**3GPP TSG-WG SA2 Meeting #143E e-meeting  *S2-210xxxx***

**Elbonia, Feb 24 – Mar 09, 2021 (revision of S2-210xxxx)**

|  |
| --- |
| *CR-Form-v12.1* |
| **CHANGE REQUEST** |
|  |
|  | **23.501** | **CR** | **XXXX** | **rev** | **-**  | **Current version:** | **16.7.0** |  |
|  |
| *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 | **X** | Radio Access Network |  | Core Network | **X** |

|  |
| --- |
|  |
| ***Title:***  | SNPN selection for UEs with a PLMN subscription |
|  |  |
| ***Source to WG:*** | Huawei, HiSilicon |
| ***Source to TSG:*** | SA2 |
|  |  |
| ***Work item code:*** | eNPN |  | ***Date:*** | 2021-02-18 |
|  |  |  |  |  |
| ***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 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-15 (Release 15)Rel-16 (Release 16)Rel-17 (Release 17)Rel-18 (Release 18)* |
|  |  |
| ***Reason for change:*** | Objectives of eNPN includes the support of scenarios when UE is using a PLMN subscription, in these scenarios the UE can select a SNPN using mechanism agreed in clause 8.1.5 of TR 23700-07, in addition to mechanism defined in clause 5.30.2.7 of TS 23.501.Case 1: For a UE configured to use SNPNs, it is allowed to use the PLMN subscription/credential to access to SNPN1, meanwhile, it can use the same PLMN subscription/credential to register to the PLMN. When the UE has successfully registered to SNPN1 using the PLMN credential, the UE may attempt to register to the PLMN using N3IWF of the PLMN over SNPN1 if the UE doesn't find available PLMN. In this case, it needs to clarify that for the UE configured to use SNPNs using PLMN credential, it shall not attempt to access PLMN over SNPN, however, if the PLMN receives the UE’s registration attempt via N3IWF when the UE has successfully registered to SNPN, the PLMN will still accept UE’s registration and keep UE registered via 3GPP access type and non 3GPP access type simultaneously.Case 2A: For a UE configured to use SNPNs, it is only allowed to use the PLMN subscription/credential to access to SNPN1. When the UE attempts to select and register to SNPN2 using PLMN credential by e.g., manual selection or support of the indication whether the SNPN2 allows registration attempts from UEs that are not explicitly configured to select the SNPN, the SNPN2 should reject the UE’s registration attempt and subsequently the UE should not try to select SNPN 2 again using PLMN credential, at least in a time period.Case 2B: For a UE configured to use SNPN, it is only allowed to use SNPN1 credential to access to SNPN1 and use the PLMN credential to access to the PLMN. When the UE attempts to select and register to SNPN1 or SNPN2 using PLMN credential by e.g., manual selection or mis-operation disregarding the RAN broadcast, the SNPN1/SNPN2 should reject the UE’s registration attempt and subsequently the UE should not try to select SNPN1/2 again using PLMN credential, at least in a time period. |
|  |  |
| ***Summary of change:*** | * For a UE configured to use SNPNs using PLMN credential, when it has successfully registered to a SNPN using PLMN credential, it shall not attempt to access PLMN over this SNPN, however, if the PLMN receives the UE’s registration attempt via PLMN N3IWF, the PLMN will still accept UE’s registration and keep UE registered via 3GPP access type and non 3GPP access type simultaneously.
* For a UE configured/capable to use SNPNs using PLMN credential, when the UE attempts to register to a SNPN not authorized to use, the SNPN AMF shall reject the UE’s registration attempt and subsequently the UE should not try to select SNPN 2 again using PLMN credential, at least in a time period.
 |
|  |  |
| ***Consequences if not approved:*** | Unclear how to address the aboves cases when specifiying the support of scenarios when UE is using a PLMN subscription to access the SNPN |
|  |  |
| ***Clauses affected:*** | 5.30.2.3, 5.30.2.5 |
|  |  |
|  | **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:*** |  |

\* \* \* \* First change \* \* \* \*

### 5.30.2 Stand-alone non-public networks

#### 5.30.2.3 UE configuration and subscription aspects

An SNPN-enabled UE is configured with subscriber identifier (SUPI), credentials for each subscribed SNPN identified by the combination of PLMN ID and NID. If an SNPN-enabled UE is configured with an N3IWF, it is also configured with an identifier of the country where the configured N3IWF is located.

To support SNPN selection and registration for UEs with a PLMN subscription, the UE subscription should contain the information of subscribed SNPN (s) that allow the UE to access using PLMN credential. The information of subscribed SNPN (s) consists of the PLMN controlled information for SNPN selection, i.e., PLMN controlled prioritized list of preferred SNPNs and PLMN controlled prioritized list of Group IDs (GIDs).

A subscriber of an SNPN is either:

- identified by a SUPI containing a network-specific identifier that takes the form of a Network Access Identifier (NAI) using the NAI RFC 7542 [20] based user identification as defined in TS 23.003 [19] clause 28.7.2. The realm part of the NAI may include the NID of the SNPN; or

- identified by a SUPI containing an IMSI.

An SNPN-enabled UE supports the SNPN access mode. When the UE is set to operate in SNPN access mode the UE only selects and registers with SNPNs over Uu as described in clause 5.30.2.4.

Emergency services are not supported in SNPN access mode.

NOTE 1: Voice support with emergency services in SNPN access mode is not specified in this release.

If a UE is not set to operate in SNPN access mode, even if it is SNPN-enabled, the UE does not select and register with SNPNs. A UE not set to operate in SNPN access mode performs PLMN selection procedures as defined in clause 4.4 of TS 23.122 [17]. For a UE capable of simultaneously connecting to an SNPN and a PLMN, the setting for operation in SNPN access mode is applied only to the Uu interface for connection to the SNPN. Annex D.4 provides more details.

NOTE 2: Details of activation and deactivation of SNPN access mode are up to UE implementation.

#### 5.30.2.5 Network access control

If a UE performs the registration or service request procedure in an SNPN identified by a PLMN ID and a self-assigned NID and there is no subscription for the UE, then the AMF shall reject the UE with an appropriate cause code to temporarily prevent the UE from automatically selecting and registering with the same SNPN.

If a UE performs the registration or service request procedure in an SNPN identified by a PLMN ID and a coordinated assigned NID and there is no subscription for the UE, then the AMF shall reject the UE with an appropriate cause code to permanently prevent the UE from automatically selecting and registering with the same SNPN.

If a UE performs the registration or service request procedure in an SNPN using PLMN credential and the UE subscription doesn’t contain the registered SNPN in the information of subscribed SNPN (s), then the AMF shall reject the UE with an appropriate cause code to prevent the UE from automatically selecting and registering with the same SNPN using PLMN credential. Optionally, the UE can start a local timer or a timer received from AMF, the UE will not automatically select and register with this SNPN using the PLMN credential until the timer expires.

For a UE that has successfully registered to a SNPN using PLMN credential, the UE shall not attempt to perform another registration with the PLMN via the User Plan of the registered SNPN as described in clause 5.30.2.7. However, if the PLMN AMF receives the UE’s registration attempt via N3IWF in the PLMN, then the PLMN AMF should not reject UE’s registration request and the PLMN UDM should keep UE registered via 3GPP Access type and Non-3GPP Access type simultaneously.

NOTE: The details of rejection and cause codes is defined in TS 24.501 [47].

In order to prevent access to SNPNs for authorized UE(s) in the case of network congestion/overload, Unified Access Control information is configured per SNPN (i.e. as part of the subscription information that the UE has for a given SNPN) and provided to the UE as described in TS 24.501 [47].

\* \* \* \* Second change \* \* \* \*

\* \* \* \* Third change \* \* \* \*

\* \* \* \* Fourth change \* \* \* \*

\* \* \* \* Fifth change \* \* \* \*

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