

G-MAC

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Cisco Certified Network Professional (CCNP) Routing & Switching

No. of Course(s): 4

Duration per Course: 60 Hours

Total Duration: 240 Hours

Course: Building Scalable Cisco Internetworks (BSCI)

Content:

Implement EIGRP operations

- Explain the functions and operations of EIGRP (e.g., DUAL).
- Configure EIGRP routing. (e.g., Stub Routing, authentication, etc.)
- Verify or troubleshoot EIGRP routing configurations.

Implement multiarea OSPF operations

- Explain the functions and operations of multiarea OSPF.
- Configure multiarea OSPF routing. (e.g., Stub, NSSA, authentication, etc.)
- Verify or troubleshoot multiarea OSPF routing configurations.

Describe integrated IS-IS

- Describe the features and benefits of integrated IS-IS.
- Configure and verify integrated IS-IS.

Implement Cisco IOS routing features

- Describe, configure or verify route redistribution between IP routing IGPs. (e.g., route-maps, default routes, etc.)
- Describe, configure or verify route filtering (i.e., distribute-lists and passive interfaces).
- Describe and configure DHCP services (e.g., Server, Client, IP helper address, etc.).

Implement BGP for enterprise ISP connectivity

- Describe the functions and operations of BGP.
- Configure or verify BGP operation in a non-transit AS (e.g., authentication).
- Configure BGP path selection. (i.e., Local Preference, AS Path, Weight or MED attributes).

Implement multicast forwarding

- Describe IP Multicast (e.g., Layer-3 to Layer-2 mapping, IGMP, etc.).
- Describe, configure, or verify IP multicast routing (i.e., PIM Sparse-Dense Mode).

Implement IPv6

- Describe IPv6 addressing operations.
- Describe IPv6 interoperation with IPv4.
- Describe, configure or verify OSPF routing with IPv6 addressing.

Course: Building Cisco Multilayer Switched Networks (BCMSN)

Content:

Implement VLANs

- Explain the functions of VLANs in a hierarchical network.
- Configure VLANs (e.g., Native, Default, Static and Access).
- Explain and configure VLAN trunking (i.e., IEEE 802.1Q and ISL).

- Explain and configure VTP.
- Verify or troubleshoot VLAN configurations.

Conduct the operation of Spanning Tree protocols in a hierarchical network

- Explain the functions and operations of the Spanning Tree protocols (i.e., RSTP, PVRST, MISTP).
- Configure RSTP (PVRST) and MISTP.
- Describe and configure STP security mechanisms (i.e., BPDU Guard, BPDU Filtering, Root Guard).
- Configure and Verify UDLD and Loop Guard.
- Verify or troubleshoot Spanning Tree protocol operations.
- Configure and verify link aggregation using PAgP or LACP.

Implement Inter-VLAN routing

- Explain and configure Inter-VLAN routing (i.e., SVI and routed ports).
- Explain and enable CEF operation.
- Verify or troubleshoot InterVLAN routing configurations.

Implement gateway redundancy technologies

- Explain the functions and operations of gateway redundancy protocols (i.e., HSRP, VRRP, and GLBP).
- Configure HSRP, VRRP, and GLBP.
- Verify High Availability configurations.

Describe and configure wireless client access

- Describe the components and operations of WLAN topologies (i.e., AP and Bridge).
- Describe the features of Client Devices, Network Unification, and Mobility Platforms (i.e., CCX, LWAPP).
- Configure a wireless client (i.e., ADU).

Describe and configure security features in a switched network

- Describe common Layer 2 network attacks (e.g., MAC Flooding, Rogue Devices, VLAN Hopping, DHCP Spoofing, etc.)
- Explain and configure Port Security, 802.1x, VACLs, Private VLANs, DHCP Snooping, and DAI.
- Verify Catalyst switch (IOS-based) security configurations (i.e., Port Security, 802.1x, VACLs, Private VLANs, DHCP Snooping, and DAI).

Configure support for voice

- Describe the characteristics of voice in the campus network.
- Describe the functions of Voice VLANs and trust boundaries.
- Configure and verify basic IP Phone support (i.e. Voice VLAN, Trust and CoS options, AutoQoS for voice).

Course: Implementing Secure Converged Wide Area Networks (ISCW)

Content:

Implement basic teleworker services

- Describe Cable (HFC) technologies.
- Describe xDSL technologies.
- Configure ADSL (i.e., PPPoE or PPPoA).

- Verify basic teleworker configurations.

Implement Frame-Mode MPLS

- Describe the components and operation of Frame-Mode MPLS (e.g., packet-based MPLS VPNs).
- Configure and verify Frame-Mode MPLS.

Implement a site-to-site IPsec VPN

- Describe the components and operations of IPsec VPNs and GRE Tunnels.
- Configure a site-to-site IPsec VPN/GRE Tunnel with SDM (i.e., preshared key).
- Verify IPsec/GRE Tunnel configurations (i.e., IOS CLI configurations).
- Describe, configure, and verify VPN backup interfaces.
- Describe and configure Cisco Easy VPN solutions using SDM.

Describe network security strategies

- Describe and mitigate common network attacks (i.e., Reconnaissance, Access, and Denial of Service).
- Describe and mitigate Worm, Virus, and Trojan Horse attacks.
- Describe and mitigate application-layer attacks (e.g., management protocols).

Implement Cisco Device Hardening

- Describe, Configure, and verify AutoSecure/One-Step Lockdown implementations (i.e., CLI and SDM).
- Describe, configure, and verify AAA for Cisco Routers.
- Describe and configure threat and attack mitigation using ACLs.
- Describe and configure IOS secure management features (e.g., SSH, SNMP, SYSLOG, NTP, Role-Based CLI, etc.)

Implement Cisco IOS firewall

- Describe the functions and operations of Cisco IOS Firewall (e.g., Stateful Firewall, CBAC, etc.).
- Configure Cisco IOS Firewall with SDM.
- Verify Cisco IOS Firewall configurations (i.e., IOS CLI configurations, SDM Monitor).

Describe and configure Cisco IOS IPS

- Describe the functions and operations of IDS and IPS systems (e.g., IDS/IPS signatures, IPS Alarms, etc.)
- Configure Cisco IOS IPS using SDM

Course: Optimizing Converged Cisco Networks (ONT)

Content:

Describe Cisco VoIP implementations

- Describe the functions and operations of a VoIP network (e.g., packetization, bandwidth considerations, CAC, etc.).
- Describe and identify basic voice components in an enterprise network (e.g. Gatekeepers, Gateways, etc.)

Describe QoS considerations

- Explain the necessity of QoS in converged networks (e.g., bandwidth, delay, loss, etc.).

- Describe strategies for QoS implementations (e.g. QoS Policy, QoS Models, etc.).

Describe DiffServ QoS implementations

- Describe classification and marking (e.g., CoS, ToS, IP Precedence, DSCP, etc.).
- Describe and configure NBAR for classification.
- Explain congestion management and avoidance mechanisms (e.g., FIFO, PQ, WRR, WRED, etc.).
- Describe traffic policing and traffic shaping (i.e., traffic conditioners).
- Describe Control Plane Policing.
- Describe WAN link efficiency mechanisms (e.g., Payload/Header Compression, MLP with interleaving, etc.).
- Describe and configure QoS Pre-Classify.

Implement AutoQoS

- Explain the functions and operations of AutoQoS.
- Describe the SDM QoS Wizard.
- Configure, verify, and troubleshoot AutoQoS implementations (i.e., MQC).

Implement WLAN security and management

- Describe and Configure wireless security on Cisco Clients and APs (e.g., SSID, WEP, LEAP, etc.).
- Describe basic wireless management (e.g., WLSE and WCS). Configure and verify basic WCS configuration (i.e., login, add/review controller/AP status, security, and import/review maps).
- Describe and configure WLAN QoS.

Exam(s):

642-901 Building Scalable Cisco Internetworks (BSCI)

642-812 Building Cisco Multilayer Switched Networks (BCMSN)

642-825 Implementing Secure Converged Wide Area Networks (ISCW)

642-845 Optimizing Converged Cisco Networks (ONT)