

WHITE PAPER

TRANSFORMING PROFESSIONAL VIDEO DISTRIBUTION WITH SDVoE® TECHNOLOGY

Why 10G AV-over-IP is Reshaping Pro AV Infrastructure

Executive Summary

Professional AV systems are moving rapidly from fixed hardware matrix switching to flexible, network-based distribution. As rooms, campuses and venues demand more displays, more sources, more collaboration tools and more remote management, traditional point-to-point video infrastructure becomes difficult to scale and costly to operate.

SDVoE®, or Software Defined Video over Ethernet, introduces a different approach. It transports high-performance video, audio, USB, control and network signals across standard Ethernet infrastructure while preserving the experience expected from premium matrix switching: exceptional image quality, near-zero latency, fast switching and reliable system control.

This white paper introduces SDVoE® technology, explains where it fits in modern AV design, and shows how Lindy's SDVoE® products help organisations deploy scalable 4K60 AV-over-IP systems without giving up the performance, usability or reliability required in professional environments.

The Evolution of Professional Video Distribution

For many years, professional video routing was dominated by dedicated matrix switches. These systems connected inputs to outputs with predictable quality and low latency, but expansion often required specialised hardware, fixed port counts and significant redesign when requirements changed.

AV-over-IP changed that model by replacing the fixed matrix chassis with Ethernet switching. Sources and displays become network endpoints, and routing becomes a software-defined function. This creates a more scalable foundation for AV systems, but not all AV-over-IP platforms deliver the same level of quality, latency or interoperability.

SDVoE® was developed to bring matrix-switch performance to an IP architecture. Instead of treating the network as a compromise, SDVoE® uses the capacity of 10G Ethernet to deliver uncompromised professional AV distribution with the flexibility of software control.

What is SDVoE®?

SDVoE® is an AV-over-IP technology platform designed for professional video distribution over Ethernet networks. It combines high-bandwidth transport, device interoperability and a common control approach so that AV systems can be designed, expanded and managed like modern networked infrastructure.

In practical terms, SDVoE® allows sources, displays and control points to be connected through a 10G Ethernet switch. The switch becomes the routing fabric, while software determines which source is shown on which display, how video walls are arranged, where USB is extended, and how systems adapt to changing requirements.

SDVoE® enables:

- 4K60 4:4:4 video distribution over 10G Ethernet
- Near-zero-latency switching and transport
- High-quality image reproduction for graphics, video and detailed visual content
- Point-to-point extension, matrix switching, video wall, multiview and KVM applications
- Transport of video, audio, USB, RS-232, IR, CEC and network signals within one architecture
- Interoperable systems built from products that share a common SDVoE® control foundation

Why 10G Matters in Professional AV

The move to 10G Ethernet is central to SDVoE®'s value. Professional AV environments increasingly rely on high-resolution content, fine graphics, real-time operator control and low-latency interaction. Compressing this content too heavily can introduce visible artefacts, timing delays and inconsistent user experiences.

A 10G architecture provides the bandwidth required to preserve image quality while supporting advanced functions such as KVM, multiview, video walls and fast source

switching. It also gives system designers room to grow as display resolutions, collaboration requirements and endpoint counts increase.

For organisations, this creates several advantages:

- Higher visual quality for text, graphics, dashboards, control interfaces and production content
- Lower latency for interactive environments and real-time decision-making
- Greater flexibility than fixed matrix switch hardware
- Simpler scaling by adding network endpoints and switch capacity
- A common infrastructure model familiar to AV and IT teams

Where SDVoE® Wins

SDVoE® is especially valuable where performance matters and where AV systems must remain flexible over time. It is not simply an extender technology; it is a platform for designing complete, software-defined AV distribution systems.

- Video quality is critical and compression artefacts are unacceptable.
- Low latency is essential for live interaction, control-room response or operator confidence.
- Multiview functionality is required for viewing multiple sources on a single display.
- Distributed KVM is needed for remote control of computers and workstations.
- Bidirectional endpoint use is beneficial, allowing devices to operate flexibly as transmitters or receivers.
- Cross-vendor interoperability helps avoid closed ecosystems and supports long-term system choice.
- USB, control and auxiliary signals must travel alongside video and audio.

Bridging AV and IT

Modern AV is increasingly part of an organisation's broader digital infrastructure. SDVoE® supports this convergence by using Ethernet switching, IP-based routing concepts and software control. This allows AV systems to benefit from network design principles such as structured cabling, switch-based expansion, monitoring and remote management.

For AV teams, SDVoE® reduces dependence on fixed hardware matrices and creates a more adaptable system architecture. For IT teams, it places AV distribution into a familiar networking framework while preserving the performance requirements of professional video.

Core Applications

Corporate and Enterprise

Conference rooms, boardrooms, executive briefing centres, hybrid collaboration spaces and corporate campuses benefit from flexible routing, shared source access and simplified expansion.

Education

Classrooms, lecture theatres, auditoriums and training labs can distribute high-quality video to multiple rooms or displays while supporting USB-based interaction and future layout changes.

Command and Control

Utilities, transport, energy, security operations and crisis centres require reliable display walls, KVM control and low-latency visual information. SDVoE® supports these mission-focused environments with scalable routing and high-performance visual delivery.

Hospitality, Retail and Public Venues

Hotels, casinos, sports bars, stadiums, digital signage networks and flagship stores can use SDVoE® to distribute content across large numbers of displays while retaining flexible control over zones and layouts.

Entertainment, Media and Live Events

Broadcast studios, esports venues, production facilities, theatres, houses of worship and live events benefit from rapid setup, dependable image quality, low latency and flexible routing.

Healthcare and Specialist Environments

Medical imaging distribution, training spaces, simulation environments and specialist visualisation rooms benefit from high-quality video transport where detail, reliability and latency are important.

Solving Real-World AV Challenges

Organisations adopting SDVoE® are usually trying to reduce complexity while improving performance. The technology addresses common AV infrastructure challenges in a direct and practical way.

Challenge	SDVoE® Approach
Fixed matrix port limits	Network-based expansion using Ethernet switches and endpoints
Visible compression artefacts	High-bandwidth 10G transport for uncompromised visual quality
Latency-sensitive applications	Near-zero-latency transport for real-time operation
Complex video wall design	Integrated wall and layout capabilities within the SDVoE® platform
Separate cabling for control and USB	Video, audio, USB and control signals carried within one architecture
Vendor lock-in	Interoperable ecosystem with common control principles
Changing room requirements	Software-defined routing and reconfiguration without redesigning the whole system

Flexibility for Today and Tomorrow

A key strength of SDVoE® is that the same general topology can support different system behaviours. A deployment can operate as a point-to-point extender, a matrix switch, a video wall processor, a multiview system or a distributed KVM platform. This reduces the need for separate specialist products for each function.

As AV requirements evolve, software-defined control makes it easier to adapt the system. Rooms can be reconfigured, displays can be reassigned, sources can be shared and new endpoints can be added without rebuilding the entire signal path.

FlexLinQ and Adaptive Deployment

SDVoE® continues to evolve for real-world installations where cabling, switch fabric and site conditions may vary. FlexLinQ extends the SDVoE® concept by allowing systems to adapt automatically to available network performance, including 10G, 5G, 2.5G and 1G connections where supported.

This approach keeps the highest-performance SDVoE® experience whenever the infrastructure allows it, while providing a practical path for installations that must work with mixed cabling or lower link speeds. For system designers, that means more deployment flexibility without abandoning the SDVoE® architecture.

Deployment Considerations

A successful SDVoE® deployment starts with network planning. Because SDVoE® is designed for high-performance AV, the Ethernet infrastructure should be selected and configured to match the required resolution, endpoint count, topology and control requirements.

- Use appropriate 10G Ethernet switching for full-performance SDVoE® systems.
- Plan endpoint locations around source, display, USB and control requirements.
- Consider copper or fibre links depending on distance, environment and installation needs.
- Design for future expansion by allowing switch capacity and cabling headroom.
- Coordinate AV and IT requirements early, including IP addressing, management access, VLAN strategy and support responsibilities.
- Use tested endpoint and controller combinations to simplify commissioning.

Enabling SDVoE® Connectivity with Lindy

Lindy's SDVoE® range provides the practical building blocks needed to deploy professional AV-over-IP systems. The products are designed to support high-quality video distribution, USB extension and system control within an SDVoE® architecture.

Together, the controller and transceiver products allow installers to create flexible systems for meeting rooms, control rooms, education, hospitality, signage, live environments and other professional AV applications.

Lindy SDVoE® Products

SDVoE® Controller (Part No. 38364)

The SDVoE® Controller provides the management layer for Lindy SDVoE® installations. It is used to configure, route and control SDVoE® devices across the network, giving installers and users a central point for system operation.

- Centralised control for SDVoE® routing and device management
- Supports creation of flexible AV-over-IP systems using Lindy SDVoE® endpoints
- Helps simplify commissioning, operation and future system changes
- Ideal for installations where multiple sources, displays and endpoints must be managed together

4K60 HDMI & USB SDVoE® Transceiver (Part No. 38365)

The 4K60 HDMI & USB SDVoE® Transceiver is the endpoint device that connects HDMI sources, displays and USB peripherals into the SDVoE® network. Its transceiver design supports flexible deployment, allowing units to be used as part of a scalable AV-over-IP system.

- Supports 4K60 HDMI signal distribution across an SDVoE® network
- Extends USB alongside video for interactive AV, KVM and collaboration applications
- Works as part of a flexible source-to-display architecture with network-based routing
- Suitable for professional AV environments that require high-quality video, low latency and simplified expansion

Conclusion

The transition from fixed AV matrix systems to AV-over-IP is now a practical reality for professional installations. SDVoE® provides a high-performance path through that transition by combining the scalability of Ethernet with the quality and responsiveness expected from premium AV infrastructure.

By using 10G networking, software-defined control and an interoperable ecosystem, SDVoE® enables organisations to build AV systems that are easier to scale, easier to adapt and better aligned with the way modern buildings and venues operate.

With Lindy's SDVoE® Controller and 4K60 HDMI & USB SDVoE® Transceiver, system designers and installers have a clear route to deploying SDVoE® technology in real-world professional AV environments.