

ETSI TS 129 552 V17.7.0 (2024-07)



**5G;
5G System;
Network Data Analytics signalling flows;
Stage 3
(3GPP TS 29.552 version 17.7.0 Release 17)**

[ETSI TS 129 552 V17.7.0 \(2024-07\)](https://standards.iteh.ai/catalog/standards/etsi/bf2887ff-b4f0-4a05-935a-990788df48d8/etsi-ts-129-552-v17-7-0-2024-07)

<https://standards.iteh.ai/catalog/standards/etsi/bf2887ff-b4f0-4a05-935a-990788df48d8/etsi-ts-129-552-v17-7-0-2024-07>



Reference

RTS/TSGC-0329552vh70

Keywords

5G**ETSI**

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
Association à but non lucratif enregistrée à la
Sous-Préfecture de Grasse (06) N° w061004871

Important notice

The present document can be downloaded from the
ETSI [Search & Browse Standards application](#).

The present document may be made available in electronic versions and/or in print. The content of any electronic and/or print versions of the present document shall not be modified without the prior written authorization of ETSI. In case of any existing or perceived difference in contents between such versions and/or in print, the prevailing version of an ETSI deliverable is the one made publicly available in PDF format on [ETSI deliver](#).

Users should be aware that the present document may be revised or have its status changed,
this information is available in the [Milestones listing](#).

If you find errors in the present document, please send your comments to
the relevant service listed under [Committee Support Staff](#).

If you find a security vulnerability in the present document, please report it through our
[Coordinated Vulnerability Disclosure \(CVD\)](#) program.

Notice of disclaimer & limitation of liability

The information provided in the present deliverable is directed solely to professionals who have the appropriate degree of experience to understand and interpret its content in accordance with generally accepted engineering or other professional standard and applicable regulations.

No recommendation as to products and services or vendors is made or should be implied.

No representation or warranty is made that this deliverable is technically accurate or sufficient or conforms to any law and/or governmental rule and/or regulation and further, no representation or warranty is made of merchantability or fitness for any particular purpose or against infringement of intellectual property rights.

In no event shall ETSI be held liable for loss of profits or any other incidental or consequential damages.

Any software contained in this deliverable is provided "AS IS" with no warranties, express or implied, including but not limited to, the warranties of merchantability, fitness for a particular purpose and non-infringement of intellectual property rights and ETSI shall not be held liable in any event for any damages whatsoever (including, without limitation, damages for loss of profits, business interruption, loss of information, or any other pecuniary loss) arising out of or related to the use of or inability to use the software.

Copyright Notification

No part may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm except as authorized by written permission of ETSI.

The content of the PDF version shall not be modified without the written authorization of ETSI.

The copyright and the foregoing restriction extend to reproduction in all media.

© ETSI 2024.
All rights reserved.

Intellectual Property Rights

Essential patents

IPRs essential or potentially essential to normative deliverables may have been declared to ETSI. The declarations pertaining to these essential IPRs, if any, are publicly available for **ETSI members and non-members**, and can be found in ETSI SR 000 314: *"Intellectual Property Rights (IPRs); Essential, or potentially Essential, IPRs notified to ETSI in respect of ETSI standards"*, which is available from the ETSI Secretariat. Latest updates are available on the ETSI Web server (<https://ipr.etsi.org/>).

Pursuant to the ETSI Directives including the ETSI IPR Policy, no investigation regarding the essentiality of IPRs, including IPR searches, has been carried out by ETSI. No guarantee can be given as to the existence of other IPRs not referenced in ETSI SR 000 314 (or the updates on the ETSI Web server) which are, or may be, or may become, essential to the present document.

Trademarks

The present document may include trademarks and/or tradenames which are asserted and/or registered by their owners. ETSI claims no ownership of these except for any which are indicated as being the property of ETSI, and conveys no right to use or reproduce any trademark and/or tradename. Mention of those trademarks in the present document does not constitute an endorsement by ETSI of products, services or organizations associated with those trademarks.

DECT™, **PLUGTESTS™**, **UMTS™** and the ETSI logo are trademarks of ETSI registered for the benefit of its Members. **3GPP™** and **LTE™** are trademarks of ETSI registered for the benefit of its Members and of the 3GPP Organizational Partners. **oneM2M™** logo is a trademark of ETSI registered for the benefit of its Members and of the oneM2M Partners. **GSM®** and the GSM logo are trademarks registered and owned by the GSM Association.

Legal Notice

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

The present document may refer to technical specifications or reports using their 3GPP identities. These shall be interpreted as being references to the corresponding ETSI deliverables. (2024-07)

The cross reference between 3GPP and ETSI identities can be found under <https://webapp.etsi.org/key/queryform.asp>.

Modal verbs terminology

In the present document "**shall**", "**shall not**", "**should**", "**should not**", "**may**", "**need not**", "**will**", "**will not**", "**can**" and "**cannot**" are to be interpreted as described in clause 3.2 of the [ETSI Drafting Rules](#) (Verbal forms for the expression of provisions).

"**must**" and "**must not**" are **NOT** allowed in ETSI deliverables except when used in direct citation.

Contents

Intellectual Property Rights	2
Legal Notice	2
Modal verbs terminology.....	2
Foreword.....	5
1 Scope	7
2 References	7
3 Definitions of terms, symbols and abbreviations	8
3.1 Terms.....	8
3.2 Symbols.....	9
3.3 Abbreviations	9
4 Reference Architecture for Data Analytics	9
4.1 General	9
4.2 Data Collection.....	10
4.3 Analytics Exposure.....	10
4.4 Data Storage and Retrieval	11
5 Signalling Flows for the Network Data Analytics Framework	12
5.1 General	12
5.2 Analytics Exposure Procedures	12
5.2.1 General.....	12
5.2.2 Network data analytics Subscribe/Unsubscribe/Notify.....	12
5.2.2.1 Analytics Subscribe/Unsubscribe/Notify initiated by 5GC NFs, OAM or AFs	12
5.2.2.2 Analytics Subscribe/Unsubscribe/Notify initiated by AFs via the NEF	13
5.2.3 Network data analytics information request	14
5.2.3.1 Analytics information request initiated by 5GC NFs, OAM or AFs	14
5.2.3.2 Analytics information request initiated by AFs via the NEF	15
5.2.4 Analytics Exposure via DCCF.....	15
5.2.5 Analytics Exposure via DCCF and MFAF	19
5.3 Analytics Aggregation from Multiple NWDAFs	24
5.3.1 General.....	24
5.3.2 Analytics aggregation with provisioning of Area of Interest	24
5.3.3 Analytics aggregation without provisioning of Area of Interest.....	26
5.4 Procedures for Analytics Transferring	27
5.4.1 Analytics context transfer initiated by target NWDAF selected by the NWDAF service consumer	27
5.4.2 Analytics Subscription Transfer initiated by source NWDAF.....	29
5.4.3 Prepared analytics subscription transfer	32
5.5 Data Collection.....	34
5.5.1 Procedure for Data Collection from NFs	34
5.5.1.1 Data Collection from NFs	34
5.5.2 Data collection profile registration	35
5.5.3 Procedure for Data Collection using DCCF	37
5.5.3.1 Data Collection via DCCF	37
5.5.3.2 Data Collection via Messaging Framework	40
5.6 ML Model provisioning procedures	45
5.6.1 General.....	45
5.6.2 ML Model Subscribe/Unsubscribe/Notify procedure	45
5.7 Procedures for Specific Network Data Analytics	46
5.7.1 General.....	46
5.7.2 Network Slice (Instance) load level Analytics	46
5.7.3 Observed Service Experience Analytics	49
5.7.4 NF load Analytics	52
5.7.5 Network Performance Analytics.....	55
5.7.6 UE Mobility Analytics.....	57
5.7.7 UE Communication Analytics	60

5.7.8	Expected UE behavioural Analytics	63
5.7.9	Abnormal UE behavioural Analytics	64
5.7.10	User Data Congestion Analytics	65
5.7.11	QoS Sustainability Analytics	68
5.7.12	Dispersion Analytics	69
5.7.13	WLAN Performance Analytics	72
5.7.14	Session Management Congestion Control Experience Analytics	74
5.7.15	Redundant Transmission Experience Analytics	75
5.7.16	DN Performance Analytics	78
5.8	Procedures for NWDAF Discovery and Selection	80
5.8.1	General	80
5.8.2	Procedures related to NRF	81
5.8.2.1	General	81
5.8.2.2	NWDAF Registration in NRF	81
5.8.2.3	Consumer discovery and selection of NWDAF in NRF	81
5.8.3	Procedures related to UDM	81
5.8.3.1	General	81
5.8.3.2	NWDAF containing AnLF Registration/Deregistration in UDM	81
5.8.3.2.1	NWDAF containing AnLF Registration in UDM	81
5.8.3.2.2	NWDAF containing AnLF Update of Registration in UDM	82
5.8.3.2.3	NWDAF containing AnLF De-Registration in UDM	82
5.8.3.3	Consumer discovery and selection of NWDAF containing AnLF in UDM	83
5.8.4	Procedures for PCF learning NWDAF IDs for served UEs	83
5.9	Analytics Data Repository procedures	84
5.9.1	General	84
5.9.2	Historical Data and Analytics Storage/Retrieval/Deletion procedure	84
5.9.3	Historical Data and Analytics Storage via Notifications	86
Annex A (informative):	Change history	89
History		90

Foreword

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

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

Version x.y.z

where:

- x the first digit:
 - 1 presented to TSG for information;
 - 2 presented to TSG for approval;
 - 3 or greater indicates TSG approved document under change control.
- y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.
- z the third digit is incremented when editorial only changes have been incorporated in the document.

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

- shall** indicates a mandatory requirement to do something
- shall not** indicates an interdiction (prohibition) to do something

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

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

- should** indicates a recommendation to do something
- should not** indicates a recommendation not to do something
- may** indicates permission to do something
- need not** indicates permission not to do something

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

- can** indicates that something is possible
- cannot** indicates that something is impossible

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

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

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

In addition:

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

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

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

iTeh Standards (<https://standards.iteh.ai>) Document Preview

[ETSI TS 129 552 V17.7.0 \(2024-07\)](https://standards.iteh.ai/catalog/standards/etsi/bf2887ff-b4f0-4a05-935a-990788df48d8/etsi-ts-129-552-v17-7-0-2024-07)

<https://standards.iteh.ai/catalog/standards/etsi/bf2887ff-b4f0-4a05-935a-990788df48d8/etsi-ts-129-552-v17-7-0-2024-07>

1 Scope

The present document specifies detailed call flows of Network Data Analytics over the Nnwdaf, Nsmf, Npcf, Nnsacf, Namf, Nnrf, Nnssf, Nnef, Naf, Ndcf, Nadrf, Nmfa and Nudm service-based interfaces and their relationship with the flow level signalling in 5G system.

NOTE: The call flows depicted in this Technical Specification do not cover all traffic cases.

The stage 2 definition and procedures of Network Data Analytics are contained in 3GPP TS 23.288 [2] and 3GPP TS 23.502 [3]. The 5G System Architecture is defined in 3GPP TS 23.501 [4].

Detailed definitions of the involved services are provided in 3GPP TS 29.520 [5], 3GPP TS 29.508 [6], 3GPP TS 29.523 [7], 3GPP TS 29.554 [8], 3GPP TS 29.521 [9], 3GPP TS 29.522 [10], 3GPP TS 29.591 [11], 3GPP TS 29.517 [12], 3GPP TS 29.574 [15], 3GPP TS 29.575 [16], 3GPP TS 29.576 [17], 3GPP TS 29.503 [22], 3GPP TS 29.510 [23], 3GPP TS 29.507 [24] and 3GPP TS 29.512 [25].

The Technical Realization of the Service Based Architecture and the Principles and Guidelines for Services Definition of the 5G System are specified in 3GPP TS 29.500 [13] and 3GPP TS 29.501 [14].

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 23.288: "Architecture enhancements for 5G System (5GS) to support network data analytics services".
- [3] 3GPP TS 23.502: "Procedures for the 5G System; Stage 2".
- [4] 3GPP TS 23.501: "System Architecture for the 5G System; Stage 2".
- [5] 3GPP TS 29.520: "5G System; Network Data Analytics Services; Stage 3".
- [6] 3GPP TS 29.508: "5G System; Session Management Event Exposure Service; Stage 3".
- [7] 3GPP TS 29.523: "5G System; Policy Control Event Exposure Service; Stage 3".
- [8] 3GPP TS 29.554: "5G System; Background Data Transfer Policy Control Service; Stage 3".
- [9] 3GPP TS 29.521: "5G System; Binding Support Management Service; Stage 3".
- [10] 3GPP TS 29.522: "5G System; Network Exposure Function Northbound APIs; Stage 3".
- [11] 3GPP TS 29.591: "5G System; Network Exposure Function Southbound Services; Stage 3".
- [12] 3GPP TS 29.517: "5G System; Application Function Event Exposure Service; Stage 3".
- [13] 3GPP TS 29.500: "5G System; Technical Realization of Service Based Architecture; Stage 3".
- [14] 3GPP TS 29.501: "5G System; Principles and Guidelines for Services Definition; Stage 3".
- [15] 3GPP TS 29.574: "5G System; Data Collection Coordination Services; Stage 3".

- [16] 3GPP TS 29.575: "5G System; Analytics Data Repository Services; Stage 3".
- [17] 3GPP TS 29.576: "5G System; Messaging Framework Adaptor Services; Stage 3".
- [18] 3GPP TS 29.518: "5G System; Access and Mobility Management Services; Stage 3".
- [19] 3GPP TS 28.532: "Management and orchestration; Generic management services".
- [20] 3GPP TS 29.536: "5G System: Network Slice Admission Control Services; Stage 3".
- [21] 3GPP TS 29.531: "5G System: Network Slice Selection Services; Stage 3".
- [22] 3GPP TS 29.503: "5G System; Unified Data Management Services; Stage 3".
- [23] 3GPP TS 29.510: "5G System; Network Function Repository Services; Stage 3".
- [24] 3GPP TS 29.507: "5G System; Access and Mobility Policy Control Service; Stage 3".
- [25] 3GPP TS 29.512: "5G System; Session Management Policy Control Service; Stage 3".
- [26] 3GPP TS 29.510: "5G System: Network function repository services; Stage 3".
- [27] 3GPP TS 28.552: "Management and orchestration; 5G performance measurements".
- [28] 3GPP TS 28.533: "Management and orchestration; Architecture framework".
- [29] 3GPP TS 37.320: "Radio measurement collection for Minimization of Drive Tests (MDT); Overall description".
- [30] 3GPP TS 28.554: "Management and orchestration; 5G end to end Key Performance Indicators (KPI)".
- [31] 3GPP TS 28.550: "Management and orchestration; Performance assurance".
- [32] 3GPP TS 37.320: "Radio measurement collection for Minimization of Drive Tests (MDT); Overall description; stage 2".
- [33] 3GPP TS 38.331: "NR; Radio Resource Control (RRC) protocol specification".
- [34] 3GPP TS 36.331: "Radio Resource Control (RRC); Protocol specification".
- [35] 3GPP TS 38.215: "NR; Physical layer measurements".
- [36] 3GPP TS 28.310: "Management and orchestration; Energy efficiency of 5G".
- [37] 3GPP TS 28.545: "Management and orchestration; Fault Supervision (FS)".

3 Definitions of terms, symbols and abbreviations

3.1 Terms

For the purposes of the present document, the terms 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].

3.2 Symbols

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
AnLF	Analytics Logical Function
DCCF	Data Collection Coordination Function
MFAF	Messaging Framework Adaptor Function
MDT	Minimization of Drive Tests
ML	Machine Learning
MTLF	Model Training Logical Function
NEF	Network Exposure Function
NRF	Network Repository Function
NSACF	Network Slice Admission Control Function
NWDAF	Network Data Analytics Function
PCF	Policy Control Function
SMF	Session Management Function
UDM	Unified Data Management

4 Reference Architecture for Data Analytics

4.1 General

For the enablement of network data analytics services, the NWDAF interacts with different entities for different purposes:

- Data Collection:
 - a) collecting Data from OAM and/or 5GC NFs (e.g. AMF);
 - b) collecting Data from untrusted AF via NEF; and/or
 - c) collecting Analytics and/or Data from 5GC NFs via DCCF or via DCCF together with ADRF and/or MFAF or via NWDAF hosting DCCF i.e. an NWDAF that implements DCCF functionality internally and supports the Nnwdaf_DataManagement API;
- Analytics Exposure:
 - a) Exposing Analytics to 5GC NFs;
 - b) Exposing Analytics to untrusted AF via NEF; and/or
 - c) Exposing Analytics to 5GC NFs via DCCF or via DCCF together with ADRF and/or MFAF or via NWDAF hosting DCCF and/or ADRF i.e. an NWDAF that implements DCCF and/or ADRF functionality internally and supports the Nnwdaf_DataManagement API;
- Storing and Retrieving data in ADRF.

The entities mentioned above interact also with each other as described in the procedures of clause 5.

4.2 Data Collection

As depicted in Figure 4.2-1, the 5G System architecture allows NWDAF to collect data from any 5GC NF (e.g. AMF, SMF) and/or OAM directly or via DCCF, DCCF together with ADRF and/or MFAF, or via NWDAF.

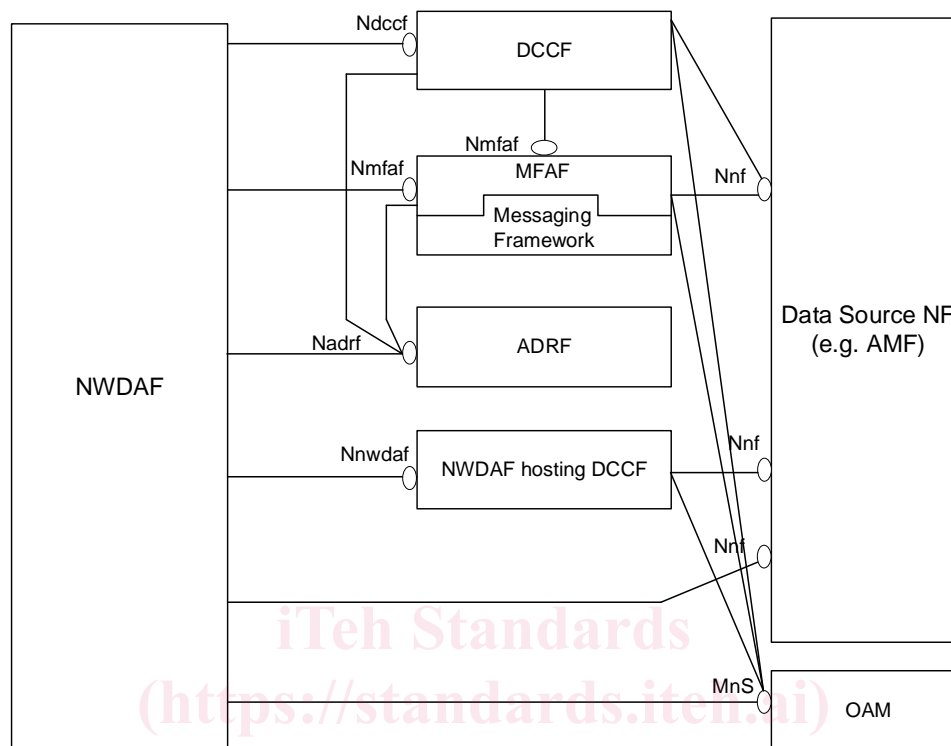


Figure 4.2-1: Data Collection Architecture

When DCCF, ADRF, MFAF or NWDAF hosting DCCF are present in the network, whether the NWDAF directly contacts the Data Source NF or goes via the DCCF, or NWDAF hosting DCCF is based on configuration of the NWDAF.

The Data Source NF may be AMF, SMF, UDM, AF, NSACF, NRF and/or NEF with the related data collection procedures described in clause 5.5. The Data Source NF may also be UPF while how to collect data from UPF is not defined in this release of the specification. If the Data Source is OAM, The NWDAF may collect relevant management data from the services in the OAM as configured by the PLMN operator. The NWDAF may use the OAM services e.g. generic performance assurance and fault supervision management services as defined in TS 28.532 [19], PM (Performance Management) services as defined in TS 28.550 [31] and/or FS (Fault Supervision) services as defined in TS 28.545 [37].

For the specific analytics event, the applicable Data Source NF(s) and the related data collection procedures and scope are described in the corresponding analytics event subclause within clause 5.7.

4.3 Analytics Exposure

As depicted in Figure 4.3-1, the 5G System architecture allows NWDAF to expose data to any 5GC NF (e.g. AMF) directly or via DCCF/MFAF.

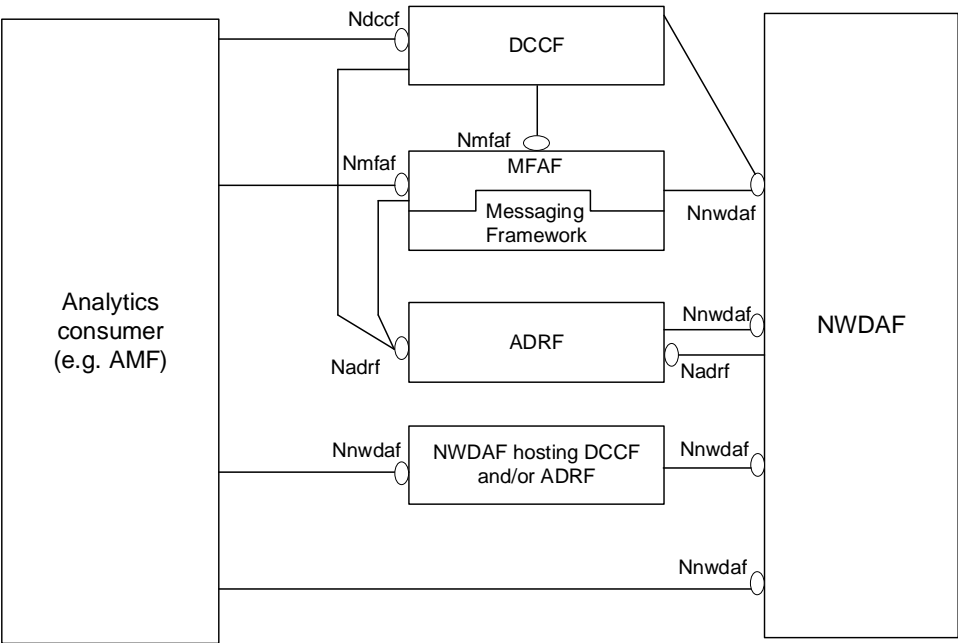


Figure 4.3-1: Analytics Exposing Architecture

When DCCF, ADRF, MFAF or NWDAF are present in the network, whether the Analytics consumer directly contacts the NWDAF or goes via the DCCF or via the NWDAF hosting DCCF and/or ADRF is based on configuration of the Analytics consumer.

The Analytics consumer may be AMF, SMF, NSSF, PCF, AF, NEF, OAM and/or CEF when directly contacts NWDAF with the related analytics exposure procedures described in clause 5.2.2 and clause 5.2.3. The Analytics consumers may be AMF, SMF, NSSF, PCF AF and/or NEF when contacts via the DCCF with the related analytics exposure procedures described in clause 5.2.4 and clause 5.2.5.

For the specific analytics event, the applicable Analytics consumer(s) and the related analytics exposure procedures and scope are described in the corresponding analytics event subclause within clause 5.7.

4.4 Data Storage and Retrieval

As depicted in Figure 4.4-1, the 5G System architecture allows the consumer to store and retrieve the collected data in the ADRF directly or via DCCF/MFAF.

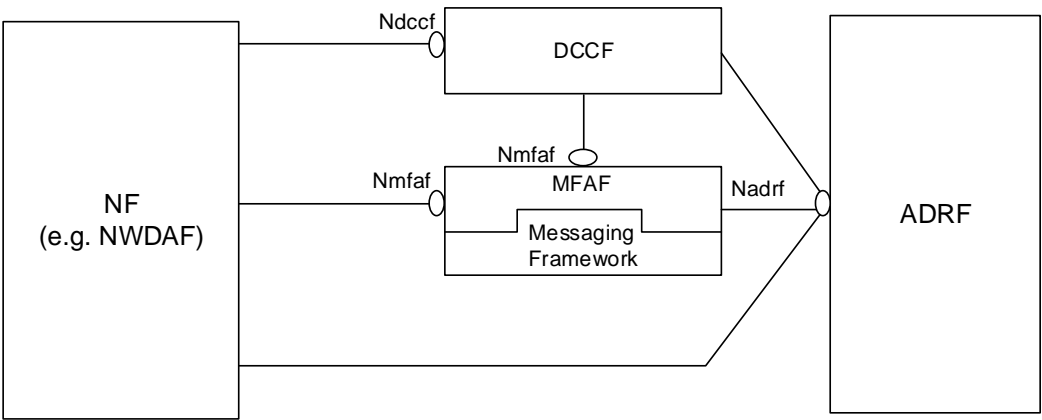


Figure 4.4-1: Data Storage and Retrieval Architecture

5 Signalling Flows for the Network Data Analytics Framework

5.1 General

This clause describes the Network Data Analytics related Signalling Flows, including the procedures for analytics exposure, analytics aggregation from multiple NWDAFs, analytics context and analytics subscription transferring between different NWDAFs, ML model provisioning, data collection, specified Network Data Analytics generation and the NWDAF discovery and selection. The specific NF service operations which are used in these procedures are also provided in the procedure descriptions.

5.2 Analytics Exposure Procedures

5.2.1 General

The analytics exposure procedures allow the NF service consumers (i.e. NFs, OAM and AFs) to obtain the analytics information from the NWDAF.

5.2.2 Network data analytics Subscribe/Unsubscribe/Notify

5.2.2.1 Analytics Subscribe/Unsubscribe/Notify initiated by 5GC NFs, OAM or AFs

This procedure is used by the NF service consumers (i.e. NFs, OAM and AFs) to subscribe to/unsubscribe from analytics information directly from the NWDAF, it is also used by the NWDAF to notify the observed analytics event(s) to the NF service consumer if subscribed before.

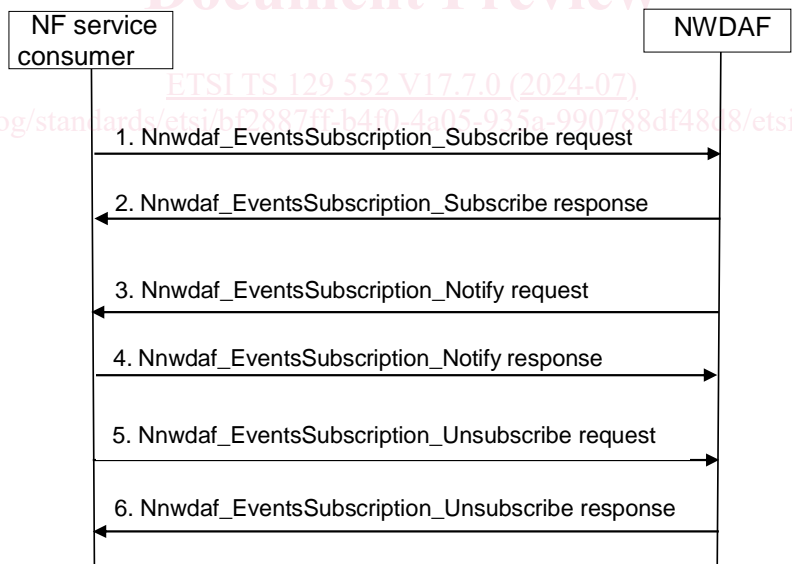


Figure 5.2.2.1-1: Analytics Subscribe/Unsubscribe/Notify initiated by 5GC NFs, OAM or AFs

1. In order to subscribe to notification(s) of analytics information from the NWDAF, the NF service consumer invokes Nnwdaf_EventsSubscription_Subscribe service operation by sending an HTTP POST request targeting the resource "NWDAF Events Subscriptions". The request includes the subscribed events and may include event filter information.

In order to update the existing subscription, the NF service consumer invokes Nnwdaf_EventsSubscription_Subscribe service operation by sending an HTTP PUT request with Resource URI of the resource "Individual NWDAF Event Subscription".

2. The NWDAF responds to the Nnwdaf_EventsSubscription_Subscribe service operation. Upon receipt of the HTTP POST request, if the subscription is accepted to be created, the NWDAF responds to the NF service consumer with "201 Created", and the URI of the created subscription is included in the Location header field.
- Upon receipt of the HTTP PUT request, if the subscription is accepted to be updated, the NWDAF responds to the NF service consumer with "200 OK" or "204 No Content"
3. If the NWDAF observes the subscribed event(s), the NWDAF invokes Nnwdaf_EventsSubscription_Notify service operation to report the event(s) by sending an HTTP POST request with {notificationURI} as Notification URI.
4. The NF service consumer sends an HTTP "204 No Content" response to the NWDAF.
5. In order to unsubscribe to the notification(s) of analytics information from the NWDAF, the NF service consumer invokes Nnwdaf_EventsSubscription_Unsubscribe service operation by sending an HTTP DELETE request targeting the resource "Individual NWDAF Event Subscription", to the NWDAF to unsubscribe from analytics information. The request includes the event subscriptionId of the existing subscription that is to be deleted.
6. The NWDAF responds to the Nnwdaf_EventsSubscription_Unsubscribe service operation. If the unsubscription is accepted, the NWDAF responds with "204 No Content".

NOTE: For details of Nnwdaf_EventsSubscription_Subscribe/Unsubscribe/Notify service operations refer to 3GPP TS 29.520 [5].

5.2.2.2 Analytics Subscribe/Unsubscribe/Notify initiated by AFs via the NEF

This procedure is used by the AF to subscribe to/unsubscribe from analytics information from the NWDAF via the NEF, it is also used by the NWDAF to notify the analytics event(s) to the AF via the NEF, if subscribed before.

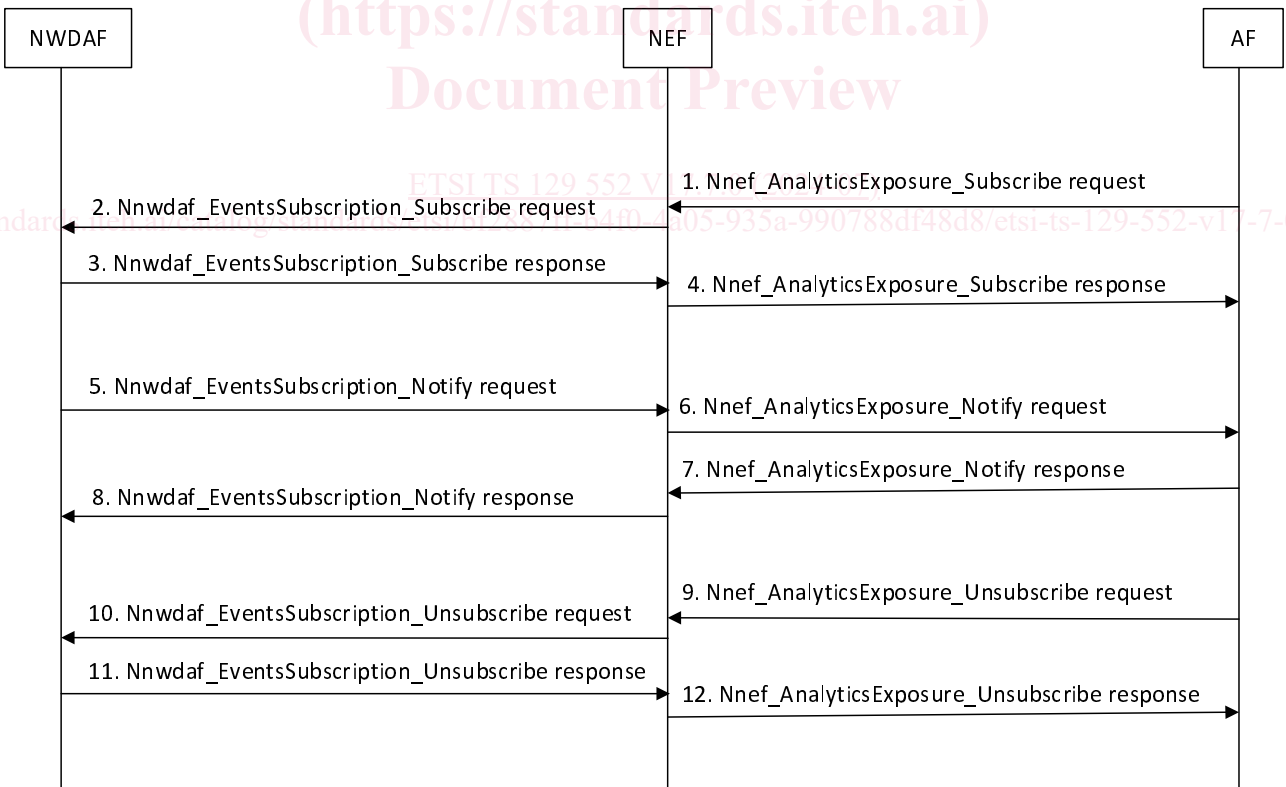


Figure 5.2.2.2-1: Analytics Subscribe/Unsubscribe/Notify initiated by AFs via the NEF

1. In order to subscribe to notification(s) of analytics exposure via the NEF, the AF invokes the Nnef_AnalyticsExposure_Subscribe request by sending an HTTP POST request message targeting the resource "Analytics Exposure Subscriptions" as defined in clause 4.4.14.1 of 3GPP TS 29.522 [10].