# TP-LINK®

## **User Guide**

## **TL-WDN3200**

## N600 Wireless Dual Band USB Adapter



Rev: 1.0.0 1910010577

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## **FCC STATEMENT**

FC

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the 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 receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/ TV technician for help.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

- 1) This device may not cause harmful interference.
- 2) This device must accept any interference received, including interference that may cause undesired operation.

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Note: The manufacturer is not responsible for any radio or tv interference caused by unauthorized modifications to this equipment. Such modifications could void the user's authority to operate the equipment.

### FCC RF Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. End users must follow the specific operating instructions for satisfying RF exposure compliance. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter. This equipment has been SAR-evaluated for use in hand. SAR measurements are based on a 5mm spacing from the body and that compliance is achieved at that distance.

## **CE Mark Warning**

## €€1588

This is a class B product. In a domestic environment, this product may cause radio interference, in which case the user may be required to take adequate measures.

## **National Restrictions**

This device is intended for home and office use in all EU countries (and other countries following the EU directive 1999/5/EC) without any limitation except for the countries mentioned below:

| Country            | Restriction  | Reason/remark  |
|--------------------|--|--|
| Bulgaria           | None   | General authorization required for outdoor use and public service  |
| France             | Outdoor use limited to<br>10 mW e.i.r.p. within<br>the band 2454-2483.5<br>MHz | Military Radiolocation use. Refarming of the 2.4 GHz band has been ongoing in recent years to allow current relaxed regulation. Full implementation planned 2012 |
| Italy              | None   | If used outside of own premises, general authorization is required   |
| Luxembourg         | None   | General authorization required for network and service supply(not for spectrum)  |
| Norway             | Implemented  | This subsection does not apply for the geographical area within a radius of 20 km from the centre of Ny-Ålesund  |
| Russian Federation | None   | Only for indoor applications   |

Note: Please don't use the product outdoors in France.

This device has been designed to operate with the antennas listed below which have a maximum gain of 3 dBi. Antennas not included in this list or having a gain greater than 3 dBi are strictly prohibited for use with this device. The required antenna impedance is 50 ohms.

To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that permitted for successful communication.

## **Industry Canada Statement:**

This device complies with RSS-210 of the Industry Canada Rules. Operation is subject to the following two conditions:

(1)This device may not cause harmful interference, and

(2)This device must accept any interference received, including interference that may cause undesired operation.

**IMPORTANT NOTE:** 

Radiation Exposure Statement:

This equipment complies with Canada radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

Ce dispositif est conforme à la norme CNR-210 d'Industrie Canada applicable aux appareils radio exempts de licence. Son fonctionnement est sujet aux deux conditions suivantes:

(1) Le dispositif ne doit pas produire de brouillage préjudiciable, et

(2) Ce dispositif doit accepter tout brouillage reçu,y compris un brouillage susceptible de provoquer un fonctionnement indésirable.

#### NOTE IMPORTANTE:

Déclaration d'exposition aux radiations:

Cet équipement est conforme aux limites d'exposition aux rayonnements IC établies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé avec un minimum de 20 cm de distance entre la source de rayonnement et votre corps.

#### Korea Warning Statements:

당해 무선설비는 운용중 전파혼신 가능성이 있음.

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如有這頻率:

**於 5.25GHz 至 5.35GHz 區域內操作之無線設備的警告聲明** 工作頻率 5.250~5.350GHz 該頻段限於室內使用。

## **DECLARATION OF CONFORMITY**

For the following equipment:

Product Description: N600 Wireless Dual Band USB Adapter

Model No.: TL-WDN3200

Trademark: TP-LINK

We declare under our own responsibility that the above products satisfy all the technical regulations applicable to the product within the scope of Council Directives:

Directives 1999/5/EC, Directives 2006/95/EC, Directives 1999/519/EC, Directives 2011/65/EU

The above product is in conformity with the following standards or other normative documents: ETSI EN 300 328 V1.7.1: 2006 ETSI EN 301 489-1 V1.8.1:2008 & ETSI EN 301 489-17 V2.1.1:2009 EN60950-1:2006+A11:2009+A1:2010 EN62311:2008 EN 301 893 EN 302 502)

The product carries the CE Mark:

**CE1588**①

Person is responsible for marking this declaration:

Yang Hongliang Product Manager of International Business

Date of issue: 2012

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## **Package Contents**

Please verify that all the package contents below are available.

- > One TL-WDN3200 N600 Wireless Dual Band USB Adapter
- > Quick Installation Guide
- > USB cable
- > One Resource CD for TL-WDN3200, including:
  - TP-LINK Wireless Configuration Utility (TWCU) and Drivers
  - User Guide
  - Other helpful information

Make sure that the above items are contained in the package. If any of the above items are damaged or missing, please contact your distributor.

#### P Note:

The 'adapter' mentioned in this User Guide stands for TL-WDN3200 N600 Wireless Dual Band USB Adapter without any explanations.

## **Chapter 1 Product Overview**

#### 1.1 Introduction

The adapter is a 802.11n client device designed to deliver a high-speed and unrivaled wireless performance for your desktop. It has better speed and range with less interference compared to other wireless-N adapters, thus you can get a better Internet experience, such as downloading, online gaming, Internet phone calls and video streaming.

With the 802.11n technology, higher throughput improvements using 2T2R, the TL-WDN3200's auto-sensing capability allows high packet transfer rate of up to 300Mbps for maximum throughput. It has good capability on anti-jamming, and it can also interoperate with other wireless (802.11b) products. The adapter supports WEP, WPA and WPA2 encryption to prevent outside intrusion and protect your personal information from being exposed.

The adapter is easy to install and manage with the Quick Setup Wizard guiding you step-by-step through the installation process and the TP-LINK Wireless Configuration Utility instructing you to quickly set up a wireless connection.

With unmatched wireless performance, reception, and security protection, the TL-WDN3200 is the best choice for easily adding or upgrading wireless connectivity to your desktop.

#### 1.2 Features

- > Complies with IEEE802.11a, IEEE802.11n, IEEE802.11g, IEEE802.11b standards
- Supports WPA-PSK/WPA2-PSK, WPA/WPA2 data security, TKIP/AES encryption, WEP encryption
- Supports high rate of up to 300Mbps for maximum throughput, supports automatically adjust to lower speeds due to distance or other operating limitations
- > Provides USB 2.0 interface
- > Supports Ad-Hoc and Infrastructure modes
- > Good capability on anti-jamming
- > Supports roaming between access points when configured in Infrastructure mode
- > Ease to configure and provides monitoring information
- > Supports Windows 7, Windows Vista, and Windows XP

#### 1.3 Hardware Overview

LED status:

| Status           | Working Status  |
|------------------|---|
| On               | The adapter has connected to a network.                                     |
| Flashing Slowly  | The driver has been installed but no data is being transmitted or received. |
| Flashing Quickly | Data is being transmitted or received.                                      |

#### PNote:

When the adapter failed to connect to a wireless network, the LED may be off. Please choose your network and try to connect again.

## **Chapter 2 Installation**

Please insert the USB adapter into your computer before installing the driver software from the Resource CD.

#### 2.1 Hardware Installation

There are two methods:

#### Method One:

Plug the adapter into an available USB interface on your computer directly.



#### Method Two:

Connect the adapter and your computer with the provided USB cable.



When the Found New Hardware wizard appears, click Cancel.

#### 2.2 Software Installation

The adapter's Setup Wizard will guide you through the installation procedures for Windows 7, Windows Vista, and Windows XP. The procedures in different systems are quite similar, therefore here takes the procedures in Windows 7 for example.

 Insert the Resource CD into your CD-ROM drive, and the window below will appear. Select model TL-WDN3200. There will be a menu including: Install Driver&Utility and User Guide. Click Install Driver&Utility to begin.



Figure 2-1

2. The InstallShield Wizard window will appear. Click Next to continue.



Figure 2-2

3. Choose a setup type. It is recommended to select **Install TP-LINK Wireless Configuration Utility and Driver**. Selecting **Install Driver Only** will only install driver and you will not be able to manage the networks through TP-LINK configuration utility. Click **Next** to continue.

| TP-LINK Wireless Configuration Utility and Driver - Instal                       | IIShield Wizard  |
|--|--|
| Setup Type<br>Select the setup type that best suits your needs.                  | TP-LINK  |
| Click the type of setup you prefer.  |  |
| Install Driver Only<br>Install TP-LINK Wireless Configuration Utility and Driver | Description<br>Choose this option to install<br>TP-LINK Wireless Configuration<br>Utility and driver. This is the<br>recommended option. |
| InstallShield — — — — — — — — — — — — — — — — — — —                              | k Next > Cancel  |

Figure 2-3

4. Click **Change** to specify the destination location for the software or you can leave it default. Click **Next** in the screen below to continue.

| TP-LINK Wir     | eless Configuration Utility and Driver - InstallShield Wiza   | rd 🔀      |
|-----------------|---|-----------|
| Choose D        | estination Location   |           |
| Select the      | e folder where setup will install files.  |           |
|                 | Install TP-LINK Wireless Configuration Utility and Driver to:<br>C:\\TP-LINK Wireless Configuration Utility | Change    |
|                 |   |           |
|                 |   |           |
| InstallShield – | < Back Nex  | t> Cancel |

Figure 2-4

5. Click **Install** to continue the setup.

| TP-LINK Wireless Configuration Utility and Driver - InstallShield Wizard   |
|--|
| Ready to Install the Program   |
| The wizard is ready to begin installation. TP-LINK   |
| Click Install to begin the installation.   |
| If you want to review or change any of your installation settings, click Back. Click Cancel to exit<br>the wizard. |
|  |
|  |
|  |
|  |
|  |
|  |
| InstallShield  |
| < Back Install Cancel  |

#### Figure 2-5

The utility and drivers will install. This may take 1~2 minutes. 6.

| TP-LINK Wireless Configuration Utility and Driver - InstallShield Wizard                 |
|--|
| Setup Status   |
| The InstallShield Wizard is installing TP-LINK Wireless Configuration Utility and Driver |
| InstallShieldCancel  |

Figure 2-6

7. After all the steps above, you will see the screen below. Click **Finish** to complete the setup.



Figure 2-7

8. After installation, the utility configuration page will automatically pop up as shown in the following figure and the icon \overline will appear on your desktop. To connect to a network, please refer to Chapter 3 Connect to a Wireless Network.

|                      |                   |           | - ×      |
|----------------------|-------------------|-----------|----------|
| Status WPS           | Network Profile   | Advanced  |          |
| Network Name(SSID) 🔻 | Security 👻        | Channel 👻 | Signal 👻 |
| TP-LINK_Network1     | WPA/WPA2-Personal | 9 (2.4G)  | â lle    |
| TP-LINK_FC6C3B       | None              | 11 (2.4G) | - Uh     |
| TP-LINK_CEC324       | None              | 6 (2.4G)  | at l     |
| TP-LINK_BF50FC       | None              | 11 (2.4G) | at l     |
| TP-LINK_BF503A       | None              | 9 (2.4G)  | ant.     |
| TP-LINK_89730        | None              | 6 (2.4G)  | line.    |
| TP-LINK_523687       | None              | 5 (2.4G)  | 1000     |
| TP-LINK_3F8AC2       | None              | 11 (2.4G) | - 11%    |
|                      |                   |           | Rescan   |



#### PNote:

If you have only installed the driver, the above configuration page will not pop up. You need to use the Windows built-in wireless utility to connect to and manage your network.

## **Chapter 3** Connect to a Wireless Network

With both the hardware and software successfully installed into your computer, you can quickly connect to a wireless network using one of the following methods.

Method One:

#### To connect using TWCU

TL-WDN3200 uses the TP-LINK Wireless Configuration Utility as the management software. The utility provides you an easy interface to connect to a network and to change any settings related to the wireless adapter.

Method Two:

#### To connect using WPS

Just by pushing the WPS button, you can set up a wireless connection quickly under the condition that your router or access point supports WPS (also called QSS).

Method Three:

#### To connect using Windows built-in wireless utility

Windows users may use the built-in wireless utility to connect to a wireless network. For specific operations, please go to <u>3.3 To connect using Windows built-in wireless utility</u>.

#### 3.1 To connect using TWCU

1. After installation, the utility configuration page will automatically pop up on the screen. If the utility page does not pop up, you can launch the utility by double-clicking the 🖉 icon on your desktop.

|              | WPS      |         | ¢.            |           |          |
|--------------|----------|---------|---------------|-----------|----------|
| Status       | WPS      | Network | Profile       | Advanced  |          |
| Network Name | (SSID) 🔻 | Secur   | ity 👻         | Channel 👻 | Signal 🦷 |
| TP-LINK_Netw | ork1     | WPA/V   | VPA2-Personal | 9 (2.4G)  | at       |
| TP-LINK_FC60 | C3B      | None    |               | 11 (2.4G) | att      |
| TP-LINK_CEC  | 324      | None    |               | 6 (2.4G)  | all      |
| TP-LINK_BF50 | )FC      | None    |               | 11 (2.4G) | att      |
| TP-LINK_BF50 | )3A      | None    |               | 9 (2.4G)  | att      |
| TP-LINK_8973 | 0        | None    |               | 6 (2.4G)  | att      |
| TP-LINK_5236 | 87       | None    |               | 5 (2.4G)  | all      |
| TP-LINK_3F8A | AC2      | None    |               | 11 (2.4G) | 100      |

#### Figure 3-1

The Network page will display all wireless networks that are available in your area. To connect to a network, simply select the wireless network name and click Connect.
 SSID (Service Set Identifier) is the name of the wireless network. The adapter will

automatically connect to your target network next time and automatically save it as a profile if you tick **Connect automatically**.

| Reliable Choice    | PS O                    |                     | - 約.             |          |
|--------------------|-------------------------|---------------------|------------------|----------|
| Status W           | PS Network              | Profile             | Advanced         |          |
| Network Name(SSID) | <ul> <li>Sec</li> </ul> | curity 👻 Cha        | annel – S        | Signal 👻 |
| TP-LINK_Network1   | WPA Conne               | /WPA2-Personal 9 (2 | 2.4G)<br>Connect |          |
| TP-LINK_FC6C3B     | None                    | e 11                | (2.4G)           | att      |
| TP-LINK_CEC324     | None                    | e 6 (2              | 2.4G)            | att      |
| TP-LINK_BF50FC     | None                    | e 11                | (2.4G)           | att      |
| TP-LINK_BF503A     | None                    | e 9 (2              | 2.4G)            | att      |
| TP-LINK_89730      | None                    | e 6 (2              | 2.4G)            | at l     |
| TP-LINK_523687     | None                    | e 5 (2              | 2.4G)            |          |
|                    |                         |                     |                  | Resca    |

Figure 3-2

3. If word **None** appears behind the SSID, this means the network to be connected is not security-enabled and you can connect to the network without entering a key. To prevent outside intrusion and safeguard your network, it is strongly recommended that you set a password to your router or access point.

|              | ĸ         |         |                                |                    |          |   |
|--------------|-----------|---------|--------------------------------|--------------------|----------|---|
| Status       | WPS       | Network | Profile                        | Advanced           |          |   |
| Network Name | e(SSID) 🔻 | Securi  | ty –                           | Channel 👻          | Signal 👻 |   |
| TP-LINK_Netw | vork1     | WPA/W   | IPA2-Personal<br>automatically | 9 (2.4G)<br>Connec |          |   |
| TP-LINK_FC6  | C3B       | None    |                                | 11 (2.4G)          | att      |   |
| TP-LINK_CEC  | 324       | None    |                                | 6 (2.4G)           | att      |   |
| TP-LINK_BF5  | DFC       | None    |                                | 11 (2.4G)          | an!      |   |
| TP-LINK_BF5  | 03A       | None    |                                | 9 (2.4G)           | line.    |   |
| TP-LINK_8973 | 10        | None    |                                | 6 (2.4G)           | at l     |   |
| TP-LINK_5236 | 687       | None    |                                | 5 (2.4G)           | att      |   |
|              |           |         |                                |                    | Rescan   | 1 |

#### Figure 3-3

If there is a "lock" icon behind the SSID, this means the wireless network is secure and the corresponding security type will display. You must know the encryption key/security settings to connect.

Input the password which can be found on the configuration page of your router or access point, then click **OK** to continue. Or push the WPS / QSS button on your router if your router features the WPS / QSS function to quickly build a connection without having to

enter a key.

| Please input the pa | ssword:   |
|---------------------|---|
| Security Key:       | *****   |
|                     | Show characters   |
| ()                  | You can also connect by pushing the button on the router. |
|                     | OK Cancel   |

Figure 3-4

4. You have successfully connected to your network and can surf the Internet now. Click **Close** to enjoy the Internet.

| Connected to TP-LINK_Network1 |       |
|-------------------------------|-------|
|                               |       |
|                               |       |
|                               | Close |

Figure 3-5

5. To view more information about the network currently connected, click **Status** in the tools section and the page will display information such as the network type, link quality and wireless mode.

| Statua           |        | Network           | Profile    | Advanced      |         |
|------------------|--------|-------------------|------------|---------------|---------|
| Status           | WP5    | Network           | Profile    | Advanced      |         |
| Profile Name:    |        | TP-LINK_Network1  |            |               |         |
| Network Name(    | SSID): | TP-LINK_Network1  |            |               |         |
| Network Type:    |        | Infrastructure    | Rate:      | 150Mbps       |         |
| Channel:         |        | 9 (2.4G)          | Encryption | Type: AES     |         |
| AP MAC:          |        | 94-0C-6D-2F-3C-BE | Wireless M | lode: 802.11n |         |
| IP Address:      |        | 192.168.1.100     |            |               |         |
| Signal Strength: |        |                   |            | 100% E        | xceller |
|                  |        |                   |            |               |         |

#### 3.2 To connect using WPS

WPS (Wi-Fi Protected Setup) function allows you to add a new wireless device to an existing network quickly.

If the wireless router supports WPS or QSS (Quick Secure Setup), you can establish a wireless connection between wireless card and router using either Push Button Configuration (PBC) method or PIN method. Three WPS connection methods are listed in the following parts.

#### 3.2.1 PBC (Push Button Configuration) method

1. Press the WPS button on the back panel of the router. Here takes router TL-WR2543ND for example.



- 2. Press the WPS button on the adapter. There are two ways:
  - Press and hold the WPS button on the adapter directly for 2~3 seconds until Figure 3-9 appears.

| · |  |        |
|---|--|--------|
|   |  | $\sum$ |

Figure 3-8

| (                       | ((WPS)))    |  |
|-------------------------|-------------|--|
| Castabing for an availa | ble netwerk |  |
| Searching for an availa | DIE NETWORK |  |
|                         |             |  |

Figure 3-9

2) Open TWCU and click **WPS** tab. Select **Push the button on my access point or wireless router** and then click **Connect**.

|  | ĸ  |   |   |                                 | - ×     |
|--|--|---|---|---------------------------------|---------|
|  | wps  |   | <u>.</u>  | 2                               |         |
| Status   | WPS  | Network   | Profile   | Advanced                        |         |
| ((WPS))<br>Please choo<br>Push the<br>Enter the<br>Enter the | This applicat<br>ose a method to<br>button on my ac<br>PIN of my acce<br>PIN of this devic | ion will guide you th<br>join a wireless netw<br>ccess point or wirele<br>ss point or wireless<br>ce into my access p | rough configuring<br>ork:<br>iss router.<br>router.<br>oint or wireless n | ı your wireless netwo<br>Duter. | rk.     |
|  |  |   |   |                                 | Connect |
|  |  | Figure  | 3-10  |                                 |         |

 When the following window appears, you have successfully connected to the network. Click **OK** to finish the WPS connection.

| Configuring t | he wireless network.             |
|---------------|----------------------------------|
|               | <b>(((WPS)))</b>                 |
| Successfully  | connected to the network by WPS! |
|               |                                  |
|               |                                  |

Figure 3-11

#### 3.2.2 PIN method

There are two ways to configure the WPS by PIN method:

- 1) Enter the PIN from your AP device.
- 2) Enter a PIN into your AP device.

Following are detailed configuration procedures of each way.

#### 3.2.2.1. Enter the PIN from your AP device

 Open TWCU and click WPS tab. Select Enter the PIN of my access point or wireless router. In the empty field beside PIN, enter the PIN labeled on the bottom of the router (here takes 13492564 for example). If you have generated a new PIN code for your router, please enter the new one instead. Click Connect to continue.

| TP-LIN  | ĸ   |   |   |                                  | <b>-</b> x |
|---|---|---|---|----------------------------------|------------|
|   | WPS   |   |   |                                  |            |
| Status  | WPS   | Network   | Profile   | Advanced                         |            |
| (((WPS))<br>Please cho<br>© Push the<br>@ Enter the<br>PIN: 1349<br>© Enter the | This applicat<br>ose a method to<br>button on my acce<br>PIN of my acce<br>2564<br>PIN of this device | ion will guide you th<br>join a wireless netw<br>ccess point or wirele<br>ss point or wireless<br>ce into my access p | nrough configuring<br>ork:<br>ess router.<br>router.<br>point or wireless r | g your wireless network<br>outer | τ          |
|   |   |   |   |                                  | Connect    |



2. The adapter will be connecting to the target network.

| ((WPS)))<br>Connecting to the network |                           |  |
|---------------------------------------|---------------------------|--|
| Connecting to the network             | <b>(((WPS)))</b>          |  |
|                                       | Connecting to the network |  |
|                                       |                           |  |
| Current PIN:13492564                  | Current DIN: 12402564     |  |



3. When Figure 3-11 appears, you have successfully connected to the network.

#### 3.2.2.2. Enter a PIN into your AP device

 Open TWCU and click WPS tab. Select Enter the PIN of this device into my access point or wireless router. In the field beside PIN, you will see the PIN value of the adapter which is randomly generated. Click Connect to continue.

|            | ĸ                |                        |                    |                         |       |
|------------|------------------|------------------------|--------------------|-------------------------|-------|
|            | WPS              |                        |                    | - 10 A                  |       |
| Status     | WPS              | Network                | Profile            | Advanced                |       |
|            |                  |                        |                    |                         |       |
| (((WPS))   | This applica     | tion will guide you th | rough configuring  | g your wireless network | C.    |
| Please cho | ose a method to  | join a wireless netw   | ork:               |                         |       |
| Push the   | button on my a   | ccess point or wirele  | ess router.        |                         |       |
| Enter the  | PIN of my acce   | ess point or wireless  | router.            |                         |       |
| Enter the  | PIN of this devi | ce into my access p    | oint or wireless r | router.                 |       |
| PIN: 0730  | 5221             | <b>**</b>              |                    |                         |       |
|            |                  |                        |                    |                         |       |
|            |                  |                        |                    |                         |       |
|            |                  |                        |                    |                         | Conne |

Figure 3-14

2. Open your router's Web-based Utility and click WPS link on the left of the main menu. Then click "Add device" and the following figure will appear. Enter the PIN value of the adapter in the empty field beside **PIN** and then click **Connect**.

| <ul> <li>PIN: 07305221</li> <li>Press the button of the new device in two minutes.</li> </ul> | Ente | r the new device   | 's PIN             |              |  |
|---|------|--------------------|--------------------|--------------|--|
| Press the button of the new device in two minutes.  | PIN: | 07305221           |                    |              |  |
|   | Pres | s the button of th | ne new device in t | two minutes. |  |



 When Connect successfully appears on the screen, the WPS configuration is complete. Or you can view the adapter's utility page to see whether the connection has been successful as shown in Figure 3-16.

|                               | PS)))             |
|-------------------------------|-------------------|
|                               |                   |
| Successfully connected to the | e network by WPS! |
|                               |                   |

Figure 3-16

#### 3.3 To connect using Windows built-in wireless utility

#### 3.3.1 In Windows 7

Windows 7 users may use the built-in wireless utility. Follow the steps below.

1. Left-click the wireless icon in your system tray (lower-right corner) as shown in the figure below. The utility will display any available wireless networks in your area. Select the wireless network (displayed using the SSID) to be connected and then click **Connect**.



Figure 3-17

2. If the network you would like to connect is security-enabled, enter the same security key or passphrase that is on your router. Or push the WPS button (also called QSS) on the router or access point (You will be prompted to push the button on the window if WPS function is supported as shown in the figure below). If the network to be connected is not secure, the connection will be built without entering a key.

| P Connect to a Network                                    | <b>—</b> |
|---|----------|
| Type the network security key                             |          |
| Security key:   |          |
| Hide characters   | _        |
| You can also connect by pushing the button on the router. |          |
| ОК  | Cancel   |

#### Figure 3-18

3. You have successfully connected to the network and can surf the Internet now.



Figure 3-19

#### 3.3.2 In Windows Vista

Windows Vista users may use the built-in wireless utility. Follow the steps below.

1. Open the wireless utility by right-clicking on the wireless computer icon in your system tray as shown in the figure below. Select **Connect to a network**.





2. The utility will display any available wireless networks in your area. Select the wireless network you would like to connect and then click **Connect**.

| Select a network to                               | rk<br>o connect to             |                |
|---|--------------------------------|----------------|
| Show All  | •                              | <b>47</b>      |
| Wireless Network Con                              | nection 6                      |                |
| TP-LINK_Netv                                      | vork1 Security-enabled network | llter          |
| TP-LINK_1BOF                                      | 28 Security-enabled network    | llter          |
| Infra_KeyTest                                     | Security-enabled network       | - 1111-        |
| Set up a connection or n<br>Open Network and Shar | ietwork<br>ing Center          |                |
|   |                                | Connect Cancel |

#### Figure 3-21

 If the network you would like to connect is security-enabled, enter the same security key or passphrase that is on your router. If the network to be connected is not secure, the connection will be built without entering a key.

| 🚱 👰 Connect to a network   |               |
|--|---------------|
|  |               |
| Type the network security key or passphrase for TP-LINK_Net                    | work1         |
| The person who setup the network can give you the key or passphrase.           |               |
|  |               |
| Security key or passphrase:  |               |
| •••••  |               |
|  |               |
| Display characters   |               |
|  |               |
|  |               |
|  |               |
| If you have a <u>USB flash drive</u> with network settings for TP-LINK_Network | l, insert it  |
| ilew.  |               |
|  |               |
|  | onnect Cancel |
| Figure 3-22  |               |

4. You have successfully connected to the network now and can surf the Internet now.

|  | - • • |
|--|-------|
| 🚱 👰 Connect to a network                   |       |
|  |       |
| Successfully connected to TP-LINK_Network1 |       |
|  |       |
|  |       |
| Save this network                          |       |
| Start this connection automatically        |       |
|  |       |
|  |       |
|  |       |
|  |       |
|  |       |
|  |       |
|  |       |
|  |       |
|  |       |
|  |       |
|  | Close |
|  |       |
| Figure 3-23                                |       |

#### Figure 3-23

#### 3.3.3 In Windows XP

Windows XP users may use the built-in wireless utility. Follow the steps below.

1. Right-click on the utility icon in your system tray (lower-right corner). Select **Switch to TP-LINK Wireless configuration Utility**.

| Open                      |                         |
|---------------------------|-------------------------|
| Radio OFF                 |                         |
| Switch to TP-LINK Wireles | s configuration Utility |
| Switch to SoftAP mode     |                         |
| About                     |                         |
| Exit                      |                         |

Figure 3-24

Or double-click the utility icon to load the utility configuration page. Click **Advanced** in the tools section and then select **Use Windows wireless configuration tool** in the figure shown below. Click **OK** when Figure 3-26 appears to continue.

|                    | WPS                                     |                                 |                  |                           |      |
|--------------------|---|---------------------------------|------------------|---------------------------|------|
| Status             | WPS                                     | Network                         | Profile          | Advanced                  |      |
| Select wire        | less configuration<br>P-LINK Wireless C | n tool<br>configuration Utility | 🔿 Use Windo      | ws wireless configuration | tool |
| Please cl          | noose a wireless                        | network adapter :               | Wireless Network | Connection 2 TL-WDN3      | 200  |
| SoftAP mo          | de                                      |                                 |                  |                           |      |
|                    |   | () OFF                          |                  |                           |      |
| OON                | Power Save mode                         |                                 |                  |                           |      |
| O ON<br>Power Save | e mode                                  |                                 |                  |                           |      |

Figure 3-25



Figure 3-26

2. Right-click on the wireless computer icon in your system tray (lower-right corner). Select View Available Wireless Networks.



Figure 3-27

3. The utility will display any available wireless networks in your area. Click on a network (displayed using the SSID) and click the **Connect** button.

| ( <sup>(</sup> )) Wireless Network Connect           | ion 32   | × |
|--|--|---|
| Network Tasks  | Choose a wireless network  |   |
| 🛃 Refresh network list                               | Click an item in the list below to connect to a <u>wi</u> reless network in range or to get more<br>information.   |   |
| Set up a wireless network for a home or small office | ((Q)) TP-LINK_254350   | ^ |
| Related Tasks  | Security-enabled wireless network (WPA2)      TP-LINK_CB3A52   |   |
| Learn about wireless<br>networking                   | Security-enabled wireless network (WPA2)   |   |
| Change the order of preferred networks               | Generation of the second secon | = |
| Change advanced settings                             | To connect to this network, click Connect. You might need to enter<br>additional information.  |   |
|  |  |   |
|  | ((o)) WR541  |   |
|  | ((Q)) SOHO_AT  | ~ |
|  |  | t |



If the network is security-enabled, you will be prompted to enter the key as shown below. If 4. not, you will connect to the network directly without entering a key.

| Wireless Network Conne   | ction 🔀                |  |  |  |  |
|--|------------------------|--|--|--|--|
| The network 'TP-LINK_Network1' requires a network key (also called a WEP key or WPA key). A network key helps prevent unknown intruders from connecting to this network. |                        |  |  |  |  |
| Type the key, and then click Connect.  |                        |  |  |  |  |
| Network <u>k</u> ey:   | •••••                  |  |  |  |  |
| C <u>o</u> nfirm network key:  | •••••                  |  |  |  |  |
|  | <u>C</u> onnect Cancel |  |  |  |  |

Figure 3-29

## **Chapter 4 Management**

This section will show you how to configure your TL-WDN3200 adapter using the TP-LINK Wireless Configuration Utility (TWCU).

The TL-WDN3200 adapter uses the TP-LINK Wireless Configuration Utility as the management software. The utility provides users with an easy interface to change any settings related to the adapter. Double-clicking on the *software* icon on your desktop will start the utility.

#### 4.1 Profile

Your wireless networks may vary in different places like home, office or coffee shop. With **Profile** management, you can easily save and manage various networks to be connected, saving you the trouble of having to repeat the same configurations. Click **Profile** in the tools section, the following page will appear.

| TP-LINK          |                          |         |                |             |           |
|------------------|--------------------------|---------|----------------|-------------|-----------|
| Status           | WPS                      | Network | Profile        | Advanced    |           |
| Profile Name     | SSID                     |         | Network Type   | Security    | Connected |
| TP-LINK_Network1 | SSID<br>TP-LINK_Network1 |         | Infrastructure | WPA-PSK/WPA | No        |
|                  |                          | Add     | Modify         | Remove      | Connect   |

Figure 4-1

#### 4.1.1 Add a profile

To add a profile, click the **Add** button on the bottom of the screen. Then the configuration window will appear.

#### 4.1.1.1. Add a profile in Infrastructure mode

If you are connecting to a wireless router or access point, select **Infrastructure** as the Network Type in the screen that appears and follow the instructions below to finish the setting.

|                  | Home             |                 |
|------------------|------------------|-----------------|
| SSID:            | TP-LINK_012345   | •               |
| Vetwork Type:    | Infrastructure   | ad hoc          |
| Security Type:   | WPA-PSK/WPA2-PSK | •               |
| Encryption Type: | TKIP/AES         | •               |
| Security Key:    | *******          | Show characters |

Figure 4-2

The following items can be found on the screen.

- Profile Name: Enter a name for your profile e.g. Home, Office, Coffee Shop. The same name is not allowed. Please also note that no space is allowed between words.
- > **SSID:** Select the target network from the drop-down list.
- Network Type: Select the network type. If you are connecting to a wireless router or access point, select Infrastructure. If you are connecting to another wireless client such as an adapter, select ad hoc.
- Security Type: Select the security type from the list. Four options are available: WPA-PSK/WPA2-PSK, WPA/WPA2, WEP and None. The security type should be the same as on your router or access point, otherwise, you will not be able to build a successful connection.

**WPA-PSK/WPA2-PSK** uses a passphrase or key to authenticate your wireless connection. The key must be the exact same key entered on your wireless router or access point. **None** stands for no security. It is recommended to enable WPA-PSK/WPA2-PSK on your wireless router or access point before configuring your wireless adapter.

- Encryption Type: From the drop-down menu, select the encryption type that is the same as on your router or access point.
- Security Key: Enter the passphrase exactly as it is on your wireless router or access point.
   Click the Show characters box to see the passphrase. Unchecking it will hide it.
- Start this connection automatically: Check this box to automatically connect to this network next time.
- > Save: Click Save to save your settings.

Complete the above settings, the Profile page should looks like the following figure. To connect to a desired network, just highlight the network you would like to connect to and click the **Connect** button on the bottom of the window.

| 7 |                      |                        |                                |                         | - x             |
|---|----------------------|------------------------|--------------------------------|-------------------------|-----------------|
|   | Status               | WPS Networ             | k Profile                      | Advanced                |                 |
|   | Profile Name<br>Home | SSID<br>TP-LINK_012345 | Network Type<br>Infrastructure | Security<br>WPA-PSK/WPA | Connected<br>No |
|   |                      |                        |                                |                         |                 |
|   |                      |                        |                                |                         |                 |
|   |                      |                        |                                |                         |                 |
|   |                      | Add                    | Modify                         | Remove                  | Connect         |

Figure 4-3

#### 4.1.1.2. Add a profile in ad hoc mode

If you are connecting to another wireless client such as an adapter, select **ad hoc** as the Network Type in the screen that appears and follow the instructions below to finish the setting.

| Profile Name:         | Home 2               |
|-----------------------|----------------------|
| SSID:                 | TP-LINK_E31F82 +     |
| Network Type:         | Infrastructure       |
| Band:                 | 5Ghz 👻               |
| Security Type:        | WEP                  |
| Encryption Type:      | Open 👻               |
| Key Index:            | 1 - ASCII_128 -      |
| Security Key:         | *************        |
| Start this connection | ction automatically. |
|                       | Save Cancel          |

Figure 4-4

The following items can be found on the screen.

- Profile Name: Enter a name for your profile e.g. Home, Office, Coffee Shop. The same name is not allowed. Please also note that no space is allowed between words.
- > **SSID:** Select the target network from the drop-down list.

- Network Type: Select the network type. If you are connecting to a wireless router or access point, select Infrastructure. If you are connecting to another wireless client such as an adapter, select ad hoc.
- Band: This item determines which operating frequency will be used. Two options are available: 2.4Ghz and 5Ghz. It is recommended that your computers and devices running video and voice applications use the 5Ghz band, while your guest access and computers that are only browsing the web use the 2.4Ghz band.
  - **2.4Ghz** You can use the 2.4GHz band to connect to many classic wireless devices like gaming consoles, laptops, DVRs, ect.
  - **5Ghz** This band is less crowded and is used for time-sensitive music, video streaming or gaming. Using this band can avoid interference with 2.4GHz networks or noisy devices like cordless phones and microwave ovens.
- Security Type: Select the security type from the list. Two options are available: WEP and None. None stands for no security. It is recommended that you select WEP to secure your wireless network.
- Encryption Type: If you select None as the Security Type, the Encryption Type will be None accordingly. If you select WEP as the Security Type, the Encryption Type will be Open.
- Key Index: You can select ASCII or Hexadecimal format on the right. ASCII format stands for any combination of keyboard characters in the specified length. Hexadecimal format stands for any combination of hexadecimal digits (0-9, a-f, A-F) in the specified length.
  - For **64-bit** encryption You can enter 10 hexadecimal digits (any combination of 0-9, a-f, A-F, zero key is not permitted) or 5 ASCII characters.
  - For **128-bit** encryption You can enter 26 hexadecimal digits (any combination of 0-9, a-f, A-F, zero key is not permitted) or 13 ASCII characters.
- Security Key: Enter the passphrase. Click the Show characters box to see the passphrase. Unchecking it will hide it.
- Start this connection automatically: Check this box to automatically connect to this network next time.
- > Save: Click Save to save your settings.

Complete the above settings, the Profile page should looks like the following figure. To connect to a desired network, just highlight the network you would like to connect to and click the **Connect** button on the bottom of the window.

| Status                         | WPS                            | Network          | Profile                                  | Advanced                        |                       |
|--------------------------------|--------------------------------|------------------|--|---------------------------------|-----------------------|
| Profile Name<br>Home<br>Home 2 | SSID<br>TP-LINK_C<br>TP-LINK_E | 112345<br>E31F82 | Network Type<br>Infrastructure<br>Ad-hoc | Security<br>WPA-PSK/WPA<br>Open | Connected<br>No<br>No |
|                                |                                | Add              | Modify                                   | Remove                          | Connect               |

Figure 4-5

#### 4.1.2 Modify a profile

You may edit an existing profile by clicking the **Modify** button from the Profile page. For instance, you may like to change the profile name from Home to Home1 or you may want to specify another SSID for profile Home. After all the changes, click **Save** to make the changes take effect.

| Profile Name:     | Home1              |          |  |
|-------------------|--------------------|----------|--|
| SSID:             | TP-LINK_4B7EDA     | -        |  |
| Network Type:     | Infrastructure     | 🔘 ad hoc |  |
| Security Type:    | None               | •        |  |
| Encryption Type:  | None               | •        |  |
| Start this conner | tion automatically |          |  |

Figure 4-6

#### 4.1.3 Delete a profile

To delete an existing profile, highlight the profile name and click **Remove** on the bottom of the screen or press the Delete button on your keyboard. When the following figure appears, click **OK** to continue.



Figure 4-7

#### 4.2 Advanced

The following configurations can be made on the Advanced page:

1) To select wireless configuration tool.

Here you can decide which tool to use, either the TP-LINK Configuration Utility or the Windows wireless configuration tool. This option is available only in Windows XP.

2) To switch to another wireless network adapter.

Here you can switch to another adapter installed in your computer. The adapters successfully installed in your computer will be listed in the drop-down menu if the adapters are supported by this utility.

3) To switch to SoftAP mode.

Once enabled, the adapter will be able to work as an AP.

4) To change the power save mode. The default option is OFF.

| tatus WPS Network Profile Advanced Select wireless configuration tool   |         |
|---|---------|
| Select wireless configuration tool  |         |
| Ouse TP-LINK Wireless Configuration Utility   | on tool |
| Wireless network adapter switch Please choose a wireless network adapter : Wireless Network Connection 2 TL-WDN | 13200   |
| SoftAP mode   |         |
| O ON OFF  |         |
| Power Save mode   |         |
|   |         |

#### 4.3 About

The About screen gives you information about the Driver and Utility versions of the adapter. Right-click on the fill icon in your system tray and select **About** from the list. The actual UI/WFF/Driver version may differ from that in the figure below. Please refer to the actual interface of the product.

| TP-LINK Wirele                                | ess Configuration Utility     |
|---|-------------------------------|
| UI version:                                   | 1.4.2 en.004                  |
| WFF version:                                  | 1.3.0.0                       |
| Driver version:                               | 3.2.6.0                       |
| Copyright (C) 2011 TH<br>All rights reserved. | P-LINK TECHNOLOGIES CO., LTD. |
|   | ОК                            |

Figure 4-9

## **Chapter 5 AP Mode**

In Soft AP mode, the adapter will work as an AP. Suppose that only one computer in your house can access the Internet for various reasons like only one WLAN port is available on your wired broadband router, however, other wireless-capable devices also want to share the Internet. Then the adapter can be configured as an AP under the Soft AP mode, saving you the trouble of having to get a separate access point or a router.

With this feature, a computer can use a single physical wireless adapter to connect as a client to a hardware access point while at the same time acting as a software AP allowing other wireless-capable devices to connect to it.

To switch to this mode, right-click on the utility icon in your system tray and select **Switch to SoftAP mode**.



Figure 5-1

Or from the **Advanced** page of the utility, tick **ON** under the SoftAP mode as shown in the following figure. Click **OK** when prompted to confirm the setting.

|                         | WPS                |                         |                   | 1                         |
|-------------------------|--------------------|-------------------------|-------------------|---------------------------|
| Status                  | WPS                | Network                 | Profile           | Advanced                  |
| Select wirel            | ess con<br>-LINK W | Are you sure t<br>mode? | to turn on the So | ftAP s configuration tool |
| Please ch<br>SoftAP mod | oose a v           | C                       | DK Ca             | n 2 TL-WDN3200            |
| ON<br>Power Save        | mode               | OFF                     |                   |                           |
| ON                      |                    | OFF                     |                   |                           |

Figure 5-2

The **Soft AP** icon should then appear beside **Advanced** icon in the utility. Please note that the **Band** option is available only in Windows XP and Windows Vista.

| 2            | WPS                 |           | 2                | 2        |          |
|--------------|---------------------|-----------|------------------|----------|----------|
| Status       | WPS                 | Network   | Profile          | Advanced | Soft AF  |
| SoftAP mod   | e:                  | ON        | OFF              |          |          |
| Internet Con | necting Share(ICS): | TP-LINK   | 300Mbps Wireless | •        |          |
| SSID:        |                     | SoftAP-W  | /DN3200          |          |          |
| Band:        |                     | 5Ghz      |                  | •        |          |
| Security Typ | e:                  | WPA2-PS   | SK               | •        |          |
| Encryption T | ype:                | AES       |                  | •        |          |
| Security Key | <b>/</b> :          | 12345678  | 90               | Show ch  | aracters |
| IP Address:  |                     | 169.254.9 | 2.45             |          |          |



- > SoftAP mode: Select to enable or disable the function.
- Internet Connecting Share(ICS): Specify a connection through which devices connected to your AP can access the Internet. The system will automatically search for all the available connections in your computer and display them in the drop-down menu.
- SSID: Enter the name for your softAP (for example, Jone) so that others can know which AP is yours when trying to connect to it. The default name (SSID) is "SoftAP".
- Band: This item determines which operating frequency will be used. Two options are available: 2.4Ghz and 5Ghz. It is recommended that your computers and devices running video and voice applications use the 5Ghz band, while your guest access and computers that are only browsing the web use the 2.4Ghz band.
  - **2.4Ghz** You can use the 2.4GHz band to connect to many classic wireless devices like gaming consoles, laptops, DVRs, ect.
  - 5Ghz This band is less crowded and is used for time-sensitive music, video streaming or gaming. Using this band can avoid interference with 2.4GHz networks or noisy devices like cordless phones and microwave ovens.
- Security Type: The security type here is set to be WPA2-PSK which is based on 802.11i and uses Advanced Encryption Standard instead of TKIP. It was designed to improve the security features of WEP. WPA2-PSK uses a passphrase or key to authenticate your wireless connection. You needn't make any configuration here.
- > **Encryption Type:** The encryption type here is set to be AES.
- Security Key: Enter the Key in the field to make your AP security enabled. It is recommended that you specify another key instead of the default key 12345678. Only by

entering the corresponding key can other computers establish a successful connection with your AP.

> **IP Address:** Here displays the IP address of the SoftAP.

## **Chapter 6 Uninstall Software**

#### 6.1 Uninstall the utility software from your PC

1. On the Windows taskbar, click the **Start** button, click **All programs**→**TP-LINK**, and then click **UninstalI-TP-LINK Wireless Configuration Utility**.



2. The following screen will appear.

| TP-LINK Wireless Configuration Utility - InstallShield Wizard   |                   |
|---|-------------------|
| Preparing Setup<br>Please wait while the InstallShield Wizard prepares the setup.   | 22                |
| TP-LINK Wireless Configuration Utility Setup is preparing the InstallShield Wi<br>guide you through the rest of the setup process. Please wait. | izard, which will |
|   |                   |
|   |                   |
|   |                   |
| InstallShield   | Cancel            |

3. Click Yes.



4. Click Finish.

| TP-LINK Wireless Configuration | n Utility - InstallShield Wizard   |
|--------------------------------|--|
|                                | <b>Uninstall Complete</b><br>InstallShield Wizard has finished uninstalling TP-LINK Wireless<br>Configuration Utility. |
|                                | K Back Finish Cancel   |

#### 6.2 Uninstall the driver software from your PC

1. On the Windows taskbar, click the **Start** button, and then click **All programs→TP-LINK**.



#### Figure 6-1 Device Manager

2. Click **Uninstall - TL-WDN3200 Driver** shown in above figure, the system will uninstall the driver software of the adapter from your PC.

## **Appendix A: Specifications**

| Normal  |   |
|---|---|
| Interface   | USB 2.0 Interface                                     |
| Standards   | IEEE802.11a, IEEE 802.11b, IEEE 802.11n, IEEE 802.11g |
| Operating System Windows 7, Windows Vista, Windows XP |   |
| Throughput  | 300Mbps (Maximal)                                     |
| Radio Data Rate                                       | 11a: 6/9/12/18/24/36/48/54Mbps                        |
|   | 11b: 1/2/5.5/11Mbps                                   |
|   | 11g: 6/9/12/18/24/36/48/54Mbps                        |
|   | 11n: Up to 300Mbps                                    |
| Modulation  | 11a:OFDM  |
|   | 11b:CCK,QPSK,BPSK                                     |
|   | 11g:OFDM  |
|   | 11n: QPSK,BPSK,16-QAM,64-QAM                          |
| Media Access Protocol                                 | CSMA/CA with ACK                                      |
| Data Security   | WPA-PSK/WPA2-PSK, WPA/WPA2, WEP, TKIP/AES             |
| Frequency*  | 2.4~2.4835GHz, 5.15~5.35GHz, 5.745~5.825GHz           |
| Spread Spectrum                                       | Direct Sequence Spread Spectrum (DSSS)                |
| Safety & Emissions                                    | FCC, CE   |

| Environmental and Physical |                              |  |
|----------------------------|------------------------------|--|
| Working Temperature        | 0℃~40℃ (32°F~104°F)          |  |
| Working Humidity           | 10% ~ 90% RH, Non-condensing |  |
| Storage Temperature        | -40℃~70℃(-40°F~158°F)        |  |
| Storage Humidity           | 5% ~ 90% RH, Non-condensing  |  |

\* 1. Only 2.412GHz $\sim$ 2.462GHz is allowed to be used in USA, which means only channel 1 $\sim$ 11 is available for American users to choose.

2. Rules on the use of 5GHz band channels may vary according to different national laws.

## **Appendix B: Glossary**

- 802.11a Specification for wireless networking at 54 Mbps using OFDM modulation and operating in radio band at 5GHz.
- 802.11b The 802.11b standard specifies a wireless product networking at 11 Mbps using direct-sequence spread-spectrum (DSSS) technology and operating in the unlicensed radio spectrum at 2.4GHz, and WEP encryption for security. 802.11b networks are also referred to as Wi-Fi networks.
- 802.11g specification for wireless networking at 54 Mbps using direct-sequence spread-spectrum (DSSS) technology, using OFDM modulation and operating in the unlicensed radio spectrum at 2.4GHz, and backward compatibility with IEEE 802.11b devices, and WEP encryption for security.
- 802.11n 802.11n builds upon previous 802.11 standards by adding MIMO (multiple-input multiple-output). MIMO uses multiple transmitter and receiver antennas to allow for increased data throughput via spatial multiplexing and increased range by exploiting the spatial diversity, perhaps through coding schemes like Alamouti coding. The Enhanced Wireless Consortium (EWC) was formed to help accelerate the IEEE 802.11n development process and promote a technology specification for interoperability of next-generation wireless local area networking (WLAN) products.
- Ad hoc Network An ad hoc network is a group of computers, each with a Wireless Adapter, connected as an independent 802.11 wireless LAN. Ad hoc wireless computers operate on a peer-to-peer basis, communicating directly with each other without the use of an access point. Ad hoc mode is also referred to as an Independent Basic Service Set (IBSS) or as peer-to-peer mode, and is useful at a departmental scale or SOHO operation.
- DSSS (Direct-Sequence Spread Spectrum) DSSS generates a redundant bit pattern for all data transmitted. This bit pattern is called a chip (or chipping code). Even if one or more bits in the chip are damaged during transmission, statistical techniques embedded in the receiver can recover the original data without the need of retransmission. To an unintended receiver, DSSS appears as low power wideband noise and is rejected (ignored) by most narrowband receivers. However, to an intended receiver (i.e. another wireless LAN endpoint), the DSSS signal is recognized as the only valid signal, and interference is inherently rejected (ignored).
- FHSS (Frequency Hopping Spread Spectrum) FHSS continuously changes (hops) the carrier frequency of a conventional carrier several times per second according to a pseudo-random set of channels. Because a fixed frequency is not used, and only the transmitter and receiver know the hop patterns, interception of FHSS is extremely difficult.
- Infrastructure Network An infrastructure network is a group of computers or other devices, each with a Wireless Adapter, connected as an 802.11 wireless LAN. In infrastructure mode, the wireless devices communicate with each other and to a wired network by first going through an access point. An infrastructure wireless network connected to a wired network is referred to as a Basic Service Set (BSS). A set of two or more BSS in a single network is

referred to as an Extended Service Set (ESS). Infrastructure mode is useful at a corporation scale, or when it is necessary to connect the wired and wireless networks.

- Spread Spectrum Spread Spectrum technology is a wideband radio frequency technique developed by the military for use in reliable, secure, mission-critical communications systems. It is designed to trade off bandwidth efficiency for reliability, integrity, and security. In other words, more bandwidth is consumed than in the case of narrowband transmission, but the trade off produces a signal that is, in effect, louder and thus easier to detect, provided that the receiver knows the parameters of the spread-spectrum signal being broadcast. If a receiver is not tuned to the right frequency, a spread-spectrum signal looks like background noise. There are two main alternatives, Direct Sequence Spread Spectrum (DSSS) and Frequency Hopping Spread Spectrum (FHSS).
- SSID A Service Set Identification is a thirty-two character (maximum) alphanumeric key identifying a wireless local area network. For the wireless devices in a network to communicate with each other, all devices must be configured with the same SSID. This is typically the configuration parameter for a wireless PC card. It corresponds to the ESSID in the wireless Access Point and to the wireless network name. See also Wireless Network Name and ESSID.
- WEP (Wired Equivalent Privacy) A data privacy mechanism based on a 64-bit or 128-bit or 152-bit shared key algorithm, as described in the IEEE 802.11 standard. To gain access to a WEP network, you must know the key. The key is a string of characters that you create. When using WEP, you must determine the level of encryption. The type of encryption determines the key length. 128-bit encryption requires a longer key than 64-bit encryption. Keys are defined by entering in a string in HEX (hexadecimal using characters 0-9, A-F) or ASCII (American Standard Code for Information Interchange alphanumeric characters) format. ASCII format is provided so you can enter a string that is easier to remember. The ASCII string is converted to HEX for use over the network. Four keys can be defined so that you can change keys easily.
- Wi-Fi A trade name for the 802.11b wireless networking standard, given by the Wireless Ethernet Compatibility Alliance (WECA, see http://www.wi-fi.net), an industry standards group promoting interoperability among 802.11b devices.
- WLAN (Wireless Local Area Network) A group of computers and associated devices communicate with each other wirelessly, which network serving users are limited in a local area.
- WPA (Wi-Fi Protected Access) A wireless security protocol uses TKIP (Temporal Key Integrity Protocol) encryption, which can be used in conjunction with a RADIUS server.

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