User Datagram Protocol (UDP)

Functionality

The User Datagram Protocol (UDP) is a connectionless communication protocol used for transmitting data through computer networks. It doesn't establish a connection before transmitting the data, instead it sends data (called datagrams) independently, and each datagram contains the information needed for delivery. These datagrams consist of three main components: the port number of the sender, the port number that the receiver is listening to, and the total length of the datagram (including the header and the data).

Common Use Cases

UDP is used in applications where the speed is important, and occasional data loss is acceptable. These common use cases include: streaming services like IPTVs, and live broadcasts, online multiplayer games, and DNS queries.

Advantages & Disadvantages

- Advantages:
  - UDP is perfect for real-time applications where delays can be critical, like gaming, live video streaming, and IPTVs
  - UDP is very fast, due to its lack of error-checking, and as it doesn't establish connections before sending data
  - Its lack of handshaking, and lightweight structure reduce its bandwidth

- Disadvantages:
  - UDP doesn't guarantee that the data will be received by the receiver
  - UDP doesn't provide an error-checking or error-correction mechanisms