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| **oneM2M**  **Technical Report** | |
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| Document Name: | oneM2M API guide |
| Date: | 2020-11-24 |
| Abstract: | Provides a collection of oneM2M API for guiding developers to develop applications using functionalities provided by a oneM2M service platform |
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About oneM2M

The purpose and goal of oneM2M is to develop technical specifications which address the need for a common M2M Service Layer that can be readily embedded within various hardware and software, and relied upon to connect the myriad of devices in the field with M2M application servers worldwide.

More information about oneM2M may be found at: http//www.oneM2M.org

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# 1 Scope

The present document is a collection of the CRUDN messages used for managing some of the main resources defined in oneM2M TS-0001 [i.2]. It also provides the description and associated flow in basic examples. It aims to use this list as a common sets of APIs to help developers to write applications that can run across different platforms and specific implementations.

When an application developer would need to build software code for managing a specific resource, he could have an immediate access to the list of CRUDN message with description and its associated examples of requests to send and its expected responses. The REST API examples are sorted by resource type and CRUDN operations, which allows a quick and easy access to the information.

# 2 References

## 2.1 Normative references

Normative references are not applicable in the present document.

## 2.2 Informative references

References are either specific (identified by date of publication and/or edition number or version number) or non‑specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

The following referenced documents are not necessary for the application of the present document but they assist the user with regard to a particular subject area.

[i.1] oneM2M Drafting Rules.

NOTE: Available at <http://www.onem2m.org/images/files/oneM2M-Drafting-Rules.pdf>.

[i.2] oneM2M TS-0001: "Functional Architecture".

[i.3] oneM2M TS-0004: "Service Layer Core protocol Specification".

# 3 Definition of terms, symbols and abbreviations

## 3.1 Terms

Void.

## 3.2 Symbols

Void.

## 3.3 Abbreviations

For the purposes of the present document, the following abbreviations apply:

ACP Access Control Policy

AE Application Entity

AE-ID Application Entity Identifier

API Application Programming Interface

CBOR Concise Binary Object Representation

CRUDN Create, Retrieve, Update, Delete and Notify operations for REST API

CSE Common Services Entity

HAIM Home Appliances Information Model

HTTP HyperText Transfer Protocol

JSON JavaScript Object Notation

RCN Result Content

REST Representational State Transfer

XML eXtensible Markup Language

# 4 Conventions

The key words "Shall", "Shall not", "May", "Need not", "Should", "Should not" in the present document are to be interpreted as described in the oneM2M Drafting Rules [i.1].

# 5 oneM2M REST APIs

## 5.1 Introduction

The major objective of the present document is providing example sets of request and response. The REST APIs that are defined in the present document cover for resources Create, Retrieve, Update and Delete management, subscription/notification, data discovery, etc. Sending the CRUD request to the CSE and getting the response may help user to learn oneM2M specification.

In the current guide, examples of API are written based on HTTP protocol binding and JSON format. The APIs are written based on release 2a version.

For more references, please refer to clause 2.2.

## 5.2 Short name representation

### 5.2.1 Introduction

oneM2M defines short names for resources and attributes. To encode the message using XML, JSON and CBOR, short names are used. Request or response body which have been formed in short names can reduce the size of the message.

### 5.2.2 Resource type short names

Table 5.2.2-1 shows shot names for the resource type. It includes resource types which are used in the present document. For more information please refer to oneM2M TS-0004 [i.2].

Table 5.2.2-1: Resource type short names

| Resource Type Name | Short Name |
| --- | --- |
| accessControlPolicy | ***acp*** |
| AE | ***ae*** |
| container | ***cnt*** |
| contentInstance | ***cin*** |
| CSEBase | ***cb*** |
| group | ***grp*** |
| remoteCSE | ***csr*** |
| subscription | ***sub*** |
| semanticDescriptor | ***smd*** |
| timeSeries | ***ts*** |
| timeSeriesInstance | ***tsi*** |

### 5.2.3 Resource attribute short names

Table 5.2.3-1 shows shot names for the resource attribute. It includes attributes which are used in the present document. For more information please refer to oneM2M TS-0004 [i.2].

Table 5.2.3-1: Resource attribute short names

| Attribute Name | Occurs in | Short Name |
| --- | --- | --- |
| *accessControlPolicyIDs* | All except accessControlPolicy, contentInstance | ***acpi*** |
| *announcedAttribute* | accessControlPolicy, AE, container, contentInstance, group, locationPolicy, mgmtObj, node, remoteCSE, schedule, semanticDescriptor, trafficPattern | ***aa*** |
| *announceTo* | accessControlPolicy, AE, container, contentInstance, group, locationPolicy, mgmtObj, node, remoteCSE, schedule, semanticDescriptor, trafficPattern | ***at*** |
| *creationTime* | All | ***ct*** |
| *expirationTime* | All except contentInstance, CSEBase | ***et*** |
| labels | All (optional) | ***lbl*** |
| *lastModifiedTime* | All | ***lt*** |
| *Link* | All | ***lnk*** |
| *parentID* | All | ***pi*** |
| *resourceID* | All | ***ri*** |
| resourceType | All | ***ty*** |
| *stateTag* | container, contentInstance, delivery, request | ***st*** |
| *resourceName* | All | ***rn*** |
| *privileges* | accessControlPolicy | ***pv*** |
| *selfPrivileges* | accessControlPolicy | ***pvs*** |
| *App-ID* | AE | ***api*** |
| *AE-ID* | AE | ***aei*** |
| *appName* | AE | ***apn*** |
| *pointOfAccess* | AE, CSEBase, remoteCSE | ***poa*** |
| *ontologyRef* | AE, container, contentInstance, semanticDescriptor. flexContainer, timeSeries | ***or*** |
| *nodeLink* | AE, CSEBase, remoteCSE | ***nl*** |
| contentSerialization | AE | ***csz*** |
| *creator* | container, contentInstance, eventConfig, group, pollingChannel, statsCollect, statsConfig, subscription, semanticDescriptor, notificationTargetPolicy, flexContainer, timeSeries | ***cr*** |
| *maxNrOfInstances* | container, timeSeries | ***mni*** |
| *maxByteSize* | container, timeSeries | ***mbs*** |
| *maxInstanceAge* | container, timeSeries | ***mia*** |
| *currentNrOfInstances* | container, timeSeries | ***cni*** |
| *currentByteSize* | container | ***cbs*** |
| *locationID* | container | ***li*** |
| *disableRetrieval* | container | ***disr*** |
| *contentInfo* | contentInstance | ***cnf*** |
| *contentSize* | contentInstance, timeSeriesInstance | ***cs*** |
| *contentRef* | contentInstance | ***conr*** |
| *containerDefinition* | flexContainer | ***cnd*** |
| primitiveContent | request | ***pc*** |
| *content* | contentInstance, timeSeriesInstance | ***con*** |
| *cseType* | CSEBase, remoteCSE | ***cst*** |
| *CSE-ID* | CSEBase, remoteCSE, serviceSubscribedNode | ***csi*** |
| *supportedResourceType* | CSEBase | ***srt*** |
| *notificationCongestionPolicy* | CSEBase | ***ncp*** |
| *memberType* | group | ***mt*** |
| *currentNrOfMembers* | group | ***cnm*** |
| *maxNrOfMembers* | group | ***mnm*** |
| *memberIDs* | group | ***mid*** |
| *membersAccessControlPolicyIDs* | group | ***macp*** |
| *memberTypeValidated* | group | ***mtv*** |
| *consistencyStrategy* | group | ***csy*** |
| *semanticSupportIndicator* | group | ***ssi*** |
| *notifyAggregation* | group | ***nar*** |
| *groupName* | group, subscription | ***gn*** |
| *CSEBase* | remoteCSE | ***cb*** |
| *M2M-Ext-ID* | remoteCSE | ***mei*** |
| *Trigger-Recipient-ID* | remoteCSE | ***tri*** |
| *requestReachability* | remoteCSE | ***rr*** |
| *triggerReferenceNumber* | remoteCSE | ***trn*** |
| *eventNotificationCriteria* | subscription | ***enc*** |
| *expirationCounter* | subscription | ***exc*** |
| *notificationURI* | subscription | ***nu*** |
| groupID | subscription | ***gpi*** |
| *notificationForwardingURI* | subscription | ***nfu*** |
| *batchNotify* | subscription | ***bn*** |
| *rateLimit* | subscription | ***rl*** |
| *preSubscriptionNotify* | subscription | ***psn*** |
| *pendingNotification* | subscription | ***pn*** |
| *notificationStoragePriority* | subscription | ***nsp*** |
| *latestNotify* | subscription | ***ln*** |
| *notificationContentType* | subscription | ***nct*** |
| *notificationEventCat* | subscription | ***nec*** |
| *subscriberURI* | subscription | ***su*** |
| *descriptorRepresentation* | semanticDescriptor | ***dcrp*** |
| *semanticOpExec* | semanticDescriptor | ***soe*** |
| *descriptor* | semanticDescriptor | ***dsp*** |
| *relatedSemantics* | semanticDescriptor | ***rels*** |
| *periodicInterval* | timeSeries | ***pei*** |
| *missingDataDetect* | timeSeries | ***mdd*** |
| *missingDataMaxNr* | timeSeries | ***mdn*** |
| *missingDataList* | timeSeries | ***mdlt*** |
| *missingDataCurrentNr* | timeSeries | ***mdc*** |
| *missingDataDetectTimer* | timeSeries | ***mdt*** |
| *dataGenerationTime* | timeSeriesInstance | ***dgt*** |
| *sequenceNr* | timeSeriesInstance | ***snr*** |
| *e2eSecInfo* | CSEBase, remoteCSE, AE | ***esi*** |
| *supportedReleaseVersions* | CSEBase, remoteCSE, AE | ***srv*** |
| *descriptorRepresentation* | semanticDescriptor | ***dcrp*** |
| *semanticOpExec* | semanticDescriptor | ***soe*** |
| *descriptor* | semanticDescriptor | ***dsp*** |
| *relatedSemantics* | semanticDescriptor | ***rels*** |
| *periodicInterval* | timeSeries | ***pei*** |
| *missingDataDetect* | timeSeries | ***mdd*** |
| *missingDataMaxNr* | timeSeries | ***mdn*** |
| *missingDataList* | timeSeries | ***mdlt*** |
| *missingDataCurrentNr* | timeSeries | ***mdc*** |
| *missingDataDetectTimer* | timeSeries | ***mdt*** |
| *dataGenerationTime* | timeSeriesInstance | ***dgt*** |
| *sequenceNr* | timeSeriesInstance | ***snr*** |
| *e2eSecInfo* | CSEBase, remoteCSE, AE | ***esi*** |
| *supportedReleaseVersions* | CSEBase, remoteCSE, AE | ***srv*** |

## 5.3 Enumeration data types

### 5.3.0 Introduction

The oneM2M Enumeration Types are based on xs:integer, and the numeric values are interpreted as specified in table 5.3.1-1.

### 5.3.1 m2m:resource Type

The enumeration type of resource Type is used in the Content-Type in the HTTP header of request. Table 5.3.1-1 only has enumeration type for resource Type which are used in the present document. More information can be found in oneM2M TS-0004 [i.2].

Table 5.3.1-: Interpretation of resourceType

|  |  |  |
| --- | --- | --- |
| **Value** | **Interpretation** | **Note** |
| 1 | accessControlPolicy |  |
| 2 | AE |  |
| 3 | container |  |
| 4 | contentInstance |  |
| 5 | CSEBase |  |
| 9 | group |  |
| 15 | pollingChannel |  |
| 16 | remoteCSE |  |
| 23 | subscription |  |
| 24 | semanticDescriptor |  |
| 28 | flexContainer |  |
| 29 | timeSeries |  |
| 30 | timeSeriesInstance |  |

### 5.3.2 m2m:result content

The response format can be changed using resultContent (RCN) parameter. The oneM2M standard defines 8 different result content, but this API guide only deals with result content 0 to 3. Table 5.3.2-1 shows resultContent value and response format matches.

Table 5.3.2-: Interpretation of resultContent

|  |  |  |
| --- | --- | --- |
| **Value** | **Interpretation** | **Note** |
| 0 | nothing |  |
| 1 | attributes |  |
| 2 | hierarchical address |  |
| 3 | hierarchical address and attributes |  |

# 6 Open API collection

## 6.1 APIs list

### 6.1.1 Introduction

The identifier of the API is constructed with the following format:

API/<RESOURCE\_TYPE>/<OPERATION\_TYPE>/<NUMBER>\_<PERMUTATION>

Specific values are used in the format defined in table 6.1.1-1.

Table 6.1.1-1: API Id Notation

| Name | Value | interpretation |
| --- | --- | --- |
| <RESOURCE\_TYPE> | CB | CSEBase |
| CSR | remoteCSE |
| AE | AE |
| CONT | container |
| CI | contentInstance |
| SMD | semanticDescriptor |
| DIS | discovery |
| SUB | subscription |
| GRP | group |
| TS | timeSeries |
| TSI | timeSeriesInstance |
| ACP | accessControlPolicy |
| FLX | flexContainer |
| <OPERATION\_TYPE> | CRE | CREATE |
| RET | RETRIEVE |
| UPD | UPDATE |
| DEL | DELETE |
| DIS | DISCOVERY |
| <NUMBER> | 001 - 999 | - |
| <PERMUTATION> | short name of attribute or resource type that is used in a request primitive. | A resultContent with its value is presented as a <PERMUTATION>   * RCN1, RCN2, RCN3, RCN4   Filter Criteria parameter used in discovery clause is presented as a <PERMUTATION>   * TY, LBL, LVL, CRB, etc. |

### 6.1.2 APIs list

Table 6.1.2-1: list of the APIs

| Interface ID | Interface Category | Interface Description |
| --- | --- | --- |
| API/CB/RET/001  API/CB/RET/001\_RCN1 | <CSEBase> RETRIEVE | Retrieve CSEBase with resultContent set to 1 or no RCN |
| API/CB/RET/001\_RCN4 | <CSEBase> RETRIEVE | Retrieve CSEBase with ResultContent set to 4 |
| API/CSR/CRE/001\_RCN0 | <remoteCSE> CREATE | Create remoteCSE with resultContent set to 0 |
| API/CSR/CRE/001  API/CSR/CRE/001\_RCN1 | <remoteCSE> CREATE | Create remoteCSE with resultContent set to 1 or no RCN |
| API/CSR/CRE/001\_RCN2 | <remoteCSE> CREATE | Create remoteCSE with resultContent set to 2 |
| API/CSR/CRE/001\_RCN3 | <remoteCSE> CREATE | Create remoteCSE with resultContent set to 3 |
| API/CSR/RET/001  API/CSR/RET/001\_RCN1 | <remdoteCSE> RETRIEVE | Retrieve remoteCSE with resultContent set to 1 or no RCN |
| API/CSR/UPD/001  API/CSR/UPD/001\_RCN1 | <remoteCSE> UPDATE | Update remoteCSE with resultContent set to 1 or no RCN |
| API/CSR/UPD/001\_RCN0 | <remoteCSE> UPDATE | Update remoteCSE with resultContent set to 0 |
| API/CSR/DEL/001\_RCN0 | <remoteCSE> DELETE | Delete remoteCSE with resultContent set to 0 |
| API/CSR/DEL/001  API/CSR/DEL/001\_RCN1 | <remoteCSE> DELETE | Delete remoteCSE with resultContent set to 1 or no RCN |
| API/AE/CRE/001\_RCN0 | <AE> CREATE | Create AE with resultContent set to 0 |
| API/AE/CRE/001  API/AE/CRE/001\_RCN1 | <AE> CREATE | Create AE with resultContent set to 1 or no RCN |
| API/AE/CRE/001\_RCN2 | <AE> CREATE | Create AE with resultContent set to 2 |
| API/AE/CRE/001\_RCN3 | <AE> CREATE | Create AE with resultContent set to 3 |
| API/AE/RET/001  API/AE/RET/001\_RCN1 | <AE> RETRIEVE | Retrieve AE with resultContent set to 1 or no RCN |
| API/AE/RET/001\_RCN4 | <AE> RETRIEVE | Retrieve AE with resultContent set to 4 |
| API/AE/UPD/001\_RCN0 | <AE> UPDATE | Update AE with resultContent set to 0 |
| API/AE/UPD/001  API/AE/UPD/001\_RCN1 | <AE> UPDATE | Update AE with resultContent set to 1 or no RCN |
| API/AE/DEL/001\_RCN0 | <AE> DELETE | Delete AE with ResultContent set to 0 |
| API/AE/DEL/001  API/AE/DEL/001\_RCN1 | <AE> DELETE | Delete AE with ResultContent set to 1 or no RCN |
| API/CONT/CRE/001\_RCN0 | <container> CREATE | Create container with resultContent set to 0 |
| API/CONT/CRE/001  API/CONT/CRE/001\_RCN1 | <container> CREATE | Create container with resultContent set to 1 or no RCN |
| API/CONT/CRE/001\_RCN2 | <container> CREATE | Create container with resultContent set to 2 |
| API/CONT/CRE/001\_RCN3 | <container> CREATE | Create container with resultContent set to 3 |
| API/CONT/RET/001  API/CONT/RET/001\_RCN1 | <container> RETRIEVE | Retrieve container with resultContent set to 1 or no RCN |
| API/CONT/RET/002\_RCN4 | <container> RETRIEVE | Retrieve container with resultContent set to 4 |
| API/CONT/UPD/001\_RCN0 | <container> UPDATE | Update container with resultContent set to 0 |
| API/CONT/UPD/001  API/CONT/UPD/001\_RCN1 | <container> UPDATE | Update container with resultContent set to 1 or no RCN |
| API/CONT/DEL/001\_RCN0 | <container> DELETE | Delete container with resultContent set to 0 |
| API/CONT/DEL/001  API/CONT/DEL/001\_RCN1 | <container> DELETE | Delete container with resultContent set to 1 or no RCN |
| API/CI/CRE/001\_RCN0 | <contentInstance> CREATE | Create contentInstance with resultContent set to 0 |
| API/CI/CRE/001  API/CI/CRE/001\_RCN1 | <contentInstance> CREATE | Create contentInstance with resultContent set to 1 or no RCN |
| API/CI/CRE/001\_RCN2 | <contentInstance> CREATE | Create contentInstance with resultContent set to 2 |
| API/CI/CRE/001\_RCN3 | <contentInstance> CREATE | Create contentInstance with resultContent set to 3 |
| API/CI/RET/001\_LA | <contentInstance> RETRIEVE | Retrieve a latest contentInstance resource |
| API/CI/RET/001\_OL | <contentInstance> RETRIEVE | Retrieve an oldest contentInstance resource |
| API/CI/RET/001\_CI | <contentInstance> RETRIEVE | Retrieve a specific contentInstance resource |
| API/CI/DEL/001\_LA | <contentInstance> DELETE | Delete a latest contentInstance resource without setting resultContent |
| API/CI/DEL/001\_LA\_RCN0 | <contentInstance> DELETE | Delete a latest contentInstance resource with resultContent set to 0 |
| API/CI/DEL/001\_OL | <contentInstance> DELETE | Delete an oldest contentInstance resource without setting resultContent |
| API/CI/DEL/001\_OL\_RCN0 | <contentInstance> DELETE | Delete an oldest contentInstance resource with resultContent set to 0 |
| API/CI/DEL/001\_CI | <contentInstance> DELETE | Delete a specific contentInstance resource without setting resultContent |
| API/CI/DEL/001\_CI\_RCN0 | <contentInstance> DELETE | Delete a specific contentInstance resource with resultContent set to 0 |
| API/SMD/CRE/001\_RCN0 | <semanticDescriptor> CREATE | Create semanticDescriptor with resultContent set to 0 |
| API/SMD/CRE/001  API/SMD/CRE/001\_RCN1 | <semanticDescriptor> CREATE | Create semanticDescriptor with resultContent set to 1 or no RCN |
| API/SMD/CRE/001\_RCN3 | <semanticDescriptor> CREATE | Create semanticDescriptor with resultContent set to 3 |
| API/SMD/RET/001  API/SMD/RET/001\_RCN1 | <semanticDescriptor> RETRIEVE | Retrieve semanticDescriptor with resultContent set to 1 or no RCN |
| API/SMD/UPD/001\_RCN0 | <semanticDescriptor> UPDATE | Update semanticDescriptor with resultContent set to 0 |
| API/SMD/UPD/001  API/SMD/UPD/001\_RCN1 | <semanticDescriptor> UPDATE | Update semanticDescriptor with resultContent set to 1 or no RCN |
| API/SMD/DEL/001\_RCN0 | <semanticDescriptor> DELETE | Delete semanticDescriptor with resultContent set to 0 |
| API/SMD/DEL/001  API/SMD/DEL/001\_RCN1 | <semanticDescriptor> DELETE | Delete semanticDescriptor with resultContent set to 1 or no RCN |
| API/DIS\_TY2 | Discovery | Discovery with resourceType filter criteria set to 2 |
| API/DIS\_TY3 | Discovery | Discovery with resourceType filter criteria set to 3 |
| API/DIS\_LBL\_ACTUATOR | Discovery | Discovery with labels filter criteria set to actuator |
| API/DIS\_LBL\_SENSOR | Discovery | Discovery with labels filter criteria set to sensor |
| API/DIS\_LVL1 | Discovery | Discovery with level filter criteria set to 1 |
| API/DIS\_LVL2 | Discovery | Discovery with level filter criteria set to 2 |
| API/DIS\_CRB | Discovery | Discovery with createdBefore filter criteria |
| API/DIS\_CRA | Discovery | Discovery with createdAfter filter criteria |
| API/DIS\_STB | Discovery | Discovery with stateTagBigger filter criteria |
| API/DIS\_STS | Discovery | Discovery with stateTagSmaller filter criteria |
| API/DIS\_SZB | Discovery | Discovery with sizeBelow filter criteria |
| API/DIS\_SZA | Discovery | Discovery with sizeAbove filter criteria |
| API/DIS\_CRB | Discovery | Discovery with unmodifiedSince filter criteria |
| API/DIS\_CRA | Discovery | Discovery with modifiedSince filter criteria |
| API/DIS\_EXB | Discovery | Discovery with expiredBefore filter criteria |
| API/DIS\_EXA | Discovery | Discovery with expiredAfter filter criteria |
| API/SUB/CRE/001\_RCN0 | <subscription> CREATE | Create subscription with resultContent set to 0 |
| API/SUB/CRE/001  API/SUB/CRE/001\_RCN1 | <subscription> CREATE | Create subscription with resultContent set to 1 or no RCN |
| API/SUB/CRE/001\_RCN2 | <subscription> CREATE | Create subscription with resultContent set to 2 |
| API/SUB/CRE/001\_RCN3 | <subscription> CREATE | Create subscription with resultContent set to 3 |
| API/SUB/RET/001  API/SUB/RET/001\_RCN1 | <subscription> RETRIEVE | Retrieve subscription with resultContent set to 1 or no RCN |
| API/SUB/UPD/001\_RCN0 | <subscription> UPDATE | Update subscription with resultContent set to 0 |
| API/SUB/UPD/001  API/SUB/UPD/001\_RCN1 | <subscription> UPDATE | Update subscription with resultContent set to 1 or no RCN |
| API/SUB/DEL/001\_RCN0 | <subscription> DELETE | Delete subscription with resultContent set to 0 |
| API/SUB/DEL/001  API/SUB/DEL/001\_RCN1 | <subscription> DELETE | Delete subscription with resultContent set to 1 or no RCN |
| API/GRP/CRE/001\_RCN0 | <group> CREATE | Create group with resultContent set to 0 |
| API/GRP/CRE/001  API/GRP/CRE/001\_RCN1 | <group> CREATE | Create group with resultContent set to 1 or no RCN |
| API/GRP/CRE/001\_RCN2 | <group> CREATE | Create group with resultContent set to 2 |
| API/GRP/CRE/001\_RCN3 | <group> CREATE | Create group with resultContent set to 3 |
| API/GRP/RET/001  API/GRP/RET/001\_RCN1 | <group> RETRIEVE | Retrieve group with resultContent set to 1 or no RCN |
| API/GRP/UPD/001\_RCN0 | <group> UPDATE | Update group with resultContent set to 0 |
| API/GRP/UPD/001  API/GRP/UPD/001\_RCN1 | <group> UPDATE | Update group with resultContent set to 1 or no RCN |
| API/GRP/DEL/001\_RCN0 | <group> DELETE | Delete group with resultContent set to 0 |
| API/GRP/DEL/001  API/GRP/DEL/001\_RCN1 | <group> DELETE | Delete group with resultContent set to 1 or no RCN |
| API/TS/CRE/001\_RCN0 | <timeSeries> CREATE | Create timeSeries with resultContent set to 0 |
| API/TS/CRE/001  API/TS/CRE/001\_RCN1 | <timeSeries> CREATE | Create timeSeries with resultContent set to 1 or no RCN |
| API/TS/CRE/001\_RCN2 | <timeSeries> CREATE | Create timeSeries with resultContent set to 2 |
| API/TS/CRE/001\_RCN3 | <timeSeries> CREATE | Create timeSeries with resultContent set to 3 |
| API/TS/RET/001  API/TS/RET/001\_RCN1 | <timeSeries> RETRIEVE | Retrieve timeSeries with resultContent set to 1 or no RCN |
| API/TS/UPD/001\_RCN0 | <timeSeries> UPDATE | Update timeSeries with resultContent set to 0 |
| API/TS/UPD/001\_RCN1 | <timeSeries> UPDATE | Update timeSeries with resultContent set to 1 or no RCN |
| API/TS/DEL/001\_RCN0 | <timeSeries> DELETE | Delete timeSeries with resultContent set to 0 |
| API/TS/DEL/001  API/TS/DEL/001\_RCN1 | <timeSeries> DELETE | Delete timeSeries with resultContent set to 1 or no RCN |
| API/TSI/CRE/001\_RCN0 | <timeSeriesInstance> CREATE | Create timeSeriesInstance with resultContent set to 0 |
| API/TSI/CRE/001  API/TSI/CRE/001\_RCN1 | <timeSeriesInstance> CREATE | Create timeSeriesInstance with resultContent set to 1 or no RCN |
| API/TSI/CRE/001\_RCN2 | <timeSeriesInstance> CREATE | Create timeSeriesInstance with resultContent set to 2 |
| API/TSI/CRE/001\_RCN3 | <timeSeriesInstance> CREATE | Create timeSeriesInstance with resultContent set to 3 |
| API/TSI/RET/001  API/TSI/RET/001\_RCN1 | <timeSeriesInstance> RETRIEVE | Retrieve timeSeriesInstance with resultContent set to 1 or no RCN |
| API/TSI/DEL/001\_RCN0 | <timeSeriesInstance> DELETE | Delete timeSeriesInstance with resultContent set to 0 |
| API/TSI/DEL/001  API/TSI/DEL/001\_RCN1 | <timeSeriesInstance> DELETE | Delete timeSeriesInstance with resultContent set to 1 or no RCN |
| API/ACP/CRE/001\_RCN0 | <accessControlPolicy> CREATE | Create accessControlPolicy with resultContent set to 0 |
| API/ACP/CRE/001  API/ACP/CRE/001\_RCN1 | <accessControlPolicy> CREATE | Create accessControlPolicy with resultContent set to 1 or no RCN |
| API/ACP/CRE/001\_RCN2 | <accessControlPolicy> CREATE | Create accessControlPolicy with resultContent set to 2 |
| API/ACP/CRE/001\_RCN3 | <accessControlPolicy> CREATE | Create accessControlPolicy with resultContent set to 3 |
| API/ACP/RET/001  API/ACP/RET/001\_RCN1 | <accessControlPolicy> RETRIEVE | Retrieve accessControlPolicy with resultContent set to 1 or no RCN |
| API/ACP/UPD/001\_RCN0 | <accessControlPolicy> UPDATE | Update accessControlPolicy with resultContent set to 0 |
| API/ACP/UPD/001  API/ACP/UPD/001\_RCN1 | <accessControlPolicy> UPDATE | Update accessControlPolicy with resultContent set to 1 or no RCN |
| API/ACP/DEL/001\_RCN0 | <accessControlPolicy> DELETE | Delete accessControlPolicy with resultContent set to 0 |
| API/ACP/DEL/001  API/ACP/DEL/001\_RCN1 | <accessControlPolicy> DELETE | Delete accessControlPolicy with resultContent set to 1 or no RCN |
| API/FLX/CRE/001\_RCN0 | <flexContainer> CREATE | Create flexContainer with resultContent set to 0 |
| API/FLX/CRE/001  API/FLX/CRE/001\_RCN1 | <flexContainer> CREATE | Create flexContainer with resultContent set to 1 or no RCN |
| API/FLX/CRE/001\_RCN2 | <flexContainer> CREATE | Create flexContainer with resultContent set to 2 |
| API/FLX/CRE/001\_RCN3 | <flexContainer> CREATE | Create flexContainer with resultContent set to 3 |
| API/FLX/RET/001  API/FLX/RET/001\_RCN1 | <flexContainer> RETRIEVE | Retrieve flexContainer with resultContent set to 1 or no RCN |
| API/FLX/UPD/001\_RCN0 | <flexContainer> UPDATE | Update flexContainer with resultContent set to 0 |
| API/FLX/UPD/001  API/FLX/UPD/001\_RCN1 | <flexContainer> UPDATE | Update flexContainer with resultContent set to 1 or no RCN |
| API/FLX/DEL/001\_RCN0 | <flexContainer> DELETE | Delete flexContainer with resultContent set to 0 |
| API/FLX/DEL/001  API/FLX/DEL/001\_RCN1 | <flexContainer> DELETE | Delete flexContainer with resultContent set to 1 or no RCN |

## 6.2 API details

### 6.2.1 Introduction

This clause introduces standard APIs to perform CRUD operations on the target resource. Each API has request and response using HTTP binding and JSON serialization, but some resources do not have all CRUD APIs which means that the resource does not support all operations. A result content is only used from 0 to 3 in this clause.

### 6.2.2 Resource Type *CSEBase*

#### 6.2.2.0 Introduction

A <*CSEBase*> resource represents a CSE and it is the root for all resources that are residing in the CSE. The <*CSEBase*>resource does not support the creation, update, and delete operations via API but only supports retrieve operation.

#### 6.2.2.1 API-CB-RET

|  |  |
| --- | --- |
| API Id | API/CB/RET/001  API/CB/RET/001\_RCN1  API/CB/RET/001\_RCN4 |
| API Name | CSEBase RETRIEVE with or without resultContent parameter |
| Target Resource | <CSEBase> resource of the requested <AE> resource |
| Description | The interface is used to send a <CSEBase>resource RETRIEVE request to CSE, and receive response from the CSE*.* |
| Resource Structure  before Sending Request |  |
| Call Flow |  |
| HTTP Header Information | |  |  | | --- | --- | | Header | **Value** | | Accept | application/ json | | X-M2M-RI | Request ID | | X-M2M-Origin | Entity ID of request originator | | X-M2M-RVI | Release Version Indicator | |
| Example with  RCN=1  or No RCN | **API/CB/RET/001**  **API/CB/RET/001\_RCN1**  **HTTP Request:**  GET /mn-name?rcn=1 HTTP/1.1  Host: 192.168.0.10:8282  Accept: application/json  X-M2M-Origin: CAE0120180406T0846311405855351047680\_cse01  X-M2M-RI: 1234  X-M2M-RVI: 2a  **HTTP Response:**  HTTP/1.1 200 OK  X-M2M-RI: 1234  X-M2M-RSC: 2000  Content-Length:344  Content-Type:application/json  X-M2M-Origin:/mnID  X-M2M-RVI: 2a  {  "m2m:cb": {  "acpi": [  "mnIDAcp"  ],  "csi": "/mnID",  "cst": 2,  "csz": [  "application/xml",  "application/json"  ],  "ct": "20180727T135221",  "lbl": [  "17.0.0+",  "ID-CSE-01"  ],  "lt": "20180727T135221",  "pi": null,  "poa": [  "http://192.168.0.10:8282"  ],  "ri": "mnID",  "rn": "mn-name",  "srt": [  1,  2,  3,  4,  5,  9,  12,  13,  14,  15,  16,  18,  23,  17,  11,  20,  19,  28,  22,  7,  21,  24,  100,  8,  10  ],  "srv": [  "2a"  ],  "ty": 5,  "srv": [  "1",  "2",  "2a"  ]  }  } |
| Example with  RCN=4 | **API/CB/RET/001\_RCN4**  **HTTP Request:**  GET /mn-name?rcn=4 HTTP/1.1  Host: 192.168.0.10:8282  Accept: application/json  X-M2M-Origin: CAE0120180406T0846311405855351047680\_cse01  X-M2M-RI: 1234  X-M2M-RVI: 2a  **HTTP Response:**  HTTP/1.1 200 OK  X-M2M-RI: 1234  X-M2M-RSC: 2000  Content-Length: 1009  Content-Type:application/json  X-M2M-Origin:/mnID  X-M2M-RVI: 2a  {  "m2m:cb": {  "acpi": [  "mnIDAcp"  ],  "csi": "/mnID",  "cst": 2,  "csz": [  "application/xml",  "application/json"  ],  "ct": "20180727T135221",  "lbl": [  "17.0.0+",  "ID-CSE-01"  ],  "lt": "20180727T135221",  "m2m:acp": [  {  "ct": "20180723T141039",  "et": "99991231T235959",  "lbl": [  "cseAcp"  ],  "lt": "20180723T141039",  "pi": "mnID",  "pv": {  "acr": [  {  "acco": {  "acip": {  "ipv4": [  "127.0.0.1/0"  ]  },  "actw": [  "\* \* \* \* \* \*"  ]  },  "acop": 63,  "acor": [  "\*"  ]  }  ]  },  "pvs": {  "acr": [  {  "acco": {  "acip": {  "ipv4": [  "127.0.0.1/0",  "127.0.0.1/1"  ]  },  "actw": [  "\* \* \* \* \* \*"  ]  },  "acop": 63,  "acor": [  "\*"  ]  }  ]  },  "ri": "mnIDAcp",  "rn": "mn-nameAcp",  "ty": 1  }  ],  "m2m:ae": [  {  "aei": "CAE0120180723T1415351396520173012480\_cse01",  "api": "A01.com.company.Temp",  "ct": "20180723T141535",  "et": "99991231T235959",  "lbl": [  "indoor\_temp",  "room\_1"  ],  "lt": "20180723T142022",  "pi": "mnID",  "ri": "CAE0120180723T1415351396520173012480\_cse01",  "rn": "ae\_sensor",  "rr": false,  "ty": 2  }  ],  "pi": null,  "poa": [  "http://192.168.0.10:8282"  ],  "ri": "mnID",  "rn": "mn-name",  "srt": [  1,  2,  3,  4,  5,  9,  12,  13,  14,  15,  16,  18,  23,  17,  11,  20,  19,  28,  22,  7,  21,  24,  100,  8,  10  ],  "ty": 5,  "srv": [  "1",  "2",  "2a"  ]  }  } |

### 6.2.3 Resource Type *remoteCSE*

#### 6.2.3.0 Introduction

The <remoteCSE> resource represents a Registree CSE that is registered into a Registrar CSE, and <remoteCSE> locates directly under the <CSEBase> of the Registrar CSE. Similarly, one <remoteCSE> resource will also be created under the <CSEBase> of the Registree CSE to represent the Registrar CSE when the Registree CSE is successfully registered into the Registrar CSE.

#### 6.2.3.1 API-CSR-CRE

|  |  |
| --- | --- |
| API Id | API/CSR/CRE/001  API/CSR/CRE/001\_RCN1  API/CSR/CRE/001\_RCN2  API/CSR/CRE/001\_RCN3  API/CSR/CRE/001\_RCN4 |
| API Name | remoteCSE CREATE with or without resultContent parameter |
| Target Resource | <remoteCSE> resource |
| Description | The interface is used to send a <remoteCSE>resource CREATE request to CSE, and receive response from the CSE*.* |
| Resource Structure |  |
| Call Flow |  |
| HTTP Header Information | |  |  | | --- | --- | | **Header** | **Value** | | X-M2M-RI | Request ID | | X-M2M-Origin | Entity ID of request originator | | Content-Type | application/json;**ty=16** | | X-M2M-RVI | Release Version Indicator | |
| Example with  RCN=0 | **API/CSR/CRE/001\_RCN0**  **HTTP Request:**  POST /cse-name?rcn=0 HTTP/1.1  Host: 192.168.56.102:9011  Content-Type:application/json;ty=16  X-M2M-Origin: C0120180406T0846311405855351047680\_cse01  X-M2M-RI: 1234  X-M2M-RVI: 2a  {    "m2m:csr": {  "cb": "//192.168.0.50:8080/cse-name2",  "csi": "/cse2ID",  "rn": "cse-name2",  "rr": true    }    }  **HTTP Response:**  HTTP/1.1 201 Created  X-M2M-RI: 1234  X-M2M-RVI: 2a  Content-Length:0  Content-Type:application/json  Content-Location: /cseID/cse2ID |
| Example with  RCN=1  or No RCN | API/CSR/CRE/001  API/CSR/CRE/001\_RCN1  HTTP Request:  POST /cse-name?rcn=1 HTTP/1.1  Host: 192.168.56.102:9011  Content-Type:application/json;ty=16  X-M2M-Origin: C0120180406T0846311405855351047680\_cse01  X-M2M-RI: 1234  X-M2M-RVI: 2a  {    "m2m:csr": {  "cb": "//192.168.56.50:8080/cse-name2",  "csi": "/cse2ID",  "rn": "cse-name2",  "rr": true    }    }  HTTP Response:  HTTP/1.1 201 Created  X-M2M-RI: 1234  X-M2M-RSC: 2001  X-M2M-RVI: 2a  Content-Length:216  Content-Type:application/json  Content-Location: /cseID/cse2ID  {  "m2m:csr": {  "cb": "//192.168.0.50:8080/cse-name2",  "csi": "/cse2ID",  "ct": "20200604T123044,616218",  "et": "99991231T235959",  "lt": "20200604T123044,616218",  "pi": "ID-CSE-01",  "ri": "cse2ID",  "rn": "cse-name2",  "rr": false,  "ty": 16  }  } |
| Example with  RCN=2 | **API/CSR/CRE/001\_RCN2**  **HTTP Request:**  POST /cse-name?rcn=2 HTTP/1.1  Host: 192.168.56.102:9011  Content-Type:application/json;ty=16  X-M2M-Origin: C0120180406T0846311405855351047680\_cse01  X-M2M-RI: 1234  X-M2M-RVI: 2a  {    "m2m:csr": {  "cb": "//192.168.0.50:8080/cse-name2",  "csi": "/cse2ID",  "rn": "cse-name2",  "rr": true    }    }  **HTTP Response:**  HTTP/1.1 201 Created  X-M2M-RI: 1234  X-M2M-RSC: 2001  X-M2M-RVI: 2a  Content-Length:30  Content-Type:application/json  Content-Location: /cseID/cse2ID  {"m2m:uri":"cse-name/cse-name2"} |
| Example with  RCN=3 | **API/CSR/CRE/001\_RCN3**  **HTTP Request:**  POST /cse-name?rcn=3 HTTP/1.1  Host: 192.168.56.102:9011  Content-Type:application/json;ty=16  X-M2M-Origin: C0120180406T0846311405855351047680\_cse01  X-M2M-RI: 1234  X-M2M-RVI: 2a  {    "m2m:csr": {  "cb": "//192.168.0.50:8080/cse-name2",  "csi": "/cse2ID",  "rn": "cse-name2",  "rr": true    }    }  **HTTP Response:**  HTTP/1.1 201 Created  X-M2M-RI: 1234  X-M2M-RSC: 2001  X-M2M-RVI: 2a  Content-Length:264  Content-Type:application/json  Content-Location: /cseID/cse2ID  {  "m2m:rce": {  "m2m:csr": {  "cb": "//192.168.56.2:8282/cse-name2",  "csi": "/cse2ID",  "ct": "20180801T093501",  "et": "99991231T235959",  "lt": "20180801T093501",  "pi": "cseID",  "poa": [  "http://192.168.56.2:8282"  ],  "ri": "cse2ID",  "rn": "cse-name2",  "rr": true,  "ty": 16,  "srv": [  "1",  "2",  "2a"  ]  },  "uri": "cse-name/cse-name2"  }  } |

#### 6.2.3.2 API-CSR-RET

|  |  |
| --- | --- |
| **API Id** | API/CSR/RET/001  API/CSR/RET/001\_RCN1 |
| **API Name** | remoteCSE RETRIEVE with or without resultContent parameter |
| **Target Resource** | <remoteCSE> resource located under <CSEBase> of the hosting CSE |
| **Description** | The interface is used to send a <remoteCSE> RETRIEVE request attached with resultContent to a hosting CSE, and the hosting CSE will send back a response containing attributes of the requested <remoteCSE> resource. |
| **Resource Structure before Sending Request** |  |
| **Call Flow** |  |
| **HTTP Header Information** | |  |  | | --- | --- | | **Header** | **Value** | | Accept | application/ json | | X-M2M-RI | Request ID | | X-M2M-Origin | Entity ID of request originator | | X-M2M-RVI | Release Version Indicator | |
| **Example with**  **RCN=1**  **or No RCN** | **API/CSR/RET/001**  **API/CSR/RET/001\_RCN1**  **HTTP Request:**  GET /cse-name/cse-name2?rcn=1 HTTP/1.1  Host: 192.168.56.102:9011  Accept: application/json  X-M2M-Origin: C0120180406T0846311405855351047680\_cse01  X-M2M-RI: 1234  X-M2M-RVI: 2a  **HTTP Response:**  HTTP/1.1 200 OK  X-M2M-RI: 1234  X-M2M-RSC: 2000  X-M2M-RVI: 2a  Content-Length:227  Content-Type:application/json  {  "m2m:csr": {  "cb": "//192.168.56.2:8282/cse-name2",  "csi": "/cse2ID",  "ct": "20180801T093501",  "et": "99991231T235959",  "lt": "20180801T093501",  "pi": "cseID",  "poa": [  "http://192.168.56.2:8282"  ],  "ri": "cse2ID",  "rn": "cse-name2",  "rr": true,  "ty": 16,  "srv": [  "1",  "2",  "2a"  ]  }  } |

#### 6.2.3.3 API-CSR-UPD

|  |  |
| --- | --- |
| **API Id** | API/CSR/UPD/001  API/CSR/UPD/001\_RCN0  API/CSR/UPD/001\_RCN1 |
| **API Name** | remoteCSE UPDATE with or without resultContent parameter |
| **Target Resource** | <remoteCSE> resource located under <CSEBase> of the hosting CSE |
| **Description** | The interface is used to send a *<*remoteCSE*>* UPDATE request attached with resultContentto a hosting CSE, and the hosting CSE will send back a response resultContent. |
| **Resource Structure before Sending Request** |  |
| **Call Flow** |  |
| **HTTP Header Information** | |  |  | | --- | --- | | **Header** | **Value** | | Content-Type | application/ json | | X-M2M-RI | Request ID | | X-M2M-Origin | CSE-ID of request originator | | X-M2M-RVI | Release Version Indicator | |
| **Example with**  **RCN=0** | **API/CSR/UPD/001\_RCN0**  EXAMPLE: Demonstrate the update of the <pointOfAccess> attribute of <remoteCSE> resource.  **HTTP Request:**  PUT /cse-name/cse-name2?rcn=0 HTTP/1.1  Host: 192.168.56.102:9011  Content-Type: application/json  X-M2M-Origin: C0120180406T0846311405855351047680\_cse01  X-M2M-RI: 1234  X-M2M-RVI: 2a  {  "m2m:csr": {  "poa": ["http://192.168.0.101:8282"]  }  }  **HTTP Response:**  HTTP/1.1 200 OK  X-M2M-RI: 1234  X-M2M-RSC: 2004  X-M2M-RVI: 2a  Content-Length:0 |
| **Example with**  **RCN=1**  **or No RCN** | **API/CSR/UPD/001**  **API/CSR/UPD/001\_RCN1**  EXAMPLE: Demonstrate the update of the <pointOfAccess> attribute of <remoteCSE> resource.  **HTTP Request:**  PUT /cse-name/cse-name2?rcn=1 HTTP/1.1  Host: 192.168.56.102:9011  Accept: application/json  X-M2M-Origin: C0120180406T0846311405855351047680\_cse01  X-M2M-RI: 1234  X-M2M-RVI: 2a  {  "m2m:csr": {  "poa": ["http://192.168.0.100:8282"]  }  }  **HTTP Response:**  HTTP/1.1 200 OK  X-M2M-RI: 1234  X-M2M-RSC: 2004  X-M2M-RVI: 2a  Content-Length:251  Content-Type:application/json  {  "m2m:csr": {  "cb": "//192.168.56.2:8282/cse-name2",  "csi": "/cse2ID",  "ct": "20180801T093501",  "et": "99991231T235959",  "lt": "20180801T095839",  "pi": "cseID",  "poa": [  "http://192.168.0.100:8282"  ],  "ri": "cse2ID",  "rn": "cse-name2",  "rr": true,  "ty": 16  "srv": [  "1",  "2",  "2a"  ]  }  } |

#### 6.2.3.4 API-CSR-DEL

|  |  |
| --- | --- |
| **API Id** | API/CSR/DEL/001  API/CSR/DEL/001\_RCN0  API/CSR/DEL/001\_RCN1 |
| **API Name** | remoteCSE DELETE with or without resultContent parameter |
| **Target Resource** | <remoteCSE> resource located under <CSEBase> of the hosting CSE |
| **Description** | The interface is used to send a <remoteCSE> DELETE request attached with resultContent set to 0 to the hosting CSE, and the hosting CSE will delete the <remoteCSE> resource and send back a response containing the response status code of the DELETE operation. |
| **Resource Structure before Sending Request** |  |
| **Call Flow** |  |
| **HTTP Header Information** | |  |  | | --- | --- | | **Header** | **Value** | | Accept | application/ json | | X-M2M-RI | Request ID | | X-M2M-Origin | CSE-ID of request originator | | X-M2M-RVI | Release Version Indicator | |
| **Example with**  **RCN=0** | **API/CSR/DEL/001\_RCN0**  **HTTP Request:**  DELETE /cse-name/cse-name2?rcn=0 HTTP/1.1  Host: 192.168.56.102:9011  Accept: application/json  X-M2M-Origin: C0120180406T0846311405855351047680\_cse01  X-M2M-RI: 1234  X-M2M-RVI: 2a  **HTTP Response:**  HTTP/1.1 200 OK  X-M2M-RI: 1234  X-M2M-RSC: 2002  X-M2M-RVI: 2a  Content-Length:0 |
| **Example with**  **RCN=1**  **or No RCN** | **API/CSR/DEL/001**  **API/CSR/DEL/001\_RCN1**  **HTTP Request:**  DELETE /cse-name/cse-name2 HTTP/1.1  Host: 192.168.56.102:9011  Accept: application/json  X-M2M-Origin: C0120180406T0846311405855351047680\_cse01  X-M2M-RI: 1234  X-M2M-RVI: 2a  **HTTP Response:**  HTTP/1.1 200 OK  X-M2M-RI: 1234  X-M2M-RSC: 2004  X-M2M-RVI: 2a  Content-Length:228  Content-Type:application/json  {  "m2m:csr": {  "cb": "//192.168.56.2:8282/cse-name2",  "csi": "/cse2ID",  "ct": "20180801T093501",  "et": "99991231T235959",  "lt": "20180801T100431",  "pi": "cseID",  "poa": [  "http://192.168.0.101:8282"  ],  "ri": "cse2ID",  "rn": "cse-name2",  "rr": true,  "ty": 16,  "srv": [  "1",  "2",  "2a"  ]  }  } |

### 6.2.4 Resource Type *AE*

#### 6.2.4.0 Introduction

The <AE> resource represents information about an Application Entity that is registered to a CSE. The originator of an <AE> create request is and only can be an AE. A CSE is not allowed to initiate an <AE> create request.

The <AE> resource which resides in different kind of nodes such as Application Dedicated Node, Middle Node, Infrastructure Node, etc. An Application Dedicated Node could reside in a constrained M2M device, while a Middle Node could reside in an M2M gateway and an Infrastructure Node could reside in an M2M Service Infrastructure. For example, in smart home scenario, light bulbs are modelled as Application Dedicated Node which communicate with home gateway which is modelled as a Middle Node and in resource registration phase, light bulbs can be registered as an <AE> resource.

#### 6.2.4.1 API-AE-CRE

|  |  |
| --- | --- |
| **API Id** | API/AE/CRE/001  API/AE/CRE/001\_RCN0  API/AE/CRE/001\_RCN1  API/AE/CRE/001\_RCN2  API/AE/CRE/001\_RCN3 |
| **API Name** | AE CREATE with or without resultContent parameter |
| **Target Resource** | <CSEBase> resource of the requested <AE> resource |
| **Description** | The interface is used by a AE Registree to send an *<*AE*>* CREATE request to a Registrar CSE and the Registrar CSE creates an <AE> resource and sends back a response to the AE Registree according to the configured resultContent parameter.  A sensor is registered to the platform by sending an <AE> registration request to the CSEBase. |
| **Resource Structure before Sending Request** |  |
| **Call Flow** |  |
| **HTTP Header Information** | |  |  | | --- | --- | | **Header** | **Value** | | X-M2M-RI | Request ID | | X-M2M-Origin | AE-ID of request originator | | Content-Type | application/json;ty=**2** | | X-M2M-RVI | Release Version Indicator | |
| **Example with**  **RCN=0** | **API/AE/CRE/001\_RCN0**  **HTTP Request:**  POST /mn-name?rcn=0 HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: C  Content-Type: application/json;ty=2  X-M2M-RI: 1234  X-M2M-RVI: 2a  {  "m2m:ae": {  "api": "A01.com.company.Temperature1",  "lbl": [  "indoor\_temperature",  "room\_1"  ],  "rr": false,  "rn": "ae\_sensor"  }  }  **HTTP Response:**  201 Created  Content-Length:0  Content-Location:/mnID/CAE0120180404T0830181405122857960960\_cse01  X-M2M-RI:1234  X-M2M-RVI: 2a  X-M2M-RSC:2001 |
| **Example with**  **RCN=1**  **or No RCN** | **API/AE/CRE/001**  **API/AE/CRE/001\_RCN1**  **HTTP Request:**  POST /mn-name HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: C  Content-Type: application/json;ty=2  X-M2M-RI: 1234  X-M2M-RVI: 2a  {  "m2m:ae": {  "api": "A01.com.company.Temperature",  "lbl": [  "indoor\_temperature",  "room\_1"  ],  "rr": false,  "rn": "ae\_sensor"  }  }  HTTP Response:  201 Created  Content-Length:310  Content-Location:/mnID/CAE0120180404T0833201405122522252800\_cse01  Content-Type:application/json  X-M2M-RI:1234  X-M2M-RVI: 2a  X-M2M-RSC:2001  {  "m2m:ae": {  "aei": "CAE0120180404T0833201405122522252800\_cse01",  "api": "A01.com.company.Temperature",  "ct": "20180404T083320",  "et": "99991231T235959",  "lbl": [  "indoor\_temperature",  "room\_1"  ],  "lt": "20180404T083320",  "pi": "mnID",  "ri": "CAE0120180404T0833201405122522252800\_cse01",  "rn": "ae\_sensor",  "rr": false,  "ty": 2,  "srv": [  "1",  "2",  "2a"  ]  }  } |
| **Example with**  **RCN=2** | **API/AE/CRE/001\_RCN2**  **HTTP Request:**  POST /mn-name?rcn=2 HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: C  Content-Type: application/json;ty=2  X-M2M-RI: 1234  X-M2M-RVI: 2a  {  "m2m:ae": {  "api": "A01.com.company.Temperature",  "lbl": [  "indoor\_temperature",  "room\_1"  ],  "rr": false,  "rn": "ae\_sensor"  }  }  **HTTP Response:**  201 Created  Content-Length:40  Content-Location:/mnID/CAE0120180404T0836301405122354398720\_cse01  Content-Type:application/json  X-M2M-RI:1234  X-M2M-RVI: 2a  X-M2M-RSC:2001  {  "m2m:uri": "mn-name/ae\_sensor"  } |
| **Example with**  **RCN=3** | **API/AE/CRE/001\_RCN3**  **HTTP Request:**  POST /mn-name?rcn=3 HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: C  Content-Type: application/json;ty=2  X-M2M-RI: 1234  X-M2M-RVI: 2a  {  "m2m:ae": {  "api": "A01.com.company.Temperature",  "lbl": [  "indoor\_temperature",  "room\_1"  ],  "rr": false,  "rn": "ae\_sensor"  }  }  **HTTP Response:**  201 Created  Content-Length:355  Content-Location:/mnID/CAE0120180404T0838301405122186544640\_cse01  Content-Type:application/json  X-M2M-RI:1234  X-M2M-RVI: 2a  X-M2M-RSC:2001  {  "m2m:rce": {  "m2m:ae": {  "aei": "CAE0120180404T0838301405122186544640\_cse01",  "api": "A01.com.company.Temperature",  "ct": "20180404T083830",  "et": "99991231T235959",  "lbl": [  "indoor\_temperature",  "room\_1"  ],  "lt": "20180404T083830",  "pi": "mnID",  "ri": "CAE0120180404T0838301405122186544640\_cse01",  "rn": "ae\_sensor",  "rr": false,  "ty": 2,  "srv": [  "1",  "2",  "2a"  ]  },  "uri": "mn-name/ae\_sensor"  }  } |

#### 6.2.4.2 API-AE-RET

|  |  |
| --- | --- |
| **API Id** | API/AE/RET/001\_RCN1  API/AE/RET/001\_RCN4 |
| **API Name** | AE RETRIEVE with or without resultContent parameter |
| **Target Resource** | The <AE> resource located under <CSEBase> |
| **Description** | The interface is used to send an <AE> RETRIEVE request attached with resultContent to the <AE> resource located under the <CSEBase> of the CSE, and the hosting CSE will send back a response according to the configured resultContent. |
| **Resource Structure before Sending Request** |  |
| **Call Flow** |  |
| **HTTP Header Information** | |  |  | | --- | --- | | **Header** | **Value** | | Accept | application/ json | | X-M2M-RI | Request ID | | X-M2M-Origin | AE-ID of request originator | | X-M2M-RVI | Release Version Indicator | |
| **Example with**  **RCN=1**  **or No RCN** | API/AE/RET/001  API/AE/RET/001\_RCN1  HTTP Request:  GET /mn-name/ae\_sensor HTTP/1.1  Accept: application/json  Host: 192.168.0.10:8282  X-M2M-Origin: CAE0120180404T0838301405122186544640\_cse01  X-M2M-RI:1234  X-M2M-RVI: 2a  HTTP Response:  200 OK  Content-Length:308  Content-Type:application/json  X-M2M-RI:1234  X-M2M-RSC:2000  {  "m2m:ae": {  "aei": "CAE0120180404T0838301405122186544640\_cse01",  "api": "A01.com.company.Temperature",  "ct": "20180404T083830",  "et": "99991231T235959",  "lbl": [  "indoor\_temperature",  "room\_1"  ],  "lt": "20180404T083830",  "pi": "mnID",  "ri": "CAE0120180404T0838301405122186544640\_cse01",  "rn": "ae\_sensor",  "rr": false,  "ty": 2,  "srv": [  "1",  "2",  "2a"  ]  }  } |
| **Example with**  **RCN=4** | **API/AE/RET/001\_RCN4**  **HTTP Request:**  GET /mn-name/ae\_sensor?rcn=4 HTTP/1.1  Accept: application/json  Host: 192.168.0.10:8282  X-M2M-Origin: CAE0120180404T0838301405122186544640\_cse01  X-M2M-RI:1234  X-M2M-RVI: 2a  // In the example, the <AE> has 2 child <container> resources cont\_temp1 and cont\_temp2  **HTTP Response:**  200 OK  Content-Length:874  Content-Type:application/json  X-M2M-RI:1234  X-M2M-RVI: 2a  X-M2M-RSC:2000  {  "m2m:ae": {  "aei": "CAE0120180404T0838301405122186544640\_cse01",  "api": "A01.com.company.Temperature",  "ct": "20180404T083830",  "et": "99991231T235959",  "lbl": [  "indoor\_temperature",  "room\_1"  ],  "lt": "20180404T084508",  "m2m:cnt": [  {  "cbs": 0,  "cni": 0,  "ct": "20180404T084508",  "et": "99991231T235959",  "lbl": [  "indoor\_temp"  ],  "lt": "20180404T084508",  "mbs": 60000000,  "mia": 1600,  "mni": 10000,  "pi": "CAE0120180404T0838301405122186544640\_cse01",  "ri": "cnt20180404T0845081405122522252801\_cse01",  "rn": "cont\_temp2",  "st": 0,  "ty": 3  },  {  "cbs": 0,  "cni": 0,  "ct": "20180404T084503",  "et": "99991231T235959",  "lbl": [  "indoor\_temp"  ],  "lt": "20180404T084503",  "mbs": 60000000,  "mia": 1600,  "mni": 10000,  "pi": "CAE0120180404T0838301405122186544640\_cse01",  "ri": "cnt20180404T0845031405122606179840\_cse01",  "rn": "cont\_temp1",  "st": 0,  "ty": 3  }  ],  "pi": "mnID",  "ri": "CAE0120180404T0838301405122186544640\_cse01",  "rn": "ae\_sensor",  "rr": false,  "ty": 2,  "srv": [  "1",  "2",  "2a"  ]  }  } |

#### 6.2.4.3 API-AE-UPD

|  |  |
| --- | --- |
| **API Id** | API/AE/UPD/001  API/AE/UPD/001\_RCN0  API/AE/UPD/001\_RCN1 |
| **API Name** | AE UPDATE with or without resultContent set |
| **Target Resource** | The <AE> resource located under <CSEBase> resource of CSE |
| **Description** | The interface is used to send an <AE> UPDATE request to the target <AE> resource under the CSE, and the hosting CSE will send back a response only containing the response status code indicating the request processing status. |
| **Resource Structure before Sending Request** |  |
| **Call Flow** |  |
| **HTTP Header Information** | |  |  | | --- | --- | | **Header** | **Value** | | X-M2M-RI | Request ID | | X-M2M-Origin | AE-ID of request originator | | Content-Type | application/json | | X-M2M-RVI | Release Version Indicator | |
| **Example with**  **RCN=0** | **API/AE/UPD/001\_RCN0**  **HTTP Request:**  PUT /mn-name/ae\_sensor?rcn=0 HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE0120180404T0838301405122186544640\_cse01  Content-Type:application/json  Accept: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  {  "m2m:ae": {  "poa": ["http://ae.temp.com:9090"],  "rr":true  }  }  **HTTP Response:**  200 OK  Content-Length:0  X-M2M-RI:1234  X-M2M-RVI: 2a  X-M2M-RSC:2004 |
| **Example with**  **RCN=1**  **or No RCN** | **API/AE/UPD/001\_RCN1**  **HTTP Request:**  PUT /mn-name/ae\_sensor HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE0120180404T0838301405122186544640\_cse01  Content-Type:application/json  Accept: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  {  "m2m:ae": {  "poa": ["http://ae.temp.com:9090"],  "rr:":true  }  }  **HTTP Response:**  200 OK  Content-Length:341  Content-Type:application/json  X-M2M-RI:1234  X-M2M-RVI: 2a  X-M2M-RSC:2004  {  "m2m:ae": {  "aei": "CAE0120180404T0838301405122186544640\_cse01",  "api": "A01.com.company.Temperature",  "ct": "20180404T083830",  "et": "99991231T235959",  "lbl": [  "indoor\_temperature",  "room\_1"  ],  "lt": "20180404T085903",  "pi": "mnID",  "poa": [  "http://ae.temp.com:9090"  ],  "ri": "CAE0120180404T0838301405122186544640\_cse01",  "rn": "ae\_sensor",  "rr": true,  "ty": 2,  "srv": [  "1",  "2",  "2a"  ]  }  } |

#### 6.2.4.4 API-AE-DEL

|  |  |
| --- | --- |
| **API Id** | API/AE/DEL/001  API/AE/DEL/001\_RCN0  API/AE/DEL/001\_RCN1 |
| **API Name** | AE DELETE |
| **Target Resource** | The <AE> resource located under <CSEBase> resource of CSE |
| **Description** | The interface is used to send an <AE> DELETE request to the hosting CSE, and the hosting CSE will delete the <AE> and send back a response containing a response status code indicating the DELETE request status. |
| **Resource Structure before Sending Request** |  |
| **Call Flow** |  |
| **HTTP Header Information** | |  |  | | --- | --- | | **Header** | **Value** | | Accept | application/ json | | X-M2M-RI | Request ID | | X-M2M-Origin | AE-ID of request originator | | X-M2M-RVI | Release Version Indicator | |
| **Example with**  **RCN=0** | **API/AE/DEL/001\_RCN0**  **HTTP Request:**  DELETE /mn-name/ae\_sensor?rcn=0 HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE0120180404T0838301405122186544640\_cse01  Accept: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  **HTTP Response:**  200 OK  Content-Length:0  X-M2M-RI:1234  X-M2M-RVI: 2a  X-M2M-RSC:2002 |
| **Example with**  **RCN=1 or**  **no RCN** | **API/AE/DEL/001**  **API/AE/DEL/001\_RCN1**  **HTTP Request:**  DELETE /mn-name/ae\_sensor HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE0120180404T0904581405122774033921\_cse01  X-M2M-RI:1234  X-M2M-RVI: 2a  **HTTP Response:**  200 OK  Content-Length:308  Content-Type:application/json  X-M2M-RI:1234  X-M2M-RVI: 2a  X-M2M-RSC:2002  {  "m2m:ae": {  "aei": "CAE0120180404T0904581405122774033921\_cse01",  "api": "A01.com.company.Temperature",  "ct": "20180404T090458",  "et": "99991231T235959",  "lbl": [  "indoor\_temperature",  "room\_1"  ],  "lt": "20180404T090556",  "pi": "mnID",  "ri": "CAE0120180404T0904581405122774033921\_cse01",  "rn": "ae\_sensor",  "rr": false,  "ty": 2,  "srv": [  "1",  "2",  "2a"  ]  }  } |

### 6.2.5 Resource Type *container*

#### 6.2.5.0 Introduction

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

The <container> resource can be seen as a container of a group of data instances with same characteristics, for example, sensor measurement of temperature, humidity, illumination, CO2, etc. For example, when a temperature sensor is modelled as application dedicated node and registered with an <AE> resource, a <container> resource can be created under the created <AE> as its child resource to contain temperature measurements. Note that <container> resource has no associated content and the real data is contained in a child resource of container called <contentInstance> which will be introduced in clause 6.2.6.

#### 6.2.5.1 API-CONT-CRE

|  |  |
| --- | --- |
| **API Id** | API/CONT/CRE/001  API/CONT/CRE/001\_RCN0  API/CONT/CRE/001\_RCN1  API/CONT/CRE/001\_RCN2  API/CONT/CRE/001\_RCN3 |
| **API Name** | container CREATE with and without resultContent parameter |
| **Target Resource** | <AE> resource as a parent resource of the requested <container> resource |
| **Description** | The interface is used to send a *<*container*>* CREATE request attached with resultContent under the <AE> resource located in the <CSEBase>. The hosting CSE will create the <container> resource under the <AE>, and send back a response according to the configured resultContent*.* |
| **Resource Structure before Sending Request** |  |
| **Call Flow** |  |
| **HTTP Header Information** | |  |  | | --- | --- | | **Header** | **Value** | | X-M2M-RI | Request ID | | X-M2M-Origin | AE-ID of request originator | | Content-Type | application/ json; ty=**3** | | X-M2M-RVI | Release Version Indicator | |
| **Example with**  **No RCN or RCN=1** | **API/CONT/CRE/001**  **API/CONT/CRE/001\_RCN1**  **HTTP Request:**  POST /mn-name/ae\_sensor HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE0120180406T0846311405855351047680\_cse01  Content-Type: application/json;ty=3  X-M2M-RI: 1234  X-M2M-RVI: 2a  {  "m2m:cnt": {  "rn": "cont\_temp"  }  }  **HTTP Response:**  201 Created  Content-Length:265  Content-Location:/mnID/cnt20180406T0857121405855183193600\_cse01  Content-Type:application/json  X-M2M-RI:1234  X-M2M-RVI: 2a  X-M2M-RSC:2001  {  "m2m:cnt": {  "cbs": 0,  "cni": 0,  "ct": "20180406T085712",  "et": "99991231T235959",  "lt": "20180406T085712",  "mbs": 60000000,  "mia": 1600,  "mni": 10000,  "pi": "CAE0120180406T0846311405855351047680\_cse01",  "ri": "cnt20180406T0857121405855183193600\_cse01",  "rn": "cont\_temp",  "st": 0,  "ty": 3  }  } |
| **Example with**  **RCN=0** | **API/CONT/CRE/001\_RCN/0**  **HTTP Request:**  POST /mn-name/ae\_sensor HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE0120180406T0846311405855351047680\_cse01  Content-Type: application/json;ty=3  X-M2M-RI: 1234  X-M2M-RVI: 2a  {  "m2m:cnt": {  "rn": "cont\_temp"  }  }  **HTTP Response:**  201 Created  Content-Length:0  Content-Location:/ mnID/cnt20180406T0922111405855351047681\_cse01  X-M2M-RI:1234  X-M2M-RVI: 2a  X-M2M-RSC:2001 |
| **Example with**  **RCN=2** | **API/CONT/CRE/001\_RCN2**  **HTTP Request:**  POST /mn-name/ae\_sensor?rcn=2 HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE0120180406T0846311405855351047680\_cse01  Content-Type: application/json;ty=3  X-M2M-RI: 1234  X-M2M-RVI: 2a  {  "m2m:cnt": {  "rn": "cont\_temp"  }  }  **HTTP Response:**  201 Created  Content-Length:50  Content-Location:/mnID/cnt20180406T0924461405855854609922\_cse01  Content-Type:application/json  X-M2M-RI:1234  X-M2M-RVI: 2a  X-M2M-RSC:2001  {  "m2m:uri": "mn-name/ae\_sensor/cont\_temp"  } |
| **Example with**  **RCN=3** | **API/CONT/CRE/001\_RCN3**  **HTTP Request:**  POST /mn-name/ae\_sensor?rcn=3 HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE0120180406T0846311405855351047680\_cse01  Content-Type: application/json;ty=3  X-M2M-RI: 1234  X-M2M-RVI: 2a  {  "m2m:cnt": {  "rn": "cont\_temp"  }  }  **HTTP Response:**  201 Created  Content-Length:322  Content-Location:/mnID/cnt20180406T0927581405855602828800\_cse01  Content-Type:application/json  X-M2M-RI:1234  X-M2M-RVI: 2a  X-M2M-RSC:2001  {  "m2m:rce": {  "m2m:cnt": {  "cbs": 0,  "cni": 0,  "ct": "20180406T092758",  "et": "99991231T235959",  "lt": "20180406T092758",  "mbs": 60000000,  "mia": 1600,  "mni": 10000,  "pi": "CAE0120180406T0846311405855351047680\_cse01",  "ri": "cnt20180406T0927581405855602828800\_cse01",  "rn": "cont\_temp",  "st": 0,  "ty": 3  },  "uri": "mn-name/ae\_sensor/cont\_temp"  }  } |

#### 6.2.5.2 API-CONT-RET

|  |  |
| --- | --- |
| **API Id** | API/CONT/RET/001  API/CONT/RET/001\_RCN1  API/CONT/RET/001\_RCN4 |
| **API Name** | container RETRIEVE with or without resultContent parameter set |
| **Target Resource** | Requested <container> resource |
| **Description** | The interface is used to send a <container> RETRIEVE request attached with resultContent to the <container> resource located in the <CSEBase>. The hosting CSE will send back a response according to the configured resultContent*.* |
| **Resource Structure before Sending Request** |  |
| **Call Flow** |  |
| **HTTP Header Information** | |  |  | | --- | --- | | **Header** | **Value** | | Accept | application/ json | | X-M2M-RI | Request ID | | X-M2M-Origin | AE-ID of request originator | | X-M2M-RVI | Release Version Indicator | |
| **Example with**  **No RCN or RCN=1** | **API/CONT/RET/001**  **API/CONT/RET/001\_RCN/1**  **HTTP Request:**  GET /mn-name/ae\_sensor/cont\_temp HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE0120180406T0846311405855351047680\_cse01  Accept: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  **HTTP Response:**  200 OK  Content-Length:265  Content-Type:application/json  X-M2M-RI:1234  X-M2M-RVI: 2a  X-M2M-RSC:2000  {  "m2m:cnt": {  "cbs": 0,  "cni": 0,  "ct": "20180406T092758",  "et": "99991231T235959",  "lt": "20180406T092758",  "mbs": 60000000,  "mia": 1600,  "mni": 10000,  "pi": "CAE0120180406T0846311405855351047680\_cse01",  "ri": "cnt20180406T0927581405855602828800\_cse01",  "rn": "cont\_temp",  "st": 0,  "ty": 3  }  } |
| **Example with**  **RCN=4** | **API/CONT/RET/001\_RCN4**  **HTTP Request:**  GET /mn-name/ae\_sensor/cont\_temp?rcn=4 HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE3878123815422295646  Accept: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  // Container <cont\_temp> has 2 child <contentInstance> resources  **HTTP Response:**  200 OK  Content-Length:1347  Content-Type:application/json  X-M2M-Origin:/mnID  X-M2M-RI: 1234  X-M2M-RVI: 2a  X-M2M-RSC:2000  {  "m2m:cnt": {  "cbs": 6,  "cni": 2,  "ct": "20180406T092758",  "et": "99991231T235959",  "lt": "20180406T094838",  "m2m:cin": [  {  "con": "27",  "cs": 3,  "ct": "20180406T094838",  "et": "99991231T235959",  "lt": "20180406T094838",  "pi": "cnt20180406T0927581405855602828800\_cse01",  "ri": "cin20180406T0948381405855183193602\_cse01",  "rn": "cin20180406T0948381405855183193601\_cse01",  "st": 2,  "ty": 4  },  {  "con": "28",  "cs": 3,  "ct": "20180406T094719",  "et": "99991231T235959",  "lt": "20180406T094719",  "pi": "cnt20180406T0927581405855602828800\_cse01",  "ri": "cin20180406T0947191405855686755841\_cse01",  "rn": "cin20180406T0947191405855686755840\_cse01",  "st": 1,  "ty": 4  }  ],  "mbs": 60000000,  "mia": 1600,  "mni": 10000,  "pi": "CAE0120180406T0846311405855351047680\_cse01",  "ri": "cnt20180406T0927581405855602828800\_cse01",  "rn": "cont\_temp",  "st": 2,  "ty": 3  }  } |

#### 6.2.5.3 API-CONT-UPD

|  |  |
| --- | --- |
| **API Id** | API/CONT/UPD/001  API/CONT/UPD/001\_RCN0  API/CONT/UPD/001\_RCN1 |
| **API Name** | container UPDATE with or without resultContent set |
| **Target Resource** | Requested <container> resource |
| **Description** | The interface is used to send a <container> UPDATE request to the target <container> resource located under the CSE, and the hosting CSE will respond with only the response status code to indicate the UPDATE operation status. |
| **Resource Structure before Sending Request** |  |
| **Call Flow** |  |
| **HTTP Header Information** | |  |  | | --- | --- | | **Header** | **Value** | | X-M2M-RI | Request ID | | X-M2M-Origin | AE-ID of request originator | | Content-Type | application/json | | X-M2M-RVI | Release Version Indicator | |
| **Example with**  **RCN=0** | **API/CONT/UPD/001\_RCN0**  **HTTP Request:**  PUT /mn-name/ae\_sensor/cont\_temp?rcn=0 HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE0120180406T0846311405855351047680\_cse01  Content-Type: application/json  X-M2M-RI:1234  X-M2M-RVI: 2a  {  "m2m:cnt": {  "mni": 400,  "lbl": ["indoor\_temperature"]  }  }  **HTTP Response:**  200 OK  Content-Length:0  X-M2M-RI:1234  X-M2M-RVI: 2a  X-M2M-RSC:2004 |
| **Example with**  **No RCN or RCN=1** | **API/CONT/UPD/001**  **HTTP Request:**  PUT /mn-name/ae\_sensor/cont\_temp HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE0120180406T0846311405855351047680\_cse01  Accept: application/json  X-M2M-RI:1234  X-M2M-RVI: 2a  {  "m2m:cnt": {  "mni": 300,  "lbl": ["indoor\_temp"]  }  }  **HTTP Response:**  200 OK  Content-Length:285  Content-Type:application/json  X-M2M-RI:1234  X-M2M-RVI: 2a  X-M2M-RSC:2004  {  "m2m:cnt": {  "cbs": 0,  "cni": 0,  "ct": "20180406T125807",  "et": "99991231T235959",  "lbl": [  "indoor\_temp"  ],  "lt": "20180406T130109",  "mbs": 60000000,  "mia": 1600,  "mni": 300,  "pi": "CAE0120180406T0846311405855351047680\_cse01",  "ri": "cnt20180406T1258071405855183193603\_cse01",  "rn": "cont\_temp",  "st": 1,  "ty": 3  }  } |

#### 6.2.5.4 API-CONT-DEL

|  |  |
| --- | --- |
| **API Id** | API/CONT/DEL/001  API/CONT/DEL/001\_RCN0 |
| **API Name** | container DELETE with no resultContent (or resultContent set to 0) |
| **Target Resource** | Requested <container> resource |
| **Description** | The interface is used to send a <container> DELETE request to a target <container> resource located under the CSE, and the hosting CSE will respond with only response status code to indicate the DELETE operation status. |
| **Resource Structure before Sending Request** |  |
| **Call Flow** |  |
| **HTTP Header Information** | |  |  | | --- | --- | | **Header** | **Value** | | X-M2M-RI | Request ID | | X-M2M-Origin | AE-ID of request originator | | Content-Type | application/json | | X-M2M-RVI | Release Version Indicator | |
| **Example with**  **RCN=0** | **API/CONT/DEL/001\_RCN0**  **HTTP Request:**  DELETE /mn-name/ae\_sensor/cont\_temp?rcn=0 HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE0120180406T0846311405855351047680\_cse01  X-M2M-RI:1234  X-M2M-RVI: 2a  **HTTP Response:**  200 OK  Content-Length:0  X-M2M-RI:1234  X-M2M-RVI: 2a  X-M2M-RSC:2002 |
| **Example with**  **No RCN or RCN=1** | **API/CONT/DEL/001**  **API/CONT/DEL/001\_RCN1**  **HTTP Request:**  DELETE /mn-name/ae\_sensor/cont\_temp HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE0120180406T0846311405855351047680\_cse01  X-M2M-RI:1234  X-M2M-RVI: 2a  **HTTP Response:**  200 OK  X-M2M-Origin:/mnID  X-M2M-RI:1234  X-M2M-RVI: 2a  X-M2M-RSC:2002  {  "m2m:cnt": {  "cbs": 0,  "cni": 0,  "ct": "20180406T125807",  "et": "99991231T235959",  "lbl": [  "indoor\_temp"  ],  "lt": "20180406T130330",  "mbs": 60000000,  "mia": 1600,  "mni": 400,  "pi": "CAE0120180406T0846311405855351047680\_cse01",  "ri": "cnt20180406T1258071405855183193603\_cse01",  "rn": "cont\_temp",  "st": 2,  "ty": 3  }  } |

### 6.2.6 Resource Type *contentInstance*

#### 6.2.6.0 Introduction

The *<*contentInstance*>* resource represents a data instance stored in the *<*container*>* resource. Taking a temperature sensor device as an example, the temperature sensor is designed to collect temperature data of environment and in this case, the real temperature data is modelled as a <contentInstance> resource. In details, we assume both the temperature sensor is registered with <AE> resource and a <container> resource is created under the <AE> to store temperature instances, under this consumption, whenever the temperature data is uploaded into a central server, the temperature data has to be denoted as a value of *content* attribute of <contentInstance> resource.

The *<*contentInstance*>* resource cannot be modified once created, and is able to be deleted explicitly by an AE or may be deleted by the platform based on specific policies. If the platform has policies to manage the *<*contentInstance*>* resource, these policies are represented by attributes *axByteSize*, *maxNrOfInstances* and/or *maxInstanceAge* attributes in their parent <container> resource.

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

#### 6.2.6.1 API-CI-CRE

|  |  |
| --- | --- |
| **API Id** | API/CI/CRE/001  API/CI/CRE/001\_RCN0  API/CI/CRE/001\_RCN1  API/CI/CRE/001\_RCN2  API/CI/CRE/001\_RCN3 |
| **API Name** | contentInstance CREATE with or without resultContent parameter |
| **Target Resource** | The <container> resource as a parent resource of being created <contentInstance> resource |
| **Description** | The interface is used to send a *<*contentInstance*>* CREATE request to the target <container> resource located under the CSE, and the hosting CSE will create a new <contentInstance> under the requested <container>, and send back a response containing only the response status code to indicate the CREATE operation status. |
| **Resource Structure before Sending Request** |  |
| **Call Flow** |  |
| **HTTP Header Information** | |  |  | | --- | --- | | **Header** | **Value** | | X-M2M-RI | Request ID | | X-M2M-Origin | AE-ID of request originator | | Content-Type | application/json;ty=**4** | | X-M2M-RVI | Release Version Indicator | |
| **Example with**  **rcn=0** | **API/CI/CRE/001\_RCN/0**  **HTTP Request:**  POST /mn-name/ae\_sensor/cont\_temp?rcn=0 HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE0120180406T0846311405855351047680\_cse01  Content-Type: application/json;ty=4  X-M2M-RI: 1234  X-M2M-RVI: 2a  {  "m2m:cin": {  "con": "20"  }  }  **HTTP Response:**  201 Created  Content-Length:0  Content-Location:/mnID/cin20180406T1358251405855267120642\_cse01  X-M2M-RI:1234  X-M2M-RVI: 2a  X-M2M-RSC:2001 |
| **Example with**  **No RCN**  **or RCN=1** | **API/CI/CRE/001**  **API/CI/CRE/001\_RCN1**  **HTTP Request:**  POST /mn-name/ae\_sensor/cont\_temp HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE0120180406T0846311405855351047680\_cse01  Content-Type: application/json;ty=4  X-M2M-RI: 1234  X-M2M-RVI: 2a  {  "m2m:cin": {  "con": "20"  }  }  **HTTP Response:**  201 Created  Content-Length:258  Content-Location:/mnID/cin20180406T1355091405855351047683\_cse01  Content-Type:application/json  X-M2M-RI:1234  X-M2M-RVI: 2a  X-M2M-RSC:2001  {  "m2m:cin": {  "con": "20",  "cs": 2,  "ct": "20180406T135509",  "et": "99991231T235959",  "lt": "20180406T135509",  "pi": "cnt20180406T1353041405855518901760\_cse01",  "ri": "cin20180406T1355091405855351047683\_cse01",  "rn": "cin20180406T1355091405855351047682\_cse01",  "st": 1,  "ty": 4  }  } |
| **Example with**  **RCN=2** | **API/CI/CRE/001\_RCN2**  **HTTP Request:**  POST /mn-name/ae\_sensor/cont\_temp?rcn=2 HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE0120180406T0846311405855351047680\_cse01  Content-Type: application/json;ty=4  X-M2M-RI: 1234  X-M2M-RVI: 2a  {  "m2m:cin": {  "con": "20"  }  }  **HTTP Response:**  201 Created  Content-Length:91  Content-Location:/mnID/cin20180406T1400131405855099266562\_cse01  Content-Type:application/json  X-M2M-RI:1234  X-M2M-RVI: 2a  X-M2M-RSC:2001  {  "m2m:uri": "mn-name/ae\_sensor/cont\_temp/cin20180406T1400131405855099266561\_cse01"  } |
| **Example with**  **RCN=3** | **API/CI/CRE/001\_RCN3**  **HTTP Request:**  POST /mn-name/ae\_sensor/cont\_temp?rcn=3 HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE0120180406T0846311405855351047680\_cse01  Content-Type: application/json;ty=4  X-M2M-RI: 1234  X-M2M-RVI: 2a  {  "m2m:cin": {  "con": "20"  }  }  **HTTP Response:**  201 Created  Content-Length:356  Content-Location:/mnID/cin20180406T1402131405855770682883\_cse01  Content-Type:application/json  X-M2M-RI:1234  X-M2M-RVI: 2a  X-M2M-RSC:2001  {  "m2m:rce": {  "m2m:cin": {  "con": "20",  "cs": 2,  "ct": "20180406T140213",  "et": "99991231T235959",  "lt": "20180406T140213",  "pi": "cnt20180406T1353041405855518901760\_cse01",  "ri": "cin20180406T1402131405855770682883\_cse01",  "rn": "cin20180406T1402131405855770682882\_cse01",  "st": 4,  "ty": 4  },  "uri": "mn-name/ae\_sensor/cont\_temp/cin20180406T1402131405855770682882\_cse01"  }  } |

#### 6.2.6.2 API-CI-RET

|  |  |
| --- | --- |
| **API Id** | API/CI/RET/001\_LA  API/CI/RET/001\_OL  API/CI/RET/001\_CI |
| **API Name** | Latest, Oldest or specific contentInstance RETRIEVE |
| **Target Resource** | <latest>, <oldest> virtual resources or individual <contentInstance> resource of the requested <container> resource |
| **Description** | The interface is used to send a <contentInstance> RETRIEVE request to the CSE, and the hosting CSE will send back a response containing the result. |
| **Resource Structure before Sending Request** |  |
| **Call Flow** |  |
| **HTTP Header Information** | |  |  | | --- | --- | | **Header** | **Value** | | Accept | application/ json | | X-M2M-RI | Request ID | | X-M2M-Origin | AE-ID of request originator | | X-M2M-RVI | Release Version Indicator | |
| **Example with**  **latest** | **API/CI/RET/001\_LA**  **HTTP Request:**  GET /mn-name/ae\_sensor/cont\_temp/la HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE0120180406T0846311405855351047680\_cse01  X-M2M-RI: 1234  X-M2M-RVI: 2a  **HTTP Response:**  200 OK  Content-Length:258  Content-Type:application/json  X-M2M-RI:1234  X-M2M-RVI: 2a  X-M2M-RSC:2000  {  "m2m:cin": {  "con": "20",  "cs": 2,  "ct": "20180406T140213",  "et": "99991231T235959",  "lt": "20180406T140213",  "pi": "cnt20180406T1353041405855518901760\_cse01",  "ri": "cin20180406T1402131405855770682883\_cse01",  "rn": "cin20180406T1402131405855770682882\_cse01",  "st": 4,  "ty": 4  }  } |
| **Example with**  **oldest** | **API/CI/RET/001\_OL**    **HTTP Request:**  GET /mn-name/ae\_sensor/cont\_temp/ol HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE0120180406T0846311405855351047680\_cse01  X-M2M-RI: 1234  X-M2M-RVI: 2a  **HTTP Response:**  200 OK  Content-Length:258  Content-Type:application/json  X-M2M-RI:1234  X-M2M-RVI: 2a  X-M2M-RSC:2000  {  "m2m:cin": {  "con": "20",  "cs": 2,  "ct": "20180406T135509",  "et": "99991231T235959",  "lt": "20180406T135509",  "pi": "cnt20180406T1353041405855518901760\_cse01",  "ri": "cin20180406T1355091405855351047683\_cse01",  "rn": "cin20180406T1355091405855351047682\_cse01",  "st": 1,  "ty": 4  }  } |
| **Example with**  **CI name** | **API/CI/RET/001\_CI**  **HTTP Request:**  GET /mn-name/ae\_sensor/cont\_temp/cin20180406T1400131405855099266561\_cse01 HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE0120180406T0846311405855351047680\_cse01  X-M2M-RI: 1234  X-M2M-RVI: 2a  **HTTP Response:**  200 OK  Content-Length:258  Content-Type:application/json  X-M2M-RI:1234  X-M2M-RVI: 2a  X-M2M-RSC:2000  {  "m2m:cin": {  "con": "20",  "cs": 2,  "ct": "20180406T140013",  "et": "99991231T235959",  "lt": "20180406T140013",  "pi": "cnt20180406T1353041405855518901760\_cse01",  "ri": "cin20180406T1400131405855099266562\_cse01",  "rn": "cin20180406T1400131405855099266561\_cse01",  "st": 3,  "ty": 4  }  } |

#### 6.2.6.3 API-CI-DEL

|  |  |
| --- | --- |
| **API Id** | API/CI/DEL/001\_LA  API/CI/DEL/001\_LA\_RCN0  API/CI/DEL/001\_OL  API/CI/DEL/001\_OL\_RCN0  API/CI/DEL/001\_CI  API/CI/DEL/001\_CI\_RCN0 |
| **API Name** | Latest, Oldest or specific contentInstance DELETE |
| **Target Resource** | <latest>, <oldest> virtual resources or individual <contentInstance> resource of the requested <container> resource |
| **Description** | The interface is used to send a <container> DELETE request to the CSE, and the hosting CSE will delete the <contentInstance>, and send back a response containing the response status code to indicate the status of the DELETE operation. |
| **Resource Structure before Sending Request** |  |
| **Call Flow** |  |
| **HTTP Header Information** | |  |  | | --- | --- | | **Header** | **Value** | | X-M2M-RI | Request ID | | X-M2M-Origin | AE-ID of request originator | | Accept | application/json | | X-M2M-RVI | Release Version Indicator | |
| **Example with**  **latest**  **(No RCN or RCN=1)** | **API/CI/DEL/001\_LA**  **HTTP Request:**  DELETE /mn-name/ae\_sensor/cont\_temp/la HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE0120180406T0846311405855351047680\_cse01  X-M2M-RI: 1234  X-M2M-RVI: 2a  **HTTP Response:**  200 OK  Content-Length:258  Content-Type:application/json  X-M2M-RI:1234  X-M2M-RVI: 2a  X-M2M-RSC:2002  {  "m2m:cin": {  "con": "20",  "cs": 2,  "ct": "20180406T140213",  "et": "99991231T235959",  "lt": "20180406T140213",  "pi": "cnt20180406T1353041405855518901760\_cse01",  "ri": "cin20180406T1402131405855770682883\_cse01",  "rn": "cin20180406T1402131405855770682882\_cse01",  "st": 4,  "ty": 4  }  } |
| **Example with**  **latest and RCN=0** | **API/CI/DEL/001\_LA\_RCN0**    **HTTP Request:**  DELETE /mn-name/ae\_sensor/cont\_temp/la?rcn=0 HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE0120180406T0846311405855351047680\_cse01  X-M2M-RI: 1234  X-M2M-RVI: 2a  **HTTP Response:**  200 OK  Content-Length:0  X-M2M-RI:1234  X-M2M-RVI: 2a  X-M2M-RSC:2002 |
| **Example with**  **oldest**  **(No RCN or RCN=1)** | **API/CI/DEL/001\_OL**  **HTTP Request:**  DELETE /mn-name/ae\_sensor/cont\_temp/ol HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE0120180406T0846311405855351047680\_cse01  X-M2M-RI: 1234  X-M2M-RVI: 2a  **HTTP Response:**  200 OK  Content-Length:258  Content-Type:application/json  X-M2M-RI:1234  X-M2M-RVI: 2a  X-M2M-RSC:2002  {  "m2m:cin": {  "con": "20",  "cs": 2,  "ct": "20180406T135509",  "et": "99991231T235959",  "lt": "20180406T135509",  "pi": "cnt20180406T1353041405855518901760\_cse01",  "ri": "cin20180406T1355091405855351047683\_cse01",  "rn": "cin20180406T1355091405855351047682\_cse01",  "st": 1,  "ty": 4  }  } |
| **Example with**  **oldest and RCN=0** | **API/CI/DEL/001\_OL\_RCN0**    **HTTP Request:**  DELETE /mn-name/ae\_sensor/cont\_temp/ol?rcn=0 HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE0120180406T0846311405855351047680\_cse01  X-M2M-RI: 1234  X-M2M-RVI: 2a  **HTTP Response:**  200 OK  Content-Length:0  X-M2M-RI:1234  X-M2M-RVI: 2a  X-M2M-RSC:2002 |
| **Example with**  **CI name**  **(No RCN or RCN=1)** | **API/CI/DEL/001\_CI**  **HTTP Request:**  DELETE /mn-name/ae\_sensor/cont\_temp/cin20180406T1400131405855099266561\_cse01 HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE0120180406T0846311405855351047680\_cse01  X-M2M-RI: 1234  X-M2M-RVI: 2a  **HTTP Response:**  200 OK  X-M2M-Origin:/mnID  X-M2M-RI:1234  X-M2M-RVI: 2a  X-M2M-RSC:2002  {  "m2m:cin": {  "con": "20",  "cs": 2,  "ct": "20180406T143434",  "et": "99991231T235959",  "lt": "20180406T143434",  "pi": "cnt20180406T1353041405855518901760\_cse01",  "ri": "cin20180406T1434341405855518901762\_cse01",  "rn": "cin20180406T1434341405855518901761\_cse01",  "st": 9,  "ty": 4  }  } |
| **Example with**  **CI name and RCN=0** | **API/CI/DEL/001\_CI\_RCN0**  **HTTP Request:**  DELETE /mn-name/ae\_sensor/cont\_temp/cin20180406T1400131405855099266561\_cse01?rcn=0 HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE0120180406T0846311405855351047680\_cse01  X-M2M-RI: 1234  X-M2M-RVI: 2a  **HTTP Response:**  200 OK  Content-Length:0  X-M2M-RI:1234  X-M2M-RVI: 2a  X-M2M-RSC:2002 |

### 6.2.7 Resource Type *semanticDescriptor*

#### 6.2.7.0 Introduction

The <semanticDescriptor> resource is used to store a semantic description pertaining to a resource and potentially sub-resources. Such a description may be provided according to ontologies. The semantic information is used by the semantic functionalities of the oneM2M system and is also available to applications or CSEs.

#### 6.2.7.1 API-SMD-CRE

|  |  |
| --- | --- |
| **API Id** | API/SMD/CRE/001  API/SMD/CRE/001\_RCN0  API/SMD/CRE/001\_RCN1  API/SMD/CRE/001\_RCN3 |
| **API Name** | semanticDescriptor CREATE with or without resultContent parameter |
| **Target Resource** | The <container> resource as a parent resource of being created <semanticDescriptor> resource |
| **Description** | The interface is used to send a *<*semanticDescriptor*>* CREATE request to the target <container> resource located under the CSE, and the hosting CSE will create a new <semanticDescriptor> under the requested <container>, and send back a response according to the configured resultContent*.* |
| **Resource Structure before Sending Request** |  |
| **Call Flow** |  |
| **HTTP Header Information** | |  |  | | --- | --- | | **Header** | **Value** | | Accept | application/json | | X-M2M-RI | Request ID | | X-M2M-Origin | AE-ID of request originator | | Content-Type | application/json;ty=**24** | | X-M2M-RVI | Release Version Indicator | |
| **RDF content** | The RDF content will be encode Base64 in the HTTP payload  <?xml version="1.0"?>  <rdf:RDF xmlns="http://www.onem2m.org/ontology/houses\_temperature\_example#"  xml:base="http://www.onem2m.org/ontology/houses\_temperature\_example"  xmlns:temperature\_example="http://www.onem2m.org/ontology/temperature\_example#"  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"  xmlns:owl="http://www.w3.org/2002/07/owl#"  xmlns:xml="http://www.w3.org/XML/1998/namespace"  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#">  <owl:NamedIndividual rdf:about="http://www.onem2m.org/ontology/houses\_temperature\_example#House1">  <rdf:type rdf:resource="http://www.onem2m.org/ontology/temperature\_example#House"/>  <temperature\_example:hasIndoorTemperature rdf:resource="http://www.onem2m.org/ontology/houses\_temperature\_example#IndoorTempProperty1"/>  </owl:NamedIndividual>  <owl:NamedIndividual rdf:about="http://www.onem2m.org/ontology/houses\_temperature\_example#IndoorTempProperty1">  <rdf:type rdf:resource="http://www.onem2m.org/ontology/temperature\_example#TemperatureProperty"/>  <temperature\_example:hasDatatype>xsd:int</temperature\_example:hasDatatype>  <temperature\_example:hasUnit>Fahrenheit</temperature\_example:hasUnit>  <temperature\_example:valueIsStoredIn>http://mnprovider.com:9011/mn-name/ae\_sensor/cont\_temp/la</temperature\_example:valueIsStoredIn>  </owl:NamedIndividual>  </rdf:RDF> |
| **Example with**  **RCN=0** | **API/SMD/CRE/001\_RCN0**    **HTTP Request:**  POST /mn-name/ae\_sensor/cont\_temp?rcn=0 HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE0120180404T0830181405122857960960\_cse01  Content-Type: application/json;ty=24  X-M2M-RI: 1234  X-M2M-RVI: 2a  {  "m2m:smd" : {  "dcrp" : "application/rdf+xml:1",  "rn" : "semantic\_describer",  "dsr": ""  }  }  **HTTP Response:**  201 Created  Content-Length:0  Content-Location:/mnID/CAE0120180404T0830181405122857960960\_cse01  X-M2M-RI:1234  X-M2M-RVI: 2a  X-M2M-RSC:2001 |
| **Example with no RCN or**  **RCN=1** | **API/SMD/CRE/001**  **API/SMD/CRE/001\_RCN1**  **HTTP Request:**  POST /mn-name/ae\_sensor/cont\_temp HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE0120180404T0830181405122857960960\_cse01  Content-Type: application/json;ty=24  X-M2M-RI: 1234  X-M2M-RVI: 2a  {  "m2m:smd" : {  "dcrp" : "application/rdf+xml:1",  "rn" : "semantic\_describer",  "dsr": ""  }  }  **HTTP Response:**  201 Created  Content-Length:3480  Content-Location:/mnID/smd20180413T1256011400030218380800\_cse01  Content-Type:application/json  X-M2M-RI:1234  X-M2M-RVI: 2a  X-M2M-RSC:2001  {  "m2m:smd": {  "ct": "20180413T125601",  "dcrp": "application/rdf+xml:1",  "dsp": "",  "et": "99991231T235959",  "lt": "20180413T125601",  "or": "http://www.onem2m.org/ontology/temperature\_example",  "pi": "cnt20180413T0847561400030050526720\_cse01",  "ri": "smd20180413T1256011400030218380800\_cse01",  "rn": "semantic\_describer",  "ty": 24  }  } |
| **Example with RCN=3** | **API/SMD/CRE/001**  **API/SMD/CRE/001\_RCN3**  **HTTP Request:**  POST /mn-name/ae\_sensor/cont\_temp?rcn=3 HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE0120180404T0830181405122857960960\_cse01  Content-Type: application/json;ty=24  X-M2M-RI: 1234  X-M2M-RVI: 2a  {  "m2m:smd" : {  "dcrp" : "application/rdf+xml:1",  "rn" : "semantic\_describer",  "dsr": ""  }  }  **HTTP Response:**  201 Created  Content-Length:3480  Content-Location:/mnID/smd20180413T1256011400030218380800\_cse01  Content-Type:application/json  X-M2M-RI:1234  X-M2M-RVI: 2a  X-M2M-RSC:2001  {  "m2m:rce": {  "m2m:smd": {  "ct": "20180413T125601",  "dcrp": "application/rdf+xml:1",  "dsp": "",  "et": "99991231T235959",  "lt": "20180413T125601",  "or": "http://www.onem2m.org/ontology/temperature\_example",  "pi": "cnt20180413T0847561400030050526720\_cse01",  "ri": "smd20180413T1256011400030218380800\_cse01",  "rn": "semantic\_describer",  "ty": 24  },  "uri": "mn-name/ae\_sensor/cont\_temp/semantic\_describer"  }  } |

#### 6.2.7.2 API-SMD-RET

|  |  |
| --- | --- |
| **API Id** | API/SMD/RET/001\_RCN1 |
| **API Name** | SemanticDescriptor RETRIEVE with or without resultContent parameter |
| **Target Resource** | Requested <semanticDescriptor> resource |
| **Description** | The interface is used to send a <semanticDescriptor> RETRIEVE request attached with resultContent to the <container> resource located in the <CSEBase>. The hosting CSE will send back a response according to the configured resultContent*.* |
| **Resource Structure before Sending Request** |  |
| **Call Flow** |  |
| **HTTP Header Information** | |  |  | | --- | --- | | **Header** | **Value** | | Accept | application/ json | | X-M2M-RI | Request ID | | X-M2M-Origin | AE-ID of request originator | | X-M2M-RVI | Release Version Indicator | |
| **Example with**  **RCN=1**  **or No RCN** | **API/SMD/RET/001**  **API/SMD/RET/001\_RCN1**    **HTTP Request:**  GET /mn-name/ae\_sensor/cont\_temp/semantic\_describer HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE0120180404T0838301405122186544640\_cse01  Accept: application/json  X-M2M-RI:1234  X-M2M-RVI: 2a  **HTTP Response:**  200 OK  Content-Length:3374  Content-Type:application/json  X-M2M-RI:1234  X-M2M-RVI: 2a  X-M2M-RSC:2000  {  "m2m:smd": {  "ct": "20180413T125601",  "dcrp": "application/rdf+xml:1",  "dsp": "",  "et": "99991231T235959",  "lt": "20180413T125601",  "or": "http://www.onem2m.org/ontology/temperature\_example",  "pi": "cnt20180413T0847561400030050526720\_cse01",  "ri": "smd20180413T1256011400030218380800\_cse01",  "rn": "semantic\_describer",  "ty": 24  }  } |

#### 6.2.7.3 API-SMD-UPD

|  |  |
| --- | --- |
| **API Id** | API/SMD/UPD/001  API/SMD/UPD/001\_RCN0  API/SMD/UPD/001\_RCN1 |
| **API Name** | semanticDescriptor UPDATE with or without resultContent set |
| **Target Resource** | The < semanticDescriptor > resource located under <container> resource |
| **Description** | The interface is used to send a *<*semanticDescriptor*>* UPDATE request to the target <container> resource located under the CSE, and the hosting CSE will create a new <semanticDescriptor> under the requested <container>, and send back a response according to the configured resultContent*.* |
| **Resource Structure before Sending Request** |  |
| **Call Flow** |  |
| **HTTP Header Information** | |  |  | | --- | --- | | **Header** | **Value** | | X-M2M-RI | Request ID | | X-M2M-Origin | AE-ID of request originator | | Content-Type | application/json | | X-M2M-RVI | Release Version Indicator | |
| **Example with**  **RCN=0** | API/AE/UPD/001\_RCN0  **HTTP Request:**  PUT /mn-name/ae\_sensor/cont\_temp/semantic\_describer?rcn=0 HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE0120180404T0830181405122857960960\_cse01  Content-Type: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  {  "m2m:smd" : {  "dsp":  " ",  "or": "http://www.onem2m.org/ontology/temperature\_example2",    }  }  **HTTP Response:**  200 OK  Content-Length:0  X-M2M-RI:1234  X-M2M-RVI: 2a  X-M2M-RSC:2004 |
| **Example with**  **RCN=1**  **or No RCN** | **API/AE/UPD/001**  **API/AE/UPD/001\_RCN1**  **HTTP Request:**  PUT /mn-name/ae\_sensor/cont\_temp/semantic\_describer HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE0120180404T0830181405122857960960\_cse01  Content-Type: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  {  "m2m:smd" : {  "dsp":  " ",  "or": "http://www.onem2m.org/ontology/temperature\_example2",    }  }  **HTTP Response:**  200 OK  Content-Length:2405  Content-Type:application/json  X-M2M-RI:1234  X-M2M-RVI: 2a  X-M2M-RSC:2004  {  "m2m:smd": {  "ct": "20180413T125601",  "dcrp": "application/rdf+xml:1",  "dsp": "",  "et": "99991231T235959",  "lt": "20180413T150302",  "or": "http://www.onem2m.org/ontology/temperature\_example2",  "pi": "cnt20180413T0847561400030050526720\_cse01",  "ri": "smd20180413T1256011400030218380800\_cse01",  "rn": "semantic\_describer",  "ty": 24  }  } |

#### 6.2.7.4 API-SMD-DEL

|  |  |
| --- | --- |
| **API Id** | API/SMD/DEL/001  API/SMD/DEL/001\_RCN0  API/SMD/DEL/001\_RCN1 |
| **API Name** | SMD DELETE |
| **Target Resource** | The <semanticDescriptor> resource located under the <container> resource |
| **Description** | The interface is used to send a <semanticDescriptor> DELETE request to the hosting CSE, and the hosting CSE will delete the <semanticDescriptor> and send back a response containing a response status code indicating the DELETE request status. |
| **Resource Structure before Sending Request** |  |
| **Call Flow** |  |
| **HTTP Header Information** | |  |  | | --- | --- | | **Header** | **Value** | | X-M2M-RI | Request ID | | X-M2M-Origin | AE-ID of request originator | | Accept | application/json | | X-M2M-RVI | Release Version Indicator | |
| **Example with**  **RCN=0** | **API/AE/DEL/001\_RCN0**  **HTTP Request:**  DELETE /mn-name/ae\_sensor/cont\_temp/semantic\_describer?rcn=0 HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE0120180404T0830181405122857960960\_cse01  X-M2M-RI:1234  X-M2M-RVI: 2a  **HTTP Response:**  200 OK  Content-Length:0  X-M2M-RI:1234  X-M2M-RSC:2002 |
| **Example with**  **RCN=1 or**  **no RCN** | **API/SMD/DEL/001**  **API/SMD/DEL/001\_RCN1**  **HTTP Request:**  DELETE /mn-name/ae\_sensor/cont\_temp/semantic\_describer HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE0120180404T0830181405122857960960\_cse01  X-M2M-RI:1234  X-M2M-RVI: 2a  **HTTP Response:**  200 OK  Content-Length:2299  Content-Type:application/json  X-M2M-RI:1234  X-M2M-RVI: 2a  X-M2M-RSC:2002  {  "m2m:smd": {  "ct": "20180413T125601",  "dcrp": "application/rdf+xml:1",  "dsp": "",  "et": "99991231T235959",  "lt": "20180413T151556",  "or": "http://www.onem2m.org/ontology/temperature\_example2",  "pi": "cnt20180413T0847561400030050526720\_cse01",  "ri": "smd20180413T1256011400030218380800\_cse01",  "rn": "semantic\_describer",  "ty": 24  }  } |

### 6.2.8 Resource discovery

#### 6.2.8.0 Introduction

The discovery is one of the common service functions which searches information about application and services. An originator can receive the matching information according to the filter criteria, by sending the discovery request. The format of a query string has both target resource address and filter criteria information; e.g. /mn-name?fu=2&ty=2.

The filterUsage can be set to retrieve any preferred format of the discovery response. The filterUsage value is specified in table 6.2.8.0-1. When filterUsage sets to 1, the response of the discovery is represented with a format of the URI list and all URIs of discovered resources is listed in the response. And when filterUsage sets to 2, the response contains attributes of the resources that matched with presented filter criteria conditions.

Table 6.2.8.0-1: Interpretation of filterUsage

|  |  |  |
| --- | --- | --- |
| Interpretation | Value | Note |
| Discovery Criteria | 1 |  |
| Conditional Retrieval | 2 | Default |

Filter criteria are set to search the resources with specific conditions. For example, AE resources can be found by setting the resourceType to 2. Some Filter criteria conditions are listed in table 6.2.8.0-2, which is extracted from the table 8.1.2-2 of oneM2M TS-0001 [i.2].

Table 6.2.8.0-2: Filter criteria conditions

| Condition tag | Short Name | Multiplicity | Description |
| --- | --- | --- | --- |
| **Matching Conditions** | | | |
| createdBefore | crb | 0..1 | The creationTime attribute of the matched resource is chronologically before the specified value. |
| createdAfter | cra | 0..1 | The creationTime attribute of the matched resource is chronologically after the specified value. |
| modifiedSince | ms | 0..1 | The lastModifiedTime attribute of the matched resource is chronologically after the specified value. |
| unmodifiedSince | us | 0..1 | The lastModifiedTime attribute of the matched resource is chronologically before the specified value. |
| stateTagSmaller | sts | 0..1 | The stateTag attribute of the matched resource is smaller than the specified value. |
| stateTagBigger | stb | 0..1 | The stateTag attribute of the matched resource is bigger than the specified value. |
| expireBefore | exb | 0..1 | The expirationTime attribute of the matched resource is chronologically before the specified value. |
| expireAfter | exa | 0..1 | The expirationTime attribute of the matched resource is chronologically after the specified value. |
| labels | lbl | 0..1 | The labels attribute of the matched resource matches the specified value. |
| resourceType | ty | 0..n | The resourceType attribute of the matched resource is the same as the specified value. It also allows differentiating between normal and announced resources. |
| sizeAbove | sza | 0..1 | The contentSize attribute of the <contentInstance> matched resource is equal to or greater than the specified value. |
| sizeBelow | szb | 0..1 | The contentSize attribute of the <contentInstance> matched resource is smaller than the specified value. |
| Filter Handling Conditions | | | |
| limit | lim | 0..1 | The maximum number of resources to be included in the filtering result. This may be modified by the Hosting CSE. When it is modified, then the new value shall be smaller than the suggested value by the Originator. |
| level | lvl | 0..1 | The maximum level of resource tree that the Hosting CSE shall perform the operation starting from the target resource (i.e. **To** parameter). This shall only be applied for Retrieve operation. The level of the target resource itself is zero and the level of the direct children of the target is one. |

As an initial condition to use discovery function, CSEBase need to have resources. Table 6.2.8.0-3 has detailed information of resources which will be used in this clause.

Table 6.2.8.0-3: Resource Specifications

| Resource Name | Resource attributes in JSON format |
| --- | --- |
| CSEBase | {  "m2m:cb": {  "pi": null,  "ty": 5,  "ct": "20180302T070445",  "ri": "CSE9486743758493047362",  "rn": "mn-name",  "lt": "20180302T070445",  "lbl": [  "mn-name"  ],  "cst": 1,  "csi": "/mn-name",  "srt": [  1,  2,  3,  4,  5,  9,  10,  13,  14,  16,  17,  23  ],  "poa": [  "http://192.168.0.10:8282"  ]  }  } |
| ae\_actuator | {  "m2m:ae": {  "pi": "mnID",  "ty": 2,  "ct": "20180404T083025",  "ri": "CAE0120180404T0830251405122594272800\_cse01",  "rn": "ae\_actuator",  "lbl": [  "actuator",  "light"  ],  "lt": "20180406T083320",  "et": "20221231T235959",  "api": "A01.com.company.Light",  "aei": "CAE0120180404T0830251405122594272800\_cse01",  "rr": false  }  } |
| cnt\_light1 | {  "m2m:cnt": {  "pi": "CAE0120180404T0830251405122594272800\_cse01",  "ty": 3,  "ct": "20180406T085318",  "ri": "cnt20180406T0853181405855183193600\_cse01",  "rn": "cont\_light1",  "lt": "20180406T085318",  "et": "20201231T235959",  "lbl": [  "indoor\_light"  "actuator"  "room1"  ],  "st": 5,  "cr": "S20170717074825768bp2l",  "mni": 10000,  "mbs": 60000000,  "mia": 1600,  "cni": 5,  "cbs": 10  }  } |
| cnt\_light2 | {  "m2m:cnt": {  "pi": "CAE0120180404T0830251405122594272800\_cse01",  "ty": 3,  "ct": "20180405T085318",  "ri": "cnt20180406T0853181405855183193600\_cse01",  "rn": "cont\_light2",  "lt": "20180406T085318",  "et": "20201231T235959",  "lbl": [  "outdoor\_light"  "actuator"  ],  "st": 4,  "cr": "S20170717074825768bp2l",  "mni": 10000,  "mbs": 60000000,  "mia": 1600,  "cni": 10,  "cbs": 20  }  } |
| ae\_sensor | {  "m2m:ae": {  "pi": "mnID",  "ty": 2,  "ct": "20180404T083320",  "ri": "CAE0120180404T0833201405122522252800\_cse01",  "rn": "ae\_sensor",  "lbl": [  "sensor",  "temperature"  ],  "lt": "20180404T083320",  "et": "20221231T235959",  "api": "A01.com.company.Temperature",  "aei": "CAE0120180404T0833201405122522252800\_cse01",  "rr": false  }  } |
| cnt\_temp1 | {  "m2m:cnt": {  "pi": "CAE0120180404T0833201405122522252800\_cse01",  "ty": 3,  "ct": "20180406T085712",  "ri": "cnt20180406T0857121405855183193600\_cse01",  "rn": "cont\_temp1",  "lt": "20180406T085712",  "et": "20201231T235959",  "lbl": [  "indoor\_temperature"  "sensor"  "room2"  ],  "st": 8,  "cr": "S20170717074825768bp2l",  "mni": 10000,  "mbs": 60000000,  "mia": 1600,  "cni": 10,  "cbs": 20  }  } |
| cnt\_temp2 | {  "m2m:cnt": {  "pi": "CAE0120180404T0833201405122522252800\_cse01",  "ty": 3,  "ct": "20180406T085820",  "ri": "cnt20180406T0858201405855563993600\_cse01",  "rn": "cont\_temp2",  "lt": "20180406T085820",  "et": "20211231T235959",  "lbl": [  "outdoor\_temperature"  "sensor"  ],  "st": 9,  "cr": "S20170717074825768bp2l",  "mni": 10000,  "mbs": 60000000,  "mia": 1600,  "cni": 15,  "cbs": 30  }  } |

#### 6.2.8.1 API-DIS-TY

|  |  |
| --- | --- |
| **API Id** | API/DIS\_TY2  API/DIS\_TY3 |
| **API Name** | Discovery with resourceType ***Filter Criteria*** condition |
| **Target Resource** | CSEBase (can be any oneM2M resource primitives) |
| **Description** | The interface is used to discovery resources that match with the **specific resource type**. If found, the Hosting CSE sends back a response with matched resources. |
| **Resource Structure** | **mn-name**  **(CSEBase)**  **ae\_actuator**  **(AE)**  **ae\_sensor**  **(AE)**  **cnt\_light1**  **(container)**  **cnt\_light2**  **(container)**  **cnt\_temp1**  **(container)**  **cnt\_temp2**  **(container)** |
| **Call Flow** | originator  Discovery request with *resourceType* ***Filter Criteria***  Response with matched resources if any  mn-name |
| **HTTP Header Information** | |  |  | | --- | --- | | **Header** | **Value** | | Accept | application/json | | X-M2M-RI | Request ID | | X-M2M-Origin | AE-ID of Originator | | X-M2M-RVI | Release Version Indicator | |
| **Example with**  **ty=2** | **API/DIS\_TY2**  **HTTP Request:**  GET /mn-name?fu=1&ty=2 HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE0120180404T0830251405122594272800\_cse01  Accept: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  **HTTP Response:**  200 OK  Content-Type: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  X-M2M-RSC: 2000  {  "m2m:uril":  "/mn-name/ae\_actuator",  "/mn-name/ae\_sensor"  } |
| **Example with**  **ty=3** | **API/DIS\_TY3**    **HTTP Request:**  GET /mn-name?fu=1&ty=3 HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE0120180404T0830251405122594272800\_cse01  Accept: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  **HTTP Response:**  200 OK  Content-Type: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  X-M2M-RSC: 2000  {  "m2m:uril": [  "/mn-name/ae\_actuator/cnt\_light1",  "/mn-name/ae\_actuator/cnt\_light2",  "/mn-name/ae\_sensor/cnt\_temp1",  "/mn-name/ae\_sensor/cnt\_temp2"  ]  } |

#### 6.2.8.2 API-DIS-LBL

|  |  |
| --- | --- |
| **API Id** | API/DIS\_LBL\_ACTUATOR  API/DIS\_LBL\_SENSOR |
| **API Name** | Discovery with label ***Filter Criteria*** condition |
| **Target Resource** | CSEBase (can be any oneM2M resource primitives) |
| **Description** | The interface is used to discovery resources that match with the **specific *label* value**. If found, the Hosting CSE sends back a response with matched resources. |
| **Resource Structure** | **mn-name**  **(CSEBase)**  **ae\_actuator**  **(AE)**  **ae\_sensor**  **(AE)**  **cnt\_light1**  **(container)**  **cnt\_light2**  **(container)**  **cnt\_temp1**  **(container)**  **cnt\_temp2**  **(container)** |
| **Call Flow** | originator  Discovery request with *label* ***Filter Criteria***  Response with matched resources if any  mn-name |
| **HTTP Header Information** | |  |  | | --- | --- | | **Header** | **Value** | | Accept | application/json | | X-M2M-RI | Request ID | | X-M2M-Origin | AE-ID of Originator | | X-M2M-RVI | Release Version Indicator | |
| **Example with**  **lbl=actuator** | **API/DIS\_LBL\_ACTUATOR**    **HTTP Request:**  GET /mn-name?fu=1&lbl=actuator HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE5630283216026458665  Accept: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  **HTTP Response:**  200 OK  Content-Type: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  X-M2M-RSC: 2000  {  "m2m:uril":  "/mn-name/ae\_actuator",  "/mn-name/ae\_actuator/cnt\_light1",  "/mn-name/ae\_actuator/cnt\_light2"  } |
| **Example with**  **lbl=sensor** | **API/DIS\_LBL\_SENSOR**    **HTTP Request:**  GET /mn-name?fu=1&lbl=sensor HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE5630283216026458665  Accept: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  **HTTP Response:**  200 OK  Content-Type: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  X-M2M-RSC: 2000  {  "m2m:uril":  "/mn-name/ae\_sensor",  "/mn-name/ae\_sensor/cnt\_temp1",  "/mn-name/ae\_sensor/cnt\_temp2"  } |

#### 6.2.8.3 API-DIS-LVL

|  |  |
| --- | --- |
| **API Id** | API/DIS\_LVL1  API/DIS\_LVL2 |
| **API Name** | Discovery with level ***Filter Criteria*** condition |
| **Target Resource** | CSEBase (can be any oneM2M resource primitives) |
| **Description** | The interface is used to discovery resources that match with the **child *level* value**. If found, the Hosting CSE sends back a response with matched resources. |
| **Resource Structure** | **mn-name**  **(CSEBase)**  **ae\_actuator**  **(AE)**  **ae\_sensor**  **(AE)**  **cnt\_light1**  **(container)**  **cnt\_light2**  **(container)**  **cnt\_temp1**  **(container)**  **cnt\_temp2**  **(container)** |
| **Call Flow** | originator  Discovery request with *level* ***Filter Criteria***  Response with matched resources if any  mn-name |
| **HTTP Header Information** | |  |  | | --- | --- | | **Header** | **Value** | | Accept | application/json | | X-M2M-RI | Request ID | | X-M2M-Origin | AE-ID of Originator | | X-M2M-RVI | Release Version Indicator | |
| **Example with**  **lvl=1** | **API/DIS\_LVL1**    **HTTP Request:**  GET /mn-name?fu=1&lvl=1 HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE5630283216026458665  Accept: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  **HTTP Response:**  200 OK  Content-Type: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  X-M2M-RSC: 2000  {  "m2m:uril":  "/mn-name/ae\_actuator",  "/mn-name/ae\_sensor"  } |
| **Example with**  **lvl=2** | **API/DIS\_LVL2**    **HTTP Request:**  GET /mn-name?fu=1&lvl=2 HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE5630283216026458665  Accept: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  **HTTP Response:**  200 OK  Content-Type: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  X-M2M-RSC: 2000  {  "m2m:uril":  "/mn-name/ae\_actuator",  "/mn-name/ae\_actuator/cnt\_light1",  "/mn-name/ae\_actuator/cnt\_light2",  "/mn-name/ae\_sensor",  "/mn-name/ae\_sensor/cnt\_temp1",  "/mn-name/ae\_sensor/cnt\_temp2"  } |

#### 6.2.8.4 API-DIS-CRB, API-DIS-CRA

|  |  |
| --- | --- |
| **API Id** | API/DIS\_CRB  API/DIS\_CRA |
| **API Name** | Discovery with createdBefore and createdAfter ***Filter Criteria*** condition |
| **Target Resource** | CSEBase (can be any oneM2M resource primitives) |
| **Description** | The interface is used to discovery resources that match with the **period of created time**. If found, the Hosting CSE sends back a response with matched resources. |
| **Resource Structure** | **mn-name**  **(CSEBase)**  **ae\_actuator**  **(AE)**  **ae\_sensor**  **(AE)**  **cnt\_light1**  **(container)**  **cnt\_light2**  **(container)**  **cnt\_temp1**  **(container)**  **cnt\_temp2**  **(container)** |
| **Call Flow** | originator  Discovery request with created time***Filter Criteria***  Response with matched resources if any  mn-name |
| **HTTP Header Information** | |  |  | | --- | --- | | **Header** | **Value** | | Accept | application/json | | X-M2M-RI | Request ID | | X-M2M-Origin | AE-ID of Originator | | X-M2M-RVI | Release Version Indicator | |
| **Example with**  **crb** | **API/DIS\_CRB**    **HTTP Request:**  GET /mn-name?fu=1&crb=20180405T235959 HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE5630283216026458665  Accept: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  **HTTP Response:**  200 OK  Content-Type: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  X-M2M-RSC: 2000  {  "m2m:uril":  "/mn-name/ae\_actuator",  "/mn-name/ae\_actuator/cnt\_light2",  "/mn-name/ae\_sensor"  } |
| **Example with**  **cra** | **API/DIS\_CRA**    **HTTP Request:**  GET /mn-name?fu=1&cra=20180405T235959 HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE5630283216026458665  Accept: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  **HTTP Response:**  200 OK  Content-Type: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  X-M2M-RSC: 2000  {  "m2m:uril":  "/mn-name/ae\_actuator/cnt\_light1",  "/mn-name/ae\_sensor/cnt\_temp1",  "/mn-name/ae\_sensor/cnt\_temp2"  } |

#### 6.2.8.5 API-DIS-STB, API-DIS-STS

|  |  |
| --- | --- |
| **API Id** | API/DIS\_STB  API/DIS\_STS |
| **API Name** | Discovery with stateTagBigger and stateTagSmaller ***Filter Criteria*** condition |
| **Target Resource** | CSEBase (can be any oneM2M resource primitives) |
| **Description** | The interface is used to discovery resources that match with the ***stateTag***. If found, the Hosting CSE sends back a response with matched resources. |
| **Resource Structure** | **mn-name**  **(CSEBase)**  **ae\_actuator**  **(AE)**  **ae\_sensor**  **(AE)**  **cnt\_light1**  **(container)**  **cnt\_light2**  **(container)**  **cnt\_temp1**  **(container)**  **cnt\_temp2**  **(container)** |
| **Call Flow** | originator  Discovery request with *stateTag* ***Filter Criteria***  Response with matched resources if any  mn-name |
| **HTTP Header Information** | |  |  | | --- | --- | | **Header** | **Value** | | Accept | application/json | | X-M2M-RI | Request ID | | X-M2M-Origin | AE-ID of Originator | | X-M2M-RVI | Release Version Indicator | |
| **Example with**  **stb** | **API/DIS\_STB**    **HTTP Request:**  GET /mn-name?fu=1&stb=6 HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE5630283216026458665  Accept: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  **HTTP Response:**  200 OK  Content-Type: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  X-M2M-RSC: 2000  {  "m2m:uril":  "/mn-name/ae\_sensor/cnt\_temp1",  "/mn-name/ae\_sensor/cnt\_temp2"  } |
| **Example with**  **sts** | **API/DIS\_STS**    **HTTP Request:**  GET /mn-name?fu=1&sts=6 HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE5630283216026458665  Accept: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  **HTTP Response:**  200 OK  Content-Type: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  X-M2M-RSC: 2000  {  "m2m:uril":  "/mn-name/ae\_actuator/cnt\_light1",  "/mn-name/ae\_actuator/cnt\_light2"  } |

#### 6.2.8.6 API-DIS-SZB, API-DIS-SZA

|  |  |
| --- | --- |
| **API Id** | API/DIS\_SZB  API/DIS\_SZA |
| **API Name** | Discovery with sizeBelow and sizeAbove ***Filter Criteria*** condition |
| **Target Resource** | CSEBase (can be any oneM2M resource primitives) |
| **Description** | The interface is used to discovery resources that match with the **size of container**. If found, the Hosting CSE sends back a response with matched resources. |
| **Resource Structure** | **mn-name**  **(CSEBase)**  **ae\_actuator**  **(AE)**  **ae\_sensor**  **(AE)**  **cnt\_light1**  **(container)**  **cnt\_light2**  **(container)**  **cnt\_temp1**  **(container)**  **cnt\_temp2**  **(container)** |
| **Call Flow** | originator  Discovery request with size of *container* ***Filter Criteria***  Response with matched resources if any  mn-name |
| **HTTP Header Information** | |  |  | | --- | --- | | **Header** | **Value** | | Accept | application/json | | X-M2M-RI | Request ID | | X-M2M-Origin | AE-ID of Originator | | X-M2M-RVI | Release Version Indicator | |
| **Example with**  **szb** | **API/DIS\_SZB**    **HTTP Request:**  GET /mn-name?fu=1&szb=15 HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE5630283216026458665  Accept: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  **HTTP Response:**  200 OK  Content-Type: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  X-M2M-RSC: 2000  {  "m2m:uril":  "/mn-name/ae\_actuator/cnt\_light1"  } |
| **Example with**  **sza** | **API/DIS\_SZA**    **HTTP Request:**  GET /mn-name?fu=1&sza=15 HTTP/1.1  Accept: application/json  Host: 192.168.0.10:8282  X-M2M-Origin: CAE5630283216026458665  Accept: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  **HTTP Response:**  200 OK  Content-Type: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  X-M2M-RSC: 2000  {  "m2m:uril":  "/mn-name/ae\_actuator/cnt\_light2",  "/mn-name/ae\_sensor/cnt\_temp1",  "/mn-name/ae\_sensor/cnt\_temp2"  } |

#### 6.2.8.7 API-DIS-US, API-DIS-MS

|  |  |
| --- | --- |
| **API Id** | API/DIS\_US  API/DIS\_MS |
| **API Name** | Discovery with unmodifiedSince and modifiedSince ***Filter Criteria*** condition |
| **Target Resource** | CSEBase (can be any oneM2M resource primitives) |
| **Description** | The interface is used to discovery resources that match with the **time of modification**. If found, the Hosting CSE sends back a response with matched resources. |
| **Resource Structure** | **mn-name**  **(CSEBase)**  **ae\_actuator**  **(AE)**  **ae\_sensor**  **(AE)**  **cnt\_light1**  **(container)**  **cnt\_light2**  **(container)**  **cnt\_temp1**  **(container)**  **cnt\_temp2**  **(container)** |
| **Call Flow** | originator  Discovery request with modificated time***Filter Criteria***  Response with matched resources if any  mn-name |
| **HTTP Header Information** | |  |  | | --- | --- | | **Header** | **Value** | | Accept | application/json | | X-M2M-RI | Request ID | | X-M2M-Origin | AE-ID of Originator | | X-M2M-RVI | Release Version Indicator | |
| **Example with**  **us** | **API/DIS\_US**    **HTTP Request:**  GET /mn-name?fu=1&us=20180405T235959 HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE5630283216026458665  Accept: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  **HTTP Response:**  200 OK  Content-Type: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  X-M2M-RSC: 2000  {  "m2m:uril":  "/mn-name/ae\_sensor"  } |
| **Example with**  **ms** | **API/DIS\_MS**    **HTTP Request:**  GET /mn-name?fu=1&ms=20180405T235959 HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE5630283216026458665  Accept: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  **HTTP Response:**  200 OK  Content-Type: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  X-M2M-RSC: 2000  {  "m2m:uril":  "/mn-name/ae\_actuator",  "/mn-name/ae\_actuator/cnt\_light1",  "/mn-name/ae\_actuator/cnt\_light2",  "/mn-name/ae\_sensor/cnt\_temp1",  "/mn-name/ae\_sensor/cnt\_temp2"  } |

#### 6.2.8.8 API-DIS-EXB, API-DIS-EXA

|  |  |
| --- | --- |
| **API Id** | API/DIS\_EXB  API/DIS\_EXA |
| **API Name** | Discovery with expiredBefore and expiredAfter ***Filter Criteria*** condition |
| **Target Resource** | CSEBase (can be any oneM2M resource primitives) |
| **Description** | The interface is used to discovery resources that match with the **period of *expirationTime***. If found, the Hosting CSE sends back a response with matched resources. |
| **Resource Structure** | **mn-name**  **(CSEBase)**  **ae\_actuator**  **(AE)**  **ae\_sensor**  **(AE)**  **cnt\_light1**  **(container)**  **cnt\_light2**  **(container)**  **cnt\_temp1**  **(container)**  **cnt\_temp2**  **(container)** |
| **Call Flow** | originator  Discovery request with *expirationTime* ***Filter Criteria***  Response with matched resources if any  mn-name |
| **HTTP Header Information** | |  |  | | --- | --- | | **Header** | **Value** | | Accept | application/json | | X-M2M-RI | Request ID | | X-M2M-Origin | AE-ID of Originator | | X-M2M-RVI | Release Version Indicator | |
| **Example with**  **exb** | **API/DIS\_EXB**    **HTTP Request:**  GET /mn-name?fu=1&exb=20211231T235959 HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE5630283216026458665  Accept: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  **HTTP Response:**  200 OK  Content-Type: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  X-M2M-RSC: 2000  {  "m2m:uril":  "/mn-name/ae\_actuator/cnt\_light1",  "/mn-name/ae\_actuator/cnt\_light2",  "/mn-name/ae\_sensor/cnt\_temp1",  "/mn-name/ae\_sensor/cnt\_temp2"  } |
| **Example with**  **exa** | **API/DIS\_EXA**    **HTTP Request:**  GET /mn-name?fu=1&exa=20211231T235959 HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE5630283216026458665  Accept: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  **HTTP Response:**  200 OK  Content-Type: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  X-M2M-RSC: 2000  {  "m2m:uril":  "/mn-name/ae\_actuator",  "/mn-name/ae\_sensor",  } |

### 6.2.9 Resource Type *subscription*

#### 6.2.9.0 Introduction

The <subscription> resource contains subscription information for its subscribed-to resource. The <subscription> resource created under the subscribed-to resource. Each <subscription> may include notification policies that specify when, and how notification are sent.

#### 6.2.9.1 API-SUB-CRE

|  |  |
| --- | --- |
| **API Id** | API/SUB/CRE/001  API/SUB/CRE/001\_RCN0  API/SUB/CRE/001\_RCN1  API/SUB/CRE/001\_RCN2  API/SUB/CRE/001\_RCN3 |
| **API Name** | <subscription> resource CREATE |
| **Target Resource** | <AE> resource of the requested <subscription> resource |
| **Description** | The interface is used to send a <subscription> CREATE request attached with resultContent to the Registrar CSE, and the Registrar CSE creates a <subscription> resource and sends back a response. |
| **Resource Structure**  **before Sending Request** | **mn-name**  **(CSEBase)**  **ae\_actuator**  **(AE)**  originator  **(AE)** |
| **Call Flow** | originator  subscription create request  Response  mn-name |
| **HTTP Header Information** | |  |  | | --- | --- | | **Header** | **Value** | | X-M2M-RI | Request ID | | X-M2M-Origin | AE-ID of Originator | | Content-Type | application/json;ty=**23** | | X-M2M-RVI | Release Version Indicator | |
| **Example with**  **RCN=0** | **API/SUB/CRE/001\_RCN0**    **HTTP Request:**  POST /mn-name/ae\_actuator?rcn=0 HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE5630283216026458665  Content-Type: application/json;ty=23  Accept: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  {  "m2m:sub": {  "enc": {  "net": [2]  },  "nct": 2,  "nu": ["https://192.168.0.10:8282/notification/handler"],  "rn": "ae\_sub"  }  }  **HTTP Response:**  201 Created  Content-Location: mn-name/ae\_actuator/ae\_sub  Content-Type: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  X-M2M-RSC: 2001 |
| **Example with**  **no RCN or**  **RCN=1** | **API/SUB/CRE/001**  **API/SUB/CRE/001\_RCN1**    **HTTP Request:**  POST /mn-name/ae\_actuatorHTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE5630283216026458665  Content-Type: application/json;ty=23  Accept: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  {  "m2m:sub": {  "enc": {  "net": [2]  },  "nct": 2,  "nu": [  https://192.168.0.10:8282/notification/handler  ],  "rn": "ae\_sub"  }  }  **HTTP Response:**  201 Created  Content-Location: mn-name/ae\_actuator/ae\_sub  Content-Type: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  X-M2M-RSC: 2001  {  "m2m:sub": {  "rn": "ae\_sub",  "ty": 23,  "ri": "SUB583675048372974938",  "pi": "CAE5630283216026458665",  "ct": "20180302T070445",  "lt": "20180302T070445",  "nu": [  "https://192.168.0.10:8282/notification/handler"  ],  "cnm": 2,  "mnm": 50,  "enc": {  "net": [2]  },  "nct": 2  }  } |
| **Example with**  **RCN=2** | **API/SUB/CRE/001\_RCN2**  **HTTP Request:**  POST /mn-name/ae\_actuator?rcn=2 HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE5630283216026458665  Content-Type: application/json;ty=23  Accept: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  {  "m2m:sub": {  "enc": {  "net": [2]  },  "nct": 2,  "nu": [  https://192.168.0.10:8282/notification/handler  ],  "rn": "ae\_sub"  }  }  **HTTP Response:**  201 Created  Content-Location: mn-name/ae\_actuator/ae\_sub  Content-Type: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  X-M2M-RSC: 2001  {  "m2m:uri": "mn-name/ae\_actuator/ae\_sub"  } |
| **Example with**  **RCN=3** | **API/SUB/CRE/001\_RCN3**  **HTTP Request:**  POST /mn-name/ae\_actuator?rcn=3 HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE5630283216026458665  Content-Type: application/json;ty=23  Accept: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  {  "m2m:sub": {  "enc": {  "net": [2]  },  "nct": 2,  "nu": [  https://192.168.0.10:8282/notification/handler  ],  "rn": "ae\_sub"  }  }  **HTTP Response:**  201 Created  Content-Location: mn-name/ae\_actuator/ae\_sub  Content-Type: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  X-M2M-RSC: 2001  {  "m2m:sub": {  "rn": "ae\_sub",  "ty": 23,  "ri": "SUB583675048372974938",  "pi": "CAE5630283216026458665",  "ct": "20180302T070445",  "lt": "20180302T070445",  "nu": [  "https://192.168.0.10:8282/notification/handler"  ],  "cnm": 2,  "mnm": 50,  "enc": {  "net": [2]  },  "nct": 2  }  } |

#### 6.2.9.2 API-SUB-RET

|  |  |
| --- | --- |
| **API Id** | API/SUB/RET/001  API/SUB/RET/001\_RCN1 |
| **API Name** | <subscription> resource RETRIEVE with resultContent set to 1 |
| **Target Resource** | Requested <subscription> resource |
| **Description** | The interface is used to send a <subscription> RETRIEVE request attached with resultContent set to 1 to the <subscription> resource hosting CSE and sends back a response. |
| **Resource Structure before Sending Request** | **mn-name**  **(CSEBase)**  **ae\_actuator**  **(AE)**  **ae\_sub**  **(subscription)** |
| **Call Flow** | originator  subscription retrieve request  Response  mn-name |
| **HTTP Header Information** | |  |  | | --- | --- | | **Header** | **Value** | | Accept | application/json | | X-M2M-RI | Request ID | | X-M2M-Origin | AE-ID of request originator | | X-M2M-RVI | Release Version Indicator | |
| **Example with**  **no RCN or**  **RCN=1** | **API/SUB/RET/001**  **HTTP Request:**  GET /mn-name/ae\_actuator/ae\_sub HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE5630283216026458665  Accept: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  **HTTP Response:**  200 OK  Content-Location: mn-name/ae\_actuator/ae\_sub  Content-Type: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  X-M2M-RSC: 2000  {  "m2m:sub": {  "rn": "ae\_sub",  "ty": 23,  "ri": "SUB583675048372974938",  "pi": "CAE5630283216026458665",  "ct": "20180302T070445",  "lt": "20180302T070445",  "nu": [  "https://192.168.0.10:8282/notification/handler"  ],  "cnm": 2,  "mnm": 50,  "enc": {  "net": [2]  },  "nct": 2  }  } |

#### 6.2.9.3 API-SUB-UPD

|  |  |
| --- | --- |
| **API Id** | API/SUB/UPD/001  API/SUB/UPD/001\_RCN0  API/SUB/UPD/001\_RCN1 |
| **API Name** | <subscription> resource UPDATE with resultContent parameter |
| **Target Resource** | Requested <subscription> resource |
| **Description** | The interface is used to send a <subscription> UPDATE request attached with resultContent to the Registrar CSE, and the Registrar CSE updates a <subscription> resource and sends back a response. |
| **Resource Structure before Sending Request** | **ae\_actuator**  **(AE)** |
| **Call Flow** | originator  subscription update request  Response  mn-name |
| **HTTP Header Information** | |  |  | | --- | --- | | **Header** | **Value** | | X-M2M-RI | Request ID | | X-M2M-Origin | AE-ID of request originator | | Content-Type | application/json | | X-M2M-RVI | Release Version Indicator | |
| **Example with**  **RCN=0** | **API/SUB/UPD/001\_RCN0**    **HTTP Request:**  PUT /mn-name/ae\_actuator/ae\_sub?rcn=0 HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE5630283216026458665  Content-Type: application/json  Accept: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  {  "m2m:sub": {  "nct": 3  }  }  **HTTP Response:**  200 OK  Content-Location: mn-name/ae\_actuator/ae\_sub  Content-Type: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  X-M2M-RSC: 2004 |
| **Example with**  **no RCN or**  **RCN=1** | **API/SUB/UPD/001**  **API/SUB/UPD/001\_RCN1**    **HTTP Request:**  PUT /mn-name/ae\_actuator/ae\_sub HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE5630283216026458665  Content-Type: application/json  Accept: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  {  "m2m:sub": {  "nct": 3  }  }  **HTTP Response:**  200 OK  Content-Location: mn-name/ae\_actuator/ae\_sub  Content-Type: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  X-M2M-RSC: 2004  {  "m2m:sub": {  "rn": "ae\_sub",  "ty": 23,  "ri": "SUB583675048372974938",  "pi": "CAE5630283216026458665",  "ct": "20180302T070445",  "lt": "20180302T070445",  "nu": [  "https://192.168.0.10:8282/notification/handler"  ],  "cnm": 2,  "mnm": 50,  "enc": {  "net": [2]  },  "nct": 3  }  } |

#### 6.2.9.4 API-SUB-DEL

|  |  |
| --- | --- |
| **API Id** | API/SUB/DEL/001  API/SUB/DEL/001\_RCN0  API/SUB/DEL/001\_RCN1 |
| **API Name** | <subscription> resource DELETE with resultContent parameter |
| **Target Resource** | Requested <subscription> resource |
| **Description** | The interface is used to send a <subscription> DELETE request attached with resultContent to the Registrar CSE, and the Registrar CSE deletes a <subscription> resource and sends back a response. |
| **Resource Structure before Sending Request** | **mn-name**  **(CSEBase)**  **ae\_actuator**  **(AE)**  **ae\_sub**  **(subscription)** |
| **Call Flow** | originator  subscription delete request  Response  mn-name |
| **HTTP Header Information** | |  |  | | --- | --- | | **Header** | **Value** | | Accept | application/json | | X-M2M-RI | Request ID | | X-M2M-Origin | AE-ID of request originator | | X-M2M-RVI | Release Version Indicator | |
| **Example with**  **no RCN or**  **RCN=0** | **API/SUB/DEL/001**  **API/SUB/DEL/001\_RCN0**  **HTTP Request:**  DELETE /mn-name/ae\_actuator/ae\_sub?rcn=0 HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE5630283216026458665  Accept: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  **HTTP Response:**  200 OK  Content-Location: mn-name/ae\_actuator/ae\_sub  Content-Type: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  X-M2M-RSC: 2002 |
| **Example with**  **RCN=1** | **API/SUB/DEL/001\_RCN1**  **HTTP Request:**  DELETE /mn-name/ae\_actuator/ae\_sub?rcn=1 HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE5630283216026458665  Accept: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  **HTTP Response:**  200 OK  Content-Location: mn-name/ae\_actuator/ae\_sub  Content-Type: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  X-M2M-RSC: 2002  {  "m2m:sub": {  "rn": "ae\_sub",  "ty": 23,  "ri": "SUB583675048372974938",  "pi": "CAE5630283216026458665",  "ct": "20180302T070445",  "lt": "20180302T070445",  "nu": [  "https://192.168.0.10:8282/notification/handler"  ],  "cnm": 2,  "mnm": 50,  "enc": {  "net": [2]  },  "nct": 3  }  } |

### 6.2.10 Resource Type *group*

#### 6.2.10.0 Introduction

The <group> resource represents a group of resources of the same or mixed types. It basically designed to handle several of resources at the same time. When a request sent through the <group> resource, it distributes the request to each member of the <group> resources, which are indicated by the memberIDs attribute.

#### 6.2.10.1 API-GRP-CRE

|  |  |
| --- | --- |
| **API Id** | API/GRP/CRE/001  API/GRP/CRE/001\_RCN0  API/GRP/CRE/001\_RCN1  API/GRP/CRE/001\_RCN2  API/GRP/CRE/001\_RCN3 |
| **API Name** | <group> resource CREATE |
| **Target Resource** | <AE> resource of the requested <group> resource |
| **Description** | The interface is used to send a <group> CREATE request attached with resultContent to the Registrar CSE, and the Registrar CSE creates a <group> resource and sends back a response. |
| **Resource Structure**  **before Sending Request** | **mn-name**  **(CSEBase)**  **ae\_actuator**  **(AE)** |
| **Call Flow** | originator  group create request  Response  mn-name |
| **HTTP Header Information** | |  |  | | --- | --- | | **Header** | **Value** | | X-M2M-RI | Request ID | | X-M2M-Origin | AE-ID of Originator | | Content-Type | application/json;ty=**9** | | X-M2M-RVI | Release Version Indicator | |
| **Example with**  **RCN=0** | **API/GRP/CRE/001\_RCN0**  **HTTP Request:**  POST /mn-name/ae\_actuator?rcn=0 HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE5630283216026458665  Content-Type: application/json;ty=9  Accept: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  {  "m2m:grp": {  "mid": [  "mn-name/ae\_actuator/lamp\_container1",  "mn-name/ae\_actuator/lamp\_container2"  ],  "mt": 3,  "mnm": 50,  "rn": "group\_lamp"  }  }  **HTTP Response:**  201 Created  Content-Location: mn-name/ae\_actuator/group\_lamp  Content-Type: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  X-M2M-RSC: 2001 |
| ***Example* with**  **no RCN or**  **RCN=1** | **API/GRP/CRE/001**  **API/GRP/CRE/001\_RCN1**    **HTTP Request:**  POST /mn-name/ae\_actuator HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE5630283216026458665  Content-Type: application/json;ty=9  Accept: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  {  "m2m:grp": {  "mid": [  "mn-name/ae\_actuator/lamp\_container1",  "mn-name/ae\_actuator/lamp\_container2"  ],  "mt": 3,  "mnm": 50,  "rn": "group\_lamp"  }  }  **HTTP Response:**  201 Created  Content-Location: mn-name/ae\_actuator/group\_lamp  Content-Type: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  X-M2M-RSC: 2001  {  "m2m:grp": {  "rn": "group\_lamp",  "ty": 9,  "ri": "GRP792482146823489621",  "pi": "CAE5630283216026458665",  "ct": "20171212T170445",  "lt": "20171212T170445",  "mt": 3,  "cnm": 2,  "mnm": 50,  "mid": [  "mn-name/ae\_actuator/lamp\_container1",  "mn-name/ae\_actuator/lamp\_container2"  ]  "mtv": true,  "csy": 1  }  } |
| **Example with**  **RCN=2** | **API/GRP/CRE/001\_RCN2**  **HTTP Request:**  POST /mn-name/ae\_actuator?rcn=2 HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE5630283216026458665  Content-Type: application/json;ty=9  Accept: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  {  "m2m:grp": {  "mid": [  "mn-name/ae\_actuator/lamp\_container1",  "mn-name/ae\_actuator/lamp\_container2"  ],  "mt": 3,  "mnm": 50,  "rn": "group\_lamp"  }  }  **HTTP Response:**  201 Created  Content-Location: mn-name/ae\_actuator/group\_lamp  Content-Type: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  X-M2M-RSC: 2001  {  "m2m:uri": "mn-name/ae\_actuator/group\_lamp"  } |
| **Example with**  **RCN=3** | **API/GRP/CRE/001\_RCN3**  **HTTP Request:**  POST /mn-name/ae\_actuator?rcn=3 HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE5630283216026458665  Content-Type: application/json;ty=9  Accept: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  {  "m2m:grp": {  "mid": [  "mn-name/ae\_actuator/lamp\_container1",  "mn-name/ae\_actuator/lamp\_container2"  ],  "mt": 3,  "mnm": 50,  "rn": "group\_lamp"  }  }  **HTTP Response:**  201 Created  Content-Location: mn-name/ae\_actuator/group\_lamp  Content-Type: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  X-M2M-RSC: 2001  {  "m2m:rce": {  "m2m:grp": {  "rn": "group\_lamp",  "ty": 9,  "ri": "GRP792482146823489621",  "pi": "CAE5630283216026458665",  "ct": "20171212T170445",  "lt": "20171212T170445",  "mt": 3,  "cnm": 2,  "mnm": 50,  "mid": [  "mn-name/ae\_actuator/lamp\_container1",  "mn-name/ae\_actuator/lamp\_container2"  ]  "mtv": true,  "csy": 1  }  "uri": "mn-name/ae\_actuator/group\_lamp"  }  } |

#### 6.2.10.2 API-GRP-RET

|  |  |
| --- | --- |
| **API Id** | API/GRP/RET/001  API/GRP/RET/001\_RCN1 |
| **API Name** | <group> resource RETRIEVE with resultContent set to 1 |
| **Target Resource** | Requested <group> resource |
| **Description** | The interface is used to send a <group> RETRIEVE request attached with resultContent set to 1 to the <group> resource hosting CSE and sends back a response. |
| **Resource Structure before Sending Request** | **mn-name**  **(CSEBase)**  **ae\_actuator**  **(AE)**  **group\_lamp**  **(group)** |
| **Call Flow** | originator  group retrieve request  Response  mn-name |
| **HTTP Header Information** | |  |  | | --- | --- | | **Header** | **Value** | | Accept | application/ json | | X-M2M-RI | Request ID | | X-M2M-Origin | AE-ID of request originator | | X-M2M-RVI | Release Version Indicator | |
| **Example with**  **no RCN or**  **RCN=1** | **API/GRP/RET/001**  **API/GRP/RET/001\_RCN1**  **HTTP Request:**  GET /mn-name/ae\_actuator/group\_lamp?rcn=1 HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE5630283216026458665  Accept: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  **HTTP Response:**  200 OK  Content-Location: mn-name/ae\_actuator/group\_lamp  Content-Type: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  X-M2M-RSC: 2000  {  "m2m:grp": {  "rn": "group\_lamp",  "ty": 9,  "ri": "GRP792482146823489621",  "pi": "CAE5630283216026458665",  "ct": "20171212T170445",  "lt": "20171212T170445",  "mt": 3,  "cnm": 2,  "mnm": 50,  "mid": [  "mn-name/ae\_actuator/lamp\_container1",  "mn-name/ae\_actuator/lamp\_container2"  ]  "mtv": true,  "csy": 1  }  } |

#### 6.2.10.3 API-GRP-UPD

|  |  |
| --- | --- |
| **API Id** | API/GRP/UPD/001  API/GRP/UPD/001\_RCN0  API/GRP/UPD/001\_RCN1 |
| **API Name** | <group> resource UPDATE with resultContent parameter |
| **Target Resource** | Requested <group> resource |
| **Description** | The interface is used to send a <group> UPDATE request attached with resultContent to the Registrar CSE, and the Registrar CSE updates a <group> resource and sends back a response. |
| **Resource Structure before Sending Request** | **mn-name**  **(CSEBase)**  **ae\_actuator**  **(AE)**  **group\_lamp**  **(group)** |
| **Call Flow** | originator  group update request  Response  mn-name |
| **HTTP Header Information** | |  |  | | --- | --- | | **Header** | **Value** | | X-M2M-RI | Request ID | | X-M2M-Origin | AE-ID of request originator | | Content-Type | application/json | | X-M2M-RVI | Release Version Indicator | |
| **Example with**  **RCN=0** | **API/GRP/UPD/001\_RCN0**  **HTTP Request:**  PUT /mn-name/ae\_actuator/group\_lamp?rcn=0 HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE5630283216026458665  Content-Type: application/json  Accept: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  {  "m2m:grp": {  "mnm": 100  }  }  **HTTP Response:**  200 OK  Content-Location: mn-name/ae\_actuator/group\_lamp  Content-Type: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  X-M2M-RSC: 2004 |
| **Example with**  **no RCN or**  **RCN=1** | **API/GRP/UPD/001**  **API/GRP/UPD/001\_RCN1**  **HTTP Request:**  PUT /mn-name/ae\_actuator/group\_lamp?rcn=1 HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE5630283216026458665  Content-Type: application/json  Accept: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  {  "m2m:grp": {  "mnm": 100  }  }  **HTTP Response:**  200 OK  Content-Location: mn-name/ae\_actuator/group\_lamp  Content-Type: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  X-M2M-RSC: 2004  {  "m2m:grp": {  "rn": "group\_lamp",  "ty": 9,  "ri": "GRP792482146823489621",  "pi": "CAE5630283216026458665",  "ct": "20171212T170445",  "lt": "20171212T170445",  "mt": 3,  "cnm": 2,  "mnm": 100,  "mid": [  "mn-name/ae\_actuator/lamp\_container1",  "mn-name/ae\_actuator/lamp\_container2"  ]  "mtv": true,  "csy": 1  }  } |

#### 6.2.10.4 API-GRP-DEL

|  |  |
| --- | --- |
| **API Id** | API/GRP/DEL/001  API/GRP/DEL/001\_RCN0  API/GRP/DEL/001\_RCN1 |
| **API Name** | <group> resource DELETE with resultContent parameter |
| **Target Resource** | Requested <group> resource |
| **Description** | The interface is used to send a <group> DELETE request attached with resultContent to the Registrar CSE, and the Registrar CSE deletes a <group> resource and sends back a response. |
| **Resource Structure before Sending Request** | **mn-name**  **(CSEBase)**  **ae\_actuator**  **(AE)**  **group\_lamp**  **(group)** |
| **Call Flow** | originator  group delete request  Response  mn-name |
| **HTTP Header Information** | |  |  | | --- | --- | | **Header** | **Value** | | Accept | application/ json | | X-M2M-RI | Request ID | | X-M2M-Origin | AE-ID of request originator | | X-M2M-RVI | Release Version Indicator | |
| **Example with**  **RCN=0** | **API/GRP/DEL/001\_RCN0**  **HTTP Request:**  DELETE /mn-name/ae\_actuator/group\_lamp?rcn=0 HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE5630283216026458665  Accept: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  **HTTP Response:**  200 OK  Content-Location: mn-name/ae\_actuator/group\_lamp  Content-Type: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  X-M2M-RSC: 2002 |
| **Example with**  **no RCN or**  **RCN=1** | **API/GRP/DEL/001**  **API/GRP/DEL/001\_RCN1**  **HTTP Request:**  DELETE /mn-name/ae\_actuator/group\_lamp?rcn=1 HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE5630283216026458665  Accept: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  **HTTP Response:**  200 OK  Content-Location: mn-name/ae\_actuator/group\_lamp  Content-Type: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  X-M2M-RSC: 2002  {  "m2m:grp": {  "rn": "group\_lamp",  "ty": 9,  "ri": "GRP792482146823489621",  "pi": "CAE5630283216026458665",  "ct": "20171212T170445",  "lt": "20171212T170445",  "mt": 3,  "cnm": 2,  "mnm": 100,  "mid": [  "mn-name/ae\_actuator/lamp\_container1",  "mn-name/ae\_actuator/lamp\_container2"  ]  "mtv": true,  "csy": 1  }  } |

#### 6.2.10.5 API-GRP-FOPT

|  |  |
| --- | --- |
| **API Id** | API/GRP/FOPT/001 |
| **API Name** | <group> resource |
| **Target Resource** | Fopt virtual resource of the <group> resource |
| **Description** | The interface is used to send a contentInstance CREATE request to the FanoutOutPoint Virtual resource of a group.  As a result, the contentInstances will be created on each container that belonging to this group. |
| **Resource Structure**  **before Sending Request** |  |
| **Call Flow** | originator  group create request  Response  mn-name |
| **HTTP Header Information** | |  |  | | --- | --- | | **Header** | **Value** | | X-M2M-RI | Request ID | | X-M2M-Origin | AE-ID of Originator | | Content-Type | application/json;ty=**4** | | X-M2M-RVI | Release Version Indicator | |
| **Example with**  **no RCN or**  **RCN=1** | API/GRP/    HTTP Request:  POST /mn-name/ae\_actuator/ group\_lamp/fopt HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE5630283216026458665  Content-Type: application/json;ty=4  Accept: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  {  "m2m:cin": {  "con": "20"  }  }  HTTP Response:  200 Created  Content-Location: mn-name/ae\_actuator/group\_lamp  Content-Type: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  X-M2M-RSC: 2000  {      "m2m:agr": {          "rsp": [              {                  "fr": "/ID-CSE-01/mn-name/ae\_actuator/lamp\_container1",                  "pc": {                      "m2m:cin": {                          "con": "20",                          "cs": 2,                          "ct": "20200609T163651,675786",                          "et": "99991231T235959",                          "lt": "20200609T163651,675786",                          "pi": "cnt20200609T1632571403417286346243\_cse01",                          "ri": "cin20200609T1636511403417286346245\_cse01",                          "rn": "fopt20200609T1636511403417286346244\_cse01",                          "st": 1,                          "ty": 4                      }                  },                  "rqi": "1234",                  "rsc": 2001              },              {                  "fr": "/ID-CSE-01/mn-name/ae\_actuator/lamp\_container2",                  "pc": {                      "m2m:cin": {                          "con": "20",                          "cs": 2,                          "ct": "20200609T163651,680775",                          "et": "99991231T235959",                          "lt": "20200609T163651,680775",                          "pi": "cnt20200609T1609261403417286346240\_cse01",                          "ri": "cin20200609T1636511403417286346246\_cse01",                          "rn": "fopt20200609T1636511403417286346244\_cse01",                          "st": 1,                          "ty": 4                      }                  },                  "rqi": "1234",                  "rsc": 2001              }          ]      }  } |

### 6.2.11 Resource Type *timeSeries*

#### 6.2.11.0 Introduction

The <timeSeries> resource represents a container for Time Series Data Instance. It is used to share information with other entities and potentially to track, detect and report the missing data in Time Series.

#### 6.2.11.1 API-TS-CRE

|  |  |
| --- | --- |
| **API Id** | API/TS/CRE/001  API/TS/CRE/001\_/RCN0  API/TS/CRE/001\_/RCN1  API/TS/CRE/001\_/RCN2  API/TS/CRE/001\_/RCN3 |
| **API Name** | <timeSeries> resource CREATE with resultContent parameter |
| **Target Resource** | <AE> resource of the requested <timeSeries> resource |
| **Description** | The interface is used to send a <timeSeries> CREATE request attached with resultContent to the Registrar CSE, and the Registrar CSE creates a <timeSeries> resource and sends back a response. |
| **Resource Structure before Sending Request** | **mn-name**  **(CSEBase)**  **ae\_sensor**  **(AE)** |
| **Call Flow** | originator  timeSeries create request  Response  mn-name |
| **HTTP Header Information** | |  |  | | --- | --- | | **Header** | **Value** | | X-M2M-RI | Request ID | | X-M2M-Origin | AE-ID of request originator | | Content-Type | application/json;ty=**29** | | X-M2M-RVI | Release Version Indicator | |
| **Example with**  **RCN=0** | **API/TS/CRE/001\_RCN0**  **HTTP Request:**  POST /mn-name/ae\_sensor?rcn=0 HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE5630283216026458665  Content-Type: application/json;ty=29  Accept: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  {  "m2m:ts": {  "rn": timeSeries\_cont,  "pei": 1,  "mdd": true,  "mdt": 5  }  }  **HTTP Response:**  201 Created  Content-Location: mn-name/ae\_sensor/timeSeries\_cont  Content-Type: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  X-M2M-RSC: 2001 |
| **Example with**  **no RCN or**  **RCN=1** | **API/TS/CRE/001**  **API/TS/CRE/001\_RCN1**    **HTTP Request:**  POST /mn-name/ae\_sensor?rcn=1 HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE5630283216026458665  Content-Type: application/json;ty=29  Accept: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  {  "m2m:ts": {  "rn": timeSeries\_cont,  "pei": 1,  "mdd": true,  "mdt": 1  }  }  **HTTP Response:**  201 Created  Content-Location: mn-name/ae\_sensor/timeSeries\_cont  Content-Type: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  X-M2M-RSC: 2001  {  "m2m:ts": {  "rn": "timeSeries\_cont",  "ty": 29,  "ri": "TS792482146823489621",  "pi": "CAE5630283216026458665",  "ct": "20171212T170445",  "lt": "20171212T170445",  "et": "2021212T170445",  "st": 0,  "mni": 3153600000,  "mbs": 3153600000,  "mia": 31536000,  "cni": 0,  "cbs": 0,  "pei": 1,  "mdd": "true",  "mdn": 1000,  "mdc": 0,  "mdt": 1  }  } |
| **Example with**  **RCN=2** | **API/TS/CRE/001\_RCN2**  **HTTP Request:**  POST /mn-name/ae\_sensor?rcn=2 HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE5630283216026458665  Content-Type: application/json;ty=29  Accept: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  {  "m2m:ts": {  "rn": timeSeries\_cont,  "pei": 1,  "mdd": true,  "mdt": 1  }  }  **HTTP Response:**  201 Created  Content-Location: mn-name/ae\_sensor/timeSeries\_cont  Content-Type: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  X-M2M-RSC: 2001  {  "m2m:uri": "mn-name/ae\_sensor/timeSeries\_cont"  } |
| **Example with**  **RCN=3** | **API/TS/CRE/001\_RCN3**  **HTTP Request:**  POST /mn-name/ae\_sensor?rcn=3 HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE5630283216026458665  Content-Type: application/json;ty=29  Accept: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  {  "m2m:ts": {  "rn": timeSeries\_cont,  "pei": 1,  "mdd": true,  "mdt": 1  }  }  **HTTP Response:**  201 Created  Content-Location: mn-name/ae\_sensor/timeSeries\_cont  Content-Type: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  X-M2M-RSC: 2001  {  "m2m:rce": {  "m2m:ts": {  "rn": "timeSeries\_cont",  "ty": 29,  "ri": "TS792482146823489621",  "pi": "CAE5630283216026458665",  "ct": "20171212T170445",  "lt": "20171212T170445",  "et": "2021212T170445",  "st": 0,  "mni": 3153600000,  "mbs": 3153600000,  "mia": 31536000,  "cni": 0,  "cbs": 0,  "pei": 1,  "mdd": "ture",  "mdn": 1000,  "mdc": 0,  "mdt": 1  }  "m2m:uri": "mn-name/ae\_sensor/timeSeries\_cont"  }  } |

#### 6.2.11.2 API-TS-RET

|  |  |
| --- | --- |
| **API Id** | API/TS/CRE/001  API/TS/CRE/001\_RCN1 |
| **API Name** | <timeSeries> resource RETRIEVE with resultContent parameter |
| **Target Resource** | Requested <timeSeries> resource |
| **Description** | The interface is used to send a <timeSeries> RETRIEVE request attached with resultContent set to 1 to the Registrar CSE and sends back a response. |
| **Resource Structure before Sending Request** | **mn-name**  **(CSEBase)mn-name**  **(CSEBase)**  **ae\_sensor**  **(AE)**  **timeSeries\_cnt**  **(timeSeries)** |
| **Call Flow** | originator  timeSeries retrieve request  Response  mn-name |
| **HTTP Header Information** | |  |  | | --- | --- | | **Header** | **Value** | | Accept | application/json | | X-M2M-RI | Request ID | | X-M2M-Origin | AE-ID of request originator | | X-M2M-RVI | Release Version Indicator | |
| **Example with**  **no RCN or**  **RCN=1** | **API/TS/RET/001**  **API/TS/RET/001\_RCN1**  **HTTP Request:**  GET /mn-name/ae\_sensor?rcn=1 HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE5630283216026458665  Accept: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  **HTTP Response:**  200 OK  Content-Location: mn-name/ae\_sensor/timeSeries\_cont  Content-Type: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  X-M2M-RSC: 2000  {  "m2m:ts": {  "rn": "timeSeries\_cont",  "ty": 29,  "ri": "TS792482146823489621",  "pi": "CAE5630283216026458665",  "ct": "20171212T170445",  "lt": "20171212T170445",  "et": "2021212T170445",  "st": 0,  "mni": 3153600000,  "mbs": 3153600000,  "mia": 31536000,  "cni": 0,  "cbs": 0,  "pei": 1,  "mdd": "ture",  "mdn": 1000,  "mdc": 0,  "mdt": 1  }  } |

#### 6.2.11.3 API-TS-UPD

|  |  |
| --- | --- |
| **API Id** | API/TS/UPD/001  API/TS/UPD/001\_RCN0  API/TS/UPD/001\_RCN1 |
| **API Name** | <timeSeries> resource UPDATE with resultContent parameter |
| **Target Resource** | Requested <timeSeries> resource |
| **Description** | The interface is used to send a <timeSeries> UPDATE request attached with resultContent to the Registrar CSE, and the Registrar CSE updates a <timeSeries> resource and sends back a response. |
| **Resource Structure before Sending Request** | **mn-name**  **(CSEBase)**  **ae\_sensor**  **(AE)**  **timeSeries\_cnt**  **(timeSeries)** |
| **Call Flow** | originator  timeSeries update request  Response  mn-name |
| **HTTP Header Information** | |  |  | | --- | --- | | **Header** | **Value** | | X-M2M-RI | Request ID | | X-M2M-Origin | AE-ID of request originator | | Content-Type | application/json | | X-M2M-RVI | Release Version Indicator | |
| **Example with**  **RCN=0** | **API/TS/UPD/001\_RCN0**  **HTTP Request:**  PUT /mn-name/ae\_sensor/timeSeries\_cont?rcn=0 HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE5630283216026458665  Content-Type: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  {  "m2m:ts": {  "mdt": 2  }  }  **HTTP Response:**  200 OK  Content-Location: mn-name/ae\_sensor/timeSeries\_cont  Content-Type: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  X-M2M-RSC: 2004 |
| **Example with**  **no RCN or**  **RCN=1** | **API/TS/UPD/001**  **API/TS/UPD/001\_RCN1**  **HTTP Request:**  PUT /mn-name/ae\_sensor/timeSeries\_cont?rcn=1 HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE5630283216026458665  Content-Type: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  {  "m2m:ts": {  "mdt": 2  }  }  **HTTP Response:**  200 OK  Content-Location: mn-name/ae\_sensor/timeSeries\_cont  Content-Type: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  X-M2M-RSC: 2004  {  "m2m:ts": {  "rn": "timeSeries\_cont",  "ty": 29,  "ri": "TS792482146823489621",  "pi": "CAE5630283216026458665",  "ct": "20171212T170445",  "lt": "20171212T170445",  "et": "2021212T170445",  "st": 0,  "mni": 3153600000,  "mbs": 3153600000,  "mia": 31536000,  "cni": 0,  "cbs": 0,  "pei": 1,  "mdd": "ture",  "mdn": 1000,  "mdc": 0,  "mdt": 2  }  } |

#### 6.2.11.4 API-TS-DEL

|  |  |
| --- | --- |
| **API Id** | API/TS/DEL/001  API/TS/DEL/001\_RCN0  API/TS/DEL/001\_RCN1 |
| **API Name** | <timeSeries> resource DELETE with resultContent parameter |
| **Target Resource** | Requested <timeSeries> resource |
| **Description** | The interface is used to send a <timeSeries> DELETE request attached with resultContent to the Registrar CSE, and the Registrar CSE updates a <timeSeries> resource and sends back a response. |
| **Resource Structure before Sending Request** | **mn-name**  **(CSEBase)**  **ae\_sensor**  **(AE)**  **timeSeries\_cnt**  **(timeSeries)** |
| **Call Flow** | originator  timeSeries delete request  Response  mn-name |
| **HTTP Header Information** | |  |  | | --- | --- | | **Header** | **Value** | | Accept | application/json | | X-M2M-RI | Request ID | | X-M2M-Origin | AE-ID of request originator | | X-M2M-RVI | Release Version Indicator | |
| **Example with**  **no RCN or**  **RCN=0** | **API/TS/DEL/001**  **API/TS/DEL/001\_RCN0**  **HTTP Request:**  DELETE /mn-name/ae\_sensor/timeSeries\_cont?rcn=0 HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE5630283216026458665  Accept: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  **HTTP Response:**  200 OK  Content-Location: mn-name/ae\_sensor/timeSeries\_cont  Content-Type: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  X-M2M-RSC: 2002 |
| **Example with**  **RCN=1** | **API/TS/DEL/001\_RCN1**  **HTTP Request:**  DELETE /mn-name/ae\_sensor/timeSeries\_cont?rcn=1 HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE5630283216026458665  Accept: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  **HTTP Response:**  200 OK  Content-Location: mn-name/ae\_sensor/timeSeries\_cont  Content-Type: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  X-M2M-RSC: 2002  {  "m2m:ts": {  "rn": "timeSeries\_cont",  "ty": 29,  "ri": "TS792482146823489621",  "pi": "CAE5630283216026458665",  "ct": "20171212T170445",  "lt": "20171212T170445",  "et": "2021212T170445",  "st": 0,  "mni": 3153600000,  "mbs": 3153600000,  "mia": 31536000,  "cni": 0,  "cbs": 0,  "pei": 1,  "mdd": "ture",h  "mdn": 1000,  "mdc": 0,  "mdt": 2  }  } |

### 6.2.12 Resource Type *timeSeriesInstance*

#### 6.2.12.0 Introduction

The <timeSeriesInstance> resource represents a data instance in the <timeSeries> resource.

#### 6.2.12.1 API-TSI-CRE

|  |  |
| --- | --- |
| **API Id** | API/TSI/CRE/001  API/TSI/CRE/001\_RCN0  API/TSI/CRE/001\_RCN1  API/TSI/CRE/001\_RCN2  API/TSI/CRE/001\_RCN3 |
| **API Name** | <timeSeriesInstance> resource CREATE with resultContent parameter |
| **Target Resource** | <timeSeries> resource of the requested <timeSeriesInstance> resource |
| **Description** | The interface is used to send a <timeSeriesInstance> CREATE request attached with resultContent to the Registrar CSE, and the Registrar CSE creates a <timeSeriesInstance> resource and sends back a response. |
| **Resource Structure before Sending Request** | **mn-name**  **(CSEBase)**  **temp\_sensor**  **(AE)**  **timeSeries\_cont**  **(timeSereis)** |
| **Call Flow** | originator  timeSeriesInstance create request  Response  mn-name |
| **HTTP Header Information** | |  |  | | --- | --- | | **Header** | **Value** | | X-M2M-RI | Request ID | | X-M2M-Origin | AE-ID of request originator | | Content-Type | application/json;ty=**30** | | X-M2M-RVI | Release Version Indicator | |
| **Example with**  **RCN=0** | **API/TSI/CRE/001\_RCN0**  **HTTP Request:**  POST /mn-name/ae\_sensor/timeSeries\_cont?rcn=0 HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE5630283216026458665  Content-Type: application/json;ty=30  X-M2M-RI: 1234  X-M2M-RVI: 2a  {  "m2m:tsi": {  "dgt": "20180307T123456",  "con": "DATA\_TACK"  }  }  **HTTP Response:**  201 Created  Content-Location: mn-name/ae\_sensor/timeSeries\_cont/tsi\_value1  Content-Type: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  X-M2M-RSC: 2001 |
| **Example with**  **no RCN or**  **RCN=1** | **API/TSI/CRE/001**  **API/TSI/CRE/001\_RCN1**  **HTTP Request:**  POST /mn-name/ae\_sensor/timeSeries\_cont HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE5630283216026458665  Content-Type: application/json;ty=30  X-M2M-RI: 1234  X-M2M-RVI: 2a  {  "m2m:tsi": {  "rn": "tsi\_value1",  "dgt": "20180307T123456",  "con": "DATA\_TACK"  }  }  **HTTP Response:**  201 Created  Content-Location: mn-name/ae\_sensor/timeSeries\_cont  Content-Type: application/json  X-M2M-Origin: CAE5630283216026458665  X-M2M-RI: 1234  X-M2M-RVI: 2a  X-M2M-RSC: 2001  {  "m2m:tsi": {  "rn": "tsi\_value1",  "ty": 30,  "pi": "CAE5630283216026458665",  "ri": "TSI840674869203617594",  "ct": "20180307T012211",  "lt": "20180307T012211",  "et": "20210307T012211",  "dgt": "20180307T123456"  "con": "DATA\_TACK",  "cs": 9,  "st": 7  }  } |
| **Example with**  **RCN=2** | **API/TSI/CRE/001\_RCN2**  **HTTP Request:**  POST /mn-name/ae\_sensor/timeSeries\_cont?rcn=2 HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE5630283216026458665  Content-Type: application/json;ty=30  X-M2M-RI: 1234  X-M2M-RVI: 2a  {  "m2m:tsi": {  "rn": "tsi\_value1",  "dgt": "20180307T123456",  "con": "DATA\_TACK"  }  }  **HTTP Response:**  201 Created  Content-Location: mn-name/ae\_sensor/timeSeries\_cont/tsi\_value1  Content-Type: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  X-M2M-RSC: 2001  {  "m2m:uri": "mn-name/ae\_sensor/timeSeries\_cont/tsi\_value1"  } |
| **Example with**  **RCN=3** | **API/TSI/CRE/001\_RCN3**  **HTTP Request:**  POST /mn-name/ae\_sensor/timeSeries\_cont?rcn=3 HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE5630283216026458665  Content-Type: application/json;ty=30  X-M2M-RI: 1234  X-M2M-RVI: 2a  {  "m2m:tsi": {  "rn": "tsi\_value1",  "dgt": "20180307T123456",  "con": "DATA\_TACK"  }  }  **HTTP Response:**  201 Created  Content-Location: mn-name/ae\_sensor/timeSeries\_cont/tsi\_value1  Content-Type: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  X-M2M-RSC: 2001  {  "m2m:rce": {  "m2m:tsi": {  "rn": "tsi\_value1",  "ty": 30,  "pi": "CAE5630283216026458665",  "ri": "TSI840674869203617594",  "ct": "20180307T012211",  "lt": "20180307T012211",  "et": "2n0210307T012211",  "dgt": "20180307T123456"  "con": "DATA\_TACK",  "cs": 9,  "st": 7  }  "m2m:uri": "mn-name/ae\_sensor/timeSeries\_cont/tsi\_value1"  }  } |

#### 6.2.12.2 API-TSI-RET

|  |  |
| --- | --- |
| **API Id** | API/TSI/RET/001  API/TSI/RET/001\_RCN1 |
| **API Name** | <timeSeriesInstance> resource RETRIEVE with resultContent parameter |
| **Target Resource** | Requested <timeSeriesInstance> resource |
| **Description** | The interface is used to send a <timeSeriesInstance> RETRIEVE request attached with resultContent set to 1 to the Registrar CSE and sends back a response. |
| **Resource Structure before Sending Request** | **mn-name**  **(CSEBase)**  **ae\_sensor**  **(AE)**  **timeSeries\_cont**  **(timeSeries)**  **tsi\_value1**  **(timeSeries\_instance)**  **tsi\_value2**  **(timeSeries\_instance)** |
| **Call Flow** | originator  timeSeriesInstance retrieve request  Response  mn-name |
| **HTTP Header Information** | |  |  | | --- | --- | | **Header** | **Value** | | Accept | application/json | | X-M2M-RI | Request ID | | X-M2M-Origin | AE-ID of request originator | | X-M2M-RVI | Release Version Indicator | |
| **Example with**  **no RCN or**  **RCN=1** | **API/TSI/RET/001**  **API/TSI/RET/001\_RCN1**  **HTTP Request:**  GET /mn-name/ae\_sensor/timeSeries\_cont/tsi\_value1?rcn=1 HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE5630283216026458665  Accept: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  **HTTP Response:**  200 OK  Content-Location: mn-name/ae\_sensor/timeSeries\_cont/tsi\_value1  Content-Type: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  X-M2M-RSC: 2000  {  "m2m:tsi": {  "rn": "tsi\_value1",  "ty": 30,  "pi": "CAE5630283216026458665",  "ri": "TSI840674869203617594",  "ct": "20180307T012211",  "lt": "20180307T012211",  "et": "2n0210307T012211",  "dgt": "20180307T123456"  "con": "DATA\_TACK",  "cs": 9,  "st": 7  }  } |

#### 6.2.12.3 API-TSI-UPD

|  |  |
| --- | --- |
| **API Id** | API/TSI/UPD |
| **API Name** | <timeSeriesInstance> resource UPDATE |
| **Target Resource** | Requested <timeSeriesInstance> resource |
| **Description** | Update operation is not allowed in <timeSeriesInstance> resource |

#### 6.2.12.4 API-TSI-DEL

|  |  |
| --- | --- |
| **API Id** | API/TSI/DEL/001  API/TSI/DEL/001\_RCN0  API/TSI/DEL/001\_RCN1 |
| **API Name** | <timeSeriesInstance> resource DELETE with resultContent parameter |
| **Target Resource** | Requested <timeSeriesInstance> resource |
| **Description** | The interface is used to send a <timeSeriesInstance> DELETE request attached with resultContent to the Registrar CSE, and the Registrar CSE creates a <timeSeriesInstance> resource and sends back a response. |
| **Resource Structure before Sending Request** | **mn-name**  **(CSEBase)**  **ae\_sensor**  **(AE)**  **timeSeries\_cont**  **(timeSeries)**  **tsi\_value1**  **(timeSeries\_instance)**  **tsi\_value2**  **(timeSeries\_instance)** |
| **Call Flow** | originator  timeSeriesInstance delete request  Response  mn-name |
| **HTTP Header Information** | |  |  | | --- | --- | | **Header** | **Value** | | Accept | application/json | | X-M2M-RI | Request ID | | X-M2M-Origin | AE-ID of request originator | | X-M2M-RVI | Release Version Indicator | |
| **Example with**  **no RCN or**  **RCN=0** | **API/TSI/DEL/001**  **API/TSI/DEL/001\_RCN0**  **HTTP Request:**  DELETE /mn-name/ae\_sensor/timeSeries\_cont/tsi\_value1?rcn=0 HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE5630283216026458665  Accept: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  **HTTP Response:**  200 OK  Content-Location: mn-name/ae\_sensor/timeSeries\_cont/tsi\_value1  Content-Type: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  X-M2M-RSC: 2002 |
| **Example with**  **RCN=1** | **API/TSI/DEL/001\_RCN1**  **HTTP Request:**  DELETE /mn-name/ae\_sensor/timeSeries\_cont/tsi\_value1?rcn=1 HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE5630283216026458665  Accept: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  **HTTP Response:**  200 OK  Content-Location: mn-name/ae\_sensor/timeSeries\_cont/tsi\_value1  Content-Type: application/json  X-M2M-Origin: CAE5630283216026458665  X-M2M-RI: 1234  X-M2M-RVI: 2a  X-M2M-RSC: 2002  {  "m2m:tsi": {  "rn": "tsi\_value1",  "ty": 30,  "pi": "CAE5630283216026458665",  "ri": "TSI840674869203617594",  "ct": "20180307T012211",  "lt": "20180307T012211",  "et": "2n0210307T012211",  "dgt": "20180307T123456"  "con": "DATA\_TACK",  "cs": 9,  "st": 7  }  } |

### 6.2.13 Resource Type *accessControlPolicy*

#### 6.2.13.0 Introduction

The <accessControlPolicy> resource is defined to contain a set of access control rules defining for which entities have which privilege to perform operations such as CREATE, RETRIEVE, UPDATE and DELETE. The allowed operations are defined by an attribute accessControlOperations that associated with each <accessControlPolicy> resource.

#### 6.2.13.1 API-ACP-CRE

|  |  |
| --- | --- |
| **API Id** | API/ACP/CRE/001  API/ACP/CRE/001\_RCN0  API/ACP/CRE/001\_RCN1  API/ACP/CRE/001\_RCN2  API/ACP/CRE/001\_RCN3 |
| **API Name** | <accessControlPolicy> resource CREATE with resultContent parameter |
| **Target Resource** | <CSEBase> of the requested <accessControlPolicy> resource |
| **Description** | The interface is used to send a <accessControlPolicy> CREATE request attached with resultContent to the Registrar CSE, and the Registrar CSE creates a <accessControlPolicy> resource, and sends back a response. |
| **Resource Structure before Sending Request** | **mn-name**  **(CSEBase)**  **ae\_sensor**  **(AE)** |
| **Call Flow** | originator  accessControlPolicy create request  Response  mn-name |
| **HTTP Header Information** | |  |  | | --- | --- | | **Header** | **Value** | | Accept | application/json | | X-M2M-RI | Request ID | | X-M2M-Origin | AE-ID of request originator | | Content-Type | application/json;ty=**1** | | X-M2M-RVI | Release Version Indicator | |
| **Example with**  **RCN=0** | **API/ACP/CRE/001\_RCN0**  **HTTP Request:**  POST /mn-name?rcn=0 HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE5630283216026458665  Content-Type: application/json;ty=1  Accept: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  {  "m2m:acp" : {  "rn": "accessControlPolicy",  "et" : "20201221T064952",  "pv" : {  "acr" : [  {  "acco" : [],  "acop" : 63,  "acor" : [ "CAE1", "CAE2" ]  }  ]  },  "pvs" : {  "acr" : [  {  "acco" : [],  "acop" : 63,  "acor" : [ "all" ]  }  ]  }  }  }  **HTTP Response:**  201 Created  Content-Location: mn-name/accessControlPolicy  Content-Type: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  X-M2M-RSC: 2001 |
| **Example with**  **no RCN or**  **RCN=1** | API/ACP/CRE/001  API/ACP/CRE/001\_RCN1  HTTP Request:  POST /mn-name?rcn=1 HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE5630283216026458665  Content-Type: application/json;ty=1  Accept: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  {  "m2m:acp" : {  "rn": "accessControlPolicy",  "et" : "20201221T064952",  "pv" : {  "acr" : [  {  "acco" : [],  "acop" : 63,  "acor" : [ "CAE1", "CAE2" ]  }  ]  },  "pvs" : {  "acr" : [  {  "acco" : [],  "acop" : 63,  "acor" : [ "all" ]  }  ]  }  }  }  HTTP Response:  201 Created  Content-Location: mn-name/accessControlPolicy  Content-Type: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  X-M2M-RSC: 2001  {  "m2m:acp": {  "rn": "accessControlPolicy",  "ty": 1,  "ri": "ACP503720698362418574",  "pi": "mnID",  "ct": "20180308T115922",  "lt": "20180308T115922",  "et": "20201221T064952",  "pv": {  "acr": [  {  "acco": [],  "acop": 63,  "acor": [  "CAE1",  "CAE2"  ]  }  ]  },  "pvs": {  "acr": [  {  "acco": [],  "acop": 63,  "acor": [  "all"  ]  }  ]  }  }  } |
| **Example with**  **RCN=2** | **API/ACP/CRE/001\_RCN2**  **HTTP Request:**  POST /mn-name?rcn=2 HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE5630283216026458665  Content-Type: application/json;ty=1  Accept: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  {  "m2m:acp" : {  "rn": "accessControlPolicy",  "et" : "20201221T064952",  "pv" : {  "acr" : [  {  "acco" : [],  "acop" : 63,  "acor" : [ "CAE1", "CAE2" ]  }  ]  },  "pvs" : {  "acr" : [  {  "acco" : [],  "acop" : 63,  "acor" : [ "all" ]  }  ]  }  }  }  **HTTP Response:**  201 Created  Content-Location: mn-name/accessControlPolicy  Content-Type: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  X-M2M-RSC: 2001  {  "m2m:uri": "mn-name/accessControlPolicy"  } |
| **Example with**  **RCN=3** | **API/ACP/CRE/001\_RCN3**  **HTTP Request:**  POST /mn-name?rcn=3 HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE5630283216026458665  Content-Type: application/json;ty=1  Accept: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  {  "m2m:acp" : {  "rn": "accessControlPolicy",  "et" : "20201221T064952",  "pv" : {  "acr" : [  {  "acco" : [],  "acop" : 63,  "acor" : [ "CAE1", "CAE2" ]  }  ]  },  "pvs" : {  "acr" : [  {  "acco" : [],  "acop" : 63,  "acor" : [ "all" ]  }  ]  }  }  }  **HTTP Response:**  201 Created  Content-Location: mn-name/accessControlPolicy  Content-Type: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  X-M2M-RSC: 2001  {  "m2m:rce": {  "m2m:acp": {  "rn": "accessControlPolicy",  "ty": 1,  "ri": "ACP503720698362418574",  "pi": "mnID",  "ct": "20180308T115922",  "lt": "20180308T115922",  "et": "20201221T064952",  "pv": {  "acr": [  {  "acco": [],  "acop": 63,  "acor": [  "CAE1",  "CAE2"  ]  }  ]  },  "pvs": {  "acr": [  {  "acco": [],  "acop": 63,  "acor": [  "all"  ]  }  ]  }  "m2m:uri": "mn-name/accessControlPolicy"  }  }  } |

#### 6.2.12.2 API-ACP-RET

|  |  |
| --- | --- |
| **API Id** | API/ACP/RET/001  API/ACP/RET/001\_RCN1 |
| **API Name** | <accessControlPolicy> resource RETRIEVE with resultContent parameter |
| **Target Resource** | <CSEBase> of the requested <accessControlPolicy> resource |
| **Description** | The interface is used to send a <accessControlPolicy> RETRIEVE request attached with resultContent set to 1 to the Registrar CSE and sends back a response. |
| **Resource Structure before Sending Request** | **mn-name**  **(CSEBase)**  **ae\_sensor**  **(AE)**  **accessControlPolicy** |
| **Call Flow** | originator  accessControlPolicy retrieve request  Response  mn-name |
| **HTTP Header Information** | |  |  | | --- | --- | | **Header** | **Value** | | Accept | application/json | | X-M2M-RI | Request ID | | X-M2M-Origin | AE-ID of request originator | | X-M2M-RVI | Release Version Indicator | |
| **Example with**  **no RCN or**  **RCN=1** | **API/ACP/RET/001**  **API/ACP/RET/001\_RCN1**  **HTTP Request:**  GET /mn-name/accessControlPolicy?rcn=1 HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE5630283216026458665  Accept: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  **HTTP Response:**  200 OK  Content-Location: mn-name/accessControlPolicy  Content-Type: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  X-M2M-RSC: 2000  {  "m2m:acp": {  "rn": "accessControlPolicy",  "ty": 1,  "ri": "ACP503720698362418574",  "pi": "mnID",  "ct": "20180308T115922",  "lt": "20180308T115922",  "et": "20201221T064952",  "pv": {  "acr": [  {  "acco": [],  "acop": 63,  "acor": [  "CAE1",  "CAE2"  ]  }  ]  },  "pvs": {  "acr": [  {  "acco": [],  "acop": 63,  "acor": [  "all"  ]  }  ]  }  }  } |

#### 6.2.12.3 API-ACP-UPD

|  |  |
| --- | --- |
| **API Id** | API/ACP/UPD/001  API/ACP/UPD/001\_RCN0  API/ACP/UPD/001\_RCN1 |
| **API Name** | <accessControlPolicy> resource UPDATE with resultContent parameter |
| **Target Resource** | <accessControlPolicy> resource |
| **Description** | The interface is used to send a <accessControlPolicy> UPDATE request attached with resultContent to the Registrar CSE, and the Registrar CSE creates a <accessControlPolicy> resource and sends back a response. |
| **Resource Structure before Sending Request** | **mn-name**  **(CSEBase)**  **ae\_sensor**  **(AE)**  **accessControlPolicy** |
| **Call Flow** | originator  accessControlPolicy update request  Response  mn-name |
| **HTTP Header Information** | |  |  | | --- | --- | | **Header** | **Value** | | X-M2M-RI | Request ID | | X-M2M-Origin | AE-ID of request originator | | Content-Type | application/json | | X-M2M-RVI | Release Version Indicator | |
| **Example with**  **RCN=0** | **API/ACP/UPD/001\_RCN0**  **HTTP Request:**  PUT /mn-name/accessControlPolicy?rcn=0 HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE5630283216026458665  Content-Type: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  {  "m2m:acp" : {  "pv" : {  "acr" : [  {  "acor" : [ "CAE\_A", "CAE\_B" ]  }  ]  },  "pvs" : {  "acr" : [  {  "acor" : [ "CAE\_C", "CAE\_D" ]  }  ]  }  }  }  **HTTP Response:**  200 OK  Content-Location: mn-name/accessControlPolicy  Content-Type: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  X-M2M-RSC: 2004 |
| **Example with**  **no RCN or**  **RCN=1** | **API/ACP/UPD/001**  **API/ACP/UPD/001\_RCN1**  **HTTP Request:**  PUT /mn-name/accessControlPolicy?rcn=1 HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE5630283216026458665  Content-Type: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  {  "m2m:acp" : {  "pv" : {  "acr" : [  {  "acor" : [ "CAE\_A", "CAE\_B" ]  }  ]  },  "pvs" : {  "acr" : [  {  "acor" : [ "CAE\_C", "CAE\_D" ]  }  ]  }  }  }  HTTP Response:  200 OK  Content-Location: mn-name/accessControlPolicy  Content-Type: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  X-M2M-RSC: 2004  {  "m2m:acp": {  "rn": "accessControlPolicy",  "ty": 1,  "ri": "ACP503720698362418574",  "pi": "mnID",  "ct": "20180308T115922",  "lt": "20180308T115922",  "et": "20201221T064952",  "pv": {  "acr": [  {  "acco": [],  "acop": 63,  "acor": [  "CAE\_A",  "CAE\_B"  ]  }  ]  },  "pvs": {  "acr": [  {  "acco": [],  "acop": 63,  "acor": [  "CAE\_C",  "CAE\_D"  ]  }  ]  }  }  } |

#### 6.2.12.4 API-ACP-DEL

|  |  |
| --- | --- |
| **API Id** | API/ACP/DEL/001  API/ACP/DEL/001\_RCN0  API/ACP/DEL/001\_RCN1 |
| **API Name** | <accessControlPolicy> resource DELETE with resultContent parameter |
| **Target Resource** | <accessControlPolicy> resource |
| **Description** | The interface is used to send a <accessControlPolicy> DELETE request attached with resultContent to the Registrar CSE, and the Registrar CSE creates a <accessControlPolicy> resource and sends back a response. |
| **Resource Structure before Sending Request** | **mn-name**  **(CSEBase)**  **ae\_sensor**  **(AE)**  **accessControlPolicy** |
| **Call Flow** | originator  accessControlPolicy delete request  Response  mn-name |
| **HTTP Header Information** | |  |  | | --- | --- | | **Header** | **Value** | | Accept | application/json | | X-M2M-RI | Request ID | | X-M2M-Origin | AE-ID of request originator | | X-M2M-RVI | Release Version Indicator | |
| **Example with**  **no RCN or**  **RCN=0** | **API/ACP/DEL/001**  **API/ACP/DEL/001\_RCN0**  **HTTP Request:**  DELETE /mn-name/accessControlPolicy?rcn=0 HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE5630283216026458665  Accept: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  **HTTP Response:**  200 OK  Content-Location: mn-name/accessControlPolicy  Content-Type: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  X-M2M-RSC: 2002 |
| **Example with**  **RCN=1** | **API/ACP/DEL/001\_RCN1**  **HTTP Request:**  DELETE /mn-name/accessControlPolicy?rcn=1 HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE5630283216026458665  Accept: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  **HTTP Response:**  200 OK  Content-Location: mn-name/accessControlPolicy  Content-Type: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  X-M2M-RSC: 2002  {  "m2m:acp": {  "rn": "accessControlPolicy",  "ty": 1,  "ri": "ACP503720698362418574",  "pi": "mnID",  "ct": "20180308T115922",  "lt": "20180308T115922",  "et": "20201221T064952",  "pv": {  "acr": [  {  "acco": [],  "acop": 63,  "acor": [  "CAE\_A",  "CAE\_B"  ]  }  ]  },  "pvs": {  "acr": [  {  "acco": [],  "acop": 63,  "acor": [  "CAE\_C",  "CAE\_D"  ]  }  ]  }  }  } |

### 6.2.14 Resource Type *flexContainer*

#### 6.2.14.0 Introduction

The <flexContainer> resource type is a customizable container for data instances. While <contentInstance> save the data in content attribute, <flexContainer> resource type directly contains the data in the attribute. Since it can have any attribute name, it may be a solution for saving custom data which is defined by the developer or manufacturer.

The CRUD examples in this clause are written based on the parking lot implementation. As custom attributes, availableSpotNumber, totalSpotNumber are made to save data for the parking lot.

#### 6.2.14.1 API-FLX-CRE

|  |  |
| --- | --- |
| **API Id** | API/FLX/CRE/001  API/FLX/CRE/001\_RCN0  API/FLX/CRE/001\_RCN1  API/FLX/CRE/001\_RCN2  API/FLX/CRE/001\_RCN3 |
| **API Name** | <flexContainer> resource CREATE with resultContent parameter |
| **Target Resource** | <CSEBase> of the requested <flexContainer> resource |
| **Description** | The interface is used to send a <flexContainer> CREATE request attached with resultContent to the Registrar CSE, and the Registrar CSE creates a <flexContainer> resource, and sends back a response. |
| **Resource Structure before Sending Request** | **mn-name**  **(CSEBase)** |
| **Call Flow** | originator  flexContainer create request  Response  mn-name |
| **HTTP Header Information** | |  |  | | --- | --- | | **Header** | **Value** | | X-M2M-RI | Request ID | | X-M2M-Origin | AE-ID of request originator | | Content-Type | application/json;ty=**28** | | X-M2M-RVI | Release Version Indicator | |
| **Example with**  **RCN=0** | **API/FLX/CRE/001\_RCN0**  **HTTP Request:**  POST /mn-name?rcn=0 HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE5630283216026458665  Content-Type: application/json;ty=28  X-M2M-RI: 1234  X-M2M-RVI: 2a  {  "m2m:sc\_offLot": {  "rn": "yt\_lot\_1",  "lbl": [  "sc"  ],  "cnd": "http://developers.iotocean.org/schema/offStreetParking.xsd",  "type": "OffStreetParking",  "category": "lot\_1",  "geolocation": [  37.4114423,  127.1293735  ],  "name": "parkingLot\_1",  "availableSpotNumber": "3",  "totalSpotNumber": "110"  }  }  **HTTP Response:**  201 Created  Content-Location: mn-name/yt\_lot\_1  Content-Type: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  X-M2M-RSC: 2001 |
| **Example with**  **no RCN or**  **RCN=1** | **API/FLX/CRE/001**  **API/FLX/CRE/001\_RCN1**  **HTTP Request:**  POST /mn-name?rcn=1 HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE5630283216026458665  Content-Type: application/json;ty=28  X-M2M-RI: 1234  X-M2M-RVI: 2a  {  "m2m:sc\_offLot": {  "rn": "yt\_lot\_1",  "lbl": [  "sc"  ],  "cnd": "http://developers.iotocean.org/schema/offStreetParking.xsd",  "type": "OffStreetParking",  "category": "lot\_1",  "geolocation": [  37.4114423,  127.1293735  ],  "name": "parkingLot\_1",  "availableSpotNumber": "3",  "totalSpotNumber": "110"  }  }  **HTTP Response:**  201 Created  Content-Location: mn-name/yt\_lot\_1  Content-Type: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  X-M2M-RSC: 2001  {  "m2m:sc\_offLot": {  "pi": "CAE5630283216026458665",  "ri": "FLX37696264720673421",  "ty": 28,  "ct": "20181019T045127",  "st": 15878,  "rn": "yt\_lot\_1",  "lt": "20181207T002422",  "et": "20211019T045127",  "lbl": [  "sc"  ],  "cnd": "http://developers.iotocean.org/schema/offStreetParking.xsd",  "type": "OffStreetParking",  "category": "lot\_1",  "geolocation": [  37.4114423,  127.1293735  ],  "name": "parkingLot\_1",  "availableSpotNumber": "3",  "totalSpotNumber": "110"  }  } |
| **Example with**  **RCN=2** | **API/FLX/CRE/001\_RCN2**  **HTTP Request:**  POST /mn-name?rcn=2 HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE5630283216026458665  Content-Type: application/json;ty=28  X-M2M-RI: 1234  X-M2M-RVI: 2a  {  "m2m:sc\_offLot": {  "rn": "yt\_lot\_1",  "lbl": [  "sc"  ],  "cnd": "http://developers.iotocean.org/schema/offStreetParking.xsd",  "type": "OffStreetParking",  "category": "lot\_1",  "geolocation": [  37.4114423,  127.1293735  ],  "name": "parkingLot\_1",  "availableSpotNumber": "3",  "totalSpotNumber": "110"  }  }  **HTTP Response:**  201 Created  Content-Location: mn-name/yt\_lot\_1  Content-Type: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  X-M2M-RSC: 2001  {  "m2m:uri": "mn-name/yt\_lot\_1"  } |
| **Example with**  **RCN=3** | **API/FLX/CRE/001\_RCN3**  **HTTP Request:**  POST /mn-name?rcn=3 HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE5630283216026458665  Content-Type: application/json;ty=28  X-M2M-RI: 1234  X-M2M-RVI: 2a  {  "m2m:sc\_offLot": {  "rn": "yt\_lot\_1",  "lbl": [  "sc"  ],  "cnd": "http://developers.iotocean.org/schema/offStreetParking.xsd",  "type": "OffStreetParking",  "category": "lot\_1",  "geolocation": [  37.4114423,  127.1293735  ],  "name": "parkingLot\_1",  "availableSpotNumber": "3",  "totalSpotNumber": "110"  }  }  **HTTP Response:**  201 Created  Content-Location: mn-name/yt\_lot\_1  Content-Type: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  X-M2M-RSC: 2001  {  "m2m:rce":{  "m2m:sc\_offLot":{  "pi":"CAE5630283216026458665",  "ri":"FLX37696264720673421",  "ty":28,  "ct":"20181019T045127",  "st":15878,  "rn":"yt\_lot\_1",  "lt":"20181207T002422",  "et":"20211019T045127",  "lbl":[  "sc"  ],  "cnd":"http://developers.iotocean.org/schema/offStreetParking.xsd",  "type":"OffStreetParking",  "category":"lot\_1",  "geolocation":[  37.4114423,  127.1293735  ],  "name":"parkingLot\_1",  "availableSpotNumber":"3",  "totalSpotNumber":"110"  }  },  "m2m:uri":"mn-name/yt\_lot\_1"  } |

#### 6.2.14.2 API-FLX-RET

|  |  |
| --- | --- |
| **API Id** | API/FLX/RET/001  API/FLX/RET/001\_RCN1 |
| **API Name** | <flexContainer> resource RETRIEVE with resultContent parameter |
| **Target Resource** | <CSEBase> of the requested <flexContainer> resource |
| **Description** | The interface is used to send a <flexContainer> RETRIEVE request attached with resultContent set to 1 to the Registrar CSE and sends back a response. |
| **Resource Structure before Sending Request** | **mn-name**  **(CSEBase)**  **yt\_lot\_1**  **(flexContainer)** |
| **Call Flow** | originator  flexContainer retrieve request  Response  mn-name |
| **HTTP Header Information** | |  |  | | --- | --- | | **Header** | **Value** | | Accept | application/json | | X-M2M-RI | Request ID | | X-M2M-Origin | AE-ID of request originator | | X-M2M-RVI | Release Version Indicator | |
| **Example with**  **no RCN or**  **RCN=1** | **API/FLX/RET/001**  **API/FLX/RET/001\_RCN1**  **HTTP Request:**  GET /mn-name/yt\_lot\_1?rcn=1 HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE5630283216026458665  Accept: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  **HTTP Response:**  200 OK  Content-Location: mn-name/yt\_lot\_1  Content-Type: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  X-M2M-RSC: 2000  {  "m2m:sc\_offLot": {  "pi": "CAE5630283216026458665",  "ri": "FLX37696264720673421",  "ty": 28,  "ct": "20181019T045127",  "st": 15878,  "rn": "yt\_lot\_1",  "lt": "20181207T002422",  "et": "20211019T045127",  "lbl": [  "sc"  ],  "cnd": "http://developers.iotocean.org/schema/offStreetParking.xsd",  "type": "OffStreetParking",  "category": "lot\_1",  "geolocation": [  37.4114423,  127.1293735  ],  "name": "parkingLot\_1",  "availableSpotNumber": "3",  "totalSpotNumber": "110"  }  } |

#### 6.2.14.3 API-FLX-UPD

|  |  |
| --- | --- |
| **API Id** | API/FLX/UPD/001  API/FLX/UPD/001\_RCN0  API/FLX/UPD/001\_RCN1 |
| **API Name** | <flexContainer> resource UPDATE with resultContent parameter |
| **Target Resource** | <flexContainer> resource |
| **Description** | The interface is used to send a <flexContainer> UPDATE request attached with resultContent to the Registrar CSE, and the Registrar CSE updates a <flexContainer> resource and sends back a response. |
| **Resource Structure before Sending Request** | **mn-name**  **(CSEBase)**  **yt\_lot\_1**  **(flexContainer)** |
| **Call Flow** | originator  flexContainer update request  Response  mn-name |
| **HTTP Header Information** | |  |  | | --- | --- | | **Header** | **Value** | | X-M2M-RI | Request ID | | X-M2M-Origin | AE-ID of request originator | | Content-Type | application/json | | X-M2M-RVI | Release Version Indicator | |
| **Example with**  **RCN=0** | **API/FLX/UPD/001\_RCN0**  **HTTP Request:**  PUT /mn-name/yt\_lot\_1?rcn=0 HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE5630283216026458665  Content-Type: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  {  "m2m:sc\_offLot" : {  "availableSpotNumber": "40",  }  **HTTP Response:**  200 OK  Content-Location: mn-name/yt\_lot\_1  Content-Type: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  X-M2M-RSC: 2004 |
| **Example with**  **no RCN or**  **RCN=1** | **API/FLX/UPD/001**  **API/FLX/UPD/001\_RCN1**  **HTTP Request:**  PUT /mn-name/yt\_lot\_1?rcn=1 HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE5630283216026458665  Content-Type: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  {  "m2m:sc\_offLot" : {  "availableSpotNumber": "40",  }  **HTTP Response:**  200 OK  Content-Location: mn-name/yt\_lot\_1  Content-Type: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  X-M2M-RSC: 2004  {  "m2m:sc\_offLot": {  "pi": "CAE5630283216026458665",  "ri": "FLX37696264720673421",  "ty": 28,  "ct": "20181019T045127",  "st": 15878,  "rn": "yt\_lot\_1",  "lt": "20181207T052435",  "et": "20211019T045127",  "lbl": [  "sc"  ],  "cnd": "http://developers.iotocean.org/schema/offStreetParking.xsd",  "type": "OffStreetParking",  "category": "lot\_1",  "geolocation": [  37.4114423,  127.1293735  ],  "name": "parkingLot\_1",  "availableSpotNumber": "40",  "totalSpotNumber": "110"  }  } |

#### 6.2.14.4 API-FLX-DEL

|  |  |
| --- | --- |
| **API Id** | API/FLX/DEL/001  API/FLX/DEL/001\_RCN0  API/FLX/DEL/001\_RCN1 |
| **API Name** | <flexContainer> resource DELETE with resultContent parameter |
| **Target Resource** | <flexContainer> resource |
| **Description** | The interface is used to send a <flexContainer> DELETE request attached with resultContent to the Registrar CSE, and the Registrar CSE deletes a <flexContainer> resource and sends back a response. |
| **Resource Structure before Sending Request** | **mn-name**  **(CSEBase)**  **yt\_lot\_1**  **(flexContainer)** |
| **Call Flow** | originator  flexContainer delete request  Response  mn-name |
| **HTTP Header Information** | |  |  | | --- | --- | | **Header** | **Value** | | Accept | application/json | | X-M2M-RI | Request ID | | X-M2M-Origin | AE-ID of request originator | | X-M2M-RVI | Release Version Indicator | |
| **Example with**  **no RCN or**  **RCN=0** | **API/FLX/DEL/001**  **API/FLX/DEL/001\_RCN0**  **HTTP Request:**  DELETE /mn-name/yt\_lot\_1?rcn=0 HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE5630283216026458665  Accept: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  **HTTP Response:**  200 OK  Content-Location: mn-name/yt\_lot\_1  Content-Type: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  X-M2M-RSC: 2002 |
| **Example with**  **RCN=1** | **API/FLX/DEL/001\_RCN1**  **HTTP Request:**  DELETE /mn-name/yt\_lot\_1?rcn=1 HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE5630283216026458665  Accept: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  **HTTP Response:**  200 OK  Content-Location: mn-name/yt\_lot\_1  Content-Type: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  X-M2M-RSC: 2002  {  "m2m:sc\_offLot": {  "pi": "CAE5630283216026458665",  "ri": "FLX37696264720673421",  "ty": 28,  "ct": "20181019T045127",  "st": 15878,  "rn": "yt\_lot\_1",  "lt": "20181207T052435",  "et": "20211019T045127",  "lbl": [  "sc"  ],  "cnd": "http://developers.iotocean.org/schema/offStreetParking.xsd",  "type": "OffStreetParking",  "category": "lot\_1",  "geolocation": [  37.4114423,  127.1293735  ],  "name": "parkingLot\_1",  "availableSpotNumber": "40",  "totalSpotNumber": "110"  }  } |

Annex A:  
Example of notification

# A.1 Notification API

## A.1.0 Introduction

The notify operation is used for notify any event. AE or CSE which has privilege to make a <subscription> resource as a child resource of the subscribed-to resource. The <subscription> resource includes notification policies that specify which, when, and how notifications are sent.

In this clause, notification examples are provided for the understanding of notification procedure. Especially, examples have different notificationEnentType in the eventNotificationCriteria. The notificationEventType value is specified in table A.1.0-1 and set when notification is sent.

Table A.1.0-1: Interpretation of notificationEventType

|  |  |  |
| --- | --- | --- |
| Value | Interpretation | Note |
| 1 | Update\_of\_Resource | Default |
| 2 | Delete\_of\_Resource |  |
| 3 | Create\_of\_Direct\_Child\_Resource |  |
| 4 | Delete\_of\_Direct\_Child\_Resource |  |

## A.1.1 API-NOTI-NET1

|  |  |  |
| --- | --- | --- |
| API Id | API/NOTI/NET1/STEP01  API/NOTI/NET1/STEP02  API/NOTI/NET1/STEP03 | |
| API Name | Notification procedure when the <subscription> resource has notificationEventType set to 1(Hosting CSE sends notification when the subscribed-to resource has been updated) | |
| Target Resource | Update Target: Requested <container> resource  Notification Target: originator | |
| Description | Figure below depicts the procedure for notification.  originator  (AE1)  mn-name  Step 03  Initial condition: MN(Hosting CSE) has a <container> resource. The originator is AE1 in this clause, but can be CSE.  Step 01: The originator sends a <subscription> resource CREATE request to the <container> resource on the Registrar CSE. In the request, notificationEventType set to 1 and notificationURI attribute set to originator. The Registrar CSE creates a <subscription> resource and sends back a response.  Step 02: An AE2 sends an UPDATE request to the <container> resource. The Registrar CSE updates a <container> resource and sends back a response.  Step 03: The Hosting CSE sends notification as soon as update succeed. The originator sends back an ACK message. | |
| **Step 01** | **Resource Structure**  **before Sending Request** | **mn-name**  **(CSEBase)**  **cont\_temp**  **(container)**  originator  **(AE)** |
| **Call Flow** | originator  (AE1)  subscription create request  Response  mn-name |
| **HTTP Header Information** | |  |  | | --- | --- | | **Header** | **Value** | | Accept | application/json | | X-M2M-RI | Request ID | | X-M2M-Origin | AE-ID of Originator | | Content-Type | application/json;ty=**23** | | X-M2M-RVI | Release Version Indicator | |
| **Example** | **API/NOTI/NET1/STEP01**    **HTTP Request:**  POST /mn-name/cont\_temp? HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE5630283216026458665  Content-Type: application/json;ty=23  Accept: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  {  "m2m:sub": {  "enc": {  "net": [1]  },  "nu": ["AE1"],  "rn": "cont\_sub"  }  }  **HTTP Response:**  201 Created  Content-Location: mn-name/cont\_temp  Content-Type: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  X-M2M-RSC: 2001 |
| **Step 02** | **Resource Structure**  **before Sending Request** | **mn-name**  **(CSEBase)**  **cont\_temp**  **(container)**  **cont\_sub**  **(subscription)** |
| **Call Flow** | mn-name  container update request  Response  AE2 |
| **HTTP Header Information** | |  |  | | --- | --- | | **Header** | **Value** | | Accept | application/json | | X-M2M-RI | Request ID | | X-M2M-Origin | AE-ID of Originator | | Content-Type | application/json | | X-M2M-RVI | Release Version Indicator | |
| **Example** | **API/NOTI/NET1/STEP02**  **HTTP Request:**  PUT /mn-name/cont\_temp? HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE0120180406T08463114  Content-Type: application/json  Accept: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  {  "m2m:cnt": {  "mni": "300"  }  }  **HTTP Response:**  200 OK  Content-Type: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  X-M2M-RSC: 2004  {  "m2m:cnt": {  "cbs": 10,  "cni": 0,  "ct": "20180406T125807",  "et": "99991231T235959",  "lbl": [  "indoor\_temp"  ],  "lt": "20180406T130109",  "mbs": 60000000,  "mia": 1600,  "mni": 300,  "pi": "CAE0120180406T0846311405855351047680\_cse01",  "ri": "cnt20180406T1258071405855183193603\_cse01",  "rn": "cont\_temp",  "st": 1,  "ty": 3  }  } |
| **Step 03** | **Resource Structure**  **before Sending Request** | **mn-name**  **(CSEBase)**  **cont\_temp**  **(container)**  **cont\_sub**  **(subscription)** |
| **Call Flow** | AE1  Notification send  ACK  mn-name |
| **HTTP Header Information** | |  |  | | --- | --- | | **Header** | **Value** | | Accept | application/json | | X-M2M-RI | Request ID | | X-M2M-Origin | AE-ID of Originator | | Content-Type | application/json | | X-M2M-RVI | Release Version Indicator | |
| **Example** | **API/NOTI/NET1/STEP03**    **HTTP Request:**  POST HTTP/1.1  Accept: application/json  Host: 192.168.0.10:8282  X-M2M-Origin: mn-name  Content-Type: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  {  "m2m:sgn": {  "sur": " mn-name/cont\_temp/cont\_sub",  "nev": {  "net":1,  "rep": {  "m2m:cnt": {  "cbs": 10,  "cni": 0,  "ct": "20180406T125807",  "et": "99991231T235959",  "lbl": [  "indoor\_temp"  ],  "lt": "20180406T130109",  "mbs": 60000000,  "mia": 1600,  "mni": 300,  "pi": "CAE0120180406T0846311405855351047680\_cse01",  "ri": "cnt20180406T1258071405855183193603\_cse01",  "rn": "cont\_temp",  "st": 1,  "ty": 3  }  }  }  }  }  **HTTP Response:**  200 OK  X-M2M-RI: 1234  X-M2M-RVI: 2a  X-M2M-RSC: 2000 |

## A.1.2 API-NOTI-NET2

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| --- | --- | --- |
| **API Id** | API/NOTI/NET2/STEP01  API/NOTI/NET2/STEP02  API/NOTI/NET2/STEP03 | |
| **API Name** | Notification procedure when the <subscription> resource has notificationEventType set to 2(Hosting CSE sends notification when the subscribed to resource has been deleted) | |
| **Target Resource** | Delete Target: Requested <container> resource  Notification Target: originator | |
| **Description** | Figure below depicts the procedure for notification.  originator  (AE1)  subscription create request to the container  Response  mn-name  AE2  container resource delete request  Response  Notification send  ACK  Step 01  Step 02  Step 03  Initial condition: MN(Hosting CSE) has a <container> resource. The originator is AE1 in this clause, but can be CSE.  Step 01: The originator sends a <subscription> resource CREATE request to the <container> resource on the Registrar CSE. In the request, notificationEventType set to 2 and notificationURI attribute set to originator. The Registrar CSE creates a <subscription> resource and sends back a response.  Step 02: An AE2 sends a DELETE request to the <container> resource. The Registrar CSE deletes a <container> resource and sends back a response.  Step 03: The Hosting CSE sends notification as soon as delete succeed. The originator sends back an ACK message. | |
| **Step 01** | **Resource Structure**  **before Sending Request** | **mn-name**  **(CSEBase)**  **cont\_temp**  **(container)**  originator  **(AE)** |
| **Call Flow** | originator  (AE1)  subscription create request  Response  mn-name |
| **HTTP Header Information** | |  |  | | --- | --- | | **Header** | **Value** | | Accept | application/json | | X-M2M-RI | Request ID | | X-M2M-Origin | AE-ID of Originator | | Content-Type | application/json;ty=**23** | | X-M2M-RVI | Release Version Indicator | |
| **Example** | **API/NOTI/NET2/STEP01**    **HTTP Request:**  POST /mn-name/cont\_temp? HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE5630283216026458665  Content-Type: application/json;ty=23  Accept: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  {  "m2m:sub": {  "enc": {  "net": [2]  },  "nu": ["AE1"],  "rn": "cont\_sub"  }  }  **HTTP Response:**  201 Created  Content-Location: mn-name/cont\_temp  Content-Type: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  X-M2M-RSC: 2001 |
| **Step 02** | **Resource Structure**  **before Sending Request** | **mn-name**  **(CSEBase)**  **cont\_temp**  **(container)**  **cont\_sub**  **(subscription)** |
| **Call Flow** | mn-name  container delete request  Response  AE2 |
| **HTTP Header Information** | |  |  | | --- | --- | | **Header** | **Value** | | Accept | application/json | | X-M2M-RI | Request ID | | X-M2M-Origin | AE-ID of Originator | | X-M2M-RVI | Release Version Indicator | |
| **Example** | **API/NOTI/NET2/STEP02**    **HTTP Request:**  DELETE /mn-name/cont\_temp? HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE0120180406T08463114  Accept: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  **HTTP Response:**  200 OK  Content-Type: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  X-M2M-RSC: 2004  {  "m2m:cnt": {  "cbs": 10,  "cni": 0,  "ct": "20180406T125807",  "et": "99991231T235959",  "lbl": [  "indoor\_temp"  ],  "lt": "20180406T130109",  "mbs": 60000000,  "mia": 1600,  "mni": 300,  "pi": "CAE0120180406T0846311405855351047680\_cse01",  "ri": "cnt20180406T1258071405855183193603\_cse01",  "rn": "cont\_temp",  "st": 1,  "ty": 3  }  } |
| **Step 03** | **Resource Structure**  **before Sending Request** | **mn-name**  **(CSEBase)** |
| **Call Flow** | AE1  Notification send  ACK  mn-name |
| **HTTP Header Information** | |  |  | | --- | --- | | **Header** | **Value** | | X-M2M-RI | Request ID | | X-M2M-Origin | AE-ID of Originator | | Content-Type | application/json | | X-M2M-RVI | Release Version Indicator | |
| **Example** | **API/NOTI/NET2/STEP03**    **HTTP Request:**  POST HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: mn-name  Content-Type: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  {  "m2m:sgn": {  "sur": " mn-name/cont\_temp/cont\_sub",  "nev": {  "net":2,  "rep": {  "m2m:cnt": {  "cbs": 10,  "cni": 0,  "ct": "20180406T125807",  "et": "99991231T235959",  "lbl": [  "indoor\_temp"  ],  "lt": "20180406T130109",  "mbs": 60000000,  "mia": 1600,  "mni": 300,  "pi": "CAE0120180406T0846311405855351047680\_cse01",  "ri": "cnt20180406T1258071405855183193603\_cse01",  "rn": "cont\_temp",  "st": 1,  "ty": 3  }  }  }  }  }  **HTTP Response:**  200 OK  X-M2M-RI: 1234  X-M2M-RVI: 2a  X-M2M-RSC: 2000 |

## A.1.3 API-NOTI-NET3

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| **API Id** | API/NOTI/NET3/STEP01  API/NOTI/NET3/STEP02  API/NOTI/NET3/STEP03 | |
| **API Name** | Notification procedure when the <subscription> resource has notificationEventType set to 3 (Hosting CSE sends notification when the direct child resource has been created) | |
| **Target Resource** | Create <contentIntance> target: Requested <container> resource  Notification Target: originator | |
| **Description** | Figure below depicts the procedure for notification.  originator  (AE1)  subscription create request to the container  Response  mn-name  AE2  contentInstance create request  Response  Notification send  ACK  Step 01  Step 02  Step 03  Initial condition: MN(Hosting CSE) has a <container> resource. The originator is AE1 in this clause, but can be CSE.  Step 01: The originator sends a <subscription> resource CREATE request to the <container> resource on the Registrar CSE. In the request, notificationEventType set to 3 and notificationURI attribute set to originator. The Registrar CSE creates a <subscription> resource and sends back a response.  Step 02: An AE2 sends a CREATE request of the <contentInstance> resource to the <container> resource. The Registrar CSE creates a <contentInstance> resource and sends back a response.  Step 03: The Hosting CSE sends notification as soon as create succeed. The originator sends back an ACK message. | |
| **Step 01** | **Resource Structure**  **before Sending Request** | **mn-name**  **(CSEBase)**  **cont\_temp**  **(container)**  originator  **(AE)** |
| **Call Flow** | originator  (AE1)  subscription create request  Response  mn-name |
| **HTTP Header Information** | |  |  | | --- | --- | | **Header** | **Value** | | Accept | application/json | | X-M2M-RI | Request ID | | X-M2M-Origin | AE-ID of Originator | | Content-Type | application/json;ty=**23** | | X-M2M-RVI | Release Version Indicator | |
| **Example** | **API/NOTI/NET3/STEP01**    **HTTP Request:**  POST /mn-name/cont\_temp? HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE5630283216026458665  Content-Type: application/json;ty=23  Accept: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  {  "m2m:sub": {  "enc": {  "net": [3]  },  "nu": ["AE1"],  "rn": "cont\_sub"  }  }  **HTTP Response:**  201 Created  Content-Location: mn-name/cont\_temp  Content-Type: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  X-M2M-RSC: 2001 |
| **Step 02** | **Resource Structure**  **before Sending Request** | **mn-name**  **(CSEBase)**  **cont\_temp**  **(container)**  **cont\_sub**  **(subscription)** |
| **Call Flow** | mn-name  contentInstance create request  Response  AE2 |
| **HTTP Header Information** | |  |  | | --- | --- | | **Header** | **Value** | | Accept | application/json | | X-M2M-RI | Request ID | | X-M2M-Origin | AE-ID of Originator | | Content-Type | application/json | | X-M2M-RVI | Release Version Indicator | |
| **Example** | **API/NOTI/NET3/STEP02**    **HTTP Request:**  POST /mn-name/cont\_temp? HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE0120180406T08463114  Content-Type: application/json  Accept: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  {  "m2m:cin": {  "con": "20"  }  }  **HTTP Response:**  201 Created  Content-Type: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  X-M2M-RSC: 2004  {  "m2m:cin": {  "con": "20",  "cs": 2,  "ct": "20180406T135509",  "et": "99991231T235959",  "lt": "20180406T135509",  "pi": "cnt20180406T1353041405855518901760\_cse01",  "ri": "cin20180406T1355091405855351047683\_cse01",  "rn": "cin20180406T1355091405855351047682\_cse01",  "st": 1,  "ty": 4  }  } |
| **Step 03** | **Resource Structure**  **before Sending Request** | **mn-name**  **(CSEBase)**  **cont\_temp**  **(container)**  **ci\_temp\_value1**  **(contentInstance)**  **cont\_sub**  **(subscription)ae\_sub**  **(subscription)** |
| **Call Flow** | AE1  Notification send  ACK  mn-name |
| **HTTP Header Information** | |  |  | | --- | --- | | **Header** | **Value** | | Accept | application/json | | X-M2M-RI | Request ID | | X-M2M-Origin | AE-ID of Originator | | Content-Type | application/json | | X-M2M-RVI | Release Version Indicator | |
| **Example** | **API/NOTI/NET3/STEP03**    **HTTP Request:**  POST HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: mn-name  Content-Type: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  {  "m2m:sgn": {  "sur": " mn-name/cont\_temp/cont\_sub",  "nev": {  "net":3,  "rep": {  "m2m:cin": {  "con": "20",  "cs": 2,  "ct": "20180406T135509",  "et": "99991231T235959",  "lt": "20180406T135509",  "pi": "cnt20180406T1353041405855518901760\_cse01",  "ri": "cin20180406T1355091405855351047683\_cse01",  "rn": "cin20180406T1355091405855351047682\_cse01",  "st": 1,  "ty": 4  }  }  }  }  }  **HTTP Response:**  200 OK  X-M2M-RI: 1234  X-M2M-RVI: 2a  X-M2M-RSC: 2000 |

## A.1.4 API-NOTI-NET4

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| **API Id** | API/NOTI/NET4/STEP01  API/NOTI/NET4/STEP02  API/NOTI/NET4/STEP03 |
| **API Name** | Notification procedure when the <subscription> resource has notificationEventType set to 4(Hosting CSE sends notification when the direct child resource has been deleted) |
| **Target Resource** | Delete <contentIntance> target: Requested <container> resource  Notification Target: originator |
| **Description** | Figure below depicts the procedure for notification.  originator  (AE1)  subscription create request to the containersubscription create request to the container  ResponseResponse  mn-name  AE2AE2  contentInstance delete requestcontainer resource update request  ResponseResponse  Notification sendNotification send  ACKACK  Step 01Step 01  Step 02Step 02  Step 03  Initial condition: MN(Hosting CSE) has a <container> resource. At the same time, <container> resource has <contentInstance> resource as a direct child resource. The originator is AE1 in this clause, but can be CSE.  Step 01: The originator sends a <subscription> resource CREATE request to the <container> resource on the Registrar CSE. In the request, notificationEventType set to 4 and notificationURI attribute set to originator. The Registrar CSE creates a <subscription> resource and sends back a response.  Step 02: An AE2 sends a DELETE request of the <contentInstance> resource to the <container> resource. The Registrar CSE deletes a <contentInstance> resource and sends back a response.  Step 03: The Hosting CSE sends notification as soon as delete succeed. The originator sends back an ACK message. |

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| **Step 01** | **Resource Structure**  **before Sending Request** | **mn-name**  **(CSEBase)**  **cont\_temp**  **(container)**  **ci\_temp\_value1**  **(contentInstance)** |
| **Call Flow** | originator  (AE1)  subscription create request  Response  mn-name |
| **HTTP Header Information** | |  |  | | --- | --- | | **Header** | **Value** | | Accept | application/json | | X-M2M-RI | Request ID | | X-M2M-Origin | AE-ID of Originator | | Content-Type | application/json;ty=**23** | | X-M2M-RVI | Release Version Indicator | |
| **Example** | **API/NOTI/NET4/STEP01**  **HTTP Request:**  POST /mn-name/cont\_temp? HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE5630283216026458665  Content-Type: application/json;ty=23  Accept: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  {  "m2m:sub": {  "enc": {  "net": [4]  },  "nu": ["AE1"],  "rn": "cont\_sub"  }  }  **HTTP Response:**  201 Created  Content-Location: mn-name/cont\_temp  Content-Type: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  X-M2M-RSC: 2001 |
| **Step 02** | **Resource Structure**  **before Sending Request** | **mn-name**  **(CSEBase)**  **cont\_temp**  **(container)**  **ci\_temp\_value1**  **(contentInstance)**  **cont\_sub**  **(subscription)** |
| **Call Flow** | mn-name  contentInstance delete request  Response  AE2 |
| **HTTP Header Information** | |  |  | | --- | --- | | **Header** | **Value** | | Accept | application/json | | X-M2M-RI | Request ID | | X-M2M-Origin | AE-ID of Originator | | X-M2M-RVI | Release Version Indicator | |
| **Example** | **API/NOTI/NET4/STEP02**  **HTTP Request:**  DELETE /mn-name/cont\_temp/ci\_temp\_value1? HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: CAE0120180406T08463114  Content-Type: application/json  Accept: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  **HTTP Response:**  200 OK  Content-Type: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  X-M2M-RSC: 2004  {  "m2m:cin": {  "con": "20",  "cs": 2,  "ct": "20180406T135509",  "et": "99991231T235959",  "lt": "20180406T135509",  "pi": "cnt20180406T1353041405855518901760\_cse01",  "ri": "cin20180406T1355091405855351047683\_cse01",  "rn": "cin20180406T1355091405855351047682\_cse01",  "st": 1,  "ty": 4  }  } |
| **Step 03** | **Resource Structure**  **before Sending Request** | **mn-name**  **(CSEBase)**  **cont\_temp**  **(container)**  **cont\_sub**  **(subscription)** |
| **Call Flow** | AE1  Notification send  ACK  mn-name |
| **HTTP Header Information** | |  |  | | --- | --- | | **Header** | **Value** | | Accept | application/json | | X-M2M-RI | Request ID | | X-M2M-Origin | AE-ID of Originator | | Content-Type | application/json | | X-M2M-RVI | Release Version Indicator | |
| **Example** | **API/NOTI/NET4/STEP03**  **HTTP Request:**  POST HTTP/1.1  Host: 192.168.0.10:8282  X-M2M-Origin: mn-name  Content-Type: application/json  X-M2M-RI: 1234  X-M2M-RVI: 2a  {  "m2m:sgn": {  "sur": " mn-name/cont\_temp/cont\_sub",  "nev": {  "net":4,  "rep": {  "m2m:cin": {  "con": "20",  "cs": 2,  "ct": "20180406T135509",  "et": "99991231T235959",  "lt": "20180406T135509",  "pi": "cnt20180406T1353041405855518901760\_cse01",  "ri": "cin20180406T1355091405855351047683\_cse01",  "rn": "cin20180406T1355091405855351047682\_cse01",  "st": 1,  "ty": 4  }  }  }  }  }  **HTTP Response:**  200 OK  X-M2M-RI: 1234  X-M2M-RVI: 2a  X-M2M-RSC: 2000 |

Annex B:  
Bibliography

* oneM2M TS-0009: "HTTP Protocol Binding".
* oneM2M TS-0011: "Common Terminology".

# History

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| --- | --- | --- |
| **Draft history** (to be removed on publication) | | |
| V0.0.1 | 2017-12-19 | Initial Draft  TST-2017-0291-TS-0051-oneM2M\_API\_Guide\_Skeleton |
| V0.0.2 | 2017-12-20 | Implemented contribution agreed at TST32.2  TST-2017-0293-oneM2M\_API\_template |
| V0.0.3 | 2018-05-29 | Implemented contribution agreed at TST35  TST-2018-0040R04-TR-0051-AE\_resource\_API  TST-2018-0041R03-TR-0051-container\_resource\_API  TST-2018-0042R03-TR-0051-contentInstance\_resource\_API  TST-2018-0047R03-TR-0051\_supplementation\_of\_resources  TST-2018-0069-TR-0051\_semanticDescriptor\_resource\_API |
| V0.1.0 | 2018-07-02 | Implemented contribution agreed at TST35.2  TST-2018-0104-TR-0051\_subscription\_and\_discovery\_supplement |
| V0.2.0 | 2018-07-19 | Implemented contribution agreed at TST36  TST-2018-0123R01-TR-0051\_add\_description\_for\_discovery  TST-2018-0124R01-TR-0051\_example\_of\_notification |
| V0.3.0 | 2018-09-10 | Implemented contribution agreed at TST36.1  TST-2018-0129R01-TR-0051-CSEBase\_resource\_API  TST-2018-0130-TR-0051-remoteCSE\_resource\_API  TST-2018-0135-TR-0051\_RVI\_and\_srv\_supplement |
| V0.3.1 | 2018-09-19 | Implemented contribution agreed at TST37  TST-2018-0144R01-CR\_for\_TR-0051  TST-2018-0149R01-TR-0051\_adding\_introduction\_for\_open\_API\_collection  TST-2018-0150-TR-0051\_editorial\_changes |
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| V0.6.0 | 2019-06-04 | Clean-up |

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| **Publication history** | | |
| V0.0.6 | August 2020 | Partners pre-processing done by ***editHelp!*** e-mail: <mailto:edithelp@etsi.org> |
| V2.0.0 | November 2020 | Final version |
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