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# Foreword

This Technical Specification has been produced by the 3rd Generation Partnership Project (3GPP).

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of the present document, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

Version x.y.z

where:

x the first digit:

1 presented to TSG for information;

2 presented to TSG for approval;

3 or greater indicates TSG approved document under change control.

y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.

z the third digit is incremented when editorial only changes have been incorporated in the document.

In the present document, modal verbs have the following meanings:

**shall** indicates a mandatory requirement to do something

**shall not** indicates an interdiction (prohibition) to do something

The constructions "shall" and "shall not" are confined to the context of normative provisions, and do not appear in Technical Reports.

The constructions "must" and "must not" are not used as substitutes for "shall" and "shall not". Their use is avoided insofar as possible, and they are not used in a normative context except in a direct citation from an external, referenced, non-3GPP document, or so as to maintain continuity of style when extending or modifying the provisions of such a referenced document.

**should** indicates a recommendation to do something

**should not** indicates a recommendation not to do something

**may** indicates permission to do something

**need not** indicates permission not to do something

The construction "may not" is ambiguous and is not used in normative elements. The unambiguous constructions "might not" or "shall not" are used instead, depending upon the meaning intended.

**can** indicates that something is possible

**cannot** indicates that something is impossible

The constructions "can" and "cannot" are not substitutes for "may" and "need not".

**will** indicates that something is certain or expected to happen as a result of action taken by an agency the behaviour of which is outside the scope of the present document

**will not** indicates that something is certain or expected not to happen as a result of action taken by an agency the behaviour of which is outside the scope of the present document

**might** indicates a likelihood that something will happen as a result of action taken by some agency the behaviour of which is outside the scope of the present document

**might not** indicates a likelihood that something will not happen as a result of action taken by some agency the behaviour of which is outside the scope of the present document

In addition:

**is** (or any other verb in the indicative mood) indicates a statement of fact

**is not** (or any other negative verb in the indicative mood) indicates a statement of fact

The constructions "is" and "is not" do not indicate requirements.

# 1 Scope

The present document specifies the stage 3 protocol and data model for the Ndccf Service Based Interface. It provides stage 3 protocol definitions and message flows, and specifies the API for each service offered by the Data Collection Coordination Function (DCCF).

The 5G System stage 2 architecture and procedures are specified in 3GPP TS 23.501 [2], 3GPP TS 23.502 [3] and 3GPP TS 23.288 [14].

The Technical Realization of the Service Based Architecture and the Principles and Guidelines for Services Definition are specified in 3GPP TS 29.500 [4] and 3GPP TS 29.501 [5].

# 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] Void.

[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".

# 3 Definitions, symbols and abbreviations

## 3.1 Definitions

For the purposes of the present document, the terms and definitions given in 3GPP TR 21.905 [1] and the following apply. A term defined in the present document takes precedence over the definition of the same term, if any, in 3GPP TR 21.905 [1].

None.

## 3.2 Symbols

For the purposes of the present document, the following symbols apply:

None.

## 3.3 Abbreviations

For the purposes of the present document, the abbreviations given in 3GPP TR 21.905 [1] and the following apply. An abbreviation defined in the present document takes precedence over the definition of the same abbreviation, if any, in 3GPP TR 21.905 [1].

ADRF Analytics Data Repository Function

AF Application Function

AMF Access and Mobility Management Function

DCCF Data Collection Coordination Function

GMLC Gateway Mobile Location Centre

LMF Location Management Function

NF Network Function

NRF Network Repository Function

NEF Network Exposure Function

NSACF Network Slice Admission Control Function

NSSF Network Slice Selection Function

NWDAF Network Data Analytics Function

PCF Policy Control Function

SMF Session Management Function

UDM Unified Data Management

UPF User Plane Function

# 4 Services offered by the DCCF

## 4.1 Introduction

The Ndccf services are used for the DCCF to provide collected data.

The following services are specified for the DCCF:

Table 4.1-1: Services provided by DCCF

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Service Name | Description | Service Operations | Operation  Semantics | Example Consumer(s) |
| Ndccf\_DataManagement | This service enables the NF service consumers to subscribe to/unsubscribe from notifications for different collected data from the DCCF. | Subscribe | Subscribe / Notify | NWDAF, PCF, NSSF, AMF, SMF, NEF, AF, LMF, ADRF |
| Unsubscribe |
| Notify |
| Fetch | Request / Response | NWDAF, PCF, NSSF, AMF, SMF, NEF, AF, LMF, ADRF |
| Ndccf\_ContextManagement | This service enables the NF service consumers to register/deregister collected data in the DCCF. | Register | Request / Response | NWDAF, ADRF |
| Update |
| Deregister |

Table 4.1-2 summarizes the corresponding APIs defined for this specification.

Table 4.1-2: API Descriptions

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Service Name** | **Clause** | **Description** | **OpenAPI Specification File** | **apiName** | **Annex** |
| Ndccf\_DataManagement | 5.1 | DCCF Data Management Service | TS29574\_Ndccf\_DataManagement.yaml | ndccf-datamanagement | A.2 |
| Ndccf\_ContextManagement | 5.2 | DCCF Context Management Service | TS29574\_Ndccf\_ContextManagement.yaml | ndccf-contextmanagement | A.3 |

## 4.2 Ndccf\_DataManagement Service

### 4.2.1 Service Description

#### 4.2.1.1 Overview

The Ndccf\_DataManagement service, as defined in 3GPP TS 23.288 [14], is provided by the Data Collection Coordination Function (DCCF).

This service:

- allows NF service consumers to subscribe, modify and unsubscribe for analytics or data releated events;

- notifies NF service consumers with a corresponding subscription about observed events; and

- allows NF service consumers to retrieve analytics or data according to the Fetch Instructions provided by DCCF.

#### 4.2.1.2 Service Architecture

The 5G System Architecture is defined in 3GPP TS 23.501 [2]. The Network Data Analytics Exposure architecture, including the DCCF architecture, is defined in 3GPP TS 23.288 [14].

Known consumers of the Ndccf\_DataManagement service are:

- Policy Control Function (PCF)

- Network Slice Selection Function (NSSF)

- Access and Mobility Management Function (AMF)

- Session Management Function (SMF)

- Network Exposure Function (NEF)

- Application Function (AF)

- Location Management Function (LMF)

- Network Data Analytics Function (NWDAF)

- Analytics Data Repository Function (ADRF)

The Ndccf\_DataManagement service is provided by the DCCF and consumed by the NF service consumers as shown in figure 4.2.1.2-1 for the SBI representation model and in figure 4.2.1.2-2 for the reference point representation model.



Figure 4.2.1.2-1: Ndccf\_DataManagement service architecture, SBI representation



Figure 4.2.1.2-2: Ndccf\_DataManagement service architecture, reference point representation

#### 4.2.1.3 Network Functions

##### 4.2.1.3.1 Data Collection Coordination Function (DCCF)

The DCCF (Data Collection Coordination Function) provides the functionality to coordinate collection of analytics and/or data from one or more NFs based on requests from one or more NF service consumers.

##### 4.2.1.3.2 NF Service Consumers

The NF service consumers for the Ndccf\_DataManagement service are as specified in 3GPP TS 29.520 [15] clause 4.2.1.3.2 for the Nnwdaf\_EventsSubscription service, with the following differences:

- The NWDAF as a service consumer supports also (un)subscription to the notification of data collection events from the DCCF.

- The CEF and the DCCF are not NF service consumers of the Ndccf\_DataManagement service.

### 4.2.2 Service Operations

#### 4.2.2.1 Introduction

Service operations defined for the Ndccf\_DataManagement Service are shown in table 4.2.2.1-1.

Table 4.2.2.1-1: Ndccf\_DataManagement Service Operations

|  |  |  |
| --- | --- | --- |
| Service Operation Name | Description | Initiated by |
| Ndccf\_DataManagement\_Subscribe | This service operation is used by an NF service consumer to subscribe to, or modify a subscription in the DCCF for event notifications. | NF service consumer (NWDAF, PCF, NSSF, AMF, SMF, NEF, AF, LMF, ADRF) |
| Ndccf\_DataManagement\_Unsubscribe | This service operation is used by an NF service consumer to unsubscribe from event notifications. | NF service consumer (NWDAF, PCF, NSSF, AMF, SMF, NEF, AF, LMF, ADRF) |
| Ndccf\_DataManagement\_Notify | This service operation is used by the DCCF to report the detected event(s) to the NF service consumer if subscribed before. | DCCF |
| Ndccf\_DataManagement\_Fetch | This service operation is used by an NF service consumer to retrieve collected data from the DCCF. | NF service consumer (NWDAF, PCF, NSSF, AMF, SMF, NEF, AF, LMF, ADRF) |

#### 4.2.2.2 Ndccf\_DataManagement\_Subscribe service operation

##### 4.2.2.2.1 General

The Ndccf\_DataManagement\_Subscribe service operation is used by an NF service consumer to create or update a subscription for analytics or data notifications from the DCCF.

##### 4.2.2.2.2 Subscription for analytics notifications

Figure 4.2.2.2.2-1 shows a scenario where the NF service consumer sends a request to the DCCF to subscribe for analytics notifications.



Figure 4.2.2.2.2-1: NF service consumer subscribes to analytics notifications

The NF service consumer shall invoke the Ndccf\_DataManagement\_Subscribe service operation to subscribe to analytics notification(s). The NF service consumer shall send an HTTP POST request with "{apiRoot}/ndccf-datamanagement/<apiVersion>/analytics-subscriptions" as Resource URI representing the "DCCF Analytics Subscriptions", as shown in figure 4.2.2.2.2-1, step 1, to create an "Individual DCCF Analytics Subscription" according to the information in the message body. The NdccfAnalyticsSubscription data structure provided in the request body shall include:

- analytics subscription information within the "anaSub" attribute;

- a notification target address within the "anaNotifUri" attribute; and

- a notification correlation identifier in the "anaNotifCorrId" attribute;

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 analytics storage within the "storeInd" attribute, if the "DataAnaCollect" feature is supported;

- a target NWDAF identifier within the "targetNfId" attribute or a target NWDAF 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 performing the requested analytics within the "timePeriod" attribute.

NOTE 1: This time window, over which the requested data collection or analytics was performed or to be performed, is different from the analytics target period, over which the statistics or predictions are requested. For example, in a subscription that requests "predictions that are performed during the month of May about UE\_MOBILITY analytics during the month of July", this time window is "May" while the analytics target period is "July". The DCCF can use the provided time window e.g. to determine when to (un)subscribe to the NWDAF 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 NdccfAnalyticsSubscription data structure as request body, the DCCF shall use the contents of the request (e.g. "anaSub" attribute in NdccfAnalyticsSubscription data structure) to determine whether the subscription can already be served or interactions with the NWDAF and/or ADRF (e.g. creation or modification of analytics subscription for Nnwdaf\_EventsSubscription 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 an NWDAF 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 analytics collection depending on local policy and regulations, then the DCCF shall check user consent for the targeted UE(s) by retrieving the user consent subscription data via the Nudm\_SDM service API of the UDM as described in clause 5.2.2 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.

If the DCCF determines that the subscription can already be served (without requiring further interactions with NWDAF and/or ADRF) or a successful response from the NWDAF and/or ADRF 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 Analytics Subscription" resource, the DCCF shall respond with "201 Created" with the message body containing a representation of the created subscription, as shown in figure 4.2.2.2.2-1, step 2. If not all the requested analytics events in the subscription are accepted, then the DCCF may include the "failEventReports" attribute within the "anaSub" attribute, indicating the event(s) for which the subscription failed and the associated reason(s). 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>/analytics-subscriptions/{subscriptionId}". If the immediate reporting indication in the "immRep" attribute within the "evtReq" attribute of the "anaSub" attribute sets to true in the event subscription, the DCCF shall include the reports of the events subscribed, if available, in the HTTP POST response within the "eventNotifications" attribute of the "anaSub" attribute, or, potentially within the "immReport" attribute, if the DataAnaCollect feature is supported.

When the "notifFlag" attribute within the "evtReq" attribute of the "anaSub" attribute 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 "notifFlag" attribute to "RETRIEVAL" or until a muting exception occurs (e.g. full buffer).

Editor's Note: It is FFS to determine whether any further provisions or limitations with regard to the usage of the "notifFlag" attribute are needed.

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 analytics, the storage approach should be based on the longest requested storage lifetime.

NOTE 4: The default operator policy for how long analytics 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.

##### 4.2.2.2.3 Update subscription for analytic notifications



Figure 4.2.2.2.3-1: NF service consumer updates subscription to analytics notifications

The NF service consumer shall invoke the Ndccf\_DataManagement\_Subscribe service operation to update a subscription to analytics notifications. The NF service consumer shall send an HTTP PUT request with "{apiRoot}/ndccf-datamanagement/<apiVersion>/analytics-subscriptions/{subscriptionId}" as Resource URI, as shown in figure 4.2.2.2.3-1, step 1, to update the subscription for an "Individual DCCF Analytics Subscription" resource identified by the {subscriptionId}. The NdccfAnalyticsSubscription data structure provided in the request body shall include the same contents as described in clause 4.2.2.2.2.

Upon the reception of an HTTP PUT request with "{apiRoot}/ndccf-datamanagement/<apiVersion>/analytics-subscriptions/{subscriptionId}" as Resource URI and NdccfAnalyticsSubscription data structure as request body, the DCCF shall use the contents of the request to determine whether the updated subscription can already be served or interactions with the NWDAF and/or ADRF (e.g. modification of analytics subscriptions with the NWDAF) 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 1: 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 an NWDAF 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 analytics collection depending on local policy and regulations, then the DCCF shall check user consent for the targeted UE(s) by retrieving the user consent subscription data via the Nudm\_SDM service API of the UDM as described in clause 5.2.2 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 2: 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.

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

- update the subscription of corresponding subscriptionId; and

- store the subscription.

If the DCCF successfully updated the "Individual DCCF Analytics Subscription" resource, the DCCF shall respond with:

a) HTTP "200 OK" status code with the message body containing a representation of the updated subscription, as shown in figure 4.2.2.2.3-1, step 2a. If not all the requested analytics events in the subscription are modified successfully, then the DCCF may include the "failEventReports" attribute within the "anaSub" attribute, indicating the event(s) for which the modification failed and the associated reason(s); If the immediate reporting indication in the "immRep" attribute within the "evtReq" attribute of the "anaSub" attribute sets to true in the request, the DCCF shall include the reports of the events subscribed, if available, in the HTTP POST response within the "eventNotifications" of the "anaSub" attribute, or, potentially within the "immReport" attribute, if the DataAnaCollect feature is supported; or

b) HTTP "204 No Content" status code, as shown in figure 4.2.2.2.3-1, step 2b.

When the "notifFlag" attribute within the "evtReq" attribute of the "anaSub" attribute is included in the request with the value "DEACTIVATE", the DCCF shall mute the event notification and store the available events until the NF service consumer requests to retrieve them by setting the "notifFlag" attribute to "RETRIEVAL" or until a muting exception occurs (e.g. full buffer); if the "notifFlag" attribute is set to the value "RETRIEVAL", the DCCF shall send the stored events to the NF service consumer, mute the event notification again and store available events; if the "notifFlag" attribute is set to the value "ACTIVATE" and the event notifications are muted (due to a previously received "DECATIVATE" value), the DCCF shall unmute the event notification, i.e. start sending again notifications for available events.

Editor's Note: It is FFS to determine whether any further provisions or limitations with regard to the usage of the "notifFlag" attribute are needed.

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 analytics, the storage approach should be based on the longest requested storage lifetime.

NOTE 3: The default operator policy for how long analytics 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 PUT request, the DCCF shall send an HTTP error response as specified in clause 5.1.7.

If the DCCF determines the received HTTP PUT request needs to be redirected, the DCCF shall send an HTTP redirect response as specified in clause 6.10.9 of 3GPP TS 29.500 [4].

##### 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;

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) by retrieving the user consent subscription data via the Nudm\_SDM service API of the UDM as described in clause 5.2.2 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.

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.

##### 4.2.2.2.5 Update subscription for data notifications



Figure 4.2.2.2.5-1: NF service consumer updates subscription to data notifications

The NF service consumer (i.e. NWDAF) shall invoke the Ndccf\_DataManagement\_Subscribe service operation to update a subscription to data notifications. The NF service consumer shall send an HTTP PUT request with "{apiRoot}/ndccf-datamanagement/<apiVersion>/data-subscriptions/{subscriptionId}" as Resource URI, as shown in figure 4.2.2.2.5-1, step 1, to update the subscription for an "Individual DCCF Data Subscription" resource identified by the {subscriptionId}. The NdccfDataSubscription data structure provided in the request body shall include the same contents as described in clause 4.2.2.2.4.

Upon the reception of an HTTP PUT request with "{apiRoot}/ndccf-datamanagement/<apiVersion>/data-subscriptions/{subscriptionId}" as Resource URI and NdccfDataSubscription data structure as request body, the DCCF shall use the contents of the request to determine whether the updated subscription can already be served or interactions with the data sources (e.g. modification of event exposure subscriptions) 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 1: 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 event exposure subscription 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 analytics collection depending on local policy and regulations), then the DCCF shall check user consent for the targeted UE(s) by retrieving the user consent subscription data via the Nudm\_SDM service API of the UDM as described in clause 5.2.2 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 2: 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.

If the DCCF determines that the updated 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:

- update the subscription of the corresponding subscriptionId; and

- store the subscription.

If the DCCF successfully updated the "Individual DCCF Data Subscription" resource, the DCCF shall respond with:

a) HTTP "200 OK" status code with the message body containing a representation of the updated subscription, as shown in figure 4.2.2.2.5-1, step 2a; 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 PUT response within the "dataSub" attribute, or, potentiallyE within the "immReport" attribute, if the DataAnaCollect feature is supported; or

b) HTTP "204 No Content" status code, as shown in figure 4.2.2.2.5-1, step 2b.

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 in the request with the value "DEACTIVATE", 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 attribute 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 notification flag is set to the value "RETRIEVAL", the DCCF shall send the stored events to the NF service consumer, mute the event notification again and store available events; if the notification flag is set to the value "ACTIVATE" and the event notifications are muted (due to a previously received "DECATIVATE" value), the DCCF shall unmute the event notification, i.e. start sending again notifications for available events.

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 3: 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 PUT request, the DCCF shall send an HTTP error response as specified in clause 5.1.7.

If the DCCF determines the received HTTP PUT request needs to be redirected, the DCCF shall send an HTTP redirect response as specified in clause 6.10.9 of 3GPP TS 29.500 [4].

#### 4.2.2.3 Ndccf\_DataManagement\_Unsubscribe service operation

##### 4.2.2.3.1 General

The Ndccf\_DataManagement\_Unsubscribe service operation is used by an NF service consumer to remove a subscription for analytics or data notifications from the DCCF.

##### 4.2.2.3.2 Unsubscribe from analytics notifications

Figure 4.2.2.3.2-1 shows a scenario where the NF service consumer sends a request to the DCCF to unsubscribe from analytics notifications.



Figure 4.2.2.3.2-1: NF service consumer unsubscribes from analytics notifications

The NF service consumer shall invoke the Ndccf\_DataManagement\_Unsubscribe service operation to unsubscribe from analytics notifications. The NF service consumer shall send an HTTP DELETE request with "{apiRoot}/ndccf-datamanagement /<apiVersion>/analytics-subscriptions/{subscriptionId}" as Resource URI representing an "Individual DCCF Analytics Subscription" resource, as shown in figure 4.2.2.3.2-1, step 1, where "{subscriptionId}" is the identifier of the existing analytics subscription that is to be deleted.

Upon the reception of an HTTP DELETE request with "{apiRoot}/ndccf-datamanagement/<apiVersion>/analytics-subscriptions /{subscriptionId}" as Resource URI, if the DCCF successfully processed and accepted the received HTTP DELETE request, the DCCF shall:

- remove the corresponding subscription;

- respond with HTTP "204 No Content" status.

If errors occur when processing the HTTP DELETE request, the DCCF shall send an HTTP error response as specified in clause 5.1.7.

If the DCCF determines the received HTTP DELETE request needs to be redirected, the DCCF shall send an HTTP redirect response as specified in clause 6.10.9 of 3GPP TS 29.500 [4].

##### 4.2.2.3.3 Unsubscribe from data notifications

Figure 4.2.2.3.3-1 shows a scenario where the NF service consumer sends a request to the DCCF to unsubscribe from data notifications.



Figure 4.2.2.3.3-1: NWDAF unsubscribes from data notifications

The NWDAF shall invoke the Ndccf\_DataManagement\_Unsubscribe service operation to unsubscribe to data notifications. The NWDAF shall send an HTTP DELETE request with "{apiRoot}/ndccf-datamanagement/<apiVersion>/data-subscriptions/{subscriptionId}" as Resource URI representing an "Individual DCCF Data Subscription" resource, as shown in figure 4.2.2.3.3-1, step 1, where "{subscriptionId}" is the identifier of the existing data subscription that is to be deleted.

Upon the reception of an HTTP DELETE request with "{apiRoot}/ndccf-datamanagement/<apiVersion>/data-subscriptions /{subscriptionId}" as Resource URI, if the DCCF successfully processed and accepted the received HTTP DELETE request, the DCCF shall:

- remove the corresponding subscription;

- respond to the NWDAF:

- with HTTP "204 No Content" status code if the "EnhDataMgmt" feature is not supported or no stored unsent data events to be included in the response; or

- with HTTP "200 OK" status code if the "EnhDataMgmt" feature is supported and including the stored unsent data events in the NdccfDataSubscriptionNotification data type in the response.

If errors occur when processing the HTTP DELETE request, the DCCF shall send an HTTP error response as specified in clause 5.1.7.

If the DCCF determines the received HTTP DELETE request needs to be redirected, the DCCF shall send an HTTP redirect response as specified in clause 6.10.9 of 3GPP TS 29.500 [4].

#### 4.2.2.4 Ndccf\_DataManagement\_Notify service operation

##### 4.2.2.4.1 General

The Ndccf\_DataManagement\_Notify service operation is used by DCCF to notify NF service consumers about subscribed events related to analytics or data.

##### 4.2.2.4.2 Notification about subscribed analytics

Figure 4.2.2.4.2-1 shows a scenario where the DCCF sends a request to the NF Service Consumer to notify it about analytics event(s).

NF service consumer

DCCF

1

.

POST

{

notificationURI

}

2

.

204

No Content or 200 OK

Figure 4.2.2.4.2-1: DCCF notifies the NF service consumer about a subscribed analytics event

The DCCF shall invoke the Ndccf\_DataManagement\_Notify service operation to notify about a subscribed analytics event. The DCCF shall send an HTTP POST request with "{notificationURI}" as Resource URI (where "{notificationURI}" has the value of the notification URI received in the NdccfAnalyticsSubscription data structure of the Ndccf\_DataManagement\_Subscribe service operation, see clause 5.1.5 for the definition of this notification URI), as shown in figure 4.2.2.4.2-1, step 1. The NdccfAnalyticsSubscriptionNotification data structure provided in the request body shall include:

- the analytics notification correlation identifier within the "anaNotifCorrId" attribute;

- the time stamp which represents the time when DCCF completes preparation of the requested analytics within the "timeStamp" attribute;

- one of the following:

- information about network data analytics function events that occurred in the "anaNotifications" attribute;

- summarized analytics derived from events based on processing instructions and formatting instructions that occurred in the "anaReports" attribute;

- information for fetching the contents of the notification in the "fetchInstruct" attribute;

- a deletion alert in the "delAlert" attribute, if the "EnhDataMgmt" feature is supported.

The NdccfAnalyticsSubscriptionNotification data structure provided in the request body may include:

- a termination request provided by the DCCF within the "terminationReq" attribute.

If the NF service consumer successfully processed and accepted the received HTTP POST request, the NF service consumer shall:

- store the notification;

- respond with HTTP "204 No Content" status code, or with HTTP "200 OK" status code and the NotifResponse data structure in the response body if the "EnhDataMgmt" feature is supported.

If errors occur when processing the HTTP POST request, the NF service consumer shall send an HTTP error response as specified in clause 5.1.7.

If 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 [4].

After the successful processing of the HTTP POST request:

- if the DCCF requests the NF service consumer to retrieve the analytics with the "fetchInstruct" attribute, the NF service consumer may invoke the Ndccf\_DataManagement\_Fetch service operation to retrieve the notified analytics as defined in clause 4.2.2.5.

- if the DCCF provided a deletion alert to the NF service consumer, the NF service consumer may invoke the Nadrf\_DataManagement\_RetrievalRequest service operation as defined in 3GPP TS 29.575 [25] clause 4.2.2.5, using the storage transaction identifier received within the "alertStorTransId" attribute of the "delAlert" attribute, in order to retrieve the analytics that are about to be deleted.

NOTE: The "alertStorTransId" attribute, which is used for retrieving data prior to deletion, does not have to be the same with or related to the storage transaction identifier that is assigned and returned during the storage of the data in the ADRF.

##### 4.2.2.4.3 Notification about subscribed data event

Figure 4.2.2.4.3-1 shows a scenario where the DCCF sends a request to the NF Service Consumer to notify it about data event(s).

NWDAF

DCCF

1

.

POST

{

notificationURI

}

2

.

204

No Content or 200 OK

Figure 4.2.2.4.3-1: DCCF notifies the NF service consumer about a subscribed data event

The DCCF shall invoke the Ndccf\_DataManagement\_Notify service operation to notify about a subscribed data event. The DCCF shall send an HTTP POST request with "{notificationURI}" as Resource URI (where "{notificationURI}" has the value of the notification URI received in the NdccfDataSubscription data structure of the Ndccf\_DataManagement\_Subscribe service operation, see clause 5.1.5 for the definition of this notification URI), as shown in figure 4.2.2.4.3-1, step 1. The NdccfDataSubscriptionNotification data structure provided in the request body shall include:

- the data notification correlation identifier within the "dataNotifCorrId" attribute;

- the time stamp which represents the time when DCCF completes preparation of the requested data within the "timeStamp" attribute;

- one of the following:

- the data notification within the "dataNotif" attribute;

- summarized data derived from events based on processing instructions and formatting instructions that occurred in the "dataReports" attribute;

- information for fetching the contents of the notification in the "fetchInstruct" attribute;

- a deletion alert in the "delAlert" attribute, if the "EnhDataMgmt" feature is supported.

The NdccfDataSubscriptionNotification data structure provided in the request body may include:

- a termination request provided by the DCCF within the "terminationReq" attribute;

- a cause for termination in the "termCause" attribute, if the "TerminationCause" feature is supported and the "terminationReq" attribute is set to "true", i.e. DCCF wants to request the termination of this subscription and will send no further notifications for it; and/or

- a pending notification cause for the stored unsent data in the "pendDataNotifCause" attribute if the "EnhDataMgmt" feature is supported.

If the NF service consumer successfully processed and accepted the received HTTP POST request, the NF service consumer shall:

- store the notification;

- respond with HTTP "204 No Content" status code, or with HTTP "200 OK" status code and the NotifResponse data structure in the response body if the "EnhDataMgmt" feature is supported.

If errors occur when processing the HTTP POST request, the NF service consumer shall send an HTTP error response as specified in clause 5.1.7.

If the NWDAF determines the received HTTP POST request needs to be redirected, the NWDAF shall send an HTTP redirect response as specified in clause 6.10.9 of 3GPP TS 29.500 [4].

After the successful processing of the HTTP POST request:

- if the DCCF requests the NF service consumer to retrieve the data with the "fetchInstruct" attribute, the NF service consumer may invoke the Ndccf\_DataManagement\_Fetch service operation to retrieve the notified data as defined in clause 4.2.2.5.

- if the DCCF provided a deletion alert to the NF service consumer, the NF service consumer may invoke the Nadrf\_DataManagement\_RetrievalRequest service operation as defined in 3GPP TS 29.575 [25] clause 4.2.2.5, using the storage transaction identifier received within the "alertStorTransId" attribute of the "delAlert" attribute, in order to retrieve the data that are about to be deleted.

NOTE: The "alertStorTransId" attribute, which is used for retrieving data prior to deletion, does not have to be the same with or related to the storage transaction identifier that is assigned and returned during the storage of the data in the ADRF.

#### 4.2.2.5 Ndccf\_DataManagement\_Fetch service operation

##### 4.2.2.5.1 General

The Ndccf\_DataManagement\_Fetch service operation is used by an NF service consumer to retrieve analytics or data notifications indicated by fetch instructions from the DCCF.

##### 4.2.2.5.2 Retrieve notified analytics and data

Figure 4.2.2.5.2-1 shows a scenario where the NF service consumer sends a request to the DCCF to retrieve notified analytics or data.



Figure 4.2.2.5.2-1: NF service consumer requesting to retrieve notified analytics or data

The NF service consumer shall invoke the Ndccf\_DataManagement\_Fetch service operation to retrieve notified analytics or data. The NF service consumer shall send an HTTP POST request to the URI "{fetchUri}" which was previously provided by the DCCF within a FetchInstruction data structure in a DCCF notification, as shown in figure 4.2.2.5.2-1, step 1, to request notified analytics or data from the DCCF.

The request body shall include fetch correlation identifiers, which were previously provided by the DCCF in the "fetchCorrIds" attribute within FetchInstruction data structure in the DCCF notification.

Upon the reception of the HTTP POST request, the DCCF shall:

- find the analytics or data according to the request.

If requested analytics is found, the DCCF shall respond with "200 OK" status code with the message body containing the NdccfAnalyticsSubscriptionNotification data structure. The NdccfAnalyticsSubscriptionNotification data structure in the response body shall include the same contents as described in clause 4.2.2.4.2 with the difference that the "fetchInstruct" attribute shall not be included.

If requested data is found, the DCCF shall respond with "200 OK" status code with the message body containing the NdccfDataSubscriptionNotification data structure. The NdccfDataSubscriptionNotification data structure in the response body shall include the same contents as described in clause 4.2.2.4.3 with the difference that the "fetchInstruct" attribute shall not be included.

If the requested analytics or data does not exist, the DCCF shall respond with "204 No Content".

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.

If the DCCF determines the received HTTP POST request needs to be redirected, the DCCF shall send an HTTP redirect response as specified in clause 6.10.9 of 3GPP TS 29.500 [4].

## 4.3 Ndccf\_ContextManagement Service

### 4.3.1 Service Description

#### 4.3.1.1 Overview

The Ndccf\_ContextManagement service, as defined in 3GPP TS 23.288 [14], is provided by the Data Collection Coordination Function (DCCF).

This service:

- allows NF service consumers to register, update or deregister the collected data or analytics information in the DCCF.

#### 4.3.1.2 Service Architecture

The 5G System Architecture is defined in 3GPP TS 23.501 [2]. The Network Data Analytics Exposure architecture, including the DCCF architecture, is defined in 3GPP TS 23.288 [14].

Known consumers of the Ndccf\_ContextManagement service are:

- Network Data Analytics Function (NWDAF)

- Analytics Data Repository Function (ADRF)

The Ndccf\_ContextManagement service is provided by the DCCF and consumed by the NF service consumers (e.g. NWDAF, ADRF) as shown in figure 4.3.1.2-1 for the SBI representation model and in figure 4.3.1.2-2 for the reference point representation model.



Figure 4.3.1.2-1: Ndccf\_ContextManagement service architecture, SBI representation



Figure 4.3.1.2-2: Ndccf\_ContexManagement service architecture, reference point representation

#### 4.3.1.3 Network Functions

##### 4.3.1.3.1 Data Collection Coordination Function (DCCF)

The DCCF (Data Collection Coordination Function) provides functionality to create, update, and delete data collection profiles.

##### 4.3.1.3.2 NF Service Consumers

The NWDAF and ADRF may register and/or update a data collection profile to the DCCF to enable data consumers to get the data which has been collected by NWDAF or ADRF directly (i.e. not via DCCF).

### 4.3.2 Service Operations

#### 4.3.2.1 Introduction

Service operations defined for the Ndccf\_ContextManagement Service are shown in table 4.3.2.1-1.

Table 4.3.2.1-1: Ndccf\_ContextManagement Service Operations

|  |  |  |
| --- | --- | --- |
| Service Operation Name | Description | Initiated by |
| Ndccf\_ContextManagement\_Register | This service operation is used by an NF service consumer to register data or analytics it is collecting in the DCCF. | NF service consumer (NWDAF, ADRF) |
| Ndccf\_ContextManagement\_Update | This service operation is used by an NF service consumer to update an existing data or analytics registration. | NF service consumer (NWDAF, ADRF) |
| Ndccf\_ContextManagement\_Deregister | This service operation is used by an NF service consumer to delete an existing data or analytics registration. | NF service consumer (NWDAF, ADRF) |

#### 4.3.2.2 Ndccf\_ContextManagement\_Register service operation

##### 4.3.2.2.1 General

##### 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;

- 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.

#### 4.3.2.3 Ndccf\_ContextManagement\_Update service operation

##### 4.3.2.3.1 General

##### 4.3.2.3.2 Update registered data collection profile

Figure 4.3.2.3.2-1 shows a scenario where the NF service consumer sends a request to the DCCF to update a registration of a data collection profile to the DCCF.



Figure 4.3.2.3.2-1: NF service consumer updates registered data collection profile

The NF service consumer (e.g. NWDAF or ADRF) shall invoke the Ndccf\_ContextManagement\_Update service operation to update a registration of data or analytics collection to DCCF. The NF service consumer shall send an HTTP PUT request with "{apiRoot}/ndccf-contextmanagement/<apiVersion>/data-collection-profiles/{profileId}" as Resource URI, as shown in figure 4.3.2.3.2-1, step 1, to update the registration of data or analytics for an "Individual DCCF Data Collection Profile" resource identified by the {profileId}. The NdccfDataCollectionProfile data structure provided in the request body shall include the same contents as described in clause 4.3.2.2.

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

- update the profile of the corresponding profileId; and

- store the profile.

If the DCCF successfully processed and accepted the received HTTP PUT request, the DCCF shall update an "Individual DCCF Data Collection Profile" resource, and shall respond with:

a) HTTP "200 OK" status code with the message body containing a representation of the updated profile, as shown in figure 4.3.2.3.2-1, step 2a; or

b) HTTP "204 No Content" status code, as shown in figure 4.3.2.3.2-1, step 2b.

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

If the DCCF determines the received HTTP PUT request needs to be redirected, the DCCF shall send an HTTP redirect response as specified in clause 6.10.9 of 3GPP TS 29.500 [4].

#### 4.3.2.4 Ndccf\_ContextManagement\_Deregister service operation

##### 4.3.2.4.1 General

##### 4.3.2.4.2 Deregister Data collection profile

Figure 4.3.2.4.2-1 shows a scenario where the NF service consumer sends a request to the DCCF to delete a registration of data collection profile.



Figure 4.3.2.4.2-1: NF service consumer deregisters data collection profile

The NF service consumer shall invoke the Ndccf\_ContextManagement\_Deregister service operation to delete a registration of data or analytics collection profile to the DCCF. The NF service consumer shall send an HTTP DELETE request with "{apiRoot}/ndccf-contextmanagement/<apiVersion>/data-collection-profiles/{profileId}" as Resource URI representing an "Individual DCCF Data Collection Profile" resource, as shown in figure 4.3.2.4.2-1, step 1, where "{profileId}" is the identifier of the existing Data Collection Profile that is to be deleted.

Upon the reception of an HTTP DELETE request with "{apiRoot}/ndccf-contextmanagement/<apiVersion>/data-collection-profiles/{profileId}" as Resource URI, if the DCCF successfully processed and accepted the received HTTP DELETE request, the DCCF shall:

- remove the corresponding registered profile;

- respond with HTTP "204 No Content" status.

If errors occur when processing the HTTP DELETE request, the DCCF shall send an HTTP error response as specified in clause 5.2.7.

If the DCCF determines the received HTTP DELETE request needs to be redirected, the DCCF shall send an HTTP redirect response as specified in clause 6.10.9 of 3GPP TS 29.500 [4].

# 5 API Definitions

## 5.1 Ndccf\_DataManagement Service API

### 5.1.1 Introduction

The Ndccf\_DataManagement shall use the Ndccf\_DataManagement API.

The API URI of the Ndccf\_DataManagement API shall be:

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

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

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

with the following components:

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

- The <apiName>shall be "ndccf-datamanagement".

- The <apiVersion> shall be "v1".

- The <apiSpecificResourceUriPart> shall be set as described in clause 5.1.3.

### 5.1.2 Usage of HTTP

#### 5.1.2.1 General

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

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

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

#### 5.1.2.2 HTTP standard headers

##### 5.1.2.2.1 General

See clause 5.2.2 of 3GPP TS 29.500 [4] for the usage of HTTP standard headers.

##### 5.1.2.2.2 Content type

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

"Problem Details" JSON object shall be used to indicate additional details of the error in a HTTP response body and shall be signalled by the content type "application/problem+json", as defined in IETF RFC 9457 [13].

#### 5.1.2.3 HTTP custom headers

The mandatory HTTP custom header fields specified in clause 5.2.3.2 of 3GPP TS 29.500 [4] shall be supported, and the optional HTTP custom header fields specified in clause 5.2.3.3 of 3GPP TS 29.500 [4] may be supported.

### 5.1.3 Resources

#### 5.1.3.1 Overview

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

Figure 5.1.3.1-1 depicts the resource URIs structure for the Ndccf\_DataManagement API.



Figure 5.1.3.1-1: Resource URI structure of the Ndccf\_DataManagement API

Table 5.1.3.1-1 provides an overview of the resources and applicable HTTP methods.

Table 5.1.3.1-1: Resources and methods overview

|  |  |  |  |
| --- | --- | --- | --- |
| Resource name | Resource URI | HTTP method or custom operation | Description |
| DCCF Analytics Subscriptions | /analytics-subscriptions | POST | Creates a new Individual DCCF Analytics Subscription resource. |
| Individual DCCF Analytics Subscription | /analytics-subscriptions/{subscriptionId} | PUT | Modifies an existing Individual DCCF Analytics Subscription resource. |
| DELETE | Deletes an Individual DCCF Analytics Subscription identified by {subscriptionId}. |
| DCCF Data Subscriptions | /data-subscriptions | POST | Creates a new Individual DCCF Data Subscription resource. |
| Individual DCCF Data Subscription | /data-subscriptions/{subscriptionId} | PUT | Modifies an existing DCCF Data Subscription resource. |
| DELETE | Deletes an Individual DCCF Data Subscription identified by {subscriptionId}. |

#### 5.1.3.2 Resource: DCCF Analytics Subscriptions

##### 5.1.3.2.1 Description

The DCCF Analytics Subscriptions resource represents all Analytics subscriptions to the Ndccf\_DataManagement Service at a given DCCF. The resource allows an NF service consumer to create a new Individual DCCF Analytics Subscription resource.

##### 5.1.3.2.2 Resource Definition

Resource URI: **{apiRoot}/ndccf-datamanagement/<apiVersion>/analytics-subscriptions**

This resource shall support the resource URI variables defined in table 5.1.3.2.2-1.

Table 5.1.3.2.2-1: Resource URI variables for this resource

|  |  |  |
| --- | --- | --- |
| Name | Data type | Definition |
| apiRoot | string | See clause 5.1.1 |

##### 5.1.3.2.3 Resource Standard Methods

###### 5.1.3.2.3.1 POST

This method shall support the URI query parameters specified in table 5.1.3.2.3.1-1.

Table 5.1.3.2.3.1-1: URI query parameters supported by the POST method on this resource

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

This method shall support the request data structures specified in table 5.1.3.2.3.1-2 and the response data structures and response codes specified in table 5.1.3.2.3.1-3.

Table 5.1.3.2.3.1-2: Data structures supported by the POST Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| NdccfAnalyticsSubscription | M | 1 | New Individual DCCF Analytics Subscription resource to be created. |

Table 5.1.3.2.3.1-3: Data structures supported by the POST Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response  codes | Description |
| NdccfAnalyticsSubscription | M | 1 | 201 Created | The creation of an Individual DCCF Analytics Subscription resource is confirmed and a representation of that resource is returned. |
| ProblemDetails | O | 0..1 | 400 Bad Request | (NOTE 2) |
| ProblemDetails | O | 0..1 | 403 Forbidden | (NOTE 2) |
| NOTE 1: The mandatory HTTP error status code for the POST method listed in Table 5.2.7.1-1 of 3GPP TS 29.500 [4] also apply.  NOTE 2: Failure cases are described in clause 5.1.7. | | | | |

Table 5.1.3.2.3.1-4: Headers supported by the 201 response code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | Contains the URI of the newly created resource, according to the structure: {apiRoot}/ndccf-datamanagement/<apiVersion>/analytics-subscriptions/{subscriptionId} |

##### 5.1.3.2.4 Resource Custom Operations

None in this release of the specification.

#### 5.1.3.3 Resource: Individual DCCF Analytics Subscription

##### 5.1.3.3.1 Description

The Individual DCCF Analytics Subscription resource represents a single Analytics Subscription to the Ndccf\_DataManagement Service at a given DCCF.

##### 5.1.3.3.2 Resource Definition

Resource URI: **{apiRoot}/ndccf-datamanagement/<apiVersion>/analytics-subscriptions/{subscriptionId}**

This resource shall support the resource URI variables defined in table 5.1.3.3.2-1.

Table 5.1.3.3.2-1: Resource URI variables for this resource

|  |  |  |
| --- | --- | --- |
| Name | Data type | Definition |
| apiRoot | string | See clause 5.1.1 |
| subscriptionId | string | Identifies an analytics subscription to the Ndccf\_DataManagement Service |

##### 5.1.3.3.3 Resource Standard Methods

###### 5.1.3.3.3.1 PUT

This method shall support the URI query parameters specified in table 5.1.3.3.3.1-1.

Table 5.1.3.3.3.1-1: URI query parameters supported by the PUT method on this resource

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

This method shall support the request data structures specified in table 5.1.3.3.3.1-2 and the response data structures and response codes specified in table 5.1.3.3.3.1-3.

Table 5.1.3.3.3.1-2: Data structures supported by the PUT Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| NdccfAnalyticsSubscription | M | 1 | Parameters to replace a subscription to DCCF Analytics Subscription resource. |

Table 5.1.3.3.3.1-3: Data structures supported by the PUT Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response  codes | Description |
| NdccfAnalyticsSubscription | M | 1 | 200 OK | The Individual DCCF Analytics Subscription resource was modified successfully and a representation of that resource is returned. |
| n/a |  |  | 204 No Content | The Individual DCCF Analytics Subscription resource was modified successfully. |
| RedirectResponse | O | 0..1 | 307 Temporary Redirect | Temporary redirection, during Individual DCCF Analytics Subscription modification. .  (NOTE 3) |
| RedirectResponse | O | 0..1 | 308 Permanent Redirect | Permanent redirection, during Individual DCCF Analytics Subscription modification.  (NOTE 3) |
| ProblemDetails | O | 0..1 | 400 Bad Request | (NOTE 2) |
| ProblemDetails | O | 0..1 | 403 Forbidden | (NOTE 2) |
| NOTE 1: The mandatory HTTP error status code for the PUT method listed in Table 5.2.7.1-1 of 3GPP TS 29.500 [4] also apply.  NOTE 2: Failure cases are described in clause 5.1.7.  NOTE 3: The RedirectResponse data structure may be provided by an SCP (cf. clause 6.10.9.1 of 3GPP TS 29.500 [4]). | | | | |

Table 5.1.3.3.3.1-4: Headers supported by the 307 Response Code on this resource

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

Table 5.1.3.3.3.1-5: Headers supported by the 308 Response Code on this resource

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

###### 5.1.3.3.3.2 DELETE

This method shall support the URI query parameters specified in table 5.1.3.3.3.2-1.

Table 5.1.3.3.3.2-1: URI query parameters supported by the DELETE method on this resource

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

This method shall support the request data structures specified in table 5.1.3.3.3.2-2 and the response data structures and response codes specified in table 5.1.3.3.3.2-3.

Table 5.1.3.3.3.2-2: Data structures supported by the DELETE Request Body on this resource

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

Table 5.1.3.3.3.2-3: Data structures supported by the DELETE Response Body on this resource

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

Table 5.1.3.3.3.2-4: Headers supported by the 307 Response Code on this resource

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

Table 5.1.3.3.3.2-5: Headers supported by the 308 Response Code on this resource

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

##### 5.1.3.3.4 Resource Custom Operations

None in this release of the specification.

#### 5.1.3.4 Resource: DCCF Data Subscriptions

##### 5.1.3.4.1 Description

The DCCF Data Subscriptions resource represents all data subscriptions to the Ndccf\_DataManagement Service at a given DCCF. The resource allows an NF service consumer to create a new Individual DCCF Data Subscription resource.

##### 5.1.3.4.2 Resource Definition

Resource URI: **{apiRoot}/ndccf-datamanagement/<apiVersion>/data-subscriptions**

This resource shall support the resource URI variables defined in table 5.1.3.4.2-1.

Table 5.1.3.3.2-1: Resource URI variables for this resource

|  |  |  |
| --- | --- | --- |
| Name | Data type | Definition |
| apiRoot | string | See clause 5.1.1 |

##### 5.1.3.4.3 Resource Standard Methods

###### 5.1.3.4.3.1 POST

This method shall support the URI query parameters specified in table 5.1.3.4.3.1-1.

Table 5.1.3.4.3.1-1: URI query parameters supported by the POST method on this resource

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

This method shall support the request data structures specified in table 5.1.3.4.3.1-2 and the response data structures and response codes specified in table 5.1.3.4.3.1-3.

Table 5.1.3.4.3.1-2: Data structures supported by the POST Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| NdccfDataSubscription | M | 1 | Individual DCCF Data Subscription resource to be created. |

Table 5.1.3.4.3.1-3: Data structures supported by the POST Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response  codes | Description |
| NdccfDataSubscription | M | 1 | 201 Created | The creation of an Individual DCCF Data Subscription resource is confirmed and a representation of that resource is returned. |
| ProblemDetails | O | 0..1 | 400 Bad Request | (NOTE 2) |
| ProblemDetails | O | 0..1 | 403 Forbidden | (NOTE 2) |
| NOTE 1: The mandatory HTTP error status code for the POST method listed in Table 5.2.7.1-1 of 3GPP TS 29.500 [4] also apply.  NOTE 2: Failure cases are described in clause 5.1.7. | | | | |

Table 5.1.3.4.3.1-4: Headers supported by the 201 response code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | Contains the URI of the newly created resource, according to the structure: {apiRoot}/ndccf-datamanagement/<apiVersion>/data-subscriptions/{subscriptionId} |

##### 5.1.3.4.4 Resource Custom Operations

None in this release of the specification.

#### 5.1.3.5 Resource: Individual DCCF Data Subscription

##### 5.1.3.5.1 Description

The Individual DCCF Data Subscription resource represents a single data subscription to the Ndccf\_DataManagement Service at a given DCCF.

##### 5.1.3.5.2 Resource Definition

Resource URI: **{apiRoot}/ndccf-datamanagement/<apiVersion>/data-subscriptions/{subscriptionId}**

This resource shall support the resource URI variables defined in table 5.1.3.5.2-1.

Table 5.1.3.5.2-1: Resource URI variables for this resource

|  |  |  |
| --- | --- | --- |
| Name | Data type | Definition |
| apiRoot | string | See clause 5.1.1 |
| subscriptionId | string | Identifies a data subscription to the Ndccf\_DataManagement Service |

##### 5.1.3.5.3 Resource Standard Methods

###### 5.1.3.5.3.1 PUT

This method shall support the URI query parameters specified in table 5.1.3.5.3.1-1.

Table 5.1.3.5.3.1-1: URI query parameters supported by the PUT method on this resource

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

This method shall support the request data structures specified in table 5.1.3.5.3.1-2 and the response data structures and response codes specified in table 5.1.3.5.3.1-3.

Table 5.1.3.5.3.1-2: Data structures supported by the PUT Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| NdccfDataSubscription | M | 1 | Parameters to replace a subscription to DCCF Data Subscription resource. |

Table 5.1.3.5.3.1-3: Data structures supported by the PUT Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response  codes | Description |
| NdccfDataSubscription | M | 1 | 200 OK | The Individual DCCF Data Subscription resource was modified successfully and a representation of that resource is returned. |
| n/a |  |  | 204 No Content | The Individual DCCF Data Subscription resource was modified successfully. |
| RedirectResponse | O | 0..1 | 307 Temporary Redirect | Temporary redirection, during Individual DCCF Data Subscription modification.  (NOTE 3) |
| RedirectResponse | O | 0..1 | 308 Permanent Redirect | Permanent redirection, during Individual DCCF Data Subscription modification.  (NOTE 3) |
| ProblemDetails | O | 0..1 | 400 Bad Request | (NOTE 2) |
| ProblemDetails | O | 0..1 | 403 Forbidden | (NOTE 2) |
| NOTE 1: The mandatory HTTP error status code for the PUT method listed in Table 5.2.7.1-1 of 3GPP TS 29.500 [4] also apply.  NOTE 2: Failure cases are described in clause 5.1.7.  NOTE 3: The RedirectResponse data structure may be provided by an SCP (cf. clause 6.10.9.1 of 3GPP TS 29.500 [4]). | | | | |

Table 5.1.3.5.3.1-4: Headers supported by the 307 Response Code on this resource

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

Table 5.1.3.5.3.1-5: Headers supported by the 308 Response Code on this resource

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

###### 5.1.3.5.3.2 DELETE

This method shall support the URI query parameters specified in table 5.1.3.5.3.2-1.

Table 5.1.3.5.3.2-1: URI query parameters supported by the DELETE method on this resource

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

This method shall support the request data structures specified in table 5.1.3.5.3.2-2 and the response data structures and response codes specified in table 5.1.3.5.3.2-3.

Table 5.1.3.5.3.2-2: Data structures supported by the DELETE Request Body on this resource

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

Table 5.1.3.5.3.2-3: Data structures supported by the PUT Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response  codes | Description |
| n/a |  |  | 204 No Content | The Individual DCCF Data Subscription resource was deleted successfully. |
| NdccfDataSubscriptionNotification | C | 0..1 | 200 OK | Successful case: The Individual NWDAF Data Management Subscription resource matching the subscriptionId was deleted and including the stored unsent data events in the response. |
| RedirectResponse | O | 0..1 | 307 Temporary Redirect | Temporary redirection, during Individual DCCF Data Subscription deletion.  (NOTE 2) |
| RedirectResponse | O | 0..1 | 308 Permanent Redirect | Permanent redirection, during Individual DCCF Data Subscription deletion.  (NOTE 2) |
| NOTE 1: The mandatory HTTP error status code for the DELETE method listed in Table 5.2.7.1-1 of 3GPP TS 29.500 [4] also apply.  NOTE 2: The RedirectResponse data structure may be provided by an SCP (cf. clause 6.10.9.1 of 3GPP TS 29.500 [4]). | | | | |

Table 5.1.3.5.3.2-4: Headers supported by the 307 Response Code on this resource

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

Table 5.1.3.5.3.2-5: Headers supported by the 308 Response Code on this resource

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

##### 5.1.3.5.4 Resource Custom Operations

None in this release of the specification.

### 5.1.4 Custom Operations without associated resources

None in this release of the specification.

### 5.1.5 Notifications

#### 5.1.5.1 General

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

Table 5.1.5.1-1: Notifications overview

|  |  |  |  |
| --- | --- | --- | --- |
| Notification | Callback URI | HTTP method or custom operation | Description  (service operation) |
| Analytics Event Notification | {anaNotifUri} | POST | Report one or several observed analytics events. |
| Data Event Notification | {dataNotifUri} | POST | Report one or several observed data collection events. |
| Fetch Notification | {fetchUri} | POST | Fetch one or several notified data or analytics. |

#### 5.1.5.2 Analytics Notification

##### 5.1.5.2.1 Description

The Analytics Notification is used by the NF service producer to report one or several observed analytics events to an NF service consumer that has subscribed to such notifications.

##### 5.1.5.2.2 Target URI

The Callback URI **"{**anaNotifUri**}"** shall be used with the callback URI variables defined in table 5.1.5.2.2-1.

Table 5.1.5.2.2-1: Callback URI variables

|  |  |
| --- | --- |
| Name | Definition |
| anaNotifUri | String formatted as URI with the Callback Uri.  The Callback Uri is assigned within the Individual DCCF Analytics Subscription resource and described within the NdccfAnalyticsSubscription type (see table 5.1.6.2.2-1). |

##### 5.1.5.2.3 Standard Methods

5.1.5.2.3.1 POST

This method shall support the request data structures specified in table 5.1.5.2.3.1-1 and the response data structures and response codes specified in table 5.1.5.2.3.2-1.

Table 5.1.5.2.3.1-1: Data structures supported by the POST Request Body

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| NdccfAnalyticsSubscriptionNotification | M | 1 | Provides information about observed analytics events |

Table 5.1.5.2.3.1-2: Data structures supported by the POST Response Body

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response codes | Description |
| NotifResponse | M | 1 | 200 OK | The receipt of the notification is acknowledged and a response with information about the planned action is provided. |
| RedirectResponse | O | 0..1 | 307 Temporary Redirect | Temporary redirection, during the analytics event notification. The response shall include a Location header field containing an alternative URI representing the end point of an alternative NF consumer (service) instance where the notification should be sent. |
| RedirectResponse | O | 0..1 | 308 Permanent Redirect | Permanent redirection, during the analytics event notification. The response shall include a Location header field containing an alternative URI representing the end point of an alternative NF consumer (service) instance where the notification should be sent. |
| NOTE: The mandatory HTTP error status codes for the POST method listed in Table 5.2.7.1-1 of 3GPP TS 29.500 [4] also apply. | | | | |

Table 5.1.5.2.3.1-3: Headers supported by the 307 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | An alternative URI representing the end point of an alternative NF consumer (service) instance towards which the notification should be redirected. |
| 3gpp-Sbi-Target-Nf-Id | string | O | 0..1 | Identifier of the target NF (service) instance towards which the notification request is redirected. |

Table 5.1.5.2.3.1-4: Headers supported by the 308 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | An alternative URI representing the end point of an alternative NF consumer (service) instance towards which the notification should be redirected. |
| 3gpp-Sbi-Target-Nf-Id | string | O | 0..1 | Identifier of the target NF (service) instance towards which the notification request is redirected. |

#### 5.1.5.3 Data Notification

##### 5.1.5.3.1 Description

The Data Notification is used by the NF service producer to report one or several observed data collection events to an NF service consumer that has subscribed to such notifications.

##### 5.1.5.3.2 Target URI

The Callback URI "{dataNotifUri}" shall be used with the callback URI variables defined in table 5.1.5.3.2-1.

Table 5.1.5.3.2-1: Callback URI variables

|  |  |
| --- | --- |
| Name | Definition |
| dataNotifUri | String formatted as URI with the Callback Uri.  The Callback Uri is assigned within the Individual DCCF Data Subscription resource and described within the NdccfDataSubscription type (see table 5.1.6.3.2-1). |

##### 5.1.5.3.3 Standard Methods

###### 5.1.5.3.3.1 POST

This method shall support the request data structures specified in table 5.1.5.3.3.1-1 and the response data structures and response codes specified in table 5.1.5.3.3.1-2.

Table 5.1.5.3.3.1-1: Data structures supported by the POST Request Body

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| NdccfDataSubscriptionNotification | M | 1 | Provides Information about observed data collection events. |

Table 5.1.5.3.3.1-2: Data structures supported by the POST Response Body

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response codes | Description |
| NotifResponse | M | 1 | 200 OK | The receipt of the notification is acknowledged and a response with information about the planned action is provided. |
| n/a |  |  | 204 No Content | The receipt of the notification is acknowledged. |
| RedirectResponse | O | 0..1 | 307 Temporary Redirect | Temporary redirection, during the data event notification.  (NOTE 2) |
| RedirectResponse | O | 0..1 | 308 Permanent Redirect | Permanent redirection, during the data event notification.  (NOTE 2) |
| NOTE 1: The mandatory HTTP error status codes for the POST method listed in Table 5.2.7.1-1 of 3GPP TS 29.500 [4] also apply.  NOTE 2: The RedirectResponse data structure may be provided by an SCP (cf. clause 6.10.9.1 of 3GPP TS 29.500 [4]). | | | | |

Table 5.1.5.3.3.1-3: Headers supported by the 307 Response Code on this resource

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

Table 5.1.5.3.3.1-4: Headers supported by the 308 Response Code on this resource

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

#### 5.1.5.4 Fetch Notification

##### 5.1.5.4.1 Description

The Fetch Notification is used by the NF service consumer to retrieve data or analytics from the DCCF.

##### 5.1.5.4.2 Target URI

The Callback URI **"{fetchUri}"** shall be used with the callback URI variables defined in table 5.1.5.4.2-1.

Table 5.1.5.4.2-1: Callback URI variables

|  |  |  |
| --- | --- | --- |
| Name | Data type | Definition |
| fetchUri | Uri | Fetch Uri as assigned during the procedure of notification about the subscribed data or analytics within the FetchInstruction data type. |

##### 5.1.5.4.3 Standard Methods

###### 5.1.5.4.3.1 POST

This method shall support the URI query parameters specified in table 5.1.5.4.3.1-1.

Table 5.1.5.4.3.1-1: URI query parameters supported by the POST method on this resource

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

This method shall support the request data structures specified in table 5.1.5.4.3.1-2 and the response data structures and response codes specified in table 5.1.5.4.3.1-3.

Table 5.1.5.4.3.1-2: Data structures supported by the POST Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| array(string) | M | 1..N | Indicate the fetch correlation identifier(s). |

Table 5.1.5.4.3.1-3: Data structures supported by the POST Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response  codes | Description |
| NdccfAnalyticsSubscriptionNotification | C | 0..1 | 200 OK | The stored analytics related to the fetch correlation identifier(s).  (NOTE 2) |
| NdccfDataSubscriptionNotification | C | 0..1 | 200 OK | The stored data related to the fetch correlation identifier(s).  (NOTE 2) |
| RedirectResponse | O | 0..1 | 307 Temporary Redirect | Temporary redirection, during subscription retrieval. The response shall include a Location header field containing an alternative URI of the resource located in an alternative DCCF. |
| RedirectResponse | O | 0..1 | 308 Permanent Redirect | Permanent redirection, during subscription retrieval. The response shall include a Location header field containing an alternative URI of the resource located in an alternative DCCF. |
| NOTE 1: The mandatory HTTP error status code for the POST method listed in Table 5.2.7.1-1 of 3GPP TS 29.500 [4] also apply.  NOTE 2: In case of a 200 OK response, one of NdccfAnalyticsSubscriptionNotification data structure and NdccfDataSubscriptionNotification data structure shall be included, depending on if the Fetch Notification included fetch correlation identifiers from an analytics notification or from a data notification. | | | | |

Table 5.1.5.4.3.1-4: Headers supported by the by the 307 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | An alternative URI of the resource located in an alternative DCCF. |
| 3gpp-Sbi-Target-Nf-Id | string | O | 0..1 | Identifier of the target NF (service) instance towards which the request is redirected. |

Table 5.1.5.4.3.1-5: Headers supported by the 308 response code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | An alternative URI of the resource located in an alternative DCCF. |
| 3gpp-Sbi-Target-Nf-Id | string | O | 0..1 | Identifier of the target NF (service) instance towards which the request is redirected. |

### 5.1.6 Data Model

#### 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. |  |
| 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. |  |
| 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. |  |

#### 5.1.6.2 Structured data types

##### 5.1.6.2.1 Introduction

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

##### 5.1.6.2.2 Type NdccfAnalyticsSubscription

Table 5.1.6.2.2-1: Definition of type NdccfAnalyticsSubscription

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| anaSub | NnwdafEventsSubscription | M | 1 | Subscribed analytics events. (NOTE 1) |  |
| anaNotifUri | Uri | M | 1 | Notification target address. |  |
| anaNotifCorrId | string | M | 1 | Notification correlation identifier. |  |
| notifEndpoints | array(NotifyEndpoint) | O | 1..N | The additional information of notification target address and correlation identifier. | 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 "anaSub" attribute. |  |
| procInstructs | array(ProcessingInstruction) | O | 1..N | Processing instructions to be used for sending event notifications. |  |
| targetNfId | NfInstanceId | O | 0..1 | NF instance identifier to which the DCCF shall create the requested subscription. (NOTE 3) |  |
| targetNfSetId | NfSetId | O | 0..1 | 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 analytics (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 analytics (i.e. the "timePeriod" attribute contains a time window in the past) then the DCCF shall retrieve the data from this ADRF. (NOTE 3) |  |
| storeInd | boolean | C | 0..1 | 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". | DataAnaCollect |
| adrfSetId | NfSetId | O | 0..1 | Identifier of the ADRF Set to be used by the DCCF.  If the subscription is for runtime analytics (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 analytics (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) |  |
| storeHandl | StorageHandlingInformation | O | 0..1 | Contains storage handling information for the analytics that will be collected and stored in an ADRF based on the requested subscription. | EnhDataMgmt |
| immReport | NdccfAnalyticsSubscriptionNotification | 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 the analytics was performed or is requested to be performed. If this attribute is provided, then the attribute "monDur" within the reporting information of the attribute "anaSub" 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. 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 in the POST request if at least one feature defined in clause 5.1.8 is supported, and it shall be present in the POST response if the NF service consumer included the"suppFeat" attribute in the POST request. |  |
| NOTE 1: The "notificationURI" and "notifCorreId" attributes of NnwdafEventsSubscription data type 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 NnwdafEventsSubscription data type during the event subscription request to the NWDAF.  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. | | | | | |

##### 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 additional information of notification target address and correlation identifier. | 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 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". | 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. 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 in the POST request if at least one feature defined in clause 5.1.8 is supported, and it shall be present in the POST response if the NF service consumer included the"suppFeat" attribute in the POST request. |  |
| 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 or "eventNotificationUri" of "gmlcDataSub") 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 or "ldrReference" of "gmlcDataSub") 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. | | | | | |

##### 5.1.6.2.4 Type NdccfAnalyticsSubscriptionNotification

Table 5.1.6.2.4-1: Definition of type NdccfAnalyticsSubscriptionNotification

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| anaNotifications | array(NnwdafEventsSubscriptionNotification) | C | 1..N | List of analytics subscription notifications. (NOTE 1, NOTE 3) |  |
| anaReports | array(NotifSummaryReport) | C | 1..N | List of reports with summarized data from multiple analytics notifications that the DCCF has received from NWDAF. (NOTE 1) |  |
| fetchInstruct | FetchInstruction | C | 0..1 | Instructions for the NF service consumer to fetch the notifications itself. (NOTE 1, NOTE 2) |  |
| delAlert | DeletionAlert | C | 0..1 | Information about analytics that is about to be deleted. (NOTE 1, NOTE 2) | EnhDataMgmt |
| anaNotifCorrId | string | M | 1 | Notification correlation identifier. |  |
| terminationReq | boolean | O | 0..1 | If provided and set to "true", it indicates that the subscription is requested to be terminated, i.e. no further notifications related to this subscription will be provided. The default value is "false". |  |
| timeStamp | DateTime | M | 1 | It represents the time when DCCF completed preparation of the requested analytics. (NOTE 3) |  |
| NOTE 1: Exactly one of these attributes shall be provided.  NOTE 2: This "fetchInstruct" attribute shall not be included in Ndccf\_DataManagement\_Fetch response body.  NOTE 3: If the DCCF has received the notifications from another source without a timestamp, then the DCCF adds itself a timestamp based on the time it received the notification in "timeStampGen" attribute contained in "dataNotification" attribute within the EventNotification data type in the NnwdafEventsSubscriptionNotification data type. | | | | | |

##### 5.1.6.2.5 Type NdccfDataSubscriptionNotification

Table 5.1.6.2.5-1: Definition of type NdccfDataSubscriptionNotification

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| dataNotif | DataNotification | C | 0..1 | Data subscription notification. (NOTE 1, NOTE 3, NOTE 4) |  |
| dataReports | array(NotifSummaryReport) | C | 1..N | List of reports with summarized data from multiple notifications received from data producer. (NOTE 1) |  |
| fetchInstruct | FetchInstruction | C | 0..1 | Instructions for the NF service consumer to fetch the notifications itself. (NOTE 1, NOTE 2) |  |
| delAlert | DeletionAlert | C | 0..1 | Information about data that is about to be deleted. (NOTE 1, NOTE 2) | EnhDataMgmt |
| dataNotifCorrId | string | M | 1 | Notification correlation identifier. |  |
| pendDataNotifCause | PendingNotificationCause | O | 0..1 | Represents the Pending Data Notification Cause for the stored unsent data. | EnhDataMgmt |
| reUserConsentPurs | array(DataCollectionPurpose) | O | 1..N | The purposes of data collection for which the user consent is revoked. This attribute may only be provided if subscription is requested to be terminated due to user consent revocation, i.e. the value of "termCause" is "USER\_CONSENT\_REVOKED". | TerminationCause |
| terminationReq | boolean | O | 0..1 | If provided and set to "true", it indicates that the subscription is requested to be terminated, i.e. no further notifications related to this subscription will be provided. The default value is "false". |  |
| termCause | TermCause | O | 0..1 | A cause for which the DCCF will collect no further data for this subscription. Its presence indicates that the DCCF requests the termination of the subscription. This attribute may only be provided if the "terminationReq" attribute is set to "true". | TerminationCause |
| timeStamp | DateTime | M | 1 | It represents the time when DCCF completed preparation of the requested analytics. (NOTE 3) |  |
| NOTE 1: Exactly one of these attributes shall be provided.  NOTE 2: This "fetchInstruct" attribute shall not be included in the response body of a Fetch operation.  NOTE 3: If the DCCF has received the notifications from another source without a timestamp, then the DCCF adds itself a timestamp based on the time it received the notification in the "timeStamp" attribute within the DataNotification data type.  NOTE 4: The "upfEventNotifs" attribute within the "dataNotification" attribute is applicable only if the "UpEvents" feature is supported. The "gmlcEventNotifs" attribute within the "dataNotification" attribute is applicable only if the "LocEvents" feature is supported. | | | | | |

##### 5.1.6.2.6 Type FormattingInstruction

Table 5.1.6.2.6-1: Definition of type FormattingInstruction

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| consTrigNotif | boolean | O | 0..1 | If provided and set to "true", it indicates that notifications shall be buffered (sending only fetch instructions to the NF service consumer) until the NF service consumer requests their delivery using Ndccf\_DataManagement or Nmfaf\_3caDataManagement Service.  The default value is "false". |  |
| reportingOptions | ReportingOptions | O | 0..1 | This attribute is provided if the NF service consumer requires clubbing of notifications and its contents describe how the notifications shall be clubbed, i.e. when they should be sent. |  |

##### 5.1.6.2.7 Type ProcessingInstruction

Table 5.1.6.2.7-1: Definition of type ProcessingInstruction

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| eventId | DccfEvent | M | 1 | Identifies the (event exposure or analytics) event that the processing instructions apply to. |  |
| procInterval | DurationSec | M | 1 | Indicates the interval (in seconds) over which the processing of data for inclusion in each notification sent to consumers shall occur. |  |
| paramProcInstructs | array(ParameterProcessingInstruction) | O | 1..N | List of event parameter name(s), and for each event parameter name, respective event parameter values and sets of the attributes to be used in the summarized reports. |  |

##### 5.1.6.2.8 Type ParameterProcessingInstruction

Table 5.1.6.2.8-1: Definition of type ParameterProcessingInstruction

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| name | string | M | 1 | This attribute contains a JSON pointer value (as defined in IETF RFC 6901 [24]) that references an attribute, i.e. a target location, within the notification object (e.g. of NefEventExposureNotif, AfEventExposureNotif, AmfEventNotification, NsmfEventExposureNotification, MonitoringReport, NotificationData, or SACEventReport data type) to which the processing instruction is applied. |  |
| values | array(Any type) | M | 1..N | A list of values for the attribute identified by the "name" attribute, which shall be matched with values contained in the notifications received and summarized by the DCCF.  The data type of the elements of the list shall be the same as the type of the attribute identified by the "name" attribute. |  |
| sumAttrs | array(SummarizationAttribute) | M | 1..N | Attributes requested to be used in the summarized reports. |  |
| aggrLevel | AggregationLevel | O | 0..1 | Indicates the aggregation level to which the processing instructions shall apply. |  |
| temporalAggrLevel | DurationSec | O | 0..1 | Indicates the temporal aggregation level interval (e.g. per minute, per hour). | DataAnaCollect |
| supis | array(Supi) | O | 1..N | Indicates the UEs for which processed reports are requested. It may be provided only if "aggrLevel" is provided and is set to the value "UE". |  |
| areas | array(NetworkAreaInfo) | C | 1..N | Indicates the Areas of Interest for which processed reports are requested. It shall be provided only if "aggrLevel" is provided and is set to the value "AOI". |  |

##### 5.1.6.2.9 Type NotifSummaryReport

Table 5.1.6.2.9-1: Definition of type NotifSummaryReport

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| eventId | DccfEvent | M | 1 | Identifies the (event exposure or analytics) event that this report applies to. |  |
| procInterval | DurationSec | M | 1 | Indicates the interval (in seconds) over which the processing of data for inclusion in this report occurred. |  |
| eventReports | array(EventParamReport) | M | 1..N | List of event parameter reports. |  |

##### 5.1.6.2.10 Type EventParamReport

Table 5.1.6.2.10-1: Definition of type EventParamReport

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| name | string | M | 1 | The name of the reported parameter. |  |
| values | array(Any type) | M | 1..N | The list of values of the reported parameter. |  |
| supi | Supi | C | 0..1 | Indicates the UE that this report is for. It shall be provided if the "aggrLevel" of the instructions had the value "UE". |  |
| area | NetworkAreaInfo | C | 0..1 | Indicates the Area of Interest that this report is for. It shall be provided if the "aggrLevel" of the instructions had the value "AOI". |  |
| spacing | NumberAverage | C | 0..1 | Contains the average and variance of the time interval separating two consecutive occurrences of the same event and parameter value. It shall be provided if available and the "SPACING" value was contained in the "paramProcInstructs" attribute of the instructions. |  |
| duration | NumberAverage | C | 0..1 | Contains the average and variance of time for which the parameter value applies. It shall be provided if available and the "DURATION" value was contained in the "paramProcInstructs" attribute of the instructions. |  |
| count | Uinteger | C | 0..1 | Represents the number of countable occurrences for the parameter. It shall be provided if available and the "OCCURRENCES" value was contained in the "paramProcInstructs" attribute of the instructions. |  |
| avgAndVar | NumberAverage | C | 0..1 | Contains the average and variance of the parameter value. It shall be provided if available and the "AVG\_VAR" value was contained in the "paramProcInstructs" attribute of the instructions. |  |
| mostFreqVal | Any type | C | 0..1 | Contains the most frequent value among the elements of the reported "values" attribute. It shall be provided if available and the "FREQ\_VAL" value was contained in the "paramProcInstructs" attribute of the instructions. |  |
| leastFreqVal | Any type | C | 0..1 | Contains the least frequent value among the elements of the reported "values" attribute. It shall be provided if available and the "FREQ\_VAL" value was contained in the "paramProcInstructs" attribute of the instructions. |  |
| minValue | string | C | 0..1 | Identifies the minimum value of the parameter. It shall be provided if available and the "MIN\_MAX" value was contained in the "paramProcInstructs" attribute of the instructions. |  |
| maxValue | string | C | 0..1 | Identifies the maximum value of the parameter. It shall be provided if available and the "MIN\_MAX" value was contained in the "paramProcInstructs" attribute of the instructions. |  |

##### 5.1.6.2.11 Type ReportingOptions

Table 5.1.6.2.11-1: Definition of type ReportingOptions

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| notifyWindow | TimeWindow | C | 0..1 | Represents a start time and a stop time during which notifications shall be sent. (NOTE) |  |
| notifyPeriod | DurationSec | C | 0..1 | Indicates the period (in seconds) with which notifications are sent to the consumer, irrespective of whether the event occurs (e.g. every 30 minutes). (NOTE) |  |
| notifyPeriodInc | DurationSec | C | 0..1 | Indicates the time interval (in seconds) between the first two notifications (where the first one is sent upon event occurrence), and that the time interval between subsequent notifications shall be increased each time by the value of this attribute. (NOTE) |  |
| depEventSubId | string | C | 0..1 | Notifications for the present subscription are sent only upon occurrence of events of the subscription with identifier that matches this attribute. (NOTE) |  |
| minClubbedNotif | Uinteger | O | 0..1 | Indicates the minimum number of clubbed notifications. |  |
| maxClubbedNotif | Uinteger | O | 0..1 | Indicates the maximum number of clubbed notifications. |  |
| NOTE: Exactly one of these attributes shall be provided. | | | | | |

##### 5.1.6.2.12 Void

##### 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 |
| NOTE: Exactly one of these attributes shall be provided. | | | | | |

##### 5.1.6.2.14 Type NotifyEndpoint

Table 5.1.6.2.14-1: Definition of type NotifyEndpoint

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| notifUri | Uri | M | 1 | Notification target address. |  |
| notifCorrId | string | O | 0..1 | Notification correlation identifier. |  |

##### 5.1.6.2.15 Type: StorageHandlingInformation

Table 5.1.6.2.15-1: Definition of type StorageHandlingInformation

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Attribute name** | **Data type** | **P** | **Cardinality** | **Description** | **Applicability** |
| lifetime | DurationSec | O | 0..1 | Indicates the lifetime of the provided data or analytics as a duration in seconds. |  |
| delNotifInd | boolean | O | 0..1 | Indication for receiving deletion alerts. If provided and set to "true", it indicates that the NF service consumer wants to receive such notifications. The default value is "false". |  |

##### 5.1.6.2.16 Type: DeletionAlert

Table 5.1.6.2.16-1: Definition of type DeletionAlert

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Attribute name** | **Data type** | **P** | **Cardinality** | **Description** | **Applicability** |
| alertStorTransId | string | M | 1 | Storage transaction identifier that can be used to retrieve the data or analytics that are about to be deleted. |  |

##### 5.1.6.2.17 Type: NotifResponse

Table 5.1.6.2.17-1: Definition of type NotifResponse

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Attribute name** | **Data type** | **P** | **Cardinality** | **Description** | **Applicability** |
| retrievalInd | boolean | M | 1 | If the NF service consumer had received a Data or Analytics Deletion Alert in the notification and determined to retrieve stored data or analytics prior to deletion, it shall be set to "true". Otherwise, it shall be set to "false". |  |

#### 5.1.6.3 Simple data types and enumerations

##### 5.1.6.3.1 Introduction

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

##### 5.1.6.3.2 Simple data types

The simple data types defined in table 5.1.6.3.2-1 shall be supported.

Table 5.1.6.3.2-1: Simple data types

|  |  |  |  |
| --- | --- | --- | --- |
| Type Name | Type Definition | Description | Applicability |
| n/a |  |  |  |

##### 5.1.6.3.3 Enumeration: SummarizationAttribute

Table 5.1.6.3.3-1: Enumeration SummarizationAttribute

|  |  |  |
| --- | --- | --- |
| Enumeration value | Description | Applicability |
| 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. |  |

##### 5.1.6.3.4 Enumeration: AggregationLevel

Table 5.1.6.3.4-1: Enumeration AggregationLevel

|  |  |  |
| --- | --- | --- |
| Enumeration value | Description | Applicability |
| UE | Indicates that the summarized reports shall be provided per UE. |  |
| AOI | Indicates that the summarized reports shall be provided per Area of Interest. |  |

##### 5.1.6.3.5 Enumeration: DataCollectionPurpose

Table 5.1.6.3.5-1: Enumeration DataCollectionPurpose

|  |  |  |
| --- | --- | --- |
| **Enumeration value** | **Description** | **Applicability** |
| ANALYTICS\_GENERATION | The data is collected for generating the analytics. |  |
| MODEL\_TRAINING | The data is collected for ML model training. |  |

##### 5.1.6.3.6 Enumeration: TermCause

Table 5.1.6.2.5-1: Enumeration TermCause

|  |  |  |
| --- | --- | --- |
| Enumeration value | Description | Applicability |
| 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. |  |

#### 5.1.6.4 Data types describing alternative data types or combinations of data types

None in this release of the specification.

#### 5.1.6.5 Binary data

None in this release of the specification.

### 5.1.7 Error Handling

#### 5.1.7.1 General

For the Ndccf\_DataManagement API, HTTP error responses shall be supported as specified in clause 4.8 of 3GPP TS 29.501 [5]. Protocol errors and application errors specified in table 5.2.7.2-1 of 3GPP TS 29.500 [4] shall be supported for an HTTP method if the corresponding HTTP status codes are specified as mandatory for that HTTP method in table 5.2.7.1-1 of 3GPP TS 29.500 [4].

In addition, the requirements in the following clauses are applicable for the Ndccf\_DataManagement API.

#### 5.1.7.2 Protocol Errors

No specific procedures for the Ndccf\_DataManagement service are specified.

#### 5.1.7.3 Application Errors

The application errors defined for the Ndccf\_DataManagement service are listed in Table 5.1.7.3-1.

Table 5.1.7.3-1: Application errors

|  |  |  |
| --- | --- | --- |
| Application Error | HTTP status code | Description |
| SUBSCRIPTION\_CANNOT\_BE\_SERVED | 400 Bad Request | Indicates that the DCCF cannot use the contents of the request to either a) determine whether the subscription can already be served or interactions with the NWDAF and/or ADRF are required or b) determine what interactions with the NWDAF and/or ADRF are required (if it has determined that they are required). |
| USER\_CONSENT\_NOT\_GRANTED | 403 Forbidden | Indicates that the request shall be rejected because an impacted user consent is not granted. |
| MUTING\_INSTR\_NOT\_ACCEPTED | 403 Forbidden | Indicates that the muting instructions received by the NF service consumer cannot be accepted. |

### 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 | 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 | 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. |
| 6 | UpEvents | Indicates the support of UPF events. |

### 5.1.9 Security

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

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

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

The Ndccf\_DataManagement API defines a single scope "ndccf-datamanagement" for the entire service, and it does not define any additional scopes at resource or operation level.

## 5.2 Ndccf\_ContextManagement Service API

### 5.2.1 Introduction

The Ndccf\_ContextManagement shall use the Ndccf\_ContextManagement API.

The API URI of the Ndccf\_ContextManagement API shall be:

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

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

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

with the following components:

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

- The <apiName>shall be "ndccf-contextmanagement".

- The <apiVersion> shall be "v1".

- The <apiSpecificResourceUriPart> shall be set as described in clause 5.2.3.

### 5.2.2 Usage of HTTP

#### 5.2.2.1 General

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

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

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

#### 5.2.2.2 HTTP standard headers

##### 5.2.2.2.1 General

See clause 5.2.2 of 3GPP TS 29.500 [4] for the usage of HTTP standard headers.

##### 5.2.2.2.2 Content type

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

"Problem Details" JSON object shall be used to indicate additional details of the error in a HTTP response body and shall be signalled by the content type "application/problem+json", as defined in IETF RFC 9457 [13].

#### 5.2.2.3 HTTP custom headers

The mandatory HTTP custom header fields specified in clause 5.2.3.2 of 3GPP TS 29.500 [4] shall be supported, and the optional HTTP custom header fields specified in clause 5.2.3.3 of 3GPP TS 29.500 [4] may be supported.

### 5.2.3 Resources

#### 5.2.3.1 Overview

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

Figure 5.2.3.1-1 depicts the resource URIs structure for the Ndccf\_ContextManagement API.



Figure 5.2.3.1-1: Resource URI structure of the Ndccf\_ContextManagement API

Table 5.2.3.1-1 provides an overview of the resources and applicable HTTP methods.

Table 5.2.3.1-1: Resources and methods overview

|  |  |  |  |
| --- | --- | --- | --- |
| Resource name | Resource URI | HTTP method or custom operation | Description |
| DCCF Data Collection Profiles | /data-collection-profiles | POST | Creates a new Individual DCCF Data Collection Profile resource. |
| Individual DCCF Data Collection Profile | /data-collection-profiles/{profileId} | PUT | Modifies an existing Individual DCCF Data Collection Profile resource. |
| DELETE | Deletes an Individual DCCF Data Collection Profile identified by {profileId}. |

#### 5.2.3.2 Resource: DCCF Data Collection Profiles

##### 5.2.3.2.1 Description

The DCCF Data Collection Profiles resource represents all data collection profiles that exist in the Ndccf\_ContextManagement service at a given DCCF.

##### 5.2.3.2.2 Resource Definition

Resource URI: **{apiRoot}/ndccf-contextmanagement/v<apiVersion>/data-collection-profiles**

This resource shall support the resource URI variables defined in table 5.2.3.2.2-1.

Table 5.2.3.2.2-1: Resource URI variables for this resource

|  |  |  |
| --- | --- | --- |
| Name | Data type | Definition |
| apiRoot | string | See clause 5.2.1 |

##### 5.2.3.2.3 Resource Standard Methods

###### 5.2.3.2.3.1 POST

This method shall support the URI query parameters specified in table 5.2.3.2.3.1-1.

Table 5.2.3.2.3.1-1: URI query parameters supported by the POST method on this resource

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

This method shall support the request data structures specified in table 5.2.3.2.3.1-2 and the response data structures and response codes specified in table 5.2.3.2.3.1-3.

Table 5.2.3.2.3.1-2: Data structures supported by the POST Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| NdccfDataCollectionProfile | M | 1 | New Individual DCCF Data Collection Profile resource to be created |

Table 5.2.3.2.3.1-3: Data structures supported by the POST Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response  codes | Description |
| NdccfDataCollectionProfile | M | 1 | 201 Created | The creation of an Individual DCCF Data Collection Profile resource is confirmed and a representation of that resource is returned. |
| NOTE: The mandatory HTTP error status code for the POST method listed in Table 5.2.7.1-1 of 3GPP TS 29.500 [4] also apply. | | | | |

Table 5.2.3.2.3.1-4: Headers supported by the 201 response code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | Contains the URI of the newly created resource, according to the structure: {apiRoot}/ndccf-contextmanagement/<apiVersion>/data-collection-profiles/{profileId} |

##### 5.2.3.2.4 Resource Custom Operations

None in this release of the specification.

#### 5.2.3.3 Resource: Individual DCCF Data Collection Profile

##### 5.2.3.3.1 Description

The Individual DCCF Data Collection Profile resource represents a single data collection profile to the Ndccf\_ContextManagement service at a given DCCF.

##### 5.2.3.3.2 Resource Definition

Resource URI: **{apiRoot}/ndccf-contextmanagement/<apiVersion>/data-collection-profiles/{profileId}**

This resource shall support the resource URI variables defined in table 5.2.3.3.2-1.

Table 5.2.3.3.2-1: Resource URI variables for this resource

|  |  |  |
| --- | --- | --- |
| Name | Data type | Definition |
| apiRoot | string | See clause 5.1.1 |
| profileId | string | Identifies a data collection profile to the Ndccf\_ContextManagement Service |

##### 5.2.3.3.3 Resource Standard Methods

###### 5.2.3.3.3.1 PUT

This method shall support the URI query parameters specified in table 5.2.3.3.3.1-1.

Table 5.2.3.3.3.1-1: URI query parameters supported by the PUT method on this resource

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

This method shall support the request data structures specified in table 5.2.3.3.3.1-2 and the response data structures and response codes specified in table 5.2.3.3.3.1-3.

Table 5.2.3.3.3.1-2: Data structures supported by the PUT Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| NdccfDataCollectionProfile | M | 1 | Parameters to replace Individual DCCF Data Collection Profile resource. |

Table 5.2.3.3.3.1-3: Data structures supported by the PUT Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response  codes | Description |
| NdccfDataCollectionProfile | M | 1 | 200 OK | The Individual DCCF Data Collection Profile resource was modified successfully, and a representation of that resource is returned. |
| n/a |  |  | 204 No Content | The Individual DCCF Data Collection Profile resource was modified successfully. |
| RedirectResponse | O | 0..1 | 307 Temporary Redirect | Temporary redirection, during Individual DCCF Data Collection Profile modification.  (NOTE 2) |
| RedirectResponse | O | 0..1 | 308 Permanent Redirect | Permanent redirection, during Individual DCCF Data Collection Profile modification.  (NOTE 2) |
| NOTE 1: The mandatory HTTP error status code for the PUT method listed in Table 5.2.7.1-1 of 3GPP TS 29.500 [4] also apply.  NOTE 2: The RedirectResponse data structure may be provided by an SCP (cf. clause 6.10.9.1 of 3GPP TS 29.500 [4]). | | | | |

Table 5.2.3.3.3.1-4: Headers supported by the 307 Response Code on this resource

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

Table 5.2.3.3.3.1-5: Headers supported by the 308 Response Code on this resource

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

###### 5.2.3.3.3.2 DELETE

This method shall support the URI query parameters specified in table 5.2.3.3.3.2-1.

Table 5.2.3.3.3.2-1: URI query parameters supported by the DELETE method on this resource

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

This method shall support the request data structures specified in table 5.2.3.3.3.2-2 and the response data structures and response codes specified in table 5.2.3.3.3.2-3.

Table 5.2.3.3.3.2-2: Data structures supported by the DELETE Request Body on this resource

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

Table 5.2.3.3.3.2-3: Data structures supported by the DELETE Response Body on this resource

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

Table 5.2.3.3.3.2-4: Headers supported by the 307 Response Code on this resource

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

Table 5.2.3.3.3.2-5: Headers supported by the 308 Response Code on this resource

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

##### 5.2.3.3.4 Resource Custom Operations

None in this release of the specification.

### 5.2.4 Custom Operations without associated resources

None in this release of the specification.

### 5.2.5 Notifications

None in this release of the specification.

### 5.2.6 Data Model

#### 5.2.6.1 General

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

Table 5.2.6.1-1 specifies the data types defined for the Ndccf\_ContextManagement service based interface protocol.

Table 5.2.6.1-1: Ndccf\_ContextManagement specific Data Types

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Clause defined | Description | Applicability |
| NdccfDataCollectionProfile | 5.2.6.2.2 | Represents an Individual DCCF Data Collection Profile resource. |  |

Table 5.2.6.1-2 specifies data types re-used by the Ndccf\_ContextManagement 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\_ContextManagement service based interface.

Table 5.2.6.1-2: Ndccf\_ContextManagement re-used Data Types

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Reference | Comments | Applicability |
| DataSubscription | 3GPP TS 29.575 [25] | Represents a data subscription to one of various possible data sources. |  |
| 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 an NWDAF analytics subscription. |  |
| SupportedFeatures | 3GPP TS 29.571 [17] | Used to negotiate the applicability of the optional features defined in table 5.2.8-1. |  |

#### 5.2.6.2 Structured data types

##### 5.2.6.2.1 Introduction

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

##### 5.2.6.2.2 Type: NdccfDataCollectionProfile

Table 5.2.6.2.2-1: Definition of type NdccfDataCollectionProfile

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| anaSub | NnwdafEventsSubscription | C | 0..1 | Representation of the analytics events subscription that is used to collect analytics.  (NOTE 1) |  |
| dataSub | DataSubscription | C | 0..1 | Representation of the data subscription that is used to collect data.  (NOTE 1) |  |
| nwdafId | NfInstanceId | C | 0..1 | NF instance identifier of the NWDAF that this data collection profile belongs to. (NOTE 2) |  |
| adrfId | NfInstanceId | C | 0..1 | NF instance identifier of the ADRF that this data collection profile belongs to. (NOTE 2) |  |
| nwdafSetId | NfSetId | C | 0..1 | Identifier of the set of the NWDAF that this data collection profile belongs to. (NOTE 2) |  |
| adrfSetId | NfSetId | C | 0..1 | Identifier of the set of the ADRF that this data collection profile belongs to. (NOTE 2) |  |
| suppFeat | SupportedFeatures | C | 0..1 | This attribute represents a list of Supported features as described in clause 5.2.8.  It shall be present in the POST request if at least one feature defined in clause 5.2.8 is supported, and it shall be present in the POST response if the NF service consumer included the"suppFeat" attribute in the POST request. |  |
| NOTE 1: Only one of these attributes shall be provided.  NOTE 2: Only one of these attributes shall be provided. | | | | | |

#### 5.2.6.3 Simple data types and enumerations

##### 5.2.6.3.1 Introduction

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

##### 5.2.6.3.2 Simple data types

The simple data types defined in table 5.2.6.3.2-1 shall be supported.

Table 5.2.6.3.2-1: Simple data types

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

#### 5.2.6.4 Data types describing alternative data types or combinations of data types

None in this release of the specification.

#### 5.2.6.5 Binary data

None in this release of the specification.

### 5.2.7 Error Handling

#### 5.2.7.1 General

For the Ndccf\_ContextManagement API, HTTP error responses shall be supported as specified in clause 4.8 of 3GPP TS 29.501 [5]. Protocol errors and application errors specified in table 5.2.7.2-1 of 3GPP TS 29.500 [4] shall be supported for an HTTP method if the corresponding HTTP status codes are specified as mandatory for that HTTP method in table 5.2.7.1-1 of 3GPP TS 29.500 [4].

In addition, the requirements in the following clauses are applicable for the Ndccf\_ContextManagement API.

#### 5.2.7.2 Protocol Errors

No specific procedures for the Ndccf\_ContextManagement service are specified.

#### 5.2.7.3 Application Errors

The application errors defined for the Ndccf\_ContextManagement service are listed in Table 5.2.7.3-1.

Table 5.2.7.3-1: Application errors

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

### 5.2.8 Feature negotiation

The optional features in table 5.2.8-1 are defined for the Ndccf\_ContextManagement API. They shall be negotiated using the extensibility mechanism defined in clause 6.6 of 3GPP TS 29.500 [4].

Table 5.2.8-1: Supported Features

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

### 5.2.9 Security

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

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

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

The Ndccf\_ContextManagement API defines a single scope "ndccf-contextmanagement" for the entire service, and it does not define any additional scopes at resource or operation level.

Annex A (normative):  
OpenAPI specification

# A.1 General

This Annex specifies the formal definition of the API(s) defined in the present specification. It consists of OpenAPI specifications in YAML format.

This Annex takes precedence when being discrepant to other parts of the specification with respect to the encoding of information elements and methods within the API(s).

NOTE: The semantics and procedures, as well as conditions, e.g. for the applicability and allowed combinations of attributes or values, not expressed in the OpenAPI definitions but defined in other parts of the specification also apply.

Informative copies of the OpenAPI specification files contained in this 3GPP Technical Specification are available on a Git-based repository that uses the GitLab software version control system (see 3GPP TS 29.501 [5] clause 5.3.1 and 3GPP TR 21.900 [7] clause 5B).

# A.2 Ndccf\_DataManagement API

openapi: 3.0.0

info:

version: 1.1.0-alpha.5

title: Ndccf\_DataManagement

description: |

DCCF Data Management Service.

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externalDocs:

description: 3GPP TS 29.574 V18.4.0; 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:

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'

/analytics-subscriptions/{subscriptionId}:

delete:

summary: Deletes an existing Individual DCCF Data Subscription.

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'

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$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 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'

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]

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]

properties:

dataNotifCorrId:

type: string

description: Notification correlation identifier.

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]

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'

#

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

#

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

- 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.

# A.3 Ndccf\_ContextManagement API

openapi: 3.0.0

info:

version: 1.1.0-alpha.2

title: Ndccf\_ContextManagement

description: |

DCCF Context Management Service.

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externalDocs:

description: 3GPP TS 29.574 V18.1.0; 5G System; Data Collection Coordination Services; Stage 3.

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

#

servers:

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

variables:

apiRoot:

default: https://example.com

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

#

security:

- oAuth2ClientCredentials:

- ndccf-contextmanagement

- {}

#

paths:

/data-collection-profiles:

post:

summary: Creates a new Individual DCCF Data Collection Profile resource.

operationId: CreateDCCFDataCollectionProfile

tags:

- DCCF Data Collection Profiles (Collection)

requestBody:

content:

application/json:

schema:

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

required: true

responses:

'201':

description: A new Individual DCCF Data Collection Profile resource created.

headers:

Location:

description: >

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

{apiRoot}/ndccf-contextmanagement/<apiVersion>/data-collection-profiles/{profileId}'

required: true

schema:

type: string

content:

application/json:

schema:

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

'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-collection-profiles/{profileId}:

delete:

summary: Deletes an existing Individual DCCF Data Subscription resource.

operationId: DeleteDCCFDataCollectionProfile

tags:

- Individual DCCF Data Collection Profile (Document)

parameters:

- name: profileId

in: path

description: >

String identifying a data collection profile at the Ndccf\_ContextManagement Service.

required: true

schema:

type: string

responses:

'204':

description: >

No Content. The Individual DCCF Data Collection Profile resource matching the profileId

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 Data Collection Profile resource.

operationId: UpdateDCCFDataCollectionProfile

tags:

- Individual DCCF Data Collection Profile (Document)

requestBody:

required: true

content:

application/json:

schema:

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

parameters:

- name: profileId

in: path

description: >

String identifying a data collection profile at the Ndccf\_ContextManagement Service.

required: true

schema:

type: string

responses:

'200':

description: >

The Individual DCCF Data Collection Profile resource was modified successfully and a

representation of that resource is returned.

content:

application/json:

schema:

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

'204':

description: >

The Individual DCCF Data Collection Profile 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'

#

components:

securitySchemes:

oAuth2ClientCredentials:

type: oauth2

flows:

clientCredentials:

tokenUrl: '{nrfApiRoot}/oauth2/token'

scopes:

ndccf-contextmanagement: Access to the ndccf-contextmanagement API

#

schemas:

NdccfDataCollectionProfile:

description: Represents an Individual DCCF Data Collection Profile.

type: object

allOf:

- oneOf:

- required: [anaSub]

- required: [dataSub]

- oneOf:

- required: [nwdafId]

- required: [adrfId]

- required: [nwdafSetId]

- required: [adrfSetId]

properties:

anaSub:

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

dataSub:

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

nwdafId:

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

nwdafSetId:

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

adrfId:

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

adrfSetId:

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

suppFeat:

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

#

Annex B (informative):  
Change history

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Change history** | | | | | | | |
| **Date** | **Meeting** | **TDoc** | **CR** | **Rev** | **Cat** | **Subject/Comment** | **New version** |
| 2021-05 | CT3#116e |  |  |  |  | Skeleton of TS on 5G System; Data Collection Coordination Services; Stage 3. | 0.0.0 |
| 2021-05 | CT3#116e |  |  |  |  | Inclusion of documents agreed in CT3#116e:  C3-213235, C3-213236, C3-213237, C3-213238 and C3-213239. | 0.1.0 |
| 2021-08 | CT3#117e |  |  |  |  | Inclusion of document agreed in CT3#117e: C3-214167. | 0.2.0 |
| 2021-10 | CT3#118e |  |  |  |  | Inclusion of document agreed in CT3#118e:  C3-215182, C3-215480, C3-215184, C3-215185, C3-215186, C3-215187, C3-215188. | 0.3.0 |
| 2021-11 | CT3#119e |  |  |  |  | Inclusion of document agreed in CT3#119e:  C3-216452, C3-216453, C3-216454, C3-216057, C3-216058, C3-216601 | 0.4.0 |
| 2022-01 | CT3#119bis-e |  |  |  |  | Inclusion of document agreed in CT3#119bis-e:  C3-220506, C3-220507, C3-220508, C3-220497, C3-220509, C3-220498, C3-220050, C3-220368, C3-220301. | 0.5.0 |
| 2022-02 | CT3#120-e |  |  |  |  | Inclusion of document agreed in CT3#120e:  C3-221619, C3-221281, C3-221287, C3-221682, C3-221301. | 0.6.0 |
| 2022-03 | CT#95e | CP-220159 |  |  |  | Presentation to TSG CT for approval | 1.0.0 |
| 2022-03 | CT#95e | CP-220159 |  |  |  | Approved by TSG CT | 17.0.0 |
| 2022-06 | CT#96 | CP-221132 | 0001 | 1 | F | Adding 3XX response handling support for DCCF services | 17.1.0 |
| 2022-06 | CT#96 | CP-221132 | 0003 | 1 | F | Corrections in the Ndccf\_DataManagement API | 17.1.0 |
| 2022-06 | CT#96 | CP-221132 | 0004 | 1 | F | Removing ENs about possible further data sources and attributes | 17.1.0 |
| 2022-06 | CT#96 | CP-221132 | 0005 | 1 | B | Update Ndccf\_DataManagement\_Fetch service operation | 17.1.0 |
| 2022-06 | CT#96 | CP-221131 | 0009 | 1 | F | Ndccf\_DataManagement API corrections | 17.1.0 |
| 2022-06 | CT#96 | CP-221130 | 0010 | - | F | Ndccf\_DataManagement API: responses on DELETE method | 17.1.0 |
| 2022-06 | CT#96 | CP-221130 | 0011 | - | F | Ndccf\_DataManagement API: responses on DELETE method | 17.1.0 |
| 2022-06 | CT#96 | CP-221130 | 0012 | - | B | Remove the unused sections from TS skeleton | 17.1.0 |
| 2022-06 | CT#96 | CP-221131 | 0013 | 1 | F | Miscellaneous corrections and updates | 17.1.0 |
| 2022-06 | CT#96 | C3-223520 | 0020 | 1 | F | Update the apiVersion in the specification | 17.1.0 |
| 2022-06 | CT#96 | CP-221133 | 0015 | - | F | Removing UDM from the list of service consumers for DCCF subscriptions | 17.1.0 |
| 2022-06 | CT#96 | CP-221136 | 0002 | 3 | B | Cleanup of the Ndccf\_DataManagement data model | 17.1.0 |
| 2022-06 | CT#96 | CP-221133 | 0016 | - | F | Removal of repetitive description in HTTP error response | 17.1.0 |
| 2022-06 | CT#96 | CP-221136 | 0006 | 3 | B | Support carrying Time Window in Ndccf\_DataManagement\_Subscribe service operation | 17.1.0 |
| 2022-06 | CT#96 | CP-221134 | 0018 | - | B | Remove the ENs about when the DCCF sends the response to the consumer | 17.1.0 |
| 2022-06 | CT#96 | CP-221134 | 0019 | 1 | B | Update the Notification Correlation ID for Ndccf\_DataManagement\_Subscribe | 17.1.0 |
| 2022-06 | CT#96 | CP-221134 | 0007 | 1 | F | add ADRF as a consumer of Ndccf\_DataManagement service | 17.1.0 |
| 2022-06 | CT#96 | CP-221135 | 0021 | 1 | F | remove CEF and OAM from the list of consumers of Ndccf\_DataManagement Service | 17.1.0 |
| 2022-06 | CT#96 | CP-221135 | 0022 | 1 | F | update of Abbreviations | 17.1.0 |
| 2022-06 | CT#96 | CP-221152 | 0023 | - | F | Update of info and externalDocs fields | 17.1.0 |
| 2022-09 | CT#97e | CP-222101 | 0032 | - | F | Corrections to Fetch service operation | 17.2.0 |
| 2022-09 | CT#97e | CP-222102 | 0034 | 1 | F | Add Headers supported by 3xx Response Code for Analytics and Data Notification | 17.2.0 |
| 2022-09 | CT#97e | CP-222102 | 0035 | 1 | F | Add the missing data types for 3xx response codes | 17.2.0 |
| 2022-09 | CT#97e | CP-222102 | 0036 | 1 | F | Missing description field for enumeration data types | 17.2.0 |
| 2022-09 | CT#97e | CP-222103 | 0031 | 1 | F | Corrections to fetch correlation identifiers | 17.2.0 |
| 2022-09 | CT#97e | CP-222103 | 0033 | 1 | F | Corrections in the error handling of DCCF subscription | 17.2.0 |
| 2022-09 | CT#97e | CP-222104 | 0026 | 1 | F | Corrections related to callback functions in DCCF | 17.2.0 |
| 2022-09 | CT#97e | CP-222104 | 0027 | 1 | F | Add ADRF information in DCCF subscriptions | 17.2.0 |
| 2022-09 | CT#97e | CP-222104 | 0029 | 1 | F | Updates of formatting and processing instructions | 17.2.0 |
| 2022-09 | CT#97e | CP-222104 | 0030 | 1 | F | Adding NRF and NSACF as data sources | 17.2.0 |
| 2022-09 | CT#97e | CP-222104 | 0017 | 2 | F | Update inputs of Ndccf\_DataManagement\_Notify service | 17.2.0 |
| 2022-09 | CT#97e | CP-222104 | 0038 | 1 | F | Support user consent indication and data collection purpose | 17.2.0 |
| 2022-09 | CT#97e | CP-222104 | 0024 | 2 | F | eventId attribute editors note removal | 17.2.0 |
| 2022-09 | CT#97e | CP-222121 | 0039 | - | F | Update of info and externalDocs fields | 17.2.0 |
| 2022-12 | CT#98e | CP-223173 | 0040 | 1 | F | User consent corrections for DCCF data management | 17.3.0 |
| 2022-12 | CT#98e | CP-223172 | 0041 | - | F | DCCF API miscellaneous corrections | 17.3.0 |
| 2022-12 | CT#98e | CP-223172 | 0042 | - | F | Correction of presence conditions for DCCF notifications | 17.3.0 |
| 2022-12 | CT#98e | CP-223172 | 0046 | - | F | Incorrect data type name | 17.3.0 |
| 2022-12 | CT#98e | CP-223173 | 0047 | 1 | F | Correction to the value of consTrigNotif attribute | 17.3.0 |
| 2022-12 | CT#98e | CP-223174 | 0048 | 2 | F | Corrections in Ndccf\_DataManagement service | 17.3.0 |
| 2022-12 | CT#98e | CP-223172 | 0049 | - | F | Corrections to data type in DELETE header | 17.3.0 |
| 2022-12 | CT#98e | CP-223173 | 0050 | 1 | F | Time stamp for requested data or analytics in Ndccf\_DataManagement Service | 17.3.0 |
| 2022-12 | CT#98e | CP-223188 | 0053 | - | F | Update of info and externalDocs fields | 17.3.0 |
| 2022-12 | CT#98e | CP-223191 | 0043 | - | F | Adding the mandatory error code 502 Bad Gateway | 18.0.0 |
| 2022-12 | CT#98e | CP-223176 | 0052 | - | F | User consent enhancements for DCCF data management | 18.0.0 |
| 2022-12 | CT#98e | CP-223190 | 0054 | - | F | Update of info and externalDocs fields | 18.0.0 |
| 2023-03 | CT#99 | CP-230148 | 0055 | - | B | Adding Supported Features in Ndccf\_ContextManagement | 18.1.0 |
| 2023-03 | CT#99 | CP-230166 | 0056 | 1 | F | Correction of the description fields in enumerations | 18.1.0 |
| 2023-03 | CT#99 | CP-230149 | 0057 | 1 | F | Handling of fetch Instruction | 18.1.0 |
| 2023-03 | CT#99 | CP-230148 | 0058 | - | F | Incorrect service name | 18.1.0 |
| 2023-03 | CT#99 | CP-230148 | 0060 | 1 | B | Enhancement of data and analytics storage | 18.1.0 |
| 2023-03 | CT#99 | CP-230148 | 0061 | - | B | Support of multiple notification endpoints | 18.1.0 |
| 2023-03 | CT#99 | CP-230148 | 0062 | - | B | Support of temporal aggregation in processing instruction | 18.1.0 |
| 2023-03 | CT#99 | CP-230162 | 0063 | - | F | Update of info and externalDocs fields | 18.1.0 |
| 2023-06 | CT#100 | CP-231125 | 0064 | 1 | B | Event muting enhancements for DCCF Subscriptions | 18.2.0 |
| 2023-06 | CT#100 | CP-231137 | 0065 | 1 | B | Implementing immediate reports for DCCF subscriptions | 18.2.0 |
| 2023-06 | CT#100 | CP-231137 | 0067 | 1 | B | Update to Ndccf\_DataManagement API for Termination Request | 18.2.0 |
| 2023-06 | CT#100 | CP-231126 | 0068 | 1 | B | Adding Storage Handling Information in DCCF Data Management subscriptions | 18.2.0 |
| 2023-06 | CT#100 | CP-231126 | 0069 | 1 | B | Sending DCCF Deletion Alerts | 18.2.0 |
| 2023-06 | CT#100 | CP-231138 | 0070 | 1 | B | Clarification of the attributes in the data types reused by DCCF and error corrections | 18.2.0 |
| 2023-06 | CT#100 | CP-231137 | 0071 | - | F | Removal of the anonymization rules | 18.2.0 |
| 2023-06 | CT#100 | CP-231131 | 0072 | - | F | Corrections to the redirection mechanism description | 18.2.0 |
| 2023-06 | CT#100 | CP-231141 | 0073 | - | F | Update of info and externalDocs fields | 18.2.0 |
| 2023-09 | CT#101 | CP-232081 | 0074 | - | B | Location Accuracy DCCF consumers and data sources | 18.3.0 |
| 2023-09 | CT#101 | CP-232095 | 0075 | 1 | B | Adding UPF to the possible data sources for analytics | 18.3.0 |
| 2023-09 | CT#101 | CP-232085 | 0076 |  | F | Update of info and externalDocs fields | 18.3.0 |
| 2023-12 | CT#102 | CP-233225 | 0078 | 1 | B | Pending Notification in Ndccf\_DataManagement API | 18.4.0 |
| 2023-12 | CT#102 | CP-233229 | 0079 | 1 | B | ProblemDetails RFC 7807 obsoleted by RFC 9457 | 18.4.0 |
| 2023-12 | CT#102 | CP-233229 | 0080 | 1 | B | Updating the obsoleted IETF HTTP RFC | 18.4.0 |
| 2023-12 | CT#102 | CP-233226 | 0081 | 1 | F | Applicability of muting exception instructions | 18.4.0 |
| 2023-12 | CT#102 | CP-233237 | 0082 | - | F | Update of info and externalDocs fields | 18.4.0 |