Assignment – 5

Title : UDP socket programming

Problem Statement :

Write a program in c/c++ using UDP sockets to enable file transfer (Script, text, audio and video one file each) between two machines. Demonstrate the packet captured trace wireshark packet Analyzer tool for peer to peer mode (transport layer protocol, UDP, ports, wireshark).

Objective :

- To learn about UDP socket programming
- File transfer using UDP.

Outcome :

Students will be able to:

- Implement UDP socket programming

Theory :

- User Datagram protocol.

UDP is a communication protocol that is primarily used for establishing low-latent and loss-tolerating connections between applications on the internet

It speeds up transmissions by enabling the transfer of data before an agreement is provided by the receiving party. As a result, UDP is beneficial in time-sensitive communications, including voice over IP (VoIP), domain name system (DNS) lookup, and video or audio playback.

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- UDP provides two services not provided by the IP layer. It provides port numbers to help distinguish different user requests and optionally a checksum capability to verify that the data arrived intact.

* Features of UDP:

- It allows packets to be dropped and received in a different order than they were transmitted, making it suitable for real time applications where latency might be a concern.
- It can be used for transaction-based protocols, such as DNS or Network Time Protocol (NTP)
- It can be used where a large number of clients are connected and where real-time error correction isn't required. such as gaming, voice or video conferencing and streaming media.

- UDP characteristics include the following:
  - It is a connectionless protocol.
  - It is used for VoIP, video conferencing, gaming and live broadcasts.
  - It is faster and needs fewer resources. The packets don't necessarily arrive in order.
  - It allows missing packets - the receiver is unable to know whether a packet has been received.
  - It is better suited for applications that need fast, efficient transmission, such as games.

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* client server model.

The scenario of the client and server on the same local network (usually called LAN, Local Area Network).

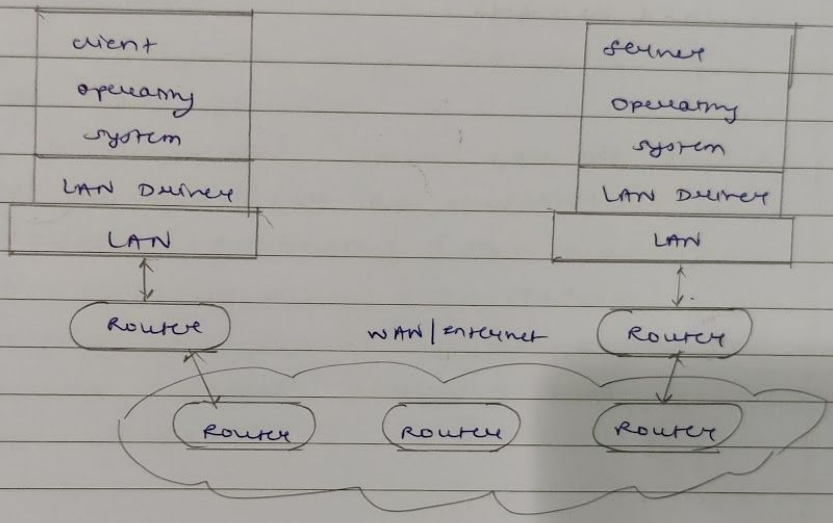


Fig. client & server on different LANs connected through LAN / Internet

- UDP SOCKET API :

There are some fundamental differences between TCP & UDP sockets. UDP is a connectionless, unreliable, datagram protocol (TCP is instead connection-oriented, reliable, and stream based). There are some instances when it makes to use UDP instead of TCP, some popular applications built around UDP are DNS, NFS, SNMP and for example, some Skype services & streaming media.

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Conclusion :

Hence, we studied and implemented program to demonstrate UDP socket programming for wired network