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| CHANGE REQUEST | |
| Meeting ID:\* | SDS 41 |
| Source:\* | Bei (Echo) Xu, Huawei, [Echo.xubei@huawei.com](mailto:Echo.xubei@huawei.com)  Yongjing Zhang, Huawei, zhangyongjing@huawei.com |
| Date:\* | 2019-06-24 |
| Reason for Change/s:\* | Add new resource ***<e2eQosSession>***. |
| CR against: Release\* | Rel-4 |
| CR against: WI\* | Active WI-0058  MNT maintenance / < Work Item number(optional)>  Is this a mirror CR? Yes  No  mirror CR number: (Note to Rapporteur - use latest agreed revision)  STE Small Technical Enhancements / < Work Item number (optional)>  Only ONE of the above shall be ticked |
| CR against: TS/TR\* | TS-0001 v4.1.0 |
| Clauses \* | 9.6.xx  10.2.yy |
| Type of change: \* | Editorial change  Bug Fix or Correction  Change to existing feature or functionality  New feature or functionality  Only ONE of the above shall be ticked |
| Other TS/TR(s) impacted | TS-0026  TS-0004 |
| Post Freeze checking:\* | This CR contains only essential changes and corrections? YES  NO  This CR may break backwards compatibility with the last approved version of the TS? YES  NO |
| Template Version: January 2019 (do not modify) | |

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GUIDELINES for Change Requests:

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

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

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

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

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

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

Follow the drafting rules.

All pictures must be editable.

Check spelling and grammar to the extent practicable.

Use Change bars for modifications.

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

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

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

## Introduction

-------------------------------------------------- Start of Change 1---------------------------------------------------

# 9 Resource Management

## 9.6 Resource Types

### 9.6.1 Overview

#### 9.6.1.1 Resource Type Summary

Table 9.6.1.1-1 introduces the normal and virtual resource types and their related child or parent resource types. Details of each resource type follow in the remainder of this clause.

Table 9.6.1.1-1 lists each specified ordinary – i.e. not announced – resource type. An addition of suffix "Annc" to the respective resource type identifier indicates the associated announced resource type. Resource types that can occur as child resources of announced resources are summarized in Table 9.6.26.1-1 "Announced Resource Types".

Among the resource types listed in Table 9.6.1.1-1, the following are termed "Content Sharing Resources" in oneM2M Specifications for the purpose of referring to any of those resource types:

* *container;*
* *contentInstance;*
* *flexContainer;*
* *timeSeries;*
* *timeSeriesInstance.*

Table 9.6.1.1-1: Resource Types

| Resource Type | Short Description | Child Resource Types | Parent Resource Types | Clause |
| --- | --- | --- | --- | --- |
| *accessControlPolicy* | Stores a representation of privileges. It is associated with resources that shall be accessible to entities external to the Hosting CSE. It controls "who" is allowed to do "what" and the context in which it can be used for accessing resources | *subscription, transaction* | *AE, AEAnnc, remoteCSE, remoteCSEAnnc, CSEBase* | 9.6.2 |
| *AE* | Stores information about the AE. It is created as a result of successful registration of an AE with the Registrar CSE | *subscription, container,*  *flexContainer,*  *group, accessControlPolicy,*  *pollingChannel, semanticDescriptor,*  *timeSeries, transaction, transactionMgmt,*  *triggerRequest, crossResourceSubscription, backgroundDataTransfer, semanticMashupInstance, locationPolicy, action* | *CSEBase* | 9.6.5 |
| *Container* | Shares data instances among entities. Used as a mediator that buffers data exchanged between AEs and/or CSEs. The exchange of data between AEs (e.g. an AE on a Node in a field domain and the peer-AE on the infrastructure domain) is abstracted from the need to set up direct connections and allows for scenarios where both entities in the exchange do not have the same reachability schedule | *container,*  *flexContainer, contentInstance, subscription, latest, oldest，semanticDescriptor, timeSeries, transaction, action* | *AE, AEAnnc, container, containerAnnc, remoteCSE, remoteCSEAnnc,*  *CSEBase,*  *flexContainer, flexContainerAnnc* | 9.6.6 |
| *contentInstance* | Represents a data instance in the *<container>* resource | *semanticDescriptor, transaction* | *Container, containerAnnc* | 9.6.7 |
| *FlexContainer* | A template which allows to define specialized (customizable) versions of containers with a flexible and lightweight structure | *container,*  *flexContainer, subscription, semanticDescriptor, timeSeries, transaction, action* | *AE, AEAnnc, container, containerAnnc,*  *flexContainer, flexContainerAnnc, remoteCSE, remoteCSEAnnc,*  *CSEBase* | 9.6.35 |
| *CSEBase* | The structural root for all the resources that are residing on a CSE. Stores information about the CSE itself | *remoteCSE, remoteCSEAnnc, node, AE, container, group, accessControlPolicy, subscription, mgmtCmd, locationPolicy, statsConfig, statsCollect, request, delivery,*  *schedule,*  *notificationTargetPolicy,*  *flexContainer,*  *timeSeries, AEContactList, transaction, transactionMgmt, crossResourceSubscription, backgroundDataTransfer, semanticMashupJobProfile, semanticMashupInstance, action* | *None specified* | 9.6.3 |
| *delivery* | Forwards requests from CSE to CSE | *subscription, transaction* | *CSEBase* | 9.6.11 |
| *eventConfig* | Defines events that trigger statistics collection | *subscription, transaction* | *statsConfig* | 9.6.24 |
| *execInstance* | Contains all execution instances of the same Management Command | *subscription, transaction* | *mgmtCmd* | 9.6.17 |
| *fanOutPoint (V)* | Virtual resource containing target for group request  It is used for addressing bulk operations to all the resources that belong to a group | *None specified* | *group* | 9.6.14 |
| *group* | Stores information about resources of the same type that need to be addressed as a Group. Operations addressed to a Group resource shall be executed in a bulk mode for all members belonging to the Group | *fanOutPoint,*  *subscription,*  *semanticFanOutPoint, semanticDescriptor, transaction, action* | *AE, AEAnnc, remoteCSE, remoteCSEAnnc, CSEBase* | 9.6.13 |
| *latest (V)* | Virtual resource that points to most recently created *<contentInstance>* and <*timeSeriesInstance*> child resource within a *<container>* *and a <timeSeries>* resource | *None specified* | *container, timeSeries* | 9.6.27 |
| *locationPolicy* | Includes information to obtain and manage geographical location. It is only referenced within a container, the *contentInstances* of the container provide location information | *subscription, transaction* | *CSEBase, AE* | 9.6.10 |
| *mgmtCmd* | Management Command resource represents a method to execute management procedures required by existing management protocols | *execInstance,*  *subscription, transaction* | *CSEBase* | 9.6.16 |
| *mgmtObj* | Management Object resource represents management functions that provides an abstraction to be mapped to external management technology. It represents the node and the software installed in the node (see note) | *subscription, transaction, semanticDescriptor* | *node, mgmtObjAnnc* | 9.6.15  Annex D |
| *m2mServiceSubscriptionProfile* | Data pertaining to the M2M Service Subscription | *serviceSubscribedNode,*  *subscription, transaction* | *CSEBase* | 9.6.19 |
| *node* | Represents specific Node information | *mgmtObj,*  *subscription, semanticDescriptor, schedule, transaction, action* | *CSEBase* | 9.6.18 |
| *notificationTargetMgmtPolicyRef* | Represents a list of notification targets and the deletion policy | *subscription, transaction* | *subscription* | 9.6.31 |
| *notificationTargetPolicy* | Represents a notification target deletion policy with pre-defined action and deletion rules | *subscription, policyDeletionRules, transaction* | *CSEBase* | 9.6.32 |
| *notificationTargetSelfReference (V)* | Virtual resource used to remove the Notification Target | *None specified* | *subscription* | 9.6.34 |
| *oldest (V)* | Virtual resource that points to first created *<contentInstance>* and <*timeSeriesInstance*> child resource within a *<container>* *and a <timeSeries>* resource | *None specified* | *container, timeSeries* | 9.6.28 |
| *pollingChannel* | Represent a channel that can be used for a request-unreachable entity | *pollingChannelURI* | *remoteCSE, AE* | 9.6.21 |
| *pollingChannelURI (V)* | Virtual resource used to perform service layer long polling of a resource Hosting CSE by a request-unreachable entity | *None specified* | *pollingChannel* | 9.6.22 |
| *policyDeletionRules* | Represents a set of rules which is associated with notification target removal policy | *subscription, transaction* | *notificationTargetPolicy* | 9.6.33 |
| *remoteCSE* | Represents a remote CSE for which there has been a registration procedure with the registrar CSE identified by the CSEBase resource | *container, containerAnnc,*  *contentInstanceAnnc*  *flexContainer, flexContainerAnnc,*  *group, groupAnnc, accessControlPolicy, accessControlPolicyAnnc, subscription, pollingChannel,*  *timeSeries,*  *timeSeriesAnnc, timeSeriesInstanceAnnc,*  *mgmtObjAnnc,*  *nodeAnnc,*  *AEAnnc,*  *locationPolicyAnnc, transaction, crossResourceSubscription, backgroundDataTransfer, semanticMashupJobProfile, semanticMashupJobProfileAnnc, semanticMashupInstance,*  *semanticMashupInstanceAnnc,*  *action* | *CSEBase* | 9.6.4 |
| *request* | Expresses/access context of an issued Request | *subscription, transaction* | *CSEBase* | 9.6.12 |
| *schedule* | Contains scheduling information for delivery of messages | *subscription, transaction* | *subscription, CSEBase,*   * *node* | 9.6.9 |
| *serviceSubscribedNode* | Node information | *subscription, transaction* | *m2mServiceSubscriptionProfile* | 9.6.20 |
| *statsCollect* | Defines triggers for the IN-CSE to collect statistics for applications | *subscription, transaction* | *CSEBase (in IN‑CSE)* | 9.6.25 |
| *statsConfig* | Stores configuration of statistics for applications | *eventConfig,*  *subscription, transaction* | *CSEBase (in IN‑CSE)* | 9.6.23 |
| *subscription* | Subscription resource represents the subscription information related to a resource. Such a resource shall be a child resource for the subscribe-to resource | *schedule, notificationTargetSelfReference, notificationTargetMgmtPolicyRef, transaction* | *accessControlPolicy, accessControlPolicyAnnc, AE, AEAnnc, container, containerAnnc, CSEBase, delivery, eventConfig, execInstance, group, groupAnnc, locationPolicy, locationPolicyAnnc, mgmtCmd, mgmtObj, mgmtObjAnnc, m2mServiceSubscriptionProfile, node, nodeAnnc, serviceSubscribedNode, remoteCSE, remoteCSEAnnc, request, schedule, scheduleAnnc,*  *semanticDescriptor, semanticDescriptorAnnc, statsCollect, statsConfig,*  *flexContainer, flexContainerAnnc,*  *timeSeries, timeSeriesAnnc* | 9.6.8 |
| *serviceSubscribedAppRule* | Represents a rule that defines allowed App-ID and AE-ID combinations that are acceptable for registering an AE on a Registrar CSE | *subscription, transaction* | *CSEBase* | 9.6.29 |
| *semanticDescriptor* | Stores semantic description pertaining to a resource and potentially sub-resources. | *subscription, transaction* | *AE, container, contentInstance, group, node, flexContainer, timeSeries, mgmtObj* | 9.6.30 |
| *semanticFanOutPoint* | Virtual resource used as target for semantic discovery aimed at a logical graph distributed over multiple *semanticDescriptor* resources, which belong to the corresponding *group* parent resource | *transaction* | *group* | 9.6.14a |
| *dynamicAuthorizationConsultation* | Represents consultation information used by a CSE when performing consultation-based dynamic authorization | *transaction* | *AE, AEAnnc, remoteCSE, remoteCSEAnnc, CSEBase* | 9.6.40 |
| *timeSeries* | Stores and Shares Time Series Data instances among entities. | *timeSeriesInstance, subscription, semanticDescriptor,*  *latest, oldest, transaction, action* | *AE, AEAnnc, remoteCSE, remoteCSEAnnc, CSEBase,*  *container, containerAnnc, flexContainer, flexContainerAnnc* | 9.6.36 |
| *timeSeriesInstance* | Represents a Time Series Data instance in the *<timeSeries>* resource | *transaction* | *timeSeries, timeSeriesAnnc* | 9.6.37 |
| *authorizationDecision* | Represents an access control decision point | *subscription, transaction* | *CSEBase* | 9.6.41 |
| *authorizationPolicy* | Represents an access control policy retrieval point | *subscription, transaction* | *CSEBase* | 9.6.42 |
| *authorizationInformation* | Represents an access control information point | *role*  *token*  *subscription, transaction* | *CSEBase* | 9.6.43 |
| *localMulticastGroup* | Stores local multicast group information of member hosting CSE. | *transaction* | *CSEBase* | 9.6.44 |
| *AEContactList* | Contains information about a CSE that has resources that referencing an AE-ID | *AEContactListPerCSE, subscription, transaction* | *CSEBase* | 9.6.45 |
| *AEContactListPerCSE* | Contains information about a CSE that has resources that referencing an AE resource identifier for tracking purposes | *None specified* | *AEContactList* | 9.6.46 |
| *transactionMgmt* |  | *subscription* | *CSEBase, AE, remoteCSE* | 9.6.47 |
| *transaction* |  | *action* | *All non-virtual resource types with the exception of the following:*  *request, delivery, pollingChannel, transactionMgmt, transaction* | 9.6.48 |
| *triggerRequest* | Used by an AE to initiate, replace or recall a device trigger request | *subscription* | *AE* | 9.6.49 |
| *ontologyRepository* | Represents the collection of the managed ontologies and the semantic validation service | *ontology, semanticValidation, subscription* | *CSEBase* | 9.6.50 |
| *ontology* | Store the representation of an ontology | *subscription* | *ontologyRepository* | 9.6.51 |
| *semanticValidation* | A virtual resource as the interface to perform semantic validation on the received <semanticDescriptor> resource against the referenced ontology. | *None specified* | *ontologyRepository* | 9.6.52 |
| *semanticMashupJobProfile* | Represents the profile and description of a semantic mashup service | *semanticMashupInstance, semanticDescriptor, subscription* | *CSEBase, remoteCSE* | 9.6.53 |
| *semanitcMashupInstance* | Represents a semantic mashup instance | *semanticMashupResult, semanticDescriptor, mashup, subscription* | *semanticMashupJobProfile, AE, remoteCSE, CSEBase* | 9.6.54 |
| *mashup* | A virtual resource use to trigger the calculation and generation of new mashup result | *Not specified* | *semanticMashupInstance* | 9.6.55 |
| *semanticMashupResult* | Represent semantic mashup results | *semanticDescriptor, subscription* | *semanticMashupInstance* | 9.6.56 |
| *multimediaSession* | Stores a representation of a multimedia session information requested by a registering AE | *subscription* | *AE* | 9.6.57 |
| *crossResourceSubscription* | represents the cross-resource subscription information related to multiple subscribed-to resources. Such a resource shall include a list of subscribed-to resources as its attribute, or shall be created as a child resource of a <group> resource where member resources shall be the subscribed-to resources. | *schedule, notificationTargetSelfReference, notificationTargetMgmtPolicyRef, transaction* | *CSEBase, remoteCSE, AE* | 9.6.58 |
| *backgroundDataTransfer* | Stores information for a background data transfer request | *None specified* | *AE, remoteCSE, CSEBase* | 9.6.60 |
| *action* | Specifies the action(s) that is performed whenever an event is triggered at the <*dependency>* resource | *dependency* | *CSEBase, remoteCSE, node, AE, container, flexContainer, group, timeSeries, transaction* | 9.6.61 |
| *dependency* | Specifies the condition(s) of a monitored event which triggers the operation(s) specified by the <*action>* resource | *None specified* | *action* | 9.6.62 |
| *e2eQosSession* | Specifies the end-to-end (E2E) QoS session requirements for the exchange of oneM2M request and response primitives between oneM2M entities. | *subscription* | *CSEBase, remoteCSE, AE* | 9.6.xx |
| NOTE: See clause 9.6.12 for a summary of specializations of *<mgmtObj>.* | | | | |

-------------------------------------------------- End of Change 1---------------------------------------------------

-------------------------------------------------- Start of Change 2---------------------------------------------------

### 9.6.xx Resource Type *e2eQosSession*

The <*e2eQosSession*> resource defines end-to-end (E2E) QoS session requirements for the exchange of oneM2M request and response primitives between oneM2M entities. This resource consists of a set of QoS parameters and an applicable set of oneM2M entities that exchange oneM2M requests and responses with one another and function as the session endpoints. A Hosting CSE uses the information configured within this resource to configure and manage E2E QoS between these session endpoints. For example, the Hosting CSE can manage the establishment and tear-down of QoS session(s) in underlying network(s) that interconnect oneM2M entities with one another, A Hosting CSE can also use this information to manage the scheduling and store-and-forwarding of requests and responses that it performs at the oneM2M service layer. When establishing a QoS session in an underlying network, a Hosting CSE can configure the QoS parameters based on the requirements defined by the <*e2eQosSession*> resource. For cases where the oneM2M entities are separated by multiple hops, each hop may require the establishment and configuration of a separate underlying network QoS session. For this case, a Hosting CSE can coordinate with its registrar and registree CSEs to assist it with the configuration of a QoS session in each respective underlying network involved in a multi-hop E2E QoS session such that the E2E QoS requirements defined within the <*e2eQosSession*> can be satisfied across the multiple hops.

Note – This current solution supports the 0-hop scenario and the 1-hop scenario involving a <*e2eQosSession*> Hosting CSE that is the registrar CSE of the session endpoints. The details for how an E2E QoS session is supported for multiple hop scenarios is for FFS.

The following are some examples of E2E oneM2M communication flows that an <*e2eQosSession*> resource Hosting CSE can manage using this QoS information.

Example #1

A first oneM2M entity that is a session endpoint sends a request to the <*e2eQosSession*> resource Hosting CSE and the *To* parameter targets a remote oneM2M entity that is also a session endpoint of the same QoS session. The <*e2eQosSession*> resource Hosting CSE can establish an individual underlying network QoS session between itself and each of the session endpoints such that each underlying network QoS session meets the QoS requirements defined in the <*e2eQosSession*> resource. In doing so, the E2E exchange of oneM2M request and response primitives between the session endpoint entities meets the E2E QoS requirements defined in the <*e2eQosSession*> resource.

Example #2

A first oneM2M entity that is a session endpoint is a subscriber to a <flexContainer> resource that is hosted by the <e2eQosSession> resource Hosting CSE. A second oneM2M entity, that is also a session endpoint of the same QoS session, sends a request to update the <flexContainer> resource. The update results in a notification being sent to the first oneM2M entity. The <e2eQosSession> resource Hosting CSE can establish an individual underlying network QoS session between itself and each of the session endpoints such that each underlying network QoS sessions meets the QoS requirements defined in the <e2eQosSession> resource. In doing so, the E2E exchange involving the second oneM2M entity sending the <flexContainer> update request and the resulting notification request that is sent to the first oneM2M entity meets the E2E QoS requirements defined in the <e2eQosSession> resource.

The <e2eQosSession> resource contains the child resources specified in table 9.6.xx-1.

Table 9.6.xx-1: Child resources of *<e2eQosSession>* resource

| **Child Resources of**  ***<e2eQosSession>*** | Child Resource Type | Multiplicity | Description | **<*e2eQosSession*> Child Resource Types** |
| --- | --- | --- | --- | --- |
| *[variable]* | *<subscription>* | 0..n | See clause 9.6.8. | <*subscription*> |

The *<e2eQosSession>* resource contains the attributes specified in table 9.6.xx-2.

Table 9.6.xx-2: Attributes of *<e2eQosSession>* resource

| Attributes of *<e2eQosSession>* | Multiplicity | RW/  RO/  WO | Description |
| --- | --- | --- | --- |
| *resourceType* | 1 | RO | See clause 9.6.1.3 |
| *resourceID* | 1 | RO | See clause 9.6.1.3 |
| *resourceName* | 1 | WO | See clause 9.6.1.3 |
| *parentID* | 1 | RO | See clause 9.6.1.3 |
| *creationTime* | 1 | RO | See clause 9.6.1.3 |
| *lastModifiedTime* | 1 | RO | See clause 9.6.1.3 |
| *expirationTime* | 1 | RW | See clause 9.6.1.3 |
| *accessControlPolicyIDs* | 0..1 (L) | RW | See clause 9.6.1.3 |
| *dynamicAuthorizationConsultationIDs* | 0..1 (L) | RW | See clause 9.6.1.3. |
| *labels* | 0..1 (L) | RW | See clause 9.6.1.3. |
| *announceTo* | 0..1(L) | RW | See clause 9.6.1.3 |
| *sessionEndpoints* | 1 | WO | Indicates the oneM2M endpoints within one oneM2M E2E QoS session. The end points include AE-IDs or CSE-IDs.  If an AE-ID is used and the AE is not a Registree of the <*e2eQosSession*> Hosting CSE, then the AE-ID will be formatted as a SP-Relative-AE-ID or Absolute-AE-ID to allow the <*e2eQosSession*> Hosting CSE to extract the CSE-ID of the CSE that hosts the destination endpoint <AE> resource. |
| *e2eQosRequirements* | 1(L) | RW | Defines the E2E QoS requirements expressed as a list of tuples. Each tuple in the list defines a single QoS session requirement applicable to the bi-directional exchange of oneM2M requests and responses between all the endpoints. Each tuple in the list contains the set of elements as defined below in table 9.6.xx-3. |
| *e2eQosPolicies* | 0..1(L) | RW | Defines E2E session QoS policies expressed as a list of tuples. Each tuple in the list defines a single policy that the <*e2eQosSession*> Hosting CSE uses to manage the session. Each tuple in the list contains the set of elements as defined below in table 9.6.xx-4. |
| *e2eQosStatus* | 1 | RO | Indicates the status of the E2E QoS session setup by the hosting CSE with the underying network. The possible values are:   * ENABLED * FAILED * DISABLED * USAGE\_EXHAUSTED |

Table 9.6.xx-3: Elements of an *e2eQosRequirements* tuple

| Name | Mandatory/Optional | Description |
| --- | --- | --- |
| *qosLevel* | M | Defines the required QoS level for this session. Expressed as a range from 0 (lowest) to 100 (highest). How a <*e2eQosSession*> Hosting CSE uses this parameter to manage the QoS of a session is implementation dependent (e.g. a Hosting CSE may map this value to an underlying network operator’s session QoS parameter values). |
| *resourceIDList* | O | Defines the resource identifier list between the endpoints which the QoS requirement applies to.  If a Resource-ID is used and the resource is not hosted by the <*e2eQosSession*> Hosting CSE, then it will be formatted as a SP-Relative-Resource-ID or Absolute-Resource-ID to allow the <*e2eQosSession*> Hosting CSE to extract the CSE-ID of the CSE that hosts the destination endpoint resource. The use of a Resource-ID enables a destination E2E QoS session endpoint to be defined at the granularity of an individual targeted resource. |
| *sessionSchedule* | O | Defines the time periods for when bi-directional exchange of oneM2M requests and responses between the session endpoints at the specified *qosLevel* is required to be enabled. If this parameter is not specified, then the scheduling of the oneM2M requests and responses between the session endpoints will be managed at the discretion of the <*e2eQosSession*> Hosting CSE based on the specified *qosLevel*. The schedule is composed of seven fields consisting of second, minute, hour, day of month, month, day of week and year. |
| *numOfRequests* | O | Defines the minimum number of requests required to be transferred at the specified *qosLevel* via the bi-directional exchange of oneM2M requests and responses between the session endpoints. If this parameter is not specified, then the number of requests and responses allowed between the session endpoints will be managed at the discretion of the <*e2eQosSession*> Hosting CSE based on the specified *qosLevel*. |
| *numOfBytes* | O | Defines the minimum number of bytes required to be transferred at the specified *qosLevel* via the bi-directional exchange of oneM2M requests and responses between the session endpoints. If this parameter is not specified, then the number of bytes allowed to be transferred between the session endpoints will be managed at the discretion of the <*e2eQosSession*> Hosting CSE based on the specified *qosLevel*. |

Table 9.6.xx-4: Elements of an *e2eQosPolicy* tuple

| Name | Mandatory/Optional | Description |
| --- | --- | --- |
| *status* | M | When the *e2eQosStatus* attribute of the <*e2eQosSession*> resource transitions to the value specified in this element, the <*e2eQosSession*> Hosting CSE performs the action specified in the *action* element.  The following are the allowed *status* values:   * FAILED * DISABLED * USAGE\_EXHAUSTED |
| *action* | M | Defines a session related action that is performed by the <*e2eQosSession*> Hosting CSE when the value of an *e2eQosStatus* attribute of the <*e2eQosSession*> resource transitions to the value specified by the *status* element.  The following are the allowed *action* values:   * RE-ENABLE: The <*e2eQosSession*> Hosting CSE will attempt to re-enable the E2E QoS session in a manner that is consistent with the *e2eQosRequirements.* * DISABLE: The <*e2eQosSession*> Hosting CSE will disable the E2E QoS session (if already not disabled). * DELETE: The Hosting CSE will delete the E2E QoS session |

-------------------------------------------------- End of Change 2---------------------------------------------------

-------------------------------------------------- Start of Change 3---------------------------------------------------

### 9.6.3 Resource Type *CSEBase*

A *<CSEBase>* resource shall represent a CSE. The *<CSEBase>* resource shall be the root for all resources that are residing in the CSE. A CSE shall be represented by only one *<CSEBase>* resource.

The *<CSEBase>* resource shall contain the child resources specified in table 9.6.3-1.

Table 9.6.3-1: Child resources of *<CSEBase>* resource

|  |  |  |  |
| --- | --- | --- | --- |
| Child Resources of *<CSEBase>* | Child Resource Type | Multiplicity | Description |
| *[variable]* | *<remoteCSE>* | 0..n | See clause 9.6.4 |
| *[variable]* | *<remoteCSEAnnc>* | 0..n | Announced variant of <*remoteCSE>*. Resourcewith CSE-specific information for a CSE that announced itself to another CSE with which it does not have a registration relationship. |
| *[variable]* | *<node>* | 0..n | See clause 9.6.18 |
| *[variable]* | *<AE>* | 0..n | See clause 9.6.5 |
| *[variable]* | *<container>* | 0..n | See clause 9.6.6 |
| *[variable]* | *<flexContainer>* | 0..n | See clause 9.6.35 |
| *[variable]* | *<group>* | 0..n | See clause 9.6.13 |
| *[variable]* | *<accessControlPolicy>* | 0..n | See clause 9.6.2 |
| *[variable]* | *<subscription>* | 0..n | See clause 9.6.8 |
| *[variable]* | *<mgmtCmd>* | 0..n | See clause 9.6.16 |
| *[variable]* | *<locationPolicy>* | 0..n | See clause 9.6.10 |
| *[variable]* | *<statsConfig>* | 0..n | See clause 9.6.23 |
| *[variable]* | *<statsCollect>* | 0..n | See clause 9.6.25 |
| *[variable]* | *<request>* | 0..n | See clause 9.6.12 |
| *[variable]* | *<delivery>* | 0..n | See clause 9.6.11 |
| *[variable]* | *<schedule>* | 0..1 | This resource defines the reachability schedule information of the entity. The absence of this resource implies the entity is always reachable. See clause 9.6.9 |
| *[variable]* | *<role>* | 0..n | See clause 9.6.38 |
| *[variable]* | *<token>* | 0..n | See clause 9.6.39 |
| *[variable]* | *<m2mServiceSubscriptionProfile>* | 0..n | See clause 9.6.19 |
| *[variable]* | *<serviceSubscribedAppRule>* | 0..n | See clause 9.6.29 |
| *[variable]* | *<notificationTargetPolicy>* | 0..n | See clause 9.6.32 |
| *[variable]* | *<dynamicAuthorizationConsultation>* | 0..n | See clause 9.6.40 |
| *[variable]* | *<timeSeries>* | 0..n | See clause 9.6.36 |
| *[variable]* | *<authorizationDecision>* | 0..n | See clause 9.6.41 |
| *[variable]* | *<authorizationPolicy>* | 0..n | See clause 9.6.42 |
| *[variable]* | *<authorizationInformation>* | 0..n | See clause 9.6.43 |
| *[variable]* | *<localMulticastGroup>* | 0..n | See clause 9.6.44 |
| *[variable]* | *<transactionMgmt>* | 0..n | See clause 9.6.47 |
| *[variable]* | *<transaction>* | 0..n | See clause 9.6.48 |
| *[variable]* | *<ontologyRepository>* | 0..1 | See clause 9.6.50 |
| *[variable]* | *<semanticMashupJobProfile>* | 0..n | See clause 9.6.53 |
| *[variable]* | *<semanticMashupInstance>* | 0..n | See clause 9.6.54 |
| *[variable]* | *<AEContactList>* | 0..n | See clause 9.6.45 |
| *[variable]* | *<e2eQosSession>* | 0..1 | See clause 9.6.xx |

An instance of a *<remoteCSEAnnc>* resource shall be created as a child of a *<CSEBase>* resource when an Originator CSE of an announcement request (i.e. original resource Hosting CSE) and a targeted Hosting CSE of an announced resource (i.e. announced resource Hosting CSE) have no registration relationship (e.g. the Originator CSE has not created *<remoteCSE>* resource on the Hosting CSE), see clause 9.6.26.

The *<CSEBase>* resource shall contain the attributes specified in table 9.6.3-2.

Table 9.6.3-2: Attributes of *<CSEBase>* resource

|  |  |  |  |
| --- | --- | --- | --- |
| Attributes of *<CSEBase>* | Multiplicity | RW/  RO/  WO | Description |
| *resourceType* | 1 | RO | See clause 9.6.1.3. |
| *resourceID* | 1 | RO | See clause 9.6.1.3. |
| *resourceName* | 1 | RO | See clause 9.6.1.3. |
| *parentID* | 1 | RO | See clause 9.6.1.3. Shall be an empty string. |
| *creationTime* | 1 | RO | See clause 9.6.1.3. |
| *lastModifiedTime* | 1 | RO | See clause 9.6.1.3. |
| *accessControlPolicyIDs* | 0..1 (L) | RO | See clause 9.6.1.3. |
| *labels* | 0..1 (L) | RO | See clause 9.6.1.3. |
| *dynamicAuthorizationConsultationIDs* | 0..1 (L) | RO | See clause 9.6.1.3. |
| *cseType* | 0..1 | RO | Indicates the type of CSE represented by the created resource:   * Mandatory for an IN-CSE, hence multiplicity (1). * Its presence is subject to SP configuration in case of an ASN-CSE or a MN-CSE. |
| *CSE-ID* | 1 | RO | The CSE identifier in SP-relative CSE-ID format (clause 7.2). |
| *supportedResourceType* | 1 (L) | RO | List of the resource types which are supported in the CSE. This attribute contains subset of resource types listed in clause 9.2. |
| *pointOfAccess* | 1 (L) | RO | Represents the list of physical addresses to be used by remote CSEs to connect to this CSE (e.g. IP address, FQDN). This attribute is exposed to its Registree. |
| *nodeLink* | 0..1 | RO | The *resource identifier* of a *<node>* resource that stores the node specific information of the node on which the CSE represented by this <*CSEBase*> resource resides. |
| *notificationCongestionPolicy* | 0..1 | RO | This attribute applies to CSEs generating subscription notifications. It specifies the rule which is applied when the storage of notifications for each subscriber (an AE or CSE) reaches the maximum storage limit for notifications for that subscriber. E.g. Delete stored notifications of lower *notificationStoragePriority* to make space for new notifications of higher *notificationStoragePriority*, or delete stored notifications of older *creationTime* to make space for new notifications when all notifications are of the same *notificationStoragePriority*. |
| *contentSerialization* | 0..1 (L) | RO | The list of supported serializations of the ***Content*** primitive parameter for receiving a request from its registrants. (e.g. XML, JSON). The list shall be ordered so that the most preferred format comes first. |
| *e2eSecInfo* | 0..1 | RO | See clause 9.6.1.3. |
| *supportedReleaseVersions* | 0..1 (L) | RO | List of oneM2M release versions which are supported by the CSE.  Starting with Release 2, this attribute is mandatory for a CSE. For CSEs compliant to older releases, this attribute is optional. For CSEs that do not include this attribute, the default release version shall be Release 1. |

### 9.6.4 Resource Type *remoteCSE*

A *<remoteCSE>* resource shall represent a Registree CSE that is registered to the Registrar CSE. *<remoteCSE>* resources shall be located directly under the *<CSEBase>* resource of Registrar CSE.

Similarly *<remoteCSE>* resource shall also represent a Registrar CSE. *<remoteCSE>* resource shall be located directly under the *<CSEBase>* resource of Registree CSE.

For example, when CSE1 (Registree CSE) registers with CSE2 (Registrar CSE), there will be two *<remoteCSE>* resources created: one in CSE1: *<CSEBase1>/<remoteCSE2>* and one in CSE2: *<CSEBase2>/<remoteCSE1>.*

Note that the creation of the two resources does not imply mutual registration. The *<CSEBase1>/<remoteCSE2>* does not mean CSE2 registered with CSE1 in the example above.

The *<remoteCSE>* resource shall contain the child resources specified in table 9.6.4-1.

Table 9.6.4-1: Child resources of *<remoteCSE>* resource

| Child Resources of *<remoteCSE>* | Child Resource Type | Multiplicity | Description | *<remoteCSEAnnc>* Child Resource Types |
| --- | --- | --- | --- | --- |
| *[variable]* | *<container>* | 0..n | See clause 9.6.6 | *<container>* |
| *[variable]* | *<containerAnnc>* | 0..n | Announced variant of <*container>.* See clause 9.6.6 | *<containerAnnc>* |
| *[variable]* | *<flexContainer>* | 0..n | See clause 9.6.35 | *<flexContainer>* |
| *[variable]* | *<flexContaineAnnc>* | 0..n | Announced variant of <flexC*ontainer>.* See clause 9.6.35 | *<flexContainerAnnc>* |
| *[variable]* | *<group>* | 0..n | See clause 9.6.13 | *<group>* |
| *[variable]* | *<groupAnnc>* | 0..n | Announced variant of <*group>.* See clause 9.6.13 | *<groupAnnc>* |
| *[variable]* | *<accessControlPolicy>* | 0..n | See clause 9.6.2 | *<accessControlPolicy>* |
| *[variable]* | *<accessControlPolicyAnnc>* | 0..n | Announced variant of <*accessControlPolicy>.* See clause 9.6.2 | *<accessControlPolicyAnnc>* |
| *[variable]* | *<subscription>* | 0..n | See clause 9.6.8 | *<subscription>* |
| *[variable]* | *<pollingChannel>* | 0..1 | See clause 9.6.21. If *requestReachability* is FALSE, the CSE that created this *<remoteCSE>* resource should create a *<pollingChannel>* resource and perform long polling. The <*pollingChannel*> shall be utilized by the parent resource. | *None* |
| *[variable]* | *<nodeAnnc>* | 0..n | Announced variant of <*node>.* This announced resource is associated with a <node> resource that is hosted on a CSE which is represented by the parent <*remoteCSE*> or <*remoteCSEAnnc*> resource. See clause 9.6.18 for *<node>*. | *<nodeAnnc>* |
| *[variable]* | *<dynamicAuthorizationConsultation>* | 0..n | See clause 9.6.40 |  |
| *[variable]* | *<timeSeries>* | 0..n | See clause 9.6.36 | *<timeSeries>* |
| *[variable]* | *<timeSeriesAnnc>* | 0..n | Announced variant of <*timeSeries>.* See clause 9.6.36 | *<timeSeriesAnnc>* |
| *[variable]* | *<AEAnnc>* | 0..n | Announced variant of <*AE>.* See clause 9.6.5 | <*AEAnnc>* |
| *[variable]* | *<locationPolicyAnnc>* | 0..n | Announced variant of <*locationPolicy>.* See clause 9.6.10 | <*locationPolicyAnnc>* |
| *[variable]* | *<transactionMgmt>* | 0..n | See clause 9.6.47 | *<transactionMgmt>* |
| *[variable]* | *<transaction>* | 0..n | See clause 9.6.48 | *<transaction>* |
| *[variable]* | *<ontologyRepositoryAnnc>* | 0..1 | Announced variant of <*ontologyRepository>.* See clause 9.6.50 | <*ontologyRepositoryAnnc>* |
| *[variable]* | *<semanticMashupJobProfile>* | 0..n | See clause 9.6.53 | *<semanticMashupJobProfile>* |
| *[variable]* | *<semanticMashupJobProfileAnnc>* | 0..n | Announced variant of <*semanticMashupJobProfile>.* See clause 9.6.53 | *<semanticMashupJobProfileAnnc>* |
| *[variable]* | *<semanticMashupInstance>* | 0..n | See clause 9.6.54 | *<semanticMashupInstance>* |
| *[variable]* | *<semanticMashupInstanceAnnc>* | 0..n | Announced variant of <*semanticMashupInstance >.* See clause 9.6.54. | *<semanticMashupInstanceAnnc>* |
| *[variable]* | *<action>* | 0..n | See clause 9.6.61 | *<actionAnnc>* |
| *[variable]* | *<e2eQosSession>* | 0..1 | See clause 9.6.xx | <*e2eQosSession Annc*> |

The <remoteCSE> resource shall contain the attributes specified in table 9.6.4-2.

Table 9.6.4-2: Attributes of *<remoteCSE>* resource

| Attributes of *<remoteCSE>* | Multiplicity | RW/  RO/  WO | Description | *<remoteCSEAnnc>* Attributes |
| --- | --- | --- | --- | --- |
| *resourceType* | 1 | RO | See clause 9.6.1.3. | NA |
| *resourceID* | 1 | RO | See clause 9.6.1.3. | NA |
| *resourceName* | 1 | WO | See clause 9.6.1.3. | NA |
| *parentID* | 1 | RO | See clause 9.6.1.3. | NA |
| *creationTime* | 1 | RO | See clause 9.6.1.3. | NA |
| *lastModifiedTime* | 1 | RO | See clause 9.6.1.3. | NA |
| *expirationTime* | 1 | RW | See clause 9.6.1.3. | MA |
| *accessControlPolicyIDs* | 0..1 (L) | RW | See clause 9.6.1.3. | MA |
| *labels* | 0..1 (L) | RW | See clause 9.6.1.3. | MA |
| *announceTo* | 0..1 (L) | RW | See clause 9.6.1.3. | NA |
| *announcedAttribute* | 0..1 (L) | RW | See clause 9.6.1.3. | NA |
| *dynamicAuthorizationConsultationIDs* | 0..1 (L) | RW | See clause 9.6.1.3. | OA |
| *cseType* | 0..1 | WO | Indicates the type of CSE represented by the created resource.   * Mandatory for an IN-CSE, hence multiplicity (1). * Its presence is subject to SP configuration in case of an ASN-CSE or a MN-CSE. | OA |
| *pointOfAccess* | 0..1 (L) | RW | For request-reachable remote CSE it represents the list of physical addresses to be used to connect to it (e.g. IP address, FQDN).  If this information is not provided and <pollingChannel> resource does exist, the CSE should use *<pollingChannel>* resource. Then the Hosting CSE can forward a request to the CSE without using the PoA. | OA |
| *CSEBase* | 1 | WO | The address of the <*CSEBase>* resource represented by this *<remoteCSE>* resource. | OA |
| *CSE-ID* | 1 | WO | The CSE identifier of the remote CSE represented by this <*remoteCSE*> resource in SP-relative CSE-ID format (clause 7.2). | OA |
| *M2M-Ext-ID* | 0..1 | RW | Supported when Registrar is IN-CSE.  See clause 7.1.8 where this attribute is described. This attribute is used only for the case of dynamic association of M2M-Ext-ID and CSE-ID. | NA |
| *Trigger-Recipient-ID* | 0..1 | RW | Supported when Registrar is IN-CSE. See clause 7.1.10 where this attribute is described. This attribute is used only for the case of dynamic association of M2M‑Ext-ID and CSE-ID. | NA |
| *requestReachability* | 1 | RW | This attribute is an indication of static capability of the CSE that created this *<remoteCSE>* resource. If the CSE can receive requests originated at or forwarded by its registar CSE, this attribute is set to "TRUE" otherwise "FALSE" (see note). | OA |
| *nodeLink* | 0..1 | RW | The *resource identifier* of a *<node>* resource that stores the node specific information of the node on which the CSE represented by this *<remoteCSE>* resource resides. | OA |
| *contentSerialization* | 0..1 (L) | RW | The list of supported serializations of the ***Content*** primitive parameter for receiving a request (e.g. XML, JSON). The list shall be ordered so that the most preferred format comes first. | OA |
| *e2eSecInfo* | 0..1 | RW | See clause 9.6.1.3. | MA |
| *triggerReferenceNumber* | 0..1 | RW | This is to identify device trigger procedure request. This attribute is used only for device trigger and assigned by the IN-CSE. | NA |
| *descendantCSEs* | 0..1(L) | RW | This attribute contains a list of identifiers of descendent CSEs of the Registree CSE represented by this <remoteCSE> resource. A descendant CSE is a CSE that either registers to the CSE represented by this <remoteCSE>, or registers to another CSE which is a descendant CSE of this <remoteCSE>.  The Registree CSE represented by this <remoteCSE> shall configure this attribute with a list of descendent CSEs upon creation of the <remoteCSE> resource.  The Registree CSE shall update this attribute whenever a new descendent CSE either registers or de-registers. The Registree CSE shall detect when a descendent CSE registers or de-registers by monitoring its <remoteCSE> resources and the descendentCSEs attribute(s) of these <remoteCSE> resources.  For a <remoteCSE> resource representing a Registrar CSE this attribute shall not be set. | OA |
| *multicastCapability* | 0..1 | RW | Indicates the oneM2M node multicast Capability, pre-defined values are:   * MBMS * IP | OA |
| *externalGroupID* | 0..1 | RW | Supported when Registrar CSE is an IN-CSE. It is used by an M2M Service Provider (M2M SP) when services targeted to a group of M2M Devices are requested from the Underlying Network. It is assumed to be a globally unique ID exposed by the underlying network to identify a group of M2M Devices (e.g. ASN, MN) for group related services. | OA |
| *triggerEnable* | 0..1 | RW | When set to “TRUE”, trigger requests may be sent to the CSE represented by this <*remoteCSE*> resource. When set to “FALSE” trigger requests shall not be sent to this CSE. | OA |
| *activityPatternElements* | 0..1(L) | RW | This attribute describes the anticipated availability of the CSE for communications. See further description below and table 9.6.4-3. | OA |
| *supportedReleaseVersions* | 0..1(L) | WO | The oneM2M release versions supported by the CSE represented by this <*remoteCSE*> resource.  Starting with Release 2, this attribute is mandatory for a CSE. For CSEs compliant to older releases, this attribute is optional. For CSEs that do not include this attribute, the default release version shall be Release 1. | MA |
| NOTE-1: Even if this attribute is set to "FALSE", it is not meant that the CSE is always unreachable by its registrees. E.g. if the CSE and its registrees are behind the same NAT, then the CSE can receive requests from its registrees. See also *pollingChannel* description in clause 9.6.21.  NOTE-2: For the case of a response, this attribute is applicable if the corresponding request does not contain the serialization format of the *Content* request parameter to allow a CSE to determine the proper serialization format to use in the response. | | | | |

The set of activity patterns represented in the *activityPatternElements* attribute describes the anticipated availability of the CSE for communications. The set provides the anticipated activity timing pattern, and may provide additional information about the anticipated mobility status and expected data size to be exchanged. Each *activityPatternElements* item is comprised of triples (*scheduleElement*, *stationaryIndication*, *dataSizeIndicator*) with parameters shown and described in table 9.6.4-3.

Table 9.6.4-3: Parameters in *activityPatternElements* triple

| Name | Description |
| --- | --- |
| *scheduleElement* | See clause 9.6.9. This parameter shall be composed from seven fields of second, minute, hour, day of month, month, day of week and year. This is a mandatory parameter in the triple. This parameter indicates the times when the entity is available to send and receive primitives. |
| *stationaryIndication* | It indicates the field node as 'Stationary (Stopping)' or 'Mobile (Moving)' for the traffic pattern. The default value is NULL, denoting that no *stationaryIndication* is provided |
| *dataSizeIndicator* | It indicates the expected data size for the traffic pattern. The default value is NULL, denoting that no *dataSizeIndicator* is provided. |

### 9.6.5 Resource Type *AE*

An *<AE>* resource shall represent information about an Application Entity registered to a CSE.

The *<AE>* resource shall contain the child resources specified in table 9.6.5-1.

Table 9.6.5-1: Child resources of *<AE>* resource

| Child Resources of *<AE>* | Child Resource Type | Multiplicity | Description | *<AEAnnc>* Child Resource Types |
| --- | --- | --- | --- | --- |
| *[variable]* | *<semanticDescriptor>* | 0..n | See clause 9.6.30 | *<semanticDescriptor>, <semanticDescriptorAnnc>* |
| *[variable]* | *<subscription>* | 0..n | See clause 9.6.8 | *<subscription>* |
| *[variable]* | *<container>* | 0..n | See clause 9.6.6 | *<container> <containerAnnc>* |
| *[variable]* | *<flexContainer>* | 0..n | See clause 9.6.35 | *<flexContainer>*  *<flexContainerAnnc>* |
| *[variable]* | *<group>* | 0..n | See clause 9.6.13 | *<group>*  *<groupAnnc>* |
| *[variable]* | *<accessControlPolicy>* | 0..n | See clause 9.6.2 | *<accessControlPolicy>*  *<accessControlPolicyAnnc>* |
| *[variable]* | *<pollingChannel>* | 0..1 | See clause 9.6.21  When the AE is request-unreachable, the AE should create this *<pollingChannel>* resource and perform long polling. The <*pollingChannel*> shall be utilized by the parent resource | *None* |
| *[variable]* | *<dynamicAuthorizationConsultation>* | 0..n | See clause 9.6.40 | *None* |
| *[variable]* | *<timeSeries>* | 0..n | See clause 9.6.36 | *<timeSeries>*  *<timeSeriesAnnc>* |
| *[variable]* | *<transactionMgmt>* | 0..n | See clause 9.6.47 | *<transactionMgmt>* |
| *[variable]* | *<transaction>* | 0..n | See clause 9.6.48 | *<transaction>* |
| *[variable]* | *<triggerRequest>* | 0..n | See clause 9.6.49 | *None* |
| *[variable]* | *<multimediaSession>* | 0..n | See Clause 9.6.57. This resources holds information describing the established multimedia session | *None* |
| *[variable]* | *<semanticMashupInstance>* | 0..n | See clause 9.6.54 | *<semanticMashupInstance>*  *<semanticMashupInstanceAnnc>* |
| *[variable]* | *<locationPolicy>* | 0..n | See clause 9.6.10 | *<locationPolicyAnnc>* |
| *[variable]* | *<action>* | 0..n | See clause 9.6.61 | *None* |
| *[variable]* | <*e2eQosSession*> | 0..1 | See clause 9.6.xx | <*e2eQosSession Annc*> |

The *<AE>* resource shall contain the attributes specified in table 9.6.5-2.

Table 9.6.5-2: Attributes of *<AE>* resource

| Attributes of  *<AE>* | Multiplicity | RW/  RO/  WO | Description | *<AEAnnc>* Attributes |
| --- | --- | --- | --- | --- |
| *resourceType* | 1 | RO | See clause 9.6.1.3. | NA |
| *resourceID* | 1 | RO | See clause 9.6.1.3. Contains the AE-ID-Stem of the AE (see clause 7.2 on identifier formats and clause 10.2.2.2 for AE registration procedure). | NA |
| *resourceName* | 1 | WO | See clause 9.6.1.3. | NA |
| *parentID* | 1 | RO | See clause 9.6.1.3. | NA |
| *expirationTime* | 1 | RW | See clause 9.6.1.3. | MA |
| *accessControlPolicyIDs* | 0..1 (L) | RW | See clause 9.6.1.3. | MA |
| *creationTime* | 1 | RO | See clause 9.6.1.3. | NA |
| *lastModifiedTime* | 1 | RO | See clause 9.6.1.3. | NA |
| *labels* | 0..1 (L) | RW | See clause 9.6.1.3. | MA |
| *announceTo* | 0..1 (L) | RW | See clause 9.6.1.3. | NA |
| *announcedAttribute* | 0..1 (L) | RW | See clause 9.6.1.3. | NA |
| *dynamicAuthorizationConsultationIDs* | 0..1 (L) | RW | See clause 9.6.1.3. | OA |
| *appName* | 0..1 | RW | The name of the application, as declared by the application developer (e.g. "HeatingMonitoring").  Several sibling resources may share the *appName*. | OA |
| *App-ID* | 1 | WO | The identifier of the Application (see clause 7.1.3). | OA |
| *AE-ID* | 1 | RO | The identifier of the Application Entity (see clause 7.1.2). | OA |
| *M2M-Ext-ID* | 0..1 | RW | Supported when Registrar is IN-CSE.  See clause 7.1.8 where this attribute is described. This attribute is used only for the case of dynamic association of M2M-Ext-ID and AE-ID. | NA |
| *trigger-Recipient-ID* | 0..1 | RW | Supported when Registrar is IN-CSE. See clause 7.1.10 where this attribute is described. This attribute is used only for the case of dynamic association of M2M‑Ext-ID and AE-ID. | NA |
| *triggerReferenceNumber* | 0..1 | RW | This is to identify device trigger procedure request. This attribute is used only for device trigger and assigned by the IN-CSE. | NA |
| *pointOfAccess* | 0..1 (L) | RW | The list of addresses for communicating with the registered Application Entity over Mca reference point via the transport services provided by Underlying Network (e.g. IP address, FQDN, URI). This attribute shall be accessible only by the AE and the Hosting CSE.  If this information is not provided and the <pollingChannel> resource does exist, the AE should use *<pollingChannel>* resource. Then the Hosting CSE can forward a request to the AE without using the PoA. | OA |
| *registrationStatus* | 0..1 | RW | Denotes status of the AE registration. If ACTIVE, the <AE> resource and all its child resources may be discoverable. If INACTIVE, the <AE> resource and all its child resources shall not be discoverable.  Set to ACTIVE during a AE registration or re-registration. When an AE changes its registration point, the registration at the old registration point is set to INACTIVE. | OA |
| *trackRegistrationPoints* | 0..1 | RW | Denotes if the Application Entity requests that its Registration Points be tracked. If TRUE, AE requests to be tracked as it changes its Registration Points. If FALSE, the AE requests not to be tracked as it changes its Registration Points. | OA |
| *ontologyRef* | 0..1 | RW | A URI of the ontology used to represent the information that is managed and understood by the AE. | OA |
| *requestReachability* | 1 | RW | This attribute is an indication of static capability of the AE that created this *<AE>* resource. If the AE can receive requests s originated at or forwarded by its registar CSE, this attribute is set to "TRUE" otherwise "FALSE". | OA |
| *nodeLink* | 0..1 | RW | The *resource identifier* of a *<node>* resource that stores the node specific information of the node on which the AE represented by this *<AE>* resource resides. | OA |
| *contentSerialization* | 0..1 (L) | RW | The list of supported serializations of the ***Content*** primitive parameter for receiving a request and a response from its registrar CSE. (e.g. XML, JSON, , CBOR). The list shall be ordered so that the most preferred format comes first. | OA |
| *e2eSecInfo* | 0..1 | RW | See clause 9.6.1.3. | MA |
| *activityPatternElements* | 0..1(L) | RW | This attribute describes the anticipated availability of the AE for communications. See further description below and table 9.6.4-3 | OA |
| *triggerEnable* | 0..1 | RW | When set to “TRUE”, trigger requests may be sent to the AE represented by this <*AE*> resource. When set to “FALSE” trigger requests shall not be sent to this AE. | OA |
| *sessionCapabilities* | 0..1 (L) | RW | The list of supported session media types (e.g. audio, video, image) and supported session protocols (e.g. RTP, RTP/AVP) as defined by session parameters as defined by the IETF IANA Session Descriptor Protocol (SDP) Parameter Registry. | OA |
| *supportedReleaseVersions* | 0..1(L) | WO | The oneM2M release versions supported by the Registree AE represented by this <*AE*> resource.  Starting with Release 2, this attribute is mandatory for an AE. For AEs compliant to older releases, this attribute is optional. For AEs that do not include this attribute, the default release version shall be Release 1. | MA |
| *externalGroupID* | 0..1 | RW | Supported when Registrar CSE is an IN-CSE. It is used by an M2M Service Provider (M2M SP) when services targeted to a group of M2M Devices are requested from the Underlying Network. It is assumed to be a globally unique ID exposed by the underlying network to identify a group of M2M Devices (e.g. ADN, ASN, MN) for group related services. | OA |
| Note:For the case of a response, this attribute is applicable if the corresponding request does not contain the serialization format of the *Content* request parameter to allow a CSE to determine the proper serialization format to use in the response. | | | | |

The set of activity patterns represented in the *activityPatternElements* attribute describes the anticipated availability of the AE for communications. The set provides the anticipated activity timing pattern and might provide additional information about the anticipated mobility status and expected data size to be exchanged. Each *activityPatternElements* item is comprised of triples (*scheduleElement*, *stationaryIndication*, *datasizeIndicator*) with parameters shown and described in table 9.6.4-3.

-------------------------------------------------- End of Change 3---------------------------------------------------

-------------------------------------------------- Start of Change 4---------------------------------------------------

## 10.2 Functional procedures

### 10.2.yy End to End QoS

#### 10.2.yy.1 Introduction

This clause describes the procedures for creation, retrieval, update and deletion of the *<e2eQosSession*> resource. The corresponding procedures over the Mcn reference point are described in TS-0026 [15] when the underlying network is 3GPP.

#### 10.2.yy.2 Create <*e2eQosSession*>

This procedure shall be used for creating an *<e2eQosSession>* resource

**Table 10.2.yy.2-1: *<e2eQosSession>* CREATE**

| ***<e2eQosSession>* CREATE** | |
| --- | --- |
| Associated Reference Point | Mca, Mcc and Mcc' |
| Information in Request message | All parameters defined in table 8.1.2-3 apply with the specific details for:  ***Content:*** The resource content shall provide the information as defined in clause 9.6.xx |
| Processing at Originator before sending Request | According to clause 10.1.2 |
| Processing at Receiver | According to clause 10.1.2. The Receiver shall interact with the underlying network to setup the end to end QoS sessions. In the case of interworking with 3GPP networks, the process at the Recevier shall refer to clause 7.x.3.1 in TS-0026 [15]. |
| Information in Response message | According to clause 10.1.2 |
| Processing at Originator after receiving Response | According to clause 10.1.2. |
| Exceptions | According to clause 10.1.2. |

#### 10.2.yy.3 Retrieve *<e2eQosSession>*

This procedure shall be used for retrieving the representation of the *<e2eQosSession>* resource.

**Table 10.2.yy.3-1: *<e2eQosSession>* RETRIEVE**

|  |  |
| --- | --- |
| ***<e2eQosSession>* RETRIEVE** | |
| Associated Reference Point | Mca, Mcc and Mcc' |
| Information in Request message | All parameters defined in table 8.1.2-3 |
| Processing at Originator before sending Request | According to clause 10.1.3 |
| Processing at Receiver | According to clause 10.1.3 |
| Information in Response message | All parameters defined in table 8.1.3-1 apply with the specific details for:  ***Content***: attributes of the *<e2eQosSession>* resource as defined in clause 9.6.xx |
| Processing at Originator after receiving Response | According to clause 10.1.3 |
| Exceptions | According to clause 10.1.3 |

#### 10.2.yy.4 Update *<e2eQosSession>*

This procedure shall be used for updating the attributes and the actual data of an *<e2eQosSession>* resource.

**Table 10.2.yy.4-1: *<e2eQosSession>* UPDATE**

|  |  |
| --- | --- |
| ***<e2eQosSession>* UPDATE** | |
| Associated Reference Point | Mca, Mcc and Mcc' |
| Information in Request message | All parameters defined in table 8.1.2-3 apply with the specific details for:  ***Content*:** attributes of the *<e2eQosSession>* resource as defined in clause 9.6.xx which need be updated |
| Processing at Originator before sending Request | According to clause 10.1.4 |
| Processing at Receiver | According to clause 10.1.4. The Receiver shall interact with the underlying network to setup the end to end QoS sessions. In the case of interworking with 3GPP networks, the process at the Recevier shall refer to clause 7.x.3.1 in TS-0026 [15]. |
| Information in Response message | According to clause 10.1.4 |
| Processing at Originator after receiving Response | According to clause 10.1.4 |
| Exceptions | According to clause 10.1.4 |

#### 10.2.yy.5 Delete *<e2eQosSession>*

This procedure shall be used for deleting the *<e2eQosSession>* resource with all related information.

**Table 10.2.20.5-1: *<e2eQosSession>* DELETE**

|  |  |
| --- | --- |
| ***<e2eQosSession>* DELETE** | |
| Associated Reference Point | Mca, Mcc and Mcc' |
| Information in Request message | All parameters defined in table 8.1.2-3 apply |
| Processing at Originator before sending Request | According to clause 10.1.5 |
| Processing at Receiver | According to clause 10.1.5. The Receiver shall interact with the underlying network to setup the end to end QoS sessions. In the case of interworking with 3GPP networks, the process at the Recevier shall refer to clause 7.x.3.3 in TS-0026 [15]. |
| Information in Response message | According to clause 10.1.5 |
| Processing at Originator after receiving Response | According to clause 10.1.5 |
| Exceptions | According to clause 10.1.5 |

-------------------------------------------------- End of Change 4---------------------------------------------------