**3GPP TSG- Meeting # *3542\_R2***

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

|  |
| --- |
| *CR-Form-v12.3* |
| **CHANGE REQUEST** |
|  |
|  |  | **CR** | **1086** | **rev** | **1** | **Current version:** |  |  |
|  |
| *For* [***HELP***](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:***  | Data and error completion for Nnwdaf\_VFLInference |
|  |  |
| ***Source to WG:*** | , Nokia, China Mobile |
| ***Source to TSG:*** |  |
|  |  |
| ***Work item code:*** | AIML\_CN |  | ***Date:*** | 13 |
|  |  |  |  |  |
| ***Category:*** | **B** |  | ***Release:*** |  |
|  | *Use one of the following categories:****F*** *(correction)****A*** *(mirror corresponding to a change in an earlier release)****B*** *(addition of feature),* ***C*** *(functional modification of feature)****D*** *(editorial modification)*Detailed explanations of the above categories canbe found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | *Use one of the following releases:Rel-8 (Release 8)Rel-9 (Release 9)Rel-10 (Release 10)Rel-11 (Release 11)…Rel-17 (Release 17)Rel-18 (Release 18)Rel-19 (Release 19) Rel-20 (Release 20)* |
|  |  |
| ***Reason for change:*** | TS 23.288 (clause 6.2H.2.4.3) defines the contents of the VFL Inference service. The following data must be added to new Inference subscriptions or requests:* Target of VFL inference: Specifies objects for which inference data is requested (i.e., list of SUPIs or UE groups by Internal/External-Group-Ids).
* [Optional] Dataset Statistical Properties: Information in order to influence the data selection mechanisms to be used for the generation of intermediate local inference results.
* [Optional] Analytics metadata request: Indicates a request from VFL server to client for analytics metadata information related to the produced intermediate local inference results.
* Only for Nnef\_VFLInference service the external identity of the VFL client (in the Nnef\_VFLInference service case, the NWDAF ID).

Responses to new subscriptions or requests must include:* Analytics ID.
* [Optional] Analytics metadata information, including:
	+ Number of data samples used.
	+ Data sample time window.
	+ Statistical properties of the analytics output.
	+ [Optional] Data sources used.

TS 23.288 also specifies possible rejection causes for VFL inference (e.g., overload, UE moved out of serving area) on VFL inference responses. For completeness, these causes must also be included in notifications requesting the termination of an individual VFL inference subscription.Further error situation to consider in responses and notifications include the possibility for NWDAF of notifying that the requested response time in VflInferReq on Nnwdaf\_VFLInference\_Subscribe requests cannot be met..Therefore, the VFLInference\_Subscribe and Nnwdaf\_VFLInference\_Notify service operations need updating to incorporate all this information. |
|  |  |
| ***Summary of change:*** | The Nnwdaf\_VFLInference API has been updated with the following modifications:* On the VflInferSub data type the cardinality of the "vflInferAnaSub" attribute is updated so that it is a string of VflInferAnaSub, aligning with the Nnwdaf\_VFLTraining service that allows the subscription to several AnalyticsIds. The corresponding EN is removed.
* The VflInferAnaSub data type has been extended to include the target(s) of VFL inference. Consequently, the editor’s note in clause 5.10.6.2.4 has been removed.
* The VflInferReq data type has been extended to optionally include:
	+ A list of requested dataset statistical properties to consider.
	+ A request for Analytics metadata information.
* The VflInferReq data type is added the "anaEvent" attribute to be applicable per analytics id.
* The VflInferResult data type has been extended to include:
	+ The NwdafEvent that the result applies to.
	+ The target(s) of VFL inference that the result applies to, leading to the removal of the editor’s note in clause 5.10.6.2.7.
	+ Optionally, analytics metadata information.

For error handling:* The VflInferNotif data type has been extended to include a termination cause specifying why NWDAF is requesting to terminate the VFL inference subscription.
* The presence of "vflInferResults" attribute on VflInferNotif data type is changed from mandatory to conditional.
* A new data type, VflTermCause, has been created to represent the reasons NWDAF may use to request the termination of an individual VFL inference subscription.

Application errors in clause 5.10.7.3 have been updated to incorporate relevant errors. |
|  |  |
| ***Consequences if not approved:*** | No support of stage 2 requirements on VFL Inference. |
|  |  |
| ***Clauses affected:*** | 4.11.2.2.2, 4.11.2.4.2, 5.10.6.1, 5.10.6.2.2, 5.10.6.2.4, 5.10.6.2.5, 5.10.6.2.6, 5.10.6.2.7, 5.10.6.3.3 (new), 5.10.7.3, A.11. |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** |  | **X** |  Other core specifications  | TS/TR ... CR ...  |
| ***affected:*** |  | **X** |  Test specifications | TS/TR ... CR ...  |
| ***(show related CRs)*** |  | **X** |  O&M Specifications | TS/TR ... CR ...  |
|  |  |
| ***Other comments:*** | This CR introduces a backwards compatible feature to the following API: TS29520\_Nnwdaf\_VFLInference.yaml API. |
|  |  |
| ***This CR's revision history:*** |  |

**Additional discussion(if needed):**

**Proposed changes:**

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

##### 4.11.2.2.2 Subscription for VFL inference event notifications

Figure 4.11.2.2.2-1 shows a scenario where the NF service consumer sends a request to the NWDAF to subscribe for VFL inference event notification(s) (as shown in 3GPP TS 23.288 [17]).



Figure 4.11.2.2.2-1: NF service consumer subscribes to VFL inference notifications

The NF service consumer shall invoke the Nnwdaf\_VFLInference\_Subscribe service operation to request NWDAF VFL client(s) to subscribe to VFL inference event notification(s). The NF service consumer shall send an HTTP POST request with "{apiRoot}/nnwdaf-vflinference/<apiVersion>/subscriptions" as Resource URI representing the "NWDAF VFL Inference Subscriptions", as shown in figure 4.11.2.2.2-1, step 1, to create a subscription for an "Individual NWDAF VFL Inference Subscription" according to the information in message body.

The VflInferSub data structure provided in the request body shall include:

- an URI where to receive the requested notifications as the "notifUri" attribute;

- a notification correlation identifier assigned by the NF service consumer for the requested notifications as "notifCorreId" attribute; and

- a description of the subscribed analytics event as the "vflInferAnaSub" attribute.

and may include:

- the VFL reporting information as the "vflReportInfo" attribute; and

- the required conditions to apply VFL inference as the "vflInferReq" attribute.

Upon the reception of an HTTP POST request with: "{apiRoot}/nnwdaf-vflinference/<apiVersion>/subscriptions" as Resource URI and VflInferAnaSub data structure as request body, the NWDAF shall create a new subscription and store the subscription.

If the NWDAF created an "Individual NWDAF VFL Inference Subscription" resource, the NWDAF shall respond with "201 Created" with the message body containing a representation of the created subscription, as shown in figure 4.11.2.2.2-1, step 2. The NWDAF shall include a Location HTTP header field. The Location header field shall contain the URI of the created subscription i.e. "{apiRoot}/nnwdaf-vflinference/<apiVersion>/subscriptions/{subscriptionId}".

If the immediate reporting indication in the "immRep" attribute within the "ReportingInformation" structure in the "vflReportInfo" attribute sets to "true" during the event subscription, the NWDAF shall include the intermediate VFL inference results of the subscribed events, if available, as the "vflInferResults" attribute in the HTTP POST response.

If any error occurs when processing the HTTP POST request, the NWDAF shall send an HTTP error response as specified in clause 5.10.7.

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

##### 4.11.2.4.2 Notification about subscribed event

Figure 4.11.2.4.2-1 shows a scenario where the NWDAF sends a request to the NF Service Consumer to notify for VFL inference event notifications (see also 3GPP TS 23.288 [17]).



Figure 4.11.2.4.2-1: NWDAF notifies the subscribed VFL inference event

The NWDAF shall invoke the Nnwdaf\_VFLInference\_Notify service operation to notify about a subscribed VFL inference event. The NWDAF shall send an HTTP POST request with "{notifUri}" received in the Nnwdaf\_VFLInference\_Subscribe service operation as Resource URI, as shown in figure 4.11.2.4.2-1, step 1. The VflInferNotif data structure provided in the request body that shall include:

- a notification correlation identifier as "notifCorreId" attribute.

and may include:- a description of the notified event as "vflInferResults " attribute;

- a cause for termination in the "termCause" attribute if the NWDAF wants to request the termination of this subscription, i.e. to indicate that it will send no further notifications for it.

Upon the reception of an HTTP POST request, if the NF service consumer successfully processed and accepted the received HTTP POST request, the NF Service Consumer shall store the notification and respond with HTTP "204 No Content" status code.

If the NF service consumer determines the received HTTP POST request needs to be redirected, the NF service consumer shall send an HTTP redirect response as specified in clause 6.10.9 of 3GPP TS 29.500 [6].

If errors occur when processing the HTTP POST request, the NF service consumer shall send an HTTP error response as specified in clause 5.10.7.

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

#### 5.10.6.1 General

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

Table 5.10.6.1-1 specifies the data types defined for the Nnwdaf\_VFLInference service-based interface protocol.

Table 5.10.6.1-1: Nnwdaf\_VFLInference specific Data Types

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Section defined | Description | Applicability |
| TermCause | 5.10.6.2.8 | Represents the termination of the events. |  |
| VflInferAnaSub | 5.10.6.2.4 | Represents an Individual NWDAF VLF Inference Subscription resource per analytics id. |  |
| VflInferNotif | 5.10.6.2.5 | Represents notification of a VFL inference subscription. |  |
| VflInferReq | 5.10.6.2.6 | Represents requirements for VFL inference |  |
| VflInferResult | 5.10.6.2.7 | Represents intermediate VFL inference result per target. |  |
| VflInferSub | 5.10.6.2.2 | Represents a VFL inference subscription. |  |
| VflInferSubPatch | 5.10.6.2.3 | Represents parameters to request the modification of a VFL inference subscription. |  |
| VflTermCause | 5.10.6.3.3 | Represents a cause of termination of a VFL inference subscription. |  |

Table 5.10.6.1-2 specifies data types re-used by the Nnwdaf\_VFLInference 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 Nnwdaf\_VFLInference service-based interface.

Table 5.10.6.1-2: Nnwdaf\_VFL re-used Data Types

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Reference | Comments | Applicability |
| AnalyticsMetadata | 5.1.6.3.14 | Represents the types of analytics metadata information that can be requested. |  |
| AnalyticsMetadataInfo | 5.1.6.2.37 | Contains analytics metadata information required for analytics aggregation. |  |
| DatasetStatisticalProperty | 5.1.6.3.15 | Dataset statistical properties of the data used for VFL 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. |  |

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

##### 5.10.6.2.2 Type VflInferSub

Table 5.10.6.2.2-1: Definition of type VflInferSub

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 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 NWDAF VFL Subscriptions resource and shall be supplied by the NWDAF in the reply of corresponding request. |  |
| vflInferAnaSubs | array(VflInferAnaSub) | M | 1..N | Identifies the VFL inference subscription information for the subscribed analytics ID(s). |  |
| vflInferReq | VflInferReq | O | 0..1 | Represents required conditions to apply VFL inference. |  |
| vflInferResults | array(VflInferResult) | O | 1..N | Represents intermediate VFL inference results |  |
| vlfReportInfo | ReportingInformation | O | 0..1 | Reporting requirement information of the VFL inference subscription.If omitted, the default values within the ReportingInformation data type apply. |  |

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

##### 5.10.6.2.4 Type VflInferAnaSub

Table 5.10.6.2.4-1: Definition of type VflInferAnaSub

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| anaEvent | NwdafEvent | M | 1 | Type of analytics for which VFL inference is required. |  |
| exterGroupIds | array(ExternalGroupId) | C | 1..N | Identifies the external group of UE(s) to which the VFL inference applies.(NOTE 1) (NOTE 2) |  |
| gpsis | array(Gpsi) | C | 1..N | Each element identifies a GPSI of an UE to which the VFL 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 VFL inference applies.(NOTE 2) |  |
| supis | array(Supi) | C | 1..N | Each element identifies a SUPI of an UE to which the VFL inference applies.(NOTE 2) |  |
| vflCorreId | string | M | 1 | VFL correlation ID used to identify the VFL process to be executed among the candidate VFL participants to which the inference subscription procedure relates. |  |
| vflEventFilter | EventFilter | O | 0..1 | Inference filter information. |  |
| NOTE 1: The "exterGroupIds" and "gpsis" attributes are not applicable in this NWDAF API.NOTE 2: Only one of "exterGroupIds", "gpsis", "intGroupIds"or "supis" attributes shall be provided. |

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

##### 5.10.6.2.5 Type VflInferNotif

Table 5.10.6.2.5-1: Definition of type VflInferNotif

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| notifCorreId | string | M | 1 | The value of Notification Correlation ID in the corresponding notification. |  |
| vflInferResults | array(VflInferResult) | C | 1..N | Represents intermediate inference results. (NOTE) |  |
| termCause | array(TermCause) | C | 1..N | A cause for which the VFL client will send no further notifications for this subscription. Its presence indicates that the VFL client requests the termination of the subscription. (NOTE) |  |
| NOTE: At least one of the "vflInferResults" or "termCause" attribute shall be provided. |

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

##### 5.10.6.2.6 Type VflInferReq

Table 5.10.6.2.6-1: Definition of type VflInferReq

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| anaEvent | NwdafEvent | M | 1 | Type of analytics for which VFL 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 VFL inference. |  |
| timeWindows | array(TimeWindow) | O | 1..N | The time periods for inference. |  |
| resTime | DateTime | O | 0..1 | Time when the intermediate local result is needed. |  |

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

##### 5.10.6.2.7 Type VflInferResult

Table 5.10.6.2.7-1: Definition of type VflInferResult

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| anaEvent | NwdafEvent | M | 1 | Type of analytics for which VFL 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. |  |
| exterGroupIds | array(ExternalGroupId) | O | 1..N | Identifies the external group of UE(s) to which the VFL inference applies.(NOTE 1) (NOTE 2) |  |
| gpsis | array(Gpsi) | O | 1..N | Each element identifies a GPSI of an UE to which the VFL inference applies.(NOTE 1) (NOTE 2) |  |
| intGroupIds | array(GroupId) | O | 1..N | Each element represents an internal group identifier of the UEs to which the VFL inference applies.(NOTE 2) |  |
| supis | array(Supi) | O | 1..N | Each element identifies a SUPI of an UE to which the VFL inference applies.(NOTE 2) |  |
| vflInferRes | array(string) | M | 1..N | References intermediate VFL 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. |  |
| NOTE 1: The "exterGroupIds" and "gpsis" attributes are not applicable in this NWDAF API.NOTE 2: Only one of "exterGroupIds", "gpsis", "intGroupIds"or "supis" attributes may be provided. |

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

##### 5.10.6.2.8 Type: TermCause

Table 5.10.6.2.8-1: Definition of type TermCause

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| vflTermCause | VflTermCause | M | 1 | Termination cause(s) for which the VFL client will send no further notifications for this subscription. Its presence indicates that the VFL client requests the termination of the events indicated by the "vflCorreIds" attribute. |  |
| vflCorreIds | array(string) | O | 0..N | VFL correlation ID used to identify the VFL process to be executed among the candidate VFL participants to which the inference subscription procedure relates. (NOTE) |  |
| NOTE: When omitted, it means the "termCause" apply to all the events within the individual subscription. |

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

##### 5.10.6.3.3 Enumeration: VflTermCause

Table 5.10.6.3.3-1: Enumeration VflTermCause

|  |  |  |
| --- | --- | --- |
| Enumeration value | Description | Applicability |
| OVERLOAD | The NF is overloaded. |  |
| UE\_LEFT\_AREA | The UE has moved out of the serving area. |  |

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

#### 5.10.7.3 Application Errors

The application errors defined for the Nnwdaf\_VFLInference API are listed in table 5.10.7.3-1.

Table 5.10.7.3-1: Application errors

|  |  |  |
| --- | --- | --- |
| Application Error | HTTP status code | Description |
| OVERLOAD | 403 Forbidden | Indicates the NWDAF is overloaded. |
| VFL\_REQS\_NOT\_MET | 403 Forbidden | Indicates the VFL requirements are not met. |
| NOTE: Including a "ProblemDetails" data structure with the "cause" attribute in the HTTP response is optional unless explicitly mandated in the service operation clauses. |

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

A.11 Nnwdaf\_VFLInference API

openapi: 3.0.0

info:

 title: Nnwdaf\_VFLInference

 version: 1.0.0-alpha.1

 description: |

 Nnwdaf\_VFLInference API Service.

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externalDocs:

 description: 3GPP TS 29.520 V19.3.0; 5G System; Network Data Analytics Services.

 url: https://www.3gpp.org/ftp/Specs/archive/29\_series/29.520/

servers:

 - url: '{apiRoot}/nnwdaf-vflinference/v1'

 variables:

 apiRoot:

 default: https://example.com

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

security:

 - {}

 - oAuth2ClientCredentials:

 - nnwdaf-vflinference

paths:

 /subscriptions:

 post:

 summary: Create a new Individual NWDAF VFL Inference Subscription resource.

 operationId: CreateNWDAFVFLInferenceSubcription

 tags:

 - Subscriptions (Collection)

 requestBody:

 required: true

 content:

 application/json:

 schema:

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

 responses:

 '201':

 description: Create a new Individual NWDAF VFL Inference Subscription resource.

 content:

 application/json:

 schema:

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

 headers:

 Location:

 description: >

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

 structure

 {apiRoot}/nnwdaf-vflinference/v1/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/VflInferNotif'

 responses:

 '204':

 description: No Content, Notification was successful

 '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'

 /subscriptions/{subscriptionId}:

 put:

 summary: Update an existing Individual NWDAF VFL Inference Subscription

 operationId: UpdateNWDAFVFLInferenceSubcription

 tags:

 - Individual NWDAF VFL Inference Subscription (Document)

 requestBody:

 required: true

 content:

 application/json:

 schema:

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

 parameters:

 - name: subscriptionId

 in: path

 description: String identifying a subscription to the Nnwdaf\_VFLInference Service.

 required: true

 schema:

 type: string

 responses:

 '200':

 description: >

 The Individual NWDAF VFL Inference Subscription resource was modified

 successfully and a representation of that resource is returned.

 content:

 application/json:

 schema:

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

 '204':

 description: >

 The Individual NWDAF VFL Inference Subscription resource was modified

 successfully.

 '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'

 patch:

 summary: Partial update an existing Individual NWDAF VFL Inference Subscription

 operationId: PartialUpdateNWDAFVFLInferenceSubcription

 tags:

 - Individual NWDAF VFL Inference Subscription (Document)

 requestBody:

 required: true

 content:

 application/merge-patch+json:

 schema:

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

 parameters:

 - name: subscriptionId

 in: path

 description: String identifying a subscription to the Nnwdaf\_VFLInference Service.

 required: true

 schema:

 type: string

 responses:

 '200':

 description: >

 The Individual NWDAF VFL Inference Subscription resource was partial

 modified successfully and a representation of that resource is returned.

 content:

 application/json:

 schema:

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

 '204':

 description: >

 The Individual NWDAF VFL Inference Subscription resource was partial

 modified successfully.

 '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: Delete an existing Individual NWDAF VFL Inference Subscription.

 operationId: DeleteNWDAFVFLInferenceSubcription

 tags:

 - Individual NWDAF VFL Inference Subscription (Document)

 parameters:

 - name: subscriptionId

 in: path

 description: >

 String identifying a subscription to the Nnwdaf\_VFLInference Service.

 required: true

 schema:

 type: string

 responses:

 '204':

 description: >

 No Content. The Individual NWDAF VFL Inference Subscription matching the

 subscriptionId was 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:

 nnwdaf-vflinference: Access to the Nnwdaf\_VFLInference API

 schemas:

 VflInferSub:

 description: Represents a VFL 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'

 vflInferAnaSubs:

 type: array

 items:

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

 minItems: 1

 description: Represents inference subscription per analytics Id.

 vflInferReq:

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

 vflInferResults:

 type: array

 items:

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

 minItems: 1

 description: Represents intermediate VFL Inference result.

 vflReportInfo:

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

 required:

 - notifUri

 - notifCorreId

 - vflInferAnaSubs

 VflInferNotif:

 description: Represents notifications on events that occurred.

 type: object

 properties:

 notifCorreId:

 type: string

 description: >

 String identifying the Notification Correlation ID in the corresponding

 notification.

 vflInferResults:

 type: array

 items:

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

 minItems: 1

 description: Represents intermediate VFL inference results.

 termCause:

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

 required:

 - notifCorreId

 oneOf:

 - required: [vflInferResults]

 - required: [termCause]

 - required: [vflInferResults, termCause]

 VflInferSubPatch:

 description: >

 Represents parameters to request the modification of a VFL Inference

 subscription.

 type: object

 properties:

 notifUri:

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

 vflInferReq:

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

 vflReportInfo:

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

 VflInferAnaSub:

 description: Represents a subscription to a single event.

 type: object

 properties:

 anaEvent:

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

 vflCorreId:

 type: string

 description: >

 VFL correlation ID used to identify the VFL process to be executed among

 the candidate VFL participants to which the VFL inference subscription

 procedure relates.

 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 vflEventFilter:

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

 required:

 - anaEvent

 - vflCorreId

 oneOf:

 - required: [exterGroupIds]

 - required: [gpsis]

 - required: [intGroupIds]

 - required: [supis]

 VflInferReq:

 description: >

 Represents the requirement on conditions to be fulfilled for the VFL 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'

 VflInferResult:

 description: >

 Represents intermediate VFL 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'

 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 vflInferRes:

 type: array

 items:

 type: string

 minItems: 1

 required:

 - anaEvent

 - vflInferRes

 TermCause:

 description: Represents the termination of the events.

 type: object

 properties:

 vflTermCause:

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

 vflCorreIds:

 type: array

 items:

 type: string

 minItems: 1

 description: Represents the identification of the VFL process.

 required:

 - vflTermCause

#

# ENUMERATIONS DATA TYPES

#

 VflTermCause:

 anyOf:

 - type: string

 enum:

 - NWDAF\_OVERLOAD

 - UE\_LEFT\_AREA

 - 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:

 - NWDAF\_OVERLOAD: The NWDAF is overloaded.

 - UE\_LEFT\_AREA: The UE has moved out of the NWDAF serving area.

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