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DSL/Broadband Router
DR-10

COMPLIANCES

FCC - Class B

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with instructions, may cause harmful interference to radio communications. However, there is no guarantee that the interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient the receiving antenna
- Increase the separation between the equipment and receiver
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected
- Consult the dealer or an experienced radio/TV technician for help

EC Conformance Declaration - Class B

This information technology equipment complies with the requirements of the Council Directive 89/336/EEC on the Approximation of the laws of the Member States relating to Electromagnetic Compatibility and 73/23/EEC for electrical equipment used within certain voltage limits and the Amendment Directive 93/68/EEC. For the evaluation of the compliance with these Directives, the following standards were applied:

compliance with these Directives, the following standards were applied:

RFT	• Limit class B according to EN 55022:1998
Emission	• Limit class A for harmonic current emission according to EN 61000-3-2:1995
	• Limitation of voltage fluctuation and flicker in low-voltage supply system according to EN 61000-3-3:1995
Immunity	• Product family standard according to EN 55024:1998
	• Electrostatic Discharge according to EN 61000-4-2:1995 (Contact Discharge: 1 kV, Air Discharge: 2 kV)
	• Radio-frequency electromagnetic field according to EN 61000-4-3:1998 (80 - 1000 MHz with 10 Hz AM 80% Modulation: 1V/m)
	• Electrical fast transient/burst according to EN 61000-4-4:1995 (AC/DC power supply: 1 kV, Data/Signal lines: 20 kV)
	• Surge immunity test according to EN 61000-4-5:1995 (AC/DC Line to Line: 2 kV, AC/DC Line to Earth: 2.5 kV)
	• Immunity to conducted disturbances, induced by radio-frequency fields, EN 61000-4-6:1996 (0.15 - 80 MHz with 10 Hz AM 80% Modulation: 1V/m)
	• Power frequency magnetic field immunity test according to EN 61000-4-8:1993 (A/m at frequency 50 Hz)
	• Voltage dips, short interruptions and voltage variations immunity test according to EN 61000-4-11:1994 (>95% Reduction @10ms, 30% Reduction @500ms, >97% Reduction @500ms)
LVD	• EN60950(A1)/1992, A2/1993, A3/1993, A4/1993, A11/1997

Industry Canada - Class B

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus as set out in the interference-causing equipment standard entitled "Digital Apparatus," ICES-003 of the Department of Communications.

Cet appareil numérique respecte les limites de bruits radioélectriques applicables aux appareils numériques de Classe B prescrites dans la norme sur le matériel brouilleur: "Appareils Numériques," NMB-003 éditée par le ministère des Communications.

Japan VCCI Class B

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取り扱い説明書に従って正しい取り扱いをして下さい。

TABLE OF CONTENTS

1 Introduction	1-1
About the Sharing Router	1-1
Features and Benefits	1-2
Applications	1-3
2 Installation	2-1
Package Contents	2-1
Description of Hardware	2-2
System Requirements	2-5
Connect the System	2-5
Basic Installation Procedure	2-6
Attach to Your Network Using Ethernet Cabling	2-6
Attach the Sharing Router to the Internet	2-8
Connecting the Power Adapter	2-9
Verify Port Status	2-9
3 Configuring Client PCs	3-1
TCP/IP Configuration	3-1
4 Configuring the Sharing Router	4-1
Navigating the Web Browser Interface	4-2
Main Menu	4-3
Time Zone	4-5
Wan Type	4-6
Wan Setting	4-6
Cable Modem (Dynamic IP)	4-6
Fixed-IP xDSL	4-7
Dial-Up xDSL (PPPoE)	4-7
PPTP	4-8
DNS	4-8
Advanced Setup	4-9
System Setting	4-9

System Time	4-9
Administrator Settings	4-10
Firmware Update	4-11
Configuration Tools	4-11
Status	4-12
Security Log	4-12
Reset	4-12
Wan Setting	4-13
Dynamic IP	4-14
Static IP	4-14
PPPoE	4-15
PPTP	4-15
DNS	4-16
LAN	4-16
LAN Settings	4-16
DHCP Client	4-16
NAT Setting	4-17
Special Application	4-17
Virtual Server	4-18
Firewall Setting	4-18
Block WAN Ping	4-19
Client Filtering	4-19
MAC Control	4-20
DMZ (Demilitarized Zone)	4-20

5 Configuring Client TCP/IP **5-1**

Installing TCP/IP Protocol in Your PC	5-1
Setting TCP/IP to Work with the Sharing Router	5-3
Configuring Your Computer with Windows 95/98/ME	5-4
Step 1. Configure TCP/IP Settings	5-4
Step 2. Disable HTTP Proxy	5-7
Step 3. Obtain IP Settings from Your Sharing Router	5-9
Configuring Your Computer with Windows 2000	5-11
Step 1. Configure TCP/IP Settings	5-11
Step 2. Disable HTTP Proxy	5-13
Step 3. Obtain IP Settings From Your Sharing Router	5-15
Configuring Your Computer with Windows NT 4.0	5-18

Step 1. Configure TCP/IP Settings	5-18
Step 2. Disable HTTP Proxy	5-21
Step 3. Obtain IP Settings From Your Sharing Router	5-22
Configuring Your Macintosh Computer	5-24
Step 1. Configure TCP/IP Settings	5-24
Step 2. Disable HTTP Proxy	5-26
Step 3. Obtain IP Settings From Your Sharing Router	5-28
Dynamic IP Allocation via a DHCP Server	5-30
Manual IP Configuration	5-31
Verifying Your TCP/IP Connection	5-32

A Troubleshooting **A-1**

B Cables **B-1**

Ethernet Cable	B-1
Specifications	B-1
Twisted-pair Cable	B-1
Straight-through Cable	B-2
Crossover Cable	B-2
RJ-45 Port Pin Assignments	B-3

C Specifications **C-1**

Internet Sharing Router	C-2
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D Ordering Information **D-1**

CHAPTER 1

INTRODUCTION

Congratulations on your purchase of the Sharing Router. We are proud to provide you with a powerful yet simple communication device for connecting your local area network (LAN) to the Internet. For those who want to surf on the Internet at the lowest possible cost, this Sharing Router provides a convenient and powerful solution.

About the Sharing Router

The Sharing Router provides Internet access to multiple users by sharing a single-user account. The most outstanding feature of the Sharing Router is the single-port WAN interface which allows you to connect to an xDSL or Cable modem. The Sharing Router provides extensive firewall protection and Virtual Private Network (VPN) pass through services.

The Sharing Router supports dial-on-demand for PPPoE and PPTP service, automatically connecting to the Internet when there are requests and terminating the connection if no further requests occur.

This new Sharing Router technology provides many cost-effective functions and management benefits. It is simple to configure and can be up and running in minutes.

Features and Benefits

- Internet connection to xDSL or Cable modem via a 10/100 Mbps WAN port
- Local network connection via 10/100 Mbps Ethernet ports
- DHCP for dynamic IP configuration, and DNS for domain name mapping
- Firewall with client privileges, hacker prevention, and NAT
- NAT also enables multi-user access with a single user account, and virtual server functionality (providing protected access to Internet services such as Web, FTP, mail and Telnet)
- User-definable application sensing wizard supports applications requiring multiple connections
- Easy setup through a Web browser on any operating system that supports TCP/IP
- Compatible with all popular Internet applications

Applications

Many advanced applications are provided by the Sharing Router, such as:

➤ LAN Access

The Sharing Router provides connectivity to 10/100 Mbps devices, making it easy to create a network in small offices or homes.

➤ Internet Access

This device supports Internet access through an xDSL, Cable, connection. Since many DSL providers use PPPoE to establish communications with end users, the Sharing Router includes a built-in client for this protocol, eliminating the need to install this service on your computer.

➤ Shared IP Address

The Sharing Router provides Internet access for up to 253 users with a shared IP address. Using only one ISP account, multiple users on your network can browse the Web at the same time.

➤ Virtual Server

If you have a fixed IP address, you can set up the Sharing Router to act as a virtual host for network address translation. Remote users access various services at your site using a constant IP address. Then, depending on the requested service (or port number), the Sharing Router can route the request to the appropriate server (at another internal IP address). This secures your network from direct attack by hackers, and provides more flexible management by allowing you to change internal IP addresses without affecting outside access to your network.

➤ **User-Definable Application Sensing Tunnel**

You can define special applications that require multiple connections such as Internet gaming, videoconferencing, and Internet telephony. The Sharing Router can then sense the application type and open a multi-port tunnel for it.

➤ **DMZ Host Support**

Allows a networked computer to be fully exposed to the Internet. This function is used when the special application sensing tunnel feature is insufficient to allow an application to function correctly.

➤ **Security**

The Sharing Router supports security features that can deny Internet access to specified users, or filter all requests for specific services the administrator does not want to serve. The Sharing Router firewall can also block common hacker attacks, including IP Spoofing, Land Attack, Ping of Death, IP with zero length, Smurf Attack, UDP port loopback, Snork Attack, TCP null scan, and TCP SYN flooding.

CHAPTER 2

SHARING ROUTER INSTALLATION

Before installing the Sharing Router, verify that you have all the items listed under "Package Contents." If any of the items are missing or damaged, contact your local distributor. Also be sure that you have all the necessary cabling before installing the Sharing Router. After installing the Sharing Router, refer to the Web-based configuration program in Chapter 4 for information on configuring the router.

Package Contents

After unpacking the Sharing Router, check the contents of the box to be sure you've received the following components:

- 49074 DSL/Broadband Router DR-10
- Power adapter
- Four rubber feet
- Users' Manual

Description of Hardware

The Sharing Router can be connected to the Internet over a remote site using an RJ-45 WAN port. It can be connected directly to your PC over a local area network using any of the Fast Ethernet LAN ports.

Access speed to the Internet depends on your service type. Full-rate ADSL can provide up to 8 Mbps downstream and 4Ml Mbps upstream. (See for optimization) ADSL provides up to 1.3 Mbps downstream and 112 Kbps upstream. Cable modems can provide up to 38 Mbps downstream and 1 Mbps upstream. However, you should note that the actual rate provided by specific service providers may vary dramatically from these upper limits.

Although access speed to the Internet is determined by the modem type connected to your Sharing Router, data passing between devices connected to your local area network can run up to 100 Mbps over the Fast Ethernet ports.

The Sharing Router includes an LED display on the front panel for system power and port indications that simplifies installation and network troubleshooting. It also provides 4 RJ-45 LAN ports on the front panel, as well as one RJ-45 WAN port on the rear panel.

- 4 RJ-45 ports for connection to a 10BASE-T/100BASE-TX Ethernet Local Area Network (LAN). These ports can auto-negotiate the operating speed to 10/100 Mbps, and the mode to half/full duplex.
- One RJ-45 port for connection to an xDSL or Cable modem. This port is fixed at 10/100 Mbps, full duplex. This port only supports MDI-X pin signals, so you will have to use either straight-through or crossover cable depending on the port type used on the modem.

The following figure shows the components of the Sharing Router :



Figure 2-1. Front Panel

Item	Description
LEDs	Power, WAN and LAN port status indicators (See Verify Port Status on page 2-10.)

LAN Ports	Fast Ethernet ports (RJ-45). Connect devices on your local area network to these ports (such as a PC, hub, or switch).
WAN Port	WAN ports (RJ-45). Connect your Cable modem, xDSL modem, or an Ethernet router to this port.
Power Inlet	Connect the included power adapter to this inlet. Warning: Using the wrong type of power adapter may cause damage.

System Requirements

- You must have an ISP that meets the following minimum requirements:
 - Internet access from your local telephone company or Internet Service Provider (ISP) using an xDSL modem, Cable modem.
 - A PC using a fixed IP address or dynamic IP address assignment via DHCP, as well as a Gateway server address and DNS server address from your service provider.
 - A computer equipped with a 10 Mbps, 100 Mbps, or 10/100 Mbps Fast Ethernet card, or a USB-to-Ethernet converter.
 - TCP/IP network protocol installed on each PC that needs to access the Internet.
 - A Java-enabled Web browser, such as Microsoft Internet Explorer 5.0/5.6 or above or Netscape Communicator 4.76/6.0/6.2 or above installed on one PC at your site for configuring the Sharing Router.

Connect the System

The Sharing Router can be positioned at any convenient location in your office or home. No special wiring or cooling requirements are needed. You should, however comply with the following guidelines:

- Keep the Sharing Router away from any heating devices.

You should also remember to turn off the power, remove the power cord from the outlet, and keep your hands dry when you install the Sharing Router.

Basic Installation Procedure

1. **Connect the LAN:** You can connect the Sharing Router to your PC, or to a hub or switch. Run Ethernet cable from one of the LAN ports on the front of the Sharing Router to your computer network adapter or to another network device.
2. **Connect the WAN:** Prepare an Ethernet cable for connecting the Sharing Router to a Cable/DSL modem or Ethernet router.
3. **Power on:** Connect the power adapter to the Sharing Router.

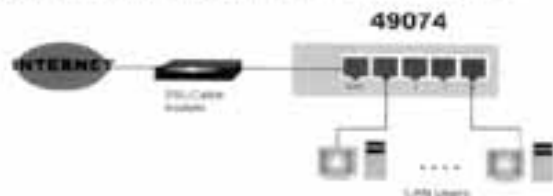


Figure 2-2. Connecting the Sharing Router

Attach to Your Network Using Ethernet Cabling

The 4 LAN ports on the Sharing Router can auto-negotiate the connection speed to 10 Mbps Ethernet or 100 Mbps Fast Ethernet, as well as the transmission mode to half-duplex or full-duplex. (See Appendix B for details on wiring.)

Use twisted-pair cable to connect any of the 4 LAN ports on the Sharing Router to an Ethernet adapter on your PC. Otherwise, you can cascade any of LAN ports on the Sharing Router to an Ethernet hub or switch, and then connect your PC or other network equipment to the hub or switch. When inserting an RJ-45 plug, be sure the tab on the plug clicks into position to ensure that it is properly seated.

Warning: Do not plug a phone jack connector into any RJ-45 port. This may damage the Sharing Router. Instead, use only twisted-pair cables with RJ-45 connectors that conform with FCC standards.

Notes: 1. Use 100-ohm shielded or unshielded twisted-pair cable with RJ-45 connectors for all connections. Use Category 3, 4 or 5 for connections that operate at 10 Mbps, and Category 5 for connections that operate at 100 Mbps.

2. Make sure each twisted-pair cable does not exceed 100 meters (328 feet).

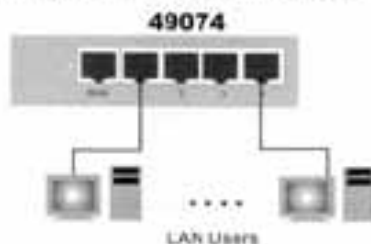


Figure 2-3. Making LAN Connections

Attach the Sharing Router to the Internet

If Internet services are provided through an ADSL or Cable modem, use unshielded or shielded twisted-pair Ethernet cable (Category 3 or greater) with RJ-45 plugs to connect the broadband modem directly to the WAN port on the Sharing Router. Use either straight-through or crossover cable depending on the port type provided by the modem (see Appendix B).



Figure 2-4. Making WAN Connections

Note: When connecting to the WAN port, use 100-ohm Category 3, 4 or 5 shielded or unshielded twisted-pair cable with RJ-45 connectors at both ends for all connections.

Connecting the Power Adapter

Plug the power adapter into the power socket on the Sharing Router, and the other end into a power outlet. Check the indicator marked Power on the front panel to be sure it is on. If the Power indicator does not light up, refer to Troubleshooting in Appendix A.

Verify Port Status

Check the power and port indicators as shown in the following table:

LED	Condition	Status
Power (Green)	On	Sharing Router is receiving power.
	Flashing	The WAN port is transmitting or receiving traffic.
	Off	The WAN port is not connected.
Link/Act (Green)	On	The indicated LAN port has established a valid network connection.
	Flashing	The indicated LAN port is transmitting or receiving traffic.
	Off	The network port is not connected.

CHAPTER 3

CONFIGURING CLIENT PCs

TCP/IP Configuration

To access the Internet through the Sharing Router, you must configure the network settings of the computers on your LAN to use the same IP subnet as the Sharing Router. The default network settings for the Sharing Router are:

IP Address: 192.168.1.1
Subnet Mask: 255.255.255.0

These settings can be changed to fit your network requirements, but you must first configure at least one computer as described in Chapter 5 to access the Sharing Router Web configuration interface. (See Chapter 4 for information on configuring the Sharing Router.)

If you have not previously configured TCP/IP for your computer, refer to "Installing TCP/IP Protocol in Your PC" on page 5-1.

All PCs connected to the Sharing Router must be set to the same IP subnet as the Gateway. The default subnet address of the Sharing Router is 192.168.1.X (where X means 2-254) and the subnet mask is 255.255.255.0. You can set the IP address for client PCs either by automatically obtaining an IP address from the Sharing Router's DHCP service or by manual configuration. See "Setting TCP/IP to work with the Sharing Router" on page 5-3.

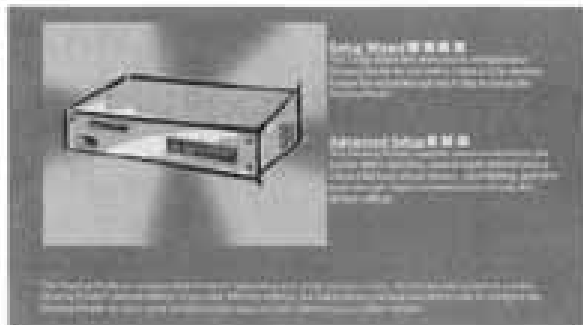
CHAPTER 4

CONFIGURING THE SHARING ROUTER

After you have configured TCP/IP on a client computer, you can use a Web browser to configure the Sharing Router. The Sharing Router can be configured by any Java-supported browser including Internet Explorer 5.0 or above, or Netscape Navigator 4.71 or above. Using the Web management interface, you can configure the Sharing Router and view statistics to monitor network activity.



To access the Sharing Router management interface, enter the IP address of the Sharing Router in your Web browser <http://192.168.1.1> (The Sharing Router automatically switches to Port 80 for management access.) Then login the Sharing Router system with no password (by default, there is no password). The home page displays the Main Menu on the left-hand side of the screen and descriptive information on the right-hand side. The Main Menu links are used to navigate to other menus that display configuration parameters and statistics.



Navigating the Web Browser Interface

The Sharing Router's management interface includes two key menus - Setup wizard, and Advanced Setup. The setup wizard menu provide general information on the current settings and how to configure the Sharing Router. The Advanced Setup menu is used to configure the LAN and WAN interface, as well as other advanced functions such as reset the Sharing Router, restore the factory settings, or upgrade firmware.

Main Menu

Using the Web management interface, you can define system parameters, manage and control the Sharing Router and its ports, or monitor network conditions. The following table briefly describes the selections available from this program.

Menu	Description
<i>Setup Wizard</i>	Follow the wizard through each step to setup the Sharing Router
<i>Advanced Setup</i>	Advanced functions settings
<i>Setup Wizard Menu</i>	Sets the cable or DSL settings
<i>Time Zone</i>	Sets the local time zone
<i>WAN Type</i>	Specifies the WAN connection type: (1) Cable modem(dynamic IP), (2) Fixed-IP xDSL, (3) Dial-up xDSL(PPPoE), (4) PPTP.
<i>WAN Setting</i>	Basic the WAN settings
<i>DNS</i>	Specifies DNS servers to use for domain name resolution.
<i>Advanced Setup Menu</i>	
<i>System</i>	Basic Configures settings and client services.
<i>WAN</i>	Specifies the Internet connection type: (1)Dynamic IP,(2)Static IP, (3)PPPoE, (4)PPTP, (5)DNS
<i>LAN</i>	Sets the TCP/IP configuration for the Sharing Router LAN interface and all DHCP clients.
<i>NAT</i>	Network Address Translation (NAT) allows multiple users IP address.
<i>Firewall</i>	The Sharing Router provides extensive firewall protection by restricting connection parameters to limit the risk of intrusion and defending against a wide array of common hacker attacks. Configures a variety of packet filtering and specialized functions, including: <ul style="list-style-type: none"> Block WAN Prog Client Filtering MAC Controls DMZ
Menu	Description

System Menu

System Time	Sets the local time zone.
Administrator Settings	Sets the password and Remote Management for administrator access.
Firmware Upgrade	Upgrades the system with the latest firmware obtained from our website.
Configuration Tools	Restores all configuration settings to the factory defaults.
Status	Displays WAN/LAN connection status, as well as firmware and hardware version numbers.
Security Log	Displays any illegal attempts to access your network.
Reboot	Reboots the system and retains all of your configuration settings.

WAN Menu

Dynamic IP	Obtain an IP address automatically from your service provider.
Static IP	Uses a static IP address to access Internet services.
PPPoE	PPP over Ethernet is a common connection method used for ADSL.
PPPT	PPP Tunneling Protocol can support multi-protocol Virtual Private Networks (VPN).
DNS	Specifies DNS servers to use for domain name resolution.

LAN Menu

LAN Settings	Enable DHCP to dynamically allocate IP address to your client PCs.
DHCP Client List	The DHCP client list allows you to see which clients are connected to the Sharing Router via IP address, host name, and MAC address.

NAT Menu

Special Application	Applications such as Internet gaming, video conferencing, and Internet telephony require multiple connections. The Special Application feature allows these applications to work properly.
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Menu	Description
Virtual Server	You can configure the Sharing Router as a virtual server so that remote users accessing services such as the Web or FTP at your local site via public IP addresses can be automatically redirected to local servers configured with private IP addresses.
Firewall Menu	
Block WAN Ping	When you "Block WAN Ping", you are causing the public WAN IP address on the Sharing Router to not respond to ping commands.
Client Filtering	You can block certain client PCs accessing the Internet based on time.
MAC Control	You can block certain client PCs accessing the Internet based on MAC addresses.
DMZ	If you have a local client PC that cannot run an Internet application properly from behind the NAT firewall, you can open the client up to unrestricted two-way Internet access by defining a virtual DMZ host.

Time Zone

1. Time Zone

Get Time Zone:

Accepted Time:

Hour:

Minute:

Click on the time zone you want to use in the time zone list above to fill the form. The time zone list is not for changing the time zone.



Set the time zone for the Sharing Router. This information is used for log entries and client filtering.

WAN Type



The screenshot shows a 'WAN Type' configuration screen. At the top, there is a 'WAN Type' label and a 'WAN Type' dropdown menu. Below this, there are four radio button options: 'Cable Modem (Dynamic IP)', 'Fixed-IP ADSL', 'PPPoE ADSL', and 'PPPoE'. The 'Cable Modem (Dynamic IP)' option is selected. Below the options, there is a 'Next' button and a 'Back' button.

Specify the WAN connection type required by your Internet Service Provider. Specify a Cable modem (Dynamic IP), Fixed-IP ADSL, PPPoE ADSL, or PPPoE.

WAN Setting

Cable Modem (Dynamic IP)



The screenshot shows the 'WAN Setting' screen for 'Cable Modem (Dynamic IP)'. It features a 'WAN Setting' label and a 'Cable Modem (Dynamic IP)' radio button, which is selected. Below this, there are two input fields: 'Modem Name' and 'MAC Address'. The 'Modem Name' field contains 'CableModem' and the 'MAC Address' field contains '00:00:00:00:00:00'. At the bottom, there are 'Next' and 'Back' buttons.

Set Cable modem host name and MAC address.

Fixed-IP ADSL



The screenshot shows the 'Fixed-IP ADSL' WAN Setting screen. It features a 'WAN Setting' label and a 'Fixed-IP ADSL' radio button, which is selected. Below this, there are three input fields: 'IP Address', 'Subnet Mask', and 'Gateway'. The 'IP Address' field contains '192.168.1.1', the 'Subnet Mask' field contains '255.255.255.0', and the 'Gateway' field contains '192.168.1.1'. At the bottom, there are 'Next' and 'Back' buttons.

Enter the IP address, subnet mask, and gateway provided to you by your ISP in the appropriate fields.

Dial-Up ADSL (PPPoE)



The screenshot shows the 'Dial-Up ADSL (PPPoE)' WAN Setting screen. It features a 'WAN Setting' label and a 'Dial-Up ADSL (PPPoE)' radio button, which is selected. Below this, there are four input fields: 'Service Name', 'User Name', 'Password', and 'Service Password'. The 'Service Name' field contains 'pppoe', the 'User Name' field contains 'pppoe', the 'Password' field contains 'pppoe', and the 'Service Password' field is empty. At the bottom, there are 'Next' and 'Back' buttons.

Enter the User Name and Password required by your ISP in the appropriate fields. If your ISP has provided you with a Service Name, enter it in the Service Name field, otherwise, leave it blank.

PPTP

Enter the Account Name, Account Password, Host Name, Service IP Address, Your IP Address, Your Subnet Mask required by your ISP in the appropriate fields. If your ISP has provided you with a connection ID, enter it in the Connection ID field, otherwise, leave it as zero.

DNS

Domain Name Servers are used to map an IP address to the equivalent domain name. Your ISP should provide the IP address for one or more domain name servers. Enter these addresses on this screen.

Advanced Setup

The Sharing Router supports advanced functions like hacker attack detection, client filtering, virtual servers, special application access, and a virtual DMZ host. We recommend you keep the default settings.

System Setting

System Time

Connecting to a Simple Network Time Protocol (SNTP) server allows the Sharing Router to synchronize the system clock to the global Internet. The synchronized clock in the Sharing Router is used to record the security log and control client filtering.

Dynamic IP

The Host Name is optional, but may be required by some ISPs. The default MAC address is set to the WAN's physical interface on the Sharing Router. Use this address when registering for Internet service, and do not change it unless required by your ISP. You can use the "Clone MAC Address" button to copy the MAC address of the Ethernet Card installed by your ISP (in your PC) and replace the WAN MAC address with this MAC address.

Static IP

If your Internet Service Provider has assigned a fixed address, enter the assigned address and subnet mask for the Sharing Router, then enter the gateway address of your ISP.

Note: You may need a fixed address if you want to provide Internet services, such as a Web server or FTP server.

PPPoE

Enter the PPPoE user name and password assigned by your ISP. The Service Name is normally optional, but may be required by some providers.

PPTP

The acronym of Point to Point Tunneling Protocol, PPTP encapsulates the packet for transmission over the Internet. It looks like to create a private "tunnel" over the large public network to have the almost equal security of private network without actually lease a private line. If your Internet Service Provider requires the use of PPTP, enter the information below.

Note: PPTP for a WAN connection is most popular in Europe.

DNS



Domain Name Servers are used to map an IP address to the equivalent domain name. Your ISP should provide the IP address for one or more domain name servers. Enter those addresses on this screen.

LAN

LAN Settings



Configure the gateway address of the Sharing Router. To dynamically assign the IP address for client PCs, enable the DHCP Server, set the lease time, and then specify the address range. Also remember to configure all of your client PCs for dynamic address allocation.

Valid IP addresses consist of four numbers, and are separated by periods. The first three fields are the network portion, and can be from 0-255, while the last field is the host portion, and can be from 1-254. However, remember not to include the gateway address of the Sharing Router in the client address pool.

DHCP Client List

IP Address	Host Name	MAC Address
192.168.1.101	PC	00:0C:29:00:00:00



The DHCP client list allows you to see which clients are connected to the Sharing Router via IP address, host name, and MAC address.

NAT Setting

Special Application

Some applications require multiple connections, such as Internet gaming, video conferencing, Internet telephone and others. These applications may not work when Network Address Translation (NAT) is enabled. If you need to run applications that require multiple connections, use the following screen to specify the additional public ports to be opened for each application.

Application	Port No.	Protocol	Public Port	Enabled
1	192.168.1.101		192.168.1.101	<input type="checkbox"/>
2	192.168.1.101		192.168.1.101	<input type="checkbox"/>
3	192.168.1.101		192.168.1.101	<input type="checkbox"/>
4	192.168.1.101		192.168.1.101	<input type="checkbox"/>
5	192.168.1.101		192.168.1.101	<input type="checkbox"/>
6	192.168.1.101		192.168.1.101	<input type="checkbox"/>
7	192.168.1.101		192.168.1.101	<input type="checkbox"/>
8	192.168.1.101		192.168.1.101	<input type="checkbox"/>
9	192.168.1.101		192.168.1.101	<input type="checkbox"/>
10	192.168.1.101		192.168.1.101	<input type="checkbox"/>



Virtual Server

Virtual Server

You can configure the Sharing Router as a virtual server, and forward requests for a service (such as Web or FTP) at a public IP address to the local server. In addition, you can configure the Sharing Router as a virtual server, and forward requests for a service (such as Web or FTP) at a public IP address to the local server. In addition, you can configure the Sharing Router as a virtual server, and forward requests for a service (such as Web or FTP) at a public IP address to the local server.

Service	External IP	Internal IP	Enabled
1	192.168.1.1	192.168.1.2	<input type="checkbox"/>
2	192.168.1.1	192.168.1.3	<input type="checkbox"/>
3	192.168.1.1	192.168.1.4	<input type="checkbox"/>
4	192.168.1.1	192.168.1.5	<input type="checkbox"/>
5	192.168.1.1	192.168.1.6	<input type="checkbox"/>
6	192.168.1.1	192.168.1.7	<input type="checkbox"/>
7	192.168.1.1	192.168.1.8	<input type="checkbox"/>
8	192.168.1.1	192.168.1.9	<input type="checkbox"/>
9	192.168.1.1	192.168.1.10	<input type="checkbox"/>



If you configure the Sharing Router as a virtual server, remote users accessing services such as Web or FTP at your local site via public IP addresses can be automatically redirected to local servers configured with private IP addresses. In other words, depending on the requested service (TCP/UDP port number), the Sharing Router redirects the external service request to the appropriate server (located at another internal IP address).

Firewall Setting

The Sharing Router's firewall can block common hacker attacks, including IP Spoofing, Land Attack, Ping of Death, IP with zero length, Smurf Attack, UDP port loopback, Snork Attack, TCP null scan, and TCP SYN flooding. The firewall does not significantly affect system performance, so we advise leaving it enabled to protect your network users.

Block WAN Ping

Block WAN Ping

You can configure the Sharing Router to block WAN ping requests. This prevents hackers from testing whether your WAN IP address is valid and supports a network.

When you "Block WAN Ping", you are causing the public WAN IP address on the



Router to not respond to ping commands. Pinging public WAN IP addresses is a common method used by hackers to test whether your WAN IP address is valid and supports a network.

Client Filtering

Client Filtering

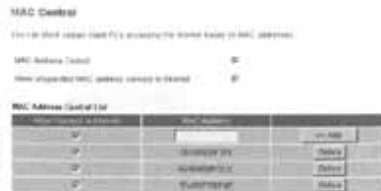
Client IP	Application	Time of Day	Enabled
192.168.1.100-192.168.1.199	FTP	Always	<input checked="" type="checkbox"/>
192.168.1.110-192.168.1.119	Internet	Monday-Friday	<input checked="" type="checkbox"/>



You can filter Internet access for local clients based on IP address, application type (i.e., HTTP port), and time of day.

For example, this screen shows that clients in the address range 192.168.1.100-199 are permanently restricted from using FTP (Port 21), while clients in the address range 192.168.1.110-119 are blocked from browsing the Internet from Monday through Friday.

MAC Control



You can block certain client PCs accessing the internet based on MAC addresses.

DMZ(Demilitarized Zone)



The DMZ Host application allows unrestricted 2-way communication between a single LAN PC and other Internet users or servers. This application is useful for supporting special-purpose services such as video-conferencing and gaming that require proprietary client software and/or 2-way user communication. To use this application, obtain a fixed Public IP Address from your ISP. Note that, in order to provide unrestricted access, the Firewall provided by the Sharing Router to protect this port is disabled, thus creating a potentially serious security risk. It is recommended that this application should be disabled when it is not in use by entering "0" in the "DMZ Host" field.

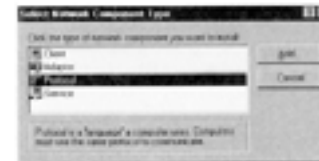
CHAPTER 5

SHARING ROUTER CONFIGURING CLIENT TCP/IP

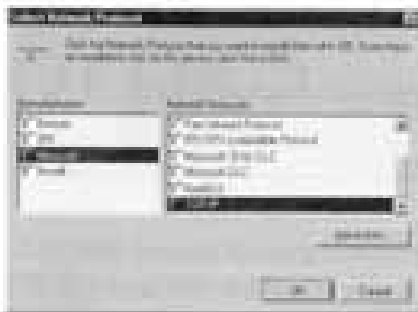
If you have not previously installed the TCP/IP protocol on your client PCs, refer to the following section. If you need information on how to configure a TCP/IP address on a PC, refer to "Setting TCP/IP to work with the Sharing Router" on page 5-3.

Installing TCP/IP Protocol in Your PC

1. Click the *Start* button and choose *Settings*, then click *Control Panel*.
2. Double click the *Network* icon and select the *Configuration* tab in the *Network* window.
3. Click the *Add* button to add the network component to your PC.
4. Double click *Protocol* to add the TCP/IP protocol



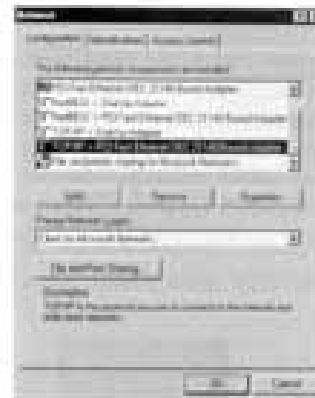
5. Select the *Microsoft* item in the manufacturers list. And choose *TCP/IP* in the Network Protocols. Click the *OK* button to return to the Network window.



6. The TCP/IP protocol will be listed in the Network window. Click *OK* to complete the install procedure and restart your PC to enable the TCP/IP protocol.

Setting TCP/IP to Work with the Sharing Router

1. Click the *Start* button and choose *Settings*, then click *Control Panel*.
2. Double click the *Network* icon. Select the TCP/IP line that has been assigned to your network card in the *Configuration* tab of the Network window.



3. Click the *Properties* button to set the TCP/IP protocol for the Sharing Router.
4. You can dynamically assign TCP/IP address settings to a client, or you can manually configure a client with address settings to meet your specific network requirements. (Note that the default IP address of the Sharing Router is 192.168.1.1.)

Configuring Your Computer with Windows 95/98/ME

You may find that the instructions here do not exactly match your version of Windows. This is because these steps and screenshots were created from Windows 98. Windows 95 and Windows Millennium Edition are very similar, but not identical to Windows 98.

Step 1. Configure TCP/IP Settings

After you have completed the hardware setup by connecting your devices, you need to configure your computer to connect to your Sharing Router. You need to determine how your ISP issues your IP address. Many ISPs issue these numbers automatically using a networking technology known as Dynamic Host Control Protocol, or DHCP. Other ISPs will specify your IP address and associated numbers, which you must enter manually. This is also known as a static IP address. How your ISP assigns your IP address determines how you will configure your computer.

1. From the Windows desktop, click the "Start" button. Choose "Settings," then click "Control Panel."



2. From "Control Panel," double-click the "Network" icon.

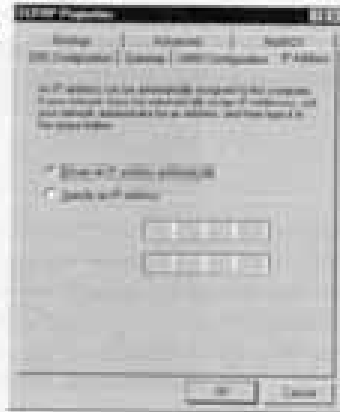


3. In the "Network" window, under the "Configuration" tab, double-click the "TCP/IP" entry that is listed with your network card.



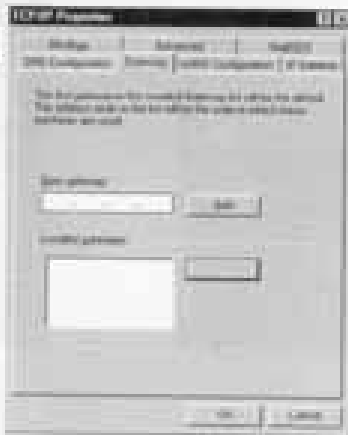
4. Select the "IP Address" tab.

If "Obtain an IP address automatically" is already selected, your computer is already configured for DHCP. Click "Cancel" to close each window, and skip to Step 2 "Disable HTTP Proxy."



5. Locate your IP address and Subnet Mask. Record them in the spaces provided below.

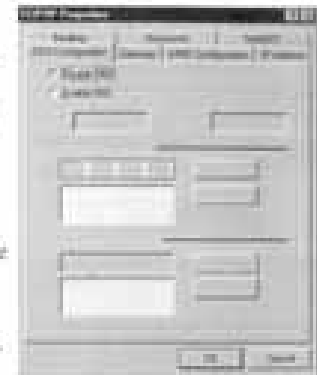
6. Click the "Gateway" tab and record the numbers listed under "Installed gateways."



7. Click the "DNS Configuration" tab. Locate the DNS servers listed under "DNS Server Search Order." Record the listed addresses.

8. After writing down your settings, check to make sure you have recorded them correctly. Click the "IP Address" tab and then click "Obtain an IP address automatically." Click OK.

9. Windows may need your Windows 95/98/ME CD to copy some files. After it finishes copying, it will then prompt you to restart your system. Click "Yes" and your computer will shut down and restart.



TCP/IP Configuration Setting

IP Address _____
 Subnet Mask _____
 Primary DNS Server _____
 Secondary DNS Server _____
 Default Gateway _____

Step 2. Disable HTTP Proxy

You will need to verify that the "HTTP Proxy" feature of your Web browser is disabled. This is so that your Web browser will be able to view the configuration pages inside your Sharing Router. The following steps are for Internet

Explosion and fire protection: Determine which measures are used and define the protection area.

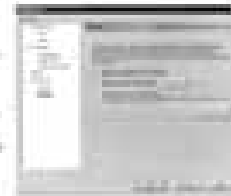
General Report

1. Name, location, explosion and fire protection status (Date, "Explosion Protection")
2. In the "General Report" section, the "Description" tab shows details of the explosion protection.
3. View of the explosion protection.
4. Field "Explosion Protection" can be used to describe the explosion protection.



Settings

1. In the "Settings" section, the "Explosion Protection" tab shows details of the explosion protection.
2. In the "Settings" section, the "Explosion Protection" tab shows details of the explosion protection.
3. In the "Settings" section, the "Explosion Protection" tab shows details of the explosion protection.



Step 4: Check if Printing from Explosion Protection

Now that you have configured your computer to connect to the Explosion Protection, it is time to check the printing settings. By following the steps and instructions shown here, you can ensure that the Explosion Protection can be printed from your computer.

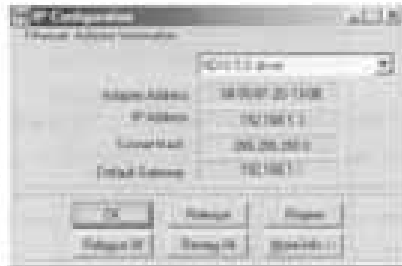
1. Click "Start," then "Run..."



2. Type "WINIPCFG" and click "OK." It may take a minute or two for the "IP Configuration" window to appear.



3. From the drop-down menu, select your network card. Click "Release" and then "Renew." Verify that your IP address is now 192.168.1.xxx, your Subnet Mask is 255.255.255.0 and your Default Gateway is 192.168.1.1. These values confirm that your Sharing Router is functioning. Click "OK" to close the "IP Configuration" window.



Configuring Your Computer with Windows 2000

Step 1. Configure TCP/IP Settings

After you have completed the hardware setup, you need to configure your computer to connect to your Sharing Router. You also need to determine how your ISP issues your IP address. Many ISPs issue these numbers automatically, using a networking technology known as Dynamic Host Control Protocol, or DHCP. Other ISPs will specify your IP address and associated numbers, which you must enter manually. This is also known as a static IP address. How your ISP assigns your IP address determines how you will configure your computer.

Here is what to do:

1. From the Windows desktop, click the "Start" button. Choose "Settings," then click "Control Panel."



2. Double-click the "Network & Dial-Up Connections" icon.



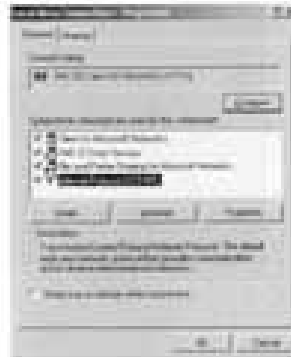
3. Double-click the icon that corresponds to the connection to your Sharing Router.



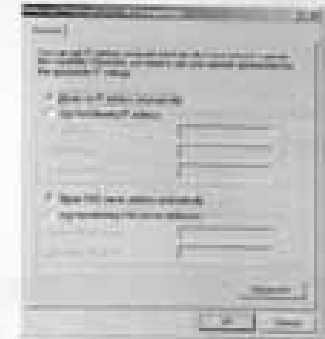
4. Click "Properties."



5. Double-click "Internet Protocol (TCP/IP)."



6. All the information that you need to record is on the "Internet Protocol (TCP/IP) Properties" dialog box. Use the spaces below to record the information.



If "Obtain an IP address automatically" and "Obtain DNS server address automatically" are already selected, your computer is already configured for DHCP. Click "Cancel" to close each window, and skip to Step 2 "Disable HTTP Proxy."

7. Select "Obtain an IP address automatically" and then select "Obtain DNS server address automatically." Then click "OK." Click "OK" or "Close" to close each window.

TCP/IP Configuration Setting

IP Address: _____
 Subnet Mask: _____
 Primary DNS Server: _____
 Secondary DNS Server: _____
 Default Gateway: _____

Step 2. Disable HTTP Proxy

You will need to verify that the "HTTP Proxy" feature of your Web browser is disabled. This is so that your Web browser will be able to view the configuration pages inside your Sharing Router. The following steps are for Internet Explorer and for Netscape. Determine which browser you use and follow the appropriate steps.

Step 3: Obtain IP Settings From Your Sharing Router

Now that you have configured your computer to connect to your Sharing Router, it needs to obtain new network settings. By releasing any old IP settings and renewing them with settings from your Sharing Router, you will also verify that you have configured your computer correctly.

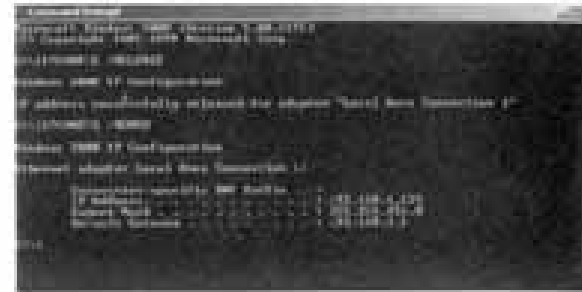
1. From the Windows desktop, click the "Start" button, then "Programs," then "Accessories," and then click "Command Prompt."



2. In the "Command Prompt" window, type "IPCONFIG /RELEASE" and press the <ENTER> key.



3. Type "IPCONFIG /RENEW" and press the <ENTER> key. Verify that your IP address is now 192.168.1.xxx (2-255), your Subnet Mask is 255.255.255.0 and your Default Gateway is 192.168.1.1. These values confirm that your Sharing Router is functioning.



4. Type "EXIT" and press <ENTER> to close the "Command Prompt" window.

Configuring Your Computer with Windows NT 4.0

Step 1. Configure TCP/IP Settings

After you have completed the hardware setup, you need to configure your computer to connect to your Sharing Router. You need to determine how your ISP issues your IP address. Many ISPs issue these numbers automatically using a networking technology known as Dynamic Host Control Protocol, or DHCP. Other ISPs will specify your IP address and associated numbers, which you must enter manually. This is also known as a static IP address. How your ISP assigns your IP address determines how you will configure your computer.

Here is what to do:

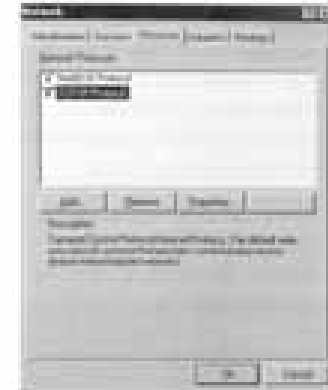
1. From the Windows desktop click "Start," then "Settings," and click "Control Panel."



2. Double-click the "Network" icon.

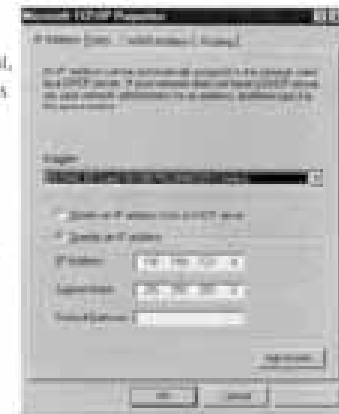


3. Select the "Protocols" tab.
4. Double-click "TCP/IP Protocol."



5. Select the "IP Address" tab.
6. In the "Adapter" drop-down list, be sure your Ethernet adapter is selected.

If "Obtain an IP address automatically" is already selected, your computer is already configured for DHCP. Click "Cancel" to close each window, and skip to Step 2 "Disable HTTP Proxy."



7. In the "TCP/IP Properties" dialog box, click the IP address tab to locate your IP address, subnet Mask, and default gateway. Record these values in the space provided below.



8. Click the "DNS" tab to see the primary and secondary DNS servers. Record these values in the appropriate spaces below.

9. After writing down your IP settings, click the IP address tab. Select "Obtain IP address automatically" and click OK. Click OK again to close the "Network" window.

10. Windows may copy some files, and will then prompt you to restart your system. Click "Yes" and your computer will shut down and restart.

TCP/IP Configuration Setting

IP Address _____
Subnet Mask _____
Primary DNS Server _____
Secondary DNS Server _____
Default Gateway _____

7. In the "TCP/IP Properties" dialog box, click the IP address tab to locate your IP address, subnet Mask, and default gateway. Record these values in the space provided below.



8. Click the "DNS" tab to see the primary and secondary DNS servers. Record these values in the appropriate spaces below.

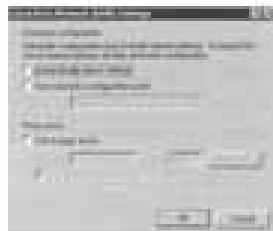
9. After writing down your IP settings, click the IP address tab. Select "Obtain IP address automatically" and click OK. Click OK again to close the "Network" window.

10. Windows may copy some files, and will then prompt you to restart your system. Click "Yes" and your computer will shut down and restart.

TCP/IP Configuration Setting

IP Address _____
Subnet Mask _____
Primary DNS Server _____
Secondary DNS Server _____
Default Gateway _____

3. Clear all the checkboxes.
4. Click "OK," and then click "OK" again to close the "Internet Options" window.



Netpage

1. Open Netscape and click the stop button. Click "Edit," then click "Preferences..."
2. In the "Preferences" window, under "Category" double-click "Advanced," then click "Proxies." Select "Direct connection to the Internet." Click "OK."



Step 3. Obtain IP Settings From Your Sharing Router

Now that you have configured your computer to connect to your Sharing Router, it needs to obtain new network settings. By releasing any old IP settings and renewing them with settings from your Sharing Router, you will also verify that you have configured your computer correctly.

1. From the Windows desktop, click the "Start" button, then "Programs," and then select "Command Prompt."
2. In the "Command Prompt" window, type "IPCONFIG /RELEASE" and press the <ENTER> key.



3. Type "IPCONFIG /RENEW" and press the <ENTER> key. Verify that your IP address is now 192.168.1.xxx, your Subnet Mask is 255.255.255.0 and your Default Gateway is 192.168.1.1. These values confirm that your Sharing Router is functioning.



4. Type "EXIT" and press <ENTER> to close the "Command Prompt" window.

Configuring Your Macintosh Computer

You may find that the instructions here do not exactly match your screen. This is because these steps and screenshots were created using Mac OS 8.5. Mac OS 7.x and above are all very similar, but may not be identical to Mac OS 8.5.

Step 1. Configure TCP/IP Settings

After you have completed the hardware setup, you need to configure your computer to connect to your Sharing Router. You need to determine how your ISP issues your IP address. Many ISPs issue these numbers automatically using a networking technology known as Dynamic Host Control Protocol, or DHCP. Other ISPs will specify your IP address and associated numbers, which you must enter manually. This is also known as a static IP address. How your ISP assigns your IP address determines how you will configure your computer.

Here is what to do:

1. Pull down the Apple Menu. Click "Control Panel" and select "TCP/IP".

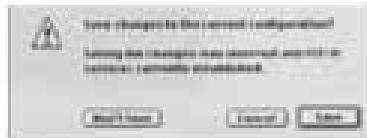


2. In the TCP/IP dialog box, make sure that "Ethernet" is selected in the "Connect Via:" field.



If "Using DHCP Server" is already selected in the "Configure:" field, your computer is already configured for DHCP. Close the TCP/IP dialog box, and skip to Step 2 "Disable HTTP Proxy."

3. All the information that you need to record is on the "TCP/IP" dialog box. Use the space below to record the information.
4. After writing down your IP settings, select "Using DHCP Server" in the "Configure" field and close the window.
5. Another box will appear asking whether you want to save your TCP/IP settings. Click Save.



TCP/IP Configuration Setting

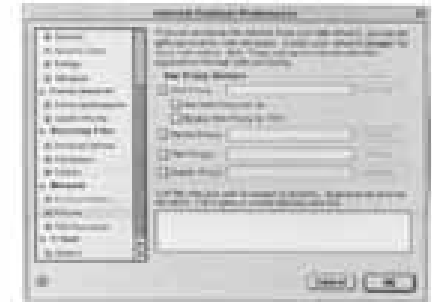
IP Address _____
Subnet Mask _____
Router _____
Name Server _____

Step 2. Disable HTTP Proxy

You will need to verify that the "HTTP Proxy" feature of your Web browser is disabled. This is so that your Web browser will be able to view the configuration pages inside your Sharing Router. The following steps are for Internet Explorer and for Netscape. Determine which browser you use and follow the appropriate steps.

Internet Explorer

1. Open Internet Explorer and click the stop button. Click "Edit" and select "Preferences."
2. In the Internet Explorer Preferences window, under Network, select Proxies.
3. Uncheck all checkboxes and click OK.



Netscape

1. Open Netscape and click the stop button. Click "Edit" and select "Preferences."



Dynamic IP Allocation via a DHCP Server

Select *Obtain an IP address automatically* in the *IP Address* tab. Do not input any values under the *Gateway* tab, and choose *Disable DNS* in the *DNS Configuration* tab. These settings will be automatically configured by the DHCP server. Click *OK* and reboot your system to implement the changes.



Manual IP Configuration

1. Select *Specify an IP address* in the *IP Address* tab. Select an IP address based on the default network 192.168.1.X (where X is between 2 and 254), and use 255.255.255.0 for the subnet mask.
2. In the *Gateway* tab, add the IP address of the Sharing Router (default: 192.168.1.1) in the *New gateway* field and click *Add*.
3. In the *DNS Configuration* tab, add the IP address for the Sharing Router and click *Add*. This automatically relays DNS requests to the DNS server(s) provided by your ISP. Otherwise, add specific DNS servers into the *DNS Server Search Order* field and click *Add*.



4. After finishing TCP/IP setup, click *OK*, and then reboot the computer. After that, set up other PCs on the LAN according to the procedures described above.

Verifying Your TCP/IP Connection

After installing the TCP/IP communication protocol and configuring an IP address in the same network with the Sharing Router, you can use the *Ping* command to check if your computer is successfully connected to the Sharing Router. The following example shows how the *Ping* procedure can be executed in an MS-DOS window.

First, execute the *Ping* command:

```
ping 192.168.1.1
```

If the following messages appear:

```
Pinging 192.168.1.1 with 32 bytes of data:
```

```
Reply from 192.168.1.1: bytes=32 time=2ms TTL=64
```

a communication link between your computer and the Sharing Router has been successfully established.

Otherwise, if you get the following messages:

```
Pinging 192.168.1.1 with 32 bytes of data:
```

```
Request timed out.
```

There may be something wrong in your installation procedure. Check the following items in sequence:

1. Is the Ethernet cable correctly connected between the Sharing Router and your computer?
The LAN LED on the Sharing Router and the Link LED of the network card on your computer must be on.
2. Is TCP/IP properly configured on your computer?
If the IP address of the Sharing Router is 192.168.1.1, the IP address of your PC must be from 192.168.1.2 - 192.168.1.254 and the default gateway must be 192.168.1.1.

If you can successfully *Ping* the Sharing Router, then you are now ready to connect to the Internet!

APPENDIX A SHARING ROUTER TROUBLESHOOTING

This appendix describes common problems you may encounter and possible solutions. The Sharing Router can be easily monitored through panel indicators to identify problems. If you cannot resolve any connection problems after checking the indicators, then refer to the other sections in the following table.

Troubleshooting Chart	
Symptom	Action
<i>LED Indicators</i>	
Power LED is Off	<ul style="list-style-type: none"> • External power supply has failed or is disconnected. • Check connections between the Sharing Router, the external power supply, and the wall outlet. • If the power indicator does not turn on when the power cord is plugged in, you may have a problem with the power outlet, power cord, or external power supply. <p>However, if the unit powers off after running for a while, check for loose power connections, power losses or surges at the power outlet.</p> <p>If you still cannot isolate the problem, then the external power supply may be defective. In this case, contact Technical Support for assistance.</p>

Troubleshooting Chart	
Symptom	Action
<i>LED Indicators</i>	
Link LED is Off	<ul style="list-style-type: none"> • Verify that the Sharing Router and attached device are powered on. • Be sure the cable is plugged into both the Sharing Router and the corresponding device. • Verify that the proper cable type is used and that its length does not exceed the specified limits. • Be sure that the network interface on the attached device is configured for the proper communication speed and duplex mode. • Check the adapter on the attached device and cable connections for possible defects. Replace any defective adapter or cable if necessary.
<i>Network Connection Problems</i>	
Cannot Ping the Sharing Router from the attached LAN, or the Sharing Router cannot Ping any device on the attached LAN	<ul style="list-style-type: none"> • Verify that the IP addresses are properly configured. For most applications, you should use the Sharing Router DHCP function to dynamically assign IP addresses to any host on the attached LAN. However, if you manually configure any IP addresses on the LAN, verify that the same network address (network component of the IP address) and subnet mask are used for both the Sharing Router and any attached LAN devices. • Be sure the device you want to Ping (or from which you are Pinging) has been configured for TCP/IP.

Troubleshooting Chart	
Symptom	Action
<i>Management Problems</i>	
Cannot connect using the Web browser	<ul style="list-style-type: none"> • Be sure to have configured the Sharing Router with a valid IP address, subnet mask and default gateway. • Check that you have a valid network connection to the Sharing Router and that the port you are using has not been disabled. • Check the network cabling between the management station and the Sharing Router.

APPENDIX B SHARING ROUTER CABLES

Ethernet Cable

Specifications

Cable Types and Specifications			
Cable	Type	Max. Length	Connector
10BASE-T	Cat. 3, 4, 5 100-ohm UTP	100 m (328 ft)	RJ-45
100BASE-TX	Cat. 5 100-ohm UTP	100 m (328 ft)	RJ-45

Twisted-pair Cable

Caution: DO NOT plug a phone jack connector into any RJ-45 port. Use only twisted-pair cables with RJ-45 connectors that conform with FCC standards.

For 10BASE-T/100BASE-TX connections, a twisted-pair cable must have two pairs of wires. Each wire pair is identified by two different colors. For example, one wire might be red and the other, red with white stripes. Also, an RJ-45 connector must be attached to both ends of the cable.

Figure B-1 illustrates how the pins on the RJ-45 connector are numbered. Be sure to hold the connectors in the same orientation when attaching the wires to the pins.

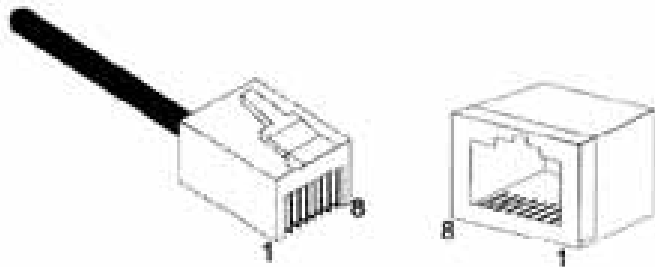


Figure B-1. RJ-45 Connector Pin Numbers

Straight-through Cable

Straight-Through RJ-45 Pin Assignments	
End 1	End 2
1(TD+)	1(TD+)
2(TD-)	2(TD-)
3(RD+)	3(RD+)
6(RD-)	6(RD-)

Pins 4,5,7 and 8 are not connected.

Crossover Cable

Crossover RJ-45 Pin Assignments	
End 1	End 2
1(TD+)	3(TD+)
2(TD-)	6(TD-)
3(RD+)	1(RD+)
6(RD-)	2(RD-)

Pins 4,5,7 and 8 are not connected.

RJ-45 Port Pin Assignments

All LAN ports on the Sharing Router support MDI configuration. There are pin signals as following.

Pin	MDI Signal Name*
1	Transmit Data (TD+)
2	Transmit Data (TD-)
3	Receive Data (RD+)
6	Receive Data (RD-)

Pins 4,5,7 and 8 are not connected.

* The "+" and "-" signs represent the polarity of the wires that make up each wire pair.

APPENDIX C SPECIFICATIONS

WAN Interface

10BASE-T/100BASE-TX, 1 RJ-45 port

Management

Web management

Advanced Features

Dynamic IP Address Configuration - DHCP, DNS

Firewall - Client privileges, hacker prevention and logging

Virtual Private Network - PPTP, L2TP, IPSec pass-through

Internet Standards

ARP (RFC 826), IP (RFC 791), ICMP (RFC 792), UDP (RFC 768), TCP (RFC 793), Telnet (RFC 854-859), MD5 (RFC 1321), BOOTP Extension (RFC 1497), PPP LCP Extension (RFC 1570), PPPoE (RFC 2516), NAT (RFC 1631), PPP (RFC 1661), HTML (RFC 1866), HTTP (RFC 1945), CHAP (RFC 1944), DHCP (RFC 2131), PPTP (RFC 2637)

Temperature

Operating: 32 to 104°F (-0 to 40°C)

Storage: -4 to 149°F (-20 to 65°C)

Humidity

5% to 95% (noncondensing)

Compliances

CE Mark

Emissions

FCC Class B

EN55022 (CISPR 22) Class B

Immunity

EN 61000-3-2/3

EN 61000-4-2/3/4/5/6/8/11

Sharing Router**LAN Interface**

10BASE-T/100BASE-TX

4 RJ-45 ports

Indicator Panel

LAN (Link, Activity), WAN (Link, Activity), Power

Dimensions

103.5 x 83.5 x 26.0 mm (4.07 x 3.28x 1.02 inch)

Weight

0.55 lbs (0.25 kg)

Input Power

5V DC (2.4A)

Maximum Current

0.40A RMS max. @110V, 0.4A RMS max. @240V

Power Consumption

6.5 Watts max. @ 100-240 VAC

Heat Dissipation

144 BTU/hr max. @ 100-240 VAC

APPENDIX D

SHARING ROUTER

ORDERING INFORMATION

Internet Sharing Router Products	
49074 Sharing Router	4-port Internet Gateway - WAN/LAN