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ATIS COAST-SYNC Update

Lee Cosart
COAST-SYNC Chair
WSTS 2014

My Current ATIS/ITU Responsibilities

ATIS: “Alliance for Telecommunications Industry Solutions”

ATIS:

- COAST-SYNC Chair
- Editor - most recently *Synchronization Interface Standard (Published Feb 2014)*

ITU-T Q13/SG15:

- Editor - G.8275.2 *Partial Timing Support (PTS) Time/Phase IEEE 1588 Profile*

Technical Reports:

Synchronization of Packet Networks (2007)

Metrics Characterizing Packet-Based Network Synchronization (2010)

Intra-office Synchronization Architecture (2013)

Synchronization Standards:

Physical Interconnection for Intra-Office Ethernet-based Timing Distribution (2009)

Synchronization Interface Standard (2013)

Ongoing activity:

Time profile discussions coordination US/ITU

GPS jamming/spoofing

Prior Name: OPTXS-SYNC (before April 2010)

Originally: ANSI T1X1.3 (before 2005)

ATIS COAST-SYNC Publications

ATIS American National Standards

- ATIS-0900101.2013 (formerly T1.101-1999), Synchronization Interface Standard
- ATIS-0900105.03.2013, Synchronous Optical Network (SONET) - Jitter and Wander at Network and Equipment Interfaces
- ATIS-0900105.09.2013, Synchronous Optical Network (SONET) - Network Timing and Synchronization
- ATIS-0900002.2009(R2014), Synchronization Standard – Physical Interconnection for Intra-Office Ethernet-based Timing Distribution

ATIS Technical Reports

- T1.TR.06-1990, Slave Stratum Clock Performance Measurement Guidelines
- T1.TR.08-1991, Jitter Measurement Methodology
- T1.TR.09-1991, Maximum Skew One-Tenth Maximum (MSTM) Model for Mode-Partition Noise (MPN)
- T1.TR.17-1993, The Effects of SONET on Payload Output Jitter
- T1.TR.33-1994, Synchronization Network Management Using Synchronization Status Messages
- T1.TR.52-1996, Value and Interpretation of Digital Pulse Masks and Eye Patterns
- T1.TR.81-2003, Synchronization Network Architecture
- ATIS-0900001 (2008), Synchronization and Packet Networks
- ATIS-0900003 (2011), Metrics Characterizing Packet-Based Network Synchronization
- ATIS-0900004 (2013), Intra-Office Synchronization Architecture

ATIS Recent Releases

Synchronization of Packet Networks, Technical Report, ATIS-0900001 (2008)

- Origins trace back to 1995/1996 in T1X1.3 when impact of ATM cell-delay-variation was discussed (c.f. T1X1.3/96-086)
- Very broad scope including timing distribution, mechanisms for timing over packet, circuit emulation, different packet transport technologies (IP, ATM, MPLS, Ethernet, xDSL, PON)

Physical Interconnection for Intra-Office Ethernet-based Timing Distribution, Synchronization Standard, ATIS-0900002.2009 (April 2010)

- Content addresses the “physical layer”
 - Covers “copper” (electrical) as well as “fiber” (optical) transmission
 - Includes 100Mbit/s as well as 1000Mbit/s Ethernet formats
 - Connectorization

Metrics Characterizing Packet-Based Network Synchronization, Technical Report, ATIS-0900003 (May 2011)

- Started as Issue SYNC 010 April 2010, completed and consented October 2010
- Related to material in G.8260 Appendix 1
- Discusses packet frequency transport metrics
 - Defines packet time sequence, PDV measurement
 - Pre-processed and integrated packet selection
 - Includes such metrics as minTDEV, MATIE, and MAFE

ATIS Current Work

New Technical Report

- ATIS-0900004 (2013), *Technical Report: Intra-Office Synchronization Architecture*
 - Description of methods for delivering a timing (time/frequency) reference from TSG (BITS) to Network Element in an intra-office environment with emphasis on performance aspects
 - Addresses both time and frequency distribution
 - Covers PTP (IEEE 1588), NTP, Synchronous Ethernet, DOCSIS Timing Interface (DTI)

Standards Updates

- ATIS-0900101 (2013) *Synchronization Interface Standard (published Feb 2014)*
- ATIS-0900002.2009(R2014) *Physical Interconnection for Intra-Office Ethernet-based Timing Distribution*
- ATIS-0900105.03.2013 *Synchronous Optical Network (SONET) – Jitter at Network Interfaces*
- ATIS-0900105.09.2013 *Synchronous Optical Network (SONET) – Network Element Timing*

ATIS Current Work

GPS backup

- GPS vulnerability: jamming and spoofing
- COAST-SYNC/ATIS activities related to GPS backup:
 - Correspondence with DHS on backup to GPS for precise time and frequency distribution
 - Letter to DHS (March 2014) highlighting current telecom technologies and the criticality of GPS vulnerability
 - Letter to FCC reviewing LightSquared GPS interference (LightSquared filed for bankruptcy May 2012)
 - Light Reading Conference on GPS Interference Nov 2012 including “GPS Security Vulnerabilities In The Mobile Networks and Alternative Synchronization Solutions” by James Armstrong (ATIS Board Member, CTO Symmetricom)
 - DHS GPS vulnerability meeting Feb 2013
 - ATIS “GPS vulnerability and implications for telecom” webinar with Todd Humphreys (UT Austin), Martin Nuss (CTO Vitesse), and James Armstrong (CTO Symmetricom) Feb 2013
 - NIST-DHS-USNO experiment to transfer time through a public network (future)
 - Technical Report planned – Editor: Marc Weiss (NIST)

Thank You

Lee Cosart

Senior Technologist

Lee.Cosart@microsemi.com

Phone: +1-408-428-6950