**3GPP TSG-CT WG4 Meeting #99eC4-204xxx**

**E-Meeting, 18th – 28th August 2020 *Revision of C4-204167***

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| *CR-Form-v12.0* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **29.502** | **CR** | **0369** | **rev** | **1** | **Current version:** | **16.4.0** |  |
|  | | | | | | | | |
| *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:*** | Callback URI correction | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Huawei | | | | | | | | | |
| ***Source to TSG:*** | CT4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | TEI16 | | | | |  | ***Date:*** | | | 2020-08-24 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **F** |  | | | | | ***Release:*** | | | Rel-16 |
|  | *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-12 (Release 12)* *Rel-13 (Release 13) Rel-14 (Release 14) Rel-15 (Release 15) Rel-16 (Release 16)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | As resource URI has the specific structure as below:  *{apiRoot}/<apiName>/<apiVersion>/<apiSpecificResourceUriPart>*  For callback URI, it is defined as:  *URI = scheme ":" "//" host [ ":" port ] / path*  Specification shall be updated to correct some resource URIs to callback URI to avoid different implmentations. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Correct the resource URI to callback URI | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | Receivers may check the structure for resource URIs | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 5.2.2.7.1, 5.2.2.8.2, 6.1.3.7.2, 6.1.5.1, 6.1.5.2.2, 6.1.6.2.9, 6.1.6.2.11 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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 contribution does not change the OpenAPI. | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

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

##### 5.2.2.7.1 General

The Create service operation shall be used to create an individual PDU session in the H-SMF for HR roaming scenarios, or in the SMF for PDU sessions involving an I-SMF.

It is used in the following procedures:

- UE requested PDU Session Establishment with or without an I-SMF insertion (see clauses 4.3.2.2.2 and 4.23.5.1 of 3GPP TS 23.502 [3]);

- when an I-SMF is inserted during the Registration, Service Request, Inter NG-RAN node N2 based handover, Xn based handover and Handover from EPC/ePDG to 5GS procedures (see clauses 4.23.3, 4.23.4, 4.23.7.3 and 4.23.11.2 of 3GPP TS 23.502 [3]);

- EPS to 5GS Idle mode mobility or handover using N26 interface (see clauses 4.11, 4.23.12.3, 4.23.12.5 and 4.23.12.7 of 3GPP TS 23.502 [3]);

- EPS to 5GS mobility without N26 interface (see clause 4.11.2.3 of 3GPP TS 23.502 [3]);

- Handover of a PDU session between 3GPP access and non-3GPP access, when the target AMF does not know the SMF resource identifier of the SM context used by the source AMF, e.g. when the target AMF is not in the PLMN of the N3IWF (see clause 4.9.2.3.2 of 3GPP TS 23.502 [3]);

- Handover from EPS to 5GC-N3IWF (see clause 4.11.3.1 of 3GPP TS 23.502 [3]);

- Handover from EPC/ePDG to 5GS (see clause 4.11.4.1 of 3GPP TS 23.502 [3]).

The NF Service Consumer (e.g. V-SMF or I-SMF) shall create a PDU session in the SMF (i.e. H-SMF for a HR PDU session, or SMF for a PDU session involving an I-SMF) by using the HTTP POST method as shown in Figure 5.2.2.7.1-1.



Figure 5.2.2.7.1-1: PDU session creation

1. The NF Service Consumer shall send a POST request to the resource representing the PDU sessions collection resource of the SMF. The payload body of the POST request shall contain:

- a representation of the individual PDU session resource to be created;

- the Request Type IE, if it is received from the UE for a single access PDU session and if the request refers to an existing PDU session or an existing Emergency PDU session; the Request Type shall not be included for a MA-PDU session establishment request; it may be included otherwise;

- the indication that a MA-PDU session is requested if a MA-PDU session is requested to be established by the UE, or the indication that the PDU session is allowed to be upgraded to a MA PDU session if the UE indicated so;

- the vsmfId IE or ismfId IE identifying the V-SMF or I-SMF respectively;

- the cpCiotEnabled IE with the value "True", if Control Plane CIoT 5GS Optimisation is enabled for this PDU session;

- the cpOnlyInd IE with the value "True", if the PDU session shall only use Control Plane CIoT 5GS Optimisation;

- the Invoke NEF indication with the value "True", if the cpCiotEnabled IE is set to "True" and data delivery via NEF is selected for the PDU session;

- the vcnTunnelInfo IE or icnTunnelInfo IE with the N9 tunnel information of the UPF controlled by the V-SMF or I-SMF respectively, except when Control Plane CIoT 5GS Optimisation is enabled and data delivery via NEF is selected for this PDU session;

- the additionalCnTunnelInfo IE with additional N9 tunnel information, if a MA PDU session is requested or if the PDU session is allowed to be upgraded to a MA PDU session, and if the UE is registered over both 3GPP and Non-3GPP accesses;

- the anType IE, indicating the access network type (3GPP or non-3GPP access) associated to the PDU session;

- the additionalAnType IE indicating an additional access network type associated to the PDU session, for a MA PDU session, if the UE is registered over both 3GPP and Non-3GPP accesses;

- the n9ForwardingTunnelInfo IE indicating the allocated N9 tunnel endpoints information for receiving the buffered downlink data packets, when downlink data packets are buffered at I-UPF controlled by the SMF during I-SMF insertion;

- a callback URI ({vsmfPduSessionUri} or {ismfPduSessionUri}) representing the PDU session resource in the V-SMF or I-SMF, for possible use by the SMF to subsequently notify the status of the PDU session. Based on the {vsmfPduSessionUri} or {ismfPduSessionUri} received, the SMF shall modify or release the PDU session using the callback URI {vsmfPduSessionUri}/modify or {ismfPduSessionUri}/modify, or shall transfer mobile terminated data received from NEF using the callback URI {vsmfPduSessionUri}/transfer-mt-data or {ismfPduSessionUri}/ transfer-mt-data;

- the list of DNAIs supported by the I-SMF, for a PDU session with an I-SMF.

As specified in clause 4.3.2.2.2 of 3GPP TS 23.502 [3], the NF Service Consumer shall be able to receive an Update request before receiving the Create Response, e.g. for EPS bearer ID allocation (see clause 4.11.1.4.1 of 3GPP TS 23.502 [3]) or Secondary authorization/authentication (see clause 4.3.2.3 of 3GPP TS 23.502 [3]).

2a. On success, "201 Created" shall be returned, the payload body of the POST response shall contain:

- the representation describing the status of the request;

- the QoS flow(s) to establish for the PDU session, except when Control Plane CIoT 5GS Optimisation is enabled for this PDU session;

- the epsPdnCnxInfo IE and, for each EPS bearer, an epsBearerInfo IE, if the PDU session may be moved to EPS during its lifetime;

- a MA PDU Session Accepted indication, if a MA PDU session is established;

- the smallDataRateControlEnabled indication set to "true" if small data rate control is applicable on the PDU session;

- the "Location" header containing the URI of the created resource.

The SMF may provide alternative QoS profiles for each GBR QoS flow with Notification control enabled, to allow the NG-RAN to accept the setup of the QoS flow if the requested QoS parameters or at least one of the alternative QoS parameters sets can be fulfilled at the time of setup.

The authority and/or deployment-specific string of the apiRoot of the created resource URI may differ from the authority and/or deployment-specific string of the apiRoot of the request URI received in the POST request.

If an Update Request was sent to the NF Service Consumer before the Create Response, the URI in the "Location" header and in the hsmfPduSessionUri IE (or smfPduSessionUri IE for a PDU session with an I-SMF) of the SMF initiated Update Request shall be the same. If the Request Type was received in the request and set to EXISTING\_PDU\_SESSION or EXISTING\_EMERGENCY\_PDU\_SESSION (i.e. indicating that this is a request for an existing PDU session or an existing emergency PDU session), the SMF shall identify the existing PDU session or emergency PDU session based on the PDU Session ID; in this case, the SMF shall not create a new PDU session or emergency PDU session but instead update the existing PDU session or emergency PDU session and provide the representation of the updated PDU session or emergency PDU session in the response to the NF Service Consumer.

The POST request shall be considered as colliding with an existing PDU session context if:

- it includes the same SUPI, or PEI for an emergency registered UE without a UICC or without an authenticated SUPI, and the same PDU Session ID as for an existing PDU session context; and

- this is a request to establish a new PDU session, i.e.:

- the RequestType IE is present in the request and set to INITIAL\_REQUEST or INITIAL\_EMERGENCY\_REQUEST (e.g. single access PDU session establishment request);

- the RequestType IE and the maRequestInd IE are both absent in the request (e.g. EPS to 5GS mobility); or

- the maRequestInd IE is present in the request (i.e. MA-PDU session establishment request) and the access type indicated in the request corresponds to the access type of the existing PDU session context.

A POST request that collides with an existing PDU session context shall be treated as a request for a new PDU session context. Before creating the new PDU session context, the SMF should delete the existing PDU session context locally and any associated resources in the UPF and PCF. See also clause 5.2.3.3.1 for the handling of requests which collide with an existing PDU session context. If the vsmfPduSessionUri or ismfPduSessionUri of the existing PDU session context differs from the vsmfPduSessionUri or ismfPduSessionUri received in the POST request, the SMF shall also send a status notification (see clause 5.2.2.10) targeting the vsmfPduSessionUri or ismfPduSessionUri of the existing PDU session context to notify the release of the existing PDU session context.

If the Request Type was received in the request and indicates this is a request for a new PDU session (i.e. INITIAL\_REQUEST) and if the Old PDU Session ID was also included in the request, the SMF shall identify the existing PDU session to be released and to which the new PDU session establishment relates, based on the Old PDU Session ID.

The NF Service Consumer shall store any epsPdnCnxInfo and EPS bearer information received from the SMF.

If the response received from the SMF contains the alwaysOnGranted attribute set to true, the NF Service Consumer shall check and determine whether the PDU session can be established as an always-on PDU session based on local policy.

If no GPSI IE is provided in the request, e.g. for a PDU session moved from another access or another system, and the SMF knows that a GPSI is already associated with the PDU session, the SMF shall include the GPSI in the response.

2b. On failure, or redirection during a UE requested PDU Session Establishment, one of the HTTP status code listed in Table 6.1.3.5.3.1-3 shall be returned. For a 4xx/5xx response, the message body shall contain a PduSessionCreateError structure, including:

- a ProblemDetails structure with the "cause" attribute set to one of the application error listed in Table 6.1.3.5.3.1-3;

- the n1SmCause IE with the 5GSM cause that the SMF proposes the NF Service Consumer to return to the UE, if the request included n1SmInfoFromUe;

- n1SmInfoToUe with any information to be sent to the UE (in the PDU Session Establishment Reject).

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

###### 5.2.2.8.2.10 PDU Session modification with I-SMF or V-SMF change

During PDU Session modification with I-SMF or V-SMF change, the NF Service Consumer (i.e. the new V-SMF for a HR PDU session, or the new I-SMF for a PDU session with an I-SMF) shall update the PDU session in the H-SMF or SMF and provide the information of the new I-SMF or V-SMF.

The requirements specified in clause 5.2.2.8.2.1 shall apply with the following modifications.

1. Same as step 1 of Figure 5.2.2.8.2-1, with the following additions:

The POST request shall contain:

- the requestIndication set to NW\_REQ\_PDU\_SES\_MOD or UE\_REQ\_PDU\_SES\_MOD for network requested or UE requested PDU session modification respectively;

- the ismfPduSessionUri or vsmfPduSessionUri IE containing the callback URI ({vsmfPduSessionUri} or {ismfPduSessionUri}) representing the PDU session in the new I-SMF or new V-SMF, for possible use by the SMF to subsequently notify the status of the PDU session. Based on the {vsmfPduSessionUri} or {ismfPduSessionUri} received, the SMF shall modify or release the PDU session using the callback URI {vsmfPduSessionUri}/modify or {ismfPduSessionUri}/modify, or shall transfer mobile terminated data received from NEF using the callback URI {vsmfPduSessionUri}/transfer-mt-data or {ismfPduSessionUri}/ transfer-mt-data;

- the ismfId or vsmfId IE containing the identifier of the new I-SMF or new V-SMF;

- optionally the iSmfServiceInstanceId or vSmfServiceInstanceId IE containing the serviceInstanceId of the new I-SMF or new V-SMF service instance serving the PDU session;

- the supportedFeatures IE indicating the optional features the NF Service Consumer supports, if at least one optional feature defined in clause 6.1.8 is supported.

2. Same as step 1 of Figure 5.2.2.8.2-1, the SMF shall replace the corresponding information for the old I-SMF or old V-SMF stored locally with the received information. In addition, the SMF shall include the supportedFeatures IE in the response, if the supportedFeatures IE was received in the request and at least one optional feature defined in clause 6.1.8 is supported by the updated PDU session resource.

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

##### 6.1.3.7.2 Resource Definition

Callback URI: **{vsmfPduSessionUri} or {ismfPduSessionUri}**

This resource shall support the callback URI variables defined in table 6.1.3.7.2-1.

Table 6.1.3.7.2-1: callback URI variables for this resource

|  |  |  |
| --- | --- | --- |
| Name | Data type | Definition |
| vsmfPduSessionUri | Uri | PDU session reference assigned by the V-SMF during the Create service operation. |
| ismfPduSessionUri | Uri | PDU session reference assigned by the I-SMF during the Create service operation. |

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

#### 6.1.5.1 General

This clause specifies the notifications provided by the Nsmf\_PDUSession service.

The delivery of notifications shall be supported as specified in clause 6.2 of 3GPP TS 29.500 [4] for Server-initiated communication.

Table 6.1.5.1-1: Notifications overview

|  |  |  |  |
| --- | --- | --- | --- |
| Notification | Callback URI | HTTP method or custom operation | Description  (service operation) |
| SM Context Status Notification | {smContextStatusUri}  (NF Service Consumer provided callback reference) | POST | Notify SM Context Status |

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

##### 6.1.5.2.2 Notification Definition

The POST method shall be used for SM context status notification and the URI shall be the callback reference provided by the NF Service Consumer during the subscription to this notification.

Callback URI: **{smContextStatusUri}**

Support of URI query parameters is specified in table 6.1.5.2.2-1.

Table 6.1.5.2.2-1: URI query parameters supported by the POST method

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| n/a |  |  |  |  |

Support of request data structures is specified in table 6.1.5.2.2-2, and support of response data structures and response codes is specified in table 6.1.5.2-3.

Table 6.1.5.2.2-2: Data structures supported by the POST Request Body

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| SmContextStatusNotification | M | 1 | Representation of the SM context status notification. |

Table 6.1.5.2.2-3: Data structures supported by the POST Response Body

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response  codes | Description |
| n/a |  |  | 204 No Content | Successful notification of the SM context status change |
| n/a |  |  | 307 Temporary Redirect | The NF service consumer shall generate a Location header field containing a URI pointing to the endpoint of another NF service consumer to which the notification should be sent. |
| NOTE: The mandatory HTTP error status codes for the POST method listed in Table 5.2.7.1-1 of 3GPP TS 29.500 [4] other than those specified in the table above also apply, with a ProblemDetails data type (see clause 5.2.7 of 3GPP TS 29.500 [4]). | | | | |

Table 6.1.5.2.2-4: Headers supported by the 307 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | A URI pointing to the endpoint of another NF service consumer to which the notification should be sent |

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

##### 6.1.6.2.9 Type: PduSessionCreateData

Table 6.1.6.2.9-1: Definition of type PduSessionCreateData

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| supi | Supi | C | 0..1 | This IE shall be present, except if the UE is emergency registered and UICCless.  When present, it shall contain the subscriber permanent identify. |  |
| unauthenticatedSupi | boolean | C | 0..1 | This IE shall be present if the SUPI is present in the message but is not authenticated and is for an emergency registered UE.  When present, it shall be set as follows:  - true: unauthenticated SUPI;  - false (default): authenticated SUPI. |  |
| pei | Pei | C | 0..1 | This IE shall be present if the UE is emergency registered and it is either UIClless or the SUPI is not authenticated.  For all other cases, this IE shall be present if it is available.  When present, it shall contain the permanent equipment identifier. |  |
| pduSessionId | PduSessionId | C | 0..1 | This IE shall contain the PDU Session ID, except during an EPS to 5GS Idle mode mobility or handover using the N26 interface. |  |
| dnn | Dnn | M | 1 | This IE shall contain the requested DNN. The DNN shall be the full DNN (i.e. with both the Network Identifier and Operator Identifier) for a HR PDU session, and it should be the full DNN in LBO and non-roaming scenarios. If the Operator Identifier is absent, the serving core network operator shall be assumed. |  |
| selectedDnn | Dnn | C | 0..1 | This IE shall be present, if another DNN other than the UE requested DNN is selected for this PDU session.  When present, it shall contain the selected DNN. The DNN shall be the full DNN (i.e. with both the Network Identifier and Operator Identifier) for a HR PDU session, and it should be the full DNN in LBO and non-roaming scenarios. If the Operator Identifier is absent, the serving core network operator shall be assumed. |  |
| sNssai | Snssai | C | 0..1 | This IE shall be present, except during an EPS to 5GS idle mode mobility or handover using the N26 interface.  When present, it shall contain:  - the requested S-NSSAI mapped to the HPLMN S-NSSAI by the VPLMN for a HR PDU session; or  - the requested S-NSSAI in the serving PLMN for a PDU session with an I-SMF. |  |
| vsmfId | NfInstanceId | C | 0..1 | This IE shall be present for a HR PDU session. When present, it shall contain the identifier of the V-SMF. |  |
| ismfId | NfInstanceId | C | 0..1 | This IE shall be present for a PDU session with an I-SMF. When present, it shall contain the identifier of the I-SMF. | DTSSA |
| servingNetwork | PlmnIdNid | M | 1 | This IE shall contain the serving core network operator PLMN ID and, for an SNPN, the NID that together with the PLMN ID identifies the SNPN. |  |
| requestType | RequestType | C | 0..1 | This IE shall be present if the request relates to an existing PDU session or an existing emergency PDU session, except during an EPS to 5GS idle mode mobility or handover using the N26 interface. It may be present otherwise.  When present, it shall indicate whether the request refers to a new PDU session or emergency PDU session, or to an existing PDU session or emergency PDU session. |  |
| epsBearerId | array(EpsBearerId) | C | 1..N | This IE shall be present during an EPS to 5GS Idle mode mobility or handover preparation using the N26 interface.  When present, it shall contain the list of EPS bearer Id(s) received from the MME. |  |
| pgwS8cFteid | Bytes | C | 0..1 | This IE shall be present during an EPS to 5GS Idle mode mobility or handover preparation using the N26 interface.  When present, it shall contain Base64-encoded characters, encoding the PGW S8 F-TEID for Control Plane as specified in Figure 8.22-1 of 3GPP TS 29.274 [16] (starting from octet 1), received from the MME. |  |
| vsmfPduSessionUri | Uri | C | 0..1 | This IE shall be present for a HR PDU session. When present, it shall include the callback URI representing the PDU session in the V-SMF. |  |
| ismfPduSessionUri | Uri | C | 0..1 | This IE shall be present for a PDU session with an I-SMF. When present, it shall include the callback URI representing the PDU session in the I-SMF. | DTSSA |
| vcnTunnelInfo | TunnelInfo | C | 0..1 | This IE shall be present for a HR PDU session, except when Control Plane CIoT 5GS Optimisation is enabled and data delivery via NEF is selected for this PDU session.  When present, this IE shall contain the N9 tunnel information of the visited CN side, i.e. V-UPF. |  |
| icnTunnelInfo | TunnelInfo | C | 0..1 | This IE shall be present for a PDU session involving an I-SMF, except when Control Plane CIoT 5GS Optimisation is enabled and data delivery via NEF is selected for this PDU session.  When present, this IE shall contain the N9 tunnel information of the I-UPF controlled by the I-SMF. | DTSSA |
| n9ForwardingTunnelInfo | TunnelInfo | C | 0..1 | This IE shall be present during Service Request procedures with I-SMF insertion, if buffered DL data is available at the I-UPF that is controlled by the SMF (see clause 4.23.4 in 3GPP TS 23.502 [3]).  When present, this IE shall contain the N9 tunnel information of the I-UPF controlled by the I-SMF. | DTSSA |
| additionalCnTunnelInfo | TunnelInfo | C | 0..1 | This IE shall be present if a MA PDU session is requested or if the PDU session is allowed to be upgraded to a MA PDU session, and the UE is registered over both 3GPP access and Non-3GPP access.  When present, it shall contain additional N9 tunnel information of the UPF controlled by the V-SMF or I-SMF. | MAPDU |
| anType | AccessType | M | 1 | This IE shall indicate the Access Network Type to which the PDU session is to be associated. |  |
| additionalAnType | AccessType | C | 0..1 | This IE shall indicate the additional Access Network Type to which the PDU session is to be associated.  This IE shall be present if a MA-PDU session is requested and the UE is registered over both 3GPP access and Non-3GPP access. | MAPDU |
| ratType | RatType | C | 0..1 | This IE shall be present and indicate the RAT Type used by the UE, if available. |  |
| ueLocation | UserLocation | C | 0..1 | This IE shall contain the UE location information, if it is available. See NOTE. |  |
| ueTimeZone | TimeZone | C | 0..1 | This IE shall contain the UE Time Zone, if it is available. |  |
| addUeLocation | UserLocation | O | 0..1 | Additional UE location.  This IE may be present, if anType indicates a non-3GPP access and a valid 3GPP access user location information is available.  When present, it shall contain:  - the last known 3GPP access user location; and  - the timestamp, if available, indicating the UTC time when the addUeLocation information was acquired.  See NOTE. |  |
| gpsi | Gpsi | C | 0..1 | This IE shall be present if it is available. When present, it shall contain the user's GPSI. |  |
| n1SmInfoFromUe | RefToBinaryData | C | 0..1 | This IE shall be present if the V-SMF or I-SMF has received known N1 SM information from the UE that does not need to be interpreted by the V-SMF or I-SMF. When present, this IE shall reference the n1SmInfoFromUe binary data (see clause 6.1.6.4.4). |  |
| unknownN1SmInfo | RefToBinaryData | C | 0..1 | This IE shall be present if the V-SMF or I-SMF has received unknown N1 SM information from the UE. When present, this IE shall reference the unknownN1SmInfo binary data (see clause 6.1.6.4.4). |  |
| supportedFeatures | SupportedFeatures | C | 0..1 | This IE shall be present if at least one optional feature defined in clause 6.1.8 is supported. |  |
| hPcfId | NfInstanceId | O | 0..1 | When present, this IE shall contain the identifier of the H-PCF (for a HR PDU session) selected by the AMF for the UE (for Access and Mobility Policy Control). |  |
| pcfId | NfInstanceId | O | 0..1 | When present, this IE shall contain the identifier of the PCF (for a PDU session with an I-SMF) selected by the AMF for the UE (for Access and Mobility Policy Control). | DTSSA |
| pcfGroupId | NfGroupId | O | 0..1 | When present, this IE shall contain the identity of the (home) PCF group serving the UE for Access and Mobility Policy and/or UE Policy. |  |
| pcfSetId | NfSetId | O | 0..1 | When present, it shall contain the NF Set ID of:  - the H-PCF, for a HR PDU session, or  - the PCF or V-PCF, for a PDU session with an I-SMF, in non-roaming and LBO roaming scenarios respectively  serving the UE for Access and Mobility Policy and/or UE Policy. |  |
| hoPreparationIndication | boolean | C | 0..1 | This IE shall be present during an EPS to 5GS handover preparation using the N26 interface or during N2 handover preparation with I-SMF insertion.  When present, it shall be set as follows:  - true: an EPS to 5GS handover preparation or N2 handover preparation with I-SMF is in progress; the PGW-C/SMF shall not switch the DL user plane of the PDU session yet.  - false: there is no on-going EPS to 5GS handover preparation or N2 handover preparation with I-SMF in progress. If a handover preparation was in progress, the handover has been completed. The PGW-C/SMF shall switch the DL user plane of the PDU session using the N9 tunnel information that has been received in the vcnTunnelInfo or icnTunnelInfo.  It shall be set to "true" during an EPS to 5GS handover preparation using the N26 interface or during N2 handover preparation with I-SMF insertion. |  |
| selMode | DnnSelectionMode | C | 0..1 | This IE shall be present if it is available. When present, it shall indicate whether the requested DNN corresponds to an explicitly subscribed DNN or to the usage of a wildcard subscription. |  |
| alwaysOnRequested | boolean | C | 0..1 | This IE shall be present and set to true if the UE requests to setup an always-on PDU session and this is allowed by local policy in the V-SMF or I-SMF.  When present, it shall be set as follows:  - true: request for an always-on PDU session  - false (default): not a request for an always-on PDU session |  |
| udmGroupId | NfGroupId | O | 0..1 | When present, it shall indicate the identity of the UDM group serving the UE. |  |
| routingIndicator | string | O | 0..1 | When present, it shall indicate the Routing Indicator of the UE. |  |
| epsInterworkingInd | EpsInterworkingIndication | O | 0..1 | This IE may be present if the indication has been received from AMF and is allowed to be forwarded to H-SMF by operator configuration.  When present, this IE shall indicate whether the PDU session may possibly be moved to EPS and whether N26 interface to be used during EPS interworking procedures. |  |
| vSmfServiceInstanceId | string | O | 0..1 | When present, this IE shall contain the serviceInstanceId of the V-SMF service instance serving the PDU session.  This IE may be used by the H-SMF to identify PDU sessions affected by a failure or restart of the V-SMF service (see clauses 6.2 and 6.3 of 3GPP TS 23.527 [24]). |  |
| iSmfServiceInstanceId | string | O | 0..1 | When present, this IE shall contain the serviceInstanceId of I-SMF service instance serving the PDU session.  This IE may be used by the SMF to identify PDU sessions affected by a failure or restart of the I-SMF service (see clauses 6.2 and 6.3 of 3GPP TS 23.527 [24]). | DTSSA |
| recoveryTime | DateTime | O | 0..1 | Timestamp when the V-SMF or I-SMF service instance serving the PDU session was (re)started (see clause 6.3 of 3GPP TS 23.527 [24]). |  |
| roamingChargingProfile | RoamingChargingProfile | O | 0..1 | Roaming Charging Profile applicable in the VPLMN (see clauses 5.1.9.1, 5.2.1.7 and 5.2.2.12.2 of 3GPP TS 32.255 [25]). |  |
| chargingId | string | O | 0..1 | Charging ID (see clauses 5.1.9.1 of 3GPP TS 32.255 [25]). |  |
| oldPduSessionId | PduSessionId | C | 0..1 | This IE shall be present if this information is received from the UE and the same SMF is selected for SSC mode 3.  When present, it shall contain the old PDU Session ID received from the UE. See clauses 4.3.2.2.1 and 4.3.5.2 of 3GPP TS 23.502 [3]. |  |
| epsBearerCtxStatus | EpsBearerContextStatus | C | 0..1 | This IE shall be present during an EPS to 5GS idle mode mobility using the N26 interface, if received in the Create SM Context request.  When present, it shall be set to the value received in the Create SM Context request. |  |
| amfNfId | NfInstanceId | C | 0..1 | This IE shall be present unless the PDU session is related to regulatory prioritized service.  When present, it shall contain the identifier of the serving AMF during UE-requested PDU Session Establishment Procedure. See clauses 4.3.2.2.2 of 3GPP TS 23.502 [3]. |  |
| guami | Guami | C | 0..1 | This IE shall be present if the amfNfId is present.  When present, it shall contain the serving AMF's GUAMI. |  |
| maxIntegrityProtectedDataRateUl | MaxIntegrityProtectedDataRate | C | 0..1 | This IE shall be present if it is available.  When present, it shall indicate the maximum integrity protected data rate supported by the UE for uplink. |  |
| maxIntegrityProtectedDataRateDl | MaxIntegrityProtectedDataRate | C | 0..1 | This IE shall be present if it is available.  When present, it shall indicate the maximum integrity protected data rate supported by the UE for downlink. |  |
| cpCiotEnabled | boolean | C | 0..1 | This IE shall be present with the value "True" if the "5gCiotCpEnabled" attribute is received with "True" value in SM Context Create request, indicating the Control Plane CIoT 5GS Optimisation is enabled for the PDU session (see 3GPP TS 23.502 [3], clause 4.3.2.2.2).  When present, it shall be set as follows:  - True: Control Plane CIoT 5GS Optimisation is enabled.  - False (default): Control Plane CIoT 5GS Optimisation is not enabled. | CIOT |
| cpOnlyInd | boolean | C | 0..1 | This IE shall be present with the value "True", if the PDU session shall only use Control Plane CIoT 5GS Optimisation (see clause 5.31.4.1 of 3GPP TS 23.501 [2]).  When present, it shall be set as follows:  - True: the PDU session shall only use Control Plane CIoT 5GS Optimisation  - False (default): the PDU session is not constrained to only use Control Plane CIoT 5GS Optimisation. | CIOT |
| invokeNef | boolean | C | 0..1 | This IE shall be present with value "True", if Control Plane CIoT 5GS Optimisation is enabled and data delivery via NEF is selected for the PDU session.  When present, it shall be set as follows:  - True: Data delivery via NEF is selected.  - False (default): Data delivery via NEF is not selected. | CIOT |
| maRequestInd | boolean | C | 0..1 | This IE shall be present if a MA-PDU session is requested to be established by the UE.  When present, it shall be set as follows:  - True: a MA-PDU session is requested  - False (default): a MA-PDU session is not requested | MAPDU |
| maNwUpgradeInd | boolean | C | 0..1 | This IE shall only be present if the PDU session is allowed to be upgraded to MA PDU session (see clause 4.22.3 of 3GPP TS 23.502 [3]).  When present, it shall be set as follows:  - True: the PDU session is allowed to be upgraded to MA PDU session  - False (default): the PDU session is not allowed to be upgraded to MA PDU session  When maRequestInd is present and set to "true", this IE shall not be present. | MAPDU |
| dnaiList | array(Dnai) | C | 1..N | This IE shall be present over N16a if an I-SMF is inserted into a PDU session during the following procedures: PDU session establishment, Registration, Service Request, Xn based handover, Inter NG-RAN node N2 based handover (see clause 4.23 of 3GPP TS 23.502 [3]).  When present, it shall include the list of DNAIs supported by the I-SMF. | DTSSA |
| presenceInLadn | PresenceState | C | 0..1 | This IE shall be present during Xn based handover with I-SMF insertion, if the DNN corresponds to a LADN.  When present, it shall be set to "IN" or "OUT" to indicate that the UE is in or out of the LADN service area. | DTSSA |
| secondaryRatUsageInfo | array(SecondaryRatUsageInfo) | O | 1..N | This IE may be present to report usage data for a secondary RAT for QoS flows and/or the whole PDU session. | DTSSA |
| smallDataRateStatus | SmallDataRateStatus | C | 0..1 | This IE shall be present if the small data rate control status is received from AMF, see clause 5.31.14.3 of 3GPP TS 23.501 [2] and clause 4.3.2.2.2 of 3GPP TS 23.502 [3]. | CIOT |
| apnRateStatus | ApnRateStatus | C | 0..1 | This IE shall be present, if the APN rate control status (APN rates are shared by all PDN connections of the UE to this APN) is received from the AMF, see clause 4.7.7.3 in 3GPP TS 23.401 [33] and clause 4.11.5.3 in 3GPP TS 23.502 [3]. | CIOT |
| dlServingPlmnRateCtl | integer | C | 0..1 | This IE shall be present if Serving PLMN Rate Control for downlink data packets is enabled in the PLMN and Control Plane CIoT 5GS Optimisation is enabled for the PDU session.  When present, this IE shall contain the maximum allowed number of Downlink NAS Data PDUs per deci hour of the serving PLMN, as specified in clause 5.31.14.2 of 3GPP TS 23.501 [2].  Minimum: 10 | CIOT |
| upSecurityInfo | UpSecurityInfo | C | 0..1 | This IE shall be present if received from NG-RAN during Xn handover procedure with I-SMF Insertion (see clause 5.2.2.7.5).  When present, this IE shall contain the User Plane Security Information associated to the PDU session. See clause 9.3.1.60 of 3GPP TS 38.413 [9]. | DTSSA |
| NOTE: In shared networks, the PLMN ID that is communicated in this IE shall be that of the selected Core Network Operator. | | | | | |

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

##### 6.1.6.2.11 Type: HsmfUpdateData

Table 6.1.6.2.11-1: Definition of type HsmfUpdateData

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| requestIndication | RequestIndication | M | 1 | This IE shall indicate the request type. |  |
| pei | Pei | C | 0..1 | This IE shall be present if it is available and has not been provided earlier to the H-SMF or SMF.  When present, this IE shall contain the permanent equipment identifier. |  |
| vcnTunnelInfo | TunnelInfo | C | 1 | This IE shall be present if the N9 tunnel information on the visited CN side provided earlier to the H-SMF has changed.  When present, this IE shall contain the new N9 tunnel information on the visited CN side. |  |
| icnTunnelInfo | TunnelInfo | C | 0..1 | This IE shall be present if the N9 tunnel information of the I-UPF for DL traffic provided earlier by the I-SMF to the SMF has changed.  When present, this IE shall contain the new N9 tunnel information of the I-UPF. | DTSSA |
| additionalCnTunnelInfo | TunnelInfo | C | 0..1 | This IE shall be present if additional N9 tunnel information provided earlier has changed, or if the UE requests to establish resources for a MA PDU session over the other access.  When present, it shall contain additional N9 tunnel information of the UPF controlled by the V-SMF or I-SMF. | MAPDU |
| servingNetwork | PlmnIdNid | C | 0..1 | This IE shall contain the serving core network operator PLMN ID, and, for an SNPN, the NID that together with the PLMN ID identifies the SNPN, if the serving network has changed. |  |
| anType | AccessType | C | 0..1 | This IE shall be present if the Access Network Type provided earlier to the H-SMF or SMF has changed, e.g. during a handover of the PDU session between 3GPP access and untrusted non-3GPP access (see clause 5.2.2.8.2.5).  When present, this IE shall indicate the new Access Network Type to which the PDU session is to be associated. |  |
| additionalAnType | AccessType | C | 0..1 | This IE shall indicate the additional Access Network Type to which the PDU session is to be associated.  This IE shall be present when the UE requests to establish resources for MA PDU session over the other access. | MAPDU |
| ratType | RatType | C | 0..1 | This IE shall be present and indicate the RAT Type used by the UE, if available, upon a change of RAT Type. |  |
| ueLocation | UserLocation | C | 0..1 | This IE shall be present if it is available, the UE Location has changed and needs to be reported to the H-SMF or SMF.  When present, this IE shall contain:  - the new UE location information; and  - the timestamp, if available, indicating the UTC time when the UeLocation information was acquired.  (NOTE 1) |  |
| ueTimeZone | TimeZone | C | 0..1 | This IE shall be present if it is available, the UE Time Zone has changed and needs to be reported to the H-SMF or SMF.  When present, this IE shall contain the new UE Time Zone. |  |
| addUeLocation | UserLocation | O | 0..1 | Additional UE location.  This IE may be present, if anType indicates a non-3GPP access and a valid 3GPP access user location information is available.  When present, it shall contain:  - the last known 3GPP access user location; and  - the timestamp, if available, indicating the UTC time when the addUeLocation information was acquired.  (NOTE 1) |  |
| pauseCharging | boolean | C | 0..1 | This IE shall be present if the H-SMF or SMF enabled the use of Pause Pause of Charging for the PDU session during the PDU session establishment and  Pause of Charging needs to be started or stopped (see clause 4.4.4 of 3GPP TS 23.502 [3]).  When present, it shall be set as follows:  - true: to Start Pause of Charging;  - false: to Stop Pause of Charging. |  |
| pti | ProcedureTransactionId | C | 0..1 | This IE shall be present if the requestIndication indicates a UE requested PDU session modification or release. When present, it shall contain the PTI value received from the UE. |  |
| n1SmInfoFromUe | RefToBinaryData | C | 0..1 | This IE shall be present if the V-SMF or I-SMF has received known N1 SM information from the UE that does not need to be interpreted by the V-SMF or I-SMF. When present, this IE shall reference the n1SmInfoFromUe binary data (see clause 6.1.6.4.4). |  |
| unknownN1SmInfo | RefToBinaryData | C | 0..1 | This IE shall be present if the V-SMF or I-SMF has received unknown N1 SM information from the UE. When present, this IE shall reference the unknownN1SmInfo binary data (see clause 6.1.6.4.4). |  |
| qosFlowsRelNotifyList | array(QosFlowItem) | C | 1..N | This IE shall be present if QoS flows have been released. |  |
| qosFlowsNotifyList | array(QosFlowNotifyItem) | C | 1..N | This IE shall be present if the QoS targets for GBR QoS flow(s) are not fulfilled anymore or when they are fulfilled again. For each GBR QoS flow indicated as not fulfilled anymore, the V-SMF/I-SMF may also indicate an alternative QoS profile which the NG-RAN currently fulfils in the currentQosProfileIndex IE. |  |
| NotifyList | array(PduSessionNotifyItem) | C | 1..N | Description of notifications related to the PDU session. This IE shall be present if the NG-RAN has established user plane resources for the PDU session that do not fulfil the User Plane Security Enforcement with a value Preferred, or when the user plane security enforcement is fulfilled again.  When present, this IE shall include the notification cause "UP\_SEC\_NOT\_FULFILLED" if at least one of the UP integrity protection or UP ciphering security enforcement is not fulfilled.  If the securityResult IE is present in the message, it provides additional details on the security enforcement results. |  |
| epsBearerId | array(EpsBearerId) | C | 0..N | This IE shall be present during an EPS to 5GS handover execution using the N26 interface.  When present, it shall contain the list of EPS bearer Id(s) successfully handed over to 5GS. The array shall be empty if no resource was successfully allocated in 5GS for any PDU session. |  |
| hoPreparationIndication | boolean | C | 0..1 | This IE shall be present during an EPS to 5GS handover preparation and handover execution using the N26 interface or during N2 handover execution with I-SMF insertion.  When present, it shall be set as follows:  - true: an EPS to 5GS handover preparation or N2 handover preparation with I-SMF is in progress; the PGW-C/SMF shall not switch the DL user plane of the PDU session yet.  - false: there is no on-going EPS to 5GS handover preparation or N2 handover preparation with I-SMF in progress. If a handover preparation was in progress, the handover has been completed. The PGW-C/SMF shall switch the DL user plane of the PDU session using the N9 tunnel information that has been received in the vcnTunnelInfo or icnTunnelInfo.  It shall be set to "true" during an EPS to 5GS handover preparation using the N26 interface.  It shall be set to "false" during an EPS to 5GS handover execution using the N26 interface or during N2 handover execution with I-SMF insertion. |  |
| revokeEbiList | array(EpsBearerId) | C | 1..N | This IE shall be present to request the H-SMF or SMF to revoke some EBIs (see clause 4.11.1.4.1 of 3GPP TS 23.502 [3]). When present, it shall contain the EBIs to revoke. |  |
| cause | Cause | C | 0..1 | This IE shall be present and set as specified in clause 5.2.2.8.2.6 during P-CSCF restoration procedure and clause 5.2.2.8.2.3 during 5G-AN requested PDU session resource release procedure.  When present, this IE shall indicate the NF Service Consumer cause of the requested modification. |  |
| ngApCause | NgApCause | C | 0..1 | The V-SMF or I-SMF shall include this IE if it received it from the 5G-AN and, for a HR PDU session, if this information is permitted to be sent to the H-SMF operator according to the V-SMF operator's policy. When present, this IE shall indicate the NGAP cause for the requested modification. |  |
| 5gMmCauseValue | 5GMmCause | C | 0..1 | The V-SMF or I-SMF shall include this IE if it received it from the AMF and, for a HR PDU session, if this information is permitted to be sent to the H-SMF operator according to the V-SMF operator's policy. |  |
| alwaysOnRequested | boolean | C | 0..1 | This IE shall be present and set to true if the UE requests to change the PDU session to an always-on PDU session and this is allowed by local policy in the V-SMF or I-SMF.  When present, it shall be set as follows:  - true: request for an always-on PDU session  - false (default): not a request for an always-on PDU session |  |
| epsInterworkingInd | EpsInterworkingIndication | O | 0..1 | This IE may be present if the indication has been received from AMF and, for a HR PDU session, it is allowed to be forwarded to H-SMF by operator configuration.  When present, this IE shall indicate whether the PDU session may possibly be moved to EPS and whether N26 interface to be used during EPS interworking procedures. |  |
| secondaryRatUsageReport | array(SecondaryRatUsageReport) | O | 1..N | This IE may be present to report usage data for a secondary RAT for QoS flows.  (NOTE 2) |  |
| secondaryRatUsageInfo | array(SecondaryRatUsageInfo) | O | 1..N | This IE may be present to report usage data for a secondary RAT for QoS flows and/or the whole PDU session. |  |
| anTypeCanBeChanged | boolean | C | 0..1 | This IE shall be present and set to true to indicate that the Access Network Type associated to the PDU session can be changed (see clause 5.2.2.8.2.2), during a Service Request procedure (see clauses 4.2.3.2 and 4.3.3.3 of 3GPP TS 23.502 [3])), in response to paging or NAS notification indicating non-3GPP access, when the PDU Session for which the UE was paged or notified is in the List Of Allowed PDU Sessions provided by the UE, and the AMF received N2 SM Information only or N1 SM Container and N2 SM Information from the SMF in step 3a of clause 4.2.3.3 of 3GPP TS 23.502 [3].  When present, it shall be set as follows:  - true: the access type of the PDU session can be changed.  - false (default): the access type of the PDU session cannot be changed. |  |
| maReleaseInd | MaReleaseIndication | C | 0..1 | This IE shall be present if a MA PDU session is requested to be released over a single access, in the following cases:  - when UE/AMF/V-SMF initiates MA PDU session release over one access; or  - when UE deregisters from one access.  When present, it shall indicate the access to be released. | MAPDU |
| maNwUpgradeInd | boolean | C | 0..1 | This IE shall be present if the PDU session is allowed to be upgraded to MA PDU session (see clause 6.4.2.2 of 3GPP TS 24.501 [7]).  When present, it shall be set as follows:  - true: the PDU session is allowed to be upgraded to MA PDU session  - false (default): the PDU session is not allowed to be upgraded to MA PDU session | MAPDU |
| maRequestInd | boolean | C | 0..1 | This IE shall be present if a MA-PDU session is requested to be established (see clause 4.22.6.3 of 3GPP TS 23.502 [3]).  When present, it shall be set as follows:  - true: a MA-PDU session is requested  - false (default): a MA-PDU session is not requested | MAPDU |
| unavailableAccesslnd | UnavailableAccessIndication | C | 0..1 | This IE shall be present if an access of a MA-PDU session is unavailable (see clause 4.22.7 of 3GPP TS 23.502 [3]).  When present, it shall indicate the access that is unavailable. | MAPDU |
| psaInfo | array(PsaInformation) | C | 1..N | This IE shall be present, for a PDU session with an I-SMF, if one or more PSAs UPF are inserted and/or removed by the I-SMF. | DTSSA |
| ulclBpInfo | UlclBpInformation | C | 0..1 | This IE shall be present, for a PDU session with an I-SMF, if an UL CL or BP UPF separate from the local PSA is inserted. | DTSSA |
| n4Info | N4Information | O | 0..1 | This IE may be present if the I-SMF needs to send N4 information (e.g. traffic usage reporting) to the SMF for traffic offloaded at a PSA controlled by an I-SMF. | DTSSA |
| n4InfoExt1 | N4Information | O | 0..1 | This IE may be present if the I-SMF needs to send additional N4 information (e.g. traffic usage reporting) to the SMF for traffic offloaded at a PSA controlled by an I-SMF. | DTSSA |
| n4InfoExt2 | N4Information | O | 0..1 | This IE may be present if the I-SMF needs to send additional N4 information to the SMF (e.g. during a change of PSA). | DTSSA |
| presenceInLadn | PresenceState | C | 0..1 | This IE shall be present during Xn based handover with I-SMF change, if the DNN corresponds to a LADN.  When present, it shall be set to "IN" or "OUT" to indicate that the UE is in or out of the LADN service area. | DTSSA |
| vsmfPduSessionUri | Uri | C | 0..1 | This IE shall be present during PDU session modification procedures when V-SMF has changed, as specified in clause 4.23.4.3 of 3GPP TS 23.502 [3].  When present, it shall include the callback URI representing the PDU session in the new V-SMF. | DTSSA |
| ismfPduSessionUri | Uri | C | 0..1 | This IE shall be present during PDU session modification procedures when I-SMF has changed, as specified in clause 4.23.4.3 of 3GPP TS 23.502 [3].  When present, it shall include the callback URI representing the PDU session in the new I-SMF. | DTSSA |
| vsmfId | NfInstanceId | C | 0..1 | This IE shall be present during PDU session modification procedures when V-SMF has changed, as specified in clause 4.23.4.3 of 3GPP TS 23.502 [3].  When present, it shall contain the identifier of the new V-SMF. | DTSSA |
| ismfId | NfInstanceId | C | 0..1 | This IE shall be present during PDU session modification procedures when I-SMF has changed, as specified in clause 4.23.4.3 of 3GPP TS 23.502 [3].  When present, it shall contain the identifier of the new I-SMF. | DTSSA |
| vSmfServiceInstanceId | string | O | 0..1 | This IE may be present during PDU session modification procedures when V-SMF has changed, as specified in clause 4.23.4.3 of 3GPP TS 23.502 [3].  When present, this IE shall contain the serviceInstanceId of the new V-SMF service instance serving the PDU session.  This IE may be used by the H-SMF to identify PDU sessions affected by a failure or restart of the V-SMF service (see clauses 6.2 and 6.3 of 3GPP TS 23.527 [24]). | DTSSA |
| iSmfServiceInstanceId | string | O | 0..1 | This IE may be present during PDU session modification procedures when I-SMF has changed, as specified in clause 4.23.4.3 of 3GPP TS 23.502 [3].  When present, this IE shall contain the serviceInstanceId of the new I-SMF service instance serving the PDU session.  This IE may be used by the SMF to identify PDU sessions affected by a failure or restart of the I-SMF service (see clauses 6.2 and 6.3 of 3GPP TS 23.527 [24]). | DTSSA |
| dlServingPlmnRateCtl | integer | C | 0..1 | The IE shall be present when the Serving PLMN Rate Control for Downlink data packets has changed since last update to the H-SMF (for HR PDU session) or SMF (for PDU sessions with an I-SMF).  When present, this IE shall contain the maximum allowed number of Downlink NAS Data PDUs per deci hour of the serving PLMN, as specified in clause 5.31.14.2 of 3GPP TS 23.501 [2]. If Serving PLMN Rate Control is disabled, the IE shall be set to null value.  Minimum: 10 | CIOT |
| dnaiList | array(Dnai) | C | 1..N | This IE shall be present over N16a during UE Triggered Service Request procedure with I-SMF change, Xn based handover and Inter NG-RAN node N2 based handover with I-SMF change (see clauses 4.23.4.3, 4.23.11.3 and 4.23.7.3.3 in 3GPP TS 23.502 [3]).  When present, it shall include the list of DNAIs supported by the new I-SMF. | DTSSA |
| supportedFeatures | SupportedFeatures | C | 0..1 | This IE shall be present if the vsmfId or the ismfId is present (i.e. during a change of V-SMF or I-SMF) and at least one optional feature defined in clause 6.1.8 is supported by the new V-SMF or I-SMF.  If this IE is absent when the vsmfId or the ismfId is present, the new V-SMF or I-SMF respectively shall be considered as not supporting any optional feature. |  |
| roamingChargingProfile | RoamingChargingProfile | O | 0..1 | This IE may be present during an inter-PLMN V-SMF change. When present, it shall contain the Roaming Charging Profile applicable in the VPLMN (see clauses 5.1.9.1, 5.2.1.7 and 5.2.2.12.2 of 3GPP TS 32.255 [25]). |  |
| moExpDataCounter | MoExpDataCounter | C | 0..1 | This IE shall be present if received from AMF.  When present, this IE shall contain the MO Exception Data Counter. | CIOT |
| vplmnQos | VplmnQos | O | 0..1 | When present, this IE shall contain the VPLMN QoS to be applied to the QoS flow with default QoS of the PDU Session. | VQOS |
| securityResult | SecurityResult | C | 0..1 | This IE shall be present if received from NG-RAN.  When present, this IE shall contain the Security Result associated to the PDU session. See clause 9.3.1.59 of 3GPP TS 38.413 [9]. |  |
| upSecurityInfo | UpSecurityInfo | C | 0..1 | This IE shall be present if received from NG-RAN during Xn handover procedure (see clause 5.2.2.8.2.16).  When present, this IE shall contain the User Plane Security Information associated to the PDU session. See clause 9.3.1.60 of 3GPP TS 38.413 [9]. |  |
| NOTE 1: In shared networks, the PLMN ID that is communicated in this IE shall be that of the selected Core Network Operator.  NOTE 2: An SMF complying with this version of the specification should report secondary RAT usage using the secondaryRatUsageInfo attribute that replaces the secondaryRatUsageReport attribute. | | | | | |

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