**3GPP TSG CT WG3 Meeting #132e *C3-240065r2***

**Electronic, 22 - 24 January, 2024**

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| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **29.514** | **CR** | **0582** | **rev** | **1** | **Current version:** | **18.4.0** |  |
|  | | | | | | | | |
| *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:*** | Clarification of feature dependency on QoSMonitoring for EnQoSMon | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | ZTE | | | | | | | | | |
| ***Source to TSG:*** | CT3 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | XRM | | | | |  | ***Date:*** | | | 2024-1-15 |
|  |  | | | |  | |  | | |  |
| ***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 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-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | According to the procedure description in 4.2.2.23 and 4.2.3.23, the support of QoSMonitoring feature is the pre-condition of the support of EnQoSMon feature. Furthermore, QOS\_MONITORING event is only applicable to QoSMonitoring feature as defined in Table 5.6.3.7-1, and QosMonitoringInformation and QosMonitoringReport data types are only applicable for QoSMonitoring feature as defined in Table 5.6.1-1. Therefore, EnQoSMon feature has dependency on QoSMonitoring feature, and this dependency needs to be indicated in 5.8. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | 1. Indicate in 5.8 that EnQoSMon feature requires that QosMonitoring feature is supported. 2. In Table 5.6.2.6-1:  * remove EnQoSMon feature from the applicability column of reqQosMonParams attribute as EnQoSMon feature requires that QosMonitoring feature is supported. * add EnQoSMon feature to the applicability column of directNotifInd attribute. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | Unclear specification may lead to implementation mistakes and interoperability problems. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 5.6.2.6, 5.6.2.25, 5.8 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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 \*\*\*

#### 5.6.2.6 Type EventsSubscReqData

Table 5.6.2.6-1: Definition of type EventsSubscReqData

| Attribute name | Data type | P | Cardinality | Description | Applicability |
| --- | --- | --- | --- | --- | --- |
| events | array(AfEventSubscription) | M | 1..N | Subscribed Events. |  |
| notifUri | Uri | O | 0..1 | Notification URI. |  |
| reqQosMonParams | array(RequestedQosMonitoringParameter) | O | 1..N | Indicates the QoS information to be monitored, e.g. UL packet delay, DL packet delay, round trip packet delay and/or congestion infomation between the UE and the UPF, and/or data rate monitoring, is to be monitored when the QoS Monitoring is enabled for the service data flow. | QoSMonitoring |
| qosMon | QosMonitoringInformation | O | 0..1 | Qos Monitoring information. It can be present when the event "QOS\_MONITORING" is subscribed and packet delay measurements are required. | QoSMonitoring |
| qosMonDatRate | QosMonitoringInformation | O | 0..1 | Contains the data rate measurements information for the subscribed report. It shall be present when the event "QOS\_MONITORING" is subscribed and data rate measurements are required. | EnQoSMon |
| pdvReqMonParams | array(RequestedQosMonitoringParameter) | O | 1..N | Indicates the Packet Delay Variation to be monitored, e.g. UL packet delay, DL packet delay and/or round trip packet delay between the UE and the UPF is to be monitored. | EnQoSMon |
| pdvMon | QosMonitoringInformation | O | 0..1 | Packet Delay Variation information for the subscribed report. It may be present when the event "PACK\_DEL\_VAR" is subscribed.  (NOTE) | EnQoSMon |
| congestMon | QosMonitoringInformation | O | 0..1 | Congestion threshold for the subscribed report. It may be present when the event "QOS\_MONITORING" is subscribed. | EnQoSMon |
| reqAnis | array(RequiredAccessInfo) | C | 1..N | Represents the required access network information. It shall be present when the event "ANI\_REPORT" is subscribed. | NetLoc |
| usgThres | UsageThreshold | O | 0..1 | Includes the volume and/or time thresholds for sponsored data connectivity. | SponsoredConnectivity |
| notifCorreId | string | O | 0..1 | It is used to set the value of Notification Correlation ID in the corresponding notification. | EnhancedSubscriptionToNotification |
| afAppIds | array(AfAppId) | O | 1..N | AF application identifier(s). It shall be present when the event "APP\_DETECTION" is subscribed. | ApplicationDetectionEvents |
| directNotifInd | boolean | O | 0..1 | Indicates that the event notification of QoS Monitoring data is sent by the UPF to Local NEF or AF if it is included and set to true. It may be present when the event "QOS\_MONITORING" is subscribed.  The default value "false" shall apply, if the attribute is not present. | ExposureToEAS  EnQoSMon |
| avrgWndw | AverWindow | O | 0..1 | Averaging window for the calculation of the data rate for the service data flow. It may be included when the "qosMonDatRate" attribute is included. | EnQoSMon |
| NOTE: The "pvdMon" attribute, when provided, contains the threshold(s) in units of milliseconds to trigger packet delay variation events for the UL, DL and/or Round Trip within the "repThreshDl", "repThreshUl" and/or "repThreshRp" attribute(s) respectively. | | | | | |

Editor’s Note: It is FFS whether the QoS monitoring requirements for congestion measurements are different than the ones for packet delay, i.e., it is FFS whether reporting period and reporting frequency apply, or different criteria needs to be applied.

Editor's note: Whether to reuse or enhance the QosMonitoringInformation data type for the "pdvMon" attribute is FFS.

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

#### 5.6.2.25 Type EventsSubscReqDataRm

This data type is defined in the same way as the "EventsSubscReqData" data type, but:

- with the OpenAPI "nullable: true" property; and

- the removable attribute "usgThres" is defined with the removable data type "UsageThresholdRm"; and removable attribute "qosMon" is defined with the removable data type "QosMonitoringInformationRm".

Table 5.6.2.25-1: Definition of type EventsSubscReqDataRm

| Attribute name | | Data type | | P | | Cardinality | | Description | | Applicability | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| events | | array(AfEventSubscription) | | M | | 1..N | | Subscribed Events. | |  | |
| notifUri | | Uri | | O | | 0..1 | | Notification URI. | |  | |
| reqQosMonParams | | array(RequestedQosMonitoringParameter) | | O | | 1..N | | Indicates the QoS information to be monitored, e.g. UL packet delay, DL packet delay, round trip packet delay and/or congestion information between the UE and the UPF, and/or data rate is to be monitored when the QoS Monitoring is enabled for the service data flow. | | QoSMonitoring  EnQoSMon | |
| qosMon | | QosMonitoringInformationRm | | O | | 0..1 | | Qos Monitoring information. It can be present when the event "QOS\_MONITORING" is subscribed. | | QoSMonitoring | |
| qosMonDatRate | | QosMonitoringInformationRm | | O | | 0..1 | | Contains the data rate measurements information for the subscribed report. It can be present when the event "QOS\_MONITORING" is subscribed and data rate measurements are required. | | EnQoSMon | |
| pdvReqMonParams | | array(RequestedQosMonitoringParameter) | | O | | 1..N | | Indicates the Packet Delay Variation to be monitored, e.g. UL packet delay, DL packet delay and/or round trip packet delay between the UE and the UPF is to be monitored. | | EnQoSMon | |
| pdvMon | | QosMonitoringInformationRm | | O | | 0..1 | | Packet Delay Variation information for the subscribed report. It may be present when the event "PACK\_DEL\_VAR" is subscribed. | | EnQoSMon | |
| congestMon | | QosMonitoringInformation | | O | | 0..1 | | Congestion threshold for the subscribed report. It may be present when the event "QOS\_MONITORING" is subscribed.  (NOTE 2) | | EnQoSMon | |
| reqAnis | | array(RequiredAccessInfo) | | C | | 1..N | | Represents the required access network information. It shall be present when the event "ANI\_REPORT" is subscribed. (NOTE) | | NetLoc | |
| usgThres | | UsageThresholdRm | | O | | 0..1 | | Includes the volume and/or time thresholds for sponsored data connectivity. | | SponsoredConnectivity | |
| notifCorreId | | string | | O | | 0..1 | | It is used to set the value of Notification Correlation ID in the corresponding notification. | | EnhancedSubscriptionToNotification | |
| directNotifInd | | boolean | | C | | 0..1 | | Indicates that the event notification of QoS Monitoring data is sent by the UPF to Local NEF or AF if it is included and set to true. It may be present when the event "QOS\_MONITORING" is subscribed. | | ExposureToEAS  EnQoSMon | |
| avrgWndw | | AverWindowRm | | O | | 0..1 | | Averaging window for the calculation of the data rate for the service data flow | | EnQoSMon | |
| NOTE 1: "ANI\_REPORT" is the one-time reported event and thus the attribute "reqAnis" is not defined as removable attribute (i.e. with the removable data type "RequiredAccessInfoRm"). Once the access network information is reported to the NF service consumer the subscription to this event is automatically terminated in the PCF and the related information is removed.  NOTE 2: The enumeration "ROUND\_TRIP" is not applicable to "QOS\_MONITORING" event. | | | | | | | | | | | |

Editor’s Note: It is FFS whether the QoS monitoring requirements for congestion measurements are different than the ones for packet delay, i.e., it is FFS whether reporting period and reporting frequency apply, or different criteria needs to be applied.

\*\*\* 3rd Change \*\*\*

## 5.8 Feature negotiation

The optional features in table 5.8-1 are defined for the Npcf\_PolicyAuthorization API. They shall be negotiated using the extensibility mechanism defined in clause 6.6.2 of 3GPP TS 29.500 [5].

When requesting the PCF to create an Individual Application Session Context resource the NF service consumer shall indicate the optional features the NF service consumer supports for the Npcf\_PolicyAuthorization service by including the "suppFeat" attribute in the "AppSessionContextReqData" data type of the HTTP POST request.

The PCF shall determine the supported features for the created Individual Application Session Context resource as specified in clause 6.6.2 of 3GPP TS 29.500 [5]. The PCF shall indicate the supported features in the HTTP response confirming the creation of the Individual Application Session Context resource by including the "suppFeat" attribute in the "AppSessionContextRespData" data type.

Table 5.8-1: Supported Features

| Feature number | Feature Name | Description |
| --- | --- | --- |
| 1 | InfluenceOnTrafficRouting | Indicates support of Application Function influence on traffic routing. If the PCF supports this feature, the NF service consumer may influence SMF routing to applications or subscribe to notifications of UP path management for the traffic flows of an active PDU session. |
| 2 | SponsoredConnectivity | Indicates support of sponsored data connectivity. If the PCF supports this feature, the NF service consumer may provide sponsored data connectivity to the SUPI. |
| 3 | MediaComponentVersioning | Indicates the support of the media component versioning. |
| 4 | URLLC | Indicates support of Ultra-Reliable Low-Latency Communication (URLLC) requirements, i.e. AF application relocation acknowledgement and UE address(es) preservation. The InfluenceOnTrafficRouting feature shall be supported in order to support this feature. |
| 5 | IMS\_SBI | Indicates support of the communication with the 5GC IMS NF service consumer via Service Based Interfaces. |
| 6 | NetLoc | Indicates the support of access network information reporting. |
| 7 | ProvAFsignalFlow | This indicates support for the feature of provisioning of AF signalling flow information as described in clauses 4.2.2.16 and 4.2.3.17. If the PCF supports this feature the NF service consumer may provision AF signalling flow information.  NOTE: This feature is used by the IMS Restoration Procedures to provide to the SMF the address of the P-CSCF selected by the UE, refer to 3GPP TS 23.380 [39].  The IMS\_SBI feature shall be supported in order to support this feature. |
| 8 | ResourceSharing | This feature indicates the support of resource sharing across several "Individual Application Session Context" resources. The IMS\_SBI feature shall be supported in order to support this feature. |
| 9 | MCPTT | This feature indicates the support of Mission Critical Push To Talk services as described in 3GPP TS 24.379 [41]. |
| 10 | MCVideo | This feature indicates the support of Mission Critical Video services as described in 3GPP TS 24.281 [43]. |
| 11 | PrioritySharing | This feature indicates that Priority Sharing is supported as described in 3GPP TS 23.503 [4], clause 6.1.3.15. |
| 12 | MCPTT-Preemption | This feature indicates the support of service pre-emption based on the information provided by the NF service consumer. It requires that both PrioritySharing and MCPTT features are also supported. |
| 13 | MacAddressRange | Indicates the support of a set of MAC addresses with a specific range in the traffic filter. |
| 14 | RAN-NAS-Cause | This feature indicates the support for the release cause code information from the access network. |
| 15 | EnhancedSubscriptionToNotification | Indicates the support of:  - Subscription to periodic notifications.  - Definition of a waiting time between the reporting of two event triggered events.  - Indication of whether the event has to be reported at PDU Session termination.  - Notification Correlation Id for a subscription to an event. |
| 16 | QoSMonitoring | Indicates the support of QoS monitoring functionality and the report of packet delay monitoring. This feature requires the support of the EnhancedSubscriptionToNotification feature. |
| 17 | AuthorizationWithRequiredQoS | Indicates support of policy authorization for the AF session with required QoS. |
| 18 | TimeSensitiveNetworking | Indicates that the 5G System is integrated within the external network as a TSN bridge. |
| 19 | PCSCF-Restoration-Enhancement | This feature indicates support of P-CSCF Restoration Enhancement. It is used for the PCF and the P-CSCF to indicate if they support P-CSCF Restoration Enhancement. |
| 20 | CHEM | This feature indicates the support of Coverage and Handover Enhancements for Media (CHEM). |
| 21 | FLUS | This feature indicates the support of FLUS functionality as described in 3GPP TS 26.238 [51]. |
| 22 | EPSFallbackReport | This feature indicates the support of the report of EPS Fallback as defined in clauses 4.2.2.30, 4.2.3.29 and 4.2.5.15. |
| 23 | ATSSS | Indicates the support of the report of the multiple access types of a MA PDU session. |
| 24 | QoSHint | This feature indicates the support of specific QoS hint parameters as described in 3GPP TS 26.114 [30], clause 6.2.10. |
| 25 | ReallocationOfCredit | This feature indicates the support of notifications of reallocation of credits events. It requires the support of IMS\_SBI feature. |
| 26 | ES3XX | Extended Support for 3xx redirections. This feature indicates the support of redirection for any service operation, according to Stateless NF procedures as specified in clauses 6.5.3.2 and 6.5.3.3 of 3GPP TS 29.500 [5] and according to HTTP redirection principles for indirect communication, as specified in clause 6.10.9 of 3GPP TS 29.500 [5]. |
| 27 | DisableUENotification | Indicates the support of disabling QoS flow parameters signalling to the UE when the SMF is notified by the NG-RAN of changes in the fulfilled QoS situation. This feature requires that the AuthorizationWithRequiredQoS featute is also supported. |
| 28 | PatchCorrection | Indicates support of the correction to the PATCH method:  When this feature is not supported, the interoperability between a NF service consumer and the PCF can only be ensured when it is not required the update of the Individual Application Session Context resource. |
| 29 | MPSforDTS | Indicates support for MPS for DTS as described in clauses 4.2.2.12.2 and 4.2.3.12. |
| 30 | ApplicationDetectionEvents | This feature indicates the support of the subscription to notifications of the detection of the start and stop of an application's traffic. |
| 31 | TimeSensitiveCommunication | Indicates that the 5G System is integrated within the external network as a TSC user plane node to enable Time Sensitive Communication, Time Synchronization and Deterministic Networking. This feature requires that the TimeSensitiveNetworking feature is also supported. |
| 32 | ExposureToEAS | This feature indicates the support of the indication of direct event notification of QoS monitoring events from the UPF to the Local NEF or AF in 5GC. This indication requires that the QoSMonitoring feature is supported. |
| 33 | SatelliteBackhaul | Indicates the support of the report of the satellite or non-satellite backhaul category of the PDU session. |
| 34 | RoutingReqOutcome | Indicates the support of:  - the report of UP path change failures; and  - the indication of whether AF routing requirements are applied.  It requires the support of InfluenceOnTrafficRouting feature. |
| 35 | EASDiscovery | This feature indicates the support of EAS (re)discovery. |
| 36 | AltSerReqsWithIndQoS | Indicates the support of provisioning Alternative Service Requirements with individual QoS parameters. This feature requires that the AuthorizationWithRequiredQoS feature is also supported. |
| 37 | SimultConnectivity | This feature indicates the support of the indication of temporary simultaneous connectivity over source and target PSA at edge relocation. This indication requires that the InfluenceOnTrafficRouting feature is supported. |
| 38 | EASIPreplacement | This feature indicates the support of provisioning of EAS IP replacement info. This support requires that InfluenceOnTrafficRouting feature is also supported |
| 39 | AccNetChargId\_String | This feature indicates the support of long character strings as access network charging identifier. |
| 40 | WLAN\_Location | This feature indicates the support of the report of the WLAN location information received from the ePDG/EPC, if available. It is only applicable to EPS interworking scenarios as described in 3GPP TS 29.512 [8], Annex B. |
| 41 | AF\_latency | This feature indicates support for edge relocation considering user plane latency. |
| 42 | UEUnreachable | This feature indicates the support for the reporting of UE temporary unavailable. |
| 43 | AltQoSProfilesSupportReport | This feature indicates the support of the report of whether Alternative QoS parameters are supported by NG-RAN. This feature requires that AuthorizationWithRequiredQoS feature is also supported. |
| 44 | PacketDelayFailureReport | Indicates the support of packet delay failure report as part of QoS Monitoring procedures. This feature requires that QoSMonitoring feature is supported. |
| 45 | EnTSCAC | Indicates the support of extensions to TSCAC and the RAN feedback for BAT offset and adjusted periodicity.  This feature requires that the TimeSensitiveCommunication feature is also supported. |
| 46 | SignalingPathValidation | This feature indicates the support of the validation of the NF type that originates the Npcf\_PolicyAuthorization\_Create request. |
| 47 | ExtQoS | This feature indicates the support for the extensions to the QoS mechanisms. |
| 48 | CommonEASDNAI | This feature controls the support of the common EAS/DNAI selection. This feature requires that the InfluenceOnTrafficRouting feature is alos supported. |
| 49 | SFC | This feature indicates support of Service Function Chaining functionality. |
| 50 | MultiMedia | This feature indicates the support of multi-modal or multimedia communication service. This feature acts as a basic functional block for extended reality (XR) and interactive media services. |
| 51 | EnSatBackhaulCatChg | This feature indicates the support also of the report of the dynamic  satellite backhaul category of the PDU session. This feature requires the support of SatelliteBackhaul feature. |
| 52 | MTU\_Size | This feature indicates the support of the report of the MTU size of the device side port. This feature requires that the TimeSensitiveCommunication feature is also supported. |
| 53 | ExtraUEaddrReport | This feature indicates the support of the report of additional IP addresses or address ranges allocated for the given PDU session resulting from framed routes or IPv6 prefix delegation. |
| 54 | AuthorizationForMpsSignalling | This feature indicates support for use of the "mpsAction" attribute to signal that the UE's MPS subscription shall be checked by the PCF prior to enabling MPS for AF signalling. |
| 55 | ExposureToTSC | This feature indicates the support of the direct event notification of TSC management information from the UPF to the TSCTSF or TSN AF in 5GC. This feature requires that the TimeSensitiveCommunication feature is also supported. |
| 56 | URSPEnforcement | This feature indicates the support of awareness of URSP rule enforcement |
| 57 | AddFlowDescriptionInformation | This feature indicates support for use e.g. of additional flow description parameters, as the flow label and the IPSec SPI. |
| 58 | QoSTiming\_5G | This feature indicates the support of QoS timing information for the transfer and support of data transmission (e.g., AI/ML traffic transmission). |
| 59 | PDUSetHandling | This feature indicates the support of PDU Set handling. This feature may be used for eXtended Reality (XR) and interactive media services. |
| 60 | RTLatency | This feature indicates the support of Round-Trip latency. This feature may be used for eXtended Reality (XR) and interactive media services. |
| 61 | EnQoSMon | This feature indicates the support of enhanced QoS monitoring functionality, i.e. the report of the congestion information, and/or, the RTT delay over two QoS flows, and/or, the data rate information, and/or, the Packet Delay Variation monitoring.  This feature requires that the QoSMonitoring feature is supported. |
| 62 | PowerSaving | This feature indicates the support of power savings in multi modal traffic. |
| 63 | L4S | This feature indicates the support of the AF indication of ECN marking for L4S support. |

Editor's note: Whether an independent feature for RT latency is needed is FFS.

Editor's note: Whether and/how to indicate the support of end of burst indication, and provision the flow periodicity information within the Power Saving feature is FFS.

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