2019 International IEEE Symposium on Precision Clock Synchronization for Measurement, Control, and Communication

September 22-27, 2019 | Portland, Oregon, USA

ISPCS 2019

International IEEE Symposium on Precision Clock Synchronization for Measurement, Control, and Communication

AN OPPORTUNITY FOR PARTICIPATION FROM THE IEEE 802.1 WORKING GROUP

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March 2019

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WHAT IS THE PURPOSE OF THIS PRESENTATION?

- The IEEE 802.1 Working Group has an opportunity to participate in the 2019 International Symposium on Precision Clock Synchronization (ISPCS).

- The event will take place September 22-27, 2019 at the Crown Plaza Hotel in Portland, Oregon.

- The intent of this presentation is to provide enough background information to allow the members of the IEEE 802.1 Working Group to make an informed decision at the closing plenary regarding a motion to participate in this event.

- Note: "participate" means to be prominently listed on the conference web site and other materials, and a speaking opportunity.

WHAT IS ISPCS? ispcs.org

- Since 2007, the objective of the symposium has been to provide a forum for researchers and practitioners from industry, academia, national laboratories and government involved in the area of Precision Clock Synchronization and Distributed Time-based Applications.

- ISPCS is sponsored by the IEEE Instrumentation and Measurement Society and is focused on enabling the use of IEEE 1588 and related standards in the market.

- Organized by industry leaders such as John Eidson, 'father' of IEEE 1588

- 2018 promotional partners of the conference included: Meinberg, ALBEDO Telecom, Microsemi, MOBATIME, National Instruments, NetTimeLogic, Oscilloquartz, Qualsar, OMICRON Lab

ISPCS Symposium Topics

- Distributed applications based on synchronized clocks:

  - Software, hardware, and system architecture
  - Time-based programming models
  - Design environments and tools
  - Distributed algorithms using or based on synchronized clocks
  - Robustness of distributed time-based systems
  - Fault tolerance in distributed time-based systems
  - Security in distributed time-based systems

  - Application requirements studies
  - Case studies and field experience
  - Analytic, modelling, and simulation studies
  - Time-based cyber-physical systems
  - Time synchronization for robotics and control
  - Time synchronization for cloud computing infrastructure
  - IaaS Data Plane & PaaS Control/Management Plane

- Clock synchronization technology:

  - Design, usage and research concerning IEEE 1588
  - Systems with heterogeneous synchronization technologies
  - Synchronization performance test and evaluation tools
  - Analytic, modelling, and simulation studies
  - Clock system management
  - Timing security and robustness
  - Synchronization over gigabit, fiber, and wireless networks
  - Local and wide-area synchronization
  - Servo design for slave clocks

  - Device design and application support
  - Conformance testing and system integration issues
  - Time and frequency distribution
  - Emerging and potential markets, e.g., smart grid, highfrequency trading, and other applications of PTP
  - Work-In-Progress reports

WHAT BENEFITS DO ATTENDEES EXPECT TO RECEIVE?

- What would make attendees want to come to this event? Companies new to Precise Clock Synchronization can get a quick-start introduction and companies that have been previously involved can learn what has happened over the last year. The program for this year's event will be found here: https://www.ispcs.org/

- Attendees will following opportunites:
  - Learn practical information about IEEE 1588 deployment at the **ISPCS Sync School** **ispcs.org/pages/ispcs-sync-school**
  - Participate in the **Plugfest**, exploring new IEEE 1588 features & all profiles **ispcs.org/pages/plugfest**
  - Meet suppliers and users of the technology
  - Keynotes, Panel discussions, **Conference** presentations and Poster Sessions of Works in Progress
  - Collaborate with other companies
  - Gain exclusive access to information on current developments and upcoming solutions

Taking a look back...

- Plugfest at CERN with leading timing experts and companies

- https://photos.google.com/share/AF1QipOCa99Jb5ujnJsUjhM0BCWtSfroYisJ8xgltTvHZhCZkvge9gm_7gyN18ogxnxMVA?key=cUtLY0J0RDkxbFl1aG1mZUJvT0ZrZDNsaFVQdG1R
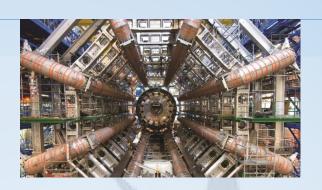

- ISPCS 2018 – at CERN

- http://2018.ispcs.org/

Plugfest

- 25 Organizations

- 70 Devices

- >15 Profiles tested

Conference

- 22 Presentations

- 124 Attendees

Taking a look back ... 2018 Papers

PTP Security

- Secure Time Synchronization Protocol
- Implementing Proposed IEEE 1588 Integrated Security Mechanism
- A hardware assisted implemenation of Time Varying Encryption System

Time and Frequency Distribution

- Time and Frequency Distribution over fibre for Geodesy, Seismology and Industry
- Exploiting Time Synchronization as Side Effect in UWB Real-Time Localization Devices
- Analysis of Controlled Packet Departure to Support Ethernet Fronthaul Synchronization via PTP
- Practical Traceability to UTC(k) from a GNSS Timing Receiver

PTP and Measurements

- Measurement Tools for Substation Equipment: Testing the Interoperability of Protocols for Time Transfer and Communication
- Delayed Authentication and Delayed Measurement Application in One-Way Synchronization
- A Software-based Low-Jitter Servo Clock for Inexpensive Phasor Measurement Units
- Comparison of Software-Defined Radios for Performance Evaluation of High Precision Clocks

- A Calibration of Timing Accuracy in NIST Cyber-Physical Systems Testbed

PTP Protocol and Devices

- A Fast and Stable Time Locked Loop for Network Time Synchronization with Parallel FLL and PLL
- Improved Precision Time Protocol with Relative Clock Phase Information
- OpenClock: A Testbed for Clock Synchronization Research
- Prototype Implementation and Performance of Time-based Distributed Scheduling on Linux for Real-Time Cyber-Physical Systems

PTP in Wireless

- IEEE 1588 Clock Synchronization Performance over Time-Varying Wireless Channels
- Phase-based High-Precision Synchronization for Wireless Networks using FPGAs

High Accuracy PTP - White Rabbit

- White Rabbit Applications and Enhancements
- White Rabbit Absolute Calibration
- High Accuracy Synchronization for Distributed Massive MIMO using White Rabbit
- Impact of network component temperature variation on long haul White Rabbit links

HOW DOES 802.1 BENEFIT?

- A chance for IEEE 802.1 to introduce itself to those who may not know about us
- Exposure to users of our precise clock synchronization standards
- Introduce the IEEE 802.1 WG to future potential participants
  - Infusion of new requirements and ideas
  - Encourage more participation from real-life users (i.e. recruiting)
  - Face-to-face time with commercial users and suppliers
- On-stage opportunity to tell the attendees who we are
  - Note: Kevin Stanton (Intel) is giving one of the keynotes at this conference
- Discuss and influence future TSN adoption
- Possible table-top space in exhibition area
  - Marketing staff can provide table/display, collateral and giveaways
  - IEEE-SA Marketing has already created marketing materials
  - NOT expecting 802.1 leadership to be present (static display and/or Kevin/myself/others attending can represent 802.1)

WHAT DOES IT MEAN IF 802.1 VOTES "YES"?

- If the motion in the Closing Plenary is approved this opportunity will be submit to the EC for approval.
- Previous discussions with IEEE-SA Marketing related to other conferences have provided this feedback:
  - Once you receive EC approval, we will need to discuss expectations from IEEE-SA Marketing. Here is what I see you needing:
  - Marketing Tactics Needed (Please note required Lead Times.)
    - Collateral-flyer (Automotive and Industrial flyers already completed)
    - Ad (Lead Time: 4-6 wks)
    - E-Blast (Lead Time: 4 wks)
    - Trade Show Support/Development/Mgt (Lead Time: 12 wks)
    - Digital Community - Social Media Campaign (Lead Time:4-8 wks)
    - PR-Press Release (Lead Time: 8 wks) Mktg will engage PR Staff
    - New Giveaways (Lead Time: 8 wks)
    - Event Promotion eBlast (Lead Time:4-8 wks)

Thank You For Your Time

Is this an activity the IEEE 802.1 WG should pursue.

Questions?
Discussion?

Thanks!

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