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| --- | --- |
| CHANGE REQUEST | |
| Meeting ID:\* | SDS#39 |
| Source:\* | Youngjin Na, , Hyundai Motor, [yjra@hyundai.com](mailto:yjra@hyundai.com)  Minbyeong Lee, Hyundai Motor, [minbyeong.lee@hyundai.com](mailto:minbyeong.lee@hyundai.com)  JaeSeung Song, KETI, [jssong@sejong.ac.kr](mailto:jssong@sejong.ac.kr) |
| Date:\* | 2019-02-14 |
| Contact:\* | JaeSeung Song, KETI, [jssong@sejong.ac.kr](mailto:jssong@sejong.ac.kr) |
| Reason for Change/s:\* | Provides a solution to Key Issue for cross resource subscription |
| CR against: Release\* | Release 4 |
| CR against: WI\* | Active <WI-0046>  MNT / < Work Item number(optional)>  Is this a companion CR? Yes  No  Companion CR number: (Note to Rapporteur - use latest agreed revision)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\* | TR-0026 |
| Clauses/Sub Clauses \* | Clause 10.XX |
| 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) | <TS/TR number>, <Version Number>, and <Description on which aspect should be reflected in this TS/TR> |
| 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

This solution addresses aspects of the Key Issue 5 on cross-Resource subscription in TR-0026. This contribution is introducing new functionalities on cross-Resource subscription such as:

1. Cross-notification only when expected changes occur in sequence
2. Independent expiration counter for <crossResourcesubsciption>
3. expiration counter update in target resource while creating cross resource subscription

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



## 10.XX Solution XX: Cross Resource Subscription Management

### 10.XX.1 Solution Description

This solution addresses the Key Issue 5 – cross Resource subscription by proposing three new functionalities within <crossResourcesubscription>. .

* **Use of <*cross-notification*> only when expected changes occur in sequence that refers to the order in which expected events happened.**

The Hosting CSE is now defined to generate a cross-resource notifications only when expected changes occur on a designated number of target resources concurrently within a time window. But there is a case where the subscriber wants to get a cross-resource notifications only when expected changes occur in a given sequence.

But, because current cross-resource notification is generated regardless of the sequence, the recevicer should check on whether the cross-resource notification is meaningful or not based on sequence information (the sequence of eventNotificationCriteria of regularResourcesAsTarget and subscriptionResourceAsTarget). This might be burden to the receiver (application). This burden can be relieved by having sequence information of eventNotificationCriteria of <*crossResourcesubsciption*>.

* **Independent expiration counter for <*crossResourcesubsciption*>**

The <*subscription*> resource has expirationCounter attribute as a deleting policy. Similarly, the cross-resource subscriber wants to have independent deleting policy for <*crossResourceSubsciption*>. In this regard, it needs to define expirationCounter for <*crossResourceSubsciption*>

* **Update expiration counter in target resource while creating cross resource subscription**

The <*crossResourcesubsciption*> resource is related to a set of target resources which could be existing *<subscription>* and/or other subscribable oneM2M resources. If a target <*subscription*> resource is deleted by reaching *expirationCounter*, the <*crossResourcesubsciption*> shall be deleted accordingly. But while creating new <*crossResourcesubsciption*> resource, if the current number of notification of the target <*subscription*> almost reach into expirationCounter, the <*crossResourcesubsciption*> resource can be deleted a short time later after creating the <*crossResourcesubsciption*> resourece, which is not situation that the cross-resource subscriber expects. For example, if the expirationCounter for target subscription is updated by adding *expirationCounter* of new <*crossResourcesubsciption*>, above mentioned problem can not be happened. In this regard, a new attribute called *expirationCounterupdatepolicy* be defined.

### 10.XX.2 Solution Applicability

This solution applies to Key Issue 5.

### 10.XX.3 Solution Details

### 10.XX.3.1 Overview

To implement this solution, <*crossResourceSubscription*> resource needs to be updated as follows:

* eventNotificationCriteriaSet supports new functionality regarding sequence
* new attributes such as expirationCounter and expirationCouter update policy

### 10.XX.3.2 Modified attribute

*The eventNotificationCriteriaSet has new functionality regarding sequence, therefore cross notifications can appear only when the given sequences are satisfied. (see* Table 10.XX.3-2)

Table 10.XX.3-2: Modified attribute of <*crossResourceSubscription*> resource

| Attributes | Multiplicity | RW/  RO/  WO | Description |
| --- | --- | --- | --- |
| *eventNotificationCriteriaSet* | 0..1(L) | RW | This attribute lists *eventNotificationCriteria* for each regular target resource as indicated in *regularResourcesAsTarget* attribute and involved in a cross-resource subscription. If there is only one *eventNotificationCriteria* contained in this attribute, it shall be applied to all target resources as indicated by *regularResourcesAsTarget* attribute. If only *subscriptionResourcesAsTarget* attribute appears (i.e. no *regularResourcesAsTarget* attribute), *eventNotificationCriteriaSet* shall not be needed. This attribute may include an indiation of a sequence of *eventNotificationCriteria*. In this case, the specified *eventNotificationCriteria* should be satisfied in the given sequence so that the subscriber can get a notification only when mutiple *eventNotificaionCriteria* are met in the specified sequence.  See clause 9.6.8 for the description of *eventNotificationCriteria*. |

Editor’s note: Having a time window attribute associated with a sequence should be investigated.

### 10.XX.3.3 New attribute

The <crossResourcesubsciption> has its own deleting policy by introducing new attribute expirationCounter and update policy while creating <crossResourcesubsciption> in order to avoid unwanted deletion.

Table 10.XX.3-3: New attribute of <crossResourceSubscription> resource

| Attributes | Multiplicity | RW/  RO/  WO | Description |
| --- | --- | --- | --- |
| *expirationCounter* | 0..1 | RW | This attribute indicates that the subscriber wants to set the life of this crossResourcesubscription to a limited number of maximum notifications. When the number of sent out notifications reaches the value of this counter, the *<crossResourcesubscription>* resource shall be deleted, regardless of any other policy. |
| *expirationCounterUpdatePolicy* | 0..1 | RW | This attribute indicates update policy on expirationCounter of the target subscription. The possible values for *expirationCounterUpdatePolicy* are :   * “NoUpdate” * “AddUpdate”   “AddUpdate” indicates that expirationCounter of <*crossResourceSubscription*> resource is added to expirationCounter of target <*subscription*>. |

Editor’s note: The proposed expirationCounterUpdatePolicy may add complexity to the cross resource subscription mechanism. Lighter mechainsms should be investigated.

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

CHECK LIST

* Does this Change Request include an informative introduction containing the problem(s) being solved, and a summary list of proposals.?
* Does this CR contain changes related to only one particular issue/problem?
* Have any mirror CRs been posted?
* Does this Change Request make **all** the changes necessary to address the issue or problem? E.g. A change impacting 5 tables should not include a proposal to change only 3 tables?Does this Change Request follow the drafting rules?
* Are all pictures editable?
* Have you checked the spelling and grammar?
* Have you used change bars for all modifications?
* Does the change include the current and surrounding clauses to clearly show where a change is located and to provide technical context of the proposed change? (Additions of complete clauses need not show surrounding clauses as long as the proposed clause number clearly shows where the new clause is proposed to be located.)
* Are multiple changes in this CR clearly separated by horizontal lines with embedded text such as, start of change 1, end of change 1, start of new clause, end of new clause.?