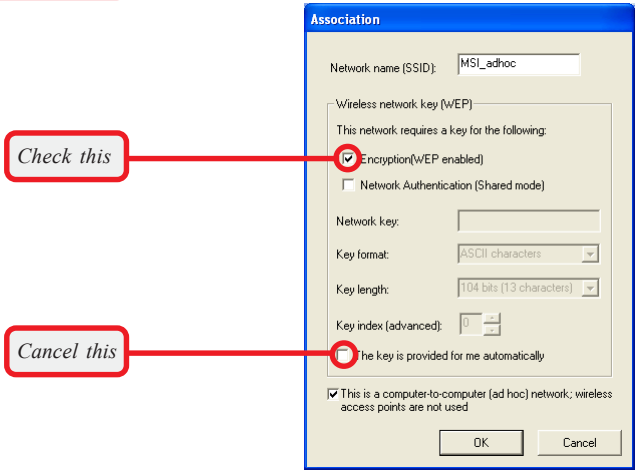
>>> 4.3 Encryption

In the wireless network environment, the administrator can set up password (Network Key) to protect the network from being attacked or unauthorized access. When building the network, you can set up 4 sets of WEP keys, which can be 5 characters (10 hex-adecimal digital) or 13 characters (26 hex-adecimal digital) and specify one of them to use.

To setup the Network Key, check ***Encryption*** *option first, then cancel* ***The key is provided for me automatically*** *option.*



Network key
Enter a key for the network.

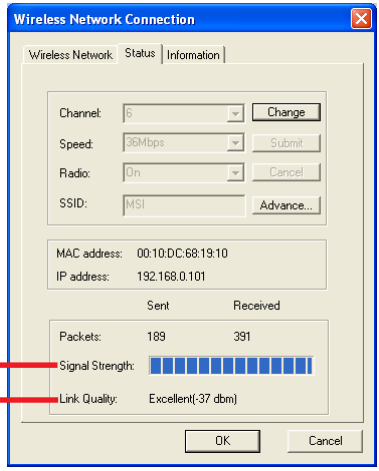
Key format
You can decide the network key to be encoded by ASCII characters or hexadecimal digitals.

Key length
In ASCII characters format, it can be 5 or 13 characters. In hexadecimal digitals format, it would be 10 or 26 digitals.

Key index
There can be up to 4 sets of WEP key (1~4). The 4 sets of WEP key must have the identical sequence with the key settings on the Access Point.

>>> 4.4 Status

In **Status** tab, you can configure more network settings.



Signal Strength:
shows the received signal strength level.
Link Quality:
shows the measured signal level and connection status.

Channel
Specify the operating radio frequency channel in Ad-hoc mode, which should be set to the same channel as the other points in the wireless network.

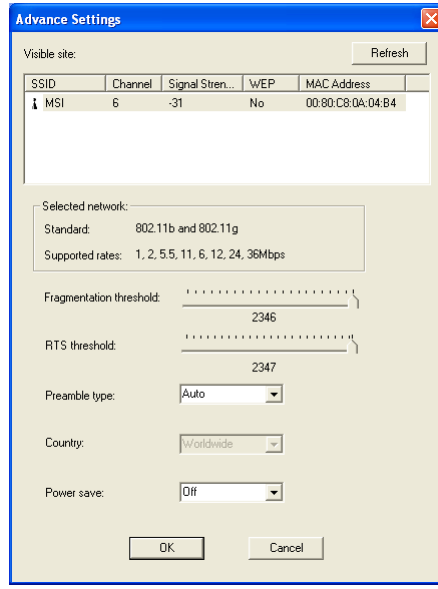
Speed
This field sets the current transmitting rate. The speed should be set to *Auto* rate to optimize performance and range, which will adjust the transfer speed for best performance and longest range automatically.

Radio
Set to ***On*** to activate the radio.

SSID
Means Service Set Identifier, a unique name shared among all points in a wireless network. It must be identical for all points in the network. Then the card will be able to connect to an access point with the same SSID.

Click ***Advance***, and you can get more information about the LAN traffic status and more detailed settings.

It is not recommended to change these settings if you are not familiar with the advanced configuration.



Fragmentation Threshold
You may set the length of the fragment in this field. Please note that each fragment should not be larger than the Fragmentation Threshold.

RTS/CTS Threshold
You may set the length threshold.

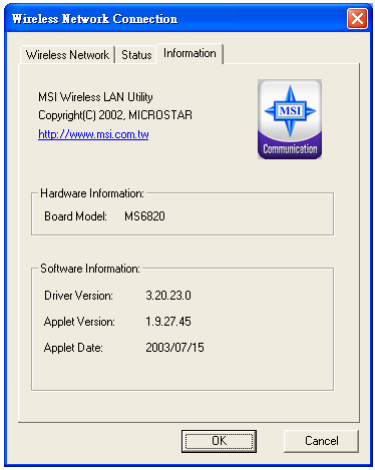
Preamble Type
You may set the length of preamble in this field. Setting options are: ***Long*** - it is set to 144 bits. ***Short*** - it is set to 72 bits. ***Auto*** - The card supports an auto-detection feature, it automatically selects the ***Preamble Type*** depending on the Access Point Preamble Type if this option is selected.

Country
Select one option according to your location you are in. The options are: **Worldwide 1-13**, **Japan 1-13**, and **USA 1-11**. The default setting is **Worldwide 1-13**.

Power save
The card will turn into power save mode when idle.

>>> 4.5 Information

In **Information** tab, you can get some information about the manufacturer, hardware and software.

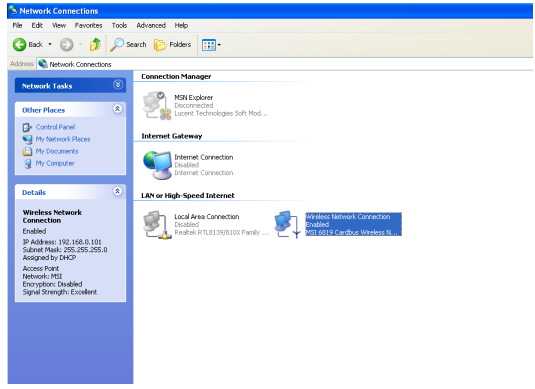


>>> 4.6 Sharing Network under Windows® XP

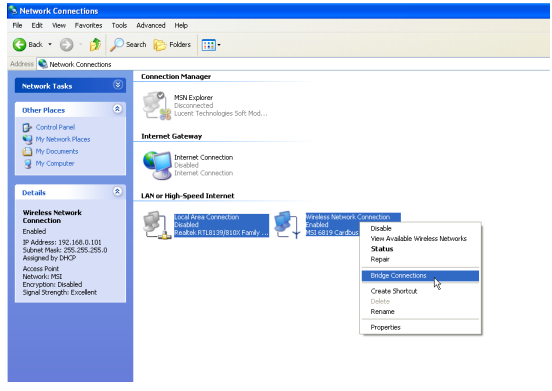
Windows® XP provides a special feature to link two networks.

1. Go to **Start -> Settings -> Control Panel**.

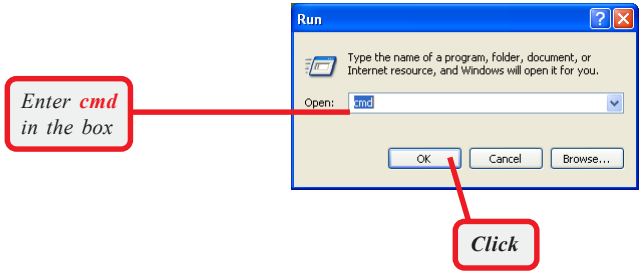
2. Select the **Network Connections** item in Control Panel to open the **Network Connections** window.



3. Select **Wireless Network Connection** and **Local Area Connection** simultaneously; then, right-click to select ***Bridge Connections*** in the context menu.



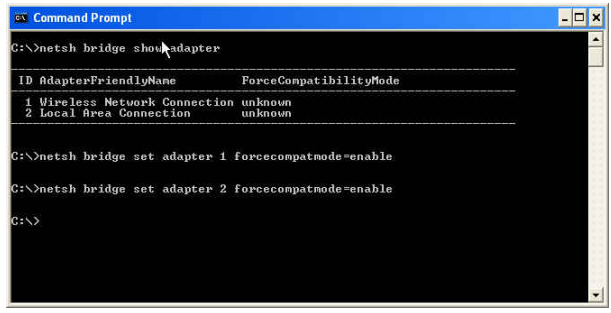
4. Go to **Start -> Run** and enter ***cmd*** in the Open box; then, click ***OK,*** and a DOS prompt window will appear.



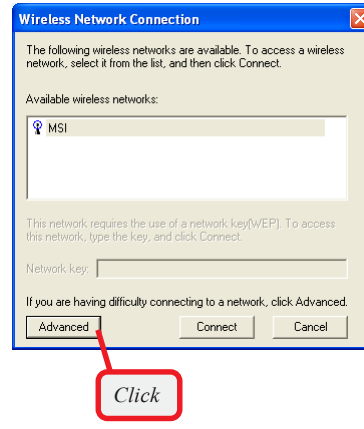
5. Type ***net bridge show adapter*** and press [**Enter**].

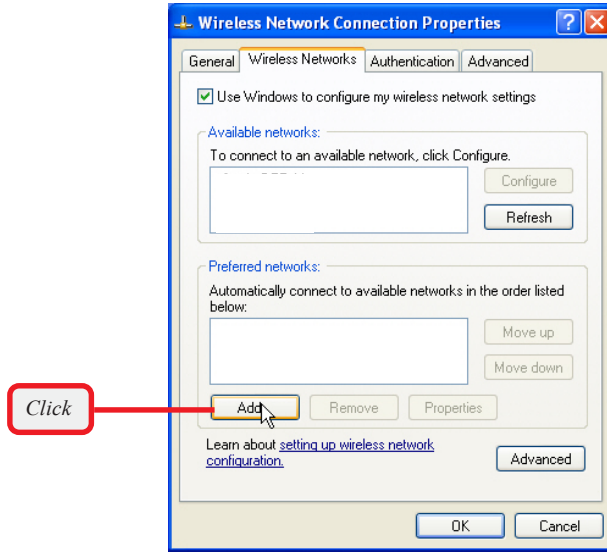
6. Type ***netsh bridge set adapter X forcecompatmode=enable***, where ***X*** is your ethernet identifier, and press [**Enter**].

7. Type ***netsh bridge set adapter Y forcecompatmode=enable***, where ***Y*** is your wireless identifier, and press [**Enter**].

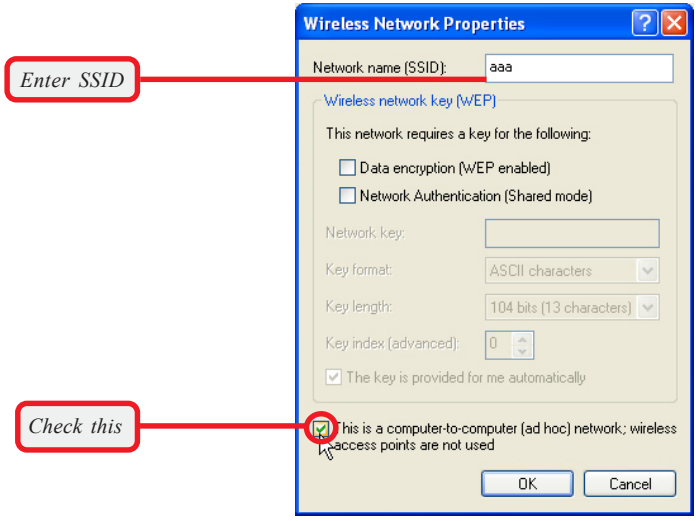


8. Click the MSI Wireless LAN icon in status area, and click ***Advanced*** to bring up the ***Wireless Network Connection Properties*** window. Click ***Add...*** to add a new wireless network connection.





9. Enter a name for this new network in the ***Network name (SSID)***, and check the "**This is a computer-to-computer [ad hoc] network; wireless access points are not used**" option. In this case, this computer will function as an access point, while other computers can use this network name (which is "***aaa*** " in the picture below) to access. Once they connect success fully, they could access the ethernet LAN via ***Network Neighborhood.***



Please also refer to Windows XP help file for more information.

5 Network Connection

This chapter describes how to prepare for connection to network and some basic outline of networking basics, including sharing files, printing from a computer on the network, or accessing the Internet on multiple computers with one connection.

>>> 5.1 Checking the Network Elements

The following elements are required for all computers if you want to connect to a network:

- Client for Microsoft Network

- TCP/IP (for MSI 6820 MiniPCI Card)

- File and printer sharing for Microsoft Networks

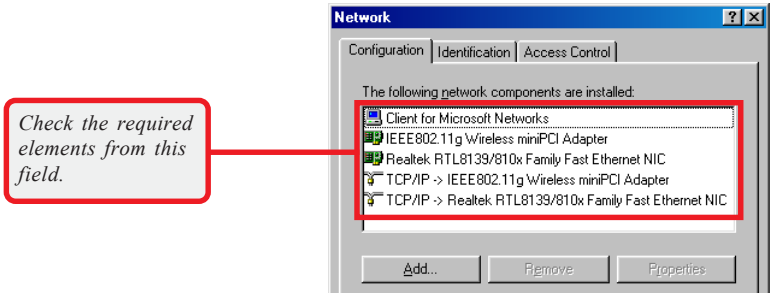
To check the required elements are installed in the system, you can:

Under Windows 98SE/ME

1. Click **Start** and choose **Settings**; then, click **Control Panel** to open the **Control Panel** window.

2. Double-click the **Network** icon.

3. The **Network** window appears to show the current network settings of the system.



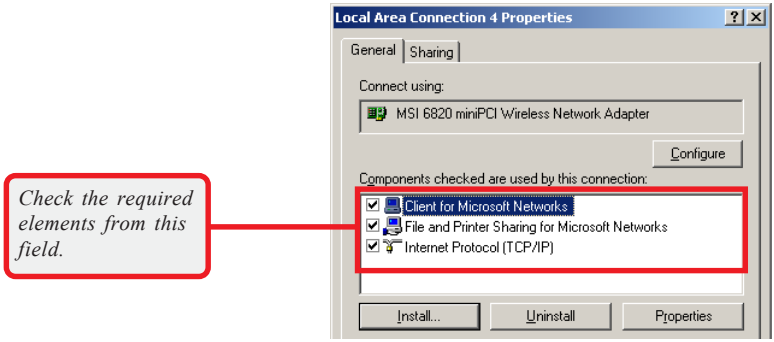
Under Windows 2000/XP

1. Click **Start** and choose **Control Panel** to open the **Control Panel** window.

2. Double-click the **Network Connection** icon to open the **Network Connection** window.

3. Right-click the **Wireless Network Connection** icon and click ***Properties*** from the shortcut menu.

4. The **Wireless Network Connection Properties** window appears to show the current network settings of the system.



>>> 5.2 Computer Identification

Please verify that each computer has a unique name and common workgroup name, if you had previously given your Windows 98SE/ME/2000/XP computers names.

Under Windows 98SE/ME

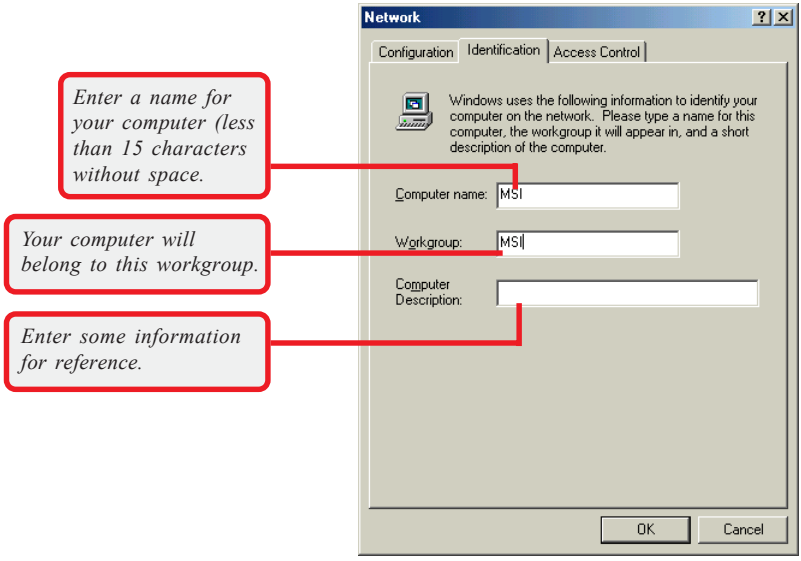
1. Open the **Network** window as described in previous section, and choose **Identification** tab.

2. Type a name for the computer In the ***Computer name*** box. This will be the name of this computer used by other computers on your network to communicate with. Please **NOTE** that each computer's name must be unique on a particular network to avoid confusion.

3. Type the workgroup name that the computer will belong to in the ***Workgroup*** box. All the computers on your network should have an identical Workgroup name.

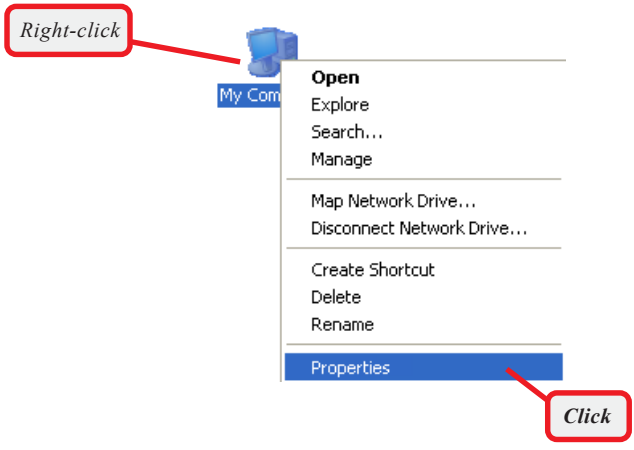
4. The ***Computer Description*** box is optional. You may enter a description that helps to identify this computer on your network. Then, click ***OK***.

5. Repeat the procedure above for each computer on your network to ensure that they all have unique Computer Name and identical Workgroup.



- **Under Windows 2000/XP**

  1. Right-click **My Computer** icon on your Windows desktop, and click ***Properties*** from the shortcut menu.

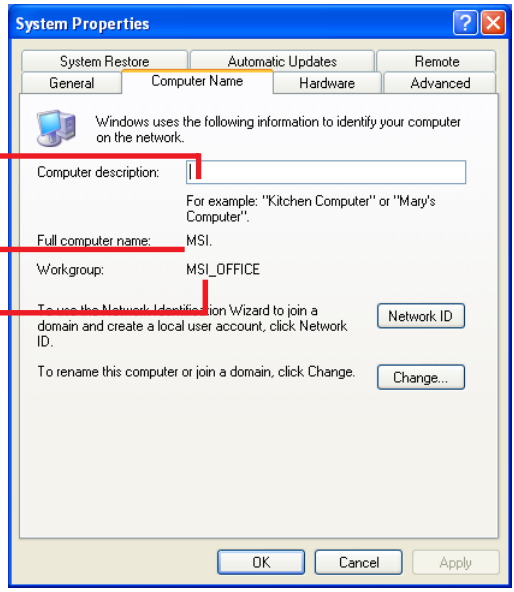


2. The **System Properties** window appears; choose **Computer Name** tab.

Enter some information for reference.

Your computer's name.

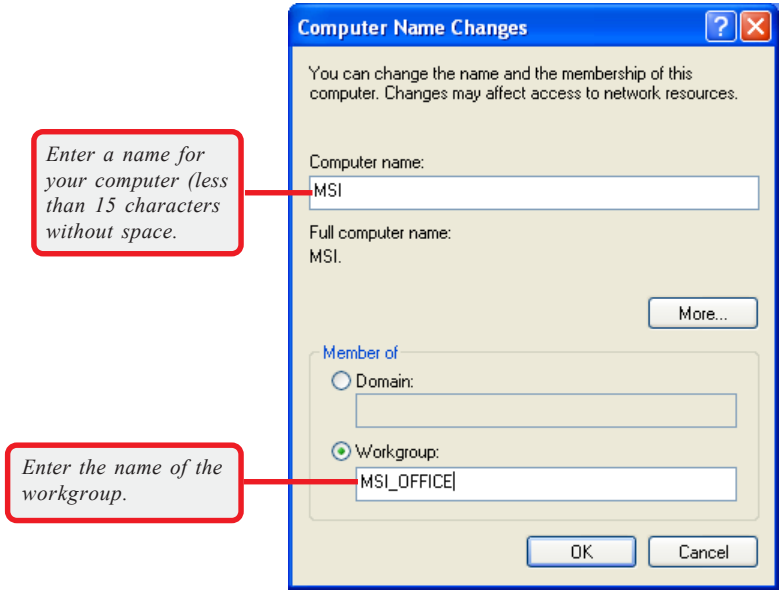
Your computer will belong to this workgroup.



3. To rename the computer and join a workgroup/ domain, click **Change**.

4. The **Computer Name Changes** window appears as below. Enter a **Computer Name**, select Workgroup and enter the name of your workgroup. Please **NOTE** that each computer's name must be unique on a particular network to avoid confusion.

5. Click ***OK*** to save changes.


Enter a name for your computer (less than 15 characters without space.
Enter the name of the workgroup.
Computer Name Changes
You can change the name and the membership of this computer. Changes may affect access to network resources.
Computer name:
MSI
Full computer name:
MSI.
More...
Member of
Domain:
Workgroup:
MSI_OFFICE
OK
Cancel

>>> 5.3 Configuring a Dynamic/Fixed IP Address

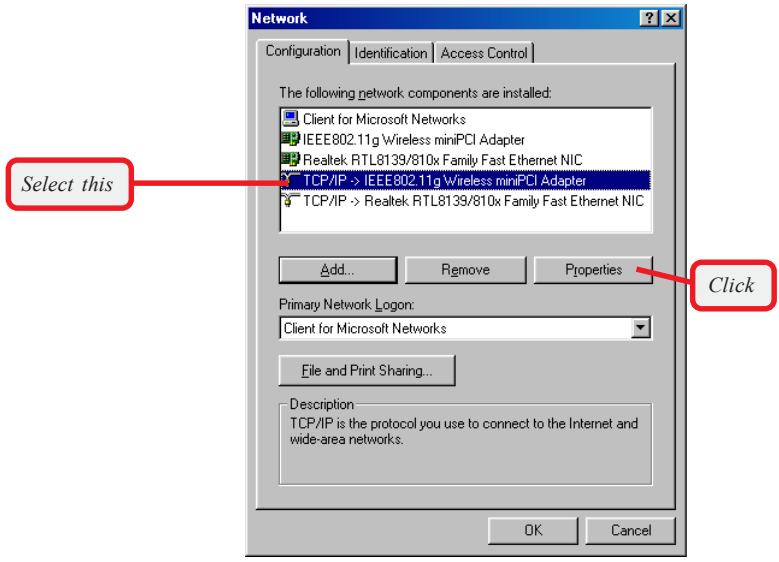
When the drivers are installed, the default setting here is set to obtain IP dynamically through a DHCP server. If you want to change the settings, please follow the steps below:

Under Windows 98SE/ME

1. Go to **Start -> Settings -> Control Panel**.

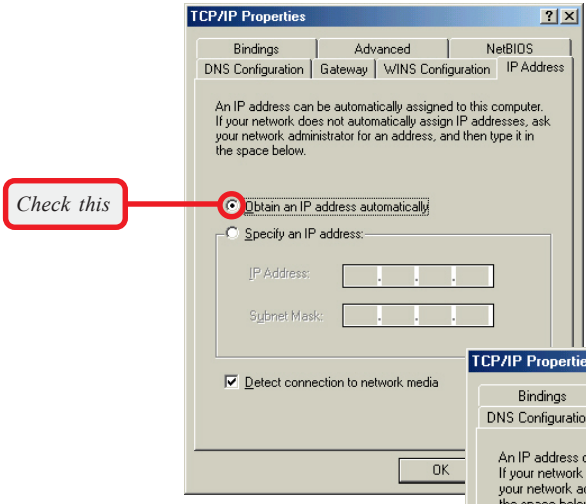
2. Double-click the **Network** icon.

3. The Network window appears as below. Select **TCP/IP -> IEEE802.11g Wireless Network miniPCI Adapter**, and click ***Properties*** to bring up the **TCP/IP Properties** window.

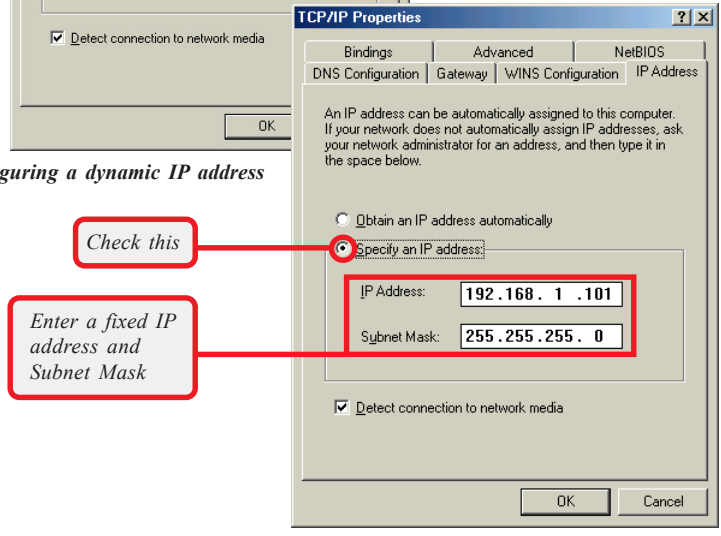


4.a To configure a dynamic IP address, choose **IP Address** tab and check **Obtain an IP Address Automatically**.

4.b To configure a fixed IP address, choose **IP Address** tab and check **Specify an IP Address**. Then, enter an IP address into the empty field. Suggested IP Address Range is ***192.168.1.1*** to ***192.168.1.253***, and suggested Subnet Mask is ***255.255.255.0***.



4.a Configuring a dynamic IP address



4.b Configuring a fixed IP address

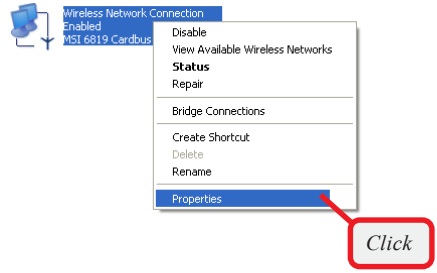
5. Click ***OK***. Then, click ***Yes*** when prompted to reboot the computer.

Under Windows 2000/XP

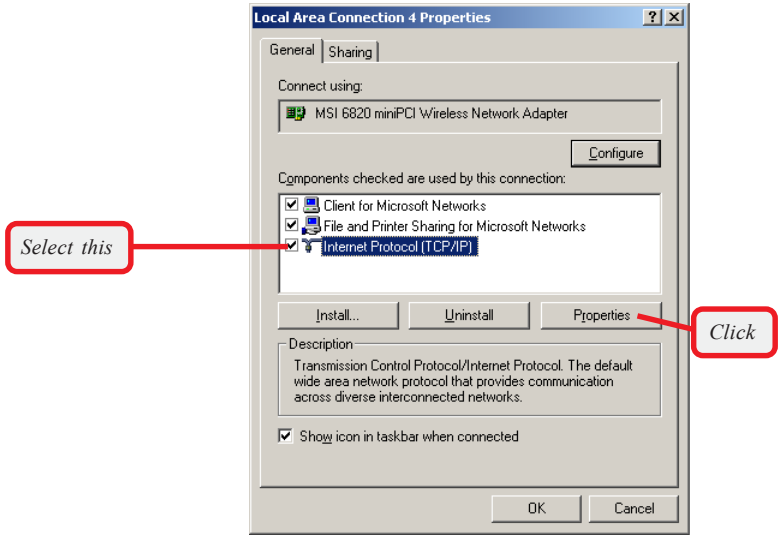
1. Click **Start** and choose **Control Panel** to open the **Control Panel** window.

2. Double-click the **Network Connection** icon to open the **Network Connection** window.

3. Right-click the **MSI 6820 miniPCI Wireless Network Adapter** icon and click ***Properties*** from the shortcut menu.

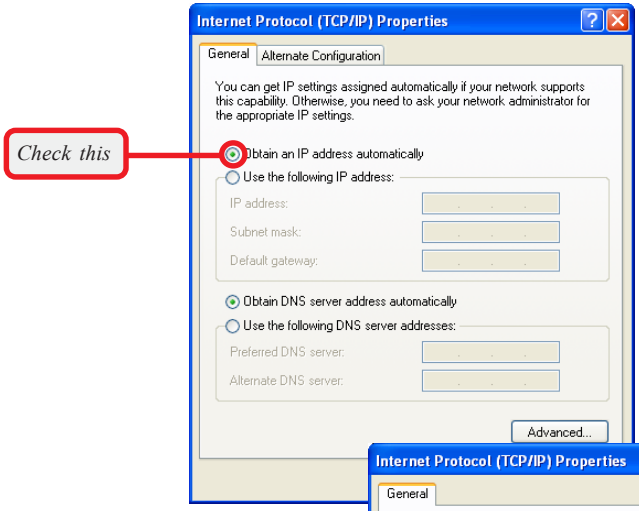


4. When the **Wireless Network Connection Properties** window appears, choose **General** tab and select **Internet Protocol [TCP/IP]**, and click ***Properties*** to bring up the **Internet Protocol [TCP/IP] Properties** window.

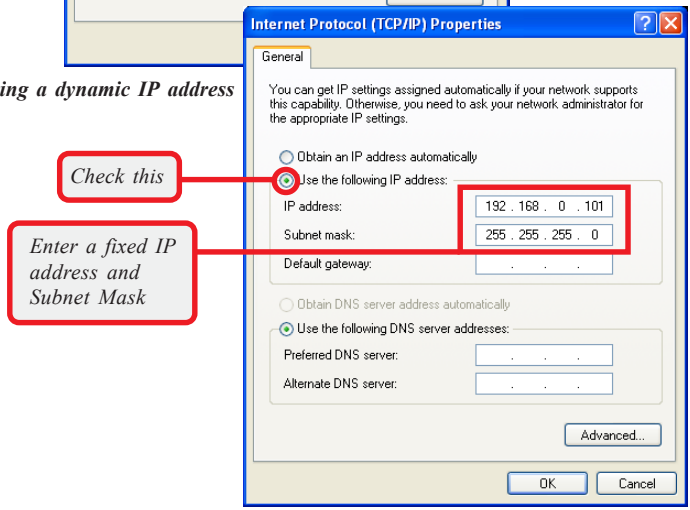


5.a To configure a dynamic IP address, check **Obtain an IP Address Automatically**.

5.b To configure a fixed IP address, check **Use the following IP address**. Then, enter an IP address into the empty field. Suggested IP Address Range is ***192.168.1.1*** to ***192.168.1.253***, and suggested Subnet Mask is ***255.255.255.0***.



5.a Configuring a dynamic IP address



5.b Configuring a fixed IP address

6. Click ***OK*** to complete the configuration.

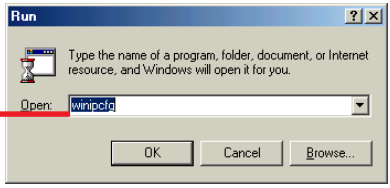
>>> 5.4 Checking TCP/IP Address

Under Windows 98SE/ME

1. Go to **Start -> Run...**.

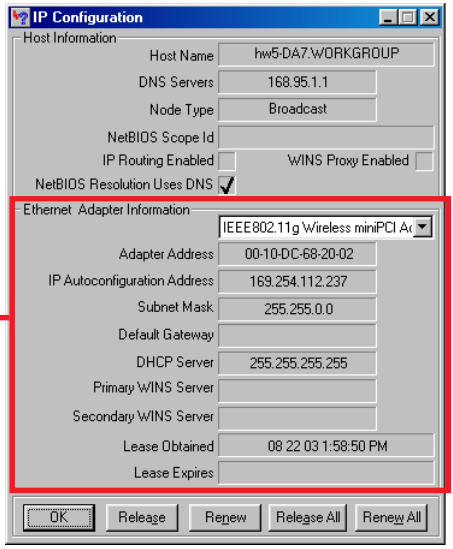
2. Type ***winipcfg*** in the Open box and click ***OK***.

*Type **winipcfg** here.*



3. The **IP Configuration** screen will appear, click ***More Info*** to bring up a screen containing detail information of your wireless network adapter.

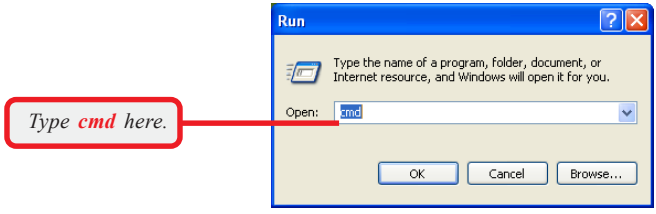
Check the configuration of IP Address, Subnet Mask, and Default Gateway are correct.



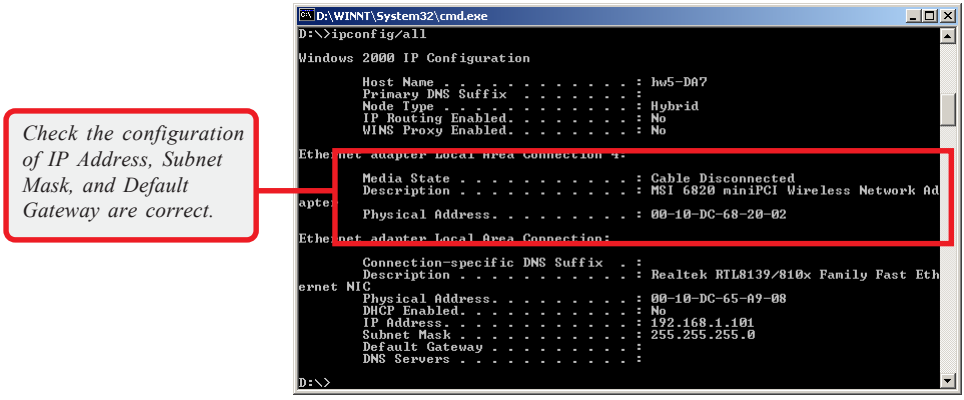
Under Windows 2000/XP

1. Go to **Start -> Run....**

2. Type ***cmd*** in the Open box and click ***OK***.



3. A DOS prompt window appears. Type ***ipconfig/all*** and press [**Enter**] to display IP information.

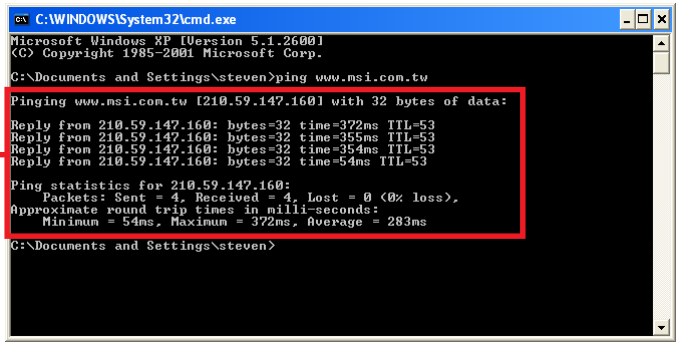


>>> 5.5 Checking Connection by Pinging

1. Go to **Start -> Run...**.

2. Type ***command*** (Windows 98SE/ME) or ***cmd*** (Windows 2000/XP) in the Open box and click ***OK***.

3. A DOS prompt window appears. Type ***ping www.msi.com.tw*** (or any URL address), which is the IP address of the Gateway in this case, and press [**Enter**].



You will get reply if the pinging is successful.

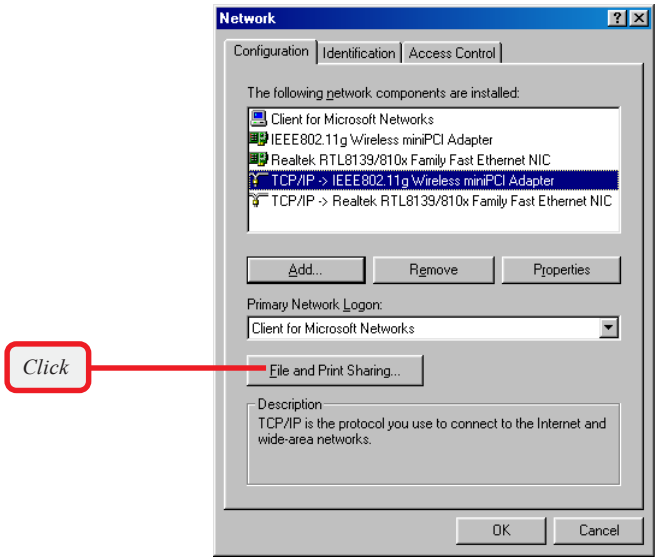
>>> 5.6 Sharing Files

You may now open and save files on other computers once your computers are connected together on a network. You will also be able to specify particular folders or disk drives to share and even password to protect them. Please verify that each computer has a unique name and common workgroup name, if you had previously given your Windows® 98SE/ME/2000/XP computers names. Follow the steps below to share specific files and folders with other computers on your network.

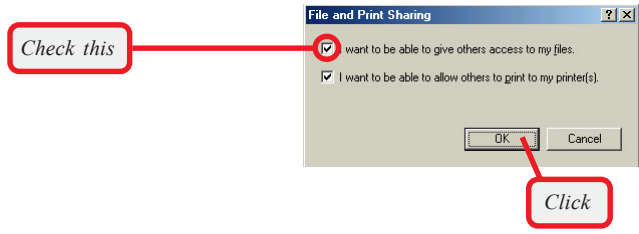
1. On your Windows desktop, right-click **My Network Place** icon and select Properties from the context menu.

2. You will configure your computers network settings in this dialog. It is also available through the **Network** icon in the **Control Panel**.

3. Click **File and Print Sharing**.



4. Check the option **I want to be able to give others access to my files**, and click ***OK***.



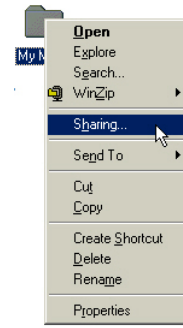
5. Click ***OK*** in the Network dialog box.

6. Provide the Windows Setup CD or direct the path to the proper location of the installation files if prompted. Then, reboot if prompted.

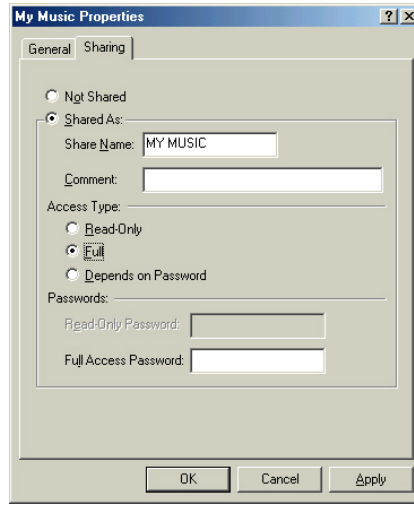
7. Now you can identify a particular folder or disk drive to share, which means you can share a folder that both you and your family member/ colleague needs to access occasionally. You can also share your CD-ROM drive for others to use if your other computers do not have one. Both of these processes are the same. Only the disk drives and folders that you specifically identify as shared will be accessible to other computers on your network.

8. Locate the disk drive or folder you want to share in Windows Explore or My Computer icon on your desktop.

9. Right-click the disk drive or folder and select **Sharing**.



10. Select ***Share As*** to set the parameters for sharing this particular disk drive or folder.



- Share Name
This is used to identify the disk drive or folder you are sharing to other computers in the network, which can be helpful as more resources in your network for others.

- Comment
This field is optional, which can be used to further describe the disk drive or folder for others in the network.

- Access Type
This option allows you to designate how much someone else can do with this shared disk drive or folder. Setting options are: ***Read-Only*** - only allows others to look at or open the files in the disk drive or folder. ***Full*** - allows others to read, write, open, save, copy, move, and even delete files. ***Depends on Password*** - gives other computers access conditional on the password they provide.

- Password
This option allows you to apply a level of security to your shared disk drive and folder. Any other computer (user) will be asked to enter the password you set here before accessing the disk drive or folder. Two passwords are used to give two levels of security (or access) to others in the network using the ***Depends on Password*** setting. Leaving the Password boxes empty will give everyone in the network access to the disk drive or folder.

11. Click ***OK*** to continue. You will be prompted to type the password(s) you provided for verification. Type the password(s) just as you typed them again.

12. Now you may access this disk drive or folder from another computer in your network. You may do so by double-clicking the **My Network Place** icon on your Windows desktop or inside Windows Explorer.

13. Navigate to the computer with the shared disk drive or folder (recognized by the Computer Name you provided), and double-click it. If you specified a password when sharing this disk drive or folder, you will be asked for the password.

14. You can access a disk drive of folder shared over the network from most Windows 98SE/ME/2000/XP applications. you can map these disk drives and folders to a drive letter on another computer to make this process easier. For example, on a computer where you are accessing a shared folder from another computer, inside Windows Explorer right-click and select **Map Network Drive**. Now you are able to assign an available drive letter. Checking **Reconnect at logon** allows Windows to map this network drive each time when you start your computer.

Appendix

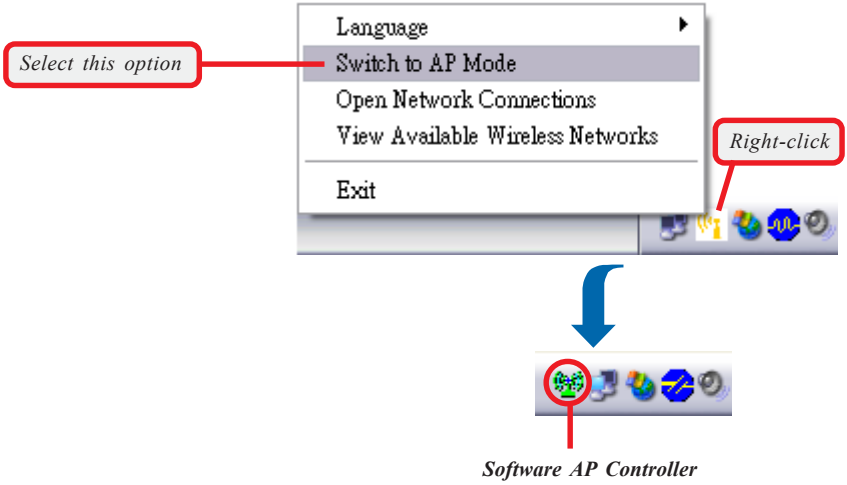
- MSI Software AP

A.1 Installing and Using the Software AP

To use the MSI Software AP, install the driver and utility for your MSI wireless adapter (for more instructions on installing, please refer to your adapter's User's Manual). When you install the driver and utility successfully, you can see the **MSI Wireless LAN** icon appears in the status area.

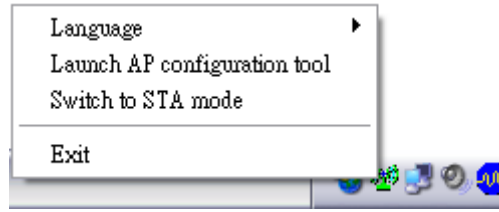
MSI Wireless LAN icon

Right-click the **MSI Wireless LAN** icon, and select the **Switch to AP Mode** option to enable the Software AP mode.



Software AP Controller

When the Software AP is enabled, right-click the **Software AP Controller** icon and a sub-menu containing more settings will appear as below.



Language
Choose a language according to your operating system.

Launch AP configuration tool
Launch the utility to configure your network settings.

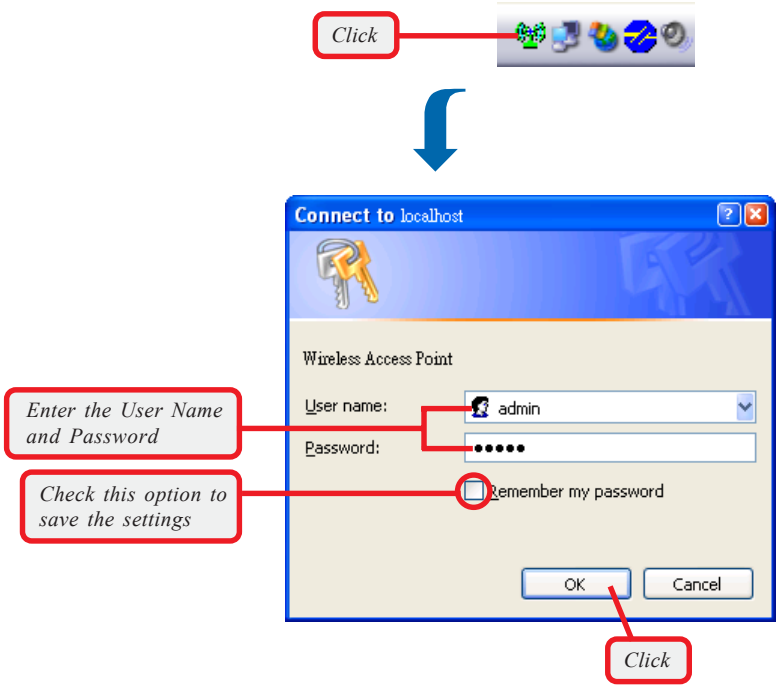
Switch to STA mode
Select to switch to the adapter's normal function and disable the virtual AP mode.

Exit
Close the program.

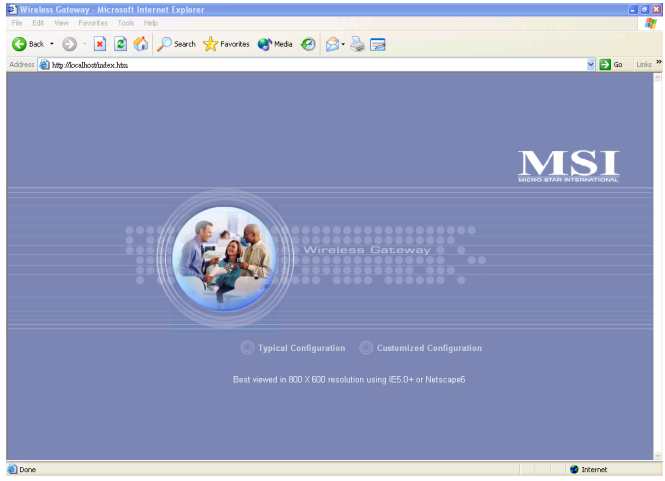
A.2 Launching the Configuration Utility

When the Software AP is enabled, click the icon to launch the Configuration Utility (or select **Launch AP configuration tool** option in the previous section).

First, enter the user's information in the **Connect** dialog box. By default, the User Name is ***admin*** and the Password is ***admin***. Then, click ***OK***.



The Home window of the Configuration Utility will appear as below, which provides two options to select: **Typical Configuration** and **Customized Configuration**.



- **Typical Configuration** provides a step-by-step Setup Wizard to guide you through the basic settings of the gateway. Generally, after completing the three steps in this option, your virtual AP can connect to the ISP and your client computer can access to the Internet without any problem.

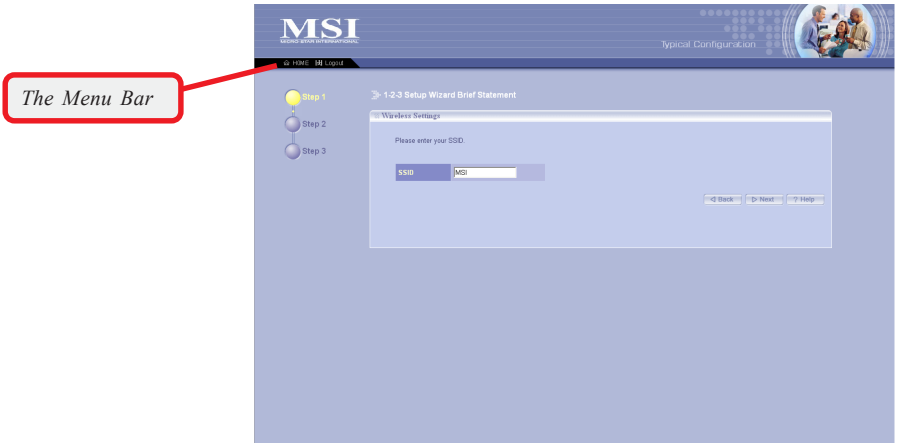
- **Customized Configuration** allows you to customize the network settings of your virtual AP for some specific purposes, such as changing password and other network settings.

- **Factory Default Settings of the Virtual AP**

SSID	MSI
Channel	1
User Name	admin
Password	admin
Encryption	Disable
DHCP client	Enable

A.3 Typical Configuration

In the Home window, click **Typical Configuration** and the Setup Wizard appears from *Step 1* to guide you through the configuration.



Step 1. Setting the SSID

The Menu Bar

During the Setup Wizard, whenever you click **HOME** in the menu bar will make you return to the Home window; click **Logout** to exit the Configuration Utility.

The Menu Bar

Step 1. Setting the SSID

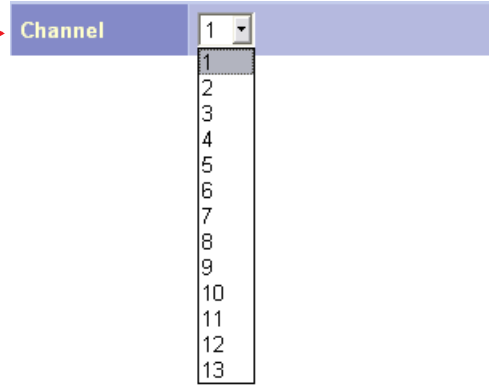
SSID (Service Set Identifier) is the name designated for a specific wireless local area network (WLAN). The factory default setting is **MSI**.

After entering your SSID, click ***Next*** to continue *step 2*.

Step 2. Setting the Channel

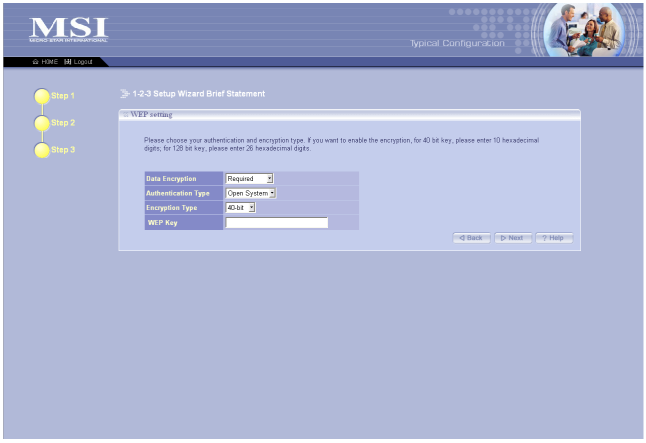
Channel **1** is the default value. Please note that all devices on the network must share the same channel.

Step 2. Setting the Channel



Make your choice and click ***Next*** to continue *step 3*.

Step 3. WEP Setting



Step 3. Setting the WEP

Data Encryption

If Data Encryption is set to **Required**, the following items must be answered. If it is set to **Not Required**, you may skip *Step 3* and click ***Next*** to close the 1-2-3 Setup Wizard.

Authentication Type

- ***Open System*** : communicates the key across the network.
- ***Shared Key*** : devices must have identical WEP settings to communicate.

Select your authentication type and continue on to the next item.

Encryption Type

Select the level of encryption desired: ***40-bit*** or ***128-bit***. If you want to enable the encryption, for 40-bit key, enter 10 hexadecimal digits; for 128-bit key, enter 26 hexadecimal digits.

Tip: Hexadecimal *digits consist of the numbers 0-9 and the letters A-F.*

WEP Key

Enter your 10- or 26-digit WEP Key.

When completed, click ***Next*** to close the 1-2-3 Setup Wizard.

A.4 Customized Configuration

Typically your virtual AP will have no problem to connect to your ISP and let internal clients to access to the Internet without any problem after going through the three steps in **Typical Configuration**. However, if you want to customize your virtual AP for some specific purposes, you may perform the configuration here.

Click **Customized Configuration**, and the main window appears as below.

Main Window of Customized Configuration

The Menu Bar

There is a menu bar in the top of the Customized Configuration window, where contains two options to exit the configuration window (**HOME** and **Logout**, as described in *page 8*); and three options for advanced configuration: **System**, **LAN**, and **Wireless**, allowing you to configure these respective settings and view the system status.

The Menu Bar

A.4.1 System

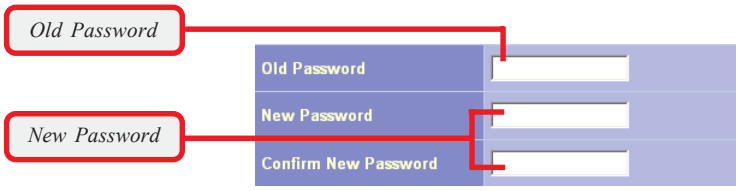
This page includes all the basic configuration tools such as options to set up password, re-load the factory default settings, and view system status.

This window includes:
> Password Setting
> Factory Default
> System Status

Tip: *Once you have changed the settings in each option, click* ***Apply*** *to save the settings, or* ***Cancel*** *to abandon. Clicking* ***Help*** *can bring up the help window.*

Password Setting

The default password of your virtual AP is ***admin***. This option allows you to use other password to replace the old password. First, enter the old password, and then enter the new password twice to confirm the password changed. Then, click ***Apply*** to save the settings.



Factory Default

You may re-load the factory settings of your Virtual AP.

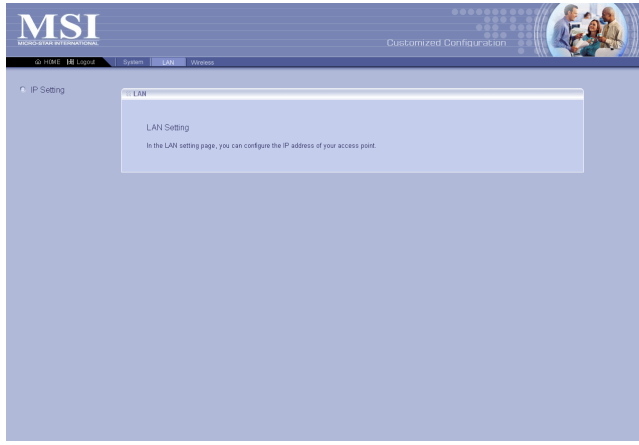
System Status

This option contains detail information of your Virtual AP, including general information and respective network settings.

A.4.2 LAN

LAN is short for *Local Area Network*. This is considered your internal network. In the LAN Setting window, you can configure the IP setting.

This window includes:
> IP Setting



IP Setting
The default setting of the IP address is obtained from your DHCP server. If there is no DHCP server in your network, uncheck the **Enable DHCP client** option and set up the IP address for your virtual AP.

DHCP Client
When set to **Enable**, your virtual AP can obtain an IP address automatically from the DHCP server. Please note that once you enable DHCP Client, you might not be able to configure your virtual AP in the browser unless you know what IP address your virtual AP is assigned.

IP Address
The IP address of the LAN interface.

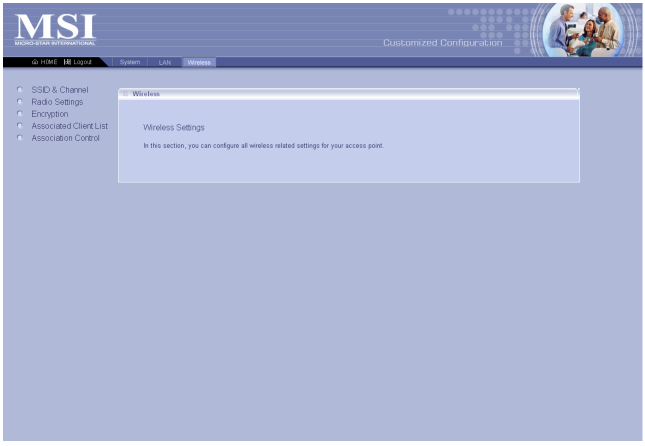
Subnet Mask
The subnet mask of the LAN interface.

Default Gateway
The IP address of the router/gateway in your network.

A.4.3 Wireless

In this section, you can configure all wireless related settings for your virtual AP.

This window includes:
> SSID & Channel
> Radio Settings
> Encryption
> Associated Client List
> Association Control

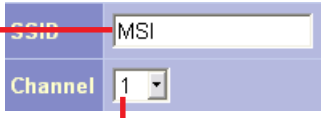


SSID & Channel

This option is used to set the SSID (Network Name) and channel for your virtual AP. If you have changed the SSID or Channel settings, click ***Apply*** to save the settings.

The virtual AP's SSID

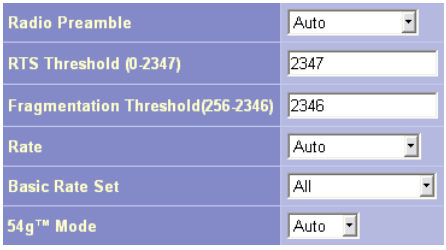
Select the Channel



Radio Setting

This option allows you to configure the operation parameters of the AP radio settings*.

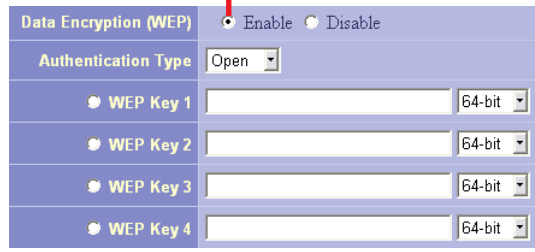
** These settings are for advanced users or MIS staff only. If you do not know how to set these parameters, you are recommended to use the default value.*



Encryption

This option allows you to configure the setting of data encryption. The WEP key must be set before the data encryption is enforced.

Enable WEP



Associated Client List

This option is to display information of stations that are currently associating to your virtual AP.

Association Control

This option allows you to control which PC can connect to the wireless LAN. If you enabled this feature, only PCs with MAC address located in Association Control List can connect to the wireless LAN.

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