firefly

Demystify Technology

UCS-ABC

Length:
5 Days

Format:
Lecture/Lab

Course Version:
5.0

Product Version:
2.1

Why Firefly

This special course focuses on UCS Administration and Troubleshooting UCS Manager 2.0 and provides additional content on networking design that customers need to successfully administer and troubleshoot UCS in their environments. The course teaches advanced component upgrade and troubleshooting skills at all layers of the Unified Computing System, LAN, SAN, and Compute.

Key UCSM 1.4 and 2.0 updates covered in this course include:

- FabricSync
- LAN/SAN configuration best practices
- Boot from SAN/iSCSI
- Chassis and multichassis power-capping
- Service Profile Maintenance Policies
- Server and Infrastructure Firmware Upgrades
- Direct-connect storage
- LAN/SAN/Compute Troubleshooting
- SPAN
- B-Series Servers B22 M3, B200 M3, B230 M2, B420 M3, B440 M2
- 6248 and 6296 Fabric Interconnects
- 2104, 2204 and 2208 IO Modules
- 1240/1280 VIC
- Creating PortChannels between the VIC 1280 and the chassis I/O Module
- Discrete and Port channel mode between the Fabric interconnect and IO Module.

These topics enable customers and partners to approach advanced UCS integration, implementation, and troubleshooting scenarios with confidence, increasing the likelihood of repeatable success with UCS.

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ATLANTA

LONDON

SINGAPORE

Course Description

This five-day, hands-on course focuses on the Cisco Unified Computing System (UCS) deployment, operations, and troubleshooting in a five-day Boot Camp format. You will learn how to configure, manage, and troubleshoot UCS B-Series servers with consolidated I/O networking for LAN and SAN connectivity and how to virtualize server properties to enable simple and rapid mobility of server OS images between physical servers. You will learn to configure and troubleshoot issues with UCS Service Profiles, LAN, SAN, and memory using the built-in monitoring and troubleshooting tools. In the lab you will practice implementing resource pools and creating mobile service profiles, explore and practice upgrading and troubleshooting firmware components, and practice troubleshooting all layers of Cisco UCS.

Who Should Attend

This course provides accelerated, in-depth technical training for system engineers, network engineers, and field engineers who need to deploy, configure, manage, and troubleshoot the Cisco Unified Computing System.

Prerequisites

The following prerequisite experience is strongly recommended:
• Basic knowledge of server and server virtualization concepts
• Basic knowledge of LAN and SAN concepts

Learning Objectives

• Learn to install and provision Cisco UCS B-Series blade servers in the Cisco UCS 5108 blade chassis. Learn the characteristics of the different models of Cisco I/O module (IOMs) and fabric interconnects and how to install them as well as understand the different connectivity topologies and options.

• Learn how the Cisco Nexus Operating System (NX-OS) treats Ethernet and Fibre Channel traffic and become acquainted with generation 2 hardware and all the newly introduced features in Cisco UCS manager 2.1

• Learn to design and configure the connectivity of the Cisco UCS with the LAN and SAN infrastructure in your data center

• Learn about Cisco UCS stateless computing and rapidly provision servers by using resource pools, policies, and templates.

• Learn essential Cisco UCS troubleshooting skills.

Module 1: Implement Cisco UCS B-Series Connectivity

Lesson 1: Implementing Cisco UCS B-Series Physical Connectivity

- Describe the relationship between I/O uplinks and bandwidth oversubscription with generation 2 hardware
- Describe the Cisco UCS 22014/2208 XP IOM architecture including CMC, I/O MUX and chassis management switch
- Describe the relationship between I/O uplinks and bandwidth oversubscription with generation 1 hardware
- Described the Cisco UCS 2104 I/O module architecture including CMC, I/O MUX, and Chassis management Switch
- Describe the features of the Cisco UCS VIC 1280 and 1240
- Compare the number of virtual interfaces available on the Cisco UCS M81KR VIC and the VIC 1280
- Describe new mezzanine cards including M51, M61, M72
- Describe the Cisco Integrated Management Controller management component of the B-Series Blades
- Describe the creation of Port channels from the Cisco UCS 6200 Series Fabric Interconnect to the 2204/2208 XP IOM
- Describe the difference between server and uplink port personalities in the fabric interconnect
- Describe the chassis discovery process and monitor using FSM
- Configure the chassis discovery policy

Lesson 2: Installing Cisco UCS B-Series Hardware

- Describe the ESD precautions that are necessary when installing Cisco UCS B-Series components
- List the steps for opening the case of half- and full-slot servers
- List the steps for physical installation of rack-mount slides in the enclosure and on the Cisco UCS 5108 Chassis
- List the steps for installation and removal of CPU, RAM, and mezzanine cards in the Cisco UCS B-Series blade servers
- List the steps for physical installation and removal of local hard drives
- List the steps for physical installation of half- and full-slot blade servers
- List the steps for physical installation of IOMs and powers supplies in the Cisco UCS 5108 chassis
- List the steps for physical installation and removal of fan units
- List the steps for physical installation and removal of SFP+ copper twin ax and optical module

Lesson 3: Implementing Cisco UCS B-Series LAN Connectivity

- Differentiate between uplink, server, appliance FCoE storage, and monitoring Ethernet port personalities of 10 Gigabit Ethernet interfaces on the Cisco UCS fabric interconnect
- Describe the requirements and configuration of port channels from the Cisco UCS fabric interconnect to the northbound switch
- Describe End-Host-Mode and its importance in forwarding over multiple Layer 2 links and maintaining a loop free topology
- Differentiate End-Host-Mode and switched mode
- Describe the requirements to configure Vans in Cisco UCS Manager
- Describe the role of vNICs to abstract MAC addresses into a service profile
- Describe the automatic pinning process and recovery from failure
- Describe the configuration of manual pinning and recovery from failure
- Describe the configuration of disjointed Layer 2 domains

Lesson 4: Implementing Cisco UCS B-Series SAN Connectivity

- Describe Fibre Channel switching
- Describe NPV
- Differentiate between Fibre Channel uplink, Fibre Channel storage, and Fibre Channel monitoring port personalities of 10 Gigabit Ethernet interfaces on the Cisco UCS fabric Interconnect
- Differentiate between benefits and drawbacks of Fibre Channel switching and NPV.
- Describe how NPIV allows a single N Port to be associated with multiple FCIDs
- Describe the requirements and benefits of VSANs in Cisco UCS Manager
- Describe the role of the vHBA to abstract WWNNs and WWPNs into a service profile
- Describe the automatic pinning process and recovery from failure
- Describe the configuration of manual pinning and recovery from failure
- Differentiate Ethernet failover from Fibre Channel multipath I/O recovery

Module 2: Provision Cisco UCS Compute Resources

Lesson 1: Provisioning the Cisco UCS Cluster

Configure primary cluster peer from the fabric interconnect console
Configure Secondary cluster peer from the fabric interconnect console and join to the cluster
Log into the Cisco UCS Manager GUI and assign a pool of management IP addresses for server management

Lesson 2: Provisioning LAN Networking

Provision VLANs for single fabric, both fabrics, and both fabrics configured differently
Provision VLAN ranges
Provision private VLANs
Provision Ethernet uplinks
Provision Ethernet uplink port channels
Provision fabric port channels from the Cisco UCS Fabric Interconnect to a Cisco 2204/2208 IOM
Provision FCoE storage ports
Provision appliance ports and prune VLANs

Lesson 3: Provisioning SAN Networking

Provision VSANs for single fabric, both fabrics, and both fabrics configured differently.
Provision Fibre Channel uplinks and VSAN trunking
Provision Fibre Channel port channels.
Provision direct-attached Fibre Channel storage ports and default zoning.

Lesson 4: Provisioning Resource Pools in Cisco UCS Manager

Provision server pools
Provision server pool auto placement
Provision UUID pools
Provision MAC pools
Provision WWNN pools
Provision WWPN pools
Provision iSCSI initiator pools

Lesson 5: Provisioning Server Policies in Cisco UCS Manager

Provision a service profile using the expert service profile wizard
Implement pools and policies in the service profile
Associate a service profile to a server
Describe the Cisco UCS Utility Operating System
Observe the association process using the FSM

Lesson 6: Provisioning Service Profiles from Templates in Cisco UCS Manager

Describe the requirements of service profile templates
Describe the difference between initial templates and updating templates, including operational caveats
Provision a vNIC template using the template wizard
Provision a vHBA template using the template wizard
Provision a service profile template using the template wizard
Provision multiple server from a service profile template
Clone a service profile

Lesson 7: Provisioning Cisco UCS C-Series Server Integration in Cisco UCS Manager

Describe the benefits of C-Series integrations
Describe the physical connectivity requirements for C-Series integration
Install version 1.2 C-Series server firmware to allow integration with Cisco UCS prior to version 2.0(2xx)
Describe the C-Series discovery process

Module 3: Manage the Cisco UCS B-Series

Lesson 1: Implementing Role Based Access Control

Describe the overall framework of RBAC in the Cisco UCS B-Series
Implement local users, roles and privileges
Implement organizations and locals
Describe the effective rights of a user as an intersection of roles and locales mapped to a user.
implement LDPA providers and provider groups
Implement LDAP (Microsoft Active Directory) as an eternal authentication and authorization service
Implement Cisco UCS roles mapping to LDAP (Active Directory attributes with LDAP provider maps

Lesson 2: Managing and Upgrading UCS B-Series Firmware

- Describe where to find Cisco UCS firmware packages on Cisco.com
- Update Cisco UCS firmware
- Direct upgrade of mezzanine adapter, Cisco Integrated Management Controller and IOM firmware
- Describe software updates on the fabric interconnect
- Describe the requirements for firmware updates via host firmware packages in the service profile
- Describe the requirement for firmware updates via host firmware packages in the service profile
- Describe the differences between the firmware processes of Cisco UCS fabric interconnect and IOM, Cisco Integrated Management Controller and adapter
- Describe how to update and activate the hardware capability catalog

Lesson 3: Implementing Backup, Import and Restore of the Cisco UCS Manager Database

- Differentiate between the supported backup types and the database objects to which they map in the Cisco UCS Manager database
- Differentiate between an import operation and a disaster recovery restore operation
- Implement a backup job
- Implement backup jobs to preserve abstracted identities
- Verify that the backup job is created and executed
- Implement an import job to restore the AA user database
- Verify that the AAA user database is restored
- Configure the Cisco UCS 6100/6200 Series Fabric Interconnect for disaster recovery restore

Lesson 4: Implementing Logging and Monitoring

- Describe Cisco UCS Manager management interfaces
- Describe the fault management system and evaluate fault severity levels
- Use the audit log to track administrative changes to the Cisco UCS manager Database
- Describe the Cisco UCS Manager operations subject to FSM validation and how to interpret FSM output
- Implement logging options including local buffer console and external syslog servers
- Use System Event log and system event log policies
- Implement Smart Call Home feature
- Validate the Smart Call Home feature
- Configure settings for logs, events and faults
- Configure SPAN to allow protocol analysis

Lesson 5: Implementing High Availability

- Describe high-availability cluster connection requirements for Cisco UCS B-Series
- Describer inter-cluster communications and Cisco UCS manager database synchronization
- Differentiate between cluster partition-in-time and partition-in-space split brain scenarios
- Describe how the Cisco UCS 5108 Blade Server Chassis SEEPROM resolves split-brain issue in the high-availability cluster.
- Modify cluster IP addressing from the Cisco UCS manager GUI and CLI

Module 4: Troubleshooting Cisco UCS

Lesson 1: UCS Configuration Confirmation

- Cisco UCS Architectural Review
- UCS Management Interfaces
- Chassis and Blade Discovery

Lesson 2: UCS Support Tools

- Intelligent Platform Management Interface
- Serial Over LAN
- Data Gathering

Lesson 3: UCS Advanced Operations

- Ethernet Switching Mode: EHV Mode *Updated to Cisco UCSM 2.1
- Ethernet Switching Mode: Switch Mode *Updated to Cisco UCSM 2.1
- Fibre Channel Switching Mode: NPV Mode *Updated to Cisco UCSM 2.1
- Fibre Channel Switching Mode: Fibre Channel Switch Mode *Updated to Cisco UCSM 2.1
- Counters and Statistics

Lesson 4: LAN/SAN Connectivity

- LAN Connectivity
- SAN Connectivity
- SAN Boot

Lesson 5: Cisco Unified Computing System Upgrades with UCSM 2.1

- Cisco UCS Upgrades
- Bundles
- Fabric Interconnect Recovery
- Firmware Auto-Install

Lesson 6: Cisco UCS Memory
Memory Primer
Memory Data Collection

Lab 1: Provisioning Identity and Resource Pools

Lab 2: Provisioning Mobile Service Profiles from Updating Templates

Lab 3: Test High Availability Demonstration 1: Provision Initial B-Series Configuration

Lab 4: Provisioning Cisco UCS Ethernet Connectivity and Management IP Pools

Lab 5: Configure Role Based Access Control

Lab 6: Backup and Restore the UCS Manager Database objects

Lab 7: Configure Logging in Cisco UCS

Lab 8: Booting Mobile ESXi Challenge lab

Lab 9: LAN/SAN Connectivity

Lab 10: Memory Data Collection

Lab 11: Memory Troubleshooting