

Bluetooth



By

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Bluetooth - History

- ✓ Named after Danish King Harold Bluetooth
- ✓ Spec version 1.0B released December 1999 (1000+ pages)
- ✓ Promoter Group consisting of 9 Companies
Ericsson, IBM, Intel, Nokia, Toshiba, 3Com, Lucent,
Microsoft, Motorola (Widely supported by all companies)
- ✓ Designed to support multimedia applications that mix voice and data

Bluetooth - Links

Synchronous Connection-Oriented (SCO) link

- ✓ Symmetrical, circuit-switched, point-to-point connections
- ✓ Suitable for voice
- ✓ Two consecutive slots (forward and return slots) reserved at fixed intervals

Bluetooth - Links

Asynchronous Connectionless (ACL) link

- ✓ Symmetrical or asymmetric, packet-switched, point-to-multipoint
- ✓ Suitable for bursty data
- ✓ Master units use a polling scheme to control ACL connections

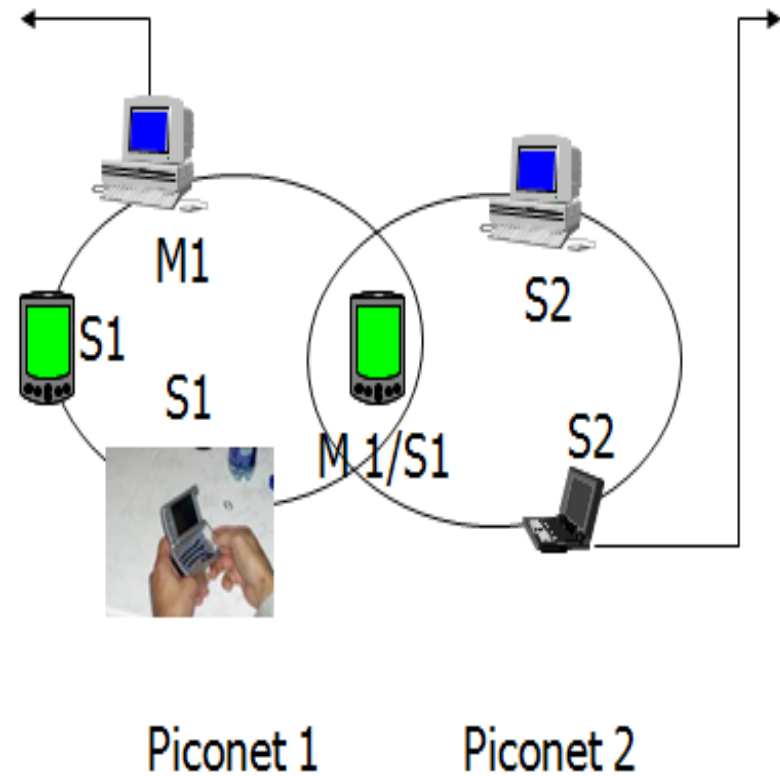
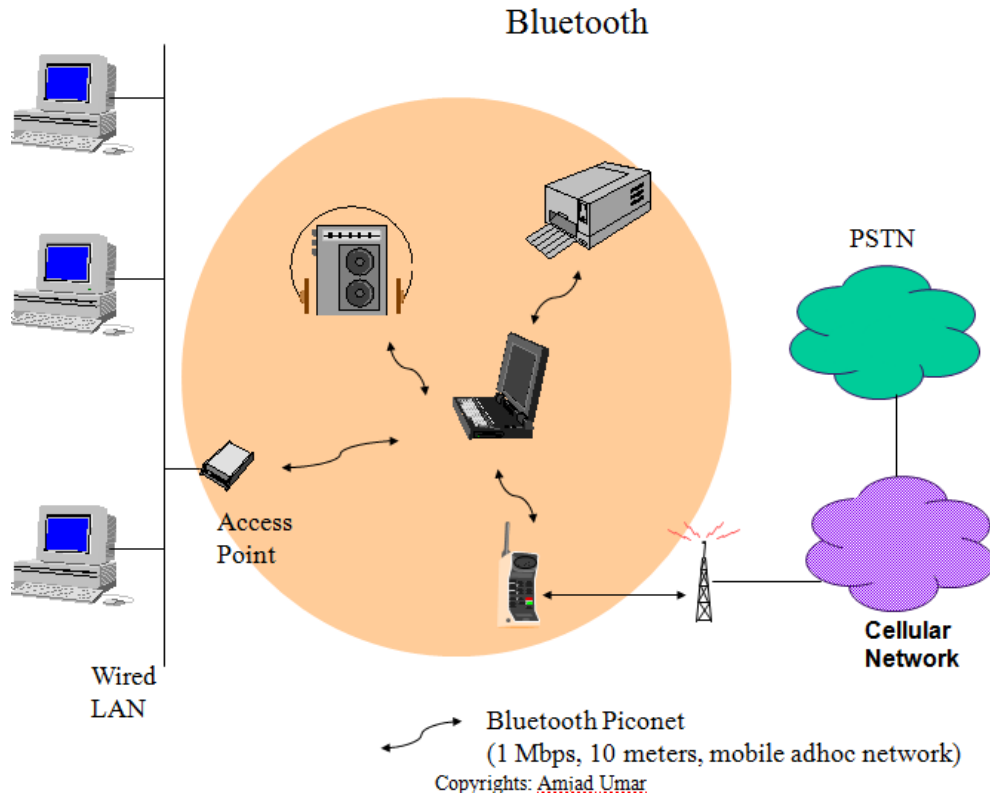
Bluetooth - Specifications

- ✓ IEEE 802.15.1
- ✓ No need for cables - RF technology - Low cost
- ✓ Short range (10 Meters, Expandable to 100 Meters)
- ✓ Low power
- ✓ 1 Data (700 Kbps) + 3 voice channels
- ✓ Omni-directional

Bluetooth - Specifications

- ✓ Uses 2.4 GHz ISM band (Unlicensed radio band - Crowded)
- ✓ WPANs
- ✓ Devices
 - ✓ Notebooks
 - ✓ Peripheral Devices
 - ✓ PDAs
 - ✓ Smartphones
- ✓ Piconets and Scatternet (Interconnected Piconets)

Bluetooth - Piconet



Bluetooth – Piconet, Terminals, Links

- ✓ Piconet: A group of 8 nodes
(1 Master and 7 active Slave Terminals)
- ✓ Single-hop point-to-point Wireless Link
- ✓ Wireless link: 1 Mbps per Piconet, shared by 8 Terminals
- ✓ A Link is characterized by FHSS
(To avoid Interference with other Piconet)

Bluetooth – Piconet, Terminals, Links

- ✓ 255 Parked Terminals
- ✓ Three modes of operation park/hold/sniff
- ✓ Master activates Slaves
- ✓ Scatternet: Group of Piconets
(Master nodes are Connected)

Bluetooth – Piconet, Terminals, Links

- ✓ Slaves communicate thru Master
- ✓ Slave may send in a slave-to-master slot
- ✓ A slave can belong to two different Piconets, but not at the same time
- ✓ A slave can leave its current Piconet (after informing its current master the duration of the leave) and join another Piconet

Bluetooth

- ✓ Parked becomes active by Master
- ✓ A master of one Piconet can also join another Piconet temporarily as a slave
- ✓ TDM with time slots of 625 microseconds
- ✓ Sender transmits on one of 79 channels for each time slot

References

- ✓ Book: Data communication and Networking
Fourth edition
By : BEHROUZ A FOROUZAN
- ✓ Computer Networking: A Top Down Approach Featuring the Internet, 3rd edition. Jim Kurose, Keith Ross
Addison-Wesley, July 2004.
- ✓ Various Relevant Websites
 - ✓ Website: www.amjadumar.com

Thank You