Comset CM685P/T Series Industrial Grade Cellular Router

User Manual

Note:

CM685P refers to 3G/UMTS/HSPA version
CM685T refers to 4G/LTE version

www.comset.com.au

Contents

Part 1

1. Introduction

The Comset CM685P/T Router is a new generation modem router designed to perform fast and reliable data communication between computing devices. The durable design, easy integration and rich built-in features make the Comset CM685P/T Router the best choice for a wide range of industrial M2M applications including power control, water schedule, traffic, oil field, weather forecast, environmental protection, street lamp control, post, bank and many other areas.

IMPORTANT: CM685P refers to the **3G/UMTS/HSPA+** Router version
CM685T refers to the **4G/LTE** Router version

Typical Network Topology:

1.1. SIM/UIM Requirements

1) For GSM/GPRS/EDGE/HSDPA/HSUPA/HSPA/HSPA+/4G LTE networks or TD-SCDMA networks, please get a SIM (Subscriber Identity Module) card with data or broadband connection.
2) For CDMA2000 EVDO/CDMA1x network, please get a UIM (User Identity Module) card with data or broadband connection
3) Ensure the signal is strong enough where you test or install the router. If you find your signal strength is not good, please contact us for high gain antennas.

1.2. Hardware content

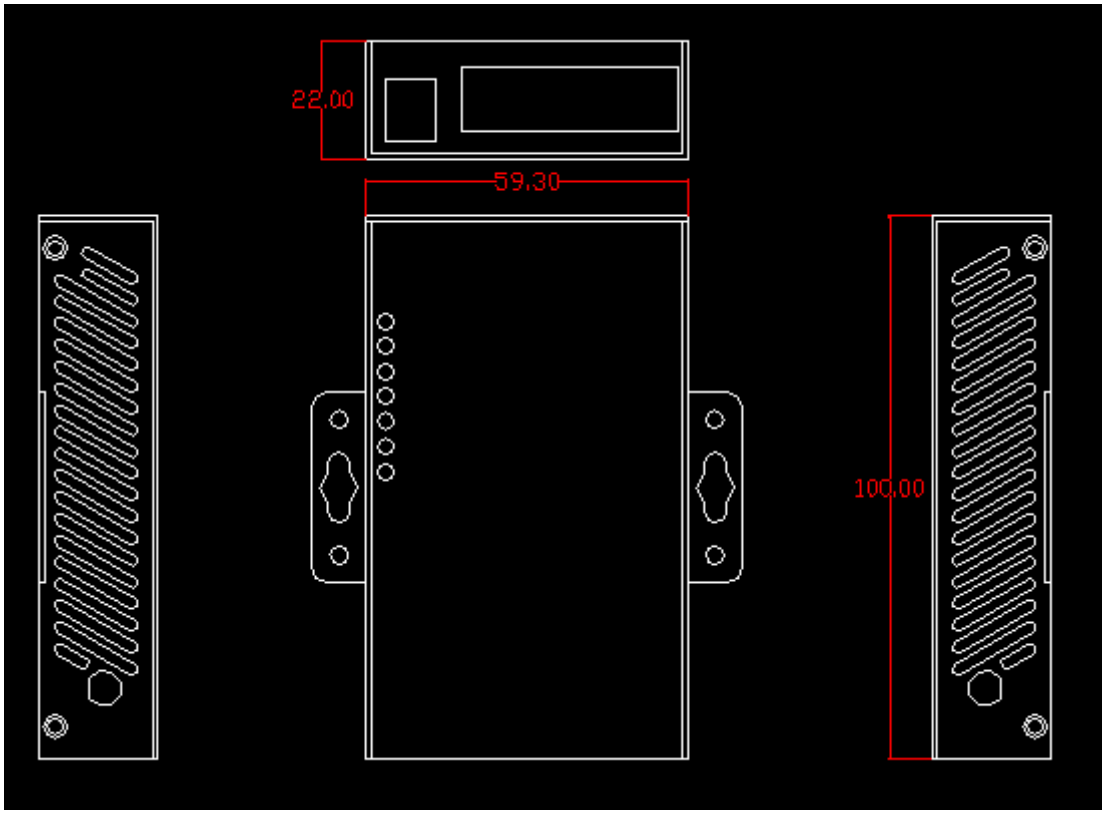
1) CM685P/T Router Modem
2) RJ45 Ethernet cable
3) 2 antennas (MIMO)
4) 100-240Vac power pack

2. Hardware Installation

This chapter mainly describes the appearance, model and function of CM685P/T series and how to install and set the configurations.

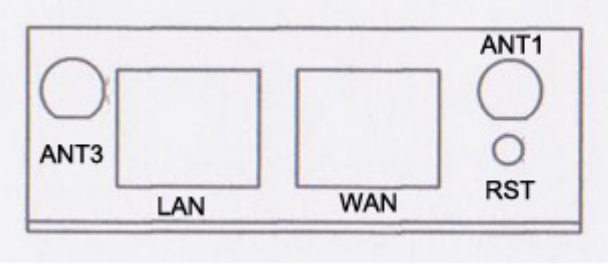
1. *Overall Dimension*
2. *Interface description*
3. *Installation*

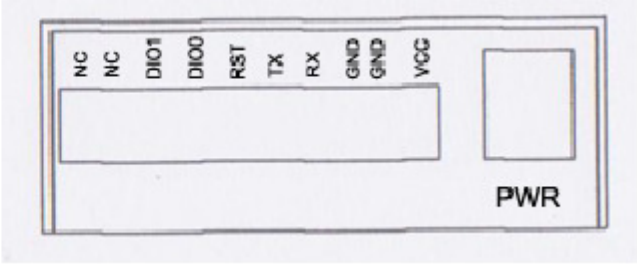
2.1. Overall Dimension

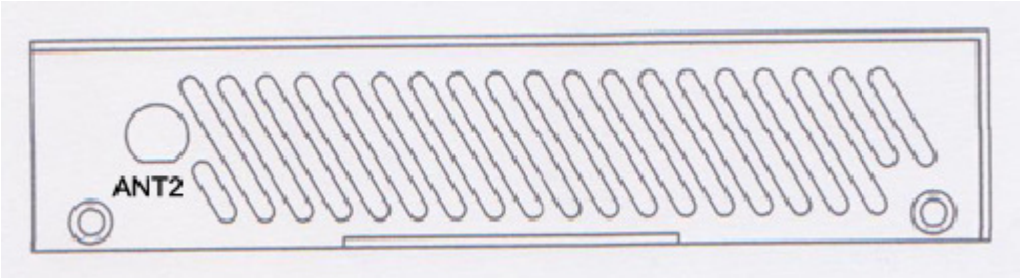


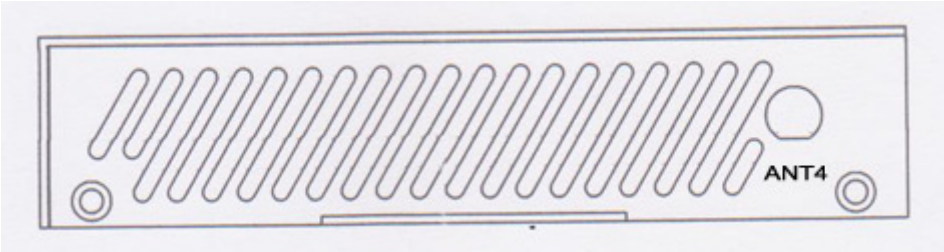
2.2. Ports and Interfaces

Picture:









LAN:	LAN RJ45 Ethernet port
WAN:	WAN RJ45 Ethernet port
RST:	Reset button
PWR:	DC power socket. DC5~40V, DC5~50V optional
VCC:	DC wire positive pole. DC5~40V, DC5~50V optional
GND:	DC wire ground
GND:	Serial ground
RX:	Serial RX port
TX:	Serial TX port
DIO0:	Digital I/O port 0 (optional)
DIO1:	Digital I/O port 1 (optional)
NC:	No Connection

Antenna Connection Table (please refer to the corresponding table)

Feature	ANT1	ANT2	ANT3	ANT4
Main Cellular	●			

Feature	ANT1	ANT2	ANT3	ANT4
Main Cellular	●			
Cellular Diversity Receiving			●	

Feature	ANT1	ANT2	ANT3	ANT4
Main Cellular	●			
WiFi			●	

Feature	ANT1	ANT2	ANT3	ANT4
Main Cellular	●			
GPS			●	

Feature	ANT1	ANT2	ANT3	ANT4
Main Cellular	●			
WiFi			●	
GPS		●		

Feature	ANT1	ANT2	ANT3	ANT4
Main Cellular	●			
Cellular Diversity Receiving		●		
WiFi			●	

Feature	ANT1	ANT2	ANT3	ANT4
Main Cellular	●			
Cellular Diversity Receiving		●		
GPS			●	

Feature	ANT1	ANT2	ANT3	ANT4
Main Cellular	●			
Cellular Diversity Receiving		●		
WiFi			●	
GPS				●

2.3. Installation

The CM685P/T modem should be installed and configured properly before being put into service. The installation and configuration should be done or supervised by a qualified engineer and the user manual must be read carefully.

Attention:
Do not install the CM685P/T modem or connect/disconnect its cables when it is powered on.

WARNING: Keep at least a 20cm distance between the user's body and the modem/router kit.

2.3.1. SIM/UIM card installation

If your router has a SIM/UIM card protector, please remove it and insert the SIM/UIM card correctly.

2.3.2. Connection of terminal blocks

Notes: The connection sequence should be accurate. Cable's insulating striping length is about 7mm. (For safety, insulating striping length should be long). Please refer to the picture below.

Attention:

1. *The power cable should be connected correctly. Please double check before switching the router on .Wrong connections may destroy the equipment.*
2. *Power terminals: Pin 1 and Pin 2;*
3. *Here：Pin 2 is "GND", Pin 1 is power input "Vin" (DC5~40V, or DV5~50V).*

PIN	Signal	Description	Note
1	VCC	+7-30V DC Input	Current：12V/1A

2	GND	Ground	
3	TX	Transmit Data	
4	RX	Receive Data	
5	PGND	Ground	
6	RST	Reset	Reset Pin has the same function as the reset button. To use it, it needs to be connected to the GND. After giving the device a 1 sec low level, it will reboot. At 3 seconds, the device will restore the factory settings
7	DIO0	General Purpose I/O	optional
8	DIO1	General Purpose I/O	optional
9	NC	Not connect	

I/O Terminal on router	DB9 Serial port (RS485 or RS232)
Port 3 (GND)	Pin 5
Port 4 (RX)	Pin 3
Port 5 (TX)	Pin 2

***Note**: If you don't get data throughput, try to switch port 4 and port5.*

2.3.3. Grounding

To ensure a safe, stable and reliable CM685P/T operation, the router casing should be grounded properly. The grounding point can be connected to the router casing/screw mounts.

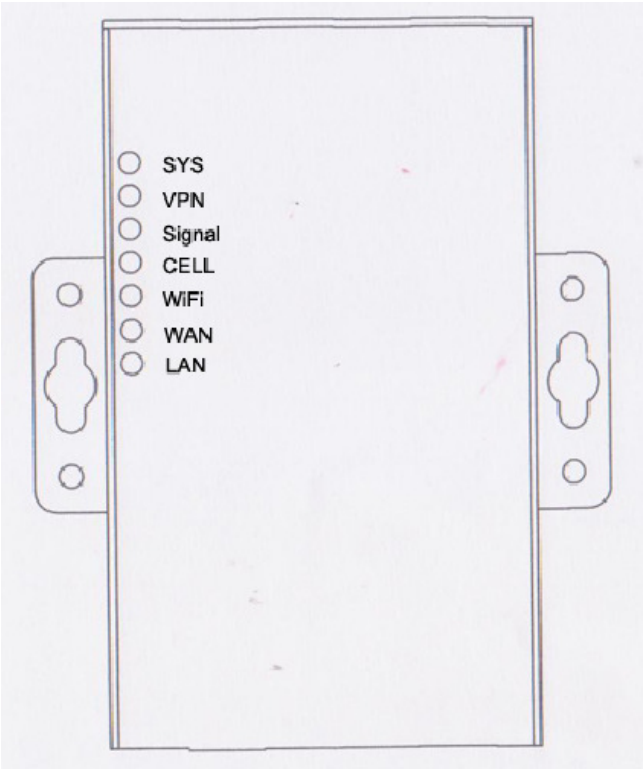
2.3.4. Power Supply

The CM685P/T series can be ordered with a 100-240Vac power pack. For direct current source, use input powers supply +5～+40V (if your CM685P/T supports 50V, the option is +5~+50V). In most cases, the standard configuration is 12V/1A.

2.3.5. LED and Check Network Status

After switching on the power to the CM685P/T, check if the SYS LED starts to blink after a few seconds. If so, this means that the system start-up is normal. If the CELL LED turns on, this means the network is online. If the VPN light works, this means the VPN tunnel has been set up. Please refer to the below table for the status of the indication lights.

LED Identifier:



LED Status:

LED	Indication Light	Description
SYS	On for 25 seconds	On for 25 seconds after being switched on
	Blink	System set-up normally
	Off or still ON after 25 seconds	System set-up failure
LAN	Blink	Ethernet Data transmission
	Off	Ethernet connection is disconnected
	On	Ethernet connection is connected
VPN	On	VPN tunnel set-up
	Off	VPN tunnel set-up failure or deactivated
CELL	On	Access to the WWAN (3G/4G)
WIFI	On	Enabled
	Off	Disabled
WAN	Blink	Data transmission- WAN
	Off	Ethernet connection is disconnected
	On	Ethernet connection is connected
Signal	Off	No signal, or signal checking is not ready
	Blinks once every 4s	Signal bar is 1
	Blinks once every 3s	Signal bar is 2
	Blinks once every 2s	Signal bar is 3
	Blinks once every 1s	Signal bar is 4
	Blinks twice every 1s	Signal bar is 5

Part 3

3. Setup and Configuration

1. *Overview*
2. *How to log into the Router*
3. *How to perform web configuration*

3.1. Overview

The CM685P/T router has a built-in WEB interface, for management and debugging. Users can set up and manage the parameters of the router via the web interface. Below are detailed steps:

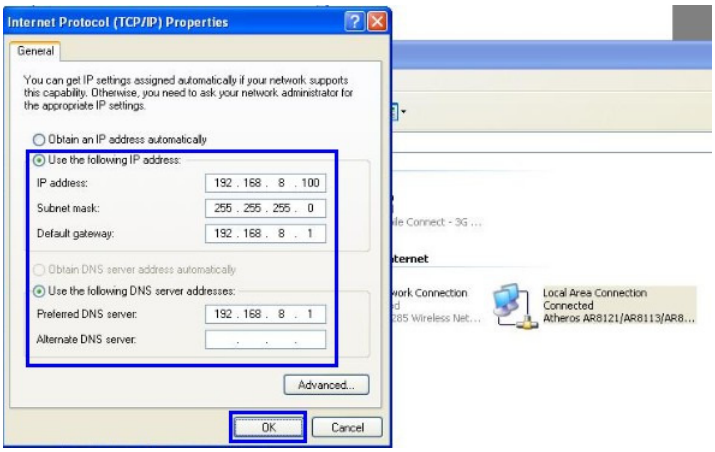
3.2. How to log onto the Router

The router's default IP is 192.168.8.1. The sub mask is 255.255.255.0.

There are two ways to set the PC's IP address.

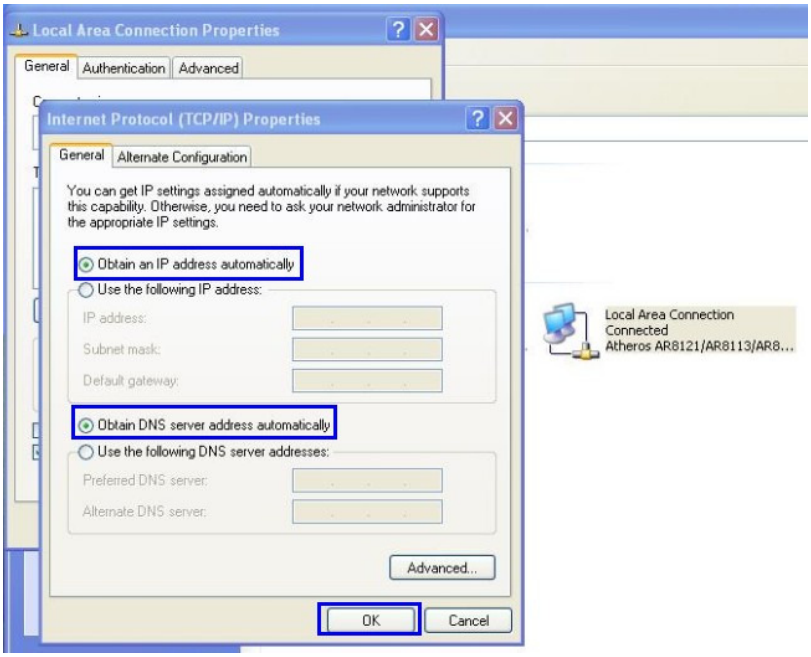
1) Manual setting

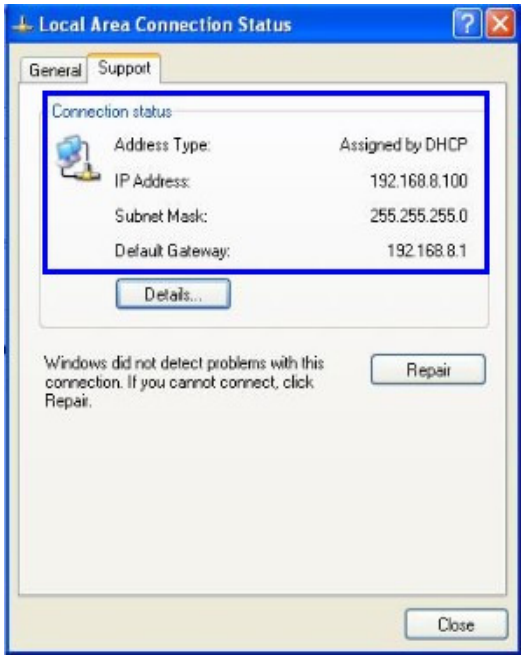
Set the PC IP as 192.168.8.xxx (xxx = 2~254), subnet mask: 255.255.255.0, default gateway: 192.168.8.1, primary DNS: 192.168.8.1.



2) DHCP

Choose "Obtain an IP address automatically" and "Obtain DNS server address automatically".





After setting the IP address, you can check it by performing a ping function. Click Windows Start menu, Run, execute “cmd” command. Input “ping 192.168.8.1” in the DOS window.

```
D:\Documents and Settings\ttt>ping 192.168.8.1

Pinging 192.168.8.1 with 32 bytes of data:

Reply from 192.168.8.1: bytes=32 time<1ms TTL=64
Reply from 192.168.8.1: bytes=32 time<1ms TTL=64
Reply from 192.168.8.1: bytes=32 time<1ms TTL=64
Reply from 192.168.8.1: bytes=32 time<1ms TTL=64

Ping statistics for 192.168.8.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

This information means the connection is established with the router.

```
Pinging 192.168.8.1 with 32 bytes of data:

Destination host unreachable.
Destination host unreachable.
Destination host unreachable.
Destination host unreachable.

Ping statistics for 192.168.8.1:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

```
Request timed out.
Request timed out.
Request timed out.
Request timed out.
```

If you get the message 'Request time out', this means there is no connection. If so, please check the network cable connection and the IP address settings.

Log into the Router

- Open the Web Browser, and type http://192.168.8.1 into the address field.
- Type User Name **"admin"** and Password **"admin"** in the pop-up Login Window, and then press the "OK" button.

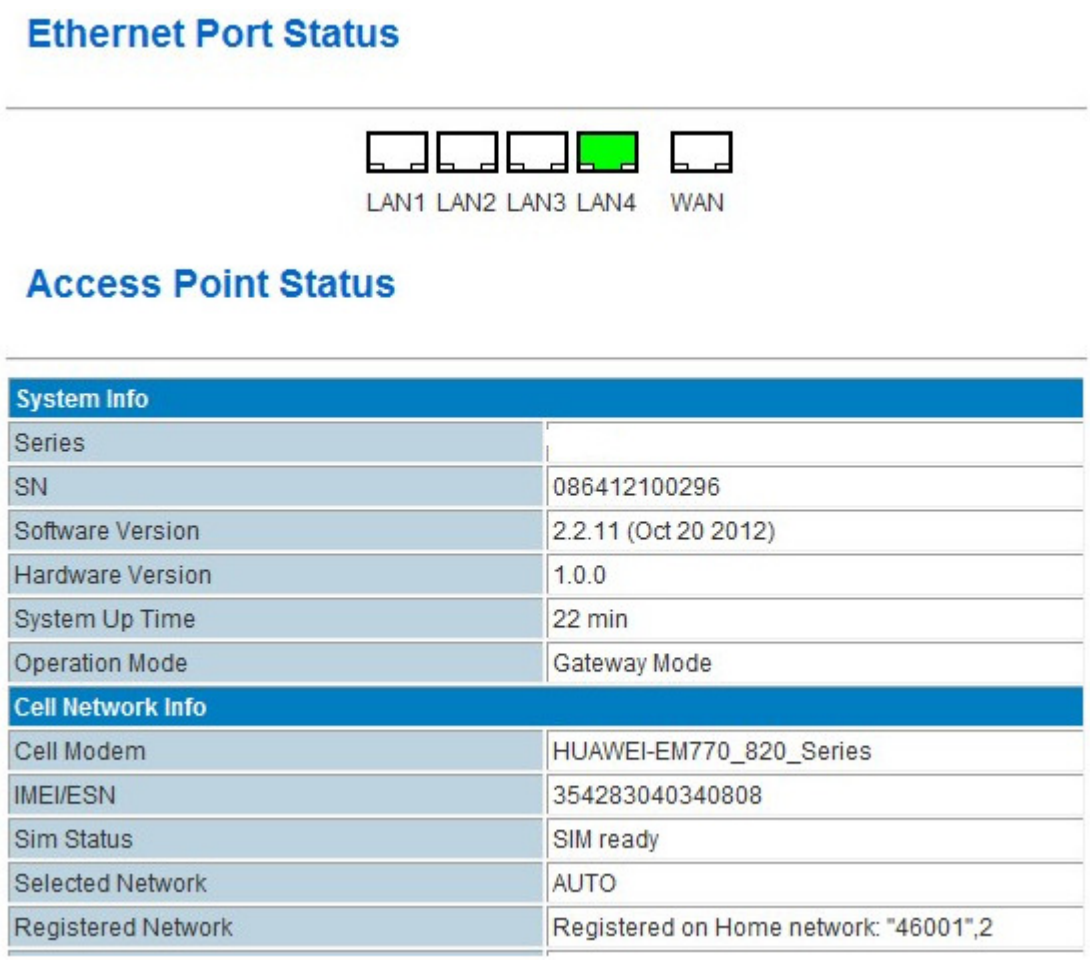
- You will be directed to the router's web management page.

Ethernet Port Status

Access Point Status

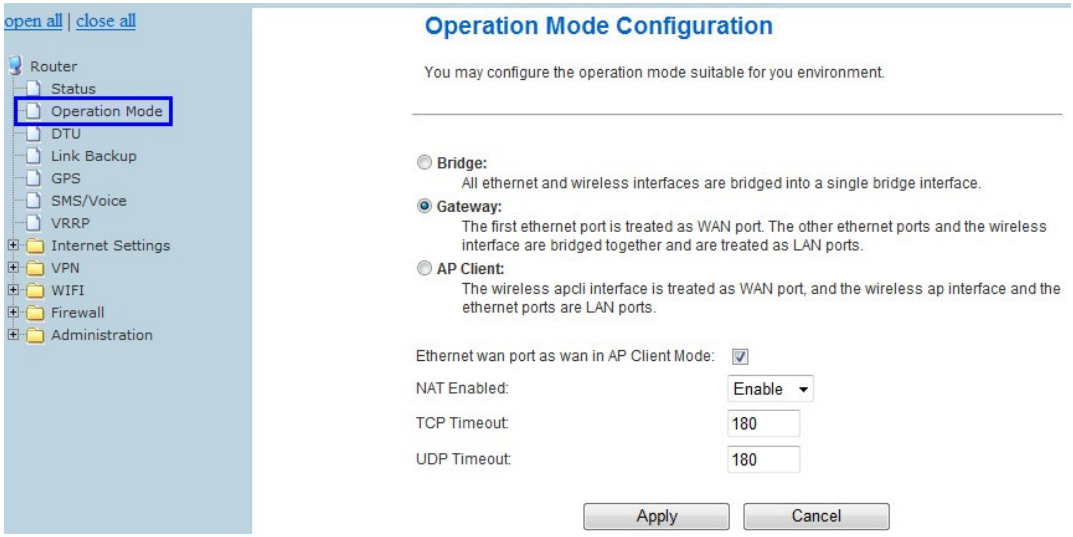
System Info	
Series	
SN	086412100296
Software Version	2.2.11 (Oct 20 2012)
Hardware Version	1.0.0
System Up Time	22 min
Operation Mode	Gateway Mode
Cell Network Info	
Cell Modem	HUAWEI-EM770_820_Series
IMEI/ESN	354283040340808
Sim Status	SIM ready
Selected Network	AUTO
Registered Network	Registered on Home network: "46001",2

3.3. Status Page



System Info	
Series	
SN	086412100296
Software Version	2.2.11 (Oct 20 2012)
Hardware Version	1.0.0
System Up Time	22 min
Operation Mode	Gateway Mode
Cell Network Info	
Cell Modem	HUAWEI-EM770_820_Series
IMEI/ESN	354283040340808
Sim Status	SIM ready
Selected Network	AUTO
Registered Network	Registered on Home network: "46001",2

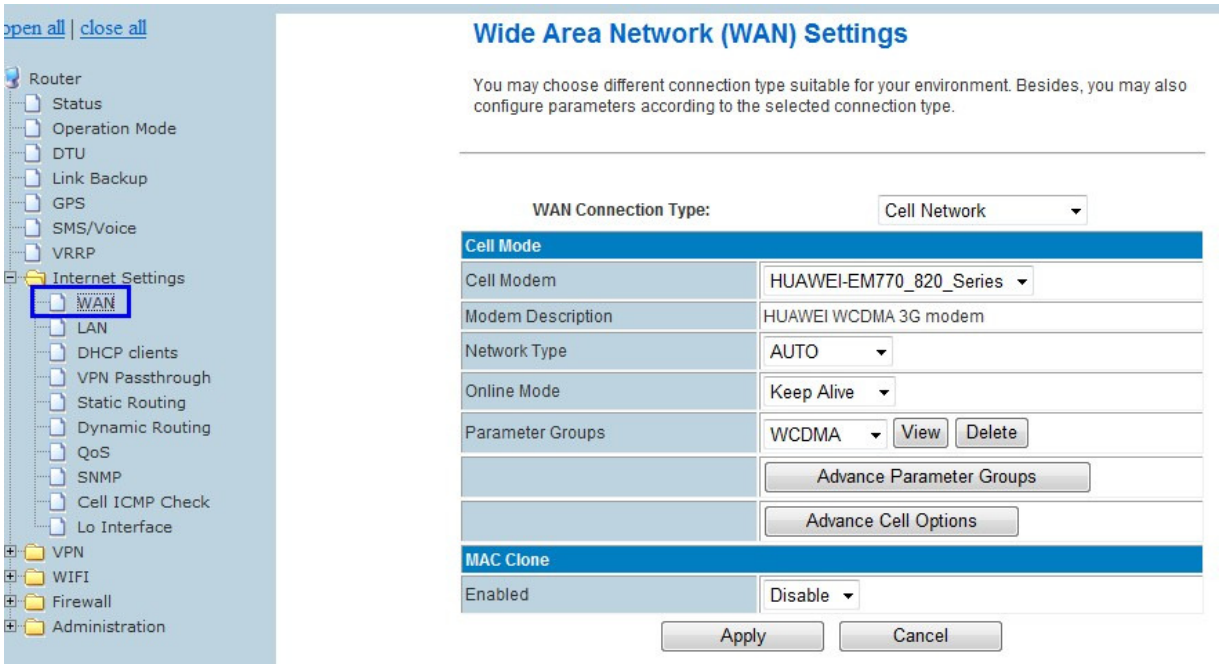
3.4. Modes of Operation



- **Bridge**
  All Ethernet and wireless interfaces are bridged into a single bridged interface.
- **Gateway**
  The first Ethernet port is treated as a WAN port. The other Ethernet ports and the wireless interface are bridged together and are treated as LAN ports.
- **AP Client**
  The wireless apcli interface is treated as a WAN port and the wireless ap interface and the Ethernet ports are LAN ports.
- **NAT**
  Network Address Translation

Normally and by default, we select "Gateway mode", and keep all other parameters as default.

3.5. WAN Settings



- **WAN Connection Type**
  Supports Static IP, DHCP, PPPoE, L2TP, PPTP, CELL Network.

3.5.1. WAN – Cellular Network

- **Cell Modem**
  The router supports different cell modems. By default, the router is set with the installed RF module prior to shipment. If you replace it with another RF module, you must select *AUTO_DETECT* and click

the *Apply button* to reboot the router. The router will automatically check and detect the RF module installed.

- **Modem Description**

  It will display related description after the CM685P/T router detects the Cell Modem.

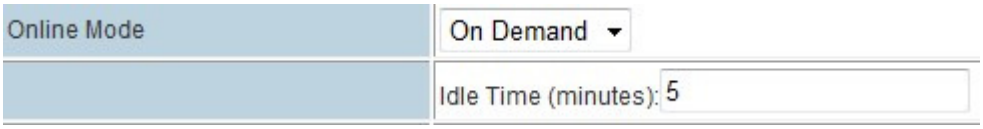
- **Network Type**

  Select the type. Different Cell Modems support different types. Default select *AUTO*.

- **Online Mode**

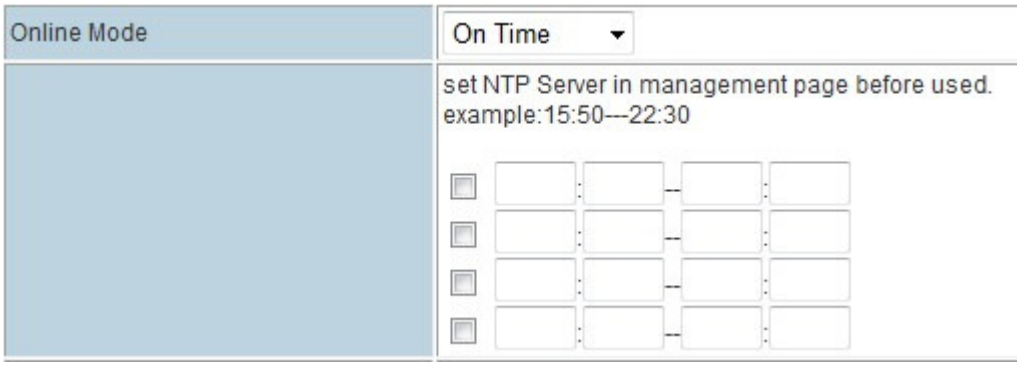
  Keep Alive: means always online. The router will keep online whether there is data for transmission or not.

  On Demand: The router will dial-up when there is data for transmission.



Idle time (minutes): fill in the time. For example, fill in 5, and the router will go offline after 5 minutes if there is no data to be transmitted.

On Time: The router will dialup or go offline depending on the schedule. It supports 4 groups in total.



- **MAC Clone**

  Enables and disables the MAC clone function.

- **Parameter Groups**

APN Group Option	Marks
AUTO	For future use. Do not select this function
WCDMA	If your router is 4G LTE or WCDMA HSPA/HSDPA/HSUPA/HSPA+/EDGE/GPRS/GSM version
CDMA	If your router is CDMA2000 EVDO or CDMA1x version
TD-SCDMA	If your router is TD-SCDMA HSDPA/HSUPA version
User-defined (only show after user defined one)	If you add one APN group with your defined parameters

- **Advance Parameter Groups**

  Click *Advance Parameter Groups*, '*Cell Modem Parameters Groups*' expands. Define one APN Group to fit your network and SIM card.

Cell Modem Parameters Groups	
Parameters Groups Name	WCDMA
Dialup	*99#
APN	telstra.extranet
User	
Password	
Command	
Auth Type	AUTO
Pin Code	
Local IP	
MTU	
Note:	If change this parameters groups,please press Add/Edit button first!
	Advance Parameter Groups Add/Edit
	Advance Cell Options

Fill in the related parameters. DO NOT FORGET TO CLICK "Add/Edit" button.

Parameters Groups Name: Type in the name with no space in between texts.

Parameters Groups Name	WCDMA_test	Right name
Parameters Groups Name	WCDMA_test	Wrong Name
Parameters Groups Name	WCDMA test	Wrong Name

Dialup: Fill in the related parameters. Get this parameter from the SIM Card Provider or Carrier;

APN: Fill in the related parameters. Get this parameter from the SIM Card Provider or Carrier;

User: Fill in the related parameters. Get this parameter from the SIM Card Provider or Carrier; If your SIM doesn't have a user name, please remove the default value, otherwise the router may not dialup.

Password: Fill in the related parameters. Get this parameter from the SIM Card Provider or Carrier; If your SIM doesn't have a user name, please remove the default value, otherwise the router may not dialup.

Command: This is for command to control the module or router. Normally it is for debug use.

Auth Type: There are three options (AUTO, PAP, CHAP/MS-CHAP/MS-CHAP2). Please confirm with your carrier the type of authentication. Normally select *AUTO*. If this doesn't work, try PAP or CHAP.

Notes: Please press the Add/Edit button to add your defined APN parameters. At *Parameter Groups*, it will automatically choose the defined *APN Parameter Groups*.

- **Advance Cell Options**

  Note: If you don't know advance cell parameters very well, please keep default settings. Otherwise the router may not work.

  Click *Advance Parameter Groups.* The *Cell Modem Parameters Groups* will expand. Click a 2nd time to reduce the window size.

Cell Options Advances Settings	
LCP	○ Disable ◉ Enable interval(sec): 10
PAP	○ Disable ◉ Auto
CHAP	○ Disable ◉ Auto
MS-CHAP	○ Disable ◉ Auto
MS-CHAP-V2	○ Disable ◉ Auto
Compression Control Protocal	◉ Disable ○ Require
Address/Control Compression	◉ Disable ○ Require
Protocal Field Compression	◉ Disable ○ Require
VJ TCP/IP Header Compression	◉ Disable ○ Require
Connection-ID Compression	◉ Disable ○ Require
BSD-Compress compression	◉ Disable ○ Require
Deflate compression	◉ Disable ○ Require
MPPE Encryption	◉ Disable ○ Enable
MPPE 40bit	◉ Disable ○ Enable
Refuse Stateless Encryption	◉ Disable ○ Enable
More Options ('~' for separate)	

LCP: PPP dialup monitor. At *interval (sec)*, fill in the time for every check. For example, if you fill in 10, the router will get LCP check every 10 seconds.

Other parameters: user can disable or enable.

3.5.2. Cell ICMP Check

ICMP check and Reboot Settings		
Active	☑	
Check method	www.google.com	Host/IP check
	112.134.33.8	Host/IP check
Check interval time (sec)	60 (60-86400)	
Check Count	3 (3-1000)	
Reboot Count Before Sleep	3 (2-50)	
Sleep Time (min)	5 (0-43200)	
Comment: It is only used for Cell Keep_Alive and On_Time mode! if you active link_backup you mask set the interval bigger the 3 min		

Apply

- **Active:** Tick to enable the ICMP check feature
- **Check method:** Fill in a domain name or IP. Click *HOST/IP check* button to verify before using it.
- **Check interval time (sec):** Set the interval time of every check
- **Check Count:** Set the checking count number
- **Reboot Count Before Sleep:** The CM685P/T Router will sleep and stop checking after failing a set number of times.
- **Sleep Time (min):** CM685P/T Router sleep time before resuming check.

Example with above picture:

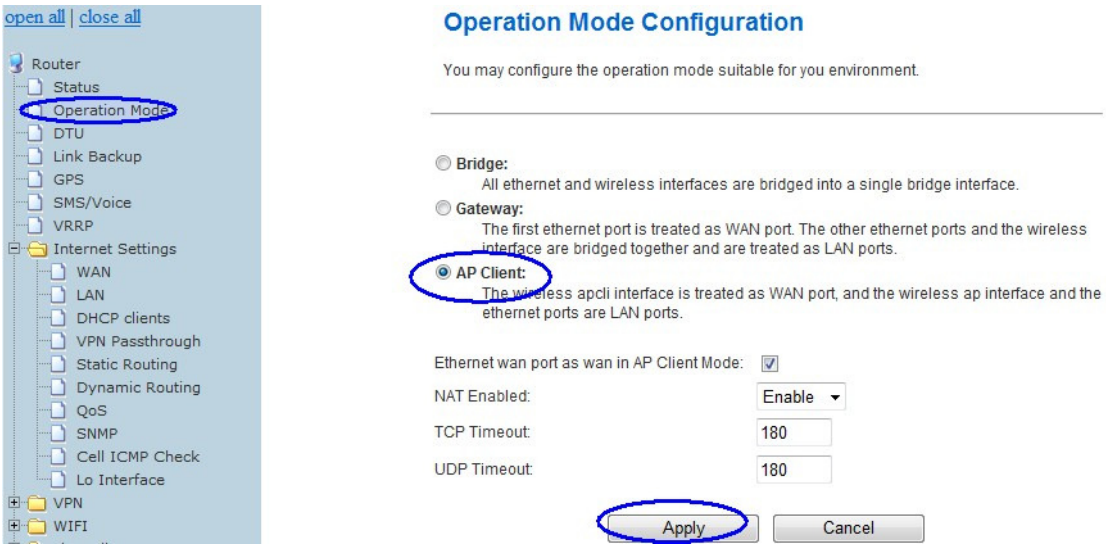
The CM685P/T Router will check "www.google.com" and "112.134.33.8". It will check 3 times, once every 60 seconds. If all 3 tries fail, the CM685P/T Router will reboot. If the unit reboots 3 times continuously, the CM685P/T Router goes to sleep to stop checking. The sleep time is 5 minutes. After 5 minutes, the CM685P/T Router will resume cycle checking.

3.5.3. AP Client mode (WiFi Client)

Set the CM685P/T as an AP client. The CM685P/T will connect to the WiFi router or WiFi AP.

Step 1)

CM685P/T web -- Operation Mode – Choose “AP Client”, and click apply button.



The router will switch to AP Client mode.

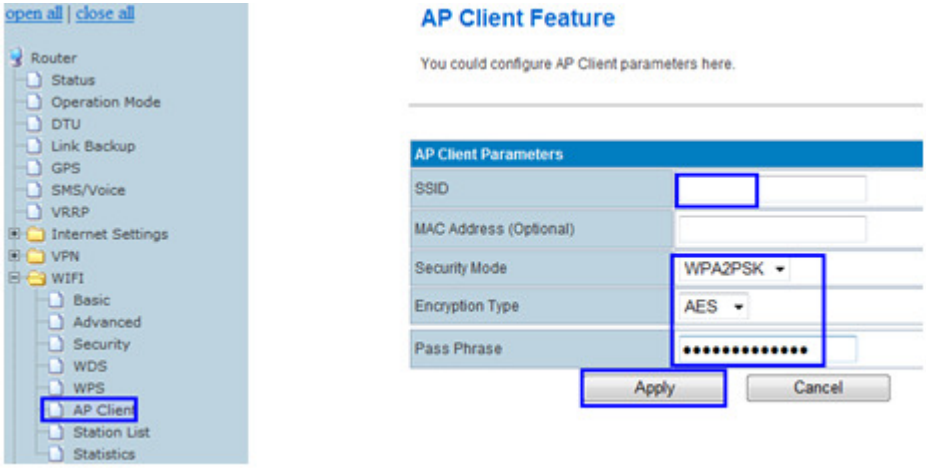
Step 2) WIFI – AP Client

Fill in the parameters.

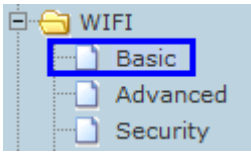
SSID: Input the WiFi router’s SSID

Security Mode: Choose the correct security mode to match the WiFi router/AP you want to connect to.

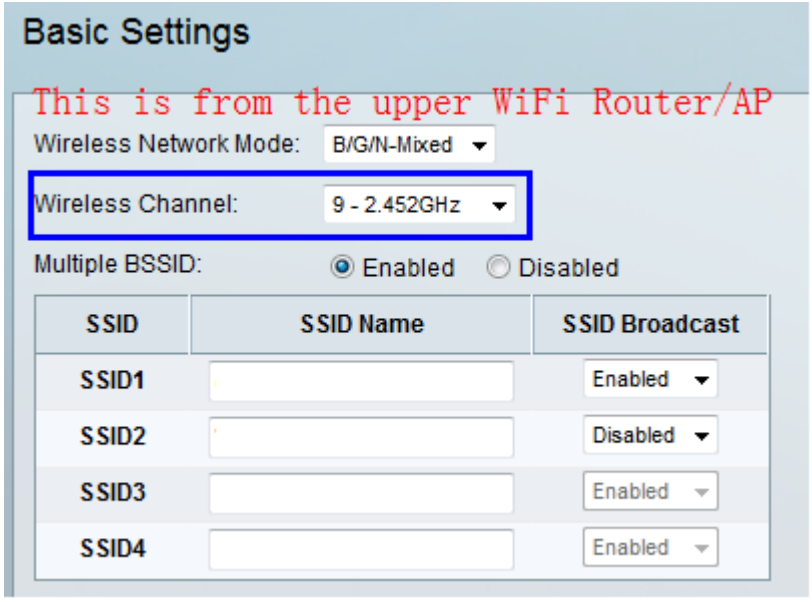
Encryption Type: Choose the correct encryption type to match the WiFi router/AP you want to connect to.



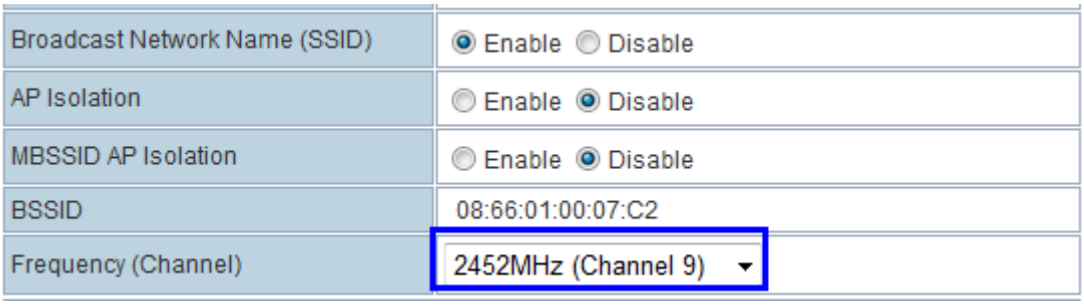
Step3) WIFI – Basic



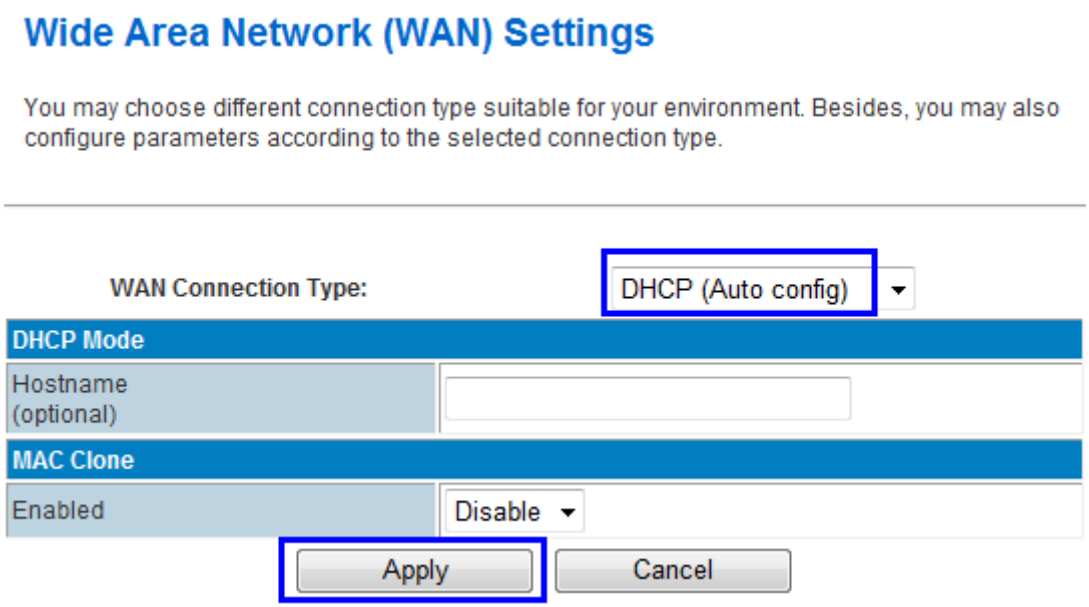
Here please select the right channel for the WiFi Router/AP you want to connect to.



Then choose the same Channel in the CM685P/T router as follows,



Step4) Internet Settings – WAN



At "WAN Connection Type", choose "DHCP (Auto Config)", and click the "Apply" button. The CM685P/T router will automatically connect to the WiFi Router and get a local IP from the WiFi router. You can check the status info page.

3.5.4 WAN – PPPoE (xDSL)

Set the CM685P/T WAN via PPPoE. The CM685P/T will connect to the upper PPPoE modem in xDSL mode.

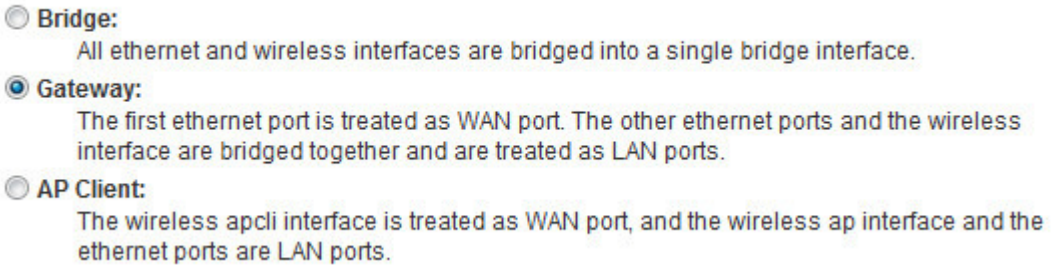
Step 1)

Connect the RJ45 cable between the PPPoE modem and the CM685P/T WAN RJ45 port. Once connected, the CM685P/T Web *Ethernet Port Status* will display.

Note: You may not see the WAN RJ45 connection status, but it will flash to fresh the status every 30 seconds. You can also manually flash to fresh.

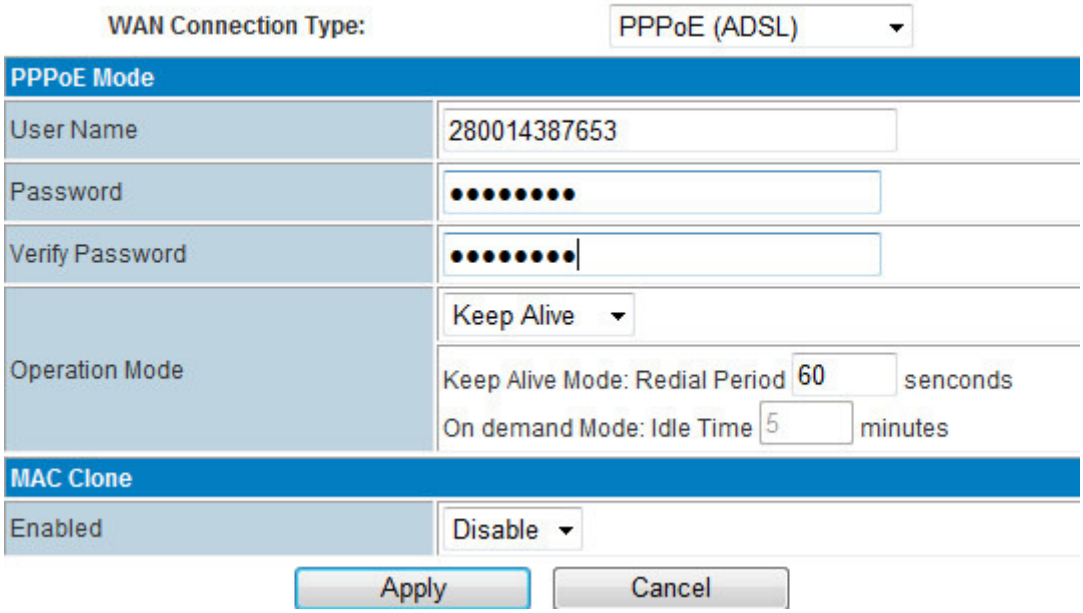
Step 2)

CM685P/T web – Operation Mode, choose "Gateway" mode



Step 3)

CM685P/T web – Internet Settings – WAN – WAN Connection Type, choose "PPPoE (ADSL)"



- **WAN Connection Type:** Choose "PPPoE (ADSL)"
- **User Name:** Fill in the PPPoE username (from DSL company)
- **Password:** Fill in the PPPoE password (from DSL company)
- **Operation Mode:** Keep Alive: PPPoE will stay online whenever there is data transmission. Fill in the Redial Period time.

  On Demand: PPPoE will dialup when there is data transmission demand.

  Set the Idle Time. PPPoE will go offline if the set idle time has no data transmission.

  Manual: Will dialup manually.

Click "Apply" button.

Step 4)

CM685P/T web – Status, the WAN IP will display once the PPPoE is online.

Internet Configurations	
Connected Type	PPPOE
WAN IP Address	119.59.141.4
Subnet Mask	255.255.255.255
Default Gateway	119.59.141.1
Primary Domain Name Server	211.162.78.1
Secondary Domain Name Server	211.162.78.3
MAC Address	08:66:01:00:04:A0

3.5.5. WAN – STATIC IP (Fixed IP)

Set the CM685P/T WAN via STATIC fixed IP. The CM685P/T will connect to the upper router via STATIC fixed IP.

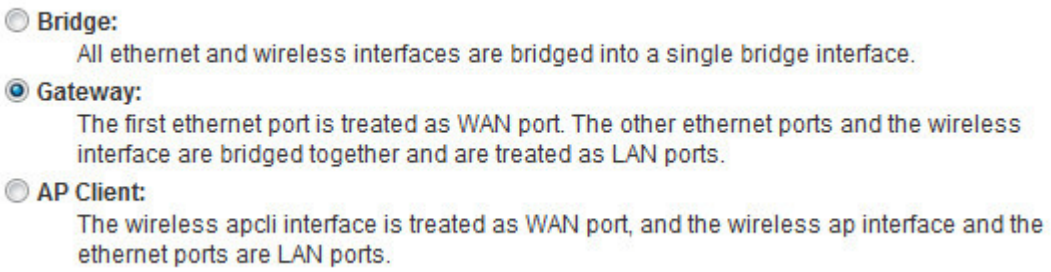
Step 1)

Connect the RJ45 cable between the Upper Router LAN RJ45 and the CM685P/T WAN RJ45 port. Once connected, the CM685P/T Web *Ethernet Port Status* will display.

Note: You may not see the WAN RJ45 connection status, but it will flash to fresh the status every 30 seconds. You can also manually flash to fresh.

Step 2)

CM685P/T web – Operation Mode, choose "Gateway" mode



Step 3)

CM685P/T web – Internet Settings – WAN – WAN Connection Type, choose "STATIC (fixed IP)"

WAN Connection Type:	STATIC (fixed IP)
Static Mode	
IP Address	192.168.1.128
Subnet Mask	255.255.255.0
Default Gateway	192.168.1.1
Primary DNS Server	192.168.1.1
Secondary DNS Server	8.8.8.8
MAC Clone	
Enabled	Disable

Apply Cancel

- **WAN Connection Type:** Choose "STATIC (fixed IP)"
- **IP Address:** Fill in one IP Address. This IP Address should be in the same range as the Upper Router. For example, the Upper Router LAN IP is 192.168.1.1 and Subnet Mask is 255.255.255.0, you can fill in the parameters as above.
- **Subnet Mask**: Fill in the Subnet Mask from the Upper Router.
- **Default Gateway**: Fill in the Upper Router's Gateway IP.
- **Primary DNS Server**: If your Upper Router supports DNS proxy, fill in the Upper Router's LAN IP as Primary DNS Server. You can also fill in the correct DNS Server IP.
- **Secondary DNS Server**: Fill in a working secondary DNS Server IP.

Click "Apply" button.

Step 4)

CM685P/T web – Status, the WAN IP will display once the STATIC (fixed IP) is online.

Internet Configurations	
Connected Type	STATIC
WAN IP Address	192.168.1.128
Subnet Mask	255.255.255.0
Default Gateway	192.168.1.1
Primary Domain Name Server	192.168.1.1
Secondary Domain Name Server	8.8.8.8
MAC Address	08:66:01:00:04:A0

3.5.6. WAN – DHCP (Auto-config/Dynamic)

Set the CM685P/T WAN via DHCP (Auto config). The CM685P/T will connect to the upper router via DHCP.

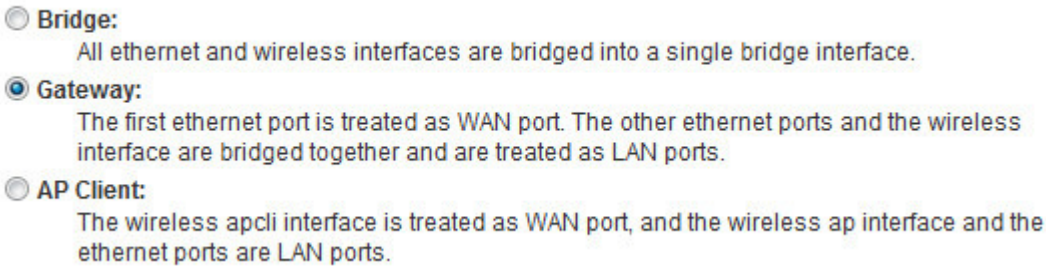
Step 1)

Connect the RJ45 cable between the Upper Router LAN RJ45 and the CM685P/T WAN RJ45 port. Once connected, the CM685P/T Web *Ethernet Port Status* will display.

Note: You may not see the WAN RJ45 connection status, but it will flash to fresh the status every 30 seconds. You can also manually flash to fresh.

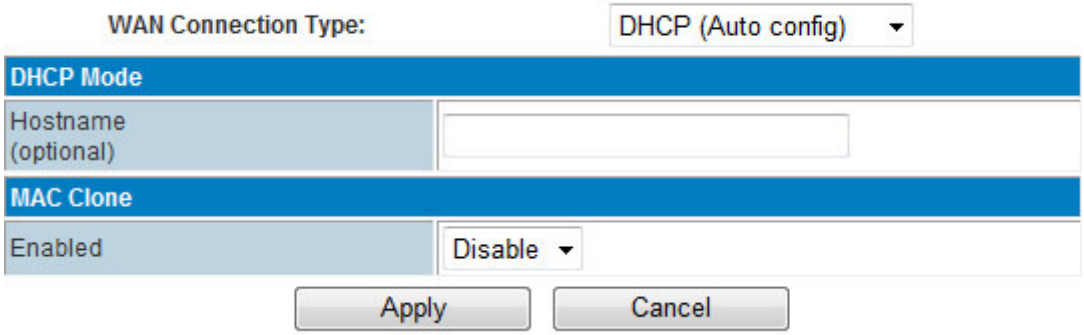
Step 2)

CM685P/T web – Operation Mode, choose "Gateway" mode



Step 3)

CM685P/T web – Internet Settings – WAN – WAN Connection Type, choose "DHCP (Auto config)"



- **WAN Connection Type:** choose "DHCP (Auto config)"

Click "Apply" button.

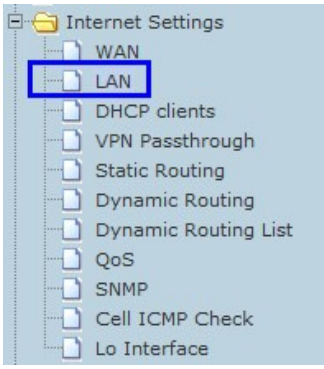
Step 4)

CM685P/T web – Status, it displays the WAN IP once the DHCP (Auto config) is online.

Internet Configurations	
Connected Type	DHCP
WAN IP Address	192.168.1.103
Subnet Mask	255.255.255.0
Default Gateway	192.168.1.1
Primary Domain Name Server	192.168.1.1
Secondary Domain Name Server	192.168.1.1
MAC Address	08:66:01:00:04:A0

3.6. LAN Settings

Navigate to Internet Settings > LAN.



LAN Setup	
IP Address	192.168.8.1
Subnet Mask	255.255.255.0
LAN 2	Enable Disable
LAN2 IP Address	
LAN2 Subnet Mask	
MAC Address	08:66:01:00:04:A1
DHCP Type	Server
Start IP Address	192.168.8.100
End IP Address	192.168.8.200
Subnet Mask	255.255.255.0
Primary DNS Server	168.95.1.1
Secondary DNS Server	8.8.8.8
Default Gateway	192.168.8.1
Lease Time	86400

Set the LAN parameters, including IP address, sub mask, VLAN, DHCP, etc.

3.6.1. Router Gateway IP

By default, the Router LAN IP is 192.168.8.1. If users want to modify it, please change the related parameters.

LAN Setup	
IP Address	192.168.1.1
Subnet Mask	255.255.255.0
LAN 2	Enable Disable
LAN2 IP Address	
LAN2 Subnet Mask	
MAC Address	08:66:01:00:04:A1
DHCP Type	Server
Start IP Address	192.168.1.100
End IP Address	192.168.1.200
Subnet Mask	255.255.255.0
Primary DNS Server	168.95.1.1
Secondary DNS Server	8.8.8.8
Default Gateway	192.168.1.1
Lease Time	86400

IP Address: Change to the value you need
Start IP Address: For DHCP start IP address
End IP Address: For DHCP end IP address
Default Gateway: Manually change it after you modify the *IP Address*.

3.6.2. MAC binding/Static IP via MAC

The CM685P/T Router supports 3 groups of MAC Binding. The parameter value format is as follows:

Statically Assigned	MAC: 00:21:86:61:7A:88 IP: 192.168.8.2
Statically Assigned	MAC: IP:
Statically Assigned	MAC: IP:

3.6.3. DNS Proxy

By default, the CM685P/T Router enables the DNS Proxy. With this, the CM685P/T router can get DNS automatically and assign it to the PC/Device. If the DNS Proxy is disabled, please input correct DNS for your PC/Device. Otherwise, it may not work correctly.

DNS Proxy	Enable

3.6.4. DHCP Client

DHCP Client List

You could monitor DHCP clients here.

DHCP Clients			
Hostname	MAC Address	IP Address	Expires in

List the Clients which are presently connected and gained IP address from DHCP.

3.6.5. Configure Static Routing

This section introduces the Routing Table and how to configure a static router.

- Routing Table

  This page shows the key routing table of this router.

Current Routing table in the system:									
No.	Destination	Netmask	Gateway	Flags	Metric	Ref	Use	Interface	Comment
1	10.64.64.64	255.255.255.255	0.0.0.0	5	0	0	0	WAN (ppp0)	
2	255.255.255.255	255.255.255.255	0.0.0.0	5	0	0	0	LAN (br0)	
3	192.168.8.0	255.255.255.0	0.0.0.0	1	0	0	0	LAN (br0)	
4	0.0.0.0	0.0.0.0	10.64.64.64	3	0	0	0	WAN (ppp0)	

- New Static Router

  This page shows how to set the static routing function of the router.

Add a routing rule	
Destination	
Range	Host
Gateway	
Interface	LAN
Comment	

Destination: Please enter Target Host or IP network segment

Range: Host or Network can be chosen

Gateway: IP address of the next router

Interface: You can choose the corresponding interface type

Comment: Additional remarks or notes

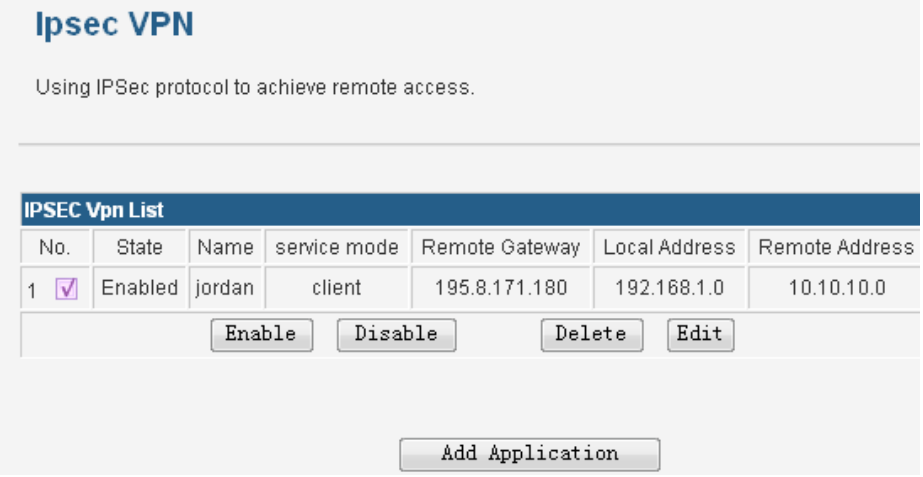
Note:

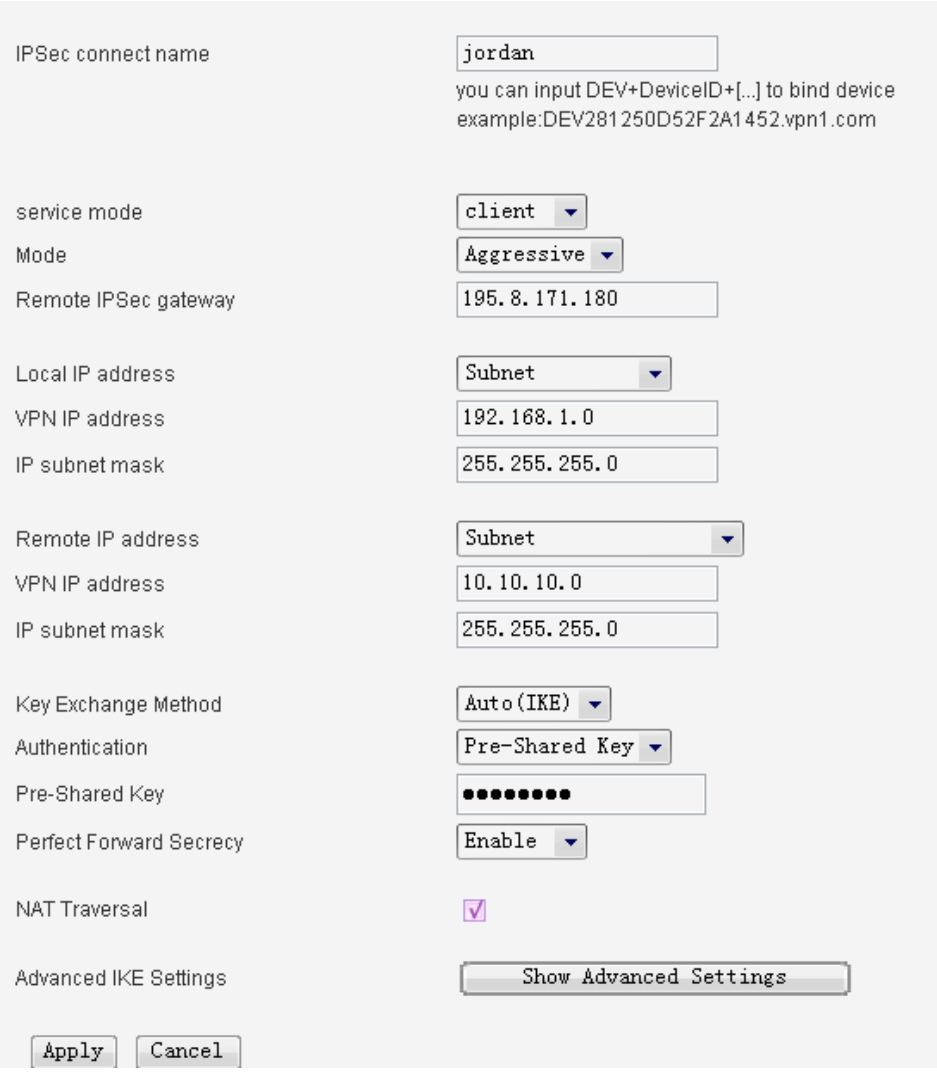
- The Gateway and LAN IP of this router must belong to the same network segment.
- If the destination IP address is one of a host, then the Subnet Mask must be 255.255.255.255.
- If the destination IP address is IP network segment, it must match with the Subnet Mask. For example, if the destination IP is 10.0.0.0, and the Subnet Mask is 255.0.0.0.

3.7. VPN

Note: Please refer to a separate VPN Manual or contact us to get the latest VPN user guide.

3.8. IPSec Feature





- **IPSec connect name**: Make sure the name in client and server are the same, we suggest to use domain name (111.vpn1.com). If you want to build a point-to-point channel, the IPSec name has to be written as DEV+equipment ID+name (DEV281250D52F2A1452.vpn1.com). Make sure both the client and server are configured with same client equipment ID. You can find the CM685P/T's ID in the Status interface.
- **Service Mode**: Server/Client
- **Mode**: Main/Aggressive. The Aggressive mode is commonly used.
- **Remote Gateway**: This choice just appears in the Client mode and it is used to fill the IP address in the Server.
- **Local IP address**: Fill LAN IP of this device. You can fill an IP or a network segment.
- **Remote IP address**: Fill the IP of the other router.
- **Authentication**: Commonly, Pre-Shared Key is chosen. And the Client and Server must have the same key.
- **Advanced AKE settings:** There are some encryption methods in this field. You must use the settings in this field when VPN tunnel needs to be built between CM685P/T and other brand VPN server.
- **Example: Connected Cisco 7200 and CM685P/T**

  How to config CM685P/T as VPN client

  IPSec Name: make sure the name in client and server are the same, we suggest to use domain name (111.vpn1.com). If you want to build a point-to-point channel, the IPSec name has to be written as DEV+equipment ID+name(DEV281250D52F2A1452.vpn1.com). Make sure both the client and server have the same Client equipment ID. You can find the CM685P/T's ID in the Status interface.

IPSec connect name	jordan you can input DEV+DeviceID+[...] to bind device example:DEV281250D52F2A1452.vpn1.com
service mode	client
Mode	Aggressive
Remote IPSec gateway	195.8.171.180
Local IP address	Subnet
VPN IP address	192.168.1.0
IP subnet mask	255.255.255.0
Remote IP address	Subnet
VPN IP address	10.10.10.0
IP subnet mask	255.255.255.0
Key Exchange Method	Auto(IKE)
Authentication	Pre-Shared Key
Pre-Shared Key	●●●●●●●●
Perfect Forward Secrecy	Enable
NAT Traversal	☑

Advanced IKE Settings	Hide Advanced Settings	
Phase 1		
Encryption	3DES	
Integrity Algorithm	SHA1	
Select Diffie-Hellman Group for Key Exchange	1024bit	
Key Lifetime	3600	Seconds
Phase 2		
Encryption	3DES	
Integrity Algorithm	SHA1	
Select Diffie-Hellman Group for Key Exchange	1024bit	
Key Lifetime	28800	Seconds

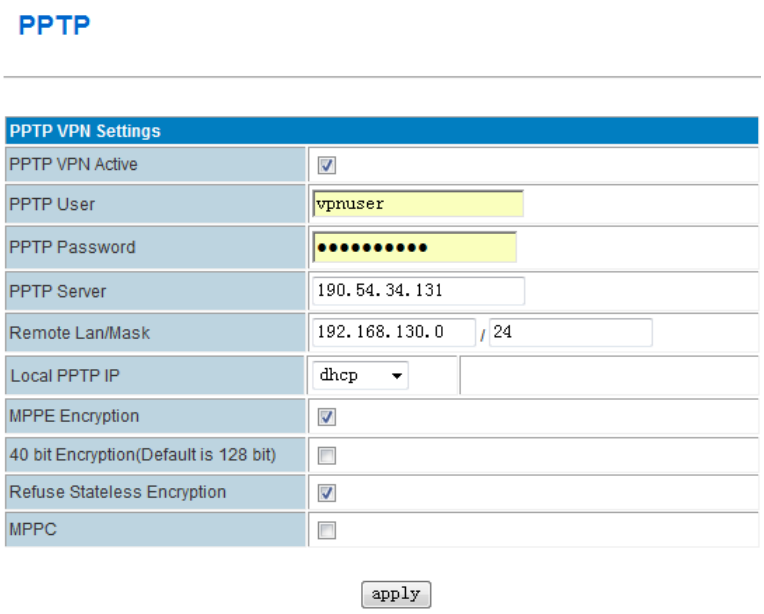
Apply Cancel

How to configure CISCO 7200 as VPN Server

```
crypto keyring jordan
  pre-shared-key hostname jordan key test

  crypto isakmp profile jordan
   description Melbourne_Aus
```

```
keyring jordan
match identity host jordan
keepalive 60 retry 10

crypto ipsec transform-set vpnset esp-des esp-sha-hmac

crypto ipsec profile jordan
set transform-set vpnset
set isakmp-profile jordan

crypto dynamic-map jordan 1
set security-association lifetime kilobytes 536870912
set security-association lifetime seconds 43200
set transform-set vpnset
set isakmp-profile jordan
reverse-route
crypto map COREVPN 26 ipsec-isakmp dynamic jordan
```

3.9. PPTP



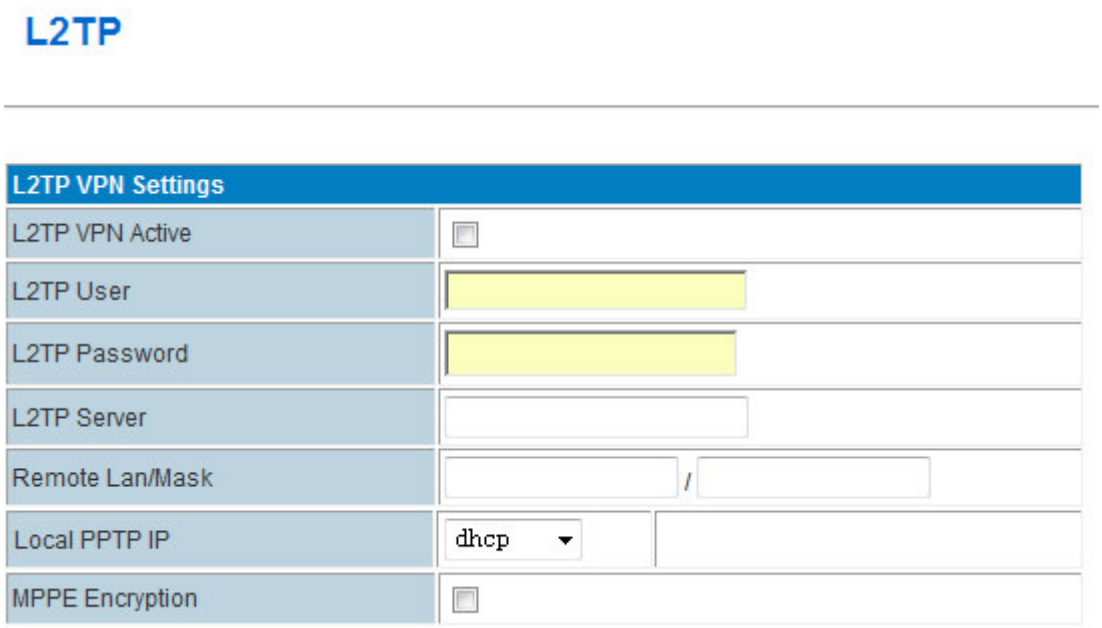
PPTP feature works as Client only.

- **PPTP VPN Active**: Tick it to enable VPN feature.
- **PPTP User**: Fill in the right username, which is from the PPTP Server.
- **PPTP Password:** Fill in the right password, which is from the PPTP Server.
- **PPTP Server**: Fill in the PPTP Server as IP address or domain name.

- **Remote Lan/Mask**: Fill in the PPTP Server's LAN range and submask.
- **Local PPTP IP**: By default choose "dhcp". If you choose "static", please fill in a local PPTP assigned IP, which depends on PPTP Server's settings.
- **MPPE Encryption:** Tick it or not. It depends on PPTP Server's settings.
- **40 bit Encryption (Default is 128 bit)**: Tick it or not. It depends on PPTP Server's settings.
- **Refuse Stateless Encryption**: Tick it or not. It depends on PPTP Server's settings.
- **MPPC**: Tick it or not. It depends on PPTP Server's settings.

Click "apply" button to activate the settings. The PPTP client will try to connect the PPTP Server automatically.

3.10. L2TP

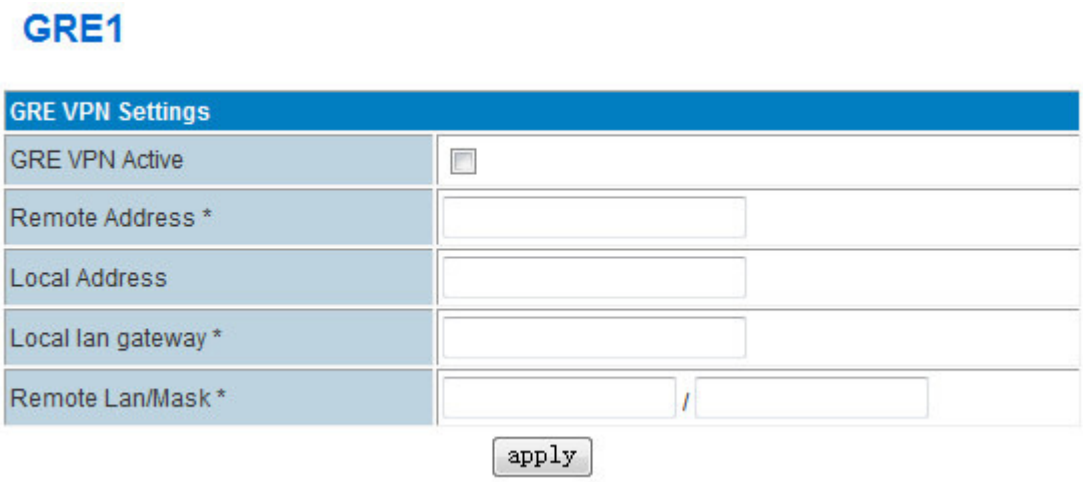


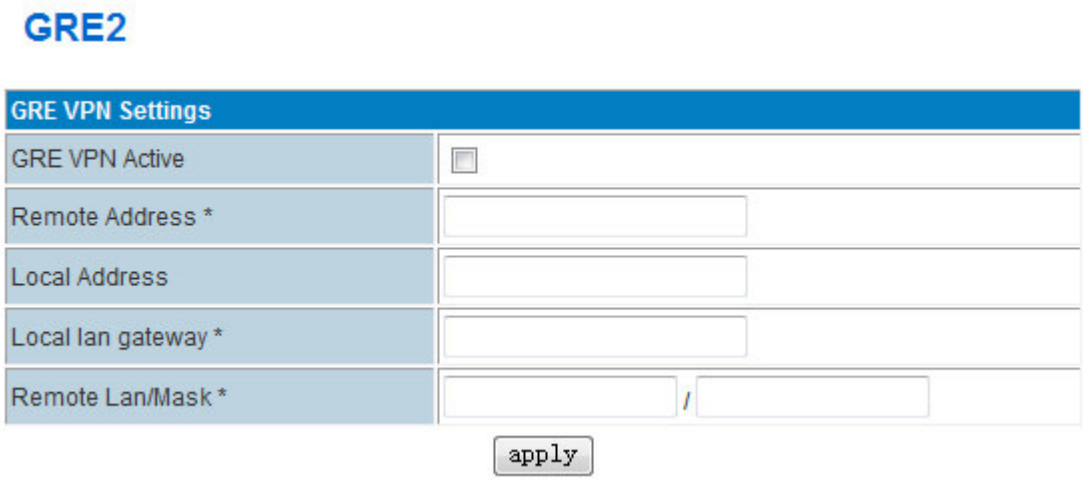
L2TP feature works as Client only.

3.11. Tunnel Features

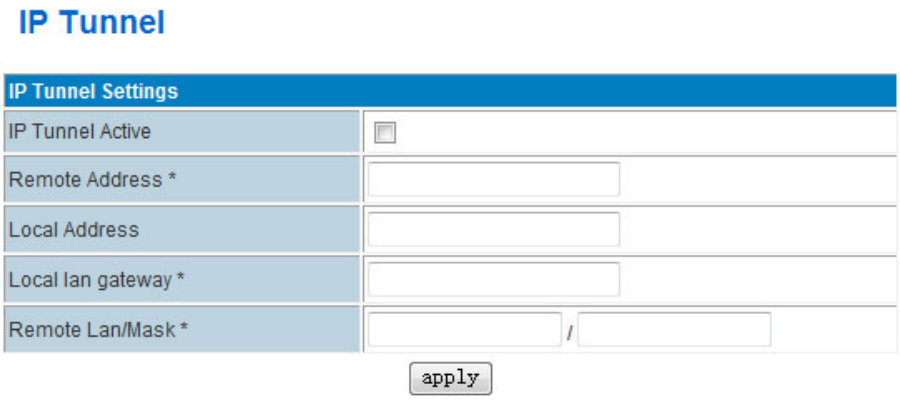
Tunnel Feature

The CM685P/T Tunnel feature supports two GRE.





IP Tunnel Feature



3.12. DTU Settings (Serial to Cellular Gateway Feature)

Notes: this feature is for CM685P/T with DTU option only.

DTU Status	
dtu status	on
DTU Serial setting	
serial baudrate	9600 bps
serial parity	none
serial databits	8 bits
serial stopbits	1 bits
serial flow control	none
DTU config	
mode	client
Protocal	tcp
server 1	☑ 113.111.127.22 : 5000
server 2	☐ 192.168.8.101 : 5000
server 3	☐ 192.168.8.102 : 5000
server 4	☐ 192.168.8.103 : 5000
Send heart beat	on
heart beat interval time (unit:s)	5
heart beat information	hex ☐ DTU_heart
send delay time(unit:ms)	200
Add id string to head	☐ ID_0001 ☐ add to heartbeat info

apply

This section is mainly about DTU settings.

- **DTU status:** Open and close DTU

DTU Serial setting

- **Serial baudrate:** Supports 300/1200/2400/4800/9600/19200/38400/57600/115200bps
- **Serial parity:** Supports none/odd/even
- **Serial databits:** Supports 7 bits and 8 bits
- **Serial stopbit:** Supports 1 bits and 2 bits
- **Serial flow control:** Supports hardware/software

DTU configuration

- **Mode:** can be configured as client or server.
- **Protocol:** Supports TCP/UDP

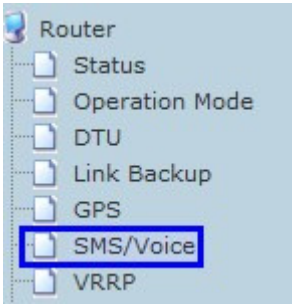
- **Server 1~server 4: F**ill in the centre server IP or Domain name and port. If you configure one server, the data will transfer to this server. If you configure more than one server, the data will transfer to all the servers at the same time
- **Send heart beat:** Open or close heart beat connection
- **Heart beat interval time:** Set interval time to send each heart beat
- **Heart beat information:** Define the content of heart beat
- **Send delay time:** Send waiting time to send data
- **Add id string to head:** Add an ID string in the data or heartbeat

3.13. SMS/Voice Control

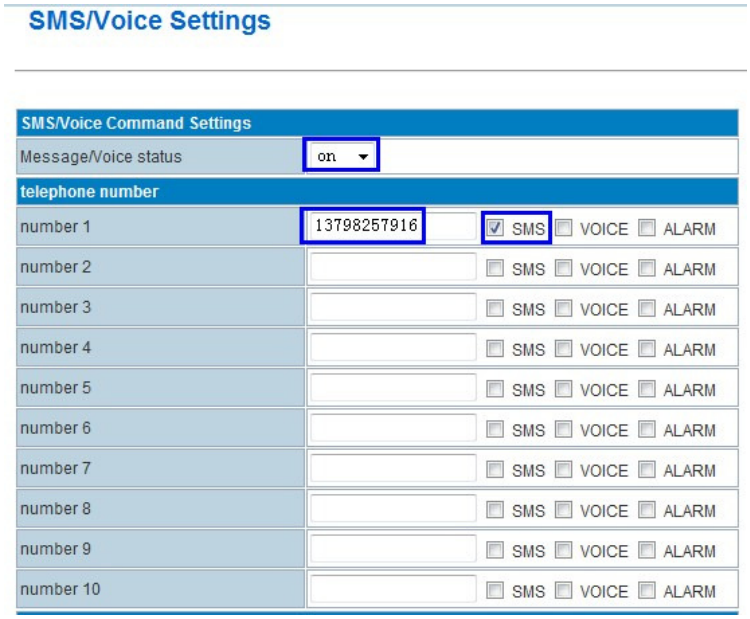
Notes: this feature is for CM685P/T with SMS/Voice option only.

3.13.1. SMS

Step 1) click "SMS/Voice"



Step 2) Activate the SMS feature



Message/Voice status: Select “On” to enable the SMS feature. Set to “Off” to disable the SMS feature.
Telephone number: Sender’s phone number.
Number 1….10: Input the sender’s phone number. Do not forget to Tick “SMS”
Step 3) Define the SMS command

SMS	
SMS Command	on
Send ack SMS	on
Reboot Router Command	reboot
Get Cell Status Command	cellstatus
Cell link-up Command	cellup
Cell link-down Command	celldown
DIO_0 Set Command	dio01
DIO_0 Reset Command	dio00
DIO_1 Set Command	dio11
DIO_1 Reset Command	dio10
DIO Status Command	diostatus

SMS Command: Select “on” to enable it. Select “off” to disable it.
Send back SMS: If “On” is selected, the router will send command feedback to the sender’s phone number. If “off” is selected, the router will not send command feedback to the sender’s phone number.
Reboot Router Command: Input the command for “reboot” operation, default is “reboot”.
Get Cell Status Command: Input the command for “router cell status checking” operation, default is “cellstatus”. For example, if we send “cellstatus” to the router, it will feedback the status to the sender such as “Router SN: 086412090002 cell_link_up”, which indicates the router’s SN number and Cell Working Status.
Cell link-up Command: Input the command for “router cell link up” operation, default is “cellup”. If router gets this command, the Router Cell will be online.
Cell link-down Command: Input the command for “router cell link down” operation, default is “celldown”. If router gets this command, the Router Cell will be offline.
DIO_0 Set Command: Input the command for I/O port 0. For SMS feature, please keep the parameter default.
DIO_0 Reset Command: Input the command for I/O port 0. For SMS feature, please keep the parameter default.
DIO_1 Set Command: Input the command for I/O port 1. For SMS feature, please keep the parameter default.

DIO_1 Reset Command: Input the command for I/O port 1. For SMS feature, please keep the parameter default.

DIO Status Command: Input the command for I/O port status. For SMS feature, please keep the parameter default.

PS: The DIO function is optional.

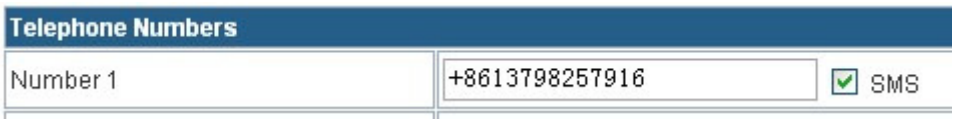
Step 4) Click apply **button to save**

Notes:

1) SIM Card inserted in the router must support SMS or Voice

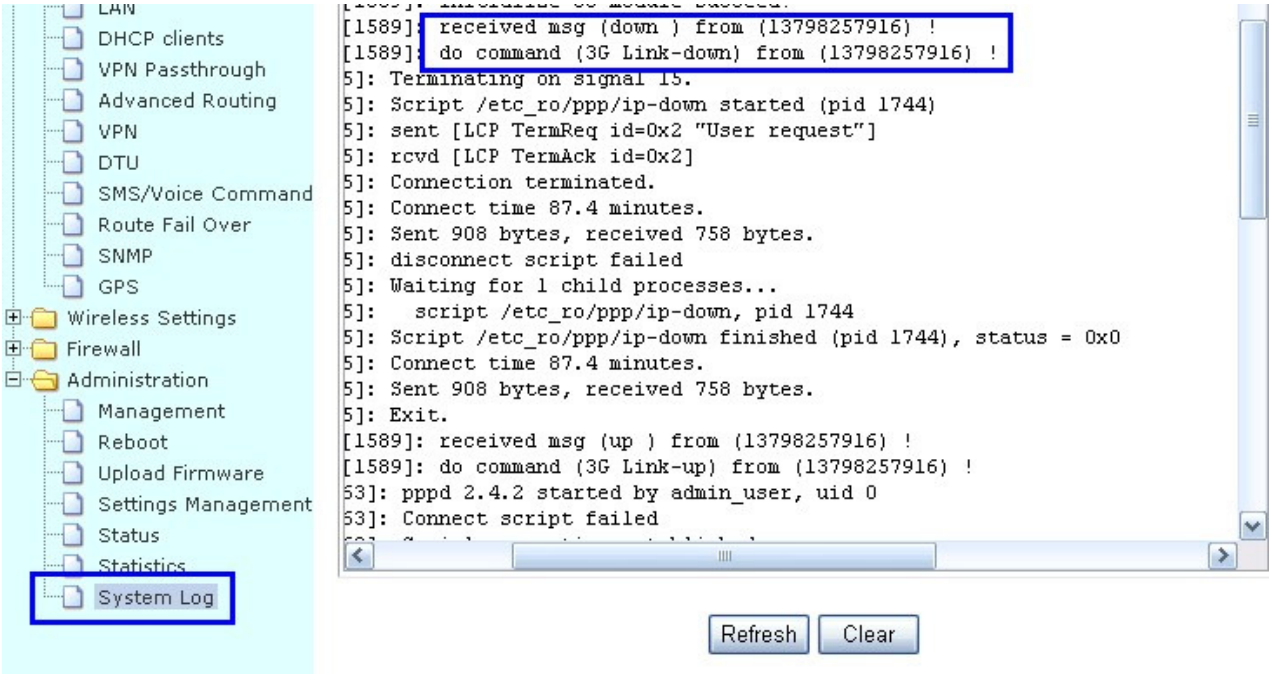
2) Try to add zone code or country code if the command doesn't work

For example, we set the number 13798257916, and if the command doesn't work, try to add the country code 86 as shown below:



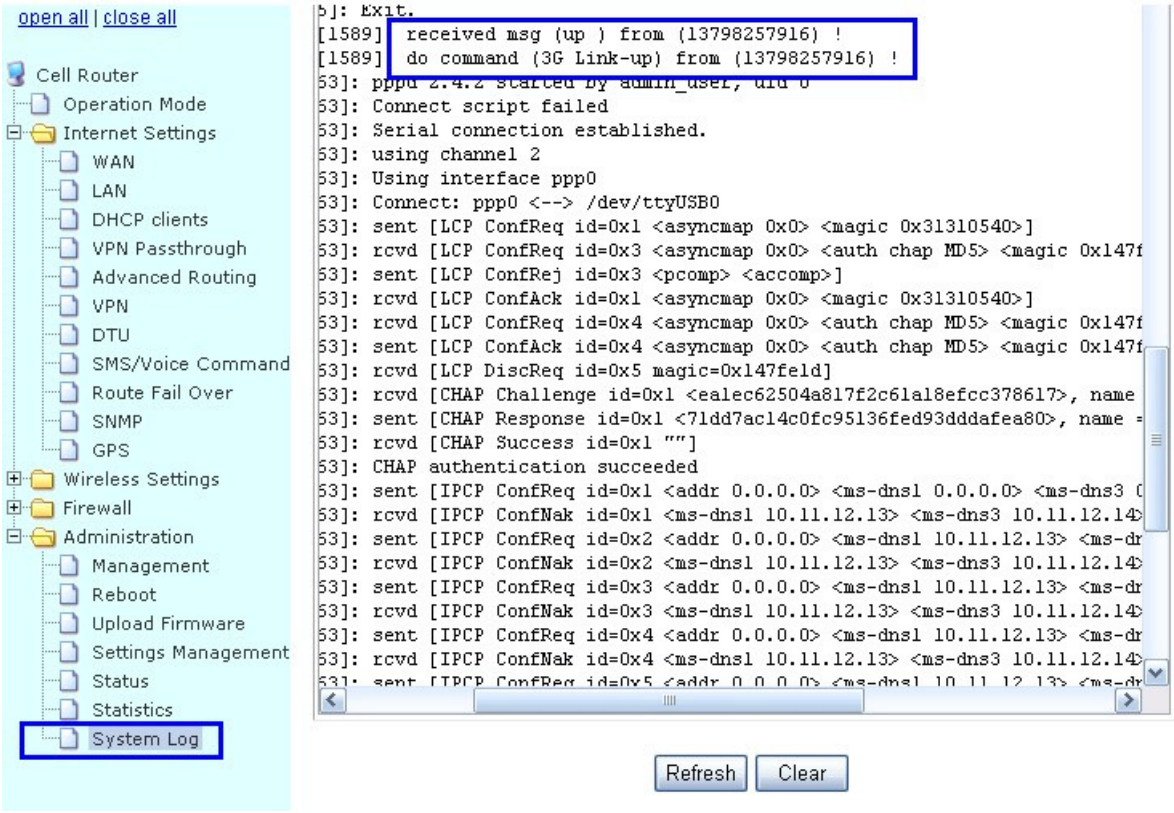
Here is an example, we set the parameters for SMS/Voice as above.

1) Use the cell phone 13798257916 to send "down" to the router's SIM Card Number. The router will receive the "down" command, and it will go off-line. In the System Log, you will find info as shown below:



2) Use the cell phone 13798257916 to send "up" to the router's SIM Card Number. The

router will receive the “up” command, and it will go online. In the System Log, you will find a log info as shown below:



3.13.2. Voice

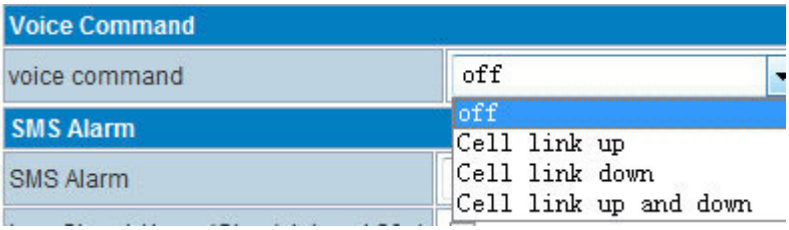
This feature may not work due to network compatibility or RF module features limitation (No voice).

Step 1) Enable voice feature

Step 2) Set the dedicated phone number for voice control

telephone number		
number 1	13798257916	☐ SMS ☑ VOICE ☐ ALARM
number 2		☐ SMS ☐ VOICE ☐ ALARM
number 3		☐ SMS ☐ VOICE ☐ ALARM
number 4		☐ SMS ☐ VOICE ☐ ALARM
number 5		☐ SMS ☐ VOICE ☐ ALARM
number 6		☐ SMS ☐ VOICE ☐ ALARM
number 7		☐ SMS ☐ VOICE ☐ ALARM
number 8		☐ SMS ☐ VOICE ☐ ALARM
number 9		☐ SMS ☐ VOICE ☐ ALARM
number 10		☐ SMS ☐ VOICE ☐ ALARM

Step 3) Configure the voice command



- **Off:** Disable the voice control
- **Cell link up:** With this selection, the voice control can only control the Router Cell online
- **Cell link down:** With this selection, the voice control can only control the Router Cell offline
- **Cell link up and down:** With this selection, the voice control can control the Router Cell offline and online. 1st control to be online, 2nd control to be offline

3.13.3 Alarm via SMS

With this feature, the Router will send an SMS to a pre-defined phone number for warning and alarm messages.

Step 1) enable Alarm feature

SMS/Voice Command Settings	
Message/Voice status	on

Step 2) set the dedicated phone number for SMS Alarm

telephone number				
number 1	13798257916	☐ SMS	☐ VOICE	☑ ALARM
number 2		☐ SMS	☐ VOICE	☐ ALARM
number 3		☐ SMS	☐ VOICE	☐ ALARM
number 4		☐ SMS	☐ VOICE	☐ ALARM
number 5		☐ SMS	☐ VOICE	☐ ALARM
number 6		☐ SMS	☐ VOICE	☐ ALARM
number 7		☐ SMS	☐ VOICE	☐ ALARM
number 8		☐ SMS	☐ VOICE	☐ ALARM
number 9		☐ SMS	☐ VOICE	☐ ALARM
number 10		☐ SMS	☐ VOICE	☐ ALARM

Step 3) Configure the voice command

SMS Alarm	
SMS Alarm	on
Low Signal Alarm (Check Interval:20s)	☑
when equal and lower level(0~2)	0
check count for alarm	10
normal signal count for check again	8

apply

Normal signal count for check again: to prevent repeating alarm.

With the setting above, the CM685P/T router checks signal every 20s. If the signal quality remains ‘0’ in all 10 checks, the CM685P/T Router will send an Alarm via SMS. After the alarm is sent, this feature will be locked, but the CM685P/T Router keeps checking the signal quality every 20s If the signal quality is higher than ‘0’ in 8 consecutive checks, the alarm feature will be unlocked and the alarm feature will start working again.

3.14. Link Backup (Route Redundancy)

Operation Mode			
Active	☑		
Back To Higher Primary When Possible	☑		
Link Priority Settings			
WAN1: Cellular Wireless	☐ OFF	◉ High Priority	○ Middle Priority ○ Low Priority
WAN2: Wifi DHCP Wireless	☐ OFF	○ High Priority	○ Middle Priority ◉ Low Priority
WAN3 : Wired PPPOE	☐ OFF	○ High Priority	◉ Middle Priority ○ Low Priority
Link Check Settings			
Check Count	3 (1-20)		
Check Interval Time(min)	2 (1-60)		
Used The Same Method	YES		
All WAN Check Method	ping ip	220.181.111.168	110.11.233.8

Apply

Operation Mode

Active: Disable or enable the link redundancy

- **Back to Higher Primary When Possible:**

  If you tick this option, the CM685P/T Router will return to the main link as soon as the main link is back in service.

  If this option is not ticked, the CM685P/T Router will not return to the main link until the backup link fails.

Link Priority Settings

- **WAN1: Cellular Wireless**
- **WAN2: WiFi DHCP Wireless**
- **WAN3: Wired XXX (XXX=DHCP, STATIC, PPPOE)**

OFF: Check *OFF Blank* to disable or uncheck to enable the link redundancy

Priority*:* High Priority, Middle Priority, Low Priority

Link Check Settings

- **Check Count:** For example, if set at 3, the router will check if the link is live 3 times.
- **Check Interval Time (min):** for example, if set at 2, the router will check if the link is live every 2 minutes.
- **Used The Same Method:**

If set as *YES*, WAN1/WAN2/WAN3 use the same check IP or domain name from *ALL WAN Check Method*.

All WAN Check Method	ping ip	220.181.111.168	110.11.233.8

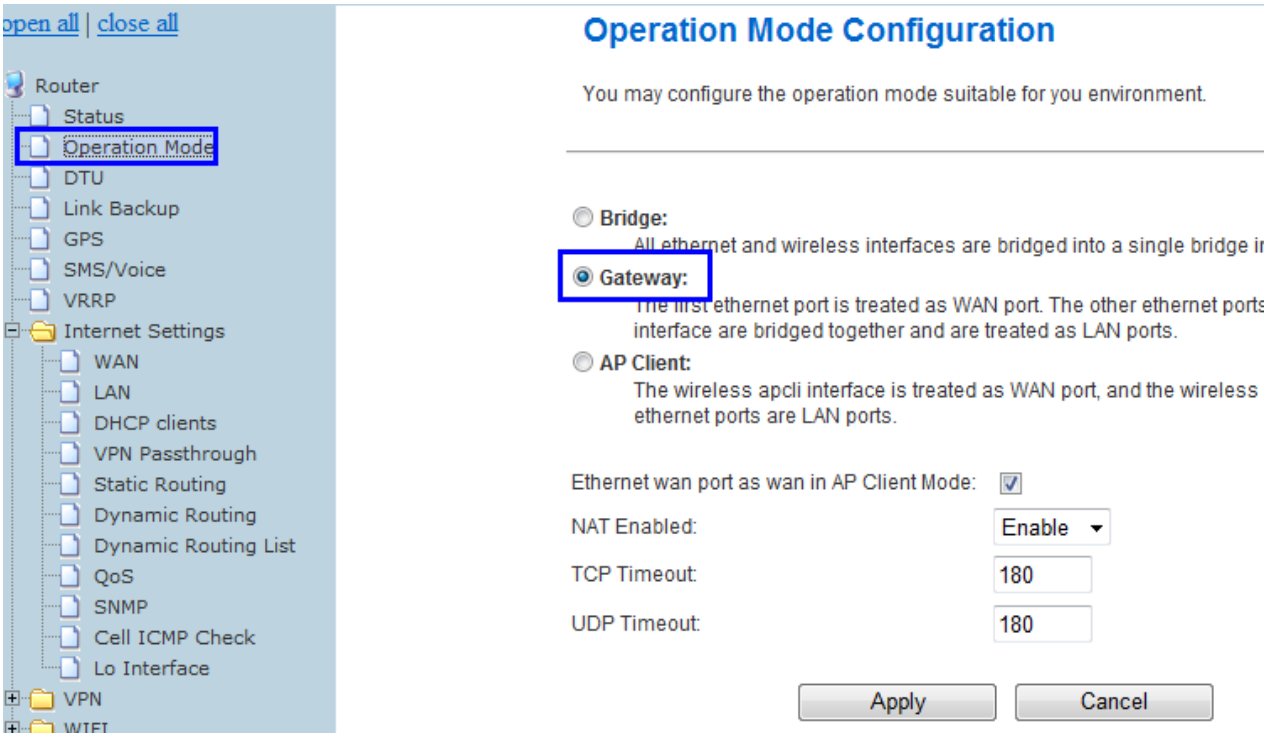
If set as *NO*, users need to set WAN1/WAN2/WAN3 live check IP or domain name separately.

Used The Same Method	NO		
WAN1 Check method	ping ip	google.com	118.113.114.2
WAN2 Check method	ping ip	163.com	222.113.114.28
WAN3 Check method	ping ip	8.8.8.8	112.113.114.222

- **All WAN Check Method:** Define the link live check IP or domain name.

How to use *Link Backup* feature? Here is an example with the CM685P/T WAN RJ45 connected to the upper side router LAN RJ45.

Confirm the upper side router is connected to the internet, and its DHCP is working. First, set the CM685P/T operation mode to default "Gateway mode".



Step 1) Activate "Link Backup". Tick "Active"
Step 2) Tick "Back to Higher Primary When Possible"
Step 3) Choose the network priority
A. Cellular as Low Priority, DHCP as High Priority

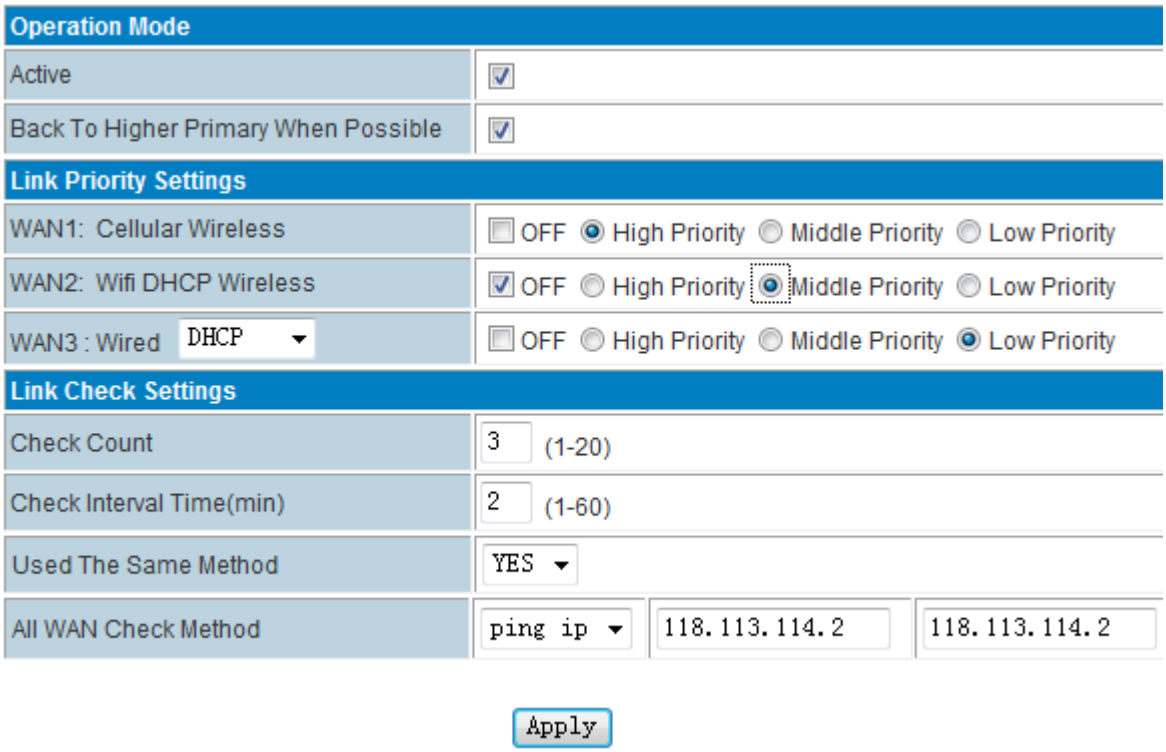
With this configuration, the router will work at DHCP mainly. If DHCP fails, it switches to cellular automatically after some time. It will automatically switch back to DHCP when DHCP is back online.

Operation Mode	
Active	☑
Back To Higher Primary When Possible	☑
Link Priority Settings	
WAN1: Cellular Wireless	☐ OFF ○ High Priority ○ Middle Priority ◉ Low Priority
WAN2: Wifi DHCP Wireless	☑ OFF ○ High Priority ◉ Middle Priority ○ Low Priority
WAN3 : Wired DHCP	☐ OFF ◉ High Priority ○ Middle Priority ○ Low Priority
Link Check Settings	
Check Count	3 (1-20)
Check Interval Time(min)	2 (1-60)
Used The Same Method	YES
All WAN Check Method	ping ip 118.113.114.2 118.113.114.2

Apply

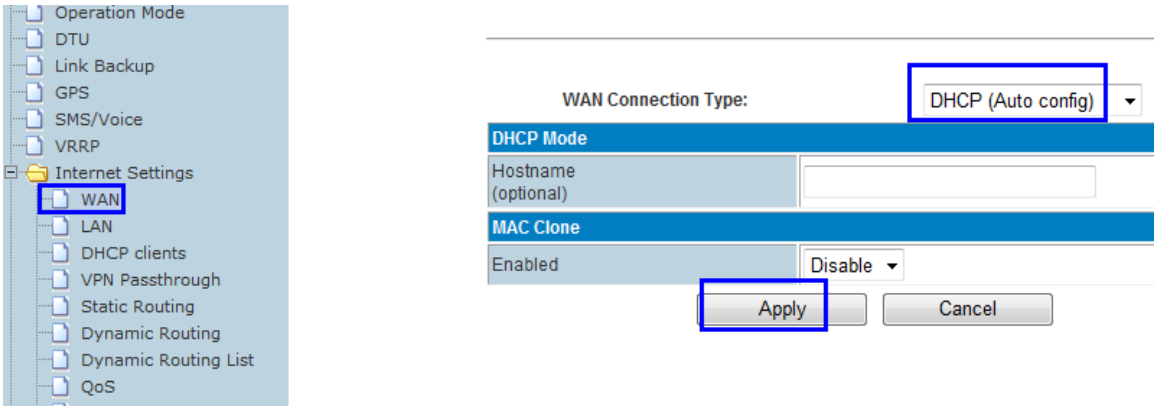
B. Cellular as High Priority, DHCP as Low Priority

With this configuration, the router connects to cellular as first priority. If cellular fails, it switches to DHCP automatically after some time. It will automatically switch back to cellular when cellular is back online.



DHCP: here it can be DHCP WiFi Client.

Step 4) if in step 3 you choose A, please set WAN as *DHCP* and click "Apply"



The CM685P/T gets WAN IP and default gateway from the up-side router.

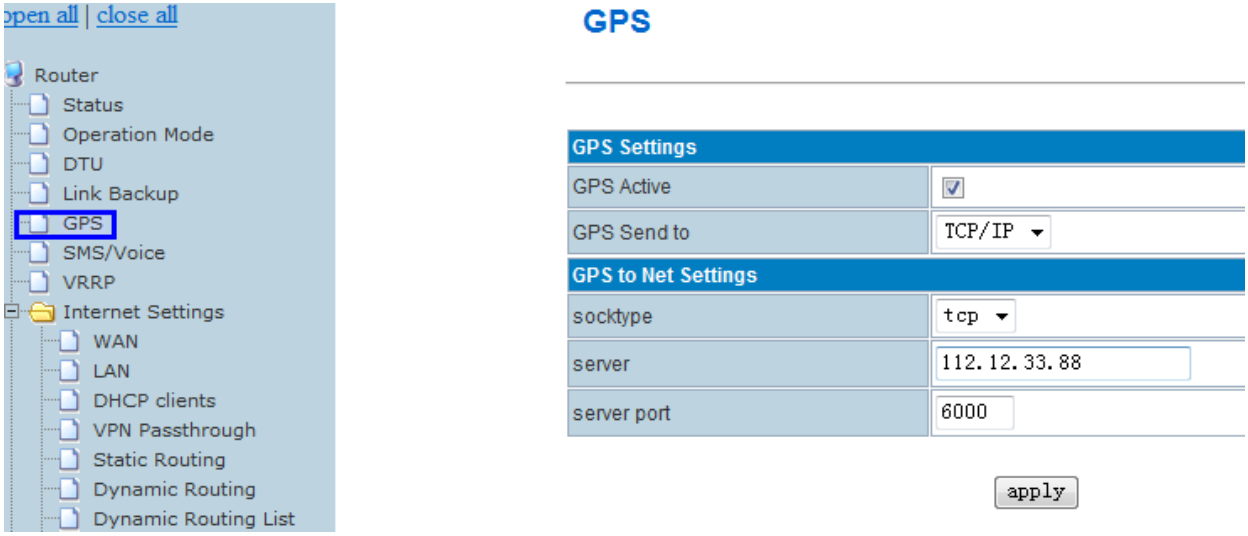
Product Model	3G Router
Software Version	2.4.6 (Aug 5 2011)
Hardware Version	1.0.0
Device ID	280230312C080435
System Up Time	36 mins, 15 secs
Operation Mode	Gateway Mode
3G Info	
Signal Strength	27 , (0-31)
Attachment State	CDMA/EVDO HYBRID
Local Network	
Local IP Address	192.168.8.1
Local Netmask	255.255.255.0
MAC Address	00:0C:43:30:52:77
Internet Configurations	
Connected Type	DHCP
WAN IP Address	192.168.0.104
Subnet Mask	255.255.255.0
Default Gateway	192.168.0.1
Primary Domain Name Server	192.168.0.1
Secondary Domain Name Server	
MAC Address	00:0C:43:30:32:12

If in step 3 you choose B, set WAN as *CELL NETWORK* and click "Apply", it will work on cellular first, and switch to LAN RJ45 cable WAN or WiFi client mode if the cellular network is fails.

Notes: for route fail over feature, please make sure the main network and backup network both work before activating the fail over feature.

3.15. GPS

Notes: GPS feature is for CM685P/T router with GPS option only.



➢ **WAN Connection Type**

- **GPS Active**: Please tick to activate GPS
- **GPS Send to**: Choose "Serial" or "TCP/IP" method. The router only receives the GPS signal. It will not process it. It will just send the received GPS signal to your GPS processor.
  If the GPS processor is connected to the 3G Router via Serial Port, then choose "Serial".

If the user chooses "TCP/IP" method, please configure the *GPS to NET Settings*.
If the user chooses "Serial" method, please configure the *GPS to Serial Settings*.

➢ **GPS to NET Settings**

- **Sock type:** tcp or udp
- **Server:** Fill in the correct destination server IP or domain name
- **Server port:** Fill in the correct destination server port

GPS Settings	
GPS Active	☑
GPS Send to	TCP/IP
GPS to Net Settings	
socktype	tcp
server	112.12.33.88
server port	6000

➢ **GPS to Serial Settings**

- **serial baudrate:** 9600/19200/38400/57600/115200bps for choice
- **serial parity:** none/odd/even for choice
- **serial databits:** 7/8 for choice
- **serial stopbits:** 1/2 for choice
- **serial flow control:** none/hardware/software for choice

GPS Settings	
GPS Active	☑
GPS Send to	Serial
GPS to Serial Settings	
serial baudrate	115200 bps
serial parity	none
serial databits	8 bits
serial stopbits	1 bits
serial flow control	none
Comment: Do not used gps with dtu when send to serial!	

3.16. WiFi Wireless Settings

Notes: WiFi is for CM685P/T with WiFi feature built-in.

3.16.1. Basic Wireless Settings

Wireless Network	
Radio On/Off	RADIO OFF
WiFi On/Off	WiFi OFF
Network Mode	11b/g/n mixed mode
Network Name(SSID)	Cell_AP_120901D4 Hidden ☐ Isolated ☐
Multiple SSID1	Hidden ☐ Isolated ☐
Multiple SSID2	Hidden ☐ Isolated ☐
Multiple SSID3	Hidden ☐ Isolated ☐
Multiple SSID4	Hidden ☐ Isolated ☐
Multiple SSID5	Hidden ☐ Isolated ☐
Multiple SSID6	Hidden ☐ Isolated ☐
Multiple SSID7	Hidden ☐ Isolated ☐
Broadcast Network Name (SSID)	◉ Enable ○ Disable
AP Isolation	○ Enable ◉ Disable
MBSSID AP Isolation	○ Enable ◉ Disable
BSSID	08:66:01:00:04:A2
Frequency (Channel)	2412MHz (Channel 1)

HT Physical Mode	
Operating Mode	◉ Mixed Mode ○ Green Field
Channel BandWidth	○ 20 ◉ 20/40
Guard Interval	○ Long ◉ Auto
MCS	Auto
Reverse Direction Grant(RDG)	○ Disable ◉ Enable
Extension Channel	2432MHz (Channel 5)
Space Time Block Coding(STBC)	○ Disable ◉ Enable
Aggregation MSDU(A-MSDU)	◉ Disable ○ Enable
Auto Block ACK	○ Disable ◉ Enable
Decline BA Request	◉ Disable ○ Enable
HT Disallow TKIP	○ Disable ◉ Enable

Other	
HT TxStream	1
HT RxStream	1

Apply Cancel

➢ **Wireless Network**

- **Radio On/Off:** If it indicates *RADIO OFF*, it means the radio is on. You can click *RADIO OFF* to disable it. If it indicates *RADIO ON*, it means the radio is off. You can click *RADIO ON* to enable it
- **WiFi On/Off:** If it indicates *WiFi OFF*, it means the WiFi is on. You can click *WiFi OFF* to disable it. If it indicates *WiFi ON*, it means the WiFi is off. You can click *WiFi ON* to enable it
  If WiFi is ON, the WiFi LED will be light on. If WiFi is OFF, the WiFi LED will be off
- **Network Mode:** 802.11b/g/n mode selection
- **Network Name (SSID):** Input the SSID, *Hidden* & *Isolated* for option. If user ticks *Hidden*, the WiFi SSID will not broadcast
- **Multiple SSID1:** CM685P/T Router supports multiple SSID 8 groups totally
- **Broadcast Network Name (SSID)**: Enable or Disable SSID broadcast
- **BSSID**: indicates the MAC of WiFi
- **Frequency (Channel):** Current working frequency and channel

3.16.2. WiFi Advanced Settings

Advanced Wireless	
BG Protection Mode	Auto
Beacon Interval	100 ms (range 20 - 999, default 100)
Data Beacon Rate (DTIM)	1 ms (range 1 - 255, default 1)
Fragment Threshold	2346 (range 256 - 2346, default 2346)
RTS Threshold	2347 (range 1 - 2347, default 2347)
TX Power	100 (range 1 - 100, default 100)
Short Preamble	Enable Disable
Short Slot	Enable Disable
Tx Burst	Enable Disable
Pkt_Aggregate	Enable Disable
IEEE 802.11H Support	Enable Disable(only in A band)
Country Code	None

Wi-Fi Multimedia	
WMM Capable	Enable Disable
APSD Capable	Enable Disable
DLS Capable	Enable Disable
WMM Parameters	WMM Configuration

3.16.3. Wireless Security/Encryption Settings

Select SSID	
SSID choice	Cell AP 120901D4

"Cell AP 120901D4"	
Security Mode	Disable

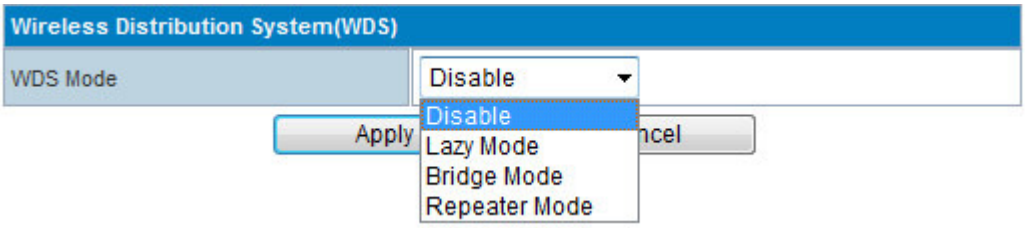
Access Policy	
Policy	Disable
Add a station Mac:	

- **SSID choice:** Select the SSID you want to configure
- **Security Mode:** Includes Disable, OPENWEB, SHAREDWEB, WEBAUTO, WPA, WPA-PSK, WPA2, WPA2-PSK, wpa-psk/wpa2-psk, wpa1/wpa2, 802.1X.
- **Access policy:** Setting the MAC list for restricted/deny access.
  Disable: Closes the *Access Policy*.
  Allow: Allows the assigned MAC to use WiFi
  Reject: Refuses the assigned MAC to use WiFi

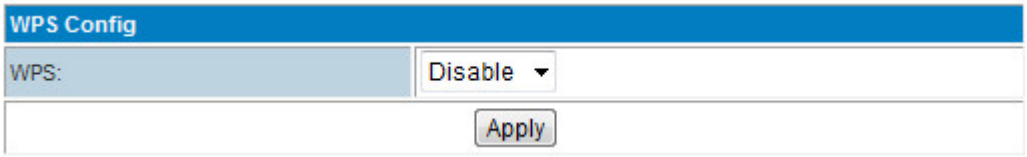
3.16.4. WDS (Wireless Distribution System)

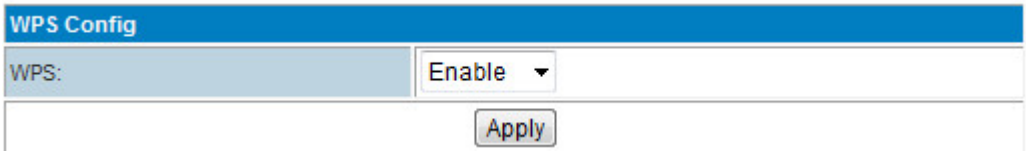
Wireless Distribution System(WDS)	
WDS Mode	Disable

Apply Cancel



3.16.5. WPS (WIFI Protected Setup)





3.16.6. Station List

3.17. Statistics

Transmit Statistics	
Tx Success	9
Tx Retry Count	0, PER=0.0%
Tx Fail after retry	0, PLR=0.0e+00
RTS Sucessfully Receive CTS	0
RTS Fail To Receive CTS	0
Receive Statistics	
Frames Received Successfully	42309
Frames Received With CRC Error	39890, PER=48.5%
SNR	
SNR	n/a, n/a, n/a

Reset Counters

3.18. Firewall

3.18.1. MAC/IP/Port Filter Settings

Basic Settings	
MAC/IP/Port Filtering	Disable
Default Policy -- The packet that don't match with any rules would be:	Dropped.

Apply Reset

MAC/IP/Port Filter Settings	
Source MAC address	
Dest IP Address	
Source IP Address	
Protocol	None
Dest Port Range	-
Source Port Range	-
Action	Accept
Comment	

(The maximum rule count is 32.)

Apply Reset

Current MAC/IP/Port filtering rules in system:

No.	Source MAC address	Dest IP Address	Source IP Address	Protocol	Dest Port Range	Source Port Range	Action	Comment	Pkt Cnt
Others would be dropped									-

Delete Selected Reset

This section is mainly about MAC/IP/Port filter settings

➢ **Basic Settings**

- **MAC/IP/Port Filtering:** Disable or Enable
- **Default Policy -- The packets that don't match with any rules would be:** Dropped/Accepted

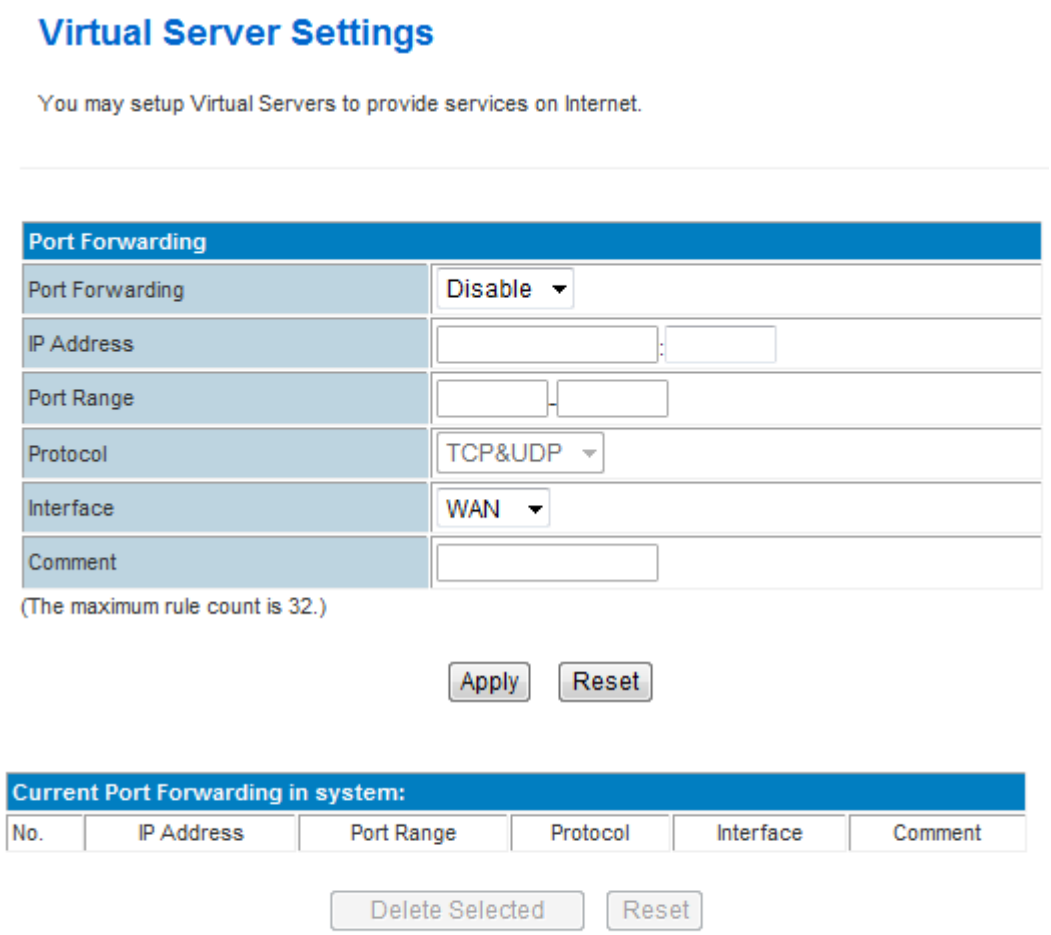
➢ **MAC/IP/Port Filter Settings**

- **Source MAC address:** Fill the MAC address which needs to be filtered
- **Dest IP Address:** IP of the target destination computer (The computer which the data packet will be sent to)
- **Destination Port Range:** Port range of the target computer
- **Source Port Range:** Port range of the computer which sends data
- **Action:** Choose *Accept* or *Drop*
- **Comment:** Input comment here

➢ **Current MAC/IP/Port filtering rules in system**

The configured rules are displayed in this table.

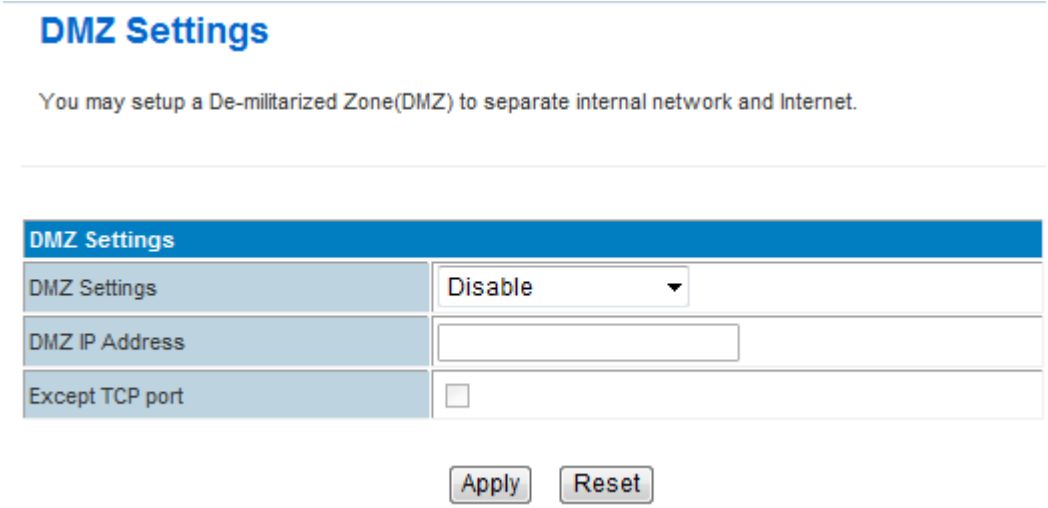
3.18.2. Port Forwarding (Virtual Server Settings) (NAT/NAPT)



Port forwarding is the process that is used by your your router or firewall to sort and forward the requested data to the right port. Computers and routers use ports as a way to organize network data. Different types of data, such as web sites, file downloads, and online games, are each assigned a port number. By using port forwarding, the router or firewall sends the correct data to the correct place.

- Virtual Server Settings: Open and close Settings
- IP address: Fill the IP address of forwarding. The first blank is for local IP address, the second blank is for port
- Port Range: Fill the port of forwarding

3.18.3. DMZ Host



In computer networking, DMZ is a firewall configuration for securing local area networks (LANs).

- **DMZ Settings**: Open and close the DMZ feature
  Disable: Close the DMZ feature
  Enable: Enable the DMZ feature for assigned IP
  Enable Super DMZ: Enable the DMZ feature for assigned MAC
- **DMZ IP Address**: Please Enter the IP address of the computer which you want to set as DMZ host
- **DMZ MAC Address**: Please Enter the MAC address of the computer which you want to set as DMZ host
- **Except TCP port**: Disable or enable for TCP port

Note: When DMZ host is settled, the computer is completely exposed to the external network; the firewall will not influence this host.

3.18.4. System Security

Remote management	
Remote management (via WAN)	Allow

Ping form WAN Filter	
Ping form WAN Filter	Disable

Block Port Scan	
Block port scan	Disable

Block SYN Flood	
Block SYN Flood	Disable

Stateful Packet Inspection (SPI)	
SPI Firewall	Disable

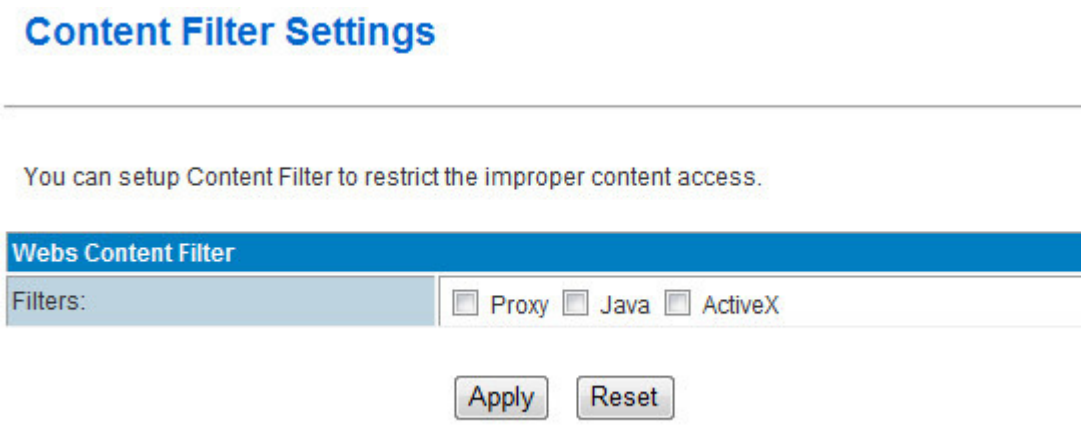
Apply Reset

Includes *Remote management*, *Ping from WAN Filter, Block Port Scan*, *Block SYN Flood* and *SPI Firewall* (Stateful Packet Inspection).

3.18.5. Content Filter Settings

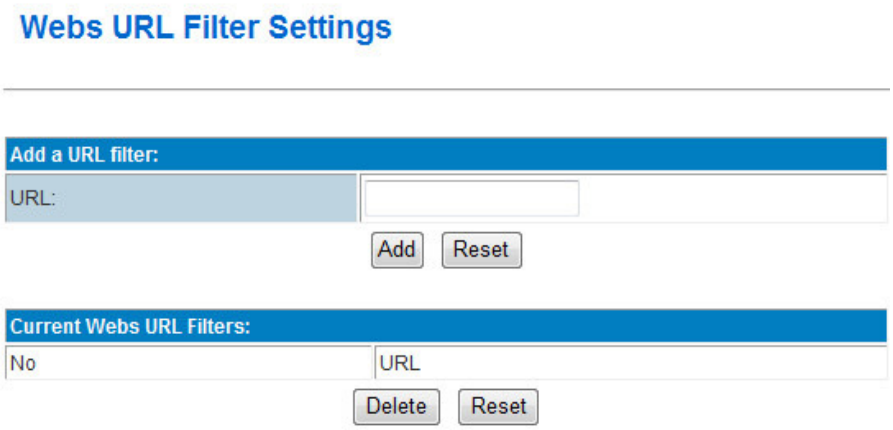
You can set up Content Filter to restrict the content access, including Webs Content Settings, URL filter and Host Filter.

- **Proxy/Java/Activex Filter**



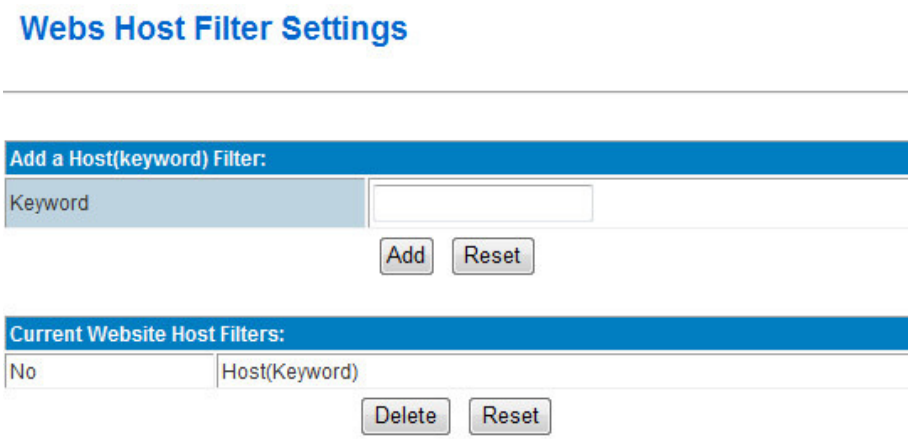
Supports Proxy, Java and ActiveX filter.

- **Web URL Filter**



Fill in the URL for filter.

- **Web Host Filter**



3.19. Administration

3.19.1. Management

- **Language Settings**

Language Settings	
Select Language	English

Select Web display language. Default is English. Any other languages/dialect can be included as an OEM request.

- **Administrator Settings**

Adminstrator Settings	
Account	pptp_user
Password	●●●●●●●●●●●●●●

Select Web display language. Default is English. Any other languages/dialect can be included as an OEM request.

- **WatchDog**

WatchDog	Enable Disable

- **Web Management Port Settings**

Web Management Port Settings	
TCP Port	80
Note	Reboot automatically once click apply

Default port is 80; if the carrier/ISP blocks port 80 for remote incoming access, please try to modify it to port 10000.

➢ **NTP Settings**

NTP Settings	
Current Time	Sat Jan 1 00:27:27 UTC 2000 Sync with host
Time Zone:	(GMT-11:00) Midway Island, Samoa
NTP Server	ex: time.nist.gov ntp0.broad.mit.edu time.stdtime.gov.tw
NTP synchronization(hours)	

➢ **DDNS Settings**

DDNS Settings	
Dynamic DNS Provider	None
Account	pptp_user
Password	●●●●●●●●●●●●●●
DDNS	

Apply Cancel

- **Dynamic DNS Provider**: Choose the right DNS server provider. Supported server list.

  Dyndns.org
  freedns.afraid.org
  www.zoneedit.com
  www.no-ip.com
  www.3322.org
  www.ez-ip.net
  www.justlinux.com
  www.dhs.org
  www.ods.org
  gnudip.cheapnet.net
  www.dyn.ca
  www.tzo.com
  www.easydns.com
  www.dyns.cx
  www.hn.org

- **Account**: Fill in account info (Example: Comset)
- **Password**: Fill in password info.
- **DDNS**: Fill in DDNS info. (DDNS name, selection can be taken from your DDNS service provider)

Example:

DDNS Settings	
Dynamic DNS Provider	Dyndns.org
Account	Comset
Password	●●●●●●●●●●●
DDNS	comset1.dyndns.org

Apply Cancel

3.19.1.1. Router web port

Web Management Port Settings	
TCP Port	80
Note	Reboot automatically once click apply

Please input the web port of the router. Normally 80 or 10000 is used.
Please re-power the router after changing the port number.

3.19.1.2. Language, password and NTP settings

Language Settings	
Select Language	English

Adminstrator Settings	
Account	pptp_user
Password	●●●●●●●●●●●●●●

NTP Settings	
Current Time	Sat Jan 1 00:27:27 UTC 2000 Sync with host
Time Zone:	(GMT-11:00) Midway Island, Samoa
NTP Server	ex: time.nist.gov ntp0.broad.mit.edu time.stdtime.gov.tw
NTP synchronization(hours)	

- Select Language.
- Administrator Settings. The default for both is admin.
- NTP Settings

3.19.1.3. DDNS settings

DDNS Settings	
Dynamic DNS Provider	None
Account	pptp_user
Password	●●●●●●●●●●●●●●
DDNS	

Apply Cancel

- **Dynamic DNS Provider**: Choose the right DNS server provider. Below is a list of supported servers.

Dyndns.org
freedns.afraid.org
www.zoneedit.com
www.no-ip.com
www.3322.org
www.ez-ip.net
www.justlinux.com
www.dhs.org
www.ods.org
gnudip.cheapnet.net
www.dyn.ca
www.tzo.com
www.easydns.com
www.dyns.cx
www.hn.org

- **Account**: Fill in account info.
- **Password**: Fill in password info.
- **DDNS**: Fill in DDNS info.

Example:

DDNS Settings	
Dynamic DNS Provider	Dyndns.org
Account	Comset
Password	●●●●●●●●●●●
DDNS	comset1.dyndns.org

Apply Cancel

3.19.2. Upload Firmware (Upgrade Firmware)

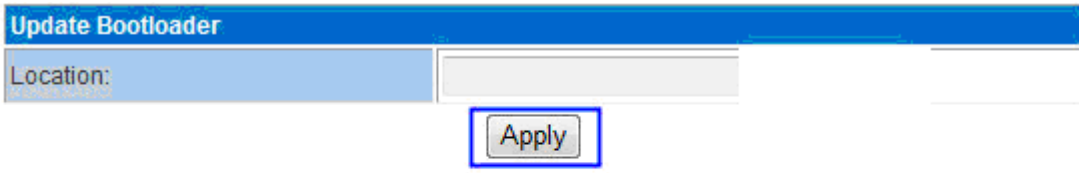
Update Firmware	
Location:	

Apply

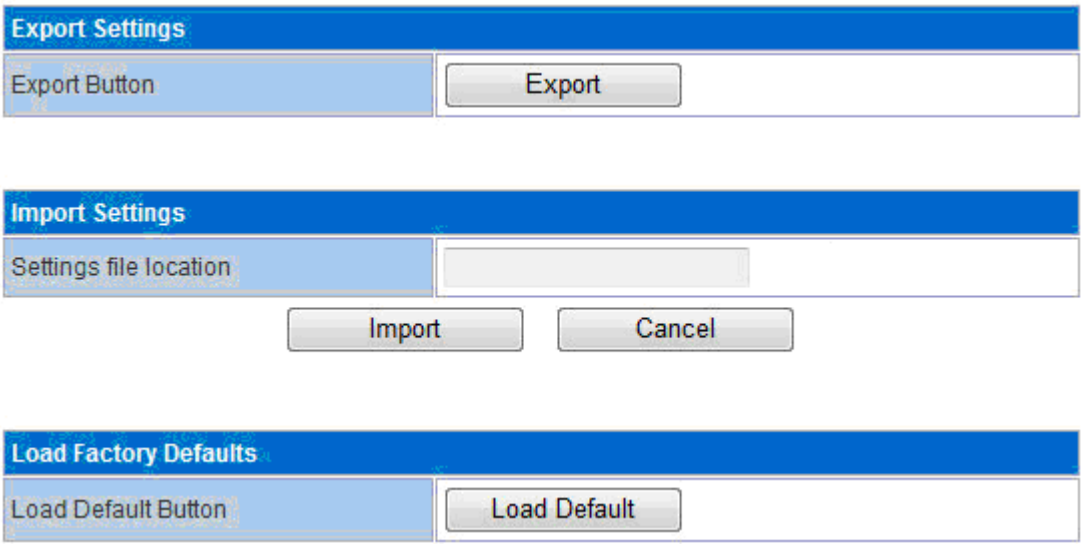
Upgrade the firmware to obtain new functionality. It takes about 2~5 minutes. Choose the correct firmware file, then click “Apply” button.

Notes: "Load Default" will reset all the settings. Please backup/export the settings before "Load Default". Or re-configure the CM685P/T after "Load Default"

For some version of firmware, it requires uploading bootloader file also. Please refer to the following picture. If bootloader is needed, a service bulletin will be issued to all users.



3.19.3. Settings Management

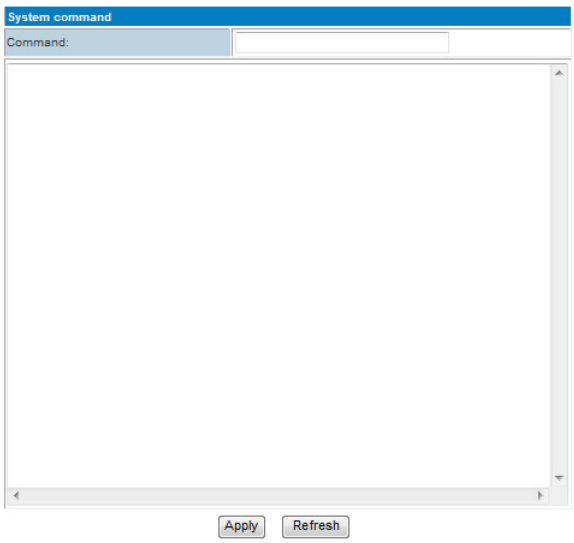


Here you can make a backup of current settings or restore previous settings of the router .

- **Export settings:** Click 'export' to export configuration files. Then select 'save path'.
- **Import settings:** Click 'browse', select previous backup configuration files and then click 'Import'. All the previous settings will be recovered.
- **Load Factory Defaults:** Click 'Load Default' then all the settings will be restored to factory settings. This is not recommended in order to avoid the loss of important parameters.

3.19.4. System Command

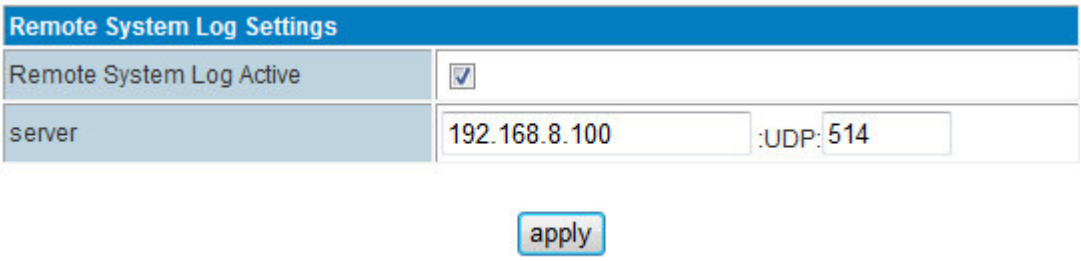
Input related command in the command area. Click “Apply” button to execute. The blank area will display settings and parameters. Please refer to appropriate RF module “Commands Guide” to use this feature.



3.19.5. System Log

➢ **Remote System Log Settings**

The CM685P/T Router can export the sys log into a remote server.



It requires sys log server tool.

Please ask/request from Comset the “Syslog Server Tool”

➢ **Local System Log**

System Log

```
Jan  1 00:00:16 syslogd started: BusyBox v1.12.1
Jan  1 00:00:16 kernel: fuse init (API version 7.8)
Jan  1 00:00:16 kernel: io scheduler noop registered (default)
Jan  1 00:00:16 kernel: Ralink gpio driver initialized
Jan  1 00:00:16 kernel: i2cdrv_major = 218
Jan  1 00:00:16 kernel: HDLC line discipline: version $Revision: 1.1.1.1
Jan  1 00:00:16 kernel: N_HDLC line discipline registered.
Jan  1 00:00:16 kernel: Ralink APSoC Hardware Watchdog Timer
Jan  1 00:00:16 kernel: SoftDog: cannot register miscdev on minor=130 (e
Jan  1 00:00:16 kernel: Serial: 8250/16550 driver $Revision: 1.8 $ 2 por
Jan  1 00:00:16 kernel: serial8250: ttyS0 at I/O 0xb0000500 (irq = 37) i
Jan  1 00:00:16 kernel: serial8250: ttyS1 at I/O 0xb0000c00 (irq = 12) i
Jan  1 00:00:16 kernel: RAMDISK driver initiali
Jan  1 00:00:16 kernel: zed: 16 RAM disks of 16384K size 1024 blocksize
Jan  1 00:00:16 kernel: loop: loaded (max 8 devices)
Jan  1 00:00:16 kernel: rdm_major = 253
Jan  1 00:00:16 kernel: Ralink APSoC Ethernet Driver Initilization. v2.1
Jan  1 00:00:16 kernel: MAC_ADRH -- : 0x00000866
Jan  1 00:00:16 kernel: MAC_ADRL -- : 0x010007c1
Jan  1 00:00:16 kernel: PROC INIT OK!
Jan  1 00:00:16 kernel: IMQ starting with 2 devices...
Jan  1 00:00:16 kernel: IMQ driver loaded successfully.
Jan  1 00:00:16 kernel:     Hooking IMQ before NAT on PREROUTING.
Jan  1 00:00:16 kernel:     Hooking IMQ after NAT on POSTROUTING.
Jan  1 00:00:16 kernel: PPP generic driver version 2.4.2
Jan  1 00:00:16 kernel: PPP BSD Compression module registered
Jan  1 00:00:16 kernel: NET: Registered protocol family 24
```

3.19.6. Statistics

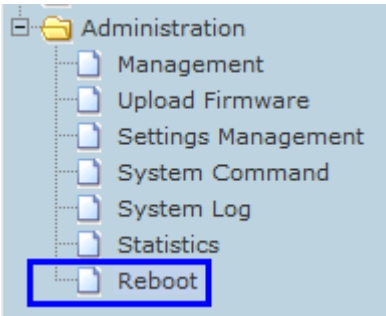
Memory	
Memory total:	60684 kB
Memory left:	31960 kB
WAN/LAN	
WAN Rx packets:	0
WAN Rx bytes:	0
WAN Tx packets:	6
WAN Tx bytes:	492
LAN Rx packets:	6093
LAN Rx bytes:	400006
LAN Tx packets:	6120
LAN Tx bytes:	1107041

All interfaces	
Name	eth2
Rx Packet	6137
Rx Byte	513803
Tx Packet	6134
Tx Byte	1139410
Name	ra0
Rx Packet	117309
Rx Byte	32422543
Tx Packet	1443
Tx Byte	0
Name	eth2.1
Rx Packet	6127
Rx Byte	427889
Tx Packet	6127
Tx Byte	1132011

Name	eth2.2
Rx Packet	0
Rx Byte	0
Tx Packet	6
Tx Byte	492
Name	br0
Rx Packet	6128
Rx Byte	404417
Tx Packet	6158
Tx Byte	1130413
Name	ppp0
Rx Packet	10
Rx Byte	160
Tx Packet	9
Tx Byte	168

Display the statistics information of system flow.

3.19.7. Reboot



Question: Why use the Reboot Feature?

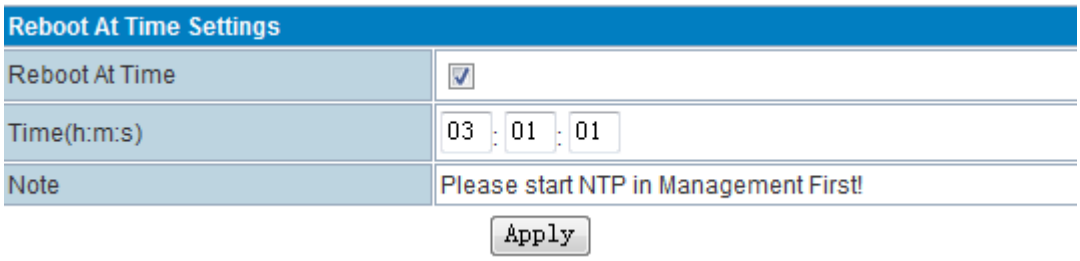
Answer: The Router is similar to a computer, whose performance depends on hardware and software. Its performance becomes weaker after working for a very long time. Reboot will refresh its performance.

Question: Is it necessary to use the Reboot Feature?

Answer: It is not necessary. Our router has high reliability and stable performance. It does not require using the reboot feature unless there is frequent connection failure which causes the router modem to fail continuously.

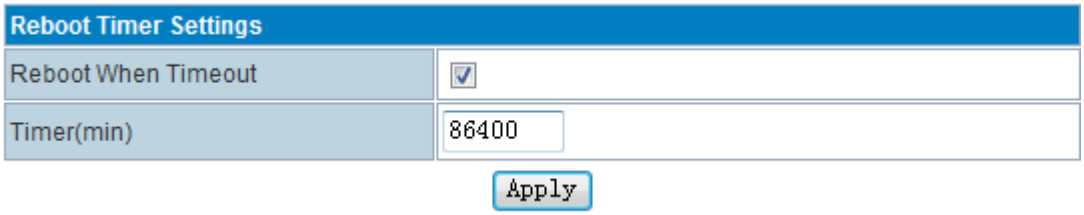
The CM685P/T Router supports three types of Reboot Features.

- **Reboot AT Time Settings**



Users can define the exact time for daily reboot.

- **Reboot AT Time Settings**



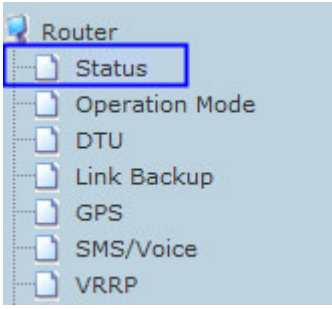
Users can set a timer to reboot.

➢ **Reboot AT Time Settings**

Reboot System	
Reboot Now	Reboot

Manually click “Reboot” button to reboot immediately.

3.19.8. Status



System Info	
Series	
SN	086412100296
Software Version	2.2.13 (Oct 20 2012)
Hardware Version	1.0.0
System Up Time	1:41
Operation Mode	Gateway Mode
Cell Network Info	
Cell Modem	HUAWEI-EM820W
IMEI/ESN	355858040246813
Sim Status	SIM ready
Selected Network	AUTO
Registered Network	Registered on Home network: "46001",2
Sub Network Type	WCDMA
Signal	13
Cell Status	UP

Internet Configurations	
Connected Type	CELL
WAN IP Address	172.17.194.232
Subnet Mask	255.255.255.255
Default Gateway	10.64.64.64
Primary Domain Name Server	210.21.196.6
Secondary Domain Name Server	221.5.88.88
MAC Address	08:66:01:00:07:C0
Local Network	
Local IP Address	192.168.8.1
Local Netmask	255.255.255.0
MAC Address	08:66:01:00:07:C1

IPSEC Status	
Name	Status
PPTP Status	
PPTP	down
L2TP Status	
L2TP	down

From this page you can see the Router's basic running state.

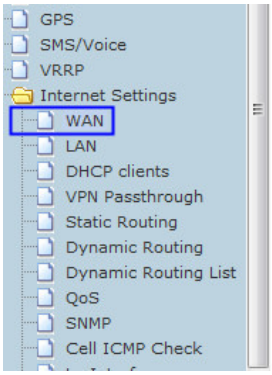
➢ **Ethernet Port Status**

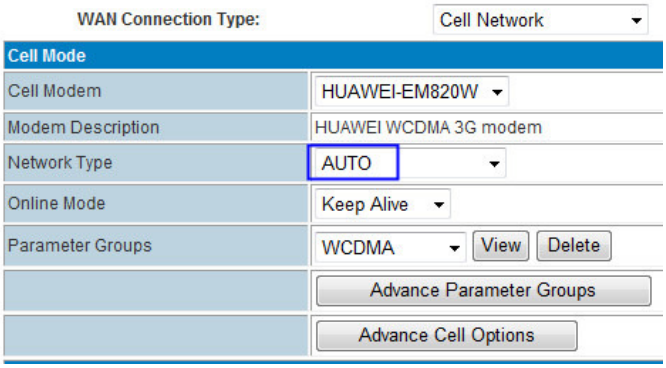
➢ **System Info**

- **Product Model**: Indicates the model name
- **SN**: Indicates the product Serial number
- **Software Version:** Software version reveals the status of software update
- **Hardware Version**: Indicates the hardware version
- **System Up Time:** Router in service time
- **Operation Mode:** Indicates the router's working mode

➢ **Cell Network Info**

- **Cell Modem:** Indicates installed RF module
- **IMEI/ESN:** Indicates IMEI or ESN info of installed RF module
- **SIM Status:** Indicates SIM card status
- **Selected Network:** Indicates the selected working network

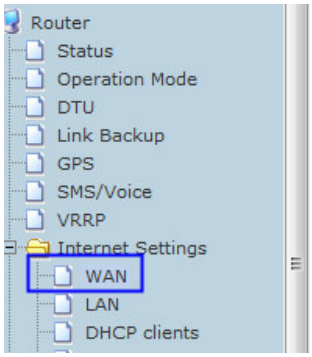


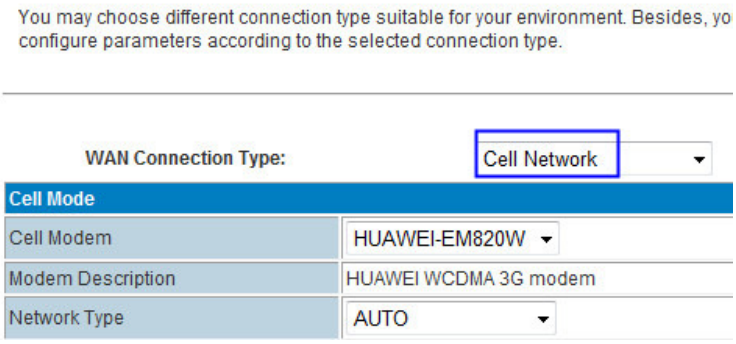


- **Registered Network:** Indicates the current working network carrier ID
- **Sub Network Type:** Indicates the current working network type
- **Signal:** Reveals the current network state of 2G/3G. 0 and 99 means no signal
- **Cell state:** Indicates the cellular is online or offline

➢ **Internet Configurations**

- **Connected Type:** Indicates the selected WAN type





- **WPN IP address:** The IP expose when the router connects to the internet
- **Primary Domain Name Server**: Indicates the Primary DNS of set or from ISP
- **Secondary Domain Name Server**: Indicates the Secondary DNS of set or from ISP
- **MAC Address**: Indicates the WAN MAC address

➢ **Local Network**

- **Local IP address:** The CM685P/T Router LAN IP
- **MAC Address:** The LAN MAC address

➢ **VPN Status**

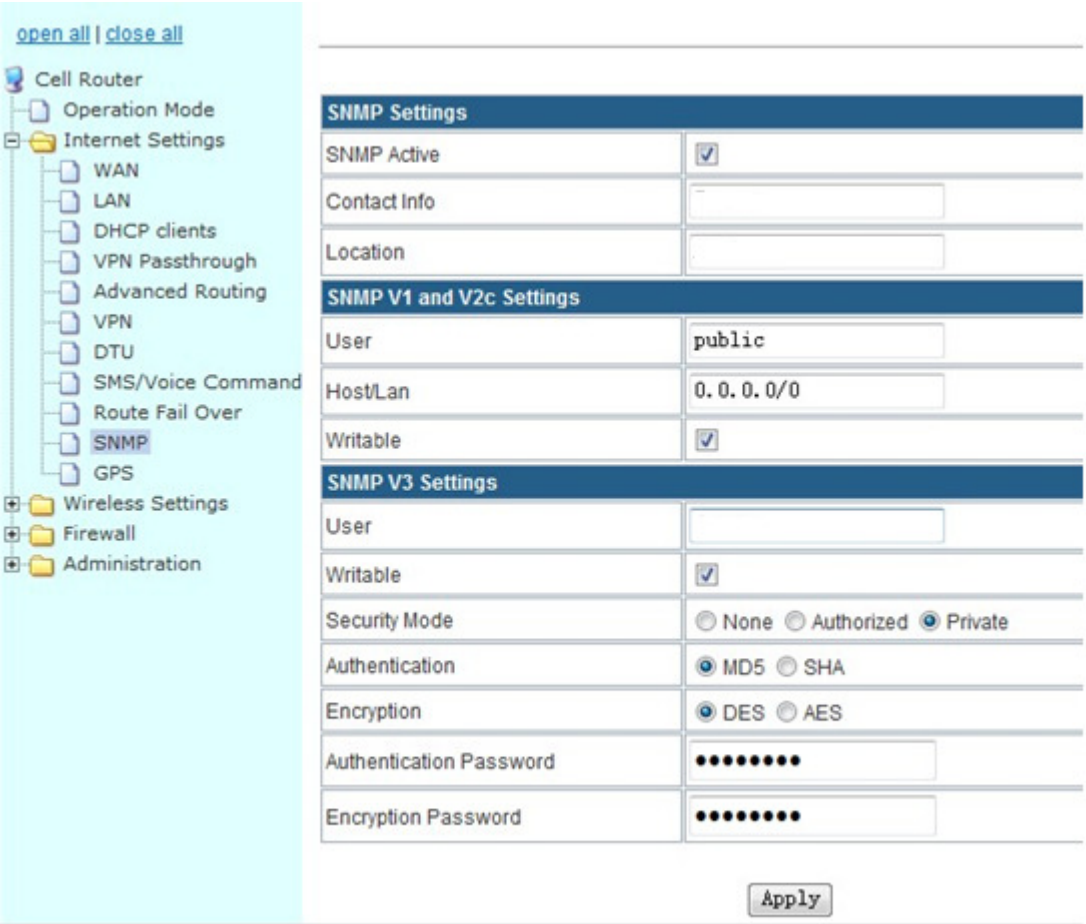
- **IPSEC Status:** Indicates IPSEC status info
- **PPTP Status:** Indicates PPTP status info
- **L2TP Status:** Indicates L2TP status info

3.20. SNMP (For version with SNMP only)

Notes: SNMP feature is for CM685P/T Router with SNMP option only.

Soft tool download link: Please see www.comset.com.au

Fill in related parameters in the screen like follows



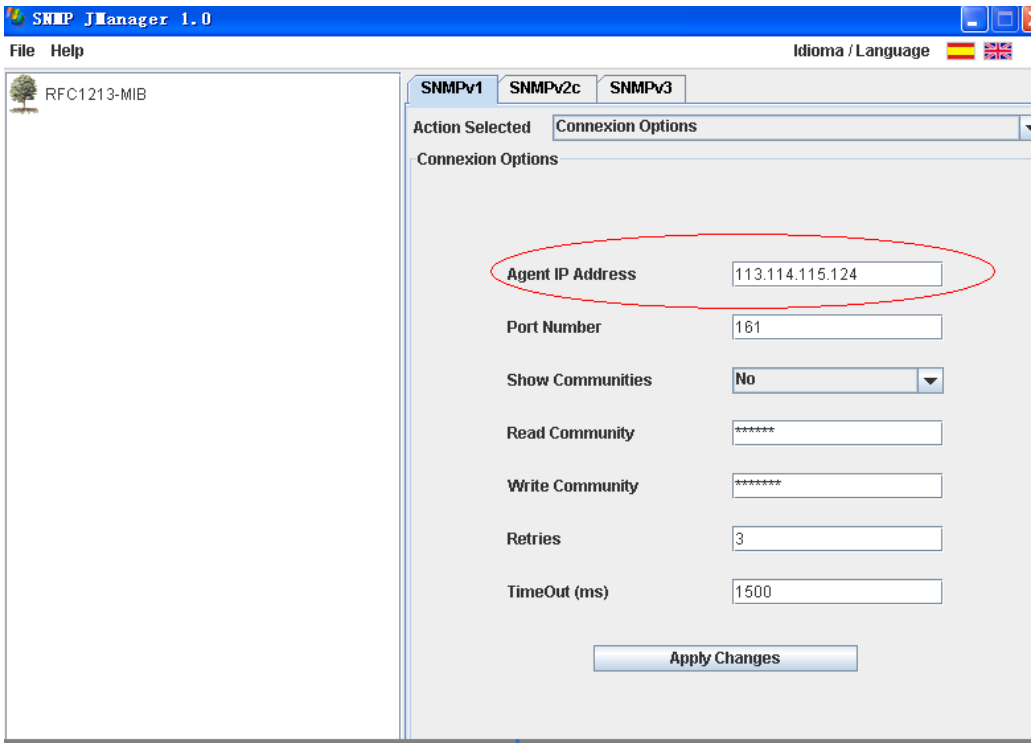
SNMP Active: Tick it to activate SNMP feature
Contact Info: Set the contact info here
Location: Set the router's installation address
User: Set the public name

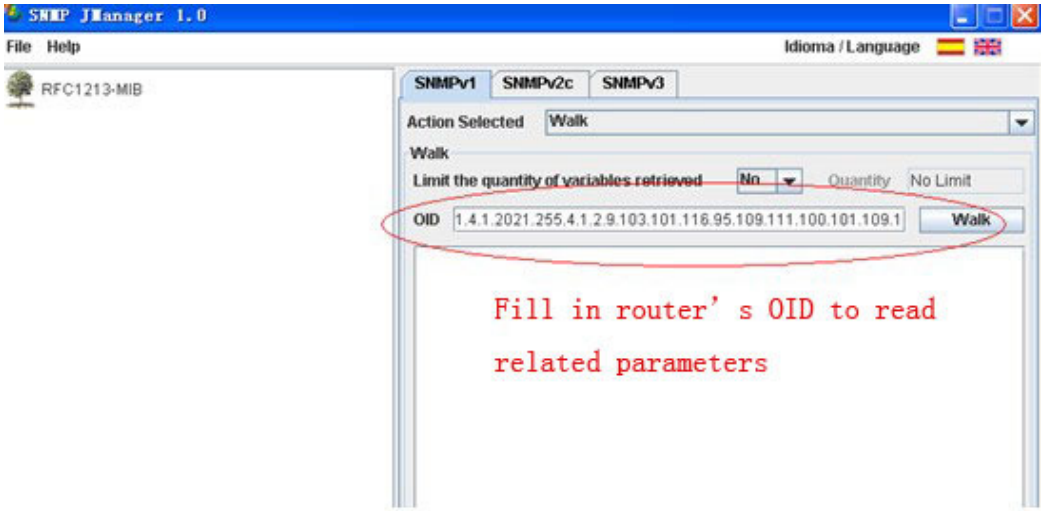
Host/Lan: Set the network range to visit the router via SNMP, default we set all as 0.0.0.0./0
Writable: Tick it to enable it
Security Mode: Choose the correct one, only for SNMP V3 version
Authentication: Choose the correct one, only for SNMP V3 version
Encryption: Choose the correct one, only for SNMP V3 version
Authentication Password: Fill in the right one
Encryption Password: Fill in the right one

Click "Apply" button and reboot the router.

Here is a list of the most important OID:
1.3.6.1.4.1.2021.255.4.1.2.9.103.101.116.95.109.111.100.101.109.1
(read module modem model)
1.3.6.1.4.1.2021.255.4.1.2.10.103.101.116.95.117.112.116.105.109.101.1
(system running time)
1.3.6.1.4.1.2021.255.4.1.2.12.103.101.116.95.109.101.109.95.102.114.101.101.1
(memory capacity)
1.3.6.1.4.1.2021.255.4.1.2.15.103.101.116.95.99.101.108.108.95.115.116.97.116.117.115.1 (3G network status)
1.3.6.1.4.1.2021.255.4.1.2.15.103.101.116.95.108.50.116.112.95.115.116.97.116.117.115.1 (pptp status)
1.3.6.1.4.1.2021.255.4.1.2.15.103.101.116.95.112.112.116.112.95.115.116.97.116.117.115.1 (l2tp status)

List client side's picture as follows,





Part 4

4. FAQs (Frequently Asked Questions)

4.1. Open Device Error

3G Info	
Signal Strength	open device error!

With this error, usually the RF module installed inside the router is loose. Please try to reinstall it.

4.2. Read Error

3G Info	
Signal Strength	read error!
Attachment State	Automatic search

With this error, it indicates the SIM card is not properly inserted. Try to check the SIM card.

4.3. Signal Strength has right parameter, but cannot dialup

3G Info	
Signal Strength	16 , (0-31)
Attachment State	Automatic search

Try to check the WAN port setting is correct.

4.4. Signal Strength shows 99

3G Info	
Signal Strength	16 , (0-31)
Attachment State	Automatic search

Signal strength indication (0-31). A 99 means no signal is detected.

4.5. The router cannot be accessed remotely

1) The router's default web port is 80. Some network ISPs block port 80. Confirm with your ISP which port can be used. Or you can try other ports, such as port 10000.

2) Check if you can ping the router's WAN IP.

4.6. The router shows 99 but still can connect to the internet and get a WAN IP

No action required. The router will function normally. This is due to specific modem modules.

4.7. The router shows SIM card and network info, but cannot connect to the internet

Check that the SIM card has remaining credit balance or limited service by the ISP.

4.8. DDNS not working

1) Please confirm that the DDNS configuration is correct.
2) Check if the router is online and a public IP is assigned, and can browse the internet.
3) Check if the WAN IP from the SIM card (shows in the status page once the router is online) is a public IP or a private IP. DDNS will not work with a private IP.

4.9. Cannot Connect to the router via RJ45 LAN

1) Please check if the Ethernet cable is correctly connected.
2) Double check that the PC network card IP is correctly configured. Please refer to *Chapter 3.2* if necessary.
3) Try to disable the PC network card, and re-enable it.

4) Reset the CM685P/T router. Power on the router, press “RST” button for 12 seconds, and then release it. The CM685P/T router will automatically load default.

4.10. Cannot Connect CM685P/T WiFi

1) Double check if the device’s WiFi switch is on.
2) Double check if the CM685P/T WiFi is on.
3) Double check Device’s wireless network card IP is correctly configured. Please refer to *Chapter 3.2*
4) Try to disable the Device’s network card, and re-enable it.

5) Reset the CM685P/T router. Power on the router, press “RST” button for 12 seconds, and then release it. The CM685P/T router will automatically load default.

4.11. Can Connect CM685P/T WiFi via Manual IP but not via DHCP

1) Try to disable the Device’s network card, and re-enable it.

2) Reset the CM685P/T router. Power on the router, press “RST” button for 12 seconds, and then release it. The CM685P/T router will automatically load default.

4.12. Cannot get Cell WAN IP

Once online, the CM685P/T Router gets a cellular WAN IP.

Internet Configurations	
Connected Type	CELL
WAN IP Address	10.193.205.114
Subnet Mask	255.255.255.255
Default Gateway	10.64.64.64
Primary Domain Name Server	210.21.196.6
Secondary Domain Name Server	221.5.88.88
MAC Address	08:66:01:00:04:A0

If the router doesn’t get a WAN IP, this may be due to the following:

Item.	Possible cause	Solution
1	The cellular WAN port has not been configured correctly.	Refer to Chapter 3.3.3.1 Cellular WAN configuration to solve it.
2	The SIM card has problems with data business or has no balance.	Check the SIM card with the ISP, the network provider or the SIM card provider. Try another working SIM card.
3	There is no network signal.	Move the router to another site to check.
4	The VPN configuration is wrong.	Check the WAN port configuration and re-enter VPN parameters carefully.
5	There is a problem with the cellular network.	Sometimes the cellular network may be unstable. Try to move to another site to test. Or try to test with another ISP/Carrier SIM card.
6	The module modem is unreadable.	Send the unit back to Comset for repair.

4.13. Cannot power on

Solution:

1. Check if the power adapter has a loose connector.
2. Try to replace the power adapter. The Comset CM685P/T router uses 9V1A, 9V2A, 12V1A or 12V2A power adapters with a 2.5mm connector.
3. The router hardware is damaged. Send back to Comset for a check or repair.

4.14. Sys log shows "connect script failed"

Problem maybe:

Item.	May be caused by	Solution
1	A. The SIM card has no data business plan; B. The SIM card has no credit left.	A. Check the SIM card data business plan. B. Check the SIM card credit balance.
2.	The WAN APN parameters are wrong.	Check the APN parameters of the WAN port. The APN parameters are supplied with the SIM card.
3	The network is unstable.	Try later, or move to another network and try again.

4.15. The CM685P/T Router is online, but it cannot connect to the internet.

The problem may be:

Item.	May be caused by	Solution
1	A DNS problem.	Check that the DNS server of the CM685P/T is correct. The DNS comes from the ISP once the CM685P/T is online. Sometimes the ISP does not give the right DNS server IP. You can try to set the correct DNS manually at your PC or device network card.
2.	A SIM card problem.	Check the APN parameters of the WAN port. The APN parameters are supplied with the SIM card.
3	The signal is too weak.	A weak signal may cause all the DNS resolution to fail. Try to get a better signal.
4	The network connection is too bad.	Contact your ISP/Carrier to get better network coverage options or obtain a better/high gain antenna.

4.16. Port forwarding is not working

Question: I have configured the port forwarding feature correctly, but it is still not working.
Answer: First, check the port to see if it is blocked by your ISP/Carrier, because some ISPs/Carriers block some ports for security reasons.
For example, let's say the CM685P/T gets WAN IP 27.38.14.223 and the CM685P/T's web port is 80. From the other network, try to visit http://27.38.14.223:80. If you can't connect, this means that the ISP/Carrier has blocked port 80. Check with your ISP/Carrier as to which ports are open for use. Then re-try the port forwarding feature.

4.17. Serial DTU point-to-point solution is not working

Problem: Take two CM685P/Ts that support Serial to cellular gateway feature (DTU feature). Configure one as a client, the other as a server. The serial DTU point-to-point is not working.

Answer: First, make sure that both CM685P/T routers are online, and that the server's IP is a public IP that can be pinged from other networks.

Second, make sure that both CM685P/T routers DTU function (Serial to Cellular function) is working. See example below:

CM685P/T DTU with Vodafone SIM as client (in NZ) --- Telstra as server (In Australia): working
CM685P/T DTU with Vodafone SIM as server (in NZ) --- Telstra as client (In Australia): working
CM685P/T DTU with Vodafone SIM as client (in NZ) ---- CM685P/T DTU with Vodafone SIM as server (in NZ): not working

This indicates the two Vodafone SIM cards cannot communicate with each other. The Vodafone ISP limits the two internal SIM cards communication.
You have two ways to solve the problem.
1) Get another SIM card from another ISP to test.

2) Contact Vodafone to remove the restriction on internal network communication.

4.18. Can't open device /dev/ttyUSBx.

Problem: Status page shows "Can't open device /dev/ttyUSBx".

Cell Network Info	
Cell Modem	HUAWEI-EM820W
IMEI/ESN	Can't open device /dev/ttyUSB3.
Sim Status	Can't open device /dev/ttyUSB3.
Selected Network	AUTO
Registered Network	Can't open device /dev/ttyUSB3.
Sub Network Type	Can't open device /dev/ttyUSB3.
Signal	Can't open device /dev/ttyUSB3.
Cell Status	DOWN

Solution:

Step 1) CM685P/T Router Web – Internet Settings – WAN, at Cell Modem, please choose "AUTO_DETECT" and click the "Apply" button.

Step 2) If step 1 cannot solve the issue, try to open the case, and then re-install the module modem into the mini PCIe slot, and try Step 1) again.

Cell Mode	
Cell Modem	AUTO_DETECT
Modem Description	HUAWEI WCDMA 3G modem
Network Type	AUTO
Online Mode	Keep Alive
Parameter Groups	WCDMA View Delete
	Advance Parameter Groups
	Advance Cell Options
MAC Clone	
Enabled	Disable

Apply Cancel

Step 3) if the problem remains after Step 1) and Step 2), please contact Comset.

4.19. PPTP is on, but cannot connect to the PPTP Server

Issue: In web status page, the PPTP shows "on", however I can't connect when I ping the PPTP Server.

Solution:

1) Check if the PPTP Status is always "on" in web status page. If not, check the PPTP configuration is correct.
2) Check if the PPTP Server assigned remote LAN is in the same network range as the CM685P/T LAN IP. The CM685P/T default LAN IP is 192.168.8.1, and the submask is 255.255.255.0. Sometimes users forget to assign remote LAN IP 192.168.8.1 for PPTP VPN Server.

If the PPTP VPN Server's remote LAN IP is 192.168.1.0/24 or 192.168.0.0/24, and cannot be changed, please change the CM685P/T LAN IP from 192.168.8.1 to 192.168.1.1 or 192.168.0.1. Also do not forget to manually change the CM685P/T Default Gateway to 192.168.1.1 or 192.168.0.1 meanwhile.

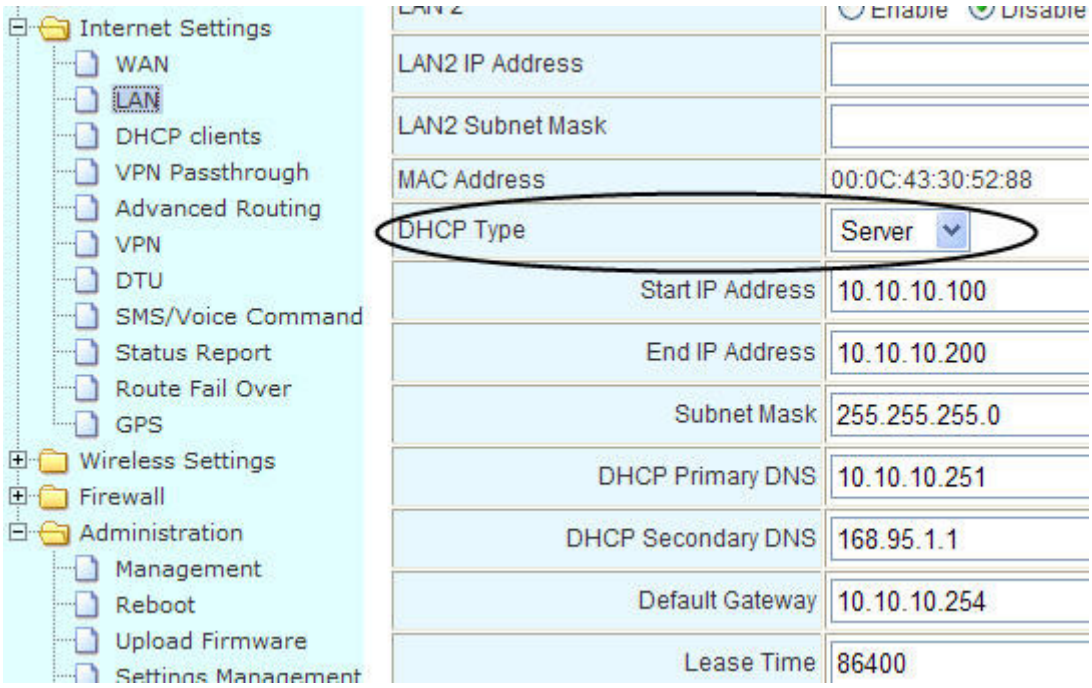
Default Gateway	192.168.8.1

3) With the above steps, the problem is commonly resolved. Otherwise, please contact Comset for support.

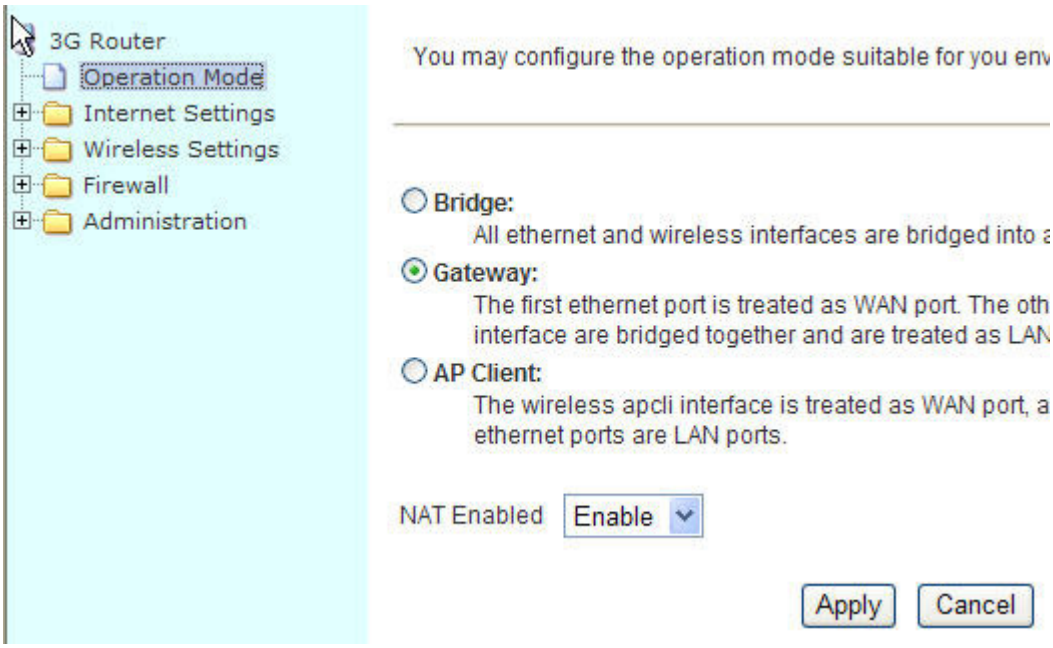
5. Test Cases and Examples

5.1. How to setup two CM685P/T routers to make a WiFi hotspot and a WiFi client

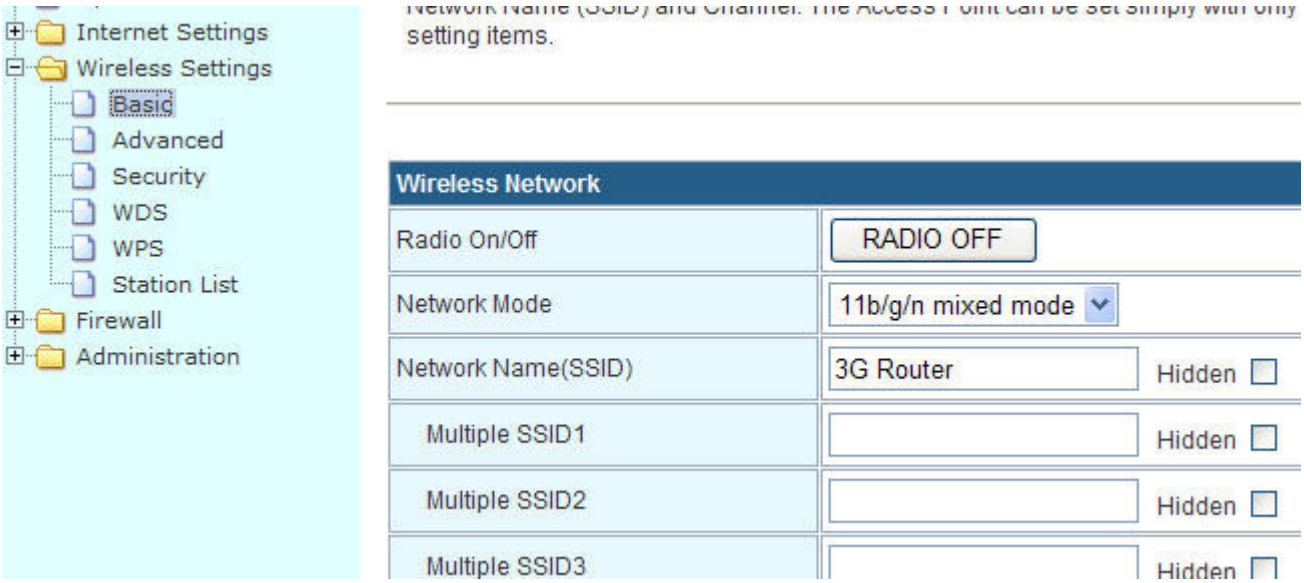
1. Take two CM685P/T routers. One will be a WiFi server; the other will be a WiFi Client. Let's name them CM685P/T-s and CM685P/T-c.
2. Connect a PC to the CM685P/T-s with a RJ45 cable.
3. With both CM685P/T-s and CM685P/T-c, make sure the DHCP services are working.



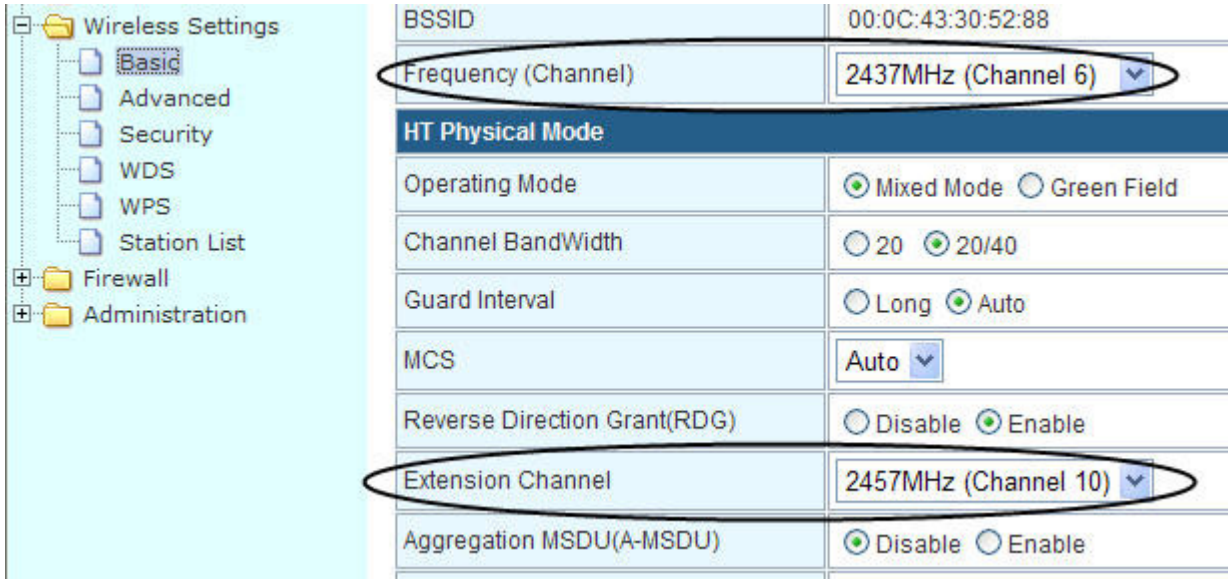
With the CM685P/T-s router, select “Gateway” and click “Apply”.



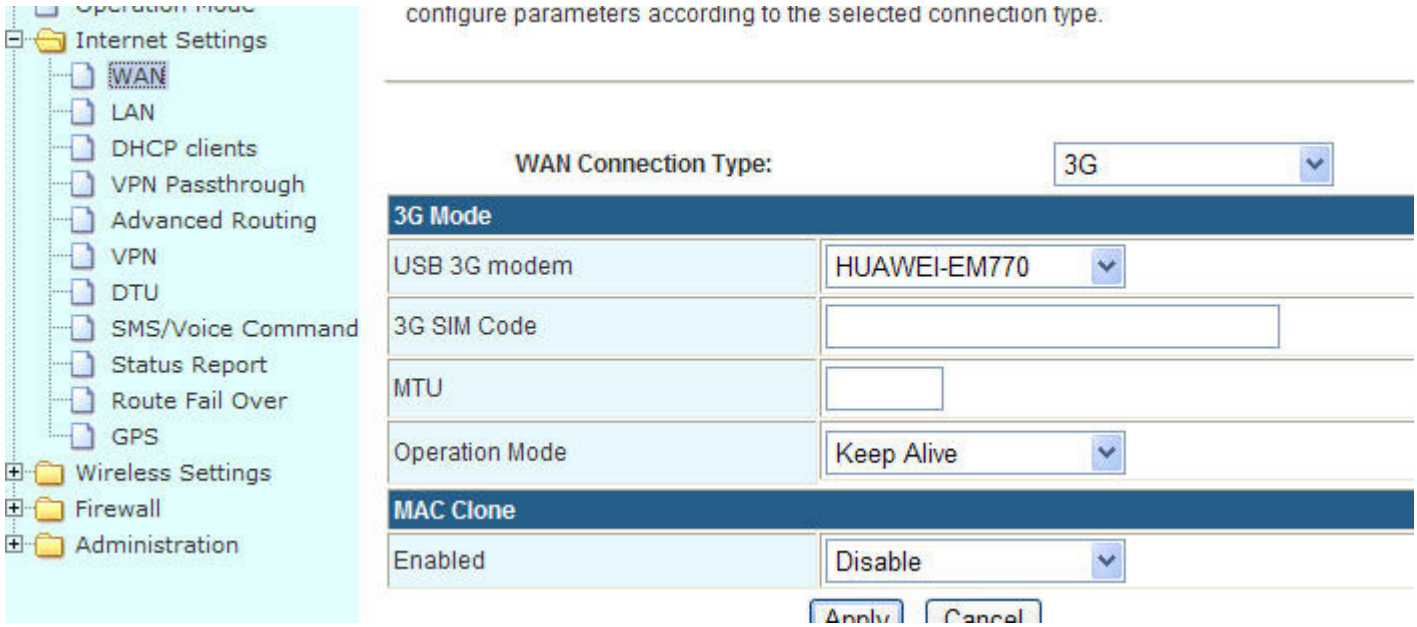
4. With the CM685P/T-s, go to “Wireless Settings--Basic” and set Network Name (SSID) as “3G Router” (Here we recommend you use “3G Router” to test first).



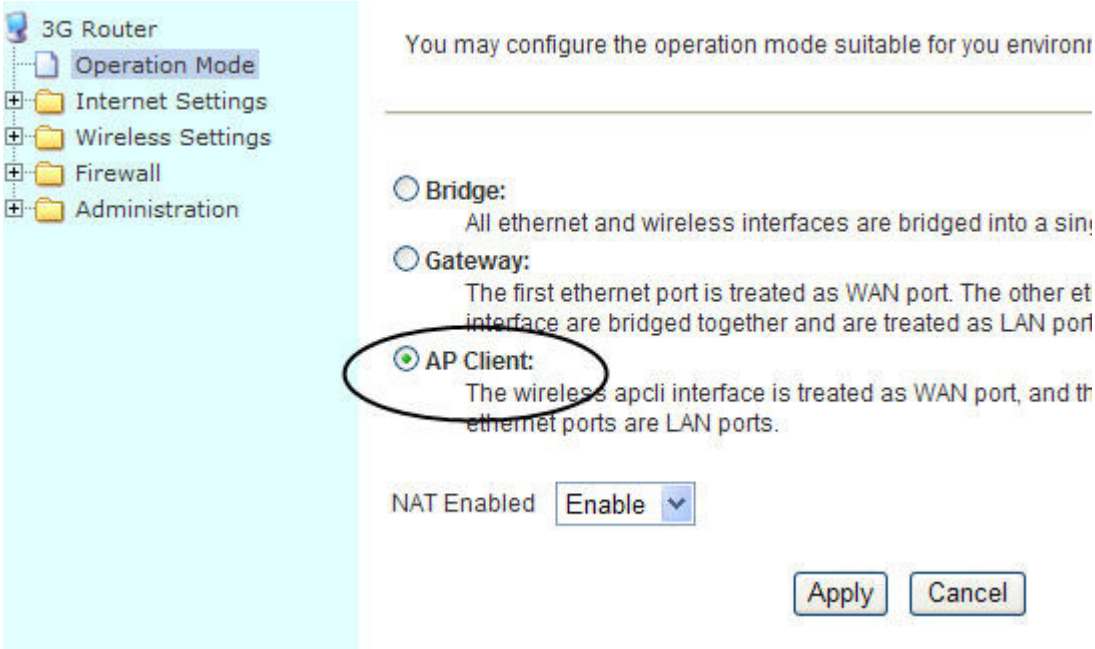
Write down the “Frequency (Channel)” and “Extension Channel”. Remember it as we will use this value with the CM685P/T-c.



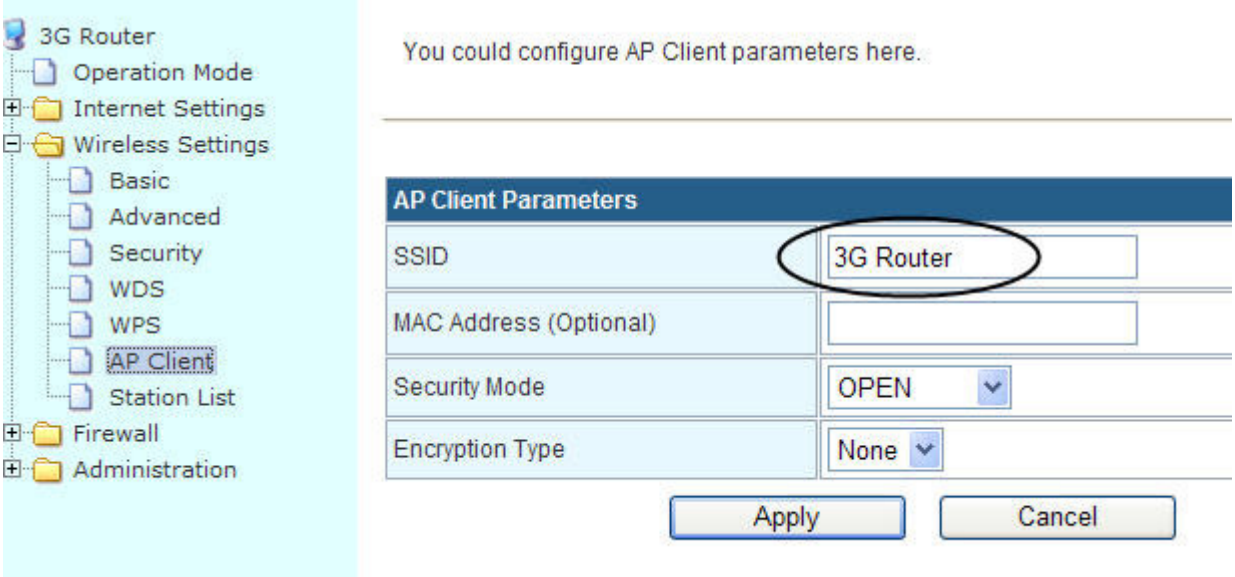
5. With the CM685P/T-s, go to “Internet Settings—WAN—WAN Connection Type:”. Choose “3G” and click “Apply”.



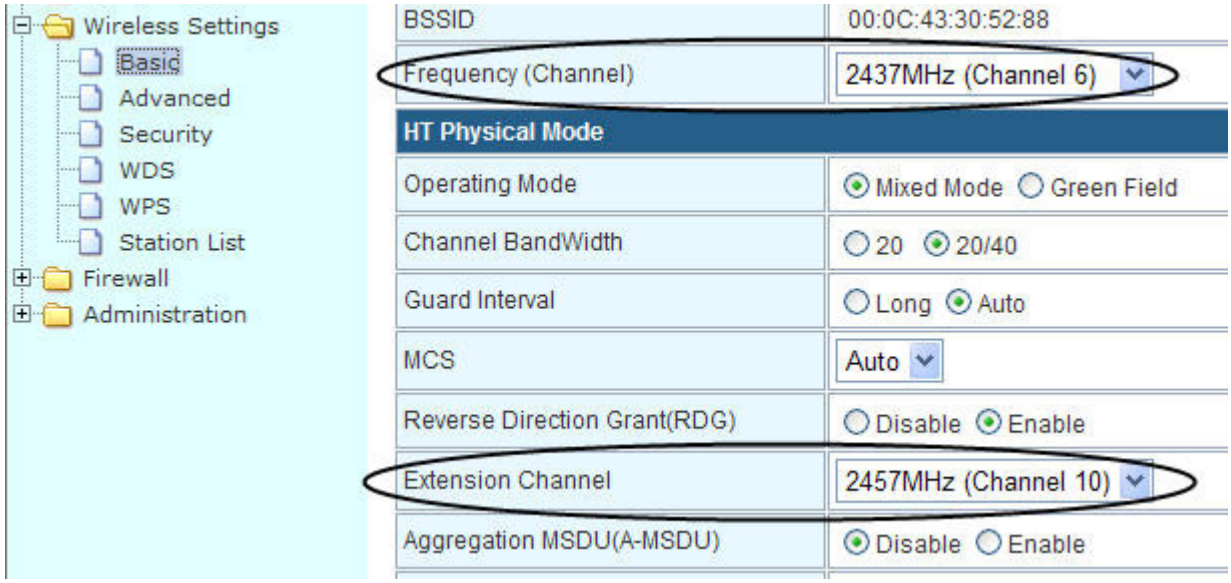
6. Try to connect to the CM685P/T-s WiFi via your Laptop/PC. If it is working, then go to step 7.
7. Connect your PC to the CM685P/T-c with a RJ45 cable.
8. With the CM685P/T-c, go to “Operation Mode”, choose “AP client” and click “Apply”



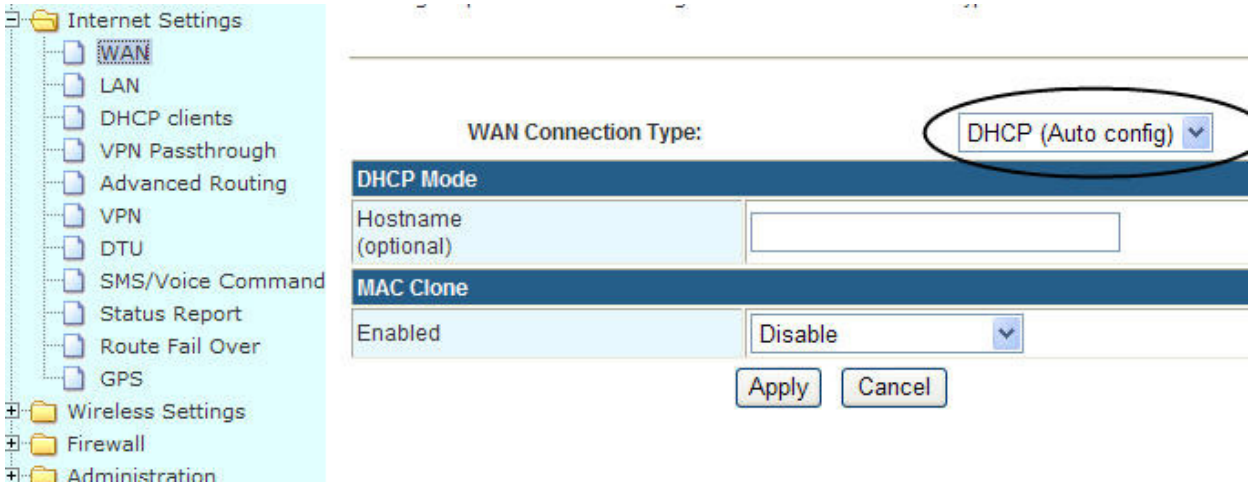
9. With the CM685P/T-c, go to "Wireless Settings—AP Client—SSID" and enter the assigned parameters from the CM685P/T-s.



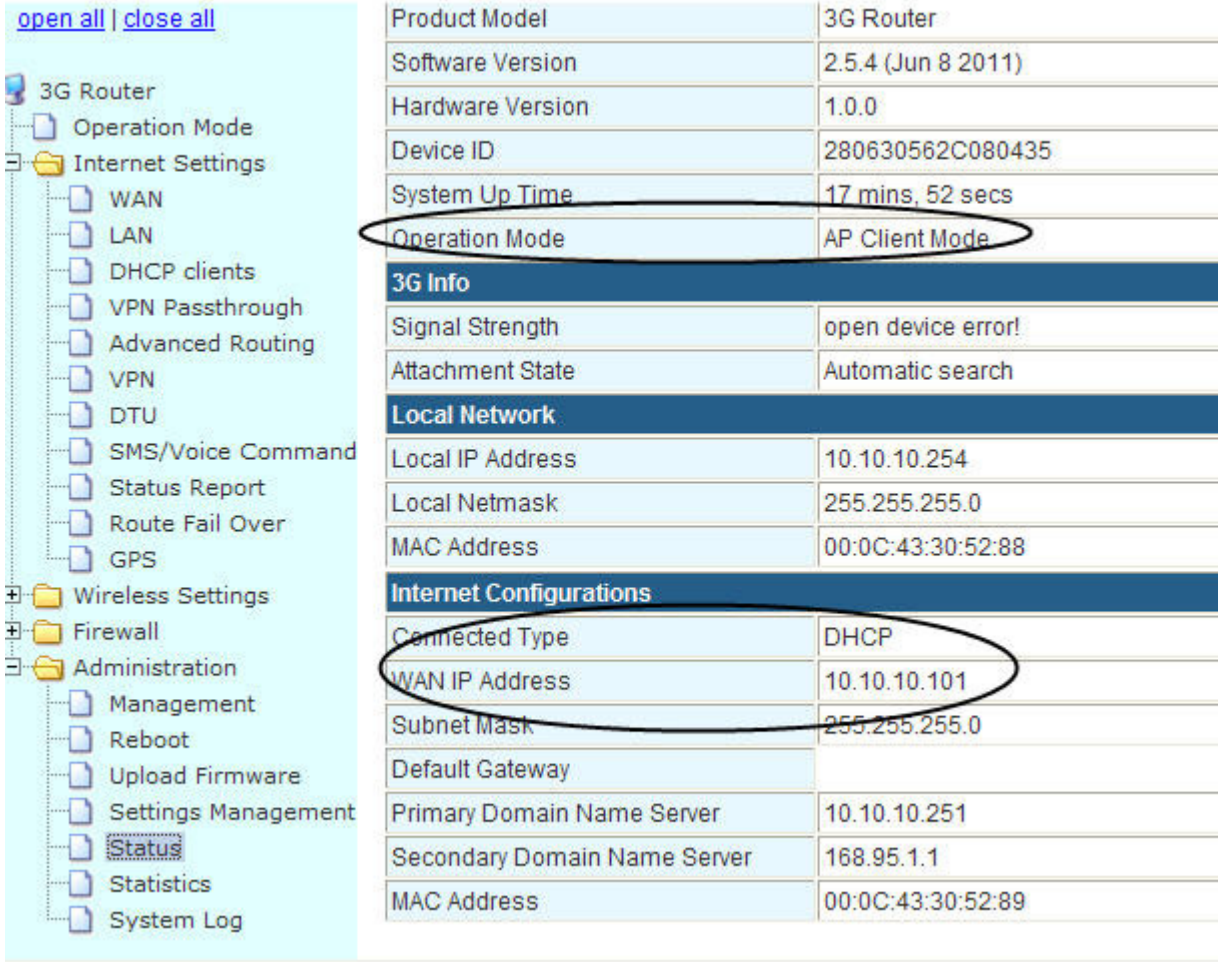
10. With the CM685P/T-c, the "Frequency Channel" and "Extension Channel" should be the same as the CM685P/T-s



11. With the CM685P/T-c, go to “Internet Settings--WAN”, set the WAN connection type as “DHCP (Auto config)”, and click “Apply”.



12. Then check the CM685P/T-c, “Administration--Status”. If it shows “Operation Mode” as “AP client Mode” and if it gets a “WAN IP Address”, that means the connection is working.



5.2. GPS feature (For version with GPS feature only)

Note: This test is a simulation test to demonstrate the GPS feature. Please use it as a reference in your real application. Here we run a TCP server tool as the GPS TCP server.

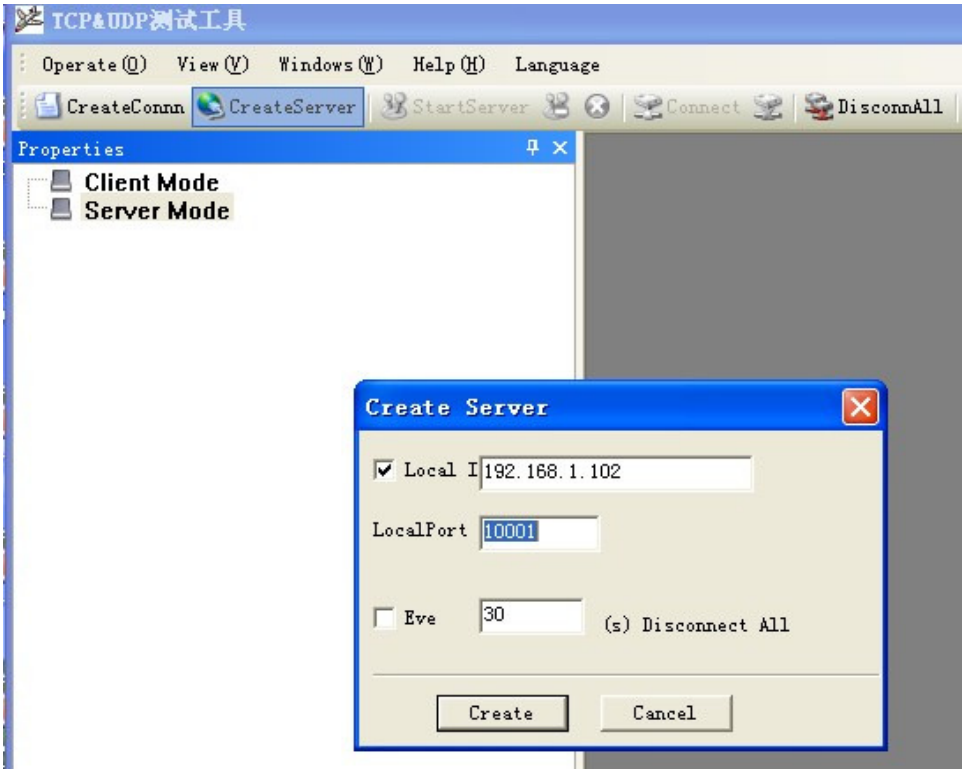
Step1: Configure the GPS feature of the router.

GPS

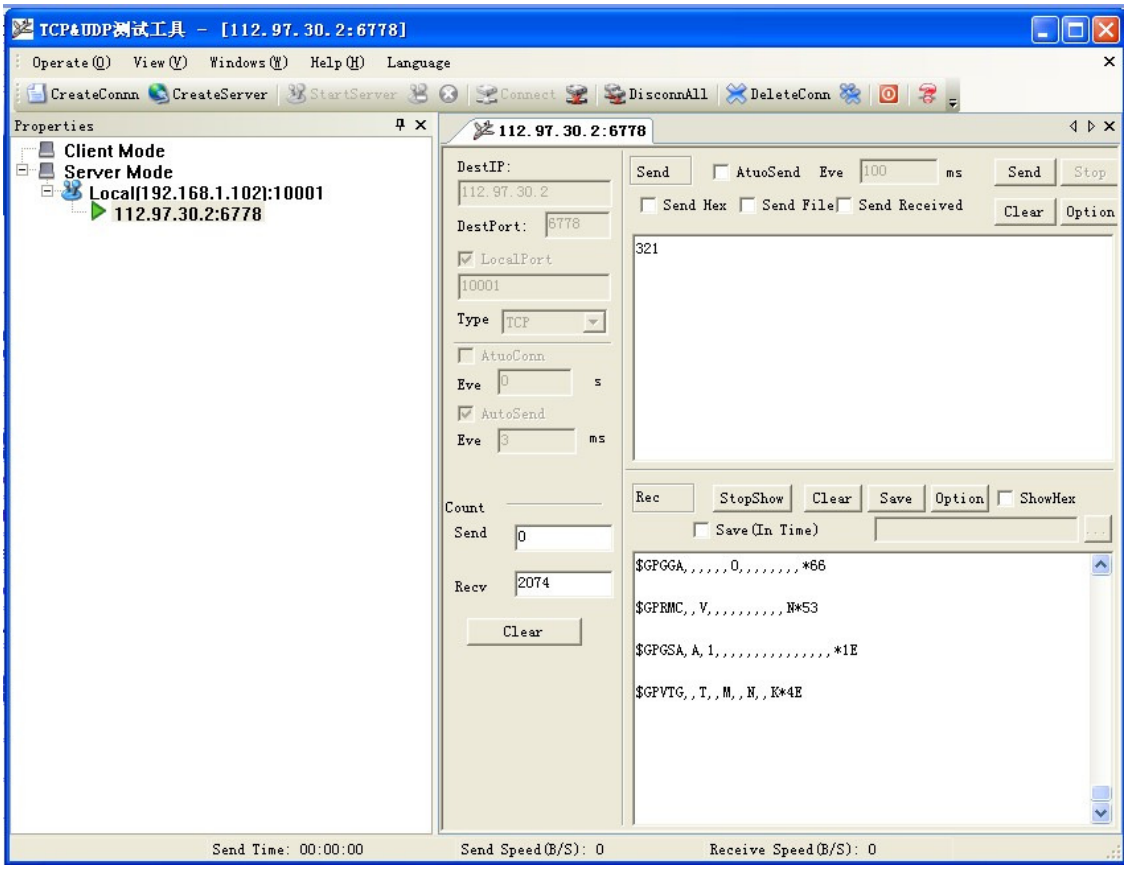
GPS Settings	
GPS Active	☑
GPS Send to	○ Serial ◉ TCP/IP
GPS To Serial Settings	
Serial Baudrate	115200 bps
Serial Parity	none
Serial Databits	8 bits
Serial Stopbits	1 bits
Serial Flow Control	none
Comment: Do not used GPS with DTU when send to serial!	
GPS To TCP/IP Settings	
Socket Type	tcp
Server	27.38.13.57
Port	10001

Apply

Step 2: run the TCP server tool. You can ask us to get this tool if you need it.
Here our server is a local network PC with IP 192.168.1.102 and port 10001.
We set a DMZ or NAT for this IP and port from the local router connected to the internet with IP 27.38.13.57.
In the router GPS configuration, we fill in IP “27.38.13.57” and port “10001”.



Once the link is okay, it will show the following status.



```
,*79

$GPGSV,3,3,09,15,12,087,*48

$GPGGA,,,,,,0,,,,,,,,*66

$GPRMC,,V,,,,,,,,,,N*53

$GPGSA,A,1,,,,,,,,,,,,,,,*1E

$GPVTG,,T,,M,,N,,K*4E
```

Above: Feedback string if no signal is received from the satellite.

If the route gets the satellite signal, it appears and updates the GPS module info from the router to the TCP GPS server with the following string.

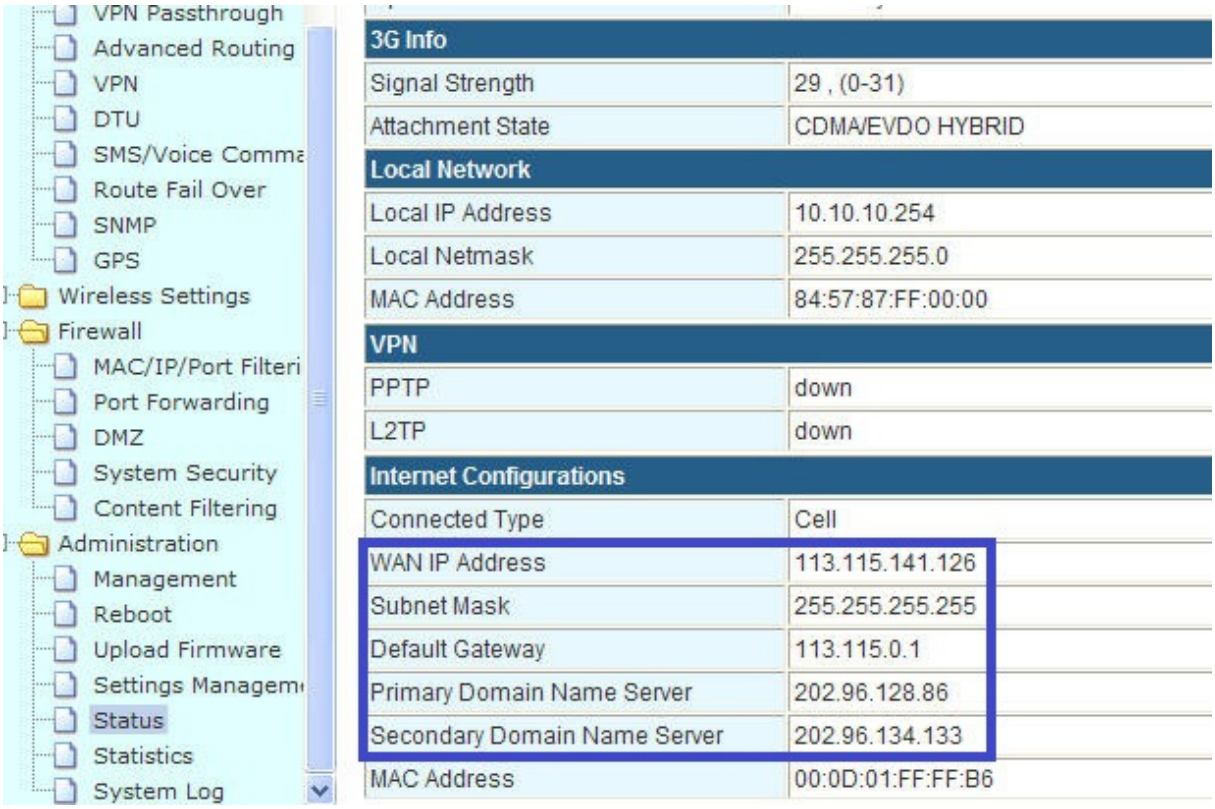
```
$GPGSV,3,3,10,12,54,144,16,18,52,144,28*79

$GPGGA,142038.0,2237.083418,N,11402.206048,E,1,04,8.9,-
107.0,M,,,,*21

$GPRMC,142038.0,A,2237.083418,N,11402.206048,E,,,091211,
,,A*64

$GPGSA,A,3,18,21,22,31,,,,,,,,,13.5,8.9,10.1*3C

$GPVTG,,T,,M,0.0,N,0.0,K*4E
```

Above: Feedback string if signal is received from the satellite.

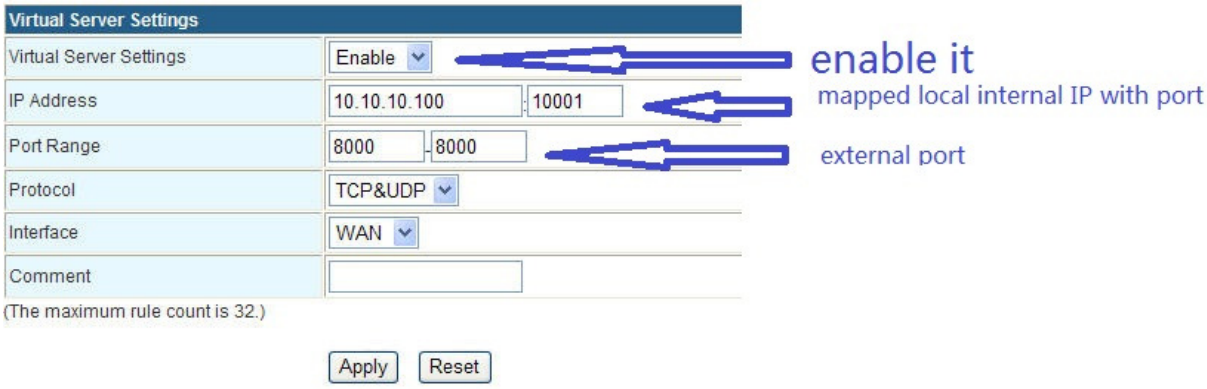
5.3. Port Forwarding (NAT, NAPT) test

Note: this test is simulation test to demonstrate the Port Forwarding function. Please use it as a reference in your real application.
Question: I configured the port forwarding feature correctly, but it is still not working.
Answer: First, please check if the port is blocked by your ISP, because some ISPs block certain ports for security reasons.
For example, let's say the CM685P/T gets WAN IP 27.38.14.223 and its default web port is 80. Try to connect to the router by entering http:// 27.38.14.223:80. If you can't connect, this means the ISP has blocked port 80. Check with your ISP which ports are open and try again.

Step 1) make sure the CM685P/T router is online.



Step 2) configure the *port forwarding* feature for the CM685P/T router

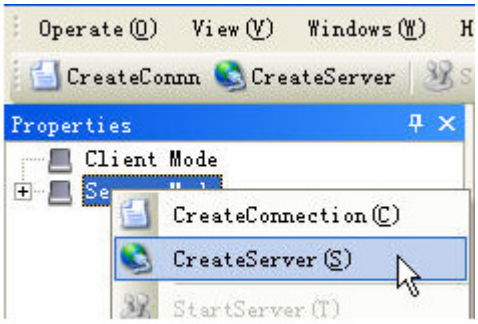


Click *Apply* to finish the configuration. The following results are displayed:

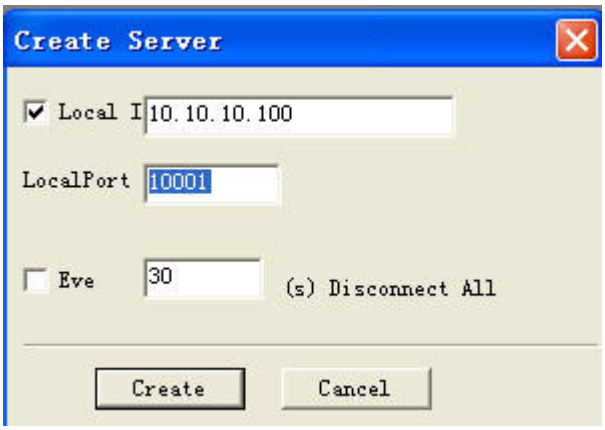
Step 3) Here we use a PC to serve as a TCP server/Remote Device.

Connect the PC to the CM685P/T LAN port via a RJ45 cable. It gets an IP 10.10.10.100.

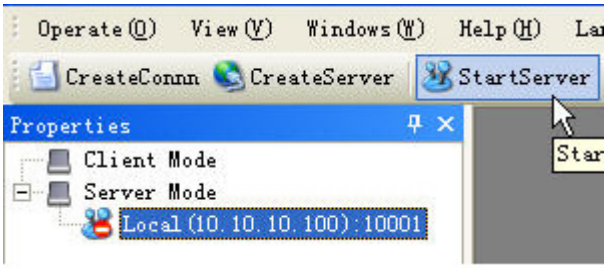
At the PC, run *TCP&UDP_debug* software (This software can be obtained from Comset).



Firstly, click *Server Mode*, and *CreateServer.*



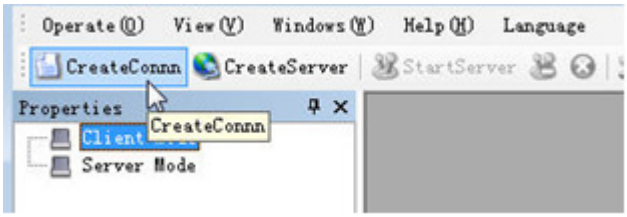
Secondly, fill in the parameters like this. The *Local IP* is the PC's IP from the CM685P/T router. The *LocalPort* is the port of the PC which will be mapped. Click *Create Button* to finish.



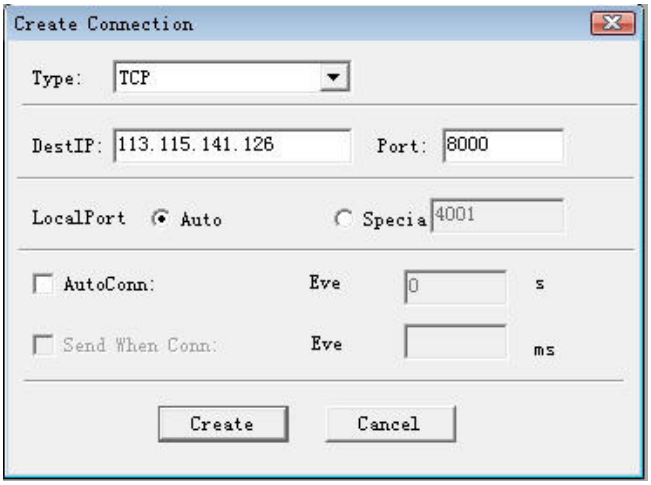
Choose the created server, and click *StartServer*. It will show the following window.

Step 4) Use another PC as a TCP client.

This PC is connected to the internet on another network. Run *TCPUDP_debug* software tool, choose *Client Mode*.

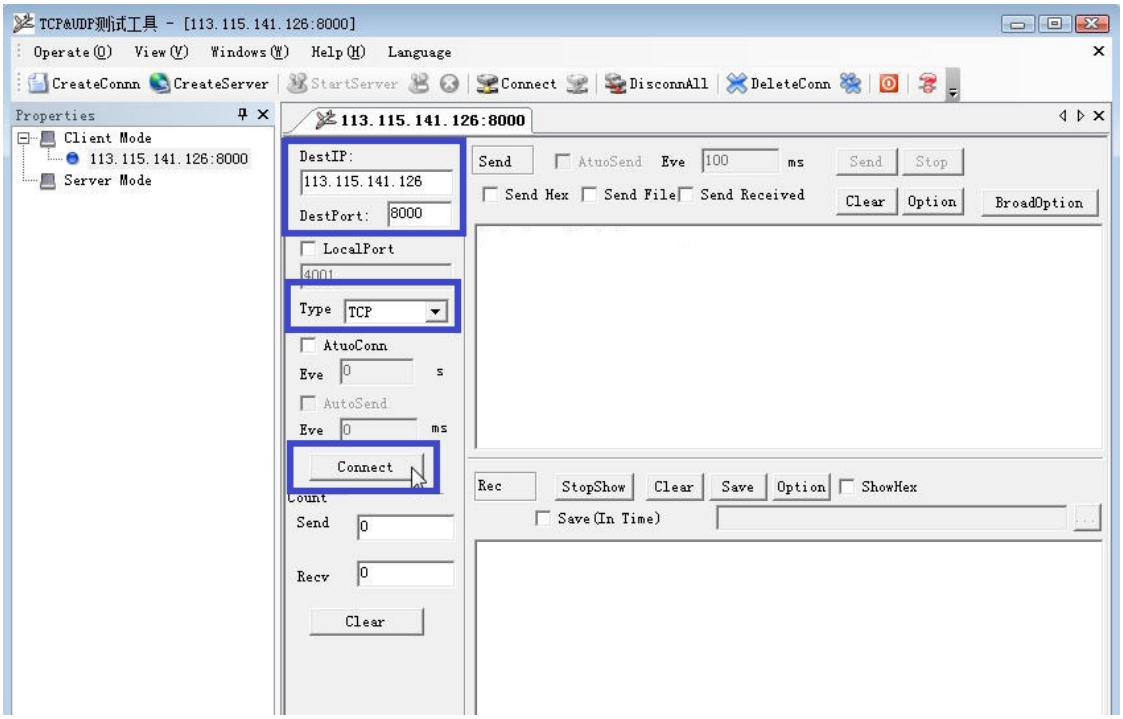


Click *CreateConn*.

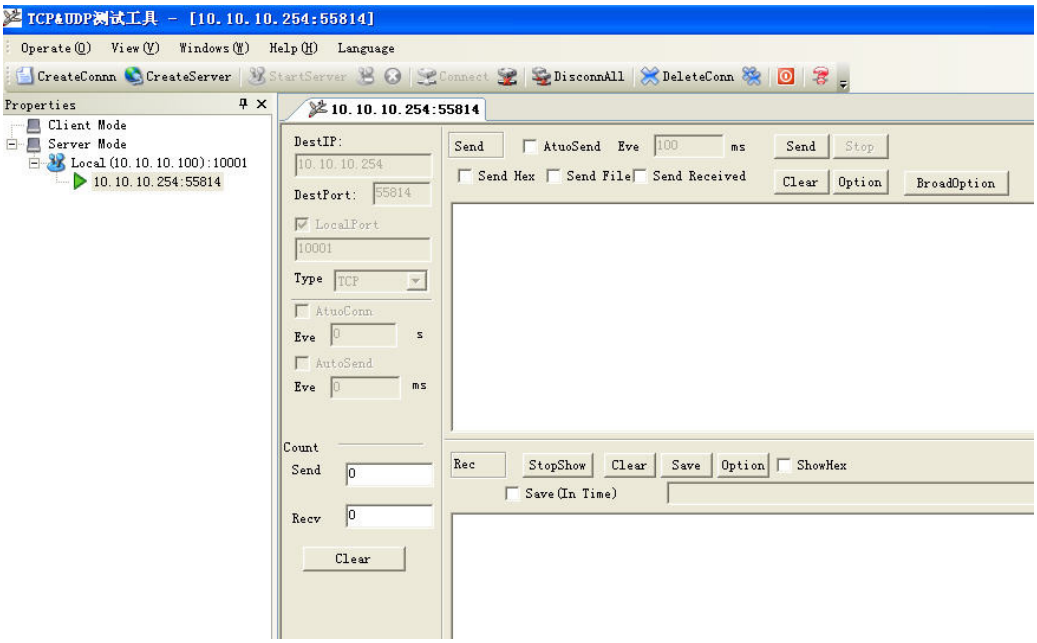


Type: choose TCP, DestIP: Fill in the CM685P/T router's WAN IP (here it is 113.115.141.126), Port: 8000 (This port is external port for mapped port 10001). Click the *Create* button to finish.

Then check the DestIP, DestPort and Type, and click *Connect* to link.

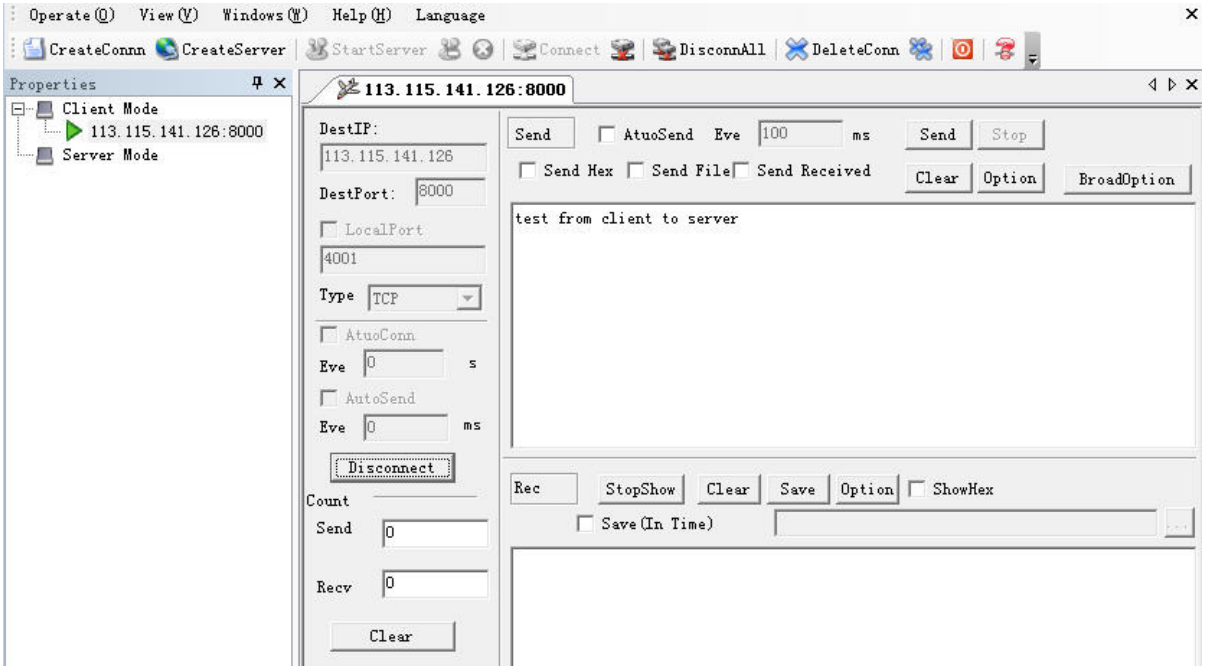


Once the link is done, at the Server PC's side, the following status is shown, which indicates the link is created.

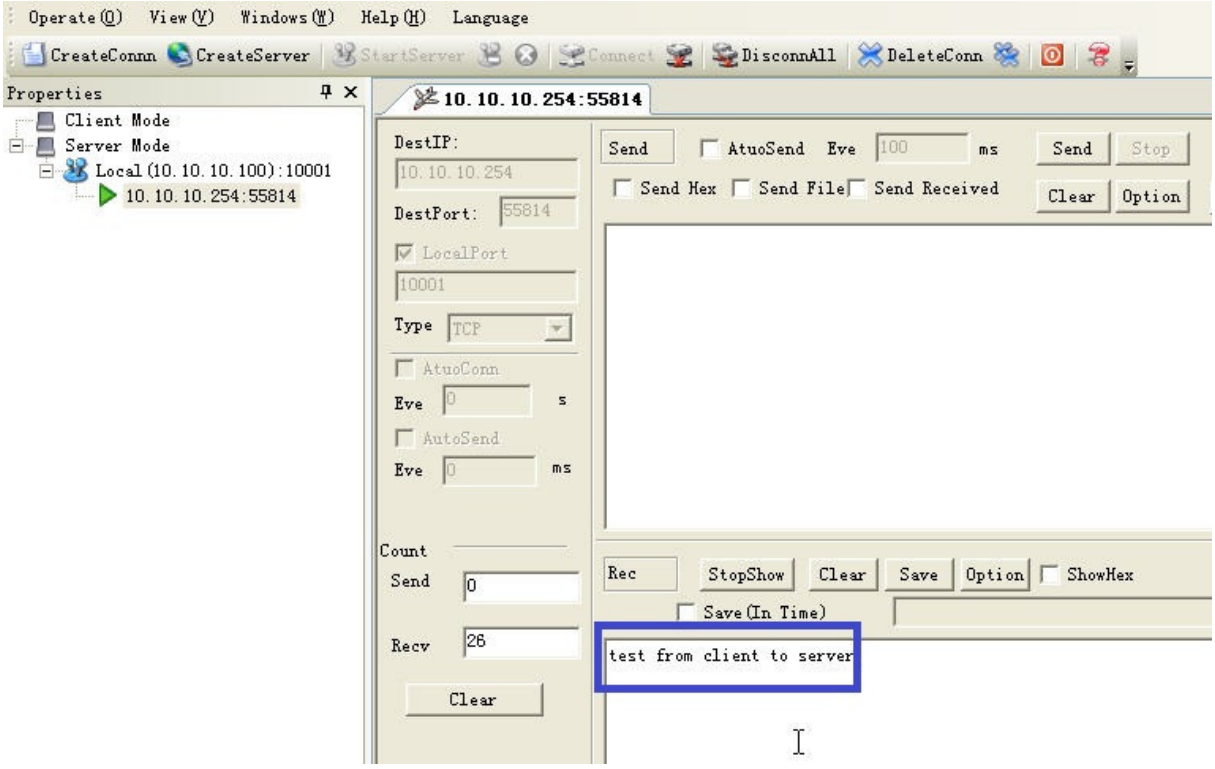


Step 5) Test the link for sending and receiving

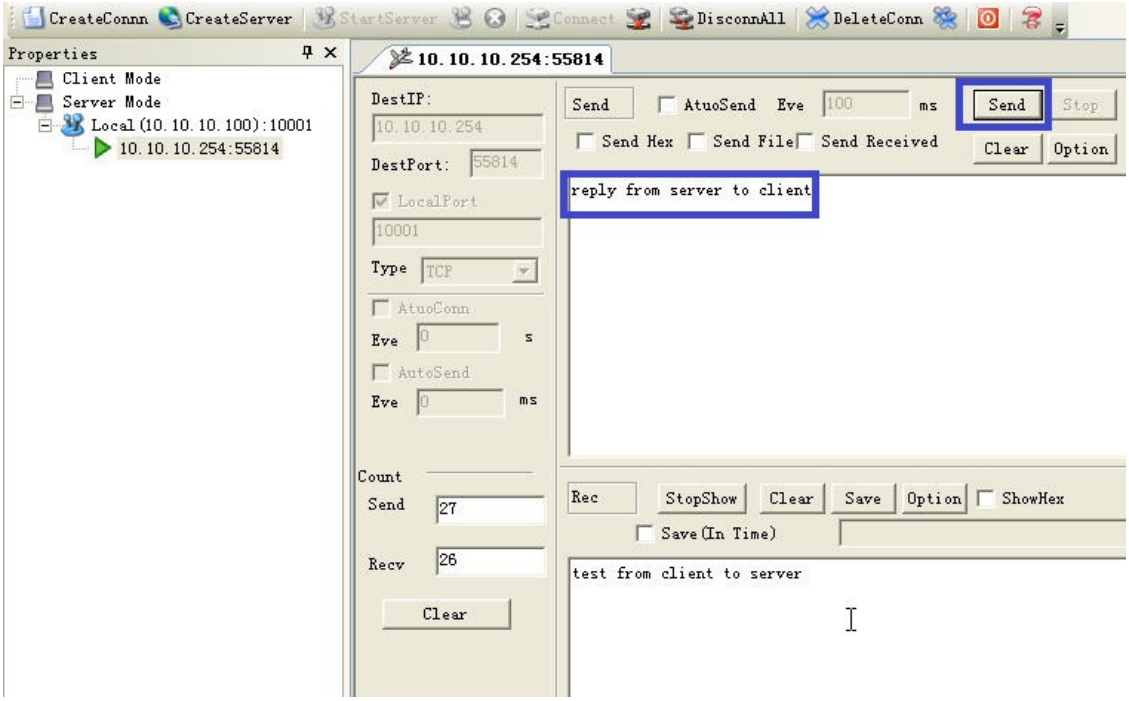
At client PC, type "test from client to server", and click the *Send* button.



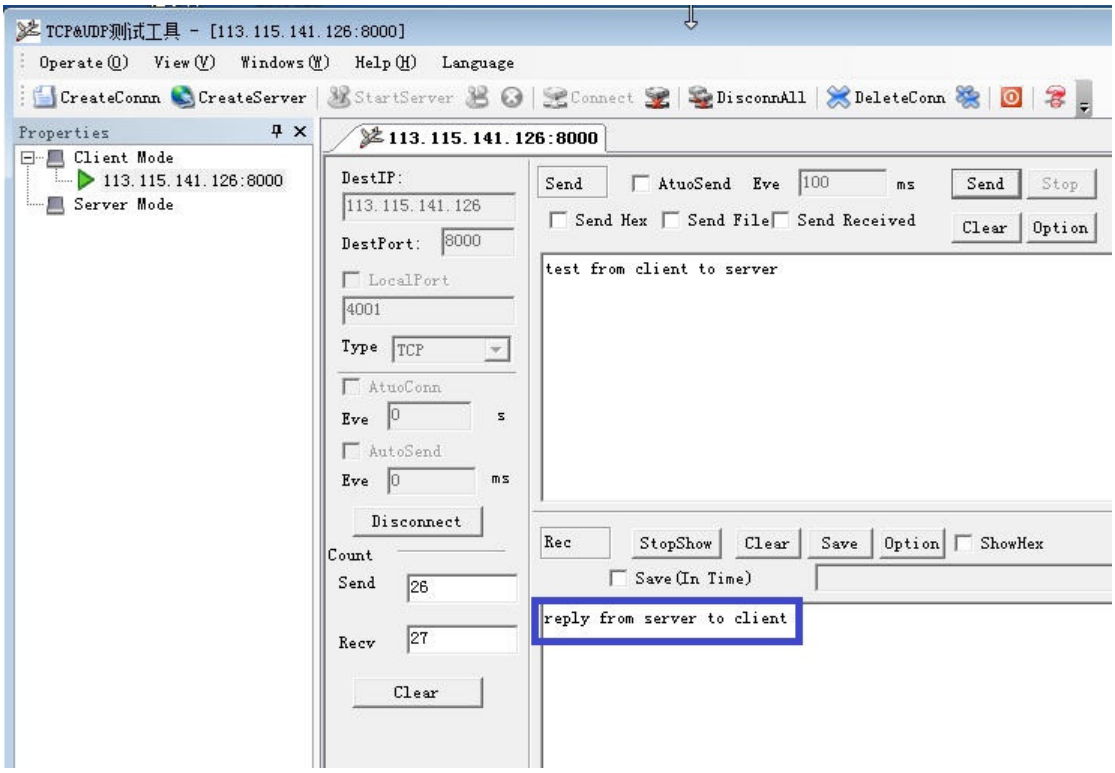
At the server PC, it will receive info from the client PC.



At Server PC, type “reply from server to client”, and click the *Send* button.



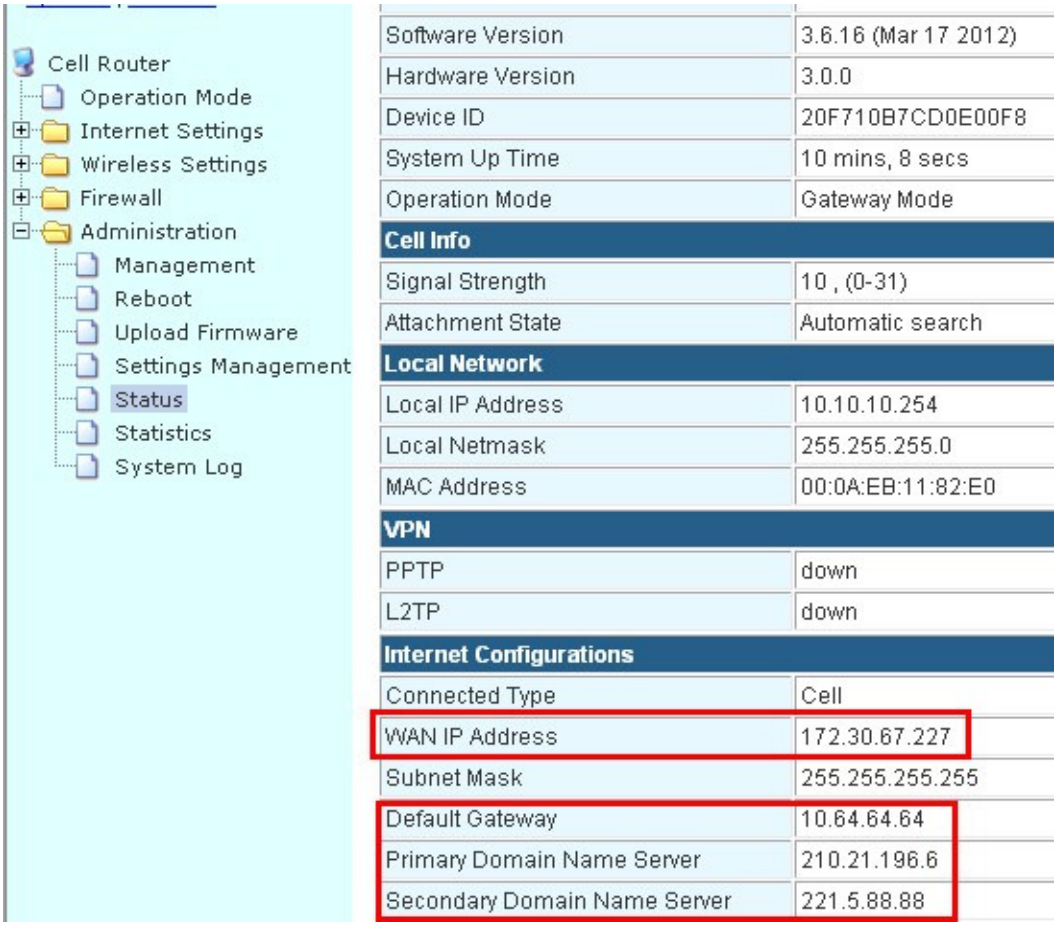
At the client PC side, it will receive the related info from the server PC.



This indicates the port forwarding is working.

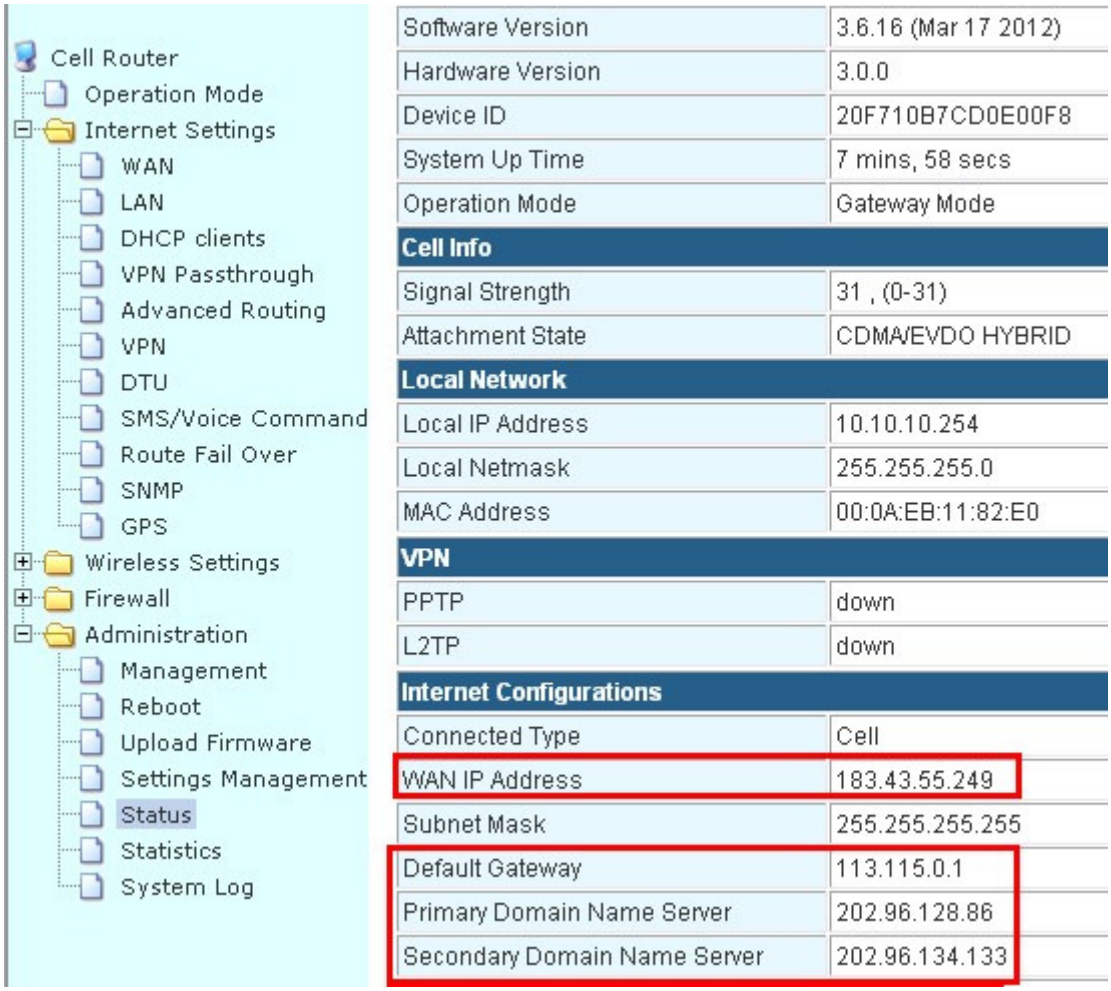
5.4. Remote Web Login

Step 1) Connect the CM685P/T online and get a **public WAN IP**.



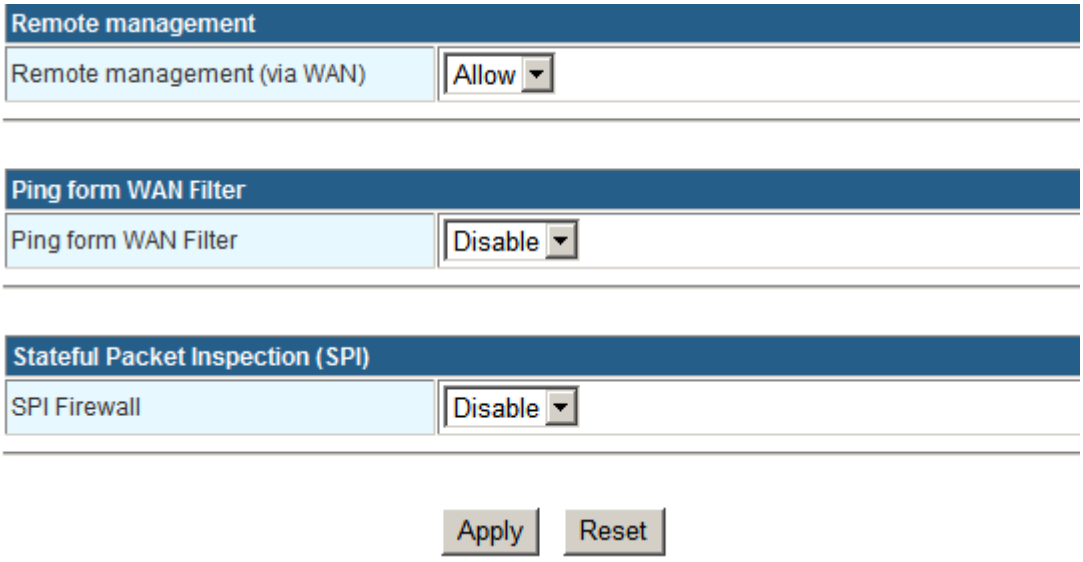
Here the CM685P/T router gets WAN IP 172.30.67.227, which is not a public IP, and cannot be pinged via the test PC. Therefore we cannot access the the CM685P/T router web remotely.

Let's get a public IP for the CM685P/T router first. Here we change to another SIM card to test.



The CM685P/T router gets a WAN IP 183.43.55.249, which is a public IP, and can ping through.

Step 2) Make sure the “Remote Management” feature is activated, as per below.



Step 3) at the test PC, open your browser and enter http://183.43.55.249:80 to access the CM685P/T router's web.

Notes:

1) The CM685P/T router's web port default is 80. Some ISPs block port 80 for security reasons. Check with your ISP and change the port if necessary before remote access can be activated.

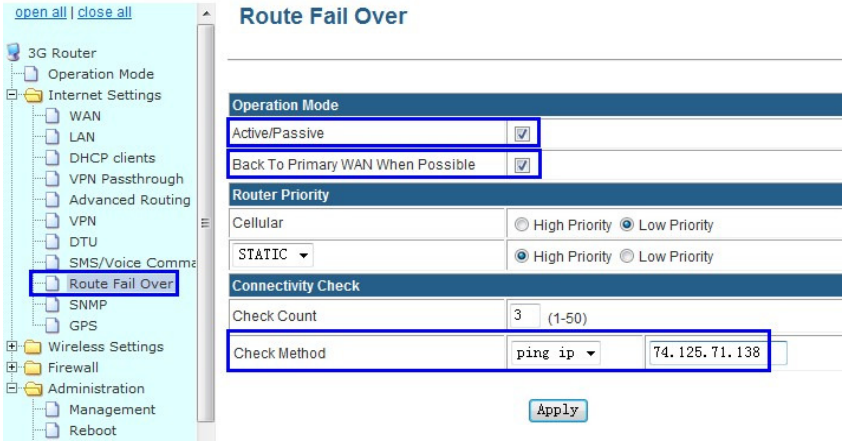
2) If you cannot get a fixed public WAN IP, you can use the CM685P/T router's DDNS feature.

5.5. WAN RJ45 Static (fixed IP) and Cellular Fail Over backup redundancy

Please connect the RJ45 WAN port and the upper Router LAN RJ45 port via a RJ45 cable. The CM685P/T WAN LED should be on.

Step 1) Log into the CM685P/T router web interface.

Step 2) navigate to Internet Settings – Route Fail Over.



Active/Passive: Tick it to enable.

Back To Primary WAN When Possible: Tick it (If you activate this feature, the router will automatically switch back to the primary main line as soon as the primary main goes back online. If you don't activate this feature, the router will stay connected to the secondary line)

Router Priority: You can select main line and secondary line for Cellular and WAN RJ45 "STATIC/DHCP/PPPoE"

For example, here we set Cellular as secondary line, and WAN RJ45 STATIC as main line. See picture above.

Check Count: Enter the number you want to check the line.

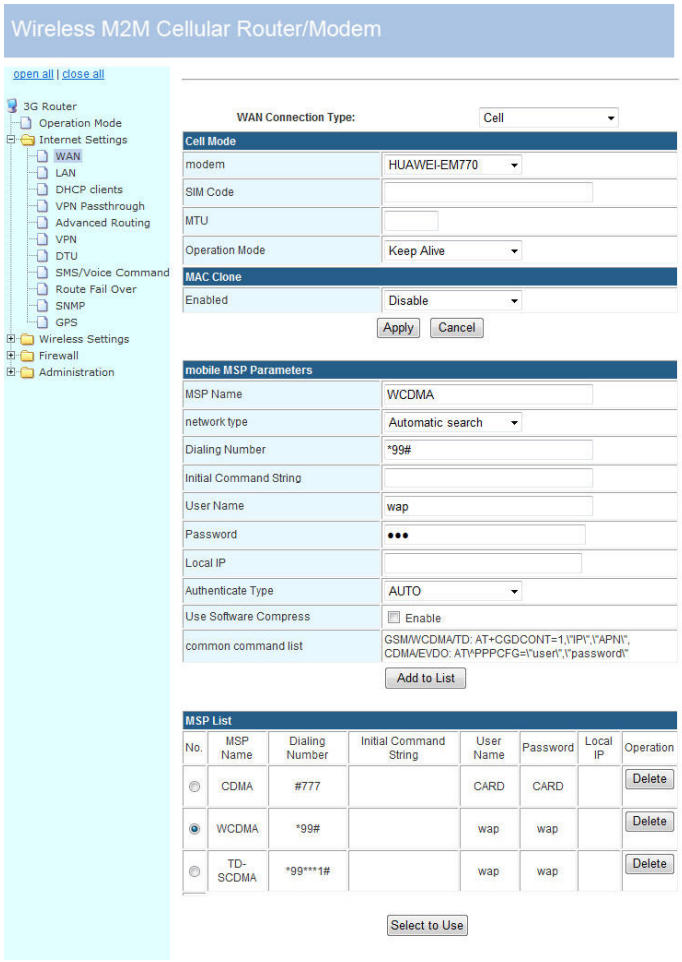
Checking Method: Enter a public IP address.

With the above configuration, the router will try to ping IP 74. 125.71.138. If it cannot get through after 3 continuous attempts, it will switch to the secondary line.

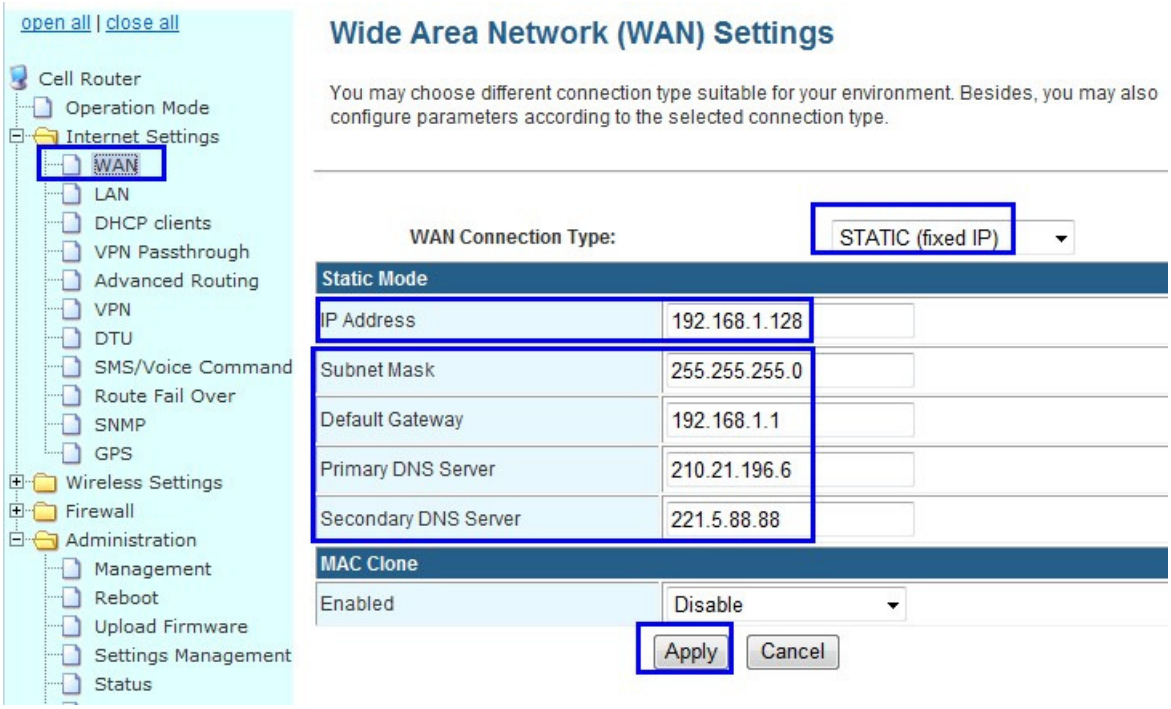
Step 3) Navigate to Internet Settings – WAN – WAN Connection Type – Cell.

Configure the Cell WAN parameters.

Please make sure the CM685P/T is online. Otherwise the fail over feature will not work.



Step 4) Navigate to Internet Settings – WAN – WAN Connection Type – STATIC (fixed IP)
Configure the Static fixed IP.



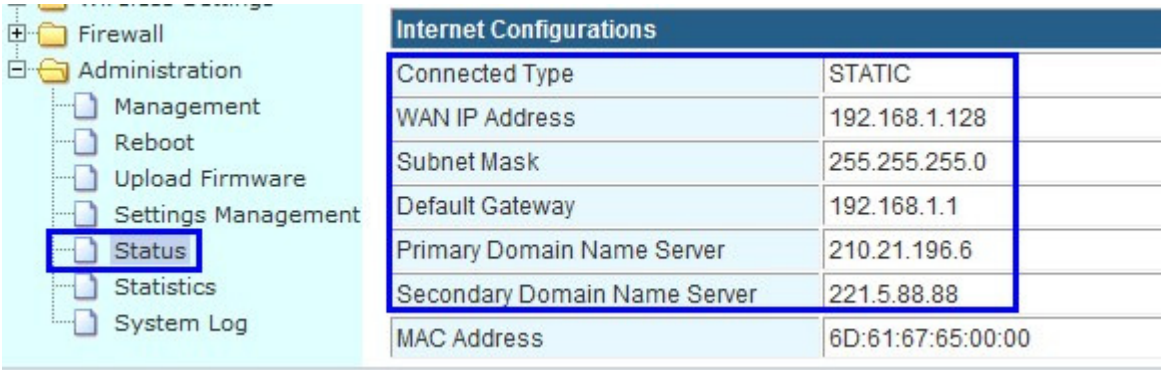
IP Address: Enter the assigned fixed LAN IP address from the upper router to the CM685P/T. Here our upper router can assign a fixed LAN IP 192.168.1.128 to the CM685P/T.

Subnet Mask: The upper router's subnet mask.
Default Gateway: Enter the default gateway. Here the default gateway is 192.168.1.1 of the upper router.
Primary DNS Server: Enter a right DNS server
Secondary DNS Server: Enter a right DNS server.

Notes: Do not forget to click the "Apply" button.

Step 5) The CM685P/T router will automatically reboot and try to connect to the STATIC WAN RJ45 as a main line. If the main line fails, it will switch to Cell as a secondary line. If STATIC WAN RJ45 resumes to work, it will switch from the Cell line to the STATIC WAN RJ45 line.

The following page indicates the Static fixed IP is working.



Once the Static (fixed IP) fails, the CM685P/T will switch to cellular automatically as follows,

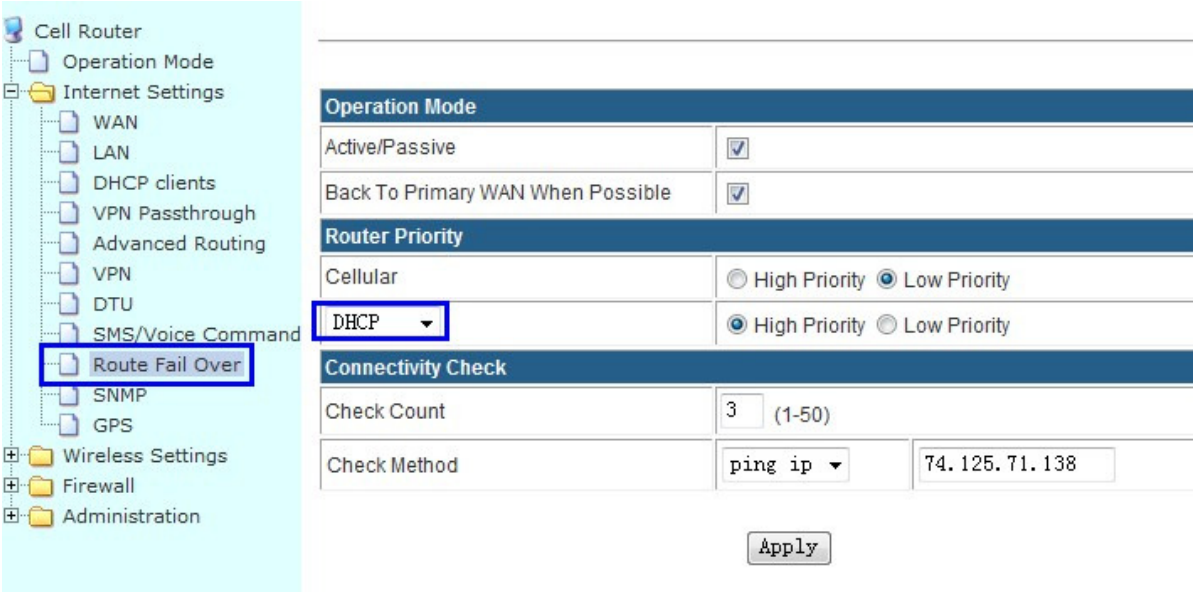
Internet Configurations	
Connected Type	Cell
WAN IP Address	172.20.5.78
Subnet Mask	255.255.255.255
Default Gateway	10.64.64.64
Primary Domain Name Server	210.21.196.6
Secondary Domain Name Server	221.5.88.88
MAC Address	6D:61:67:65:00:00

5.6. WAN RJ45 DHCP and Cellular Fail Over backup redundancy

Please connect the RJ45 WAN port and the upper Router LAN RJ45 port via a RJ45 cable. The CM685P/T WAN LED should go on.

Step 1) Log into the CM685P/T router web interface.

Step 2) Navigate to Internet Settings – Route Fail Over.



Active/Passive: Select it

Back To Primary WAN When Possible: Select it. If you activate this, the router will automatically switch to the primary main line from the secondary line as soon as the primary main line goes back online.

Router Priority: You can select the main line and the secondary line for Cellular and WAN RJ45 "STATIC/DHCP/PPPoE"

For example, here we set Cellular as the secondary line, and WAN RJ45 DHCP as the main line.

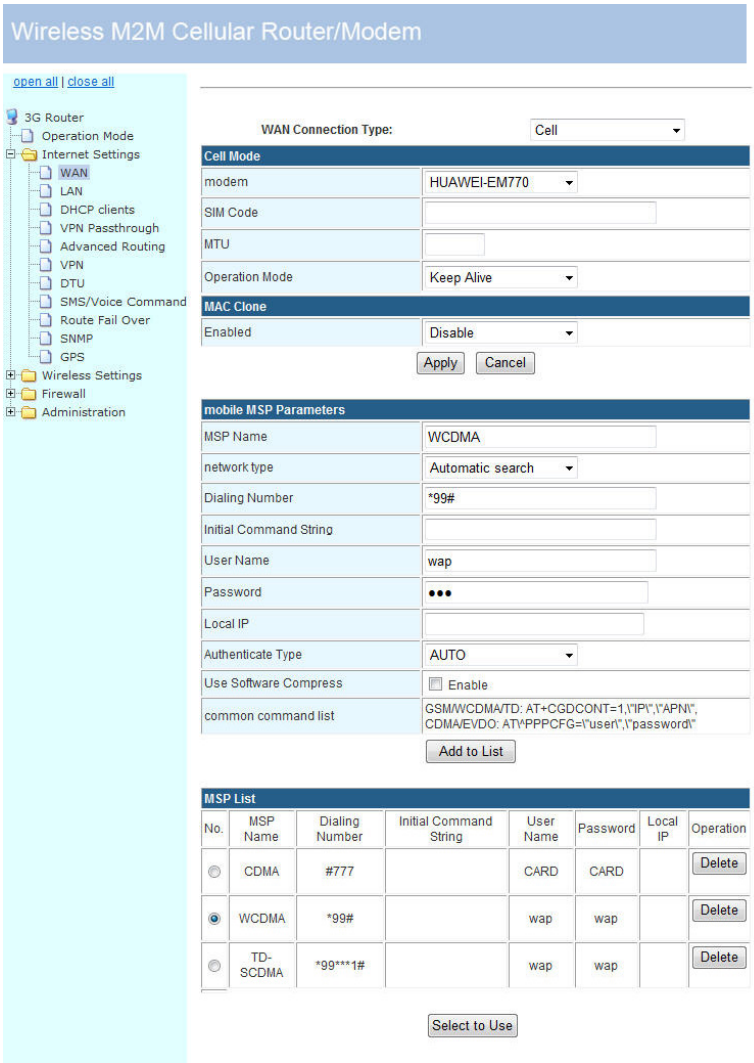
Check Count: Enter the number you want to check the line.

Checking Method: Enter a public IP address.

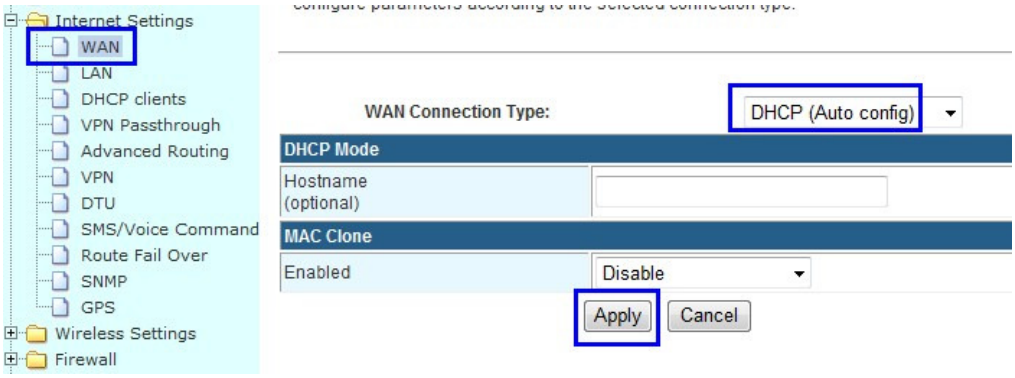
With the above configuration, the router will try to ping IP 74. 125.71.138 and if it cannot connect after 3

consecutive attempts, it will switch to the secondary line.

Step 3) Navigate to Internet Settings – WAN – WAN Connection Type – Cell.
Configure the Cell WAN parameters.
Please make sure the CM685P/T is online. Otherwise the fail over feature will not work.



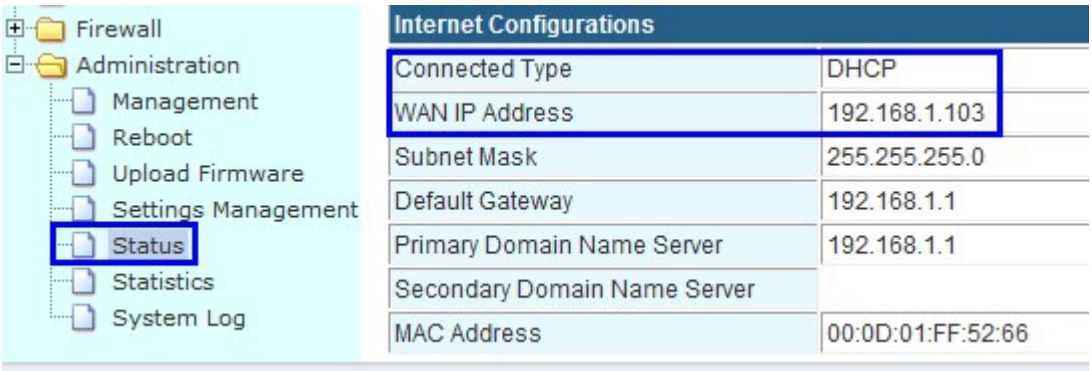
Step 4) Navigate to Internet Settings – WAN – WAN Connection Type – DHCP (Auto config)
Choose “DHCP (Auto config)” at WAN Connection Type, and click the “Apply” button.



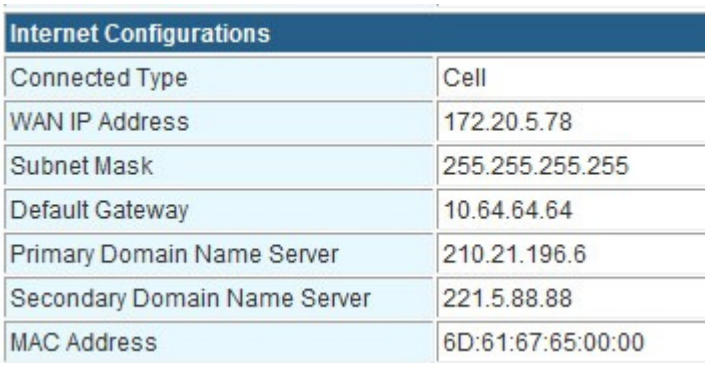
Notes: Do not forget to click the “Apply” button.

Step 5) The CM685P/T router will automatically reboot and try to connect the DHCP WAN RJ45 as the main line. If the main line fails, it will switch to Cell as the secondary line. And if DHCP WAN RJ45 resumes to work, it will switch from the Cell line to the DHCP WAN RJ45 line.

The following page indicated the DHCP is working.



Once the DHCP (Auto config) fails, the CM685P/T will switch to cellular automatically as follows,

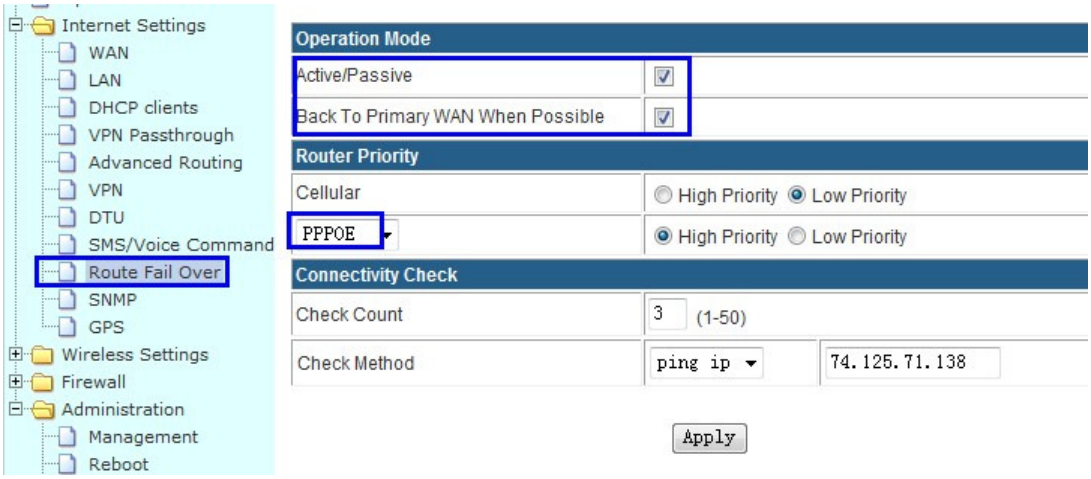


Internet Configurations	
Connected Type	Cell
WAN IP Address	172.20.5.78
Subnet Mask	255.255.255.255
Default Gateway	10.64.64.64
Primary Domain Name Server	210.21.196.6
Secondary Domain Name Server	221.5.88.88
MAC Address	6D:61:67:65:00:00

Notes: If the DHCP cannot get a WAN IP Address, please “Load Default” for the CM685P/T router to retry.

5.7. WAN RJ45 PPPoE and Cellular Fail Over backup redundancy

Please connect the RJ45 WAN port and the ADSL modem RJ45 port via RJ45 cable. The CM685P/T WAN LED should be on.
Step 1) log into the CM685P/T router web interface.
Step 2) Navigate to Internet Settings – Route Fail Over.



Active/Passive: Select.

Back To Primary WAN When Possible: Select. If you activate this, the router will automatically switch to the primary main line from the secondary line as soon as the primary main line resumes to work.

Router Priority: You can select the main line and the secondary line for Cellular and WAN RJ45 "STATIC/DHCP/PPPoE"

For example, here we set Cellular as the secondary line, and WAN RJ45 PPPOE as the main line. See picture above.

Check Count: fill in the number you want to check the line.

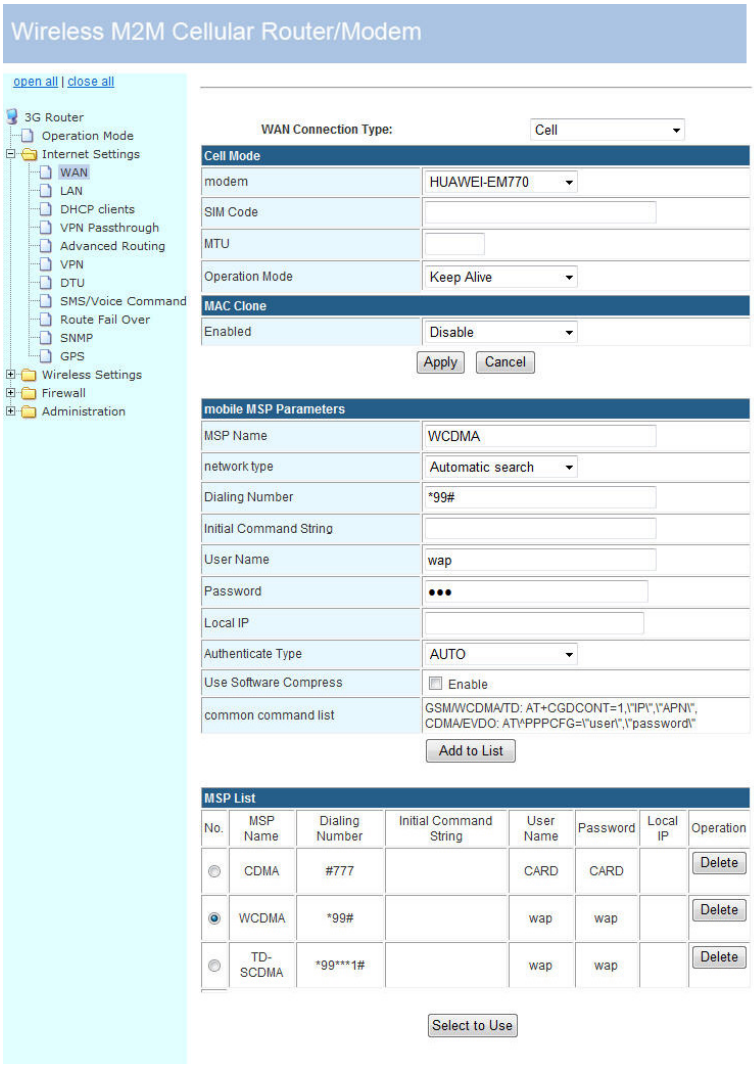
Checking Method: fill in a public IP address to ping.

With the above configuration, the router will try to ping IP 74. 125.71.138. If it cannot get through after 3 continuous attempts, it will switch to the secondary line.

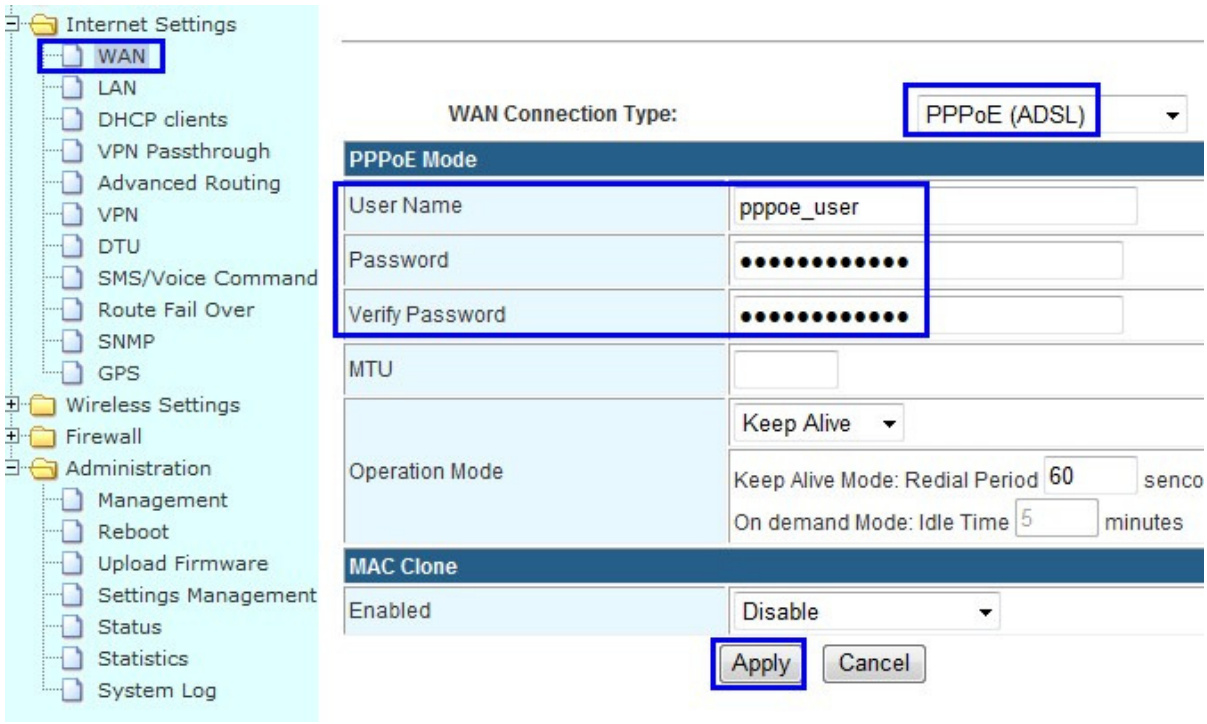
Step 3) Navigate to Internet Settings – WAN – WAN Connection Type – Cell.

Configure the Cell WAN parameters.

Please make sure the CM685P/T is online. Otherwise the fail over feature will not work.

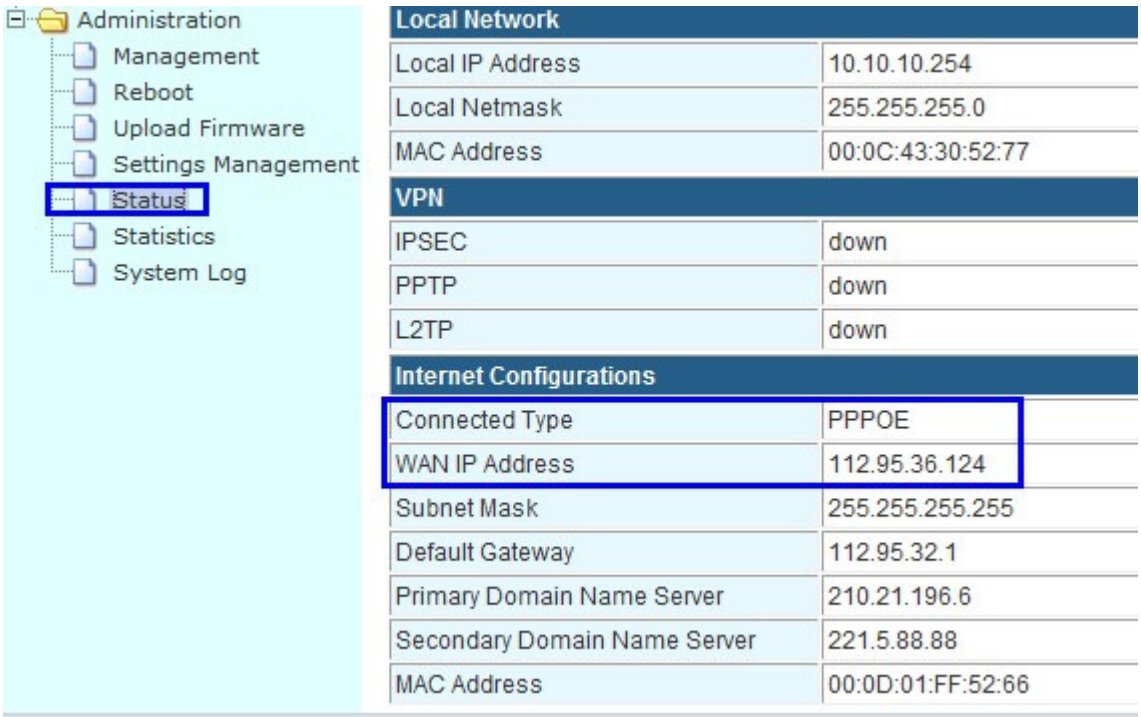


Step 4) Navigate to Internet Settings – WAN – WAN Connection Type – PPPoE (ADSL)



Fill in the correct parameters for xDSL.
Notes: Do not forget to click the “Apply” button.

Step 5) The CM685P/T router will automatically reboot and try to connect the WAN RJ45 PPPoE as the main line. If the main line fails, it will switch to Cell as the secondary line. If the WAN RJ45 PPPoE resumes to work, it will switch from the Cell line to the WAN RJ45 PPPoE line.
The following page indicates that the PPPoE is working.

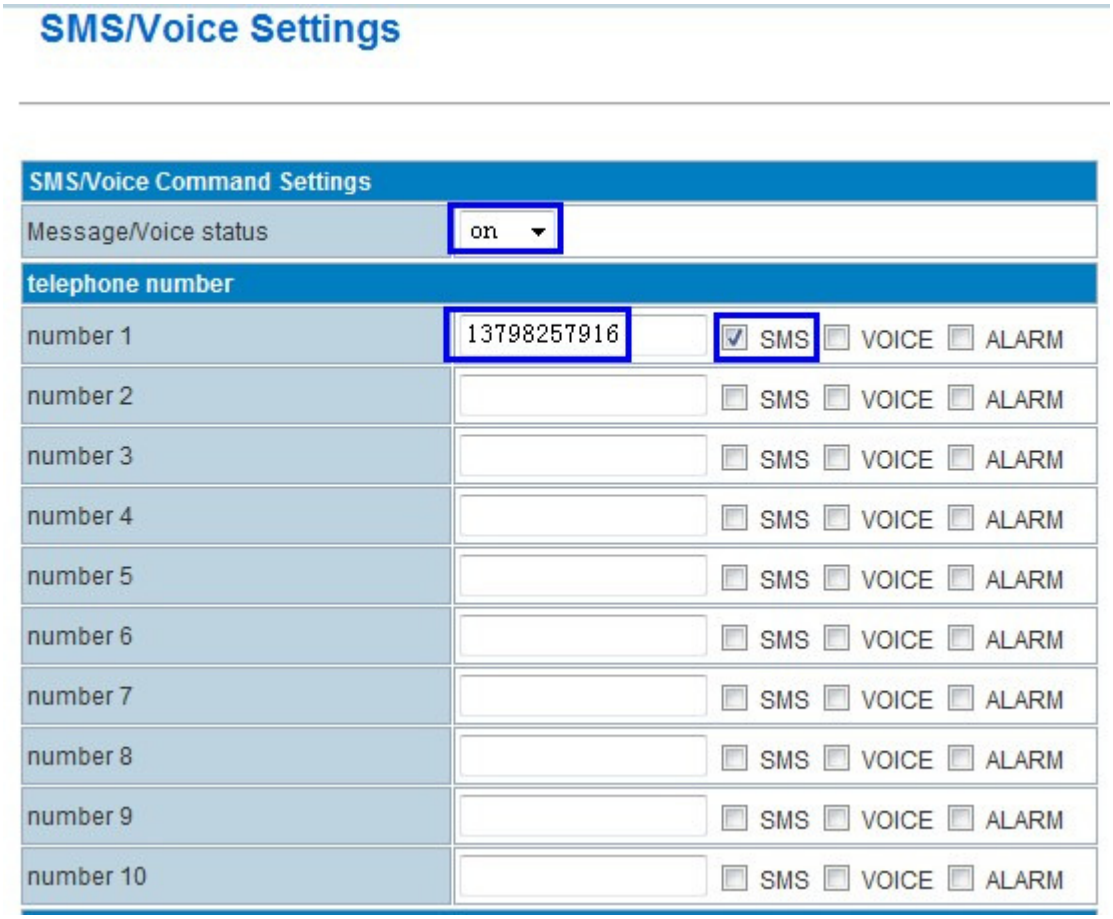


As soon as the PPPoE (ADSL) fails, the CM685P/T will switch to cellular automatically as follows.

Internet Configurations	
Connected Type	Cell
WAN IP Address	172.20.5.78
Subnet Mask	255.255.255.255
Default Gateway	10.64.64.64
Primary Domain Name Server	210.21.196.6
Secondary Domain Name Server	221.5.88.88
MAC Address	6D:61:67:65:00:00

5.8. SMS Reboot/Cell UP/Cell Down control

Step 1) Configure it as follows,



SMS	
SMS Command	on
Send ack SMS	on
Reboot Router Command	reboot
Get Cell Status Command	cellstatus
Cell link-up Command	cellup
Cell link-down Command	celldown
DIO_0 Set Command	dio01
DIO_0 Reset Command	dio00
DIO_1 Set Command	dio11
DIO_1 Reset Command	dio10
DIO Status Command	diostatus

Step 2) for the EVDO version, please keep your UIM Card so it can get CDMA1x network also. Otherwise the router cannot support SMS features because SMS cannot work on the EVDO network but can on the CDMA1x network.

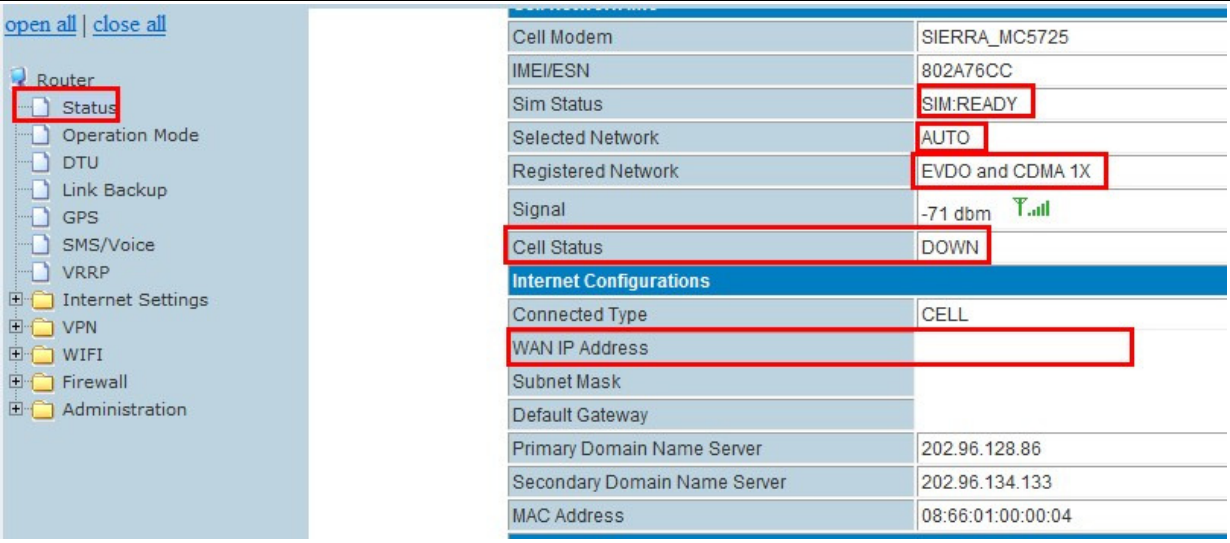
Cell Network Info	
Cell Modem	SIERRA_MC5725
IMEI/ESN	802A76CC
Sim Status	SIM:READY
Selected Network	AUTO
Registered Network	EVDO and CDMA 1X
Signal	-71 dbm
Cell Status	UP

The WCDMA/GSM/W-LTE have no limitation.

Step 3) CELL DOWN control test

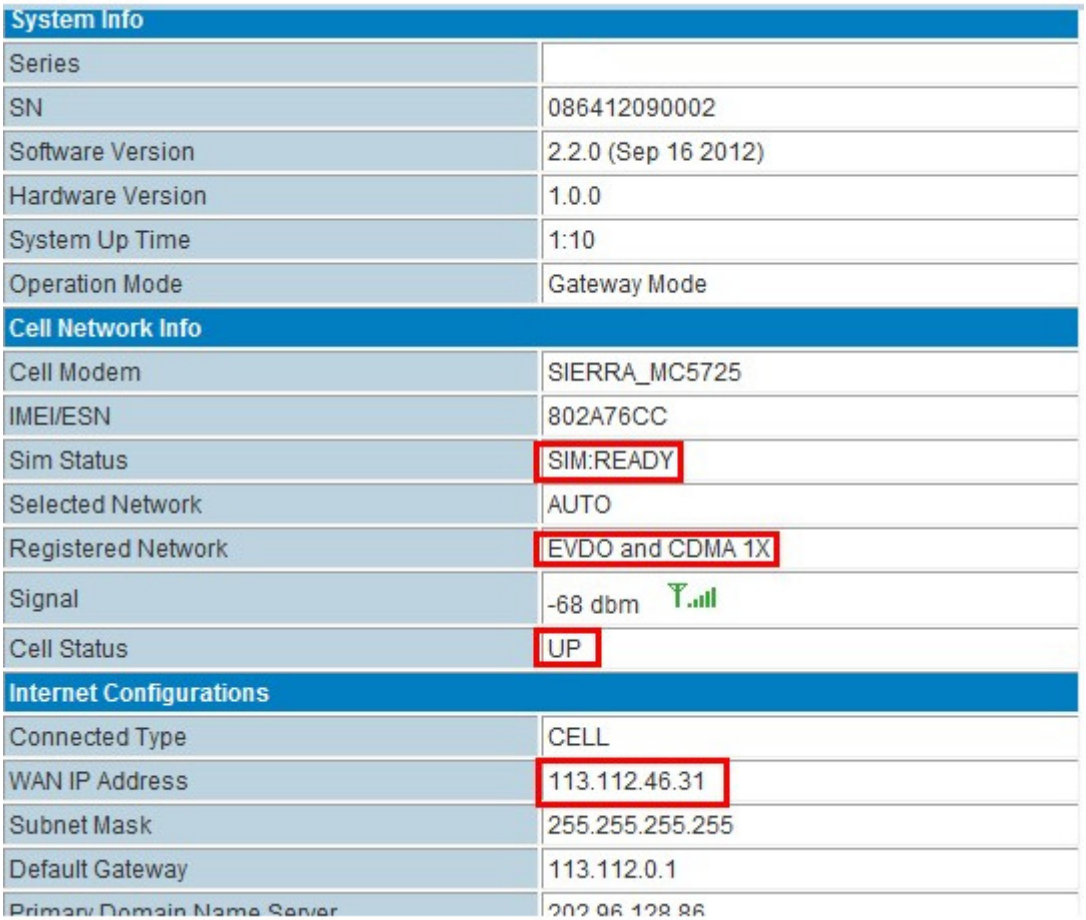
Send the “celldown” command from the sender’s phone. Here the sender’s mobile number is 13798257916. In the router’s System Log, you can find similar info "received index=0 msg (celldown) from (13798257916)!"

The Router CELL will go offline, and the WAN IP will disappear, as per status page below.



Step 4) CELL UP control test

From the sender's phone number 13798257916, send the "cellup" command to the router's SIM/UIM card number. In the router's "System Log", you'll find similar info "received index=0 msg (cellup) from (13798257916) ". The router cell will dialup to go back online.



System Info	
Series	
SN	086412090002
Software Version	2.2.0 (Sep 16 2012)
Hardware Version	1.0.0
System Up Time	1:10
Operation Mode	Gateway Mode
Cell Network Info	
Cell Modem	SIERRA_MC5725
IMEI/ESN	802A76CC
Sim Status	SIM:READY
Selected Network	AUTO
Registered Network	EVDO and CDMA 1X
Signal	-68 dbm
Cell Status	UP
Internet Configurations	
Connected Type	CELL
WAN IP Address	113.112.46.31
Subnet Mask	255.255.255.255
Default Gateway	113.112.0.1
Primary Domain Name Server	202.96.128.86

Step 5) CELL STATUS check test

From the sender's phone number 13798257916, send "cellstatus" to the router's SIM/UIM card number. In the router's "System Log", you'll find similar info " received index=0 msg (cellstatus) from (13798257916)". The router will feedback the CELL STATUS to the sender's phone number 13798257916. At 13798257916, we will get the following message: "Router SN:086412090002 cell_link_up".

5.9. PPTP client connection

PPTP Server's Info:
PPTP Server IP: 190.54.34.131
Username: vpnuser
Password: tekrem9876
Remote LAN/Mask: 192.168.130.0/24
PPTP Server's Assigned Network: 192.168.8.0/24 (If your PPTP Server does not assign an IP in the CM685P/T IP network range, the PPTP can connect but cannot send data through. Also you can change the CM685P/T LAN IP into the PPTP server's assigned network such as 192.168.0.1 or 192.168.1.1, etc.)

Step 1) Make sure the CM685P/T router is online.
Step 2) Enter the PPTP parameters as follows.

PPTP

PPTP VPN Settings	
PPTP VPN Active	☑
PPTP User	vpnuser
PPTP Password	●●●●●●●●●●
PPTP Server	190.54.34.131
Remote Lan/Mask	192.168.130.0 / 24
Local PPTP IP	dhcp
MPPE Encryption	☑
40 bit Encryption(Default is 128 bit)	☐
Refuse Stateless Encryption	☑
MPPC	☐

apply

Step 3) Check if the PPTP is connected.
Navigate to Router Web – Status.

PPTP Status	
PPTP	up

Step 4) Ping the PPTP server to test the connection.