SMPTE REGISTERED DISCLOSURE DOCUMENT

Essence-independent IP Live Networked Media Transport

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Errors in this document should be reported to the proponent identified below, with a copy to eng@smpte.org.

All other inquiries in respect of this document, including inquiries as to intellectual property requirements that may be attached to use of the disclosed technology, should be addressed to the proponent identified below.

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Introduction

Although network systems have become common in file-based applications, until recently it has been difficult to apply networking technologies to live production applications in which there is a strong requirement for real-time processing.

However, with the continuing rapid evolution of networking technologies, there is now a trend towards the use of networked systems for live production applications.

This RDD describes an IP-based transport mechanism (referred to hereafter as ‘IP mapping') intended mainly for live production applications.

1 Scope

This RDD defines the IP mapping which includes the following main characteristics:

1. Essence-independent mapping

   Each essence (video, audio and ancillary data) can be dealt with independently.

2. Packet protection using FEC and/or hitless failover

   Appropriate protection can be chosen according to application requirements.

3. Frame-boundary-aware mapping for both essence and FEC

   Frame accurate processing can be performed in both essence and FEC.

4. Support for up to 4K uncompressed and compressed video

   Either uncompressed video or compressed video can be chosen up to 4K video seamlessly according to application requirements.

2 Normative References

IETF RFC 3550, RTP: A Transport Protocol for Real-Time Applications

IETF RFC 3551, RTP Profile for Audio and Video Conferences with Minimal Control

SMPTE RDD 34:2015, LLVC — Low Latency Video Codec for Network Transfer

SMPTE ST 125:2013, SDTV Component Video Signal Coding 4:4:4 and 4:2:2 for 13.5 MHz and 18 MHz Systems

SMPTE ST 272:2004, Television — Formatting AES Audio and Auxiliary Data into Digital Video Ancillary Data Space

SMPTE ST 274:2008, Television — 1920 × 1080 Image Sample Structure, Digital Representation and Digital Timing Reference Sequences for Multiple Picture Rates

SMPTE ST 291-1:2011, Ancillary Data Packet and Space Formatting

SMPTE ST 296:2012, 1280 × 720 Progressive Image 4:2:2 and 4:4:4 Sample Structure — Analog and Digital Representation and Analog Interface

SMPTE ST 299-1:2009, 24-Bit Digital Audio Format for SMPTE 292 Bit-Serial Interface

SMPTE ST 424:2012, 3 Gb/s Signal/Data Serial Interface

SMPTE ST 425-1:2014, Source Image Format and Ancillary Data Mapping for the 3 Gb/s Serial Interface

SMPTE ST 425-3:2015, Image Format and Ancillary Data Mapping for the Dual Link 3 Gb/s Serial Interface

SMPTE ST 425-5:2015, Image Format and Ancillary Data Mapping for the Quad Link 3 Gb/s Serial Interface

SMPTE ST 2022-5:2013, Forward Error Correction for High Bit Rate Media Transport Over IP Networks (HBRMT)

SMPTE ST 2036-1:2014, Ultra High Definition Television — Image Parameter Values for Program Production

SMPTE ST 2048-1:2011, 2048 × 1080 and 4096 × 2160 Digital Cinematography Production Image Formats FS/709

SMPTE ST 2059-1:2015, Generation and Alignment of Interface Signals to the SMPTE Epoch