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650 Route des Lucioles
F-06921 Sophia Antipolis Cedex - FRANCE

Tel.: +33 4 92 94 42 00 Fax: +33 4 93 65 47 16

Siret N° 348 623 562 00017 - APE 7112B
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Contents

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:

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

[21] Void.

[22] Void.

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

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

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

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

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

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

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

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

[31] Void.

[32] 3GPP TS 29.523: "5G System; Policy Control Event Exposure Service; 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 Unsubscribe Notify	Subscribe / Notify	NWDAF, PCF, NSSF, AMF, SMF, NEF, AF, LMF, ADRF
		Fetch	Request / Response	NWDAF, PCF, NSSF, AMF, SMF, NEF, AF, LMF, ADRF
		Transfer	Request / Response	DCCF
Ndccf_ContextManagement	This service enables the NF service consumers to register/deregister collected data in the DCCF.	Register Update Deregister	Request / Response	NWDAF, ADRF

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;
- allows NF service consumers to retrieve analytics or data according to the Fetch Instructions provided by DCCF; and
- allows NF service consumers to transfer UE data subscription context to the target 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)
- Data Collection Coordination Function (DCCF)

Editor's Note: It is FFS whether the SCP, the UDM, and the NRF are consumers of the Ndccf_DataManagement service.

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.

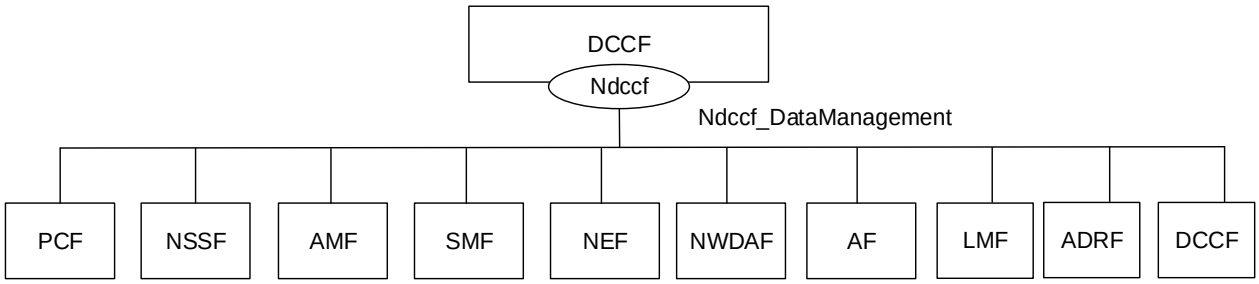

Figure 4.2.1.2-1: Ndccf_DataManagement service architecture, SBI representation

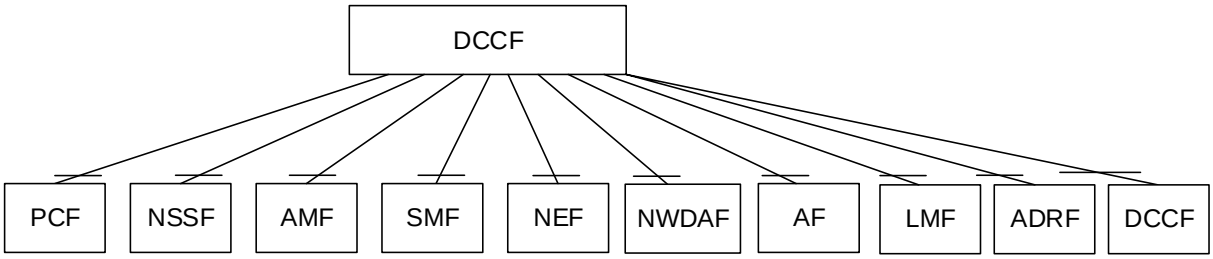

Figure 4.2.1.2-2: Ndccf_DataManagement service architecture, reference point representation

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 is not a NF service consumer of the Ndccf_DataManagement service.
- As an NF service consumer of the Ndccf_DataManagement service, the DCCF supports requesting the transfer of a UE data subscription from source DCCF to target DCCF.

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 or inform the NF service consumer the successful data subscription transfer.	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)
Ndccf_DataManagement_Transfer	This service operation is used by the source DCCF to transfer UE data subscription context to the target DCCF.	NF service consumer (DCCF)

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.

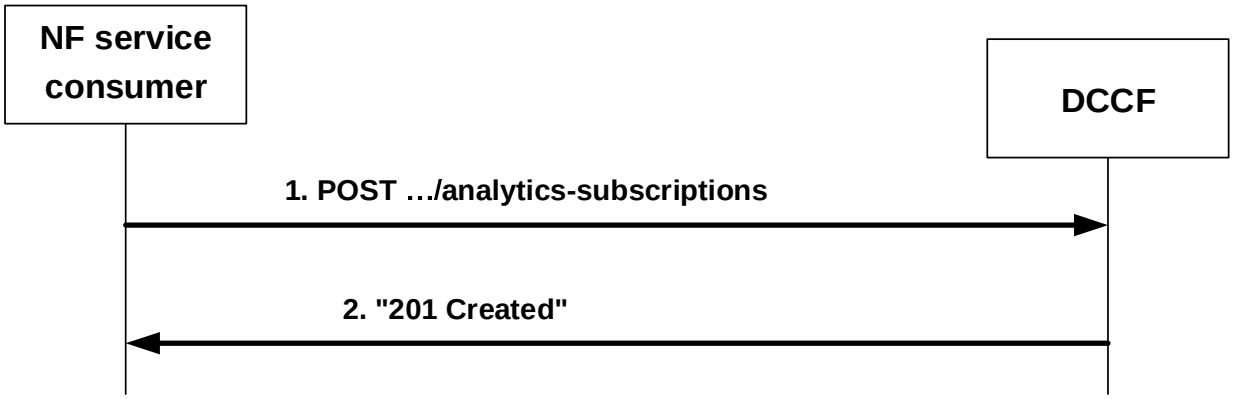

Figure 4.2.2.2.2-1: NF service consumer subscribes to analytics notifications

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) based on the user consent subscription data that is retrieved via the Nudm_SDM service API of the UDM as described in clause 5.2.2.24 and clause 6.1.3.32 of 3GPP TS 29.503 [20]. If the user consent subscription data retrieved from the UDM indicate that the user consent is not granted for the impacted user(s), then the DCCF shall send an HTTP "403 Forbidden" error response including the "cause" attribute set to "USER_CONSENT_NOT_GRANTED".

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

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

If the DCCF determines that the subscription can already be served (without requiring further interactions with 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).

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

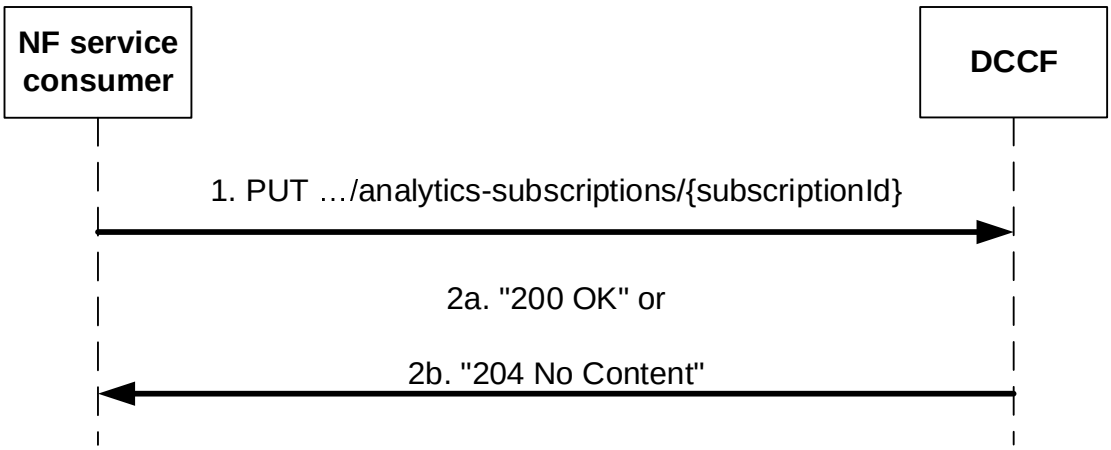

Figure 4.2.2.2.3-1: NF service consumer updates subscription to analytics notifications

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) based onthe user consent subscription data that is retrieved via the Nudm_SDM service API of the UDM as described in clause 5.2.2.24 and clause 6.1.3.32 of 3GPP TS 29.503 [20]. If the DCCF receive the response from the UDM that it is not granted for the impacted user(s), then the DCCF shall send an HTTP "403 Forbidden" error response including the "cause" attribute set to "USER_CONSENT_NOT_GRANTED".

NOTE 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.

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.

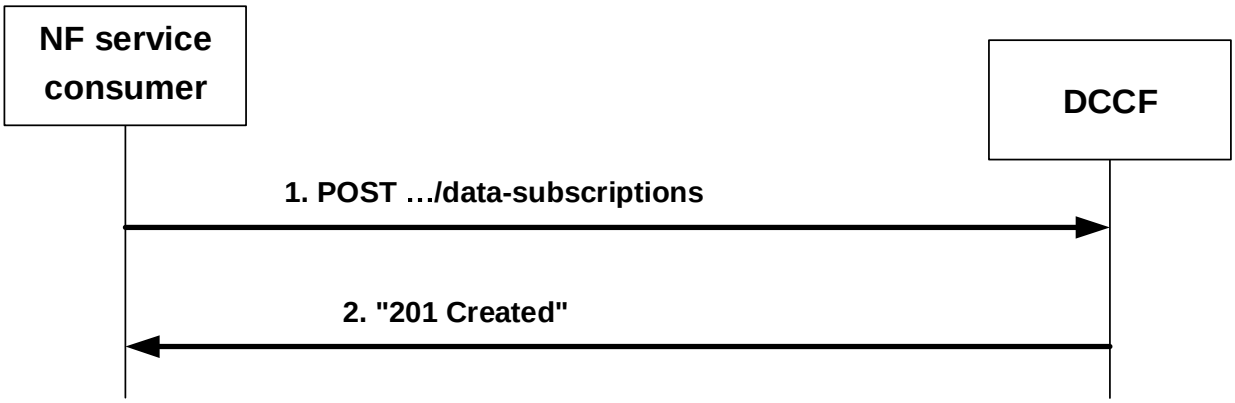

Figure 4.2.2.2.4-1: NF service consumer subscribes to data notifications

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;

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

and may include:

- the notification endpoints within the "notifEndpoints" attribute, if the "DataAnaCollect" feature is supported;
- formatting instructions within the "formatInstruct" attribute;
- processing instructions within the "procInstructs" attribute;
- the indication for data storage within the "storeInd" attribute, if the "DataAnaCollect" feature is supported;
- a target NF identifier within the "targetNfId" attribute" or a target NF set identifier within the "targetNfSetId" attribute";
- an ADRF identifier within the "adrfId" attribute or an ADRF set identifier within the "adrfSetId" attribute; and/or
- time window of the occurrence of the requested data collection within the "timePeriod" attribute.

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

- the purpose of data collection within the "dataCollectPurposes" attribute.
- the indication that the NF service consumer has already checked the user consent within the "checkedConsentInd" attribute.
- storage handling information within the "storeHandl" attribute, if the "EnhDataMgmt" feature is supported.

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

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

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

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

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

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

- create a new subscription;
- assign a subscriptionId;
- store the subscription.

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

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

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

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

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

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

4.2.2.2.5 Update subscription for data notifications

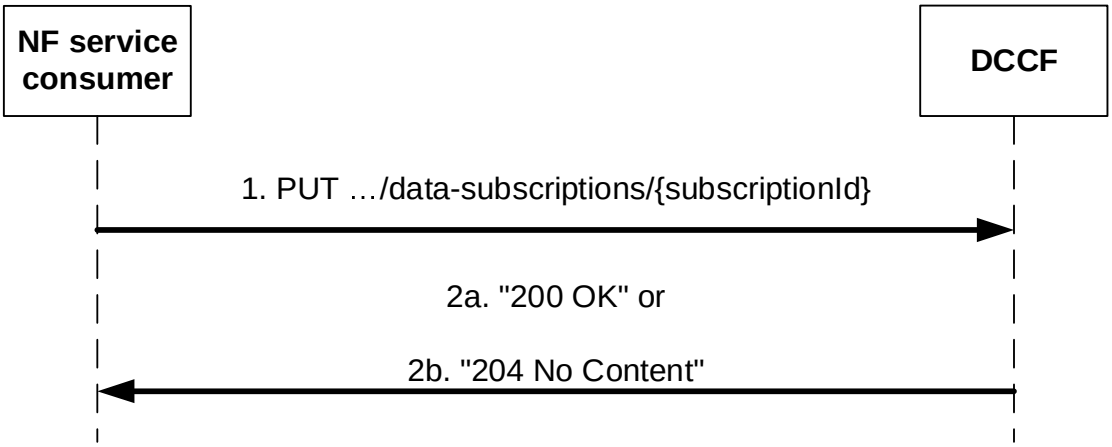

Figure 4.2.2.2.5-1: NF service consumer updates subscription to data notifications

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 data collection depending on local policy and regulations, then the DCCF shall check user consent for the targeted UE(s) based on the user consent subscription data that is retrieved via the Nudm_SDM service API of the UDM as described in clause 5.2.2.24 and clause 6.1.3.32 of 3GPP TS 29.503 [20]. If the DCCF receive the response from the UDM that it is not granted for the impacted user(s), then the DCCF shall send an HTTP "403 Forbidden" error response including the "cause" attribute set to "USER_CONSENT_NOT_GRANTED".

NOTE 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.

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

If the DCCF determines that the 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.

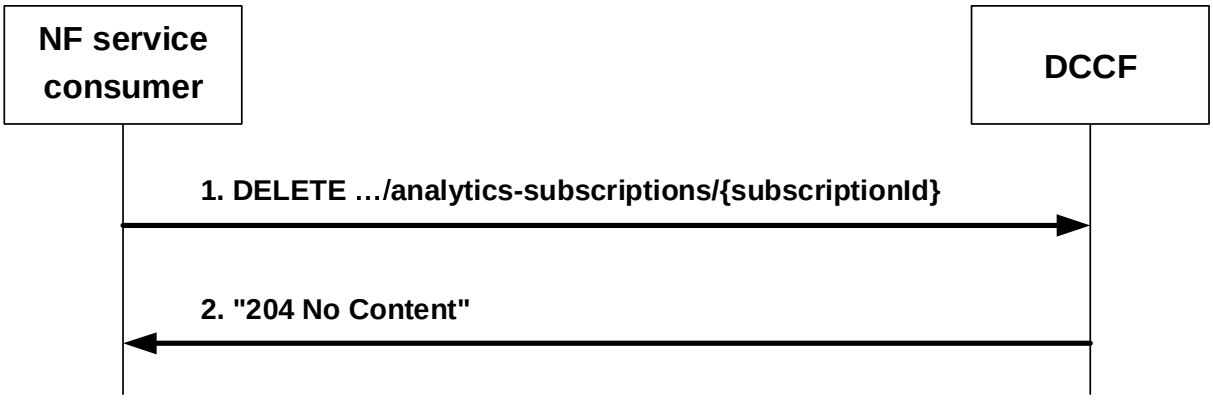

Figure 4.2.2.3.2-1: NF service consumer unsubscribes from analytics notifications

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.

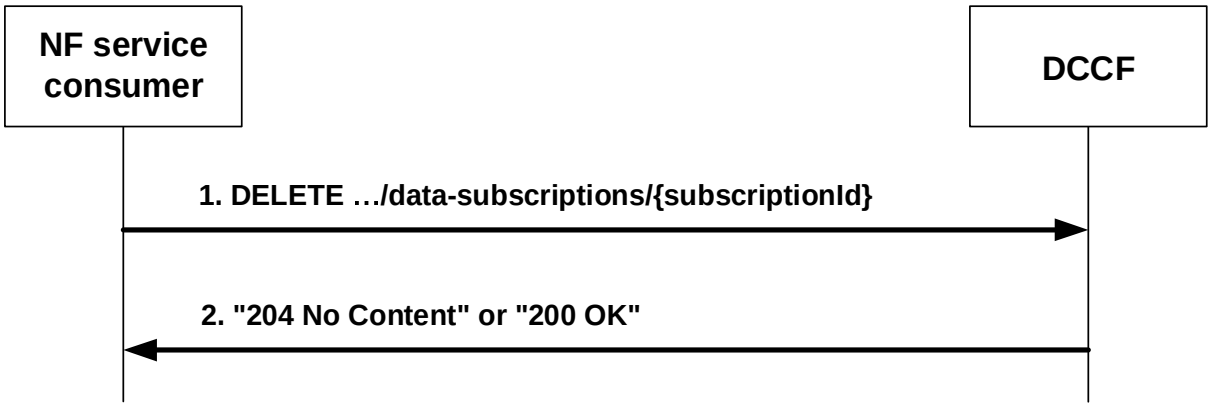

Figure 4.2.2.3.3-1: NF service consumer unsubscribes from data notifications

The NF service consumer shall invoke the Ndccf_DataManagement_Unsubscribe service operation to unsubscribe to data notifications. The NF service consumer 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 NF service consumer:
  - 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 or notify NF service consumers about the successful data subscription transfer.

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).

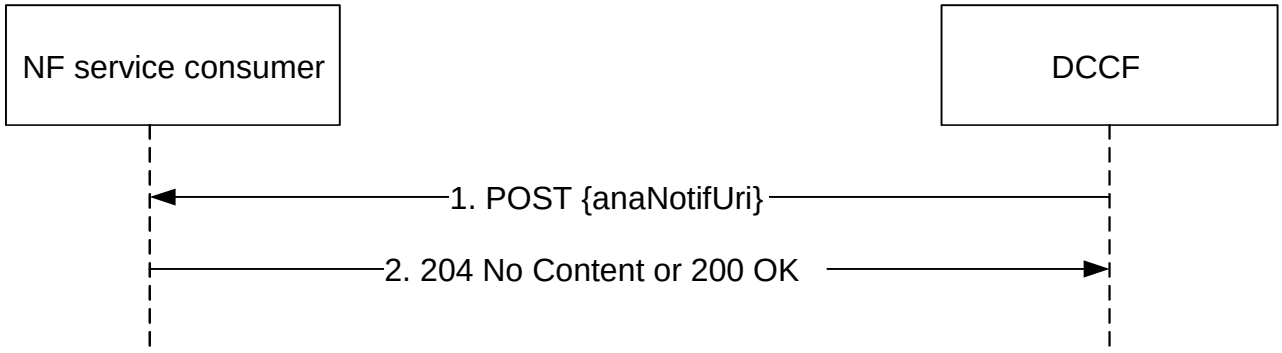

Figure 4.2.2.4.2-1: DCCF notifies the NF service consumer about a subscribed analytics event

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 "{anaNotifUri}" as Resource URI (where "{anaNotifUri}" 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) or notify it about the successful data subscription transfer.

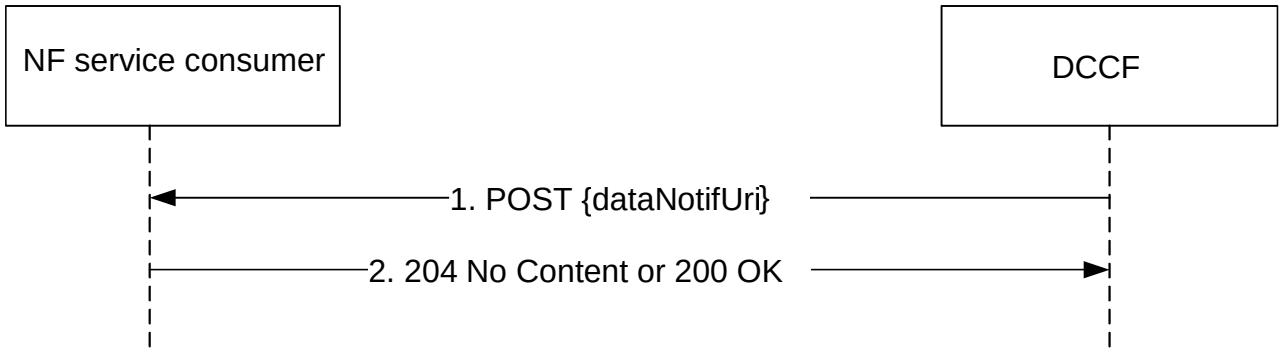

Figure 4.2.2.4.3-1: DCCF notifies the NF service consumer about a subscribed data event

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 "{dataNotifUri}" as Resource URI (where "{dataNotifUri}" 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 new URI of the transferred data subscription (i.e. the resource URI of the Individual DCCF Data Subscription resource created by the target DCCF) in the "newSubscriptionUri" attribute, if the "SubscriptionTransfer" feature is supported and the source DCCF notifies the successful transfer of this subscription.

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 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 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.

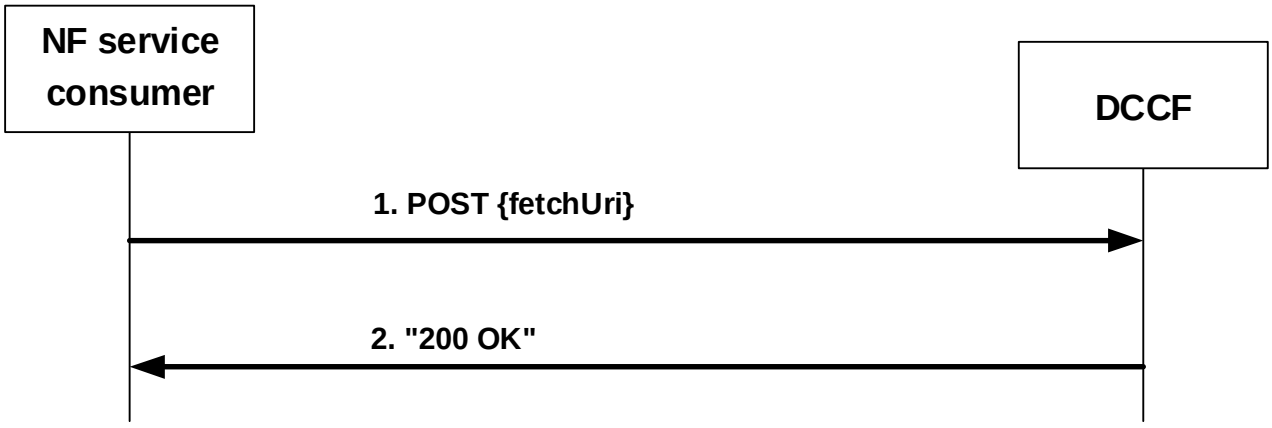

Figure 4.2.2.5.2-1: NF service consumer requesting to retrieve notified analytics or data

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" and "delAlert" attributes 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", "delAlert" and "newSubscriptionUri" attributes shall not be included.

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].

4.2.2.6 Ndccf_DataManagement_Transfer service operation

4.2.2.6.1 General

The Ndccf_DataManagement_Transfer service operation is used by NF service consumer to request the transfer of UE data subscription context to the target DCCF.

4.2.2.6.2 Request for UE data subscription context transfer

Figure 4.2.2.6.2-1 shows a scenario where the NF Service Consumer (i.e. DCCF) sends a request to the DCCF to request the transfer of UE data subscription context from the NF Service Consumer to the NF Service Producer.

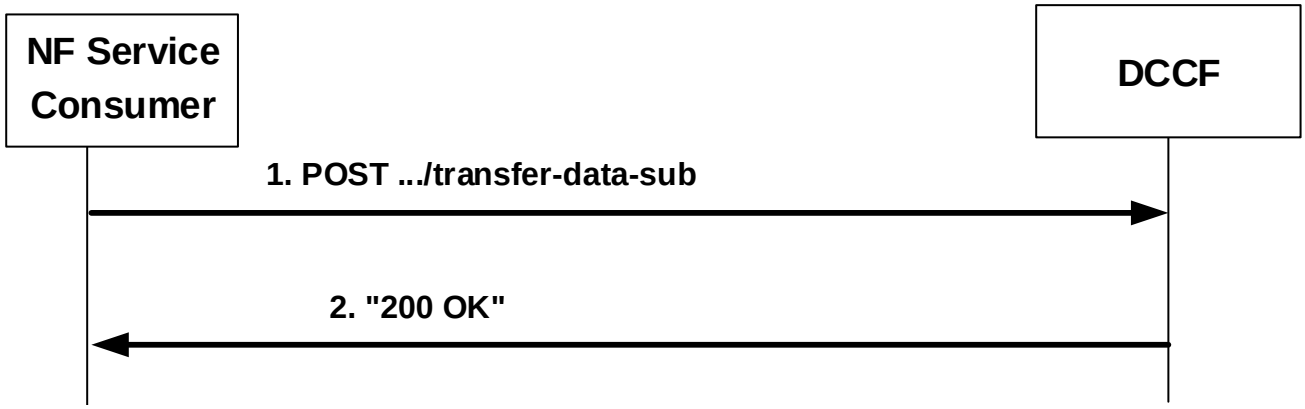

Figure 4.2.2.6.2-1: NF service consumer requests a data subscription transfer

The NF Service Consumer shall invoke the Ndccf_DataManagement_Transfer service operation to request the transfer of UE data subscription context by sending an HTTP POST request to the "{apiRoot}/ndccf-datamanagement/<apiVersion>/transfer-data-sub" URI, as shown in figure 4.2.2.6.2-1, step 1. The contents of the NdccfDataSubscription data structure provided in the request body are as described in clause 4.2.2.2.4.

Upon the reception of an HTTP POST request to "{apiRoot}/ndccf-datamanagement/<apiVersion>/transfer-data-sub" with NdccfDataSubscription data structure as request body, in the successful case the DCCF shall create a new

Individual DCCF Data Subscription resource for the transferred subscription and send an HTTP "200 OK" response with DataTransferResp data structure as the response body, as shown in figure 4.2.2.6.2-1, step 2. The DataTransferResp data structure in the response body shall include:

- the URI of the created resource in the "newSubscriptionUri" attribute;
- the features supported by both the data consumer and the target DCCF in the "suppFeat" attribute, if the NF service consumer included the"suppFeat" attribute in the POST request.

; The NF Service Consumer shall then notify the data consumer about the successful data subscription transfer as defined in clause 4.2.2.4.3, including the received URI of the created resource in the "newSubscriptionUri" attribute of the NdccfDataSubscriptionNotification data type and the received features supported both by the data consumer and the target DCCF in the "suppFeat" attribute.

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

4.2.2.6.3 Void

4.2.2.6.4 Void

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.

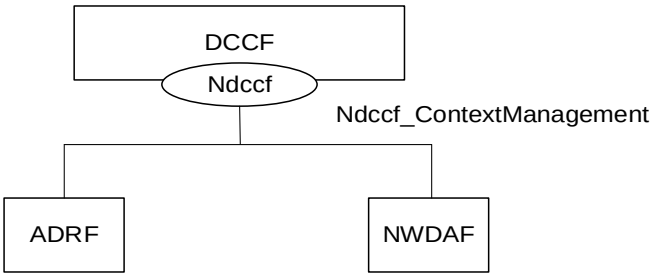

Figure 4.3.1.2-1: Ndccf_ContextManagement service architecture, SBI representation

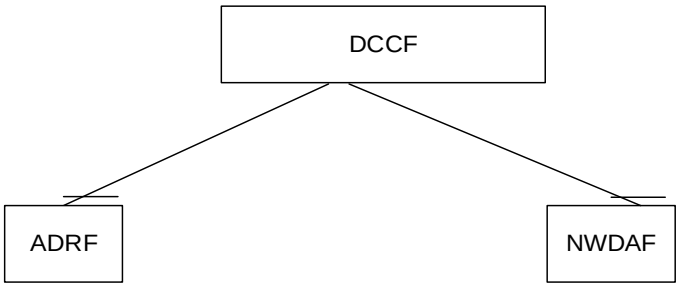

Figure 4.3.1.2-2: Ndccf_ContexManagement service architecture, reference point representation

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.

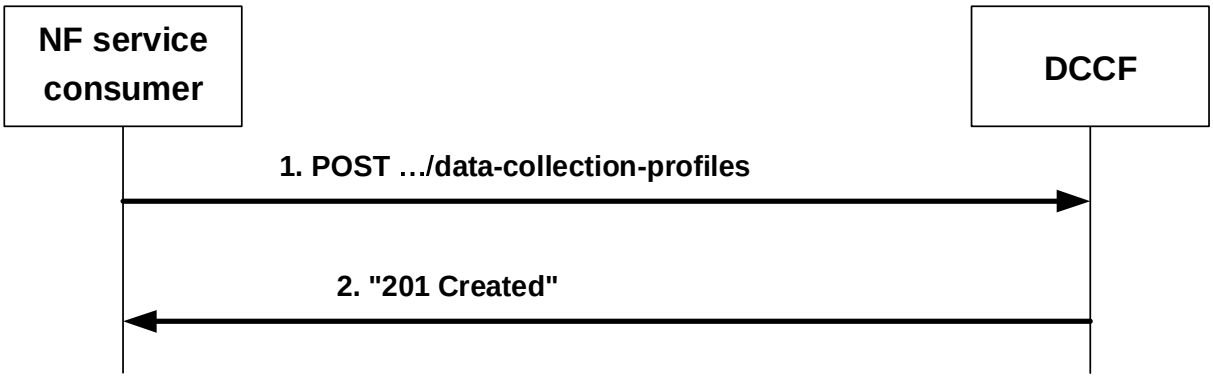

Figure 4.3.2.2.2-1: NF service consumer registers data collection profile

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

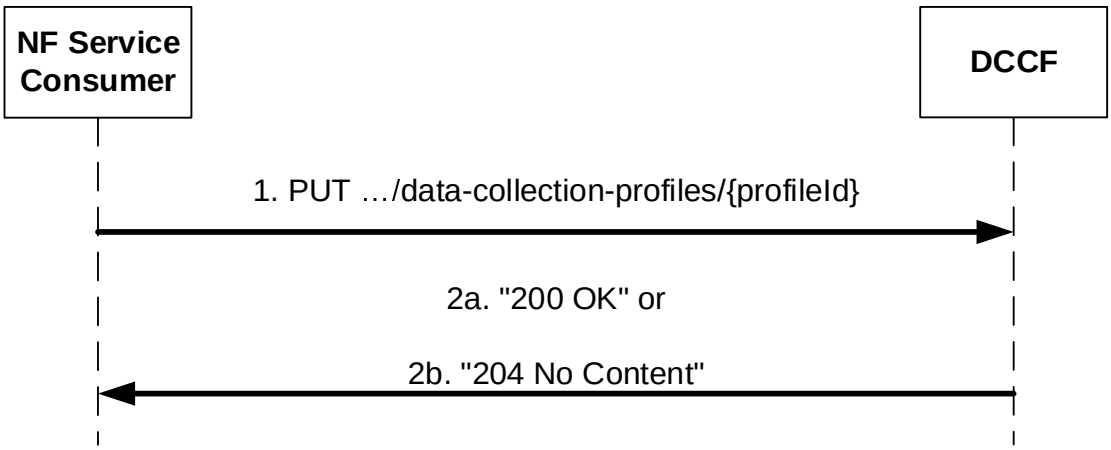

Figure 4.3.2.3.2-1: NF service consumer updates registered data collection profile

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.

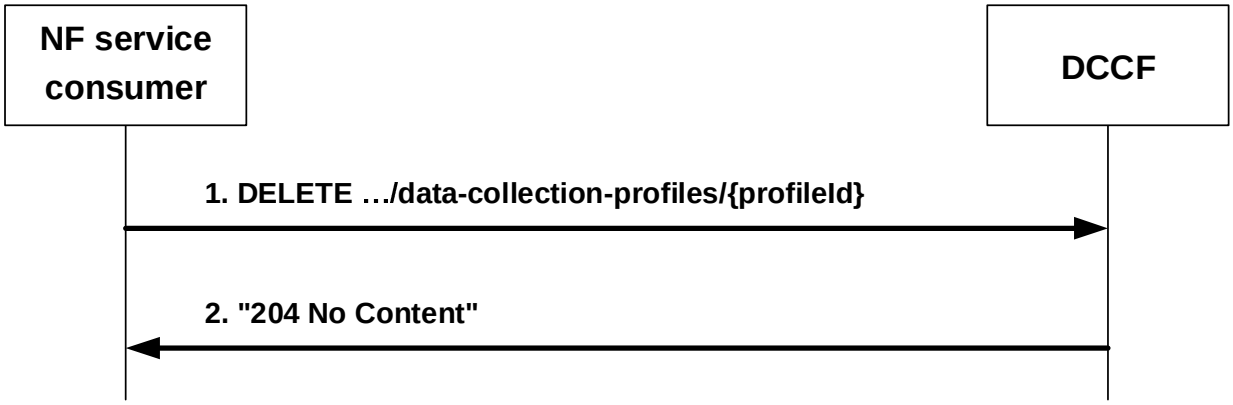

Figure 4.3.2.4.2-1: NF service consumer deregisters data collection profile

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.

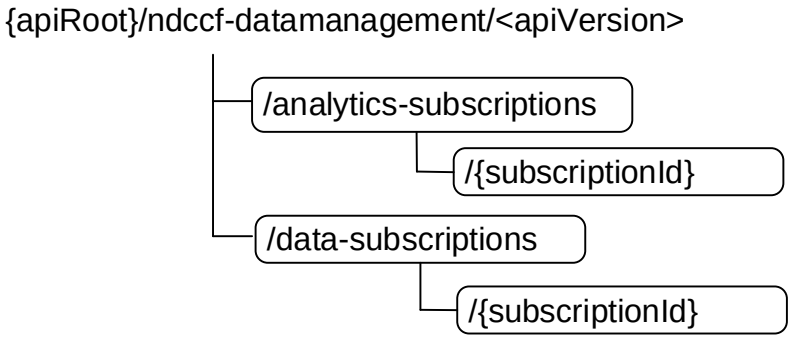

Figure 5.1.3.1-1: Resource URI structure of the Ndccf_DataManagement API

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 5.1.3.4.2-1: 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 DELETE 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 DCCF Data 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.

5.1.3.6 Void

5.1.3.7 Void

5.1.4 Custom Operations without associated resources

5.1.4.1 Overview

The structure of the custom operation URIs of the Ndccf_DataManagement service is shown in Figure 5.1.4.1-1.

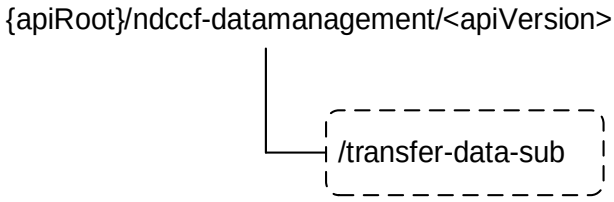

Figure 5.1.4.1-1: Custom operation URI structure of the Ndccf_DataManagement API

Table 5.1.4.1-1 provides an overview of the custom operations and applicable HTTP methods.

Table 5.1.4.1-1: Custom operations without associated resources

Custom operation URI	Mapped HTTP method	Description
{apiRoot}/ndccf-datamanagement/<apiVersion>/transfer-data-sub	POST	Request the DCCF to transfer a subscription for data collection from the NF Service Consumer to the NF Service Producer.

5.1.4.2 Operation: transfer-data-sub

5.1.4.2.1 Description

The operation is used by the NF service consumer to request the DCCF to transfer a data subscription from the NF Service Consumer to the NF Service Producer.

5.1.4.2.2 Operation Definition

This operation shall support the request data structures shown in Table 5.1.4.2.2-1 and the response data structures and error codes specified in Tables 5.1.4.2.2-2.

Table 5.1.4.2.2-1: Data structures supported by the POST Request Body on this resource

Data type	P	Cardinality	Description
NdccfDataSubscription	M	1	Information about data subscription that is requested to be transferred.

Table 5.1.4.2.2-2: Data structures supported by the POST Response Body on this resource

Data type	P	Cardinality	Response codes	Description
DataTransferResp	M	1	200 OK	Successful transfer of a data subscription from the NF Service Consumer to the NF Service Producer.
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.				

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.
n/a			204 No Content	The receipt of the notification is acknowledged.
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.	
DataTransferResp	5.1.6.2.19	Represents an Individual DCCF Data Subscription resource created at the target DCCF.	SubscriptionTransfer
DccfEvent	5.1.6.2.13	Represents the event type exposed by DCCF	
DeletionAlert	5.1.6.2.16	Contains information about data or analytics that are about to be deleted.	EnhDataMgmt
EventParamReport	5.1.6.2.10	Represents a summarized report for one event parameter.	
FormattingInstruction	5.1.6.2.6	Contains data or analytics formatting Instructions.	
NdccfAnalyticsSubscription	5.1.6.2.2	Represents an Individual DCCF Analytics Subscription resource.	
NdccfAnalyticsSubscriptionNotification	5.1.6.2.4	Represents a notification that corresponds with an Individual DCCF Analytics Subscription resource.	
NdccfDataSubscription	5.1.6.2.3	Represents an Individual DCCF Data Subscription resource.	
NdccfDataSubscriptionNotification	5.1.6.2.5	Represents a notification that corresponds with an Individual DCCF Data Subscription resource.	
NotifResponse	5.1.6.2.17	Contains information about the planned action upon receiving a notification.	EnhDataMgmt
NotifSummaryReport	5.1.6.2.9	Represents summarized notifications based on processing instructions.	
ParameterProcessingInstruction	5.1.6.2.8	Contains an event parameter name and the respective event parameter values and sets of attributes to be used in summarized reports.	
ProcessingInstruction	5.1.6.2.7	Contains instructions related to the processing (e.g. clubbing) of notifications.	
ReportingOptions	5.1.6.2.11	Represents reporting options for notifications that are processed.	
StorageHandlingInformation	5.1.6.2.15	Contains storage handling information for data or analytics.	EnhDataMgmt
SummarizationAttribute	5.1.6.3.3	Represents attribute in the summarized report.	
TermCause	5.1.6.3.6	A cause for which the DCCF will collect no further data for this subscription.	TerminationCause

Table 5.1.6.1-2 specifies data types re-used by the Ndccf_DataManagement service based interface protocol from other specifications, including a reference to their respective specifications and when needed, a short description of their use within the Ndccf_DataManagement service based interface.

Table 5.1.6.1-2: Ndccf_DataManagement re-used Data Types

Data type	Reference	Comments	Applicability
AfEvent	3GPP TS 29.517 [21]	Represents an AF Event id	
AmfEventType	3GPP TS 29.518 [19]	Represents an AMF Event id	
DataSubscription	3GPP TS 29.575 [25]	Represents a data subscription to one of various possible data sources.	
DataNotification	3GPP TS 29.575 [25]	Represents a data subscription notification of one of various possible data sources.	
DateTime	3GPP TS 29.571 [17]	Identifies the time.	
DurationSec	3GPP TS 29.571 [17]	Time in seconds.	
EventNotifyDataType	3GPP TS 29.515 [29]	Represents a GMLC Event id	LocEvents
EventType	3GPP TS 29.503 [20]	Represents an UDM Event id	
EventType	3GPP TS 29.564 [30]	Represents a UPF Event id	UpEvents
FetchInstruction	3GPP TS 29.576 [26]	The fetch instruction indicates whether the data or analytics can be fetched by the consumer.	
NefEvent	3GPP TS 29.591 [22]	Represents a NEF Event id	
NetworkAreaInfo	3GPP TS 29.554 [28]	Identifies a network area.	
NfInstanceId	3GPP TS 29.571 [17]	NF instance identifier.	
NfSetId	3GPP TS 29.571 [17]	NF set identifier.	
NnwdafEventsSubscription	3GPP TS 29.520 [15]	Represents a NWDAF analytics subscription.	
NnwdafEventsSubscriptionNotification	3GPP TS 29.520 [15]	Represents a NWDAF analytics subscription notification.	
NumberAverage	3GPP TS 29.520 [15]	Represents average and variance of a parameter value.	
PcEvent	3GPP TS 29.523 [32]	Represents a PCF Event id	PcfEvents
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 notification target address(es) and correlation identifier(s) of additional endpoints that need to be notified, if any.	DataAnaCollect
formatInstruct	FormattingInstruction	O	0..1	Formatting instructions to be used for sending event notifications. If provided, they take the precedence over any potentially conflicting event reporting requirements provided within the "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, otherwise, if set to "false", it indicates that the consumer has not yet checked the user consent. The default value is "false".	UserConsent
suppFeat	SupportedFeatures	C	0..1	This attribute represents a list of Supported features as described in clause 5.1.8. It shall be present if feature negotiation needs to take place.	

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 notification target address(es) and correlation identifier(s) of additional endpoints that need to be notified, if any.	DataAnaCollect
formatInstruct	FormattingInstruction	O	0..1	Formatting instructions to be used for sending event notifications. If provided, they take the precedence over any potentially conflicting event reporting requirements provided within the "dataSub" attribute.	
procInstructs	array(ProcessingInstruction)	O	1..N	Processing instructions to be used for sending event notifications.	
targetNfId	NfInstanceId	O	0..1	Data Producer NF instance identifier to which the DCCF shall create the requested subscription. (NOTE 3)	
targetNfSetId	NfSetId	O	0..1	Data Producer NF set identifier to which the DCCF shall create the requested subscription. (NOTE 3)	
adrfId	NfInstanceId	O	0..1	Identifier of the ADRF to be used by the DCCF. If the subscription is for runtime data (i.e. the "timePeriod" attribute is either absent or contains a time window in the future) then the DCCF shall store the notifications in this ADRF. If the subscription is for historical data (i.e. the "timePeriod" attribute contains a time window in the past) then the DCCF shall retrieve the data from this ADRF. (NOTE 3)	
adrfSetId	NfSetId	O	0..1	Identifier of the ADRF Set to be used by the DCCF. If the subscription is for runtime data (i.e. the "timePeriod" attribute is either absent or contains a time window in the future) then the DCCF shall store the notifications in this ADRF Set. If the subscription is for historical data (i.e. the "timePeriod" attribute contains a time window in the past) then the DCCF shall retrieve the data from this ADRF Set. (NOTE 3)	
storeInd	boolean	C	0..1	The indication for data storage. This attribute shall be provided and set to "true" if the consumer requests to store the data in an ADRF but both the "adrfId" and "adrfSetId" attributes are not provided. The default value is "false".	DataAnaCollect
storeHandl	StorageHandlingInformation	O	0..1	Contains storage handling information for the data that will be collected and stored in an ADRF based on the requested subscription.	EnhDataMgmt

immReport	NdccfDataSubscriptionNotification	O	0..1	Immediate report including available DCCF notification. May only be present in the DCCF response to a subscription request and only if immediate reporting together with formatting/processing instructions was requested in the subscription request.	DataAnaCollect
timePeriod	TimeWindow	O	0..1	Represents a start time and a stop time during which data was collected or is requested to be collected. If this attribute is included, then the internal attributes of the data subscription that indicate a subscription duration (e.g. the "targetPeriod" attribute of an "eventSubs" attribute of an "smfDataSub" attribute, or the "monDur" attribute of the ReportingInformation data type) shall not be provided. (NOTE 2)	
dataCollectPurposes	array(DataCollectionPurpose)	O	1..N	The purposes of data collection. This attribute may only be provided if user consent is required depending on local policy and regulations and the consumer has not checked user consent.	
checkedConsentInd	boolean	O	0..1	If set to "true", it indicates that the NF service consumer has already checked the user consent, otherwise, if set to "false", it indicates that the consumer has not yet checked the user consent. The default value is "false".	UserConsent
suppFeat	SupportedFeatures	C	0..1	This attribute represents a list of Supported features as described in clause 5.1.8. It shall be present if feature negotiation needs to take place. In the POST request for UE data subscription context transfer, it represents the features supported by the data consumer.	

NOTE 1: The notification target address contained in the subscription attribute that is provided within the "dataSub" attribute (i.e. "eventNotifyUri" of "amfDataSub", "notifUri" of "smfDataSub", "callbackReference" of "udmDataSub", "notifUri" of "nefDataSub", "notifUri" of "afDataSub", "nfStatusNotificationUri" of "nrfDataSub", "eventNotifyUri" of "nsacfDataSub", "eventNotifyUri" of "upfDataSub" if the UpEvents feature is supported, "eventNotificationUri" of "gmlcDataSub" if the LocEvents feature is supported, "notifyCallBackUri" of "lmfDataSub" if the LmfEvents feature is supported, or "notifUri" of "pcfDataSub" if the PcfEvents feature is supported) and the notification correlation ID contained in the subscription attribute that is provided within the "dataSub" attribute (i.e. the "notifyCorrelationId" of "amfDataSub", "notifId" of "smfDataSub", "notifyCorrelationId" of "udmDataSub", "notifId" of "nefDataSub", "notifId" of "afDataSub", "notifyCorrelationId" of "nsacfDataSub", "notifyCorrelationId" of "upfDataSub" if the UpEvents feature is supported, "ldrReference" of "gmlcDataSub" if the LocEvents feature is supported, "notifyCorrelationId" of "lmfDataSub" if the LmfEvents feature is supported, or "notifId" of "pcfDataSub" if the PcfEvents feature is supported) shall be ignored by the DCCF. The DCCF will provide the notification target address and the notification correlation ID of the DCCF itself in the data type during the event subscription request to each NF. The event reporting information (e.g. "eventsRepInfo" attribute in the case of AF events) may include muting instructions (e.g. within the "notifFlagInstruct" attribute in the case of AF events) and/or muting notifications settings (e.g. within the "mutingSetting" attribute in the case of AF events) only if the EnhDataMgmt feature is supported.

NOTE 2: It includes the time period either in the past or in the future (i.e., start time as past time and stop time as future time is not allowed).

NOTE 3: "targetNfId" and "targetNfSetId" are mutually exclusive. "adrfId" and "adrfSetId" are also mutually exclusive.

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 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
newSubscriptionUri	Uri	C	0..1	The URI of the subscription resource located in the target DCCF. This parameter shall be present if the notification is for informing the successful transfer of a subscription from the source DCCF to the target DCCF. (NOTE 1, NOTE 2)	SubscriptionTransfer
dataNotifCorrId	string	M	1	Notification correlation identifier.	
suppFeat	SupportedFeatures	C	0..1	This attribute represents the features supported by both the data consumer and the target DCCF as described in clause 5.1.8. It shall be present if the "newSubscriptionUri" attribute is present.	SubscriptionTransfer
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 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. The "lmfEventNotifs" attribute within the "dataNotification" attribute is applicable only if the "LmfEvents" feature is supported. The "pcfEventNotifs" attribute within the "dataNotification" attribute is applicable only if the "PcfEvents" 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
lmfEventInd	boolean	C	0..1	If provided it identifies an LMF Data Exposure event. It may only have the value "true". (NOTE)	LmfEvents
pcfEvent	PcEvent	C	0..1	Identifies a PCF event. (NOTE)	PcfEvents
NOTE: Exactly one of these attributes shall be provided.					

Editor's Note: The necessity and terminology of the lmfEventInd attribute are FFS.

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".	

5.1.6.2.18 Void

5.1.6.2.19 Type: DataTransferResp

Table 5.1.6.2.19-1: Definition of type DataTransferResp

Attribute name	Data type	P	Cardinality	Description	Applicability
newSubscriptionUri	Uri	M	1	The Uri of the Individual DCCF Data Subscription resource that is created at the target DCCF.	
suppFeat	SupportedFeatures	C	0..1	This attribute represents the features supported by both the data consumer and the target DCCF as described in clause 5.1.8. It shall be present if feature negotiation needs to take place.	

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.	
OUT_OF_SERVING_AREA	The UE(s) moved outside of the DCCF serving area.	EnhDataMgmt
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	This feature indicates the support of detailed handling of user consent, e.g. indications that user consent has been checked and error responses related to the user consent is not granted.
2	DataAnaCollect	This feature indicates support for the enhancement of data and analytics collection.
3	EnhDataMgmt	This feature indicates the support of enhanced data management mechanisms, including support of pending notification, muting and storage handling.
4	TerminationCause	This feature indicates support for data collection subscription termination requests with termination cause and the purposes of data collection if the user consent is revoked sent by the DCCF to the NF service consumer.
5	LocEvents	This feature indicates the support of location events from the GMLC.
6	UpEvents	This feature indicates the support of UPF events.
7	SubscriptionTransfer	This feature indicates support for the data subscription transfer.
8	LmfEvents	This feature indicates the support of LMF data exposure events.
9	PcfEvents	This feature indicates the support of PCF event exposure 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.

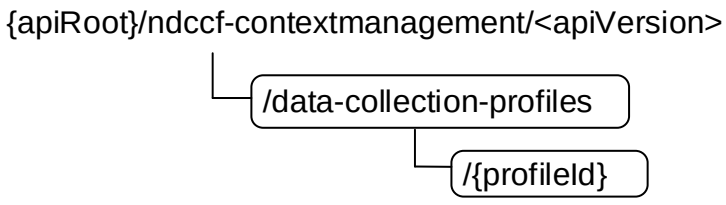

Figure 5.2.3.1-1: Resource URI structure of the Ndccf_ContextManagement API

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: 1.2.0-alpha.4
  title: Ndccf_DataManagement
  description: |
    DCCF Data Management Service.
    © 2025, 3GPP Organizational Partners (ARIB, ATIS, CCSA, ETSI, TSDSI, TTA, TTC).
    All rights reserved.

externalDocs:
  description: 3GPP TS 29.574 V19.4.0; 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:
          deprecated: true
          requestBody:
            required: true
            content:
              application/json:
                schema:
                  type: array
                  items:
                    type: string
                  minItems: 1
                  description: Fetch correlation identifiers.
          responses:
            '200':
              description: Expected response to a valid request
              content:
                application/json:
                  schema:
                    $ref: '#/components/schemas/NdccfAnalyticsSubscriptionNotification'
            '307':
              $ref: 'TS29571_CommonData.yaml#/components/responses/307'
            '308':
              $ref: 'TS29571_CommonData.yaml#/components/responses/308'
            '400':
              $ref: 'TS29571_CommonData.yaml#/components/responses/400'
            '401':
              $ref: 'TS29571_CommonData.yaml#/components/responses/401'
            '403':
              $ref: 'TS29571_CommonData.yaml#/components/responses/403'
            '404':
              $ref: 'TS29571_CommonData.yaml#/components/responses/404'
            '411':
              $ref: 'TS29571_CommonData.yaml#/components/responses/411'
            '413':
              $ref: 'TS29571_CommonData.yaml#/components/responses/413'
            '415':
              $ref: 'TS29571_CommonData.yaml#/components/responses/415'
            '429':
              $ref: 'TS29571_CommonData.yaml#/components/responses/429'
            '500':
              $ref: 'TS29571_CommonData.yaml#/components/responses/500'
            '502':
              $ref: 'TS29571_CommonData.yaml#/components/responses/502'
            '503':
              $ref: 'TS29571_CommonData.yaml#/components/responses/503'
            default:
              $ref: 'TS29571_CommonData.yaml#/components/responses/default'
    FetchNotif:
      '{$request.body#/fetchInstruct/fetchUri}':
        post:
          requestBody:
            required: true
            content:
              application/json:
                schema:
                  type: array
                  items:
                    type: string
                  minItems: 1
                  description: Fetch correlation identifiers.
          responses:
            '200':
              description: Expected response to a valid request
              content:
                application/json:
                  schema:
                    $ref: '#/components/schemas/NdccfDataSubscriptionNotification'
            '307':
              $ref: 'TS29571_CommonData.yaml#/components/responses/307'
            '308':
              $ref: 'TS29571_CommonData.yaml#/components/responses/308'
            '400':
              $ref: 'TS29571_CommonData.yaml#/components/responses/400'
```

```
                        '401':
                          $ref: 'TS29571_CommonData.yaml#/components/responses/401'
                        '403':
                          $ref: 'TS29571_CommonData.yaml#/components/responses/403'
                        '404':
                          $ref: 'TS29571_CommonData.yaml#/components/responses/404'
                        '411':
                          $ref: 'TS29571_CommonData.yaml#/components/responses/411'
                        '413':
                          $ref: 'TS29571_CommonData.yaml#/components/responses/413'
                        '415':
                          $ref: 'TS29571_CommonData.yaml#/components/responses/415'
                        '429':
                          $ref: 'TS29571_CommonData.yaml#/components/responses/429'
                        '500':
                          $ref: 'TS29571_CommonData.yaml#/components/responses/500'
                        '503':
                          $ref: 'TS29571_CommonData.yaml#/components/responses/503'
                        default:
                          $ref: 'TS29571_CommonData.yaml#/components/responses/default'

  /analytics-subscriptions/{subscriptionId}:
    delete:
      summary: Deletes an existing Individual DCCF Analytics Subscription resource.
      operationId: DeleteDCCFAnalyticsSubscription
      tags:
        - Individual DCCF Analytics Subscription (Document)
      parameters:
        - name: subscriptionId
          in: path
          description: >
            String identifying an analytics subscription to the Ndccf_DataManagement Service.
          required: true
          schema:
            type: string
      responses:
        '204':
          description: >
            No Content. The Individual DCCF Analytics Subscription resource matching the
            subscriptionId was deleted.
        '307':
          $ref: 'TS29571_CommonData.yaml#/components/responses/307'
        '308':
          $ref: 'TS29571_CommonData.yaml#/components/responses/308'
        '400':
          $ref: 'TS29571_CommonData.yaml#/components/responses/400'
        '401':
          $ref: 'TS29571_CommonData.yaml#/components/responses/401'
        '403':
          $ref: 'TS29571_CommonData.yaml#/components/responses/403'
        '404':
          $ref: 'TS29571_CommonData.yaml#/components/responses/404'
        '429':
          $ref: 'TS29571_CommonData.yaml#/components/responses/429'
        '500':
          $ref: 'TS29571_CommonData.yaml#/components/responses/500'
        '502':
          $ref: 'TS29571_CommonData.yaml#/components/responses/502'
        '503':
          $ref: 'TS29571_CommonData.yaml#/components/responses/503'
        default:
          $ref: 'TS29571_CommonData.yaml#/components/responses/default'
    put:
      summary: Updates an existing Individual DCCF Analytics Subscription resource.
      operationId: UpdateDCCFAnalyticsSubscription
      tags:
        - Individual DCCF Analytics Subscription (Document)
      requestBody:
        required: true
        content:
          application/json:
            schema:
              $ref: '#/components/schemas/NdccfAnalyticsSubscription'
      parameters:
        - name: subscriptionId
          in: path
          description: >
            String identifying an analytics subscription to the Ndccf_DataManagement Service.
```

```
        required: true
        schema:
          type: string
      responses:
        '200':
          description: >
            The Individual DCCF Analytics Subscription resource was modified successfully and a
            representation of that resource is returned.
          content:
            application/json:
              schema:
                $ref: '#/components/schemas/NdccfAnalyticsSubscription'
        '204':
          description: >
            The Individual DCCF Analytics Subscription resource was modified successfully.
        '307':
          $ref: 'TS29571_CommonData.yaml#/components/responses/307'
        '308':
          $ref: 'TS29571_CommonData.yaml#/components/responses/308'
        '400':
          $ref: 'TS29571_CommonData.yaml#/components/responses/400'
        '401':
          $ref: 'TS29571_CommonData.yaml#/components/responses/401'
        '403':
          $ref: 'TS29571_CommonData.yaml#/components/responses/403'
        '404':
          $ref: 'TS29571_CommonData.yaml#/components/responses/404'
        '411':
          $ref: 'TS29571_CommonData.yaml#/components/responses/411'
        '413':
          $ref: 'TS29571_CommonData.yaml#/components/responses/413'
        '415':
          $ref: 'TS29571_CommonData.yaml#/components/responses/415'
        '429':
          $ref: 'TS29571_CommonData.yaml#/components/responses/429'
        '500':
          $ref: 'TS29571_CommonData.yaml#/components/responses/500'
        '502':
          $ref: 'TS29571_CommonData.yaml#/components/responses/502'
        '503':
          $ref: 'TS29571_CommonData.yaml#/components/responses/503'
        default:
          $ref: 'TS29571_CommonData.yaml#/components/responses/default'

  /data-subscriptions:
    post:
      summary: Creates a new Individual DCCF Data Subscription resource.
      operationId: CreateDCCFDataSubscription
      tags:
        - DCCF Data Subscriptions (Collection)
      requestBody:
        content:
          application/json:
            schema:
              $ref: '#/components/schemas/NdccfDataSubscription'
        required: true
      responses:
        '201':
          description: Creates a new Individual DCCF Data Subscription resource.
          headers:
            Location:
              description: >
                Contains the URI of the newly created resource, according to the structure
                {apiRoot}/ndccf-datamanagement/<apiVersion>/data-subscriptions/{subscriptionId}
              required: true
              schema:
                type: string
          content:
            application/json:
              schema:
                $ref: '#/components/schemas/NdccfDataSubscription'
        '400':
          $ref: 'TS29571_CommonData.yaml#/components/responses/400'
        '401':
          $ref: 'TS29571_CommonData.yaml#/components/responses/401'
        '403':
          $ref: 'TS29571_CommonData.yaml#/components/responses/403'
        '404':
```

```
      $ref: 'TS29571_CommonData.yaml#/components/responses/404'
    '411':
      $ref: 'TS29571_CommonData.yaml#/components/responses/411'
    '413':
      $ref: 'TS29571_CommonData.yaml#/components/responses/413'
    '415':
      $ref: 'TS29571_CommonData.yaml#/components/responses/415'
    '429':
      $ref: 'TS29571_CommonData.yaml#/components/responses/429'
    '500':
      $ref: 'TS29571_CommonData.yaml#/components/responses/500'
    '502':
      $ref: 'TS29571_CommonData.yaml#/components/responses/502'
    '503':
      $ref: 'TS29571_CommonData.yaml#/components/responses/503'
    default:
      $ref: 'TS29571_CommonData.yaml#/components/responses/default'
  callbacks:
    dccfDataNotification:
      '{$request.body#/dataNotifUri}':
        post:
          requestBody:
            required: true
            content:
              application/json:
                schema:
                  $ref: '#/components/schemas/NdccfDataSubscriptionNotification'
          responses:
            '200':
              description: The notification is acknowledged and a planned action is provided.
              content:
                application/json:
                  schema:
                    $ref: '#/components/schemas/NotifResponse'
            '204':
              description: The receipt of the notification is acknowledged.
            '307':
              $ref: 'TS29571_CommonData.yaml#/components/responses/307'
            '308':
              $ref: 'TS29571_CommonData.yaml#/components/responses/308'
            '400':
              $ref: 'TS29571_CommonData.yaml#/components/responses/400'
            '401':
              $ref: 'TS29571_CommonData.yaml#/components/responses/401'
            '403':
              $ref: 'TS29571_CommonData.yaml#/components/responses/403'
            '404':
              $ref: 'TS29571_CommonData.yaml#/components/responses/404'
            '411':
              $ref: 'TS29571_CommonData.yaml#/components/responses/411'
            '413':
              $ref: 'TS29571_CommonData.yaml#/components/responses/413'
            '415':
              $ref: 'TS29571_CommonData.yaml#/components/responses/415'
            '429':
              $ref: 'TS29571_CommonData.yaml#/components/responses/429'
            '500':
              $ref: 'TS29571_CommonData.yaml#/components/responses/500'
            '502':
              $ref: 'TS29571_CommonData.yaml#/components/responses/502'
            '503':
              $ref: 'TS29571_CommonData.yaml#/components/responses/503'
            default:
              $ref: 'TS29571_CommonData.yaml#/components/responses/default'
          callbacks:
            Fetch:
              '{$request.body#/fetchInstruct/fetchUri}':
                post:
                  requestBody:
                    required: true
                    content:
                      application/json:
                        schema:
                          type: array
                          items:
                            type: string
                          minItems: 1
                          description: Fetch correlation identifiers.
```

```
                    responses:
                      '200':
                        description: Expected response to a valid request
                        content:
                          application/json:
                            schema:
                              $ref: '#/components/schemas/NdccfAnalyticsSubscriptionNotification'
                      '307':
                        $ref: 'TS29571_CommonData.yaml#/components/responses/307'
                      '308':
                        $ref: 'TS29571_CommonData.yaml#/components/responses/308'
                      '400':
                        $ref: 'TS29571_CommonData.yaml#/components/responses/400'
                      '401':
                        $ref: 'TS29571_CommonData.yaml#/components/responses/401'
                      '403':
                        $ref: 'TS29571_CommonData.yaml#/components/responses/403'
                      '404':
                        $ref: 'TS29571_CommonData.yaml#/components/responses/404'
                      '411':
                        $ref: 'TS29571_CommonData.yaml#/components/responses/411'
                      '413':
                        $ref: 'TS29571_CommonData.yaml#/components/responses/413'
                      '415':
                        $ref: 'TS29571_CommonData.yaml#/components/responses/415'
                      '429':
                        $ref: 'TS29571_CommonData.yaml#/components/responses/429'
                      '500':
                        $ref: 'TS29571_CommonData.yaml#/components/responses/500'
                      '502':
                        $ref: 'TS29571_CommonData.yaml#/components/responses/502'
                      '503':
                        $ref: 'TS29571_CommonData.yaml#/components/responses/503'
                      default:
                        $ref: 'TS29571_CommonData.yaml#/components/responses/default'

  /data-subscriptions/{subscriptionId}:
    delete:
      summary: Deletes an existing Individual DCCF Data Subscription resource.
      operationId: DeleteDCCFDataSubscription
      tags:
        - Individual DCCF Data Subscription (Document)
      parameters:
        - name: subscriptionId
          in: path
          description: String identifying a data subscription to the Ndccf_DataManagement Service.
          required: true
          schema:
            type: string
      responses:
        '204':
          description: >
            No Content. The Individual DCCF Data Subscription resource matching the subscriptionId
            was deleted.
        '200':
          description: >
            The Individual DCCF Data Subscription resource matching the subscriptionId was deleted
            and including the stored unsent data events in the response.
                  content:
                    application/json:
                      schema:
                        $ref: '#/components/schemas/NdccfDataSubscriptionNotification'
        '307':
          $ref: 'TS29571_CommonData.yaml#/components/responses/307'
        '308':
          $ref: 'TS29571_CommonData.yaml#/components/responses/308'
        '400':
          $ref: 'TS29571_CommonData.yaml#/components/responses/400'
        '401':
          $ref: 'TS29571_CommonData.yaml#/components/responses/401'
        '403':
          $ref: 'TS29571_CommonData.yaml#/components/responses/403'
        '404':
          $ref: 'TS29571_CommonData.yaml#/components/responses/404'
        '429':
          $ref: 'TS29571_CommonData.yaml#/components/responses/429'
        '500':
          $ref: 'TS29571_CommonData.yaml#/components/responses/500'
```

```
      '502':
        $ref: 'TS29571_CommonData.yaml#/components/responses/502'
      '503':
        $ref: 'TS29571_CommonData.yaml#/components/responses/503'
      default:
        $ref: 'TS29571_CommonData.yaml#/components/responses/default'
  put:
    summary: Updates an existing Individual DCCF Data Subscription resource.
    operationId: UpdateDCCFDataSubscription
    tags:
      - Individual DCCF Data Subscription (Document)
    requestBody:
      required: true
      content:
        application/json:
          schema:
            $ref: '#/components/schemas/NdccfDataSubscription'
    parameters:
      - name: subscriptionId
        in: path
        description: >
          String identifying a data subscription to the Ndccf_DataManagement Service.
        required: true
        schema:
          type: string
    responses:
      '200':
        description: >
          The Individual DCCF Data Subscription resource was modified successfully and a
          representation of that resource is returned.
        content:
          application/json:
            schema:
              $ref: '#/components/schemas/NdccfDataSubscription'
      '204':
        description: >
          The Individual DCCF Data Subscription resource was modified successfully.
      '307':
        $ref: 'TS29571_CommonData.yaml#/components/responses/307'
      '308':
        $ref: 'TS29571_CommonData.yaml#/components/responses/308'
      '400':
        $ref: 'TS29571_CommonData.yaml#/components/responses/400'
      '401':
        $ref: 'TS29571_CommonData.yaml#/components/responses/401'
      '403':
        $ref: 'TS29571_CommonData.yaml#/components/responses/403'
      '404':
        $ref: 'TS29571_CommonData.yaml#/components/responses/404'
      '411':
        $ref: 'TS29571_CommonData.yaml#/components/responses/411'
      '413':
        $ref: 'TS29571_CommonData.yaml#/components/responses/413'
      '415':
        $ref: 'TS29571_CommonData.yaml#/components/responses/415'
      '429':
        $ref: 'TS29571_CommonData.yaml#/components/responses/429'
      '500':
        $ref: 'TS29571_CommonData.yaml#/components/responses/500'
      '502':
        $ref: 'TS29571_CommonData.yaml#/components/responses/502'
      '503':
        $ref: 'TS29571_CommonData.yaml#/components/responses/503'
      default:
        $ref: 'TS29571_CommonData.yaml#/components/responses/default'


/transfer-data-sub:
  post:
    summary: Transfers a Data Management subscription.
    operationId: DataManagementTransfer
    tags:
      - DCCF Data Management Transfer (Custom Operation)
    requestBody:
      content:
        application/json:
          schema:
            $ref: '#/components/schemas/NdccfDataSubscription'
```

```
        required: true
      responses:
        '200':
          description: Indicates a successful DCCF Data Management transfer .
          content:
            application/json:
              schema:
                $ref: '#/components/schemas/DataTransferResp'
        '400':
          $ref: 'TS29571_CommonData.yaml#/components/responses/400'
        '401':
          $ref: 'TS29571_CommonData.yaml#/components/responses/401'
        '403':
          $ref: 'TS29571_CommonData.yaml#/components/responses/403'
        '404':
          $ref: 'TS29571_CommonData.yaml#/components/responses/404'
        '411':
          $ref: 'TS29571_CommonData.yaml#/components/responses/411'
        '413':
          $ref: 'TS29571_CommonData.yaml#/components/responses/413'
        '415':
          $ref: 'TS29571_CommonData.yaml#/components/responses/415'
        '429':
          $ref: 'TS29571_CommonData.yaml#/components/responses/429'
        '500':
          $ref: 'TS29571_CommonData.yaml#/components/responses/500'
        '502':
          $ref: 'TS29571_CommonData.yaml#/components/responses/502'
        '503':
          $ref: 'TS29571_CommonData.yaml#/components/responses/503'
        default:
          $ref: 'TS29571_CommonData.yaml#/components/responses/default'

#
components:
  securitySchemes:
    oAuth2ClientCredentials:
      type: oauth2
      flows:
        clientCredentials:
          tokenUrl: '{nrfApiRoot}/oauth2/token'
          scopes:
            ndccf-datamanagement: Access to the ndccf-datamanagement API
#
  schemas:
#
    NdccfAnalyticsSubscription:
      description: Represents an Individual DCCF Analytics Subscription.
      type: object
      required:
        - anaSub
        - anaNotifUri
        - anaNotifCorrId
      properties:
        anaSub:
          $ref:
'TS29520_Nnwdaf_EventsSubscription.yaml#/components/schemas/NnwdafEventsSubscription'
        anaNotifUri:
          $ref: 'TS29571_CommonData.yaml#/components/schemas/Uri'
        anaNotifCorrId:
          type: string
          description: Notification correlation identifier.
        notifEndpoints:
          type: array
          items:
            $ref: '#/components/schemas/NotifyEndpoint'
          minItems: 1
          description: The information of notification endpoints.
        formatInstruct:
          $ref: '#/components/schemas/FormattingInstruction'
        procInstructs:
          type: array
          items:
            $ref: '#/components/schemas/ProcessingInstruction'
          minItems: 1
          description: Processing instructions to be used for sending event notifications.
        targetNfId:
          $ref: 'TS29571_CommonData.yaml#/components/schemas/NfInstanceId'
```

```
        targetNfSetId:
          $ref: 'TS29571_CommonData.yaml#/components/schemas/NfSetId'
        adrfId:
          $ref: 'TS29571_CommonData.yaml#/components/schemas/NfInstanceId'
        ardfSetId:
          $ref: 'TS29571_CommonData.yaml#/components/schemas/NfSetId'
        storeInd:
          type: boolean
          description: >
            The indication for data storage. This attribute shall be provided and set to "true"
            if the consumer requests to store the data in an ADRF but both the "adrfId" and
            "adrfSetId" attributes are not provided. The default value is "false".
        storeHandl:
          $ref: '#/components/schemas/StorageHandlingInformation'
        suppFeat:
          $ref: 'TS29571_CommonData.yaml#/components/schemas/SupportedFeatures'
        timePeriod:
          $ref: 'TS29122_CommonData.yaml#/components/schemas/TimeWindow'
        dataCollectPurposes:
          type: array
          items:
            $ref: '#/components/schemas/DataCollectionPurpose'
          minItems: 1
          description: >
            The purposes of data collection. This attribute may only be provided if user consent is
            required depending on local policy and regulations and the consumer has not
            checked user consent.
        checkedConsentInd:
          type: boolean
          description: Indication that the NF service consumer has already checked the user consent.
        immReport:
          $ref: '#/components/schemas/NdccfAnalyticsSubscriptionNotification'

#
    NdccfDataSubscription:
      description: Represents an Individual DCCF Data Subscription.
      type: object
      required:
        - dataNotifUri
        - dataNotifCorrId
        - dataSub
      properties:
        dataSub:
          $ref: 'TS29575_Nadrf_DataManagement.yaml#/components/schemas/DataSubscription'
        dataNotifUri:
          $ref: 'TS29571_CommonData.yaml#/components/schemas/Uri'
        dataNotifCorrId:
          type: string
          description: Notification correlation identifier.
        notifEndpoints:
          type: array
          items:
            $ref: '#/components/schemas/NotifyEndpoint'
          minItems: 1
          description: The information of notification endpoints.
        formatInstruct:
          $ref: '#/components/schemas/FormattingInstruction'
        procInstructs:
          type: array
          items:
            $ref: '#/components/schemas/ProcessingInstruction'
          minItems: 1
          description: Processing instructions to be used for sending event notifications.
        targetNfId:
          $ref: 'TS29571_CommonData.yaml#/components/schemas/NfInstanceId'
        targetNfSetId:
          $ref: 'TS29571_CommonData.yaml#/components/schemas/NfSetId'
        adrfId:
          $ref: 'TS29571_CommonData.yaml#/components/schemas/NfInstanceId'
        ardfSetId:
          $ref: 'TS29571_CommonData.yaml#/components/schemas/NfSetId'
        storeInd:
          type: boolean
          description: >
            The indication for analytics storage. This attribute shall be provided and set to "true"
            if the consumer requests to store the analytics in an ADRF but both the "adrfId" and
            "adrfSetId" attributes are not provided. The default value is "false".
        storeHandl:
```

```
          $ref: '#/components/schemas/StorageHandlingInformation'
        timePeriod:
          $ref: 'TS29122_CommonData.yaml#/components/schemas/TimeWindow'
        suppFeat:
          $ref: 'TS29571_CommonData.yaml#/components/schemas/SupportedFeatures'
        dataCollectPurposes:
          type: array
          items:
            $ref: '#/components/schemas/DataCollectionPurpose'
          minItems: 1
          description: >
            The purposes of data collection. This attribute may only be provided if user consent
            is required depending on local policy and regulations and the consumer has not
            checked user consent.
        checkedConsentInd:
          type: boolean
          description: Indication that the NF service consumer has already checked the user consent.
        immReport:
          $ref: '#/components/schemas/NdccfDataSubscriptionNotification'

#
    NdccfAnalyticsSubscriptionNotification:
      description: Represents a notification for a DCCF analytics subscription.
      type: object
      required:
        - anaNotifCorrId
        - timeStamp
      oneOf:
        - required: [anaNotifications]
        - required: [anaReports]
        - required: [fetchInstruct]
        - required: [delAlert]
      properties:
        anaNotifCorrId:
          type: string
          description: Notification correlation identifier.
        anaNotifications:
          type: array
          items:
            $ref:
'TS29520_Nnwdaf_EventsSubscription.yaml#/components/schemas/NnwdafEventsSubscriptionNotification'
          minItems: 1
          description: List of analytics subscription notifications.
        anaReports:
          type: array
          items:
            $ref: '#/components/schemas/NotifSummaryReport'
          minItems: 1
          description: >
            List of reports with summarized data from multiple analytics notifications that the DCCF
            has received from NWDAF.
        fetchInstruct:
          $ref: 'TS29576_Nmfaf_3caDataManagement.yaml#/components/schemas/FetchInstruction'
        terminationReq:
          type: boolean
          description: >
            If provided and set to true, it indicates the termination of the data management
            subscription that requested by the DCCF, i.e. no further notifications related to this
            subscription will be provided, apart from sending final report (if available).
            The default value is false.
        delAlert:
          $ref: '#/components/schemas/DeletionAlert'
        timeStamp:
          $ref: 'TS29571_CommonData.yaml#/components/schemas/DateTime'
#
    NdccfDataSubscriptionNotification:
      description: Represents a notification for a DCCF data subscription.
      type: object
      required:
        - dataNotifCorrId
        - timeStamp
      oneOf:
        - required: [dataNotif]
        - required: [dataReports]
        - required: [fetchInstruct]
        - required: [delAlert]
        - required: [newSubscriptionUri]
      properties:
```

```
        dataNotifCorrId:
          type: string
          description: Notification correlation identifier.
        newSubscriptionUri:
          $ref: 'TS29571_CommonData.yaml#/components/schemas/Uri'
        suppFeat:
          $ref: 'TS29571_CommonData.yaml#/components/schemas/SupportedFeatures'
        dataNotif:
          $ref: 'TS29575_Nadrf_DataManagement.yaml#/components/schemas/DataNotification'
        dataReports:
          type: array
          items:
            $ref: '#/components/schemas/NotifSummaryReport'
          minItems: 1
          description: >
            List of reports with summarized data from multiple notifications received from data
            producer.
        delAlert:
          $ref: '#/components/schemas/DeletionAlert'
        fetchInstruct:
          $ref: 'TS29576_Nmfaf_3caDataManagement.yaml#/components/schemas/FetchInstruction'
        terminationReq:
          type: boolean
          description: >
            If provided and set to true, it indicates the termination of the data management
            subscription that requested by the DCCF, i.e. no further notifications related to this
            subscription will be provided, apart from sending final report (if available).
            The default value is false.
        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'
#
    FormattingInstruction:
      description: Contains data or analytics formatting instructions.
      type: object
      properties:
        consTrigNotif:
          type: boolean
          description: >
            Indicates that notifications shall be buffered until the NF service consumer requests
            their delivery.
        reportingOptions:
          $ref: '#/components/schemas/ReportingOptions'
#
    ReportingOptions:
      description: Represents reporting options for processed notifications.
      type: object
      oneOf:
        - required: [notifyWindow]
        - required: [notifyPeriod]
        - required: [notifyPeriodInc]
        - required: [depEventSubId]
      properties:
        notifyWindow:
          $ref: 'TS29122_CommonData.yaml#/components/schemas/TimeWindow'
        notifyPeriod:
          $ref: 'TS29571_CommonData.yaml#/components/schemas/DurationSec'
        notifyPeriodInc:
          $ref: 'TS29571_CommonData.yaml#/components/schemas/DurationSec'
        depEventSubId:
          type: string
          description: >
            Notifications for the present subscription are sent only upon occurrence of events of
the
            subscription with identifier that matches this attribute.
        minClubbedNotif:
          $ref: 'TS29571_CommonData.yaml#/components/schemas/Uinteger'
        maxClubbedNotif:
          $ref: 'TS29571_CommonData.yaml#/components/schemas/Uinteger'
```

```
#
    ProcessingInstruction:
      description: Contains instructions related to the processing of notifications.
      type: object
      required:
       - eventId
       - procInterval
      properties:
        eventId:
          $ref: '#/components/schemas/DccfEvent'
        procInterval:
          $ref: 'TS29571_CommonData.yaml#/components/schemas/DurationSec'
        paramProcInstructs:
          type: array
          items:
            $ref: '#/components/schemas/ParameterProcessingInstruction'
          minItems: 1
          description: >
            List of event parameter names, and for each event parameter name, respective event
            parameter values and sets of the attributes to be used in the summarized reports.
    NotifyEndpoint:
      description: The information of notification endpoint.
      type: object
      required:
       - notifUri
      properties:
        notifUri:
          $ref: 'TS29571_CommonData.yaml#/components/schemas/Uri'
        notifCorrId:
          type: string
          description: Notification correlation identifier.

#
    DccfEvent:
      description: >
        Identifies the (event exposure or analytics) event that the processing instructions
        shall apply to. Contains all event IDs related to DCCF.
      type: object
      oneOf:
        - required: [nwdafEvent]
        - required: [smfEvent]
        - required: [amfEvent]
        - required: [nefEvent]
        - required: [afEvent]
        - required: [sacEvent]
        - required: [nrfEvent]
        - required: [udmEvent]
        - required: [gmlcEvent]
        - required: [upfEvent]
        - required: [lmfEventInd]
        - required: [pcfEvent]
      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'
        lmfEventInd:
          type: boolean
          enum:
            - true
          description: It identifies an LMF Data Exposure event.
        pcfEvent:
```

```
          $ref: 'TS29523_Npcf_EventExposure.yaml#/components/schemas/PcEvent'

#
    ParameterProcessingInstruction:
      description: >
        Contains an event parameter name and the respective event parameter values and sets of
        attributes to be used in summarized reports.
      type: object
      required:
       - name
       - values
       - sumAttrs
      properties:
        name:
          type: string
          description: >
            A JSON pointer value that references an attribute within the notification object to
which
            the processing instruction is applied.
        values:
          type: array
          items: {}
          minItems: 1
          description: A list of values for the attribute identified by the name attribute.
        sumAttrs:
          type: array
          items:
            $ref: '#/components/schemas/SummarizationAttribute'
          minItems: 1
          description: Attributes requested to be used in the summarized reports.
        aggrLevel:
          $ref: '#/components/schemas/AggregationLevel'
        supis:
          type: array
          items:
            $ref: 'TS29571_CommonData.yaml#/components/schemas/Supi'
          minItems: 1
          description: Indicates the UEs for which processed reports are requested.
        temporalAggrLevel:
          $ref: 'TS29571_CommonData.yaml#/components/schemas/DurationSec'
        areas:
          type: array
          items:
            $ref: 'TS29554_Npcf_BDTPolicyControl.yaml#/components/schemas/NetworkAreaInfo'
          minItems: 1
          description: Indicates the Areas of Interest for which processed reports are requested.
#
    NotifSummaryReport:
      description: Represents summarized notifications based on processing instructions.
      type: object
      required:
       - eventId
       - procInterval
       - eventReports
      properties:
        eventId:
          $ref: '#/components/schemas/DccfEvent'
        procInterval:
          $ref: 'TS29571_CommonData.yaml#/components/schemas/DurationSec'
        eventReports:
          type: array
          items:
            $ref: '#/components/schemas/EventParamReport'
          minItems: 1
          description: List of event parameter reports.
#
    EventParamReport:
      description: Represents a summarized report for one event parameter.
      type: object
      required:
       - name
       - values
      properties:
        name:
          type: string
          description: The name of the reported parameter.
        values:
          type: array
```

```
          items: {}
          minItems: 1
          description: The list of values of the reported parameter.
        supi:
          $ref: 'TS29571_CommonData.yaml#/components/schemas/Supi'
        area:
          $ref: 'TS29554_Npcf_BDTPolicyControl.yaml#/components/schemas/NetworkAreaInfo'
        spacing:
          $ref: 'TS29520_Nnwdaf_EventsSubscription.yaml#/components/schemas/NumberAverage'
        duration:
          $ref: 'TS29520_Nnwdaf_EventsSubscription.yaml#/components/schemas/NumberAverage'
        avgAndVar:
          $ref: 'TS29520_Nnwdaf_EventsSubscription.yaml#/components/schemas/NumberAverage'
        mostFreqVal: {}
        leastFreqVal: {}
        count:
          $ref: 'TS29571_CommonData.yaml#/components/schemas/Uinteger'
        minValue:
          type: string
          description: The minimum value of the parameter.
        maxValue:
          type: string
          description: The maximum value of the parameter.
#
    StorageHandlingInformation:
      description: Contains storage handling information about data or analytics.
      type: object
      properties:
        lifetime:
          $ref: 'TS29571_CommonData.yaml#/components/schemas/DurationSec'
        delNotifInd:
          type: boolean
          description: Indicates if deletion alerts are requested.
#
    DeletionAlert:
      description: Contains information about data or analytics that are about to be deleted.
      type: object
      properties:
        alertStorTransId:
          type: string
          description: >
            Storage transaction identifier that can be used to retrieve data or analytics.
      required:
       - alertStorTransId
#
    NotifResponse:
      description: >
        Contains information about planned actions related to data or analytics
        that are about to be deleted.
      type: object
      properties:
        retrievalInd:
          type: boolean
          description: >
            Indicates if the NF service consumer has determined to retrieve data
            or analytics that are about to be deleted.
      required:
       - retrievalInd
#
    DataTransferResp:
      description: >
        Represents an Individual DCCF Data Subscription resource created at the
        target DCCF.
      type: object
      properties:
        newSubscriptionUri:
          $ref: 'TS29571_CommonData.yaml#/components/schemas/Uri'
        suppFeat:
          $ref: 'TS29571_CommonData.yaml#/components/schemas/SupportedFeatures'
      required:
       - newSubscriptionUri
#
    SummarizationAttribute:
      anyOf:
      - type: string
        enum:
          - SPACING
          - DURATION
```

```
          - OCCURRENCES
          - AVG_VAR
          - FREQ_VAL
          - MIN_MAX
      - type: string
        description: >
          This string provides forward-compatibility with future extensions to the enumeration but
          is not used to encode content defined in the present version of this API.
      description: |
        Represents the attribute in the summarized report.
        Possible values are:
        - SPACING: Average and variance of the time interval separating two consecutive occurrences
          of the same event and parameter value, or periodicity for periodic reporting.
        - DURATION: Average and variance of the time for which the parameter value applies.
        - OCCURRENCES: Number of countable occurrences for the parameter.
        - AVG_VAR: Average and variance of the parameter.
        - FREQ_VAL: Most and least frequent values.
        - MIN_MAX: Maximum and minimum parameter values.
#
    AggregationLevel:
      anyOf:
      - type: string
        enum:
          - UE
          - AOI
      - type: string
        description: >
          This string provides forward-compatibility with future
          extensions to the enumeration but is not used to encode
          content defined in the present version of this API.
      description: |
        Represents the aggregation level for processing instructions.
        Possible values are:
        - UE: Indicates that the summarized reports shall be provided per UE.
        - AOI: Indicates that the summarized reports shall be provided per Area of Interest.
#
    DataCollectionPurpose:
      anyOf:
      - type: string
        enum:
          - ANALYTICS_GENERATION
          - MODEL_TRAINING
      - type: string
        description: >
          This string provides forward-compatibility with future extensions to the enumeration but
          is not used to encode content defined in the present version of this API.
      description: |
        Represents the purpose for data collection.
        Possible values are:
        - ANALYTICS_GENERATION: The data is collected for generating the analytics.
        - MODEL_TRAINING: The data is collected for ML model training.

#
    TermCause:
      anyOf:
      - type: string
        enum:
          - USER_CONSENT_REVOKED
          - DCCF_OVERLOAD
          - OTHER
          - OUT_OF_SERVING_AREA
      - type: string
        description: >
          This string provides forward-compatibility with future
          extensions to the enumeration but is not used to encode
          content defined in the present version of this API.
      description: |
        Represents the cause for the subscription termination request by DCCF for data collection.
        Possible values are:
        - USER_CONSENT_REVOKED: The user consent has been revoked.
        - DCCF_OVERLOAD: The DCCF is overloaded.
        - OTHER: Indicates that the termination is due to other reason.
        - OUT_OF_SERVING_AREA: Indicates that that the UE(s) moved outside of the DCCF serving area.
```

A.3 Ndccf_ContextManagement API

```
openapi: 3.0.0
info:
  version: 1.2.0-alpha.3
  title: Ndccf_ContextManagement
  description: |
    DCCF Context Management Service.
    © 2025, 3GPP Organizational Partners (ARIB, ATIS, CCSA, ETSI, TSDSI, TTA, TTC).
    All rights reserved.
externalDocs:
  description: 3GPP TS 29.574 V19.4.0; 5G System; Data Collection Coordination Services; Stage 3.
  url: 'https://www.3gpp.org/ftp/Specs/archive/29_series/29.574/'
#
servers:
  - url: '{apiRoot}/ndccf-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 Collection Profile 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/DataSubscription'
        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
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History

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