3GPP TSG-RAN WG3 Meeting #126 R3-247799

**Orlando, USA, 18 - 22 November, 2024**

Agenda Item: 12.3

Source: Huawei

Title: (TP for TS 38.300) Architecture and Protocol stack for NR Femto

Document for: Agreement

# 1 Introduction

This contribution introduces the update for architecture and protocol stack for NR Femto, according to the offline discussion organized by the WI rapporteur.

# Annex ——TP for TS 38.300

*Start of Change*

# 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 is out of RAN 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-C 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 NR Femto shall only connect to a single NR Femto GW at one time when the NR Femto connects via the NR Femto GW. The NR Femto GW supports NG-Flex configuration and can simultaneously connect to multiple AMFs.

The functions supported by the NR Femto shall be the same as those supported by a gNB (with possible exceptions e.g. NNSF when the NR Femto connects via the NR Femto GW) and the procedures run between an NR Femto and the 5GC shall be the same as those between a gNB and the 5GC. One NR femto serves one or more cells.

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

NG-U is defined as specified in clause 4.3.1.1 regardless of whether it is concentrated in the NR Femto GW. The figure below shows the NG-U protocol stack between NR Femto and UPF.



Figure 4.X.3.1-1: User plane for NG Interface between NR Femto and UPF

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

The figure below shows the NG-C protocol stack with the NR Femto GW.

When the NR Femto GW is not present, NG-C is defined as specified in clause 4.3.1.2, and all the NGAP procedures are terminated at the NR Femto and the AMF.



Figure 4.X.3.2-1: Control plane for NG Interface for NR Femto to AMF with the NR Femto GW

*End of Change*