RTMENT OF INFORMATION TECHNOLOGY
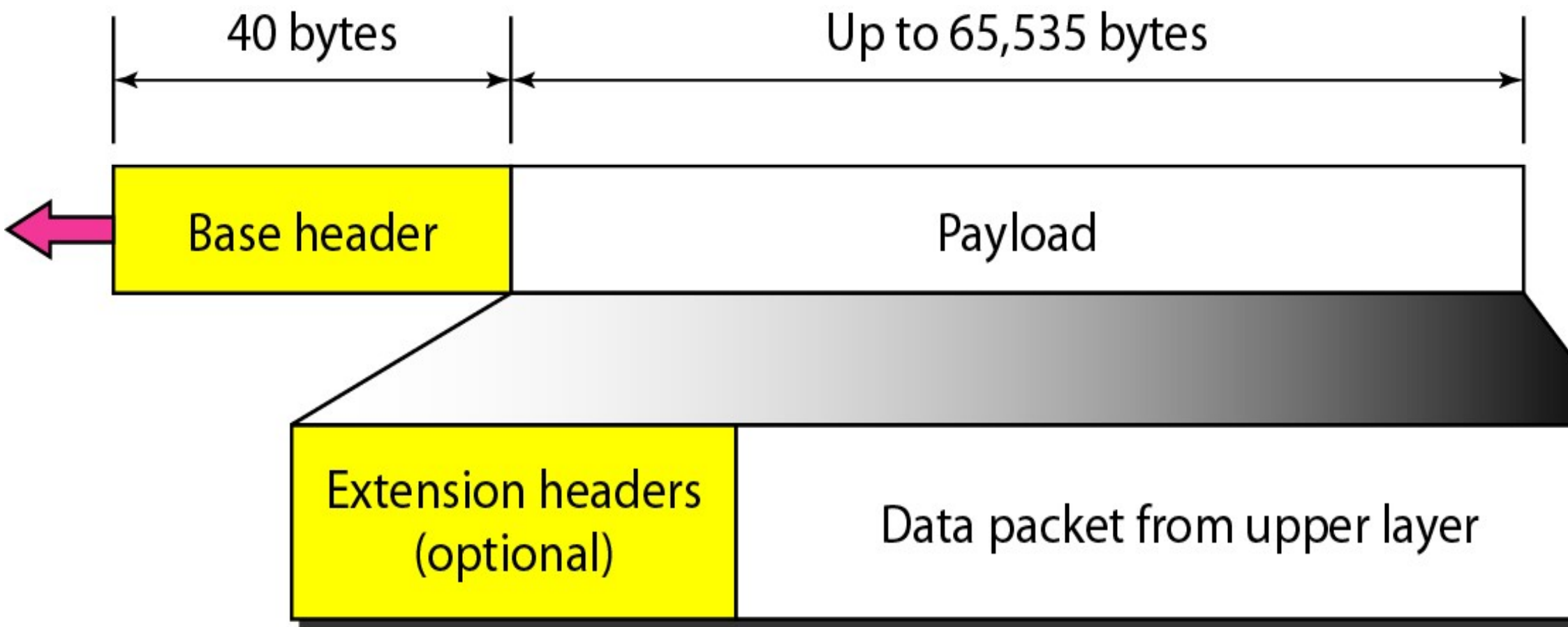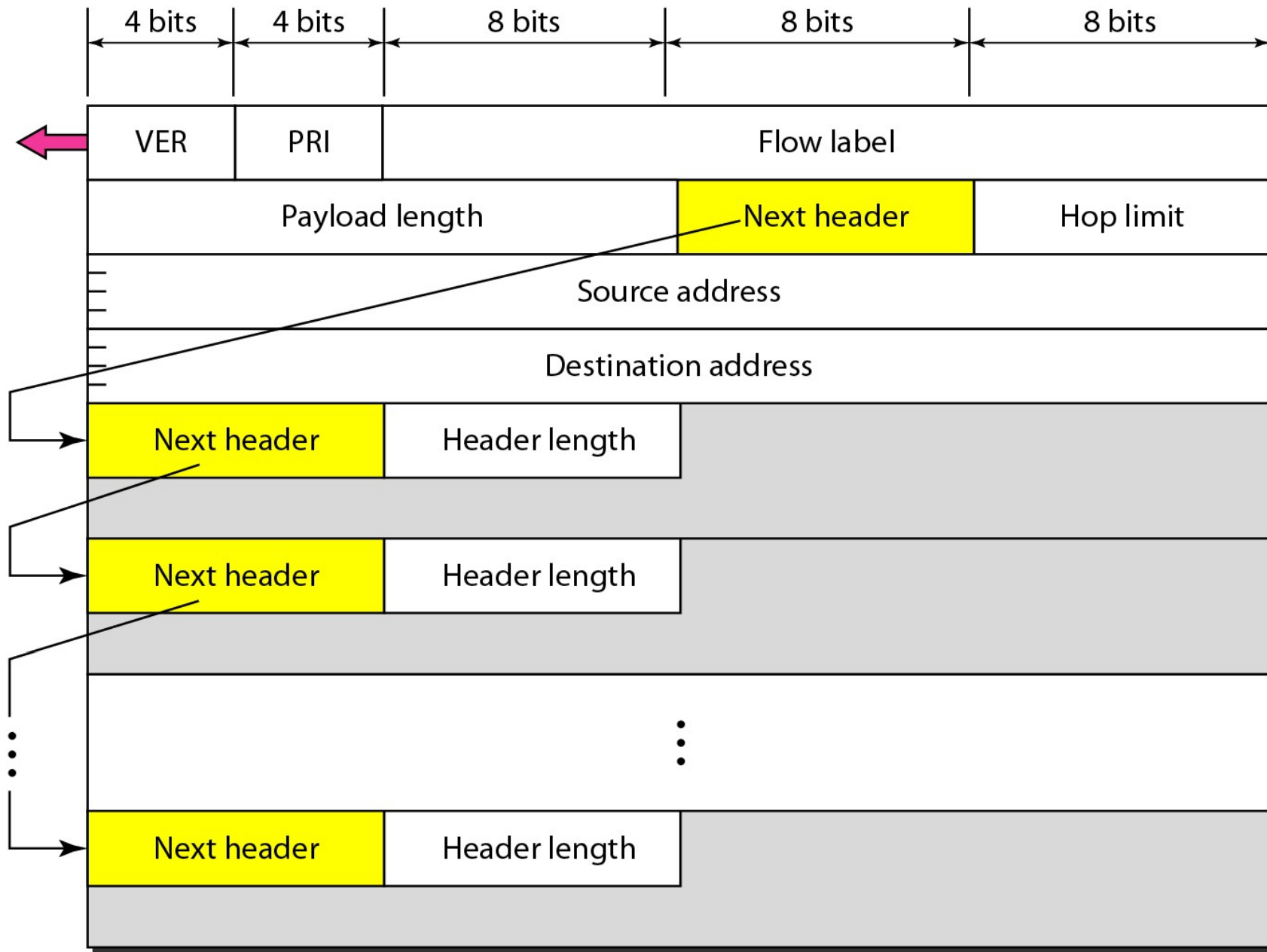
16IT301 – COMPUTER NETWORKS

II YEAR IV SEM

NIT 3 – INTERNETWORKING AND ROUTING

TOPIC 17 –IP (IPv6)

The network layer protocol in the TCP/IP protocol suite is currently IPv4. Although IPv4 is well designed, communication has evolved since the inception of IPv4 in 1970s. IPv4 has some deficiencies that make it unsuitable for the fast-growing Internet.

	40 bytes		Up to 65,535 bytes

Base header

Payload

Extension headers (optional)

Data packet from upper layer

4 bits	4 bits	8 bits	8 bits	8 bits
VER	PRI	Flow label		
Payload length			Next header	Hop limit
Source address				
Destination address				
Next header		Header length		
Next header		Header length		
Next header		Header length		

Code	Next Header
0	Hop-by-hop option
2	ICMP
6	TCP
17	UDP
43	Source routing
44	Fragmentation
50	Encrypted security payload
51	Authentication
59	Null (no next header)
60	Destination option

Priority	Meaning
0	No specific traffic
1	Background data
2	Unattended data traffic
3	Reserved
4	Attended bulk data traffic
5	Reserved
6	Interactive traffic
7	Control traffic

Priority	Meaning
8	Data with greatest redundancy
. . .	. . .
15	Data with least redundancy

headers

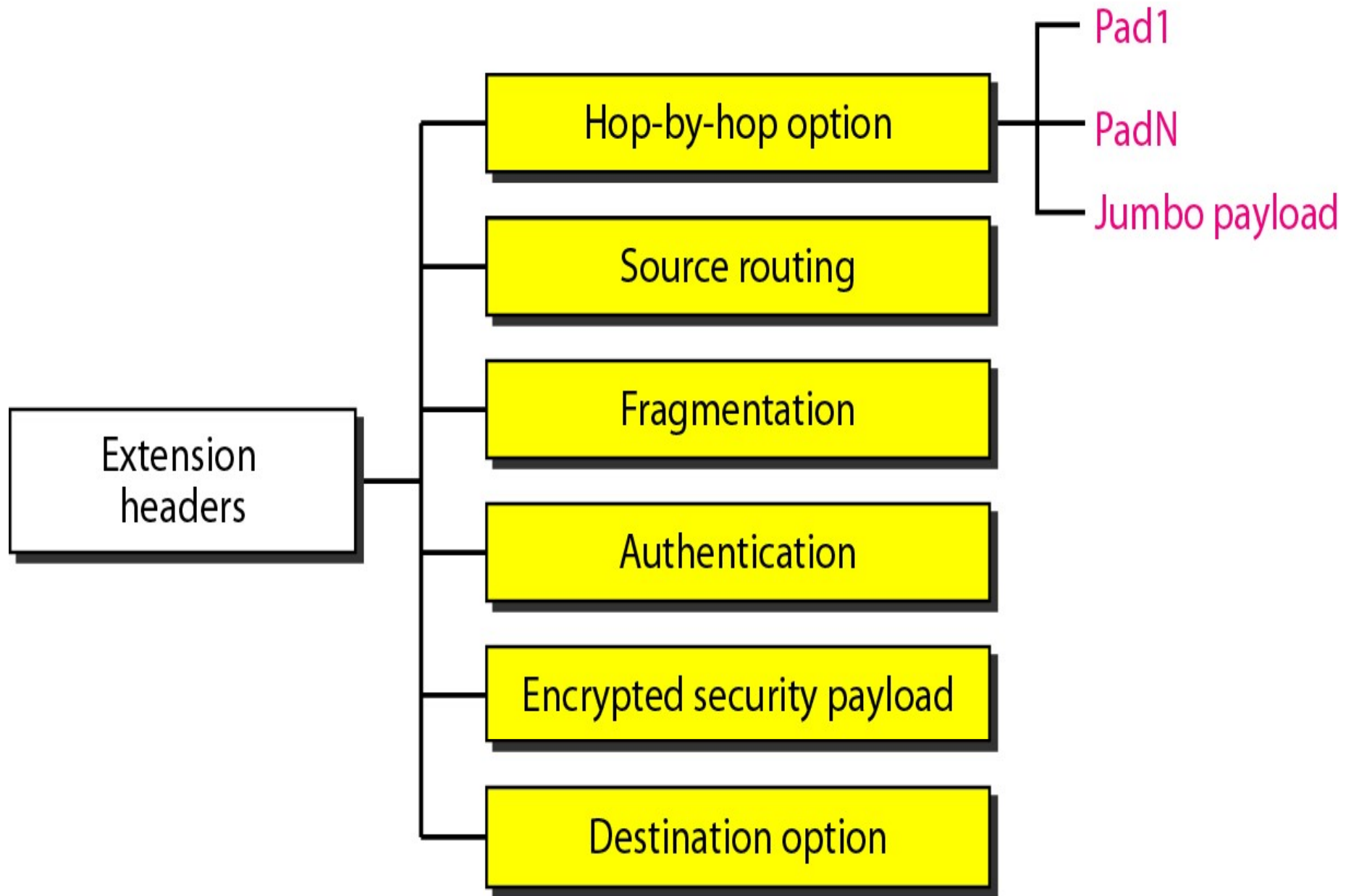| Comparison |
| --- |
| header length field is eliminated in IPv6 because the length of the header i ... version. |
| service type field is eliminated in IPv6. The priority and flow label fields to ... the function of the service type field. |
| total length field is eliminated in IPv6 and replaced by the payload length ... |
| identification, flag, and offset fields are eliminated from the base header in ... ncluded in the fragmentation extension header. |
| TTL field is called hop limit in IPv6. |
| protocol field is replaced by the next header field. |
| header checksum is eliminated because the checksum is provided by uppe ... ocols; it is therefore not needed at this level. |
| option fields in IPv4 are implemented as extension headers in IPv6. |

Extension header types

Comparison
he no-operation and end-of-option options in IPv4 are replaced by Pad1 and PadN ptions in IPv6.
he record route option is not implemented in IPv6 because it was not used.
he timestamp option is not implemented because it was not used.
he source route option is called the source route extension header in IPv6.
he fragmentation fields in the base header section of IPv4 have moved to the fragmentatio ttension header in IPv6.
he authentication extension header is new in IPv6.
he encrypted security payload extension header is new in IPv6.

Because of the huge number of systems on the Internet, the transition from IPv4 to IPv6 cannot happen suddenly. It takes a considerable amount of time before every system in the Internet can move from IPv4 to IPv6. The transition must be smooth to prevent any problems between IPv4 and IPv6 systems.

size of an IP address in IPv6 is _____

bytes

28 bits

bytes

00 bits

e IPv6 header, the traffic class field is similar to which field in
er?

agmentation field

st-switching

S field

tion field

does not use _____ type of address.

oadcast

ulticast

ycast

Thank You