**3GPP TSG-S4 Meeting #120-e *S4-220929***

**Online, , 17th–26th August 2022** revision of S4aI221359

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| *CR-Form-v12.0* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  |  | **CR** |  | **rev** |  | **Current version:** |  |  |
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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:*** |  | | | | | | | | |
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| ***Source to WG:*** |  | | | | | | | | |
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| ***Work item code:*** |  | | | | |  | ***Date:*** | |  |
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| ***Category:*** |  |  | | | | | ***Release:*** | |  |
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| ***Reason for change:*** | | Discussion of CT3 LS revealed that the event consumer procedure is incorrect. | | | | | | | |
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| ***Summary of change:*** | | * Clarify that the use of R5 by NWDAF is governed by TS 23.288. * Clarify that event subscription filters are in scope. * Provide cross-references to relevant CT3 specifications for northbound/southbound NEF exposure. * Remove the Data Access Profile parameter from step 2 and most subsequent steps because the Event Subscriber does not know this information from the outset (although the Authorization AS may supply it later in the call flow). | | | | | | | |
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| ***Consequences if not approved:*** | | Misalignment with SA2 procedures in TS 23.288. | | | | | | | |
| ***Q*** | |  | | | | | | | |
| ***Clauses affected:*** | | 2, 4.2, 4.3, 5.3, 4.6.1, 4.7.1, 5.8 | | | | | | | |
|  | |  | | | | | | | |
|  | | **Y** | **N** |  | | | |  | |
| ***Other specs*** | |  | **X** | Other core specifications | | | |  | |
| ***affected:*** | |  | **X** | Test specifications | | | |  | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | |  | |
|  | |  | | | | | | | |
| ***Other comments:*** | | See also C3-223571|S4-220907 and S2-2204729|S4-220912. | | | | | | | |
|  | |  | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | |

FIRST CHANGE

# 2 References

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

(SNIPPED)

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

[2] 3GPP TS 23.501: "System architecture for the 5G System (5GS)".

[3] 3GPP TS 23.502: "Procedures for the 5G System (5GS)".

[4] 3GPP TS 23.288: "Architecture enhancements for 5G System (5GS) to support network data analytics services".

[5] 3GPP TS 29.517: "5G System; Application Function Event Exposure Service; Stage 3".

[6] 3GPP TS 29.510: "Network function repository services; Stage 3".

[7] 3GPP TS 29.532: "Data Collection and Reporting; Protocols and Formats".

[8] 3GPP TS 23.222: "Common API Framework for 3GPP Northbound APIs".

[9] 3GPP TS 33.501: "Security architecture and procedures for 5G System".

[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".

NEXT CHANGE

## 4.2 Functional entities for data collection and reporting

(SNIPPED)

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 processing instructions.

NOTE 1: 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].

NOTE 2: The UE data of interest to the NWDAF at reference point R5, for example Observed Service Experience and Collective Behaviour, is governed by clause 6 of TS 23.288 [4].

(SNIPPED)

NEXT CHANGE

## 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:

(SNIP)

- **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 5.2.19.2.4 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).

(SNIP)

NEXT CHANGE

### 4.6.1 General

(SNIP)

Once configured, these data collection clients then send *data reports* to the Data Collection AF associated with the data collection client configuration. Each data report provides the external application identifier associated with the UE Application and also includes a non-empty list of *data reporting records* containing the parameters collected by the data collection client. These parameters typically include a sampling timestamp.

NOTE 1: It is the responsibility of the data collection client to discover its external application identifier by means outside the scope of the present document.

An event consumer (the NWDAF and/or Event Consumer AF) subscribes to a type of event exposed by the Data Collection AF using the procedures defined in clause 6.2.8.2.3 of TS 23.288 [4]. The event consumer may additionally specify user-, location- and/or application-based filters in its subscription request in order to further limit the events exposed to a subset of those permitted by the relevant provisioned data exposure restriction(s). Attempts by an event consumer to subscribe to event types that are not provisioned at the Data Collection AF instance are permitted, but will yield no event notifications until such event types have been successfully provisioned.

NOTE 2: It is the responsibility of the event consumer to discover the relevant application identifier of interest by means outside the scope of the present document.

Depending on the *data processing instructions* provisioned in the Data Collection AF, a data reporting record contributes to zero or more events exposed to subscribers at reference points R5 and/or R6. Conversely, an exposed event arises from one or more data reporting records. In the case of events synthesised by the Data Collection AF from multiple data reporting records, the timestamp of the event shall indicate when it was synthesised. Otherwise, the timestamp of the event shall be identical to the timestamp of the data reporting record from which it arose.

The Data Collection AF exposes a batch of recent events to consumers (the NWDAF and/or Event Consumer AF) as an *event exposure notification*.

NEXT CHANGE

### 4.7.1 Service exposure via Network Exposure Function (NEF)

The following services provided by a Data Collection AF deployed inside the trusted domain shall be exposed northbound by the NEF to an Application Service Provider outside the trusted domain, as depicted in clauses A.3 and A.4:

- The Ndcaf\_DataReportingProvisioning service shall be exposed to Provisioning AF instances deployed outside the trusted domain as Nnef\_DataReportingProvisioning. See clause 6 of TS 26.532 [7] and clause 5.24 of TS 29.522 [10].

- The Ndcaf\_DataReporting service shall be exposed to Indirect Data Collection Clients and Application Servers deployed outside the trusted domain as Nnef\_DataReporting. See clause 7 of TS 26.532 [7] and clause 5.23 of TS 29.522 [10].

- The Naf\_EventExposure service shall be exposed to Event Consumer AF instances deployed outside the trusted domain as Nnef\_EventExposure. See TS 29.517 [5] and TS 29.522 [10].

The following services provided by an externally deployed Data Collection AF shall be exposed southbound by the NEF to Network Functions deployed inside the trusted domain, as depicted in clauses A.5:

- The Naf\_EventExposure service shall be exposed to Event Consumer AF instances deployed inside the trusted domain as Nnef\_EventExposure. See TS 29.517 [5] and TS 29.591 [11].

NEXT CHANGE

## 5.3 Procedures for Data Collection AF subscription

Subsequently, one or more of the two types of event consumer discover the Data Collection AF and subscribe to events from it.



Figure 5.3‑1: High-level procedures for subscription phase

The steps are as follows:

5. The NWDAF discovers the Data Collection AF by following the Nnrf\_NFDiscovery procedure defined in clause 5.2.7.3 of TS 23.502 [3]...

6. ...and then subscribes to event(s) of interest by invoking the Naf\_EventExposure\_Subscribe service operation defined in clause 5.2.19.2.2 of TS 23.502 [3] on the discovered Data Collection AF. As described in clause 4.6.1, user-, location- and/or application-based filters may be specified as additional input parameters to the operation.

7. The Event Consumer AF discovers the Data Collection AF by following the Nnrf\_NFDiscovery procedure defined in clause 5.2.7.3 of TS 23.502 [3]...

8. ...and then subscribes to event(s) of interest by invoking the Naf\_EventExposure\_Subscribe service operation defined in clause 5.2.19.2.2 of TS 23.502 [3] on the discovered Data Collection AF.

NEXT CHANGE

## 5.8 Procedures for event consumer authorization

The procedure for authorising access to the events exposed by the Data Collection AF is depicted by the following call flow:



Figure 5.8‑1: High-level procedures for event consumer authorization

The steps are:

1. The Provisioning AF provisions the data collection and the report exposure functionality at reference point R1, per the procedures in clause 5.2, including a set of Data Access Profiles.

1a. The Data Collection AF may provision the Authorization AS with a Data Access Profile configuration corresponding to step 1, including the Data Access Profile ID. The procedures used in this step are outside the scope of standardisation.

2. An event consumer sends a subscription request to the Data Collection AF to receive events via reference point R5 or R6, per the procedures in clause 5.3, indicating the Event ID of interest and any desired user-, location- and/or application-based filters (see clause 4.6.1).

3. In return, the Data Collection AF redirects the event consumer to the Authorization AS in order to obtain access.

4. The event consumer contacts the Authorization AS (according to the procedures for authorization of NF service access defined in clause 13.4 of TS 33.501 [9]) with a set of valid credentials.

5. If access is granted, the Authorization AS responds with an access token that is valid for a specific period of time. The access token may encode a Data Access Profile ID if the authorization applies narrowly. The response may redirect the event consumer to the Data Collection AF using the initial subscription request URL, enhanced with the access token and optionally with the Data Access Profile ID passed in the clear.

6. The event consumer resends the subscription request (including the Event ID and desired filters, if any) to the Data Collection AF, this time with the access token and, optionally, with the Data Access Profile ID.

7. The Data Collection AF may verify the access token with the Authorization AS, or it may verify it locally.

8. If verification is successful, the Data Collection AF approves the subscription request for the requested Access Profile

9. The Data Collection AF sends event notifications to the event consumer, per the procedures in clause 5.6.

10. The event consumer cancels its event subscription using the procedures in clause 5.7.

END OF CHANGES