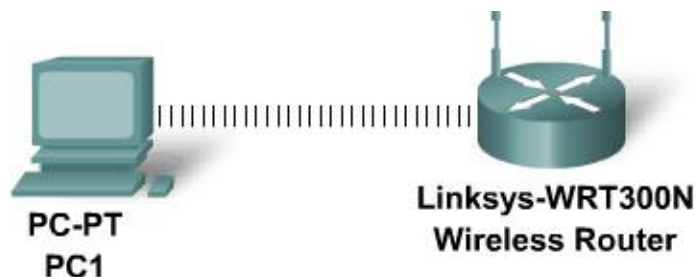


## Lab 3.4.3 Performing a Wireless Site Survey



Device Designation	Device Name	Address	Subnet Mask
PC1	PC1	192.168.2.2	255.255.255.0
Wireless Router	WR1	LAN 192.168.2.1	255.255.255.0

### Objective

- Use available tools to perform a wireless site survey.

### 640-802 CCNA Exam Objective

This lab contains skills that relate to the following CCNA exam objective:

- Identify common issues with implementing wireless networks, including interface and misconfiguration.

### Expected Results and Success Criteria

Before starting this lab, read through the tasks that you are expected to perform. What do you expect the result of performing these tasks will be?

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What problems could arise if a wireless survey was not carried out before implementing a wireless LAN?

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## Background / Preparation

An important factor when building a wireless network is understanding how a router's wireless signals travel. Many factors can reduce signal quality in a building. Signal strength and quality must be checked throughout the location to determine the best placement of the wireless Access Point (AP) device. Some locations may provide superior signal quality but are not secure. A survey of the building topology must be done to determine the best possible location for both signal strength and security.

This lab will focus on signal strength by changing the location of a wireless router. Signal strength will be viewed by using the program Network Stumbler. The AP does not need to be physically connected to the network via an Ethernet cable to perform this task. We are simply going to plug in the AP and its power source to an electrical outlet, at increasing distances (from the wireless NIC in PC1), and view the signal strength on the PC1 device.

The program Network Stumbler will be used to evaluate the wireless signal quality in the building. Go to <http://www.netstumbler.com/downloads/>. Download and install Network Stumbler 4.0 on PC1.

### Step 1: Configure the wireless client PC1

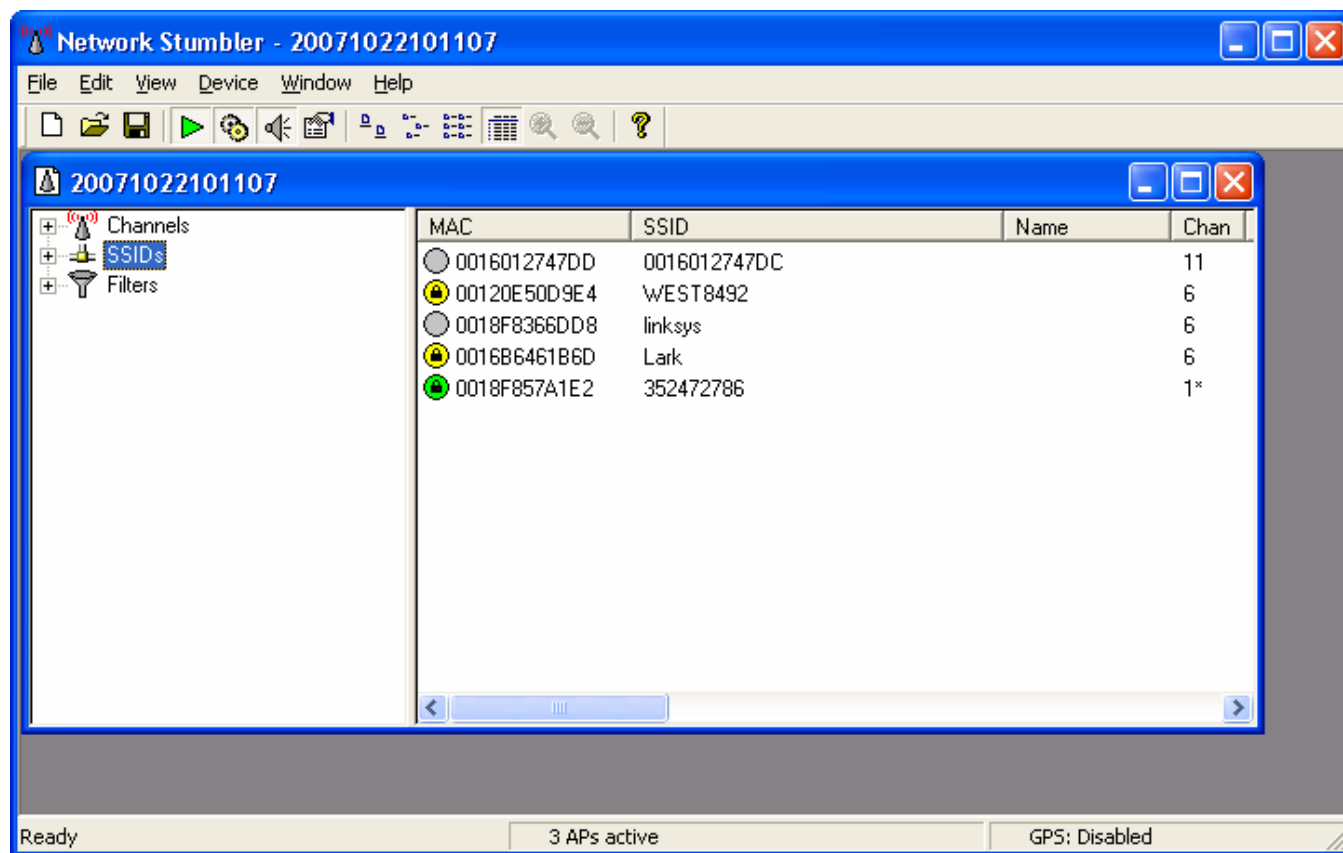
**NOTE:** If the PCs used in this lab are also connected to your Academy LAN or to the Internet, ensure that you record the cable connections and TCP/IP settings so that these can be restored at the conclusion of the lab.

- a. Referring to the topology diagram, configure the PC1 wireless NIC address to match the address shown in the topology for PC1.
- b. Ensure that power has been applied to the Wireless Router.
- c. From the command prompt of PC1, ping the Wireless Router to confirm network connectivity.  
If the pings fail, troubleshoot and establish connectivity.

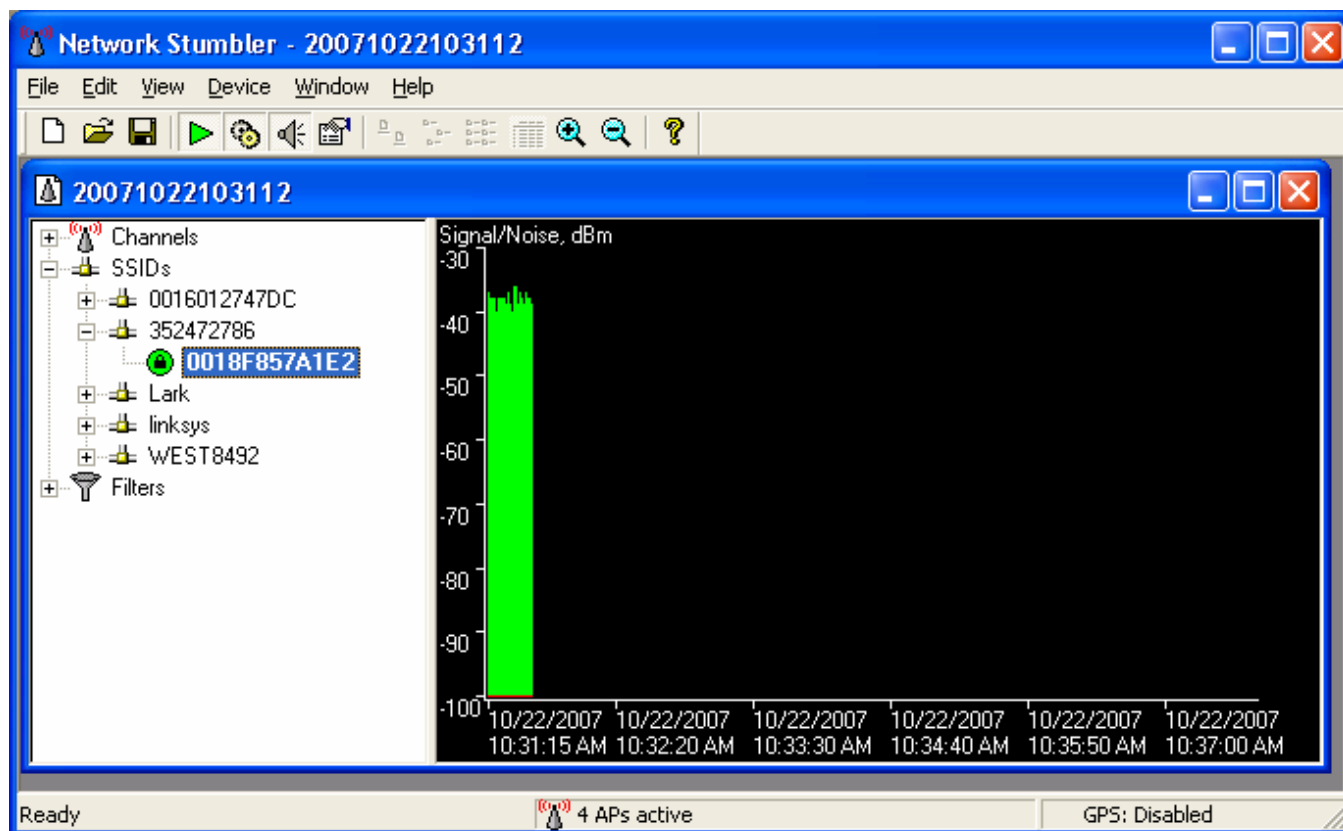
### Step 2: Monitor signal strength using Network Stumbler

- a. On PC1, open the Network Stumbler program.
- b. In the Network Stumbler window, expand the SSIDs section and locate the SSID of the wireless router being used in this demonstration.

**NOTE:** It may be possible that more than one SSID appears. Other wireless devices in the area may be configured to broadcast their SSIDs.



- c. Expand that SSID number to find the Wireless Router MAC address. Click that address to open the Signal/Noise monitoring window to the right.



The Green vertical bars in the moving graph indicate signal strength. Red bars indicate signal noise. The higher the green bars, the more signal strength. Additional information may be found in the **Help** menu of the Network Stumbler program (**Help > User Interface > Configuration Dialog > Graph View**).

- d. Record the signal strength of the Wireless Router at its current location and include its distance from PC1.

### Step 3: Relocate the wireless AP

- a. Unplug the power cord on the Wireless Router and move the device to a location outside the room, preferably more than 25 feet away, and plug the power cord into the nearest wall outlet within that area.
- b. Wait for the Wireless Router to power up, and then return to PC1 to view the Signal/Noise meter.

Has the signal strength been reduced? \_\_\_\_\_

Record the signal strength of the Wireless Router at the current location and include its distance from PC1. \_\_\_\_\_

### Step 4: Relocate the wireless AP to a secure location

- a. Unplug the power cord on the wireless router and move the device to a secure wiring closet, outside the classroom. This room should be able to be locked and also provide an AC wall outlet to plug in the Wireless Router power supply.
- b. Plug the power cord in and power up the Wireless Router. While waiting for the Wireless Router to power up, close the wiring closet door, and return to PC1 to view the Signal/Noise meter.

Has the signal strength been reduced? \_\_\_\_\_

- c. Record the signal strength of the Wireless Router at the current location and include its distance from PC1.

Will the current placement of the Wireless Router be a good location to provide wireless access to other rooms within the area? \_\_\_\_\_

Judge how far away end devices can be placed from the wireless Access Point and determine the number of end devices that the AP could provide service to.

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What obstructions tend to cause the largest drop in signal strength?

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### **Step 5: Clean up**

Return the wireless router to the classroom. For PC hosts that are normally connected to other networks (such as the school LAN or to the Internet), reconnect the appropriate cabling and restore the TCP/IP settings.

### **Challenge**

Determine possible secure locations in your building topology that can contain wireless Access Points.