**3GPP TSG-SA3 Meeting #107-e *S3-221121-r1***

e-meeting, 16 - 20 May 2022

**Source: Samsung**

**Title: New SID on security aspects of control plane based remote provisioning in Non-Public Networks**

**Document for: Approval**

**Agenda Item: 6**

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: Study on security aspects of control plane based remote provisioning in Non-Public Networks

## Acronym: FS\_eNPN\_SRP

## Unique identifier: *TBA*

## Potential target Release: Rel-18

# 1 Impacts

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

# 2 Classification of the Work Item and linked work items

## 2.1 Primary classification

### This work item is a …

|  |  |
| --- | --- |
|  | Feature |
|  | Building Block |
|  | Work Task |
| X | Study Item |

## 2.2 Parent Work Item

|  |
| --- |
| Parent Work / Study Items  |
| Acronym | Working Group | Unique ID | Title (as in 3GPP Work Plan) |
| N/A | N/A | N/A | N/A |

### 2.3 Other related Work Items and dependencies

|  |
| --- |
| Other related Work /Study Items (if any) |
| Unique ID | Title | Nature of relationship |
| 880008 | Study on enhanced security support for Non-Public Networks | Rel-17 study item |
| 920025 | Security Aspects of eNPN | Rel-17 work item |
| 840024 | Study on enhanced support of Non-Public Networks | SA2 Rel-17 study item |

Dependency on non-3GPP (draft) specification: N/A

# 3 Justification

Non-Public Networks were introduced in Rel-16, and further enhancements were achieved in Rel-17. Coming to the remote provisioning, however, it was concluded in Rel-17 eNPN study (TR 33.857) that “user plane will be used for provisioning of SO-SNPN or PNI-NPN credentials in the present document. Definition in 3GPP of UP and CP provisioning is out of scope of the present document”, where “the present document” implies that this conclusion applies to Rel-17 for now and further study and conclusions are open for future releases.

Further study on the control plane based remote provisioning and its protocol definition are necessary in Rel-18 for the following reasons:

* As there is no definition or guidance from 3GPP about which UP protocol to be used for the remote provisioning, it will be difficult for a device manufacturer to produce devices that are interoperable with various Provisioning Servers in the world.
* IP-based UP provisioning protocols do not work with non-IP NPN devices, while CP based provisioning could work with such devices.

In addition, SA2 already suggested CP provisioning solutions as well as UP provisioning solutions in their Rel-17 study item (TR 23.700-07) and the conclusion on the remote provisioning is “The UE may support the Control Plane remote provisioning or the User Plane remote provisioning”. Especially, their conclusion about CP provisioning is as follows:

* Remote provisioning based on UE Parameters Update Procedure as defined in TS 23.502 [6] can be used for provisioning of credentials and other information to enable access to SO-SNPN. After Registration Complete, while onboarding is still in progress, UPU is imminent, thus, the NAS signalling connection shall not be released. It shall be possible that the SO-SNPN credentials being provisioned are not accessible (e.g. by using and additional credential in the UE) by the onboarding network.

Editor’s note: SA WG3 feedback will need to be taken into account for including of the CP based provisioning.

Further progress on the CP based provisioning was not made in SA2 as there was no feedback/conclusion on the CP based remote provisioning from SA3. In SA2#150-e meeting, an LS (S2-2202581) was submitted, which informs SA3 why the CP based remote provisioning was not included in the Rel-17 SA2 normative work/Rel-18 SA2 SID and that SA2 can start a normative work on the CP based remote provisioning if SA3 would agree on the protocol for the CP remote provisioning for SNPN credentials. Although the LS was noted, a clarifying statement proposed by SA2 NPN rapporteur was captured in the SA2#150-e Chair Notes as follows: “The reason why CP provisioning could not be part of Rel-17 was that SA3 could not agree on the security functionality. It is up to SA3 whether and how to progress CP provisioning in Rel-18”.

During the study phase in SA3 Rel-17, there was not enough time to investigate a control plane based solution which provides an end-to-end security protection. Therefore, SA3 needs to study further on the remote provisioning in Rel-18, while narrowing down the scope in consideration of the previous discussions in Rel-17 (e.g. credentials type should be non-USIM credentials and the security for the credentials protection should be End-to-End between the UE and the PS).

Considering the above, there is a need to study potential solutions for End-to-End secure provisioning of non-USIIM credentials based on control plane, so that:

* A device manufacturer can produce an NPN device that are interoperable with various provisioning servers in the world
* Non-IP NPN devices can be provisioned with the SO-SNPN or PNI-NPN credentials
* SA2 can make a progress on the CP based remote provisioning during the normative work phase in SA2 Rel-18.

# 4 Objective

The objective of this study is to:

1. Support for remote provisioning of SNPN or PNI-NPN credentials
	* Study potential requirements and solutions for End-to-End secure provisioning of Non-USIM credentials based on the Control Plane.
2. Conclude on selected solutions for potential normative work.

# 5 Expected Output and Time scale

|  |
| --- |
| New specifications {One line per specification. Create/delete lines as needed} |
| Type  | TS/TR number | Title | For info at TSG#  | For approval at TSG# | Rapporteur |
| Internal TR | 33.xxx | Study on security aspects of control plane based remote provisioning in NPN  | TSG#98  | TSG#99 | - |

|  |
| --- |
| Impacted existing TS/TR {One line per specification. Create/delete lines as needed} |
| TS/TR No. | Description of change  | Target completion plenary# | Remarks |
| N/A | N/A  | N/A  | N/A  |

# 6 Work item Rapporteur(s)

-

# 7 Work item leadership

SA3

# 8 Aspects that involve other WGs

Potential interactions with SA2 for the architectural aspects (security enforcement information).

# 9 Supporting Individual Members

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| --- |
| Supporting IM name |
| Samsung |
| Ericsson |
| Philips |
| CMCC |
| Lenovo |
| InterDigital |
| Huawei |
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