**3GPP TSG CT WG3 Meeting #134 *C3-242112***

**Changsha, China, 15 - 19 April, 2024 (Revision of C3-242xyz)**

|  |
| --- |
| *CR-Form-v12.2* |
| **CHANGE REQUEST** |
|  |
|  | **29.508** | **CR** | **0261** | **rev** | **-** | **Current version:** | **18.5.0** |  |
|  |
| *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)*.* |
|  |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***Proposed change affects:*** | UICC apps |  | ME |  | Radio Access Network |  | Core Network | **X** |

|  |
| --- |
|  |
| ***Title:***  | Access type change for MA PDU session update |
|  |  |
| ***Source to WG:*** | Nokia, Ericsson  |
| ***Source to TSG:*** | CT3 |
|  |  |
| ***Work item code:*** | AIMLsys |  | ***Date:*** | 2024-04-08 |
|  |  |  |  |  |
| ***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:*** | In TS 23.502 clause 5.2.8.3.1 (as per S2-2312638), the change of access type in MA PDU session is as follows:- Change of Access Type; The event notification contains the new Access Type for the PDU Session. For MA PDU Session the Change of Access Type may include two Access Type information that the user is currently using.The corresponding update has to be reflected in the stage 3 data model and openAPI.The wrong reference of addAccTypes has to be updated.  |
|  |  |
| ***Summary of change:*** | 1. MA PDU session with the multiple access type is clarified.
2. addAccTypes.is updated as pduAccTypes
 |
|  |  |
| ***Consequences if not approved:*** | There is a misalignment between stage 2 and stage 3 specfications. The incorrect attribute is mentioned in the specification. |
|  |  |
| ***Clauses affected:*** | 5.6.2.5, 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 impact the OpenAPI descriptions defined in this specification. |
|  |  |
| ***This CR's revision history:*** |  |

\* \* \* \* First Change \* \* \* \*

#### 5.6.2.5 Type EventNotification

Table 5.6.2.5-1: Definition of type EventNotification

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| event | SmfEvent | M | 1 | Event that is notified. |  |
| timeStamp | DateTime | M | 1 | Time at which the event is observed. |  |
| supi | Supi | C | 0..1 | Subscription Permanent Identifier. It is included when the subscription applies to a group of UE(s) or any UE. (NOTE 9) |  |
| gpsi | Gpsi | C | 0..1 | Identifies a GPSI. It shall contain an MSISDN. It is included when it is available and the subscription applies to a group of UE(s) or any UE.This IE is not applicable to "SMCC\_EXP" event. |  |
| ueIpAddr | IpAddr | C | 0..1 | Indicates the UE IP address, It is included for event "DISPERSION" when it is available and requested in the subscription. | Dispersion |
| transacInfos | array(TransactionInfo) | C | 1..N | Transaction Information. Shall be included for event "DISPERSION". | Dispersion |
| sourceDnai | Dnai | C | 0..1 | Source DN Access Identifier. Shall be included for event "UP\_PATH\_CH" if the DNAI changed (NOTE 1, NOTE 2). |  |
| targetDnai | Dnai | C | 0..1 | Target DN Access Identifier. Shall be included for event "UP\_PATH\_CH" if the DNAI changed (NOTE 1, NOTE 2). |  |
| dnaiChgType | DnaiChangeType | C | 0..1 | DNAI Change Type. Shall be included for event "UP\_PATH\_CH". |  |
| candidateDnais | array(Dnai) | O | 1..N | The candidate DNAI(s) for the PDU Session. May be included for event "UP\_PATH\_CH". | CommonEASDNAI |
| easRediscoverInd | boolean | O | 0..1 | Indication of EAS re-discovery. If present and set to "true", it indicates the EAS re-discovery is performed, e.g. due to change of common EAS. Default value is "false" if omitted. | CommonEASDNAI |
| candDnaisPrioInd | boolean | O | 0..1 | If provided and set to "true", it indicates that the candidate DNAIs provided in the "candidateDnais" attribute are in descending priority order, i.e. the lower the array index the higher the priority of the respective DNAI. If omitted, the default value is "false". It may only be provided if the "candidateDnais" attribute is provided and the "dnaiChgType" attribute is set to the value "EARLY". | CommonEASDNAI |
| trafCorreInfo | TrafficCorrelationNotification | O | 0..1 | Contains traffic correlation information for notification.It shall be provided if the event attribute has the value "TRAFFIC\_CORRELATION". | CommonEASDNAI |
| sourceUeIpv4Addr | Ipv4Addr | O | 0..1 | The IPv4 Address of the served UE for the source DNAI. May be included for event "UP\_PATH\_CH". |  |
| sourceUeIpv6Prefix | Ipv6Prefix | O | 0..1 | The Ipv6 Address Prefix of the served UE for the source DNAI. May be included for event "UP\_PATH\_CH". |  |
| targetUeIpv4Addr | Ipv4Addr | O | 0..1 | The IPv4 Address of the served UE for the target DNAI. May be included for event "UP\_PATH\_CH". |  |
| targetUeIpv6Prefix | Ipv6Prefix | O | 0..1 | The Ipv6 Address Prefix of the served UE for the target DNAI. May be included for event "UP\_PATH\_CH". |  |
| sourceTraRouting | RouteToLocation | C | 0..1 | N6 traffic routing information for the source DNAI. Shall be included for event "UP\_PATH\_CH" if available (NOTE 2). |  |
| targetTraRouting | RouteToLocation | C | 0..1 | N6 traffic routing information for the target DNAI. Shall be included for event "UP\_PATH\_CH" if available (NOTE 2). |  |
| ueMac | MacAddr48 | O | 0..1 | UE MAC address. May be included for event "UP\_PATH\_CH". |  |
| adIpv4Addr | Ipv4Addr | O | 0..1 | Added IPv4 Address(es). May be included for event "UE\_IP\_CH". |  |
| adIpv6Prefix | Ipv6Prefix | O | 0..1 | Added Ipv6 Address Prefix(es). May be included for event "UE\_IP\_CH". |  |
| reIpv4Addr | Ipv4Addr | O | 0..1 | Removed IPv4 Address(es). May be included for event "UE\_IP\_CH". |  |
| reIpv6Prefix | Ipv6Prefix | O | 0..1 | Removed Ipv6 Address Prefix(es). May be included for event "UE\_IP\_CH". |  |
| plmnId | PlmnIdNid | C | 0..1 | New PLMN Identifier or the SNPN Identifier. Shall be included for event "PLMN\_CH".It shall be included for event "UP\_PATH\_CH" to contain the new serving PLMN identifier, if the "HR-SBO" feature is supported and the UE has moved to a serving PLMN where local traffic offloading is allowed.(NOTE 7) |  |
| accType | AccessType | C | 0..1 | New Access Type. Shall be included for event "AC\_TY\_CH" and may be included for event "QFI\_ALLOC". |  |
| pduAccTypes | array(AccessType) | O | 1..N | The list of Access Types used for the PDU session. May be included for event "QFI\_ALLOC" and/or event "AC\_TY\_CH" in case of Multiple Access PDU session.(NOTE 10) | MultipleAccessTypes |
| pduSeId | PduSessionId | C | 0..1 | PDU session ID. Shall be included for event "PDU\_SES\_REL" and "PDU\_SES\_EST". It shall also be included for event "QFI\_ALLOC" if the subscription was for a UE, a group of UEs, or any UE, and not for a specific PDU Session. |  |
| ratType | RatType | C | 0..1 | New RAT Type. Shall be included for event 'RAT\_TY\_CH'. | EneNA |
| dddStatus | DlDataDeliveryStatus | C | 0..1 | Downlink data delivery status (discarded, transmitted, buffered). Shall be included for event "DDDS", | DownlinkDataDeliveryStatus |
| maxWaitTime | DateTime | C | 0..1 | The estimated maximum waiting time for downlink data delivery, Shall be included for event "DDDS" with status "BUFFERED". | DownlinkDataDeliveryStatus |
| dddTraDescriptor | DddTrafficDescriptor | C | 0..1 | The downlink data descriptor impacted by downlink data delivery status change. Shall be included for event "DDDS" | DownlinkDataDeliveryStatus |
| commFailure | CommunicationFailure | C | 0..1 | Describes the communication failure cause for the UE. Shall be included for event "COMM\_FAIL". | CommunicationFailure |
| ipv4Addr | Ipv4Addr | O | 0..1 | IPv4 address. May be included for event "PDU\_SES\_REL" or "PDU\_SES\_EST". | PduSessionStatus |
| ipv6Prefixes | array(Ipv6Prefix) | O | 1..N | IPv6 prefixes. May be included for event "PDU\_SES\_REL" or "PDU\_SES\_EST". (NOTE 3) | PduSessionStatus |
| ipv6Addrs | array(Ipv6Addr) | O | 1..N | IPv6 addresses. May be included for event "PDU\_SES\_REL" or "PDU\_SES\_EST". (NOTE 3) | PduSessionStatus |
| pduSessType | PduSessionType | C | 0..1 | PDU session type. Shall be included if the PduSessionStatus or PduSessionInfo feature is supported. (NOTE 8) | PduSessionStatusPduSessionInfo |
| sscMode | SscMode | O | 0..1 | Represents the SSC mode of the PDU Session. It may be included for event "QFI\_ALLOC". (NOTE 8) | PduSessionInfo |
| qfi | Qfi | C | 0..1 | QoS flow identifier. Shall be included for event "QFI\_ALLOC". | QfiAllocation |
| appId | ApplicationId | O | 0..1 | Contains the application identifier. May be included for event "QFI\_ALLOC". (NOTE 4) (NOTE 8) | QfiAllocationPduSessionInfo |
| ethFlowDescs | array(EthFlowDescription) | O | 1..N | Descriptor(s) for non-IP traffic in which only ethernet flow description is defined. It allows the encoding of multiple UL and/or DL flows. Each entry of the array describes a single Ethernet flow. May be included for event "QFI\_ALLOC", when the description of the Ethernet traffic requires multiple UL and/or DL flows. (NOTE 4) | MultipleFlowDescriptions |
| ethfDescs | array(EthFlowDescription) | O | 1..2 | Contains the flow description for the Uplink and/or Downlink Ethernet flows. May be included for event "QFI\_ALLOC". (NOTE 4) | QfiAllocation |
| flowDescs | array(FlowDescription) | O | 1..N | Descriptor(s) of IP traffic. It allows the encoding of multiple UL and/or DL flows. Each entry of the array describes a single IP flow. May be included for event "QFI\_ALLOC", when the description of the IP traffic requires multiple UL and/or DL flows. (NOTE 4) | MultipleFlowDescriptions |
| fDescs | array(FlowDescription) | O | 1..2 | Contains the flow description for the Uplink and/or Downlink IP flows. May be included for event "QFI\_ALLOC". (NOTE 4) | QfiAllocation |
| dnn | Dnn | C | 0..1 | Data network name, Shall be included for event "QFI\_ALLOC". May be included for event "PDU\_SES\_REL" or "PDU\_SES\_EST". Shall be included to indiate the DNN associated with URLLC service for event "RED\_TRANS\_EXP".Shall be included if DNN based SMCC is applied.It shall be included for event "UP\_PATH\_CH" to contain the HPLMN DNN, if the "HR-SBO" feature is supported and the UE has moved to a serving PLMN where local traffic offloading is allowed. | QfiAllocation, PduSessionStatusRedundantTransmissionExpSMCCEHR-SBO |
| snssai | Snssai | C | 0..1 | Identifies the slice information. Shall be included for event "QFI\_ALLOC".Shall be included if S-NSSAI based SMCC is applied.It shall be included for event "UP\_PATH\_CH" to contain the HPLMN S-NSSAI, if the "HR-SBO" feature is supported and the UE has moved to a serving PLMN where local traffic offloading is allowed. | QfiAllocationEneNASMCCEHR-SBO |
| ulDelays | array(Uinteger) | O | 1..N | Uplink packet delay in units of milliseconds. May be included for event "QOS\_MON". (NOTE 5) | QoSMonitoringE2eDataVolTransTime |
| dlDelays | array(Uinteger) | O | 1..N | Downlink packet delay in units of milliseconds. May be included for event "QOS\_MON". (NOTE 5) | QoSMonitoringE2eDataVolTransTime |
| ulCongInfo | Uinteger | O | 0..1 | Uplink congestion information. Percentage of packets that UPF uses for ECN marking for L4S (without "%" sign). May be included for event "QOS\_MON". | EnQoSMon |
| dlCongInfo | Uinteger | O | 0..1 | Downlink congestion information. Percentage of packets that UPF uses for ECN marking for L4S (without "%" sign). May be included for event "QOS\_MON". | EnQoSMon |
| rtDelays | array(Uinteger) | O | 1..N | Round trip delay in units of milliseconds. May be included for event "QOS\_MON". (NOTE 5) | QoSMonitoringE2eDataVolTransTime |
| ulDataRate | BitRate | O | 0..1 | Uplink data rate. May be included for event "QOS\_MON". (NOTE 11) | EnQoSMon |
| dlDataRate | BitRate | O | 0..1 | Downlink data rate. May be included for event "QOS\_MON". (NOTE 11) | EnQoSMon |
| timeWindow | TimeWindow | C | 0..1 | Time window representing a start time and a stop time of the data collection period. Shall be included for event "SMCC\_EXP". | SMCCE |
| smNasFromUe | array(SmNasFromUe) | C | 1..N | Information on the SM NAS messages that SMF receives from UE for PDU Session. Shall be included for event "SMCC\_EXP". | SMCCE |
| smNasFromSmf | array(SmNasFromSmf) | C | 1..N | Information on the SM congestion control applied SM NAS messages that SMF sends to UE for PDU Session. Shall be included for event "SMCC\_EXP". | SMCCE |
| upRedTrans | boolean | C | 0..1 | Indicates whether the redundant transmission is setup or terminated. Set to "true" if the redundant transmission is setup, otherwise set to "false" if the redundant transmission is terminated. Default value is set to "false". Shall be included for event "RED\_TRANS\_EXP". | RedundantTransmissionExp |
| ssId | string | C | 0..1 | SSID that the PDU session is related to. (NOTE 6) | WlanPerformance |
| bssId | string | C | 0..1 | BSSID that the PDU session is related to. (NOTE 6) | WlanPerformance |
| startWlan | DateTime | C | 0..1 | The time stamp that indicates when the existing PDU Session's access type changes to WLAN or when the new PDU Session for WLAN is established. (NOTE 6) | WlanPerformance |
| endWlan | DateTime | C | 0..1 | The time stamp that indicates when the existing WLAN based PDU Session's access type is not WLAN any more or when the PDU Session for WLAN is released. (NOTE 6) | WlanPerformance |
| pduSessInfos | array(PduSessionInformation) | C | 1..N | The PDU session related information. It shall be included for event "UP\_STATUS\_INFO". | UeCommunication |
| upfInfo | UpfInformation | C | 0..1 | The information of the UPF serving the UE.Shall be included for event "UPF\_INFO". | ServiceExperienceDnPerformance |
| pdmf | boolean | O | 0..1 | Packet delay measurement failure indicator. When set to true, it indicates that a packet delay failure has occurred, i.e. no measurement result is available during the reporting period.Default value is false if omitted. May be included for event "QOS\_MON". | PacketDelayFailureReport |
| satBackhaulCat | SatelliteBackhaulCategory | C | 0..1 | The satellite backhaul category or non-satellite backhaul used for the PDU session shall be included for event "SATB\_CH".  | EnSatBackhaulCategoryChg |
| supportedFeatures | SupportedFeatures | C | 0..1 | List of negotiated features supported by the SMF and NF service consumer as described in clause 5.8.This parameter shall be supplied by the SMF when the SMF detects that at least one feature related to an implicit subscription is supported by both the SMF and the NF service consumer. |  |
| targetAfId | string | O | 0..1 | Identifier of the Application Function responsible for the target DNAI. May be included for event "UP\_PATH\_CH" if the target DNAI is not known to the source AF. | EasRelocationEnh |
| 5qi | 5Qi | O | 0..1 | The 5G QoS Identifier. May be included for event "QFI\_ALLOC". | EnQfiAllocation |
| NOTE 1: If the DNAI is not changed while the N6 traffic routing information is changed, the "sourceDnai" attribute and "targetDnai" attribute shall not be provided.NOTE 2: The change from the UP path status where no DNAI applies to a status where a DNAI applies indicates the activation of the related AF request and therefore only the target DNAI and N6 traffic routing information is provided in the event notification; the change from the UP path status where a DNAI applies to a status where no DNAI applies indicates the de-activation of the related AF request and therefore only the source DNAI and N6 traffic routing information is provided in the event notification. NOTE 3: If provided, either ipv6Prefixes or ipv6Addrs shall be present. NOTE 4: Only one of the appId, ethfDescs, ethFlowDescs, flowDescs or fDescs attributes shall be provided. NOTE 5: In this release of the specification one element may be included in the array as specified in clause 4.2.2.2.NOTE 6: If notified event is "WLAN\_INFO", then one of the "ssId" or "bssId" attribute and one of the "startWLAN" or "endWLAN" attribute shall be present.NOTE 7: The SNPN Identifier consists of the PLMN Identifier and the NID.NOTE 8: When the subscribed event is "QFI\_ALLOC" and the PduSessionInfo feature is supported, if the "pduSessionType" attribute and/or "sscMode" attribute is included, the associated "appId" attribute shall be provided.NOTE 9: If the "WlanPerformanceExt\_AIML" feature is supported, the "supi" attribute may also be included for a single UE when the subscription applies to the "WLAN\_INFO" event.NOTE 10: If multiple Access Types are used for the PDU Session and the "MultipleAccessTypes" feature is supported, the SMF shall include each PDU Session Access Type in the "pduAccTypes" attribute.NOTE 11: When the "ulDataRate" and/or "dlDataRate" attributes are present, the congestion related attributes and the packet delay related attributes shall not be present. |

\* \* \* \* Next changes \* \* \* \*

## 5.8 Feature negotiation

The optional features in table 5.8-1 are defined for the Nsmf\_EventExposure API. They shall be negotiated using the extensibility mechanism defined in clause 6.6 of 3GPP TS 29.500 [4].

Table 5.8-1: Supported Features

|  |  |  |
| --- | --- | --- |
| Feature number | Feature Name | Description |
| 1 | DownlinkDataDeliveryStatus | This feature indicates support for the "Downlink data delivery status" event. |
| 2 | CommunicationFailure | This feature indicates support for the "communication failure" event. |
| 3 | PduSessionStatus | This feature indicates support for the PDU session establishment event and enhancement (PDU session type, IP address) for the PDU session release event. |
| 4 | QfiAllocation | This feature indicates support for the "QFI allocation" event. |
| 5 | QosMonitoring | This feature indicates support for the "QoS Monitoring" event. (NOTE 1) (NOTE 3) |
| 6 | 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 [4] and according to HTTP redirection principles for indirect communication, as specified in clause 6.10.9 of 3GPP TS 29.500 [4].  |
| 7 | EneNA | This feature indicates support for the enhancements of network data analytics requirements. |
| 8 | ULBuffering | This feature indicates support for Uplink buffering indication. (See NOTE 2) |
| 9 | SMCCE | This feature indicates support for Session Management Congestion Control Experience for PDU Session. |
| 10 | Dispersion | This feature indicates support for Session Management transactions dispersion. |
| 11 | ERIR | Indicates the support of immediate report of the available subscribed event(s) within the subscription response to the NF service consumer. |
| 12 | RedundantTransmissionExp | This feature indicates support for Redundant Transmission Experience. |
| 13 | WlanPerformance | This feature indicates support for WLAN information on PDU Session for which Access Type is NON\_3GPP\_ACCESS and RAT Type is TRUSTED\_WLAN, to support WLAN performance analytics. |
| 14 | EASIPreplacement | This feature indicates the support of provisioning of EAS IP replacement info (See NOTE 2). |
| 15 | BIUMR | This feature bit indicates whether the NF Service Consumer (e.g. SMF) and PCF supports Binding Indication Update for multiple resource contexts specified in clauses 6.12.1 and 5.2.3.2.6 of 3GPP TS 29.500 [4]. |
| 16 | UeCommunication | This feature indicates the support of UE communication analytics. |
| 17 | ServiceExperience | This feature indicates support for service experience analytics. |
| 18 | DnPerformance | This feature indicates support for DN performance analytics. |
| 19 | MultipleFlowDescriptions | This feature indicates the support of the report of multiple UL and/or DL flows. |
| 20 | PacketDelayFailureReport | This feature indicates the support of packet delay failure report as part of QoS Monitoring procedures. This feature requires that QosMonitoring feature is supported. |
| 21 | CommonEASDNAI | This feature indicates support of enhancements of UP path change event notification. (NOTE 1) |
| 22 | PduSessionInfo | This feature indicates support for PDU Session parameters information. |
| 23 | EnhDataMgmt | Indicates the support of enhanced data management mechanisms. Supporting this feature also requires the support of feature EneNA. |
| 24 | WlanPerformanceExt\_AIML | This feature indicates support for the enhancements of WLAN performance supporting AIML, including support of analytics per UE granularity. Supporting this feature also requires the support of feature WlanPerformance. |
| 25 | EasRelocationEnh | This feature indicates enhanced support of EAS relocation procedures via additional information about the AFs that are responsible for certain EAS. |
| 26 | UPEAS | This feature indicates the support of UPF enhancements for exposure. |
| 27 | EnSatBackhaulCategoryChg | This feature indicates the support of notification of a change between different satellite backhaul categories, or dynamic satellite backhaul categories, or between satellite backhaul and non-satellite backhaul. |
| 28 | E2eDataVolTransTime | This feature indicates support for E2E data volume transfer time analytics. |
| 29 | AreaFilter | This feature indicates support for using an area as a subscription filter. |
| 30 | MultipleAccessTypes | This feature indicates the support of providing list of Access Type(s) used for the PDU Session. This is used for MA PDU sessions as well. |
| 31 | EnQfiAllocation | Indicates the enhancement on "QFI allocation" event. Supporting this feature also requires the support of feature QfiAllocation. |
| 32 | EnQoSMon | This feature indicates the support of enhanced QoS monitoring functionality, i.e. the report of the congestion information, and/or, the data rate information monitoring. (NOTE 1) (NOTE 3)This feature requires that QosMonitoring feature is supported. |
| 33 | HR-SBO | This feature indicates the support of extensions to User Plane Path Change event notifications to support Home Routed sessions with Session Breakout. (NOTE 2) |
| NOTE 1: SMF determines the support of this feature by the NF service consumer as part of the implicit subscription information provided by the PCF as described in 3GPP TS 29.512 [14] for the "UP\_PATH\_CH” event and "TRAFFIC\_CORRELATION” event and "QOS\_MON" event.NOTE 2: NF service consumers determine the support of this feature as part of the notification of the implicitly subscribed events as described in clause 4.2.2.2.NOTE 3: The negotiation of this feature may be explicit (via Nsmf\_EventExposure\_Subscribe service operation) or implicit as described in NOTE 1. |

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