

# ENCOR (350-410) VIDEO TRAINING SERIES

## 0.0.0 COURSE INTRODUCTION

## 0.1.0 PERFORMING LAB EXERCISES WITH VIRL

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### *1.0.0 Enterprise Architecture*

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#### 1.1.0 Lesson 1: Enterprise Network Design Considerations

- 1.1.1 Tier 2 vs. Tier 3 Designs
- 1.1.2 On-Premise vs. Cloud Designs
- 1.1.3 Fabric Capacity Planning
- 1.1.4 Redundant Design
- 1.1.5 First Hop Redundancy Protocols (FHRPs)
- 1.1.6 Stateful Switchover (SSO)
- 1.1.7 Lesson 1 Quiz

#### 1.2.0 Lesson 2: Wireless LAN (WLAN) Design Considerations

- 1.2.1 WLAN Deployment Options
- 1.2.2 Location Services
- 1.2.3 Lesson 2 Quiz

#### 1.3.0 Lesson 3: Software-Defined WAN (SD-WAN)

- 1.3.1 Overview of SD-WAN Technologies
- 1.3.2 SD-WAN Implementation Examples
- 1.3.3 Lesson 3 Quiz

#### 1.4.0 Lesson 4: Software-Defined Access (SD-Access)

- 1.4.1 Overview of SD-Access Technologies
- 1.4.2 SD-Access Implementation Examples
- 1.4.3 Lesson 4 Quiz

#### 1.5.0 Lesson 5: Quality of Service (QoS)

- 1.5.1 Review of QoS Mechanisms
- 1.5.2 Applying QoS Policies
- 1.5.3 Wireless QoS
- 1.5.4 INTERACTIVE EXERCISE: Identifying WMM Access Categories
- 1.5.5 Lesson 5 Quiz

#### 1.6.0 Lesson 6: Switching Mechanisms

- 1.6.1 Process Switching
- 1.6.2 Cisco Express Forwarding (CEF)
- 1.6.3 INTERACTIVE EXERCISE: Packet Switching Types
- 1.6.4 The CAM vs. the TCAM
- 1.6.5 The FIB vs. the RIB
- 1.6.6 Lesson 6 Quiz

#### 1.7.0 Module 1 Summary

#### 1.8.0 Module 1 Quiz

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## *2.0.0 Virtualization Technologies*

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- 2.1.0 Lesson 1: Device Virtualization
  - 2.1.1 Hypervisor Types 1 and 2
  - 2.1.2 Virtual Machines
  - 2.1.3 Virtual Switches
  - 2.1.4 Lesson 1 Quiz
- 2.2.0 Lesson 2: Data Path Virtualization
  - 2.2.1 Virtual Routing and Forwarding (VRF)
  - 2.2.2 VIRT LAB: VRF
  - 2.2.3 The Need to Combine GRE and IPsec Tunneling
  - 2.2.4 Configuring GRE over IPsec Tunnels
  - 2.2.5 Lesson 2 Quiz
- 2.3.0 Lesson 3: Network Virtualization
  - 2.3.1 Location ID Separation Protocol (LISP)
  - 2.3.2 Virtual Extensible LAN (VXLAN)
  - 2.3.3 Lesson 3 Quiz
- 2.4.0 Module 2 Summary
- 2.5.0 Module 2 Quiz

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## *3.0.0 Infrastructure Technologies*

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- 3.1.0 Lesson 1: Layer 2 Infrastructure Technologies
  - 3.1.1 Review of IEEE 802.1Q Trunking
  - 3.1.2 Troubleshooting 802.1Q Trunks
  - 3.1.3 Review of EtherChannel Operation
  - 3.1.4 Troubleshooting EtherChannels
  - 3.1.5 Multiple Spanning Tree (MST) Theory
  - 3.1.6 MST Configuration
  - 3.1.7 VIRT LAB - MSTP
  - 3.1.8 Review of Rapid Spanning Tree Protocol (RSTP)
  - 3.1.9 RSTP Configuration
  - 3.1.10 VIRT LAB - Rapid PVST+
  - 3.1.11 Lesson 1 Quiz
- 3.2.0 Lesson 2: OSPF
  - 3.2.1 OSPF Compared to EIGRP
  - 3.2.2 Review of OSPF Neighbor Formation
  - 3.2.3 Review of OSPF Network Types
  - 3.2.4 Multi-Area OSPFv2 Configuration
  - 3.2.5 VIRT LAB: OSPFv2 Configuration

- 3.2.6 OSPF Route Filtering
- 3.2.7 VIRT LAB: OSPF Route Filtering
- 3.2.8 OSPF Route Summarization
- 3.2.9 OSPFv3 Traditional Configuration
- 3.2.10 VIRT LAB: OSPFv3 Traditional Configuration
- 3.2.11 OSPFv3 Address Families Configuration
- 3.2.12 VIRT LAB: OSPFv3 Address Families Configuration
- 3.2.13 Lesson 2 Quiz
- 3.3.0 Lesson 3: BGP
  - 3.3.1 Fundamental BGP Concepts
  - 3.3.2 BGP Path Selection Criteria
  - 3.3.3 INTERACTIVE EXERCISE: BGP Path Selection
  - 3.3.4 Routing IPv4 with BGP Configuration
  - 3.3.5 VIRT LAB: BGP for IPv4
  - 3.3.6 Routing IPv6 with BGP Over an IPv4 Session Configuration
  - 3.3.7 Routing IPv6 with BGP Over an IPv6 Session Configuration
  - 3.3.8 VIRT LAB: BGP for IPv6
  - 3.3.9 Lesson 3 Quiz
- 3.4.0 Lesson 4: Wireless Technologies
  - 3.4.1 Wireless Communication Theory
  - 3.4.2 Access Point Modes
  - 3.4.3 Antenna Types
  - 3.4.4 INTERACTIVE EXERCISE: Antenna Selection
  - 3.4.5 Access Point Operation
  - 3.4.6 Layer 2 vs. Layer 3 Roaming
  - 3.4.7 WLAN Configuration Troubleshooting
  - 3.4.8 WLAN Client Troubleshooting
  - 3.4.9 Lesson 4 Quiz
- 3.5.0 Lesson 5: Network Services
  - 3.5.1 Review of Network Address Translation (NAT)
  - 3.5.2 Static NAT Configuration
  - 3.5.3 Dynamic NAT Configuration
  - 3.5.4 Port Address Translation (PAT) Configuration
  - 3.5.5 Review of Network Time Protocol (NTP) 3.5.6 HSRP Configuration
  - 3.5.7 VIRT LAB - HSRP
  - 3.5.8 VRRP Configuration
  - 3.5.9 VIRT LAB - VRRP
  - 3.5.10 Multicast Operation
  - 3.5.11 Lesson 5 Quiz
- 3.6.0 Module 3 Summary
- 3.7.0 Module 3 Quiz

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## 4.0.0 Network Management

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### 4.1.0 Lesson 1: Command Line Management Utilities

- 4.1.1 The "debug" Command
- 4.1.2 The "traceroute" Command
- 4.1.3 The "ping" Command
- 4.1.4 Lesson 1 Quiz

### 4.2.0 Lesson 2: SNMP

- 4.2.1 SNMP Theory
- 4.2.2 SNMPv2 Configuration
- 4.2.3 SNMPv3 Configuration
- 4.2.4 Lesson 2 Quiz

### 4.3.0 Lesson 3: Syslog

- 4.3.1 Syslog Theory
- 4.3.2 Syslog Configuration
- 4.3.3 Lesson 3 Quiz

### 4.4.0 Lesson 4: NetFlow

- 4.4.1 NetFlow Theory
- 4.4.2 NetFlow Configuration
- 4.4.3 VIRT Lab: NetFlow
- 4.4.4 Flexible NetFlow Configuration
- 4.4.5 Lesson 4 Quiz

### 4.5.0 Lesson 5: SPAN

- 4.5.1 SPAN Theory
- 4.5.2 SPAN Configuration
- 4.5.3 RSPAN Configuration
- 4.5.4 VIRT LAB: RSPAN
- 4.5.5 ERSPAN Configuration
- 4.5.6 Lesson 5 Quiz

### 4.6.0 Lesson 6: IP SLA

- 4.6.1 IP SLA Theory
- 4.6.2 Basic IP SLA Configuration
- 4.6.3 Advanced IP SLA Configuration
- 4.6.4 Lesson 6 Quiz

### 4.7.0 Lesson 7: EEM

- 4.7.1 EEM Theory
- 4.7.2 EEM Configuration
- 4.7.3 Lesson 7 Quiz

### 4.8.0 Module 4 Summary

### 4.9.0 Module 4 Quiz

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## 5.0.0 Network Security

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- 5.1.0 Lesson 1: Device Access Security
  - 5.1.1 Privilege Level Passwords
  - 5.1.2 Line Passwords
  - 5.1.3 AAA with a Local Database
  - 5.1.4 VIRT LAB: AAA
  - 5.1.5 Lesson 1 Quiz
- 5.2.0 Lesson 2: Infrastructure Security
  - 5.2.1 Standard Access Control List (ACL) Configuration
  - 5.2.2 Extended Numbered ACL Configuration
  - 5.2.3 Extended Named ACL Configuration
  - 5.2.4 INTERACTIVE EXERCISE: ACL Troubleshooting
  - 5.2.5 ACL Considerations
  - 5.2.6 Control Plane Policing (CoPP) Theory
  - 5.2.7 CoPP Configuration
  - 5.2.8 Lesson 2 Quiz
- 5.3.0 Lesson 3: Wireless Security
  - 5.3.1 Overview of EAP
  - 5.3.2 EAP Configuration
  - 5.3.3 Overview of WebAuth
  - 5.3.4 WebAuth Configuration
  - 5.3.5 Pre-Shared Key (PSK) Theory
  - 5.3.6 PSK Configuration
  - 5.3.7 Lesson 3 Quiz
- 5.4.0 Lesson 4: Security Design Considerations
  - 5.4.1 Cyber Threat Defense
  - 5.4.2 Endpoint Hardening
  - 5.4.3 Next Generation Firewall (NGFW)
  - 5.4.4 Cisco TrustSec
  - 5.4.5 Media Access Control Security (MACsec)
  - 5.4.6 Network Access Control (NAC) with 802.1X
  - 5.4.7 MAC Authentication Bypass (MAB)
  - 5.4.8 Web Authentication (WebAuth)
  - 5.4.9 INTERACTIVE EXERCISE: Identifying Security Mechanisms
  - 5.4.10 Lesson 4 Quiz
- 5.5.0 Module 5 Summary
- 5.6.0 Module 5 Quiz

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## 6.0.0 Network Automation

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- 6.1.0 Lesson 1: Network Programmability Foundations
  - 6.1.1 Overview of SDN
  - 6.1.2 Comparing the Cisco APIC and APIC-EM
  - 6.1.3 Network Programmability Example 6.1.4 JSON Formatting
  - 6.1.5 XML Formatting
  - 6.1.6 YANG Data Modeling
  - 6.1.7 Lesson 1 Quiz
- 6.2.0 Lesson 2: Python Programming
  - 6.2.1 Installing Python
  - 6.2.2 The Interactive Interpreter
  - 6.2.3 Data Types
  - 6.2.4 Data Type Conversions
  - 6.2.5 Lists
  - 6.2.6 Dictionaries
  - 6.2.7 User Input
  - 6.2.8 The IF Function
  - 6.2.9 Loops
  - 6.2.10 File Access
  - 6.2.11 INTERACTIVE EXERCISE: Python Script Debugging
  - 6.2.12 Lesson 2 Quiz
- 6.3.0 Lesson 3: Python Scripts for Network Configuration
  - 6.3.1 APIC-EM Programming
  - 6.3.2 Python Script Example: Getting a Service Ticket
  - 6.3.3 Python Script Example: Getting User Information
  - 6.3.4 Python Script Example: Getting Host Information
  - 6.3.5 APIC Programming
  - 6.3.6 API Overview
  - 6.3.7 Using Postman to Create a Tenant
  - 6.3.8 APIC Programming Tools
  - 6.3.9 NETCONF
  - 6.3.10 RESTCONF
  - 6.3.11 Lesson 3 Quiz
- 6.4.0 Lesson 4: Orchestration Tools
  - 6.4.1 Chef
  - 6.4.2 Puppet
  - 6.4.3 Ansible
  - 6.4.4 SaltStack
  - 6.4.5 INTERACTIVE EXERCISE: Orchestration Tool Identification
  - 6.4.6 Lesson 4 Quiz
- 6.5.0 Lesson 5: Network Automation with Cisco DNA Center and vManage
  - 6.5.1 Cisco DNA Center Overview
  - 6.5.2 Cisco DNA Center Workflows
  - 6.5.3 Overview of vManage
  - 6.5.4 Cisco DNA Center and vManage APIs

6.5.5 REST API Response Codes

6.5.6 REST API Security Considerations

6.5.7 Lesson 5 Quiz

6.6.0 Module 6 Summary

6.7.0 Module 6 Quiz

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## *7.0.0 Exam Preparation*

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7.1.0 Lesson 1: How to Register for the Exam

7.2.0 Lesson 2: Study Strategies

7.3.0 Lesson 3: What to do on Exam Day

7.4.0 Module 7 Summary