

Cloud, NFV and SDN – 2 days

CONTENTS

The course is designed to let the student acquire knowledge on architecture, hardware, software, services and development of Cloud Computing technologies. The course analyzes hypervisor virtualization and container technology, and explains the difference between the cloud execution environment and cloud management. Telco cloud is discussed in the context of the ETSI NFV standard. The course also covers Software-Defined Networking and describes how NFV and SDN intersects and work together.

PREREQUISITES

Working knowledge of computer and telecommunications systems.

NOTE: This course is not delivered with the FoldOut methodology.

Introduction

- What is the cloud?
- Essential cloud characteristics
- as-a-Service models
- Examples of Cloud Services
- Aspects of Cloud Services
- Private/Public/Hybrid/Multi-Cloud

Virtualization

- Virtualization and Cloud
- Virtualization benefits
- Distribution of Resources
- Single/Multi-tenancy
- Live Migration

Hypervisor Solutions

- Type 1 and Type 2 hypervisors
- Desktop vs server Virtualization
- Hardware Assist

Containers

- Linux Containers (LXC)
- Docker
- Kubernetes/Redshift
- The Cloud Native approach

Acceleration Technologies

- SR-IOV
- DPDK
- Acceleration in VMs and Containers

OpenStack

- Introduction and background
- Components/Projects
- Main Openstack Architecture

- Compute/Storage/Networking with Openstack
- OpenStack in Practice
- Bare metal deployment
- VMWare + Openstack

Network Function Virtualization (NFV)

- The Telco Cloud
- ETSI NFV Standards
- NFV main architecture
- Official NFV Use cases
- NFV Concerns
- Proofs-of-Concept
- Open Source NFV
- VMware and Openstack in NFV

Software-Defined Networking (SDN)

- Why SDN?
- SDN in Datacenters
- Three variations on SDN
 - OpenFlow-Based
 - Control Plane Extensions
 - Overlay Abstraction
- Network Operating Systems
 - OpenDayLight
- OpenFlow
- VxLAN
- Example SDN service providers
- The Bigger SDN Picture

Summary