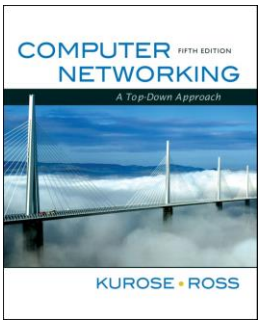
# RSC
# Part II: Network Layer
# 5. IPv6

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These slides are, mainly, part of the companion slides to the book "Computer Networking: A Top Down Approach" generously made available by their authors (see copyright below). The slides have been adapted, where required, to the teaching needs of the subject above.



Computer Networking: A Top Down Approach 5th edition. Jim Kurose, Keith Ross Addison-Wesley, April 2009.



# RSC Part II: Network Layer

- II. 1 Basic Network layer concepts
- II.2 Introduction to IPv4
- II.3 IPv4 addressing
- II.4 IPv4 in operation
  - ARP
- II.5 IPv6
- II.6 Network routing
  - Link state
  - Distance Vector
- II.7 Routing in the Internet
  - Hierarchical routing
  - RIP

# IPv6: motivation

- *initial motivation:* 32-bit address space soon to be completely allocated.
- additional motivation:
  - header format helps speed processing/forwarding
  - header changes to facilitate QoS

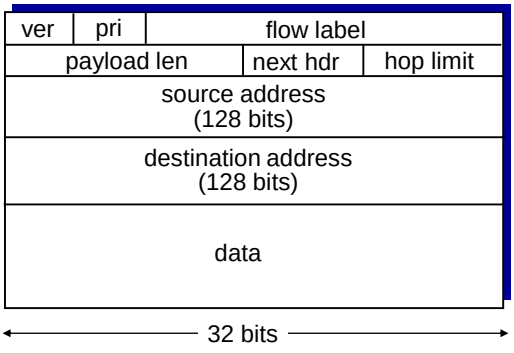
*IPv6 datagram format:*

- fixed-length 40 byte header
- no fragmentation allowed



# IPv6 datagram format

*priority:* identify priority among datagrams in flow
*flow Label:* identify datagrams in same "flow."
(concept of"flow" not well defined).
*next header:* identify upper layer protocol for data



# Other changes from IPv4

- *checksum*: removed entirely to reduce processing time at each hop
- *options:* allowed, but outside of header, indicated by "Next Header" field
- *ICMPv6:* new version of ICMP
  - additional message types, e.g. "Packet Too Big"
  - multicast group management functions