

# 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



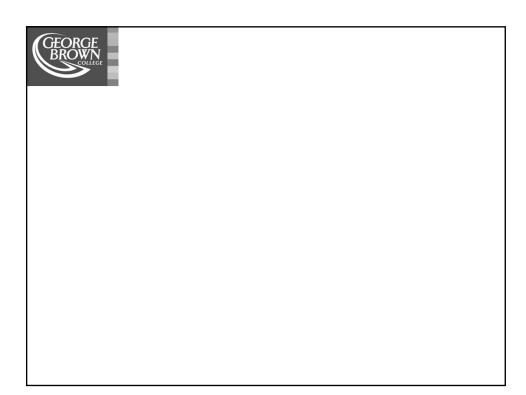
### Site Surveys in Detail

- 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