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Learning Style: Virtual Classroom

Technology: Cisco

Difficulty: Advanced

Course Duration: 5 Days

CCIEEI Enterprise Infrastructure



About This Course:

The new CCIE Enterprise Infrastructure certification program prepares you for today’s expert-level job roles in enterprise infrastructure technologies. CCIE Enterprise Infrastructure now includes automation and programmability to help you scale your enterprise infrastructure.

Course Objectives:

Prepare for the CCIE Enterprise Infrastructure exam.

Audience:

Cisco Network Architects who are looking to achieve CCIE Certification.

Prerequisites:

There are no formal prerequisites for CCIE Enterprise Infrastructure, but we recommend candidates to have five to seven years of experience with designing, deploying, operating and optimizing enterprise networking technologies and solutions prior to taking the class. Experience or detailed understanding of IPV6, Software Defined Access, Software Defined WAN, BGP, MPLS, QOS, Security, Network Optimization, Network Programmability and Automation.

Course Outline:

VTP:

- VTP and different versions
- Pruning

EtherChannel:

- LACP
- Layer 2 and Layer 3

Spanning Protocol:

- 1d, 802.1w, and 802.1s

SPAN, RSPAN, and ERSPAN

DMVPN:

- All Phases
- Redundancy:
    - Two Clouds One Hub
    - Two Hubs one Cloud
    - Two hubs two Clouds

Running Routing Protocols

DMVPN over MPLS

EIGRP:

- RD, CD, S, FC, FS, and FD
- Configuration, and hidden debugging

- Authentications:
    - MD5, and SHA
- Summarization
- Load Balancing:
    - Equal Cost
    - Unequal Cost
    - Add-Path
- Filtering
- Default Route Injection
- Optimization:
    - Query Propagation Boundary
    - IP FRR
    - STUB routing (All Options)
- Metric:
    - Classic
    - Wide Metric
- Route Tags:
    - Decimal and Dotted-Decimal Notations
- OTP

OSPFv2:

- Overview and special cases
- GRE or Virtual-Links
- LSAs, FA, and RFCs (1583, 1587, 2328, 3101, 5185 and many more)
- Best Path Selection
- Network Types
- Area Types
- Optimization:
    - GTSM
    - LFA
- Default Route Injection
- Authentication:
    - RFC 2328
    - RFC 5709
- Summarization
- Filtering

BGP:

- States
- Establishing a Peer Session:
    - Regular method
    - Peer-Groups
    - Templates
- Best Path Selection
- Attributes:
    - Weight, AS-Path, Origin, Next-Hop, Local-Preference, Atomic-Aggregate Communities, Aggregator, and MED
- Load Balancing:

        - Equal Cost
        - Unequal Cost
    - Conditional Advertisement
    - Out/In Bound Route Filtering and the order
    - ORF
    - Multihoming Scenarios
    - AS-Path Manipulation:
        - Regexp
        - Local-as
        - Allow-as
        - Remove-Private-as
    - Convergence and Scalability:
        - Route Reflectors
        - Confederation
        - Aggregation (All Options)
    - Other BGP Features:
        - MultiPath
        - Add-Path
        - Route-Refresh
        - Soft Reconfiguration

IPv6:

- Acquiring an IPv6 Address:
    - IPv6 General Prefix
    - SLAAC
    - DHCPv6
        - Rapid-Commit
        - Relay
    - Prefix Delegation
- IPv6 and DMVPN
- EIGRPv6
- OSPFv3: Both flavors, LSAs, RFCs
- BGP for IPv6: IPv6 transport, and IPv4 route exchange
- Transitional Solutions:
    - NAT-PT
    - 6VPE
- Multicast
    - MLD
    - Static RP
    - BSR
    - Embedded RP
- IPv6 Traffic Filters
- RA Guard
- ND Inspection

MPLS:

- LDP, VRFs, RD, and RT
- L3VPNs

- Route Leaking
- PE to CE Routing

Security:

- Control Plane Policing
- VACLs
- Storm Control
- DHCP Snooping
- IP Source Guard
- DAI
- Private VLANs
- Port Security
- Access-lists
- uRPF
- Device Tracking
- IPsec
- Identity Use Case For FlexVPN
    - Site-to-Site
    - IKEv1, and IKEv2 Using Preshared Keys
- 1x Port Base Authentication
    - Device Roles
    - Port States
    - Authentication Process
    - Host Modes

Network Services:

- FHRP
    - HSRP, VRRP, and GLBP
- NAT
    - Static NAT, and PAT
    - Dynamic NAT
    - Policy-Base NAT
    - VRF-Aware NAT
    - VASI NAT

Software Defined Infrastructure:

- Cisco SD Access
    - Design a Cisco SD Access solution
    - Underlay network (IS-IS, manual/PnP)
    - Overlay fabric design (LISP, VXLAN, Cisco TrustSec)
    - Fabric domains (single-site and multi-site using SD-WAN transit)
- Cisco SD Access deployment
    - Cisco DNA Center device discovery and device management
    - Add fabric node devices to an existing fabric
    - Host onboarding (wired endpoints only)
    - Fabric border handoff
    - Segmentation

        - Macro-level segmentation using VNs
        - Micro-level segmentation using SGTs (using Cisco ISE)
    - Assurance
        - Network and client health (360)
        - Monitoring and troubleshooting
- Cisco SD-WAN
    - Design a Cisco SD-WAN solution
        - Orchestration plane (vBond, NAT)
        - Management Plane (vManage)
        - Control Plane (vSmart, OMP)
        - Data Plane (vEdge/cEdge)
- WAN edge deployment
- Onboarding new edge routers
- Orchestration with zero-touch provisioning/PnP
- OMP
- TLOC
- Configuration templates
- Localized policies (only QoS)
- Centralized policies
- Application aware Routing
- Topologies