SNS COLLEGE OF TECHNOLOGY

Coimbatore-35

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DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

19ECE308- WIRELESS TECHNOLOGIES FOR IOT

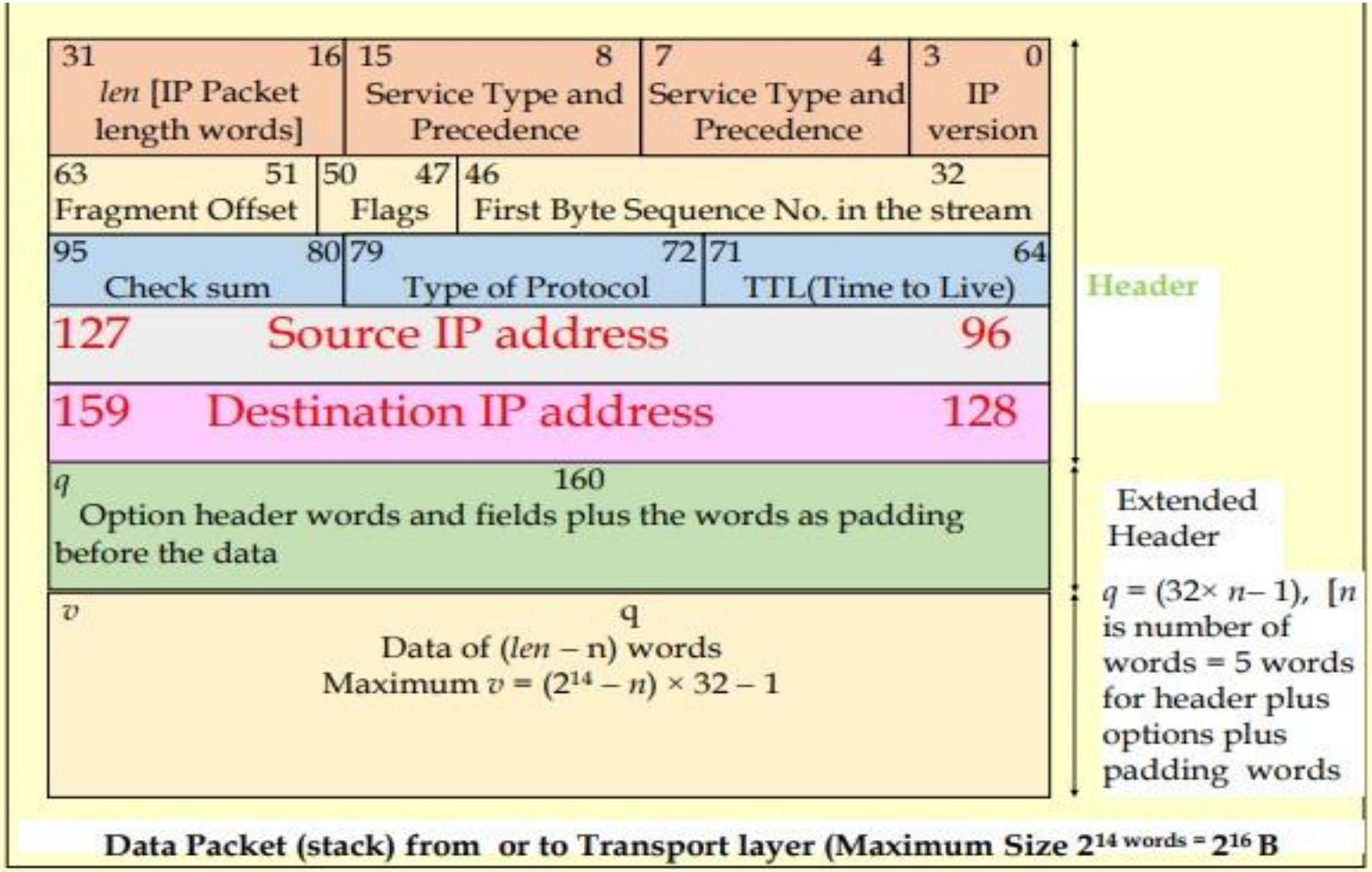
UNIT 2 - ARCHITECTURE AND DESIGN PRINCIPLES FOR IOT

TOPIC 5 –IP ADDRESSING IN THE IOT

32-bit IP version 4 address

- An IP address identifies every device connected to the internet. This enables computers and other internet-connected devices, such as mobile phones and Internet-of-Things (IoT) devices, to communicate over the internet and on local-area networks (LANs).
- Four decimal numbers separated by dots, for example, 198.136.56.2

for 32 bits 11000110 10001000 00111000 00000010.



Recall Source and destination addresses at the header in TCP protocol stack

4-decimal Numbers IP version 4 address

- IP addresses can be between 0.0.0.0 to 255.255.255.255, total 232 addresses due to 32-bit address.
- Three separate fields with a decimal number each for each set of 8 bits are easier to use.

Subnet address

- Internet address visible to outside world for the routers on the Internet
- Subnet address for use within the group internally, and is invisible to outside world.
- A subnet is a sub-network consisting of number of hosts or nodes or devices or machines.

Class A, B and C Networks

- Three x.x.x specifies a network group of 224 2 hosts
- Two x.x specifies a network group of (216 2) hosts,
- One .x specifies a smaller group of (28 2) hosts

Class A network group address

- Address n.x.x.x, where x is between 0 to 255 and n is between 1 and 126 for the addresses between 1.0.0.0 and 126.x.x.x.
- This is because the IP address 32-bit has msb bit 31 =0.

Class B Network

- •Class B network group address means address n.m.x.x, where x is between 0 to 255 and n.m is between 128.1 to 191.254 for the addresses between 128.1.0.0 and 191.254.x.x.
- This is because the IP address 32-bit has two msb bits 31-30 = 10

Class C Network

- Class C network group address means address n.m.k.x, where x is between 0 to 255 and n.m.k is between 192.0.1 and 223.255.254 for the addresses between 192.0.1.0 and 223.255.254.x.
- This is because the IP address 32-bit has three msb bits 31-30-29 = 11

Dynamic IP Address

- A number of computers, laptops, mobiles and devices may need connection in an organisation to an IP router
- Once a device connects to Internet, it needs to be allotted individual IP address, called dynamic IP address
- When the device connects to a router, the router and device use DHCP (Dynamic Host Control Protocol)
- DHCP actions assign an IP address at an instance to the device.

Domain Names System (DNS)

- An Application which provides the IP address for the corresponding service from the named domain service
- For example, an IP address, 198.136.56.2 (11000110 10001000 00111000 00000010) registered domain name rajkamal.org for the IP address

128-bit address IPv6 address

- A hexadecimal digit represents 4-bit, 0 hex = 0000 binary to f hex = 1111.
- 128-bit address: 32 hexadecimal digits
- Eight sets of 4 hex-digits each separate by a colon or dot in an IPv6 address.
- Example is 16-hexadecimal digits, 40a0: 0acb:8a00:b372:0000: 0000:0000:0000.

Thank You