

## UDP: User Datagram Protocol

UDP is a connectionless transport layer (layer 4) protocol in OSI model, which provides a simple and unreliable message service for transaction-oriented services. UDP is basically an interface between IP and upper-layer processes. UDP protocol ports distinguish multiple applications running on a single device from one another.

Since many network applications may be running on the same machine, computers need something to make sure the correct software application on the destination computer gets the data packets from the source machine, and some way to make sure replies get routed to the correct application on the source computer. This is accomplished through the use of the UDP "port numbers". For example, if a station wished to use a Domain Name System (DNS) on the station 128.1.123.1, it would address the packet to station 128.1.123.1 and insert destination port number 53 in the UDP header. The source port number identifies the application on the local station that requested domain name server, and all response packets generated by the destination station should be addressed to that port number on the source station. Details of UDP port numbers could be found in the TCP/UDP Port Number document and in the reference.

Unlike the TCP , UDP adds no reliability, flow-control, or error-recovery functions to IP. Because of UDP's simplicity, UDP headers contain fewer bytes and consume less network overhead than TCP.

UDP is useful in situations where the reliability mechanisms of TCP are not necessary, such as in cases where a higher-layer protocol might provide error and flow control, or real time data transportation is required.

UDP is the transport protocol for several well-known application-layer protocols, including Network File System (NFS) , Simple Network Management Protocol (SNMP) , Domain Name System (DNS) , and Trivial File Transfer Protocol (TFTP).

### Protocol Structure - UDP User Datagram Protocol Header

16	32 bit
Source port	Destination port
Length	Checksum
Data	

- Source port - Source port is an optional field. When used, it indicates the port of the sending process and may be assumed to be the port to which a reply should be addressed in the absence of any other information. If not used, a value of zero is inserted.
- Destination port - Destination port has a meaning within the context of a particular Internet destination address.

- Length - It is the length in octets of this user datagram, including this header and the data. The minimum value of the length is eight.
- Checksum -- The sum of a pseudo header of information from the IP header, the UDP header and the data, padded with zero octets at the end, if necessary, to make a multiple of two octets.
- Data - Contains upper-level data information.