VSF Fall Meeting Series Webinar - Tuesday September 22, 2020

EBU PYRAMID UPDATE & JT-NM TESTED PROGRAM PLANS

Félix Poulin, Director of Media Transport Architecture and Lab (CBC/Radio-Canada)
Willem Vermost, Design + Engineering Manager (VRT)
THE TECHNOLOGY PYRAMID FOR MEDIA NODES
Minimum User Requirements to Build and Manage an IP-Based Media Facility using Open Standards & Specifications.

I. Media Transport
Based on SMPTE ST 2110 system

II. Time and Sync
Based on Precision Time Protocol (PTP)

III. Operational Control
Based on AMWA Networked Media Open Specifications (NMOS)

IV. Configuration and Monitoring
Enabling agile facilities

V. Security
Implementing best practices

TECH.EBU.CH/TECH3371
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ST 2110 IS NECESSARY, BUT NOT SUFFICIENT

In order to build and moreover to maintain operational a large Media-over-IP facility

We need a “Full Stack” of technologies and best practices to complement ST 2110

V. Security
Implementing best practices

Widely available
Partially available
Rarely available

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THE EBU PYRAMID UPDATE, WHAT HAS CHANGED?

EBU Tech 3371 version 2 was published in July 2020

With clarification, additions and revised colours

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FUNDAMENTAL PRINCIPLES

1. Follow cybersecurity Best Practices
2. Implementable in software – flexible, agile, scalable
3. Reuse existing IT and Internet Standards
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DEFINITION OF OPEN
1. Documentation publicly accessible
2. Clear licencing, ideally free
3. New versions backward compatible

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I. Media Transport

1. Single link video SMPTE ST 2110-20
2. Software-friendly SMPTE ST 2110-21 Wide video receivers
3. Universal, multichannel and low latency audio SMPTE ST 2110-30 Level B
4. Stream protection with SMPTE ST 2022-7:2018

ST 2110 Interoperability is good.

**NEW** Relaxed audio ST 2110-30 from Level C to B.

Most important is to bundle phase related channels into the same streams.
II. TIME AND SYNC

II. Time and Sync
1. PTP monitoring with IETF RFC 8575 or RFC 8173
2. PTPv2 configurable within SMPTE and AES profiles
3. Multi-interface PTP redundancy
4. Synchronisation of audio, video and data essences

I. Media Transport
Based on SMPTE ST 2110 system

Added PTP monitoring and locking performance

Inter-Essence Synchronisation is still unaddressed, we hope on ST 2110-10 revision
III. OPERATIONAL CONTROL

1. Discovery and Registration: AMWA IS-04, BCP-002
2. Connection Management: AMWA IS-05
3. Device Control: Open Methods and AMWA IS-07
4. Audio Channel Mapping: AMWA IS-08
5. Topology discovery: LLDP

Adoption of NMOS has made progressed!

Added Device Control: Open Methods and AMWA IS-07 for event & tally
IV. CONFIGURATION AND MONITORING

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IV. Configuration and Monitoring
1. IP assignment and low-level configuration:
   DHCP, AMWA IS-09
2. Open configuration management
   – e.g. YANG / OpenConfig, Open API, SSH …
3. Open monitoring protocols
   – e.g. YANG / OpenConfig, MQTT, Syslog, SNMPv3, …

This layer enables manageability of large facilities

Requirements where clarified and strengthened

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V. Security
1. EBU R 148 Security Tests
2. EBU R 143 Security Safeguards
3. Secure HTTPS API calls: AMWA BCP-003

Warning: Low attention by industry!
First part of NMOS Security best practices is published

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A WIDE CONSENSUS endorsed by

- EBU
- NABA
- World Broadcasting Unions
- JT
- AMWA
- SMPTE
- VSF
- Video Services Forum

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HOW TO USE PYRAMID
Consider all the requirements on the Pyramid in your architecture
Ask for the requirement from Tech 3371 in your tenders

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The Media Node Maturity Checklist at the back is meant to help discussions between customers and vendors and to quickly assess the level of maturity of a product for suitable large deployment.

Details of each criteria are described in the EBU Tech 3371 available at tech.ebu.ch/pyramid.
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ALL PYRAMID RESOURCES
TECH.EBU.CH/ PYRAMID

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JT-NM TESTED PROGRAM PLANS

Willem Vermost, Design + Engineering Manager (VRT)
J-NM TESTED PROGRAM – WHAT IS IT?

• Documented insight into how vendor equipment aligns with the SMPTE ST 2110 and SMPTE ST 2059 standards, JT-NM TR-1001-1 and AMWA NMOS specifications.

• Testing of NMOS registries and controllers were added at this event.

• It is not a certification program; it is a snapshot in time.
• Face-to-face: cancelled!
• Pivot to Self-testing
• According To JT-NM Test Plan
• SMPTE ST 2110 → Self-tested
• NMOS/TR-1001-1 → Self-tested
• NMOS controllers → Tested via the cloud
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34 vendors published their results in the final catalogues:
- 59 products were tested against the ST 2110 test plan
- 44 products were tested against the NMOS/TR-1001-1 test plan
- Including
  - 4 NMOS registries
  - 6 NMOS controllers
JT-NM TESTED PROGRAM – PUBLISHED CATALOGS

ALL PYRAMID RESOURCES

HTTP://JT-NM.ORG/JT-NM_TESTED/
CONCLUSIONS

• Improved results compared to the previous events
• JT-NM Tested team was not able to fully verify self-testing results
• The self-testing is useful for improving implementations
• Remote testing must be worked out for proper validation of results
• JT-NM formed the JT-NM Tested Board to drive the JT-NM Tested program
FUTURE PLANS

Next round targeted for March-April 2021

With more remote testing and improved Self-Testing (assuming no face-to-face event)
EBU PYRAMID UPDATE & JT-NM TESTED PROGRAM PLANS

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Thank you