SAMSUNG ELECTRO-MECHANICS

SAMSUNG

MagicLAN SWL-2000P

User Manual (Ver. 1.0)

Notice 1

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http://www.MagicLAN.com
Service Dept. +82-331-210-6805
Sales Dept. +82-331-210-6386

SAMSUNG – America Corporation

Western US Marketing Office
85 Tasman Drive
San Jose, CA 95134 USA
Tel: (408)544-5200 Fax: (408)544-4967

Eastern US Marketing Office
LanPAL AKOM Corporation
9 Parklawn Dr.
Bethel, CT 06801
Tel: (203)778-9500 Fax: (203)778-9525

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The SWL-2000P complies with Part 15 of the FCC rules.
Operation is subject to the following two conditions;

(1) This device may not cause harmful interference.
(2) This device must accept any interference received, including interference that may cause undesired operation.

Note: The SWL-2000P has been tested and found to comply with the limits for a Class B digital device and a low power transmitter, according 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 the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to resolve the problem by one or more of the following measures;

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

Important Safety Information

- Read these simple guidelines. Breaking the rules may be dangerous or illegal. SAMSUNG is not responsible for any damages caused by breaking the rules.
- Wireless LAN Card described in this document is approved for use in a wireless local area network.
- Remember to make backup copies of important data.
- When you are transferring data, keep your desktop computer stationary. Roaming between access points may break the connection.
- Only qualified service personnel must repair the equipment.
- All wireless devices may get interference, which could affect performance.
- Use approved accessories only. Do not connect incompatible products.
- Use only accessories approved by the wireless LAN Card manufacturer for use with this particular wireless LAN Card. The use of any other types will invalidate any approval or warranty applying to the wireless LAN Card, and may be dangerous,
- Use only the region setting appropriate for the area where the wireless LAN Card is used at the present time. Using the card in any other region or with an incorrect region setting is prohibited and may be illegal.
- Operation of any radio transmitting equipment, including a wireless LAN Card, may interference with the functionality of inadequately protected medical devices.
- Do not use the wireless LAN Card on aircraft.
- Do not use the wireless LAN Card at a refueling point.
- Do not use the wireless LAN Card near fuel or chemicals.
- Do not use the wireless LAN Card where blasting is in progress.
- Do not use the wireless LAN Card when the use of wireless device may cause interference or danger.
- Do not use the wireless LAN Card where the use of cellular terminals is prohibited.

Table of Contents

1. MagicLAN Installation ……... 7

1.1 Introduction ……... 7

1.2 Technical Background ……... 7

1.3 MagicLAN Overview ……. 10

2. Before Installation ……... 11

2.1 What's in your Package …… 11

2.2 System Requirement …… 11

3. MagicLAN Installation for Windows95/98 ……. 12

3.1 Installation Overview …… 12

3.2 Hardware Installation …… 13

3.2.1 Desktop PC Adapter Card (SWL-2000P) ……. 13

3.2.2 Access Point (SWL-2000AP) ……... 14

3.3 Software Installation ……..…… 15

3.3.1 Driver Setup …….. 15

3.4 MagicLAN Wireless LAN Card Properties Setup …… 20

3.4.1 Before Wireless LAN Card Properties Setup ……... 20

3.4.1.1 Basics regarding the Properties Setup …….. 20

3.4.1.2 Meanings of the Properties Setup Options …… 20

3.4.2 Setting Network Properties for "Peer-to-Peer" mode ……... 21

3.5 Network Configuration Setup ……... 23

3.5.1 Network Configuration Setup Overview …….. 23

3.5.2 Before TCP/IP Networking Configuration Setup ……..…… 23

3.5.2.1 What you should know before Configuration ……... 23

3.5.2.2 What you should have in your hands to proceed further …….. 24

3.5.3 Setting Network Properties for "StructureNet" mode …….. 25

3.5.4 Setting Network Properties for "Instawave" mode …….. 26

3.5.5 TCP/IP Networking Configuration Setup ……..…… 27

3.5.5.1 TCP/IP Installation …… 27

3.5.5.2 TCP/IP Properties Setup ……... 30

4. MagicLAN Installation for Windows NT …… 34

4.1 Hardware Installation 34
4.2 Software Installation 34
4.2.1 When there is no Windows NT Networking installed yet 34
4.2.2 When there is Windows NT networking already installed 44
5. Packet Driver Installation for MS-DOS 52
5.1 Copy the Packet Driver 52
5.2 Setup AUTOEXEC.BAT 52
5.3 Setup MAGICWAV.CFG 52
6. Access Point(AP) Installation 56
6.1 Before Access Point(AP) Installation 56
6.1.1 Access Point(AP) 56
6.1.2 What you need for the Installation 56
6.2 Access Point(AP) Installation 56
6.2.1 Access Point Setup using Null Modem Cable 56
6.2.2 Access Point Setup without Null Modem (Cold Start Mode) 59
6.3 Configuration Setup 59
6.4 Parameter Setup 60
6.5 Null Modem Cable Configuration 62
6.6 Diagnostic Methods 62
7. Management Utilities(Web & Telnet) 63
7.1 About Management Utilities 63
7.2 Hyper Terminal Management Utility 63
7.3 Web Management Utility 63
7.3.1 Web Management Utility Overview 63
7.3.2 AP Status Report(http://xxx.xxx.xxx.xxx) 64
7.3.3 AP Statistics(http://xxx.xxx.xxx.xxx/stats.htm) 65
7.3.4 AP Configuration Settings(http://xxx.xxx.xxx.xxx/config.htm) 67
7.3.5 Access Point Bridge Table Report(http://169.79.60.26/tables0000.htm) 68
7.4 TELNET Management Utility 70
7.4.1 Telnet Management Utility Overview 70
7.4.2 Various Commands and Usage 70
7.4.2.1 Usage of the command line 70
7.4.2.2 All Possible Commands 70
7.4.2.3 Explanation on various Commands 71

8. Miscellaneous Features ……..……... 73
8.1 Connection Check ……..…… 73
8.1.1 When successfully connected to Network through AP ……..…… 73
8.1.2 When failed to connect to Network through AP ……... 73
8.2 Performance & AP Information Check ……. 73
8.3 Brief Troubleshooting …… 74
8.4 Specifications ……. 75
8.4.1 Physical Specifications ……..…… 75
8.4.2 Radio Characteristics …… 75
8.4.3 Network Characteristics …… 75

1. MagicLAN Introduction

1.1 Introduction

Thank you for your purchase of SAMSUNG MagicLAN (SWL-2000P) Wireless LAN Adapter. Installing card allows the computer to join a wireless network based on the IEEE 802.11 wireless LAN standard. You will be surprised how easy for you to be a part of network with no bother of twisted cables.

1.2 Technical Background

• What is IEEE 802.11?

The IEEE 802.11 specification is a wireless LAN standard developed by the IEEE (Institute of Electrical and Electronic Engineering) committee in order to specify an “over an air” interface between a wireless client and a base station or Access Point, as well as among wireless clients.

Like other IEEE 802 families, IEEE 802.11 specification addresses both Physical (PHY) layer and Media Access Control (MAC) layer.

• IEEE 802.11 Physical (PHY) Layer

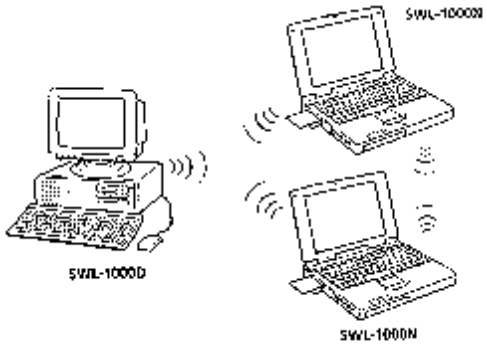
At the PHY layer, IEEE 802.11 defines three physical characteristics for LAN: diffused infrared, Direct Sequence Spread Spectrum (DSSS), and Frequency Hopping Spread Spectrum (FHSS). While the infrared PHY operates at the baseband, the other two PHYs operate at the 2.4GHz ISM (Industrial, Scientific, and Medical) band, which can be used for operating wireless LAN devices without the need for end-user licenses. In order for wireless devices to be interoperable, they have to be conform to the same PHY standard.

• IEEE 802.11 Media Access Control (MAC) Layer

The IEEE 802.11 MAC Layer is mainly concerned with rules for accessing the wireless medium. There are two network architectures defined: StructureNet Network and Peer-to-Peer Network.

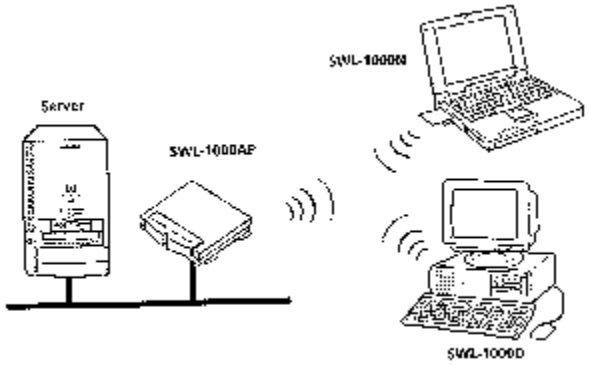
• Peer-to-Peer Network

Peer-to-Peer Network is an architecture that is used to support mutual communication among wireless clients only. Since Peer-to-Peer Network does not support access to wired networks, it does not need an Access Point to be a part of the network. You can use the network immediately after setting up the operating mode using the supplied network driver.



• StructureNet Network

StructureNet Network is architecture to provide communication between wireless clients and wired network resources. The transition of data is defined by an Access Point (AP) and the associated wireless clients. So a wireless client can access all the services that are available for a regular wired LAN by using Access Point (AP).

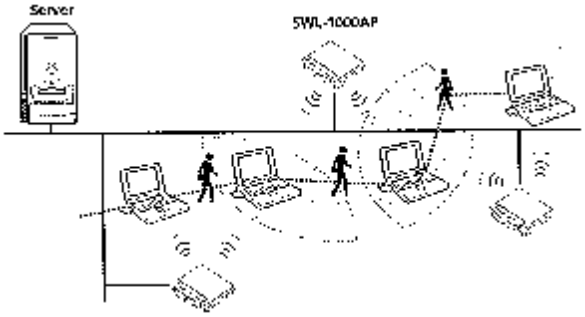


• Instawave Network

Instawave Network is architecture to provide both Peer-to-Peer Network features and StructureNet Network feathers at the same time. In other words, wireless clients on the network can directly communicate with each other while they can also access wired LAN clients through AP if they want. Instawave Network is a good choice for small networks that need maximum flexibility and simplicity.

• Roaming

Roaming is a service that allows wireless clients to use the network in motion by automatically moving the connection to an old Access Point into a new Access Point when the clients enter into a new cell.



• Scanning, Beaconing & ESS ID

When a wireless client is initialized, it is necessary for it to find and communicate with the correct group for wireless devices, including Access Point (AP). At this point, it may search for all the frequency channels and this process is called “scanning.”

There may be multiple APs and network operating at the same time. It may be necessary to ensure that the station joins with the correct network during the scanning process. To achieve this, each AP is assigned to be part of a logical group called the Extended Service Set (ESS). The name of this logical group is the ESS ID. When roaming is operating, there may be several Access Points as part of the same ESS.

After powering up, the wireless client will listen on its default frequency channel. It will be listening for “beacons” sent by another wireless station or AP. Here, a beacon is a short message containing the ESS ID that will be broadcast roughly ten times a second.

When the wireless station hears a beacon, if the ESS ID in the beacon matches its own, the client knows that it is on the correct channel and can communicate with its group. If no beacons are seen, or if the ESS ID does not match, the wireless client may move to the next frequency channel and repeat this listening procedure. If all frequency channels have been searched with no matched ESS ID found, it will assume that it is the first client in the group to wake up and will return to its default channel and start to issue beacons itself.

In DSSS, this scanning process occurs at start up and may also occur when the client roams between APs.

1.3 MagicLAN Overview

- The MagicLAN SWL-2000P (for Desktop) is a wireless LAN adapter card that provides wireless connection between PCs.

- The MagicLAN is designed to operate with IEEE 802.11 (wireless LAN International Standard) wireless compliant radio cards and uses a CSMA/CA (Collision Sense Multiple Access with Collision Avoidance) algorithm as the media access scheme, which makes high speed communication with minimal collision possible.

- The MagicLAN supports DSSS (Direct Sequence Spread Spectrum). This is a radio technique, which scrambles the data prior to transmission and uses a correlation technique on receiving to improve the signal to noise ratio and makes it possible to communicate in the office having a wall and a compartment.

- The function of the MagicLAN SWL-2000AP (Access Point) is to transfer information from a wired LAN to a wireless LAN and vice versa. When operating, the MagicLAN AP is invisible to most users (Normally, unless the user is an administrator, the MagicLAN AP cannot be seen or accessed by users on the network).

- The MagicLAN Adapter has three LED's (Light Emitting Diodes) on the part of the card: Power, Tx, and Rx. The red Power LED will illuminate when the power is applied. The orange Tx LED and green Rx LED will illuminate when the date is transmitted out and in respectively.

- The MagicLAN supports various network software. The network driver is provided to support most network software such as MS-DOS Packet, Windows 95/98, and Windows NT 3.51/4.0.

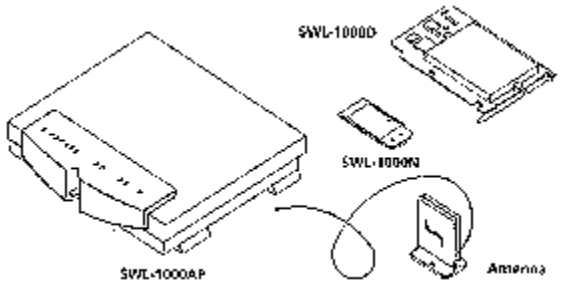
2. Before the Installation

The following section will assist you in successfully installing your wireless network adapter card. You will first install the hardware and software, then set network properties to accommodate resource sharing and to select the type of wireless network you wish to install. The MagicLAN can be easily installed and used, without bother to connect cables and maintain them to use network as a wired LAN requires.

2.1 What's in Your Package

Please check the contents of the box to make sure everything is included and ready for use. Here is the list of what you should have in your package:

- SWL-2000P (PCI Card) Adapter
- SWL-2000P Installation Diskette (Driver Diskette)
- User's Manual
- SWL-2000AP (Each Access Point requires a SWL-2000N adapter card for operation)
- Power Adapter (SWL-2000AP only)
- SWL-2000AP Utilities Diskette (SWL-2000AP only)
- External Antenna



2.2 System Requirement

- Operating System: MS Windows 95 / Windows 98 / Windows NT3.51/ Windows NT4.0
- Computer System with a $3^1/_2$-inch floppy disk drive
- For Desktop PC Adapter Card (SWL-2000P):
  The computer system should have an extra IRQ and I/O address.
  (SWL-2000P is PCI Plug & Play card supporting IRQ 9, 10, 11, and 12.)

3. MagicLAN Installation for Windows 95/98

3.1 Installation Overview

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

- Install the hardware.
  - For the StructureNet mode, you must install an Access Point (SWL-2000AP) first. Then install the adapter (SWL-2000P).

- Install the software using the included installation diskette.

- Install the network protocol(s) required to communicate on your network. Most likely you will need the TCP/IP protocol.

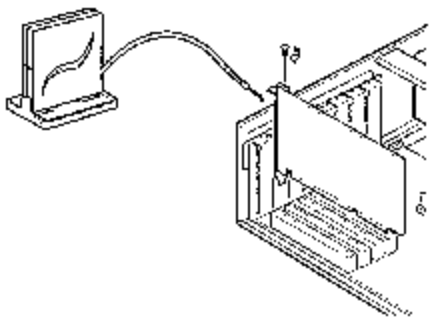
3.2 Hardware Installation

3.2.1 Desktop PC Adapter Card (SWL-2000P)

- Turn your computer off first, uncover the case, and remove the Dummy Bracket of an empty PCI expansion slot.

- Insert a MagicLAN wireless LAN card to the slot carefully and insert the screw to mount it in place.

- Then, insert the antenna to the antenna connector in the back of the PC card as shown in the following picture.



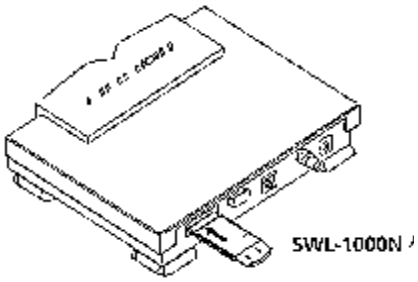
- Turn the PC back on and confirm that the adapter card is recognized by the PC by checking the LED before you cover the PC back.
  (A SWL-2000P Adapter supports PCI Plug & Play and it is supposed to be automatically recognized and installed under MS Windows environment. If your system does not support Plug & Play, you can use the utility for PCI PnP (not included in this package)).

- If the PC recognizes the adapter right, close the case and now you are ready to proceed to software setup.

3.2.2 Access Point (SWL-2000AP)

- An Access Point is equipped with an Ethernet adapter supporting 10base-T, 10base 2 and a MagicLAN wireless LAN adapter card.

- Insert the MagicLAN card (SWL-2000N) into the PCMCIA slot of the Access Point (SWL-2000AP)



- Connect the network cable to Ethernet port (10base-T or 10base 2) on the back of the Access Point.

- Connect the power adapter, and now you are ready to use the MagicLAN Access Point.

3.3 Software Installation

3.3.1 Driver Setup

(The dialog box pictures used in this section is from Windows 98, and the ones from Windows 95 may be slightly different.)

1. Start your PC and allow Windows95/98 to fully load. Since you must already have installed the MagicLAN Adapter in the previous step, an "**Add New Hardware Wizard**" box will appear.

2. If you use PCI-compatible desktop PC and have not installed the SWL-2000P adapter yet, **you MUST turn off the PC first** to install the adapter, insert the adapter to the slot and reboot, and you will see an "**Add New Hardware Wizard**" box.

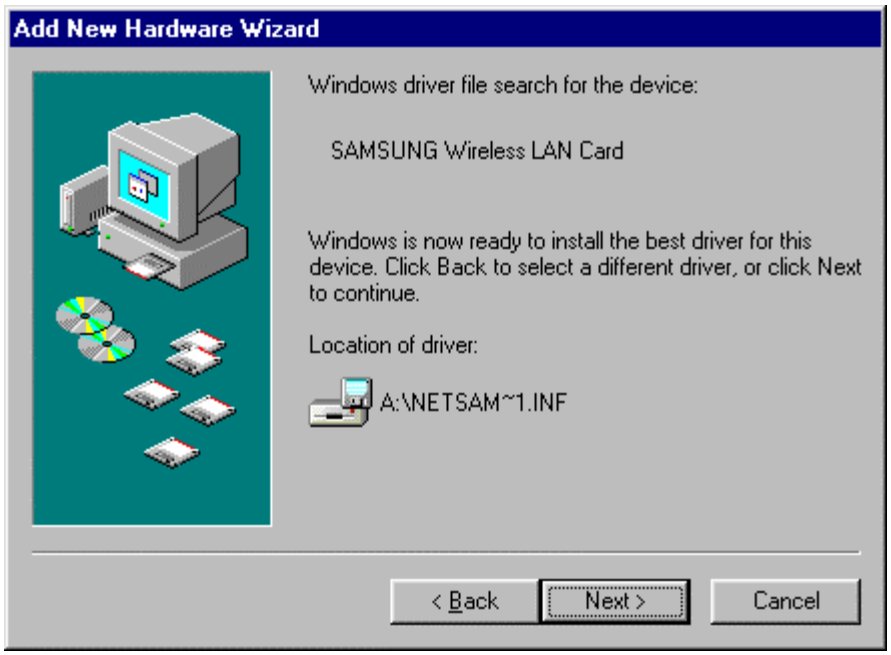
3. In "**Add New Hardware Wizard**" box, be sure SAMSUNG-WirelessLAN appears as a new device name as the following box shows.

4. Insert the MagicLAN (SWL-2000P) Installation Diskette into your floppy drive. Click on "**Next**".

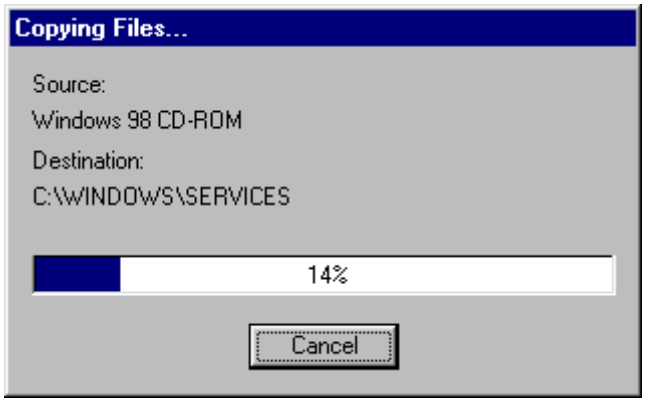
5. Windows 95/98 will present a list of drivers and optionally allow you to specify a location where it can find the appropriate driver software for the device. The following dialog box will appear if you use Windows98. Be sure the MagicLAN (SWL-2000P) Installation Diskette is in floppy drive and "**Search for the… (Recommended)**" option is selected. Click on "**Next**". (Windows95 has a slightly different display, and you should select a "**Have Disk**" option instead.)

6. Next, **"Add New Hardware Wizard**" box may appear as follows. Be sure the MagicLAN (SWL-2000P) Installation Diskette is in floppy drive and **Floppy disk drives** option is checked as follows. Click on "**Next**".

7. If the proper driver was successfully found on the floppy disk, **"Add New Hardware Wizard**" box may appear as follows. Click on "**Next**".

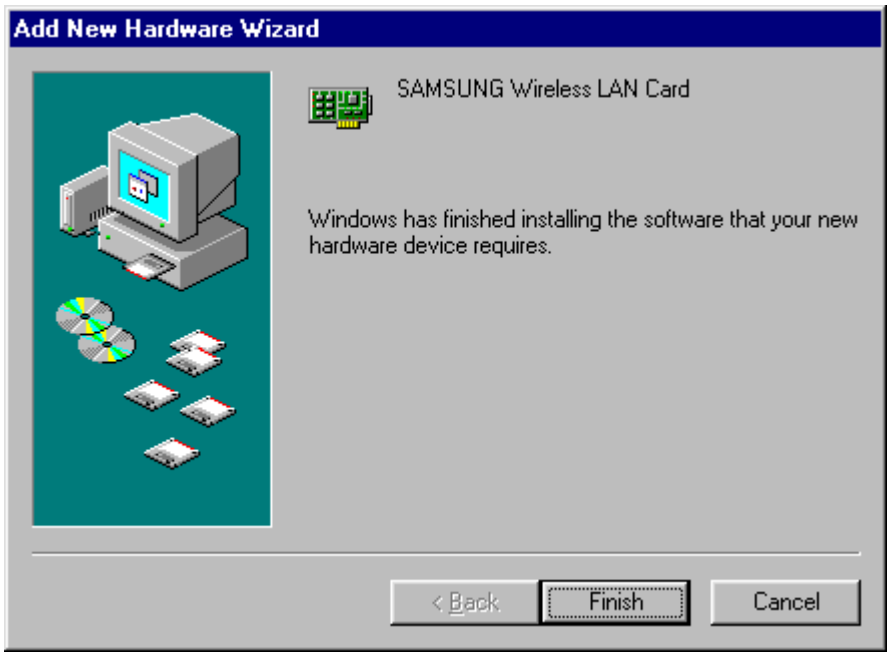


8. Windows95/98 will now copy files from the floppy disk and may prompt you for the location for the Windows95/98 installation CD or files. Depending on how your computer was configured by the manufacturer, you may need to insert the Windows CD into your CD-ROM drive at this step. While files are being copied, you will see "**Copying Files…**" box similar to the one below.



9. While copying files, the following box may appear requesting you to specify where the some files are located. In the drop-down choice box below, select "**A:**" where the MagicLAN (SWL-2000P) Installation Diskette is located. Click on "**OK**".

10. When the driver and all the required Windows95/98 software components are loaded, you will see the box similar to the one below, which indicates that the driver for "**SAMSUNG Wireless LAN Card**" has been successfully installed. Click on "**Finish**".



11. Finally, "**System Settings Change**" box will appear, asking if you wish to restart your computer now. Remove the MagicLAN (SWL-2000P) Installation Diskette from your floppy drive. Since you are done with the Installation Diskette, place it in a safe place for later use. Now, Click on "**No**" to proceed to MagicLAN Wireless LAN Card Properties Setup before you restart your computer.

3.4 MagicLAN Wireless LAN Card Properties Setup

3.4.1 Before MagicLAN Wireless LAN Card Properties Setup

3.4.1.1 Basics regarding the Properties Setup

- Peer-to-Peer Operating Mode:
  Multiple wireless clients can directly communicate with each other without AP.
- StructureNet Operating Mode:
  Wireless clients can communicate with each other or with clients on another wired network always through AP.
- Instawave Operating Mode:
  Multiple wireless clients using the same channel can directly communicate with each other, And they also can communicate with clients on another wired network through AP. In the second case, it is automatically set up which AP will be used for it.
- Roaming:
  One feature of StructureNet operating mode that effortlessly moves between APs that are on different channels but have the same ESS ID.
- From your network administrator, you should find out ESS ID of the AP and channel number that you are supposed to use.

3.4.1.2 Meanings of the Properties Setup Options

- Default Scanning / Start Channel: Option in StructureNet and Peer-to-Peer Network)
  StructureNet operating mode enables clients to automatically search for new Access Point. In **Default Scanning** mode, the wireless client begins the search with Channel 1. The client then searches all consecutive channels until it finds a new AP with the same ESS ID. If you want to start the search from a specific channel other than channel 1, you can deselect the **Default Scanning** check box and enter the desired channel number in a blank for **Start Channel**. This **Start Channel** entry will be helpful when multiple APs are within range of each other and you desire to connect to a specific AP among them.
- Enable Power Saving: Option in StructureNet Network
  Power save mode will keep the wireless LAN adapter in a low power standby state when there is no data transfer. This **Enable Power Saving** option is mainly to extend the operating time of portable battery operated device such as desktop computers, even sacrificing the effective throughput of the wireless connection. So you should test both with and without power saving enabled to see if this option satisfies your needs.

- Case sensitive ESS ID: Option in StructureNet and Peer-to-Peer Network

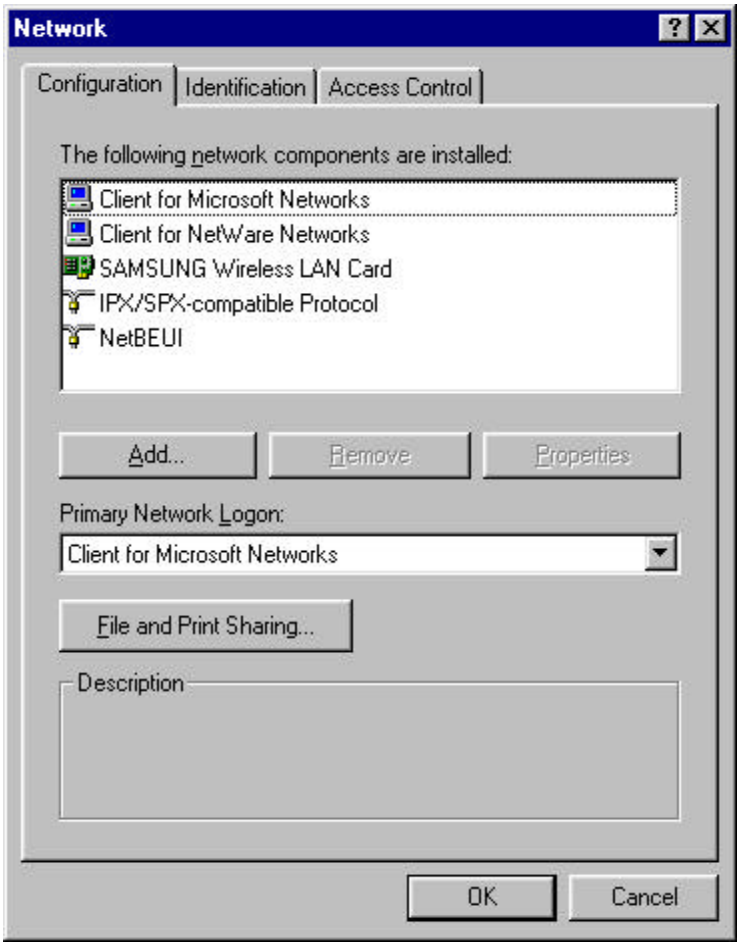
  When entering ESS ID, you can make it case sensitive by checking **Case sensitive ESS ID** check box.

- Auto join: Option in StructureNet and Peer-to-Peer Network

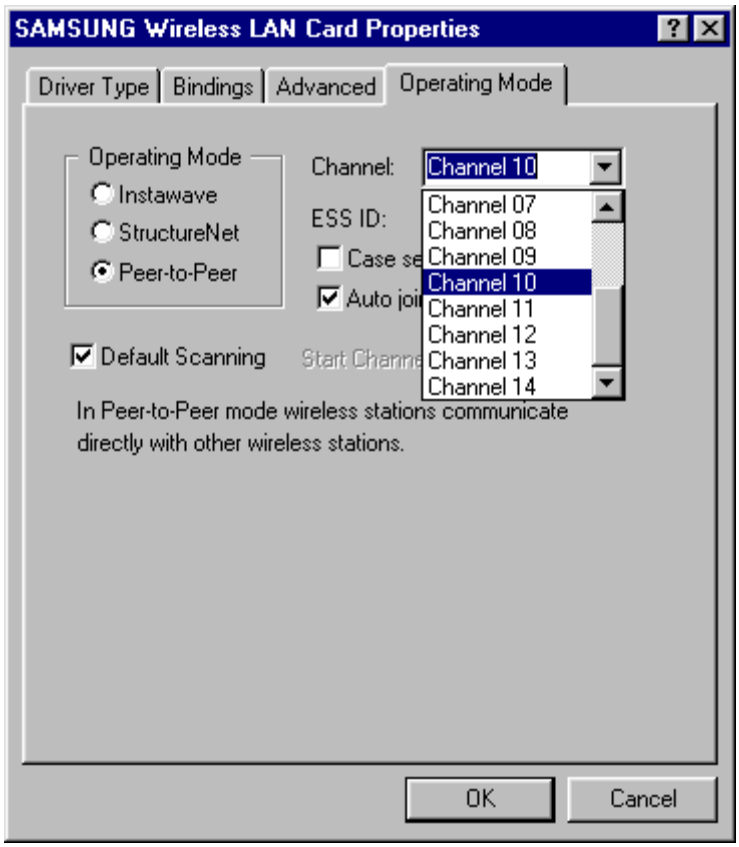
  When **Auto join** option is selected, the wireless client will associate with whatever access point is within range and has the best signal independent of the ESS ID setting. Since you may not use the same AP as described in the "**Access Point Client Properties**" box, you can check which AP and ESS ID you are actually using by double clicking the task bar status icon to display the wireless client status box.

3.4.2 Setting Network Properties for "Peer-to-Peer" mode

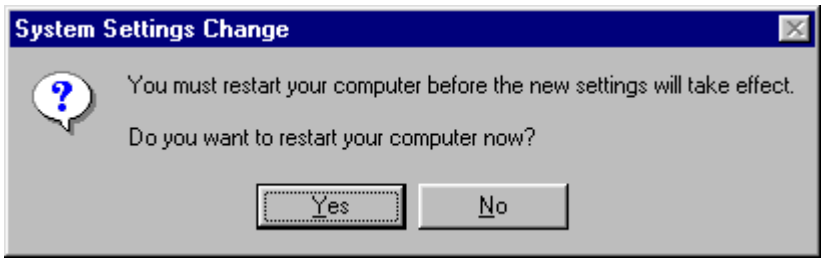
1. Right click on your "**Network Neighborhood**" icon and click on "**Properties**".
2. "**Network**" box will appear with **Configuration** tab selected as follows. In the list in the box, click on "**SAMSUNG Wireless LAN Card**" and "**Properties**" button in the middle sequentially.



3. “**Access Point Client Properties**” box will appear as follow.



4. Check the **Peer-to-Peer** radio button in **Operating Mode** list.
5. Enter the desired **ESS ID** you are authorized to use.
   (ESS ID is set to “MagicLAN” as default, but you can change it to another.)
6. Select the desired **Channel** you are authorized to use.
7. Change some options if you want.
8. Click on “OK” to finish up the setup.
9. “**System Setting Change**” box will appear as follows. Click on “**No**” to proceed to Network Configuration Setup before you restart your computer.



3.5 Network Configuration Setup

3.5.1 Network Configuration Setup Overview

• After you finish up the hardware and software driver setup, you will need to install and configure Microsoft Networking components.

• If you only need to access the Internet, installation of the TCP/IP networking component should be sufficient.

• If you want some functions to share files and printers in small LAN environment, some installations may use an alternative networking protocol called NetBEUI protocol.

• Both TCP/IP and NetBEUI protocols can be used to share files and printers between wired and wireless computers.

3.5.2 Before TCP/IP Networking Configuration Setup

3.5.2.1 What you should know before Configuration

• **TCP/IP** protocol is a protocol used to connect to a Wide Area Network (WAN), such as the Internet or hard-wired Ethernet networks.

• Every computer connecting to WAN has a **unique** number called **IP address**, which consists of two parts, network part and host part. For example, consider the IP address 150.205.30.9.
Assuming this is part of a Class B network, the first two numbers (150.205) represent the network address and the second two numbers (30.9) represent the host address.

• Network administrator can divide the host part of IP address into two or more subnets for more effective use. In that case, **subnet mask** is used to determine what kind of subnet the IP address belongs to.

• You should consult your network administrator or Internet Service Provider (ISP) to find out your **IP address** and **subnet mask**.

• There are two ways of obtaining an IP address. Some networks use **Dynamic Host Configuration Protocol (DHCP)** to dynamically assign an IP address every time you log on to the network. Others use static IP that is uniquely assigned to your computer and you use the same IP address whenever you log on to the network.

• You should consult your network administrator or Internet Service Provider (ISP) to find out if you would use **DHCP or static IP**.

• **Windows Internet Name Service (WINS)** is a network service that resolves a computer NETBIOS name to an IP address. It is similar in concept to the Domain Name Service (DNS) except WINS resolves NETBIOS names while DNS resolves host names.

• If you use a static IP and want to enable WINS, You should consult your network administrator or Internet Service Provider (ISP) to find out the **WINS server IP Address and Scope ID.**

• **Gateway** is a hardware or software set-up that translates between two dissimilar protocols. More easily, it can also be called a specific point to access another system. So if you want to reach out to Internet from your PC, you should set up a gateway to pass through.

• You should consult your network administrator or Internet Service Provider (ISP) to find out your **Gateway Address**.

• Domain Name Service (**DNS**) is the service that performs a mapping between domain names – more English-like names - and their corresponding IP address.

• DNS can be either enabled or dPCIbled. If you want to enable it, you should also consult your network administrator or Internet Service Provider (ISP) to find out your **Host ID**, **Domain, DNS Server IP Address, and Domain suffix**.

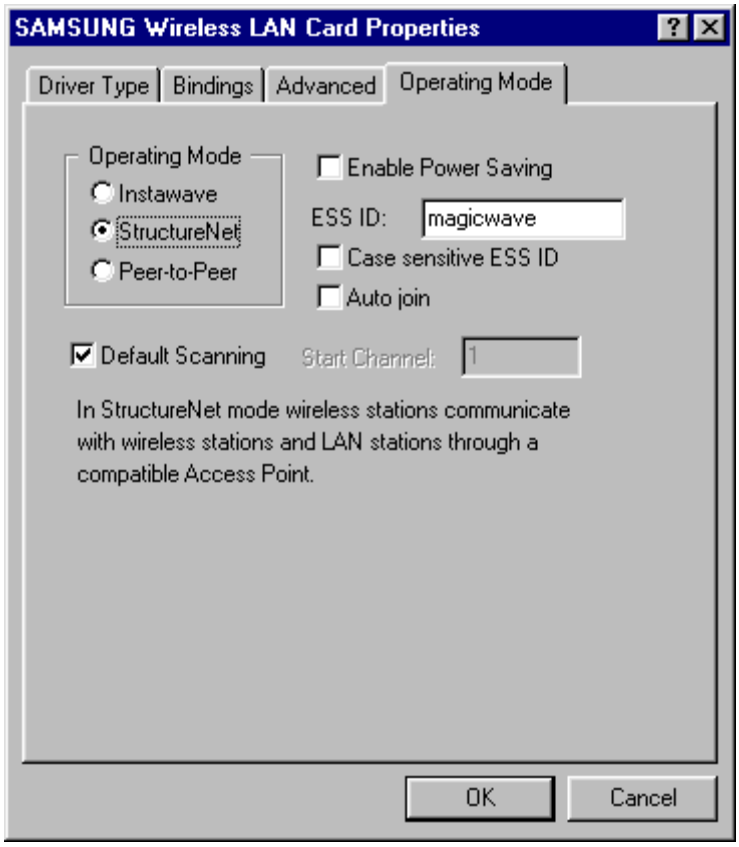
3.5.2.2 What you should have in your hands to proceed further

• Whether you would use **DHCP or static IP** (Required)
• Your **Gateway Address** (Required)
• Your **IP address** and **subnet mask**. (If you want to use static IP)
• **WINS server IP Address** and **Scope ID** (If you want to enable WINS using static IP)
• Your **Host ID**, **Domain, DNS Server IP Address,** and **Domain suffix**
(If you want to use DNS)

(Consult your network administrator or ISP if you are not sure any of the above, and make sure you are ready with all the information necessary to proceed more.)

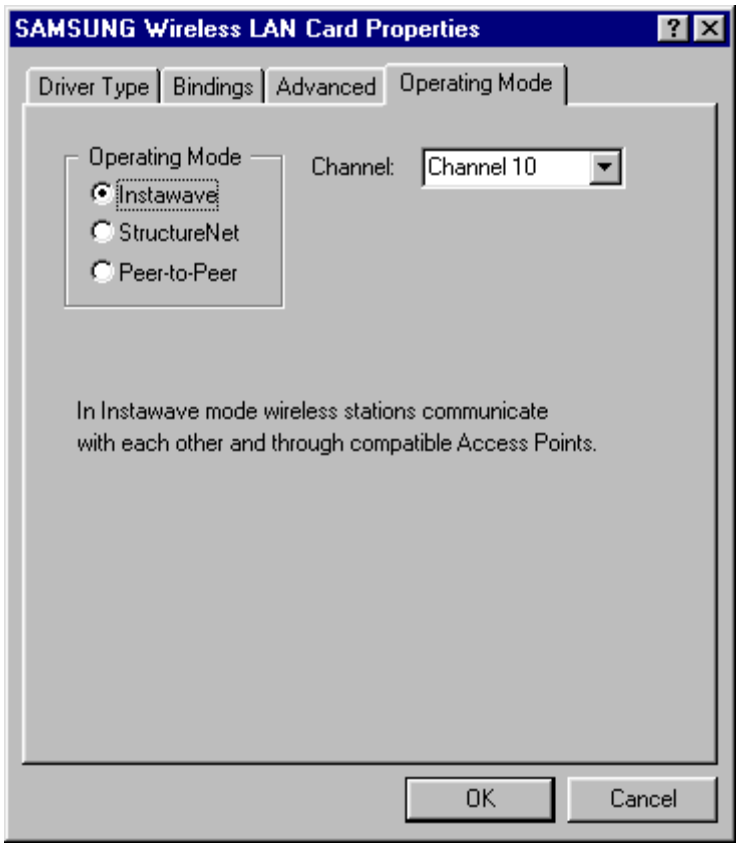
3.5.3 Setting Network Properties for “StructureNet” mode

1. Do the step 1 and 2 mentioned in the previous section. (Section 3.4.2)
2. In “**Access Point Client Properties**” box, check the **StructureNet** radio button in **Operating Mode** list.
3. Enter the desired **ESS ID** for the Access Point you are authorized to use.
   (ESS ID is set to “magicwave” as default, but you can change it to another.)
4. Change some options if you want.
5. Click on “**OK**” to finish up the setup.
6. Do the step 9 mentioned in the previous section (Section 3.4.2) to make the change effective.



3.5.4. Setting Network Properties for “Instawave” mode

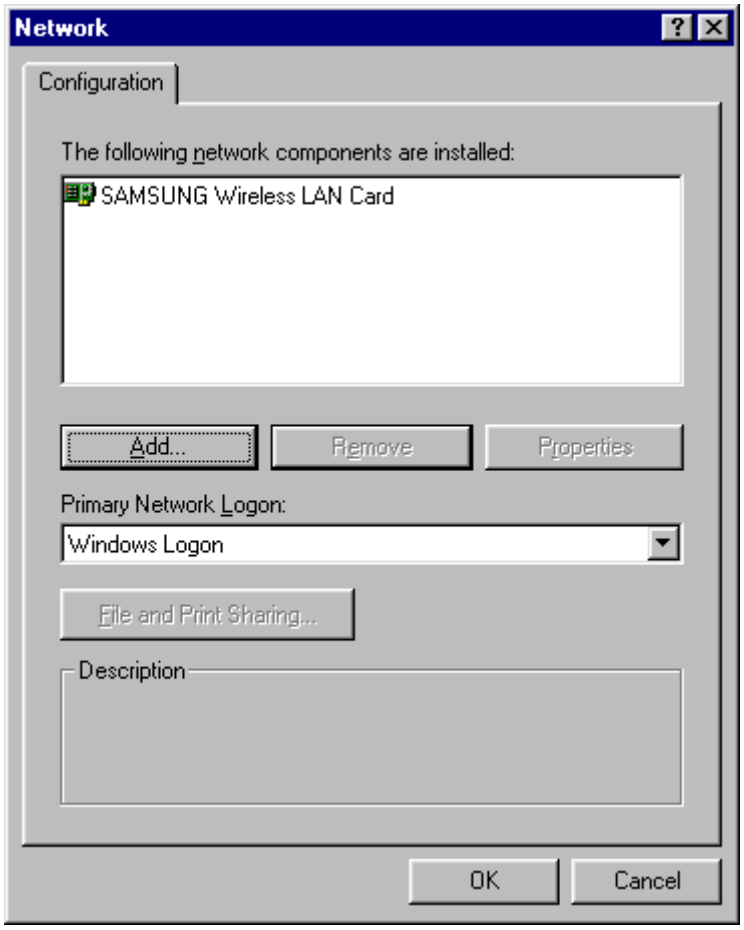
1. Do the step 1 and 2 mentioned in the section 3.4.2.
2. In “**Access Point Client Properties**” box, check the **Instawave** radio button in **Operating Mode** list.
3. Select the desired **Channel** you are authorized to use.
4. Click on “**OK**” to finish up the setup.
5. Do the step 9 mentioned in the section 3.4.2 to make the change effective.



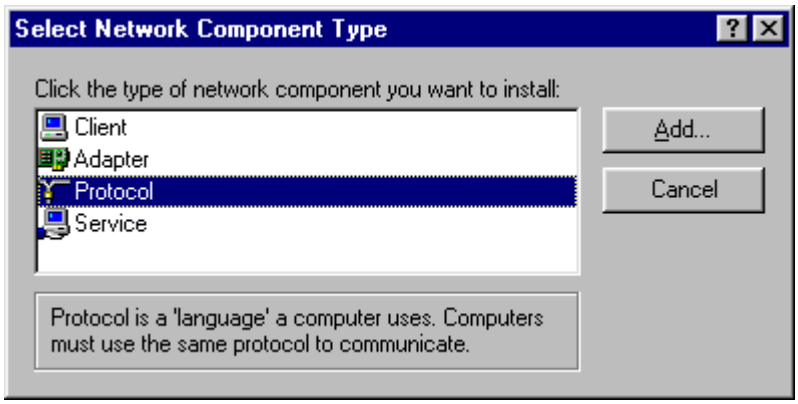
3.5.5 TCP/IP Networking Configuration Setup

3.5.5.1 TCP/IP Installation

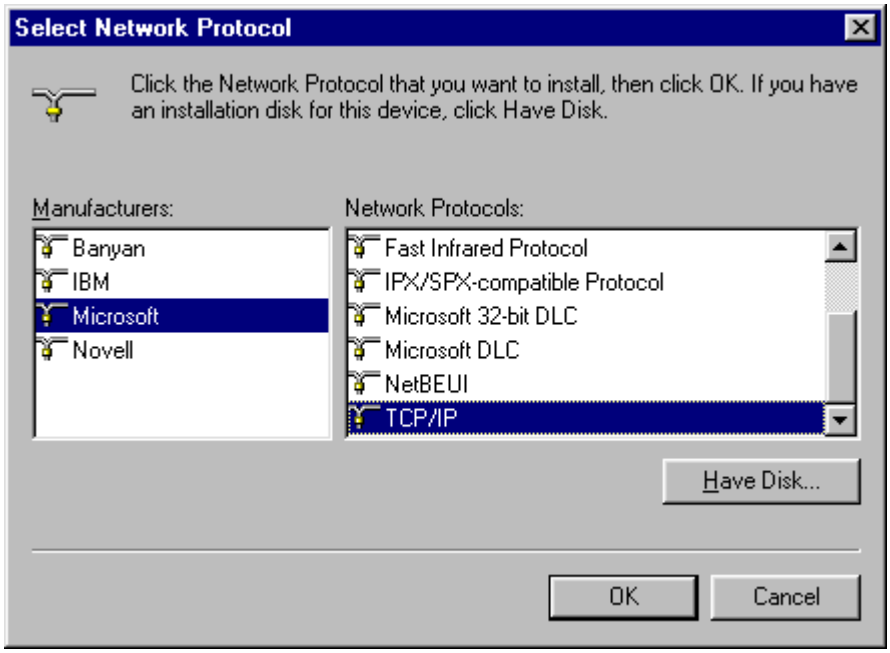
1. **Right click** on the **Network Neighborhood** icon and select "**Properties**" at the bottom "**Network**" box may appear as follows. If you find **TCP/IP** in the list of **Configuration** tab, skip to 3.5.5.2 (TCP/IP Properties Setup). To add TCP/IP, Click on "**Add**".



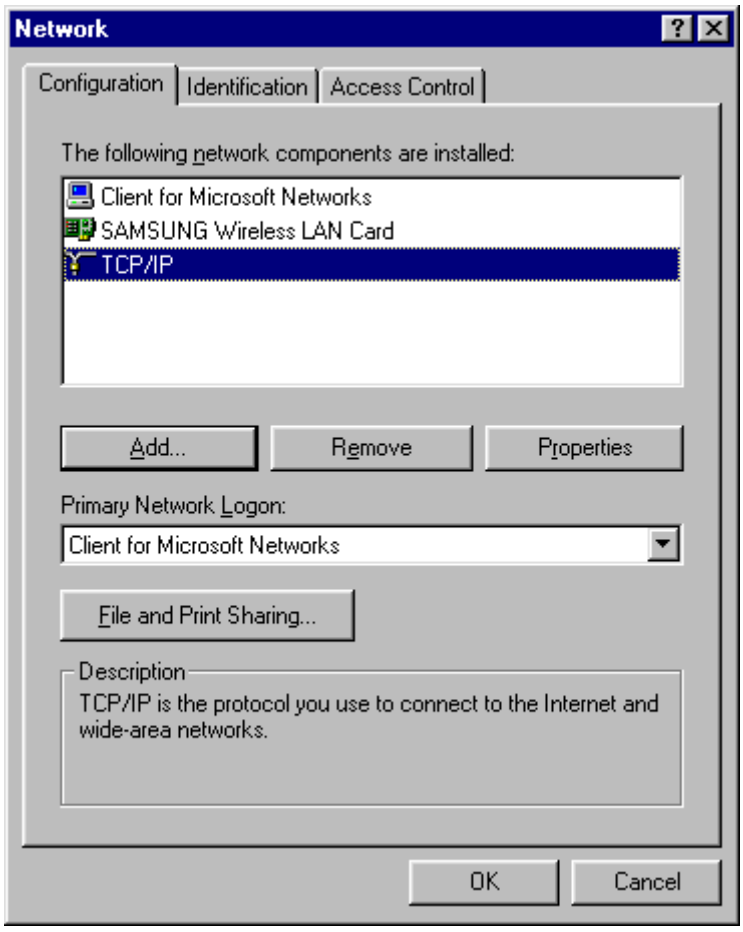
2. When “**Select Network Component Type**” box appears, select “**Protocol**” since TCP/IP that we want to install is a Protocol. Click on “**Add**”.



3. "**Select Network Protocol**" box will appear. From the list of Manufacturers, select "**Microsoft**". From the list of Network Protocols list, select "**TCP/IP**". Click on "**OK**".



4. In “**Network**” box, you will see “**TCP/IP**”, which means that TCP/IP is successfully installed in your system now.

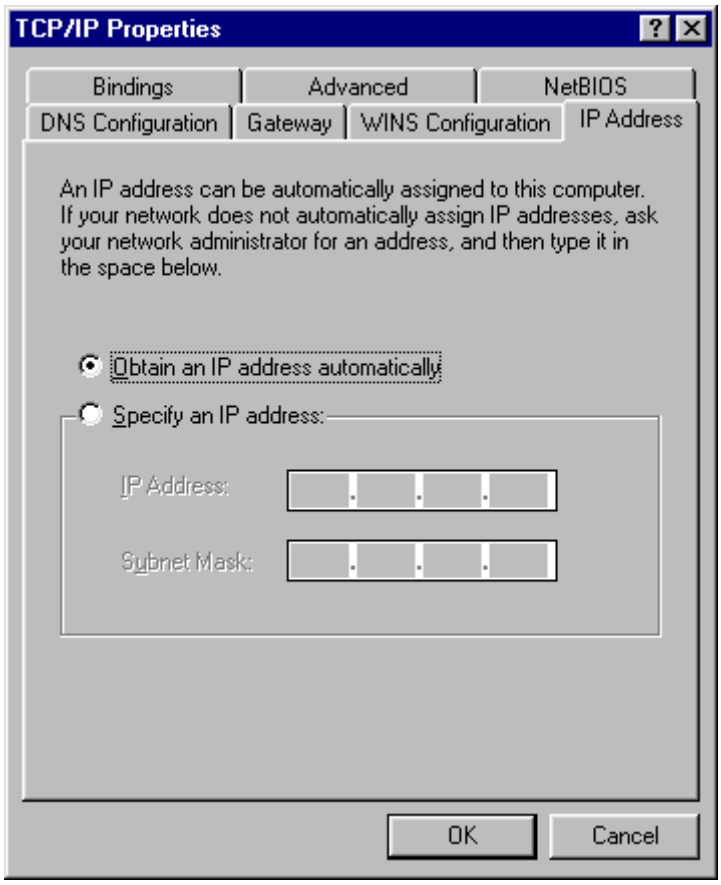


5. While TCP/IP is selected, click on “**Properties**” to proceed for TCP/IP Properties Setup.

3.5.5.2 TCP/IP Properties Setup

1. Continuing from the last step, "**TCP/IP Properties**" box will appear. If not already selected, select **IP Address** tab on top of the box to display the IP configuration setting. If you find from your network administrator or ISP that you would use DHCP so that you can get a dynamic IP every time you log on the network, select "**Obtain an IP address automatically**" and proceed to step 2a. If you use a static IP address, select "**Specify an IP address**" and type in your **IP Address** and **Subnet Mask** in the blank below, and proceed to step 2b.

   Go to **WINS Configuration** tab on top of the box to proceed.



2. **WINS Configuration** box will appear as follows.

2a. If you use DHCP so that you would get a dynamic IP address every time you log on:

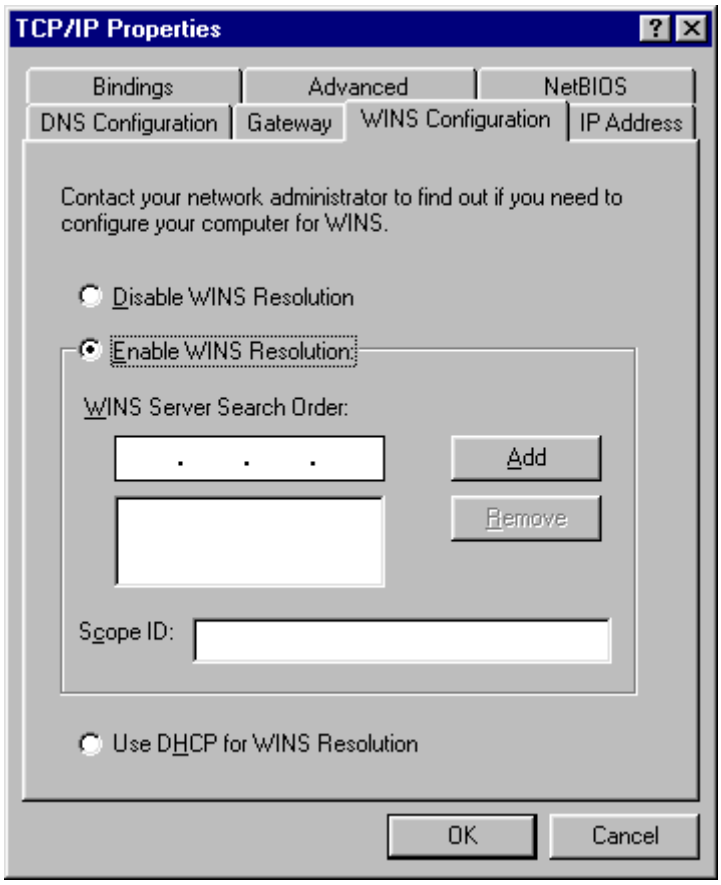
Select "**Use DHCP for WINS Resolution**" at the bottom.

2b. If you use a static IP address and want to:

a. DPCIble WINS Resolution: Select "**DPCIble WINS Resolution**" in the middle.

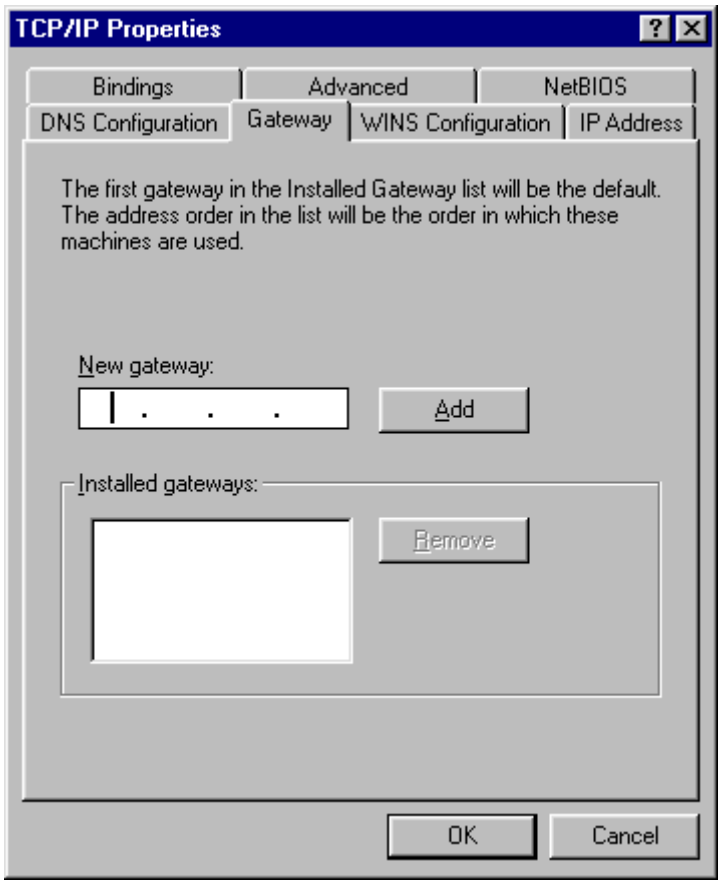
b. Enable WINS Resolution: Select "**Enable WINS Resolution**" and fill out the blanks for **WINS Server Search Order** and **Scope ID** using the information from your network administrator or ISP.

Go to **Gateway** tab on top of the box to proceed.

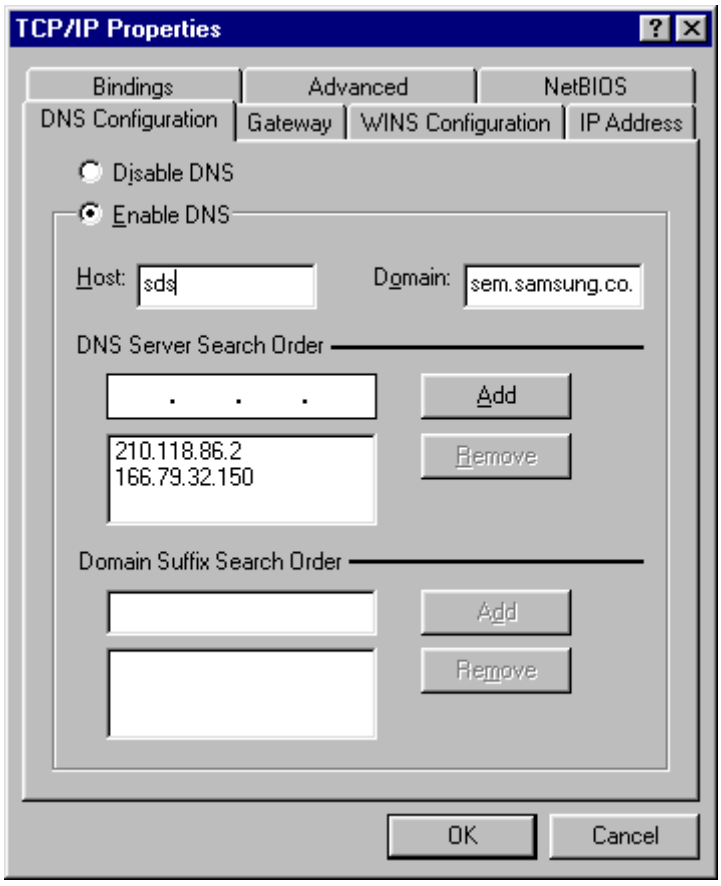


3. **Gateway** box will appear on your screen as follows. If your network administrator or ISP provided you with a Gateway IP address, type that address into the "**New Gateway**" field and click on "**Add**". If more than one IP addresses were provided to you, repeat the procedure until you type in all those numbers.

   Go to **DNS Configuration** tab of top of the box to proceed.



4. **DNS Configuration** box will appear as follows. If you want to dPCIble DNS, check on the radio button for "**DPCIble DNS**". Otherwise, check on the radio button for "**Enable DNS**" and type **Host** and **Domain** in the proper field. After that, type IP Address of DNS server in "**DNS Server Search Order**" box and click on "**Add**". Repeat this procedures if multiple IP address of the DNS server were provided. If applicable, fill out the "**Domain Suffix Search Order**" field. Click on "**OK**" at the bottom of "**TCP/IP Properties**" box.



5. "**System Setting Change**" box will appear as follows. Click on "**Yes**" to restart your computer so that the whole installation procedures take effects.

4. MagicLAN Installation for Windows NT

4.1 Hardware Installation

Hardware installation procedure for Windows NT is exactly same as the one for Windows 95/98.
Please make a reference of the Windows 95/98 hardware installation section. (Section 3.1)

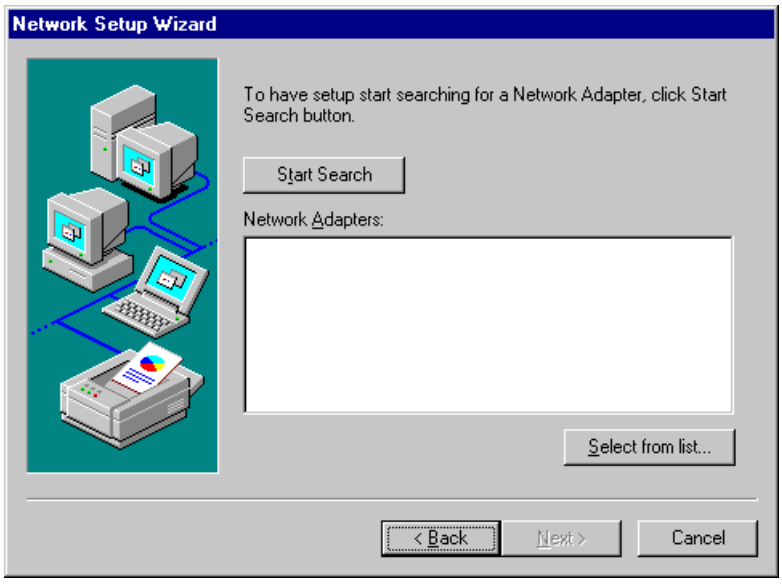
4.2 Software Installation

4.2.1 When there is no Windows NT Networking installed yet

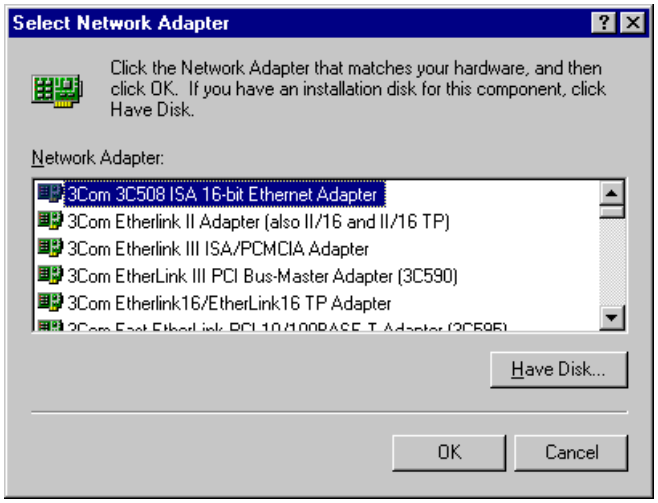
1. Unlike Windows 95/98, since Windows NT does not support Plug and Play (PnP), you should add your driver manually. To do so, click on "**start**" in task bar, go to "**Settings**", and go to "**Control Panel**".

2. Under "**Control Panel**", double click on **Network** icon.

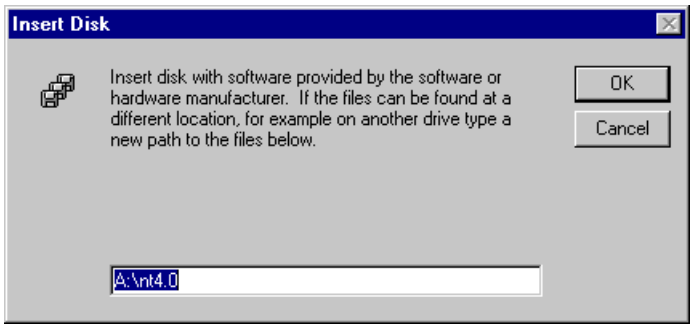
3. Since there is no NT networking installed in your system, you may be asked if you want to install NT networking first. Click on "**Yes**" button. Next, you may be asked to specify how you access to the network: modem or LAN. Check the proper selection and click on "**Next**". In "**Network Setup Wizard**" box, click on "**Select from list**" button.



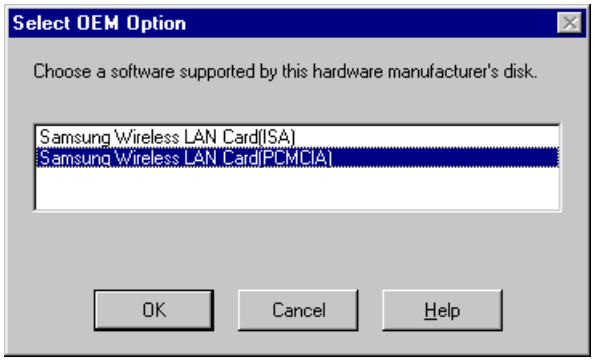
4. In "**Select Network Adapter**" box, click on "**Have Disk**" button.



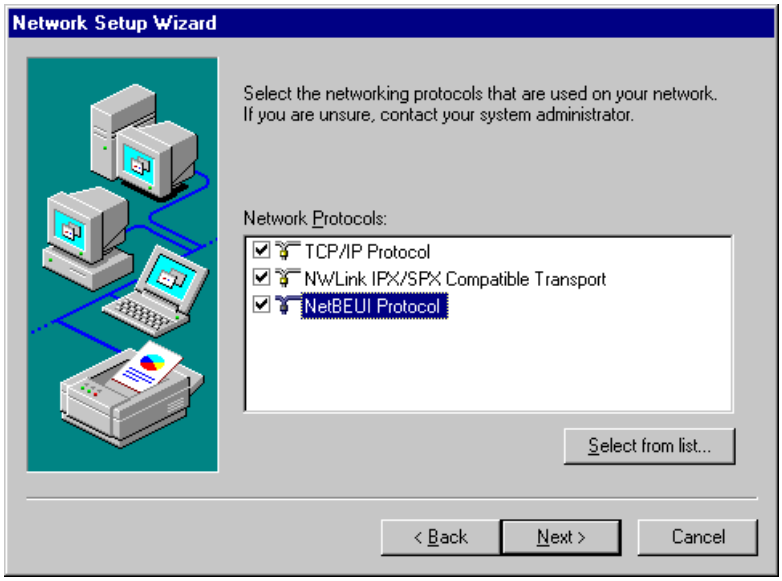
5. In "**Insert Disk**" box, you may be asked to specify the necessary software directory. Insert the MagicLAN installation disk into the floppy disk drive, type in "**A:\nt4.0**" in the blank and click on "**OK**" button. (In this example, we assume we are installing Windows NT version 4.0.)



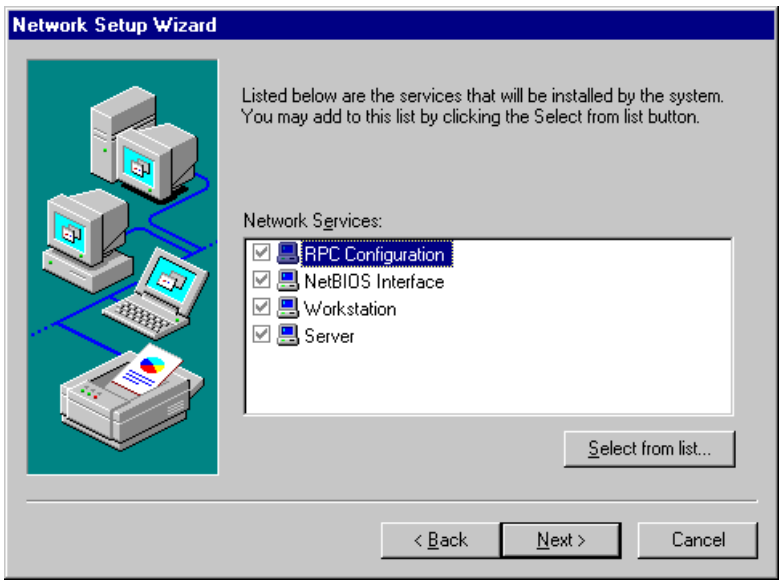
6. In "**Select OEM Option**" box, two adapters found may appear in the list. Select the proper adapter and click on "**OK**" button. Usually you can select PCI for desktop. In the next box, make sure that SAMSUNG Wireless LAN Card is checked and click on "**Next**".



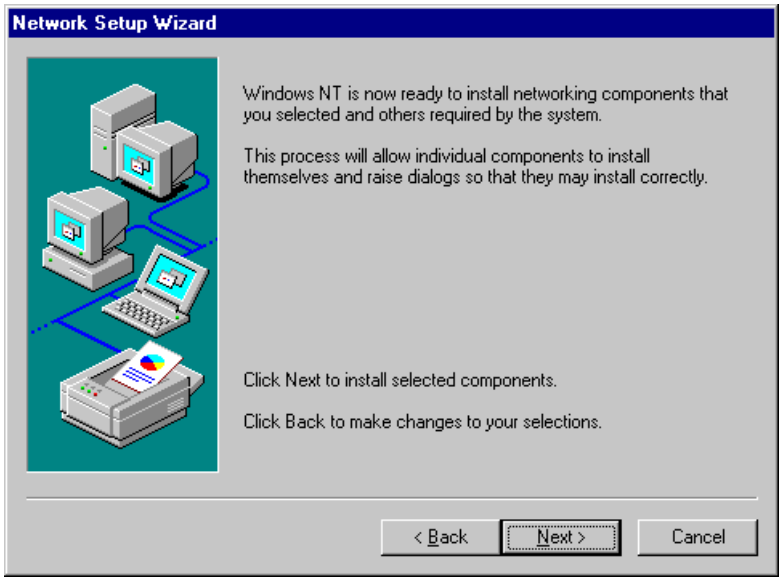
7. In the next box to choose protocols to use, make sure that all the protocols you want to use are checked and click on "**Next**".



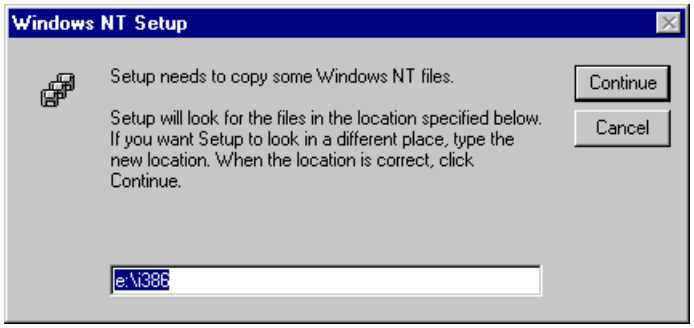
8. In the next box to choose network services to use, make sure that all the services you want to use are checked and click on "**Next**".



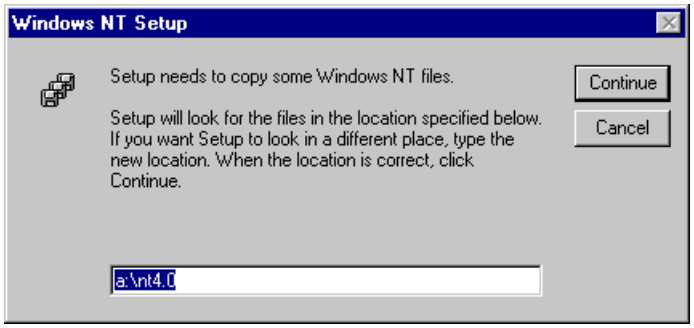
9. In the next box, it is confirmed that necessary NT networking components are selected. Click on "**Next**".



10. When you are asked to specify the directory that the necessary NT files are copied from, insert your Windows NT CD and type in "**e:\i386**" in the location blank. (Here it is assumed that the CD-ROM drive is e drive)



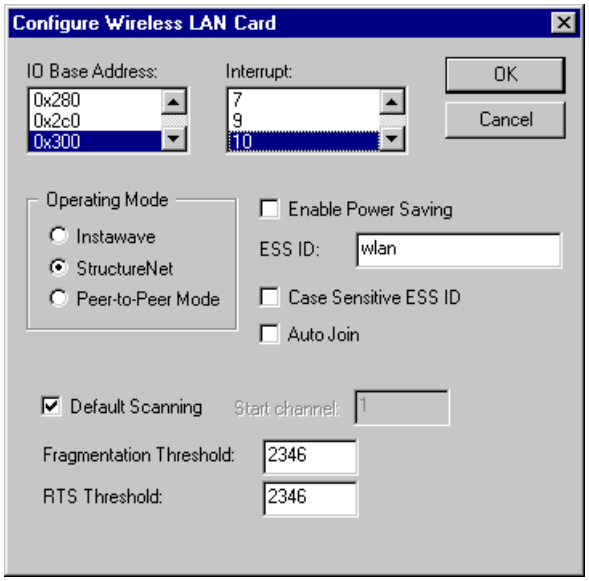
11. Some files from the "**e:\i386**" directory are copied and you may be prompted the same box to ask you to specify where the NT files are once more. Since it is looking for some files from the installation diskette this time, insert your installation disk into floppy disk drive and type in "**a:\nt4.0**" in the location blank. Windows NT networking is successfully installed now



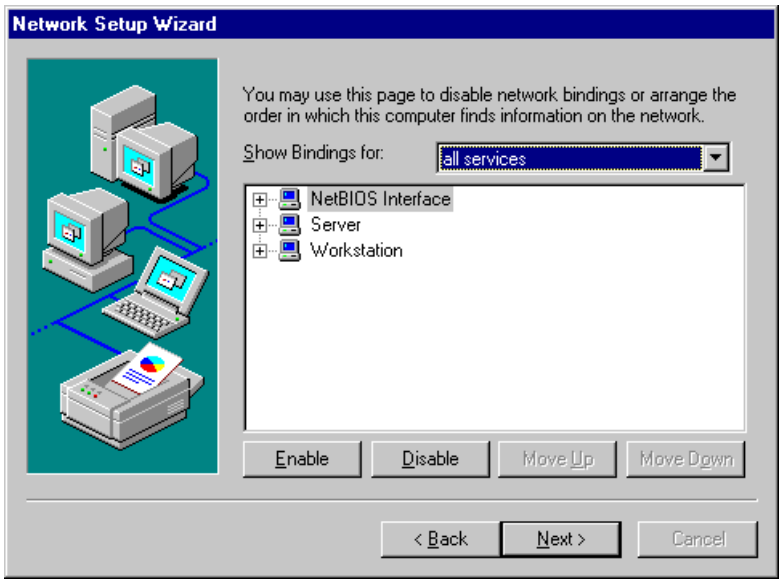
12. "**Configure Wireless LAN Card**" box may appear as follows. Set each some parameters (I/O

Base,

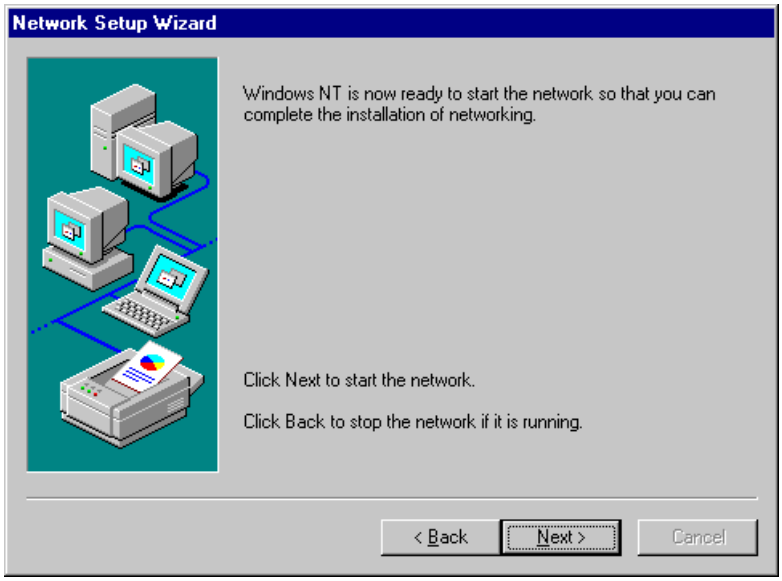
Interrupt, Fragmentation Threshold, RTS Threshold) for the proper system configuration setup and other parameters (Operating Mode, ESS ID, etc.) for the proper LAN Card configuration setup. For the information on LAN Card-related parameters, you can refer to the explanation on the previous section (3.4 SAMSUNG Wireless LAN Card Properties Setup). If you are not sure any of system configuration-related parameters, please refer to your network administrator. After you set all the parameters necessary, click on "**OK**" to proceed.



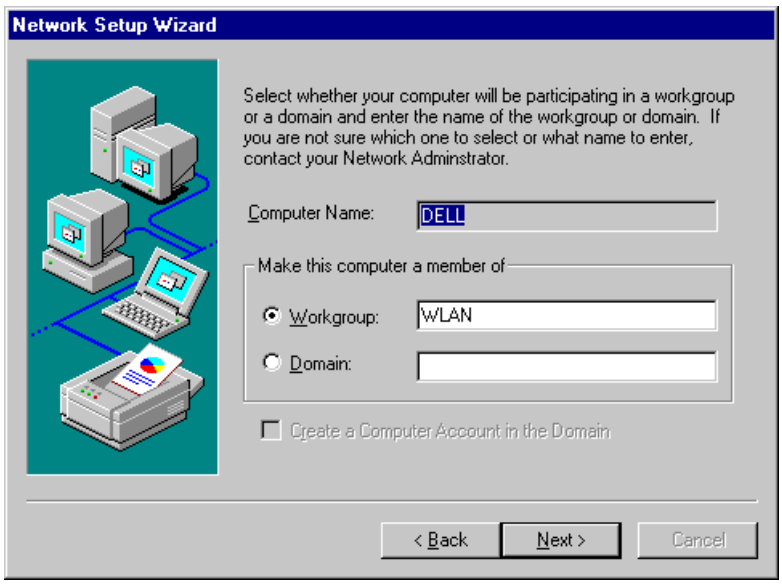
13. Network binding related box may appear next. Click on "**Next**" to proceed.



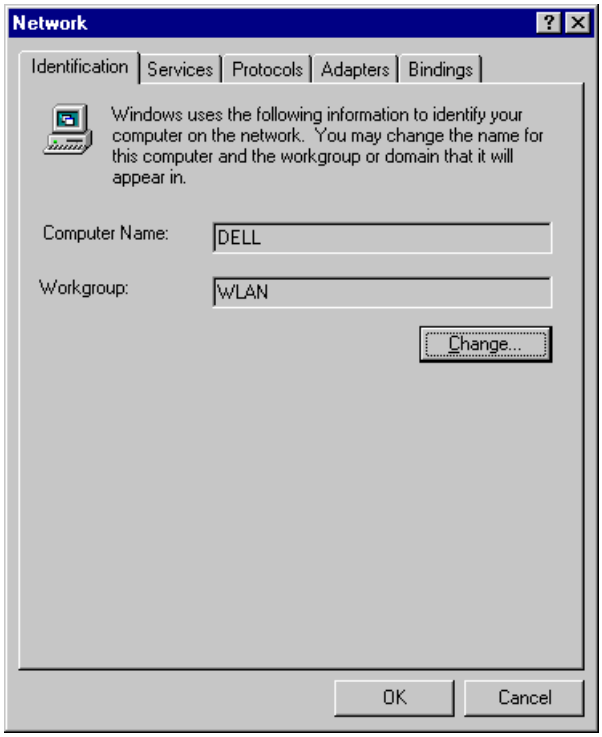
14. Next box will say network installation is done and network is ready to start. Click on "**Next**" in that box and "**Finish**" on the next box to start network.



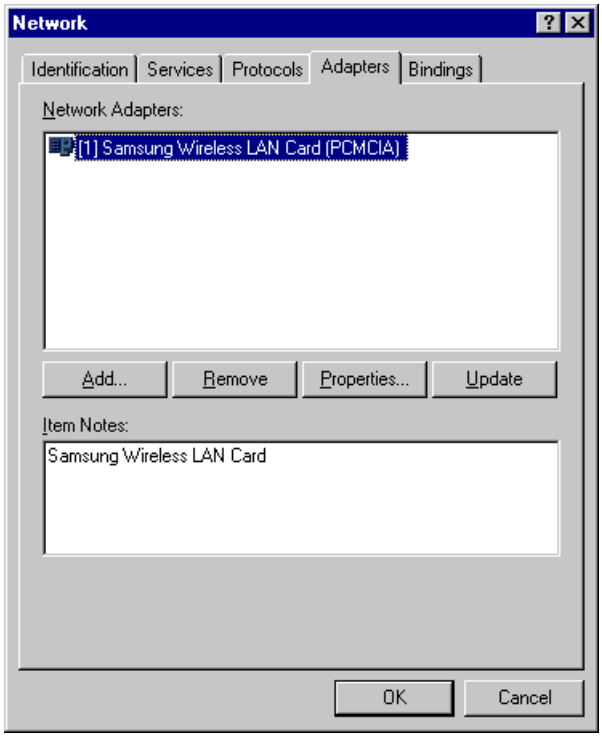
15. You will be prompted to enter the name of the Workgroup or Domain in the next box. Type in a desired name of it and click on "**Next**" to proceed.



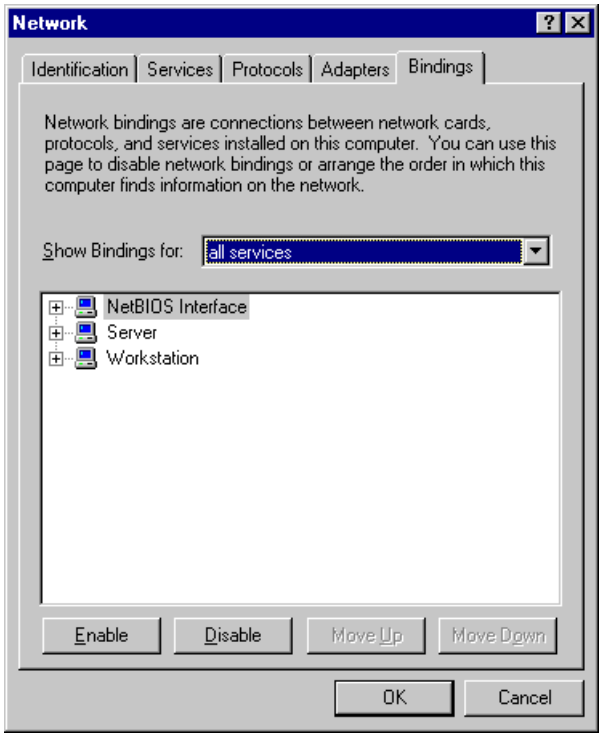
16. "**Network**" box with **Identification** tab selected will appear as follows. You can change the Computer Name and Workgroup after clicking on "**Change**" in the middle of the box.



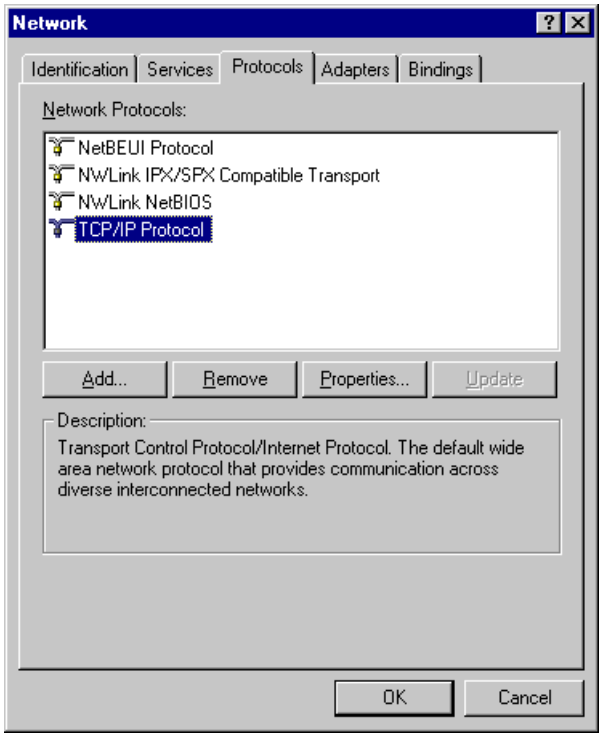
17. Go to **Adapters** tab of the "**Network**" box, and make sure that "**SAMSUNG Wireless LAN Card**" are installed and currently selected.



18. Go to **Binding** tab of the "**Network**" box and check if all the necessary services are binded.

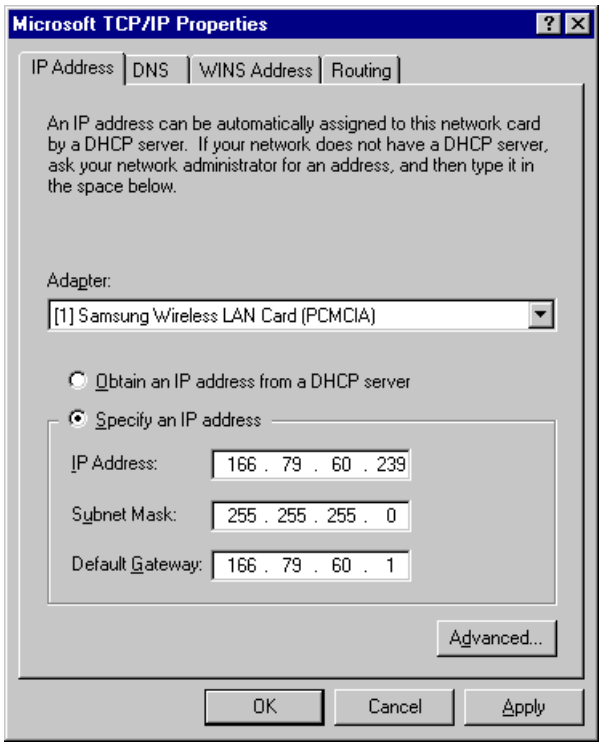


19. Go to **Protocols** tab of the "**Network**" box. Select "**TCP/IP Protocol**" in the list and click on "**Properties**" button.



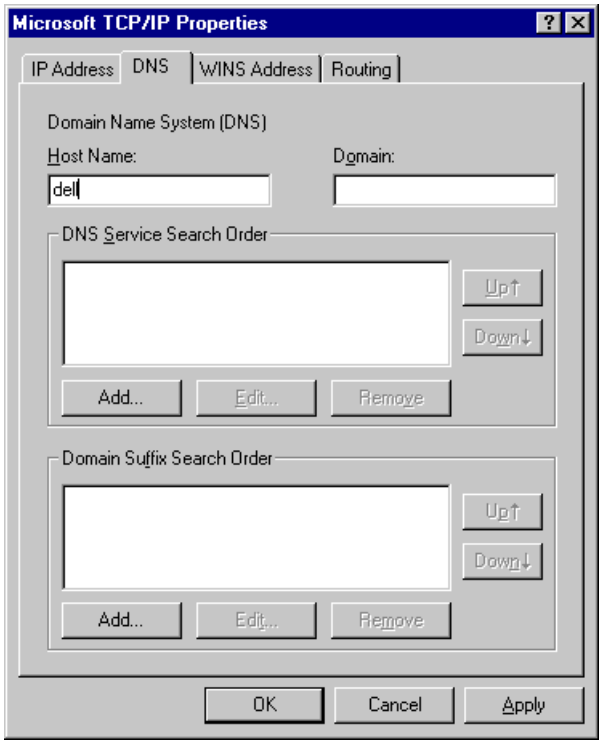
20. "**Microsoft TCP/IP Properties**" box with **IP Address** tab selected will appear as follows. Select "**SAMSUNG Wireless LAN Card**" in the Adapter section, and fill out the rest sections with proper information. About the parameters and meaning, you can refer to the explanation in the previous section.

(3.5 Network Configuration Setup). If you are not sure about any of the required information in this section, please consult to your network administrator. Go to **DNS** tab.

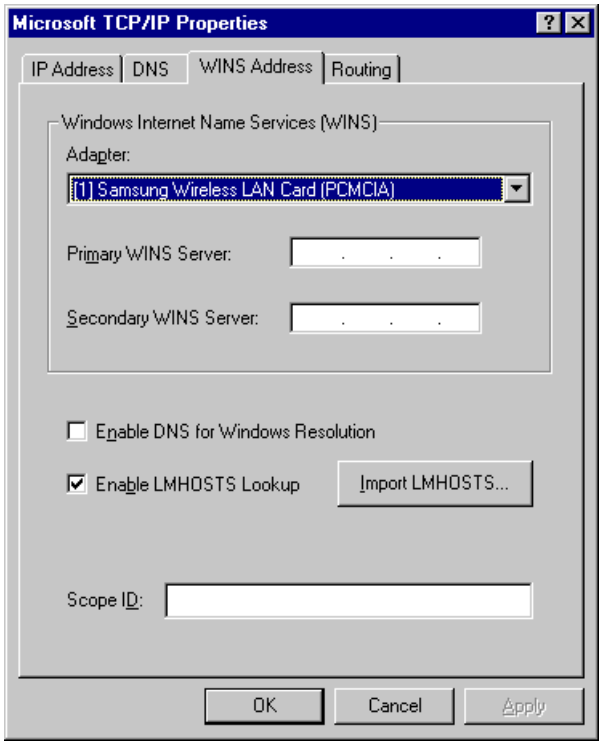


21. In "**Microsoft TCP/IP Properties**" box with **DNS** tab selected, enter the proper information for the blanks. About the parameters and meaning, you can refer to the explanation in the previous section. (3.5 Network Configuration Setup). If you are not sure about any of the required information in this section,

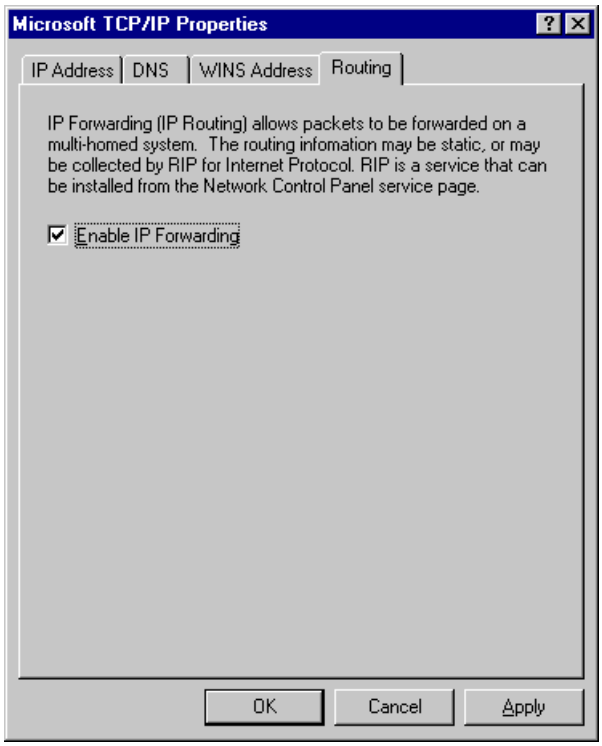
please consult to your network administrator. Go to **WINS Address** tab.



22. In "**Microsoft TCP/IP Properties**" box with **WINS Address** tab selected, select SAMSUNG Wireless LAN Card (PCMCIA) and fill the rest of the blanks with the proper information. About the parameters and meaning, you can refer to the explanation in the previous section. (3.5 Network Configuration Setup). If you are not sure about any of the required information in this section, please consult to your network administrator. Go to **Routing** tab.



23. In "**Microsoft TCP/IP Properties**" box with **Routing** tab selected, make sure if "**Use IP Routing**" is checked only if you want NT to play a role of router in your network. Click on "**OK**".



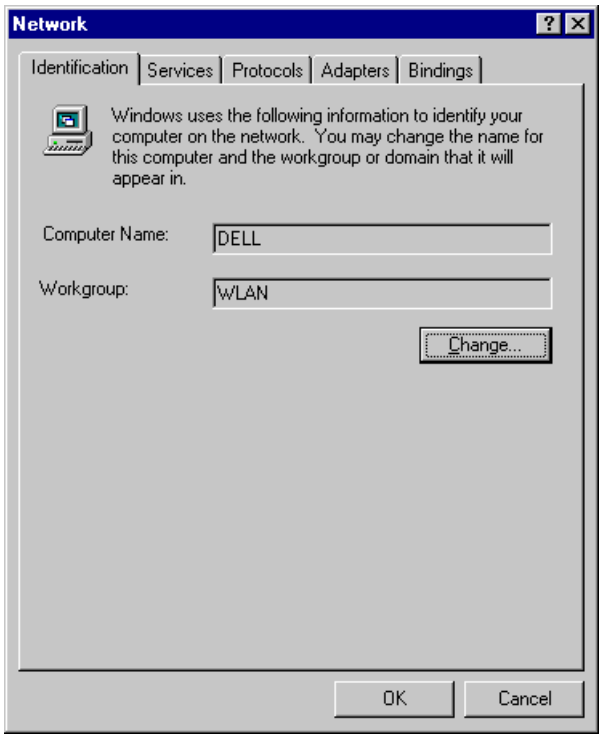
24. When TCP/IP properties are set, click on "**Close**". Then "**System Setting Change**" box will appear as follows. Click on "**Yes**" to restart your computer so that the whole installation procedures take effects.

4.2.2 When There is Windows NT networking already installed

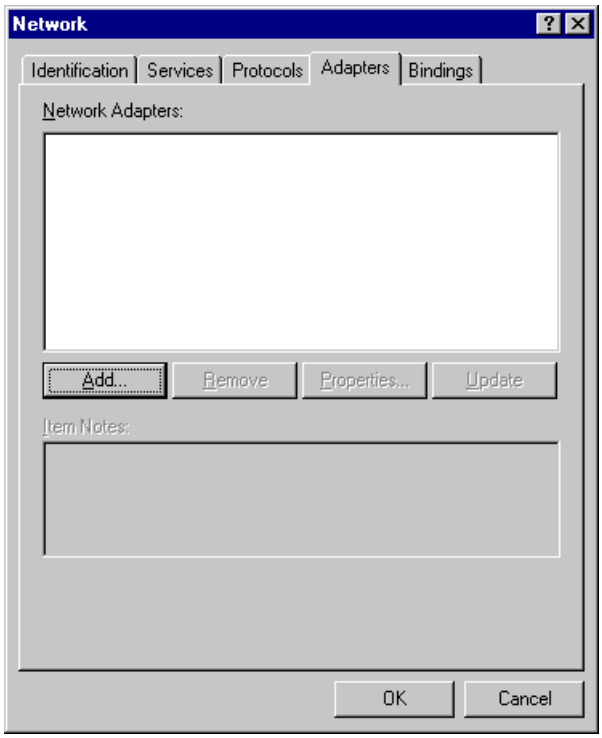
1. Unlike Windows 95/98, since Windows NT does not support Plug and Play (PnP), you should add your driver manually. To do so, click on "**start**" in task bar, go to "**Settings**", and go to "**Control Panel**".

2. Under "**Control Panel**", double click on **Network** icon.

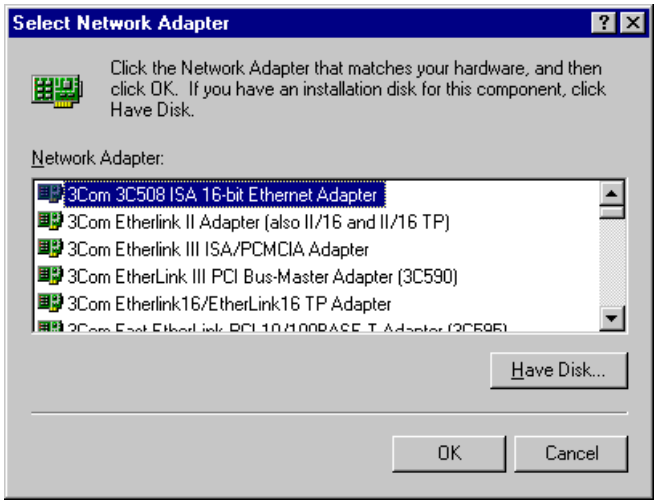
3. "**Network**" box with **Identification** tab selected may appear as follows. You can change the Computer Name and Workgroup after clicking on "**Change**" in the middle of the box.



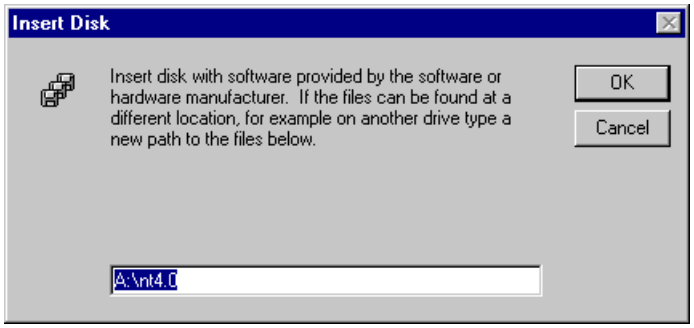
4. Go to **Adapters** tab of the "**Network**" box, and click on "**Add**" button in the middle.



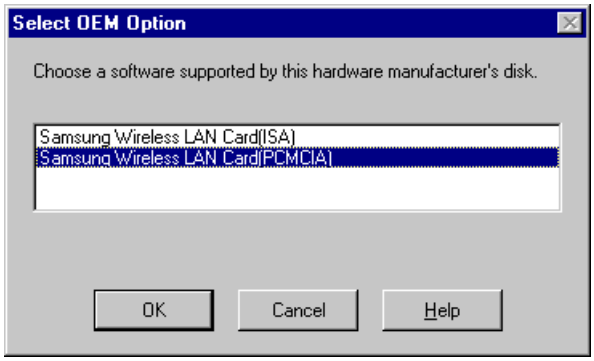
5. "**Select Network Adapter**" box may appear as follows. Click on "**Have Disk**".



6. "**Insert Disk**" box may appear as follows. Insert the Installation Diskette into your floppy drive and specify the path "**A:\nt4.0**" in blank field. Click on "**OK**". (In this example, we assume we are installing Windows NT version 4.0.)

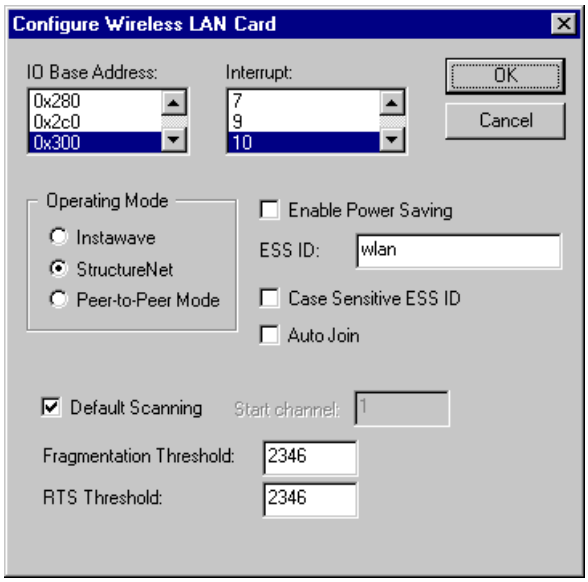


7. If the Driver is successfully set up, "**Select OEM Option**" box may appear. Select the card type. Usually you can select PCI for desktop. Click on "**OK**".

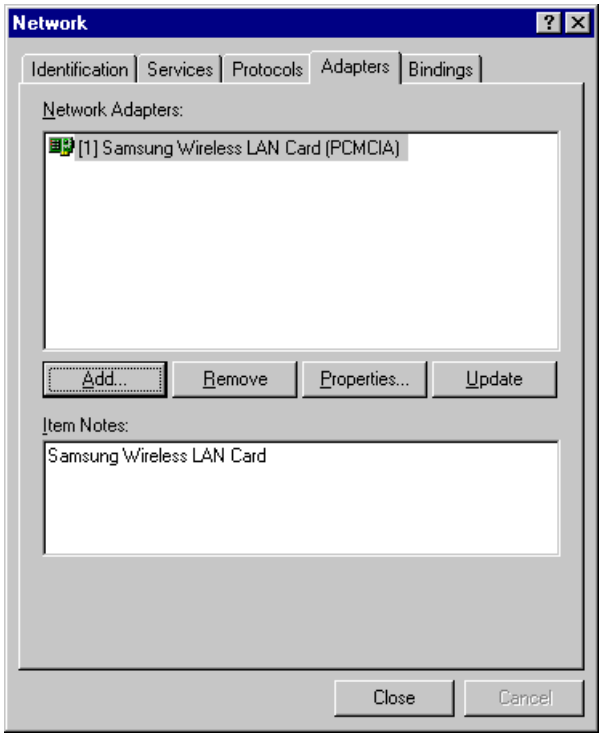


8. "**Configure Wireless LAN Card**" box may appear as follows. Set each some parameters (I/O Base,

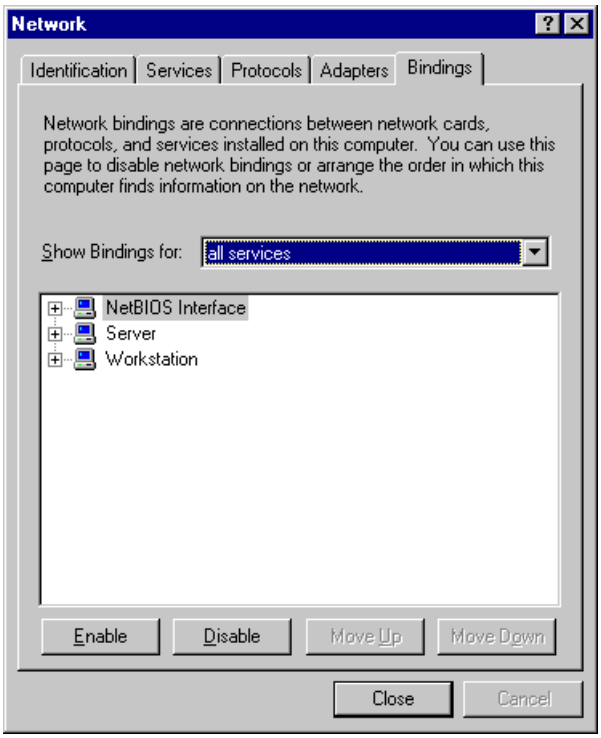
Interrupt, Fragmentation Threshold, RTS Threshold) for the proper system configuration setup and other parameters (Operating Mode, ESS ID, etc.) for the proper LAN Card configuration setup. For the information on LAN Card-related parameters, you can refer to the explanation on the previous section (3.4 SAMSUNG Wireless LAN Card Properties Setup). If you are not sure any of system configuration-related parameters, please refer to your network administrator. After you set all the parameters necessary, click on "**OK**" to proceed.



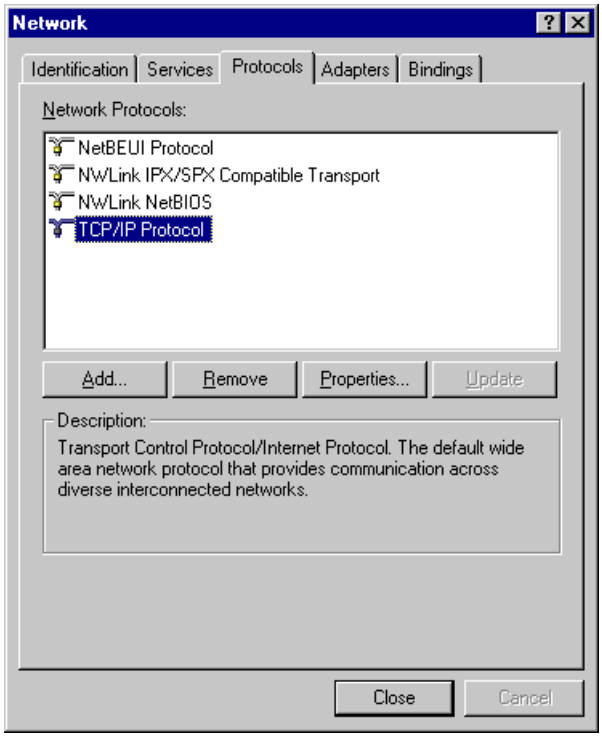
9. "**Network**" box with **Adapters** tab selected may appear as follows. Make sure "**SAMSUNG Wireless LAN Card**" is installed and currently selected.



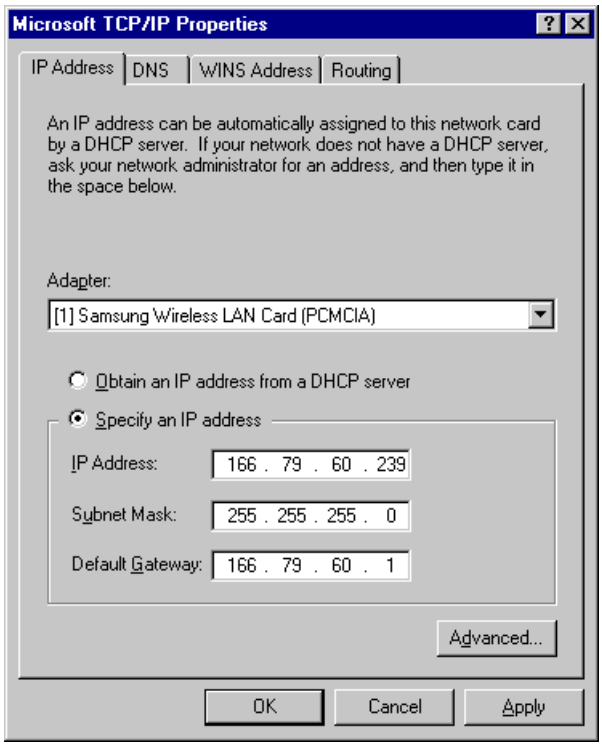
10. Go to **Binding** tab of the "**Network**" box. Make sure that all the necessary services are binded.



11. Go to **Protocols** tab in the "**Network**" box. If you have TCP/IP protocol already installed in your system, select "**TCP/IP Protocol**" and click on "**Properties**". If you do not have TCP/IP protocol installed yet, you will have to add it by clicking on "**Add**" button, selecting "**TCP/IP Protocol**", and clicking on "**OK**". Once you add it, click on "**Properties**".

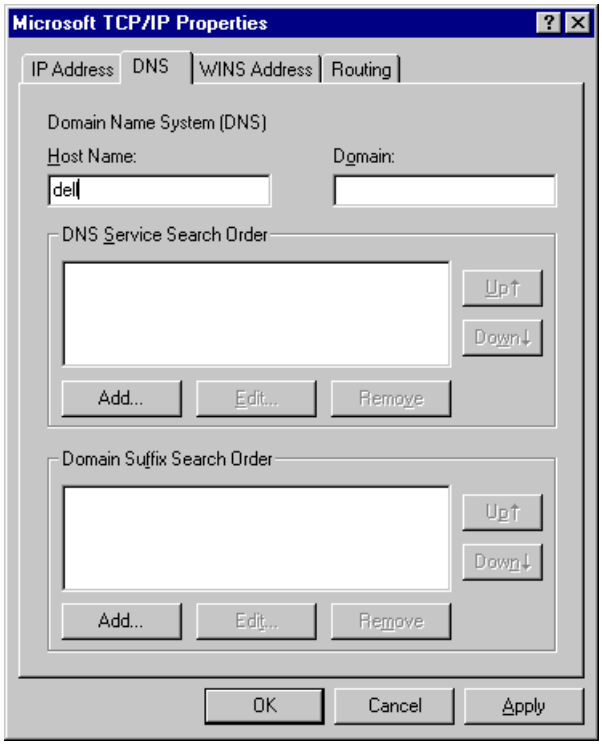


12. "**Microsoft TCP/IP Properties**" box with **IP Address** tab selected will appear as follows. Select "**SAMSUNG Wireless LAN Card**" in the Adapters section, and fill out the rest sections with proper information. About the parameters and meaning, you can refer to the explanation in the previous section. (3.5 Network Configuration Setup). If you are not sure about any of the required information in this section, please consult to your network administrator. Go to **DNS** tab.

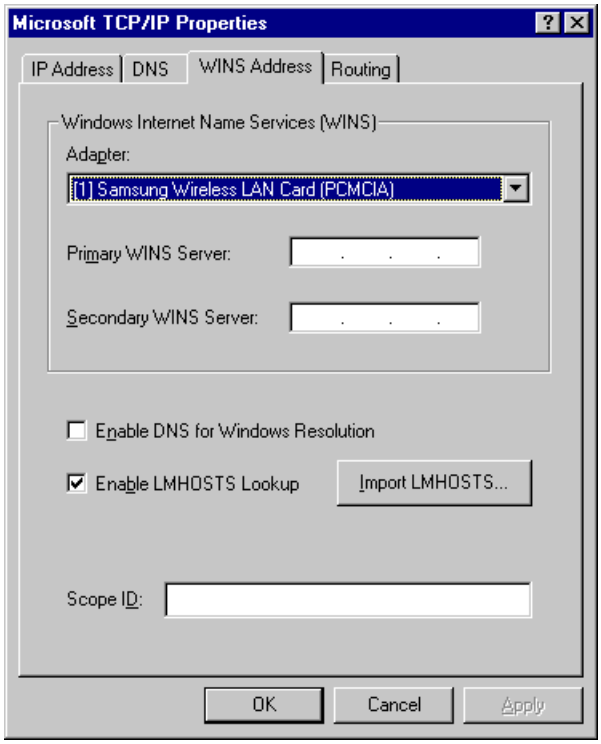


13. In "**Microsoft TCP/IP Properties**" box with **DNS** tab selected, enter the proper information for the blanks. About the parameters and meaning, you can refer to the explanation in the previous section. (3.5 Network Configuration Setup). If you are not sure about any of the required information in this section,

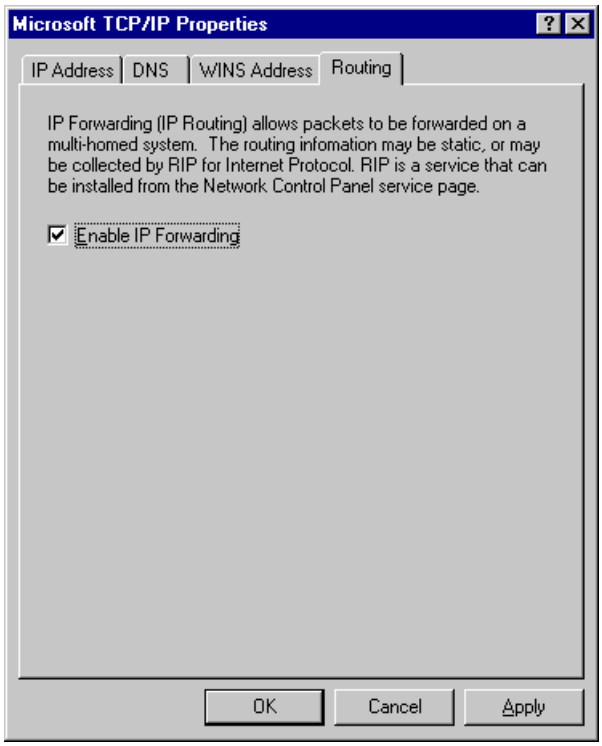
please consult to your network administrator. Go to **WINS Address** tab.



14. In "**Microsoft TCP/IP Properties**" box with **WINS Address** tab selected, select "**SAMSUNG Wireless LAN Card**" and fill the rest of the blanks with the proper information. About the parameters and meaning, you can refer to the explanation in the previous section. (3.5 Network Configuration Setup). If you are not sure about any of the required information in this section, please consult to your network administrator. Go to **Routing** tab.

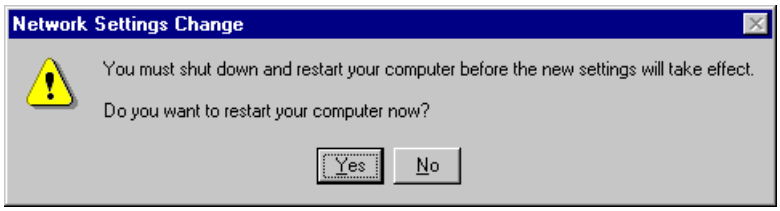


15. In "**Microsoft TCP/IP Properties**" box with **Routing** tab selected, make sure that "**Enable IP Forwarding**" is checked only if you want NT to play a role of router in your network. Click on "**OK**".



16. When TCP/IP properties are set, click on "**Close**". Then "**System Setting Change**" box will appear as follows. Click on "**Yes**" to restart your computer so that the whole installation procedures take

effects.


Network Settings Change
You must shut down and restart your computer before the new settings will take effect.
Do you want to restart your computer now?
Yes
No

5. Packet Driver Installation for MS-DOS

5.1 Copy the Packet Driver

1. Create a new directory where you want to store a Packet Driver software on your hard disk.
   Ex> c:\>md packet
   (From this point, directory “Packet” right under root directory will be used for packet driver software directory for clearer explanation.)
2. Insert the installation diskette in drive A.
3. Copy all files in 'a:\dos>' to the ‘c:\Packet>’ directory which you created in the step 1.
   Ex> a:\dos>copy *.* c:\packet

5.2 Setup AUTOEXEC.BAT

1. Change current directory to c:\
2. Open 'AUTOEXEC.BAT' with any text editor such as edit.exe
   Ex> c:\>edit autoexec.bat
3. Add the following line at the last line of ‘AUTOEXEC.BAT’ file.
   Ex> c:\packet\magicwav.exe
4. Save 'AUTOEXEC.BAT' and exit the editor program.

5.3 Setup MAGICWAV.CFG

1. Change current directory to “Packet” directory right under root(C:\) directory.
2. Open 'MAGICWAV.CFG' using a text editor such as edit.exe.
   Ex> edit MagicWave.cfg
3. The structure of the 'MAGICWAV.CFG' is as follows.
   a. Basic Parameters that should be set:
      ESSID: MAGICWAVE (default)
      NETWORKMODE: 1 (default)
      CHANNEL: 3 (default)
      INTEROP: 1 (default)
   b. Parameters for Users that the driver will ignore:
      (If you do not want to use PNP, set these parameters.)
      IRQ: 9 (default)
      IO: 240 (default)
      MEM: D800 (default)

4. To set a parameter value, type in parameter name and a value within the range as specified in Table A.
5. Save 'MAGICWAV.CFG' and exit editor program.
6. If you want to use TCP/IP protocol, you should load TCP/IP driver after loading packet driver. To do this, you must refer to the TCP/IP driver manual.

Table A. MagicLAN Packet Driver Parameter Values

Parameter	***Description***
ESSID	Alphanumeric string with a maximum of 10 ASCII characters that identifies the network to which you would like to connect your computer. Note that this string is NOT case-sensitive.
NETWORKMODE	MagicLAN can be used in 'Ad-Hoc' mode where Access Point (AP) is not required or in 'Infrastructure' mode where all communication will be made through an AP. Available values are as follows: 0 : Ad-Hoc mode 1 : Infrastructure mode
CHANNEL	This parameter is used as an operating channel. The domain and its available channel are shown in Table B.
INTEROP	Interoperability Flag. If this parameter set to '1', MAGICLAN can be used with other wireless LAN cards that based on IEEE 802.11 specification and support interoperability. Otherwise MAGICLAN can communicate only with MAGICLAN LAN card.
IRQ	Interrupt Request Number. If you use PnP (Plug and Play) bios, you can leave this parameter unspecified. Available values are as follows: PCI cards : 9, A, B, C
IO	This parameter is used as an I/O base port for MAGICLAN. If you use PnP (Plug and Play) bios, you can leave this parameter unspecified. Available values are as follows: 200, 240, 280, 2C0, 300, 340, 380
MEM	This parameter is used as a memory base address segment for MAGICLAN. If you use PnP (Plug and Play) bios, you can leave this parameter unspecified. Available values are as follows: C800, D000, D800

Table B. Number of operation channels

	Frequency	FCC	USA	Canada (ETSI)	Europe	Spain (MKK)	Japan
1	2412 MHz	O	O	O			
2	2417 MHz	O	O	O			
3	2422 MHz	O	O	O			
4	2427 MHz	O	O	O			
5	2432 MHz	O	O	O			
6	2437 MHz	O	O	O			
7	2442 MHz	O	O	O			
8	2447 MHz	O	O	O			
9	2452 MHz	O	O	O			
10	2457 MHz	O	O	O	O	O	
11	2462 MHz	O	O	O	O	O	
12	2467 MHz			O		O	
13	2472 MHz			O		O	
14	2484 MHz						O

For each supported country, all channels in Table B marked with 'O' shall be supported.

6. Access Point (AP) Installation

6.1 Before Access Point (AP) Installation

6.1.1 Access Point (AP)

SAMSUNG MagicLAN SWL-2000AP (Access Point) is equipped with an Ethernet Adapter supporting 10base-T, 10bast-2 LAN wire and MagicLAN wireless LAN Adapter Card.

6.1.2 What you need for the installation

SWL-2000AP (Access Point) and Power Adapter

SWL-2000N (PCMCIA Wireless LAN) Adapter Card

SWL-2000AP (Access Point) Utilities Diskette

Null Modem Cable - Optional

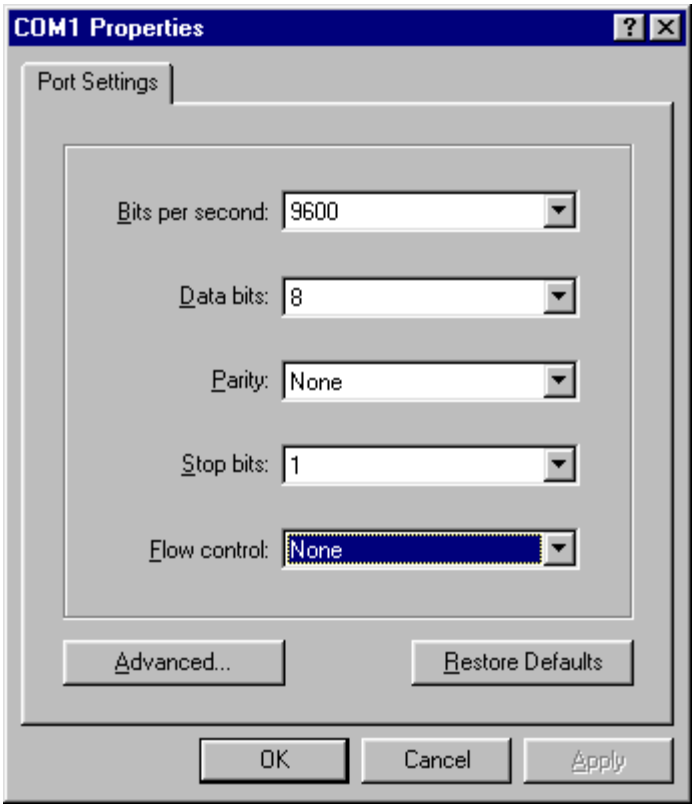
6.2 Access Point (AP) Installation

6.2.1 Access Point Setup using Null Modem Cable

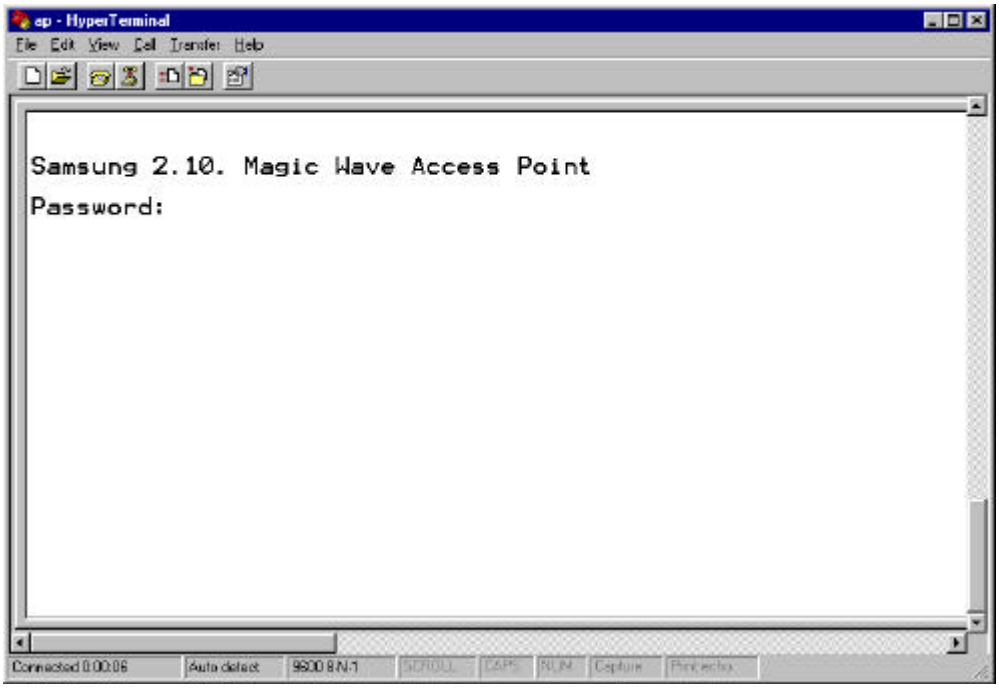
1. Link the PC serial port and the AP serial port with Null Modem Cable.
2. Insert 10base-T or 10bast-2 LAN line to the proper slot in the back of the AP.
3. Insert the SWL-2000N into the PCMCIA slot of in the back of the AP.
4. Turn on the power of the AP
5. All the LEDs will turn on and off. If the alert LED remains on, it indicates an error condition.
6. Press down "**Start**" on the task bar, go to "**Programs**", go to "**Accessories**", go to "**Communications**" and click on "**Hyper Terminal**" there.
7. If there is no "Hyper Terminal", you should add Hyper Terminal program by following the next steps. Press down "**Start**" on the task bar, go to "**Settings**" and click on "**Control Panel**". In "Control Panel" box, double click on "**Add/Remove Programs**", go to **Windows Setup** tab, double click on "**Communications**", check the "**Hyper Terminal**" and click on "**OK**". This will install Hyper Terminal on your system, and now you can follow the next step.
8. Run Hyper Terminal by double clicking on Hyper Terminal icon.
9. Enter any name for the connection in the blank and select an icon for it in the following box. Click on "**OK**".

10. "**Connect To**" box will appear as follows. Select "**Direct to Com1**" for "**Connect using**" blank. Click on "**OK**". (If error occurs, check if other communication device such as modem is using the same port. If so, remove the port from that device and follow the step again.)

11. "**Com1 Properties**" box will appear as follows. Set the property value as follows:
Bits per second = 9600, Data bits = 8, Parity = None, Stop bits = 1 and Flow control = None.
Click on "**OK**".



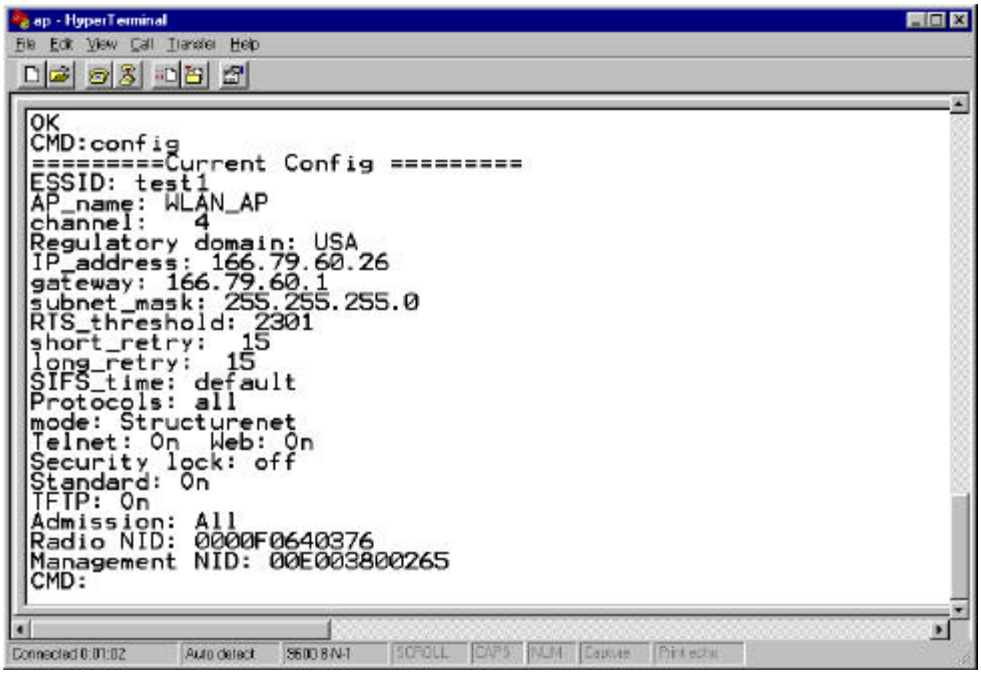
12. "**Hyper Terminal**" box will appear to show your the connection to AP as follows. When you are prompted to enter a Password, type in "**default**" which is a preset default password.



6.2.2 Access Point Setup without Null Modem Cable (Cold Start Mode)

1. Insert 10base-T or 10bast-2 LAN line to the proper slot in the back of the AP.
2. Insert the SWL-2000N into the PCMCIA slot of in the back of the AP.
3. Turn on the power of the AP **WHILE you are holding down the button** in front of the AP.
4. All the LEDs will turn on and off. When all the LEDs are off, release the button, and you will see all the LEDs blinking in a chasing pattern from left to right.
5. Now, from your wired PC (not wireless), go to "**start**" in your task bar, go to "**run**", and type in "**ping –t xxx.xxx.xxx.xxx**" to send ping message to your AP. (Here, xxx.xxx.xxx.xxx represents an IP address you want to assign to your AP)
6. When your AP responds to this ping request, the blinking of your AP will stop.
7. Turn off the power of your AP and turn it back on with no button pressed down this time.
8. From your PC, telnet to your AP using its IP address and proceed to the configuration setup.
9. When you are prompted to enter a Password in telnet mode, type in "**default**" which is a preset default password.

6.3 Configuration Setup



1. To get help about commands, just type in "**help**" at CMD prompt.
2. In order to identify the CONFIGURATION, you type in "**config**" at CMD prompt and press the ENTER key.
3. Set parameters for the environment using the "**set**" command at CMD prompt as follows:
   CMD: set ESSID MagicLAN (Group Name)

CMD: set AP_name WLAN_AP (Access Point Name)

CMD: set channel 1 (RF channel)

CMD: set IP_address 123.45.67.8 (origin IP of the AP)

CMD: set gateway 123.45.67.1

CMD: set mode structurenet

CMD: set Telnet on/off (for telnet connection)

CMD: set Web on/off (for http connection)

CMD: set standard on (for interoperability)

4. After you set all the parameters for your system, execute "**restart**" command to make the changes take effects.
5. Now your AP is ready to be used.

6.4 Parameter Setup

• RADIO RELATED

channel: This field specifies the operating channel for the SWL-2000AP. The SWL-2000AP allows from 1 to 13 but the channels used by adjacent AP should be apart by more than 5 channels. For example, if an AP uses channel 1, the adjacent AP should use channel 6 or higher for the best output.

Default: 1

RTS_threshold: This field determines the size of RTS(Request-To-Send)/CTS(Clear-To-Send) frames and the frames to be used.

Default: 2301

short_retry: This field specifies the number of transmissions of RTS/CTS to be attempted before aborting when the communication between clients is interfered. Note that RTS/CTS are delivered back and forth between the clients to monitor the channel for the possibility of communications.

Default: 15

long_retry: This field specifies the number of trials of data transmission when the channel or a client causes the cease of data transmissions.

Default: 15

Standard: This field is used for interoperability between multiple IEEE 802.11 venders.

Default: on

• ACCESS POINT FEATURES

essid: This field is used to name a wireless LAN group when in StructureNet mode. If the roaming is to be supported, the value of ESS_ID of all the APs should be the same.

Default: wlan

ap_name: This field is a string up to 9 letters and is used to give SWL-2000AP an identifier name. This is useful if you have multiple APs on a network for roaming. In that case the essid for all APs should be same but ap_name for each AP should be different.

Default: LocalAP

mode: This field specifies the operating mode of the unit. Insert the "Instawave" for <Peer-to-Peer> and the "StructureNet" for <StrectureNet>.

Default: StructureNet

protocol: The normal mode of an AP is to pass all protocols. In this case the value of default protocol should be "all". If your wireless station uses TCP/IP protocol only, you can set the value of protocols to "TCP/IP". In this case, non TCP/IP messages are not passed by the AP.

Default: All

• TCP/IP PARAMETERS

IP_address: This field is used to assign a TCP/IP address to the AP and needed when a user manages the AP by TELNET or uses web manager utilities. A user can access management utilities for the AP by putting in the assigned IP address on TELNET or WEB BROWSER.

Default: 0.0.0.0 (No IP address assigned)

subnet_mask: This field is used to define the TCP/IP sub-net mask. This field should be set if you plan to use the built in management features of the AP.

Default: 255.255.255.0

gateway: This field is needed to connect to an external network using the TCP/IP protocol. SWL-2000AP stores all the IP addresses received from TCP/IP ARP (Address Resolution Protocol) message. If the destination is an IP address instead of a local network, the packets are sent to a gateway.

Default: 0.0.0.0 (no gateway)

• MANAGEMENT FUNCTIONS

password: This field allows the manager to define the password used by the Command Line Manager before they can enter commands.

Default: "default"

telnet: This field enables or dPCIbles the built TELNET management capability. This field will not affect a terminal attached via the serial port, which is always enabled when a terminal is attached. You can select either "on" or "off" to enable or dPCIble it.

Default: on

web: This field enables or dPCIbles the built in web management utility. You can select either “on” or “off” to enable or dPCIble it.

Default: “on”

6.5 Null Modem Cable Configuration

9 pin female connector		**9 pin female connector**	
pin 5	<==========>	***pin 5***	< Ground - Ground >
pin 3	<==========>	***pin 2***	< Transmit - Receive >
pin 7	<==========>	***pin 8***	< RTS - CTS >
pin 6	<==========>	***pin 4***	< DSR - DTR >
pin 2	<==========>	***pin 3***	< Receive - Transmit >
pin 8	<==========>	***pin 7***	< CTS - RTS >
pin 4	<==========>	***pin 6***	< DTR - DSR >

6.6 Diagnostic Methods

1. When the “power” LED of the Access Point does not illuminate, make sure that the power cord is fully seated in the socket on the rear panel of the unit.
2. When the “alert” LED continuously illuminates or blinks, check the states of the radio card (SWL -1000N) installed in the Access Point. Unplug and re-plug POWER (OFF/ON again).
3. If the “alert” LED continuously illuminates or blinks, please contact your local service center or the retailer where you purchased the units.

7. Management Utilities (Web & Telnet)

7.1 About Management Utilities

SAMSUNG MagicLAN has three ways of managing the configuration setup for SWL-2000AP: through Hyper Terminal, Web and Telnet service. Using one of those three, you can change the initial setup for AP that you were supposed to do at the previous chapter. (6. Access Point Installation)

7.2 Hyper Terminal Management Utility

You can use Hyper Terminal to manage the AP configuration setting by doing the same step as explained at the previous chapter. (6. Access Point Installation)
Remember that you will need a null modem cable to use Hyper Terminal.

7.3 Web Management Utility

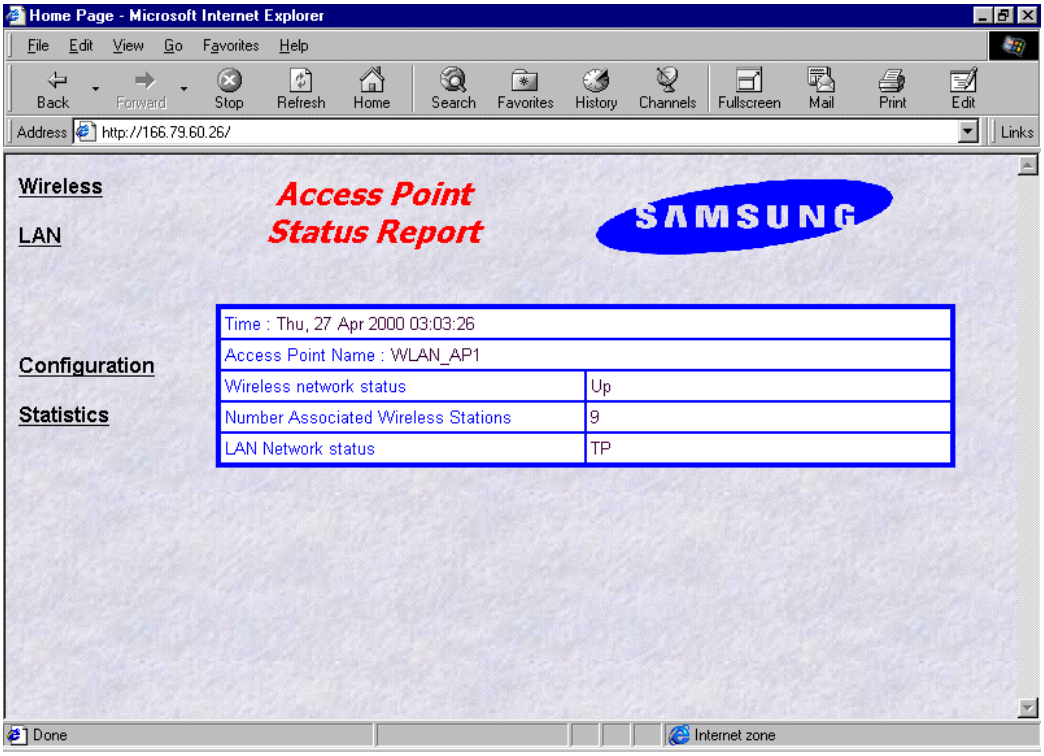
7.3.1 Web Management Utility Overview

In order to view the web management page, start your web browser and simply enter the IP address of your Access Point in the “address” or “URL” field. On most browsers, the screen will refresh with the latest information every 10 seconds. With IE4.0 you can stop the auto refresh by clicking on the “Stop” button of the browser. The followings are some of the Web Management Utility pages.

- Status Report
- Statistics
- Configuration Settings
- Bridge Table Report

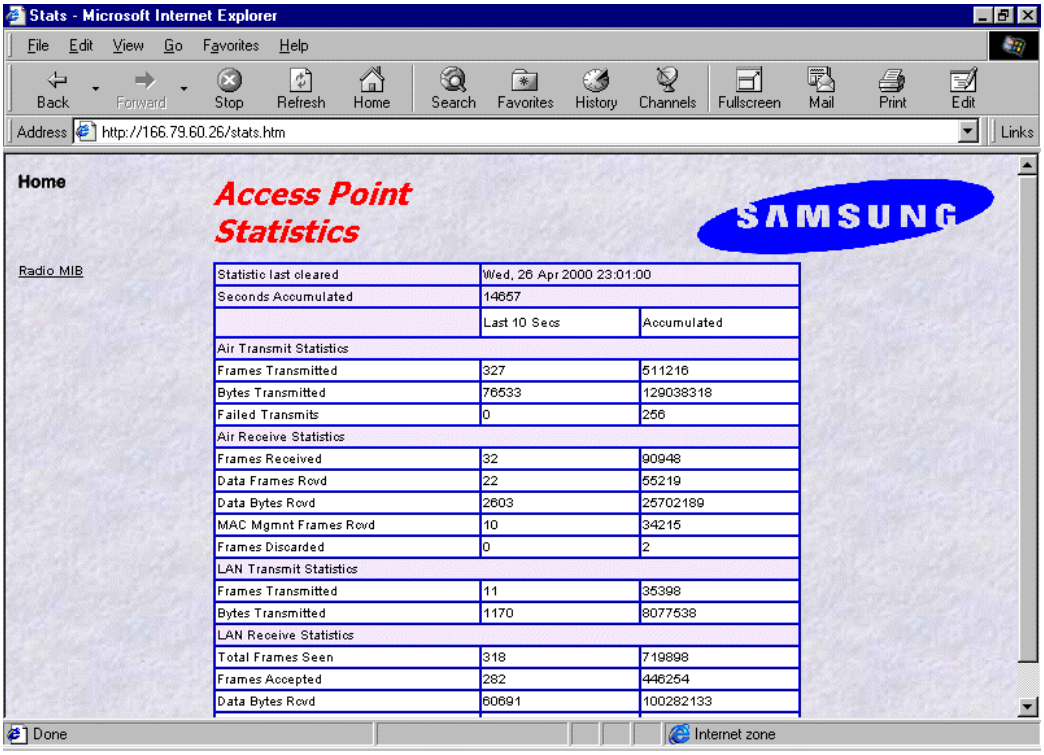
7.3.2 AP Status Report (http://xxx.xxx.xxx.xxx)

This page provides the basic information on wireless network setup including AP.



- **Time:** The current time as set in the SWL-2000AP
- **Access Point Name:** The “AP_name” parameter of the SWL-2000AP.
- **Wireless Network Status:** If the AP is operating normally the field will show “Up”. If there is any problem with the AP, or no AP installed, the field will show “Down”.
- **Number Associated Wireless Stations:** This shows how many wireless clients are currently connected to the AP.
- **LAN Network status:** This field will show “TP” when the Twisted Pair (10baseT) connection is operating. Otherwise it will show “Coax”.

7.3.3 AP Statistics (http://xxx.xxx.xxx.xxx/stats.htm)

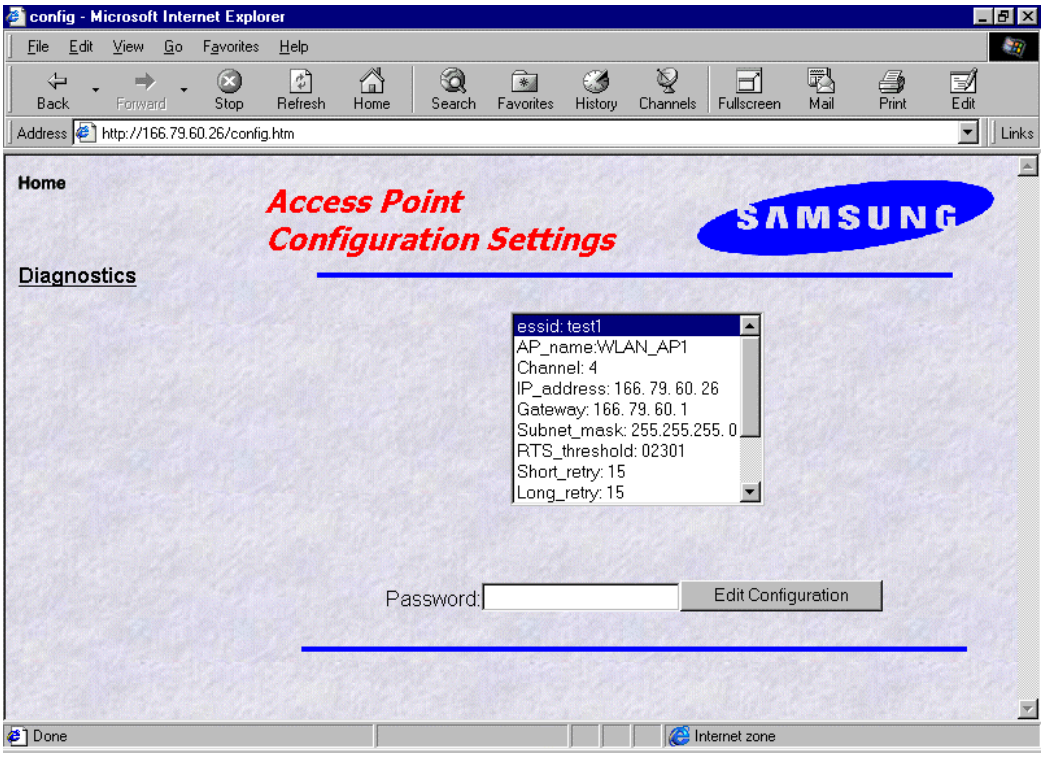


Statistic last cleared	Wed, 26 Apr 2000 23:01:00	
Seconds Accumulated	14657	
	Last 10 Secs	Accumulated
Air Transmit Statistics		
Frames Transmitted	327	511216
Bytes Transmitted	76533	129038318
Failed Transmits	0	256
Air Receive Statistics		
Frames Received	32	90948
Data Frames Rcvd	22	55219
Data Bytes Rcvd	2603	25702189
MAC Mgmnt Frames Rcvd	10	34215
Frames Discarded	0	2
LAN Transmit Statistics		
Frames Transmitted	11	35398
Bytes Transmitted	1170	8077538
LAN Receive Statistics		
Total Frames Seen	318	719898
Frames Accepted	282	446254
Data Bytes Rcvd	60691	100282133

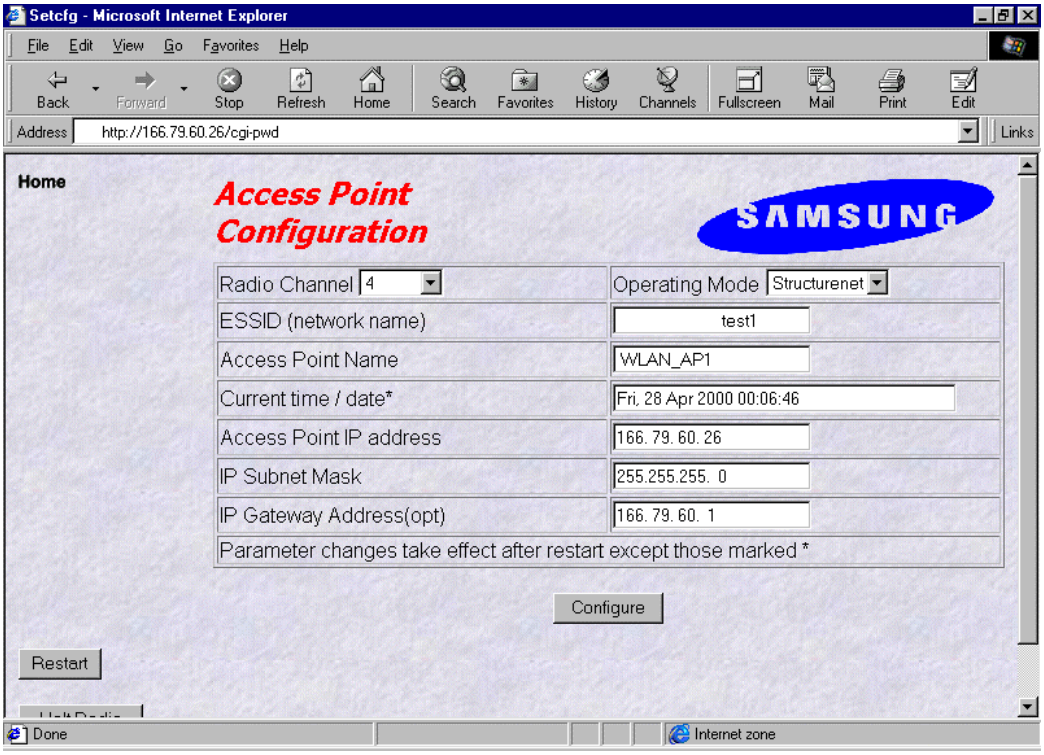
This page provides statistical information on the AP and radio functions. It shows accumulated traffic information. There are two columns shown in the table: “last 10 seconds” and “accumulated”. Columns under “last 10 seconds” will represent the data during the last 10 seconds, and columns under “accumulated” will represent the accumulated data till then. The whole screen will be automatically updated every 10 seconds.

Field Name	*Description*
Air Transmit Statistics	
Frames Transmitted	The count of frames transmitted on the wireless medium. This does not count retry frames - if a frame is sent twice.
Bytes Transmitted	The number of bytes contained in the frames that have been transmitted.
Failed Transmits	The number of frames which could not be transmitted.
Air Receive Statistics	
Frames Received	The number of frames of all types received by the Access Point from the radio.
Data Frames Received	The number of frames received from the radio which are data frames (as opposed to management frames etc).
Data Bytes Received	The number of bytes contained in the data frames received.
MAC Management Frames Received	The number of frames received such as IEEE802.11 beacons or association requests.
Frames Discarded	The count of frames which were discarded, because of duplicate rejection or because of buffer overflow.
LAN Transmit Statistics	
Frames Transmitted	The number of frames transmitted from the Access Point to the Ethernet LAN.
Bytes Transmitted	The number of bytes in the frames transmitted.
LAN Receive Statistics	
Total Frame Seen	The number of frames seen on the LAN
Frames Accepted	The number of frames accepted by the Access Point.
Data Bytes Received	The count of bytes contained in frames accepted by the AP.
Frames Discarded	Frames which were discarded because of problems such as bad CRC or buffer overflow.

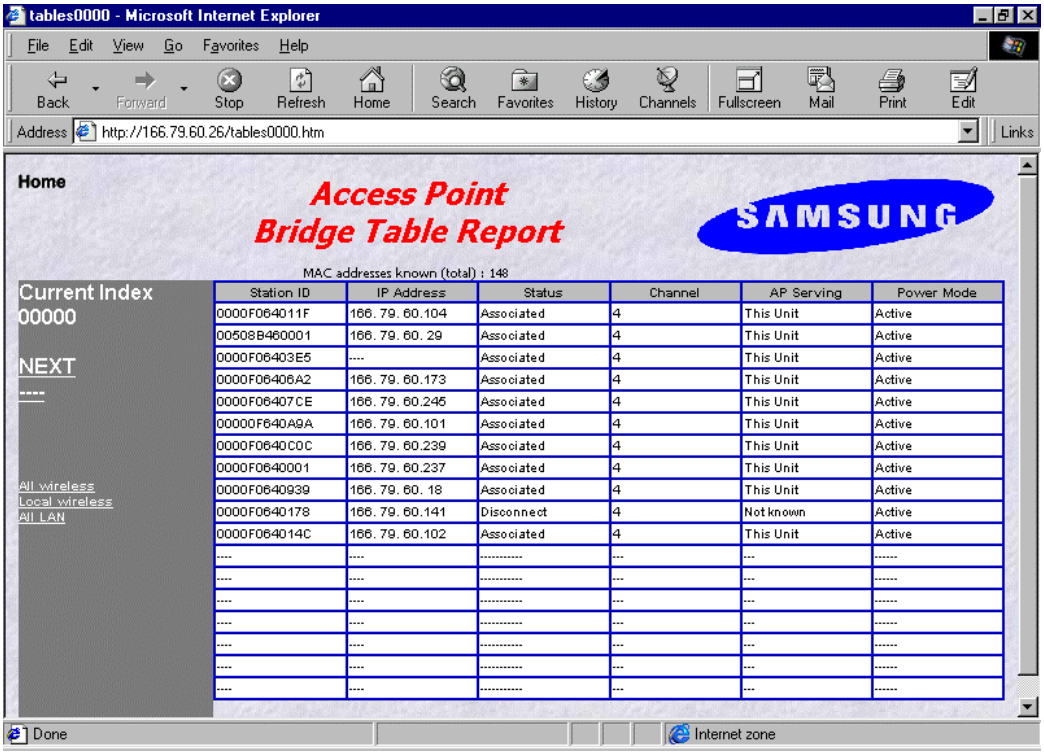
7.3.4 AP Configuration Settings (http://xxx.xxx.xxx.xxx/config.htm)



This page displays the current configuration and allows the access to the page where you can change the configuration setup. If you want to change the configuration setup, enter the password and click on the “Edit Configuration” button, and it will lead you to configuration setup change page like the below. The initial password is preset to “**default**”.



7.3.5 Access Point Bridge Table Report (http://166.79.60.26/tables0000.htm)



This station screen allows the manager to see which wireless stations are currently active on the Access Point (Wireless) and Wired LAN (LAN). The screen shows up to 18 stations at a time.

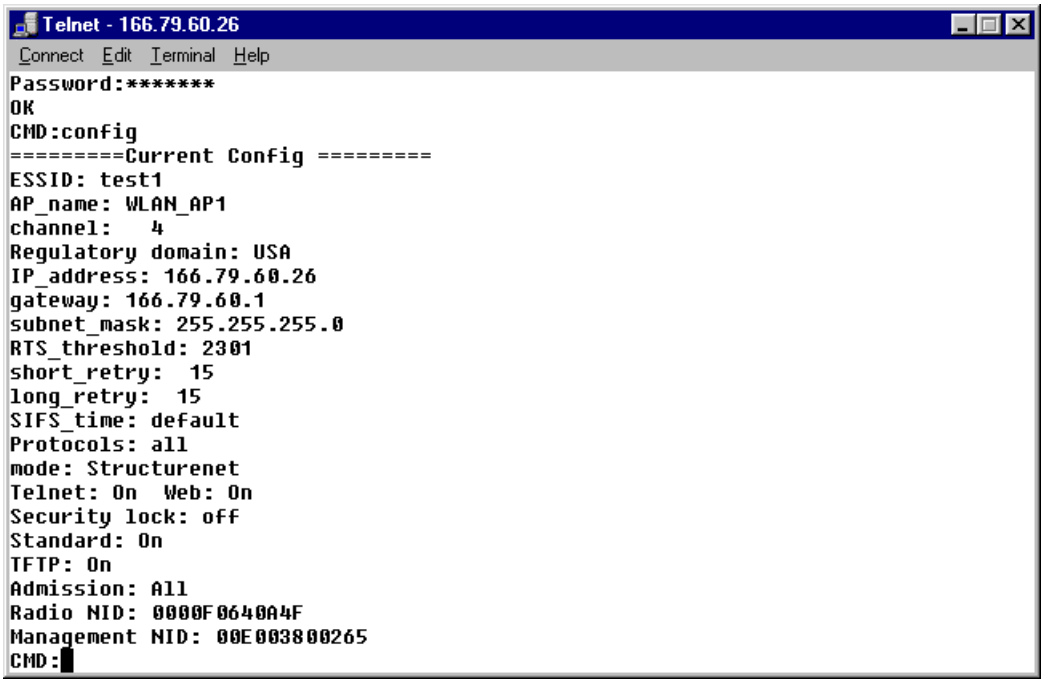
So the "**NEXT**" hyperlink will lead you to view the next 18 stations in the list and "**PREV**" hyperlink will lead you to go back to the previous list.

Field Name	***Description***
Station ID	This is the NID (Network ID) or the name of the station if set. The name is obtained from the NID name table.
IP Address	The IP address of the station (if known)
Status	"Associated" means that the station is associated with this Access Point.
	"Disconnected" means that the station is not associated with this AP could however, be associated with another AP.
	"Detected" means that frames from the station have been seen but, that it has not been associated.
	"Bridged" entries are wired stations that are reached through a different Access Point than the current displayed one.
	"Is Bridging" is Access Points detected over the air. These other Access Points provide for wireless bridging between two separate LAN segments.
	"Local AP" means that it is another AP on the same LAN. This entry will be seen where roaming is implemented.
Channel	The radio channel of the station.
AP Serving	If the station is associated the words "This Unit" will appear. Otherwise the NID or name of the Access Point to which the station is associated will be shown.
Power Mode	If the station supports "Power Save Poll" mode of IEEE802.11, this field will indicate that power saving is active with the word "On".

7.4 TELNET Management Utility

7.4.1 Telnet Management Utility Overview

In order to browse Telnet management setup, type the command "**telnet xxx.xxx.xxx.xxx**" in DOS windows and the TELNET screen will appear as follows. Here, "xxx.xxx.xxx.xxx" represents the IP address of your destination AP. When you are prompted to type in the password, enter "**default**" which is preset as a default password.



7.4.2 Various Commands and Usage

7.4.2.1 Usage of the command line

The user can enter commands in the following form:

Command parameter1 parameter2

7.4.2.2 All possible Commands

show	arp	config	stats
set	nid	bridge	restart
time	settime	setdate	ping
logout	ver	log	help
trace	traceon	traceoff	tracelp
traceclr	broadcast	dPCIble	

7.4.2.3 Explanation on various Commands

- help: Displays list of all the commands.
  Usage: help [command]
- show: Displays the number of attached clients in both wireless and wired LAN.
  Similar to the “Bridge Table Report” screen of the Web Management Utility.
  a. Usage: show [A | G | S]
  - A: List of all known clients attached via wireless LAN.
  - G: List of all known clients attached via wired LAN.
  - S: List of all wireless stations.
  b. The result of the command is list providing the following information.
  - Net ID: IEEE network address of the client.
  - State: Current relationship of client with AP
  (Associated, Disconnected, Detected, is bridging, bridged, Local AP, Unknown).
  - Channel: Radio channel.
  - Power: Whether the power of the client is on or off. (On, Off)
  - Current AP: The Access Point with which the unit is associated.
  - IP address: IP address of the client.
- time: Displays the current date and time and those of last restarted time.
- settime: Sets the system time.
  Usage: “settime HH(hours):MM(minutes):SS(seconds)”
- setdate: Sets the system date.
  Usage: “setdate MM(month):DD(date):YY(year)”
- config: Displays the current system settings for configuration. Note that if a configuration change has been made which requires a system restart to take effect, both the old and the new values will be shown.
- stats: Displays traffic statistics. Statistics are displayed for the last 10 second interval. To view the cumulative total, use the command line of “stats c”.
- logout: After this command has been issued the user must re-enter the password before any more commands can be issued.
- ver: Displays version information about the Access Point software.
- restart: Reinitializes the SWL-2000AP.
- ping: Issues an ICMP Echo request (PING) to the specified IP address.
  Usage: “ping xxx.xxx.xxx.xxx [yy]”
  (Here, “xxx.xxx.xxx.xxx” is the destination IP address and yy option will make this ping command executed indefinitely.)
- nid: nid is the unique number of wireless LAN card, which is also called “MAC Address”.
  Usage: “nid [add | delete] 123456789abc NAME” / “nid list”

(Here, “123456789abc” is the new NID value and “NAME” is a text string up to 9 characters with no space in between.)

- trace: Displays the contents of the trace buffer. This command does NOT clear the trace buffer so that issuing the command twice will produce the same result.
- traceclr: Clears the entries which have been read by the trace command.
- tracelp: Displays a continuously updated log to the screen. To exit, press <Ctrl+C>.

  Usage: “tracelp” : Updates the display every 5 seconds.

  “tracelp Q” : Updates the display every second.

  “tracelp S” : Updates the display every minute.
- traceon: Activates tracing for certain events. (Refer to “traceoff”)
- traceoff: Deactivates tracing for certain events.

  Usage: “traceoff <specifier> <specifier>”

  Here, specifier is of the following strings:

  - “br+” : Traces new entries in the bridge table.
  - “br-” : Traces bridge table entries which age out.
  - “IP+” : Traces new TCP/IP address.
  - “sys” : Traces authenticate, associate, WIN/LOSE negotiations (roaming).
  - “all” : Turns off or on tracing of all events.

  Default specifier Combinations are like the following:

  - “traceon sys”
  - “traceoff br+ br- IP+”

8. Miscellaneous Features

8.1 Connection Check

8.1.1 When successfully connected to Network through AP

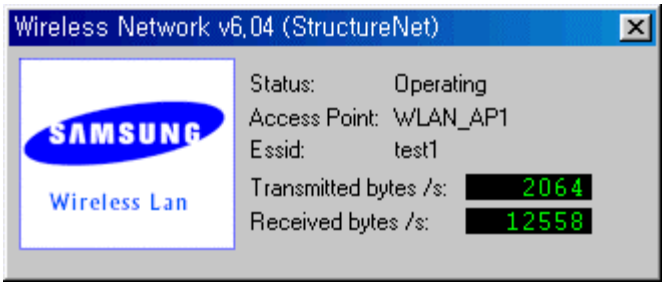
On task bar at the bottom of window, you will see a monitor-like SWL-2000P icon, which is colored blue. The icon looks like the following. (The rightmost one)

8.1.2 When failed to connect to Network through AP

On task bar at the bottom of window, you will see a monitor-like SWL-2000P icon with "**red X**" through it. The icon looks like the following. (The rightmost one)

8.2 Performance & AP Information Check

After you make sure if the connection is successfully made, double click on the icon and the following box will appear to display the AP's current performance regarding transmitting and receiving and some basic AP information including ESS ID, AP name, and its status. This is also used to check which AP the client is currently using when the auto join option is selected.



8.3 Brief Troubleshooting

If you encounter some problems while installation, please try one or more of the followings.

- Check the driver configuration if the driver you are using is the correct one for your networking environment.
- Reboot with the Adapter inserted.
- Completely remove and reinstall the Adapter and driver.
- A common problem is a driver/firmware version mismatch. If the driver fails to find the card, this is often the case. Inform this to your retailer and try to install with different combination of driver and firmware.
- Check the resources used by the card to make sure no resource is being used by another device in your system.

(To see your resources setup, right click on My Computer icon, click on Properties, go to Device Manager tab, and click on Properties. The windows will display I/O Address, IRQ, DMA Channel and Memory ranges occupied on your system.)

8.4 Specifications

8.4.1 Physical Specifications

	SWL-2000P
PC Interface	PCI
Dimensions(L*W*H)	180*110*10mm
Weight	145g
Temperature:	
- Operating	0 to 50 ºC (maximum humidity 95%)
- Storage	-10 to 60 ºC
Power Characteristics:	
- Receive Mode	320mA
- Transmit Mode	710mA
- Power Supply	5V

8.4.2 Radio Characteristics

Frequency	2412 to 2462 MHz
Modulation Method	Direct Sequence Spread Spectrum - QPSK
Tx/Rx Switching Speed	2µs
Output Power	+14dBm EIRP
Operating Range:	
- Open Space	Max. 400m(1330ft)
- Semi Open Space	Max. 80m(260ft)
- Closed Space	Max. 35m(110ft)

8.4.3 Network Characteristics

Compatibility	IEEE 802.11 Standard for Wireless LAN
Media Access Protocol	CSMA/CA
Supported OS	MS-DOS, MS Windows95/98, Window NT 3.51 and 4.0