Cloud Native NFV Architecture and Operations Workshop

NWV_306x | Expert-Led Live | 5G Core | Expert
Course Duration: 3 days

The 5G network has been designed to better support containerization. Containerized Network Functions allow for higher capacity, but they have a number of challenges around networking, performance, isolation, and orchestration. The course provides a technical overview of deploying a containerized network – in terms of the architecture, requirements, challenges, operations, and management – and how they relate and complement one another. Containerized network functions use cases are used to explore the different options that are available in the containerized world. The course enables hands-on practice of some key concepts.

Intended Audience

This course is intended for a personnel in engineering and operations roles who are looking for a technical introduction to Containerized Network Functions and Kubernetes/Docker based cloud environments.

Objectives

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

- Describe applications of containerization (i.e. 5G)
- Compare Private, Public, and Hybrid cloud options
- Identify key service deployment considerations
- Discuss the role of containerization on networks (i.e. 5G)
- Define network functions and network slice microservice deployment scenarios
- Define networking challenges of containerization
- List and describe Containerized NF Life Cycle Management
- Hands-on demonstration of some key containerized deployment concepts

Course Prerequisites

Containers and Microservices in Telecom

Outline

1. Network Virtualization Architecture
1.1 5G Core and Edge network as a use case
1.2 Network service templates
1.3 Container and VM based Network Functions
Exercise: Mini-Lab1: Lab-Setup

2. Virtualized Infrastructure
2.1 Private vs public vs hybrid cloud
2.2 Kubernetes, Docker
2.3 AWS, Azure
2.4 OpenStack
2.5 Storage considerations
2.6 Security considerations
Exercise: Mini-Lab2: Docker Containers

3. Service Deployment Considerations
3.1 System level performance considerations
3.2 Container based performance considerations
3.3 VM based performance considerations
3.4 Container Engineering and Automation
3.5 DPDK and SR-IOV considerations
Exercise: Mini-Lab3: Docker Containers Resources

4. Network Functions Virtualization
4.1 Service Based Architecture
4.2 Containerized NFs
4.3 Microservices
4.4 Design Attributes (State, Persistency, etc.)
Exercise: Mini-Lab4: Build & deploy containers with an app

5. Networking Considerations
5.1 Networking with Containers
5.2 Networking with Kubernetes
5.3 Role of SDN in Container Networking
Exercise: Mini-Lab5: Container Networking

6. Orchestration and Deployment
6.1 Kubernetes Orchestration Overview
6.2 Packaging
6.3 Instantiation
6.4 Life Cycle Management
Exercise: Optional: Mini-Lab6: Networking, Deployment