Site Surveys

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Site Survey

The first step in a wireless LAN (WLAN) deployment is to ensure that desired operation begins with a site survey to assess the Radio Frequency (RF) behavior in a specific environment. Many issues can arise in a wireless network due to poor planning and coverage.

Objective

The intended purpose of this document:

- Provide guidelines for proper planning
- Provide good preparation
- Identification of the key items to check through the analysis of a survey report.

Types of Site Surveys

There are three types of surveys:

- Passive
- Active
- Predictive.

Passive Survey

Passive surveys are performed with a listen-only mode. The survey client never associates to the access point (AP). Such surveys can be helpful when you look for rogue devices or you want a good gauge of downlink RF coverage from the infrastructure devices.These can be accomplished with a passive survey:

- Identify rogues
- Locate RF trouble zones quickly
- Validate final RF setting
- Perform initial surveys

Active Survey

Active surveys are performed with the survey client associated to the APs used throughout the survey. When a client is associated, it performs all the tasks a typical 802.11 client performs, which includes rate shifting data rates as the RF condition changes and performs retransmissions. Active surveys are commonly used for new WLAN deployments because they provide the most details upon which to base a design.

There are two main methods used in active surveys:

- Basic Service Set Identifier (BSSID) Method: This method locks a client into an AP's radio MAC address and prevents the client from roaming.
- Service Set Identifier (SSID) Method: This is more commonly used for post-deployment scenarios and used to survey multiple APs. It enables the survey client to associate to an SSID where the client roams between multiple APs.

Predictive Survey

Predictive surveys are performed with a software program. The program uses the information about the coverage area to perform AP placements based on RF algorithms. These surveys are typically void of any type of field measurements.

The best times to incorporate a predictive survey include:

- Deployment environment has not yet been built.
- To obtain a budgetary environment for WLAN-related hardware.
- When roaming requirements are less stringent.

Survey Checklist

- Identify Primary Requirements
- Identify Facility Requirement
- Identify Requirement for Type of Client Devices

Primary Requirements

- RF application needs (voice, data, location)
- Type of facility
- Type of client devices

Facility Requirements

- Single-floor
- Multi-floor
- Campus (indoor and outdoor)
- Warehouse
- Obtain digital floor plans from customer

Requirement for Type of Client Devices

- Minimum Received Signal Strength Indicator (RSSI)
- Minimum Signal-to-Noise Ratio (SNR)
- Delay and Jitter tolerance
- Maximum transmit (Tx) power

Survey Checklist

- Initial Walkthrough
- Select Proper Survey Model
- Determine Proper Deployment Characteristics
- Specify the tools to complete the survey
- Define Client Devices to be Deployed
- Determine Physical requirements

Initial Walkthrough

- Access building type
- Anticipate difficult zones
- Confirm surveyed areas
- Check details of area not mentioned on the main coverage map
- Check unexpected roaming path

Select Proper Survey Model

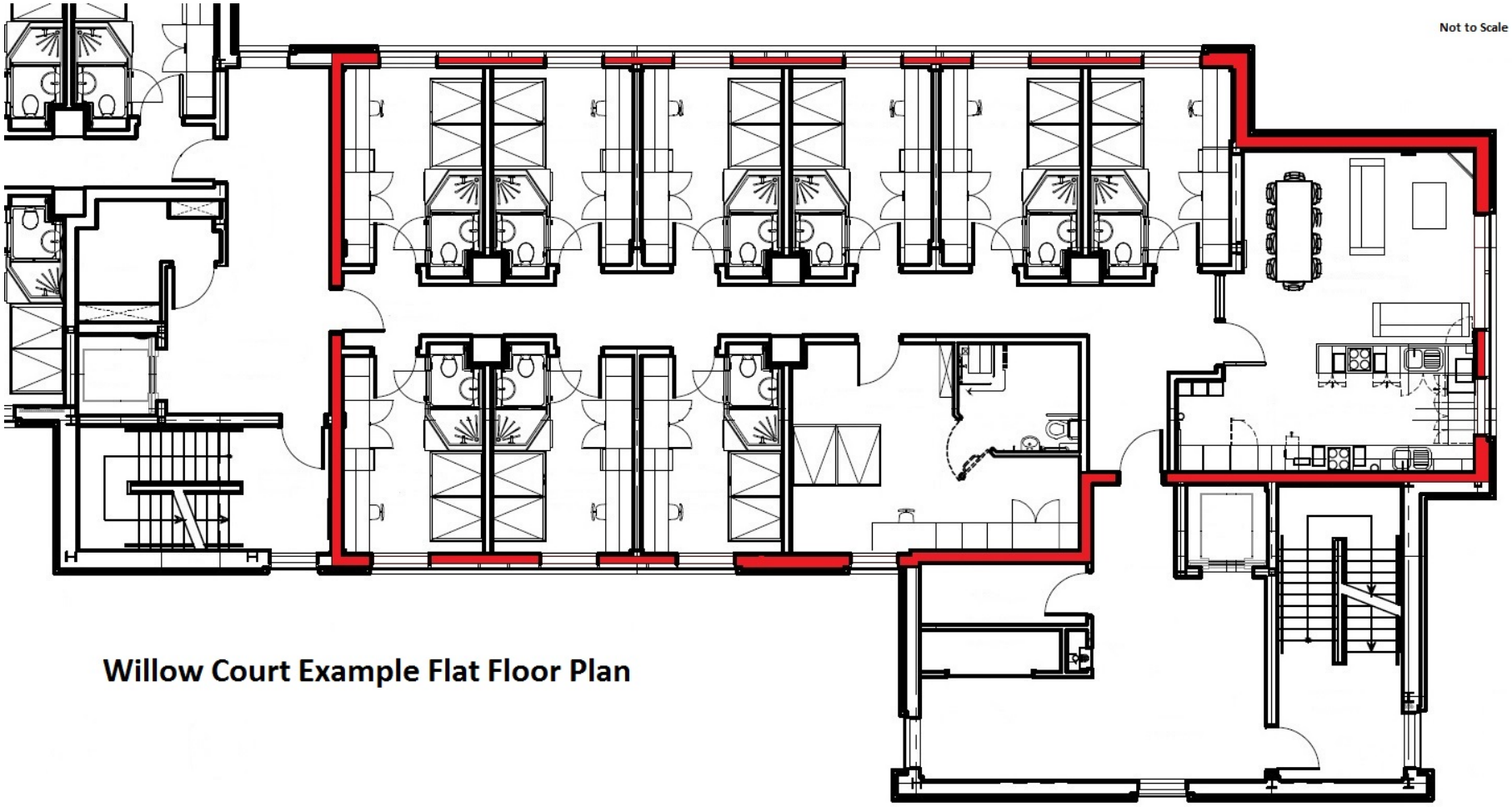
- Data
- Voice
- Location

Determine Proper Deployment Characteristics

- Dense deployment
- Highly mobile (Many cells; high-reliability; fast-moving clients)

Specify the tools to complete the survey

Obtain digital floor plans from Physical Planning Unit



https://www.stir.ac.uk/about/short-breaks-and-vacations/accommodation/

Define Client Devices to be Deployed

- Maximum Tx Power level
- Receiver Sensitivity
- Antenna

Determine Physical requirements

- Power
- Understand cable considerations
- Mounting considerations
- Outdoor grounding and lightning protection
- Consider placement of additional APs for monitoring

Acknowledgements

This document is based on previous work done by:
CISCO (https://www.cisco.com/c/en/us/support/docs/wireless/5500-series-wireless-controllers/116057-site-survey-guidelines-wlan-00.html#anc2)

FUJISTU (https://www.fujitsu.com/us/Images/Power-auditing-services.pdf)

Questions.