Lab 2.6.5.3 Creating an Adhoc Network

Estimated Time: 30 Minutes

Number of Team Members: Students will work in teams of two for this lab process

Objective

Each team will configure several personal computers to communicate with each other without an AP or cables.

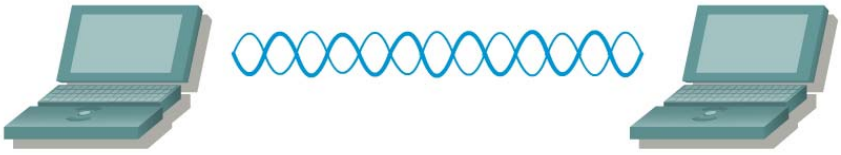
Scenario

Several PCs equipped with Cisco Aironet Client Adapters will be needed. They should be installed and setup. Configure the Aironet Client Utility (ACU) to allow them to connect together as a network without an AP. Perform some of the diagnostics included in the ACU for Ad Hoc mode.

Passive mode differs from active mode in Wireless LANs. The diagnostics tests that are performed in Passive mode can help determine the best placement and coverage for the AP of the network. Instead of using an AP, the other PC becomes the wireless client that can provide similar information.

Active Mode performs these diagnostics with the use of an AP. This lab is an exercise to familiarize the student with how to gather some of this valuable information.

Topology



Preparation

Prior to this lab, all the PCs should be equipped with working Cisco Aironet Client Adapters. The Aironet Client Utility should be installed on the computers.

It is very important for the instructor to assign team numbers. Also, unique IP Addresses should be assigned to each client adapter or personal computer within each team to avoid IP conflicts.

Each team should use the same SSID for each PC in the pod to ensure that the computers associate to each other. The SSID to be used for all PCs is adhocP (where P is the group number assigned by the instructor).

The instructor should help students understand the addressing scheme. Using the information in the following chart, configure the host computers. Note that no default gateway is needed. By assigning unique IP addresses and SSIDs, the students avoid conflict with other teams.

Team	Client Name	SSID	Client Address
1	Client1a	Adhoc1	10.0.1.10/24
	Client1b	Adhoc1	10.0.1.11/24
2	Client2a	Adhoc2	10.0.2.10/24
	Client2b	Adhoc2	10.0.2.11/24
3	Client3a	Adhoc3	10.0.3.10/24
	Client3b	Adhoc3	10.0.3.11/24

The following tools and resources will be required to complete this lab:

Two PCs equipped with the Cisco Aironet Client Adapter per group. One of the computers should be a laptop for mobility purposes.

Step 1 Create a profile named adhocP (where P is the team number)

a. Open the Cisco Aironet Client Utility.

b. Click on the **Profile Manager** icon.

c. Click on the **Add** button.

d. Click on the **OK** button.

e. From the System Parameters tab, type Adhoc# (where # is the group number assigned by the instructor) in the SSID1: box.

f. In the Network Type section, select the **Ad Hoc** radio button.

g. Power Save Mode can be left as the Default Constantly Awake Mode (CAM) setting at this time.

h. Click the **OK** button.

i. Exit Profile Manager by clicking on the **OK** button.

Step 2 Select the profile named adhocP (where P is the team number)

a. From the Aironet Client Utility, click on **Select Profile** icon.

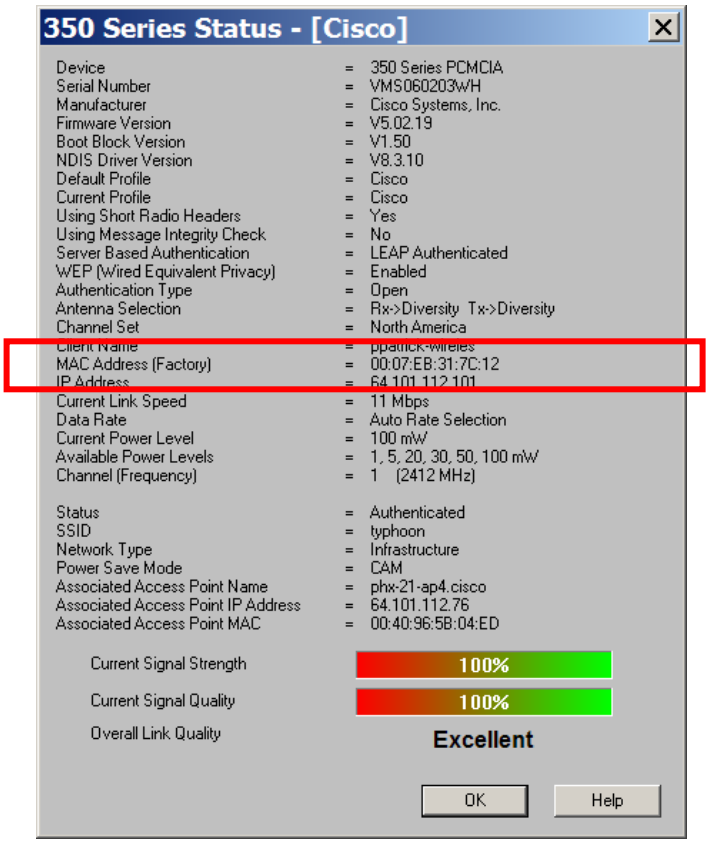
b. From the Use Selected Profile drop down box, select **adhocP**.

c. Click on the **OK** button.

d. Notice that a message appears on the status line at the bottom the Aironet Client Utility that the wireless NIC is in AdHoc Mode.

Step 3 Obtain the MAC address of the PC

a. Click the Status button on the ACU.



b. What is the MAC address of the computer? Provide this information to your team partner so diagnostics can be performed.

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c. Write your partner's MAC address.

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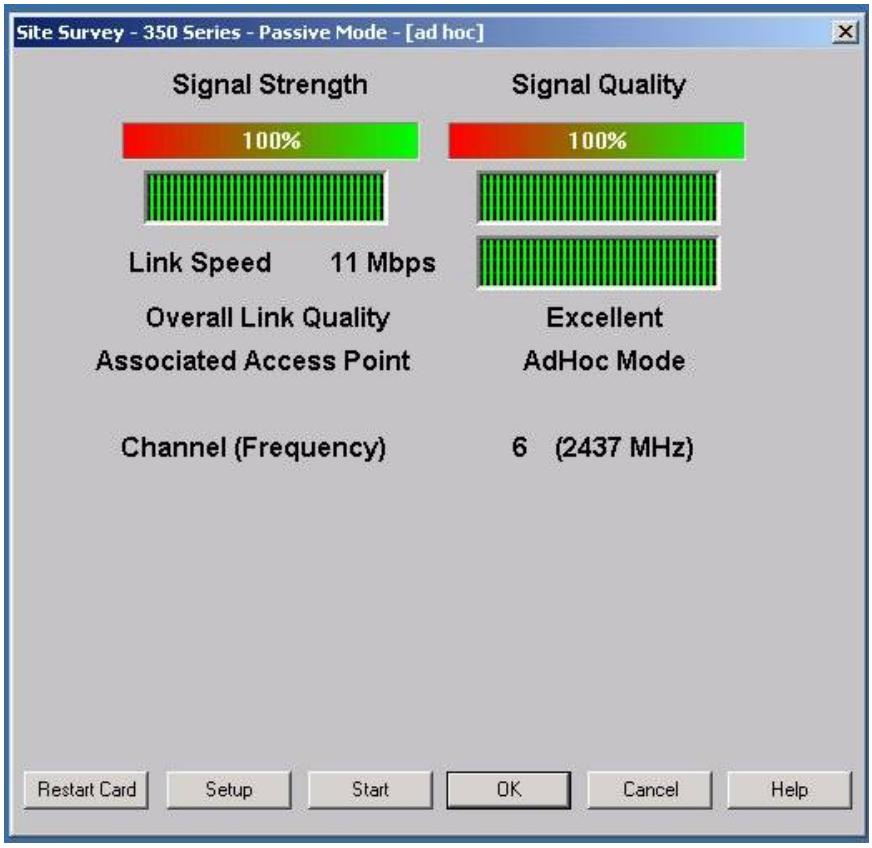
Step 4 Ad Hoc Site Survey Passive Mode



a. Click on the **Site Survey** button. This will start the Site Survey Passive mode.

b. Click on the **Setup** button to start the Site Survey Setup mode.

c. Type in the Destination MAC address of your partner's PC that was obtained. That is the PC that will be used for an ad hoc site survey. Try this a few different times with different members of the class.

d. Click the **OK** button to go back to the Ad Hoc Passive Mode Screen.

e. Click the **Start** button to initiate an active mode site survey.

f. What additional information was added to the Ad Hoc Site Survey Screen?

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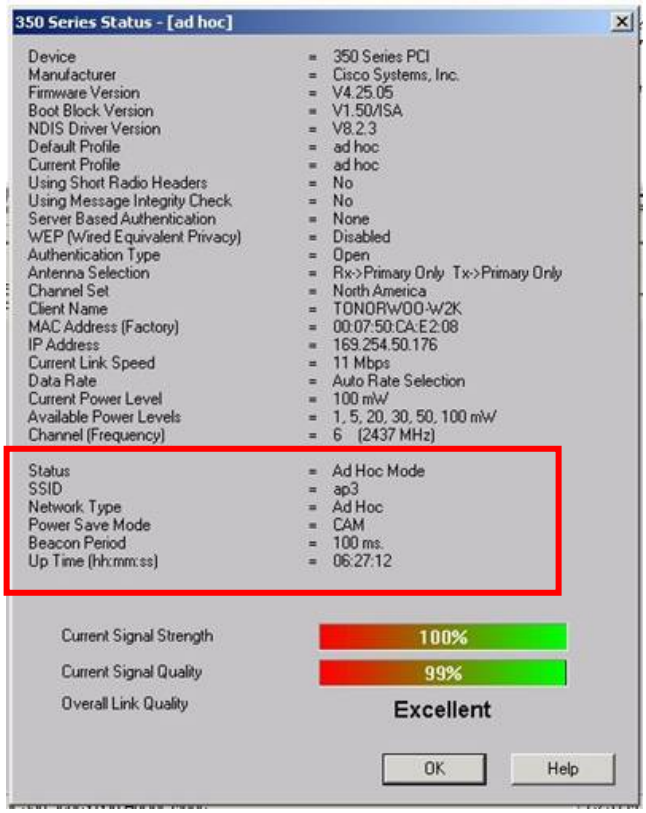
Step 5 Ad Hoc Status screen



a. What is the Status of the PC?

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b. What is the SSID of the PC?

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c. What is the Network Type of the PC?

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d. What is the Power Save Mode of the PC?

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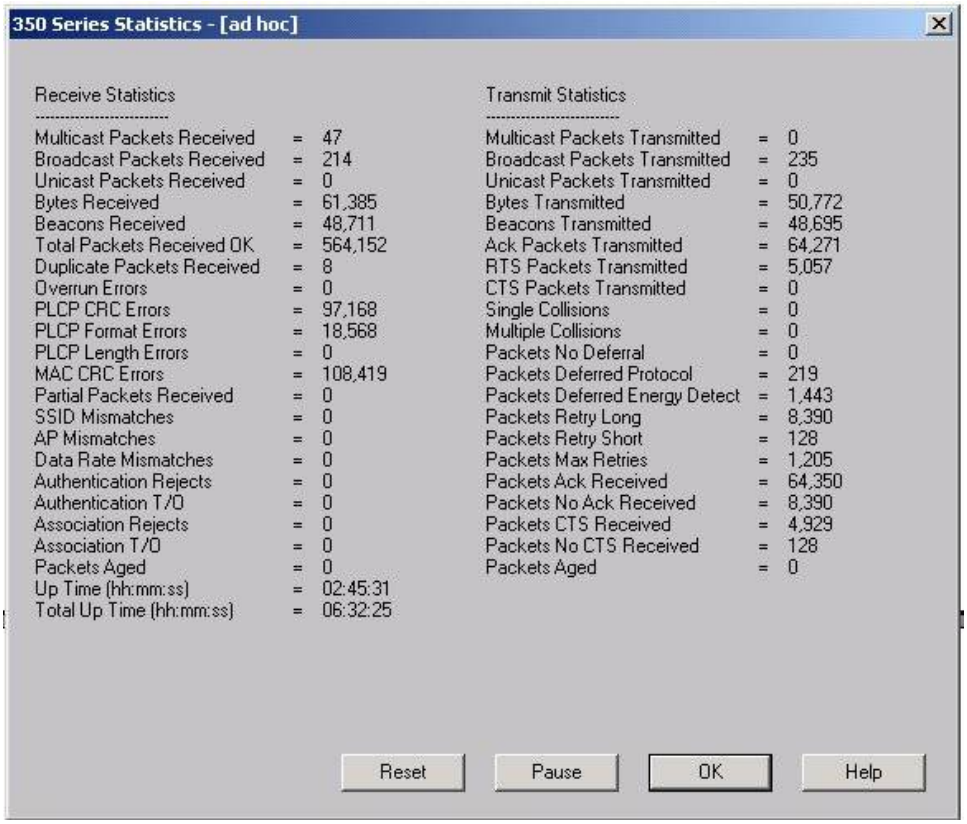
Note Optional: Walk around the class and note the change in Signal Strength and Signal Quality.

Step 6 Ad Hoc Statistics screen



a. How many Broadcast packets were received?

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b. How many Broadcast packets were transmitted?

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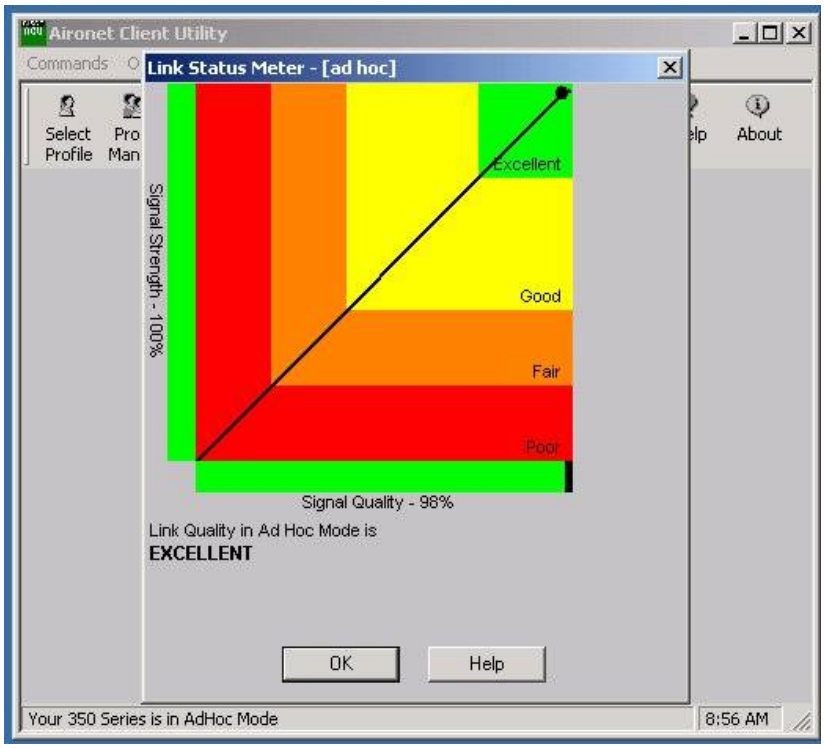
c. Exit from the Ad Hoc Statistics screen by selecting **OK**.

Step 7 Link Status Meter screen

Once Ad Hoc mode is configured properly on the computer, click on the **Link Status Meter** (LSM) icon with the Aironet Client Utility (ACU) to activate the Link Status Meter. Note the position of Signal Strength and Signal Quality indicator line on the meter.



If using a laptop, answer the following questions.

a. Move the laptop around the area. Note how the Link Status Meter behaves. What is the approximate distance that the two computers can be apart before they disassociate?

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b. Move one of the computers behind a metal bookcase or file cabinet. Was there a noticeable change in signal quality or signal strength?

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c. Try this same experiment with other materials such as the glass window, walls, desks, plastic objects. Which of the materials had the greatest effect on the signal quality or signal strength?

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d. If a 2.4 GHZ phone is available, activate the talk button near one of the computers. Note the Link Status Meter. What happens to the signal quality or signal strength?

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e. Move the computer behind a wooden door and note the Link Status Meter. Did the wooden door have any effect on the signal quality or signal strength?

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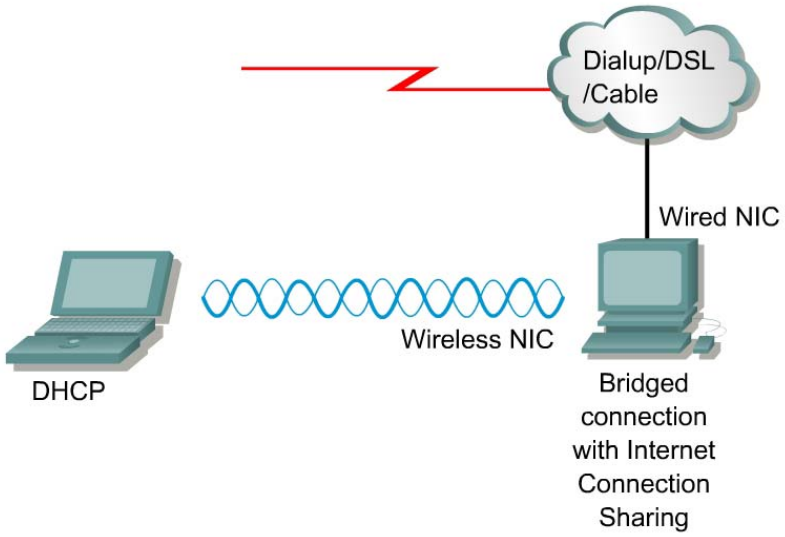
Step 8 File share in Ad Hoc Mode (OPTIONAL LAB)

Scenario 1—Setup a window file share, a web page, or a FTP server program on each PC. Transfer files from one PC to the other. Open a web browser and enter the IP address of the peer team member. If web services are enabled on the peer PC, then a web page should be displayed. Try to transfer a file by FTP between PCs.

Scenario 2—Setup a network game or program that requires network connectivity between PCs. Determine if there are any performance issues. Have other teams change to the adhoc network by matching the SSID and moving into the same IP subnet. Determine if there is a point at which network performance is an issue. Remember that network connectivity is more than ping or telnet traffic. Network application and user demands must always be tested to assure proper network performance after any wireless installation.

Scenario 3—Setup a PC as an mp3 file server and stream music across the wireless adhoc network. Determine if there are any performance issues. Have other teams change to the adhoc network by matching the SSID and moving into the same IP subnet. Determine if there is a point at which network performance is an issue.

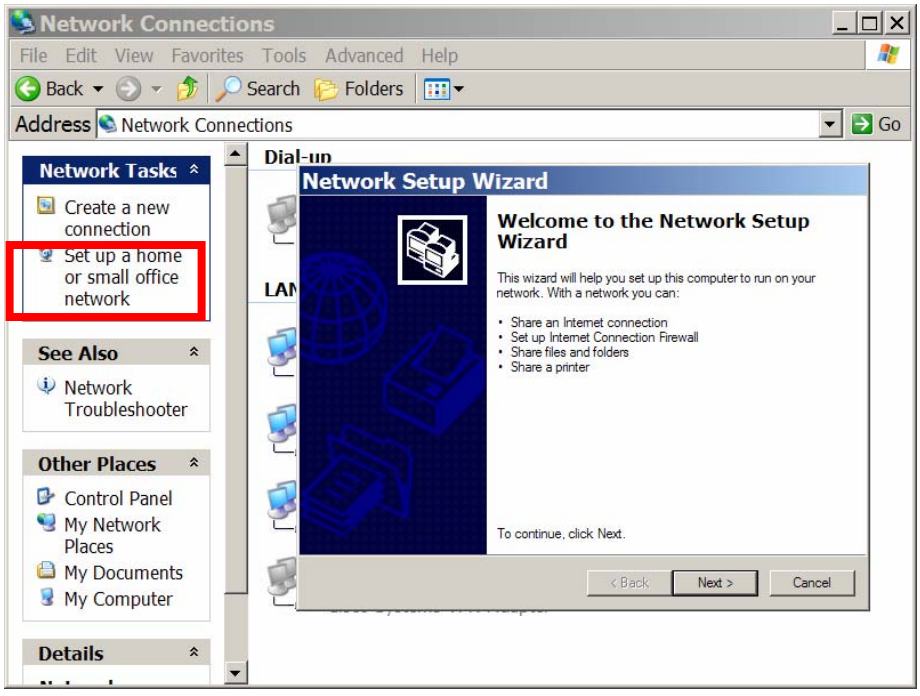
Step 9 Create an AdHoc Network with Internet connection sharing (OPTIONAL LAB)



Is it necessary to purchase an AP in order to share the fast broadband connection at home? This lab is very similar to using a cross-connect cable for a small PC network, but without the use of the router or additional cables.

a. Bridge the connection on the Desktop PC

b. Share an Internet connection



c. Configure Wireless NICs on both PCs in Adhoc mode.

