**3GPP TSG-SA4 Meeting #116e *S4-211506***

**Electronic meeting, Telco, November 10-19, 2021**

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|  | **26.531** | **CR** |  | **rev** |  | **Current version:** | **0.1.2** |  |
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| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* |
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| ***Proposed change affects:*** | UICC apps |  | ME | **X** | Radio Access Network |  | Core Network | **X** |

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| ***Title:***  | Proposed Changes to TS 26.531 |
|  |  |
| ***Source to WG:*** |  Qualcomm Incorporated |
| ***Source to TSG:*** | SA4 |
|  |  |
| ***Work item code:*** | EVEX |  | ***Date:*** | 2021-11-03 |
|  |  |  |  |  |
| ***Category:*** | **F** |  | ***Release:*** | Rel-17 |
|  | *Use one of the following categories:****F*** *(correction)****A*** *(mirror corresponding to a change in an earlier release)****B*** *(addition of feature),* ***C*** *(functional modification of feature)****D*** *(editorial modification)*Detailed explanations of the above categories canbe found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | *Use one of the following releases:Rel-8 (Release 8)Rel-9 (Release 9)Rel-10 (Release 10)Rel-11 (Release 11)Rel-12 (Release 12)**Rel-13 (Release 13)Rel-14 (Release 14)Rel-15 (Release 15)Rel-16 (Release 16)* |
|  |  |
| ***Reason for change:*** | There are some bugs in the latest version of TS 26.531 to be corrected, as well as a few areas for improvement |
|  |  |
| ***Summary of change:*** | Proposed corrections and suggested improvements to the document. |
|  |  |
| ***Consequences if not approved:*** | Mistakes and insufficient clarity in current spec baseline that will hamper further development of the document.  |
|  |  |
| ***Clauses affected:*** | 3, 4.2-4.4, 4.6.1-4.6.4, 5.4 and 5.5 |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** |  | **X** |  Other core specifications  | TS/TR ... CR ...  |
| ***affected:*** |  | **X** |  Test specifications | TS/TR ... CR ...  |
| ***(show related CRs)*** |  | **X** |  O&M Specifications | TS/TR ... CR ...  |
|  |  |
| ***Other comments:*** |  |
| ***56***  |  |
| ***This CR's revision history:*** |  |

1st CHANGE: Clauses 3

# 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], TS 23.501 [2], TS 23.502 [3], TS 23.288 [4], TS 29.517 [5] 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].

**data collection client:** functional entity that collects data and reports it to the Data Collection AF, *viz.* Direct Data Collection Client, Indirect Data Collection Client or AS

**direct reporting:** method of sending a data report from the Direct Data Collection Client to the Data Collection AF

**indirect reporting:** method of sending a data report from a UE Application to the Data Collection AF via an Indirect Data Collection Client function of an Application Service Provider

END OF 1st CHANGE

2nd CHANGE: Clauses 4.2 through 4.4

## 4.2 Functional entities for data collection and reporting

Editor’s Note: Different realisations of the reference are currently under consideration by SA4, including SEAL-based and CAPIF-based models.

Figure 4.2‑1 below shows the reference architecture for data collection and reporting using reference point notation.



NOTE: The Data Collection AF may be deployed outside the trusted domain, in which case the services it exposes to API invokers are mediated by the NEF. The logical relationships denoted by the reference points are unaffected by such deployment choices.

Figure 4.2‑1: Reference architecture for data collection and reporting in reference point notation

The functional entities illustrated in the figure are described as follows:

1. Data collection and reporting functionality is provisioned at reference point R1 by a *Provisioning AF* of the *Application Service Provider* that may be deployed either inside or outside the trusted domain.

2. The *Data Collection AF* may be deployed inside or outside the trusted domain. It is responsible for managing the provisioning state for data collection and reporting. When its provisioning state changes, the Data Collection AF updates the set of available NF profile(s) in the NRF by invoking the Nnrf\_NFManagement service defined in clause 5.2.7.2 of TS 23.502 [3] according to the usage defined in clause 6.2.8.2.2 of TS 23.288 [4] and specified in clause 6.1 of TS 29.510 [6].

NOTE 1: If the Data Collection AF is deployed outside the trusted domain, this registration occurs via the NEF, as described in clause 6.2.2.3 of TS 23.288 [4].

The Data Collection AF provides a data collection and reporting configuration to the *Direct Data Collection Client* at reference point R2, to the *Indirect Data Collection Client* at reference point R3 and Application Server (*AS*) instances at reference point R4, and receives data reports from them respectively at those same reference points.

The Data Collection AF processes received data reports according to processing instructions in its provisioning state. The processing activities include, but are not limited to, reporting format conversion, data normalisation, domain-specific anonymisation of data and (dis)aggregation of data into reports to be exposed as events.

Editor’s Note: Currently-defined 3GPP event types are specified in TS 23.502 and TS 23.288. Additional types of UE application level information available at the AF – for example content hosting logs, QoS and charging policy modification, network assistance and consumption reports as defined in TS 26.501 and TS 26.512 for 5G Media Streaming may also be deemed suitable as event exposure services for subscription by the NWDAF in performing related data analytics, based on further discussion with SA2.

Finally, the Data Collection AF is responsible for exposing processed UE data to event notification subscribers both inside the trusted domain (such as the NWDAF) and outside it (such as the *Event Consumer AF* in the Application Service Provider). In this role, the Data Collection AF realises the Event Exposure Service as defined in clause 6.2.2.1 of TS 23.288 [4] and as specified in TS 29.517 [5]. Subscribers fulfil the role of NF consumers of this service in the service-based architecture [2, 3].

The set of UE data to be collected and exposed by the Data Collection AF is determined by the intersection[[1]](#footnote-2) between its provisioning state provided at R1 and the current set of subscriptions. This is reflected in the data collection and reporting configuration exposed at reference points R2, R3 and R4, and the subscription-driven event notifications sent to consumer entities such as the NWDAF or Event Consumer of an Application Service Provider over reference points R5 and R6. The Data Collection AF is responsible for ensuring that access to UE data is controlled according to the rules indicated in its provisioning state.

NOTE 2: When the Data Collection AF is deployed outside the trusted domain, the NWDAF uses the procedure defined in clause 5.2.6.2 of TS 23.502 [3] and further elaborated by clause 6.2.2.3 of TS 23.288 [4] to collect data from the externally deployed Data Collection AF via the NEF.

NOTE 3: The Data Collection AF is intended to be instantiated inside another Application Function in order to satisfy the domain-specific data collection and reporting requirements corresponding to particular features in the 5G System. As such, there may be several domain-specific Data Collection AF instances operating simultaneously in a particular 5G System, each one performing a different role. The definitions of these instantiations are beyond the scope of the present document.

3. The *Direct Data Collection Client* is responsible for collecting relevant data in the UE and for sending data reports to the Data Collection AF via reference point R2 using the Ndcaf\_DataReporting service according to a data collection and reporting configuration that it has previously obtained from the Data Collection AF by invoking the same service at reference point R2.

NOTE 1: This method of reporting corresponds to the direct data collection procedure defined in clause 6.2.8 of TS 23.288 [4].

NOTE 2: In the case where the Data Collection AF is deployed in a different trust domain than the UE, the Direct Data Collection Client instead invokes the equivalent Nnef\_DataReporting API via the NEF.

NOTE 3: The Direct Data Collection Client function is intended to be instantiated inside other UE functions in order to satisfy the domain-specific data collection and reporting requirements corresponding to particular features of the 5G System. As such, there may be several domain-specific Data Collection Client instances operating simultaneously on a given UE, each one performing a different role. One valid deployment option is to combine these instances in a common middleware component. Another option is to provide the Direct Data Collection Client as an integral part of each relevant UE Application. The definitions of these instantiations are beyond the scope of the present document. The realisation of these logical functions is implementation-dependent.

4. The *UE Application* is responsible for sharing relevant data with the Direct Data Collection Client via reference point R7. This may be achieved as a combination of application design, application configuration via R8 and/or application configuration via R7.

5. An Application Service Provider may also collect data from UE Applications via reference point R8 and employ an *Indirect Data Collection Client* subfunction to then send data reports to the Data Collection AF via reference point R3 by invoking the Ndcaf\_DataReporting service according to a data collection and reporting configuration that it has previously obtained from the Data Collection AF by invoking the same service at reference point R3.

NOTE 1: This method of reporting corresponds to the indirect data collection procedure defined in clause 6.2.8 of TS 23.288 [4].

NOTE 2: In the case where the Application Service Provider server is deployed in a different trust domain than the Data Collection AF, the Indirect Data Collection Client instead invokes the equivalent Nnef\_DataReporting API via the NEF at reference point R3.

Editor’s Note: Need to check with SA2 about stage 2 definition of the Nnef\_DataReporting service (and possibly as follow-up with CT3 on corresponding stage 3 specification) which is currently absent in TS 23.502 [3] and TS 23.288 [4].

6. Application Server instances (labelled *AS*) inside or outside the trusted domain may also collect data and report it to the Data Collection AF via reference point R4 by invoking the Ndcaf\_DataReporting service, according to a data collection and reporting configuration previously obtained from the Data Collection AF by invoking the same service at reference point R4.

Editor’s Note: Need to check with SA2 about stage 2 definition of the Nnef\_DataReporting service (and possibly as follow-up with CT3 on corresponding stage 3 specification) which is currently absent in TS 23.502 [3] and TS 23.288 [4].

NOTE 1: In the case where the Application Server is deployed in a different trust domain than the Data Collection AF, the AS instead invokes the equivalent Nnef\_DataReporting service via the NEF.

NOTE 2: The data collection and reporting requirements for such Application Servers are domain-specific and therefore beyond the scope of the present document.

7. The NWDAF is the primary consumer of processed UE data. This is exposed to the NWDAF by the Data Collection AF in the form of data reporting event notifications via reference point R5 using the Naf\_EventExposure service (as specified in TS 29.517 [5]) after any processing by the Data Collection AF has been performed according to its provisioned procesing instructions.

NOTE: If the Data Collection AF is deployed outside the trusted domain, this interaction occurs instead by invoking the Nnef\_EventExposure service via the NEF, as defined in clause 5.2.6.2 of TS 23.502 [3] and as further elaborated by clause 6.2.2.3 of TS 23.288 [4].

8. By means of appropriate data collection and reporting provisioning, certain UE data may also be exposed in the form of data reporting events by the Data Collection AF to an *Event Consumer AF* residing in the Application Service Provider via reference point R6 using the Naf\_EventExposure service defined in clause 5.2.19 of TS 23.502 [4] and specified in TS 29.517 [5].

NOTE: In the case where the Application Service Provider server is deployed outside the trusted domain, the Nnef\_EventExposure service, as defined in clause 5.2.6.2 of TS 23.502 [3], is invoked instead.

## 4.3 Reference points for data collection and reporting

The purposes of the reference points in the functional architecture defined in clause 4.2 above are as follows:

- **R1** supports the following interactions between a Provisioning AF in the Application Service Provider and the Data Collection AF:

- Used by the Application Service Provider to provision data collection and reporting in a Data Collection AF instance by means of the Ndcaf\_DataReportingProvisioning service defined in clause 4.4 of the present document (or else the equivalent service exposed by the NEF if the two functions are deployed in different trust domains). The provisioning information specifies what data is to be collected by Data Collection Clients, how it is to be processed by the Data Collection AF and how it is to be exposed to event notification subscribers. A generic provisioning envelope for data collection and reporting is defined in clause 4.6 of the present document, but this is expected to be extended by individual reporting domains.

- **R2** supports the following interactions between the Direct Data Collection Client in the UE and the Data Collection AF:

- Used by a Direct Data Collection Client instance to obtain its data collection and reporting configuration from the corresponding Data Collection AF instance by means of the Ndcaf\_DataReporting service defined in clause 4.4 of the present document. A generic data collection and reporting configuration envelope is defined in clause 4.6.3 of the present document, but details of the configuration are specific to individual reporting domains and are specified elsewhere.

- Subsequently used by the Direct Data Collection Client to send reports to its Data Collection AF instance by means of the Ndcaf\_DataReporting service defined in clause 4.4 of the present document. A generic data reporting envelope is defined in clause 4.6.4 of the present document, but details of the reporting format are specific to individual reporting domains and are specified elsewhere.

NOTE 1: This method of reporting corresponds to the direct data collection procedure defined in clause 6.2.8 of TS 23.288 [4].

- **R3** supports the following interactions between the Indirect Data Collection Client in the Application Service Provider Server and the Data Collection AF.

- Used by an Indirect Data Collection Client instance to obtain its data collection and reporting configuration from the corresponding Data Collection AF instance by means of the Ndcaf\_DataReporting service defined in clause 4.4 of the present document (or else the equivalent service exposed by the NEF if the two functions are deployed in different trust domains). A generic data collection and reporting configuration envelope is defined in clause 4.6.3 of the present document, but details of the configuration are specific to individual reporting domains and are specified elsewhere.

- Subsequently used by the Indirect Data Collection Client in the Application Service Provider server to send data reports to its Data Collection AF instance by means of the Ndcaf\_DataReporting service defined in clause 4.4 of the present document (or else the equivalent service exposed by the NEF if the two functions are deployed in different trust domains). A generic data reporting envelope is defined in clause 4.6.4 of the present document, but details of the reporting format are specific to individual reporting domains and are specified elsewhere.

NOTE 2: This method of reporting corresponds to the indirect data collection procedure defined in clause 6.2.8 of TS 23.288 [4].

- **R4** supports the following interactions between the Application Server (AS) and the Data Collection AF:

- Used by an AS instance to obtain its data collection and reporting configuration from the corresponding Data Collection AF instance by means of the Ndcaf\_DataReporting service defined in clause 4.4 of the present document (or else the equivalent service exposed by the NEF if the two functions are deployed in different trust domains). A generic data collection and reporting configuration envelope is defined in clause 4.6.3 of the present document, but details of the configuration are specific to individual reporting domains and are specified elsewhere.

- Subsequently used by the AS instance to send data reports to its Data Collection AF instance by means of the Ndcaf\_DataReporting service defined in clause 4.4 of the present document (or else the equivalent service exposed by the NEF if the two functions are deployed in different trust domains). A generic data reporting envelope is defined in clause 4.6.4 of the present document, but details of the reporting format are specific to individual reporting domains and are specified elsewhere.

NOTE 3: The AS plays the role of a Network Function when it invokes the Ndcaf\_DataReporting service at reference point R4.

- **R5** supports the following interactions between the NWDAF and the Data Collection AF:

 Used by an NWDAF instance to subscribe to data reporting events exposed by a Data Collection AF instance, according to the Naf\_EventExposure\_Subscribe procedure defined in clause 5.2.19.2.2 of TS 23.502 [3], as further elaborated in step 3a of clause 6.2.8.2.3 in TS 23.288 [4], and as specified in TS 29.517 [5] (or else the equivalent Nnef\_EventExposure\_Subscribe service exposed by the NEF if the two functions are deployed in different trust domains).

 Subsequently used by the Data Collection AF to expose data reporting events to the NWDAF, according to the Naf\_EventExposure\_Notify procedure defined in clause 5.2.19.2.2 of TS 23.502 [3], as further elaborated in step 5a of clause 6.2.8.2.3 in TS 23.288 [4], and as specified in TS 29.517 [5] (or else the equivalent Nnef\_EventExposure\_Notify service exposed by the NEF if the two functions are deployed in different trust domains).

- **R6** supports the following interactions between the Event Consumer AF in the Application Service Provider and the Data Collection AF:

- Used by an Event Consumer AF instance to subscribe to data reporting events exposed by the Data Collection AF, according to the Naf\_EventExposure\_Subscribe procedure defined in clause 5.2.19.1 of TS 23.502 [3] and specified in TS 29.517 [5] (or else the equivalent Nnef\_EventExposure\_Subscribe service exposed by the NEF if the two functions are deployed in different trust domains).

- Subsequently used by the Data Collection AF to expose data reporting events to the Event Consumer AF according to the Naf\_EventExposure\_Notify procedure defined in clause 5.2.19.1 of TS 23.502 [3] and specified in TS 29.517 [5] (or else the equivalent Nnef\_EventExposure\_Notify service exposed by the NEF if the two functions are deployed in different trust domains).

Editor’s Note: Need to check with SA2/CT3 about the security aspects of event exposure to External AFs via the NEF. Exposure of events to external parties via NEF is not explicitly described in TS 23.288, although it is envisaged as a possibility in TS 23.502.

- **R7** is a client API offered by the Direct Data Collection Client to the UE Application.

NOTE 4: When the Direct Data Collection Client is embedded in the UE Application, reference point R7 is not used.

NOTE 5: Interactions at reference point R7 are not fully specified in this release.

- **R8** supports data collection and reporting interactions between the UE Application and the Application Service Provider server.

NOTE 6: Interactions at reference point R8 are beyond the scope of 3GPP standardisation.

## 4.4 Service-based architecture for data collection and reporting

Editor’s Note: Different realisations of the reference architecture are currently under consideration by SA4, including SEAL-based and CAPIF-based models.

Figure 4.4‑1 below shows the reference architecture for data collection and reporting in service-based architecture notation. It depicts the case where the Data Collection AF is deployed inside the trusted domain, while the Application Service Provider and the AS may be deployed independently either inside or outside the trusted domain.



NOTE 1: In its role as an event exposure service provider Application Function, the Data Collection AF provides the (un)subscription operations of the Naf\_EventExposure (or Nnef\_EventExposure) service for use by Network Function service consumers. As Network Function service consumers, the NWDAF and the Event Consumer AF provide the event notification operation of the Naf\_EventExposure (or Nnef\_EventExposure) service for use by the Data Collection AF.

NOTE 2: The UE-based Direct Data Collection Client interacts with the Data Collection AF in the user plane, and so the interaction at reference point R2 does not traverse the service bus.

Figure 4.4‑1: Reference architecture for data collection and reporting in service‑based architecture notation when the Data Collection AF is deployed in the trusted domain

The following service-based APIs are used in connection with data collection and reporting:

1. The Ndcaf\_DataReportingProvisioning service is provided by the Data Collection AF. It is defined by the present document and is specified in TS 26.532 [7]. This service is used by Provisioning AF instances to provision data collection and reporting in the Data Collection AF.

2. The Nnrf\_NFManagement service is provided by the NRF. It is defined in clause 5.2.7.2 of TS 23.502 [3] and specified in clause 6.1 of TS 29.510 [6]. This service is used by the Data Collection AF to register an available NF profile with the NRF for each set of data collection and reporting provisioning information held by the former.

NOTE: As described in clause 6.2.8.2.2 of TS 23.288 [4] the NF profile in this case includes the External Application Identifier (used by clients when reporting data to the Data Collection AF), the Internal Application Identifier (used for event exposure to the NWDAF) and the Event ID. These NF profile parameters are in addition to those specified in clause 5.2.7.2 of TS 23.502 [3].

3. The Ndcaf\_DataReporting service is provided by the Data Collection AF. It is defined by the present document and is specified in TS 26.532 [7].

a. This service is used by the Direct Data Collection Client, by the Indirect Data Collection Client in the Application Service Provider server and by AS instances to obtain their data collection and reporting configuration from the Data Collection AF.

b. Subsequently, this service is used by the Direct Data Collection Client, by the Indirect Data Collection Client and by AS instances to send data reports to the Data Collection AF.

NOTE: Trusted AS instances play the role of a Network Function when invoking the Ndcaf\_DataReporting service (or equivalent) and are therefore depicted in figure 4.4‑1 as being directly attached to the service bus.

4. The Naf\_EventExposure service is provided by the Data Collection AF. It is defined in clause 5.2.19.2 of TS 23.502 [3] and TS 23.288 [4], and is specified in TS 29.517 [5].

a. Used by the NWDAF to subscribe to data reporting events exposed by the Data Collection AF and subsequently used by the Data Collection AF to notify these events to the NWDAF, as described in clause 6.2.2.2 or 6.2.2.3 (as appropriate) of TS 23.288 [4].

b. Used by an Event Consumer AF in the Application Service Provider server to subscribe to data reporting events exposed by the Data Collection AF and subsequently used by the Data Collection AF to notify these events to the Application Service Provider server, as described in clause 6.2.2.2 or clause 6.2.2.3 (as appropriate) of TS 23.288 [4].

Figure 4.4‑2 depicts the case where the Data Collection AF is instead deployed outside the trusted domain, along with the Application Service Provider and the (external) AS. In this case, the subfunctions of the Application Service Provider and the (external) AS do not interact with the Data Collection AF via the 5G System service bus. The Ndcaf service is therefore not required in such deployments. The interactions at the relevant reference points are outside the scope of 3GPP and are depicted as R1′, R3′, R4′ and R6′ to reflect this.



Figure 4.4‑2: Reference architecture for data collection and reporting in service‑based architecture notation when the Data Collection AF is deployed outside the trusted domain

END OF 2nd CHANGE

3rd CHANGE: Clauses 4.6.1 through 4.6.4

# 4.6 Domain model

### 4.6.1 General

Figure 4.6.1‑1 depicts the static data model for the data collection and reporting domain. It is further described below.



Figure 4.6.1‑1: Static domain model

The Application Service Provider provisions zero or more sets of provisioning information in the Data Collection AF at reference point R1. The baseline set of information provisioned is described in clause 4.6.2. Each set of provisioning information pertains to one application, identified by its external application identifier, and one type of exposed event, uniquely identified in the 5G System by its Event ID, as defined in clause 4.15.1 of TS 23.502 [3]. There may be more than one set of provisioning information for a particular external application identifier, but the combination of the external application identifier and Event ID shall be unique for a given Data Collection AF instance.

Each set of provisioning information is manifested as a data collection client configuration that the Data Collection AF makes available to Direct Data Collection Client instances at reference point R2, to Indirect Data Collection Client instances at R3 and to AS instances at R4.

These data collection clients then send data reports to the Data Collection AF associated with the data collection client configuration. It is the responsibility of the data collection client to discover its external application identifier by means outside the scope of the present document.

### 4.6.2 Provisioning information for data collection and reporting

A separate set of provisioning information shall be provided to the Data Collection AF at reference point R1 for each Event ID it is to expose. This provisioning information embodies the Service Level Agreement between the network operator and the Application Service Provider envisaged in clause 6.2.8.1 of TS 23.288 [4]. The provisioning information shall include at least the parameters defined in table 4.6.2‑1 below:

Table 4.6.2‑1: Baseline provisioning information for data collection and reporting

|  |  |  |
| --- | --- | --- |
| Parameter | Cardinality | Description |
| External Application Identifier | 1..1 | The identifier to be used in reports sent to the Data Collection AF by data collection clients. (This needs to be mapped to the Internal Application Identifier when exposing events to the NWDAF.) |
| Internal Application Identifier | 1..1 | The identifier to be used by event consumers (including the NWDAF and the Event Conumer AF) when subscribing to events in the Data Collection AF. |
| Event ID | 1..1 | The identifier of an AF event that will be exposed to event consumers as a result of the provisioning. |
| Valid targets | 1..1 | A parameter to control whether event consumers are permitted to filter events by External UE identifier or External Group Identifier when subscribing, instead of receiving events relating to all UEs. |
| Parameters to be collected | 1..\* | The subset of domain-specific parameters associated with the specified Event ID to be collected by the Data Collection AF (subject to user consent). |
| Data transformation recipe | 1..\* | A set of operations to be performed by the Data Collection AF on the parameters reported according to clause 4.6.4 prior to exposure as an event at a particular access level.The set of supported operations shall include at least: COUNT, MEAN, MEDIAN, MINIMUM, MAXIMUM and SUM.. |
| Data exposure restrictions | 1..\* | A set of restrictions on the exposure of the collected data after any data processing, each corresponding to a different access level. |

### 4.6.3 Configuration information for data collection clients

All clients of the Data Collection AF wishing to report data shall first obtain a data collection and reporting configuration from the Data Collection AF at reference point R2, R3 or R4 (as appropriate). For each Event ID, the data collection and reporting configuration shall include at least the parameters defined in table 4.6.3‑1 below:

Table 4.6.3‑1: Baseline information for data collection and reporting configuration

|  |  |  |
| --- | --- | --- |
| Parameter | Cardinality | Description |
| External Application Identifier | 1..1 | Identifies the UE Application to which this data collection and reporting configuration pertains.Quoted in reports sent to the Data Collection AF. |
| Parameters to be collected | 1..\* | The subset of domain-specific parameters associated with the specified Event ID to be collected by the Data Collection AF (subject to user consent). |

Editor’s Note: When *requesting configuration*, additional information needs to be passed across the R7 client API (then R2) to realise the "authentication information that enables the [Data Collection] AF to verify the authenticity of the UE's Application that provides data" as envisaged in clause 6.2.8.1 of TS 23.288 [4].

### 4.6.4 Information included in data reports to the Data Collection AF

For each Event ID, the data report shall include at least the parameters as defined in table 4.6.4-1 below:

Table 4.6.4‑1: Baseline information for data reporting

|  |  |  |
| --- | --- | --- |
| Parameter | Cardinality | Description |
| External Application Identifier | 1..1 | Identifies the UE Application to which this data report pertains. |
| Collected parameters | 1..\* | The set of parameters collected by the data collection and reporting client. |

Editor’s Note: When *reporting data*, additional information needs to be passed across the R7 client API (then R2) to realise the "authentication information that enables the [Data Collection] AF to verify the authenticity of the UE's Application that provides data" as envisaged in clause 6.2.8.1 of TS 23.288 [4].

END OF 3rd CHANGE

4th CHANGE: Clauses 5.4 and 5.5

## 5.4 Procedures for configuring data collection client

At some later point, one or more of the three types of data collection client obtain their configuration from the Data Collection AF by invoking the Ndcaf\_DataReporting service defined in the present document and specified in TS 26.532 [7]. The intersection between the above provisioning information and current event consumer subscriptions determines the contents of this configuration.



Figure 5.4‑1: High-level procedures for data collection client configuration phase

The steps are as follows:

9. The Direct Data Collection Client acquires its data collection and reporting configuration from the Data Collection AF, if relevant.

10. The Indirect Data Collection Client acquires its data collection and reporting configuration from the Data Collection AF, if relevant.

11. The AS acquires its data collection and reporting configuration from the Data Collection AF, if relevant.

Whenever the provisioning information changes, or the set of event exposure subscriptions changes, a new set of data collection and reporting configuration shall be made available to data collection clients by the Data Collection AF.

## 5.5 Procedures for reporting to the Data Collection AF



Figure 5.5‑1: High-level procedures for data reporting and exposure phase

The different data collection clients proceed as follows:

12. The Direct Data Reporting Client may submit a data report to the Data Collection AF via reference point R2 by invoking the Ndcaf\_DataReporting service defined in the present document and specified in TS 26.532 [7].

13. The UE Application may send application-specific data reporting to the Application Service Provider...

14. ...and the Indirect Data Collection Client may, as a result, submit a data report to the Data Collection AF by invoking the Ndcaf\_DataReporting service defined in the present document and specified in TS 26.532 [7].

15. The AS may submit a data report to the Data Collection AF by invoking the Ndcaf\_DataReporting service defined in the present document and specified in TS 26.532 [7].

END OF 4th CHANGE

1. In the event that provisioning data and subscription data contain similar rules, the permissible information to be exposed by the Data Collection Function shall be governed by the rule with more restrictive semantics. [↑](#footnote-ref-2)