

Intertek Testing Services NA Inc.

EXHIBIT 7

INSTRUCTION MANUAL

Intertek Testing Services NA Inc.

7.0 Instruction Manual

Attached is a draft copy of the Instruction Manual. Per Zoom Telephonics, Inc. the revised manual will replace all reference of the Harris PRISM with their Zoom Wireless PC LAN Card.

Zoom Telephonics will also insert the Information to the User shown below into the next revision of the instruction manual.

Warning: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

ZOOM

FOR REGULATORY
PURPOSES ONLY

CONFIDENTIAL

Zoom Telephonics, Inc.

230 Board

Wireless LAN

FaxModem

User's Manual

Preliminary
Draft

CONFIDENTIAL

Zoom Telephonics, Inc.
207 South Street, Boston, MA 02111
Tel: 617-235-1072
Fax: 617-235-0923
Web site: www.zoomtel.com

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1.0 INTRODUCTION

1.1 PRISM™ Wireless Ethernet Adapter Overview

Congratulations on your purchase of the Harris PRISM Wireless Ethernet Adapter (Adapter). The Adapter is a PCMCIA card that provides an interface between a PCMCIA-compatible computer and a wireless Ethernet network based on the IEEE 802.11 Ethernet standard.

PCMCIA, which stands for Personal Computer Memory Card International Association, is an organization that defines the international standards for computer peripherals. The Harris PRISM Wireless Ethernet Adapter is a peripheral device built to the standards set by PCMCIA, so it can be used in computers with type II, type III, and Toshiba® 16mm (type IV) PCMCIA slots.

The Harris PRISM Wireless Ethernet Adapter can operate with or without an access point to a wired network. If an access point is not used, the device can communicate with another Harris PRISM Wireless Ethernet Adapter and will function as a peer-to-peer workgroup LAN. If used with an access point, the Adapter will provide access to a wired network just like a standard wired Ethernet adapter.

The Adapter has three LEDs (light-emitting diodes) on the part of the card that extends out of the PCMCIA slot. These lights may indicate power, link, and transmit state, depending on the driver implementation. At least one red LED will display power in most cases.

**DO NOT INSERT THE PRISM CARD INTO THE
PCMCIA SLOT UNTIL INSTRUCTED TO DO SO!**

1.2 This Manual

This manual is intended as a supplement to the manual(s) supplied with your Network Operating System (NOS) software. Use that documentation or consult your network administrator for information about configuring your network when the PRISM Wireless Ethernet Adapter is used with an access point connected to your wired network.

1.3 What's In Your Package

Be sure to check the contents of the box to be sure everything is included and ready for use. Here is what is inside:

- The Harris PRISM Wireless Ethernet Adapter
- The Harris PRISM Wireless Ethernet Adapter Installation Diskette
- The Installation "Quick Start" Guide
- This User Reference Manual

1.4 Preparing For Installation On Windows 95

IMPORTANT NOTE:

The Harris PRISM Wireless Ethernet Adapter requires Windows 95 version 4.00.950A or later! If you do not know what version of Windows 95 you are running, **RIGHT click** on the **"My Computer"** icon and select **"Properties"**. The version is displayed below the operating system. If the version lists 4.00.950, you do not have the correct version. Download Service Pack 1 from <http://www.microsoft.com> and install it to your system before taking any further action!

The software that controls the way the Adapter operates is on the Harris PRISM Wireless Ethernet Adapter installation diskette. You must install this software in order for the Adapter to function.

To install and configure the software that controls the Adapter, you need the following items:

- The Harris PRISM Wireless Ethernet Adapter
- The Harris PRISM Wireless Ethernet Adapter installation diskette
- A computer system with a 3 1/2-inch floppy drive and a PCMCIA Type II, Type III or Toshiba 16mm Type IV card slot
- Microsoft Windows 95, Version 4.00.950A or later.

DO NOT INSERT THE PRISM CARD INTO THE PCMCIA SLOT UNTIL INSTRUCTED TO DO SO!

2.0 INSTALLATION

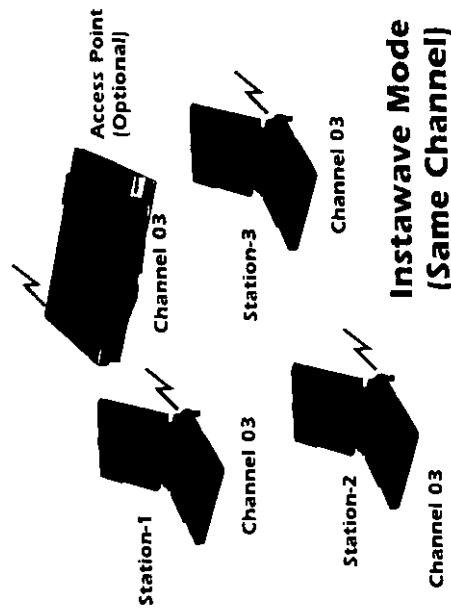
2.1 Installation Overview

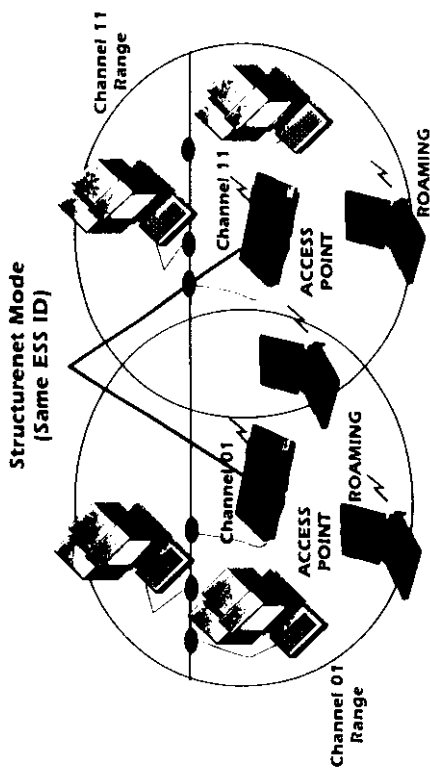
The following sections will assist you in successfully installing your wireless network adapter card. You will first install the software and hardware then set network properties to accommodate resource sharing and to select the type of wireless network you wish to establish.

OPERATING MODES

There are two modes of operation for the PRISM Wireless Ethernet Adapter Card. Instawave and Structurernet. Instawave, the default mode, enables users to select a common channel. All wireless ethernet stations, including access points, can communicate as long as they are on that common channel. Structurernet should only be used when roaming is needed. Roaming is defined as the ability to effortlessly move between access points that are on different channels. For example, with large high-traffic areas it may be necessary to have many access points, each assigned a different channel. In Structurernet mode, users can move between these access points without having to reconfigure their channel settings. Structurernet automatically redirects users to the appropriate channel with access controlled by an ESS ID. Instawave is the default mode and should accommodate most network needs. If roaming capabilities are needed, see the section titled: *Setting Network Properties For The Structurernet Mode*.

Wired Network





INSTALLATION SUMMARY

Here are the steps you will perform in establishing your wireless network connection:

1. Install the software and hardware using the installation diskette.
2. Install the NetBEUI protocol if needed.
3. Set file & printer sharing and station identification.
4. Select drives, folders, and printers that you wish to share with other computers.
5. If the Structurenet mode is desired, you will perform a special setup.
6. If an access point to a network is to be used, you will need to install the TCP/IP protocol.

DO NOT INSERT THE PRISM CARD INTO THE PCMCIA SLOT UNTIL INSTRUCTED TO DO SO!

2.2 PRISM Wireless Network Adapter Card Hardware And Software Installation

The following network components will automatically be installed if your computer has not previously been configured for networking:

- The Wireless Ethernet Adapter Card driver
- Client for Microsoft Networks
- Client for Netware Networks
- The InTalk Access Point Client software
- IPX/SPX and NetBEUI protocols for peer-to-peer networking and to support the default Instawave mode.

SPECIAL NOTE:

If your computer was already configured for a TCP/IP networking, the following installation process will not automatically install NetBEUI. The NetBEUI protocol will be needed if you want to establish a peer-to-peer network. After you complete this section (2.2) continue to **Section 2.3** which will step you through the process of installing NetBEUI.

1. DO NOT INSERT THE PRISM CARD INTO THE PCMCIA SLOT UNTIL ALERTED TO DO SO!

2. Start your PC and allow Windows 95 to fully load. Do not start any other programs until the installation is completed. If your PC was already running, make sure you close out all programs before you attempt this installation.

3. Insert the *Installation Diskette* into your floppy drive (usually drive A:).

4. Go to the Windows 95 [**Start**] menu and select **Run...**

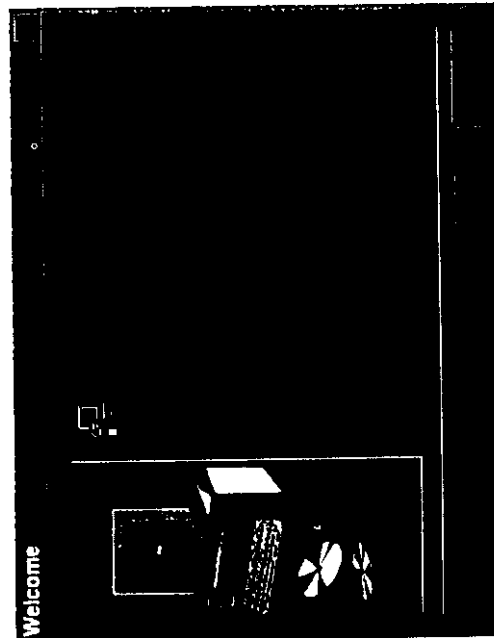
Enter [**a:\setup.exe**], assuming drive A: is where you place the installation diskette.

Click [**OK**].

The Harris PRISM banner appears while the setup software is loading.



At this point, an "Information" box *may appear* on your screen stating that you have a version of Windows 95 that is incompatible. If so, instructions will be displayed telling you how to update Windows 95. If this information box does not appear, your version of Windows 95 is compatible and a "Welcome" dialog box will appear.

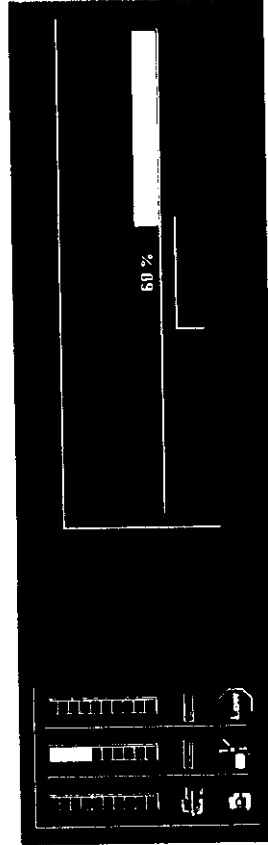


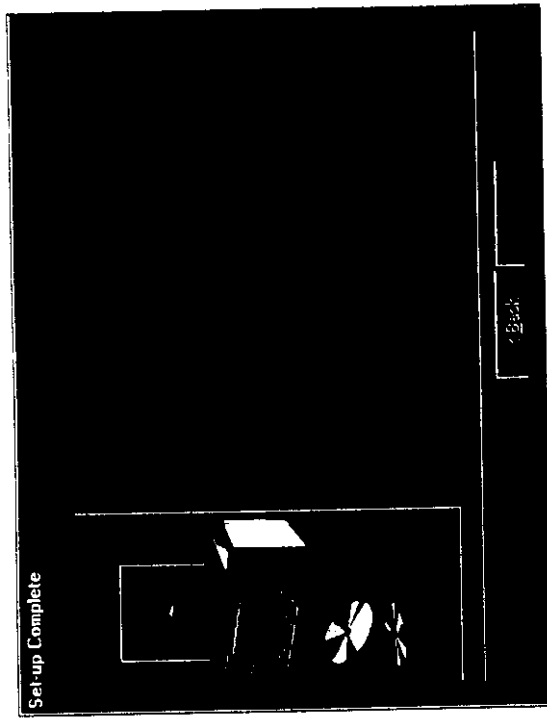
5. Carefully read the entire "Welcome" box before clicking on [**Next**]. Select [**Cancel**] if you need to close other programs that are now running.

When you click on [**Next**], an information box appears, reminding you to make sure that your PRISM Radio Card is removed from your system. If your PRISM Radio card is inserted, remove the card and click [**OK**] to continue.



When you click on [**OK**], additional setup software will be loaded from the installation diskette.





6. A "Setup Complete" box appears on your screen telling you to insert your PRISM Wireless Network Adapter Card into one of your PCMCIA slots.

INSERT THE WIRELESS NETWORK ADAPTER CARD INTO A PCMCIA SLOT NOW.

THE CARD SHOULD SLIDE IN EASILY MOST OF THE WAY. THEN OFFER SOME RESISTANCE AS IT IS SEATED INTO A MULTIPIN CONNECTOR. DO NOT FORCE THE CARD TO SLIDE IN. CONSULT YOUR COMPUTER USER MANUAL AND OTHER DOCUMENTATION THAT CAME WITH YOUR CARD.

Click on [**Finish**].

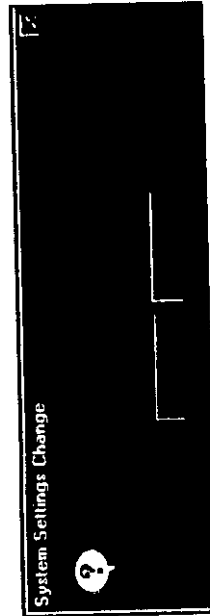
Three tiny lights on the card (red, yellow, and green) turn on shortly after it is firmly inserted into the slot. The green light is on only for a second. The red and yellow lights may stay on most of the time.

A "New Hardware" box appears and driver software begins to load.

7. A "System Settings Change" box appears asking if you wish to restart your computer now.

NOTE: If the computer had a network installed prior to the PRISM installation, you may not be prompted to restart your computer. You may, however, need to reconfigure NetBEUI A(Chapter 2.3) and/or TCP/IP settings (Chapter 2.7).

Remove the installation disk from your floppy drive. You are finished with the installation diskette. You may put it in a safe place.



Click on [**Yes**].

That completes the software and hardware installation.

IMPORTANT NOTE:

If your computer was already configured for TCP/IP networking prior to this installation and you wish to establish a simple peer-to-peer network, you will need to proceed to the next section (2.3) to install the NetBEUI protocol. Otherwise, proceed to **Section 2.4 Setting File & Printer Sharing And Station Identification**

2.3 Installing The NetBEUI Protocol For Peer-To-Peer Networking

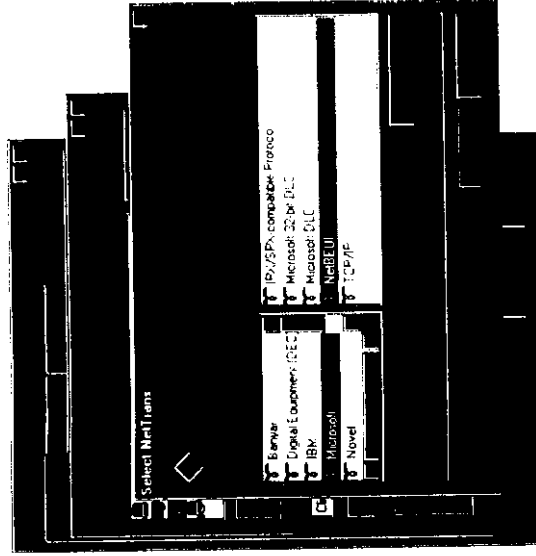
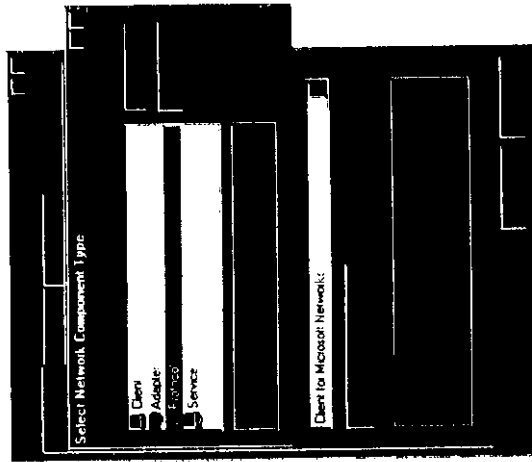
Follow the steps in this section if your computer was already configured for TCP/IP networking prior to this installation and you wish to establish a simple peer-to-peer network. The NetBEUI protocol is necessary for peer-to-peer networking.

STARTING CONDITIONS

- You have just completed the hardware and software installation.
 - The PRISM Wireless Network Adapter Card is still inserted in one of your PCMCIA slots.
 - You have just restarted your computer.
1. During the restart process, an "Enter Network Password" box appears. For peer-to-peer networking, you may not need a password unless an access point to a wired network is used. Even so, some small networks may not use passwords. Simply click on **OK**. Do not click on cancel. If you have access to the wired network via an access point, use your usual network password.
 2. After Windows 95 has fully loaded, locate the "Network Neighborhood" icon on your screen. Using your mouse, **RIGHT click** on the "Network Neighborhood" icon.
 3. Select "Properties" from the pop-up menu.

The "Network" box now appears. Notice it contains three main tabs: **Configuration**, **Identification**, and **Access Control**.

4. In the "Network" box, **Configuration** tab, click on the **Add** button. A "Select Network Component Type" box appears. Click on "Protocol", then click the **Add** button.



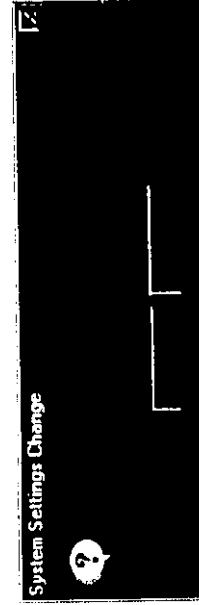
5. A "Select Network Protocol" box appears. From the list of Manufacturers click on Microsoft.

6. From the Network Protocols list, select NetBEUI, then click **OK**.

The NetBEUI protocol is now installed.

7. Click on **OK** in the "Network" box.

8. A "System Setting Change" box appears asking if you wish to restart your computer.



Click **YES**.

Proceed to the next section titled: *Setting File & Printer Sharing And Station Identification.*

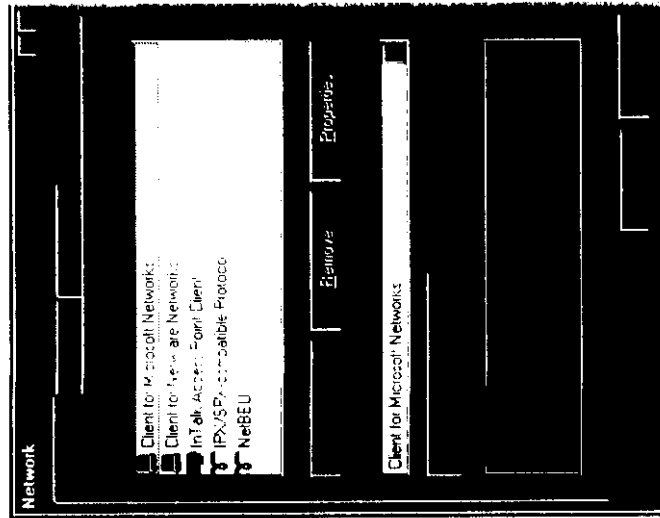
2.4 Setting File & Printer Sharing And Station Identification

This section will assist you in setting up a peer-to-peer network that utilizes the NetBEUI protocol. NetBEUI is a Microsoft protocol that allows for simple networking between computers. Computers that utilize the NetBEUI protocol can only communicate on a peer-to-peer basis with other computers within the workgroup and are unable to connect to wide-area networks (e.g., the Internet). If you want to connect to a WAN or an existing TCP/IP network, you must configure your TCP/IP properties. (See the section titled: *TCP/IP Network Installation*.)

STARTING CONDITIONS

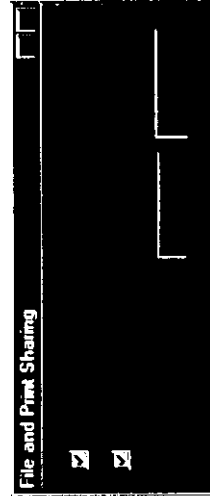
- You have just completed the hardware and software installation.
 - The PRISM Wireless Network Adapter Card is still inserted in one of your PCMCIA slots.
 - You have just restarted your computer.
1. During the restart process, an **"Enter Network Password"** box appears. For peer-to-peer networking, you may not need a password unless an access point to a wired network is used. Even so, some small networks may not use passwords. Simply click on [**OK**]. Do not click on cancel. If you have access to the wired network via an access point, use your usual network password.
 2. After Windows 95 has fully loaded, locate the **"Network Neighborhood"** icon on your screen. Using your mouse, **RIGHT click** on the **"Network Neighborhood"** icon.
 3. Select **"Properties"** from the pop-up menu.

The **"Network"** box now appears. Notice it contains three main tabs: **Configuration**, **Identification**, and **Access Control**.



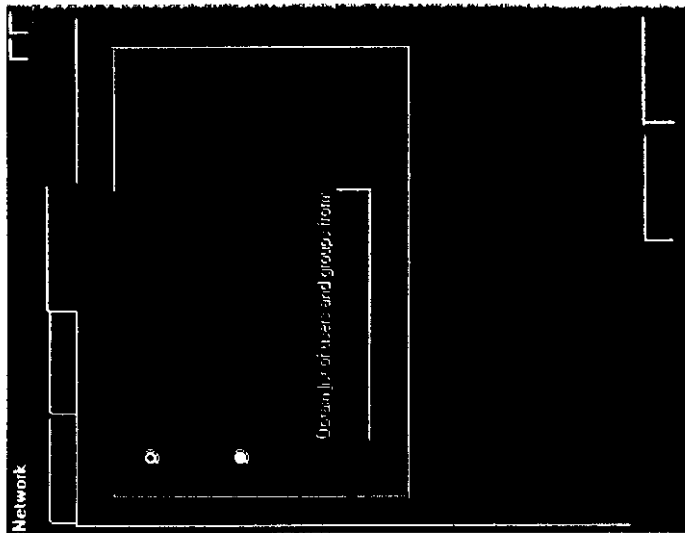
4. Click on [**File and Print Sharing**]

A **"File and Print Sharing"** box appears. Select both sharing options as shown here.

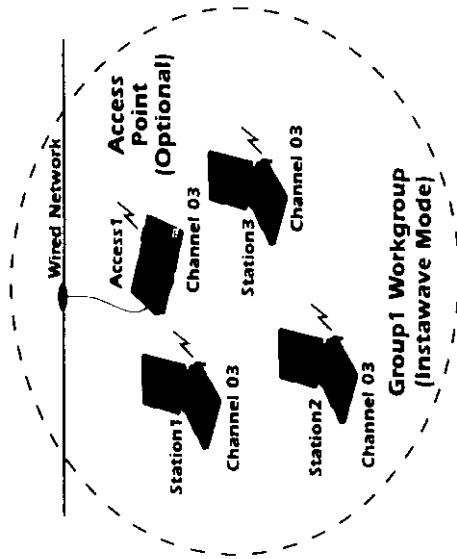


Click on [**OK**].

5. Select the **Access Control** tab in the "Network" box. In the Access Control tab, "Shared-level access control" is often used. If you have a need for "User-level access control", consult your network administrator for instructions.



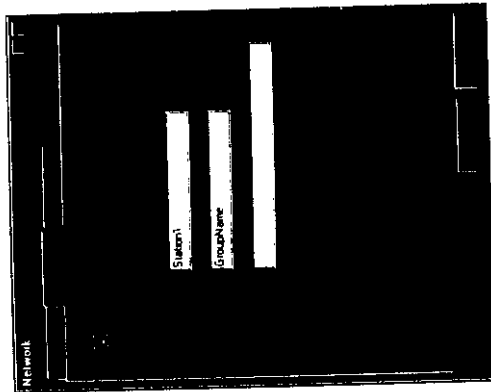
6. Still in the "Network" box, select the **Identification** tab. Here, you will enter the name of your computer and your workgroup.



SPECIAL NOTE:

If you wish to include an access point in your workgroup, you will need to set TCP/IP protocol parameters. If this is for an established corporate network, your network administrator will provide you the needed information or will set the parameters for you. Also, refer to the section in this manual titled: **TCP/IP Network Installation**.

Enter a desired Computer name such as: "Station1", or "John Doe", or whatever identifying name you wish. Enter a **Workgroup** name such as: "Group1", or your business name, or your department name, or any nickname. *All stations in the workgroup must use the same workgroup name.* Entering a computer description is optional. Note: Your computer name and workgroup name may already exist if you have already been connected to a wired network.



Click on [**OK**].

- A "System Setting Change" box appears asking if you wish to restart your computer.



Click [**YES**].

Proceed to the next section titled: *Selecting Sharable Drives, Folders, and Printers*.

2.5 Selecting Sharable Drives, Folders, and Printers

Designating drives, folders, and printers that are to be shared with others in your workgroup or on your network is optional. Even if you decide not to share resources with others, you will be able to access others' resources, assuming they have designated resources to share with others.

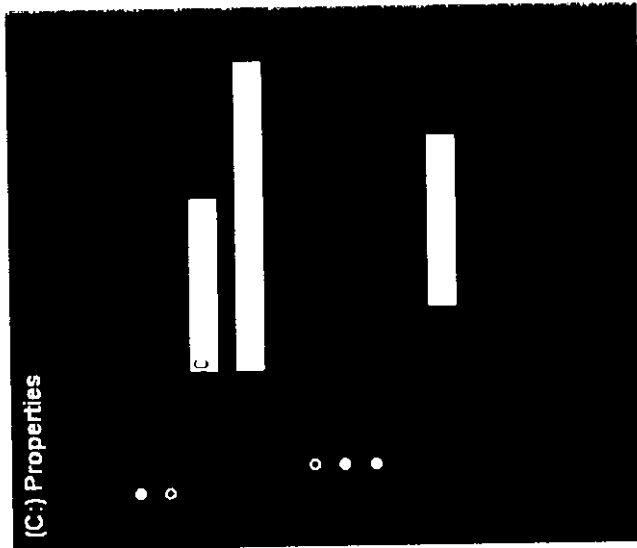
STARTING CONDITIONS

- You have just finished setting network properties.
- The PRISM Wireless Network Adapter Card is still inserted in one of your PCMCIA slots.
- You have just restarted your computer. An "Enter Network Password" box appears. For peer-to-peer networking, you may not need a password unless an access point to a wired network is used. Even so, some small networks may not use passwords. Simply click on [**OK**]. Do not click on cancel. If you have access to the wired network via an access point, use your usual network password.

SHARING DRIVES AND FOLDERS

1. After Windows 95 has fully loaded, open Windows Explorer from your [**Start**] menu by clicking on [**Start**], then select "Programs", then select "Windows Explorer".
2. All of your drives and folders can be seen in Windows Explorer. Using your mouse, **RIGHT** click on a folder or drive that you wish to make available to others in your workgroup or network. A pop-up menu appears.

3. Select **"Sharing"** from the pop-up menu. A **"Properties"** box appears.



4. Select **"Shared as:"** and enter a **"Shared name"**, if one does not already appear in this field.
Select the desired **"Access Type:"**. As a minimum, select **"Read-Only"**. If desired or needed, enter an access password in the **"Read-Only Password:"** field. This will require others to use the password to read your files. If you do not enter an access password, they will not have to enter a password to gain access.
"Read-Only" means other network users can only read your shared files. They will not be able to change them. **"Full"** access means you are giving other permission to read and alter your shared files. A password for full access may be assigned in the **"Full-Access Password:"** field. If the access type **"Depends on Password"** is selected, a different password can be assigned for **"Read-Only"** and **"Full"** access. Then, if you want someone to have full access, you give them your full-access password. Consult your Windows 95 manual for further explanation.

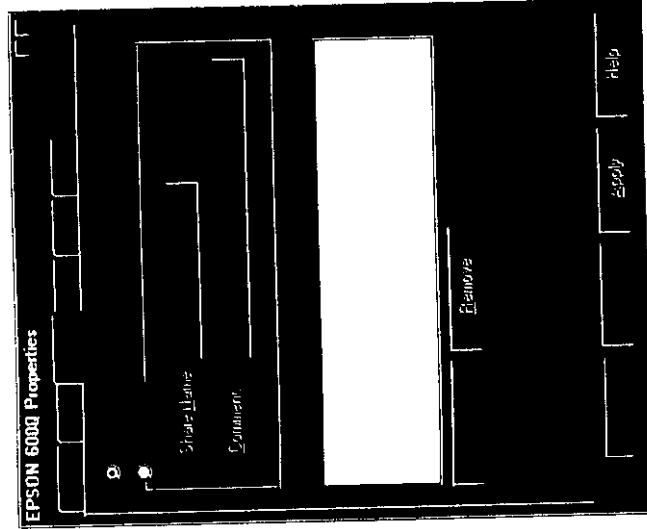
Click [**OK**].

5. Repeat Steps 2 through 4 for any drives or folders you wish to share with other stations in your network.

6. Close Windows Explorer.

SHARING PRINTERS

7. Click on the [**Start**] menu button, then, **"Settings"**, then **"Printers"**.
A **"Printers"** window appears showing you what printers are installed for use on your computer.
8. **RIGHT click** on a printer that you wish to share with the network.
A pop-up menu appears.
9. Select **"Sharing"** in the pop-up menu. A **"Properties"** box appears.



10. Select the "Shared As:" radio button and enter and "Share Name:" if a name does not automatically appear in that field.

11. Click on the [**Add**] button and select "The World" if you want everyone to be able to use your printer. Otherwise, select those from the list of network users to whom you wish to grant access. Click on "Full Access" for each user selected.

12. When finished adding users, click on [**OK**].

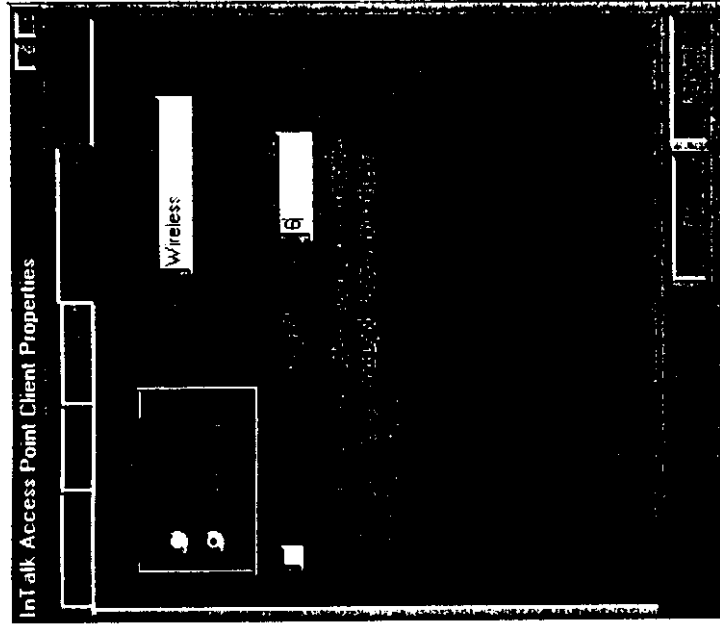
That completes your drive, folder, and printer sharing setup.

2.6 Setting Network Properties For The Structurenet Mode

Structurenet should only be used when roaming is needed. Roaming is defined as the ability to effortlessly move between access points that are on different channels but have the same ESS ID. For example, for large high-traffic areas it may be necessary to have many access points, each assigned a different channel. In Structurenet mode, users can move between these access points without having to reconfigure their channel settings. This is because Structurenet automatically redirects users to the appropriate channel with access controlled by an ESS ID. The ESS ID is an identifying name that both the access point(s) and roaming stations use. Thus, access is based on the ESS ID, not the channel frequency as in the Instawave mode.

To configure your station (computer) for the Structurenet mode you will need to know the ESS ID for the access point(s) you are authorized to use. This is provided by your network administrator.

1. After obtaining the ESS ID, **RIGHT** click on your "Network Neighborhood" icon and select "Properties".
2. The "Network" box appears with the **Configuration** tab selected. In the network components list, click on "InTalk Access Point Client", then click on the [**Properties**] button.
3. The "InTalk Access Point Client Properties" box appears. Select the **Operating Mode** tab.
4. Select the Structurenet radio button.
5. Enter the **ESS ID** for the access point(s) you are authorized to use.
6. As described earlier, Structurenet mode enables clients to automatically search for new access points. In the Default Scanning mode, the client begins this search with Channel 1. The client then searches all consecutive channels until it finds a new access point with the same ESS ID. If you want the searching process to begin with a specific channel, deselect the Default Scanning checkbox and enter a Start Channel. The Start Channel entry is helpful when multiple access points are within range of each other and you desire to connect to a specific access point.



If your network uses the TCP/IP protocol, such as the Internet and many corporate Intranets, and if your computer had not already been configured for TCP/IP networking before this installation, you will need to install the TCP/IP protocol by continuing to the next section titled: **TCP/IP**

Network Installation

7 TCP/IP Network Installation

This section will assist you in connecting to a TCP/IP network. TCP/IP is a protocol used to connect to a wide-area network (WAN), such as the Internet or hard-wired ethernet networks. Each computer connecting to a WAN has a unique number that identifies the machine. This number is referred to as the computer's **IP address**. This section requires a knowledge of, or access to, specific information about the network you are connecting to. It is strongly advised that you consult your network administrator or Internet Service Provider (ISP) prior to changing TCP/IP settings. The following is a checklist of required information you need to acquire *from your network administrator or ISP*. Complete the checklist prior to setting TCP/IP properties. Please refer to Microsoft Networking for complete information on TCP/IP.

TCP/IP CHECKLIST

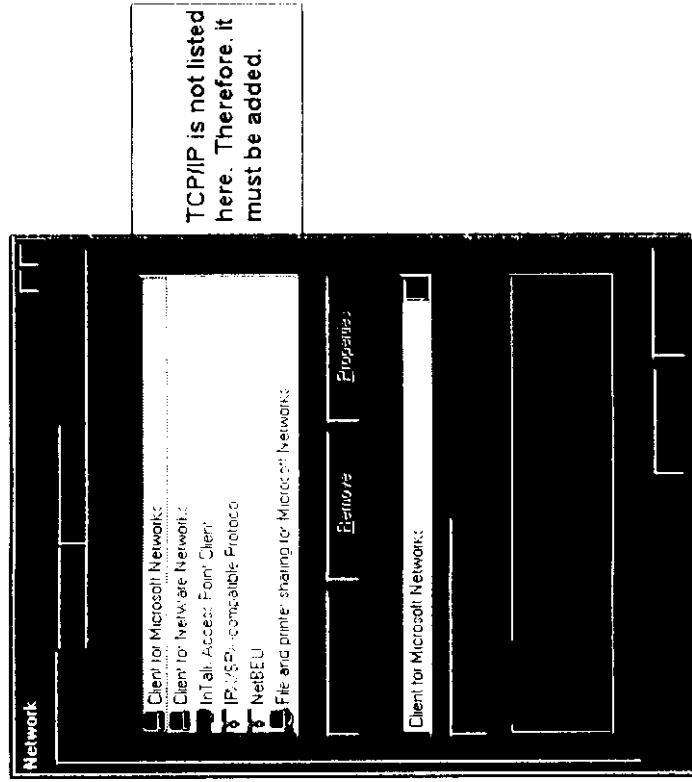
1. Is the network you are connecting to running DHCP (Dynamic Host Configuration Protocol)?
___ YES If Yes, proceed to number 4. ___ NO If No, proceed to number 2.
2. Obtain an IP address from your network administrator or ISP. _____
3. Obtain the appropriate Subnet Mask address. _____
4. Do you use DHCP for WINS Resolution? ___ YES ___ NO If yes, go to number 10
5. Should WINS Resolution be disabled? ___ YES ___ NO If yes, go to number 10
6. WINS Resolution should be Enabled.
7. Obtain the IP address of the Primary WINS Server. _____
8. Obtain the IP address of the Secondary WINS Server (if applicable). _____
9. Obtain the appropriate Scope ID (if applicable). _____
10. Obtain the appropriate Gateway address(es) (if applicable). _____
11. Is DNS Disabled? ___ YES ___ NO If yes, go to number 17.
12. DNS should be Enabled.
13. Obtain the appropriate Host ID. _____
14. Obtain the appropriate Domain. _____
15. Obtain the appropriate DNS Server Search Order. _____

6. Obtain the appropriate Domain Suffix Search Order (if applicable).

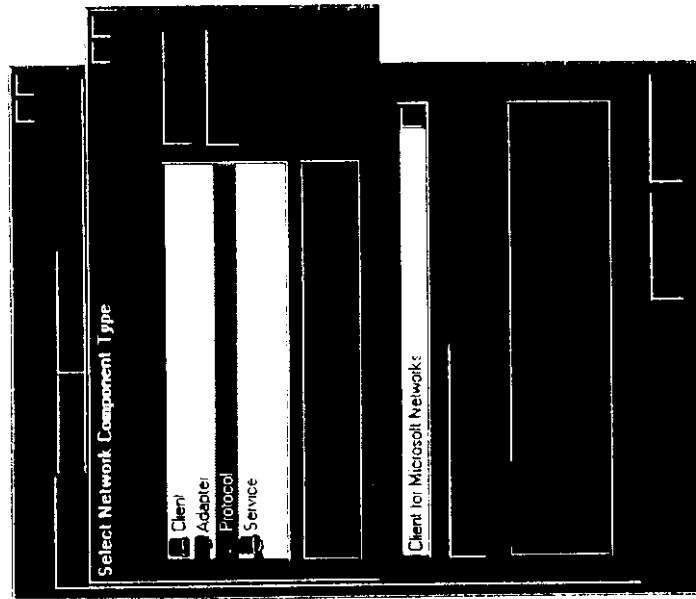
Notes:

INSTALLING TCP/IP

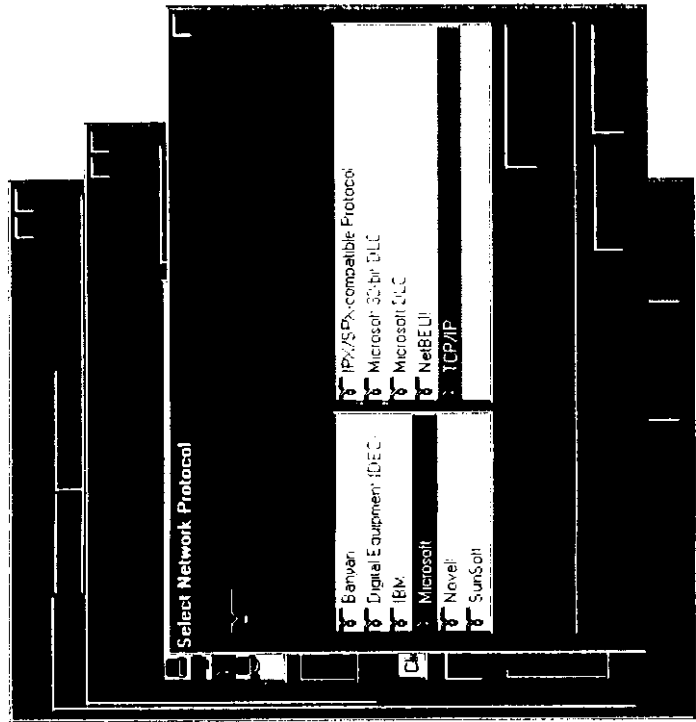
1. **RIGHT** click on the Network Neighborhood icon, then select "Properties". The "Network" dialog box appears. If TCP/IP is found in the window list in the **Configuration** tab, skip to the next section: **Setting TCP/IP Properties**. If TCP/IP is not listed, you must install the TCP/IP protocol.



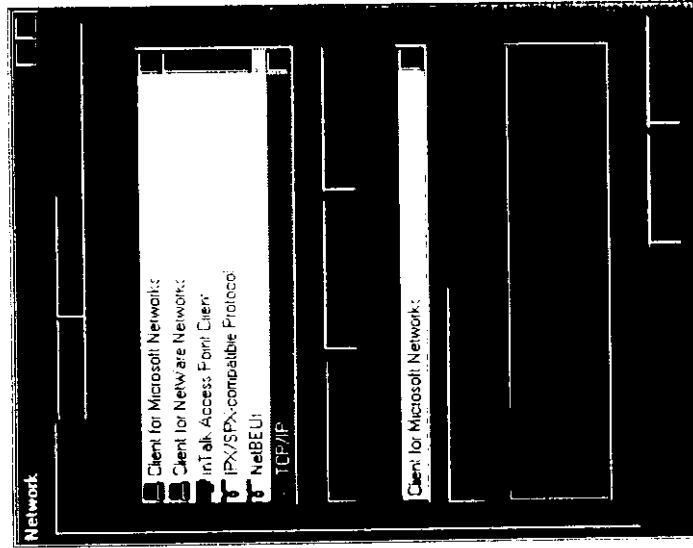
in the "Network" box. Configuration tab, click on the **Add** button. A "Select Network Component Type" box appears. Click on **Protocol**, then click the **Add** button.



3. A "Select Network Protocol" box appears. From the list of Manufacturers, click on **Microsoft**. From the Network Protocols list, select **TCP/IP**, then click **OK**.



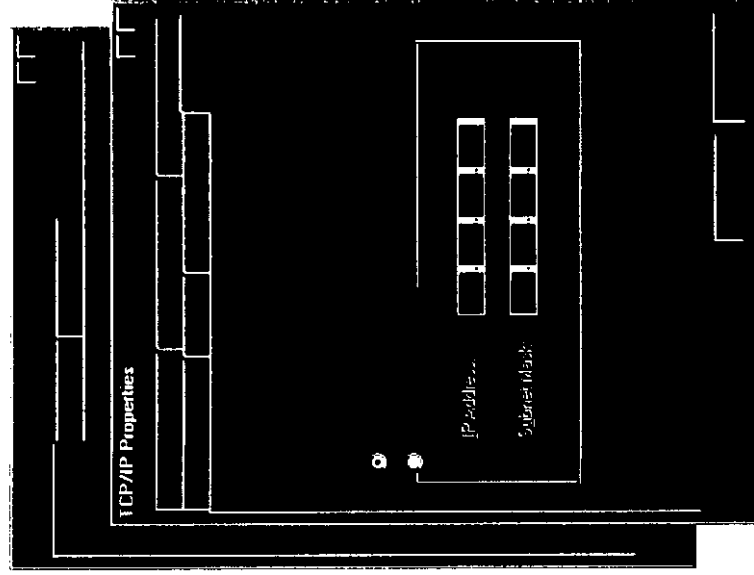
The TCP/IP protocol is now installed.



DO NOT CLICK OK at the bottom of the "Network" dialog box. Proceed to the next section titled: *Setting TCP/IP Properties*

SETTING TCP/IP PROPERTIES

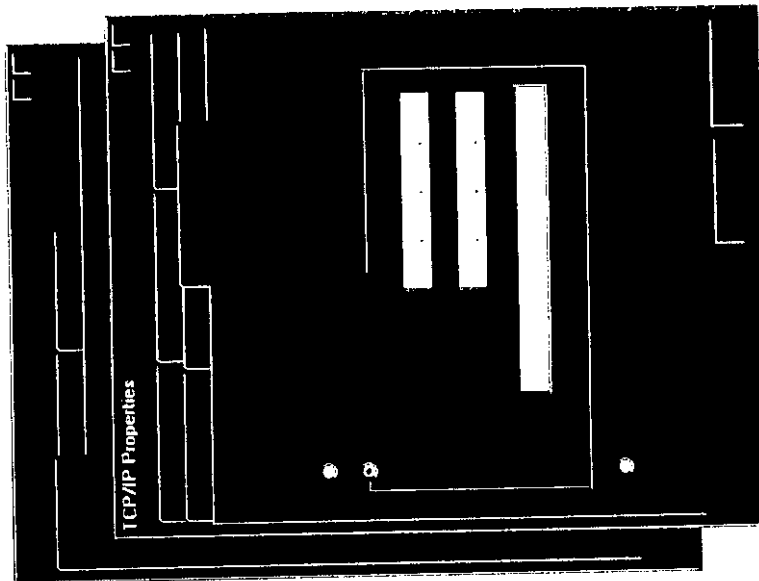
1. In the "Network" dialog box, Configuration tab, click on TCP/IP from the list, then click the [**Properties**] button. In the following steps, **DO NOT CLICK OK until directed to do so**.



2. **IP Address Configuration** — If not selected already, click on the IP Address tab of the "TCP/IP Properties" dialog box to display the IP address configuration settings. The IP address is a unique number that identifies your computer. There are two ways of obtaining an IP address. Some networks use the Dynamic Host Configuration Protocol (DHCP) to dynamically assign an IP address every time you log on to the network. Other networks require that a network administrator or an Internet Service Provider (ISP) provide you with an assigned IP address or "Static IP".

If you checked Yes to Question 1 of the **TCP/IP Properties** dialog box, then **DHCP** should be enabled. Click on the radio button for "Obtain an IP address automatically" then proceed to Step 3: **WINS Configuration**.

If you answered NO to Question 1 of the **TCP/IP Properties** dialog box, then you must specify an IP address. Click on the radio button for "Specify an IP address" and enter the IP Address from Question 2, and Subnet Mask from Question 3 of your check list. **DO NOT CLICK OK.** Continue to Step 3: **WINS Configuration**.

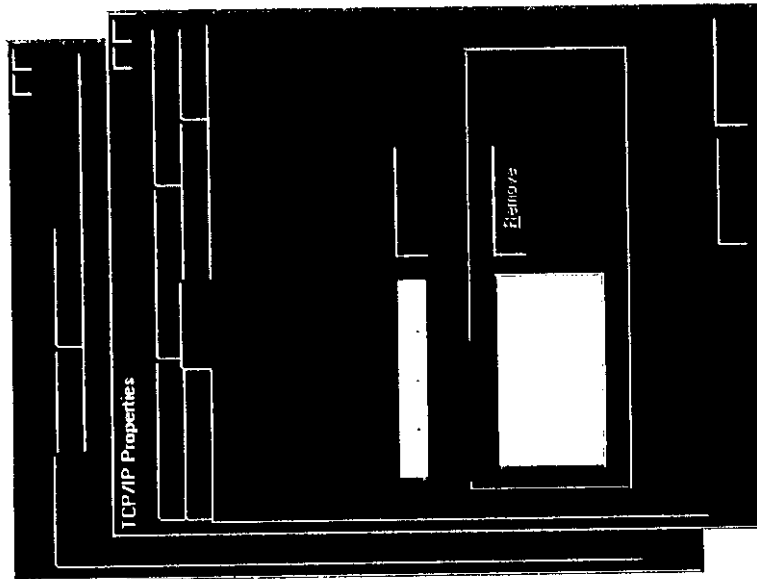


3. **WINS Configuration** — Click on the **WINS Configuration** icon in the **TCP/IP Properties** dialog box to display **WINS Configuration** settings.

If you entered YES to Question 4 of the check list, then click the radio button for "Use DHCP for WINS Resolution" and proceed to Step 4: **Gateway Configuration**.

If you entered YES to Question 5, click on the radio button for "Disable WINS Resolution" and proceed to Step 4: **Gateway Configuration**.

If you entered YES to Question 6 or your check list, click on the radio button for "Enable WINS Resolution". Enter the "Primary WINS Server" address from Question 7. Enter the "Secondary WINS Server" address from Question 8 if applicable. Enter the "Scope ID" from Question 9 if applicable. **DO NOT CLICK OK.** Continue to Step 4: **Gateway Configuration**.



4. **Gateway Configuration** — Click on the **Gateway** tab of the “**TCP/IP Properties**” dialog box to display Gateway settings.

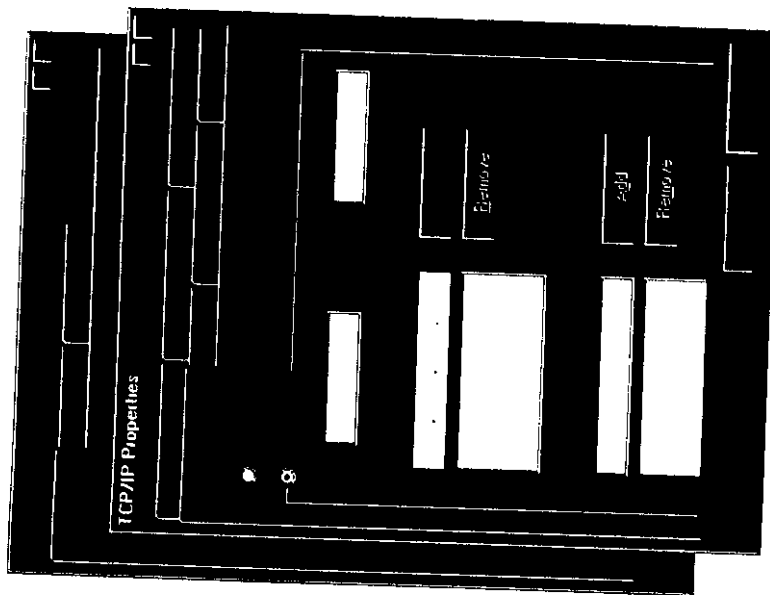
If your network administrator or ISP provided you with a Gateway IP address, type that address into the “**New Gateway:**” field, then click the [**Add**] button. Repeat this process if multiple Gateway addresses were provided to you. **DO NOT CLICK OK.** Continue to Step 5: **DNS Configuration**.

5. **DNS Configuration** — The DNS (Domain Name Server) Configuration tells your computer which DNS servers to use. A DNS Server resolves text names with the IP addresses that computers use.

If you answered YES to Question 11 of your check list, then click on the radio button for “**Disable DNS**” and proceed to Step 6: **Completing TCP/IP Settings**.

If you answered NO to Question 11, then click on the radio button for “**Enable DNS**”. Enter the host name from Question 13 of your check list. Enter the domain name from Question 14. Enter the IP address of the DNS server from Question 15 into the “**DNS Server Search Order**” field, then click the [**Add**] button. Repeat this process for multiple DNS IP addresses.

If applicable, enter the Domain Suffix from Question 16 into the “**Domain Suffix Search Order**” field, then click the [**Add**] button. If necessary, repeat this process for multiple entries.



Completing TCP/IP Settings — It is now time to click [**OK**] on the “TCP/IP Properties” dialog box.



A “System Settings Change” box will inform you that you must restart your computer. Click the [**YES**] button to restart your computer.

3.0 OPERATION

3.1 Starting a Networking Session

1. Before turning your computer on, insert your Harris PRISM Wireless Ethernet Adapter card into a PCMCIA slot. Make sure it slides in all the way and seats into the connector. A slight amount of resistance will be felt as the card engages the connector.
2. Power up your computer. After a short time, you will see the **InTalk Banner** appear for a brief time along with the “Enter Network Password” dialog box. The dialog box remains and invites you to enter a password.
3. For simple peer-to-peer networking, a password is not usually needed. If a password has not been previously set, simply click on [**OK**]. If you are connecting to a wired network, via a wireless access point, enter your usual password, then click on [**OK**]. Do not click [**Cancel**] or your networking session will be terminated prematurely.
4. After Windows 95 has fully loaded, **DOUBLE click** (left mouse button) on your “Network Neighborhood” icon on your screen. Your “Network Neighborhood” window will open. After some time (might be as long as a minute or two) an “Entire Network” icon will appear along with small computer icons that are labeled with the names of all stations (users, computers, clients) in your workgroup. If after a couple minutes you still do not see other members of your workgroup, **DOUBLE click** on the “Entire Network” icon. This should cause them to appear.

3.2 Terminating a Networking Session

If you wish to shut down your computer and terminate the networking at the same time, you may do so. Simply shut the computer down using the [**Start**] menu as you normally would. If you wish, you may leave the adapter card in the slot ready for the next time you start your computer.

If you wish to use your computer without networking enabled, you may do one of the following:

1. Remove the adapter card from the PCMCIA slot before starting the computer.

2. Click on [**Cancel**] when the "Enter Network Password" dialog box appears at startup.

If you wish to terminate networking but you do not wish to shut down your computer, simply left click on the adapter card icon in the Windows 95 task bar at the bottom of your screen. A [**Stop InTalk Access Point Client**] button will appear. When you click on it, the networking will be terminated and the adapter card will be turned off. Restart your computer if you wish to enable networking again.

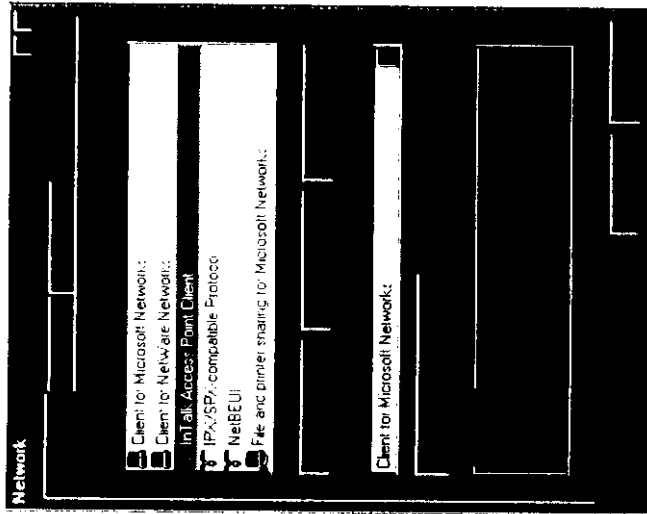


4.0 DE-INSTALLATION

4.1 Removing The Installed Drivers

Removing the Harris PRISM Wireless Ethernet Adapter drivers and network configuration is a simple procedure.

1. **RIGHT** click on the "Network Neighborhood" icon and click on "Properties". The "Network" dialog box appears.
2. Select the **Configuration** tab if it is not already selected. Click on the "InTalk Access Point Client" in the network components list.
3. Click on the [**Remove**] button.



The drivers and setup is now removed. Networking can no longer take place unless the installation is completely redone using the installation diskette.

5.0 TROUBLESHOOTING

In normal situations the Harris PRISM Wireless Ethernet Adapter will provide reliable, trouble-free operation in a variety of environments. If any problems develop, this chapter may be able to help you determine and correct the problem.

Because of the nature of the medium, troubleshooting problems requires a bit more thought. There are no cables to check for shorts or external network devices to verify. In short, if both Harris PRISM Wireless Ethernet Adapters are functioning, the network should work. Interference can be a problem at long distances, so troubleshoot with both devices in the same room if possible.

Watch for errors during the boot process. The card LED should light up, the system should beep, and a driver banner should appear announcing the driver is installed. If all of these things do not occur, then check for resource conflicts described below.

5.1 Installation Problems

If the Harris PRISM Wireless Ethernet Adapter fails during its install, try the following:

- Check the driver configuration. Verify that the driver you are using is the correct one for your network operating system.
- Reboot with the adapter inserted.
- Completely remove and reinstall the adapter and driver.
- Check the resources used by the card. Verify the resource is not being used by another device in the computer system. (See chart below for a list of commonly used resources.)
- Try a different Harris PRISM Wireless Ethernet Adapter.

Device	I/O Address	IRQ
Printer Port	3B0-3BF	7
Game Port	200-20F	N/A
Fixed Disk Controller	320-32F	14, 15
VGA Adapter	3C0-3CF	9
Sound Card	220-22F	5

To see your resources that are running under Windows 95, **RIGHT** click on "My Computer" and click on "Properties". Click on the Device manager tab, then click on "Properties". The windows will display I/O Address, IRQ, DMA Channel and Memory ranges occupied on your computer.

One of the more common problems is a driver/firmware version mismatch. If the driver fails to find the card, this is often the problem.

5.2 Post-Installation

The card LED lights, the system beeps, and the driver banner appears, but you are not able to communicate with another host. Here are some pointers.

No Computer or only the current host appears in Network Neighborhood.

Most of the time, this is not actually a problem. No computer will announce itself unless File and Print Sharing is loaded in the network applet. If the systems have just rebooted, the Browse List in Network Neighborhood may not have been created. This process may take as long as 10 minutes, even on a small network.

By clicking Start, then Run and typing in "\COMPUTERNAME" where COMPUTERNAME is the name of a host running with the Harris PRISM Wireless Ethernet Adapter. This method does not use browsing, but tries to communicate directly with the named computer. Make certain to name a computer with File and Print Sharing loaded and something shared. If this fails as well, verify both computers are on the same channel, have the same ESS ID and are running the same version of the driver. The newer drivers support features that older drivers cannot.

6.0 SPECIFICATIONS

Form Factor:	PCMCIA Standard 2.0, Type II extended (5.0mm) card
Operating Frequency:	2.4GHz ISM frequency band
Conforming Standard:	IEEE 802.11 Direct Sequence Specification
Throughput:	Dynamically supports 1Mbps and 2Mbps standards
MAC:	AMD AM79C930
Firmware:	Microcode/BIOS are software programmable
Radio Chipset:	Harris PRISM Chipset
Antenna:	Integrated Microstrip Antenna
Indoor Range:	300 feet (Environment dependent)
Outdoor Range:	>1000 feet
Drivers:	NDIS 2.0 (Windows for Workgroups) NDIS 3.0 (Windows 95 and Windows NT)
Protocols Supported:	TCP/IP (preferred) IPX/SPX Compatible NetBEUI

CARD INFORMATION STRUCTURE:

FUNCTION NAME	CONTENT
Manufacturer's ID	00
Function ID	Network Adapter
Product Revision	5
Manufacturer	AMD
Product	AM79C930
PROG	
LOT	

ABSOLUTE MAXIMUM RATINGS:

Supply Voltage	-0.3V to 6.0V (Max)
Storage Temperature	-20°C to 65°C

OPERATING CONDITIONS:

Operating Temperature Range	0°C ≤ T _A ≤ 55°C
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POWER REQUIREMENTS:

290mA Average (Not power saving mode)
60mA Average (Power saving mode)
30mA Sleep

WARRANTY:

One Year, parts and labor.

CHANNEL TABLE:

Channel ID	FCC Frequencies	ETSI Channel Frequencies	Japan Frequency
1	2412MHz	N/A	N/A
2	2417MHz	N/A	N/A
3	2422MHz	2422MHz	N/A
4	2427MHz	2427MHz	N/A
5	2432MHz	2432MHz	N/A
6	2437MHz	2437MHz	N/A
-	2442MHz	2442MHz	N/A
8	2447MHz	2447MHz	N/A
9	2452MHz	2452MHz	N/A
10	2457MHz	2457MHz	N/A
11	2462MHz	2462MHz	N/A
12	N/A	N/A	2484MHz

7.0 GLOSSARY

#

802.11

The medium access control and physical characteristics for wireless local area networks are specified in this standard. The medium access control unit in this standard is designed to support physical layer units as they may be adopted dependent on the availability of spectrum. This standard contains three physical layer units: two radio units, both operating in the 2400-2500 MHz band, and one baseband infrared unit. One radio unit employs the frequency-hopping spread spectrum technique, and the other employs the direct sequence spread spectrum technique.

A

ACCESS POINT

An internetworking device that seamlessly connects wired and wireless networks together.

ADDRESS

An address is a unique identification code that is assigned to a network device so it may independently send and receive messages.

ADDRESS RESOLUTION PROTOCOL (ARP)

Within TCP/IP, ARP is the protocol that determines whether a packet's source and destination addresses are in the Data-Link Control (DLC) or Internet Protocol (IP) format. ARP is necessary for proper packet routing on a TCP/IP network.

ATTENUATION

Attenuation is the amount of power that is lost as the signal moves over the cable from the transmitter to the receiver. It is measured in decibels (dBs).

B

BANDWIDTH

The size (in Hertz) of the frequency range that a signal transmission occupies. Bandwidth is the amount of data that can be transmitted over a channel, measured in bits per second. For example, Ethernet has a 10Mbps bandwidth and FDDI has a 100Mbps bandwidth.

BEACON PERIOD

Time in milliseconds between beacons.

BRIDGE

A bridge connects two networks of the same access method, for example, Ethernet to Ethernet or Token Ring to Token Ring. A bridge works at the OSI's Media Access layer, and is transparent to upper-layer devices and protocols. Bridges operate by filtering packets according to their destination addresses. Most bridges automatically learn where these addresses are located, and are thus called learning bridges.

BROADCAST

A broadcast message is addressed to all stations on a network.

BROADCAST STORM

In a broadcast storm, network congestion occurs because large numbers of frames are transmitted by many stations in response to a transmission by one station.

BROUTER

A brouter is a device that can transparently bridge protocols as well as route them. It is a hybrid of a bridge and a router.

C

CARD INFORMATION

A data structure written on every card Structure (CIS) that complies with the PCMCIA standard, containing information about the formatting and organization of the data on the card.

CARD SERVICES

A software program that coordinates PCMCIA card access to sockets and system resources, including device drivers, utilities, and application programs. Card Services assigns the I/O Base Address, Interrupt Request Level, and the CIS Memory Base Address for the PCMCIA adapter.

CARRIER SENSE, MULTIPLE ACCESS WITH COLLISION DETECTION (CSMA/CD)

Ethernet and 802.3 LANs use the CSMA/CD access method. In CSMA/CD, each network device waits for a time when the network is not busy before transmitting and it detects transmissions already on the wire that were put there by other stations.

CELL

An area of coverage provided by an access point. Also called microcell.

CHANNEL

Specifies the default (802.11) channel. See the table of channels in the specifications.

D

DESIRED ESS ID. See ESS ID.

DIRECT SEQUENCE

Direct-sequence devices replicate one bit of data 11 times and send it over one-third of the spectrum range at once. Receiving devices process the bit once and discard repeated transmissions. This method provides a higher delivery guarantee, but multiple access points can interfere with one another more easily because they have a choice of only three places in the spectrum from which to transmit. Direct sequence can provide a stronger signal than frequency hopping, potentially supporting higher speeds, but it also requires more power to transmit, limiting the time a portable device can operate before it needs to be charged. This method does not limit throughput as Frequency Hopping does.

DRIVER

A program, usually resident in server or workstation memory, that controls the adapter or implements the protocol stacks that allow higher-level applications to communicate with the network hardware.

E

ELECTROMAGNETIC INTERFERENCE/RADIO FREQUENCY INTERFERENCE (EMI/RFI)

EMI and RFI are forms noise on data transmission lines that reduces data integrity. Motors, machines, and other generators of electromagnetic radiation cause EMI. RFI is caused by radio waves.

ESS ID

This is a user-defined string that is used by the driver to limit communication on the same channel. This must be the same for all computers you wish to communicate with.

ETHERNET

Ethernet is a 10Mbps CSMA/CD network that runs over thick coax, thin coax, twisted-pair, and fiber-optic cable. A thick coax Ethernet uses a bus topology. A thin coax Ethernet uses a daisy chain topology. Twisted-pair Ethernet uses a star topology. A fiber Ethernet is point-to-point. DIX or Blue Book Ethernet is the name of the Digital Equipment Corp., Intel, and Xerox specification; 802.3 is the IEEE's specification; 8802/3 is the ISO's specification.

F

FILE TRANSFER PROTOCOL (FTP)

FTP is the TCP/IP protocol for file transfer.

FILTERING

Filtering is the process by which particular source and destination addresses are prevented from crossing a bridge or router onto another portion of the subnetwork.

FRAGMENTATION

Fragmentation is the process in which larger frames from one network are broken up into smaller frames — and into the frame size that is compatible with the network to which they'll be forwarded.

FREQUENCY HOPPING

In frequency hopping, devices send one small piece of data at a time over 1 MHz of the spectrum, hopping to a different 1 MHz portion before sending the next bit. All devices associated with one access point are programmed to hop in synch. Multiple access points can operate within the same area because they have different hop synchronizations and therefore will not interfere with one another's communications. This spread spectrum method limits users to less than 2Mbps throughput, unlike Direct Sequence.

G

GATEWAY

In OSI terminology, a gateway is a hardware and software device that connects two dissimilar systems, such as a LAN and a mainframe. It operates at the fourth through the seventh layers of the OSI model. In Internet terminology, a gateway is another name for a router.

H

HUB

A concentrator is a multiport repeater or hub that brings together the connections from multiple network nodes. Concentrators have moved past their origins as wire concentration centers, and often house bridges, routers, and network-management devices.

IMPEDANCE

Impedance is the resistance equivalent for AC, and it affects a network's propagation delay and attenuation. Each protocol and topology has its own impedance standards. For example, 10BaseT has an impedance of 100 ohms to 105 ohms, while 10Base2 has an impedance of 50 ohms.

INFRARED

Infrared electromagnetic waves are above that of microwaves but below the visible spectrum. Infrared is used for some wireless LANs and peripheral communication.

INPUT/OUTPUT (I/O)

The method, medium, or device (such as a keyboard, monitor, floppy disk, hard disk, network adapter, or printer) used to transfer data to a computing system or from the computing system back to a device, a network, etc.

INTERFERENCE

A situation that occurs when an unwanted RF signal occupies the same frequency band as a desired signal.

INSTITUTE OF ELECTRONICS AND ELECTRICAL ENGINEERS (IEEE)

The IEEE is a professional society of electrical engineers. One of its functions is to coordinate, develop, and publish data communications standards for use in the United States.

INTERNATIONAL STANDARDS ORGANIZATION (ISO)

ISO is a multinational standards-setting organization that formulates computer and communication standards, among others. ISO defined the OSI reference model, which divides computer communications into seven layers: physical, data-link, network, transport, session, presentation, and application.

INTERNET

The Internet is a collection of more than 2,000 packet-switched networks located principally in the United States, but also in other parts of the world, all linked using the TCP/IP protocol. It links many university, government, and research sites.

INTERNET PROTOCOL (IP)

IP is part of the TCP/IP suite. It is a session-layer protocol that governs packet forwarding.

INTERNETWORK

An internetwork is collection of several networks that are connected by bridges and routers so all users and devices can communicate with each other, regardless of the network segment to which they are attached.

INTERNETWORK PACKET EXCHANGE (IPX)

IPX is the part of Novell's NetWare stack that governs packet forwarding. This transport protocol is based on Xerox Network System.

INTEROPERABILITY

Interoperability is the ability of one manufacturer's computer equipment to operate alongside, communicate with, and exchange information with another vendor's dissimilar computer equipment.

ISOCRONOUS TRANSMISSION

An isochronous service transmits asynchronous data over a synchronous data link. An isochronous service must be able to deliver bandwidth at specific, regular intervals. It is required when time-dependent data, such as video or voice, is to be transmitted. For example, Asynchronous Transfer Mode can provide isochronous service.

J

JITTER

Jitter is a form of random signal distortion that interferes with the reception of signals.

L

LOCAL AREA NETWORK (LAN)

A LAN is a group of computers, each equipped with the appropriate network adapter card and software and connected by cable, that share applications, data, and peripherals. All connections are made via cable or wireless media, but a LAN does not use telephone services. It typically spans a single building or campus.

M

MANAGEMENT INFORMATION BASE (MIB)

A MIB is a repository or database of the characteristics and parameters that are managed in a device. Simple Network Management Protocol (SNMP) and Common Management Information Protocol (CMIP) use MIBs to contain the attributes of their managed systems.

MAX FRAME SIZE

This can be any valid (802.11) packet size up to a maximum of 1600.

MEDIA ACCESS CONTROL (MAC)

The MAC is the lower sublayer of the data-link layer (Logical Link Control is the upper sublayer), and it governs access to the transmission media.

MULTICAST

Multicast packets are single packets that are copied to a specific subset of network addresses. In contrast, broadcast packets are sent to all stations in a network.

MULTIPLEXING

Multiplexing is putting multiple signals on a single channel.

N

NETBIOS

NetBIOS is a protocol developed by IBM that governs data exchange and network access. Because NetBIOS lacks a network-layer, it cannot be routed in a network, which makes building large internetworks of NetBIOS-based networks difficult. Examples of NetBIOS-based NOSs include IBM LAN Server and Artisoft LANtastic.

NETBEUI

Microsoft's version of NetBIOS is called NetBEUI. It is a protocol that governs data exchange and network access. Because NetBEUI lacks a network-layer, it cannot be routed in a network, which makes building large internetworks of NetBEUI-based networks difficult.

NETWORK

A network is a system of computers, hardware, and software that is connected over which data, files, and messages can be transmitted and end users communicate. Networks may be local or wide area.

NDIS

Network Driver Interface Specification, developed by Microsoft and 3Com. A software specification used in network operating systems, such as IBM LAN Server or Microsoft LAN Manager, to create drivers for network adapters. NDIS drivers support multiple protocols and multiple adapters and can be unloaded from memory to conserve conventional DOS RAM space.

NETWORK INTERFACE CARD (NIC)

A network interface card is the adapter card that plugs into computers and includes the electronics and software so the station can communicate over the network.

NOISE

Noise is sporadic, irregular or multifrequency electrical signals that are superimposed on the desired signal.

O

ODI

Open Data-Link Interface. A MAC-level specification developed by Novell and Apple. Drivers complying with this specification can work with NetWare 2.x, NetWare 3.x, and NetWare 4.x. Like NDIS, the ODI driver supports multiple protocols and adapters, and can be unloaded from memory to conserve conventional DOS RAM space.

OPEN SYSTEMS

In open systems, no single manufacturer controls the specifications for the architecture. The specifications are in the public domain, and developers can legally write to them. Open systems are crucial for interoperability. 802.11 is an open system.

OPEN SYSTEMS INTERCONNECTION (OSI)

The OSI model is the seven-layer, modular protocol stack defined by ISO for data communications between computers. Its layers are: Physical, Data Link, Network, Transport, Session, Presentation, and Application.

OUTSOURCING

Outsourcing is the process of subcontracting network operations and support to an organization outside your company. They can even write your manuals for you.

P

PACKET

The unit of information transmitted over the network, consisting of a preamble, a destination address, a source address, the data being transmitted, and a code that allows testing for correct transmission.

PCMCIA

Personal Computer Memory Card International Association. Also used to refer to a physical device now referred to as a PC Card.

PEER-TO-PEER

In a peer-to-peer architecture, two or more nodes can directly initiate communication with each other; they do not need an intermediary. A device can be both the client and the server.

PING

Ping is a utility in the TCP/IP suite of protocols that allows a client to verify connectivity to another host on a network.

PROPAGATION DELAY

Propagation delay is the time it takes for one bit to travel across the network from its transmission point to its destination.

PROTOCOL

A protocol is a standardized set of rules that specify how a conversation is to take place, including the format, timing, sequencing and/or error checking.

R

REPEATER

A repeater is a Physical-Layer device that regenerates, retimes, and amplifies electrical signals.

REQUEST FOR COMMENT (RFC)

An RFC is the Internet's notation for draft, experimental, and final standards.

ROUTER

A router is a network-layer device that connects networks using the same Network-Layer protocol, for example TCP/IP or IPX. A router uses a standardized protocol, such as RIP, to move packets efficiently to their destination over an internetwork. A router provides greater control over paths and greater security than a bridge; however, it is more difficult to set up and maintain.

S

SERVER

A server is a computer that provides shared resources to network users. A server typically has greater CPU power, number of CPUs, memory, cache, disk storage, and power supplies than a computer that is used as a single-user workstation.

SEQUENTIAL PACKET EXCHANGE (SPX)

SPX is Novell's protocol for the transmission of data in sequence.

SESSION

A session is a communications connection between two nodes.

SIMPLE NETWORK MANAGEMENT PROTOCOL (SNMP)

SNMP is a request-response type protocol that gathers management information from network devices. SNMP is a de facto standard protocol for network management. Two versions exist: SNMP 1 and 2. It provides a means to monitor and set configuration parameters.

SOCKET

In the PCMCIA environment, the hardware in the host computer where the PC card is placed. The socket maps the host's internal bus signals to the PCMCIA interface signals.

SOCKET SERVICES

The software layer that provides a standardized interface to manipulate PC cards, sockets, etc. It is directly above the hardware.

SPREAD SPECTRUM

A radio data transmission modulation technique by which the transmitted signal is spread over a bandwidth wider than the information bandwidth. Spread Spectrum bands are designated by the FCC and require no user license.

T

TELNET

Telnet is the TCP/IP protocol for terminal emulation.

TRANSMISSION CONTROL PROTOCOL/INTERNET PROTOCOL (TCP/IP)

TCP/IP is the protocol suite developed by the Advanced Research Projects Agency (ARPA). It is widely used in corporate internetworks, because of its superior design for WANs. TCP governs how packets are sequenced for transmission on the network. IP provides a connectionless datagram service. The term "TCP/IP" is often used to generically refer to the entire suite of related protocols.

U

USER DATAGRAM PROTOCOL (UDP)

UDP is the connectionless transport protocol within the TCP/IP suite. Because it does not add overhead, as the connection-oriented TCP does, UDP is typically used with network-management applications and SNMP.

W

WIDE AREA NETWORK (WAN)

A WAN consists of multiple LANs that are tied together via telephone services and/or fiber optic cabling. WANs may span a city, state, a country, or even the world.

WIRELESS LANS (WLAN)

A wireless LAN does not use cable to transmit signals, but rather uses radio or infrared to transmit packets through the air. Radio frequency (RF) and infrared are the commonly used types of wireless transmission used. Spread spectrum is used to access the low-frequency RF in the Industrial, Scientific, and Medical (ISM) band. Most wireless LANs use spread spectrum. It offers limited bandwidth, usually under 4Mbps, and users share the bandwidth with other devices in the spectrum; however, users can operate a spread spectrum device without licensing from the Federal Communications Commission (FCC).