

UDP – User Datagram Protocol (1/4)

1

- TCP provides a reliable, connection-oriented transport service, but at the same time implementation and execution of the TCP protocol requires considerable effort (e.g. for connection establishment and termination)
- **UDP – User Datagram Protocol** is an alternative, especially for sending short messages without having to establish a connection beforehand. It is a connectionless, unreliable transport service.
- UDP, like TCP, is located directly on IP and provides as functionality just the communication ports - **UDP ports** - for linking the communicating applications

UDP – User Datagram Protocol (2/4)

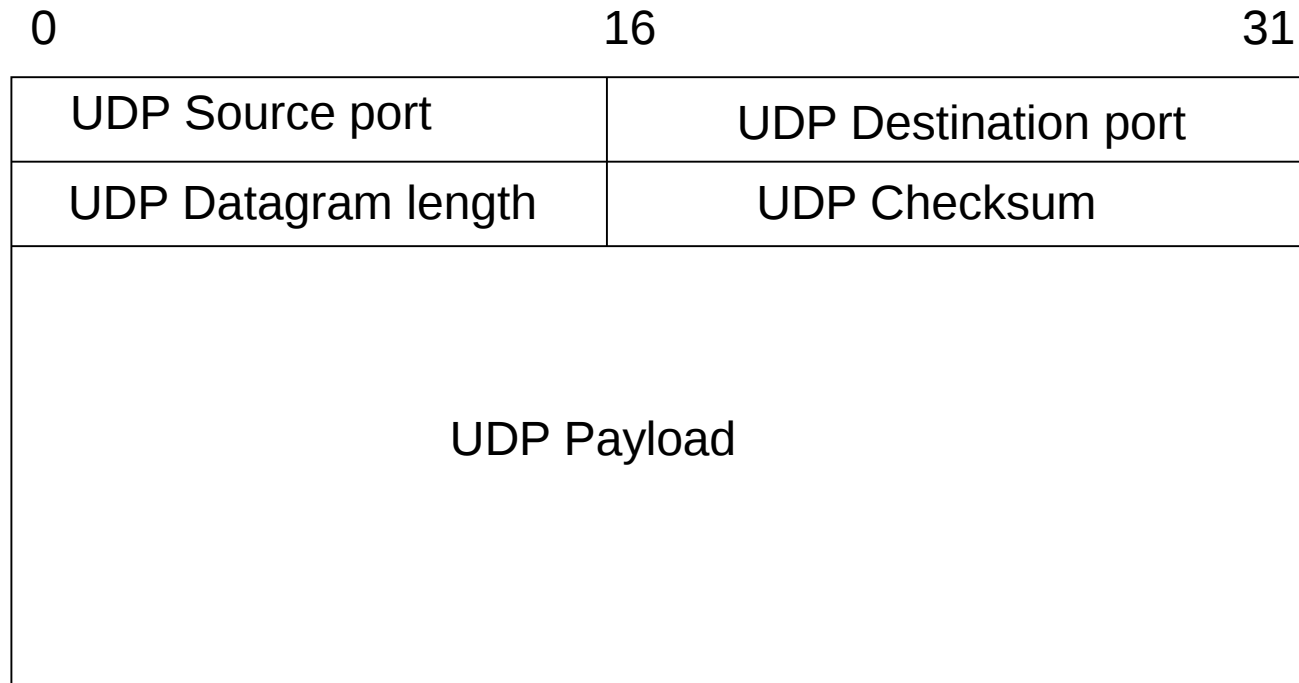
2

- UDP is used by different protocols on the application layer, which are limited to **simple query/response interaction** , e.g.
 - TFTP - 69, DNS - 53, NTP - 123, RPC - 111, LDAP - 389, ...
- UDP receives data from applications via their ports and forwards it as encapsulated UDP datagrams to IP for transmission – **port multiplexing**
- Port numbers established for TCP and UDP can be different, however, they must be the same if they are to be used by both protocols

UDP – User Datagram Protocol (3/4)

3

Structure of a UDP data packet – UDP datagram:



UDP – User Datagram Protocol (4/4)

4

Structure of the header of a UDP datagram:

- **Source port** (16 bits) – port number of the sender
- **Destination port** (16 bits) – port number of the receiver
- **Length** (16 bits) – length of the UDP datagram in bytes, minimum 8 bytes (header length)
- **Checksum** (16 bits) – via UDP header, UDP payload and pseudo header with the algorithm used in IP (calculation is optional)