**3GPP TSG- Meeting #**

**, , -**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.3* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  |  | **CR** |  | **rev** |  | **Current version:** |  |  |
|  | | | | | | | | |
| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* | | | | | | | | |
|  | | | | | | | | |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***Proposed change affects:*** | UICC apps |  | ME |  | Radio Access Network |  | Core Network | **X** |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | | | | | | | | |
| ***Title:*** | Adding LMF as ML model training and performance monitoring data source | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** |  | | | | | | | | | |
| ***Source to TSG:*** |  | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | AIML\_CN | | | | |  | ***Date:*** | | |  |
|  |  | | | |  | |  | | |  |
| ***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 can be found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | | | | | | | | *Use one of the following releases: Rel-8 (Release 8) Rel-9 (Release 9) Rel-10 (Release 10) Rel-11 (Release 11) … Rel-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)  Rel-20 (Release 20)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | According to S2-2410995, the NWDAF may collect data from the LMF using the Nlmf\_DataExposure service, which is defined in 29.572 (see C4-245244) for AIML based positioning ML model training or performance monitoring. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Added Nlmf\_DataExposure to the possible ML model training or performance monitoring data sources. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | Not fulfilled stage 2 requirement and not possible to retrieve data from LMF for AIML based positioning ML model training or performance monitoring purposes. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 2, 4.2.2.2.4, 4.3.2.2.2, 5.1.6.1, 5.1.6.2.3, 5.1.6.2.13, 5.1.8, A.2 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | | **X** |  | Other core specifications | | | | TS 23.288 CR 1253  TS 23.273 CR 0574 | | |
| ***affected:*** | |  | **X** | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | | This CR introduces a backwards compatible feature into the OpenAPI file of the Ndccf\_DataManagement API. | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

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

2 References

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

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

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

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

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

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

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

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

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

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

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

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

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

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

[11] IETF RFC 9113: " HTTP/2".

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

[13] IETF RFC 9457: "Problem Details for HTTP APIs".

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

[15] 3GPP TS 29.520: "5G System; Network Data Analytics Services; Stage 3".

[16] Void.

[17] 3GPP TS 29.571: "5G System; Common Data Types for Service Based Interfaces; Stage 3".

[18] Void.

[19] Void.

[20] 3GPP TS 29.503: "5G System; Unified Data Management Services; Stage 3".

[21] Void.

[22] Void.

[23] 3GPP TS 29.122: "T8 reference point for Northbound APIs".

[24] IETF RFC 6901: "JavaScript Object Notation (JSON) Pointer".

[25] 3GPP TS 29.575: "5G System; Analytics Data Repository Services; Stage 3".

[26] 3GPP TS 29.576: "5G System; Messaging Framework Adaptor Services; Stage 3".

[27] 3GPP TS 29.536: "5G System; Network Slice Admission Control Services; Stage 3".

[28] 3GPP TS 29.554: "5G System; Background Data Transfer Policy Control Service; Stage 3".

[29] 3GPP TS 29.515: "5G System; Gateway Mobile Location Services; Stage 3".

[30] 3GPP TS 29.564: "5G System; User Plane Function Services; Stage 3".

[31] 3GPP TS 29.572: "5G System; Location Management Services; Stage 3".

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

4.2.2.2.4 Subscription for data notifications

**Figure 4.2.2.2.4-1 shows a scenario where the NF service consumer sends a request to the DCCF to subscribe for data notifications.**

****

**Figure 4.2.2.2.4-1: NF service consumer subscribes to data notifications**

The NF service consumer (i.e. NWDAF) shall invoke the Ndccf\_DataManagement\_Subscribe service operation to subscribe to data notification(s). The NF service consumer shall send an HTTP POST request with "{apiRoot}/ndccf-datamanagement/<apiVersion>/data-subscriptions" as Resource URI, as shown in figure 4.2.2.2.4-1, step 1, to create a subscription for an "Individual DCCF Data Subscription" resource according to the information in message body. The NdccfDataSubscription data structure provided in the request body shall include:

- a notification target address within the "dataNotifUri" attribute;

- a notification correlation identifier within the "dataNotifCorrId" attribute; and

- a data subscription within the "dataSub" attribute, which contains one of the following:

- AMF event exposure subscription within the "amfDataSub" attribute;

- SMF event exposure subscription within the "smfDataSub" attribute;

- UDM event exposure subscription within the "udmDataSub" attribute;

- NEF event exposure subscription within the "nefDataSub" attribute;

- AF event exposure subscription within the "afDataSub" attribute;

- NRF event exposure subscription within the "nrfDataSub" attribute;

- NSACF event exposure subscription within the "nsacfDataSub" attribute;

- GMLC event exposure subscription within the "gmlcDataSub" attribute;

- UPF event exposure subscription within the "upfDataSub" attribute, if the "UpEvents" feature is supported;

- LMF data exposure event subscription within the "lmfDataSub" attribute, if the "LmfEvents" feature is supported;

and may include:

- the notification endpoints within the "notifEndpoints" attribute, if the "DataAnaCollect" feature is supported;

- formatting instructions within the "formatInstruct" attribute;

- processing instructions within the "procInstructs" attribute;

- the indication for data storage within the "storeInd" attribute, if the "DataAnaCollect" feature is supported;

- a target NF identifier within the "targetNfId" attribute" or a target NF set identifier within the "targetNfSetId" attribute";

- an ADRF identifier within the "adrfId" attribute or an ADRF set identifier within the "adrfSetId" attribute; and/or

- time window of the occurrence of the requested data collection within the "timePeriod" attribute.

NOTE 1: The DCCF can use the provided time window e.g. to determine when to (un)subscribe to the data source NF and/or what subscription duration to indicate to it.

- the purpose of data collection within the "dataCollectPurposes" attribute.

- the indication that the NF service consumer has already checked the user consent within the "checkedConsentInd" attribute.

- storage handling information within the "storeHandl" attribute, if the "EnhDataMgmt" feature is supported.

Upon the reception of an HTTP POST request with: "{apiRoot}/ndccf-datamanagement/<apiVersion>/subscriptions" as Resource URI and NdccfDataSubscription data structure as request body, the DCCF shall use the contents (e.g. "smfDataSub" attribute in NdccfDataSubscription data structure) of the request to determine whether the subscription can already be served or interactions with data sources (e.g. creation or modification of event exposure subscription for Nsmf\_EventExposure service) are required. If the DCCF cannot use the contents of the request to determine this, the DCCF shall send an HTTP "400 Bad Request" error response including the "cause" attribute set to "SUBSCRIPTION\_CANNOT\_BE\_SERVED".

NOTE 2: The "SUBSCRIPTION\_CANNOT\_BE\_SERVED" error can occur, for example, when the request is syntactically valid and there is no DCCF internal error, but the DCCF can neither find an existing subscription to a data source nor construct one based on the received subscription contents.

If the user consent has not been checked by the NF service consumer and is required for the requested data collection depending on local policy and regulations, then the DCCF shall check user consent for the targeted UE(s) based on the user consent subscription data that is retrieved via the Nudm\_SDM service API of the UDM as described in clause 5.2.2.24 and clause 6.1.3.32 of 3GPP TS 29.503 [20]. If the DCCF receive the response from the UDM that it is not granted for the impacted user(s), then the DCCF shall send an HTTP "403 Forbidden" error response including the "cause" attribute set to "USER\_CONSENT\_NOT\_GRANTED".

NOTE 3: When the target of reporting is a SUPI or a GPSI then the subscription can be rejected, e.g. because user consent is not granted, and the error is sent to the consumer. When the target of reporting is an Internal Group Id, or a list of SUPIs/GPSI(s) or any UE, and the user consent is not granted for a subset of the impacted users, then no error is sent, but a subset of the SUPIs/GPSIs is skipped if user consent is not granted.

Otherwise, if the user consent subscription data retrieved from the UDM indicate that the user consent is granted for the impacted user(s), the DCCF shall subscribe to notification of changes of the user consent (unless it is already subscribed) by invoking the Nudm\_SDM\_Subscribe service operation by sending an HTTP POST request targeting the resource "SdmSubscriptions" to the UDM as described in clause 5.2.2.3 of 3GPP TS 29.503 [20].

If the DCCF determines that the subscription can already be served (without requiring further interactions with the data sources) or a successful response from the data source(s) is received for the creation or modification of subscription(s) to serve this subscription, the DCCF shall:

- create a new subscription;

- assign a subscriptionId;

- store the subscription.

If the DCCF created an "Individual DCCF Data Subscription" resource, the DCCF shall respond with "201 Created" with the message body containing a representation of the created subscription, as shown in figure 4.2.2.2.4-1, step 2. The DCCF shall include a Location HTTP header field. The Location header field shall contain the URI of the created subscription i.e. "{apiRoot}/ndccf-datamanagement/<apiVersion>/data-subscriptions/{subscriptionId}". If an immediate reporting indication is provided in the subscription, the DCCF shall include the reports of the events subscribed, if available, in the HTTP POST response within the "dataSub" attribute, or, potentially within the "immReport" attribute, if the DataAnaCollect feature is supported.

When the notification flag of the "dataSub" attribute (e.g. the "notifFlag" attribute within the "eventsRepInfo" attribute in the case of AF events) is included and set to "DEACTIVATE" in the request, the DCCF shall mute the event notification and store the available events until the NF service consumer requests to retrieve them by setting the notification flag to "RETRIEVAL" or until a muting exception occurs (e.g. full buffer). When a muting exception occurs, if the EnhDataMgmt feature is supported, the DCCF may consider the contents of the muting instructions of the "dataSub" attribute (if provided; e.g. the "notifFlagInstruct" attribute within the "eventsRepInfo" attribute in the case of AF events) and/or local configuration to determine its actions.

If the EnhDataMgmt feature is supported and the DCCF accepts the provided notification flag and muting instructions, it may indicate the applied muting notification settings in the response (e.g. within the "mutingSetting" attribute in the case of AF events). If the DCCF does not accept the provided notification flag and muting instructions, it shall send an HTTP "403 Forbidden" error response including the "cause" attribute set to "MUTING\_INSTR\_NOT\_ACCEPTED".

If the DCCF receives storage handling information in the request but determines (e.g. based on local policy) that a different storage approach shall be followed, it indicates the determined storage approach to the consumer by setting accordingly the "storeHandl" attribute (e.g. providing a different lifetime, or setting the indication about deletion alerts to "false") in the message body of the response. When more than one consumer has requested storage lifetime for the same data, the storage approach should be based on the longest requested storage lifetime.

NOTE 4: The default operator policy for how long data is to be stored can be longer or shorter than the lifetime requested by the consumer. A default operator policy can for example accept only consumer requested lifetimes that are shorter or longer than the default policy.

If an error occurs when processing the HTTP POST request, the DCCF shall send an HTTP error response as specified in clause 5.1.7.

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

4.3.2.2.2 Register data collection profile to DCCF

Figure 4.3.2.2.2-1 shows a scenario where the NF service consumer sends a request to the DCCF to register data or analytics it is collecting to the DCCF.

****

**Figure 4.3.2.2.2-1: NF service consumer registers data collection profile**

The NF service consumer shall invoke the Ndccf\_ContextManagement\_Register service operation to register data or analytics it is collecting to the DCCF. The NF service consumer shall send an HTTP POST request with "{apiRoot}/ndccf-contextmanagement/<apiVersion>/data-collection-profiles" as Resource URI representing the "DCCF Data Collection Profiles", as shown in figure 4.3.2.2.2-1, step 1, to create an "Individual DCCF Data Collection Profile" according to the information in the message body. The NdccfDataCollectionProfile data structure provided in the request body shall include:

- one of the following data or analytics collection information:

- analytics subscription information within the "anaSub" attribute;

- data subscription information within the "dataSub" attribute, which contains one of the following:

- AMF event exposure subscription within the "amfDataSub" attribute;

- SMF event exposure subscription within the "smfDataSub" attribute;

- UDM event exposure subscription within the "udmDataSub" attribute;

- NEF event exposure subscription within the "nefDataSub" attribute;

- AF event exposure subscription within the "afDataSub" attribute;

- NRF event exposure subscription within the "nrfDataSub" attribute;

- NSACF event exposure subscription within the "nsacfDataSub" attribute;

- GMLC event exposure subscription within the "gmlcDataSub" attribute;

- UPF event exposure subscription within the "upfDataSub" attribute, if the "UpEvents" feature is supported;

- LMF data exposure subscription within the "lmfDataSub" attribute, if the "LmfEvents" feature is supported;

- one of the following identifiers related to the NF service consumer:

- NWDAF instance identifier within the "nwdafId" attribute;

- ADRF instance identifier within the "adrfId" attribute;

- NWDAF set identifier within the "nwdafSetId" attribute;

- ADRF set identifier within the "adrfSetId" attribute;

Upon the reception of an HTTP POST request with "{apiRoot}/ndccf-contextmanagement/<apiVersion>/data-collection-profiles" as Resource URI and NdccfDataCollectionProfile data structure as request body, the DCCF shall:

- create a new profile;

- assign a profileId;

- store the profile.

If the DCCF created an "Individual DCCF Data Collection Profile" resource, the DCCF shall respond with "201 Created" with the message body containing a representation of the created profile, as shown in figure 4.3.2.2.2-1, step 2. The DCCF shall include a Location HTTP header field. The Location header field shall contain the URI of the created profile, i.e. "{apiRoot}/ndccf-contextmanagement/<apiVersion>/data-collection-profiles/{profileId}".

If an error occurs when processing the HTTP POST request, the DCCF shall send an HTTP error response as specified in clause 5.2.7.

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

5.1.6.1 General

This clause specifies the application data model supported by the Ndccf\_DataManagement API.

Table 5.1.6.1-1 specifies the data types defined for the Ndccf\_DataManagement service based interface protocol.

**Table 5.1.6.1-1: Ndccf\_DataManagement specific Data Types**

|  |  |  |  |
| --- | --- | --- | --- |
| **Data type** | **Clause defined** | **Description** | **Applicability** |
| AggregationLevel | 5.1.6.3.4 | Contains an aggregation level for processing instructions (e.g. per UE, per Area of Interest). |  |
| DataCollectionPurpose | 5.1.6.3.5 | Represents the purpose for data collection. |  |
| DataTransferResp | 5.1.6.2.19 | Represents an Individual DCCF Data Subscription resource created at the target DCCF. | SubscriptionTransfer |
| DccfEvent | 5.1.6.2.13 | Represents the event type exposed by DCCF |  |
| DeletionAlert | 5.1.6.2.16 | Contains information about data or analytics that are about to be deleted. | EnhDataMgmt |
| EventParamReport | 5.1.6.2.10 | Represents a summarized report for one event parameter. |  |
| FormattingInstruction | 5.1.6.2.6 | Contains data or analytics formatting Instructions. |  |
| NdccfAnalyticsSubscription | 5.1.6.2.2 | Represents an Individual DCCF Analytics Subscription resource. |  |
| NdccfAnalyticsSubscriptionNotification | 5.1.6.2.4 | Represents a notification that corresponds with an Individual DCCF Analytics Subscription resource. |  |
| NdccfDataSubscription | 5.1.6.2.3 | Represents an Individual DCCF Data Subscription resource. |  |
| NdccfDataSubscriptionNotification | 5.1.6.2.5 | Represents a notification that corresponds with an Individual DCCF Data Subscription resource. |  |
| NotifResponse | 5.1.6.2.17 | Contains information about the planned action upon receiving a notification. | EnhDataMgmt |
| NotifSummaryReport | 5.1.6.2.9 | Represents summarized notifications based on processing instructions. |  |
| ParameterProcessingInstruction | 5.1.6.2.8 | Contains an event parameter name and the respective event parameter values and sets of attributes to be used in summarized reports. |  |
| ProcessingInstruction | 5.1.6.2.7 | Contains instructions related to the processing (e.g. clubbing) of notifications. |  |
| ReportingOptions | 5.1.6.2.11 | Represents reporting options for notifications that are processed. |  |
| StorageHandlingInformation | 5.1.6.2.15 | Contains storage handling information for data or analytics. | EnhDataMgmt |
| SummarizationAttribute | 5.1.6.3.3 | Represents attribute in the summarized report. |  |
| TermCause | 5.1.6.3.6 | A cause for which the DCCF will collect no further data for this subscription. | TerminationCause |

Table 5.1.6.1-2 specifies data types re-used by the Ndccf\_DataManagement 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 Ndccf\_DataManagement service based interface.

**Table 5.1.6.1-2: Ndccf\_DataManagement re-used Data Types**

|  |  |  |  |
| --- | --- | --- | --- |
| **Data type** | **Reference** | **Comments** | **Applicability** |
| AfEvent | 3GPP TS 29.517 [21] | Represents an AF Event id |  |
| AmfEventType | 3GPP TS 29.518 [19] | Represents an AMF Event id |  |
| DataSubscription | 3GPP TS 29.575 [25] | Represents a data subscription to one of various possible data sources. |  |
| DataNotification | 3GPP TS 29.575 [25] | Represents a data subscription notification of one of various possible data sources. |  |
| DateTime | 3GPP TS 29.571 [17] | Identifies the time. |  |
| DurationSec | 3GPP TS 29.571 [17] | Time in seconds. |  |
| EventNotifyDataType | 3GPP TS 29.515 [29] | Represents a GMLC Event id | LocEvents |
| EventType | 3GPP TS 29.503 [20] | Represents an UDM Event id |  |
| EventType | 3GPP TS 29.564 [30] | Represents a UPF Event id | UpEvents |
| FetchInstruction | 3GPP TS 29.576 [26] | The fetch instruction indicates whether the data or analytics can be fetched by the consumer. |  |
| NefEvent | 3GPP TS 29.591 [22] | Represents a NEF Event id |  |
| NetworkAreaInfo | 3GPP TS 29.554 [28] | Identifies a network area. |  |
| NfInstanceId | 3GPP TS 29.571 [17] | NF instance identifier. |  |
| NfSetId | 3GPP TS 29.571 [17] | NF set identifier. |  |
| NnwdafEventsSubscription | 3GPP TS 29.520 [15] | Represents a NWDAF analytics subscription. |  |
| NnwdafEventsSubscriptionNotification | 3GPP TS 29.520 [15] | Represents a NWDAF analytics subscription notification. |  |
| LmfEventType | 3GPP TS 29.572 [31] | Represents an LMF Data Exposure Event id | LmfEvents |
| NumberAverage | 3GPP TS 29.520 [15] | Represents average and variance of a parameter value. |  |
| PendingNotificationCause | 3GPP TS 29.520 [15] | Represents the Pending Notification Cause for the stored unsent events. | EnhDataMgmt |
| RedirectResponse | 3GPP TS 29.571 [17] | Contains redirection related information. |  |
| SACEvent | 3GPP TS 29.536 [27] | Represents a NSAC Event id |  |
| SmfEvent | 3GPP TS 29.508 [18] | Represents a SMF Event id |  |
| Supi | 3GPP TS 29.571 [17] | Contains a SUPI. |  |
| SupportedFeatures | 3GPP TS 29.571 [17] | Used to negotiate the applicability of the optional features defined in table 5.1.8-1. |  |
| TimeWindow | 3GPP TS 29.122 [23] | Represents a time window. |  |
| Uinteger | 3GPP TS 29.571 [17] | Unsigned Integer. |  |
| Uri | 3GPP TS 29.571 [17] | URI. |  |

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

5.1.6.2.3 Type NdccfDataSubscription

**Table 5.1.6.2.3-1: Definition of type NdccfDataSubscription**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Attribute name** | **Data type** | **P** | **Cardinality** | **Description** | **Applicability** |
| dataSub | DataSubscription | M | 1 | Represents the requested events subscription.  (NOTE 1) |  |
| dataNotifUri | Uri | M | 1 | Notification target address. |  |
| dataNotifCorrId | string | M | 1 | Notification correlation identifier. |  |
| notifEndpoints | array(NotifyEndpoint) | O | 1..N | The notification target address(es) and correlation identifier(s) of additional endpoints that need to be notified, if any. | DataAnaCollect |
| formatInstruct | FormattingInstruction | O | 0..1 | Formatting instructions to be used for sending event notifications. If provided, they take the precedence over any potentially conflicting event reporting requirements provided within the "dataSub" attribute. |  |
| procInstructs | array(ProcessingInstruction) | O | 1..N | Processing instructions to be used for sending event notifications. |  |
| targetNfId | NfInstanceId | O | 0..1 | Data Producer NF instance identifier to which the DCCF shall create the requested subscription. (NOTE 3) |  |
| targetNfSetId | NfSetId | O | 0..1 | Data Producer NF set identifier to which the DCCF shall create the requested subscription. (NOTE 3) |  |
| adrfId | NfInstanceId | O | 0..1 | Identifier of the ADRF to be used by the DCCF.  If the subscription is for runtime data (i.e. the "timePeriod" attribute is either absent or contains a time window in the future) then the DCCF shall store the notifications in this ADRF.  If the subscription is for historical data (i.e. the "timePeriod" attribute contains a time window in the past) then the DCCF shall retrieve the data from this ADRF. (NOTE 3) |  |
| adrfSetId | NfSetId | O | 0..1 | Identifier of the ADRF Set to be used by the DCCF.  If the subscription is for runtime data (i.e. the "timePeriod" attribute is either absent or contains a time window in the future) then the DCCF shall store the notifications in this ADRF Set.  If the subscription is for historical data (i.e. the "timePeriod" attribute contains a time window in the past) then the DCCF shall retrieve the data from this ADRF Set. (NOTE 3) |  |
| storeInd | boolean | C | 0..1 | The indication for data storage. This attribute shall be provided and set to "true" if the consumer requests to store the data in an ADRF but both the "adrfId" and "adrfSetId" attributes are not provided. The default value is "false". | DataAnaCollect |
| storeHandl | StorageHandlingInformation | O | 0..1 | Contains storage handling information for the data that will be collected and stored in an ADRF based on the requested subscription. | EnhDataMgmt |
| immReport | NdccfDataSubscriptionNotification | O | 0..1 | Immediate report including available DCCF notification.  May only be present in the DCCF response to a subscription request and only if immediate reporting together with formatting/processing instructions was requested in the subscription request. | DataAnaCollect |
| timePeriod | TimeWindow | O | 0..1 | Represents a start time and a stop time during which data was collected or is requested to be collected. If this attribute is included, then the internal attributes of the data subscription that indicate a subscription duration (e.g. the "targetPeriod" attribute of an "eventSubs" attribute of an "smfDataSub" attribute, or the "monDur" attribute of the ReportingInformation data type) shall not be provided.  (NOTE 2) |  |
| dataCollectPurposes | array(DataCollectionPurpose) | O | 1..N | The purposes of data collection. This attribute may only be provided if user consent is required depending on local policy and regulations and the consumer has not checked user consent. |  |
| checkedConsentInd | boolean | O | 0..1 | If set to "true", it indicates that the NF service consumer has already checked the user consent, otherwise, if set to "false", it indicates that the consumer has not yet checked the user consent. The default value is "false". | UserConsent |
| suppFeat | SupportedFeatures | C | 0..1 | This attribute represents a list of Supported features as described in clause 5.1.8.  It shall be present if feature negotiation needs to take place.  In the POST request for UE data subscription context transfer, it represents the features supported by the data consumer. |  |
| NOTE 1: The notification target address contained in the subscription attribute that is provided within the "dataSub" attribute (i.e. "eventNotifyUri" of "amfDataSub", "notifUri" of "smfDataSub", "callbackReference" of "udmDataSub", "notifUri" of "nefDataSub", "notifUri" of "afDataSub", "nfStatusNotificationUri" of "nrfDataSub", "eventNotifyUri" of "nsacfDataSub", "eventNotifyUri" of "upfDataSub" if the UpEvents feature is supported, "eventNotificationUri" of "gmlcDataSub" if the LocEvents feature is supported, or "notifyCallBackUri" of "lmfDataSub" if the LmfEvents feature is supported) and the notification correlation ID contained in the subscription attribute that is provided within the "dataSub" attribute (i.e. the "notifyCorrelationId" of "amfDataSub", "notifId" of "smfDataSub", "notifyCorrelationId" of "udmDataSub", "notifId" of "nefDataSub", "notifId" of "afDataSub", "notifyCorrelationId" of "nsacfDataSub", "notifyCorrelationId" of "upfDataSub" if the UpEvents feature is supported, "ldrReference" of "gmlcDataSub" if the LocEvents feature is supported, or "notifCorrelationId" of "lmfDataSub" if the LmfEvents feature is supported) shall be ignored by the DCCF. The DCCF will provide the notification target address and the notification correlation ID of the DCCF itself in the data type during the event subscription request to each NF. The event reporting information (e.g. "eventsRepInfo" attribute in the case of AF events) may include muting instructions (e.g. within the "notifFlagInstruct" attribute in the case of AF events) and/or muting notifications settings (e.g. within the "mutingSetting" attribute in the case of AF events) only if the EnhDataMgmt feature is supported.  NOTE 2: It includes the time period either in the past or in the future (i.e., start time as past time and stop time as future time is not allowed).  NOTE 3: "targetNfId" and "targetNfSetId" are mutually exclusive. "adrfId" and "adrfSetId" are also mutually exclusive. | | | | | |

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

5.1.6.2.13 Type DccfEvent

**Table 5.1.6.2.13-1: Definition of type DccfEvent**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Attribute name** | **Data type** | **P** | **Cardinality** | **Description** | **Applicability** |
| nwdafEvent | NwdafEvent | C | 0..1 | Identifies an NWDAF event type. (NOTE) |  |
| smfEvent | SmfEvent | C | 0..1 | Identifies an SMF event type. (NOTE) |  |
| amfEvent | AmfEventType | C | 0..1 | Identifies an AMF event type. (NOTE) |  |
| nefEvent | NefEvent | C | 0..1 | Identifies an NEF event type. (NOTE) |  |
| udmEvent | EventType | C | 0..1 | Identifies a UDM event ID that the processing instructions apply to. (NOTE) |  |
| afEvent | AfEvent | C | 0..1 | Identifies an AF event type. (NOTE) |  |
| sacEvent | SACEvent | C | 0..1 | Identifies an NSACF event type. (NOTE) |  |
| nrfEvent | NotificationEventType | C | 0..1 | Identifies an NRF event type. (NOTE) |  |
| gmlcEvent | EventNotifyDataType | C | 0..1 | Identifies a GMLC event type. (NOTE) | LocEvents |
| upfEvent | EventType | C | 0..1 | Identifies a UPF event. (NOTE) | UpEvents |
| lmfEvent | LmfEventType | C | 0..1 | Identifies an LMF event. (NOTE) | LmfEvents |
| NOTE: Exactly one of these attributes shall be provided. | | | | | |

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

5.1.8 Feature negotiation

The optional features in table 5.1.8-1 are defined for the Ndccf\_DataManagement API. They shall be negotiated using the extensibility mechanism defined in clause 6.6 of 3GPP TS 29.500 [4].

**Table 5.1.8-1: Supported Features**

|  |  |  |
| --- | --- | --- |
| **Feature number** | **Feature Name** | **Description** |
| 1 | UserConsent | This feature indicates the support of detailed handling of user consent, e.g. indications that user consent has been checked and error responses related to the user consent is not granted. |
| 2 | DataAnaCollect | This feature indicates support for the enhancement of data and analytics collection. |
| 3 | EnhDataMgmt | This feature indicates the support of enhanced data management mechanisms, including support of pending notification, muting and storage handling. |
| 4 | TerminationCause | This feature indicates support for data collection subscription termination requests with termination cause and the purposes of data collection if the user consent is revoked sent by the DCCF to the NF service consumer. |
| 5 | LocEvents | This feature indicates the support of location events from the GMLC. |
| 6 | UpEvents | This feature indicates the support of UPF events. |
| 7 | SubscriptionTransfer | This feature indicates support for the data subscription transfer. |
| 8 | LmfEvents | This feature indicates the support of LMF data exposure events. |

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

A.2 Ndccf\_DataManagement API

openapi: 3.0.0

info:

version: 1.1.1

title: Ndccf\_DataManagement

description: |

DCCF Data Management Service.

© 2024, 3GPP Organizational Partners (ARIB, ATIS, CCSA, ETSI, TSDSI, TTA, TTC).

All rights reserved.

externalDocs:

description: 3GPP TS 29.574 V18.7.0; 5G System; Data Collection Coordination Services; Stage 3.

url: 'https://www.3gpp.org/ftp/Specs/archive/29\_series/29.574/'

#

servers:

- url: '{apiRoot}/ndccf-datamanagement/v1'

variables:

apiRoot:

default: https://example.com

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

#

security:

- oAuth2ClientCredentials:

- ndccf-datamanagement

- {}

#

paths:

/analytics-subscriptions:

post:

summary: Creates a new Individual DCCF Analytics Subscription resource.

operationId: CreateDCCFAnalyticsSubscription

tags:

- DCCF Analytics Subscriptions (Collection)

requestBody:

description: Contains the information for the creation the resource.

content:

application/json:

schema:

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

required: true

responses:

'201':

description: Create a new Individual DCCF Analytics Subscription resource.

headers:

Location:

description: >

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

{apiRoot}/ndccf-datamanagement/<apiVersion>/analytics-subscriptions/{subscriptionId}

required: true

schema:

type: string

content:

application/json:

schema:

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

'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:

dccfAnalyticsNotification:

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

post:

requestBody:

required: true

content:

application/json:

schema:

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

responses:

'200':

description: The notification is acknowledged and a planned action is provided.

content:

application/json:

schema:

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

'204':

description: The receipt of the notification is acknowledged.

'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'

callbacks:

Fetch:

'{$request.body#/fetchInstruct/fetchUri}':

post:

deprecated: true

requestBody:

required: true

content:

application/json:

schema:

type: array

items:

type: string

minItems: 1

description: Fetch correlation identifiers.

responses:

'200':

description: Expected response to a valid request

content:

application/json:

schema:

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

'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'

FetchNotif:

'{$request.body#/fetchInstruct/fetchUri}':

post:

requestBody:

required: true

content:

application/json:

schema:

type: array

items:

type: string

minItems: 1

description: Fetch correlation identifiers.

responses:

'200':

description: Expected response to a valid request

content:

application/json:

schema:

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

'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'

'503':

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

default:

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

/analytics-subscriptions/{subscriptionId}:

delete:

summary: Deletes an existing Individual DCCF Analytics Subscription resource.

operationId: DeleteDCCFAnalyticsSubscription

tags:

- Individual DCCF Analytics Subscription (Document)

parameters:

- name: subscriptionId

in: path

description: >

String identifying an analytics subscription to the Ndccf\_DataManagement Service.

required: true

schema:

type: string

responses:

'204':

description: >

No Content. The Individual DCCF Analytics Subscription resource 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'

put:

summary: Updates an existing Individual DCCF Analytics Subscription resource.

operationId: UpdateDCCFAnalyticsSubscription

tags:

- Individual DCCF Analytics Subscription (Document)

requestBody:

required: true

content:

application/json:

schema:

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

parameters:

- name: subscriptionId

in: path

description: >

String identifying an analytics subscription to the Ndccf\_DataManagement Service.

required: true

schema:

type: string

responses:

'200':

description: >

The Individual DCCF Analytics Subscription resource was modified successfully and a

representation of that resource is returned.

content:

application/json:

schema:

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

'204':

description: >

The Individual DCCF Analytics 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'

/data-subscriptions:

post:

summary: Creates a new Individual DCCF Data Subscription resource.

operationId: CreateDCCFDataSubscription

tags:

- DCCF Data Subscriptions (Collection)

requestBody:

content:

application/json:

schema:

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

required: true

responses:

'201':

description: Creates a new Individual DCCF Data Subscription resource.

headers:

Location:

description: >

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

{apiRoot}/ndccf-datamanagement/<apiVersion>/data-subscriptions/{subscriptionId}

required: true

schema:

type: string

content:

application/json:

schema:

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

'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:

dccfDataNotification:

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

post:

requestBody:

required: true

content:

application/json:

schema:

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

responses:

'200':

description: The notification is acknowledged and a planned action is provided.

content:

application/json:

schema:

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

'204':

description: The receipt of the notification is acknowledged.

'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'

callbacks:

Fetch:

'{$request.body#/fetchInstruct/fetchUri}':

post:

requestBody:

required: true

content:

application/json:

schema:

type: array

items:

type: string

minItems: 1

description: Fetch correlation identifiers.

responses:

'200':

description: Expected response to a valid request

content:

application/json:

schema:

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

'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'

/data-subscriptions/{subscriptionId}:

delete:

summary: Deletes an existing Individual DCCF Data Subscription resource.

operationId: DeleteDCCFDataSubscription

tags:

- Individual DCCF Data Subscription (Document)

parameters:

- name: subscriptionId

in: path

description: String identifying a data subscription to the Ndccf\_DataManagement Service.

required: true

schema:

type: string

responses:

'204':

description: >

No Content. The Individual DCCF Data Subscription resource matching the subscriptionId

was deleted.

'200':

description: >

The Individual DCCF Data Subscription resource matching the subscriptionId was deleted

and including the stored unsent data events in the response.

content:

application/json:

schema:

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

'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'

put:

summary: Updates an existing Individual DCCF Data Subscription resource.

operationId: UpdateDCCFDataSubscription

tags:

- Individual DCCF Data Subscription (Document)

requestBody:

required: true

content:

application/json:

schema:

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

parameters:

- name: subscriptionId

in: path

description: >

String identifying a data subscription to the Ndccf\_DataManagement Service.

required: true

schema:

type: string

responses:

'200':

description: >

The Individual DCCF Data Subscription resource was modified successfully and a

representation of that resource is returned.

content:

application/json:

schema:

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

'204':

description: >

The Individual DCCF Data 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'

/transfer-data-sub:

post:

summary: Transfers a Data Management subscription.

operationId: DataManagementTransfer

tags:

- DCCF Data Management Transfer (Custom Operation)

requestBody:

content:

application/json:

schema:

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

required: true

responses:

'200':

description: Indicates a successful DCCF Data Management transfer .

content:

application/json:

schema:

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

'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'

#

components:

securitySchemes:

oAuth2ClientCredentials:

type: oauth2

flows:

clientCredentials:

tokenUrl: '{nrfApiRoot}/oauth2/token'

scopes:

ndccf-datamanagement: Access to the ndccf-datamanagement API

#

schemas:

#

NdccfAnalyticsSubscription:

description: Represents an Individual DCCF Analytics Subscription.

type: object

required:

- anaSub

- anaNotifUri

- anaNotifCorrId

properties:

anaSub:

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

anaNotifUri:

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

anaNotifCorrId:

type: string

description: Notification correlation identifier.

notifEndpoints:

type: array

items:

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

minItems: 1

description: The information of notification endpoints.

formatInstruct:

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

procInstructs:

type: array

items:

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

minItems: 1

description: Processing instructions to be used for sending event notifications.

targetNfId:

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

targetNfSetId:

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

adrfId:

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

ardfSetId:

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

storeInd:

type: boolean

description: >

The indication for data storage. This attribute shall be provided and set to "true"

if the consumer requests to store the data in an ADRF but both the "adrfId" and

"adrfSetId" attributes are not provided. The default value is "false".

storeHandl:

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

suppFeat:

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

timePeriod:

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

dataCollectPurposes:

type: array

items:

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

minItems: 1

description: >

The purposes of data collection. This attribute may only be provided if user consent is

required depending on local policy and regulations and the consumer has not

checked user consent.

checkedConsentInd:

type: boolean

description: Indication that the NF service consumer has already checked the user consent.

immReport:

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

#

NdccfDataSubscription:

description: Represents an Individual DCCF Data Subscription.

type: object

required:

- dataNotifUri

- dataNotifCorrId

- dataSub

properties:

dataSub:

$ref: 'TS29575\_Nadrf\_DataManagement.yaml#/components/schemas/DataSubscription'

dataNotifUri:

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

dataNotifCorrId:

type: string

description: Notification correlation identifier.

notifEndpoints:

type: array

items:

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

minItems: 1

description: The information of notification endpoints.

formatInstruct:

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

procInstructs:

type: array

items:

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

minItems: 1

description: Processing instructions to be used for sending event notifications.

targetNfId:

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

targetNfSetId:

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

adrfId:

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

ardfSetId:

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

storeInd:

type: boolean

description: >

The indication for analytics storage. This attribute shall be provided and set to "true"

if the consumer requests to store the analytics in an ADRF but both the "adrfId" and

"adrfSetId" attributes are not provided. The default value is "false".

storeHandl:

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

timePeriod:

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

suppFeat:

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

dataCollectPurposes:

type: array

items:

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

minItems: 1

description: >

The purposes of data collection. This attribute may only be provided if user consent

is required depending on local policy and regulations and the consumer has not

checked user consent.

checkedConsentInd:

type: boolean

description: Indication that the NF service consumer has already checked the user consent.

immReport:

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

#

NdccfAnalyticsSubscriptionNotification:

description: Represents a notification for a DCCF analytics subscription.

type: object

required:

- anaNotifCorrId

- timeStamp

oneOf:

- required: [anaNotifications]

- required: [anaReports]

- required: [fetchInstruct]

- required: [delAlert]

properties:

anaNotifCorrId:

type: string

description: Notification correlation identifier.

anaNotifications:

type: array

items:

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

minItems: 1

description: List of analytics subscription notifications.

anaReports:

type: array

items:

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

minItems: 1

description: >

List of reports with summarized data from multiple analytics notifications that the DCCF

has received from NWDAF.

fetchInstruct:

$ref: 'TS29576\_Nmfaf\_3caDataManagement.yaml#/components/schemas/FetchInstruction'

terminationReq:

type: boolean

description: >

If provided and set to true, it indicates the termination of the data management

subscription that requested by the DCCF, i.e. no further notifications related to this

subscription will be provided, apart from sending final report (if available).

The default value is false.

delAlert:

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

termCause:

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

pendDataNotifCause:

$ref: 'TS29520\_Nnwdaf\_DataManagement.yaml#/components/schemas/PendingNotificationCause'

reUserConsentPurs:

type: array

items:

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

minItems: 1

description: The purposes of data collection for which the user consent is revoked.

timeStamp:

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

#

NdccfDataSubscriptionNotification:

description: Represents a notification for a DCCF data subscription.

type: object

required:

- dataNotifCorrId

- timeStamp

oneOf:

- required: [dataNotif]

- required: [dataReports]

- required: [fetchInstruct]

- required: [delAlert]

- required: [newSubscriptionUri]

properties:

dataNotifCorrId:

type: string

description: Notification correlation identifier.

newSubscriptionUri:

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

suppFeat:

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

dataNotif:

$ref: 'TS29575\_Nadrf\_DataManagement.yaml#/components/schemas/DataNotification'

dataReports:

type: array

items:

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

minItems: 1

description: >

List of reports with summarized data from multiple notifications received from data

producer.

delAlert:

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

fetchInstruct:

$ref: 'TS29576\_Nmfaf\_3caDataManagement.yaml#/components/schemas/FetchInstruction'

terminationReq:

type: boolean

description: >

If provided and set to true, it indicates the termination of the data management

subscription that requested by the DCCF, i.e. no further notifications related to this

subscription will be provided, apart from sending final report (if available).

The default value is false.

timeStamp:

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

#

FormattingInstruction:

description: Contains data or analytics formatting instructions.

type: object

properties:

consTrigNotif:

type: boolean

description: >

Indicates that notifications shall be buffered until the NF service consumer requests

their delivery.

reportingOptions:

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

#

ReportingOptions:

description: Represents reporting options for processed notifications.

type: object

oneOf:

- required: [notifyWindow]

- required: [notifyPeriod]

- required: [notifyPeriodInc]

- required: [depEventSubId]

properties:

notifyWindow:

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

notifyPeriod:

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

notifyPeriodInc:

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

depEventSubId:

type: string

description: >

Notifications for the present subscription are sent only upon occurrence of events of the

subscription with identifier that matches this attribute.

minClubbedNotif:

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

maxClubbedNotif:

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

#

ProcessingInstruction:

description: Contains instructions related to the processing of notifications.

type: object

required:

- eventId

- procInterval

properties:

eventId:

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

procInterval:

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

paramProcInstructs:

type: array

items:

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

minItems: 1

description: >

List of event parameter names, and for each event parameter name, respective event

parameter values and sets of the attributes to be used in the summarized reports.

NotifyEndpoint:

description: The information of notification endpoint.

type: object

required:

- notifUri

properties:

notifUri:

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

notifCorrId:

type: string

description: Notification correlation identifier.

#

DccfEvent:

description: >

Identifies the (event exposure or analytics) event that the processing instructions

shall apply to. Contains all event IDs related to DCCF.

type: object

oneOf:

- required: [nwdafEvent]

- required: [smfEvent]

- required: [amfEvent]

- required: [nefEvent]

- required: [afEvent]

- required: [sacEvent]

- required: [nrfEvent]

- required: [udmEvent]

- required: [gmlcEvent]

- required: [upfEvent]

- required: [lmfEvent]

properties:

nwdafEvent:

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

smfEvent:

$ref: 'TS29508\_Nsmf\_EventExposure.yaml#/components/schemas/SmfEvent'

amfEvent:

$ref: 'TS29518\_Namf\_EventExposure.yaml#/components/schemas/AmfEventType'

nefEvent:

$ref: 'TS29591\_Nnef\_EventExposure.yaml#/components/schemas/NefEvent'

udmEvent:

$ref: 'TS29503\_Nudm\_EE.yaml#/components/schemas/EventType'

afEvent:

$ref: 'TS29517\_Naf\_EventExposure.yaml#/components/schemas/AfEvent'

sacEvent:

$ref: 'TS29536\_Nnsacf\_SliceEventExposure.yaml#/components/schemas/SACEvent'

nrfEvent:

$ref: 'TS29510\_Nnrf\_NFManagement.yaml#/components/schemas/NotificationEventType'

gmlcEvent:

$ref: 'TS29515\_Ngmlc\_Location.yaml#/components/schemas/EventNotifyDataType'

upfEvent:

$ref: 'TS29564\_Nupf\_EventExposure.yaml#/components/schemas/EventType'

lmfEvent:

$ref: 'TS29572\_Nlmf\_DataExposure.yaml#/components/schemas/LmfEventType'

#

ParameterProcessingInstruction:

description: >

Contains an event parameter name and the respective event parameter values and sets of

attributes to be used in summarized reports.

type: object

required:

- name

- values

- sumAttrs

properties:

name:

type: string

description: >

A JSON pointer value that references an attribute within the notification object to which

the processing instruction is applied.

values:

type: array

items: {}

minItems: 1

description: A list of values for the attribute identified by the name attribute.

sumAttrs:

type: array

items:

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

minItems: 1

description: Attributes requested to be used in the summarized reports.

aggrLevel:

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

supis:

type: array

items:

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

minItems: 1

description: Indicates the UEs for which processed reports are requested.

temporalAggrLevel:

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

areas:

type: array

items:

$ref: 'TS29554\_Npcf\_BDTPolicyControl.yaml#/components/schemas/NetworkAreaInfo'

minItems: 1

description: Indicates the Areas of Interest for which processed reports are requested.

#

NotifSummaryReport:

description: Represents summarized notifications based on processing instructions.

type: object

required:

- eventId

- procInterval

- eventReports

properties:

eventId:

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

procInterval:

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

eventReports:

type: array

items:

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

minItems: 1

description: List of event parameter reports.

#

EventParamReport:

description: Represents a summarized report for one event parameter.

type: object

required:

- name

- values

properties:

name:

type: string

description: The name of the reported parameter.

values:

type: array

items: {}

minItems: 1

description: The list of values of the reported parameter.

supi:

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

area:

$ref: 'TS29554\_Npcf\_BDTPolicyControl.yaml#/components/schemas/NetworkAreaInfo'

spacing:

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

duration:

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

avgAndVar:

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

mostFreqVal: {}

leastFreqVal: {}

count:

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

minValue:

type: string

description: The minimum value of the parameter.

maxValue:

type: string

description: The maximum value of the parameter.

#

StorageHandlingInformation:

description: Contains storage handling information about data or analytics.

type: object

properties:

lifetime:

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

delNotifInd:

type: boolean

description: Indicates if deletion alerts are requested.

#

DeletionAlert:

description: Contains information about data or analytics that are about to be deleted.

type: object

properties:

alertStorTransId:

type: string

description: >

Storage transaction identifier that can be used to retrieve data or analytics.

required:

- alertStorTransId

#

NotifResponse:

description: >

Contains information about planned actions related to data or analytics

that are about to be deleted.

type: object

properties:

retrievalInd:

type: boolean

description: >

Indicates if the NF service consumer has determined to retrieve data

or analytics that are about to be deleted.

required:

- retrievalInd

#

DataTransferResp:

description: >

Represents an Individual DCCF Data Subscription resource created at the

target DCCF.

type: object

properties:

newSubscriptionUri:

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

suppFeat:

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

required:

- newSubscriptionUri

#

SummarizationAttribute:

anyOf:

- type: string

enum:

- SPACING

- DURATION

- OCCURRENCES

- AVG\_VAR

- FREQ\_VAL

- MIN\_MAX

- 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 attribute in the summarized report.

Possible values are:

- SPACING: Average and variance of the time interval separating two consecutive occurrences

of the same event and parameter value, or periodicity for periodic reporting.

- DURATION: Average and variance of the time for which the parameter value applies.

- OCCURRENCES: Number of countable occurrences for the parameter.

- AVG\_VAR: Average and variance of the parameter.

- FREQ\_VAL: Most and least frequent values.

- MIN\_MAX: Maximum and minimum parameter values.

#

AggregationLevel:

anyOf:

- type: string

enum:

- UE

- AOI

- 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 aggregation level for processing instructions.

Possible values are:

- UE: Indicates that the summarized reports shall be provided per UE.

- AOI: Indicates that the summarized reports shall be provided per Area of Interest.

#

DataCollectionPurpose:

anyOf:

- type: string

enum:

- ANALYTICS\_GENERATION

- MODEL\_TRAINING

- 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 purpose for data collection.

Possible values are:

- ANALYTICS\_GENERATION: The data is collected for generating the analytics.

- MODEL\_TRAINING: The data is collected for ML model training.

#

TermCause:

anyOf:

- type: string

enum:

- USER\_CONSENT\_REVOKED

- DCCF\_OVERLOAD

- OTHER

- OUT\_OF\_SERVING\_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 subscription termination request by DCCF for data collection.

Possible values are:

- USER\_CONSENT\_REVOKED: The user consent has been revoked.

- DCCF\_OVERLOAD: The DCCF is overloaded.

- OTHER: Indicates that the termination is due to other reason.

- OUT\_OF\_SERVING\_AREA: Indicates that that the UE(s) moved outside of the DCCF serving area.

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