[COVER] STORY
A Grand AV 'Thei'sis Of a New Scale Campus

The Importance of Audio Networking
By Brad Price, Senior Product Manager, Audinate

Background
Many people without experience, believe audio networking is a replacement for the cables and methods previously used, and often overlook the profound changes that networking brings. Here, we look to clarify what audio networking is and does, and explain where it is heading.

Where we were: point-to-point connections
Legacy audio systems are connected "point to point," meaning each device has inputs and outputs, and signals flow over dedicated connections and cables. This simple approach has a physical wiring diagram, explaining the signal paths. However, issues with this approach include:
- Difficult to scale
- Difficult to change connections
- Noisy, ground loops
- Many heavy cables
- Channel count is limited by devices and connectors

Where networks take us: connect anything
Audio networks are computer networks, with real-time audio being the primary data. In a network, all devices are connected to a common fabric, so signals are sent from any point to any other point using software. The benefits of networks include:
- Ability to scale to hundreds of devices, each with many channels
- Connection changes are very simple
- Immunity to hum, noise and ground loop issues
- Lightweight, inexpensive CAT5/6 cable carries all channels at once
- Full, native integration with computers for control and audio processing

Applications

Audio networking is transforming the way audio gets done in many sectors:

Systems Integration

Integrators are adopting audio networking, improving customer satisfaction and bottom lines. Networked systems are quick and easy to install, with lightweight CAT5/6 cables and no ground issues. Users do not need to access cables buried in walls to make changes. Instead, routing is done with software, decreasing maintenance cost and increasing speed.

Audio networking is a natural fit for computer-driven installations, providing direct connectivity to computer-based control panels, audio sources and audio processing. In many settings, existing network infrastructure is used.

Live Sound

Live sound was one of the first areas to be advanced by audio networking, replacing bulky and unreliable analog snakes with CAT5/6. Networked systems cover greater distances than analog, easily covering large venues. And, precisely-timed line arrays benefit from networking with the tight synchronization of endpoints.

Recording

Audio networking is revolutionizing live event recording with the ability to connect any computer to the network to capture audio. Products are on the market now to deliver channels of pristine digital signal directly to recording applications.

Dante

Dante is the most popular audio networking solution available, with over 400 manufacturers producing thousands of Dante-enabled products. Dante is a "full stack" system developed by Audinate and sold to OEMs. Audinate provides features, tools and functionality, such as Dante Controller for managing networks, Dante Virtual Soundcard for recording on PCs and Dante Domain Manager for securing large installations.

Dante features automatic discovery of devices, one-click signal routing and low latency. It supports up to 512 channels per device, with fixed latency that is typically 1ms for a large system.

Dante doesn't require any special network gear and works with off-the-shelf switches and inexpensive CAT5E cables. Compatible with existing network infrastructure already installed, Dante saves time and lowers costs.

And, all Dante-enabled devices are guaranteed to work together, making Dante the logical choice for managing large, complex, multi-brand systems.

The Future of Audio Networking

Digital audio itself was a revolution, and networking solutions are a logical extension of the changes wrought by computing technology in recent decades. As audio increasingly moves to purely digital realms, the benefits with flexibility, scale, quality and cost are obvious. Networking is here to stay.

While different protocols may evolve, the audio industry is keen to improving interoperability, such as AES67 (a bridge standard for passing audio between different systems). Ultimately, any solution must provide the best experience for installers, engineers and the audiences alike.

To learn more about Dante, please visit www.audinate.com.

About the Author:

Brad Price is the Senior Product Manager at Audinate and has an extensive background in audio engineering, music performance, and software product development. He works with the development team to create software for Dante Audio Networking that brings value to audio professionals across a wide range of industry categories.