



SMPTE Atlanta Chapter IBC 2019 Recap Standards and Trends

Luann Linnebur

Nevion

Sept. 23, 2019





5 days  55,000+ attendees
1,700 exhibitors  300 speakers





IBC Recap Topics

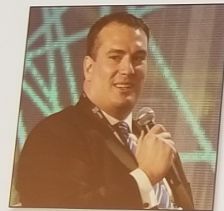
- **2019 Devoncroft Executive Summit | Amsterdam**
 - The Business of Media Technology
- **IP Showcase**
 - Tested Product Catalog
 - Demos and presentations
- **Future Zone**
 - What's coming in NMOS and elsewhere
- **Joint Demos and Announcements**
 - 2110, JPEG XS, Partnerships

Devoncroft Market View



Strategic Industry Analysis: Identifying Value in Today's Market

September 2019



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Principal Analyst
jstinehour@devoncroft.com

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2019 Big Broadcast Survey Trend Index

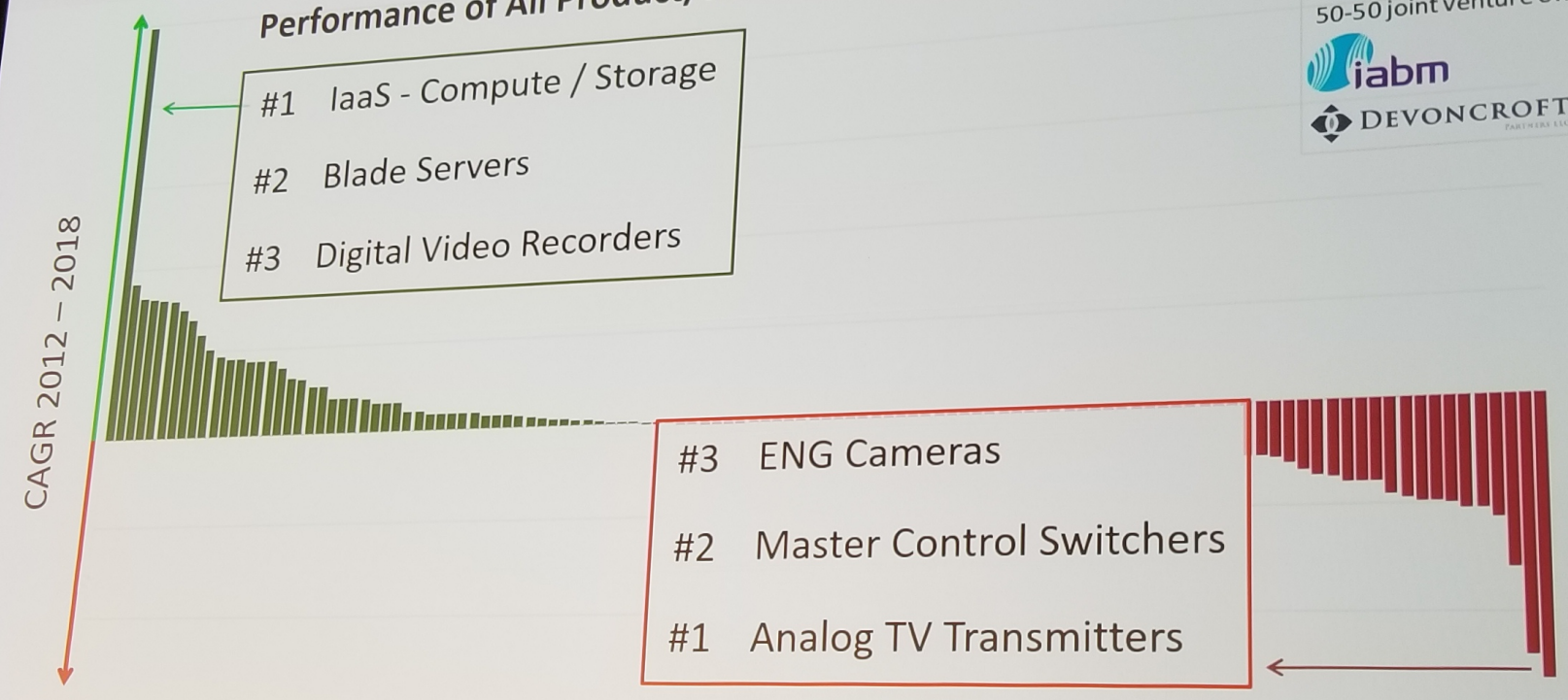
Source: Devoncroft Big Broadcast Survey 2019



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So there is a lot of Good News

Performance of All Product/Service Categories Since 2012



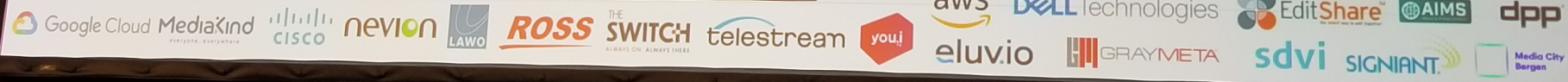
IABM DC
DIGITAL MEDIA MARKET INTELLIGENCE

IABM DC LLC is a 50-50 joint venture of:

iabm

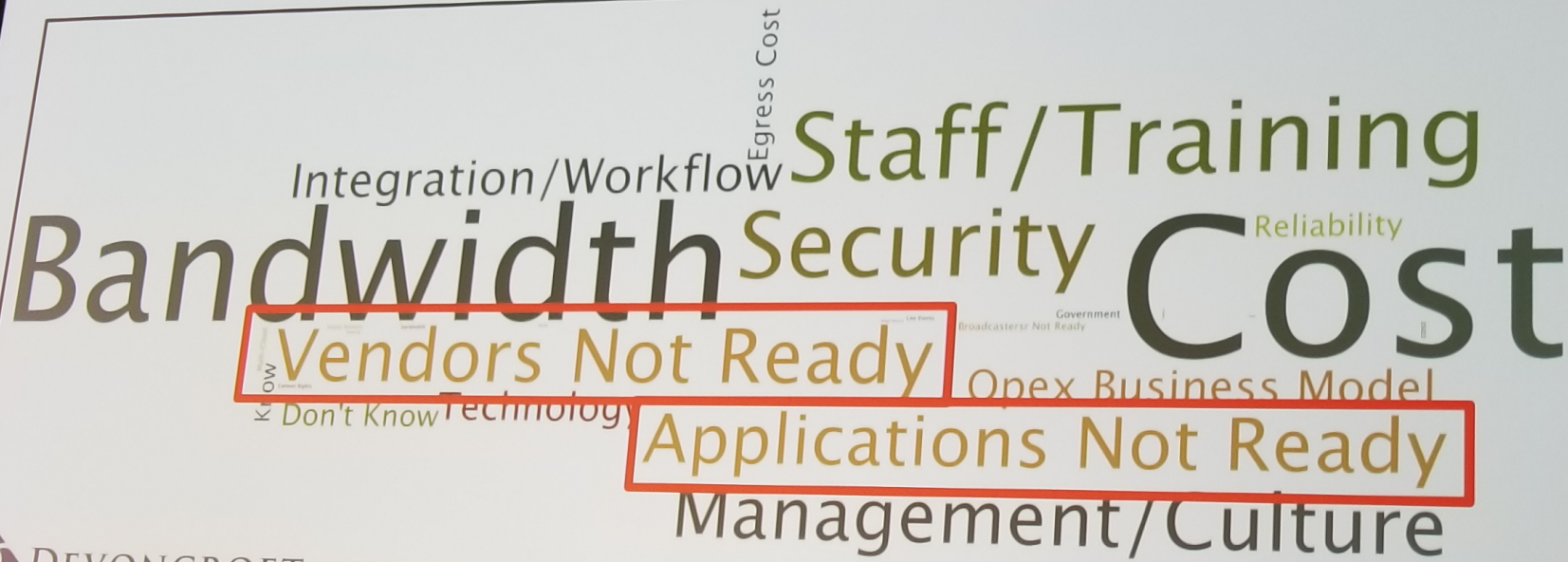
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There are Still Obstacles

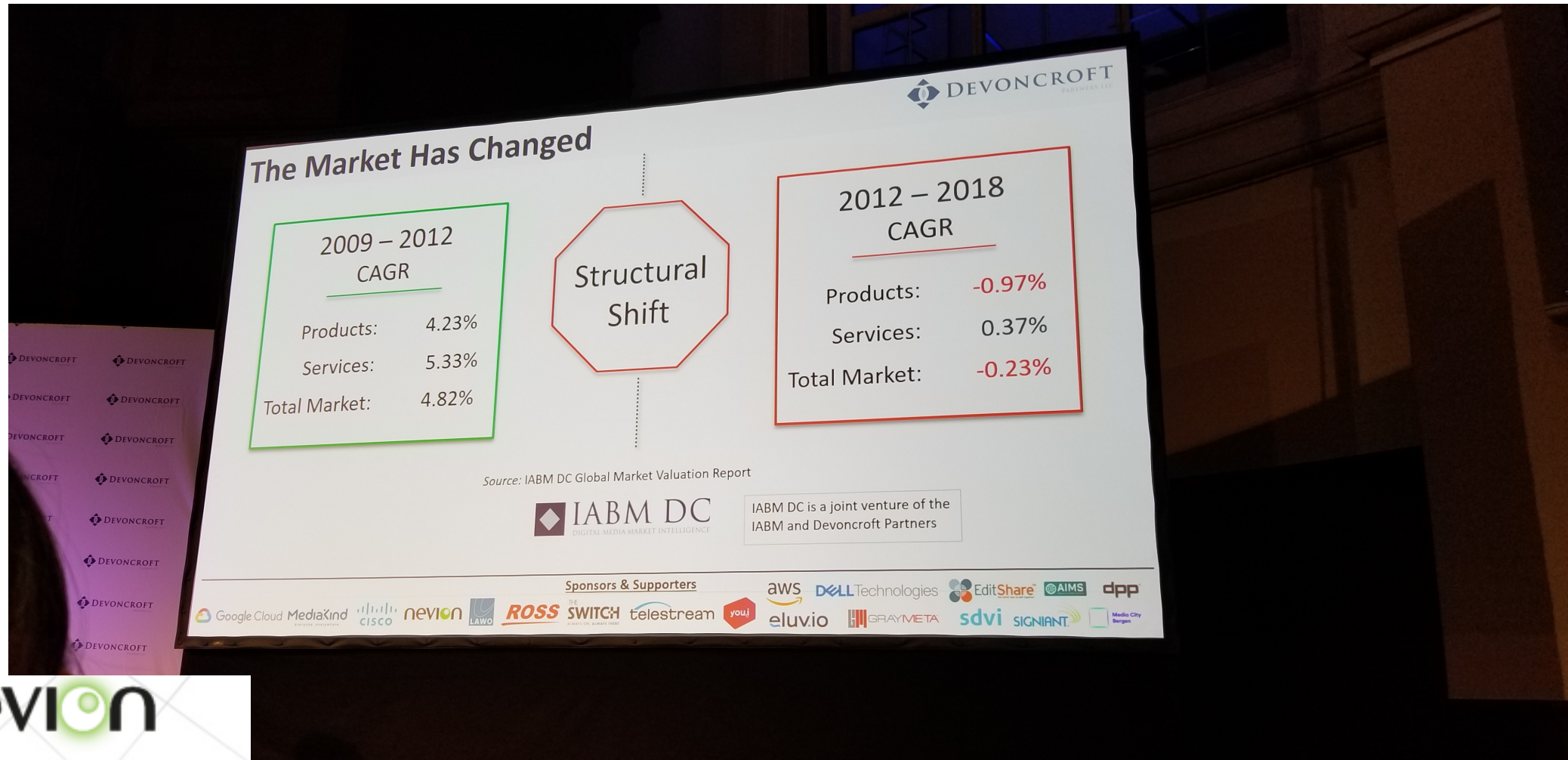
What is the Biggest Obstacle preventing you from achieving your goals with Cloud Computing / Virtualization?



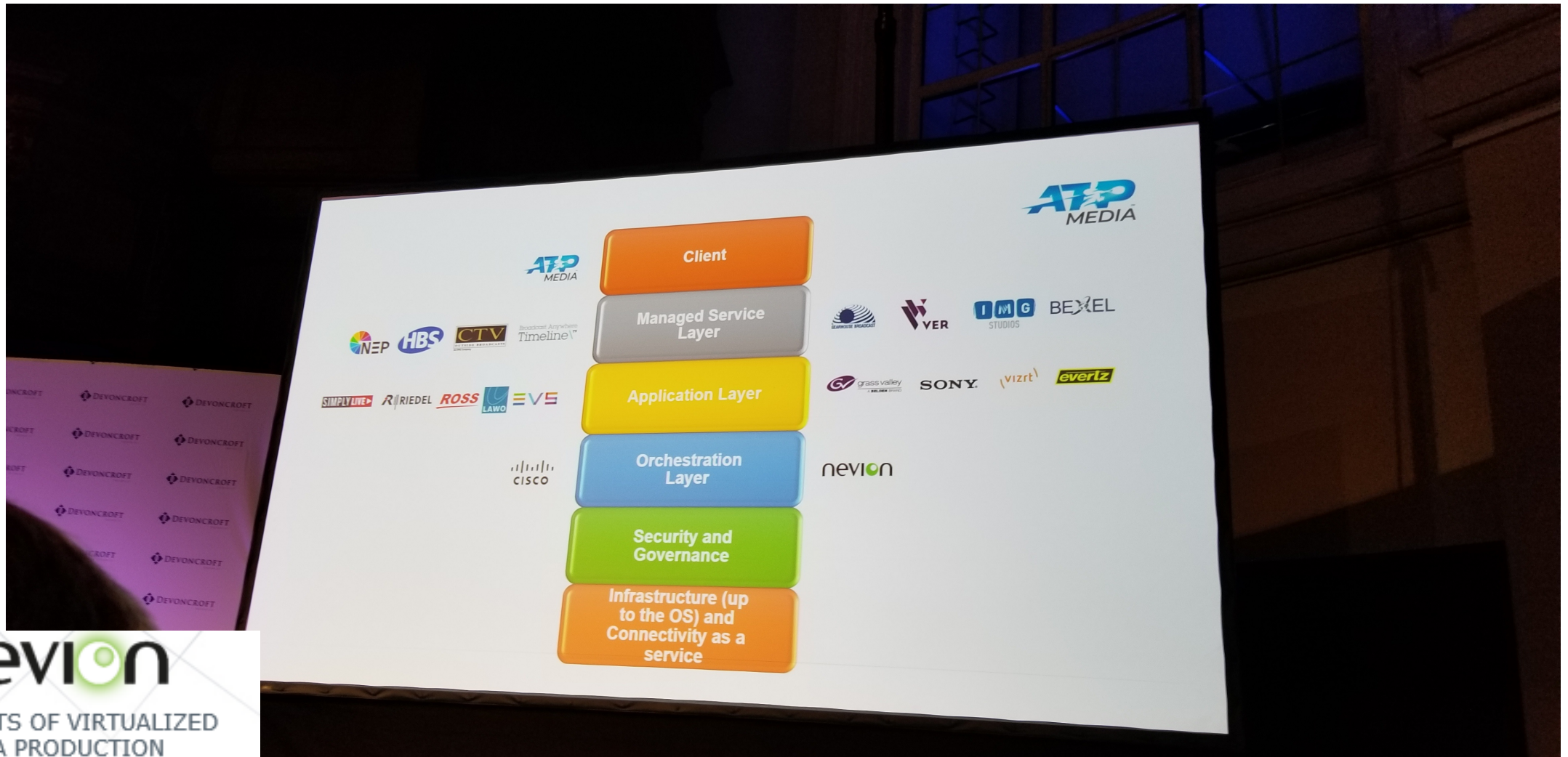
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Starting to heat up for services



Challenge for Application Layer



How does a vendor plan for this?

Upcoming NFL Sports Rights Deals

DEVONCROFT

Timeline: Late 2021, 2H 2022, Feb. 2023, Sep. 2023, Feb. 2031

Operational life of new technology

End of new contract

Likely timing of announcement

Current Contract Expires

Start of new contract

New Technology Buildout

How will vendors direct R&D based on this decision?

Data, Video, Audio, Publish

Sponsors & Supporters: Google Cloud, MediaKind, CISCO, neviON, LAW0, ROSS, SWITCH, telestream, AWS, eluvio, DELL Technologies, GRAYMETA, EditShare, sdvi, AIMS, SIGNIANT, dpp, Media City Bergen

Ways to monetize



IP Showcase and Theatre



The Technology Pyramid for Media Nodes

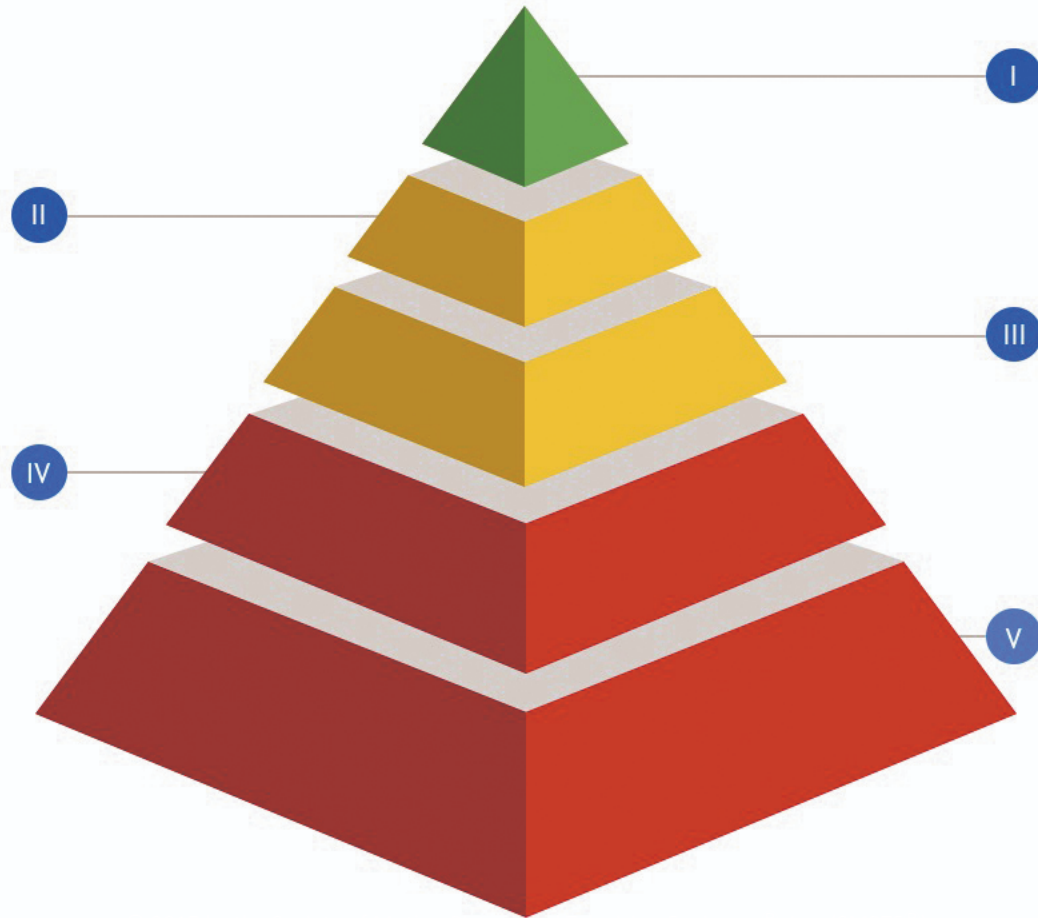
Minimum User Requirements to Build and Manage an IP-Based Media Facility.

Time and Sync

- PTPv2 configurable within SMPTE and AES profiles
- Multi-interface PTP redundancy
- Synchronisation of audio, video and data essences

Configuration and Monitoring

- IP assignment: DHCP
- Open configuration management - e.g., API, config file, SSH CLI, etc.
- Open monitoring protocol - e.g., syslog, agent, SNMPv3, etc.



Media Transport

- Single link video SMPTE ST 2110-20
- Software-friendly SMPTE ST 2110-21 Wide video receivers
- Universal, multichannel and low latency audio SMPTE ST 2110-30 Level C
- Stream protection with SMPTE ST 2022-7

Discovery and Connection

- Discovery and Registration: AMWA IS-04
- Connection Management: AMWA IS-05
- Audio channel mapping: AMWA IS-08 (in dev.)
- Topology discovery: LLDP

Security

- EBU R 148 Security Tests
- EBU R 143 Security Safeguards
- Secure HTTPS API calls

Widely available

Partially available

Rarely available

AIMS Roadmap – July 2019



SDI over IP Baseline	Audio over IP	Standardized Transport of Audio, Video, & ANC Elements	System Environment & Device Behaviors
<p>SMPTE ST 2022-6 SDI Over IP</p>	<p>AES67 Audio Over IP</p>	<p>SMPTE ST 2110-10 Timing & Definitions SMPTE ST 2110-20 Uncompressed Video SMPTE ST 2110-21 Packet Pacing SMPTE ST 2110-30 AES67 Audio SMPTE ST 2110-31 AES3 Compressed Audio SMPTE ST 2110-40 Ancillary Data</p>	<p>PTP, DHCP, LLDP, DNS-SD Network Environment AMWA NMOS IS-04 Discovery & Registration AMWA NMOS IS-05 Connection Management System Resource Critical System Parameters</p>





The poster has a dark blue background. At the top left is the 'JT-nm' logo in a white square. The title 'Joint Task Force on Networked Media' is in white, followed by 'JT-NM Tested Program August 2019' in a larger white font. A QR code is on the left side. Two overlapping document images show test plan details, including 'SMPTE ST 2110 Test Plan v.1.3' and 'NMOS/TR-1001 Test Plan v.1.2'. A horizontal bar with a colorful background contains the text 'Get your free copy of the test results'. At the bottom right are two circular 'TESTED' seals: a green one for 'SMPTE ST 2110' and a red one for 'AMWA NMOS JT-NM TR-1001-1', both dated '08 / 19'. The URL 'http://jt-nm.org/jt-nm_tested/' is at the bottom left.

http://jt-nm.org/jt-nm_tested/



JT-NM Tested Event August 2019 – SMPTE ST 2110 Results



Device Under Test				REPORT		1. General Network Interface Tests			2. Media Network Related Tests						3. ST 2110-10 Tests									
Vendor Name	Model	HW version	SW Version	Video Only, Audio Only, Full	Tx, Rx, Tx/Rx	1.1 Management Network Interface Test	1.1.1 Ping Respons	1.1.2 TTL > 16	1.2 Media Network Interface Test	1.2.1 Ping Respons	1.2.1 TTL > 16	2.1 Basic PTP configuration Test	2.1.1 Set PTP Domain	2.1.2 lock to PTP	2.1.3 Do Not Become Master	2.1.4 Doesn't Reply to TIV Management Messages	2.2 Manual PTP configuration Test	2.5 Basic Multicast Configuration test	2.6 Extended Multicast Configuration test	3.1 IGMPv3 test for a receiver	3.2 SDP verification for a sender	3.2.1 Tx provides an SDP	3.2.2 SDP is validated with SDPoker and correct	
Adeas/Nextera	SDI IP Gateway	V2.2	V2.2	1. Full	1. Tx/Rx																			
Adeas/Nextera	SDI IP Gateway - UHDp50	V2.2	V2.2	1. Full	1. Tx/Rx																			
AJA	KonaIP	v1.0	v15.5	1. Full	1. Tx/Rx																			
AJA	IdIP	v1.0	v15.2	1. Full	1. Tx/Rx																			
Embrionix	emFusion	200	2.5	1. Full	1. Tx/Rx																			
Embrionix	emFusion - UHDp50	200	2.5	1. Full	1. Tx/Rx																			
EVS	XT-VIA	XT-VIA	16.2	1. Full	1. Tx/Rx																			
Grass Valley (Multiviewer)	Kaleido-IP	X320	v11.0	1. Full	1. Tx/Rx																			
Grass Valley (Processors)	XIP-3901 + XIP-3901-UDC-IP	Rev AJ	v0.255	1. Full	1. Tx/Rx																			
Grass Valley (Switcher)	K-FRM X	v14.4.3	v14.4.3	1. Full	1. Tx/Rx																			
Harmonic	Spectrum X	1 RU	9	1. Full	1. Tx/Rx																			
Imagine Communications	SNP	A	v1.3.0	1. Full	1. Tx/Rx																			
Imagine Communications	EPIC-MV	A	v1.4.4.5	1. Full	1. Tx/Rx																			
Imagine Communications	SNP - UHDp50	A	v1.3.0	1. Full	1. Tx/Rx																			
Macnica ATD	Media over IP Package	v1.1.2	v1.1.1	1. Full	1. Tx/Rx																			
Matrox	X.mio5 Q25	RevA	10.1.040.24351	1. Full	1. Tx/Rx																			
Matrox	DSX LES D25	RevA	10.1.040.24351	1. Full	1. Tx/Rx																			
Matrox	X.mio3 IP	RevA	10.1.040.24350	1. Full	1. Tx/Rx																			
Matrox	X.mio5 Q25 - UHDp50	RevA	10.1.040.24351	1. Full	1. Tx/Rx																			
Matrox	DSX LES D25 - UHDp50	RevA	10.1.040.24351	1. Full	1. Tx/Rx																			
Nevion	Virtuoso MI	MI V1.0	v1.1.2502	1. Full	1. Tx/Rx																			
Pebble Beach Systems	Dolphin	N/A	v.1.13.2954.1	1. Full	1. Tx/Rx																			
Pebble Beach Systems	Dolphin - UHDp50	N/A	v.1.13.2954.1	1. Full	1. Tx/Rx																			
Riedel Communications	MediorNet MicroN IP	N/A	V6.1	1. Full	1. Tx/Rx																			
Sony	HDCU Series	V2.23	V2.23	1. Full	1. Tx/Rx																			
Sony	HDCU Series - UHDp50	V2.23	V2.23	1. Full	1. Tx/Rx																			
Sumavision	S010	V1.1	V1.0.2	1. Full	1. Tx/Rx																			
TAG V.S.	MCM-9000	N/A	v4.8.5	1. Full	1. Tx/Rx																			
TAG V.S.	MCM-9000 - UHDp50	N/A	v4.8.5	1. Full	1. Tx/Rx																			
Tektronix/Telestream	PRISM MPI2-10	MPI2-10	1.8.2	1. Full	1. Tx/Rx																			
vizrt	VizEngine 3.14	3.14	3.14	1. Full	1. Tx/Rx																			
vizrt	VizEngine 3.14 - UHDp50	3.14	3.14	1. Full	1. Tx/Rx																			
AJA	IPF-10G2-HDMI	v1.0	v2.2	1. Full	2. Tx																			
AJA	IPF-10G2-SDI	v1.0	v2.2	1. Full	2. Tx																			
Embrionix	ST2110 Encapsulator (HD-SDI)	100	3.1	1. Full	2. Tx																			

LEGEND

- Green square = test passed
- Grey square = test failed or not tested
- White square = test not applicable



JT-NM Tested Event August 2019 – SMPTE ST 2110 Results

Device Under Test				REPORT	5. ST 2110-30 Tests										6. ST 2110-40 Tests						7. ST 2022-7 Tests																		
Vendor Name	Model	HW version	SW Version	Video Only, Audio Only, Full Tx, Rx, Tx/Rx	5.1 Stream Blank Test Tx	5.1.1 Stream Present	5.1.2 Multicast Address Is correct	5.2 Stream Audible Validation Tx	5.3 RTP Timestamp Test Tx	5.3.1 RTP Timestamps between .1ms and 0ms	5.3.2 RTP Timestamp is not drifting	5.4 Stream Audible Validation Rx	5.4.1 Receive Stream Level A	5.4.2 Receive Stream Level B	5.4.3 Receive Stream Level C	5.4.4 No audible artifacts on headphones	6.1 Stream -40 validation Tx	6.1.1 DID/DDID match expectations	6.1.2 Legal Values for SD line and sample fields	6.1.3 Marker and field bits correct for format	6.1.4 No Stream Payload Errors	6.2 Stream -40 Validation Rx	6.2.1 Display Closed Caption Test	6.2.2 Output ANC proSDI and read on Test Equipment	6.2.3 Provide a packet list with at least DID/DDID and line numbers	7.1 Stream Blank Test Tx	7.1.1 Initialize Redundant Stream	7.1.2 Redund Blue on different MAC and IP Addresses	7.2 Stream blank test rx	7.2.1 Receive stream without artifacts	7.2.2 Redund Blue on different MAC and IP Addresses	7.3 Redundancy Test	7.3.1 Receive w/ 25% error alternating between ports	7.3.2 DIF latency with synchronized alternating, burst loss 25%	7.3.3 DIF Latency and PDV w/ synchronized latency of 25%				
Adeas/Nextera	SDI IP Gateway	V2.2	V2.2	1. Full																																			
Adeas/Nextera	SDI IP Gateway - UHDp50	V2.2	V2.2	1. Full																																			
AAI	KonaIP	v1.0	v15.5	1. Full																																			
AAI	IQIP	v1.0	v15.2	1. Full																																			
Embrionix	emFusion	200	2.5	1. Full																																			
Embrionix	emFusion - UHDp50	200	2.5	1. Full																																			
EVS	XT-VIA	XT-VIA	16.2	1. Full																																			
Grass Valley (Multiviewer)	Kaleido-IP	X320	v11.0	1. Full																																			
Grass Valley (Processors)	XIP-3901 + XIP-3901-UDC-IP	Rev A1	v0.255	1. Full																																			
Grass Valley (Switcher)	K-FRM X	v14.4.3	v14.4.3	1. Full																																			
Harmonic	Spectrum X	1RU	9	1. Full																																			
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Matrox	X.mios Q25	RevA	10.1.040.24351	1. Full																																			
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Matrox	X.mios3 IP	RevA	10.1.040.24350	1. Full																																			
Matrox	X.mios Q25 - UHDp50	RevA	10.1.040.24351	1. Full																																			
Matrox	DSX LES D25 - UHDp50	RevA	10.1.040.24351	1. Full																																			
Nevion	Virtuoso MI	MI V1.0	v1.1.2502	1. Full																																			
Pebble Beach Systems	Dolphin	N/A	v.1.13.2954.1	1. Full																																			
Pebble Beach Systems	Dolphin - UHDp50	N/A	v.1.13.2954.1	1. Full																																			
Riedel Communications	MediorNet MicroN IP	N/A	V6.1	1. Full																																			
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TAG V.S.	MCM-9000 - UHDp50	N/A	v4.8.5	1. Full																																			
Tektronix/Teletream	PRISM MPI2-10	MPI2-10	1.8.2	1. Full																																			
vizrt	VizEngine 3.14	3.14	3.14	1. Full																																			
vizrt	VizEngine 3.14 - UHDp50	3.14	3.14	1. Full																																			
AAI	IPT-10G2-HDMI	v1.0	v2.2	1. Full																																			
AAI	IPT-10G3-SDI	v1.0	v2.2	1. Full																																			
Embrionix	ST2110 Encapsulator (HD-SDI)	100	3.1	1. Full																																			

LEGEND

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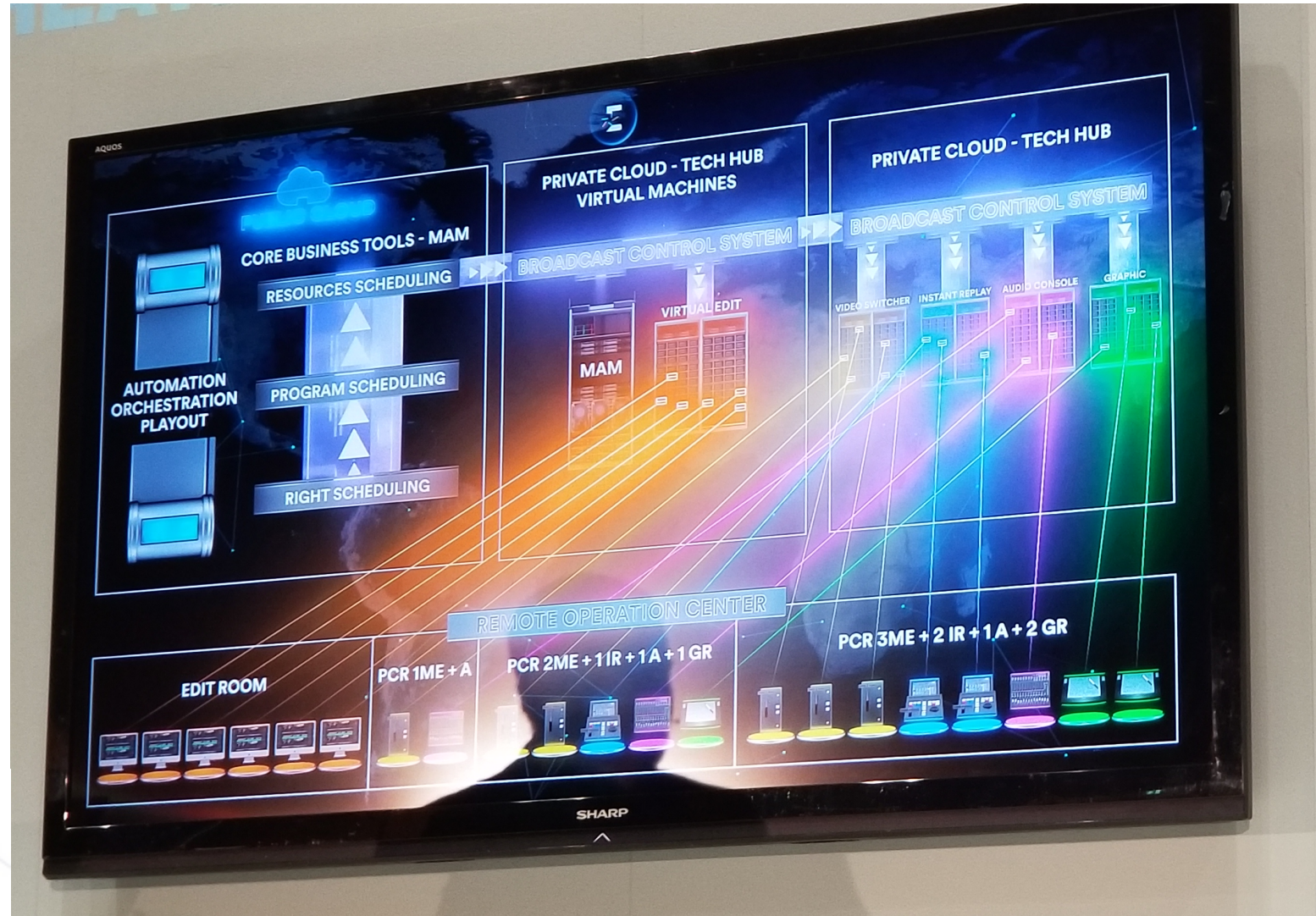
JT-NM Tested Event August 2019 – AMWA NMOS/JT-NM TR-1001-1 Results

Device Under Test				REPORT	4. Media Node Streams												
Vendor Name	Model	HW Version	SW Version	Tx, Rx, Tx/Rx	4.1 Sender configuration and streaming	Sender stream matches configuration	Master_enable functions correctly	4.2 Receiver configuration and reception	Receiver joins correct stream	Master_enable functions correctly	4.3 IGMPv3	Use IGMPv3	Source filter matches SDP source IP	4.4 SDP source-filters	SDP has source-filter	Source-filter matches interface source IP	
Adeas/Nextera	SDI IP Gateway	V2.2	V2.2	Tx/Rx													
AJA	KonaIP	v1.0	v15.2	Tx/Rx													
AJA	IoIP	v1.0	v15.2	Tx/Rx													
EEG	HD492 Alta	1.57	8.2.2019	Tx/Rx													
EVS	XT-VIA	XT-VIA	16.2	Tx/Rx													
Embrionix	emFusion	200	2.5	Tx/Rx													
Grass Valley	XIP-3901 + XIP-3901-UDC-IP	Rev AJ	v0.260	Tx/Rx													
Harmonic	Spectrum X	Spectrum X 1 RU	9	Tx/Rx													
Imagine Communications	SNP	A	v1.3.0	Tx/Rx													
Macnica ATD	Media over IP Package	v1.1.2	v1.1.1	Tx/Rx													
Matrox	X.mio5 Q25	RevA	10.1.040.24351	Multicast Tx/Rx													
Matrox	DSX LE5 D25	RevA	10.1.040.24351	Multicast Tx/Rx													
Matrox	X.mio3 IP	RevA	10.1.040.24350	Multicast Tx/Rx													
Nevion	Virtuoso MI	MI V1.0	v1.1.25	Tx/Rx													
Pebble Beach Systems	Dolphin	N/A	V1.13	Tx/Rx													
Riedel Communications	Artist 32/64/128 G2	N/A	V8.0	Tx/Rx													
Riedel Communications	MediorNet MicroN IP	N/A	V6.1.1	Tx/Rx													
Sony	HDCU Series	V2.23	V2.23	Tx/Rx													
vizrt	VizEngine 3.14	3.14	3.14	Multicast Tx/Rx													
AJA	IPT-10G2-HDMI	v1.0	v2.2	Tx													
AJA	IPT-10G2-SDI	v1.0	v2.2	Tx													
Embrionix	ST2110 Encapsulator (HD-SDI)	100	3.1	Tx													
Net Insight	N640-Tx	A1	FX-j2kapp.6	Tx													
AJA	IPR-10G-HDMI	v1.0	v2.2	Rx													
AJA	IPR-10G2-HDMI	v1.0	v2.2	Rx													
AJA	IPR-10G2-SDI	v1.0	v2.2	Rx													
Bridge Technologies	VB440	Rev A	v5.3.6	Rx													
Embrionix	ST2110 Decapsulator (HD-SDI)	100	3.1	Rx													
Grass Valley	Kaleido-IP	X320	v11.0	Rx													
Imagine Communications	EPIC-MV	A	v1.4.4.7	Rx													
Leader Electronics Corp.	LV5600	Rev A	v3.4	Rx													
Net Insight	N640-Rx	A1	FX-j2kapp.6	Rx													
PHABRIX Ltd.	Qx	Main 9	v3.4	Rx													
Tektronix/Telestream	PRISM MPI2-10	MPI2-10	1.9	Rx													

Aggressive rollout of new tech



Ultimate solution



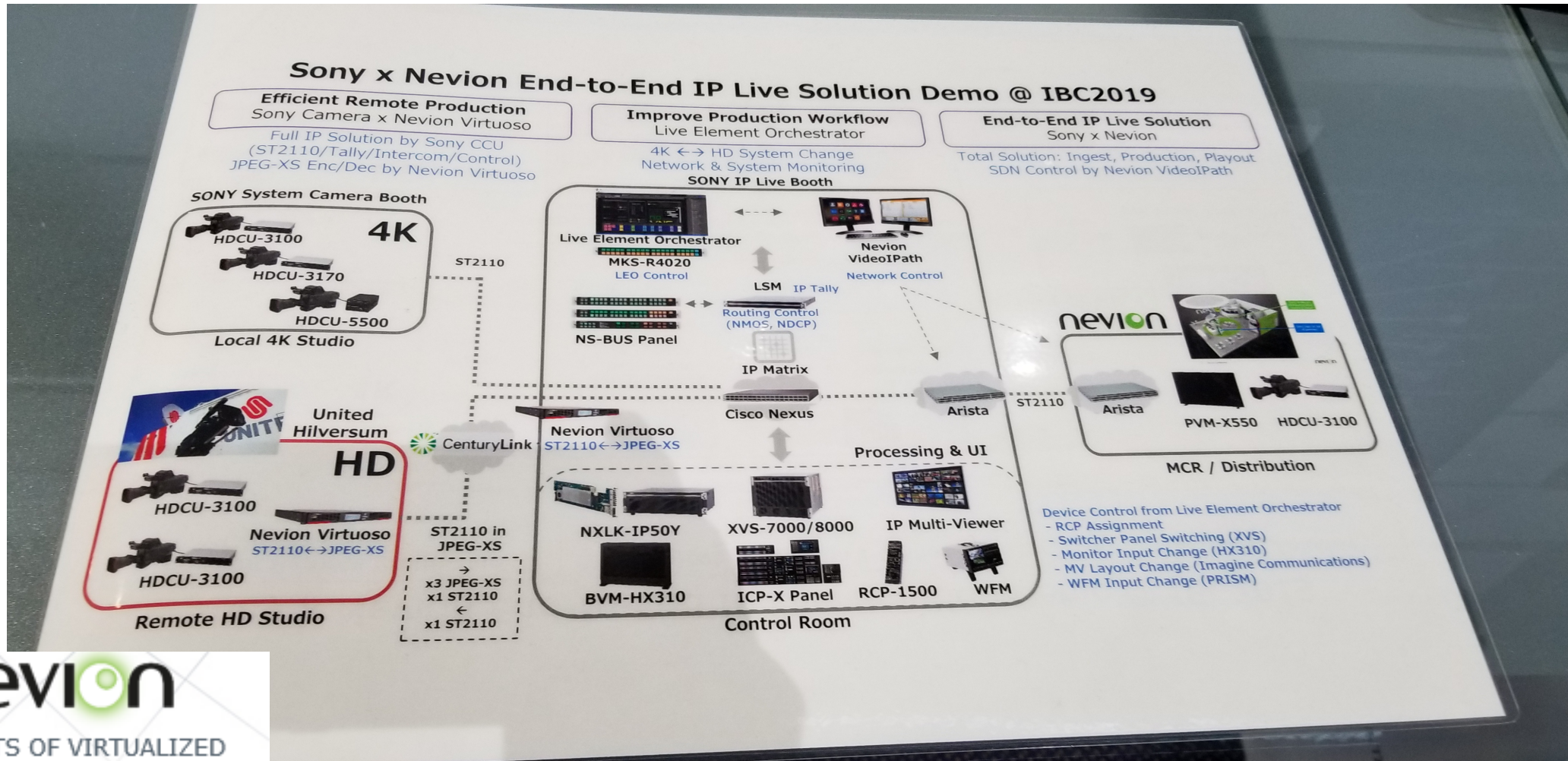
Deployments discussed



JPEG XS over 2110 Deployment



More companies collaborating



Not all work with Happy Hour each day



That's a wrap from IBC

Thank you

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nevision

ARCHITECTS OF VIRTUALIZED
MEDIA PRODUCTION