Cloud, NFV and Kubernetes

The course discusses different approaches for virtualization, how they can be used to model and deploy network and service functions in cloud computing environments as well as Network Function Virtualization and the environment and tools (such as OpenStack) for monitoring and managing such functions.

This course also describes the concepts of Docker and Kubernetes and provides comparison with openstack.

In addition the course discussed the concepts of Software Defined Networks and the market drivers for these emerging technologies

Content of the Training:

1) Cloud Characteristics

- Definition of Cloud
- Essential cloud characteristics
- Service models
- Deployment models

2) Virtualization and hypervisors

- Virtualization concept
- Why Virtualization ?
- Single/Multi-tenancy
- Benefts of Virtualization
- Virtualization Vs Cloud
- Hypervisor solutions : Type 1 and Type 2

3) Containers, Docker and Kubernetes

- History of virtualization twards containers
- What is a container
- Virtualization Vs container
- Docker and Kubernetes

4) Cloud Native

- Key trends about cloud native
- Purpose of cloud native
- Customer's journey to the Cloud
- Microservices vs. Monolithic applications
- Definition of cloud native concepts (Devops, API, Multicloud …)

5) OpenStack Architecture

- What is Open Stack ?
- Open stack components
- Main Openstack Architecture
- Practical demo of Open Stack

6) Keystone and authentification

- Keystone component
- Proving your identity in Open Stack
- Generation of token
- Command line and demo with Open stack

7) Launching instance in Open Stack

- What is Openstack server
- Launching instance
- Practice demo with Open stack
- Network access and Security group
- Nova Architecture

8) Evolution and Types of Kubernetes

- Evolution of Kubernete
- From AWS to Google Kubernetes
- Different types of Kubernetes
- Vmware Tanzu Vs Redhat Openshift, Vs AWS & GCP

9) Kubernete architecture

- Global Architecture and components
- Master Node in Kubernetes
- Worker Node in Kubernetes

10) Differences between OpenStack and Kubernetes

- Hypervisor vs Container Engine
- VMs and Pods
- VNF vs CNF
- Database Architecture and Types
- Nova compute vs Kubelet

11) Network functions virtualization (NFV)

- NFV Definition and ETSI
- NFV Architecture
- NFV Layers and vendors
- NFV Use cases

12) Software Defined Networking (SDN)

- What is SDN ?
- SDN Challenges
- SDN + NFV
- SDN Architecture
- SDN vendors and use cases