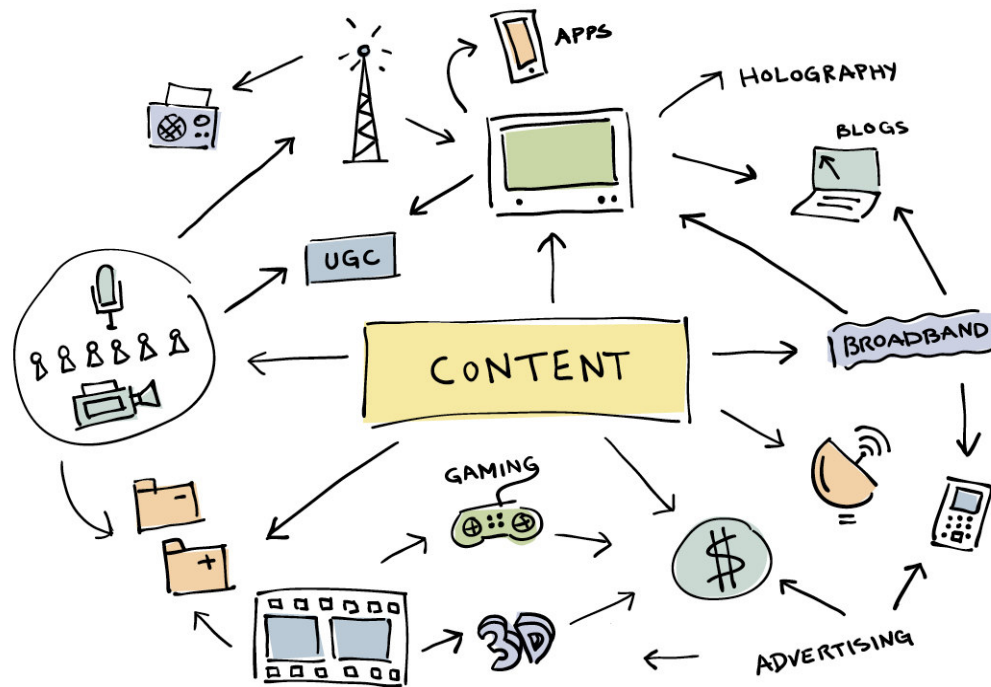


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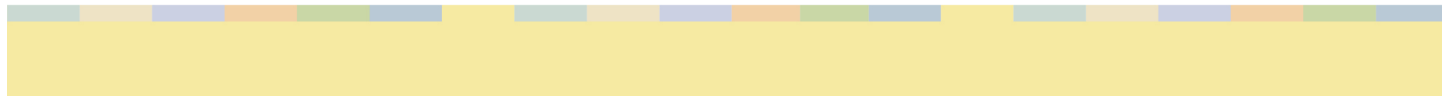
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Status on MPEG, Internet Protocol and Ethernet Jitter Improving Technologies for Broadcaster Content in Broadband Networks

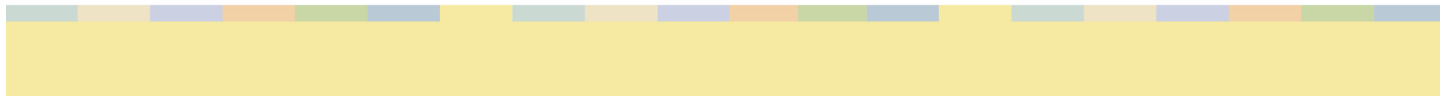
D. Kelly Daniels



Internet Protocol and Ethernet Still Focus of Corrections



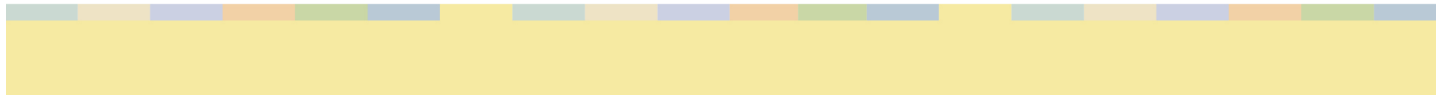
- Sync E Protocol and IEEE 1588 Grand-master and Slave Clock are still the solution for a Multicast Video and Streaming Media Transport.
- Ixia and Tektronix have developed test suites and test probes to confirm operation of both protocols for compliance to protocol processing and network performance.
- Real-Time Protocol adopted for IPTV and Switched Digital Video Model because of SNTP Time Stamping solutions that already exist in RTP designs.
- MPEG packet processing remains the same, reliance on encoding of content and decoding at STB.



Precision Timing Protocol vs Synchronized Ethernet



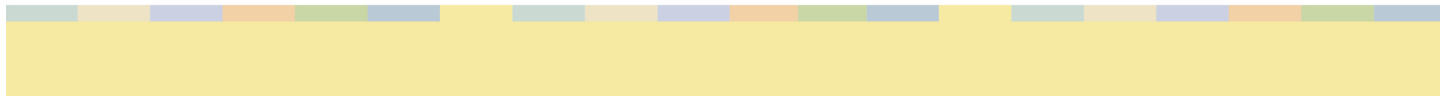
- Precision Timing Protocol
 - IEEE 1588 v2
 - Relies on highly accurate Head-end time source.
 - Router Function Call for Time Stamp update.
 - Correlation of Time Reference (Slave) using Protocol at Client operation in STB (enabled decoding device).
- Synchronized Ethernet
 - ITU 8261, 8262 & 8264
 - Time Source currently uses GPS/Stratum but will evolve into more precise time reference methods.
 - Analogous to Synch Byte Message in SONET/SDH transport
 - The Sync Byte must be present end-to-end in the Ethernet Port messaging.



In the Past Year



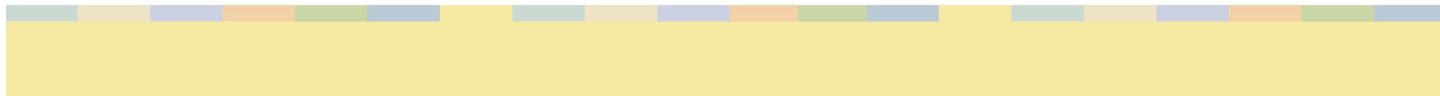
- Cisco joins Alcatel, Rivelut and Tellabs in deploying Precision Timing Protocol in Router configuration support.
- Test Equipment manufactures are now providing test equipment that uses ITU and IEEE models for protocol conformance.
- Test Equipment manufactures are now testing end-to-end performance in test suites improved over Media Delivery Index and V-Factor models for Video Quality.
- Real-time Protocol over-takes Multi-cast as preferred protocol for IPTV delivery.
- Digital Timing Interface is still preferred method in DOCSIS Broadband delivery networks.



Recent Developments in Preparing Content for IPTV Broadcasting.



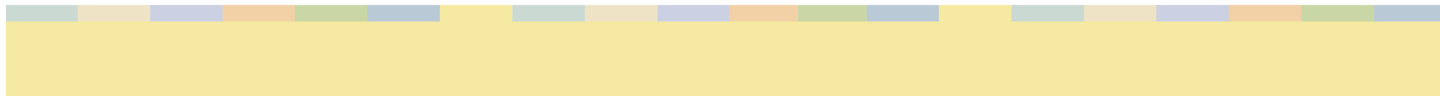
- Test Results using 50 Mbps recording camera are in for High Definition TV in MPEG-3 verse MPEG-4. At 8-10 Mbps HD performs on Par using MPEG-4 compared to MPEG-2. At 18 Mbps, HD in MPEG-4 is as good as Standard Definition in MPEG-2. At higher bit rates, Hi-Def deteriorates in MPEG-4. Apparently too much compression takes place and cannot be properly stuffed for larger bandwidth or larger viewing areas.
- Expect Higher Mbps Recording of Hi-Def to perform much better at higher bit rate Broadband networks.



Future Work in Jitter Improvement Techniques



- TIC-TOC Committee work to incorporate concept of “Carrier Grade Synchronization” in Internet Protocol is suspended.
- Work from TIC-TOC has been adopted by many and may resume further specification in the Internet Engineering Task Force Committee for NTPv4 work in-progress already.



Bibliography/References



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- Presenter – D. Kelly Daniels, Telco Planning, Inc.

