**3GPP TSG-CT WG3 Meeting #130 *C3-234380***

**Xiamen, China, 9 - 13 October, 2023**

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| *CR-Form-v12.2* |
| **CHANGE REQUEST** |
|  |
|  | **29.514** | **CR** | **0560** | **rev** | **-** | **Current version:** | **18.3.0** |  |
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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:***  | Event notification for AF requested QoS for a UE or group of UEs not identifed by a UE address  |
|  |  |
| ***Source to WG:*** | Ericsson |
| ***Source to TSG:*** | CT3 |
|  |  |
| ***Work item code:*** | GMEC |  | ***Date:*** | 2023-10-05 |
|  |  |  |  |  |
| ***Category:*** | B |  | ***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-16 (Release 16)Rel-17 (Release 17)Rel-18 (Release 18)Rel-19 (Release 19)* |
|  |  |
| ***Reason for change:*** | TS 23.502, clause 4.15.6.14, step 14 specifies:" When an event condition is met, e.g. that the establishment of the transmission resources corresponding to the QoS update succeeded or failed, the PCF sends a notification to TSCTSF or NEF as applicable. This step is the same as steps 7-8 in clause 4.15.6.6." Where steps 7 in clause 4.15.6.6 specifies:"When the event condition is met, e.g. that the establishment of the transmission resources corresponding to the QoS update succeeded or failed, the PCF sends Npcf\_PolicyAuthorization\_Notify message to the NEF notifying about the event"These requirements imply that the Npcf\_PolicyAuthorization\_Notify message to the NEF about the event is the resul of an implicit subscription for events notification for a UE or a Group of UE(s) (i.e., there is no Npcf\_PolicyAuthorization\_Create/Update/Subscribe that conveys the application session context creation with the subscription information), and the implicit subscription information is obtained from UDR. How implicit subscriptions are enabled for the Npcf\_PolicyAuthorization service needs to be covered in TS 29.514.  |
|  |  |
| ***Summary of change:*** | A new clause is added to describe Event notification for AF requested QoS for a UE or groups of UEs not identified by a UE address. It covers the description that in the indicated scenario, the notification is the result of an implicit subscription via UDR and lists the differences in relation to the notifications sent when the event notification is explicitly subscribed. |
|  |  |
| ***Consequences if not approved:*** | Implicit subscription to notifications are not supported by the Npcf\_PolicyAuthorization service. |
|  |  |
| ***Clauses affected:*** | 4.2.2.1, 4.2.3.1, 4.2.5.1, 4.2.5.29, 4.2.6.1, 5.5.2.1, 5.5.2.2, (new) 5.6.29 |
|  |  |
|  | **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. |
|  |  |
| ***This CR's revision history:*** |  |

\* \* \* \* Start of Changes \* \* \* \*

#### 4.2.5.1 General

The Npcf\_PolicyAuthorization\_Notify service operation enables notification to NF service consumers that the previously subscribed event for the existing application session context occurred or that the application session context is no longer valid.

The following procedures using the Npcf\_PolicyAuthorization\_Notify service operation are supported:

- Notification about application session context event.

- Notification about application session context termination.

- Notification about Service Data Flow QoS notification control.

- Notification about service data flow deactivation.

- Reporting usage for sponsored data connectivity.

- Notification of resources allocation outcome.

- Reporting access network information.

- Notification of signalling path status.

- Notification about out of credit.

- Notification about TSC user plane node management information and/or port management information, Individual Application Session Context exists.

- Notification about Service Data Flow QoS Monitoring control.

- Report of EPS Fallback.

- Notification about TSC user plane node Information, no Individual Application Session Context exists.

- Notification about reallocation of credit.

- Notification of MPS for DTS outcome.

- Notification about application detection information.

- Notification about satellite backhaul category changes.

- Notification about UP path change enforcement failure.

- Notification about PDU session established/terminated events.

- Notification about extra UE addresses.

- Notification about BAT offset.

- Notification about UE reporting Connection Capabilities.

- Notification about Packet Delay Variation.

- Notification about 5GS support for Policy Control for L4S.

- Notification about Round-Trip delay monitoring measurements over two QoS flows.

- Event notification for AF requested QoS for a UE or group of UE(s) not identifed by UE address(es).

\* \* \* \* Next change \* \* \* \*

#### 4.2.5.29 Event notification for AF requested QoS for a UE or group of UE(s) not identifed by UE address(es)

An NF service consumer (e.g., AF, NEF) may subscribe to event(s) reporting implicitly via the UDR as specified in 3GPP TS 29.519 [53] (see also clause 4.15.6.14 of 3GPP TS 23.502 [3] and clause 6.1.3.28 of 3GPP TS 23.503 [4]) when provisioning/updating AF requested QoS for a UE or a group of UE(s) not identified by UE address(es).This procedure is invoked by the PCF to notify the NF service consumer(s) (e.g., NEF, AF) when such previously subscribed event(s) occur.

When the PCF determines that event(s) occurred (e.g., upon reception of an event notification for a PDU session from the SMF as described in 3GPP TS 29.512 [8]), the PCF shall invoke the Npcf\_PolicyAuthorization\_Notify service operation as described in clause 4.2.5.2 with the following differences:

a. The "{notifUri}" variable part of the request URI of the HTTP POST request shall contain the callback URI included within the "notifUri" attribute contained within the "evSubsc" attribute of the corresponding AF Requested QoS Data obtained from the UDR as specified in 3GPP TS 29.519 [53].

b. The "EventsNotification" data type shall include within the "{appSessionId}" variable part of the "<apiSpecificResourceUriPart>" component (see clause 5.1) of the "evSubsUri" attribute, the notification correlation identifier included within the "notifCorreId" attribute included within the "evSubsc" attribute of the corresponding AF Requested QoS Data also obtained from the UDR as specified in 3GPP TS 29.519 [53].

The PCF notification of the specific events required by 3GPP TS 23.503 [4] clause 6.1.3.28 using the Npcf\_PolicyAuthorization\_Notify request is described in the related clauses of the current specification.

\* \* \* \* Next change \* \* \* \*

#### 5.5.2.1 Description

The Event Notification is used by the PCF to report one or several observed application session context events to the NF service consumer that has subscribed to such notifications, via the Events Subscription sub-resource for explicit subscriptions or, via the UDR for implicit subscriptions.

NOTE: The "callbacks" definition for event notification of the OpenAPI specification found in Annex A.2 associated e.g. to the POST method of the "Individual Application Session Context" resource is used to specify the notification request for both explicit and implicit subscriptions.

\* \* \* \* Next change \* \* \* \*

#### 5.5.2.2 Target URI

The Callback URI **"{notifUri}/notify"** shall be used with the callback URI variables defined in table 5.5.2.2-1.

Table 5.5.2.2-1: Callback URI variables

|  |  |  |
| --- | --- | --- |
| Name | Data type | Definition |
| notifUri | Uri | The Notification URI as assigned within the Events Subscription sub-resource and described within the EventsSubscReqData type (see table 5.6.2.6-1) for explicit subscriptions.For implicit subscriptions the Notification URI is assigned via the provisioning of the corresponding application data in the UDR as specified in clause 4.2.5.29 (see also 3GPP TS 29.519 [53]. |
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\* \* \* \* Next change \* \* \* \*

#### 5.6.2.9 Type EventsNotification

Table 5.6.2.9-1: Definition of type EventsNotification

| Attribute name | Data type | P | Cardinality | Description | Applicability |
| --- | --- | --- | --- | --- | --- |
| adReports | array(AppDetectionReport) | C | 0..1 | Includes the detected application report. It shall be present when the notified event is "APP\_DETECTION". | ApplicationDetectionEvents |
| accessType | AccessType | C | 0..1 | Includes the access type. It shall be present when the notified event is "ACCESS\_TYPE\_CHANGE" or, if the feature "URSPEnforcement" is supported, when the notified event is "URSP\_ENF\_INFO". |  |
| addAccessInfo | AdditionalAccessInfo | O | 0..1 | Indicates the additional combination of Access Type and RAT Type available for MA PDU session. It may be present when the notified event is "ACCESS\_TYPE\_CHANGE" and the PDU session is a Multi-Access PDU session. | ATSSS |
| relAccessInfo | AdditionalAccessInfo | O | 0..1 | Indicates the released combination of Access Type and RAT Type previously available for MA PDU session. It may be present when the notified event is "ACCESS\_TYPE\_CHANGE" and the PDU session is a Multi-Access PDU session. | ATSSS |
| anChargAddr | AccNetChargingAddress | O | 0..1 | Includes the access network charging address. It shall be present if available when the notified event is "CHARGING\_CORRELATION". | IMS\_SBI |
| anChargIds | array(AccessNetChargingIdentifier) | C | 1..N | Includes the access network charging identifier(s). It shall be present when the notified event is "CHARGING\_CORRELATION". | IMS\_SBI |
| anGwAddr | AnGwAddress | O | 0..1 | Access network Gateway Address. It carries the IP address of the ePDG used as IPSec tunnel endpoint with the UE for EPC/ePDG and 5GS interworking. It shall be present, if applicable, when the notified event is "ACCESS\_TYPE\_CHANGE". |  |
| l4sReports | array(L4sSupport) | C | 1..N | ECN marking for L4S support information. It shall be present when the notified event is "L4S\_SUPP". | XRM\_5G |
| evSubsUri | Uri | M | 1 | The Events Subscription URI. Identifies the Events Subscription sub-resource that triggered the notification.(NOTE 1, NOTE 5) |  |
| evNotifs | array(AfEventNotification) | M | 1..N | Notifications about individual events. |  |
| failedResourcAllocReports | array(ResourcesAllocationInfo) | C | 1..N | Indicates the status of the PCC rule(s) related to certain failed media components. It shall be included when the event trigger is "FAILED\_RESOURCES\_ALLOCATION". |  |
| succResourcAllocReports | array(ResourcesAllocationInfo) | O | 1..N | Indicates the alternative service requirement the NG-RAN can guarantee to certain media components. It may be included when the event trigger is "SUCCESSFUL\_RESOURCES\_ALLOCATION". | AuthorizationWithRequiredQoS |
| noNetLocSupp | NetLocAccessSupport | O | 0..1 | Indicates the access network does not support the report of the requested access network information. | NetLoc |
| outOfCredReports | array(OutOfCreditInformation) | C | 1..N | Out of credit information per service data flow. It shall be present when the notified event is "OUT\_OF\_CREDIT". | IMS\_SBI |
| plmnId | PlmnIdNid | C | 0..1 | PLMN Identifier or the SNPN Identifier. It shall be present when the notified event is "PLMN\_CHG" or, if location information is required but is not available when the notified event is "ANI\_REPORT". It shall be present if available when the notified event is "RAN\_NAS\_CAUSE".(NOTE 2) |  |
| qncReports | array(QosNotificationControlInfo) | C | 1..N | QoS notification control information. It shall be present when the notified event is "QOS\_NOTIF". |  |
| qosMonReports | array(QosMonitoringReport) | C | 1..N | QoS Monitoring reporting information. It shall be present when the notified event is "QOS\_MONITORING". | QoSMonitoring |
| qosMonDatRateReps | array(QosMonitoringReport)t | C | 1..N | QoS Monitoring reporting information with data rate measurements. It shall be present when the notified event is "QOS\_MONITORING" and data rate measurements are available. | XRM\_5G |
| congestReports | array(QosMonitoringReport) | C | 1..N | Congestion information. It shall be present when the notified event is "QOS\_MONITORING". | XRM\_5G |
| pdvMonReports | array(PdvMonitoringReport) | C | 1..N | Packet Delay Variation information. It shall be present when the notified event is "PACK\_DEL\_VAR". | XRM\_5G |
| ranNasRelCauses | array(RanNasRelCause) | C | 1..N | RAN-NAS release cause. It shall be present if available when the notified event is "RAN\_NAS\_CAUSE". | RAN-NAS-Cause |
| ratType | RatType | O | 0..1 | RAT type. It shall be present, if applicable, when the notified event is "ACCESS\_TYPE\_CHANGE" or, if the feature "URSPEnforcement" is supported, when the notified event is "URSP\_ENF\_INFO". |  |
| satBackhaulCategory | SatelliteBackhaulCategory | C | 0..1 | Indicates the satellite or non-satellite backhaul category of the PDU session. It shall be present, if applicable, when the notified event is "SAT\_CATEGORY\_CHG". | SatelliteBackhaul |
| ueLoc | UserLocation | O | 0..1 | E-UTRA, or NR, and/or non-3GPP trusted and untrusted access user location information. "n3gppTai" and "n3IwfId" attributes within the "N3gaLocation" data type shall not be supplied. It shall be present if required and available when the notified event is "ANI\_REPORT". It shall be present if available when the notified event is "RAN\_NAS\_CAUSE".(NOTE 3) (NOTE 4) | NetLoc, RAN-NAS-Cause |
| ueLocTime | DateTime | O | 0..1 | Contains the NTP time at which the UE was last known to be in the location.(NOTE 3) | NetLoc |
| ueTimeZone | TimeZone | O | 0..1 | UE time zone.It shall be present if required and available when the notified event is "ANI\_REPORT". It shall be present if available when the notified event is "RAN\_NAS\_CAUSE". | NetLoc, RAN-NAS-Cause |
| usgRep | AccumulatedUsage | C | 0..1 | Indicates the measured volume and/or time for sponsored data connectivity. It shall be present when the notified event is "USAGE\_REPORT". | SponsoredConnectivity |
| urspEnfRep | UrspEnforcementInfo | C | 0..1 | Includes the URSP rule enforcement information received from a UE from associated URSP rule(s). It shall be present when the notified event is "URSP\_ENF\_INFO". | URSPEnforcement |
| sscMode | SscMode | O | 0..1 | SSC Mode of the PDU session.It may be present when the notified event is "URSP\_ENF\_INFO". | URSPEnforcement |
| ueReqDnn | Dnn | O | 0..1 | UE requested DNN.It may be present when the notified event is "URSP\_ENF\_INFO". | URSPEnforcement |
| redundantPduSessionInfo | RedundantPduSessionInformation | O | 0..1 | RSN and PDU session pair ID of the redundant PDU session.It may be present when the notified event is "URSP\_ENF\_INFO". | URSPEnforcement |
| tsnBridgeManCont | BridgeManagementContainer | O | 0..1 | Transports TSC user plane node management information. | TimeSensitiveNetworking |
| tsnPortManContDstt | PortManagementContainer | O | 0..1 | Transports port management information for the DS-TT port. | TimeSensitiveNetworking |
| tsnPortManContNwtts | array(PortManagementContainer) | O | 1..N | Transports port management information for one or more NW-TT ports. | TimeSensitiveNetworking |
| ipv4AddrList | array(Ipv4AddrMask) | O | 1..N | List of Framed Route information of IPv4. | ExtraUEaddrReport |
| ipv6PrefixList | array(Ipv6Prefix) | O | 1..N | List of Framed Route information of IPv6 or list of IPv6 address prefixes of the served UE. | ExtraUEaddrReport |
| batOffsetInfo | BatOffsetInfo | C | 0..1 | The offset of the BAT and the optionally adjusted periodicity.It shall be present if available when the notified event is "BAT\_OFFSET\_INFO". | EnTSCAC |
| NOTE 1: Either the complete resource URI included in the "evSubsUri" attribute or the "apiSpecificResourceUriPart" component (see clause 5.1) of the resource URI included in the "evSubsUri" attribute may be used by the NF service consumer for the identification of the Individual Application Session Context resource related to the notification.NOTE 2: The SNPN Identifier consists of the PLMN Identifier and the NID.NOTE 3: Whether the "ueLoc" attribute also encodes the age of location is implementation specific.NOTE 4: When the "ueLoc" attribute contains both, the 3GPP and the non-3GPP UE location, the "ueLocTime" attribute contains the age of the last known 3GPP UE location.NOTE 5: For event notifications of implicit subscriptions, the content of "evSubsUri" attribute shall be set as specified in clause 4.2.5.29. |

\* \* \* \* End of change \* \* \* \*