**3GPP TSG CT WG3 Meeting #134 *C3-242193r1***

**Changsha, China, 15-19 April 2024**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **29.591** | **CR** | **0176** | **rev** | **1** | **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:*** | UP path change notification for HR-SBO | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | ZTE | | | | | | | | | |
| ***Source to TSG:*** | CT3 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | EDGE\_Ph2 | | | | |  | ***Date:*** | | | 2024-04-08 |
|  |  | | | |  | |  | | |  |
| ***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:*** | | For HR-SBO scenario, the Traffic Influence information is provided directly from V-NEF to V-SMF via the Nnef\_TrafficInfluenceData API. If the AF request is for subscribing to UP path change events of the HR-SBO PDU session (especially for the change of local PSA UPF in VPLMN, see TS 23.548), the V-SMF will report the UP path change to the V-NEF.  In this case, the notification URI and notification corrlelation id are assigned by the V-NEF and provided to the V-SMF. However, there is a NOTE says that the "upPathChgNotifCorreId" and "upPathChgNotifUri" attributes assigned by the V-NEF shall not be included in TrafficInfluDataNotify data structure.  In addition, TrafficInfluDataNotif data type including resource URI was defined and used instead of TrafficInfluData in 29.519 to enable the consumer to identify the change in the notification (*see CP-200136*). Similarly, the V-SMF also needs the resource URI or something like that to identify the change in the notification. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Update the notification procedure to indicate that when the AF request is for subscribing to UP path change events of the HR-SBO PDU session, the NEF shall include the "upPathChgNotifUri" and "upPathChgNotifCorreId" attributes of the TrafficInfluData data structure.  Replace TrafficInfluData with TrafficInfluDataNotif, and the table NOTE is removed. | | | | | | | | |
|  | | on | | | | | | | | |
| ***Consequences if not approved:*** | | UP path change notification for HR-SBO cannot work properly due to the lack of notifUri and notifId. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 4.4.2.4.2, 5.3.6.1, 5.3.6.2.3, 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 correction to the OpenAPI file of the Nnef\_TrafficInfluenceData API. | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

**Additional discussion(if needed):**

**Proposed changes:**

\*\*\* 1st Change \*\*\*

##### 4.4.2.4.2 Notification of changes of Traffic Influence Data

Figure 4.4.2.4.2-1 illustrates the notification about Traffic Influence Data.



Figure 4.4.2.4.2-1: Notification about Traffic Influence Data

If the NEF observes Traffic Influence Data that an NF service consumer has subscribed, the NEF shall send an HTTP POST request as shown in step 1 of figure 4.4.2.4.2-1, with the "{notifUri}" as request URI containing the value previously provided by the NF service consumer within the corresponding subscription, and the TrafficInfluDataNotify data structure as request body.

The TrafficInfluDataNotify data structure shall include:

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

- Traffic Influence Data within the "eventNotifications" attribute. When the AF request is for subscribing to UP path change events of the HR-SBO PDU session, the NEF shall include the "upPathChgNotifUri" and "upPathChgNotifCorreId" attributes of the TrafficInfluData data structure defined in 3GPP TS 29.519 [30].

Upon successful reception of an HTTP POST request with "{notifUri}" as request URI and TrafficInfluDataNotify data structure as request body, the NF service consumer shall send an HTTP "204 No Content" response, as shown in step 2 of figure 4.4.2.4.2-1.

\*\*\* 2nd 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. |  |
| 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. |  |
| TrafficInfluDataNotif | 3GPP TS 29.519 [28] | Contains traffic influence data. |  |
| Uri | 3GPP TS 29.571 [16] | Contains a URI. |  |

\*\*\* 3rd Change \*\*\*

##### 5.3.6.2.3 Type: TrafficInfluDataNotify

Table 5.3.6.2.3-1: Definition of type TrafficInfluDataNotify

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Attribute name** | **Data type** | **P** | **Cardinality** | **Description** | **Applicability** |
| notifCorrId | string | M | 1 | Notification correlation identifier. |  |
| eventNotifications | array(TrafficInfluDataNotif) | M | 1..N | Notifications about Individual Events. |  |

\*\*\* 4th 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.

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]

- required: [supis]

- required: [anyUe]

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/TrafficInfluDataNotif'

minItems: 1

description: Notifications about Individual Events.

required:

- notifCorrId

- eventNotifications

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