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| CHANGE REQUEST |
| Meeting ID:\* | SDS #48 |
| Source:\* | Kenichi Yamamoto, KDDI, kc-yamamoto@kddi.com |
| Date:\* | 2020-12-16 |
| Reason for Change/s:\* | Editorial correction for <nwMonitoringReq> |
| CR against: Release\* | Rel-4 |
| CR against: WI\* | [x]  Active WI-0080[ ]  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 v4.6.0 |
| Clauses \* | 9.6.64, 10.2.23 |
| Type of change: \* | [ ]  Editorial change[x]  Bug Fix or Correction[ ]  Change to existing feature or functionality[ ]  New feature or functionalityOnly ONE of the above shall be ticked |
| Other TS/TR(s) impacted | TS-0001, TS-0026 Release 4 |
| Post Freeze checking:\* | This CR contains only essential changes and corrections? YES [x]  NO [ ] This CR may break backwards compatibility with the last approved version of the TS? YES [ ]  NO [x]  |
| Template Version: January 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

This contribution addresses following editorial corrections for <nwMonitoringReq> resource while doing stage 3 work.

* Remove <*subscription*> resource in Change 1 and Change 3.
* The multiplicity of *geographicArea* attribute is changed for a single region and optional use in table 9.6.64-1 of Change 1.
* Remove the *announcedTo* attribute in Change 1 and Change 3.
* The combination between *monitorEnable* attribute and *congestionLevel* /*externalGroupID/ geographicArea* attributes are added to table 9.6.64-1 of Change 1 and Create/Update operation of Change 2.
* Remove the SCEF/NSE procedures in Delete operation of Change 2.

R01 updates based on SDS discussion.

* Undo the subscription resource with additional descriptions.
* Add subscription procedures to CREATE operation.
* Revice UPDATE operation for NSE interaction.
* Add description to DELETE operation for NSE interaction.

R02 updates based on agreed TS-0004 contributions (SDS-0019R08) .

* The Disabled of *monitorEnable* is not allowed for Update operation. So the limitations for the operations are added.
* If the value of *monitorEnable* is set and other mandatory attribute is not present (e.g. *congestionLevel* attribute) for Update operation, the Receiver shall not process the request. So error handling operations for the Receiver are added.
* Additional Update is not allowed to align with POST methods of 3GPP SCEF APIs. So the limitations for the Update operations are added
* Apply enum values of monitorEnable atribute in <nwMonitoringReq> Resource type and CRUD operations.

R03 updates based on SDS discussion.

* Remove MonitorCongestionAndDeviceNumber of *monitorEnable* attribute.
* Add *monitorStatus* attribute to notify a response status from NSE, and update the CRUD operations.

R06 updates based on the comments from Peter (see SDS-0019R11).

R07 updates based on agreed TS-0004 contributions (see SDS-0019R12) .

* Add error handling descriptions to *failureReason* attribute and Update operation.

### ----------------------start of change 1 ----------------------------------------------------

### 9.6.64 Resource Type *nwMonitoringReq*

The <*nwMonitoringReq*> resource is used by an Originator (e.g. AE) to request network status information from an Underlying Network. The resource provides the status information for a particular geographic area of an Underlying Network such as congestion status and number of devices.

The <*nwMonitoringReq*> resource contains the child resources specified in Table 9.6.64-1.

Table 9.6.64-1: Child resources of *<nwMonitoringReq>* resource

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

The <*nwMonitoringReq*> resource contains the attributes specified in table 9.6.64-2.

Table 9.6.64‑1: Attributes of *<nwMonitoringReq>* Resource

| Attributes of *<nwMonitoringReq>* | 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. |
| *owner* | 0..1 | RW | See clause 9.6.1.3. |
| *labels* | 0..1 (L) | RW | See clause 9.6.1.3. |
|  |  |  |  |
| *monitorEnable* | 0..1 | RW | Indicates the type of network monitoring request.* MonitorCongestion: Monitor congestion status in an area.
* MonitorDeviceNumber: Monitor number of devices in an area.
 |
| *monitorStatus* | 1 | RO | Indicates the response status from the underlying network. The possible values are:* DISABLED: Default
* ENABLED: Enable the Hosting CSE to interact with the NSE
* FAILED: Indicate an error response from the NSE.
 |
| *failureReason* | 0..1 | RO | Indicates the failure reason from the NSE. The attribute is applicable, if monitorStatus indicates FAILED. The possible values are:* BAD\_REQUEST: Incorrect parameters were passed in the request issued by the Hosting CSE. In this case, the Hosting CSE may be configured with the parameters which the NSE is able to support.
* UNAUTHORIZED: The Hosting CSE is not authorized to issue request to the NSE. In this case, the Hosting CSE may be configured with the parameters which the NSE is able to support.
* FORBIDDEN: This represents the case when the NSE is able to understand the request but unable to fulfil the request due to errors (e.g. congestionLevel and/or geographicArea may be set to wrong values). In this case, the Originator may be configured with the values within the range defined by MNO policies.
* NOT\_FOUND: The resource URI was incorrect. In this case, the Hosting CSE may be configured with the URI which the NSE is able to support.
* LENGTH\_REQUIRED: The code indicates that the NSE refuses to accept the request without a Content-Length header field. In this case, the Hosting CSE may be configured with the Content-Length header field.
* PAYLOAD\_TOO\_LARGE: The request contains a payload larger than the NSE is able to process. In this case, the Originator may retry the request without optional attribute(s).
* UNSUPPORTED\_MEDIA\_TYPE: The code indicates that the resource is in a format which is not supported by the NSE for the method. In this case, the Hosting CSE may be configured with the payload which the NSE is able to support.
* TOO\_MANY\_REQUESTS: The code indicates that due to excessive traffic which, if continued over time, may lead to (or may increase) an overload situation. In that case, the Originator may reduce the frequency of requests or avoid immediate retries.
* INTERNAL\_SERVER\_ERROR: The NSE encountered an unexpected condition that prevented it from fulfilling the request.
* SERVICE\_UNAVAILABLE: The NSE is unable to handle the request.
 |
| *geographicArea* | 0..1 | RW | Indicates a list of geographic area where the Originator wants to retrieve an Underling Network information. This attribute shall be configured if *monitorEnable* is set to MonitorCongestion or MonitorDeviceNumber. |
| *congestionLevel* | 0..1(L) | RW | Indicates a list of congestion level(s) with abstracted value (e.g. HIGH, MEDIUM or LOW) or exact value (e.g. between 0 and 31) that the IN-CSE requests to be informed of when reached. This attribute shall be configured if *monitorEnable* is set to MonitorCongestion.  |
| *congestionStatus* | 0..1 | RO | Indicates the network status indicator that is abstracted value for congestion status (e.g. HIGH, MEDIUM or LOW) or exact value for congestion status (e.g. between 0 and 31) received from the NSE. |
| *numberOfDevices* | 0..1 | RO | Indicates the network status indicator that is an integer for congestion status or the number of devices. |
| *externalGroupID* | 0..1 | RW | 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. This attribute may be configured if *monitorEnable* is set to MonitorDeviceNumber. |
| *M2M-Ext-IDs* | 0..1(L) | RO | See clause 7.1.8 where this attribute is described. This attribute is used only for the case of dynamic association between the M2M-Ext-ID with the CSE-ID or AE-ID.  |

### ----------------------end of change 1 -----------------------------------------------------

### ----------------------start of change 2 ----------------------------------------------------

### 10.2.23 Network Monitoring Request

#### 10.2.23.1 Introduction

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

#### 10.2.23.2 Create <*nwMonitoringReq*>

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

**Table 10.2.23.2-1: *<nwMonitoringReq>* CREATE**

| ***<nwMonitoringReq>* CREATE**  |
| --- |
| 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 9.6.64 |
| Processing at Originator before sending Request | According to clause 10.1.2 with the following modifications:* The Originator shall set the *monitorStatus* attribute to DISABLED.
 |
| Processing at Receiver | According to clause 10.1.2. |
| Information in Response message | According to clause 10.1.2 |
| Processing at Originator after receiving Response | According to clause 10.1.2 with the following modifications:The Originator shall create the <*subscription*> resource as the child of <*nwMonitoringReq*> resource to get notified of network monitoring status. |
| Exceptions | According to clause 10.1.2. |

#### 10.2.23.3 Retrieve<*nwMonitoringReq*>

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

**Table 10.2.23.3-1: *<nwMonitoringReq>* RETRIEVE**

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| ***<nwMonitoringReq>* RETRIEVE** |
| 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 *<nwMonitoringReq>* resource as defined in clause 9.6.64 |
| Processing at Originator after receiving Response | According to clause 10.1.3 |
| Exceptions | According to clause 10.1.3 |

#### 10.2.23.4 Update <*nwMonitoringReq*>

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

**Table 10.2.23.4-1: *<nwMonitoringReq>* UPDATE**

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| ***<nwMonitoringReq>* UPDATE** |
| Information in Request message | All parameters defined in table 8.1.2-3 apply with the specific details for:***Content*:** attributes of the *<nwMonitoringReq>* resource as defined in clause 9.6.64 which need be updated |
| Processing at Originator before sending Request | According to clause 10.1.4 with the following additions:* If the Originator sends a request for congestion status in an area, the Originator shall set the *monitorEnable* attribute to MonitorCongestion, and set the *congestionLevel* attribute and *geographicArea* attribute.
* If the Originator sends a request for number of devices in an area, the Originator shall set the *monitorEnable* attribute to MonitorDeviceNumber, and set the *geographicArea* attribute.
* The Originator may also configure other optional attributes defined in clause 9.6.64.
* If the value of *monitorStatus* is set to ENABLED, the Originator shall not send a request.
 |
| Processing at Receiver | According to clause 10.1.4 with the following additions:If the value of *monitorE*nable is MonitorCongestion, the Receiver shall check if *congestionLevel* attribute and *geographicArea* attribute are included in the request. * If the attributes are present, the Receiver shall set the value of *monitorStatus* to ENABLED, and the subsequent Update procedures of the Receiver shall be performed for the resource. Then, the Receiver shall interact with the NSE to request network status information. In the case of interworking with 3GPP networks, the Receiver shall perform the operations defined in clause 7.15.3 in oneM2M TS-0026 [11].
* If the attributes are not present, the Receiver shall respond with an error.

If the value of *monitorE*nable is MonitorDeviceNumber, the Receiver shall check if *geographicArea* attribute is included in the request. * If the attributes is present, the Receiver shall set the value of *monitorStatus* to ENABLED, and the subsequent Update procedures of the Receiver shall be performed for the resource. Then, the Receiver shall interact with the NSE to request network status information. In the case of interworking with 3GPP networks, the Receiver shall perform the operations defined in clause 7.15.3 in oneM2M TS-0026 [11].
* If the attribute is not present, the Receiver shall respond with an error.

If the value of *monitorStatus* is ENABLED, the Receiver shall respond with an error.If the Receiver receives a request for deletion of *monitorEnable* attribute, the Receiver shall set the value of *monitorStatus* to DISABLED. |
| Information in Response message | According to clause 10.1.4 |
| Processing at Originator after receiving Response | According to clause 10.1.4 with the following additions:If the value of *failureReason* is set to FORBIDDEN, the Originator may be configured with the values within the range defined by MNO policies.If the value of *failureReason* is set to PAYLOAD\_TOO\_LARGE, the Originator may retry the request without optional attribute(s).If the value of *failureReason* is set to TOO\_MANY\_REQUESTS, the Originator may reduce the frequency of requests or avoid immediate retries. |
| Exceptions | According to clause 10.1.4 with the following additions:If the Hosting CSE receives a successful response from the NSE, the Hosting CSE shall set the response of the NSE with the corresponding attributes of the *<nwMonitoringReq>* resource, and shall send a notification request of *<nwMonitoringReq>* resource to the Originator,If the Hosting CSE receives an error response from the NSE, the Hosting CSE shall set the value of *monitorStatus* to FAILED, and shall map the error response to the value of *failureReason*. Then, the Hosting CSE shall send a notification request of *<nwMonitoringReq>* resource to the Originator (See note).If the value of *failureReason* is set to BAD\_REQUEST, UNAUTHORIZED, NOT\_FOUND, LENGTH\_REQUIRED or UNSUPPORTED\_MEDIA\_TYPE, the Hosting CSE may be configured with the parameters which the NSE is able to support. |
| NOTE: How to map the error response to the value of *failureReason* depends on the support of the Underlying Network. In the case of interworking with 3GPP networks, the Receiver shall apply the operations defined in clause 7.15.3 in oneM2M TS-0026 [11]. |

#### 10.2.23.5 Delete <*nwMonitoringReq*>

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

**Table 10.2.23.5-1: *<nwMonitoringReq>* DELETE**

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| ***<nwMonitoringReq>* DELETE** |
| 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 with the following modifications:Depending on the procedures of the Underlying Network, the CSE shall submit a network monitoring delete request to the appropriate NSE using the appropriate Mcn protocol. The message shall contain information needed by the NSE to delete the network monitoring request for the corresponding underlying network. For example, for a 3GPP network monitoring delete request the required information needed within the network monitoring request message is captured in TS-0026 [11].If the CSE receives a confirmation from the NSE that the network monitoring delete was accepted, the CSE shall delete the applicable <*nwMonitoringReq*> resource and return a successful response to the Originator. If the CSE receives an indication that the network monitoring delete request was not accepted, the CSE shall return an error response to the Originator and shall not update the <*nwMonitoringReq*> resource. . |
| 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 2 -----------------------------------------------------

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