

# CISC-15 - ENSLD - DESIGNING CISCO ENTERPRISE NETWORKS V2.0

Categoria: **Cisco**

## INFORMAZIONI SUL CORSO



Durata:  
5 Giorni



Categoria:  
Cisco



Qualifica Istruttore:  
Cisco Certified  
Instructor



Dedicato a:  
Professionista IT



Produttore:  
Cisco

## OBIETTIVI

After completing this course, you should be able to:

- Design EIGRP internal routing for the enterprise network
- Design OSPF internal routing for the enterprise network
- Design IS-IS internal routing for the enterprise network
- Design a network based on customer requirements
- Design BGP routing for the enterprise network
- Describe the different types and uses of MP-BGP address families
- Describe BGP load sharing
- Design a BGP network based on customer requirements
- Decide where L2/L3 boundary will be in your Campus network and make design decisions
- Describe layer 2 design considerations for Enterprise Campus networks
- Design a LAN network based on customer requirements
- Describe layer 3 design considerations in an Enterprise Campus network
- Examine Cisco SD-Access fundamental concepts
- Describe Cisco SD-Access Fabric Design
- Design an SD-Access Campus Fabric based on customer requirements
- Design service provider-managed VPNs
- Design enterprise-managed VPNs
- Design a resilient WAN
- Design a resilient WAN network based on customer requirements
- Examine the Cisco SD-WAN architecture
- Describe Cisco SD-WAN deployment options
- Examine Cisco SD-WAN—NAT and hybrid design considerations
- Design Cisco SD-WAN redundancy
- Explain the basic principles of QoS
- Design QoS for the WAN
- Design QoS for enterprise network based on customer requirements
- Explain the basic principles of multicast
- Exploring Multicast with PIM-SM
- Designing rendezvous point distribution solutions
- Describe high-level considerations when doing IP addressing design
- Create an IPv6 addressing plan

- Plan an IPv6 deployment in an existing enterprise IPv4 network
- Describe the challenges that you might encounter when transitioning to IPv6
- Design an IPv6 addressing plan based on customer requirements
- Describe Network APIs and protocols
- Describe YANG, NETCONF and RESTCONF

## PREREQUISITI

Attendees should meet the following prerequisites:

- Understand network fundamentals
- Implement LANs
- Implement Internet connectivity

Recommended prerequisites:

- CCNA - Implementing and Administering Cisco Solutions
- ENCOR - Implementing and Operating Cisco Enterprise Network Core Technologies

## CONTENUTI

### Designing EIGRP Routing

- Describe Scalable EIGRP Designs and Fast Convergence
- Examine EIGRP Autonomous Systems and Layered Designs
- Describe Scalable EIGRP Hub-and-Spoke and Stub Designs
- Describe EIGRP Convergence Features

### Designing OSPF Routing

- OSPF Neighbour Adjacencies and LSAs
- OSPF Scalability Issues
- Define Area and Domain Summarization
- OSPF Full and Partial Mesh
- OSPF Convergence
- Design Case Study Activity: Designing an Enterprise Connectivity

### Designing IS-IS Routing

- Describe IS-IS Routing Protocol
- Examine IS-IS Adjacencies and Authentication
- Describe IS-IS and OSPF Similarities
- Explore IS-IS Routing Logic
- Describe IS-IS Operations
- Examine Integrated IS-IS for IPv6

### Designing BGP Routing and Redundancy

- Identify IBGP Scalability Issues
- BGP Route Reflector Terminology
- Describe BGP-Split-Horizon
- Route Reflector Loop Prevention Mechanisms
- BGP Confederation Loop Prevention Mechanisms
- Compare BGP Load Sharing Designs

- Examine Dual and Multihomed BGP Designs

### **Exploring BGP Address Families and Attributes**

- BGP Address Families and Attributes
- BGP Route Selection Preferences
- Describe BGP Communities
- Examine a Case Study - Designing a Dual-Stack MP-BGP Environment
- Design Case Study Activity: Designing an Enterprise Network with BGP Internet Connectivity

### **Designing an Enterprise Campus LAN**

- Compare End-to-End and Local VLANs
- Describe the Layer 3 Access Layer
- Examine a Case Study
- Describe Cloud Deployment Models

### **Designing Layer 2 Campus**

- Describe VLANs, Trunks and VTP
- Understanding the Spanning Tree Protocol
- Understanding Layer 2 Security Techniques
- Understand MST, POE, and EnergyWise
- Describe Port Aggregation Considerations
- First-Hop Redundancy
- Describe Network Requirements of Applications
- Design Case Study Activity: Designing an Enterprise Campus LAN

### **Designing a Layer 3 Campus**

- The Benefits of Building Triangles
- Routing Convergence
- Describe Routing Protocols and Summarization
- Describe Default Routes, Redistribution and Filtering
- Examine Passive Interface, Routing Convergence and Routing IPv4 and IPv6
- Describe Network Management Best Practices

### **Discovering the Cisco SD-Access Architecture**

- Cisco Software Defined Access Overview
- Cisco Software-Defined Access Architecture
- Cisco SD-Access Node Roles
- Cisco Software-Defined Access Definition and Benefits
- Examine the Fabric Enabled Wireless LAN
- Role of Cisco SD-Access in Cisco DNA

### **Exploring Cisco SD-Access Fabric Design**

- Describe SD-Access Fabric Constructs
- Describe Design Requirements of Underlay Network
- Describe DHCP and Security Solutions for the Fabric Domain
- Describe Cisco SD-Access Wireless Fabric Constructs

### **Exploring Cisco SD-Access Site Design Strategy and Considerations**

- Cisco SD-Access Site Reference Models

- Cisco SD-Access Distributed Campus Considerations
- Migration to Cisco SD-Access
- Design Case Study Activity: Designing Cisco SD-Access in the Enterprise

### **Discovering Service Provider-Managed VPNs**

- WAN Connection Decision Points
- Describe Layer 3 MPLS VPN
- Use Routing Protocols at the PE-CE

### **Designing Enterprise-Managed VPNs**

- Enterprise-Managed VPNs Overview
- Describe GRE, mGRE and IPsec
- Describe Dynamic VTI, GET VPN, SSL VPN and Flex VPN
- Describe DMVPN
- Describe EIGRP DMVPN and DMVPN Scaling

### **Designing WAN Resiliency**

- WAN Design Overview
- Describe Common MPLS WNA Design Models
- Describe Common Layer 2 WNA Design Models
- Describe Common VPN WAN Design Models
- Describe Cellular VPN Design Models
- Remote Site Local Internet Connectivity
- Remote-Site LAN Design
- WAN Connectivity Case Study
- Describe Basic Traffic Engineering Techniques
- Describe Cloud Connectivity Options
- Design Case Study Activity: Designing Resilient Enterprise WAN

### **Examining Cisco SD-WAN Architectures**

- Describe SDN for the WAN
- Describe Cisco SD-WAN Components and Functions
- Describe the Orchestration Plane
- Describe the Management Plane
- Describe the Control Plane
- Describe the Data Plane
- Describe SD-WAN Analytics
- Describe the Overlay Management Protocol
- Define OMP Network Terminology
- Describe Transport Locators
- Describe Fabric Operation

### **Examining Cisco SD-WAN Deployment Design Considerations**

- Describe Controller Deployment Options
- Describe Controller Deployment Models
- Describe Cisco SD-WAN Cloud Deployment
- Describe Cisco SD-WAN Managed Service Provider Deployment
- Describe Cisco SD-WAN On-Premises Deployment
- Use Enterprise CA

- Describe Controller Placement and Challenges
- Describe Cloud Controller Connections
- Describe On-Premise Controller Connections
- Describe MPLS and Internet Interconnection
- Describe Deployment Considerations
- Describe On-Premises Deployment Considerations
- Describe vBond On-Premises Deployment

### **Examining Cisco SD-WAN-NAT and Hybrid Design Considerations**

- Describe Working with NAT
- Describe NAT Traversal Combinations
- Describe Zero-Touch Provisioning
- Describe Considerations for Hybrid Scenarios
- Describe Deployment Options: Pure Vs Hybrid

### **Designing Cisco SD-WAN Routing and High Availability**

- Describe Horizontal Solution Scale
- Describe SD-WAN Redundancy
- Describe Site Design
- Describe Path Redundancy
- Compare an Underlay Vs Overlay Network
- Describe SD-WAN Branch Connectivity
- Describe SD-WAN Privacy and Integrity
- Describe SD-WAN Secure Segmentation
- Describe SD-WAN Security Features
- Cisco SD-WAN Security Use Cases
- Design Case Study Activity: Designing Resilient Enterprise Cisco SD-WAN

### **Exploring QoS**

- IntServ vs DiffServ
- Explain Classification and Marking Tools
- Policers and Shapers
- Describe Queuing Tools
- Explain RFC 4594 QoS Recommendations

### **Designing LAN and WAN QoS**

- Need for Campus QoS
- Describe the Classification, Marking and Policing QoS Model
- Need for QoS in WAN and Branch
- Need for QoS in IPsec VPN
- Describe DMVPN QoS Considerations
- Describe SD-WAN Forwarding
- Describe SD-WAN QoS Operation
- Describe vEdge Queuing
- Design Case Study Activity: Designing QoS in an Enterprise Network

### **Introducing Multicast**

- Explain How IP Multicast Works
- Explain Multicast Groups

- Describe SD-WNA Multicast Application Support
- Describe the Functions of a Multicast Network
- Describe Multicast Protocols
- Describe Multicast Forwarding and RPF Check
- Explain Multicast Protocol Basics

### **Exploring Multicast with PIM-SM**

- Describe Multicast Distribution Trees Identification
- Describe Reciver Joins and Registering the Source
- Describe PIM-SM SPT Switchover
- Describe Multicast Routing Table
- Describe Basic SSM Concepts
- Describe Bidirectional PIM
- Describe DF Election and Messages
- Case Study: DF Election

### **Designing Rendezvous Point Distribution Solutions**

- Rendezvous Point Discovery
- Case Study: Auto-RP Operation
- Auto-RP and BSR Flooding
- MSDP Protocol Overview

### **Designing an IPv4 Address Plan**

- IPv4 Adress Planning Considerations
- Plan the IP Addressing Hierarchy
- Create an Addressing Plan
- Case Study: Design an IPv4 Address Space
- Case Study: Resolve Overlapping Address Ranges
- Allocating More IP Addresses

### **Exploring IPv6 (Self-Study)**

- IPv6 Address Planning Considerations
- IPv6 for an Enterprise
- Describe IPv6 Address Allocation: Linked IPv4 Into IPv6
- Describe IPv6 Address Allocation: Per Location/Type
- Describe IPv6 Address Allocation: Per VLAN

### **Deploying IPv6 (Self-Study)**

- Describe the IPv6 Phased Approach
- Identify IPv6 Services to Deploy
- IPv4 and IPv6 Coexistence
- Transition Mechanisms
- Describe NAT64 and DNS64
- Describe Manual Tunnels
- Describe Tunnel Brokers
- Describe 6rd
- Describe DS-Lite
- Describe LISP
- IPv6 Application Support

- IPv6 Related Security
- Design Case Study Activity: Designing an Enterprise IPv6 Network

### **Introducing Network APIs and Protocols (Self-Study)**

- Describing Network APIs and Protocols
- Describing the Evolution of Device Management and Programmability
- Describing Data Encoding Formats
- Describing JSON
- Describing XML
- Describing Data Models
- Describing the Model-Driven Programmability Stack
- Describing REST
- Describing NETCONF
- Describing RESTCONF
- Describing gRPC

### **Exploring YANG, NETCONF, RESTCONF, and Model-Driven Telemetry (Self-Study)**

- Define YANG, NETCONF and RESTCONF
- Describe YANG Concepts
- Describe NETCONF Concepts
- Describe RESTCONF Concepts
- Compare NETCONF and RESTCONF
- Describe gRPC and gNMI
- Define Model-Driven Telemetry
- Describe Stream Telemetry Data
- Explain Subscription
- Describe Dial-In and Dial-Out Model-Driven Telemetry

## **INFO**

**Esame:** 300-420 - Designing Cisco Enterprise Networks

**Materiale didattico:** Materiale didattico ufficiale Cisco in formato digitale

**Costo materiale didattico:** incluso nel prezzo del corso a Calendario

**Natura del corso:** Operativo (previsti lab su PC)