

# Wireless LANs

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# Agenda

- Introduction to IEEE 802.11b
- DePaul University design, installation and support
- Security issues
- Futures

# Wireless

- Mobility
- Frequency Division Multiplexing (FDM)
- Industrial, Scientific and Medical (ISM) bands
- Channel assignment and placement
- Propagation issues
- Modulation and encoding

# IEEE 802.11

- 802.11 - 1 M/bs and 2 Mb/s @ 2.4 GHz
- 802.11a - 54 Mb/s @ 5 GHz
- 802.11b - 11 Mb/s @ 2.4 GHz
- 802.11g - 54 Mb/s @ 2.4 GHz
- Task Group E - quality of service
- Task Group F - IAPP
- Task Group I - security

# LAN components

- Relation to OSI model
- Medium Access Control (MAC)
- Independent (ad-hoc) versus infrastructure networks
- Service Set Identity (SSID)
- Power save features
- Association and authentication
- Encryption (WEP)

# Example access point

- Let's login to an access point and check out its settings...

# Example client config

- Time to check out a client configuration (non-Windows)...

## Discussion item

- Imagine giving every fan at the United Center access to a wireless LAN from any seat. Also assume that fans will have access to the public Internet. What challenges will there be? How would you design it?

# DePaul wireless design

- Separate VLANs and subnets
- Access point placement and installation
- End user software and configuration
- Authentication
- WEP
- Network monitoring and management

# DePaul installation

- Refer to Jeanine's presentation now...

# DePaul support

- Refer to Nicola's presentation now...

# WEP

- Symmetric key architecture
- Uses RC4
- Uses IV
- Broken by design

# Additional security

- 802.1x
- Cisco LEAP
- VPNs
- Firewalls
- NetReg
- Other homegrown solutions and ideas

## Discussion item

- Assume you are a cable or DSL-based ISP selling high-speed Internet access to homes. How do you feel about customers deploying wireless LANs? Do you care how many hosts the customer attaches? Do you care if the customer allows their neighbor to attach to their wireless LAN and thus the rest of the internetwork through your network?

# Wireless communities

- Traditional telco and ISP bypass
- Natural evolution from mainframe->PC->network
- Mapping, warchalking and stumbling