



A/V Standards for Pro A/V How and Why

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Why standards for a market that doesn't use them?

- Interoperability
- Interoperability
- Interoperability



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We had A/V standards before

- Analog Video – NTSC/PAL/SECAM broadcast
- Analog Audio – 600/150 ohm balanced – Broadcast Radio
- Digital Video – Serial Digital Interface (SDI) – Broadcast SMPTE
- Digital Audio – AES varieties – Broadcast AES
- Now we move to IP

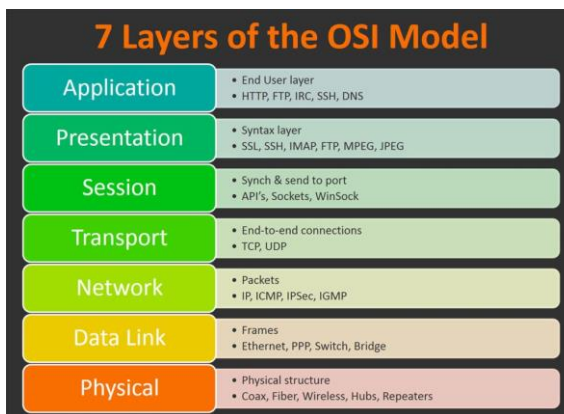


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Internet Protocol (IP) is a STANDARD!

- OSI Model is IP
 - PHY
 - ETHERNET
 - UDP
 - RTP
 - PTP



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Standards Groups provide the means

- IETF (Internet Engineering Task Force)
 - RFC's (Request for Comments) formal documents
- IEEE (Institute of Electrical and Electronics Engineers)
 - Standards for many things including time (1588)
- SMPTE (Society for Motion Picture & Television Engineers)
 - Video Standards – 259M, 292M, 424M
- AES (Audio Engineering Society)
 - Audio Standards – AES67, AES3



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So why is Pro A/V avoiding IP standards?

- Interoperability
- Interoperability
- Interoperability



The prevailing theme is VERY dangerous!

Nearly all Pro A/V IP derivations are
PROPRIETARY



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What's the AIMS way?

SMPTE 2110 Suite of Professional Standards

- 2110 – 10 Timing and Synchronization (IEEE 1588 based)
- 2110 – 20 Video (RFC 4175)
- 2110 – 30 Audio (AES67)
- 2110 – 40 ANC data (SMPTE 291)
- NMOS Registration & Discovery



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What's missing for Pro A/V?

The Roadmap for Pro A/V is missing!

- 2110 – 22 Compressed video
 - VC-2 (SMPTE 2042)
 - TICO XS (JPEG XS)
 - Other Registered codecs such as H.264/265



While we have compression solutions what about the rest?



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The missing links!*

- HDCP
- Simplified Timing
- Secondary interfacing
 - USB (standard)
 - GPI/GPO (standard)
 - RS 232 (standard)
 - EDID (standard)
- Encryption & Security



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HDCP

- HDCP 2.2 (High bandwidth Digital Content Protection)
 - Intel based
 - AIMS Pro A/V has begun preliminary discussions
- Used for HDMI interfaces
- Allows 4K and lower



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Simplified Timing

- PTP timing may be too much for Pro A/V
- Easier methods for non-synchronous signal types



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Secondary Interfaces

- USB
 - USB to IP needs a common methodology to/from IP
 - Very common interface among thousands of devices
- GPI/GPO
 - Common methodology for triggering events via contact closure
- RS 232
 - This is pretty much common among manufacturers but a common method needs to be identified
 - Other types could be included such as RS422, RS 495, etc.



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Security & Encryption

- Security in IP is key to success
- Various methodologies
 - FIPS 140-2 crypto means
 - Certificate means
 - Others



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Standards Basics

Getting involved

- Join AIMS!
 - Bring your ideas and start the process
- Participate in allied bodies
 - VSF (Video Services Forum)
 - AMWA (Advanced Media Workflows Association)
- Invite from other organizations
 - CEA for example



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Thank you

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