3 Tips to Accelerate Your IP (ST2110) Migration

IPShowcase at NABShow 2022

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Distributed, Remote and Cloud IP Production has Accelerated

This is pushing Studios to move to IP as the lines between remote, campus and studio locations are blurring

IP infrastructure provides the backbone that allows signals, both compressed and uncompressed, to interconnect – removing distance limitations of legacy signal transport

Omdia

37%

Set to embrace remote production in 2019 – COVID has pushed higher

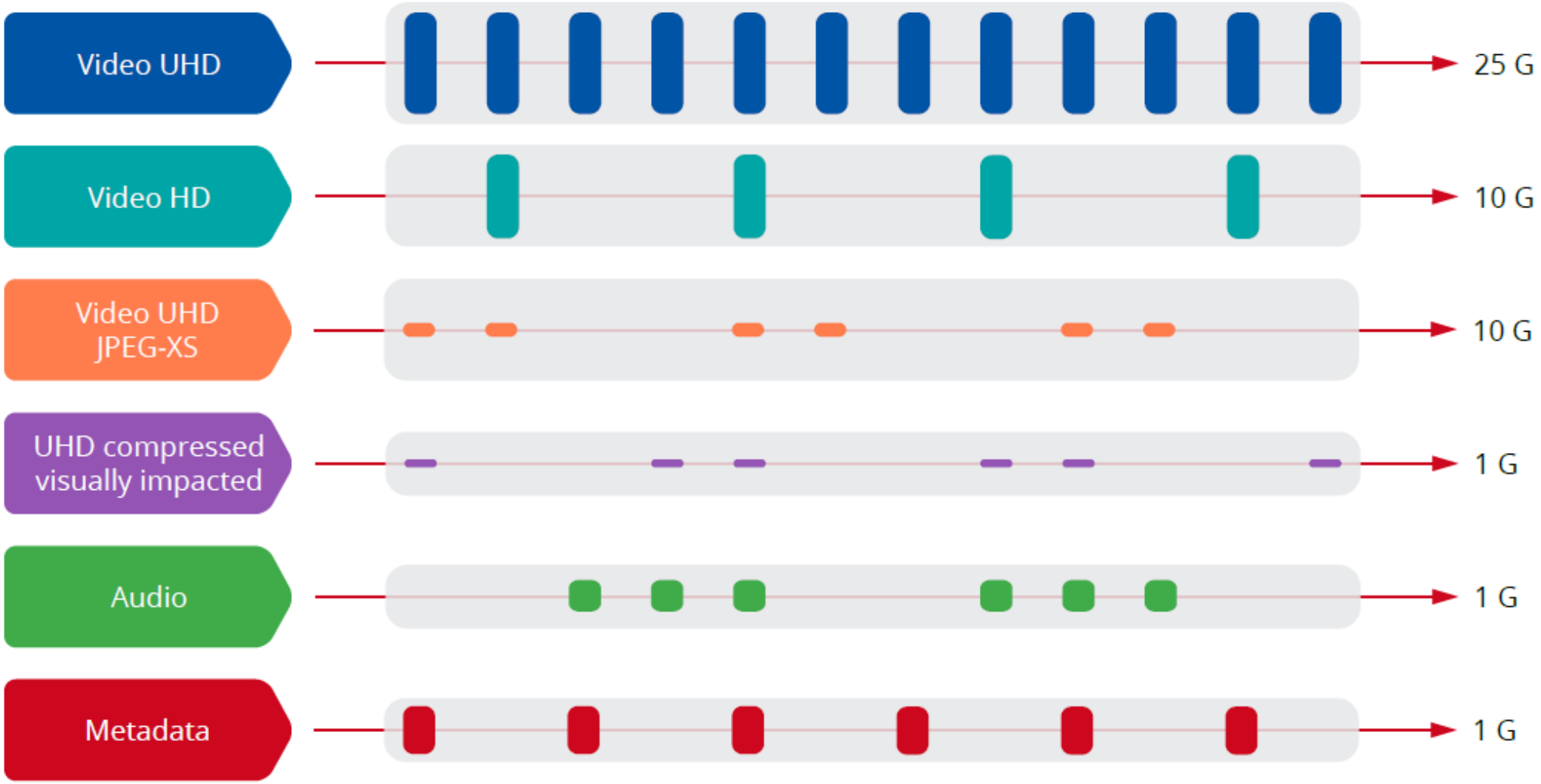
3 Tips for IP Migration

Three fundamental bits of knowledge that will help ease the migration to IP

Tip 1	Tip 2	Tip 3
Define Your Network Architecture Well	Timing is Critical for IP	Find and Use the Experts

TIP1 : Define Your Network Architecture Well

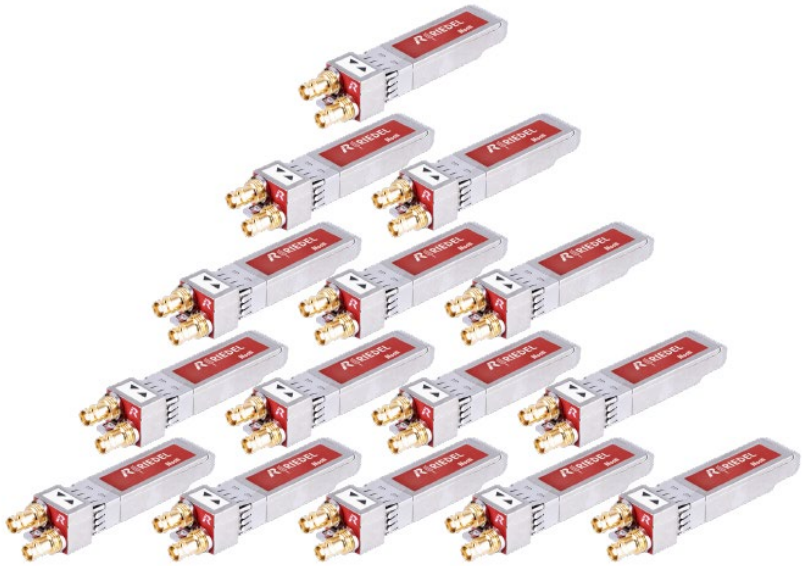
Types of Media



Number of Streams

One

OR



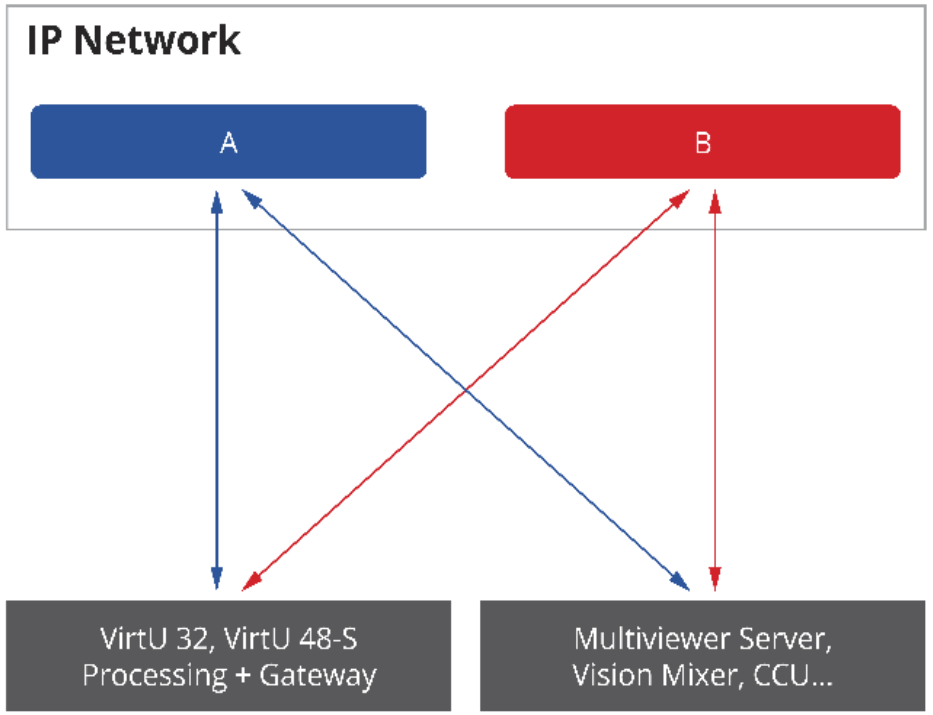
Many

Location and Available Bandwidth & Quality

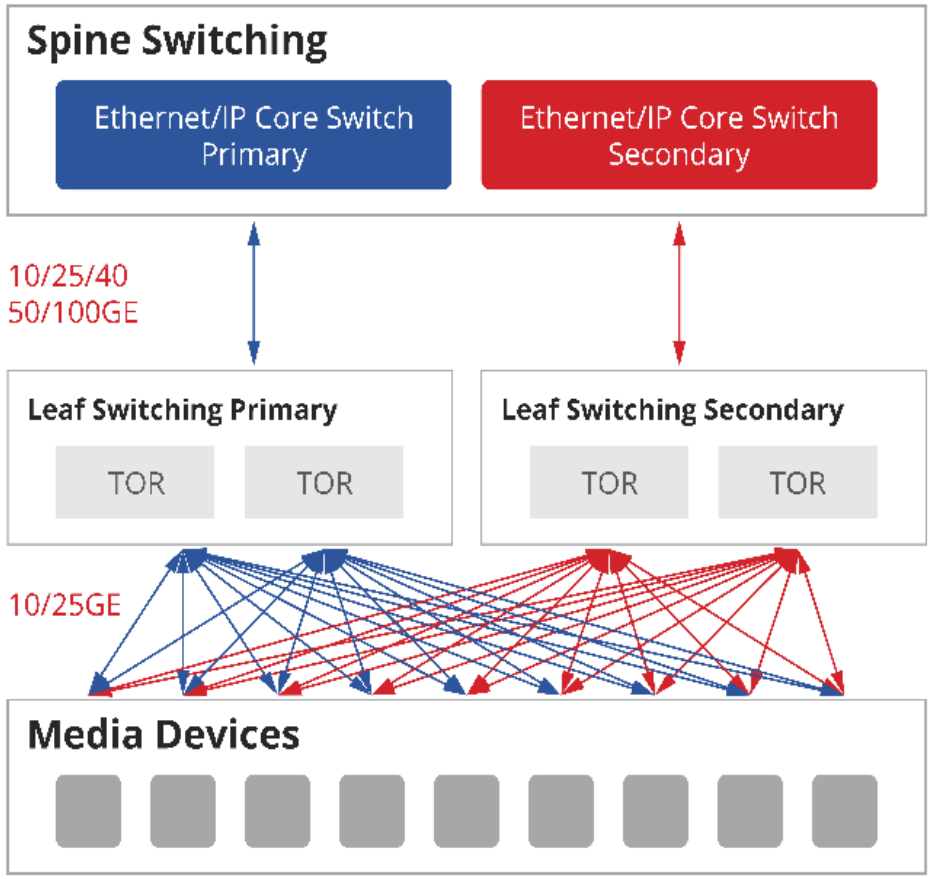
Broadband Internet	MPLS	Internal Lan	Dark Fiber
• Latency : 10 -450 msec • Jitter : 40 msec • Packet Loss : 2% • Speed : < 1.5 Gbps	• Latency : 1 -50 msec • Jitter : 1 msec • Packet Loss : 0% • Speed : < 10 Gbps	• Latency few usec • Jitter : few usec • Packet Loss : 0% • Speed : up to 400 Gbps	• Latency : 5 usec • Jitter : 0 msec • Packet Loss : 0% • Speed : < 100 Gbps
• Compressed • FEC or ARQ (RIST, SRT, ZIXI)	• Compressed • FEC or ARQ (RIST, SRT, ZIXI) • ST2022-7 (comes with cost)	• Uncompressed • ST2022-7 (for maintenance)	• Uncompressed, SDI

Spine-Leaf versus Monolithic

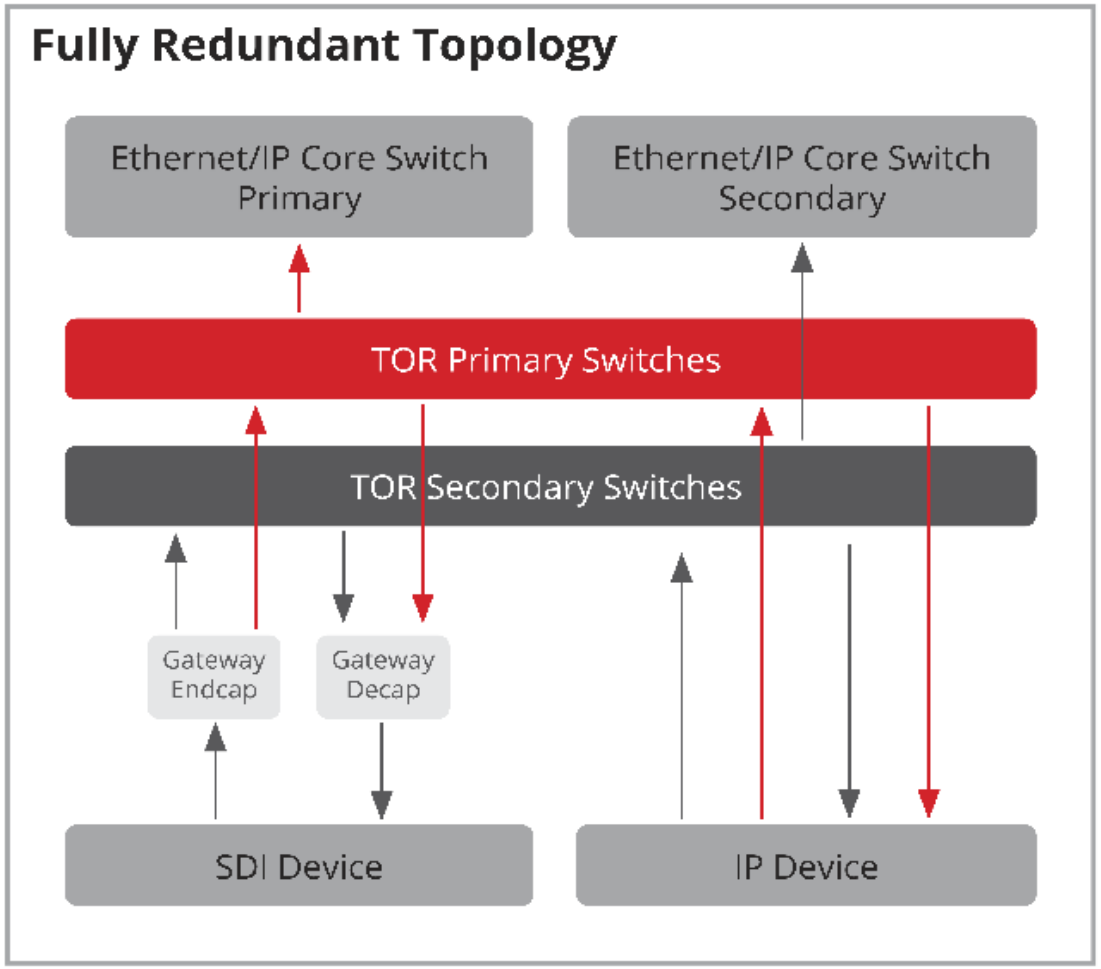
Monolithic

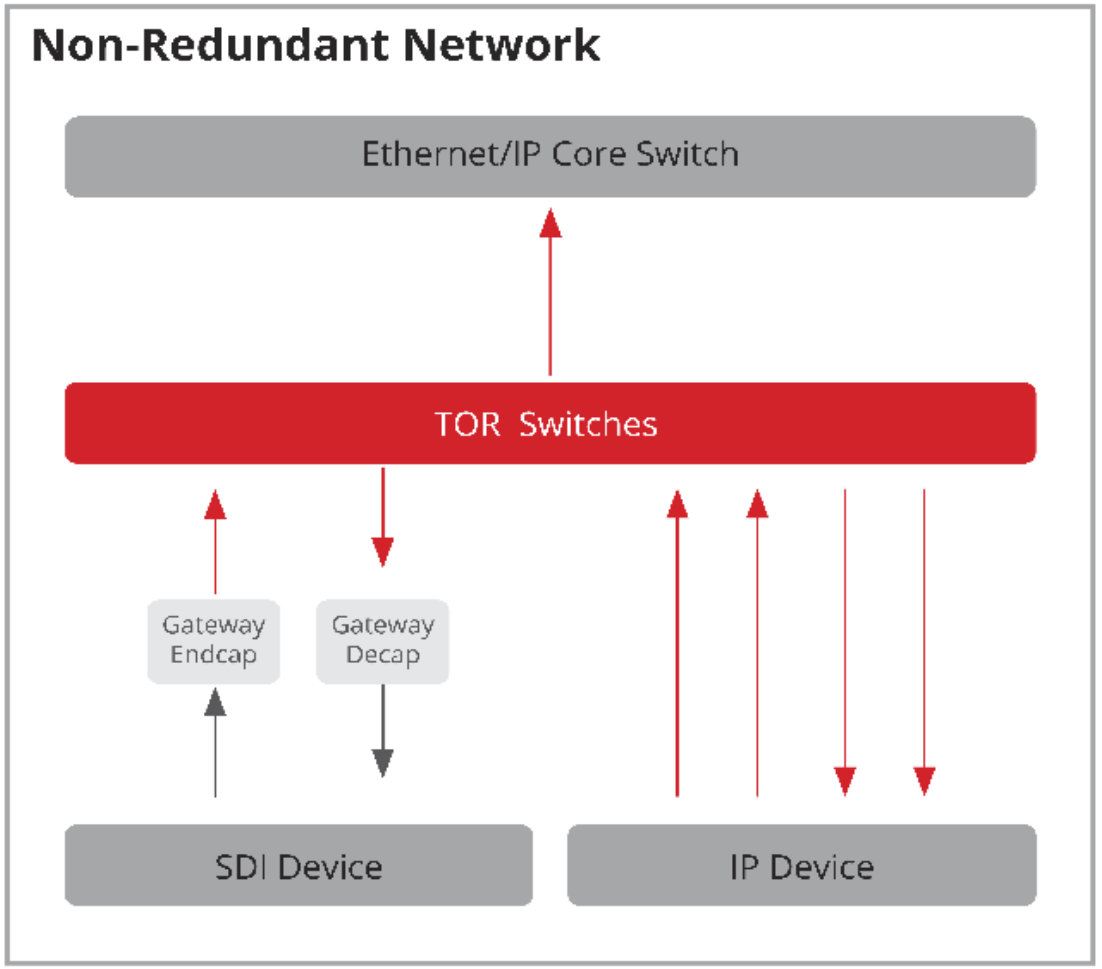


Spine-Leaf

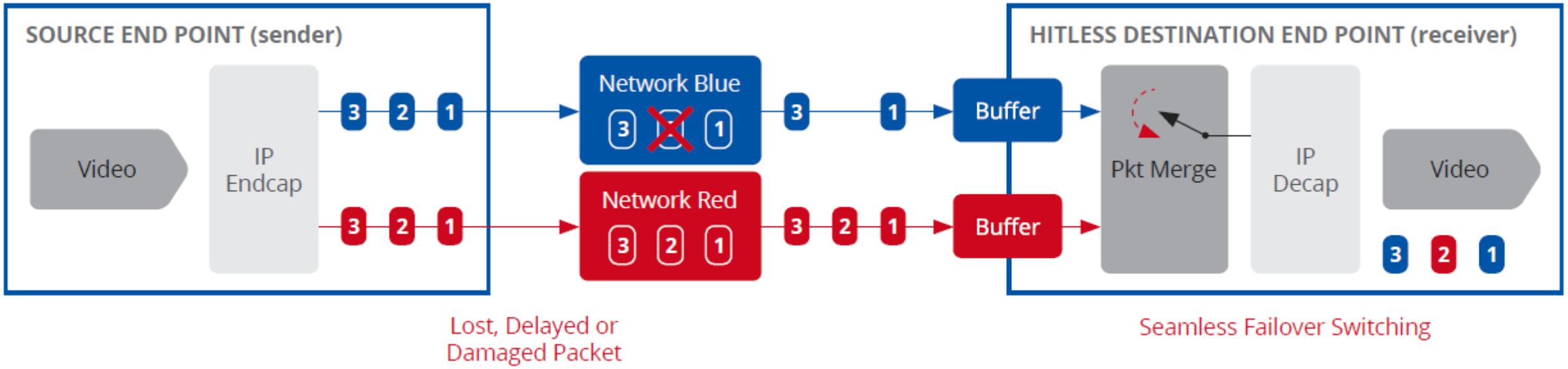


Redundant versus Non-Redundant

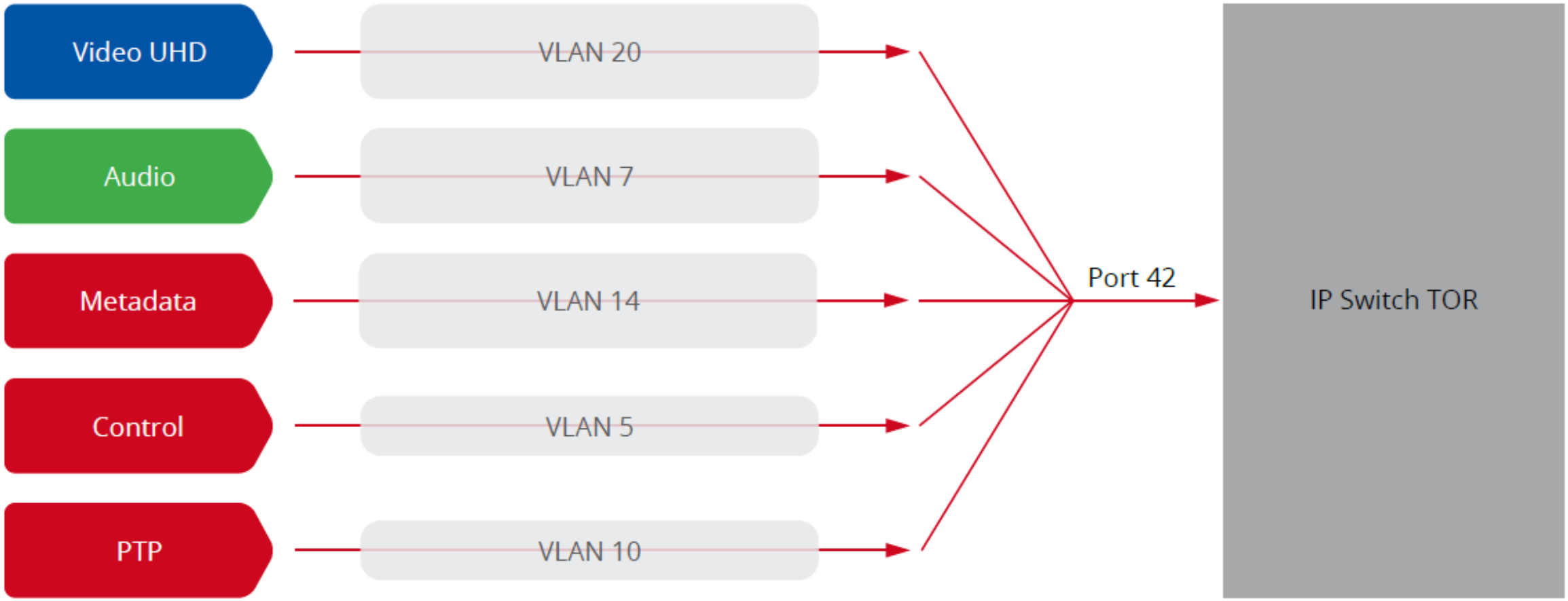




Redundancy Explained

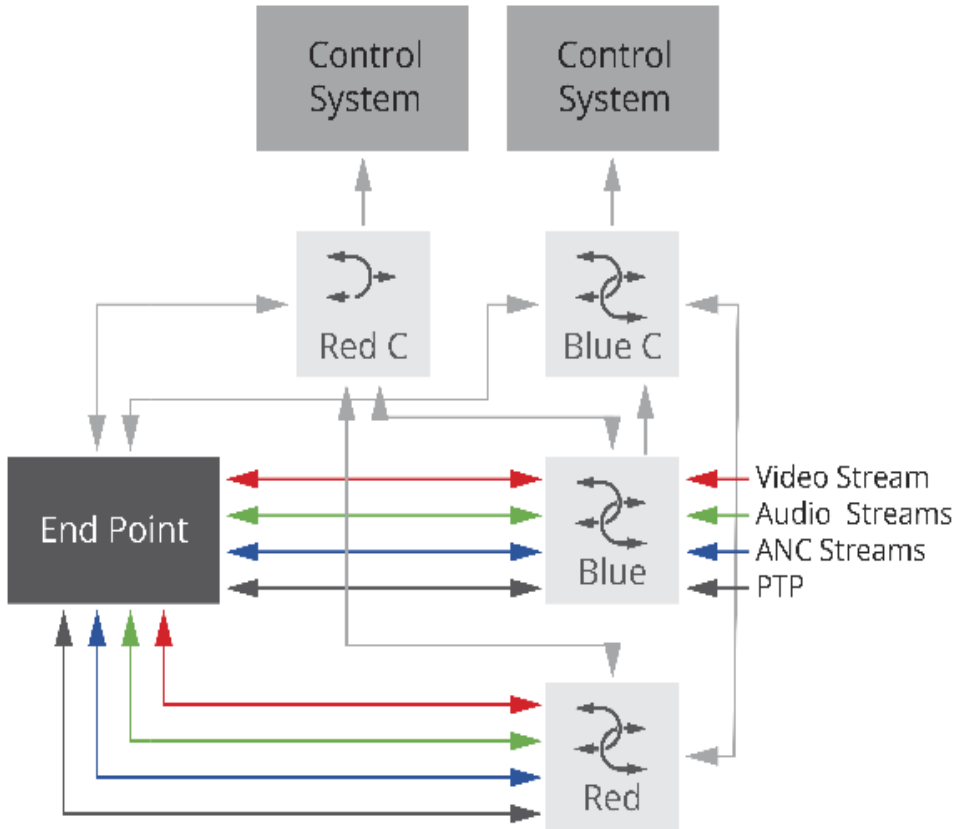


VLAN

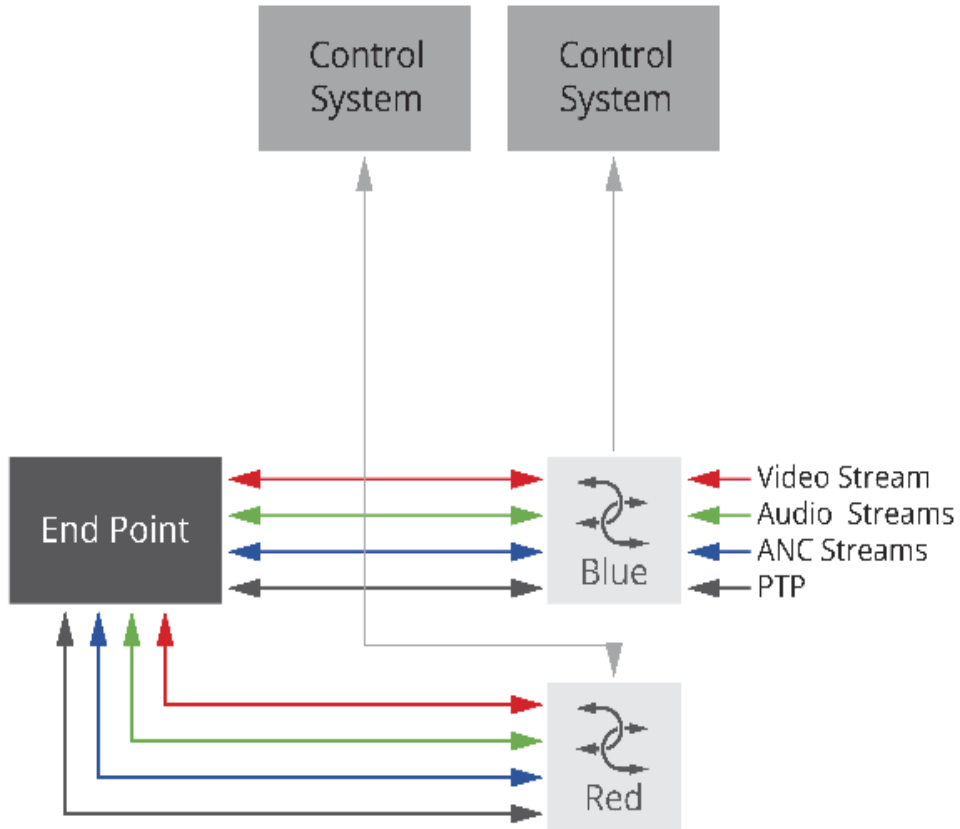

Video UHD
Audio
Metadata
Control
PTP
VLAN 20
VLAN 7
VLAN 14
VLAN 5
VLAN 10
Port 42
IP Switch TOR

OOB versus In-Band control

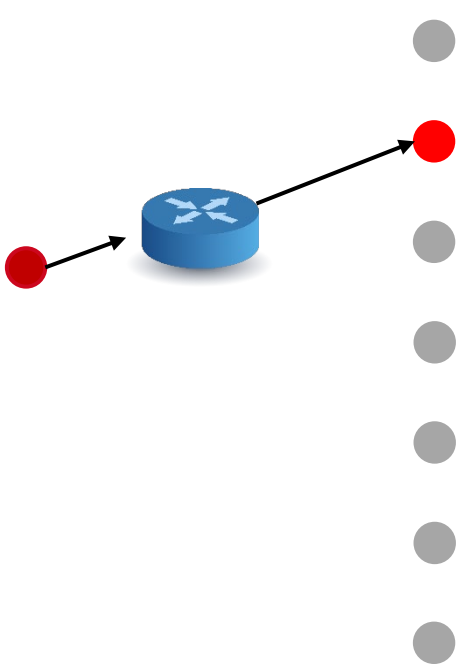
Out-of-Band Control



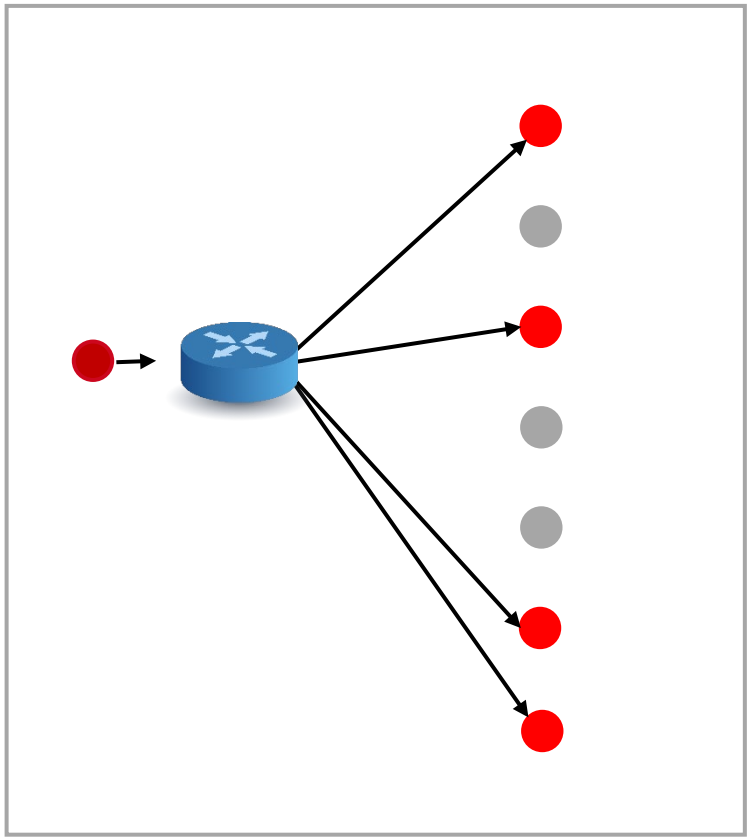
In-Band Control



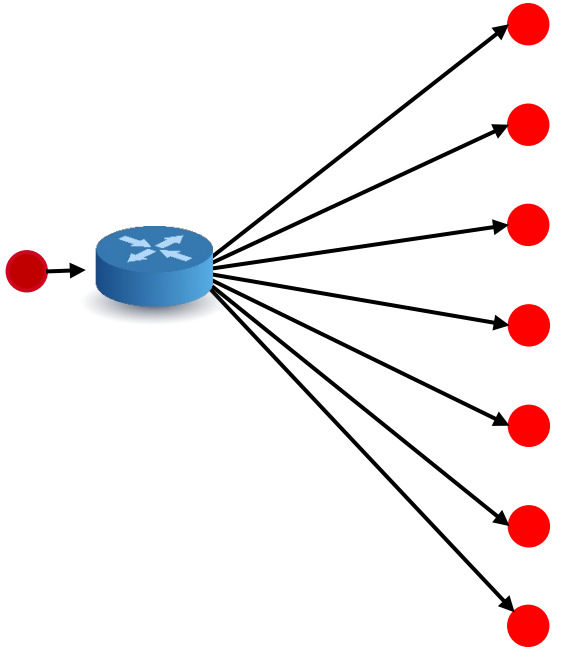
Multicast



Unicast



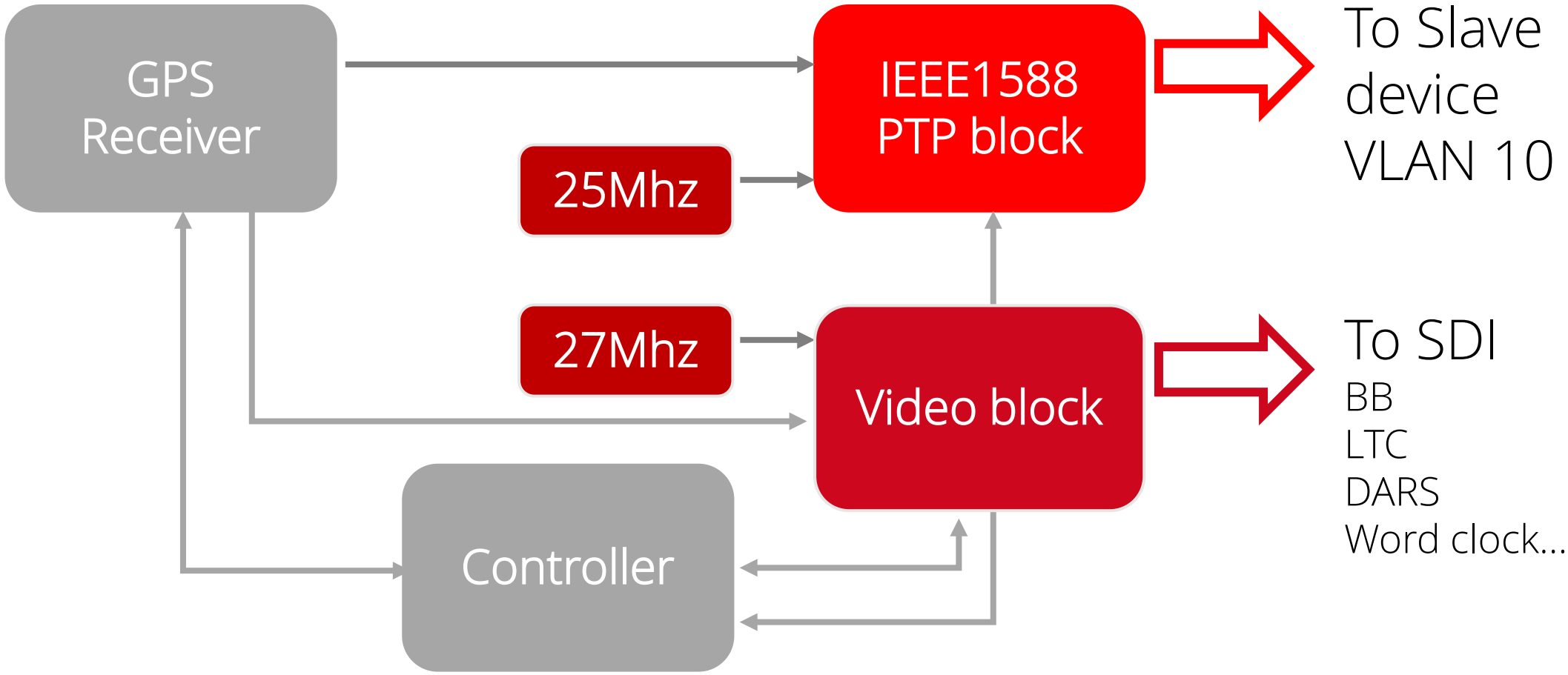
Multicast
Can flood network switch



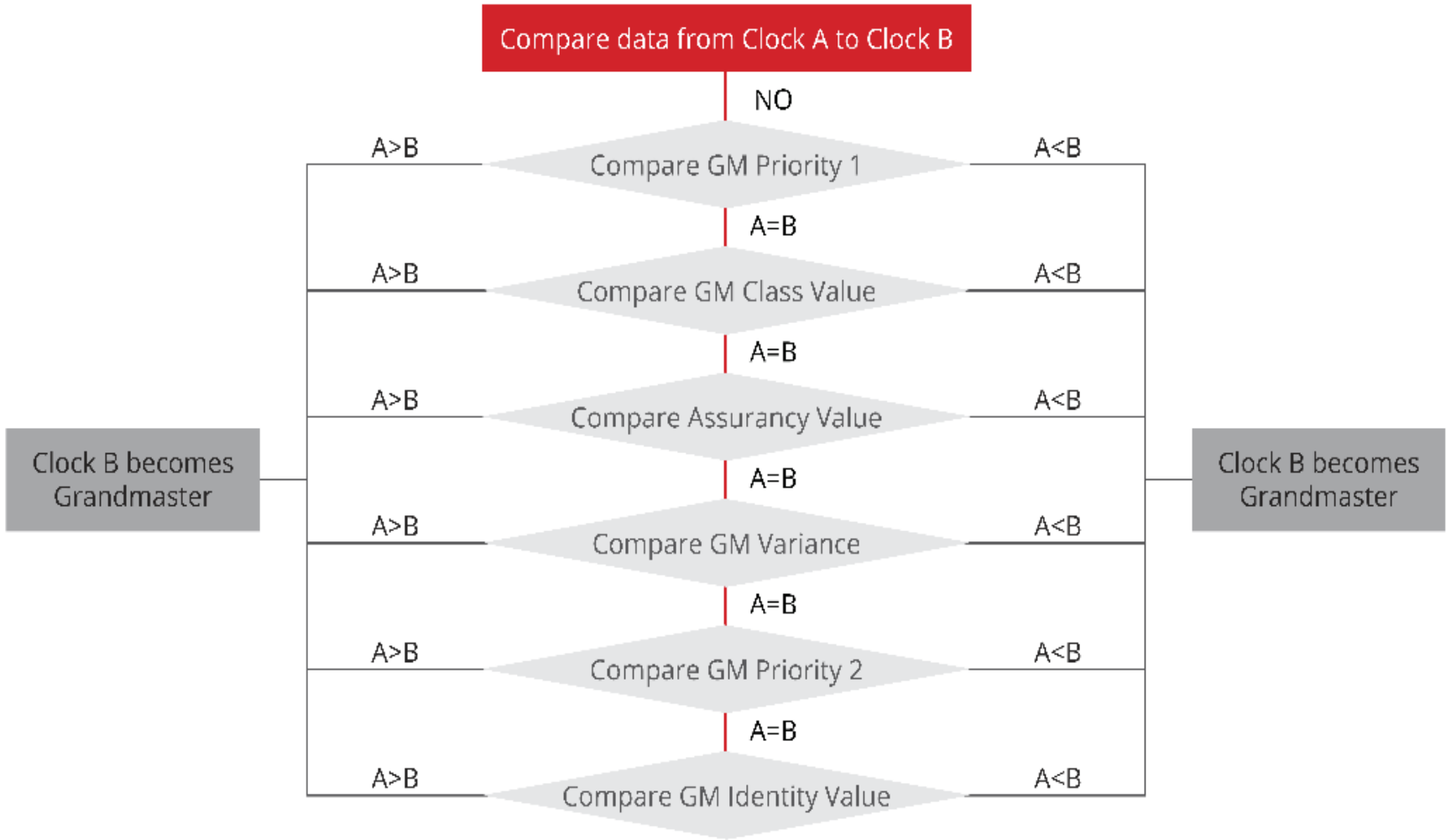
Broadcast
Can flood network switch

TIP2 :
Timing is Critical for IP

SPG with PTP grand masters

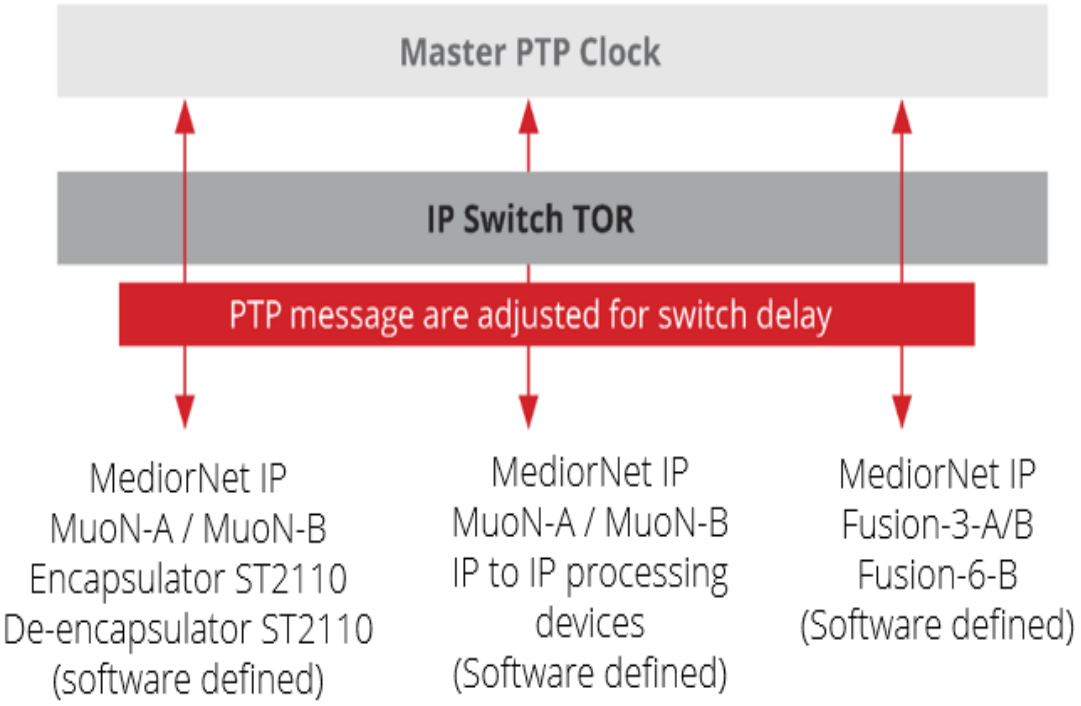


BMCA Decision Criteria

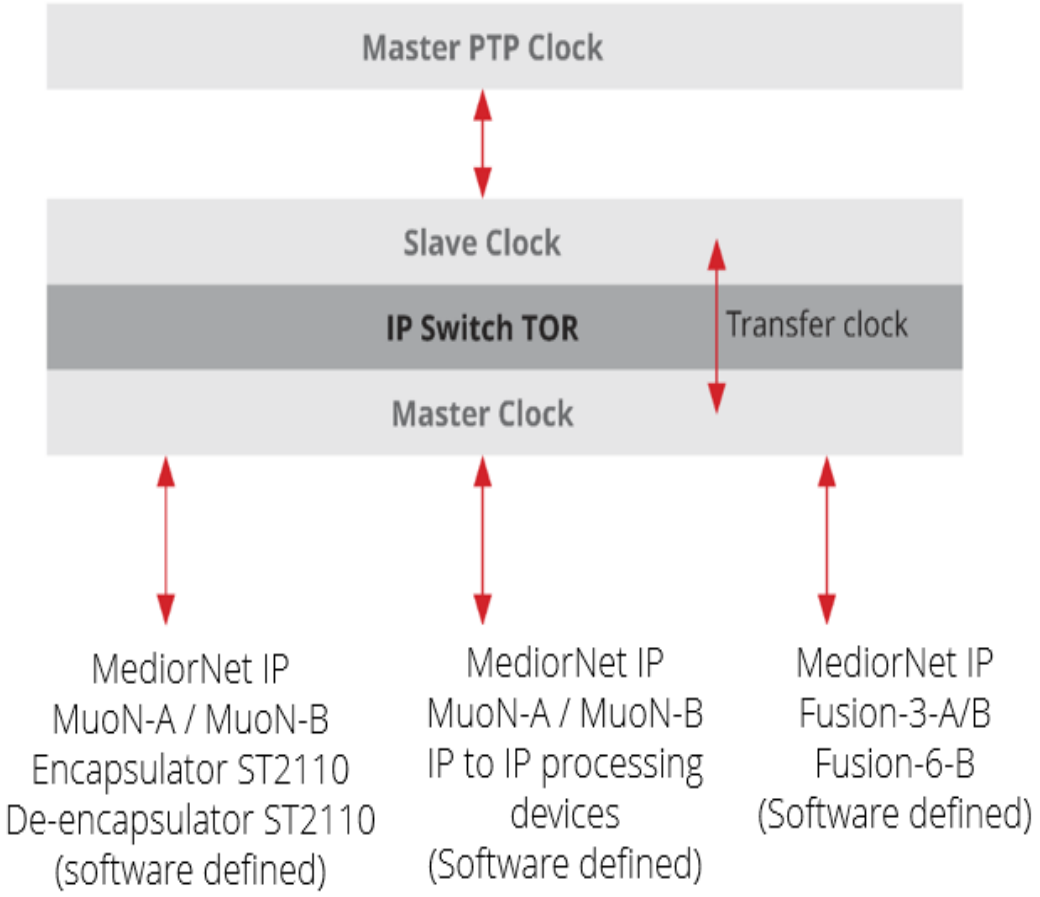


Transparent versus Boundary Clock

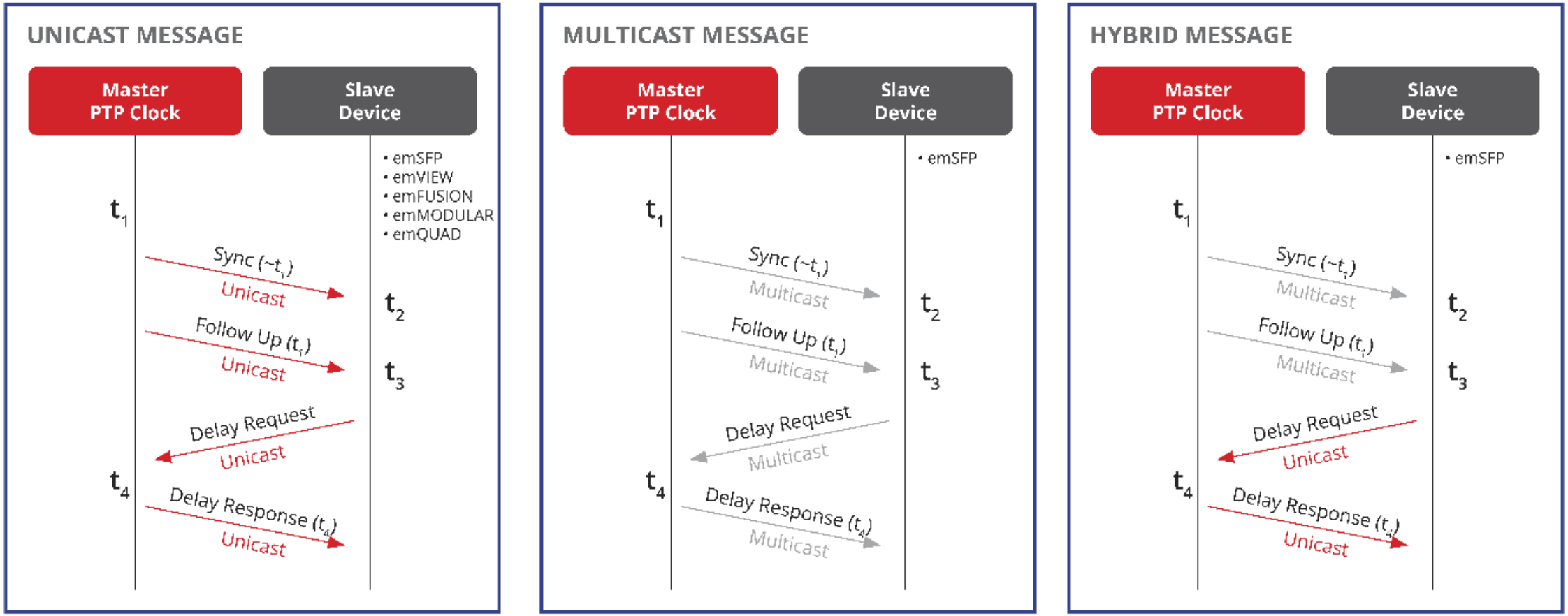
Transparent Clock System



Boundary Clock System



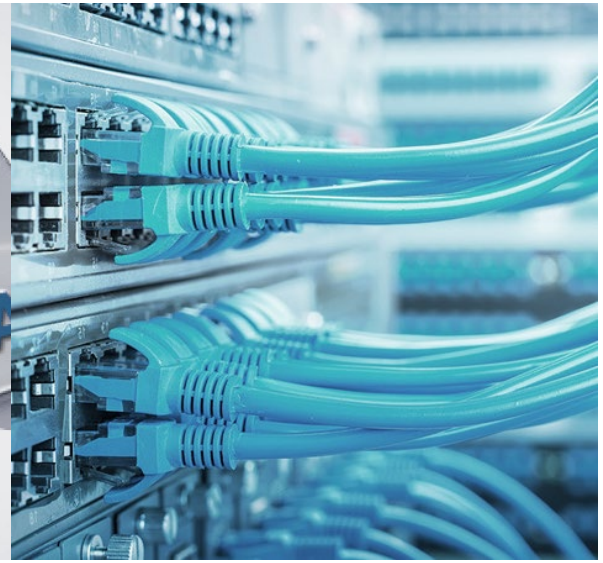
Type of PTP messages



TIP3 :
Find and Use the Experts

The Expert Partners

Both Manufacturing of Audio and Video Equipment and Network Equipment, plus a System Integrator(s) to pull it together



Manufacturers	System Integrators	Manufacturers
Video and Audio Product Manufacturers	System Integrators, that work for and/or with manufacturers and the clients	Network Switch and Fiber/Cabling Manufacturers

Training

Need to know BOTH AV and Network

- Hybrid IP Network/Media Engineers
  - For an IT person, bandwidth is the concern.
  - For a Media person, bandwidth, packet drop, and Latency are the concern.
  - Cross training between IT and Media is needed

Summary of 3 Tips for IP Migration

If you start with these, the transition is simpler and smoother

Tip 1	Tip 2	Tip 3
Architect Your Network Well	Timing is Critical for IP	Find and Use the Experts

Q&A
Thank You!