**3GPP TSG-SA3 Meeting #123 draft-S3-252959-r1**

**Stor-Göteborg, Sweden, 25th Aug 2025 - 29th Aug 2025 revision of S3-252642**

**Source: Nokia, ZTE**

**Title: New SID on Security aspects of WAB nodes for NR**

**Document for: Approval**

**Agenda Item: 6.1.4**

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 WAB nodes for NR

# Document for: Approval

# Acronym: FS\_5G\_WAB\_Security

# Unique identifier: TBA

# Potential target Release: Rel-20

# 1 Impacts

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

# 2 Classification of the Work Item and linked work items

## 2.1 Primary classification

### This work item is a …

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

## 2.2 Parent Work Item

N/A

|  |
| --- |
|  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

### 2.3 Other related Work Items and dependencies

|  |
| --- |
| **Other related Work /Study Items (if any)** |
| **Unique ID** | **Title** | **Nature of relationship** |
| 1030028 | Study on security aspects of 5G NR Femto Document | Rel-19 study item for 5G NR Femto security covered the WTs to capture security architecture aspects for NR Femto and focused on alignment with SA2 Rel-19 study. |
| 1020082 | Study on additional topological enhancements for NR | RAN study concluded in Rel-19 where WAB node architecture was defined. |

# 3 Justification

As part of TR 38.799, RAN has documented the Rel-19 study of topological enhancements for NR. This study RAN confirmed the feasibility of WAB functionality, and is pursuing normative work for WAB and NR Femto. This study defines WAB architecture and covers the relevant interfaces involved.



Above figure is Figure 4.2-1 from TR 38.799 showing an example of WAB architecture for 5GS when the WAB-gNB’s NG traffic is transported via PDU session backhaul. There are other architectural drawings illustrating the architecture for transport via non-3GPP backhaul, using an L2TP tunnel gateway to convey the WAB-gNB’s traffic over the BH PDU session(s), etc. TR 38.799 also concludes stating that the normative work should consider architectural aspects of WAB including :

* backhauling of the WAB-gNB’s NG, Xn and OAM traffic is conducted over the WAB-MT’s PDU session(s).
* WAB-gNBs can establish Xn interface(s) with the WAB-MT’s serving BH RAN node and with other surrounding gNBs

As part of TR 33.745, SA3 has documented the Rel-19 study of security aspects of NR Femto. The relevant normative work is ongoing and is documented in TS 33.545. This study item was focusing on alignment with SA2 Rel-19 study item for NR Femto architecture, and achieved the objectives of coming up with security specifications for NR Femto with as much possible re-use from TS 33.320 (security aspects of H(e)NB). Also, CAG related security aspects were covered in this study item.

However, following security aspects were not covered in Rel-19 study in SA3:

* Security aspects of WAB nodes were not studied in Rel-19. For example, access control, location verification, integrity checks, etc. security mechanisms need to be specified for WAB nodes which are deployed in untrusted environments. Also, possible threats due to moving WAB nodes also needs to be studied in SA3.
* WAB nodes deployed in untrusted environments.
	+ Wireless Access Backhaul (WAB) node includes a gNB component (WAB-gNB) and an MT component (WAB-MT). The WAB-gNB is based on the gNB functionality, whereas WAB-MT supports at least a subset of UE functionalities.
	+ WAB nodes are not in operator’s trusted environment and hence, are more vulnerable to compromises. SA3 needs to study the security aspects and consider possibilities of compromised WAB nodes. Also, possible ways to detect and mitigate the risks associated with compromised WAB nodes should be studied in SA3.
	+ Important to note that WAB nodes are moving nodes and include one component which is based on gNB functionality and one which has a subset of UE functionalities. From operator’s point of view, it is important to determine if such a moving node is compromised and also to study how operators can keep track of the movement of such nodes.

# 4 Objectives

Based on the above justification, the following objectives will be studied:

WT#1: Define security architecture and security requirements for WAB-nodes.

 NOTE 1: The architectural aspects of WAB as per the normative work concluded in TR 38.799 can be taken as basis for WT#1.

 NOTE 2: As much as possible, possible re-use of security architecture and procedures can be considered.

WT#2: Study security impacts of potentially compromised WAB nodes and define requirements for detection and mitigation against any compromised WAB nodes.

 NOTE 3: Possible re-use of security procedures derived for detection and mitigation against potentially compromised Femto can be considered, wherever applicable.

NOTE 4: This also includes possible security aspects related to moving WAB nodes, because the architecture supports this.

## TU estimates and dependencies

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Work Task ID | TU Estimate(Study) | TU Estimate(Normative) | RAN Dependency(Yes/No/Maybe)  | Inter Work Tasks Dependency Editor’s Note: This column should highlight if WT#x is self-contained, or is dependent on the completion of other WTs |
| 1 | 1 TUs (2 meetings) | 0.5 TU (1 meeting cycles) | Maybe | RAN3 |
| 2 | 1 TUs (2 meetings) | 0.5 TU (1 meeting cycles) | No |  |

Total TU estimates for the study phase: 2 TUs (4 meeting cycles)

Total TU estimates for the normative phase: 1 TUs (2 meeting cycles)

Total TU estimates: 3

# 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.xyz | Study on Security aspects of Wireless Access Backhaul nodes for NR | SA#112Jun 2026 | SA#112 Jun 2026 | *TBD* |

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

# 6 Work item Rapporteur(s)

*TBD*

# 7 Work item leadership

SA3

# 8 Aspects that involve other WGs

RAN3 for overall architecture aspects of WAB.

# 9 Supporting Individual Members

|  |
| --- |
| **Supporting IM name** |
| Nokia |
| ZTE |
|  |
|  |
|  |
|  |
|  |
|  |
|  |