Live Demo at Flex5GWare Final Event, June 2017

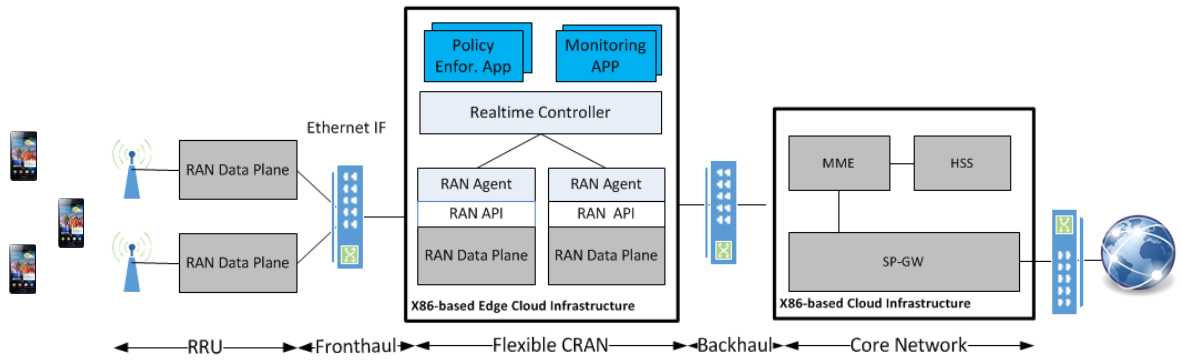
Title: FlexCRAN: Flexible Cloud-RAN Platform

Several C-RAN features can be realized using OpenAirInterface (OAI) software/hardware platforms to show a 3 tier C-RAN architecture as specified by 3GPPP (RRU, DU, CU) and NGFI (RRU, RAU, RCC). In this demo, we show some of these realizable features of C-RAN using OAI and commodity hardware. The RCC/RAU is deployed on a commodity Intel x86 PC and connected to RRUs deployed on commodity Intel x86 PCs through a Gigabit Ethernet (GbE) switch. Please note that, although we can use OAI software and Juju-based orchestration tools, JoX, to deploy RAN modules on a powerful server grade machines, for the purposes of this demonstration, a scaled down setup will be used. The RRU which is also realized on an Intel x86 PC is connected with commodity RF front-end devices such as USRP B210/B200mini. The RCC/RAU-RRU exchange packetized I/Q samples over raw Ethernet or UDP over the GbE fronthaul link. Two possible LTE eNodeB protocol splits will be shown across RCC-RRU running the OAI lte-softmodem and they are summarized as follows.

1. Time-domain I/Q split (IF5): RCC/RAU and RRU exchange time-domain I/Q samples as Ethernet packets across the Ethernet-based fronthaul link. Additionally, A-law compression is employed on the I/Q data that is transported across the Ethernet fronthaul links.
2. Frequency-domain I/Q split (IF4.5): RCC/RAU and RRU exchange frequency-domain I/Q samples across the Ethernet based fronthaul link. In this split architecture, RRUs perform some of the lower PHY layer processing, namely FFT/IFFTs. Similar to the IF5 split, the A-law compression is employed on the I/Q data.

In addition, we demonstrate the RAN realtime monitoring and control through the MOSAIC-5G FlexRAN controller and two network applications, namely status monitoring, and RRM policy enforcement.

The core network functional components i.e., S/P-GW, MME and HSS, are also realized using openair-cn. Commercial off-the-shelf (COTS) mobile clients are used to test the functionality of the C-RAN prototype. The RAN is deployed in FDD, SISO, for 5/10MHz channel bandwidth in band 7/13 with very low tx power depending on the environment. Figure below shows the demo setup:



Link to the program :

http://www.flex5gware.eu/finalevent5G

Supporting projects :

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