CISC-14 - ENARSI - IMPLEMENTING CISCO ENTERPRISE ADVANCED ROUTING AND SERVICES V1.1

Categoria: **Cisco**

INFORMAZIONI SUL CORSO

Durata:	Categoria:	Qualifica Istruttore:	Dedicato a:	Produttore:
5 Giorni	Cisco	Cisco Certified Instructor	Professionista IT	Cisco

OBIETTIVI

After completing this course you should be able to:

- -Configure, optimize, and troubleshoot enhanced interior gateway routing protocol (EIGRP)
- -Configure, optimize, and troubleshoot open shortest path first (OSPF)v2 and OSPFv3
- -Implement and troubleshoot route redistribution using filtering mechanisms
- -Implement path control using policy-based routing (PBR) and IP service level agreement (SLA)
- -Configure, optimize, and troubleshoot border gateway protocol (BGP)
- -Implement multiprotocol BGP (MP-BGP)
- -Describe the features of multiprotocol label switching (MPLS)
- -Describe the major architectural components of an MPLS virtual private network (VPN)
- -Identify the routing and packet forwarding functionalities for MPLS VPNs
- -Explain how packets are forwarded in an MPLS VPN environment
- -Implement Cisco internetwork operating system (IOS®) dynamic multipoint VPNs (DMVPNs)
- -Implement and troubleshoot dynamic host configuration protocol (DHCP)
- -Describe the tools available to secure the IPV6 first hop
- -Troubleshoot Cisco router security features
- -Troubleshoot infrastructure security and services
- -Troubleshoot network issues with Cisco DNA Center Assurance

PREREQUISITI

Attendees should meet the following prerequisites:

- -General understanding of network fundamentals
- -Basic knowledge of how to implement LANs
- -General understanding of how to manage network devices
- -General understanding of how to secure network devices
- -Basic knowledge of network automation

Recommended prerequisites:

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

CONTENUTI

Implementing EIGRP

- -EIGRP Features
- -EIGRP Reliable Transport
- -Explore EIGRP Operation
- -Compare EIGRP Classic and Named Mode
- -Exchange of Routing Knowledge in EIGRP
- -EIGRP Metrics
- -EIGRP Classic Mode Metric Calculation
- -Example of EIGRP Classic Mode Metric Calculation
- -EIGRP Feasibility Condition
- -Example of EIGRP Path Calculation

Optimizing EIGRP

- -EIGRP Queries
- -EIGRP Stub Routers
- -EIGRP Stuck in Active
- -EIGRP Summary Routes
- -EIGRP Load Balancing
- -EIGRP Authentication

Troubleshooting EIGRP (Self-Study)

- -Troubleshoot EIGRP
- -Troubleshoot EIGRP Neighbor Issues
- -Troubleshoot EIGRP Routing Table Issues
- -Troubleshoot EIGRP Stub
- -Troubleshoot EIGRP Summarization
- -Troubleshoot EIGRP for IPv6
- -Troubleshoot EIGRP Authentication

Implementing OSPF

- -OSPF Features
- -OSPF Operations
- -Hierarchical Structure of OSPF
- -Design Limitations of OSPF
- -OSPF Message Types
- -Compare OSPFv2 and OSPFv3
- -OSPFv2 and OSPFv3 LSA Types
- -Periodic OSPF Database Changes
- -Exchange and Synchronize LSDBs
- -Synchronize LSDB on Multi-Access Networks
- -Execution of the SPF Algorithm

Optimizing OSPF

- -OSPF Route Summarization
- -Default Routing in OSPF
- -OSPF Special Areas

-Default Route Cost in OSPF Special Areas
-OSPF Authentication
-OSPF Virtual Link

Troubleshooting OSPF (Self-Study)

-Components of Troubleshooting OSPF
-Troubleshoot OSPF Adjacency
-Troubleshoot OSPF Routing Issues
-Troubleshoot OSPF Path Selection
-Troubleshoot OSPF Special Areas
-Troubleshoot OSPF Summarization

Configuring Redistribution

-Route Redistribution
-Redistribution of Route Information
-Determine Default Metrics for Redistributed Routes
-Calculation of Costs for OSPF E1 and E2 Routes
-Types of Redistribution
-Mutual Redistribution
-Need for Redistribution
-Need for Redistribution Manipulation
-Filtering Tools: Distribute Lists
-Filtering Tools: Prefix Lists
-Filtering Tools: Route Maps
-Identity Caveats of Redistribution

Troubleshooting Redistribution (Self-Study)

-Troubleshooting Redistribution
-Troubleshoot Issues with Redistribution Route Feedback

Implementing Path Control

-Need for Path Control
-PBR Features and Benefits
-Explain How to Configure PBR
-Bidirectional Forwarding Detection
-BFD Operational Modes

Implementing IBGP

-BGP Fundamentals
-BGP Neighbor Relationships
-BGP Path Attributes
-BGP Path Selection
-BGP Transit AS Functionality
-IBGRP Path Processing
-IBGRP Split Horizon
-IBGRP Full Mesh

Optimizing BGP

-Configure the Weight Attribute

-Configure the MED Attribute
-Configure BGP Route Filtering
-Implement BGP Peer Groups
-IBGP Scalability Issues in a Transit AS
-Route Reflector Split-Horizon Rules
-Redundant Route Reflectors
-BGP Authentication

Implementing MP-BGP

-MP-BGP Support for IPv6
-IPv6 BGP Filtering Mechanisms

Troubleshooting BGP (Self-Study)

-Monitor BGP
-Troubleshoot BGP Neighbor Relationships
-Understand BGP Monitoring
-Troubleshooting IBGP
-Troubleshoot MP-BGP

Exploring MPLS (Self-Study)

-Describe Traditional IP Routing
-Describe MPLS Features and Benefits
-Explain MPLS Terminology
-Describe MPLS Architecture Components
-Describe the Architecture of Ingress Edge LSRs
-Describe the Architecture of Intermediate LSRs
-Describe the Architecture of Egress Edge LSRs

Introducing MPLS L3 VPN Architecture (Self-Study)

-Describe MPLS L3 VPN Architecture
-Describe PE Router Architecture
-Describe VRF
-Describe Methods of Propagating Routing Information Across the P-Network
-Describe Route Distinguishers
-Describe RD Operation in MPLS VPN
-Describe Route Targets
-Describe RT and RD Process Flow

Introducing MPLS L3 VPN Routing (Self-Study)

-Describe MPLS L3 VPN Routing Requirements
-Describe Support for Internet Routing
-Describe Routing Tables on PE Routers
-Describe the End-toEnd Flow of Routing Updates
-Describe End-toEnd VPN Packet Forwarding Mechanisims
-Describe VPN Penultimate Hop Popping
-Describe the Propagation of VPN Labels Between PE Routers

Configuring VRF-Lite

-PE Router Routing Contexts

- -VPN-Aware Routing Protocols
- -VRF Table
- -VRF-Lite Functionality
- -Implement VRF-Lite
- -Migration from Old to New Style VRF CLI
- -Routing with VRF-Lite

Implementing DMVPN

- -Overview of Cisco IOS DMVPN
- -DMVPN Solution Components
- -Understanding GRE
- -NHRP
- -DMVPN Operations
- -DMVPN Authentication
- -DMVPN Hub Configuration
- -DMVPN Spoke configuration
- -DMVPN Routing Configuration
- -Verify DMVPN

Implementing DHCP

- -DHCP Overview
- -DHCP Relay
- -DHCP Manual Address Binding
- -Describe DHCP Options
- -IPv6 Stateless Address Autoconfiguration Overview
- -DHCPv6 Overview
- -DHCPv6 Operation
- -Stateless DHCPv6 Overview
- -DHCPv6 Relay Agent
- -Troubleshoot DHCP
- -Troubleshoot IPv6 Address Assignment on Clients

Introducing IPv6 First Hop Security (Self-Study)

- -Describe IPv6 Snooping
- -Describe IPv6 ND Inspection
- -Describe IPv6 RA Guard
- -Describe DHCPv6 Guard
- -Describe IPv6 Source Guard
- -Describe IPv6 Destination Guard

Securing Cisco Routers

- -Interpret an IPv4 ACL
- -Implement an IPv4 ACL for Filtering
- -Implement a Time-Based IPv4 ACL
- -Interpret an IPv6 ACL
- -Implement an IPv6 ACL for Filtering
- -Troubleshoot Access Links
- -Describe Control Plane Security

- -Describe Control Plane Policing
- -CoPP Implementation Steps
- -Describe uRPF
- -uRPF Configuration Example

Troubleshooting Infrastructure Security and Services (Self-Study)

- -AAA Overview
- -AAA Configuration Using Local Database
- -AAA Configuration Using a AAA Server
- -Troubleshoot AAA
- -SNMP
- -Troubleshoot SNMP
- -Syslog
- -Network Management Protocols
- -NetFlow
- -Cisco Flexible NetFlow

Troubleshooting with DNA Center Assurance (Self-Study)

- -Need for DNA Assurance
- -Cisco AI Network Analytics
- -DNA Assurance Health Scores
- -Using Path Trace for Troubleshooting
- -Troubleshooting using DNA Assurance- Use Cases

Labs

- -Discovery Lab 1: Configure EIGRP Using Classic Mode and Named Mode for IPv4 and IPv6
- -Discovery Lab 2: Verify the EIGRP Topology Table
- -Discovery Lab 3: Configure EIGRP Stub Routing, Summarization, and Default Routing
- -Discovery Lab 4: Configure EIGRP Load Balancing and Authentication
- -Discovery Lab 5: Troubleshoot EIGRP Issues
- -Discovery Lab 6 : Configure OSPFv3 for IPv4 and IPv6
- -Discovery Lab 7: Verify the Link-State Database
- -Discovery Lab 8: Configure OSPF Stub Areas and Summarization
- -Discovery Lab 9: Configure OSPF Authentication
- -Discovery Lab 10: Troubleshoot OSPF Issues
- -Discovery Lab 11: Implement Routing Protocol Redistribution
- -Discovery Lab 12: Manipulate Redistribution
- -Discovery Lab 13: Manipulate Redistribution Using Route Maps
- -Discovery Lab 14: Troubleshoot Redistribution Issues
- -Discovery Lab 15: Implement PBR
- -Discovery Lab 16: Configure IBGP and EBGP
- -Discovery Lab 17: Implement BGP Path Selection
- -Discovery Lab 18: Configure BGP Advanced Features
- -Discovery Lab 19: Configure BGP Route Reflectors
- -Discovery Lab 20: Configure MP-BGP for IPv4 and IPv6
- -Discovery Lab 21: Troubleshoot BGP Issues
- -Discovery Lab 22: Configure Routing with VRF-Lite
- -Discovery Lab 23: Implement Cisco IOS DMVPN

-Discovery Lab 24: Obtain IPv6 Addresses Dynamically
-Discovery Lab 25: Troubleshoot DHCPv4 and DHCPv6 Issues
-Discovery Lab 26: Troubleshoot IPv4 and IPv6 ACL Issues
-Discovery Lab 27: Configure and Verify uRPF
-Discovery Lab 28: Troubleshoot Network Management Protocol Issues: Lab 1
-Discovery Lab 29: Troubleshoot Network Management Protocol Issues: Lab 2

INFO

Esame: 300-410 - Implementing Cisco Enterprise Advanced Routing and Services
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)