

PC37.238

Submitter Email: billdickerson@shaw.ca
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PAR Expiration Date: 31-Dec-2012
Status: Modification to a Previously Approved PAR
Root PAR: PC37.238 **Approved on:** 26-Sep-2008
Project Record: C37.238

1.1 Project Number: PC37.238
1.2 Type of Document: Standard
1.3 Life Cycle: Full Use

2.1 Title: Standard Profile for Use of IEEE Std. 1588 Precision Time Protocol in Power System Applications **Old Title:** Standard Profile for Use of IEEE 1588 Precision Time Protocol in Power System Protection

3.1 Working Group: IEEE 1588 Profile for Protection Applications (PE/PSR/WG_PC37.238)

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3.2 Sponsoring Society and Committee: IEEE Power & Energy Society/Power System Relaying (PE/PSR)

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3.3 Joint Sponsor: IEEE Power & Energy Society/Substations (PE/SUB)

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4.1 Type of Ballot: Individual

4.2 Expected Date of submission of draft to the IEEE-SA for Initial Sponsor Ballot: 07/2011

4.3 Projected Completion Date for Submittal to RevCom: 07/2012

5.1 Approximate number of people expected to be actively involved in the development of this project: 30

5.2 Scope: This standard specifies a common profile for use of IEEE 1588-2008 Precision Time Protocol (PTP) in power system protection, control, automation and data communication applications utilizing an Ethernet communications architecture.

Old Scope: This standard specifies a common profile for use of IEEE 1588-2008 Precision Time Protocol (PTP) in power system protection, control and automation applications utilizing an Ethernet communications architecture.

The profile specifies a well-defined subset of IEEE 1588-2008 mechanisms and settings aimed at enabling device interoperability, robust response to network failures, and deterministic control of delivered time quality. It specifies the preferred physical layer (Ethernet), higher level protocol used for PTP message exchange and the PTP protocol configuration parameters. Special attention is given to ensuring consistent and reliable time distribution within substations, between substations, and across wide geographic areas.

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5.3 Is the completion of this standard dependent upon the completion of another standard: No

5.4 Purpose: The purpose of this standard is to facilitate adoption of IEEE Std 1588-2008 for power system applications requiring high precision time synchronization. It specifies a common subset of PTP parameters and options to provide global time availability, device interoperability and failure management. This set of PTP parameters and options allows IEEE 1588-2008 based time synchronization to be used in mission critical power system protection, control, automation and data communication applications.

Old Purpose: The purpose of this standard is to facilitate adoption of IEEE Std 1588-2008 for power system applications requiring high precision time synchronization. It specifies a common subset of PTP parameters and options to provide global time availability, device interoperability and failure management. This set of PTP parameters and options allows IEEE 1588-2008 based time synchronization to be used in mission critical power system protection, control and automation applications.

5.5 Need for the Project: IEEE-1588 Precision Time Protocol provides methods for precise synchronization via Ethernet communications networks. These networks are being widely deployed in today's power systems. IEEE-1588 provides a great deal of flexibility, so that it can be used in numerous applications, and with this flexibility lies the potential for problems with inter-operability.

For specific applications, 1588 encourages the development of "Profiles" which specify configurations and options from the possible choices in the standard. These profiles encourage adoption of IEEE-1588 and provide for interoperability. Without such a profile, extensive configuration would be required. Such configuration requires knowledge exceeding the experience of most power system engineers. Improper configuration prevents interoperability, defeating the purpose.

Precise time in the substation simplifies the job of event reconstruction after faults, and holds the promise of remedial action, where widespread blackouts can potentially be avoided by precise and specific remedial actions taken at the onset of system instabilities. Such actions might include islanding, load shedding, or generator tripping, and serve the purpose of localizing and isolating the problem. Taking such actions requires confidence in the information upon which the action is based. Precise time synchronization is an enabling technology in providing this information with confidence.

This project will develop an IEEE-1588 Profile for power system protection applications.

5.6 Stakeholders for the Standard: Stakeholders include those interested in accurately-synchronized power system measurements, including:

Utilities

Regulatory agencies, i.e. NERC, FERC, et al

Independent systems operators

Manufacturers of substation equipment

Intellectual Property

6.1.a. Has the IEEE-SA policy on intellectual property been presented to those responsible for preparing/submitting this PAR prior to the PAR submittal to the IEEE-SA Standards Board?: Yes

If yes, state date: 13-May-2008

6.1.b. Is the Sponsor aware of any copyright permissions needed for this project?: No

6.1.c. Is the Sponsor aware of possible registration activity related to this project?: No

7.1 Are there other standards or projects with a similar scope?: Yes

If Yes please explain: IEEE P802.1AS specifies the use of IEEE 1588 in audio and video applications in Bridged Local Area Networks. P802.1AS effort does not overlap with this PAR due to vastly different reliability and security requirements associated with power system protection, control and automation.

and answer the following

Sponsor Organization: LAN/MAN Std Cmte, IEEE CompSoc

Project/Standard Number: IEEE P802.1AS

Project/Standard Date: 25-May-2006

Project/Standard Title: Standard for Local and Metropolitan Area Networks - Timing and Synchronization for Time-Sensitive Applications in Bridged Local Area Networks

7.2 International Activities

a. Adoption

Is there potential for this standard (in part or in whole) to be adopted by another national, regional or international organization?: Yes

Organization: IEC

Technical Committee Name: POWER SYSTEM IED COMMUNICATION AND ASSOCIATED DATA MODELS

Technical Committee Number: TC57 WG10

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b. Joint Development

Is it the intent to develop this document jointly with another organization?: No

c. Harmonization

Are you aware of another organization that may be interested in portions of this document in their standardization development efforts?: No

8.1 Additional Explanatory Notes (Item Number and Explanation): This change is to add the Power and Energy Society, Substations Committee as a joint sponsor. The scope and purpose have been expanded from protection applications to substation applications in general. Specifically, 'data communications' has been added as an application area. Changes have been made to the title, scope and purpose which reflect the wider sponsorship and application of the proposed standard.