

ENCOR

Implementing Cisco Enterprise Network Core Technologies

Durata: 5 gg

Descrizione

Il corso ENCOR Implementing Cisco Enterprise Network Core Technologies rappresenta il pilastro fondamentale del percorso tecnologico e di certificazione Enterprise. Esso infatti prepara il partecipante all'esame Core della Certificazione CCNP Enterprise (Esame 350-401). Questo corso affronta tematiche fondamentali delle moderne infrastrutture di rete tra le quali: High availability, redundancy, FHRP, WLAN deployment, Cisco SD-WAN solution, Cisco SD-Access solution, wired and wireless QoS, VRF, GRE, IPsec tunneling, VXLAN, RSTP, MST, Advanced EIGRP e OSPF, eBGP, NetFlow, Flexible NetFlow, SPAN, RSPAN, ERSPAN, NETCONF, RESTCONF, Cisco DNA Center e altro ancora.

Prerequisiti

Si consiglia la partecipazione al CCNA.

Contenuti

Examining Cisco Enterprise Network Architecture

- Cisco Enterprise Architecture Model
- Campus LAN Design Fundamentals
- Traditional Multilayer Campus Layer Design
- Campus Distribution Layer Design

Understanding Cisco Switching Paths

- Layer 2 Switch Operation
- Investigate the CAM
- Control and Data Plane
- Cisco Switching Mechanisms
- Analyze Cisco Express Forwarding

Implementing Campus LAN Connectivity

- Revisiting VLANs
- Trunking with 802.1Q
- Troubleshoot VLAN and Trunk Issues
- Inter-VLAN Routing

Building Redundant Switched Topology

- Spanning-Tree Protocol Overview
- Spanning-Tree Protocol Operation
- Spanning-Tree Protocols Types and Features
- Tuning STP and Configuring RSTP
- Multiple Spanning Tree Protocol
- Configure Multiple Spanning Tree Protocol
- PortFast and BPDU Guard

Implementing Layer 2 Port Aggregation

- Need for EtherChannel

- EtherChannel Mode Interactions
- Layer 2 EtherChannel Configuration Guidelines
- EtherChannel Load-Balancing Options
- Troubleshoot EtherChannel Issues
- Troubleshoot EtherChannel

Understanding EIGRP

- EIGRP Features
- EIGRP Reliable Transport
- Establishing EIGRP Neighbor Adjacency
- EIGRP Metrics
- EIGRP Path Selection
- Explore EIGRP Load Balancing and Sharing
- EIGRP for IPv6
- Compare EIGRP and OSPF Routing Protocols

Implementing OSPF

- Describe OSPF
- The OSPF Process
 - OSPF Neighbor Adjacencies
- Building a Link-State Database
- OSPF LSA Types
- Compare Single-Area and Multiarea OSPF
- OSPF Area Structure
- OSPF Network Types
- Implement Multiarea OSPF

Optimizing OSPF

- OSPF Cost
- Implement OSPF Tuning
- OSPF Route Summarization
- OSPF Route Filtering Tools
- Apply OSPF Optimization
- Compare OSPFv2 and OSPFv3
- Implement OSPFv3

Exploring EBGP

- Interdomain Routing with BGP
- BGP Operations
- Types of BGP Neighbor Relationships
- BGP Path Selection
- BGP Path Attributes
- Configure and Verify Single-Homed EBGP

Implementing Network Redundancy

- Need for Default Gateway Redundancy
- Define FHRP
- Implementing HSRP
- HSRP Advanced Features
- Configure VRRP

- Cisco Switch High Availability Features
- Implementing NAT
 - Define Network Address Translation
 - NAT Address Types
 - Explore NAT Implementations
 - NAT Virtual Interface
 - Implement NAT
- Introducing Virtualization Protocols and Techniques
 - 12.2 Server Virtualization
 - 12.3 Need for Network Virtualization
 - 12.4 Path Isolation Overview
 - 12.5 Introducing VRF
 - 12.6 Configure and Verify VRF
 - 12.7 Introducing Generic Routing Encapsulation
 - 12.8 Configure and Verify a GRE Tunnel
- Understanding Virtual Private Networks and Interfaces
 - Site-to-Site VPN Technologies
 - IPsec VPN Overview
 - IPsec: IKE
 - IPsec Modes
 - IPsec VPN Types
 - Cisco IOS VTI
 - Configure Static VTI Point-to-Point Tunnels
- Understanding Wireless Principles
 - Explain RF Principles
 - Describe Watts and Decibels
 - Describe Antenna Characteristics
 - Describe IEEE Wireless Standards
 - Identify Wireless Component Roles
- Examining Wireless Deployment Options
 - Wireless Deployment Overview
 - Describe Autonomous AP Deployment
 - Describe Centralized Cisco WLC Deployment
 - Describe FlexConnect Deployment
 - Cloud Deployment and Its Effect on Enterprise Networks
 - Describe the Cloud-Managed Meraki Solution
 - Cisco Catalyst 9800 Series Controller Deployment Options
 - Describe Cisco Mobility Express
- Understanding Wireless Roaming and Location Services
 - Wireless Roaming Overview
 - Mobility Groups and Domains
 - Wireless Roaming Types
 - Describe Location Services
- Examining Wireless AP Operation
 - Universal AP Priming

- Explore the Controller Discovery Process
- Describe AP Failover
- Explain High Availability
- Explore AP Modes

Understanding Wireless Client Authentication

- Authentication Methods
- Pre-Shared Key (PSK) Authentication
- 802.1X User Authentication Overview
- PKI and 802.1X Certificate-Based Authentication
- EAP-Transport Layer Security (EAP-TLS)
- Protected Extensible Authentication Protocol (PEAP)
- EAP-FAST
- Guest Access with Web Auth
- Configure Wireless Client Authentication in a Centralized Deployment

Troubleshooting Wireless Client Connectivity

- Wireless Troubleshooting Tools Overview
- Spectrum Analysis
- Wi-Fi Scanning
- Packet Analysis
- Cisco AireOS GUI and CLI Tools
- Cisco Wireless Config Analyzer Express
- Common Wireless Client Connectivity Issues Overview
- Client to AP Connectivity
- 10 WLAN Configuration
- 11 Infrastructure Configuration
- 12 Troubleshoot Wireless Client Connectivity Issues

Introducing Multicast Protocols

- Multicast Overview
- Internet Group Management Protocol
- Multicast Distribution Trees
- IP Multicast Routing
- Rendezvous Point

Introducing QoS

- Understand the Impact of User Applications on the Network
- Need for Quality of Service (QoS)
- Describe QoS Mechanisms
- Define and Interpret a QoS Policy

Implementing Network Services

- Understanding Network Time Protocol (NTP)
- Logging Services
- Configure Syslog
- Simple Network Management Protocol (SNMP)
- Introducing NetFlow
- Flexible NetFlow
- Configure and Verify Flexible NetFlow

- Understanding Cisco IOS Embedded Event Manager (EEM)
- Configuring Cisco IOS Embedded Event Manager (EEM)

Using Network Analysis Tools

- Troubleshooting Concepts
- Network Troubleshooting Procedures: Overview
- Network Troubleshooting Procedures: Case Study
- Basic Hardware Diagnostics
- Filtered Show Commands
- Troubleshoot Connectivity and Analyze Traffic with Ping, Traceroute, and Debug
- Cisco IOS IP SLAs
- Configure and Verify Cisco IP SLAs
- Switched Port Analyzer (SPAN) Overview
- Remote SPAN (RSPAN)
- Encapsulated Remote Switched Port Analyzer (ERSPAN)
- Cisco Packet Capture Tools Overview

Implementing Infrastructure Security

- ACL Overview
- ACL Wildcard Masking
- Types of ACLs
- Configure Numbered Access Lists
- Use ACLs to Filter Network Traffic
- Apply ACLs to Interfaces
- Configure Named Access Lists
- Configure Standard and Extended ACLs
- Control Plane Overview
- Control Plane Policing
- Configure Control Plane Policing

Implementing Secure Access Control

- Securing Device Access
- AAA Framework Overview
- Benefits of AAA Usage
- Authentication Options
- RADIUS and TACACS+
- Enabling AAA and Configuring a Local User for Fallback
- Configuring RADIUS for Console and VTY Access
- Configuring TACACS+ for Console and VTY Access
- Configure Authorization and Accounting
- Implement Local and Server-Based AAA

Understanding Enterprise Network Security Architecture

- Explore Threatscape
- Intrusion Prevention Systems
- Virtual Private Networks
- Content Security
- Logging
- Endpoint Security

- Personal Firewalls
- Antivirus and Antispyware
- Centralized Endpoint Policy Enforcement
- Cisco AMP for Endpoints
- Firewall Concepts
- TrustSec
- MACsec
- Identity Management
- 802.1X for Wired and Wireless Endpoint Authentication
- MAC Authentication Bypass
- Web Authentication

Exploring Automation and Assurance Using Cisco DNA Center

- Need for Digital Transformation
- Cisco Digital Network Architecture
- Cisco Intent-Based Networking
- Cisco DNA Center
- Cisco DNA Assurance
- Cisco DNA Center Automation Workflow
- Cisco DNA Assurance Workflow

Examining the Cisco SD-Access Solution

- Need for Cisco SD-Access
- Software-Defined Access Overview
- Cisco SD-Access Fabric Control Plane Based on LISP
- Cisco SD-Access Fabric Data Plane Based on VXLAN
- Cisco SD-Access Fabric Policy Plane Based on Cisco TrustSec
- Cisco SD-Access Fabric Components
- Role of Cisco ISE and Cisco DNA Center in SD-Access
- Cisco SD-Access Wireless Integration
- Traditional Campus Interoperating with Cisco SD-Access

Understanding the Working Principles of the Cisco SD-WAN Solution

- Need for Software Defined Networking for WAN
- SD-WAN Components
- SD-WAN Orchestration Plane
- SD-WAN Management Plane
- SD-WAN Control Plane
- SD-WAN Data Plane
- SD-WAN Automation and Analytics

Understanding the Basics of Python Programming

- Describe Python Concepts
- String Data Types
- Numbers Data Types
- Boolean Data Types
- Script Writing and Execution
- Analyze Code
- Writing and Troubleshooting Python Scripts

Introducing Network Programmability Protocols

- Configuration Management
- Evolution of Device Management and Programmability
- Data Encoding Formats
- Explore JSON Objects and Scripts in Python
- Data Models
- Model Driven Programmability Stack
- Describe YANG
- REST
- NETCONF
- Explain NETCONF and YANG
- Describe the RESTCONF Protocol
- Cisco IOS XE and IOS XR Systems Overview
- Use NETCONF Via SSH
- Use RESTCONF with Cisco IOS XE Software

Introducing APIs in Cisco DNA Center and vManage

- Application Programming Interfaces
- REST API Response Codes and Results
- REST API Security
- API in DNA-Center
- REST API in vManage

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- Investigate the CAM
- Analyze Cisco Express Forwarding
- Troubleshoot VLAN and Trunk Issues
- Tuning Spanning Tree Protocol (STP) and Configuring Rapid Spanning Tree Protocol (RSTP)
- Configure Multiple Spanning Tree Protocol
- Troubleshoot EtherChannel
- Implement Multi-area OSPF
 - Implement OSPF Tuning
 - Apply OSPF Optimization
 - Implement OSPFv3
 - Configure and Verify Single-Homed EIGRP
 - Implementing Hot Standby Routing Protocol (HSRP)
 - Configure Virtual Router Redundancy Protocol (VRRP)
 - Implement NAT
 - Configure and Verify Virtual Routing and Forwarding (VRF)
 - Configure and Verify a Generic Routing Encapsulation (GRE) Tunnel
- Configure Static Virtual Tunnel Interface (VTI) Point-to-Point Tunnels
- Configure Wireless Client Authentication in a Centralized Deployment
- Troubleshoot Wireless Client Connectivity Issues
- Configure Syslog
- Configure and Verify Flexible NetFlow
- Configuring Cisco IOS Embedded Event Manager (EEM)
- Troubleshoot Connectivity and Analyze Traffic with Ping, Traceroute, and Debug

- Configure and Verify Cisco IP SLAs
- Configure Standard and Extended ACLs
- Configure Control Plane Policing
- Implement Local and Server-Based AAA
- Writing and Troubleshooting Python Scripts
- Explore JavaScript Object Notation (JSON) Objects and Scripts in Python
- Use NETCONF Via SSH
- Use RESTCONF with Cisco IOS XE Software

Certificazioni

Corso di preparazione al conseguimento della
Certificazione Cisco CCNP Enterprise ENCOR

Esame 350-401 Parte della Certificazione Cisco CCNP Enterprise
Implementing Cisco Enterprise Network Core Technologies (ENCOR)