O-RAN Architecture and Operations

5G_208x | Expert-Led Live | 5G Access | Expert
Course Duration: 1 day

This training is a technical overview of Open RAN as defined by the O-RAN Alliance. It sketches the O-RAN architecture, defines the RAN logical functions, their interfaces, and steps through the deployment operations.

Intended Audience

This course is intended for planning, engineering, operations, and systems performance teams.

Objectives

After completing this course, the student will be able to:

- Identify the key technology enablers for Open RAN initiatives
- Sketch O-RAN architecture, describe role of each logical function and their open interfaces
- Describe SMO architecture and functions
- Describe the role of Non-RT RIC, Near RT-RIC towards network operations
- Describe A1/E2 operations that helps to improve Network Performance for different usage scenarios
- Identify the different location strategies of O-RAN components and its challenges

Course Prerequisites

Welcome to 5G

Outline

1. Open RAN Drivers
1.1 Need for Open RAN
1.2 Industry Initiative and role of O-RAN Alliance
1.3 Separation of user and control planes
1.4 Virtualization in 5G RAN
1.5 Role of artificial intelligence and automation
Exercise: Open RAN drivers

2. O-RAN Network Architecture
2.1 O-RAN reference architecture
2.2 Role of Service Management and Orchestration (SMO)
2.3 SMO using ONAP and OSM
2.4 RAN Intelligent Controllers (Non-RT RIC, Near RT RIC)
2.5 Functionalities of O-CU-CP, O-CU-UP, O-DU, O-RU
2.6 O-Cloud services
2.7 O-RAN interfaces
2.8 O-RAN Split Option 7-2x Interface
2.9 APIs in O-RAN
Exercise: O-RAN architecture

3. O-RAN Operations
3.1 Network service instantiation and management
3.2 O-Cloud management and orchestration
3.3 Non-RT RIC Services Framework
3.4 A1/E2 interface protocol stack and procedures
3.5 Interaction between xAPPs and E2 nodes
3.6 RAN usage scenarios
3.7 Fronthaul transport and synchronization
Exercise: Operations in O-RAN

4. O-RAN Deployment Scenarios
4.1 Near RT-RIC, O-DU, O-CU, O-RU location strategies
4.2 Challenges and key considerations
4.3 O-RAN slicing