

Mobile IP



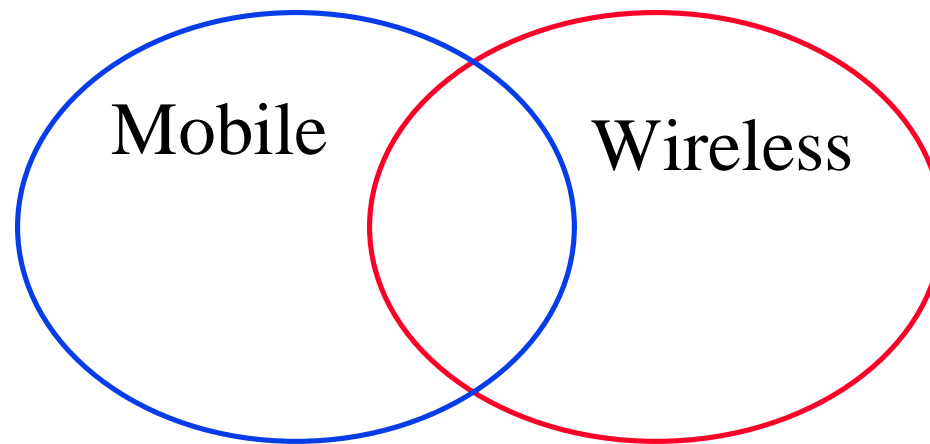
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- ❑ Wireless: Introduction
- ❑ Problem: IP Addresses and location
- ❑ Solution: Mobile IP

Mobile vs Wireless



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

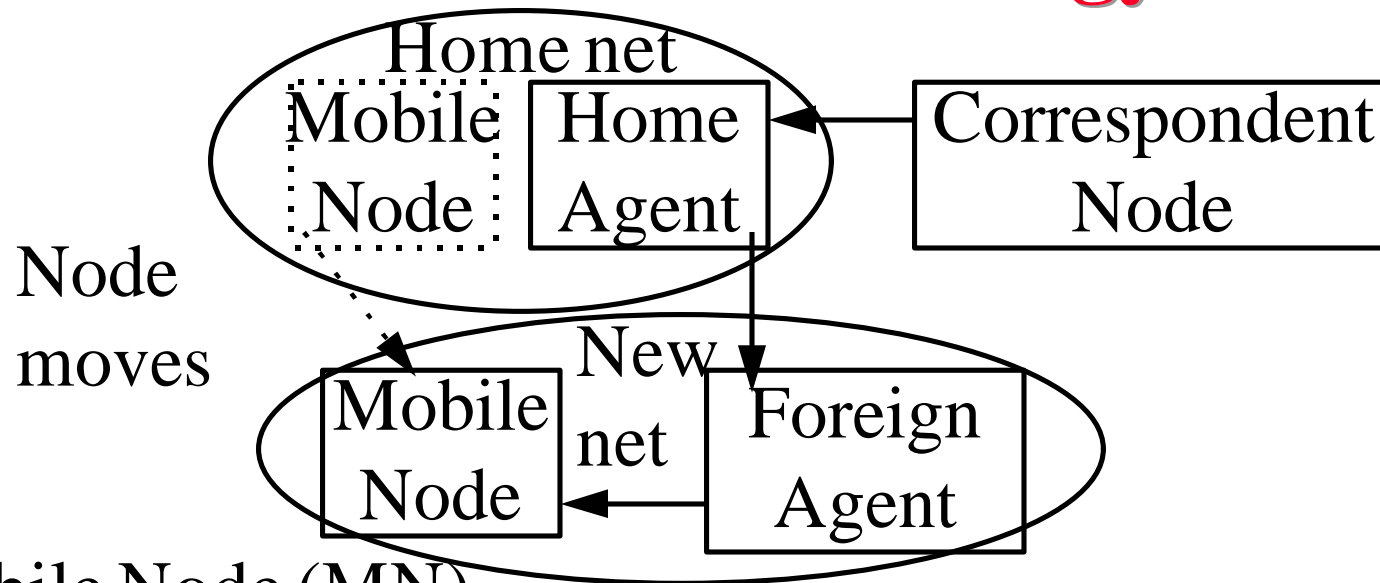
Mobile IP: Features

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

Impact

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

Mobile IP: Terminology



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

Mobile IP: Processes

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

Processes (Cont)

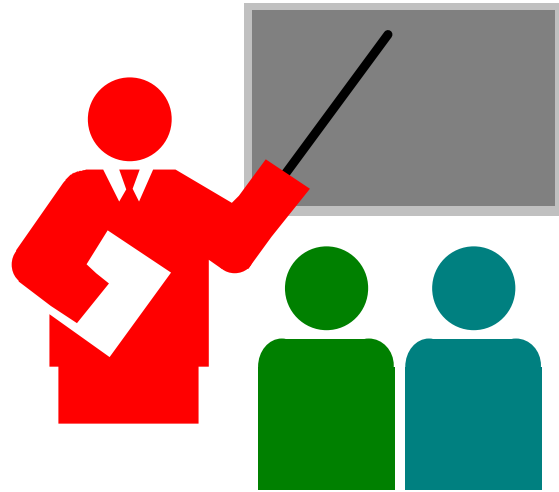
- ❑ Each "Mobility binding" has a negotiated lifetime limit
- ❑ To continue, reregister within lifetime
- ❑ Return to Home:
 - ❑ Mobile node deregisters with home agent sets care-of-address to its permanent IP address
 - ❑ Lifetime = 0 \Rightarrow Deregistration
- ❑ Deregistration with foreign agents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

Encapsulation/Tunneling

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



Summary



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

Mobile IP: References

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

Homework

- Read RFC 2002 on Mobile IP