Audinate®

How Dante AV-over-IP Delivers Safer, Socially-Distanced Conference Rooms

THE CRITICAL COMPONENTS OF COMPLETE, SCALABLE SOLUTIONS

Updated for social-distancing requirements

Conferencing – more important, and now more challenging

Conferencing capabilities had been on the rise prior to the recent pandemic - but now, they must be considered crucial. With substantial numbers of people working from home and in socially distanced workplaces, the ability to create a safe and effective environment for communication is critical to productivity, safety and the ability of companies to stay in business.

Improving the quality of conference environments has been the topic of much discussion, but now takes on another dimension. Older methods that were suboptimal from an audio standpoint are now downright dangerous. When people must crowd around built-in speakers and microphones on laptops to share a conversation with others, the risks are far greater than simply missing a word. Companies and IT departments must now lead employees towards better and safer ways to use conferencing spaces and equipment.

Still, the fact remains that too many conferencing solutions are simply not well adapted to a socially distanced workplace. AV equipment intended for use in small gatherings often consists of a small dedicated PC, a USB-connected soundbar with a built-in mic, and perhaps a webcam. Users are forced to unsafely huddle around one end of a table in order to hear what is being said, and to be heard on the other end of the call. Sometimes users substitute their own laptops for the room PC, adding BYOD (Bring Your Own Device) headaches to the situation.

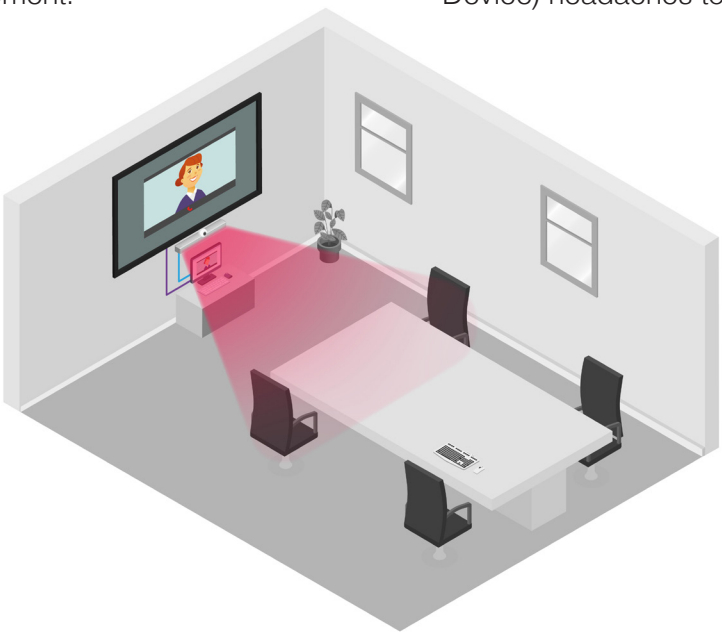


Figure 1: *Soundbar solution with limited coverage in a socially-distanced conference room*

Conferencing – more important, and now more challenging

(continued)

But, as the space between employees increases, distance-limited USB-based solutions falter. As people must spread out over a room, it becomes increasingly difficult to hear what's being said through a soundbar at one end of the room, and more difficult for a single microphone to capture everyone. Callers on the opposite end of the conference call are confused by a mix of voices all speaking at the same time, with quiet voices hopelessly drowned out by louder ones that are closer to the microphone. As the volume is turned up to compensate, the automatic echo cancellation (AEC) works overtime and sound quality deteriorates further. Frustration and futility are the inevitable, unproductive outcomes.

IT departments are frequently put in charge of these systems but find they have limited ability to address these problems. Can one expand a small conferencing system like a soundbar? How can one add more microphones to improve coverage? How far can a USB cable be run before it fails to work with all the laptops? How can USB-driven speakers be placed on a wall or ceiling for better audibility? How does one run analog cables instead? Myriad technical limitations seem to appear at every step.

Critically, IT asks: how can this be managed if we can't see it like the rest of the network? How can we keep dozens of these rooms working if we need to send someone up to fix things every day, especially during a pandemic?

What does a better solution look like?

It's useful to ask what an imagined solution might look like, addressing the use cases and distancing required. What are the most important attributes, and how might they work together to make conferencing safe for users and IT staff alike?

It's scalable

Compact solutions like USB "speaker pucks" and soundbars were great when we could all huddle closely around them. They're not so great now.

A better solution needs to cover space more effectively. It means more endpoints – microphones and speakers - that can be added as needed and where they are needed, not restricted by cable reach. For very understandable historical and technical reasons, USB solutions are not oriented this way and are sharply limited in both distance and expandability.

A better solution overcomes this and allows key endpoints to be placed where they need to be for optimal, socially-distanced use.

It allows the use of multi-channel DSPs

Powerful, multi-channel Digital Signal Processors (DSPs) are great tools for cost-effectively improving the quality of conferencing and are essential for any multi-microphone deployment.

A better solution allows for easy integration of DSPs, and even allows a single large DSP to manage multiple rooms with as many distanced endpoints as are required for employees to safely communicate.

It supports superior microphone solutions

An axiom of audio professionals is that microphones must be as close to their intended sources as possible. For a conferencing solution that accommodates social distancing, this means the ability to support multiple microphones around a table, or to use advanced beam-forming ceiling microphones to capture everyone across a large area. Smart ceiling microphones are relatively new to the scene and allow for excellent coverage that cannot be disturbed by people accidentally covering or blocking table microphones, a common problem.

A better solution allows for easy use of advanced multi-microphone and ceiling microphone techniques and allows more to be added as needed on a room-by-room basis.

What does a better solution look like? (continued)

It sounds great

Adding more endpoints for distanced employees doesn't really help if the audio quality is poor. Everyone needs to hear and be heard.

A better solution is 100 percent digital and noise-free, no matter how many devices are in use.

It supports BYOD

Distanced or not, users aren't going to stop using their own laptops, tablets and phones for meetings.

A better solution provides easy ways for attendees to connect their devices without requiring a lot of special knowledge to make them work - no matter how many microphones and speakers are in use.

It can be managed as an IT resource

Not only are legacy conferencing systems ill-suited to today's social distancing requirements, but they are also isolated from the IT department as stand-alone "islands" of technology, requiring inefficient and unsafe in-person visits by staff to address problems.

A better solution places conferencing resources under the control of IT like any other part of the network and allows many problems to be addressed before attendees walk into the conference room with their masks on.

It can be secured

Nearly everything that an IT department deals with is under the control of a management system that permits only authorized users to access specific resources, thereby reducing risk and providing accountability.

A better solution provides this kind of security as part of the conferencing infrastructure, ensuring that only the right people can make changes and everyone else cannot.

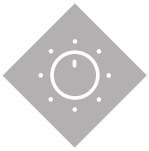
Audio over IP – a better way to connect

One might be forgiven for confusing audio-over-IP with internet streaming of content. It's true that streaming services send music to users over a network connection, but that is where the similarities end. Streaming services send low-bandwidth, compressed media to devices with no attempt at synchronization or low latency, because those attributes don't matter when each receiver is separate from one another. Audio-over-IP is a technology used to distribute real-time, tightly synchronized uncompressed audio to devices, replacing earlier analog and digital transports.

All professional audio you've experienced at a concert or event has been real-time, whatever the technology used. For musicians to play or presenters to speak, what they hear from the sound system must not be delayed or compromised. Audio-over-IP delivers this performance level over standard IP networks, and does so at scales previously unimaginable: hundreds of simultaneous channels of pristine digital audio may be transported over a gigabit network with certainty. Audio-over-IP has transformed professional audio, enabling systems to be more flexible and expandable while being incredibly easy to use. Audio over IP is exactly what the doctor order to accommodate the spread-out workplaces of today.

Benefits of Audio-over-IP

Easy to deploy:
use existing network infrastructure or install thin, lightweight Ethernet cabling.



Easy to use:
auto-discovery of devices and automatic clock settings make setup a breeze.

Flexible:
cchange configurations with just a mouse click, no need to re-cable.

Scalable:
easily add devices without adding extra cables, with support for hundreds of channels per device.

Go the distance:
support devices over distances that analog and point-to-point digital cannot match, ensuring proper coverage.

Perfect audio:
100% lossless, 24-bit audio with ultra-low latency.

Futureproof:
Audio-over-IP is the direction chosen by all major manufacturers of professional audio equipment.

Audio over IP – a better way to connect (continued)

Audio-over-IP solutions like Audinate's popular Dante are widely available in products from hundreds of manufacturers, providing a toolset that ensures a consistent, intuitive workflow with 100 percent interoperability between devices. Even used in a simple implementation, Dante addresses most of the concerns we have for safe, socially-distanced conferencing and is extendable to address many more.

Figure 2: *: Audio-over-IP solution with ceiling microphone and multiple loudspeakers for complete coverage*

Scalable: Add devices as you need them

Dante isn't limited to any fixed number of devices and is not hampered by the limitations of a point-to-point connection strategy that requires a dedicated cable between any two devices. Devices can be added to a system simply by connecting them to open network ports. Dante provides auto-discovery of new devices and allows them to immediately be patched into existing configurations with a few mouse clicks.

When a conference space needs more microphones or speakers to be safe and intelligible, just connect them via Ethernet cable to a switch port and they are immediately available to use, anywhere on the network.

No distance limitations: Place devices where they need to be

As mentioned above, USB cables are notoriously limited in usable length. While extenders are available, USB remains a point-to-point connection type that requires a separate, dedicated cable for each attached device, and most USB hosts can only accept one device at a time.

Audio-over-IP solutions like Dante decisively remove all these limitations. Ethernet cables carry data for hundreds of devices each and may easily be run in lengths of 300 feet per section. Ethernet is already ubiquitous in every place of business or entertainment, making it easy to place microphones, loudspeakers and even DSPs wherever they need to be for safe, productive engagement.

Multichannel: Support for high capacity DSPs

With the ability to support hundreds of audio channels per device, Dante-enabled DSPs are a natural fit in modern conferencing installations. A single DSP can address several different rooms and

Even with the global pandemic we can still have a large meeting, or even a major event, without too much effort at the new offices," said Ali, an AV Engineer for one of North America's largest financial institutions. "We can route one audio stream from a single location to many additional rooms that could be used for overfill."

may even be located in a central closet if desired. Save money, increase safety and centralize key components by leveraging the power of your existing network.

More coverage: Support for multiple and beam-forming microphones

Having more microphones available so that each person in a room can be clearly heard is a major step towards better, safer conferencing. While most USB-based systems are limited to a single microphone, a networked approach easily allows multiple microphones to be distributed and connected via a DSP that auto-mixes signals for maximum clarity. Advanced networked-connected multi-microphone ceiling systems solve the problem elegantly by using intelligent beam-forming aimed at participants, allowing for safe distances to be maintained without compromising clarity. Ceiling microphones also avoid common issues of tabletop microphones, such as covering or blocking them accidentally.

Lossless: Bit-perfect, noise-free audio for better sound

Over-extended USB cables result in audible dropouts. Analog cables pick up hum and noise. Audio-over-IP solutions like Dante provide 100 percent lossless digital audio at studio-level quality levels with no degradation of signal whatsoever, regardless of system size. Great audio is a key component of a great conferencing experience, especially when they are spread out over larger distances and spaces.

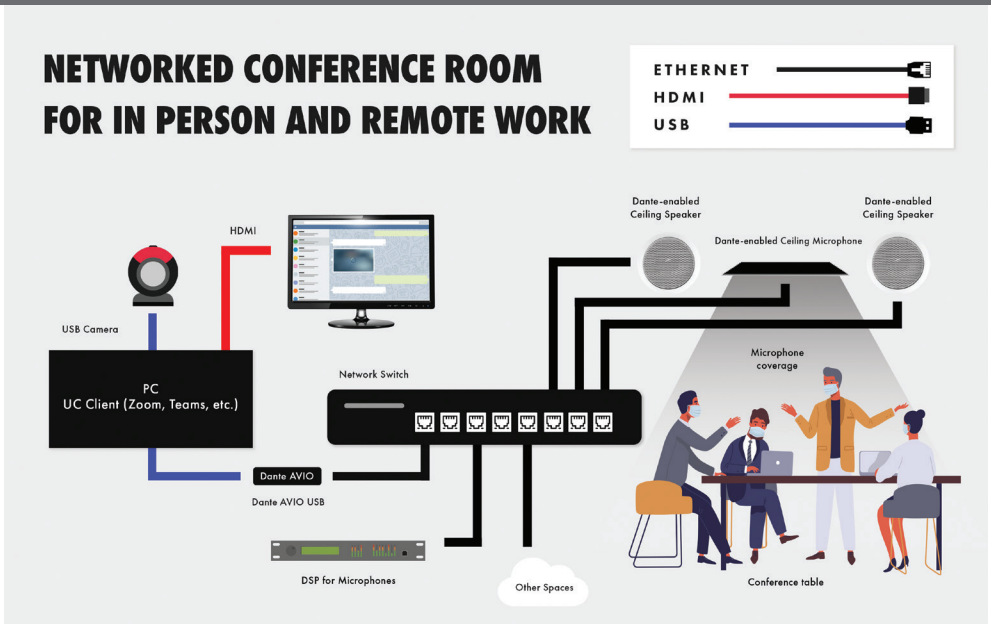
User-friendly: Easy support for BYOD

Just because audio-over-IP is built upon advanced technology doesn't mean it's difficult to use or requires that the end user have special knowledge. USB converter devices like Dante AVIO adapters require no additional software or drivers and allow any laptop or mobile device to be instantly connected to pre-configured audio connections via the network.

In addition, conferencing software makers are starting to include Dante directly in applications, enabling a user to connect directly to a Dante audio network without leaving the conferencing or DSP software. Extensive automation reduces unknowns and ensures proper performance, every time.

Less fussing and less touching adds up to safer workplaces.

"People can just speak normally," Ali said. "No need to lean into a microphone or talk across someone."



Infographic showing connections in a Dante-enabled conference space

Dante Domain Manager: Advanced audio-over-IP tools for IT managers

Dante Domain Manager is a server-based solution that brings complete IT management to Dante-enabled devices from all manufacturers and brings new capabilities that increase compatibility with existing networks.

For many business installations, Dante Domain Manager is the piece that completes the audio-over-IP puzzle.

Treat AV like any other IT resource

Dante Domain Manager gives IT managers a centralized, complete view of the entire networked audio deployment, showing every room. Control access and manage which devices may interact with others for a stable, high-performance system, all on one screen.

Define and separate your conference rooms

Dante Domain Manager allows IT to define separate, non-interfering domains of devices that correspond to conference rooms and event spaces. This way, each conferencing area can be distinctly defined and managed without concern that an error will disrupt functionality elsewhere on the network.

Domains also “clean up” the appearance of the network in routing software like Dante Controller by showing users only one domain at a time. Rather than forcing users to hunt for the correct devices on a crowded network, domains make it easy to see how things are setup. Errors are reduced and configuration goes faster.

Dante Domain Manager: Advanced audio-over-IP tools for IT managers (continued)

Figure 3: *Multiple socially-distanced conference rooms managed by a single Dante Domain Manager*

Control who can make changes

Like other IT resources, Dante Domain Manager is tied to your company's user directory system so that only authorized users may see or make changes, on a per-domain basis. User accounts allow IT managers to delegate authority as needed for efficiency and to prevent unwanted changes from inexperienced users. Need to add more devices or re-arrange conference spaces? Dante Domain Manager supports simple "drag and drop" management for administrators, making these tasks easy and intuitive.

"All of the configurations and the routing are remembered if you move devices," Ali said.

Dante Domain Manager: Advanced audio-over-IP tools for IT managers (continued)

Multi-subnet support brings Dante to every port

With Dante Domain Manager on your network, Dante can be routed seamlessly across subnets. This frees IT managers from the restrictions of dedicated AV networks, allowing any port on the network to be Dante-ready. Conference rooms no longer require special audio-over-IP VLANs or isolated ports – instead, design your system to work with the infrastructure you already have.

Stay on top with alerts and audits

Dante Domain Manager provides a complete set of alerts to notify IT managers of any changes to the system – devices offline, routes changed, dropped packets, clocking issues and more – easily with dashboard, SNMP and email notifications. A complete log of all actions taken by all users is kept for analysis and troubleshooting, with user and date/time stamps.

“For example, if I lose a device, if suddenly someone calls for support and says a speaker isn’t working, the first thing I can do is check it on the software, on Dante Domain Manager.”

Conclusion

Audio over IP provides an immediate, futureproof foundation for modern conferencing systems that can accommodate the distancing requirements of today as well as the new possibilities of tomorrow.

Dante is already the most widely adopted audio-over-IP solution in the world, delivering incredible scalability and performance to thousands of products while giving users easy-to-use tools.

Dante Domain Manager enhances Dante, bringing the level of control and security that IT professionals require for the businesses they support. It makes deployment and maintenance far easier and more effective than non-networked, legacy technologies in conference rooms.

As more and more businesses seek ways to engage people and employees safely, high quality, IT-managed communications are going to be front and center.

For more information about Dante, please visit:
https://www.audinate.com/corporate