

Mobile IP



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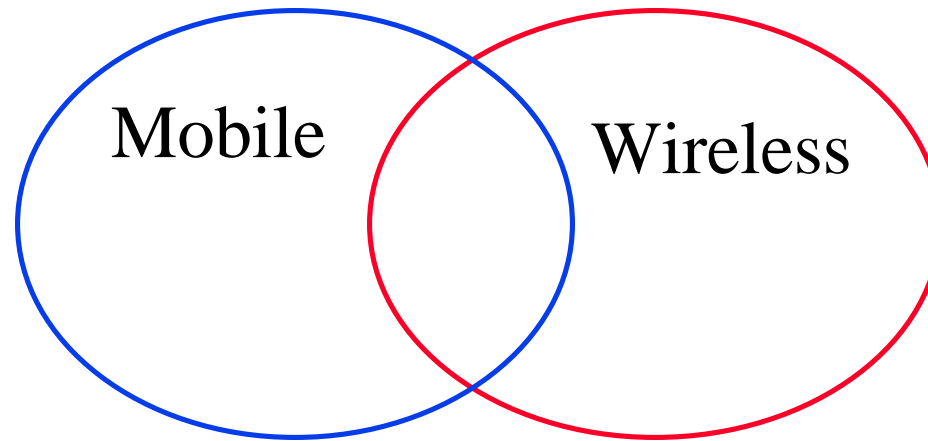
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- q Wireless: Introduction
- q Problem: IP Addresses and location
- q Solution: Mobile IP

Mobile vs Wireless



- q Mobile vs Stationary
- q Wireless vs Wired
- q Wireless \Rightarrow media sharing issues
- q Mobile \Rightarrow routing, location, addressing issues

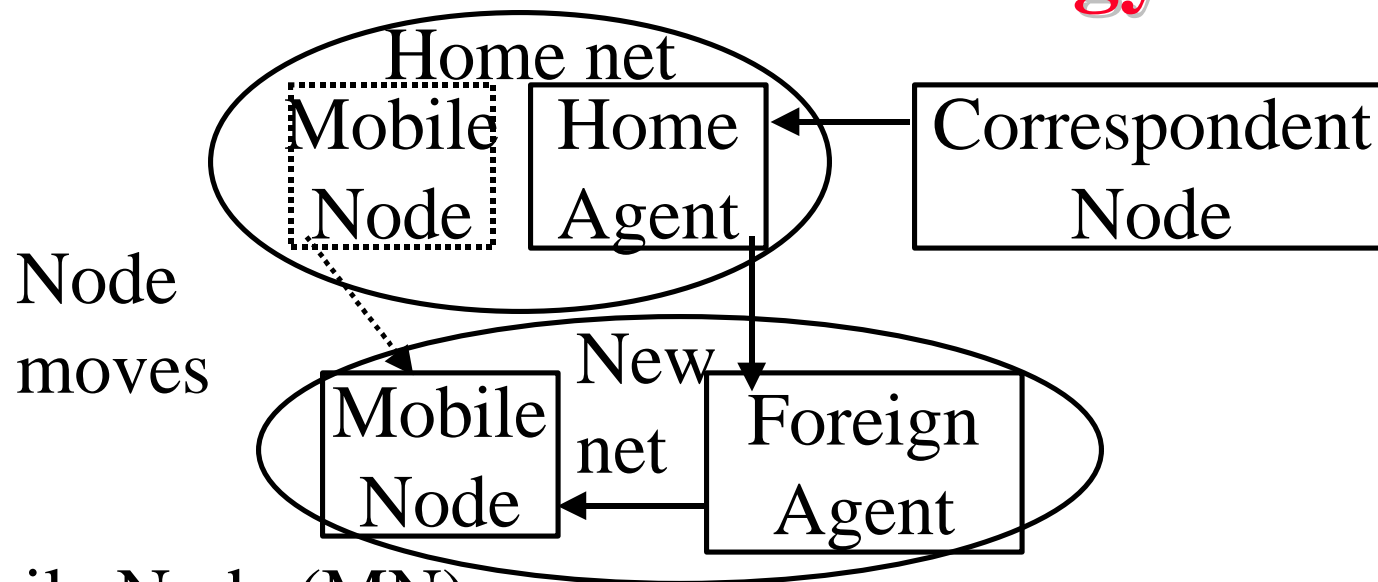
Mobile IP: Features

- q You can take you notebook to any location
- q Finds nearby IP routers and connects *automatically*
You don't even have to find a phone jack
- q Only "Mobility Aware" routers and mobile units need new s/w
- q Other routers and hosts can use current IP
- q No new IP addresses or address formats
- q Secure: Allows authentication
- q Also supports mobile networks
(whole airplane/car load of mobile units)

Impact

- q Your Email is continuously delivered
- q You can start a telnet or x-window session as if local
- q Continuous access to your home resources
- q Access to local resources: Printers
- q Airports, Hotels, Hospitals will provide "Mobile IP connectivity"
- q Better connectivity
 - ⇒ More productive meetings and conferences
- q Cities will feature "Mobile IP Accessways"
- q You can compute while driving

Mobile IP: Terminology



- q Mobile Node (MN)
- q Home Agent (HA), Foreign Agent (FA)
- q Care-of-address (COA): Address of the end-of-tunnel towards the mobile node
- q Correspondent Node (CN)
- q Home Address: Mobile's permanent IP address

Mobile IP: Processes

- q Agent Discovery: To find agents
 - q Home agents and foreign agents advertise periodically on network layer and optionally on datalink
 - q They also respond to solicitation from mobile node
 - q Mobile selects an agent and gets/uses care-of-address
- q Registration
 - q Mobile registers its care-of-address with home agent. Either directly or through foreign agent
 - q Home agent sends a reply to the mobile node via FA

Processes (Cont)

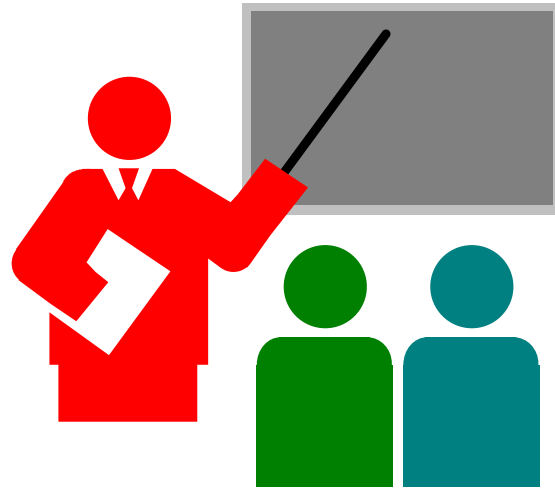
- q Each "Mobility binding" has a negotiated lifetime limit
- q To continue, reregister within lifetime
- q Return to Home:
 - q Mobile node deregisters with home agent sets care-of-address to its permanent IP address
 - q Lifetime = 0 \Rightarrow Deregistration
- q Deregistration with foreign agents is not required. Expires automatically
- q Simultaneous registrations with more than one COA allowed (for handoff)

Encapsulation/Tunneling

- q Home agent intercepts mobile node's datagrams and forwards them to care-of-address
- q Home agent tells local nodes and routers to send mobile node's datagrams to it
- q Decapsulation: Datagram is extracted and sent to mobile node



Summary



- q Wireless vs mobile
- q IP: Transparent mobility via home/foreign agents

Mobile IP: References

- q C. Huitema, “Routing in the Internet,” Prentice-Hall, 1995, Chapter 12.
- q [RFC2002] C. Perkins, “IP Mobility Support,” 10/29/96, 79 pages.
- q Mobile-IP working group homepage,
<http://www.ietf.cnri.reston.va.us/html.charters/mobileip-charter.html>