Toshiba WRC-1000 User Manual

Wireless routing center

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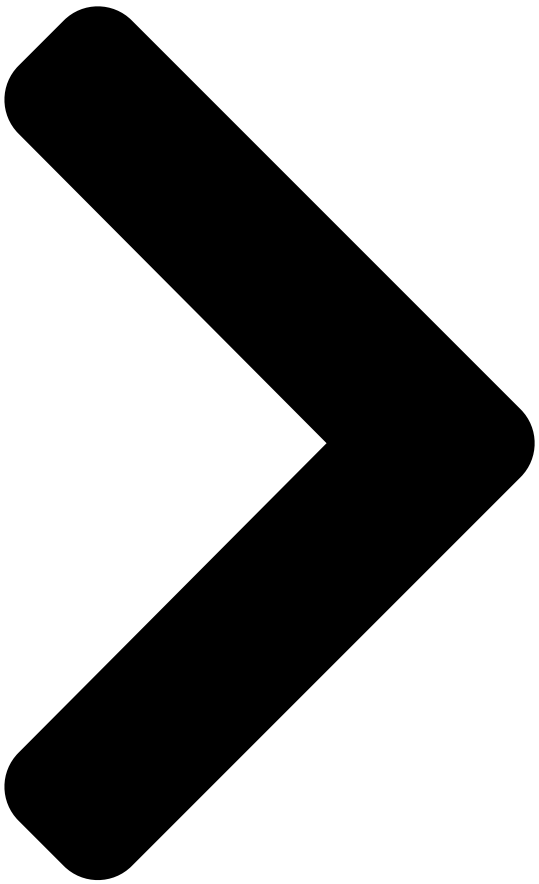

TOSHIBA
Wireless Routing Center
WRC-1000

User's Manual

R10UM020801

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Related Manuals for Toshiba WRC-1000

Wireless Router Toshiba PA3227E-1ETC Specifications

Wireless routing center (1 page)

Network Router Toshiba WIRELESS LAN MODULE GN-1050 Operator's Manual

Multifunctional digital systems wireless lan module (60 pages)

Network Router Toshiba RB-RXS30-E Operator's Manual

Wireless (7 pages)

Network Router Toshiba BMS-TP0641ACE Installation Manual

Touch screen controller for air conditioning control system (10 pages)

Summary of Contents for Toshiba WRC-1000

Page 1 TOSHIBA Wireless Routing Center WRC-1000 User’s Manual R10UM020801...

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Page 3: Fcc Information

Consult the dealer or an experienced radio/TV technician for help. WARNING: TOSHIBA is not responsible for any radio or television interference caused by unauthorized modification of the devices included with this TOSHIBA Wireless Routing Center, or the substitution or attachment of connecting cables and equipment other than specified by TOSHIBA.

Page 4 “The product complies with the requirements of the Low Voltage Directive 73/23/EEC and the EMC Directive 89/336/EEC.” This product is carrying the CE-Mark in accordance with the related European Directives. Responsible for CE-Marking is TOSHIBA Europe, Hammfelddamm 8, 41460 Neuss, Germany. VCCI Class B Information...

Page 5: Wireless Lan And Your Health

Wireless LAN device prior to turning on the equipment. Regulatory Information The TOSHIBA Wireless Routing Center WRC-1000 must be installed and used in strict accordance with the manufacturer’s instructions as described in the user documentation that comes with the product. This device complies with the follow-...

Page 6 Canada - Industry Canada (IC) This device complies with RSS 210 of Industry Canada. Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of this device.” L’utilisation de ce dispositif est autorisée seulement aux conditions suivantes : (1) il ne doit pas produire de brouillage et (2) l’...

Page 7 Gebruik buiten gebouw alleen op kanalen 10 (2457 MHz) en 11 (2462 MHz). Voor privé-gebruik buiten gebouw over publieke groud over afstand kleiner dan 300m geen registratie bij BIPT/IBPT nodig; voor gebruik over afstand groter dan 300m is wel registratie bij BIPT/IBPT nodig. Voor publiek gebruik buiten gebouwen is licentie van BIPT/IBPT verplicht.

Page 8 The radiated output power of the TOSHIBA Wireless Routing Center WRC-1000 is far below the FCC radio frequency exposure limits. Nevertheless, the TOSHIBA Wireless Routing Center WRC-1000 shall be used in such a manner that the potential for human contact during normal operation is minimized. When using this device, a certain separation distance between antenna and nearby persons has to be kept to ensure RF exposure compliance.

Page 9 2 In case that RF interference occurs to Other Radio Stations from this equipment, please change promptly the frequency for use, place to use, or stop emitting Radio. 3 Please contact TOSHIBA Direct PC if you have a problem, such as interference from this equipment to Other Radio Stations. 2. Indication The indication shown below appears on this equipment.

Page 10 CAUTION: Do not use this equipment except in the countries/regions in the following table. Australia Austria Belgium Canada Denmark Finland France Germany Greece Iceland Ireland Italy Japan Lichtenstein Luxembourg The Netherlands Norway Portugal Spain Sweden Switzerland Countries/regions that have been approved TOSHIBA Wireless Routing Center WRC-1000...

Page 11: Table Of Contents

Table of Contents Preface Manual contents ..... xv Conventions .....xv Abbreviations .....xv Icons .....xvi Keys .....xvi Key operation .....xvi Display .....xvi Messages .....xvi Chapter 1 Introduction Overview ..... 1-1 Package contents .....1-1 System requirements .....

Page 12 Chapter 3 Setup Mounting ..... 3-2 Vertical mounting .....3-2 Horizontal mounting .....3-3 Wall mounting .....3-4 AC adapter .....3-4 Connecting the Wireless Routing Center .....3-5 Setting up the Ethernet/Wireless LAN client .....3-7 Setting up Ethernet client .....3-7 Setting up Wireless client .....

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Page 15: Preface

1000. The WRC-1000 provides high-speed wireless or wired connection to the Internet and to a Local Area Network. This manual tells how to set up and begin using your TOSHIBA Wireless Routing Center WRC-1000, herein referred to as the Wireless Routing Center.

Page 16: Icons

User's Manual Icons Icons identify ports, dials, and other parts of your Wireless Routing Center. The indicator panel also uses icons to identify the components it is providing informa- tion on. Keys The keyboard keys are used in the text to describe many computer operations. A distinctive typeface identifies the key top symbols as they appear on the keyboard.

Page 17: Chapter 1 Introduction

Chapter 1 Introduction Overview The Wireless Routing Center features a wireless Access Point, a four-port LAN switch and a WAN port, which extend your existing broadband Cable/ADSL connection. It allows the broadband connection to be shared through either the IEEE 802.11b Access Point feature or the 10/100Base-TX Ethernet® switch, which also eliminates the need for an additional hub or switch.

Page 18: Features

User's Manual Features WAN port features One 10/100 Base-TX RJ-45 auto sensing and crossover Ethernet WAN port for Broadband connection (Cable/DSL or direct Ethernet) PPPoE (PPP over Ethernet) Client with Keep Alive/Connect On Demand Support PAP and CHAP Authentication DHCP Client MAC Address Cloning Settable and Changeable IP Address LAN port features...

Page 19: Security Features

DHCP Server function for IP distribution to local network users NTP/Manual System Clock Configuration Saving/Retrieving Event Logging * This device has been tested by TOSHIBA in accordance with UPnP Forum Test Tools and is verified to support UPnP for Windows Messenger® for Windows XP.

Page 20 User's Manual...

Page 21: Chapter 2 The Grand Tour

Chapter 2 The Grand Tour This chapter identifies the various components of your Wireless Routing Center. Front, left and top Figure 2-1 shows the Wireless Routing Center’s front, left and top positions. YSTEM INDICATORS Figure 2-1 Front, left and top of the Wireless Routing Center System The system indicators provide LEDs for monitoring the indicators...

Page 22: Bottom And Right

User's Manual Bottom and right Figure 2-2 shows the Wireless Routing Center’s bottom and right sides. UBBER PADS OTCHES UBBER PADS OUNTING HOLE Figure 2-2 The bottom and right sides of the Wireless Routing Center Notches Use these notches to hang the Wireless Routing Center from screws in a wall.

Page 23: Indicators

Indicators 5VDC Power connector DC IN 5V CAUTION: Always use the correct AC adapter to avoid the risk of fire or damage to your Wireless Routing Center. The current rating for the Wireless Routing Center is 2.0 amperes. On/Off Power switch LAN ports 1-4 An integrated four-port 10/100BaseT switch provides four RJ-45 ports for connection to a hub, switch or NIC-...

Page 24: Led Indicators

User's Manual LED Indicators The Wireless Routing Center is equipped with eight LEDs on the front panel as described in the table below. Table 2-1 Indicator conditions LEDs Function Color Status Description Power Green Off No power is supplied to the unit. Solid Power is supplied to the unit.

Page 25: Stand

Screws for wall mount Stand A stand lets you install the Wireless Routing Center in an upright position on a desk. Figure 2-5 The stand Screws for wall mount Two screws are supplied to secure the Wireless Routing Center to a wall. Figure 2-6 The two screws for wall mount...

Page 26: Ac Adapter And Power Cord

User's Manual AC adapter and power cord The AC adapter converts AC power to DC power and reduces the voltage supplied to the Wireless Routing Center. It can automatically adjust to any voltage from 100 to 240 volts and to a frequency of either 50 or 60 hertz, enabling you to use the Wireless Routing Center in almost any country/region.

Page 27: Chapter 3 Setup

Chapter 3 Setup This chapter describes how to position your Wireless Routing Center for wireless data exchange and how to connect cables. The figure below shows an example of connections in a LAN and a LAN connec- tion to the Internet. Home/Office Internet Service Provider...

Page 28: Mounting

User's Manual Mounting The Wireless Routing Center can be used either vertically or horizontally on a desk or hung on a wall. NOTES: 1. Place the device close to a power outlet if possible. 2. Avoid placing the device in places where people may walk on the cables.

Page 29: Horizontal Mounting

Mounting 2. Set the Wireless Routing Center upright. Figure 3-3 The Wireless Routing Center’s upright position in a stand Horizontal mounting Four rubber pads protect the back of the Wireless Routing Center. Lay it on a flat surface with the pad side down.

Page 30: Wall Mounting

3. Connect the power cord to an electrical outlet (100 to 240 VAC). CAUTION: Use the adapter supplied with the Wireless Routing Center. Connecting the wrong adapter could damage the Wireless Routing Center. TOSHIBA assumes no liability for any damage in such case.

Page 31: Connecting The Wireless Routing Center

Connecting the Wireless Routing Center Follow the order of 1, 2, 3 as shown in the figure below when you connect the AC adapter. Reverse the order when you disconnect. Figure 3-5 Connecting the AC adapter Connecting the Wireless Routing Center Prior to connecting the

hardware, make sure to power off your Ethernet device, Cable/ADSL modem and Wireless Routing Center.

Page 32 User's Manual 1. Connecting your computer to the LAN port. Attach one end of the Ethernet cable with RJ-45 connectors to your hub, switch or a computer's Ethernet port, and the other end to one of the LAN ports of your Wireless Routing Center. Figure 3-6 Connecting the LAN port 2.

Page 33: Setting Up The Ethernet/Wireless Lan Client

Setting up the Ethernet/Wireless LAN client Setting up the Ethernet/Wireless LAN client To access the Wireless Routing Center via Ethernet or wireless network, you must properly configure the network settings of your Ethernet or wireless client com- puter. As the Wireless Routing Center is configured with the default IP address of 192.168.10.1 and subnet mask of 255.255.255.0, and its DHCP server is enabled by default, you can configure your computer's TCP/IP settings as one of the following:...

Page 34 User's Manual 2. Right-click the Local Area Connection icon and then click Proper- ties. 3. In the General window, highlight Internet Protocol (TCP/IP) and then click Properties. 4. Enable Obtain an IP address automatically and then click OK. Figure 3-8 Obtain an IP address automatically Checking/Renew IP Address under Windows XP The following steps help you verify that your network adapter gets an IP address within the DHCP IP pool range (192.168.10.100 ~ 192.168.10.150 by default) of...

Page 35: For Windows 2000

Setting up the Ethernet/Wireless LAN client For Windows 2000 1. From the Start menu, point to Settings and then click Network and Dial-up Connections. 2. Right-click the Local Area Connection icon and then click Properties. 3. In the General window, highlight Internet Protocol (TCP/IP) and then click Properties.

Page 36 User's Manual For Windows 98/ME 1. Click the Start menu, point to Settings and click Control Panel. 2. Double-click the Network icon. 3. In the Configuration window, highlight TCP/IP protocol for your NIC and click Properties. 4. In the IP Address window, select Obtain an IP address automati- cally.

Page 37: Setting Up Wireless Client

Setting up the Ethernet/Wireless LAN client Checking/Renew IP Address under Windows 98/ME The following steps help you verify if your network adapter gets an IP address within the DHCP IP pool range (192.168.10.100 ~ 192.168.10.150 by default) of the Wireless Routing Center. If not, you may need to renew the IP information. 1.

Page 38: Checking Connection With The Wireless Routing Center

User's Manual 3. Verify that your Wireless LAN setting is identical to the router's default wireless settings. Checking Connection with the Wireless Routing Center You can use the Ping command to verify whether or not your Ethernet/Wireless client is connected to the Wireless Routing Center. To execute ping command, open a DOS window and ping the IP address of the Wireless Routing Center at the DOS prompt.

Page 39: Chapter 4 Web Configuration

Wireless Routing Center. The Wireless Routing Center comes with the default IP address of 192.168.10.1 and subnet mask of 255.255.255.0. The DHCP Server is enabled by default. You can also use the TOSHIBA WRC Finder program on the TOSHIBA Wireless Routing Center WRC-1000 Utility CD-ROM to open the Wireless Routing Center's Web Configuration page.

Page 40: Accessing Web Configuration Page

Figure 4-1 Web Browser 1. Follow the steps below to start TOSHIBA WRC Finder. 1) Load the TOSHIBA Wireless Routing Center WRC-1000 Utility CD- ROM in the set-up computer. 2) Use Windows Explorer to locate and copy the file WRC_FIND.exe to...

Page 41 Accessing Web Configuration Page 3) Double-click the copied file WRC_FIND.exe to start the WRC Finder. Figure 4-2 WRC_FIND.EXE 2. Follow the steps below to find Wireless Routing Center. 1) A dialog box will be displayed asking you if you want to search for Wireless Routing Centers.

Page 42 4) When the WRC Finder locates a Wireless Routing Center, the following information will be displayed: Access Point Name: Wireless LAN's Access Point Name MAC Address: Access Point's MAC Address IP Address: WRC-1000's IP Address SSID: SSID Channel: The channel that is being used. Figure 4-4 WRC information 5) If no Wireless Routing Center is found, the Confirm dialog box is displayed again.

Page 43 Accessing Web Configuration Page After connecting to the Wireless Routing Center, you will be prompted to enter username and password. Leave the username admin and enter the default password of password. Figure 4-5 Password window After you login, the Overview Configuration page of the Wireless Routing Center will be displayed.

Page 44 User's Manual Figure 4-6 Configuration window When you make settings with the Web configuration utility, fields related to a selected option will be displayed to avoid conflicting setting. The utility also displays an error message if you enter an invalid value.

Page 45: To Enable Your Settings

Viewing system overview and log To enable your settings After you have customized the settings, click the Apply button. The Wireless Routing Center will begin registering the settings. You will be prompted to wait for a few seconds. During this process, it is important not to turn the Wireless Routing Center OFF or ON.

Page 46: Filter Log

User's Manual Figure 4-8 Overview Configuration Filter Log If filter feature is enabled, you can click the Log link in Status menu to display the filter activity log. See Viewing Filter Log for more information on log category. Figure 4-9 Activity Log...

Page 47: Configuration For Nat Routing Mode

Configuration for NAT Routing Mode Configuration for NAT Routing Mode Before you configure your Wireless Routing Center, you must decide whether to configure the Wireless Routing Center as a router or as a bridge. This section describes only how to set up the Wireless Routing Center as a router. For instruc- tions on bridge configuration, refer to the section, Configuration for Bridge Mode,...

Page 48 User's Manual 3. If required, in the MAC Address field, enter your network adapter's MAC address in the format of xx:xx:xx:xx:xx:xx. Otherwise keep the default values. This field allows you to copy a network adapter's MAC address to the WAN port of the Wireless Routing Center.

Page 49 Configuration for NAT Routing Mode PPPoE Client If PPPoE Client is your option, configure these fields as required by your ISP. PPPoE Connection Status: This item is not configured. It displays whether the connection is up or down. Username/Password: Enter the user name and password provided by your ISP for logging onto the Internet.

Page 50 User's Manual Figure 4-11 WAN Configuration-PPPoE Client Manual Config If Manual Config is your option, configure these fields as required by your ISP. IP Address/Subnet Mask: Enter the fixed IP address and subnet mask given by your ISP. The default values are 0.0.0.0/0.0.0.0. Default Gateway: The IP address of the default gateway of the router is the IP that the Wireless Routing Center first contacts to communicate with the Internet.

Page 51: Lan Configuration For Nat Routing Mode

Configuration for NAT Routing Mode After you finish the WAN settings, click Apply to submit your changes. Figure 4-12 WAN Configuration-Manual Config LAN Configuration for NAT Routing Mode The Wireless Routing Center communicates with a LAN through a LAN port. The LAN configuration page lets you define the private IP address and DHCP server settings over the LAN interface.

Page 52 User's Manual The Wireless Routing Center implements a built-in DHCP (Dynamic Host Configuration Protocol) server on its LAN interface, which dynamically assigns IP addresses to DHCP clients on the LAN/Wireless LAN. The DHCP server also provides a default gateway (the router's LAN IP address) and DNS addresses for DHCP clients to access the Internet.

Page 53 Configuration for NAT Routing Mode IP Pool Range: Specify the starting and ending IP address of the IP address pool. Whenever a network device requests an Internet session, the

router will allocate an unused IP address from this pool and lease it to the device for a specified amount of time.

Page 54: Configuration For Bridge Mode

User's Manual Configuration for Bridge Mode A bridge connects two or more LANs, and it bases the forwarding decision on the MAC address. In Bridge mode, filters, forwarding and routing do not apply. To set up the bridge mode, perform the procedures below. Part 1.

Page 55

Configuration for Bridge Mode Figure 4-16 Bridge Mode-DHCP Client Manual Config: If enabled, manually enter the IP address, its subnet mask and default gateway in IP Address/Subnet Mask/Default Gateway fields. NOTE: To reconnect after committing this setting, you will need to make sure the computer uses an IP address in the same subnet as the manually entered IP.

Page 56: Wireless Lan Configuration

User's Manual Wireless LAN Configuration The Wireless Routing Center implements Access Point capability which connects wireless clients to a wired LAN. It allows wireless nodes to access network resources and share the broadband Internet connection. With the default values, the router (Access Point) can be easily associated by a wireless client.

Page 57: Advanced

Wireless LAN Security Channel ID: The radio frequency used for communication. Available channels vary according to the regulations in your area. Select a channel out of the available channels or use the default channel. Advanced Do not broadcast SSID: An AP will periodically broadcast its SSID to allow the wireless clients to recognize its presence.

Page 58: Wep

User's Manual Figure 4-19 Wireless LAN Security 802.1x 802.1x: Specify whether to use the 802.1x function. The options are Not Used and Used. Wep Key Distribution: Specify whether to dynamically distribute the WEP key. This radio button will appear when the 802.1x function is used. Key Length: Specify the length of the WEP key to be distributed.

Page 59

Wireless LAN Security Authentication Mode: Authentication is a process in which the AP validates whether wireless clients are qualified to access the AP’s service. A wireless client must be validated before it can associate with an AP. The IEEE802.11 defines two types of algorithms in authentication: “open”...

Page 60: Access Control

User's Manual Access Control MAC Address Access Control: The Wireless Routing Center also supports authentication based on the MAC address of a wireless client. If this function is enabled, the AP will allow association by a client only if that client’s MAC address matches an address in the Allow List.

Page 61: Filters

Filters This setting is used to validate wireless stations by RADIUS servers. Settings can be made for up to four RADIUS servers. Enable/Disable: Use the radio buttons to disable or enable validation of wireless stations by RADIUS servers. IP Address: Set the IP address of the RADIUS server. Port: Set the port number of the RADIUS server.

Page 62: Filter Types

User's Manual Filter Types When setting up filter rules, you can define the Filter rules based on the LAN computer’s MAC address, IP address or the protocol type of the data packet. Each filter type is described below. NOTE: Based on the OSI reference model, MAC Filters have higher priority than IP Filters while IP Filters have higher priority than Port Filters.

Page 63

Filters Filter Scenario of the Wireless Routing Center When setting up your filter policies, note the filter scenario used by the router: When Filter Type is Listed Block: If all filters are disabled: No filter rule is specified to block any packet. All packets can pass through the WAN port.

Page 64: Forwarding

User's Manual Viewing Filter Log When the filter feature is enabled, the router will keep a record of the packets discarded. To view the firewall activity log, go to Status > Log. Activity Log is displayed with a maximum of 32 entries. Click the Update button to refresh the log with newly reported data.

Page 65: If You Have A Web Server On Your Network

Forwarding TCP Port Forwards: In the first Start and End fields, define the port range for the incoming TCP service you want to forward. In the IP Address field, enter the IP address of the virtual server to which packets are forwarded. The Start/ End fields on the right side define the port range for the TCP service on the virtual server.

Page 66 80 and the router will not forward the packets since no forwarding entry matches. As a result, if a WAN computer tries to access the LAN's WEB server, it will be routed to the WRC-1000 Web configuration page instead.

Page 67: Routing

Routing Routing If your Wireless Routing Center is connected to more than one router or your network is composed of multiple subnets, you may need to set up a static route to determines the data transmitting route. The page displays the routing table of the Wireless Routing Center and allows you to set up a maximum of 8 static routing rules.

Page 68: Administration Configuration

User's Manual Administration Configuration System Clock Network administrators may want to synchronize date and time among network devices. This can be done by synchronizing the local clock to an available NTP server or manually specifying the date and time in the Wireless Routing Center for your network.

Page 69 Administration Configuration WAN Management: Available only in NAT Routing Mode. If available, this item is disabled by default. That is, any external access from the WAN port will be rejected. If this option is enabled, a WAN Port field is displayed with the default value of 80.

Page 70: System Configuration

User's Manual Report Log to TFTP Server: Available only in NAT Routing Mode. If available, it specifies whether to report the firewall event log to your TFTP server. If enabled, a LAN TFTP Server field is present for you to specify the IP address of the TFTP server.

Page 71 System Configuration NOTE: Do not interrupt the upgrade process. You could damage your Wireless Routing Center. After the upgrade is complete, you can see the new firmware version in the Cur- rent Firmware version field. User Configurations Save Current Configurations: Allows you to save your customized settings to the Wireless Routing Center.

Page 72 User's Manual 4-34...

Page 73: Chapter 5 Troubleshooting

Chapter 5 Troubleshooting This chapter provides information on restoring your Wireless Routing Center to proper working order if there appears to be a problem. Refer also to your computer user's manual. Power The Power indicator does not light when the power switch is pressed. Cause No power is supplied to the Wireless Routing Center.

Page 74 User's Manual If you have forgotten the local IP address, reset to the defaults. Refer to the Appendix A, Default values. Note that not only the IP address, but all settings will be reset. Cause 2 The local IP address set in the personal computer may differ from that of the Wireless Routing Center.

Page 75: Wireless Lan

Remedy Read the manual for your Wireless LAN PC card, and check that the driver has been installed and is operating correctly. If you are using a TOSHIBA Wireless LAN PC card in a computer running Windows 2000, follow the steps below.

Page 76 User's Manual Cause 2 The settings of Wireless LAN stations are different from those of the Wireless Routing Center. Remedy Make sure the following settings are the same on the Wireless LAN stations and the Wireless Routing Center. SSID (Network Name) Basic rate not higher than the communication rate of the Wireless LAN PC cards in the Wireless LAN stations WEP mode disable/64 bits/128 bits...

Page 77 Wireless LAN Windows 2000 1. Click Start, point to Programs, Accessories and click Command Prompt to open the Command Prompt window. 2. Enter ipconfig and press Enter. 3. Check the values for the IP address and subnet mask. IP address : 192.168.10.100 – 192.168.10.150 Subnet Mask : 255.255.255.0 Default Gateway : 192.168.10.1 If the TCP/IP protocol has not been installed, or if the correct IP...

Page 78 User's Manual Figure 5-2 Checking the TCP/IP setting Cause 4 There are incorrect network settings on the computers. Remedy Following the steps below to make sure the computers can communi- cate with each other. Check the domain name and network sharing settings. 1.

Page 79: Application Problems

Application problems 3. The following message, for example, indicates proper communica- tion. Check the network settings of the computers. C:\ping 192.168.10.100 Pinging 192.168.10.100 with 32 bytes of data Reply from 192.168.10.100: bytes=32 time<10ms TTL=128 Reply from 192.168.10.100: bytes=32 time<10ms TTL=128 Reply from 192.168.10.100: bytes=32 time<10ms TTL=128 Reply from 192.168.10.100: bytes=32 time<10ms TTL=128 4.

Page 80: Forgotten Password

Call the customer support office of your Internet Service Provider. Question Can the Wireless Routing Center be used with Linux? TOSHIBA confirmed the operation of the Wireless Routing Center with Linux using TCP/IP, but offers no guarantee of operation. It is outside the scope of support.

Page 81: Appendix A Default Values

Appendix A Default values The table below lists all the Wireless Routing Center’s default values. Values that are not listed are blank. To reset the Wireless Routing Center, refer to the Load Default item in Chapter 2, The Grand Tour. WAN/LAN Relation NAT Routing mode Protocol...

Page 82 User's Manual Filters Filter Type Listed Block MAC Filters disable IP Filters disable TCP Port Filters disable UDP Port Filters disable Administration System Clock set by Manual Setup Username admin Password password WAN Management disable WAN Port Ping Reply disable WRC Finder Function Via WAN disable UPnP Function...

Page 83 Appendix B 802.1x Overview The 802.1x function restricts the connection of unauthorized stations by authenti- cating each station. The 802.1x function has the following advantages in security and administration. Security The function makes authentication during station connec- tion and permits only the station that has passed the authentication to communicate.

Page 84 User's Manual 802.1x Function This section explains the 802.1x function more specifically. Required Environment The following environment is required to use the 802.1x function. RADIUS Access point (this product). Wireless LAN station The 802.1x function needs to be supported even on the station side. RADIUS Abbreviation of Remote Authentication Dial In User Service.

Page 85 Appendix B Authentication Authentication starts when a radio LAN station connects to the access point. When the station connects, the access point issues a request to start authentica- tion for that station. Although the station that has received the request starts the authentication procedure, the access point transfers all messages related to the authentication to the RADIUS server.

Page 86: Authentication Type

User's Manual The access point permits the station to communicate. At this point, the WEP key can be distributed. (Whether the WEP key can be distributed depends on the authentication type.) 6. The station can joint the network. Authentication type Several types of authentication

are prepared.

Page 87: Configuration Example

The RADIUS uses “Internet Authentication Service” of Windows 2000 Server. Device configuration The following is the device block diagram. Windows 2000 Server WRC-1000 Windows 2000 Server Software Windows 2000 Server is used as the OS. The RADIUS uses “Internet Authentica- tion Service.”...

Page 88 User's Manual CA (Certificate Authority) Install Certificate Service in Windows 2000 Server. For details on Certificate Service, refer to the online Help of Windows 2000. RADIUS server Install Internet Authentication Service in Windows 2000 Server. For details on Internet Authentication Service, refer to the online Help of Windows 2000.

Page 89 Appendix B 5. Set Client address. Enter the IP address of the access point and RADIUS server. In this example, 192.168.10.1 is set. Set Shared secret. Enter the password for communication between the access point and the RADIUS server. In this example, my shared secret is set.

Page 90 User's Manual 3. Set Policy friendly name. In this example, WRC-1000AP is set. Figure B-3 Add Remote Access Policy window Click Next. 4. Add a Conditions by pressing the Add button. This example defines that this policy should be used when Client-Friendly-Name is WRC-1000AP. Various conditions are available.

Page 91 Appendix B 5. Select Grant remote access permission. Figure B-5 Select Grant remote access permission Click Next.

Page 92: Access Point

User's Manual 6. Click the Edit Profile button and select the Authentication tab. Place a check mark in the Extensible Authentication Protocol check box. Select Smart Card or other Certificate for the EAP type. Figure B-6 Edit Dial-in Profile window Click OK.

Page 93 Appendix B 2. Select the Wireless LAN Security page. 3. 802.1x group Select Used in the 802.1x field. Select the Enable radio button in the WEP Key Distribution field. Select the 128bits radio button in the Key Length field. 4. RADIUS group Select the 1 Enable radio button in the RADIUS Servers field.

Page 94 User's Manual Wireless LAN station The following provides the setting procedure for the Wireless LAN station. Step 1 Certificate issuance and installation First, have the certificate organization issue a certificate and store it in the local computer. 1 Temporarily, have the station join the wired LAN network. 2 Start the Internet Explorer and connect to the following URL.

Page 95 Appendix B 2. The above example issues and installs a certificate through the network. You can also download the certificate into a file and install it from media such as a floppy disk. For more information, refer to the online Help of the certificate authority.

Page 96 User's Manual 2. Select the Authentication tab. Place a check mark in the Enable network access control using IEEE 802.1x check box. Select Smart Card or other Certificate in the EAP type field. Click Properties. Figure B-10 Authentication tab B-14...

Page 97 Appendix B 3. Select the Use a certificate on this computer radio button. Place a check mark in the Validate server certificate check box. Select a reliable certificate authority from the Trusted root certifi- cate authority combo box. In this example, select the certificate authority, which was installed in Win- dows 2000 Server.

Page 98 User's Manual B-16...

Page 99: Ac Power Cord And Connectors

Appendix C AC Power Cord and Connectors The power cord’s AC input plug must be compatible with the various international AC power outlets and the cord must meet the standards for the country/region in which it is used. All cords must meet the following specifications: Length: Minimum 1.8 meters (5.9 ft.) Wire size:...

Page 100 User's Manual The following illustrations show the plug shapes for the U.S.A. and Canada, the United Kingdom, Australia and Europe. USA and Canada United Kingdom UL approved BS approved CSA approved Australia Europe Approved by the AS approved appropriate agency...

Page 101: Glossary

Glossary The terms in this glossary cover the topics discussed in this manual. 10Base-T/100Base-TX: Two standards for Ethernet data transmission speeds. channel: The channel is the radio 10Base-T transmits at 10Mbps and frequency used to communicate on a 100Base-TX transmits at 100Mbps. wireless LAN.

Page 102 encryption IEEE 802.11b (IEEE 802.11): A wireless LAN standard that enables data trans- encryption: The device allows use of mission at a speed of 11 Mbps and a data encryption compliant with the wave length of 2.4GHz. Devices can be IEEE802.11 standard WEP (Wired located up to 100 meters from the access Equivalent Privacy) and 128 bit WEP.

Page 103: Routing Table

routing table medium reservation: Reserving the PPPoE: Point-to-Point Protocol over access point for a specific terminal and Ethernet. notification to other terminals not to protocol: A set of rules used for trans- call. It is used to avoid the hidden termi- mitting data.

Page 104: Static Routing

static routing static routing: A routing system in WAN: Wide Area Network covers a which routes are set manually. larger area than a LAN. See also LAN. subnet mask: Determine what subnet WEP key: See encryption. an IP address belongs to. wireless LAN access point: A terminal switching hub: A multiport bridge that on a wireless LAN or an interface be-...

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