3GPP TSG-WG SA2 Meeting #163 *S2-2406176r5*

**Jeju, Korea, May 27 – 31, 2024 (revision of S2-2405671)**

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| *CR-Form-v12.2* |
| **CHANGE REQUEST** |
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|  | **23.501** | **CR** | **5356** | **rev** | **5** | **Current version:** | **18.5.0** |  |
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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 |  | Radio Access Network |  | Core Network | **x** |

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| ***Title:***  | Network Slicing for Indirect Network Sharing |
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| ***Source to WG:*** | Huawei, HiSilicon, Nokia, Lenovo, Samsung |
| ***Source to TSG:*** | SA2 |
|  |  |
| ***Work item code:*** | TEI19\_NetShare |  | ***Date:*** | 2024-05-17 |
|  |  |  |  |  |
| ***Category:*** | B |  | ***Release:*** | Rel-19 |
|  | *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-16 (Release 16)Rel-17 (Release 17)Rel-18 (Release 18)Rel-19 (Release 19)* |
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| ***Reason for change:*** | In case of Indirect Network Sharing, how to handle Network Slicing should be considered.Compared to roaming case as defined in the clause 5.15.6, for Indirect Network Sharing, the broadcasted PLMN IDs include the PLMN IDs representing participating operators and a UE from participating operator selects a PLMN ID representing the participating operator. Therefore, If the broadcasting PLMN ID which represents the participating operator is the one of the SUPI, the UE constructs Requested NSSAI based on the descriptions of non-roaming case. And the S-NSSAI from the Serving PLMN (i.e. hosting operator) sent to the UE should only include S-NSSAI of participating operator’s value (i.e. HPLMN S-NSSAI).After receiving the S-NSSAI of participating operator’s value from UE, the serving AMF determines the S-NSSAI of hosting operator’s value (i.e. VPLMN S-NSSAI) based on the S-NSSAI mapping agreement between hosting operator and participating operator and proceeds the relevant procedures involving network slicing based on the roaming case as defined in the clause 5.15.6.If the broadcasting PLMN ID which represents the participating operator is not the one in UE’s SUPI, the network slicing handling including UE and network shall comply with the roaming case.It is proposed to clarify the differences of Network Slice handling compared to the roaming case for Indirect Network Sharing. |
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| ***Summary of change:*** | Add description on Network Slicing for Indirect Network Sharing to clarify the network will treat slicing as roaming case while the UE shall treat it as non-roaming in Indirect Network Sharing If the broadcasting PLMN ID which represents the participating operator is the one of UE’s SUPI. Otherwise, it is the same as HR roaming. |
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| ***Consequences if not approved:*** | The Network Slicing for Indirect Network Sharing is not supported.  |
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| ***Clauses affected:*** | 5.18.5 |
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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 ...  |
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| ***Other comments:*** |  |
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| ***This CR’s revision history:*** | Revision 3:In case of Indirect Network Sharing, the differences of Network Slicing handling depend on the broadcasting PLMN which represents the participating operator:* If the selected PLMN ID is that of the UE’s SUPI(i.e. when the broadcast PLMN ID which represents the participating operator is the PLMN ID which is derived from UE’s SUPI), the network slicing handling for UE behaviour follows the non-roaming case and the network slicing handling for network behaviour follows the roaming case.
* For other cases (e.g. the broadcast PLMN ID which represents the participating operator is included in the list of equivalent PLMNs), the network slicing handling including UE and network shall comply with the roaming case.

The revision 3 proposes to clarify the Network Slicing handling. The descriptions endorsed in the S2-2405671 are highlighted in yellow. |

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

### 5.18.5 Network Sharing and Network Slicing

As defined in clause 5.15.1, a Network Slice is defined within a PLMN or SNPN. Network sharing is performed among different PLMNs and/or SNPNs.

 In the case of 5G MOCN, each PLMN or SNPN sharing the NG-RAN defines and supports its PLMN- or SNPN- specific set of slices that are supported by the common NG-RAN.

In the case of Indirect Network Sharing, the differences of Network Slicing handling is perfomed as the follows:

- If, in an Indirect Network Sharing area, the selected PLMN ID is the HPLMN ID or EHPLMN ID (which is not derived from UE’s SUPI) of the UE, From the network side, the network slicing handling shall be performed as defined in clause 5.15.6. The changes compared to baseline operations are as follows:

- During Registration procedure, the Requested NSSAI (optionally with the mapping of Requested NSSAI) from the UE is described in TS 24.501 [47]. After receiving the Registration Request including the above information from UE, the serving AMF determines the corresponding S-NSSAIs of hosting operator (i.e. VPLMN S-NSSAIs) based on the S-NSSAI mapping agreement between hosting operator and participating operator or acquires the S-NSSAI mapping from the NSSF of hosting operator’s network. The serving AMF further checks whether the corresponding S-NSSAIs of hosting operator are supported by the shared RAN. If none of the corresponding S-NSSAIs of hosting operator are supported the serving AMF rejects the Registration Request. Otherwise the serving AMF continues the Registration procedure and sends to the UE Allowed NSSAI, Partially Allowed NSSAI, rejected S-NSSAIs and Configured NSSAI only containing HPLMN S-NSSAI(s) without providing slice mapping information (i.e. when the selected PLMN ID is HPLMN ID) or EHPLMN S-NSSAIs with slice mapping information to HPLMN S-NSSAIs (i.e. when the selected PLMN ID is EHPLMN ID which is not derived from SUPI). The serving AMF creates a list of S-NSSAIs of the hosting operator corresponding to the S-NSSAIs included in the Allowed NSSAI sent to the UE and includes these S-NSSAIs in the Allowed NSSAI in the signalling to the shared NG-RAN and to the PCF during the AM policy association establishment. The above AMF functionality is applied also during UE Configuration Update procedure.

- During PDU Session Establishment procedure, the UE includes the S-NSSAI(s) of participating operator in the PDU Session Establishment Request as described in TS 24.501 [47]. After receiving the S-NSSAI of participating operator from UE, the serving AMF uses the S-NSSAI of hosting operator (i.e. VPLMN S-NSSAI) as "the S-NSSAI belonging to the Allowed NSSAI " as defined in clause 5.15.6. The serving AMF uses VPLMN S-NSSAI and HPLMN S-NSSAI for the following PDU Session establishment procedure.

 NOTE 0: If NSSF is involved, the AMF will include HPLMN S-NSSAI value in the Requested NSSAI sent to the NSSF.

NOTE 1: In the case of Indirect Network Sharing, the shared RAN only needs to support the S-NSSAI of Hosting operator and select the serving AMF as described in clause 5.15.5.2.1. Then, the shared RAN does not need to be provisioned with the mapping information from participating operator’s S-NSSAI values to hosting operator’s S-NSSAI values. Whether the EHPLMN S-NSSAI is same as HPLMN S-NSSAI depends on participating operator’s policy. It is assumed that at least one of the AMFs connecting to the shared RAN have the above functionality.

- For other cases, (e.g. the broadcast PLMN ID which represents the participating operator is included in the list of equivalent PLMNs), the network slicing handling including UE and network shall comply with the roaming case as defined in the clause 5.15.6.

NOTE 2: In other cases as described above, it is assumed the Network Slice configuration of the hosting operator applies also for the broadcasted PLMN ID representing the participating operator, i.e. the hosting operator acts as VPLMN.

NOTE 3: Which broadcast option to be used and whether to broadcast one or more PLMN ID(s) for each participating operator is determined based on the agreement between the hosting operator and participating operator.

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