OpenAirInterface - VNFs for 3GPP Cellular Stack

Introduction of OpenAirInterface:

OpenAirInterface [1] is an open source Rel 8/Rel-10 3GPP compliant reference implementation of BBU, UE, RRH and EPC that runs on general purpose computing platform (Intel/ARM). The software can interface with commodity lab RF SDR platforms such as USRP B210 [2] for over-the-air (OTA) experiments with commercial devices. OpenAirInterface (OAI) offers the potential to test OPNFV infrastructure within the framework of Functest project by offering several open source 3GPP 4G/5G VNFS, for example:

1. EPC (HSS, MME, S/P GW)
2. Base Band Unit (BBU)
3. OAISIM: OAI Simulator for 3GPP RAN
4. Remote Radio Unit (RRU)
5. User Equipment (UE)

The communication amongst the different VNFs within OpenAirInterface can happen over standard IP Communication interface thus avoiding the need of special purpose servers/RF equipment for testing OpenAirInterface. The current plan for OAI is to integrate OAI EPC as a VNF within OPNFV Functest as a part of Danube, the fourth OPNFV release. It should be noted that there is ongoing work within the OAI community towards dis-aggregating OAI EPC into (HSS, MME, S-GW, P-GW). This will enable all the different EPC components to run in their own virtual environments and be chained together with service orchestrator to provide EPC functionality dynamically based on network demand. RRU is a network element that interfaces directly with either commercial RF equipment (or in the case of OAI with general purpose SDR), and communicates with BBU over Optical/Ethernet Interface.

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Integration of OAI in Functest:
TBD: Overall Architecture
TBD: Integration aspects specific to JOID
TBD: Integration aspects specific to FUEL

Test cases of OAI vEPC in Functest:
TBD: System Architecture aspects + test cases

Current Plan:
It is proposed to integrate OAI EPC as VNF within Functest in OpNFV Release Danube with sample test cases to test vEPC functionality.

References: