Внедрение решений в области виртуализации центров обработки данных (v.5.0) (DCUCI)

Кому следует посетить

Проектировщикам сетей, сетевым администраторам,системным инженерам, программистам и менеджерам проектов.

Сертификации

Этот курс является частью следующих программ сертификаций:

- Cisco Data Center Unified Computing Support Specialist
- Cisco Data Center Unified Computing Design Specialist
- Cisco Certified Network Professional Data Center (CCNP Data Center)
- Cisco CCIE Data Center (CCIE Data Center)

Предварительные требования

Перед посещение курса слушателю необходимо иметь знания в рамках:

- DCUCI предварительный онлайн тест
- Понимание проектирования и архитектуры системных серверов
- Знакомство с Ethernet и TCP/IP networking
- Знакомство с сетями хранения данных
- Знакомство с Fibre Channel protocol
- Понимание архитектуры ЦОД Cisco
- Знакомство с hypervisor technologies (vSphere, Hyper-V, Xen)

Рекомендовано посещение следующих тренингов:

- Implementing Cisco Data Center Unified Fabric (v.5.0) (DCUFI)
- Построение сетей хранения данных Cisco (ICSNS)

Цели курса

После прослушивания курса специалисты должны научиться:

- Внедрять решения в области виртуализации центров обработки данных (ЦОД)
- Настраивать параметры функционирования виртуализированного ЦОДа
- Управлять виртуализированным ЦОДом
- Устранять неполадки, возникающие в процессе работы
- Описывать процесс виртуализации ЦОДа

Содержание курса

Курс **Внедрение решений в области виртуализации центров обработки данных**рассказывает об основах унифицированной вычислительной системы Cisco (Cisco UCS) и о способах виртуализации центров обработки данных.В дополнение к этому студенты учатся внедрять Cisco UCS, настраивать процессы маршрутизации и коммутации на продуктах Cisco Nexus, работая с инфраструктурой масштаба предприятия.

Длительность: 5 дней

Цены:

- Россия: 110 000,- руб.
- Украина: 26 943,- грн.

- Казахстан: 546 000,- тенге

Программа курса

Now Featuring UCS Manager Code v2.0!
Module 1: Brief Survey of Cisco Data Center Unified Computing Implementation E-Learning
Validate that you have the knowledge provided in the self-paced e-Learning content.

- Lesson 1: Explaining Challenges of Data Center Server Management
- Lesson 2: Introducing Cisco Unified Computing System
- Lesson 3: Selecting Cisco UCS C-Series Hardware Components
- Lesson 4: Installing Cisco UCS C-Series Hardware
- Lesson 5: Describing Cisco UCS B-Series Hardware Components
- Lesson 6: Assembling B-Series Architecture and Features
- Lesson 7: Lesson 1: Characterizing Cisco UCS Use Cases
- Lesson 8: Provisioning Operating Systems
- Lesson 9: Provisioning Applications
- Lesson 10: Describing Server Virtualization
- Lesson 11: Introducing the Cisco Nexus 1000V
- Lesson 12: Introducing VMware Ethernet Networking
- Lesson 13: Characterizing Cisco Nexus 1000V Architecture

Module 2: Installation of the Cisco Unified Computing System C-Series
Install and configure Cisco Unified Computing System C-Series hardware, software components, and management.

Lesson 1: Upgrading Firmware Components in the Cisco Unified Computing System C-Series

- Locate C-Series firmware on Cisco.com
- Download C-Series firmware from Cisco.com
- Update Cisco IMC firmware
- Update the BIOS firmware

Lesson 2: References to Additional Installation Topics in E-Learning

- Describe the content of Installation of Cisco Unified Computing C-Series E-Learning Module.
- Understand the process of accessing and using e-learning content

Module 3: Configure Cisco Integrated Management Controller
Use the Cisco Server Integrated Management Controller to provision server hardware to load an operating system or hypervisor.

Lesson 1: Configuring Cisco Server Integrated Management Controller

- Configure Cisco IMC with an IP address to enable in-band management access
- Access the server BIOS
- Export tech support data to TFTP server
- Reboot the Cisco IMC
- Recover from a corrupt BIOS image
- Monitor sensor and log data in Cisco IMC

Lesson 2: Provision Server Hardware with Cisco Integrated Management Controller

- Configure local user accounts to restrict access to Cisco IMC
- Configure external IPMI access.
- Configure external access to SoL
- Access to KVM over IP
- Access virtual media to perform operating system or hypervisor load
- Describe the requirements to use PXE to perform operating system or hypervisor provisioning
- Locate operating system-specific C-Series drivers from Cisco.com
- Download operating system-specific C-Series drivers from Cisco.com

Module 4: Cisco Unified Computing System B-Series Hardware and Management
Assemble the hardware, software components, and management architecture of the Cisco Unified Computing System B-Series.

Lesson 1: Describing Cisco UCS B-Series Hardware Components

- List the Cisco UCS 6100 Series fabric interconnect licensing requirements
- Differentiate between the three fault tolerant configurations of the Cisco UCS B-Series power supplies

Lesson 2: Assembling B-Series Architecture and Features

- Describe high availability cluster requirements and processes of the 6100 Fabric Interconnect
- Describe fault detection and correction using Cisco UCSM and the CLI

Lesson 3: Installing Cisco UCS B-Series Hardware

- Define the physical and environmental requirements for Cisco UCS B-Series servers including dimensions, weight, and floor loading considerations
- List the steps for opening the case of B-200, B-210, and B-250 blade servers
- List the steps for installation and removal of CPU, RAM, and mezzanine cards in B-Series blades
- List the steps for physical of installation and removal of local hard drives
- List the steps for physical installation of I/O modules and power supplies in the Cisco UCS 5108 chassis
- List the steps for physical installation and removal of fan units
- List the steps for physical installation of B200 and B250 blade servers
- List the steps for physical installation and removal of SFP+ copper twinax and optical modules
- List the steps for physical installation of rack-mount slides in the enclosure and on the 5108 chassis

Module 5: Cisco Unified Computing System Connectivity Configuration and Management

Configure the connectivity options of the Cisco Unified Computing System B-Series in Cisco UCS Manager.

Lesson 1: Configuring Cisco Unified Computing System B-Series Physical Connectivity

- Describe I/O module architecture including CMC, Redwood I/O MUX and CMS
- Describe the BMC management component of the B-Series blades
- Describe the relationship between I/O uplinks and bandwidth oversubscription
- Describe the difference between port personalities in the Fabric Interconnect
- Describe the discovery process and how to monitor using Finite State Machine output

Lesson 2: Exploring the Unified Computing System B-Series User Interfaces

- Navigate the layout of the Cisco UCS Manager GUI
- Describe what features are available in the six tabs of the navigation window
- Access the Cisco UCS Manager Command Line Interface
- Access the local management, SMASH CLP, adapter, BMC, IOM and NX-OS command line interfaces
- List the main features available in the local management, SMASH CLP, adapter, BMC, IOM and NX-OS command line interfaces

Lesson 3: Configuring Compute Node LAN Connectivity

- Differentiate between the three port personality states 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 a 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 with switched mode
- Describe the requirements to configure VLANs in Cisco UCS Manager
- Describe the role of Virtual NICs (vNIC) 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

Lesson 4: Distinguishing Compute Node SAN Connectivity

- Describe Fibre Channel switching
- Describe N_Port Virtualization
- Differentiate between benefits and drawbacks Fibre Channel Switching and N_Port Virtualization (NPV)
- Describe how N-Port ID Virtualization (NPIV) allows a single N_Port to be associated with multiple FC_IDs
- Describe the requirements and configuration of VSANs in Cisco UCS Manager
- Describe the role of the Virtual HBAs (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

Module 6: Server Resources Implementation

Configure physical server resources through logical server profiles.

Lesson 1: Creating Identity and Resource Pools

- Articulate the rationale for creating identity and resource pools
- Configure UUID pools
- Configure MAC pools
- Configure WWNN pools
- Configure WWPN pools
- Configure Server pools
- Configure the processes to automate server pool membership based on a qualification policy
- Demonstrate the importance of creating pools in the correct Organization

Lesson 2: Creating Service Profiles

- Describe the need for, and benefits of creating service profiles
- Configure a BIOS policy to enable virtualization features
- Configure an adapter policy to enable RSS and set the failback timer for fabric failover
- Create a QoS system class and allow all Ethernet traffic to use jumbo frames up to an MTU of 9216
- Configure IPMI and SoL policies
- Configure a scrub policy for local disks and BIOS
- Differentiate between the feature available in the simple service profile wizard and the expert wizard
- Start the service profile expert wizard
- Configure the service profile to take its UUID from a pool
- Configure a vHBA for both fabrics and have the service profile take its assignment of WWNN and WWPNs from a pool
- Configure a vNIC for both fabrics and have the service profile take its assignment of MAC addresses from a pool
- Configure the binding of a vHBA to a Fibre Channel boot target
- Server assignment
- Differentiate between required versus optional components of the service profile definition

Lesson 3: Creating Service Profile Templates and Cloning Service Profiles

- Create a service profile template and describe the need for pooled resources and identities
- Describe the reasons to create differentiated service profile templates to allow variations of policy
- Automate the creation of a server farm using service profile templates
- Describe the hidden pitfalls when using updating templates
- Unbind a service profile from its template
- Clone a service profile and demonstrate understanding of cloning requirements

Lesson 4: Managing Service Profiles

- Use Cisco UCS Manager to associate and disassociate a service profile to a server blade
- Describe what changes to a service profile trigger a Cisco UCS utility update (and outage to a server)
- Describe the importance of planning the Org where a service profile is created
- Use Cisco UCS Manager to move a service profile to a new server blade in the event of hardware failure

Module 7: Networking in a Virtual Server Environment

Use the Cisco Nexus 1000V fits in a VMware server virtualization environment.

Lesson 1: Introducing the Cisco Nexus 1000V

- Describe Cisco virtual switching solution for DVS
- Describe the features of Cisco Nexus 1000V switching components

Lesson 2: Introducing VMware Ethernet Networking

- Describe how Cisco Nexus 1000V fits into VMware Distributed Switching (vDS)
- Describe Cisco virtual switching solution for vDS
- Describe the unique features of Cisco Nexus 1000V switching components including SPAN, NetFlow, and ERSPAN
- Differentiate between the capabilities of the M81KR/P81E versus the Nexus 1000V

Lesson 3: Characterizing Cisco Nexus 1000V Architecture

- Describe the Cisco Nexus 1000V
- Describe the Cisco Nexus 1000V network architecture

Lesson 4: Installing and Configuring the Cisco Nexus 1000V

- Configure the VSM vSwitch network
- Install VSM on to a VM

- Run setup after the VSM is installed
- Configure certificate exchange and connection from VSM to vCenter
- Describe the need for redundant VSM configuration
- Describe the Nexus 1010 VSM Appliance
- Differentiate between the capabilities of the Nexus 1010 VSM Appliance and the software VSM

Lesson 5: Configuring Basic Cisco Nexus 1000V Networking

- Configure port profiles in the VSM
- Configure VLANs in the VSM and assign to port profiles
- Configure Private VLANs
- Configure uplink profiles
- Configure vEthernet profiles
- Configure Nexus 1000V port channels
- Configure adding Virtual Ethernet Modules (VEM) to the VSM
- Configure backup of VSM configuration to a TFTP server
- Configure vMotion of hosts and Nexus 1000V port profile mobility

Lesson 6: Configuring the M81KR Virtualization Adapter for VMware Pass-Thru Switching

- Install Cisco UCS Manager Extension in vCenter
- Configure Cisco UCS Manager to connect to vCenter
- Configure VLANs in the VM tab of Cisco UCS Manager and assign to port profiles
- Configure uplink profiles
- Configure vEthernet profiles
- Configure service profile with Dynamic NICs
- Configure vMotion of hosts and M81-KR port profile mobility

Module 8: Cisco Unified Computing System Management and Maintenance

Configure system management, maintenance, and high availability processes in a Cisco Unified Computing System B-Series.

Lesson 1: Implementing Cisco Unified Computing System Startup and Shutdown Procedures

- Implement startup and shutdown procedures for the Cisco UCS 6100 Series fabric interconnect
- Describe the effects of shutting down or rebooting a Cisco UCS 6100 Series fabric interconnect on the high availability cluster

Lesson 2: Characterizing Role-Based Access Control

- Articulate the overall framework of RBAC in Cisco UCS B-Series
- Configure local users, roles, and privileges
- Configure organizations and locales
- Demonstrate understanding the effective rights of a user as an intersection of roles and locales mapped to a user
- Configure LDAP/Active Directory as External Authentication and Authorization Service
- Demonstrate How to Map Cisco UCS Roles LDAP/Active Directory Attributes

Lesson 3: Backing-up and Restoring the Cisco UCS Manager Database

- Differentiate between the supported backup types and what functions they map to in the Cisco UCS Manager database
- Differentiate between an import operation and a disaster recover restore operation
- Configure a backup job
- Configure the backup job to preserve abstracted identities
- Verify the backup is created and executed
- Configure an import job to restore the AAA user database
- Verify the AAA user database is restored
- Configure the 6100 Series fabric interconnect for disaster recovery restore

Lesson 4: Managing High Availability

- Describe high availability cluster connection requirements for Cisco UCS B-Series
- Describe inter-cluster communications and Cisco UCS Manager database synchronization
- Describe how the Cisco UCS 5108 Chassis SEEPROM resolves the split-brain issue in the high availability cluster
- Differentiate between cluster “partition in time” and “partition in space” conditions
- Modify cluster IP addressing

Lesson 5: Monitoring System Events

- Describe the fault management system and evaluate fault severity levels
- Use the audit log to track administrative changes to the Cisco UCS Manager database

- Differentiate areas of operation subject to Finite State Machine validation and how to interpret the FSM output
- Differentiate the configuration and validation of logging options including local buffer, console and external Syslog servers
- Configure the Smart Call Home feature
- Validate the Smart Call Home feature
- Configure Settings for logs, events, and faults

Lesson 6: Managing and Upgrading Cisco UCS B-Series Firmware

- Describe where to find Cisco UCS C-Series firmware packages on Cisco.com
- Update the Cisco UCS B-Series firmware
- Direct upgrade of mezzanine adapter, Cisco IMC, and IOM firmware
- Describe software update on the fabric interconnect
- Firmware updates via service profile (BIOS MUST update this way)
- List the differences between the firmware processes of Cisco UCS 61x0 fabric interconnect and IOM/Cisco IMC/Adapter

DCUCI 4.0 Hands-On Lab Excercises:

- Lab 3-1: Initial C-Series Configuration
- Lab 5-1: Configure LAN and SAN Physical Connections
- Lab 6-1: Configure Identity and Resource Pools
- Lab 6-2: Create Mobile Service Profiles from Updating Templates
- Lab 7-1: Create Data Center Cluster in VMware vCenter
- Lab 7-2: Install a Nexus 1000V VSM
- Lab 7-3: Create Port Profiles
- Lab 8-1: Configure Role-Based Access Control
- Lab 8-2: Back up and Import Cisco UCS Manager Configuration Data
- Lab 8-3: Reporting in the Cisco Unified Computing System