54Mbps 802.11b/g
SoftGate Wireless AP/Router solution

User's Guide

Version QG 1.75 December 2004

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Federal Communication Commission Interference Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with 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 try to correct the interference by one of the following measures:

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

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

IMPORTANT NOTE:
FCC Radiation Exposure Statement:
This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. End users must follow the specific operating instructions for satisfying RF exposure compliance.
This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Remark: Wireless USB Dongle is limited in Ch1~Ch11 by specified firmware controlled in U.S.A.

Chapter 1. General Introduction

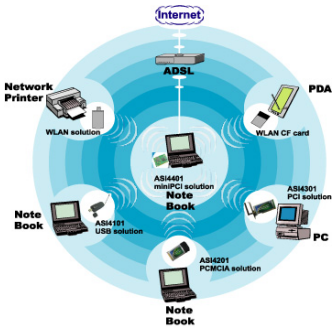
This Chapter provides a general overview of the SoftGate AP/Router's features and specifications.

Thank you for choosing SoftGate® wireless solution. SoftGate® is the first AP-less series family product to utilize an existing computer to become a wireless AP and Router with the management capability. SoftGate® can provide four functions (4- in-1): Router, AP, Bridge, and WLAN Client. Through SoftGate®, users can share internet connection and PC's resources such as files, Hard Disk storage, MP3 music, printers, CD/DVD ROM…etc. A wireless Local LAN connection can be easily built using SoftGate® technology. SoftGate® is the first technology that truly removes the limitation of wireless base station (AP/Router).

There are two major functions added in this version: Client Management and Time Management.

Client Management SoftGate® has a unique patent for user to manage individual client. SoftGate® console screen will update immediately if there is any new client login to SoftGate®. This feature is not possible to accomplish by using a traditional AP(or dedicated hardware AP). For traditional AP, user must go through a complicated procedure in order to get only the client's MAC address. Traditional or dedicated hardware AP can get only the client's MAC address. SoftGate®, on the other hand, can easily provide the full client information including Computer Name, IP address and MAC address.

Time Management SoftGate® is able to let user manage the client by time. SoftGate® is not only provide the limiting hours that client can access SoftGate® but also the exact hour to login. Most importantly is that SoftGate® operates on each individual client. Hence, the operation on the client will not disturb other clients normal operation.



1.1 SoftGate Features

- **4 in 1 Device**— Integrates Router, AP, Bridge, and WLAN client into your system.
- **Easy Installation & Expansion**— Simple, affordable and flexible solution break through your wireless limitation.
- **Complete Mobility**— Small size, portable wireless AP, Router, and WLAN client.
- **Mode Switch**— Mode switching can be as easy as one mouse click. It will take less than one minute to switch between the mode operations.
- **Wireless Bridge** — SoftGate® can share the Internet connection via another standard wireless device in the same system, It' s useful for hotspot (Mobile city) network environment.
- **Intelligent device**— Auto-detect and configuration at installation. There is a minimum to no knowledge required to setup a wireless environment. In the client mode, SoftGate® will auto detect and connect to available AP/Router.
- **Time Management** —SoftGate® can manage clients according to time limitation. You can easily setup a time limitation for each individual user. The time operation on each individual user will not disturb other clients' normal operation.
- **Share Folder**— SoftGate® will make share folders easier than ever. SoftGate® instantaneously allow user to share the Hard Disk information with the clients. It will assume maximum allowance to access the Hard Disk. Once, the SoftGate® is shutdown, than the shared folders turn off automatically. It will prevent the information being access without user awareness.
- **Save and Load**— Each configuration can be saved independently. User can re-load the profile at the proper environment.
- **Flexible WLAN adapter selected**— SoftGate® can let users select to share different broadband Internet connection, such as RJ45, wireless connection, dial-up, or 1394 connection.
- **Support multiple languages**— SoftGate® can let users to choose different language at installation. Users is also able to change to the prefer language after completed installation.
- **Computer name and IP**— SoftGate® can let you easily identify who is accessing your resource. SoftGate® will display the complete each client information such as: Computer Name, IP address, and MAC address.
- **Security**—64-bit or 128-bit WEP, TKIP, and AES

1.2 SoftGate Specifications

Standard	IEEE 802.11b, IEEE 802.11g
Adapter Type	USB, CardBus, PCI
Multi Mode	Router, AP, Bridge and station
Modulation Technology	802.11g : OFDM (64QAM, 16QAM, QPSK, BPSK) 802.11b : CCK (11Mbps), DQPSK (2Mbps), DBPSK (1Mbps)
Data Encryption	64/128 bit WEP Encryption TKIP AES 802.1x, WPA (Windows XP SP1 and Windows 2000 SP4 only)
Frequency Band	2.412 ~ 2.462 GHz (US) 2.412 ~ 2.484 GHz (Japan) 2.412 ~ 2.472 GHz (Europe) 2.457 ~ 2.462 GHz (Spain) 2.457 ~ 2.472 GHz (France)
Channels	11 (US, Canada), 13 (Europe), 14 (Japan), 2 (Spain), 4 (France)
Date Rates & Modulation	802.11g : 6,9,12,18,24,36,48,54 Mbps 802.11b : 1,2,5.5,11 Mbps
Media Access Protocol	CSMA/CA with ACK
Supported OS	Windows 2000, XP
Transmit Output Power	802.11b≧18.5dBm 802.11g 6/9Mbps≧17.5dBm 12/18Mbps≧17.5dBm 24Mbps≧15dBm 36Mbps≧15dBm 48Mbps≧13dBm 54Mbps≧13dBm
Operating Range	Open Space: up to 400 meters; Indoor: up to 100 meters The transmission speed varies in the surrounding environment.
Operational Voltage	5.0 V ± 5%
Temperature	0~65°C (Operating)
Humidity	Max. 95% Non-condensing
Certifications	FCC, CE, SAR
Warranty	One year (limitation)

Chapter 2. SoftGate Installation

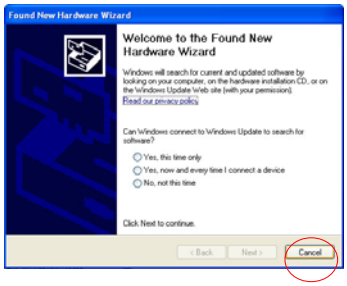
This chapter describes SoftGate® installation procedure under Windows XP.

Caution:

Note 1: It is recommended the Broadband Internet connection or LAN connection is working properly in your system before the SoftGate installation..

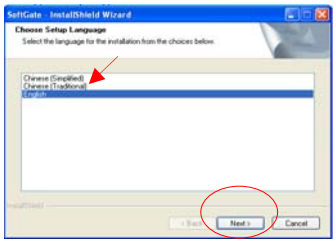
Note 2: Connect the device into your system before you begin to install the software.

Step 1: Insert the device into your system. Windows will automatically detect the device and pop-up the "Found new hardware" message. Click "cancel" button.

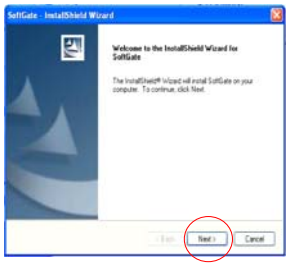


Step 2: Insert the installation CD into your CD-ROM and execute auto installing program.

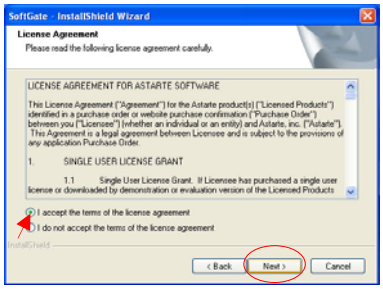
Step 3: Choose the prefer language, and click "Next" to continue.
Note: 1. Choosing the wrong language may cause computer to display funny characters on the screen. User may not be able to read.
Note: 2. The language can be changed after install.



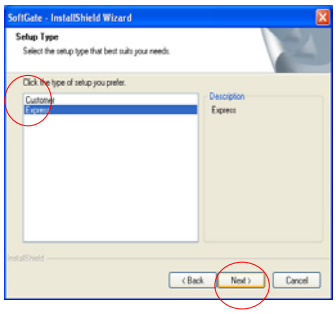
Step 4: Click "Install" to start installation procedure. Click "Next" to continue.



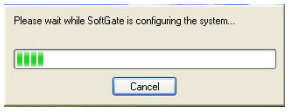
- **Install-Shield Wizard will show license agreement. If you agree this license, please choose "I accept ", and click "Next" to continue the installation procedures. Otherwise, choose "I do not accept …" to cancel the installation.**



Step 5: Choose the Type you want to install SoftGate, and click "Next" to continue. The default is the "Express" type, and we recommend that you choose "Express" type to install SoftGate.

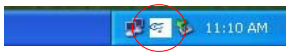


Step 6: At this moment, SoftGate installation wizard will detect your computer's environment automatically.



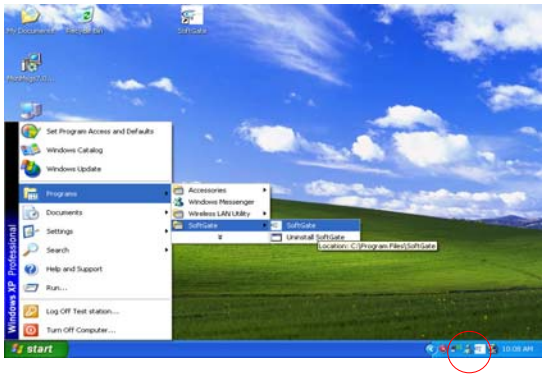
Step 7: Click the "Finish" button to restart your computer and get ready to use the SoftGate.

- **Click the SoftGate Icon in system tray to pop-up SoftGate Manager.**



Chapter 3. Using SoftGate

After successfully install SoftGate®, you can activate SoftGate® from Start → All Programs → SoftGate. It also locates in your system tray.



3.1 SoftGate Main Screen

1. **Power On/Off button:** To turn on or off the radio. Yellow color means power on. White color means Power off
2. **Mode switching button:** To switch between each mode: Station (Client), Bridge(AP), Router or Repeater (not implement yet). Yellow color means active mode
3. **Internet connection button:** Click logo to link SoftGate web site to get the latest update product information and technical support.

3.2 Client Mode

Click on Station button to switch to client/station mode.

3.2.1 Main tab

3.2.1.1 Connection section:

- Click the “Refresh” to search for all available AP/Router.
- High light the AP/Router which you want to connect. Click the “Connect” to link the specific AP/Router.
- The BSSID will turn red once it was connected successfully.
- Click on “Add” to create a profile site. User can go to “Setting” to Add/Edit/Delete user profile

3.2.1.2 Quality section:

- SoftGate provides “Throughput” and “Signal” status for users to review the network information when the auto-refresh is checked.

3.2.1.3 Information section:

- It provides the information of “SoftGate Adapter” and WLAN adapter.

3.2.1.4 Setting section:

- User can change the language through the pull down menu.
- Use ADD/Edit/Delete button to manage your profile.

3.2.2 Assignment tab

3.2.2.1 Setup section:

- SSID, Region, and Channel fields are not available on the "Station/Client mode".
- **Share Folder button:** Allow users to share the folders on the Harddisk with other clients instantaneously.

1. Click "**Share folder**" to choose the folder in your computer which you want to share. Assign a name for the shared folder.
2. Click "**Add**" button to add the folder which you want to share into the shared folder list.
3. Select the "Shared Name" and click "Delete" to remove the shared folder from the share list.

- Click "Save" to save all settings.
- Click "Load" to re-load the settings from computer.

** "AP configuration" only can be used at Bridge/Router mode.

3.2.2 Encryption section:

- This field is not available on the "Station/Client mode".

** Relates to the security features of SoftGate. Security features will be addressed in the Appendix-A.

SoftGate Security

3.3 Bridge/Router mode

Click on “Bridge mode or Router mode” to act as “Wireless AP/Router”.

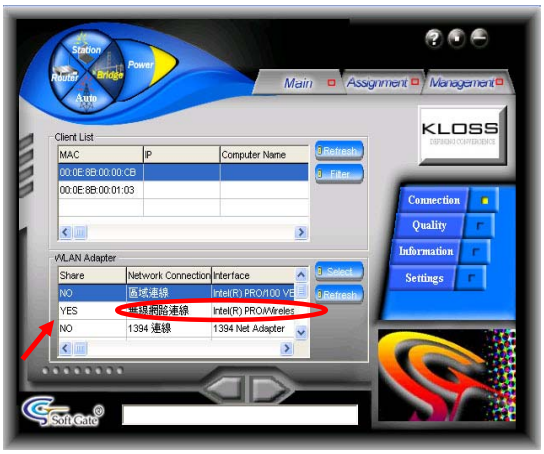
3.3.1 Main tab

3.3.1.1 Connection section:

- Click on “**Bridge**” or “**Router**” to switch to “Bridge or Router operation”.
- <Client List> shows the MAC address, IP address, and Computer Name of the clients.
  - Click on the “**Refresh**” to get an update on the client list.
  - High light the client and click the “**Filter**” to add the client into MAC filtering list. (Refer to section “Management function” for detail).
- <WLAN Adapter> displays available broadband network connections.
  - “Refresh” updates all available broadband network connections.
  - Click the “Select” to share the broadband connection.

*****For Router/ Bridge mode only (Select the WLAN adapter first and click the mode-switch button. you want to switch.)

◆ **Wireless Bridge/Router Function** —SoftGate® can share the Internet connection via another standard wireless device in the same system. SoftGate provides user to share the Internet connection through another standard wireless interface device (like Centrino™), User can do Internet access under one ISP account when using in Public wireless network (hotspot), and especially for the application of mobile city.



- Enable another standard wireless device in the same system (already installed SoftGate and under bridge/router mode) and link to one of other available AP’ s.
- Click the “Refresh” button, and you can find the wireless adapter connection in SoftGate Main tab, “WLAN Adapter” section,
- Highlight this wireless adapter and click the “Select” button to enable sharing function to other clients that connected to this SoftGate device.
- Now, SoftGate is providing wireless bridge/router function for client users.

3.3.1.2 Quality section:

- SoftGate provides “Throughput” and “Signal” status for users to review the network information when the auto-refresh is checked.

3.3.1.3 Information section:

- It provides the information of “SoftGate Adapter” and WLAN adapter.
- Click the “**Refresh**” to get the updated data.

3.3.1.4 Setting section:

- Use the pull down menu to select the language pack for SoftGate. SoftGate provides several language packs for user.

** The **“Profile site List”** function is only using under “**Station mode”.**

3.3.2 Assignment tab

3.3.2.1 Setup section:

- **SSID:** Service Set Identifier (SSID) is the name which will be found in the site survey.
- **Region:** Pull down to choose your location.
- **Channel: T**he active channel of SoftGate.
- Click the “**Apply**” to enable the changes.

3.3.2.2 Setup section (Share folder):

- **Share Folder button:** Allow users to share the folders on the Harddisk with other clients instantaneously.

1. Click "**Share folder**" to choose the folder in your computer which you want to share. Assign a name for the shared folder.
2. Click "**Add**" button to add the folder which you want to share into the shared folder list.
3. Select the "Shared Name" and click "Delete" to remove the shared folder from the share list.

- Click the "Save" to save all settings.
- Click the "Load" to re-load the settings from computer.
- Click the "**Apply**" to save and enable the changes.

3.3.2.3 Encryption section:

- SoftGate provides the wireless standard encryption for user to enhance network security. Type in 5 characters (64-bit format) and 13 characters (128-bit format) encryption. There are 4 index WEP Key available for user to use. Client must use the same Index and passwords to login to use the resource.
- Click the "**Apply**" to save and enable the encryption function.

** Relates to the security features of SoftGate. Security features are discussed in detail at ***SoftGate Security.***

3.3.3 Management tab

3.3.3.1 Status section (Time Management function):

- MAC filtering function to allow/Deny clients access the resourced in approved time zone.
  - High light the client, MAC will show the client MAC address. Click on the "Deny" to deny the client access the resource. The default is allow
  - Select on the point to right button for the time management.
  - The default is available on all the time.
  - Click on the button(s) the **APPROVED TIME ZONE** to have the time management.
  - Click on Apply after you have finished the selection.

Allow

Deny

SoftGate Appendix

SoftGate Securities

As mentioned in the SoftGate introduction, securing your SoftGate enabled network is essential in a wireless network environment.

Security for the SoftGate enabled wireless network is maintained through two primary features:

- Support for the Wired Equivalency Protocol (WEP)
- Support for MAC address filtering(not implement yet)

Appendix A: WEP Key Configuration

The Wired Equivalency Protocol (*WEP)* is an 802.11 encryption standard that provides a moderate level of security for wireless LAN's. Using WEP will provide enhanced security to your SoftGate powered network, providing network authentication and data encryption.
SoftGate allows the user to enter a 64 or 128 bit WEP key. The user simply enters the WEP key and SoftGate automatically configures the SoftGate host to use WEP with the provided key. Clients that attempt to associate with the SoftGate host will be required to supply the WEP key.
SoftGate allows you to enter and store up to 4 keys, although you may only use one key at any given time. The interface provides the capability to quickly switch keys using the pull down dialog box "Use Key #".
Clients that connect to SoftGate must be configured to use WEP, and they must be configured with the correct WEP key before attempting to connect to SoftGate.
Figure shows details the "Wireless AP" interface where WEP security is configured.

Key Length: select either 64-bit or 128-bit encryption method.
64-Bit –Allows wireless LAN card to encrypt data with the 64-Bit encryption algorithm.
128-Bit –Allows wireless LAN card to encrypt data with the 128-Bit encryption algorithm.

The **Encryption** tab enables you to identify up to 4 different encryption passwords and select one of them to encrypt your transmission data. The password of your choice may either be:
For 64-bit encryption:
5 alphanumeric characters in the range of "a-z", "A-Z" and "0-9" (e.g. MyKey)
For 128-bit encryption:
13 alphanumeric characters in the range of "a-z", "A-Z" and "0-9" (e.g. MyKeysoftgate).

** After setup to Use WEP key #1, and in Client side has to correct index to the key you used.

Appendix B: MAC Address Filtering

SoftGate supports MAC address filtering for denying or allowing access to individual clients. A MAC address (Media Access Control) is a unique hardware address for networking equipment. The MAC address is used by the network for associating an IP addresses to a users networking hardware, in this case their wireless LAN adapter. Because each MAC address is unique, it is suitable to use a MAC address for filtering purposes.

MAC Filtering User Interface

The MAC Filter configuration interface that allows the SoftGate host user the ability to configure SoftGate to explicitly "Deny" or "Allow " access to the SoftGate network based on MAC address of the client adapter. When "Deny/Allow Access" is enabled, listed MAC addresses that are checked will be denied/allowed access to the SoftGate enabled network.
SoftGate is also able to let user manage the client by time. SoftGate is not only provide the limiting hours that client can access SoftGate® but also the exact hour to login. Most importantly is that SoftGate® operates on each individual client. Hence, the operation on the client will not disturb other clients normal operation.

Appendix C: Wireless Network Settings of SoftGate

The SoftGate wireless solution can be configured as an AP/Router or as a wireless LAN adapter, just easily to use the mode switch button.

The SoftGate device acts as a central link (AP/Router) between other computers in the wireless network. It provides wireless clients to communicate with each other or with a wired network. Also SoftGate adapter can switch to station mode as an individual WiFi client, through it you can link to any AP/Routers in your wireless network.

Appendix D: Troubleshooting

This troubleshooting guide provides solutions for some common problems that you may encounter while using SoftGate wireless solution. These problems require simple troubleshooting that you can perform by yourself. Contact SoftGate Support if you encounter problems not mentioned in this section.

1. Why I can not install SoftGate in my computer?
   A: Check your computer's Operation System version, SoftGate only support Microsoft Windows 2000 and XP.
2. Other Wireless LAN card can not associated with SoftGate AP/Router?.
   A: Make sure you wireless LAN card has the same specification as the SoftGate AP/Router, It must meet IEEE 802.11b/g standard.
   Check the SoftGate adapter is in AP/Router mode.
   Check the distance between those devices, It maybe out of the wireless range.
   When encryption is enabled, check both SoftGate AP/Router and wireless LAN card have the same encryption settings (encryption method, password, key#...)
3. The throughput seems slow!
   A: Avoid placing you SoftGate behind a metal object.