

Wireless Ad Hoc Networking -Bluetooth PAN

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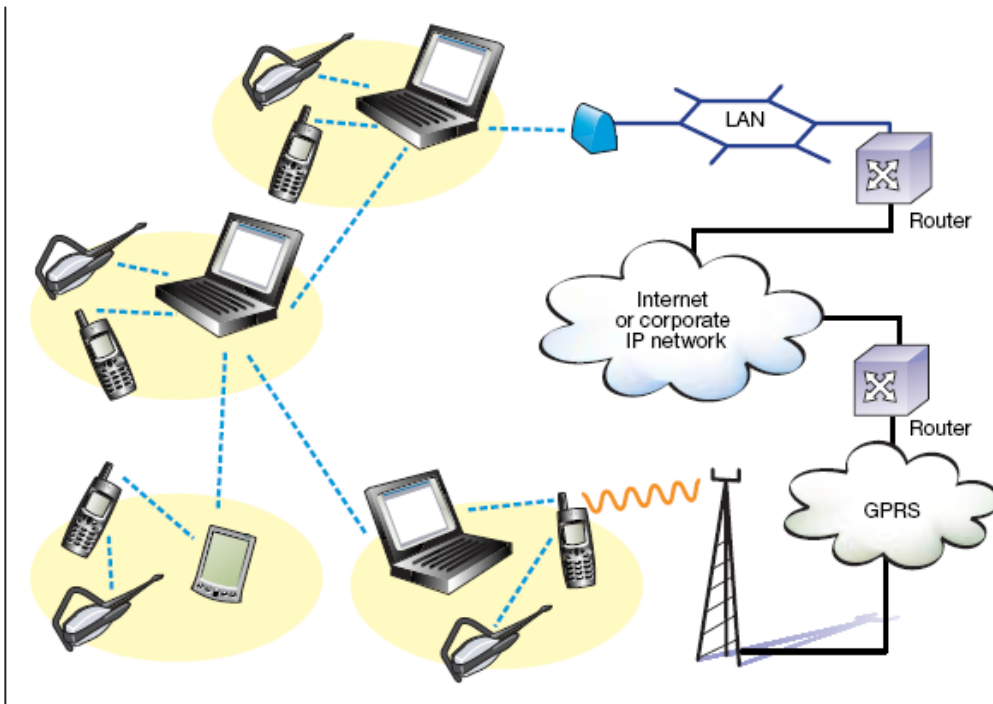
- What is a wireless ad hoc network?
 - A decentralized wireless network
 - Not rely on a pre-existing infrastructure
 - Nodes use a wireless interface to send packet

Typical Applications

- Military Sector
- Commercial Sector
 - used in places no infrastructure (fixed and cellular) available
- Local Level
 - link laptops in a conference
 - sharing information in a home network
- Short-range ad hoc network
 - intercommunication between various mobile devices
 - form a PAN (personal area network) by bluetooth technology

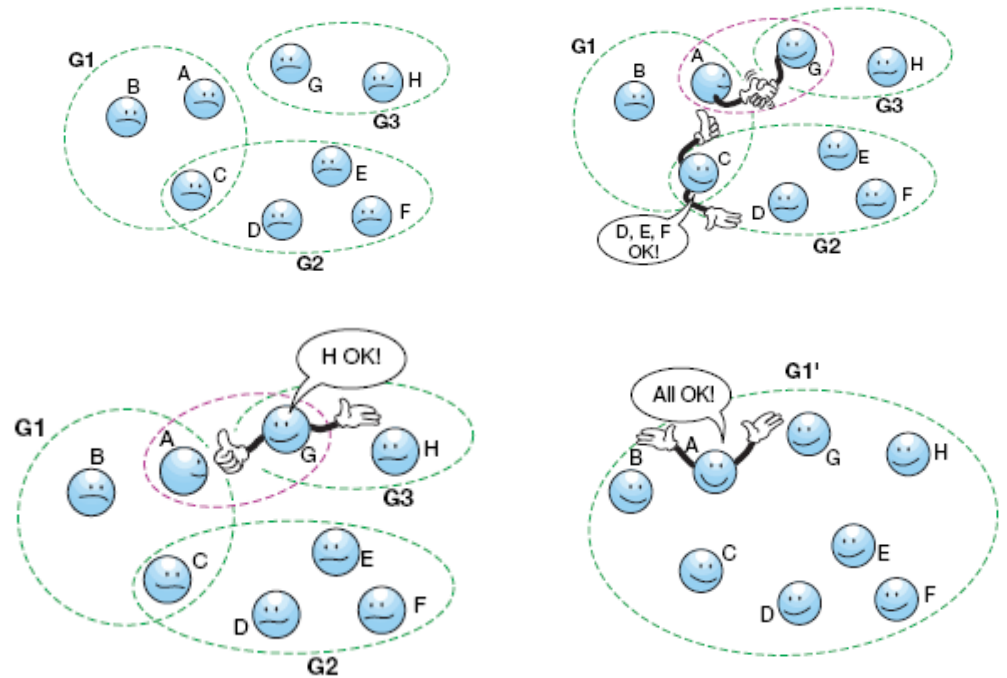
PAN-a network extension

- A bluetooth-based PAN:
 - extend mobile network into user domain
 - use a GPRS/UMTS mobile phone to the internet



Typical ad hoc network functions

- Security
 - use cryptographic key to create a trust relationships

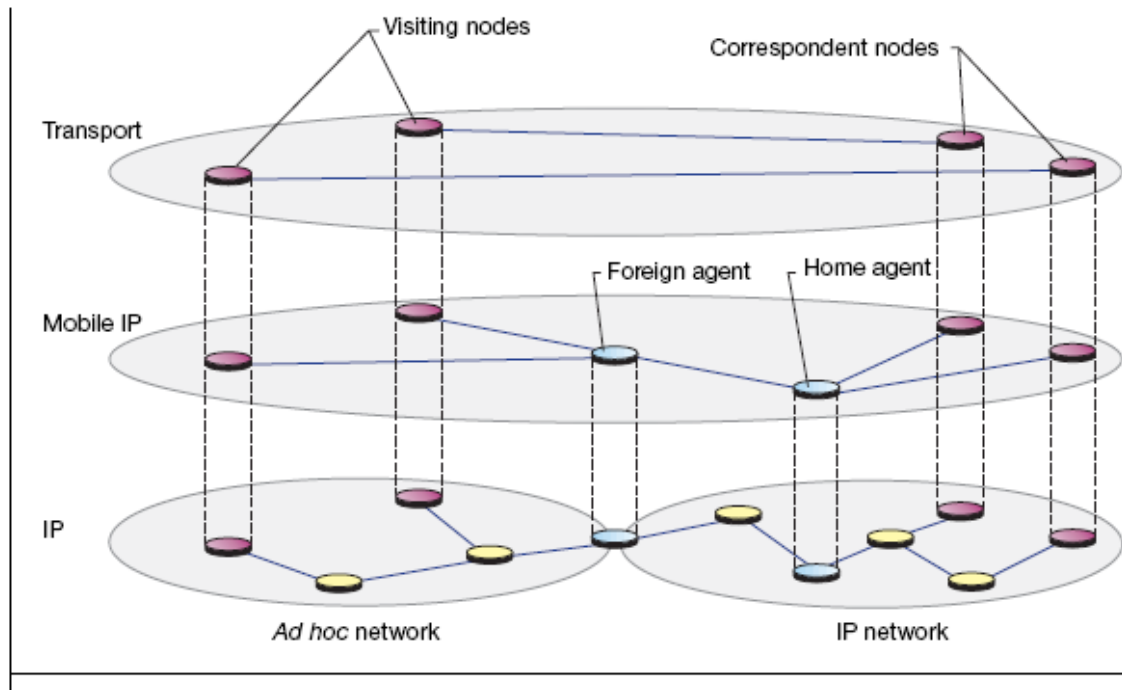


- Routing in ad hoc networks
 - challenge task: nodes randomly move in network
 - two main methods: proactive and reactive routes
 - proactive: maintain routes to all nodes
 - use power and link bandwidth more as nodes increases
 - reactive: dictate routes between nodes when needed

- Three mobile ad hoc network-routing protocols
 - AODV(*Ad hoc on-demand distance vector*) (*Reactive*)
 - DSR (Dynamic source routing) (Reactive)
 - DSDV (Destination-sequenced distance vector) (Proactive)
- Reactive approach is better for
 - mobile environment with limited bandwidth capacity
- Proactive approach
 - use too many resources to update paths
 - cause loss of packet

Mobility functions

- MIPMANET (Mobile IP for mobile ad hoc network)
 - access to the internet
 - the service of mobile IP



- Foreign agents used as access point
- Ad hoc routing protocol
- Use home IP address and register in foreign agent
- To send package: to foreign agent
- To receive package: from home agent to foreign agent by IP tunnel

References

- M. Frodigh, et al, "Wireless Ad Hoc Networking: The Art of Networking without a Network," *Ericsson Review*, No. 4, 2000.

- Questions?