been the stumbling block to using the technology in live sound. The companies that are building audio versions have found ways to reduce the latency created by this process and give us near-real time audio. The nodal nature of these networks allows us to send and receive packets at multiple locations.

Now if you need a broadcast feed, a recording feed or inputs to a monitor console, you don't have to deal with the analog interface demons. Just hang a node off a CAT-5 (or now CAT-6) cable (or a piece of fiber) and tell the packets to go there. In many instances the hubs and routers can be commercially available pieces similar

to what is used in an office network.

So... where can we go with this? Imagine a world where your snake cable (CAT-6 or multimode fiber) can fit on a 1-foot diameter spool with room to spare and weighs 15 pounds. The ends are RJ45 or ST connectors that can be bought at the local electronic supply store for a couple of bucks and terminated in two minutes flat. (In comparison, the power cord going to front-of-house is way bigger than the drive snake.)

Further, CAT-6 will be so cheap that if it's been fouled by the beer garden patrons, you can just leave it. And we haven't even started talking about WI-FI.

Might as well control the whole production on the same network with some software called – hmmm, how about ShowNet? Instant messages from the production manager when catering is up. Revised set lists during the show when the singer starts losing his voice. Warnings about how badly we're exceeding the SPL restrictions.

Oh well, time to go. I need to message the monitor engineer and tell him to get that ring out of the floor tom.

Editor's Note: A herpetologist is someone who studies and provides information about reptiles and amphibians. ■



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