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User Manual for the NETGEAR 54 Mbps Wireless USB 2.0 Adapter WG111



NETGEAR

NETGEAR, Inc.
4500 Great America Parkway
Santa Clara, CA 95054 USA

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Manual abstract:

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@@@Please refer to the notes in the operating instructions. @@@Read instructions for correct handling. FCC Information to User This product does not contain any user serviceable components and is to be used with approved antennas only. Any product changes or modifications will invalidate all applicable regulatory certifications and approvals FCC Guidelines for Human Exposure This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance of 20 cm between the radiator and your body. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter. Declaration Of Conformity We NETGEAR, Inc., 4500 Great America Parkway, Santa Clara, CA 95054, declare under our sole responsibility that the model WG11v2 Wireless USB 2.0 Adapter complies with Part 15 of FCC Rules. Operation is subject to the following two conditions: · · This device may not cause harmful interference, and This device must accept any interference received, including interference that may cause undesired operation.

Regulatory Compliance Information This section includes user requirements for operating this product in accordance with National laws for usage of radio spectrum and operation of radio devices. Failure of the end-user to comply with the applicable requirements may result in unlawful operation and adverse action against the end-user by the applicable National regulatory authority. NOTE: This product's firmware limits operation to only the channels allowed in a particular Region or Country. Therefore, all options described in this user's guide may not be available in your version of the product. FCC Requirements for Operation in the United States Radio Frequency Interference Warnings & Instructions 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 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 methods: · · · Reorient or relocate the receiving antenna Increase the separation between the equipment and the receiver Connect the equipment into an electrical outlet on a circuit different from that which the radio receiver is connected
iii 202-10026-01 · Consult the dealer or an experienced radio/TV technician for help. NETGEAR 54 Mbps Wireless USB 2.

0 Adapter WG11v2 Tested to Comply with FCC Standards FOR HOME OR OFFICE USE PY3WG11V2 Modifications made to the product, unless expressly approved by NETGEAR, Inc., could void the user's right to operate the equipment. Export Restrictions This product or software contains encryption code which may not be exported or transferred from the US or Canada without an approved US Department of Commerce export license. Europe - EU Declaration of Conformity This device is a 2.4 GHz low power RF device intended for home and office use in EU and EFTA member states. In some EU / EFTA member states some restrictions may apply. Please contact local spectrum management authorities for further details before putting this device into operation. This product is certified for Switzerland and all EU countries. Marking by the above symbol indicates compliance with the Essential Requirements of the R&TTE Directive of the European Union (1999/5/EC). This equipment meets the following conformance standards: EN300 328, EN301 489-17, EN60950 Requirements For Operation in the European Community Countries of Operation and Conditions of Use in the European Community The user should run the client utility program provided with this product to check the current channel of operation and confirm that the device is operating in conformance with the spectrum usage rules for European Community countries as described in this section.

This device is intended to be operated in all countries of the European Community. Operation Using 2.4 GHz Channels in France The following radio channel usage limitations apply in France. The radio spectrum regulator in France, Autorité de regulation des telecommunications (ART), enforces the following rules with respect to use of 2.4GHz spectrum in various locations in France.

Please check ART's web site for latest iv 202-10026-01 requirements for use of the 2.4GHz band in France: <http://www.art-telecom.fr/eng/index.htm>.

When operating in the following metropolitan regions (départements) in France, this device may be operated under the following conditions: Indoors using any channel in the 2.4-2.4835 GHz band (Channels 1-13) Outdoors using channels in the 2.4-2.454 GHz band (Channels 1-7) When operating outside of the following regions (départements) in France (see table below), this product must be operated under the following conditions: · · Indoors using channels in the 2.4465-2.4835 GHz band (Channels 10-13). Outdoor operation not permitted. Please refer to the ART web site for further details. Metropolitan Regions with Eased Restrictions in 2.

4GHz Band v 202-10026-01 Declaration of Conformity in Languages of the European Community Finnish: Valmistaja NETGEAR, Inc. vakuuttaa täten että Radio LAN device tyypinen laite on direktiivin 1999/5/EY oleellisten vaatimusten ja sitä koskevien direktiivin muiden ehtojen mukainen. Dutch: Hierbij verklaart NETGEAR, Inc. dat het toestel Radio LAN device in overeenstemming is met de essentiële eisen en de andere relevante bepalingen van richtlijn 1999/5/EG. French: Par la présente NETGEAR, Inc. déclare que l'appareil Radio LAN device est conforme aux exigences essentielles et aux autres dispositions pertinentes de la directive 1999/5/CE.



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Swedish: Härmed intygar NETGEAR, Inc. att denna Radio LAN device står i överensstämmelse med de väsentliga egenskapskrav och övriga relevanta bestämmelser som framgår av direktiv 1999/5/EG. Danish: Undertegnede NETGEAR, Inc. erklærer herved, at følgende udstyr Radio LAN device overholder de væsentlige krav og øvrige relevante krav i direktiv 1999/5/EF.

German: Hiermit erklährt NETGEAR, Inc., dass sich dieser/diese/dieses Radio LAN device in Übereinstimmung mit den grundlegenden Anforderungen und den anderen relevanten Vorschriften der Richtlinie 1999/5/EG befindet. Italian: Con la presente NETGEAR, Inc. dichiara che questo Radio LAN device è conforme ai requisiti essenziali ed alle altre disposizioni pertinenti stabilite dalla direttiva 1999/5/CE. Spanish: Por medio de la presente NETGEAR, Inc. declara que el Radio LAN device cumple con los requisitos esenciales y cualesquiera otras disposiciones aplicables o exigibles de la Directiva 1999/5/CE.

Portugese: NETGEAR, Inc. declara que este Radio LAN device está conforme com os requisitos essenciais e outras disposições da Directiva 1999/5/CE. Canadian Department of Communications Radio Interference Regulations This digital apparatus (NETGEAR 54 Mbps Wireless USB 2.0 Adapter WG111v2) does not exceed the Class B limits for radio-noise emissions from digital apparatus as set out in the Radio Interference Regulations of the Canadian Department of Communications.

Canada ID: 4054A-WG111V2 vi 202-10026-01 Contents Chapter 1 About This Manual Audience, Scope, Conventions

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Right pane. Use the right pane to view the contents of the manual. Also, each page of the manual includes a link at the top right which links to a PDF file containing just the currently selected chapter of the manual. 1-2 202-10026-01 About This Manual User Manual for the NETGEAR 54 Mbps Wireless USB 2.0 Adapter WG111 How to Print this Manual To print this manual you can choose one of the following several options, according to your needs. · Printing a "How To" Sequence of Steps in the HTML View. Use the Print button on the upper right of the toolbar to print the currently displayed topic. Using this button when a step-by-step procedure is displayed will send the entire procedure to your printer--you do not have to worry about specifying the correct range of pages. Printing a Chapter. Use the link at the top right of any page.

· · Click "PDF of This Chapter" link at the top right of any page in the chapter you want to print. A new browser window opens showing the PDF version of the chapter you were viewing. Click the print icon in the upper left of the window. Tip: If your printer supports printing two pages on a single sheet of paper, you can save paper and printer ink by selecting this feature. Printing the Full Manual.

Use the PDF button in the toolbar at the top right of the browser window. Click PDF button. A new browser window opens showing the PDF version of the chapter you were viewing. Click the print icon in the upper left of the window. Tip: If your printer supports printing two pages on a single sheet of paper, you can save paper and printer ink by selecting this feature.

About This Manual 202-10026-01 1-3 User Manual for the NETGEAR 54 Mbps Wireless USB 2.0 Adapter WG111 1-4 202-10026-01 About This Manual User Manual for the NETGEAR 54 Mbps Wireless USB 2.0 Adapter WG111 Chapter 2 Introduction This chapter introduces the features, package contents, and appearance of the NETGEAR 54 Mbps Wireless USB 2.0 Adapter WG111. About the WG111 The NETGEAR 54 Mbps Wireless USB 2.0 Adapter WG111 gives you ultimate mobility in your office or while you are traveling. It frees you from traditional Ethernet wiring and helps you create a wireless network for sharing your broadband Internet access among multiple PCs in and around your home. It is designed for PC computers running Microsoft® Windows®. It is a USB 2.0 device and is backwards compatible with USB 1.

1 ports. Its auto-sensing capability allows high packet transfer at up to 54 Mbps for maximum throughput or dynamic range shifting to lower speeds due to distance or operating limitations in an environment with a lot of electromagnetic interference. The WG111 Wireless USB 2.0 Adapter provides reliable, standards-based 802.11g 54 Mbps WLAN connectivity that is protected with industry-standard security. It works with Windows 98SE, Me, 2000, and XP operating systems. Key Features The WG111 Wireless USB 2.0 Adapter provides the following features: · · Reliable IEEE 802.11g and b standards-based wireless technology. 54 Mbps high speed data transfer.

Wireless nodes negotiate to operate in the optimal data transfer rate. In a noisy environment or when the distance between the wireless nodes is far, the wireless nodes automatically fall back to operate at lower transfer rates. High level of data encryption using 128-bit Shared Key WEP data encryption method. A lower level of data encryption or no data encryption is available to simplify your network setup or to improve data transfer rate. WPA PSK (Wi-Fi Protected Access Pre-Shared Key) support.

2-1 202-10026-01 · · Introduction User Manual for the NETGEAR 54 Mbps Wireless USB 2.0 Adapter WG111 What's in the Box? The product package should contain the following items: · · · NETGEAR 54 Mbps Wireless USB 2.0 Adapter WG111 Installation Guide for the NETGEAR 54 Mbps Wireless USB 2.0 Adapter WG111 NETGEAR 54 Mbps Wireless USB 2.0 Adapter WG111 Resource CD, including: -- Driver and Wireless Assistant Software -- User Manual for the NETGEAR 54 Mbps Wireless USB 2.

0 Adapter WG111 -- Animated Network Properties Configuration Tutorial -- PC Networking Tutorial Warranty and Support information card A plastic cradle to hold the WG111 Velcro fasteners to attach the WG111 to the plastic cradle A USB adapter cable · · · Cradle WG111 54 Mbps Wireless USB 2.



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0 Adapter USB Cable WG111 Resource CD, Installation guide and Warranty/Support information card Velcro Figure 2-1: NETGEAR 54 Mbps Wireless USB 2.0 Adapter WG111 Box contents If any of the parts are incorrect, missing, or damaged, contact your NETGEAR dealer. Keep the carton, including the original packing materials, in case you need to return the product for repair. 2-2 202-10026-01 Introduction User Manual for the NETGEAR 54 Mbps Wireless USB 2.0 Adapter WG111 A Road Map for 'How to Get There From Here' The introduction and adoption of any new technology can be a difficult process. Wireless technology has removed one of the barriers to networking--running wires. It allows more people to try networking while at the same time exposes them to the inherent complexity of networking. General networking concepts, setup, and maintenance can be difficult to understand. In addition, wireless technology adds issues, such as range, interference, signal quality, and security to the picture.

To help overcome potential barriers to successfully using wireless networks, the table below identifies how to accomplish such things as connecting to a wireless network, assuring appropriate security measures are taken, browsing the Internet through your wireless connection, exchanging files with other computers and using printers in the combined wireless and wired network. Table 2-1. If I Want To? Connect to a wireless network A Road Map for How to Get There From Here What Do I Do? 1. Identify the wireless network name (SSID) and, if used, the wireless security settings. 2. Set up the NETGEAR 54 Mbps Wireless USB 2.0 Adapter WG111 with the settings from step 1. What's Needed? 1. A wireless network 2. A PC within the operating range of the wireless network.

For guidelines about the range of wireless networks, see "Observing Location and Range Guidelines" on page 3-2. How Do I? To set up the WG111, see Chapter 3, "Basic Setup" and follow the instructions provided. To learn about wireless networking technology, see Appendix B, "Wireless Networking Basics" for a general introduction. Introduction 202-10026-01 2-3 User Manual for the NETGEAR 54 Mbps Wireless USB 2.0 Adapter WG111 Table 2-1.

If I Want To? A Road Map for How to Get There From Here What Do I Do? What's Needed? How Do I? To learn about wireless networking security, see "Authentication and WEP" on page B-2 and "WPA Wireless Security" on page B-8. To use WEP security features, see "Enabling Wireless Security Features" on page 4-7 and configure your WG111 accordingly. To use WPA-PSK security features, see "How to Configure WPA-PSK Encryption Security" on page 4-10. Protect my 1. Assure that the 1.

A wireless network with wireless network authentication and WEP or connection from has security WPA encryption enabled. snooping, features enabled. 2. Wireless networking hacking, or 2. Configure my equipment that supports information WG111 with the WEP encryption, such as theft. security settings of the WG111 and all the wireless NETGEAR wireless network. networking products. 3. Use Windows security features. Note: Secure Internet sites such as banks and online merchants use encryption security built into browsers like Internet Explorer and Netscape.

Any wireless networking security features you might implement are in addition to those already in place on secure Internet sites. Connect to the 1. Activate my Internet over my wireless link and wireless verify my network network. connection. 2. Open an Internet browser such as Internet Explorer or Netscape Navigator. 1. An active Internet connection like those from cable or DSL service providers. 2. A wireless network connected to the cable or DSL Internet service through a cable/DSL router as illustrated in "Connecting to an Access Point in Infrastructure Mode" on page 4-2.

To configure your WG111 in Infrastructure Mode, see "Basic Installation Instructions" on page 3-4, and locate the section for your version of Windows. For assistance with configuring the TCP/IP Internet software on a PC, see "Preparing Your Computers for TCP/IP Networking" on page C-1 or refer to the PC Networking Tutorial on the NETGEAR 54 Mbps 3. TCP/IP Internet Wireless USB 2.0 Adapter networking software WG111 Resource CD and the installed and configured Help information provided in the on my PC according to the Windows system you are using. requirements of the .

Internet service provider. 4. A browser like Internet Explorer or Netscape Navigator. 2-4 202-10026-01 Introduction User Manual for the NETGEAR 54 Mbps Wireless USB 2.0 Adapter WG111 Table 2-1.

If I Want To? A Road Map for How to Get There From Here What Do I Do? What's Needed? How Do I? For assistance with Windows networking software, see "Preparing Your Computers for TCP/IP Networking" on page C-1 for configuration scenarios or refer to the Help system included with your version of Windows. Windows Domain settings are usually managed by corporate computer support groups. Windows Workgroup settings are commonly managed by individuals who want to set up small networks in their homes, or small offices. For assistance with setting up Windows networking, refer to the PC Networking Tutorial on the NETGEAR 54 Mbps Wireless USB 2.0 Adapter WG111 Resource CD and the Help information provided in the Windows system you are using. Exchange files 1. Use the Windows 1. The PC I am using to Network connect to the wireless between a Neighborhood network needs to be wirelessly feature to browse configured with the connected PC for computers in Windows Client and File and other the combined and Print Sharing. computers in a wireless and wired 2. The PC I am using to my combined network.

connect to the wireless wireless and 2. Browse the hard network needs to be drive of the target configured with the same wired computer in the Windows Workgroup or network. network in order to locate the directory or files you want to work with. Domain settings as the other Windows computers in the combined wireless and wired network. 3. Use the Windows Explorer copy and paste functions to exchange files between the computers. 3. Any Windows networking security access rights such as login user name/ password that have been assigned in the Windows network or for sharing particular files must be provided when Windows prompts for such information. 4. If so-called Windows 'peer' Workgroup networking is being used, the drive, file system directory, or file need to be enabled for sharing.

Introduction 202-10026-01 2-5 User Manual for the NETGEAR 54 Mbps Wireless USB 2.0 Adapter WG111 Table 2-1. If I Want To? A Road Map for How to Get There From Here What Do I Do? What's Needed? How Do I? Windows Domain settings are usually managed by corporate computer support groups. Windows Workgroup settings are commonly managed by individuals who want to set up small networks in their homes, or small offices.



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For assistance with setting up Windows networking, refer to the PC Networking Tutorial on the NETGEAR 54 Mbps Wireless USB 2.0 Adapter WG111 Resource CD and the Help information provided in the Windows system you are using. For assistance with setting up printers in Windows, refer to the Help and Support information that comes with the version of the Windows operating systems you are using. Use printers in 1. Use the Windows 1. The PC I am using to Printers and Fax connect to the wireless a combined features to locate network needs to be wireless and available printers configured with the wired in the combined Windows Client and File network. wireless and wired and Print Sharing. 2. 2. Use the Windows Add a Printer wizard to add access to a network printer from the PC you are using to wirelessly connect to the network. 3. 3. From the File menu of an application such as Microsoft Word, use the Print Setup feature to direct your print output to the 4. printer in the network. network. The PC I am using to connect to the wireless network needs to be configured with the same Windows Workgroup or Domain settings as the other Windows computers in the combined wireless and wired network.

Any Windows networking security access rights such as login user name/ password that have been assigned in the Windows network must be provided when Windows prompts for such information. If so-called Windows 'peer' networking is being used, the printer needs to be enabled for sharing. 2-6 202-10026-01 Introduction Chapter 3 Basic Setup This chapter describes how to install your NETGEAR 54 Mbps Wireless USB 2.0 Adapter WG111 and set up basic wireless connectivity on your Wireless Local Area Network (WLAN). Advanced wireless network configuration is covered in Chapter 4, "Configuration" in this manual. Note: Indoors, computers can easily connect to 802.11 wireless networks at distances of several hundred feet. Because walls do not always block wireless signals, others outside your immediate area could access your network. It is important to take appropriate steps to secure your network from unauthorized access. The NETGEAR 54 Mbps Wireless USB 2.

0 Adapter WG111 provides highly effective security features which are covered in "Enabling Wireless Security Features" on page 4-7 in this manual. Deploy the security features appropriate to your needs. What You Need Before You Begin You need to verify your computer meets the minimum system requirements and identify the wireless network configuration settings of the WLAN where you will connect before you can configure your wireless USB adapter and connect. Verifying System Requirements Before installing the NETGEAR 54 Mbps Wireless USB 2.0 Adapter WG111, please make sure that these minimum requirements have been met: · You must have a PC with a Pentium® 300 MHz or higher compatible processor with an available USB 2.

0 or 1.1 port. Note: If you do not have a USB 2.0 port on your PC, the throughput of the WG111 will be limited to the 14 Mbps of the USB 1.1 standard. · · A CD-ROM drive. 5 Mbytes of free hard disk space. Basic Setup 202-10026-01 3-1 User Manual for the NETGEAR 54 Mbps Wireless USB 2.0 Adapter WG111 · Windows XP Home, Windows XP Professional, 2000, Me, or 98SE. Some versions of Windows may ask for the original Windows operating system installation files to complete the installation of the WG111 driver software. Observing Location and Range Guidelines Computers can connect over wireless networks indoors at a range which vary significantly based on the physical location of the computer with the NETGEAR 54 Mbps Wireless USB 2.0 Adapter WG111. For best results, avoid potential sources of interference, such as: · · · Large metal surfaces Microwaves 2.4 GHz Cordless phones In general, wireless devices can communicate through walls. However, if the walls are constructed with concrete, or have metal, or metal mesh, the effective range will decrease if such materials are between the devices.

The WG111 Wireless USB 2.0 Adapter comes with a plastic cradle and velcro fasteners to facilitate placement in an optimal location. Position the USB Adapter so that the external devices are less likely to interfere. The USB Adapter should have a clear line of sight to the access point or router it wirelessly connects to. The figure below shows one recommended placement scenario for personal computers: Figure 3-1: Personal computer with WG111 attached to the monitor To attach the USB drive to a Notebook cover or monitor: 3-2 202-10026-01 Basic Setup User Manual for the NETGEAR 54 Mbps Wireless USB 2.0 Adapter WG111 1. The WG111 Wireless USB 2.0 Adapter comes with 3 pieces of velcro. Locate the one that has a prickly side and attach it to the plastic cradle on the middle of the outside rear panel. Figure 3-2: Plastic cradle 2.

3. Insert the WG111 Wireless USB 2.0 Adapter in the plastic cradle. Place one of the other pieces of velcro on the back of your notebook monitor near the top for better reception. Note: The last piece of velcro can be placed on the side of your desktop PC monitor nearest your wireless access point, if you are using the USB Adapter with a desktop PC.

4. 5. Join the pieces of velcro to attach the USB Adapter in the plastic cradle to the notebook monitor. Attach one end of the USB cable to the USB drive. See the installation instructions for your operating system before attaching the other end of the USB cable to your computer.

· · For Windows XP, see "For Windows XP Users Installing a WG111" on page 3-5. For Windows 2000, 98SE, and Me, see "For Windows 2000 & 98SE/Me Users Installing a WG111" on page 3-9. Two Basic Operating Modes The WG111 Wireless USB 2.0 Adapter can operate in the following two basic modes: · Infrastructure Mode: An 802.11 networking framework in which devices and computers communicate with each other by first going through an access point (AP). For example, this mode is used when computers in a house connect to an Access Point that is attached to a router which lets multiple computers share a single Cable or DSL broadband Internet connection. Basic Setup 202-10026-01 3-3 User Manual for the NETGEAR 54 Mbps Wireless USB 2.0 Adapter WG111 · Ad Hoc Mode: An 802.11 networking framework in which devices or computers communicate directly with each other, without the use of an AP. For example, Ad Hoc Mode is used when two Windows computers are configured with file and print sharing enabled and you want to exchange files directly between them.

Both of these configuration options are available with the WG111 Wireless USB 2.0 Adapter. Infrastructure configuration procedures for basic network connectivity are covered below. Advanced infrastructure configuration procedures and Ad Hoc configuration are covered in Chapter 4, "Configuration" of this manual. WG111 Default Wireless Configuration Settings If this is a new wireless network installation, use the factory default settings to set up the network and verify wireless connectivity.



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If this is an addition to an existing wireless network, you will need to identify the wireless configuration and security parameters already defined. Your NETGEAR 54 Mbps Wireless USB 2.0 Adapter WG111 factory default basic settings are: · Network Name Service Set Identification (SSID): Any (First available network) Note: In order for the WG111 Wireless USB 2.0 Adapter to communicate with a wireless access point or wireless adapter, all devices must be configured with the same wireless network name (SSID). · Network Mode (Infrastructure or Ad Hoc): Infrastructure Data security WEP encryption:

Disabled The section below provides instructions for setting up the NETGEAR 54 Mbps Wireless USB 2.

0 Adapter WG111 for basic wireless connectivity to an access point. The procedures below provide step-by-step installation instructions for Windows PCs. Use the procedure that corresponds to the version of Windows you are using. Basic Installation Instructions Use the procedure below that corresponds to the version of Windows you are using. 3-4 202-10026-01 Basic Setup User Manual for the NETGEAR 54 Mbps Wireless USB 2.

0 Adapter WG111 For Windows XP Users Installing a WG111 Install the WG111 driver and Wireless Assistant software. a. Power on your PC, let the operating system boot up completely, and log in as needed. Insert the Resource CD for the WG111 into your CD-ROM drive. The CD main page shown at the right will load.

Click Install Driver and Utility. Follow the InstallShield Wizard steps. You will be prompted to choose the country you are located in. Select your location from the list. WG111 Resource CD Note: If this screen fails to load automatically, browse to the CD and double-click autorun.exe. b. c. d. Click Finish when done, and if prompted restart your computer.

InstallShield Wizard Note: If a Windows XP Certification warning appears, click Continue Anyway to proceed. Basic Setup 202-10026-01 3-5 User Manual for the NETGEAR 54 Mbps Wireless USB 2.0 Adapter WG111 Install the NETGEAR 54 Mbps Wireless USB 2.0 Adapter WG111. a. Locate an available USB port on your PC. Connect the USB cable to the WG111 and insert the other end of the cable into the USB slot on your PC. After a short delay, the Found New Hardware Wizard displays. Select Install the software automatically (Recommended) and click Next. Note: Click Continue Anyway if you are prompted with a Windows XP Logo testing message.

b. Add New Hardware Wizard Note: If the USB port in your computer is not a USB v2.0 type port but rather a USB v1.1 type port, you will see a "HI_SPEED USB Device Plugged into non-I-SPEED USB Hub" message. The WG111 will work but the USB v1.

I port maximum speed is 14 Mbps whereas the maximum speed of a USB v2.0 port is 480 Mbps. So, when the WG111 is connected to a USB v1.1 port, the communications speed will be limited to the maximum of the USB v1.1 port.

c. Next you will be prompted to enable the NETGEAR Smart Wireless Assistant. Click Yes to accept this option. If you choose No, you must read the Windows XP documentation for an explanation of how to use the Windows XP Wireless Networks configuration utility. You will also be prompted to choose the country you are located in. d. Click Finish when done, and if prompted restart your computer. You will see the WG111 system tray icon on the lower right portion of the Windows task bar. Enable NETGEAR Utility Configuration WG111 System Tray Icon 3-6 202-10026-01 Basic Setup User Manual for the NETGEAR 54 Mbps Wireless USB 2.0 Adapter WG111 Configure your WG111.

a. Click the icon on the Windows desktop or in the system tray to open the WG111 SMART WIZARD Wireless Assistant. The utility opens to the Settings tab page. Click Help for instructions on using the SMART WIZARD Wireless Assistant. Click here to open the Wireless Assistant. WG111 system tray icon b.

Change the Network Name SSID to match your network. Tip: As an alternative to typing in the SSID, you can use the drop-down list or SMART WIZARD Wireless Assistant Settings page the Networks tab to view the available wireless networks, and choose the one Tip: Click the Help button on the lower left you want. to view help information for each tab. Click Apply to activate the connection.

You can also enter a profile name and click Save Profile to store the current settings. Tip: Create profiles called work and home. Then, activate whichever one you need for your current location. c. Note: The NETGEAR default settings are Infrastructure mode, with Any (first available network that replies) for the wireless network name SSID, and WEP disabled.

If your WLAN settings are different from the NETGEAR default settings, you will not connect. Set up your WG111 accordingly. Note: This procedure assumes you are connecting to a wireless network which is not using WEP security. If your network includes WEP settings, click the Settings tab page and configure the WG111 accordingly. For help with these steps, click the Help button in the WG111 Wireless Assistant to view help information for each tab, or see "Enabling Wireless Security Features" on page 4-7.

Basic Setup 202-10026-01 3-7 User Manual for the NETGEAR 54 Mbps Wireless USB 2.0 Adapter WG111 Verify wireless connectivity to your network. a. Verify that the status monitor information at the bottom of the utility matches your wireless network. b. c. Check the color of the WG111 icon in the Windows system tray: green or yellow indicates a working connection; red indicates no connection. Check the WG111 LED: blinking means attempting to connect; solid indicates a good connection; off means the WG111 is not plugged in. d. Verify connectivity to the Internet or network resources.

Note: If you are unable to connect, see Chapter 4, "Troubleshooting". 3-8 202-10026-01 Basic Setup User Manual for the NETGEAR 54 Mbps Wireless USB 2.0 Adapter WG111 For Windows 2000 & 98SE/Me Users Installing a WG111 Install the WG111 driver and Wireless Assistant software. Note: Windows 2000 may require you to be logged on with administrator rights. a. Power on your PC, let the operating system boot up completely, and log in as needed. Insert the Resource CD for the WG111 into your CD-ROM drive. The CD main page shown at the right will load. Click Install Driver and Utility. Follow the InstallShield Wizard steps.

You will be prompted to choose the country you are located in. Select your location from the list. WG111 Resource CD Note: If this screen fails to load automatically, browse to the CD and double-click autorun.exe. b.

c. d. Click Finish when done, and if prompted restart your computer. InstallShield Wizard Basic Setup 202-10026-01 3-9 User Manual for the NETGEAR 54 Mbps Wireless USB 2.0 Adapter WG111 Install the NETGEAR 54 Mbps Wireless USB 2.

0 Adapter WG111. a. Locate an available USB port on your PC. Connect the USB cable to the WG111 and insert the other end of the cable into the USB slot on your PC.



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After a short delay, the Found New Hardware Wizard displays. Note: Click Yes if you are prompted with a Windows 2000 Digital Signature Not Found message. Found New Hardware Wizard b. a. Click Finish when done, and if prompted restart your computer. You will see the WG111 system tray icon on the lower right portion of the Windows task bar.

Note: If your computer does not have a USB v2.0 port but rather a USB v1.1 type port, the WG111 will be limited to the maximum speed of the USB v1.1 port. USB v1.1 port maximum speed is 14 Mbps whereas the maximum speed of a USB v2.0 port is 480 Mbps. WG111 System Tray Icon 3-10 202-10026-01 Basic Setup User Manual for the NETGEAR 54 Mbps Wireless USB 2.0 Adapter WG111 Configure your WG111 and save the Profile. a.

Click the WG111 icon on the Windows desktop or in the system tray to open the WG111 Wireless Assistant. The utility opens to the Settings tab page. Click Help for instructions on using the SMART WIZARD Wireless Assistant. Click here to open the Wireless Assistant. WG111 system tray icon b. For the Network Name (SSID), use the default of Any (First available network) or type an SSID for your network. Tip: As an alternative to typing in the SSID, you can use the drop-down list or the Networks tab to view the available wireless networks, and choose the one you want. WG111 Wireless Assistant Note: The NETGEAR default settings are Infrastructure mode, with Any (first available network that replies) for the wireless network name SSID, and WEP disabled. If your WLAN settings are different from the NETGEAR default settings, you will not connect. Set up your WG111 accordingly.

Note: This procedure assumes you are connecting to a wireless network which is not using WEP security. If your network includes WEP settings, click the Security tab page and configure the WG111 accordingly. For help with these steps, click the Help button in the WG111 Wireless Assistant to view help information for each tab, or see "Enabling Wireless Security Features" c. d. Click Apply to activate the connection. You can also enter a profile name and click Save Profile to store the current settings. Tip: If you use your desktop PC to connect to a wireless network at work and at home, create profiles called work and home. Then, activate whichever one you need for wherever you are located. on page 4-7. Basic Setup 202-10026-01 3-11 User Manual for the NETGEAR 54 Mbps Wireless USB 2.

0 Adapter WG111 Verify wireless connectivity to your network. a. b. c. Verify that the status monitor information at the bottom of the utility matches your wireless network. Check the color of the WG111 icon in the Windows system tray: green or yellow indicates a working connection; red indicates no connection. Check the WG111 LED: blinking means attempting to connect; solid indicates a good connection; off means the WG111 is not plugged in. d. Verify connectivity to the Internet or network resources. Note: If you are unable to connect, see Chapter 4, "Troubleshooting".

3-12 202-10026-01 Basic Setup User Manual for the NETGEAR 54 Mbps Wireless USB 2.0 Adapter WG111 WG111 Wireless Connection Indicators The NETGEAR 54 Mbps Wireless USB 2.0 Adapter WG111 provides the following three indicators which give you feedback on the status of your wireless connection: · · The status LED on the NETGEAR 54 Mbps Wireless USB 2.0 Adapter WG111 indicates the condition of wireless link. The color of the SysTray icon is on the System Tray portion of the taskbar in the Microsoft Windows desktop indicates the status of the connection.

Interpreting the LED on the WG111 Status LED The status LED is described in this table. Table 3-1: LED OFF Blink On LED Descriptions Meaning · The WG111 in not plugged in to the PC. · Power save mode (default from power up or reset). Looking for network association. Associated or joined with network. Basic Setup 202-10026-01 3-13 User Manual for the NETGEAR 54 Mbps Wireless USB 2.0 Adapter WG111 Interpreting System Tray Icon Colors The System Tray (SysTray) resides on one end of the taskbar in the Microsoft Windows desktop. Color Red Condition The WG111 has no connection to any wireless node.

Description The WG111 is not able to link to any other wireless node or the link is lost. Check your configuration or try moving to a location where the wireless signal quality is better. The wireless link is weak. You may need to move to a better spot, such as closer to the wireless access point. Also, look for possible interference such as a 2.4 GHz cordless phone or large metal surface. Yellow The WG111 has a connection with another wireless node.

Green The WG111 has a connection with another wireless node. The WG111 has established good communication with an access point and the signal quality is strong. 3-14 202-10026-01 Basic Setup Chapter 4 Configuration This chapter describes how to configure your NETGEAR 54 Mbps Wireless USB 2.0 Adapter WG111 for wireless connectivity on your Wireless Local Area Network (WLAN) and use the data security encryption features. Note: The instructions in this section refer to the NETGEAR WG111 Wireless Assistant. For Windows XP users to use the NETGEAR Wireless Assistant, the Windows XP Wireless Networks configuration utility must be deselected. If you did not enable the NETGEAR utility when you installed the WG111 Wireless USB 2.0 Adapter, open the network connections from the system tray icon, click the Properties button, click the Wireless Networks tab and then clear the "Use Windows to configure my wireless network settings" check box. Understanding the Configuration Options The WG111 Wireless Assistant provides a complete and easy to use set of tools to: · · · Configure wireless settings Monitor wireless network connections Save your settings in configuration profiles The section below introduces these capabilities of the Wireless Assistant. Using Configuration Profiles The WG111 Wireless Assistant uses profiles to store all the configuration settings for a particular wireless network.

You can store multiple profiles and recall the one which matches the network you want to join. Configuration 202-10026-01 4-1 User Manual for the NETGEAR 54 Mbps Wireless USB 2.0 Adapter WG111 For example, if you use your notebook PC to connect to a wireless network in an office and a wireless network in your home, you can create a profile for each wireless network. Then, you can easily load the profile that has all the configuration settings you need to join the network you are using at the time. There are two types of wireless network connections you can configure: · · Infrastructure Mode -- uses the 802.11 infrastructure mode. Ad Hoc Mode -- uses the 802.11 Ad Hoc mode For more information on 802.11 wireless network modes, see "Wireless Networking Overview" on page B-1 of this manual.



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Connecting to an Access Point in Infrastructure Mode This section provides instructions for configuring the NETGEAR 54 Mbps Wireless USB 2.0 Adapter WG111 to connect to a wireless access point or wireless router. How to Configure an Infrastructure Mode Profile Follow the instructions below to configure an infrastructure mode profile for connecting to an access point. 1. Run the WG111 Wireless Assistant. a. b. c. Make sure the WG111 software is installed and the WG111 is connected to your PC. Open the Wireless Assistant by clicking on the WG111 icon system tray. Click the Settings tab to display the view shown below.

in the Windows 4-2 202-10026-01 Configuration User Manual for the NETGEAR 54 Mbps Wireless USB 2.0 Adapter WG111 Figure 4-1: Settings page, Infrastructure configuration 2. Configure the wireless network settings. a. b. In the Network Type section, be sure that Access Point (Infrastructure) is selected. Enter the SSID. This is also called the Wireless Network Name. Note: You will not get a wireless network connection unless the network SSID matches exactly what is configured in the access point. Tip: You can click the Network tab to view a list of the available wireless networks and their SSIDs at the location where you are.

3. Save your settings in a Profile. a. b. c.

d. Type a descriptive name for the Profile in the "Profiles" field. Click Save Profile. All the configuration settings are saved in this profile. Click Apply. Click Close to exit the Wireless Assistant or Cancel to return to the previous settings. 4. Verify wireless connectivity to your network. Verify connectivity using a browser such as Netscape or Internet Explorer to connect to the Internet, or check for file and printer access on your network. You can check the status bar in the Wireless Assistant for the current connection status. Configuration 202-10026-01 4-3 User Manual for the NETGEAR 54 Mbps Wireless USB 2.0 Adapter WG111 Note: If you cannot connect, see Chapter 4, "Troubleshooting". Also, for problems with accessing network resources, the Windows Client and File and Print Sharing software might not be installed and configured properly on your computers. Please refer to "Preparing Your Computers for TCP/IP Networking" on page C-1. Connecting to Another PC in Ad Hoc Mode The peer-to-peer setting of the WG111 uses Ad Hoc mode.

Ad Hoc mode is an 802.11 networking framework in which devices or computers communicate directly with each other, without the use of an access point. For example, this mode is used when two Windows computers are configured with file and print sharing enabled and you want to exchange files directly between them. How to Configure an Ad Hoc Mode Profile Note: Ad Hoc mode will not work using DHCP settings. Ad Hoc mode requires either static IP addresses (such as 192.168.0.1) or the IPX protocol. For instructions on setting up static IP addresses on a Windows PC, refer to the PC Networking Tutorial included on the NETGEAR 54 Mbps Wireless USB 2.0 Adapter WG111 Resource CD.

Follow the instructions below to configure an Ad Hoc mode profile. 1. Run the WG111 Wireless Assistant. Make sure the WG111 software is installed and the WG111 is connected to your PC. b.

Open the Wireless Assistant by clicking on the WG111 icon in the Windows system tray. c. Click the Settings tab to display the view shown below. a. 4-4 202-10026-01 Configuration User Manual for the NETGEAR 54 Mbps Wireless USB 2.0 Adapter WG111 Figure 4-2: Settings page, Ad Hoc configuration 2. Configure the wireless network settings. a. b. c. Select Computer-to-Computer (Ad Hoc) for the Network Type. Enter the SSID for the Ad Hoc network. Click Apply. 3. Save your settings in a Profile.

Type a descriptive name in the "Profiles" field. b. Click Save Profile. All the configuration settings are saved in this profile. c. Click Apply. d. Click Close to exit the Wireless Assistant. 4. Configure the PC network settings.

a. a. Configure each PC with either a static IP address or with the IPX protocol. Note: For instructions on configuring static IP addresses, refer to the networking tutorial on your NETGEAR 54 Mbps Wireless USB 2.0 Adapter WG111 Resource CD.

b. Restart the PCs. Configuration 202-10026-01 4-5 User Manual for the NETGEAR 54 Mbps Wireless USB 2.0 Adapter WG111 5. Verify wireless connectivity between your peer devices.

Verify connectivity by using the Ping program: a. On the Windows taskbar click the Start button, and then click Run. Figure 4-3: Windows Run program dialog box b. c. Assuming the target PC is configured with 192.168.0.1 as its IP address, type ping -t 192.168.0.

I and then click OK. This will cause a continuous ping to be sent to the device with the 192.168.0.1 static IP address. The ping response should change to "reply." Figure 4-4: Ping test results At this point the connection is established. You may need to reboot in certain Windows operating systems such as Windows 98SE. Note: If you cannot connect, see Chapter 4, "Troubleshooting". Also, for problems with accessing network resources, Windows Client and File and Print Sharing software might not be installed and configured properly on your computers.

Please refer to "Preparing Your Computers for TCP/IP Networking" on page C-1. 4-6 202-10026-01 Configuration User Manual for the NETGEAR 54 Mbps Wireless USB 2.0 Adapter WG111 How to Start a Computer-to-Computer (Ad Hoc) Network 1. 2. 3.

Fill in the Network Name (SSID). Select the Computer-to-Computer (Ad Hoc) Network Type. Click Initiate Ad Hoc. The Ad Hoc Setting dialog box will appear. Figure 4-5: Initiate Ad Hoc 4.

Choose the speed and channel for your Ad Hoc computer-to-computer network. If you notice interference problems with another nearby wireless device, select a channel that is not being used by any other wireless networks near your wireless adapter. Use the Networks tab page to identify the channels in use in your area. 5. Click OK. Note: The channel number differs depending on the country. The connection speed automatically defaults to the highest speed. Enabling Wireless Security Features You can strengthen the security of your wireless connection by enabling Wired Equivalent Privacy (WEP) encryption of the wireless data communications. For more information on 802.11 WEP security, see "Authentication and WEP" on page B-2.

Alternatively, you can use WPA-PSK (Wi-Fi Protected Access Pre-Shared Key) encryption. For more information on WPA security, see "WPA Wireless Security" on page B-8. In addition to the WG111 wireless security features, you should also configure appropriate LAN network security features such as requiring a user name and password to access the shared resources in your network. Configuration 202-10026-01 4-7 User Manual for the NETGEAR 54 Mbps Wireless USB 2.0 Adapter WG111 The procedures below identify how to configure the WEP encryption settings of your NETGEAR 54 Mbps Wireless USB 2.



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0 Adapter WG111. Identifying the Wireless Network Name (SSID) and WEP Security Settings Print this form, fill in the configuration parameters and put it in a safe place for possible future reference. For an existing wireless network, the person who set up the network will be able to provide this information. · Wireless Network Name (SSID): The Service Set Identification (SSID) identifies the wireless local area network. Any (First available network) is the default WG111 wireless network name (SSID).

You may customize it using up to 32 alphanumeric characters. Write your customized wireless network name (SSID) on the line below. Note: The SSID in the wireless access point is the SSID you configure in the wireless USB adapter. For the access point and wireless nodes to communicate with each other, all must be configured with the same SSID. Wireless network name (SSID): _____ · WEP Security Encryption key: The default WEP encryption key number is 1, and the default key size is 64 bits.

Note: The key number as well as the key value used by all wireless nodes must be the same. If they are different, you will not be able to connect. WEP Encryption Key Size, circle one: 64 or 128 bits WEP Encryption Passphrase, if used: _____ A Passphrase is used to automatically generate the WEP hexadecimal numbers for the key. If the wireless network Access Point uses a Passphrase, you can also use that here. Otherwise, you will have to manually enter the hexadecimal numbers.

WEP Hexadecimal Numbers: _____ The WEP Hexadecimal Numbers are needed if a Passphrase is not used in the wireless network access point, but rather if the key is manually entered. Use the procedures below to configure basic security settings in the WG111. 4-8 202-10026-01 Configuration User Manual for the NETGEAR 54 Mbps Wireless USB 2.0 Adapter WG111 How to Configure WEP Encryption Security Follow the steps below to configure WEP Encryption Security. 1. Run the WG111 Wireless Assistant. a. b. c. Make sure the WG111 software is installed and the WG111 is connected to your PC.

Open the Wireless Assistant by clicking on the WG111 icon system tray. Click the Settings tab and view the Security section, as shown below. in the Windows Figure 4-6: WEP Encryption Security 2. 3. Select WEP. Select whether to generate the WEP key with a passphrase or enter the key manually: · Select Create with Passphrase and enter the passphrase. The Wireless Assistant will automatically generate the WEP key. Note: The characters are case sensitive. Be sure to use the same passphrase for all the wireless devices in the network. · If the passphrase method is not available in the other devices, you must manually enter the keys to match exactly what is in the access point and other 802.

11b wireless devices. 4. Select the WEP encryption strength you will use. The choices are: · 64-bit WEP data encryption 128-bit WEP data encryption Note: Larger encryption keys require more processing and may slow the communications response times. Configuration 202-10026-01 4-9 User Manual for the NETGEAR 54 Mbps Wireless USB 2.

0 Adapter WG111 5. 6. The default key setting must match what is set in the access point and the other 802.11 wireless devices. Click Apply for the changes to take effect.

How to Configure WPA-PSK Encryption Security Wi-Fi Protected Access (WPA) is wireless security with far greater protection than WEP. WPA-PSK (pre-shared key) uses encryption of a shared key as the starting point. WPA has a significant advantages over WEP -- an encryption key differing in every packet.

It is extremely difficult for hackers to read messages even if they have intercepted the data. To configure WPA-PSK security, click the Advanced Security button. The Advanced Security button is located in the Settings page, Security section. Figure 4-7: Advanced Security page The Passphrase can be between 8 and 63 characters. Select TKIP or AES for the security mechanism. TKIP stands for Temporal Key Integrity Protocol. TKIP replaces WEP with a new encryption algorithm that is stronger than the WEP algorithm, but that uses the calculation facilities present on existing wireless devices to perform encryption operations.

One of the encryption methods supported by WPA, besides TKIP, is the Advanced Encryption Standard (AES). This is viewed as the optimal choice for security conscience organizations, but the problem with AES is that it requires a fundamental redesign of the NIC's hardware in both the station and the access point. TKIP is a pragmatic compromise that allows organizations to deploy better security while AES capable equipment is being designed, manufactured, and incrementally deployed. For more information on WPA security, see "WPA Wireless Security" on page B-8. 4-10 202-10026-01 Configuration User Manual for the NETGEAR 54 Mbps Wireless USB 2.0 Adapter WG111 Networks Page The Networks Page scans and displays all available wireless networks in your area. Figure 4-8: Networks page The following information is displayed for each network scanned: · Wireless Network Name (SSID): Wireless Network Name (SSID) is the name assigned to a wireless network. This is the same as the SSID or ESSID configuration parameter. Note that, as a security measure, some wireless access points do not broadcast their SSID. @@@@Signal: Identifies the signal strength of the communications.

@@@Total is the default. @@@@The approved channels for this region are automatically scanned. Governments regulate the channels used for wireless transmission. @@Driver Version: The wireless adapter driver version. Driver Date: The wireless adapter driver release date.

MAC Address: The MAC address of this adapter. @@@@A short transmit preamble might give slightly better performance. Choices are Long, Short, or Auto. @@The rate can be from 1 Mbps to 54 Mbps. Wireless Mode: Select the wireless protocols you will use. @@@@Do not change this setting unless you are sure you need to. @@@@Reload the WG111 software, if necessary. @@The access point may not be powered on. Or, the access point and the WG111 are not configured with the same wireless parameters. Check the SSID and WEP settings. The wireless LED blinks and cannot connect to an access point. Troubleshooting 202-10026-01 4-1 User Manual for the NETGEAR 54 Mbps Wireless USB 2.0 Adapter WG111 I can connect to an access point, but I cannot connect to other computers on the network or the Internet. This could be a physical layer problem or a network configuration problem. Check to make sure that the access point is physically connected to the Ethernet network.

Make sure that the IP addresses and the Windows networking parameters are all configured correctly. Restart the cable or DSL modem, router, access point, and notebook PC. Refer to the "A Road Map for How to Get There From Here" on page 2-3 for additional suggestions.



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Frequently Asked Questions Use the information below to solve common problems you may encounter. Also, please refer to the knowledge base on the NETGEAR web site at www.netgear.com/support/main.asp. The WG111 status line displays a speed lower than 54 Mbps If you are connecting to an 802.11b network, the maximum 802.

11b speed is 11 Mbps. If your computer does not have a USB v2.0 port but rather a USB v1.1 type port, the WG111 will be limited to the maximum speed of the USB v1.1 port.

USB v1.1 port maximum speed is 14 Mbps whereas the maximum speed of a USB v2.0 port is 480 Mbps. PC computers can be upgraded with optional add-on USB v2.0 adapters that provide one or more USB v2.

0 ports. Note: If you are already using a USB 2.0 controller, make sure that you are using the correct driver for USB 2.0. For Windows XP, you need to upgrade your system to Service Pack 1 in order to utilize the USB 2.0 port. For Windows 2000, you need to upgrade your system to Service Pack 4 in order to utilize the USB 2.0 port. The WG111 Smart Wireless Assistant keeps asking me to save my settings This is because you have made changes to the settings and the utility is offering you the chance to save the changes. If you want to avoid these Profile setting prompts, simply click Apply before you close the utility program.

4-2 202-10026-01 Troubleshooting User Manual for the NETGEAR 54 Mbps Wireless USB 2.0 Adapter WG111 Ad Hoc mode is not working correctly You need to click the Initiate Ad Hoc button before you click Apply. Here is how you start an Ad Hoc network: 1. 2. 3. 4. 5. Fill in the Network Name (SSID).

Select the Computer-to-Computer (Ad Hoc) Network Type. Click Initiate Ad Hoc.

Accept the default settings or make your changes and click OK Click Apply. Note: Be sure all computers in your Ad Hoc network are configured with static IP addresses in the same subnet. How to know if the WG111 card has received a valid IP address The WG111 must receive an IP address from a wireless router or wireless access point. The easiest way is check the IP address is to open up the WG111 utility program and view the IP address in the About page. How to use Windows XP's own Wireless Configuration Utility The NETGEAR WG111 software is designed so that the user will be asked to choose one of the utility programs during initial software installation.

Be sure the WG111 is connected to the PC and follow these instructions to change your selection. 1. 2. 3. 4.

Go to Control Panel and select Network Connections. Right click on the connection and select Properties. Click the Wireless Networks tab. Select or clear the WG111 "Use Windows to configure my wireless network settings" check box. New Hardware Wizard appears after installation has completed This happens if the USB device is connected to a different port than the one used during installation. Return the USB device to the original USB port. Troubleshooting

202-10026-01 4-3 User Manual for the NETGEAR 54 Mbps Wireless USB 2.0 Adapter WG111 How to get a PDF copy of the Manual In the Manual HTML page, there is a PDF button image at the top right hand corner of the web page. Click the PDF icon to bring up a PDF file of the entire manual. You can also Print, Email, or Bookmark pages using the corresponding icons next to the PDF icon.

4-4 202-10026-01 Troubleshooting Appendix A Technical Specifications This appendix provides technical specifications for the NETGEAR 54 Mbps Wireless USB 2.0 Adapter WG111. Antennae Standards Radio Data Rate Frequency Power Emissions Bus interface Provided drivers Operating Environment Encryption Warranty 1 Integrated internal antenna 802.11g, 802.11b 1, 2, 5.5, 6, 9, 11, 12, 18, 24, 36, 48, and 54 Mbps (Auto Rate Sensing) 2.4GHz to 2.5GHz (CCK and OFDM Modulation) 5V Bus powered FCC, CE USB 2.0 Microsoft Windows XP, 2000, Me, 98SE Operating temperature: 0 to 55 degrees C 40-bit (also called 64-bit) and 128-bit WEP data encryption Limited 1-year warranty Technical Specifications 202-10026-01 A-1 User Manual for the NETGEAR 54 Mbps Wireless USB 2.0 Adapter WG111 A-2 202-10026-01 Technical Specifications Appendix B Wireless Networking Basics This chapter provides an overview of Wireless networking.

Wireless Networking Overview The WG111 Wireless USB 2.0 Adapter conforms to the Institute of Electrical and Electronics Engineers (IEEE) 802.11b standard for wireless LANs (WLANs) and a product update will bring the WG111 into conformance to the 802.11g standard when it is ratified. On an 802.11b or g wireless link, data is encoded using direct-sequence spread-spectrum (DSSS) technology and is transmitted in the unlicensed radio spectrum at 2.5GHz. The maximum data rate for the wireless link is 11 Mbps, but it will automatically back down from 11 Mbps to 5.5, 2, and 1 Mbps when the radio signal is weak or when interference is detected. The 802.

11g auto rate sensing rates are 1, 2, 5.5, 6, 9, 12, 18, 24, 36, 48, and 54 Mbps. The 802.11 standard is also called Wireless Ethernet or Wi-Fi by the Wireless Ethernet Compatibility Alliance (WECA, see <http://www.wi-fi.net>), an industry standard group promoting interoperability among 802.11 devices. The 802.11 standard offers two methods for configuring a wireless network - ad hoc and infrastructure. Infrastructure Mode With a wireless Access Point, you can operate the wireless LAN in the infrastructure mode.

@@@There is no Access Point involved in this configuration. @@@@An SSID is a thirty-two character (maximum) alphanumeric key identifying the name of the wireless local area network. Some vendors refer to the SSID as network name. Authentication and WEP The absence of a physical connection between nodes makes the wireless links vulnerable to eavesdropping and information theft. To provide a certain level of security, the IEEE 802.11 standard has defined two types of authentication methods, Open System and Shared Key. With Open System authentication, a wireless PC can join any network and receive any messages that are not encrypted. With Shared Key authentication, only those PCs that possess the correct authentication key can join the network. By default, IEEE 802.11 wireless devices operate in an Open System network.

Wired Equivalent Privacy (WEP) data encryption is used when the wireless devices are configured to operate in Shared Key authentication mode. There are two shared key methods implemented in most commercially available products, 64-bit and 128-bit WEP data encryption. B-2 202-10026-01 Wireless Networking Basics User Manual for the NETGEAR 54 Mbps Wireless USB 2.0 Adapter WG111 802.11 Authentication The 802.

11 standard defines several services that govern how two 802.11 devices communicate. The following events must occur before an 802.11 Station can communicate with an Ethernet network through an access point such as the one built in to the WG111: 1. 2.

3. 4. 5. 6. 7. 8. Turn on the wireless station. The station listens for messages from any access points that are in range.



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