SVIP Production
2022-6 to 2110

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Studio Video over IP
The Challenge Before Us

• The **pace of change** is faster than ever

  **Multi-platform**

  **Increasing resolutions/frame rates**

  **Wide Color Gamut/High Dynamic Range**

• How do I build a plant that can flexibly prepare me for the above changes...

• ...and that allows me to succeed in an environment with these new entrants?
“The primary objective of the Joint Task Force on Networked Media (JT-NM) is to ensure interoperability in packet-based systems (networking, equipment and software) for professional media. This includes defining an agile, on-demand, packet-based network infrastructure designed to support a variety of distributed, automated, professional media (file- and stream-based) workflows for local, regional and global production supporting any format, standards based, for interoperability to facilitate new workflows and reduce total cost of ownership and to speed-up content time-to-market”\(^1\)

\(^1\) Joint Task Force on Networked Media Report on User Requirements, 2013
JT-NM Reference Architecture

Scope is far beyond mere transport

- JT-NM RA 1.0 published September 4, 2015
- http://www.jt-nm.org/
SVIP History

- SVIP Activity Group formed April 17, 2014
- Technical Recommendation Fall, 2015
- 32NF60-SVIP DG (on-going)

Video Services Forum (VSF) Technical Recommendation TR-03
Transport of Uncompressed Elementary Stream Media over IP

November 12, 2015

ST 2110
2022-6: A viable, pre-existing standard

ST 2022-6:2012 - Transport of High Bit Rate Media Signals over IP Networks

Currently over 100 implementations of ST 2022-6 worldwide
The Essential Difference between 2022-6 and 2110

**Bundled (Audio, Video, Metadata together)**
- Audio/Video/Metadata/Sync travel **coherently**
- Requires extra work to “unpack” separate essences
- Well suited for **Playout/Distribution** workflows
- Well suited for **WAN/Contribution** across timing domains

**Essence Based (Audio, Video, Metadata separate)**
- Ideal for **Studio/Production** workflows
- Individual essence kept in sync using PTP timing
Where are we now?

Final Committee Draft Stage

System Timing and Definitions: SMPTE ST 2110-10
- Covers the system as a whole, the timing model, and common requirements across all essence types

Uncompressed Active Video: SMPTE ST 2110-20
- Documents the IP transport of uncompressed active video using an RTP format based on IETF RFC 4175

PCM Digital Audio: SMPTE ST 2110-30
- Documents and constrains the use of IP-encapsulated PCM audio in a manner based on and compatible with AES67 in such systems
Where are we now? (continued)

Pre-Final Committee Draft Comment Stage

Video Sender Traffic Shaping: SMPTE ST 2110-21
• Specifies the traffic shaping model for senders and corresponding requirements on receivers of SMPTE ST 2110-20 (video) streams

Ancillary Data: SMPTE ST 2110-40
• Documents the IP transport of SMPTE ST 291 ancillary data using an RTP mapping based on an IETF draft

IETF Standard close to completion, next active topic for 32NF60 SVIP Drafting Group
NAB 2017 IP Showcase

• 41 Vendors
• 12 Racks of Equipment
• Cameras, Integrated Playout, Signal Processing, Audio Consoles, Servers, Gateways, PCI interface cards, switches, multi-viewers
• All demonstrating interoperability to the Final Draft of ST 2110
Question #1: Will your company be shipping SMPTE ST 2110 product to market in 2017 (not including alpha, beta or proof of concept)?
Survey Results from April 2017

Question #2: Please list the categories you plan to ship (in 2017).

The “Grubby Hands” Behind the Curtain

JT-NM Engineering Interops

- March 2017 (ST 2059)
- February 2017 (ST 2110/IS-04)
- August 2016 (TR03/ST 2022-6/IS-04)
- June 2016 (ST 2059/AES 67)
- January 2016 (ST 2022-6/TR03)

Fox Network Center (FNC) in The Woodlands, TX
NMOS Incubator Workshops

Held at multiple locations

~3 to 4 times per year
AMWA IS-04 allows users to discover their devices in the network and do basic connection management.

This automates what is a manual process with SDI based systems.
Where do we go from here?

- Finish the base set of ST 2110 documents
- Add support for compressed video payloads
- Extend capability/scalability of AMWA IS-04
- Deploy

POCs are on-going with major deployments planned for Q1 2018
JT-NM Roadmap of Networked Media Open Interoperability*

I. SDI over IP
- SMPTE ST 2022-6
- AES67
- SDI over IP
- Audio over IP
- Serial Digital Interface

II. Elementary flows
- VSF TR-03
- SMPTE ST 2059
- ST 2110
- Timing
- Transport of uncompressed essence

III. Auto-Provisioning
- AMWA IS-04
- Discovery & Registration
- AMWA NMOS
- Network Ctrl & Device connection mgt

IV. Dematerialized facilities
- Virtualized functions
- Cloud-fit
- Distributed and on-demand workflows
- Automated resource management for more flexible and sharable infrastructure at scale
- More flexible and efficient workflows
- New formats supported like UHD and mezzanine compression
- Start implementing IP with current workflows
- Ease remote production
- Current and mature technology
- Available for many years and evolving

Legend:
- Standard / Specification
  - Published
  - Widely available

* JT-NM assumption as of April 2017 and will evolve over time. Visit JT-NM.org for the latest update. Feedback to jt-nm-info@videoservicesforum.org
Thank You