**3GPP TSG- Meeting #**

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| *CR-Form-v12.1* |
| **CHANGE REQUEST** |
|  |
|  |  | **CR** |  | **rev** | **4** | **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)*.* |
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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***Proposed change affects:*** | UICC apps |  | ME |  | Radio Access Network |  | Core Network | **X** |

|  |
| --- |
|  |
| ***Title:***  | SS\_NetworkResourceMonitoring API support |
|  |  |
| ***Source to WG:*** |  |
| ***Source to TSG:*** | CT3 |
|  |  |
| ***Work item code:*** |  |  | ***Date:*** |  |
|  |  |  |  |  |
| ***Category:*** |  |  | ***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 canbe 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-15 (Release 15)Rel-16 (Release 16)Rel-17 (Release 17)Rel-18 (Release 18)* |
|  |  |
| ***Reason for change:*** | The CR #0092 on TS 23.434 presented in SA6 #47e meeting provides new clarifications for SS\_NetworkResourceMonitoring API.3GPP TS 23.434 defines the SS\_NetworkResourceMonitoring API and the related Obtain/Subscribe/Unsubscribe/Notify Unicast QoS Monitoring Data service operations in clause 14.4.4. Thus, need to support the SS\_NetworkResourceMonitoring API in this specification.In this CR, the compromise design for Obtain service operation based on one-time immediate response is implemented due to time limitation for Rel-17. |
|  |  |
| ***Summary of change:*** | This CR provides new functionality of the SS\_NetworkResourceMonitoring API for the VAL server to Obtain/Subscribe/Unsubscribe/Notify QoS Monitoring Data from the NRM server. |
|  |  |
| ***Consequences if not approved:*** | Missing the SS\_NetworkResourceMonitoring API support that is not aligned with Stage 2. |
|  |  |
| ***Clauses affected:*** | 7.4.Z(new) |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** | **X** |  |  Other core specifications  | TS 23.434 CR 0092 |
| ***affected:*** |  | **X** |  Test specifications | TS/TR ... CR ...  |
| ***(show related CRs)*** |  | **X** |  O&M Specifications | TS/TR ... CR ...  |
|  |  |
| ***Other comments:*** | This CR does not affect OpenAPI file. |
|  |  |
| ***This CR's revision history:*** | The following updates are done in r2 version:* minor editorial corrections;
* data models update according to CR #0092 on TS 23.434;
* EN resolving according to CR #0092 on TS 23.434;
* introduced terminiation reporting indication mechanism; and
* added the timestamp for the notification.
 |

**Additional discussion(if needed):**

**Proposed changes:**

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

### 7.4.Z SS\_NetworkResourceMonitoring API

#### 7.4.Z.1 API URI

The SS\_NetworkResourceMonitoring service shall use the SS\_NetworkResourceMonitoring API.

The request URIs used in HTTP requests from the VAL server towards the NRM server shall have the Resource URI structure as defined in clause 6.5 with the following clarifications:

- The <apiName>shall be "ss-nrm".

- The <apiVersion> shall be "v1".

- The <apiSpecificSuffixes> shall be set as described in clause 7.4.Z.2

#### 7.4.Z.2 Resources

##### 7.4.Z.2.1 Overview



Figure 7.4.Z.2.1-1: Resource URI structure of the SS\_NetworkResourceMonitoring API

Table 7.4.Z.2.1-1 provides an overview of the resources and applicable HTTP methods.

Table 7.4.Z.2.1-1: Resources and methods overview

|  |  |  |  |
| --- | --- | --- | --- |
| Resource name | Resource URI | HTTP method or custom operation | Description |
| Measurement Subscriptions | /measurements | POST | Create individual measurement subscription resource or obtain unicast QoS monitoring data for VAL UEs, VAL Group, or VAL Streams. |
| Individual Measurement Subscription | /measurements/{measurementId} | DELETE | Remove an existing individual measurement subscription resource according to the measurementId. |
| GET | Read an existing individual measurement subscription resource according to the measurementId. |

##### 7.4.Z.2.2 Resource: Measurement Subsriptions

###### 7.4.Z.2.2.1 Description

###### 7.4.Z.2.2.2 Resource Definition

Resource URI: {**apiRoot**}/**ss-nrm**/<**apiVersion**>/**measurements**

This resource shall support the resource URI variables defined in table 7.4.Z.2.2.2-1.

Table 7.4.Z.2.2.2-1: Resource URI variables for this resource

|  |  |  |
| --- | --- | --- |
| Name | Data Type | Definition |
| apiRoot | string | See clause 7.4.1.1. |
| apiVersion | string | See clause 7.4.1.1. |

###### 7.4.Z.2.2.3 Resource Standard Methods

7.4.Z.2.2.3.1 POST

Table 7.4.Z.2.2.3.1-1: URI query parameters supported by the POST method on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
|  |  |  |  |  |

This method shall support the request data structures specified in table 7.4.Z.2.2.3.1-2 and the response data structures and response codes specified in table 7.4.Z.2.2.3.1-3.

Table 7.4.Z.2.2.3.1-2: Data structures supported by the POST Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| MeasurementSubscription | M | 1 |  |

Table 7.4.Z.2.2.3.1-3: Data structures supported by the POST Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Responsecodes | Description |
| MeasurementSubscription | M | 1 | 201 Created | The requested individual measurement subscription resource is successfully created and a representation of the created resource is returned in the response body. |
| MeasurementInformation | M | 1 | 200 OK | The requested unicast QoS monitoring data is returned. |
| NOTE: The mandatory HTTP error status codes for the POST method listed in table 5.2.6-1 of 3GPP TS 29.122 [3] shall also apply. |

Table7.4.Z.2.2.3.1-4: Headers supported by the 201 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | Contains the URI of the newly created resource, according to the structure: {apiRoot}/ss-nrm/<apiVersion>/trigger- measurements /{measurementId} |

###### 7.4.Z.2.2.4 Resource Custom Operations

None.

##### 7.4.Z.2.3 Resource: Individual Measurement Subscription

###### 7.4.Z.2.3.1 Description

###### 7.4.Z.2.3.2 Resource Definition

Resource URI: {**apiRoot**}/**ss-nrm**/<**apiVersion**>/**measurements**/{**measurementId**}

This resource shall support the resource URI variables defined in table 7.4.Z.2.3.2-1.

Table 7.4.Z.2.3.2-1: Resource URI variables for this resource

|  |  |  |
| --- | --- | --- |
| Name | Data Type | Definition |
| apiRoot | string | See clause 7.4.1.1. |
| apiVersion | string | See clause 7.4.1.1. |
| measurementId | string | Represents the identifier of an individual measurement subscription resource. |

###### 7.4.Z.2.3.3 Resource Standard Methods

7.4.Z.2.3.3.1 DELETE

This operation deletes the Individual Measurement Subscription resource. This method shall support the URI query parameters specified in table 7.4.Z.2.3.3.1-1.

Table 7.4.Z.2.3.3.1-1: URI query parameters supported by the DELETE method on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| n/a |  |  |  |  |

This method shall support the request data structures specified in table 7.4.Z.2.3.3.1-2 and the response data structures and response codes specified in table 7.4.Z.2.3.3.1-3.

Table 7.4.Z.2.3.3.1-2: Data structures supported by the DELETE Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| n/a |  |  |  |

Table 7.4.Z.2.3.3.1-3: Data structures supported by the DELETE Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Responsecodes | Description |
| n/a |  |  | 204 No Content | The Individual Measurement Subscription resource matching the measurementId is deleted. |
| n/a |  |  | 307 Temporary Redirect | Temporary redirection, during resource termination. The response shall include a Location header field containing an alternative URI of the resource located in an alternative NRM server.Redirection handling is described in subclause 5.2.10 of 3GPP TS 29.122 [3]. |
| n/a |  |  | 308 Permanent Redirect | Permanent redirection, during resource termination. The response shall include a Location header field containing an alternative URI of the resource located in an alternative NRM server.Redirection handling is described in subclause 5.2.10 of 3GPP TS 29.122 [3]. |
| NOTE: The mandatory HTTP error status codes for the DELETE method listed in table 5.2.6-1 of 3GPP TS 29.122 [3] also apply. |

Table 7.4.Z.2.3.3.1-4: Headers supported by the 307 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | An alternative URI of the resource located in an alternative NRM server. |

Table 7.4.Z.2.3.3.1-5: Headers supported by the 308 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | An alternative URI of the resource located in an alternative NRM server. |

7.4.Z.2.3.3.2 GET

This operation reads the individual measurement resource. This method shall support the URI query parameters specified in table 7.4.Z.2.3.3.2-1.

Table 7.4.Z.2.2.3.2-1: URI query parameters supported by the GET method on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
|  |  |  |  |  |

This method shall support the request data structures specified in table 7.4.Z.2.3.3.2-2 and the response data structures and response codes specified in table 7.4.Z.2.3.3.2-3.

Table 7.4.Z.2.3.3.2-2: Data structures supported by the GET Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| n/a |  |  |  |

Table 7.4.Z.2.3.3.2-3: Data structures supported by the GET Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Responsecodes | Description |
| MeasurementInformation | M | 1 | 200 OK |  |
| n/a |  |  | 307 Temporary Redirect | Temporary redirection, during resource retrieval. The response shall include a Location header field containing an alternative URI of the resource located in an alternative NRM server.Redirection handling is described in subclause 5.2.10 of 3GPP TS 29.122 [3]. |
| n/a |  |  | 308 Permanent Redirect | Permanent redirection, during resource retrieval. The response shall include a Location header field containing an alternative URI of the resource located in an alternative NRM server.Redirection handling is described in subclause 5.2.10 of 3GPP TS 29.122 [3]. |
| NOTE: The mandatory HTTP error status codes for the GET method listed in table 5.2.7.1-1 of 3GPP TS 29.500 [22] shall also apply. |

Table 7.4.Z.2.3.3.2-4: Headers supported by the 307 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | An alternative URI of the resource located in an alternative NRM server. |

Table 7.4.Z.2.3.3.2-5: Headers supported by the 308 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | An alternative URI of the resource located in an alternative NRM server. |

7.4.Z.3 Notifications

7.4.Z.3.1 General

Table 7.4.1.3.1-1: Notifications overview

|  |  |  |  |
| --- | --- | --- | --- |
| Notification | Callback URI | HTTP method or custom operation | Description(service operation) |
| Individual Measurement Subscription Nofication | {notifUri} | POST | Notify about the the measured data |

##### 7.4.Z.3.2 Notify\_Individual\_Measurement

###### 7.4.Z.3.2.1 Description

###### 7.4.Z.3.2.2 Notification definition

Callback URI: {**notifUri**}

This method shall support the URI query parameters specified in table 7.4.Z.3.2.2-1.

Table 7.4.Z.3.2.2-1: URI query parameters supported by the POST method on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| n/a |  |  |  |  |

This method shall support the request data structures specified in table 7.4.Z.3.2.2-2 and the response data structures and response codes specified in table 7.4.Z.3.2.2-3.

Table 7.4.Z.3.2.2-2: Data structures supported by the POST Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| MeasurementInformation | M | 1 | Represents the reported measurement data. |

Table 7.4.Z.3.2.2-3: Data structures supported by the POST Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response codes | Description |
| n/a |  |  | 204 No Content | The receipt of the Notification is acknowledged. |
| n/a |  |  | 307 Temporary Redirect | Temporary redirection, during notification. The response shall include a Location header field containing an alternative URI representing the end point of an alternative VAL server where the notification should be sent.Redirection handling is described in subclause 5.2.10 of 3GPP TS 29.122 [3]. |
| n/a |  |  | 308 Permanent Redirect | Permanent redirection, during notification. The response shall include a Location header field containing an alternative URI representing the end point of an alternative VAL server where the notification should be sent.Redirection handling is described in subclause 5.2.10 of 3GPP TS 29.122 [3]. |
| NOTE: The mandatory HTTP error status codes for the POST method listed in table 5.2.6-1 of 3GPP TS 29.122 [3] also apply. |

Table 7.4.Z.3.2.2-4: Headers supported by the 307 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | An alternative URI representing the end point of an alternative VAL server towards which the notification should be redirected. |

Table 7.4.Z.3.2.2-5: Headers supported by the 308 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | An alternative URI representing the end point of an alternative VAL server towards which the notification should be redirected. |

#### 7.4.Z.4 Data Model

##### 7.4.Z.4.1 General

This clause specifies the application data model supported by the API. Data types listed in clause 6.2 apply to this API

Table 7.4.Z.4.1-1 specifies the data types defined specifically for the SS\_NetworkResourceMonitoring API service.

Table 7.4.Z.4.1-1: SS\_NetworkResourceMonitoring API specific Data Types

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Section defined | Description | Applicability |
| MeasurementInformation | 7.4.Z.4.2.2 | Indicates the measurement information for VAL UEs list, VAL Group, or VAL Stream. |  |
| MeasurementData | 7.4.Z.4.2.3 | Presents the aggregated measurement data. |  |
| MeasurementDataType | 7.4.Z.4.3.1 | Indicates the requested measurement data type. |  |
| MeasurementPeriod | 7.4.Z.4.2.4 | Indicates the measurement time period. |  |
| MeasurementRequirements | 7.4.Z.4.2.7 | Indicates the measurement requirements. |  |
| MeasurementSubscription | 7.4.Z.4.2.8 | The measurement subscription request. |  |
| ReportingMode | 7.4.Z.4.3.2 | Indicates the reporting mode. |  |
| ReportingRequirements | 7.4.Z.4.2.5 | Indicates the requested requirements of reporting. |  |
| ReportingTermination | 7.4.Z.4.2.6 | Indicates when the reporting shall stop. |  |
| TerminationMode | 7.4.Z.4.3.3 | Indicates the termination mode. |  |

Table 7.4.Z.4.1-2 specifies data types re-used by the SS\_NetworkResourceMonitoring API service.

Table 7.4.Z.4.1-2: Re-used Data Types

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Reference | Comments | Applicability |
| AverWindow | 3GPP TS 29.571 [21] |  |  |
| BitRate | 3GPP TS 29.571 [21] |  |  |
| DateTime | 3GPP TS 29.571 [21] |  |  |
| DurationSec | 3GPP TS 29.571 [21] |  |  |
| PacketLossRate | 3GPP TS 29.571 [21] |  |  |
| SupportedFeatures | 3GPP TS 29.571 [21] |  |  |
| Uinteger | 3GPP TS 29.571 [21] |  |  |
| Uri | 3GPP TS 29.571 [21] |  |  |
| ValTargetUe | clause 7.3.1.4.2.3 | Used to identify either a VAL User ID or a VAL UE ID. |  |
| WebsockNotifConfig | 3GPP TS 29.122 [3] |  |  |

##### 7.4.Z.4.2 Structured data types

###### 7.4.Z.4.2.1 Introduction

###### 7.4.Z.4.2.2 Type: MeasurementInformation

Table 7.4.Z.4.2.2-1: Definition of type MeasurementInformation

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| valUeIds | array(ValTargetUe) | C | 1..N | List of VAL UEs whose measurement data is provided (NOTE 1). |  |
| valGroupId | string | C | 0..1 | The group ID used for the VAL group for which measurement data is provided (NOTE 1). |  |
| valStreamIds | array(string) | C | 1..N | List of VAL stream IDs whose measurement data (NOTE 1). |  |
| measData | MeasurementData | M | 1 | The aggregated measurement data. |  |
| timestamp | DateTime | M | 1 | The timestamp of the measurement. |  |
| isLastNotif | boolean | C | 0..1 | The indication of the reporting termination in the last notification (NOTE 2). |  |
| NOTE 1: Only one of these attributes shall be provided.NOTE 2: isLastNotif attribute shall be provided in the last notification. Set to false or omit otherwise. |

###### 7.4.Z.4.2.3 Type: MeasurementData

Table 7.4.Z.4.2.3-1: Definition of type MeasurementData

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| dlDelay | Uinteger | O | 0..1 | The downlink packet delay (NOTE). |  |
| ulDelay | Uinteger | O | 0..1 | The uplink packet delay (NOTE). |  |
| rtDelay | Uinteger | O | 0..1 | The round trip packet delay (NOTE). |  |
| avgPlr | PacketLossRate | O | 0..1 | The average packet loss rate (NOTE). |  |
| avgDataRate | BitRate | O | 0..1 | The average data rate (NOTE). |  |
| maxDataRate | BitRate | O | 0..1 | The maximum data rate (NOTE). |  |
| avrDlTrafficVol | Uinteger | O | 0..1 | The average traffic volume for downlink (NOTE). |  |
| avrUlTrafficVol | Uinteger | O | 0..1 | The average traffic volume for uplink (NOTE). |  |
| NOTE: At least one of the measurement indexes shall be provided. |

###### 7.4.Z.4.2.4 Type: MeasurementPeriod

Table 7.4.Z.4.2.4-1: Definition of type MeasurementPeriod

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| measStartTime | DateTime | M | 1 | Indicate the starting time for the measurement. |  |
| measDuration | DurationSec | M | 1 | Indicate the duration for the measurement starting from the measStartTime. |  |

###### 7.4.Z.4.2.5 Type: ReportingRequirements

Table 7.4.Z.4.2.5-1: Definition of type ReportingRequirements

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| reportingMode | ReportingMode | M | 1 | The indication of the requested reporting option: periodic or event-triggered. |  |
| reportingPeriod | DurationSec | C | 0..1 | Identifies the reporting time interval for the periodic reporting (NOTE 1). |  |
| reportingThr | MeasurementData | C | 0..1 | Identifies reporting threshold corresponding to the measurement index (NOTE 2). |  |
| NOTE 1: reportingPeriod shall be presented for the periodic reporting option.NOTE 2: reportingThr shall be presented for the event-triggered reporting option. |

###### 7.4.Z.4.2.6 Type: ReportingTermination

Table 7.4.Z.4.2.6-1: Definition of type ReportingTermination

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| repTerminMode | TerminationMode | M | 1 | The indication of the requested reporting termination option: time-triggered, event-triggered, or user-triggered. |  |
| expirationTimer | DurationSec | C | 0..1 | Identifies the reporting time interval for the time triggered termination option (NOTE 1). |  |
| maxRepNum | Uinteger | C | 0..1 | Indicates the maximum number of reports (number of reports reached) (NOTE 2). |  |
| termThr | MeasurementData | C | 0..1 | Indicates the reporting termination threshold corresponding to the measurement index (NOTE 3). |  |
| NOTE 1: expirationTimer shall be presented for the time-triggered termination option.NOTE 2: maxRepNum shall be presented for the event-triggered termination number of reports reached option.NOTE 3: termThr shall be presented for the event-triggered termination measurement index threshold reached option. |

###### 7.4.Z.4.2.7 Type: MeasurementRequirements

Table 7.4.Z.4.2.7-1: Definition of type MeasurementRequirements

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description | Applicability |
| measDataTypes | array(MeasurementDataType) | M | 1..N | Indicates the required types of measurement data. |  |
| measAggrGranWnd | AverWindow | O | 0..1 | It indicates the aggregation granularity window for the measured data (NOTE 1). |  |
| measPeriod | MeasurementPeriod | O | 0..1 | It indicates the required measurement time period (NOTE 2). |  |
| NOTE 1: If absent, 1 minute is used as default setting.NOTE 2: If absent, current time and 5 minutes duration are used as default setting. |

###### 7.4.Z.4.2.8 Type: MeasurementSubscription

Table 7.4.Z.4.2.8-1: Definition of type MeasurementSubscription

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description | Applicability |
| valUeIds | array(ValTargetUe) | C | 1..N | List of VAL UEs which measurement data reporting is requested (NOTE 1). |  |
| valGroupId | string | C | 0..1 | The group ID used for the VAL group for which measurement data reporting is requested (NOTE 1). |  |
| valStreamIds | array(string) | C | 1..N | List of VAL streams for which measurement data reporting is requested (NOTE 1) |  |
| measReqs | MeasurementRequirements | O | 0..1 | It indicates the measurement requirements (NOTE 2). |  |
| reportReqs | ReportingRequirements | O | 0..1 | It indicates the requested requirements of reporting (NOTE 3). |  |
| reportTerm | ReportingTermination | O | 0..1 | It indicates when the reporting shall stop (NOTE 4). |  |
| notifiUri | Uri | C | 0..1 | It indicates the URI where the notification should be delivered to. The notifiUri attribute shall be presented for subscription without immediate report. |  |
| immRep | boolean | O | 0..1 | It indicates the immediate reporting. If included, when it is set to true it indicates immediate reporting of the subscribed events. |  |
| reqTestNotif | Boolean | O | 0..1 | Set to true by the NF service consumer to request the VAL server to send a test notification as defined in clause 6.3.5.3. Set to false or omitted otherwise. | Notification\_test\_event |
| wsNotifCfg | WebsockNotifConfig | O | 0..1 | Configuration parameters to set up notification delivery over Websocket protocol as defined in clause 6.3.5.4. | Notification\_websocket |
| suppFeat | SupportedFeatures | C | 0..1 | This parameter shall be supplied by VAL server in the POST request that request the creation of an individual measurement resource and shall be supplied in the reply of corresponding request. |  |
| NOTE 1: Only one of these query parameters shall be presented.NOTE 2: If absent, the default values shall be used.NOTE 3: If absent, the default event triggered reporting is used.NOTE 4: If absent, it defaults to event triggered reporting. |  |

##### 7.4.Z.4.3 Simple data types and enumerations

###### 7.4.Z.4.3.1 Enumeration: MeasurementDataType

Table 7.4.Z.4.3.1-1: Enumeration MeasurementDataType

|  |  |  |
| --- | --- | --- |
| **Enumeration value** | **Description** | **Applicability** |
| DL\_DELAY | The indication for requesting the downlink packet delay data type. |  |
| UL\_DELAY | The indication for requesting the uplink packet delay data type. |  |
| RT\_DELAY | The indication for requesting the round trip packet delay data type. |  |
| AVG\_PLR | The indication for requesting the average packet loss rate data type. |  |
| AVG\_DATA\_RATE | The indication for requesting the average data rate data type. |  |
| MAX\_DATA\_RATE | The indication for requesting the maximum data rate data type. |  |
| AVG\_DL\_TRAFFIC\_VOLUME | The indication for requesting the average traffic volume for downlink data type. |  |
| AVG\_UL\_TRAFFIC\_VOLUME | The indication for requesting the average traffic volume for uplink data type. |  |

###### 7.4.Z.4.3.2 Enumeration: ReportingMode

Table 7.4.Z.4.3.2-1: Enumeration ReportingMode

|  |  |  |
| --- | --- | --- |
| **Enumeration value** | **Description** | **Applicability** |
| PERIODIC | The periodic reporting mode. |  |
| EVENT\_TRIGGERED | The event-triggered reporting mode. |  |

###### 7.4.Z.4.3.3 Enumeration: TerminationMode

Table 7.4.Z.4.3.3-1: Enumeration TerminationMode

|  |  |  |
| --- | --- | --- |
| **Enumeration value** | **Description** | **Applicability** |
| TIME\_TRIGGERED | The time-triggered termination mode. |  |
| EVENT\_TRIGGERED\_NUM\_REPORTS\_REACHED | The event-triggered termination number of reports reached mode. |  |
| EVENT\_TRIGGERED\_MEAS\_THR\_REACHED | The event-triggered termination measurement index threshold reached mode. |  |
| USER\_TRIGGERED | The user-triggered termination mode. |  |

7.4.Z.5 Error HandlingGeneral error responses are defined in clause 6.7.

#### 7.4.Z.6 Feature negotiation

General feature negotiation procedures are defined in clause 6.8. Table 7.4.Z.6-1 lists the supported features for SS\_NetworkResourceMonitoring API.

Table 7.4.Z.6-1: Supported Features

|  |  |  |
| --- | --- | --- |
| **Feature number** | **Feature Name** | **Description** |
| 1 | Notification\_test\_event | The testing of notification connection is supported according to clause 6.6. |
| 2 | Notification\_websocket | The delivery of notifications over Websocket is supported according to clause 6.6. This feature requires that the Notification\_test\_event feature is also supported. |

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