

P08: Networking with UDP

Q1: Understand the Basics of User Datagram Protocol

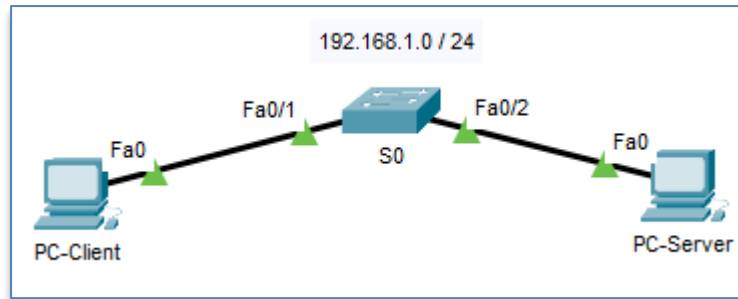
In computer networking, the User Datagram Protocol (UDP) is one of the core members of the Internet protocol suite. The protocol was designed by David P. Reed in 1980 and formally defined in RFC 768. With UDP, computer applications can send messages, in this case referred to as datagrams, to other hosts on an Internet Protocol (IP) network. Prior communications are not required in order to set up communication channels or data paths.

UDP uses a simple connectionless communication model with a minimum of protocol mechanisms. UDP provides checksums for data integrity, and port numbers for addressing different functions at the source and destination of the datagram. It has no handshaking dialogues, and thus exposes the user's program to any unreliability of the underlying network; there is no guarantee of delivery, ordering, or duplicate protection. If error-correction facilities are needed at the network interface level, an application may use Transmission Control Protocol (TCP) or Stream Control Transmission Protocol (SCTP) which are designed for this purpose.

UDP is suitable for purposes where error checking and correction are either not necessary or are performed in the application; UDP avoids the overhead of such processing in the protocol stack. Time-sensitive applications often use UDP because dropping packets is preferable to waiting for packets delayed due to retransmission, which may not be an option in a real-time system.

Q2: Configuring a UDP Client and a UDP Server

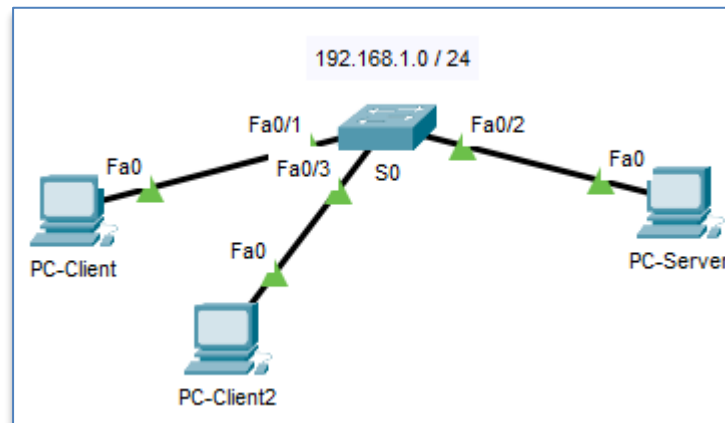
- Open **PTLab 08.2.pka** and implement the network shown below:



In this activity, a **TCP socket in Python** will be used to send data from PC-Client to PC-Server.

Q3: Try me! Questions

1. Connect another client to S0 as shown below and forward messages from PC-Client to PC-Client2 (via PC-Server) vice versa. (you may assume PC-Client, PC-Client2 are two chat clients)



2. In Q2, try to simulate a packet drop during the data transmission from PC-Client to PC-Server. See whether UDP recovers from the lost packet.

Summary

1. Understand the Basics of User Datagram Protocol
2. Configuring a UDP Client and a UDP Server
3. **Try me! Questions**



WELL DONE!