



CCNA



The Best Training Institute in Hyderabad



MODULE 1

Operation of IP Data Networks

- Functions of Routers, Switches, Bridges and Hubs
- OSI and TCP/IP models
- Data flow between two hosts across a network

LAN Switching Technologies

- Identify basic switching concepts
- Types of Switching
- Collision / Broadcast Domains
- CAM Table
- Configure and verify initial switch configuration
- Switch operation (ping, telnet and ssh)
- Identify enhanced switching technologies
- RSTP / PVSTP
- Ether channels
- Configure and verify VLANs / Trunking
- DTP / Auto negotiation
- Configure and verify PVSTP operation
- Root bridge election / STP Modes



IP Routing Technologies

- Describe basic routing concepts
 - o C E F
 - o Packet forwarding
 - o Router lookup process
- Describe the boot process of Cisco IOS routers
- Configure and verify basic Router configuration
- Configure and verify interface (serial and Ethernet)
- Configure and verify Static & Default routing
- Manage Cisco IOS Files
 - o Boot preferences / Cisco IOS image(s)
 - o Licensing
- Differentiate methods of routing and routing protocols
- Static vs. Dynamic
- Link state vs. Distance Vector



IP addressing (IPv4 / IPv6)

- Private and public IP addresses for IPv4
- IPv6 addressing scheme
- IPv4 addressing scheme using VLSM and summarization
- IPv6 in conjunction with IPv4 such as (dual stack)
- Describe IPv6 addresses
 - o Global unicast
 - o Multicast
 - o Link local
 - o Unique local
 - o eui 64
 - o auto configuration



Network Device Security

- Configure and verify network device security
 - o Enable secret vs enable
 - o Disable telnet
 - o SSH / VTYs
 - o Physical security
 - o Service password
- Configure and verify Switch Port Security
 - o Sticky MAC / MAC address limitation
 - o Static / dynamic
 - o Violation modes(Err disable/Shutdown)
 - o Protect restrict
 - o Err disable recovery



Troubleshooting

- Troubleshoot and Resolve VLAN problems
 - o Identify that VLANs are configured
 - o port membership correct
 - o IP address configured
- Troubleshoot and Resolve trunking problems
 - o trunk states
 - o encapsulation
 - o Allowed vlans
- Troubleshoot and Resolve STP
 - o Root switch
 - o Priority
 - o Mode
 - o Port states
- Troubleshoot and Resolve routing issues
 - o Administrative distance



- Configure and verify OSPF (single area)
 - o Benefit of single area
 - o neighbor adjacencies
 - o OSPF states, Multi area
 - o Configure OSPF v2 & OSPF v3
 - o Router ID, Passive interface, LSA types
- Configure and verify EIGRP (single AS)
 - o Feasible Distance / Feasible Successors
 - o Administrative distance
 - o Feasibility condition
 - o Metric composition
 - o Router ID, Auto summary, Path selection
 - o Load balancing (Equal & Unequal)
 - o Passive interface
- InterVLAN routing (Router on a stick)
 - o sub interfaces, encapsulation
- Configure SVI interfaces



IP Services

- Configure and verify DHCP (IOS Router)
 - o Configuring router interfaces to use DHCP
 - o DHCP options
 - o Excluded addresses, Lease time
- ACL (Types, Features & Applications of ACLs)
 - o Log option
- Configure and verify ACL
- Identify the basic operation of NAT
 - o Purpose, Pool, Static, 1 to 1 & Overloading
 - o Source addressing & One way NAT
- Configure and verify NAT
- Configure and verify NTP as a client
- Recognize High availability (FHRP, VRRP, HSRP & GLBP)
- Configure and verify Syslog.



- Describe SNMP v2 & v3
 - o Routing is enabled
 - o Routing table is correct
 - o Correct path selection
- Troubleshoot and Resolve OSPF problems
 - o Neighbor advances
 - o Hello and Dead timers
 - o OSPF area
 - o Interface MTU
 - o Network types, Neighbor states
 - o OSPF topology database
- Troubleshoot and Resolve EIGRP problems
 - o Neighbor adjancies
 - o AS number
 - o Load balancing



- Troubleshoot and Resolve interVLAN
 - o Connectivity
 - o Encapsulation
 - o Subnet, Native VLAN
 - o Port mode trunk status
- Troubleshoot and Resolve ACL issues
 - o Statistics, Permitted networks, Direction
- Troubleshoot and Resolve WAN implementation issues
 - o Serial interfaces, PPP, Frame relay
- Monitor NetFlow statistics
- Troubleshoot ether channel problems



WAN Technologies

- Identify different WAN Technologies
 - o Metro Ethernet, VSAT, Cellular 3G & 4G
 - o ISDN, DSL, Frame relay, MPLS, VPN & Cable
- Configure and verify Frame Relay on Cisco routers



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