WIRELESS 150N PCI CARD
USER MANUAL

MODEL 525473

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Life just got easier.™

MH-525473-UM-0713-01

Thank you for purchasing the Manhattan Wireless 150N PCI Card, model 525473.

This compact high-speed adapter allows you to connect your desktop computer towireless networks so you can transfer or receive digital images, videos and MP3 files faster than ever, connecting to the wireless network with link speeds of up to 150 Mbps using the latest in wireless technology. This adapter is also compatible with 802.11b and 802.11g wireless access points and wireless routers, giving you the flexibility to start upgrading your wireless network without the need to replace your existing equipment.

Detailed instructions in this user manual make installation reasonably quick and simple so you'll soon be enjoying the benefits of all these additional features:

- Detachable 3 dBi antenna with reverse SMA connector
- Supports WMM (Wi-Fi Multimedia) for increased multimedia data throughput
- Supports the most popular operating systems: Windows 2000, XP, Vista and 7/8
- Supports Software AP function
- Includes low profile 8 cm bracket
- Three-Year Warranty

System Requirements

- Desktop PC with Pentium 300 MHz-compatible processor or higher
- Windows XP, Vista or 7/8
- Available 32-bit PCI slot

Package Contents

- Wireless 150N PCI Card
- 1 antenna
- Quick install guide
- Low profile 8 cm bracket
- Setup CD with user manual

NOTE: Some screen images have been modified to fit the format of this manual.

TABLE OF CONTENTS

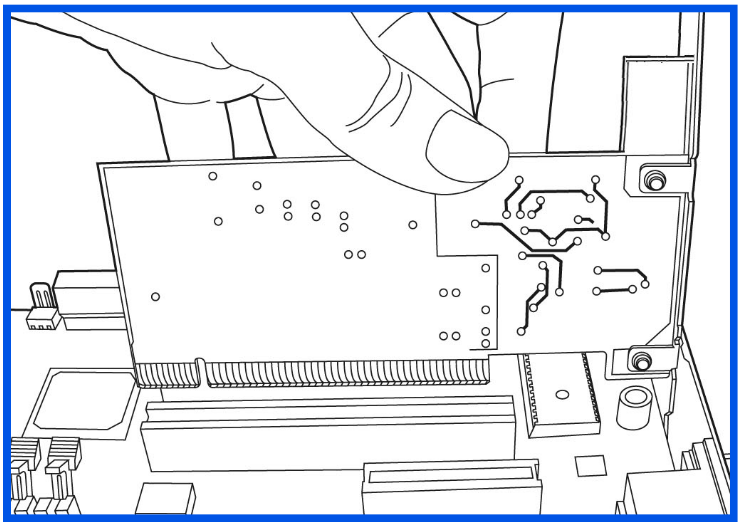
NOTE: The Windows XP screen images are similar for Windows 2000/ 2003/ Vista/7. Some images have been modified to fit the format of this user manual.

SAFETY GUIDELINES

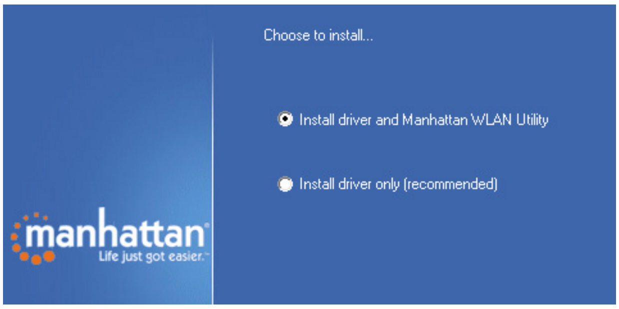
For the protection of equipment users and connected devices, follow these safety guidelines:

1. This adapter is designed for indoor use only; *do not* place this adapter outdoors.
2. Do not place or use this adapter in excessively hot or humid environments.
3. Do not yank any connected cables.
4. Firmly secure this device if it's placed at any significant height to prevent damage or injury should it fall.
5. Keep this device out of the reach of children.
6. There are no user-serviceable parts inside the adapter. If the adapter is not working properly, contact your dealer (place of purchase) and ask for help. Do not disassemble the adapter, as doing so will void the warranty.

INSTALLATION



1. Turn off the computer and install the PCI card into a free PCI slot.
2. Close the computer case and power-on the computer.
3. The Welcome to the Found New Hardware Wizard screen will display automatically. Click "Cancel" to continue.
4. Insert the included setup CD and run the "Setup.exe" program. Read the license agreement that displays; select "I accept the terms of the license agreement" and click "Next" to continue.
5. On the Setup Type screen, select "Install driver and Manhattan WLAN Utility." Select "Install driver only" if you prefer to use the Windows integrated WLAN function. Click "Next."

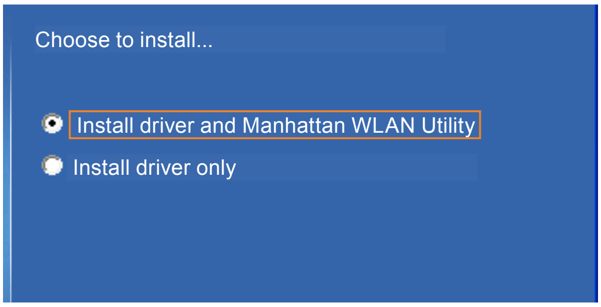


Choose to install...

● Install driver and Manhattan WLAN Utility

○ Install driver only (recommended)

6. In Windows XP, a “Microsoft Zero Configuration Tool” option displays. It’s recommended that the alternative “Manhattan Configuration Tool” option be selected, as it features more functions. Click “Next.”

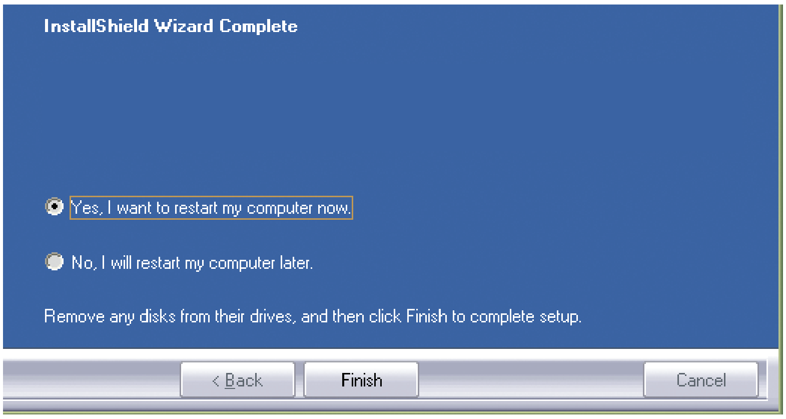


Choose to install...

● Install driver and Manhattan WLAN Utility

○ Install driver only

7. Once the software installation is complete, select “Yes, I want to restart my computer.”



InstallShield Wizard Complete

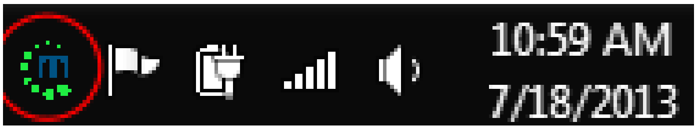
● Yes, I want to restart my computer now.

○ No, I will restart my computer later.

Remove any disks from their drives, and then click Finish to complete setup.

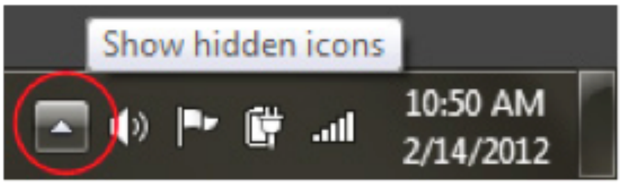
CONFIGURATION

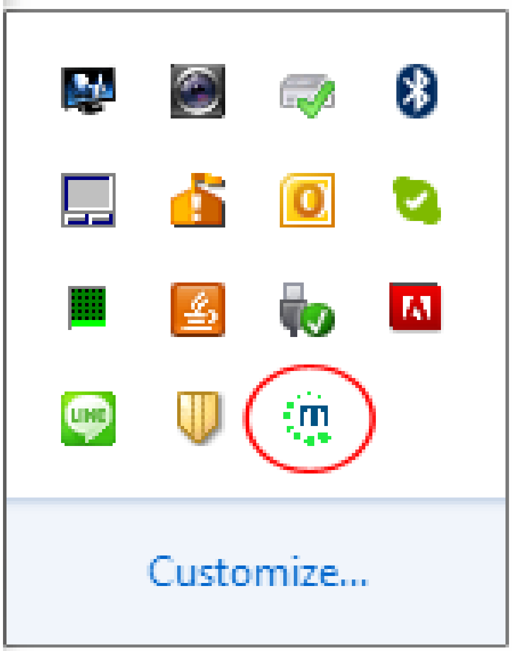
The configuration utility — which displays automatically once the adapter is connected — is a useful utility that helps you configure the adapter and monitor link status and statistics during the communication process. This adapter will auto-connect to the wireless device that has the best signal strength and no wireless security setting.



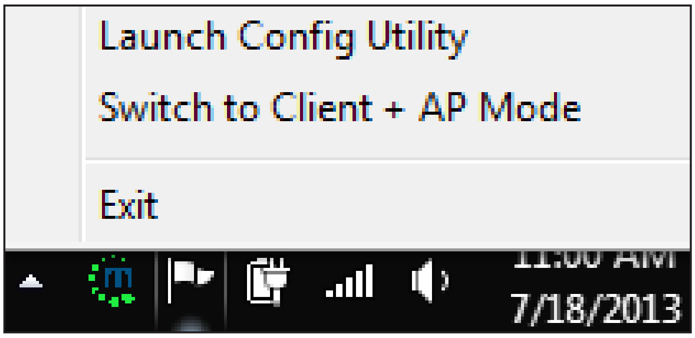
The configuration utility icon appears in the Windows systems tray while the adapter is running. You can open it by double-clicking on the icon.

NOTE: On some systems, the icon may only be visible when you view hidden icons:





Right-clicking the icon reveals several choices (which may vary depending on the operating system used):



Launch Config Utility

This starts the configuration utility. It performs the same function as double-clicking the icon.

Switch to Client + AP Mode

In this mode, the Manhattan Wireless 450N Dual-Band USB Adapter acts as both a wireless network adapter for your computer and an access point for other wireless devices to connect to the network. In most cases, this function is not needed and should not be activated.

Switch to AP Mode

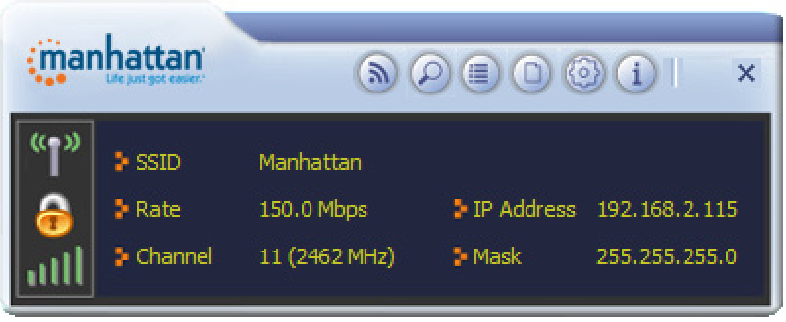
In this mode, the wireless USB adapter acts as an access point for other wireless devices to connect to the network, but it does *not* function as a regular wireless network adapter. In most cases, this function is not needed and should not be activated.

Windows Zero Configuration Tool (not shown)

In Windows XP, there is a Windows Zero Configuration Tool (WZC) option for setting up wireless clients. When it’s selected, you will not use the Manhattan WLAN configuration utility to connect to any wireless network. Instead, you will use the Windows integrated so-called “Zero Config” function. If you are experienced in the use of the Windows Zero configuration function, you can use it instead of the

Manhattan WLAN configuration utility. Unless you plan on using the AP mode function of the WLAN adapter, there are no disadvantages to using Windows Zero configuration over the Manhattan WLAN configuration utility. (This user manual only includes instructions for the Manhattan WLAN configuration utility, however.)

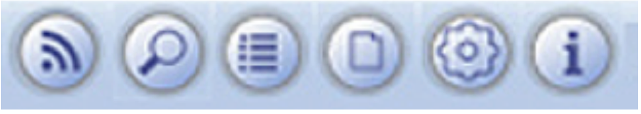
Manhattan WLAN Utility Main Screen



SSID Manhattan

Rate 150.0 Mbps   IP Address 192.168.2.115

Channel 11 (2462 MHz)   Mask 255.255.255.0



After you launch the utility, you'll be presented with the main screen. The screen provides you with information about your current wireless connection, such as the name (SSID) of the network the computer is connected to, the current data rate and the computer's IP address. It also provides links to the various functions that the utility provides.

Wi-Fi Direct

Wi-Fi Direct is a standard that allows Wi-Fi devices to connect to each other with no need for a wireless access point. It is similar to the older Ad-Hoc mode, but it is easier to set up and provides more functionality. Refer to the detailed Wi-Fi Direct section (Page 20) for details on how to use it.

Available Networks

Click this button to have the Manhattan wireless adapter scan for and display a list of all wireless networks in range. Double-click an entry on that list to establish a connection to that network. Read more in the Connecting to a Wireless Network section (Page 10).

Link Information

Click for detailed information about the current wireless connection, which some might even find interesting.

Profile List

Whenever you establish a connection to a Wireless network, you can add the connection to your profile list, enabling you to later quickly join the network without having to provide the security credentials again. Read more on this in the Profile List section (Page 11).

Advanced

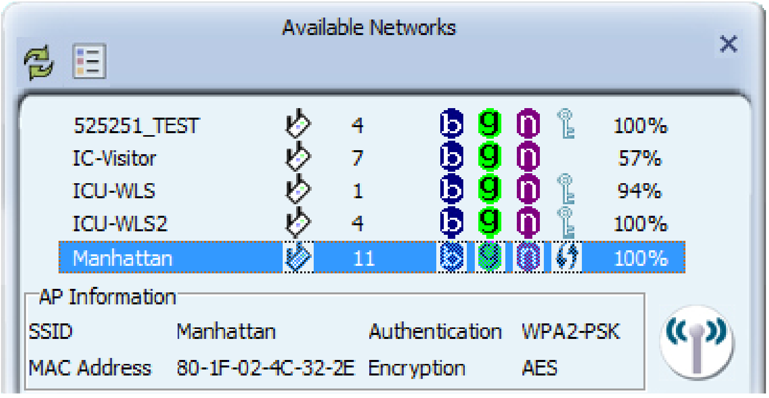
Access to advanced settings is possible via this function. It is not needed under normal circumstances to make any changes here. See the Advanced Settings section (Page 18) for details.

About

This screen displays information about the software version of the WLAN utility.

Connecting to a Wireless Network

Click on the Available Networks button for a list of available wireless networks.



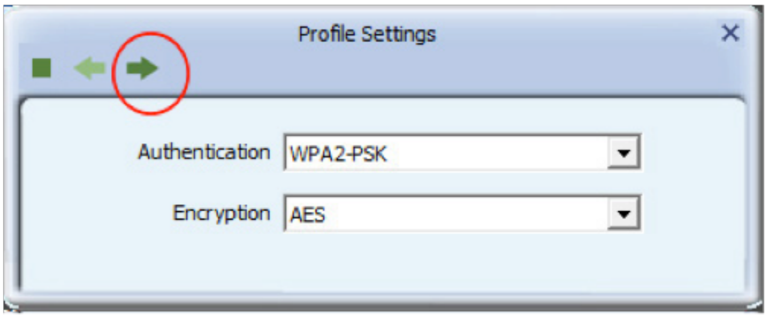
Available Networks

525251_TEST	4	b	g	n	🔑	100%
IC-Visitor	7	b	g	n		57%
ICU-WLS	1	b	g	n	🔑	94%
ICU-WLS2	4	b	g	n	🔑	100%
Manhattan	11	b	g	n	🔑	100%

AP Information

SSID	Manhattan	Authentication	WPA2-PSK
MAC Address	80-1F-02-4C-32-2E	Encryption	AES

Locate your wireless network in the list, and double-click it. In case the wireless network is protected by a security key, a screen will show up asking you to confirm the wireless settings. The example below uses WPA2-PSK authentication and AES encryption. If you do not know what this means, or if you do not know which values your wireless network uses, don't worry: The utility detects the settings automatically for you, and under normal circumstances there is no need to make any changes. Simply click on the circled right arrow — and don't waste your time wondering why this screen is even here.

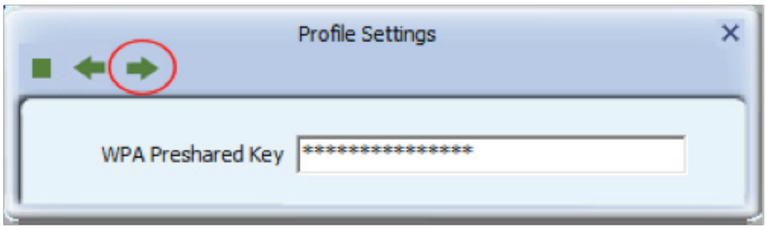


Profile Settings

Authentication: WPA2-PSK

Encryption: AES

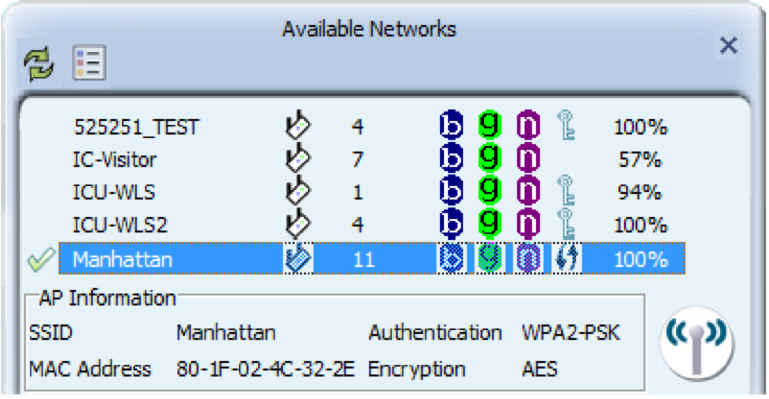
The next step is to enter the actual password of the wireless network. This is often referred to as the passphrase. It is important not to confuse this with the WPS PIN code, which is explained later in this manual. You need to type in the correct password and click on the right arrow to connect to the wireless network.



Profile Settings

WPA Preshared Key: ****************

If the information you provided turns out to be correct, you'll see a check mark in front of the name of the network you've just connected to. The check mark indicates a proper connection has been established.



Available Networks

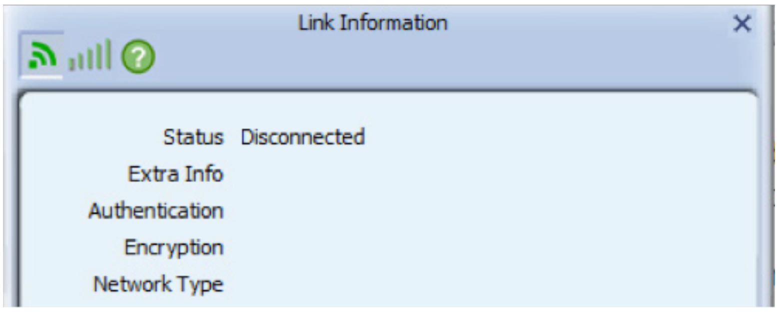
	Network	Channel	Modes	Signal
	525251_TEST	4	b g n	100%
	IC-Visitor	7	b g n	57%
	ICU-WLS	1	b g n	94%
	ICU-WLS2	4	b g n	100%
✓	Manhattan	11	b g n	100%

AP Information

SSID	Manhattan	Authentication	WPA2-PSK
MAC Address	80-1F-02-4C-32-2E	Encryption	AES

If you entered a wrong password, the utility will not display an error message: It will instead simply not show the check mark.

Another indication that something went wrong is when you click on the Link Information button and the screen displays "Status = Disconnected."



Link Information

Status	Disconnected
Extra Info	
Authentication	
Encryption	
Network Type	

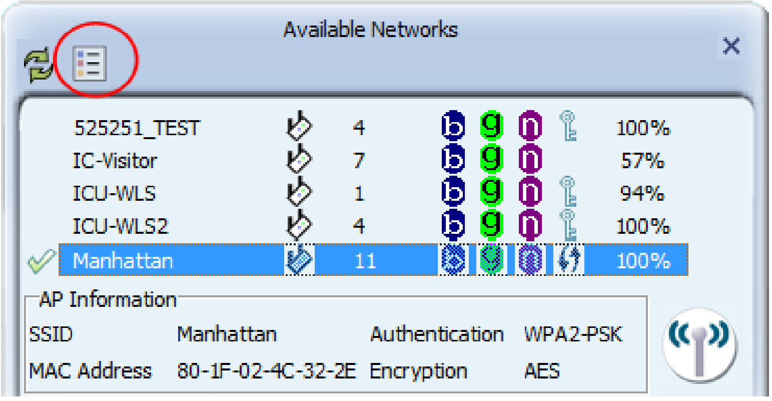
Should that happen, double-click the network name and repeat the procedure — until the utility indicates that you got it right!

Profile List

The properties of a connection — that is, the network name, the password, the wireless channel and such — can be stored in a profile. If you connect to different wireless networks on a regular basis, creating profiles for these networks saves you the trouble of entering the wireless password each and every time you want to connect to the network.

Adding a Connection to a Profile

After you've successfully connected to a wireless network (see previous section), you can add that connection to a profile. To do that, open the Available Networks screen, select the active connection indicated by the check mark (circled in red below), then click on the icon (circled in green below).



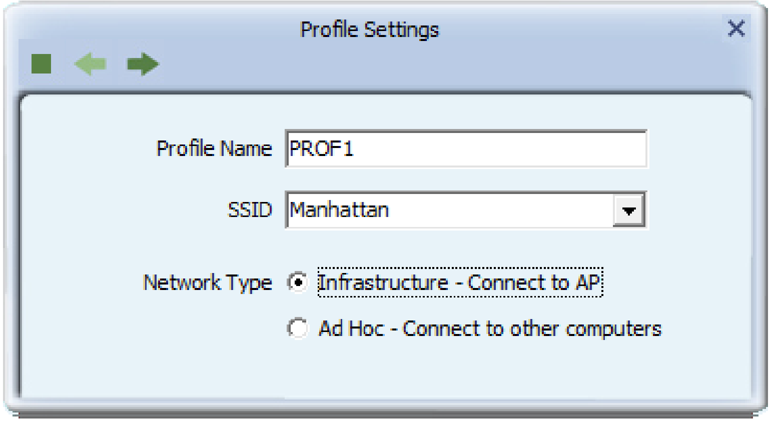
Available Networks

	525251_TEST	4	b	g	n	⚷	100%
	IC-Visitor	7	b	g	n		57%
	ICU-WLS	1	b	g	n	⚷	94%
	ICU-WLS2	4	b	g	n	⚷	100%
✓	Manhattan	11	b	g	n	⚷	100%

AP Information

SSID	Manhattan	Authentication	WPA2-PSK
MAC Address	80-1F-02-4C-32-2E	Encryption	AES

The next screen allows you to provide a name for the profile (for example, “work network”). The SSID (service set identifier) will show the name of the network that you’re connected to at the moment. The network type is set to the correct value by default. (Infrastructure is by far the most common value.) Since the Manhattan WLAN utility detects the correct settings by default, you should not make any changes to the network type at this point.



Profile Settings

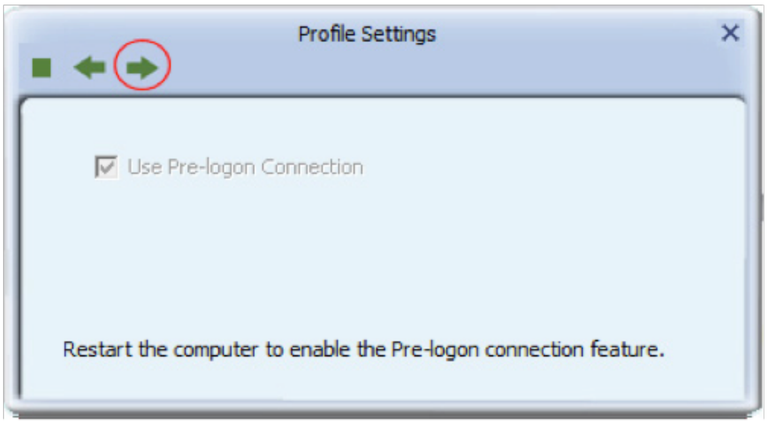
Profile Name: PROF1

SSID: Manhattan

Network Type: ● Infrastructure - Connect to AP

○ Ad Hoc - Connect to other computers

On the next screen, you need to confirm the security settings and the optional password (see previous section). After you’ve provided the correct information, you’ll see the next screen, which asks you about the “Pre-logon Connection.” When this feature is enabled, a wireless network connection will be established before you log on to Windows so you can authenticate yourself against the network server. If you don’t need this, you can leave this box unchecked. On certain systems, the option is enabled by default and cannot be disabled (see the screenshot). Click the right arrow to continue.



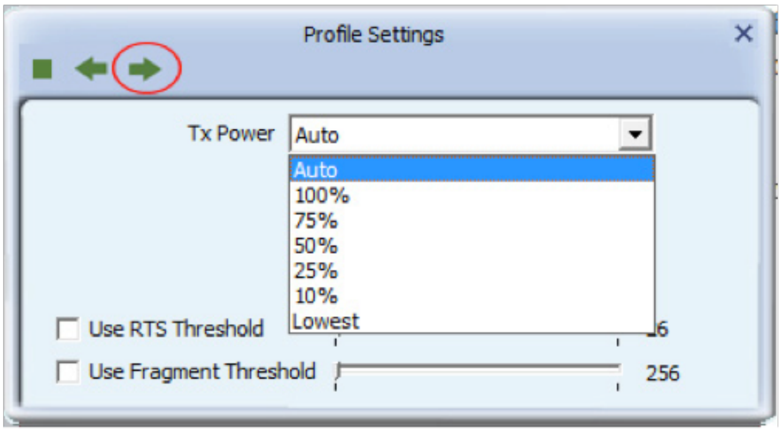
☑ Use Pre-logon Connection

Restart the computer to enable the Pre-logon connection feature.

On the next screen you can define the maximum translation output power (Tx Power) of the wireless adapter. While you would normally leave the setting as “Auto” or “100%” in situations where you do not want to have your signal travel so far (e.g., because you live in an apartment building), you can choose a lower value. After all, being able to receive a wireless signal is the first step in a successful attempt to break into the network. In other words: Why would you want to broadcast your wireless signal all over your neighborhood when your wireless access at home works fine when it’s set at “50%” for output power?

The option “Use RTS Threshold” is disabled by default. Unless you experience problems with your wireless connection, or if the signal strength is generally very low, this doesn’t need to be enabled. If you experience poor wireless performance, you can try using values between 1200 and 500, and below 500 in severe cases.

The option “Use Fragment Threshold” has a similar impact on poor wireless connections. By default it is disabled and should remain so. The fragmentation threshold is used to set the maximum size of packets that a client will send. The smaller the maximum sizes the better the reliability of the wireless connection, but the performance is likely to decrease at lower levels.

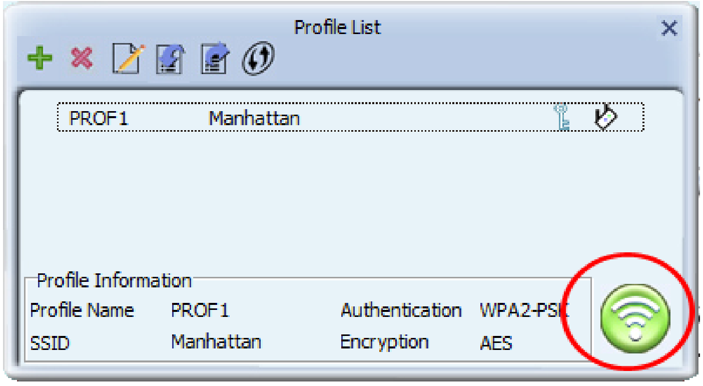


Tx Power: Auto

□ Use RTS Threshold 6

□ Use Fragment Threshold 256

At this point, you're done creating and connecting the profile. To activate it, click on the icon (circled in red below).



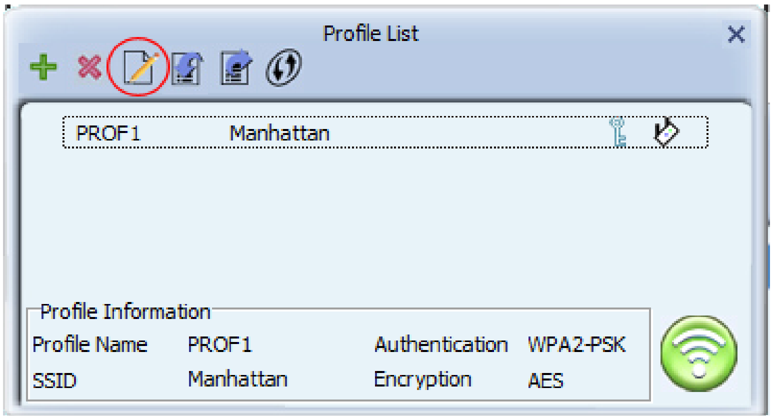
PROF1	Manhattan		

Profile Information

Profile Name	PROF1	Authentication	WPA2-PSK
SSID	Manhattan	Encryption	AES

Changing an Existing Profile

Click on the Profile List button to open the profile list. Select the profile you want to modify and click on the edit icon (circled). Editing the profile involves the exact same steps and screens as creating a profile, which you have seen on the previous pages.



PROF1	Manhattan		

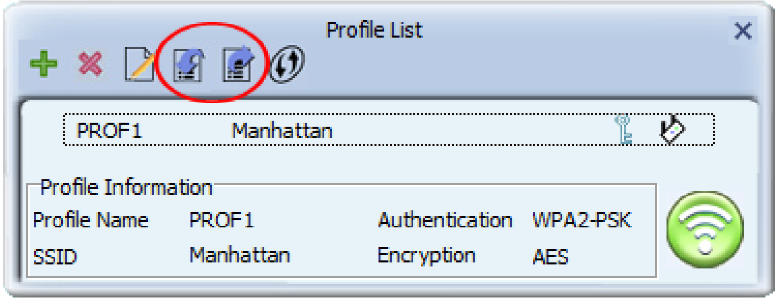
Profile Information

Profile Name	PROF1	Authentication	WPA2-PSK
SSID	Manhattan	Encryption	AES

Importing and Exporting a Profile

The Profile List screen allows you to save a profile to a hard drive or USB stick, then reload it at a later time. This can be a useful tool for a network administrator who needs to set up many computers for the same wireless network. After all, entering the same password over and over on different systems can get old quickly and it's not exactly an efficient use of time.

When you click on one of the icons circled in red below, a screen will display that allows you to either save a new profile or reload an existing one.



Profile List

PROF1	Manhattan		

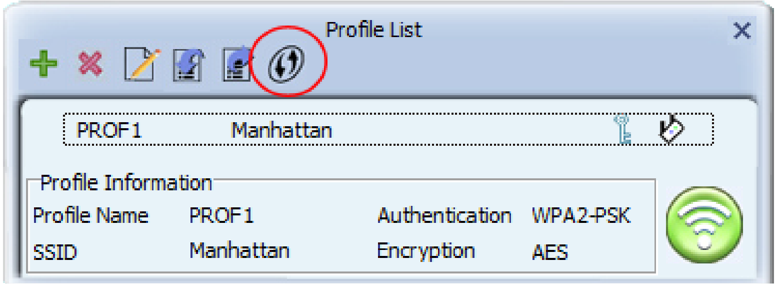
Profile Information

Profile Name	PROF1	Authentication	WPA2-PSK
SSID	Manhattan	Encryption	AES

Creating a Profile with WPS

Besides adding a profile manually, you can connect to a wireless network and create a profile based on WPS technology. Wi-Fi Protected Setup, also known as Wi-Fi Simple Config, is a computing standard that attempts to allow easy establishment of a secure wireless home network. It lets you join a secure wireless network simply by pushing a button or entering a PIN code) — without entering a complicated password. WPS is still relatively new, and some wireless routers, especially older models, don’t support it. If you’re not sure whether or not your router supports WPS, there’s a simple way to find out. The housing of the router must have a WPS button (also called N-connect). If there’s no such button, you can stop reading this section now because everything that follows would not be applicable to your network.

To begin, click on the Add WPS Profile button.



Profile List

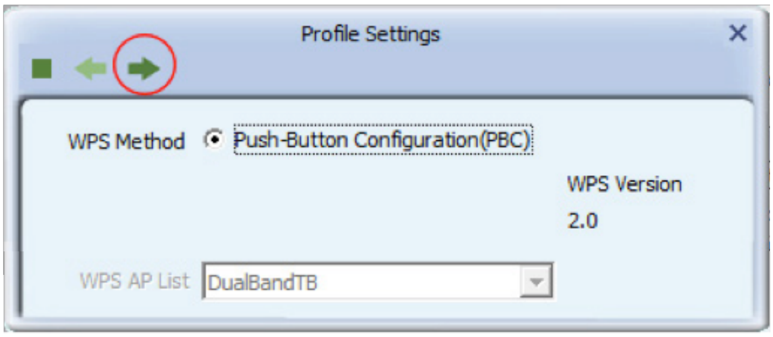
PROF1	Manhattan		

Profile Information

Profile Name	PROF1	Authentication	WPA2-PSK
SSID	Manhattan	Encryption	AES

You’ll then see the screen below, presenting you with two choices:

- Push-Button Configuration (PBC)
- PIN / numeric code



Profile Settings

WPS Method ● Push-Button Configuration(PBC)

WPS Version 2.0

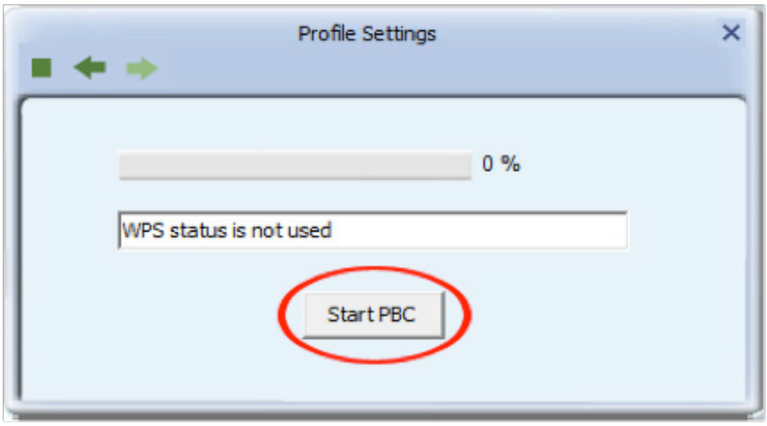
WPS AP List DualBandTB

To initiate a PBC connection, you need to first press the WPS button on the router; then, within two minutes, press the WPS button on the adapter. The two devices will automatically connect to each other, and the wireless adapter will use the correct network encryption key for your wireless network.

NOTE: The location of the WPS button on adapters varies. Yours may not even have a physical WPS button.

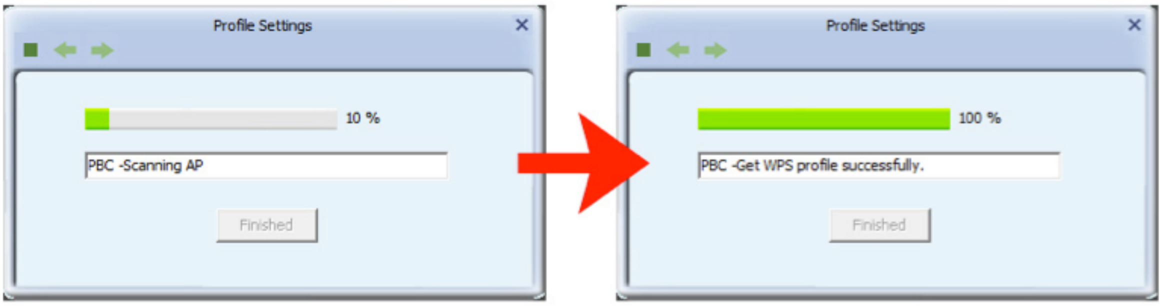
If PBC involves physically pressing buttons, then why does the software have an option for a push-button setup? The answer is simple: The same Manhattan WLAN
utility is included with the PCI WLAN Card and the tiny Wireless 150N Nano Adapter. In the case of the card, it's a matter of convenience. The software push-button eliminates the need to get down on your knees to press the sometimes-hard-to-reach PBC button on the card ... on the back of your computer underneath your desk. In the case of the adapter, it's a necessity. The adapter is so small that there's just no room to place a button on the product, making a virtual button mandatory.

As with the two-button procedure above, once you've pressed the PBC button on the wireless router, you need to click on "Start PBC" within two minutes.



WPS status is not used

The utility will then scan for a wireless router currently accepting PBC requests.



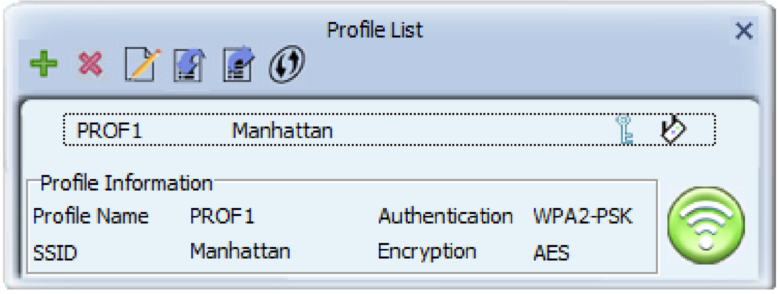
10 %

PBC -Scanning AP

100 %

PBC -Get WPS profile successfully.

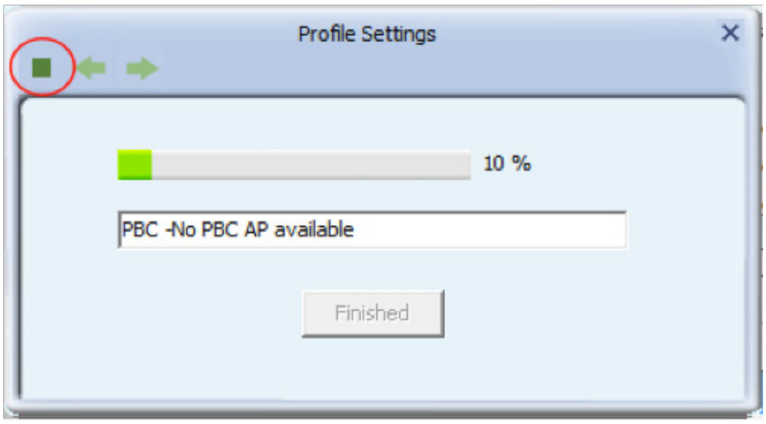
If the scan is successful, the main Profile List screen displays and the network name now has a preceding check mark.



PROF1 Manhattan

Profile Name	PROF1	Authentication	WPA2-PSK
SSID	Manhattan	Encryption	AES

Should you instead see the screen below, something went wrong. Either the WPS button wasn’t pressed on the wireless router, or you didn’t press the Start PBC button within two minutes after the button on the wireless router was pressed. If you see the screen below, click on the Stop symbol (circled in red) to cancel the scan attempt and try again.

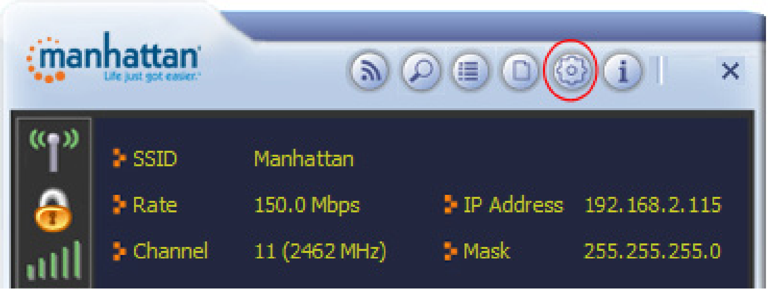


10 %

PBC -No PBC AP available

Advanced

The Advanced screen lets you configure the wireless operational mode of your adapter. Normally, there is no need to open this page and make any changes.



SSID Manhattan

Rate 150.0 Mbps

IP Address 192.168.2.115

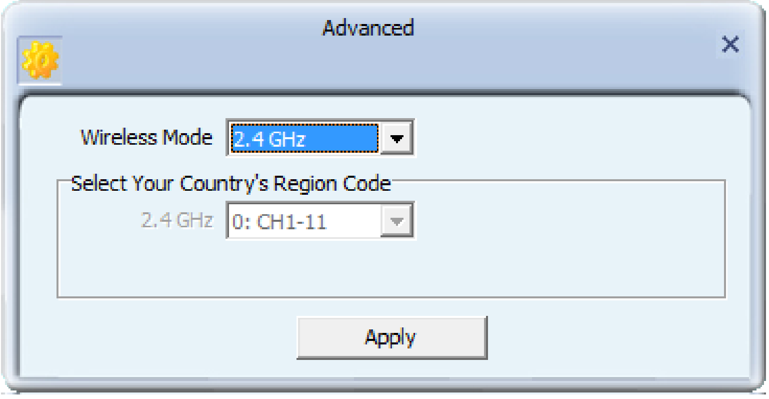
Channel 11 (2462 MHz)

Mask 255.255.255.0

If your wireless adapter is capable of 2.4 and 5 GHz connections, as dual-band adapters are, you can select the Wireless Mode setting here. By default, both frequency bands are enabled. The option may be grayed out or not available, depending on your wireless adapter.

The Country's Region Code selection may also be grayed out, but, really, there is no need to change this value. Nonetheless, it's good to be able to see the values that you cannot change.

The third option, B/G Protection, should be left at "Auto." The B/G Protection mode ensures that older wireless 802.11b and 802.11g devices will not degrade the performance of the much faster wireless 802.3n network. So, if you have a mix of older and newer wireless stations in the network, it's recommended that you enable the protection mechanism or leave it set to "Auto." Only if you know for certain that your network consists only of wireless N clients should you consider disabling this option, as it can increase the performance of your connections ever so slightly.



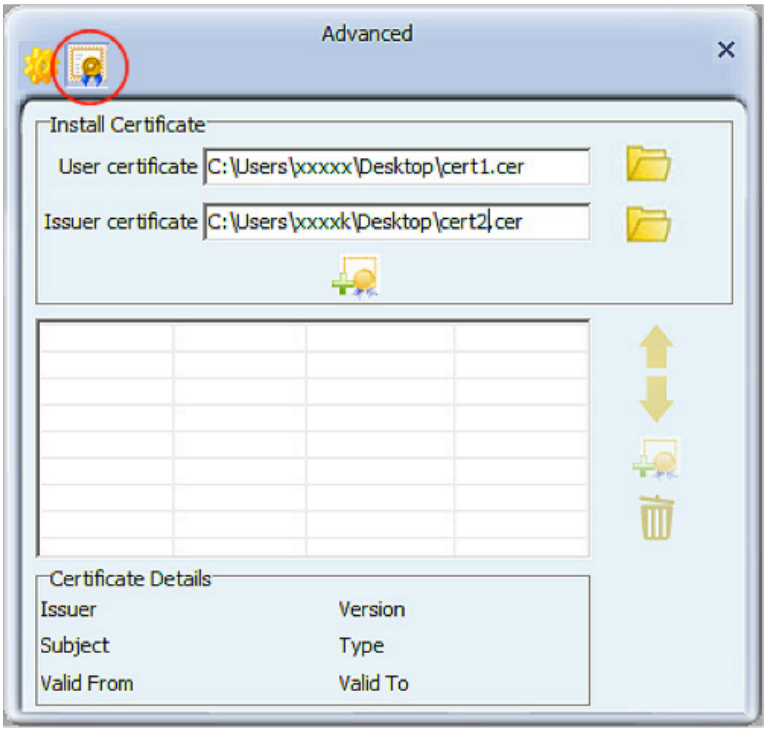
Advanced

Wireless Mode: 2.4 GHz

Select Your Country's Region Code

2.4 GHz: 0: CH1-11

The second Advanced screen is designed for network administrators and allows for the installation of 802.1x WPA Enterprise certificates. Both user and issuer certificates can be installed, though in most cases this won't be required since the certificate will likely have already been installed through the included Windows components.

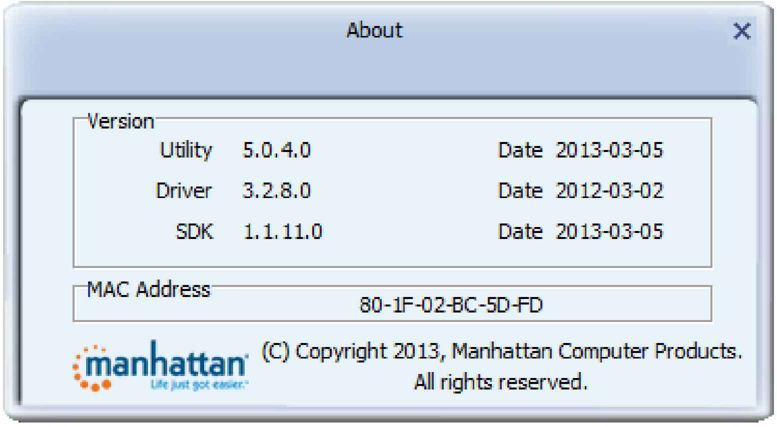


User certificate C:\Users\xxxxx\Desktop\cert1.cer

Issuer certificate C:\Users\xxxxk\Desktop\cert2.cer

About

Click on the About button ⓘ to view information about the utility itself, the driver installed and other things. If you ever need to contact Technical Support, it's good to have the information on this screen readily available for reference.



Utility	5.0.4.0	Date 2013-03-05
Driver	3.2.8.0	Date 2012-03-02
SDK	1.1.11.0	Date 2013-03-05

MAC Address 80-1F-02-BC-5D-FD

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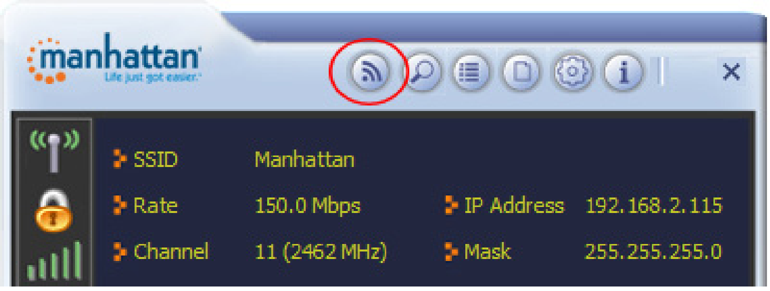
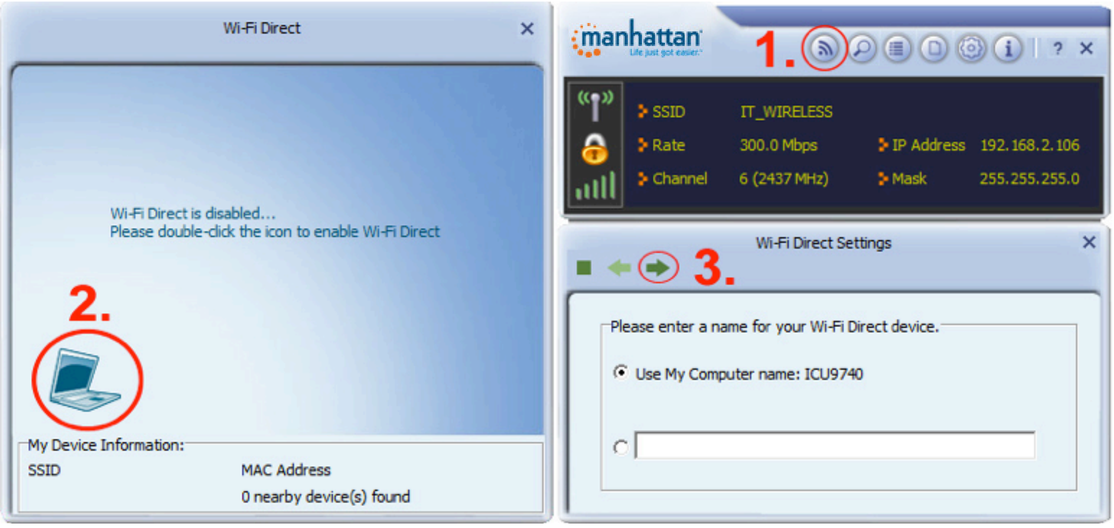
Wi-Fi Direct – Overview

Wi-Fi Direct is a standard that allows Wi-Fi devices to connect to each other without a wireless access point. It's become increasingly common for smartphones and portable media players to include Wi-Fi as a standard feature, and it's even become common in feature phones. Currently, printers, cameras, scanners and many other common devices can be found with Wi-Fi in addition to other connections, like USB. The widespread adoption of Wi-Fi in new classes of smaller devices has made the need for working ad hoc networking much more important. Even without a central Wi-Fi hub or router, which we call access points, it would be useful for a laptop computer to be able to wirelessly connect to a local printer. Although the ad hoc mode was created to address this sort of need, the lack of additional information for discovery makes it difficult to use in practice. Wi-Fi Direct, then, is a new and improved way of device-to-device wireless connections and is the de facto replacement of the former ad hoc mode.



SSID Manhattan
Rate 150.0 Mbps IP Address 192.168.2.115
Channel 11 (2462 MHz) Mask 255.255.255.0

1. Click on the Wi-Fi Direct button.
2. Double-click the circled icon and wait for the next screen to open up.
3. Enter a name for your Wi-Fi Direct device or use the computer name, which is preselected.



Wi-Fi Direct

Wi-Fi Direct is disabled...
Please double-click the icon to enable Wi-Fi Direct

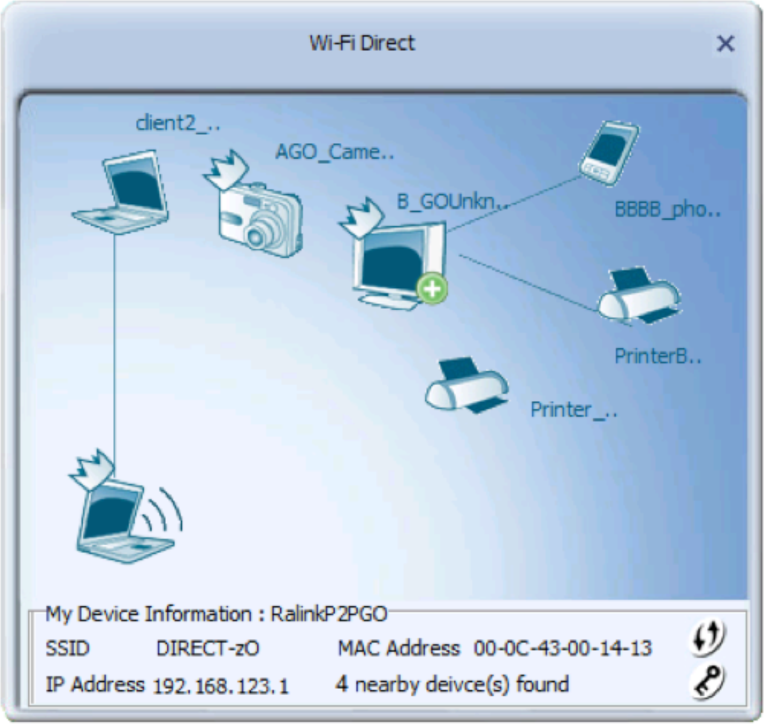
My Device Information:
SSID MAC Address
0 nearby device(s) found

SSID IT_WIRELESS
Rate 300.0 Mbps IP Address 192.168.2.106
Channel 6 (2437 MHz) Mask 255.255.255.0

Wi-Fi Direct Settings

Please enter a name for your Wi-Fi Direct device.
● Use My Computer name: ICU9740
○

Once you've successfully activated Wi-Fi Direct service, the main screen will display. Depending on whether or not Wi-Fi Direct–enabled devices are found, the screen will look different:



My Device Information : RalinkP2PGO

SSID DIRECT-zO MAC Address 00-0C-43-00-14-13

IP Address 192.168.123.1 4 nearby deivce(s) found

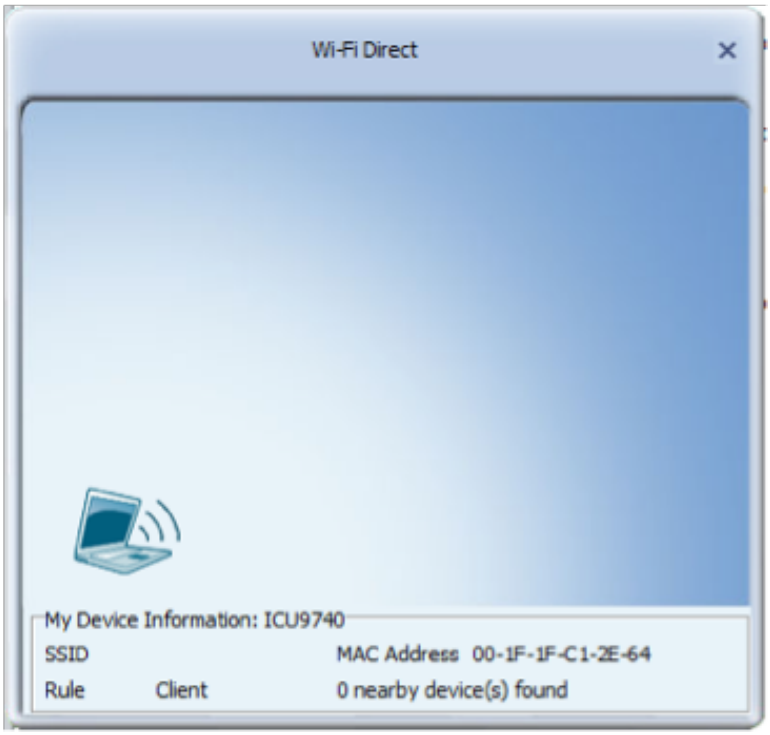
Example 1: Wi-Fi–enabled devices are found in the network.

GO (Group Owner) indicates an access point or similar device.

This indicates that the device is the head of one or more client devices (multiple clients belong to this GO).

This icon indicates that you can configure a secured connection with this device via WPS.

This sets the WPA2AES encryption key.



My Device Information: ICU9740

SSID

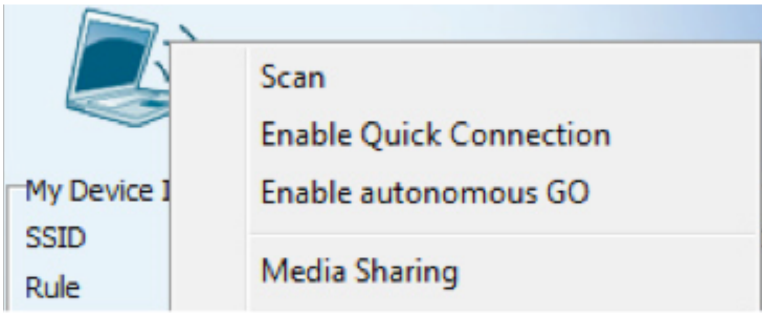
MAC Address 00-1F-1F-C1-2E-64

Rule Client

0 nearby device(s) found

Example 2: No Wi-Fi enabled devices are found in the network.

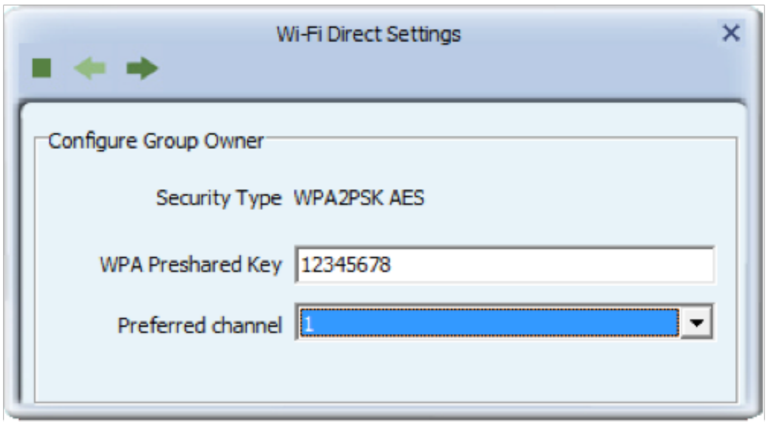
Right-click the laptop icon in the lower left corner to open the menu below.



Scan: Perform an active scan for available Wi-Fi Direct enabled devices.

Enable Quick Connection: Enables the Quick Connection mode.

Enable autonomous GO: Click to make your computer a group owner (GO), symbolized by ☝. Once this feature is enabled, you need to set the WPA password. The default value is 12345678. It's recommended that this be changed to something more secure. Select the preferred channel for the new Wi-Fi Direct group and click ➡.



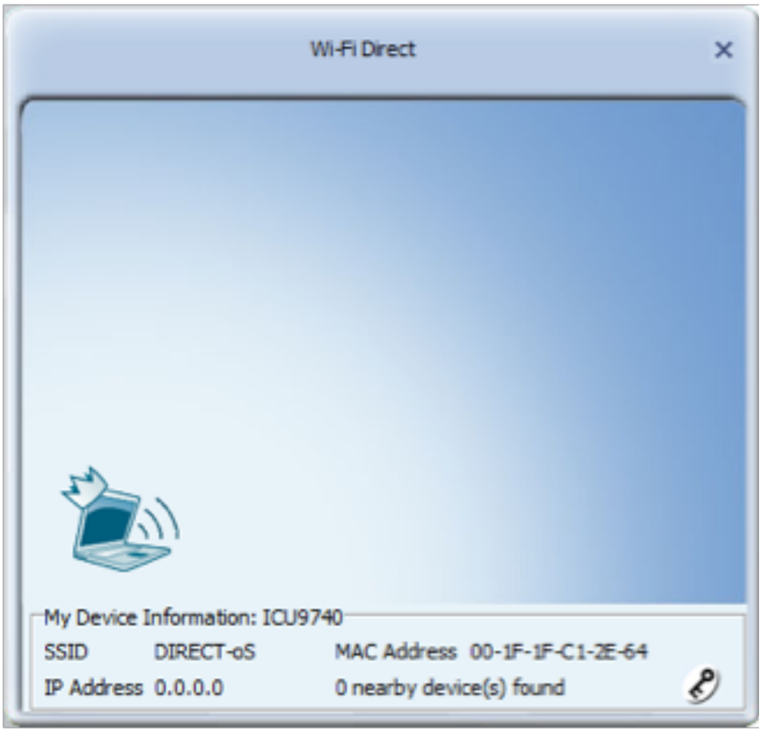
Configure Group Owner

Security Type WPA2PSK AES

WPA Preshared Key 12345678

Preferred channel 1

Back at the main screen, you should see ✓, indicating that this computer is now a group owner (GO).



My Device Information: ICU9740

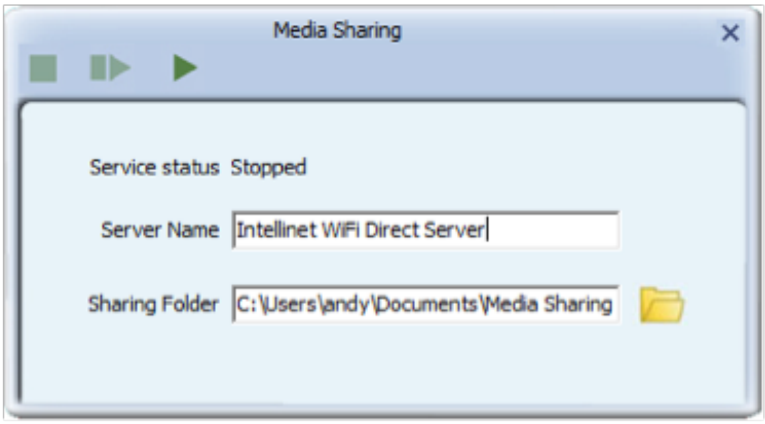
SSID DIRECT-oS

MAC Address 00-1F-1F-C1-2E-64

IP Address 0.0.0.0

0 nearby device(s) found

Media Sharing: You can turn your computer into a media server for connected Wi-Fi Direct clients. Enter a server name — e.g., mymediaserver — and specify the folder on your hard drive you want to share. Click ▶ to start the service. Click ■▶ to re-start the service. Click ■ to stop the service.



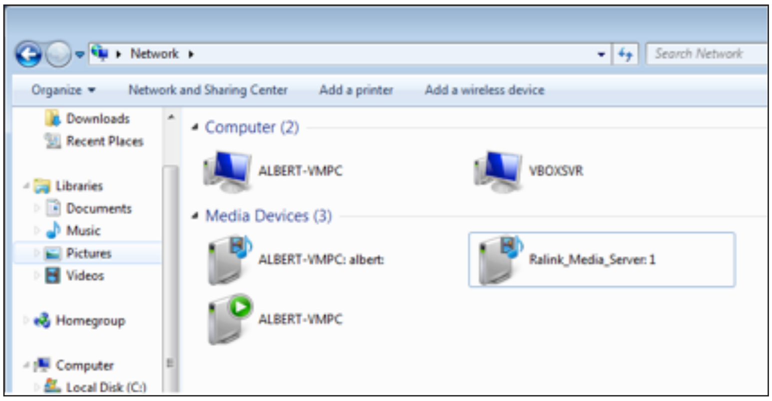
Media Sharing

Service status Stopped

Server Name: Intellinet WiFi Direct Server

Sharing Folder: C:\Users\andy\Documents\Media Sharing

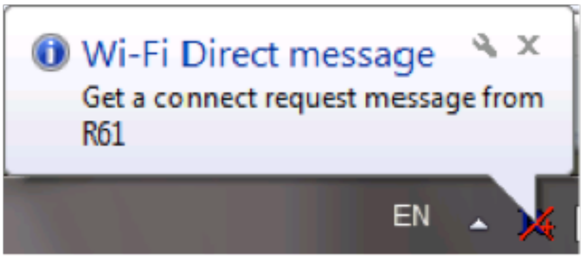
After you've enabled the media sharing function, other computers can see the shared folder in the network environment. The example shows Ralink_Media_Server, but it will be the name that you entered as the server name in the previous step. Double-click the server icon to open Windows Media Player, allowing users to play back the media files you shared.



Wi-Fi Direct – Creating and Accepting Connections

Accepting a Wi-Fi Direct Connection Request

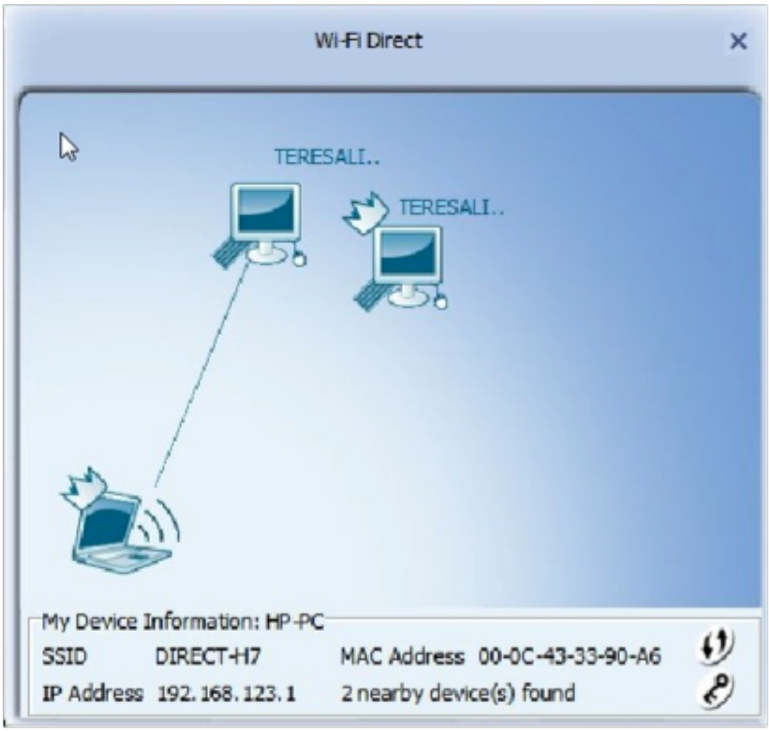
If your computer's Wi-Fi Direct function is enabled and another client wants to connect with your computer, a pop-up message will alert you. Click the message to accept the incoming request.



Wi-Fi Direct message

Get a connect request message from R61

Once the client is successfully connected, you can see the client on the Wi-Fi Direct main screen (below). A line between the client and your computer indicates that a connection has been established.



Wi-Fi Direct

My Device Information: HP-PC

SSID DIRECT-H7

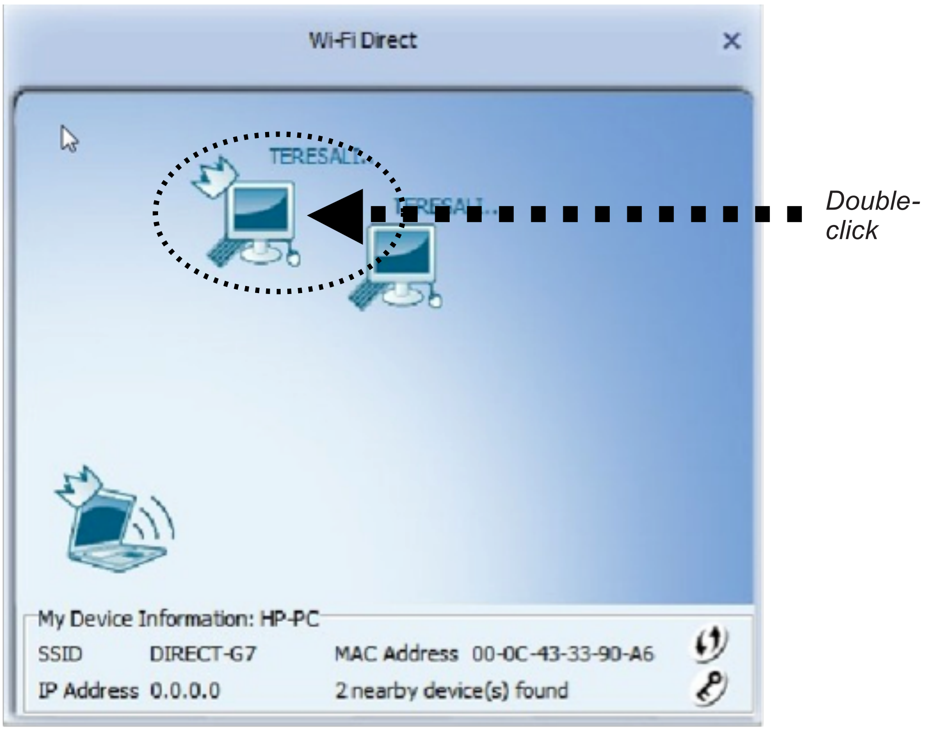
IP Address 192.168.123.1

MAC Address 00-0C-43-33-90-A6

2 nearby device(s) found

Establishing a Wi-Fi Direct Connection with Another Client

To establish connection with a P2P (peer to peer) device, double-click on its icon.



Wi-Fi Direct

My Device Information: HP-PC

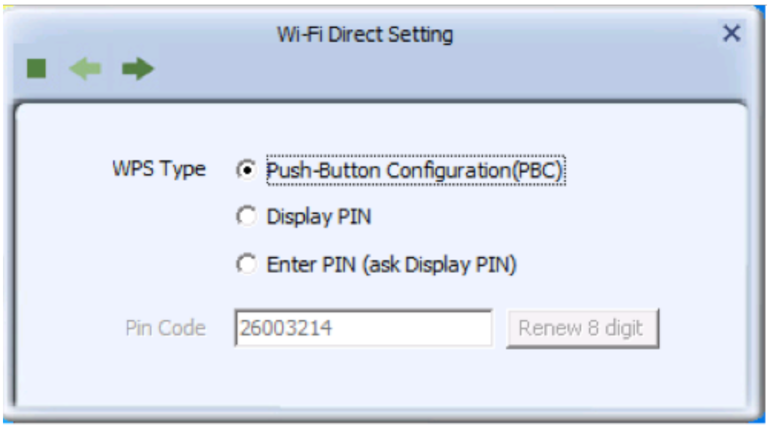
SSID DIRECT-G7

IP Address 0.0.0.0

MAC Address 00-0C-43-33-90-A6

2 nearby device(s) found

You'll be prompted to select its WPS connection type:


Wi-Fi Direct Setting

WPS Type
● Push-Button Configuration(PBC)
○ Display PIN
○ Enter PIN (ask Display PIN)

Pin Code: 26003214

Push-Button Configuration: Select to use this method to establish a connection.

Display PIN: Select to use this method to establish a connection. With this method, you'll see an 8-digit number displayed here. Enter this number on the device you want to connect to.

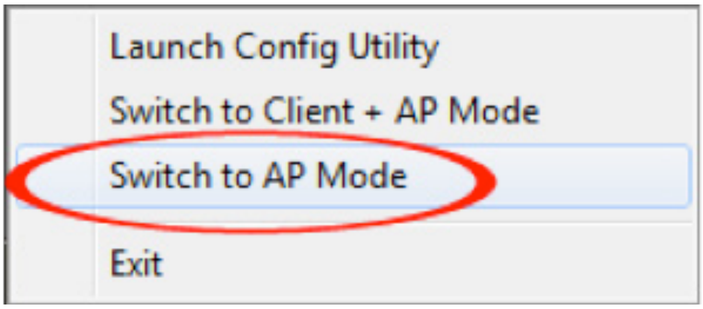
Enter PIN: Input the 8-digit PIN number displayed on the device you want to connect to in the Pin Code field to establish the connection.

Click ➡ to establish the connection.

AP Mode

This option allows you to turn your computer into a wireless access point (in this case, a "soft" AP, made possible by the adapter software) that other wireless devices can be connected to. Your computer could then share files, provide access to the local network, and even share an existing Internet connection. When you activate the AP mode as shown below, the wireless adapter will cease to function as a regular wireless network adapter.

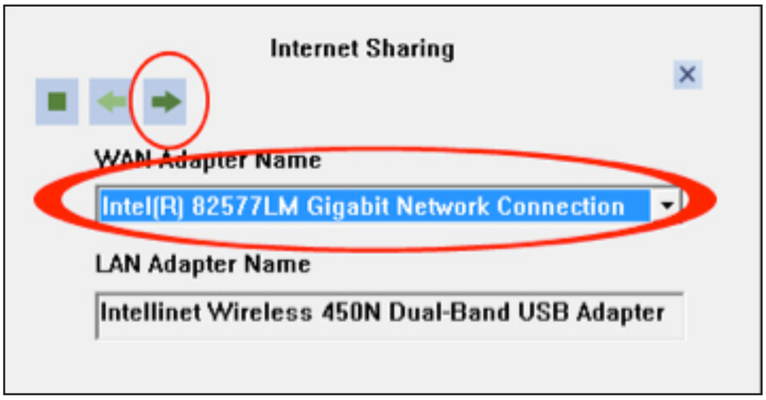
NOTE: If you're thinking about activating this mode but the wireless adapter is the only means for your computer to connect to a network, don't do it. The AP mode



can only effectively be used if a second network connection, either wired or wireless, is active.

Once you activate the AP mode, you'll be asked to specify which network adapter (other than the Manhattan wireless adapter) should be used for the AP mode. If the goal is to share an existing Internet connection, then this adapter must provide an

Internet connection your computer. In the example below, the computer will use the Manhattan Wireless 450N Dual-Band Adapter to provide wireless access point functionality while the Intel 82577LM Gigabit adapter provides the Internet connection to the computer. This is the connection you'll be sharing wirelessly. If you've understood everything so far, it should be clear that the screen may look different during your setup since you likely have a different WAN adapter installed.



Internet Sharing

WAN Adapter Name

Intel(R) 82577LM Gigabit Network Connection

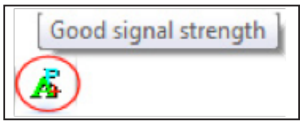
LAN Adapter Name

Intellinet Wireless 450N Dual-Band USB Adapter

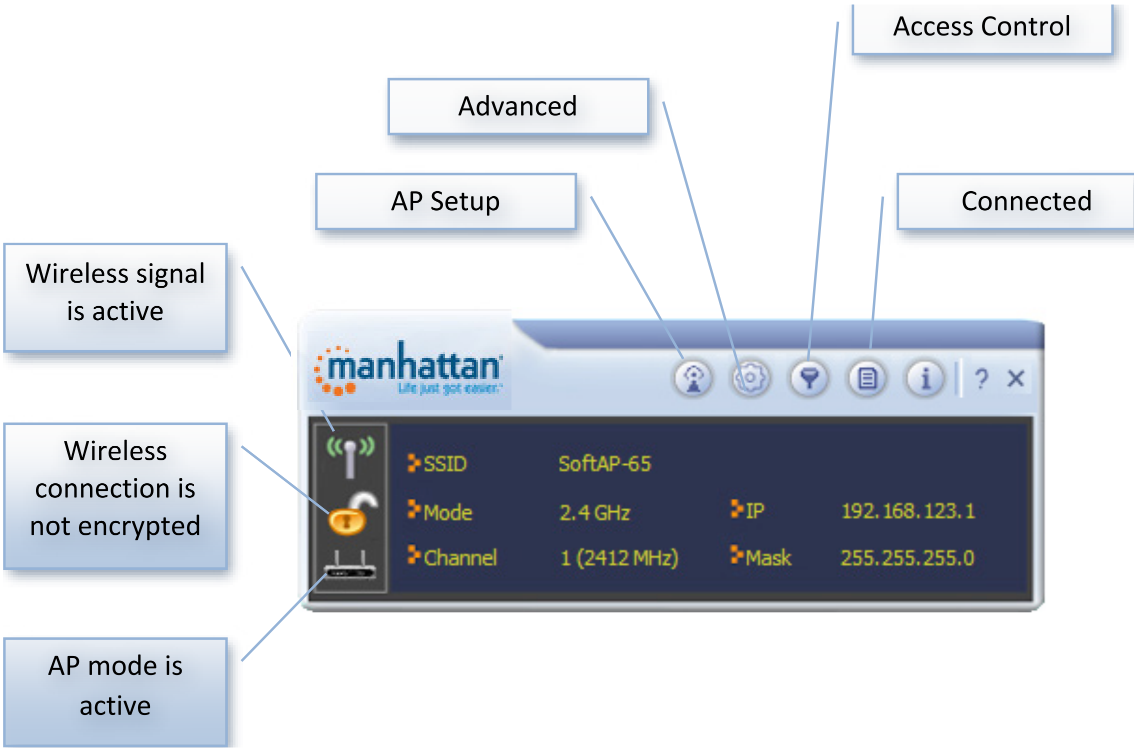
After you click on the right arrow, a brief message about enabling ICS (Internet Connection Sharing) will display before the screen disappears.

Enabling ICS. Please wait...

The other thing that will disappear is the Manhattan wireless connection icon — replaced by a new icon indicating that the AP mode is now active. Right-click that icon and select "Open Utility" to start the configuration utility for the AP mode.



Good signal strength

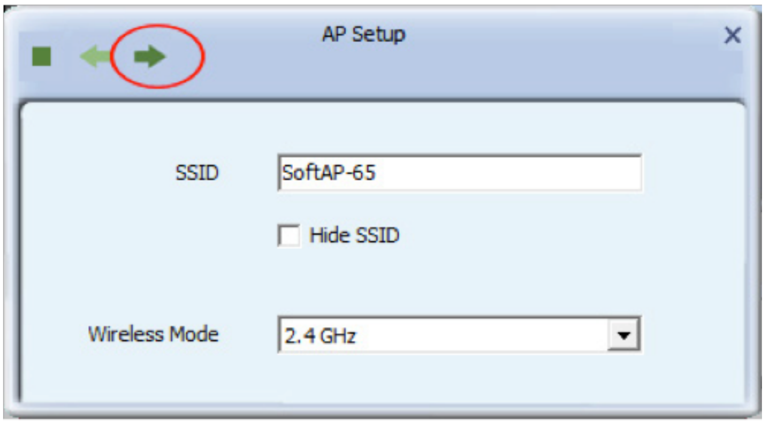


SSID SoftAP-65
Mode 2.4 GHz
Channel 1 (2412 MHz)
IP 192.168.123.1
Mask 255.255.255.0

AP Setup

Now that your computer acts as a wireless access point, you can give the network a proper name so that other computers can easily find it. Enter a new name for your wireless network in the SSID field or leave the current one. If you don't want to openly broadcast the name of the network, activate the Hide SSID option.

The wireless mode is of importance on systems running a dual-band wireless adapter as it defines which frequency band, 2.4 or 5 GHz, is to be used for the access point. If you aren't sure what to use, it's always good advice to keep the value at 2.4 GHz. Click the right arrow to move to the next screen.

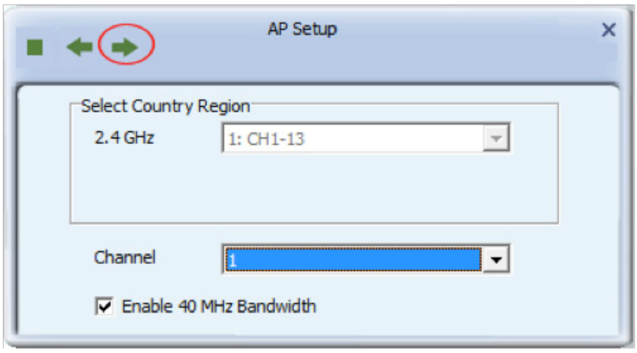


SSID SoftAP-65

□ Hide SSID

Wireless Mode 2.4 GHz

You can adjust the wireless channel on the next screen. For optimal performance, it's best to use a channel that is furthest away from other wireless networks. For example, if there is another wireless network running on channel 8, ideally you want to use channel 2 or 1, as shown below. If you were to use a channel closer to the existing wireless network, it would still work, but the performance would be slightly diminished. If there are no other wireless networks around, or if you don't know which channel they operate on, it's okay to leave the channel set at value "1." The option "Enable 40 MHz Bandwidth" should be selected for the best possible performance. Click the right arrow to move to the next screen.



AP Setup

Select Country Region

2.4 GHz: 1: CH1-13

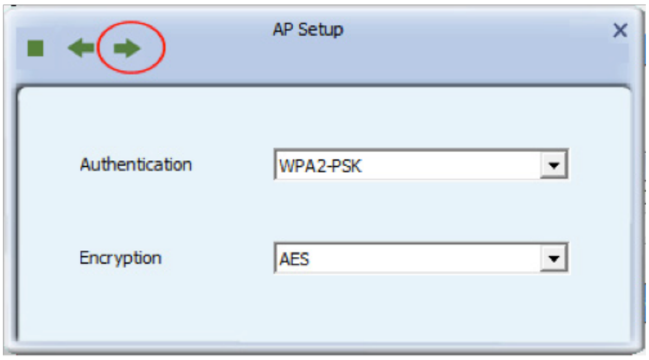
Channel: 1

☑ Enable 40 MHz Bandwidth

The next configuration aspect to consider is the security setup of the wireless network. Unless you want to broadcast an unencrypted wireless signal that everybody can connect to, it's smart to secure the network with a password. First, select the level of security from the Authentication drop-down menu:

- "Open" means that the wireless network will not be secured.
- "Shared" activates WEP encryption, but WEP encryption is very weak and should only be used to connect legacy (older) devices that don't support WPA or WPA2.
- "WPA-PSK" or (better) "WPA2-PSK" provides a good (and recommended) level of protection; "WPA-PSK / WPA2-PSK" allows access to clients using either.

The Encryption option can be set to either "AES" or "TKIP," AES being the preferred option since it's more efficient. TKIP is a fallback, in case a wireless adapter doesn't support AES. Click the right arrow to continue the configuration.

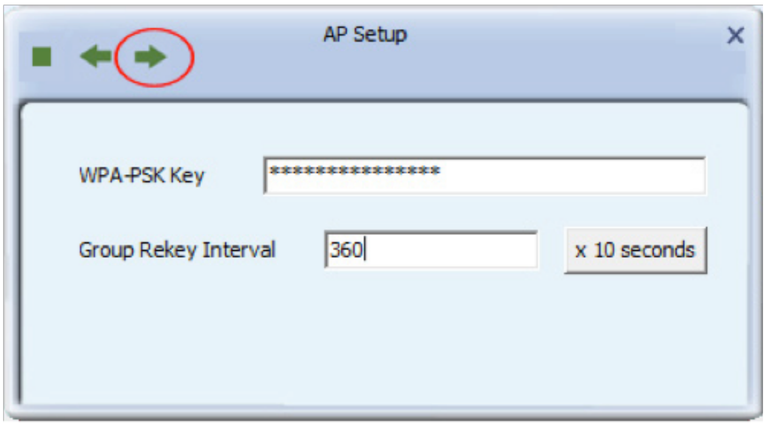


AP Setup

Authentication: WPA2-PSK

Encryption: AES

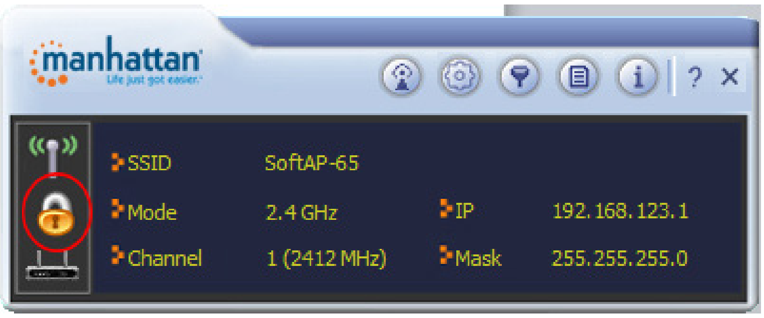
The next step is to enter the actual password, or passphrase, for the wireless network. As for the Group Rekey Interval setting, the group key (or group transient key) is a key shared among all wireless clients connected to the same AP, and is used to secure multicast/broadcast traffic. The interval defines how often the group transient key is changed. This is not the wireless password, however. This mechanism works “behind the scenes” — completely hidden from you the user. The default setting of “60” means that every 10 minutes (60 x 10 seconds = 600 seconds) the client receives a new group transient key. There can be a very brief time period in which network access is interrupted as a result of this. A good value to use is 360, which increases the interval to one hour. Higher values are also acceptable and do not cause any problems.



WPA-PSK Key: ****************

Group Rekey Interval: 360 x 10 seconds

The main screen now reloads, indicating that the wireless signal is protected.



SSID: SoftAP-65

Mode: 2.4 GHz

IP: 192.168.123.1

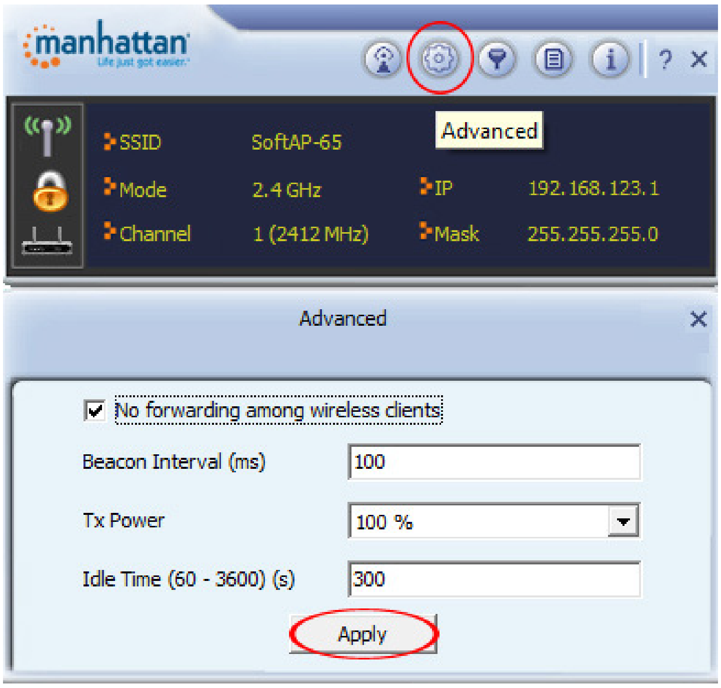
Channel: 1 (2412 MHz)

Mask: 255.255.255.0

Advanced

As with the Configuration Utility, click the Advanced icon to view or change the Advanced settings in AP mode. The enable/disable options, drop-down menus and settings tables/lists are detailed below with their corresponding screens.

- No forwarding among wireless clients — When this option is activated, no communication is possible between any wireless clients that are connected to the “soft” AP. This, this option acts as a client isolation feature. When the option



SSID SoftAP-65

Mode 2.4 GHz

Channel 1 (2412 MHz)

IP 192.168.123.1

Mask 255.255.255.0

Advanced

☑ No forwarding among wireless clients

Beacon Interval (ms) 100

Tx Power 100 %

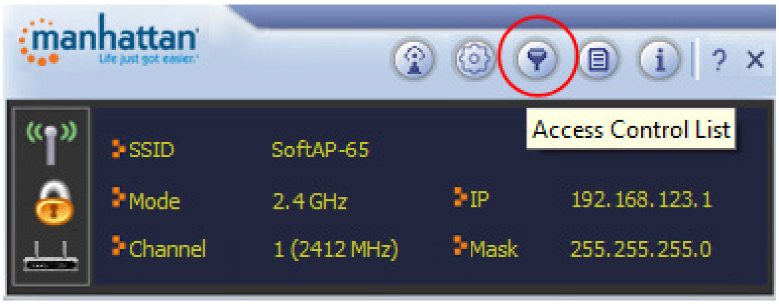
Idle Time (60 - 3600) (s) 300

is disabled, all wireless clients can freely communicate with each other. Choosing which option is the right one depends on your network application.

- Beacon Interval (ms) — Access points broadcast traffic indication messages, or beacons, in order to synchronize wireless networks. The beacon interval specifies the duration in milliseconds between those beacon packets. The default value of "100" typically does not need to be changed. If you prefer to tweak the performance of your wireless network, you can lower the value (in case your location be crowded by many different wireless networks creating a lot of interference, perhaps) or you can raise the value (if you're in a remote locale with hardly any interference at all, for example). Then again, the effects are minor to the point that only highly sensitive measuring tools can distinguish the differences.
- Tx Power — This presents a menu of various output power ratings for the adapter. If you want to limit the range of your wireless network to your office or home in order to eliminate the possibility of an outside intruder breaking into your network, you can lower the power setting to "75%," "50%," "25%" or "Low."
- Idle Time — The default setting ("300") doesn't need to be changed.

Access Control List

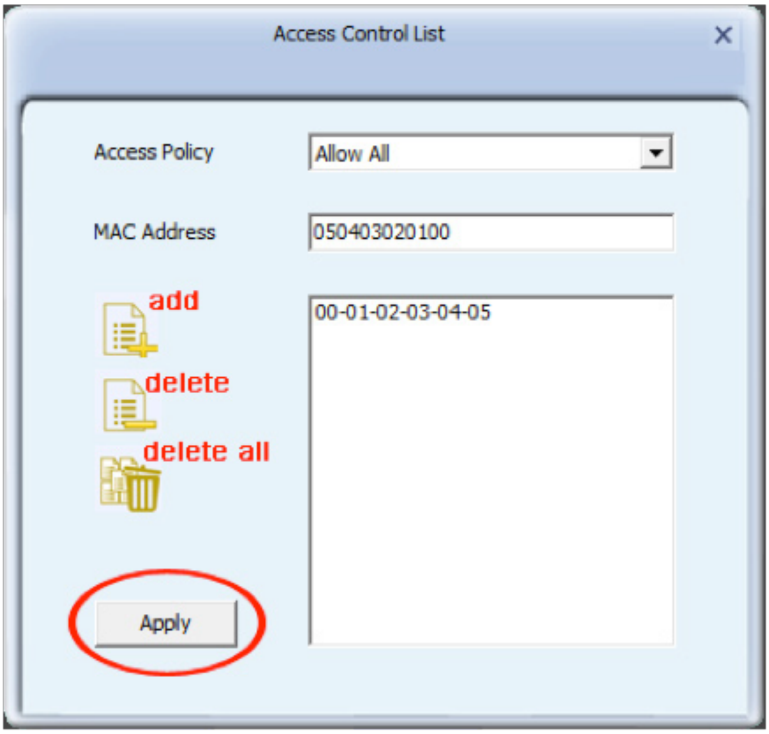
The Access Control List offers yet another way to increase security. By combining this feature with the four actions recommended above — WPA2 encryption, limiting output power, enabling the "no forwarding between wireless clients" option and hiding the SSID — you can make your network much more secure. Click the Access Control List icon to display the feature’s configuration screen.



SSID SoftAP-65
Mode 2.4 GHz
IP 192.168.123.1
Channel 1 (2412 MHz)
Mask 255.255.255.0

The MAC address is a unique hardware identification number assigned to any network adapter during production. Whether the adapter is internal to a notebook or iPad, or is a PCI network card in a desktop PC, the MAC address is unique to that device. Therefore, it’s a means of identifying a connecting computer, smartphone, tablet PC or laptop through the network adapter it uses.

- Access Policy — Select “Allow All” to create a white (spam-free) list of MAC addresses so that only addresses you enter into the utility will be able to connect. Select “Reject All” to create black list. In this case, access will be granted to any MAC address that is not listed on the screen. Select “Disable” to deactivate the function.



Access Policy: Allow All

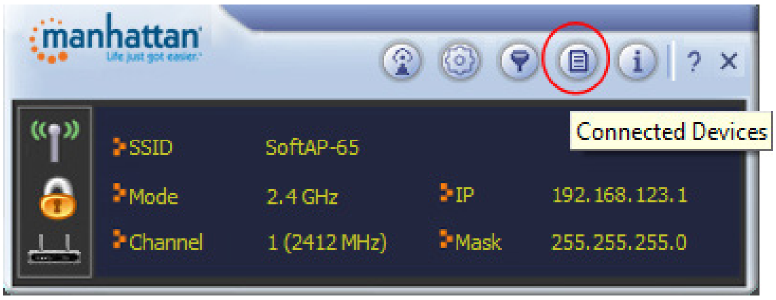
MAC Address: 050403020100

00-01-02-03-04-05

- MAC Address — Enter a 12-character address without no spaces, dashes or colons; e.g., 001122334455. (Media access control, or MAC, addresses used elsewhere can appear in 00:00:00:00:00 or 00-00-00-00-00 formats.) Based on the MAC address of the wireless client, you can now decide whether to allow or deny access.
- Add, Delete and Delete All — To add the currently displayed MAC address to the list, click on the “Add” icon. To remove an address from the list, select it and click on the “Delete” icon. Remove all MAC addresses on the list by clicking on “Delete All.” ***NOTE:*** The utility will not ask you to confirm this; it deletes the entries without question. So be careful not to accidentally overwrite a lot of MAC addresses you may not have meant to delete.

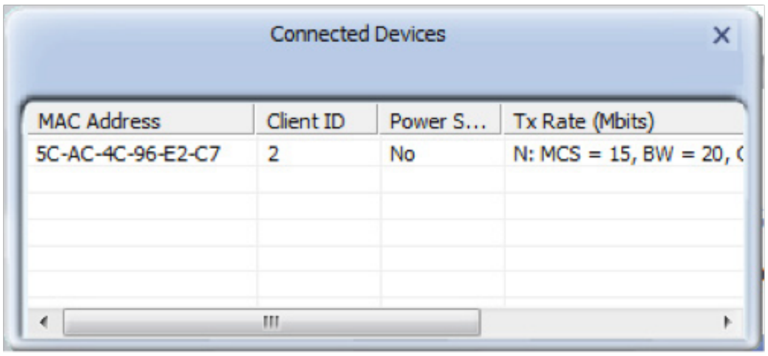
Connected Devices

To display an overview of who is connected to the Soft AP, click on the Connected Devices icon.



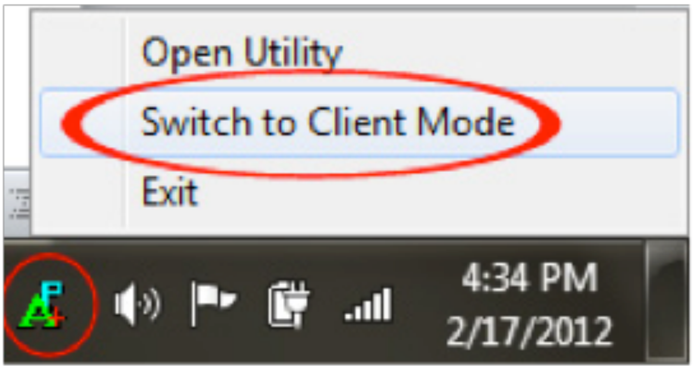
SSID	SoftAP-65		
Mode	2.4 GHz	IP	192.168.123.1
Channel	1 (2412 MHz)	Mask	255.255.255.0

The example below shows one connected client.

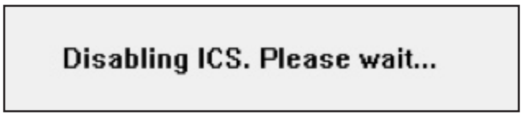


MAC Address	Client ID	Power S...	Tx Rate (Mbits)
5C-AC-4C-96-E2-C7	2	No	N: MCS = 15, BW = 20, (

To return the wireless adapter to the regular client mode, right-click the icon in the systems tray and select “Switch to Client Mode.”



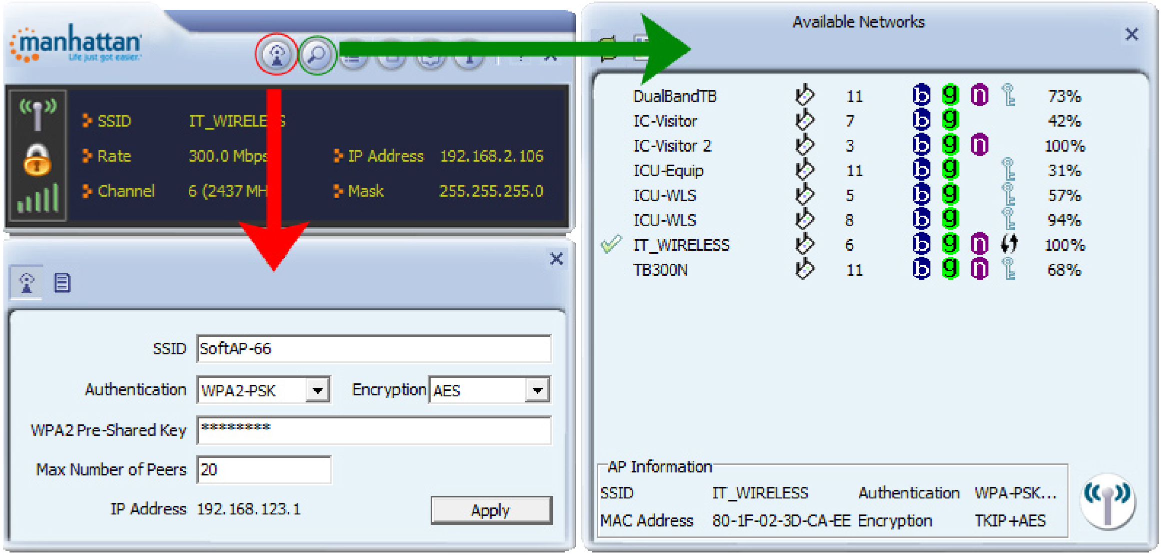
The utility will then deactivate ICS (Internet Connection Sharing) and return to the original mode. The message below will be shown briefly. This is completely normal and is to be expected.



Disabling ICS. Please wait...

Client + AP Mode

In this mode the Manhattan Wireless 450N Dual-Band USB Adapter acts as both the wireless network adapter for your computer and as an access point so other wireless devices can connect to the network.



SSID IT_WIRELE S
Rate 300.0 Mbps
Channel 6 (2437 MH
IP Address 192.168.2.106
Mask 255.255.255.0

SSID SoftAP-66
Authentication WPA2-PSK
Encryption AES
WPA2 Pre-Shared Key ********
Max Number of Peers 20
IP Address 192.168.123.1

	DualBandTB	11	b	g	n	🔑	73%
	IC-Visitor	7	b	g			42%
	IC-Visitor 2	3	b	g	n		100%
	ICU-Equip	11	b	g		🔑	31%
	ICU-WLS	5	b	g		🔑	57%
	ICU-WLS	8	b	g		🔑	94%
✓	IT_WIRELESS	6	b	g	n	↻	100%
	TB300N	11	b	g	n	🔑	68%

AP Information
SSID IT_WIRELESS Authentication WPA-PSK...
MAC Address 80-1F-02-3D-CA-EE Encryption TKIP+AES

Click 📡 to open the access point configuration menu. Here, you can assign an SSID and wireless encryption, and specify how many clients can use this connection. Click 🔍 to bring up the list of available wireless networks to which you can connect with your wireless adapter.

The image above shows that

a) The wireless adapter is connected to the wireless network “IT_WIRELESS”; and

b) The wireless adapter broadcasts an access point signal as “SoftAP-66,” which uses WPA2 encryption.

Any wireless client that connects to “SoftAP-66” will get Internet service via the IT_WIRELESS network.

SPECIFICATIONS

NOTE: Specifications are subject to change without notice.

Standards

- IEEE 802.11a (54 Mbps Wireless LAN)
- IEEE 802.11b (11 Mbps Wireless LAN)
- IEEE 802.11g (54 Mbps Wireless LAN)
- IEEE 802.11n (450 Mbps Wireless LAN)
- IEEE 802.11e (QoS Enhancement WMM)

General

- Interface: Hi-Speed USB 2.0
- Chipset: Ralink RT3573
- Frequency band:
  - 2.400 – 2.483 GHz (Industrial Scientific Medical Band)
  - 5.150 – 5.825 GHz (Industrial Scientific Medical Band)
- Modulation technologies:
  - 802.11b: Direct Sequence Spread Spectrum (DSSS): DBPSK, DQPSK, CCK
  - 802.11g: Orthogonal Frequency Division Multiplexing (OFDM): BPSK, QPSK, 16QAM, 64QAM
  - 802.11n: Orthogonal Frequency Division Multiplexing (OFDM): BPSK, QPSK, 16QAM, 64QAM
- Security:
  - 64/128-bit WEP data encryption
  - WPA and WPA2
  - Cisco CCX
- Transmit power 2.4 GHz:
  - 11n: 14 dBm +/- 1.5 dBm
  - 11g: 14 dBm +/- 1.5 dBm
  - 11b: 16 dBm +/- 1.5 dBm
- Transmit power 5 GHz:
  - 11n: 11 dBm +/- 1.5 dBm
  - 11a: 11 dBm +/- 1.5 dBm
- Receive sensitivity 2.4 GHz:
  - 11n 40 MHz: -66 dBm +/- 2 dBm
  - 11n 20 MHz: -69 dBm +/- 2 dBm
  - 11g: -71 dBm +/- 2 dBm
  - 11b: -87 dBm +/- 2 dBm
- Receive sensitivity 5.0 GHz:
  - 11n 40 MHz: -65 dBm +/- 2 dBm

  - 11n 20 MHz: -69 dBm +/- 2 dBm
  - 11a: -70 dBm +/- 2 dBm
- Antennas: 3T3R mode, 2 printed antennas, 1 external antenna
- Certification: FCC Class B, CE

LEDs

- Link/Activity

Environmental

- Dimensions: 18 (H) x 26.6 (W) x 87.1 (L) mm (0.7 x 1.0 x 3.4 in.)
- Weight: 0.16 kg (0.4 lbs.)
- Operating temperature: 0 – 40°C (32 – 104°F)
- Operating humidity: max. 90% RH, non-condensing
- Storage temperature: -20 – 60°C (-4 – 149°F)

System Requirements

- Windows XP/Vista and Windows 7/8
- Available Hi-Speed USB 2.0 type-A port

WASTE ELECTRICAL & ELECTRONIC EQUIPMENT

Disposal of Electric and Electronic Equipment

(applicable in the European Union and other European countries with separate collection systems)

This symbol on the product or its packaging indicates that this product shall not be treated as household waste. Instead, it should be taken to an applicable collection point for the recycling of electrical and electronic equipment. By ensuring this product is disposed of correctly, you will help prevent potential negative consequences to the environment and human health, which could otherwise be caused by inappropriate waste handling of this product. If your equipment contains easily removable batteries or accumulators, dispose of these separately according to your local requirements. The recycling of materials will help to conserve natural resources. For more detailed information about recycling of this product, contact your local city office, your household waste disposal service or the shop where you purchased this product. In countries outside of the EU: If you wish to discard this product, contact your local authorities and ask for the correct manner of disposal.

COMPLIANCE STATEMENTS

FCC Class B

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of Federal Communications Commission (FCC) Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment to an outlet on a circuit different from the receiver.
- Consult the dealer or an experienced radio/TV technician for help.

FCC Radiation Exposure Statement

This equipment complies with FCC radiation exposure set forth for an uncontrolled environment. To avoid the possibility of exceeding FCC radio frequency exposure limits, human proximity to the antenna shall not be less than 20 cm (8 inches) during normal operation. The antenna(s) used for this transmitter must not be co-located or operating in conjunction with any other antenna or transmitter. The equipment version marketed in the U.S. is restricted to usage of channels 1-11.

CE / R&TTE

This device complies with the requirements of R&TTE Directive 1999/5/EC.
The ETSI version of this device is intended for home and office use in Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden and the United Kingdom, and is also authorized for use in EFTA member states Iceland, Liechtenstein, Norway and Switzerland.

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