3GPP TSG-RAN WG3 #124 R3-24xxxx

Fukuoka, Japan, 20– 24 May 2024

Agenda Item: 12.1

Source: NTTDOCOMO (moderator)

Title: Summary of Offline Discussion on additional topological enhancement

Document for: Approval

# Introduction

This document provides a summary of the offline discussion on additional topological enhancements.

**CB: # WAB**

* **Resolve the FFS captured above**
* **Converge on the TPs below, where agreements taken above will be captured. If any more agreements are taken, they can be included in the TPs below:**
	+ **TP for Architecture (Nokia)**
	+ **TP for Integration procedure (Huawei)**
	+ **TP for Authorization (CATT)**
	+ **TP for Mobility (Ericsson)**
	+ **TP for miscellaneous issues (ZTE)**
		- **WAB configuration**
		- **Etc**
* **SA2 reply LS (Qualcomm)**

(Moderator – Docomo)

Summary of offline disc in R3-243844

# Discussion

## FFS issues

**Upon WAB-gNB mobility:**

**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.**

**Q1. 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. Is this needed for AMF relocation?**

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**Q2. In case this procedure above is used for AMF relocation, whether new cells have to belong to different logical gNBs or can belong to the same gNB?**

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**Q3. Do you agree to capture the following text for IP address allocation for WAB-node in the TR 38.799:**

**4.3.x IP address allocation for WAB-node**

**A WAB-MT may obtain IP address(es) as a normal UE. The WAB-MT may deliver the allocated IP address(es) to the co-located WAB-gNB, which is used by the WAB-gNB for traffic exchange via the backhaul.**

**Alternatively, the WAB-gNB may obtain dedicated IP address(es) from operator. In this case, separate IP addresses are used by the WAB-gNB and co-located WAB-MT. In this case, a tunnel (e.g. based on IPsec or L2TP) could be established to transfer the WAB traffic by implementation. If a tunnel is established, a gateway may be deployed to terminate the tunnel.**

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**Q4. Do you agree to capture in the TR 38.799 the following architecture and protocol stack as a potential option.**

**The WAB architecture for using dedicated IP addresses for WAB-gNB via tunnel when the WAB-gNB’s NG traffic is transported via PDU session backhaul is shown in Figure 3.**



 **Figure 3: The WAB architecture example for 5GS using dedicated IP addresses for WAB-gNB when the WAB-gNB traffic is encapsulated in a tunnel and transported via PDU session backhaul**

**The corresponding protocol stack for NG-U and NG-C transport using layer 2 tunnel is shown in Figure 4.**



**Figure 4: The protocol stack for NG-U and NG-C transport using layer 2 tunnel**

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# Conclusion

# References

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| [R3-243021](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_124%5CDocs%5CR3-243021.zip) | LS on FS\_VMR\_Ph2 solution impacts to RAN (SA2(Qualcomm)) | LS in |
| [R3-243174](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_124%5CDocs%5CR3-243174.zip) | Discussion on Wireless Access Backhaul (NTTDOCOMO, INC.) | discussion |
| [R3-243199](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_124%5CDocs%5CR3-243199.zip) | (draft Reply LS) Discussion on reply LS to SA2 on VS\_VMR\_Ph2 solution impacts on RAN (Qualcomm Inc.) | other |
| [R3-243200](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_124%5CDocs%5CR3-243200.zip) | (TP to TR 38.799) WAB requirements and archtiecture (Qualcomm Inc.) | other |
| [R3-243201](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_124%5CDocs%5CR3-243201.zip) | (TP to TR 38.799) WAB network integration and mobility (Qualcomm Inc.) | other |
| [R3-243202](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_124%5CDocs%5CR3-243202.zip) | (TP to TR 38.799) WAB resource coordination (Qualcomm Inc.) | other |
| [R3-243217](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_124%5CDocs%5CR3-243217.zip) | (TP to TR 38.799) Discussion on architecture and protocol stack for R19 WAB (ZTE) | other |
| [R3-243218](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_124%5CDocs%5CR3-243218.zip) | (TP to TR 38.799) Discussion on supporting WAB and the reply LS on FS\_VMR\_Ph2 solution impacts to RAN (ZTE) | other |
| [R3-243219](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_124%5CDocs%5CR3-243219.zip) | (TP to TR 38.799) Discussion on WAB mobility and resource multiplexing (ZTE) | other |
| [R3-243247](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_124%5CDocs%5CR3-243247.zip) | Consideration on architecture and mobility for WAB (NEC) | discussion |
| [R3-243305](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_124%5CDocs%5CR3-243305.zip) | (TP for TR 38.799) General aspects of WAB (Xiaomi) | other |
| [R3-243306](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_124%5CDocs%5CR3-243306.zip) | (TP for TR 38.799) SA2’s LS for WAB (Xiaomi) | other |
| [R3-243327](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_124%5CDocs%5CR3-243327.zip) | (TP to TR 38.799) Discussion on impact of WAB (CATT) | other |
| [R3-243328](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_124%5CDocs%5CR3-243328.zip) | (draft reply LS) Discussion on LS for VMR from SA2 (CATT) | other |
| [R3-243329](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_124%5CDocs%5CR3-243329.zip) | (TP to TR 38.799) Discusson on resource multiplexing for WAB (CATT) | other |
| [R3-243339](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_124%5CDocs%5CR3-243339.zip) | Discussion on the Architecture, Access control and QoS support of WAB (Huawei) | pCR |
| [R3-243340](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_124%5CDocs%5CR3-243340.zip) | Discussion on the procedures related to the WAB (Huawei) | pCR |
| [R3-243341](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_124%5CDocs%5CR3-243341.zip) | Discussion on SA2's LS (S2-2405822/R3-243021) on FS\_VMR\_Ph2 solution impacts to RAN (Huawei) | discussion |
| [R3-243351](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_124%5CDocs%5CR3-243351.zip) | (TP to draft TR 38.799) Discussion on WAB architecture and high level aspects (Nokia, Nokia Shanghai Bell) | other |
| [R3-243352](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_124%5CDocs%5CR3-243352.zip) | Discussion on WAB integration and mobility (Nokia, Nokia Shanghai Bell) | discussion |
| [R3-243353](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_124%5CDocs%5CR3-243353.zip) | Resource Multiplexing for WAB (Nokia, Nokia Shanghai Bell) | discussion |
| [R3-243361](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_124%5CDocs%5CR3-243361.zip) | (pCR for TR 38.799) WAB Architecture and Scenarios (Ericsson) | pCR |
| [R3-243362](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_124%5CDocs%5CR3-243362.zip) | (pCR for TR 38.799) Functional Aspects of WAB-Nodes (Ericsson) | pCR |
| [R3-243363](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_124%5CDocs%5CR3-243363.zip) | Handling of Backhaul Link Degradation and Resource Multiplexing for WAB (Ericsson) | discussion |
| [R3-243389](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_124%5CDocs%5CR3-243389.zip) | Discussion on integration procedure for WAB node (Lenovo) | discussion |
| [R3-243390](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_124%5CDocs%5CR3-243390.zip) | Discussion on migration procedure for WAB node (Lenovo) | discussion |
| [R3-243391](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_124%5CDocs%5CR3-243391.zip) | Discussion on resource multiplexing for WAB node (Lenovo) | discussion |
| [R3-243581](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_124%5CDocs%5CR3-243581.zip) | Discussion on enhancements for WAB (CANON Research Centre France) | discussion |
| [R3-243583](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_124%5CDocs%5CR3-243583.zip) | Discussion on RAN impact of SA2 solution in WAB (LG Electronics) | discussion |
| [R3-243584](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_124%5CDocs%5CR3-243584.zip) | (TP for TR 38.799) Architecture and protocol stack for WAB’s Xn (LG Electronics) | other |
| [R3-243585](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_124%5CDocs%5CR3-243585.zip) | Reply LS on FS\_VMR\_Ph2 solution impacts to RAN (LG Electronics) | LS out To: SA2 CC: RAN2 |
| [R3-243588](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_124%5CDocs%5CR3-243588.zip) | Views on FS\_VMR\_Ph2 Solution Impacts to RAN (China Telecom) | discussion |
| [R3-243648](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_124%5CDocs%5CR3-243648.zip) | (TP to TR 38.799) Discussion on network integration for WAB (Samsung) | pCR |
| [R3-243649](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_124%5CDocs%5CR3-243649.zip) | (TP to TR 38.799) Discussion on WAB mobility (Samsung) | pCR |

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| [R3-243020](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_124%5CDocs%5CR3-243020.zip) | LS on Support of UE move between CAG cell of 5G Femto and CSG cell (SA2(Docomo)) | LS in |
| [R3-243025](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_124%5CDocs%5CR3-243025.zip) | LS to request clarification on the potential baseline system architecture of 5G NR Femto (SA3(China mobile)) | LS in |
| [R3-243175](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_124%5CDocs%5CR3-243175.zip) | Discussion on NR Femto (NTTDOCOMO, INC.) | discussion |
| [R3-243176](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_124%5CDocs%5CR3-243176.zip) | draft Reply LS on Support of UE move between CAG cell of 5G Femto and CSG cell (NTTDOCOMO, INC.) | LS out To: SA2 CC: RAN2 |
| [R3-243187](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_124%5CDocs%5CR3-243187.zip) | 5G femto architecture considerations (AT&T Services, Inc.) | discussion |
| [R3-243197](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_124%5CDocs%5CR3-243197.zip) | Comment on Femto architecture options 1 and 2 (Charter Communications, Inc) | other |
| [R3-243198](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_124%5CDocs%5CR3-243198.zip) | Xn Gateway in Femto architecture (Charter Communications, Inc) | discussion |
| [R3-243203](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_124%5CDocs%5CR3-243203.zip) | (draft Reply LS) Discussion on reply LS to SA2 on Support of UE move between CAG cell of 5G Femto and CSG cell (Qualcomm Inc.) | other |
| [R3-243232](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_124%5CDocs%5CR3-243232.zip) | Access to local services from the 5G Femto via distributed UPF (Huawei) | pCR |
| [R3-243252](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_124%5CDocs%5CR3-243252.zip) | Open issues on NR femto (NEC) | discussion |
| [R3-243315](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_124%5CDocs%5CR3-243315.zip) | Discussion on NG connection and interface for Option 2 for NR Femto Architecture (Baicells) | discussion |
| [R3-243316](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_124%5CDocs%5CR3-243316.zip) | (TP to TR 38.799)NG connection and interface for Option 2 for NR Femto Architecture (Baicells) | discussion |
| [R3-243330](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_124%5CDocs%5CR3-243330.zip) | (TP to TR 38.799) On 5G Femto architecture (CATT) | other |
| [R3-243331](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_124%5CDocs%5CR3-243331.zip) | (TP to TR 38.799) On 5G Femto local service access (CATT) | other |
| [R3-243332](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_124%5CDocs%5CR3-243332.zip) | (TP to TR 38.799) On 5G Femto access control mechanism (CATT) | other |
| [R3-243342](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_124%5CDocs%5CR3-243342.zip) | Discussion on the architecture and access control for NR Femto (Huawei) | pCR |
| [R3-243343](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_124%5CDocs%5CR3-243343.zip) | Discussion on SA2’s LS (S2-2405813/ R3-243020) on Support of UE move between CAG cell of 5G Femto and CSG cel (Huawei) | discussion |
| [R3-243374](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_124%5CDocs%5CR3-243374.zip) | NR Femto Architecture and Ongoing Issues (Ericsson LM) | pCR |
| [R3-243392](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_124%5CDocs%5CR3-243392.zip) | Architecture for NR Femto (Lenovo) | discussion |
| [R3-243393](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_124%5CDocs%5CR3-243393.zip) | Access control and handover for NR Femto with CAG (Lenovo) | discussion |
| [R3-243394](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_124%5CDocs%5CR3-243394.zip) | Discussion on interworking between CAG and CSG cells (Lenovo) | discussion |
| [R3-243409](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_124%5CDocs%5CR3-243409.zip) | NR Femto Node Access Control with CAG (Ericsson LM) | pCR |
| [R3-243411](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_124%5CDocs%5CR3-243411.zip) | Access to Local Services via Local UPF (Ericsson LM) | pCR |
| [R3-243562](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_124%5CDocs%5CR3-243562.zip) | [TP for TR 38.799] Evaluation of NR Femto Architecture Options (Nokia, TMO US, AT&T, Verizon Wireless, KDDI, British Telecom, NTT Docomo Charter) | other |
| [R3-243563](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_124%5CDocs%5CR3-243563.zip) | Support of UE Move between CAG cell and CSG cell (Nokia) | discussion |
| [R3-243564](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_124%5CDocs%5CR3-243564.zip) | Reply LS on Support of UE move between CAG cell of 5G Femto and CSG Cell (Nokia) | LS out To: SA2 CC:  |
| [R3-243565](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_124%5CDocs%5CR3-243565.zip) | [TP for TR 38.799] Access to Local Services (Nokia ) | other |
| [R3-243586](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_124%5CDocs%5CR3-243586.zip) | Discussion on SA2 solutions to support HO between CAG and CSG cell (LG Electronics) | discussion |
| [R3-243587](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_124%5CDocs%5CR3-243587.zip) | Reply LS on Support of UE move between CAG cell of 5G Femto and CSG cell (LG Electronics) | LS out To: SA2, RAN2 CC:  |
| [R3-243607](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_124%5CDocs%5CR3-243607.zip) | On Access Control for NR Femto (China Telecom) | discussion |
| [R3-243608](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_124%5CDocs%5CR3-243608.zip) | On Architecture for NR Femto Support (China Telecom) | discussion |
| [R3-243650](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_124%5CDocs%5CR3-243650.zip) | (TP to TR 38.799) Discussion on Femto architecture (Samsung) | pCR |
| [R3-243651](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_124%5CDocs%5CR3-243651.zip) | (TP to TR 38.799) Discussion on access control for NR Femto (Samsung) | pCR |
| [R3-243686](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_124%5CDocs%5CR3-243686.zip) | draft Reply LS to request clarification on the potential baseline system architecture of 5G NR Femto (NTTDOCOMO, INC.) | LS out To: SA3 CC: SA2 |
| [R3-243753](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_124%5CDocs%5CR3-243753.zip) | (TP to TR 38.799)Discussion on architecture and access control of NR Femto (ZTE) | discussion |
| [R3-243754](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_124%5CDocs%5CR3-243754.zip) | (TP to TR 38.799)Discussion on support of local services (ZTE) | discussion |
| [R3-243755](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_124%5CDocs%5CR3-243755.zip) | Discussion on CSG-CAG mobility (ZTE) | discussion |
| [R3-243761](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_124%5CDocs%5CR3-243761.zip) | Draft Reply LS to request clarification on the potential baseline system architecture of 5G NR Femto (CMCC) | LS out To: SA3 CC: SA2 |