IEEE STANDARDS ASSOCIATION

IEEE Standard for Common Format for Event Data Exchange (COMFEDE) for Power Systems

IEEE Power & Energy Society

Sponsored by the
IEEE Power System Relaying Committee

IEEE
3 Park Avenue
New York, NY 10016-5997
USA

11 November 2010

IEEE Std C37.239™-2010

IEEE Standard for Common Format for Event Data Exchange (COMFEDE) for Power Systems

Sponsor

IEEE Power System Relaying Committee

of the

IEEE Power & Energy Society

Approved 30 September 2010

IEEE-SA Standards Board

Abstract: A common format for data files used for the interchange of various types of event data collected from electrical power systems or power system models is defined. Extensibility, extension mechanisms, and compatibility of future versions of the format are discussed. An XML schema is defined. A sample file is given.

Keywords: eXtensible Markup Language (XML) name spaces, instance file, payload data, XML schema

The Institute of Electrical and Electronics Engineers, Inc.
3 Park Avenue, New York, NY 10016-5997, USA

PDF: ISBN 978-0-7381-6474-8 STD97025
Print: ISBN 978-0-7381-6475-5 STDPD97025

IEEE Standards documents are developed within the IEEE Societies and the Standards Coordinating Committees of the IEEE Standards Association (IEEE-SA) Standards Board. The IEEE develops its standards through a consensus development process, approved by the American National Standards Institute, which brings together volunteers representing varied viewpoints and interests to achieve the final product. Volunteers are not necessarily members of the Institute and serve without compensation. While the IEEE administers the process and establishes rules to promote fairness in the consensus development process, the IEEE does not independently evaluate, test, or verify the accuracy of any of the information or the soundness of any judgments contained in its standards.

Use of an IEEE Standard is wholly voluntary. The IEEE disclaims liability for any personal injury, property or other damage, of any nature whatsoever, whether special, indirect, consequential, or compensatory, directly or indirectly resulting from the publication, use of, or reliance upon this, or any other IEEE Standard document.

The IEEE does not warrant or represent the accuracy or content of the material contained herein, and expressly disclaims any express or implied warranty, including any implied warranty of merchantability or fitness for a specific purpose, or that the use of the material contained herein is free from patent infringement. IEEE Standards documents are supplied "**AS IS**."

The existence of an IEEE Standard does not imply that there are no other ways to produce, test, measure, purchase, market, or provide other goods and services related to the scope of the IEEE Standard. Furthermore, the viewpoint expressed at the time a standard is approved and issued is subject to change brought about through developments in the state of the art and comments received from users of the standard. Every IEEE Standard is subjected to review at least every five years for revision or reaffirmation, or every ten years for stabilization. When a document is more than five years old and has not been reaffirmed, or more than ten years old and has not been stabilized, it is reasonable to conclude that its contents, although still of some value, do not wholly reflect the present state of the art. Users are cautioned to check to determine that they have the latest edition of any IEEE Standard.

In publishing and making this document available, the IEEE is not suggesting or rendering professional or other services for, or on behalf of, any person or entity. Nor is the IEEE undertaking to perform any duty owed by any other person or entity to another. Any person utilizing this, and any other IEEE Standards document, should rely upon his or her independent judgment in the exercise of reasonable care in any given circumstances or, as appropriate, seek the advice of a competent professional in determining the appropriateness of a given IEEE standard.

Interpretations: Occasionally questions may arise regarding the meaning of portions of standards as they relate to specific applications. When the need for interpretations is brought to the attention of IEEE, the Institute will initiate action to prepare appropriate responses. Since IEEE Standards represent a consensus of concerned interests, it is important to ensure that any interpretation has also received the concurrence of a balance of interests. For this reason, IEEE and the members of its societies and Standards Coordinating Committees are not able to provide an instant response to interpretation requests except in those cases where the matter has previously received formal consideration. A statement, written or oral, that is not processed in accordance with the IEEE-SA Standards Board Operations Manual shall not be considered the official position of IEEE or any of its committees and shall not be considered to be, nor be relied upon as, a formal interpretation of the IEEE. At lectures, symposia, seminars, or educational courses, an individual presenting information on IEEE standards shall make it clear that his or her views should be considered the personal views of that individual rather than the formal position, explanation, or interpretation of the IEEE.

Comments for revision of IEEE Standards are welcome from any interested party, regardless of membership affiliation with IEEE. Suggestions for changes in documents should be in the form of a proposed change of text, together with appropriate supporting comments. Recommendations to change the status of a stabilized standard should include a rationale as to why a revision or withdrawal is required. Comments and recommendations on standards, and requests for interpretations should be addressed to:

Secretary, IEEE-SA Standards Board
445 Hoes Lane
Piscataway, NJ 08854
USA

Introduction

This introduction is not part of IEEE Std C37.239-2010, IEEE Standard for Common Format for Event Data Exchange (COMFEDE) for Power Systems.

Power network fault event data are indispensable to the analysis, testing, evaluation, and simulation of power systems and related protection schemes. The flexibility provided by digital devices in recording such event data has brought about a situation wherein the users of these records are confronted with the difficulty of dealing with the different formats used by each device to generate, store, and transmit the recorded data.

Notice to users

Laws and regulations

Users of these documents should consult all applicable laws and regulations. Compliance with the provisions of this standard does not imply compliance to any applicable regulatory requirements. Implementers of the standard are responsible for observing or referring to the applicable regulatory requirements. IEEE does not, by the publication of its standards, intend to urge action that is not in compliance with applicable laws, and these documents may not be construed as doing so.

Copyrights

This document is copyrighted by the IEEE. It is made available for a wide variety of both public and private uses. These include both use, by reference, in laws and regulations, and use in private self-regulation, standardization, and the promotion of engineering practices and methods. By making this document available for use and adoption by public authorities and private users, the IEEE does not waive any rights in copyright to this document.

Updating of IEEE documents

Users of IEEE standards should be aware that these documents may be superseded at any time by the issuance of new editions or may be amended from time to time through the issuance of amendments, corrigenda, or errata. An official IEEE document at any point in time consists of the current edition of the document together with any amendments, corrigenda, or errata then in effect. In order to determine whether a given document is the current edition and whether it has been amended through the issuance of amendments, corrigenda, or errata, visit the IEEE Standards Association web site at http://ieeexplore.ieee.org/xpl/standards.jsp, or contact the IEEE at the address listed previously.

For more information about the IEEE Standards Association or the IEEE standards development process, visit the IEEE-SA web site at http://standards.ieee.org.

Errata

Errata, if any, for this and all other standards can be accessed at the following URL: http://standards.ieee.org/reading/ieee/updates/errata/index.html. Users are encouraged to check this URL for errata periodically.

Interpretations

Current interpretations can be accessed at the following URL: http://standards.ieee.org/reading/ieee/interp/index.html.

Patents

Attention is called to the possibility that implementation of standard may require use of subject matter covered by patent rights. By publication of this standard, no position is taken with respect to the existence or validity of any patent rights in connection therewith. The IEEE is not responsible for identifying Essential Patent Claims for which a license may be required, for conducting inquiries into the legal validity or scope of Patents Claims or determining whether any licensing terms or conditions provided in connection with submission of a Letter of Assurance, if any, or in any licensing agreements are reasonable or non-discriminatory. Users of this standard are expressly advised that determination of the validity of any patent rights, and the risk of infringement of such rights, is entirely their own responsibility. Further information may be obtained from the IEEE Standards Association.

Participants

At the time this standard was submitted to the IEEE-SA Standards Board for approval, the Common Data Format for IED Event Data Working Group had the following membership:

Mark Adamiak, *Chair*
Pierre L. Martin, *Vice Chair*

Eric Allen
Scott Anderson
Alex Apostolov
Christoph Brunner
Jim Hacket
Randy Hamilton
Juergen Holbach
Mladen Kezunovic
Stanley Klein
Larry Smith
Stan Thompson
Benton Vandiver

The following members of the individual balloting committee voted on this standard. Balloters may have voted for approval, disapproval, or abstention.

William J. Ackerman
Mark Adamiak
S. Aggarwal
James Ariza
Ali Al Awazi
Hugh Barrass
Martin Baur
Kenneth Behrendt
Oscar Bolado
Steven Brockschink
Gustavo Brunello
Suresh Channarasappa
Arvind K. Chaudhary
Keith Chow
Stephen Conrad
R. W. Corlew
James Cornelison
Carlo Donati
Gary Donner
Michael Dood
Neal Dowling
Gary Engmann
Kenneth Fodero
Jeffrey Gilbert
Manjinder Gill
Jalal Gohari
Edwin Goodwin
Randall Groves
Roeer Hedding
Gary Heuston
Werner Hoelzl
Stuart Holoman
David Horvath
C. Huntley
Akio Iso
R. Jackson
Junghoon Jee
Piotr Karocki
Tanuj Khandelwal
Yuri Khersonsky
Yongburn Kim
James Kinney
Stanley Klein
J. Koepfinger
Jim Kulchisky
Chung-Yiu Lam
Charles Lenzon
James Liming
G. Luri
Pierre L. Martin
William McBride
John McDonald
Gary Michel
Keith Moore
Jerry Murphy
R. Murphy
Bruce Muschlitz
Anthony Napikoski
Michael S. Newman
Robert Orndorff
Chris Osterloh
Lorraine Padden
Bansi Patel
Farnoosh Rahmatian
R. Ray
Robert Robinson
Charles Rogers
Sukhbir Sandhdev
Bob Saint
Martin Sanders
Steven Sano
Bartien Sayogo
Thomas Schossig
Lubomir Sevov
Devki Sharma
Gil Shultz
Mark Simon
Vesselin Skendzic
James Smith
Jerry Smith
John Spare
Gary Stoedter
Michael Swearingen
Richard Taylor
John Tengdin
John Toth
Demetrios Tziouvaras
Joe Uchiyama
Eric Udren
Sterling Vaden
Srinivasa Vemuru
John Vergis
Jane Verner
John Wang
Hung-Yu Wei
Kenneth White
Philip Winston
Paul Work
Richard Young
Oren Yuen

When the IEEE-SA Standards Board approved this standard on 30 September 2010, it had the following membership:

Robert M. Grow, *Chair*
Richard H. Hulett, *Vice Chair*
Steve M. Mills, *Past President*
Judith Gorman, *Secretary*

Karen Bartleson	Young Kyun Kim	Ronald C. Petersen
Victor Berman	Joseph L. Koepfinger*	Thomas Prevost
Ted Burse	John Kulick	Jon Walter Rosdahl
Clint Chaplin	David J. Law	Sam Sciacca
Andy Drozd	Hung Ling	Mike Seavey
Alexander Gelman	Oleg Logvinov	Curtis Siller
Jim Hughes	Ted Olsen	Don Wright

*Member Emeritus

Also included are the following nonvoting IEEE-SA Standards Board liaisons:

Satish Aggarwal, *NRC Representative*
Richard DeBlasio, *DOE Representative*
Michael Janezic, *NIST Representative*

Don Messina
IEEE Standards Program Manager, Document Development

Matthew J. Ceglia
IEEE Standards Program Manager, Technical Program Development

Contents

IEEE Standard for Common Format for Event Data Exchange (COMFEDE) for Power Systems

1. Overview

1.1 Scope

This standard defines a format for files containing event data such as sequence of events or fault summary reports collected from power systems or power system models. The format is intended to provide an easily interpretable form for use in exchanging data.

1.2 Purpose

This standard defines a common format for the data files needed for the exchange of various types of power network events in order to facilitate event data integration and analysis from multiple data sources and from different vendor devices. The flexibility provided by digital devices in recording network fault event data in the electric utility industry has generated the need for a standard format for the exchange of data. These data are being used with various devices to enhance and automate the analysis, testing, evaluation, and simulation of power systems and related protection schemes during fault and disturbance conditions. Since each source of data may use a different proprietary format, a common data format is necessary to facilitate the exchange of such data between applications. This will facilitate the use of proprietary data in diverse applications and allow users of one proprietary system to use digital data from other systems.