Cisco™ CCNA : OSI and TCP/IP

OSI MODEL

Application : Responsible for identifying and establishing the availability of desired comm partner and verifying sufficient resources exist for comm. Ex: FTP, SMTP

Presentation : Responsible for presenting the data in standard formats. Some Presentation layer standards are JPEG, MPEG, MIDI, PICT, Quick Time, TIFF.

Session : Responsible for co-ordinating communication between systems/nodes. Some of the session layer protocols and interfaces: NFS, RPC, SQL, ASP, DNA SCP

Transport : Responsible for multiplexing upper-layer applications, session mgmt tearing down of virtual circuits, flow control and to maintain data integrity.

Network : Responsible for sending packets from the source network to the destination network using routing methods. Routers work at network layer.

Datalink : Consists of LLC sublayer and MAC sublayer. LLC handles error control, flow flow control, framing etc. MAC handles access to shared media such as ethernet.

Physical : Responsible for ultimate transmission of data over network communications media. Some of the standard interfaces at physical layer are EIA/TIA-232, V.24,V.35, HSSI

TCP/IP MODEL

Application : Defines TCP/IP application protocols and how host programs interface with transport layer services to use the network. Ex: FTP, SMTP, Telnet

Transport : Provides communication session management between host computers. Ex: TCP, UDP

Internet : Performs routing of IP datagrams.
Ex: IP, ARP, ICMP

Physical : Controls the hardware devices and media that make up the network.

Some important port numbers

FTP : 20 (Data), 21 (Control)	Telnet : 23	DHCP : 67 (Server) 68 (Client)	POP3 : 110
TFTP : 69	SMTP : 25	DNS : 53	HTTP : 80
IMAP:143	HTTPS:443	LDAP:: 389	SNMP: 161
SSH: 22	BGP:179	Time:37	Whois:43

Port numbers used by TCP/UDP: A port number can range from 0-65535, but port numbers between 0-1023 are termed as well known ports because most of the popular services are under this range only

Above 1023 : Used by upper layer protocols to set up sessions with other hosts and by TCP to use as source and destination addresses.