**3GPP TSG CT WG3 Meeting #135 *C3-243150***

**Hyderabad, IN, 27 - 31 May, 2024**

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| *CR-Form-v12.3* |
| **CHANGE REQUEST** |
|  |
|  | **29.520** | **CR** | **0908** | **rev** | **-** | **Current version:** | **18.5.1** |  |
|  |
| *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 |  |

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|  |
| ***Title:***  | Correction for accuracy information notification |
|  |  |
| ***Source to WG:*** | ZTE, Ericsson, Nokia |
| ***Source to TSG:*** | CT3 |
|  |  |
| ***Work item code:*** | eNA\_Ph3 |  | ***Date:*** | 2024-05-20 |
|  |  |  |  |  |
| ***Category:*** | **F** |  | ***Release:*** | Rel-18 |
|  | *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-17 (Release 17)Rel-18 (Release 18)Rel-19 (Release 19) Rel-20 (Release 20)* |
|  |  |
| ***Reason for change:*** | As per the text below from clause 6.2D.2 of 23.288, the event notification can only include the accuracy information, however in current specification, the analytics information of the notified event shall be provided.*The NWDAF containing AnLF provides only the Analytics Accuracy Information for the analytics ID according to the parameters defined in the Analytics Accuracy Request Information included in the subscription request. The Analytics Accuracy Information is provided in a separated notification when the periodicity for providing the Analytics Accuracy Information indicated in the Analytics Accuracy Request Information is different from the periodicity for providing the analytics output indicated in the subscription request, or the accuracy value is under the analytics accuracy threshold which is indicated in the subscription request or locally configured.* |
|  |  |
| ***Summary of change:*** | Update the procedure description in 4.2.2.4.2 and data type defintion in 5.1.6.2.5 to clarify that the accuracy information can be notified separately. |
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| ***Consequences if not approved:*** | Misalignment with stage2 requirement. |
|  |  |
| ***Clauses affected:*** | 4.2.2.4.2, 5.1.6.2.5 |
|  |  |
|  | **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:*** | This CR does not have any impact in the OpenAPI specification. |
|  |  |
| ***This CR's revision history:*** |  |

**Additional discussion(if needed):**

**Proposed changes:**

\*\*\* 1st Change \*\*\*

##### 4.2.2.4.2 Notification about subscribed event

Figure 4.2.2.4.2-1 shows a scenario where the NWDAF sends a request to the NF service consumer to notify for event notifications or notify for the successful analytics subscription transfer (see also 3GPP TS 23.288 [17]).



Figure 4.2.2.4.2-1: NWDAF notifies the subscribed event

The NWDAF shall invoke the Nnwdaf\_EventsSubscription\_Notify service operation to notify the subscribed event or the successful analytics subscription transfer. The NWDAF shall send an HTTP POST request with "{notificationURI}" received in the Nnwdaf\_EventsSubscription\_Subscribe service operation as Resource URI, as shown in figure 4.2.2.4.2-1, step 1.

If both the repetition period ("repPeriod" or "repetitionPeriod") attribute and the "offsetPeriod" attribute are present in the subscription request for periodical notification, the NWDAF shall produce a notification in every repetition period seconds, including the statistics in the past offset period if the "offsetPeriod" attribute value is negative, or including the prediction for the future offset period if the "offsetPeriod" attribute value is positive.

The NnwdafEventsSubscriptionNotification data structure provided in the request body shall include:

- If the notification is for notifying about the analytics information of subscribed events, a description of the notified event as "eventNotifications" attribute that for each event shall include:

a) an event identifier as "event" attribute;

b) network slice load level information in the "sliceLoadLevelInfo" attribute when subscribed event is "SLICE\_LOAD\_LEVEL";

c) service experience information as "svcExps" attribute when subscribed event is "SERVICE\_EXPERIENCE";

d) UE mobility information in the "ueMobs" attribute when subscribed event is "UE\_MOBILITY";

e) UE communication information in the "ueComms" attribute when subscribed event is "UE\_COMM";

f) abnormal behaviour information in the "abnorBehavrs" attribute when subscribed event is "ABNORMAL\_BEHAVIOUR";

g) user data congestion information in the "userDataCongInfos" attribute when subscribed event is "USER\_DATA\_CONGESTION";

h) QoS sustainability information in the "qosSustainInfos" attribute when subscribed event is "QOS\_SUSTAINABILITY";

i) NF load information in "nfLoadLevelInfos" attribute when subscribed event is "NF\_LOAD";

j) network performance information in the "nwPerfs" attribute when subscribed event is "NETWORK\_PERFORMANCE";

k) Load level information for the network slice(s) and the optionally associated network slice instance(s) in "nsiLoadLevelInfos" attribute when subscribed event is "NSI\_LOAD\_LEVEL";

l) Dispersion information in the "disperInfos" attribute when subscribed event is "DISPERSION";

m) Redundant transmission experience information in the "redTransInfos" attribute when subscribed event is "RED\_TRANS\_EXP";

n) WLAN performance information in the "wlanInfos" attribute when subscribed event is "WLAN\_PERFORMANCE";

o) DN performance information in the "dnPerfInfos" attribute when subscribed event is "DN\_PERFORMANCE";

p) SMCCE performance information in the "smccExps" attribute when subscribed event is "SM\_CONGESTION";

q) PFD Determination information for known application identifier(s) in the "pfdDetermInfos" attribute when subscribed event is "PFD\_DETERMINATION";

r) PDU Session traffic information in the "pduSesTrafInfos" attribute when subscribed event is "PDU\_SESSION\_TRAFFIC";

s) E2E data volume transfer time in the "dataVlTrnsTmInfos" attribute when subscribed event is "E2E\_DATA\_VOL\_TRANS\_TIME";

t) Movement Behaviour information in the "movBehavInfos" attribute when subscribed event is "MOVEMENT\_BEHAVIOUR";

u) Location Accuracy information in the "locAccInfos" attribute when the subscribed event is "LOC\_ACCURACY"; and

v) Relative Proximity information in the " relProxInfos" attribute when subscribed event is "RELATIVE\_PROXIMITY";

and may include:

a) information about analytics metadata required for aggregation of the analytics in the "anaMetaInfo" attribute if the feature "Aggregation" is supported;

b) the start time of which the analytics information will become valid in the "start" attribute, if the "EneNA" feature is supported;

c) the expiration time after which the analytics information will become invalid in the "expiry" attribute.

- If the feature "AnalyticsAccuracy" is supported and the notification is for notifying about the accuracy information of subscribed events (which requires that the "accuReq" attribute was set to "true" in the subscription request), a description of the notified event as "eventNotifications" attribute that for each event shall include:

a) an event identifier as "event" attribute;

b) the analytics accuracy information in "accuInfo" attribute, if the "cancelAccuInd" attribute is set to "false" or omitted;

and may include:

c) an indication that the NWDAF cancelled subscription of analytics accuracy information in "cancelAccuInd" attribute;

d) the pause analytics consumption indication in "pauseInd" attribute;

e) the resume analytics consumption indication in "resumeInd" attribute.

NOTE 1: In this version of the specification, the NWDAF containing AnLF can provide the accuracy information to an NF consumer that subscribes to the analytics.

NOTE 2: When receiving a subscription from an NF service consumer that includes the request for accuracy information, the analytics and/or the accuracy information can be provided by NWDAF containing AnLF in one notification or via different notifications.

NOTE 3: In this version of the specification, only subscribing or requesting accuracy information without requesting analytics is not supported.

- If the "EneNA" feature is supported and the target NWDAF notifies a successful analytics subscription transfer, the old subscription ID which had been allocated by the source NWDAF within the "oldSubscriptionId" attribute and the resource URI of the Individual NWDAF Event Subscription resource created by the target NWDAF within "resourceUri" attribute, and if the "PartialAnalyticsSubTransfer" feature is supported and not all the analytics events in the subscription transfer are accepted, the successful transferred subscription event(s) within the "transEvents" attribute; and

- an event subscription Id as "subscriptionId" attribute;

and may include:

a) the notification correlation identifier in the "notifCorrId" attribute, if the "EneNA" feature is supported.

b) a cause for termination in the "termCause" attribute, if the "TermRequest" feature is supported and the NWDAF wants to request the termination of this subscription, i.e. to indicate that it will send no further notifications for it.

If the feature "EneNA" is supported and the time when analytics information is needed has been provided (via the "timeAnaNeeded" attribute within the "extraReportReq" attribute) during the subscription for an event (via the "event" attribute within the EventSubscription data type), if the time when analytics information is needed is reached but the subscribed analytics information is not ready, the consumer does not need to wait for the analytics information any longer. In this case, the NWDAF may send an HTTP POST request as shown in step 1 of figure 4.2.2.4.2-1, which shall only provide (within the EventNotification data type in the NnwdafEventsSubscriptionNotification data type) an indication of the failure event via the "event" attribute and the corresponding failure reason via a "failNotifyCode" attribute, and may also provide a minimum time interval recommended by the NWDAF for the event via a "rvWaitTime" attribute which will be used by the NF service consumer to determine the time when analytics information is needed in similar future analytics subscriptions.

Upon the reception of an HTTP POST request with: "{notificationURI}" as Resource URI and NnwdafEventsSubscriptionNotification data structure as request body, if the NF service consumer successfully processed and accepted the received HTTP POST request, the NF service consumer shall:

- store the notification; and

- respond with HTTP "204 No Content" status code.

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 feature "ES3XX" is supported, and 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 [6].

\*\*\* 2nd Change \*\*\*

##### 5.1.6.2.5 Type EventNotification

Table 5.1.6.2.5-1: Definition of type EventNotification

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| event | NwdafEvent | M | 1 | Event that is notified. |  |
| start | DateTime | O | 0..1 | It defines the start time of which the statistics analytics information is applicable or predictions analytics information is valid. (NOTE 1) (NOTE 4) |  |
| dataVlTrnsTmInfos | array(E2eDataVolTransTimeInfo) | C | 1..N | E2E data volume transfer time information.Shall be present if the subscribed event is "E2E\_DATA\_VOL\_TRANS\_TIME".(NOTE 5) | E2eDataVolTransTime |
| expiry | DateTime | O | 0..1 | It defines the expiration time after which the statistics analytics information is not applicable or predictions analytics information is invalid. (NOTE 1) (NOTE 4) |  |
| timeStampGen | DateTime | C | 0..1 | It defines the timestamp of analytics generation. (NOTE 3) |  |
| failNotifyCode | NwdafFailureCode | C | 0..1 | Identifies the failure reason for the event notification.It shall only be included if the event notification is failed or the analytics information is not ready. (NOTE 2) | EneNA |
| rvWaitTime | DurationSec | O | 0..1 | Indicate a recommended time interval (in seconds) which is used to determine the time when analytics information is needed in similar future event subscriptions. It may only be included if the "failNotifyCode" attribute sets to "UNSATISFIED\_REQUESTED\_ANALYTICS\_TIME". | EneNA |
| anaMetaInfo | AnalyticsMetadataInfo | C | 0..1 | Contains information about analytics metadata required to aggregate the analytics. It shall be present if the "anaMeta" attribute was included in the subscription, containing the information indicated by the "anaMeta" attribute. | Aggregation |
| nwPerfs | array(NetworkPerfInfo) | C | 1..N | The network performance information.Shall be present when subscribed even is "NETWORK\_PERFORMANCE".(NOTE 5) | NetworkPerformance |
| nfLoadLevelInfos | array(NfLoadLevelInformation) | C | 1..N | The NF load level information. When subscribed event is "NF\_LOAD", the nfLoadLevelInfos shall be included.(NOTE 5) | NfLoad |
| nsiLoadLevelInfos | array(NsiLoadLevelInfo) | C | 1..N | Each element identifies the load level information for each S-NSSAI and the optionally associated network slice instance.Shall be included when subscribed event is "NSI\_LOAD\_LEVEL".(NOTE 5) | NsiLoad  |
| pfdDetermInfos | array(PfdDeterminationInfo) | C | 1..N | Represents the PFD Determination information for a known application identifier.Shall be included when subscribed event is "PFD\_DETERMINATION".(NOTE 5) | PfdDetermination |
| qosSustainInfos | array(QosSustainabilityInfo) | C | 1..N | The QoS sustainability information.When subscribed event is "QOS\_SUSTAINABILITY", the qosSustainInfos shall be included.(NOTE 5) | QoSSustainability |
| sliceLoadLevelInfo | SliceLoadLevelInformation | C | 0..1 | The slices and the load level information.When subscribed event is "SLICE\_LOAD\_LEVEL", the sliceLoadLevelInfo shall be included.(NOTE 5) |  |
| svcExps | array(ServiceExperienceInfo) | C | 1..N | The service experience information.When subscribed event is "SERVICE\_EXPERIENCE", the svcExps shall be included.(NOTE 5) | ServiceExperience |
| ueComms | array(UeCommunication) | C | 1..N | The UE communication information.When subscribed event is "UE\_COMM", the ueComms shall be included.(NOTE 5) | UeCommunication |
| ueMobs | array(UeMobility) | C | 1..N | The UE mobility information.When subscribed event is "UE\_MOBILITY", the ueMobs shall be included.(NOTE 5) | UeMobility |
| abnorBehavrs | array(AbnormalBehaviour) | C | 1..N | The Abnormal Behaviour information.When subscribed event is "ABNORMAL\_BEHAVIOUR", the abnorBehavrs shall be included.(NOTE 5) | AbnormalBehaviour |
| userDataCongInfos | array(UserDataCongestionInfo) | C | 1..N | The location and user data congestion information. Shall be present if the subscribed event is "USER\_DATA\_CONGESTION".(NOTE 5) | UserDataCongestion |
| dnPerfInfos | array(DnPerfInfo) | C | 1..N | The DN performance information.Shall be present if the subscribed event is "DN\_PERFORMANCE".(NOTE 5) | DnPerformance |
| disperInfos | array(DispersionInfo) | C | 1..N | The Dispersion information.When subscribed event is "DISPERSION", the "disperInfos" attribute shall be included.(NOTE 5) | Dispersion |
| redTransInfos | array(RedundantTransmissionExpInfo) | C | 1..N | The redundant transmission experience related information.When subscribed event is "RED\_TRANS\_EXP", the "redTransInfos" attribute shall be included.(NOTE 5) | RedundantTransmissionExp |
| wlanInfos | array(WlanPerformanceInfo) | C | 1..N | The WLAN performance related information.When subscribed event is "WLAN\_PERFORMANCE", the "wlanInfos" attribute shall be included.(NOTE 5) | WlanPerformance |
| smccExps | array(SmcceInfo) | C | 1..N | The Session Management Congestion Control Experience information.Shall be present when the requested event is "SM\_CONGESTION".(NOTE 5) | SMCCE |
| pduSesTrafInfos | array(PduSesTrafficInfo) | C | 1..N | The PDU Session traffic related information.When subscribed event is "PDU\_SESSION\_TRAFFIC", the "pduSesTrafInfos" attribute shall be included.(NOTE 5) | PduSesTraffic |
| accuInfo | AccuracyInfo | C | 0..1 | The analytics accuracy information.Shall be provided if the analytics accuracy requirement was subscribed in the "accuReq" attribute and the "cancelAccuInd" attribute is set to "false" or omitted. | AnalyticsAccuracy |
| cancelAccuInd | boolean | O | 0..1 | Indicates cancelled subscription of the analytics accuracy information.Set to "true" indicates the NWDAF cancelled subscription of analytics accuracy information as the NWDAF does not support the accuracy checking capability.Otherwise set to "false". Default value is "false" if omitted. | AnalyticsAccuracy |
| pauseInd | boolean | O | 0..1 | Pause analytics consumption indication applicable on analytics ID level. Set to "true" to indicate the consumer to stop the consumption of the analytics because the accuracy level needs to be increased.Default value is "false" if omitted. | AnalyticsAccuracy |
| resumeInd | boolean | O | 0..1 | Resume analytics consumption indication applicable on analytics ID level. Set to "true" to indicate the consumer to resume the consumption of the analytics because the accuracy has been improved.Default value is "false" if omitted. | AnalyticsAccuracy |
| movBehavInfos | array(MovBehavInfo) | C | 1..N | The Movement Behaviour information.When subscribed event is "MOVEMENT\_BEHAVIOUR", the "movBehavInfo" attribute shall be included.(NOTE 5) | MovementBehaviour |
| relProxInfos | array(RelProximityInfo) | C | 1..N | The Relative Proximity information.When subscribed event is "RELATIVE\_PROXIMITY", the "relProxInfos" attribute shall be included.(NOTE 5) | RelativeProximity |
| locAccInfos | array(LocAccuracyInfo) | C | 1..N | The Location Accuracy related information.It shall be present when the subscribed event is "LOC\_ACCURACY".(NOTE 5) | LocAccuracy |
| NOTE 1: If the "start" attribute and the "expiry" attribute are both provided, the DateTime of the "expiry" attribute shall not be earlier than the DateTime of the "start" attribute.NOTE 2: The value of "PREDICTION\_NOT\_ALLOWED" and "BOTH\_STAT\_PRED\_NOT\_ALLOWED" of the NwdafFailureCode data type is not applicable for the "failNotifyCode" attribute. The value of "UNAVAILABLE\_DATA" of the NwdafFailureCode data type is applicable for the the "failNotifyCode" attribute only when the "StatisticsFailure" feature is supported.NOTE 3: This attribute shall be included when ADRF is deployed.NOTE 4: The validity period specified by "start" and "expiry" attributes is determined by NWDAF internal logic, and is a subset of the analytics target period indicated by "startTs" and "endTs", or "offsetPeriod" attributes contained in "extraReportReq" attribute of the subscription. If the analytics target period refers to the past, the period specified by these two attributes indicate the time period over which the statistics are applicable. If the analytics target period refers to the future, the period specified by these two attributes indicate the time period over which the predictions are valid.NOTE 5: If the "AnalyticsAccuracy" feature is supported and the notification is only for notifying about the accuracy information of subscribed events, this attribute is not included even if the respective event was subscribed. |

\*\*\* End of Changes \*\*\*