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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.830.2

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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.830.2

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

Summary

Recommendation ITU-T H.830.2 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.

This Recommendation was initially approved as ITU-T H.832 (01/2015) and later renumbered, without further modifications, as ITU-T H.830.2 (01/2015) for consistency with the numbering of new WAN interface conformance testing specifications.

History

Edition	Recommendation	Approval	Study Group	Unique ID*
1.0	ITU-T H.832	2015-01-13	16	11.1002/1000/12250
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* 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

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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.

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As of the date of approval of this Recommendation, ITU had not 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/.

Table of Contents

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.

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.

Recommendation ITU-T H.830.2

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

1 Scope

The scope of this Recommendation[1] 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/wsrm/200702/wsrm-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.		

Notes	BP-R2201 and BP-R2210 imply that there may be at most one child element of the soap:Body. The referenced errata, NE05, would not be allowed by Continua (as it is not compliant with the WS-I Basic Profile).

TP Id		TP/WAN/REC/WSI/BP/BV-001		
TP label		SOAP encodingStyle Attribute		
Coverage	**Spec**	[OASIS/WS-I BP]		
	Testable Items	BP-R1005; M	BP-R1006; M	BP-R1007; M
Applicability		C_REC_000		
Initial condition		The receiver under test has a WebService enabled and the simulated sender has a SOAP message, with a correct soap:encodingStyle attribute in one of the elements, ready to be sent.		
Test procedure		1. The simulated sender sends the SOAP message. 2. The receiver responds with another SOAP message: a. If a soap:encodingStyle attribute is present in any element: ❑ Namespace is not "http://schemas.xmlsoap.org/soap/envelope/" ❑ The element is not a child of soap:Body ❑ If PICS C_REC_WSI_003 is declared, the element is not a grandchild of soap:body		
Pass/Fail criteria		In step 2, if the soap:encodingStyle attribute is present, it is as specified.		
Notes				

TP Id		TP/WAN/REC/WSI/BP/BV-002		
TP label		Use of SOAP in HTTP		
Coverage	**Spec**	[OASIS/WS-I BP]		
	Testable items	BP-R1127; M	BP-R1140; M	CommonReq1; 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 that contains a SOAPAction field not quoted in its HTTP header.		
Test procedure		1. The simulated sender sends a message using HTTP/1.1 with a SOAPAction HTTP Header field not quoted without using security. 2. The receiver processes the message (it responds with the fault wsse:InvalidSecurity).		
Pass/Fail criteria		Check that in step 2 the message has been processed.		
Notes				

TP Id		TP/WAN/REC/WSI/BP/BV-003		
TP label		HTTP Status Codes		
Coverage	**Spec**	[OASIS/WS-I BP]		
	Testable items	BP-R1124; M	BP-R1111; R	BP-R1112; R
		BP-R1125; M	BP-R1113; R	BP-R1114; R
		BP-R1115; R		
Applicability		C_REC_000		

Initial condition	The receiver under test has a WebService enabled and the simulated sender is ready to send a HTTP request with an envelope permitted by the SUT
Test procedure	1. The simulated sender sends a HTTP request to the receiver under test with an envelope permitted by the SUT. 2. The receiver responds with "2xx" as status code. It is recommended to be "200 OK" if the response contains an envelope that is not a fault. It is recommended to be "200 OK" or "202 Accepted", if the response does not contain a SOAP envelope but indicates the successful outcome of the HTTP Request. 3. The simulated sender sends a HTTP request with a malformed message. 4. The receiver responds with "4xx" as status code. It is recommended to be "400 Bad Request". 5. The simulated sender sends a HTTP request with a method that is not "POST" 6. The receiver responds with "4xx" as status code. It is recommended to be "405 Method not Allowed". 7. The simulated sender sends a HTTP request with a Content-Type header field not permitted by the receiver's WSDL description. 8. The Receiver responds with "4xx" as status code. It is recommended to be "415 Unsupported Media Type".
Pass/Fail criteria	Check that status codes are as specified.
Notes	

TP Id		TP/WAN/REC/WSI/BP/BV-004		
TP label		Messages using WSDL descriptions		
Coverage	**Spec**	[OASIS/WS-I BP]		
	Testable items	BP-R2211; M	BP-R2212; M	BP-R2213; M
		BP-R2214; M		
Applicability		C_REC_000 AND (C_REC_WSI_003 OR C_REC_WSI_004)		
Initial condition		The receiver under test has a WebService enabled and the simulated sender is ready to send any SOAP message.		
Test procedure		1. The simulated sender sends a SOAP message. 2. The receiver under test responds with another SOAP message. 3. Look into the WSDL of the service and check in the captured message that: If C_REC_WSI_003: a. If the value of the parts attribute of the soapbind:body element of the description is an empty string, there is no part accessor element. b. If the value of the parts attribute of the soapbind:body element of the description is not empty, check that the part accessor of the envelope is present and that the value of the xsi:nil attribute, if it is present, is not "1" or "true". If C_REC_WSI_004: a. If the value of the parts attribute of the soapbind:body is an empty string, the envelope does not have element content in the soap:Body element.		
Pass/Fail criteria		Check that the envelope is as specified in step 3.		
Notes				

TP Id		TP/WAN/REC/WSI/BP/BV-005		
TP label		Port Types		
Coverage	**Spec**	[OASIS/WS-I BP]		
	Testable items	BP-R2301; M		
Applicability		C_REC_000		
Initial condition		The receiver under test has a WebService enabled and the simulated sender is ready to send any SOAP message.		
Test procedure		1. The simulated sender sends a SOAP message to the receiver under test. 2. The receiver under test responds with a SOAP message. 3. Check the wsdl:parts elements in the wsdl:message of the WSDL of the receiver under test. 4. Compare them with the soap:Body elements.		
Pass/Fail criteria		In step 4, check that the order of the wsdl:parts are the same as the order of the elements in the soap:Body		
Notes				

TP Id		TP/WAN/REC/WSI/BP/BV-006		
TP label		SOAP Binding		
Coverage	**Spec**	[OASIS/WS-I BP]		
	Testable items	BP-R2742; O	BP-R2743; O	
Applicability		C_REC_000		
Initial condition		The receiver under test has a WebService enabled and the simulated sender is ready to send a SOAP message that causes a fault in the receiver response.		
Test procedure		1. The simulated sender sends a SOAP message that causes a fault at the receiver. 2. The receiver under test responds with a fault message. 3. Check the detail element and the SOAP header block.		
Pass/Fail criteria		Look into the WSDL description of the web service and check that: ❑ in step 2, it is optional that the detail element is not described by the soapbind:fault element of the description and that the header block is not described by a soapbind:headerfault element.		
Notes		A simulated sender can cause a fault at the receiver in many different ways: ❑ If the receiver uses security, the sender sends a SOAP envelope without the security header. ❑ If the sender sends something that is not a SOAP envelope. ❑ If the receiver uses WSRM, the sender sends something incorrect about the WSRM, such as an unknown sequence, or something like that.		

TP Id		TP/WAN/REC/WSI/BP/BV-006_B		
TP label		SOAP Binding 2		
Coverage	**Spec**	[OASIS/WS-I BP]		
	Testable items	BP-R2712; M	BP-R2729; M	BP-R2735; M
		BP-R2755; M	BP-R2737; M	BP-R2738; M
		BP-R2739; O	BP-R2752; O	BP-R2753; O
Applicability		C_REC_000 AND (C_REC_WSI_003 OR C_REC_WSI_004)		
Initial condition		The receiver under test has a WebService enabled and the simulated sender is ready to send any SOAP message.		
Test procedure		1. The simulated sender sends a SOAP message to the receiver under test. 2. The receiver responds with a SOAP message. 3. Check the captured message.		
Pass/Fail criteria		Look into the WSDL description of the web service and check: • In step 2, o If the SOAP header block is not described in wsdl:binding, it can be present and it is optional that the mustUnderstand attribute is present and equal to "1" and that the envelope has more than one instance for each header block. o All soapbind:headers specified in wsdl:input or wsdl:output of a wsdl:operation of a wsdl:binding are included in the envelope. o If C_REC_WSI_003, the part accessor of the envelope has a local name equal to the name of the attribute of the wsdl:part element, it is placed in no namespace and its descendents have a namespace qualified by the schema in which the part accessor types are defined. In addition the envelope has a wrapper element whose name is the corresponding wsdl:operation name suffixed with the string "Response". o If C_REC_WSI_004, the child element of the soap:Body is an instance of the global element declaration referenced by the corresponding wsdl:message part.		
Notes				

TP Id		TP/WAN/REC/WSI/BP/BV-007		
TP label		Use of HTTPS		
Coverage	**Spec**	[OASIS/WS-I BP]		
	Testable items	BP-R5000; O	BP-R5001; M	BP-R5010; O
Applicability		C_REC_000		
Initial condition		The receiver under test has a WebService enabled and the simulated sender is ready to send any HTTP request.		
Test procedure		1. The simulated sender sends a HTTP request. 2. Wait until the receiver under test responds using a HTTP instance. 3. Check the value of the location attribute of the soapbind:address element in its wsdl:port description.		
Pass/Fail criteria		In step 2, if this value is "https", the instance requires HTTPS, otherwise, if it is "http", the instance requires HTTP.		
Notes		Applicability is ALL because although TI says that HTTPS is optional, the CDG states that HTTPS with TLS must be used.		

TP Id		TP/WAN/REC/WSI/BP/BV-008		
TP label		SOAP Processing Model		
Coverage	**Spec**	[OASIS/WS-I BP]		
	Testable items	BP-R1025; M	BP-R1028; R	BP-R1029; M
		BP-R1030; R	BP-R1027; M	
Applicability		C_REC_000		
Initial condition		The receiver under test has a WebService enabled and the simulated sender is ready to send a SOAP message with a header block with soap:MustUnderstand='1'|'true' that the receiver does not understand.		
Test procedure		1. The simulated sender sends the SOAP message. 2. The receiver under test generates a soap:MustUnderstand fault. 3. The receiver responds with that fault. 4. Check that when receiver generates the fault. The simulated sender is notified of the fault by the receiver.		
Pass/Fail criteria		In step 3, the receiver responds with a soap:MustUnderstand fault and no other messages.		
Notes		If the receiver does not send another message besides a soap:MustUnderstand fault, then it is considered that further processing is not performed prior to the generation of the fault.		

TP Id		TP/WAN/REC/WSI/BP/BV-009		
TP label		SOAP Faults		
Coverage	**Spec**	[OASIS/WS-I BP]		
	Testable items	BP-R1107; M	BP-R1002; M	
Applicability		C_REC_000		
Initial condition		The receiver under test has a WebService enabled and the simulated sender is ready to send a SOAP message with a soap:Fault in the soap:Body.		
Test procedure		1. The simulated sender sends an envelope with a single soap:fault child in the soap:Body. 2. Wait for any response from the receiver under test. 3. The simulated sender sends a soap:fault with zero elements as children of the detail element. 4. Wait for any response of receiver. 5. The simulated sender sends a soap:fault with zero attributes in the detail element. 6. Wait for any response from the receiver.		
Pass/Fail criteria		In step 2,4 and 6 the receiver must not report any error, because all the messages are accepted.		
Notes				

<table>
<tr><td colspan="2">TP Id</td><td colspan="3">TP/WAN/REC/WSI/BP/BV-010</td></tr>
<tr><td colspan="2">TP label</td><td colspan="3">WSDL Description</td></tr>
<tr><td rowspan="10">Coverage</td><td>Spec</td><td colspan="3">[OASIS/WS-I BP]</td></tr>
<tr><td rowspan="9">Testable items</td><td>BP-R1034; R</td><td>BP-R2028; M</td><td>BP-R2029; M</td></tr>
<tr><td>BP-R4004; M</td><td>BP-R4005; R</td><td>BP-R4002; R</td></tr>
<tr><td>BP-R4003; M</td><td>BP-R2030; O</td><td>BP-R2026; R</td></tr>
<tr><td>BP-R2101; M</td><td>BP-R2102; M</td><td>BP-R2105; M</td></tr>
<tr><td>BP-R2110; M</td><td>BP-R2111; M</td><td>BP-R2112; R</td></tr>
<tr><td>BP-R2114; R</td><td>BP-R2302; O</td><td>BP-R2303; M</td></tr>
<tr><td>BP-R2304; M</td><td>BP-R2305; M</td><td>BP-R2709; O</td></tr>
<tr><td>BP-R2711; R</td><td></td><td></td></tr>
<tr><td colspan="2">Applicability</td><td colspan="3">C_REC_000</td></tr>
<tr><td colspan="2">Initial condition</td><td colspan="3">The receiver has published its WSDL description.</td></tr>
<tr><td colspan="2">Test procedure</td><td colspan="3">1. Look up the WSDL description using the corresponding URL given by the receiver under test. Check that:
a. xmlns:xml≠ "http://www.w3.org/XML/1998/namespace"
b. XML version = "1.0"
c. UTF-8 or UTF-16 encoding are used and the unicode byte order mark (BOM) is optional.
d. if wsdl:documentation is present, check that it is the first child element of wsdl:import, wsdl:part or wsdl:definitions.
e. the targetNamespace attribute of an xsd:schema contained in wsdl:types element, has a valid non-null value, unless the xsd:schema has xsd:import and/or xsd:annotation as its only child element(s)
<types>
<xsd:schema targetNamespace="http://example.org/foo/"
… >
f. the wsdl:portType definition does not use Solicit-Response or Notification Type operations and has operations with distinct values for their name attributes:
<portType name="BarPortType">
<operation name="BarOperation">
<input message="bar:BarMsg"/>
</operation>
</portType>
g. if present the parameterOrder attribute of the wsdl:operation, that is a child of wsdl:portType, omits at most 1 wsdl:part from the output message.
h. the wsdl:ArrayType is not present on type declaration.
i. the soapenc:ArrayType is not extended or restricted.
j. the description does not contain any extension elements with a wsdl:required attribute value of "true" on any WSDL construct (wsdl:binding, wsdl:portType, wsdl:message, wsdl:types or wsdl:import) as is recommended.
k. The namespace of a QName reference to a schema component is defined in the targetNamespace attribute on the xsd:schema element or is the namespace of the xsd:import element.
l. aQName reference to WSDL components in namespaces that have been neither imported nor defined on the referring WSDL Document, is not used.
m. wsdl:bindings are optional
n. that more than one wsdl:port with the same value for the location attribute of the soapbind:address element are not used as is recommended.</td></tr>
<tr><td colspan="2">Pass/Fail criteria</td><td colspan="3">Check that:</td></tr>
</table>

	• in step 1, the sender can access the WSDL description. • all elements and attributes are as specified. • the description using the wsdl namespace is valid according to the XML schema found at http://ws-i.org/profiles/basic/1.1/wsdl11.xsd. • the description using the WSDL SOAP Bind namespace is valid according to the XML schema found at http://ws-i.org/profiles/basic/1.1/wsdlsoap-2004-08-24.xsd.
Notes	BP-R4005 is the same that BP-R1034

TP Id		TP/WAN/REC/WSI/BP/BV-011		
TP label		WSDL Description: wsdl:binding		
Coverage	**Spec**	[OASIS/WS-I BP]		
	Testable items	BP-R2209; R	BP-R2202; O	BP-R2208; O
		BP-R2205; M	BP-R2701; M	BP-R2702; M
		BP-R2705; M	BP-R2706; M	BP-R2710; M
		BP-R2716; M	BP-R2717; M	BP-R2726; M
		BP-R2718; M	BP-R2719; O	BP-R2740; R
		BP-R2741; R	BP-R2720; M	BP-R2749; M
		BP-R2721; M	BP-R2754; M	BP-R2722; O
		BP-R2723; M	BP-R2707; M	BP-R2751; M
Applicability		C_REC_000 AND (C_REC_WSI_003 OR C_REC_WSI_004)		
Initial condition		The receiver has published its WSDL description.		
Test procedure		1. Look up the WSDL description using the corresponding URL given by the receiver under test. If wsdl:binding is present, check that: a. the Soapbind:binding child element specifies the transport attribute and transport="http://schemas.xmlsoap.org/soap/http". b. the soapbind:header and soapbind:body elements are optional. c. the wsdl:binding refers in soapbind:headerfault, soapbind:header, soapbind:fault elements only to wsdl:parts that has been defined using the element attribute. d. the operations resulted in operation signatures that are different from one another. e. the "use" attribute in soapbind:header, soapbind:body, soapbind:headerfault and soapbidn:fault, if they are present, is "literal". f. the wsdl:binding has the same wsdl:operations as wsdl:portType. g. the part attribute of soapbind:header and soapbind:headerfault elements, if they are present, have the schema type of "NMTOKEN". h. the soapbind:headerfault elements are optional if there are no known header faults. i. all soapbind:fault elements have the name attribute specified and its value matches the value of the name attribute on its parent wsdl:fault element. The "use" attribute is optional. j. the order of the soapbind:header element, if it is present, is independent of the order of SOAP header blocks. k. if C_REC_WSI_003, the namespace attribute is specified only on a contained soapbind:body and its value is an absolute URI. if C_REC_WSI_004, the namespace attribute is not specified.		
Pass/Fail criteria		The sender can access the WSDL description and if wsdl:binding is present, elements and attributes are as specified above.		
Notes		The profile defines the "operation signature" to be the fully qualified name of the child element of SOAP body of the SOAP input message described by an operation in a WSDL binding.		

	In the case of rpc-literal binding, the operation name is used as a wrapper for the part accessors. In the document-literal case, since a wrapper with the operation name is not present, the message signatures must be correctly designed.

TP Id		TP/WAN/REC/WSI/BP/BV-012		
TP label		WSDL Description. Imported Descriptions		
Coverage	**Spec**	[OASIS/WS-I BP]		
	Testable items	BP-R2001; M	BP-R2803; M	BP-R2002; M
		BP-R2003; M	BP-R2004; M	BP-R2009; O
		BP-R2010; M	BP-R2011; M	BP-R2007; M
		BP-R2022; M	BP-R2023; M	BP-R2005; M
Applicability		C_REC_000 AND C_REC_WSI_002		
Initial condition		The receiver has published its WSDL description.		
Test procedure		1. Look up the WSDL description using the corresponding URL given by the receiver under test. If the wsdl:import element is present, check that: a. the wsdl:import is only used to import another wsdl description. b. the namespace of the wsdl:import is not a relative URI. c. the XML schema "import" statement is used to import the XML schema definitions within the xsd:schema element. d. an imported XML schema definitions is version 1.0. e. the schemaLocation attribute of the xsd:import element is resolved to a document whose root element is a schema from the namespace "http://www.w3.org/2001/XMLSchema" f. UTF-8 or UTF-16 encoding is used and it is optional that it includes the unicode byte order mark (BOM). g. the location attribute of the wsdl:import element is not empty. h. the wsdl:import precedes all other elements from the WSDL, except wsdl:documentation. i. wsdl:types precedes all other elements from the WSDL, except wsdl:documentation and wsdl:import. j. the targetNamespace attribute of the description being imported is the same as the namespace attribute on the wsdl:import element in the importing description.		
Pass/Fail criteria		The sender can access the WSDL description and that elements and attributes of wsdl:import are as specified above.		
Notes				

TP Id		TP/WAN/REC/WSI/BP/BV-013		
TP label		WSDL Description: wsdl:parts element		
Coverage	**Spec**	[OASIS/WS-I BP]		
	Testable items	BP-R2201; C	BP-R2210; C	BP-R2203; C
		BP-R2207; O	BP-R2204; C	BP-R2206; M
		BP-R2306; M		
Applicability		C_REC_000 AND (C_REC_WSI_003 OR C_REC_WSI_004)		
Initial condition		The receiver has published its WSDL description.		
Test procedure		1. Look up the WSDL description using the corresponding URL given by the receiver under test. An example of a part element in a description is shown below: <message name="GetTradePriceInput"> <part name="body" element="tns:SubscribeToQuotes"/> </message>		
Pass/Fail criteria		Check that: • if C_REC_WSI_004 is supported and the receiver does not specify the parts attribute on a soapbind:body element, the wsdl:message defines zero or one wsdl:parts. o If the receiver does specify the doc-literal binding, it has at most one part listed in the parts attribute and it is defined using the element attribute, that refers to a global element declaration. • if C_REC_WSI_003 is supported, the receiver refers in its soapbind:body element(s) only to a wsdl:part element(s) defined using the type attribute. wsdl:parts that uses the elements attribute and this provided those wsdl:parts are not referred to by a soapbind:body are optional. • in either case above, the wsdl:message does not specify both type and element attributes on the same wsdl:part.		
Notes				

A.3 Subgroup 2.1.2 – Basic security profile (BSP)

TP Id		TP/WAN/REC/WSI/BSP/BV-000		
TP Label		TLS and SSL		
Coverage	**Spec**	[OASIS WS-I BSP]		
	Testable items	BSP-322; R	BSP-323; R	
	Spec	[b-CDG 2012], WAN interface		
	Testable items	SecGuidelines2; M		
Applicability		C_REC_000		
Initial condition		The simulated sender and the receiver under test have never been partners in a message exchange.		
Test procedure		1. If instance is FIPS compliant (C_REC_WSI_005=true): a. Load the simulated sender supporting TLS_RSA_FIPS_WITH_AES_128_CBC_SHA b. Make the receiver under test establish a TLS connection. c. Check in TLS handshake that the receiver under test SHOULD not support: ❑ Any cipher-suites with an DH_anon in their symbolic name ❑ Any cipher-suites with a MD5 in their symbolic name ❑ Any of the following cipher-suites: • TLS_RSA_WITH_NULL_SHA • TLS_RSA_WITH_NULL_MD5 ❑ Any cipher-suites that use 40 or 56 bit keys d. Check that the receiver under test supports TLS_RSA_FIPS_WITH_AES_128_CBC_SHA e. Close the connection. 2. If an instance is not FIPS compliant (C_REC_WSI_005=false): a. Load the simulated sender supporting TLS_RSA_WITH_AES_128_CBC_SHA. b. Make the receiver under test establish a TLS connection. c. Check in the TLS handshake that the receiver under test SHOULD not support: ❑ any cipher-suites with a DH_anon in their symbolic name. ❑ any cipher-suites with a MD5 in their symbolic name. ❑ any of the following cipher-suites: • TLS_RSA_WITH_NULL_SHA • TLS_RSA_WITH_NULL_MD5 ❑ any cipher-suites that use 40 or 56 bit keys. d. Check that the receiver under test MUST support TLS_RSA_WITH_AES_128_CBC_SHA. e. Close the connection.		
Pass/Fail criteria		• If C_REC_WSI_005, the receiver under test must support TLS_RSA_FIPS_WITH_AES_128_CBC_SHA. • If not C_REC_WSI_005, the receiver under test must support TLS_RSA_WITH_AES_128_CBC_SHA. • The cipher-suites supported must match with these PICS: C_REC_WSI_029, C_REC_WSI_030, C_REC_WSI_031, C_REC_WSI_032.		
Notes				

TP Id		TP/WAN/REC/WSI/BSP/BV-003		
TP label		Basic Profile Clarification		
Coverage	**Spec**	[OASIS WS-I BSP]		
	Testable items	BSP-R5814; O	BSP-R5801; M	BSP-R5803; M
		BSP-R5805; M	BSP-R5807; M	BSP-R5809; M
		BSP-R5811; M	BSP-R5813; M	
Applicability		C_REC_000 AND C_REC_WSI_006		
Initial condition		The receiver under test has a WebService enabled and the simulated sender is ready to send a SOAP message using the same security policy as the receiver.		
Test procedure		1. The simulated sender sends a message using SOAP message security. 2. The receiver under test responds using SOAP message security. 3. The simulated sender takes the WSDL description and after reversing the SOAP message security of the response, check that: a. the order of the elements in the soap:body is the same as that of the wsdl:parts in the wsdl:message. b. operations in wsdl:binding result in operations signatures that are different from one another. c. the envelope includes all the soapbind:headers specified on a wsdl:input or wsdl:output of a wsdl:operation of a wsdl:binding. d. if C_REC_WSI_003, the envelope has a wrapper element whose name is the corresponding wsdl:operation name suffixed with the string "Response". e. if C_REC_WSI_004, the binding is serialized as an envelope with a soap:Body whose child element is an instance of the global element declaration referenced by the corresponding wsdl:message part. 4. The simulated sender sends an envelope with an incorrect namespace. 5. The receiver generates a soap:Fault with a faultcode= "VersionMismatch". 6. The simulated sender sends an envelope with an incorrect namespace and a soap:MustUnderstand attribute value of "1". 7. The receiver generates a soap:Fault with a faultcode= "VersionMismatch". 8. The simulated sender sends an envelope with a correct namespace and soap:MustUnderstand attribute value of "1" using security that the receiver is not going to understand. 9. The receiver generates a soap:Fault with a faultcode="MustUnderstand". 10. The simulated sender sends an envelope with a correct namespace, soap:MustUnderstand attribute value of "0" and that is inconsistent with its WSDL description. 11. The receiver generates a soap:Fault with a faultcode="Sender".		
Pass/Fail criteria		All steps are as specified. When the receiver generates a soap:Fault, it can transmit it or discard the message.		
Notes		"Reverse" means to remove impacts of applying SOAP message security that has been applied to an envelope created according to BP 1.1 • bp11:R1029 states "Where the normal outcome of processing a SOAP Envelope would have resulted in the transmission of a SOAP response, but rather a fault is generated instead, a RECEIVER MUST transmit a fault place of the response" • bp11:R2301 states "The order of the elements in the soap:body of an ENVELOPE MUST be the same as that of the wsdl:parts in the wsdl:message that describes it." • bp11:R2710 states "The operations in a wsdl:binding in a DESCRIPTION MUST result in operation signatures that are different from one another." • bp11:R2712 states "A document-literal binding MUST be serialized as an ENVELOPE with a soap:Body whose child element is an instance of the global element declaration referenced by the corresponding wsdl:message part."		

	• bp11:R2724 states "If an INSTANCE receives an envelope that is inconsistent with its WSDL description, it SHOULD generate a soap:Fault with a faultcode of 'Client', unless a 'MustUnderstand' or 'VersionMismatch' fault is generated." • bp11:R2725 states "If an INSTANCE receives an envelope that is inconsistent with its WSDL description, it MUST check for "VersionMismatch", "MustUnderstand" and "Client" fault conditions in that order." • bp11:R2729 states "An ENVELOPE described with an rpc-literal binding that is a response MUST have a wrapper element whose name is the corresponding wsdl:operation name suffixed with the string 'Response'." • bp11:R2738 states "An ENVELOPE MUST include all soapbind:headers specified on a wsdl:input or wsdl:output of a wsdl:operation of a wsdl:binding that describes it."

TP Id		TP/WAN/REC/WSI/BSP/BV-004		
TP label		Timestamp element		
Coverage	**Spec**	[OASIS WS-I BSP]		
	Testable items	BSP-R3227; M	BSP-R3203; M	BSP-R3224; R
		BSP-R3221; M	BSP-R3222; M	BSP-R3220; R
		BSP-R3229; R	BSP-R3213; M	BSP-R3215; M
		BSP-R3225; M	BSP-R3226; M	BSP-R3217; M
		BSP-R3223; M		
Applicability		C_REC_000 AND C_REC_WSI_007		
Initial condition		The receiver under test has a WebService enabled and the simulated sender is ready to send a SOAP message with a Timestamp		
Test procedure		1. The simulated sender sends the message using a Timestamp element. 2. The receiver under test responds to the message. 3. Check in the response message that: a. the Timestamp is present and there is only one. For example: <wsu:Timestamp wsu:Id="*timestamp*"> <wsu:Created>*2001-09-13T08:42:00Z*</wsu:Created> <wsu:Expires>*2001-10-13T09:00:00Z*</wsu:Expires> </wsu:Timestamp> b. only one created element is present and inside it: ❑ ValueType attribute is not included ❑ UTC format is used in time values ❑ seconds values are less than 60 and its decimal values are recommended to be less than 3 digits to the right c. if an Expires element is present, there is only one and it comes after the created element and: ❑ ValueType attribute is not included ❑ UTC format is used in time values ❑ the seconds values are less than 60 and its decimal values are recommended to be less than 3 digits to the right		
Pass/Fail criteria		The elements in step 3 are as specified.		
Notes				

TP Id		TP/WAN/REC/WSI/BSP/BV-005		
TP label		Security Token References - Direct References		
Coverage	**Spec**	[OASIS WS-I BSP]		
	Testable items	BSP-R3061; M	BSP-R3057; M	BSP-R3064; M
		BSP-R3059; M	BSP-R3058; M	BSP-R3062; M
		BSP-R3027; M	BSP-R3211; M	
Applicability		C_REC_000 AND C_REC_WSI_019		
Initial condition		The receiver under test has a WebService enabled and the simulated sender is ready to send a SOAP message with the same security policy as the receiver.		
Test procedure		1. The simulated sender sends a message using a security token reference (STR) with an STR reference. 2. The receiver under test responds with a message including a SecurityTokenReference with a direct reference: <wsse:SecurityTokenReference wsu:Id="..."> <wsse:Reference URI="..." ValueType="..."/> </wsse:SecurityTokenReference> 3. Check in the captured message that: a. there is only one STR_Reference to the SECURITY_TOKEN_REFERENCE b. the STR_Reference does not reference another STR or an STR_Embedded. c. a URI Attribute is present. d. a ValueType attribute is present and it contains a value for the referenced security token specified by the corresponding security token profile (e.g., an X.509 certificate token). e. the STR does not contain an STR_KEY_NAME and does not reference a ds:KeyInfo element.		
Pass/Fail criteria		Check that the STR is as specified in steps 2 and 3.		
Notes				

TP Id		TP/WAN/REC/WSI/BSP/BV-006		
TP label		Security Token References - Key Identifier References		
Coverage	**Spec**	[OASIS WS-I BSP]		
	Testable items	BSP-R3054; M	BSP-R3063; M	BSP-R3070; M
		BSP-R3071; M		
Applicability		C_REC_000 AND C_REC_WSI_020		
Initial condition		The receiver under test has a WebService enabled and the simulated sender is ready to send a SOAP message with the same security policy as the receiver.		

Test procedure	1. The simulated sender sends a message using a security token reference (STR) with a key identifier reference. 2. The receiver under test responds with a message including a SecurityTokenReference with a key identifier reference: <wsse:SecurityTokenReference> <wsse:KeyIdentifier wsu:Id="..." ValueType="..." EncodingType="..."> ... </wsse:KeyIdentifier> </wsse:SecurityTokenReference> 3. Check in the captured message that: a. ValueType is present and contains a value specified within the security token profile associated with the referenced security token. b. if SAML Token is referenced, an encodingType attribute is not present. If SAML Token is not referenced, encodingType="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-soap-message-security-1.0#Base64Binary".
Pass/Fail criteria	In step 3, the attributes are as specified.
Notes	

TP Id		TP/WAN/REC/WSI/BSP/BV-024		
TP label		SoapAction Header		
Coverage	**Spec**	[OASIS WS-I BSP]		
	Testable items	BSP-C2010; R		
Applicability		C_REC_000		
Initial condition		The receiver under test has a WebService enabled and its WSDL description is available.		
Test procedure		1. Take the wsdl description using the URL provided by the receiver under test (I_REC_WSI_001) 2. Check that in soapbind:operation element, the soapAction attribute is omitted or its value is an empty string..		
Pass/Fail criteria		In step 2, it is recommended that the soapAction attribute is omitted or that its value is an empty string, if it is present and includes any value, a warning is issued.		
Notes		This test case verifies a recommended behaviour and therefore it will never result is a fail.		

A.4 Subgroup 2.1.3 – Reliable messaging (RM)

TP Id		TP/WAN/REC/WSI/RM/BV-000_A		
TP label		Protocol Preconditions		
Coverage	**Spec**	[OASIS WS-I RM]		
	Testable items	Namespace; M		
Applicability		C_REC_000		
Initial condition		The simulated sender and the receiver under test are in the none sequence state.		
Test procedure		1. The simulated sender sends a CreateSequence with an offer element to the receiver. 2. The receiver under test responds with a CreateSequenceResponse accepting the offer. 3. The simulated sender sends a sequence. 4. The receiver under test responds with its sequence and a SequenceAcknowledgement element. 5. The simulated sender sends a SequenceAcknowledgement element.		
Pass/Fail criteria		Check that in every wsrm element its XML namespace is: xmlns:wsrm="http://docs.oasis-open.org/ws-rx/wsrm/200702",		
Notes				

TP Id		TP/WAN/REC/WSI/RM/BV-000_B		
TP label		Delivery Assurances		
Coverage	**Spec**	[OASIS WS-I RM]		
	Testable items	DelivAssurance 4; C	DelivAssurance 7; C	
	Spec	[b-CDG 2012], WAN Interface		
	Testable items	CommonReq 2; O	CommonReq 3; R	
Applicability		C_REC_000 AND (C_REC_WSI_025 OR C_REC_WSI_026)		
Initial condition		The simulated sender and the receiver under test are in the none sequence state.		
Test procedure		1. The simulated sender sends a CreateSequence message with an offer element. 2. The receiver under test responds with CreateSequenceResponse. 3. The sender sends a sequence message indicating that it is the last message. Note that when the receiver acknowledges that sequence, the sender and receiver switch WSRM roles: the sender becomes an RM destination and the receiver becomes an RM source. 4. The receiver responds with the SequenceAcknowledgement and a sequence message indicating that it is the last message. 5. The sender does not send the SequenceAcknowledgement. 6. If C_REC_WSI_025, the receiver may retry transmission. 7. If C_REC_WSI_026, the receiver should retry transmission.		
Pass/Fail criteria		All steps are as indicated.		
Notes				

TP Id		TP/WAN/REC/WSI/RM/BV-001		
TP label		Considerations on the Use of Extensibility Points		
Coverage	**Spec**	[OASIS WS-I RM]		
	Testable items	ExtensPoints 2; R		
Applicability		C_REC_000		
Initial condition		The simulated sender and the receiver under test are in the none sequence state.		
Test procedure		1. The simulated sender sends a CreateSequence message using an extensibility point that the receiver does not recognize, such as <myExtensibilityPoint />. 2. The receiver under test should respond, ignoring the extensibility point, with CreateSequenceResponse.		
Pass/Fail criteria		All step are as indicated.		
Notes		An attribute extensibility point is referred to using @{any} in place of the attribute name. This indicates that any attribute name can be used, from any namespace other than the wsrm: namespace.		

TP Id		TP/WAN/REC/WSI/RM/BV-002		
TP label		Consideration on the Use of "Piggy-Backing"		
Coverage	**Spec**	[OASIS WS-I RM]		
	Testable items	PiggyBack 1; O	PiggyBack 2; M	PiggyBack 3; R
Applicability		C_REC_000		
Initial condition		The simulated sender and the receiver under test are in the none sequence state.		
Test procedure		1. The simulated ender sends a CreateSequence with an offer element. 2. The receiver under test responds with CreateSequenceResponse. 3. The sender sends a sequence message. 4. The receiver responds including a SequenceAcknowledgement header block. ❑ If the SOAP message also contains a sequence header block (piggy-backing), all the header blocks have the same endpoint reference (EPR). ❑ If not, any other header block is sent in the same SOAP message, the receiver under test sends a message for every other RM-element (not piggy-backing). 5. The sender responds using a SequenceAcknowledgement header block.		
Pass/Fail criteria		In step 4, if the receiver sends only one message with more than one header block (piggy-backing), the endpoint reference (EPR) is the same for every header block.		
Notes		See the sections of the WS-RM that define each RM Protocol header block for indications on which ones may be considered for piggy-backing. An endpoint reference is made using a "wsa:To" element. The way to test that every header block is targeted to the same endpoint is to check that there is only one "wsa:To" element in the soap:header.		

<table>
<tr><td colspan="2">TP Id</td><td colspan="3">TP/WAN/REC/WSI/RM/BV-003</td></tr>
<tr><td colspan="2">TP label</td><td colspan="3">Sequence Creation</td></tr>
<tr><td rowspan="6">Coverage</td><td>Spec</td><td colspan="3">[OASIS WS-I RM]</td></tr>
<tr><td rowspan="5">Testable items</td><td>WSAddress 1; C</td><td>SeqCreation 1; M</td><td>SeqCreation 3; M</td></tr>
<tr><td>SeqCreation 6; M</td><td>SeqCreation 13; M</td><td>SeqCreation 16; M</td></tr>
<tr><td>SeqCreation 17; M</td><td>SeqCreation 18; C</td><td>SeqCreation 19; M</td></tr>
<tr><td>SeqCreation 20; O</td><td>SeqCreation 21; O</td><td>SeqCreation 23; M</td></tr>
<tr><td>SeqRefused 1; M</td><td>Faults 3; M</td><td></td></tr>
<tr><td colspan="2">Applicability</td><td colspan="3">C_REC_000</td></tr>
<tr><td colspan="2">Initial condition</td><td colspan="3">The simulated sender and the receiver under test are in the none sequence state.</td></tr>
<tr><td colspan="2">Test procedure</td><td colspan="3">1. The simulated sender sends a CreateSequence, with an offer element message to the receiver under test.
2. The receiver responds with a CreateSequenceResponse or a CreateSequenceRefused fault message.
If the response is CreateSequenceResponse:
3. The received message has the following properties:
a. In the header block:
❑ wsa:Action = http://docs.oasis-open.org/ws-rx/wsrm/200702/CreateSequenceResponse.
❑ wsrm:CreateSequenceResponse is not present.
b. In the body of the message:
❑ the wsrm:Identifier value is an absolute URI that uniquely identifies the sequence created by the RM destination
❑ the wsrm:Expires element, if present:
• its type is xs:duration
• is value is equal or less than the value requested by the RM source in the corresponding CreateSequence message
• it is recommended that any resources associated with the sequence are reclaimed before this time. Otherwise, the sequence will be silently terminated after this time.
❑ the wsrm:IncompleteSequenceBehaviour element may be present. Possible values are: "discard", "DiscardEntireSequence", "DiscardFollowingFirstGap" and "NoDiscard"
❑ if the offer element contains the "http://www.w3.org/2005/08/addressing/anonymous" IRI as its address, the receiver does not accept this offer.
❑ if wsrm:Accept is present, wsrm:AcksTo is present within the Accept element, and the receiver is able to send sequences messages
❑ if wsrm:Accept is not present, the receiver is NOT able to send sequences messages.
If the response is a CreateSequenceRefused fault:
4. the received message has the following properties:
❑ wsa:Action = http://docs.oasis-open.org/ws-rx/wsrm/200702/fault
❑ Code = Sender or Receiver
❑ Subcode = wsrm:CreateSequenceRefused
❑ Reason = "The create sequence request has been refused by the RM destination".
❑ Detail = xs:any.</td></tr>
</table>

Pass/Fail criteria	All the elements are as specified and only if the offer is accepted by the receiver, can it send sequence messages.
Notes	

TP Id		TP/WAN/REC/WSI/RM/BV-004		
TP label		Closing a Sequence		
Coverage	**Spec**	[OASIS WS-I RM]		
	Testable items	WSAddress 1; C	SeqClosing 1; O	SeqClosing 2; M
		SeqClosing 3; M	SeqClosing 4; R	SeqClosing 5; O
		SeqClosing 6; M	SeqClosing 8; O	SeqClosing 9; M
		SeqClosing 10; R	SeqClosing 11; M	SeqClosing 12; M
		SeqClosing 7; R		
Applicability		C_REC_000		
Initial condition		The simulated sender has created a sequence with an offer element. The simulated sender and the receiver under test are in the created sequence state.		
Test procedure		1. The simulated sender sends a sequence message including an AckRequested element in its header block or indicating that it is the last one. 2. The receiver under test responds using a SequenceAcknowledgement header block. 3. If C_REC_WSI_033 = TRUE, the receiver under test sends a CloseSequence element in the body of the message before the simulated sender does, check that the received message includes: a. In the header block: ❑ aSequenceAcknowledgement element and a wsrm:Final element within it are present. ❑ wsa:Action = http://docs.oasis-open.org/ws-rx/wsrm/200702/CloseSequence. b. In the body of the message, within the CloseSequence element: ❑ the wsrm:Identifier value is an absolute URI of the closing sequence ❑ it is recommended that a LastMsgNumber element is present and that in this case, it specifies the highest assigned message number of all the sequence traffic messages for the closing sequence. 4. If the receiver under test sends the CloseSequence element in the body of the message before the simulated sender, the simulated sender responds with a CloseSequenceResponse message, including its Identifier element as an absolute URI, then goes to step 7 below. 5. If C_REC_WSI_033 = FALSE, the simulated sender sends a CloseSequence element in the body of the message including a correct LastMsgNumber. 6. The receiver responds with a message including: a. In the header block: ❑ A SequenceAcknowledgement header block including a Final element is present. ❑ wsa:Action = http://docs.oasis-open.org/ws-rx/wsrm/200702/CloseSequenceResponse. b. In the body of the message: ❑ A CloseSequenceResponse element with a wsrm:Identifier element that is an absolute URI of the closing sequence. 7. Once the sequence is closed, the sender sends a new sequence message referencing that closed sequence. 8. The receiver under test does not accept that message. It is recommended that receiver responds with a SequenceClosed fault.		

Pass/Fail criteria	All fields are as specified.
Notes	

TP Id		TP/WAN/REC/WSI/RM/BV-005		
TP label		Sequence Termination		
Coverage	**Spec**	[OASIS WS-I RM]		
	Testable items	WSAddress 1; C	SeqTermination 1; R	SeqTermination 2; M
		SeqTermination 3; O	SeqTermination 4; O	SeqTermination 5; M
		SeqTermination 7; M	SeqTermination 8; O	SeqTermination 9; M
		SeqTermination 10; M	SeqTermination 11; M	SeqTermination 12; R
		SeqTermination 13; M	SeqTermination 14; M	SeqTermination 15; M
Applicability		C_REC_000		
Initial condition		The simulated sender has created a sequence with an offer element. The simulated sender and the receiver under test are in the created sequence state.		
Pass/Fail criteria		All fields and messages exchanged are as specified.		
Test procedure		1. The simulated sender sends a sequence message including an AckRequested element in its header block or indicating that it is the last one. 2. The receiver under test responds using a SequenceAcknowledgement header block. 3. If C_REC_WSI_035 = TRUE, the receiver under test sends a TerminateSequence element in the body of the message before the simulated sender does so. The received message includes: a. In the header block: ❑ A SequenceAcknowledgement element containing a wsrm:Final element. ❑ wsa:Action = http://docs.oasis-open.org/ws-rx/wsrm/200702/TerminateSequence. ❑ The wsrm: TerminateSequence is not present. b. In the body of the message, within the TerminateSequence element: ❑ The wsrm:Identifier value is an absolute URI of the terminating sequence. ❑ It is recommended that LastMsgNumber is present, and in that case, its value must be equal to the value of the LastMsgNumber element in any CloseSequence message(s) sent for the same sequence. 4. If the receiver sends a TerminateSequence, the simulated sender responds with a TerminateSequenceResponse message, including its Identifier element as an absolute URI. 5. If C_REC_WSI_035 = FALSE, the simulated sender sends a TerminateSequence element in the body of the message and it is recommended that the TerminateSequence element includes a correct LastMsgNumber. 6. If the simulated sender has sent a TerminateSequence, the receiver generates an UnknownSequence fault or responds with a message including: a. In the header block: ❑ A SequenceAcknowledgement header block. ❑ wsa:Action = http://docs.oasis-open.org/ws-rx/wsrm/200702/TerminateSequenceResponse. b. In the body of the message within the TerminateSequenceResponse element: ❑ wsrm:Identifier value = an absolute URI of the terminating sequence. 7. Once the sequence is terminated, the simulated sender sends a sequence message referencing the terminated sequence. 8. The receiver under test does not accept that message.		
Notes				

TP Id		TP/WAN/REC/WSI/RM/BV-006		
TP label		Sequences		
Coverage	**Spec**	[OASIS WS-I RM]		
	Testable items	ProtocolInv 1; M	Sequences 1; M	Sequences 2; M
		Sequences 3; M	Sequences 4; M	Sequences 5; M
		Sequences 6; M	Sequences 7; M	Sequences 8; M
Applicability		C_REC_000		
Initial condition		The simulated sender has created a sequence with an offer element. The simulated sender and the receiver under test are in the created sequence state.		
Test procedure		1. The simulated sender sends a sequence message including an AckRequested element in its header block or indicates that it is the last one. 2. The receiver under test responds using a SequenceAcknowledgement header block. 3. If an offer element was sent in the CreateSequence and the receiver accepts that offer: ❑ Wait until the receiver starts to send sequence messages. ❑ In the received messages, check that: • The wsrm:MessageNumber element is of type MessageNumberType and starts at 1 and increments by 1 for every sequential message. • There is only one sequence header block in each message. • The wsrm:Identifier element must be present in the header block and must be an absolute URI that uniquely identifies the sequence. • The mustUnderstand attribute = "1" or "true".		
Pass/Fail criteria		All elements in step 3 are as specified.		
Notes				

TP Id		TP/WAN/REC/WSI/RM/BV-007		
TP label		Request Acknowledgement		
Coverage	**Spec**	[OASIS WS-I RM]		
	Testable items	ProtocolInv 6; R	WSAddress 3; C	ReqAck 1; O
		ReqAck 2; O	ReqAck 7; M	ReqAck 8; M
		SeqAck 3; R	SeqAck 4; M	SeqAck 21; R
		SeqAck 23; R		
Applicability		C_REC_000 AND C_REC_WSI_036		
Initial condition		The simulated sender and the receiver under test are in the none sequence state.		

Test procedure	1. The simulated sender sends a CreateSequence message with an offer element. If the receiver accepts the offer: 2. The receiver responds with a CreateSequenceResponse including an accept element. 3. The simulated sender sends a sequence message indicating that it is the last one. 4. The receiver under test sends a SequenceAcknowledgement and starts to send sequence messages and sends its first AckRequested element in the header block of one message. 5. In that received message in the header block, check that: ❑ wsa:Action = http://docs.oasis-open.org/ws-rx/wsrm/200702/AckRequested (if soap body is empty). ❑ wsrm:Identifier = absolute URI that uniquely identifies the sequence. 6. The simulated sender does not validate any message with a SequenceAcknowledgement header block with a None element. 7. The receiver should retransmit the messages. 8. If the receiver retransmits the messages, the simulated sender does not validate any message using a Nack element within a SequenceAcknowledgement header block. 9. The receiver should retransmit the messages. 10. If the receiver retransmits the messages, the simulated sender validates the messages using a SequenceAcknowledgement header block. 11. The simulated sender sends a Nack element with the MessageNumber of one of the previous messages received. 12. The receiver should ignore the Nack element.
Pass/Fail criteria	All elements are as specified. If a non-mustUnderstand fault occurs when processing a SequenceAcknowledgement header that was piggy-backed, a fault is generated, but the processing of the original message is not affected.
Notes	

TP Id		TP/WAN/REC/WSI/RM/BV-008		
TP label		Sequence Acknowledgement		
Coverage	**Spec**	[OASIS WS-I RM]		
	Testable items	ProtocolInv 2; M	ProtocolInv 3; M	ProtocolInv 4; M
		ProtocolInv 5; O	WSAddress 2; C	ReqAck 3; R
		ReqAck 4; M	ReqAck 5; M	SeqAck 1; O
		SeqAck 2; O	SeqAck 5; O	SeqAck 6; M
		SeqAck 7; R	SeqAck 8; M	SeqAck 9; M
		SeqAck 10; M	SeqAck 11; O	SeqAck 12; M
		SeqAck 13; M	SeqAck 14; M	SeqAck 15; M
		SeqAck 16; M	SeqAck 17; M	SeqAck 18; O
		SeqAck 19; M	SeqAck 20; O	SeqAck 22; M
Applicability		C_REC_000		
Initial condition		The simulated sender has created a sequence with an offer. The simulated sender and the receiver under test are in the created sequence state.		

Test procedure	1. The simulated sender transmits 3 messages with its respective sequence header block and in the last one it includes an AckRequest. 2. The receiver under test responds including a SequenceAcknowledgement header block or an UnknownSequence fault. 3. If the response has a SequenceAcknowledgement header block: ❑ If AcksTo field of any message to be acknowledged is an anonymous IRI, the receiver must transmit the SequenceAcknowledgement on the channel provided by the context of the received message containing a SOAP envelope that contains a sequence header block and/or an AckRequested header block for that same sequence identifier. ❑ If the soap body of the message is empty, the wsa:Action = http://docs.oasis-open.org/ws-rx/wsrm/200702/SequenceAcknowledgement ❑ The wsrm:Identifier = absolute URI. It cannot be used in another SequenceAcknowledgement in the same message. ❑ Only one of these elements is present: one or more AcknowledgementRange, a None or a Nack. ❑ The final element is present when the sequence is closed, but it is not included when a Nack is sent. ❑ If an AcknowledgementRange element is present: • the lower attribute is equal to or less than the upper attribute, • the lower attribute is equal to the message number of the lowest contiguous message in a sequence range accepted by the receiver, • the upper attribute is equal to the message number of the highest contiguous message in a sequence range accepted by the receiver. ❑ If a None element is present then no messages have been accepted or received. ❑ If a Nack element is present a specific message has not been received and it cannot be included in a SequenceAcknowledgement header block for a message that it had previously acknowledged within an AcknowledgementRange.
Pass/Fail criteria	All elements are as specified. If a non-mustUnderstand fault occurs when processing an AckRequested header block that was piggy-backed, a fault is generated, but the processing of the original message is not affected.
Notes	

TP Id		TP/WAN/REC/WSI/RM/BV-009		
TP label		Sequence Terminated Fault		
Coverage	**Spec**	[OASIS WS-I RM]		
	Testable items	SeqTerminatedFault 2; M	SeqTerminatedFault 3; M	SeqTerminatedFault 4; M
		Faults 1; R	Faults 2; M	Faults 3; M
Applicability		C_REC_000		
Initial condition		The simulated sender and the receiver under test are in the none sequence state. The simulated sender is able to send a sequence message when the sequence has been terminated.		

Test procedure	1. The simulated sender sends a CreateSequence message with an offer element. 2. The receiver under test responds with a CreateSequenceResponse message accepting the offer. 3. The simulated sender sends a sequence indicating that it is the last message. 4. The receiver responds with a SequenceAcknowledgement with the element AcknowledgementRange Lower=1 and Upper=1. 5. IF C_REC_WSI_035=TRUE, wait until the receiver under test sends a TerminateSequence or force it to terminate the sequence and the simulated sender responds with TerminateSequenceResponse. ELSE, the simulated sender sends a TerminateSequence message and the receiver under test responds with TerminateSequenceResponse. 6. The simulated sender transmits a sequence with the message number within the range, for example, Message Number=2. 7. The receiver generates a SequenceTerminated fault. It is recommended that the fault is transmitted to the sender. 8. If the fault is transmitted by the receiver under test, the message includes the following properties: ❑ wsa:Action = http://docs.oasis-open.org/ws-rx/wsrm/200702/fault. ❑ Code = Sender ❑ Subcode = SequenceTerminated ❑ Reason = The Sequence has been terminated due to an unrecoverable error. ❑ Detail = <wsrm:Identifier ...> xs:anyURI </wsrm:Identifier> 9. The simulated sender terminates the sequence and passes to the none sequence state.
Pass/Fail criteria	All elements are as specified in step 8
Notes	

TP Id		TP/WAN/REC/WSI/RM/BV-010		
TP label		Unknown Sequence Fault		
Coverage	**Spec**	[OASIS WS-I RM]		
	Testable items	UnknownSeq 1; M	UnknownSeq 2; M	UnknownSeq 3; M
		Faults 1; R	Faults 2; M	Faults 3; M
Applicability		C_REC_000		
Initial condition		The simulated sender and the receiver under test are in the none sequence state. The simulated sender is able to send a sequence message when it is in the none sequence state.		
Test procedure		1. The simulated sender transmits a sequence message to the receiver under test. 2. The receiver generates an UnknownSequence fault. It is recommended that the fault is transmitted to the sender. 3. If the fault is transmitted by the receiver under test, that message includes the following properties: ❑ wsa:Action = http://docs.oasis-open.org/ws-rx/wsrm/200702/fault. ❑ Code = Sender ❑ Subcode = UnknownSequence ❑ Reason = The value of wsrm:Identifier is not a known sequence identifier ❑ Detail = <wsrm:Identifier ...> xs:anyURI </wsrm:Identifier> 4. Wait until the receiver terminates the sequence.		
Pass/Fail criteria		All elements are as specified in step 3		
Notes				

TP Id		TP/WAN/REC/WSI/RM/BV-011		
TP label		Invalid Acknowledgement Fault		
Coverage	**Spec**	[OASIS WS-I RM]		
	Testable items	InvalidAck 1; M	InvalidAck 2; M	Faults 1; R
		Faults 2; M	Faults 3; M	
Applicability		C_REC_000		
Initial condition		The simulated sender and the receiver under test are in the none sequence state. Simulated Sender is able to include a wrong AckRange and None and Nack elements in a SequenceAcknowledgement message.		
Test procedure		1. The simulated sender creates a sequence with an offer. 2. The receiver under test responds using a CreateSequenceResponse message accepting the offer. 3. After the simulated sender has sent its sequences and the receiver acknowledges them, the receiver under test sends a sequence message with its respective message number. 4. If the last sequence message is not labelled as the last one, wait until the receiver sends an AckRequested. Otherwise, go to next step. 5. The simulated sender responds with a SequenceAcknowledgement with the wrong AckRange element and None and Nack elements. 6. The receiver generates an InvalidAcknowledgement fault. It is recommended that the fault is transmitted to the sender. 7. If the fault is transmitted by the receiver under test, that message includes the following properties: ❑ wsa:Action = http://docs.oasis-open.org/ws-rx/wsrm/200702/fault. ❑ Code = Sender ❑ Subcode = InvalidAcknowledgement ❑ Reason = <any> ❑ Detail = <any related to the message that produces the fault>		
Pass/Fail criteria		All elements are as specified in step 7.		
Notes				

TP Id		TP/WAN/REC/WSI/RM/BV-012		
TP label		Message Number Rollover		
Coverage	**Spec**	[OASIS WS-I RM]		
	Testable items	MessageNumrRoll 4; R		
Applicability		C_REC_000		
Initial condition		The simulated sender has created a sequence with an offer element. The simulated sender and the receiver under test are in the created sequence state. The simulated sender is able to send a message number rollover fault instead of a SequenceAcknowledgement message.		
Test procedure		1. The simulated sender under test transmits a sequence message indicating that it is the last one. 2. The receiver under test sends its sequence and the SequenceAcknowledgement. 3. The simulated sender generates a message number rollover fault and this is transmitted to the receiver. 4. The receiver should retransmit undelivered messages until the sender closes or terminates the sequence. 5. The simulated sender closes the sequence.		
Pass/Fail criteria		Step 4 must be as indicated.		
Notes				

TP Id		TP/WAN/REC/WSI/RM/BV-012_B		
TP label		Message Number Rollover2		
Coverage	**Spec**	[OASIS WS-I RM]		
	Testable items	MessageNumrRoll 1; M	MessageNumrRoll 2; M	MessageNumrRoll 3; R
		Faults 1; R	Faults 2; M	Faults 3; M
Applicability		C_REC_000		
Initial condition		The simulated sender has created a sequence with an offer element. The simulated sender and the receiver under test are in the created sequence state. The simulated sender is able to change the message number of its sequence message.		
Test procedure		1. The simulated sender sends a sequence message with a MessageNumber=1 2. The receiver under test responds with its sequence message and may include a SequenceAcknowledge header block. 3. The simulated sender transmits a sequence message with a message number outside the range (bigger than 9,223,372,036,854,775,807 or its internal limitation). 4. The receiver generates a message number rollover fault. It is recommended that the fault is transmitted to the sender. 5. If the fault is transmitted by the receiver under test, that message includes the following properties: ❑ wsa:Action = http://docs.oasis-open.org/ws-rx/wsrm/200702/fault. ❑ Code = Sender ❑ Subcode = MessageNumberRollover ❑ Reason = The maximum value for wsrm:MessageNumber has been exceeded ❑ Detail = <wsrm:Identifier ...> *xs:anyURI* </wsrm:Identifier> <wsrm:MaxMessageNumber> *wsrm:MessageNumberType* </wsrm:MaxMessageNumber> 6. The simulated sender retransmits its undelivered messages. 7. The receiver should accept undelivered messages until the sequence is closed or terminated. 8. The simulated sender closes the sequence.		
Pass/Fail criteria		All elements are as specified in step 5 and steps 2, 4 and 7 must be as indicated.		
Notes				

TP Id		TP/WAN/REC/WSI/RM/BV-013		
TP label		Sequence Closed Fault		
Coverage	**Spec**	[OASIS WS-I RM]		
	Testable items	SeqClosedFault 1; M	SeqClosedFault 2; M	Faults 1; R
		Faults 2; M	Faults 3; M	
Applicability		C_REC_000		
Initial condition		The simulated sender has created a sequence with an offer element. The simulated sender and receiver under test are in the created sequence state. The simulated sender is able to send a sequence message as long as the sequence has not yet been closed.		

Test procedure	1. The simulated sender sends a sequence to the receiver under test with MessageNumber=1 and indicating that it is the last one. 2. The receiver responds with a SequenceAcknowledgement with an AcknowledgementRange Lower=1 Upper=1, and a sequence message 3. The simulated sender sends a CloseSequence. 4. The receiver responds with CloseSequenceResponse. 5. The simulated sender transmits a sequence with a message number within the range, for example, MessageNumber=2. 6. The receiver generates a SequenceClosed fault. It is recommended that the fault is transmitted to the sender. 7. If the fault is transmitted by the receiver under test, that message includes the following properties: ❑ wsa:Action = http://docs.oasis-open.org/ws-rx/wsrm/200702/fault. ❑ Code = Sender ❑ Subcode = SequenceClosed ❑ Reason = The Sequence is closed and cannot accept new messages ❑ Detail = <wsrm:Identifier ...> xs:anyURI </wsrm:Identifier>
Pass/Fail criteria	All elements are as specified in step 7.
Notes	

TP Id		TP/WAN/REC/WSI/RM/BV-014		
TP label		WSRM Required Fault		
Coverage	**Spec**	[OASIS WS-I RM]		
	Testable items	WSRMReq 1; C	WSRMReq 2; M	Faults 1; R
		Faults 2; M	Faults 3; M	
Applicability		C_REC_000 AND C_REC_WSI_034		
Initial condition		The simulated sender and the receiver under test are in the none sequence state. The simulated sender is able to send a message without using WSRM protocol.		
Test procedure		1. The simulated sender transmits a SOAP message without using any element of the WSRM protocol. 2. The receiver generates a WSRMRequired fault. It is recommended that the fault is transmitted to the sender. 3. If the fault is transmitted by the receiver under test, that message includes the following properties: ❑ wsa:Action = http://docs.oasis-open.org/ws-rx/wsrm/200702/fault. ❑ Code = Sender ❑ Subcode = WSRMRequired ❑ Reason = The RM Destination requires the use of WSRM ❑ Detail = xs:any		
Pass/Fail criteria		All elements are as specified in step 3.		
Notes				

Bibliography

[b-CDG 1.0] Continua Health Alliance, Continua Design Guidelines v1.0. (2008), *Continua Design Guidelines*.

[b CDG 2010] Continua Health Alliance, Continua Design Guidelines v1.5 (2010), *Continua Design Guidelines*.

[b CDG 2011] Continua Health Alliance, Continua Design Guidelines (2011) "Adrenaline", *Continua Design Guidelines.*

[b CDG 2012] Continua Health Alliance, Continua Design Guidelines (2012) "Catalyst", *Continua Design Guidelines*.

[b-ETSI SR 001 262] ETSI SR 001 262 v1.8.1 (2003), *ETSI drafting rules*.

[b-SOAP 1.2] W3C SOAP 1.2 (2007), *SOAP Version 1.2* (Second Edition). <http://www.w3.org/TR/soap/>

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