



**SmartM2M;
Smart Appliances Ontology and Communication
Framework Testing;
Part 3: Test Suite Structure and Test Purposes (TSS & TP)**

Reference

DTS/SmartM2M-103 268-3_SAP_TSS

Keywords

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Foreword

This Technical Specification (TS) has been produced by ETSI Technical Committee Smart Machine-to-Machine communications (SmartM2M).

The present document is part 3 of a multi-part deliverable covering Conformance test specifications for Smart Appliances Ontology and Communication Framework Testing, as identified below:

- Part 1: "Testing methodology";
- Part 2: "Protocol Implementation Conformance Statement (PICS) pro forma";
- Part 3: "Test Suite Structure and Test Purposes (TSS & TP)";**
- Part 4: "Abstract Test Suite (ATS) and Protocol Implementation eXtra Information for Testing (PIXIT)".

Modal verbs terminology

In the present document "**shall**", "**shall not**", "**should**", "**should not**", "**may**", "**need not**", "**will**", "**will not**", "**can**" and "**cannot**" are to be interpreted as described in clause 3.2 of the [ETSI Drafting Rules](#) (Verbal forms for the expression of provisions).

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1 Scope

The present document provides the Test Suite Structure and Test Purposes (TSS & TP) for Conformance test specifications for Smart Appliances testing as defined in ETSI TS 103 268-1 [3] and ETSI TS 118 115 [5] in compliance with the relevant requirements and in accordance with the relevant guidance given in ISO/IEC 9646-7 [4].

2 References

2.1 Normative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

Referenced documents which are not found to be publicly available in the expected location might be found at <https://docbox.etsi.org/Reference>.

NOTE: While any hyperlinks included in this clause were valid at the time of publication, ETSI cannot guarantee their long term validity.

The following referenced documents are necessary for the application of the present document.

- [1] ETSI TS 103 264: "SmartM2M; Smart Appliances; Reference Ontology and oneM2M Mapping".
- [2] ETSI TS 118 112: "oneM2M; Base Ontology (oneM2M TS-00012)".
- [3] ETSI TS 103 268-1: "SmartM2M; Smart Appliances Ontology and Communication Framework Testing; Part 1: Testing methodology".
- [4] ISO/IEC 9646-7: "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 7: Implementation Conformance Statements".
- [5] ETSI TS 118 115: "oneM2M; Testing Framework (oneM2M TS-0015)".

2.2 Informative references

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NOTE: While any hyperlinks included in this clause were valid at the time of publication, ETSI cannot guarantee their long term validity.

The following referenced documents are not necessary for the application of the present document but they assist the user with regard to a particular subject area.

Not applicable.

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in ETSI TS 103 268-1 [3], in ETSI TS 118 112 [2] and in ISO/IEC 9646-7 [4] apply.

3.2 Abbreviations

For the purposes of the present document, the abbreviations given in ETSI TS 103 268-1 [3], ETSI TS 103 264 [1] and ETSI TS 118 112 [2] and the following apply:

API	Application Programming Interface
EUT	Equipment Under Test
IFS	Interoperable Features Statement
IUT	Implementation Under Test
IWF	InterWorking Function
PICS	Protocol Implementation Conformance Statement
QE	Qualified Equipment
RP	Reference Point
SAP	Smart Appliance
SUT	System Under Test
TP	Test Purpose
TSS	Test Suite Structure

4 Prerequisites and Test Configurations

4.1 Test Configurations

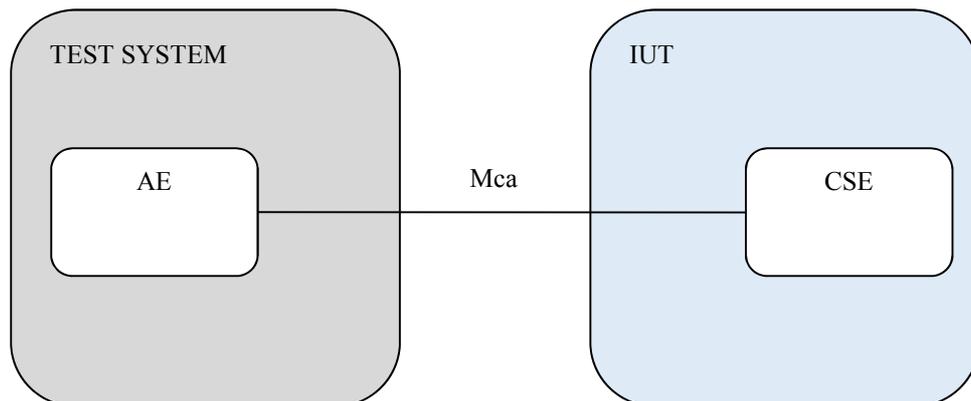


Figure 4.1-1: Test configuration 1 (CF01)

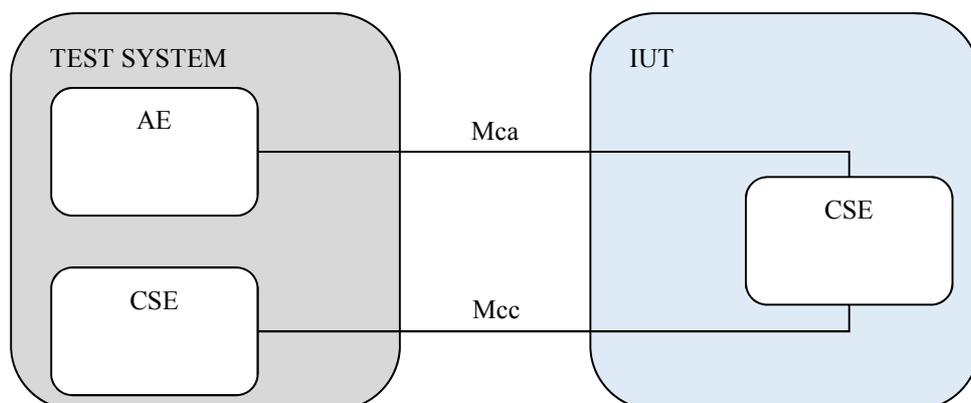


Figure 4.1-2: Test configuration 2 (CF02)

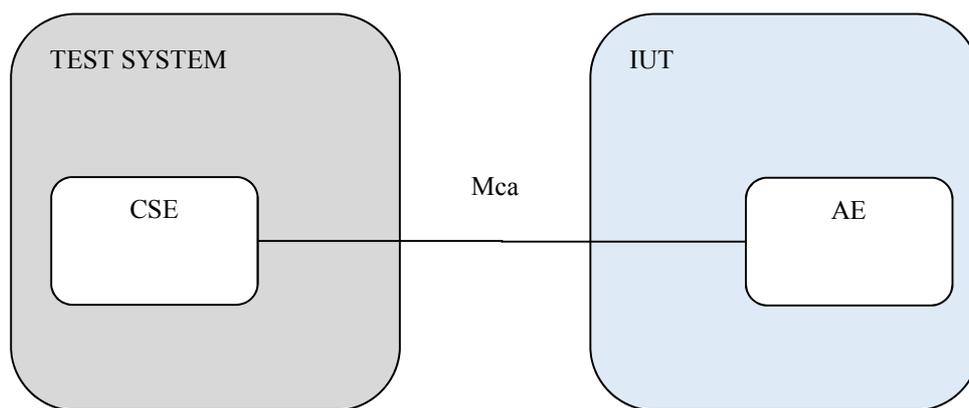


Figure 4.1-3: Test configuration 3 (CF03)

5 Test Suite Structure (TSS)

5.1 Structure for SAP tests

Table 5.1-1 shows SAP Test Suite Structure (TSS) including its subgroups defined for conformance testing.

Table 5.1-1: TSS for oneM2M

Root	Group	Sub-group	category
SAP	SAREF		Valid behaviour
			Valid behaviour

The test suite is structured as a tree with the root defined as SAP. The tree is of rank 3 with the first rank a Group, the second a Sub-group and the third a Category. The third rank is the standard ISO conformance test categories.

6 Test Purposes (TP)

6.1 Introduction

6.1.1 TP definition conventions

The TPs are defined by the rules shown in table 6.1.1-1.

Table 6.1.1-1: TP definition rules

TP Header	
TP ID	The TP ID is a unique identifier. It shall be specified according to the TP naming conventions defined in clause 6.1.2.
Test objective	Short description of test purpose objective according to the requirements from the base standard.
Reference	The reference indicates the sub-clauses of the reference standard specifications in which the conformance requirement is expressed.
PICS Selection	Reference to the PICS statement involved for selection of the TP. Contains a Boolean expression.
TP Behaviour	
Initial conditions	The initial conditions define in which initial state the IUT has to be to apply the actual TP. In the corresponding Test Case, when the execution of the initial condition does not succeed, it leads to the assignment of an Inconclusive verdict.
Expected behaviour (TP body)	Definition of the events, which are parts of the TP objective, and the IUT are expected to perform in order to conform to the base specification. In the corresponding Test Case, Pass or Fail verdicts can be assigned there.
Final conditions	Definition of the events that the IUT is expected to perform or shall not perform, according to the base standard and following the correct execution of the actions in the expected behaviour above. In the corresponding Test Case, the execution of the final conditions is evaluated for the assignment of the final verdict.

6.1.2 TP Identifier naming conventions

The identifier of the TP is built according to table 6.1.2-1.

Table 6.1.2-1: TP naming convention

Identifier:	TP/<root>/<gr>/<sgr>/<x>/<nn>		
	<root> = root		
	<gr> = group		
	<sgr> = subgroup		
	<x> = type of testing	BV	Valid Behaviour tests
		BI	Invalid Syntax or Behaviour Tests
		BO	Inopportune Behaviour
	<nn> = sequential number		01 to 99

6.1.3 Rules for the behaviour description

The description of the TP is built according to ETSI TS 103 268-1 [3].

6.1.4 Sources of TP definitions

All TPs are specified according to ETSI TS 103 264 [1] and ETSI TS 118 112 [2].

6.1.5 Mnemonics for PICS reference

To avoid an update of all TP tables when the PICS document is changed, table 6.1.5-1 introduce mnemonics name and the correspondence with the real PICS item number.

Table 6.1.5-1: Mnemonics for PICS reference

Mnemonic	PICS item
PICS_AE	A.5.1/1 [1]
PICS_CONTAINER	A.5.1/1 [1]
PICS_FLEXCONTAINER	A.5.1/1 [1]
PICS_GENERIC_IWK_SERVICE	A.5.1/1 [1]
PICS_GENERIC_IWK_OP_INSTANCE	A.5.1/1 [1]
PICS_DEVICE	A.5.2/1 [1]
PICS_FUNCTION	A.5.3/1 [1]
PICS_PROPERTY	A.5.5/1 [1]
PICS_COMMAND	A.5.6/1 [1]
PICS_DEVICECATEGORY	A.5.7/1 [1]
PICS_STATE	A.5.8/1 [1]
PICS_TASK	A.5.9/1 [1]
PICS_UNITOFMEASURE	A.5.10/1 [1]
PICS_COMMODITY	A.5.11/1 [1]
PICS_BUILDINGOBJECT	A.5.12/1 [1]
PICS_BUILDINGSPACE	A.5.13/1 [1]
PICS_PROFILE	A.5.14/1 [1]
PICS_FUNCTIONCATEGORY	A.5.15/1 [1]
PICS_OBJECTPROPERTY	A.5.16/1 [1]
PICS_DATATYPE	A.5.17/1 [1]
PICS_OPERATION	A.5.18/1 [1]
PICS_THING	A.5.19/1 [1]
PICS_ASPECT	A.5.20/1 [1]

6.2 Test purposes for SAP Testing

6.2.1 SAREF

TP Id	TP/SAP/SAREF/BV/001						
Test objective	Check that the IUT creates for an instantiation of a <i>class</i> of the Base Ontology a oneM2M resource of type <i><semanticDescriptor></i> containing a descriptor attribute containing the instantiated class in RDF data.						
Reference	ETSI TS 118 112 [2], clause 7.1.1.1						
Config Id	CF03						
PICS Selection	PICS_AE						
Initial conditions	with { the CSE being in the "initial state" and the IUT having an ontology instance containing an instantiation of a <i>class</i> of the Base Ontology and the IUT having privileges to perform CREATE operation }						
Expected behaviour	<table border="1"> <thead> <tr> <th colspan="2" style="text-align: center;">Test events</th> </tr> </thead> <tbody> <tr> <td>when { the IUT starts and registers }</td> <td></td> </tr> <tr> <td>then { the IUT sends a valid CREATE request containing To set to address of <AE> resource and Resource-Type set to <i><semanticDescriptor></i> and From set to AE-ID and Content containing <i><semanticDescriptor></i> resource containing descriptor attribute containing RDF data of the instantiated class }</td> <td></td> </tr> </tbody> </table>	Test events		when { the IUT starts and registers }		then { the IUT sends a valid CREATE request containing To set to address of <AE> resource and Resource-Type set to <i><semanticDescriptor></i> and From set to AE-ID and Content containing <i><semanticDescriptor></i> resource containing descriptor attribute containing RDF data of the instantiated class }	
Test events							
when { the IUT starts and registers }							
then { the IUT sends a valid CREATE request containing To set to address of <AE> resource and Resource-Type set to <i><semanticDescriptor></i> and From set to AE-ID and Content containing <i><semanticDescriptor></i> resource containing descriptor attribute containing RDF data of the instantiated class }							

TP Id	Class
TP/SAP/SAREF/BV/001_01	saref:Device
TP/SAP/SAREF/BV/001_02	saref:Door switch
TP/SAP/SAREF/BV/001_03	saref:Energy meter
TP/SAP/SAREF/BV/001_04	saref:Light switch
TP/SAP/SAREF/BV/001_05	saref:Meter
TP/SAP/SAREF/BV/001_06	saref:Sensor
TP/SAP/SAREF/BV/001_07	saref:Smoke sensor
TP/SAP/SAREF/BV/001_08	saref:Switch
TP/SAP/SAREF/BV/001_09	saref:Temperature sensor
TP/SAP/SAREF/BV/001_10	saref:Washing machine
TP/SAP/SAREF/BV/001_11	saref:Service
TP/SAP/SAREF/BV/001_12	saref:Switch on service
TP/SAP/SAREF/BV/001_13	saref:Function
TP/SAP/SAREF/BV/001_14	saref:Actuating function
TP/SAP/SAREF/BV/001_15	saref:On off function
TP/SAP/SAREF/BV/001_16	saref:Open close function
TP/SAP/SAREF/BV/001_17	saref:start stopfunction
TP/SAP/SAREF/BV/001_18	saref:Event function
TP/SAP/SAREF/BV/001_19	saref:Metering function
TP/SAP/SAREF/BV/001_20	saref:Sensing function
TP/SAP/SAREF/BV/001_21	saref:Command
TP/SAP/SAREF/BV/001_22	saref:Close command
TP/SAP/SAREF/BV/001_23	saref:Get command
TP/SAP/SAREF/BV/001_24	saref:Get current meter value command
TP/SAP/SAREF/BV/001_25	saref:Get meter data command
TP/SAP/SAREF/BV/001_26	saref:Get meter history command
TP/SAP/SAREF/BV/001_27	saref:Get sensing data command
TP/SAP/SAREF/BV/001_28	saref:Notify command
TP/SAP/SAREF/BV/001_29	saref:Off command
TP/SAP/SAREF/BV/001_30	saref:On command
TP/SAP/SAREF/BV/001_31	saref:Open command
TP/SAP/SAREF/BV/001_32	saref:Pause command
TP/SAP/SAREF/BV/001_33	saref:Set level command
TP/SAP/SAREF/BV/001_34	saref:Set absolute level command
TP/SAP/SAREF/BV/001_35	saref:Set relative level command
TP/SAP/SAREF/BV/001_36	saref:Start command
TP/SAP/SAREF/BV/001_37	saref:Step down command
TP/SAP/SAREF/BV/001_38	saref:Step up command
TP/SAP/SAREF/BV/001_39	saref:Stop command
TP/SAP/SAREF/BV/001_40	saref:Toggle command

TP Id	TP/SAP/SAREF/BV/002
Test objective	Check that the IUT creates for an instantiation of a class of the Base Ontology a oneM2M resource of type < <i>semanticDescriptor</i> > containing an Ontology-Ref attribute that identifies the instantiated class.
Reference	ETSI TS 118 112 [2], clause 7.1.1.1
Config Id	CF03
PICS Selection	PICS_AE
Initial conditions	with { the CSE being in the "initial state" and the IUT having an ontology instance containing an instantiation of a class of the Base Ontology the IUT having privileges to perform CREATE operation }
Expected behaviour	Test events
	when { the IUT starts and registers } then { the IUT sends a valid CREATE request containing To set to address of <AE> resource and Resource-Type set to < <i>semanticDescriptor</i> > and From set to AE-ID and Content containing < <i>semanticDescriptor</i> > resource containing Ontology-Ref set to an URI that identifies the instantiated class. }

TP Id	Class
TP/SAP/SAREF/BV/002_01	saref:Device
TP/SAP/SAREF/BV/002_02	saref:Door switch
TP/SAP/SAREF/BV/002_03	saref:Energy meter
TP/SAP/SAREF/BV/002_04	saref:Light switch
TP/SAP/SAREF/BV/002_05	saref:Meter
TP/SAP/SAREF/BV/002_06	saref:Sensor
TP/SAP/SAREF/BV/002_07	saref:Smoke sensor
TP/SAP/SAREF/BV/002_08	saref:Switch
TP/SAP/SAREF/BV/002_09	saref:Temperature sensor
TP/SAP/SAREF/BV/002_10	saref:Washing machine
TP/SAP/SAREF/BV/002_11	saref:Service
TP/SAP/SAREF/BV/002_12	saref:Switch on service
TP/SAP/SAREF/BV/002_13	saref:Function
TP/SAP/SAREF/BV/002_14	saref:Actuating function
TP/SAP/SAREF/BV/002_15	saref:On off function
TP/SAP/SAREF/BV/002_16	saref:Open close function
TP/SAP/SAREF/BV/002_17	saref:start stopfunction
TP/SAP/SAREF/BV/002_18	saref:Event function
TP/SAP/SAREF/BV/002_19	saref:Metering function
TP/SAP/SAREF/BV/002_20	saref:Sensing function
TP/SAP/SAREF/BV/002_21	saref:Command
TP/SAP/SAREF/BV/002_22	saref:Close command
TP/SAP/SAREF/BV/002_23	saref:Get command
TP/SAP/SAREF/BV/002_24	saref:Get current meter value command
TP/SAP/SAREF/BV/002_25	saref:Get meter data command
TP/SAP/SAREF/BV/002_26	saref:Get meter history command
TP/SAP/SAREF/BV/002_27	saref:Get sensing data command
TP/SAP/SAREF/BV/002_28	saref:Notify command
TP/SAP/SAREF/BV/002_29	saref:Off command
TP/SAP/SAREF/BV/002_30	saref:On command
TP/SAP/SAREF/BV/002_31	saref:Open command
TP/SAP/SAREF/BV/002_32	saref:Pause command
TP/SAP/SAREF/BV/002_33	saref:Set level command
TP/SAP/SAREF/BV/002_34	saref:Set absolute level command
TP/SAP/SAREF/BV/002_35	saref:Set relative level command
TP/SAP/SAREF/BV/002_36	saref:Start command
TP/SAP/SAREF/BV/002_37	saref:Step down command
TP/SAP/SAREF/BV/002_38	saref:Step up command
TP/SAP/SAREF/BV/002_39	saref:Stop command
TP/SAP/SAREF/BV/002_40	saref:Toggle command

TP Id	TP/SAP/SAREF/BV/003
Test objective	Check that the IUT creates for an instantiation of a class of the Base Ontology a oneM2M resource of type <semanticDescriptor> containing the instantiated Object Property for which the instantiated class is the domain class.
Reference	ETSI TS 118 112 [2], clause 7.1.1.1
Config Id	CF03
PICS Selection	PICS_AE, PICS_OBJECTPROPERTY
Initial conditions	with { the CSE being in the "initial state" and the IUT having an ontology instance containing an instantiation of a class of the Base Ontology and the IUT having privileges to perform CREATE operation }
Expected behaviour	Test events
	when { the IUT starts and registers }
	then { the IUT sends a valid CREATE request containing To set to address of <AE> resource and Resource-Type set to <semanticDescriptor> and From set to AE-ID and Content containing <semanticDescriptor> resource containing the instantiated Object Property for which the instantiated class is the domain class.

TP Id	Object Property
TP/SAP/SAREF/BV/003_01	saref:accomplishes
TP/SAP/SAREF/BV/003_02	saref:acts upon
TP/SAP/SAREF/BV/003_03	saref:consists of
TP/SAP/SAREF/BV/003_04	saref:contains
TP/SAP/SAREF/BV/003_05	saref:has category
TP/SAP/SAREF/BV/003_06	saref:has command
TP/SAP/SAREF/BV/003_07	saref:has consumption
TP/SAP/SAREF/BV/003_08	saref:has function
TP/SAP/SAREF/BV/003_09	saref:has input parameter
TP/SAP/SAREF/BV/003_10	saref:has meter reading
TP/SAP/SAREF/BV/003_11	saref:has meter reading time
TP/SAP/SAREF/BV/003_12	saref:has output parameter
TP/SAP/SAREF/BV/003_13	saref:has price
TP/SAP/SAREF/BV/003_14	saref:has production
TP/SAP/SAREF/BV/003_15	saref:has profile
TP/SAP/SAREF/BV/003_16	saref:has sensing range
TP/SAP/SAREF/BV/003_17	saref:has sensing time
TP/SAP/SAREF/BV/003_18	saref:has singular unit
TP/SAP/SAREF/BV/003_19	saref:has state
TP/SAP/SAREF/BV/003_20	saref:has threshold
TP/SAP/SAREF/BV/003_21	saref:has time
TP/SAP/SAREF/BV/003_22	saref:has typical consumption
TP/SAP/SAREF/BV/003_23	saref:is accomplished by
TP/SAP/SAREF/BV/003_24	saref:is category of
TP/SAP/SAREF/BV/003_25	saref:is command of
TP/SAP/SAREF/BV/003_26	saref:is located in
TP/SAP/SAREF/BV/003_27	saref:is measured in
TP/SAP/SAREF/BV/003_28	saref:is offered by
TP/SAP/SAREF/BV/003_29	saref:is used for
TP/SAP/SAREF/BV/003_30	saref:offers
TP/SAP/SAREF/BV/003_31	saref:represents

TP Id	TP/SAP/SAREF/BV/004
Test objective	Check that the IUT creates for an instantiation of a class of the Base Ontology a oneM2M resource of type < <i>semanticDescriptor</i> > containing the instantiated Data Property for which the instantiated class is the domain class.
Reference	ETSI TS 118 112 [2], clause 7.1.1.1
Config Id	CF03
PICS Selection	PICS_AE, PICS_OBJECTPROPERTY
Initial conditions	with { the CSE being in the "initial state" and the IUT having an ontology instance containing an instantiation of a class of the Base Ontology and the IUT having privileges to perform CREATE operation }
Expected behaviour	Test events
	when { the IUT starts and registers }
	then { the IUT sends a valid CREATE request containing To set to address of <AE> resource and Resource-Type set to <i>semanticDescriptor</i> and From set to AE-ID and no Name attribute and Content containing <i>semanticDescriptor</i> resource containing the instantiated Data Property for which the instantiated class is the domain class. }

TP Id	Data Property
TP/SAP/SAREF/BV/004_01	saref:has description
TP/SAP/SAREF/BV/004_02	saref:has manufacturer
TP/SAP/SAREF/BV/004_03	saref:has meter reading type
TP/SAP/SAREF/BV/004_04	saref:has model
TP/SAP/SAREF/BV/004_05	saref:has name
TP/SAP/SAREF/BV/004_06	saref:has sensor type
TP/SAP/SAREF/BV/004_07	saref:has space type
TP/SAP/SAREF/BV/004_08	saref:has task
TP/SAP/SAREF/BV/004_09	saref:has value
TP/SAP/SAREF/BV/004_10	saref:is flexible
TP/SAP/SAREF/BV/004_11	saref:is interruption possible

TP Id	TP/SAP/SAREF/BV/005
Test objective	Check that the IUT creates for an instantiation of a class of the Base Ontology a oneM2M resource of type < <i>semanticDescriptor</i> > containing an instance of the resourceDescriptorLink annotation property that contains the URI of the semanticDescriptor of the instance of the range class.
Reference	ETSI TS 118 112 [2], clause 7.1.1.1
Config Id	CF03
PICS Selection	PICS_AE, PICS_OBJECTPROPERTY
Initial conditions	<p>with {</p> <p style="padding-left: 40px;">the CSE being in the "initial state" and</p> <p style="padding-left: 40px;">the IUT having an ontology instance containing</p> <p style="padding-left: 80px;">an instantiation of a class of the Base Ontology and</p> <p style="padding-left: 80px;">a range class of an object property instantiated in a different <<i>semanticDescriptor</i>> resource that is different to the <<i>semanticDescriptor</i>> resource in which the domain class is instantiated and</p> <p style="padding-left: 40px;">the IUT having privileges to perform CREATE operation</p> <p>}</p>
Expected behaviour	Test events
	<p>when {</p> <p style="padding-left: 20px;">the IUT starts and registers</p> <p>}</p> <p>then {</p> <p style="padding-left: 20px;">the IUT sends a valid CREATE request containing</p> <p style="padding-left: 40px;">To set to address of <AE> resource and</p> <p style="padding-left: 40px;">Resource-Type set to <i>semanticDescriptor</i> and</p> <p style="padding-left: 40px;">From set to AE-ID and</p> <p style="padding-left: 40px;">Content containing</p> <p style="padding-left: 80px;"><i>semanticDescriptor</i> resource containing</p> <p style="padding-left: 120px;">an instance of the resourceDescriptorLink annotation property that contains the URI of the semanticDescriptor of the instance of the range class.</p>

TP Id	Class
TP/SAP/SAREF/BV/005_01	saref:Device
TP/SAP/SAREF/BV/005_02	saref:Door switch
TP/SAP/SAREF/BV/005_03	saref:Energy meter
TP/SAP/SAREF/BV/005_04	saref:Light switch
TP/SAP/SAREF/BV/005_05	saref:Meter
TP/SAP/SAREF/BV/005_06	saref:Sensor
TP/SAP/SAREF/BV/005_07	saref:Smoke sensor
TP/SAP/SAREF/BV/005_08	saref:Switch
TP/SAP/SAREF/BV/005_09	saref:Temperature sensor
TP/SAP/SAREF/BV/005_10	saref:Washing machine
TP/SAP/SAREF/BV/005_11	saref:Service
TP/SAP/SAREF/BV/005_12	saref:Switch on service
TP/SAP/SAREF/BV/005_13	saref:Function
TP/SAP/SAREF/BV/005_14	saref:Actuating function
TP/SAP/SAREF/BV/005_15	saref:On off function
TP/SAP/SAREF/BV/005_16	saref:Open close function
TP/SAP/SAREF/BV/005_17	saref:start stopfunction
TP/SAP/SAREF/BV/005_18	saref:Event function
TP/SAP/SAREF/BV/005_19	saref:Metering function
TP/SAP/SAREF/BV/005_20	saref:Sensing function
TP/SAP/SAREF/BV/005_21	saref:Command
TP/SAP/SAREF/BV/005_22	saref:Close command
TP/SAP/SAREF/BV/005_23	saref:Get command
TP/SAP/SAREF/BV/005_24	saref:Get current meter value command
TP/SAP/SAREF/BV/005_25	saref:Get meter data command
TP/SAP/SAREF/BV/005_26	saref:Get meter history command
TP/SAP/SAREF/BV/005_27	saref:Get sensing data command
TP/SAP/SAREF/BV/005_28	saref:Notify command
TP/SAP/SAREF/BV/005_29	saref:Off command
TP/SAP/SAREF/BV/005_30	saref:On command
TP/SAP/SAREF/BV/005_31	saref:Open command
TP/SAP/SAREF/BV/005_32	saref:Pause command
TP/SAP/SAREF/BV/005_33	saref:Set level command
TP/SAP/SAREF/BV/005_34	saref:Set absolute level command
TP/SAP/SAREF/BV/005_35	saref:Set relative level command
TP/SAP/SAREF/BV/005_36	saref:Start command
TP/SAP/SAREF/BV/005_37	saref:Step down command
TP/SAP/SAREF/BV/005_38	saref:Step up command
TP/SAP/SAREF/BV/005_39	saref:Stop command
TP/SAP/SAREF/BV/005_40	saref:Toggle command

TP Id	TP/SAP/SAREF/BV/006
Test objective	Check that the IUT creates for an instantiation of a Device class or subclass a <semanticDescriptor> resource under <AE>.
Reference	ETSI TS 118 112 [2], clause 7.1.1.2
Config Id	CF03
PICS Selection	PICS_AE, PICS_DEVICE
Initial conditions	with { the CSE being in the "initial state" and the IUT having a Device class or subclass instance and the IUT having privileges to perform CREATE operation on the resource <AE> }
Expected behaviour	Test events
	when { the IUT starts and registers }
	then { the IUT sends a valid CREATE request containing To set to address of <AE> resource and Resource-Type set to <i>semanticDescriptor</i> resource and From set to AE-ID and Content containing <semanticDescriptor> resource containing <i>descriptor</i> attribute containing instance of the Device class or subclass containing <i>rdf:about</i> attribute containing URI of the device }

TP Id	Device class/subclass
TP/SAP/SAREF/BV/006_01	saref:Device
TP/SAP/SAREF/BV/006_02	saref:Door switch
TP/SAP/SAREF/BV/006_03	saref:Energy meter
TP/SAP/SAREF/BV/006_04	saref:Light switch
TP/SAP/SAREF/BV/006_05	saref:Meter
TP/SAP/SAREF/BV/006_06	saref:Sensor
TP/SAP/SAREF/BV/006_07	saref:Smoke sensor
TP/SAP/SAREF/BV/006_08	saref:Switch
TP/SAP/SAREF/BV/006_09	saref:Temperature sensor
TP/SAP/SAREF/BV/006_10	saref:Washing machine

TP Id	TP/SAP/SAREF/BV/007
Test objective	Check that the IUT creates for an instantiation of a Service class or subclass a <semanticDescriptor> resource under <genericInterworkingService> resource.
Reference	ETSI TS 118 112 [2], clause 7.1.1.2
Config Id	CF03
PICS Selection	PICS_GENERIC_IWK_SERVICE, PICS_SERVICE
Initial conditions	with { the CSE being in the "initial state" and the IUT having a Service class or subclass instance and the IUT having created <genericInterworkingService> resource and the IUT having privileges to perform CREATE operation }
Expected behaviour	Test events
	when { the IUT starts and registers }
	then { the IUT sends a valid CREATE request containing To set to address of <genericInterworkingService> resource and Resource-Type set to <semanticDescriptor> type and From set to AE-ID and Content containing <semanticDescriptor> resource containing descriptor attribute containing instance of the Service class or subclass containing rdf:about attribute containing the URI of the Device concatenated with the letter "*" and the class name of the Service } }

TP Id	Service class/subclass
TP/SAP/SAREF/BV/007_01	saref:Service
TP/SAP/SAREF/BV/007_02	saref:Switch on service

TP Id	TP/SAP/SAREF/BV/008
Test objective	Check that the IUT creates for an instantiation of a Functionality class or subclass a <semanticDescriptor> resource under <AE> resource.
Reference	ETSI TS 118 112 [2], clause 7.1.1.2
Config Id	CF03
PICS Selection	PICS_AE, PICS_FUNCTION
Initial conditions	with { the CSE being in the "initial state" and the IUT having a Functionality class or subclass instance and the IUT having privileges to perform CREATE operation }
Expected behaviour	Test events
	when { the IUT starts and registers }
	then { the IUT sends a valid CREATE request containing To set to address of <AE> and Resource-Type set to <semanticDescriptor> type and From set to AE-ID and Content containing <semanticDescriptor> resource containing descriptor attribute containing rdf:about attribute containing the URI of the Device concatenated with the letter "*" and the class name of the Functionality. }

TP Id	Functionality class/subclass
TP/SAP/SAREF/BV/008_01	saref:Function
TP/SAP/SAREF/BV/008_02	saref:Actuating function
TP/SAP/SAREF/BV/008_03	saref:On off function
TP/SAP/SAREF/BV/008_04	saref:Open close function
TP/SAP/SAREF/BV/008_05	saref:start stopfunction
TP/SAP/SAREF/BV/008_06	saref:Event function
TP/SAP/SAREF/BV/008_07	saref:Metering function
TP/SAP/SAREF/BV/008_08	saref:Sensing function

TP Id	TP/SAP/SAREF/BV/009
Test objective	Check that the IUT creates for an instantiation of a Functionality class or subclass a <semanticDescriptor> resource under <Container> resource.
Reference	ETSI TS 118 112 [2], clause 7.1.1.2
Config Id	CF03
PICS Selection	PICS_CONTAINER, PICS_FUNCTION
Initial conditions	with { the CSE being in the "initial state" and the IUT having a Functionality class or subclass instance and the IUT having created Container <Container> and the IUT having privileges to perform CREATE operation }
Expected behaviour	Test events
	when { the IUT starts and registers }
	then { the IUT sends a valid CREATE request containing To set to address of <Container> and Resource-Type set to <semanticDescriptor> type and From set to AE-ID and Content containing <semanticDescriptor> resource containing descriptor attribute containing rdf:about attribute containing the URI of the Device concatenated with the letter "*" and the class name of the Functionality. }

TP Id	Functionality class/subclass
TP/SAP/SAREF/BV/009_01	saref:Function
TP/SAP/SAREF/BV/009_02	saref:Actuating function
TP/SAP/SAREF/BV/009_03	saref:On off function
TP/SAP/SAREF/BV/009_04	saref:Open close function
TP/SAP/SAREF/BV/009_05	saref:start stopfunction
TP/SAP/SAREF/BV/009_06	saref:Event function
TP/SAP/SAREF/BV/009_07	saref:Metering function
TP/SAP/SAREF/BV/009_08	saref:Sensing function

TP Id	TP/SAP/SAREF/BV/010
Test objective	Check that the IUT creates for an instantiation of a Functionality class or subclass a <semanticDescriptor> resource under <FlexContainer> resource.
Reference	ETSI TS 118 112 [2], clause 7.1.1.2
Config Id	CF03
PICS Selection	PICS_FLEXCONTAINER, PICS_FUNCTION
Initial conditions	with { the CSE being in the "initial state" and the IUT having a Functionality class or subclass instance and the IUT having created Container <FlexContainer> and the IUT having privileges to perform CREATE operation }
Expected behaviour	Test events
	when { the IUT starts and registers }
	then { the IUT sends a valid CREATE request containing To set to address of <FlexContainer> and Resource-Type set to <semanticDescriptor> type and From set to AE-ID and Content containing <semanticDescriptor> resource containing descriptor attribute containing rdf:about attribute containing the URI of the Device concatenated with the letter "*" and the class name of the Functionality. }

TP Id	Functionality class/subclass
TP/SAP/SAREF/BV/010_01	saref:Function
TP/SAP/SAREF/BV/010_02	saref:Actuating function
TP/SAP/SAREF/BV/010_03	saref:On off function
TP/SAP/SAREF/BV/010_04	saref:Open close function
TP/SAP/SAREF/BV/010_05	saref:start stopfunction
TP/SAP/SAREF/BV/010_06	saref:Event function
TP/SAP/SAREF/BV/010_07	saref:Metering function
TP/SAP/SAREF/BV/010_08	saref:Sensing function

TP Id	TP/SAP/SAREF/BV/011
Test objective	Check that the IUT creates for an instantiation of a Command class or subclass a <semanticDescriptor> resource under <AE> resource.
Reference	ETSI TS 118 112 [2], clause 7.1.1.2
Config Id	CF03
PICS Selection	PICS_AE, PICS_COMMAND
Initial conditions	with { the CSE being in the "initial state" and the IUT having a Command class or subclass instance the IUT having privileges to perform CREATE operation }
Expected behaviour	Test events
	when { the IUT starts and registers }
	then { the IUT sends a valid CREATE request containing To set to address of <AE> and Resource-Type set to <semanticDescriptor> type and From set to AE-ID and Content containing <semanticDescriptor> resource containing descriptor attribute containing instance of the Command class or subclass containing rdf:about attribute containing URI of the Device concatenated with the letter "*" and the class name of the Command. } }

TP Id	Command class/subclass
TP/SAP/SAREF/BV/011_01	saref:Command
TP/SAP/SAREF/BV/011_02	saref:Close command
TP/SAP/SAREF/BV/011_03	saref:Get command
TP/SAP/SAREF/BV/011_04	saref:Get current meter value command
TP/SAP/SAREF/BV/011_05	saref:Get meter data command
TP/SAP/SAREF/BV/011_06	saref:Get meter history command
TP/SAP/SAREF/BV/011_07	saref:Get sensing data command
TP/SAP/SAREF/BV/011_08	saref:Notify command
TP/SAP/SAREF/BV/011_09	saref:Off command
TP/SAP/SAREF/BV/011_10	saref:On command
TP/SAP/SAREF/BV/011_11	saref:Open command
TP/SAP/SAREF/BV/011_12	saref:Pause command
TP/SAP/SAREF/BV/011_13	saref:Set level command
TP/SAP/SAREF/BV/011_14	saref:Set absolute level command
TP/SAP/SAREF/BV/011_15	saref:Set relative level command
TP/SAP/SAREF/BV/011_16	saref:Start command
TP/SAP/SAREF/BV/011_17	saref:Step down command
TP/SAP/SAREF/BV/011_18	saref:Step up command
TP/SAP/SAREF/BV/011_19	saref:Stop command
TP/SAP/SAREF/BV/011_20	saref:Toggle command

TP Id	TP/SAP/SAREF/BV/012
Test objective	Check that the IUT creates for an instantiation of a Command class or subclass a <semanticDescriptor> resource under <Container> resource
Reference	ETSI TS 118 112 [2], clause 7.1.1.2
Config Id	CF03
PICS Selection	PICS_CONTAINER, PICS_COMMAND
Initial conditions	with { the CSE being in the "initial state" and the IUT having a Command class or subclass instance the IUT having created Container <Container> and the IUT having privileges to perform CREATE operation }
Expected behaviour	Test events
	when { the IUT starts and registers }
	then { the IUT sends a valid CREATE request containing To set to address of <Container> and Resource-Type set to <semanticDescriptor> type and From set to AE-ID and Content containing <semanticDescriptor> resource containing descriptor attribute containing instance of the Command class or subclass containing rdf:about attribute containing URI of the Device concatenated with the letter "*" and the class name of the Command. }

TP Id	Command class/subclass
TP/SAP/SAREF/BV/012_01	saref:Command
TP/SAP/SAREF/BV/012_02	saref:Close command
TP/SAP/SAREF/BV/012_03	saref:Get command
TP/SAP/SAREF/BV/012_04	saref:Get current meter value command
TP/SAP/SAREF/BV/012_05	saref:Get meter data command
TP/SAP/SAREF/BV/012_06	saref:Get meter history command
TP/SAP/SAREF/BV/012_07	saref:Get sensing data command
TP/SAP/SAREF/BV/012_08	saref:Notify command
TP/SAP/SAREF/BV/012_09	saref:Off command
TP/SAP/SAREF/BV/012_10	saref:On command
TP/SAP/SAREF/BV/012_11	saref:Open command
TP/SAP/SAREF/BV/012_12	saref:Pause command
TP/SAP/SAREF/BV/012_13	saref:Set level command
TP/SAP/SAREF/BV/012_14	saref:Set absolute level command
TP/SAP/SAREF/BV/012_15	saref:Set relative level command
TP/SAP/SAREF/BV/012_16	saref:Start command
TP/SAP/SAREF/BV/012_17	saref:Step down command
TP/SAP/SAREF/BV/012_18	saref:Step up command
TP/SAP/SAREF/BV/012_19	saref:Stop command
TP/SAP/SAREF/BV/012_20	saref:Toggle command

TP Id	TP/SAP/SAREF/BV/013
Test objective	Check that the IUT creates for an instantiation of a Command class or subclass a <semanticDescriptor> resource under <FlexContainer> resource.
Reference	ETSI TS 118 112 [2], clause 7.1.1.2
Config Id	CF03
PICS Selection	PICS_FLEXCONTAINER, PICS_COMMAND
Initial conditions	with { the CSE being in the "initial state" and the IUT having a Command class or subclass instance the IUT having created Container <FlexContainer> and the IUT having privileges to perform CREATE operation }
Expected behaviour	Test events
	when { the IUT starts and registers }
	then { the IUT sends a valid CREATE request containing To set to address of <FlexContainer> and Resource-Type set to <semanticDescriptor> type and From set to AE-ID and Content containing <semanticDescriptor> resource containing descriptor attribute containing instance of the Command class or subclass containing rdf:about attribute containing URI of the Device concatenated with the letter "*" and the class name of the Command. } }

TP Id	Command class/subclass
TP/SAP/SAREF/BV/013_01	saref:Command
TP/SAP/SAREF/BV/013_02	saref:Close command
TP/SAP/SAREF/BV/013_03	saref:Get command
TP/SAP/SAREF/BV/013_04	saref:Get current meter value command
TP/SAP/SAREF/BV/013_05	saref:Get meter data command
TP/SAP/SAREF/BV/013_06	saref:Get meter history command
TP/SAP/SAREF/BV/013_07	saref:Get sensing data command
TP/SAP/SAREF/BV/013_08	saref:Notify command
TP/SAP/SAREF/BV/013_09	saref:Off command
TP/SAP/SAREF/BV/013_10	saref:On command
TP/SAP/SAREF/BV/013_11	saref:Open command
TP/SAP/SAREF/BV/013_12	saref:Pause command
TP/SAP/SAREF/BV/013_13	saref:Set level command
TP/SAP/SAREF/BV/013_14	saref:Set absolute level command
TP/SAP/SAREF/BV/013_15	saref:Set relative level command
TP/SAP/SAREF/BV/013_16	saref:Start command
TP/SAP/SAREF/BV/013_17	saref:Step down command
TP/SAP/SAREF/BV/013_18	saref:Step up command
TP/SAP/SAREF/BV/013_19	saref:Stop command
TP/SAP/SAREF/BV/013_20	saref:Toggle command

TP Id	TP/SAP/SAREF/BV/014
Test objective	Check that the IUT creates for an instantiation of a Operation class a <semanticDescriptor> resource under <genericInterworkingOperationInstance> resource.
Reference	ETSI TS 118 112 [2], clause 7.1.1.2
Config Id	CF03
PICS Selection	PICS_GENERIC_IWK_OP_INSTANCE, PICS_Operation
Initial conditions	with { the CSE being in the "initial state" and the IUT having an Operation class instance and the IUT having created <genericInterworkingOperationInstance> resource and the IUT having privileges to perform CREATE operation }
Expected behaviour	Test events
	when { the IUT starts and registers }
	then { the IUT sends a valid CREATE request containing To set to address of <genericInterworkingOperationInstance> resource and Resource-Type set to <semanticDescriptor> type and From set to AE-ID and Content containing <semanticDescriptor> resource containing descriptor attribute containing instance of the Operation class containing rdf:about attribute containing the URI of the Device concatenated with the letter "" and the class name of the Service, concatenated with the letter "" and a combination of the class name of the Operation with a number that makes the instance unique within its Service instance during the operation's lifetime. } }

TP Id	TP/SAP/SAREF/BV/015
Test objective	Check that the IUT creates for an instantiation of a OperationInput and OperationOutput classes a <semanticDescriptor> resource under <Container> resource.
Reference	ETSI TS 118 112 [2], clause 7.1.1.2
Config Id	CF03
PICS Selection	PICS_CONTAINER, PICS_Operation
Initial conditions	with { the CSE being in the "initial state" and the IUT having an OperationInput and OperationOutput classes instances and the IUT having created <Container> and the IUT having privileges to perform CREATE operation }
Expected behaviour	Test events
	when { the IUT starts and registers } then { the IUT sends a valid CREATE request containing To set to address of <Container> and Resource-Type set to <semanticDescriptor> type and From set to AE-ID and Content containing <semanticDescriptor> resource containing descriptor attribute containing instance of the OperationInput and OperationOutput classes containing rdf:about attribute containing the URI of the Operation Instance concatenated with the letter "*" and the class name of the OperationInput and OperationOutput. } }

TP Id	TP/SAP/SAREF/BV/016
Test objective	Check that the IUT creates for an instantiation of a OperationInput and OperationOutput classes a <semanticDescriptor> resource under <FlexContainer> resource.
Reference	ETSI TS 118 112 [2], clause 7.1.1.2
Config Id	CF03
PICS Selection	PICS_FLEXCONTAINER, PICS_Operation
Initial conditions	with { the CSE being in the "initial state" and the IUT having an OperationInput and OperationOutput class instances and the IUT having created <FlexContainer> and the IUT having privileges to perform CREATE operation }
Expected behaviour	Test events
	when { the IUT starts and registers } then { the IUT sends a valid CREATE request containing To set to address of <FlexContainer> and Resource-Type set to <semanticDescriptor> type and From set to AE-ID and Content containing <semanticDescriptor> resource containing descriptor attribute containing instance of the OperationInput and OperationOutput classes containing rdf:about attribute containing the URI of the Operation Instance concatenated with the letter "*" and the class name of the OperationInput and OperationOutput. } }

TP Id	TP/SAP/SAREF/BV/017
Test objective	Check that the IUT creates for an instantiation of a InputDataPoint and OutputDataPoint classes a <semanticDescriptor> resource under <Container> resource.
Reference	ETSI TS 118 112 [2], clause 7.1.1.2
Config Id	CF03
PICS Selection	PICS_CONTAINER, PICS_Operation
Initial conditions	with { the CSE being in the "initial state" and the IUT having an InputDataPoint and OutputDataPoint classes instances and the IUT having created <Container> and the IUT having privileges to perform CREATEoperation }
Expected behaviour	Test events
	when { the IUT starts and registers }
	then { the IUT sends a valid CREATE request containing To set to address of <Container> and Resource-Type set to <semanticDescriptor> resource and From set to AE-ID and Content containing <semanticDescriptor> resource containing descriptor attribute containing instance of the OperationInput and OperationOutput classes containing rdf:about attribute containing the URI of the Device concatenated with the letter "*" and the class name of the InputDataPoint or OutputDataPoint } }

TP Id	TP/SAP/SAREF/BV/018
Test objective	Check that the IUT creates for an instantiation of a InputDataPoint and OutputDataPoint classes a <semanticDescriptor> resource under <FlexContainer> resource.
Reference	ETSI TS 118 112 [2], clause 7.1.1.2
Config Id	CF03
PICS Selection	PICS_FLEXCONTAINER, PICS_Operation
Initial conditions	with { the CSE being in the "initial state" and the IUT having an InputDataPoint and OutputDataPoint classes instances and the IUT having created <FlexContainer> and the IUT having privileges to perform CREATEoperation }
Expected behaviour	Test events
	when { the IUT starts and registers }
	then { the IUT sends a valid CREATE request containing To set to address of <FlexContainer> and Resource-Type set to <semanticDescriptor> resource and From set to AE-ID and Content containing <semanticDescriptor> resource containing descriptor attribute containing instance of the InputDataPoint and OutputDataPoint classes containing rdf:about attribute containing the URI of the Device concatenated with the letter "*" and the class name of the InputDataPoint or OutputDataPoint } }

TP Id	TP/SAP/SAREF/BV/019
Test objective	Check that the IUT sets the "rdf:about" attribute in the <semanticDescriptor> for an OperationState class.
Reference	ETSI TS 118 112 [2], clause 7.1.1.2
Config Id	CF03
PICS Selection	PICS_PICS_GENERIC_IWK_OP_INSTANCE, PICS_OPERATION
Initial conditions	with { the CSE being in the "initial state" and the IUT having an OperationState class instance and the IUT having created <genericInterworkingOperationInstance > resource that is related via the "hasOperationState" Object Property and the IUT having privileges to perform CREATE operation }
Expected behaviour	Test events
	when { the IUT starts and registers }
	then { the IUT sends a valid CREATE request containing To set to address of <genericInterworkingOperationInstance> resource and Resource-Type set to <semanticDescriptor> type and From set to AE-ID and Content containing <semanticDescriptor> resource containing descriptor attribute containing instance of the OperationState class containing rdf:about attribute containing the URI of the OperationInstance concatenated with the letter "*" and "OperationState" } }

TP Id	TP/SAP/SAREF/BV/020						
Test objective	Check that the IUT sets the "oneM2MTargetURI" dataProperty in the <semanticDescriptor> for an OperationState class.						
Reference	ETSI TS 118 112 [2], clause 7.1.1.2						
Config Id	CF03						
PICS Selection	PICS_GENERIC_IWK_OP_INSTANCE, PICS_OPERATION						
Initial conditions	<pre> with { the CSE being in the "initial state" and the CSE having registered the IUT and the IUT giving an OperationState class instance and the IUT having created <genericInterworkingOperationInstance > resource that is related via the "hasOperationState" Object Property and the IUT having privileges to perform CREATE operation } </pre>						
Expected behaviour	<table border="1"> <thead> <tr> <th></th> <th>Test events</th> </tr> </thead> <tbody> <tr> <td> <pre> when { the IUT starts and registers } </pre> </td> <td></td> </tr> <tr> <td> <pre> then { the IUT sends a valid CREATE request containing To set to address of <genericInterworkingOperationInstance> resource and Resource-Type set to <semanticDescriptor> type and From set to AE-ID and Content containing <semanticDescriptor> resource containing descriptor attribute containing instance of the OperationState class containing data property "oneM2MTargetURI" containing the URI of the genericInterworkingOperationInst ance resource. } </pre> </td> <td></td> </tr> </tbody> </table>		Test events	<pre> when { the IUT starts and registers } </pre>		<pre> then { the IUT sends a valid CREATE request containing To set to address of <genericInterworkingOperationInstance> resource and Resource-Type set to <semanticDescriptor> type and From set to AE-ID and Content containing <semanticDescriptor> resource containing descriptor attribute containing instance of the OperationState class containing data property "oneM2MTargetURI" containing the URI of the genericInterworkingOperationInst ance resource. } </pre>	
	Test events						
<pre> when { the IUT starts and registers } </pre>							
<pre> then { the IUT sends a valid CREATE request containing To set to address of <genericInterworkingOperationInstance> resource and Resource-Type set to <semanticDescriptor> type and From set to AE-ID and Content containing <semanticDescriptor> resource containing descriptor attribute containing instance of the OperationState class containing data property "oneM2MTargetURI" containing the URI of the genericInterworkingOperationInst ance resource. } </pre>							

TP Id	TP/SAP/SAREF/BV/021				
Test objective	Check that the IUT instantiates the "OperationState" value in <semanticDescriptor> for an OperationState class.				
Reference	ETSI TS 118 112 [2], clause 7.1.1.2				
Config Id	CF03				
PICS Selection	PICS_GENERIC_IWK_OP_INSTANCE, PICS_OPERATION				
Initial conditions	<pre>with { the CSE being in the "initial state" and the CSE having registered the IUT and the IUT giving an OperationState class instance and the IUT having created <genericInterworkingOperationInstance> resource that is related via the "hasOperationState" Object Property and the IUT having privileges to perform CREATE operation }</pre>				
Expected behaviour	<table border="1"> <thead> <tr> <th colspan="2" style="text-align: center;">Test events</th> </tr> </thead> <tbody> <tr> <td style="vertical-align: top;"> <pre>when { the IUT starts and registers }</pre> </td> <td style="vertical-align: top;"> <pre>then { the IUT sends a valid CREATE request containing To set to address of <genericInterworkingOperationInstance> resource and Resource-Type set to <semanticDescriptor> type and From set to AE-ID and Content containing <semanticDescriptor> resource containing descriptor attribute containing instance of the OperationState class or subclass containing data property "oneM2MAttribute" containing the value "OperationState" } } }</pre> </td> </tr> </tbody> </table>	Test events		<pre>when { the IUT starts and registers }</pre>	<pre>then { the IUT sends a valid CREATE request containing To set to address of <genericInterworkingOperationInstance> resource and Resource-Type set to <semanticDescriptor> type and From set to AE-ID and Content containing <semanticDescriptor> resource containing descriptor attribute containing instance of the OperationState class or subclass containing data property "oneM2MAttribute" containing the value "OperationState" } } }</pre>
Test events					
<pre>when { the IUT starts and registers }</pre>	<pre>then { the IUT sends a valid CREATE request containing To set to address of <genericInterworkingOperationInstance> resource and Resource-Type set to <semanticDescriptor> type and From set to AE-ID and Content containing <semanticDescriptor> resource containing descriptor attribute containing instance of the OperationState class or subclass containing data property "oneM2MAttribute" containing the value "OperationState" } } }</pre>				

TP Id	TP/SAP/SAREF/BV/022
Test objective	Check that the IUT creates for an Aspect class a<semanticDescriptor> resource under <Container> resource.
Reference	ETSI TS 118 112 [2], clause 7.1.1.2
Config Id	CF03
PICS Selection	PICS_CONTAINER, PICS_ASPECT
Initial conditions	with { the CSE being in the "initial state" and the IUT having an Aspect class instance and the IUT having created <Container> resource and the IUT having privileges to perform CREATE operation }
Expected behaviour	Test events
	when { the IUT starts and registers }
	then { the IUT sends a valid CREATE request containing To set to address of <Container> and Resource-Type set to <semanticDescriptor> type and From set to AE-ID and Content containing <semanticDescriptor> resource containing descriptor attribute containing instance of the Aspect class containing rdf:about attribute containing a URI that is unique within the oneM2M Solution. }

TP Id	TP/SAP/SAREF/BV/023
Test objective	Check that the IUT creates for an Aspect class a<semanticDescriptor> resource under <FlexContainer> resource.
Reference	ETSI TS 118 112 [2], clause 7.1.1.2
Config Id	CF03
PICS Selection	PICS_FLEXCONTAINER, PICS_ASPECT
Initial conditions	with { the CSE being in the "initial state" and the IUT having an Aspect class instance and the IUT having created <FlexContainer> resource and the IUT having privileges to perform CREATE operation }
Expected behaviour	Test events
	when { the IUT starts and registers }
	then { the IUT sends a valid CREATE request containing To set to address of <FlexContainer> and Resource-Type set to <semanticDescriptor> type and From set to AE-ID and Content containing <semanticDescriptor> resource containing descriptor attribute containing instance of the Aspect class containing rdf:about attribute containing a URI that is unique within the oneM2M Solution. }

TP Id	TP/SAP/SAREF/BV/0247
Test objective	Check that the IUT creates for a Thing Class a <semanticDescriptor> resource under <Container> resource.
Reference	ETSI TS 118 112 [2], clause 7.1.1.2
Config Id	CF03
PICS Selection	PICS_CONTAINER, PICS_THING
Initial conditions	with { the CSE being in the "initial state" and the IUT having a Thing class or subclass instance and the IUT having created <Container> resource and the IUT having privileges to perform CREATE operation }
Expected behaviour	Test events
	when { the IUT starts and registers }
	then { the IUT sends a valid CREATE request containing To set to address of <Container> and Resource-Type set to <semanticDescriptor> type and From set to AE-ID and Content containing <semanticDescriptor> resource containing descriptor attribute containing instance of the Thing class containing rdf:about attribute containing a URI that is unique within the oneM2M Solution. }

TP Id	TP/SAP/SAREF/BV/025
Test objective	Check that the IUT creates for a Thing Class a <semanticDescriptor> resource under <FlexContainer> resource.
Reference	ETSI TS 118 112 [2], clause 7.1.1.2
Config Id	CF03
PICS Selection	PICS_FLEXCONTAINER, PICS_THING
Initial conditions	with { the CSE being in the "initial state" and the IUT having a Thing class instance and the IUT having created <FlexContainer > resource and the IUT having privileges to perform CREATE operation }
Expected behaviour	Test events
	when { the IUT starts and registers }
	then { the IUT sends a valid CREATE request containing To set to address of <FlexContainer> and Resource-Type set to <semanticDescriptor> type and From set to AE-ID and Content containing <semanticDescriptor> resource containing descriptor attribute containing instance of the Thing class containing rdf:about attribute containing a URI that is unique within the oneM2M Solution. }

TP Id	TP/SAP/SAREF/BV/028
Test objective	Check that the IUT creates a for a saref:Device class a <semanticDescriptor> resource that contains the properties saref:hasModel and saref:hasManufacturer
Reference	ETSI TS 103 264 [1], clause 4.3
Config Id	CF03
PICS Selection	PICS_DEVICE, PICS_DATAPROPERTY
Initial conditions	with { the CSE being in the "initial state" and the IUT having privileges to perform CREATE operation and the IUT having an ontology instance containing an instantiation of a saref:Device class }
Expected behaviour	Test events
	when { the IUT starts and registers }
	then { the IUT sends a valid CREATE request containing To set to <AE><AE> and Resource-Type set to <semanticDescriptor> type and From set to AE-ID and Content containing <semanticDescriptor> resource containing descriptor attribute containing instance of the saref:Device class and containing predicate indicating "saref:hasModel" and containing predicate indicating s aref:hasManufacturer" }

TP Id	TP/SAP/SAREF/BV/029
Test objective	Check that the IUT creates for a saref:Device a <semanticDescriptor> resource that contains at least one saref:Function.
Reference	ETSI TS 103 264 [1], clause 4.3
Config Id	CF03
PICS Selection	PICS_DEVICE, PICS_FUNCTION
Initial conditions	with { the CSE being in the "initial state" and the IUT having privileges to perform CREATE operation and the IUT having an ontology instance containing an instantiation of a saref:Device class }
Expected behaviour	Test events
	when { the IUT starts and registers }
	then { the IUT sends a valid CREATE request containing To set to <AE><AE> and Resource-Type set to <semanticDescriptor> type and From set to AE-ID and Content containing <semanticDescriptor> resource containing descriptor attribute containing instance of the saref:Device THE_DEVICE and attribute containing rdf:about indicating THE_DEVICE and predicate indicating "saref:hasFunction THE_FUNCTION) and attribute containing rdf:about indicating THE_FUNCTION } }

TP Id	TP/SAP/SAREF/BV/030
Test objective	Check that the IUT creates for a saref:Function class a <semanticDescriptor> resource that contains at least one saref:Command
Reference	ETSI TS 103 264 [1], clause 4.3
Config Id	CF03
PICS Selection	PICS_FUNCTION, PICS_COMMAND
Initial conditions	with { the CSE being in the "initial state" and the IUT having privileges to perform CREATE operation and the IUT having an ontology instance containing an instantiation of a saref:Function class }
Expected behaviour	Test events
	when { the IUT starts and registers }
	then { the IUT sends a valid CREATE request containing To set to <AE> and Resource-Type set to <semanticDescriptor> type and From set to AE-ID and Content containing <semanticDescriptor> resource containing descriptor attribute containing instance of the saref:Function THE_FUNCTION and attribute containing rdf:about indicating THE_FUNCTION and predicate indicating "saref:hasCommand" THE_COMMAND and attribute containing rdf:about indicating THE_COMMAND } }

TP Id	TP/SAP/SAREF/BV/031
Test objective	Check that the IUT creates for a saref:Service class a <semanticDescriptor> resource that contains at least one saref:Function.
Reference	ETSI TS 103 264 [1], clause 4.3
Config Id	CF03
PICS Selection	PICS_FUNCTION, PICS_SERVICE
Initial conditions	with { the CSE being in the "initial state" and the IUT having privileges to perform CREATE operation and the IUT having an ontology instance containing an instantiation of a saref:Service class }
Expected behaviour	Test events
	when { the IUT starts and registers } then { the IUT sends a valid CREATE request containing To set to <AE> and Resource-Type set to <semanticDescriptor> type and From set to AE-ID and Content containing <semanticDescriptor> resource containing descriptor attribute containing instance of the saref:Service THE_SERVICE and attribute containing rdf:about indicating THE_SERVICE and predicate indicating "saref:hasFunction" THE_FUNCTION and attribute containing rdf:about indicating THE_FUNCTION } }

TP Id	TP/SAP/SAREF/BV/032
Test objective	Check that the IUT creates for a saref:Service class a <semanticDescriptor> resource that contains at least one saref:Device.
Reference	ETSI TS 103 264 – 4.3
Config Id	CF03
PICS Selection	PICS_DEVICE, PICS_SERVICE
Initial conditions	with { the CSE being in the "initial state" and the IUT having privileges to perform CREATE operation and the IUT having an ontology instance containing an instantiation of a saref:Service class }
Expected behaviour	Test events
	when { the IUT starts and registers } then { the IUT sends a valid CREATE request containing To set to <AE> and Resource-Type set to <semanticDescriptor> type and From set to AE-ID and Content containing <semanticDescriptor> resource containing descriptor attribute containing instance of the saref:Service THE_SERVICE and attribute containing rdf:about indicating PX_DEVICE_URI and predicate indicating "saref:hasService" THE_SERVICE } }

TP Id	TP/SAP/SAREF/BV/033
Test objective	Check that the IUT creates for a saref:Service class a <semanticDescriptor> resource that contains the input and output parameters necessary to operate the service.
Reference	ETSI TS 103 264 [1], clause 4.3
Config Id	CF03
PICS Selection	PICS_SERVICE, PICS_ObjectProperty
Initial conditions	with { the CSE being in the "initial state" and the IUT having privileges to perform CREATE operation and the IUT having an ontology instance containing an instantiation of a saref:Service class }
Expected behaviour	Test events
	when { the IUT starts and registers }
	then { the IUT sends a valid CREATE request containing To set to <AE> and Resource-Type set to <semanticDescriptor> type and From set to AE-ID and Content containing <semanticDescriptor> resource containing descriptor attribute containing instance of the saref:Service and containing predicate indicating "saref:hasInputParameter" and containing predicate indicating saref:hasOutputParameter" } }

Annex A (informative): Notification Testcases

The testcases of the Annex A are describing some Notification functional test scenarios. They are relevant but informative as there is no corresponding requirements in the ETSI TS 118 112 [2] nor ETSI TS 103 264 [1].

TP Id	TP/SAP/SAREF/BV/034
Test objective	Check that the IUT updates its Device class or subclass after <semanticDescriptor> resource is updated
Reference	ETSI TS 118 112 [2], clause 7.1
Config Id	CF03
PICS Selection	PICS_AE, PICS_DEVICE
Initial conditions	<pre>with { the IUT being in the "initial state" and the IUT having registered the AE and the IUT having created a <semanticDescriptor> resource containing a Device class or subclass instance }</pre>
Expected behaviour	<pre>Test events when { the IUT receives a valid NOTIFY request containing Content containing A notification resource containing The updated Device class or subclass } then { the IUT updates its Device class or subclass value}</pre>

TP Id	Device class/subclass
TP/SAP/SAREF/BV/034_01	saref:Device
TP/SAP/SAREF/BV/034_02	saref:Door switch
TP/SAP/SAREF/BV/034_03	saref:Energy meter
TP/SAP/SAREF/BV/034_04	saref:Light switch
TP/SAP/SAREF/BV/034_05	saref:Meter
TP/SAP/SAREF/BV/034_06	saref:Sensor
TP/SAP/SAREF/BV/034_07	saref:Smoke sensor
TP/SAP/SAREF/BV/034_08	saref:Switch
TP/SAP/SAREF/BV/034_09	saref:Temperature sensor
TP/SAP/SAREF/BV/034_10	saref:Washing machine

TP Id	TP/SAP/SAREF/BV/035
Test objective	Check that the IUT updates its Service class or subclass after <semanticDescriptor> resource is updated
Reference	ETSI TS 118 112 [2], clause 7.1
Config Id	CF03
PICS Selection	PICS_GENERIC_IWK_SERVICE, PICS_SERVICE
Initial conditions	with { the IUT being in the "initial state" and the IUT having registered the AE and the IUT having created a <semanticDescriptor> resource containing a Service class or subclass instance }
Expected behaviour	Test events
	when { the IUT receives a valid NOTIFY request containing Content containing A notification resource containing The updated Service class or subclass } then { the IUT updates its Service class or subclass value }

TP Id	Service class/subclass
TP/SAP/SAREF/BV/035_01	saref:Service
TP/SAP/SAREF/BV/035_02	saref:Switch on service

TP Id	TP/SAP/SAREF/BV/036
Test objective	Check that the IUT updates its Function class or subclass after <semanticDescriptor> resource is updated.
Reference	ETSI TS 118 112 [2], clause 7.1
Config Id	CF03
PICS Selection	PICS_FUNCTION
Initial conditions	with { the IUT being in the "initial state" and the IUT having registered the AE and the IUT having created a <semanticDescriptor> resource containing a Function class or subclass instance }
Expected behaviour	Test events
	when { the IUT receives a valid NOTIFY request containing Content containing A notification resource containing The updated Function class or subclass } then { the IUT updates its Function class or subclass value }

TP Id	Functionality class/subclass
TP/SAP/SAREF/BV/036_01	saref:Function
TP/SAP/SAREF/BV/036_02	saref:Actuating function
TP/SAP/SAREF/BV/036_03	saref:On off function
TP/SAP/SAREF/BV/036_04	saref:Open close function
TP/SAP/SAREF/BV/036_05	saref:start stopfunction
TP/SAP/SAREF/BV/036_06	saref:Event function
TP/SAP/SAREF/BV/036_07	saref:Metering function
TP/SAP/SAREF/BV/036_08	saref:Sensing function

TP Id	TP/SAP/SAREF/BV/037
Test objective	Check that the IUT updates its Command class or subclass after <semanticDescriptor> resource is updated.
Reference	ETSI TS 118 112 [2], clause 7.1
Config Id	CF03
PICS Selection	PICS_COMMAND
Initial conditions	with { the IUT being in the "initial state" and the IUT having registered the AE and the IUT having created a <semanticDescriptor> resource containing a Command class or subclass instance }
Expected behaviour	Test events when { the IUT receives a valid NOTIFY request containing Content containing A notification resource containing The updated Command class or subclass } then { the IUT updates its Command class or subclass value }

TP Id	Command class/subclass
TP/SAP/SAREF/BV/037_01	saref:Command
TP/SAP/SAREF/BV/037_02	saref:Close command
TP/SAP/SAREF/BV/037_03	saref:Get command
TP/SAP/SAREF/BV/037_04	saref:Get current meter value command
TP/SAP/SAREF/BV/037_05	saref:Get meter data command
TP/SAP/SAREF/BV/037_06	saref:Get meter history command
TP/SAP/SAREF/BV/037_07	saref:Get sensing data command
TP/SAP/SAREF/BV/037_08	saref:Notify command
TP/SAP/SAREF/BV/037_09	saref:Off command
TP/SAP/SAREF/BV/037_10	saref:On command
TP/SAP/SAREF/BV/037_11	saref:Open command
TP/SAP/SAREF/BV/037_12	saref:Pause command
TP/SAP/SAREF/BV/037_13	saref:Set level command
TP/SAP/SAREF/BV/037_14	saref:Set absolute level command
TP/SAP/SAREF/BV/037_15	saref:Set relative level command
TP/SAP/SAREF/BV/037_16	saref:Start command
TP/SAP/SAREF/BV/037_17	saref:Step down command
TP/SAP/SAREF/BV/037_18	saref:Step up command
TP/SAP/SAREF/BV/037_19	saref:Stop command
TP/SAP/SAREF/BV/037_20	saref:Toggle command

TP Id	TP/SAP/SAREF/BV/038
Test objective	Check that the IUT updates its Object Property after <semanticDescriptor> resource is updated.
Reference	ETSI TS 118 112 [2], clause 7.1
Config Id	CF03
PICS Selection	PICS_OBJECT_PROPERTY
Initial conditions	with { the IUT being in the "initial state" and the IUT having registered the AE and the IUT having created a <semanticDescriptor> resource containing a Object Property instance }
Expected behaviour	Test events when { the IUT receives a valid NOTIFY request containing Content containing A notification resource containing The updated Object Property } then { the IUT updates its Object Property }

TP Id	Object Property
TP/SAP/SAREF/BV/038_01	saref:accomplishes
TP/SAP/SAREF/BV/038_02	saref:acts upon
TP/SAP/SAREF/BV/038_03	saref:consists of
TP/SAP/SAREF/BV/038_04	saref:contains
TP/SAP/SAREF/BV/038_05	saref:has category
TP/SAP/SAREF/BV/038_06	saref:has command
TP/SAP/SAREF/BV/038_07	saref:has consumption
TP/SAP/SAREF/BV/038_08	saref:has function
TP/SAP/SAREF/BV/038_09	saref:has input parameter
TP/SAP/SAREF/BV/038_10	saref:has meter reading
TP/SAP/SAREF/BV/038_11	saref:has meter reading time
TP/SAP/SAREF/BV/038_12	saref:has output parameter
TP/SAP/SAREF/BV/038_13	saref:has price
TP/SAP/SAREF/BV/038_14	saref:has production
TP/SAP/SAREF/BV/038_15	saref:has profile
TP/SAP/SAREF/BV/038_16	saref:has sensing range
TP/SAP/SAREF/BV/038_17	saref:has sensing time
TP/SAP/SAREF/BV/038_18	saref:has singular unit
TP/SAP/SAREF/BV/038_19	saref:has state
TP/SAP/SAREF/BV/038_20	saref:has threshold
TP/SAP/SAREF/BV/038_21	saref:has time
TP/SAP/SAREF/BV/038_22	saref:has typical consumption
TP/SAP/SAREF/BV/038_23	saref:is accomplished by
TP/SAP/SAREF/BV/038_24	saref:is category of
TP/SAP/SAREF/BV/038_25	saref:is command of
TP/SAP/SAREF/BV/038_26	saref:is located in
TP/SAP/SAREF/BV/038_27	saref:is measured in
TP/SAP/SAREF/BV/038_28	saref:is offered by
TP/SAP/SAREF/BV/038_29	saref:is used for
TP/SAP/SAREF/BV/038_30	saref:offers
TP/SAP/SAREF/BV/038_31	saref:represents

TP Id	TP/SAP/SAREF/BV/039
Test objective	Check that the IUT updates its Data Property after <semanticDescriptor> resource is updated.
Reference	ETSI TS 118 112 [2], clause 7.1
Config Id	CF03
PICS Selection	PICS_DATA_PROPERTY
Initial conditions	with { the IUT being in the "initial state" and the IUT having registered the AE and the IUT having created a <semanticDescriptor> resource containing a Data Property instance }
Expected behaviour	Test events
	when { the IUT receives a valid NOTIFY request containing Content containing A notification resource containing The updated Data Property } then { the IUT updates its Data Property }

TP Id	Data Property
TP/SAP/SAREF/BV/039_01	saref:has description
TP/SAP/SAREF/BV/039_02	saref:has manufacturer
TP/SAP/SAREF/BV/039_03	saref:has meter reading type
TP/SAP/SAREF/BV/039_04	saref:has model
TP/SAP/SAREF/BV/039_05	saref:has name
TP/SAP/SAREF/BV/039_06	saref:has sensor type
TP/SAP/SAREF/BV/039_07	saref:has space type
TP/SAP/SAREF/BV/039_08	saref:has task
TP/SAP/SAREF/BV/039_09	saref:has value
TP/SAP/SAREF/BV/039_10	saref:is flexible
TP/SAP/SAREF/BV/039_11	saref:is interruption possible

History

Document history		
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