SAMSUNG ELECTRO-MECHANICS

SAMSUNG

MagicLAN

SWL-2300U

User Manual (Rev. 2.0)

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Notice 1

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SAMSUNG Electro-Mechanics Co., Ltd. reserves the right to change this manual and the specifications to improve products without prior notice. So you can get the most recent software and user documentation for all MagicLAN products on our web site.

The users manual or instruction manual for an intentional or unintentional radiator shall caution the user that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

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http://www.MagicLAN.com

Service Dept.
Tel : +82-31-218-2416,8,9,20 Fax : +82-31-218-2431
Sales Dept.
<**America**>
Tel : +82-31-218-2407,9,11 Fax : +82-31-210-5996
<Europe>
Tel : +82-31-218-2409 Fax : +82-31-210-5996

<Asia>
Tel : +82-31-210-5603 Fax : +82-31-218-2414
Japan
Tel : +82-31-210-5706 Fax : +82-31-210-5996
China
Tel : +82-31-210-5703 Fax : +82-31-210-5996

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Notice 2

WARNING

While installing and operating this transmitter and antenna combination the radio frequency exposure limit of 1mW/cm^2 may be exceeded at distances close to the antennas installed. Therefore, the user must maintain a minimum distance of 20 cm from the antenna.

Important Safety Information

- Read these simple guidelines. Breaking the rules may be dangerous or illegal. SAMSUNG will not be responsible for any damages caused by breaking the rules.
- WLAN 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 laptop computer stationary. Roaming between access points (APs) 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 WLAN Card manufacturer for use with this particular W LAN Card. The use of any other types will invalidate any approval or warranty applying to the WLAN Card, and may be dangerous.
- Use only the region settings appropriate for the area where the WLAN 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 WLAN Card, may cause interference with the functionality of inadequately protected medical devices.
- Do not use the WLAN Card on aircraft.
- Do not use the WLAN Card at a refueling point.
- Do not use the WLAN Card near inflammable materials or chemicals.
- Do not use the WLAN Card where blasting is in progress.
- Do not use the WLAN Card when the use of wireless device may cause interference or danger.
- Do not use the WLAN Card where the use of cellular terminals is prohibited.
- Microwave oven degrades the performance of wireless LAN drastically. So do not use the WLAN card in the environment where Microwave oven is being used.

SAMSUNG ELECTRO-MECHANICS

11Mbps High Rate 802.11b WLAN USB Adapter

■ Specifications

Model Name	SWL-2300U
System Interface	USB Spec 1.1 Compliant
Frequency Band	2.400 ~ 2.4835GHz(Subject to local regulations)
Operating Voltage	5V±5% from Host PC
Current Consumption	Receive : 250mA (Typical), Transmit : 350mA (Typical) Power Save: 10mA (Typical)
Data Rate	1, 2, 5.5 or 11Mbps
Spreading	DSSS(Direct Sequence Spread Spectrum)
Output Power	40mW(16dBm) for 22MHz Bandwidth, 7mW/MHz
Receive Sensitivity	-84dBm(Typical) at 11Mbps
Security	40-bit/104(128)-bit WEP Encryption
Antenna	2 Printed on PCB Antennas (supporting Rx Diversity)
Available Drivers	Microsoft Windows 98SE/ME/2000/XP/XPSP1
Standards	IEEE 802.11b
Media Access Protocol	CSMA / CA (Carrier Sense Multiple Access with Collision Avoidance)
Temperature Range	Operating : 0~45□(32~113□), Storage : -25~70□(-13□~158□)
Humidity	10% to 90% Non-condensing
Operating Range (1024 bytes file transfer)	Open Space : 150m(500ft) at 11Mbps, 200m(660ft) at 2Mbps Office: 30m(100ft) at 11Mbps, 50m(160ft) at 2Mbps *Range differs by environment
Dimensions	114mm×52mm×15mm & 1.2M Cable with USB A-type Connector
Weight	40g(Except 1.2m Cable)
Certifications & Regulatory Approvals	Wi-Fi certified, USA(FCC), Canada(IC) R&TTE Approval(CE) and 15 EU & 4 EFTA Countries Notifications completed, Korea will be planned

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**** Table: The Operating Channels

Channel#	Frequency	FCC	Canada	ETSI	France	Spain	Japan
1	2412MHz	○	○	○		○	○
2	2417MHz	○	○	○		○	○
3	2422MHz	○	○	○		○	○
4	2427MHz	○	○	○		○	○
5	2432MHz	○	○	○		○	○
6	2437MHz	○	○	○		○	○
7	2442MHz	○	○	○		○	○
8	2447MHz	○	○	○		○	○
9	2452MHz	○	○	○		○	○
10	2457MHz	○	○	○	○	○	○
11	2462MHz	○	○	○	○	○	○
12	2467MHz	○		○	○	○	○
13	2472MHz	○		○	○	○	○
14	2484MHz						○

1. MagicLAN Installation

1.1 Introduction

Thank you for your purchase of SAMSUNG MagicLAN. Installing this cards allow the computer to join a wireless network based on the IEEE 802.11b (High Data Rate) WLAN standard. You will be surprised how easy for you are a part of the 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 (AP), 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

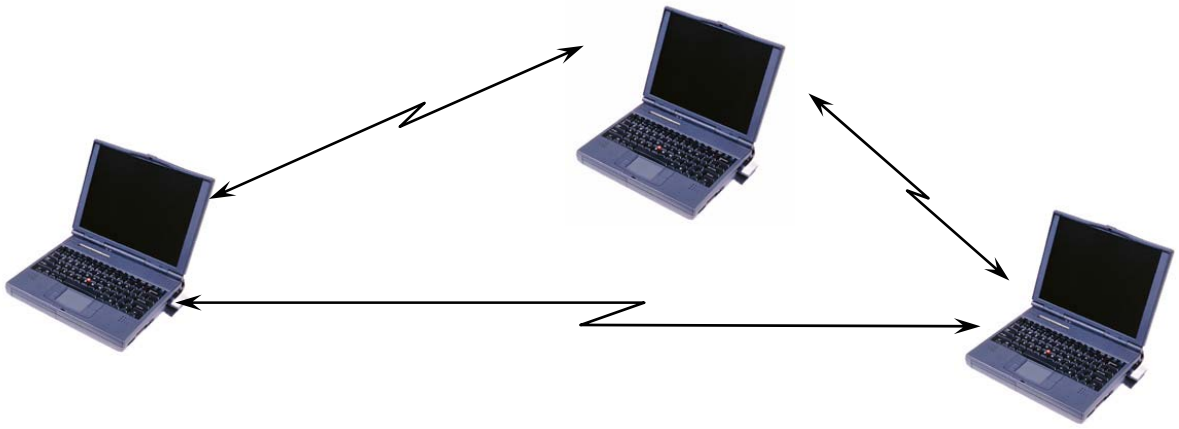
At the PHY layer, IEEE 802.11 defines three physical characteristics for WLAN: diffused infrared, direct sequence spread spectrum (DSSS), and frequency hopping spread spectrum (FHSS). While the infrared PHY operates at the baseband, the other two PHYs operate at the 2.4GHz ISM (Industrial, Scientific, and Medical) band, which can be used for operating wireless LAN devices without the need of end-user licenses. In order for wireless devices to be interoperable, they have to be conforming to the same PHY standard.

• IEEE 802.11 Media Access Control (MAC) Layer

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

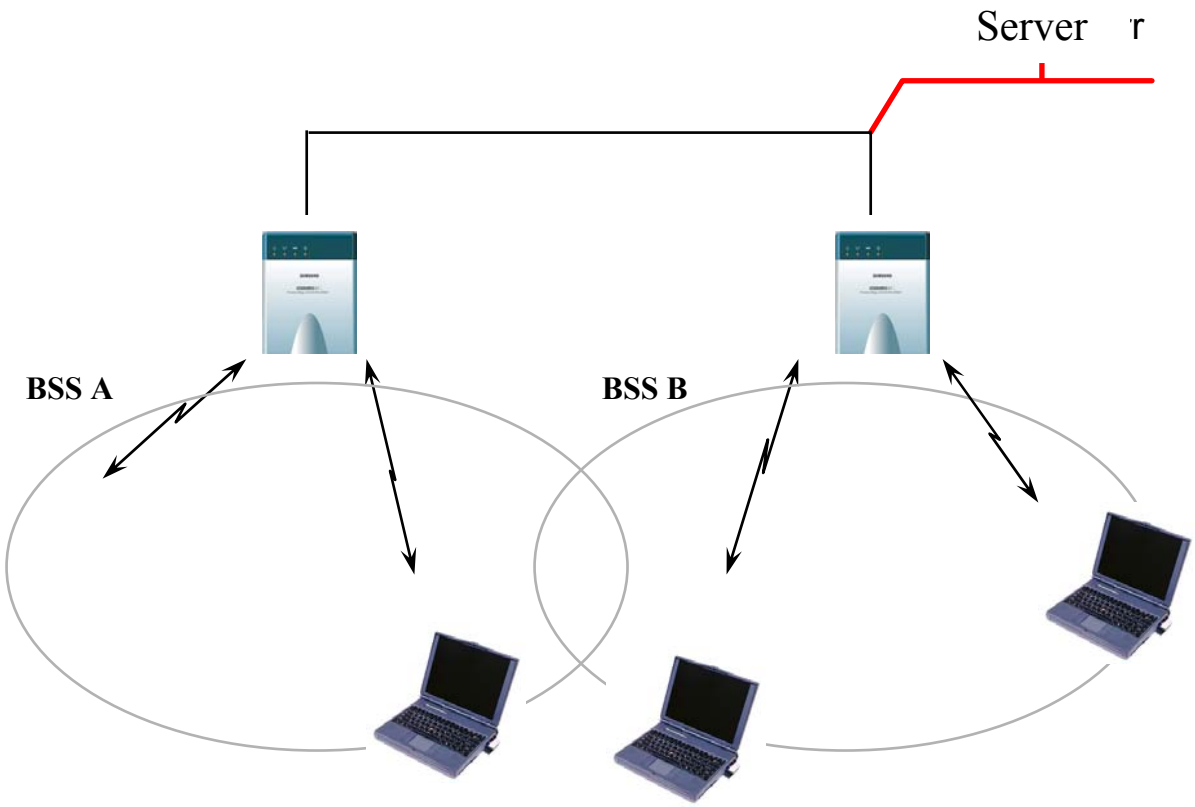
• Ad-hoc Network

Ad-hoc Network is an architecture that supports mutual communication among wireless clients only. Since Ad-hoc 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 by installing the supplied network driver.



• **Infrastructure Network**

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



• **Roaming**

Roaming is a service that allows wireless clients to use the network in motion by automatically changing the connection from an old Access Point to a new Access Point when the clients enter in a new cell. During roaming the clients may observe the loose

connection or delay in accessing the resources of the network.

• **Scanning, Beaconing & ESS ID**

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

There may be multiple APs and networks 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 the power on, wireless clients will listen on its default frequency channel. It will be listening for *beacons* sent by another wireless station or AP. 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 and 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.

In case of direct sequence spread spectrum (DSSS) physical layer, this scanning process occurs at start up and may also occur when the client roams between APs.

1.3 MagicLAN Overview

• The MagicLAN SWL-2300U(USB Adapter) are wireless LAN adapter that provide wireless connection between computers.

• 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 probability) possible.

• The MagicLAN supports DSSS (Direct Sequence Spread Spectrum) physical layer. This is a radio technique, which scrambles the data prior to transmission and uses a correlation technique on receiver 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 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 SWL-2300U both for Laptop PC and Desktop PC is small and portable as a roaming function is provided for users who need network services while maintaining mobility.

• The MagicLAN supports various network software. The network driver is provided to support network software such as, Windows 98SE,ME, Windows 2000, Windows XP.

• To get further information of Samsung MagicLAN WLAN Card, please visit our website at http://www.magiclan.com to download the respective drivers.

2. Before the Installation

The following section will assist you in installing your WLAN Adapter successfully. You will install the MagicLAN Card and software (driver & utility), and finally set the network properties to accommodate resource sharing and select the type of wireless network that you wish to install. The MagicLAN can easily be installed and used, without bothering to connect cables for keeping your computer to use network resources, as in case of a wired LAN.

2.1 What is 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-2300U(USB Adapter)
- Samsung MagicLAN Installation CD

2.2 System Requirement

- Operating System: Windows 98SE, Windows ME, Windows 2000, Windows XP
- Laptop Computer with a CD-ROM drive.
- Laptop Computer that have a USB slot and available USB interface.

2.3 Preparations For Installation

 You have to prepare Installation CD which is provided by manufacturer.

 You can just install SWL-2300U Adapters to use Ad-hoc network.

 You need to install Access Point(AP) to use Infrastructure network.(Refer to the AP Manual about the installation method of AP)

 You may need the original CD of (Windows 98SE,Windows ME, Windows 2000, Windows XP) to set network environment.

3. MagicLAN Installation For Windows 98SE/ME/2000/XP

We will explain the installation method for SWL-2300U(USB Adapter) .

3.1 Installation Overview

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

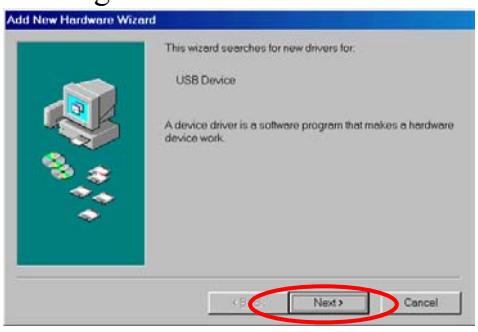
1. Install the Access Point at first. AP is needed in case of Infrastructure network mode.
2. You should install the Wireless LAN Card (SWL-2300U).
3. Install the software using the Installation CD.
4. Install the network protocol(s) required to communicate on your network. Most likely you will need the TCP/IP protocol.

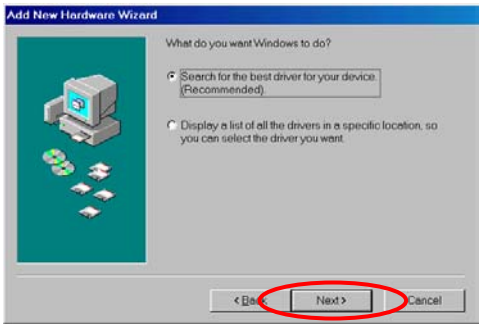
3.2 Installation Procedure of Windows 98SE

Please follow the following steps one by one to install the USB Adapter successfully.

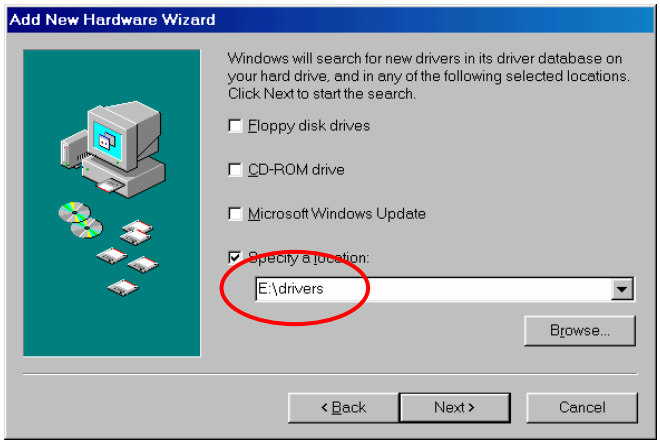
< Method 1 - Inserting card first >

1. Insert the USB Adapter into the USB slot of your computer.
2. **Add New Hardware Wizard** appeared and the system looks for "USB Device". Press **NEXT** button and check if **Search for the best driver for your device(recommended)** is slected and then press **NEXT** button . Insert the MagicLAN Installation CD into the CD-ROM drive.

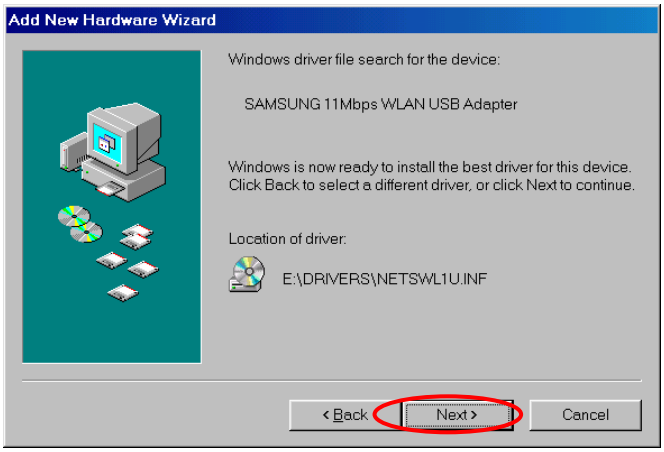




3. Mark the **Specify a location** tap and type "**E:\Drivers**" right below in this tap(Where E is the CD-drive of your PC).

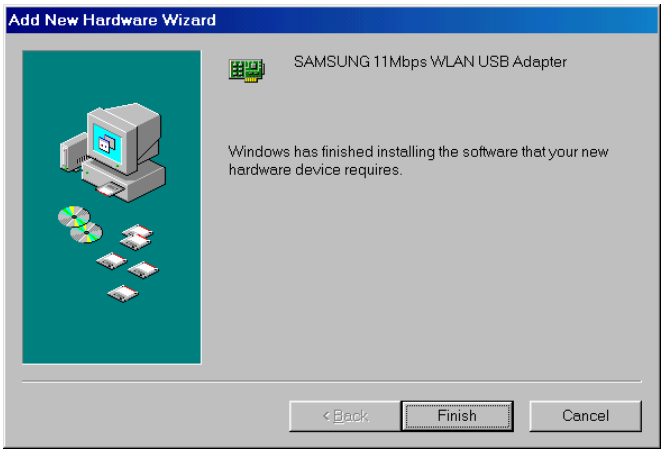


Then press **NEXT** button.

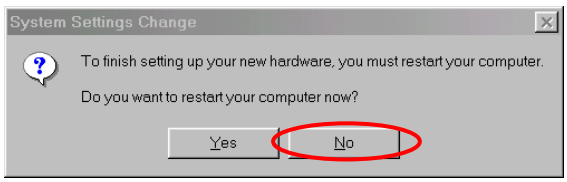


You can find the "SAMSUNG WLAN USB Adapter(SWL-2300)" and now it is ready to install our software.

4. Press **NEXT** and system will copy driver files. You may require Windows 98 CD.

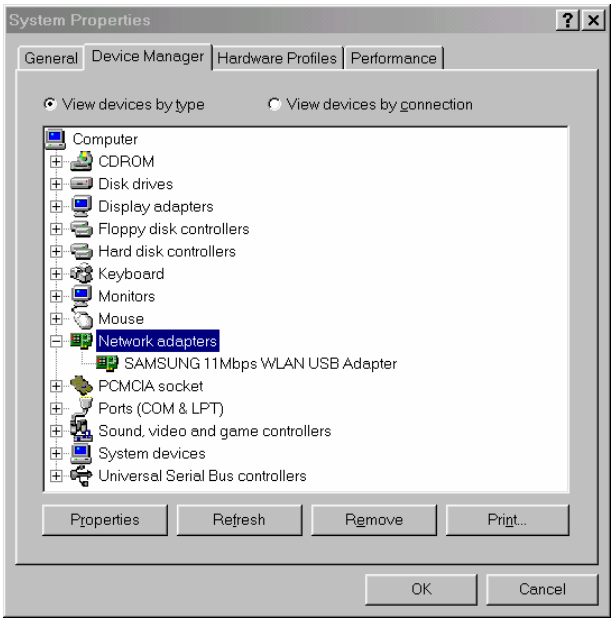


Now driver files are fully installed to start the Wireless LAN Card's operation.

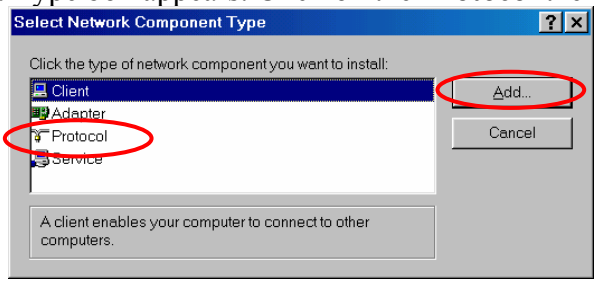


If screen message **Do you want to restart your Computer now** will pop up, select **No**.

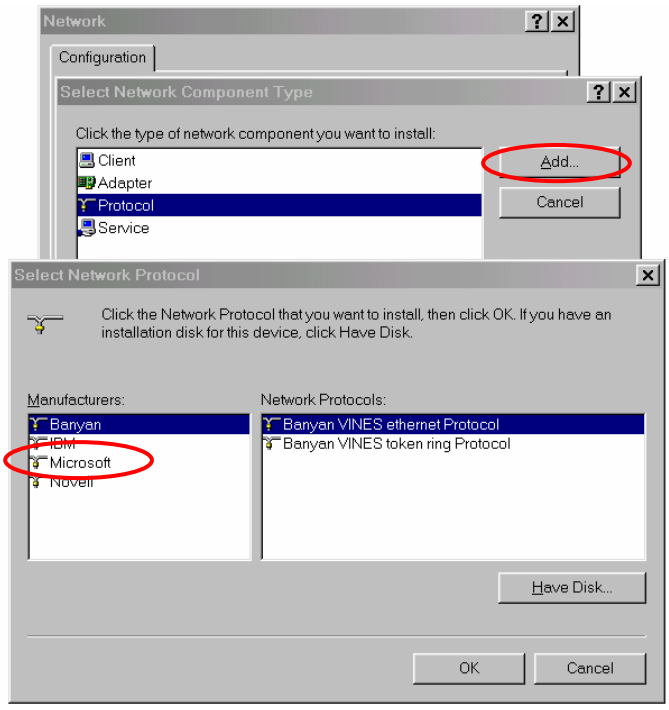
5. After rebooting your computer, right click on the **My Computer** using the mouse and click **Properties**.
6. Check for the SAMSUNG WLAN USB Adapter(SWL-2300) by clicking on the **Device Manager**. If you find the **Yellow** sign on the adapter, it shows the installation is not successful. Select the Adapter and click on **Remove**. Restart your computer after uninstalling the driver. *(See the Adapter Removal in section 3.7)*



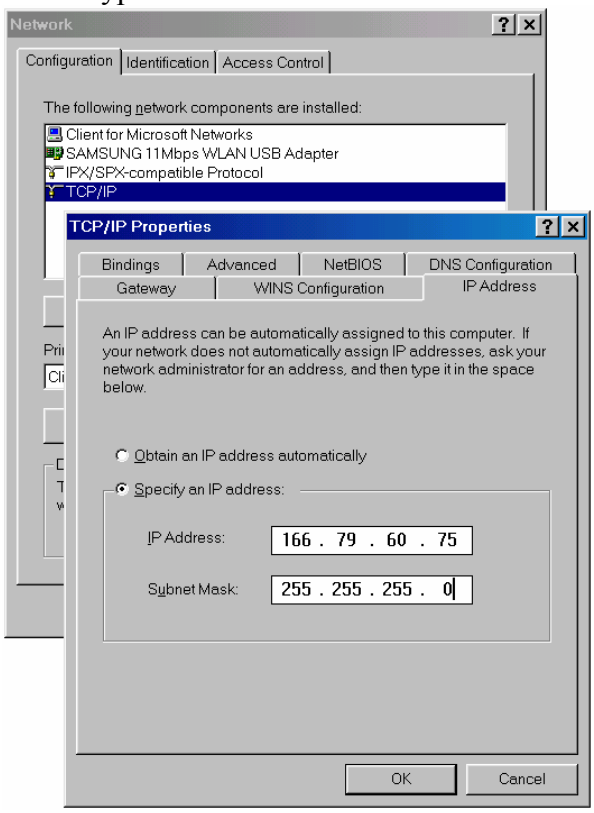
7. Right click on the **Network Neighborhood** using the mouse. Select **Properties** from the pop up menu. The network box appears and you see three main tabs: *Configuration*, *Identification* and *Access Control*.
8. Click on the configuration tab and then click on the add button. Select Network Component Type box appears. Click on the **Protocol** then click the **Add** button.



9. Select Network Protocols box appears. From the list of manufactures, click on Microsoft. From the list of network protocols list, select **IPX/SPX** and **TCP/IP**, then click **OK**.(If you want, you can install the **NetBEUI** protocol.)

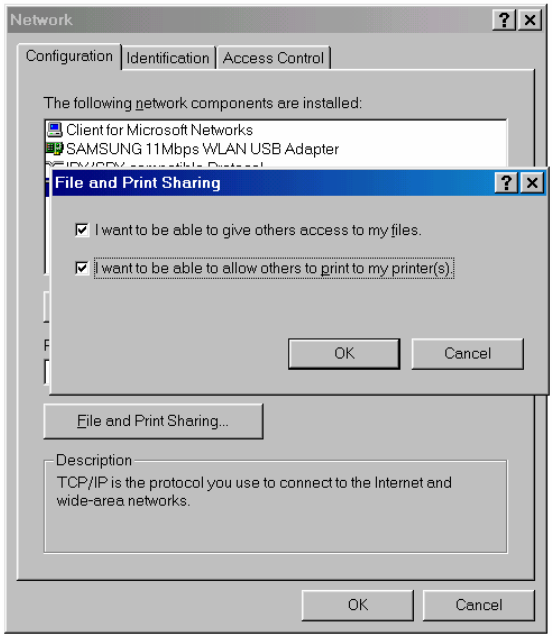


10. Select the **TCP/IP-> SAMSUNG WLAN USB Adapter(SWL-2300)** option for setting the **IP** address value, Gateway value and DNS value of your computer. After setting these parameters appropriately, click **OK** to return to Network Component Type.

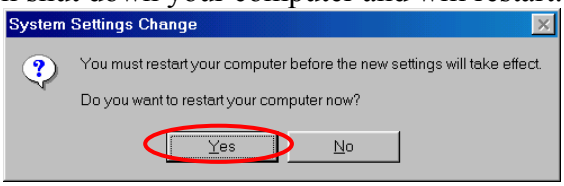


11. you can select the **File and Printer Sharing** options as well as the access to your computer by other users connected to that network by setting the

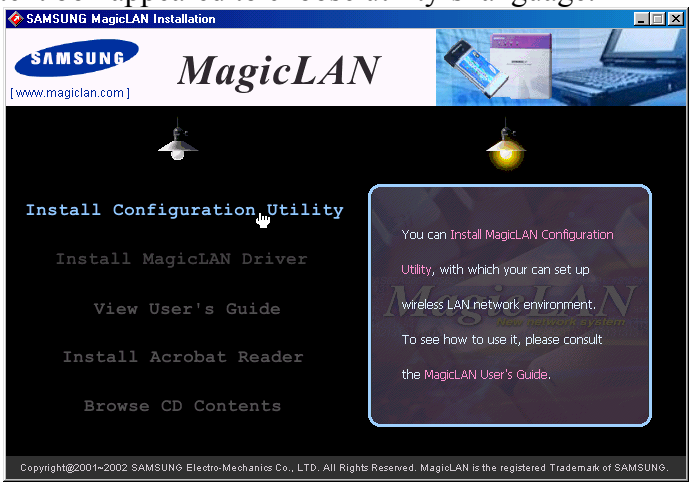
appropriate options.



12. Screen message '**Do you want to restart your computer now?'** will pop up. Select **Yes**. It will shut down your computer and will restart.



13. After booting the computer, you have to draw out and re-insert the MagicLAN Installation CD to be automatically installed. You can click '**Install Configuration Utility'** to install our utility. Choose the appropriate language when a context box appeared to choose utility's language.



14. You can set up Wireless LAN environment by our utility program provided. Refer to '**Chapter 4**' in this manual.

< Method 2 – Installing software first >

1. If you insert the MagicLAN Installation CD into the CD-ROM drive, software will launch automatically. Then, click on the '**Install MagicLAN Driver**'.

2. You can see the pictures of Wireless LAN Cards by model name.(SWL-2300U USB Adapter). Click on the model name to install it's driver.

3. Click on Operating System in the right screen in which you want to install driver.

4. After installing driver, insert card.

5.The other procedures are same to 5~14 of **< Method 1 - Inserting card first** >.

Cf.) ***The third method*** **:**

You can combine **'Method 1'** with **'Method 2'**. In other words, **after inserting card** into the computer, you can install driver and utility by **using the installshield** instead, not by the inf file. In case of Windows 2000 and Windows XP, system will recognize the card automatically during installation .

Notice that if you install a card after removing it in a Device Manager, you have to mark the check box("Do you want to scan for hardware changes?"). The function is same to the "Refresh" in ther Device Manager.

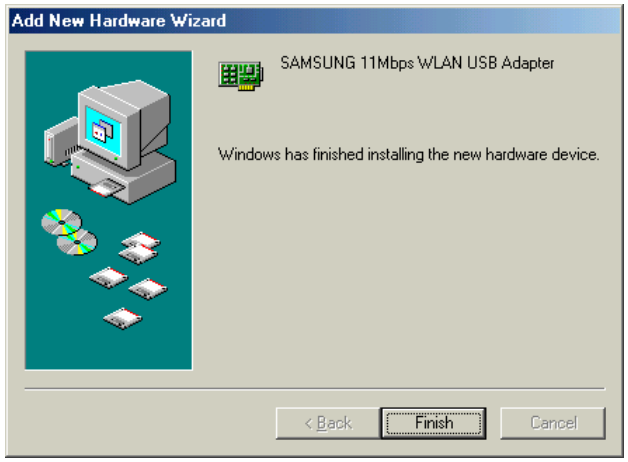
3.3 Installation Procedure of Windows ME

Please follow the following steps one by one to install the USB Adapter successfully.

< Method 1 - Inserting card first >

1. Insert the USB Adapter into the USB slot of your computer.
2. "**Add New Hardware Wizard**" appeared and the system looks for "USB Device". Check if **Search for the best driver for your device(recommended)** is slected. Insert the MagicLAN Installation CD into the CD-ROM drive.

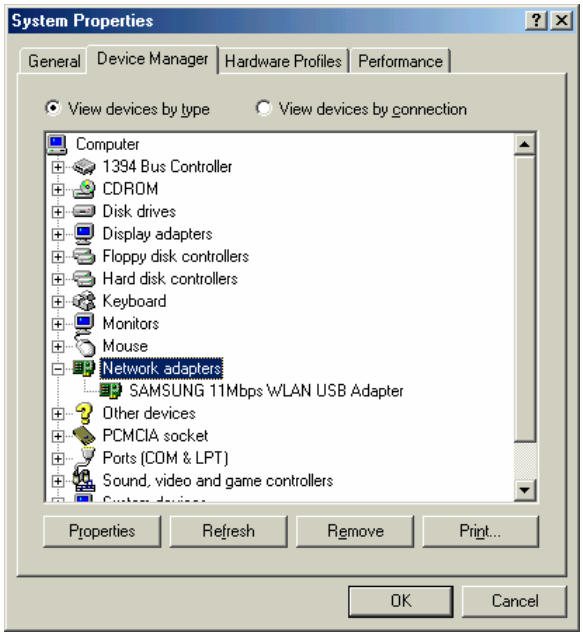
3. You can find the "SAMSUNG WLAN USB Adapter(SWL-2300) " . And the system will copy driver files. You may require Windows ME CD. You can click **Yes** in the "Digital Signature Not Found" Message box.



Now driver files are fully installed to start the Wireless LAN Card's operation. If screen message '**Do you want to restart your Computer now?'** will pop up, select **No**.

4. After booting the computer, right click on the **My Computer** using the mouse and click property.
5. Check for the SAMSUNG WLAN USB Adapter(SWL-2300) by clicking on the **Device Manager**. If you find the **Yellow** sign on the adapter, it shows the installation is not successful. Select the Adapter and click on **Remove**. Restart

your computer after uninstalling the driver. *(See the Adapter Removal in section 3.7)*



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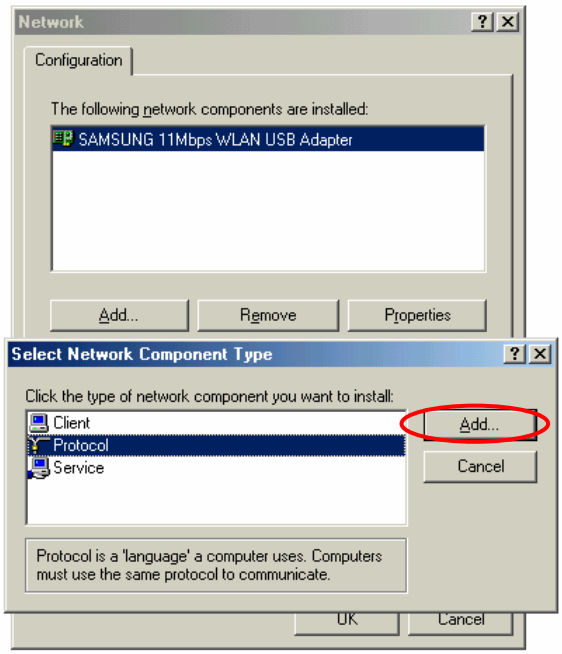
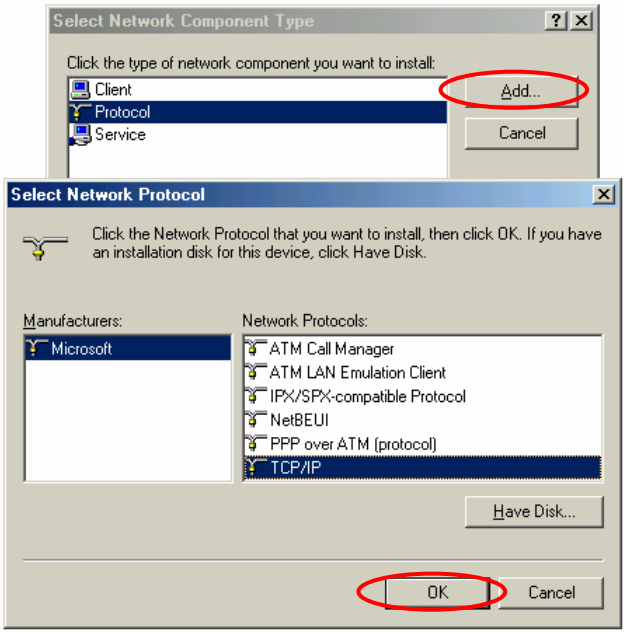
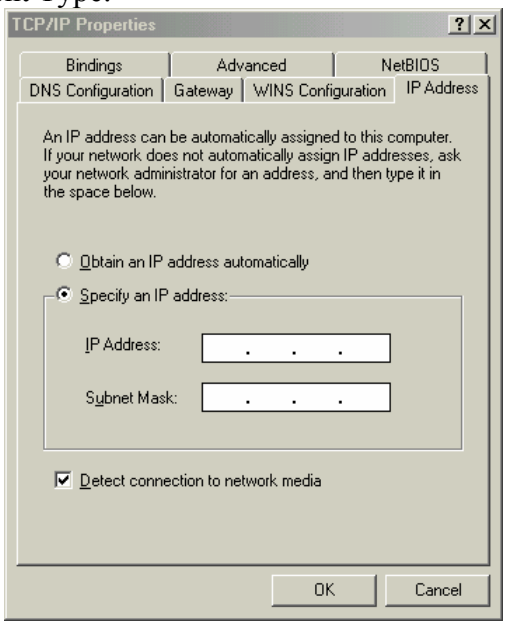
7. Click on the configuration tab and then click on the add button. Select Network Component Type box appears. Click on the **Protocol** then click the **Add** button.



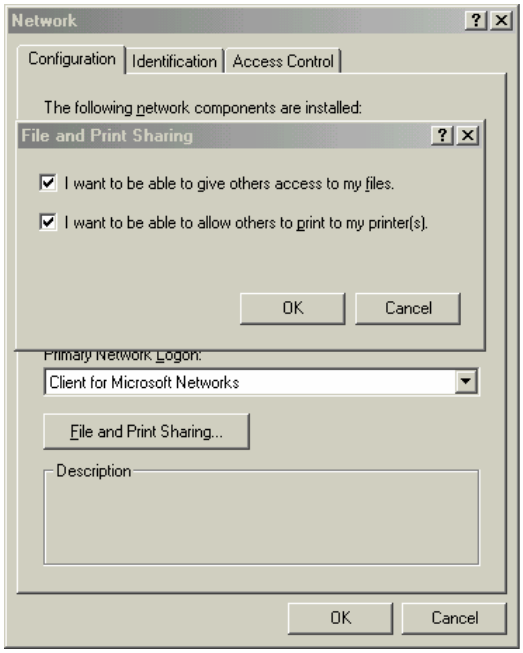
8. Select Network Protocols box appears. From the list of manufactures, click on Microsoft. From the list of network protocols list, select **IPX/SPX** and **TCP/IP**, then click **OK**.(If you want, you can install the **NetBEUI** protocol.)



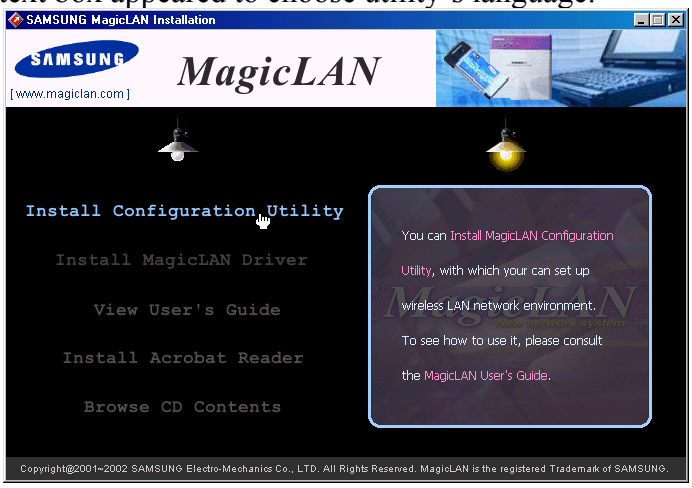
9. Select the **TCP/IP-> SAMSUNG WLAN USB Adapter(SWL-2300)** option for setting the **IP** address value, gateway value and DNS value of your computer. After setting these parameters appropriately, click **OK** to return to Network Component Type.



10. you can select the **File and Printer Sharing** options as well as the access to your computer by other users connected to that network by setting the appropriate options.



11. Screen message '**Do you want to restart your Computer now?'** will pop up. Select **Yes**. It will shut down your computer and will restart.
12. After booting the computer, you have to draw out and re-insert the MagicLAN Installation CD to be automatically installed. You can click "**Install Configuration Utility**" to install our utility. Choose the appropriate language when a context box appeared to choose utility's language.



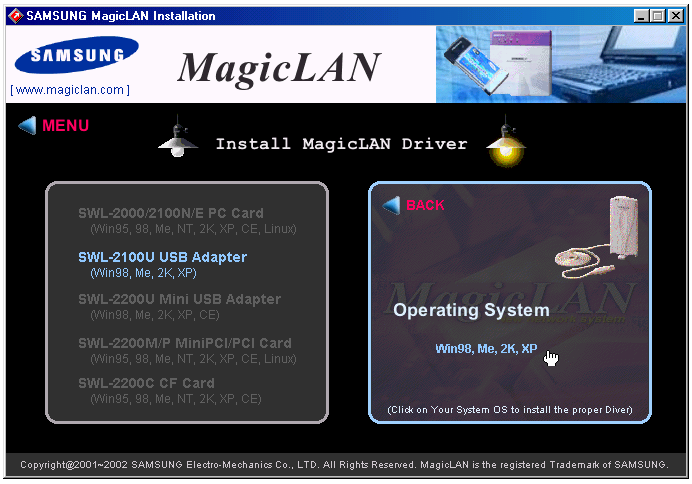
13. You can set up Wireless LAN environment by our utility program provided. Refer to '**Chapter 4**' in this manual.

< Method 2 – Installing software first >

1. If you insert the MagicLAN Installation CD into the CD-ROM drive, software will launch automatically. Then, click on the '**Install MagicLAN Driver'**.

2. You can see the pictures of Wireless LAN Cards by model name.(SWL-2300U USB Adapter). Click on the model name to install it's driver.

3. Click on Operating System in the right screen in which you want to install driver.



4.After installing driver, insert card. You can click **Yes** in the "Digital Signature Not Found" Message box

5.The other procedures are same to 4~13 of **< Method 1 - Inserting card first >**

Cf.) ***The third method*** **:**

You can combine **'Method 1'** with **'Method 2'**. In other words, **after inserting card** into the computer, you can install driver and utility by **using the installshield** instead, not by the inf file. In case of Windows 2000 and Windows XP, system will recognize the card automatically during installation .

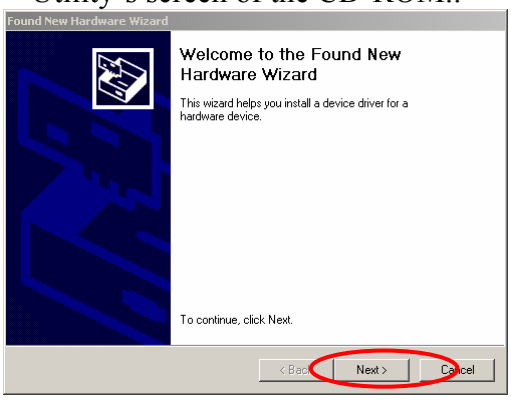
Notice that if you install a card after removing it in a Device Manager, you have to mark the check box("Do you want to scan for hardware changes?"). The function is same to the "Refresh" in ther Device Manager.

3.4 Installation Procedure of Windows 2000

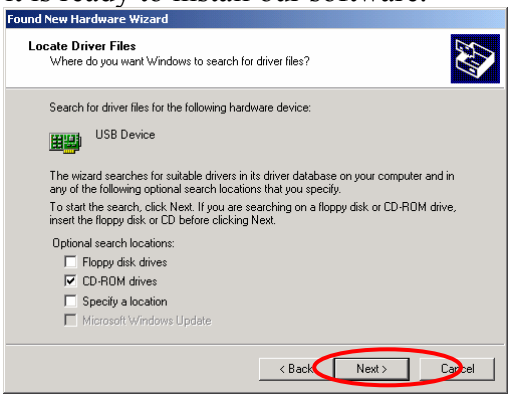
Please follow the following steps one by one to install the USB Adapter successfully.

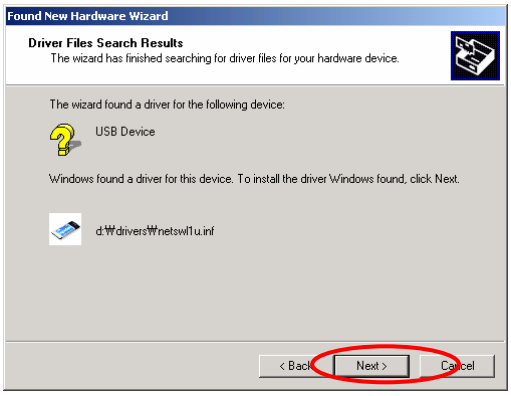
< Method 1 - Inserting card first >

1. Insert the USB Adapter into USB slot of your computer.
2. **Found New Hardware Wizard** appeared and the system looks for "Network Controller". Press **NEXT** button and check if "Search for the best driver for your device(recommended)" is slected and then press **NEXT** button. Insert the MagicLAN Installation CD into the CD-ROM drive. You can ignore the MagicLAN Utility's screen of the CD-ROM..

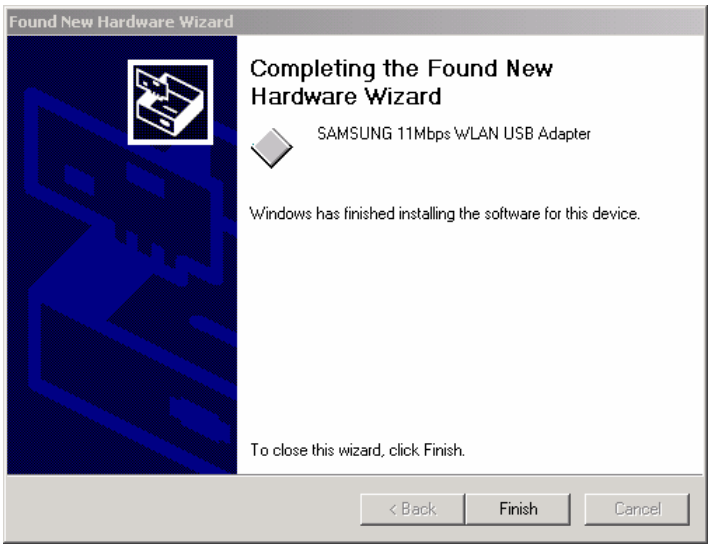


3. Mark the "CD-ROM drivers" tap and then press **NEXT**. You can find the INF file and now it is ready to install our software.

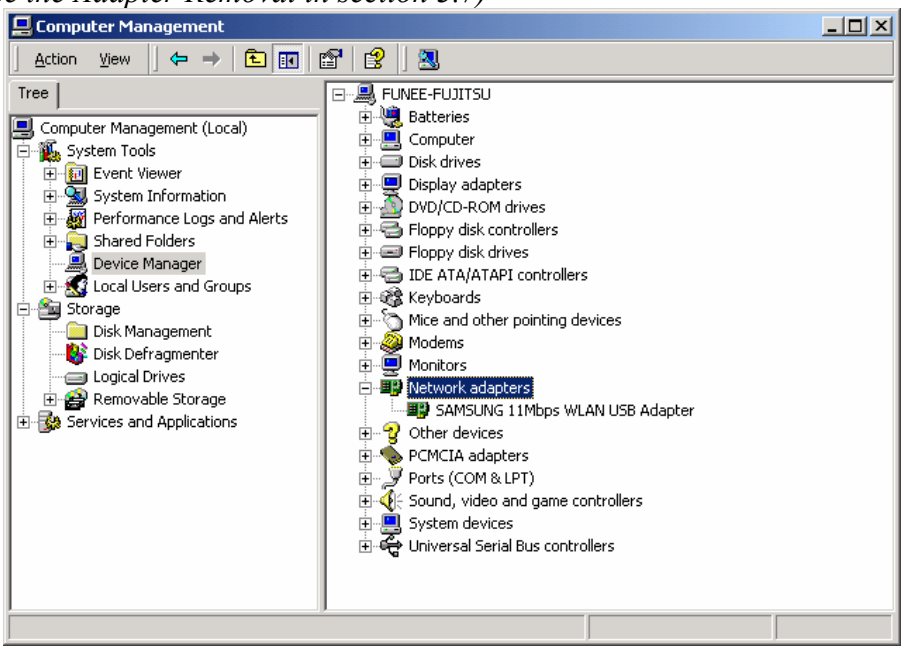




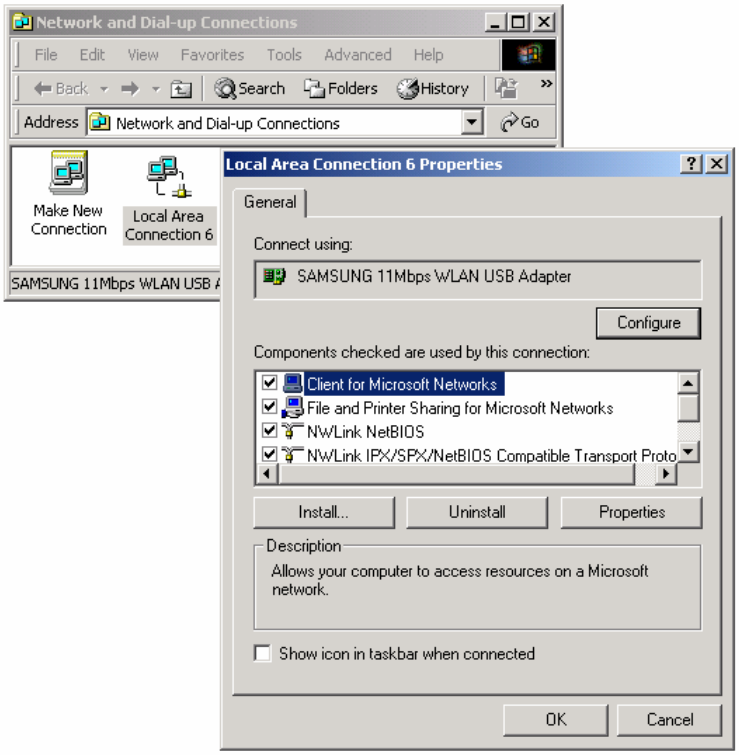
4. Press **NEXT** and system will copy driver files. You can click **Yes** in the "Digital Signature Not Found" Message box. Now driver files are fully installed to start the Wireless LAN Card's operation.



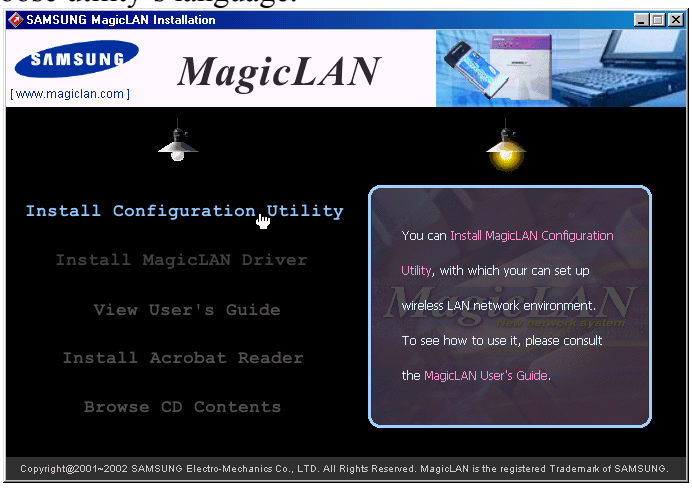
5. Check for the SAMSUNG WLAN USB Adapter(SWL-2300) on the Device Manager of a **Computer Management** in the Adminidtrative Tools . If you find the **Yellow** sign on the adapter, it shows the installation is not successful. In this case, select the adapter and click on **Remove**. Restart your computer after uninstalling the driver to make the changes effective. *(See the Adapter Removal in section 3.7)*



6. Right click on the **Network Places** using the mouse and double-click on the **Local Area Connection** ,and then click on **Properties.**



7. Click on the **TCP/IP** option for setting the **IP** address for your computer. Set the **IP** value, **Gateway** value, **DNS** value. After setting these parameters appropriately, click **OK** to return to Network Component Type.
8. You can select the **File and Printer Sharing for Microsoft Networks** options to allow the **Access** to your computer by other users connected to that network by setting the computer sharing options. Click on OK.
9. After booting the computer, you have to draw out and re-insert the MagicLAN Installation CD to be automatically installed. You can click **Install Configuration Utility** to install our utility. Choose the appropriate language when a context box appeared to choose utility's language.



10. You should reboot the computer to use our utility properly in the NT-based OSs(Windows 2000, XP).
11. After rebooting your computer, you can set up Wireless LAN environment by our

utility program provided. Refer to '**Chapter 4**' in this manual.

< Method 2 – Installing software first >

1. If you insert the MagicLAN Installation CD into the CD-ROM drive, software will launch automatically. Then, click on the '**Install MagicLAN Driver'**.

2. You can see the pictures of Wireless LAN Cards by model name.(SWL-2300U USB Adapter). Click on the model name to install it's driver.

3. Click on Operating System in the right screen in which you want to install driver.

4. After installing driver, insert card.

5. System recognize the card and you can click **Yes** in the "Digital Signature Not Found" Message box.

6. The other procedures are same to 5~11 of **< Method 1 - Inserting card first >**

Cf.) ***The third method* :**

You can combine **'Method 1'** with **'Method 2'**. In other words, **after inserting card** into the computer, you can install driver and utility by **using the installshield** instead, not by the inf file. In case of Windows 2000 and Windows XP, system will recognize the card automatically during installation .

Notice that if you install a card after removing it in a Device Manager, you have to mark the check box("Do you want to scan for hardware changes?"). The function is same to the "Refresh" in ther Device Manager.