

# O-RAN Hands-on Training

## Course Overview

This course deals with O-RAN use cases, with particular emphasis on a traffic steering use case based on the O-RAN ALLIANCE standard. The main focus is the implementation within the Open Networking Foundation (ONF) SD-RAN project. This is provided with step-by-step guidance on environment installation and xApp implementation. The course also includes simulation demonstrations in the xApp and RIC field along with a hands-on part using Open RAN xApp demonstrator. The course covers xApps development for the  $\mu$ ONOS RIC of the ONF's SD-RAN project.

## Who Should Attend?

Participants with a background in either system design, or network design should benefit from participation. The focus is on Open RAN implementation, thus a prerequisite is that the participants have general knowledge of the Open RAN system and poses programming skills in CI/CD types of environments. Participants should have a basic background in the design of the Open RAN system and xApps for the Near-Real-Time (Near-RT) RIC. The focus is on xApps development for ONF's SD-RAN platform. Thus, an experience with the Ubuntu OS, Kubernetes tool, and GO programming language will be helpful.

## Course Agenda

### O-RAN Use Cases (2 h)

- Overview of use cases and phases by O-RAN ALLIANCE
- Open RAN Technical Priority Document
- Example use case details and requirements
  - Traffic steering and multi-access traffic steering
  - QoS-based Resource Optimization

### Traffic Steering Use Case Analysis and Simulations (1.5 h)

- Traffic Steering (TS) mechanism
- Analysis of TS in O-RAN
- Example xApps implementations for TS use case
- Simulation studies and analysis of the TS scenarios
- Live demo & access to an online simulator

### SD-RAN Hands-on and xApp Installation (2.5 h)

- Environment preparation and installation process
- ONF's SD-RAN introduction and software installation
- SD-RAN RANSim deployment, API, and laboratory tasks (Communication with the RAN Simulator, Network data displaying, Basic GUI creation)

- Installation of a simple application to communicate through API
- Step-by-step xApp deployment to communicate through E2 Interface and laboratory tasks (obtaining information about the network nodes through the E2 interface, Traffic Steering xApp testing)
- Traffic Steering xApp policy control over A1 Interface within SD-RAN (Demo)

### Live Q&A session (2 h)

- Online Q&A session with Rimedo Labs developer

### Delivery option: Mixed (live and pre-recorded)

- Pre-recorded self-paced training with 6h of recorded videos with laboratory tasks for self-practice.
- After the self-paced part, 2-hour live Q&A session with Rimedo Labs instructor
- Package includes:
  - Access to Open RAN xApp demonstrator
  - Materials: PDFs with course slides, abbreviation list, supplementary materials
  - Certificate of completion for each participant
  - 1 month of offline post-course support (i.e. participants can ask questions over email also during the 30 days after the course is completed)

Notes: The course contents are subject to minor modifications. The hour split for each topic is related to the recorded sessions and is for informational purposes, thus for the instructor-led training, it may be slightly different.

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