



# **SNS COLLEGE OF TECHNOLOGY**

**Coimbatore-35**

**An Autonomous Institution**

Accredited by NBA – AICTE and Accredited by NAAC – UGC with 'A+'  
Grade

Approved by AICTE, New Delhi & Affiliated to Anna University,  
Chennai



## **DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING**

### **19ECE308- WIRELESS TECHNOLOGIES FOR IOT**

III ECE / VI SEMESTER

UNIT 2 – for IoT/M2M devices. UNIT II ARCHITECTURE AND DESIGN

PRINCIPLES FOR IOT

### **TOPIC 4 –Internet connectivity**



# 6LoWPAN Features



- IETF recommended methods for reassembly of fragments
- IPv6 and UDP (or ICMP) headers compression (6LoWPAN-hc adaptation layer)
- Neighbour discovery (6LoWPAN-nd adaptation layer) and supports mesh routing



# Data Stack



- Uses 6LoWPAN protocol at adaptation layer
- Adaptation layer data stack transmits to IPv6 Internet layer
- Nodes having low speed and low power. For example, Wireless Personal Area Network (WPAN) nodes.



## IPv6 over IEEE 802.15.4 standard network nodes



- Headers, security and Application data in a frame
- Total device node frame size = 127B .
- IPv6 header = 40B;
- UDP header = 8B;

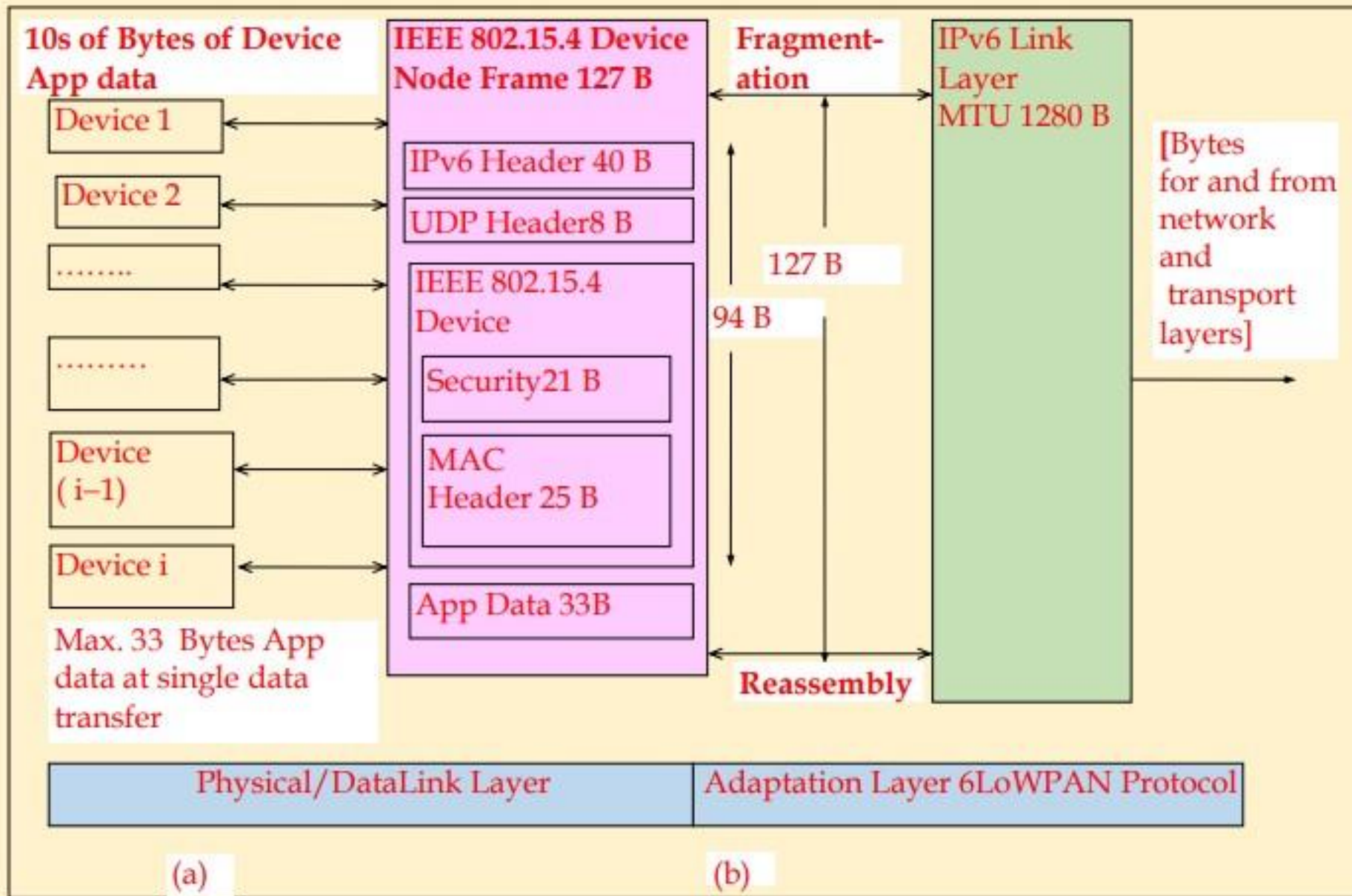


Fig. 4.5(a) Physical layer IEEE 802.15.4 network devices (b) Adaptation layer 6LoWPAN protocol 127 B fragmented frames reassembly into IPv6 maximum 1280 B or fragmentation of IPv6 MTU 1280B into 127 B frames for transfer to a device.



## IPv6 over IEEE 802.15.4 standard network nodes



- Device node MAC (Media Access Control) = 25 B;
- AES-128 security = 21 B;
- Remaining Application data



# IPv6 MTU at data link layer



- 1280 B fragments into frame of 127 B each for single transfer to a device node



# IPv6 MTU (maximum transmission unit)



- •Link layer = 1280 B
- •Link layer frame fragmentation needed in order to
- communicate frame of 127 B over IEEE 802.15.4
- nodes (device).





# The frame MTU



- 1280B for transmission to network layer
- Fragments from frames from the device of 127 B each reassemble into IPv6 frame