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| INPUT CONTRIBUTION |
| Group Name:\* | TDE |
| Title:\* | Interop Test Cases for Semantics |
| Source:\* | KETI and EGM |
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| Date:\* | 2020-10-06 |
| Abstract:\* | The contribution proposes some Interoperability Test Descriptions for semantics management to be added to TS-0013 |
| Agenda Item:\* | TBD |
| Work item(s): |  |
| Document(s) Impacted\* | TS-0013 |
| Intended purpose ofdocument:\* | [x]  Decision[x]  Discussion[ ]  Information[ ]  Other <specify> |
| Decision requested or recommendation:\* | Incorporate the proposed text into TS-0013 |

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1. **Introduction**

This contribution consists of some test descriptions about Semantics to be included into the TS-0013.

The clause numbers and the TD identifier names in the following proposal may change when included in to TS-0013.

1. **Proposal**

### -----------------------Start of change 1-------------------------------------------

## 8.6 Semantics management

### 8.6.1 Semantic Access Control Policy management

#### 8.6.1.1 Procedure for creating ACP triples when a new <accessControlPolicy> resource is created

| **Interoperability Test Description** |
| --- |
| **Identifier:** | TD\_M2M\_NH\_106 |
| **Objective:** | ACP triples are created when a new *<accessControlPolicy>* resource is created |
| **Configuration:** | M2M\_CFG\_01 |
| **References:** | oneM2M TS-0034 [13], clause 7.2.1.5.2 |
|  |
| **Pre-test conditions:** | * AE has created an application resource <AE> on Registrar CSE
* The Registrar CSE has SGS available
 |
|  |  |
| **Test Sequence** |
| **Step** | **RP** | **Type** | **Description** |
| 1 |  | Stimulus | AE sends a request to create an *<*accessControlPolicy*>* resource |
| 2 | Mca | PRO Check Primitive  | * op = 1 (Create)
* to = {CSEBaseName}/<AE>
* fr = AE-ID
* rqi = (token-string)
* ty = 1 (accessControlPolicy)
* pc = Serialized representation of < accessControlPolicy > resource
 |
| 3 |  | IOP Check | Check if possible that the <accessControlPolicy> resource is created in Registrar CSE.Check if possible that Registrar CSE has created ACP Triples in SGS for the new <accessControlPolicy> resource |
| 4 | Mca | PRO Check Primitive | * rsc = 2001 (CREATED)
* rqi = (token-string) same as received in request message
* pc = Serialized representation of < accessControlPolicy > resource
 |
| 5 |  | IOP Check | AE indicates successful operation |
| IOP Verdict |  |
| PRO Verdict |  |

#### 8.6.1.2 Procedure for updating ACP triples when a new <accessControlPolicy> resource is updated

| **Interoperability Test Description** |
| --- |
| **Identifier:** | TD\_M2M\_NH\_107 |
| **Objective:** | ACP triples are updated when an existing <accessControlPolicy> resource is updated |
| **Configuration:** | M2M\_CFG\_01 |
| **References:** | oneM2M TS-0034 [13], clause 7.2.1.5.3 |
|  |
| **Pre-test conditions:** | * AE has created an application resource <AE> on Registrar CSE
* accessControlPolicy resource has been created in registrar CSE under <AE> resource with name {accessControlPolicyName}
* The Registrar CSE has SGS available
 |
|  |  |
| **Test Sequence** |
| **Step** | **RP** | **Type** | **Description** |
| 1 |  | Stimulus | AE sends a request to update a privileges attribute of {accessControlPolicyName} |
| 2 | Mca | PRO Check Primitive  | * op = 1 (Create)
* to = {CSEBaseName}/{AE}/{accessControlPolicyName}
* fr = AE-ID
* rqi = (token-string)
* ty = 1 (accessControlPolicy)
* pc = Serialized representation of updated <accessControlPolicy> resource
 |
| 3 |  | IOP Check | Check if possible that the <accessControlPolicy> resource has been updated in Registrar CSECheck if possible that Registrar CSE has updated corresponding ACP Triples in SGS |
| 4 | Mca | PRO Check Primitive | Registrar CSE sends response containing:* rsc = 2004 (UPDATED)
* rqi = (token-string) same as received in request message
* pc = Serialized representation of <accessControlPolicy> resource
 |
| 5 |  | IOP Check | AE indicates successful operation |
| IOP Verdict |  |
| PRO Verdict |  |

#### 8.6.1.3 Procedure for deleting ACP triples when an existing <accessControlPolicy> resource is deleted

| **Interoperability Test Description** |
| --- |
| **Identifier:** | TD\_M2M\_NH\_108 |
| **Objective:** | ACP triples are updated when an existing <accessControlPolicy> resource is updated |
| **Configuration:** | M2M\_CFG\_01 |
| **References:** | oneM2M TS-0034 [13], clause 7.2.1.5.4 |
|  |
| **Pre-test conditions:** | * AE has created an application resource <AE> on Registrar CSE
* accessControlPolicy resource has been created in registrar CSE under <AE> resource with name {accessControlPolicyName}
* The Registrar CSE has SGS available
 |
|  |  |
| **Test Sequence** |
| **Step** | **RP** | **Type** | **Description** |
| 1 |  | Stimulus | AE is requested to send an accessControlPolicy delete request to Registrar CSE |
| 2 | Mca | PRO Check Primitive  | * op = 4 (Delete)
* to = {CSEBaseName}/{AE}/{accessControlPolicyName}
* fr = AE-ID
* rqi = (token-string)
* pc = empty
 |
| 3 |  | IOP Check | Check if possible that the <accessControlPolicy> resource has been removed from registrar CSE.Check if possible that Registrar CSE has deleted corresponding ACP Triples in SGS |
| 4 | Mca | PRO Check Primitive | Registrar CSE sends response containing:* rsc = 2002 (DELETED)
* rqi = (token-string) same as received in request message
* pc = empty
 |
| 5 |  | IOP Check | AE indicates successful operation |
| IOP Verdict |  |
| PRO Verdict |  |

#### 8.6.1.4 Procedure for creating ACP-SD binding triples and SD relationship in SGS

| **Interoperability Test Description** |
| --- |
| **Identifier:** | TD\_M2M\_NH\_109 |
| **Objective:** | ACP-SD Binding Triples and SD relationship in SGS are created when AE creates a <semanticDescriptor> resource in Registrar CSE |
| **Configuration:** | M2M\_CFG\_01 |
| **References:** | oneM2M TS-0034 [13], clause 7.2.1.5.5 |
|  |
| **Pre-test conditions:** | * AE has created an application resource <AE> on Registrar CSE
* accessControlPolicy resource has been created in registrar CSE under <AE> resource with name {accessControlPolicyName}
* The Registrar CSE has SGS available
 |
|  |  |
| **Test Sequence** |
| **Step** | **RP** | **Type** | **Description** |
| 1 |  | Stimulus | AE sends a request to create an *<*semanticDescriptor*>* resource |
| 2 | Mca | PRO Check Primitive  | * op = 1 (Create)
* to = {CSEBaseName}/<AE>
* fr = AE-ID
* rqi = (token-string)
* ty = 24 (semanticDescriptor)
* pc = Serialized representation of <semanticDescriptor> resource
	+ acpi = URI of {accessControlPolicyName}
 |
| 3 |  | IOP Check | Check if possible that the <semanticDescriptor> resource is created in Registrar CSE.Check if possible that Registrar CSE has created SD Relationship Triples and ACP-SD Binding Triples for the new <semanticDescriptor> in SGS |
| 4 | Mca | PRO Check Primitive | * rsc = 2001 (CREATED)
* rqi = (token-string) same as received in request message
* pc = Serialized representation of <semanticDescriptor> resource
 |
| 5 |  | IOP Check | AE indicates successful operation |
| IOP Verdict |  |
| PRO Verdict |  |

#### 8.6.1.5 Procedure for updating ACP-SD binding triples in SGS

| **Interoperability Test Description** |
| --- |
| **Identifier:** | TD\_M2M\_NH\_110 |
| **Objective:** | ACP-SD Binding Triples are updated when the accessControlPolicyIDs attribute of a <semanticDescriptor> resource is updated |
| **Configuration:** | M2M\_CFG\_01 |
| **References:** | oneM2M TS-0034 [13], clause 7.2.1.5.6 |
|  |
| **Pre-test conditions:** | * AE has created an application resource <AE> on Registrar CSE
* accessControlPolicy resource has been created in registrar CSE under <AE> resource with name {accessControlPolicyName}
* AE has created a semanticDescriptor resource <semanticDescriptor> as child resource of <AE> resource
* The Registrar CSE has SGS available
 |
|  |  |
| **Test Sequence** |
| **Step** | **RP** | **Type** | **Description** |
| 1 |  | Stimulus | AE sends a request to update an accessControlPolicyIDs attribute of the resource |
| 2 | Mca | PRO Check Primitive  | * op = 3 (Update)
* to = {CSEBaseName}/URI of <semanticDescriptor> resource
* fr = AE-ID
* rqi = (token-string)
* pc = Serialized representation of updated <semanticDescriptor> resource
 |
| 3 |  | IOP Check | Check if possible that the <semanticDescriptor> resource is updated in Registrar CSE.Check if possible that Registrar CSE has updated corresponding ACP-SD Binding Triples in SGS |
| 4 | Mca | PRO Check Primitive | Registrar CSE sends response containing:* rsc = 2004 (UPDATED)
* rqi = (token-string) same as received in request message
* pc = Serialized representation of <accessControlPolicy> resource
 |
| 5 |  | IOP Check | AE indicates successful operation |
| IOP Verdict |  |
| PRO Verdict |  |

#### 8.6.1.6 Procedure for updating SD relationship triples in SGS

| **Interoperability Test Description** |
| --- |
| **Identifier:** | TD\_M2M\_NH\_111 |
| **Objective:** | SD Relationship Triples are updated when the descriptor attribute of a <semanticDescriptor> resource is changed |
| **Configuration:** | M2M\_CFG\_01 |
| **References:** | oneM2M TS-0034 [13], clause 7.2.1.5.7 |
|  |
| **Pre-test conditions:** | * AE has created an application resource <AE> on Registrar CSE
* accessControlPolicy resource has been created in registrar CSE under <AE> resource with name {accessControlPolicyName}
* AE has created a semanticDescriptor resource <semanticDescriptor> as child resource of <AE> resource
* The Registrar CSE has SGS available
 |
|  |  |
| **Test Sequence** |
| **Step** | **RP** | **Type** | **Description** |
| 1 |  | Stimulus | AE is requested to send a semanticDescriptor Update Request to update the *descriptor* attribute of the resource. |
| 2 | Mca | PRO Check Primitive  | * op = 3 (Update)
* to = {CSEBaseName}/URI of <semanticDescriptor> resource
* fr = AE-ID
* rqi = (token-string)
* pc = Serialized representation of updated <semanticDescriptor> resource
 |
| 3 |  | IOP Check | Check if possible that the <semanticDescriptor> resource is updated in Registrar CSE.Check if possible that Registrar CSE has updated old SD Relationship Triples and/or add new SD Relationship Triple in the SGS. |
| 4 | Mca | PRO Check Primitive | Registrar CSE sends response containing:* rsc = 2004 (UPDATED)
* rqi = (token-string) same as received in request message
* pc = Serialized representation of <accessControlPolicy> resource
 |
| 5 |  | IOP Check | AE indicates successful operation |
| IOP Verdict |  |
| PRO Verdict |  |

#### 8.6.1.7 Procedure for deleting SD relationship triples and ACP-SD binding triples in SGS

| **Interoperability Test Description** |
| --- |
| **Identifier:** | TD\_M2M\_NH\_112 |
| **Objective:** | AE discovers accessible resources residing in Registrar CSE using the semanticFilter filter criteria  |
| **Configuration:** | M2M\_CFG\_01 |
| **References:** | oneM2M TS-0034 [13], clause 7.4oneM2M TS-0004 [2], clause 7.3.3.18 |
|  |
| **Pre-test conditions:** | * AE1 has created an application resource <AE> on Registrar CSE
* AE1 has created a container resource <container> on Registrar CSE
* AE1 has created a <semanticDescriptor> as a child resource of a <container>
 |
| **Test Sequence** |
| **Step** | **RP** | **Type** | **Description** |
| 1 |  | Stimulus | AE1 is requested to send a Discovery request to discover the <container> resource using the semanticFilter filterCriteria |
| 2 | CheckMca | PRO Check Primitive  | Sent request contains* op = 2 (Retrieve)
* to = {CSEBaseName}
* from = AE-ID
* rqi = (token-string)
* fu=1
* smf=sparqlQuery1
* pc = empty
 |
| 3 | CheckMca | PRO Check Primitive | Sent response contains* rsc = 2000 (OK)
* rqi = (token-string) same as received in request message
* pc = Serialized representation of data object containing the <Container> address
 |
| 4 |  | IOP Check | AE1 indicates notification received |
| IOP Verdict |  |
| PRO Verdict |  |

### 8.6.2 Semantic Filtering and discovery

#### 8.6.2.1 Semantic Filtering and Discovery using <semanticFanOutPoint> resource

| **Interoperability Test Description** |
| --- |
| **Identifier:** | TD\_M2M\_NH\_113 |
| **Objective:** | AE discovers accessible resources residing in Registrar CSE using the <semanticFanOutPoint> |
| **Configuration:** | M2M\_CFG\_01 |
| **References:** | oneM2M TS-0034 [13], clause 7.4.1 |
|  |
| **Pre-test conditions:** | * AE has created an application resource <AE> on Registrar CSE
* AE has created <container> resources {container1} and {container2} in registrar CSE under <AE> resource
* AE has created a group resource with semanticSupportIndicator attribute set to TRUE and memberIds set to {container1} and {container2} ids
* AE has created <semanticDescriptor> as a child resources of a resources {container1} and {container2}
 |
|  |  |
| **Test Sequence** |
| **Step** | **RP** | **Type** | **Description** |
| 1 |  | Stimulus | AE is requested to send a Discovery request to discover the < semanticFanOutPoint > virtual resource of <group> |
| 2 | Mca | PRO Check Primitive  | * op = 2 (Retrieve)
* to = {CSEBaseName}/<AE>/<group>/sfopt
* from = AE-ID
* rqi = (token-string)
* fu=1
* smf=sparqlQuery1
* pc = empty
 |
| 4 | Mca | PRO Check Primitive | Sent response contains* rsc = 2000 (OK)
* rqi = (token-string) same as received in request message
* pc = Serialized representation of data object containing the <Container> resources addresses
 |
| 5 |  | IOP Check | AE indicates successful operation |
| IOP Verdict |  |
| PRO Verdict |  |

#### 8.6.2.2 Resource link-based Semantic Discovery

| **Interoperability Test Description** |
| --- |
| **Identifier:** | TD\_M2M\_NH\_114 |
| **Objective:** | AE discovers accessible resources residing in Registrar CSE using the resource link-based Semantic Discovery |
| **Configuration:** | M2M\_CFG\_01 |
| **References:** | oneM2M TS-0034 [13], clause 7.4.3 |
|  |
| **Pre-test conditions:** | * AE has created an application resource <AE> on Registrar CSE
* AE has created <container> resources {container1} and {container2} in registrar CSE under <AE> resource
* AE has created a group resource with semanticSupportIndicator attribute set to TRUE and memberIds set to {container1} and {container2} ids
* AE has created <semanticDescriptor> resources as a child resources of a resources {container1} and {container2} named {descriptor1} and {descriptor2}
* {descriptor1} has *relatedSemantics* attribute set to ID of {descriptor2}
* {descriptor2} has *relatedSemantics* attribute set to ID of {descriptor1}
 |
|  |  |
| **Test Sequence** |
| **Step** | **RP** | **Type** | **Description** |
| 1 |  | Stimulus | AE1 is requested to send a Discovery request to discover the <container> resource using the semanticFilter filterCriteria |
| 2 | Mca | PRO Check Primitive  | * op = 2 (Retrieve)
* to = {CSEBaseName}/<AE>
* from = AE-ID
* rqi = (token-string)
* fu=1
* smf=sparqlQuery1
* pc = empty
 |
| 4 | Mca | PRO Check Primitive | Sent response contains* rsc = 2000 (OK)
* rqi = (token-string) same as received in request message
* pc = Serialized representation of data object containing the <Container> resources addresses
 |
| 5 |  | IOP Check | AE indicates successful operation |
| IOP Verdict |  |
| PRO Verdict |  |

#### 8.6.2.3 Semantic query

| **Interoperability Test Description** |
| --- |
| **Identifier:** | TD\_M2M\_NH\_115 |
| **Objective:** | AE performs a Semantic Query request in Registrar CSE using the semanticFilter filter criteria  |
| **Configuration:** | M2M\_CFG\_01 |
| **References:** | oneM2M TS-0034 [13], clause 7.4oneM2M TS-0004 [2], clause 7.3.3.18 |
|  |
| **Pre-test conditions:** | * AE1 has created an application resource <AE> on Registrar CSE
* AE1 has created a container resource <container> on Registrar CSE
* AE1 has created a <semanticDescriptor> as a child resource of a <container>
 |
| **Test Sequence** |
| **Step** | **RP** | **Type** | **Description** |
| 1 |  | Stimulus | AE1 is requested to send a Semantic Query Operation request to query the <container> resource using a SPARQL query |
| 2 | CheckMca | PRO Check Primitive  | Sent request contains* op = 2 (Retrieve)
* to = {CSEBaseName}
* from = AE-ID
* rqi = (token-string)
* sqi = TRUE
* smf=sparqlQuery1
* rcn = 10 (semantic content)
* pc = empty
 |
| 3 | CheckMca | PRO Check Primitive | Sent response contains* rsc = 2000 (OK)
* rqi = (token-string) same as received in request message
* pc = Serialized representation semantic query result
 |
| 4 |  | IOP Check | AE indicates notification received |
| IOP Verdict |  |
| PRO Verdict |  |

### 8.6.3 Semantic Mashup management

#### 8.6.3.1 SemanticMashupJobProfile Create

| **Interoperability Test Description** |
| --- |
| **Identifier:** | TD\_M2M\_NH\_116 |
| **Objective:** | AE creates a SemanticMashupJobProfile resource in Registrar CSE via a SemanticMashupJobProfile Create Request |
| **Configuration:** | M2M\_CFG\_01 |
| **References:** | oneM2M TS-0034 [13], clause 6.3.2oneM2M TS-0004 [2], clause 7.4.49.2.1 |
|  |
| **Pre-test conditions:** | * AE has created an application resource <AE> on Registrar CSE
 |
|  |  |
| **Test Sequence** |
| **Step** | **RP** | **Type** | **Description** |
| 1 |  | Stimulus | AE sends a request to create a <semanticMashupJobProfile> |
| 2 | Mca | PRO Check Primitive  | * op = 1 (Create)
* to = {CSEBaseName}
* fr = AE-ID
* rqi = (token-string)
* ty = 40 (semanticMashupJobProfile)
* pc = Serialized representation of <semanticMashupJobProfile> resource
 |
| 3 |  | IOP Check | Check if possible that the <semanticDescriptor> resource is created in Registrar CSE. |
| 4 | Mca | PRO Check Primitive | * rsc = 2001 (CREATED)
* rqi = (token-string) same as received in request message
* pc = Serialized representation of <semanticMashupJobProfile> resource
 |
| 5 |  | IOP Check | AE indicates successful operation |
| IOP Verdict |  |
| PRO Verdict |  |

#### 8.6.3.2 SemanticMashupJobProfile Retrieve

| **Interoperability Test Description** |
| --- |
| **Identifier:** | TD\_M2M\_NH\_117 |
| **Objective:** | AE retrieves information of a semanticMashupJobProfile resource via a semanticMashupJobProfile Retrieve Request |
| **Configuration:** | M2M\_CFG\_01 |
| **References:** | oneM2M TS-0034 [13], clause 6.3.3oneM2M TS-0004 [2], clause 7.4.49.2.2 |
|  |
| **Pre-test conditions:** | * AE has created an Application Entity resource <AE> on Registrar CSE
* AE has created a semanticMashupJobProfile resource <semanticMashupJobProfile> as child resource of <AE> resource
 |
| **Test Sequence** |
| **Step** | **RP** | **Type** | **Description** |
| 1 |  | Stimulus | AE is requested to send a Retrieve Request for a <semanticMashupJobProfile> |
| 2 | Mca | PRO Check Primitive  | * op = 2 (Retrieve)
* to = {CSEBaseName}/URI of <semanticMashupJobProfile> resource
* fr = AE-ID
* rqi = (token-string)
* pc = empty
 |
| 3 | Mca | PRO Check Primitive | * rsc =2000 (OK)
* rqi = (token-string) same as received in request message
* pc = Serialized representation of <semanticMashupJobProfile> resource
 |
| 4 |  | IOP Check | AE indicates successful operation |
| IOP Verdict |  |
| PRO Verdict |  |

#### 8.6.3.3 SemanticMashupJobProfile Update

| **Interoperability Test Description** |
| --- |
| **Identifier:** | TD\_M2M\_NH\_118 |
| **Objective:** | AE updates attribute in <semanticMashupJobProfile> resource via a semanticMashupJobProfile Update Request |
| **Configuration:** | M2M\_CFG\_01 |
| **References:** | oneM2M TS-0034 [13], clause 6.3.4oneM2M TS-0004 [2], clause 7.4.49.2.3 |
|  |
| **Pre-test conditions:** | * AE has created an Application Entity resource <AE> on Registrar CSE
* AE has created a semanticMashupJobProfile resource <semanticMashupJobProfile> as child resource of <AE> resource
 |
| **Test Sequence** |
| **Step** | **RP** | **Type** | **Description** |
| 1 |  | Stimulus | AE is requested to send a semanticMashupJobProfile Update Request to update the *memberFilter* attribute of the resource. |
| 2 | Mca | PRO Check Primitive  | * op = 3 (Update)
* to = {CSEBaseName}/URI of <semanticMashupJobProfile> resource
* fr = AE-ID
* rqi = (token-string)
* pc = Serialized representation of updated <semanticMashupJobProfile> resource
 |
| 3 |  | IOP Check | Check if possible that the <semanticDescriptor> resource is updated in Registrar CSE. |
| 4 | Mca | PRO Check Primitive | * rsc = 2004 (Updated)
* rqi = (token-string) same as received in request message
* pc = Serialized representation of <semanticMashupJobProfile> resource
 |
| 5 |  | IOP Check | AE indicates successful operation |
| IOP Verdict |  |
| PRO Verdict |  |

#### 8.6.3.4 SemanticMashupJobProfile Delete

| **Interoperability Test Description** |
| --- |
| **Identifier:** | TD\_M2M\_NH\_119 |
| **Objective:** | AE deletes semanticMashupJobProfile resource via a semanticMashupJobProfile Delete Request |
| **Configuration:** | M2M\_CFG\_01 |
| **References:** | oneM2M TS-0034 [13], clause 6.3.5oneM2M TS-0004 [2], clause 7.4.49.2.4 |
|  |
| **Pre-test conditions:** | * AE has created an Application Entity resource <AE> on Registrar CSE
* AE has created a semanticMashupJobProfile resource <semanticMashupJobProfile> as child of <AE> resource
 |
| **Test Sequence** |
| **Step** | **RP** | **Type** | **Description** |
| 1 |  | Stimulus | AE is requested to send a semanticMashupJobProfile Delete Request |
| 2 | Mca | PRO Check Primitive  | * op = 4 (Delete)
* to = {CSEBaseName}/URI of <semanticMashupJobProfile> resource
* fr = AE-ID
* rqi = (token-string)
* pc = empty
 |
| 3 |  | IOP Check | Check if possible that the <semanticMashupJobProfile> resource is deleted in Registrar CSE. |
| 4 | Mca | PRO Check Primitive | * rsc = 2002 (DELETED)
* rqi = (token-string) same as received in request message
* pc = empty
 |
| 5 |  | IOP Check | Check if possible that the <semanticMashupJobProfile> resource has been removed in Registrar CSE. |
| 6 |  | IOP Check | AE indicates successful operation. |
| IOP Verdict |  |
| PRO Verdict |  |

#### 8.6.3.5 SemanticMashupInstance Create

| **Interoperability Test Description** |
| --- |
| **Identifier:** | TD\_M2M\_NH\_120 |
| **Objective:** | AE creates a semanticMashupInstance resource in Registrar CSE via a semanticMashupInstance Create Request |
| **Configuration:** | M2M\_CFG\_01 |
| **References:** | oneM2M TS-0034 [13], clause 6.4.2oneM2M TS-0004 [2], clause 7.4.50.2.1 |
|  |
| **Pre-test conditions:** | * AE has created an application resource <AE> on Registrar CSE
 |
|  |  |
| **Test Sequence** |
| **Step** | **RP** | **Type** | **Description** |
| 1 |  | Stimulus | AE sends a request to create a <semanticDescriptor> |
| 2 | Mca | PRO Check Primitive  | * op = 1 (Create)
* to = {CSEBaseName}
* fr = AE-ID
* rqi = (token-string)
* ty = 41 (semanticMashupInstance)
* pc = Serialized representation of <semanticMashupInstance> resource
 |
| 3 |  | IOP Check | Check if possible that the <semanticDescriptor> resource is created in Registrar CSE. |
| 4 | Mca | PRO Check Primitive | * rsc = 2001 (CREATED)
* rqi = (token-string) same as received in request message
* pc = Serialized representation of <semanticMashupInstance> resource
 |
| 5 |  | IOP Check | AE indicates successful operation |
| IOP Verdict |  |
| PRO Verdict |  |

#### 8.6.3.6 SemanticMashupInstance Retrieve

| **Interoperability Test Description** |
| --- |
| **Identifier:** | TD\_M2M\_NH\_121 |
| **Objective:** | AE retrieves information of a semanticMashupInstance resource via a semanticMashupInstance Retrieve Request |
| **Configuration:** | M2M\_CFG\_01 |
| **References:** | oneM2M TS-0034 [13], clause 6.4.3oneM2M TS-0004 [2], clause 7.4.50.2.2 |
|  |
| **Pre-test conditions:** | * AE has created an Application Entity resource <AE> on Registrar CSE
* AE has created a semanticMashupInstance resource <semanticMashupInstance> as child resource of <CSEBase> resource
 |
| **Test Sequence** |
| **Step** | **RP** | **Type** | **Description** |
| 1 |  | Stimulus | AE is requested to send a Retrieve Request for a <semanticMashupInstance> |
| 2 | Mca | PRO Check Primitive  | * op = 2 (Retrieve)
* to = {CSEBaseName}/URI of <semanticMashupInstance> resource
* fr = AE-ID
* rqi = (token-string)
* pc = empty
 |
| 3 | Mca | PRO Check Primitive | * rsc =2000 (OK)
* rqi = (token-string) same as received in request message
* pc = Serialized representation of <semanticMashupInstance> resource
 |
| 4 |  | IOP Check | AE indicates successful operation |
| IOP Verdict |  |
| PRO Verdict |  |

#### 8.6.3.7 SemanticMashupInstance Update

| **Interoperability Test Description** |
| --- |
| **Identifier:** | TD\_M2M\_NH\_122 |
| **Objective:** | AE updates attribute in <semanticMashupInstance> resource via a semanticMashupInstance Update Request |
| **Configuration:** | M2M\_CFG\_01 |
| **References:** | oneM2M TS-0034 [13], clause 6.4.4oneM2M TS-0004 [2], clause 7.4.50.2.3 |
|  |
| **Pre-test conditions:** | * AE has created an Application Entity resource <AE> on Registrar CSE
* AE has created a semanticMashupInstance resource <semanticMashupInstance> as child resource of <CSEBase> resource
 |
| **Test Sequence** |
| **Step** | **RP** | **Type** | **Description** |
| 1 |  | Stimulus | AE is requested to send a semanticMashupInstance Update Request to update the *smjpInputParameter* attribute of the resource. |
| 2 | Mca | PRO Check Primitive  | * op = 3 (Update)
* to = {CSEBaseName}/URI of <semanticMashupInstance> resource
* fr = AE-ID
* rqi = (token-string)
* pc = Serialized representation of updated <semanticMashupInstance> resource
 |
| 3 |  | IOP Check | Check if possible that the <semanticDescriptor> resource is updated in Registrar CSE. |
| 4 | Mca | PRO Check Primitive | * rsc = 2004 (Updated)
* rqi = (token-string) same as received in request message
* pc = Serialized representation of <semanticMashupInstance> resource
 |
| 5 |  | IOP Check | AE indicates successful operation |
| IOP Verdict |  |
| PRO Verdict |  |

#### 8.6.3.8 SemanticMashupInstance Delete

| **Interoperability Test Description** |
| --- |
| **Identifier:** | TD\_M2M\_NH\_123 |
| **Objective:** | AE deletes semanticMashupInstance resource via a semanticMashupInstance Delete Request |
| **Configuration:** | M2M\_CFG\_01 |
| **References:** | oneM2M TS-0034 [13], clause 6.4.5oneM2M TS-0004 [2], clause 7.4.50.2.4 |
|  |
| **Pre-test conditions:** | * AE has created an Application Entity resource <AE> on Registrar CSE
* AE has created a semanticMashupInstance resource <semanticMashupInstance> as child resource of <CSEBase> resource
 |
| **Test Sequence** |
| **Step** | **RP** | **Type** | **Description** |
| 1 |  | Stimulus | AE is requested to send a semanticMashupInstance Delete Request |
| 2 | Mca | PRO Check Primitive  | * op = 4 (Delete)
* to = {CSEBaseName}/ URI of <semanticMashupInstance> resource
* fr = AE-ID
* rqi = (token-string)
* pc = empty
 |
| 3 |  | IOP Check | Check if possible that the <semanticMashupInstance> resource is deleted in Registrar CSE. |
| 4 | Mca | PRO Check Primitive | * rsc = 2002 (DELETED)
* rqi = (token-string) same as received in request message
* pc = empty
 |
| 5 |  | IOP Check | Check if possible that the <semanticMashupInstance> resource has been removed in Registrar CSE. |
| 6 |  | IOP Check | AE indicates successful operation. |
| IOP Verdict |  |
| PRO Verdict |  |

#### 8.6.3.9 SemanticMashupResult Rertieve

| **Interoperability Test Description** |
| --- |
| **Identifier:** | TD\_M2M\_NH\_124 |
| **Objective:** | AE retrieves information of a semanticMashupResult resource via a semanticMashupResult Retrieve Request |
| **Configuration:** | M2M\_CFG\_01 |
| **References:** | oneM2M TS-0034 [13], clause 6.6.2oneM2M TS-0004 [2], clause 7.4.52.2.2 |
|  |
| **Pre-test conditions:** | * AE has created an Application Entity resource <AE> on Registrar CSE
* AE has created a semanticMashupInstance resource <semanticMashupInstance> as child resource of <CSEBase> resource
* <semanticMashupResult> resource is created as child resource of <semanticMashupInstance> resource
 |
| **Test Sequence** |
| **Step** | **RP** | **Type** | **Description** |
| 1 |  | Stimulus | AE is requested to send a Retrieve Request for a <semanticMashupResult> |
| 2 | Mca | PRO Check Primitive  | * op = 2 (Retrieve)
* to = {CSEBaseName}/URI of <semanticMashupInstance> resource
* fr = AE-ID
* rqi = (token-string)
* pc = empty
 |
| 3 | Mca | PRO Check Primitive | * rsc =2000 (OK)
* rqi = (token-string) same as received in request message
* pc = Serialized representation of <semanticMashupResult> resource
 |
| 4 |  | IOP Check | AE indicates successful operation |
| IOP Verdict |  |
| PRO Verdict |  |

#### 8.6.3.10 SemanticMashupResult Delete

| **Interoperability Test Description** |
| --- |
| **Identifier:** | TD\_M2M\_NH\_125 |
| **Objective:** | AE deletes semanticMashupResult resource via a semanticMashupResult Delete Request |
| **Configuration:** | M2M\_CFG\_01 |
| **References:** | oneM2M TS-0034 [13], clause 6.6.3oneM2M TS-0004 [2], clause 7.4.52.2.4 |
|  |
| **Pre-test conditions:** | * AE has created an Application Entity resource <AE> on Registrar CSE
* AE has created a semanticMashupInstance resource <semanticMashupInstance> as child resource of <CSEBase> resource
* <semanticMashupResult> resource is created as child resource of <semanticMashupInstance> resource
 |
| **Test Sequence** |
| **Step** | **RP** | **Type** | **Description** |
| 1 |  | Stimulus | AE is requested to send a semanticMashupResult Delete Request |
| 2 | Mca | PRO Check Primitive  | * op = 4 (Delete)
* to = {CSEBaseName}/ URI of <semanticMashupInstance> resource/ URI of <semanticMashupResult> resource
* fr = AE-ID
* rqi = (token-string)
* pc = empty
 |
| 3 |  | IOP Check | Check if possible that the <semanticMashupResult> resource is deleted in Registrar CSE. |
| 4 | Mca | PRO Check Primitive | * rsc = 2002 (DELETED)
* rqi = (token-string) same as received in request message
* pc = empty
 |
| 5 |  | IOP Check | Check if possible that the <semanticMashupResult> resource has been removed in Registrar CSE. |
| 6 |  | IOP Check | AE indicates successful operation. |
| IOP Verdict |  |
| PRO Verdict |  |

#### 8.6.3.11 Mashup Retrieve

| **Interoperability Test Description** |
| --- |
| **Identifier:** | TD\_M2M\_NH\_126 |
| **Objective:** | AE triggers a calculation and generation of the mashup result by sending a <semanticMashupInstance>/<mashup> Retrieve Request |
| **Configuration:** | M2M\_CFG\_01 |
| **References:** | oneM2M TS-0034 [13], clause 6.5.2oneM2M TS-0004 [2], clause 7.4.51.2.2 |
|  |
| **Pre-test conditions:** | * AE has created an Application Entity resource <AE> on Registrar CSE
* AE has created a semanticMashupInstance resource <semanticMashupInstance> as child resource of <CSEBase> resource
 |
| **Test Sequence** |
| **Step** | **RP** | **Type** | **Description** |
| 1 |  | Stimulus | AE retrieves a <mashup> resource in a <semanticMashupInstance> |
| 2 | Mca | PRO Check Primitive  | * op = 2 (Retrieve)
* to = {CSEBaseName}/URI of <semanticMashupInstance> resource/msp
* fr = AE-ID
* rqi = (token-string)
* pc = empty
 |
| 3 |  | IOP Check | Check if possible that a <semanticMashupResult> resource is created under the <semanticMashupInstance> resource |
| 4 | Mca | PRO Check Primitive | * rsc =2000 (OK)
* rqi = (token-string) same as received in request message
* pc = Serialized representation of <semanticMashupResult> resource
 |
| 5 |  | IOP Check | AE indicates successful operation |
| IOP Verdict |  |
| PRO Verdict |  |

### 8.6.4 Ontology Repository management

#### 8.6.5.1 OntologyRepository Create

| **Interoperability Test Description** |
| --- |
| **Identifier:** | TD\_M2M\_NH\_127 |
| **Objective:** | AE creates a OntologyRepository resource in Registrar CSE via a OntologyRepository Create Request |
| **Configuration:** | M2M\_CFG\_01 |
| **References:** | oneM2M TS-0034 [13], clause 6.7.2oneM2M TS-0004 [2], clause 7.4.46.2.1 |
|  |
| **Pre-test conditions:** | * AE has created an application resource <AE> on Registrar CSE
 |
|  |  |
| **Test Sequence** |
| **Step** | **RP** | **Type** | **Description** |
| 1 |  | Stimulus | AE sends a request to create a <ontologyRepository> |
| 2 | Mca | PRO Check Primitive  | * op = 1 (Create)
* to = {CSEBaseName}
* fr = AE-ID
* rqi = (token-string)
* ty = 38 (ontologyRepository)
* pc = Serialized representation of <ontologyRepository> resource
 |
| 3 |  | IOP Check | Check if possible that the <ontologyRepository> resource is created in Registrar CSE. |
| 4 | Mca | PRO Check Primitive | * rsc = 2001 (CREATED)
* rqi = (token-string) same as received in request message
* pc = Serialized representation of <ontologyRepository> resource
 |
| 5 |  | IOP Check | AE indicates successful operation |
| IOP Verdict |  |
| PRO Verdict |  |

#### 8.6.4.2 OntologyRepository Retrieve

| **Interoperability Test Description** |
| --- |
| **Identifier:** | TD\_M2M\_NH\_128 |
| **Objective:** | AE retrieves information of a ontologyRepository resource via a ontologyRepository Retrieve Request |
| **Configuration:** | M2M\_CFG\_01 |
| **References:** | oneM2M TS-0034 [13], clause 6.7.3oneM2M TS-0004 [2], clause 7.4.46.2.2 |
|  |
| **Pre-test conditions:** | * AE has created an Application Entity resource <AE> on Registrar CSE
* AE has created a ontologyRepository resource <ontologyRepository> as child resource of <AE> resource
 |
| **Test Sequence** |
| **Step** | **RP** | **Type** | **Description** |
| 1 |  | Stimulus | AE is requested to send a Retrieve Request for a <ontologyRepository> |
| 2 | Mca | PRO Check Primitive  | * op = 2 (Retrieve)
* to = {CSEBaseName}/URI of <ontologyRepository> resource
* fr = AE-ID
* rqi = (token-string)
* pc = empty
 |
| 3 | Mca | PRO Check Primitive | * rsc =2000 (OK)
* rqi = (token-string) same as received in request message
* pc = Serialized representation of <ontologyRepository> resource
 |
| 4 |  | IOP Check | AE indicates successful operation |
| IOP Verdict |  |
| PRO Verdict |  |

#### 8.6.4.3 OntologyRepository Update

| **Interoperability Test Description** |
| --- |
| **Identifier:** | TD\_M2M\_NH\_129 |
| **Objective:** | AE updates attribute in <ontologyRepository> resource via a ontologyRepository Update Request |
| **Configuration:** | M2M\_CFG\_01 |
| **References:** | oneM2M TS-0034 [13], clause 6.7.4oneM2M TS-0004 [2], clause 7.4.46.2.3 |
|  |
| **Pre-test conditions:** | * AE has created an Application Entity resource <AE> on Registrar CSE
* AE has created a ontologyRepository resource <ontologyRepository> as child resource of <AE> resource
 |
| **Test Sequence** |
| **Step** | **RP** | **Type** | **Description** |
| 1 |  | Stimulus | AE is requested to send a ontologyRepository Update Request to update an attribute of the resource. |
| 2 | Mca | PRO Check Primitive  | * op = 3 (Update)
* to = {CSEBaseName}/URI of <ontologyRepository> resource
* fr = AE-ID
* rqi = (token-string)
* pc = Serialized representation of updated <ontologyRepository> resource
 |
| 3 |  | IOP Check | Check if possible that the <ontologyRepository> resource is updated in Registrar CSE. |
| 4 | Mca | PRO Check Primitive | * rsc = 2004 (Updated)
* rqi = (token-string) same as received in request message
* pc = Serialized representation of <ontologyRepository> resource
 |
| 5 |  | IOP Check | AE indicates successful operation |
| IOP Verdict |  |
| PRO Verdict |  |

#### 8.6.4.4 OntologyRepository Delete

| **Interoperability Test Description** |
| --- |
| **Identifier:** | TD\_M2M\_NH\_130 |
| **Objective:** | AE deletes OntologyRepository resource via a OntologyRepository Delete Request |
| **Configuration:** | M2M\_CFG\_01 |
| **References:** | oneM2M TS-0034 [13], clause 6.7.5oneM2M TS-0004 [2], clause 7.4.46.2.4 |
|  |
| **Pre-test conditions:** | * AE has created an Application Entity resource <AE> on Registrar CSE
* AE has created a ontologyRepository resource <ontologyRepository> as child of <AE> resource
 |
| **Test Sequence** |
| **Step** | **RP** | **Type** | **Description** |
| 1 |  | Stimulus | AE is requested to send a ontologyRepository Delete Request |
| 2 | Mca | PRO Check Primitive  | * op = 4 (Delete)
* to = {CSEBaseName}/URI of <ontologyRepository> resource
* fr = AE-ID
* rqi = (token-string)
* pc = empty
 |
| 3 |  | IOP Check | Check if possible that the <ontologyRepository> resource is deleted in Registrar CSE. |
| 4 | Mca | PRO Check Primitive | * rsc = 2002 (DELETED)
* rqi = (token-string) same as received in request message
* pc = empty
 |
| 5 |  | IOP Check | Check if possible that the <ontologyRepository> resource has been removed in Registrar CSE. |
| 6 |  | IOP Check | AE indicates successful operation. |
| IOP Verdict |  |
| PRO Verdict |  |

### 8.6.5 Semantic validation management

#### 8.6.5.1 Semantic validation independent of <semanticDescriptor> resource operation

| **Interoperability Test Description** |
| --- |
| **Identifier:** | TD\_M2M\_NH\_131 |
| **Objective:** | AE checks the validity of the <semanticDescriptor> resource via a <semanticValidation> Update Request |
| **Configuration:** | M2M\_CFG\_01 |
| **References:** | oneM2M TS-0034 [13], clause 7.10.2oneM2M TS-0004 [2], clause 7.4.48.2.3 |
|  |
| **Pre-test conditions:** | * AE has created an Application Entity resource <AE> on Registrar CSE
* AE has created a semanticDescriptor resource <semanticDescriptor> as child of <AE> resource
 |
| **Test Sequence** |
| **Step** | **RP** | **Type** | **Description** |
| 1 |  | Stimulus | AE is requested to send a <semanticValidation> Update Request to check the validity of the <semanticDescriptor>resource |
| 2 | Mca | PRO Check Primitive  | * op = 3 (Update)
* to = {CSEBaseName}/URI of <semanticDescriptor> resource/smv
* fr = AE-ID
* rqi = (token-string)
* pc = Serialized representation of <semanticValidation> parameters
 |
| 3 |  | IOP Check | Check if possible that the received <semanticDescriptor> resource with the *semanticValidated* attribute is set to 'true' in Registrar CSE. |
| 4 | Mca | PRO Check Primitive | * rsc = 2004 (Updated)
* rqi = (token-string) same as received in request message
 |
| 5 |  | IOP Check | AE indicates successful operation |
| IOP Verdict |  |
| PRO Verdict |  |

#### 8.6.5.2 Semantic validation triggered when Create a semanticDescriptor resource

| **Interoperability Test Description** |
| --- |
| **Identifier:** | TD\_M2M\_NH\_132 |
| **Objective:** | AE creates a <semanticDescriptor> resource visa SemanticDescriptor Create Request and Registrar CSE checks the validity of the created <semanticDescriptor> resource |
| **Configuration:** | M2M\_CFG\_01 |
| **References:** | oneM2M TS-0034 [13], clause 7.10.3oneM2M TS-0004 [2], clause 7.4.34.2.1 |
|  |
| **Pre-test conditions:** | * AE has created an Application Entity resource <AE> on Registrar CSE
 |
| **Test Sequence** |
| **Step** | **RP** | **Type** | **Description** |
| 1 |  | Stimulus | AE is requested to send a < semanticDescriptor > Create Request with *validationEnable* attribute set to 'true' |
| 2 | Mca | PRO Check Primitive  | * op = 1 (Create)
* to = {CSEBaseName}
* fr = AE-ID
* rqi = (token-string)
* ty = 24 (semanticDescriptor)
* pc = Serialized representation of <semanticDescriptor> resource
 |
| 3 |  | IOP Check | Check if possible that the <semanticDescriptor> resource is created in Registrar CSE.Check if possible that the semanticValidated attribute of the <semanticDescriptor> is set to 'true'. |
| 4 | Mca | PRO Check Primitive | * rsc = 2001 (CREATED)
* rqi = (token-string) same as received in request message
* pc = Serialized representation of <semanticDescriptor> resource
 |
| 5 |  | IOP Check | AE indicates successful operation |
| IOP Verdict |  |
| PRO Verdict |  |

### 8.6.6 Ontology Mapping management

#### 8.6.6.1 OntologyMapping Create

| **Interoperability Test Description** |
| --- |
| **Identifier:** | TD\_M2M\_NH\_133 |
| **Objective:** | AE creates an OntologyMapping resource in Registrar CSE via an OntologyMapping Create Request |
| **Configuration:** | M2M\_CFG\_01 |
| **References:** | oneM2M TS-0034 [13], clause 6.10.2oneM2M TS-0004 [2], clause 7.4.62.2.1 |
|  |
| **Pre-test conditions:** | * AE has created an application resource <AE> on Registrar CSE
 |
|  |  |
| **Test Sequence** |
| **Step** | **RP** | **Type** | **Description** |
| 1 |  | Stimulus | AE sends a request to create a <ontologyMapping> resource |
| 2 | Mca | PRO Check Primitive  | * op = 1 (Create)
* to = {CSEBaseName}
* fr = AE-ID
* rqi = (token-string)
* ty = 52 (ontologyMapping)
* pc = Serialized representation of <ontologyMapping>resource
 |
| 3 |  | IOP Check | Check if possible that the <ontologyMapping> resource is created in Registrar CSE. |
| 4 | Mca | PRO Check Primitive | * rsc = 2001 (CREATED)
* rqi = (token-string) same as received in request message
* pc = Serialized representation of <ontologyMapping> resource
 |
| 5 |  | IOP Check | AE indicates successful operation |
| IOP Verdict |  |
| PRO Verdict |  |

#### 8.6.6.2 OntologyMapping Retrieve

| **Interoperability Test Description** |
| --- |
| **Identifier:** | TD\_M2M\_NH\_134 |
| **Objective:** | AE retrieves information of an ontology mapping result via a ontologyMapping Retrieve Request |
| **Configuration:** | M2M\_CFG\_01 |
| **References:** | oneM2M TS-0034 [13], clause 6.10.3oneM2M TS-0004 [2], clause 7.4.62.2.2 |
|  |
| **Pre-test conditions:** | * AE has created an Application Entity resource <AE> on Registrar CSE
* AE has created a ontologyMapping resource <ontologyMapping> as child resource of <AE> resource
 |
| **Test Sequence** |
| **Step** | **RP** | **Type** | **Description** |
| 1 |  | Stimulus | AE is requested to send a Retrieve Request for a <ontologyMapping> |
| 2 | Mca | PRO Check Primitive  | * op = 2 (Retrieve)
* to = {CSEBaseName}/URI of <ontologyMapping> resource
* fr = AE-ID
* rqi = (token-string)
* pc = empty
 |
| 3 | Mca | PRO Check Primitive | * rsc =2000 (OK)
* rqi = (token-string) same as received in request message
* pc = Serialized representation of <ontologyMapping> resource
 |
| 4 |  | IOP Check | AE indicates successful operation |
| IOP Verdict |  |
| PRO Verdict |  |

#### 8.6.6.3 OntologyMapping Update

| **Interoperability Test Description** |
| --- |
| **Identifier:** | TD\_M2M\_NH\_135 |
| **Objective:** | AE updates attribute in <ontologyMapping> resource via a ontologyMapping Update Request |
| **Configuration:** | M2M\_CFG\_01 |
| **References:** | oneM2M TS-0034 [13], clause 6.10.4oneM2M TS-0004 [2], clause 7.4.62.2.3 |
|  |
| **Pre-test conditions:** | * AE has created an Application Entity resource <AE> on Registrar CSE
* AE has created a ontologyMapping resource <ontologyMapping> as child resource of <AE> resource
 |
| **Test Sequence** |
| **Step** | **RP** | **Type** | **Description** |
| 1 |  | Stimulus | AE is requested to send a ontologyMapping Update Request to update the *mappingPolicy* attribute of the resource. |
| 2 | Mca | PRO Check Primitive  | * op = 3 (Update)
* to = {CSEBaseName}/URI of <ontologyMapping> resource
* fr = AE-ID
* rqi = (token-string)
* pc = Serialized representation of updated <ontologyMapping> resource
 |
| 3 |  | IOP Check | Check if possible that the <ontologyMapping> resource is updated in Registrar CSE. |
| 4 | Mca | PRO Check Primitive | * rsc = 2004 (Updated)
* rqi = (token-string) same as received in request message
* pc = Serialized representation of <ontologyMapping> resource
 |
| 5 |  | IOP Check | AE indicates successful operation |
| IOP Verdict |  |
| PRO Verdict |  |

#### 8.6.6.4 OntologyMapping Delete

| **Interoperability Test Description** |
| --- |
| **Identifier:** | TD\_M2M\_NH\_136 |
| **Objective:** | AE deletes OntologyMapping resource via a OntologyMapping Delete Request |
| **Configuration:** | M2M\_CFG\_01 |
| **References:** | oneM2M TS-0034 [13], clause 6.10.5oneM2M TS-0004 [2], clause 7.4.62.2.4 |
|  |
| **Pre-test conditions:** | * AE has created an Application Entity resource <AE> on Registrar CSE
* AE has created a ontologyMapping resource <ontologyMapping> as child of <AE> resource
 |
| **Test Sequence** |
| **Step** | **RP** | **Type** | **Description** |
| 1 |  | Stimulus | AE is requested to send a ontologyMapping Delete Request |
| 2 | Mca | PRO Check Primitive  | * op = 4 (Delete)
* to = {CSEBaseName}/URI of <ontologyMapping> resource
* fr = AE-ID
* rqi = (token-string)
* pc = empty
 |
| 3 |  | IOP Check | Check if possible that the <ontologyMapping> resource is deleted in Registrar CSE. |
| 4 | Mca | PRO Check Primitive | * rsc = 2002 (DELETED)
* rqi = (token-string) same as received in request message
* pc = empty
 |
| 5 |  | IOP Check | Check if possible that the <ontologyMapping> resource has been removed in Registrar CSE. |
| 6 |  | IOP Check | AE indicates successful operation. |
| IOP Verdict |  |
| PRO Verdict |  |

### -----------------------End of change 1-------------------------------------------