

ITU-T

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

H.832

(01/2015)

SERIES H: AUDIOVISUAL AND MULTIMEDIA SYSTEMS

E-health multimedia services and applications –
Interoperability compliance testing of personal health
systems (HRN, PAN, LAN, TAN and WAN)

Conformance of ITU-T H.810 personal health devices: WAN interface Part 2: Web services interoperability: Receiver

Recommendation ITU-T H.832

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ITU-T H-SERIES RECOMMENDATIONS
AUDIOVISUAL AND MULTIMEDIA SYSTEMS

CHARACTERISTICS OF VISUAL TELEPHONE SYSTEMS	H.100–H.199
INFRASTRUCTURE OF AUDIOVISUAL SERVICES	
General	H.200–H.219
Transmission multiplexing and synchronization	H.220–H.229
Systems aspects	H.230–H.239
Communication procedures	H.240–H.259
Coding of moving video	H.260–H.279
Related systems aspects	H.280–H.299
Systems and terminal equipment for audiovisual services	H.300–H.349
Directory services architecture for audiovisual and multimedia services	H.350–H.359
Quality of service architecture for audiovisual and multimedia services	H.360–H.369
Telepresence	H.420–H.429
Supplementary services for multimedia	H.450–H.499
MOBILITY AND COLLABORATION PROCEDURES	
Overview of Mobility and Collaboration, definitions, protocols and procedures	H.500–H.509
Mobility for H-Series multimedia systems and services	H.510–H.519
Mobile multimedia collaboration applications and services	H.520–H.529
Security for mobile multimedia systems and services	H.530–H.539
Security for mobile multimedia collaboration applications and services	H.540–H.549
Mobility interworking procedures	H.550–H.559
Mobile multimedia collaboration inter-working procedures	H.560–H.569
BROADBAND, TRIPLE-PLAY AND ADVANCED MULTIMEDIA SERVICES	
Broadband multimedia services over VDSL	H.610–H.619
Advanced multimedia services and applications	H.620–H.629
Ubiquitous sensor network applications and Internet of Things	H.640–H.649
IPTV MULTIMEDIA SERVICES AND APPLICATIONS FOR IPTV	
General aspects	H.700–H.719
IPTV terminal devices	H.720–H.729
IPTV middleware	H.730–H.739
IPTV application event handling	H.740–H.749
IPTV metadata	H.750–H.759
IPTV multimedia application frameworks	H.760–H.769
IPTV service discovery up to consumption	H.770–H.779
Digital Signage	H.780–H.789
E-HEALTH MULTIMEDIA SERVICES AND APPLICATIONS	
Interoperability compliance testing of personal health systems (HRN, PAN, LAN, TAN and WAN)	H.820–H.859
Multimedia e-health data exchange services	H.860–H.869

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

Recommendation ITU-T H.832

Conformance of ITU-T H.810 personal health devices: WAN interface Part 2: Web services interoperability: Receiver

Summary

Recommendation ITU-T H.832 is a transposition of Continua Health Alliance Test Tool DG2013, Test Suite Structure & Test Purposes, WAN Interface; Part 2: Web Services Interoperability. Receiver (Version 1.3, 2014-01-24), that was developed by the Continua Health Alliance. A number of versions of this specification existed before transposition.

This Recommendation includes an electronic attachment with the protocol implementation conformance statements (PICS) and the protocol implementation extra information for testing (PIXIT) required for the implementation of Annex A.

History

Edition	Recommendation	Approval	Study Group	Unique ID*
1.0	ITU-T H.832	2015-01-13	16	11.1002/1000/11830-en

* 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>.

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Table of Contents

		Page
1	Scope.....	1
2	References.....	1
3	Definitions	2
3.1	Terms defined elsewhere	2
3.2	Terms defined in this Recommendation.....	2
4	Abbreviations and acronyms	2
5	Conventions	3
6	Test suite structure (TSS)	4
7	Electronic attachment	5
	Annex A – Test purposes	6
A.1	TP definition conventions.....	6
A.2	Subgroup 2.1.1 – Basic profile (BP)	7
A.3	Subgroup 2.1.2 – Basic security profile (BSP).....	17
A.4	Subgroup 2.1.3 – Reliable messaging (RM)	22
	Bibliography.....	34

Electronic attachment: Electronic attachment with the protocol implementation conformance statements (PICS) and the protocol implementation extra information for testing (PIXIT) required for the implementation of Annex A.

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Introduction

This Recommendation is a transposition of Continua Health Alliance Test Tool DG2013, Test Suite Structure & Test Purposes, WAN Interface; Part 2: Web Services Interoperability. Receiver (Version 1.3, 2014-01-24), that was developed by the Continua Health Alliance. A number of versions of this specification existed before transposition and these can be found in the table below.

Version	Date	Revision history
1.1	2012-10-05	Initial release for Test Tool DG2011. It is the same version as "TSS&TP_1.5_WAN_PART_2_(REC WS-I)_v1.1.doc" because new features included in [b-CDG 2011] do not affect the test procedures specified in this document.
1.2	2013-05-24	Initial release for Test Tool DG2012. It is the same version as "TSS&TP_DG2011_WAN_PART_2_(REC WS-I)_v1.1.doc" because new features included in [b-CDG 2012] do not affect the test procedures specified in this document.
1.3	2014-01-24	Initial release for Test Tool DG2013. It is the same version as "TSS&TP_DG2012_WAN_PART_2_(REC WS-I)_v1.1.doc" because new features included in CDG 2013 [ITU-T H.810] do not affect the test procedures specified in this document.

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Recommendation ITU-T H.832

Conformance of ITU-T H.810 personal health devices: WAN interface Part 2: Web services interoperability: Receiver

1 Scope

The scope of this Recommendation¹ is to provide a test suite structure and the test purposes (TSS & TP) for the WAN interface based on the requirements defined in the Continua Design Guidelines (CDG) [ITU-T H.810]. The objective of this test specification is to provide a high probability of air interface interoperability between different devices.

The TSS & TP for the WAN interface document have been divided into the eight parts specified below. This Recommendation covers Part 2.

- **Part 1:** Web services interoperability [ITU-T H.810] Sender
- **Part 2:** Web services interoperability [ITU-T H.810] Receiver
- **Part 3:** SOAP/ATNA. Sender
- **Part 4:** SOAP/ATNA. Receiver
- **Part 5:** PCD-01 HL7 messages. Sender
- **Part 6:** PCD-01 HL7 messages. Receiver
- **Part 7:** Consent management. Sender
- **Part 8:** Consent management. Receiver

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 H.810] Recommendation ITU-T H.810 (2013), *Interoperability design guidelines for personal health systems*.

[IEEE 11073-20601A] IEEE 11073-20601A-2010, *IEEE Health informatics – Personal health device communication – Part 20601: Application profile – Optimized Exchange Protocol Amendment 1*.
<<http://standards.ieee.org/findstds/standard/11073-20601a-2010.html>>

[OASIS/WS-I BP] OASIS/WS-I (2006), *Basic Profile Version 1.1*.
<http://www.ws-i.org/Profiles/BasicProfile-1.1.html>

[OASIS WS-I BSP] OASIS/WS-I (2007), *WS-I Basic Security Profile Version 1.0*.
<http://www.ws-i.org/Profiles/BasicSecurityProfile-1.0.html>

[OASIS WS-I RM] OASIS (2007), *Reliable Messaging Version 1.1*.
<http://docs.oasis-open.org/ws-rx/wsrn/200702/wsrn-1.1-spec-cs-01.pdf>

¹ This Recommendation includes an electronic attachment with the protocol implementation extra information for testing (PIXIT) required for the implementation of Annex A.

3 Definitions

3.1 Terms defined elsewhere

3.1.1 agent [IEEE 11073-20601A]: A node that collects and transmits personal health data to an associated manager.

3.1.2 manager [IEEE 11073-20601A]: A node receiving data from one or more agent systems. Some examples of managers include a cellular phone, health appliance, set top box, or a computer system.

3.2 Terms defined in this Recommendation

None.

4 Abbreviations and acronyms

This Recommendation uses the following abbreviations and acronyms:

AHD	Application Hosting Device
ATNA	Audit Trail and Node Authentication
ATS	Abstract Test Suite
CDG	Continua Design Guidelines
DUT	Device Under Test
GUI	Graphical User Interface
INR	International Normalized Ratio
IUT	Implementation Under Test
MDS	Medical Device System
NFC	Near Field Communication
PCO	Point of Control and Observation
PCT	Protocol Conformance Testing
PHD	Personal Healthcare Device
PHDC	Personal Healthcare Device Class
PHM	Personal Healthcare Monitoring (report)
PICS	Protocol Implementation Conformance Statement
PIXIT	Protocol Implementation extra Information for Testing
SDP	Service Discovery Protocol
SOAP	Simple Object Access Protocol
TCRL	Test Case Reference List
TCWG	Test and Certification Working Group
TP	Test Purpose
TSS	Test Suite Structure
URI	Uniform Resource Identifier
USB	Universal Serial Bus

WAN	Wide Area Network
WD	WAN Device
WDM	Windows Driver Model
WS	Web Service
WSDL	Web Service Description Language
XML	extensible Markup Language

5 Conventions

The key words "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "MAY", "MAY NOT" in this document are to be interpreted as in [b-ETSI SR 001 262].

- SHALL is equivalent to 'must' or 'it is required to'.
- SHALL NOT is equivalent to 'must not' or 'it is not allowed'.
- SHOULD is equivalent to 'it is recommended to'.
- SHOULD NOT is equivalent to 'it is not recommended to'.
- MAY is equivalent to 'is permitted'.
- MAY NOT is equivalent to 'it is not required that'.

NOTE – The above-mentioned key words are capitalized for illustrative purposes only and they do not appear capitalized within this Recommendation.

Reference is made in the ITU-T H.800-series of Recommendations to different versions of the Continua Design Guidelines (CDG) by a specific designation. The list of terms that may be used in this Recommendation is provided in Table 1. Furthermore, the 2013 edition of the Continua design guidelines, which is published as [ITU-T H.810], is designated by "CDG 2013" as an extension of the designations indicated in the bibliography.

Table 1 – List of designations associated to the various versions of the CDG

CDG name	Transposed as	Version	Description	Designation
2013 plus errata	[ITU-T H.810]	4.1	CDG 2013 plus errata noting all ratified bugs.	–
2013	–	4.0	Release 2013 of CDG including maintenance updates of the CDG 2012 and additional guidelines that cover new functionalities.	Endorphin
2012 plus errata	–	3.1	CDG 2012 plus errata noting all ratified bugs [b-CDG 2012].	–
2012	–	3.0	Release 2012 of the CDG including maintenance updates of CDG 2011 and additional guidelines that cover new functionalities.	Catalyst
2011 plus errata	–	2.1	CDG 2011 integrated with identified errata.	–
2011	–	2.0	Release 2011 of CDG including maintenance updates of the CDG 2010 and additional guidelines that cover new functionalities [b-CDG 2011].	Adrenaline

Table 1 – List of designations associated to the various versions of the CDG

CDG name	Transposed as	Version	Description	Designation
2010 plus errata	–	1.6	CDG 2010 integrated with identified errata	–
2010	–	1.5	Release 2010 of the CDG with maintenance updates of CDG Version 1 and additional guidelines that cover new functionalities [b-CDG 2010].	1.5
1.0	–	1.0	First released version of the CDG [b-CDG 1.0].	–

6 Test suite structure (TSS)

The test purposes (TPs) for the WAN interface have been divided into the main subgroups specified below. Annex A describes the TPs for subgroups 2.1.1 to 2.1.3 (shown in bold).

- Group 1: Sender (SEN)
 - Group 1.1: Web services interoperability (WSI)
 - Subgroup 1.1.1: Basic profile (BP)
 - Subgroup 1.1.2: Basic security profile (BSP)
 - Subgroup 1.1.3: Reliable messaging (RM)
 - Group 1.2: SOAP (SOAP)
 - Subgroup 1.2.1: SOAP headers (HEAD)
 - Group 1.3: Audit (ATNA)
 - Subgroup 1.3.1: General (GEN)
 - Subgroup 1.3.2: PCD-01 (PCD-01)
 - Subgroup 1.3.3: Consent management (CM)
 - Group 1.4: PCD-01 HL7 Messages (PCD-01-DATA)
 - Subgroup 1.4.1: General (GEN)
 - Subgroup 1.4.2: Design guidelines (DG)
 - Subgroup 1.4.3: Pulse oximeter (PO)
 - Subgroup 1.4.4: Blood pressure monitor (BPM)
 - Subgroup 1.4.5: Thermometer (TH)
 - Subgroup 1.4.6: Weighing scales (WEG)
 - Subgroup 1.4.7: Glucose meter (GL)
 - Subgroup 1.4.8: Cardiovascular fitness and activity monitor (CV)
 - Subgroup 1.4.9: Strength fitness equipment (ST)
 - Subgroup 1.4.10: Independent living activity hub (HUB)
 - Subgroup 1.4.11: Adherence monitor (AM)
 - Subgroup 1.4.12: Peak expiratory flow monitor (PF)
 - Subgroup 1.4.13: Body composition analyser (BCA)
 - Subgroup 1.4.14: Basic electrocardiograph (ECG)
 - Group 1.5: Consent management (CM)

- Subgroup 1.5.1: WAN XDR transaction (TRANS)
- Subgroup 1.5.2: WAN metadata validation (META)
- Subgroup 1.5.3: WAN consent directive validation (CDV)
- Group 2: Receiver (REC)
 - **Group 2.1: Web service interoperability (WSI)**
 - **Subgroup 2.1.1: Basic profile (BP)**
 - **Subgroup 2.1.2: Basic security profile (BSP)**
 - **Subgroup 2.1.3: Reliable messaging (RM)**
 - Group 2.2: SOAP (SOAP)
 - Subgroup 2.2.1: SOAP headers (HEAD)
 - Group 2.3: Audit (ATNA)
 - Subgroup 2.3.1: General (GEN)
 - Subgroup 2.3.2: PCD-01 (PCD-01)
 - Subgroup 2.3.3: Consent management (CM)
 - Group 2.4: PCD-01 HL7 Messages (PCD-01-DATA)
 - Subgroup 2.4.1: General (GEN)
 - Subgroup 2.4.2: Design guidelines (DG)
 - Subgroup 2.4.3: Pulse oximeter (PO)
 - Subgroup 2.4.4: Blood pressure monitor (BPM)
 - Subgroup 2.4.5: Thermometer (TH)
 - Subgroup 2.4.6: Weighing scales (WEG)
 - Subgroup 2.4.7: Glucose meter (GL)
 - Subgroup 2.4.8: Cardiovascular fitness and activity monitor (CV)
 - Subgroup 2.4.9: Strength fitness equipment (ST)
 - Subgroup 2.4.10: Independent living activity hub (HUB)
 - Subgroup 2.4.11: Adherence monitor (AM)
 - Subgroup 2.4.12: Peak expiratory flow monitor (PF)
 - Subgroup 2.4.13: Body composition analyser (BCA)
 - Subgroup 2.4.14: Basic electrocardiograph (ECG)
 - Group 2.5: Consent management (CM)
 - Subgroup 2.5.1: WAN XDR transaction (TRANS)
 - Subgroup 2.5.2: WAN service validation (SER)

7 Electronic attachment

The protocol implementation conformance statements (PICS) and the protocol implementation extra information for testing (PIXIT) required for the implementation of Annex A can be downloaded from <http://handle.itu.int/11.1002/2000/12067>.

In the electronic attachment, letters "C" and "I" in the column labelled "Mandatory" are used to distinguish between "PICS" and "PIXIT" respectively during testing. If the cell is empty, the corresponding PICS is "independent". If the field contains a "C", the corresponding PICS is dependent on other PICS, and the logical expression is detailed in the "SCR_Expression" field. The static conformance review (SCR) is used in the test tool to assert whether the PICS selection is consistent.

Annex A

Test purposes

(This annex forms an integral part of this Recommendation.)

A.1 TP definition conventions

The test purposes (TP) are defined according to the following rules:

- **TP Id:** This is a unique identifier (TP/<TT>/<DUT>/<GR>/<SGR>/<XX> – <NNN>). It is specified according to the naming convention defined below:
 - Each test purpose identifier is introduced by the prefix "TP"
 - <TT>: This is the test tool that will be used in the test case.
 - WAN: Wide area network
 - <DUT>: This is the device under test.
 - SEN: WAN observation sender
 - REC: WAN observation receiver
 - <GR>: This identifies a group of test cases.
 - <SGR>: This identifies a subgroup of test cases.
 - <XX>: This identifies the type of testing.
 - BV: Valid behaviour test
 - BI: Invalid behaviour test
 - <NNN>: This is a sequential number that identifies the test purpose (TP).
- **TP label:** This is the title of the TP.
- **Coverage:** This contains the specification reference and clause to be checked by the TP.
 - Spec: This indicates the earliest version of the specification from which the testable items to be checked by the TP are included.
 - Testable item: This contains testable items to be checked by the TP.
- **Test purpose:** This is a description of the requirements to be tested.
- **Applicability:** This contains the PICS items that define if the test case is applicable or not for a specific device. When a TP contains an "ALL" in this field it means that it applies to the device under test within that scope of the test (specialization, transport used, etc.).
- **Initial condition:** This indicates the state to which the DUT needs to be moved at the beginning of TC execution.
- **Test procedure:** This describes the steps to be followed in order to execute the test case.
- **Pass/Fail criteria:** This provides criteria to decide whether the DUT passes or fails the test case.

A.2 Subgroup 2.1.1 – Basic profile (BP)

TP Id		TP/WAN/REC/WSI/BP/BI-000		
TP label		SOAP Envelope Namespace		
Coverage	Spec	[OASIS/WS-I BP]		
	Testable items	BP-R1015; M		
Applicability		C_REC_000		
Initial condition		The receiver under test has a WebService enabled and the simulated sender has a SOAP message whose document element is not a soap:Envelope, ready to be sent		
Test procedure		1. The simulated sender sends the SOAP message [b-SOAP 1.2]. 2. The receiver generates a fault.		
Pass/Fail criteria		Check that the receiver generates a fault and does not discard the message.		
Notes				

TP Id		TP/WAN/REC/WSI/BP/BV-000		
TP label		SOAP Envelopes Structure		
Coverage	Spec	[OASIS/WS-I BP]		
	Testable items	BP-R9980; M	BP-R9981; M	BP-R1014; M
		BP-R1008; M	BP-R1009; M	BP-R1033; R
		BP-R1017; M	BP-R1032; M	
Applicability		C_REC_000		
Initial condition		The receiver under test has a WebService enabled and the simulated sender has a SOAP message ready to be sent.		
Test procedure		1. The simulated sender sends a SOAP message to the receiver under test. 2. The receiver responds with another SOAP message. Check that the captured message has the following structure <soap:Envelope 'namespace'> <soap:Header> ... </soap:Header> <soap:Body> The children of the soap:envelope are here </soap:Body> </soap:Envelope> where soap:Header is optional and it is recommended that the namespace is not "http://www.w3.org/XML/1998/namespace".		
Pass/Fail criteria		Check that: the message contains, in this order, an envelope, an optional header and a body. each namespace that appears in the soap message is qualified. the soap:envelope, soap:header and soap:body do not have attributes in the namespace http://schemas.xmlsoap.org/soap/envelope/. there is no DTD or processing instructions in the envelope. axsi:type is used only if a derived type is indicated (see XML Schema Part 1: Structures, Section 2.6.1) the namespace is "http://www.w3.org/2003/05/soap-envelope" to support SOAP 1.2.		