

INTERNATIONAL
STANDARD

ISO/IEC/
IEEE
8802-1Q

Second edition
2020-08

AMENDMENT 2
2021-09

**Telecommunications and exchange
between information technology
systems — Requirements for local and
metropolitan area networks —**

Part 1Q:

Bridges and bridged networks

AMENDMENT 2: YANG data model

*Télécommunications et échange entre systèmes informatiques —
Exigences pour les réseaux locaux et métropolitains —*

Partie 1Q: Ponts et réseaux pontés

AMENDEMENT 2

2021



Reference number
ISO/IEC/IEEE 8802-1Q:2020/Amd.2:2021(E)

© IEEE 2018

iTeh Standards
(<https://standards.iteh.ai>)
Document Preview

[ISO/IEC/IEEE 8802-1Q:2020/Amd 2:2021](https://standards.iteh.ai/catalog/standards/iso/flce6b7d-1b90-45bf-9b6c-af4983b5db0f/iso-iec-ieee-8802-1q-2020-amd-2-2021)

<https://standards.iteh.ai/catalog/standards/iso/flce6b7d-1b90-45bf-9b6c-af4983b5db0f/iso-iec-ieee-8802-1q-2020-amd-2-2021>



COPYRIGHT PROTECTED DOCUMENT

© IEEE 2018

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from IEEE at the address below.

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

Email: stds.ipr@ieee.org
Website: www.ieee.org

Published in Switzerland

Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO/IEC documents should be noted.

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 contained in its standards.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents) or the IEC list of patent declarations received (see patents.iec.ch).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html. In the IEC, see www.iec.ch/understanding-standards.

ISO/IEC/IEEE 8802-1Q:2020/Amd 2 was prepared by the LAN/MAN of the IEEE Computer Society (as IEEE Std 802.1Qcp-2018) and drafted in accordance with its editorial rules. It was adopted, under the "fast-track procedure" defined in the Partner Standards Development Organization cooperation agreement between ISO and IEEE, by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 6, *Telecommunications and information exchange between systems*.

A list of all parts in the ISO/IEC/IEEE 8802 series can be found on the ISO and IEC websites.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html and www.iec.ch/national-committees.

IEEE Std 802.1Qcp™-2018
(Amendment to
IEEE Std 802.1Q™-2018)

**IEEE Standard for
Local and metropolitan area networks—
Bridges and Bridged Networks—
Amendment 30: YANG Data Model**

Sponsor

LAN/MAN Standards Committee
of the
IEEE Computer Society

Approved 14 June 2018

IEEE-SA Standards Board

iteh Standards

(<https://standards.iteh.ai>)

Document Preview

[ISO/IEC/IEEE 8802-1Q:2020/Amd 2:2021](https://standards.iteh.ai/catalog/standards/sist/f1ce6b7d-1b90-45bf-9b6c-af4983b5db0f/iso-iec-ieee-8802-1q-2020-amd-2-2021)

2021

Abstract: A YANG data model in support of configuration and operational status information for a subset of Bridging capabilities is provided in this amendment to IEEE Std 802.1Q™-2018.

Keywords: Bridged Local Area Networks, IEEE 802®, IEEE 802.1Q™, IEEE 802.1Qcp™, local area networks (LANs), MAC Bridges, metropolitan area networks, Virtual Bridged Local Area Networks (virtual LANs), YANG

iTeh Standards
(<https://standards.iteh.ai>)
Document Preview

[ISO/IEC/IEEE 8802-1Q:2020/Amd 2:2021](https://standards.iteh.ai/catalog/standards/iso/flce6b7d-1b90-45bf-9b6c-af4983b5db0f/iso-iec-ieee-8802-1q-2020-amd-2-2021)

<https://standards.iteh.ai/catalog/standards/iso/flce6b7d-1b90-45bf-9b6c-af4983b5db0f/iso-iec-ieee-8802-1q-2020-amd-2-2021>

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

Copyright © 2018 by The Institute of Electrical and Electronics Engineers, Inc.
All rights reserved. Published 14 September 2018. Printed in the United States of America.

IEEE and 802 are registered trademarks in the U.S. Patent & Trademark Office, owned by The Institute of Electrical and Electronics Engineers, Incorporated.

PDF: ISBN 978-1-5044-4927-4 STD23138
Print: ISBN 978-1-5044-4928-1 STDPD23138

IEEE prohibits discrimination, harassment, and bullying.

For more information, visit <http://www.ieee.org/web/aboutus/whatis/policies/p9-26.html>.

No part of this publication may be reproduced in any form, in an electronic retrieval system or otherwise, without the prior written permission of the publisher.

Important Notices and Disclaimers Concerning IEEE Standards Documents

IEEE documents are made available for use subject to important notices and legal disclaimers. These notices and disclaimers, or a reference to this page, appear in all standards and may be found under the heading “Important Notices and Disclaimers Concerning IEEE Standards Documents.” They can also be obtained on request from IEEE or viewed at <http://standards.ieee.org/IPR/disclaimers.html>.

Notice and Disclaimer of Liability Concerning the Use of IEEE Standards Documents

IEEE Standards documents (standards, recommended practices, and guides), both full-use and trial-use, are developed within IEEE Societies and the Standards Coordinating Committees of the IEEE Standards Association (“IEEE-SA”) Standards Board. IEEE (“the Institute”) develops its standards through a consensus development process, approved by the American National Standards Institute (“ANSI”), which brings together volunteers representing varied viewpoints and interests to achieve the final product. IEEE Standards are documents developed through scientific, academic, and industry-based technical working groups. Volunteers in IEEE working groups are not necessarily members of the Institute and participate without compensation from IEEE. While IEEE administers the process and establishes rules to promote fairness in the consensus development process, 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.

IEEE Standards do not guarantee or ensure safety, security, health, or environmental protection, or ensure against interference with or from other devices or networks. Implementers and users of IEEE Standards documents are responsible for determining and complying with all appropriate safety, security, environmental, health, and interference protection practices and all applicable laws and regulations.

IEEE does not warrant or represent the accuracy or content of the material contained in its standards, and expressly disclaims all warranties (express, implied and statutory) not included in this or any other document relating to the standard, including, but not limited to, the warranties of: merchantability; fitness for a particular purpose; non-infringement; and quality, accuracy, effectiveness, currency, or completeness of material. In addition, IEEE disclaims any and all conditions relating to: results; and workmanlike effort. IEEE standards documents are supplied “AS IS” and “WITH ALL FAULTS.”

Use of an IEEE standard is wholly voluntary. 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.

In publishing and making its standards available, IEEE is not suggesting or rendering professional or other services for, or on behalf of, any person or entity nor is IEEE undertaking to perform any duty owed by any other person or entity to another. Any person utilizing any IEEE Standards document, should rely upon his or her own 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.

IN NO EVENT SHALL IEEE BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO: PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE PUBLICATION, USE OF, OR RELIANCE UPON ANY STANDARD, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE AND REGARDLESS OF WHETHER SUCH DAMAGE WAS FORESEEABLE.

Translations

The IEEE consensus development process involves the review of documents in English only. In the event that an IEEE standard is translated, only the English version published by IEEE should be considered the approved IEEE standard.

Official statements

A statement, written or oral, that is not processed in accordance with the IEEE-SA Standards Board Operations Manual shall not be considered or inferred to be the official position of IEEE or any of its committees and shall not be considered to be, or be relied upon as, a formal position of 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 of IEEE.

Comments on standards

Comments for revision of IEEE Standards documents are welcome from any interested party, regardless of membership affiliation with IEEE. However, IEEE does not provide consulting information or advice pertaining to IEEE Standards documents. Suggestions for changes in documents should be in the form of a proposed change of text, together with appropriate supporting comments. Since IEEE standards represent a consensus of concerned interests, it is important that any responses to comments and questions also receive 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 comments or questions except in those cases where the matter has previously been addressed. For the same reason, IEEE does not respond to interpretation requests. Any person who would like to participate in revisions to an IEEE standard is welcome to join the relevant IEEE working group.

Comments on standards should be submitted to the following address:

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

Laws and regulations

Users of IEEE Standards documents should consult all applicable laws and regulations. Compliance with the provisions of any IEEE Standards document 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

IEEE draft and approved standards are copyrighted by IEEE under U.S. and international copyright laws. They are made available by IEEE and are adopted 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 these documents available for use and adoption by public authorities and private users, IEEE does not waive any rights in copyright to the documents.

Photocopies

Subject to payment of the appropriate fee, IEEE will grant users a limited, non-exclusive license to photocopy portions of any individual standard for company or organizational internal use or individual, non-commercial use only. To arrange for payment of licensing fees, please contact Copyright Clearance Center, Customer Service, 222 Rosewood Drive, Danvers, MA 01923 USA; +1 978 750 8400. Permission to photocopy portions of any individual standard for educational classroom use can also be obtained through the Copyright Clearance Center.

Updating of IEEE Standards documents

Users of IEEE Standards documents 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. A current 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.

Every IEEE standard is subjected to review at least every ten years. When a document is more than ten years old and has not undergone a revision process, 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 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-SA Website at <http://ieeexplore.ieee.org/> or contact IEEE at the address listed previously. For more information about the IEEE-SA or IEEE's standards development process, visit the IEEE-SA Website at <http://standards.ieee.org>.

Document Preview

Errata

Errata, if any, for all IEEE standards can be accessed on the IEEE-SA Website at the following URL: <http://standards.ieee.org/findstds/errata/index.html>. Users are encouraged to check this URL for errata periodically.

Patents

Attention is called to the possibility that implementation of this standard may require use of subject matter covered by patent rights. By publication of this standard, no position is taken by the IEEE with respect to the existence or validity of any patent rights in connection therewith. If a patent holder or patent applicant has filed a statement of assurance via an Accepted Letter of Assurance, then the statement is listed on the IEEE-SA Website at <http://standards.ieee.org/about/sasb/patcom/patents.html>. Letters of Assurance may indicate whether the Submitter is willing or unwilling to grant licenses under patent rights without compensation or under reasonable rates, with reasonable terms and conditions that are demonstrably free of any unfair discrimination to applicants desiring to obtain such licenses.

Essential Patent Claims may exist for which a Letter of Assurance has not been received. 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 of approval of this standard, the IEEE 802.1 Working Group had the following membership:

Glenn Parsons, Chair
John Messenger, Vice Chair
János Farkas, Chair, Time-Sensitive Networking Task Group
Marc Holness, Editor

Ralf Assmann	Marina Gutierrez	Maximilian Riegel
Shenghua Bao	Stephen Haddock	Jessy V. Rouyer
Jens Bierschen	Mark Hantel	Atsushi Sato
Steinar Bjornstad	Lokesh Kabra	Frank Schewe
Christian Boiger	Michael Karl	Michael Seaman
Paul Bottorff	Stephan Kehrer	Johannes Specht
Radhakrishna Canchi	Hajime Koto	Patricia Thaler
David Chen	Christophe Mangin	Paul Unbehagen
Feng Chen	Scott Mansfield	Xinyuan Wang
Weiyang Cheng	James McIntosh	Tongtong Wang
Paul Congdon	Tero Mustala	Hao Wang
Rodney Cummings	Tomoki Ohsawa	Karl Weber
Hesham Elbakoury	Donald R. Pannell	Brian Weis
Norman Finn	Walter Pienciak	Jordon Woods
Geoffrey Garner	Michael Potts	Takahiro Yamaura
Eric W. Gray	Wei Qiu	Xiang Yu
Craig Gunther	Karen Randall	Nader Zein

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

Thomas Alexander	Randall Groves	Charles Moorwood
Richard Alfvén	Stephen Haddock	Nick S. A. Nikjoo
Butch Anton	Mark Hantel	Paul Nikolich
Stefan Aust	Marco Hernandez	Satoshi Obara
Gordon Bechtel	Werner Hoelzl	Bansi Patel
David Black	Noriyuki Ikeuchi	Alon Regev
Christian Boiger	Atsushi Ito	Maximilian Riegel
Nancy Bravin	Raj Jain	Robert Robinson
Dietmar Bruckner	SangKwon Jeong	Benjamin Rolfe
Demetrio Bucaneg, Jr.	Peter Jones	Jessy V. Rouyer
Stephen Bush	Piotr Karocki	Michael Seaman
William Byrd	Stephan Kehrer	Daniel Smith
Juan Carreon	Stuart Kerry	Thomas Starai
Keith Chow	Yongbum Kim	Walter Struppler
Charles Cook	Hyeong Ho Lee	Mark-Rene Uchida
Rodney Cummings	James Lepp	Dmitri Varsanofiev
Sourav Dutta	Jon Lewis	George Vlantis
János Farkas	Michael Lynch	Khurram Waheed
Norman Finn	Elvis Maculuba	Andreas Wolf
Avraham Freedman	Arthur Marris	Chun Yu Charles Wong
Eric W. Gray	Richard Mellitz	Oren Yuen
		Zhen Zhou

When the IEEE-SA Standards Board approved this standard on 14 June 2018, it had the following membership:

Jean-Philippe Faure, *Chair*
Gary Hoffman, *Vice Chair*
John D. Kulick, *Past Chair*
Konstantinos Karachalios, *Secretary*

Chuck Adams
Masayuki Ariyoshi
Ted Burse
Stephen Dukes
Doug Edwards
J. Travis Griffith
Michael Janezic

Thomas Koshy
Joseph L. Koepfinger*
Kevin Lu
Daleep Mohla
Damir Novosel
Ronald C. Petersen
Annette D. Reilly

Robby Robson
Dorothy Stanley
Adrian Stephens
Mehmet Ulema
Phil Wennblom
Howard Wolfman
Yu Yuan

*Member Emeritus

iTeh Standards
(<https://standards.iteh.ai>)
Document Preview

[ISO/IEC/IEEE 8802-1Q:2020/Amd 2:2021](https://standards.iteh.ai/catalog/standards/iso/flce6b7d-1b90-45bf-9b6c-af4983b5db0f/iso-iec-ieee-8802-1q-2020-amd-2-2021)

<https://standards.iteh.ai/catalog/standards/iso/flce6b7d-1b90-45bf-9b6c-af4983b5db0f/iso-iec-ieee-8802-1q-2020-amd-2-2021>

Introduction

This introduction is not part of IEEE Std 802.1Qcp-2018, IEEE Standard for Local and metropolitan area networks—Bridges and Bridged Networks—Amendment 30: YANG Data Model.

This amendment to IEEE Std 802.1Q-2018 specifies a YANG data model that provides configuration and operational status reporting for IEEE 802.1Q Two-Port MAC Relay, Customer VLAN Bridges, and Provider Bridges.

This standard contains state-of-the-art material. The area covered by this standard is undergoing evolution. Revisions are anticipated within the next few years to clarify existing material, to correct possible errors, and to incorporate new related material. Information on the current revision state of this and other IEEE 802[®] standards may be obtained from

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

iTeh Standards
(<https://standards.iteh.ai>)
Document Preview

[ISO/IEC/IEEE 8802-1Q:2020/Amd 2:2021](https://standards.iteh.ai/catalog/standards/iso/flce6b7d-1b90-45bf-9b6c-af4983b5db0f/iso-iec-ieee-8802-1q-2020-amd-2-2021)

<https://standards.iteh.ai/catalog/standards/iso/flce6b7d-1b90-45bf-9b6c-af4983b5db0f/iso-iec-ieee-8802-1q-2020-amd-2-2021>

Contents

1.	Overview	12
1.3	Introduction.....	12
2.	Normative references	13
4.	Abbreviations	14
5.	Conformance	15
5.4	VLAN Bridge component requirements.....	15
5.13	MAC Bridge component requirements.....	15
5.16	TPMR conformance.....	15
8.	Principles of Bridge operation	16
8.12	Bridge Management Entity	16
8.13	Addressing	16
12.	Bridge management	17
12.10	Bridge VLAN managed objects.....	17
48.	YANG Data Model	18
48.1	YANG Framework.....	18
48.2	Security considerations	19
48.3	IEEE 802.1Q YANG model	21
48.4	Structure of the YANG model.....	31
48.5	Relationship to IEEE 802.1Q managed objects.....	33
48.6	Definition of IEEE 802.1Q YANG modules.....	39
Annex A (normative)	PICS proforma—Bridge implementations	90
A.5	Major capabilities.....	90
A.48	YANG	90
Annex U (informative)	Bibliography	91

List of figures

Figure 48-1—General YANG hierarchy	18
Figure 48-2—YANG root hierarchy with IEEE 802.1Q YANG modules	19
Figure 48-3—UML YANG interface management model	22
Figure 48-4—Generic IEEE 802.1Q bridge mode	23
Figure 48-5—Bridge port model	24
Figure 48-6—TPMR model	25
Figure 48-7—TPMR port model	26
Figure 48-8—Provider Bridge model	28
Figure 48-9—Provider Edge Bridge C-VLAN Interface mode	29
Figure 48-10—Provider Edge Bridge S-VLAN interface model	30

iTeh Standards
(<https://standards.iteh.ai>)
Document Preview

[ISO/IEC/IEEE 8802-1Q:2020/Amd 2:2021](https://standards.iteh.ai/catalog/standards/iso/flce6b7d-1b90-45bf-9b6c-af4983b5db0f/iso-iec-ieee-8802-1q-2020-amd-2-2021)

<https://standards.iteh.ai/catalog/standards/iso/flce6b7d-1b90-45bf-9b6c-af4983b5db0f/iso-iec-ieee-8802-1q-2020-amd-2-2021>