Understanding Cisco Cloud Fundamentals
CLDFND v1.0; 5 Days; Instructor-led

Course Description
Understanding Cisco Cloud Fundamentals (CLDFND) v1.0 is a five-day instructor-led training course that is designed for Cloud Operations Engineers, Cloud Technical Administrators, Cloud Infrastructure Architects, and Cisco Integrators and Partners who provide operation and support of Cisco Cloud Products and Solutions. This course provides students with the necessary knowledge, skills and attitudes (KSA) to perform foundational tasks related to Cloud computing, and help students prepare for the CCNA Cloud certification, an associate level certification specializing in Cloud technologies.

Course Objectives
Upon completing this course, the learner will be able to meet these overall objectives:
- Describe Cloud Computing principles and basics
- Give better understanding of the data center as a major resource for Cloud services
- Describe the Cisco products and technologies building the data center
- Describe common cloud characteristics
- List cloud service models
- Compare cloud deployment models
- Illustrate key features of UCS
- Define server virtualization
- Describe network architectures for the datacenter
- Describe Cisco ACI
- Describe Infrastructure Virtualization
- Define virtual networking services
- Define Virtual Application Containers
- Analyze storage provisioning concepts
- Describe basic SAN storage concepts
- Define basic NAS storage concepts
- Compare the difference between all the storage access technologies
- Identify the various Cisco storage network devices
- Describe various reference architectures for converged infrastructure

Audience
The primary audience for this course is as follows:
- Cloud Operations Engineers operation and support of the Cisco Cloud Products and Solutions

The secondary audience for this course is as follows:
Cloud Technical Administrators implementation operation and support of Cisco Cloud Products and Solutions
Cloud Infrastructure Architects design infrastructure and operations of Cloud Services using Cisco Cloud Products and Solutions

Prerequisites
The knowledge and skills that a learner must have before attending this course are as follows:

- Understand network fundamentals for example, routing, switching, VLAN
- Understand compute fundamentals for example, servers, operating systems
- Understand storage fundamentals for example, basics of FC, FCoE, VSAN

Course Outline
Module 1: Introduction to Cloud Computing

Lesson 1: Introducing Cloud Computing Basic Concepts
- Describing Cloud Computing
- Describing Cisco Cloud Computing Evolution
- Explaining Business Needs for Cloud Computing
- Describing Cloud Computing Characteristics

Lesson 2: Describing Cloud Service Models
- Describing as a Service" Models of Cloud Computing
- Explaining IaaS
- Explaining PaaS
- Explaining SaaS
- Explaining XaaS

Lesson 3: Comparing Cloud Deployment Models
- Identifying the Cloud Deployment Models
- Describing the Characteristics of Private Cloud Deployment
- Describing Public Cloud Deployment
- Describing Community Cloud Deployment
- Describing the Hybrid Cloud Deployment

Lesson 4: Exploring the Cisco Intercloud Solution
- Describing Hybrid Cloud Challenges
- Describing the Cisco Intercloud Hybrid Cloud Solution
- Describing the Cisco Intercloud Fabric Architectural Overview
- Describing Cisco Intercloud Fabric Core Services
- Describing the Cisco Intercloud Fabric for Business
- Describing the Cisco Intercloud Fabric Director Features
- Describing the Cisco Intercloud Fabric Secure Extender Features
- Describing the Cisco Intercloud Fabric for Providers
- Describing the Intercloud Fabric Deployment Models
Module 2: Cloud Networking

Lesson 1: Describing Cisco Data Center Network Architecture
- Describing Traditional Isolated LAN and SAN Networks
- Identifying Cisco Unified Fabric Fundamentals
- Describing Cisco Nexus Family of Products
- Evaluating VDC on the Cisco Nexus 7000 Series Switch

Lesson 2: Exploring Virtual Networking
- Describing the Traditional Network Access Layer
- Describing the VM Network Access Layer
- Explaining Standard vSwitches
- Explaining Distributed Virtual Switches

Lesson 3: Identifying Cisco Nexus 1000V Series Switches
- Describing Standard vSwitch Challenges
- Describing Cisco Nexus 1000V Components
- Explaining Cisco Nexus 1000V Benefits
- Explaining High Availability in the Cisco Nexus 1000V Series
- Describing the Integration of Cisco Nexus 1000V Series
- Explaining Cisco VSUM

Lesson 4: Define and Analyze Cisco Virtual Networking Service Appliances
- Describing Virtual Networking Service Appliances
- Describing Cisco Prime Network Services Controller in the Data Center Virtual Infrastructure
- Describing VSG in the Data Center Virtual Infrastructure
- Describing Cisco CSR Virtual Router in the Data Center Virtual Infrastructure
- Describing Cisco ASAv Cloud Firewall
- Describing Cisco vWAAS in the Data Center Virtual Infrastructure
- Describing Citrix NetScaler 1000V

Lesson 5: Define and Analyze Software Defined Network Fundamentals
- Describing SDN Basic Principles
- Describing SDN Separation of Control and Data
- Describing SDN Programmability
- Describing Cisco ONE Architecture
- Describing VLAN and VXLAN Differences
- Describing NVGRE

Lesson 6: Describing the Cisco ACI Solution
- Addressing the Changing Landscape
- Describing the Application-Centric Approach to Managing Your Infrastructure
- Describing Problems That SDN Misses
- Describing the Benefits of Leaf and Spine Architecture
- Describing the Role of the APIC Controller
Module 3: Cloud Storage

Lesson 1: Comparing Storage
- Describing Block Storage and File-Based Storage Characteristics
- Describing the SCSI Overview
- Describing the Fibre Channel Protocol Overview
- Describing the FCoE Protocol Transporting Options
- Describing the iSCSI Protocol Overview
- Identifying Network-Attached Storage Protocols
- Identifying Storage Thick and Thin Provisioning Methods
- Describing Object Storage Principles

Lesson 2: Describing Fibre Channel Storage Networking Concepts
- Describing the Fibre Channel SAN Topologies
- Identifying Cisco SAN Switches
- Describing the Different Types of Fibre Channel Ports
- Describing the Fibre Channel Addressing
- Describing the FLOGI and the FCNS Processes
- Describing How VSANs Create Multiple Logical SANs
- Describing the Purpose and Use of Zoning and LUN Masking

Lesson 3: Exploring NAS Storage Basic Concepts
- Describing the NAS Topologies
- Describing NAS Shares and Mount Points
- Describing the Different NFS Features and Functions
- Describing the NAS Permissions

Lesson 4: Identifying Cisco MDS and UCS Invicta Products
- Describing the Cisco MDS Products Portfolio
- Explaining the Cisco MDS 9250i Multiservice Modular Switch Capabilities
- Describing the Cisco UCS Invicta Series

Module 4: Cloud Compute

Lesson 1: Describing Cisco UCS C-Series Product Family
- Describing Cisco UCS C-Series Products and Benefits
- Describing Cisco UCS C-Series Rack Servers
- Describing Cisco UCS C-Series Network Adapter Card Features
- Describing Cisco UCS C-Series Comprehensive Server Management

Lesson 2: Identifying Cisco UCS B-Series Product Family
- Describing Cisco UCS B-Series Products
- Describing Cisco UCS 5100 Series Blade Server Chassis
- Describing Cisco UCS B-Series Servers
- Describing Cisco UCS Fabric Extender
- Describing Cisco UCS 6200 Series Fabric Interconnect
• Describing Cisco UCS B-Series Network Adapters Features
• Describing Cisco UCS High Availability Features
• Describing Cisco UCS B-Series Connectivity Topology

Lesson 3: Explaining Cisco UCS Blade Provisioning
• Explaining Cisco UCS Service Profiles
• Reviewing Service Profile Policies
• Describing Resource Pools
• Describing Virtual LAN and SAN Adapters
• Reviewing Service Profile Templates
• Describing Cisco UCS Manager
• Describing Cisco UCS Central

Lesson 4: Defining Server Virtualization
• Windows and Linux Operating System Functions
• Traditional Server Deployments
• Server Virtualization
• Describing Hypervisor Responsibilities
• Describing VMware vSphere Virtualization
• Describing Microsoft Hyper-V Virtualization
• Describing Citrix XenServer Virtualization
• Describing KVM Virtualization

Module 5: Cloud Automation and Reference Architectures

Lesson 1: Exploring Reference Architecture for Converged Infrastructure
• Describing the Components and Benefits of Reference Architectures
• Describing FlexPod Components and Benefits
• Describing VCE Components and Benefits
• Describing VSPEX Components and Benefits
• Describing HDS UCP Select Components and Benefits

Lesson 2: Describing Cloud Automation, Provisioning, and Management Platforms
• Describing Cloud Computing Operations and Management Challenges
• Describing Cloud Computing Automation and Management Solutions
• Describing the Cisco UCS Director Infrastructure Management and Orchestrate Features
• Describing Cisco Prime Service Catalog
• Describing the Open Stack Cloud Infrastructure Solution

Lab Outline

Hardware Lab 1: Examine Cisco Intercloud Fabric Director
• Navigating the Cisco Intercloud Fabric Director

Hardware Lab 2: Validate VSAN and Zoning
• Access the Cisco MDS 9250i and the Cisco Nexus 5672 Switches
• Examine the Interface Configuration
• Examine the VSAN Configuration
• Examine Zoning Configuration and Available Zoning Commands and Options

Hardware Lab 3: Validate FLOGI and FCNS
• Examine the FLOGI and FCNS Databases

Hardware Lab 4: Explore the Cisco UCS Manager GUI
• Navigating the Cisco UCS Manager GUI
• View the Cisco UCS Management Interfaces
• View the Cisco UCS Cluster Connectivity

Hardware Lab 5: Review Cisco UCS B-Series Configuration
• Navigating the Cisco UCS Manager GUI
• View Server and Identity Pools
• View Policies and Templates
• View the Service Profile Template

Hardware Lab 6: Deploying VMware ESXi Server on Cisco UCS Blade
• Create a Service Profile from the Service Profile Template and Install ESXi on the Server
• Add the ESXi Hosts to the vCenter Server

Hardware Lab 7: Connecting ESXi Server to FC LUN on the Cisco UCS Invicta Storage
• Examine Current Storage Configuration of the ESXi Hosts
• Examine FLOGI and FCNS Databases of FC Fabrics and the Preconfigured Zoning Policy
• Examine Preconfigured Storage
• Create a New Datastore on the ESXi Host

Hardware Lab 8: Deploying the Cisco Nexus 1000V Switch with VSUM
• Navigating the Cisco VSUM
• Adding the ESXi Hosts to the Existing Cisco Nexus 1000V Implementation
• Reviewing the Changed Cisco Nexus 1000V Implementation in the Cisco VSUM

Hardware Lab 9: Examine the Cisco Prime Network Services Controller
• Logging in to the Cisco Prime Services Controller and Creating a Tenant
• Navigating the Cisco Prime Services Controller GUI

Hardware Lab 10: Deploying Cisco Virtual Security Gateway
• Navigating the Cisco PNSC
• Configuring a Compute Firewall Security with VSG Using PNSC
• Configuring a Permit-All Rule on the Cisco Prime NSC

Hardware Lab 11: Deploying Cisco ASA 1000V
• Navigating the Cisco PNSC
• Verify the Configuration of Cisco ASA 1000V Using PNSC
• Verify the Network Configuration of Cisco ASA 1000V with the vSphere Web Client
• Verify the Configuration of Cisco ASA 1000V Using CLI