**3GPP TSG-SA WG1 Meeting #98e draftS1-221103r1**

**Electronic Meeting, 9 – 19 May 2022** *(revision of S1-22xxxx)*

**Source: vivo,** **China Unicom**

**pCR Title: Pseudo-CR on use case of mobility for non-N2 shared network**

**Draft Spec: 3GPP TR 22.851v0.0.0**

**Agenda item: 7.5**

**Document for: Approval**

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*Abstract: introduce the mobility scenarios and potential requirements for the non-N2 shared network in TR22.851.*

**1. Introduction**

Study FS\_netshare aims to study use cases and potential requiremnts for the non-N2 shared network.

**2. Reason for Change**

Mobility scenarios and potential requirements needs to be discussed and agreed for the non-N2 shared network.

**3. Conclusions**

none

**4. Proposal**

It is proposed to agree the following changes to 3GPP TR 22.851.

\* \* \* First Change \* \* \* \*

# 2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

* References are either specific (identified by date of publication, edition number, version number, etc.) or non‑specific.
* For a specific reference, subsequent revisions do not apply.
* For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

[1] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

[x1] 3GPP TS 22.101: "Service principles".

[x2] 3GPP TS 23.122: "Non-Access-Stratum (NAS) functions related to Mobile Station (MS) in idle mode".

[x3] 3GPP TS 22.261: "Service requirements for the 5G system".

\* \* \* Next Change \* \* \* \*

### 5.A.1 Description

It is worth mentioning that 5G networks have been designed to provide shared facilities at the beginning of the deployment. This means that if the 4G network has independent E-UTRAN coverage and shared E-UTRAN coverage at the same time, there will be more than one operator's wireless access technology simultaneously supporting coverages:

- Independent E-UTRA coverage,

- Shared E-UTRA coverage,

- Independent 5G NR coverage,

- Shared 5G NR coverage.

Therefore, interoperability with existing technologies needs to be considered when introducing non-N2 network sharing.

### 5.A.2 Pre-conditions

1. It is assumed that, OP1’s home network uses the same PLMN-ID for both 4G and 5G; and OP2’s home network uses same PLMN-ID for both 4G and 5G network.

NOTE: The home 4G and 5G network of OP1 and OP2 may be deployed with independent and shared wireless access technology.

- OP 1 is Hosting RAN Operator, Only OP1’s 5G RAN is "shared" with Participating Operator 2.

- OP 2 is Participating Operator.

- UE subscribe to OP2’s home PLMN.

- UE may register successfuly to OP1’s shared 5G network.

1. Both operators agree to share the network via non-N2 direct connection between the shared radio access network and the OP2's core network.

3. Potential scenario1: OP1 shared 5G network may overlap with OP2’s 4G home network; may also overlap with OP2’s 5G home network (i.e. at OP1’s border).

1. Potential scenario2: OP1 shared 5G network may overlap with OP2’s 4G home network (i.e. at OP1 border); may also overlap with OP2’s 5G home network (i.e. at OP1 border).

NOTE: The overlap between OP2’s 4G and OP1’s 5G home network happen in the border.

### 5.A.3 Service Flows



1. OP2\_4G
2. OP2\_5G
3. OP2\_5G
4. OP1\_5G
5. OP1\_5G
6. OP1\_5G

②

①

Figure 5. A.3-1: Non-N2 shared network mobility scenario

The UE moves between the OP1’s shared 5G network and the OP2’s home network.

NOTE 1: OP1\_5G is OP1’s shared 5G network, via non-N2 direct connection between the shared radio access network and the OP2's core network.

NOTE 2: OP2\_5G is OP2’s home network, may be MOCN networks or independent network.

NOTE 3: OP2\_4G is OP2’s home network, may be a MOCN network or independent network.

Scenario 1: shared (OP1) 5G - > home (OP2) 5G

-UE is registered in OP1 and get some 5G services, and moves from shared network to home 5G network. As shown as ① in figure, that is OP1\_5G(shared) - > OP2\_5G.

Scenario 2: shared (OP1) 5G - > home (OP2) 4G

-UE is registered in OP1 and get some 5G services, and moves from shared network to home 4G network. As shown as ② in figure, that is OP1\_5G(shared) - > OP2\_4G.

Scenario 3: home (OP2) 4G - > shared (OP1) 5G

-UE is registered in OP2 and get some 4G services, and moves from home 4G network to shared network. As shown as ② in figure, that is OP2\_4G - > OP1\_5G(shared).

Scenario 4: home (OP2) 5G - > shared (OP1) 5G

-UE is registered in OP2 and get some 5G services, and moves from home 5G network to the shared network. As shown as ① in Figure, that is OP2\_5G - > OP1\_5G(shared) .

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### 5.A.4 Post-conditions

All forms of mobility (i.e. between participating operators RAN and shared RAN for both CONNECTED mode and IDLE mode UE, see clause 3.1 of TS 23.122 [X2]) successfully processed in a sharing scenario without direct connections between the shared access and the core networks of the participating operator.

### 5.A.5 Existing feature partly or fully covering use case functionality

SA1 has performed various studies on mobility and network sharing in previous releases, where related normative stage 1 requirements are introduced in 3GPP TS 22.101 [x1] and 22.261[x3].

3GPP TS 22.261 [x3] introduces requirements of Diverse mobility management, stated as follows:

*The 5G system shall support inter- and/or intra- access technology mobility procedures within 5GS with minimum impact to the user experience (e.g. QoS, QoE).*

3GPP TS 22.101 [x1] introduces requirements of mobility of network sharing, stated as follows:

*It shall be possible to support different mobility management rules, service capabilities and access rights as a function of the home PLMN of the subscribers.*

*The above requriements are based on MOCN.*

### 5.A.6 Potential New Requirements needed to support the use case

[PR 5.A.6-001] Mobility shall be supported if a user crosses the border between the shared network managed by Hosting operator and the Participating Operator’s home network.

\* \* \* Next Change \* \* \* \*

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