

IEEE Standard for Service Interoperability in Ethernet Passive Optical Networks (SIEPON)

IEEE Communications Society

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IEEE Standard for Service Interoperability in Ethernet Passive Optical Networks (SIEPON)

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Abstract: This standard describes the system-level requirements needed to ensure service-level, multi-vendor interoperability of Ethernet Passive Optical Network (EPON) equipment. The specifications complement the existing IEEE 802.3 and IEEE 802.1 standards, which ensure the interoperability at the Physical Layer (PHY) and Data Link Layer. Specifically included in this specification are

- EPON system-level interoperability specifications covering equipment functionality, traffic engineering, and service-level quality of service/class of service (QoS/CoS) mechanisms;
- Management specifications covering equipment management, service management, and EPON power-saving mechanism.

Keywords: 1G-EPON, 10G-EPON, EPON, Ethernet Passive Optical Network, IEEE 1904.1, interoperability, QoS, quality of service, service interoperability, SIEPON

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Lior Khhermosh, *Service Configuration and Provisioning Task Force Chair*
Alan M. Brown, *Service Configuration and Provisioning Task Force Editor*

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Seiji Kozaki, *Service Survivability Task Force Chair*
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James Chen, *System/Device Management Task Force Chair*
Fumio Daido, *System/Device Management Task Force Editor*

Toshihiko Kusano, *Conformance Test Procedures Task Force Chair*
Marek Hajduczenia, *Conformance Test Procedures Task Force Editor for Package A*
Motoyuki Takizawa, *Conformance Test Procedures Task Force Editor for Package B*
Liu Qian, *Conformance Test Procedures Task Force Editor for Package C*

The following individuals submitted technical contributions or commented on the standard at various stages of the project development.

Venkat Arunarthi, Cortina
Victor Blake, Victor Blake
Wang Bo, China Telecommunications Corp.
Zhang Boshan, ZTE Corporation
Alan M. Brown, Aurora Networks
Xiao Chen, Alcatel-Lucent
Shen Chengbin, China Telecom
Fumio Daido, Sumitomo Electric Industries Ltd.
Peng Du, Broadcom Corporation
Hesham ElBakoury, Huawei Technologies
Michael Emmendorfer, ARRIS
Josh Feinstein, Broadcom Corporation
Marek Hajduczenia, ZTE Corporation
Ryan Hirth, Broadcom Corporation
Takeshi Imai, Mitsubishi Electric Corporation
Ryo Inohara, KDDI R&D Laboratories Inc.
Erez Izenberg, Marvell
Qiang Jiang, Broadcom Corporation
Keisuke Jinen, Sumitomo Electric Industries Ltd.
Manabu Kato, PMC-Sierra, Inc.
Lior Khhermosh, PMC-Sierra, Inc.
Mitsunobu Kimura, Hitachi, Ltd.
Curtis Knittle, Cable Television Laboratories
(CableLabs)

Shinichi Kouyama, Sumitomo Electric Industries Ltd.
Seiji Kozaki, Mitsubishi Electric Corporation
Glen Kramer, Broadcom Corporation
Toshihiko Kusano, Oliver Solutions, Ltd.
Lowell Lamb, Broadcom Corporation
Jeff Lapak, University of New Hampshire-IOL
Rick Li, Cortina
Xuguang Li, Qualcomm
Wei Lin, Huawei Technologies
Eric Lynskey, Broadcom Corporation
Bob Mandeville, Iometrix
Jeff Mandin, PMC-Sierra, Inc.
Makoto Matsuoka, Hitachi, Ltd.
Hiroaki Mukai, Mitsubishi Electric Corporation
Daisuke Murayama, NTT Corporation
Kenichi Nakura, Mitsubishi Electric Corporation
Susumu Nishihara, NTT Corporation
Kazumi Onishi, Oki Electric Industry Co., Ltd.
Liu Qian, RITT, CATR
Duane Remein, FiberHome Technologies
Shoichiro Seno, Mitsubishi Electric Corporation
Kenichi Shimamura, NEC
Santanu Sinha, Cortina
Oren Spector, Oliver Solutions, Ltd.

Jeff Stribling, Hitachi Communications Technologies America, Inc.
 Takeshi Suehiro, Mitsubishi Electric Corporation
 Ken-Ichi Suzuki, NTT Corporation
 Masashi Tadokoro, NTT Corporation
 Makoto Taguchi, PMC-Sierra, Inc.
 Akihiro Takahashi, Oki Electric Industry Co., Ltd.
 Motoyuki Takizawa, Fujitsu Telecom Networks, Ltd.

Kiyoshi Uematsu, Oki Electric Industry Co., Ltd.
 Chengwei Wang, China Telecommunications Corp.
 Lu Yang, RITT, CATR
 Hosung Yoon, KT
 He Yuanling, ZTE Corporation
 Meiyang Zang, ZTE Corporation
 Zhou Zhen, FiberHome Technologies

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

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 Broadcom Corporation
 Cable Television Laboratories Inc. (CableLabs)
 Cortina Systems
 FiberHome Technologies Group
 FUJITSU
 Hitachi, Ltd.
 KT Corp.
 Maxim Integrated Products

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Introduction

This introduction is not part of IEEE Std 1904.1-2013, IEEE Standard for Service Interoperability in Ethernet Passive Optical Networks (SIEPON).
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This standard builds upon the IEEE 802.3ah™ (1G-EPON) and IEEE 802.3av™ (10G-EPON) Physical Layer and Data Link Layer specifications and provides system-level and network-level definitions of numerous EPON features, geared toward fostering interoperability between various implementations aiming to provide the same set of functionalities.^a These Service Interoperability in Ethernet Passive Optical Networks (SIEPON) features allow “plug-and-play” interoperability of the transport, service, and control planes in a multi-vendor environment. This standard serves a number of important purposes:

- Compliant EPON devices follow a common specification for the worldwide market, potentially resulting in larger volumes and reduced costs.
- Operators may not face the challenge of developing system-level specifications and interoperability testing procedures before they can deploy EPON.
- EPON vendors may not need to implement multiple options to comply with multiple proprietary/national specifications. Reduced device complexity may further reduce cost.
- Competition among EPON equipment and component suppliers may increase, thus potentially driving further innovation and cost reductions.

^a Information on references can be found in Clause 2.

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IEEE Standard for Service Interoperability in Ethernet Passive Optical Networks (SIEPON)

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1 Overview

1.1 Scope

This standard describes the system-level requirements needed to provide service-level, multi-vendor interoperability of Ethernet Passive Optical Network (EPON) equipment. The specifications complement the existing IEEE 802.3™ and IEEE 802.1™ standards, which enable the interoperability at the Physical Layer and Data Link Layer.¹ Specifically included in this specification are

- EPON system-level interoperability specifications covering equipment functionality, traffic engineering, and service-level quality of service/class of service (QoS/CoS) mechanisms;
- Management specifications covering equipment management, service management, and power utilization.

1.2 Purpose

The purpose of this standard is to build upon the IEEE 802.3ah (1G-EPON) and IEEE 802.3av (10G-EPON) Physical Layer and Data Link Layer standards and create a system-level and network-level standard, thus allowing full “plug-and-play” interoperability of the transport, service, and control planes in a multi-vendor environment.

¹ Information on references can be found in Clause 2.