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IETF Standards Update

Doug Arnold & Greg Dowd

Symmetricom, Inc.

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IETF 86 Social: Harry Potter World, Universal Studios

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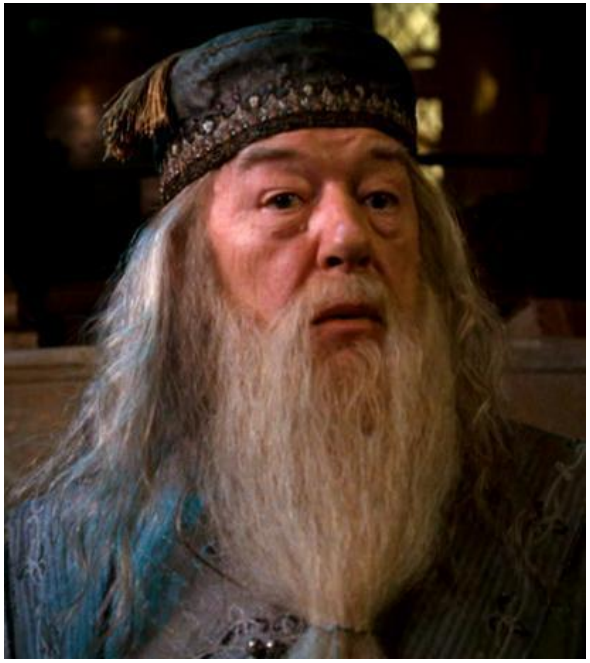
Wizard or IETF participant?



TICTOC Working Group

- **T**iming over **I**P **C**onnection and **T**ransfer **o**f **C**lock
  - Chairs:
    - Karen O'Donoghue, Internet Society
    - Yakov Stein, RAD Data Communications
  - Concerned with highly accurate time and frequency distribution over native IP and MPLS-enabled IP Packet Switched Networks
  - Effectively merged with NTP working group
- Current drafts in 5 areas:
  - Transport
  - Management
  - Security
  - NTP
  - RTP

List of Current Internet Drafts

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- Transport
  - Timing over MPLS — *draft-ietf-tictoc-1588overmpls-04*
  - Securing Model-C Inter-Provider (L2) VPNs with Label Hopping — *draft-mjsraman-l3vpn-tictoc-label-hop-03*
  - Multi-Path Time Synchronization — *draft-mjsraman-l2vpn-tictoc-label-hop-03*
  - PTP Enterprise Profile — *draft-shpiner-multi-path-synchronization-01*
- Management
  - PTP MIB — *draft-ietf-tictoc-ptp-enterprise-profile-02*
- Security
  - Security Requirements of Time Synchronization — *draft-ietf-tictoc-ptp-mib-05*
  - Autokey Version 2 Specification — *draft-ietf-tictoc-security-requirements-04*

draft-sibold-autokey-02

List of Current Internet Drafts (cont.)

- NTP
  - Using NTP Extension Field without Authentication — *draft-mizrahi-ntp-extension-field-01*
  - Autokey Version 2 Specification (also in security list) — *draft-sibold-autokey-02*
- RTP
  - RTP Clock Source Signalling — *draft-ietf-avtcore-clksrc-03*

Transport: Timing Over MPLS

- Status
  - Active Internet Draft
  - Goal of Last Call in this month
- Purpose
  - Describe how NTP and PTP shall be sent by MPLS
  - Addresses complications unique to timing protocols
- Features
  - Encapsulation
    - UDP/IP
    - Ethernet
  - MPLS-TP supported
  - Defines Timing LSR, LER

Transport: VPN Label Hop

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- Status
  - Individual submission
- Purpose
  - Defines a method for securing Inter-Provider VPN “Model C”
- Features
  - combination of label-hopping and PTP to mitigate spoofing and replay attacks

Transport: Multipath PTP/NTP

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- Status
  - Individual submission
  - Second version posted to reflector
  - Authors also participating in IEEE 1588
- Purpose
  - Increase robustness and security by sending redundant timing messages over multiple network paths
- Key features
  - Assumes network technology to support multi-path
    - Not covered in document
  - Discusses case where both or only one end device have multipath capability

Transport: PTP Profile for Enterprise Networks

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- Status
  - Mailing list item
- Purpose
  - A PTP profile tailored to the needs of IT network administrators
- Significant features
  - Layer 3 only: IPv4 or IPv6
  - End to end delay measurements
  - On path support allowed, but not required
  - Multicast sync and announce, unicast delay request
  - Multiple masters allowed

Management: PTPv2 MIB

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- Status
  - Active Internet Draft
  - Authors have asked for a last call (second attempt)
  - Alan Luchuk (SNMP Research) created SNMP agent to aid in review
- Purpose
  - Create a general purpose MIB for PTP
  - Emphasis on needs of L3 PTP, including Telecom Profile
    - Not covered by existing L2 profile MIBs
- Features
  - PTPv2 only
  - Asymmetry correction
  - Read only

Security: Requirements for NTP and PTP

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- Status
  - Active Internet Draft
- Purpose
  - Summary list of threats and counter measures
  - Describes the requirements, not the implementations.
- Features (some of the MUSTs)
  - Authentication & authorization of sender, master, management messages
  - Integrity protection
  - Replay protection
  - Key freshness

Security, NTP: Autokey Successor Proposal

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- Status
  - Individual submission
  - TICTOC in discussion with NTF
  - Author plans to join IEEE 1588 WG
- Purpose
  - Update and improve on the NTP Autokey security mechanism
  - Provide authenticated NTP
- Key Features
  - Based on standard PKI technology
  - Digital signature chain does not have mirror NTP stratum hierarchy
  - Updated list of hash codes

NTP & RTP

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NTP Extension Field Without Authentication

- Status:
  - Individual submission
- Purpose:
  - Describes the use of NTP Extension Field without the current mandatory cryptochecksum

RTP Clock Source Signaling

- Status
  - avtcore working group draft
- Purpose
  - Defines to better use the NTP timestamps included in RTP streams.

General TICTOC Observations

- TICTOC is an active working group
  - 3 meetings
  - 10 drafts active
  - 135 messages on mailing list since last WSTS
- Well positioned to develop common approaches for handling NTP and Layer 3 PTP
- Served as place to discuss PTP in absence of active IEEE 1588 committee
  - Some TICTOC work will feed into IEEE 1588 Working Group
  - Stay active in the IETF as well for NTP/PTP common handling

Thank You.

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Doug Arnold

darnold@symmetricom.com

Greg Dowd

gdowd@symmetricom.com