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For LWM2M Semantically Enabled contentInstances, there is a need to have a oneM2M reference to other contentInstances.

-------------------------------------------Item 1-----------------------------------------------------------------------------------------

### 9.6.7 Resource Type *contentInstance*

The *<contentInstance>* resource represents a data instance in the <container> resource. The content of the *contentInstance* can be encrypted.

Unlike other resources, the *<contentInstance>* resource shall not be modified once created. An AE shall be able to delete a *contentInstance* resource explicitly or it may be deleted by the platform based on policies. If the platform has policies for *contentInstance* retention, these shall be represented by the attributes *maxByteSize*, *maxNrOfInstances* and/or *maxInstanceAge* attributes in the *<container>* resource. If multiple policies are in effect, the strictest policy shall apply.

The *<contentInstance>* resource inherits the same access control policies of the parent *<container>* resource, and does not have its own *accessControlPolicyIDs* attribute.



Figure 9.6.7-1: Structure of *<contentInstance>* resource

The *<contentInstance>* resource shall contain the child resources specified in table 9.6.7-1.

Table 9.6.7-1: Child resources of *<container>* resource

| Child Resources of *<contentInstance>* | Child Resource Type | Multiplicity | Description | *<contentInstanceAnnc>* Child Resource Types |
| --- | --- | --- | --- | --- |
| *semanticDescriptor* | *<semanticDescriptor>* | 0..n | See clause 9.6.30 | *<semanticDescriptor>, <semanticDescriptorAnnc>* |

The <contentInstance> resource shall contain the attributes specified in table 9.6.7-2.

Table 9.6.7-2: Attributes of *<contentInstance>* resource

| Attributes of *<contentInstance>* | Multiplicity | RW/  RO/  WO | Description | | *<contentInstanceAnnc>* Attributes |
| --- | --- | --- | --- | --- | --- |
| *resourceType* | 1 | RO | See clause 9.6.1.3 . | | NA |
| *resourceID* | 1 | RO | See clause 9.6.1.3 . | | NA |
| *resourceName* | 1 | WO | See clause 9.6.1.3 . | | NA |
| *parentID* | 1 | RO | See clause 9.6.1.3 . | | NA |
| *labels* | 0..1 (L) | WO | See clause 9.6.1.3 . | | MA |
| *expirationTime* | 1 | WO | See clause 9.6.1.3 . | | NA |
| *creationTime* | 1 | RO | See clause 9.6.1.3 . | | NA |
| *lastModifiedTime* | 1 | RO | See clause 9.6.1.3 . | | NA |
| *stateTag* | 1 | RO | See clause 9.6.1.3 .  The *stateTag* attribute of the parent resource should be incremented first and copied into this *stateTag* attribute when a new instance is added to the parent resource. | | OA |
| *announceTo* | 0..1 (L) | WO | See clause 9.6.1.3 . | | NA |
| *announcedAttribute* | 0..1 (L) | WO | See clause 9.6.1.3 . | | NA |
| *creator* | 0..1 | RO | The AE-ID or CSE-ID of the entity which created the resource. | | NA |
| *contentInfo* | 0..1 | WO | Information on the content that is needed to understand the content. This attribute is a composite attribute. It is composed first of an Internet Media Type (as defined in the IETF RFC 6838) describing the type of the data, and second of an encoding information that specifies how to first decode the received content. Both elements of information are separated by a separator defined in oneM2M TS-0004 [[3](#REF_ONEM2MT2_0004)]. | | OA |
| *contentSize* | 1 | RO | Size in bytes of the *content* attribute. | | OA |
| *contentRef* | 0..1 | RW | This attribute contains a list of name-value pairs. Each entry expresses and associative reference to a <contentInstance> or <flexContainer> resource. The name of the entry indicates the relationship and the value of the entry the reference (URI) to the resource. | OA | |
| *ontologyRef* | 0..1 | WO | A reference (URI) of the ontology used to represent the information that is stored in the *contentInstances* resources of the <*container>* *resource*. If this attribute is not present, the *contentInstance* resource inherits the *ontologyRef* from the parent *<container>* resource if present  NOTE: Access to this URI is out of scope of oneM2M. | | OA |
| *content* | 1 | WO | Actual content of a *contentInstance*. This content may be opaque data for understandable with the help of the *contentInfo*. This may, for example, be an image taken by a security camera, or a temperature measurement taken by a temperature sensor. | | OA |

-------------------------------------end item 1

-------------------------------------------Item 2-----------------------------------------------------------------------------------------

### 9.4.2 Link Relations

The following link relations are defined.

Table 9.4.2-1: Link Relations

|  |  |  |  |
| --- | --- | --- | --- |
| Linked Resource Type (link destination) | Linking Resource Types  (link origin) | Linking Method | Description |
| *accessControPolicy* | Several  (e.g. *node, AE, remoteCSE, container*) | Attribute named *accessControlPolicyIDs* | See clause 9.6.2 |
| *node* | *CSEBase, remoteCSE, AE* | Attribute named *nodeLink* | See clause 9.6.3  See clause 9.6.4  See clause 9.6.5 |
| *CSEBase* or *remoteCSE* | *node* | Attribute named *hostedCSELink* OR parent resource of type *CSEBase* | See clause 9.6.18 |
| a parent resource of any resourceType | a child resource of any resourceType | Attribute named *parentID* | See clause 9.6.1.3 |
| a child resource of any resourceType | a parent resource of any resourceType | Child resource of a specific type | See clause 9.6 |
| *mgmtObj* | *mgmtObj* | Attribute named mgmtLink | See clause 9.6.15 |
| contentInstance | contentInstance | Attribute named contentRef | See clause 9.6.7 and 9.6.35 |