**3GPP TSG-RAN WG3 Meeting #124R3-243861**

**Fukuoka, Japan, May 20th – 24th 2024**

Agenda Item: 12.2

Source: Ericsson

Title: (pCR for TR 38.799): Mobility Support for WAB-Nodes

Document for: Agreement

# Agreements

**Support the following scenarios for intra-PLMN WAB-node mobility:**

* **UE´s AMF/UPF remains unchanged as WAB-gNB moves inside a PLMN.**
* **UE´s AMF/UPF changes as WAB-gNB moves inside a PLMN.**
* **BH UPF/AMF remains unchanged as WAB-MT moves inside a PLMN.**
* **BH UPF/AMF changes as WAB-MT moves inside a PLMN.**

**Legacy mobility procedures can be supported for WAB-MT.**

**RAN3 assumes that roaming scenarios for WAB-MT are supported.**

**Establishment of Xn Connections of the WAB-gNB with BH-RAN nodes, as well as with surrounding RAN nodes, is supported and can follow legacy procedures.
Addition of new information in the legacy procedures is not precluded**

**If needed, the WAB-gNB may power up one or more new cells with new configuration parameters related to its current location and handover UEs between the old and new cell served by the WAB-gNB.**

**FFS if this procedure is needed for AMF relocation.**

**Discuss whether in case this procedure is used for AMF relocation, new cells have to belong to different logical gNBs or can belong to the same gNB.**

# pCR for TR 38.799

-------------------------------------------Start of changes-------------------------------------------

X.4 Mobility handling

The following scenarios for intra-PLMN WAB-node mobility are supported:

1. UE´s AMF/UPF remains unchanged as the WAB-gNB moves inside a PLMN.
2. UE´s AMF/UPF changes as the WAB-gNB moves inside a PLMN.
3. BH UPF/AMF remains unchanged as the WAB-MT moves inside a PLMN.
4. BH UPF/AMF changes as the WAB-MT moves inside a PLMN.

### X.4.1 WAB-MT mobility in the HPLMN

The WAB-MT reuses legacy mobility handover procedures.

### X.4.2 Roaming of WAB-MT

RAN3 assumes that, during WAB-node movement, the WAB-MT may connect to a PLMN different than its HPLMN. In this case, the WAB-gNB remains connected to the HPLMN.

### X.4.3 WAB-gNB mobility in the HPLMN

Mobility of WAB-gNB inside the HPLMN is supported. During WAB-node movement, establishment andr removal of the WAB-gNB’s NG and/or Xn connections may be needed. FFS whether NG connections can be suspended.

Establishment of Xn connections of the WAB-gNB with BH-RAN nodes, as well as with surrounding RAN nodes, is supported and can follow legacy procedures. Addition of new information in the legacy procedures is not precluded.

#### x.4.3.1 WAB-gNB mobility in the HPLMN with change of UE’s AMF

During WAB-node movement, the UE’s AMF(s) may need to be changed. AMF change may be accompanied with the change of the configuration parameters of the WAB-gNB. The NG connection handling and WAB-gNB configuration update may affect the served UEs.

1. Based on, e.g., its current location and/or additional criteria, the WAB-gNB determines that a change of UE’s AMF(s) is needed. The WAB-gNB may obtain the configuration parameters needed to establish the connection to the new UE’s AMF(s), and the parameters needed for the WAB-gNB to operate and serve UEs in the new area (e.g., a new set of cell IDs, gNB ID, PCI(s), TAC and RANAC). FFS how the WAB-gNB obtains these parameters.
2. The WAB-gNB establishes one or more new NG connections towards one or more new UE’s AMFs and, optionally, it may establish Xn connection(s) with the BH-gNB and the surrounding RAN nodes, following legacy procedures. It is FFS whether the establishment of NG connections towards new UE’s AMF(s) requires instantiation of a second logical WAB-gNB.
3. In case an update of WAB-gNB cell configuration parameters occurs such that the UE connectivity is unaffected, the UE contexts are transferred between the old and the new UE’s AMF(s), and, for each UE, rebinding of the NG connection to the new SCTP association is done. In case the update of WAB-gNB cell configuration parameters is such that the UE connectivity is affected (e.g., new TAC(s) and cell ID(s) are configured), one or more new cells are powered up. It is FFS whether the new cell(s) have to belong to a different logical WAB-gNBs than the old cell(s), or whether the old and new cell(s) can belong to the same WAB-gNB. The UEs are handled as follows:
	1. A UE in RRC\_CONNECTED state is handed over between an old cell and a new cell. If the new cell has a TAC different than the old cell, the UE detects the new TAC. If the new TAC is outside the UE’s registration area, the UE triggers the NAS Mobility Registration Update procedure towards the core network. In case the UE is supposed to be served by a new UE’s AMF, the new UE’s AMF retrieves the UE context from the old UE’s AMF.
	2. A UE in RRC\_IDLE state served by the WAB-gNB detects a new TAC (of the new cell) and triggers the NAS Mobility Registration Update procedure towards the core network, as defined in TS 23.502 [xx]. In case the UE is supposed to be served by a new UE’s AMF, the new UE’s AMF retrieves the UE context from the old UE’s AMF.
	3. A UE in RRC\_INACTIVE state served by the WAB-gNB detects a new TAC/RANAC and triggers the Access Stratum RNA update procedure towards WAB-gNB and NAS Mobility Registration Request towards the core network. In case the UE is supposed to be served by a new UE’s AMF, the new UE’s AMF retrieves the UE context from the old UE’s AMF.
4. The NG connection(s) between the WAB-gNB and the old UE’s AMF(s) are removed. FFS whether NG connections can be suspended.

#### x.4.3.2 WAB-gNB mobility in the HPLMN without the change of UE’s AMF

During WAB-node movement, the configuration parameters of the WAB-gNB can be changed, where the change of UE’s AMF(s) may not be needed. In this case, the procedure defined in clause x.4.3.1 can be reused, without the removal of the existing NG connections towards the UE’s AMF(s) and the establishment of new NG connections towards new UE’s AMF(s).

#### x.4.3.3 WAB PDU session handling upon WAB-node mobility

TBW

-------------------------------------------End of changes-------------------------------------------