TCP/IP

The Transmission Control Protocol/Internet Protocol (TCP/IP) suit was created by the Department of Defense (DoD).

*The DoD model has

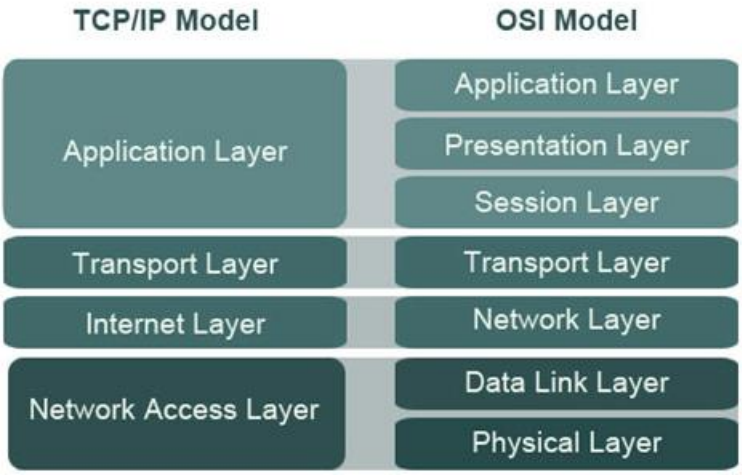
o The Process / Application Layer

o The Host-to-Host Layer

o The Internet Layer

o The Network-access Layer

2.1 Comparing OSI and TCP/IP Models



2.2 Process/Application Layer

- The Process/Application Layer defines protocols for node-to-node application communication and controls user interface specification.
- Examples for this layer are: Telnet, FTP, TFTP, NFS, SMTP, SNMP, DNS, DHCP etc.

o Telnet

*Telnet is used for Terminal Emulation.

*It allows a user sitting on a remote machine to access the resources of another machine.

o FTP (File Transfer Protocol)

* It allows you to transfer files from one machine to another.

* It also allows access to both directories and files.

* It uses TCP for data transfer and hence slow but reliable.

TFTP (File Transfer Protocol)

 This is stripped down version of FTP.

 It has no directory browsing abilities.

 It can only send and receive files.

 It uses UDP for data transfer and hence faster but not reliable.

o SNMP (Simple Network Management Protocol)

 SNMP enable a central management of Network.

 Using SNMP an administrator can watch the entire network.

 SNMP works with TCP/IP.

 IT uses UDP for transportation of the data.

o DNS (Domain Name Service)

 DNS resolves FQDN with IP address.

 DNS allows you to use a domain name to specify and IP address.

 It maintains a database for IP address and Hostnames.

o DHCP (Dynamic Host Configuration Protocol)

 Dynamically assigns IP address to hosts.

2.3 The Internet Layer Protocols

 Internet Protocol (IP)

 Internet Control Message Protocol (ICMP)

 Address Resolution Protocol (ARP)

 Reverse Address Resolution Protocol (RARP)

Internet Protocol (IP)

 Provides connectionless, best-effort delivery routing of datagram's.

 IP is not concerned with the content of the datagram's.

 It looks for a way to move the datagram's to their destination.

Internet Control Message Protocol (ICMP)

 ICMP messages are carried in IP datagram's and used to send error and control

messages.

 The following are some common events & messages that ICMP relates to:

o Destination Unreachable

o Ping

o Traceroute

Address Resolution Protocol (ARP)

 ARP works at Internet Layer of DoD Model

 It is used to resolve MAC address with the help of a known IP address.

RARP (Reverse ARP)

 This also works at Internet Layer.

 It works exactly opposite of ARP.

 It resolves an IP address with the help of a known MAC address.

 DHCP is the example of an RARP implementation.