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Bluetooth Stack Protocol

Bluetooth stack protocol refers to the layered architecture that defines how Bluetooth devices communicate with each other. The protocol stack is divided into layers, each responsible for different aspects of the communication process. Here's an overview of the Bluetooth protocol stack:

1.Radio (RF) Layer: The Bluetooth radio layer is the lowest layer of Bluetooth architecture.It lays down the physical structure and specifications for the transmission of radio waves.

- It defines two types of physical links: connection-less and connection-oriented.

2.Baseband Link Layer: The baseband is the digital engine of a Bluetooth system and is equivalent to the MAC sublayer in LANs. It performs the connection establishment within a piconet, addressing, packet format, timing and power control.

3.Link Manager Protocol Layer: It performs the management of the already established links which includes authentication and encryption processes. It is responsible for creating the links, monitoring their health, and terminating them gracefully upon command or failure.

4.Logical Link Control and Adaption (L2CAP) Protocol Layer: It is also known as the heart of the Bluetooth protocol stack. It allows the communication between upper and lower layers of the Bluetooth protocol stack. It packages the data packets received from upper layers into the form expected by lower layers.

5.Service Discovery Protocol (SDP) Layer: It is short for Service Discovery Protocol. It allows discovering the services available on another Bluetooth-enabled device.

6.RF Comm Layer: It is a cabal replacement protocol. It is short for Radio Frontend Component. It provides a serial interface with WAP and OBEX. It also provides emulation of serial ports over the logical link control and adaption protocol(L2CAP).

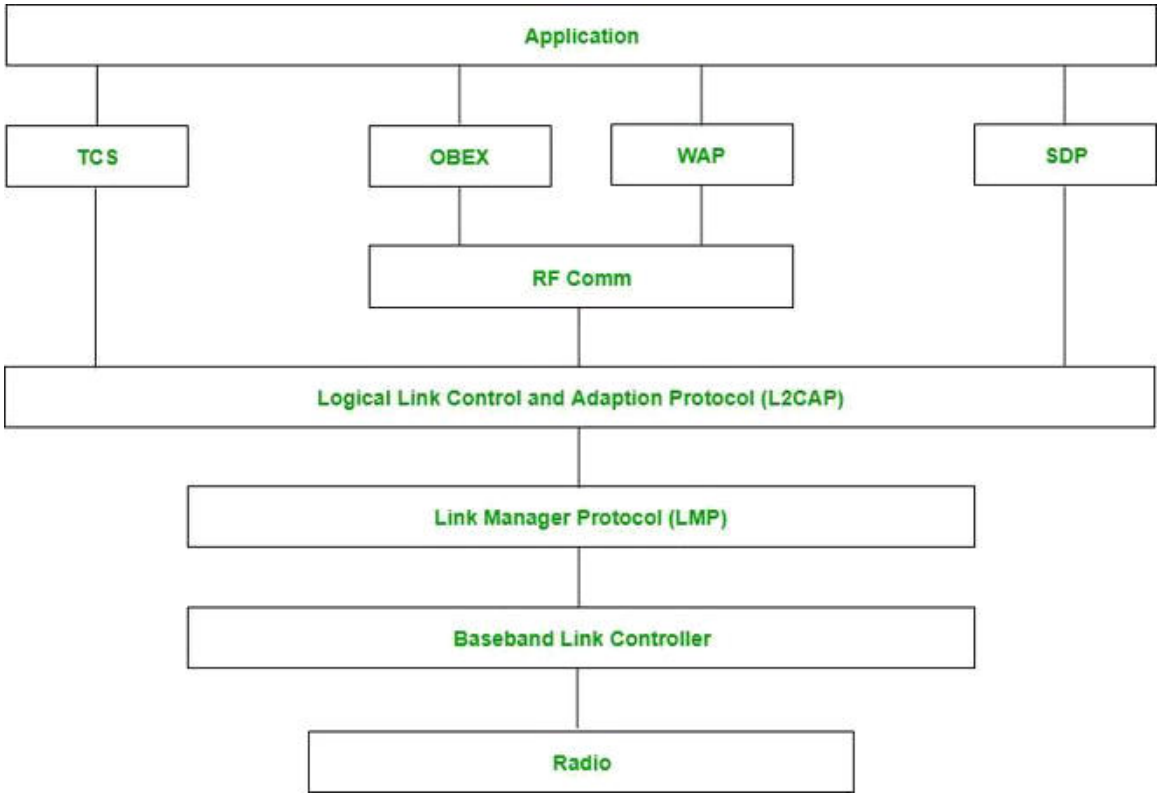
7.OBEX: It is short for Object Exchange. It is a communication protocol to exchange objects between 2 devices.

8.WAP: It is short for Wireless Access Protocol. It is used for internet access.

9.TCS: It is short for Telephony Control Protocol. It provides telephony service. The basic function of this layer is call control (setup & release) and group management for the gateway serving multiple devices.

10.Application Layer: It enables the user to interact with the application.

Architecture of Bluetooth Stack Protocol:



Piconet:

A piconet is a network created by connecting multiple wireless devices using Bluetooth technology.

In a piconet network a master device exists, this master device cm gets connected to 7 more slave devices.

It includes the master the number of devices that can be connected is limited to 8.

Due to less number of devices active at a time the usage of channel band width is not more.

Number of devices that can be connected is limited to 8. It is applicable for devices belonging to small areas.

Scatternet:

It is a network which connects multiple piconets using Bluetooth and it acts as a master and another type of piconet acts as a slave.

It has more than 6 devices that can be connected.

Multiple devices are active, so there is an effective use of channel bandwidth.

It is a connection of multiple piconets therefore it is applicable for devices belonging to large areas.