6210 Central Ave, Portage, IN. 46368 Phone: 219.764.3800 Fax: 219.764.3805 Web: http://www.ctclc.com

Deploying, Configuring, Monitoring, and Troubleshooting Enterprise Networking Compute System (ENCS-CT)

This is a five day hands-on course that provides the skills and knowledge necessary to Install, Configure, Monitor, and Troubleshooting the Cisco 5100/5400 Enterprise Networking Compute System (ENCS). Students will learn how to deploy the ENCS as a standalone as well as in High Availability Mode. Students will then learn how to deploy and Manage NVFIS with Windows, Linux and other Cisco Functions. Students will then learn how to monitor and troubleshoot the Hardware, IOS, and NFVIS Functions. Students will also perform several labs from the Initial Configuration, High Availability, Deployment of NFVIS VMs and Monitoring and Troubleshooting Hardware, VMs, and Applications.

Use this course towards your Cisco Continuing (CE) Education Credits (50)

Why Attend with Current Technologies CLC

- Our Instructors are the top 10% rated by Cisco
- Our Lab has a dedicated 1 Gig Fiber Connection for our Labs
- Our Labs run up to Date Code for all our courses

Objectives

- ENCS Introduction
- ENCS Hardware
- Initial Configuration
- High Availability
- Configuring ENCS Networking
- Network Virtual Functions
- Deploying NFV SDWAN with ENCS
- Deploying NFV Windows Servers on ENCS
- Deploying NFV Linux Machine on ENCS
- Backing Up and Restoring VNF with ENCS
- DNA Center Integration
- Monitoring ENCS
- Troubleshooting

Outline

Course Duration

5 day

Course Price

$4,895.00

Methods of Delivery

- Instructor Led
- Virtual ILT
- On-Site

Module 1: Introduction to the Enterprise Networking Compute System (ENCS)

- What is the ENCS Platform?
- What are the use cases for using the ENCS?
- What is Network Function Virtualization?

Module 2: ENCS Hardware

- ENCS Models
- System Software Overview
- ENCS Hardware
    - CPU
    - Understanding CPU Resources
    - How CPUs are assigned
    - vCPU Allocations
    - RAM Configuration
    - Supported NIM Modules
    - Storage Options
    - RAID Configuration Options
    - Routed Ports
    - SR-IOV (Single root IO-Virtualization)
    - Switched Ports
    - Power Supply Configuration
    - CIMC Configuration
    - Upgrading the ENCS Firmware

Module 3: Initial Configuration

- BIOS Setup
- Default System Settings
- Login to KVM console
- CLI Access
- GUI Access
- Changing Initial Settings
- Setting NTP
- Portal Access
- Secure Boot
- Setting NTP
- Portal Access
- Secure Boot
- Setting up High Availability
- Installing Cisco Enterprise NFVIS Using the KVM Console

Module 4: High Availability

- High Availability Options
- High Availability Design
- High Availability Topology
- Physical Devices Connection
- VM and Service Chain Network Connection
- Virtual NIC Failure Detection
- Track Feature Configuration with EEM Scripts
- Isolating LAN and Transit Link Traffic for HA

- Packet Flow for HA
- Configuration Scenarios for HA
- Cisco ENCS HA Failure Points
    - ENCS chassis hardware failure
    - Cisco Enterprise NFVIS software failure
    - LAN Phy link failure
    - LAN connectivity failure
    - VNFs (Cisco ASAv, Cisco vWAAS, and Windows/Linux)

Module 5: Configuring ENCS Networking

- 5400 ENCS Internal Networking
- ENCS NFVIS Networking Options
    - SR-IOV Packet Flow
    - DPDK-OVS Packet Flow
    - OVS Packet Flow
- Cisco ENCS Single WAN IP Deployment Scenarios
- Cisco ENCS DUAL WAN Deployment Scenarios
- ENCS Switch Portal Configuration
    - Switch Settings
    - Spanning Tree Protocol (STP)
    - Configuring Dot1x
    - Configuring LACP
    - Configuring VLANs
    - Switch General Setting
    - Switch Advanced Setting
- Configuring Secondary IP and Source Interface
- Ports and Port Channels
    - Admin Status
    - Configuring Port Channels
    - LLDP Settings
    - CDP Settings
- MSTP for ENCS 5400 8-Port Switch
- ENCS 5400 Switch LLDP
- Secure Overlay and Single IP Configuration
- Dual WAN Support
- Configuring System Shell-Access
- Switch Port Security
- TACACS and RADIUS Support on NFVIS
- SNMP Support on NFVIS
- SPAN Session or Port Mirroring
- Configuring Packet Capture

Module 6: Network Virtual Functions

- Why Virtualize? Motivations for the Enterprise
- What is NFVIS?
- NFVIS Software Stack
- NFVIS Security
- NFVIS Domain Isolation
- Network Hypervisor
- Linux Containers

- Containers and Virtual Machines
- VNF Onboarding
- Supported Virtual Machines
- Third Party VNF Certification Resources
- VM Types
- Plan VM Deployment
- VM Requirements
- VNF Packages
- VM Packaging
- Defining VNF Profiles
- Create Package, Download or Register
- Managing a Deployed VM
- Service Chaining VNFs
- Console Access to VNFs
- Deploying VNFs using NFVIS GUI
- Deploying VM using ISO – Upload
- Deploying VM using ISO – Profile
- Deploying VM using ISO – Deployment
- Deployment VM using – ISO Booting

Module 7: Deploying NFV SDWAN with ENCS

- Cisco SD-WAN Support on ENCS
- Virtual vEdge On-boarding on ENCS

Module 8: Deploying NFV Windows Servers on ENCS

Module 9: Deploying NFV Linux Machine on ENCS

Module 10: Backing Up and Restoring VNF with ENCS

- NFVIS Requirements
- NFVIS Backup Restore options
- Backup/Restore CLIs

Module 11: DNA Center Integration

- What's Cisco DNA Center
- DNA Center Design
- Network Settings and Image Repository
- NFV
- Site Creation
- Network Profiles
- WAN Design
- Add Services
- ENCS Template
- Additional VNFs
- Assign Profile to Sites
- NFVIS Local GUI

Module 12: Monitoring ENCS

- What is the Benchmark to measure against?
- Packet Flows LAN>WAN

- Host System Monitoring
- Potential Bottlenecks in a Virtualized System
    - Physical System Bottlenecks: Interface and Cores
    - I/O Processing also takes CPU Cycles
    - I/O Technologies: OVS, VPP, and PCIe Pass-Through
    - I/O Technologies: SR-IOV
    - SR-IOV Virtualization Caveats
- KVM Performance Tuning Recommendations

Module 13: Troubleshooting

- Troubleshooting Enhancements
- NFVIS Built-in Recovery
- Image Registration Logs
- Deployment Troubleshooting
- Provisioning Troubleshooting
- Pnp Troubleshooting
- CLI
    - Tech-Support
    - Packet Capture
    - NFVIS Notification
- GUI
    - Tech-Support
    - Packet Capture
    - NFVIS Notification
- Service Status
- Resetting to Factory Default
- Event Notifications
- Syslog Support
- NFVIS Password Recovery

LAB OUTLINE

Lab 1: Initial Configuration of ENCS 5400

- Cisco ENCS Sizing Tool
- Login and Configure into the CIMC CLI
- Login and Configure into the CIMC GUI
- Configure ENCS Hardware Settings
- Login to KVM console

Lab 2: Install the Cisco Enterprise NFVIS on ENCS

Lab 3: Configuring ENCS High Availability

Lab 4: Configure ENCS Networking

- SR-IOV Configuration
- DPDK Configuration
- Configure ENCS Internal Switch Configuration

- Port Mirroring
- Packet Capture

Lab 5: Configuring NFVIS

- Initial Configuration
- IPv4 Initial System Settings
- Login and MOTD Banners
- Configuring System Routes
- Configuring Time Manually
- Managing User Roles and Authentication

Lab 6: Deploying NFV SDWAN

Lab 7: Deploying NFV Windows

Lab 8: Deploying NFV Windows

Lab 9: Backing Up and Restoring VNF with ENCS

- NFVIS Requirements
- NFVIS Backup Restore options
- Backup/Restore CLIs

Lab 10: Monitoring ENCS

- Host System Monitoring
- Virtual Machine monitoring
- Identifying Bottlenecks
- Performance Tuning Recommendations

Lab 11: Troubleshooting

- Service Status
- Basic Troubleshooting
- Decoding Logs
- Deployment Troubleshooting
- Configure Event Notification
- Configuring Syslog
- Resetting to Factory Default
- NFVIS Password Recovery
- Virtual Machine Troubleshooting