

Bluetooth : 802.15.1

- Adopted the bluetooth MAC and PHY specs.
- Range < 10 m
- data 1 Mbps
- Not for heavy traffic loads
- BNEP

→ Bluetooth Network Encapsulation Protocol

- Ethernet alike environment.
- Supports all types of Ethernet communication
- Header compressions
- Packet filtering

Why?

- Allows all network protocols (IPv4, v6, ...)
- Peer-to-peer (no π/s)
- Re-use all ^{existing} network apps.
- cost
- solution similar to 802.11

→ Bluetooth 4.0 : low Energy

Use cases: proximity, time, emergency, sensors, network availability,

BLE has same application areas as Zigbee (low bandwidth, average / low latency data, not video, data, voice, audio, only state)

What is it?

- Open, short range radio technology, blank sheet of paper design, different to Bluetooth classic, optimized for ultra low power, enables coin cell battery use cases.
- All optimized for lowest power consumption (short packets, less RF channels, single protocol, etc)
- Designed to send small chunks of data (exposing state)

→ BLE and GAP

→ GAP (Generic access profile) defines a profile all Bluetooth devices implement. Also defines procedures for device discovery, link establishment, management and termination and initiation of security features.

→ Gap layer has one of four roles:

broadcaster → non-connectable advertiser

observer → scans for advertisements but doesn't initiate connection

peripheral → advertiser connectable and can operate as slave in a single link layer connection.

central → scans for ads and starts connections, operates as master.

→ Discoverable modes:

non-discoverable - no ads

limited-discoverable - ads for a limited amount of time before returning to standby.

general discoverable - ads continuously.

→ BLE and GAP: Pairing

Initiated by either device.

Both generate and exchange short-term keys to decrypt packets.

Either can request bonding to create long term relationships.