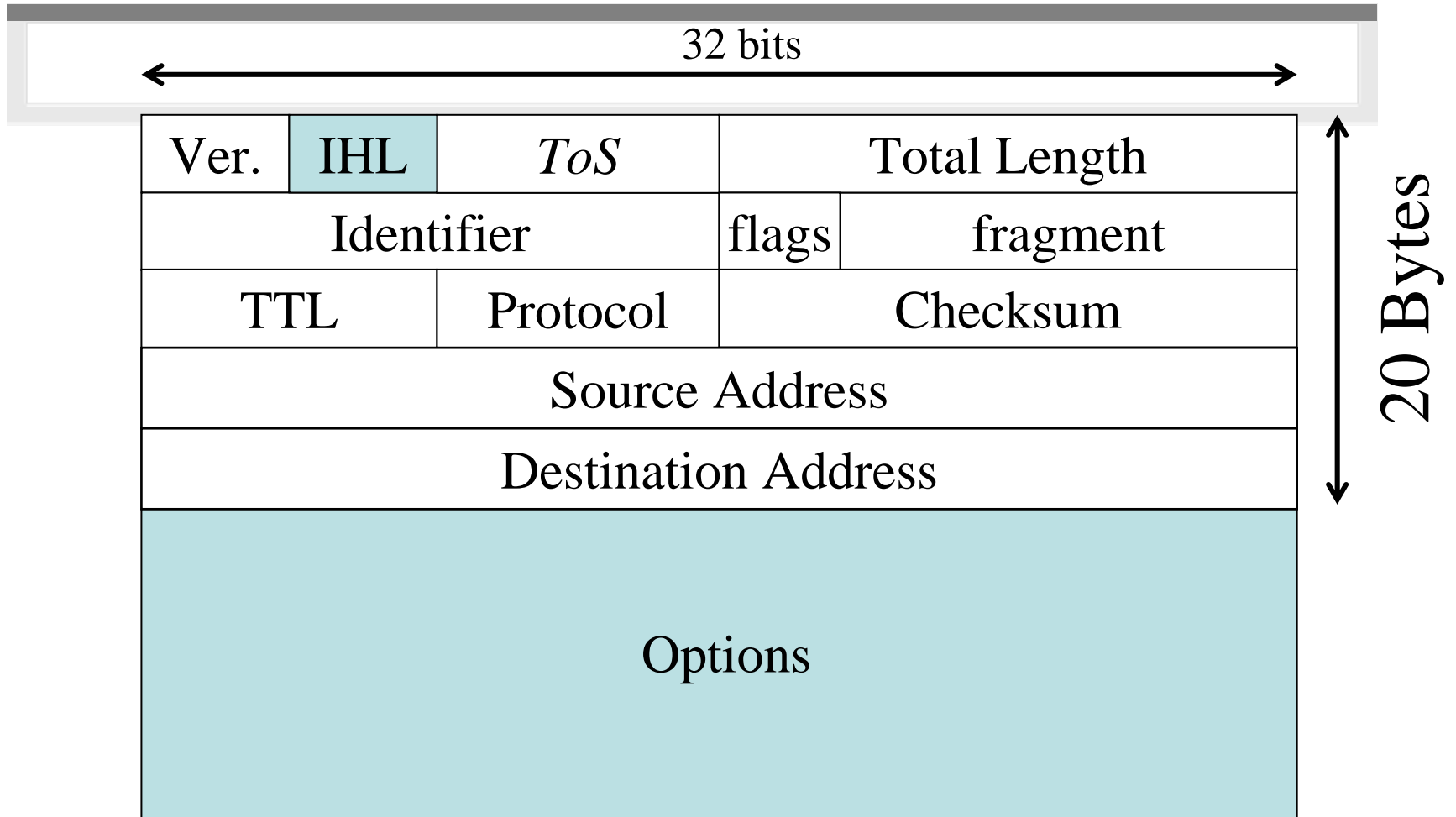




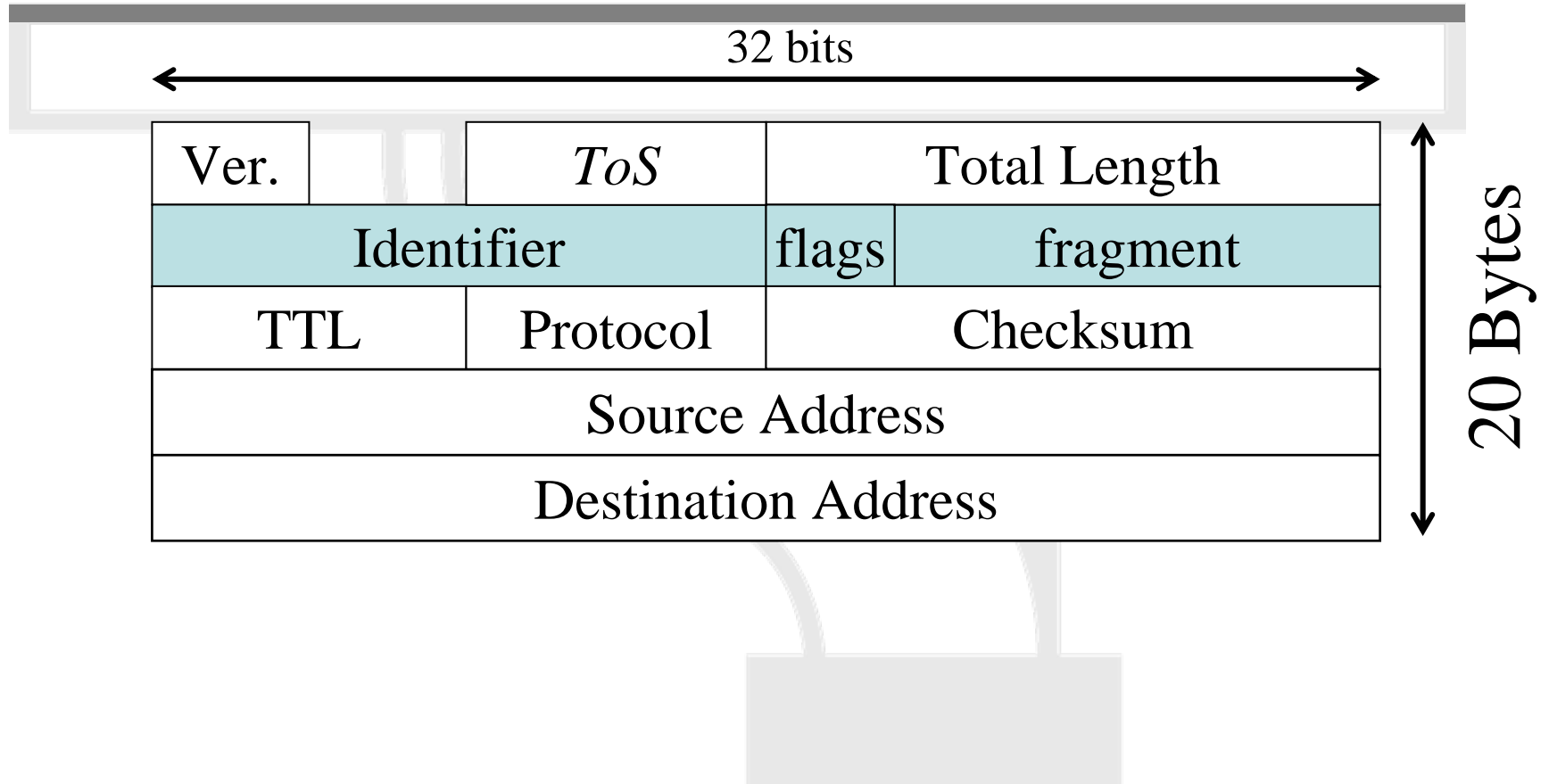
**IPv6  
Protocol  
(RFC 2460 DS)**



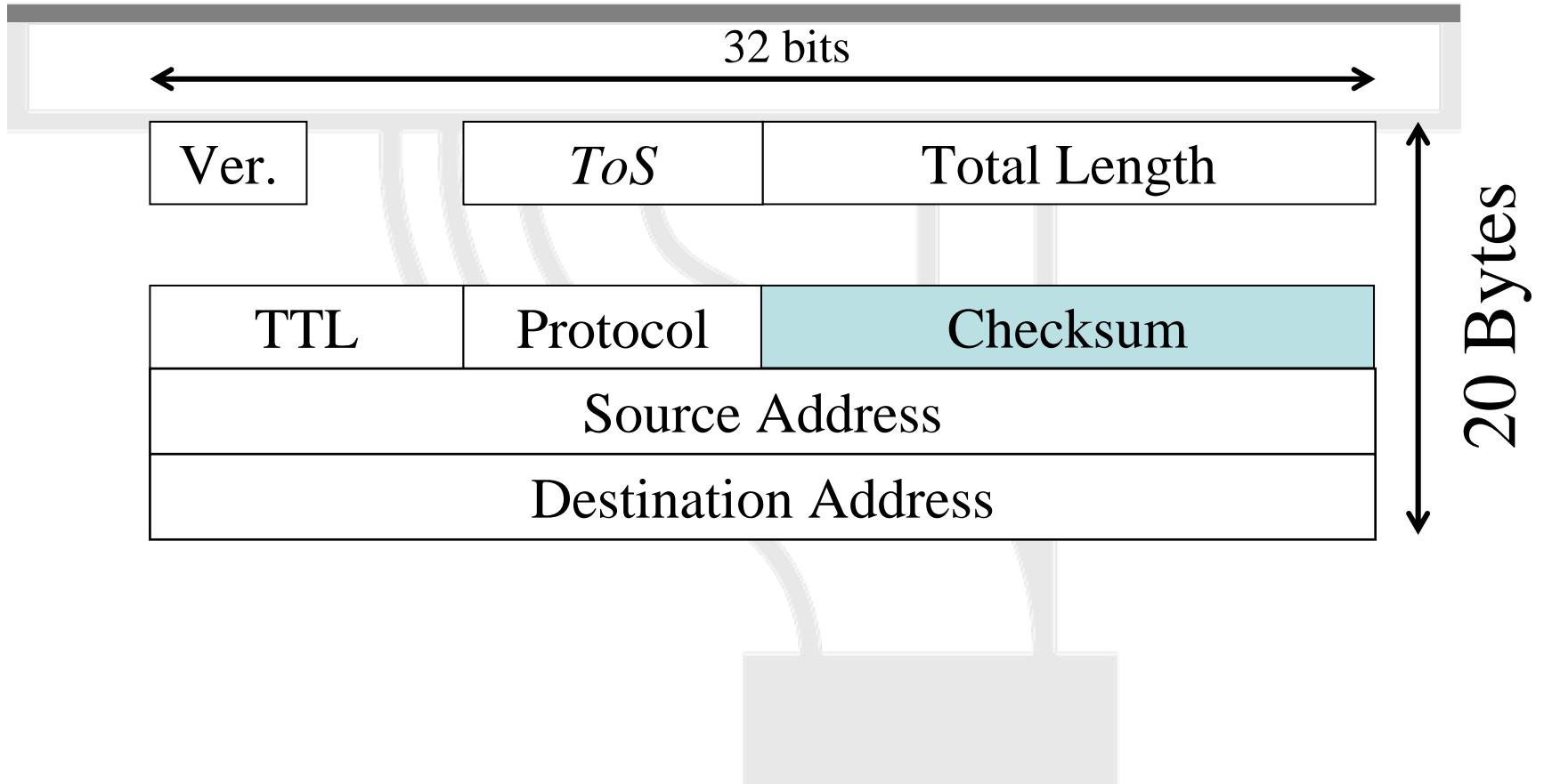
# IPv4 Header



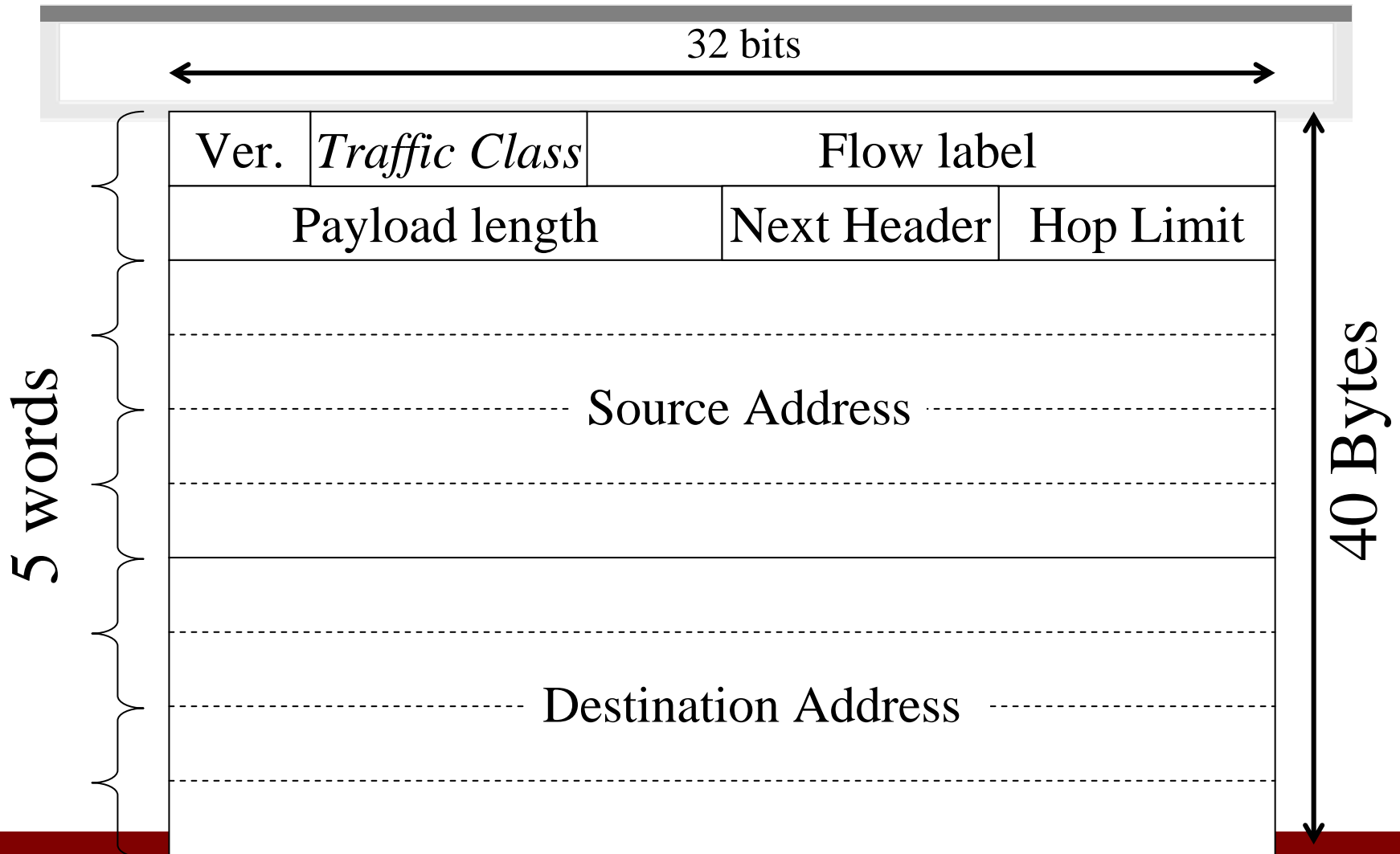
# IPv4 Header



# IPv4 Header

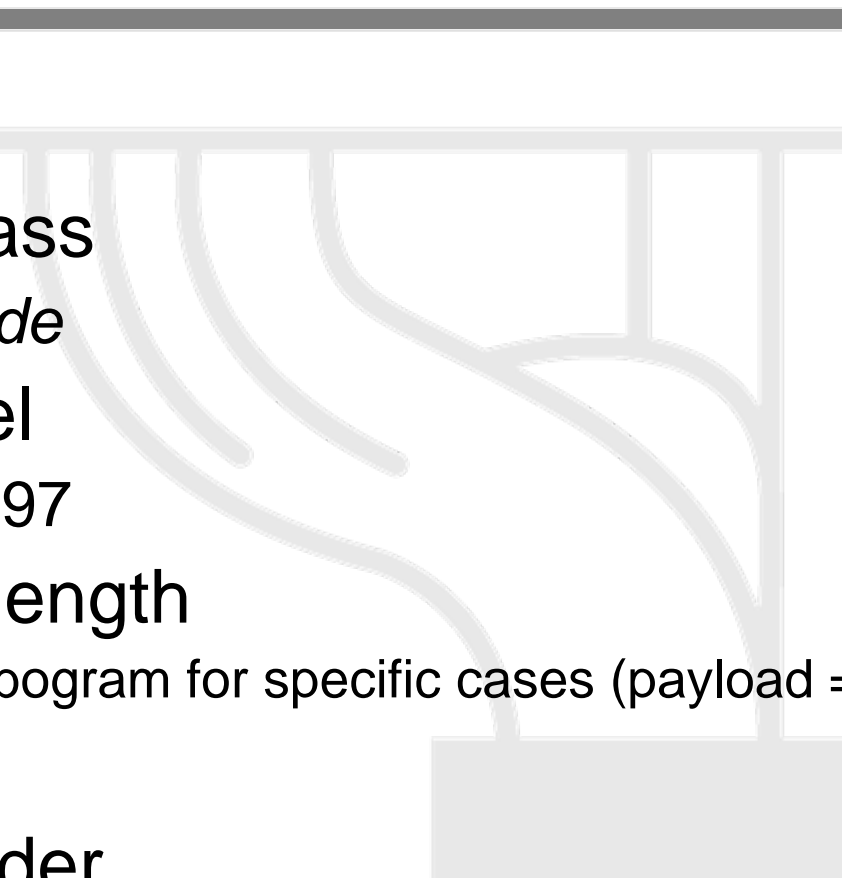


# IPv6: Header simplification



*Where and when ?*

# IPv6 header

- Version
  - Traffic class
    - *Next slide*
  - Flow label
    - RFC 3697
  - Payload length
    - Use Jumbogram for specific cases (payload = 0)
  - Hop limit
  - Next header
- 



# CoS support in IPv6

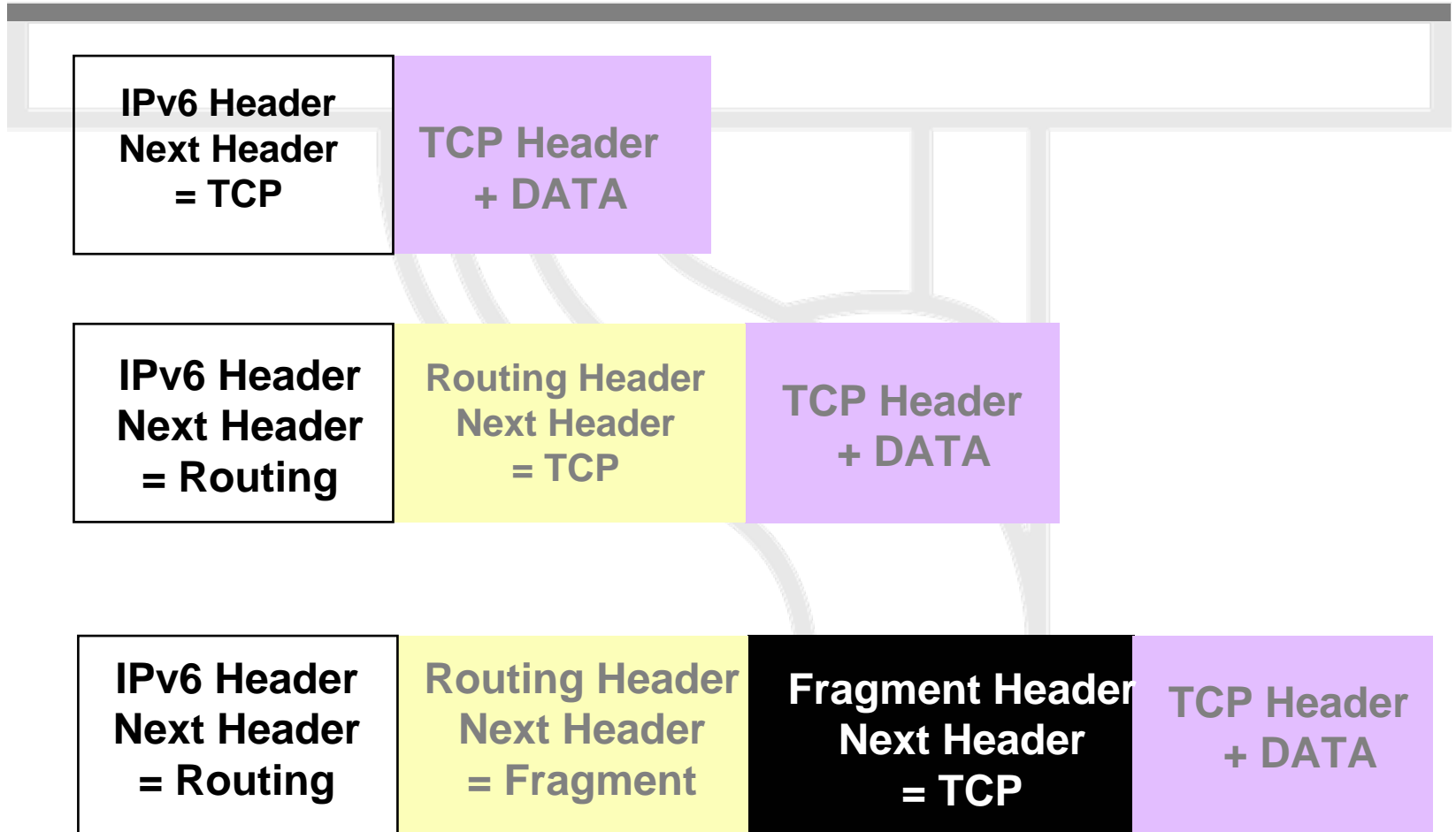
- The **Traffic Class field**: *used as in IPv4*
  - Work done in diffserv wg (closed): RFCs **2474**, 2475, 2597, 3260, ...



- The **Flow Label field**: designed to enable classification of packets belonging to a specific flow
  - **A flow** is a sequence of packets that should receive specific non-default handling from the network
  - Intuitively: 5-tuple of the same source/destination address/port and transport protocol values
  - Without the flow label the classifier must use transport next header value and port numbers
    - Less efficient (need to parse the option headers)
    - May be impossible (fragmentation or IPsec ESP)
  - Further info:
    - RFC 3697 (PS)



# IPv6: Optional headers



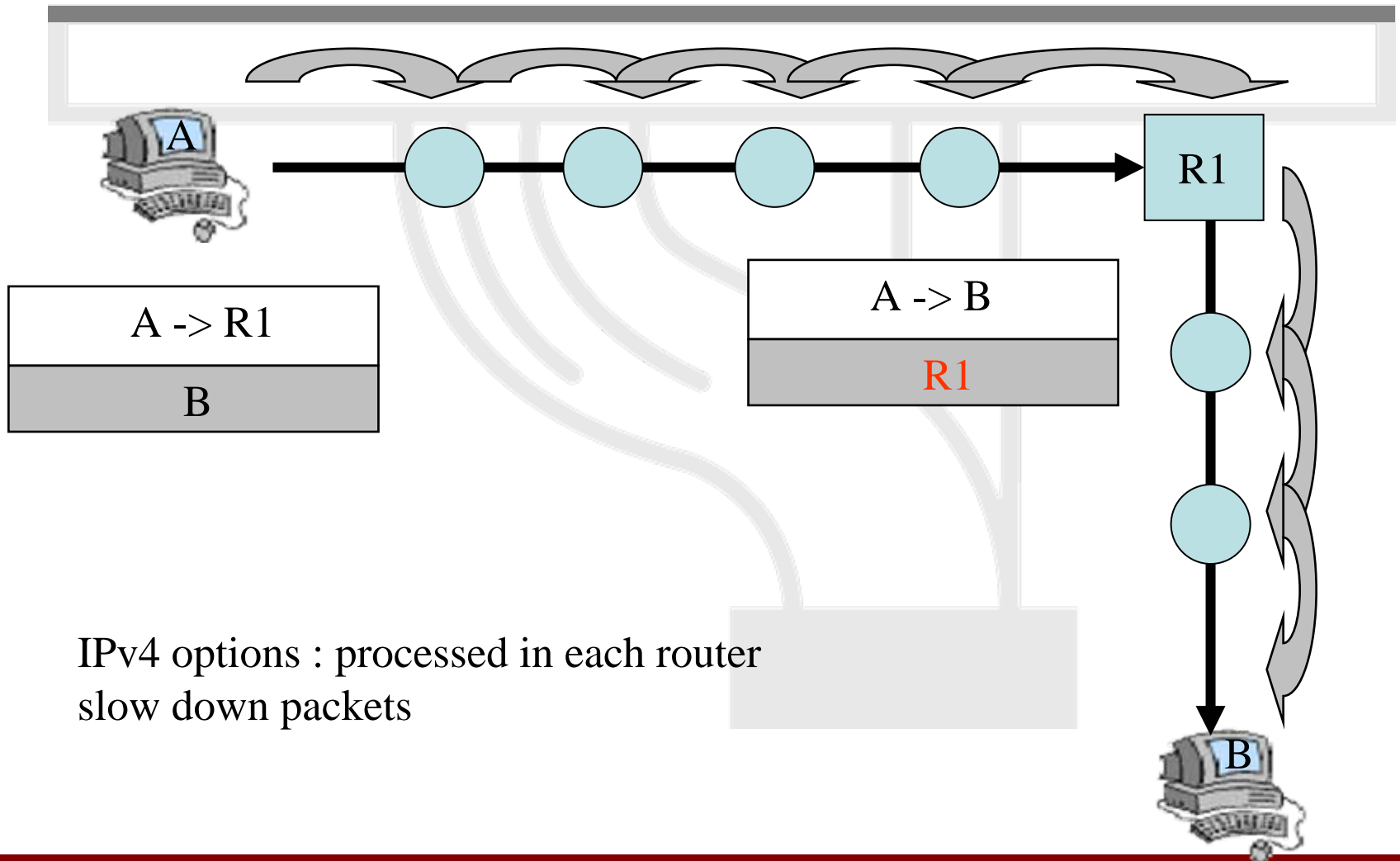


# IPv6: Optional extensions

- Hop-by-hop (jumbogram, router alert)
  - Always the first extension
  - Replace IPv4 options,
  - Analyzed by every router.
- Destination
- Routing (loose source routing)
- Fragmentation
- Authentication
- Security



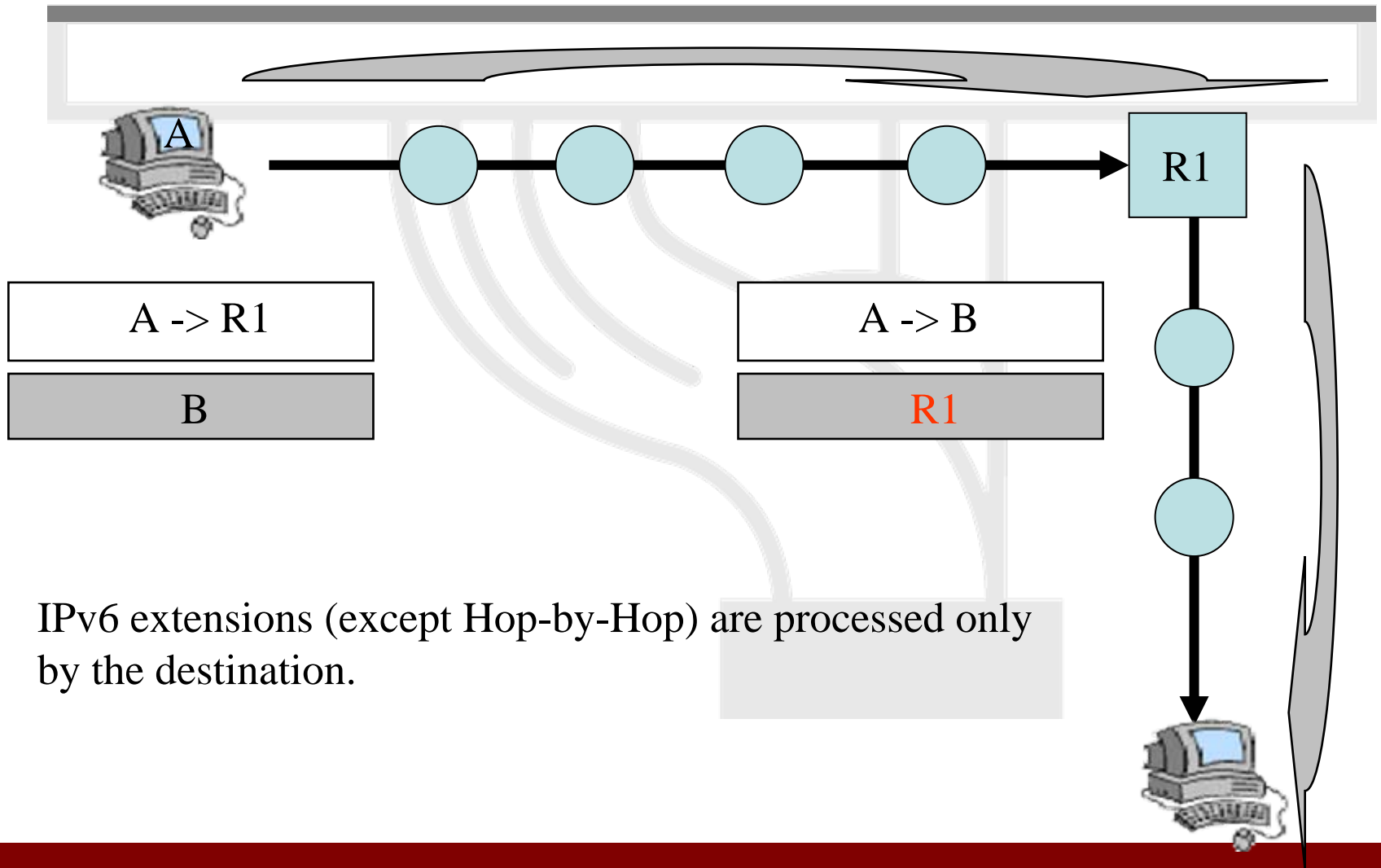
# v4 options vs. v6 extensions



IPv4 options : processed in each router  
slow down packets



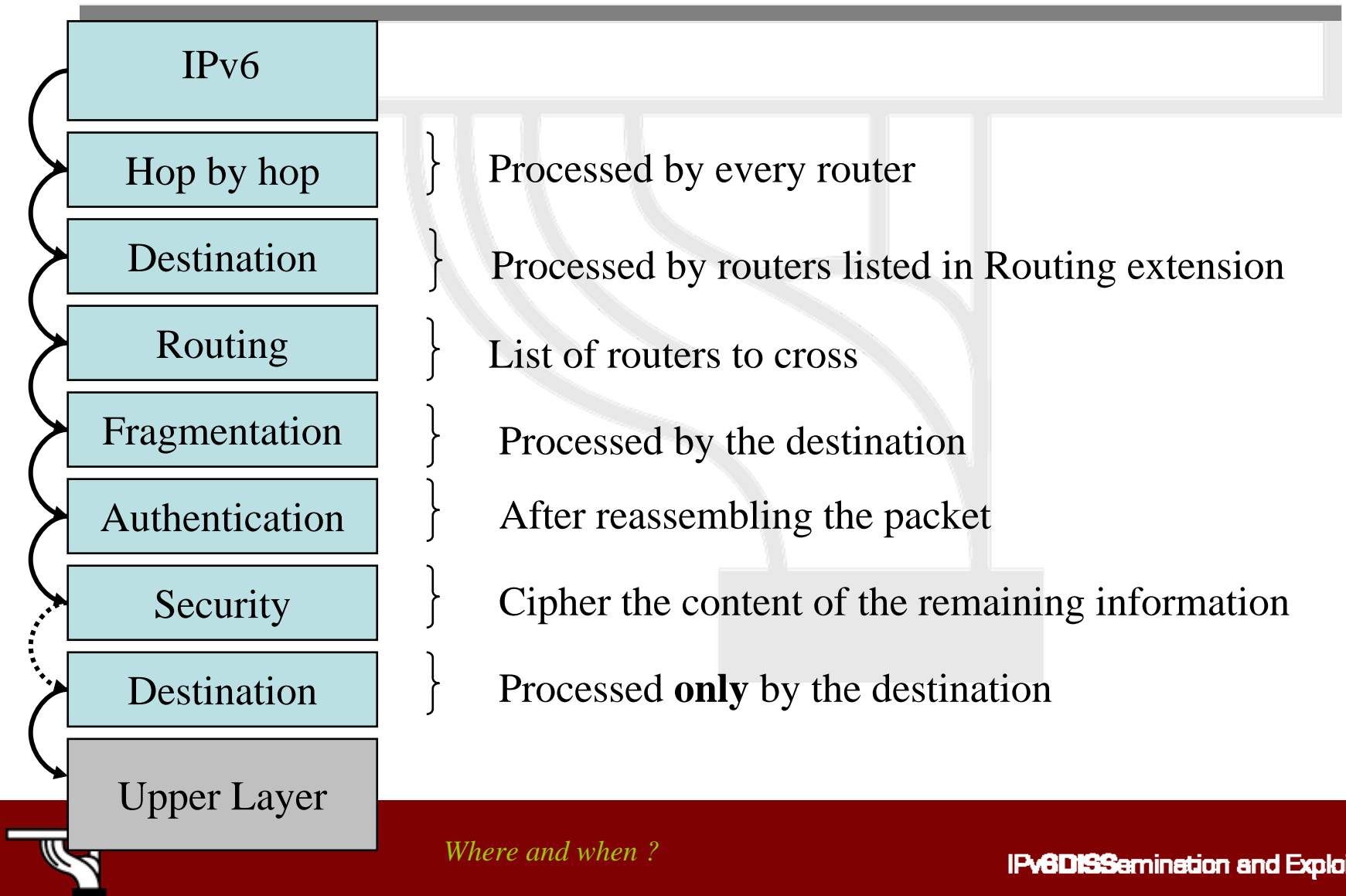
# v4 options vs. v6 extensions



IPv6 extensions (except Hop-by-Hop) are processed only by the destination.



# Order is important (RFC 2460)



*Where and when ?*