MA8-R GPRS Router

User's Manual

DOC20080601

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Revision and Iteration History

Version	Publication Date	Authors	Summary of Changes and Updates
V1.0	06/01/2008	Kevin Lee	Document Creation

1 Overview

1.1 1.1 Introduction

Today, the Internet based on TCP/IP provides a sharing communicating platform for us. More and more communication networks and intelligent facilities can be connected to the Internet due to the open interconnection of Internet.

With the development of modern industry and technology, industrial control involves more and more networks, and the demand for this feature is increasing. Besides, it develops gradually from traditional field control mode to remote control mode. Thanks to the powerful internet and developed communicating technology, the communicating distance is no longer the bottle neck, thus the industrial control network extends.

The wireless data-carrying networks based on GPRS/EDGE/CDMA/3G provide a reliable data passage for the industrial data transferring. Making use of its wireless connection, and high data-transferring speed while connecting with Internet, the industrial remote data transfer has been realized and thus the network of industrial remote control has been built.

Nowadays the wireless operators provide voice and data service for their clients. With the development of wireless communicating technology, wireless products are used widely in the data transfer domain. And the realization of wireless module further accelerates this application. Our company has been in the wireless technological domain for many years. Aiming to the demand and requirement of industry, it provides MA8-R series, which is based on TCP/IP and wireless data protocols. Especially, the MA8-R are with a feature of low cost, high reliability, good adaptation to the environment and easy maintenance. Besides, they can provide a high-speed, always online, transparent data transfer, which satisfy the requirement of industrial data collection, transfer and monitor completely. So it can be widely used in industry.

1.2 Product

MA8-R series aims at the industrial domain. So its design and manufacture accord with the industry standard. Through the tests by clients, they work well with a distinct superiority over other products.

MA8-R series adopts the powerful 32-bit processor of Coldfire series by Motorola. It installs 16M SDRAM and 8M FLASH, which further enhance its performance. Besides, several kinds of wireless modules are adopted as the communicating module. The circuit layout, source manipulation and shell design bear the experiences by senior engineers and suggestions of industrial clients. These series are manufactured fully taking into account the requirement of industrial environment.

The software that MA8-R uses is a customized 32-bit embedded operating system. the kernel is customized and the network performance is optimized especially in the narrow-band link, which enhance its performance in the wireless network.

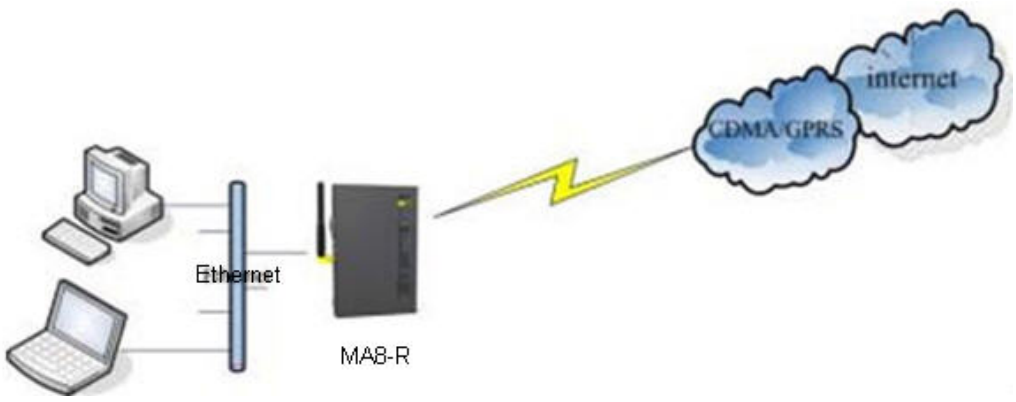
The picture of the products is as follow:

1.3 Applications

MA8-R routers have several different applications:

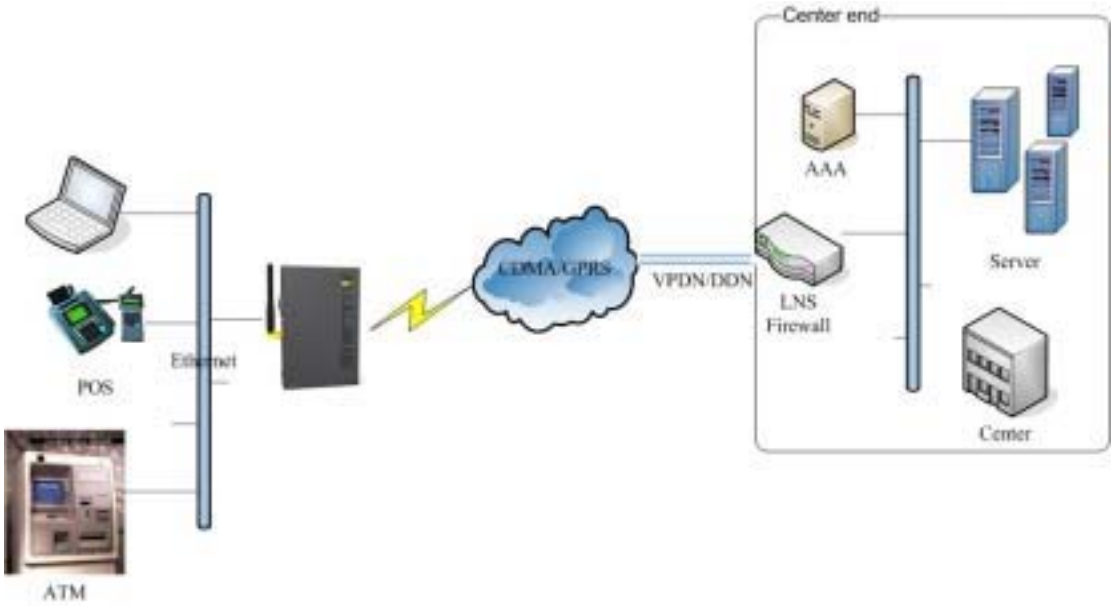
1.3.1 Common router

MA8-R routers can be used as common routers. Customers can access Internet easily. Situations like out-of-doors wireless use and wild car-based use are preferred.



1.3.2 VPDN

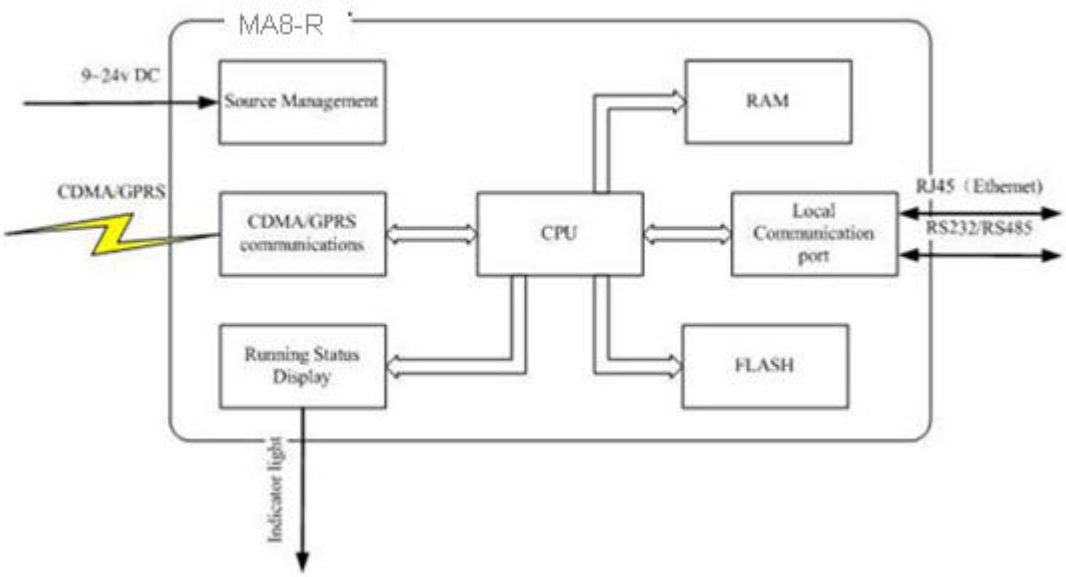
MA8-R routers realize the VPDN. This application is widely employed in the ATM of bank, POS communication and other situations which has specific requirement on the communication link. The advantages include high security, complete data channel insulation from internet and other network. And the disadvantage is that it depends on the special service by the local mobile operator, so the price is high and it is not convenient to build network across provinces. The typical network structure is as follow:


Center end
AAA
Server
LNS
Firewall
Center
CDMA/GPRS
VPDN/DDN
Ethernet
POS
ATM

2 Function and technical data

2.1 System structure

The figure below displays the system structure and working principle of MA8-R.



2.2 physical property

Exterior feature

Dimension: 180*114*28mm

Weight: 510g

Environment: 0~60℃

Keeping Temp: -15~75℃

Comparative Temp: 95%(no coagulation)

Interface

UIM/SIM card: 3V

Antenna: 50Ω/SMA

Serial:

Interface type : RS-232

Data bit: 6/7/8

Stop bit: 1/2

Parity bit: N/O/D

Baud rate: 9600/19200/38400/57600/115200/230400 bps

Ethernet Interface

Interface type: RJ45

Communication rate: 10/100M auto adaptive

Working mode: half/full duplex

Display: Panel LED Output

Power Supply

Voltage: 9-24V DC

Operating Current:

Standby 100mA@+12VDC

Communicating 350mA@+12VDC

2.3 Function

The form below lists the functions of MA8-R.

Function Type	Function Name	Declaration	Remark
Basic Functions	Broad Voltage Supply	9~24V DC Input	
	Wireless network		
	Serial Port Configuration	Use serial port to configure	
	Telnet Configuration	Use Telnet to configure	
	Web Configuration	Use Web to configure	
	Log	System records the status automatically	
	Status Display	LED displays the status	
	Router	Static router	
	Guide installation	Can be installed on the guides of industrial cabinet	
	Reset	Reset to the manufacturer's setting using a "Reset" Key	
	10/100M Ethernet Interface	LAN supports 10/100M half/full duplex Ethernet working mode	
	VPDN/DDN	Support VPDN/DDN	
	Hardware Watchdog	Support hardware watchdog	
	Global Time-zone	Support global time zone	
	Network Clock	Synchronize with the base station	
Network Functions	PPP protocol	P2P Dialup Protocol	
	CHAP Authentication	Authentication Method	No need to transfer the ID and Password
	PAP Authentication	Authentication Method	
	MS-CHAP Authentication	Authentication Method	
	Network link detection	Detect the network link timely	
	Disconnection detection, automatic recovery	Redial when the link or network is error	

	Dynamic domain binding	Bind the dynamic IP to the stationary DNS	
	Router management facility	It supports static route and can add 4 routing rules	
	NAT	Network address conversion accessing the outside	
	Device name	Can give a name to the device, such as MA8-R.	
	Flow management technique	Using flow management strategy, MA8-R dynamically manipulates the data by classifying the priority level of different services. This guarantees the bandwidth of the key application.	
	Activate DHCP	If DHCP is activated, it can obtain the IP address automatically.	
	Activate MAC-IP binding	If MAC-IP binding is activated, only those devices with the specified MAC-IP pairs are allowed to use the router for data exchange.	
	Virtual server	Mapping to 4 port services	You can assign a port or a port range here. Port range is assigned as "Port1:Port2", which means from Port1 to Port2. E.g. 50000:50156 means port range from 50000 to 50156.
	IP mapping	Mapping to 1 IP	
	Multi network card IP configuration	4 IP addresses can be set for the device and all IP can be used as gateways.	
	Firewall filter function	8 firewall filter rules can be set for IPs and ports filtering.	
	Drop unwanted data flow function	Can realize the MAC address bonding function.	
	Heart beat function	Support several kinds of heart beats such as PPP, ICMP and operator billing decision.	

Advanced function	Time zone function	MA8-R adjusts the facilities throughout the world according to a time zone standard.	
	Serial data terminal （DTU）	Conversion between serial port and Ethernet protocol	
	Short-message alarm	MA8-R can send alarm to the client using short message	
	Local and remote upgrade	Upgrade the firmware locally or remotely through network	
	monitoring	VPN status and signal quality of network service on a web interface.	
	Activation by short-message	User can use short message to activate the MA8-R, build connection and VPN channel.	
	Activation by calling	When the remote machine is not on line, user can use phone call to activate the MA8-R, build connection and VPN channel.	
	Dialing on demand	MA8-R builds connection and VPN channel automatically when there is local data flow.	
	Remote system log function	The system log can be sent to a remote server. The server can either have a public IP or a dynamic IP address, but it can only use UDP protocol and port 514 to receive the system log.	

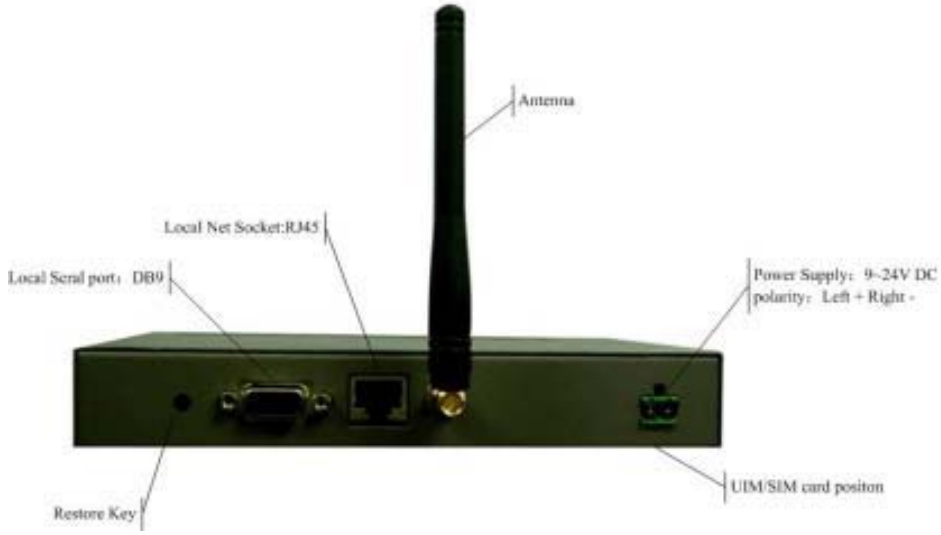
2.4 Performance

The form below lists the results of performance test of MA8-R.

	Name	Result	Remark
Basic performance	Signal Quality	18~31	Within the Unicom range.
	dialing time cost	< 8s	The time to connect
	connecting duration	>24 hours	Depending on the local network
	UDP delay	350ms ~ 450ms	Tested by "ping" tools
	UDP Packet loss rate	<= 1%	Tested by "ping" tools
	Uplink rate	<= 60-80kbps	Average
	Downlink rate	<= 100kbps	Average

2.5 Appearance and Panel

The picture below is the appearance of MA8-R3xx series：



Mark	Explanation
"Reset" key	The reset key is used to reset the power. The restore key beside the DB9 is used to restore the initial configuration at shipping time.
Antenna	Antenna of wireless module
RESET	Indicator light of "Reset"
POWER	Indicator light of power source
STATUS	Indicator light of status
WARN	Indicator of alarm
ERROR	Indicator of erroneous status
LINK	Indicator of LAN connection
DPLX	Indicator of duplex LAN
COLL	Indicator of LAN collision
10M	Indicator of LAN 10Mbps
100M	Indicator of LAN 100Mbps
MODEM	Indicator of wireless module running
UIM/SIM socket	Place the UIM/SIM card
Local serial port	Local RS-232 port
Local network port	LAN port
Power source	Power supply input
Rail	Used to fix MA8-R on industrial box, cabinet guide(optional)

3 Installation

This chapter introduces the installation of MA8-R3xx wireless data terminal.

3.1 Precondition

Make sure that the MA8-R is within the wireless network coverage and there is no screen.

AC or 9~24VDC are required. Installation of first time must be carried out by eligible engineers authorized by our company.

3.2 Open-package

MA8-R series products are carried by cartons. Please conserve the carton for possible transport and repair.

MA8-R series products include all the parts below：

MA8-R wireless router 1
RJ45 cable 1 (RJ45，1 meter，crossover cable)
Product CD 1
Optional accessories：
Antenna 1（standard, enhanced and anti-knocking antenna）
12V DC power source 1
Industrial rail 1 set

3.3 Installation

Please read section 3.1 before installation and provide the following items：

One PC

OS : Windows 2000、Windows NT 、Windows XP
CPU: >PII 233
Memory: >32M
Hard disk: >6.4G
Serial port: >1
Ethernet: >1（10M/100M）

IE version: >5.0
Resolution: >640 * 480
One UIM/SIM card (Make sure that this card provides Unicom data service and doesn't owe service fee).
Power supply
AC: Can be used together with DC power source
9~24V DC: Wave < 100 mV
Ground Connection

Make sure that MA8-R is installed on horizontal surface with small vibrating frequency. When the bail is used, MA8-R can be fixed on box with guides. The industrial bail must be used when MA8-R is installed on moving and vibrating machines.

Open the UIM/SIM shell on the MA8-R base，place the UIM/SIM card on the UIM/SIM socket，and then close the UIM/SIM shell.

After MA8-R is installed on some fixed place, you can connect the antenna to it. Avoid the contact of the antenna to any other metals, and place the antenna at some broad areas.

Note ：The position and angle at which the antenna is placed may influence the signal quality.

After installing the antenna, you can connect MA8-R to a 9~24VDC power source and see whether the Power Led on MA8-R Panel lightens. If the led doesn't lighten, please contact our tech support.

If the Power Led lightens, then you can begin to configure.

4 Configuration

This chapter is about parameter configuration needed when using MA8-R. The configuration can be done through three methods including Web mode, Telnet mode and Serial mode.

4.1 Web mode

Before MA8-R can be used, effective configuration is needed. The detailed explanation of how to carry out the Web page configuration is introduced below.

4.1.1 Preparation

Firstly connect your machine to MA8-R using RJ45 cable or HUB, and then set your IP to the same network segment with MA8-R. (e.g. 192.168.2.99, the default address of MA8-R is 192.168.2.1, subnet mask is 255.255.255.0) The next step is to set the IP of MA8-R as the gateway .

Open Internet Explorer (or other browser), and input the IP address of MA8-R. (e.g. http://192.168.2.1, the default IP address of MA8-R)

After the connection is built, you will see the login interface (see the figure below). You need to login as a system administrator, input the ID and password (default ID and password are adm/123456).

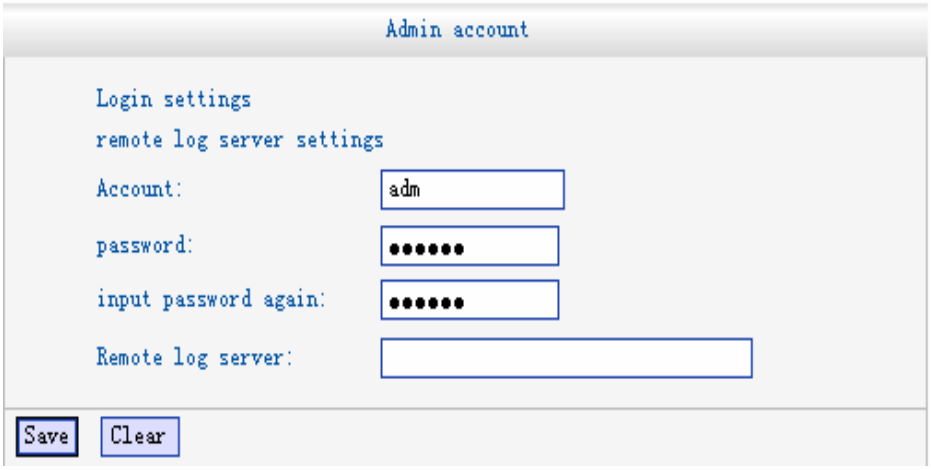
Click the OK, and then enter the configuration interface：

4.1.2 Configuration

4.1.2.1 system configuration

The system parameter configuration includes administrator configuration, management configuration and short-message alarm configuration.

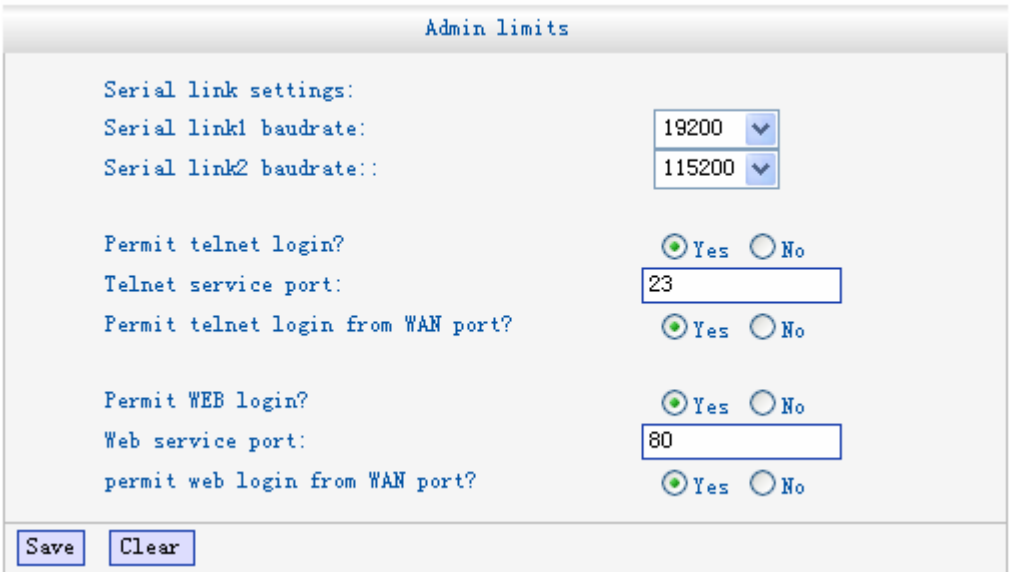
4.1.2.1.1 Admin account configuration



This page is used to set and change the ID and password of system administrator.

System administrator configuration		
Account	Account used to login the configuration Interface	(default) adm
Password	Password used to login the configuration interface	(default) 123456
Remote log server	The system log can be sent to a remote server. The server can either have a public IP or a dynamic IP address, but it can only use UDP protocol and port 514 to receive the system	

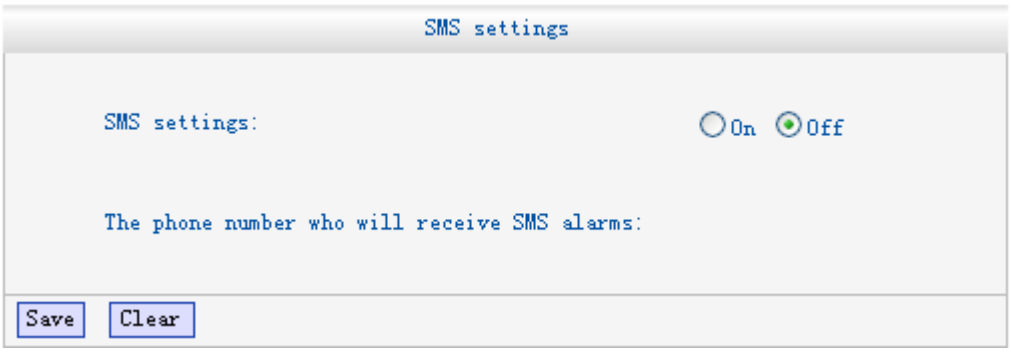
4.1.2.1.2 Admin limits configuration



This page is used to configure the management of the system

Management configuration		
Serial link settings :		
Serial link1 baudrate	Baud rate of MA8-R's exterior serial port	19200
Serial link2 baudrate	Baud rate of MA8-R's interior modem	115200
Telnet configuration		
Permit telnet login?	Switch of the telnet configuration interface	Y
telnet service port:	TCP Service port of telnet	23
Permit telnet login from WAN port?	Whether the telnet configuration from exterior network is allowed. In the case of N, telnet configuration from interior network or VPN is allowed only.	Y
Web configuration		
Permit WEB login?	Switch of the web configuration interface	
Web service port:	TCP Service port of web	80
Permit web login from WAN port?	Whether the web configuration from exterior network is allowed. In the case of N, web configuration from interior network or VPN is allowed only.	Y

4.1.2.1.3 SMS alarm configuration



This page is used to configure the short-message alarm function.

SMS settings		
SMS settings	Short-message alarm functions when the system fails to dial	Close
The phone number who will receive SMS alarms:	Mobile phone number that receives the short-message alarm , it is valid when	blank

4.1.2.2 Network configuration

The network configuration includes LAN configuration, dialing configuration, dynamic domain configuration，DTU configuration，bandwidth configuration and firewall configuration etc.

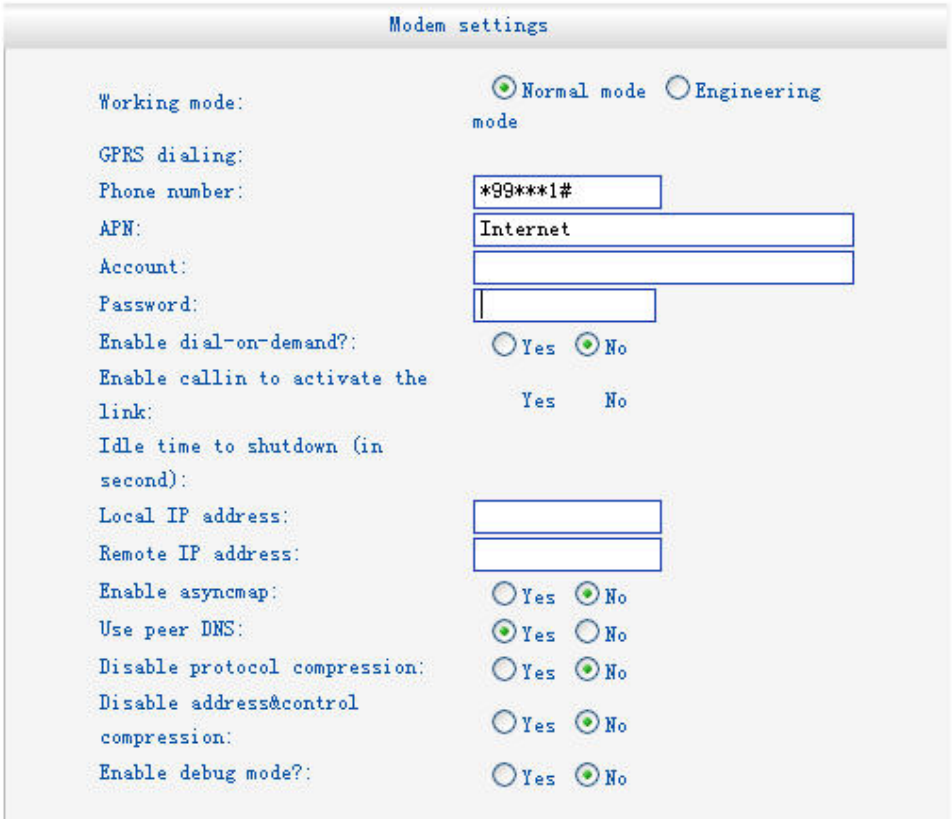
4.1.2.2.1 LAN configuration

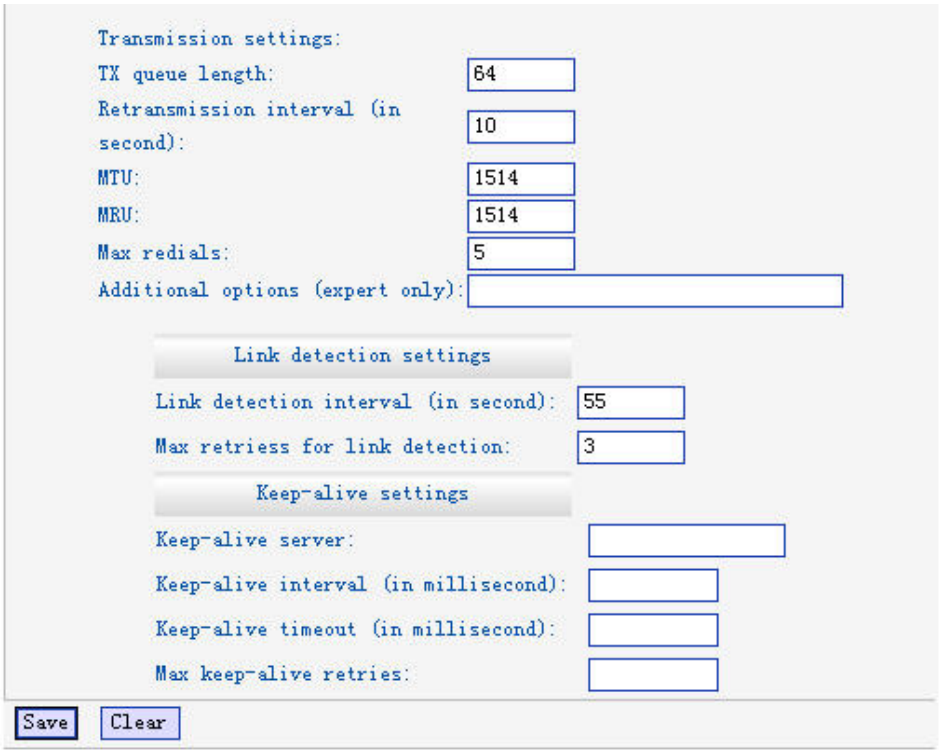
This page is used to configure the parameters of local network.

Information display	Explanation	Recommend
LAN settings		
Localhost name	Can give a name to the device, such as	MA8-R
MAC	MAC address of MA8-R's LAN	
Local IP address	IP address of MA8-R's LAN	192.168.2.1
Netmask:	Subnet mask of MA8-R's LAN	255.255.255.0

Default route:	Don't configure!	
Primary DNS	Don't configure!	
Secondly DNS	Don't configure!	
Muti IP Setting	4 IP addresses can be set for the device and all IP can be used as gateways.	

4.1.2.2.2 Dialing configuration





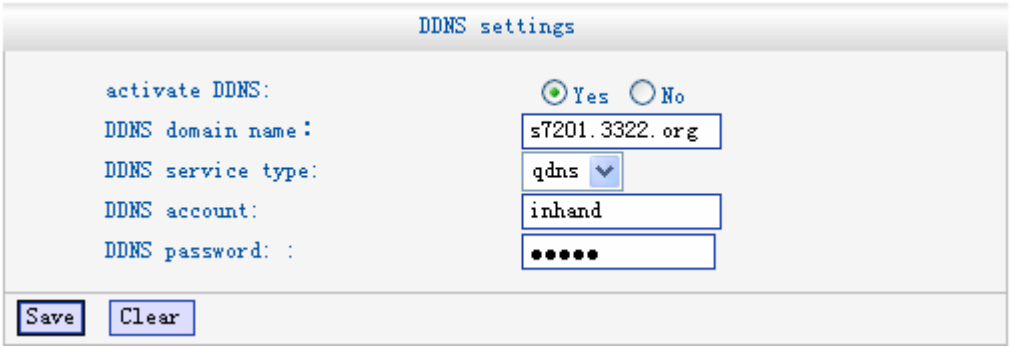
This page is used to configure the dialing number, account and password of WAN.

Information display	Explanation	Recommend
Data service dialing:		
Phone number:	The dialing parameter provided by wireless service provider.	
Account	The dialing parameter provided by wireless provider, dialing account. parameter is the VPDN/DDN connecting account	
Password	The dialing parameter provided by wireless service provider, dialing password. The current connecting password. Note: In the case of VPDN/DDN,	
Dial on demand	Yes: The connection is built when there is data flow in local network or there is dial-in. No: The connection is built when power turns on.	No

Callin to active link?	Yes: The connection is built when there is a callin.（automatic hang-up after one ringing, busy when there is continuous activation）， valid only when the "Dial on demand"	No
Local IP address	Local address before the dialing succeeds. Don't configure!	
Remote IP address	Remote address before the dialing succeeds. Don't configure!	
Idle time to shutdown(second):	If the status of no data flow exceeds the limit time, the connection will be stop. The default number is 3600（one hour）	3600
Use asyncmap option:	Commonly set to "No". Set to "Yes" only if the operator supports async options..	No
use peer DNS:	Set to "Yes" if you want to use the DNS assigned by the operator and set to "No" if you don't. Some VPDN configuration needs this option.	No
Disable protocol compression:	Commonly set to "Yes". Set to "No" only if the operator supports protocol compression.	Yes
Disable address&control compression:	Commonly set to "Yes". Set to "No" only if the operator supports address&control compression. Some VPDN configuration needs this	Yes
Debug mode:	Open the debug switch	Close
Transmission settings:		
Retransmission interval(int seconds):	PPP negotiation retransmission interval.	10
MTU: Max Transfer	The max size of transmitting data package allowed. Recommend 1514	1514
MRU: Max Receive	The max size of receiving data package allowed. Recommend 1514	1514
Connection checking interval：	The time interval between two connection checks. The default is 60	60
Connection max failure	If the failures of continuous connection check exceed this number, disconnects. The default is 3	3

Max redial:	The system will be restarted if the redialing time exceeds this number. The	5
PPP HeartBeat Settings		
connection detect interval	Set the PPP heartbeat time interval.	90
connection max failure	Set the maximum connection failure time.	3
ICMP HeartBeat Settings		
keep alive server	Set keep alive server.	
keep alive interval	Set keep alive time interval.9	

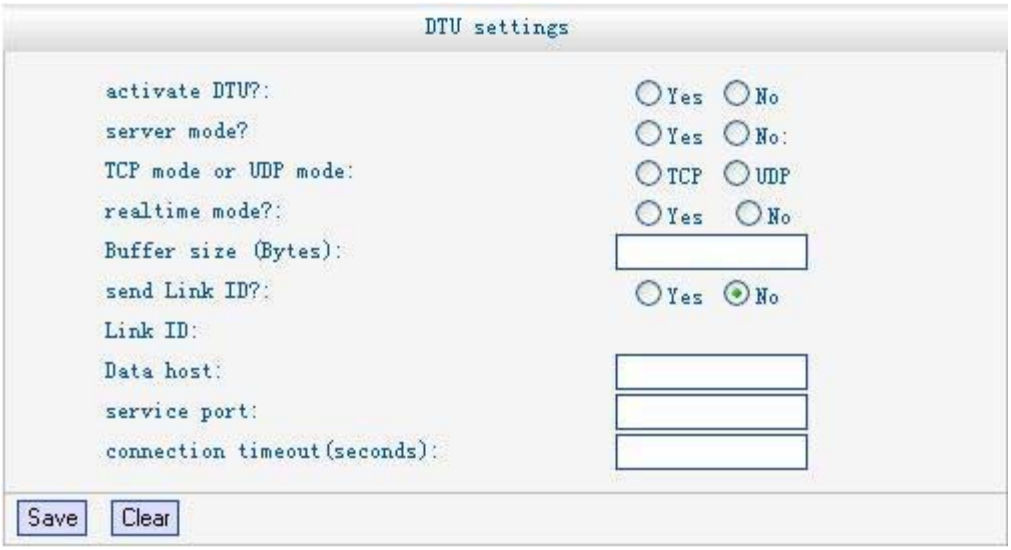
4.1.2.2.3 DDNS configuration



This page is used to configure the dynamic DNS

DDNS settings		
Activate DDNS:	Activating the dynamic DNS refers to binding a stationary domain to a dynamic IP. Application to the DDNS service firm	N
DDNS domain name:	Bound dynamic domain name	
DDNS service type:	Service type of dynamic domain：qdns、	qdns
DDNS account:	Account of dynamic domain	
DDNS password	Password of dynamic domain	

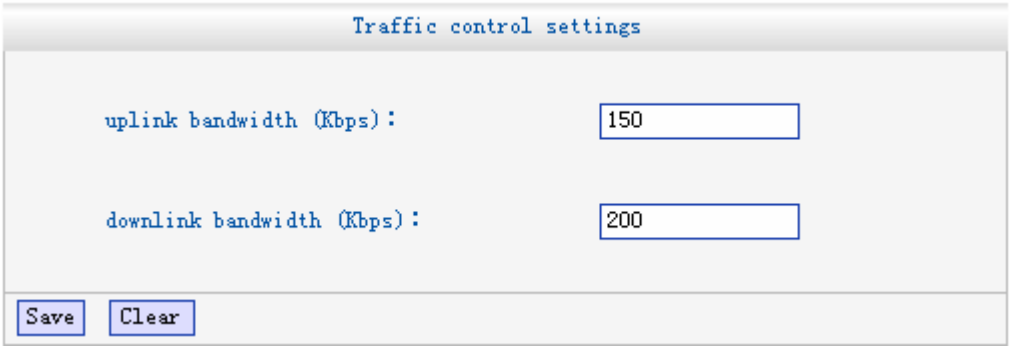
4.1.2.2.4 DTU configuration



This page is used to configure the DTU.

DTU settings		
activate DTU	Activate MA8-R serial port data transfer.	N
server mode	Set MA8-R work mode.	N
TCP mode or UDP	Set data transfer mode.	
realtime mode	Set real-time mode.	N
Buffer size (Bytes)		102400
send Link ID	Set Link ID sending.	N
Link ID		
Data host	Set data host server.	
service port	Set data service port.	
connection timeout(seconds	Set max connection timeout.	10

4.1.2.2.5 Traffic control configuration



This page is used to configure the bandwidth.

Traffic control settings		
Uplink bandwidth(Kbps):	Up-load bandwidth control of WAN. The default is 100	150
Downlink bandwidth(Kbps):	Down-load bandwidth control of WAN. The default is 200	200

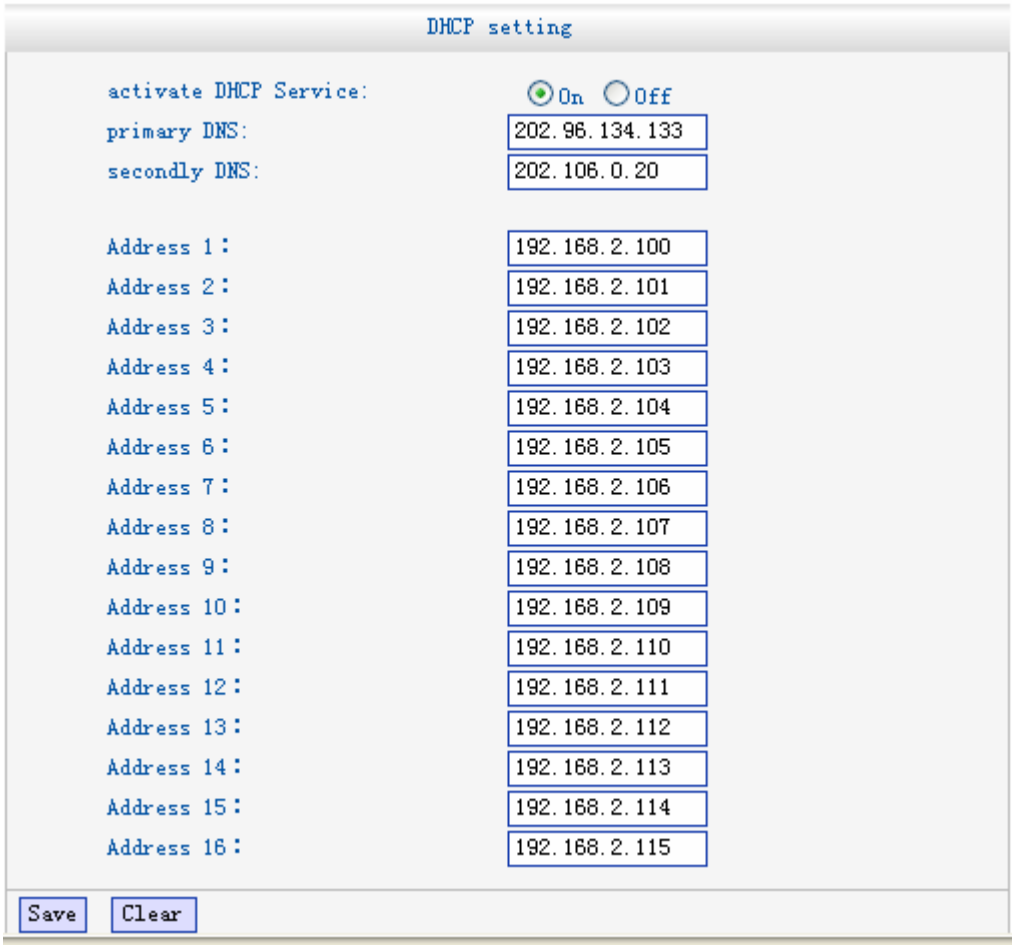
4.1.2.2.6 Firewall configuration

This page is used to configure the firewall.

Firewall settings		
Drop unwanted traffic setting?	Set if drop unwanted data traffic. It can realize the MAC address bonding	NO
Share the WAN link?:		Permit
Virtual Server	If this item is configured, the IP datagram coming from wan will be directed to the computer of input IP Better not configure. Note: it must be set within the same network segment as MA8-R LAN.	blank
Port mapping		
Virtual Server	This is the virtual address that is assigned to MA8-R.Central end can administrate MA8-R by connecting to this virtual address Note: valid only when IPSec VPN is activated.	
Server 1、2、3、4		

Server Port 1、2、3、4	You can assign a port or a port range here. Port range is assigned as "Port1:Port2", which means from Port1 to Port2. E.g. 50000:50156 means port range	
Protocol Type 1、2、3、		
Firewall policy	Set firewall policy with IP and porting filtering and TCP/UDP protocols.	

4.1.2.2.7 DHCP service configuration

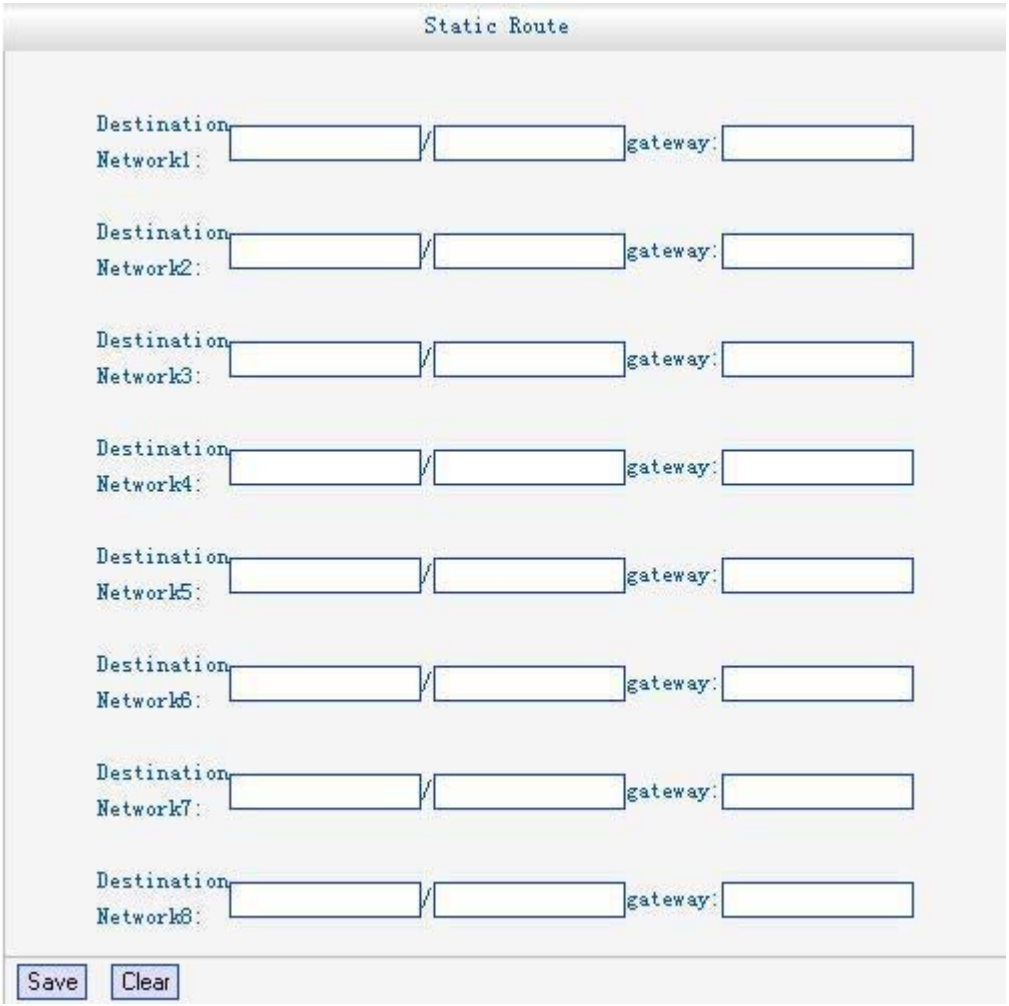


This page is used for DHCP server configuration.

DHCP service setting		
activate DHCP service	Set to "On" to enable embedded DHCP server	
Primary DNS	the primary DNS to be assigned to the clients	
Secondly DNS	The secondly DNS to be assigned to the	

Address 1~Address	IP poll to be assigned to the clients	

4.1.2.2.8 Static Route configuration



This page is used for static route table configuration.

Static Route configuration

Destination Network	Additional subnets connected to the Ethernet port.	These options are not functional at this
Geteway		

4.1.2.2.9 MAC-IP address pair binding

This page is used for MAC-IP address pair binding.

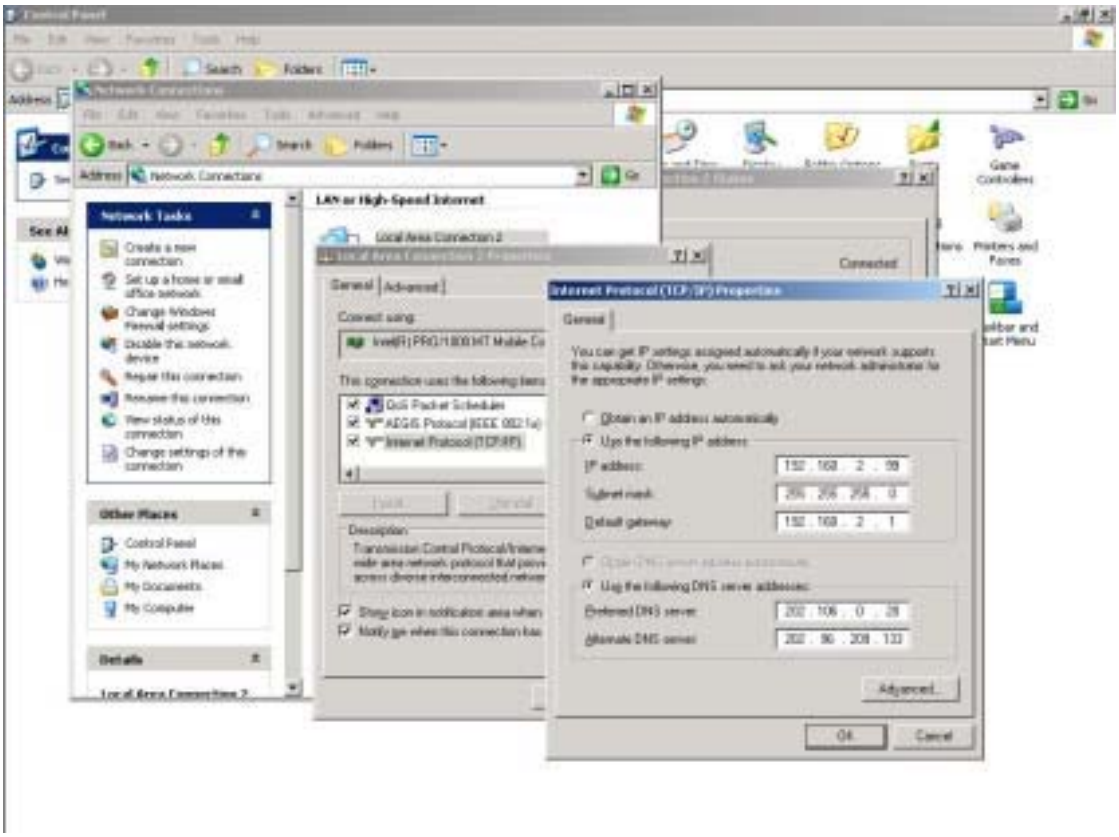
MAC

Bind ip address	Permit: allow binding with MAC and IP	
IP	IP address	
MAC	MAC address	

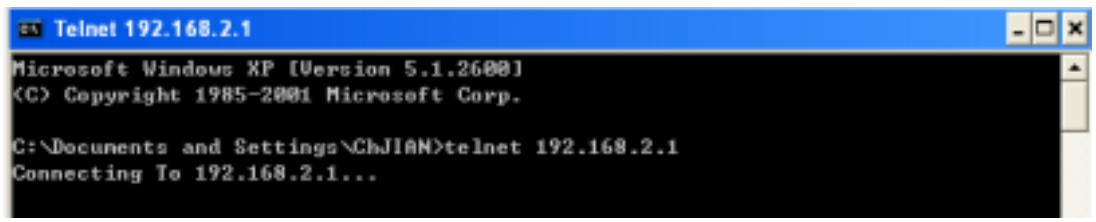
4.2 telnet mode

This section details how to configure the system in telnet mode.

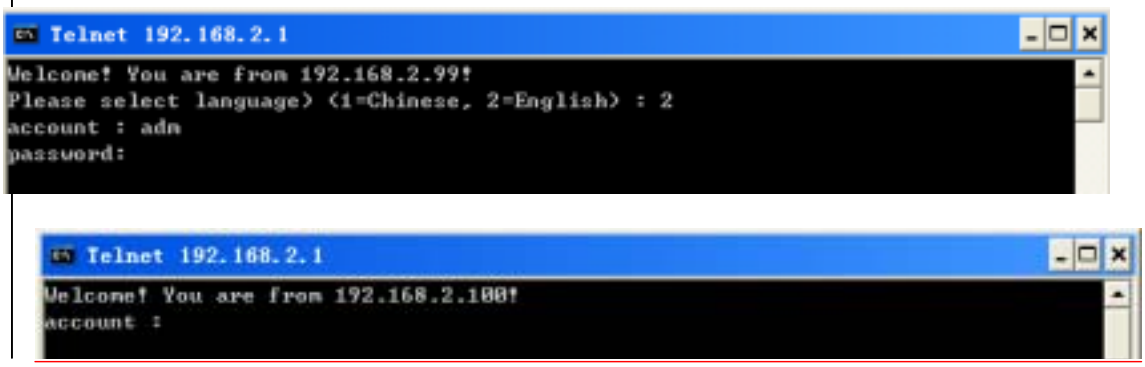
Firstly connect your machine to MA8-R using RJ45 cable or HUB, then set your IP to be in the same network segment with MA8-R.，(e.g. 192.168.2.99, the default address of MA8-R is 192.168.2.1, subnet mask is 255.255.255.0) The next step is to set the IP of MA8-R as the gateway (See the figure below)：



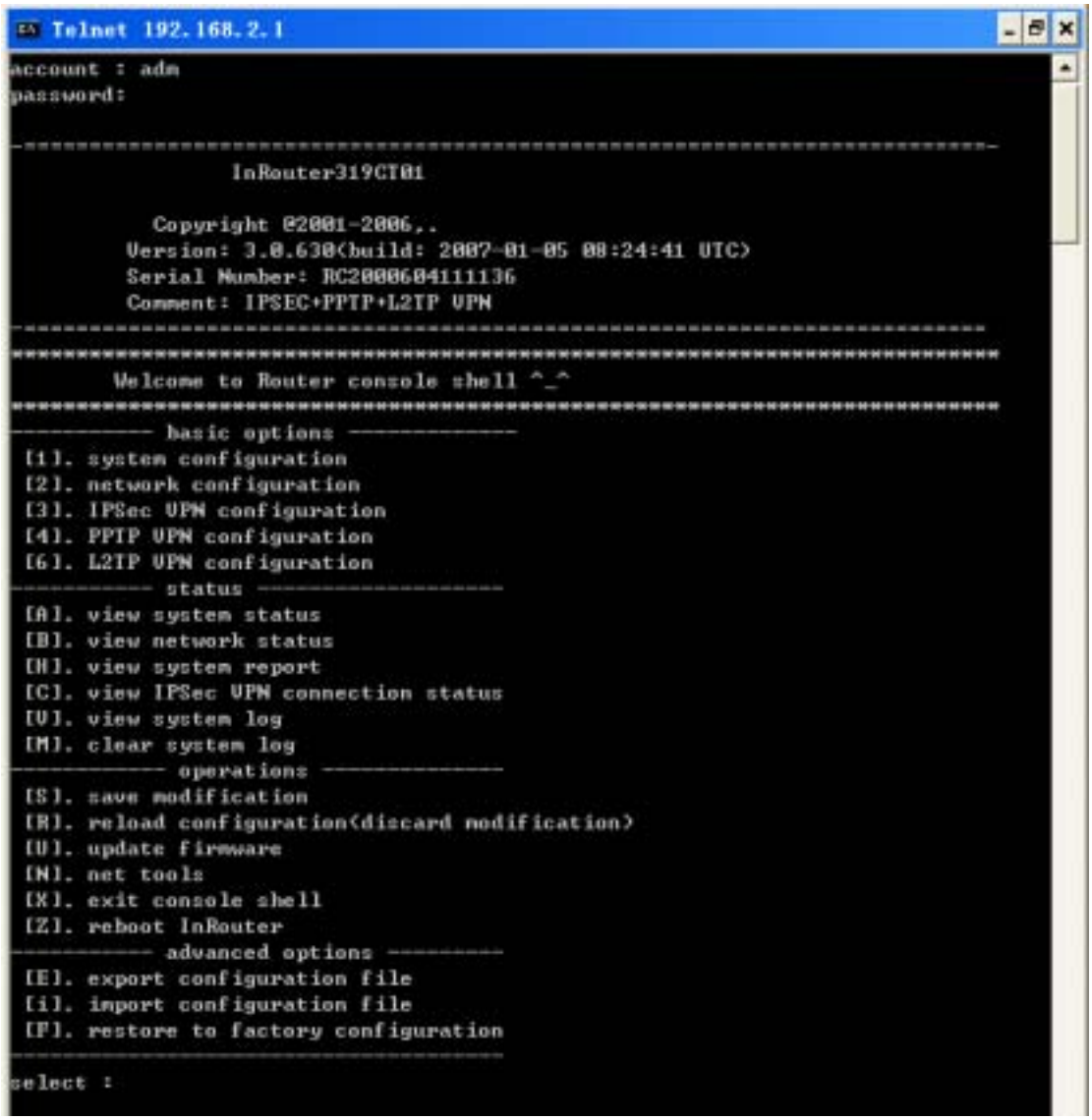
Then，open the command line window（Star->Run, input cmd , then a dos window will appear），input telnet 192.168.2.1(connect MA8-R, assuming IP is 192.168.2.1) (See the figure below)：



After connection succeeds, please input 1 or 2 according to the hint to select the language. Then input the user ID and password to login, the default is adm/123456 (See the figure below):

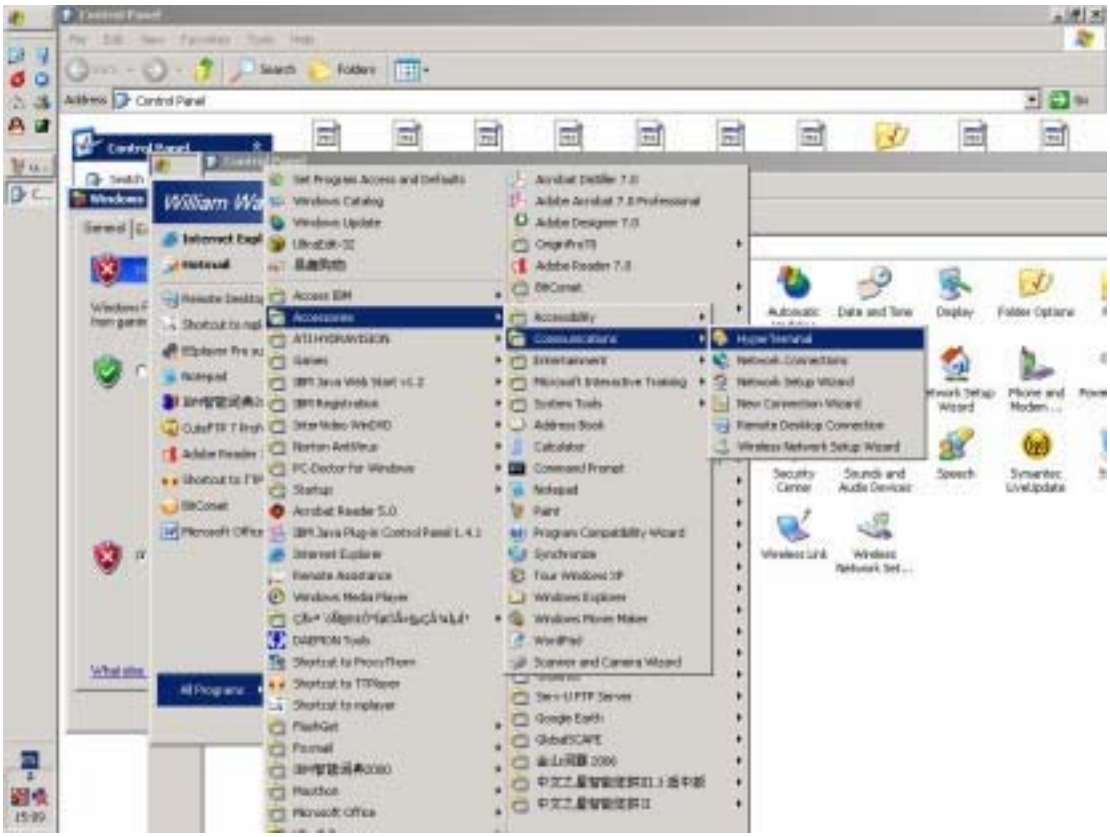


After successful login, the configuration menu will appear (See the figure below):

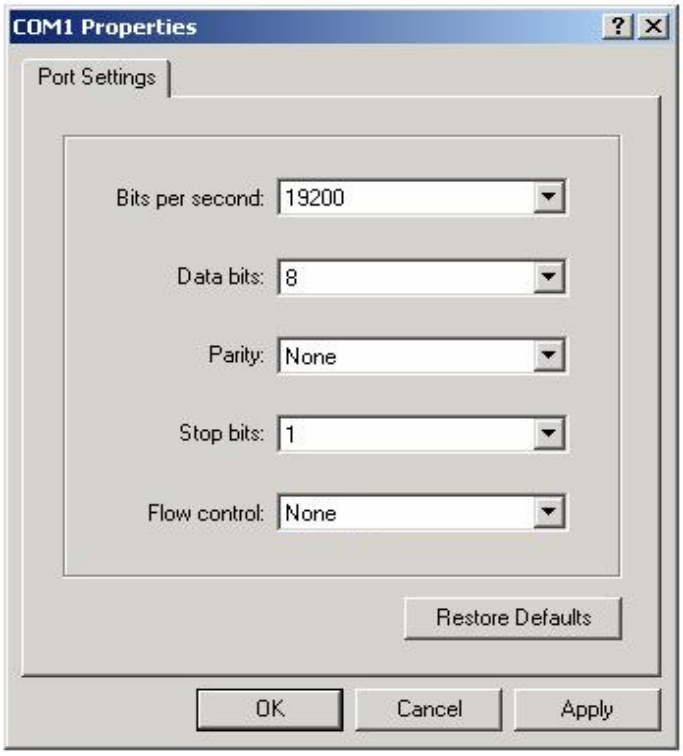


4.3 Serial Mode

Prepare a RS-232 cable and connect the serial port of MA8-R and PC with it. Open the "Hyper Terminal" of Windows ：



Parameter : 19200-8-N-1，



Input some "enter" after connection and the login prompt appears (See the figure below): Input the user name and password (Default is adm/123456).

5 Instruction for Using MA8-R

This section discusses how to check system status and access Internet and VPN through MA8-R.

5.1 Check system and connection status

This section discusses how to check system status, connection status and 3xx's VPN status through panel lights, Web mode, telnet mode and Serial mode.

5.1.1 Panel Lights

Below is the meaning of several leads when the system is running:

RESET	POWER	STATUS	WARN	ERROR	Meaning
On	On	X	X	Off	Press "RESET"
On	On	Blink	X	blink	Reset the system to manufacturer's setting.
Off	On	On	On	X	System is being restarted
Off	On	blink	On	Off	System is checking data connection service
Off	On	blink	blink	Off	System is dialing or waiting for activation(telephone dial-in, local)
Off	On	blink	Off	Off	Dialing success. System connects to network and works properly.
Off	On	blink	blink	On	Dialing failed. System is going to be restarted.

Note:

On means that light is on stablely for at least 3 seconds. Off means that light is off stably for at least 3 seconds. Blink means a 1Hz blink.

X means this status can be omitted.

Bellow is about network status led.

LINK	DUPLEX	10M	100M	COLLISION	Meaning
On					
	On				Network line is OK.
	Off				Local network funciions duplex
		On	Off		Local network functions simplex
		Off	On		Local networks functions at 10M
				Blink	Local networks functions at 100M.
					There is data flow in the local network.

Note：

On means that light is on stablely for at least 3 seconds. Off means that light is off stably for at least 3 seconds. Blink means a 1Hz blink.

Below is about meaning of modem lights.

modem Local network	Meaning
Off	Modem has bugs, please contact the factory.
On	Modem is searching for network.
Blink	Modem works normally.

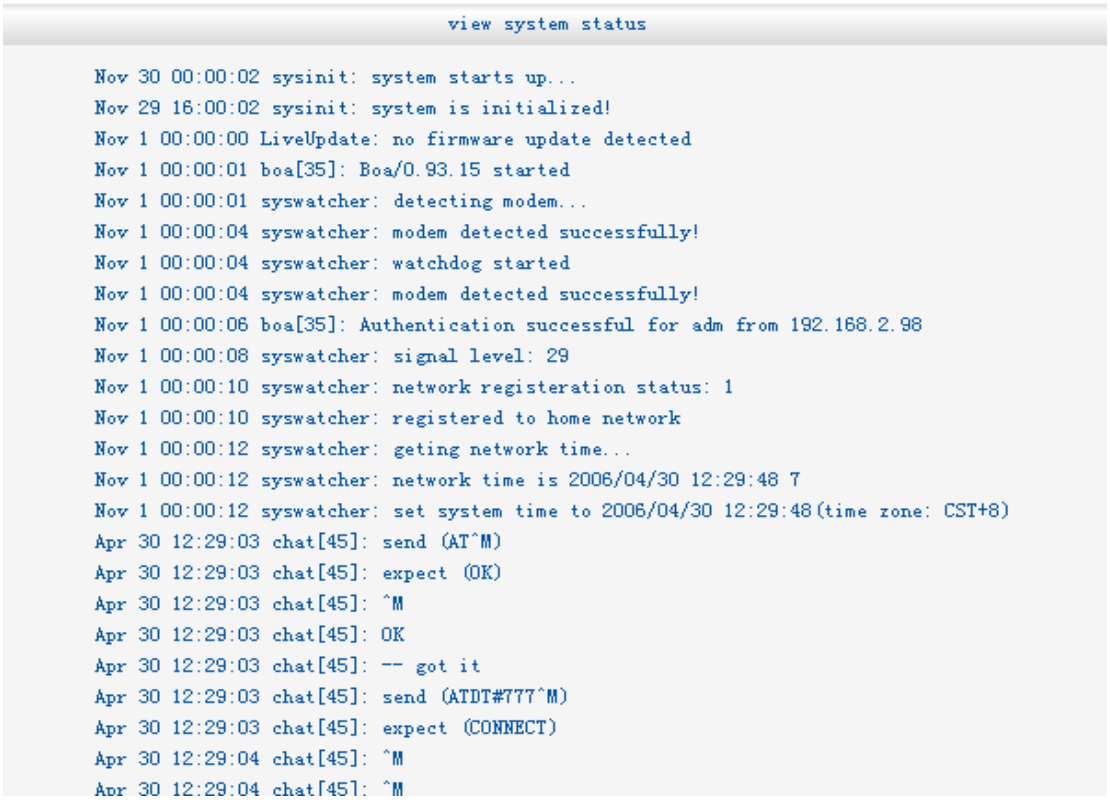
Note：

On means that light is on stably for at least 3 seconds. Off means that light is off stably for at least 3 seconds. Blink means a 1Hz blink.

5.1.2 Web Mode

5.1.2.1 System Log

Enter the "system log" of "system status" (See the figure below):



User can use this page to check the system log.

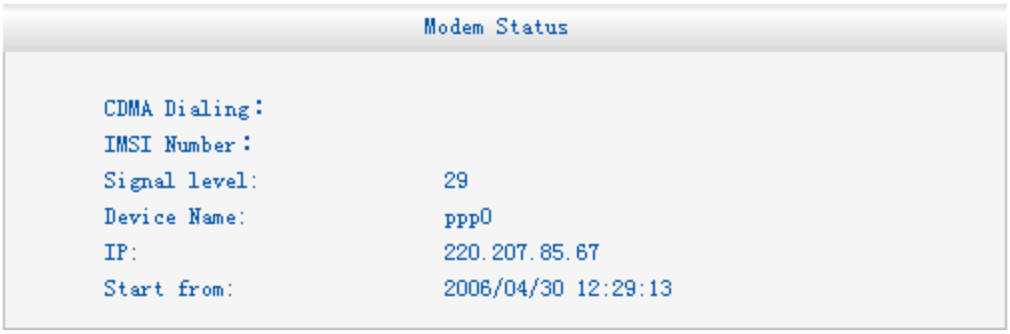
5.1.2.2 System Status

Enter the "Basic" of "System Status" (See the figure below):

This page can used to check the system status.

5.1.2.3 MODEM Status

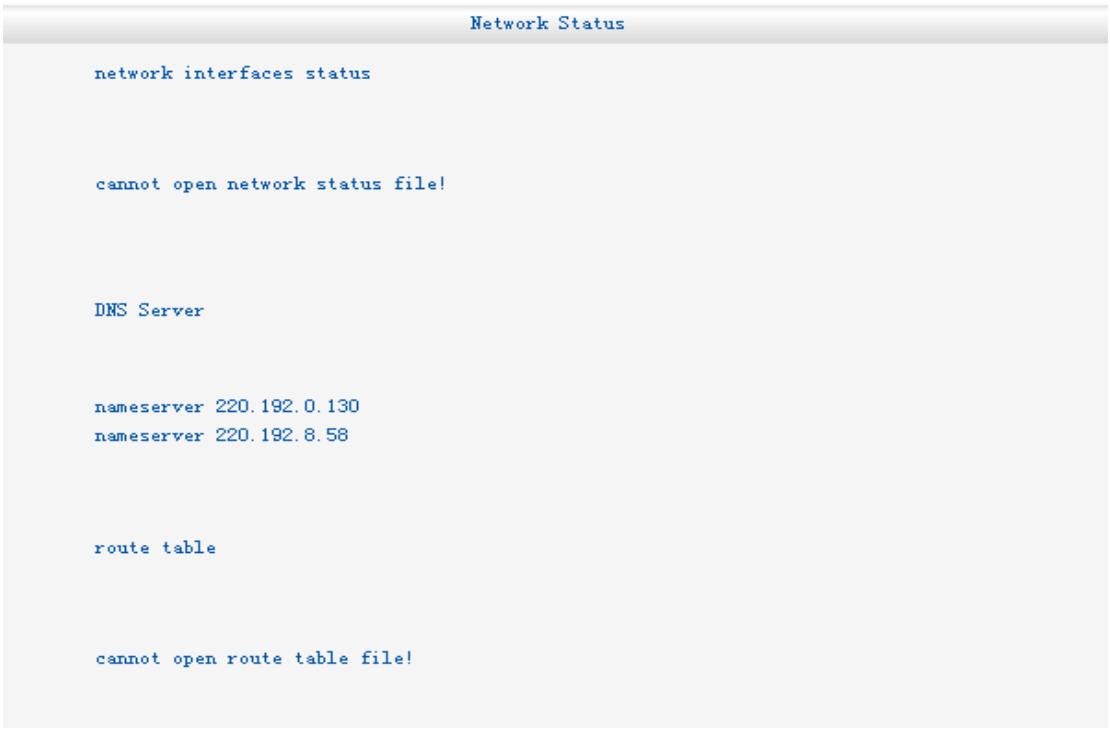
Enter "CDMA/GPRS/EDGE Dialing" of "System Status" (See the figure below):



This page can be used to check the Modem status

5.1.2.4 Network status

Enter "Networking" of "System Status" (See the figure below):



This page can be used to check network link status.

Additional information	Additional information about certificate enrollment status	

Certificate information	If certificate enrollment is successful, information like certificate title and effective time is displayed here.	

5.1.3 Telnet&Serial mode

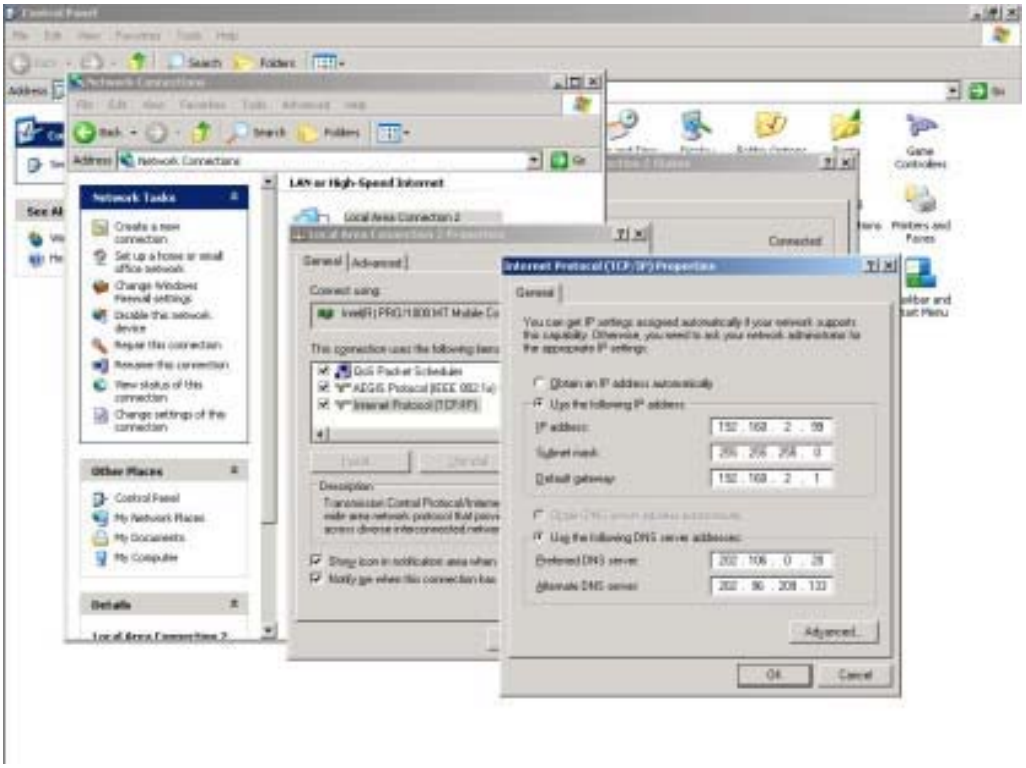
Users can check system status by accessing configuration interface through telnet or serial mode. (refer to 4.2.1 for telnet mode , refer to 4.3.1 for serial mode)：

5.2 Access Internet

If the configuration of MA8-R is completed and the dialing is OK, it can access Internet. We can use MA8-R to access Internet through the following methods：

Method 1：

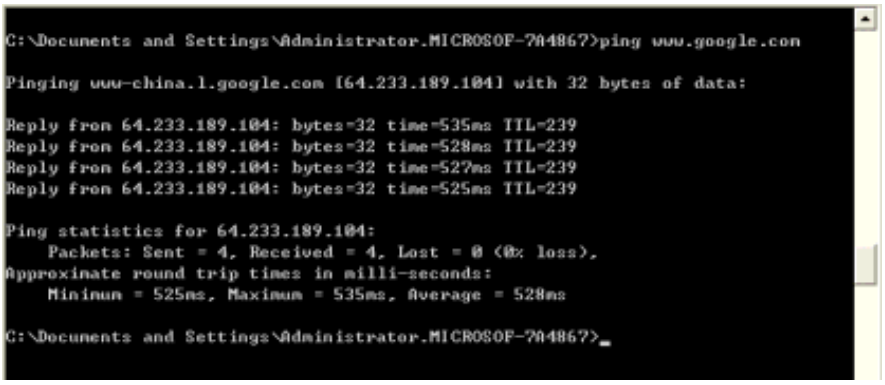
Firstly connect MA8-R to a PC using an RJ45 cable or HUB, then configure the network parameter of the PC and make it within MA8-R's network segment. (192.168.2~254, default IP address of MA8-R is 192.168.2.1). Subnet mask is 255.255.255.0. Set the IP of MA8-R as the gateway of the PC. Configure the DNS server (using the ordinary one). (See the figure below)：



After the configuration, open the command window (Start->Run, input "cmd" and press "enter") and run:

Ping www.google.com

If the following information appears, it means accessing internet is OK.



Method 2：

Connect MA8-R to a PC and configure the network parameter the same as that in the method 1. Use an IE Brower to verify if MA8-R can access internet.


Microsoft Corporation - Microsoft Internet Explorer
Microsoft
Product Families
Windows
Office
Servers
Developer Tools
Business Solutions
Games & Xbox
MSN
Windows Mobile
All Products
Resources
Downloads
Microsoft Update
Office Update
Security
Support
Knowledge Base
For Partners
Learning Tools
Events & Webcasts
Microsoft Worldwide
Countries & Regions
Looks
and
Brains
The new Motorola Q
Mobile
genuine
Microsoft
Get access to free downloads and more
Turn it up to
Windows Media Player 11
Download Beta 2 today
Highlights
Latest releases
Using your computer
For Business
Download Windows Live Messenger
Popular Searches
Templates
ActiveSync
Clip art
Popular Downloads
Windows Defender Beta 2
DirectX End-User Runtime
More Popular Downloads

5.3 Restart system

When the system needs to be restarted, then:

Firstly enter "system tools" (See the figure below):

Push "Reboot", then the system will be restarted.