UDP - Transport Layer

TCP/IP class

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intro

- UDP - user datagram protocol
- RFC 768
- UDP == “ip with ports”
- client/server both “bind” to a port and you send messages/recv them from a port
- port is 0..64k-1, unsigned short
- well-known ports associated with servers

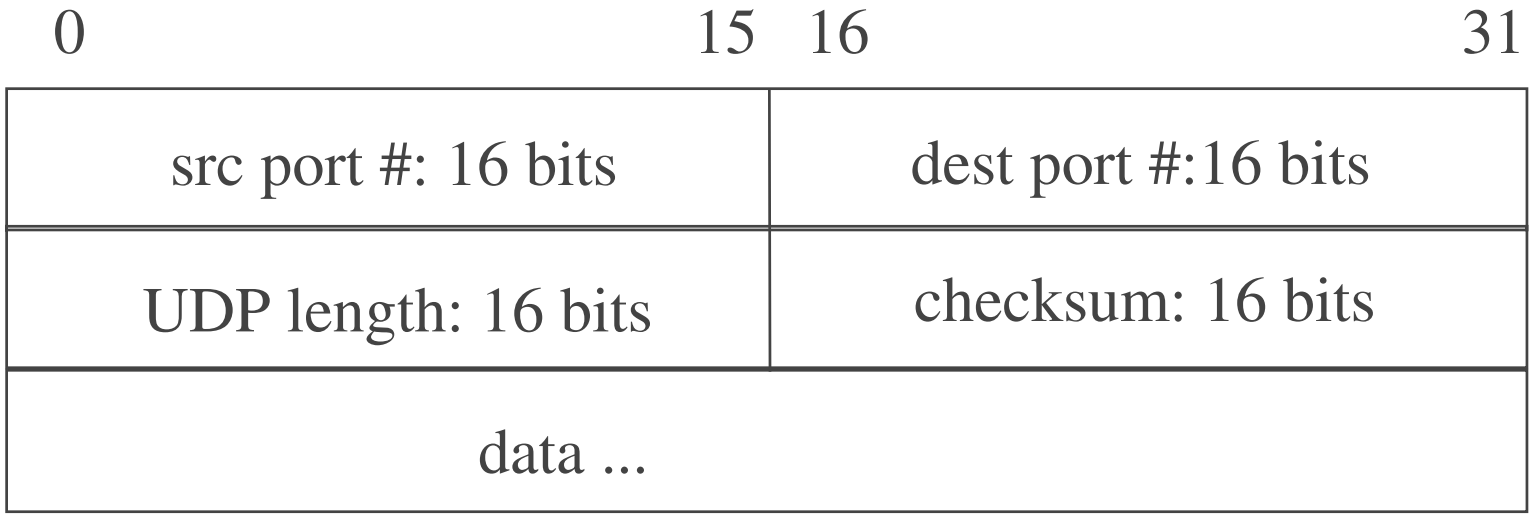
intro, cont

- UDP provides unreliable connectionless delivery
- there is a checksum, but it is configured on/off per host - has been typically off in the past (that may be changing)
- checksum is over ip pseudo header, udp header, and data
- 0 put in checksum field in header to compute, if 0 is sent, means csum off

udp encapsulation

8 bytes (no options)

udp header



length includes header, minimum is 8

psuedo-header

- udp code must tack on ip pseudo-header and optionally perform checksum over it
  - 32 bit source ip address
  - 32 bit dest. ip address
  - 1 byte zero
  - 1 byte proto = 17 (UDP)
  - 2 bytes UDP length == 12 bytes in all
- idea is to include IP addresses (etc) into checksum in order to prove that dest is correct

apps that use UDP

- statistically, broadcast oriented
  - routing daemons (rip and routed)
  - rwho
- multicast apps
  - need multicast, tcp can't do that
  - need sequencing, timestamp, udp doesn't do that
- message-oriented
  - snmp
  - dns

apps, cont

- NFS - distributed file system - why?
  - one reason is that TCP needs too much kernel state (memory) for connections (virtual circuit problem #1)

study questions

- so if UDP over localhost OR on a local network works fine, why not just use it for a file transfer?
- how can you find out if UDP checksums are on, off on your host? Can you find a way to turn them on/off?