CCNA COURSE CONTENT

Networking concepts

- Components of network – router, switch, hub, bridge etc

- Types of Network – LAN, MAN, WAN, VPN, PAN & Content Network

- Defining Network requirements – NIC- Ethernet (CSMA/CD)

- 10/100/1000 mbps DUPLEX (Half/Full/Auto) – Connecting Media – Coax.

- 10 base 2T – UTP/STP – CAT 1/2/3..

- Straight through/cross crimping (only details no practical)

- Fiber optics – Single/Multimedia

- 100 Base TX/FX etc – wireless communication.

- Ethernet cabling Standard.

- Connecting Devices

- Repeater – Hub – Switch – Bridge – Topology – Bus/Star/Ring

OSI – Model

- 7 Layers – Communication between the Layers (Encapsulation & De-encapsulation) – PDU.

- Layer 2 – MAC/LLC – 802.3/802.2 (SAP/SNAP) /Ethernet II – Frames

- Broadcast/Collision domain – point of -Hub/Switch/Router

- L4 – 3way handshake – windowing – and about – Connectionless

- Packet size [64B (mini) to 1518B (Max)]

TCP/IP Model & Ipv4 Addressing

- All Layers of TCP/IP Compound with – OS

- Application Layer – TFTP/FTP/SMTP/TELNET/SNMP/DNS

- Transport Layer – TCP/UDP – TCP Segment Format

- 3 way handshake/windowing – UDP segment Format

- Internet Layer

- IP datagram format – Protocol No. – TCP 6 – UDP 17

- ICMP – ARP – RARP

- Introduction to IP addressing – Class A/B/C/D/E

- Private IP address – First OCTET range etc.

Subnetting

- Default Subnet Mask

- Class C Subnetting & Practice no. given

- Class B Subnetting & problems

- Class A Subnetting & problems

Introduction to IPV6

- Introduction

- Host Address Assignment

- Unicast, Multicast and other Special ipV6 Addresses

- Configuring ipV6 Routing and Routing Protocols

- Translations between ipV4 and ipV6

- Summary

Basic of Router & Configuration

- Selection of Router & Cabling a Route

  - When Router used – LAN with WAN connect – to connect networks of different IP

- Different interface of Router – AUI /S0/S1/AUX – console / BRI etc.

- Cables used in different interfaces/purpose of interfaces

- WAN interface cable – EIA/TIA – 232/449/530 – V.35 – X.21

- Different CISCO series – modular/fixed – 10mbps/100 etc

- Straight through between DTE & DCE

Different modes of operation & basic commands

- Internal Components:

  - ROM – POST – BSL – ROM-MONITOR PRG – MINIIOS

  - Different interface of Router – AUI /S0/S1/AUX – console / BRI etc.

  - DRAM -Running Config

  - NVRAM – Startup Config

  - Flash MEM – IOS

- Different Modes:

  - ROM Monitor – Reboot Mode – Setup – Exec Model

- Exec Mode

  - User -Privilege – Global – Sub-configuration mode

  - Syntax/command to switch between modes

  - Assigning IP address for -E0-S0-S1

  - Enabling/disabling – console/privilege / vty password

  - Mold – command

  - Show Config / start / run / version / flash

- Basic commands practice

  - Changing between modes – (user-privilege- Global-etc)

  - IP address configuration-E0-S0-S1

- Password – enabling – encrypting it

- Practice – motd – show commands – editing commands

- Assigning host name (for Router)

- Advanced Commands

  - Register value – X2102 – boot field value/purpose ROM monitor made – password breaking 8th/6th/13th bit of register value importance

  - Boot system flash/network/ROM – config-register (Changing register value) – etc command purpose Booting sequence – Backup & Recovery – CDP

  - Practice an above commands as well as following

  - Telnet – [ctrl+shift+6]x – disconnect – sh users /Sessions

  - Clear lines resume – [hostname resolving in telnet domain Enabling/disabling etc – no practical for this alone]

  - Overview of Cisco SDM (Security Device Manager)

IP Routing

- IP Routing, Static Routing & Default Routing

  - IP routing – static routing – default- dynamic routing

  - Providing clock rate to up the link after identifying DCE by "Sh controllers" command

  - Commands/syntax – Static/default routing

- Static Routing & Default Routing

  - Practical-session for Static & default routing

- Dynamic Routing and RIP

  - Dynamic Routing – IGP & EGP.

- IGP – RIP-OSPF – EGRP – EIGRP

- Classes of Routing Protocol – Distance vector – Link State – Balanced hybrid

- Role of Routing Protocol – builds/updates/selects & Routes the packet

- Soluting for Routing loops – Max. loop count – split horizon – Route poison Reverse – Hold down Timer

- Features of RIP – distance vector algorithm – RIP V1/V2 – load sharing – metric (depends – loop count)

- Metric value depends – loop count – Ticks – delay – Reliability – cost – MTU – Bandwidth

- Command – Router RIP Network

- Sh IP route

- Timer value for RIP– Update/Invalid/ hold down/flush Timer

RIP

- Dynamic Routing – RIP Practical

Dynamic Routing EIGRP & OSPF

- Limitations of distance vector algorithm

- Features of EIGRP and its operations

- Configuring EIGRP – "Auto-redistribution"

- Verify and troubleshooting EIGRP

- Features of OSPF and its operation

- Configuring single area OSPF

- Verify and troubleshoot OSPF

Access List

- Purpose/advantage of Access-list

- IP [-for a host – for a network/sub network].

- Std IP access-list – wild card calculation

- Extd IP access list

- Switch port ACL,.

- Step involved in creating access list

- Applying access list at the interface – (inbound/outbound)

- Named access-list for IP

- Access-list in Telnet sessiont

- NAT IP standard Access List

  - Practical on

  - IP Std access-list

- IP Extended Access List

  - IP Extd access-list, named access lists

- NAT

  - Implement, Verify & Troubleshoot NAT

    - Explain the Basic Operation Of NAT

    - Using (including CLI/SDM)

    - Practicals on Static NAT, Dynamic NAT and PAT

    - Troubleshoot issues

- WAN Technologies

  - WAN Technologies- Leased Line

    - Leased line

    - P to P communication

- HDLC & PPP protocol-features

- Enabling HDLC & PPP

o PPP Link

- PPP layer & its explanation/role

- PAP/CHAP role

- Configuring PAP/CHAP using commands

o VPN

- Describe VPN technology

- Importance Of VPN

- Benefits & Role

- Impact & Components

o Frame-Relay

- Packet Switched Network

- Virtual circuit – DLCI – Access-link – CRI – FECN – BECN – LMI

- Enabling Frame-relay

- Inverse ARP

- Configuring frame-relay for

- Mesh Network

- Star Network

- Combination of above two

- Switching

o Switching Operation and Configuration

- Function –add-learning / Forward-filters the Frame / loop avoidance

- Redundant path and its problems

- Spanning Tree Protocol – purpose – its different state (blocking/listening/learning/forwarding)

- Modes of operation of switch/Bridge

- Port duplexing

- Switch & hub – half duplex

- Switch & Server – full duplex

- CISCO catalyst switch 1912 & 1924 interface details

- M/K/I modes

- Basic and advanced commands

- Enabling & configuring MAC address table

  - VLAN Configuration

    - VLAN – ISL – Trunking

    - Enabling Trunking

    - Assigning VLAN No. & name

    - Configuring ports to a specific VLAN

    - VTP purpose

    - VTP domain

    - VTP modes of operation

    - Switching Technologies (including VTP , RSTP , PVSTP, 802.1q)

    - Implement Basic Switch Security (including Port Security , Trunk access .etc)

- Wireless LAN

  - Wireless Intro & Operation

- Standards associated with Wireless Media (including WI-FI Alliance, ITU/FCC)

- Ad-hoc mode, infrastructure mode

- SSID, BSS, ESS

- Basic Parameters to configure on a Wireless Network

- Wireless Security Feature's (WEP, WPA 1 / 2)

- Implementing Wireless Networks

Contact for CCNA Training: +919885022027