Designing Cisco Data Center Unified Fabric v5.0 (DCUFD)

Course ID#: 1575-914-ZZ-W

Hours: 35

Course Content

Course Description:

In this course, you will gain the knowledge and skills needed to design scalable, reliable, and intelligent data center unified fabric and virtualization solutions based on Cisco Fabric Extenders (FEXs), Fibre Channel over Ethernet (FCoE), Cisco FabricPath, and equipment and link virtualization technologies.

You will review Cisco Data Center Unified Fabric solutions and learn how to evaluate existing data center infrastructure, determine the requirements, and design the Cisco Data Center Unified Fabric solution based on Cisco products and technologies.

Prerequisites:

• CCNA Data Center
• Knowledge that is covered in the Cisco Nexus product family courses
• Knowledge that is covered in the DESGN - Designing for Cisco Internetwork Solutions course

Topics:

Module 1: Cisco Data Center Solutions
• Defining the Data Center o Categorizing general data center solution components
• Baseline technology and terminology used in data center solutions
• Analyzing business, technical, and environmental challenges
• Recognizing the cloud computing paradigm, terms, and concepts
• Recognizing the importance of virtualization technologies and solutions for data center evolution
• Identifying the Cisco Data Center Solution
• Evaluating the Cisco Data Center architectural framework
• Evaluating the Cisco Data Center architectural framework network component

• Evaluating the Cisco Data Center architectural framework storage component
• Designing the Cisco Data Center Solution
• Design process for the CiscData Center solution
• Assessing the deliverables of the Cisco Data Center solution
• Cisco Validated Designs

Module 2: Data Center Technologies
• Designing Layer 2 and Layer 3 Switching
• Hardware-forwarding architectures
• IP addressing considerations and IP routing technologies
• Virtualizing Data Center Components
• Device virtualization mechanisms
• Designing virtualized solutions using VDCs

- Designing virtualized services using contexts on firewalling and load-balancing devices
- Designing virtualized services using virtual appliances
- Designing Layer 2 Multipathing Technologies
- Link virtualization technologies that allow for scaling of the network
- Designing solutions using vPCs and MEC
- Designing solutions using Cisco FabricPath

Module 3: Data Center Topologies
- Designing the Data Center Core Layer Network
- Need for the data center core layer
- Designing a Layer 3 data center core layer
- Designing a Layer 2 data center core layer
- Evaluating designs using data center collapsed core
- Designing the Data Center Aggregation Layer
- Classical aggregation layer designs
- Designing the aggregation layer with VDCs
- Designing the aggregation layer using Cisco Unified Fabric
- Designing the aggregation layer with IP storage-related specifics in mind
- Designing the Data Center Access Layer
- Classic access layer designs and design issues
- Designing the access layer with vPC and MEC
- Designing the access layer with FEXs
- Designing the access layer with Cisco Unified Fabric
- Designing the Data Center Virtualized Access Layer
- Virtual access layer
- Virtual access layer solutions within virtual machine hosts
- Designing solutions with Cisco Adapter FEX
- Designing solutions with Cisco VM-FEX
- Designing solutions with the Cisco Nexus 1000V switch

- Designing High Availability
- Designing high availability for IP-based services
- Designing high availability by implementing link aggregation
- Designing high availability of services using IP routing and FHRPs
- Providing high availability with RHI
- Designing high availability of services using LISP
- Designing Data Center Interconnects o Reasons for data center interconnects
- Data center interconnect technologies
- Designing data center interconnects using Cisco OTV o Storage replication technologies

Module 4: Data Center Storage
- Introducing SAN
- Data storage and Fibre Channel basic terms
- Fibre Channel basic concepts
- Fibre Channel flow control mechanisms
- Designing SAN
- Explore different storage designs and topologies
- Designing SANs using Cisco best practices and Cisco Validated Designs
- Designing scalable SANs with provisions for multitenancy
- Designing Unified Fabric
- Flow control when using FCoE
- Using FIP
- Different design options with unified fabric networks
- Designing unified fabric deployments with FEXs
- Designing SAN Services
- Need for SAN-based Fibre Channel services
- Designing SAN-based Fibre Channel services
- SAN replication
- Designing long-distance Fibre Channel interconnects

- Presenting design examples and use cases for various SAN long-distance acceleration solutions

Module 5: Data Center Security
- Designing Data Center Application Security
- Need for data center security technologies
- Characteristics of firewalls
- Positioning security appliances within data center networks
- Designing secure communication on multiple layers
- Designing Link Security Technologies and Device Hardening
- Design requirements for Cisco TrustSec
- Device-hardening technologies
- Designing secure management networks
- Designing Storage Security
- Designing secure SANs
- Security solutions for data encryption
- Outline security implications for IP-based storage

Module 6: Data Center Application Services
- Designing Data Center Application Architecture
- Application architecture and design
- Application tiering
- Application optimization technologies
- Designing Application Services
- Server load-balancing technologies
- Adding application services to an existing data center
- Contexts
- Designing secure application load-balancing solutions
- Designing Global Load Balancing
- Need for GSLB
- Designing a GSLB solution
- Protocols that are used for site selection and site monitoring
- Site selection process

Module 7: Data Center Management

- Designing Data Center Management Solutions
- Need for network management
- Cisco Data Center management products
- Scalability limitations
- Secure management in multitenant environments