

Wireless Internet Routing

Introduction

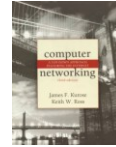
Wireless Internet Routing

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Disclaimer and Acknowledgements



Lots of content borrowed from/inspired by:

- ❑ Computer Networking: A Top Down Approach Featuring the Internet, 3rd edition. By Jim Kurose and Keith Ross, Addison-Wesley, July 2004.
- ❑ Mobile Ad Hoc Networks: Routing, MAC and Transport Issues, Infocom 2006 Tutorial by Nitin Vaidya (<http://www.crhc.illinois.edu/wireless/tutorials.html>)
- ❑ Computer Networks, EPFL-IC, Fall 2008, Jean-Pierre Hubaux and Mohammad Hossein Manshaei (<http://compnet.epfl.ch>)
- ❑ Mobile Networks, EPFL-IC, Spring 2009, Jean-Pierre Hubaux (<http://mobnet.epfl.ch/>)
- ❑ CS691aa, 2007, Deepak Ganesan (<http://www.cs.umass.edu/~dganesan/courses/fall07/>)
- ❑ Optimized Link State Routing, Andreas Tønnesen (<http://www.olsr.org/?q=links>)
- ❑ Wikipedia (but be cautious...)

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Motivation: IP on Everything and Wireless Everywhere

- ❑ Wireless connectivity is cheap and easy
 - ❑ Wi-Fi, GSM, 3G, Bluetooth on the same device (or even chip)
- ❑ We want more connectivity
- ❑ Everything becomes connected

The Internet is becoming wireless

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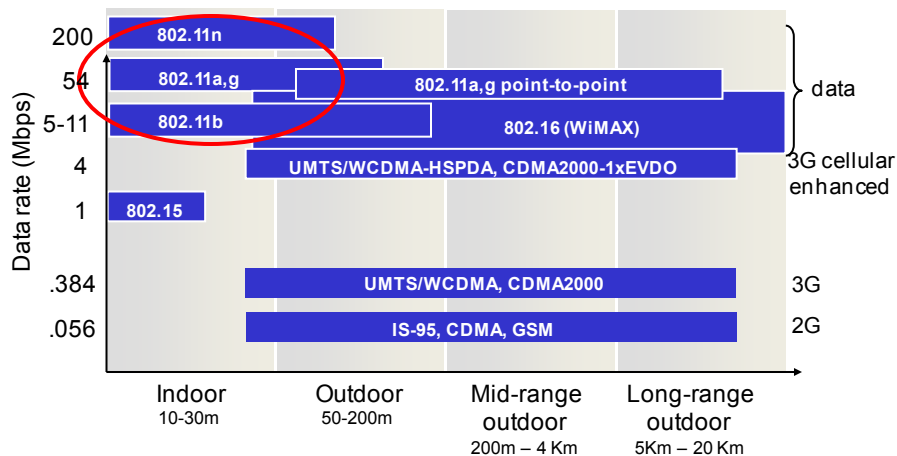
Motivation: Wireless Communication Networks are Everywhere

- Cellular networks: GSM, 3G
- Wi-Fi networks: Wireless LAN, Hotspots, Fon, Freifunk, ...
- Personal and body area networks: Bluetooth, Wireless USB
- Vehicular networks
- Sensor networks and RFID
- Underwater networks, inter-planetary networks...

In this course: routing in radio communication networks for wireless Internet access

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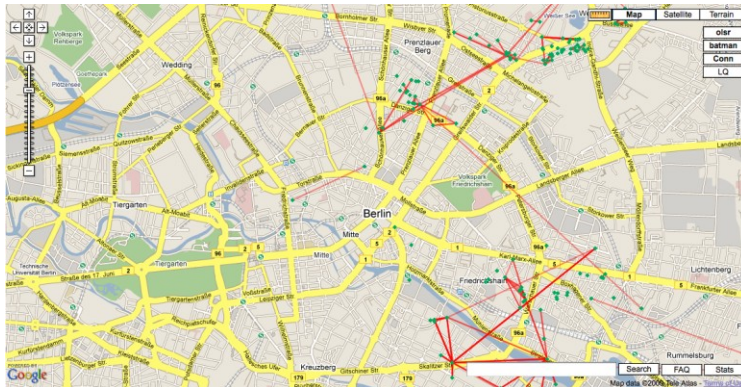
Wireless is Everywhere



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Community Networks/Mesh Network

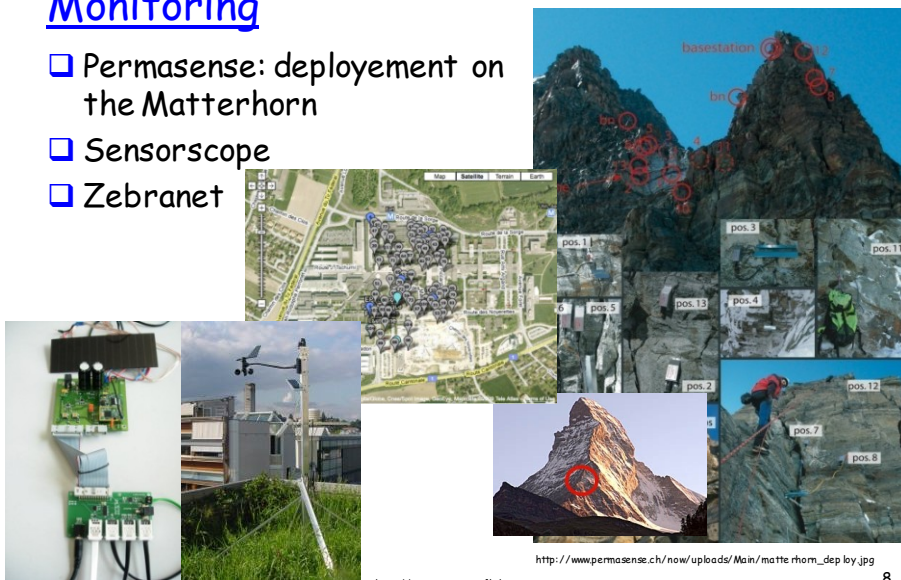
- Freifunk (map.berlin.freifunk.net)
- Seattle Wireless (since 2000)



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Sensor Networks for Environmental Monitoring

- Permasense: deployment on the Matterhorn
- Sensorscope
- Zebranet



http://www.permasense.ch/now/uploads/Main/matte_rhom_dep_loy.jpg

<http://sensorscope.epfl.ch>

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Overview

- Introduction to wireless routing
- Review: architecture of wireless networks, wireless PHY, wireless MAC, 802.11
- Wireless: what does it change?
- Specifics of routing in wireless networks
- In the beginning: routing for wireless ad hoc networks and MANET
- Becoming standard: wireless Internet routing
- Selected topic(s): taking advantage of the wireless medium