Module-1: Data Communication Components - 3

Monday, January 17, 2022 3:23 PM

IP address — required for routing the packet outside the network perimeter.

TCP & IP — main protocols to carry data across the networks. (they are the main vehicles for carrying the data).

Encapsulation/Decapsulation: one of the important concepts in protocol layering in the Internet.

✓ **Transport Layer header**: identifies source and destination applications processes, information needed for flow control, error control or Congestion Control.

TL packet → Segment (TCP) — Transmission Control Protocol.

TL packet → User datagram (UDP) — User Datagram Protocol.

✓ **Network Layer header**: IP logical address of the source and the destination hosts, fragmentation information, information for error checking of the header, and so on.

N/W Layer packet — datagram.

↳ Data link layer header: physical/link layer addresses of the host or the next hop (router)

DL layer header - (frame)

↳ passed on the physical layer for transmission.

OSI Model.

Open system: set of protocols that allows two different systems to communicate regardless of their underlying hardware and software.

OSI - not a protocol but a model for understanding and designing a network architecture that is flexible, robust, and interoperable.

OSI model - a layered framework for the design of network systems that allows communication between all types of computers.

Presentation layer:

(1) Responsible for delivery and formatting of information to the application for further processing and display.
(different computer architectures have different data

to the application for further processing ...

(different computer architectures have different data representations). —— BIG ENDIAN SYSTEM
SMALL ENDIAN SYSTEM }

(2) handles all issues related to data presentation and transport, including translation, encryption, and compression.

Session Layer.

(1) Uses the services provided by the TL, enables applications to establish and maintain sessions and to synchronize sessions.

(2) the use of checkpoints by the session layer enables the communication session to resume communication from the point at which failure occurred. (useful for sending large files).

* Although services provided by the PL and SL were listed in the OSI model documentation, but actual protocols for these two layers were not fully defined/described and the corresponding s/w was not fully developed.