

# User Datagram Protocol

## Introduction

UDP is simplest Transport Layer communication protocol available of the TCP/IP protocol suite. It involves minimum amount of communication mechanism. UDP is said to be an unreliable transport protocol but it uses IP services which provides best effort delivery mechanism.

In UDP, the receiver does not generate an acknowledgement of packet received and in turn, the sender does not wait for any acknowledgement of packet sent. This feature makes this unreliable as well as easier on processing.

## Requirement:

Why do we need an unreliable protocol to transport data? We deploy UDP where the acknowledgement packets share significant amount of bandwidth with the actual data. Say for example, in Video streaming thousands of packets are forwarded towards its users. Acknowledging all the packets is troublesome and may contain huge amount of bandwidth wastage. The best delivery mechanism of underlying IP protocol ensures best efforts to deliver its packets, but even if some packets in video streaming get lost, the impact is not huge and can be ignored easily. Loss of few packets in video and voice traffic sometime goes unnoticed.

## Features:

- UDP is used when acknowledgement of data does not hold any significance.
- UDP is good protocol for data flowing in one direction.
- UDP is simple and suitable for query based communications.
- UDP is not connection oriented.
- UDP does not provide congestion control mechanism.
- UDP does not guarantee ordered delivery of data.
- UDP is stateless.
- UDP is suitable protocol for streaming applications such as VoIP, multimedia streaming.

## UDP Header:

UDP header is as simple as its function



[Image: UDP Header]

UDP header contains four main parameters:

- **Source Port:** This 16 bits information is used to identify the source port of the packet.
- **Destination Port:** This is also 16 bits information, which is used identify application level service on destination machine.
- **Length:** Length field specifies the entire length of UDP packet (including header). It is 16-bits field and minimum value is 8-byte, i.e. the size of UDP header itself.
- **Checksum:** This field stores the checksum value generated by the sender before sending. IPv4 has this field as optional so when checksum field does not contain any value is made 0 and all its bits are set to zero.

## UDP application:

Here are few applications as example, which uses UDP to transmit data:

- Domain Name Services
- Simple Network Management Protocol
- Trivial File Transfer Protocol
- Routing Information Protocol
- Kerberos

Source:

[http://www.tutorialspoint.com/data\\_communication\\_computer\\_network/user\\_datagram\\_protocol.htm](http://www.tutorialspoint.com/data_communication_computer_network/user_datagram_protocol.htm)