**3GPP TSG-SA WG2 Meeting #146-E *S2-2106006r07***

**Elbonia, 16 – 27 August 2021**

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| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **23.502** | **CR** | **3026** | **rev** | **-** | **Current version:** | **17.1.0** |  |
|  | | | | | | | | |
| *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:*** | NSAC support for EPC interworking | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Samsung, NTT DOCOMO,ZTE | | | | | | | | | |
| ***Source to TSG:*** | SA2 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | eNS\_Ph2 | | | | |  | ***Date:*** | | | 2021-08-10 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **B** |  | | | | | ***Release:*** | | | Rel-17 |
|  | *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-15 (Release 15) Rel-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | 502 CR to support NSAC for EPC interworking | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | It is proposed that the existing NSAC service operations are reused for EPC interworking. | | | | | | | | |
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| ***Consequences if not approved:*** | | Unclear specifications | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 4.11.0a. 5, 5.2.21.1 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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:*** | |  | | | | | | | | |

\*\*\* 1st change \*\*\*

#### 4.11.0a.5 PDN Connection Establishment

During establishment of non-emergency PDN connection in the EPC, the UE and the SMF+PGW-C exchange information via PCO as described in clause 5.15.7 of TS 23.501 [2]. For UE with 5GC NAS capability disabled (i.e. N1 mode is disabled), the UE may also allocate a PDU Session ID and send it to the SMF+PGW-C via PCO. If the SMF+PGW-C supports more than one S-NSSAI and the APN is valid for more than one S-NSSAI, before the SMF+PGW-C provides an S-NSSAI to the UE, the SMF+PGW-C should check such that the selected S-NSSAI is among the UE's subscribed S-NSSAIs, and that the S-NSSAI is not subject to Network Slice-Specific Authentication and Authorization, by retrieving the Subscribed S-NSSAI from UDM using the Nudm\_SDM\_Get service operation (the SMF+PGW-C discovers and selects a UDM as described in clause 6.3.8 of TS 23.501 [2]). If the SMF+PGW-C is in a VPLMN, the SMF+PGW-C uses the Nnssf\_NSSelection\_Get service operation to retrieve a mapping of the Subscribed S-NSSAIs to Serving PLMN S-NSSAI values. If the S-NSSAIs supported by the SMF+PGW-C are all subject to NSSAA, then the SMF+PGW-C should reject the PDN connection establishment. If the selected S-NSSAI is subject to NSAC and EPS counting is required for the S-NSSAI, the SMF+PGW-C uses the Nnsacf\_NSAC\_NumberOfUEsUpdate services operation and/or the Nnsacf\_NSAC\_NumberOfPDUsUpdate services operation to check if the selected S-NSSAI is available as described in clause 4.11.5.x.

As described in TS 23.548 [74], during establishment of a PDN connection, a UE that hosts EEC(s) may indicate to the SMF+PGW-C, in the PCO, that it supports the ability to receive ECS address(es) via NAS and to transfer the ECS Address(es) to the EEC(s). If the UE indicated in the PCO that it supports the ability to receive ECS address(es) via NAS, the SMF+PGW-C may provide the ECS Address Configuration Information (as described in clause 6.5.2 of TS 23.548 [74]) to the UE in the PCO. The SMF+PGW-C may derive the Edge Configuration Server Information based on local configuration, the UE's location, and/or UE subscription information.

The SMF+PGW-C may use the bearer modification procedure without bearer QoS update to send the UE a PCO with updated ECS Address Configuration Information as defined in clause 6.5.2 of TS 23.548 [74] to the UE.

During establishment of non-emergency PDN connection in the EPC, if PGW-C+SMF is selected for a UE that has 5GS subscription, the SMF may be configured to obtain the subscribed IP index from UDM as part of subscription data using the Nudm\_SDM\_Get service operation (the PGW-C+SMF discovers and selects a UDM as described in clause 6.3.8 of TS 23.501 [2]).

During establishment of non-emergency PDN connection in the EPC, if SMF+PGW-C is selected for a UE that has 5GS subscription but does not support 5GC NAS and is accessing via EPC/E-UTRAN and if the SMF+PGW-C supports more than one S-NSSAI and the APN is valid for more than one S-NSSAI, the SMF+PGW-C+PGW-C may proceed as specified in first paragraph of this clause or select any S-NSSAI associated with the APN of the PDN connection. The SMF+PGW-C shall not provide any 5GS related parameters to the UE.

NOTE: The SMF+PGW-C knows that the UE does not support 5GS NAS if the UE does not provide PDU Session ID in PCO (see clause 5.15.7 of TS 23.501 [2]).

During establishment of emergency PDN connection:

- The SMF+PGW-C is to be derived from the emergency APN or to be statically configured in the Emergency Configuration Data in MME.

- 5GC interworking support with N26 or without N26 is determined based on UE's 5G NAS capability and local configuration (in the Emergency Configuration Data in MME).

- The S-NSSAI configured for the emergency APN in SMF+PGW-C is not sent to the UE by the SMF+PGW-C. One S-NSSAI is configured for the emergency APN.

During establishment of non-emergency PDN connection and emergency PDN connection, if SMF+PGW-C is selected for a UE that does not support 5GC NAS, the SMF+PGW-C creates unique PDU Session ID for each PDN connection of the UE.

The unique PDU Session ID can be created based on the EPS Bearer IDs assigned by the MME for the PDN Connections associated with the UE and not be in the range of PDU Session ID values that can be created by a 5GC NAS capable UE.

When the SMF+PGW-C establishes the PDN connection successfully, the SMF+PGW-C provides the ID of the PCF ID selected for the PDN connection in the UDM using the Nudm\_UECM\_Registration service operation.

A SMF+PGW-C may support L2TP as described in clause 4.3.2.4. In this case step 1 and step 7 of Figure 4.3.2.4‑1 correspond to a PDN Connection establishment and a SMF+PGW-C replaces the SMF in that Figure.

\*\*\* 2nd change \*\*\*

### 5.2.21 Network Slice Admission Control Function (NSACF) services

#### 5.2.21.1 General

The following table illustrates the NSACF services.

Table 5.2.21.1-1: List of NSACF services

|  |  |  |  |
| --- | --- | --- | --- |
| Service Name | Service Operations | Operation Semantics | Example Consumer(s) |
| Nnsacf\_NumberOfUEsPerSlice | AvailabilityCheckAndUpdate | Request/Response | AMF, SMF (NOTE) |
|  | EACNotify |  | AMF |
| Nnascf\_NumberOfPDUsPerSlice | AvailabilityCheckAndUpdate | Request/Response | SMF |
| Nnsacf\_SliceEventExposure | Subscribe | Subscribe/Notify | NEF |
|  | Unsubscribe |  | NEF |
|  | Notify |  | NEF |
| Nnsacf\_SliceStatus | Retrieval | Request/Response | NEF |
| NOTE: If EPS counting is required for the S-NSSAI, the SMF+PGW-C uses the Nnsacf\_NumberOfUEs services operation at PDN connection establishement procedure. | | | |

\*\*\* End of the changes \*\*\*