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CCNA Training Syllabus

1. IPv4 ADDRESSING

- IP address
- Version of IP Address
- Characteristics of IPV4
- Classification of IPV4
- Public IP Address
- Private IP Address
- Network Mask
- Role Network mask in IP Addressing
- Default Mask of Classful IP Address
- IP Address is combination of Network bits & Host bits
- Network ID or Network Address
- Broadcast ID or Broadcast Address
- ANDing Process
- No. of Network ID's & Valid IP Address in Class A, Class B, Class C
- Subnetting
- Summarization
- Supernetting
- Tips & Tricks
 - » Network Address, Broadcast Address
 - » First Valid IP address,
 - » Last valid IP address,
 - » Valid range of IP address,
 - » Subnet mask,
 - » Block size,

- » Next Network Address,

2. Introduction of Cisco Router

- General port diagram of Cisco Routers
- Cable & Connection.
- Connectivity diagram of Cisco Routers with Network Devices
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3. IP ROUTING

- Basic Routing Concept
- Routed & Routing Protocols
- » Next hop
- » Longest Match
- » AD
- » Metric
- » Destination NID
- » Route Codes
- » Outgoing Interface
- AD & Metrics of Different Routing Protocols

4. Static Routing

Configure, Verify and Troubleshoot

- » Static Route
- » Default route

5. DYNAMIC PROTOCOLS & DYNAMIC ROUTING

- Types of dynamic protocols
- IGP vs. EGP protocols
- Link state vs. Distance Vector

6. OSPF (Open Shortest Path First)

- Configure, Verify and Troubleshoot
- OSPF Terminology
- Link-states Advertisement
- Router ID & its selection.

- Loopback Interface & Loopback Address
- Hello timer & Dead Timer
- Concept of Area in OSPF & its Advantages
- Backbone area
- Types of Area's in OSPF
- OSPF router interface Priority
- DR & BDR Concept
- Process ID
- Concept of Wild Card Mask
- ABR & ASBR
- Passive Interface
- AD & Metric
- Neighbor adjacency components
- OSPF router states
- OSPF LSA Types
- Discuss OSPF single & multi area
- Type of Tables in OSPF
 - » Neighbor Table
 - » Topology Table
 - » Routing Table
- Types of OSPF Network Topologies
 - » Point-to-Point
 - » BMA
 - » NBMA

7. EIGRP (Enhanced Interior Gateway Routing Protocol)

- Configure, Verify and Troubleshoot
 - » Feasible Distance / Feasible Successors /Administrative distance
 - » Feasibility condition
 - » Metric composition
 - » Auto summary & no auto summary
 - » Multicast address of eigrp
 - » Hello & Hold timer
 - » Variance factor
 - » AD's of eigrp

- » Passive interface
- » Wild card mask
- Types of Eigrp tables.
- » Neighbor Table
- » Topology Table
- » Routing Table
- Neighbor adjacency Parameter
- » Hello
- » ASN
- » METRIC WEIGHT

8. BGP (Border Gateway Protocol)

- Configure, Verify and Troubleshoot
- BGP Introduction
- BGP Neighbor & Network Implementation
- Types of ASN (public and private)
- Type of BGP Tables
- Type of BGP Neighbor
- Neighbor Adjacency components
- When to use BGP

9. Packet Filtering (ACL)

- Configure, Verify and Troubleshoot
- Types of ACL
- Inbound and outbound
- Standard and Extended (No. and Named)
- Drawback of Numbered ACL
- ACL Implementation Rules

10. WAN

- Introduction of WAN
- Advantage of NAT
- Static NAT, Dynamic NAT, PAT
- Configure, Verify and Troubleshoot
- Ppp authentication

- Ppp multilink

11. VPN

- Introduction of vpn
- Vpn models
- Gre terminology
- Mpls terminology
- Ip-sec vpn

12. IPv6

- Configure, Verify and Troubleshoot
- Introduction of IPv6
- Need of IPv6
- IPv6 addressing
 - » Link Local address
 - » Site local address
 - » Global Unicast Address
 - » Multicast Address
 - » eui 64
- IPv4 to IPv6 Migration
 - » Dual stack
- Different way to represent ipv6
- IPv6 supporting protocols

13. HOW TO MANAGE CISCO DEVICES

- Cisco Discovery Protocol (CDP)
- Resolving hostname
- Password recovery procedure
- Backup & Up gradation of IOS
- Backup & Up gradation of Configuration File
- telnet, ssh, syslog server, ntp

14. IP SERVICES

- DHCP
- DHCP Server (IOS Router)

- DHCP Client
- DHCP Pool
- Excluded addresses
- Lease Time
- Default Router

15. LAN Switching

- Introduction of Cisco Switches
- Collision Domain & Broadcast Domain
- Bridges and Hubs
- Bridge & its Function
 - » Forwarding
 - » Filtering
 - » Flooding
- Formation of MAC Table or CAM Table
- VLAN
 - Access port & Access link
 - Trunk port & Trunk link
 - How to form trunk & its requirements
 - Trunking Protocols ISL & dot1q
- DTP
- Inter-Vlan Routing
- SVI
- VTP & ITS MODE
- STP
 - STP Convergence Components
 - » lowest Bridge ID
 - » lowest RPC
 - » lowest Sender BID
 - » lowest Sender Port ID
 - STP Convergence Steps:
 - » Election of Root Bridge.
 - » Election of Root Port.

- » Election of Designated Port
- Spanning Tree Mode
- PVSTP
- STP Advance Feature
- » Uplinkfast
- » Portfast
- » Backbonefast
- Basic concept of RSTP
- Drawback of STP
- Concept of Etherchannel
- HSRP

16. Network Device Security

- Configure and verify network device security features such as
 - » Device password security
 - » Enable secret vs. enable
 - » Transport
 - » Disable telnet
 - » SSH
 - » VTYs
 - » Physical security
 - » Service password
- Configure and verify Switch Port Security
- Violation modes
 - » Shutdown
 - » Protect
 - » Restrict

17. OSI (Open System Interconnection) & TCP/IP

- Introduction to OSI or Layered Structure model
- Data encapsulation & De-encapsulation Process
- PDU form of Data at each layer
- Role of OSI layers
 - » Application
 - » Presentation

- » Session
- » Transport
- » Network
- » Data link
- » Physical
- Introduction of Protocols & Network Devices per layer
- OSI peer to peer communication diagram
- OSI Vs. TCP/IP
- TCP/IP Layers

18. Network Automation via Python script

19. Brief Introduction of SDWAN Arch.

- Controllers
- Transport
- Wan Edges Devices
- Types of VPN
- Types of Tunnels.
- Overlay fabric
- underlay fabric

20. Brief Introduction of QoS Components

- Best Effort
- Intserv
- Diffserv
- Delay
- Jitter
- Loss
- Queues
- Classification
- Marking
- Queuing
- Congestion
- Policing

- shaping

21. Brief Introduction of Wireless Component

- SSID
- RF
- Encryption
- Access Point
- Cisco Wireless Controllers

22. introduction of Two-Tier Architecture & Three-Tier Architecture

23. Introduction of Leaf & Spine

24. Introduction of Hosting Devices

- On Premise
- On Cloud

25. physical interface and cabling types

- Single-mode fiber
- multimode fiber, copper
- Connections (Ethernet shared media and point-to-point)
- Concepts of PoE