**3GPP TSG- Meeting #4 *242023***

Changsha, China, 15th Apr 2024 – 19th Apr 2024

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| *CR-Form-v12.1* |
| **CHANGE REQUEST** |
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|  |  | **CR** | **0535** | **rev** | **1** | **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 |  | Radio Access Network |  | Core Network | **X** |

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|  |
| ***Title:***  |  Add use case and measurements related to NEF analytics exposure to AF |
|  |  |
| ***Source to WG:*** | Nokia |
| ***Source to TSG:*** | S5 |
|  |  |
| ***Work item code:*** | PM\_KPI\_5G\_Ph4 |  | ***Date:*** | 2024-04-05 |
|  |  |  |  |  |
| ***Category:*** | **B** |  | ***Release:*** | Rel-19 |
|  | *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-15 (Release 15)Rel-16 (Release 16)Rel-17 (Release 17)Rel-18 (Release 18)* |
|  |  |
| ***Reason for change:*** | In TS 23.288 (SA2 clause 6.1.1.2 and 6.1.2.2), five service operations are specified under “Procedures for analytics exposure” that enables the AF to subscribe/unsubscribe/fetch for analytics generated by the NWDAF. These service operations include the following:* *Nnef\_AnalyticsExposure\_subscribe*
* *Nnef\_AnalyticsExposure\_unsubscribe*
* *Nnef\_AnalyticsExposure\_notify*
* *Nnef\_AnalyticsExposure\_fetch*
* *Nnef\_AnalyticsExposure\_fetch response*

The failed or inefficient analytics exposure by the NEF towards the AF would impact the fulfilment of an application service and therefore it is important for the operators to monitor the performance of analytics exposure such as the number of such subscriptions and fetch requests received by the NEF, notifications and fetch responses sent by the NEF and time consumed by the NEF to serve service subscription and fetch requests. These measurements are also useful for the operators to analyze and evaluate the performance of the NEF itself and to take management actions for configuration, resource allocation or load balancing purposes.  |
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| ***Summary of change:*** | 1. A new measurement family “AE” is introduced2. A new measurement “Number of analytics exposure service subscriptions received by NEF” is introduced.3. A new measurement “Number of analytics exposure service fetch requests received by NEF” is introduced. 4. A new measurement “Number of analytics exposure service notifications sent by NEF” is introduced. 5. A new measurement “Number of analytics exposure service fetch responses sent by NEF” is introduced.6. A new measurement “Number of failed analytics service subscriptions by NEF” is introduced.7. A new measurement “Time consumed by the NEF to expose analytics information” is itnroduced.8. A use case on “Monitoring of analytics exposure to AF” is introduced. |
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| ***Consequences if not approved:*** | Operator will not be able to monitor the performance of analytics exposure service operations and to take NEF management actions for configuration, resource allocation or load balancing purposes. |
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| ***Clauses affected:*** | 3.3, 5.9, A |
|  |  |
|  | **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:*** | S5-242023 is the revision of S5-241350.  |

***Start of First change***

## 3.3 Measurement family

The measurement names defined in the present document are all beginning with a prefix containing the measurement family name. This family name identifies all measurements which relate to a given functionality and it may be used for measurement administration.

The list of families currently used in the present document is as follows:

- DRB (measurements related to Data Radio Bearer).

- RRC (measurements related to Radio Resource Control).

- UECNTX (measurements related to UE Context).

- RRU (measurements related to Radio Resource Utilization).

- RM (measurements related to Registration Management).

- SM (measurements related to Session Management).

- GTP (measurements related to GTP Management).

- IP (measurements related to IP Management).

- PA (measurements related to Policy Association).

- MM (measurements related to Mobility Management).

- VR (measurements related to Virtualized Resource).

- CARR (measurements related to Carrier).

- QF (measurements related to QoS Flow).

- AT (measurements related to Application Triggering).

- SMS (measurements related to Short Message Service).

- PEE (measurements related to Power, Energy and Environment).

- NFS (measurements related to NF service).

- PFD (measurements related to Packet Flow Description).

- RACH (measurements related to Random Access Channel).

- MR (measurements related to Measurement Report).

- L1M (measurements related to Layer 1 Measurement).

- NSS (measurements related to Network Slice Selection).

- PAG (measurements related to Paging).

- NIDD (measurements related to Non-IP Data Delivery).

- EPP (measurements related to external parameter provisioning).

- TI (measurements related to traffic influence).

- CE (measurements related to Connection Establishment).

- SPP (measurements related to Service Parameter Provisioning).

- BDTP (measurements related to Background Data Transfer Policy).

- DM (measurements related to Data Management).

- AFQ (measurements related to AF session with QoS).

- UCM (measurements related to UE radio Capability Management).

- PAU (measurements related to Policy Authorization).

- EEX (measurements related to Event Exposure).

- SDM (measurements related to subscriber data management).

- PPV (measurements related to parameter provisioning).

- DIS (measurements related to discovery).

- Location Management (measurements related to Location Management).

- SP (measurement related to service provisioning).

##  - DANS (measurements related to Data Analytics Service).

 - AE (measurements related to analytics exposure).

***Start of Next change***

## 5.9 Performance measurements for NEF

### 5.9.X Measurements related to analytics exposure

## 5.9.X.1 Number of analytics exposure service subscriptions received by NEF

a) This measurement provides the number of analytics exposure service subscriptions/fetches received by the NEF.

b) CC

c) On receiving the service subscription by the AF to subscribe for analytics, each subscription is added to the corresponding counter. The measurement can be split into sub-counters per analytics ID, sub-counters per S-NSSAI, sub-counters per PLMN.

d) It is an integer value

e) AE.AnalyticsExposureSerSubReceived

f) NEFFunction

g) Valid for packet switched traffic

h) 5GS

## 5.9.X.2 Number of analytics exposure service notifications sent by NEF

a) This measurement provides the number of analytics exposure service notifications sent by the NEF.

b) CC

c) On sending the notification by the NEF corresponding to analytics exposure service subscribe, each sent notification is added to the corresponding counter. The measurement can be split into sub-counters per analytics ID, sub-counters per S-NSSAI sub-counters per PLMN.

d) It is an integer value

e) The measurement name may have the form AE.AnalyticsExposureSerNotificationSent

f) NEFFunction

g) Valid for packet switched traffic

h) 5GS

## 5.9.X.3 Number of failed analytics service subscriptions by NEF

a) This measurement provides the number of analytics exposure service subscriptions received and rejected by the NEF.

b) CC

c) On receiving the service subscription by the AF for the analytics exposure, each rejected subscription is added to the corresponding counter. The measurement can be split into sub-counters per analytics ID, sub-counters per S-NSSAI and sub-counters per PLMN.

d) It is an integer value

e) AE.MemberUESelectionAssistanceSerSubRejected

f) NEFFunction

g) Valid for packet switched traffic

## h) 5GS

## 5.9.X.4 Number of analytics exposure service fetch requests received by NEF

a) This measurement provides the number of analytics exposure service fetch requests received by the NEF.

b) CC

c) On receiving the service fetch request by the AF to fetch for analytics, each fetch request is added to the corresponding counter. The measurement can be split into sub-counters per analytics ID, sub-counters per S-NSSAI, sub-counters per PLMN.

d) It is an integer value

e) AE.AnalyticsExposureSerFetchReceived

f) NEFFunction

g) Valid for packet switched traffic

h) 5GS

## 5.9.X.5 Number of analytics exposure service fetch responses sent by NEF

a) This measurement provides the number of analytics exposure service fetch responses sent by the NEF.

b) CC

c) On sending the service fetch response by the NEF corresponding to analytics exposure service fetch request, each sent notification is added to the corresponding counter. The measurement can be split into sub-counters per analytics ID, sub-counters per S-NSSAI sub-counters per PLMN.

d) It is an integer value

e) AE.AnalyticsExposureSerFetchResponseSent

f) NEFFunction

g) Valid for packet switched traffic

h) 5GS

## 5.9.X.6 Number of failed analytics service fetch requests by NEF

a) This measurement provides the number of analytics exposure service fetch requests received and rejected by the NEF.

b) CC

c) On receiving the service fetch request by the AF for the analytics exposure, each rejected fetch request is added to the corresponding counter. The measurement can be split into sub-counters per analytics ID, sub-counters per S-NSSAI and sub-counters per PLMN.

d) It is an integer value

e) AE.MemberUESelectionAssistanceSerFetchReqRejected

f) NEFFunction

g) Valid for packet switched traffic

h) 5GS

## 5.9.X.7 Time consumed by the NEF to expose analytics information

a) This measurement provides the time consumed by the NEF to expose analytics information to AF considering both inbound and outbound restrictions.

b) DER(n=1)

c) *The measurement is obtained by the following method:*

- the time when the analytics exposure service subscription or analytics exposure fetch request was received by the NEF, minus the time when the NEF sends the corresponding first notification or fetch response with the exposed analytics information. The measurement can be per Analytics ID.

d) A real value in milliseconds

e) AE.AnalyticsExposureSerTimeCons

f) NEFFunction

g) Valid for packet switched traffic

h) 5GS

***Start of Next change***

Annex A (informative):
Use cases for performance measurements

A.Y Monitoring of analytics exposure to AF

As described in TS 23.288 [59], there are two procedures for analytics exposure to AFs be performed via NEF, one is by using analytics subscription to NWDAF and another is by using analytics request to NWDAF. an AF may send analytics subscription or fetch requests to NEF to obtain analytics information for a particular analytics ID in order to support an application service. If the subscription or fetch request from AF complies with the inbound and outbound restrictions, the NEF obtains the requested analytics information from the NWDAF and notifies or responds to the AF with the obtained analytics information after mapping them for external usage.

The failed or inefficient analytics exposure by the NEF towards the AF would impact the fulfilment of an application service. Therefore, the performance of analytics exposure such as the number of such subscriptions and fetch requests received by the NEF, notifications and fetch responses sent by the NEF and time consumed by the NEF to serve service subscription and fetch requests needs to be monitored. These measurements are also useful for the operators to analyze and evaluate the performance of the NEF itself and to take management actions on the NEF with respect to configuration, resource allocation or load balancing purposes.

***End of Changes***