3GPP TSG-RAN WG3 #125 R3-24xxxxx

Maastricht, Netherlands, 19th – 23rd August, 2024

Agenda Item: 12.2

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.

# Discussion

## WAB

* **Conclusion of study**

**Proposal 1: Based on the study, RAN3 can confirm the feasibility of WAB functionality from RAN3 perspective.**

**Proposal 2: RAN3 concludes that a normative phase for WAB should be pursued to capture various aspects identified in the study.**

**Proposal 3: The normative work for WAB should be based on the functionalities, terminology and requirements captured in TR 38.799.**

**Proposal 4: The normative work should consider the following architectural aspects for WAB according to TR 38.799:**

* **Backhauling of the WAB-gNB NG, Xn and OAM traffic is conducted over the WAB-MT’s PDU session.**
* **WAB-gNB’s can establish Xn interface(s) with the WAB-MT’s serving BH RAN node and with other surrounding gNBs.**
* **The interface between WAB-MT and WAB-gNB is out-of-scope for the normative phase.**
* **Split architecture of WAB-gNB is out-of-scope for the normative phase.**

**Proposal 5: WAB-gNB configuration and WAB-MT configuration have no impact expected in RAN3.**

**Proposal 6: Authorization procedure for WAB-MT is out of RAN3 scope and is expected to be handled by SA2. RAN3 to define the WAB-node behavior in case the authorization status of WAB-MT and/or WAB-gNB changes.**

**Proposal 7: The normative phase to define a network integration procedure following TR 38.799.**

**Proposal 8: All legacy UE mobility procedures should be supported by WAB-gNB. Mobility for WAB-MT is based on the legacy procedure.**

**Proposal 9: Normative phase to define the handling of WAB-gNB’s traffic during WAB-node mobility including the case where IP address(es) of the BH PDU sessions change.**

**Proposal 9a: Normative phase to define the procedure for UE’s AMF change for UE connected to WAB-gNB.**

**Proposal 10: The normative phase to include enhancements to the UE’s ULI that reflect the WAB node’s location.**

**Proposal 11: The normative phase to capture the handling of:s:**

* **PCI collision.**
* **Reconfiguration of TAC on WAB-gNB.**
* **Avoidance of multi-hop WAB.**
* **Radio-resource coordination between access and backhaul links.**

**Proposal 12: The normative phase to discuss enhancements for:**

* **NG removal procedure.**
* **Handling of backhaul link degradation by the backhaul and access network.**
* **Xn connection management (e.g., avoidance of setting up Xn between WAB-gNBs)**
* **NG connection management (e.g., NG connection suspension)**
* **Handling of PDB for traffic of UEs served by the WAB-gNB**

**Above is conclusion of the study.**

* **WAB mobility**

**Proposal 2-1: For WAB-gNB mobility with change of UE’s AMF, the WAB-node can create a second logical gNB with a different gNB-ID and perform NG-handover of all connected UEs.**

**Proposal 2-2: For WAB-gNB mobility with change of UE’s AMF, the new logical gNB’s cell to broadcast a different TAC than the initial logical gNB’s cell.**

**Proposal 5-3: The TAC of a WAB-gNB cell can change without change of the UE’s AMF.**

**Single-gNB solution: RAN3 discussed the following two scenarios. To confirm with SA2 if it work. Send LS to SA2 describing single-gNB solution(s)**

* **Single gNB single cell using registration update due to TAC change**
* **Single gNB two cells with different TAC using NG HO**
* **Single gNB single cell without TAC change**

**Two logical gNB solution: it is workable by implementation.**

**Agreement: resolve whether single gNB solution is feasible during normative phase based on reply LS from SA2.**

**Remove the EN. Details to be discussed in CB.**

* **Xn management**

**Proposal 1-1: WAB-gNB can reuse existing Xn-C TNL address discovery procedure to know the Xn-C TNL address of BH-gNB serving WAB-MT, then setup Xn with BH-gNB serving WAB-MT.**

**Proposal 1-2: BH-gNB can provide the Xn-C TNL address of neighboring gNB to WAB-gNB, so WAB-gNB can directly initiate Xn Setup with neighbour gNB.**

**Proposal 1-3: WAB-gNB can also use the neighboring cell information received from the BH-gNB to update its NCRT or initiate the Xn-C TNL address discovery procedure towards the neighboring gNB for further TNL/Xn Setup with the neighboring gNB, without waiting for the measurement report from UE (or WAB-MT).**

**Proposal 1-4: If Xn is to be avoided among WAB-gNBs, TNL discovery procedure can be enhanced to avoid Xn establishment as early as possible among WAB-gNBs.**

**Proposal 1-5: Existing Xn Removal procedure can be reused to remove the Xn between WAB-gNB and surround gNB.**

* SA2 LS R3-244019 / S2-2407345

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| *SA2 has discussed the access control (to restrict MWAB-UE accessing MWAB-gNB cell) for below two cases:**a) MWAB-UE accessing any MWAB-gNB in IDLE and CONNECTED mode(documented as one candidate solution in clause 6.2.3.6 of TS 23.700-06); and* *b) MWAB-UE accessing MWAB-gNB belonging to same MWAB.* *SA2 assume that those scenarios will be discussed by RAN WGs, and ask for RAN feedback.* |

**Initial access**

**Solution1: WAB-gNB sends WAB indication to AMF via NG setup procedure**

**Solution 2: The WAB-gNB uses dedicated frequencies and/or PCI partitions, which are avoided by the WAB-MT for cell-reselection and measurement reports.**

**Solution 3: WAB-gNB-cells broadcast a “WAB” indicator in SIB1, and the WAB-MT avoids (re)selection or reporting of cells broadcasting this indicator.**

**Solution 4: WAB-MT includes a “WAB” indicator in UE capabilities, and the network rejects an access attempt or a handover request to a WAB-gNB based on this indicator.**

**WAB-MT Mobility**

**Solution1: source gNB/AMF includes WAB-MT indicator in the XnAP/NGAP HO request**

**Solution2: a WAB indicator is introduced in the WAB-MT’s UE capabilities**

**Proposal 1-2: The Reply LS to SA2 to include that based on these observations, RAN3 believes that further details of issue 1 can be handled in the normative phase.**

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* **WAB authorization**

**Proposal 3-1: The OAM can provide the WAB-gNB with the policies for controlling its service authorization status, or the OAM can enforce the policies by configuring the WAB-gNB only when the WAB-gNB is authorized.**

**Proposal 3-2: If the WAB-MT and WAB-gNB are connected to different PLMNs, service authorization of the WAB-gNB is managed by the PLMN in which the WAB-gNB is connected.**

1. The UP resources for the established BH PDU session(s) should be released if the WAB-MT/WAB-gNB is non-authorized.
2. The WAB-MT informs the 5GC serving the WAB-MT of the de-authorization status of the WAB-gNB in time.
* **Resource multiplexing**

**Similar as IAB system, the BH-gNB should know the multiplexing capabilities of WAB-node, and the resource configuration of WAB-gNB. RAN3 to study Xn signalling for WAB-node resource coordination in normative phase.**

* **NG connection management**

**Proposal 1: The NG connection(s) of WAB-node can be suspended.**

* **PCI collision avoidance**

**Proposal 4: For WAB, PCI collision avoidance can use the same mechanisms as defined for mobile IAB.**

* **QoS support for WAB**

**TR 38.799 to include a reference to TS 23.700-06 on QoS support for WAB.**

**Proposal 2-1: In the uplink direction, WAB can perform the traffic mapping based on the QoS of the UL packet, and the QoS of the QoS flow of its BH PDU session.**

**Proposal 2-2: For downlink N2/N3 traffic, the WAB-MT’s UPF performs the traffic mapping based on the IP header of the N2/N3 traffic.**

**Proposal 2-3: For downlink traffic mapping to the appropriate N3 BH PDU session QoS flow, the WAB-gNB needs to know the DSCP information for the further DL NG-U packet during the UE’s PDU Session Resource Setup/Modification procedure.**

* **BH-ng-eNB**

**Proposal 3-1: RAN3 introduce BH-ng-eNB, and define it as the ng-eNB serving the WAB-MT.**

* **BH link degradation**

**Proposal 1: The access and the BH network can coordinate for mitigating BH link degradation.**

**Proposal 5-1: To determine a proper PDB of WAB-MT’s QoS flow satisfying the UE’s E2E PDB, the WAB-MT’s CN should know the CN PDB requirement between the WAB-gNB and the UE’s UPF.**

**Proposal 5-2: If the backhaul is NTN link, the UE’s CN should know the BH link type is NTN for seting proper QoS parameter of UE’s traffic.**

## 5G Femto

* Conclusion of study

Agree the following yellow part for conclusions.

Conclusion and recommendations

NG IF

Option 1 (direct connection of an NR Femto Node to the 5GC via the NG interface) is already possible.

In order to maintain the existing infrastructure for an operator who has deployed LTE HeNBs, Option 2 with an optional NR Femto GW is recommended for a normative phase.

**Xn Interface**

Option A (direct connection of an NR Femto Node to other NR Femto Nodes / gNBs via the Xn interface) is already possible and shall not be precluded.

Access control

For Access control, NR Femto reuses the existing CAG functionalities, no stage3 impact is identified.

Above is for Conclusion and recommendations

To Agree to have a TP merging two below evaluations.

**OptionA: direct connection of NR Femto to other RAN nodes**

**Pros**:

1. Already supported by current architecture.
2. Less CP latency and no processing delay due to absence of a concentration stage.
3. Local breakout can be supported.

**Cons:**

1. Not suitable for certain deployments with large number of NR Femtos.
2. Not suitable for residential deployments with frequent switch on/off of NR Femtos.

**Option B: Xn GW**

**Pros:**

1. Only one Xn association from Other RAN nodes to Xn GW, so it can support large number of femtos.
2. Other NG RAN nodes is shielded from frequent switch on/off of the NR Femtos.
3. Enables operators who have already deployed 4G Femtos using X2 GW to capitalize on operating model and integration process of 5G Femtos.
4. Foreseen specification impacts are already well known from 4G.

**Cons:**

1. Some stage3 specification impact.
2. Some processing delay for CP/UP message, especially when large number of femtos are connected to same Xn GW.
3. Hard to deploy.

### 5.2.x Evaluation of Architecture options for the Xn interface

Following table concludes the comparison of the two Xn interface options [1].

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| **Option** | **Pros** | **Cons** |
| **A** | * Already supported by current architecture.
* Less CP latency and no processing delay due to absence of a concentration stage.
 |  |
| **B** | * Can support large number of Xn connections for one NR Femto.
 | * Some stage3 specification impact.
* Some processing delay for CP message.
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**Proposal 2**: capture in the conclusion of the TR 38.799 that options 1 and 2 will proceed in the work item phase.

**NG Interface**

Option 1 (direct connection of an NR Femto Node to the 5GC via the NG interface) is already possible and shall not be precluded.

In order to maintain the existing infrastructure for an operator who has deployed LTE HeNBs, Option 2 with an optional NR Femto GW should be selected.

**Xn Interface**

Option A (direct connection of an NR Femto Node to other NR Femto Nodes / gNBs via the Xn interface) is already possible and shall not be precluded.

**Access Control**

Using existing NG-RAN CAG functionality for NR Femto Nodes is already possible, same as for gNBs.

**Access to Local Services**

Using existing functionality supporting a co-located local UPF for NR Femto Nodes is already possible, same as for gNBs.

* Access control

Proposal 1: For Access control, NR Femto reuses the existing CAG functionalities, no enhancement is needed.

With the existing CAG mechanism, the open, hybrid and closed access modes can be supported as follows:

- To support the open access mode: The NR Femto activates a PLMN cell, which can be accessed by legacy UE without access control.

- To support the hybrid access mode: The NR Femto cell can be shared by both PLMN and CAG, through broadcast both the plmn-IdentityInfoList and the npn-IdentityInfoList-r16 in the SIB1, but without the cellReservedForOtherUse. Then, this cell is accessible as a CAG cell by UEs which has the allowed CAG list including this cell. For the legacy UE not supporting CAG, this cell is viewed as a normal PLMN cell.

- To support the closed access mode: The NR Femto activates an NPN-only cell by broadcasting the cellReservedForOtherUse IE with value be set as “true”, then this cell can only be accessed by the UEs whose allowed CAG list includes a CAG-ID broadcasted by the NR Femto cell.

* Local services

**Proposal 1: In order to access local services through a local breakout, a NR femto node may connect to a local UPF (co-located or stand-alone) providing the necessary functionality and terminating N9 toward the central UPF and N6 toward the local data network.**

**Proposal 2: If desired, when accessing local services according to 5GC UP architecture for femto deployments, support for Session and Service Continuity should follow current specified behavior by SA2.**

**Observation 1: All necessary functionality is already specified by SA2.**

**Reuse SA2 existing solutions(LADN, edge computing), and capture the following aspects in the TR.**

**Aspects#1: scalability of discovery of local UPF**

**Aspects#2: turn on/off**

**Aspects#3: aggregation of N4**

Agree the following TP for general part.

## 5.1 General

5G Femto enables use cases to provide NR access at home or at enterprise premises. The study of NR Femto is based on following assumption:

* An NR Femto node only supports NR;
* Initial access control to a CAG supported by a NR Femto node is performed by the AMF, reusing current PNI-NPN functionality;
* Reusing CAG configurations and mobility functionalities specified for PNI-NPN also for NR Femto nodes deployments;
* No impacts on the UE are in scope of the study;
* Option A does not have any architecture impact in 3GPP;
* Architecture Option 1 does not require any architecture change;
* Support for large numbers of 5G Femto should be possible in a scalable manner.
* how to select the local UPF to be collocated with the NR Femto?

**Proposal 1**: RAN3 to discuss which option to take and acknowledge associated standards impact.

**Option 1: use the Cell ID of ULI report from NR Femto**

**Option 2: use the TAI report from NR Femto**

**Option 3: NR Femto indicates an address to 5GC (similar to LIPA)**

* CAG-CSG mobility (R3-243020/ S2-2405813)

 RAN3 thanks for the SA2 LS on support of UE move between CAG cell of 5G Femto and CSG cell

 (R3-243020/ S2-2405813). RAN3 answer the SA2 questions as following:

**Question 1: SA2 would like to know whether the two solutions mentioned above have any impact on the RAN (e.g., for RAN procedures)?**

Answer: RAN3 analyzed the two solutions and concluded that solution1 has UE and RAN impact. For solution2, there is no UE or RAN impact since the access control is conducted by AMF/MME. However, handover failure may occur with solution2.

* Solution1: The UE partitions CSG-CAG ID and constructs mapped CSG/CAG ID, and reports to the NG-RAN or E-UTRAN (depending on the considered mobility direction) as described in pCR (S2-2405814).
* Solution2: RAN recognizes the target CSG cell (or the target CAG cell) as an open cell during the handover (e.g., via local configuration) and the core network performs access control as described in pCR (S2-2405789).

**Question 2: SA2 has reserved the time units for the normative work of WT#1 based on the result of RAN3 work (RP-234041), which is expected to start in SA2 from SA2#164. Therefore, SA2 requests to confirm the conclusion of RAN3 on overall architecture, etc., which will be used as the basis for SA2's normative work.**

Answer: RAN3 have already studied the overall architecture of 5G femto (see attached TR).

# Conclusion, Recommendations

**TP allocation**

* **WAB**
	+ **TP for conclusion and recommendations of study (Qualcomm)**
	+ **WAB mobility (Ericsson)**
	+ **TP for PCI collision (ZTE)**
	+ **TP for QoS (?)**
	+ **TP for Multiple hop prevention (?)**
	+ **LS (to SA2) on WAB mobility (Huawei)**
* **5G femto**
	+ **TP for conclusion and recommendations of study (Nokia, Ericsson)**
	+ **Access control (Huawei)**
	+ **TP for Xn IF evaluation (ZTE, Huawei)**
	+ **TP for Local services (Ericsson, Nokia)**
	+ **TP for 5G femto general part (ZTE)**

# References

|  |  |  |
| --- | --- | --- |
| [R3-244019](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_125%5CDocs%5CR3-244019.zip) | LS on questions regarding FS\_VMR\_Ph2 (SA2(Samsung)) | LS in |
| [R3-244118](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_125%5CDocs%5CR3-244118.zip) | (TP to TR 38.799) Discussion on supporting WAB and the reply LS to SA2 (ZTE Corporation) | other |
| [R3-244119](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_125%5CDocs%5CR3-244119.zip) | (TP to TR 38.799) Discussion on WAB mobility (ZTE Corporation) | other |
| [R3-244120](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_125%5CDocs%5CR3-244120.zip) | (TP to TR 38.799) Discussion on other aspects in WAB (ZTE Corporation) | other |
| [R3-244121](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_125%5CDocs%5CR3-244121.zip) | Discussion on Network Selection for WAB (Fraunhofer IIS, Fraunhofer HHI) | discussion |
| [R3-244140](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_125%5CDocs%5CR3-244140.zip) | (draft Reply LS) Discussion on reply LS to SA2 on questions regaring VS\_VMR\_Ph2 (Qualcomm Inc.) | other |
| [R3-244141](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_125%5CDocs%5CR3-244141.zip) | (TP to TR 38.799) Remaining issues for WAB (Qualcomm Inc.) | other |
| [R3-244142](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_125%5CDocs%5CR3-244142.zip) | (TP to TR 38.799) Conclusion of study on WAB (Qualcomm Inc.) | other |
| [R3-244154](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_125%5CDocs%5CR3-244154.zip) | Discussion on the architecture and mobility for WAB (NEC) | discussion |
| [R3-244231](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_125%5CDocs%5CR3-244231.zip) | (TP to TR 38.799 & draft reply LS) On WAB architecture and authorization (CATT) | other |
| [R3-244232](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_125%5CDocs%5CR3-244232.zip) | (TP to TR 38.799) Discussion on WAB mobility (CATT) | other |
| [R3-244233](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_125%5CDocs%5CR3-244233.zip) | (TP to TR 38.799) Discusson on resource multiplexing for WAB (CATT) | other |
| [R3-244269](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_125%5CDocs%5CR3-244269.zip) | (pCR for TR 38.799): Functional Aspects of WAB-Nodes (Ericsson) | pCR |
| [R3-244270](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_125%5CDocs%5CR3-244270.zip) | (pCR for TR 38.799): Handling of Reliability and Latency for WAB (Ericsson) | pCR |
| [R3-244271](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_125%5CDocs%5CR3-244271.zip) | Reply to SA2 Questions Regarding UE Access Control and Additional ULI (Ericsson) | discussion |
| [R3-244316](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_125%5CDocs%5CR3-244316.zip) | Discussion on architecture and QoS mapping for WAB (Lenovo) | discussion |
| [R3-244317](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_125%5CDocs%5CR3-244317.zip) | (TP to TR 38.799) Discussion on WAB-gNB migration (Lenovo) | other |
| [R3-244318](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_125%5CDocs%5CR3-244318.zip) | (TP to TR 38.799) Discussion on resource multiplexing for WAB node (Lenovo) | other |
| [R3-244334](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_125%5CDocs%5CR3-244334.zip) | Discussion on enhancements for WAB (CANON Research Centre France) | discussion |
| [R3-244337](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_125%5CDocs%5CR3-244337.zip) | (TP to TR 38.799) Discussion on Xn support for WAB-gNB and Traffic Mapping (Nokia, Nokia Shanghai Bell) | other |
| [R3-244338](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_125%5CDocs%5CR3-244338.zip) | (TP to TR 38.799) Discussion on WAB mobility (Nokia, Nokia Shanghai Bell) | other |
| [R3-244339](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_125%5CDocs%5CR3-244339.zip) | Discussion on SA2 LS (Nokia, Nokia Shanghai Bell) | discussion |
| [R3-244392](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_125%5CDocs%5CR3-244392.zip) | (TP for TR 38.799) Remaining open issues in WAB (LG Electronics) | other |
| [R3-244394](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_125%5CDocs%5CR3-244394.zip) | (TP for TR 38.799) Access control and location information in WAB (LG Electronics) | other |
| [R3-244395](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_125%5CDocs%5CR3-244395.zip) | Reply LS on questions regarding FS\_VMR\_Ph2 (LG Electronics) | LS out To: RAN2, SA2 CC:  |
| [R3-244526](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_125%5CDocs%5CR3-244526.zip) | Discussion on the Architecture, access control and QoS mappingsupport of WAB (Huawei) | pCR |
| [R3-244527](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_125%5CDocs%5CR3-244527.zip) | Discussion on WAB mobility and other some remaining issues (Huawei) | pCR |
| [R3-244528](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_125%5CDocs%5CR3-244528.zip) | Discussion on SA2's LS (S2-2407345) on questions regarding FS\_VMR\_Ph2 (Huawei) | discussion |
| [R3-244541](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_125%5CDocs%5CR3-244541.zip) | (TP to TR 38.799) Discussion on support WAB (Samsung) | pCR |
| [R3-244542](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_125%5CDocs%5CR3-244542.zip) | Discussion on WAB mobility (Samsung) | discussion |
| [R3-244543](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_125%5CDocs%5CR3-244543.zip) | (draft Reply LS) Discussion on LS for VMR from SA2 (Samsung) | discussion |
| [R3-244562](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_125%5CDocs%5CR3-244562.zip) | On WAB Awareness and Authorization (China Telecom) | discussion |
| [R3-244563](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_125%5CDocs%5CR3-244563.zip) | On Xn Connection Management (China Telecom) | discussion |
| [R3-244631](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_125%5CDocs%5CR3-244631.zip) | Discussion on Wireless Access Backhaul (NTT DOCOMO INC.) | discussion |

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| [R3-244012](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_125%5CDocs%5CR3-244012.zip) | Reply LS on Support of UE move between CAG cell of 5G Femto and CSG cell (RAN2(LGE)) | LS in |
| [R3-244101](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_125%5CDocs%5CR3-244101.zip) | (TP for TR 38.799) Access to local services from the 5G Femto via distributed UPF (Huawei) | other |
| [R3-244143](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_125%5CDocs%5CR3-244143.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 |
| [R3-244144](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_125%5CDocs%5CR3-244144.zip) | Support of local services with UPF at NR Femto (Qualcomm Inc.) | discussion |
| [R3-244145](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_125%5CDocs%5CR3-244145.zip) | Conclusion of study on NR Femto (Qualcomm Inc.) | discussion |
| [R3-244167](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_125%5CDocs%5CR3-244167.zip) | (Draft reply LS) Mobility between CAG cell and CSG cell (NEC) | discussion |
| [R3-244168](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_125%5CDocs%5CR3-244168.zip) | NR femto (NEC) | discussion |
| [R3-244171](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_125%5CDocs%5CR3-244171.zip) | (TP to TR 38.799)Discussion on architecture and access control of NR Femto (ZTE Corporation) | discussion |
| [R3-244172](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_125%5CDocs%5CR3-244172.zip) | (TP to TR 38.799)Discussion on support of local services (ZTE Corporation) | discussion |
| [R3-244173](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_125%5CDocs%5CR3-244173.zip) | (TP for TR 38.799)Evaluation of NR Femto Architecture Options (ZTE Corporation) | discussion |
| [R3-244202](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_125%5CDocs%5CR3-244202.zip) | (TP to TR 38.799) Proposals on NR Femto Architecture (Baicells) | discussion |
| [R3-244234](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_125%5CDocs%5CR3-244234.zip) | (TP to TR 38.799) Discussion on 5G Femto architecture (CATT) | other |
| [R3-244235](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_125%5CDocs%5CR3-244235.zip) | (TP to TR 38.799) On 5G Femto local service access (CATT) | other |
| [R3-244236](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_125%5CDocs%5CR3-244236.zip) | (TP to TR 38.799) On 5G Femto access control mechanism (CATT) | other |
| [R3-244258](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_125%5CDocs%5CR3-244258.zip) | (TP to TR 38.799) On Access Control and Mobility for NR Femto (China Telecom) | other |
| [R3-244259](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_125%5CDocs%5CR3-244259.zip) | (TP to TR 38.799) On local service access for NR Femto (China Telecom) | other |
| [R3-244319](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_125%5CDocs%5CR3-244319.zip) | Discussion on interworking between CAG and CSG cells (Lenovo) | discussion |
| [R3-244320](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_125%5CDocs%5CR3-244320.zip) | (TP to TR 38.799) Access control and handover for NR Femto with CAG (Lenovo) | other |
| [R3-244321](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_125%5CDocs%5CR3-244321.zip) | Local services for NR Femto via collocated local UPF (Lenovo) | discussion |
| [R3-244369](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_125%5CDocs%5CR3-244369.zip) | (Non-Opinionated) Analysis of CAG-CSG Mobility Support (Ericsson, NTT Docomo, Huawei, ZTE, LG Electronics Inc., Deutsche Telekom) | discussion |
| [R3-244370](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_125%5CDocs%5CR3-244370.zip) | Discussion and Potential Conclusions for NR Femto (Ericsson) | pCR |
| [R3-244371](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_125%5CDocs%5CR3-244371.zip) | NR Femto Node Access Control with CAG (Ericsson) | pCR |
| [R3-244372](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_125%5CDocs%5CR3-244372.zip) | Access to Local Services via Local UPF (Ericsson) | pCR |
| [R3-244396](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_125%5CDocs%5CR3-244396.zip) | (TP for TR 38.799) Remaining open issues in 5G Femto (LG Electronics) | other |
| [R3-244414](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_125%5CDocs%5CR3-244414.zip) | [TP for TR 38.799] Conclusion on NR Femto Architecture Options (Nokia, TMO US, AT&T, Verizon Wireless, British Telekom, NTT Docomo, KDDI, Charter) | other |
| [R3-244415](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_125%5CDocs%5CR3-244415.zip) | Answer to SA2 LS on UE Move between CAG cell and CSG cell (Nokia ) | discussion |
| [R3-244416](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_125%5CDocs%5CR3-244416.zip) | [TP for TR 38.799] Temporary Access Control for NR Femtos and Mobility (Nokia ) | other |
| [R3-244419](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_125%5CDocs%5CR3-244419.zip) | [TP for TR 38.799] Access to Local Services (Nokia ) | other |
| [R3-244529](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_125%5CDocs%5CR3-244529.zip) | Discussion on the architecture for NR Femto (Huawei) | pCR |
| [R3-244530](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_125%5CDocs%5CR3-244530.zip) | Discussion on the access control for NR Femto (Huawei) | pCR |
| [R3-244544](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_125%5CDocs%5CR3-244544.zip) | (TP to TR 38.799) Discussion on Femto architecture (Samsung) | pCR |
| [R3-244545](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_125%5CDocs%5CR3-244545.zip) | (TP to TR 38.799) Discussion on access control and handover for NR Femto (Samsung) | pCR |
| [R3-244589](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_125%5CDocs%5CR3-244589.zip) | Discussion on 5G Femto architecture (CMCC) | discussion |
| [R3-244590](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_125%5CDocs%5CR3-244590.zip) | Discussion on access control for 5G Femto with CAG (CMCC) | discussion |
| [R3-244591](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_125%5CDocs%5CR3-244591.zip) | Draft Reply LS to request clarification on the potential baseline system architecture of 5G NR Femto (CMCC) | LS out To: SA3 CC: SA2 |
| [R3-244632](file:///D%3A%5C%E4%BC%9A%E8%AE%AE%E7%A1%AC%E7%9B%98%5CTSGR3_125%5CDocs%5CR3-244632.zip) | Discussion on 5G Femto (NTT DOCOMO INC.) | discussion |