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Your Trusted Learning Partner

CCIE DATA CENTER v3.1



Join us for the best CCIE Data Center v3.1 training

Day 1

- Introduction
  - Updates on the new version v3.0
  - Hardware and Software updates
  - Topics covered throughout the course
  - What is Data Centre?
  - Topologies in a Data Centre

Nexus Module

Day 2 & 3

- Introduction to NXOS
- Hardware
  - 9K
  - 7K
  - 5K
  - 2K

Day 4

- Virtual Device Context (VDC)
  - What is VDC?
  - Different types of VDC
    - Default VDC
    - Admin VDC
    - Non-Default VDC
  - Resource allocation, Templates, Boot-Order, HA- Policies.

Day 5, 6 & 7

- Virtual Port-Channel (VPC)
  - Introduction to vPC
  - vPC Terminologies
  - vPC Control Plane
  - vPC Data Plane (L2 + L3)
  - vPC with HSRP
  - vPC Loop avoidance
  - Types of VPC (Regular/E-vPC/Back to Back VPC)
  - vPC Lab (Regular/EVPC/B2B vpc/VPC + HSRP)

Day 8

- Multicast
  - IGMP (Internet Group Management Protocol)
  - PIM (Protocol Independent Multicast)
    - Sparse mode
      - ASM (Any Source multicast)
      - SSM (Source Specific multicast)
    - Dense mode

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- Bidirectional PIM
  - Phantom RP

Day 9, 10 & 11

- VXLAN
  - VXLAN Introduction
  - Advantage/Limitation of VXLAN
  - VXLAN Terminologies
  - VXLAN Packet Format
  - VXLAN Data Plane Based forwarding
    - HER (Head End Replication)
    - F&L (Flood & Learn)
  - VXLAN Control Plane Based forwarding
    - MP-BGP L2 EVPN

Nexus Labs

Day 12, 13, 14, 15 & 16

Virtual Device Context (VDC)

Task 1: Check basic information of N7K

Task 2: Create a Non-Default VDC

Task 3: Allocate interfaces to the vdc

Task 4: Change the CPU-share and boot-order for the vdc

Task 5: Create a new resource template

Task 6: Assign the mgmt IP address to the vdc

Task 7: Create local users and check access

Virtual Port-Channel (VPC)

Task 1: Building Virtual Port-Channel

Task 2: Changing the Role-Priority by bouncing the peer-link

Task 3: Changing the Role-Priority by enabling vPC Role Pre-empt

Task 4: Make the peer-keepalive link down and check the behavior

Task 5: Make the peer-link down and check the behavior

Task 6: Peer-Switch

Task 7: vPC with HSRP (Peer-Gateway)

Task 8: Dual-Sided vPC

Virtual Extensible LAN (VXLAN)

Task 1: Same VLAN, Same VNI, Same Subnet, Same Mcast-group

Task 2: Same VLAN, Same VNI, Different Subnet, Same Mcast-group

Task 3: Different VLAN, Same VNI, Different Subnet, Same Mcast-group

Task 4: Different VLAN, Different VNID, Different Subnet, Same Mcast-group

Task 5: Different VLAN, Different VNID, Different Subnet, Different Mcast-group on both

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VTEPs

Task 6: Different VLAN, Different VNID, Different Subnet, Different Mcast-group (Between VTEPs)

Task 7: Extending L2 Bridging using BGP-eVPN (Asymmetric IRB)

Task 8: Inter-VNI routing using L3 VNI and BGP-eVPN

Task 9: VXLAN + VPC

Task 10: Multicast (ASM/SSM)

Application Centric Infrastructure (ACI) module

Day 17 & 18

- Introduction to SDN
- Nexus 9K Hardware Revisit
- ACI Introduction
- ACI Leaf & Spine architecture
- APIC Controller

Day 19 & 20

- Protocols in ACI
  - ISIS
  - MP-BGP
  - VXLAN
  - COOP
  - Opflex
  - LLDP
  - DHCP

Day 21 & 22

- APIC Initialization & Cluster
- ACI Fabric Discovery
- ACI Dashboard Overview

Day 23 & 24

- Terminologies in ACI
  - Tenant
    VRF & BD
  - Application Profile & EPG
  - Contracts & Filters
- ACI Policy Construct

Day 25 & 26

- 3 Tier Architecture in ACI
- ACI packet forwarding
  Bare Metal in ACI
- VMM integration

Day 27 & 28

- L2 Out
- VPC in ACI
- L3 out in ACI
- Transit Routing in ACI

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Day 29 & 30

- ➢ L4-L7 Integration in ACI
- ➢ Inter-Tenant Communication in ACI

Micro segmentation in ACI

Day 31 & 32

- ➢ Introduction & Configuring/Implementing Multi Pod & Multi Site in ACI

ACI Labs

Day 33, 34, 35, 36 & 37

Task 1: ACI Fabric Initialization
Task 2: Configuring VLAN Pools
Task 3: Configuring Physical and External Domains
Task 4: Configuring Interface policies for Leafs and Spines
Link Level Policy
CDP Interface
LLDP Interface
Port-Channel Policy
Task 5: Creating Interface Policy Group
Leaf Access Port
PC Interface
VPC Interface
Task 6: Configuring Interface Profiles
Leaf Profile
FEX Profile
Task 7: Creating Switch Profile
Task 8: Bare-Metal Host Communication
End points in the same EPG under the same Application Profile.
Task 9: VMM Integration
Task 10: Intra-Tenant Communication
Task 11: Inter-Tenant Communication
Task 12: ASAv Integration in Transparent Mode
Task 13: ASAv Integration in Routed Mode
Task 14: L3Out OSPF Communication
Task 15: L3Out BGP Communication
Task 16: L2 Extension using OTV
Task 17: Configuring OOB Contracts for Fabric Management
Task 18: Configuring ACI fabric as DHCP Relay Agent
Task 19: Configuring Monitoring Sessions in ACI
Task 20: Configure ACI for Transit-Routing
Task 21: Configuring Loop-prevention Mechanism, BPDU Guard, End-Point Movement, End-point Retention Policy, IP Aging Policy/GARP
Task 22: Configuring Security Policies in ACI.
AAA
LDAP
RADIUS

Storage

Day 38

- ➢ Introduction to Storage
- ➢ Topologies in Storage
  - DAS

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- NAS
- SAN

Day 39

- JBOD, RAID
- Introduction to Storage Protocols
  - iSCSI
  - FC
  - FCoE

Day 40

- What is FC?
- Addressing schemes in FC
- Fabric Services
  - FLOGI
  - PLOGI
  - PRLI
  - PRLO

Day 41 & 42

- NPV, NPIV, Zoning
- What is FCoE?
- How FCoE is a lossless protocol?
  - PFC (Priority Flow Control)
  - ETS (Enhanced Transmission Selection)
  - DCBx (Data Center Bridging Exchange)
- FCoE Initialization Protocol (FIP)
- Configuring FCoE

Unified Computing System

Day 43 & 44

- What is UCS?
- Benefits
- Components
  - Fabric Interconnect
    - Clustering
    - Hardware models
    - Types of ports
    - Modes of FI
  - Chassis
    - Hardware model
    - SEEPROM
  - IOM (Input/output Module)
    - Hardware models
    - Components of IOM
  - VIC (Virtual Interface Card)
    - Hardware models
    - Pinning

Day 44

- Introduction to GUI
- Configuring interfaces on FI
- Aggregating Server ports into a port-channel
- Creating Port-channel
- Creating VLANs and allowing them through PCs.
- Creating MAC & IP Pool

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- Creating vNIC Templates

Day 45

- Creating LACP, LAN Connectivity, Network Control, Storage Disk Group Policies
- Creating Storage Profile
- Creating WWNN & WWPN Pool
- Creating VSANs
- Creating FC / FCoE Port-channels
- Creating vHBA Templates
- Creating SAN Connectivity Policy
- Configuring NTP on UCSM

Day 46

- Creating UUID Pool
- Creating Scrub, Maintenance, KVM, Local Disk & Boot Policies
- Configuring zoning on N5K.
- Configuring FCoE on N5K.
- Creating a Service Profile Template
- Creating a Service Profile from the template.

UCS Labs

Day 46, 47, 48, 49 & 50

Task 1: Discovering compute devices and chassis
Task 2: Understanding and configuring UCS Infrastructure Connectivity
Task 3: Configuring UCS Global Policies
Task 4: Configuring VLANs and VSANs
Task 5: Configuring Resource Pools in UCS
Task 6: Converting Interfaces on FI
Task 7: Configuring Uplink Port-channels
Task 8: Creating VLAN-GROUPs
Task 9: Configuring NTP on UCS
Task 10: Creating Policies

Network Control Policy
Local-Disk Configuration Policy
LACP Policy
Storage Profile
Storage Policy
Multicast Policy
vNIC Template
LAN Connectivity Policy
QoS Policy
vHBA Template
SAN Connectivity Policy
vMedia Policy

Task 11: Converting Interfaces to FC on 5K
Task 12: Configuring VSANs and Zone Distributions
Task 13: Configuring FCoE on 5K
Task 14: Checking FLOGI Database
Task 15: Creating Boot Policies
Task 16: Creating Service Profile Template
Task 17: Creating Service Profile
Task 18: Configure Boot from SAN
Task 19: Configuring Appliance VLANs
Task 20: Creating Overlay vNIC and Booting using SAN

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Data Center Automation and Programmability

Day 51, 52, 53

Data Center Automation - Python – Beginner to Maestro

- Syntax and Integrated Development Environment
- Operators and Operands
- Control structures, Loops and Loop Controls
- Functions and Modules
- In-built Data Structures
- Functional programming
- Decorator and Generator
- Object Oriented Programming (OOP) concept
- Regular Expressions
- File and Exceptional Handling

Day 54 & 55

Libraries for CLI automation

- Scripting practice using the open libraries available
- Paramiko
- Netmiko
- Napalm
- Telnetlib

Day 56

Data serialization and libs

- json
- yaml
- xml
- Related libraries and how to use them

Day 57

REST-API and Tools

- HTTP and its terminologies
- HTTP CRUD and ERROR codes (google CRUD now !!)
- API
- REST
- Curl
- Postman

Day 58

ANSIBLE

- Basics of Linux environment
- Ansible components
- Hosts/inventory and .cfg
- Ad-hoc and modules
- Jinja templating

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Day 59 & 60

Cisco Devices Programmability

NX-OS

- NX-API
- Overview of programmable features
- Developer Sandbox
- NX-OS Object
- Data Management Engine (DME)
- Management Information Tree (MIT)
- Visore

ACI

- Tenant
- ACI GUI
- EPG
- Object Model
- Cobra, Arya and Toolkit
- CRUD a Tenant

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