New IEEE 1588 Revision

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Agenda

- IEEE-1588^{TM} Revision
- Project Authorization Request (PAR)
- PAR Items
- Sub Committees

Geneva, Switzerland,13 July 2013

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IEEE 1588 Revision

- Working Group to revise IEEE 1588 was formed

- Project Authorization Request (PAR) was approved in June 2013

- Officers
  - Kang Lee (NIST), Sponsor, Project Manager
  - John Eidson, (Calnex Solutions): Co-Chair
  - Doug Arnold (Meinberg): Co-Chair
  - Hans Weibel (ZHAW), Vice-Chair
  - Silvana Rodrigues (IDT): Secretary
  - John Mackay (Progeny Systems): Editor

Scope of the PAR

- Several items have been included in the Scope of the PAR
  - Correct known technical and editorial errors
  - Precision and accuracy improvements
  - SNMP-compliant MIB
  - Security
  - Clarification of layering, interfaces, and protocol of the standard
  - **Backwards compatibility with version 2**

- Some proposals are not explicitly stated in the Scope of the PAR, as they were covered by other proposals

Working Group technical work

- Five sub committees have been created to focus on several aspects of the technical work
  - Architecture
  - High Accuracy
  - Upkeep
  - Management
  - Security

- Each sub committee meets once or twice a month via conference call
  - A charter and a requirements document have been created for each sub-committee

Architecture

- Charter
  - "It needs to clarify the layering, interfaces, and protocol of the standard, including the behavior of systems that deploy different protocol options"

- Needs clarification in IEEE 1588
  - Guidelines on the interaction of different profiles
  - Support of multiple profiles on the same network
  - Revise the description of the IEEE 1588 architecture and layering of the protocol (e.g. media dependent versus media independent interface)
  - Make it easier to make future modifications in IEEE 1588
  - Reduce duplication between SDOs (ex. IEEE 802.1AS and IEEE 1588)
  - Mixed mode multicast (sync/Announce) and unicast (delay_req/delay_resp)
  - SC is working on a proposal describing constraints on alternate BMCAs

High Accuracy

- Charter
  - "The protocol enhances support for synchronization to better than 1 nanosecond"

- Proposal includes the option to use Synchronous Ethernet for frequency synchronization at the physical layer

- Add clause(s) and/or informative annex to clearly describe the steps when a PTP link is being established for high accuracy
  - Definitions of dataset fields and TLVs
  - High Accuracy state machine
  - Mechanism to perform measurements and calibration

- Example on how to use the mechanism to achieve high accuracy

- The requirements document has been finalized

IDT.

Upkeep

- Charter
  - "Incorporate official IEEE interpretations and other known errors or needed clarifications into 1588-2008 in order to provide a clean version as a basis for modifications of the current P1588 working group.
  - Once this is done serve as a 'quality control' function for any modifications proposed by other committees to ensure freedom from inconsistencies and backward compatibility issues."

- Working on proposals to correct known technical and editorial errors

- Several items dealt at the IEEE 1588 Interpretations Committee have been addressed
  - A proposal to clarify Transparent Clock Source Address has been accepted
  - Working on text to add clarity throughout the standard
    - Ex. ClockIdentity, Announce Receipt Timeout, Unicast

Management

- Charter
  - "The management SC will consider the management of IEEE 1588 clocks, e.g. MIB, related management protocols (SNMP and native management protocol), and OAM mechanisms."

- The proposal is to create a single IEEE 1588 MIB

- IEEE C37.238 (Power profile) and IEEE 802.1AS have defined their own MIB

- They are also looking for a mechanism to allow in-service monitoring of synchronization quality

Security

- Charter
  - "To specify a security capability for PTP. This capability is expected to be optional"

- The requirements document is based on the IETF document "draft-ietf-tictoc-security-requirements"

- Potential technologies that could be use as basis
  - MACSec – link (MAC) based
  - IPSEC
  - Adapt/change/improve Annex K, or deprecate it?

- Detailed discussions going on potential solutions

Other Proposals

- Several working items have been proposed such as
  - Mapping of IEEE 1588 to 802.11 using 802.11v
  - Multiple time sources and multiple time distribution methods
  - Review IPv6 mapping
  - Multilane Ethernet (e.g. 40 and 100 Gigabit)

Working Group working process

- Plenary conference calls are scheduled once a month
  - Third Wednesday of each month at 11AM Eastern Time

- Sub committees meets once or twice a month via conference call
  - Calendar for the conference calls are available for members at IEEE Central Desktop

- Three face-to-face plenary meetings
  - Two 4-day meeting
  - One 1-1/2 day meeting in the fall collocated with ISPCS (International IEEE Symposium on Precision Clock Synchronization for Measurement, Control and Communication)

P1588 Working Group

- Public web site
  https://ieee-sa.centraldesktop.com/1588public/

- To join the IEEE P1588 WG
  - Create an email (subject line: IEEE P1588 WG participation)
  - Include your name, organization, email, & phone number, and submit to:
    Silvana Rodrigues
    IEEE P1588 Working Group Secretary
    silvana.rodrigues@idt.com

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THANK YOU!

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