

COURSE AGENDA:

CCIE Data Center Certification and Training Syllabus

For Qualifying Exam - Implementing and Operating Cisco Data Center Core Technologies (DCCOR 350-601)

Network – 25%

1.1 Apply routing protocols

1.1.a OSPFv2, OSPFv3

1.1.b MP-BGP

1.1.c PIM

1.1.d FHRP

1.2 Apply switching protocols such as RSTP+, LACP and vPC

1.3 Apply overlay protocols such as VXLAN EVPN and OTV

1.4 Apply ACI concepts

1.4.a Fabric setup

1.4.b Access policies

1.4.c VMM

1.4.d Tenant policies

1.5 Analyze packet flow (unicast, multicast, and broadcast)

1.6 Analyze Cloud service and deployment models (NIST 800-145)

1.7 Describe software updates and their impacts

1.7.a Disruptive / nondisruptive

1.7.b EPLD

1.7.c Patches

1.8 Implement network configuration management

- 1.9 Implement infrastructure monitoring such as NetFlow and SPAN
- 1.10 Explain network assurance concepts such as streaming telemetry

Compute – 25%

- 2.1 Implement Cisco Unified Compute System Rack Servers
- 2.2 Implement Cisco Unified Compute System Blade Chassis
 - 2.2.a Initial setup
 - 2.2.b Infrastructure management
 - 2.2.c Network management (VLANs, pools and policies, templates, QoS)
 - 2.2.d Storage management (SAN connectivity, Fibre Channel zoning, VSANs, WWN pools, SAN policies, templates)
 - 2.2.e Server management (Server pools and boot policies)
- 2.3 Explain HyperFlex Infrastructure Concepts and benefits (Edge and Hybrid Architecture vs all-flash)
- 2.4 Describe firmware and software updates and their impacts on B-Series and C-Series servers
- 2.5 Implement compute configuration management (Backup and restore)
- 2.6 Implement infrastructure monitoring such as SPAN and Intersight

Storage Network – 20%

- 3.1 Implement Fibre Channel
 - 3.1.a Switch fabric initialization
 - 3.1.b Port channels
 - 3.1.c FCID
 - 3.1.d CFS

3.1.e Zoning

3.1.f FCNS

3.1.g Device alias

3.1.h NPV and NPIV

3.1.i VSAN

3.2 Implement FCoE Unified Fabric (FIP and DCB)

3.3 Describe NFS and NAS concepts

3.4 Describe software updates and their impacts (Disruptive/nondisruptive and EPLD)

3.5 Implement infrastructure monitoring

Automation – 15%

4.1 Implement automation and scripting tools

4.1.a EEM

4.1.b Scheduler

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4.1.c Bash Shell and Guest Shell for NX-OS

4.1.d REST API

4.1.e JSON and XML encodings

4.2 Evaluate automation and orchestration technologies

4.2.a Ansible

4.2.b Puppet

4.2.c Python

4.2.d POAP

4.2.e DCNM

4.2.f UCSD

4.2.g PowerShell

Security – 15%

5.1 Apply network security

5.1.a AAA and RBAC

5.1.b ACI contracts and microsegmentation

5.1.c First-hop security features such as dynamic ARP inspection (DAI), DHCP snooping, and port security

5.1.d CoPP

5.2 Apply compute security

5.2.a AAA and RBAC

5.2.b Keychain authentication

5.3 Apply storage security

5.3.a AAA and RBAC

5.3.b Port security

5.3.c Fabric binding



For Lab Exam - CCIE Data Center v3.0

1. Data Center L2/L3 Connectivity (20%)

1.1 Layer 2 technologies

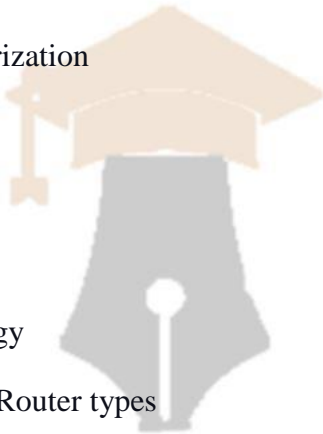
1.1.a Link Aggregation

1.1.a i vPC

1.1.a ii PortChannel

1.1.b Tagging/Trunking

- 1.1.c Static Path binding
- 1.1.d Spanning Tree Protocol
 - 1.1.d i PVST
 - 1.1.d ii MST
- 1.2 Routing Protocols and features
 - 1.2.a OSPF (v2 and v3)
 - 1.2.a i Authentication
 - 1.2.a ii Adjacencies
 - 1.2.a iii Network types and Area Types
 - 1.2.a iv LSA Types
 - 1.2.a v Route Aggregation/Summarization
 - 1.2.a vi Route Redistribution
 - 1.2.b ISIS
 - 1.2.b i Adjacencies
 - 1.2.b.i.1. Single area, single topology
 - 1.2.b ii Network types, Levels and Router types
 - 1.2.b.ii.1. NSAP addressing
 - 1.2.b.ii.2. Point-to-point, broadcast
 - 1.2.c BGP
 - 1.2.c i Path Selection
 - 1.2.c ii External and Internal Peering
 - 1.2.c iii Route reflectors and Route Server
 - 1.2.c iv Peer Templates
 - 1.2.c v Multi-Hop EBGp
 - 1.2.c vi Route Aggregation/Summarization



1.2.c vii Route Redistribution

1.2.d BFD

1.2.e FHRP

1.3 Multicast protocols

1.3.a PIM

1.3.a i Sparse Mode

1.3.a ii BiDir

1.3.a iii Static RP, BSR, AutoRP, PhantomRP

1.3.a iv IPv4 PIM Anycast

1.3.a v IPv4 Anycast RP using MSDP

1.3.b IGMP

1.3.b i IGMPv2, IGMPv3

1.3.b ii IGMP Snooping

1.3.b iii IGMP Querier



2. Data Center Fabric Infrastructure (15%)

2.1 Physical fabric components

2.1.a Fabric Discovery

2.1.b Controllers/Network Managers

2.1.c Switches

2.2 Fabric policies

2.2.a Access Policies

2.2.b Multi Tenancy

2.2.c Monitoring Policies

2.3 Tenant Policies

2.3.a Application profiles and EPGs

2.3.b Networking

2.3.c Security

2.4 Fabric Monitoring

2.4.a Faults

2.4.b Events

2.4.c Health indicators

2.4.d Audit Logs

2.5 Virtual Networking

2.5.a vSphere VDS

3. Data Center Fabric Connectivity (15%)

3.1 VRF lite

3.2 L3Out

3.2.a OSPF

3.2.a i Authentication

3.2.a ii Adjacencies

3.2.a iii Network types and Area Types

3.2.a iv Route Redistribution

3.2.b BGP

3.2.b i AS manipulation

3.2.b ii External and Internal Peering

3.2.b iii Route reflectors

3.2.b iv Route Redistribution

3.2.c Transit Routing

3.3 Inter Fabric connectivity

3.3.a Multi-Pod

3.3.b Multi-Site

3.3.c Virtual POD

3.3.d remote Leaf

3.4 Overlays

3.4.a VXLAN EVPN

4. Data Center Compute (15%)

4.1 Compute Resources

4.1.a UCSM Policies, Profiles and Templates

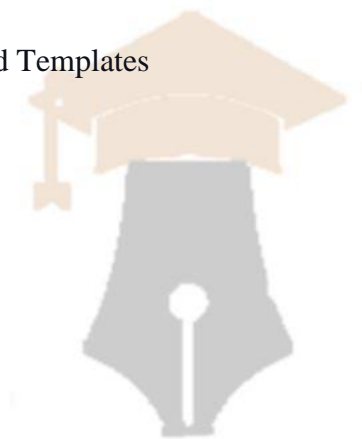
4.1.b Hyperflex

4.2 Compute Connectivity

4.2.a SAN/LAN uplinks

4.2.b Rack server integration

4.2.c Port Modes



5. Data Center Storage Protocols and Features (10%)

5.1 FC and FCoE

5.1.a Zoning

5.1.b NPV/NPIV

5.1.c Trunking

5.1.d Portchannel

5.1.e Load Balancing

5.2 iSCSI

5.2.a Authentication

5.2.b Multipathing

5.3 RoCE v2 over IP Networks

6. Data Center Security and Network Services (10%)

6.1 Security features

6.1.a ACL's

6.1.b First Hop Security

6.1.c Port security

6.1.d Private VLANs

6.1.e Contracts

6.2 RBAC

6.2.a Radius

6.2.b TACACS+

6.2.c LDAP

6.2.d AAA

6.3 Network Services Insertion and Redirection

6.3.a Policy Based Routing

6.3.b Policy Based Redirection

6.3.c Inter VRF communication

6.3.d Route Targets

6.3.e Prefix Lists

6.4 Services

6.4.a Flow/Telemetry Export

6.4.b SPAN



6.4.c SNMP

6.4.d Syslog

6.4.e DHCP

6.4.f NTP/PTP

6.5 Traffic management

6.5.a Queueing

6.5.b Policing

6.5.c Classification/Marking

6.5.d Scheduling

6.5.e CoPP

7. Data Center Automation and Orchestration (15%)

7.1 Data center tasks using scripts (Python and Ansible)

7.1.a Create, Read, Update, Delete using RESTful APIs

7.1.b Deploy and modify configurations

7.1.c Statistics, Data Collection

7.2 Data Center Automation and Orchestration using tools

7.2.a DCNM

7.2.b UCSD

7.2.b i Tasks

7.2.b ii Workflows

7.2.b iii Catalog

7.2.c Intersight

7.2.d CloudCenter Suite

7.2.d i Applications

7.2.d ii Deployments

7.2.d iii Action Orchest

