**3GPP TSG-CT WG4 Meeting #96eC4-201083**

**E-Meeting, 17th – 28th February 2020**

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| *CR-Form-v12.0* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **29.502** | **CR** | **0301** | **rev** | **1** | **Current version:** | **16.2.0** |  |
|  | | | | | | | | |
| *For* [***HE******LP***](about:blank#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](about:blank)*.* | | | | | | | | |
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| ***Proposed change affects:*** | UICC apps |  | ME |  | Radio Access Network |  | Core Network | **X** |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | | | | | | | | |
| ***Title:*** | New cause value for NSSAA failure and revocation | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | NEC, ZTE | | | | | | | | | |
| ***Source to TSG:*** | CT4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | eNS | | | | |  | ***Date:*** | | | 2020-2-12 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **C** |  | | | | | ***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](about:blank). | | | | | | | | *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:*** | | SA2 (CR#1953) agreed on new requirement that specific to   * Network Slice-Specific Re-Authentication and Re-Authorization failure; and * Slice-Specific Authorization Revocation;   AMF initiates the PDU session release procedure.  Since Rel15, TS29.502 has defined a cause REL\_DUE\_TO\_SLICE\_NOT\_AVAILABLE since for PDU session release when an S-NSSAI is no longer available, e.g. due to UE mobility. However, this Cause is not intended to be used for Network Slice-Specific Authentication and Authorization failure or revocation.  Operators may have requirement on differentiation of PDU session release for various scenarios, e.g. for network event statistics and performance tunning. In our view, we need new Cause value for the failure or revocation of Network Slice-Specific Authentication and Authorization. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Add cause "REL\_DUE\_TO\_SLICE\_AUTHORIZATION" | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | No proper Cause defined for the failure or revocation of Network Slice-Specific Authentication and Authorization. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 5.2.2.3.1, (new)5.2.2.3.x, 6.1.6.2.4, 6.1.6.3.8, A.2 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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's revision history:*** | |  | | | | | | | | |

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

##### 5.2.2.3.1 General

The Update SM Context service operation shall be used to update an individual SM context and/or provide N1 or N2 SM information received from the UE or the AN, for a given PDU session, towards the SMF, or the V-SMF for HR roaming scenarios, or the I-SMF for a PDU session with an I-SMF.

It is used in the following procedures:

- PDU Session modification (see clause 4.3.3 of 3GPP TS 23.502 [3]);

- UE or network requested PDU session release (see clause 4.3.4.2 and clause 4.3.4.3 of 3GPP TS 23.502 [3]);

- UE requested MA PDU session establishment over the other access (see clause 4.22.7 of 3GPP TS 23.502 [3]);

- UE or network-initiated MA PDU session release over a single access (see clause 4.22 of 3GPP TS 23.502 [3]);

- Activation or Deactivation of the User Plane connection of an existing PDU session, i.e. establishment or release of the N3 tunnel between the AN and serving CN (see clause 5.6.8 of 3GPP TS 23.501 [2] and clauses 4.2.2.2, 4.2.3, 4.2.6 and 4.9.1.3.3 of 3GPP TS 23.502 [3]);

- Xn and N2 Handover procedures (see clauses 4.9.1, 4.23.7 and 4.23.11 of 3GPP TS 23.502 [3]);

- Handover between 3GPP and untrusted non-3GPP access procedures (see clause 4.9.2 of 3GPP TS 23.502 [3]);

- Inter-AMF change due to AMF planned maintenance or AMF failure (see clause 5.21.2 of 3GPP TS 23.501 [2]), or inter-AMF mobility in CM-IDLE mode (see clauses 4.2.2.2 and 4.23.3 of 3GPP TS 23.502 [3]);

- RAN Initiated QoS Flow Mobility (see clause 4.14.1 of 3GPP TS 23.502 [3] and clause 8.2.5 of 3GPP TS 38.413 [9]);

- All procedures requiring to provide N1 or N2 SM information to the SMF, e.g. UE requested PDU Session Establishment procedure (see clause 4.3.2.2 of 3GPP TS 23.502 [3]), session continuity procedure (see clause 4.3.5 of 3GPP TS 23.502 [3]);

- EPS to 5GS Idle mode mobility or handover using N26 interface (see clause 4.11 of 3GPP TS 23.502 [3]);

- 5GS to EPS Handover using N26 interface (see clause 4.11.1.2 of 3GPP TS 23.502 [3]);

- PDU Session Reactivation during P-CSCF Restoration procedure via AMF (see clause 5.8.4.3 of 3GPP TS 23.380 [21]);

- AMF requested PDU session release due to a change of the set of network slices for a UE where a network slice instance is no longer available (see clause 4.3.4.2 of 3GPP TS 23.502 [3]);

- AMF receives an "initial request" with PDU Session Id which already exists in PDU session context of the UE (see clause 5.4.5.2.5 of 3GPP TS 24.501 [7]);

- Secondary RAT Usage Data Reporting (see clause 4.21 of 3GPP TS 23.502 [3]);

- Service Request Procedures with I-SMF change or I-SMF removal when downlink data packets are buffered at the I-UPF (See clause 4.23.4 of 3GPP TS 23.502 [3]);

- Connection Suspend procedure (see clause 4.8.1.2 of 3GPP TS 23.502 [3]);

- Connection Resume in CM-IDLE with Suspend procedure (see clause 4.8.2.3 of 3GPP TS 23.502 [3]);

- AMF requested PDU session release due to Network Slice-Specific Authentication and Authorization failure or revocation (see subclause 4.2.9.2 of 3GPP TS 23.502 [3] and subclause 4.2.9.4 of 3GPP TS 23.502 [3]);

The NF Service Consumer (e.g. AMF) shall update an individual SM context and/or provide N1 or N2 SM information to the SMF by using the HTTP POST method (modify custom operation) as shown in Figure 5.2.2.3.1-1.



Figure 5.2.2.3.1-1: SM context update

1. The NF Service Consumer shall send a POST request to the resource representing the individual SM context resource in the SMF. The payload body of the POST request shall contain the modification instructions and/or the N1 or N2 SM information, or the indication that the PDU session is allowed to be upgraded to a MA PDU session if so indicated by the UE as specified in clause 6.4.2.2 of 3GPP TS 24.501 [7]. If the request contains EBI(s) to revoke, then the SMF shall disassociate the EBI(s) with the QFI(s) with which they are associated.

2a. On success, "204 No Content" or "200 OK" shall be returned; in the latter case, the payload body of the POST response shall contain the representation describing the status of the request and/or N1 or N2 SM information.

If the ExemptionInd IE is included in the request message, indicating that the NAS SM message included in the request was exempted from NAS congestion control by the AMF, the SMF shall verify that the included 5G SM message can be exempted from a NAS SM congestion control activated in the AMF as specified in clause 5.19.7 of 3GPP TS 23.501 [2].

The SMF may indicate to the NF Service Consumer that it shall release EBI(s) that were assigned to the PDU session by including the releaseEbiList IE, e.g. when a QoS flow is released.

2b. On failure, one of the HTTP status code listed in Table 6.1.3.3.3.2-3 shall be returned. For a 4xx/5xx response, the message body shall contain an SmContextUpdateError structure, including:

- a ProblemDetails structure with the "cause" attribute set to one of the application error listed in Table 6.1.3.3.3.2-3;

- N1 SM information, if the SMF needs and can return a response to the UE;

- N2 SM information, if the SMF needs and can return a response to the NG-RAN.

The following clauses specify additional requirements applicable to specific scenarios.

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

##### 5.2.2.3.x AMF requested PDU Session Release due to Network Slice-Specific Authentication and Authorization failure or revocation

The requirements specified in subclause 5.2.2.3.1 shall apply with the following modifications.

1. Same as step 1 of Figure 5.2.2.3.1-1, with the following modifications.

The POST request shall contain:

- the release IE set to true;

- the cause IE set to REL\_DUE\_TO\_SLICE\_AUTHORIZATION.

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

##### 6.1.6.2.4 Type: SmContextUpdateData

Table 6.1.6.2.4-1: Definition of type SmContextUpdateData

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| pei | Pei | C | 0..1 | This IE shall be present if it is available and has not been provided earlier to the SMF.  When present, this IE shall contain the permanent equipment identifier. |  |
| servingNfId | NfInstanceId | C | 0..1 | This IE shall be present upon inter-AMF change or mobility, or upon a N2 handover execution with AMF change.  When present, it shall contain the identifier of the serving NF (e.g. AMF). |  |
| smContextStatusUri | Uri | C | 0..1 | This IE shall be present if the servingNfId IE is present. It may be present otherwise.  When present, this IE shall include the callback URI to receive notification of SM context status. |  |
| guami | Guami | C | 0..1 | This IE shall be present if the servingNfId of AMF is present.  When present, it shall contain the serving AMF's GUAMI. |  |
| servingNetwork | PlmnIdNid | C | 0..1 | This IE shall be present if the servingNfId IE is present.  When present, it shall contain the serving core network operator PLMN ID and, for an SNPN, the NID that together with the PLMN ID identifies the SNPN. |  |
| backupAmfInfo | array(BackupAmfInfo) | C | 1..N | This IE shall be included for the modification of the BackupAmfInfo if the NF service consumer is an AMF and the AMF supports the AMF management without UDSF.  For deleting the backupAmfInfo, it shall contain the Null value. |  |
| anType | AccessType | C | 0..1 | This IE shall be present upon a change of the Access Network Type associated to the PDU session, e.g. during a handover of the PDU session between 3GPP access and untrusted non-3GPP access (see clause 5.2.2.3.5.2).  When present, 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 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. |  |
| presenceInLadn | PresenceState | C | 0..1 | This IE shall be present during a Service Request procedure (see clause 5.2.2.3.2.2) ), an Xn handover (see clause 5.2.2.3.3) or a N2 handover execution (see clause 5.2.2.3.4.3), if the DNN of the PDU session 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. |  |
| ueLocation | UserLocation | C | 0..1 | This IE shall be present if it is available and if it needs to be reported to the SMF (e.g. the user location has changed or the user plane of the PDU session is deactivated).  When present, this IE shall contain:  - the UE location information; and  - the timestamp, if available, indicating the UTC time when the UeLocation information was acquired.  See NOTE. |  |
| 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 SMF.  When present, this IE shall contain the 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.  See NOTE. |  |
| upCnxState | UpCnxState | C | 0..1 | This IE shall be present to request the activation or the deactivation of the user plane connection of the PDU session.  When present, it shall be set as specified in clauses 5.2.2.3.2, 5.2.2.3.15 and 5.2.2.3.16. |  |
| hoState | HoState | C | 0..1 | This IE shall be present to request the preparation, execution or cancellation of a handover of the PDU session.  When present, it shall be set as specified in clause 5.2.2.3.4. |  |
| toBeSwitched | boolean | C | 0..1 | This IE shall be present during an Xn Handover (see clause 5.2.2.3.3) to request to switch the PDU session to a new downlink N3 tunnel endpoint.  When present, it shall be set as follows:  - true: request to switch to the PDU session.  - false (default): no request to switch the PDU session. |  |
| failedToBeSwitched | boolean | C | 0..1 | This IE shall be present during an Xn Handover (see clause 5.2.2.3.3) if the PDU session failed to be setup in the target RAN.  When present, it shall be to true to indicate that the PDU session failed to be setup in the target RAN. |  |
| n1SmMsg | RefToBinaryData | C | 0..1 | This IE shall be present if N1 SM Information has been received from the UE.  When present, this IE shall reference the N1 SM Message binary data (see clause 6.1.6.4.2). |  |
| n2SmInfo | RefToBinaryData | C | 0..1 | This IE shall be present if N2 SM Information has been received from the AN.  When present, this IE shall reference the N2 SM Information binary data (see clause 6.1.6.4.3). |  |
| n2SmInfoType | N2SmInfoType | C | 0..1 | This IE shall be present if "n2SmInfo" attribute is present.  When present, this IE shall indicate the NG AP IE type for the NG AP SMF related IE container carried in "n2SmInfo" attribute. |  |
| targetId | NgRanTargetId | C | 0..1 | This IE shall be present during a N2 handover preparation, when the hoState IE is set to the value "PREPARING".  When present, it shall contain the Target ID identifying the target RAN Node ID and TAI received in the Handover Required from the Source RAN. |  |
| targetServingNfId | NfInstanceId | C | 0..1 | This IE shall be present during a N2 handover preparation with AMF change, when the hoState IE is set to the value "PREPARING".  When present, it shall contain the identifier of the target serving NF (e.g. AMF). |  |
| dataForwarding | boolean | C | 0..1 | This IE shall be present and set as specified in clause 5.2.2.3.9 during a 5GS to EPS handover, or as specified in 5.2.2.3.13 during a N2 based handover with I-SMF insertion/change/removal.  When present, it shall be set as follows:  - true: setup the indirect data forwarding tunnels;  - false (default): indirect data forwarding tunnels are not required to be setup (see clause 5.2.2.3.9). |  |
| n9ForwardingTunnel | TunnelInfo | C | 0..1 | This IE shall be present in the following case:  - UE triggered Service Request with I-SMF change/removal, if requesting to forward buffered downlink data packets at I-UPF (See clause 4.23.4 of 3GPP TS 23.502 [3]).  When present, it shall carry the N9 forwarding tunnel info of I-UPF. | DTSSA |
| n9DlForwardingTnlList | array (IndirectDataForwardingTunnelInfo) | C | 1..N | This IE shall be present in the following case:  - N2 based handover with I-SMF insertion/change/removal, if downlink indirect data forwarding tunnels are requested to be established between target I-UPF and source I-UPF / source UPF (see clause 4.23.7 and 4.23.11 of 3GPP TS 23.502 [3]).  When present, it shall carry the list of N9 downlink indirect data forwarding tunnel(s) info of I-UPF. | DTSSA |
| n9UlForwardingTnlList | array (IndirectDataForwardingTunnelInfo) | C | 1..N | This IE shall be present in the following case:  - N2 based handover with I-SMF insertion/change/removal, if uplink indirect data forwarding tunnels are requested to be established between target I-UPF and source I-UPF / source UPF (see clause 4.23.7 and 4.23.11 of 3GPP TS 23.502 [3]).  When present, it shall carry the list of N9 uplink indirect data forwarding tunnel(s) info of I-UPF. | DTSSA |
| epsBearerSetup | array(EpsBearerContainer) | C | 0..N | This IE shall be present during a 5GS to EPS handover using the N26 interface.  When present, it shall include the EPS bearer context(s) successfully setup in EPS. The array shall be empty if no resource was successfully allocated in EPS for any PDU session. |  |
| revokeEbiList | array(EpsBearerId) | C | 1..N | This IE shall be present to request the 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. |  |
| release | boolean | C | 0..1 | This IE shall be used to indicate a network initiated PDU session release is requested.  This IE shall be present and set as specified in clause 5.2.2.3.10 during P-CSCF restoration procedure, in clause 5.2.2.3.11 during AMF requested PDU Session Release due to duplicated PDU Session Id, in clause 5.2.2.3.12 during AMF requested PDU Session Release due to slice not available, and in clause 5.2.2.3.x during AMF requested PDU Session Release due to Network Slice-Specific Authentication and Authorization failure or revocation.  When present, it shall be set as follows:  - true: PDU session release is required;  - false (default): PDU session release is not required. |  |
| cause | Cause | O | 0..1 | When present, this IE shall indicate the cause for the requested modification, e.g. the NF Service Consumer cause for requesting to deactivate the user plane connection of the PDU session. |  |
| ngApCause | NgApCause | C | 0..1 | This IE shall be present, if the information is available. When present, this IE shall indicate the cause for the requested modification, e.g. the NGAP cause for requesting to deactivate the user plane connection of the PDU session. |  |
| 5gMmCauseValue | 5GMmCause | C | 0..1 | This IE shall be included if the AMF received a 5GMM cause code from the UE during any network initiated PDU session modification or release procedure. (e.g 5GMM Status message in response to a Downlink NAS Transport message carrying 5GSM payload). |  |
| sNssai | Snssai | C | 0..1 | This IE shall be present, during an EPS to 5GS idle mode mobility or handover using the N26 interface, if the S-NSSAI for the serving PLMN derived from the S-NSSAI of the home PLMN differs from the S-NSSAI provided in the Create SM Context Request.  When present, it shall contain the S-NSSAI for the serving PLMN. |  |
| traceData | TraceData | C | 0..1 | This IE shall be included if trace is required to be activated, modified or deactivated (see 3GPP TS 32.422 [22]).  For trace modification, it shall contain a complete replacement of trace data.  For trace deactivation, it shall contain the Null value. |  |
| epsInterworkingInd | EpsInterworkingIndication | O | 0..1 | This IE may be present if the indication has been provided during the PDU session creation, and its value has changed after session creation or last update.  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. |  |
| 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 5.2.2.3.2.4), during a Service Request procedure (see clause 4.2.3.2 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: the access type of the PDU session cannot be changed (default). |  |
| n2SmInfoExt1 | RefToBinaryData | C | 0..1 | This IE shall be present if more than one N2 SM Information has been received from the AN.  When present, this IE shall reference the N2 SM Information binary data (see clause 6.1.6.4.3). |  |
| n2SmInfoTypeExt1 | N2SmInfoType | C | 0..1 | This IE shall be present if "n2SmInfoExt1" attribute is present.  When present, this IE shall indicate the NG AP IE type for the NG AP SMF related IE container carried in "n2SmInfoExt1" attribute. |  |
| maReleaseInd | MaReleaseIndication | C | 0..1 | This IE shall be present if one access of a MA PDU session is requested to be released, when UE/AMF initiates MA PDU session release over one access.  When present, it indicates 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 |
| exemptionInd | ExemptionInd | C | 0..1 | This IE shall be present if the AMF has exempted the NAS message from a NAS SM congestion control activated in the AMF. |  |
| NOTE: In shared networks, when the message is sent from the VPLMN to the HPLMN, the PLMN ID that is communicated in this IE shall be that of the selected Core Network Operator.  In shared networks, when the AMF and SMF pertain to the same PLMN, the Primary PLMN ID shall be communicated in the ECGI or NCGI to the SMF. The Core Network Operator PLMN ID shall be communicated in the TAI and the Serving Network. | | | | | |

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

##### 6.1.6.3.8 Enumeration: Cause

The enumeration Cause indicates a cause information. It shall comply with the provisions defined in table 6.1.6.3.8-1.

Table 6.1.6.3.8-1: Enumeration Cause

|  |  |
| --- | --- |
| Enumeration value | Description |
| "REL\_DUE\_TO\_HO" | Release due to Handover |
| "EPS\_FALLBACK" | Mobility due to EPS fallback for IMS voice is on-going. |
| "REL\_DUE\_TO\_UP\_SEC" | Release due to user plane Security requirements that cannot be fulfilled. |
| "DNN\_CONGESTION" | Release due to the DNN based congestion control. |
| "S\_NSSAI\_CONGESTION" | Release due to the S-NSSAI based congestion control. |
| "REL\_DUE\_TO\_REACTIVATION" | Release due to PDU session reactivation. |
| "5G\_AN\_NOT\_RESPONDING" | The 5G AN did not respond to the request initiated by the network. |
| "REL\_DUE\_TO\_SLICE\_NOT\_AVAILABLE" | Release due to the associated S-NSSAI becomes no longer available. |
| "REL\_DUE\_TO\_DUPLICATE\_SESSION\_ID" | Release due to a UE request to establish a new PDU session with an identical PDU session Id. |
| "PDU\_SESSION\_STATUS\_MISMATCH" | Release due to mismatch of PDU Session status between UE and AMF. |
| "HO\_FAILURE" | Handover preparation failure |
| "INSUFFICIENT\_UP\_RESOURCES" | Failure to activate the User Plane connection of a PDU session due to insufficient user plane resources. |
| "PDU\_SESSION\_HANDED\_OVER" | The PDU session is handed over to another system or access. |
| "PDU\_SESSION\_RESUMED" | Resume the user plane connection of the PDU session. |
| "CN\_ASSISTED\_RAN\_PARAMETER\_TUNING" | SMF derived CN assisted RAN parameters tuning. |
| "ISMF\_ CONTEXT\_TRANSFER" | The PDU session shall be transferred from old I-SMF to new I-SMF. |
| "SMF\_ CONTEXT\_TRANSFER" | The PDU session shall be transferred from old SMF to new SMF. |
| "REL\_DUE\_TO\_PS\_TO\_CS\_HO" | Release due to 5G SRVCC from NG-RAN to 3GPP UTRAN, as specified in clause 6.5.4 of 3GPP TS 23.216 [35]. |
| "REL\_DUE\_TO\_SLICE\_AUTHORIZATION" | Release due to Network Slice-Specific Authentication and Authorization failure or revocation. |

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

## A.2 Nsmf\_PDUSession API

[…TEXT SKIPPED…]

Cause:

anyOf:

- type: string

enum:

- REL\_DUE\_TO\_HO

- EPS\_FALLBACK

- REL\_DUE\_TO\_UP\_SEC

- DNN\_CONGESTION

- S\_NSSAI\_CONGESTION

- REL\_DUE\_TO\_REACTIVATION

- 5G\_AN\_NOT\_RESPONDING

- REL\_DUE\_TO\_SLICE\_NOT\_AVAILABLE

- REL\_DUE\_TO\_DUPLICATE\_SESSION\_ID

- PDU\_SESSION\_STATUS\_MISMATCH

- HO\_FAILURE

- INSUFFICIENT\_UP\_RESOURCES

- PDU\_SESSION\_HANDED\_OVER

- PDU\_SESSION\_RESUMED

- CN\_ASSISTED\_RAN\_PARAMETER\_TUNING

- ISMF\_CONTEXT\_TRANSFER

- SMF\_CONTEXT\_TRANSFER

- REL\_DUE\_TO\_PS\_TO\_CS\_HO

- REL\_DUE\_TO\_SLICE\_AUTHORIZATION

- type: string

description: >

This string provides forward-compatibility with future

extensions to the enumeration but is not used to encode

content defined in the present version of this API.

description: >

Possible values are

- REL\_DUE\_TO\_HO

- EPS\_FALLBACK

- REL\_DUE\_TO\_UP\_SEC

- DNN\_CONGESTION

- S\_NSSAI\_CONGESTION

- REL\_DUE\_TO\_REACTIVATION

- 5G\_AN\_NOT\_RESPONDING

- REL\_DUE\_TO\_SLICE\_NOT\_AVAILABLE

- REL\_DUE\_TO\_DUPLICATE\_SESSION\_ID

- PDU\_SESSION\_STATUS\_MISMATCH

- HO\_FAILURE

- INSUFFICIENT\_UP\_RESOURCES

- PDU\_SESSION\_HANDED\_OVER

- PDU\_SESSION\_RESUMED

- CN\_ASSISTED\_RAN\_PARAMETER\_TUNING

- ISMF\_CONTEXT\_TRANSFER

- SMF\_CONTEXT\_TRANSFER

- REL\_DUE\_TO\_PS\_TO\_CS\_HO

- REL\_DUE\_TO\_SLICE\_AUTHORIZATION

[…TEXT SKIPPED…]

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