

# Fundamentals: Setting Up Your Own Wireless Network

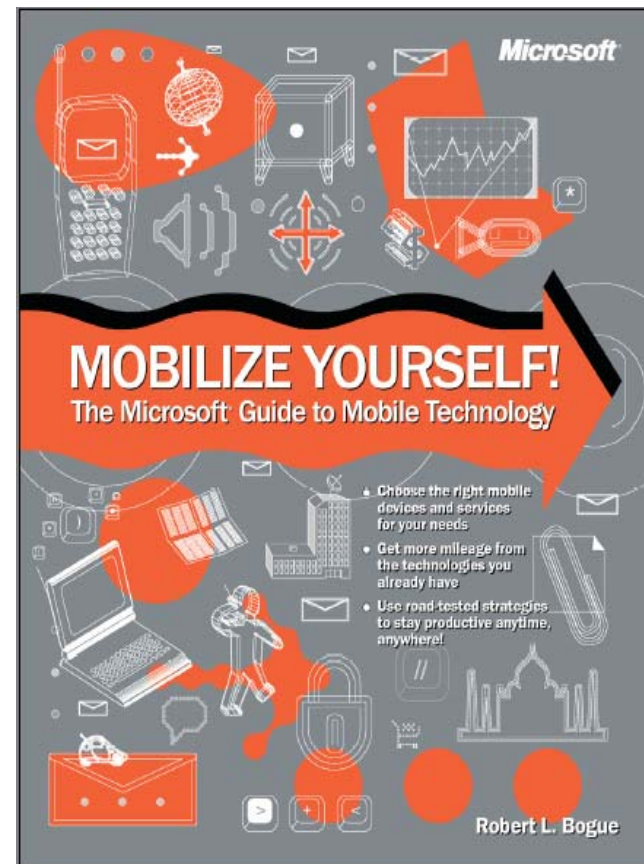
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CONFERENCE AND EXHIBITION

  
A CENTRIC Event

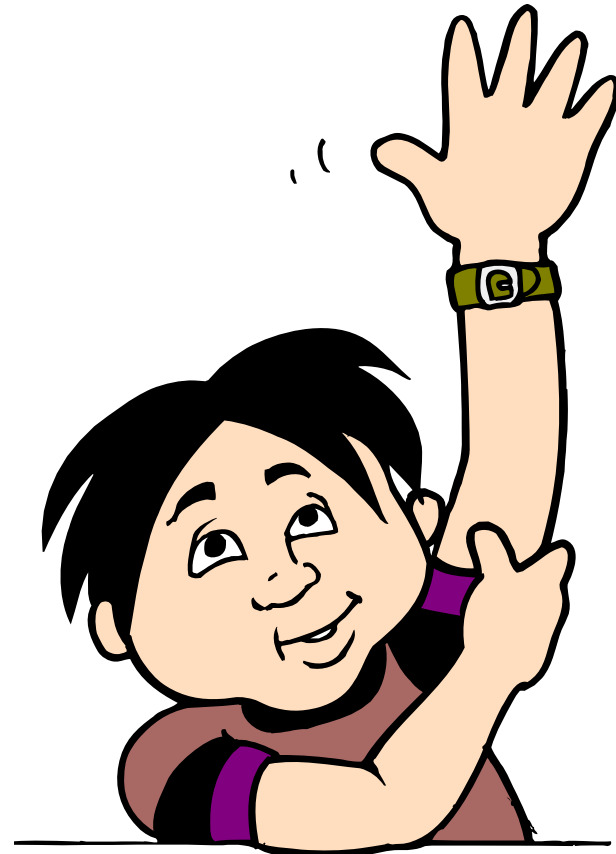
# Who am I?

- Microsoft MVP Commerce Server, previously MVP for Windows Server-Networking
- Author of 16 books, editor of 100 more, author of ~50 articles/year
- **Certified:** MCSE (NT4 & W2K), MCSA:Security, Security+, Server+, i-Net+, Project+, A+, Network+, CDIA+, e-Biz+
- Blogger:  
<http://www.thorprojects.com/blog>



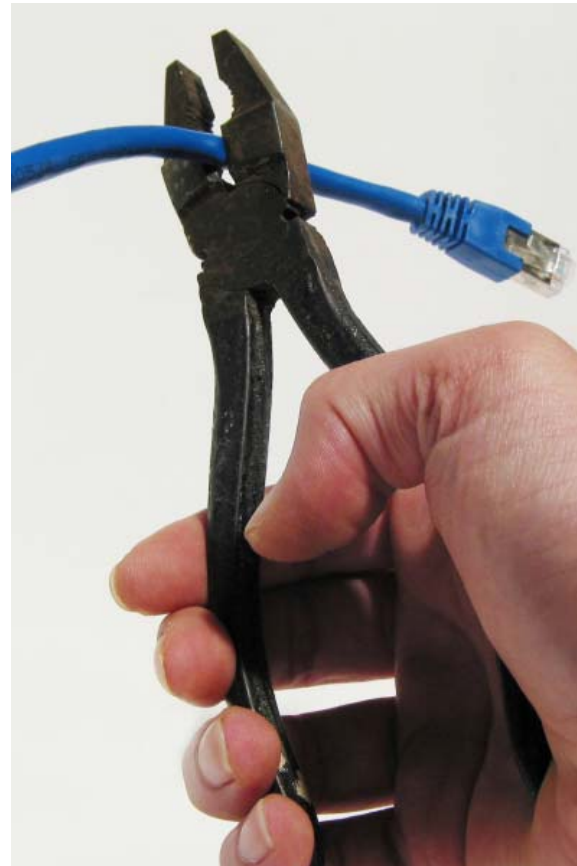
# About You

- What do you want to get out of today?
- What projects are you thinking about?
- Is there anything in particular you want to hear about?



# Why Wireless?

- Cabling Costs
  - \$100/run
- Flexibility
  - Laptops are outselling desktops



# Getting Started

- The Standards
- The Equipment
- The Settings
- The Challenges



# The Standards

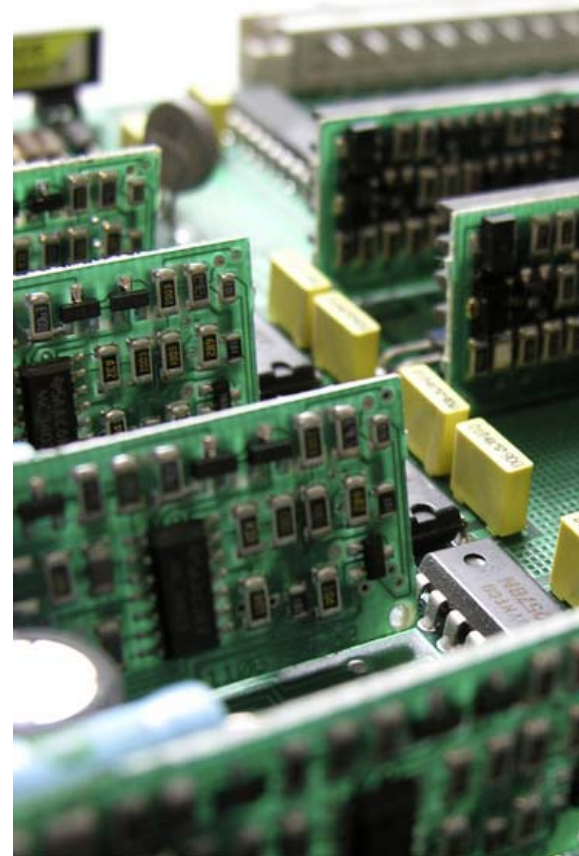
- 802.11b/g
  - 2.4 Ghz
  - 11+ Mbps
- 802.11a
  - 5 Ghz
  - 54+ Mbps





# The Equipment

- **Wireless Access Point**
  - Connects to the existing wired network
- **Router with Wireless Access Point**
  - Connects to existing wired network and the Internet
- **Network Interface Card**
  - Allows computer to work wirelessly



# The Settings

- SSID – Service Set Identifier – the name of the network.
- Channel – The specific radio frequency to use
- Security – SSID Broadcast, MAC Filtering, WEP, WPA, etc.





# The Challenges

- Frequency Conflicts
- Range
  - Too Much
  - Too Little
- Performance



# Fixing Frequency Conflicts

- Set multiple-access points on different channels
- Avoid 2.4 Ghz cordless phones, wireless TV transmitters, etc.
- Look for signal-to-noise problems



# Reducing Range

- Reduce the power setting on the wireless access point
- Move the access point to a different location
- Create barriers between the AP and the unwanted area.



# Increasing Range

- Add another Access Point
- Add high gain antennas



# Performance

- Add an Access Point
- Move high-volume users to cabled connections



# Setting Security

- SSID – Not Security
- MAC Filtering – Trivial Security
- WEP – Some Security
- WPA – Decent Security
- VPN – User-based Good Security





# SSID

- Disabling SSID broadcasts doesn't make the wireless network hidden.



# MAC Filtering

- Trivial to pretend to be a MAC that isn't filtered.



# WEP

- Known vulnerabilities
- Requires a few minutes to a few days of sniffing based on luck and traffic levels



# WPA

- Many forms
- Designed to replace WEP
- Device based authentication



# VPN

- Same technology used to connect across the Internet
- User Based Authentication



# Thank You

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