

ITU-T

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

G.9979

Amendment 1
(02/2016)

SERIES G: TRANSMISSION SYSTEMS AND MEDIA,
DIGITAL SYSTEMS AND NETWORKS

Access networks – In premises networks

Implementation of the generic mechanism
in the IEEE 1905.1a-2014 Standard to include
applicable ITU-T Recommendations

Amendment 1

Recommendation ITU-T G.9979 (2014) – Amendment 1

ITU-T

ITU-T G-SERIES RECOMMENDATIONS

TRANSMISSION SYSTEMS AND MEDIA, DIGITAL SYSTEMS AND NETWORKS

INTERNATIONAL TELEPHONE CONNECTIONS AND CIRCUITS	G.100–G.199
GENERAL CHARACTERISTICS COMMON TO ALL ANALOGUE CARRIER-TRANSMISSION SYSTEMS	G.200–G.299
INDIVIDUAL CHARACTERISTICS OF INTERNATIONAL CARRIER TELEPHONE SYSTEMS ON METALLIC LINES	G.300–G.399
GENERAL CHARACTERISTICS OF INTERNATIONAL CARRIER TELEPHONE SYSTEMS ON RADIO-RELAY OR SATELLITE LINKS AND INTERCONNECTION WITH METALLIC LINES	G.400–G.449
COORDINATION OF RADIOTELEPHONY AND LINE TELEPHONY	G.450–G.499
TRANSMISSION MEDIA AND OPTICAL SYSTEMS CHARACTERISTICS	G.600–G.699
DIGITAL TERMINAL EQUIPMENTS	G.700–G.799
DIGITAL NETWORKS	G.800–G.899
DIGITAL SECTIONS AND DIGITAL LINE SYSTEM	G.900–G.999
MULTIMEDIA QUALITY OF SERVICE AND PERFORMANCE – GENERIC AND USER-RELATED ASPECTS	G.1000–G.1999
TRANSMISSION MEDIA CHARACTERISTICS	G.6000–G.6999
DATA OVER TRANSPORT – GENERIC ASPECTS	G.7000–G.7999
PACKET OVER TRANSPORT ASPECTS	G.8000–G.8999
ACCESS NETWORKS	G.9000–G.9999
Metallic access networks	G.9700–G.9799
Optical line systems for local and access networks	G.9800–G.9899
In premises networks	G.9900–G.9999

For further details, please refer to the list of ITU-T Recommendations.

Recommendation ITU-T G.9979

Implementation of the generic mechanism in the IEEE 1905.1a-2014 Standard to include applicable ITU-T Recommendations

Amendment 1

Summary

Recommendation ITU-T G.9979 specifies the necessary details for including Recommendations ITU-T G.9960, ITU-T G.9961 ITU-T G.9962, ITU-T G.9963 and ITU-T G.9964 and ITU-T G.9954 transceivers as supported home networking technologies under the abstraction layer defined by IEEE 1905 technology.

Amendment 1 includes support for Recommendation ITU-T G.9977.

History

Edition	Recommendation	Approval	Study Group	Unique ID*
1.0	ITU-T G.9979	2014-12-05	15	11.1002/1000/12080
1.1	ITU-T G.9979 (2014) Amd. 1	2016-02-26	15	11.1002/1000/12534

* To access the Recommendation, type the URL <http://handle.itu.int/> in the address field of your web browser, followed by the Recommendation's unique ID. For example, <http://handle.itu.int/11.1002/1000/11830-en>.

FOREWORD

The International Telecommunication Union (ITU) is the United Nations specialized agency in the field of telecommunications, information and communication technologies (ICTs). The ITU Telecommunication Standardization Sector (ITU-T) is a permanent organ of ITU. ITU-T is responsible for studying technical, operating and tariff questions and issuing Recommendations on them with a view to standardizing telecommunications on a worldwide basis.

The World Telecommunication Standardization Assembly (WTSA), which meets every four years, establishes the topics for study by the ITU-T study groups which, in turn, produce Recommendations on these topics.

The approval of ITU-T Recommendations is covered by the procedure laid down in WTSA Resolution 1.

In some areas of information technology which fall within ITU-T's purview, the necessary standards are prepared on a collaborative basis with ISO and IEC.

NOTE

In this Recommendation, the expression "Administration" is used for conciseness to indicate both a telecommunication administration and a recognized operating agency.

Compliance with this Recommendation is voluntary. However, the Recommendation may contain certain mandatory provisions (to ensure, e.g., interoperability or applicability) and compliance with the Recommendation is achieved when all of these mandatory provisions are met. The words "shall" or some other obligatory language such as "must" and the negative equivalents are used to express requirements. The use of such words does not suggest that compliance with the Recommendation is required of any party.

INTELLECTUAL PROPERTY RIGHTS

ITU draws attention to the possibility that the practice or implementation of this Recommendation may involve the use of a claimed Intellectual Property Right. ITU takes no position concerning the evidence, validity or applicability of claimed Intellectual Property Rights, whether asserted by ITU members or others outside of the Recommendation development process.

As of the date of approval of this Recommendation, ITU had received notice of intellectual property, protected by patents, which may be required to implement this Recommendation. However, implementers are cautioned that this may not represent the latest information and are therefore strongly urged to consult the TSB patent database at <http://www.itu.int/ITU-T/ipr/>.

© ITU 2015

All rights reserved. No part of this publication may be reproduced, by any means whatsoever, without the prior written permission of ITU.

Table of Contents

	Page
1 Scope.....	1
2 References.....	1
3 Definitions	2
4 Abbreviations and acronyms	2
5 Conventions	3
6 ITU-T interface description for 1905.1 devices	3
6.1 ITU-T interfaces in 1905 reference model	3
6.2 ITU-T security mechanisms in 1905 networks	6
7 ITU-T interface Generic PHY device information type TLV	7
8 ITU-T interface technology description	9
8.1 Description of Generic PHY XML fields.....	9
8.2 ITU-T Interface XML Technology description.....	11
9 Test vectors	14
10 ITU-T specific schema	15
11 ITU-T vendor specific TLVs	15

Recommendation ITU-T G.9979

Implementation of the generic mechanism in the IEEE 1905.1a-2014 Standard to include applicable ITU-T Recommendations

Amendment 1

Editorial note: This is a complete-text publication. Modifications introduced by this amendment are shown in revision marks relative to Recommendation ITU-T G.9979 (2014).

1 Scope

This Recommendation makes use of the generic extension mechanism defined in the IEEE 1905.1a 2014 standard to include ITU-T G.9960, ITU-T G.9961, ITU-T G.9962, ITU-T G.9963 and ITU-T G.9964 (referred to hereafter as ITU-T G.996x) and ITU-T G.9954 transceivers [ITU-T G.991.1](#), [ITU-T G.991.2](#), [ITU-T G.992.1](#), [ITU-T G.992.2](#), [ITU-T G.992.3](#), [ITU-T G.992.4](#), [ITU-T G.992.5](#), [ITU-T G.993.1](#), [ITU-T G.993.2](#), [ITU-T G.993.5](#) and [ITU-T G.9701](#) (referred to hereafter as [ITU-T xDSL](#)) as supported ~~home~~ networking technologies under the abstraction layer defined by 1905 technology (see [IEEE 1905.11a 2014]).

The IEEE 1905.1 standard defines an abstraction layer for multiple ~~home~~ networking technologies, which presents a common virtual interface (the 1905 MAC SAP) to upper layers for the underlying networking technologies below the relevant 1905.1 Interface SAP(s).

As indicated in clause 1.1 of the IEEE 1905.1 standard, 1905 is extensible to work with network technologies not included in the original standard. This Recommendation makes use of the generic extension mechanism described in IEEE 1905.1a to specify an extension to the IEEE 1905.1 standard that introduces the ITU-T G.996x and ITU-T G.9954 network technologies as additional underlying network interfaces for the 1905 abstraction layer.

2 References

The following ITU-T Recommendations and other references contain provisions which, through reference in this text, constitute provisions of this Recommendation. At the time of publication, the editions indicated were valid. All Recommendations and other references are subject to revision; users of this Recommendation are therefore encouraged to investigate the possibility of applying the most recent edition of the Recommendations and other references listed below. A list of the currently valid ITU-T Recommendations is regularly published. The reference to a document within this Recommendation does not give it, as a stand-alone document, the status of a Recommendation.

[ITU-T G.991.1] Recommendation ITU-T G.991.1 (1998), *High bit rate digital subscriber line (HDSL) transceivers*.

[ITU-T G.991.2] Recommendation ITU-T G.991.2 (2003), *Single-pair high-speed digital subscriber line (SHDSL) transceivers*.

[ITU-T G.992.1] Recommendation ITU-T G.992.1 (1999), *Asymmetric digital subscriber line (ADSL) transceivers*.

[ITU-T G.992.3] Recommendation ITU-T G.992.3 (1999), *Asymmetric digital subscriber line transceivers 2 (ADSL2)*.

[ITU-T G.992.5] Recommendation ITU-T G.992.5 (1999), *Asymmetric Asymmetric digital subscriber line 2 transceivers (ADSL2) – Extended bandwidth ADSL2 (ADSL2plus)*.

[ITU-T G.993.1] Recommendation ITU-T G.993.1 (2004), *Very high speed digital subscriber line transceivers (VDSL)*.

[ITU-T G.993.2]	<u>Recommendation ITU-T G.993.2 (2015), <i>Very high speed digital subscriber line transceivers 2 (VDSL2)</i>.</u>
[ITU-T G.993.5]	<u>Recommendation ITU-T G.993.5 (2015), <i>Self-FEXT cancellation (vectoring) for use with VDSL2 transceivers</i>.</u>
[ITU-T G.9700]	<u>Recommendation ITU-T G.9700 (2014), <i>Fast access to subscriber terminals (G.fast) – Power spectral density specification</i>.</u>
[ITU-T G.9701]	<u>Recommendation ITU-T G.9701 (2014), <i>Fast access to subscriber terminals (G.fast) – Physical layer specification</i>.</u>
[ITU-T G.9954]	Recommendation ITU-T G.9954 (2007), <i>Home networking transceivers – Enhanced physical, media access, and link layer specifications</i> .
[ITU-T G.9960]	Recommendation ITU-T G.9960 (2011), <i>Unified high-speed wire-line based home networking transceivers – System architecture and physical layer specification</i> .
[ITU-T G.9961]	Recommendation ITU-T G.9961 (2010), <i>Unified high-speed wire-line based home networking transceivers – Data link layer specification</i> .
[ITU-T G.9962]	Recommendation ITU-T G.9962 (2014), <i>Unified high-speed wire-line based home networking transceivers – management specification</i> .
[ITU-T G.9963]	Recommendation ITU-T G.9963 (2011), <i>Unified high-speed wire-line based home networking transceivers – Multiple input/multiple output specification</i> .
[ITU-T G.9964]	Recommendation ITU-T G.9964 (2011), <i>Unified high-speed wire-line based home networking transceivers – Power spectral density specification</i> .
[ITU-T G.9977]	<u>Recommendation ITU-T G.9977 (2016), <i>Mitigation of interference between DSL and PLC</i>.</u>
~~[IEEE 1905.1A]~~	~~IEEE Standard 1905.1 2013, <i>IEEE Standard for a Convergent Digital Home Network for Heterogeneous Technologies, including IEEE Standard 1905.1a 2014, Amendment 1 to IEEE Std 1905.1 2013, Support of New MAC/PHYs and Enhancements</i>.~~
[IEEE 1905.1 2013]	<u>IEEE Standard 1905.1 (2013), <i>IEEE Standard for a Convergent Digital Home Network for Heterogeneous Technologies</i>.</u>
[IEEE 1905.1a 2014]	<u>IEEE Standard 1905.1a (2014), <i>IEEE Standard for a Convergent Digital Home Network for Heterogeneous Technologies, Amendment 1: Support of new MAC/PHYs and enhancements</i>.</u>
[ISO/IEC 8859-1]	ISO/IEC 8859-1:1998, <i>Information technology – 8-bit single-byte coded graphic character sets – Part 1: Latin alphabet No. 1</i> .

3 Definitions

This Recommendation defines the following terms:

3.1 1905 abstraction layer: Layer defined in [IEEE 1905.1a 2014A] that provides a common interface to underlying home network interfaces.

3.2 1905 device: A device with one or more interfaces abstracted by a 1905 abstraction layer.