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| CHANGE REQUEST |
| Meeting ID:\* |  SDS #51 |
| Source:\* | Bob Flynn, Exacta GSS, bob.flynn@exacctagss.com Andreas Kraft, DT, A.Kraft@telekom.de Miguel Angel Reina Ortega, ETSI, MiguelAngel.ReinaOrtega@etsi.org  |
|  | 29 August 2021 |
| Reason for Change/s:\* | Clarification for <timeSeries> CREATE procedure |
| CR against: Release\* | Release 4 |
| CR against: WI\* | [ ]  Active WI-xxxx[x]  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, 4.6.0 |
| Clauses \* | 7.4.38 |
| Type of change: \* | [ ]  Editorial change[x]  Bug Fix or Correction[ ]  Change to existing feature or functionality[ ]  New feature or functionalityOnly ONE of the above shall be ticked |
| Impacted other TS/TR(s) |  |
| 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

This is a companion to SDS-2021-xxx-TS0001\_timestamp\_operations

During review of timeSeries functionality the following issues have been identified

There is no definition of a missing data point. **Provided below**.

What should happen if missing data detect time = 0. **This is a bad request based on definitions, specifically this value must be greater than *periodicIntervalDelta.***

Stop / restart timer process. **Previously, for simplicity, this was not possible, the <timeSeries> resource had to be deleted. We think this is too restrictive for reasonable use of the <timeSeries> resource and propose procedures below.**

### \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Start of Change 1 \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

### 7.4.38 Resource Type <timeSeries>

#### 7.4.38.1 Introduction

The resource represents a container for Time Series Data instances. It is used to share information with other entities and potentially to track, detect and report the missing data in Time Series. A *<timeSeries>* resource has no associated content, only attributes and child resources.

The detailed description can be found in clause 9.6.36 in oneM2M TS-0001 [6].

Table 7.4.38.1‑1: Data type definition of <timeSeries> resource

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

Table 7.4.38.1‑2: Universal/Common Attributes of <timeSeries> 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 |
| *holder* | O | O |
| *announceTo* | O | O |
| *announcedAttribute* | O | O |
| *announceSyncType* | O | O |
| *creator* | O | NP |
| *location* | O | O |

Table 7.4.38.1‑3: Resource Specific Attributes of <timeSeries> 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 |
| *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*) |
| *periodicInterval* | O | O | xs:positiveInteger  | No default (This is in units of milliseconds) |
| *periodicIntervalDelta* | O | O | xs:nonNegativeInteger | If not specified the default is determined by the Hosting CSE.(This is in units of milliseconds) |
| *missingDataDetect* | O | O | xs:boolean | If not set then this is treated as false |
| *missingDataMaxNr* | O | O | xs:positiveInteger | No default |
| *missingDataList* | NP | NP | m2m:missingDataList | No default |
| *missingDataCurrentNr* | NP | NP | xs:nonNegativeInteger | No default(This is generated by the Hosting CSE and limited by the *missingDataMaxNr*) |
| *missingDataDetectTimer* | O | O | xs:positiveInteger  | No default(This is in units of milliseconds) |
| *ontologyRef* | O | O | xs:anyURI | No default |
| *contentInfo* | O | NP | m2m:contentInfo | No default |

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 |
| <latest> | la | 1 | Clause 7.4.27 |
| <oldest> | ol | 1 | Clause 7.4.28 |
| <transaction> | [variable] | 0..n | Clause 7.4.61 |
| NOTE: <latest> and <oldest> are only present if there is a <timeSeriesInstance>. |

#### 7.4.38.2 <timeSeries> resource specific procedures for CRUD operations

##### 7.4.38.2.0 Introduction

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

##### 7.4.38.2.1 Create

***Originator:***

No change from the generic procedures in clause 7.2.2.1.

***Receiver:***

Primitive specific operation after Recv-6.5 "Create/Update/Retrieve/Delete/Notify operation is performed ". See clause 7.2.2.2.

If the Originator provides a value for *periodicInterval* the Hosting CSE shall check that the *periodicIntervalDelta* has a value less than or equal to (*periodicInterval*/2), if not the Hosting CSE shall return the response primitive with a ***Response Status Code*** indicating “BAD\_REQUEST”. If the Originator provides a value for *periodicInterval* and does not set the *periodicIntervalDelta*, the Hosting CSE shall set the *periodicIntervalDelta* according to local policy.

In the case that the *periodicInterval* attribute is set and *missingDataDetect* is true, the Hosting CSE shall monitor the Time Series Data based on its *periodicInterval*. The monitoring shall start upon creation of the first *<timeSeriesInstance>*. The Hosting CSE shall consider an expected *<timeSeriesInstance>* to be missing when the amount of time equal to *missingDataDetectTimer* has passed after its **expected dataGenerationTime** as defined in TS-0001 [6] clause 10.2.4.29.

When the Hosting CSE detects a missing data point, the *dataGenerationTime* of the missing data point is inserted into the *missingDataList* attribute and the *missingDataCurrentNr* shall be increased by one. When the *missingDataCurrentNr* exceeds the *missingDataMaxNr,* the oldest *dataGenerationTime* shall be removed from *missingDataList* to enable the insertion of the new missing data point information and *missingDataCurrentNr* shall be set to the value of *missingDataMaxNr*.

##### 7.4.38.2.2 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.

##### 7.4.38.2.3 Update

***Originator:***

No change from the generic procedures in clause 7.2.2.1.

***Receiver:***

The following are additional Hosting CSE procedures to the generic resource handling procedures in clause 7.2.2.2.

Recv-6.4: The following steps are in addition to the procedures defined in clause 7.3.3.4:

Check if *missingDataDetect* is present in the received request. In the case that *missingDataDetect* is present:

If *missingDataDetect* is **true** the Hosting CSE shall clear the values in *missingDataList* and *missingDataCurrentNr* and begin or restart the time series data monitoring process.

If *missingDataDetect* is **false** the Hosting CSE will stop the time series data monitoring process and retain the current state of *missingDataList* and *missingDataCurrentNr*.

In the case that *missingDataDetect* is not present:

If the current value of *missingDataDetect* is **true** the Hosting CSE shall return the response primitive with a ***Response Status Code*** indicating “BAD\_REQUEST” if any of the following attributes are present in the UPDATE request: *missingDataDetectTimer, missingDataMaxNr, periodicIntervalDelta, periodicInterval.*

##### 7.4.38.2.4 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 \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*