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Standards for IT-Based Systems

Last year, I wrote about the initiatives that SMPTE is undertaking in developing standards for the all-IT-based facility. In the intervening year, a lot has transpired, but there is still much work to be done. The industry demand to transition facility infrastructures based on SDI interfaces to IT infrastructure and packet networks is becoming more urgent. Fundamental to this transition is the user demand for interoperable, open systems that allow mixing and matching of products from different vendors to meet users' needs. There is a strong sentiment, both in the user and manufacturer communities that managing this transition from traditional infrastructures is critical, and time is of the essence.

The Joint Task Force on Networked Media (JT-NM) was formed by SMPTE, the European Broadcasting Union; the Video Services Forum (VSF) and the Advanced Media Workflow Association continue to provide a coordination effort in the transition from purpose-built broadcast equipment and interfaces (SDI, AES, crosspoint switcher, and so on) to IT-based packet networks (Ethernet, IP, servers, storage, cloud, and so on). To that end, JT-NM co-sponsored a very successful demonstration of IP technology at IBC in September and plan to do so again at NAB this year. JT-NM has updated their Roadmap of Networked Media Open Interoperability showing how the range of

underlying technologies is expected to evolve, and the expected time-frame for building an interoperable multivendor system around these standards/specifications. You can download the roadmap at <https://tech.ebu.ch/docs/groups/jtnm/jtnmroadmap.pdf>.

Crucial to the successful networked plant is the requirement to have facility-wide timing methods to keep multiple audio, video, and data streams in the same transport in sync (lip sync); to keep multiple media streams synced together (link sync); and to keep streams and end points synced to a common timing reference where required (nodal sync). In April 2015, SMPTE standardized a new network-based synchronization system in the multipart document suite SMPTE 2059. The initial two standards provide the foundation for the system. A new engineering guideline published in 2016 describes basic ideas, concepts, and use cases of the new synchronization system. SMPTE has been conducting PTP interoperability testing among various vendors who have deployed SMPTE 2059 systems. The goal of the testing is to confirm that the provisions of the standards are unambiguous and that the technology does, indeed, yield the intended results. A report from the most recent tests in June 2016 is posted on the SMPTE website at <https://www.smpete.org/standards/reports>.

Technology Committee 32NF is working on a project to develop a suite of standards specifying the carriage, synchronization, and description of separate elementary

essence streams over IP for live production. There is interest in the industry for the completion of this standard. The work is going on in the 32NF-60 Studio Video over IP Drafting Group. The resulting standards, based on VSF Technical Recommendations TR-03 and TR-04, will be numbered ST 2110. The current document plan foresees at least six parts:

- ST 2110-10 System Timing and Definitions
- ST 2110-20 Uncompressed Active Video
- ST 2110-21 Timing Model for Uncompressed Active Video
- ST 2110-30 PCM Digital Audio
- ST 2110-31 AES3 Transparent Transport including transport of non-PCM/compressed audio over AES3
- ST 2110-40 Ancillary Data
- ST 2110-50 Interoperation of ST 2022-6 streams.

As of March 2017, ST 2110-10, -20, and -30 have completed ballot to become Final Committee Drafts, and are in the comment resolution stage. The remaining parts are in the Working Draft stage. In an interop event held by the VSF and JT-NM in February 2017, 23 vendors recently tested draft standard versions of ST 2110.

The next few years will be filled with change for the media industry. And I believe that the relevant SMPTE standards will help guide this transition from traditional infrastructures, through hybrid systems to an all-IT-based infrastructure. Stay tuned!

