

CISCO CERTIFIED NETWORK PROFESSIONAL – CCNP (New Track) Training Program



This Program is ideally suited to following individuals who are:

- **Fresh University Graduates and like to develop their Career In CISCO**
- **Already working class who are willing to update and learn the new methodologies of CISCO and would like to get the certification of CISCO Second step CCNP**
- **Managers, Professionals, Network Engineers and Managers can also join, to learn the CISCO with the high tech professionals who have the extensive experience of Telecom sector at abroad.**

Program is offered by: 3D Educators – Trainers & Consultants

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Inauguration

The Training Program will be inaugurated by a senior member of 3DEducators

Program Structure

Number of classes in a week	Two Class Per Week
Duration of each class	2-Hour
Total Duration	60 Hours

Other Learning Activities:

Classroom Assignments	6
Presentations by Trainees	1

About the Program Designer & Instructor

The "CCNP" Program has been designed by the International company CISCO and will be conducted by Senior most consultants who having the huge experience of training and implementation On CISCO System. They have worked with various large multinational organizations and provide the training in local and abroad.

The Trainers who are conducting this program have the following positions in the different organization:

- ✓ CCIE, CCNP, CCNA
- ✓ Telecom Engineers
- ✓ CISCO Engineers

They trainers are foreign qualified and having the degrees of PhD, MBA (MIS), BE (Telecom), MCSE + I, MCDBA, A+ Certified and CCIE, CCNP, and CCNA Certified. s

CCNP Course Outline

1. Planning Routing Services to Requirements

- Assessing Complex Enterprise Network Requirements
- . Cisco conceptual network models, such as Cisco Enterprise

Architectures and the Cisco hierarchical network model

- . Cisco Enterprise Architecture
- . Traffic conditions in a converged network
- . Cisco SONA framework
- . Routing and routing protocols

Common Maintenance Processes and Procedures

Create a typical implementation plan

Typical implementation plan information and tasks

- . Implementation documentation

2. Implementing an EIGRP-Based Solution

- Planning Routing Implementations with EIGRP
- . Four key technologies employed by EIGRP
- . How EIGRP operates
- . Five components of the metric used by EIGRP
- . Calculate the EIGRP metric for a range of pathways between routers
- . Create a typical implementation plan for an EIGRP-based solution
- . Document EIGRP implementation, operations, and maintenance processes
- Implementing and Verifying Basic EIGRP for the Enterprise LAN Architecture
- . Commands used in a basic EIGRP configuration task
- . Select the interfaces and networks that will participate in EIGRP routing use the network command and wildcard masks
- . Verify basic EIGRP operations and that the router recognizes

EIGRP neighbors and their routes

- . Create neighbor relationships using the neighbor command and verify that the router recognizes EIGRP neighbors and routes
- . Control routing update advertisements using the passive-interface command
- . Configure and verify the last-resort gateway or default route

- . Why administrators may need to use manual route summarization over default automatic route summarization

- . **Configure and verify route summarization**

- **Configuring and Verifying EIGRP for the Enterprise WAN Architecture**

- . Effect on EIGRP operations when operating over a circuit emulation link such as Metro Ethernet or EoMPLS
- . Effect on EIGRP operations when operating over MPLS VPNs
- . Effect on EIGRP operations when operating over Frame Relay
- . Physical interface: dynamic DLCI mapping, static DLCI mapping, broadcast vs. non-broadcast
- . Logical multipoint interface: dynamic DLCI mapping, static DLCI mapping, broadcast vs. non-broadcast
- . Logical point-to-point interface
- . Configure and verify EIGRP operating over Frame Relay
- . Features of load balancing across equal paths
- . Configure and verify EIGRP load balancing across unequal cost paths
- . Evaluate why EIGRP defaults may need to be changed to ensure efficient use of bandwidth across WAN links
- . Configure EIGRP bandwidth use across WAN links

- **Implementing and Verifying EIGRP Authentication**

- . Evaluate router authentication
- . Message Digest 5 (MD5) authentication used in EIGRP
- . Configure MD5 authentication
- . Troubleshoot MD5 authentication

- **Advanced EIGRP Features in an Enterprise Network**

- . Factors affecting scalability in large internetworks
- . How EIGRP uses queries to update its routing tables in the event that a route is lost and there is no feasible successor
- . Mark the spokes of a large network as stubs to reduce EIGRP queries and thus improve network scaling
- . Why stuck-in-active (SIA) connections occur
- . Minimize active routes
- . Illustrate how graceful shutdown prevents loss of packets when routers go down

3. Implementing a Scalable Multiarea Network OSPF-Based Solution

- **Planning Routing Implementations with OSPF as Scalable Routing Protocol**

- . Link-state routing protocols
- . The two-tier hierarchy structure of OSPF

- . How routers running a link-state routing protocol establish neighbor adjacencies with their neighboring routers
- . How OSPF calculates the best path to each destination network
- . How routers use link-state updates (LSUs) to verify that links are still active
- . Different OSPF area types
- . Create a typical implementation plan for an OSPF-based solution
- . Create a typical implementation documentation package for an

OSPF-based solution

- How OSPF Packet Processes Work
 - . Five OSPF packet types
 - . How OSPF neighbor adjacencies are established
 - . Process of exchanging and synchronizing the link-state databases (LSDBs or topology tables) between routers
 - . How OSPF maintains synchronization of the LSDBs (topology tables) of all routers in the network
 - . Process of maintaining a database of only the most recent link-state sequence numbers
 - . How to verify that OSPF packets are flowing properly between two routers
- Improving Routing Performance in a Complex Enterprise Network
- **OSPF network types**
 - . Determine adjacency behavior in point-to-point links
 - . Determine adjacency behavior in a broadcast network
 - . Determine adjacency behavior in a Metro Ethernet and EoMPLS network
 - . Determine adjacency behavior in MPLS networks
- **Select a DR and BDR**
 - . Implement OSPF over different Frame Relay implementations
 - . Implement OSPF over Frame Relay NBMA
 - . Use subinterfaces in OSPF over Frame Relay
 - . Implement OSPF over a point-to-point Frame Relay network
 - . Implement OSPF over a point-to-multipoint Frame Relay network
- **Configuring and Verifying OSPF Routing**
 - . Configure basic single-area and multiarea OSPF
 - . Enable the route process
 - . Configure a router ID
 - . Enable OSPF on networks and interfaces using the network and IP ospf commands
 - . Configure basic multiarea OSPF operations
 - . Verify basic multiarea OSPF operations
 - . Neighbor relationship
 - . OSPF router types
 - . LSAs defined by OSPF

- . Interpret the OSPF LSDB and routing table
 - . How routing advertisements can be controlled using the passive-interface command
 - . Effects of a non-contiguous backbone or area that does not connect to area 0 and how (Design note: Network mergers are a good context) OSPF virtual links are used to address these issues
 - . Configure and verify an OSPF virtual link
 - . Change the cost metric from default values
- Lab 3-1 Debrief
 - Lab 3-2 Debrief
 - Configuring and Verifying OSPF Route Summarization
 - . Functions of interarea route summarization and external route summarization
 - . Configure route summarization in OSPF
 - . Benefits of a default route in OSPF
 - . Configure a default route injection into OSPF
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4. Implement an IPv4-Based Redistribution Solution
- Assessing Network Routing Performance and Security Issues
 - . Common network performance issues
 - . How distribution lists work
 - . Use distribution lists to control routing updates
 - . How prefix lists work
 - . Use a prefix list to control routing updates
 - . How route maps work
 - . Use route maps to control routing updates
 - . Use route maps to filter routes
 - . Suppress routing updates using passive interfaces
 - Operating a Network Using Multiple IP Routing Protocols
 - . The need to use multiple IP routing protocols
 - . Route redistribution
 - . Configure dynamic routing protocol updates for passive interfaces and distribute lists
 - . Use of Policy routing and route maps
 - . Seed metrics used by various routing protocols
 - . Process for points of distribution in a network and identifying possible routing loops
 - . Create a distribution and loop map for a given network
 - Configuring and Verifying Route Redistribution

- . Procedures necessary to configure route redistribution
- . How to redistribute routes into RIP
- . How to redistribute routes into EIGRP
- . How to redistribute routes into OSPF
- . Assess the advantages of administrative distance in terms of routing protocols
- . Modify administrative distance on the router globally for a particular routing protocol or specifically for certain routes to control path selection
- . Assess the impact of administrative distance changes on routing tables
- . Implement route maps with route redistribution to prevent routing loops
- . Verify route redistribution operations

5. Implementing Path Control

- Assessing Path Control Network Performance Issues
 - . Assess path control network performance
 - . Use filters to determine path selection
 - . Use PBR to determine path selection
 - . Configure and verify PBR
 - . Configure and verify PBR operations on a Cisco router

6. Connection of an Enterprise Network to an ISP Network

- Planning the Enterprise-to-ISP Connection
 - . Connectivity requirement between an enterprise network and an ISP
 - . Exchanging routing information across an ISP
 - . Static routes
 - . Common IGPs
 - . MPLS VPNs
 - . Circuit Emulation
 - . BGP
 - . Types of enterprise-to-ISP connections and their effect on the selection of an exchange method
 - . Single-homed
 - . Dual-homed
 - . Multihomed
 - . Dual-multihomed
- Considering the Advantages of Using BGP
 - . Connectivity between an enterprise network and an ISP that requires the use of BGP, including issues that arise when an enterprise decides to connect to the Internet through multiple ISPs
- . BGP multihoming options
- . How BGP routes between autonomous systems
- . How BGP uses path-vector functionality

- . Features of BGP in terms of deployment and enhancements over other distance vector routing protocol and database types
- Comparing the Functions and Uses of EBGP and IBGP
- . Terms used to describe BGP routers and their relationships
- . Requirements for establishing an external BGP (EBGP) neighbor relationship
- . Requirements for establishing an internal BGP (IBGP) neighbor relationship
- . Use of metrics
- **Configuring and Verifying Basic BGP Operations**
- . Initiate basic BGP configuration
- . Activate a BGP session for external and internal neighboring routers
- . Administratively shut down and re-enable a BGP neighbor
- . Select the factors and options to correctly configure BGP
- . BGP neighbor states
- . Configure MD5 authentication on the BGP TCP connection between two routers
- . Configure and verify BGP operations in a single-homed environment
- . Troubleshoot BGP configuration

- **Using the BGP Attributes and Path Selection Process**
- . BGP attributes that affect outbound EBGP path selection
- . Criteria for selecting a BGP path
- . Configure the AS path attribute to affect outbound EBGP path selection
- . How the local preference attribute can be configured to affect outbound path selection
- . Configure the weight attribute to affect outbound EBGP path selection
- . Use route maps to set selected attributes for selected routes to control outbound EBGP path selection
- . AS Path prepending
- . Local preference
- . Weight
- . How the MED attribute can be configured to effect inbound EBGP path selection
- . How the AS path attribute (AS prepending) can be configured to affect inbound EBGP path selection
- . How to use route maps to set selected attributes for selected routes to control outbound EBGP path selection
- . AS Path prepending
- . MED
- . Document implementation, operations, and maintenance Labs

E-Learning Training on IPv6 and Routing for Branch Offices and Remote Workers

- . Implementing IPv6
- . Implementing Routing Facilities for Branch Offices and Mobile Workers
- . Analyzing Mobile Workers Designs and Planning for Mobile Workers Installations
- . Directed Demo: Implement Special Facilities for Mobile Workers

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