**3GPP TSG-CT3 Meeting #135 *C3-243189***

**Hyderabad, India, 27th May 2024 - 31st May 2024**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.3* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **29.591** | **CR** | **0187** | **rev** | **-** | **Current version:** | **18.5.0** |  |
|  | | | | | | | | |
| *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:*** | Updates to Traffic Influence Data subscriptions for HR-SBO | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Nokia | | | | | | | | | |
| ***Source to TSG:*** | CT3 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | EDGE\_Ph2 | | | | |  | ***Date:*** | | | 2024-05-20 |
|  |  | | | |  | |  | | |  |
| ***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-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)  Rel-20 (Release 20)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | 23.502 clauses 5.2.6.35.2, 5.2.12.2.1, and 4.3.6.5.2 require the V-SMF to be able to subscribe to Traffic Influence Data using (together with the DNN, S-SNSSAI, which always needs to be provided) the PLMN ID or the UE address. The PLMN ID and the UE address have been already added to the respective data models in 29.522 and 29.519. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Added the UE address and PLMN ID parameters to the TrafficInfluDataSub data type, and corrected the respective conditions in the service operation descriptions. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | Not aligned with stage 2 requirements. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 4.4.2.2.2, 5.3.6.1, 5.3.6.2.2, A.4 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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 introduces a backwards compatible feature into the OpenAPI file of the Nnef\_TrafficInfluenceData API. | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

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

4.4.2.2.2 Creating a new subscription

Figure 4.4.2.2.2-1 illustrates the creation of a Individual Traffic Influence Data Subscription.

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**Figure 4.4.2.2.2-1: Creation of a subscription**

In order to subscribe to Traffic Influence Data, the SMF shall send an Nnef\_TrafficInfluenceData\_Subscribe request using the HTTP POST method to the NEF with "{apiRoot}/nnef-traffic-influence-data/<apiVersion>/subscriptions" as request URI as shown in step 1 of figure 4.4.2.2.2-1. The HTTP POST message shall include TrafficInfluDataSub data structure as request body. The TrafficInfluDataSub data structure shall include:

- the notification URI in the "notifUri" attribute;

- the notification correlation identifier in the "notifCorrId" attribute;

- the identifications of DNN in the "dnns" attribute and/or the identifications of network slice in the "snssais" attribute;

and may include:

- the internal Group Identifier in "internalGroupIds" attribute;

- the identification(s) of target UE(s) in the "supis" attribute;

- the any UE indication in the "anyUe" attribute;

- the identification(s) of the HPLMN in the "hplmnId" attribute;

- the UE address(es) either in the "ipv4Addrs" attribute or in the "ipv6Addrs" attribute;

- the reporting requirements of the subscription in "rptInfo" attribute.

Upon receipt of the HTTP request from the SMF, the NEF shall interact with the UDR by invoking the Nudr\_DataRepository service as described in 3GPP TS 29.504 [20] to retrieve and subscribe to the Traffic Influence Data in the application data in the UDR.

After receiving a successful response from the UDR, the NEF shall create a new subscription and assign a subscription identifier for the "Individual Traffic Influence Data Subscription" resource. Then the NEF shall send an HTTP "201 Created" response with TrafficInfluDataSub data structure as response body and a Location header field containing the URI of the created individual subscription resource to the NF service consumer.

If the immediate report indication is included in the subscription request, the NEF shall include the currently available Traffic Influence Data in the response body.

If errors occur when processing the HTTP POST request or receiving an error code from the UDR, the NEF shall send an HTTP error response as specified in clause 5.3.7.

\*\*\* Next Change \*\*\*

5.3.6.1 General

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

Table 5.3.6.1-1 specifies the data types defined for the Nnef\_TrafficInfluenceData service based interface protocol.

**Table 5.3.6.1-1: Nnef\_TrafficInfluenceData specific Data Types**

|  |  |  |  |
| --- | --- | --- | --- |
| **Data type** | **Section defined** | **Description** | **Applicability** |
| TrafficInfluDataNotify | 5.3.6.2.3 | Contains traffic influence data for notification. |  |
| TrafficInfluDataSub | 5.3.6.2.2 | Contains traffic influence subscription data. |  |

Table 5.3.6.1-2 specifies data types re-used by the Nnef\_TrafficInfluenceData service based interface protocol from other specifications, including a reference to their respective specifications and when needed, a short description of their use within the Nnef\_TrafficInfluenceData service based interface.

**Table 5.3.6.1-2: Nnef\_TrafficInfluenceData re-used Data Types**

|  |  |  |  |
| --- | --- | --- | --- |
| **Data type** | **Reference** | **Comments** | **Applicability** |
| Dnn | 3GPP TS 29.571 [16] | Identifies the DNN. |  |
| GroupId | 3GPP TS 29.571 [16] | Identifies a group of UEs. |  |
| Ipv4Addr | 3GPP TS 29.571 [16] | Identifies an IPv4 address. |  |
| Ipv6Addr | 3GPP TS 29.571 [16] | Identifies an IPv6 address. |  |
| PlmnId | 3GPP TS 29.571 [16] | Identifies a PLMN. |  |
| ReportingInformation | 3GPP TS 29.523 [22] | Represents the type of reporting the subscription requires. |  |
| Snssai | 3GPP TS 29.571 [16] | Identifies a Single Network Slice Selection Assistance Information. |  |
| Supi | 3GPP TS 29.571 [16] | The SUPI for an UE. |  |
| SupportedFeatures | 3GPP TS 29.571 [16] | Indicates the features supported. |  |
| TrafficInfluData | 3GPP TS 29.519 [28] | Contains traffic influence data. |  |
| Uri | 3GPP TS 29.571 [16] | Contains a URI. |  |

\*\*\* Next Change \*\*\*

5.3.6.2.2 Type: TrafficInfluDataSub

**Table 5.3.6.2.2-1: Definition of type TrafficInfluDataSub**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Attribute name** | **Data type** | **P** | **Cardinality** | **Description** | **Applicability** |
| notifUri | Uri | M | 1 | URI provided by the NF service consumer indicating where to receive the subscribed notifications from the NEF. |  |
| notifCorrId | string | M | 1 | Notification correlation identifier. |  |
| dnns | array(Dnn) | C | 1..N | Each element identifies a DNN.  (NOTE) |  |
| snssais | array(Snssai) | C | 1..N | Each element identifies an internal slice. (NOTE) |  |
| internalGroupIds | array(GroupId) | C | 1..N | Each element identifies a group of users. (NOTE) |  |
| supis | array(Supi) | O | 1..N | Each element identifies a user. |  |
| anyUe | boolean | O | 0..1 | Identifies any UE when setting to "true".  Default value is "false" if omitted. |  |
| hplmnId | PlmnId | O | 0..1 | Identifies a PLMN. |  |
| ipv4Addrs | array(Ipv4Addr) | O | 1..N | Each element identifies a UE IPv4 address. |  |
| ipv6Addrs | array(Ipv6Addr) | O | 1..N | Each element identifies a UE IPv6 address. |  |
| rptInfo | ReportingInformation | O | 0..1 | Represents the reporting requirements of the subscription. |  |
| immReports | array(TrafficInfluData) | O | 1..N | Contains the Traffic Influence Data that match this subscription.  It may be included only in the POST (or PUT) response body of a subscription creation (or modification), and only if the "immRep" attribute contained in "rptInfo" is set to "true" in the corresponding HTTP request. |  |
| supportedFeatures | SupportedFeatures | C | 0..1 | Used to negotiate the applicability of the optional features. This attribute shall be provided in the POST request and in the response of successful resource creation. |  |
| NOTE: At least one of "dnns", "snssais" shall be provided. | | | | | |

Editor's note: Whether the "internalGroupIds" is plural or single is FFS.

\*\*\* Next Change \*\*\*

A.4 Nnef\_TrafficInfluenceData API

openapi: 3.0.0

info:

title: Nnef\_TrafficInfluenceData

version: 1.0.0-alpha.3

description: |

NEF Traffic Influence Data Service.

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externalDocs:

description: >

3GPP TS 29.591 V18.4.0; 5G System; Network Exposure Function Southbound Services; Stage 3.

url: https://www.3gpp.org/ftp/Specs/archive/29\_series/29.591/

servers:

- url: '{apiRoot}/nnef-traffic-influence-data/v1'

variables:

apiRoot:

default: https://example.com

description: apiRoot as defined in clause 4.4 of 3GPP TS 29.501

security:

- {}

- oAuth2ClientCredentials:

- nnef-traffic-influence-data

paths:

/subscriptions:

post:

summary: subscribe to notifications

operationId: CreateIndividualSubcription

tags:

- Subscriptions (Collection)

requestBody:

required: true

content:

application/json:

schema:

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

responses:

'201':

description: Success

content:

application/json:

schema:

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

headers:

Location:

description: >

Contains the URI of the newly created resource, according to the structure

{apiRoot}/nnef-traffic-influence-data/<apiVersion>/subscriptions/{subscriptionId}

required: true

schema:

type: string

'400':

$ref: 'TS29571\_CommonData.yaml#/components/responses/400'

'401':

$ref: 'TS29571\_CommonData.yaml#/components/responses/401'

'403':

$ref: 'TS29571\_CommonData.yaml#/components/responses/403'

'404':

$ref: 'TS29571\_CommonData.yaml#/components/responses/404'

'411':

$ref: 'TS29571\_CommonData.yaml#/components/responses/411'

'413':

$ref: 'TS29571\_CommonData.yaml#/components/responses/413'

'415':

$ref: 'TS29571\_CommonData.yaml#/components/responses/415'

'429':

$ref: 'TS29571\_CommonData.yaml#/components/responses/429'

'500':

$ref: 'TS29571\_CommonData.yaml#/components/responses/500'

'502':

$ref: 'TS29571\_CommonData.yaml#/components/responses/502'

'503':

$ref: 'TS29571\_CommonData.yaml#/components/responses/503'

default:

$ref: 'TS29571\_CommonData.yaml#/components/responses/default'

callbacks:

myNotification:

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

post:

requestBody:

required: true

content:

application/json:

schema:

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

responses:

'204':

description: No Content, Notification was succesfull

'307':

$ref: 'TS29571\_CommonData.yaml#/components/responses/307'

'308':

$ref: 'TS29571\_CommonData.yaml#/components/responses/308'

'400':

$ref: 'TS29571\_CommonData.yaml#/components/responses/400'

'401':

$ref: 'TS29571\_CommonData.yaml#/components/responses/401'

'403':

$ref: 'TS29571\_CommonData.yaml#/components/responses/403'

'404':

$ref: 'TS29571\_CommonData.yaml#/components/responses/404'

'411':

$ref: 'TS29571\_CommonData.yaml#/components/responses/411'

'413':

$ref: 'TS29571\_CommonData.yaml#/components/responses/413'

'415':

$ref: 'TS29571\_CommonData.yaml#/components/responses/415'

'429':

$ref: 'TS29571\_CommonData.yaml#/components/responses/429'

'500':

$ref: 'TS29571\_CommonData.yaml#/components/responses/500'

'502':

$ref: 'TS29571\_CommonData.yaml#/components/responses/502'

'503':

$ref: 'TS29571\_CommonData.yaml#/components/responses/503'

default:

$ref: 'TS29571\_CommonData.yaml#/components/responses/default'

get:

summary: read all of the active subscriptions

operationId: ReadAllSubscriptions

tags:

- Traffic Influence Data

parameters:

- name: dnn

in: query

description: Identifies a DNN.

required: false

schema:

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

- name: snssai

in: query

description: Identifies a slice.

required: false

content:

application/json:

schema:

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

- name: internal-Group-Id

in: query

description: Identifies a group of users.

required: false

schema:

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

- name: supi

in: query

description: Identifies a user.

required: false

schema:

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

responses:

'200':

description: OK.

content:

application/json:

schema:

type: array

items:

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

'204':

description: No Content.

'307':

$ref: 'TS29571\_CommonData.yaml#/components/responses/307'

'308':

$ref: 'TS29571\_CommonData.yaml#/components/responses/308'

'400':

$ref: 'TS29571\_CommonData.yaml#/components/responses/400'

'401':

$ref: 'TS29571\_CommonData.yaml#/components/responses/401'

'403':

$ref: 'TS29571\_CommonData.yaml#/components/responses/403'

'404':

$ref: 'TS29571\_CommonData.yaml#/components/responses/404'

'406':

$ref: 'TS29571\_CommonData.yaml#/components/responses/406'

'429':

$ref: 'TS29571\_CommonData.yaml#/components/responses/429'

'500':

$ref: 'TS29571\_CommonData.yaml#/components/responses/500'

'503':

$ref: 'TS29571\_CommonData.yaml#/components/responses/503'

default:

$ref: 'TS29571\_CommonData.yaml#/components/responses/default'

/subscriptions/{subscriptionId}:

get:

summary: retrieve subscription

operationId: GetIndividualSubcription

tags:

- IndividualSubscription (Document)

parameters:

- name: subscriptionId

in: path

description: Subscription ID

required: true

schema:

type: string

responses:

'200':

description: OK. Resource representation is returned

content:

application/json:

schema:

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

'307':

$ref: 'TS29571\_CommonData.yaml#/components/responses/307'

'308':

$ref: 'TS29571\_CommonData.yaml#/components/responses/308'

'400':

$ref: 'TS29571\_CommonData.yaml#/components/responses/400'

'401':

$ref: 'TS29571\_CommonData.yaml#/components/responses/401'

'403':

$ref: 'TS29571\_CommonData.yaml#/components/responses/403'

'404':

$ref: 'TS29571\_CommonData.yaml#/components/responses/404'

'406':

$ref: 'TS29571\_CommonData.yaml#/components/responses/406'

'429':

$ref: 'TS29571\_CommonData.yaml#/components/responses/429'

'500':

$ref: 'TS29571\_CommonData.yaml#/components/responses/500'

'502':

$ref: 'TS29571\_CommonData.yaml#/components/responses/502'

'503':

$ref: 'TS29571\_CommonData.yaml#/components/responses/503'

default:

$ref: 'TS29571\_CommonData.yaml#/components/responses/default'

put:

summary: update subscription

operationId: ReplaceIndividualSubcription

tags:

- IndividualSubscription (Document)

requestBody:

required: true

content:

application/json:

schema:

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

parameters:

- name: subscriptionId

in: path

description: Subscription ID

required: true

schema:

type: string

responses:

'200':

description: OK. Resource was succesfully modified and representation is returned

content:

application/json:

schema:

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

'204':

description: No Content. Resource was succesfully modified

'307':

$ref: 'TS29571\_CommonData.yaml#/components/responses/307'

'308':

$ref: 'TS29571\_CommonData.yaml#/components/responses/308'

'400':

$ref: 'TS29571\_CommonData.yaml#/components/responses/400'

'401':

$ref: 'TS29571\_CommonData.yaml#/components/responses/401'

'403':

$ref: 'TS29571\_CommonData.yaml#/components/responses/403'

'404':

$ref: 'TS29571\_CommonData.yaml#/components/responses/404'

'411':

$ref: 'TS29571\_CommonData.yaml#/components/responses/411'

'413':

$ref: 'TS29571\_CommonData.yaml#/components/responses/413'

'415':

$ref: 'TS29571\_CommonData.yaml#/components/responses/415'

'429':

$ref: 'TS29571\_CommonData.yaml#/components/responses/429'

'500':

$ref: 'TS29571\_CommonData.yaml#/components/responses/500'

'502':

$ref: 'TS29571\_CommonData.yaml#/components/responses/502'

'503':

$ref: 'TS29571\_CommonData.yaml#/components/responses/503'

default:

$ref: 'TS29571\_CommonData.yaml#/components/responses/default'

delete:

summary: unsubscribe from notifications

operationId: DeleteIndividualSubcription

tags:

- IndividualSubscription (Document)

parameters:

- name: subscriptionId

in: path

description: Subscription ID

required: true

schema:

type: string

responses:

'204':

description: No Content. Resource was succesfully deleted

'307':

$ref: 'TS29571\_CommonData.yaml#/components/responses/307'

'308':

$ref: 'TS29571\_CommonData.yaml#/components/responses/308'

'400':

$ref: 'TS29571\_CommonData.yaml#/components/responses/400'

'401':

$ref: 'TS29571\_CommonData.yaml#/components/responses/401'

'403':

$ref: 'TS29571\_CommonData.yaml#/components/responses/403'

'404':

$ref: 'TS29571\_CommonData.yaml#/components/responses/404'

'429':

$ref: 'TS29571\_CommonData.yaml#/components/responses/429'

'500':

$ref: 'TS29571\_CommonData.yaml#/components/responses/500'

'502':

$ref: 'TS29571\_CommonData.yaml#/components/responses/502'

'503':

$ref: 'TS29571\_CommonData.yaml#/components/responses/503'

default:

$ref: 'TS29571\_CommonData.yaml#/components/responses/default'

components:

securitySchemes:

oAuth2ClientCredentials:

type: oauth2

flows:

clientCredentials:

tokenUrl: '{nrfApiRoot}/oauth2/token'

scopes:

nnef-traffic-influence-data: Access to the Nnef\_TrafficInfluenceData API

schemas:

TrafficInfluDataSub:

description: Represents an Individual traffic influence subscription data.

type: object

properties:

notifUri:

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

notifCorrId:

type: string

description: Notification correlation identifier.

dnns:

type: array

items:

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

minItems: 1

description: Each element identifies a DNN.

snssais:

type: array

items:

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

minItems: 1

description: Each element identifies a slice.

internalGroupIds:

type: array

items:

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

minItems: 1

description: Each element identifies a group of users.

supis:

type: array

items:

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

minItems: 1

description: Each element identifies the user.

anyUe:

type: boolean

description: >

Identifies any UE when setting to "true". Default value is "false" if omitted.

hplmnId:

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

ipv4Addrs:

type: array

items:

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

minItems: 1

description: Each element identifies an IPv4 address.

ipv6Addrs:

type: array

items:

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

minItems: 1

description: Each element identifies an IPv6 address.

rptInfo:

$ref: 'TS29523\_Npcf\_EventExposure.yaml#/components/schemas/ReportingInformation'

immReports:

type: array

items:

$ref: 'TS29519\_Application\_Data.yaml#/components/schemas/TrafficInfluData'

minItems: 1

description: Immediate report with Traffic Influence Data that match this subscription.

supportedFeatures:

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

required:

- notifUri

- notifCorrId

anyOf:

- required: [dnns]

- required: [snssais]

- required: [internalGroupIds]

TrafficInfluDataNotify:

description: Represents notifications for traffic influence data.

type: object

properties:

notifCorrId:

type: string

description: Notification correlation identifier.

eventNotifications:

type: array

items:

$ref: 'TS29519\_Application\_Data.yaml#/components/schemas/TrafficInfluData'

minItems: 1

description: Notifications about Individual Events.

required:

- notifCorrId

- eventNotifications

\*\*\* End of Changes \*\*\*