**SA WG2 Meeting #143E S2-20xxxxx**

**24 February-09 March 2021, Elbonia (revision of S2-20xxxx)**

**Source: Ericsson (Rapporteur)**

**Title: KI#2 conclusion from FS\_eNPN moderated email discussion**

**Document for: Approval**

**Agenda Item: 8.2.1**

**Work Item / Release: FS\_eNPN / Rel-17**

*Abstract of the contribution: This contribution proposes changes to KI#2 conclusion inline with the moderated email discussions for the FS\_eNPN open issues for KI#2.*

# 1. Introduction

The FS\_eNPN moderated email discussion is captured in S2-21xxxxx.

# 2. Discussion

## 2.1 Questions and answers for KI#2

The questions and answers related to KI#2 are listed in S2-21xxxx.

## 2.2 Proposed way forward for KI#2

The following includes the propsoed way forward as listed in S2-21xxxxx.

## KI#2-Q1: Continuity for single radio UE using N3IWF

No clear majority, but majority of comments proposed to rely on existing means and potentially describe how to best make use of what we have.

It is proposed to consider CR(s) providing informative description of how to "best" achieve continuity using N3IWF, there is no need to update the WID as it can be considered as part of " Informative guideline for how to use existing Rel-16 mechanisms and information to support VIAPA services".

## KI#2-Q2: Network trigger for UE to register to N3IWF

Majority wanted to leave it to UE implementation (11 vs 5)

It is proposed to not progress such network trigger.

Optionally, consider some discussions and input from proponents to explain a complete solution and show why it provides a benefit.

## KI#2-Q3: Latency to resume a service provided by the overlay network

Majority see no need for any additional mechanism (11 vs 1).

It is proposed to remove the related EN, and update related text accordingly.

## KI#2-Q4: New QoS notification information between NPN and PLMN

Majority see no need for any additional QoS notification information.

It is proposed to remove the related EN.

# 3. Conclusion

The proposed way forward for "KI#2-Q1: Continuity for single radio UE using N3IWF" does not impact the KI#2 conclusions.

The proposed way forward for "KI#2-Q2: Network trigger for UE to register to N3IWF" proposed to not progress such network trigger while at the same time consider any input papers explaining a complete solution and show why it provides a benefit. This CR consequently removes the EN.

The proposed way forward for "KI#2-Q3: Latency to resume a service provided by the overlay network" proposed to conclude that there is no need for any additional mechanism i.e. EN removed and related text updated accordingly.

The proposed way forward for "KI#2-Q4: New QoS notification information between NPN and PLMN" proposed to conclude that there is no need for any additional QoS notification information i.e. EN removed.

# 4. Proposal

It is proposed to make the following changes to TR 23.700-07.

\*\*\*\*\*\*\*\*\*\*\*\* Start of Changes \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

## 8.2 Key Issue #2: NPN support for Video, Imaging and Audio for Professional Applications (VIAPA)

When UE only has single subscription, the data service from both V-SNPN and Home SP (PLMN or SNPN), as well as service continuity is to be evaluated and concluded by KI#1.

When UE have both subscriptions for SNPN and PLMN, following interim agreements are adopted.

For the issue of service continuity for VIAPA,

- It is concluded that the existing Rel-16 N3IWF-architecture is used as the basis to address data service from both networks and session/service continuity between the two networks.

- For single radio UE, PDU session continuity can be realized by utilizing the existing handover procedure between non-3GPP access and 3GPP access for single access PDU session, where one network is acting as non-3GPP access of the other network.

- For dual radio UE the UE can use one radio operating in SNPN access mode and the other operating the normal PLMN selection, in order to avoid SNPN access mode switch. PDU Session continuity and service continuity may e.g. be provided as follows:

- UE registers to both SNPN and PLMN the procedure described in clause 4.9.2 in TS 23.502 [6] is followed as necessary.

- Register to the same 5GC via both Uu and NWu interface and possibly establish MA-PDU session. Upon mobility, UE and UPF could switch the user plane resource to the corresponding access type.

Editor's note: Dual radio may have radio limitation when operated simultaneous with two independent service providers. It is FFS whether is further enhancements is needed.

For the issue of QoS support for VIAPA:

NOTE 1: The network does not assist the UE to select the proper network for Uu in this Release.

- After the UE selects the SNPN or PLMN, the UE obtains VIAPA service with or without Rel-16 N3IWF architecture specified in clause D.3 of TS 23.501 [4].

- It is proposed to add an informative guideline for mapping between standardized 5QI/ARP and DSCP marking value in TS 23.501 [4], Annex D, so that the PLMN and SNPN may use the same mapping values for UL and DL user plane traffic within SNPN and PLMN.

To ensure appropriate latency to resume a service provided by the overlay network, the NG-RAN uses existing information to provide an appropriate RRC state to the UE.

To support UE to receive data services from one network (e.g. NPN), and paging as well as data services from another network (e.g. PLMN) simultaneously, the following principles will be progressed in the normative phase:

- For single radio UE, keep overlay network connection always in CM-CONNECTED by using mechanisms available in Rel-16 .

NOTE 2: Mechanisms available such as the IKEv2 liveness check procedure defined in clause 7.8 and clause 7.9 in TS 24.502 [10] allows to keep alive the PDU session in underlay network avoiding the deregistration from the overlay network. The timer in TIMEOUT\_PERIOD\_FOR\_LIVENESS\_CHECK attribute, CM\_IDLE timer and N3GPP UE Deregistration timer need to be configured properly in order to efficiently reach the goal of increasing UE reachability and reduce the lack of paging in PDU session carried over IKEv2. In case of IKEv2 liveness check failure, as long as the UE maintains a PDU session in underlay network, existing mechanism defined in NOTE 3 in clause 5.5.2 in TS 23.501 [4] enables the UE to transit to CM-CONNECTED state again.

- When N3IWF based solution is used, the overlay network and its service AF can use existing NEF notification procedures, such as of subscribing the "QoS monitoring" or "QoS sustainability" via the interface between NEF and AF, to subscribe and receive the notification from underlay network regarding the connectivity QoS status or QoS mapping changes that are associated with the IPsec of the overlay network. With the QoS update information from the underlay network, the overlay network can adjust its connectivity QoS accordingly. The opposite way is also applicable that the underlay network and its service AF can use existing NEF notification procedures, such as of subscribing the "QoS monitoring" or "QoS sustainability" via the interface between NEF and AF, to subscribe and receive the notification from overlay network regarding the connectivity QoS status or QoS mapping changes that are associated with the IPsec of the overlay network. With the QoS update information from the underlay network, the underlay network can adjust its connectivity QoS accordingly.

Concurrent access to very low latency VIAPA services and PLMN services can be supported as follows:

- The single radio UE may register on the SNPN and accesses VIAPA services directly via the SNPN and accesses PLMN services via the SNPN and the PLMN's N3IWF.

- The single radio UE may register on the PLMN and accesses VIAPA services directly via the PLMN (e.g. based on a local UPF and direct peering between the PLMN and the venue's VIAPA services) and also accesses PLMN services directly via the PLMN.

\*\*\*\*\*\*\*\*\*\*\*\* End of Changes \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*