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SERIES H: AUDIOVISUAL AND MULTIMEDIA SYSTEMS

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

**Conformance of ITU-T H.810 personal health
system: Services interface Part 17: Personal
Health Device Observation Upload (POU)
Sender**

Recommendation ITU-T H.830.17

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Recommendation ITU-T H.830.17

Conformance of ITU-T H.810 personal health system: Services interface Part 17: Personal Health Device Observation Upload (POU) Sender

Summary

Recommendation ITU-T H.830.17 provides a test suite structure (TSS) and the test purposes (TPs) for Personal Health Device Observation Upload (POU) sender in the Services interface, based on the requirements defined in the Recommendations of the ITU-T H.810 subseries, of which Recommendation ITU-T H.810 (2019) is the base Recommendation. The objective of this test specification is to provide a high probability of interoperability at this interface.

Recommendation ITU-T H.830.17 includes an electronic attachment with the protocol implementation conformance statements (PICSs) and the protocol implementation extra information for testing (PIXIT) required for the implementation of Annex A.

History

Edition	Recommendation	Approval	Study Group	Unique ID*
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Capability exchange, conformance testing, continua design guidelines, e-health, Health & Fitness service, ITU-T H.810, personal connected health devices, POU, services interface.

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

Introduction

The table below shows the revision history of this test specification.

Version	Date	Revision history
1.0	2020-12-21	Initial release for the inclusion of Personal Health Device Observation Upload (POU) sender.

Recommendation ITU-T H.830.17

Conformance of ITU-T H.810 personal health system: Services interface Part 17: Personal Health Device Observation Upload (POU) Sender

1 Scope

The scope of this Recommendation¹ is to provide a test suite structure (TSS) and the test purposes (TPs) for the Services interface based on the requirements defined in the Continua Design Guidelines (CDG) [ITU-T H.810 (2019)]. The objective of this test specification is to provide a high probability of interoperability at this interface.

The TSS and TPs for the Services interface have been divided into the parts specified below. This Recommendation covers Part 17.

- Part 1: Web services interoperability. Health & Fitness Service sender
- Part 2: Web services interoperability. Health & Fitness Service receiver
- Part 3: SOAP/ATNA. Health & Fitness Service sender
- Part 4: SOAP/ATNA. Health & Fitness Service receiver
- Part 5: PCD-01 HL7 Messages. Health & Fitness Service sender
- Part 6: PCD-01 HL7 Messages. Health & Fitness Service receiver
- Part 7: Consent Management. Health & Fitness Service sender
- Part 8: Consent Management. Health & Fitness Service receiver
- Part 9: hData Observation Upload. Health & Fitness Service sender
- Part 10: hData Observation Upload. Health & Fitness Service receiver
- Part 11: Questionnaires. Health & Fitness Service sender
- Part 12: Questionnaires. Health & Fitness Service receiver
- Part 13: Capability Exchange. Health & Fitness Service sender
- Part 14: Capability Exchange. Health & Fitness Service receiver
- Part 15: FHIR Observation Upload. Health & Fitness Service sender
- Part 16: FHIR Observation Upload. Health & Fitness Service receiver.
- **Part 17: POU. Health & Fitness Service sender.**
- Part 18: POU. Health & Fitness Service 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 standalone document, the status of a Recommendation.

[ITU-T H.810 (2019)] Recommendation ITU-T H.810 (2017), *Interoperability design guidelines for personal health systems: Introduction*.

¹ 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.

3 Definitions

3.1 Terms defined elsewhere

None.

3.2 Terms defined in this Recommendation

None.

4 Abbreviations and acronyms

This Recommendation uses the following abbreviations and acronyms:

AHD	Application Hosting Device
API	Application Programming Interface
ATNA	Audit Trail and Node Authentication
BLE	Bluetooth Low Energy
BT HDP	Bluetooth Health Device Profile
CDG	Continua Design Guidelines
CGM	Continuous Glucose Monitor
DOC	Device Observation Consumer
DOR	Device Observation Reporter
DUT	Device Under Test
FHIR	Fast Healthcare Interoperability Resources
HFS	Health & Fitness Service
HFSR	Health & Fitness Service Receiver
HFSS	Health & Fitness Service Sender
HL7	Health Level 7
HTTP	Hypertext Transfer Protocol
IHE	Integrating the Healthcare Enterprise
INR	International Normalized Ratio
IP	Insulin Pump
JSON	JavaScript Object Notation
MDS	Medical Device System
NFC	Near Field Communication
PCD	Patient Care Device
PHD	Personal Health Device
PHDC	Personal Healthcare Device Class
PHG	Personal Health Gateway
PHI	Personal Health Information
PICS	Protocol Implementation Conformance Statement
PIXIT	Protocol Implementation extra Information for Testing

POU	Personal Health Device Observation Upload
SABTE	Sleep Apnoea Breathing Therapy Equipment
SCR	Static Conformance Review
SOAP	Simple Object Access Protocol
TLS	Transport Level Security
TP	Test Purpose
TSS	Test Suite Structure
USB	Universal Serial Bus
URI	Uniform Resource Identifier
WS	Web Service
WSI	Web Services Interoperability
XDR	Cross-Enterprise Document Reliable Interchange
XML	extensible Markup Language
ZB	Zigbee

5 Conventions

The key words "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "MAY", "MAY NOT" in this Recommendation are to be interpreted as in [b-IHE_PCD_Suppl_POU].

- SHALL is equivalent to "must" or "it is required to".
- SHALL NOT is equivalent to "must not" or "it is not allowed to".
- 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 designations that may be used in this Recommendation is provided in Table 1.

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

CDG release	Transposed as	Version	Description	Designation
2019	–	8.0	Release 2019 of the CDG including maintenance updates of the CDG 2017 and additional guidelines that cover new functionalities.	–
2017	–	7.0	Release 2017 of the CDG including maintenance updates of the CDG 2016 and additional guidelines that cover new functionalities.	–
2016 plus errata	[b-ITU-T H.810 (2016)]	6.1	Release 2016 plus errata noting all ratified bugs [b-CDG 2016].	–
2016	–	6.0	Release 2016 of the CDG including maintenance updates of the CDG 2015 and additional guidelines that cover new functionalities.	Iris
2015 plus errata	[b-ITU-T H.810 (2015)]	5.1	Release 2015 plus errata noting all ratified bugs [b-CDG 2015]. The 2013 edition of [ITU-T H.810] is split into eight parts in the ITU-T H.810 series.	–
2015	–	5.0	Release 2015 of the CDG including maintenance updates of the CDG 2013 and additional guidelines that cover new functionalities.	Genome
2013 plus errata	[b-ITU-T H.810 (2013)]	4.1	Release 2013 plus errata noting all ratified bugs [b-CDG 2013].	–
2013	–	4.0	Release 2013 of the CDG including maintenance updates of the CDG 2012 and additional guidelines that cover new functionalities.	Endorphin
2012 plus errata	–	3.1	Release 2012 plus errata noting all ratified bugs [b-CDG 2012].	–
2012	–	3.0	Release 2012 of the CDG including maintenance updates of the 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 the CDG including maintenance updates of the CDG 2010 and additional guidelines that cover new functionalities [b-CDG 2011].	Adrenaline
2010 plus errata	–	1.6	CDG 2010 integrated with identified errata.	–
2010	–	1.5	Release 2010 of the CDG with maintenance updates of the 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

The test procedures (TPs) for the Services interface have been divided into the main subgroups specified below. Annex A describes the TPs for subgroups 1.7.1 and 1.7.2 (shown in bold):

- Group 1: HFS sender (HFSS)
 - 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: Simple object access protocol (SOAP)
 - Subgroup 1.2.1: SOAP headers (HEAD)
 - Group 1.3: Audit trail and node authentication (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)
 - Subgroup 1.4.15: International normalized ratio (INR)
 - Subgroup 1.4.16: Sleep apnoea breathing therapy equipment (SABTE)
 - Subgroup 1.4.17: Insulin pump (IP)
 - Subgroup 1.4.18: Continuous glucose monitor (CGM)
 - Group 1.5: Consent Management (CM)
 - Subgroup 1.5.1: HFS XDR transaction (TRANS)
 - Subgroup 1.5.2: HFS metadata validation (META)
 - Subgroup 1.5.3: HFS consent directive validation (CDV)
 - Group 1.6: hData Observation Upload (HDATA)
 - Subgroup 1.6.1: General (GEN)
 - Group 1.7: Questionnaires (QUE)
 - Subgroup 1.7.1: General (GEN)
 - Subgroup 1.7.2: CDA validation (CDA)

- Group 1.8: Capability Exchange (CE)
 - Subgroup 1.8.1: General (GEN)
 - Subgroup 1.8.2: hData record format (HRF)
- Group 1.9: FHIR Observation Upload (FHIR)
 - Subgroup 1.9.1: General (GEN)
 - Subgroup 1.9.2: FHIR Encoding Guidelines (ENC)
- **Group 1.10: Personal Health Device Observation Upload (POU)**
 - Subgroup 1.10.1: General (GEN)
- Group 2: HFS receiver (HFSR)
 - 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)
 - Subgroup 2.4.15: International normalized ratio (INR)
 - Subgroup 2.4.16: Sleep apnoea breathing therapy equipment (SABTE)
 - Subgroup 2.4.17: Insulin pump (IP)
 - Subgroup 2.4.18: Continuous glucose monitor (CGM)
 - Group 2.5: Consent Management (CM)
 - Subgroup 2.5.1: HFS XDR transaction (TRANS)
 - Subgroup 2.5.2: HFS service validation (SER)

- Group 2.6: hData Observation Upload (HDATA)
 - Subgroup 2.6.1: General (GEN)
 - Subgroup 2.6.2: hData record format (HRF)
- Group 2.7: Questionnaires (QUE)
 - Subgroup 2.7.1: General (GEN)
 - Subgroup 2.7.2: CDA validation (CDA)
 - Subgroup 2.7.3: hData record format (HRF)
- Group 2.8: Capability Exchange (CE)
 - Subgroup 2.8.1: General (GEN)
 - Subgroup 2.8.2: hData record format (HRF)
- Group 2.9: FHIR Observation Upload (FHIR)
 - Subgroup 2.9.1: General (GEN)
- Group 2.10: Personal Health Device Observation Upload (POU)
 - Subgroup 1.10.1: General (GEN)

7 Electronic attachment

The protocol implementation conformance statements (PICSs) and the protocol implementation extra information for testing (PIXIT) required for the implementation of Annex A can be downloaded from <https://handle.itu.int/11.1002/2000/12067>. See [b-HFSR PICS & PIXIT] and [b-HFSS PICS & PIXIT].

In the electronic attachment, letters "C" and "I" in the column labelled "Mandatory" are used to distinguish between "PICSs" 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 PICSs, 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 procedures

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

A.1 Test purpose definition conventions

The TPs 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 TP identifier is introduced by the prefix "TP".
 - <TT>: This is the test tool that will be used in the test case.
 - HFS: Health & Fitness Services Interface
 - <DUT>: This is the device under test.
 - SEN: HFS sender
 - REC: HFS 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 TP.
- **TP label:** This is 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 were 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 a 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 DUT within that scope of the test (specialization, transport used, etc.).
- **Other PICSs:** This contains additional PICS items (apart from the PICS specified in the Applicability row) which are used within the test case implementation and can modify the final verdict. When this row is empty, it means that only the PICS specified in the Applicability row are used within the test case implementation.
- **Initial condition:** This indicates the state to which the DUT needs to be moved at the beginning of test case 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 1.10.1: General (GEN)

TP Id		TP/HFS/SEN/POU/GEN/BV-000		
TP label		POU Profile – Actors and Transactions (DOR)		
Coverage	Spec	[b-IHE_PCD_Suppl_POU]		
	Testable items	IHETrans;M	DORReq 6;M	POUActorTrans;M
		CommPCH-01MessSem 3;M	CommPCH-02MessSem 2;M	
Test purpose		<p>Check that:</p> <p>A Device Observation Reporter (DOR) supports the following required transactions to claim compliance with the POU.</p> <ol style="list-style-type: none"> 1. Communicate fast healthcare interoperability resources (FHIR) Personal Health Device (PHD) Data (PCH-01) 2. Communicate RESTful FHIR PHD Data (PCH-02) 		
Applicability		C_SEN_000 AND C_SEN_GEN_009 AND C_SEN_GEN_010		
Other PICSS				
Initial condition		<p>Simulated HFS supports POU Server and Capability Exchange Continua Certified Capability Classes, so it has an POU application programming interface (API) that can accept a POU that requires transport level security (TLS) and an authentication token. The HFS supports all available OAuth 2.0 authorization grant types (so they are listed in the grantTypes element of its OAuthDescriptor). Simulated HFS has no previously stored resources and supports both transactions: FHIR PHD data (PCH-01) and RESTful FHIR PHD Data (PCH-02).</p>		
Test procedure		<ol style="list-style-type: none"> 1. Ask the DOR under test to upload an Observation resource as a complete bundle to the simulated Receiver using a FHIR PHD Data (PCH-01) transaction. 2. Ask the DOR under test to upload an Observation resource as a complete bundle to the simulated Receiver using a RESTful FHIR PHD Data (PCH-02) transaction. 		
Pass/fail criteria		<ul style="list-style-type: none"> • Receiver correctly retrieves a first complete bundle. • The first transaction is a FHIR PHD Data (PCH-01) transaction. • Receiver correctly retrieves a second complete bundle. • The second transaction is a RESTful FHIR PHD Data (PCH-02) transaction. 		
Notes				

TP Id		TP/HFS/SEN/POU/GEN/BV-001		
TP label		DOR Requirements. Time source		
Coverage	Spec	[b-IHE_PCD_Suppl_POU]		
	Testable items	DORReq 1;M	DORReq 2;M	
Test purpose		<p>Check that:</p> <p>A DOR is synchronized to a time source.</p> <p>[AND]</p> <p>A DOR ensures correct time stamps in the PHD Data that are aligned with the timeline of this time source.</p>		

Applicability	C_SEN_000 AND C_SEN_GEN_009
Other PICSS	
Initial condition	Simulated HFS supports POU Server and Capability Exchange Continua Certified Capability Classes, so it has an POU API that can accept a POU that requires TLS and an authentication token. The HFS supports all available OAuth 2.0 authorization grant types (so they are listed in the grantTypes element of its OAuthDescriptor). Simulated HFS has no previously stored resources and supports both transactions: FHIR PHD data (PCH-01) and RESTful FHIR PHD Data (PCH-02).
Test procedure	<ol style="list-style-type: none"> 1. Ask the DOR under test to upload an Observation resource as a complete bundle to the simulated Receiver. 2. Ask the DOR under test to upload another Observation resource as a complete bundle to the simulated Receiver.
Pass/fail criteria	<ul style="list-style-type: none"> • The time in the received bundle in step 2 is correct. • The timestamps of the bundles received in steps 1 and 2 are aligned with the timeline of this time source.
Notes	

TP Id	TP/HFS/SEN/POU/GEN/BV-002		
TP label	DOR Requirements. Duplicate bundle		
Coverage	Spec	[b-IHE_PCD_Suppl_POU]	
	Testable items	DORReq 5;M	
Test purpose	Check that: The DOR prevents duplication of data when using the RESTful FHIR API.		
Applicability	C_SEN_000 AND C_SEN_GEN_010		
Other PICSS			
Initial condition	Simulated HFS supports POU Server and Capability Exchange Continua Certified Capability Classes, so it has an POU API that can accept a POU that requires TLS and an authentication token. The HFS supports all available OAuth 2.0 authorization grant types (so they are listed in the grantTypes element of its OAuthDescriptor). Simulated HFS has no previously stored resources and supports both transactions: FHIR PHD data (PCH-01) and RESTful FHIR PHD Data (PCH-02).		
Test procedure	<ol style="list-style-type: none"> 1. Ask the DOR under test to upload an Observation resource (create) as a complete bundle to the simulated Receiver using transaction PCH-02. 2. Ask the DOR under test to upload an Observation resource (conditional create) as a complete bundle to the simulated Receiver using transaction PCH-02. 		
Pass/fail criteria	<ul style="list-style-type: none"> • Only one bundle was received, with no duplicate data. 		
Notes			

TP Id		TP/HFS/SEN/POU/GEN/BV-003_A		
TP label		PCH-01 Message Semantics. OAuth identity token (PCH-01)		
Coverage	Spec	[b-IHE_PCD_Suppl_POU]		
	Testable items	CommPCH-01MessSem 1;M		
Test purpose		<p>Check that:</p> <p>The OAuth identity token is recognized by the Device Observation Consumer for acceptance of the message but how that identity token is obtained is a business trust relationship decision.</p>		
Applicability		C_SEN_000 AND C_SEN_GEN_009 AND C_SEN_GEN_011		
Other PICSS				
Initial condition		<p>Simulated HFS supports POU Server and Capability Exchange Continua Certified Capability Classes, so it has an POU API that can accept a POU that requires TLS and an authentication token. The HFS supports all available OAuth 2.0 authorization grant types (so they are listed in the grantTypes element of its OAuthDescriptor). Simulated HFS has no previously stored resources and supports both transactions: FHIR PHD data (PCH-01) and RESTful FHIR PHD Data (PCH-02).</p>		
Test procedure		1. Send a FHIR Bundle by DOR under test to simulated receiver using transaction PCH-01.		
Pass/fail criteria		<ul style="list-style-type: none"> The OAuth identity token was recognized by the Device Observation Consumer (DOC) upon receiving a valid response. 		
Notes				

TP Id		TP/HFS/SEN/POU/GEN/BV-003_B		
TP label		PCH-02 Message Semantics. OAuth identity token PCH-02		
Coverage	Spec	[b-IHE_PCD_Suppl_POU]		
	Testable items	CommPCH-02MessSem 1;M		
Test purpose		<p>Check that:</p> <p>The OAuth identity token is recognized by the DOC for acceptance of the message but how that identity token is obtained is a business trust relationship decision.</p>		
Applicability		C_SEN_000 AND C_SEN_GEN_010 AND C_SEN_GEN_011		
Other PICSS				
Initial condition		<p>Simulated HFS supports POU Server and Capability Exchange Continua Certified Capability Classes, so it has an POU API that can accept a POU that requires TLS and an authentication token. The HFS supports all available OAuth 2.0 authorization grant types (so they are listed in the grantTypes element of its OAuthDescriptor). Simulated HFS has no previously stored resources and supports both transactions: FHIR PHD data (PCH-01) and RESTful FHIR PHD Data (PCH-02).</p>		
Test procedure		1. Send a FHIR Bundle by DOR under test to simulated receiver using transaction PCH-02.		
Pass/fail criteria		<ul style="list-style-type: none"> The OAuth identity token was recognized by the DOC upon receiving a valid response. 		
Notes				

TP Id		TP/HFS/SEN/POU/GEN/BV-004		
TP label		PCH-01 Message Semantics. Bundle elements		
Coverage	Spec	[b-IHE_PCD_Suppl_POU]		
	Testable items	CommPCH-01MessSem 4;M	CommPCH-01MessSem 5;M	CommPCH-01MessSem 6;M
		CommPCH-01MessSem 7;M		
Test purpose		<p>Check that:</p> <p>Only the create, conditional create and conditional update FHIR transactions are specified in the Bundle using the PCH-01 transaction.</p> <p>[AND]</p> <p>The Patient, PHD Device, PHG Device, are sent every time.</p> <p>[AND]</p> <p>The Patient, PHD Device, and PHG Device resource entries specify the conditional create FHIR transaction or conditional update on the identifier value and system elements.</p> <p>[AND]</p> <p>Observation resource entries created from stored data specify the conditional create FHIR transaction on the identifier value element.</p>		
Applicability		C_SEN_000 AND C_SEN_GEN_009		
Other PICSS				
Initial condition		<p>Simulated HFS supports POU Server and Capability Exchange Continua Certified Capability Classes, so it has an POU API that can accept a POU that requires TLS and an authentication token. The HFS supports all available OAuth 2.0 authorization grant types (so they are listed in the grantTypes element of its OAuthDescriptor). Simulated HFS has no previously stored resources and supports both transactions: FHIR PHD data (PCH-01) and RESTful FHIR PHD Data (PCH-02).</p>		
Test procedure		<ol style="list-style-type: none"> 1. Ask the DOR under test to upload an Observation resource as a complete bundle to the simulated Receiver using transaction PCH-01. 		
Pass/fail criteria		<ul style="list-style-type: none"> • The create, conditional create and conditional update FHIR transactions are specified in the Bundle. • The Patient, PHD Device and PHG Device are specified in the Bundle. • The Patient, PHD Device and PHG Device resource entries specify the conditional create FHIR transaction or conditional update on the identifier value and system elements. • Observation resource entries created from stored data specify the conditional create FHIR transaction on the identifier value element. 		
Notes				

TP Id		TP/HFS/SEN/POU/GEN/BV-005		
TP label		PCH-02 RESTful FHIR PHD Data TLS security and OAuth authentication		
Coverage	Spec	[b-IHE_PCD_Suppl_POU]		
	Testable items	CommPCH-02;M	DORReq 4;M	CommPCH-01;M

Test purpose	Check that: The DOR Actors support TLS security and OAuth authentication for this Integrating the Healthcare Enterprise (IHE) transaction.
Applicability	C_SEN_000 AND C_SEN_GEN_009 AND C_SEN_GEN_010 AND C_SEN_GEN_011 AND C_SEN_GEN_012
Other PICSS	
Initial condition	Simulated HFS supports POU Server and Capability Exchange Continua Certified Capability Classes, so it has a POU API that can accept a POU that requires TLS and an authentication token. The HFS supports all available OAuth 2.0 authorization grant types (so they are listed in the grantTypes element of its OAuthDescriptor). Simulated HFS has no previously stored resources and supports both transactions: FHIR PHD data (PCH-01) and RESTful FHIR PHD Data (PCH-02).
Test procedure	1. Ask the DOR under test to upload an Observation resource as a complete bundle to the simulated Receiver using transaction PCH-02.
Pass/fail criteria	<ul style="list-style-type: none"> The DOR supports TLS security and OAuth authentication for this IHE transaction.
Notes	

TP Id	TP/HFS/SEN/POU/GEN/BV-006		
TP label	PCH-02 Message Semantics		
Coverage	Spec	[IHE_PCD_Suppl_POU]	
	Testable items	CommPCH-02MessSem 2;M	CommPCH-02MessSem 3;M
		CommPCH-02MessSem 5;M	CommPCH-02MessSem 4;M
Test purpose	<p>Check that:</p> <p>The DOR either ensures that the Patient, PHD Device, and PHG Device resource do not exist on the server (perhaps by doing a GET) or uses the conditional create or conditional update transaction on the identifier value.</p> <p>[AND]</p> <p>Observation resource entries created from stored data specify the conditional create FHIR transaction on the identifier value element.</p> <p>[AND]</p> <p>The upload attempts to filter duplicate resources instead of relying on the conditional create and conditional update FHIR transactions.</p>		
Applicability	C_SEN_000 AND C_SEN_GEN_010		
Other PICSS			
Initial condition	Simulated HFS supports POU Server and Capability Exchange Continua Certified Capability Classes, so it has a POU API that can accept a POU that requires TLS and an authentication token. The HFS supports all available OAuth 2.0 authorization grant types (so they are listed in the grantTypes element of its OAuthDescriptor). Simulated HFS has no previously stored resources and supports both transactions: FHIR PHD data (PCH-01) and RESTful FHIR PHD Data (PCH-02).		
Test procedure	<ol style="list-style-type: none"> Ask the DOR under test to upload an Observation resource as a complete bundle to the simulated Receiver using transaction PCH-02. Ask the DOR under test to upload an Observation resource (conditional create) as a complete bundle to the simulated Receiver using transaction PCH-02. 		
Pass/fail criteria	<ul style="list-style-type: none"> The resource has not been created in step 2. 		
Notes			

TP Id		TP/HFS/SEN/POU/GEN/BV-007		
TP label		RESTfull FHIR API. FHIR version		
Coverage	Spec	[b-IHE_PCD_Suppl_POU]		
	Testable items	A2-FHIRResource 1;M		
Test purpose		<p>Check that:</p> <p>The DOR supporting the Communicate RESTful FHIR PHD Data (PCH-02) transaction uses the Patient, Device, Observation and optionally the Bundle resources. The elements used in these resources are compatible with FHIR version 4.0.0.</p>		
Applicability		C_SEN_000 AND C_SEN_GEN_010		
Other PICSS				
Initial condition		<p>Simulated HFS supports POU Server and Capability Exchange Continua Certified Capability Classes, so it has an POU API that can accept a POU that requires TLS and an authentication token. The HFS supports all available OAuth 2.0 authorization grant types (so they are listed in the grantTypes element of its OAuthDescriptor). Simulated HFS has no previously stored resources and supports both transactions: FHIR PHD data (PCH-01) and RESTful FHIR PHD Data (PCH-02).</p>		
Test procedure		<ol style="list-style-type: none"> 1. Ask the DOR under test to upload an Observation resource as a complete bundle to the simulated Receiver using transaction PCH-02. 		
Pass/fail criteria		<ul style="list-style-type: none"> • The elements used in these resources are compatible with FHIR version 4.0.0. 		
Notes				

TP Id		TP/HFS/SEN/POU/GEN/BV-008		
TP label		RESTfull FHIR API. Operations		
Coverage	Spec	[b-IHE_PCD_Suppl_POU]		
	Testable items	A2-RESTfulFHIR-API 1;M		
Test purpose		<p>Check that:</p> <p>DORs following the POU only use the following RESTful FHIR operations for uploading:</p> <ul style="list-style-type: none"> • Create • Conditional Create • Conditional Update 		
Applicability		C_SEN_000 AND C_SEN_GEN_010		
Other PICSS				
Initial condition		<p>Simulated HFS supports POU Server and Capability Exchange Continua Certified Capability Classes, so it has an POU API that can accept a POU that requires TLS and an authentication token. The HFS supports all available OAuth 2.0 authorization grant types (so they are listed in the grantTypes element of its OAuthDescriptor). Simulated HFS has no previously stored resources and supports both transactions: FHIR PHD data (PCH-01) and RESTful FHIR PHD Data (PCH-02).</p>		

Test procedure	<ol style="list-style-type: none"> 1. Ask the DOR under test to create an Observation resource as a complete bundle to the simulated Receiver using transaction PCH-02. 2. Ask the DOR under test to use conditional create to upload an Observation resource as a complete bundle to the simulated Receiver using transaction PCH-02. 3. Ask the DOR under test to use conditional update to upload an Observation resource as a complete bundle to the simulated Receiver using transaction PCH-02.
Pass/fail criteria	<ul style="list-style-type: none"> • Step 1 creates the resource correctly. • Step 2 does not create the resource as it is already on the server. • Step 3 correctly updates the resource.
Notes	DOR is responsible for converting patient measurement data into FHIR resources and uploading it to a DOC using the RESTful FHIR API.

TP Id	TP/HFS/SEN/POU/GEN/BV-009		
TP label	RESTfull FHIR API. Resources		
Coverage	Spec	[b-IHE_PCD_Suppl_POU]	
	Testable items	A2-RESTfulFHIR-API 2;M	
Test purpose	<p>Check that:</p> <p>Health and Fitness Servers supporting the Communicate RESTful FHIR PHD Data transaction support the Patient, Device and Observation resources as well as the FHIR transaction Bundle.</p>		
Applicability	C_SEN_000 AND C_SEN_GEN_010		
Other PICSS			
Initial condition	<p>Simulated HFS supports POU Server and Capability Exchange Continua Certified Capability Classes, so it has an POU API that can accept a POU that requires TLS and an authentication token. The HFS supports all available OAuth 2.0 authorization grant types (so they are listed in the grantTypes element of its OAuthDescriptor). Simulated HFS has no previously stored resources and supports both transactions: FHIR PHD data (PCH-01) and RESTful FHIR PHD Data (PCH-02).</p>		
Test procedure	<ol style="list-style-type: none"> 1. Upload patient resource. The first transaction is a FHIR PHD Data transaction PCH-02. 2. Upload device resource. The second transaction is a FHIR PHD Data transaction PCH-02. 3. Upload observation resource. The third transaction is a FHIR PHD Data transaction PCH-02. 		
Pass/fail criteria	<ul style="list-style-type: none"> • The RESTful FHIR PHD data transaction supports patient, device, and observation resources as well as the FHIR transaction bundle. 		
Notes			

TP Id	TP/HFS/SEN/POU/GEN/BV-010		
TP label	PHD Patient Resource. Logical Id		
Coverage	Spec	[b-IHE_PCD_Suppl_POU]	
	Testable items	A2.1PHD-PatientRes 1;M	

Test purpose	Check that: DOR does not upload a Patient resource. It uses the logical Id in all resources that require a reference to a Patient resource.
Applicability	C_SEN_000 AND C_SEN_GEN_010
Other PICSS	
Initial condition	Simulated HFS supports POU Server and Capability Exchange Continua Certified Capability Classes, so it has an POU API that can accept a POU that requires TLS and an authentication token. The HFS supports all available OAuth 2.0 authorization grant types (so they are listed in the grantTypes element of its OAuthDescriptor). Simulated HFS has no previously stored resources and supports both transactions: FHIR PHD data (PCH-01) and RESTful FHIR PHD Data (PCH-02).
Test procedure	1. The DOR is given the logical Id of a Patient resource by the service provider.
Pass/fail criteria	<ul style="list-style-type: none"> The DOR will not load a patient resource, but rather the logical identification of a resource that requires a reference to a patient resource.
Notes	Patient information is a highly sensitive issue. To support protection of Personal Health Information (PHI) the POU Profile supports an option where the DOR is given the logical Id (not the identifier) of a Patient resource by the service provider. How this logical Id is obtained is not specified by the POU Profile. In that case, the DOR shall not upload a Patient resource. It shall use the logical Id in all resources that require a reference to a Patient resource.

TP Id	TP/HFS/SEN/POU/GEN/BV-011		
TP label	PHD Patient Resource. Duplicate data		
Coverage	Spec	[b-IHE_PCD_Suppl_POU]	
	Testable items	A2.1PHD-PatientRes 3;M	A2.2PHD-DevRes 1;M
		A2.4PHD-BOP;M	A2.2PHD-DevRes 2;M
Test purpose	Check that: The DOR either ensures the resource does not exist on the server before using a create operation or uses a conditional create or conditional update operation on the identifier system and value elements.		
Applicability	C_SEN_000 AND C_SEN_GEN_010		
Other PICSS			
Initial condition	Simulated HFS supports POU Server and Capability Exchange Continua Certified Capability Classes, so it has an POU API that can accept a POU that requires TLS and an authentication token. The HFS supports all available OAuth 2.0 authorization grant types (so they are listed in the grantTypes element of its OAuthDescriptor). Simulated HFS has no previously stored resources and supports both transactions: FHIR PHD data (PCH-01) and RESTful FHIR PHD Data (PCH-02).		
Test procedure	<ol style="list-style-type: none"> The simulated receiver uses a GET resource operation. The same resource is uploaded using a conditional create or update conditional operation. 		
Pass/fail criteria	<ul style="list-style-type: none"> Step 2 returns a fail verdict. 		
Notes			

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