Linux Networking: udp

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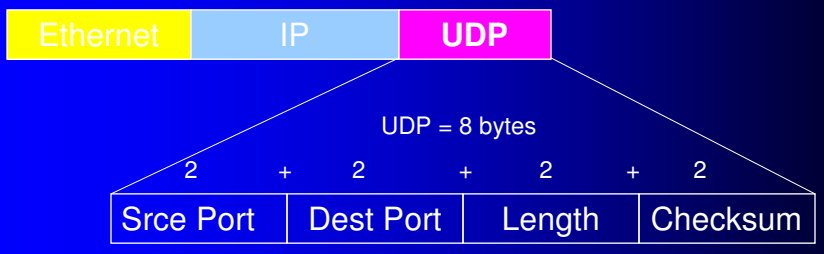
UDP

- Stateless, unreliable transport protocol with no delivery guarantee
- performance over reliability
- well suited to broadcast and discovery type messaging
- RFC 768 and RFC 1122 (STD 6)

UDP Ports

- UDP multiplexes among various upper layer protocols by using PORTS
- 16 bit port numbers are assigned to specific applications by UDP
- Some UDP ports use "Well Known" numbers (53 DNS, 69 TFTP etc)

UDP header



UDP Header

- Source Port - originator of the data
  - Not required can legally be 0
- Destination Port - destination application
- Length - length of the UDP header and following date
- Checksum - over IP "pseudo header", UDP header and data
  - Optional - can be left 0xFFFF

UDP checksum

- To detect errors (sent-vs-received mismatch)
- Sender algorithm
  - sum all 16-bit words in packet
  - take binary 1's-complement
  - place in checksum field
- Receiver algorithm
  - sum all 16-bit words in packet
  - add to that the checksum
  - result should be 1111111111111111

Algorithm example

data:

in ASCII-	A	B	C	D
in binary-	01000001	01000010	01000011	01000100

sum:

```
  01000001 01000010
  01000011 01000100
  ----------------
  10000100 10000110
```

these add to
11111111 11111111

1's-comp: 01111011 01111001
(checksum)

so had better sum of received data plus received checksum

Who uses UDP instead of TCP?

- streaming applications
- discovery tools
- certain application protocols
  - DNS
  - TFTP
  - traceroute

UDP Trace (traceroute –m1 www.ucla.edu)