**SA WG2 Meeting #S2-137E S2-2002233**

**24 - 28 February, 2020, Electronic meeting (revision of S2-20xxxxx)**

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| *CR-Form-v12.0* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **23.288** | **CR** | **0142** | **rev** | **-** | **Current version:** | **16.2.0** |  |
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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 |  | Radio Access Network |  | Core Network | **X** |

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| ***Title:*** | Clarification on the NWDAF services invoked in Abnormal behaviour | | | | | | | | | |
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| ***Source to WG:*** | China Telecom | | | | | | | | | |
| ***Source to TSG:*** | SA2 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | eNA | | | | |  | ***Date:*** | | | 2020-02-15 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **F** |  | | | | | ***Release:*** | | | Rel-16 |
|  | *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 can be 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)* | |
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| ***Reason for change:*** | | According to descriptions in the clause 6.7.5.3: *The NWDAF services as defined in the clauses 7.2 and 7.3 are invoked to notify consumer NFs.*, UE Abnormal behaviour information is provided by means of both NWDAF services: Nnwdaf\_AnalyticsSubscription Service or Nnwdaf\_AnalyticsInfo Service.  However, the Nnwdaf\_AnalyticsInfo Service hasn’t been invoked in the procedure to Abnormal behaviour related network data analytics. | | | | | | | | |
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| ***Summary of change:*** | | Complete the NWDAF services invoked in Abnormal behaviour related network data analytics. | | | | | | | | |
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| ***Consequences if not approved:*** | | Incomplete descriptions lead to misunderstanding. | | | | | | | | |
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| ***Clauses affected:*** | | 6.7.5.4 | | | | | | | | |
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|  | | **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:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

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| **First change** |

#### 6.7.5.4 Procedure



Figure 6.7.5.4-1: Procedure for NWDAF assisted misused or hijacked UEs identification

1a. A consumer NF subscribes to/requests NWDAF using Nnwdaf\_AnalyticsSubscription\_Subscribe/ Nnwdaf\_AnalyticsInfo\_Request (Analytics ID set to "Abnormal behaviour", Target of Analytics Reporting = Internal-Group-Identifier or SUPI).

A consumer NF may subscribe to/request abnormal behaviour notification/response from NWDAF for a group of UEs or a specific UE. The Analytics ID indicates the NWDAF to identify misused or hijacked UEs through abnormal behaviour analytic.

1b. AF to NWDAF: Nnwdaf\_AnalyticsSubscription\_Subscribe or Nnwdaf\_AnalyticsInfo\_Request (Analytics ID, Target of Analytics Reporting = External-group identifier or External UE ID).

For untrusted AFs, the AF sends the subscription via a NEF, where the AF invokes NEF service Nnef\_AnalyticsExposure\_Subscribe or Nnef\_AnalyticsExposure\_Fetch (Analytics ID, Target of Analytics Reporting = External-group-identifier or External UE ID).

An AF may also subscribe to/request abnormal behaviour notification/response from NWDAF for a group of UEs or a specific UE, where the subscription/request message may contain expected UE behaviour parameters identified on the application layer. If an External-Group-Identifier is provided by the AF, the NEF interrogates UDM to map the External-Group-Identifier to the Internal-Group-Identifier and obtain SUPI list corresponding to the Internal-Group-Identifier.

2. NWDAF to AMF (Conditional): Namf\_EventExposure\_Subscribe (Event ID(s), Event Filter(s), Internal-Group-Identifier or SUPI).

The NWDAF sends subscription requests to the related AMF to collect UE behavioural information if it has not subscribed such data.

NOTE 1: The NWDAF determines the AMF serving the UE as described in clause 6.2.2.1.

The AMF sends event reports to the NWDAF based on the report requirements contained in the subscription request received from the NWDAF.

If requested by NWDAF via Event Filter(s), the AMF checks whether the UE's behaviour matches its expected UE behavioural information. In this case, the AMF sends event reports to the NWDAF only when it detects that the UE's behaviour deviated from its expected UE behaviour.

3. NWDAF to SMF (Conditional): Nsmf\_EventExposure\_Subscribe (Event ID(s), Event Filter(s), Internal-Group-Identifier or SUPI).

The NWDAF sends subscription requests to the related SMF if it has not subscribed such data.

NOTE 2: The NWDAF determines the SMF serving the UE as described in clause 6.2.2.1.

The SMF sends event reports to the NWDAF based on the report requirements contained in the subscription request received from the NWDAF.

If requested by NWDAF via Event Filter(s), the SMF checks whether the UE's behaviour matches its expected UE behavioural information. In this case, the SMF sends event reports to the NWDAF only when it detects that the UE's behaviour deviated from its expected UE behaviour.

4. The NWDAF performs data analytics for misused or hijacked UEs identification. Based on the analytics and operator's policies the NWDAF determines whether to send a notification to 5GC NFs or the AF.

5a. NWDAF to consumer NF (AMF or PCF or SMF depending on the subscription) (Conditional): Nnwdaf\_AnalyticsSubscription\_Notify or Nnwdaf\_AnalyticsInfo\_Response (Analytics ID, (Exception ID, Internal-Group-Identifier or SUPI, Exception level)) (which is used depending on the service used in step 1a).

If the NWDAF determines to send a notification/response to the consumer 5GC NFs, the NWDAF invokes Nnwdaf\_EventSubscription\_Notify or Nnwdaf\_AnalyticsInfo\_Response services. Based on the notification/response, the 5G NFs adopt configured actions to resolve/mitigate/avoid the risks as described in the Table 6.7.5.3-1.

5b. NWDAF to AF (Conditional): Nnwdaf\_AnalyticsSubscription\_Notify or Nnwdaf\_AnalyticsInfo\_Response(Analytics ID, (Exception ID, External UE ID)) (which is used depending on the service used in step 1b).

If the NWDAF determines to send a notification/response to the consumer AF, the NWDAF needs to include external UE ID of the identified UE into the notification/response message.

NOTE 3: Based on the notification, the AF can adopt corresponding actions, e.g. adjusting recommended TCP Window Size, adjusting recommended Service Start and End.

NOTE 4: The call flow only shows a subscribe-notify model for the interaction of NWDAF and consumer NF for simplicity instead of both request-response model and subscription-notification model.

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| **End of change** |