|  |
| --- |
| CHANGE REQUEST |
| Meeting ID:\* | PRO 34.2 |
| Source:\* | Dale Seed, Convida Wireless, Seed.Dale@ConvidaWireless.comBob Flynn, Convida Wireless, Flynn.Bob@ConvidaWireless.com  |
| Date:\* | 2018-04-12 |
| Reason for Change/s:\* | See the introduction  |
| CR against: Release\* | Release 3 |
| CR against: WI\* | [x]  Active - WI-0034 - Study of re-usable service layer context &Transaction enablement [ ]  MNT maintenance / < Work Item number(optional)>Is this a mirror CR? Yes [ ]  No [x] mirror CR number: (Note to Rapporteur - use latest agreed revision)[ ]  STE Small Technical Enhancements / < Work Item number (optional)>Only ONE of the above shall be ticked |
| CR against: TS/TR\* | TS-0004 Version 3.7.0 |
| Clauses \* | Various |
| Type of change: \* | [ ]  Editorial change[ ]  Bug Fix or Correction[ ]  Change to existing feature or functionality[x]  New feature or functionalityOnly ONE of the above shall be ticked |
| Impacted other TS/TR(s) | <TS/TR number>, <Version Number>, and <Description on which aspect should be reflected in this TS/TR> |
| Post Freeze checking:\* | This CR contains only essential changes and corrections? YES [x]  NO [ ] This CR may break backwards compatibility with the last approved version of the TS? YES [ ]  NO [x]  |
| Template Version: January 2017 (Do not modify) |

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GUIDELINES for Change Requests:

Provide an informative introduction containing the problem(s) being solved, and a summary list of proposals.

Each CR should contain changes related to only one particular issue/problem.

In case of a correction, and the change apply to previous releases, a separate “mirror CR” should be posted at the same time of this CR

Mirror CR: applies only when the text, including clause numbering are exactly the same.

Companion CR: applies when the change means the same but the baselines differ in some way (e.g. clause number).

Follow the principle of completeness, where all changes related to the issue or problem within a deliverable are simultaneously proposed to be made E.g. A change impacting 5 tables should not only include a proposal to change only 3 tables. Includes any changes to references, definitions, and acronyms in the same deliverable.

Follow the drafting rules.

All pictures must be editable.

Check spelling and grammar to the extent practicable.

Use Change bars for modifications.

The change should include the current and surrounding clauses to clearly show where a change is located and to provide technical context of the proposed change. Additions of complete clauses need not show surrounding clauses as long as the proposed clause number clearly shows where the new clause is proposed to be located.

Multiple changes in a single CR shall be clearly separated by horizontal lines with embedded text such as, start of change 1, end of change 1, start of new clause, end of new clause.

When subsequent changes are made to content of a CR, then the accepted version should not show changes over changes. The accepted version of the CR should only show changes relative to the baseline approved text.

## Introduction

A transaction is a set of oneM2M request primitives that must be performed as an atomic set. The entire set of requests either need to be executed successfully or none of them executed.

This contribution adds support for Transaction Management to TS-0004. Transaction Management functionality is currently described in TS-0001 as a new Rel-3 feature.

The proposed Transaction Management capabilities support assisting applications with the atomic and consistent processing of oneM2M request primitives on a set of targeted resources. These transaction management capabilities include the scheduling of a transaction, locking and unlocking of resources targeted by a transaction, the atomic execution of a transaction on targeted resources, the committal of successful transaction results, and the abort and rollback of non-successful transactions.

Many IoT use cases such as industrial and smart city require transaction support. For example, an automated factory assembly line requires atomic and consistent updates to the robots on the assembly line to ensure their settings remain synchronized with each other.

R03 – Address email comments:

Change 1:

Editorial. The description part of <transactionMgmt> and <transaction> is referring to TS-0001, but wrong clause number. Those should be 9.6.47 and 9.6.48 respectively. I checked all the attributes for both resources, those look good. But the procedure part is not completed yet. You have notes to add receiver steps. You may have been working on the revision already.

Change 11:

* <delivery> shall not have <transaction> as a child. Please remove this change.

Change 12:

* This change doesn’t say for which resource, but seems for <request> resource. <request> shall not have <transaction> as a child. Please remove this change.

Change 30:

* This change in the <flexContainer> has been covered by TS-0004 v3.7.0 already.

Change 32:

* I don’t think we need <subscription> as a child for <timeSeriesInstamce>.

Change 35:

* <trafficPattern> is gone in release 3.

Comments:

* There are new resources added in TS-0001. ARC says “With the exception of the <request>, <delivery>, <transaction> and <transactionMgmt> resources, a <transaction> resource may be created as a child resource of any resource targeted by a oneM2M transaction.” If that’s the case, we need to add <transaction> to other resources. One missing is <localMulticastGroup> which contains <transaction> as a child. Other new resources, ARC doesn’t have <transaction>, but please check if it’s not needed.

Change 39:

* New enum data types, please add description about the applicability. For example,

6.3.4.2.ZZ m2m:transactionMode

Used for the transactionMode attribute in <transactionMgmt> resource to define whether the Hosting CSE or the creator of a <transactionMgmt> resource is responsible for controlling the execution of the transaction.

6.3.4.2.ZZ m2m:transactionControl

Used for the transactionControl attribute in <transactionMgmt> and <transaction> resources to control the state of a transaction.

6.3.4.2.ZZ m2m:transactionState

Used for the transactionState attribute in <transactionMgmt> and <transaction> resources to monitor the state of a transaction.

6.3.4.2.ZZ m2m:transactionLockType

Used for the transactionLockType attribute in <transactionMgmt> and <transaction> resources to configure the type of lock that is required on the targeted resource in order to perform the transaction.

6.3.4.2.ZZ m2m:transactionMgmtHandling

Used for the transactionMgmtHandling attribute in <transactionMgmt> resource to configure whether to persist or delete the <transactionMgmt> resource after its completion.

Change 42:

4118 has been assigned already. Please use “xxxx” so that I can assign the next available code.

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

### 7.4.XX Resource Type <transactionMgmt>

#### 7.4.XX.1 Introduction

This resource is used to initiate and manage the atomic and consistent processing of a transaction consisting of multiple oneM2M request primitives. The detailed description can be found in clause 9.6.47 of TS-0001 [6].

**Table 7.4.XX.1‑1: Data type definition of <transactionMgmt> resource**

|  |  |  |
| --- | --- | --- |
| **Data Type ID** | **File Name** | **Note** |
| transactionMgmt | CDT-transactionMgmt-v3\_4\_0.xsd |  |

Table 7.4.XX.1‑1: Universal/Common Attributes of <transactionMgmt> resource

|  |  |
| --- | --- |
| **Attribute Name** | **Request Optionality**  |
| **Create** | **Update** |
| @resourceName | O | NP |
| *resourceType* | NP | NP |
| *resourceID* | NP | NP |
| *parentID* | NP | NP |
| *accessControlPolicyIDs* | O | O |
| *creationTime* | NP | NP |
| *expirationTime* | O | O |
| *lastModifiedTime* | NP | NP |
| *labels* | O | O |
| *creator* | O | NP |
| *dynamicAuthorizationConsultationIDs* | O | O |

Table 7.4.XX.1‑2: Resource Specific Attributes of <transactionMgmt> resource

|  |  |  |  |
| --- | --- | --- | --- |
| **Attribute Name** | **Request Optionality**  | **Data Type** | **Default Value and Constraints** |
| **Create** | **Update** |
| *transactionLockTime* | O | NP | m2m:timestamp | No default |
| *transactionExecuteTime* | O | NP | m2m:timestamp | No default |
| *transactionCommitTime* | O | NP | m2m:timestamp | No default |
| *transactionExpirationTime* | O | NP | m2m:timestamp | No default |
| *transactionMode* | O | NP | m2m:transactionMode | CSE\_CONTROLLED |
| *transactionLockType* | O | NP | m2m:transactionLockType | BLOCK\_ALL |
| *transactionControl* | NP | O | m2m:transactionControl | INITIAL |
| *transactionState* | NP | NP | m2m:transactionState | No default |
| *transactionMaxRetries* | O | O | xs:nonNegativeInteger | 0 (No Retries) |
| *transactionMgmtHandling* | O | O | m2m:transactionMgmtHandling | No default |
| *requestPrimitives* | M | NP | m2m:aggregatedRequest | No default |
| *responsePrimitives* | NP | NP | m2m:aggregatedResponse | No default |

Table 7.4.XX.1‑3: Child Resources of <transactionMgmt> resource

|  |  |  |  |
| --- | --- | --- | --- |
| **Child Resource Type**  | **Child Resource Name** | **Multiplicity** | **Ref. to in Resource Type Definition** |
| <subscription> | [variable] | 0..n | Clause 7.4.8 |

#### 7.4.XX.2 <transactionMgmt> resource specific procedure on CRUD operations

##### 7.4.XX.2.0 Introduction

This clause describes <transactionMgmt> resource specific behaviour for CRUD operations.

##### 7.4.XX.2.1 Create

***Originator:***

The following are changes to the Originator procedures described in clause 7.2.2.1.

Orig-1.0 When composing a request primitive, the Originator shall include *requestPrimitives* attribute in the resource representation of the <transactionMgmt> in the content of the primitive. Each request primitive in the *requestPrimitives* attribute shall be created using the procedures described in clause 7.2.2.1.

***Receiver:***

Same as the generic operations detailed in clause 7.2.2.2 with the following additions.

1. Recv-6.4:
	* The receiver shall set the *transactionControl* value to INITIAL.
	* If the ***From*** parameter contained in each primitive in the *requestPrimitives* attribute of the received <transactionMgmt> resource is not equal to the Originator of the received request primitive, the receiver shall generate a ***Response Status Code*** indicating "BAD\_REQUEST".

NOTE: Process the <transactionMgmt> resource as described in 10.2.18.1 of TS-0001 [6] after Recv-6.7.

##### 7.4.XX.2.2 Retrieve

***Originator:***

No change from the generic procedures in clause 7.2.2.1.

***Receiver:***

No change from the generic procedures in clause 7.2.2.2.

##### 7.4.XX.2.3 Update

***Originator:***

The following are changes to the Originator procedures described in clause 7.2.2.1.

1. Orig-1.0 When composing a request primitive, if the originator changes the *transactionControl* value the originator shall use allowed values as specified in table 10.2.18.1-1 of TS-0001 [6]

***Receiver:***

Same as the generic operations detailed in clause 7.2.2.2 with the following additions.

1. Recv-6.3
	* If the *transactionControl* value is in the update primitive then if the Originator does not match the creator of the <transactionMgmt> resource the receiver shall generate a Response Status Code indicating “ORIGINATOR\_HAS\_NO\_PRIVILEGE”.
2. Recv-6.4
	* If there is a *transactionControl* value in the update primitive
		1. If *transactionMode* has the value “CSE\_CONTROLLED” then the Receiver shall generate a ***Response Status Code*** indicating "BAD\_REQUEST"
		2. If *transactionState* value indicates that the previous transition [as shown by the *transactionControl* value in the <transactionMgmt> resource] is not complete the RECEIVER shall generate a ***Response Status Code*** indicating “STATE\_CHANGE\_NOT\_ALLOWED\_UNTIL\_TRANSACTION\_PROCESSING\_IS\_COMPLETED”.
		3. If *transactionControl* value in the request primitive does not transition to values specified in table 10.2.18.1-1 of TS-0001 [6] the Receiver shall generate a ***Response Status Code*** indicating "ILLEGAL\_TRANSACTION\_STATE\_TRANSITION\_ATTEMPTED".

NOTE: Process the <transactionMgmt> resource as described in 10.2.18.1 of TS-0001 [6] after Recv-6.7.

##### 7.4.XX.2.4 Delete

***Originator:***

No change from the generic procedures in clause 7.2.2.1.

***Receiver:***

Same as the generic operations detailed in clause 7.2.2.2 with the following additions.

1. Recv-6.5
* The receiver shall check that the *transactionState* is either COMMITTED or ABORTED before deleting the <transactionMgmt> resource. To commit or abort the transaction the Receiver shall follow the procedure defined in clause 10.2.18.1 of TS-0001 [6].

### 7.4.YY Resource Type <transaction>

#### 7.4.YY.1 Introduction

This resource is used to initiate and manage the atomic and consistent processing of a single oneM2M request primitive of a oneM2M transaction.

The detailed description can be found in clause 9.6.48 in TS-0001 [6].

A <transaction> create request may be originated by a CSE that hosts a <transactionMgmt> resource. Alternatively, a <transaction> resource may be used independent of a <transactionMgmt> resource when an AE creates individual <transaction> resources itself.

**Table 7.4.YY.1‑1: Data type definition of <transaction> resource**

|  |  |  |
| --- | --- | --- |
| **Data Type ID** | **File Name** | **Note** |
| transaction | CDT-transaction-v3\_4\_0.xsd |  |

Table 7.4.YY.1‑1: Universal/Common Attributes of <transaction> resource

|  |  |
| --- | --- |
| **Attribute Name** | **Request Optionality**  |
| **Create** | **Update** |
| @resourceName | O | NP |
| *resourceType* | NP | NP |
| *resourceID* | NP | NP |
| *parentID* | NP | NP |
| *accessControlPolicyIDs* | O | O |
| *creationTime* | NP | NP |
| *expirationTime* | O | O |
| *lastModifiedTime* | NP | NP |
| *labels* | O | O |
| *creator* | O | NP |
| *dynamicAuthorizationConsultationIDs* | O | O |

Table 7.4.YY.1‑2: Resource Specific Attributes of <transaction> resource

|  |  |  |  |
| --- | --- | --- | --- |
| **Attribute Name** | **Request Optionality**  | **Data Type** | **Default Value and Constraints** |
| **Create** | **Update** |
| *transactionID* | M | NP | xs:string | No default |
| *transactionControl* | NP | O | m2m:transactionControl | LOCK |
| *transactionState* | NP | NP | m2m:transactionState | No default |
| *transactionLockTime* | O | NP | m2m:timestamp | No default |
| *transactionExecuteTime* | O | NP | m2m:timestamp | No default |
| *transactionCommitTime* | O | NP | m2m:timestamp | No default |
| *transactionLockType* | O | NP | m2m:transactionLockType | BLOCK\_ALL |
| *requestPrimitive* | M | NP | m2m:requestPrimitive | No default |
| *responsePrimitive* | NP | NP | m2m:responsePrimitive | No default |

Table 7.4.YY.1‑3: Child Resources of <transaction> resource

|  |  |  |  |
| --- | --- | --- | --- |
| **Child Resource Type**  | **Child Resource Name** | **Multiplicity** | **Ref. to in Resource Type Definition** |
| <subscription> | [variable] | 0..n | Clause 7.4.8 |

#### 7.4.YY.2 <transaction> resource specific procedure on CRUD operations

##### 7.4.YY.2.0 Introduction

This clause describes <transaction> resource specific behaviour for CRUD operations.

##### 7.4.YY.2.1 Create

***Originator:***

The following are changes to the Originator procedures described in clause 7.2.2.1.

Orig-1.0 When composing a request primitive, the Originator shall include *requestPrimitives* attribute in the resource respresentation of the <transaction> in the content of the primitive. Each request primitive in the *reqestPrimitives* attribute shall be created using the procedures described in clause 7.2.2.1.

***Receiver:***

Same as the generic operations detailed in clause 7.2.2.2 with the following additions.

1. Recv-6.4: The following steps are in addition to the generic Create procedures defined in clause 7.3.3.5.
	* The receiver shall set the *transactionControl* value to LOCK.
	* If the **From** parameter contained in the primitive in the *requestPrimitives* attribute of the received <transaction> resource is not equal to the Originator of the received request primitive, the receiver shall generate a Response Status Code indicating "BAD\_REQUEST".
2. Recv-6.5: The following steps are in addition to the generic Create procedures defined in clause 7.3.3.5
	* Process the <transaction> resource as described in 10.2.18.1 of TS-0001 [6]

##### 7.4.YY.2.2 Retrieve

***Originator:***

No change from the generic procedures in clause 7.2.2.1.

***Receiver:***

No change from the generic procedures in clause 7.2.2.2.

##### 7.4.YY.2.3 Update

***Originator:***

The following are changes to the Originator procedures described in clause 7.2.2.1.

1. Orig-1.0 When composing a request primitive, if the originator changes the *transactionControl* value the originator shall use allowed values as specified in table 10.2.18.1-1 of TS-0001 [6]

***Receiver:***

Same as the generic operations detailed in clause 7.2.2.2 with the following additions.

1. Recv-6.3
* If the *transactionControl* value is in the update primitive then if the Originator does not match the *creator* of the <transaction> resource the receiver shall generate a ***Response Status Code*** indicating “ORIGINATOR\_HAS\_NO\_PRIVILEGE”.
1. Recv-6.4
* If the *transactionControl* value is in the update primitive
	+ If *transactionControl* value does not transition to values specified in table 10.2.18.1-1 of TS-0001 [6] the Receiver shall generate a ***Response Status Code*** indicating "ILLEGAL\_TRANSACTION\_STATE\_TRANSITION\_ATTEMPTED".
	+ If *transactionState* is not equal with the value of *transactionControl* being replaced by this Update operation the RECEIVER shall generate a ***Response Status Code*** indicating “STATE\_CHANGE\_NOT\_ALLOWED\_UNTIL\_TRANSACTION\_PROCESSING\_IS\_COMPLETED”.
1. Recv-6.5: The following steps are in addition to the generic Update procedures defined in clause 7.3.3.7
* Process the <transaction> resource as described in 10.2.18.1 of TS-0001 [6]

##### 7.4.YY.2.4 Delete

***Originator:***

No change from the generic procedures in clause 7.2.2.1.

***Receiver:***

Same as the generic operations detailed in clause 7.2.2.2 with the following additions.

1. Recv-6.5
* The receiver shall check that the *transactionState* is either committed or aborted before deleting the <transaction> resource. To commit or abort the transaction the Receiver shall follow the procedure defined in clause 10.2.18.1 of TS-0001 [6].

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

### -----------------------Start of change 2-------------------------------------------

Table 7.4.2.1‑4: Child Resources of <accessControlPolicy> resource

|  |  |  |  |
| --- | --- | --- | --- |
| Child Resource Type  | Child Resource Name | Multiplicity | Ref. to Resource Type Definition |
| <subscription> | [variable] | 0..n | Clause 7.4.8 |
| <transaction> | [variable] | 0..n | Clause 7.4.YY |

### -----------------------End of change 2 ---------------------------------------------

### -----------------------Start of change 3-------------------------------------------

Table 7.4.3.1‑3: Child resources of <CSEBase> resource

|  |  |  |  |
| --- | --- | --- | --- |
| Child Resource Type | Child Resource Name | Multiplicity | Ref. to Resource Type Definition |
| <remoteCSE> | [variable] | 0..n | Clause 7.4.4 |
| <remoteCSEAnnc> | [variable] | 0..n | Clause 7.4.4 |
| <node> | [variable] | 0..n | Clause 7.4.18 |
| <AE> | [variable] | 0..n | Clause 7.4.5 |
| <container> | [variable] | 0..n | Clause 7.4.6 |
| <group> | [variable] | 0..n | Clause 7.4.13 |
| <accessControlPolicy> | [variable] | 0..n | Clause 7.4.2 |
| <subscription> | [variable] | 0..n | Clause 7.4.8 |
| <mgmtCmd> | [variable] | 0..n | Clause 7.4.16 |
| <locationPolicy> | [variable] | 0..n | Clause 7.4.10 |
| <statsConfig> | [variable] | 0..n | Clause 7.4.23 |
| <statsCollect> | [variable] | 0..n | Clause 7.4.25 |
| <request> | [variable] | 0..n | Clause 7.4.12 |
| <delivery> | [variable] | 0..n | Clause 7.4.11 |
| <schedule> | [variable] | 0..1 | Clause 7.4.9 |
| <m2mServiceSubscriptionProfile> | [variable] | 0..n | Clause 7.4.19 |
| <serviceSubscribedAppRule> | [variable] | 0..n | Clause 7.4.29 |
| <notificationTargetPolicy> | [variable] | 0..n | Clause 7.4.31 |
| <dynamicAuthorizationConsultation> | [variable] | 0..n | Clause 7.4.36 |
| <flexContainer> | [variable] | 0..n | Clause 7.4.37 |
| <timeSeries> | [variable] | 0..n | Clause 7.4.38 |
| <role> | [variable] | 0..n | Clause 7.4.40 |
| <token> | [variable] | 0..n | Clause 7.4.41 |
| <authorizationDecision> | [variable] | 0..n | Clause 7.4.43 |
| <authorizationPolicy> | [variable] | 0..n | Clause 7.4.44 |
| <authorizationInformation> | [variable] | 0..n | Clause 7.4.45 |
| <transactionMgmt> | [variable] | 0..n | Clause 7.4.XX |
| <transaction> | [variable] | 0..n | Clause 7.4.YY |

### -----------------------End of change 3 ---------------------------------------------

### -----------------------Start of change 4-------------------------------------------

Table 7.4.4.1‑4: Child resources of <remoteCSE> resource

|  |  |  |  |
| --- | --- | --- | --- |
| Child Resource Type  | Child Resource Name | Multiplicity | Ref. to Resource Type Definition |
| <container> | [variable] | 0..n | Clause 7.4.6 |
| <containerAnnc> | [variable] | 0..n | Clause 7.4.6 |
| <flexContainer> | [variable] | 0..n | Clause 7.4.37 |
| <flexContainerAnnc> | [variable] | 0..n | Clause 7.4.37 |
| <group> | [variable] | 0..n | Clause 7.4.13 |
| <groupAnnc> | [variable] | 0..n | Clause 7.4.13 |
| <accessControlPolicy> | [variable] | 0..n | Clause 7.4.2 |
| <accessControlPolicyAnnc> | [variable] | 0..n | Clause 7.4.2 |
| <subscription> | [variable] | 0..n | Clause 7.4.8 |
| <pollingChannel> | [variable] | 0..1 | Clause 7.4.21 |
| <schedule> | [variable] | 0..1 | Clause 7.4.9 |
| <nodeAnnc> | [variable] | 0..n | Clause 7.4.36 |
| <dynamicAuthorizationConsultation> | [variable] | 0..n | Clause 7.4.36 |
| <flexContainer> | [variable] | 0..n | Clause 7.4.37 |
| <timeSeries> | [variable] | 0..n | Clause 7.4.38 |
| <timeSeriesAnnc> | [variable] | 0..n | Clause 7.4.38 |
| <remoteCSEAnnc> | [variable] | 0..n | Clause 7.4.4 |
| <AEAnnc> | [variable] | 0..n | Clause 7.4.5 |
| <locationPolicyAnnc> | [variable] | 0..n | Clause 7.4.10 |
| <transactionMgmt> | [variable] | 0..n | Clause 7.4.XX |
| <transaction> | [variable] | 0..n | Clause 7.4.YY |

### -----------------------End of change 4 ---------------------------------------------

### -----------------------Start of change 5-------------------------------------------

Table 7.4.5.1‑4: Child resources of <AE> resource

|  |  |  |  |
| --- | --- | --- | --- |
| Child Resource Type  | Child Resource Name | Multiplicity | Ref. to Resource Type Definition |
| <subscription> | [variable] | 0..n | Clause 7.4.8 |
| <container> | [variable] | 0..n | Clause 7.4.6 |
| <group> | [variable] | 0..n | Clause 7.4.13 |
| <accessControlPolicy> | [variable] | 0..n | Clause 7.4.2 |
| <pollingChannel> | [variable] | 0..n | Clause 7.4.21 |
| <schedule> | [variable] | 0..1 | Clause 7.4.9 |
| <semanticDescriptor> | [variable] | 0..n | Clause 7.4.34 |
| <dynamicAuthorizationConsultation> | [variable] | 0..n | Clause 7.4.36 |
| <flexContainer> | [variable] | 0..n | Clause 7.4.37 |
| <timeSeries> | [variable] | 0..n | Clause 7.4.38 |
| <trafficPattern> | [variable] | 0..n | Clause 7.4.42 |
| <transactionMgmt> | [variable] | 0..n | Clause 7.4.XX |
| <transaction> | [variable] | 0..n | Clause 7.4.YY |

### -----------------------End of change 5 ---------------------------------------------

### -----------------------Start of change 6-------------------------------------------

**Table 7.4.6.1‑4: Child resources of <container> resource**

|  |  |  |  |
| --- | --- | --- | --- |
| **Child Resource Type**  | Child Resource Name | **Multiplicity** | **Ref. to in Resource Type Definition** |
| <contentInstance> | [variable] | 0..n | Clause 7.4.7 |
| <subscription> | [variable] | 0..n | Clause 7.4.8 |
| <container> | [variable] | 0..n | Clause 7.4.6 |
| <latest> | la | 1 | Clause 7.4.27 |
| <oldest> | ol | 1 | Clause 7.4.28 |
| <semanticDescriptor> | [variable] | 0..n | Clause 7.4.34 |
| <flexContainer> | [variable] | 0..n | Clause 7.4.37 |
| <transaction> | [variable] | 0..n | Clause 7.4.YY |

### -----------------------End of change 6 ---------------------------------------------

### -----------------------Start of change 7-------------------------------------------

**Table 7.4.6.1‑4: Child resources of <contentInstance> resource**

|  |  |  |  |
| --- | --- | --- | --- |
| **Child Resource Type**  | **Child Resource Name** | **Multiplicity** | **Ref. to in Resource Type Definition** |
| <semanticDescriptor> | [variable] | 0..n | Clause 7.4.28 |
| <transaction> | [variable] | 0..n | Clause 7.4.YY |

### -----------------------End of change 7 ---------------------------------------------

### -----------------------Start of change 8-------------------------------------------

Table 7.4.8.1‑4: Child resources of <subscription> resource

|  |  |  |  |
| --- | --- | --- | --- |
| Child Resource Type | Child Resource Name | Multiplicity | Ref. to in Resource Type Definition |
| <schedule> | notificationSchedule | 0..1 | Clause 7.4.9 |
| <notificationTargetMgmtPolicyRef> | [variable] | 0..n | Clause 7.4.30 |
| <notificationTargetSelfReference> | ntsr | 1 | Clause 7.4.33 |
| <transaction> | [variable] | 0..n | Clause 7.4.YY |

### -----------------------End of change 8 ---------------------------------------------

### -----------------------Start of change 9-------------------------------------------

**Table 7.4.9.1‑6: Child resources of <schedule > resource**

|  |  |  |  |
| --- | --- | --- | --- |
| **Child Resource Type**  | Child Resource Name | **Multiplicity** | **Ref. to in Resource Type Definition** |
| <subscription> | [variable] | 0..n | Clause 7.4.8 |
| <transaction> | [variable] | 0..n | Clause 7.4.YY |

### -----------------------End of change 9 ---------------------------------------------

### -----------------------Start of change 10-------------------------------------------

**Table 7.4.10.1‑4: Child resources of <locationPolicy> resource**

|  |  |  |  |
| --- | --- | --- | --- |
| Child Resource Type | **Child Resource Name** | **Multiplicity** | Ref. to Resource Type Definition |
| *<subscription>* | [variable] | 0..n | Clause 7.4.8 |
| <transaction> | [variable] | 0..n | Clause 7.4.YY |

### -----------------------End of change 10 ---------------------------------------------

### -----------------------Start of change 11-------------------------------------------

### REMOVED CHANGE

### -----------------------End of change 11 ---------------------------------------------

### -----------------------Start of change 12-------------------------------------------

### REMOVED CHANGE

### -----------------------End of change 12 ---------------------------------------------

### -----------------------Start of change 13-------------------------------------------

Table 7.4.13.1‑4: Child resources of <group> resource

|  |  |  |  |
| --- | --- | --- | --- |
| Child Resource Type | Child Resource Name | Multiplicity | Ref. to in Resource Type Definition |
| <subscription> | [variable] | 0..n | Clause 7.4.8 |
| <semanticDescriptor> | [variable] | 0..n | Clause 7.4.34 |
| <fanOutPoint> | fopt | 1 | Clause 7.4.14 |
| <semanticFanOutPoint> | sfop | 0..1 | Clause 7.4.35 |
| <transaction> | [variable] | 0..n | Clause 7.4.YY |

### -----------------------End of change 13 ---------------------------------------------

### -----------------------Start of change 14-------------------------------------------

Table 7.4.15.1‑3: Child resources of <mgmtObj> resource

|  |  |  |  |
| --- | --- | --- | --- |
| Child Resource Type  | Child Resource Name | Multiplicity | Ref. to Resource Type Definition |
| <subscription> | [variable] | 0..n | Clause 7.4.8 |
| <transaction> | [variable] | 0..n | Clause 7.4.YY |

### -----------------------End of change 14 ---------------------------------------------

### -----------------------Start of change 15-------------------------------------------

Table 7.4.16.1‑4: Child resources of <mgmtCmd> resource

|  |  |  |  |
| --- | --- | --- | --- |
| Child Resource Type  | Child Resource Name | Multiplicity | Ref. to Resource Type Definition |
| <subscription> | [variable] | 0..n | clause 7.4.8 |
| <execInstance> | [variable] | 0..n | clause 7.4.17 |
| <transaction> | [variable] | 0..n | Clause 7.4.YY |

### -----------------------End of change 15 ---------------------------------------------

### -----------------------Start of change 16-------------------------------------------

Table 7.4.17.1‑4: Child Resources of <execInstance> resource

|  |  |  |  |
| --- | --- | --- | --- |
| Child Resource Type | **Child Resource Name** | **Multiplicity** | Ref. to Resource Type Definition |
| <subscription> | [variable] | 0..n | Clause 7.4.8 |
| <transaction> | [variable] | 0..n | Clause 7.4.YY |

### -----------------------End of change 16 ---------------------------------------------

### -----------------------Start of change 17-------------------------------------------

Table 7.4.18.1‑4: Child resources of <node> resource

|  |  |  |  |
| --- | --- | --- | --- |
| Child Resource Type  | Child Resource Name | Multiplicity | Ref. to Resource Type Definition |
| <mgmtObj> | [variable] | 0..n | Clasue 7.4.15,See Annex D |
| <subscription> | [variable] | 0..n | Clause 7.4.8 |
| <semanticDescriptor> | [variable] | 0..n | Clause 7.4.34 |
| <trafficPattern> | [variable] | 0..n | Clause 7.4.42 |
| <transaction> | [variable] | 0..n | Clause 7.4.YY |

### -----------------------End of change 17 ---------------------------------------------

### -----------------------Start of change 18-------------------------------------------

Table 7.4.19.1‑3: Child resources of <m2mServiceSubscriptionProfile>

|  |  |  |  |
| --- | --- | --- | --- |
| Child Resource Type  | Child Resource Name | Multiplicity | Ref. to Resource Type Definition |
| <subscription> | [variable] | 0..n | Clause 7.4.8 |
| <serviceSubscribedNode > | [variable] | 0..n | Clause 7.4.20 |
| <transaction> | [variable] | 0..n | Clause 7.4.YY |

### -----------------------End of change 18 ---------------------------------------------

### -----------------------Start of change 19-------------------------------------------

Table 7.4.20.1‑4: Child resources of <serviceSubscribedNode> resource

|  |  |  |  |
| --- | --- | --- | --- |
| Child Resource Type  | Child Resource Name | Multiplicity | Ref. to Resource Type Definition |
| <subscription> | [variable] | 0..n | 7.4.8 |
| <transaction> | [variable] | 0..n | Clause 7.4.YY |

### -----------------------End of change 19 ---------------------------------------------

### -----------------------Start of change 20-------------------------------------------

Table 7.4.21.1‑3: Child resources of <pollingChannel> resource

|  |  |  |  |
| --- | --- | --- | --- |
| Child Resource Type | Name | Multiplicity | Ref. to Resource Type Definition |
| <pollingChannelURI> | pcu | 1 | Clause 7.4.22 |
| <transaction> | [variable] | 0..n | Clause 7.4.YY |

### -----------------------End of change 20 ---------------------------------------------

### -----------------------Start of change 21-------------------------------------------

Table 7.4.23.1‑3: Child resources of <statsConfig> resource

|  |  |  |  |
| --- | --- | --- | --- |
| Child Resource Type  | Child Resource Name | Multiplicity | Ref. to Resource Type Definition |
| <eventConfig> | [variable] | 0..n | Clause 7.4.24 |
| <subscription> | [variable] | 0..n | Clause 7.4.8 |
| <transaction> | [variable] | 0..n | Clause 7.4.YY |

### -----------------------End of change 21 ---------------------------------------------

### -----------------------Start of change 22-------------------------------------------

Table 7.4.24.1‑4: Child Resources of <eventConfig> resource

|  |  |  |  |
| --- | --- | --- | --- |
| Child Resource Type | **Child Resource Name** | **Multiplicity** | Ref. to Resource Type Definition |
| <subscription> | [variable] | 0..n | Clause 7.4.8 |
| <transaction> | [variable] | 0..n | Clause 7.4.YY |

### -----------------------End of change 22 ---------------------------------------------

### -----------------------Start of change 23-------------------------------------------

Table 7.4.25.1‑4: Child Resources of <statsCollect> resource

|  |  |  |  |
| --- | --- | --- | --- |
| Child Resource Type | **Child Resource Name** | **Multiplicity** | Ref. to Resource Type Definition |
| <subscription> | [variable] | 0..n | Clause 7.4.8 |
| <transaction> | [variable] | 0..n | Clause 7.4.YY |

### -----------------------End of change 23 ---------------------------------------------

### -----------------------Start of change 24-------------------------------------------

Table 7.4.29.1‑4: Child resources of <serviceSubscribedAppRule> resource

|  |  |  |  |
| --- | --- | --- | --- |
| Child Resource Type | **Child Resource Name** | **Multiplicity** | Ref. to Resource Type Definition |
| *<subscription>* | [variable] | 0..n | Clause 7.4.8 |
| <transaction> | [variable] | 0..n | Clause 7.4.YY |

### -----------------------End of change 24 ---------------------------------------------

### -----------------------Start of change 25-------------------------------------------

Table 7.4.30.1‑4: Child resources of <notificationTargetMgmtPolicyRef> resource

|  |  |  |  |
| --- | --- | --- | --- |
| Child Resource Type | **Child Resource Name** | **Multiplicity** | Ref. to Resource Type Definition |
| *<subscription>* | [variable] | 0..n | Clause 7.4.8 |
| <transaction> | [variable] | 0..n | Clause 7.4.YY |

### -----------------------End of change 25 ---------------------------------------------

### -----------------------Start of change 26-------------------------------------------

Table 7.4.31.1‑4: Child resources of <notificationTargetPolicy> resource

|  |  |  |  |
| --- | --- | --- | --- |
| Child Resource Type | **Child Resource Name** | **Multiplicity** | Ref. to Resource Type Definition |
| <policyDeletionRules> | [variable] | 0..2 | Clause 7.4.32 |
| <subscription> | [variable] | 0..n | Clause 7.4.8 |
| <transaction> | [variable] | 0..n | Clause 7.4.YY |

### -----------------------End of change 26 ---------------------------------------------

### -----------------------Start of change 27-------------------------------------------

Table 7.4.32.1‑4: Child resources of <policyDeletionRules> resource

|  |  |  |  |
| --- | --- | --- | --- |
| Child Resource Type | **Child Resource Name** | **Multiplicity** | Ref. to Resource Type Definition |
| *<subscription>* | [variable] | 0..n | Clause 7.4.8 |
| <transaction> | [variable] | 0..n | Clause 7.4.YY |

### -----------------------End of change 27 ---------------------------------------------

### -----------------------Start of change 28-------------------------------------------

Table 7.4.34.1‑4: Child resources of <semanticDescriptor> resource

|  |  |  |  |
| --- | --- | --- | --- |
| Child Resource Type | **Child Resource Name** | **Multiplicity** | Ref. to Resource Type Definition |
| *<subscription>* | [variable] | 0..n | Clause 7.4.8 |
| <transaction> | [variable] | 0..n | Clause 7.4.YY |

### -----------------------End of change 28 ---------------------------------------------

### -----------------------Start of change 29-------------------------------------------

Table 7.4.36.1‑4: Child resources of <dynamicAuthorizationConsultation> resource

|  |  |  |  |
| --- | --- | --- | --- |
| Child Resource Type | **Child Resource Name** | **Multiplicity** | Ref. to Resource Type Definition |
| *<subscription>* | [variable] | 0..n | Clause 7.4.8 |
| <transaction> | [variable] | 0..n | Clause 7.4.YY |

### -----------------------End of change 29 ---------------------------------------------

### -----------------------Start of change 30-------------------------------------------

### REMOVED CHANGE

### -----------------------End of change 30 ---------------------------------------------

### -----------------------Start of change 31-------------------------------------------

Table 7.4.38.1‑4: Child Resources of <timeSeries> resource

|  |  |  |  |
| --- | --- | --- | --- |
| **Child Resource Type**  | Child Resource Name | **Multiplicity** | **Ref. to in Resource Type Definition** |
| <timeSeriesInstance> | [variable] | 0..n | Clause 7.4.39 |
| <subscription> | [variable] | 0..n | Clause 7.4.8 |
| <semanticDescriptor> | [variable] | 0..n | Clause 7.4.34 |
| <transaction> | [variable] | 0..n | Clause 7.4.YY |

### -----------------------End of change 31 ---------------------------------------------

### -----------------------Start of change 32-------------------------------------------

Table 7.4.39.1‑4: Child resources of <timeSeriesInstance> resource

|  |  |  |  |
| --- | --- | --- | --- |
| Child Resource Type | **Child Resource Name** | **Multiplicity** | Ref. to Resource Type Definition |
| <semanticDescriptor> | [variable] | 0..n | Clause 7.4.28 |
| <transaction> | [variable] | 0..n | Clause 7.4.YY |

### -----------------------End of change 32 ---------------------------------------------

### -----------------------Start of change 33-------------------------------------------

Table 7.4.40.1‑4: Child Resources of <role> resource

|  |  |  |  |
| --- | --- | --- | --- |
| **Child Resource Type**  | Child Resource Name | **Multiplicity** | **Ref. to in Resource Type Definition** |
| <subscription> | [variable] | 0..n | Clause 7.4.8 |
| <transaction> | [variable] | 0..n | Clause 7.4.YY |

### -----------------------End of change 33 ---------------------------------------------

### -----------------------Start of change 34-------------------------------------------

Table 7.4.41.1‑4: Child Resources of <token> resource

|  |  |  |  |
| --- | --- | --- | --- |
| **Child Resource Type**  | Child Resource Name | **Multiplicity** | **Ref. to in Resource Type Definition** |
| <subscription> | [variable] | 0..n | Clause 7.4.8 |
| <transaction> | [variable] | 0..n | Clause 7.4.YY |

### -----------------------End of change 34 ---------------------------------------------

### -----------------------Start of change 35 -------------------------------------------

REMOVED CHANGE

### -----------------------End of change 35 ---------------------------------------------

### -----------------------Start of change 36 -------------------------------------------

Table 7.4.43.1‑4: Child Resources of <authorizationDecision> resource

|  |  |  |  |
| --- | --- | --- | --- |
| Child Resource Type | Child Resource Name | Multiplicity | Ref. to Resource Type Definition |
| <subscription> | [variable] | 0..n | Clause 7.4.8 |
| <transaction> | [variable] | 0..n | Clause 7.4.YY |

### -----------------------End of change 36 ---------------------------------------------

### -----------------------Start of change 37 -------------------------------------------

Table 7.4.44.1‑4: Child Resources of <authorizationPolicy> resource

|  |  |  |  |
| --- | --- | --- | --- |
| Child Resource Type | Child Resource Name | Multiplicity | Ref. to Resource Type Definition |
| <subscription> | [variable] | 0..n | Clause 7.4.8 |
| <transaction> | [variable] | 0..n | Clause 7.4.YY |

### -----------------------End of change 37 ---------------------------------------------

### -----------------------Start of change 38 -------------------------------------------

Table 7.4.45.1‑4: Child Resources of <authorizationInformation> resource

|  |  |  |  |
| --- | --- | --- | --- |
| Child Resource Type | Child Resource Name | Multiplicity | Ref. to Resource Type Definition |
| <role> | [variable] | 0..n | Clause 7.4.40 |
| <token> | [variable] | 0..n | Clause 7.4.41 |
| <subscription> | [variable] | 0..n | Clause 7.4.8 |
| <transaction> | [variable] | 0..n | Clause 7.4.YY |

### -----------------------End of change 38 ---------------------------------------------

### -----------------------Start of change 39 ---------------------------------------------

#### Enumeration type definitions

##### 6.3.4.2.1 m2m:resourceType

Table 6.3.4.2.1‑1: Interpretation of resourceType

|  |  |  |
| --- | --- | --- |
| Value | Interpretation | Note |
| 1 | accessControlPolicy |  |
| 2 | AE |  |
| 3 | container |  |
| 4 | contentInstance |  |
| 5 | CSEBase |  |
| 6 | delivery |  |
| 7 | eventConfig |  |
| 8 | execInstance |  |
| 9 | group |  |
| 10 | locationPolicy |  |
| 11 | m2mServiceSubscriptionProfile |  |
| 12 | mgmtCmd |  |
| 13 | mgmtObj |  |
| 14 | node |  |
| 15 | pollingChannel |  |
| 16 | remoteCSE |  |
| 17 | request |  |
| 18 | schedule |  |
| 19 | serviceSubscribedAppRule |  |
| 20 | serviceSubscribedNode |  |
| 21 | statsCollect |  |
| 22 | statsConfig |  |
| 23 | subscription |  |
| 24 | semanticDescriptor |  |
| 25 | notificationTargetMgmtPolicyRef |  |
| 26 | notificationTargetPolicy |  |
| 27 | policyDeletionRules |  |
| 28 | flexContainer |  |
| 29 | timeSeries |  |
| 30 | timeSeriesInstance |  |
| 31 | role |  |
| 32 | token |  |
| 33 | trafficPattern |  |
| 34 | dynamicAuthorizationConsultation |  |
| 35 | authorizationDecision |  |
| 36 | authorizationPolicy |  |
| 37 | authorizationInformation |  |
| XX | transactionMgmt |  |
| YY | transaction |  |
| 10001 | accessControlPolicyAnnc |  |
| 10002 | AEAnnc |  |
| 10003 | containerAnnc |  |
| 10004 | contentInstanceAnnc |  |
| 10009 | groupAnnc |  |
| 10010 | locationPolicyAnnc |  |
| 10013 | mgmtObjAnnc |  |
| 10014 | nodeAnnc |  |
| 10016 | remoteCSEAnnc |  |
| 10018 | scheduleAnnc |  |
| 10024 | semanticDescriptorAnnc |  |
| 10028 | flexContainerAnnc |  |
| 10029 | timeSeriesAnnc |  |
| 10030 | timeSeriesInstanceAnnc |  |
| 10033 | trafficPatternAnnc |  |
| 10034 | dynamicAuthorizationConsultationAnnc |  |
| NOTE: See clause 6.4.1 "Request message parameter data types". |

##### 6.3.4.2.11 m2m:memberType

Used for ***memberType*** attribute in <group> resource.

Table 6.3.4.2.11‑1: Interpretation of memberType

|  |  |  |
| --- | --- | --- |
| Value | Interpretation | Note |
| 0 | mixed | A mixture of all the resource types (except mixed itself). |
| 1 | accessControlPolicy |  |
| 2 | AE |  |
| 3 | container |  |
| 4 | contentInstance |  |
| 5 | CSEBase |  |
| 6 | delivery |  |
| 7 | eventConfig |  |
| 8 | execInstance |  |
| 9 | group |  |
| 10 | locationPolicy |  |
| 11 | m2mServiceSubscription |  |
| 12 | mgmtCmd |  |
| 13 | mgmtObj |  |
| 14 | node |  |
| 15 | pollingChannel |  |
| 16 | remoteCSE |  |
| 17 | request |  |
| 18 | schedule |  |
| 19 | serviceSubscribedAppRule |  |
| 20 | serviceSubscribedNode |  |
| 21 | statsCollect |  |
| 22 | statsConfig |  |
| 23 | subscription |  |
| 24 | semanticDescriptor |  |
| 25 | notificationTargetMgmtPolicyRef |  |
| 26 | notificationTargetPolicy |  |
| 27 | policyDeletionRules |  |
| 28 | flexContainer |  |
| 29 | timeSeries |  |
| 30 | timeSeriesInstance |  |
| 31 | role |  |
| 32 | token |  |
| 33 | trafficPattern |  |
| 34 | dynamicAuthorizationConsultation |  |
| 35 | authorizationDecision |  |
| 36 | authorizationPolicy |  |
| 37 | authorizationInformation |  |
| XX | transactionMgmt |  |
| YY | transaction |  |
| 10001 | accessControlPolicyAnnc |  |
| 10002 | AEAnnc |  |
| 10003 | containerAnnc |  |
| 10004 | contentInstanceAnnc |  |
| 10009 | groupAnnc |  |
| 10010 | locationPolicyAnnc |  |
| 10013 | mgmtObjAnnc |  |
| 10014 | nodeAnnc |  |
| 10016 | remoteCSEAnnc |  |
| 10018 | scheduleAnnc |  |
| 10024 | semanticDescriptorAnnc |  |
| 10028 | flexContainerAnnc |  |
| 10029 | timeSeriesAnnc |  |
| 10030 | timeSeriesInstanceAnnc |  |
| 10033 | trafficPatternAnnc |  |
| 10034 | dynamicAuthorizationConsultationAnnc |  |
| 20001 | oldest |  |
| 20002 | latest |  |
| NOTE: See clause 7.4.13 "Resource Type group".  |

##### 6.3.4.2.ZZ m2m:transactionMode

This is used for the transactionMode attribute in <transactionMgmt> resource to define whether the Hosting CSE or the creator of a <transactionMgmt> resource is responsible for controlling the execution of the transaction.

Table 6.3.4.2.ZZ‑1: Interpretation of transactionMode

|  |  |  |
| --- | --- | --- |
| Value | Interpretation | Note |
| 1 | CSE\_CONTROLLED | This is the default |
| 2 | CREATOR\_CONTROLLED |  |

##### 6.3.4.2.ZZ m2m:transactionControl

This is used for the transactionControl attribute in <transactionMgmt> and <transaction> resource to control the state of a transaction.

Table 6.3.4.2.ZZ‑1: Interpretation of transactionControl

|  |  |  |
| --- | --- | --- |
| Value | Interpretation | Note |
| 1 | INITIAL |  |
| 2 | LOCK |  |
| 3 | EXECUTE |  |
| 4 | COMMIT |  |
| 5 | ABORT |  |

##### 6.3.4.2.ZZ m2m:transactionState

This is used for the transactionState attribute in <transactionMgmt> and <transaction> resource to monitor the state of a transaction.

Table 6.3.4.2.ZZ‑1: Interpretation of transactionState

|  |  |  |
| --- | --- | --- |
| Value | Interpretation | Note |
| 1 | INITIAL |  |
| 2 | LOCKED |  |
| 3 | EXECUTED |  |
| 4 | COMMITTED |  |
| 5 | ERROR |  |
| 6 | ABORTED |  |

##### 6.3.4.2.ZZ m2m:transactionLockType

This is used for the transactionLockType attribute in <transactionMgmt> and <transaction> resource to configure the type of lock that is required on the targeted resource in order to perform the transaction.

Table 6.3.4.2.ZZ‑1: Interpretation of transactionLockType

|  |  |  |
| --- | --- | --- |
| Value | Interpretation | Note |
| 1 | BLOCK\_ALL |  |
| 2 | ALLOW\_RETRIEVES |  |

##### 6.3.4.2.ZZ m2m:transactionMgmtHandling

This is used for the transactionMgmtHandling attribute in <transactionMgmt> resource to configure whether to persist or delete the <transactionMgmt> resource after its completion.

Table 6.3.4.2.ZZ‑1: Interpretation of transactionMgmtHandling

|  |  |  |
| --- | --- | --- |
| Value | Interpretation | Note |
| 1 | DELETE |  |
| 2 | PERSIST |  |

### -----------------------End of change 39 ---------------------------------------------

### -----------------------Start of change 40 ---------------------------------------------

### 6.5.3 regularResource

#### 6.5.3.1 Description

This type definition includes the universal and common attributes used by the non-annouceable M2M resources.

#### Reference

See Table 6.3.6‑2.

#### Usage

This type is used by the following resource types:

<delivery>, <eventConfig>, <execInstance>, <m2mServiceSubscriptionProfile>, <mgmtCommand>, <request>, <serviceSubscribedNode>, <statsCollect>, <statsConfig>, <subscription>, <serviceSubscribedAppRule>, <notificationTargetMgmtPolicyRef>, <notificationTargetPolicy>, <policyDeletionRules>, <dynamicAuthorizationConsultation>, <role>, <token>, <authorizationDecision>, <authorizationPolicy> <authorizationInformation>, <transactionMgmt>, <transaction>

### -----------------------End of change 40 ---------------------------------------------

### -----------------------Start of change 41 ---------------------------------------------

### 8.2.3 Resource attributes

In protocol bindings, resource attributes names shall be translated into short names shown in the following tables.

Table 8.2.3‑6: Resource attribute short names (6/6)

|  |  |  |
| --- | --- | --- |
| Attribute Name | Occurs in | Short Name |
| *serviceName* | genericInterworkingService | ***gisn*** |
| *operationName* | genericInterworkingOperationInstance | ***gion*** |
| *inputDataPointLinks* | genericInterworkingService, genericInterworkingOperationInstance | ***giip*** |
| *outputDataPointLinks* | genericInterworkingService, genericInterworkingOperationInstance | ***giop*** |
| *inputLinks* | genericInterworkingOperationInstance | ***giil*** |
| *outputLinks* | genericInterworkingOperationInstance | ***giol*** |
| *operationState* | genericInterworkingOperationInstance | ***gios*** |
| *direction* | allJoynApp | ***dir*** |
| *objectPath* | allJoynSvcObject | ***ajop*** |
| *interfaceIntrospectXmlRef* | allJoynInterface | ***ajir*** |
| *input* | allJoynMethodCall | ***inp*** |
| *callStatus* | allJoynMethodCall | ***clst*** |
| *output* | allJoynMethodCall | ***out*** |
| *currentValue* | allJoynProperty | ***crv*** |
| *requestedValue* | allJoynProperty | ***rqv*** |
| *decision* | authorizationDecision | ***dec*** |
| *status* | authorizationDecision, authorizationPolicy, authorizationInformation | ***sta*** |
| *to* | authorizationDecision, authorizationPolicy | ***to\**** |
| *from* | authorizationDecision, authorizationInformation | ***fr\**** |
| *requestedResourceType* | authorizationDecision | ***rrt*** |
| *operation* | authorizationDecision | ***op\**** |
| *filterUsage* | authorizationDecision | ***fu*** |
| *roleIDs* | authorizationDecision, authorizationInformation | ***rids\**** |
| *tokenIDs* | authorizationDecision, authorizationInformation | ***tids\**** |
| *tokens* | authorizationDecision | ***tkns\**** |
| *requestTime* | authorizationDecision | ***rtm*** |
| *originatorLocation* | authorizationDecision | ***olo*** |
| *originatorIP* | authorizationDecision | ***oip*** |
| *policies* | authorizationPolicy | ***ps*** |
| *combiningAlgorithm* | authorizationPolicy | ***ca*** |
| *transactionLockTime* | transactionMgmt, transaction | ***tltm*** |
| *transactionExecuteTime* | transactionMgmt, transaction | ***text*** |
| *transactionCommitTime* | transactionMgmt, transaction | ***tct*** |
| *transactionExpirationTime* | transactionMgmt | ***tept*** |
| *transactionMode* | transactionMgmt | ***tmd*** |
| *transactionLockType* | transactionMgmt, transaction | ***tltp*** |
| *transactionControl* | transactionMgmt, transaction | ***tctl*** |
| *transactionState* | transactionMgmt, transaction | ***tst*** |
| *transactionMaxRetries* | transactionMgmt | ***tmr*** |
| *transactionMgmtHandling* | transactionMgmt | ***tmh*** |
| *requestPrimitives* | transactionMgmt | ***rqps*** |
| *responsePrimitives* | transactionMgmt | ***rsps*** |
| *transactionID* | transaction | ***tid*** |
| *requestPrimitive* | transaction | ***trqp*** |
| *responsePrimitive* | transaction | ***trsp*** |
| NOTE: \* marked short names have been already assigned in Table 8.2.2-1. |

### -----------------------End of change 41 ---------------------------------------------

### -----------------------Start of change 42 ---------------------------------------------

#### Originator error response class

Table 6.6.3.5-1 specifies the RSCs for Originator error responses.

41xx codes are oneM2M specific.

Table 6.6.3.5‑1: RSCs for Originator error response class

|  |  |
| --- | --- |
| Numeric Code | Description |
| 4000 | BAD\_REQUEST |
| 4004 | NOT\_FOUND |
| 4005 | OPERATION\_NOT\_ALLOWED |
| 4008 | REQUEST\_TIMEOUT |
| 4101 | SUBSCRIPTION\_CREATOR\_HAS\_NO\_PRIVILEGE |
| 4102 | CONTENTS\_UNACCEPTABLE |
| 4103 | ORIGINATOR\_HAS\_NO\_PRIVILEGE |
| 4104 | GROUP\_REQUEST\_IDENTIFIER\_EXISTS |
| 4105 | CONFLICT |
| 4106 | ORIGINATOR\_HAS\_NOT\_REGISTERED |
| 4107 | SECURITY\_ASSOCIATION\_REQUIRED |
| 4108 | INVALID\_CHILD\_RESOURCE\_TYPE |
| 4109 | NO\_MEMBERS |
| 4110 | GROUP\_MEMBER\_TYPE\_INCONSISTENT |
| 4111 | ESPRIM\_UNSUPPORTED\_OPTION |
| 4112 | ESPRIM\_UNKNOWN\_KEY\_ID |
| 4113 | ESPRIM\_UNKNOWN\_ORIG\_RAND\_ID |
| 4114 | ESPRIM\_UNKNOWN\_RECV\_RAND\_ID |
| 4115 | ESPRIM\_BAD\_MAC |
| 4116 | ESPRIM\_IMPERSONATION\_ERROR |
| 4117 | ORIGINATOR\_HAS\_ALREADY\_REGISTERED |
| xxxx | ILLEGAL\_TRANSACTION\_STATE\_TRANSITION\_ATTEMPTED |

#### 6.6.3.6 Receiver error response class

Table 6.6.3.6-1 specifies the RSCs for Receiver error responses.

51xx codes are oneM2M specific, which are used in generic procedures.

52xx codes are oneM2M specific, which are used in resource specific procedures.

**Table 6.6.3.6‑1: RSCs for Receiver error response class**

|  |  |
| --- | --- |
| Numeric Code | Description |
| 5000 | INTERNAL\_SERVER\_ERROR |
| 5001 | NOT\_IMPLEMENTED |
| 5103 | TARGET\_NOT\_REACHABLE |
| 5105 | RECEIVER\_HAS\_NO\_PRIVILEGE |
| 5106 | ALREADY\_EXISTS |
| 5203 | TARGET\_NOT\_SUBSCRIBABLE |
| 5204 | SUBSCRIPTION\_VERIFICATION\_INITIATION\_FAILED |
| 5205 | SUBSCRIPTION\_HOST\_HAS\_NO\_PRIVILEGE |
| 5206 | NON\_BLOCKING\_REQUEST\_NOT\_SUPPORTED |
| 5207 | NOT\_ACCEPTABLE |
| 5208 | DISCOVERY\_DENIED\_BY\_IPE |
| 5209 | GROUP\_MEMBERS\_NOT\_RESPONDED |
| 5210 | ESPRIM\_DECRYPTION\_ERROR |
| 5211 | ESPRIM\_ENCRYPTION\_ERROR |
| 5212 | SPARQL\_UPDATE\_ERROR |
| 5214 | TARGET\_HAS\_NO\_SESSION\_CAPABILITY |
| 5215 | SESSION\_IS\_ONLINE |
| 5216 | JOIN\_MULTICAST\_GROUP\_FAILED |
| 5217 | LEAVE\_MULTICAST\_GROUP\_FAILED |
| 5218 | TRIGGERING\_DISABLED\_FOR\_RECIPIENT |
| 5219 | UNABLE\_TO\_REPLACE\_TRIGGER\_REQUEST |
| 5220 | UNABLE\_TO\_RECALL\_TRIGGER\_REQUEST |
| 5221 | CROSS\_RESOURCE\_OPERATION\_FAILURE |
| 52xx | STATE\_CHANGE\_NOT\_ALLOWED\_UNTIL\_TRANSACTION\_PROCESSING\_IS\_COMPLETED |

### -----------------------End of change 42 ---------------------------------------------

### -----------------------Start of change 43 ---------------------------------------------

Table 7.4.46.1‑3: Child Resources of <*ontologyRepository*> resource

|  |  |  |  |
| --- | --- | --- | --- |
| Child Resource Type | Child Resource Name | Multiplicity | Ref. to Resource Type Definition |
| <subscription> | [variable] | 0..n | Clause 7.4.8 |
| *<ontology>* | [variable] | 0..n | Clause 7.4.47 |
| *<semanticValidation>* | smv | 1 | Clause 7.4.48 |
| <transaction> | [variable] | 0..n | Clause 7.4.YY |

### -----------------------End of change 43 ---------------------------------------------

### -----------------------Start of change 44 ---------------------------------------------

Table 7.4.47.1‑4: Child Resources of <*ontology*> resource

|  |  |  |  |
| --- | --- | --- | --- |
| Child Resource Type | Child Resource Name | Multiplicity | Ref. to Resource Type Definition |
| <subscription> | [variable] | 0..n | Clause 7.4.8 |
| <transaction> | [variable] | 0..n | Clause 7.4.YY |

### -----------------------End of change 44 ---------------------------------------------

### -----------------------Start of change 45 ---------------------------------------------

Table 7.4.49.1‑4: Child Resources of <semanticMashupJobProfile> resource

|  |  |  |  |
| --- | --- | --- | --- |
| Child Resource Type | Child Resource Name | Multiplicity | Ref. to Resource Type Definition |
| *<subscription>* | [variable] | 0..n | Clause 7.4.8 |
| *<semanticMashupInstance>* | [variable] | 0..n | Clause 7.4.50 |
| *<semanticDescriptor>* | [variable] | 0..1 | Clause 7.4.34 |
| <transaction> | [variable] | 0..n | Clause 7.4.YY |

### -----------------------End of change 45 ---------------------------------------------

### -----------------------Start of change 46 ---------------------------------------------

Table 7.4.50.1‑4: Child Resources of <semanticMashupInstance> resource

|  |  |  |  |
| --- | --- | --- | --- |
| Child Resource Type | Child Resource Name | Multiplicity | Ref. to Resource Type Definition |
| *<semanticMashupResult>* | [variable] | 0..n | Clause 7.4.51 |
| *<semanticDescriptor>* | [variable] | 0..1 | Clause 7.4.34 |
| *<subscription>* | [variable] | 0..n | Clause 7.4.8 |
| *<mashup>* | msp | 0..1 | Clause 7.4.52 |
| <transaction> | [variable] | 0..n | Clause 7.4.YY |

### -----------------------End of change 46 ---------------------------------------------

### -----------------------Start of change 47 ---------------------------------------------

Table 7.4.52.1‑4: Child Resources of <semanticMashupResult> resource

|  |  |  |  |
| --- | --- | --- | --- |
| Child Resource Type | Child Resource Name | Multiplicity | Ref. to Resource Type Definition |
| *<semanticDescriptor>* | [variable] | 0..1 | Clause 7.4.34 |
| *<subscription>* | [variable] | 0..n | Clause 7.4.8 |
| <transaction> | [variable] | 0..n | Clause 7.4.YY |

### -----------------------End of change 47 ---------------------------------------------

### -----------------------Start of change 48 ---------------------------------------------

Table 7.4.53.1‑4: Child Resources of <AEContactList> resource

|  |  |  |  |
| --- | --- | --- | --- |
| Child Resource Type | Child Resource Name | Multiplicity | Ref. to Resource Type Definition |
| <subscription> | [variable] | 0..n | Clause 7.4.8 |
| <AEContactListPerCSE> | [variable] | 0..n | Clause 7.4.54 |
| <transaction> | [variable] | 0..n | Clause 7.4.YY |

### -----------------------End of change 48 ---------------------------------------------

### -----------------------Start of change 49 ---------------------------------------------

Table 7.4.56.1‑4: Child Resources of <*multimediaSession*> resource

|  |  |  |  |
| --- | --- | --- | --- |
| Child Resource Type | Child Resource Name | Multiplicity | Ref. to Resource Type Definition |
| <subscription> | [variable] | 0..n | Clause 7.4.8 |
| <accessControlPolicy> | [variable] | 0..n | Clause 7.4.2 |
| <transaction> | [variable] | 0..n | Clause 7.4.YY |

### -----------------------End of change 49 ---------------------------------------------

### -----------------------Start of change 50 ---------------------------------------------

Table 7.4.57.1‑4: Child Resources of <triggerRequest> resource

|  |  |  |  |
| --- | --- | --- | --- |
| Child Resource Type | Child Resource Name | Multiplicity | Ref. to Resource Type Definition |
| <subscription> | [variable] | 0..n | Clause 7.4.8 |
| <transaction> | [variable] | 0..n | Clause 7.4.YY |

### -----------------------End of change 50 ---------------------------------------------

### -----------------------Start of change 51 ---------------------------------------------

Table 7.4.58.1‑4: Child Resources of <crossResourceSubscription> resource

|  |  |  |  |
| --- | --- | --- | --- |
| Child Resource Type | Child Resource Name | Multiplicity | Ref. to Resource Type Definition |
| <notificationTargetMgmtPolicyRef> | [variable] | 0..n | Clause 7.4.30 |
| <notificationTargetSelfReference> | ntsr | 1 | Clause 7.4.33 |
| <subscriptionLinkDeletion> | sld | 1 | Clause 7.4.xx |
| <transaction> | [variable] | 0..n | Clause 7.4.YY |

### -----------------------End of change 51 ---------------------------------------------

CHECK LIST

* Does this Change Request include an informative introduction containing the problem(s) being solved, and a summary list of proposals.?
* Does this CR contain changes related to only one particular issue/problem?
* Have any mirror CRs been posted?
* Does this Change Request make **all** the changes necessary to address the issue or problem? E.g. A change impacting 5 tables should not include a proposal to change only 3 tables?Does this Change Request follow the drafting rules?
* Are all pictures editable?
* Have you checked the spelling and grammar?
* Have you used change bars for all modifications?
* Does the change include the current and surrounding clauses to clearly show where a change is located and to provide technical context of the proposed change? (Additions of complete clauses need not show surrounding clauses as long as the proposed clause number clearly shows where the new clause is proposed to be located.)
* Are multiple changes in this CR clearly separated by horizontal lines with embedded text such as, start of change 1, end of change 1, start of new clause, end of new clause.?