



This guide defines the baseline network characteristics to evaluate when deploying BSS OMNI AV-over-IP and USB-over-IP products. It applies to the 600 Series, 300 Series, and 200 Series of video and USB products. Use it as a planning baseline; the selected model, firmware, signal format, control method, and network topology determine the final design.

Product families

Family	Primary network role	Planning emphasis
600 Series	AVoIP video endpoints	Multicast video transport, IGMP control, uplink capacity, QoS, and routed-VLAN design.
300 Series	AVoIP video endpoints	Same multicast fundamentals as Vx600; confirm stream count, resolution, and aggregate bandwidth for the selected design.
200 Series	USB and peripheral endpoints	Managed Ethernet for control, discovery, and endpoint communications; apply multicast requirements only when the deployment uses a multicast media path.

Design note: The AVoIP requirements below are the controlling requirements for Vx600 and Vx300 video deployments. Ux200 deployments must meet the common Ethernet and management requirements, with multicast and QoS additions determined by the actual USB transport architecture and system configuration.

Minimum network baseline

- Managed network switches with administrator access to VLAN, multicast, QoS, and port configuration.
- Gigabit Ethernet to each endpoint as the minimum access speed. Use higher-speed uplinks when aggregate stream traffic, multiple receivers, or shared infrastructure requires it.
- A dedicated or logically isolated AV VLAN is recommended for AVoIP systems. Keep control, management, and user traffic segmented according to the site security policy.
- Full-duplex switched Ethernet with stable link negotiation and no unmanaged switch, wireless bridge, or consumer-grade repeater in the media path.
- A documented IP addressing plan, DHCP reservations or static assignments as appropriate, and a defined method for DNS, NTP, and device management services.

Multicast and IGMP for AVoIP video

- Enable IGMP snooping on every switch that carries AVoIP multicast traffic, including intermediate and aggregation switches.
- Provide at least one IGMP querier on each multicast VLAN. Use a single, deliberately selected querier per VLAN; avoid competing queriers.
- Enable fast leave or immediate leave only where the topology and receiver behavior support it.
- Prevent unregistered multicast flooding where the switch platform supports the control.
- When multicast crosses VLAN or Layer 3 boundaries, use an approved multicast-routing design and validate PIM, rendezvous-point, and firewall requirements.

AVoIP transport and switch configuration

Traffic capacity and topology

- Calculate bandwidth from the actual number of active transmitters and receivers, video format, frame rate, transport method, and protocol overhead. Do not size uplinks from endpoint port speed alone.
- Keep planned sustained utilization below the site engineering limit and reserve headroom for burst traffic, control, discovery, and failover behavior.
- Do not rely on daisy chaining unless the selected product documentation explicitly supports it.
- Use redundant or diverse uplinks where availability requirements justify them, and validate multicast convergence and loop-prevention behavior.

Jumbo frames

Jumbo frames may be used when required by the selected transport profile, but they must be configured consistently across the complete path. If enabled, set a common MTU on endpoint-facing ports, trunks, uplinks, and routed interfaces that carry the traffic. Do not mix incompatible MTUs in the same media path.

Quality of service

- Use QoS when AVoIP traffic shares links with other high-volume or latency-sensitive traffic.
- Classify and prioritize media, control, and management traffic according to the selected product documentation.
- Avoid shaping, policing, or deep buffering that adds avoidable latency or drops burst traffic.
- Verify queue capacity and egress scheduling at aggregation points.

Layer 2 and Layer 3 stability

- Control topology-change multicast flooding on AV VLANs where the switch platform exposes that behavior.
- Use loop prevention and link aggregation only in accordance with the switch vendor supported design.
- Keep switch firmware, transceiver compatibility, and spanning-tree behavior within the site supported standards.
- Validate endpoint join and leave behavior, stream stability, and packet counters under the planned worst-case stream combination.

Validation checklist

Check	Acceptance condition
Access links	Every endpoint has a stable full-duplex link at the planned speed; errors and discarded packets remain within the approved threshold.
IGMP	Snooping is active on the complete path and one querier is present per multicast VLAN.
Uplinks	Measured peak and sustained utilization remain within the approved design margin.
QoS	Traffic markings, queues, and policies behave as intended under contention.
Control and USB	Discovery, control, USB endpoint communications, DNS/NTP, and management access work on the approved VLAN and firewall policy.

USB Series deployment guidance

The Ux200 Series is planned as a managed network endpoint family. The common baseline applies to every deployment; the additional AVoIP controls apply only when the system design uses multicast media transport or shares infrastructure with AVoIP video.

Common Ux200 requirements

- Provide a reliable wired Ethernet connection on the approved control or endpoint VLAN. Confirm that speed, duplex, PoE behavior, and port security match the selected model.
- Permit the required discovery, control, management, and firmware-service traffic through the site VLAN and firewall policy.
- Use DHCP reservations or static addressing when predictable endpoint identity is required.
- If USB traffic is transported through a networked media path, validate latency, jitter, packet-loss, and bandwidth targets as system-level requirements.
- Do not assume that a USB endpoint has the same multicast or video bandwidth profile as an AVoIP video endpoint. Confirm the actual role of each Ux200 device.

Deployment cautions

- This guide is not a substitute for the model-specific installation guide, firmware release notes, or switch-vendor configuration guide.
- Product capabilities and recommended settings can change by model, firmware, licensing, and transport profile. Reconfirm the final design against current product documentation before commissioning.
- Record the switch model, firmware, VLAN IDs, IGMP querier, multicast-routing boundaries, QoS policy, MTU, and measured link utilization as part of handover.
- If deployed across a routed enterprise network, involve the network administrator before enabling multicast routing or changing global switch behavior.

Recommended handover record

Item	Record
Products	Model, firmware, quantity, and endpoint role for each Vx600, Vx300, and Ux200 device.
Network	Switches, firmware, port map, VLANs, IP ranges, DHCP/static policy, and routed boundaries.
Multicast	IGMP snooping scope, querier location, leave behavior, multicast-routing mode, and RP if used.
Performance	Peak stream combination, measured uplink utilization, packet/error counters, latency/jitter observations, and test date.
Operations	Monitoring owner, change-control reference, support contacts, and rollback plan.