3GPP TSG-RAN WG3 Meeting #125bis R3-245720

Hefei, China, 14 – 18 October 2024

**Agenda item: 12.3**

**Source: Nokia,** **TMO US, AT&T, Verizon Wireless, BT, Charter**

**Title: TP for BL CR on Introduction of NR Femto Architecture and Protocol Aspects**

**WID/SID: FS\_WAB\_5GFemto\_NR - Release 19**

**Document for: Discussion and Decision**

# 2 TP for BL CR 38.300

4 Overall Architecture and Functional Split

4.X Support of NR Femtos

4.X.1 Architecture

Figure 4.X.1-1 shows a logical architecture for the NR Femto that has a set of NG interfaces to connect the NR Femto to the 5GC.



**Figure 4.X.1-1: NR Femto Logical Architecture**

NOTE: the SeGW and NR Femto Management System are out of RAN3 scope.

The NR Femto may directly connect to the 5GC. The NG-RAN architecture may also deploy an NR Femto Gateway (NR Femto GW) to allow the concentration of the NG-C interface between the NR Femto and the 5GC. Based on implementation, the transport of NG-U between the NR Femto and the 5GC may be optionally concentrated in the NR Femto GW.

For NR Femto, the NG interface is defined as the interface:

- Between the NR Femto GW and the Core Network;

- Between the NR Femto and the NR Femto GW;

- Between the NR Femto and the Core Network;

The NR Femto GW appears to the AMF as a gNB. The NR Femto GW appears to the NR Femto as an AMF. The NG interface between the NR Femto and the 5GC is the same regardless whether the NR Femto is connected to the 5GC via an NR Femto GW or not.

The functions supported by the NR Femto shall be the same as those supported by a gNB (with possible exceptions e.g. NNSF) and the procedures run between an NR Femto and the 5GC shall be the same as those between a gNB and the 5GC.

Xn-connectivity is supported between NR Femtos and between NR Femtos and gNBs, independent of whether any of the involved NR Femtos is connected to an NR Femto GW.

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### 4.X.3 Interfaces

#### 4.X.3.1 Protocol Stack for NG User Plane

Editor’s note: Description FFS.

#### 4.X.3.2 Protocol Stacks for NG Control Plane

The two figures below show the NG-C protocol stack with and without the NR Femto GW.

When the NR Femto GW is not present (Fig. 4.x.3.2-1), all the NGAP procedures are terminated at the NR Femto and the AMF.

Any protocol function associated to a UE-dedicated-procedure shall reside within the NR Femto and the AMF only.



Figure 4.X.3.2-1: Control plane for NG-C Interface for NR Femto to AMF without the NR Femto GW



Figure 4.X.3.2-2: Control plane for NG-C Interface for NR Femto to AMF with the NR Femto GW