UDP

10강

User Datagram Protocol

- Transport layer protocol with low overhead
- UDP has the datagram model
  - No stream
- 3 Uses of UDP
  - Non-unicast
  - Real-time
  - Short transactions

UDP

- Does little more than what IP does
  - Delivery between interface and process
  - Port number is the “address” it uses
- UDP format (Fig. 10-2)
  - Simple: 2 port numbers, length (header+payload), checksum (usual Internet checksum)

UDP header

- Port number
  - Associated with a process (running program)
    - If no association is found, ICMP Port Unreachable is returned to the source by UDP
    - In TCP, it is Reset flag that is returned, not the ICMP error
  - Required to find the process
    - Remember ICMP error carries the starting part of the dead IP datagram? Now you know why.

UDP header

- Length field is not really unique
  - Can infer the UDP length from the two lengths in the IP header
    - Total length – 4*header length
  - Both layer headers are accessible because up to transport layer the kernel implements

UDP checksum

- Covers entire UDP datagram including the header
  - Optional in IPv4, mandatory in IPv6
    - If not used, 0x0000
    - If used but computed to be 0x0000, change to 0xffff
    - Both are zeros in 1's complement notation
  - Either both ends use it or both don't use it
  - Currently on by default

UDP checksum

- Uses “pseudo-header” in checksum computation
  - Also checks if delivered to the right IP address etc.

UDP and IP fragmentation

- UDP simply attaches the 8B header to whatever comes down from the user
  - And make it into a “datagram”
  - Doesn’t perform any segmentation
- So IP sometimes gets to fragment the datagram that contains UDP
  - Fig. 10-9