Making the Wireless Home Network Connection in Windows XP Without a Router

Published: April 8, 2002
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I've received many inquiries from Windows XP residential users asking how to wirelessly network a second or third computer without the expense of a wireless router or a router and a stand-alone wireless access point (WAP). This is sometimes called an *ad hoc* wireless network. Building an ad hoc 802.11b wireless network using the graphical user interface in Windows XP takes just a few minutes. Because it's powered by wireless zero configuration, you won't need to run a single cable or hunt for an electrical outlet! Add Internet Connection Sharing on the host computer and all connected computers will be surfing the net wirelessly in no time at all.

We'll start with a single computer that already has a wired Ethernet broadband connection to the Internet. Then we'll build the ad hoc wireless network in three steps:

1. The first step will be to install an 802.11b wireless card in the main computer and configure it as a computer-to-computer (ad hoc) wireless connection.
2. The second step will be to install a wireless card in a second computer.
3. To complete the network and provide connectivity to the Internet, Internet Connection Sharing (ICS) will be enabled on the host.

As you read through the procedures below, note that the accompanying images are captured from both the host and client computers and that the screen shots of the host computer contain a silver title bar, while the client computer screen shots contain a blue title bar.

Configuring the Host Computer

After you install an 802.11b adapter (such as an Orinoco or Cisco wireless network card) on a computer, Windows XP will automatically detect the card, install drivers, and display an icon in the notification area. (I am using Agere's Orinoco Silver cards to construct the ad hoc wireless network here. Although they have native, in-box support in Windows XP, these cards can be updated with even newer drivers and firmware through Microsoft Update). If the computer is in an environment where other wireless networks are in range, Windows should display a list of available networks automatically. However, if no wireless networks are in range, the wireless connection icon may display a red “X” and may not automatically open a **View Wireless Networks** window. To open this window, click the icon for the wireless connection.

Do not select an available network at this time if any are displayed in the **Available networks** listing. If your computer previously connected to a preferred access point, remove all preferred access points. This will ensure that a connection is made only to the ad hoc network that you are trying to configure.

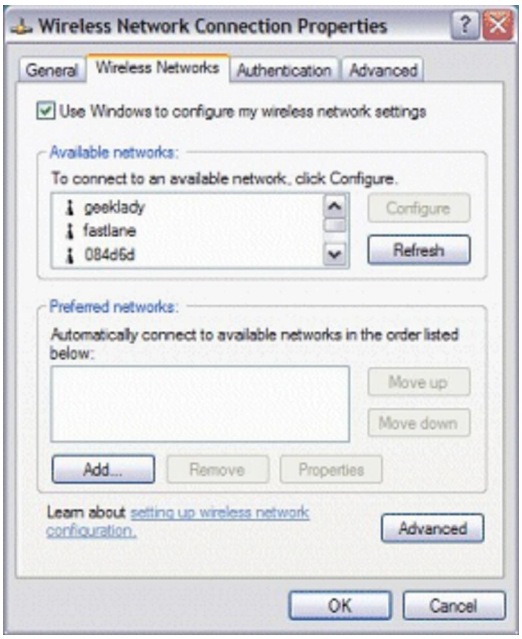

Figure 1

Next, click the **Advanced** tab at the top of the window. Select **Computer to computer (ad hoc) networks only** and clear the **Automatically connect to non-preferred networks** box if it is selected. This setting, along with removing preferred networks, ensures connection to the ad hoc network only.

Click the **Wireless Networks** tab again. Under Preferred Networks, click **Add**, as shown in Figure 1. In the **Wireless Network Properties** dialog box, specify a **Network name (SSID)**. Use any name desired, but be sure to use it to configure all computers. Note that the network type is already marked as a computer-to-computer network and that this cannot be changed since it has already been specified that a connection should be made to only ad hoc networks.

Figure 2

Wireless Equivalency Protocol (**WEP**) settings are not being configured at this time because it's easier to get an ad hoc wireless network running smoothly before attempting to configure WEP data encryption. The decision on whether or not to use WEP should be based on your environment. In most cases, for optimum protection and security, after your ad hoc network is running properly, you should return to **Wireless Network Properties** and specify WEP settings.

After configuring the network name (SSID) in the Wireless Network Properties dialog box, the new ad hoc network will be displayed with a PC Card icon to designate that this is a computer-to-computer network.

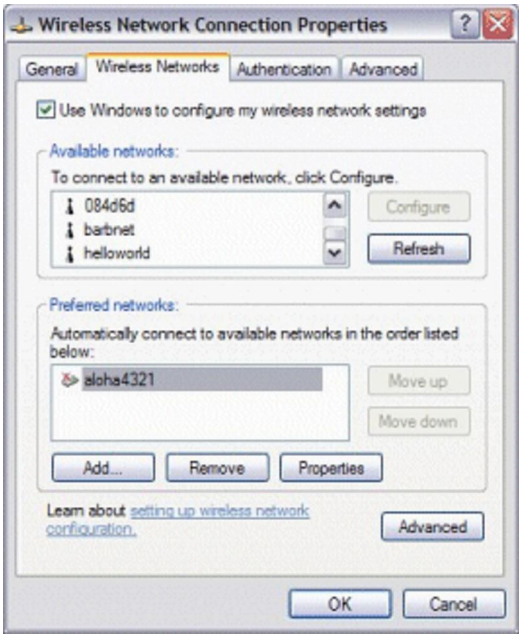

Figure 3

Note the red **X**. When a second computer is in range and the new ad hoc network is connected, the display changes to show a working computer-to-computer network without the **X**.

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Configuring a Client Computer

After installing an Agere Orinoco 802.11b Silver PC Card in a second computer, the Wireless Networks tab displays a list of in-range wireless access points or ad hoc wireless networks, as shown in Figure 4.

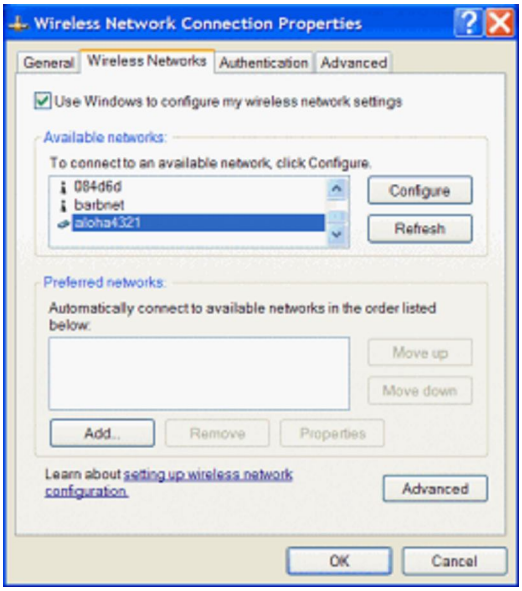

Figure 4

The new ad hoc network **aloha4321** is listed (and is identified by the PC Card icon). Highlight the network name, and then click **Configure**. Because WEP will not be configured at this time, click **OK**.

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Sharing the Connection

Now that a successful ad hoc wireless network has been created, we'll set up Internet Connection Sharing.

1. Open **Network Connections** on the host computer. (Click **Start**, click **Control Panel**, click **Switch to classic view**, and then click **Network Connections**.
2. Click the connection to be shared, and under **Network Tasks**, click **Change settings of this connection**.
3. On the **Advanced** tab, select the **Allow other network users to connect through this computer's Internet connection** check box.
4. If you are not using a third party firewall and have not already set up the **Internet Connection Firewall (ICF)**, be sure to check the box enabling this feature. (Read more about why to enable ICF in an earlier column, Don't Let the Defense Rest.)
5. Finally, optionally enable the setting to let other users control or enable this connection.

After completing ICS configuration, the **Network Connection** window on the host computer will display the original wired Ethernet connection and display the status as **Shared** as well as **Enabled**. The Network Connection window on the client computer will display the connection on the host as an **Internet Gateway**.

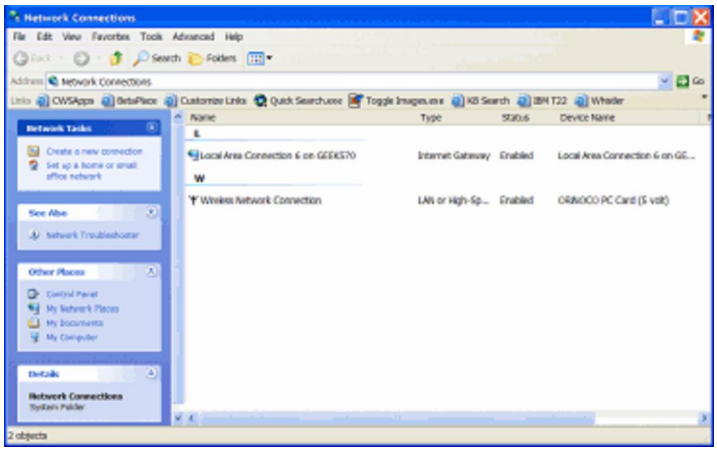

Figure 5

The client computer(s) should now receive a private class, non-routable IP address in the 192.168.0.* address range via DHCP from the host computer and should have full Internet connectivity.

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Configuring WEP

As connectivity has now been established successfully, the next step is to return to **Network Properties** and configure **WEP** settings to ensure the best security possible for the ad hoc network.

On the host computer, open the **Wireless Network Properties** dialog box and select the **Data encryption (WEP enabled)** check box. Consult the documentation provided by your wireless card manufacturer for the key format and key length.

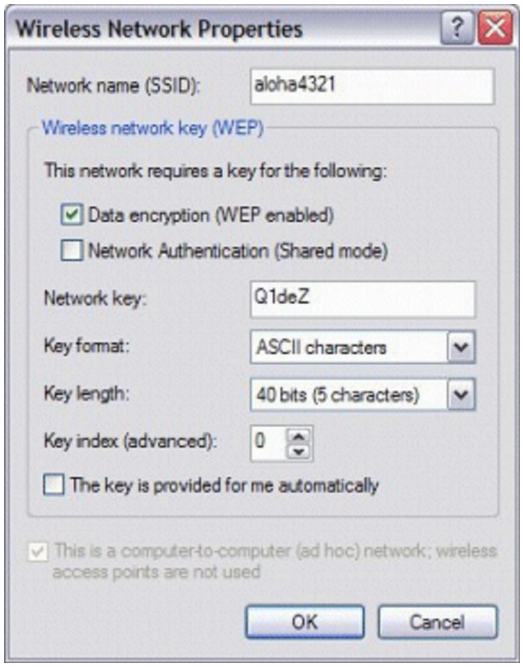

Figure 6

Use the highest level of encryption possible (key length) that is supported by your hardware and drivers. Agere's Orinoco Silver cards are used here, and only support 64-bit WEP (also known as 40 bits). Using the latest drivers and firmware, Windows XP actually automatically detects that this hardware only supports 64-bit encryption and will not allow

setting the key to 128 bit. Be sure that if you use an ASCII network key that you pick random characters and letters that can't be easily guessed. The final step is to use the same key and encryption settings and configure the client computer(s). Note: for additional security, consider changing the key on a regular weekly basis.

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Instant Private Networking

Not only does ad hoc wireless networking provide a lower cost method to share an Internet connection than a more expensive wireless router/router plus separate access point solution, but it affords a fast and simple way of establishing a means to share data and documents for groups with no external LAN or Internet connection. With no available DHCP server, Windows XP provides an automatic private IP address between 169.254.0.0 and 169.254.255.255 to network adapters. If you're sitting around a conference table with a group of colleagues and find that everyone is in desperate need of a Power Point presentation on an associate's computer on the other side of the room, setting up an instant ad hoc wireless network can be the solution, allowing everyone to copy the file to their computers over the wireless network. You'll need to have the same workgroup configured with appropriate permissions for file and print sharing, and you'll never have to wait again to get connected to the Internet or a corporate LAN to receive copies of urgently needed documents.

Barb Bowman enjoys sharing her own experiences and insights into today's leading edge technologies. She is a product development manager for AT&T Broadband Internet Services, but her views here are strictly personal.

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