



# O-RAN Architecture and Operations

5G\_208x | Expert-Led Live | 5G Access |   

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 automationExercise: 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-RANExercise: 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 synchronizationExercise: 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