

**ZTE I600**

**WiMAX MODEM**

# **User Manual**

# **Announcement**

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# 1. General Information

## 1.1 Welcome

- Thanks for choosing the ZTE I600 WiMAX MODEM (herein after referred to as “MODEM”). To get the most from your MODEM and to keep it in the best condition please read this manual carefully.
- The pictures, symbols and contents in this manual are for reference only. They might not be completely identical with your MODEM. ZTE operates a policy of continuous development. We reserve the right to update the technical specifications in this document at any time without prior notice.

## 1.2 Safety Precautions

- Some electronic devices may be susceptible to electromagnetic interference. Locate the MODEM away from TV set, radio and other electronic equipment to avoid electromagnetic interference.
- The MODEM may interfere with medical devices like hearing aides and pacemakers. Consult with a physician or the manufacturer of the medical device before using the MODEM.
- Do not use your MODEM in dangerous environments such as oil or chemical factories where there are explosive gases or explosive products being processed.
- Please use original accessories or accessories that are authorized by Sprint. Unauthorized accessories may affect the MODEM performance, damage the MODEM or cause danger to you.
- Do not attempt to dismantle the MODEM. There are no user serviceable parts.
- Do not immerse the MODEM in any liquid.
- Do not place objects on top of the MODEM. This may lead to overheating of the device.
- The device must be placed in ventilation environment for use.
- Do not expose the MODEM to direct sunlight or store it in hot areas. High temperature can shorten the life of electronic devices.
- Do not touch the antenna while calling.
- Do not allow children to play with the MODEM or charger.
- Keep the length of the cable between the MODEM and the phone less than 33 feet.
- The MODEM is for indoor use only. Do not use the MODEM outside. Do not connect telephone extensions which run outside of the building. These can result in lightning damage to your unit.

- This device has been tested for compliance with FCC RF Exposure (SAR) limits in the typical laptop computer configuration. This device cannot be used with handheld PDAs (personal digital assistants). This device and its antenna must not be co-located or operated in conjunction with any other antenna or transmitter.

### **1.3 Cleaning and Maintaining**

- Use an antistatic cloth to clean the MODEM. Do not use chemical or abrasive cleanser as these could damage the plastic case. Turn off your MODEM before you clean it.
- Use the MODEM within the temperature range of 0°C ~55°C[32°F ~ 131°F] and the humidity range of 10%~85%.
- Do not use your MODEM during a thunderstorm. Remove the mains power pack from the wall socket.
- Please do not touch the antenna with your hand during conversation. Covering the antenna may affect call quality, may cause the MODEM to operate at higher power level than needed.

### **1.4 Limited Warranty**

- This warranty does not apply to defects or errors in the Product caused by:
  - (a) Reasonable MODEM Appearance Disfiguration.
  - (b) End User's failure to follow ZTE's installation, operation or maintenance instructions or procedures.
  - (c) End User's mishandling, misuse, negligence, or improper installation, disassemble, storage, servicing or operation of the Product.
  - (d) Modifications or repairs not made by ZTE or a ZTE-certified individual.
  - (e) Power failures, surges, fire, flood, accident, actions of third parties or other events outside ZTE's reasonable control.
  - (f) Usage of products of third Parties, or usage in conjunction with third party products provided that such defects is due to the combined usage.
  - (g) Any other cause beyond the range of normal usage for Products. End User shall have no right to reject, return, or receive a refund for any Product from ZTE under the above-mentioned situations.
- This warranty is end user's sole remedy and ZTE's sole liability for defective or nonconforming items, and is in lieu of all other warranties, expressed, implied or statutory, including but not limited to the implied warranties of merchantability and fitness for a particular purpose, unless otherwise required under the mandatory provisions of the law.

## 1.5 Limitation of Liability

- ZTE shall not be liable for any loss of profits or indirect, special, incidental or consequential damages resulting from or arising out of or in connection with using of this product, whether or not ZTE had been advised, knew or should have known of the possibility of such damages, including, but not limited to lost profits, interruption of business, cost of capital, cost of substitute facilities or product, or any downtime cost.
- The servicing instructions in this notice are for use by qualified service personnel only. To reduce the risk of electric shock, do not perform any servicing other than that contained in the operating instructions, unless you are qualified to do so.
- The shield of the coaxial cable must be connected to earth (grounded) at the entrance to the building in accordance with applicable national electrical installation codes.
- In areas of high surge events or poor grounding situations and areas prone to lightning strikes, additional surge protection may be required(i.e.PF 11VNT3 from American Power Conversion)on the AC, RF, Ethernet and Phone lines.
- When the telephony Modem is connected to a local computer, the computer must be properly grounded to the building/residence AC ground network. All plug-in cards within the computer must be properly installed and grounded to the computer frame per the manufacturer's specifications.

### Note:

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.

- The user is cautioned that changes or modifications not expressly approved by the grantee of this device could void the user's authority to operate the equipment.

✧ *Class B:*

## FEDERAL COMMUNICATIONS 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 or more 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.

**CAUTION:**

Any changes or modifications not expressly approved by the grantee of this device could void the user's authority to operate the equipment.

✧ **RF exposure warning**

This equipment must be installed and operated in accordance with provided instructions and the antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter. End-users and installers must be provide with antenna installation instructions and transmitter operating conditions for satisfying RF exposure compliance.

## 2. Getting Started

### 2.1 Appearance



Front Panel









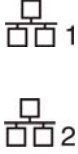
### 2.2 Parts Supplied

Parts	Quantity
MODEM	1
Power adapter	1
RJ-45 10/100BaseT Ethernet cable	2
Remote antenna	1 (optional)
CD	1
Quick Start Guide	1
Technical Legal Guide (TLG)	1
Package List	1

Please contact with your provider as soon as possible if the parts have any damage or lost. If replacing product, please preserve the packing box and parts of the product.

### 2.3 LED Indicator

There are total eleven LEDs for the MODEM, detailed description as following table.

LED	Marker		Status	Description
WiMAX RSSI			Solid Green or Off	Use 3 LEDs to indicate signal strength.  : No signal  : Signal is weak  : Signal is medium  : Signal is strong
WiMAX Status			Solid Green	Register Success
			Slow Flashing	Register Process/Device Startup
Phone1/Phone2			Off	Hook on/Out of Service
			Solid Green	Hook off
			Flashing Green	Message waiting Indicator
Power			Solid Green	Power Supply
			Solid Red	Power Supply Failure
LAN1/LAN2		Top left corner LED	Off	Out of Connection
			Solid Green	Connection
			Flashing Green	Data Service Process
	Top right corner LED	Off	10M Interface	
		Solid Yellow	100M Interface	

## 2.4 Working Condition

### ■ Working Condition for Host

- ✧ Working temperature: 0°C ~ +55°C [32°F ~ 131°F]
- ✧ Working humidity: 10% ~ 85%
- ✧ Storage temperature: -30°C ~ +70°C [-22°F ~ 158°F]
- ✧ Storage humidity: 5% ~ 90%

## 2.5 Technical Parameters

Mode of Access	WiMAX (Worldwide Interoperability for Microwave Access)
WiMAX Protocol	802.16e(IEEE 802.16-2005)
Frequency Range	2.496GHz-2.690GHz
Dimensions (W×H×D)	150mm×180mm×120mm
Weight	359g

Please refer to the real objects for the related parameters about the charger.

## 2.6 ports



All six ports are in back panel.

Port Indicator	Description
DC 12V ⊖ ⊕	External power socket
1 2	Phone port
1 2	LAN port
▼	Remote antenna interface
↻	Reset button

I600 WiMAX supply a extended antenna interface. When the signal is weak, you can use the extended antenna interface to strengthen the signal.

**CAUTION:**

Once you use the indoor antenna, the antenna integrated into the device will be null and void.

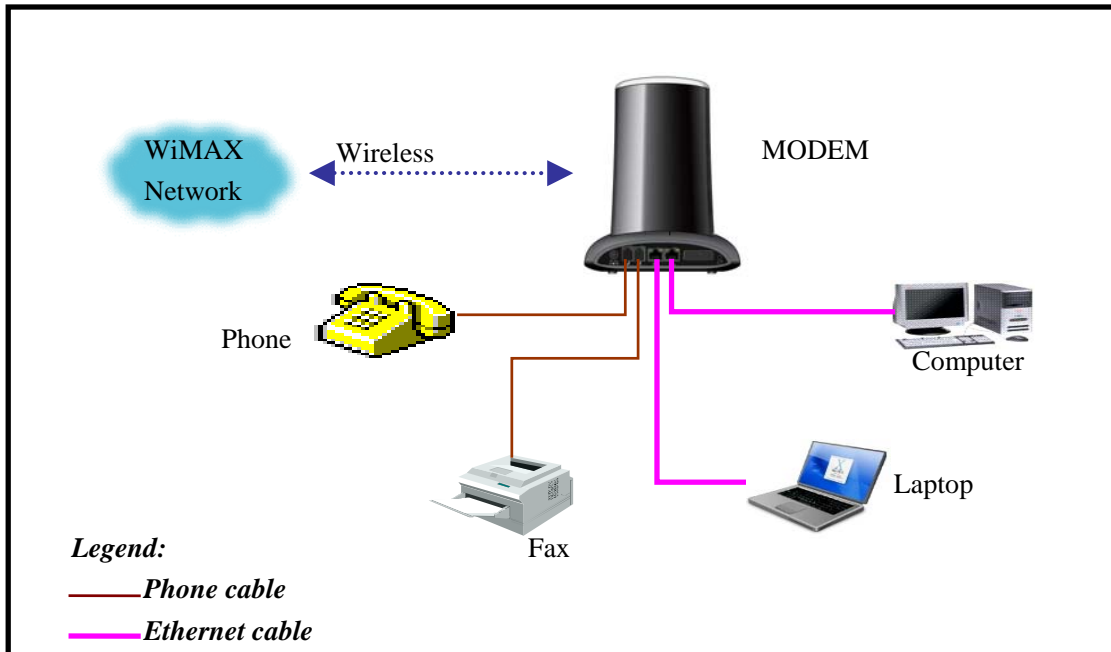
Installation and removing extended antenna cable must be carried out under the guidance of professionals.

Please contact your requirement provider to buy the extended antenna.

# 3.Connecting MODEM

## 3.1 Application Structure

Network connection is shown as follows



## 3.2 Hardware installation

Make sure that your modem is powered off.

### 3.2.1 Connect to LAN

Plug one end of an Ethernet network cable into LAN ports on the back of the MODEM, and plug the other end into an Ethernet port on a network device, for example: PCs or other network devices. The Ethernet cable can be crossover or straight.

Note:

Don't insert phone cable into LAN ports.

### 3.2.2 Connect to phone

Connect phone cable to  1 or  2 port of MODEM.

### 3.2.3 Connect power adapter

Connect the included power adapter to the MODEM power port, and then plug the power adapter into an electrical outlet. The Power LED on the front panel will light up when the adapter is connected properly.

Note:

Make sure you use the power adapter that is supplied with the MODEM. Use of a different power adapter could damage the MODEM.

### **3.2.4 Power on MODEM**

Turn on the MODEM.

## 4.Preparation for configuring MODEM

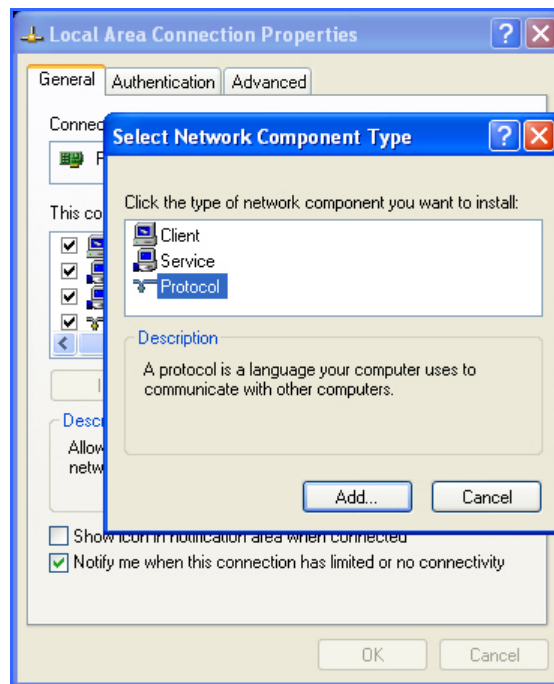
Usually, MODEM has been configured by service provider and you can use it directly. But in some instance, you need configure MODEM by yourself.

### 4.1 TCP/IP installation and configuration

#### Installation

If TCP/IP protocol is not installed, please install it first. Please refer to installation steps in WinXp as follows(For classic start menu):.

1. Click <**Start**> and select [**Settings**] then click <**Network Connections**>.
2. Double-click <**Local Area Connection**> and click <**Properties**>.
3. Click <**Install...**> and double-click <**Protocol**>.

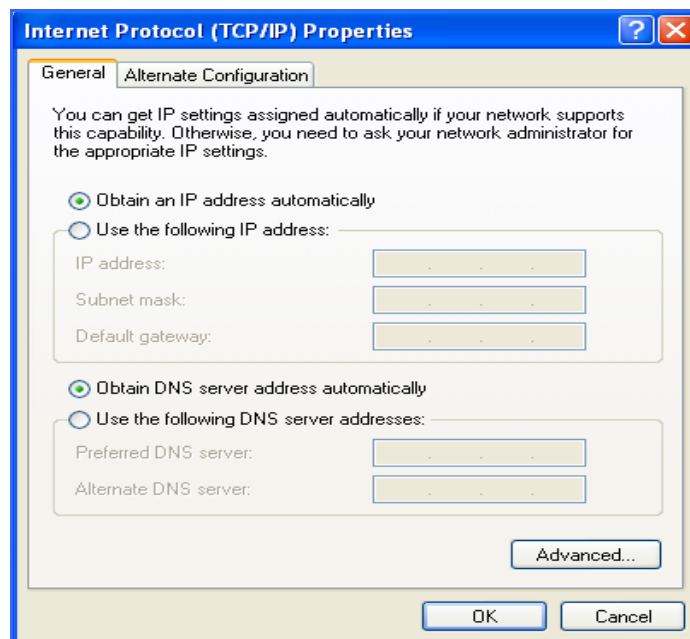


4. Select <**Internet Protocol (TCP/IP)**> and click <**OK**>.

#### Configuration (For classic start menu)

1. Click <**Start**> and select [**Settings**], then click <**Network Connections**>.
2. Double-click <**Local Area Connection**> and click <**Properties**>.
3. Double-click <**Internet Protocol(TCP/IP)**> and select <**Obtain an IP address automatically**>, <**Obtian DNS server address automatically**>.





#### Note:

If the service provider provides DNS IP address, please select <Use the following DNS server addresses> and enter the specified IP address.

## 4.2 Checking

### 4.2.1 Check LAN connection

1. Click <Start> and <Run>. In the *Open* field, enter **command**. Press the **Enter** key or click the <OK> button. In the command prompt, type **ping 192.168.100.1** and press the **Enter** key.
2. If you get a reply as follows, the LAN connection is ok.

```
C:\Documents and Settings\Administrator>ping 192.168.100.1
Pinging 192.168.100.1 with 32 bytes of data:
Reply from 192.168.100.1: bytes=32 time=23ms TTL=64
Reply from 192.168.100.1: bytes=32 time=5ms TTL=64
Reply from 192.168.100.1: bytes=32 time=4ms TTL=64
```

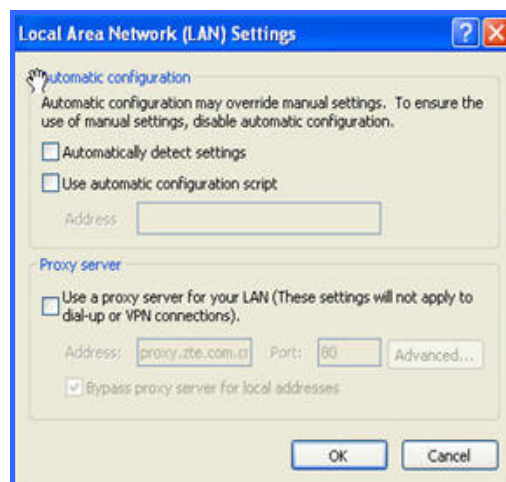
3. If you do not get a reply as follows, please check the LAN and TCP/IP configuration. Refer to chapter 3.2 and chapter 4.1 in detail.

```
C:\Documents and Settings\Administrator>ping 192.168.100.1
Pinging 192.168.100.1 with 32 bytes of data:
Request timed out.
Request timed out.
```

## 4.2.2 Cancel proxy server in browser

For classic start menu:

1. Click <Start>, <Settings>, and <Control Panel>, Select <Internet Options>.
2. Select <Connections>.
3. Click the <LAN settings> button and remove anything that is checked



4. Click the <OK> button to go back to the previous screen.
5. Click the <OK> button to confirm cancelling proxy server in browser.

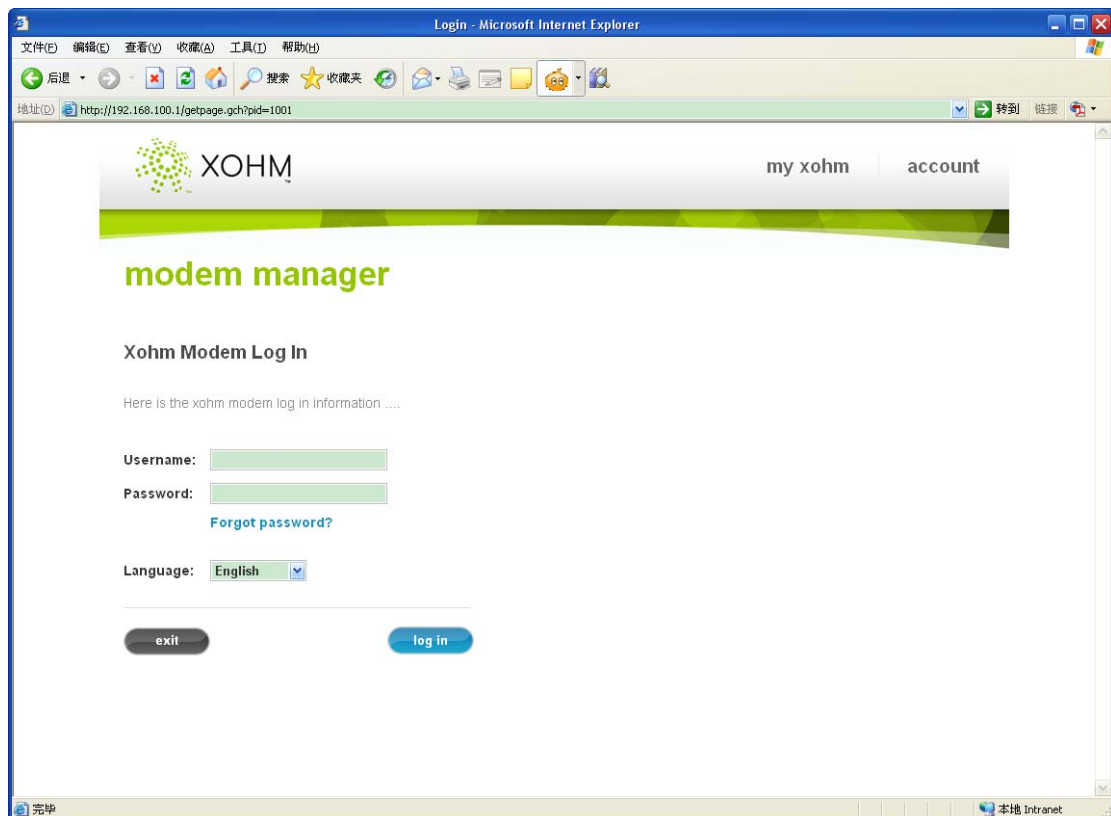
## 4.2.3 Others

Sometimes you also need several parameters, please ask your service provider in detail.

# 5.MODEM Manager

## 5.1 log in

To access the Web-based Utility of the MODEM, launch Internet Explorer or Netscape Navigator and enter the MODEM's default IP address (**192.168.100.1**) in the address field. Press the **Enter** key. A screen will appear asking you for your User name and Password (detailed as following picture). Enter **user** in the *Username* field and **1234** in the *Password* field. Select the proper language. Then click the **<log in>** button.



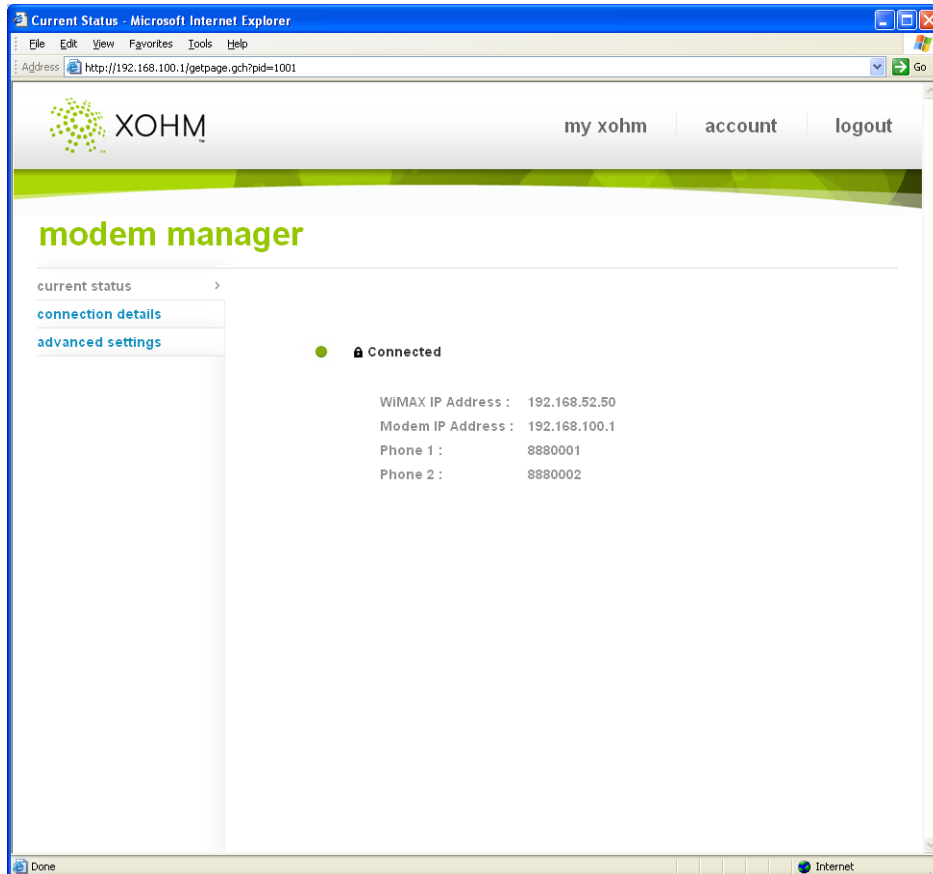
Note:

-If you forget password, please click ***Forgot password*** link.

-If you click **<exit>** button, you will see the following prompt message.



When you access the MODEM setup page, the first screen you see as following:

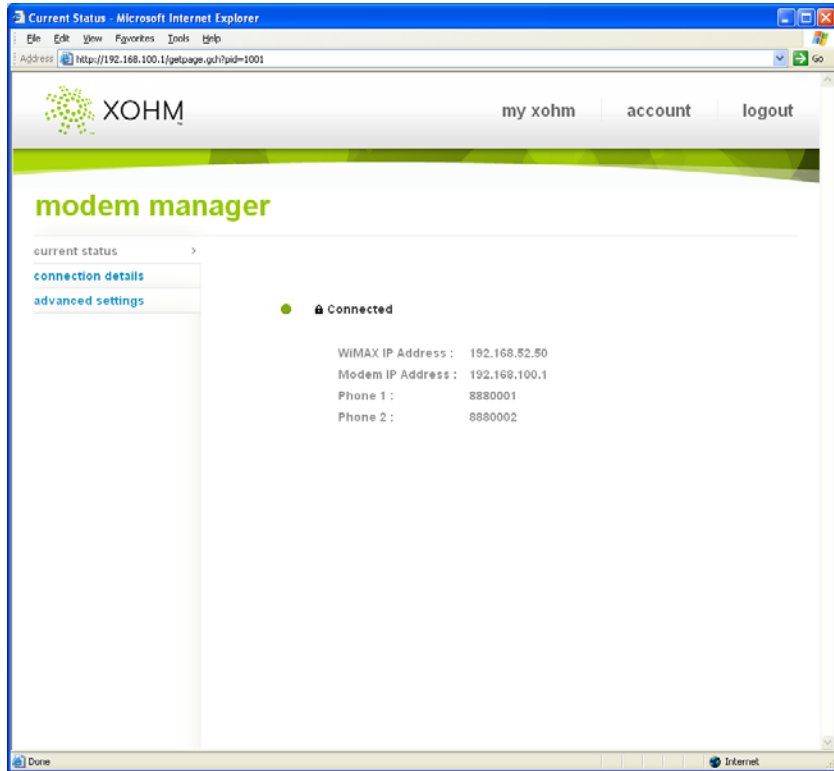


This page includes six links:

- Click *my xohm* link to access <http://www.xhom.com>.
- Click *account* link to access <http://www.xhom.com/members/account>.
- Click *logout* link to manual exit MODEM setup page. In addition, if no any operation within 5 minutes, the screen will return to log in page when you process again in the old MODEM setup page.
- Click *current status* and *connection details* link to view MODEM and network current status.
- Click *advanced settings* link to set MODEM.

## 5.2 current status

When you access the MODEM setup page, you will see the basic information.



- WiMAX IP Address

MODEM current WAN IP address

- MODEM IP Address

MODEM setup page IP address

- Phone 1



Phone number for phone 1

- Phone 2

Phone number for phone 2

- ●  Connected

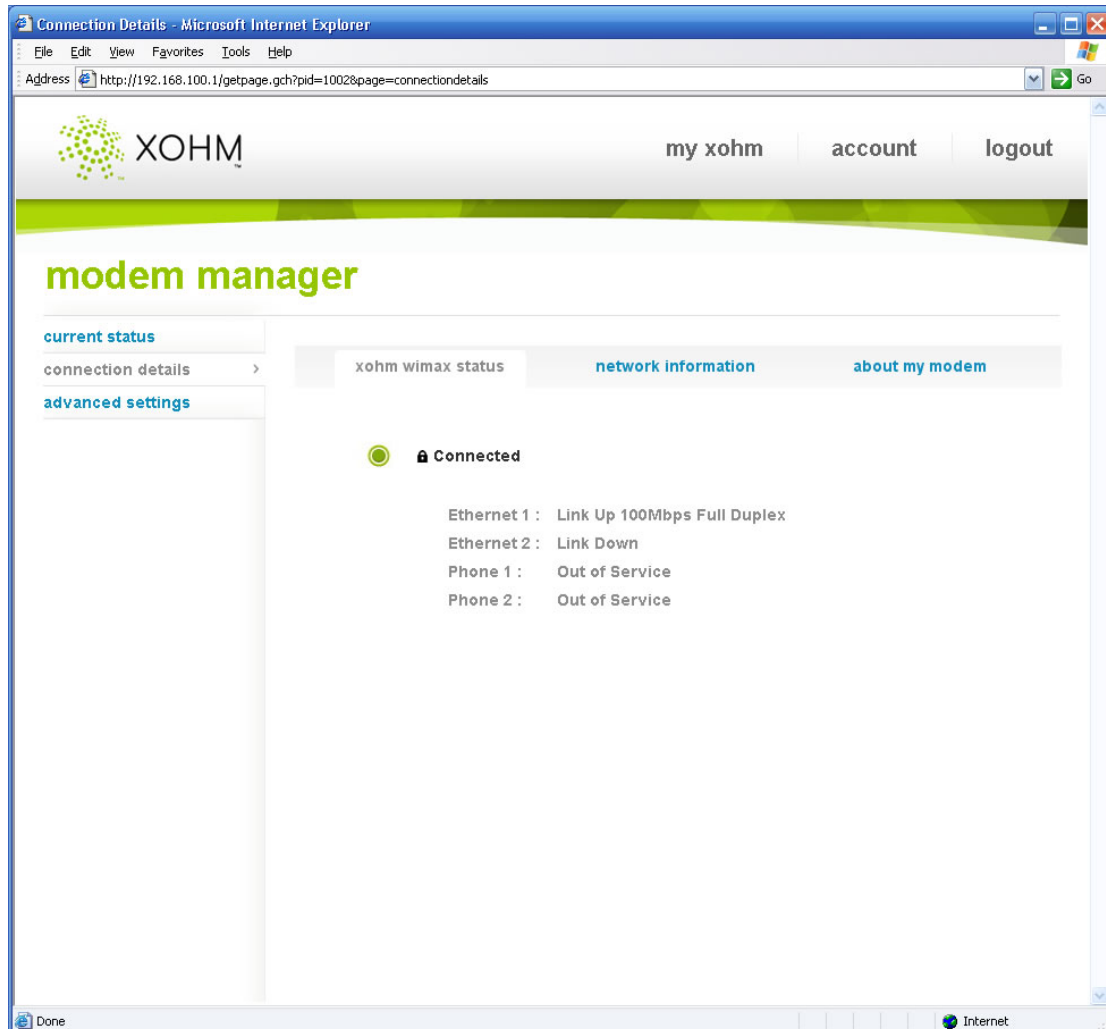
Show the current network signal strength and connection status. Detailed as follows:

Name	Icon	Description
Signal strength		More circles show stronger signal.
		No signal
Connection status	<b>Connected</b>	MODEM accesses network successfully

	<b>Disconnected</b>	Disconnected with WiMAX network
--	---------------------	---------------------------------

### 5.3 connection details

When connection is successful, please click *connection details* link to enter into following page.



#### 5.3.1 xohm wimax status

- Ethernet 1

LAN port 1 property and current status

- Ethernet 2

LAN port 2 property and current status

- Phone 1

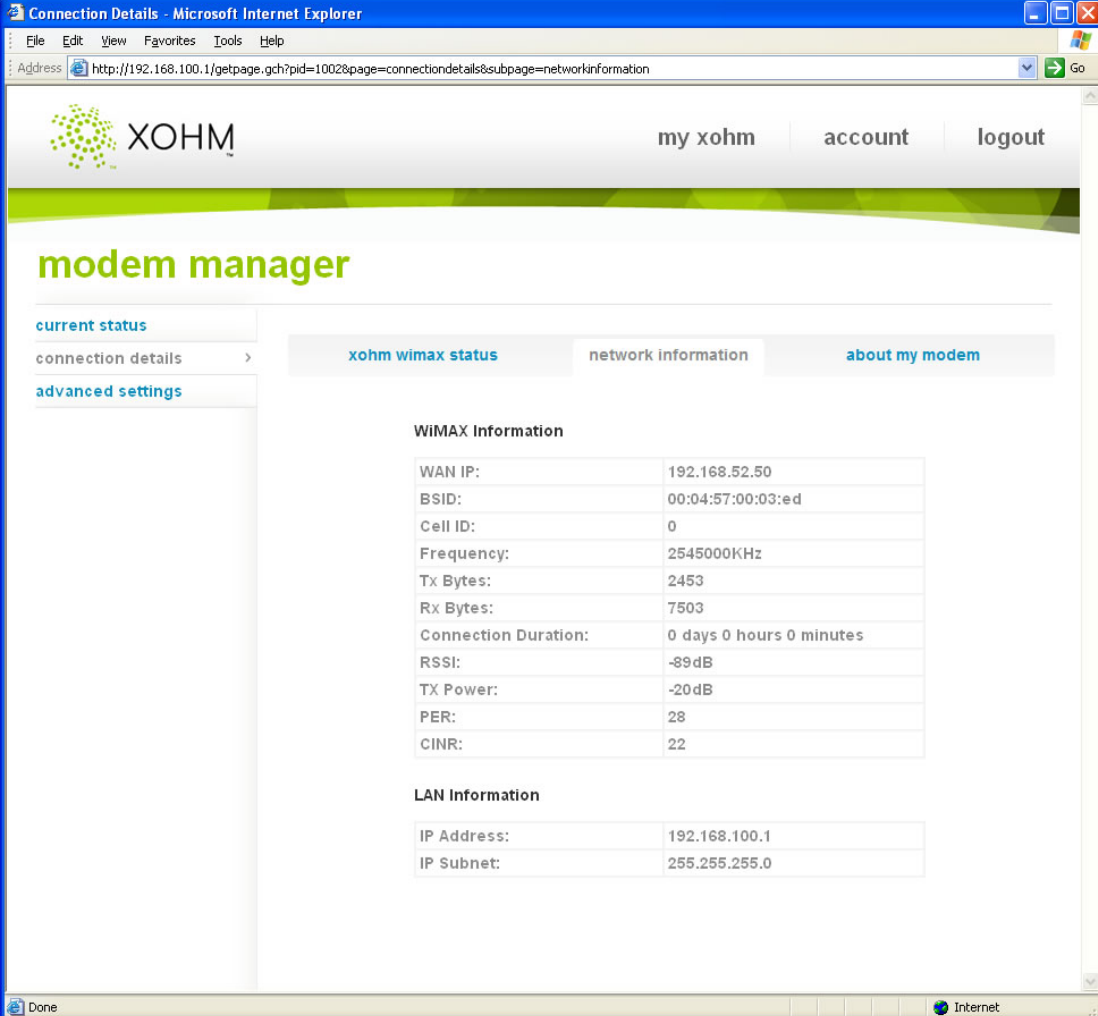
Phone 1 current status

- Phone 2

Phone 2 current status

### 5.3.2 network information

Click *network information* link to enter into following page.



The screenshot shows a web browser window titled "Connection Details - Microsoft Internet Explorer". The address bar shows the URL: <http://192.168.100.1/getpage.gch?pid=1002&page=connectiondetails&subpage=networkinformation>. The page header features the XOHM logo and navigation links for "my xohm", "account", and "logout". The main content area is titled "modem manager" and includes a sidebar with "current status", "connection details", and "advanced settings". The "network information" tab is selected, displaying two tables: "WIMAX Information" and "LAN Information".

WIMAX Information	
WAN IP:	192.168.52.50
BSID:	00:04:57:00:03:ed
Cell ID:	0
Frequency:	2545000KHz
Tx Bytes:	2453
Rx Bytes:	7503
Connection Duration:	0 days 0 hours 0 minutes
RSSI:	-89dB
TX Power:	-20dB
PER:	28
CINR:	22

LAN Information	
IP Address:	192.168.100.1
IP Subnet:	255.255.255.0

#### ■ WiMAX Information

Used to view WiMAX network information

- WAN IP: IP address for WAN connection
- BSID: Base Station ID of the Modem connected
- Cell ID: Cell ID of the Modem connected
- Frequency: Frequency information
- Tx Bytes: Transmission flow statistic
- Rx Bytes: Receiver flow statistic
- Connection Duration: Setup time for connection

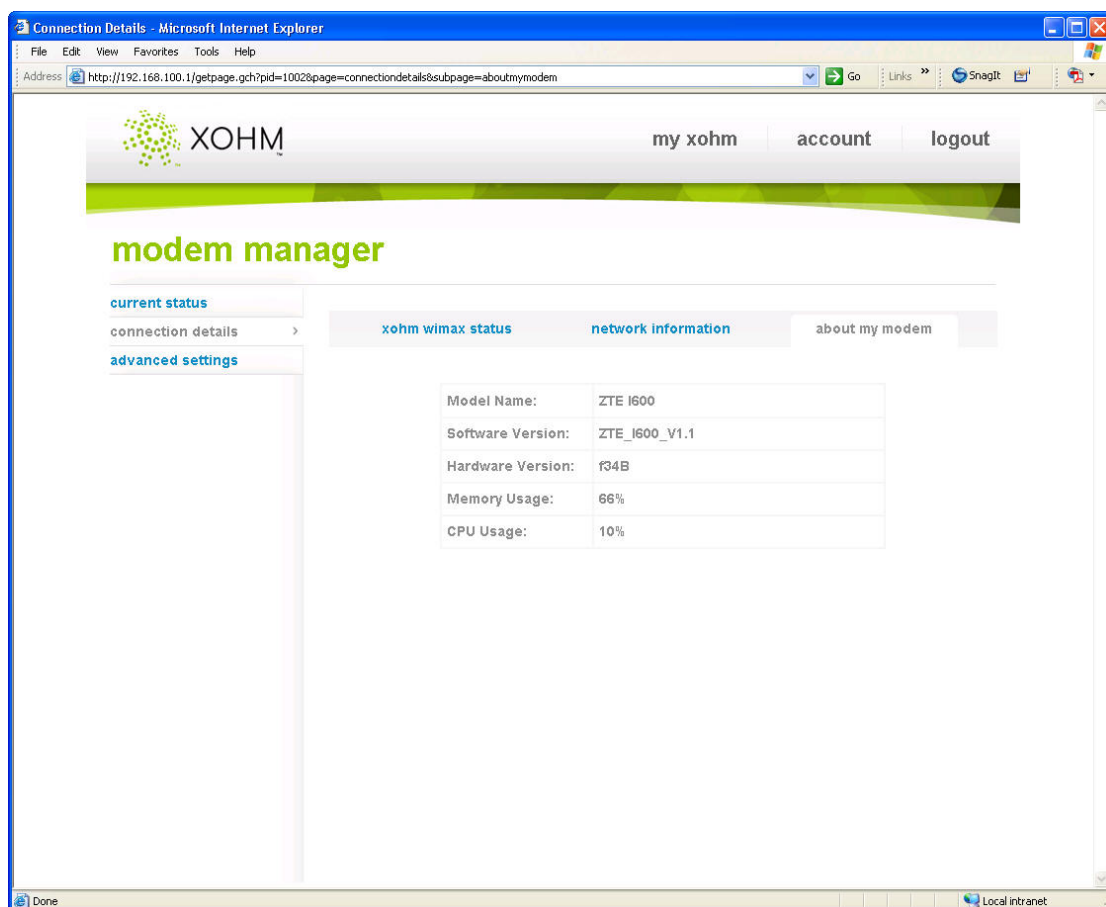
- RSSI: Receive signal strength indicator
- Tx Power: Transmission power
- PER: Package error ratio
- CINR: Carrier to interference and noise ratio

■ LAN Information

Used to view LAN IP address and subnet

### 5.3.3 about my modem

Click *about my modem* link to enter into following page.

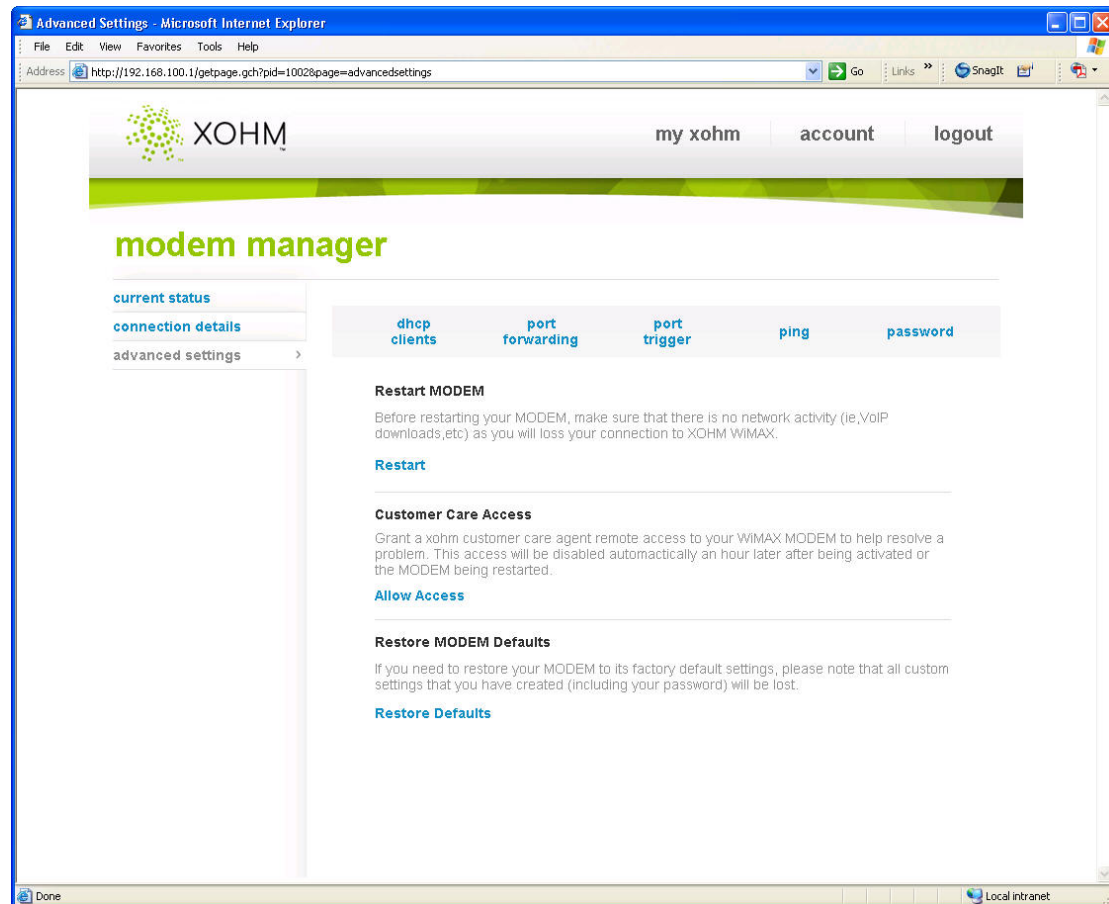


- Model Name: The Model of this modem.
- Software Version: Current software version of this modem.
- Hardware Version: Current hardware version of this modem.
- Memory: Current Memory usage percent.
- CPU usage: Current CPU usage percent.



## 5.4 advanced settings

Click *advanced settings* link to enter into following page.



- Click **Restart** link to reboot your MODEM, you can not access MODEM setup page until system rebooting finish.
- Click **Allow Access** link, XOHM customer care will remote access your MODEM and help you solve some problem.
- Click **Restore Defaults** link to active factory default settings, all customer settings that you have created (including your password) will be lost.

### 5.4.1 dhcp clients

Click *dhcp clients* link to enter into following page:

MAC Address	IP Address	Expires in
00-1b-fc-03-d4-c1	192.168.100.100	Infinity
00-15-c5-44-91-48	192.168.100.101	Infinity
00-1a-92-ea-86-10	192.168.100.102	Infinity
00-1a-92-da-7b-f5	192.168.100.103	Infinity
00-1b-fc-b6-d4-12	192.168.100.104	Infinity
00-17-31-1e-ba-2a	192.168.100.105	Infinity
00-17-a4-18-20-18	192.168.100.106	Infinity
00-19-21-d4-e2-d9	192.168.100.107	Infinity
00-1b-fc-5b-b6-f8	192.168.100.108	Infinity
00-1b-b9-ff-9f-0d	192.168.100.109	Infinity
00-1e-37-d2-6b-13	192.168.100.110	Infinity
00-19-21-b9-82-e8	192.168.100.111	Infinity
00-17-a4-99-29-18	192.168.100.112	Infinity
00-1e-90-3e-20-1d	192.168.100.113	Infinity
00-0a-e4-fd-5f-05	192.168.100.114	Infinity
00-1d-72-8a-5f-03	192.168.100.115	Infinity

- MAC Address

Display the MAC address of DHCP Clients

- IP Address

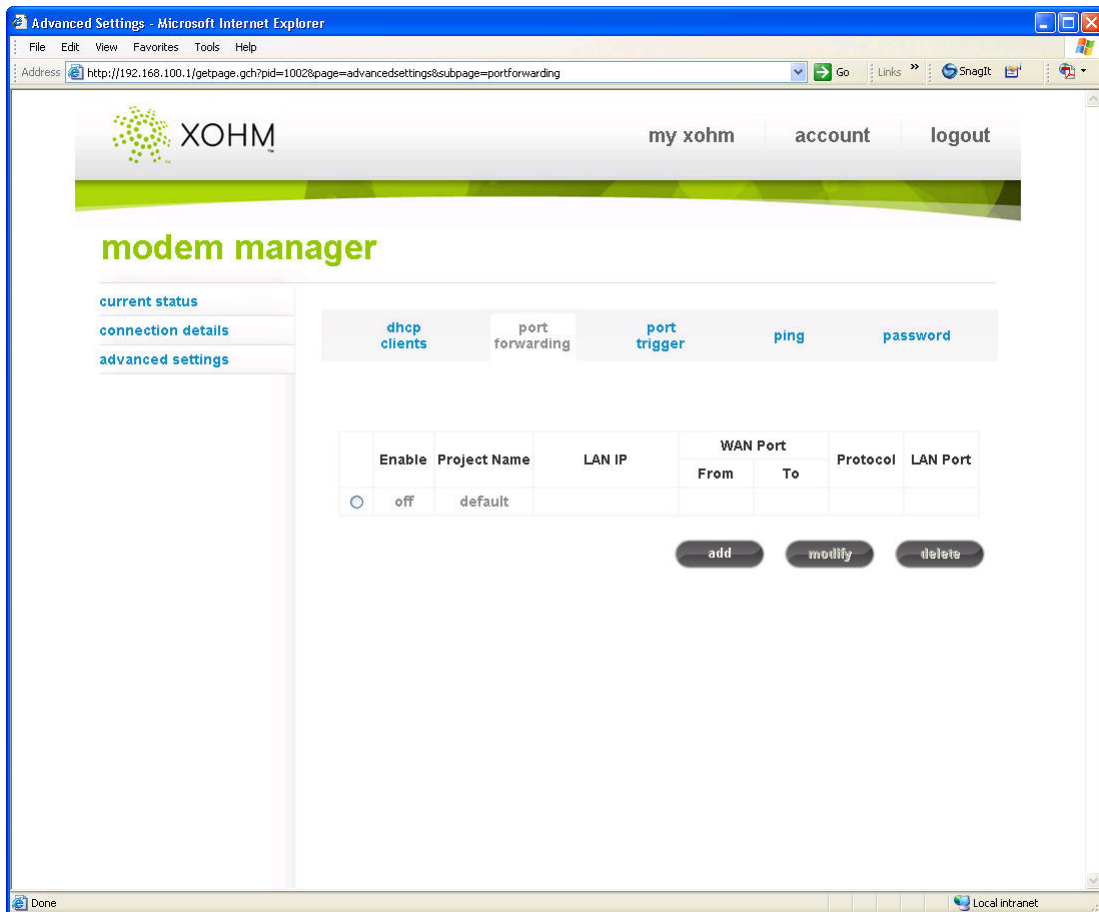
Display the IP address of DHCP Clients

- Expired in

Show you that how many times you can still use the IP address.

### 5.4.2 port forwarding

This allows you to do ports mapping and forwarding for public services or other specialized Internet applications on your network. Click *port forwarding* link to enter into forwarding page.



—Click **<add>** button to add an item for this function.

—Click **<modify>** button to modify your configuration.

—Click **<delete>** button to delete the item.

The port mapping also can choose default disposition.

- Enable

Enable port forwarding function

- Project Name

The project name of port forwarding

- Protocol

Select the protocol type

- WAN Port Range

Port range for WAN connection

- LAN IP

IP address in local area network

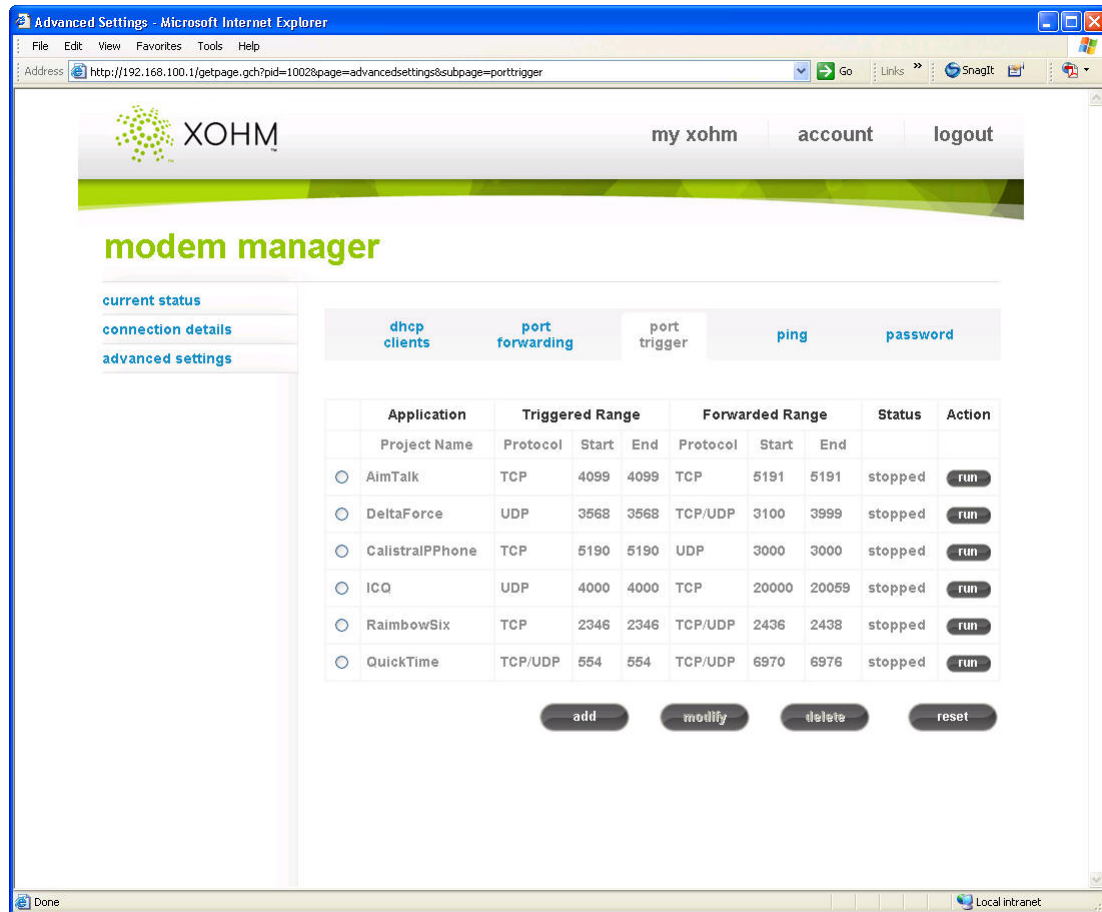
- LAN Port

Port number in local area network.

For example: Project name is “WiMAX”, WAN Port Range is “2030~2050”, LAN IP is “192.168.100.2”, and LAN port is “23”. In this case, hosts at WAN side visiting LAN through port 2030~2050 will be redirected to LAN side host’s (IP: 192.168.100.2) Telnet service.

### 5.4.3 port trigger

This allows you to configure the MODEM to watch outgoing data for specific port numbers. Click *port trigger* link to enter into following page.



■ Application:

Application name for port trigger function

■ Triggered Range

Protocol: Display protocol of trigger connection

Start: Display starting port of trigger connection

End: Display end port of trigger connection

■ Forwarded Range

Protocol: Display protocol of transfer connection

Start: Display starting port of transfer connection

End: Display end port of transfer connection

■ Status

Display current status of trigger application

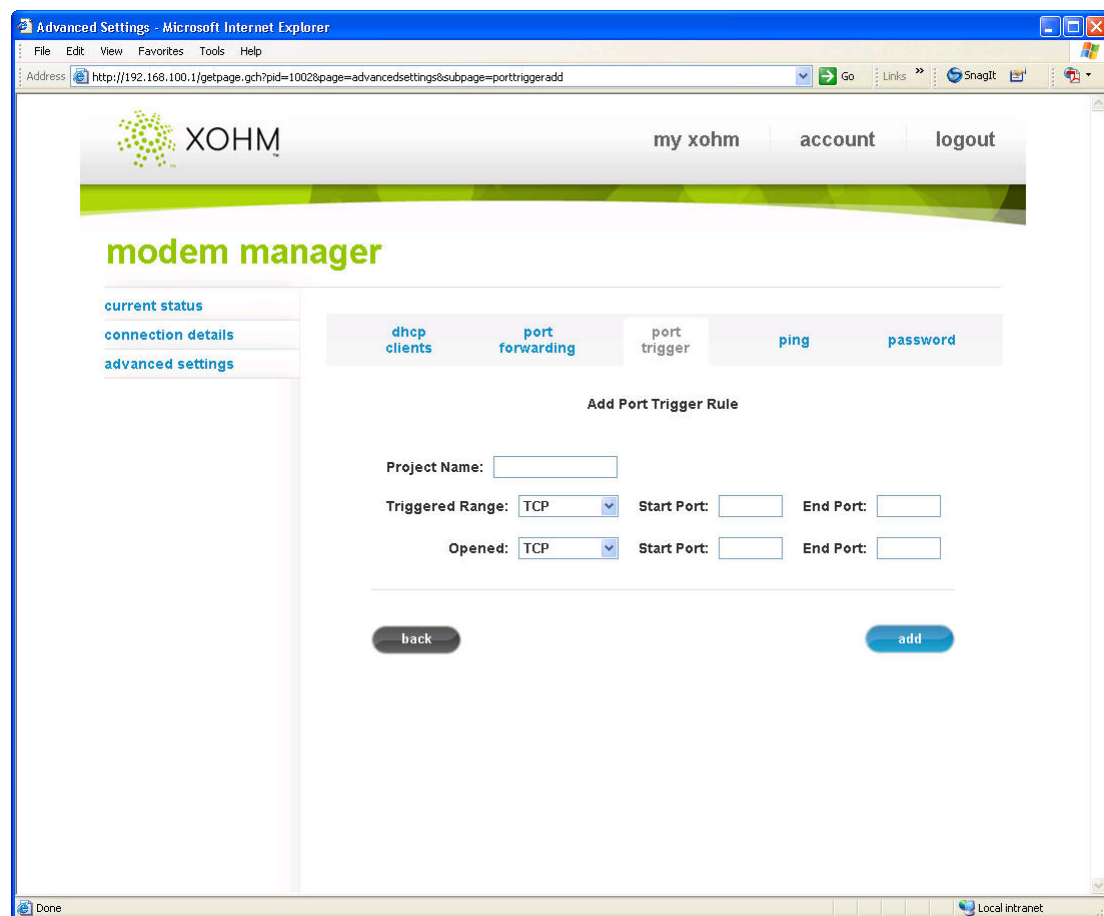
■ Action

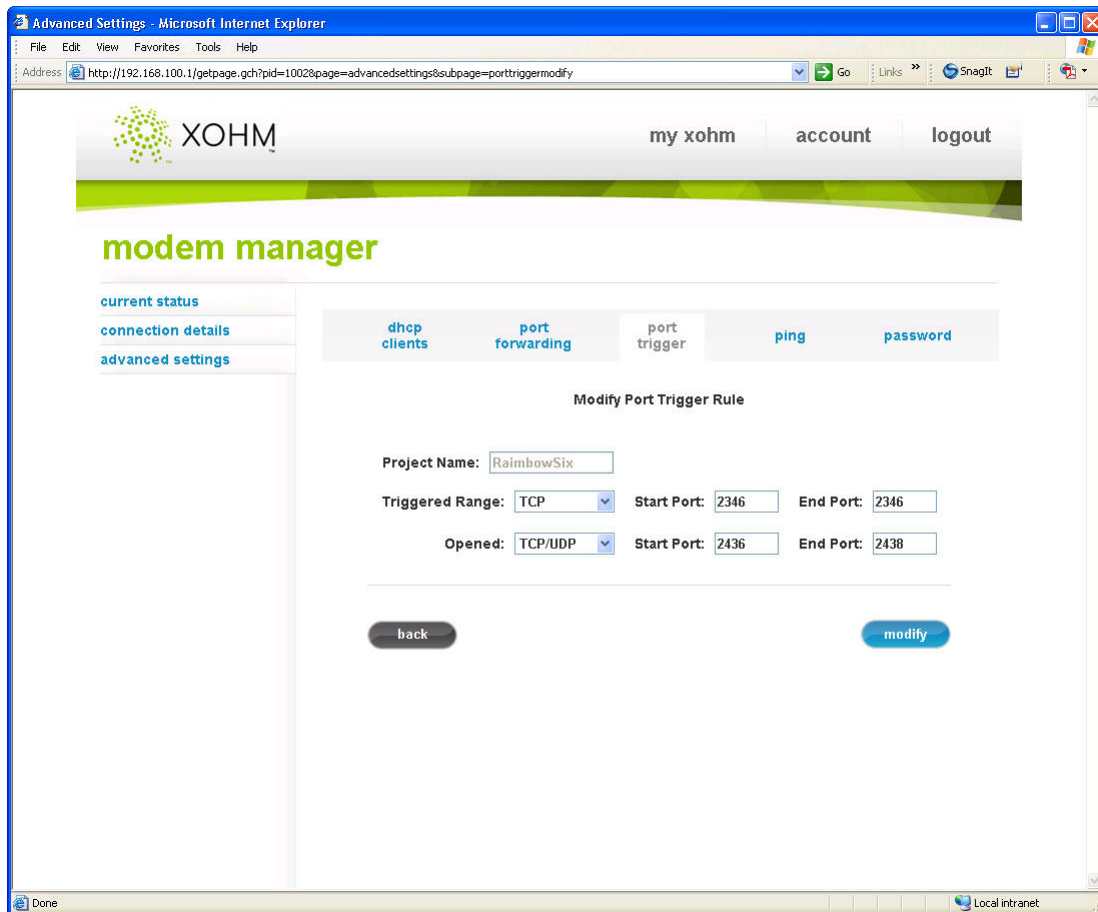
Active or inactive current configuration, there are two type buttons: <run> and <stop>, when you click current button, the action changed to the other.

—Click<delete> button to delete the selected item.

—Click <reset> button to load default configuration from default database.

—Click <add> or <modify> button to enter into Port Trigger configuration page.





- Project Name

Configure application name for port trigger

- Trigger Range

Protocol of trigger connection, three options: TCP UDP TCP/UDP

- Opened

Protocol of transfer connection, protocol options: TCP UDP TCP/UDP

- Start Port

Setting start port

- End Port

Setting end port

- ADD

ADD current configuration

- Modify

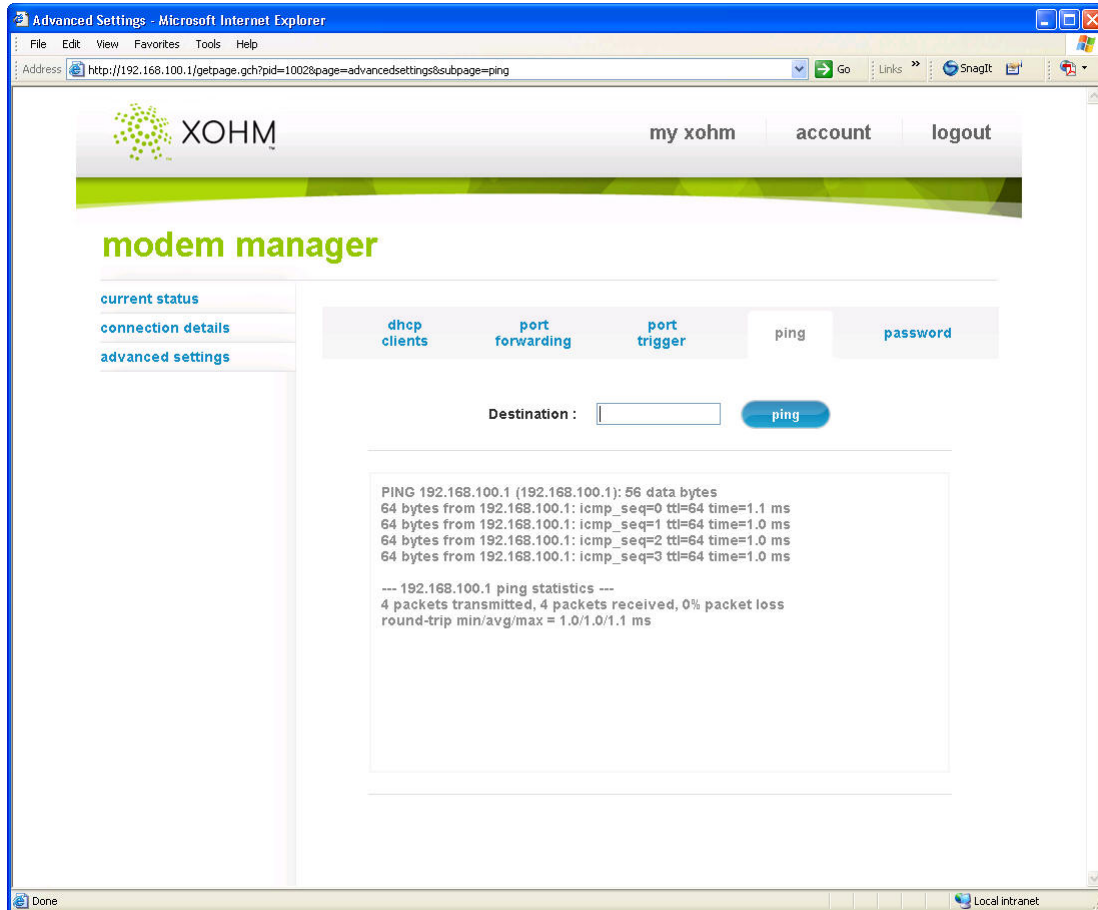
Save current modified configuration

- Back

Return to the Port Trigger page

#### 5.4.4 ping

The ping will check the status of a connection, Click *ping* link to enter into following page.



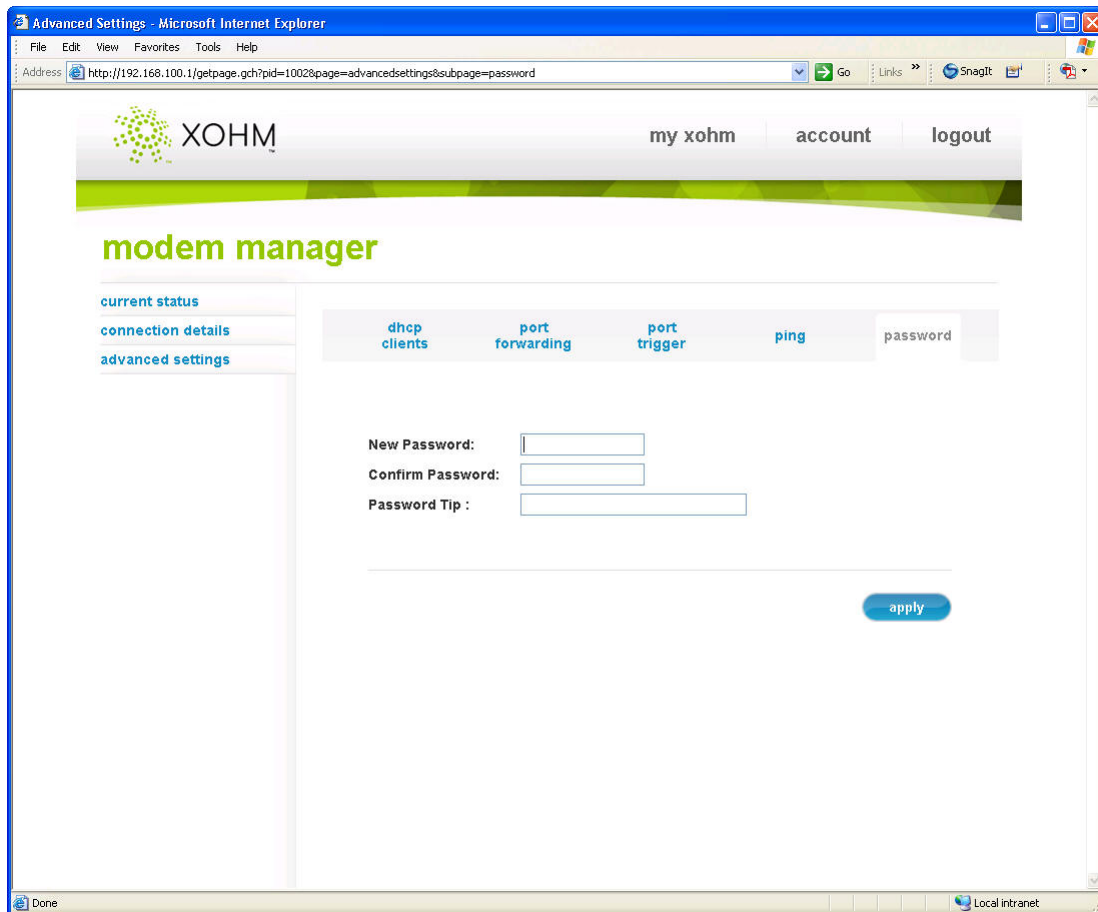
#### ■ Destination

Input destination IP address or network address

For example: input destination IP 192.168.100.200, click <ping> button, the test result will be displayed in the text box.

#### 5.4.5 password

Click *password* link to enter into following page.



- New Password

Input new password

- Confirm Password

Confirm new password

- Password Tip

Input this message to help you recall the password

Note:

Click <apply> button to active the new password.



## 6.Troubleshooting

This chapter list some problems that you might encounter while installing or using MODEM, please read following relative information at first. If the problem still can not be solved, please contact with distributor or service provider.

Problem	Check Point
<b>Indicator light</b>	
After power on the MODEM, power LED is off.	1. Make sure power adapter is original accessories. 2. Power adapter correctly connect with MODEM and wall socket/power.
After insert Ethernet cable, the LAN indicator light is off.	1. Make sure Ethernet cable correctly connect with computer/HUB and MODEM. 2. Confirm computer/HUB is power on.
<b>Access network failure</b>	
Can not access the setup page of the MODEM	1. Verify the LAN connection successful. 2. Checking your TCP/IP settings. <u>Refer to Windows Help for details. Make sure Obtain IP address automatically is selected in the settings.</u> 3. Using Ping command to make sure that your computer is properly connected to the MODEM. Please refer to chapter 4.2. If still not work, please contact your service provider.
Can not access Internet	1. Please check your PC's settings and connection according to the above advices, ensure that your PC can access MODEM setup page. 2. If PC is configured correctly and only can access MODEM setup page, please check your MODEM. Detailed refer to chapter 5. If MODEM configured correctly, but still not work, please contact your service provider.
<b>Others</b>	
Call failure	1. Please Confirm the connectivity of telephone. 2. Make sure the telephones perfectly connect with MODEM. If the call still is failure, please contact with your service provider.
Web page configuration lost after restart the MODEM	1. Make sure you have clicked <apply> button after modify the configuration every time. 2. If you click <apply> button, but the problem still exist, please contact with your service provider.

# Appendix Glossary

- DNS

Domain Name Server: it can provide the service that network node name can be translated to network IP address in the internet.

- Internet

Global network, used to exchange data, news and viewpoints within millions of computer.

- IP Address

32 bit address, used to identify one computer in TCP/IP.

- LAN

Used to connect some communication equipment (computer, MODEM and printer) within one room, school or other limited region.

- MAC Address

The Media Access Control (MAC) address is a unique number assigned by the manufacturer to any Ethernet networking device, such as a network adapter, that allows the network to identify it at the hardware level. For all practical purposes, this number is usually permanent. Unlike IP address, which can change every time a computer log in the network, the MAC address of a device stays the same, making it a valuable identifier for the network..

- Protocol

Communication protocol: it is a rule that network equipment must follow for mutual communicating to transfer, transmit and receive data.

- TCP/IP

Transmission Control Protocol/Internet Protocol: basic communication protocol of network communication, but TCP/IP defines one group of protocol, not only include TCP and IP.

- UDP

User Data Protocol: packet exchanging communication protocol in internet, its default under layer protocol is IP, provide simple protocol mechanism when transfer information to another user.

- WAN

Wide Area Network

- WiMAX

Worldwide Interoperability for Microwave Access

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