Internet Protocol - IP

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Jaime Delgado

DAC – UPC

Contents

- Unit 1: IP.
- Unit 2: Other supporting protocols and services.
- Unit 3: Routing algorithms.
- Unit 4: Security.

Contents Unit 1

IP:

- IP addresses.
- Routing tables.
- Fragmentation.
- IP protocol and service.

Contents Unit 1

IP:

- IP addresses.
- **Routing tables.**
- Fragmentation.
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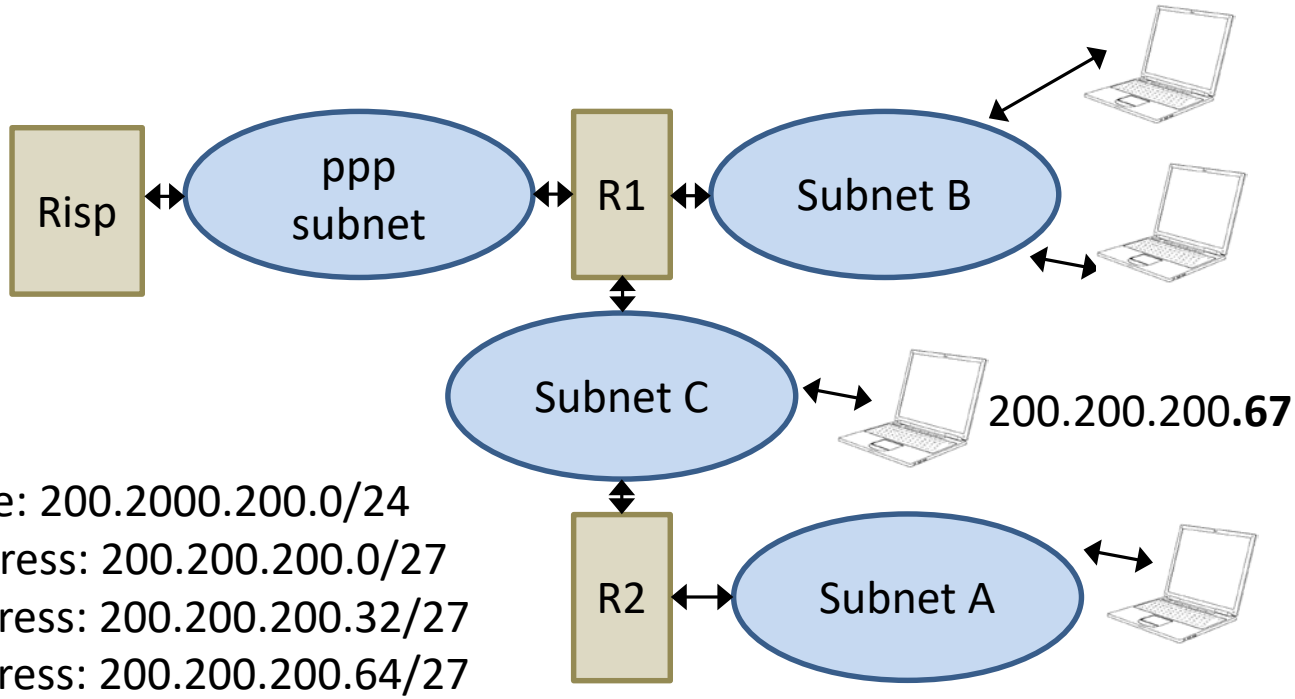
Subnet example



Address range: 200.2000.200.0/24
Subnet A address: 200.200.200.0/27
Subnet B address: 200.200.200.32/27
Subnet C address: 200.200.200.64/27
ppp subnet address: 200.200.202.0/30

R1 interfaces:
ppp0, e0 (subnet B), e1 (subnet C)
R2 interfaces:
e0 (subnet C), e1 (subnet B)

R1 ppp address: 200.200.**202.1**
Risp ppp address: 200.200.**202.2**
R1 subnet **B** address: 200.200.200.**33**
R1 subnet **C** address: 200.200.200.**66**
R2 subnet **A** address: 200.200.200.**1**
R2 subnet **C** address: 200.200.200.**65**

Routing table 200.200.200.67

Where do I want to go?		How do I get there?	
Destination network	**Mask**	**Gateway**	**Interface**
.64 (my subnet, C)	/27	Direct	E0
.0 (subnet A)	/27	.65 (R2)	E0
.32 (subnet B)	/27	.66 (R1)	E0
0.0.0.0 (rest of the world)	/0	.66 (R1)	E0

Routing table Router R1

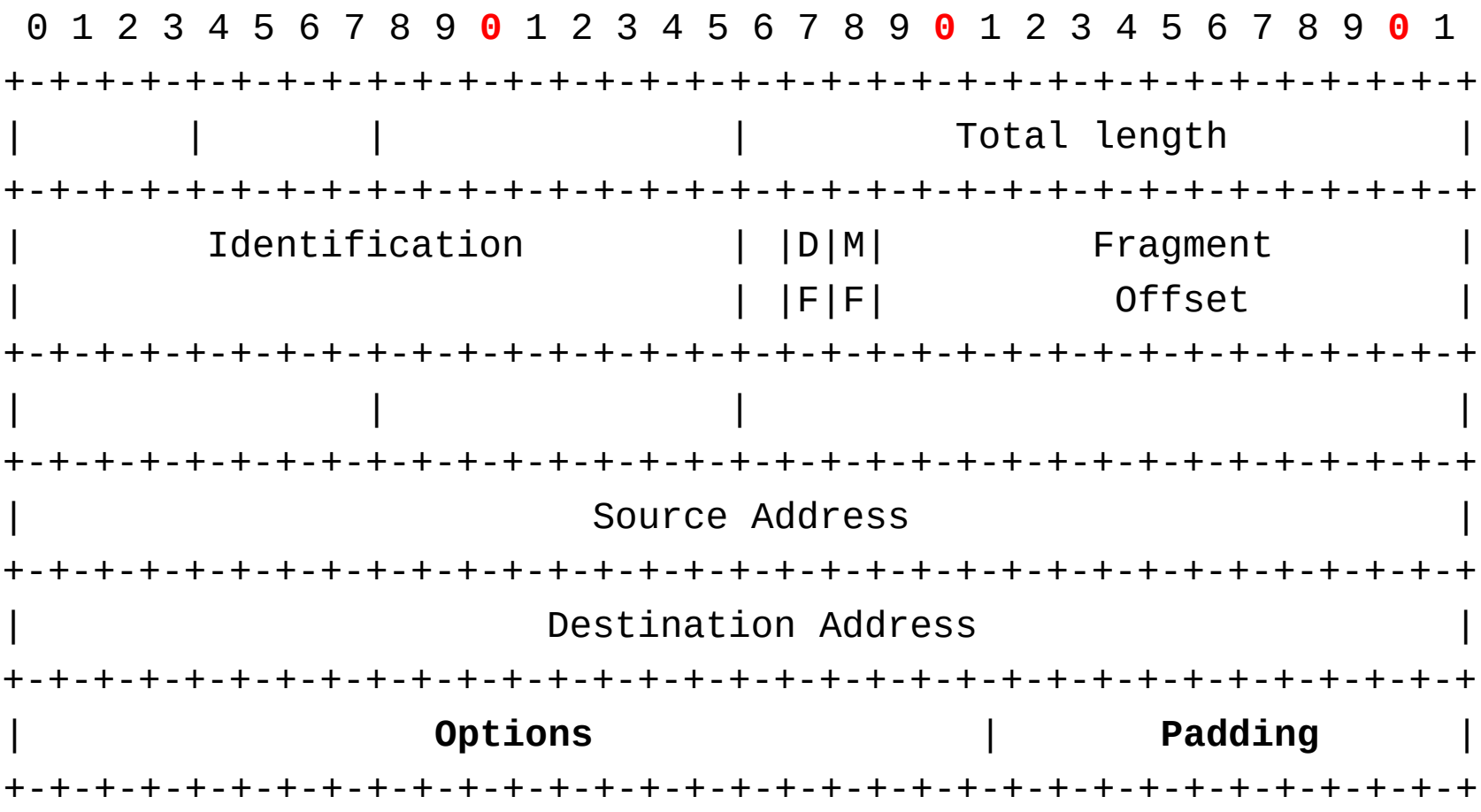
Where do I want to go?		How do I get there?	
Destination network	**Mask**	**Gateway**	**Interface**
.32 (my subnet, B)	/27	Direct	E0
.64 (my subnet C)	/27	Direct	E1
.0 (subnet A)	/27	.65 (R2)	E1
0.0.0.0 (rest of the world)	/0	200.200.202 .2 (Risp)	ppp0

Contents Unit 1

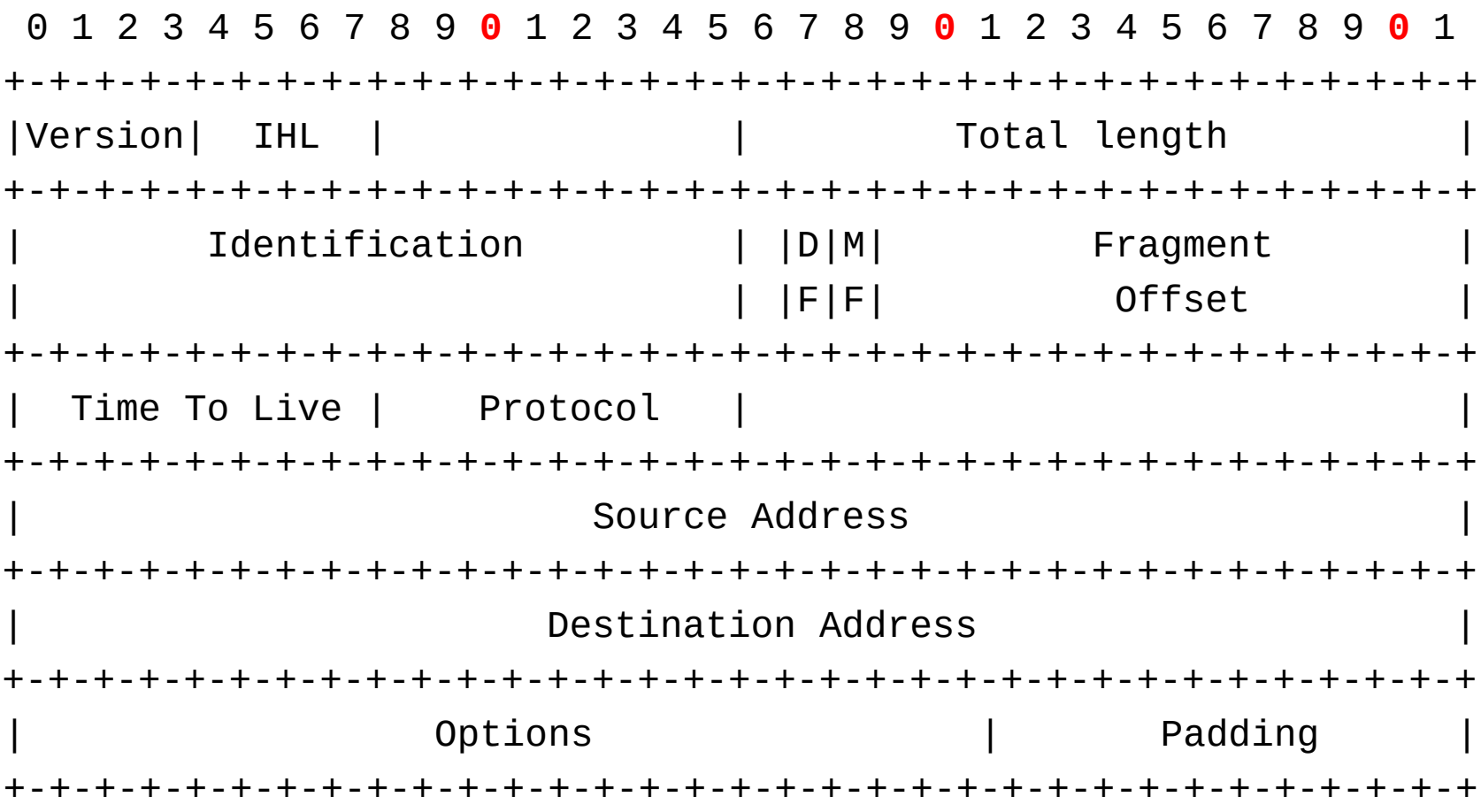
IP:

- IP addresses.
- Routing tables.
- Fragmentation.
- **IP protocol and service.**

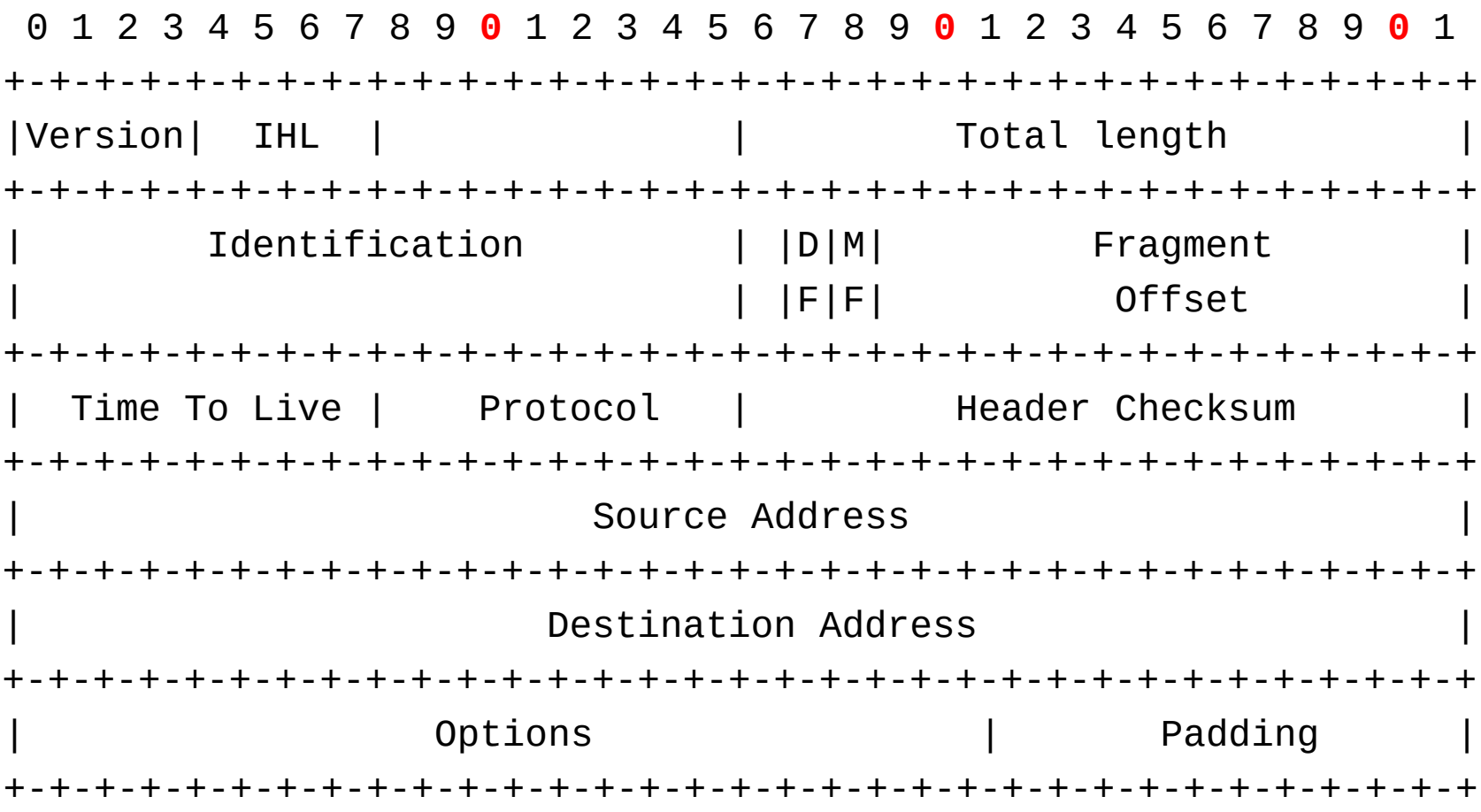
IP Header


0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1
Total length
Identification
D F
M F
Fragment Offset
Source Address
Destination Address
Options
Padding

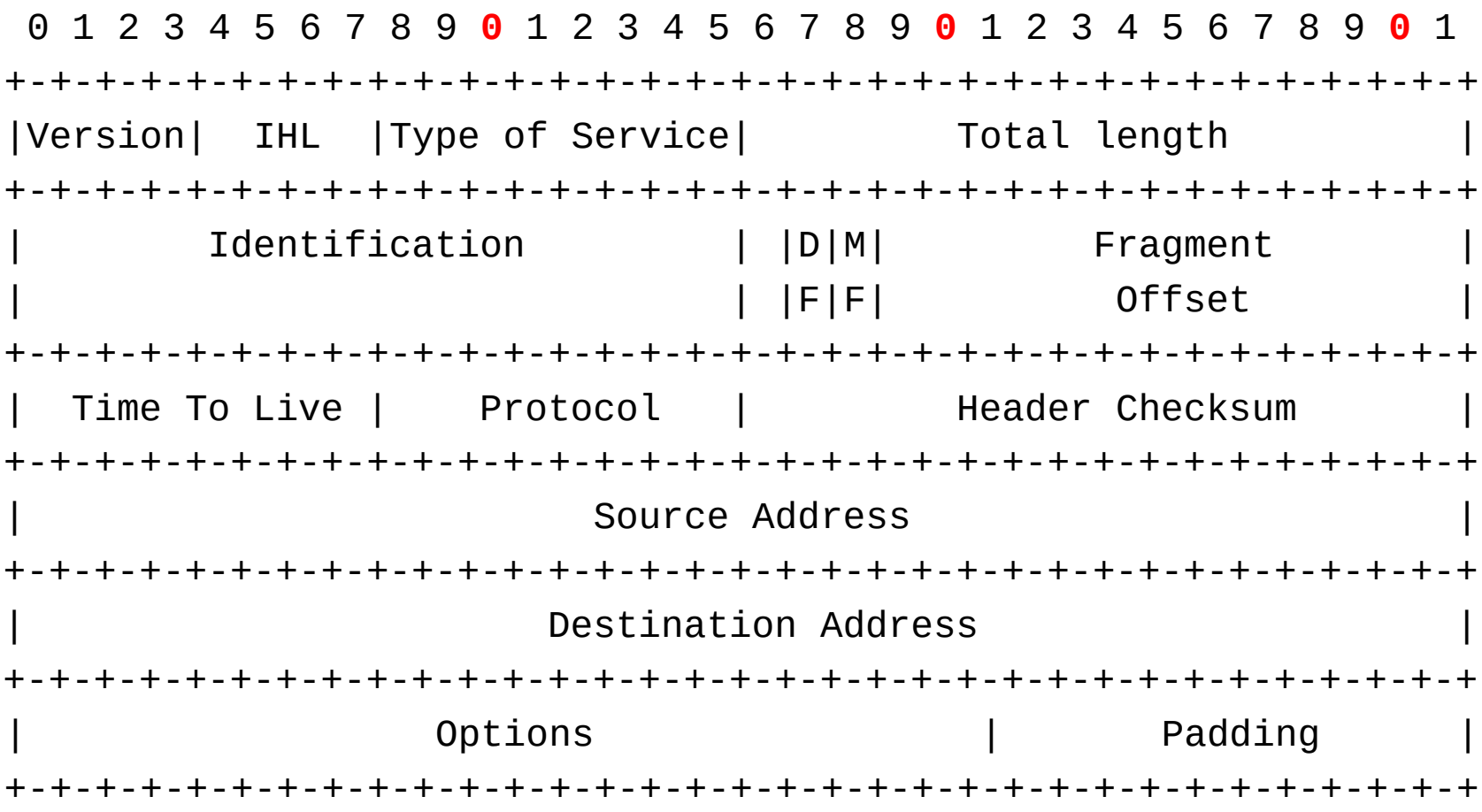
IP Header


0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1
Version
IHL
Total length
Identification
D
M
F
F
Fragment Offset
Time To Live
Protocol
Source Address
Destination Address
Options
Padding

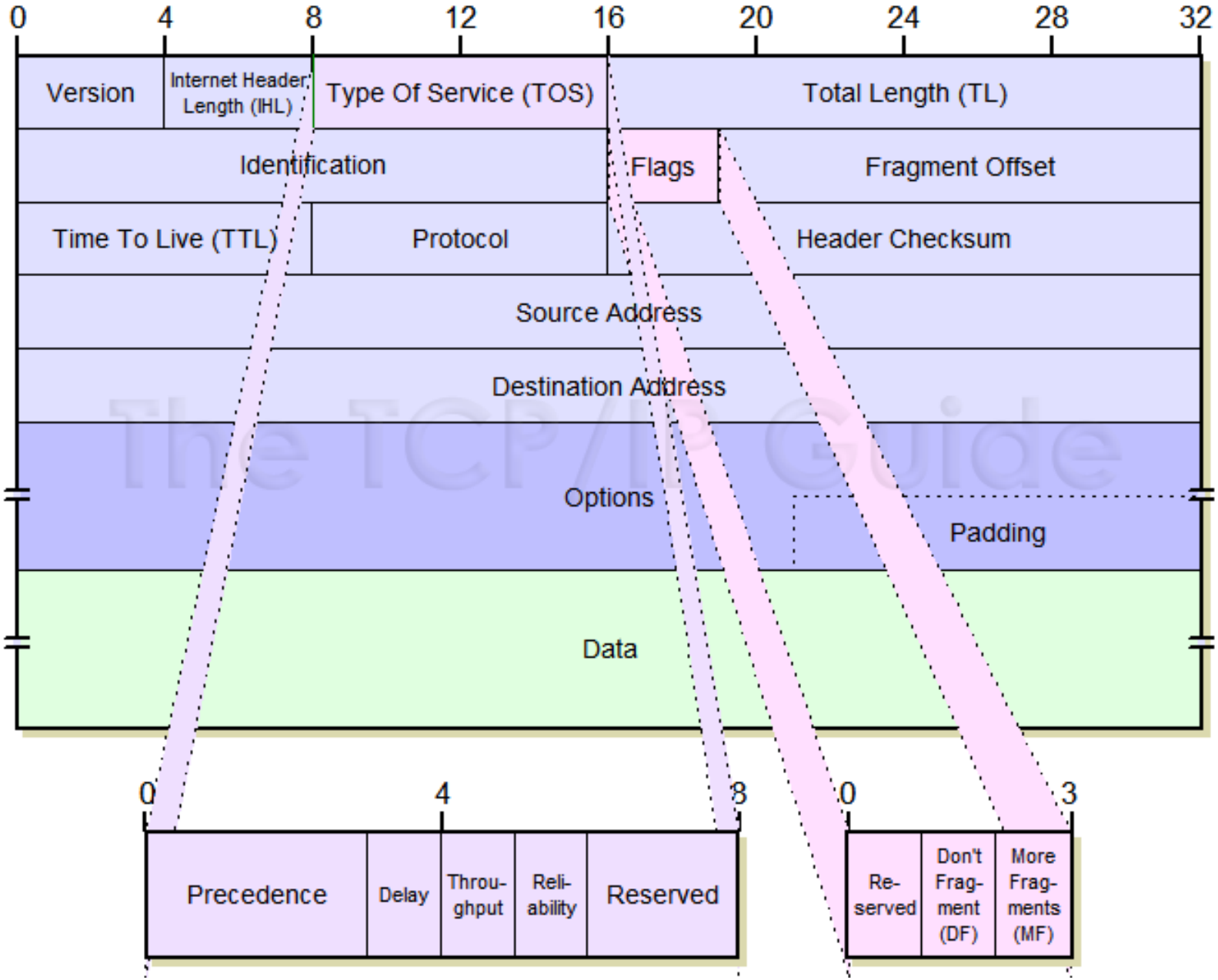
IP Header


0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1
Version
IHL
Total length
Identification
D
M
Fragment Offset
Time To Live
Protocol
Header Checksum
Source Address
Destination Address
Options
Padding

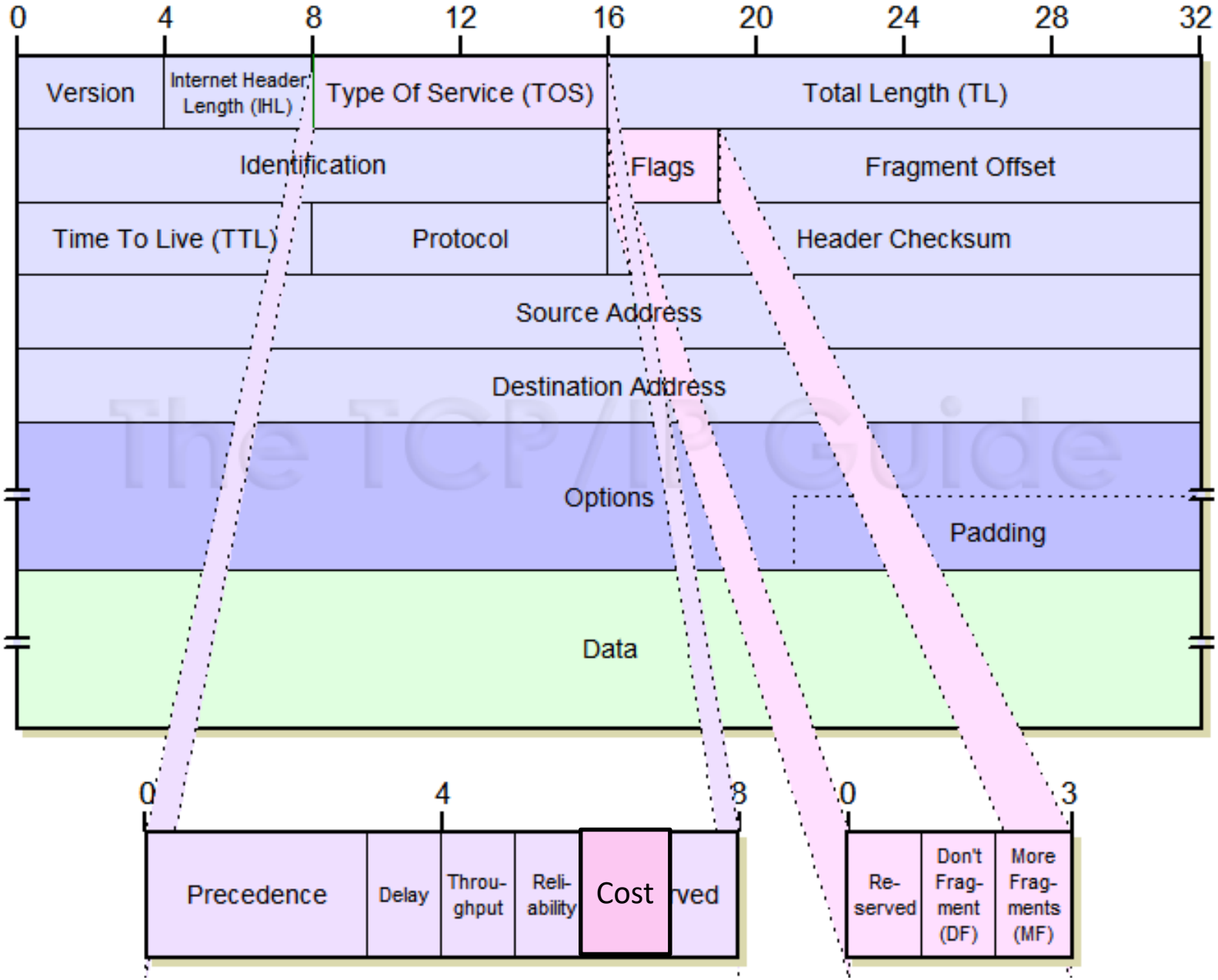
IP Header


0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1
Version
IHL
Type of Service
Total length
Identification
D
M
F
F
Fragment Offset
Time To Live
Protocol
Header Checksum
Source Address
Destination Address
Options
Padding

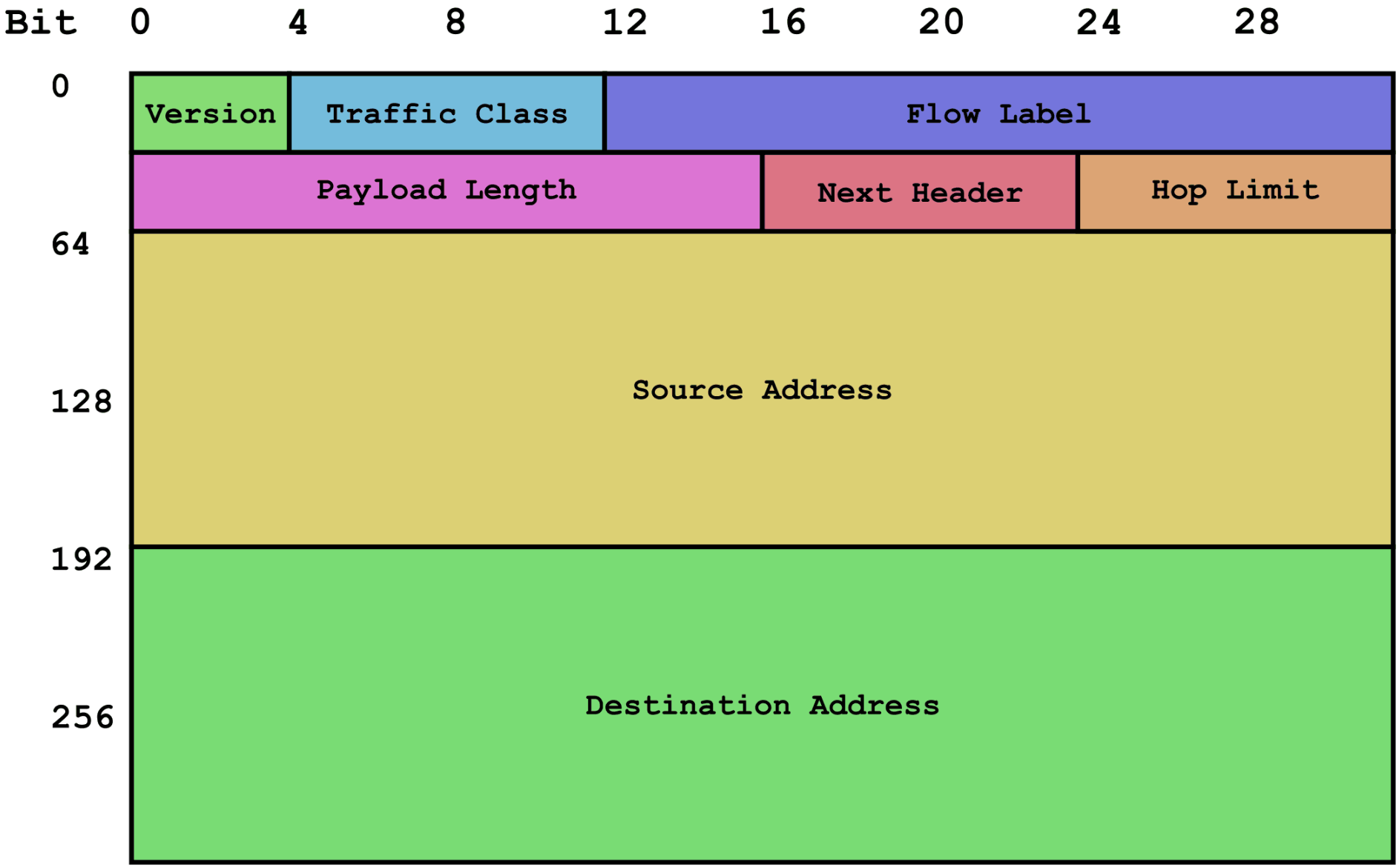
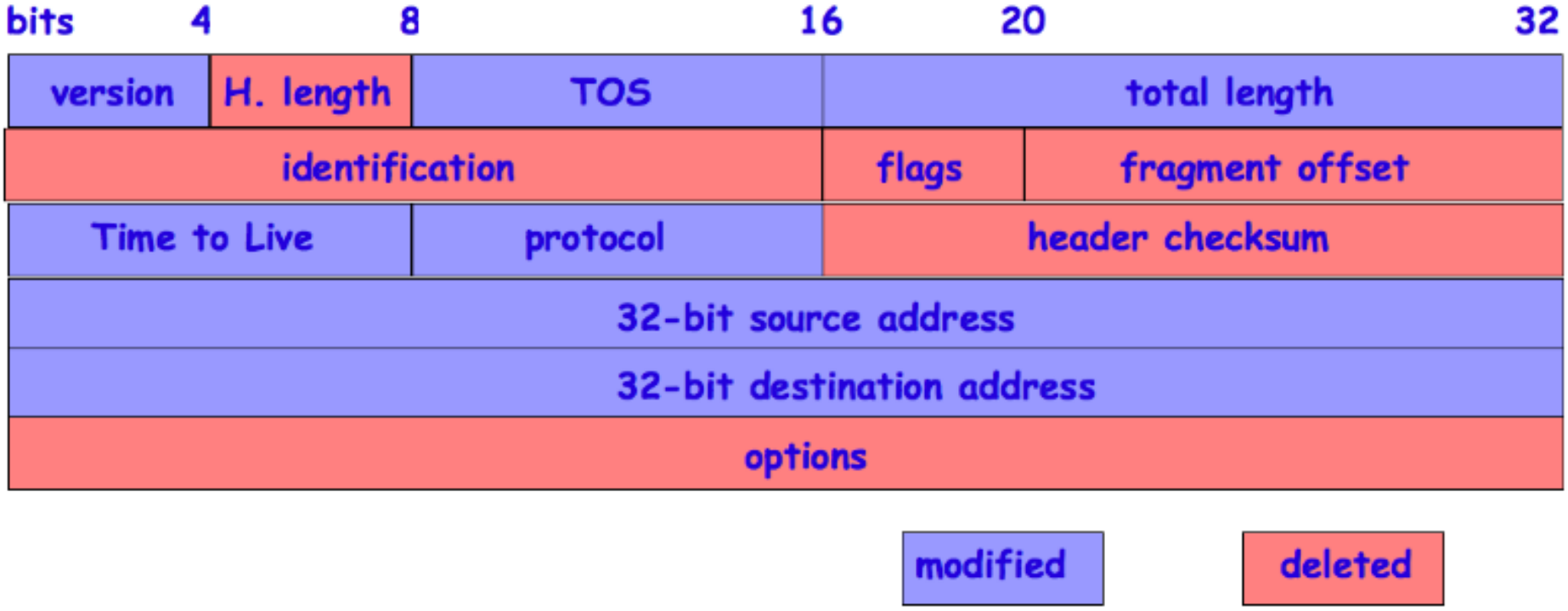
IPv4 Header


0
4
8
12
16
20
24
28
32
Version
Internet Header Length (IHL)
Type Of Service (TOS)
Total Length (TL)
Identification
Flags
Fragment Offset
Time To Live (TTL)
Protocol
Header Checksum
Source Address
Destination Address
Options
Padding
Data
0
4
8
Precedence
Delay
Throu-ghput
Reli-ability
Reserved
0
3
Re-served
Don't Frag-ment (DF)
More Frag-ments (MF)

IPv4 Header


0
4
8
12
16
20
24
28
32
Version
Internet Header Length (IHL)
Type Of Service (TOS)
Total Length (TL)
Identification
Flags
Fragment Offset
Time To Live (TTL)
Protocol
Header Checksum
Source Address
Destination Address
Options
Padding
Data
0
4
8
Precedence
Delay
Throu-ghput
Reli-ability
Cost
ved
0
3
Re-served
Don't Frag-ment (DF)
More Frag-ments (MF)

IPv6 Header


Bit
0
4
8
12
16
20
24
28
0
64
128
192
256
Version
Traffic Class
Flow Label
Payload Length
Next Header
Hop Limit
Source Address
Destination Address

IPv4 vs. IPv6 Header