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| CHANGE REQUEST | |
| Meeting ID:\* | SDS 65.3 |
| Source:\* | Anupama, C-DOT, [anupama@cdot.in](mailto:anupama@cdot.in)  Poornima, C-DOT, [poornima@cdot.in](mailto:poornima@cdot.in)  Siddharth, C-DOT, [strikha@cdot.in](mailto:strikha@cdot.in) |
| Date:\* | 2024-07-23 |
| Reason for Change/s:\* | See the Introduction |
| CR against: Release\* | Rel 5 |
| CR against: WI\* | Active <Work Item number>  MNT maintenance / < Work Item number(optional)>  Is this a mirror CR? Yes  No  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, V4.21.0 |
| Clauses \* | 9.6.6 |
| Type of change: \* | Editorial change  Bug Fix or Correction  Change to existing feature or functionality  New feature or functionality  Only ONE of the above shall be ticked |
| Other TS/TR(s) impacted | TS-0004 |
| Post Freeze checking:\* | This CR contains only essential changes and corrections? YES  NO  This CR may break backwards compatibility with the last approved version of the TS? YES  NO |
| Template Version: January 2020 (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.

If this is a correction, and the change applies to previous releases, a separate “mirror CR” should be posted at the same time as 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. Include any changes to references, definitions, and abbreviations in the same deliverable.

Follow the drafting rules.

All pictures must be editable.

Check spelling and grammar.

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 proposed new clause is 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 the 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

The CR is corresponding TS-0001 agreed contribution SDS-2024-0076R01-Container\_newAttribute(R5) which proposed to add a new attribute- maxByteSizePerInstance in <container> resource.

The purpose of this attribute is to ensure that each contentInstance resource that is being created under a <container> resource doesn’t exceed a defined limit.

For more details on this attribute requirement, please refer SDS-2024-0076R01-Container\_newAttribute(R5).

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

### 7.4.6 Resource Type <container>

#### 7.4.6.1 Introduction

This resource represents a container for data instances. It is used to share information among other entities and potentially to track the data. A <container> resource has no associated content, only attributes and child resources.

The detailed description can be found in clause 9.6.6 in oneM2M TS-0001 [6].

Table 7.4.6.1‑1: Data type definition of <container> resource

|  |  |  |
| --- | --- | --- |
| **Data Type ID** | **File Name** | **Note** |
| container | CDT-container.xsd |  |

Table 7.4.6.1‑2: Universal/Common Attributes of <container> resource

|  |  |  |
| --- | --- | --- |
| Attribute Name | Request Optionality | |
| Create | Update |
| *@resourceName* | O | NP |
| *resourceType* | NP | NP |
| *resourceID* | NP | NP |
| *parentID* | NP | NP |
| *creationTime* | NP | NP |
| *lastModifiedTime* | NP | NP |
| *labels* | O | O |
| *accessControlPolicyIDs* | O | O |
| *expirationTime* | O | O |
| *dynamicAuthorizationConsultationIDs* | O | O |
| *custodian* | O | O |
| *announceTo* | O | O |
| *announcedAttribute* | O | O |
| *announceSyncType* | O | O |
| *stateTag* | NP | NP |
| *creator* | O | NP |
| *location* | O | O |

Table 7.4.6.1‑3: Resource Specific Attributes of <container> resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Attribute Name | Request Optionality | | Data Type | Default Value and Constraints |
| Create | Update |
| *maxNrOfInstances* | O | O | xs:nonNegativeInteger | No default |
| *maxByteSize* | O | O | xs:nonNegativeInteger | No default |
| *maxInstanceAge* | O | O | xs:nonNegativeInteger | No default |
| *maxByteSizePerInstance* | O | O | xs:nonNegativeInteger | No default |
| *currentNrOfInstances* | NP | NP | xs:nonNegativeInteger | No default  (This is generated by the Hosting CSE and limited by the maxNrOfInstances) |
| *currentByteSize* | NP | NP | xs:nonNegativeInteger | No default  (This is generated by the Hosting CSE and limited by the maxByteSize) |
| *locationID* | NP | NP | xs:anyURI | No default |
| *ontologyRef* | O | O | xs:anyURI | No default |
| *disableRetrieval* | O | O | xs:boolean | Default value is false, when the parameter is not specified |

**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 | |
| <timeSeries> | | [variable] | | 0..n | | Clause 7.4.38 | |
| <transaction> | | [variable] | | 0..n | | Clause 7.4.61 | |
| <action> | | [variable] | | 0..n | | Clause [7.4.75](#_7.4.75_Resource_Type) | |

#### 7.4.6.2 <container> resource specific procedures for CRUD operations

##### 7.4.6.2.0 Introduction

This clause describes container resource specific behaviour for CRUD operations.

##### 7.4.6.2.1 Create

***Originator:***

No change from the generic procedures in clause 7.2.2.1.

***Receiver:***

The primitive-specific operation Recv-6.4 is performed with following exceptions for optional attributes while executing procedures defined in clause 7.3.3.3.

The Hosting CSE may assign default values based on local policy for optional attributes *maxNrOfInstances*, *maxByteSize* and *maxInstanceAge*.

If the *maxNrOfInstances*, *maxByteSize, maxByteSizePerInstance* or *maxInstanceAge* attributes are present in the resource representation, but their value indicates an invalid value, then the request shall be rejected with a ***Response Status Code*** indicating "BAD\_REQUEST" error.

If *maxByteSizePerInstance* and *maxByteSize* are present in request but *maxByteSizePerInstance* exceeds *maxByteSize*, then the request shall be rejected with a ***Response Status Code*** indicating "BAD\_REQUEST" error.

There are two cases where the Hosting CSE may configure or override a *maxNrOfInstances*, *maxByteSize* or *maxInstanceAge* value specified in the resource representation (if present).

1. If the Originator does not specify a value the Hosting CSE may configure a *maxNrOfInstances*, *maxByteSize, maxByteSizePerInstance* or *maxInstanceAge* into the resource according to local policy. If the Hosting CSE has configured a value it shall return this value back to the originator in the response if the Result Content parameter permits this.
2. If the Hosting CSE determines that the *maxNrOfInstances*, *maxByteSize* or *maxInstanceAge* requested by the Originator does not meet its requirements (e.g. based on a local policy) the Hosting CSE shall configure a *maxNrOfInstances*, *maxByteSize, maxByteSizePerInstance* or *maxInstanceAge* into the resource according to local policy. The Hosting CSE shall return the modified value back to the originator in the response if the Result Content parameter permits this.

No other changes from the generic procedures in clause 7.2.2.2.

##### 7.4.6.2.2 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.

##### 7.4.6.2.3 Update

***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.

If *maxByteSizePerInstance* and *maxByteSize* are present in request but *maxByteSizePerInstance* exceeds *maxByteSize*, then the request shall be rejected with a ***Response Status Code*** indicating "BAD\_REQUEST" error.

If *maxByteSizePerInstance* is present in request but *maxByteSizePerInstance* exceeds *maxByteSize* present in resource representation, then the request shall be rejected with a ***Response Status Code*** indicating "BAD\_REQUEST" error.

If *maxByteSize* is present in request but *maxByteSize* is less than *maxByteSizePerInstance* present in resource representation, then the request shall be rejected with a ***Response Status Code*** indicating "BAD\_REQUEST" error.

##### 7.4.6.2.4 Delete

***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.

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

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

### 7.4.7 Resource Type <contentInstance>

#### 7.4.7.1 Introduction

The <contentInstance> resource represents a data instance in the container.

The detailed description can be found in clause 9.6.7 in oneM2M TS-0001 [6].

Table 7.4.7.1‑1: Data type definition of <contentInstance> resource

|  |  |  |
| --- | --- | --- |
| **Data Type ID** | **File Name** | **Note** |
| contentInstance | CDT-contentInstance.xsd |  |

Table 7.4.7.1‑2: Universal/Common Attributes of <contentInstance> resource

|  |  |  |  |
| --- | --- | --- | --- |
| Attribute Name | | Request Optionality | |
| Create | |
| *@resourceName* | | O | |
| *resourceType* | | NP | |
| *resourceID* | | NP | |
| *parentID* | | NP | |
| *creationTime* | | NP | |
| *lastModifiedTime* | | NP | |
| *labels* | | O | |
| *expirationTime* | | O | |
| *announceTo* | | O | |
| *announcedAttribute* | | O | |
| *stateTag* | | NP | |
| *creator* | | O | |
| *location* | | O | |

Table 7.4.7.1‑3: Resource Specific Attributes of <contentInstance> resource

|  |  |  |  |
| --- | --- | --- | --- |
| Attribute Name | Request Optionality | Data Type | Default Value and Constraints |
| Create |
| *contentInfo* | O | m2m:contentInfo | No default |
| *contentSize* | NP | xs:nonNegativeInteger | No default |
| *contentRef* | O | m2m:contentRef | No default |
| *ontologyRef* | O | xs:anyURI | No default |
| *content* | M | xs:anyType | No default (Transfer encoding may be applied, and indicated applied encoding as part of the *contentInfo* attribute) |
| *deletionCnt* | O | xs:positiveInteger | No default |

Table 7.4.7.1‑4: Child resources of <contentInstance> resource

|  |  |  |  |
| --- | --- | --- | --- |
| **Child Resource Type** | **Child Resource Name** | **Multiplicity** | **Ref. to in Resource Type Definition** |
| <semanticDescriptor> | [variable] | 0..n | Clause 7.4.34 |
| <transaction> | [variable] | 0..n | Clause 7.4.61 |

The *contentInfo* attribute shall provide meta information about the stored data in *content* and is optional. See the definition of m2m:contentInfo in Table 6.3.3‑1: oneM2M Simple Data Types for details

#### 7.4.7.2 <contentInstance> resource specific procedures for CRUD operations

##### 7.4.7.2.1 Create

***Originator:***

No change from the generic procedures in clause 7.2.2.1.

***Receiver:***

Primitive specific operation on Recv-6.5 "Create/Update/Retrieve/Delete/Notify operation is performed" with the following additional operations.

1. The Hosting CSE shall check whether the size in bytes of the *content* attribute of the <contentInstance> resource is greater than *maxByteSizePerInstance* of the targeted parent <container> resource.

a) If true, the Hosting CSE shall return the response primitive with a ***Response Status Code*** indicating "NOT\_ACCEPTABLE" error.

1. The Hosting CSE shall check whether the size in bytes of the *content* attribute of the <contentInstance> resource is greater than *maxByteSize* of the targeted parent <container> resource.

a) If true, the Hosting CSE shall return the response primitive with a ***Response Status Code*** indicating "NOT\_ACCEPTABLE" error. Skip steps 2 and 3 below.

b) If false, the Hosting CSE shall set the *contentSize* attribute of the <contentInstance> resource to the size in bytes of the *content* attribute.

1. The Hosting CSE shall check the *currentNrOfInstances* and *currentByteSize* of the targeted parent <container> resource.

a) If *maxNrOfInstances* of the targeted parent <container> resource is specified then if the *currentNrOfInstances* when modified to reflect the addition of the new *<*contentInstance*>* exceeds *maxNrOfInstances*, the Hosting CSE shall remove the oldest *<*contentInstance*>* resource from the targeted <container*>* resource.

b) If *maxByteSize* of the targeted parent <container> resource is specified then if the *currentByteSize* when modified to reflect the addition of the new *<*contentInstance*>* exceeds *maxByteSize* the Hosting CSE shall remove the oldest *<*contentInstance*>* resources from the targeted *<*container*>* resource until *maxByteSize* conditions are met.

c) The Hosting CSE shall update the *currentNrOfInstances* of the targeted parent <container> resource with the count of <contentInstance> resources in the targeted parent <container> resource. The Hosting CSE shall update the *currentByteSize* of the targeted parent <container> resource with the sum of the *contentSize* attributes of the <contentInstance> resources in the targeted parent <container> resource.

d) When removing the oldest *<*contentInstance*>* resources, the Hosting CSE shall not generate notifications even if there exists a <subscription> to the targeted <container> resource and this <subscription> is configured to generate a notification on "Delete\_of\_Direct\_Child\_Resource".

e) If the *maxInstanceAge* attribute is present in the targeted parent <container> resource, then the Hosting CSE shall set the *expirationTime* attribute in <contentInstance> resource such that the time difference between *expirationTime* and the *creationTime* of the <contentInstance> resource shall not exceed the *maxInstanceAge* of the targeted parent <container> resource.

1. The Hosting CSE shall increment the *stateTag* attribute of the targeted parent <container> resource and copy the value into the *stateTag* attribute of the <contentInstance> resource.
2. If the hosting CSE has the capability to duplicate the actual data in semantic triples, it may decide whether to represent the *content* as semantic triples, depending on local policies/configurations. If the hosting CSE decides to do so, it shall execute the following actions: a) represent the actual data contained in the *content* attribute to semantic triples (e.g. RDF triples); b) create a <semanticDescriptor> child resource for the <contentInstance> resource with its descriptor attribute set to these semantic triples generated in a).
3. If the hosting CSE does not have the capability to duplicate the actual data in semantic triples complying with an ontology that it supports, this step will be skipped.

No other changes from the generic procedures in clause 7.2.2.2.

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

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.?