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| CHANGE REQUEST | |
| Meeting ID:\* | PRO 28 |
| Source:\* | Francisco Sang-Eon Kim, KT (TTA), kim.sangeon@kt.com |
| Date:\* | 2017-03-19 |
| Reason for Change/s:\* | The validation for <group< resource is not clear and has some logical problem. |
| CR against: Release\* | Release 3 |
| CR against: WI\* | Active <Work Item number>  MNT maintenance  Is this a mirror CR? Yes  No  mirror CR number: (Note to Rapporteur - use latest agreed revision)  STE Small Technical Enhancements / WI-0050  Only ONE of the above shall be ticked |
| CR against: TS/TR\* | TS-0004-V3.0.0 |
| Clauses \* | * + 1. Resource Type <group>        1. Receiver error response class  6.6.3.3 Successful response class |
| 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 |
| Impacted other TS/TR(s) | Not identified |
| 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 2017 (Do not modify) | |

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GUIDELINES for Change Requests:

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

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

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

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

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

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

Follow the drafting rules.

All pictures must be editable.

Check spelling and grammar to the extent practicable.

Use Change bars for modifications.

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

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

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

## Introduction

The clause specifies <group> resource specific procedure.

The CREATE/UPDATA procedures can be interpreted as following diagram.

1. **Primitive specific operation: Validate the provided attributes. It shall also check whether the number of URIs present in the memberIDs attribute of the group resource representation does not exceed the maximum as specified by the maxNrOfMembers attribute.**

**If the maximum is exceeded, the request shall be rejected with a Response Status Code indicating "MAX\_NUMBER\_OF\_MEMBER\_EXCEEDED" error.**

**If there are duplicate members in the memberIDs attribute then the duplicate members are removed before creation of the <group> resource.  
If the memberType attribute of the <group> resource is not "MIXED", the Hosting CSE shall also verify that all the member IDs including sub-groups in the attribute memberIDs of the <group> resource representation provided in the request shall conform to the memberType of the group resource.**

**To validate a resource type of a member, the Hosting CSE shall check the resourceType attribute of the resource which is indicated by the member ID. To check the resourceType attribute, the Hosting CSE may retrieve the member resource.**

**When a member ID is virtual resource, the Hosting CSE shall check the resourceType attribute of the parent resource. If the resource type of the parent allows this child virtual resource type, the Hosting CSE checks whether the virtual resource type matches with the memberType attribute of the group. If they match, then the Hosting CSE considers that the virtual member resource is validated.**

This specification can be considered as following flow chart.



Here, it is missing the case that parent resource doest not allow virtual resource. This proposes to generate new error code like yellow circle.

The sentence in 45, “To check the resourceType attribute, the Hosting CSE may retrieve the member resource.” is not correct because “may” is optional. If skip retrieve the member resource, the rest of the specification can not perform. So, it should be changed to ‘shall’ that is “To check the resourceType attribute, the Hosting CSE shall retrieve the member resource.”

1. **In the case that the <group> resource contains sub-group member resources, the receiver shall retrieve the *memberType* of the sub-group member resources to validate the *memberType*. If the *memberType* cannot be retrieved due to lack of privilege, the request shall be rejected with a Response Status Code indicating "RECEIVER\_HAS\_NO\_PRIVILEGE" error.**

**If the sub-group member resources are temporarily unreachable, the receiver shall set the memberTypeValidated attribute of the <group> resource to FALSE and return the result to the originator in the response of the request.**

**As soon as any unreachable sub-group resource becomes reachable, the receiver shall perform the memberType validation procedure. The originator may get to know the validation result by subscribing to the created resource if the memberTypeValidated attribute is FALSE. Upon unsuccessful validation, the receiver shall delete the <group> resource if the consistencyStrategy of the <group> resource is ABANDON\_GROUP, or remove the inconsistent members from the <group> resource if the consistencyStrategy attribute is ABANDON\_MEMBER, or set the memberType attribute of the <group> resource to "MIXED" if the consistencyStrategy attribute is SET\_MIXED.**

This specification can be considered as following flow chart.

Notice ‘Retrieve resource of each memberIDs’ is rectangular to indicate mandatory not optional.

Above box is dashed line to indicate optional.



**As soon as any unreachable sub-group resource becomes reachable, the receiver shall perform the memberType validation procedure. The originator may get to know the validation result by subscribing to the created resource if the memberTypeValidated attribute is FALSE.**

This is ambiguous. So this contribution proposes as following.

We don’t have to start validation procedure from start and jump to know the validation result by subscribing to the created resource.

Subscription is possible solution to check the reachability. An alternative solution is retry to unreachable resource.

**Upon unsuccessful validation, the receiver shall delete the <group> resource if the consistencyStrategy of the <group> resource is ABANDON\_GROUP, or remove the inconsistent members from the <group> resource if the consistencyStrategy attribute is ABANDON\_MEMBER, or set the memberType attribute of the <group> resource to "MIXED" if the consistencyStrategy attribute is SET\_MIXED.**

Also, it is not clear to process for unreachable *memberIDs*

This contribution proposes to resolve above issues by introducing *unreachableMemberIDs* and *enforcement* attributes.

An *unreachableMemberIDs* attribute is a list of *memberIDs* that is not reachable.

This is useful to check the validation of <group> resource. The TS-0004 is specified when *memberIDs* is not reachable, whole validation is performed again.

With this *unreachableMemberIDs* attribute, validation for <group> resource can perform to partial *memberIDs* not whole *memberIDs*

An *enforcement* attribute is value whether the unreachable *memberIDs* include or not. When enforcement is TRUE, operation(Create, Retrieve, Update, Delete) shall be performed even if *unreachableMemberIDs* exist.

When enforcement is FALSE, it may check reachability for *unreachableMemberIDs* or check *memberTypeValidated*.

The TS-0004 is not explicitly specified on this at this time.

The followings are possible procedure for protocol aspects.





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



### Resource Type <group>

#### 7.4.13.1 Introduction

The <group> resource represents a group of resources of the same or mixed resource types. The <group> resource can be used to do bulk manipulations on the resources represented by the ***memberIDs*** attribute. The <group> resource contains an attribute that represents the members of the group and a virtual resource (e.g. <fanOutPoint>, < *semanticFanOutPoint>*) that allows operations to be applied to the resources represented by those members. The detailed description can be found in clause 9.6.13 in TS-0001 [6].

Table 7.4.13.1‑1: Data type definition of <group> resource

|  |  |  |
| --- | --- | --- |
| Data Type ID | File Name | Note |
| group | CDT-group-v2\_10\_0.xsd |  |

Table 7.4.13.1‑2: Universal/Common Attributes of <group> resource

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

Table 7.4.13.1‑3: Resource Specific Attributes of <group> resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Attribute Name | Request Optionality | | Data Type | Default Value and Constraints |
| Create | Update |
| memberType | O | NP | m2m:memberType | Default value is set to 'MIXED' |
| currentNrOfMembers | NP | NP | xs:nonNegativeInteger | No default  (This is generated by the Hosting CSE and limited by the *maxNrOfMembers* attribute of the <group> resource) |
| maxNrOfMembers | M | O | xs:positiveInteger | No default |
| memberIDs | M | O | list of xs:anyURI | No default  This list may contain no members |
| membersAccessControlPolicyIDs | O | O | m2m:listOfURIs | No default |
| memberTypeValidated | NP | NP | xs:boolean | No default  (This is generated by the Hosting CSE) |
| consistencyStrategy | O | NP | m2m:consistencyStrategy | Default value is set to 'ABANDON\_MEMBER' |
| groupName | O | O | xs:string | No default |
| semanticSupportIndicator | NP | NP | xs:boolean | No default  (This is generated by the Hosting CSE and the value shall be ‘TRUE’ when this attribute is present) |
| *unreachableMemberIDs* | O | O | list of xs:anyURI | No default  This list may contain no members |
| *enforcement* | O | O | xs:boolean | TRUE is default |

Table 7.4.13.1‑4: Child resources of <group> resource

|  |  |  |  |
| --- | --- | --- | --- |
| Child Resource Type | Child Resource Name | Multiplicity | Ref. to in Resource Type Definition |
| <subscription> | [variable] | 0..n | Clause 7.4.8 |
| <semanticDescriptor> | [variable] | 0..n | Clause 7.4.34 |
| <fanOutPoint> | fopt | 1 | Clause 7.4.14 |
| <semanticFanOutPoint> | sfop | 0..1 | Clause 7.4.35 |

#### 7.4.13.2 <group> resource specific procedure on CRUD operations

##### 7.4.13.2.0 Introduction

This clause describes <group> resource specific procedure on Resource Hosting CSE for CRUD operations.



##### Create

Resource specific operation after Recv-6.4 "Check validity of resource representation for the given resource type" and before Recv-6.5 "Create/Update/Retrieve/Delete/Notify operation is performed". See clause 7.2.2.2.

A procedure of <group> resource validation is:

1. Step01: Check duplication of memberIDs attribute.

* If there are duplicate *memberIDs* attributes, the duplicated *memberIDs* shall be removed at step 01-1 and goes to step 02.
* If there are no duplicated *memberIDs*, it proceed to step 02.

Step02: Compare *currentNrOf*Members and *maxNrOfMembers* attribute.

* If the *currentNrOfMembers* value is less than the *maxNrOfMembers* value, it goes to step 03.
* If the *currentNrOfMembers* value is larger than or equal to the *maxNrOfMembers* value, the Hosting CSE shall terminate validation process and response to the Originator with a ***Response Status Code*** indicating "MAX\_NUMBER\_OF\_MEMBER\_EXCEEDED" error at step 12-6.

1. Step03: Check the whether a memberIDs is virtual resource.

* If *memberIDs* is virtual resources, the Hosting CSE shall check the *resourceType* attribute of the parent resource at step 03-2.
  + If the resource type of the parent allows this child virtual resource type at step 03-2, the Hosting CSE goes to step 03-1.
  + Otherwise at step 03-2, the Hosting CSE shall be terminate validation process and response to the Originator with ***Response Status Code*** indicating "NOT\_ALLOWED\_VIRTUAL\_RESOURCE" at step 12-7.
* If *memberIDs* is not virtual resource, validation process goes to step03-1.

Step04: Check reachability to all *memberIDs*.

The Hosting CSE shall check reachability to retrieve each *memberIDs*.

* If the sub-group member or *memberIDs* of the <group> are temporarily unreachable, the Hosting CSE shall set the *memberTypeValidated* attribute to FALSE at step 04-1 and goes to step 06. In this case, the ***Response Status Code*** depends on value of *consistencyStrategy* attribute.
* If *memberIDs* is all reachable, the Receiver goes to step 05.

1. Step05: Check privilege.

The Hosting CSE shall check privilege to retrieve the *memberIDs* including sub-group member resources to validate the *memberType*.

* If the *memberIDs* can be retrieved and validated all *memberIDs*, the Hosting CSE shall be set *memberTypeValidated* attribute to TRUE at step 05-1 and goes to step 12-0 which is termination of validation process and response to the Originator with ***Response Status Code*** indicating "OK".
* If the *memberIDs* cannot be retrieved due to lack of privilege, the Hosting CSE shall terminate validation process and response to the Originator with a ***Response Status Code*** indicating "RECEIVER\_HAS\_NO\_PRIVILEGE" error at step 12-5.

1. Step06: Check *consistencyStrategy* attribute.
   1. When the *consistencyStrategy* attribute is ABANDON\_GROUP, the Hosting CSE shall terminate validation process at step 06-1 and response to the Originator with a ***Response Status Code*** indicating "ABANDON\_GROUPRESOURCE" error at step 12-1.
   2. When the *consistencyStrategy* attribute is ABANDON\_ MEMBER, the Hosting CSE shall abandon the *memberIDs* that *memberTypeValidated* is FALSE at step 06-2 and create the <group> resource also response to the Originator with a ***Response Status Code*** indicating "SUCCESSFUL\_OPERATION\_GROUP\_RESOURCE" at step 12-2.
   3. When the *consistencyStrategy* attribute is SET\_ MIXED, the Hosting CSE shall check the *memberType* attribute at step 07 whether the *memberType* is single resource type or mixed type.

* When the *memberType* is single type resource it goes to step 08.
* When the *memberType* is multiple resource type at step 07, the Hosting CSE check reachability for *unreachablememberIDs* at step 09.

1. Step08: Check reachability for *unreachablememberIDs* for single *memberType.*

* When the Hosting CSE has success reachability to *unreachablememberIDs* for single type resource, the Hosting CSE shall be set *memberTypeValidated* attribute to TRUE at step 08-1 and response to the Originator with a ***Response Status Code*** indicating "OK" at step 12-0.
* When the Hosting CSE has fail to reachability to *unreachablememberIDs* for single type resource, the Hosting CSE shall check *enforcement* attribute at step 10.
  + If the *enforcement* attribute value is TRUE, the Hosting CSE shall create <group> resource and response to the Originator with a ***Response Status Code*** indicating "SUCCESSFUL\_OPERATION\_GROUP\_RESOURCE" at step 12-2..
  + If the *enforcement* attribute value is FALSE, the Hosting CSE shall terminate validation process at step 12.4 and response to the Originator with a ***Response Status Code*** indicating "GROUP\_MEMBERS\_NOT\_RESPONDED" error. In this case,the Hosting CSE may retry to check the reachability.

1. Step09: Check reachability for *unreachablememberIDs* for mixed *memberType.*

* When the Hosting CSE has success reachability to *unreachablememberIDs* for mixed *resourceType*, the Hosting CSE shall be set *memberTypeValidated* attribute to TRUE at step 08-1 and response to the Originator with a ***Response Status Code*** indicating "OK" at step 12-0.
* When the Hosting CSE has fail to reachability to *unreachablememberIDs* for mixed *resourceType*, the Hosting CSE shall check *enforcement* attribute at step 11.
  + If the *enforcement* attribute value is TRUE, the Hosting CSE shall create <group> resource and response to the Originator with a ***Response Status Code*** indicating "SUCCESSFUL\_MIXED\_GROUP\_RESOURCE" at step 12-3..
  + If the *enforcement* attribute value is FALSE, the Hosting CSE shall terminate validation process at step 12.4 and response to the Originator with a ***Response Status Code*** indicating "GROUP\_MEMBERS\_NOT\_RESPONDED" error. In this case, the Hosting CSE may retry to check the reachability.





Figure 7.4.13.2‑1: <Group> Resource Validation Procedure

##### Retrieve

No primitive specific operations.

##### Update

Primitive specific operation after Recv-6.4 "Check validity of resource representation for the given resource type" and before Recv-6.5 "Create/Update/Retrieve/Delete/Notify operation is performed ". See clause 7.2.2.2.

The validation procedure for update operation is the same as clause 7.4.13.2.1 except for step 08 and step 09.

1. Step08: Check reachability for *unreachablememberIDs* for single *memberType.*

* When the Hosting CSE has success reachability to *unreachablememberIDs* for single type resource, the Hosting CSE shall be set *memberTypeValidated* attribute to TRUE at step 08-1 and response to the Originator with a ***Response Status Code*** indicating "OK" at step 12-0.
* When the Hosting CSE has fail to reachability to *unreachablememberIDs* for single type resource, the Hosting CSE shall check *enforcement* attribute at step 10.
  + If the *enforcement* attribute value is TRUE, the Hosting CSE shall update <group> resource and response to the Originator with a ***Response Status Code*** indicating "SUCCESSFUL\_OPERATION\_GROUP\_RESOURCE" at step 12-2..
  + If the *enforcement* attribute value is FALSE, the Hosting CSE shall terminate validation process at step 12.4 and response to the Originator with a ***Response Status Code*** indicating "GROUP\_MEMBERS\_NOT\_RESPONDED" error at step 12-4. In this case,the Hosting CSE may retry to check the reachability.

1. Step09: Check reachability for *unreachablememberIDs* for mixed *memberType.*

* When the Hosting CSE has success reachability to *unreachablememberIDs* for mixed *resourceType*, the Hosting CSE shall be set *memberTypeValidated* attribute to TRUE at step 08-1 and response to the Originator with a ***Response Status Code*** indicating "OK" at step 12-0.
* When the Hosting CSE has fail to reachability to *unreachablememberIDs* for mixed *resourceType*, the Hosting CSE shall check *enforcement* attribute at step 11.
  + If the *enforcement* attribute value is TRUE, the Hosting CSE shall update <group> resource and response to the Originator with a ***Response Status Code*** indicating "SUCCESSFUL\_MIXED\_GROUP\_RESOURCE" at step 12-3..
  + If the *enforcement* attribute value is FALSE, the Hosting CSE shall terminate validation process at step 12.4 and response to the Originator with a ***Response Status Code*** indicating "GROUP\_MEMBERS\_NOT\_RESPONDED" error. In this case, the Hosting CSE may retry to check the reachability.

##### Delete

No primitive specific operations.

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

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



#### Successful response class

Table 6.6.3.2-1 specifies the RSCs for successful responses.

**Table 6.6.3.3‑1: RSCs for successful response class**

|  |  |
| --- | --- |
| Numeric Code | Description |
| 2000 | OK |
| 2001 | CREATED |
| 2002 | DELETED |
| 2004 | UPDATED |
| 20XX | SUCCESSFUL\_OPERATION\_GROUP\_RESOURCE |
| 20XX | SUCCESSFUL\_MIXED\_GROUP\_RESOURCE |

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

-----------------------Start of change 3---------------------------------------------

#### Receiver error response class

Table 6.6.3.6-1 specifies the RSCs for Receiver error responses.

51xx codes are oneM2M specific, which are used in generic procedures.

52xx codes are oneM2M specific, which are used in resource specific procedures.

**Table 6.6.3.6‑1: RSCs for Receiver error response class**

|  |  |
| --- | --- |
| Numeric Code | Description |
| 5000 | INTERNAL\_SERVER\_ERROR |
| 5001 | NOT\_IMPLEMENTED |
| 5103 | TARGET\_NOT\_REACHABLE |
| 5105 | RECEIVER\_HAS\_NO\_PRIVILEGE |
| 5106 | ALREADY\_EXISTS |
| 5203 | TARGET\_NOT\_SUBSCRIBABLE |
| 5204 | SUBSCRIPTION\_VERIFICATION\_INITIATION\_FAILED |
| 5205 | SUBSCRIPTION\_HOST\_HAS\_NO\_PRIVILEGE |
| 5206 | NON\_BLOCKING\_REQUEST\_NOT\_SUPPORTED |
| 5207 | NOT\_ACCEPTABLE |
| 5208 | DISCOVERY\_DENIED\_BY\_IPE |
| 5209 | GROUP\_MEMBERS\_NOT\_RESPONDED |
| 5210 | ESPRIM\_DECRYPTION\_ERROR |
| 5211 | ESPRIM\_ENCRYPTION\_ERROR |
| 5212 | SPARQL\_UPDATE\_ERROR |
| 52XX | NOT\_ALLOWED\_VIRTUAL\_RESOURCE |
| 52XX | ABANDON\_GROUP\_RESOURCE |
| 52XX | GROUP\_MEMBERS\_NOT\_RESPONDED |

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

CHECK LIST

* Does this Change Request include an informative introduction containing the problem(s) being solved, and a summary list of proposals.?
* Does this CR contain changes related to only one particular issue/problem?
* Have any mirror CRs been posted?
* Does this Change Request make **all** the changes necessary to address the issue or problem? E.g. A change impacting 5 tables should not include a proposal to change only 3 tables?Does this Change Request follow the drafting rules?
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