



Training Contents

SDDC - Software Defined Data Center with SDN+ and Ivan Pepelnjak 23-24nd September in Stockholm

Software Defined Data Center

This section illustrates the concepts of Software Defined Data Centers (SDDC) with a real-life example using VMware NSX/VSAN and Nutanix Virtual Computing Platform and describes the following concepts:

- Software-defined Storage
 - Software-defined Network Connectivity
 - Software-defined Network Services
-

Architectural Approaches to SDDC Networking

This section describes typical SDDC networking and network services architectures:

- Heavy orchestration of existing data center networking and network services components.
 - Hardware network virtualization solutions with virtual appliances or network services insertion.
 - Hypervisor-based network virtualization solutions with virtual appliances.
-

Hardware Network Virtualization Solutions

This section describes network virtualization implemented with hardware data center fabrics, from large-scale L2 fabrics (TRILL, FabricPath, VCS Fabric) to overlay solution (VXLAN on Arista EOS, Cisco Nexus 9000) and policy-based architectures (Cisco ACI)

Product Deep Dive: Cisco ACI

Cisco Application Centric Infrastructure is the leading example of hardware-based network virtualization. This section explains:

- Cisco ACI architecture;
 - Packet forwarding across Cisco ACI fabric;
 - Cisco ACI endpoint groups (EPG) and contracts;
 - Service insertion in Cisco ACI.
-

Overlay Virtual Networking Deep Dive

In the Overlay Virtual Networking section you'll discover the architecture and technical details of numerous overlay virtual networking solutions including:

- Multicast-based VXLAN (Cisco Nexus 1000V, VMware vCNS)
 - Unicast VXLAN (Cisco Nexus 1000V, VMware NSX)
 - VMware NSX for multiple hypervisors (including OpenStack)
 - Hyper-V Network Virtualization (Microsoft)
 - Contrail (Juniper)
-

The section covers these deep-dive topics (including detailed packet flows):

- Layer-2 MAC address learning and flooding in overlay virtual networks;
- Connecting overlay networks with the physical world using layer-2 gateways, layer-3 gateways, and virtual and physical appliances;
- Distributed layer-3 forwarding;
- Layer-3 overlay virtual networks.

Product Deep Dive: VMware NSX

VMware NSX was the first commercial product implementing the software defined data centers paradigm in vSphere and multi-hypervisor environments, including OpenStack- and CloudStack-based deployments.

This section describes the architecture of VMware NSX and its components, NSX principles of operation, and services offered by VMware NSX in vSphere- and open source based clouds.

Virtualized Network Services

After a brief refresher of Network Function Virtualization (NFV) concepts, this section focuses on typical virtual network services use cases, benefits and drawbacks of virtual appliances (as compared to their physical counterparts), performance limitations of virtual appliances, and deployment and management challenges in large-scale environments.

Software-defined Security

Firewalls inserted between VM Ethernet adapters and virtual switches can drastically change the typical security paradigms, and introduce centrally managed scale-out architectures.

This section describes the common VM NIC firewall architectures (including Cisco's VSG, VMware NSX and Hyper-V-based solutions) as well as service insertion and virtual network tapping solutions.