**3GPP TSG- Meeting #**

**E-Meeting April 17 - 21, 2023**

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| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  |  | **CR** | **4205** | **Rev** | **-** | **Current version:** | **18.1.0** |  |
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| *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 | **X** | Radio Access Network |  | Core Network | **X** |

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| ***Title:*** | SNPN selection for access to localized services | | | | | | | | | |
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| ***Source to WG:*** |  | | | | | | | | | |
| ***Source to TSG:*** |  | | | | | | | | | |
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| ***Work item code:*** | \_Ph2 | | | | |  | ***Date:*** | | | 2023-04-06 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **C** |  | | | | | ***Release:*** | | |  |
|  | *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-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | 1.  CT1 indicated preference to create new lists for SNPN selection for access to Localized Services.  2.  Regarding location validity information, there are notes copied below:  *NOTE 2: The location validity information is used to aid the UE where to search for the SNPNs in the Credentials Holder controlled prioritized list of SNPNs and GINs and is not used for any area restriction enforcement.*  *NOTE 7: The location validity information is used to aid the UE where to search for the SNPNs in the Credentials Holder controlled prioritized list of SNPNs and GINs and is not used for any area restriction enforcement.*  It causes confusion on how the UE to use such information, whether to enforce the condition, or only consider them as assistance information during the network selection.  3.  CR implementation editorial issue for text copied below:  *When the Credentials Holder updates a UE with the Credentials Holder controlled prioritized lists of preferred SNPNs and GINs the UE may perform SNPN selection again, e.g. to potentially select a higher prioritized SNPN.*  *and GINs the UE may perform SNPN selection again, e.g. to potentially select a higher prioritized SNPN or to potentially select an SNPN that provides access for Localized Services.*  4.  CR implementation editorial issue for text copied below:  *i the SNPN with the validity information the UE was last registered with (if the validity information is met);Editor's note: Whether the Equivalent SNPN(s) has same validity information as the SNPN that providing access for Localized Services the UE was last registered is for FFS* | | | | | | | | |
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| ***Summary of change:*** | | Creating new lists for SNPN selection for access to Localized Services, and remove the EN about whether new list is used or existing list is extended.  Regarding the note for location validity information, possible options:   1. Remove the NOTEs, so that the UE needs to enforce the validity conditions during the network selection. (as proposed in the current CR revision) 2. Modify the term “location validity information” as “location validity assistance information”, and make such information as optional in the new lists. It is up to UE implementation whether/how to use these information during network selection. 3. Remove the NOTEs and clarify that the location validity information will only be enforced by the UE when such location information is available to the UE (e.g. the GPS is enabled by the user, so that the UE is made aware of the GPS coordniates)   A new revision will be provided if option 2 or 3 is agreed.  Correct the editorial problem of the current spec due to CR implementation issue. | | | | | | | | |
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| ***Consequences if not approved:*** | | Mismatch between specs.  UE uses the location validity information in different | | | | | | | | |
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| ***Clauses affected:*** | | 5.30.2.3, 5.30.2.4.2 | | | | | | | | |
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|  | | **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*

#### 5.30.2.3 UE configuration and subscription aspects

An SNPN-enabled UE is configured with the following information for each subscribed SNPN:

- PLMN ID and NID of the subscribed SNPN;

- Subscription identifier (SUPI) and credentials for the subscribed SNPN;

- Optionally, an N3IWF FQDN and the MCC of the country where the configured N3IWF is located;

- Optionally, if the UE supports access to an SNPN using credentials from a Credentials Holder:

- User controlled prioritized list of preferred SNPNs;

- Credentials Holder controlled prioritized list of preferred SNPNs;

- Credentials Holder controlled prioritized list of GINs.

- Optionally, if the UE supports access to an SNPN using credentials from a Credentials Holder and access to an SNPN providing access for Localized Services:

- Credentials Holder controlled prioritized list of preferred SNPNs for accessing Localized Services, each entry of the list includes:

- an SNPN identifier;

- validity information; and

- optionally, location assistance information.

- Credentials Holder controlled prioritized list of GINs for accessing Localized Services, each entry of the list includes:

- a GIN;

- validity information; and

- optionally, location assistance information.

- Protection scheme for concealing the SUPI as defined in TS 33.501 [29].

NOTE 1: Additionally the UE can be configured with indication to use anonymous SUCI as defined in TS 24.501 [47].

Validity information consists of:

- Time validity information, i.e. time periods (defined by start and end times) when access to the SNPN for accessing Localized Services is allowed; and/or

Location assistance information consisting of:

- Geolocation information, and/or,

- Tracking Area information of serving networks, i.e. lists of TACs per PLMN ID or per PLMN ID and NID.

The UE may use the location assistance information to determine where to search for the SNPNs in the Credentials Holder controlled prioritized list of SNPNs and GINs for accessing Localized Services, i.e., the location assistance information is not used for any area restriction enforcement.

For an SNPN-enabled UE with SNPN subscription, the Credentials Holder controlled prioritized lists of preferred SNPNs and GINs, or Credentials Holder controlled prioritized lists of preferred SNPNs and GINs for accessing Localized Services may be updated by the Credentials Holder using the Steering of Roaming (SoR) procedure as defined in Annex C of TS 23.122 [17]. Updating Credentials Holder controlled prioritized lists of preferred SNPNs and GINs, or Credentials Holder controlled prioritized lists of preferred SNPNs and GINs for accessing Localized Services via the Steering of Roaming (SoR) procedure is not applicable for Credentials Holder with AAA Server.

A subscription 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 clause 28.7.2 of TS 23.003 [19]. The realm part of the NAI may include the NID of the SNPN; or

- identified by a SUPI containing an IMSI.

NOTE 3: As to route network signalling to AUSF and UDM instances serving the SNPN-enabled UE, the UE can be configured with Routing Indicator locally or updated with Routing Indicator using the UE Parameters Update via UDM Control Plane procedure defined in clause 4.20 of TS 23.502 [3]. When the SNPN credential is stored in the USIM, the Routing Indicator is provisioned in the USIM, when the SNPN credential is stored in the ME, the Routing Indicator is provisioned in the ME.

In the case of access to an SNPN using credentials owned by a Credentials Holder as specified in clause 5.30.2.9.2 and clause 5.30.2.9.3, the SUPI shall also contain identification for the Credentials Holder (i.e. the realm in the case of Network Specific Identifier based SUPI or the MCC and MNC in the case of an IMSI based SUPI). In the case of access to an SNPN using credentials owned by a Credentials Holder using AAA-S as specified in clause 5.30.2.9.2, only Network Specific Identifier based SUPI is supported.

NOTE 4: When Credentials Holder is an SNPN, and the MCC and MNC of the SNPN is not unique (e.g. MCC =999 is used and MNC is not coordinated amongst the SNPNs), then IMSI based SUPI is not supported as the MCC and MNC need not be globally unique always; instead USIM credentials are supported using Network Specific Identifier based SUPI.

NOTE 5: Network Specific Identifier are not supported for the case the Credentials Holder is provided by a PLMN.

NOTE 6: It is assumed that normally the SNPN and the Credentials Holder use different PLMN ID. If the SNPN and CHs (where CH can be another SNPN or a PLMN) share PLMN ID, and IMSI based SUPI is used, then the Routing Indicator can be used for AUSF/UDM discovery and selection as long as the Routing Indicator values are coordinated among the involved SNPN and CHs. When the PLMN ID is not shared between SNPNs and CHs (where CH can be another SNPN or a PLMN) and IMSI based SUPI is used, then PLMN ID is sufficient to be used for AUSF/UDM discovery & selection unless the CHs deploys multiple AUSF/UDM in which case also the Routing Indicator can be used as long as the Routing Indicator values are coordinated within the CH.

An SNPN-enabled UE that supports access to an SNPN using credentials from a Credentials Holder and that is equipped with a PLMN subscription may additionally be configured with the following information for SNPN selection and registration using the PLMN subscription in SNPN access mode:

- User controlled prioritized list of preferred SNPNs;

- Credentials Holder controlled prioritized list of preferred SNPNs;

- Credentials Holder controlled prioritized list of preferred GINs.

- Optionally if the UE supports access to an SNPN providing access for Localized Services:- Credentials Holder controlled prioritized list of preferred SNPNs for accessing Localized Services, each entry of the list includes:

- an SNPN identifier;

- validity information; and

- optionally, location assistance information.

- Credentials Holder controlled prioritized list of preferred GINs for accessing Localized Services, each entry of the list includes:

- a GIN;

- validity information; and

- optionally, location assistance information.

Validity information consists of

- Time validity information, i.e. time periods (defined by start and end times) when access to the SNPN for accessing Localized Services is allowed; and/or,

Location assistance information consisting of

- Geolocation information, and/or,

- Tracking Area information of serving networks, i.e. lists of TACs per PLMN ID or per PLMN ID and NID.

The UE may use the location assistance information to determine where to search for the SNPNs in the Credentials Holder controlled prioritized list of SNPNs and GINs for accessing Localized Services, i.e., the location assistance information is not used for any area restriction enforcement.

For an SNPN-enabled UE with PLMN subscription, the Credentials Holder controlled prioritized lists of preferred SNPNs and GINs, or the Credentials Holder controlled prioritized lists of preferred SNPNs and GINs for accessing Localized Services may be updated by the Credentials Holder using the Steering of Roaming (SoR) procedure as defined in Annex C of TS 23.122 [17].

When the Credentials Holder updates a UE with the Credentials Holder controlled prioritized lists of preferred SNPNs and GINs, and/or the Credentials Holder controlled prioritized lists of preferred SNPNs and GINs for accessing Localized Services, the UE may perform SNPN selection again, e.g. to potentially select a higher prioritized SNPN or to potentially select an SNPN that provides access for Localized Services.

*NEXT CHANGE*

##### 5.30.2.4.2 Automatic network selection

NOTE 1: If the UE has multiple subscriptions (SNPN and/or PLMN) it is assumed that the subscription to use for automatic selection is determined by implementation specific means prior to network selection.

If the UE supports accessing an SNPN providing access for Localized Services and the end user enables to access Localized Services, for automatic network selection, the UE shall select and attempts registration on available SNPN in the following order:

(a) if the UE supports access to an SNPN using Credentials from a Credentials Holder then the UE continues by selecting and attempting registration on available and allowable SNPNs which broadcasts the indication that access using credentials from a Credentials Holder is supported in the following order:

i the SNPN with the validity information the UE was last registered with (if the validity information is met);

Editor's note: Whether the Equivalent SNPN(s) has same validity information as the SNPN that providing access for Localized Services the UE was last registered is for FFS

ii SNPNs in the Credentials Holder controlled prioritized list of preferred SNPNs for accessing Localized Services (in priority order) if the validity information is available and is met;

iii SNPNs, which additionally broadcast a GIN contained in the Credentials Holder controlled prioritized list of preferred GINs for accessing Localized Services (in priority order) if validity information is available and is met;

(b) the SNPN without validity information the UE was last registered with (if available) or the equivalent SNPN (if available);

(c) the subscribed SNPN, which is identified by the PLMN ID and NID for which the UE has SUPI and credentials;

(d) the available and allowable SNPNs which broadcast the indication that access using credentials from a Credentials Holder is supported in the following order:

i SNPNs in the user controlled prioritized list of preferred SNPNs (in priority order);

ii SNPNs in the Credentials Holder controlled prioritized list of preferred SNPNs (in priority order);

iii SNPNs, which additionally broadcast a GIN contained in the Credentials Holder controlled prioritized list of preferred GINs (in priority order);

iv- SNPNs, which additionally broadcast an indication that the SNPN allows registration attempts from UEs that are not explicitly configured to select the SNPN, i.e. the broadcasted NID or GIN is not present in the Credentials Holder controlled prioritized lists of preferred SNPNs/GINs, nor in the Credentials Holder controlled prioritized lists of preferred SNPNs/GINs for accessing Localized Services in the UE.

If the UE supports accessing an SNPN providing access for Localized Services and the end user enables to access Localized Services, the UE shall periodically attempt reselection and registration on a higher priority SNPN 1) based on the order of the above sub-bullets (i) to (iii) of bullet (a), bullet (c), sub-bullets (i) to (iii) of bullet (d) if the UE is not registered to the sub-bullet (i) of bullet (a) or 2) based on the order of the above sub-bullets (ii) to (iii) of bullet (a), bullet (c), sub-bullets (i) to (iii) of bullet (d) if the UE is registered to the sub-bullet (i) of bullet (a) if any of the below conditions is met:

- if there are one or more SNPNs with validity information which is met, and the UE is not registered to an SNPN which has highest priority among the one or more SNPNs; or

- if there is no SNPN with validity information which is met, and there are one or more GINs with the validity information which is met, and the UE is not registered to an SNPN broadcasting a GIN which has highest priority among the one or more GINs; or

- if there is no SNPN with validity information which is met and there is no GIN with validity information which is met, and the UE is not registered to the subscribed SNPN

Otherwise, the UE does not trigger periodic reselection and does not attempt registration on a higher priority SNPN

NOTE 2: Details of network selection (e.g. validity information handling, periodicity determination) specified in TS 23.122 [17].

If a validity condition in Credentials Holder controlled prioritized lists of preferred SNPNs/GINs for accessing Localized Services changes from from met to not met (and vice versa), the UE shall attempt selection and registration on an SNPN based on the above bullets (a) to (d).

If the UE does not support to access an SNPN providing access for Localized Services or the end user does not enable to access the Localized Services, for automatic network selection the UE shall select and attempts registration on available and allowable SNPNs in the following order:

- the SNPN without validity information the UE was last registered with (if available) or the equivalent SNPN (if available);

- the subscribed SNPN, which is identified by the PLMN ID and NID for which the UE has SUPI and credentials.;

- If the UEs supports access to an SNPN using credentials from a Credentials Holder then the UE continues by selecting and attempting registration on available and allowable SNPNs which broadcast the indication that access using credentials from a Credentials Holder is supported in the following order:

- SNPNs in the user controlled prioritized list of preferred SNPNs (in priority order);

- SNPNs in the Credentials Holder controlled prioritized list of preferred SNPNs (in priority order);

- SNPNs, which additionally broadcast a GIN contained in the Credentials Holder controlled prioritized list of preferred GINs (in priority order);

NOTE 3: If multiple SNPNs are available that broadcast the same GIN, the order in which the UE selects and attempts a registration with those SNPNs is implementation specific.

- SNPNs, which additionally broadcast an indication that the SNPN allows registration attempts from UEs that are not explicitly configured to select the SNPN, i.e. the broadcasted NID or GIN is not present in the Credentials Holder controlled prioritized lists of preferred SNPNs/GINs in the UE.

NOTE 4: If multiple SNPNs are available that broadcast the indication that the SNPN allows registration attempts from UEs that are not explicitly configured to select the SNPN, the order in which the UE selects and attempts a registration with those SNPNs is implementation specific.

When a UE performs Registration or Service Request to an SNPN, the UE shall indicate the PLMN ID and NID as broadcast by the selected SNPN to NG-RAN. NG-RAN shall inform the AMF of the selected PLMN ID and NID.

*END CHANGE*