



Your PDF Guides

You can read the recommendations in the user guide, the technical guide or the installation guide for ZYXEL NBG4115. You'll find the answers to all your questions on the ZYXEL NBG4115 in the user manual (information, specifications, safety advice, size, accessories, etc.). Detailed instructions for use are in the User's Guide.

User manual ZYXEL NBG4115
User guide ZYXEL NBG4115
Operating instructions ZYXEL NBG4115
Instructions for use ZYXEL NBG4115
Instruction manual ZYXEL NBG4115

NBG4115

Wireless N-lite 3G Home Router

User's Guide

Default Login Details

IP Address <http://192.168.1.1>
Password 1234



Firmware Version 1.0
Edition 2, 7/2009

www.zyxel.com

ZyXEL

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<http://yourpdfguides.com/dref/2465223>

Manual abstract:

· Type [CTRL]+[F] to open the Adobe Reader search utility and enter a word or phrase. This can help you quickly pinpoint the information you require. You can also enter text directly into the toolbar in Reader. · To quickly move around within a page, press the [SPACE] bar. This turns your cursor into a "hand" with which you can grab the page and move it around freely on your screen. · Embedded hyperlinks are actually cross-references to related text.

@@@The Technical Writing Team, ZyXEL Communications Corp., 6 Innovation Road II, Science-Based Industrial Park, Hsinchu, 30099, Taiwan. Need More Help? More help is available at www.zyxel.com.

· Download Library Search for the latest product updates and documentation from this link. Read the Tech Doc Overview to find out how to efficiently use the User Guide, Quick Start Guide and Command Line Interface Reference Guide in order to better understand how to use your product. · Knowledge Base If you have a specific question about your product, the answer may be here. This is a collection of answers to previously asked questions about ZyXEL products.

· Forum This contains discussions on ZyXEL products. Learn from others who use ZyXEL products and share your experiences as well. 4 User's Guide About This User's Guide Customer Support Should problems arise that cannot be solved by the methods listed above, you should contact your vendor. If you cannot contact your vendor, then contact a ZyXEL office for the region in which you bought the device. See http://www.zyxel.com/web/contact_us.php for contact information. Please have the following information ready when you contact an office. · Product model and serial number. · Warranty Information. · Date that you received your device. User's Guide 5 Document Conventions Document Conventions Warnings and Notes

These are how warnings and notes are shown in this User's Guide. Warnings tell you about things that could harm you or your device. Note: Notes tell you other important information (for example, other things you may need to configure or helpful tips) or recommendations.

Syntax Conventions · The NBG4115 may be referred to as the "NBG4115", the "device", the "product" or the "system" in this User's Guide. · Product labels, screen names, field labels and field choices are all in bold font. · A key stroke is denoted by square brackets and uppercase text, for example, [ENTER] means the "enter" or "return" key on your keyboard. "Enter" means for you to type one or more characters and then press the [ENTER] key. "Select" or "choose" means for you to use one of the predefined choices. · A right angle bracket (>) within a screen name denotes a mouse click. For example, Maintenance > Log > Log Setting means you first click Maintenance in the navigation panel, then the Log sub menu and finally the Log Setting tab to get to that screen. · Units of measurement may denote the "metric" value or the "scientific" value. For example, "k" for kilo may denote "1000" or "1024", "M" for mega may denote "1000000" or "1048576" and so on. · "e."

g.," is a shorthand for "for instance", and "i.e.," means "that is" or "in other words". 6 User's Guide Document Conventions Icons Used in Figures Figures in this User's Guide may use the following generic icons.

The NBG4115 icon is not an exact representation of your device. NBG4115 Computer Notebook computer Server DSLAM Firewall Telephone Switch Router Modem User's Guide 7 Safety Warnings Safety Warnings · Do NOT use this product near water, for example, in a wet basement or near a swimming pool. · Do NOT expose your device to dampness, dust or corrosive liquids. · Do NOT store things on the device. · Do NOT install, use, or service this device during a thunderstorm.

There is a remote risk of electric shock from lightning. · Connect ONLY suitable accessories to the device. · Do NOT open the device or unit. Opening or removing covers can expose you to dangerous high voltage points or other risks. ONLY qualified service personnel should service or disassemble this device. Please contact your vendor for further information. · Make sure to connect the cables to the correct ports. · Place connecting cables carefully so that no one will step on them or stumble over them. · Always disconnect all cables from this device before servicing or disassembling. · Use ONLY an appropriate power adaptor or cord for your device.

· Connect the power adaptor or cord to the right supply voltage (for example, 110V AC in North America or 230V AC in Europe). · Do NOT allow anything to rest on the power adaptor or cord and do NOT place the product where anyone can walk on the power adaptor or cord. · Do NOT use the device if the power adaptor or cord is damaged as it might cause electrocution. · If the power adaptor or cord is damaged, remove it from the power outlet. · Do NOT attempt to repair the power adaptor or cord. Contact your local vendor to order a new one. · Do not use the device outside, and make sure all the connections are indoors. There is a remote risk of electric shock from lightning. · Do NOT obstruct the device ventilation slots, as insufficient airflow may harm your device. · Antenna Warning! This device meets ETSI and FCC certification requirements when using the included antenna(s).

Only use the included antenna(s). · If you wall mount your device, make sure that no electrical lines, gas or water pipes will be damaged. Your product is marked with this symbol, which is known as the WEEE mark. WEEE stands for Waste Electronics and Electrical Equipment. It means that used electrical and electronic products should not be mixed with general waste.

Used electrical and electronic equipment should be treated separately. 8 User's Guide Contents Overview Contents Overview Introduction

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You can connect network devices via the Ethernet ports of the NBG4115 so that they can communicate with each other and access the Internet. · Wireless. Wireless clients can connect to the NBG4115 to access network resources. · WAN. Connect to a broadband modem/router for Internet access. · WPS. Create an instant network connection with another WPS-compatible device, sharing your network connection with it. · 3G Wireless. Connect to a local 3G wireless network to take advantage of superior connection speeds and improved download times. Figure 1 NBG4115 Network LAN 1 LAN 2 WLAN User's Guide 21 Chapter 1 Introduction 1.

3 Ways to Manage the NBG4115 Use any of the following methods to manage the NBG4115. · WPS (Wi-Fi Protected Setup). You can use the WPS button or the WPS section of the Web Configurator to set up a wireless network with your ZyXEL Device. · Web Configurator. This is recommended for everyday management of the NBG4115 using a (supported) web browser. 1.4 Good Habits for Managing the NBG4115 Do the following things regularly to make the NBG4115 more secure and to manage the NBG4115 more

effectively. · Change the password. Use a password that's not easy to guess and that consists of different types of characters, such as numbers and letters. ·

Write down the password and put it in a safe place.

· Back up the configuration (and make sure you know how to restore it). Restoring an earlier working configuration may be useful if the device becomes unstable or even crashes. If you forget your password, you will have to reset the NBG4115 to its factory default settings. If you backed up an earlier configuration file, you would not have to totally re-configure the NBG4115.



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You could simply restore your last configuration. 1.5 LEDs Figure 2 Front Panel 22 User's Guide Chapter 1 Introduction The following table describes the LEDs and the WPS button. Table 1 Front Panel LEDs and WPS Button LED POWER COLOR Green STATUS On Off DESCRIPTION The NBG4115 is receiving power and functioning properly. The NBG4115 is not receiving power. The NBG4115 is ready, but is not sending/ receiving data through the wireless LAN.

The NBG4115 is sending/receiving data through the wireless LAN. The NBG4115 is negotiating a WPS connection with a wireless client. WLAN Green On Blinking Off WAN Green On Blinking Off LAN 1-2 Green On Blinking Off 3G Green On Blinking Off Internet Green On The wireless LAN is not ready or has failed. The NBG4115 has a successful 10/100MB WAN connection. The NBG4115 is sending/receiving data through the WAN. The WAN connection is not ready, or has failed. The NBG4115 has a successful 10/100MB Ethernet connection. The NBG4115 is sending/receiving data through the LAN. The LAN is not connected. The NBG4115 has a 3G card installed and is communicating with routers.

The NBG4115 is transmitting and/or receiving data from routers through an installed 3G card. There is no 3G card installed. The NBG4115 has received an IP address through either the WAN or WLAN interface and can connect to the Internet. The NBG4115 has not received an IP address through either the WAN or WLAN interface and as such cannot connect to the Internet. Off WPS Button Press this button for 1 second to set up a wireless connection via WiFi Protected Setup with another WPS-enabled client.

You must press the WPS button on the client side within 120 seconds for a successful connection. User's Guide 23 Chapter 1 Introduction 24 User's Guide CHAPTER 2.1 Overview 2 The WPS Button Your NBG4115 supports WiFi Protected Setup (WPS), which is an easy way to set up a secure wireless network. WPS is an industry standard specification, defined by the WiFi Alliance. WPS allows you to quickly set up a wireless network with strong security, without having to configure security settings manually.

Each WPS connection works between two devices. Both devices must support WPS (check each device's documentation to make sure). Depending on the devices you have, you can either press a button (on the device itself, or in its configuration utility) or enter a PIN (a unique Personal Identification Number that allows one device to authenticate the other) in each of the two devices. When WPS is activated on a device, it has two minutes to find another device that also has WPS activated. Then, the two devices connect and set up a secure network by themselves. For more information on using WPS, see Section 6.4 on page 68. User's Guide 25 Chapter 2 The WPS Button 26 User's Guide CHAPTER 3.1 Overview 3 The Web Configurator This chapter describes how to access the NBG4115 Web Configurator and provides an overview of its screens. The Web Configurator is an HTML-based management interface that allows easy setup and management of the NBG4115 via Internet browser.

Use Internet Explorer 6.0 and later or Netscape Navigator 7.0 and later versions or Safari 2.0 or later versions. The recommended screen resolution is 1024 by 768 pixels. In order to use the Web Configurator you need to allow: · Web browser pop-up windows from your device. Web pop-up blocking is enabled by default in Windows XP SP (Service Pack) 2. · JavaScripts (enabled by default). · Java permissions (enabled by default). Refer to the Troubleshooting chapter to see how to make sure these functions are allowed in Internet Explorer.

3.2 Accessing the Web Configurator 1 Make sure your NBG4115 hardware is properly connected and prepare your computer or computer network to connect to the NBG4115 (refer to the Quick Start Guide). Launch your web browser. Type "http://192.168.

1.1" as the website address. Your computer must be in the same subnet in order to access this website address. 2 3 User's Guide 27 Chapter 3 The Web Configurator Type "1234" (default) as the password and click Login. In some versions, the default password appears automatically - if this is the case, click Login.

You should see a screen asking you to change your password (highly recommended) as shown next. Type a new password (and retype it to confirm) and click Apply or click Ignore. 4 5 Figure 3 Change Password Screen Note: The management session automatically times out when the time period set in the Administrator Inactivity Timer field expires (default five minutes). Simply log back into the NBG4115 if this happens. 6 Select the setup mode you want to use. · Click Go to Wizard Setup to use the Configuration Wizard for basic Internet and Wireless setup. · Click Go to Advanced Setup to view and configure all the NBG4115's settings. 28 User's Guide Chapter 3 The Web Configurator · Select a language to go to the basic Web Configurator in that language. To change to the advanced configurator see Chapter 23 on page 199. Figure 4 Selecting the setup mode 3.

3 Resetting the NBG4115 If you forget your password or IP address, or you cannot access the Web Configurator, you will need to use the RESET button at the back of the NBG4115 to reload the factory-default configuration file. This means that you will lose all configurations that you had previously saved, the password will be reset to "1234" and the IP address will be reset to "192.168.1.1". 3.3.1 Procedure to Use the Reset Button 1 2 3 Make sure the power LED is on. Press the RESET button for longer than 1 second to restart/reboot the NBG4115. Press the RESET button for longer than five seconds to set the NBG4115 back to its factory-default configurations.

3.4 Navigating the Web Configurator The following summarizes how to navigate the Web Configurator from the Status screen in Router Mode and AP Mode. User's Guide 29 Chapter 3 The Web Configurator 3.5 The Status Screen in Router Mode Click on Status. The screen below shows the status screen in Router Mode.

(For information on the status screen in AP Mode see Chapter 5 on page 56.) Figure 5 Web Configurator Status Screen The following table describes the icons shown in the Status screen. Table 2 Status Screen Icon Key ICON DESCRIPTION Click this icon to open the setup wizard. Click this icon to view copyright and a link for related product information. Click this icon at any time to exit the Web Configurator.

Select a number of seconds or None from the drop-down list box to refresh all screen statistics automatically at the end of every time interval or to not refresh the screen statistics. Click this button to refresh the status screen statistics. 30 User's Guide Chapter 3 The Web Configurator The following table describes the labels shown in the Status screen.



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Table 3 Web Configurator Status Screen LABEL Device Information System Name Firmware Version WAN Information - SIM Card Status - MAC Address - IP Address - IP Subnet Mask - DHCP LAN Information - MAC Address - IP Address - IP Subnet Mask - DHCP WLAN Information - MAC Address - Status - Name (SSID) - Channel - Operating Channel - Security Mode - 802.11 Mode - WPS This shows the wireless adapter MAC Address of your device. This shows the current status of the Wireless LAN - On, Off or Off by scheduler. This shows a descriptive name used to identify the NBG4115 in the wireless LAN. This shows the channel number which you select manually. This shows the channel number which the NBG4115 is currently using over the wireless LAN. This shows the level of wireless security the NBG4115 is using.

This shows the wireless standard. This displays Configured when the WPS has been set up. This displays Unconfigured if the WPS has not been set up. Click the status to display Network > Wireless LAN > WPS screen. System Status System Up Time Current Date/Time System Resource - CPU Usage This displays what percentage of the NBG4115's processing ability is currently used. When this percentage is close to 100%, the NBG4115 is running at full load, and the throughput is not going to improve anymore. If you want some applications to have more throughput, you should turn off other applications. This is the total time the NBG4115 has been on. This field displays your NBG4115's present date and time. This shows the LAN Ethernet adapter MAC Address of your device. This shows the LAN port's IP address. This shows the LAN port's subnet mask. This shows the LAN port's DHCP role - Server or None. (3G Only) When a 3G USB device is attached to the NBG4115, this provides information specific to it. This shows the WAN Ethernet adapter MAC Address of your device. This shows the WAN port's IP address. This shows the WAN port's subnet mask. This shows the WAN port's DHCP role - Client or None. This is the System Name you enter in the Maintenance > System > General screen. It is for identification purposes.

This is the firmware version and the date created. DESCRIPTION User's Guide 31 Chapter 3 The Web Configurator Table 3 Web Configurator Status Screen (continued) LABEL - Memory Usage System Setting - Firewall - Bandwidth Management - UPnP Interface Status Interface Status This displays the NBG4115 port types. The port types are: WAN, LAN and WLAN. For the 3G, LAN and WAN ports, this field displays Down (line is down) or Up (line is up or connected). For the WLAN, it displays Up when the WLAN is enabled or Down when the WLAN is disabled. Rate For the LAN ports, this displays the port speed and duplex setting or N/A when the line is disconnected. For the WAN port, it displays the port speed and duplex setting if you're using Ethernet encapsulation and Idle (line (ppp) idle), Dial (starting to trigger a call) and Drop (dropping a call) if you're using PPPoE or PPTP encapsulation. This field displays N/A when the line is disconnected. For the WLAN, it displays the maximum transmission rate when the WLAN is enabled and N/A when the WLAN is disabled. Summary DHCP Table Packet Statistics WLAN Station Status Use this screen to view current DHCP client information.

Use this screen to view port status and packet specific statistics. Use this screen to view the wireless stations that are currently associated to the NBG4115. This shows whether the firewall is active or not. This shows whether bandwidth management is enabled or not. This shows whether UPnP is active or not. DESCRIPTION This shows what percentage of the heap memory the NBG4115 is using. 3.5.1 Navigation Panel Use the sub-menus on the navigation panel to configure NBG4115 features. The following table describes the sub-menus.

Table 4 Screens Summary LINK Status TAB FUNCTION This screen shows the NBG4115's general device, system and interface status information. Use this screen to access the wizard, and summary statistics tables. Network 32 User's Guide Chapter 3 The Web Configurator Table 4 Screens Summary LINK Wireless LAN TAB General MAC Filter FUNCTION Use this screen to configure wireless LAN. Use the MAC filter screen to configure the NBG4115 to block access to devices or block the devices from accessing the NBG4115. This screen allows you to configure advanced wireless settings.

Use this screen to configure Wi-Fi Multimedia Quality of Service (WMM QoS). WMM QoS allows you to prioritize wireless traffic according to the delivery requirements of individual services. Use this screen to configure WPS. Use this screen to add a wireless station using WPS. Use this screen to schedule the times the Wireless LAN is enabled.

This screen allows you to configure ISP parameters, WAN IP address assignment, DNS servers and the WAN MAC address. Use this screen to configure other advanced properties. Use this screen to configure LAN IP address and subnet mask. Use this screen to enable the NBG4115's DHCP server. Use this screen to assign IP addresses to specific individual computers based on their MAC addresses and to have DNS servers assigned by the DHCP server. Use this screen to view current DHCP client information and to always assign an IP address to a MAC address (and host name). Use this screen to enable NAT. Use this screen to configure servers behind the NBG4115. Use this screen to change your NBG4115's port triggering settings. Use this screen to set up dynamic DNS.

Use this screen to activate/deactivate the firewall. This screen shows a summary of the firewall rules, and allows you to edit/add a firewall rule. Use this screen to block certain web features and sites containing certain keywords in the URL. Use this screen to configure IP static routes. Advanced QoS WPS WPS Station Scheduling WAN Internet Connection Advanced LAN DHCP Server IP General Advanced Client List NAT General Application Advanced DDNS Security Firewall General General Services Content Filter Management Static Route Filter IP Static Route User's Guide 33 Chapter 3 The Web Configurator Table 4 Screens Summary LINK Bandwidth Management TAB General FUNCTION Use this screen to use pre-configured bandwidth management profiles for how your NBG4115 manages incoming and outgoing data. Use this screen to create your own bandwidth management profile for how your NBG4115 manages incoming and outgoing data. Use this screen to configure through which interface(s) and from which IP address(es) users can use HTTP to manage the NBG4115. Use this screen to enable UPnP on the NBG4115. Use this screen to view and change administrative settings such as system and domain names, password and inactivity timer. Use this screen to change your NBG4115's time and date.

Use this screen to view the logs for the categories that you selected. Use this screen to upload firmware to your NBG4115.



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Use this screen to backup and restore the configuration or reset the factory defaults to your NBG4115. This screen allows you to reboot the NBG4115 without turning the power off. This screen allows you to select whether your device acts as a Router or an Access Point.

This screen allows you to select the language you prefer. Advanced Remote MGMT UPnP Maintenance System WWW General General Time Setting Logs Tools View Log Firmware Configuration Restart Sys OP Mode Language General Language 3.5.2 Summary: DHCP Table DHCP (Dynamic Host Configuration Protocol, RFC 2131 and RFC 2132) allows individual clients to obtain TCP/IP configuration at start-up from a server. @@@@If DHCP service is disabled, you must have another DHCP server on that network, or else the computer must be manually configured.

Click the DHCP Table (Details...) hyperlink in the Status screen. Read-only information here relates to your DHCP status. The DHCP table shows current 34 User's Guide Chapter 3 The Web Configurator DHCP client information (including IP Address, Host Name and MAC Address) of all network clients using the NBG4115's DHCP server. Figure 6 Summary: DHCP Table The following table describes the labels in this screen. Table 5 Summary: DHCP Table LABEL # IP Address Host Name MAC Address DESCRIPTION This is the index number of the host computer. @@This field displays the computer host name. This field shows the MAC address of the computer with the name in the Host Name field.

Every Ethernet device has a unique MAC (Media Access Control) address which uniquely identifies a device. The MAC address is assigned at the factory and consists of six pairs of hexadecimal characters, for example, 00:A0:C5:00:00:02. Refresh Click Refresh to renew the screen. 3.5.3 Summary: Packet Statistics Click the Packet Statistics (Details...) hyperlink in the Status screen. Readonly information here includes port status, packet specific statistics and the "system up time".

The Poll Interval(s) field is configurable and is used for refreshing the screen. Figure 7 Summary: Packet Statistics User's Guide 35 Chapter 3 The Web Configurator The following table describes the labels in this screen. Table 6 Summary: Packet Statistics LABEL Port Status DESCRIPTION This is the NBG4115's port type. For the LAN ports, this displays the port speed and duplex setting or Down when the line is disconnected. For the WAN port, it displays the port speed and duplex setting if you're using Ethernet encapsulation and Idle (line (ppp) idle), Dial (starting to trigger a call) and Drop (dropping a call) if you're using PPPoE or PPTP encapsulation.

This field displays Down when the line is disconnected. For the WLAN, it displays the maximum transmission rate when the WLAN is enabled and Down when the WLAN is disabled. TxPkts RxPkts Collisions Tx B/s Rx B/s System Up Time Poll Interval(s) Set Interval Stop This is the number of transmitted packets on this port. This is the number of received packets on this port. This is the number of collisions on this port.

This displays the transmission speed in bytes per second on this port. This displays the reception speed in bytes per second on this port. This is the total time the NBG4115 has been on. Enter the time interval for refreshing statistics in this field. Click this button to apply the new poll interval you entered in the Poll Interval(s) field. Click Stop to stop refreshing statistics. 3.5.4 Summary: WLAN Station Status Click the WLAN Station Status (Details..

.) hyperlink in the Status screen. View the wireless stations that are currently associated to the NBG4115 in the Association List. Association means that a wireless client (for example, your network or computer with a wireless network card) has connected successfully to the AP (or wireless router) using the same SSID, channel and security settings. Figure 8 Summary: Wireless Association List 36 User's Guide Chapter 3 The Web Configurator The following table describes the labels in this screen. Table 7 Summary: Wireless Association List LABEL # MAC Address Association Time Refresh DESCRIPTION This is the index number of an associated wireless station. This field displays the MAC address of an associated wireless station. This field displays the time a wireless station first associated with the NBG4115's WLAN network. Click Refresh to reload the list. User's Guide 37 Chapter 3 The Web Configurator 38 User's Guide CHAPTER 4.

1 Overview 4 Connection Wizard This chapter provides information on the wizard setup screens in the Web Configurator. 4.2 Wizard Setup The Web Configurator's wizard setup helps you configure your device to access the Internet. Refer to your ISP (Internet Service Provider) checklist in the Quick Start Guide to know what to enter in each field. Leave a field blank if you don't have that information.

1 After you access the NBG4115 Web Configurator, click the Go to Wizard setup hyperlink. You can click Go to Advanced setup hyperlink to skip this wizard setup and configure basic or advanced features accordingly. Figure 9 Select Wizard or Advanced Mode User's Guide 39 Chapter 4 Connection Wizard Choose a language by clicking on the language's button. The screen will update. Click the Next button to proceed to the next screen.

2 Figure 10 Select a Language 3 Read the on-screen information and click Next. Figure 11 Welcome to the Connection Wizard 4.3 STEP 1: System Information System Information contains administrative and system-related information. 4.3.1 System Name System Name is for identification purposes. However, because some ISPs check this name you should enter your computer's "Computer Name". In Windows 2000, click Start > Settings > Control Panel and then doubleclick System. Click the Network Identification tab and then the Properties button. Note the entry for the Computer name field and enter it as the System Name.

In Windows XP, click Start > My Computer > View system information and then click the Computer Name tab. Note the entry in the Full computer name field and enter it as the NBG4115 System Name. 40 User's Guide Chapter 4 Connection Wizard 4.3.2 Domain Name The Domain Name entry is what is propagated to the DHCP clients on the LAN. If you leave this blank, the domain name obtained by DHCP from the ISP is used. While you must enter the host name (System Name) on each individual computer, the domain name can be assigned from the NBG4115 via DHCP. Click Next to configure the NBG4115 for Internet access. Figure 12 Wizard Step 1: System Information The following table describes the labels in this screen. Table 8 Wizard Step 1: System Information LABEL System Name DESCRIPTION System Name is a unique name to identify the NBG4115 in an Ethernet network. Enter a descriptive name.



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This name can be up to 30 alphanumeric characters long. Spaces are not allowed, but dashes "-" and underscores "_" are accepted. Type the domain name (if you know it) here. If you leave this field blank, the ISP may assign a domain name via DHCP.

The domain name entered by you is given priority over the ISP assigned domain name. Click Back to display the previous screen. Click Next to proceed to the next screen. Click Exit to close the wizard screen without saving. Domain Name Back Next Exit User's Guide 41 Chapter 4 Connection Wizard 4.

4 STEP 2: Wireless LAN Set up your wireless LAN using the following screen. Figure 13 Wizard Step 2: Wireless LAN The following table describes the labels in this screen. Table 9 Wizard Step 2: Wireless LAN LABEL Name (SSID) DESCRIPTION Enter a descriptive name (up to 32 printable 7-bit ASCII characters) for the wireless LAN. If you change this field on the NBG4115, make sure all wireless stations use the same SSID in order to access the network. Security Select a Security level from the drop-down list box. Choose Auto (WPA2-PSK) to have the NBG4115 generate a pre-shared key automatically. After you click Next a screen pops up displaying the generated pre-shared key. Write down the key for use later when connecting other wireless devices to your network. Click OK to continue. Choose None to have no wireless LAN security configured.

If you do not enable any wireless security on your NBG4115, your network is accessible to any wireless networking device that is within range. If you choose this option, skip directly to Section 4.5 on page 43. Choose Extend (WPA-PSK or WPA2-PSK) security to configure a PreShared Key. Choose this option only if your wireless clients support WPAPSK or WPA2-PSK respectively. If you choose this option, skip directly to Section 4.4.1 on page 43. Channel Selection Back Next Exit The range of radio frequencies used by IEEE 802.11b/g/n wireless devices is called a channel.

The device will automatically select the channel with the least interference. Click Back to display the previous screen. Click Next to proceed to the next screen. Click Exit to close the wizard screen without saving. 42 User's Guide Chapter 4 Connection Wizard Note: The wireless stations and NBG4115 must use the same SSID, channel ID, WPA-PSK (if WPA-PSK is enabled) or WPA2-PSK (if WPA2-PSK is enabled) for wireless communication.

4.4.1 Extend (WPA-PSK or WPA2-PSK) Security Choose Extend (WPA-PSK) or Extend (WPA2-PSK) security in the Wireless LAN setup screen to set up a Pre-Shared Key. Figure 14 Wizard Step 2: Extend (WPA-PSK or WPA2-PSK) Security The following table describes the labels in this screen. Table 10 Wizard Step 2: Extend (WPA-PSK or WPA2-PSK) Security LABEL Pre-Shared Key Back Next Exit DESCRIPTION Type from 8 to 63 case-sensitive ASCII or HEX characters.

You can set up the most secure wireless connection by configuring WPA in the wireless LAN screens. You need to configure an authentication server to do this. Click Back to display the previous screen. Click Next to proceed to the next screen. Click Exit to close the wizard screen without saving. 4.5 STEP 3: Internet Configuration The NBG4115 offers four Internet connection types. They are Ethernet, PPP over Ethernet, PPTP or Mobile 3G. The wizard attempts to detect which WAN connection type you are using. If the wizard does not detect a connection type, you must select one from the drop-down list box.

If you have an always-on connection, most likely you should use Ethernet. If your connection requires a user name and password to authenticate your connection, then choose either PPPoE or PPTP. Finally, if you are using a USB-based 3G device, select the Mobile 3G option. User's Guide 43 Chapter 4 Connection Wizard Note: When you select Mobile 3G, then all WAN connections are made through this. Check with your ISP to make sure you use the correct type. This wizard screen varies according to the connection type that you select. Figure 15 Wizard Step 3: ISP Parameters. The following table describes the labels in this screen, Table 11 Wizard Step 3: ISP Parameters CONNECTION TYPE Ethernet PPPoE DESCRIPTION Select the Ethernet option when the WAN port is used as a regular Ethernet. Select the PPP over Ethernet option for a dial-up connection. If your ISP gave you an IP address and/or subnet mask, then select PPTP.

Select the PPTP option for a dial-up connection. Select the Mobile 3G option for a USB 3G connection. PPTP Mobile 3G 4.5.1 Ethernet Connection Choose Ethernet when the WAN port is used as a regular Ethernet.

Continue to Section 4.5.5 on page 49. Figure 16 Wizard Step 3: Ethernet Connection 44 User's Guide Chapter 4 Connection Wizard 4.5.

2 PPPoE Connection Point-to-Point Protocol over Ethernet (PPPoE) functions as a dial-up connection. PPPoE is an IETF (Internet Engineering Task Force) standard specifying how a host personal computer interacts with a broadband modem (for example DSL, cable, wireless, etc.) to achieve access to high-speed data networks. For the service provider, PPPoE offers an access and authentication method that works with existing access control systems (for instance, RADIUS). One of the benefits of PPPoE is the ability to let end users access one of multiple network services, a function known as dynamic service selection.

This enables the service provider to easily create and offer new IP services for specific users. Operationally, PPPoE saves significant effort for both the subscriber and the ISP/ carrier, as it requires no specific configuration of the broadband modem at the subscriber's site. By implementing PPPoE directly on the NBG4115 (rather than individual computers), the computers on the LAN do not need PPPoE software installed, since the NBG4115 does that part of the task. Furthermore, with NAT, all of the LAN's computers will have Internet access. Figure 17 Wizard Step 3: PPPoE Connection The following table describes the labels in this screen.

Table 12 Wizard Step 3: PPPoE Connection LABEL Connection Type Service Name User Name Password Back DESCRIPTION Select the PPP over Ethernet option for a dial-up connection. Type the name of your service provider. Type the user name given to you by your ISP. Type the password associated with the user name above. Click Back to return to the previous screen. ISP Parameter for Internet Access User's Guide 45 Chapter 4 Connection Wizard Table 12 Wizard Step 3: PPPoE Connection LABEL Next Exit DESCRIPTION Click Next to continue. Click Exit to close the wizard screen without saving. 4.5.3 PPTP Connection Point-to-Point Tunneling Protocol (PPTP) is a network protocol that enables transfers of data from a remote client to a private server, creating a Virtual Private Network (VPN) using TCP/IP-based networks.

PPTP supports on-demand, multi-protocol, and virtual private networking over public networks, such as the Internet.



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Refer to the appendix for more information on PPTP. Note: The NBG4115 supports one PPTP server connection at any given time. Figure 18 Wizard Step 3: PPTP Connection The following table describes the fields in this screen Table 13 Wizard Step 3: PPTP Connection LABEL Connection Type DESCRIPTION Select PPTP from the drop-down list box. To configure a PPTP client, you must configure the User Name and Password fields for a PPP connection and the PPTP parameters for a PPTP connection.

ISP Parameters for Internet Access 46 User's Guide Chapter 4 Connection Wizard Table 13 Wizard Step 3: PPTP Connection LABEL User Name Password Server IP Address Connection ID/ Name DESCRIPTION Type the user name given to you by your ISP. Type the password associated with the User Name above. Type the IP address of the PPTP server. Enter the connection ID or connection name in this field. It must follow the "c:id" and "n:name" format. For example, C:12 or N:My ISP. This field is optional and depends on the requirements of your ISP. PPTP Configuration Get automatically from ISP Use fixed IP address My IP Address My IP Subnet Mask Back Next Exit Select this radio button if your ISP did not assign you a fixed IP address. Select this radio button, provided by your ISP to give the NBG4115 a fixed, unique IP address. Type the (static) IP address assigned to you by your ISP. Type the subnet mask assigned to you by your ISP (if given). Click Back to return to the previous screen. Click Next to continue. Click Exit to close the wizard screen without saving. User's Guide 47 Chapter 4 Connection Wizard 4.

5.4 Mobile 3G Mobile 3G is a set of international "third generation" standards for the sending and receiving of voice, video, and wireless data in a mobile environment. For the NBG4115, this type of wireless connection requires a connected 3G-compatible USB device (see the included Quick Start Guide for installation information), and a 3G account with your local ISP. Note: When you use Mobile 3G, all WAN connections are made through it. Figure 19 Wizard Step 3: Mobile 3G Connection The following table describes the fields in this screen Table 14 Wizard Step 3: Mobile 3G Connection LABEL Connection Type PIN Code APN Code Dial Number User Name Password Back Next Exit DESCRIPTION Select Mobile 3G from the drop-down list box. Enter the 4-digit 3G account PIN code given to you by your ISP. Enter the Access Point Name (APN) given to you by your ISP. Enter the phone number that must be dialed in order to login to your 3G account from the NBG4115. Type the user name given to you by your ISP. Type the password associated with the User Name above. Click Back to return to the previous screen. Click Next to continue. Click Exit to close the wizard screen without saving. ISP Parameters for Internet Access 48 User's Guide Chapter 4 Connection Wizard 4.5.

5 Your IP Address The following wizard screen allows you to assign a fixed IP address or give the NBG4115 an automatically assigned IP address depending on your ISP. Figure 20 Wizard Step 3: Your IP Address The following table describes the labels in this screen Table 15 Wizard Step 3: Your IP Address LABEL Get automatically from your ISP Use fixed IP address provided by your ISP Back Next Exit DESCRIPTION Select this option if your ISP did not assign you a fixed IP address. This is the default selection. If you choose this option, skip directly to Section 4.5.

10 on page 52. Select this option if you were given IP address and/or DNS server settings by the ISP. The fixed IP address should be in the same subnet as your broadband modem or router. Click Back to return to the previous screen. Click Next to continue. Click Exit to close the wizard screen without saving.

4.5.6 WAN IP Address Assignment Every computer on the Internet must have a unique IP address. If your networks are isolated from the Internet, for instance, only between your two branch offices, you can assign any IP addresses to the hosts without problems.

However, the Internet Assigned Numbers Authority (IANA) has reserved the following three blocks of IP addresses specifically for private networks. Table 16 Private IP Address Ranges 10.0.0.0 172.16.0.0 192.168.0.0 10.255.255.255 172.31.

255.255 192.168.255.255 You can obtain your IP address from the IANA, from an ISP or have it assigned by a private network.

If you belong to a small organization and your Internet access is through an ISP, the ISP can provide you with the Internet addresses for your User's Guide 49 Chapter 4 Connection Wizard local networks. On the other hand, if you are part of a much larger organization, you should consult your network administrator for the appropriate IP addresses. Note: Regardless of your particular situation, do not create an arbitrary IP address; always follow the guidelines above. For more information on address assignment, please refer to RFC 1597, Address Allocation for Private Internets and RFC 1466, Guidelines for Management of IP Address Space. 4.5.7 IP Address and Subnet Mask Similar to the way houses on a street share a common street name, so too do computers on a LAN share one common network number. Where you obtain your network number depends on your particular situation. If the ISP or your network administrator assigns you a block of registered IP addresses, follow their instructions in selecting the IP addresses and the subnet mask. If the ISP did not explicitly give you an IP network number, then most likely you have a single user account and the ISP will assign you a dynamic IP address when the connection is established.

The Internet Assigned Number Authority (IANA) reserved this block of addresses specifically for private use; please do not use any other number unless you are told otherwise. Let's say you select 192.168.1.0 as the network number; which covers 254 individual addresses, from 192.168.1.1 to 192.168.1.254 (zero and 255 are reserved). In other words, the first three numbers specify the network number while the last number identifies an individual computer on that network. Once you have decided on the network number, pick an IP address that is easy to remember, for instance, 192.168.1.

1, for your NBG4115, but make sure that no other device on your network is using that IP address. @@Your NBG4115 will compute the subnet mask automatically based on the IP address that you entered. You don't need to change the subnet mask computed by the NBG4115 unless you are instructed to do otherwise. 4.5.

8 DNS Server Address Assignment Use DNS (Domain Name System) to map a domain name to its corresponding IP address and vice versa, for instance, the IP address of www.zyxel.com is 204.217.0.2. The DNS server is extremely important because without it, you must know the IP address of a computer before you can access it. The NBG4115 can get the DNS server addresses in the following ways. 50 User's Guide Chapter 4 Connection Wizard The ISP tells you the DNS server addresses, usually in the form of an information sheet, when you sign up.



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If your ISP gives you DNS server addresses, enter them in the DNS Server fields in the Wizard and/or WAN > Internet Connection screen.

If the ISP did not give you DNS server information, leave the DNS Server fields set to 0.0.0.0 in the Wizard screen and/or set to From ISP in the WAN > Internet Connection screen for the ISP to dynamically assign the DNS server IP addresses. 1 2 4.5.9 WAN IP and DNS Server Address Assignment The following wizard screen allows you to assign a fixed WAN IP address and DNS server addresses. Figure 21 Wizard Step 3: WAN IP and DNS Server Addresses The following table describes the labels in this screen Table 17 Wizard Step 3: WAN IP and DNS Server Addresses LABEL My WAN IP Address DESCRIPTION Enter your WAN IP address in this field. The WAN IP address should be in the same subnet as your DSL/Cable modem or router. Enter the IP subnet mask in this field.

Enter the gateway IP address in this field. WAN IP Address Assignment My WAN IP Subnet Mask Gateway IP Address System DNS Server Address Assignment (if applicable) DNS (Domain Name System) is for mapping a domain name to its corresponding IP address and vice versa. The DNS server is extremely important because without it, you must know the IP address of a computer before you can access it. The NBG4115 uses a system DNS server (in the order you specify here) to resolve domain names for DDNS and the time server. User's Guide 51 Chapter 4 Connection Wizard Table 17 Wizard Step 3: WAN IP and DNS Server Addresses LABEL First DNS Server Second DNS Server DESCRIPTION Enter the DNS server's IP address in the fields provided. If you do not configure a system DNS server, you must use IP addresses when configuring DDNS and the time server. Click Back to return to the previous screen. Click Next to continue. Click Exit to close the wizard screen without saving. Back Next Exit 4.

5.10 WAN MAC Address Every Ethernet device has a unique MAC (Media Access Control) address. The MAC address is assigned at the factory and consists of six pairs of hexadecimal characters, for example, 00:A0:C5:00:00:02. Table 18 Example of Network Properties for LAN Servers with Fixed IP Addresses Choose an IP address Subnet mask Gateway (or default route) 192.168.1.2-192.168.1.32; 192.

168.1.65-192.168.1.254. 255.255.255.0 192.

168.1.1(NBG4115 LAN IP) This screen allows users to configure the WAN port's MAC address by either using the NBG4115's MAC address, copying the MAC address from a computer on your LAN or manually entering a MAC address. Once it is successfully configured, the address will be copied to configuration file. It is advisable to clone the MAC address from a computer on your LAN even if your ISP does not presently require MAC address authentication.

Figure 22 Wizard Step 3: WAN MAC Address 52 User's Guide Chapter 4 Connection Wizard The following table describes the fields in this screen. Table 19 Wizard Step 3: WAN MAC Address LABEL Factory Default Clone the computer's MAC address Set WAN MAC Address Back Next Exit DESCRIPTION Select Factory Default to use the factory assigned default MAC address. Select this option and enter the IP address of the computer on the LAN whose MAC you are cloning. It is advisable to clone the MAC address from a computer on your LAN even if your ISP does not presently require MAC address authentication.

Select this option and enter the MAC address you want to use.

Click Back to return to the previous screen. Click Next to continue. Click Exit to close the wizard screen without saving. 4.6 Connection Wizard Complete Click Finish to complete the wizard setup. Figure 23 Connection Wizard Complete You have successfully set up your NBG4115 to operate on your network and access the Internet. User's Guide 53 Chapter 4 Connection Wizard 54 User's Guide CHAPTER 5.1 Overview 5 AP Mode This chapter discusses how to configure settings while your NBG4115 is set to AP Mode. Many screens that are available in Router Mode are not available in AP Mode. Note: See Chapter 6 on page 63 for an example of setting up a wireless network in AP mode.

Use your NBG4115 as an AP if you already have a router or gateway on your network. In this mode your device bridges a wired network (LAN) and wireless LAN (WLAN) in the same subnet. See the figure below for an example. Figure 24 Wireless Internet Access in AP Mode A B 5.2 Setting your NBG4115 to AP Mode 1 Log into the Web Configurator if you haven't already. See the Quick start Guide for instructions on how to do this. User's Guide 55 Chapter 5 AP Mode To set your NBG4115 to AP Mode, go to Maintenance > Sys OP Mode > General and select Access Point. 2 Figure 25 Maintenance > Sys OP Mode > General 3 A pop-up appears providing information on this mode. Click OK in the pop-up message window. (See Section 22.

2 on page 196 for more information on the pop-up.) Click Apply. Your NBG4115 is now in AP Mode. Note: You have to log in to the Web Configurator again when you change modes. 5.

3 The Status Screen in AP Mode Click on Status. The screen below shows the status screen in AP Mode. Figure 26 Status: AP Mode 56 User's Guide Chapter 5 AP Mode The following table describes the labels shown in the Status screen. Table 20 Web Configurator Status Screen LABEL Device Information System Name Firmware Version LAN Information - MAC Address - IP Address - IP Subnet Mask - DHCP WLAN Information - MAC Address - Status - Name (SSID) - Channel - Operating Channel - Security Mode - 802.11 Mode This shows the wireless adapter MAC Address of your device.

This shows the current status of the Wireless LAN - On, Off or Off by scheduler. This shows a descriptive name used to identify the NBG4115 in the wireless LAN. This shows the channel number which you select manually. This shows the channel number which the NBG4115 is currently using over the wireless LAN. This shows the level of wireless security the NBG4115 is using. This shows the IEEE 802.11 standard that the NBG4115 supports. Wireless clients must support the same standard in order to be able to connect to the NBG4115 This shows the WPS (WiFi Protected Setup) Status. Click the status to display Network > Wireless LAN > WPS screen. This is the total time the NBG4115 has been on.

This field displays your NBG4115's present date and time. This displays what percentage of the NBG4115's processing ability is currently used. When this percentage is close to 100%, the NBG4115 is running at full load, and the throughput is not going to improve anymore. If you want some applications to have more throughput, you should turn off other applications. This shows what percentage of the heap memory the NBG4115 is using. This displays the NBG4115 port types. The port types are: LAN and WLAN. For the LAN port, this field displays Down (line is down) or Up (line is up or connected).



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For the WLAN, it displays Up when the WLAN is enabled or Down when the WLAN is disabled. This shows the LAN Ethernet adapter MAC Address of your device.

This shows the LAN port's IP address. This shows the LAN port's subnet mask. This shows the LAN port's DHCP role - None. This is the System Name you enter in the Maintenance > System > General screen. It is for identification purposes.

This is the firmware version and the date created. DESCRIPTION - WPS System Status System Uptime Current Date/Time System Resource - CPU Usage - Memory Usage Interface Status Interface Status User's Guide 57 Chapter 5 AP Mode Table 20 Web Configurator Status Screen (continued) LABEL Rate DESCRIPTION For the LAN ports, this displays the port speed and duplex setting or N/A when the line is disconnected. For the WLAN, it displays the maximum transmission rate when the WLAN is enabled and N/A when the WLAN is disabled. Summary Packet Statistics WLAN Station Status Use this screen to view port status and packet specific statistics. Use this screen to view the wireless stations that are currently associated to the NBG4115.

5.3.1 Navigation Panel Use the menu in the navigation panel to configure NBG4115 features in AP Mode. The following screen and table show the features you can configure in AP Mode. Figure 27 Menu: AP Mode The following table describes the sub-menus. Table 21 Screens Summary LINK Status TAB FUNCTION This screen shows the NBG4115's general device, system and interface status information. Use this screen to access the wizard, and summary statistics tables. Network 58 User's Guide Chapter 5 AP Mode Table 21 Screens Summary LINK Wireless LAN TAB General MAC Filter FUNCTION Use this screen to configure wireless LAN. Use the MAC filter screen to configure the NBG4115 to block access to devices or block the devices from accessing the NBG4115. This screen allows you to configure advanced wireless settings.

Use this screen to configure Wi-Fi Multimedia Quality of Service (WMM QoS). WMM QoS allows you to prioritize wireless traffic according to the delivery requirements of individual services. Use this screen to configure WPS. Use this screen to add a wireless station using WPS. Use this screen to schedule the times the Wireless LAN is enabled. Use this screen to configure LAN IP address and subnet mask or to get the LAN IP address from a DHCP server. Use this screen to view and change administrative settings such as system and domain names, password and inactivity timer. Use this screen to change your NBG4115's time and date. Use this screen to view the logs for the categories that you selected. Use this screen to upload firmware to your NBG4115.

Advanced QoS WPS WPS Station Scheduling LAN Maintenance System General IP Time Setting Logs Tools View Log Firmware Configuratio Use this screen to backup and restore the configuration or n reset the factory defaults to your NBG4115. Restart Sys OP Mode Language General This screen allows you to reboot the NBG4115 without turning the power off. This screen allows you to select whether your device acts as a Router or a Access Point. This screen allows you to select the language you prefer. 5.

4 LAN Settings Use this section to configure your LAN settings while in AP Mode. Click Network > LAN to see the screen below. User's Guide 59 Chapter 5 AP Mode Note: If you change the IP address of the NBG4115 in the screen below, you will need to log into the NBG4115 again using the new IP address.

Figure 28 Network > LAN > IP The table below describes the labels in the screen. Table 22 Network > LAN > IP LABEL Get from DHCP Server User Defined LAN IP IP Address DESCRIPTION Select this to let the DHCP server in the gateway assign the NBG4115 IP address.

Select this to give the NBG4115 a static IP address. Type the IP address in dotted decimal notation. The default setting is 192.168.1.2. If you change the IP address you will have to log in again with the new IP address. @@@@ Click Apply to save your changes to the NBG4115. Click Reset to reload the previous configuration for this screen. IP Subnet Mask Apply Reset 5.

5 WLAN and Maintenance Settings The configuration of wireless and maintenance settings in AP Mode is the same as for Router Mode. · See Chapter 5 on page 69 for information on the configuring your wireless network. · See Maintenance and Troubleshooting (179) for information on the configuring your Maintenance settings. 60 User's Guide Chapter 5 AP Mode 5.6 Logging in while in AP Mode 1 2 Connect your computer to the LAN port of the NBG4115.

The default IP address of the NBG4115 is "192.168.1.2". In this case, your computer must have an IP address in the range between "192.168.1.3" and "192.168.1.

254". Click Start > Run on your computer in Windows. Type "cmd" in the dialog box. Type "ipconfig" to show your computer's IP address. If your computer's IP address is not in the correct range then see Appendix D on page 233 for information on changing your computer's IP address.

After you've set your computer's IP address, open a web browser such as Internet Explorer and type "192.168.1.2" as the web address in your web browser.

See Chapter 6 on page 63 for a tutorial on setting up a network with an AP. 3 4 5 6 User's Guide 61 Chapter 5 AP Mode 62 User's Guide CHAPTER 6.1 Overview This chapter provides tutorials for setting up your NBG4115. 6 Tutorials 6.2 Set Up a 3G Connection This section shows you how to make a 3G connection with your NBG4115. There are two ways to set up your 3G options.

1 Use the Wizard, which was introduced in the Quick Start Guide. The wizard is good for getting up and running in as little time as possible. It allows you to configure the minimum number of options required to get connected. Use the Web Configurator's Network options. This is handy because it gives you access to other options not available in the Wizard, allowing you to have more control over your device. This tutorial shows you how to do the second one. You will need the following information, which should be provided by your ISP: FIELD PIN Code 2 DESCRIPTION This is the 4-digit Personal Identification Number (PIN) for your 3G device's SIM card. This is the Access Point Name (APN) of the 3G network to which you intend to connect. This is the number used to instruct your 3G device to make its data connection to the 3G network. EXAMPLE 1234 APN Code mobile.

p3.cz.co gprsinternet *09# *09**3# Dial Number User's Guide 63 Chapter 6 Tutorials FIELD User Name DESCRIPTION This is your account user name.

EXAMPLE dcmchale 0b1ken@kashiik.org Password This is your account user name's password.

***** To set up a 3G connection: 1 2 Connect to the Web Configurator, as described in the Quick Start Guide.



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