**3GPP TSG CT WG3 Meeting #139 C3-250486**

**Athens, GR, 17 Feb - 21 Feb, 2025 (revision of C3-250376)**

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| *CR-Form-v12.3* |
| **CHANGE REQUEST** |
|  |
|  | **29.522** | **CR** | **1533** | **rev** | **1** | **Current version:** | **19.1.0** |  |
|  |
| *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:***  | Enhancements on the QoS Sustainability analytics exposure |
|  |  |
| ***Source to WG:*** | Huawei |
| ***Source to TSG:*** | CT3 |
|  |  |
| ***Work item code:*** | eNetAE19 |  | ***Date:*** | 2024-12-25 |
|  |  |  |  |  |
| ***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-17 (Release 17)Rel-18 (Release 18)Rel-19 (Release 19) Rel-20 (Release 20)* |
|  |  |
| ***Reason for change:*** | * The "qosFlowRetThd" and "ranUeThrouThd" attributes shall be defined as conditional instead of optional according to NOTE 1 in Table 5.6.3.3.18-1.
* The description of "QoS\_SustainabilityExt\_eNA" feature needs to be enhanced to reflect the functionalities it supports, and the dependent feature also needs to be corrected.
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| ***Summary of change:*** | * Update the P column of "qosFlowRetThd" and "ranUeThrouThd" attributes.
* Update the description of "QoS\_SustainabilityExt\_eNA" feature.
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| ***Consequences if not approved:*** | Errors in the specification may lead to interoperability issue. |
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| ***Clauses affected:*** | 5.6.3.3.18, 5.6.4 |
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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 does not impact the OpenAPI file. |
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| ***This CR's revision history:*** |  |

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

##### 5.6.3.3.18 Type QosSustainabilityExposure

Table 5.6.3.3.18-1: Definition of type QosSustainabilityExposure

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| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| locArea | LocationArea5G | M | 1 | Identification(s) of applicable location areas where the analytics result applies. (NOTE 3, NOTE 5) |  |
| fineAreaInfos | array(GeographicalArea) | O | 1..N | This attribute contains the geographical locations in a fine granularity (e.g. smaller than a cell).May be provided when the "fineGranAreas" attribute is provided in the request. | QoS\_SustainabilityExt\_eNA |
| startTs | DateTime | M | 1 | Represents the start time of the applicable observing period.(NOTE 4) |  |
| endTs | DateTime | M | 1 | Represents the end time of the applicable observing period.(NOTE 4) |  |
| qosFlowRetThd | RetainabilityThreshold | O | 0..1 | The reporting QoS Flow Retainability Threshold that are met or crossed for 5QI of GBR resource type.(NOTE 1) |  |
| ranUeThrouThd | BitRate | O | 0..1 | The reporting RAN UE Throughput Threshold that are met or crossed for 5QI of non-GBR resource type.(NOTE 1) |  |
| snssai | Snssai | O | 0..1 | Identifies the network slice information. | QoS\_Sustainability\_Ext |
| confidence | Uinteger | C | 0..1 | Indicates the confidence of the prediction. (NOTE 2)Shall be present if the analytics result is a prediction.Minimum = 0. Maximum = 100. |  |
| NOTE 1: Either "qosFlowRetThd" or "ranUeThrouThd" attribute shall be provided. NOTE 2: If the requested period identified by the "startTs" and "endTs" attributes in the EventReportingRequirement data type is a future time period, which means the analytics result is a prediction. If no sufficient data is collected to provide the confidence of the prediction before the time deadline, a zero confidence shall be returned.NOTE 3: The NetworkAreaInfo data type within the LocationArea5G data is not applicable.NOTE 4: If the "temporalGranSize" attribute is provided in the request, the duration indicated by the "startTs" and "endTs" attributes shall be greater than or equal to the value of the "temporalGranSize" attribute.NOTE 5: If the "spatialGranSizeTa" and/or "spatialGranSizeCell" attributes are provided in the request, the number of TAs or cells contained in "locArea" attribute shall be smaller than or equal to the values of the "spatialGranSizeTa" and/or "spatialGranSizeCell" attributes. |

\*\*\* Next Change \*\*\*

### 5.6.4 Used Features

The table below defines the features applicable to the AnalyticsExposure API. Those features are negotiated as described in clause 5.2.7 of 3GPP TS 29.122 [4].

Table 5.6.4-1: Features used by AnalyticsExposure API

|  |  |  |
| --- | --- | --- |
| Feature number | Feature Name | Description |
| 1 | Ue\_Mobility | This feature indicates support for the analytics event related to UE mobility. |
| 2 | Ue\_Communication | This feature indicates support for the analytics event related to UE communication information. |
| 3 | Abnormal\_Behavior | This feature indicates support for the analytics event related to UE's abnormal behaviour. |
| 4 | Congestion | This feature indicates support for the analytics event related to UE's user data congestion information. |
| 5 | Network\_Performance | This feature indicates support for the analytics event related to network performance. |
| 6 | QoS\_Sustainability | This feature indicates support for the analytics event related to QoS sustainability. |
| 7 | Notification\_websocket | The delivery of notifications over Websocket is supported as described in 3GPP TS 29.122 [4]. This feature requires that the Notification\_test\_event feature is also supported. |
| 8 | Notification\_test\_event | The testing of notification connection is supported as described in 3GPP TS 29.122 [4]. |
| 9 | Dispersion | This feature indicates support for the analytics event related to Dispersion analytics. |
| 10 | EneNA | This feature indicates support for the enhancements of network data analytics requirements. |
| 11 | DnPerformance | This feature indicates the support of the analytics event related to DN performance. |
| 12 | ServiceExperience | This feature indicates support for the event related to service experience. |
| 13 | CongestionExt | This feature indicates support for the extensions to the event related to user data congestion, including support of GPSI and/or list of Top applications. Supporting this feature also requires the support of feature Congestion. |
| 14 | Abnormal\_Behavior\_Ext | This feature indicates support for the extensions to the event related to abnormal behavior, including support of exposing DNN and S-NSSAI information.Supporting this feature also requires the support of feature Abnormal\_Behavior. |
| 15 | QoS\_Sustainability\_Ext | This feature indicates support for the extensions to the event related to QoS sustainability, including support of exposing S-NSSAI information.Supporting this feature also requires the support of feature QoS\_Sustainability. |
| 16 | TermRequest | This feature indicates support for Analytics Exposure Subscription termination requests sent by the NEF to the NF service consumer. |
| 17 | QoS\_SustainabilityExt\_eNA | This feature indicates support for the extensions to the event related to QoS sustainability, including:* support of multiple S-NSSAIs
* support of deriving the QoS sustainability analytics in an AoI with fine granularity.

Supporting this feature also requires the support of feature QoS\_Sustainability\_Ext. |
| 18 | ServiceExperienceExt\_eNA | This feature indicates support for the extensions to the event related to service experience supporting eNA, including support for DNN, S-NSSAI, Location Area, PDU Session parameters information for service experience analytics. Supporting this feature also requires the support of feature ServiceExperience. |
| 19 | Abnormal\_BehaviorExt\_eNA | This feature indicates support for the extensions to the event related to abnormal behavior related to eNA, including support of exposing DNN and S-NSSAI information.Supporting this feature also requires the support of feature Abnormal\_Behavior. |
| 20 | CongestionExt\_eNA | This feature indicates support for the extensions to the event related to user data congestion related to eNA, including support of GPSI and/or list of Top applications. Supporting this feature also requires the support of feature Congestion. |
| 21 | DispersionExt\_eNA | This feature indicates support for the extensions associated with analytics event related to Dispersion analytics. Supporting this feature also requires the support of feature Congestion. |
| 22 | DnPerformanceExt\_eNA | This feature indicates the support of the analytics event related to DN performance. Supporting this feature also requires the support of the "Dispersion" feature. |
| 23 | UeCommunicationExt\_eNA | This feature indicates the support of the analytics event related to UE communication related to eNA. Supporting this feature also requires the support of feature Ue\_Communication. |
| 24 | Ue\_MobilityExt\_eNA | This feature indicates the support of the analytics event related to UE Mobility supporting eNA, including ordering criterion and preferred granularity of location. Supporting this feature also requires the support of feature Ue\_Mobility. |
| 25 | DnPerformanceExt\_AIML | This feature indicates support for extensions to the event related to DN Performance supporting AIML, including support of extended DN Performance Analytics for group of UEs. Supporting this feature also requires the support of feature DnPerformance. |
| 26 | UeMobilityExt\_AIML | This feature indicates support for further extensions to the event related to UE mobility supporting AIML, including support of UE’s geographical distribution and direction analytics. Supporting this feature also requires the support of feature "Ue\_Mobility". |
| 27 | NetworkPerformanceExt\_AIML | This feature indicates support of the network performance enhancements for AI/ML-based Services. Within this feature the following enhacements are covered:- support of providing gNB resource usage for GBR traffic and Delay-critical GBR traffic.Supporting this feature also requires the support of Network\_Performance feature. |
| 28 | E2eDataVolTransTime | This feature indicates support for E2E data volume transfer time analytics |
| 29 | ENAExt | This feature indicates support for the general enhancements of analytics exposure requirements, including support for use case context sent by the NF service consumer to the NEF. |
| 30 | NetworkPerfExt\_eNA | This feature indicates support for the enhancements of network performance. Within this feature the following enhacements are covered:- support of providing target period subset in the analytics.Supporting this feature also requires the support of Network\_Performance feature. |
| 31 | MovementBehaviour | This feature indicates support for the Movement Behaviour information. |
| 32 | WlanPerformance\_AIML | This feature indicates support for the WLAN Performance information supporting AIML. |
| 33 | NSLoad | This feature indicates the support of Network Slice load level information reporting subscription/notification functionality as part of the support of network slice capability exposure application layer framework.The following functionalities are supported:- support to subscribe and get notified of (or retrieve) Network Slice load level analytics information. |
| 34 | AnalyticsAccuracy | This feature indicates support for the Analytics Accuracy information. |
| 35 | RelativeProximity | This feature indicates support for the Relative Proximity analytics. |
| 36 | StatisticsFailure | This feature indicates support for partial failure report for statistics during event notification.This feature requires the support of the "EneNA" feature. |
| 37 | RoamingAnalytics | This feature indicates support for forwarding errors related to roaming analytics. |
| 38 | MovementBehaviourExt | This feature indicates support for the enhancement of Movement Behaviour information.The following functionalities are supported:- Support targeting list of UEs in Movement Behaviour Analytics.Supporting this feature also requires the support of MovementBehaviour feature. |
| 39 | QoSSustainabilityExt2 | This feature indicates support for the enhancements of QoS Sustainability Analytics.The following functionalities are supported:- Support targeting list of UEs in QoS Sustanability Analytics.Supporting this feature also requires the support of QoS\_SustainabilityExt\_eNA feature. |
| 40 | SignallingStorm | This feature indicates support for the Signalling Storm Analytics. |

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