SNS COLLEGE OF ENGINEERING

Kurumbapalayam(Po), Coimbatore – 641 107
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Department of Computer Science and Technology

Course Name – 19IT503 Internet of Things

III Year / V Semester

Unit 3 – EVOLVING IoT STANDARDS & PROTOCOLS

Topic 7- 6LoWPAN and IPSO

6LoWPAN

IETF IPv6 OVER LOWPOWER WPAN (6LoWPAN)

- 6LoWPAN is an IPv6 adaption layer for low power wireless PAN (LoWPAN).
- A link in a LoWPAN is characterized as lossy, low power, low bit-rate, short range, with many nodes saving energy with long sleep periods.
- 6LoWPAN provides a means of carrying packet data in the form of IPv6 over IEEE 802.15.4 and other networks
- A LoWPAN is potentially composed of a large number of overlapping radio ranges works on 2.4 GHz
- It uses AES-128 link layer security for authentication and encryption and TLS

6LoWPAN

IETF IPv6 OVER LOWPOWER WPAN (6LoWPAN)

- 6LoWPAN (IPv6 over Low-Power Wireless Personal Area Networks), is a low power wireless mesh network where every node has its own IPv6 address.
- This allows the node to connect directly with the Internet using open standards.
- It works great with open IP standard including TCP, UDP, HTTP, COAP, MATT and web-sockets.
- It offers end-to-end IP addressable nodes.
- There’s no need for a gateway, only a router which can connect the 6LoWPAN network to IP.
- In a 6LowPAN network, leaf nodes can sleep for a long duration of time.

6LoWPAN

6LoWPAN Application Areas

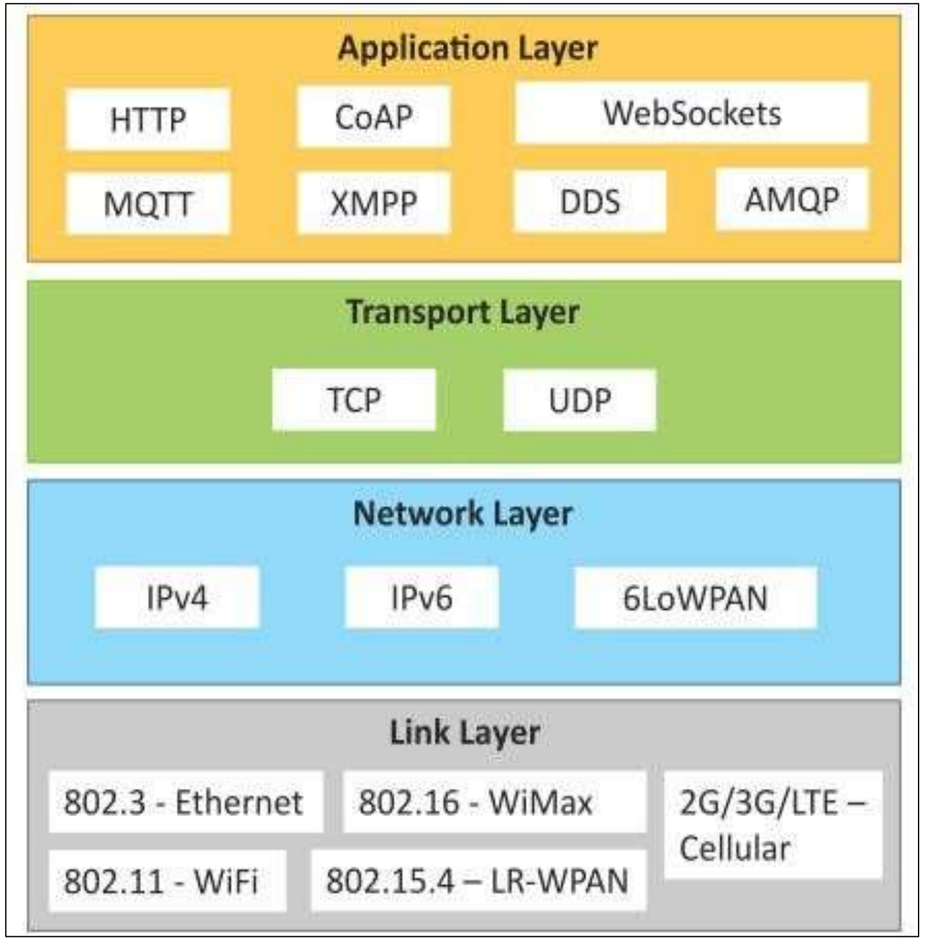
•Automation: There are enormous opportunities for 6LoWPAN to be used in many different areas of automation.

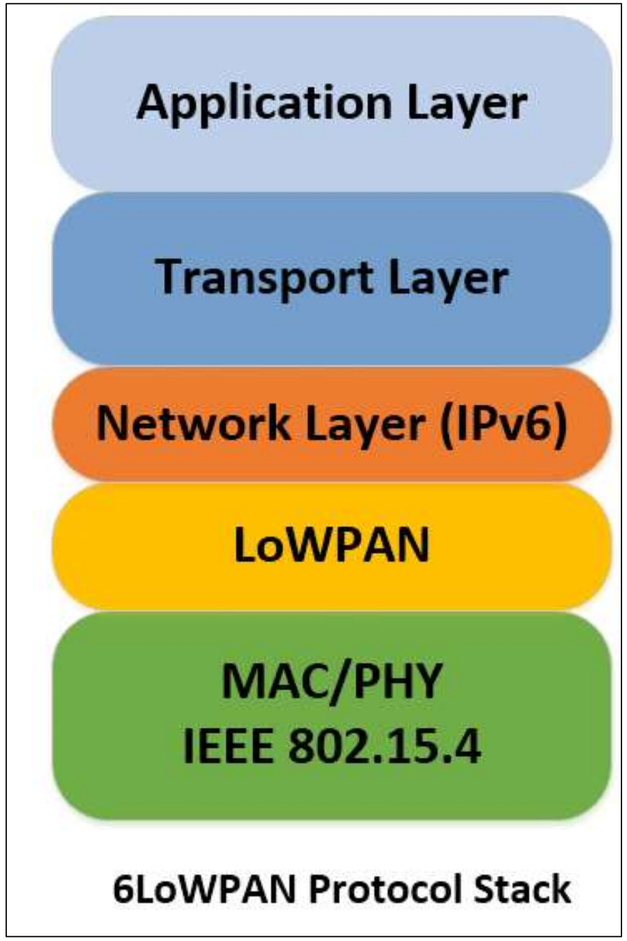
•Industrial monitoring: Industrial plants and automated factories provide a great opportunity for 6LoWPAN. Major savings can be made by using automation in every day practices. Additionally, 6LoWPAN can connect to the cloud which opens up many different areas for data monitoring and analysis.

•Smart Grid: Smart grids enable smart meters and other devices to build a micro mesh network. They are able to send data back to the grid operator’s monitoring and billing system using the IPv6.

•Smart Home: By connecting your home IoT devices using IPv6, it is possible to gain distinct advantages over other IoT systems.

6LoWPAN-Protocol Stack





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- A LoWPAN is potentially composed of a large number of overlapping radio ranges. Although a given radio range has broadcast capabilities, the aggregation of these is a complex non-broadcast multiaccess (NBMA) structure with generally no LoWPAN-wide multicast capabilities.
- Link-local scope is in reality defined by reachability and radio strength.
- A LoWPAN to be made up of links with undetermined connectivity properties, along with the corresponding address model assumptions defined therein.

IP IN SMART OBJECTS (IPSO)

The IPSO Alliance is an advocate for IP-networked devices for use in energy, consumer, healthcare, and industrial applications.

The IPSO Alliance is a non-profit association of more than 60 members from leading technology, communications, and energy companies around the world.

The mission is to provide a foundation for industry growth through building stronger relationships, fostering awareness, providing education, promoting the industry, generating research, and creating a better understanding of IP and its role in connecting smart objects

IP IN SMART OBJECTS (IPSO)

GOALS

•Promote IP as the premier solution for access and communication for smart objects.

•Promote the use of IP in smart objects by developing and publishing white papers and case studies and providing updates on standards progress from associations like IETF, among others, and through other supporting marketing activities.

•Understand the industries and markets where smart objects can have an effective role in growth when connected using the Internet protocol.

•Organize interoperability tests that will allow members and interested parties to show that products and services using IP for smart objects can work together and meet industry standards for communication.

•Support IETF and other standards development organizations in the development of standards for IP for smart objects.

THANK YOU