BELKIN®

N1 Wireless Notebook Card

((N1))
MIMO

User Manual

F5D8011

Table of Contents

Introduction

Thank you for purchasing the Belkin N1 Wireless Notebook Card. Now you can take advantage of this great new technology and gain the freedom to network your home and office computers wirelessly. This Card allows you to connect a notebook computer to your network. Please be sure to read through this User Manual completely, and pay special attention to the section entitled "Placement of your Wireless Networking Hardware for Optimal Performance".

Benefits of a Home Network

Your Belkin Home Network will allow you to:

• Share one high-speed Internet connection with all the computers in your home

• Share resources, such as files, and hard drives among all the connected computers in your home

• Share a single printer with the entire family

• Share documents, music, video, and digital pictures

• Store, retrieve, and copy files from one computer to another

• Simultaneously play games online, check Internet email, and chat

Advantages of a Wireless Network

Here are some of the advantages of setting up a Belkin wireless network:

• **Mobility** – you no longer need a dedicated "computer room"—you can work on a networked laptop or desktop computer anywhere within your wireless range

• **Easy installation** – Belkin Easy Installation Wizards make setup simple

• **Flexibility** – set up and access printers, computers, and other networking devices from anywhere in your home

• **Easy expansion** – the wide range of Belkin networking products lets you expand your network to include devices such as printers and gaming consoles

• **No cabling required** – you can spare the expense and hassle of retrofitting Ethernet cabling throughout the home or office

• **Widespread industry acceptance** – choose from a wide range of interoperable networking products

Placement of your Wireless Networking Hardware for Optimal Performance

Your wireless connection will be stronger the closer your computer is to your wireless router (or access point). Typical indoor operating range for your wireless devices is between 100 and 200 feet. In the same way, your wireless connection and performance will degrade somewhat as the distance between your wireless router (or access point) and connected devices increases. This may or may not be noticeable to you. As you move farther from your wireless router (or access point), connection speed may decrease. Factors that can weaken signals simply by getting in the way of your network's radio waves are metal appliances or obstructions, and walls.

If you have concerns about your network's performance that might be related to range or obstruction factors, try moving the computer to a position between five and 10 feet from the wireless router (or access point) in order to see if distance is the problem. If difficulties persist even at close range, please contact Belkin Technical Support.

Note: While some of the items listed below can affect network performance, they will not prohibit your wireless network from functioning; if you are concerned that your network is not operating at its maximum effectiveness, this checklist may help.

1. Placement of your Wireless Router (or Access Point)

Place your wireless router (or access point), the central connection point of your network, as close as possible to the center of your wireless network devices.

To achieve the best wireless network coverage for your "wireless clients," (i.e. computers enabled by Belkin Wireless Notebook Cards, Wireless Desktop Cards, and Wireless USB Adapters):

• Ensure that your wireless router's (or access point's) antennas are parallel to each other, and are positioned vertically (toward the ceiling). If your wireless router (or access point) itself is positioned vertically, point the antennas as much as possible in an upward direction.

• In multistory homes, place the wireless router (or access point) on a floor that is as close to the center of the home as possible. This may mean placing the wireless router (or access point) on an upper floor.

• Try not to place the wireless router (or access point) near a cordless 2.4GHz phone.

2. Avoid Obstacles and Interference

Avoid placing your wireless router (or access point) near devices that may emit radio "noise", such as microwave ovens. Other objects that can inhibit wireless communication can include:

• Refrigerators

• Washers and/or dryers

• Metal cabinets

• Large aquariums

• Metallic-based, UV-tinted windows

If your wireless signal seems weak in some spots, make sure that objects such as these are not blocking the signal's path between your computers and wireless router (or access point).

3. Cordless Phone Placement

If the performance of your wireless network is impaired after attending to the above issues, and you have a cordless phone:

• Try moving cordless phones away from the wireless router (or access point) and your wireless-enabled computers.

• Unplug and remove the battery from any cordless phone that operates on the 2.4GHz band (check manufacturer's information). If this fixes the problem, your phone may be interfering.

• If your phone supports channel selection, change the channel on the phone to the farthest channel from your wireless network as possible. For example, change the phone to channel 1 and move your wireless router (or access point) to channel 11. (Your channel selection will vary depending on your region.) See your phone's user manual for detailed instructions.

• If necessary, consider switching to a 900MHz or 5GHz cordless phone.

Introduction

4. Choose the "Quietest" Channel for your Wireless Network

In locations where homes or offices are close together, such as apartment buildings or office complexes, there may be wireless networks nearby that can conflict with yours. Use the Site Survey capabilities of your Belkin Wireless Networking Utility to locate any other wireless networks, and move your wireless router (or access point) and computers to a channel as far away from other networks as possible.

Experiment with more than one of the available channels in order to find the clearest connection and avoid interference from neighboring cordless phones or other wireless devices.

For more Belkin wireless networking products, use the detailed Site Survey and wireless channel information included in your User Manual.

5. Secure Connections, VPNs, and AOL

Secure connections typically require a user name and password, and are used where security is important. Secure connections include:

• Virtual Private Network (VPN) connections, often used to connect remotely to an office network

• The "Bring Your Own Access" program from America Online (AOL), which lets you use AOL through broadband provided by another cable or DSL service

• Most online banking websites

• Many commercial websites that require a user name and password to access your account

Secure connections can be interrupted by a computer's power management setting, which causes it to "go to sleep." The simplest solution to avoid this is to simply reconnect by re-running the VPN or AOL software, or by re-logging into the secure website.

A second alternative is to change your computer's power management settings so it does not go to sleep; however, this may not be appropriate for portable computers. To change your power management setting in Windows, see the "Power Options" item in the Control Panel.

If you continue to have difficulty with Secure Connections, VPNs, and AOL, please review steps 1–4 in the previous pages to be sure you have addressed these issues.

These guidelines should allow you to cover the maximum possible area with your wireless router. Should you need to cover an even wider area, we suggest the Belkin Wireless Range Extender/Access Point.

For more information regarding our networking products, visit our website at www.belkin.com/networking or call Belkin Technical Support.

Overview

Product Features

The Card complies with the IEEE draft-802.11n specification to communicate with other draft-802.11n-compliant wireless devices at up to 300Mbps*. The Card is also compatible with 802.11g devices at 54Mbps as well as 802.11b products at 11Mbps. The Card operates on the same 2.4GHz frequency band as 802.11b/g Wi-Fi® products.

• 2.4GHz ISM (Industrial, Science, and Medical) band operation

• Integrated easy-to-use Belkin Wireless Networking Utility

• CardBus interface, for operation in virtually any notebook computer

• WPA, WPA2, 64-bit WEP (Wired Equivalent Privacy), or 128-bit encryption

• Wireless access to networked resources

• Data rate of up to 300Mbps* (draft 802.11n), 54Mbps (802.11g), or 11Mbps (802.11b)

• Easy installation and use

• LED power and network link/activity indicators

Overview

Applications and Advantages

- **Wireless roaming with a laptop around the home or office**
  Offers the freedom of networking without cables

- **Connection rates of up to 300Mbps***
  Provides immediate high-speed wireless connectivity at home, work, and hotspot locations without compromising the use of existing 802.11b/g products

- **Compatibility with 802.11b/g products**
  The Card is backward-compatible with existing Wi-Fi (IEEE 802.11b/g) products

- **Difficult-to-wire environments**
  Enables networking in buildings with solid or finished walls, or open areas where wiring is difficult to install

- **Difficult-to-wire environments**
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- **Frequently changing environments**
  Adapts easily in offices or environments that frequently rearrange or change locations

- **SOHO (Small Office/Home Office) networking needs**
  Provides the easy and quick, small network installation SOHO users need

Product Specifications

Host Interface:	32-bit CardBus
Power Consumption:	802.11b/802.11g/802.11n
802.11b:	1Mbps, 18 dBm, 630mA
802.11g:	6Mbps, 18 dBm, 670mA
802.11n:	MCS15 HT20, 18 dBm, 660mA/HT40, 18 dBm, 700mA
Operating Temperature:	32—140 degrees F (0—60 degrees C)
Storage Temperature:	-4—176 degrees F (-20—80 degrees C)
Humidity:	Max. 90% (non-condensing)
Typical Operating Range:	Up to 1,000 ft. (304.8m)**

*NOTE: The standard transmission rate–300Mbps–is the physical data rate. Actual data throughput will be lower.

**Wireless performance may vary depending on the networking environment.

Overview

(a) Power LED
Lights up when the Card is powered up

(b) Link/Activity LED
Lights up when the Card is connected; flashes when wireless activity is detected

(c) Card Connector
Part of the Card that fits into your computer's CardBus slot

System Requirements

- PC-compatible laptop with one available CardBus slot
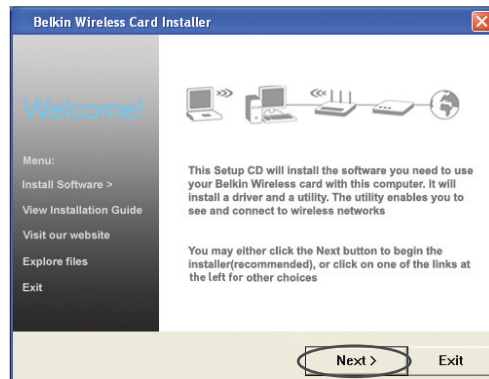- Windows® 2000 or XP

Package Contents

- N1 Wireless Notebook Card
- Quick Installation Guide
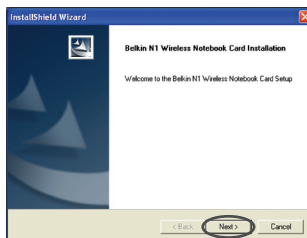- Installation Software CD
- User Manual

Step 1 | Install

IMPORTANT: Install the software before inserting the Card.

1.1   Insert the Installation Software CD into your CD-ROM drive.

1.2   1.2 The Belkin Wireless Card Installer screen will automatically appear. (This may take 15–20 seconds.) Click "Install Software" or "Next" to start the installation.
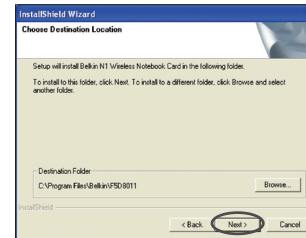

Note: If the Belkin Wireless Card Installer screen does not appear within 20 seconds, access your CD-ROM by double-clicking on the "My Computer" icon; then double-click on the CD-ROM drive into which the installation CD has been placed. Double-click on the icon named "Setup.exe".
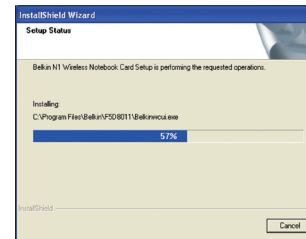

1.3   The InstallShield Wizard will now start. Click "Next" to continue.

1.4   Select a different destination folder for the software installation, or simply click "Next".
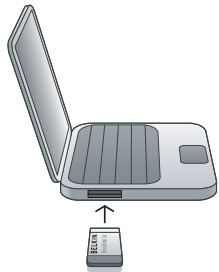

1.5   The first in a series of progress-monitoring screens will let you know where you are in the setup process.

1.6   You might see a screen similar to this one. This DOES NOT mean there is a problem. Our software has been fully tested and is compatible with this operating system. Select "Continue Anyway" and follow the on-screen instructions.

section

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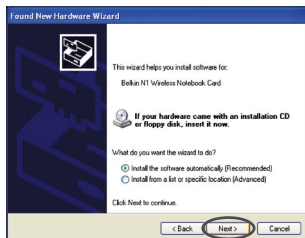
Step 2	Insert

Insert the Card into your Computer

2.1 After the software installation is finished, the message "Please plug in your Notebook Card now" will appear. Insert your Card.
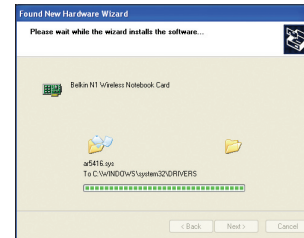

2.2 The Found New Hardware Wizard will appear. (This may take 3–15 seconds.) Select "Yes, this time only" and click "Next" to install the hardware.

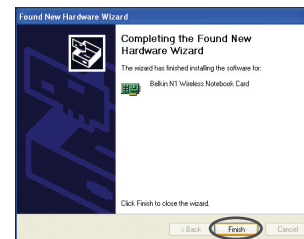**2.3** Select "Install the software automatically" and click "Next" to install the hardware.

2.4 The Wizard will now install your software.

2.5 You might see a screen similar to this one. This DOES NOT mean there is a problem. Our software has been fully tested and is compatible with this operating system. Select "Continue Anyway" and follow the on-screen instructions.

2.6 The installation is now complete. Click "Finish" to exit.

section 1 2 3 4 5 6