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Switch requirements for common AV protocols

Use this comparison to select switch capabilities. Match the exact endpoint profile, network design and firmware before configuring QoS, multicast or timing.

Audio transport

- Dante: native Dante typically uses PTPv1 and mDNS on a local subnet. Audinate's normal markings are 56 for critical clock events and 46 for audio or PTPv2 traffic in applicable modes. Disable EEE on Dante ports. Enable multicast controls where multicast media is used. Dante and AES67 modes can have different clock and discovery behavior.
- AES67: interoperable RTP audio uses IEEE 1588-2008 PTPv2 and a compatible media clock profile. Plan IGMP for IPv4 multicast. Endpoint discovery is implementation-dependent. Match timing domain, payload, packet time and actual DSCP markings. An active switch clock and jumbo frames are not baseline requirements.
- Q-SYS: native Q-LAN uses PTPv2. Its Q-LAN QoS preset marks PTP 46, audio 34 and video 26. The Audinate preset is a separate design choice. Preserve priority across uplinks and use Q-SYS's requirements for egress queues, scheduling and multicast.
- RAVENNA: supports profile-dependent RTP audio, including unicast or multicast and AES67/ST 2110 interoperability where supported by both endpoints. Verify PTPv2 profile and domain, session discovery and advertised stream parameters.
- CobraNet: legacy Layer 2 Ethernet technology with unicast or multicast bundles. IP IGMP snooping cannot manage non-IP CobraNet audio traffic. Follow the installed endpoint manuals for switch behavior, latency, duplex and separation from other traffic.

Video transport

- Generic AV-over-IP: use the encoder's actual bitrate, discovery, clock, VLAN and frame-size requirements. Size links for distinct streams and local replication. Configure IGMP where IP multicast media requires it.
- SDVoE: size for the 10GbE endpoint links and multicast topology. Confirm the equipment vendor's settings for frame size, queue treatment and power saving. There is no blanket requirement here to use cut-through switching.
- NDI: plan for the specific High Bandwidth or HX mode and actual send/receive rates. Local discovery generally uses mDNS, with Discovery Server available for managed deployments. Multicast media is optional and needs IGMP controls if enabled.
- IPMX: verify the device's supported IPMX profiles, timing requirements and NMOS discovery/control workflow. An asynchronous IPMX mode is not interchangeable with a PTP-locked AES67 or ST 2110 workflow.
- SMPTE ST 2110: plan the required essence formats, timing and PTP profile, multicast routing where needed, and deterministic capacity. Use the applicable ST 2059 timing architecture. Boundary/transparent clock placement and jumbo frames depend on the design. ST 2022-7 protection requires endpoints supporting redundant streams and diverse paths.

Before approving a switch

- Verify access/uplink rates, QoS classifier and egress scheduling, group/source scale, PTP capabilities if the design needs them, and supported optics/PoE. Demonstrate discovery, clock lock, peak load and failover with the exact devices before sign-off.

References

Audinate, Dante information for network administrators
Audio Engineering Society, AES67
Q-SYS Networking Requirements
RAVENNA technical resources
NDI white paper, Network Layout
NDI white paper, Multicast
SDVoE Alliance
IPMX PCM Digital Audio Profile requirements
SMPTE ST 2110 standards suite

Documentation review. Validate with the exact firmware and endpoints before deployment.