

JT-NM Qualification Event

Willem Vermost – Senior Media over IP Architect
European Broadcasting Union



The story starts at last years pre-staging event at Riedel for IBC 2018. We noticed that some of the devices, that were demonstrated during the IP showcase, did not fully conform to SMPTE ST 2110.

SMPTE ST 2110 Final Draft Interoperability

SMPTE ST 2110 drafts, AMWA IS-04, SMPTE ST 2059, SMPTE ST 2022-7



This is a growth process. We go from the birth of a standard to real world implementations. The showcase needs to change from showing samples or beta versions to showing real products.



Network Technology Seminar 2018, Presenter: Jack Douglas
About: “ ST2110 and ST2059 Interop Testing and Demonstrations”



*Tough Question: "Why are these tests done behind closed doors?
Other industries do similar events and make results public!"*

Scope of the Qualification Event

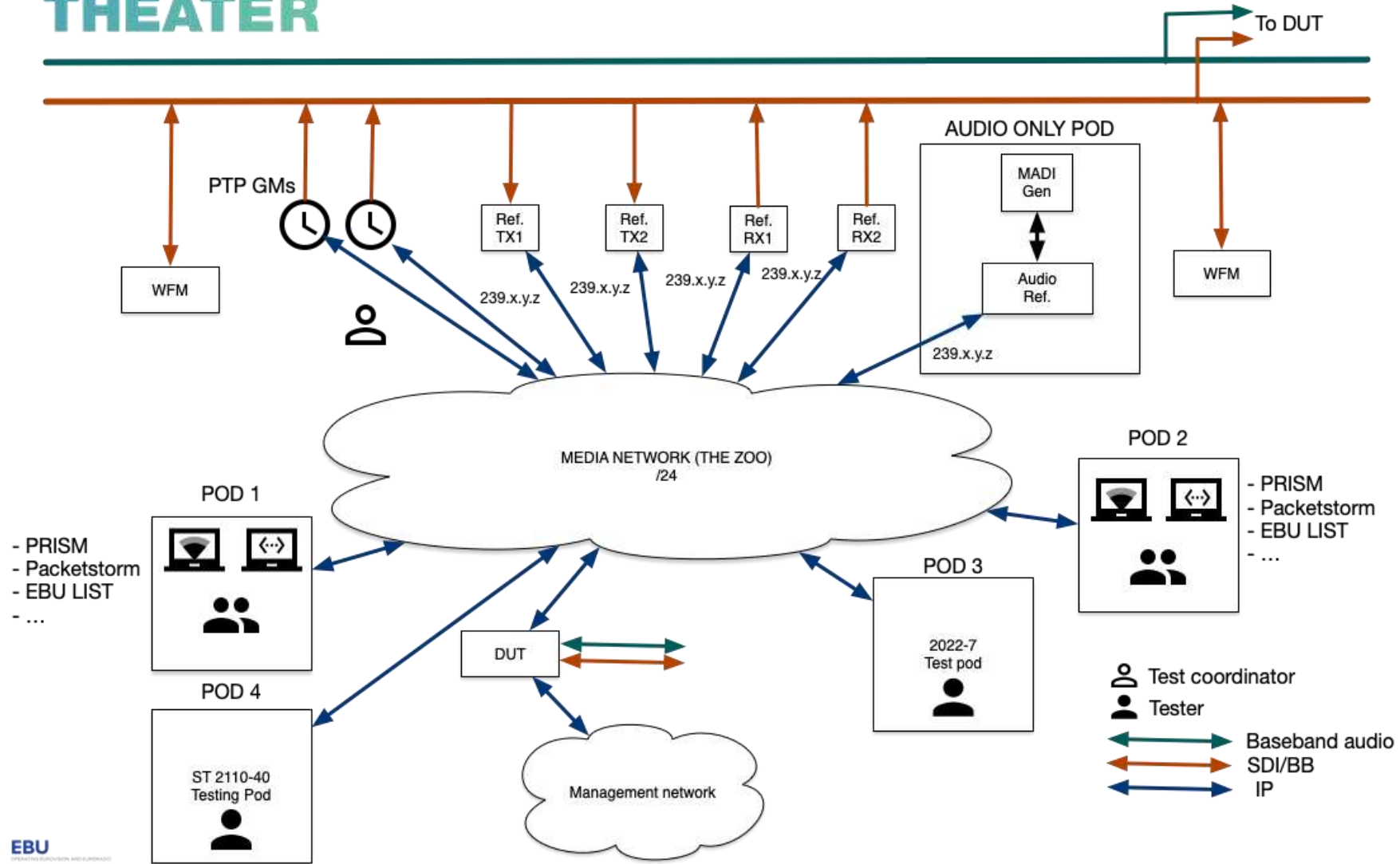
- The March 2019 Testing Event will focus on the following aspects of the live IP infrastructure: the general network-related functionality of a media device
- media-specific data plane standards
 - SMPTE ST 2110
 - SMPTE ST 2022-7
 - SMPTE ST 2059
- While the 1.0 program does not include the AMWA NMOS specifications, it is expected that elements will be added in future versions of the program.

Experts Group

- Alun Fryer (Ross Video)
- Andy Rayner (Nevion)
- Bill McLaughlin (EEG)
- Felix Oberhardt (IRT)
- Franz Baumann (IRT)
- Ievgen Kostiukevych (EBU)
- Jack Douglass (PacketStorm)
- Jean Lapierre (Matrox)
- John Mailhot (Imagine Communications)
- Leigh Whitcomb (Imagine)
- Mike Overton (Tektronix)
- Mike Waidson (Tektronix)
- Pedro Ferreira (Bisect)
- Robert Welch (Arista Networks)
- Serge Grondin (Grass Valley)
- Sonja Langhans (IRT)
- Thomas Kernen (Mellanox Technologies)
- Willem Vermost (EBU)

Final Plan

- The complete plan: 18 pages.
- These are basic tests
- http://jt-nm.org/jt-nm_tested/



Toolbox

BridgeTech VB440

- <https://bridgetech.tv/vb440/>

EBU Live IP Software Toolkit (EBU LIST)

- <http://list.ebu.io>
- <https://github.com/ebu/pi-list>

Packetstorm CRS, Network Emulator, VIP

- <https://packetstorm.com/packetstorm-products/>

SDPoker

- <https://github.com/Streampunk/sdpoker>

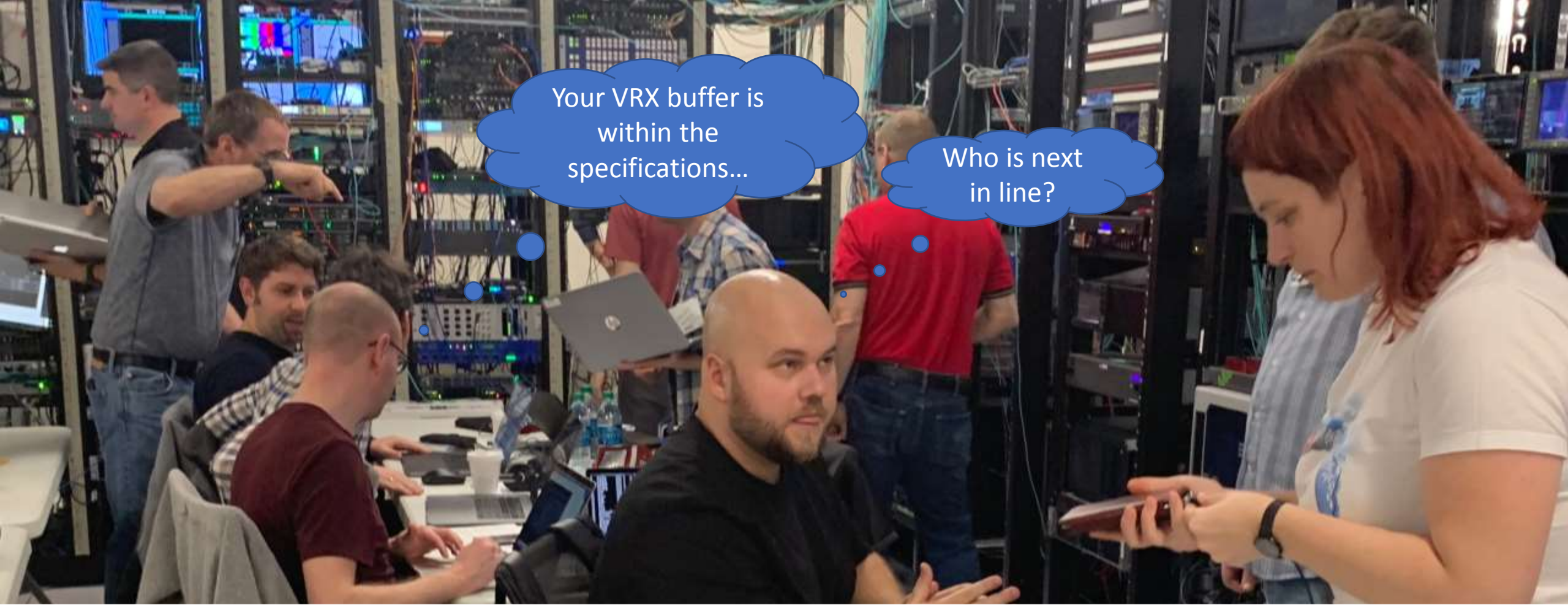
Tektronix PRISM

- <https://www.tek.com/prism-media-monitoring-and-analysis-platform>

Wireshark




We needed to be very efficient, in order to subject about 80 different devices to 50 different tests. (about 4000 tests in total)



Your VRX buffer is within the specifications...

Who is next in line?

We created a pipeline, in order to be as efficient as possible.



We need to speed up, we'll never make it ...

Different stages were needed: “in the hall”, “on deck”, “test”, ...



The JT-NM Enterprise Profile was announced and an appropriate victim was voluntarily chosen to come up with a first draft.

03/30/19			General Tests										ST 2110-20 Video Tests															
Test			1.1 Management	1.1 Management	1.2 Media Interface	1.2 Media Interface	2.1 Basic FTP	2.1 Basic FTP	2.1 Basic FTP	2.3 Multicast config	3.1 SMP-V	3.2 SMP	3.2 SMP	4.1 Back To Video	4.1 Back To Video	4.1 Back To Video	4.2 Stream Violation Video	4.2 Stream Violation Video	4.2 Stream Violation Video	4.2 Stream Violation Video	4.3 ST 2110-21 buffer measurements Video	4.3 ST 2110-21 buffer measurements Video	4.4 RTP -TS Test Video	4.4 RTP -TS Test Video	4.5 Back Video	4.5 Back Video	4.6 In Facility Video	4.6 In Facility Video
Subtest			Ping	TTL=16	Ping	TTL=16	Set Domain	Lock	Not Mover	Independent streams for Tx and Rx	low (SMP-V)	is provide an SDP	SDP is valid with SMP-V	Stream present	Multicast Addr connect	Forward connect	Decode by Reference Rx	No Visible Errors	Photo No errors	Color Network Compatibility	WebBuffer actual Rx	RTP 0:0:000000 to return	RTP not calling	Receive Stream	Display Stream	Receive Stream	Video is free of artifacts	
Hamric	Spectrum X	SW 8.5.1.041 / HW v1																										
Imagine Communications	SMP	SW 1.2.0.18 / HW RevA																										
Imagine Communications	EPIC-MV	SW 1.3 / HW RevA																										
Imagine Communications	VERBIO	SW 4.1.1																										
Leader Electronic Corp	UV600	SW 2.9 / HW RevA																										
Metrica Technology	VR410-L (Judge)	SW 1.6.1 / HW R6310																										
Metrica Technology	VR410 (Flaw)	SW 1.6.2 / HW R6329																										
Metrica ATD	ST2110 10G Tx IP Package	FPGA Design ver: 0.8.11 / SDK ver: 0.3.0																										
Metrica ATD	ST2110 10G Rx IP Package	FPGA Design ver: 0.8.11 / SDK ver: 0.3.0																										
Matrox Rev	X.mio3 IP	HW RevA / SW 10.0.101.23776																										
Matrox Rev	DSX LES Q25	HW RevA / SW 10.0.101.23895																										
Matrox Rev	X.mio5 Q25	HW RevA / SW 10.0.101.23895																										
MediaCloud	MK Content Processing	SW 10.6.0.2 / FW 1.1.0.28																										
Mellanox	Rivermax 1.0	SW v. 0.5.44																										
Neuver	Virtuoso	SW 2.9.1600 / HW B1																										
Net Insight	Nimble 800	HW A1 / SW GX.3.8.0.2																										
Peta	Secure IP	FW 104 SW 2.30																										
Phabrix	Ox (Decap)	s/w v 3.0.0																										
Phabrix	Sx TAG (Decap)	s/w 1.07.55177; Endorianix s/w 2.3																										
Phabrix	Sx TAG (Decap)	s/w 1.07.25177; Endorianix s/w 2.3																										
Riedel	AESA7-108 G2	SW 6.0.0 / HW 12.05																										
Riedel	MicoN IP	SW 7.50 / HW G2																										



Blank (white) square denotes one of the following:

1. The test does not apply to the device
2. The device did not pass the test.



JT-NM TESTED PROGRAM AT IP SHOWCASE
2019 NAB SHOW - GET YOUR COPY NOW!

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

Special thanks to the EBU and IRT for administering the tests, and to Fox, Arista Networks, Bridge Technologies, PacketStorm, and Tektronix for their support during the testing event.

Any Questions? Thank You!

Willem Vermost – Senior Media over IP Architect

European Broadcasting Union

vermost@ebu.ch - +41 79 376 78 59