



Site Surveys and Network Planning

Chapter 6
COMP3049 – CWNA



Objectives

- Identify equipment, applications and system features required to perform virtual site survey
 - Predictive analysis/simulation
 - Integrated virtual survey features of wireless controllers
 - Indoor vs. outdoor surveys



Objectives

- Identify equipment and applications involved in performing a manual site survey
 - Hardware kits
 - Active tools and applications
 - Passive tools and applications
 - Manufacturer client utilities



Site Surveys

- Determine needs
- Discover how environment can support WLANs



Physical Site Surveys

- Can you place/mount equipment where needed to provide coverage?
- What is best location for antennas, Aps, Bridges, etc?
- For outdoor links, is there proper LoS?
- Is power available at the equipment location?



Physical Site Surveys (cont'd.)

- Can Ethernet cables be run to AP locations?
- Can you protect outdoor antennas and devices from weather?
- Or do you need to provide special enclosures?



RF Site Surveys

- Is spectrum utilization low enough?
- How must WLAN be implemented to provide adequate coverage?
- Is there a need to negotiate with neighbours?
- Should I implement OFDM or ERP?



Manual Survey Preparation

- Organization's needs and objectives
 - Determine requirements
 - Users
 - Business
 - Functional
 - Determine constraints
 - Budgetary
 - Technical
 - Regulatory



Manual Survey Preparation

- Define objectives
 - Business
 - Technical
- Determine how to implement WLAN that meets objectives
 - Perform a RF site survey
 - Document
 - Create an implementation plan



Organization's Needs and Objectives

- Requirements analysis
 - Process of discovering the requirements of a project
- User requirements
 - What tasks must users perform?
 - How long do these tasks take?
 - Who else is affected?



Organization's Needs and Objectives

- Business requirements
 - Superset of user requirements
 - Internal and external requirements
 - Employees and clients
- Functional requirements
 - Technical capabilities (standards supported)
 - Security, reliability, etc.



Constraints

- Budgetary
 - Can you get this done for X Dollars?
 - My neighbour did it for \$49.00. Can you do the same?
- Technical
 - Standards support
 - Ability to support voice, for example



Constraints

- Regulatory
 - Not just frequency ranges
 - Sarbanes-Oxley, HIPAA, PIPEDA, etc
 - Government security requirements



Define Objectives

- Business
 - Improve quality
 - Improve efficiency
 - Reduce Costs
 - Increase production
 - Organization continuity



Define Objectives

- Business examples:
 - Better, faster, cheaper and more
 - Increase user mobility
 - Reduce delays in digital information delivery
 - Implement a secure network that meets performance demands



Define Objectives

- Technical
 - Seamless roaming
 - Conference room access
 - VoWLAN
 - Provide sufficient coverage to deliver information in a timely fashion everywhere
 - Install controllers to offset the processing of security techniques such as authentication



How to Implement

- Perform site survey
- Manual
 - Accurate, real readings
- Automated
 - Equipment reconfigures dynamically when environment changes
- Assisted
 - A hybrid of the two above
- Virtual (predictive)



How to Implement

- Document the site survey
 - Before and after
 - Brainstorm
 - Interview staff
 - Focus groups
 - System analysis
 - Current and future usage



Site Surveys in Detail

- Gather site-specific documentation
 - Blueprints
- Building plans, material inventory
 - Including office layouts
- Existing network characteristics
- Permits, zoning requirements
 - Towers
 - Bridge, antenna locations



Site Surveys in Detail

- Hardware kit contents
 - Spectrum analyzer
 - Protocol analyzer
 - Laptop computer and software
 - AP, antennas and cables
 - Batteries, binoculars
 - Walkie-talkie, cell phone
 - Measuring device/tape



Site Surveys in Detail

- Hardware kit contents (cont'd.)
 - Mounting tools and devices
 - Both temporary and permanent
 - Marking tape
 - Chalk, marker
 - Dolly or rolling cart
 - Digital camera
 - GPS





Implementation Plan

- Don't forget to create one!
- Attach copy of site survey
- List interference sources
 - Known
 - Potential
- Pre-order infrastructure installation, if required
 - Data cables and power



Implementation Plan

- Provide copy of all documentation to client
- This can save you time and hassles