**3GPP TSG- Meeting #C3-253544**

**Gothenburg, Sweden, 25 -29 August, 2025**

**Source: Ericsson, Nokia, Huawei**

**Title: Pseudo-CR on The procedures of the Naf\_Inference API**

**Spec: 3GPP TS 29.530 V0.0.0**

**Agenda item: 19.39**

**Document for: Agreement**

**1. Introduction**

TS 23.288 is introduced the Naf\_Inference service.

There is an EN on clause 11.4.1 of TS 23.288 indicating that parameters of the Naf\_Inference service operations are FFS and more will be added when procedures and content of services are agreed.

Naf\_Inference API shall be completed on Stage 3 with SA2 input.

**2. Reason for Change**

The procedures of the Naf\_Inference service description and the Naf\_Inference API need to be specified.

**3. Conclusions**

**4. Proposal**

It is proposed to agree the following changes to 3GPP TS 29.530 V0.0.0.

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

## 5.1 Introduction

The AF offers to other NFs the following services:

- Naf\_Inference

Table 5.1-1 summarizes the corresponding APIs defined for this specification.

Table 5.1-1: API Descriptions

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Service Name | Clause | Description | OpenAPI Specification File | apiName | Annex |
| Naf\_Inference | 5.5 | Naf\_Inference API | TS29530\_Naf\_Inference.yaml | naf-inference | A.5 |

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

## 5.5 Naf\_Inference Service

### 5.5.1 Service Description

The Naf\_Inference service as defined in 3GPP TS 23.288 [14], is provided by the Application Function (AF) acting as VFL server.

This service allows the NF service consumers:

- to subscribe to and unsubscribe from different inference events;

- to modify inference subscriptions; and

- be notified about events for corresponding inference subscriptions.

### 5.5.2 Service Operations

#### 5.5.2.1 Introduction

Service operations defined for the Naf\_Inference Service are shown in table 5.5.2-1.

Table 5.5.2-1: Naf\_Inference Service Operations

|  |  |  |
| --- | --- | --- |
| Service Operation Name | Description | Initiated by |
| Naf\_Inference\_Subscribe | This service operation is used by an NF service consumer to subscribe to, or modify a subscription in the AF for Inference event notifications. | NF Consumer (i.e., NWDAF, NEF) |
| Naf\_Inference\_Unsubscribe | This service operation is used by an NF service consumer to unsubscribe from Inference event notifications. | NF Consumer (i.e., NWDAF, NEF) |
| Naf\_Inference\_Notify | This service operation is used by the AF to report Inference related event(s) to the NF service consumer which has subscribed to the event report service. | AF |

#### 5.5.2.2 Naf\_Inference\_Subscribe

##### 5.5.2.2.1 General

The Naf\_Inference\_Subscribe service operation is used by an NF service consumer to request AF VFL servers(s) to subscribe or update subscription for inference event notifications from the AF acting as VFL server.

The following procedures are supported by the "Naf\_Inference\_Subscribe" service operation:

- Inference Subscription Creation.

- Inference Subscription Update.

##### 5.5.2.2.2 Inference Subscription Creation

Figure 5.5.2.2.2-1 a scenario where an NF service consumer sends a request to the AF to request the creation of an Inference Subscription.



Figure 5.5.2.2.2-1: Procedure for Inference subscription

In order to subscribe to Inference event notifications, the NF service consumer shall send an HTTP POST request to the AF targeting the URI of the "Inference Subscriptions" collection resource, with the request body including the InferEventsSubsc data structure.

Upon the reception of an HTTP POST request with: "{apiRoot}/naf-inference/<apiVersion>/subscriptions" as Resource URI and inferAnaSub data structure as request body:

- If the VFL server is a trusted AF:

- If no VFL model is already trained, the VFL server initiates VFL Training by sending Nnwdaf\_VFLTraining\_Subscribe towards NWDAF(s) acting as VFL Client(s).

- If VFL model is already trained, the VFL server may decide to initiate the VFL inference procedure towards the selected NWDAF VFL client(s) by sending Nnwdaf\_VFLInference\_Subscribe.

- If the VFL server is an untrusted AF:

- If no VFL model is already trained, the VFL server initiates VFL Training by sending for each NWDAF acting as VFL client an Nnef\_VFLTraining\_Subscribe request towards NEF indicating the identity of the NWDAF acting as VFL Client.

- If VFL model is already trained, the VFL server may decide to initiate the VFL inference procedure. For each selected NWDAF VFL client the VFL server sends an Nnef\_VFLInference\_Subscribe request to the NEF indicating the identity of the NWDAF acting as VFL Client.

If no NWDAF VFL Client(s) are selected, the VFL server may generate the VFL inference results based only on its local trained ML model associated with the determined VFL correlation ID.

Upon success, the AF shall respond with an HTTP "201 Created" status code with the response body containing a representation of the created "Individual Inference Subscription" resource within the InferEventsSubsc data structure, and an HTTP "Location" header field containing the URI of the created resource.

##### On failure, the appropriate HTTP status code indicating the error shall be returned and appropriate additional error information should be returned in the HTTP POST response body, as specified in clause 6.4.7.5.5.2.2.3 Inference Subscription Update

Figure 5.5.2.2.3-1 illustrates the modification of an existing subscription.

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Figure 5.5.2.2.3-1: Modification of an existing subscription

In order to request the update of an existing inference subscription, the NF service consumer shall send an HTTP PUT/PATCH request to the AF, targeting the URI of the corresponding "Individual Inference Subscription" resource, with the request body including either:

- the updated representation of the resource within the InferEventsSubsc data structure, in case the HTTP PUT method is used; or

- the requested modifications to the resource within the InferEventsSubscPatch data structure, in case the HTTP PATCH method is used.

Upon receipt of the HTTP PUT/PATCH request from the NF service consumer the AF shall:-

 if the VFL server is a trusted AF and there are NWDAF VFL subscriptions associated to the AF inference subscription, the VFL updates those NWDAF VFL inference subscriptions by sending an Nnwdaf\_VFLInference\_Subscribe request towards each applicable NWDAF VFL client(s);

- if the VFL server is an untrusted AF and there are NWDAF VFL subscriptions associated to the AF inference subscription, the VFL updates those NWDAF VFL inference subscriptions by sending for each applicable NWDAF client an Nnef\_VFLInference\_Subscribe request to the NEF indicating the identity of the NWDAF VFL Client;

Upon success, the AF shall update the targeted "Individual Inference Subscription" resource accordingly and respond with either:

- an HTTP "200 OK" status code with the response body containing a representation of the updated "Individual Inference Subscription" resource within the InferEventsSubsc data structure; or

- an HTTP "204 No Content" status code.

On failure, the appropriate HTTP status code indicating the error shall be returned and appropriate additional error information should be returned in the HTTP PUT/PATCH response body, as specified in clause 6.4.7.

#### 5.5.2.3 Naf\_Inference\_Unsubscribe

##### 5.5.2.3.1 General

The Naf\_Inference\_Unsubscribe service operation is used by an NF service consumer to subscribe from inference notifications.

The following procedures are supported by the "Naf\_Inference\_Unsubscribe" service operation:

- Inference Subscription Deletion.

##### 5.5.2.3.2 Inference Subscription Deletion

Figure 5.5.2.3.2-1 shows a scenario where the NF service consumer sends a request to the AF to unsubscribe from an inference notification (see also 3GPP TS 23.288 [14]).



Figure 5.5.2.3.2-1: NF service consumer unsubscribes from inference notifications

In order to request the deletion of an existing Inference Subscription, the NF service consumer shall send an HTTP DELETE request to the AF targeting the URI of the corresponding "Individual Inference Subscription" resource.

Upon success, the AF shall respond with an HTTP "204 No Content" status code.

On failure, the appropriate HTTP status code indicating the error shall be returned and appropriate additional error information should be returned in the HTTP DELETE response body, as specified in clause 6.4.7.

#### 5.5.2.4 Naf\_Inference\_Notify

##### 5.5.2.4.1 General

The Naf\_Inference\_Notify service operation is used by an AF to notify NF consumers about subscribed inference events.

The following procedures are supported by the "Naf\_Inference\_Notify" service operation:

- Inference Notification.

##### 5.5.2.4.2 Inference Notification

Figure 5.5.2.4.2-1 shows a scenario where the AF sends a request to the NF Service Consumer to notify for inference event notifications (see also 3GPP TS 23.288 [14]).



Figure 5.5.2.4.2-1: AF notifies the subscribed inference event

In order to notify a previously subscribed service consumer on Inference event(s), the AF shall send an HTTP POST request to the NF service consumer with the request URI set to "{notifUri}", where the "notifUri" variable is set to the value received from the NF service consumer during the creation/update of the corresponding Inference Subscription using the procedures defined in clauses 5.4.2.2, and the request body including the TrainEventsNotif data structure.

2a. Upon success, the NF service consumer shall respond to the AF with an HTTP "204 No Content" status code to acknowledge the reception of the notification.

2b. On failure, the appropriate HTTP status code indicating the error shall be returned and appropriate additional error information should be returned in the HTTP POST response body, as specified in clause 6.3.7.

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

## 6.4 Naf\_Inference Service API

### 6.4.1 Introduction

The Naf\_Inference service shall use the Naf\_Inference API.

The API URI of the Naf\_Inference 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 "naf-inference".

- The <apiVersion> shall be "v1".

- The <apiSpecificResourceUriPart> shall be set as described in clause 6.4.3.

### 6.4.2 Usage of HTTP

#### 6.4.2.1 General

If the AF is untrusted, support of HTTP/1.1 (IETF RFC 9112 [15], IETF RFC 9110 [16] and IETF RFC 9111[17] over TLS is mandatory and support of HTTP/2 (IETF RFC 9113 [11]) over TLS is recommended. TLS shall be used as specified in clause 12.3 and clause 13.1 of 3GPP TS 33.501 [8].

If the AF is trusted, HTTP/2, IETF RFC 9113 [11], shall be used as specified in clause 5.2 of 3GPP TS 29.500 [4].

HTTP/2, IETF RFC 9113 [11], shall be used as specified in clause 5 of 3GPP TS 29.500 [4].

HTTP/2 shall be transported as specified in clause 5.5 of 3GPP TS 29.500 [4].

The OpenAPI [6] specification of HTTP messages and content bodies for the Naf\_Inference API is contained in Annex A.

#### 6.4.2.2 HTTP standard headers

##### 6.4.2.2.1 General

See clause 5.5.2 of 3GPP TS 29.500 [4] for the usage of HTTP standard headers.

##### 6.4.2.2.2 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 9457 [13].

#### 6.4.2.3 HTTP custom headers

The mandatory HTTP custom header fields specified in clause 5.5.3.2 of 3GPP TS 29.500 [4] shall be supported, and the optional HTTP custom header fields specified in clause 5.5.3.3 of 3GPP TS 29.500 [4] may be supported.

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

### 6.4.3 Resources

#### 6.4.3.1 Overview

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

Figure 6.4.3.1-1 depicts the resource URIs structure for the Naf\_Inference API.

Example:



Figure 6.4.3.1-1: Resource URI structure of the Naf\_Inference API

Table 6.4.3.1-1 provides an overview of the resources and applicable HTTP methods.

Table 6.4.3.1-1: Resources and methods overview

|  |  |  |  |
| --- | --- | --- | --- |
| Resource purpose/name | Resource URI (relative path after API URI) | HTTP method or custom operation | Description (service operation) |
| AF Inference Subscriptions | /subscriptions | POST | Creates a new Individual AF Inference Subscription resource. |
| Individual AF Inference Subscription | /subscriptions/{subscriptionId} | PUT | Updates an existing Individual AF Inference Subscription identified by subresource {subscriptionId}.. |
| PATCH | Modifies an existing Individual AF Inference Subscription identified by subresource {subscriptionId}. |
| DELETE | Deletes an Individual AF Inference Subscription identified by subresource {subscriptionId}. |

#### 6.4.3.2 Resource: AF Inference subscriptions

##### 6.4.3.2.1 Description

The AF Inference Subscriptions resource represents all Inference subscriptions to the Naf\_Inference service at a given AF. The resource allows an NF service consumer to create a new Individual AF Inference Subscription resource.

##### 6.4.3.2.2 Resource Definition

Resource URI: **{apiRoot}/naf-inference/<apiVersion>/subscriptions**

This resource shall support the resource URI variables defined in table 6.4.3.2.2-1.

Table 6.4.3.2.2-1: Resource URI variables for this resource

|  |  |  |
| --- | --- | --- |
| Name | Data type | Definition |
| apiRoot | String | See clause 6.4.1 |

##### 6.4.3.2.3 Resource Standard Methods

6.4.3.2.3.1 POST

This method shall support the URI query parameters specified in table 6.4.3.2.3.1-1.

Table 6.4.3.2.3.1-1: 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 6.4.3.2.3.1-2 and the response data structures and response codes specified in table 6.4.3.2.3.1-3.

Table 6.4.3.2.3.1-2: Data structures supported by the POST Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| InferEventSubsc | M | 1 | Contains the information required for the creation of a new Individual AF Inference Subscription resource."intGroupIds" and "supis" target identities on "inferAnaSub" attribute under this structure are not applicable to this API if the NF consumer is a NEF, i.e., the AF is an untrusted AF."exterGroupIds" and "gpsis" target identities on "inferAnaSub" attribute under this structure are not applicable to this API if the NF consumer is an NWDAF, i.e., the AF is a trusted AF. |

Table 6.4.3.2.3.1-3: Data structures supported by the POST Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Responsecodes | Description |
| InferEventSubsc | M | 1 | 201 Created | Contains the representation of the Individual AF Inference Subscription resource. |
| ProblemDetails | O | 0..1 | 403 Forbidden | (NOTE 2) |
| NOTE: The mandatory HTTP error status code for the POST method listed in Table 5.5.7.1-1 of 3GPP TS 29.500 [4] also apply.NOTE 2: Failure cases are described in clause 6.4.7. |

Table 6.4.3.2.3.1-4: 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}/naf-inference/<apiVersion>/subscriptions/{subscriptionId} |

##### 6.4.3.2.4 Resource Custom Operations

There are no resource custom operations defined for this resource in this release of the specification.

#### 6.4.3.3 Resource: Individual AF Inference subscriptions

##### 6.4.3.3.1 Description

The Individual AF Inference Subscription resource represents a single inference subscription to the Naf\_Inference service at a given AF.

##### 6.4.3.3.2 Resource Definition

Resource URI: **{apiRoot}/naf-inference/<apiVersion>/subscriptions/{subscriptionId}**

This resource shall support the resource URI variables defined in table 6.4.3.3.2-1.

Table 6.4.3.3.2-1: Resource URI variables for this resource

|  |  |  |
| --- | --- | --- |
| Name | Data type | Definition |
| apiRoot | string | See clause 6.4.1 |
| subscriptionId | string | Identifies an inference subscription to the Naf\_Inference service. |

##### 6.4.3.3.3 Resource Standard Methods

6.4.3.3.3.1 PUT

This method shall support the URI query parameters specified in table 6.4.3.3.3.1-1.

Table 6.4.3.3.3.1-1: 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 6.4.3.3.3.1-2 and the response data structures and response codes specified in table 6.4.3.3.3.1-3.

Table 6.4.3.3.3.1-2: Data structures supported by the PUT Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| **Data type** | **P** | **Cardinality** | **Description** |
| InferEventSubsc | M | 1 | Parameters to replace a subscription to AF Inference Subscription resource. |

Table 6.4.3.3.3.1-3: Data structures supported by the PUT Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Data type** | **P** | **Cardinality** | **Response codes** | **Description** |
| InferEventSubsc | M | 1 | 200 OK | Successful case.The Individual AF Inference Subscription resource was modified successfully and a representation is returned."intGroupIds" and "supis" target identities on "inferAnaSub" attribute under this structure are not applicable to this API if the NF consumer is a NEF, i.e., the AF is an untrusted AF."exterGroupIds" and "gpsis" target identities on "inferAnaSub" attribute under this structure are not applicable to this API if the NF consumer is an NWDAF, i.e., the AF is a trusted AF. |
| n/a |  |  | 204 No Content | Successful case.The Individual AF Inference Subscription resource was modified successfully. |
| RedirectResponse | O | 0..1 | 307 Temporary Redirect | Temporary redirection.(NOTE 2) |
| RedirectResponse | O | 0..1 | 308 Permanent Redirect | Permanent redirection.(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 6.4.3.3.3.1-4: 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 AF (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 | Contains the identifier of the target NF (service) instance towards which the request is redirected. |

Table 6.4.3.3.3.1-5: 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 AF (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 | Contains the identifier of the target NF (service) instance towards which the request is redirected. |

6.4.3.3.3.2 PATCH

This method shall support the URI query parameters specified in table 6.4.3.3.3.2-1.

Table 6.4.3.3.3.2-1: URI query parameters supported by the PATCH method on this resource

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

This method shall support the request data structures specified in table 6.4.3.3.3.2-2 and the response data structures and response codes specified in table 6.4.3.3.3.2-3.

Table 6.4.3.3.3.2-2: Data structures supported by the PATCH Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| InferEventSubscPatch | M | 1 | Partial update of parameters to a subscription to AF Inference Subscription resource |

Table 6.4.3.3.3.2-3: Data structures supported by the PATCH Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Responsecodes | Description |
| InferEventSubsc | M | 1 | 200 OK | The Individual AF Inference Subscription resource was partial modified successfully and a representation of that resource is returned."intGroupIds" and "supis" target identities on "inferAnaSub" attribute under this structure are not applicable to this API if the NF consumer is a NEF, i.e., the AF is an untrusted AF."exterGroupIds" and "gpsis" target identities on "inferAnaSub" attribute under this structure are not applicable to this API if the NF consumer is an NWDAF, i.e., the AF is a trusted AF. |
| n/a |  |  | 204 No Content | The Individual AF Inference Subscription resource was partial modified successfully. |
| RedirectResponse | O | 0..1 | 307 Temporary Redirect | Temporary redirection.(NOTE 2) |
| RedirectResponse | O | 0..1 | 308 Permanent Redirect | Permanent redirection.(NOTE 2) |
| NOTE 1: The mandatory HTTP error status codes for the PATCH 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 6.4.3.3.3.2-4: 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 AF (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 | Contains the identifier of the target NF (service) instance towards which the request is redirected. |

Table 6.4.3.3.3.2-5: 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 AF (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 | Contains the identifier of the target NF (service) instance towards which the request is redirected. |

6.4.3.3.3.3 DELETE

This method shall support the URI query parameters specified in table 6.4.3.3.3.3-1.

**Table 6.4.3.3.3.3-1: 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 6.4.3.3.3.3-2 and the response data structures and response codes specified in table 6.4.3.3.3.3-3.

**Table 6.4.3.3.3.3-2: Data structures supported by the DELETE Request Body on this resource**

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

**Table 6.4.3.3.3.3-3: 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 AF Inference Subscription resource matching the subscriptionId was deleted. |
| RedirectResponse | O | 0..1 | 307 Temporary Redirect | Temporary redirection.(NOTE 2) |
| RedirectResponse | O | 0..1 | 308 Permanent Redirect | Permanent redirection.(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 6.4.3.3.3.3-4: 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 AF (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 request is redirected. |

**Table 6.4.3.3.3.3-5: 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 AF (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 request is redirected. |

##### 6.4.3.2.4 Resource Custom Operations

There are no resource custom operations defined for this resource in this release of the specification.

### 6.4.4 Custom Operations without associated resources

There are no custom operations defined for this resource in this release of the specification.

### 6.4.5 Notifications

#### 6.4.5.1 General

Notifications shall comply to clause 6.4 of 3GPP TS 29.500 [4] and clause 4.6.4.3 of 3GPP TS 29.501 [5].

Table 6.4.5.1-1: Notifications overview

|  |  |  |  |
| --- | --- | --- | --- |
| Notification | Callback URI | HTTP method or custom operation | Description(service operation) |
| Inference Notification | {notifUri} | POST | Provides Information about observed events. |

#### 6.4.5.5 Inference notification

##### 6.4.5.5.1 Description

The Inference Event Notification is used by the AF to report one or several observed Inference Events to a NF service consumer that has subscribed to such Notifications via the Individual AF Inference Subscription Resource.

##### 6.4.5.5.2 Target URI

The Callback URI **"{notifUri}"** shall be used with the callback URI variables defined in table 6.4.5.5.2-1.

Table 6.4.5.5.2-1: Callback URI variables

|  |  |
| --- | --- |
| Name | Definition |
| notifUri | String formatted as URI with the Callback Uri |

##### 6.4.5.5.3 Standard Methods

6.4.5.5.3.1 POST

This method shall support the request data structures specified in table 6.4.5.5.3.1-1 and the response data structures and response codes specified in table 6.4.5.5.3.1-1.

Table 6.4.5.5.3.1-2: Data structures supported by the POST Request Body

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| InferNotif | M | 1 | Provides Information about observed events."intGroupIds" and "supis" target identities on "inferResults" attribute under this structure are not applicable to this API if the NF consumer is a NEF, i.e., the AF is an untrusted AF."exterGroupIds" and "gpsis" target identities on "inferResults" attribute under this structure are not applicable to this API if the NF consumer is an NWDAF, i.e., the AF is a trusted AF. |

Table 6.4.5.5.3.1-3: Data structures supported by the POST Response Body

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 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 event notification.(NOTE 2) |
| RedirectResponse | O | 0..1 | 308 Permanent Redirect | Permanent redirection, during event notification.(NOTE 2) |
| NOTE: The mandatory HTTP error status codes for the POST method listed in Table 5.5.7.1-1 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 6.4.5.5.3.1-4: Headers supported by the 307 Response Code on this resource**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Data type** | **P** | **Cardinality** | **Description** |
| Location | String | M | 1 | Contains an alternative URI representing the end point of an alternative NF consumer (service) instance towards which the notification should be 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 6.4.5.5.3.1-5: Headers supported by the 308 Response Code on this resource**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Data type** | **P** | **Cardinality** | **Description** |
| Location | String | M | 1 | Contains an alternative URI representing the end point of an alternative NF consumer (service) instance towards which the notification should be 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. |

### 6.4.6 Data Model

#### 6.4.6.4 General

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

Table 6.4.6.4-1 specifies the data types defined for the Naf\_Inference service based interface protocol.

Table 6.4.6.4-1: Naf\_Inference specific Data Types

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Clause defined | Description | Applicability |
| InferAnaSub | 5.4.6.4.4 | Represents notification of an AF inference subscription per analytics id. |  |
| InferNotif | 5.4.6.4.5 | Represents notification of an AF inference subscription. |  |
| InferEventSubsc | 5.4.6.4.2 | Represents an inference subscription. |  |
| InferEventSubscPatch | 5.4.6.4.3 | Represents parameters to request the modification of an AF inference subscription. |  |
| InferReq | 5.4.6.4.6 | Represents inference requirements. |  |
| InferResult | 5.4.6.4.7 | Represents inference results. |  |

Table 6.4.6.4-2 specifies data types re-used by the Naf\_Inference 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 Naf\_Inference service based interface.

Table 6.4.6.4-2: Naf\_Inference re-used Data Types

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Reference | Comments | Applicability |
| AnalyticsMetadata | 3GPP TS 29.520 [xx] | Represents the types of analytics metadata information that can be requested. |  |
| AnalyticsMetadataInfo | 3GPP TS 29.520 [xx] | Contains analytics metadata information required for analytics aggregation. |  |
| DatasetStatisticalProperty | 3GPP TS 29.520 [xx] | Dataset statistical properties of the data used for inference. |  |
| DateTime | 3GPP TS 29.571 [8] | Represents a date and time. |  |
| DurationSec | 3GPP TS 29.571 [8] | Represents a time duration expressed in units of seconds. |  |
| EventFilter | 5.2.6.2.3 | Identifies the filter for the subscribed event. |  |
| ExternalGroupId | 3GPP TS 29.122 [19] | External Group Identifier for a user group. |  |
| Gpsi | 3GPP TS 29.571 [8] | The GPSI for a UE. |  |
| GroupId | 3GPP TS 29.571 [8] | Identifies a group of UEs. |  |
| NwdafEvent | 5.1.6.3.4 | Describes the NWDAF Events. |  |
| ReportingInformation | 3GPP TS 29.523 [20] | Represents the type of reporting a subscription requires. |  |
| RedirectResponse | 3GPP TS 29.571 [8] | Contains redirection related information. |  |
| Supi | 3GPP TS 29.571 [8] | The SUPI for a UE. |  |
| SupportedFeatures | 3GPP TS 29.571 [8] | Represents the list of supported features. |  |
| TimeWindow | 3GPP TS 29.122 [19] | Represents a time window. |  |
| Uinteger | 3GPP TS 29.571 [8] | Unsigned Integer, i.e. only value 0 and integers above 0 are permissible. |  |
| Uri | 3GPP TS 29.571 [8] | Represents a URI. |  |

#### 6.4.6.4 Structured data types

##### 6.4.6.4.1 Introduction

##### 5.4.6.4.2 Type InferEventSubsc

Table 5.4.6.4.2-1: Definition of type InferEventSubsc

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| notifCorreId | string | M | 1 | The value of Notification Correlation ID in the corresponding notification. |  |
| notifUri | Uri | M | 1 | URI at which the NF service consumer requests to receive notifications. |  |
| suppFeats | SupportedFeatures | C | 0..1 | List of Supported features used as described in clause 5.10.8.It shall be supplied by NF service consumer in the POST requests that request the creation of an AF Inference Subscriptions resource and shall be supplied by the AF in the reply of corresponding request. |  |
| inferAnaSubs | array(InferAnaSub) | M | 1..N | Identifies the inference subscription information for the subscribed analytics ID(s). |  |
| inferReq | InferReq | O | 0..1 | Represents required conditions to apply inference. |  |
| inferResults | array(InferResult) | O | 1..N | Represents inference results. |  |
| reportInfo | ReportingInformation | O | 0..1 | Reporting requirement information of the inference subscription.If omitted, the default values within the ReportingInformation data type apply. |  |

EN: 23.288 clause 11.4.1 states on EN that parameters of the Naf\_Inference service operations are FFS and more will be added when procedures and content of services are agreed. This affects the parameter definition of InferEventSubsc data type.

##### 5.4.6.4.3 Type InferEventSubscPatch

Table 5.4.6.4.3-1: Definition of type InferEventSubsc

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| notifUri | Uri | M | 1 | URI at which the NF service consumer requests to receive notifications. |  |
| inferReq | InferReq | O | 0..1 | Represents required conditions to apply inference. |  |
| reportInfo | ReportingInformation | O | 0..1 | Reporting requirement information of the inference subscription.If omitted, the default values within the ReportingInformation data type apply. |  |

##### 5.4.6.4.4 Type InferAnaSub

Table 5.10.6.4.4-1: Definition of type InferAnaSub

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| anaEvent | NwdafEvent | M | 1 | Type of analytics for which inference is required. |  |
| exterGroupIds | array(ExternalGroupId) | C | 1..N | Identifies the external group of UE(s) to which the inference applies.(NOTE 1) (NOTE 2) |  |
| gpsis | array(Gpsi) | C | 1..N | Each element identifies a GPSI of an UE to which the inference applies.(NOTE 1) (NOTE 2) |  |
| intGroupIds | array(GroupId) | C | 1..N | Each element represents an internal group identifier of the UEs to which the inference applies.(NOTE 2) |  |
| supis | array(Supi) | C | 1..N | Each element identifies a SUPI of an UE to which the inference applies.(NOTE 2) |  |
| eventFilter | EventFilter | O | 0..1 | Inference filter information. |  |
| NOTE 1: The "exterGroupIds" and "gpsis" attributes are not applicable in this specification.NOTE 2: Only one of "exterGroupIds", "gpsis", "intGroupIds"or "supis" attributes shall be provided. |

EN: 23.288 clause 11.4.1 states on EN that parameters of the Naf\_Inference service operations are FFS and more will be added when procedures and content of services are agreed. This affects the parameter definition of InferAnaSub data type.

##### 5.4.6.4.5 Type InferNotif

Table 5.4.6.4.5-1: Definition of type InferNotif

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| notifCorreId | string | M | 1 | The value of Notification Correlation ID in the corresponding notification. |  |
| inferResults | array(InferResult) | M | 1..N | Represents inference results. (NOTE) |  |
| NOTE: At least one of the "inferResults" or "termCause" attribute shall be provided. |

EN: 23.288 clause 11.4.1 states on EN that parameters of the Naf\_Inference service operations are FFS and more will be added when procedures and content of services are agreed. This affects the parameter definition of InferNotif data type.

##### 5.4.6.4.6 Type InferReq

Table 5.4.6.4.6-1: Definition of type InferReq

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| anaEvent | NwdafEvent | M | 1 | Type of analytics for which inference is required. |  |
| anaMeta | array(AnalyticsMetadata) | O | 1..N | List of analytics metadata that are requested to be included in the response.Only "NUM\_OF\_SAMPLES", "DATA\_WINDOW", "DATA\_STAT\_PROPS" and “DATA\_SOURCES” values are applicable. |  |
| dataStatProps | array(DatasetStatisticalProperty) | O | 1..N | List of dataset statistical properties of the data to be used to perform inference. |  |
| timeWindows | array(TimeWindow) | O | 1..N | The time periods for inference. |  |
| resTime | DateTime | O | 0..1 | Time when the local result is needed. |  |

EN: 23.288 clause 11.4.1 states on EN that parameters of the Naf\_Inference service operations are FFS and more will be added when procedures and content of services are agreed. This affects the parameter definition of InferReq data type.

##### 5.4.6.4.7 Type InferResult

Table 5.4.6.4.7-1: Definition of type InferResult

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| anaEvent | NwdafEvent | M | 1 | Type of analytics for which inference is required. |  |
| anaMetaInfo | AnalyticsMetadataInfo | C | 0..1 | Contains information about analytics metadata required to aggregate the analytics. It shall be present if the "anaMeta" attribute was included in the request, and contains the information requested by the "anaMeta" attribute."strategy", "accuracy" and "procIntructs" attributes are not applicable. |  |
| inferRes | array(string) | C | 1..N | References inference results. This is vendor-specific information and is agreed between vendors, if necessary for sharing purposes.The content of this attribute is not standardized in this Release. |  |
| termCause | InferTermCause | C | 0..1 | A cause for which the AF client will send no further notifications for this subscription. Its presence indicates that the AF requests the termination of the subscription. (NOTE) |  |
| NOTE: One of the "inferRes" or "termCause" attributes shall be provided. |

EN: 23.288 clause 11.4.1 states on EN that parameters of the Naf\_Inference service operations are FFS and more will be added when procedures and content of services are agreed. This affects the parameter definition of InferResult data type.

#### 6.4.6.3 Simple data types and enumerations

##### 6.4.6.3.1 Introduction

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

##### 6.4.6.3.2 Simple data types

The simple data types defined in table 6.4.6.3.2-1 shall be supported.

Table 6.4.6.3.2-1: Simple data types

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

##### 6.4.6.3.3 Enumeration: InferTermCause

Table 5.10.6.3.3-1: Enumeration TermCause

|  |  |  |
| --- | --- | --- |
| Enumeration value | Description | Applicability |
| OVERLOAD | The NF/AF is overloaded. |  |

EN: 23.288 clause 11.4.1 states on EN that parameters of the Naf\_Inference service operations are FFS and more will be added when procedures and content of services are agreed. This affects the parameter definition of InferTermCause data type.

### 6.4.7 Error Handling

#### 6.4.7.1 General

For the Naf\_Inference 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 5.5.7.2-1 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 5.5.7.1-1 of 3GPP TS 29.500 [4].

In addition, the requirements in the following clauses are applicable for the Naf\_Inference API.

#### 6.4.7.2 Protocol Errors

No specific procedures for the Naf\_Inference service are specified.

#### 6.4.7.3 Application Errors

The application errors defined for the Naf\_Inference service are listed in Table 6.4.7.3-1.

Table 6.4.7.3-1: Application errors

|  |  |  |
| --- | --- | --- |
| Application Error | HTTP status code | Description |
| OVERLOAD | 403 Forbidden | Indicates the NWDAF is overloaded. |
| NOTE: Including a "ProblemDetails" data structure with the "cause" attribute in the HTTP response is optional unless explicitly mandated in the service operation clauses. |

### 6.4.8 Feature negotiation

The optional features in table 6.4.8-1 are defined for the Naf\_Inference API. They shall be negotiated using the extensibility mechanism defined in clause 6.6 of 3GPP TS 29.500 [4].

Table 6.4.8-1: Supported Features

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

### 6.4.9 Security

As indicated in 3GPP TS 33.501 [8] and 3GPP TS 29.500 [4], the access to the Naf\_Inference 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 Naf\_Inference 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 Naf\_Inference service.

The Naf\_Inference API defines a single scope "naf-inference" for the entire service, and it does not define any additional scopes at resource or operation level.

### 6.4.10 HTTP redirection

An HTTP request may be redirected to a different AF service instance when using direct or indirect communications (see 3GPP TS 29.500 [4]).

An SCP that reselects a different AF producer instance will return the NF Instance ID of the new AF producer instance in the 3gpp-Sbi-Producer-Id header, as specified in clause 6.40.3.4 of 3GPP TS 29.500 [4].

If an AF redirects a service request to a different AF using an HTTP 307 Temporary Redirect or 308 Permanent Redirect status code, the identity of the new AF towards which the service request is redirected shall be indicated in the 3gpp-Sbi-Target-Nf-Id header of the HTTP 307 Temporary Redirect or 308 Permanent Redirect response as specified in clause 6.40.9.1 of 3GPP TS 29.500 [4].

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

# A.5 Naf\_Inference API

openapi: 3.0.0

info:

 title: Naf\_Inference

 version: 1.0.0-alpha.1

 description: |

 Naf\_Inference API Service.

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externalDocs:

 description: >

 3GPP TS 29.530 V1.0.0; 5G System; Application Function Artificial

 Intelligence/Machine Learning (AI/ML) Services.

 url: https://www.3gpp.org/ftp/Specs/archive/29\_series/29.530/

servers:

 - url: '{apiRoot}/naf-inference/v1'

 variables:

 apiRoot:

 default: https://example.com

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

security:

 - {}

 - oAuth2ClientCredentials:

 - naf-inference

paths:

 /subscriptions:

 post:

 summary: Create a new Individual AF Inference Subscription resource.

 operationId: CreateAFInferenceSubcription

 tags:

 - Subscriptions (Collection)

 requestBody:

 required: true

 content:

 application/json:

 schema:

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

 responses:

 '201':

 description: Create a new Individual AF Inference Subscription resource.

 content:

 application/json:

 schema:

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

 headers:

 Location:

 description: >

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

 structure

 {apiRoot}/naf-inference/v1/subscriptions/{subscriptionId}.

 required: true

 schema:

 type: string

 '400':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/400'

 '401':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/401'

 '403':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/403'

 '404':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/404'

 '411':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/411'

 '413':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/413'

 '415':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/415'

 '429':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/429'

 '500':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/500'

 '502':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/502'

 '503':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/503'

 default:

 $ref: 'TS29122\_CommonData.yaml#/components/responses/default'

 callbacks:

 myNotification:

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

 post:

 requestBody:

 required: true

 content:

 application/json:

 schema:

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

 responses:

 '204':

 description: No Content, Notification was successful

 '307':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/307'

 '308':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/308'

 '400':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/400'

 '401':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/401'

 '403':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/403'

 '404':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/404'

 '411':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/411'

 '413':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/413'

 '415':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/415'

 '429':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/429'

 '500':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/500'

 '502':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/502'

 '503':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/503'

 default:

 $ref: 'TS29122\_CommonData.yaml#/components/responses/default'

 /subscriptions/{subscriptionId}:

 put:

 summary: Update an existing Individual AF Inference Subscription

 operationId: UpdateAFInferenceSubcription

 tags:

 - Individual AF Inference Subscription (Document)

 requestBody:

 required: true

 content:

 application/json:

 schema:

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

 parameters:

 - name: subscriptionId

 in: path

 description: String identifying a subscription to the Naf\_Inference Service.

 required: true

 schema:

 type: string

 responses:

 '200':

 description: >

 The Individual AF Inference Subscription resource was modified

 successfully and a representation of that resource is returned.

 content:

 application/json:

 schema:

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

 '204':

 description: >

 The Individual AF Inference Subscription resource was modified

 successfully.

 '307':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/307'

 '308':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/308'

 '400':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/400'

 '401':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/401'

 '403':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/403'

 '404':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/404'

 '411':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/411'

 '413':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/413'

 '415':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/415'

 '429':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/429'

 '500':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/500'

 '502':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/502'

 '503':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/503'

 default:

 $ref: 'TS29122\_CommonData.yaml#/components/responses/default'

 patch:

 summary: Partial update an existing Individual AF Inference Subscription

 operationId: PartialUpdateAFInferenceSubcription

 tags:

 - Individual AF Inference Subscription (Document)

 requestBody:

 required: true

 content:

 application/merge-patch+json:

 schema:

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

 parameters:

 - name: subscriptionId

 in: path

 description: String identifying a subscription to the Naf\_Inference Service.

 required: true

 schema:

 type: string

 responses:

 '200':

 description: >

 The Individual AF Inference Subscription resource was partial

 modified successfully and a representation of that resource is returned.

 content:

 application/json:

 schema:

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

 '204':

 description: >

 The Individual AF Inference Subscription resource was partial

 modified successfully.

 '307':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/307'

 '308':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/308'

 '400':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/400'

 '401':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/401'

 '403':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/403'

 '404':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/404'

 '411':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/411'

 '413':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/413'

 '415':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/415'

 '429':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/429'

 '500':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/500'

 '502':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/502'

 '503':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/503'

 default:

 $ref: 'TS29122\_CommonData.yaml#/components/responses/default'

 delete:

 summary: Delete an existing Individual AF Inference Subscription.

 operationId: DeleteAFInferenceSubcription

 tags:

 - Individual AF Inference Subscription (Document)

 parameters:

 - name: subscriptionId

 in: path

 description: >

 String identifying a subscription to the Naf\_Inference Service.

 required: true

 schema:

 type: string

 responses:

 '204':

 description: >

 No Content. The Individual AF Inference Subscription matching the

 subscriptionId was deleted.

 '307':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/307'

 '308':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/308'

 '400':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/400'

 '401':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/401'

 '403':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/403'

 '404':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/404'

 '429':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/429'

 '500':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/500'

 '502':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/502'

 '503':

 $ref: 'TS29122\_CommonData.yaml#/components/responses/503'

 default:

 $ref: 'TS29122\_CommonData.yaml#/components/responses/default'

components:

 securitySchemes:

 oAuth2ClientCredentials:

 type: oauth2

 flows:

 clientCredentials:

 tokenUrl: '{nrfApiRoot}/oauth2/token'

 scopes:

 naf-inference: Access to the Naf\_Inference API

 schemas:

 InferEventSubsc:

 description: Represents an Inference subscription.

 type: object

 properties:

 notifCorreId:

 type: string

 description: >

 String identifying the Notification Correlation ID in the corresponding

 notification.

 notifUri:

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

 suppFeats:

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

 inferAnaSubs:

 type: array

 items:

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

 minItems: 1

 description: Represents inference subscription per analytics Id.

 inferReq:

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

 inferResults:

 type: array

 items:

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

 minItems: 1

 description: Represents Inference result.

 reportInfo:

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

 required:

 - notifUri

 - notifCorreId

 - inferAnaSubs

 InferNotif:

 description: Represents notifications on events that occurred.

 type: object

 properties:

 notifCorreId:

 type: string

 description: >

 String identifying the Notification Correlation ID in the corresponding

 notification.

 inferResults:

 type: array

 items:

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

 minItems: 1

 description: Represents inference results.

 termCause:

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

 required:

 - notifCorreId

 - inferResults

 InferEventSubscPatch:

 description: >

 Represents parameters to request the modification of an Inference

 subscription.

 type: object

 properties:

 notifUri:

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

 inferReq:

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

 reportInfo:

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

 InferAnaSub:

 description: Represents a subscription to a single event.

 type: object

 properties:

 anaEvent:

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

 exterGroupIds:

 type: array

 items:

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

 minItems: 1

 gpsis:

 type: array

 items:

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

 minItems: 1

 intGroupIds:

 type: array

 items:

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

 minItems: 1

 supis:

 type: array

 items:

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

 minItems: 1

 eventFilter:

 $ref: 'TS29520\_Nnwdaf\_AnalyticsInfo.yaml#/components/schemas/EventFilter'

 required:

 - anaEvent

 oneOf:

 - required: [exterGroupIds]

 - required: [gpsis]

 - required: [intGroupIds]

 - required: [supis]

 InferReq:

 description: >

 Represents the requirement on conditions to be fulfilled for the Inference.

 type: object

 properties:

 anaEvent:

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

 anaMeta:

 type: array

 items:

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

 minItems: 1

 dataStatProps:

 type: array

 items:

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

 minItems: 1

 timeWindows:

 type: array

 items:

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

 minItems: 1

 resTime:

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

 InferResult:

 description: >

 Represents Inference result per target UE.

 type: object

 properties:

 anaEvent:

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

 anaMetaInfo:

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

 items:

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

 minItems: 1

 inferRes:

 type: array

 items:

 type: string

 minItems: 1

 required:

 - anaEvent

 oneOf:

 - required: [inferRes]

 - required: [termCause]

#

# ENUMERATIONS DATA TYPES

#

 InferTermCause:

 anyOf:

 - type: string

 enum:

 - OVERLOAD

 - type: string

 description: >

 This string provides forward-compatibility with future extensions to the

 enumeration but is not used to encode content defined in the present version

 of this API.

 description: |

 Represents the cause for the analytics subscription termination request.

 Possible values are:

 - OVERLOAD: The NF is overloaded.

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