**3GPP TSG-CT WG1 Meeting #141eCP-232176**

**Online 17– 21 April 2023d**

**Source: ZTE**

**Title: New WID on SOR-enhanced for Slice-based PLMN Selection**

**Document for: Approval**

**Agenda Item: 18.1.1**

3GPP™ Work Item Description

Information on Work Items can be found at <http://www.3gpp.org/Work-Items>
See also the [3GPP Working Procedures](http://www.3gpp.org/specifications-groups/working-procedures), article 39 and the TSG Working Methods in [3GPP TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm)

Title: Slice-based PLMN Selection

Acronym: SPS

Unique identifier: TBD

Potential target Release: Rel-18

# 1 Impacts

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Affects: | UICC apps | ME | AN | CN | Others (specify) |
| Yes | x | x |  | x |  |
| No |  |  | x |  |  |
| Don't know |  |  |  |  | x |

# 2 Classification of the Work Item and linked work items

## 2.1 Primary classification

### This work item is a …

|  |  |
| --- | --- |
|  | Study  |
|  | Normative – Stage 1 |
| x | Normative – Stage 2 |
| x | Normative – Stage 3 |
|  | Normative – Other\* |

**\* Other = e.g. testing**

## 2.2 Parent Work Item

For a brand-new topic, use “N/A” in the table below. Otherwise indicate the parent Work Item.

|  |
| --- |
| Parent Work / Study Items  |
| Acronym | Working Group | Unique ID | Title (as in 3GPP Work Plan) |
| EASNS | SA1 | 910032 | Enhanced Access to and Support of Network Slice |

### 2.3 Other related Work Items and dependencies

|  |
| --- |
| Other related Work /Study Items (if any) |
| Unique ID | Title | Nature of relationship |
| 940063 | Study on Network Slicing Phase 3 | Study on key issue #2 “Support of providing VPLMN network slice information to a roaming UE” |
|  |  |  |

**Dependency on non-3GPP (draft) specification:**

# 3 Justification

SA1 has agreed a new requirement in TS 22.261 clause 6.1.2.1:

*For a roaming UE activating a service/application requiring a network slice not offered by the serving network but available in the area from other network(s), the HPLMN shall be able to provide the UE with prioritization information of the VPLMNs with which the UE may register for the network slice.*

SA2 investigated possible mechanisms to support this new requirement during the study on Network Slicing Phase 3. For key issue #2 regarding support of providing VPLMN network slice information to a roaming UE based on the SA1 requirement, SA2 concluded in stage 2 work of Network Slicing Phase 3 (eNS\_Ph3) in Rel-18 (see SP-221135) as:

"*For key issue #2*

*- Support of slice based SoR mechanism by referencing to TS* *23.122.*"

Thus CT1 should investigate how to enhance the SOR mechanism and PLMN selection (stage 2 work) to fulfil the SA1 requirement and then define the detail encoding of the related information (stage 3 work).

# 4 Objective

The objective of this work item is to enhance the applicable CT1 stage 2 specifications (i.e. TS 23.122, etc.) to support the stage 1 requirements listed in clause 3.

The following aspects of stage 2 work are expected to be covered:

1. Define when the home network provides the prioritization information of the VPLMNs with which the UE may register for the network slice to the UE supporting such feature.

Editor’s note: It is FFS whether to introduce assistant information that is used by the home network to generate the prioritization information of the VPLMNs with which the UE may register for the network slice.

2. Define the prioritization information of the VPLMNs with which the UE may register for the network slice that is securely transferred from the home network to the UE and used by the UE for Slice-based PLMN selection.

NOTE: Whether the current security mechanism can be re-used should be confirmed by SA3.

3. Define the information exchanged between the UDM and the SoR-AF to generate the prioritization information of the VPLMNs with which the UE may register for the network slice.

4. Define the UE behaviour upon reception of the prioritization information of the VPLMNs with which the UE may register for the network slice for Slice-based PLMN Selection.

Upon completion of stage 2 work, the stage 3 alignment of CT1, CT4 and CT6 are expected:

For CT1, the expected work includes:

1. NAS protocol enhancements for UE supporting Slice-based PLMN Selection.

2. Potential enhancement to trigger the HPLMN to provide the roaming UE with the prioritization information of the VPLMNs with which the UE may register for the network slice.

3. Potential extending the existing SOR transparent container or introducing a new SOR transparent container to exchange the information between the UE and the network.

4. Enhance the PLMN selection procedure based on the received prioritization information of the VPLMNs with which the UE may register for the network slice.

5. Avoid ping-pong effect among the VPLMNs due to Slice-based PLMN Selection and also due to interworking with Steering of Roaming.

For CT4, the expected work includes:

1. Enhancements to UDM and SoR-AF to generate, deliver and update the prioritization information of the VPLMNs with which the UE may register for the network slice.

2. Potential enhancements to UDR to store the prioritization information of the VPLMNs with which the UE may register for the network slice.

3. Potential enhancements to AUSF and SP-AF to provide security protection for the prioritization information of the VPLMNs with which the UE may register for the network slice delivery.

For CT6, the expected work includes:

* Potential impacts on USIM to support the prioritization information of the VPLMNs with which the UE may register for the network slice for slice-based PLMN selection.

# 5 Expected Output and Time scale

|  |
| --- |
| New specifications |
| Type  | TS/TR number | Title | For info at TSG#  | For approval at TSG# | Rapporteur |
|  |  |  |  |  |  |

|  |
| --- |
| Impacted existing TS/TR |
| TS/TR No. | Description of change  | Target completion plenary# | Remarks |
| 23.122 | Enhancement on PLMN selection and SoR mechanism to support the stated objective. | TSG CT#103 (March 2024) | CT1 responsibility |
| 24.501 | Enhancement on NAS procedures and messages to support the stated objectives. | TSG CT#103 (March 2024) | CT1 responsibility |
| 29.503 | Enhancement on UDM services to support the stated objectives. | TSG CT#103 (March 2024) | CT4 responsibility |
| 29.504 | Potential enhancement on UDR services to support the stated objective. | TSG CT#103 (March 2024) | CT4 responsibility |
| 29.505 | Potential extension of UDR data model to support the stated objective. | TSG CT#103 (March 2024) | CT4 responsibility |
| 29.509 | Potential enhancement on AUSF services to support the stated objective. | TSG CT#103 (March 2024) | CT4 responsibility |
| 29.544 | Potential enhancement on SP-AF services to support the stated objective. | TSG CT#103 (March 2024) | CT4 responsibility |
| 29.550 | Potential enhancement on SoR-AF services to support the stated objective. | TSG CT#103 (March 2024) | CT4 responsibility |
| 31.102 | Potential impacts to support enhanced SoR information for slice-based PLMN selection. | TSG CT#103 (March 2024) | CT6 responsibility |
| 31.111 | Potential impacts to support enhanced SoR information for slice-based PLMN selection. | TSG CT#103 (March 2024) | CT6 responsibility |

# 6 Work item Rapporteur(s)

Shuang Liang, ZTE, liang.shuang3@zte.com.cn

# 7 Work item leadership

CT1

# 8 Aspects that involve other WGs

SA3 for potential security enhancement to support providing prioritization information of VPLMNs with which the UE may register for a network slice to a UE.

# 9 Supporting Individual Members

|  |
| --- |
| Supporting IM name |
| ZTE |
| Nubia |
| Huawei? |
| HiSilicon? |
| Nokia? |
| Nokia Shanghai Bell? |
| Verizon? |
| LG Electronics? |
| China Mobile |
| SHARP? |
| KDDI? |
| Lenovo |
| NEC |
| Ericsson? |
| Vivo |
| OPPO? |