**3GPP TSG-CT WG3 Meeting #125 *C3-225196\_R1***

**Toulouse, France, 14th – 18th November 2022**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **29.549** | **CR** | **0122** | **rev** | **-** | **Current version:** | **17.6.0** |  |
|  | | | | | | | | |
| *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:*** | OpenAPI implementation for the Update\_Unicast\_QoS\_Monitoring\_Subscription service operation in the SS\_NetworkResourceMonitoring API | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Ericsson | | | | | | | | | |
| ***Source to TSG:*** | CT3 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | eSEAL2 | | | | |  | ***Date:*** | | | 2022-11-01 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **B** |  | | | | | ***Release:*** | | | Rel-18 |
|  | *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-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | The VAL server needs a mechanism to update an existing individual unicast QoS monitoring subscription on the NRM server side. The clause 14.4.4.6 of 3GPP TS 23.434 (CR #0112 of 3GPP TS 23.434) defines this functionality. However, the necessary procedure, HTTP metods and data structures are not defined in the current version of 3GPP TS 29.549. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | This CR intoroduces OpenAPI implementations for the Update\_Unicast\_QoS\_Monitoring service operation and related data structure in the SS\_NetworkResourceMonitoring API. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | * Impossiblity to replace or partially modify a unicast QoS monitoring subscription in the SS\_NetworkResourceMonitoring API. * Misaligment with the Stage 2 requirements. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | A.10; | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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 provides a backwards compatible feature for TS29549\_SS\_NetworkResourceMonitoring.yaml OpenAPI file. | | | | | | | | |
| ***()*** | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

**Additional discussion(if needed):**

**Proposed changes:**

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

# A.10 SS\_NetworkResourceMonitoring API

openapi: 3.0.0

info:

title: SS\_NetworkResourceMonitoring

description: |

API for SEAL Network Resource Monitoring.

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version: "1.0.1"

externalDocs:

description: >

3GPP TS 29.549 V17.6.0 Service Enabler Architecture Layer for Verticals (SEAL);

Application Programming Interface (API) specification; Stage 3.

url: https://www.3gpp.org/ftp/Specs/archive/29\_series/29.549/

security:

- {}

- oAuth2ClientCredentials: []

servers:

- url: '{apiRoot}/ss-nrm/v1'

variables:

apiRoot:

default: https://example.com

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

paths:

/subscriptions:

post:

summary: Create individual unicast monitoring subscription resource or obtain unicast QoS monitoring data for VAL UEs, VAL Group, or VAL Streams.

operationId: SubscribeUnicastMonitoring

tags:

- Unicast Monitoring Subscriptions (Collection)

requestBody:

required: true

content:

application/json:

schema:

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

responses:

'201':

description: >

The requested individual monitoring subscription resource is successfully created

and a representation of the created resource is returned in the response body.

content:

application/json:

schema:

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

headers:

Location:

description: Contains the URI of the newly created individual monitoring resource.

required: true

schema:

type: string

'200':

description: The requested unicast QoS monitoring data is returned.

content:

application/json:

schema:

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

'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:

NotifyUnicastMonitoringData:

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

post:

summary: Notify on updates of the individual monitoring resorce accoring the requested reporting settings.

requestBody:

required: true

content:

application/json:

schema:

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

responses:

'204':

description: The 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}:

delete:

summary: Remove an existing individual unicast monitoring subscription resource according to the subscriptionId.

operationId: UnsubscribeUnicastMonitoring

tags:

- Individual Unicast Monitoring Subscription (Document)

parameters:

- name: subscriptionId

in: path

description: >

Represents the identifier of an individual unicast monitoring subscription resource.

required: true

schema:

type: string

responses:

'204':

description: >

The Individual Unicast Monitoring Subscription resource matching the

subscriptionId is 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'

get:

summary: Read an existing individual unicast monitoring subscription resource according to the subscriptionId.

operationId: ReadUnicastMonitoringSubscription

tags:

- Individual Unicast Monitoring Subscription (Document)

parameters:

- name: subscriptionId

in: path

description: >

Represents the identifier of an individual unicast monitoring subscription resource.

required: true

schema:

type: string

responses:

'200':

description: The requested individual unicast monitoring subscription returned.

content:

application/json:

schema:

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

'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'

put:

summary: >

Update an individual unicast monitoring subscription identified by the subscriptionId.

operationId: UpdateUnicastMonitoring

tags:

- Individual Unicast Monitoring Subscription (Document)

parameters:

- name: subscriptionId

in: path

description: >

Represents the identifier of an individual unicast monitoring subscription resource.

required: true

schema:

type: string

requestBody:

description: Updated details of the unicast QoS monitoring subscription.

required: true

content:

application/json:

schema:

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

responses:

'200':

description: >

The subscription is updated successfully, and the updated subscription

information returned in the response.

content:

application/json:

schema:

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

'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: >

Modify an individual unicast monitoring subscription identified

by the subscriptionId.

operationId: ModifyUnicastMonitoring

tags:

- Individual Unicast Monitoring Subscription (Document)

parameters:

- name: subscriptionId

in: path

description: >

Represents the identifier of an individual unicast monitoring subscription resource.

required: true

schema:

type: string

requestBody:

required: true

content:

application/merge-patch+json:

schema:

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

responses:

'200':

description: >

Individual individual unicast QoS monitoring subscription resource is modified

successfully and representation of the modified individual unicast QoS monitoring

subscription resource is returned.

content:

application/json:

schema:

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

'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'

components:

securitySchemes:

oAuth2ClientCredentials:

type: oauth2

flows:

clientCredentials:

tokenUrl: '{tokenUrl}'

scopes: {}

schemas:

MonitoringReport:

description: Indicates the monitoring information for VAL UEs list, VAL Group, or VAL Stream.

type: object

properties:

valUeIds:

type: array

minItems: 1

items:

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

description: List of VAL UEs whose QoS monitoring data is requested.

valGroupId:

type: string

description: The VAL Group Id which QoS monitoring data is requested.

valStreamIds:

type: array

minItems: 1

items:

type: string

description: List of VAL streams for which QoS monitoring data is requested.

measData:

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

failureRep:

type: array

items:

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

description: >

The failure report indicating the VAL UE(s) or VAL Stream ID(s) whose measurement

data is not obtained successfully.

timestamp:

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

required:

- measData

- timestamp

oneOf:

- required: [valUeIds]

- required: [valGroupId]

- required: [valStreamIds]

MeasurementData:

description: Presents the aggregated measurement data.

type: object

properties:

dlDelay:

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

ulDelay:

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

rtDelay:

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

avgPlr:

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

avgDataRate:

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

maxDataRate:

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

avrDlTrafficVol:

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

avrUlTrafficVol:

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

anyOf:

- required: [dlDelay]

- required: [ulDelay]

- required: [rtDelay]

- required: [avgPlr]

- required: [avgDataRate]

- required: [maxDataRate]

- required: [avrDlTrafficVol]

- required: [avrUlTrafficVol]

MeasurementPeriod:

description: >

Indicates the measurement time period.

type: object

properties:

measStartTime:

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

measDuration:

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

required:

- measStartTime

- measDuration

ReportingRequirements:

description: Indicates the requested frequency of reporting.

type: object

properties:

reportingMode:

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

reportingPeriod:

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

reportingThrs:

type: array

items:

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

minItems: 1

immRep:

type: boolean

repTerminMode:

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

expirationTimer:

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

maxNumRep:

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

termThr:

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

termThrMode:

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

required:

- reportingMode

FailureReport:

description: >

Represents the failure report indicating the VAL UE(s) or VAL Stream ID(s)

for which the NRM server failed to obtain the requested data.

type: object

properties:

valUeIds:

type: array

minItems: 1

items:

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

description: >

List of VAL UE(s) whose measurement data is not obtained successfully.

valStreamIds:

type: array

minItems: 1

items:

type: string

description: >

List of VAL stream ID(s) whose measurement data is not obtained successfully.

failureReason:

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

measDataType:

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

required:

- measDataType

MeasurementRequirements:

description: Indicates the measurement requirements.

type: object

properties:

measDataTypes:

type: array

items:

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

minItems: 1

description: Indicates the required the QoS measurement data types.

measAggrGranWnd:

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

measPeriod:

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

required:

- measDataTypes

MonitoringSubscription:

description: The unicast monitoring subscription request.

type: object

properties:

valUeIds:

description: List of VAL UEs whose QoS monitoring data is requested.

type: array

minItems: 1

items:

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

valGroupId:

type: string

description: The VAL Group Id which QoS monitoring data is requested.

valStreamIds:

type: array

minItems: 1

items:

type: string

description: List of VAL streams for which QoS monitoring data is requested.

measReqs:

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

monRep:

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

reportReqs:

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

notifUri:

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

reqTestNotif:

type: boolean

wsNotifCfg:

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

suppFeat:

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

oneOf:

- required: [valUeIds]

- required: [valGroupId]

- required: [valStreamIds]

ReportingThreshold:

description: >

Indicates the requested reporting termination threshold for the measurement index(es).

type: object

properties:

measThrValues:

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

thrDirection:

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

required:

- measThrValues

- thrDirection

MonitoringSubscriptionPatch:

description: Represents the monitoring subscription partial modification request.

type: object

properties:

measReqs:

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

reportReqs:

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

notifUri:

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

# Simple data types and Enumerations

MeasurementDataType:

anyOf:

- type: string

enum:

- DL\_DELAY

- UL\_DELAY

- RT\_DELAY

- AVG\_PLR

- AVG\_DATA\_RATE

- MAX\_DATA\_RATE

- AVG\_DL\_TRAFFIC\_VOLUME

- AVG\_UL\_TRAFFIC\_VOLUME

- type: string

description: >

Indicates the type of measurement data.

description: |

Possible values are:

- DL\_DELAY: Downlink packet delay.

- UL\_DELAY: Uplink packet delay.

- RT\_DELAY: Round trip packet delay.

- AVG\_PLR: Average packet loss rate.

- AVG\_DATA\_RATE: Average data rate.

- MAX\_DATA\_RATE: Maximum data rate.

- AVG\_DL\_TRAFFIC\_VOLUME: Average downlink traffic volume.

- AVG\_UL\_TRAFFIC\_VOLUME: Average uplink traffic volume.

TerminationMode:

anyOf:

- type: string

enum:

- TIME\_TRIGGERED

- EVENT\_TRIGGERED\_NUM\_REPORTS\_REACHED

- EVENT\_TRIGGERED\_MEAS\_THR\_REACHED

- USER\_TRIGGERED

- type: string

description: >

Indicates the termination mode

description: |

Possible values are:

- TIME\_TRIGGERED: Time-triggered termination mode.

- EVENT\_TRIGGERED\_NUM\_REPORTS\_REACHED: Event-triggered termination number of reports reached mode.

- EVENT\_TRIGGERED\_MEAS\_THR\_REACHED: The event-triggered termination measurement index threshold reached mode.

- USER\_TRIGGERED: User-triggered termination mode.

FailureReason:

anyOf:

- type: string

enum:

- USER\_NOT\_FOUND

- STREAM\_NOT\_FOUND

- DATA\_NOT\_AVAILABLE

- OTHER\_REASON

- type: string

description: >

Represents the failure reason.

description: |

Possible values are:

- USER\_NOT\_FOUND: The user is not found.

- STREAM\_NOT\_FOUND: The stream is not found.

- DATA\_NOT\_AVAILABLE: The requested data is not available.

- OTHER\_REASON: Other reason (unspecified).

ThresholdHandlingMode:

anyOf:

- type: string

enum:

- ALL\_REACHED

- ANY\_REACHED

- type: string

description: >

Indicates the multi-parameter threshold handling mode.

description: |

Possible values are:

- ALL\_REACHED: The decision criterion is met when all the provided thresholds are reached.

- ANY\_REACHED: The decision criterion is met when any of the provided threshold(s) is reached.

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