**3GPP TSG-SA WG1 Meeting #98e S1-221100R2**

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

**Source: CATT, China Unicom**

**pCR Title: Pseudo-CR on use case of security for non-N2 sharing network**

**Draft Spec: 3GPP TR 22.851 V.0.0.0**

**Agenda item: 7.5**

**Document for: Approval**

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*Abstract: This clause describes the sharing scenarios and potential security requirements for non-N2 sharing network in TR22.851*

**1. Introduction**

The use case of non-N2 sharing network is an important use case in the network sharing. The contribution describes the use case and potential requirements of security for non-N2 sharing network scenario.

**2. Reason for Change**

Update the “Use Cases” section 5 of the new TR 22.851.

**3. Conclusions**

It is proposed to put the use case into the TR 22.851.

**4. Proposal**

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

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

## 5 Use cases

## 5.A Use case of security and topology hiding

### 5. A.1 Description

If the connection between radio access network and home core network is not always available, it is inevitable to use connection between operators to achieve interoperability. In order to avoid increasing technical complexity, the principle is to avoid modifying more new interfaces, which makes it easier for operators to reach an agreement on network interconnection. However, there is a need to consider information security between different networks.

### 5. A.2 Pre-conditions

It is assumed that:

1. OP 1 is the Hosting Operator of a shared access network.

2. OP 2 is a Participating Operator in the shared access network.

3. The shared access network does not have a direct connection with the core network of OP 2.

4. UE 2 is a subscriber of OP 2.

### 5. A.3 Service Flows

OP 1

5G Network

topology hiding

UE 2 of OP2

OP 2

5G Network

topology hiding

UE 2 of OP2

UE 2 moves between OP2 and OP1

Figure 5.A.3-1: Network security scenario between the shared access and the core network of the participating operator.

It is assumed that the Hosting Operator and Participating Operator support mobility between the two networks, then:

1. UE 2 moves from OP2’s network to the shared network of OP1.

2. Information about UE 2 needed for UE movement may be transferred from OP2’s network to OP1’s network.

3. Both OP1 and OP2 want the connection between networks to be under security protection.

4. UE 2 returns to OP2’s network from the shared network of OP1;

5. Information about UE 2 needed for UE movement may be transferred from OP1’s network to OP2’s network when the UE returns to OP 2.

6. Both OP1 and OP2 want the connection between networks to be under security protection when UE 2 returns to the home coverage area;

Some information related to serving network elements may be transferred through the connection between networks during an active communication, for example, IP address and network element identification.

*Question for clarification – is the above sentence restricted to sharing this information only when the UE is moving from 1 to the other network or can such information be shared at any point in an active communication?*

*Wq: Information is transmitted between networks only because UE moves. It does not point to any point, which has nothing to do with movement for this case.*

The necessary information of border element between networks of Hosting RAN operator and Participating Operator are known in order to serve the normal network connection. At the same time, the non-border element information of one operator’s network should be hidden from the other operator’s network to as large extent as possible.

*The above sounds very architectural. Depending on how my question for clarification is answered, we can find some alternate words to convey the intent.*

*Wq: This paragraph is added because when offline discussion, the company proposes that not all information needs to be hidden, otherwise the communication cannot work normally. Therefore, at present, we only need to hide the information of non border* element*s.*

### 5. A.4 Post-conditions

*Probably there should be some text here that only relevant information is shared between the core networks when a UE moves between them.*

Wq provided wording: The communication of UE 2 succeed, when UE 2 moves between shared access network and Participating Operator’s network.

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

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

[PR 5.A.6-001] The 5G system shall be able to ensure security protection between networks of Hosting RAN operator and Participating Operators when a user crosses the border of the shared network.

*The above sounds like an existing capability – even in network sharing today.*

*Wq: In the work of SA2, the security protection of mobility does not include N14 interface between operators’ network.*

[PR 5.A.6-002] The 5G system shall prevent the Hosting RAN operator and Participating Operator from being aware of the information of non-border network elements to each other, such as Geographical location, network topology, etc.

*The above does not sound like a requirement that will be useful to the downstream groups. Probably it should be a ‘positive’ rather than ‘negative’ requirement.*

*Wq: Does negative mean this word “*prevent”*? Since we can see a lot of this word in 22.261. I don't understand the problem itself. Could you please clarified it?*