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Northeastern University - Innovation Campus at Burlington
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JOINT OSC/OSFG-OAI WORKSHOP: E2E REFERENCE DESIGNS FOR O_RAN

DAY 2 DEMOS -

Paulo Marques

Demo: OAIBOX for O-RAN Testing and Integration
Affiliation: Allbesmart

Abstract: Based on extensive experience and contributions to the OAI code, Allbesmart has developed and launched the OAIBOX product line (www.oaibox.com), which is a monolithic 5G open-source test network for research, experimentation and education. The OAIBOX works as an abstraction layer to facilitate using OAI through a powerful dashboard to monitor and control the network. In this workshop Allbesmart will release an O-RAN compliant OAIBOX solution. We will showcase a desegregate OAIBOX end-to-end test network with 5G CN, CU, DU and FLEX RIC components in docker containers. Allbesmart will bring two computer nodes (5G CN + O-CU and O-DU) and a COTS RU. A RF cable kit will allow transmission between the RU and a COTS UE avoiding wireless interference. The split 7.2 between DU-RU and the F1 interface between CU-DU will be available in open source for interoperability tests. The OAIBOX Dashboard's intuitive graphical user interface for real-time monitoring and control will expose a rich set of network.

Melissa Elkadi

Demo: Open-Source 5G Sidelink Multi-hop Demonstration
Affiliation: EpiSci

Abstract: EpiSci has developed a physical layer communications framework for 5G new radio (NR) Sidelink (SL) which enables NR UEs to exchange data independently without relying on the base station (BS), known as SL mode 2. Initially, we have implemented physical SL broadcast channel (PSBCH) and Physical SL Shared Channel (PSSCH). The SyncRef UE broadcasts a SL synchronization signal block (S-SSB) periodically over PSBCH, which the nearby UE detects and uses to synchronize its timing and frequency components with the SyncRef UE. Once a connection is established, the SyncRef UE acts as a transmitter and shares data with the receiver UE (nearby UE) via the PSSCH. Our interactive demo consists of a GUI in which the user has the opportunity to type their own personal text message and select a phone they would like to send it to (either UE #1 or UE #2); multi-hop forwarding will occur depending on the selected destination UE.

Rakesh Mundlamuri

Demo: Novel 5G Ranging Mechanism using OpenAirInterface
Affiliation: EURECOM

Abstract: In our demonstration, we present a real-time implementation of our novel uplink 5G ranging algorithm to localize a user using openairinterface. Our algorithm is not only robust to clock drift but also computationally efficient when compared to existing absolute time of arrival estimation methods.

KEYSIGHT

Michael Jones

OPEN AIR interface

Teodora Vladic

Demo: RAN Control of UE-specific DRB-level QoS attributes

Affiliation: Keysight & OpenAirInterface

Abstract: The goal of this demo is to improve the QoS for many UEs on the network in high traffic scenarios.

Using KPM SM Report Service, RIC observes:
- The congestion of the cell,
- The throughput for a specific QoS or Slice of UE,
- The throughput for a set of UEs that match the condition criteria based on GBR rate.

Using RC SM Report Service, RIC investigates and stores the DRB information of UEs.
If the cell is congested and the UEs throughput decreased below the threshold, using RC SM Control Service, RIC optimizes the QoS parameters like Maximum Flow Bit Rate, Guaranteed Flow Bit Rate, and Priority of the mapped QoS Flows. In this manner, for each UE the QoS is improved based on the current resource usage.

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Rajeev Gangula

Demo: xApp for Dynamic Spectrum Sharing in CBRS

Affiliation: Northeastern University

Abstract: We consider a scenario where the OAI gNB is sharing the spectrum with an incumbent priority user in 3.5 GHz citizens broadband radio service (CBRS) band. In this demo, the OAI gNB will detect the physical resource blocks (PRBs) in which the priority user is active, and adapts it's transmission strategy. We leverage the dynamic bandwidth part (BWP) switching capabilities of the OAI gNB.

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Sakthivel Velumani

Demo: End-to-End Slicing with OAI on Colosseum

Affiliation: Northeastern University

Abstract: In this demo, we will demonstrate end-to-end slicing capabilities in OAI. The features included in the demo are: 1) Multiple PDU session establishment with OAI soft-UE 2) Customizable slice selection for each PDU session from the allowed slices at the UE 3) OAI gNB MAC scheduler that supports multiple slices and dynamic slice policy updates. The demo uses Colosseum infrastructure.

POLITECNICO MILANO 1863

Eugenio Moro

Demo: An Open RAN Framework for the Dynamic Control of 5G Service Level Agreements

Affiliation: Politecnico di Milano

Abstract: In this demo, we leverage the Open RAN closed-loop control capabilities to demonstrate multiple data-driven and dynamic Service Level Agreement (SLA) enforcement policies, capable of adapting the RAN semi-persistent scheduling patterns to match users' requirements. To do so, we implement semi-persistent-like scheduling capabilities in the OpenAirInterface (OAI) 5G stack, as well as an easily extensible and customizable version of the Open RAN E2 interface that connects the OAI base stations to the near-real-time RIC. We demonstrate our framework on Colosseum, a large-scale hardware-in-the-loop channel emulator.