**3GPP TSG-CT WG3 Meeting #128 *C3-232178***

**Bratislava, Slovakia, 22nd - 26th May, 2023 (revision of C3-231621)**

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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **29.591** | **CR** | **0123** | **rev** | **3** | **Current version:** | **18.1.0** |  |
|  | | | | | | | | |
| *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)*.* | | | | | | | | |
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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***Proposed change affects:*** | UICC apps |  | ME |  | Radio Access Network |  | Core Network | **X** |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | | | | | | | | |
| ***Title:*** | Definition of the new TrafficInfluenceData API | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Huawei | | | | | | | | | |
| ***Source to TSG:*** | CT3 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | EDGE\_Ph2 | | | | |  | ***Date:*** | | | 2023-05-10 |
|  |  | | | |  | |  | | |  |
| ***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:*** | | As indicated in clause 5.2.6.35 of TS 23.502, a new service TrafficInfluenceData was added for NEF to support V-SMF subscribe AF request from V-NEF. This paper proposes to define the the TrafficInfluenceData API. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Define the resource and data models for the TrafficInfluenceData API. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | AF influenced traffic routing cannot be supported in VPLMN for HR-SBO case. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 5.3(new) | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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:*** | | The CR does not impact the OpenAPI file. | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | | Rev 3 provides additional updates:   * Corrections to the redirection mechanism description. | | | | | | | | |

**Additional discussion(if needed):**

**Proposed changes:**

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

# 2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non‑specific.

- For a specific reference, subsequent revisions do not apply.

- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

[1] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

[2] 3GPP TS 23.501: "System Architecture for the 5G System; Stage 2".

[3] 3GPP TS 23.502: "Procedures for the 5G System; Stage 2".

[4] 3GPP TS 29.500: "5G System; Technical Realization of Service Based Architecture; Stage 3".

[5] 3GPP TS 29.501: "5G System; Principles and Guidelines for Services Definition; Stage 3".

[6] OpenAPI: "OpenAPI Specification Version 3.0.0", <https://spec.openapis.org/oas/v3.0.0>.

[7] 3GPP TR 21.900: "Technical Specification Group working methods".

[8] 3GPP TS 33.501: "Security architecture and procedures for 5G system".

[9] IETF RFC 6749: "The OAuth 2.0 Authorization Framework".

[10] 3GPP TS 29.510: "5G System; Network Function Repository Services; Stage 3".

[11] IETF RFC 7540: "Hypertext Transfer Protocol Version 2 (HTTP/2)".

[12] IETF RFC 8259: "The JavaScript Object Notation (JSON) Data Interchange Format".

[13] IETF RFC 7807: "Problem Details for HTTP APIs".

[14] 3GPP TS 23.288: "Architecture enhancements for 5G System (5GS) to support network data analytics services".

[15] 3GPP TS 29.522: "5G System; Network Exposure Function Northbound APIs; Stage 3".

[16] 3GPP TS 29.571: "5G System; Common Data Types for Service Based Interfaces; Stage 3".

[17] 3GPP TS 29.520: "5G System; Network Data Analytics Services; Stage 3".

[18] 3GPP TS 29.517: "5G System; Application Function Event Exposure Service; Stage 3".

[19] 3GPP TS 29.551: "5G System; Packet Flow Description Management Service; Stage 3".

[20] 3GPP TS 29.541: "5G System; Network Exposure (NE) function services for Non-IP Data Delivery (NIDD) and Short Message Services (SMS); Stage 3".

[21] 3GPP TS 29.554: "5G System; Background Data Transfer Policy Control Service; Stage 3".

[22] 3GPP TS 29.523: "5G System; Policy Control Event Exposure Service; Stage 3".

[23] 3GPP TS 29.256: "Uncrewed Aerial Systems Network Function (UAS-NF); Aerial Management Services; Stage 3".

[24] 3GPP TS 26.531: "Data Collection and Reporting; General Description and Architecture".

[25] 3GPP TS 26.501: "5G Media Streaming (5GMS); General description and architecture".

[26] 3GPP TS 26.512: "5G Media Streaming (5GMS); Protocols".

[27] 3GPP TS 23.273: "5G System (5GS) Location Services (LCS); Stage 2".

[28] 3GPP TS 29.519: "5G System; Usage of the Unified Data Repository service for Policy Control Data, Application Data and Structured Data for Exposure; Stage 3".

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

## 5.3 TrafficInfluenceData Service API

### 5.3.1 Introduction

The TrafficInfluenceData service shall use the TrafficInfluenceData API.

The API URI of the TrafficInfluenceData API shall be:

**{apiRoot}/<apiName>/<apiVersion>**

The request URIs used in HTTP requests from the NF service consumer towards the NF service producer shall have the Resource URI structure defined in clause 4.4.1 of 3GPP TS 29.501 [5], i.e.:

**{apiRoot}/<apiName>/<apiVersion>/<apiSpecificResourceUriPart>**

with the following components:

- The {apiRoot} shall be set as described in 3GPP TS 29.501 [5].

- The <apiName>shall be "nnef-traffic-influence-data".

- The <apiVersion> shall be "v1".

- The <apiSpecificResourceUriPart> shall be set as described in clause 5.3.3.

### 5.3.2 Usage of HTTP

#### 5.3.2.1 General

HTTP/2, IETF RFC 7540 [11], shall be used as specified in clause 5 of 3GPP TS 29.500 [4].

HTTP/2 shall be transported as specified in clause 5.3 of 3GPP TS 29.500 [4].

The OpenAPI [6] specification of HTTP messages and content bodies for the TrafficInfluenceData API is contained in Annex 4.

#### 5.3.2.2 HTTP standard headers

##### 5.3.2.2.1 General

See clause 5.3.2 of 3GPP TS 29.500 [4] for the usage of HTTP standard headers.

##### 5.3.2.2.2 Content type

JSON, IETF RFC 8259 [12], shall be used as content type of the HTTP bodies specified in the present specification as specified in clause 5.4 of 3GPP TS 29.500 [4]. The use of the JSON format shall be signalled by the content type "application/json".

"Problem Details" JSON object shall be used to indicate additional details of the error in a HTTP response body and shall be signalled by the content type "application/problem+json", as defined in IETF RFC 7807 [13].

#### 5.3.2.3 HTTP custom headers

The TrafficInfluenceData API shall support mandatory HTTP custom header fields specified in clause 5.3.3.2 of 3GPP TS 29.500 [4] and may support HTTP custom header fields specified in clause 5.3.3.3 of 3GPP TS 29.500 [4].

In this Release of the specification, no specific custom headers are defined for the TrafficInfluenceData API.

### 5.3.3 Resources

#### 5.3.3.1 Overview

This clause describes the structure for the Resource URIs and the resources and methods used for the service.

Figure 5.3.3.1-1 depicts the resource URIs structure for the TrafficInfluenceData API.



Figure 5.3.3.1-1: Resource URI structure of the TrafficInfluenceData API

Table 5.3.3.1-1 provides an overview of the resources and applicable HTTP methods.

Table 5.3.3.1-1: Resources and methods overview

|  |  |  |  |
| --- | --- | --- | --- |
| Resource name | Resource URI | HTTP method or custom operation | Description |
| Traffic Influence Data Subscriptions | /subscriptions | POST | Creates a subscription to notifications of Traffic Influence Data Information, i.e. creation of an Individual Traffic Influence Data Subscription resource. |
| GET | Reads all subscriptions to Traffic Influence Data. |
| Individual Traffic Influence Data Subscription | /subscriptions/{subscriptionId} | PUT | Modify all of the properties of an existing subscription to Traffic Influence Data. |
| GET | Reads a subscription to Individual Traffic Influence Data. |
| DELETE | Cancels an individual subscription to notifications of Traffic Influence Data. |

#### 5.3.3.2 Resource: Traffic Influence Data Subscriptions

##### 5.3.3.2.1 Description

The resource represents the collection of Traffic Influence Data subscriptions of the TrafficInfluenceData service. It allows NF service consumers to create a new subscription to notifications on Traffic Influence Data.

##### 5.3.3.2.2 Resource Definition

Resource URI: **{apiRoot}/nnef-traffic-influence-data/<apiVersion>/subscriptions**

This resource shall support the resource URI variables defined in table 5.3.3.2.2-1.

Table 5.3.3.2.2-1: Resource URI variables for this resource

|  |  |  |
| --- | --- | --- |
| Name | Data type | Definition |
| apiRoot | string | See clause 5.3.1 |

##### 5.3.3.2.3 Resource Standard Methods

###### 5.3.3.2.3.1 POST

This method shall support the URI query parameters specified in table 5.3.3.2.3.1-1.

Table 5.3.3.2.3.1-1: URI query parameters supported by the POST method on this resource

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

This method shall support the request data structures specified in table 5.3.3.2.3.1-2 and the response data structures and response codes specified in table 5.3.3.2.3.1-3.

Table 5.3.3.2.3.1-2: Data structures supported by the POST Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| TrafficInfluDataSub | M | 1 | Contains the information required for the creation of a new Individual Traffic Influence Data Subscription resource. |

Table 5.3.3.2.3.1-3: Data structures supported by the POST Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response  Codes | Description |
| TrafficInfluDataSub | M | 1 | 201 Created | Contains the representation of the Individual Traffic Influence Data Subscription resource. |
| NOTE: The mandatory HTTP error status code for the POST method listed in table 5.2.7.1-1 of 3GPP TS 29.500 [4] also apply. | | | | |

Table 5.3.3.2.3.1-4: 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}/nnef-traffic-influence-data/<apiVersion>/subscriptions/{subscriptionId} |

Editor's note: It is FFS whether GET method for reading all subscripitions is needed.

#### 5.3.3.3 Resource: Individual Traffic Influence Data Subscription

##### 5.3.3.3.1 Description

The resource represents an individual Traffic Influence Data subscription of the TrafficInfluenceData service. It allows NF service consumers to subscribe/unsubscribe an Traffic Influence Data information, and allows the NEF to notify Traffic Influence Data to the NF service consumer.

##### 5.3.3.3.2 Resource Definition

Resource URI: **{apiRoot}/nnef-traffic-influence-data/<apiVersion>/subscriptions/{subscriptionId}**

This resource shall support the resource URI variables defined in table 5.3.3.3.2-1.

Table 5.3.3.3.2-1: Resource URI variables for this resource

|  |  |  |
| --- | --- | --- |
| Name | Data type | Definition |
| apiRoot | string | See clause 5.3.1 |
| subscriptionId | string | Identifier of the subscription. |

##### 5.3.3.3.3 Resource Standard Methods

###### 5.3.3.3.3.1 GET

This method shall support the URI query parameters specified in table 5.3.3.3.3.1-1.

Table 5.3.3.3.3.1-1: URI query parameters supported by the GET method on this resource

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

This method shall support the request data structures specified in table 5.3.3.3.3.1-2 and the response data structures and response codes specified in table 5.3.3.3.3.1-3.

Table 5.3.3.3.3.1-2: Data structures supported by the GET Request Body on this resource

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

Table 5.3.3.3.3.1-3: Data structures supported by the GET Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response codes | Description |
| TrafficInfluDataSub | M | 1 | 200 OK | The subscription information is returned. |
| RedirectResponse | O | 0..1 | 307 Temporary Redirect | Temporary redirection, during subscription retrieval.  (NOTE 2) |
| RedirectResponse | O | 0..1 | 308 Permanent Redirect | Permanent redirection, during subscription retrieval.  (NOTE 2) |
| NOTE 1: The mandatory HTTP error status codes for the GET method listed in table 5.2.7.1-1 of 3GPP TS 29.500 [4] also apply.  NOTE 2: The RedirectResponse data structure may be provided by an SCP (cf. clause 6.10.9.1 of 3GPP TS 29.500 [4]). | | | | |

Table 5.3.3.3.3.1-4: Headers supported by the 307 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | Contains an alternative URI of the resource located in an alternative NEF (service) instance towards which the request is redirected.  For the case where the request is redirected to the same target via a different SCP, refer to clause 6.10.9.1 of 3GPP TS 29.500 [4]. |
| 3gpp-Sbi-Target-Nf-Id | string | O | 0..1 | Identifier of the target NEF (service) instance towards which the request is redirected. |

Table 5.3.3.3.3.1-5: Headers supported by the 308 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | Contains an alternative URI of the resource located in an alternative NEF (service) instance towards which the request is redirected.  For the case where the request is redirected to the same target via a different SCP, refer to clause 6.10.9.1 of 3GPP TS 29.500 [4]. |
| 3gpp-Sbi-Target-Nf-Id | string | O | 0..1 | Identifier of the target NEF (service) instance towards which the request is redirected. |

###### 5.3.3.3.3.2 PUT

This method shall support the URI query parameters specified in table 5.3.3.3.3.2-1.

Table 5.3.3.3.3.2-1: URI query parameters supported by the PUT method on this resource

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

This method shall support the request data structures specified in table 5.3.3.3.3.2-2 and the response data structures and response codes specified in table 5.3.3.3.3.2-3.

Table 5.3.3.3.3.2-2: Data structures supported by the PUT Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| TrafficInfluDataSub | M | 1 | Modify an existing subscription to Traffic Influence Data. |

Table 5.3.3.3.3.2-3: Data structures supported by the PUT Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response  codes | Description |
| TrafficInfluDataSub | M | 1 | 200 OK | The subscription was updated successfully. |
| n/a |  |  | 204 No Content | The subscription has been successfully updated and no content is returned in the response body. |
| RedirectResponse | O | 0..1 | 307 Temporary Redirect | Temporary redirection, during subscription retrieval.  (NOTE 2) |
| RedirectResponse | O | 0..1 | 308 Permanent Redirect | Permanent redirection, during subscription retrieval.  (NOTE 2) |
| NOTE 1: The mandatory HTTP error status codes for the PUT method listed in table 5.2.7.1-1 of 3GPP TS 29.500 [4] also apply.  NOTE 2: The RedirectResponse data structure may be provided by an SCP (cf. clause 6.10.9.1 of 3GPP TS 29.500 [4]). | | | | |

Table 5.3.3.3.3.2-4: Headers supported by the 307 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | Contains an alternative URI of the resource located in an alternative NEF (service) instance towards which the request is redirected.  For the case where the request is redirected to the same target via a different SCP, refer to clause 6.10.9.1 of 3GPP TS 29.500 [4]. |
| 3gpp-Sbi-Target-Nf-Id | string | O | 0..1 | Identifier of the target NEF (service) instance towards which the request is redirected. |

Table 5.3.3.3.3.2-5: Headers supported by the 308 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | Contains an alternative URI of the resource located in an alternative NEF (service) instance towards which the request is redirected.  For the case where the request is redirected to the same target via a different SCP, refer to clause 6.10.9.1 of 3GPP TS 29.500 [4]. |
| 3gpp-Sbi-Target-Nf-Id | string | O | 0..1 | Identifier of the target NEF (service) instance towards which the request is redirected. |

###### 5.3.3.3.3.3 DELETE

This method shall support the URI query parameters specified in table 5.3.3.3.3.3-1.

Table 5.3.3.3.3.3-1: 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 5.3.3.3.3.3-2 and the response data structures and response codes specified in table 5.3.3.3.3.3-3.

Table 5.3.3.3.3.3-2: Data structures supported by the DELETE Request Body on this resource

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

Table 5.3.3.3.3.3-3: Data structures supported by the DELETE Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response codes | Description |
| n/a |  |  | 204 No Content | Successful case. The Individual Traffic Influence Data Subscription resource matching the subscriptionId was deleted. |
| RedirectResponse | O | 0..1 | 307 Temporary Redirect | Temporary redirection, during subscription termination.  (NOTE 2) |
| RedirectResponse | O | 0..1 | 308 Permanent Redirect | Permanent redirection, during subscription termination.  (NOTE 2) |
| NOTE 1: The mandatory HTTP error status code for the DELETE method listed in table 5.2.7.1-1 of 3GPP TS 29.500 [4] also apply.  NOTE 2: The RedirectResponse data structure may be provided by an SCP (cf. clause 6.10.9.1 of 3GPP TS 29.500 [4]). | | | | |

Table 5.3.3.3.3.3-4: Headers supported by the 307 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | Contains an alternative URI of the resource located in an alternative NEF (service) instance towards which the request is redirected.  For the case where the request is redirected to the same target via a different SCP, refer to clause 6.10.9.1 of 3GPP TS 29.500 [4]. |
| 3gpp-Sbi-Target-Nf-Id | string | O | 0..1 | Identifier of the target NEF (service) instance towards which the request is redirected. |

Table 5.3.3.3.3.3-5: Headers supported by the 308 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | Contains an alternative URI of the resource located in an alternative NEF (service) instance towards which the request is redirected.  For the case where the request is redirected to the same target via a different SCP, refer to clause 6.10.9.1 of 3GPP TS 29.500 [4]. |
| 3gpp-Sbi-Target-Nf-Id | string | O | 0..1 | Identifier of the target NEF (service) instance towards which the request is redirected. |

### 5.3.4 Custom Operations without associated resources

None.

### 5.3.5 Notifications

#### 5.3.5.1 General

Notifications shall comply to clause 6.2 of 3GPP TS 29.500 [4] and clause 4.6.2.3 of 3GPP TS 29.501 [5].

Table 5.3.5.1-1: Notifications overview

|  |  |  |  |
| --- | --- | --- | --- |
| Notification | Callback URI | HTTP method or custom operation | Description  (service operation) |
| Event Notification | {notifUri} | POST | Provides Traffic Influence Data. |

#### 5.3.5.2 Traffic Influence Data Notification

##### 5.3.5.3.1 Description

The Traffic Influence Data Notification is used by the NEF to report the observed Traffic Influence Data to an NF service consumer that has subscribed to such Notifications.

##### 5.3.5.3.2 Target URI

The Notification URI **"{notifUri}"** shall be used with the callback URI variables defined in table 5.3.5.3.2-1.

Table 5.3.5.3.2-1: Callback URI variables for this resource

|  |  |  |
| --- | --- | --- |
| Name | Data type | Definition |
| notifUri | Uri | The Notification URI as assigned by the NF service consumer during the subscription service operation and described within the TrafficInfluDataSub data type. |

##### 5.3.5.3.3 Standard Methods

###### 5.3.5.3.3.1 POST

This method shall support the request data structures specified in table 5.3.5.3.3.1-1 and the response data structures and response codes specified in table 5.3.5.3.3.1-2.

Table 5.3.5.3.3.1-1: Data structures supported by the POST Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| TrafficInfluDataNotify | M | 1 | Provides the Traffic Influence Data. |

Table 5.3.5.3.3.1-2: 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. |
| RedirectResponse | O | 0..1 | 307 Temporary Redirect | Temporary redirection, during notification.  (NOTE 2) |
| RedirectResponse | O | 0..1 | 308 Permanent Redirect | Permanent redirection, during notification.  (NOTE 2) |
| NOTE 1: The mandatory HTTP error status codes for the POST method listed in table 5.2.7.1-1 of 3GPP TS 29.500 [4] also apply.  NOTE 2: The RedirectResponse data structure may be provided by an SCP (cf. clause 6.10.9.1 of 3GPP TS 29.500 [4]). | | | | |

Table 5.3.5.3.3.1-3: Headers supported by the 307 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | Contains an alternative URI representing the end point of an alternative NF consumer (service) instance towards which the request is redirected.  For the case where the request is redirected to the same target via a different SCP, refer to clause 6.10.9.1 of 3GPP TS 29.500 [4]. |
| 3gpp-Sbi-Target-Nf-Id | string | O | 0..1 | Identifier of the target NF (service) instance towards which the notification request is redirected. |

Table 5.3.5.3.3.1-4: Headers supported by the 308 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | Contains an alternative URI representing the end point of an alternative NF consumer (service) instance towards which the request is redirected.  For the case where the request is redirected to the same target via a different SCP, refer to clause 6.10.9.1 of 3GPP TS 29.500 [4]. |
| 3gpp-Sbi-Target-Nf-Id | string | O | 0..1 | Identifier of the target NF (service) instance towards which the notification request is redirected. |

### 5.3.6 Data Model

#### 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 TrafficInfluenceData service based interface protocol.

Table 5.3.6.1-1: 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 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 TrafficInfluenceData service based interface.

Table 5.3.6.1-2: 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. |  |
| TrafficInfluData | 3GPP TS 29.519 [28] | Contains traffic influence data. |  |
| Uri | 3GPP TS 29.571 [16] | Contains a URI. |  |

#### 5.3.6.2 Structured data types

##### 5.3.6.2.1 Introduction

This clause defines the structures to be used in resource representations.

##### 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) | O | 1..N | Each element identifies a DNN.  (NOTE) |  |
| snssais | array(Snssai) | O | 1..N | Each element identifies an interna slice. (NOTE) |  |
| internalGroupIds | array(GroupId) | O | 1..N | Each element identifies a group of users. (NOTE) |  |
| supis | array(Supi) | O | 1..N | Each element identifies the user.  (NOTE) |  |
| anyUe | boolean | O | 0..1 | Identifies any UE when setting to "true".  Default value is "false" if omitted.  (NOTE) |  |
| 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" set to "true". |  |
| 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", "internalGroupIds", "anyUe" or "supis" shall be provided. | | | | | |

##### 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(TrafficInfluData) | M | 1..N | Notifications about Individual Events. |  |
| NOTE: The "upPathChgNotifCorreId", "upPathChgNotifUri", "resUri" and "resetIds" attributes contained in TrafficInfluData shall not be included. | | | | | |

#### 5.3.6.3 Simple data types and enumerations

##### 5.3.6.3.1 Introduction

This clause defines simple data types and enumerations that can be referenced from data structures defined in the previous clauses.

##### 5.3.6.3.2 Simple data types

The simple data types defined in table 5.3.6.3.2-1 shall be supported.

Table 5.3.6.3.2-1: Simple data types

|  |  |  |  |
| --- | --- | --- | --- |
| Type Name | Type Definition | Description | Applicability |
|  |  |  |  |

### 5.3.7 Error Handling

#### 5.3.7.1 General

For the TrafficInfluenceData API, HTTP error responses shall be supported as specified in clause 4.8 of 3GPP TS 29.501 [5]. Protocol errors and application errors specified in table 5.3.7.2-1 of 3GPP TS 29.500 [4] shall be supported for an HTTP method if the corresponding HTTP status codes are specified as mandatory for that HTTP method in table 5.2.7.1-1 of 3GPP TS 29.500 [4].

In addition, the requirements in the following clauses are applicable for the TrafficInfluenceData API.

#### 5.3.7.2 Protocol Errors

No specific procedures for the TrafficInfluenceData service are specified.

#### 5.3.7.3 Application Errors

The application errors defined for the TrafficInfluenceData service are listed in Table 5.3.7.3-1.

Table 5.3.7.3-1: Application errors

|  |  |  |
| --- | --- | --- |
| Application Error | HTTP status code | Description |
|  |  |  |

### 5.3.8 Feature negotiation

The optional features in table 5.3.8-1 are defined for the TrafficInfluenceData API. They shall be negotiated using the extensibility mechanism defined in clause 6.6 of 3GPP TS 29.500 [4].

Table 5.3.8-1: Supported Features

|  |  |  |
| --- | --- | --- |
| Feature number | Feature Name | Description |
|  |  |  |

### 5.3.9 Security

As indicated in 3GPP TS 33.501 [8] and 3GPP TS 29.500 [4], the access to the TrafficInfluenceData API may be authorized by means of the OAuth2 protocol (see IETF RFC 6749 [9]), based on local configuration, using the "Client Credentials" authorization grant, where the NRF (see 3GPP TS 29.510 [10]) plays the role of the authorization server.

If OAuth2 is used, an NF Service Consumer, prior to consuming services offered by the TrafficInfluenceData API, shall obtain a "token" from the authorization server, by invoking the Access Token Request service, as described in 3GPP TS 29.510 [10], clause 5.4.2.2.

NOTE: When multiple NRFs are deployed in a network, the NRF used as authorization server is the same NRF that the NF Service Consumer used for discovering the TrafficInfluenceData service.

The TrafficInfluenceData API defines a single scope "nnef-traffic-influence-data" for the entire service, and it does not define any additional scopes at resource or operation level.

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