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| CHANGE REQUEST |
| Meeting ID:\* | SDS #48 |
| Source:\* | Kenichi Yamamoto, KDDI, kc-yamamoto@kddi.com |
| Date:\* | 2020-12-14 |
| Reason for Change/s:\* | Providing Release 4 Stage 3 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-0004 v4.1.0 |
| Clauses \* | 6.3.3, 6.3.4.2, 6.5.3, 7.4, 8.2.3, 8.2.4 |
| Type of change: \* | [ ]  Editorial change[ ]  Bug Fix or Correction[ ]  Change to existing feature or functionality[x]  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 provides Stage 3 changes needed for implementation of Network Monitoring Request procedure and the introduction of the <*nwMonitoringReq*> resource (see TS-0001 V4.6.0, sections 9.6.64 and 10.2.23).

R01 updates based on offline discussion.

R02 and R03 updates based on the comments from Peter (R03 contains 5th and 7th bullets).

* 1. The TS-0001 clause 9.6.64 now includes the owner attribute. Could you please add it to this CR?.
	+ Kenichi - Added the owner attribute to clause 7.4.x in Change 5.
* 2. GeographicArea. With your change this is now a single region (either a country or a circular area) but TS-0001 says that it is a list of regions. If the idea is to keep things simple and only have one region, then you need to change TS-0001. If you want multiple regions then you need to define a new complex type (e.g. GeographicAreas) that contains 1 or more m2m:locationRegion instances.
	+ Kenichi – My idea is to keep things simple and only have one region. So I changed the multiplicity of geographicArea attribute to “0..1” with additional descriptions in TS-0001 of SDS-2020-0249. I changed the attribute as optional in Change 5. In case of Creare operation, we don’t need geographic area information.
* 3. I assume that the resource is Not announceable, as you have listed it in 6.5.3.3 and Change 2 does not include nwMonitoringReqAnnc. However in Change 5 you include an announcedTo attribute. This shouldn't be there for resources that aren't announceable (and for announceable resources it should be just called announceTo, without the d). I see that in TS-0001 there's an announceTo, which should be removed if it isn't announceable.
	+ Kenichi – You’re right. The attribute is incorrect. I removed the announcedTo attribute in Table 7.4.x.1 2 of Change 5 and TS-0001 of SDS-2020-0249.
* 4. The congestionLevels attribute is shown as optional both here and in TS-0001, but there's no description in either document of a default. What happens if you create the resource without providing this attribute? I assume the idea is that it's optional so that you don't have to set it if you have monitorEnable set to 0 or 3, since those values don't include congestion monitoring. However what happens if:

a) You have monitorEnable set to 1 or 2 and you haven't set congestionLevels? Does this just mean that no alerts are generated, or is it an error?

b) You have monitorEnable set to 0 or 3 and you have set congestionLevels? Is it ignored, or is it an error?

* + Kenichi – Thank you for your pointing out. The congestionLevels attribute shall be configured if monitorEnable is set to “1” or “3”. So some descriptions were added to Update operations of Change 5 and TS-0001 of SDS-2020-0249. TS-0026 has already contained the description.
	I also added the description of externalGroupID to clause 7.4.x.2.3 of Change 5 and Table 9.6.64 in TS-0001 of SDS-2020-0249. The externalGroupID attribute is optionally applicable if monitorEnable is set to “2” or “3”.
* 5. I wasn't sure how the notification process works. For most resources, a <subscription> child is used to notify people if there's a change to the parent's attributes. Do you just subscribe to changes to congestionStatus, or is there some other connection between congestionLevels and the subscription? If so, I have similar questions to 4 - e.g. what happens if you set congestionLevels but don't have a <subscription> child?.
	+ Kenichi – As you pointed out, we can subscribe the congestionStatus. However, there was no description to subscribe numberOfDeveices and M2M-Ext-ID (If externalGroupId has been provided in the request). The Originator creates the <subscription> resource as the child of the <nwMonitoringReq> resource in Create operation. After receiving the responsed from SCEF, the Hosting CSE maps the SCEF parameters to the congestionStatus/numberOfDeveices/M2M-Ext-ID of the <nwMonitoringReq> resource and sends a notification to the Originator. This procedure was updated in TS-0026 of SDS-2020-0248.
* 6. Since you don't show any interactions with the network in 7.4.x.2.1 Create, I assume that the idea is that monitoring doesn't start until you do an Update to set monitorEnable to a non-zero value. In that case we should have a requirement that says that you have to create the resource with monitorEnable = 0. Alternatively we could have monitorEnable marked as NP in Create and say that it always defaults to 0 in a newly created resource.
	+ Kenichi - You’re right. In case of Create operation, monitorEnable shall be set to 0. So I added monitorEnable operation to 7.4.x.2.1 Create in Change 5, TS-0001 of SDS-2020-0249 and TS-0026 of SDS-2020-0248.
* 7. The procedure in 7.4.x.2.4 Delete doesn't look right - it's a copy of Update at the moment. I looked at TS-0026 and I couldn't follow what that was saying, as there seem to be several steps that are described as "Optional". Does that mean that an implementation can choose to ignore them? For example the response to the Originator is described as Optional. Also it mentions a case in which the oneM2M resource is not deleted. What RSC should be returned in that case?
	+ Kenichi – All deletion procedures of SCEF APIs in TS-0026 are optional. As you pointed out, the deletion procedure was not clear and has some wrong descriptons. So we updated them in TS-0026 contribution. If the oneM2M resource is not deleted, the Hosting CSE can use the error handling procedures as described in clause 8.3 of TS-0026. Regarding TS-0001 and TS-0004, we’d like to keep high-level descriptions for deletion procedure. Because the interection of the NSE depends on the type of underlying network.
	In case of 3GPP SCEF as described in TS-0026, the deletion procedures are as follows;
		- If we subscribe 3GPP Network Status Reports API, the Hosting CSE sends a deletion request to the SCEF for removing API subscription. After receiving the successful response from the SCEF, the Hosting CSE can delete <nwMonitoringReq> resource. Otherwise the Hosting CSE may use the error handling procedures in clause 8.3 of TS-0026. This API is applicable if monitorEnable attribute is set to “enable congestion status in an area” or “enable both number of devices and congestion status in an area”.
		- If we subscribe 3GPP Monitoring Event API (Number of UEs in an area), the Hosting CSE does not have to send a deletion requiest to the SCEF. Because this API uses one time request/response procedure (not subscription/notification). This means the Hosting CSE can remove <nwMonitoringReq> resource without interaction of the SCEF. This API is applicable if monitorEnable attribute is set to “enable number of devices in an area” or “enable both number of devices and congestion status in an area”.

R04 updates based on the comments from Peter.

1. In Change 5 you state that the Originator sets monitorEnable to 0 on Create - I assume that this is so that the Resource is always created in disabled state, and only becomes active when someone subsequently does an Update to change this attribute to 1,2 or 3.
If that's the case, then why allow it on the Create at all? You could have it shown as NP, just like the other attributes, and in the default column of 7.4.x.1-3 you could say that the default is Disabled.

If you keep it as M, then you need to say that the Receiver of a Create checks the value of the attribute and returns an error if it is not 0 (and say what RSC value is to be used)

* + Kenichi – Thank you for your feedback. I changed the Create as NP and the default is Disabled. I also removed the monitorEnable description in Create operation in clause 7.4.x.2.1 of Change 5.
1. Similarly in Change 5 you need to list the checks that the Receiver makes on Update (and the RSCs). Also why aren't you allowing an Update to set the monitorEnable to 0 (i.e. set the resource back to Disabled)? Even if the underlying network doesn't support disable/re-enable, I assume you could handle disable like Delete, and then reconnect with the underlying network if the application then does a second Update to change monitorEnable to a non-zero value.
	* Kenichi – I found an issue for subscription of Underlying NW.
		+ In case of 3GPP Network Status Report API, the Hosting CSE sends a subscription request with POST method. If we want to update the attributes of <nwMonitoringReq> resource during subscribing the Network Status Report API, the Hosting CSE has to remove the subscription of the API, then does second Update to change the attributes of <nwMonitoringReq> resource. Because the POST method is used for creating a new network status reporting subscription resource, not updating the resource.
		+ So we revised Update operation in clause 7.4.x.2.3 of Change 5. But we don’t say the value of monitorEnable in the operation, because the interection of the NSE depends on the type of Underlying NW. TS-0026 may be needed to have additional description.
2. Is the originator allowed to do an Update that changes the value of monitorEnable from one non-zero value to another, e.g. 1->2? You don't say that this is forbidden, so I assume it is ok - I just thought I should check.
	* Kenichi – As I mentioned second bullet, the value of monitorEnable depends on the type of Underlying NW. We’d like to keep high-level description for TS-0004.

R06 updates based on SDS/offline discussion.

* The value 0 of monitorEnable is not allowed for Update operation. So the limitations for Update operations are added in Change 5.
* 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 in Change 5.
* Additional Update is not allowed to align with POST methods of 3GPP SCEF APIs. So the limitations for Update operations are added in Change 5.

R08 updates based on SDS/offline discussion.

* In the table of m2m:monitorEnable of Change 3, the enum values of monitorEnable attribute are added.
* In CRUD operations of Change 5, the numeric values of monitorEnable attribute are changed to the enum values.

R09 updates based on SDS discussion.

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

R11 updates based on the comments from Peter.

1. The monitorEnable attribute is 0..1 RW with just the two values (MonitorCongestion and MonitorDeviceNumber)

* + [Kenichi] Agreed. TS-1, TS-4 and TS-26 contributions are updated.

2 The monitorStatus attribute is 1 RO with three values (DISABLED, ENABLED, FAILED)

* + [Kenichi] Agreed. TS-4 contribution also shows the value 0 indicates to DISABLED.

|  |  |  |
| --- | --- | --- |
| 0 | DISABLED | Default |
| 1 | ENABLED | Enable the Hosting CSE to interact with NSE |
| 2 | FAILED | Indicate an error response from the NSE |

3. When it is first created the resource has monitorStatus set to DISABLED, and monitorEnable is absent (as are all the other 0..1 resource-specific attributes)

* + [Kenichi] Agreed. TS-4 contribution shows “Default is DISABLED”

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| *monitorEnable* | NP |       O | m2m: monitorEnable | No default |
| *monitorStatus* | NP | NP | m2m: monitorStatus | Default is Disabled |

4. Originator can do updates while monitorStatus is DISABLED or FAILED, but not when it is ENABLED

* + [Kenichi] Agreed.

5. The monitorEnable is Optional in an Update request.  If it's not present in the request then the update simply adds/removes/alters the other RW attributes (normal oneM2M procedure). This means the originator can change things like congestionLevel as many times as it likes before enabling the monitoring.

* + [Kenichi] Agreed. This suggestion is good idea for AE’s point of view.

6. If monitorEnable is present in the Update request, then the hosting CSE checks that the other attributes are set as required (using the values in the existing resource if they haven't been provided in the update request). If they are ok it follows the standard oneM2M procedure to update the resource attributes using the values in the request (so this includes monitorEnable). It also sets monitorStatus to ENABLED, sends the oneM2M response and initiates the call to the SCEF.

* + [Kenichi] Agreed. I updated TS-4 contribution as follow:
* If the value of monitorEnable 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 [43].

7. If the SCEF call then fails, the hosting CSE sets monitorStatus to FAILED.  Originator is then free to delete the resource, or to do another Update with a monitorEnable which will retry the call to SCEF, with new parameters if the Originator specified them.

* [Kenichi] Agreed. I think we don’t have additional description for this operation.

8. In terms of TS-0004 procedures you will need

* Statement that monitorStatus gets set to  DISABLED on Create
* Check that monitorStatus is not ENABLED on Update (you had this already)
* Statement that monitorStatus gets set to ENABLED on a successful Update if that Update request contained monitorEnable
* [Kenichi] Thank you very much. I updated TS4/TS1/TS26 contributions based on your suggestion.

9. There's one bit we didn't discuss, which is whether the Originator can delete the monitorEnable attribute. Obviously it could only do that when monitorStatus is FAILED. I guess we could allow this, in which case the hosting CSE should also set monitorStatus back to disabled for symmetry with the original Created state.

* [Kenichi] This is good idea. I added following operation of Receiver to TS-4 contribution. I think there is no additional operation of Originator.
* If the Receiver receives a request for deletion of monitorEnable attribute, the Receiver shall set the value of  monitorStatus to DISABLED.

10. On Monday we also mentioned having another attribute  that contains a failure reason that gets set when monitorStatus is FAILED. Does SCEF send any error codes or failure messages that could be used for this?

* [Kenichi] Following error codes are applicable to all SCEF APIs as defined in 3GPP TS29.122. The error codes also have clause 8.3 in TS-26.

Table 5.2.6-1: Response bodies supported for responses to all requests.

|  |  |
| --- | --- |
| Response Codes | Remarks |
| 400 Bad Request | Incorrect parameters were passed in the request.  |
| 401 Unauthorized | The client is not authorized as described in IETF RFC 7235 [21]. |
| 403 Forbidden | This represents the case when the server is able to understand the request but unable to fulfil the request due to errors (e.g. the requested parameters are out of range). More information may be provided in the "invalidParams" attribute of the "ProblemDetails" structure. |
| 404 Not Found | The resource URI was incorrect, for instance because of a wrong "scsAsId" field. |
| 411 Length Required | The code indicates that the server refuses to accept the request without a Content-Length header field. |
| 413 Payload Too Large | If the received HTTP request contains payload body larger than the server is able to process, the NF shall reject the HTTP request with the HTTP status code "413 Payload Too Large". |
| 415 Unsupported Media Type | The code indicates that the resource is in a format which is not supported by the server for the method. |
| 429 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.The HTTP header field "Retry-After" may be added in the response to indicate how long the client has to wait before making a new request. |
| 500 Internal Server Error  | The server encountered an unexpected condition that prevented it from fulfilling the request. |
| 503 Service Unavailable  | The server is unable to handle the request. |

Based on the SCEF errors, I tried to add failureReason as a new attribute.

Table 6.3.4.2.x‑1: Interpretation of failureReason

|  |  |  |
| --- | --- | --- |
| Value | Interpretation | Note |
| 1 | BAD\_REQUEST | Incorrect parameters were passed in the request issued by the Hosting CSE. |
| 2 | UNAUTHORIZED | The Hosting CSE is not authorized to issue request to the NSE. |
| 3 | 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. the requested parameters are out of range).  |
| 4 | NOT\_FOUND | The resource URI was incorrect. |
| 5 | LENGTH\_REQUIRED | The code indicates that the NSE refuses to accept the request without a Content-Length header field. |
| 6 | PAYLOAD\_TOO\_LARGE | The request contains a payload larger than the NSE is able to process. |
| 7 | UNSUPPORTED\_MEDIA\_TYPE | The code indicates that the resource is in a format which is not supported by the NSE for the method. |
| 8 | 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. The HTTP header field "Retry-After" may be added in the response to indicate how long the Hosting CSE has to wait before making a new request. |
| 9 | INTERNAL\_SERVER\_ERROR | The NSE encountered an unexpected condition that prevented it from fulfilling the request. |
| 10 | SERVICE\_UNAVAILABLE | The NSE is unable to handle the request. |
| NOTE:      See clause 7.4.x  "Resource Type nwMonitoringReq". |

The following receiver operation was added to the contributions. In case of error handling of 3GPP SCEF, we  can refer to TS-26.

* If the Receiver receives an error response from the NSE, the Receiver shall set the value of monitorStatus to FAILED, and shall map the error response to the value of failureReason. Then, the Receiver shall send a notification request of <nwMonitoringReq> resource to the Originator.

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 [43].

R12 updates based on the comments of Table 6.3.4.2.x 1: Interpretation of failureReason from Peter.

1,5,7 are likely to be caused by programming errors in the implementation of the Hosting CSE

2 and 4 are caused by Hosting CSE configuration errors (this is CSE configuration not specified by oneM2M)

9,10 are for problems in the NSE itself

* [Kenichi] You are right. 1,2,4,5, 7 are caused by the Hosting CSE. 9 and 10 are caused by the NSE. So I revised the following table based on your comments.

That leaves 3,6 and 8. These look like things that could be caused by the oneM2M user. For example could you get 3 (FORBIDDEN) if you were to set bad values for congestionLevels or locationRegion? If this is so, it would be nice to give the user a hint as to what they should do to fix the problem.

* [Kenichi] 3 can be fixed by the Originator. If we set wrong values to congestionLevel /geographicArea, the SCEF returns the FORBIDDEN. So we add a hint to the table.

Regarding the value of 6, I don’t have an appropriate use case. I think one of the option is to remove option attributes of <nwMonitoringReq> (see the table). If you have any solution for the error, please share with us.

Also for 8, you have a comment that says "The HTTP header field "Retry-After" may be added in the response to indicate how long the Hosting CSE has to wait before making a new request." However that's not going to be much use to the oneM2M user since we aren't returning that value to them.

* [Kenichi] Regarding the value of 8, 3GPP TS does not show the error code in detail. I guess Originator may reduce the frequency of requests or avoid immediate retries (see the table).

Table 6.3.4.2.x‑1: Interpretation of failureReason

|  |  |  |
| --- | --- | --- |
| Value | Interpretation | Note |
| 1 | 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. |
| 2 | 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. |
| 3 | 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.~~the requested parameters are out of range~~). In this case, the Originator may be configured with the values within the range defined by MNO policies. |
| 4 | 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. |
| 5 | 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. |
| 6 | 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). |
| 7 | 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. |
| 8 | 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. ~~The HTTP header field "Retry-After" may be added in the response to indicate how long the Hosting CSE has to wait before making a new request.~~ In that case, the Originator may reduce the frequency of requests or avoid immediate retries. |
| 9 | INTERNAL\_SERVER\_ERROR | The NSE encountered an unexpected condition that prevented it from fulfilling the request. |
| 10 | SERVICE\_UNAVAILABLE | The NSE is unable to handle the request. |
| NOTE:      See clause 7.4.x  "Resource Type nwMonitoringReq". |

[Kenichi] The followings are summary for each error code;

1. **400 Bad Request**

If the SCEF receives a request from the Hosting CSE, but the attribute/value as defined in TS29.122 is not supported by the SCEF, the SCEF will reject the request by sending 400 error code. In that case, a Service Provider or Operator may fix the issue with a right attribute/value for the Hosting CSE, and the Originator may retry an Update request. So the error is only applicable to the Hosting CSE.

Following is a specific application error of Monitoring Event API as defined in TS29.122. The error is for supported future, which is configured by the Hosting CSE. The use case of  the application error is introduced in clause 8.3.2.3 of TS-0026.

Table 5.3.5.3-1: Application errors for Monitoring Event API

|  |  |  |
| --- | --- | --- |
| Application Error | HTTP status code | Description |
| EVENT\_FEATURE\_MISMATCH | 400 Bad Request | Indicates the resource creation is not allowed since the supported feature corresponding to the monitoring event is not supported by the client. |

1. **401 Unauthorized**

TS29.122 defines the error code that is applicable to all APIs, and does not show it in detail. It just shows “as described in IETF RFC 7235”. I think the error code is for HTTP Authorization. RFC7235 shows 401 as follows;

3.1.  401 Unauthorized

The 401 (Unauthorized) status code indicates that the request has not  been applied because it lacks valid authentication credentials for the target resource.  The server generating a 401 response MUST send a WWW-Authenticate header field (Section 4.1) containing at least one challenge applicable to the target resource.

If the request included authentication credentials, then the 401 response indicates that authorization has been refused for those credentials.  The user agent MAY repeat the request with a new or replaced Authorization header field (Section 4.2).  If the 401 response contains the same challenge as the prior response, and the user agent has already attempted authentication at least once, then the user agent SHOULD present the enclosed representation to the user, since it usually contains relevant diagnostic information.

I think the error is for CSE, not related externalID.If the Originator sends a request with externalGroupID, the Hositing CSE maps the attribute and sends a request to the SCEF. If the SCEF receives the request, it sends a notification with the list of externalIDs associated with externalGroupID to the SCEF. If the Originator sends a request with wrong externalGroupID, the SCEF may sends a 400 error code.

1. **403 Forbidden**

If a SCEF receives a request from the Hosting CSE, the SCEF will check whether the parameters in the request body are within the range defined by MNO policies. If one or more of these parameters are unable to fulfil the range, the SCEF will reject the request by sending 403 error code. In that case, a Service Provider or Operator may fix the issue by using the value within the range for the Originator. For example, if congestionLevel and/or geographicArea is set to wrong values, or the value for out of range, the SCEF returns the error code. In this case, the Originator may be configured with the values within the range defined by MNO policies.

Followings are specific application errors of Monitoring Event API/Network Status API as defined in TS29.122. The use case of  the application error is introduced in clause 8.3.2.2 of TS-0026.

Table 5.3.5.3-1: Application errors for Monitoring Event API

|  |  |  |
| --- | --- | --- |
| Application Error | HTTP status code | Description |
| PARAMETER\_OUT\_OF\_RANGE | 403 Forbidden | Indicates that the resource is not allowed to be created since one or more of the received parameter are out of range defined by operator policies. |
| OPERATION\_PROHIBITED | 403 Forbidden | Indicates the HTTP method is not supported. |

Table 5.9.5.3-1: Application errors for Network Status Report API

|  |  |  |
| --- | --- | --- |
| Application Error | HTTP status code | Description |
| QUOTA\_EXCEEDED | 403 Forbidden | Not enough quota for SCS/AS. |

1. **404 Not Found**
2. **411 Length Required**

TS29.122 defines the error codes that are applicable to all APIs, and does not show them in detail. In that case, a Service Provider or Operator may fix the issue with a right URI/header field for the Hosting CSE.

1. **413 Payload Too Large**

TS29.122 defines the error codes that are applicable to all APIs, and does not show them in detail. In that case, the Originator may send a request without optional attributes.

1. **415 Unsupported Media Type**

TS29.122 defines the error code that is applicable to all APIs, and does not show it in detail. In that case, a Service Provider or Operator may fix the issue with a right payload(e.g. Content-Type) for the Hosting CSE. RFC7231 defines the error code as follow.

6.5.13.  415 Unsupported Media Type

The 415 (Unsupported Media Type) status code indicates that the origin server is refusing to service the request because the payload is in a format not supported by this method on the target resource. The format problem might be due to the request's indicated Content-Type or Content-Encoding, or as a result of inspecting the data directly.

1. **429 Too Many Requests**

TS29.122 defines the error code that is applicable to all APIs, and does not show it in detail. It may be a failure of the Originator. In that case, Originator may reduce the frequency of requests or avoid immediate retries..

1. **500 Internal Server Error**

For example, the SCEF supports the monitoring type of Location Reporting and does not support the monitoring type of Number of UE in an Area. If the Originator sets the monitorEnable to MonitorDeviceNumber and sends a request to Hosting-CSE, the Hosting CSE sends a response the Originator, and requests to the SCEF with the monitoring type of Number of UE in an Area. Then, the SCEF will reject the request by sending 500 error code with the application error "EVENT\_UNSUPPORTED", because the SCEF does not support the monitoring type of Number of UE in an Area. In that case, a Service Provider or Operator may fix the issue with a right parameter for the NSE.

Following is a specific application error of Monitoring Event API as defined in TS29.122. The use case of  the application error is introduced in clause 8.3.2.1 of TS-0026.

Table 5.3.5.3-1: Application errors for Monitoring Event API

|  |  |  |
| --- | --- | --- |
| Application Error | HTTP status code | Description |
| EVENT\_UNSUPPORTED | 500 Internal Server Error | Indicates the required monitoring event is not supported by the server. |

**10. 503 Service Unavailable**

TS29.122 defines the error codes that are applicable to all APIs, and does not show them in detail. In that case, a Service Provider or Operator may fix the issue with a right parameter for the NSE.

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

### 6.3.3 oneM2M simple data types

Table 6.3.3‑1 describes oneM2M-specific simple data type definitions. XML Schema data type definitions for these data types can be found in the XSD file called CDT-commonTypes-v4\_1\_0.xsd.

The types in Table 6.3.3‑1 are either:

* Atomic data types derived from XML Schema data types by restrictions (other than enumeration) or union.
* List data types constructed from other XML Schema or oneM2M-defined atomic data types.

The oneM2M-defined enumeration data types are defined in clause 6.3.4.

Table 6.3.3‑1: oneM2M Simple Data Types

| XSD type name | Type Name | Examples | Description |
| --- | --- | --- | --- |
| … | … | … | ,,, |
| m2m:congestionLevel | Congestion Level | 0 or1 or31 or | Indicates the level of congestion as specified in 3GPP TS 23.003 [17]. It is an integer between 0 and 31 inclusive. |
| m2m:congestionLevels | List of Congestion Levels | 0 7 22 | The list shall contain at least one member  |
|  |  |  |  |

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

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

#### 6.3.4.2 Enumeration type definitions

##### 6.3.4.2.1 m2m:resourceType

Table 6.3.4.2.1‑1: Interpretation of resourceType

| Value | Interpretation | Note |
| --- | --- | --- |
| 1 | accessControlPolicy |  |
| 2 | AE |  |
| 3 | container |  |
| 4 | contentInstance |  |
| 5 | CSEBase |  |
| 6 | delivery |  |
| 7 | eventConfig |  |
| 8 | execInstance |  |
| 9 | group |  |
| 10 | locationPolicy |  |
| 11 | m2mServiceSubscriptionProfile |  |
| 12 | mgmtCmd |  |
| 13 | mgmtObj |  |
| 14 | node |  |
| 15 | pollingChannel |  |
| 16 | remoteCSE |  |
| 17 | request |  |
| 18 | schedule |  |
| 19 | serviceSubscribedAppRule |  |
| 20 | serviceSubscribedNode |  |
| 21 | statsCollect |  |
| 22 | statsConfig |  |
| 23 | subscription |  |
| 24 | semanticDescriptor |  |
| 25 | notificationTargetMgmtPolicyRef |  |
| 26 | notificationTargetPolicy |  |
| 27 | policyDeletionRules |  |
| 28 | flexContainer |  |
| 29 | timeSeries |  |
| 30 | timeSeriesInstance |  |
| 31 | role |  |
| 32 | token |  |
| 33 | void |  |
| 34 | dynamicAuthorizationConsultation |  |
| 35 | authorizationDecision |  |
| 36 | authorizationPolicy |  |
| 37 | authorizationInformation |  |
| 38 | ontologyRepository |  |
| 39 | ontology |  |
| 40 | semanticMashupJobProfile |  |
| 41 | semanticMashupInstance |  |
| 42 | semanticMashupResult |  |
| 43 | AEContactList |  |
| 44 | AEContactListPerCSE |  |
| 45 | localMulticastGroup |  |
| 46 | multimediaSession |  |
| 47 | triggerRequest |  |
| 48 | crossResourceSubscription |  |
| 49 | backgroundDataTransfer |  |
| 50 | transactionMgmt |  |
| 51 | transaction |  |
| 52 | ontologyMapping |  |
| 53 | ontologyMappingAlgorithm |  |
| 54 | ontologyMappingAlgorithmRepository |  |
| 55 | reasoningJobInstance |  |
| 56 | reasoningRules |  |
| 57 | semanticRuleRepository |  |
| 58 | flexContainerInstance |  |
| XX | nwMonitoringReq |  |
| 10001 | accessControlPolicyAnnc |  |
| 10002 | AEAnnc |  |
| 10003 | containerAnnc |  |
| 10004 | contentInstanceAnnc |  |
| 10009 | groupAnnc |  |
| 10010 | locationPolicyAnnc |  |
| 10013 | mgmtObjAnnc |  |
| 10014 | nodeAnnc |  |
| 10016 | remoteCSEAnnc |  |
| 10018 | scheduleAnnc |  |
| 10024 | semanticDescriptorAnnc |  |
| 10028 | flexContainerAnnc |  |
| 10029 | timeSeriesAnnc |  |
| 10030 | timeSeriesInstanceAnnc |  |
| 10033 | void |  |
| 10034 | dynamicAuthorizationConsultationAnnc |  |
| 10038 | ontologyRepositoryAnnc |  |
| 10039 | ontologyAnnc |  |
| 10040 | semanticMashupJobProfileAnnc |  |
| 10041 | semanticMashupInstanceAnnc |  |
| 10042 | semanticMashupResultAnnc |  |
| 10046 | multimediaSessionAnnc |  |
| 10052 | ontologyMappingAnnc |  |
| 10053 | ontologyMappingAlgorithmAnnc |  |
| 10054 | ontologyMappingAlgorithmRepositoryAnnc |  |
| 10055 | reasoningJobInstanceAnnc |  |
| 10056 | reasoningRulesAnnc |  |
| 10057 | semanticRuleRepositoryAnnc |  |
| NOTE: See clause 6.4.1 Request primitive parameter data types. |

### ----------------------end of change 2 -----------------------------------------------------

### ----------------------start of change 3 -----------------------------------------------------

##### 6.3.4.2.x m2m:monitorEnable

Used for the *monitorEnable* attribute of the <nwMonitoringReq> resource.

Table 6.3.4.2.x‑1: Interpretation of monitorEnable

|  |  |  |
| --- | --- | --- |
| Value | Interpretation | Note |
|  |  |  |
| 1 | MonitorCongestion | Monitor congestion status in an area |
| 2 | MonitorDeviceNumber | Monitor number of devices in an area |
|  |  |  |
| NOTE: See clause 7.4.x "Resource Type nwMonitoringReq". |

##### 6.3.4.2.x m2m:monitorStatus

Used for the *monitorStatus* attribute of the <nwMonitoringReq> resource.

Table 6.3.4.2.x‑1: Interpretation of monitorStatus

|  |  |  |
| --- | --- | --- |
| Value | Interpretation | Note |
| 0 | DISABLED | Default |
| 1 | ENABLED | Enable the Hosting CSE to interact with NSE |
| 2 | FAILED | Indicate an error response from the NSE |
| NOTE: See clause 7.4.x "Resource Type nwMonitoringReq". |

##### 6.3.4.2.x m2m:failureReason

Used for the *monitorStatus* attribute of the <nwMonitoringReq> resource.

Table 6.3.4.2.x‑1: Interpretation of failureReason

|  |  |  |
| --- | --- | --- |
| Value | Interpretation | Note |
| 1 | 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. |
| 2 | 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. |
| 3 | 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.  |
| 4 | 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. |
| 5 | 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. |
| 6 | 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). |
| 7 | 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. |
| 8 | 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. |
| 9 | INTERNAL\_SERVER\_ERROR | The NSE encountered an unexpected condition that prevented it from fulfilling the request. |
| 10 | SERVICE\_UNAVAILABLE | The NSE is unable to handle the request. |
| NOTE: See clause 7.4.x "Resource Type nwMonitoringReq". |

### ----------------------end of change 3 -----------------------------------------------------

### ----------------------start of change 4 -----------------------------------------------------

### 6.5.3 regularResource

#### 6.5.3.1 Description

This type definition includes the universal and common attributes used by the non-announceable oneM2M resources.

#### 6.5.3.2 Reference

See Table 6.3.6‑2.

#### 6.5.3.3 Usage

This type is used by the following resource types:

<delivery>, <eventConfig>, <execInstance>, <m2mServiceSubscriptionProfile>, <mgmtCommand>, <request>, <serviceSubscribedNode>, <statsCollect>, <statsConfig>, <subscription>, <serviceSubscribedAppRule>, <notificationTargetMgmtPolicyRef>, <notificationTargetPolicy>, <policyDeletionRules>, <dynamicAuthorizationConsultation>, <role>, <token>, <authorizationDecision>, <authorizationPolicy> <authorizationInformation>, <AEContactList>, <AEContactListPerCSE>, <localMulticastGroup>, <triggerRequest>, <crossResourceSubscription>, <backgroundDataTransfer>, <transactionMgmt>, <transaction>.<nwMonitoringReq>.

### ----------------------end of change 4 -----------------------------------------------------

### ----------------------start of change 5 -----------------------------------------------------

### 7.4.x 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. Additional description of the <nwMonitoringReq> resource is contained in clauses 9.6.64 and 10.2.23 of oneM2M TS-0001 [6]. The corresponding procedures over the Mcn reference point are described in oneM2M TS‑0026 [43].

Table 7.4.x.1‑1: Data type definition of <nwMonitoringReq> resource

|  |  |  |
| --- | --- | --- |
| **Data Type ID** | **File Name** | **Note** |
| nwMonitoringReq | CDT- nwMonitoringReq-v\_4\_XX\_0.xsd |  |

Table 7.4.x.1‑2: Universal/Common Attributes of <nwMonitoringReq> resource

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

Table 7.4.x.1‑3: Resource Specific Attributes of <nwMonitoringReq> resource

|  |  |  |  |
| --- | --- | --- | --- |
| Attribute Name | Request Optionality  | Data Type | Default Value and Constraints |
| Create | Update |
| *monitorEnable* | NP |  O | m2m: monitorEnable | No default |
| *monitorStatus* | NP | NP | m2m: monitorStatus | Default is DISABLED |
| *failureReason* | NP | NP | m2m: failureReason | No default |
| *geographicArea* | NP | M | m2m:locationRegion | No default |
| *congestionLevel* | NP | O | m2m:congestionLevels | No default. |
| *congestionStatus* | NP | NP | m2m:congestionLevel | No default. |
| *numberOfDevices* | NP | NP | xs:nonNegativeInteger | No default |
| *externalGroupID* | NP | O | m2m:externalID | No default |
| *M2M-Ext-IDs* | NP | NP | list of m2m:externalID | No default |

Table 7.4.x.1‑4: Child Resources of <nwMonitoringReq> resource

|  |  |  |  |
| --- | --- | --- | --- |
| Child Resource Type | Child Resource Name | Multiplicity | Ref. to Resource Type Definition |
| <subscription> | [variable] | 0..n | Clause 7.4.8 |

#### 7.4.x.2 < nwMonitoringReq> resource specific procedures for CRUD operations

##### 7.4.x.2.0 Introduction

This clause describes <nwMonitoringReq> resource specific primitive behaviour for CRUD operations.

##### 7.4.x.2.1 Create

***Originator:***

No change from the generic procedures in clause 7.2.2.1.

***Receiver:***

No change from the generic procedures in clause 7.2.2.2.

##### 7.4.x.2.2 Retrieve

***Originator:***

No change from the generic procedures in clause 7.2.2.1.

***Receiver:***

No change from the generic procedures in clause 7.2.2.2.

##### 7.4.x.2.3 Update

***Originator:***

No change from the generic procedures in clause 7.2.2.1 with the following exception:

* If the value of *monitorEnable* is MonitorCongestion, the Originator shall set the *geographicArea* attribute and the *congestionLevel* attribute.
* If the value of *monitorEnable* is MonitorDeviceNumber, the Originator shall set the *geographicArea* attribute.
* If the value of *monitorEnable* is MonitorDeviceNumber, the Originator may set the *externalGroupID* attribute.
* If value of *monitorStatus* is set to ENABLED, the Originator shall not send a request,
* 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.

***Receiver:***

No change from the generic procedures in clause 7.2.2.2 with the following exception:

* If the value of *monitorEnable* 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 [43].
	+ If the attributes are not present, the Receiver shall not process the request and shall return a response primitive with a ***Response Status Code*** indicating "BAD\_REQUEST" error.
* If the value of *monitorEnable* is MonitorDeviceNumber, the Receiver shall check if *geographicArea* attribute is included in the request.
	+ If the attribute 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 [43].
	+ If the attribute is not present, the Receiver shall not process the request and shall return a response primitive with a ***Response Status Code*** indicating "BAD\_REQUEST" error.
* If the value of *monitorStatus* is set to ENABLED, the Receiver shall not process the request and shall reject the request with a ***Response Status Code*** indicating "CONFLICT" error.
* If the Receiver receives a request for deletion of *monitorEnable* attribute, the Receiver shall set the value of *monitorStatus* to DISABLED.
* If the Receiver receives a successful response from the NSE, the Receiver 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 Receiver receives an error response from the NSE, the Receiver shall set the value of *monitorStatus* to FAILED, and shall map the error response to the value of *failureReason*. Then, the Receiver shall send a notification request of <nwMonitoringReq> resource to the Originator.

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 [43].

* If the value of failureReason is set to BAD\_REQUEST, UNAUTHORIZED, NOT\_FOUND, LENGTH\_REQUIRED or UNSUPPORTED\_MEDIA\_TYPE, the Receiver may be configured with the parameters which the NSE is able to support.

##### 7.4.x.2.4 Delete

***Originator:***

No change from the generic procedures in clause 7.2.2.1.

***Receiver:***

No change from the generic procedures in clause 7.2.2.2.

The Receiver shall interact with the underlying network to delete network status information depending on the procedures of the Underlying Network. In the case of interworking with 3GPP networks, the Receiver shall perform the operations defined in clause 7.15.3 in oneM2M TS-0026 [43].

### ----------------------end of change 5 -----------------------------------------------------

### ----------------------start of change 6 -----------------------------------------------------

### 7.4.3 Resource Type <CSEBase>

#### 7.4.3.1 Introduction

A <CSEBase> resource shall represent a CSE. This <CSEBase> resource shall be the root for all the resources that are residing on the CSE. The detailed description can be found in clause 9.6.3 in oneM2M TS-0001 [6].

Table 7.4.3.1‑1: Data type definition of <CSEBase> resource

|  |  |  |
| --- | --- | --- |
| Data Type ID | File Name | Note |
| CSEBase | CDT-CSEBase-v4\_1\_0.xsd |  |

Table 7.4.3.1‑2: Universal/Common Attributes of <CSEBase> resource

|  |
| --- |
| Attribute Name |
|
| *@resourceName* |
| *resourceType* |
| *resourceID* |
| *parentID* |
| *creationTime* |
| *lastModifiedTime* |
| *labels* |
| *location* |

The value of the parentID attribute for the <CSEBase> resource shall be an empty string since the <CSEBase> resource does not have a parent. The common attributes *accessControlPolicyIDs* and *dynamicAuthorizationConsultationIDs* are treated as resource-specific attributes.

Table 7.4.3.1‑3: Resource Specific Attributes of <CSEBase> resource

|  |  |  |
| --- | --- | --- |
| **Attribute Name** | **Data Type** | **Default Value and Constraints** |
|
| *accessControlPolicyIDs* | m2m:acpType | No default |
| *cseType* | m2m:cseTypeID | No default |
| *CSE-ID* | m2m:ID | No default |
| *supportedResourceType* | list of m2m:resourceType | No default |
| *pointOfAccess* | m2m:poaList | No default |
| *nodeLink* | xs:anyURI | No default |
| *dynamicAuthorizationConsultationIDs* | list of xs:anyURI | No default |
| *contentSerialization* | m2m:serializations | No default |
| *e2eSecInfo* | m2m:e2eSecInfo | No default |
| *supportedReleaseVersions* | m2m:supportedReleaseVersions | No default |

Table 7.4.3.1‑4: Child resources of <CSEBase> resource

|  |  |  |  |
| --- | --- | --- | --- |
| Child Resource Type | Child Resource Name | Multiplicity | Ref. to Resource Type Definition |
| <remoteCSE> | [variable] | 0..n | Clause 7.4.4 |
| <remoteCSEAnnc> | [variable] | 0..n | Clause 7.4.4 |
| <node> | [variable] | 0..n | Clause 7.4.18 |
| <AE> | [variable] | 0..n | Clause 7.4.5 |
| <container> | [variable] | 0..n | Clause 7.4.6 |
| <group> | [variable] | 0..n | Clause 7.4.13 |
| <accessControlPolicy> | [variable] | 0..n | Clause 7.4.2 |
| <subscription> | [variable] | 0..n | Clause 7.4.8 |
| <mgmtCmd> | [variable] | 0..n | Clause 7.4.16 |
| <locationPolicy> | [variable] | 0..n | Clause 7.4.10 |
| <statsConfig> | [variable] | 0..n | Clause 7.4.23 |
| <statsCollect> | [variable] | 0..n | Clause 7.4.25 |
| <request> | [variable] | 0..n | Clause 7.4.12 |
| <delivery> | [variable] | 0..n | Clause 7.4.11 |
| <schedule> | [variable] | 0..1 | Clause 7.4.9 |
| <m2mServiceSubscriptionProfile> | [variable] | 0..n | Clause 7.4.19 |
| <serviceSubscribedAppRule> | [variable] | 0..n | Clause 7.4.29 |
| <notificationTargetPolicy> | [variable] | 0..n | Clause 7.4.31 |
| <dynamicAuthorizationConsultation> | [variable] | 0..n | Clause 7.4.36 |
| <flexContainer> | [variable] | 0..n | Clause 7.4.37 |
| <timeSeries> | [variable] | 0..n | Clause 7.4.38 |
| <role> | [variable] | 0..n | Clause 7.4.40 |
| <token> | [variable] | 0..n | Clause 7.4.41 |
| <authorizationDecision> | [variable] | 0..n | Clause 7.4.43 |
| <authorizationPolicy> | [variable] | 0..n | Clause 7.4.44 |
| <authorizationInformation> | [variable] | 0..n | Clause 7.4.45 |
| <ontologyRepository> | [variable] | 0..1 | Clause 7.4.46 |
| <semanticMashupJobProfile> | [variable] | 0..n | Clause 7.4.49 |
| <semanticMashupInstance> | [variable] | 0..n | Clause 7.4.50 |
| <AEContactList> | [variable] | 0..1 | Clause 7.4.53 |
| <localMulticastGroup> | [variable] | 0..n | Clause 7.4.55 |
| <crossResourceSubscription> | [variable] | 0..n | Clause 7.4.58 |
| <backgroundDataTransfer> | [variable] | 0..n | Clause 7.4.59 |
| <transactionMgmt> | [variable] | 0..n | Clause 7.4.60 |
| <transaction> | [variable] | 0..n | Clause 7.4.61 |
| <nwMonitoringReq> | [variable] | 0..n | Clause 7.4.x |

### ----------------------end of change 6 -----------------------------------------------------

### ----------------------start of change 7 -----------------------------------------------------

### 7.4.4 Resource Type <remoteCSE>

#### 7.4.4.1 Introduction

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

In addition each registered CSE shall have a <remoteCSE> resource representing its Registrar CSE. This is located directly under the registered CSE's <CSEBase>.

The detailed description can be found in clause 9.6.4 in oneM2M TS-0001 [6].

Table 7.4.4.1‑1: Data type definition of <remoteCSE> resource

|  |  |  |
| --- | --- | --- |
| Data Type ID | File Name | Note |
| remoteCSE | CDT-remoteCSE-v4\_1\_0.xsd |  |

Table 7.4.4.1‑2: Universal/Common Attributes of <remoteCSE> 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 |
| *dynamicAuthorizationConsultationIDs* | O | O |
| *location* | O | O |

Table 7.4.4.1‑3: Resource Specific Attributes of <remoteCSE> resource

|  |  |  |  |
| --- | --- | --- | --- |
| Attribute Name | Request Optionality  | Data Type | Default Value and Constraints |
| Create | Update |
| *cseType* | O | NP | m2m:cseTypeID | No default |
| *pointOfAccess* | O | O | m2m:poaList | No default |
| *CSEBase* | M | NP | xs:anyURI | No default |
| *CSE-ID* | M | NP | m2m:ID | No default |
| *M2M-Ext-ID* | O | O | m2m:externalID  | No default |
| *Trigger-Recipient-ID* | O | O | m2m:triggerRecipientID | No default |
| *requestReachability* | M | O | xs:boolean | No default |
| *nodeLink* | O | O | xs:anyURI | No default |
| *triggerReferenceNumber* | O | O | xs:unsignedInt | No default |
| *contentSerialization* | O | O | m2m:serializations | No default |
| *e2eSecInfo* | O | O | m2m:e2eSecInfo | No default |
| *descendantCSEs* | O | O | m2m:listOfM2MID | No default |
| *supportedReleaseVersions* | M | O | m2m:supportedReleaseVersions | No default |
| *multicastCapability* | O | O | m2m:multicastCapability | No default |
| *externalGroupID* | O | O | m2m:externalID | No default |
| *triggerEnable* | O | O | xs:boolean | false |
| *activityPatternElements* | O | O | m2m:activityPatternElements | No default |

Table 7.4.4.1‑4: Child resources of <remoteCSE> resource

|  |  |  |  |
| --- | --- | --- | --- |
| Child Resource Type  | Child Resource Name | Multiplicity | Ref. to Resource Type Definition |
| <container> | [variable] | 0..n | Clause 7.4.6 |
| <containerAnnc> | [variable] | 0..n | Clause 7.4.6 |
| <flexContainer> | [variable] | 0..n | Clause 7.4.37 |
| <flexContainerAnnc> | [variable] | 0..n | Clause 7.4.37 |
| <group> | [variable] | 0..n | Clause 7.4.13 |
| <groupAnnc> | [variable] | 0..n | Clause 7.4.13 |
| <accessControlPolicy> | [variable] | 0..n | Clause 7.4.2 |
| <accessControlPolicyAnnc> | [variable] | 0..n | Clause 7.4.2 |
| <subscription> | [variable] | 0..n | Clause 7.4.8 |
| <pollingChannel> | [variable] | 0..1 | Clause 7.4.21 |
| <nodeAnnc> | [variable] | 0..n | Clause 7.4.36 |
| <dynamicAuthorizationConsultation> | [variable] | 0..n | Clause 7.4.36 |
| <flexContainer> | [variable] | 0..n | Clause 7.4.37 |
| <timeSeries> | [variable] | 0..n | Clause 7.4.38 |
| <timeSeriesAnnc> | [variable] | 0..n | Clause 7.4.38 |
| <remoteCSEAnnc> | [variable] | 0..n | Clause 7.4.4 |
| <AEAnnc> | [variable] | 0..n | Clause 7.4.5 |
| <locationPolicyAnnc> | [variable] | 0..n | Clause 7.4.10 |
| <ontologyRepositoryAnnc> | [variable] | 0..1 | Clause 7.4.46 |
| <semanticMashupJobProfile> | [variable] | 0..n | Clause 7.4.49 |
| <semanticMashupJobProfileAnnc> | [variable] | 0..n | Clause 7.4.49 |
| <semanticMashupInstance> | [variable] | 0..n | Clause 7.4.50 |
| <semanticMashupInstanceAnnc> | [variable] | 0..n | Clause 7.4.50 |
| <crossResourceSubscription> | [variable] | 0..n | Clause 7.4.58 |
| <transactionMgmt> | [variable] | 0..n | Clause 7.4.60 |
| <transaction> | [variable] | 0..n | Clause 7.4.61 |
| <nwMonitoringReq> | [variable] | 0..n | Clause 7.4.x |

### ----------------------end of change 7 -----------------------------------------------------

### ----------------------start of change 8 -----------------------------------------------------

### 7.4.5 Resource Type <AE>

#### 7.4.5.1 Introduction

The <AE> resource represents information about an Application Entity known to a given Common Services Entity.

The detailed description can be found in clause 9.6.5 in oneM2M TS-0001 [6].

Table 7.4.5.1‑1: Data type definition of <AE> resource

|  |  |  |
| --- | --- | --- |
| Data Type ID | File Name | Note |
| AE | CDT-AE-v4\_1\_0.xsd | XSD schema for AE resource |

Table 7.4.5.1‑2: Universal/Common Attributes of <AE> 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 |
| *dynamicAuthorizationConsultationIDs* | O | O |
| *location* | O | O |

Table 7.4.5.1‑3: Resource Specific Attributes of <AE> resource

|  |  |  |  |
| --- | --- | --- | --- |
| Attribute Name | Request Optionality  | Data Type | Default Value and Constraints |
| Create | Update |
| *appName* | O | O | xs:string | No default |
| *App-ID* | M | NP | xs:string | No default |
| *AE-ID* | NP | NP | m2m:ID | No default |
| *pointOfAccess* | O | O | m2m:poaList | No default |
| *ontologyRef* | O | O | xs:anyURI | No default |
| *nodeLink* | O | O | xs:anyURI | No default |
| *requestReachability* | M | O | xs:boolean | No default |
| *contentSerialization* | O | O | m2m:serializations | No default |
| *e2eSecInfo* | O | O | m2m:e2eSecInfo | No default |
| *M2M-Ext-ID* | O | O | m2m:externalID | No default |
| *supportedReleaseVersions* | M | O | m2m:supportedReleaseVersions | No default |
| *registrationStatus* | O | O | m2m:AERegistrationStatus | No default |
| *trackRegistrationPoints* | O | O | xs:boolean | No default |
| *sessionCapabilities* | O | O | m2m:sessionCapabilities | No default |
| *triggerEnable* | O | O | xs:boolean | false |
| *activityPatternElements* | O | O | m2m:activityPatternElements | No default |

Table 7.4.5.1‑4: Child resources of <AE> resource

|  |  |  |  |
| --- | --- | --- | --- |
| Child Resource Type  | Child Resource Name | Multiplicity | Ref. to Resource Type Definition |
| <subscription> | [variable] | 0..n | Clause 7.4.8 |
| <container> | [variable] | 0..n | Clause 7.4.6 |
| <group> | [variable] | 0..n | Clause 7.4.13 |
| <accessControlPolicy> | [variable] | 0..n | Clause 7.4.2 |
| <pollingChannel> | [variable] | 0..n | Clause 7.4.21 |
| <semanticDescriptor> | [variable] | 0..n | Clause 7.4.34 |
| <dynamicAuthorizationConsultation> | [variable] | 0..n | Clause 7.4.36 |
| <flexContainer> | [variable] | 0..n | Clause 7.4.37 |
| <timeSeries> | [variable] | 0..n | Clause 7.4.38 |
| <semanticMashupInstance> | [variable] | 0..n | Clause 7.4.50 |
| <multimediaSession> | [variable] | 0..n | Clause 7.4.56 |
| <triggerRequest> | [variable] | 0..n | Clause 7.4.57 |
| <crossResourceSubscription> | [variable] | 0..n | Clause 7.4.58 |
| <transactionMgmt> | [variable] | 0..n | Clause 7.4.60 |
| <transaction> | [variable] | 0..n | Clause 7.4.61 |
| <nwMonitoringReq> | [variable] | 0..n | Clause 7.4.x |

### ----------------------end of change 8 -----------------------------------------------------

### ----------------------start of change 9 -----------------------------------------------------

### 8.2.3 Resource attributes

In protocol bindings, resource attributes names shall be translated into short names shown in the following tables.

…

Table 8.2.3‑3: Resource attribute short names (3/6)

| Attribute Name | Occurs in | Short Name |
| --- | --- | --- |
| *objectPaths* | mgmtObj | ***obps*** |
| *mgmtSchema* | mgmtObj | ***mgs*** |
| *nodeID* | node | ***ni*** |
| *hostedCSELink* | node | ***hcl*** |
| *mgmtClientAddress* | node | ***mgca*** |
| *hostedAELinks* | node | ***hael*** |
| *hostedServiceLinks* | node | ***hsl*** |
| *networkID* | node | ***nid*** |
| *roamingStatus* | node | ***rms*** |
| *nodeType* | node | ***nty*** |
| *CSEBase* | remoteCSE | ***cb\**** |
| *M2M-Ext-ID* | remoteCSE, AE, locationPolicy, triggerRequest, nwMonitoringReq | ***mei*** |
| *Trigger-Recipient-ID* | remoteCSE, triggerRequest | ***tri*** |
| *requestReachability* | remoteCSE | ***rr*** |
| *triggerReferenceNumber* | remoteCSE | ***trn*** |
| *descendantCSEs* | remoteCSE | ***dcse*** |
| *multicastCapability* | remoteCSE | ***mtcc*** |
| *originator* | request | ***org*** |
| *metaInformation* | request | ***mi*** |
| *requestStatus* | request | ***rs*** |
| *operationResult* | request | ***ors*** |
| *operation* | request | ***op\**** |
| *requestID* | request | ***rid*** |
| *scheduleElement* | schedule | ***se*** |
| *networkCoordinated* | schedule | ***nco*** |
| *deviceIdentifier* | serviceSubscribedNode | ***di*** |
| *ruleLinks* | serviceSubscribedNode | ***rlk*** |
| *niddRequired* | serviceSubscribedNode | ***nrq*** |
| *statsCollectID* | statsCollect | ***sci*** |
| *collectingEntityID* | statsCollect | ***cei*** |
| *collectedEntityID* | statsCollect | ***cdi*** |
| *devStatus* | areaNwkDeviceInfo | ***ss*** |
| *statsRuleStatus* | statsCollect | ***srs*** |
| *statModel* | statsCollect | ***sm*** |
| *collectPeriod* | statsCollect | ***cp*** |
| *eventNotificationCriteria* | subscription | ***enc*** |
| *expirationCounter* | subscription, crossResourceSubscription | ***exc*** |
| *notificationURI* | subscription, crossResourceSubscription | ***nu*** |
| *groupID* | subscription | ***gpi*** |
| *notificationForwardingURI* | subscription | ***nfu*** |
| *batchNotify* | subscription | ***bn*** |
| *rateLimit* | subscription | ***rl*** |
| *preSubscriptionNotify* | subscription | ***psn*** |
| *pendingNotification* | subscription | ***pn*** |
| *notificationStoragePriority* | subscription | ***nsp*** |
| *latestNotify* | subscription | ***ln*** |
| *notificationContentType* | subscription | ***nct*** |
| *notificationEventCat* | subscription, crossResourceSubscription | ***nec*** |
| *subscriberURI* | subscription, crossResourceSubscription | ***su*** |
| *version* | firmware, software, token | ***vr*** |
| *URL* | firmware, software | ***url*** |
| *update* | firmware | ***ud*** |
| *updateStatus* | firmware | ***uds*** |
| *install* | software | ***in*** |
| *uninstall* | software | ***un*** |
| *installStatus* | software | ***ins*** |
| *activate* | software | ***act*** |
| *deactivate* | software | ***dea*** |
| *activeStatus* | software, areaNwkInfo | ***acts*** |
| *memAvailable* | memory | ***mma*** |
| *memTotal* | memory | ***mmt*** |

…

Table 8.2.3‑6: Resource attribute short names (6/6)

| Attribute Name | Occurs in | Short Name |
| --- | --- | --- |
| *serviceName* | genericInterworkingService | ***gisn*** |
| *operationName* | genericInterworkingOperationInstance | ***gion*** |
| *inputDataPointLinks* | genericInterworkingService, genericInterworkingOperationInstance | ***giip*** |
| *outputDataPointLinks* | genericInterworkingService, genericInterworkingOperationInstance | ***giop*** |
| *inputLinks* | genericInterworkingOperationInstance | ***giil*** |
| *outputLinks* | genericInterworkingOperationInstance | ***giol*** |
| *operationState* | genericInterworkingOperationInstance | ***gios*** |
| *direction* | allJoynApp | ***dir*** |
| *objectPath* | allJoynSvcObject | ***ajop*** |
| *interfaceIntrospectXmlRef* | allJoynInterface | ***ajir*** |
| *input* | allJoynMethodCall | ***inp*** |
| *callStatus* | allJoynMethodCall | ***clst*** |
| *output* | allJoynMethodCall | ***out*** |
| *currentValue* | allJoynProperty | ***crv*** |
| *requestedValue* | allJoynProperty | ***rqv*** |
| *decision* | authorizationDecision | ***dec*** |
| *status* | authorizationDecision, authorizationPolicy, authorizationInformation | ***sus*** |
| *to* | authorizationDecision, authorizationPolicy | ***to\**** |
| *from* | authorizationDecision, authorizationInformation | ***fr\**** |
| *requestedResourceType* | authorizationDecision | ***rrt*** |
| *operation* | authorizationDecision | ***op\**** |
| *filterUsage* | authorizationDecision | ***fu*** |
| *roleIDs* | authorizationDecision, authorizationInformation | ***rids\**** |
| *tokenIDs* | authorizationDecision, authorizationInformation | ***tids\**** |
| *tokens* | authorizationDecision | ***tkns\**** |
| *requestTime* | authorizationDecision | ***rtm*** |
| *originatorLocation* | authorizationDecision | ***olo*** |
| *originatorIP* | authorizationDecision | ***oip*** |
| *policies* | authorizationPolicy | ***ps*** |
| *combiningAlgorithm* | authorizationPolicy | ***ca*** |
| *ontologyFormat* | ontology | ***ontf*** |
| *ontologyContent* | ontology | ***ontc*** |
| *sourceOntology* | ontologyMapping | ***sont*** |
| *targetOntology* | ontologyMapping | ***tont*** |
| *mappingPolicy* | ontologyMapping | ***mpol*** |
| *mappingAlgorithmLinks* | ontologyMapping | ***mpal*** |
| *mappingResultFormat* | ontologyMapping | ***mprf*** |
| *mappingResult* | ontologyMapping | ***mpr*** |
| *executable* | ontologyMappingAlgorithm | ***exec*** |
| *algorithmType* | ontologyMappingAlgorithm | ***algt*** |
| *mappingThreshold* | ontologyMappingAlgorithm | ***mpth*** |
| *memberFilter* | semanticMashupJobProfile | ***mbft*** |
| *smiID* | semanticMashupJobProfile | ***miid*** |
| *inputDescriptor* | semanticMashupJobProfile | ***iptd*** |
| *outputDescriptor* | semanticMashupJobProfile | ***uptd*** |
| *functionDescriptor* | semanticMashupJobProfile | ***fucd*** |
| *smjpID* | semanticMashupInstance | ***mjid*** |
| *smjpInputParameter* | semanticMashupInstance, semanticMashupResult | ***jpin*** |
| *memberStoreType* | semanticMashupInstance | ***mst*** |
| *mashupMember* | semanticMashupInstance | ***msm*** |
| *resultGenType* | semanticMashupInstance | ***rgt*** |
| *periodForResultGen* | semanticMashupInstance | ***prg*** |
| *mashupResultFormat* | semanticMashupResult | ***mrf*** |
| *mashupResult* | semanticMashupResult | ***mrt*** |
| *ruleRepresentation* | reasoningRules | ***rrep*** |
| *ruleRepresentationFormat* | reasoningRules | ***rrepf*** |
| *reasoningType* | reasoningJobInstance | ***rtyp*** |
| *reasoningMode* | reasoningJobInstance | ***rmod*** |
| *reasoningPeriod* | reasoningJobInstance | ***rper*** |
| *factSet* | reasoningJobInstance | ***rfst*** |
| *ruleSet* | reasoningJobInstance | ***rrst*** |
| *resultRepresentation* | reasoningJobInstance | ***rsrp*** |
| *resultRepresentationFormat* | reasoningJobInstance | ***rsrpf*** |
| *numberImpactedCSEs* | AEContactList | ***nic*** |
| *externalGroupID* | LocalMulticastGroup, remoteCSE, nwMonitoringReq | ***egid*** |
| *multicastAddress* | LocalMulticastGroup | ***mad*** |
| *multicastGroupFanoutTarget* | LocalMulticastGroup | ***mgft*** |
| *memberList* | LocalMulticastGroup | ***mli*** |
| *responseTarget* | LocalMulticastGroup | ***rstt*** |
| *responseTimeWindow* | LocalMulticastGroup | ***rstw*** |
| *TMGI* | LocalMulticastGroup | ***tmgi*** |
| *sessionOriginatorID* | multimediaSession | ***soi*** |
| *acceptedSessionDescriptions* | multimediaSession | ***asd*** |
| *offeredSessionDescriptions* | multimediaSession | ***osd*** |
| *sessionState* | multimediaSession | ***sst*** |
| *triggerPurpose* | triggerRequest | ***tpe*** |
| *triggerStatus* | triggerRequest | ***tst*** |
| *triggerValidityTime* | triggerRequest | ***tvt*** |
| *triggerInfoAE-ID* | triggerRequest | ***tiae*** |
| *triggerInfoAddress* | triggerRequest | ***tia*** |
| *triggerInfoOperation* | triggerRequest | ***tio***  |
| *targetedResourceType* | triggerRequest | ***tirt***  |
| *triggerReference* | triggerRequest | ***trf*** |
| *regularResourcesAsTarget* | crossResourceSubscription | ***rrat*** |
| *subscriptionResourcesAsTarget* | crossResourceSubscription | ***srat*** |
| *timeWindowType* | crossResourceSubscription | ***twt*** |
| *timeWindowSize* | crossResourceSubscription | ***tws*** |
| *eventNotificationCriteriaSet* | crossResourceSubscription | ***encs*** |
| *associatedCrossResourceSub* | subscription | ***acrs*** |
| *volumePerNode* | backgroundDataTransfer | ***vpn*** |
| *numberOfNodes* | backgroundDataTransfer | ***non*** |
| *desiredTimeWindow* | backgroundDataTransfer | ***dtw*** |
| *transferSelectionGuidance* | backgroundDataTransfer | ***tsg*** |
| *geographicInformation* | backgroundDataTransfer | ***ggi*** |
| *groupLink* | backgroundDataTransfer | ***gli*** |
| *transactionLockTime* | transactionMgmt, transaction | ***tltm*** |
| *transactionExecuteTime* | transactionMgmt, transaction | ***text*** |
| *transactionCommitTime* | transactionMgmt, transaction | ***tct*** |
| *transactionExpirationTime* | transactionMgmt | ***tept*** |
| *transactionMode* | transactionMgmt | ***tmd*** |
| *transactionLockType* | transactionMgmt, transaction | ***tltp*** |
| *transactionControl* | transactionMgmt, transaction | ***tctl*** |
| *transactionState* | transactionMgmt, transaction | ***trst*** |
| *transactionMaxRetries* | transactionMgmt | ***tmr*** |
| *transactionMgmtHandling* | transactionMgmt | ***tmh*** |
| *requestPrimitives* | transactionMgmt | ***rqps*** |
| *responsePrimitives* | transactionMgmt | ***rsps*** |
| *transactionID* | transaction | ***tid*** |
| *monitorEnable* | nwMonitoringReq |  |
| *monitorStatsu* | nwMonitoringReq |  |
| *failureReason* | nwMonitoringReq |  |
| *geographicArea* | nwMonitoringReq |  |
| *congestionLevel* | nwMonitoringReq |  |
| *congestionStatus* | nwMonitoringReq |  |
| *numberOfDevices* | nwMonitoringReq |  |
| NOTE: \* marked short names have been already assigned in Table 8.2.2-1. |

### ----------------------end of change 9 -----------------------------------------------------

### ----------------------start of change 10 -----------------------------------------------------

### 8.2.4 Resource types

In protocol bindings resource type names shall be translated into short names of Table 8.2.4‑1.

**Table 8.2.4‑1: Resource and specialization type short names**

| Resource Type Name | Short Name |
| --- | --- |
| … | ***…*** |
| *nwMonitoringReq* |  |

### ----------------------end of change 10 -----------------------------------------------------

### ----------------------start of change 11 -----------------------------------------------------

##### 6.3.4.2.11 m2m:memberType

Used for the *memberType* attribute of the <group> resource.

Table 6.3.4.2.11‑1: Interpretation of memberType

| Value | Interpretation | Note |
| --- | --- | --- |
| 0 | mixed | A mixture of all the resource types (except mixed itself). |
| 1 | accessControlPolicy |  |
| 2 | AE |  |
| 3 | container |  |
| 4 | contentInstance |  |
| 5 | CSEBase |  |
| 6 | delivery |  |
| 7 | eventConfig |  |
| 8 | execInstance |  |
| 9 | group |  |
| 10 | locationPolicy |  |
| 11 | m2mServiceSubscription |  |
| 12 | mgmtCmd |  |
| 13 | mgmtObj |  |
| 14 | node |  |
| 15 | pollingChannel |  |
| 16 | remoteCSE |  |
| 17 | request |  |
| 18 | schedule |  |
| 19 | serviceSubscribedAppRule |  |
| 20 | serviceSubscribedNode |  |
| 21 | statsCollect |  |
| 22 | statsConfig |  |
| 23 | subscription |  |
| 24 | semanticDescriptor |  |
| 25 | notificationTargetMgmtPolicyRef |  |
| 26 | notificationTargetPolicy |  |
| 27 | policyDeletionRules |  |
| 28 | flexContainer |  |
| 29 | timeSeries |  |
| 30 | timeSeriesInstance |  |
| 31 | role |  |
| 32 | token |  |
| 33 | void |  |
| 34 | dynamicAuthorizationConsultation |  |
| 35 | authorizationDecision |  |
| 36 | authorizationPolicy |  |
| 37 | authorizationInformation |  |
| 38 | ontologyRepository |  |
| 39 | ontology |  |
| 40 | semanticMashupJobProfile |  |
| 41 | semanticMashupInstance |  |
| 42 | semanticMashupResult |  |
| 43 | AEContactList |  |
| 44 | AEContactListPerCSE |  |
| 46 | multimediaSession |  |
| 47 | triggerRequest |  |
| 48 | crossResourceSubscription |  |
| 49 | backgroundDataTransfer |  |
| 50 | transactionMgmt |  |
| 51 | transaction |  |
| 52 | ontologyMapping |  |
| 53 | ontologyMappingAlgorithm |  |
| 54 | ontologyMappingAlgorithmRepository |  |
| 55 | reasoningJobInstance |  |
| 56 | reasoningRules |  |
| 57 | semanticRuleRepository |  |
| 58 | flexContainerInstance |  |
| XX | nwMonitoringReq |  |
| 10001 | accessControlPolicyAnnc |  |
| 10002 | AEAnnc |  |
| 10003 | containerAnnc |  |
| 10004 | contentInstanceAnnc |  |
| 10009 | groupAnnc |  |
| 10010 | locationPolicyAnnc |  |
| 10013 | mgmtObjAnnc |  |
| 10014 | nodeAnnc |  |
| 10016 | remoteCSEAnnc |  |
| 10018 | scheduleAnnc |  |
| 10024 | semanticDescriptorAnnc |  |
| 10028 | flexContainerAnnc |  |
| 10029 | timeSeriesAnnc |  |
| 10030 | timeSeriesInstanceAnnc |  |
| 10033 | void |  |
| 10034 | dynamicAuthorizationConsultationAnnc |  |
| 10038 | ontologyRepositoryAnnc |  |
| 10039 | ontologyAnnc |  |
| 10040 | semanticMashupJobProfileAnnc |  |
| 10041 | semanticMashupInstanceAnnc |  |
| 10042 | semanticMashupResultAnnc |  |
| 10046 | multimediaSessionAnnc |  |
| 10052 | ontologyMappingAnnc |  |
| 10053 | ontologyMappingAlgorithmAnnc |  |
| 10054 | ontologyMappingAlgorithmRepositoryAnnc |  |
| 10055 | reasoningJobInstanceAnnc |  |
| 10056 | reasoningRulesAnnc |  |
| 10057 | semanticRuleRepositoryAnnc |  |
| 20001 | oldest |  |
| 20002 | latest |  |
| 20003 | mashup |  |
| NOTE: See clause 7.4.13 "Resource Type group". |

### ----------------------end of change 11 -----------------------------------------------------