**3GPP TSG-CT WG3 Meeting #134 *C3-242227\_R1***

**Changsha, China, 15th – 19th April, 2024**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.3* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  |  | **CR** | **0005** | **rev** | **-** | **Current version:** |  |  |
|  | | | | | | | | |
| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* | | | | | | | | |
|  | | | | | | | | |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***Proposed change affects:*** | UICC apps |  | ME |  | Radio Access Network |  | Core Network | **X** |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | | | | | | | | |
| ***Title:*** | The support of a timestamp indication in notification reports | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** |  | | | | | | | | | |
| ***Source to TSG:*** | CT3 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | SEALDD | | | | |  | ***Date:*** | | |  |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **B** |  | | | | | ***Release:*** | | |  |
|  | *Use one of the following categories:* ***F*** *(correction)* ***A*** *(mirror corresponding to a change in an earlier release)* ***B*** *(addition of feature),* ***C*** *(functional modification of feature)* ***D*** *(editorial modification)*  Detailed explanations of the above categories can be found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | | | | | | | | *Use one of the following releases: Rel-8 (Release 8) Rel-9 (Release 9) Rel-10 (Release 10) Rel-11 (Release 11) … Rel-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19) Rel-20 (Release 20)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | The design of notifications in SEALDD layer allows to provide multiple reports in a single notification. This design may be compliment with additional data about when each individual event occurred in order to provide the echanced information about the event. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | This pCR introduce the support of a timestamp in notification report as an improvement in Stage 3. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | The service consumer do not have information about the timestamp when the report was generated when multiple events are provided in one notification. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 6.1.6.1, 6.1.6.2.11, 6.4.6.2.6, A.2, A.5 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **X** | Other core specifications | | | | TS/TR ... CR ... | | |
| ***affected:*** | |  | **X** | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | | * This CR addresses provides the backwards compatible feature for the SDD\_Transmission API, SDD\_TransmissionQualityMeasurement API. | | | | | | | | |
| ***()*** | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

**Additional discussion(if needed):**

**Proposed changes:**

\* \* \* First Change \* \* \* \*

#### 6.1.6.1 General

This clause specifies the application data model supported by the API.

Table 6.1.6.1-1 specifies the data types defined for the SDD\_Transmission API.

Table 6.1.6.1-1: SDD\_Transmission API specific Data Types

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Clause defined | Description | Applicability |
| ConnEstabData | 6.1.6.2.12 | Represents SEALDD connection status establishment data. |  |
| ConnStatusEvent | 6.1.6.3.3 | Represents Connection Status Events. |  |
| ConnInfo | 6.1.6.2.4 | Represents SEALDD Data transmission connection information. |  |
| ConnStatusNotif | 6.1.6.2.10 | Represents a Connection Status Notification. |  |
| ConnStatusReport | 6.1.6.2.11 | Represents a Connection Status Event report. |  |
| ConnStatusSubsc | 6.1.6.2.8 | Represents a Connection Status Subscription. |  |
| ConnStatusSubscPatch | 6.1.6.2.9 | Represents the requested modifications to a Connection Status Subscription. |  |
| QoSInfo | 6.1.6.2.5 | Represents SEALDD related QoS requirements. |  |
| TransReq | 6.1.6.2.2 | Represents the parameters to request the SEALDD enabled regular or URLLC application data transmission service. |  |
| TransResp | 6.1.6.2.3 | Represents a SEALDD enabled regular or URLLC application data transmission service response. |  |
| TransType | 6.1.6.3.4 | Represents the requested transmission type (i.e., Regular transmission or URLLC transmission). |  |
| ValServBdw | 6.1.6.2.6 | Represents VAL Server related bandwidth information. |  |
| ValUsersBdw | 6.1.6.2.7 | Represents VAL users related bandwidth information. |  |

Table 6.1.6.1-2 specifies data types re-used by the SDD\_Transmission API from other specifications, including a reference to their respective specifications, and when needed, a short description of their use within the SDD\_Transmission API.

Table 6.1.6.1-2: SDD\_Transmission API re-used Data Types

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Reference | Comments | Applicability |
| AlternativeServiceRequirementsData | 3GPP TS 29.514 [19] | Represents alternative QoS related parameters. |  |
| Bandwidth | 3GPP TS 29.122 [2] | Represents a bandwidth. |  |
| DateTime | 3GPP TS 29.122 [2] | Represents a date and time. |  |
| DurationSec | 3GPP TS 29.122 [2] | Represents a time duration in seconds. |  |
| Ipv4Addr | 3GPP TS 29.122 [2] | Represents an IPv4 address. |  |
| Ipv6Addr | 3GPP TS 29.122 [2] | Represents an IPv6 address. |  |
| Port | 3GPP TS 29.122 [2] | Represents an IP port. |  |
| SupportedFeatures | 3GPP TS 29.571 [18] | Represents the list of supported feature(s) and used to negotiate the applicability of the optional features. |  |
| Uri | 3GPP TS 29.122 [2] | Represents a URI. |  |
| ValTargetUe | 3GPP TS 29.549 [15] | Represents the identifier of the targeted VAL UE or VAL user. |  |

\* \* \* Next change \* \* \* \*

##### 6.1.6.2.11 Type: ConnStatusReport

Table 6.1.6.2.11-1: Definition of type ConnStatusReport

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| event | ConnStatusEvent | M | 1 | Represents the connection status event. |  |
| valTgtUe | ValTargetUe | M | 1 | Represents the VAL UE or VAL user to which the SEALDD connection status report is related. |  |
| valServiceId | string | M | 1 | Represents the identity of the VAL service to which the SEALDD connection status report is related. |  |
| connEstData | ConnEstabData | C | 0..1 | Represents the SEALDD connection establishment data.  This attribute shall be present only if the "event" attribute is set to "ESTABLISHED". |  |
| timestamp | DateTime | O | 0..1 | Represents the timestamp of this report. |  |

\* \* \* Next change \* \* \* \*

##### 6.4.6.2.6 Type: TransQualMeasReport

Table 6.4.6.2.6-1: Definition of type TransQualMeasReport

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| measId | array(MeasurementId) | M | 1..N | Contains the reported transmission quality measurement(s). |  |
| valUeIds | array(string) | C | 1..N | Contains the list of the identifier(s) of the VAL UE(s) to which the transmission quality measurement report is related.  (NOTE) |  |
| valUserIds | array(string) | C | 1..N | Contains the list of the identifier(s) of the VAL user(s) to which the transmission quality measurement report is related.  (NOTE) |  |
| measData | TransQualMeasData | O | 0..1 | Contains the reported transmission quality measurement data. |  |
| timestamp | DateTime | O | 0..1 | Represents the timestamp of this report. |  |
| NOTE: These attributes are mutually exclusive. Either one of them shall be present, unless the corresponding subscription is for a single VAL UE/user, in which case they may not be present. | | | | | |

\* \* \* Next change \* \* \* \*

# A.2 SDD\_Transmission API

openapi: 3.0.0

info:

title: SEALDD Server Data Transmission Service

version: 1.0.0-alpha.5

description: |

SEALDD Server Data Transmission Service.

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externalDocs:

description: >

3GPP TS 29.548 V1.1.0; Service Enabler Architecture Layer for Verticals (SEAL);

SEAL Data Delivery (SEALDD) Server Services; Stage 3.

url: https://www.3gpp.org/ftp/Specs/archive/29\_series/29.548/

servers:

- url: '{apiRoot}/sdd-trans/v1'

variables:

apiRoot:

default: https://example.com

description: apiRoot as defined in clause 6.5 of 3GPP TS 29.549

security:

- {}

- oAuth2ClientCredentials: []

paths:

/{transType}/request-trans:

parameters:

- name: transType

in: path

description: >

Represents the requested transmission type.

required: true

schema:

$ref: '#/components/schemas/TransType'

post:

summary: Request SEALDD enabled Regular or URLLC Data Transmission.

operationId: RequestTrans

tags:

- Request SEALDD Data Transmission

requestBody:

required: true

content:

application/json:

schema:

$ref: '#/components/schemas/TransReq'

responses:

'200':

description: >

OK. The SEALDD enabled Regular or URLLC application data transmission service request

was successfully received and processed.

content:

application/json:

schema:

$ref: '#/components/schemas/TransResp'

'307':

$ref: 'TS29122\_CommonData.yaml#/components/responses/307'

'308':

$ref: 'TS29122\_CommonData.yaml#/components/responses/308'

'400':

$ref: 'TS29122\_CommonData.yaml#/components/responses/400'

'401':

$ref: 'TS29122\_CommonData.yaml#/components/responses/401'

'403':

$ref: 'TS29122\_CommonData.yaml#/components/responses/403'

'404':

$ref: 'TS29122\_CommonData.yaml#/components/responses/404'

'411':

$ref: 'TS29122\_CommonData.yaml#/components/responses/411'

'413':

$ref: 'TS29122\_CommonData.yaml#/components/responses/413'

'415':

$ref: 'TS29122\_CommonData.yaml#/components/responses/415'

'429':

$ref: 'TS29122\_CommonData.yaml#/components/responses/429'

'500':

$ref: 'TS29122\_CommonData.yaml#/components/responses/500'

'503':

$ref: 'TS29122\_CommonData.yaml#/components/responses/503'

default:

$ref: 'TS29122\_CommonData.yaml#/components/responses/default'

/subscriptions:

post:

summary: Request the Creation of a new Connection Status Subscription.

operationId: CreateConnStatusSubsc

tags:

- Connection Status Subscriptions (Collection)

requestBody:

required: true

content:

application/json:

schema:

$ref: '#/components/schemas/ConnStatusSubsc'

responses:

'201':

description: >

Successful case. The requested Connection Status Subscription resource is successfully

created and a representation of the created "Individual Connection Status Subscription"

resource is returned in the response body.

content:

application/json:

schema:

$ref: '#/components/schemas/ConnStatusSubsc'

headers:

Location:

description: >

Contains the URI of the newly created Individual Connection Status Subscription

resource.

required: true

schema:

type: string

'400':

$ref: 'TS29122\_CommonData.yaml#/components/responses/400'

'401':

$ref: 'TS29122\_CommonData.yaml#/components/responses/401'

'403':

$ref: 'TS29122\_CommonData.yaml#/components/responses/403'

'404':

$ref: 'TS29122\_CommonData.yaml#/components/responses/404'

'411':

$ref: 'TS29122\_CommonData.yaml#/components/responses/411'

'413':

$ref: 'TS29122\_CommonData.yaml#/components/responses/413'

'415':

$ref: 'TS29122\_CommonData.yaml#/components/responses/415'

'429':

$ref: 'TS29122\_CommonData.yaml#/components/responses/429'

'500':

$ref: 'TS29122\_CommonData.yaml#/components/responses/500'

'503':

$ref: 'TS29122\_CommonData.yaml#/components/responses/503'

default:

$ref: 'TS29122\_CommonData.yaml#/components/responses/default'

callbacks:

ConnStatusNotif:

'{$request.body#/notifUri}':

post:

summary: Notify a previously subscribed service consumer on SEALDD connection status event(s).

requestBody:

required: true

content:

application/json:

schema:

$ref: '#/components/schemas/ConnStatusNotif'

responses:

'204':

description: >

Successful case. The Connection Status Notification is successfully received.

'307':

$ref: 'TS29122\_CommonData.yaml#/components/responses/307'

'308':

$ref: 'TS29122\_CommonData.yaml#/components/responses/308'

'400':

$ref: 'TS29122\_CommonData.yaml#/components/responses/400'

'401':

$ref: 'TS29122\_CommonData.yaml#/components/responses/401'

'403':

$ref: 'TS29122\_CommonData.yaml#/components/responses/403'

'404':

$ref: 'TS29122\_CommonData.yaml#/components/responses/404'

'411':

$ref: 'TS29122\_CommonData.yaml#/components/responses/411'

'413':

$ref: 'TS29122\_CommonData.yaml#/components/responses/413'

'415':

$ref: 'TS29122\_CommonData.yaml#/components/responses/415'

'429':

$ref: 'TS29122\_CommonData.yaml#/components/responses/429'

'500':

$ref: 'TS29122\_CommonData.yaml#/components/responses/500'

'503':

$ref: 'TS29122\_CommonData.yaml#/components/responses/503'

default:

$ref: 'TS29122\_CommonData.yaml#/components/responses/default'

/subscriptions/{subscriptionId}:

parameters:

- name: subscriptionId

in: path

description: >

Represents the identifier of the Individual Connection Status Subscription resource.

required: true

schema:

type: string

get:

summary: Retrieve an existing Individual Connection Status Subscription resource.

operationId: GetIndConnStatusSubsc

tags:

- Individual Connection Status Subscription (Document)

responses:

'200':

description: >

OK. The requested Individual Connection Status Subscription resource shall be returned.

content:

application/json:

schema:

$ref: '#/components/schemas/ConnStatusSubsc'

'307':

$ref: 'TS29122\_CommonData.yaml#/components/responses/307'

'308':

$ref: 'TS29122\_CommonData.yaml#/components/responses/308'

'400':

$ref: 'TS29122\_CommonData.yaml#/components/responses/400'

'401':

$ref: 'TS29122\_CommonData.yaml#/components/responses/401'

'403':

$ref: 'TS29122\_CommonData.yaml#/components/responses/403'

'404':

$ref: 'TS29122\_CommonData.yaml#/components/responses/404'

'406':

$ref: 'TS29122\_CommonData.yaml#/components/responses/406'

'429':

$ref: 'TS29122\_CommonData.yaml#/components/responses/429'

'500':

$ref: 'TS29122\_CommonData.yaml#/components/responses/500'

'503':

$ref: 'TS29122\_CommonData.yaml#/components/responses/503'

default:

$ref: 'TS29122\_CommonData.yaml#/components/responses/default'

put:

summary: Request the update of an existing Individual Connection Status Subscription resource.

operationId: UpdateIndConnStatusSubsc

tags:

- Individual Connection Status Subscription (Document)

requestBody:

required: true

content:

application/json:

schema:

$ref: '#/components/schemas/ConnStatusSubsc'

responses:

'200':

description: >

OK. The Individual Connection Status Subscription resource is successfully updated and

a representation of the updated resource shall be returned in the response body.

content:

application/json:

schema:

$ref: '#/components/schemas/ConnStatusSubsc'

'204':

description: >

No Content. The Individual Connection Status Subscription resource is successfully

updated and no content is returned in the response body.

'307':

$ref: 'TS29122\_CommonData.yaml#/components/responses/307'

'308':

$ref: 'TS29122\_CommonData.yaml#/components/responses/308'

'400':

$ref: 'TS29122\_CommonData.yaml#/components/responses/400'

'401':

$ref: 'TS29122\_CommonData.yaml#/components/responses/401'

'403':

$ref: 'TS29122\_CommonData.yaml#/components/responses/403'

'404':

$ref: 'TS29122\_CommonData.yaml#/components/responses/404'

'411':

$ref: 'TS29122\_CommonData.yaml#/components/responses/411'

'413':

$ref: 'TS29122\_CommonData.yaml#/components/responses/413'

'415':

$ref: 'TS29122\_CommonData.yaml#/components/responses/415'

'429':

$ref: 'TS29122\_CommonData.yaml#/components/responses/429'

'500':

$ref: 'TS29122\_CommonData.yaml#/components/responses/500'

'503':

$ref: 'TS29122\_CommonData.yaml#/components/responses/503'

default:

$ref: 'TS29122\_CommonData.yaml#/components/responses/default'

patch:

summary: Request the modification of an existing Individual Connection Status Subscription resource.

operationId: ModifyIndConnStatusSubsc

tags:

- Individual Connection Status Subscription (Document)

requestBody:

required: true

content:

application/merge-patch+json:

schema:

$ref: '#/components/schemas/ConnStatusSubscPatch'

responses:

'200':

description: >

OK. The Individual Connection Status Subscription resource is successfully modified

and a representation of the updated resource shall be returned in the response body.

content:

application/json:

schema:

$ref: '#/components/schemas/ConnStatusSubsc'

'204':

description: >

No Content. The Individual Connection Status Subscription resource is successfully

modified and no content is returned in the response body.

'307':

$ref: 'TS29122\_CommonData.yaml#/components/responses/307'

'308':

$ref: 'TS29122\_CommonData.yaml#/components/responses/308'

'400':

$ref: 'TS29122\_CommonData.yaml#/components/responses/400'

'401':

$ref: 'TS29122\_CommonData.yaml#/components/responses/401'

'403':

$ref: 'TS29122\_CommonData.yaml#/components/responses/403'

'404':

$ref: 'TS29122\_CommonData.yaml#/components/responses/404'

'411':

$ref: 'TS29122\_CommonData.yaml#/components/responses/411'

'413':

$ref: 'TS29122\_CommonData.yaml#/components/responses/413'

'415':

$ref: 'TS29122\_CommonData.yaml#/components/responses/415'

'429':

$ref: 'TS29122\_CommonData.yaml#/components/responses/429'

'500':

$ref: 'TS29122\_CommonData.yaml#/components/responses/500'

'503':

$ref: 'TS29122\_CommonData.yaml#/components/responses/503'

default:

$ref: 'TS29122\_CommonData.yaml#/components/responses/default'

delete:

summary: Request the deletion of an existing Individual Connection Status Subscription resource.

operationId: DeleteIndConnStatusSubsc

tags:

- Individual Connection Status Subscription (Document)

responses:

'204':

description: >

No Content. The Individual Connection Status Subscription resource is successfully

deleted.

'307':

$ref: 'TS29122\_CommonData.yaml#/components/responses/307'

'308':

$ref: 'TS29122\_CommonData.yaml#/components/responses/308'

'400':

$ref: 'TS29122\_CommonData.yaml#/components/responses/400'

'401':

$ref: 'TS29122\_CommonData.yaml#/components/responses/401'

'403':

$ref: 'TS29122\_CommonData.yaml#/components/responses/403'

'404':

$ref: 'TS29122\_CommonData.yaml#/components/responses/404'

'429':

$ref: 'TS29122\_CommonData.yaml#/components/responses/429'

'500':

$ref: 'TS29122\_CommonData.yaml#/components/responses/500'

'503':

$ref: 'TS29122\_CommonData.yaml#/components/responses/503'

default:

$ref: 'TS29122\_CommonData.yaml#/components/responses/default'

components:

securitySchemes:

oAuth2ClientCredentials:

type: oauth2

flows:

clientCredentials:

tokenUrl: '{tokenUrl}'

scopes: {}

schemas:

#

# STRUCTURED DATA TYPES

#

TransReq:

description: >

Represents the parameters to request the SEALDD enabled Regular or URLLC application data

transmission service.

type: object

properties:

valServiceId:

type: string

valTargetId:

$ref: 'TS29549\_SS\_UserProfileRetrieval.yaml#/components/schemas/ValTargetUe'

valServerConnInfo:

$ref: '#/components/schemas/ConnInfo'

qosInfo:

$ref: '#/components/schemas/QosInfo'

valServerBdw:

$ref: '#/components/schemas/ValServBdw'

valUsersBdw:

$ref: '#/components/schemas/ValUsersBdw'

suppFeat:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/SupportedFeatures'

required:

- valServerConnInfo

TransResp:

description: >

Represents a SEALDD enabled Regular or URLLC application data transmission service response.

type: object

properties:

ddServerConnInfo:

$ref: '#/components/schemas/ConnInfo'

suppFeat:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/SupportedFeatures'

ConnInfo:

description: >

Represents SEALDD Data transmission connection information.

type: object

properties:

ipv4Addr:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Ipv4Addr'

ipv6Addr:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Ipv6Addr'

port:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/Port'

uri:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/Uri'

oneOf:

- required: [ipv4Addr]

- required: [ipv6Addr]

- required: [uri]

QosInfo:

description: >

Represents SEALDD related QoS requirements.

type: object

properties:

qosReference:

type: string

altQoSReferences:

type: array

items:

type: string

minItems: 1

altQosReqs:

type: array

items:

$ref: 'TS29514\_Npcf\_PolicyAuthorization.yaml#/components/schemas/AlternativeServiceRequirementsData'

minItems: 1

anyOf:

- required: [qosReference]

- required: [altQoSReferences]

- required: [altQosReqs]

- not:

required: [altQoSReferences, altQosReqs]

- not:

required: [qosReference, altQosReqs]

ValServBdw:

description: >

Represents VAL Server related bandwidth information.

type: object

properties:

totalUlBdw:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/Bandwidth'

totalDlBdw:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/Bandwidth'

required:

- totalUlBdw

- totalDlBdw

ValUsersBdw:

description: >

Represents VAL users related bandwidth information.

type: object

properties:

minUlBdw:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/Bandwidth'

minDlBdw:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/Bandwidth'

maxUlBdw:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/Bandwidth'

maxDlBdw:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/Bandwidth'

required:

- minUlBdw

- minDlBdw

- maxUlBdw

- maxDlBdw

ConnStatusSubsc:

description: >

Represents a Connection Status Subscription.

type: object

properties:

events:

type: array

items:

$ref: '#/components/schemas/ConnStatusEvent'

minItems: 1

description: >

Represents the subscribed event(s).

valServiceId:

type: string

valTgtUe:

$ref: 'TS29549\_SS\_UserProfileRetrieval.yaml#/components/schemas/ValTargetUe'

valServerConnInfo:

$ref: '#/components/schemas/ConnInfo'

notifUri:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/Uri'

expTime:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/DateTimeRo'

suppFeat:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/SupportedFeatures'

required:

- events

- valServerConnInfo

- notifUri

ConnStatusSubscPatch:

description: >

Represents the requested modifications to a Connection Status Subscription.

type: object

properties:

events:

type: array

items:

$ref: '#/components/schemas/ConnStatusEvent'

minItems: 1

valServiceId:

type: string

valTgtUe:

$ref: 'TS29549\_SS\_UserProfileRetrieval.yaml#/components/schemas/ValTargetUe'

valServerConnInfo:

$ref: '#/components/schemas/ConnInfo'

notifUri:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/Uri'

ConnStatusNotif:

description: >

Represents a Connection Status Notification.

type: object

properties:

subscriptionId:

type: string

reports:

type: array

items:

$ref: '#/components/schemas/ConnStatusReport'

minItems: 1

required:

- subscriptionId

- reports

ConnStatusReport:

description: >

Represents a Connection Status Event report.

type: object

properties:

event:

$ref: '#/components/schemas/ConnStatusEvent'

valTgtUe:

$ref: 'TS29549\_SS\_UserProfileRetrieval.yaml#/components/schemas/ValTargetUe'

valServiceId:

type: string

connEstData:

$ref: '#/components/schemas/ConnEstabData'

timestamp:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/DateTime'

required:

- event

- valTgtUe

- valServiceId

ConnEstabData:

description: >

Represents SEALDD connection status establishment data.

type: object

properties:

ddServerConnInfo:

$ref: '#/components/schemas/ConnInfo'

comLifetime:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/DurationSec'

required:

- ddServerConnInfo

# SIMPLE DATA TYPES

#

#

# ENUMERATIONS

#

ConnStatusEvent:

anyOf:

- type: string

enum:

- ESTABLISHED

- RELEASED

- type: string

description: >

This string provides forward-compatibility with future extensions to the enumeration

and is not used to encode content defined in the present version of this API.

description: |

Represents Connection Status Events.

Possible values are:

- ESTABLISHED: Indicates that the SEALDD connection is established.

- RELEASED: Indicates that the SEALDD connection is released.

TransType:

anyOf:

- type: string

enum:

- regular

- urllc

- type: string

description: >

This string provides forward-compatibility with future extensions to the enumeration

and is not used to encode content defined in the present version of this API.

description: |

Represents the requested transmission type.

Possible values are:

- regular: Indicates that the requested transmission type is Regular transmission.

- urllc: Indicates that the requested transmission type is URLLC transmission.

# Data types describing alternative data types or combinations of data types:

#

\* \* \* Next change \* \* \* \*

# A.5 SDD\_TransmissionQualityMeasurement API

openapi: 3.0.0

info:

title: SEALDD Server Data Transmission Quality Measurement Service

version: 1.0.0-alpha.6

description: |

SEALDD Server Data Transmission Quality Measurement Service.

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externalDocs:

description: >

3GPP TS 29.548 V1.1.0; Service Enabler Architecture Layer for Verticals (SEAL);

SEAL Data Delivery (SEALDD) Server Services; Stage 3.

url: https://www.3gpp.org/ftp/Specs/archive/29\_series/29.548/

servers:

- url: '{apiRoot}/sdd-tqm/v1'

variables:

apiRoot:

default: https://example.com

description: apiRoot as defined in clause 6.5 of 3GPP TS 29.549

security:

- {}

- oAuth2ClientCredentials: []

paths:

/subscriptions:

post:

summary: Request the creation of a Transmission Quality Measurement Subscription.

operationId: CreateTransQualMeasSubsc

tags:

- Transmission Quality Measurement Subscriptions (Collection)

requestBody:

required: true

content:

application/json:

schema:

$ref: '#/components/schemas/TransQualMeasSubsc'

responses:

'201':

description: >

Created. The Transmission Quality Measurement Subscription is successfully created

and a representation of the created Individual Transmission Quality Measurement

Subscription resource shall be returned.

content:

application/json:

schema:

$ref: '#/components/schemas/TransQualMeasSubsc'

headers:

Location:

description: >

Contains the URI of the created Individual Transmission Quality Measurement

Subscription resource.

required: true

schema:

type: string

'400':

$ref: 'TS29122\_CommonData.yaml#/components/responses/400'

'401':

$ref: 'TS29122\_CommonData.yaml#/components/responses/401'

'403':

$ref: 'TS29122\_CommonData.yaml#/components/responses/403'

'404':

$ref: 'TS29122\_CommonData.yaml#/components/responses/404'

'411':

$ref: 'TS29122\_CommonData.yaml#/components/responses/411'

'413':

$ref: 'TS29122\_CommonData.yaml#/components/responses/413'

'415':

$ref: 'TS29122\_CommonData.yaml#/components/responses/415'

'429':

$ref: 'TS29122\_CommonData.yaml#/components/responses/429'

'500':

$ref: 'TS29122\_CommonData.yaml#/components/responses/500'

'503':

$ref: 'TS29122\_CommonData.yaml#/components/responses/503'

default:

$ref: 'TS29122\_CommonData.yaml#/components/responses/default'

callbacks:

TransQualMeasNotif:

'{$request.body#/notifUri}':

post:

requestBody:

required: true

content:

application/json:

schema:

$ref: '#/components/schemas/TransQualMeasNotif'

responses:

'204':

description: >

No Content. The Transmission Quality Measurement notification is successfully

received and acknowledged.

'307':

$ref: 'TS29122\_CommonData.yaml#/components/responses/307'

'308':

$ref: 'TS29122\_CommonData.yaml#/components/responses/308'

'400':

$ref: 'TS29122\_CommonData.yaml#/components/responses/400'

'401':

$ref: 'TS29122\_CommonData.yaml#/components/responses/401'

'403':

$ref: 'TS29122\_CommonData.yaml#/components/responses/403'

'404':

$ref: 'TS29122\_CommonData.yaml#/components/responses/404'

'411':

$ref: 'TS29122\_CommonData.yaml#/components/responses/411'

'413':

$ref: 'TS29122\_CommonData.yaml#/components/responses/413'

'415':

$ref: 'TS29122\_CommonData.yaml#/components/responses/415'

'429':

$ref: 'TS29122\_CommonData.yaml#/components/responses/429'

'500':

$ref: 'TS29122\_CommonData.yaml#/components/responses/500'

'503':

$ref: 'TS29122\_CommonData.yaml#/components/responses/503'

default:

$ref: 'TS29122\_CommonData.yaml#/components/responses/default'

/subscriptions/{subscriptionId}:

parameters:

- name: subscriptionId

in: path

description: >

Represents the identifier of the Individual Transmission Quality Measurement Subscription

resource.

required: true

schema:

type: string

get:

summary: Retrieve an existing Individual Transmission Quality Measurement Subscription resource.

operationId: GetIndTransQualMeasSubsc

tags:

- Individual Transmission Quality Measurement Subscription (Document)

responses:

'200':

description: >

OK. The requested Individual Transmission Quality Measurement Subscription resource

shall be returned.

content:

application/json:

schema:

$ref: '#/components/schemas/TransQualMeasSubsc'

'307':

$ref: 'TS29122\_CommonData.yaml#/components/responses/307'

'308':

$ref: 'TS29122\_CommonData.yaml#/components/responses/308'

'400':

$ref: 'TS29122\_CommonData.yaml#/components/responses/400'

'401':

$ref: 'TS29122\_CommonData.yaml#/components/responses/401'

'403':

$ref: 'TS29122\_CommonData.yaml#/components/responses/403'

'404':

$ref: 'TS29122\_CommonData.yaml#/components/responses/404'

'406':

$ref: 'TS29122\_CommonData.yaml#/components/responses/406'

'429':

$ref: 'TS29122\_CommonData.yaml#/components/responses/429'

'500':

$ref: 'TS29122\_CommonData.yaml#/components/responses/500'

'503':

$ref: 'TS29122\_CommonData.yaml#/components/responses/503'

default:

$ref: 'TS29122\_CommonData.yaml#/components/responses/default'

put:

summary: Request the update of an existing Individual Transmission Quality Measurement Subscription resource.

operationId: UpdateIndTransQualMeasSubsc

tags:

- Individual Transmission Quality Measurement Subscription (Document)

requestBody:

required: true

content:

application/json:

schema:

$ref: '#/components/schemas/TransQualMeasSubsc'

responses:

'200':

description: >

OK. The Individual Transmission Quality Measurement Subscription resource is

successfully updated and a representation of the updated resource shall be returned in

the response body.

content:

application/json:

schema:

$ref: '#/components/schemas/TransQualMeasSubsc'

'204':

description: >

No Content. The Individual Transmission Quality Measurement Subscription resource is

successfully updated and no content is returned in the response body.

'307':

$ref: 'TS29122\_CommonData.yaml#/components/responses/307'

'308':

$ref: 'TS29122\_CommonData.yaml#/components/responses/308'

'400':

$ref: 'TS29122\_CommonData.yaml#/components/responses/400'

'401':

$ref: 'TS29122\_CommonData.yaml#/components/responses/401'

'403':

$ref: 'TS29122\_CommonData.yaml#/components/responses/403'

'404':

$ref: 'TS29122\_CommonData.yaml#/components/responses/404'

'406':

$ref: 'TS29122\_CommonData.yaml#/components/responses/406'

'429':

$ref: 'TS29122\_CommonData.yaml#/components/responses/429'

'500':

$ref: 'TS29122\_CommonData.yaml#/components/responses/500'

'503':

$ref: 'TS29122\_CommonData.yaml#/components/responses/503'

default:

$ref: 'TS29122\_CommonData.yaml#/components/responses/default'

patch:

summary: Request the modification of an existing Individual Transmission Quality Measurement Subscription resource.

operationId: ModifyIndTransQualMeasSubsc

tags:

- Individual Transmission Quality Measurement Subscription (Document)

requestBody:

required: true

content:

application/merge-patch+json:

schema:

$ref: '#/components/schemas/TransQualMeasSubscPatch'

responses:

'200':

description: >

OK. The Individual Transmission Quality Measurement Subscription resource is

successfully modified and a representation of the updated resource shall be returned in

the response body.

content:

application/json:

schema:

$ref: '#/components/schemas/TransQualMeasSubsc'

'204':

description: >

No Content. The Individual Transmission Quality Measurement Subscription resource is

successfully modified and no content is returned in the response body.

'307':

$ref: 'TS29122\_CommonData.yaml#/components/responses/307'

'308':

$ref: 'TS29122\_CommonData.yaml#/components/responses/308'

'400':

$ref: 'TS29122\_CommonData.yaml#/components/responses/400'

'401':

$ref: 'TS29122\_CommonData.yaml#/components/responses/401'

'403':

$ref: 'TS29122\_CommonData.yaml#/components/responses/403'

'404':

$ref: 'TS29122\_CommonData.yaml#/components/responses/404'

'406':

$ref: 'TS29122\_CommonData.yaml#/components/responses/406'

'429':

$ref: 'TS29122\_CommonData.yaml#/components/responses/429'

'500':

$ref: 'TS29122\_CommonData.yaml#/components/responses/500'

'503':

$ref: 'TS29122\_CommonData.yaml#/components/responses/503'

default:

$ref: 'TS29122\_CommonData.yaml#/components/responses/default'

delete:

summary: Request the deletion of an existing Individual Transmission Quality Measurement Subscription resource.

operationId: DeleteIndTransQualMeasSubsc

tags:

- Individual Transmission Quality Measurement Subscription (Document)

responses:

'204':

description: >

No Content. The Individual Transmission Quality Measurement Subscription resource is

successfully deleted.

'307':

$ref: 'TS29122\_CommonData.yaml#/components/responses/307'

'308':

$ref: 'TS29122\_CommonData.yaml#/components/responses/308'

'400':

$ref: 'TS29122\_CommonData.yaml#/components/responses/400'

'401':

$ref: 'TS29122\_CommonData.yaml#/components/responses/401'

'403':

$ref: 'TS29122\_CommonData.yaml#/components/responses/403'

'404':

$ref: 'TS29122\_CommonData.yaml#/components/responses/404'

'406':

$ref: 'TS29122\_CommonData.yaml#/components/responses/406'

'429':

$ref: 'TS29122\_CommonData.yaml#/components/responses/429'

'500':

$ref: 'TS29122\_CommonData.yaml#/components/responses/500'

'503':

$ref: 'TS29122\_CommonData.yaml#/components/responses/503'

default:

$ref: 'TS29122\_CommonData.yaml#/components/responses/default'

/reports:

get:

summary: Retrieve Historical Transmission Quality Measurement Report(s).

operationId: GetHistTransQualMeasReports

tags:

- Historical Transmission Quality Measurement Reports (Collection)

parameters:

- name: app-traffic-ids

in: query

required: true

schema:

type: array

items:

type: string

minItems: 1

- name: val-group-id

in: query

required: false

schema:

type: string

- name: val-ue-ids-list

in: query

required: false

schema:

type: array

items:

type: string

minItems: 1

- name: all-val-ues

in: query

required: false

schema:

type: boolean

default: false

description: >

Indicates that the request is related to all VAL UE(s) of the application traffic

identified by the application traffic identifier(s) provided within the

appTrafficIds attribute.

true indicates that the request is related to all VAL UE(s).

false" indicates that the request is not related to all VAL UE(s).

The default value when this query parameter is omitted is false.

- name: supp-feat

in: query

required: false

schema:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/SupportedFeatures'

responses:

'200':

description: >

OK. The requested Historical Transmission Quality Measurement Report(s) shall be

returned.

content:

application/json:

schema:

$ref: '#/components/schemas/HistTransQualMeasReports'

'307':

$ref: 'TS29122\_CommonData.yaml#/components/responses/307'

'308':

$ref: 'TS29122\_CommonData.yaml#/components/responses/308'

'400':

$ref: 'TS29122\_CommonData.yaml#/components/responses/400'

'401':

$ref: 'TS29122\_CommonData.yaml#/components/responses/401'

'403':

$ref: 'TS29122\_CommonData.yaml#/components/responses/403'

'404':

$ref: 'TS29122\_CommonData.yaml#/components/responses/404'

'406':

$ref: 'TS29122\_CommonData.yaml#/components/responses/406'

'429':

$ref: 'TS29122\_CommonData.yaml#/components/responses/429'

'500':

$ref: 'TS29122\_CommonData.yaml#/components/responses/500'

'503':

$ref: 'TS29122\_CommonData.yaml#/components/responses/503'

default:

$ref: 'TS29122\_CommonData.yaml#/components/responses/default'

components:

securitySchemes:

oAuth2ClientCredentials:

type: oauth2

flows:

clientCredentials:

tokenUrl: '{tokenUrl}'

scopes: {}

schemas:

#

# STRUCTURED DATA TYPES

#

TransQualMeasSubsc:

description: >

Represents a Transmission Quality Measurement Subscription.

type: object

properties:

appTrafficIds:

type: array

items:

type: string

minItems: 1

valGroupId:

type: string

valUeIdsList:

type: array

items:

type: string

minItems: 1

valUserIdsList:

type: array

items:

type: string

minItems: 1

allValUesInd:

type: boolean

default: false

measConds:

type: array

items:

$ref: 'TS29549\_SS\_Events.yaml#/components/schemas/ValidityConditions'

minItems: 1

reqs:

type: object

additionalProperties:

$ref: '#/components/schemas/TransQualMeasReq'

minProperties: 1

nullable: true

description: >

Represents the transmission quality measurement reporting requirements of the

subscription.

The key of the map shall be any unique string encoded value.

subsExpTime:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/DateTimeRo'

notifUri:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/Uri'

suppFeat:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/SupportedFeatures'

required:

- appTrafficIds

- reqs

- notifUri

oneOf:

- required: [valGroupId]

- required: [valUeIdsList]

- required: [valUserIdsList]

- required: [allValUesInd]

TransQualMeasReq:

description: >

Represents Transmission Quality Measurement requirements.

type: object

properties:

measId:

type: array

items:

$ref: '#/components/schemas/MeasurementId'

minItems: 1

repType:

$ref: 'TS29508\_Nsmf\_EventExposure.yaml#/components/schemas/NotificationMethod'

repPeriodicity:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/DurationSec'

repGranularity:

$ref: '#/components/schemas/RepGranularity'

measWindow:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/TimeWindow'

measExpTime:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/DateTime'

repCriteriaSets:

type: object

additionalProperties:

$ref: '#/components/schemas/TransQualMeasCriteriaSet'

minProperties: 1

description: >

Contains one or several set(s) of transmission quality measurement reporting

criteria.

The key of the map shall be any unique string encoded value.

Only the criteria related to the subscribed measurement(s) within the measId attribute

shall be present within this attribute.

required:

- measId

TransQualMeasSubscPatch:

description: >

Represents the requested modifications to a Transmission Quality Measurement Subscription.

type: object

properties:

measConds:

type: array

items:

$ref: 'TS29549\_SS\_Events.yaml#/components/schemas/ValidityConditions'

minItems: 1

reqs:

type: object

additionalProperties:

$ref: '#/components/schemas/TransQualMeasReq'

minProperties: 1

nullable: true

description: >

Represents the transmission quality measurement reporting requirements of the

subscription.

The key of the map shall be any unique string encoded value and shall be set to the same

value as the one provided during the creation of the transmission quality measurement

subscription.

notifUri:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/Uri'

TransQualMeasNotif:

description: >

Represents a Transmission Quality Measurement Notification.

type: object

properties:

subscriptionId:

type: string

reports:

type: array

items:

$ref: '#/components/schemas/TransQualMeasReport'

minItems: 1

required:

- subscriptionId

- reports

TransQualMeasReport:

description: >

Represents a Transmission Quality Measurement report.

type: object

properties:

measId:

type: array

items:

$ref: '#/components/schemas/MeasurementId'

minItems: 1

valUeIds:

type: array

items:

type: string

minItems: 1

valUserIds:

type: array

items:

type: string

minItems: 1

measData:

$ref: '#/components/schemas/TransQualMeasData'

timestamp:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/DateTime'

required:

- measId

not:

required: [valUeIds, valUserIds]

TransQualMeasCriteria:

description: >

Represents the Transmission Quality Measurement reporting criteria.

type: object

properties:

minLatency:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uinteger'

avgLatency:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uinteger'

maxLatency:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uinteger'

minBitRate:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/BitRate'

avgBitRate:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/BitRate'

maxBitRate:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/BitRate'

minPackLossRate:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/PacketLossRate'

avgPackLossRate:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/PacketLossRate'

maxPackLossRate:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/PacketLossRate'

minJitter:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uint32'

avgJitter:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uint32'

maxJitter:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uint32'

oneOf:

- required: [minLatency]

- required: [avgLatency]

- required: [maxLatency]

- required: [minBitRate]

- required: [avgBitRate]

- required: [maxBitRate]

- required: [minPackLossRate]

- required: [avgPackLossRate]

- required: [maxPackLossRate]

- required: [minJitter]

- required: [avgJitter]

- required: [maxJitter]

TransQualMeasData:

description: >

Represents the Transmission Quality Measurement data.

type: object

properties:

minLatency:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uinteger'

maxLatency:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uinteger'

avgLatency:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uinteger'

stdDevLatency:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uinteger'

kPercLatency:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uinteger'

kValLatency:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uinteger'

minBitRate:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/BitRate'

maxBitRate:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/BitRate'

avgBitRate:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/BitRate'

stdDevBitRate:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/BitRate'

kPercBitRate:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/BitRate'

kValBitRate:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uinteger'

minPackLossRate:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/PacketLossRate'

maxPackLossRate:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/PacketLossRate'

avgPackLossRate:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/PacketLossRate'

stdDevPackLossRate:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/PacketLossRate'

kPercPackLossRate:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/PacketLossRate'

kValPackLossRate:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uinteger'

minJitter:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uint32'

maxJitter:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uint32'

avgJitter:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uint32'

stdDevJitter:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uint32'

kPercJitter:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uint32'

kValJitter:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Uinteger'

measPeriod:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/DurationSec'

timestamp:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/DateTime'

anyOf:

- required: [minLatency]

- required: [maxLatency]

- required: [avgLatency]

- required: [minBitRate]

- required: [maxBitRate]

- required: [avgBitRate]

- required: [minPackLossRate]

- required: [maxPackLossRate]

- required: [avgPackLossRate]

- required: [minJitter]

- required: [maxJitter]

- required: [avgJitter]

HistTransQualMeasReports:

description: >

Represents Historical Transmission Quality Measurement Report(s).

type: object

properties:

reports:

type: array

items:

$ref: '#/components/schemas/TransQualMeasReport'

minItems: 0

suppFeat:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/SupportedFeatures'

required:

- reports

TransQualMeasCriteriaSet:

description: >

Represents a set of transmission quality measurement reporting criteria.

type: object

properties:

criteria:

$ref: '#/components/schemas/TransQualMeasCriteria'

direction:

$ref: 'TS29520\_Nnwdaf\_EventsSubscription.yaml#/components/schemas/MatchingDirection'

required:

- criteria

- direction

# SIMPLE DATA TYPES

#

#

# ENUMERATIONS

#

MeasurementId:

anyOf:

- type: string

enum:

- LATENCY

- BITRATE

- PACKET\_LOSS\_RATE

- JITTER

- type: string

description: >

This string provides forward-compatibility with future extensions to the enumeration

and is not used to encode content defined in the present version of this API.

description: |

Represents the transmission quality measurement type.

Possible values are:

- LATENCY: Indicates that the requested/reported measurement is the latency.

- BITRATE: Indicates that the requested/reported measurement is the bit rate.

- PACKET\_LOSS\_RATE: Indicates that the requested/reported measurement is the packet loss

rate.

- JITTER: Indicates that the requested/reported measurement is the jitter.

RepGranularity:

anyOf:

- type: string

enum:

- INDIVIDUAL\_VAL\_UE

- VAL\_GROUP

- ALL\_VAL\_UES

- type: string

description: >

This string provides forward-compatibility with future extensions to the enumeration

and is not used to encode content defined in the present version of this API.

description: |

Represents the reporting granularity.

Possible values are:

- INDIVIDUAL\_VAL\_UE: Indicates that the granularity is individual VAL UE/user.

- VAL\_GROUP: Indicates that the granularity is VAL Group.

- ALL\_VAL\_UES: Indicates that the granularity is all VAL UE/user(s).

# Data types describing alternative data types or combinations of data types:

#

\* \* \* End of changes \* \* \* \*