Performance Analysis with OAI and NS3

Project Domain / Category

Networks / Network Simulation

Abstract / Introduction

OpenAirInterface(OAI) is an open source software implementation for 5th generation cellular/mobile network. OAI can be run over commodity hardware and supports wide range of Linux distributions such as ubuntu, centos etc. For 5G the OAI can be used to setup enhanced Node Bs and Evolved Packet Core. This project aims students to get familiarized with the 5G and basic principles to create test environment to measure general performance parameters such as maximum achievable throughput, latency, packet loss with different mobility patterns and speeds.

Functional Requirements:

1. A Presentation on 5G and OAI
2. Setup suitable Linux environment with containers support
3. Install OAI stack and create 4 eNodeBs and one EPC
4. Create a set of mobile users (at least 8) and a webserver
    a. Connect Webserver with EPC
    b. Mobile users should associate with B
5. Setup Mobility Patterns using NS3
6. Create a simple connectivity scenario as shown in the figure 1.

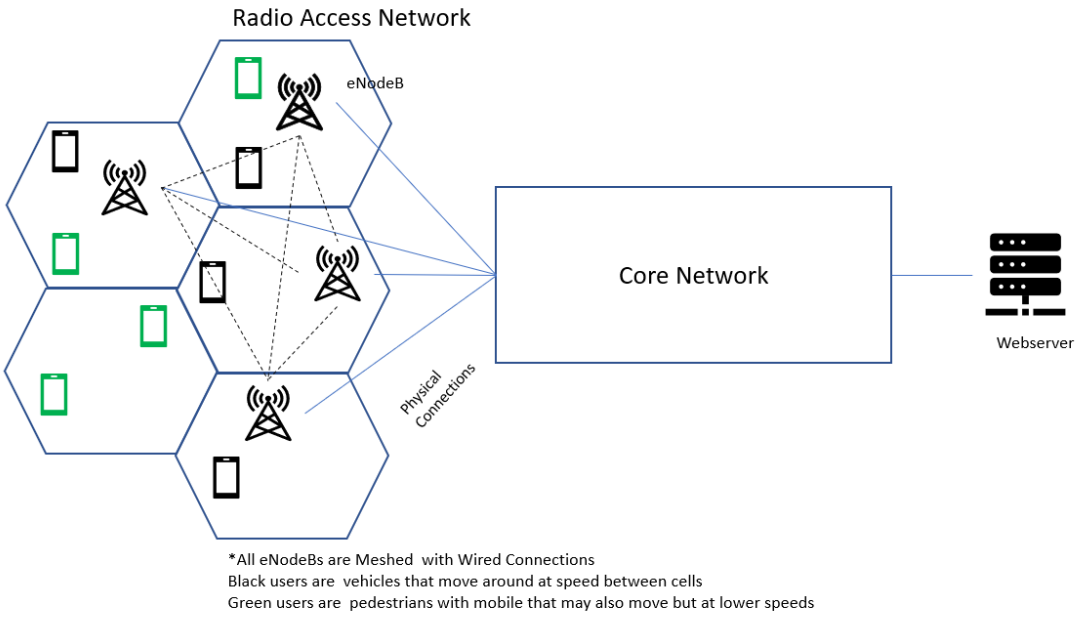

Figure 1 - Network Scenario

7. Measure Performance parameters (throughput, Latency, Jitter, Mobility)

Tools:

Linux , Ubuntu/Centos
Docker Containers
OAI (https://www.openairinterface.org/?page_id=25)
NS3 (https://apps.nsnam.org/app/nr/)
Shell Scripting /Python /AWK

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