

MM-5500PRO Quick Start Manual

Wireless CDMA 1x EVDO Ethernet modem



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FCC RF EXPOSURE COMPLIANCE

In August 1996 the Federal Communications Commission (FCC) of the United States with its action in Report and Order FCC 96-326 adopted an updated safety standard for human exposure to radio frequency (RF) electromagnetic energy emitted by FCC regulated transmitters. Those guidelines are consistent with the safety standard previously set by both U.S. and international standards bodies. The design of this phone complies with the FCC guidelines and these international standards.

Use only the supplied or an approved antenna. Unauthorized antennas, modifications, or attachments could impair call quality, damage the phone, or result in violation of FCC regulations.

This MM-5500PRO Wireless Ethernet modem has been tested for FCC exposure compliance with the MM-5500PRO wireless ethernet modem form factor. In order to comply with FCC RF exposure requirements, the MM-5500PRO Wireless Ethernet modem must be operated with the MM-5500PRO wireless ethernet modem form factor.

The use of this device in any other type of host configuration may not comply with FCC RF exposure requirements and should be avoided. During operation, a 20cm separation distance should be maintained between the antenna, whether extended or retracted, and the user's/bystander's body (excluding hands, wrists, feet, and ankles) to ensure FCC RF exposure compliance.

CAUTION

Change or modification without the express consent of Maxon Electronics Australia Pty. Ltd. voids the user's authority to use the equipment. This equipment has been tested and found to comply with the limits pursuant to Part 22 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in an appropriate installation. This equipment generates, uses, and can radiate radio frequency energy and, if not used in accordance with instructions, can cause harmful radiation to radio communication. However, there is no guarantee that interference will not occur in a particular installation. If the equipment does cause harmful interference in radio and television reception, which can be determined by turning the equipment on and off, the user is encouraged to try to correct the interference by one or more of the following measures:

Reorient or relocate the receiving antenna

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Purpose

This manual includes how to configure and use the MM-5500PRO.

1. Introduction

1.1 MM-5500PRO Overview

There are a lot of connections for Internet. Figure 1 shows one of the connectivity on the internet using a normal ADSL modem.



[Figure 1. Normal Network using an ADSL Modem]

MM-5500PRO is an wireless ethernet modem that supports the connection between LAN (Local Area Network) to WAN(Wide Area Network) wirelessly in Small Office Home Office.

Figure 2 shows the MM-5500PRO's shape.



[Figure 2. Each part name of MM-5500PRO]

MM-5500PRO supports WAN protocol like PPP, HDLC etc. using CDMA 1x EVDO modem, routing and bridging functions internally for the high speed data transfer.

1.2 Features

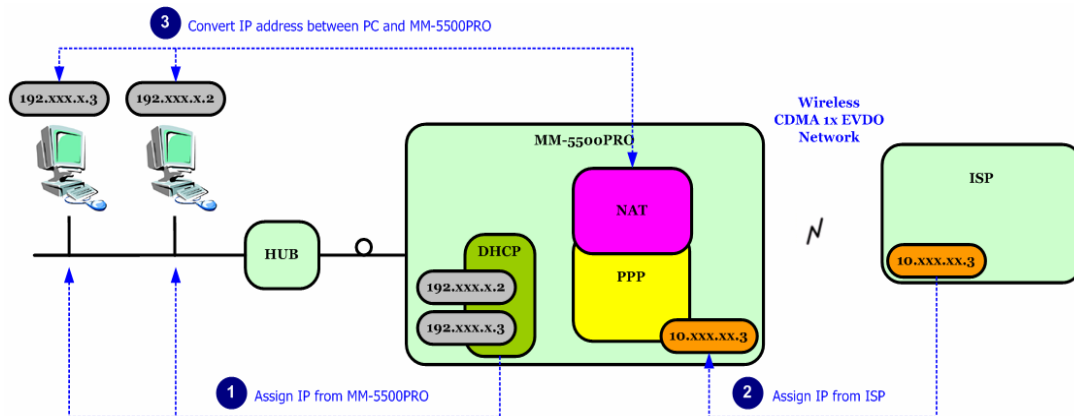
- An 10/100Mbps Ethernet LAN Port.
- An CDMA 1x EVDO modem for WAN(ISP).
- 32-bit RISC Processor.
- An RS-232 console port for management.
- Status LED of system operation.
- Adopt Embedded OS .
- Support routing protocol like RIP v1/v2.
- Provide DHCP Server/Relay.
- Radius client.
- User-friendly Web-based page.
- Remote management available.
- SNTP Client for network time.

2. Operation Process

There are two-way of MM-5500PRO operation. One is PPP (Point to Point Protocol) mode and the other one is PPPoE(PPP over Ethernet) mode.

2.1 PPP mode

On PPP mode MM-5500PRO has the IP from ISP (Internet Service Provider) itself, so MM-5500PRO can share the IP with many Host PCs. Below figure 3 shows PPP mode operation.

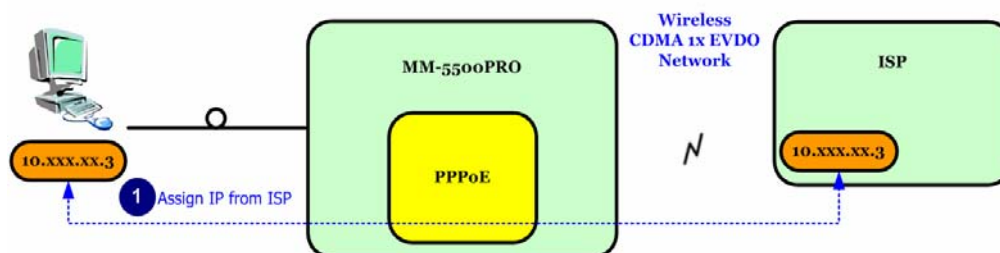


[Figure 3. PPP mode operation]

First, Host PCs get each private IP(hereby IP-1) from MM-5500PRO via DHCP server. Second MM-5500PRO gets public/Private IP(hereby IP-2) from ISP via CDMA 1x EVDO modem. Now MM-5500PRO has two kinds of IP, one is from ISP and the other ones are to Host PCs. Third, MM-5500PRO convert network data between IP-1 and IP-2 via NAT.

2.2 PPPoE mode

On PPPoE mode MM-5500PRO has no IP, just the Host PC gets IP from ISP.



[Figure 4. PPPoE mode operation]

Different on PPP mode, the IP from ISP goes to Host PC directly. MM-5500PRO converts protocol from PPP to PPPoE or on reverse direction, the Host PC processes all network protocols.

3. Factory Default

MM-5500PRO is already set for normal operation. So just connect between PC and MM-5500PRO. Check the network environment of Host PC.

3.1 Connecting Internet

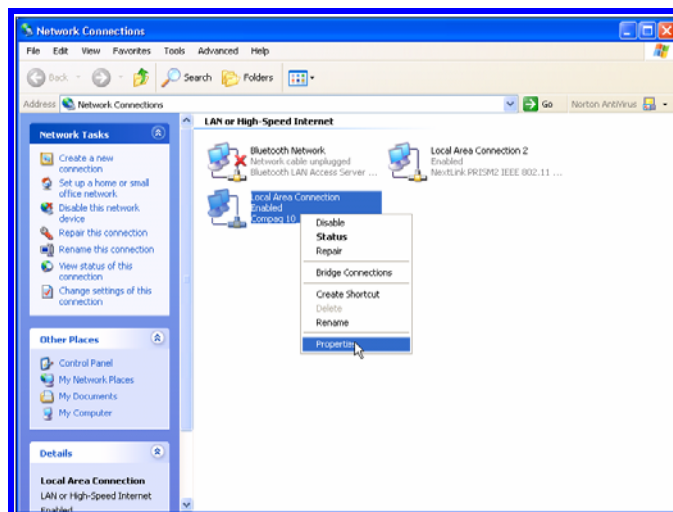
For accessing Internet, should obtain IP automatically so refer below steps.

- (1) Assumed the user uses the Windows XP. For connect between PC and MM-5100PRO, click "My Network Places" choose the [properties].



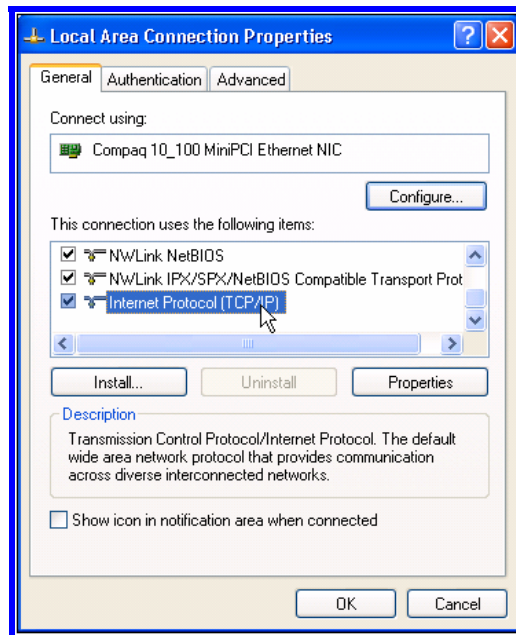
[Figure 5. First step of setting the Host PC]

- (2) Check the "Local Area Connection", click the mouse right button then [Properties].



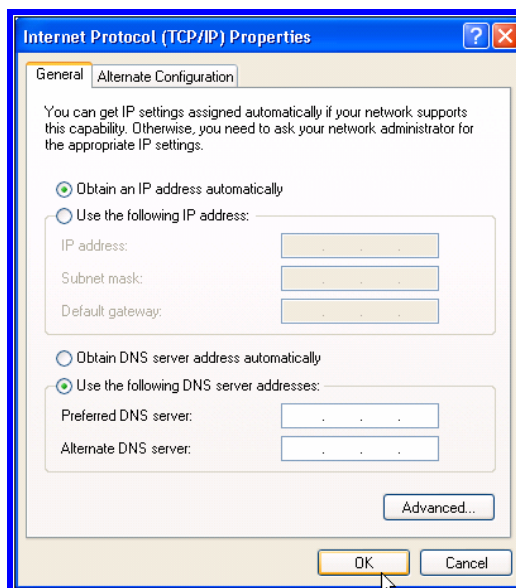
[Figure 6. Second step of setting the Host PC]

- (3) Chose "Internet Protocol [TCP/IP]" Tab and double click the item.



[Figure 7. Third step of setting the Host PC]

(4) Check the "Obtain an IP address automatically" then click the [OK] button.

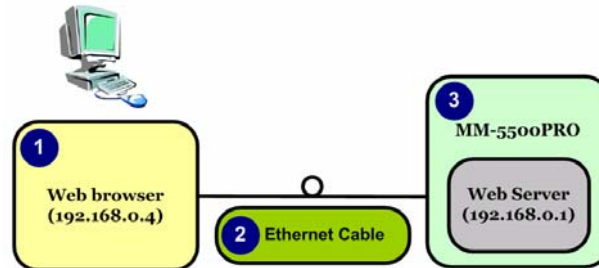


[Figure 8. Forth step of setting the Host PC]

(5) Host PC's setting is finished. Connect Power and Ethernet cable on MM-5500PRO. Wait for about 10 seconds or until the LED of PKT blinks. Connect your PC on Internet.

4. MM-5500PRO Configuration

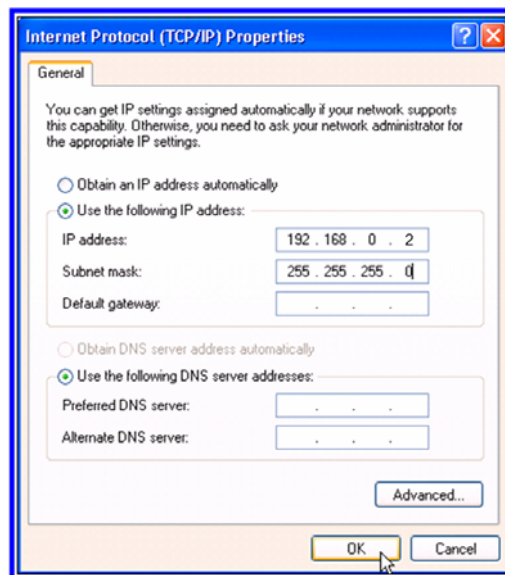
User can change the function of MM-5500PRO by configuring it for user's purpose. Supports the web based configuration pages for simplified installation and setup. Figure 9 shows connection on MM-5500PRO's configuration.



[Figure 9. Configuration of MM-5500PRO]

- (1) Connect Power cable on MM-5500PRO.
- (2) Connect LAN cable between Host PC and MM-5500PRO.
- (3) Set Host PC network environment below.
 - Host PC IP : 192.168.0.2(except 1: 1 is MM-5500PRO)
 - Subnet mask : 255.255.255.0
 - DNS : (omit)

Figure 10 shows the window of Internet Protocol(TCP/IP) Properties.
(if don't know how to find below window, go to page 5)



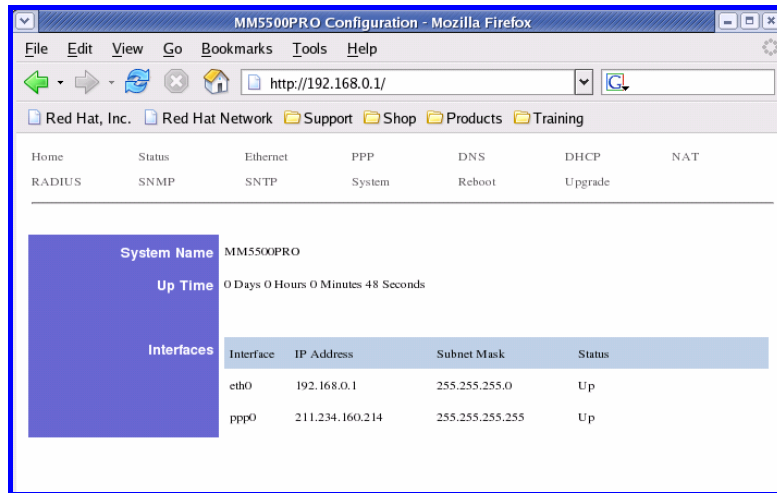
[Figure 10. Setting Host PC]

- (4) Start web browser like Internet explore then write IP address, 192.168.0.1 (by default) for connecting web page of configuration in MM-5500PRO.

(5) The pop-up window of login page appears like figure 11.

- User name: admin
- Password: admin

(6) "Home" page shows the system information of MM-5500PRO.



[Figure 11. Home Page]

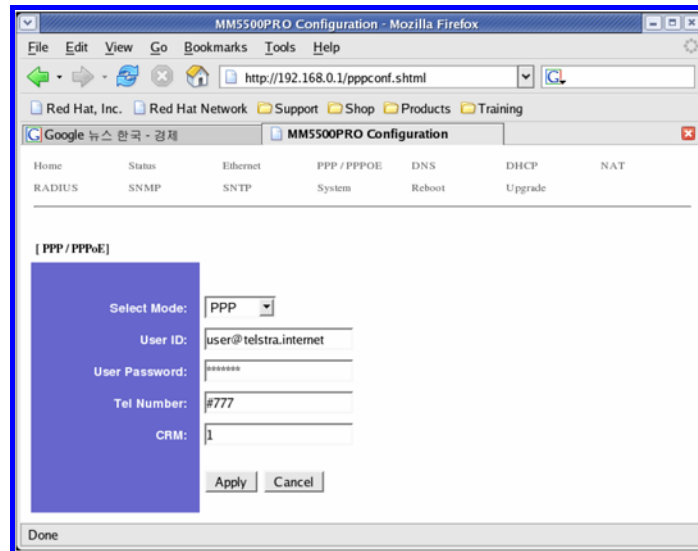
ITEM	Description
System Name	Product Name
Up Time	Operation time from power on
Interface	eth0 : Status of Ethernet0 IP ppp0 : Status of CDMA0 IP (After getting IP from ISP, this IP appears)

(7) We saw the connecting web page of configuration in MM-5500PRO, now try to set each configurations for each mode.

5. PPP mode Configuration

We assume that MM-5500PRO current mode is not PPP mode in this chapter.

- (1) Connect Power cable on MM-5500PRO.
- (2) Follow the chapter 4, connect MM-5500PRO's configuration web page.
- (3) Click "PPP/PPPOE" menu then PPP/PPPOE page appears like figure 12.



[Figure 12. PPP/PPPOE Page]

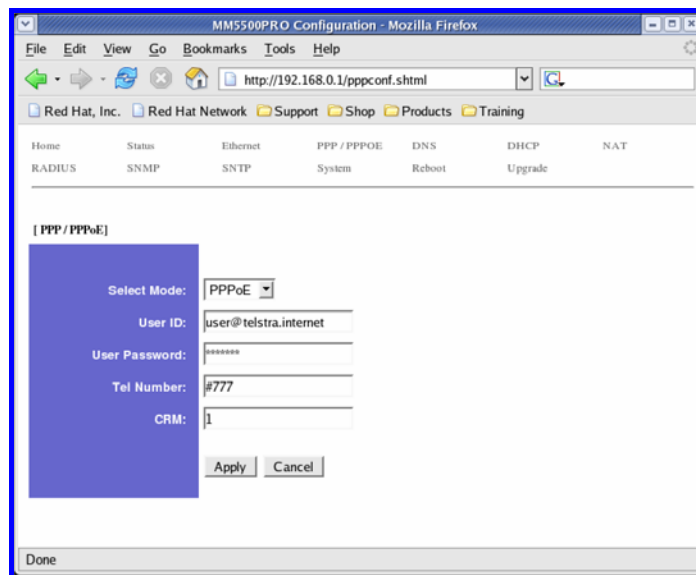
ITEM	Description
Select Mode	PPP
User ID	user@telstra.internet (or others)
User Password	Password
Tel Number	#777
CRM	1 : 1x, EVDO (By default) 150 : 1x only 160 : EVDO only

- (4) All setting finished then Click the **Apply** button.
- (5) Disconnect power cable then reconnect it.
- (6) Follow the chapter 3, change the Host PC's network environment.
- (7) Execute web browser and explore internet.

6. PPPoE mode Configuration

We assume that MM-5500PRO current mode is not PPPoE mode in this chapter.

- (1) Connect Power cable on MM-5500PRO.
- (2) Follow the chapter 4, connect MM-5500PRO's configuration web page.
- (3) Click "PPP/PPPOE" menu then PPP/PPPOE page appears like figure 13.

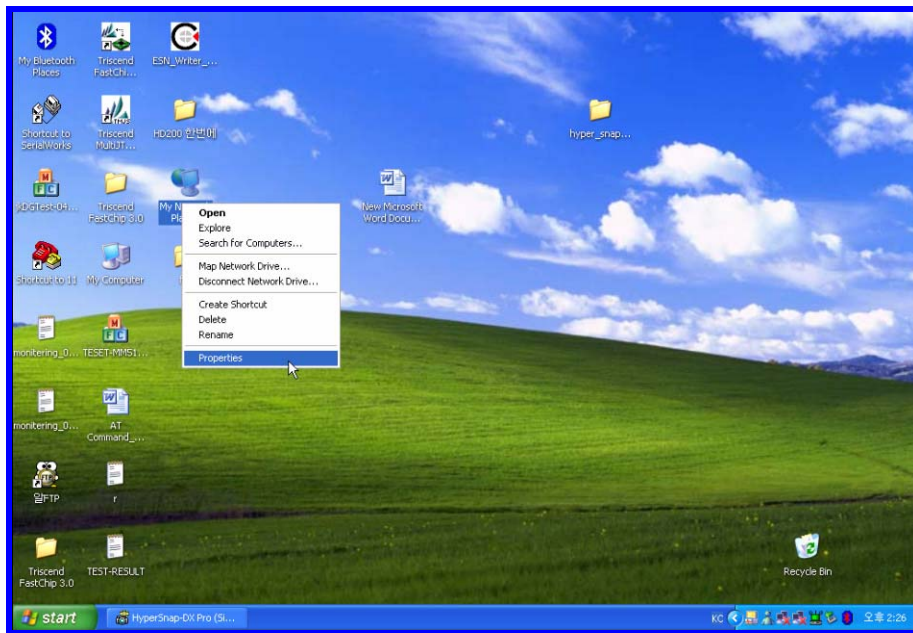


[Figure 13. PPP/PPPOE Page]

ITEM	Description
Select Mode	PPPoE
User ID	Not effect
User Password	Not effect
Tel Number	Not effect
CRM	1 : 1x, EVDO (By default) 150 : 1x only 160 : EVDO only

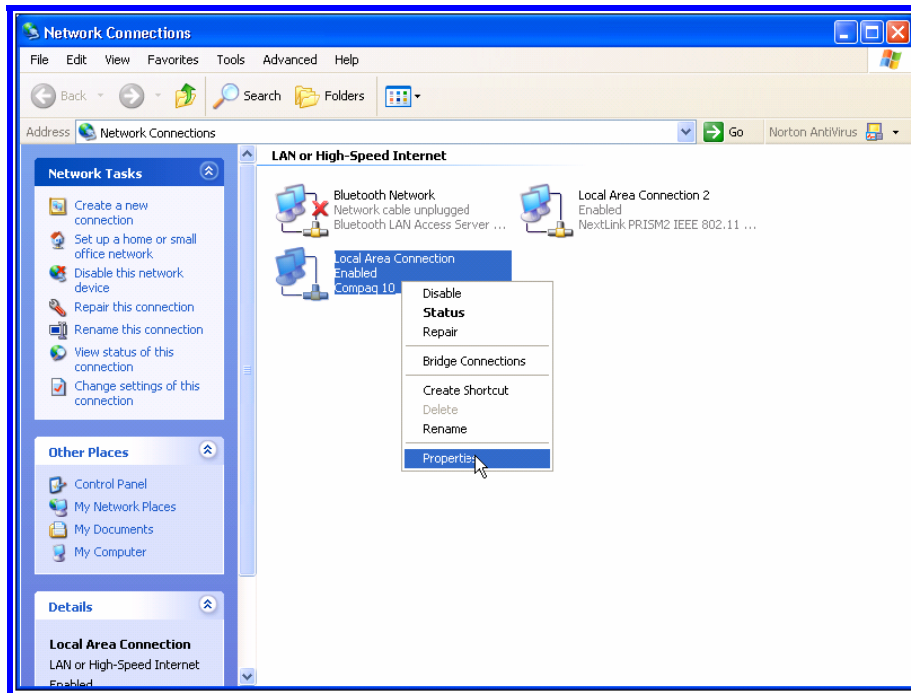
- (4) All setting finished then Click the **Apply** button.
- (5) Disconnect power cable then reconnect it.
- (6) Follow the chapter 3, change the Host PC's network environment.

(7) In this example we assumed the user uses the Windows XP. If it is not Windows XP, the user should install PPPoE connection application program. For connect between PC and MM-5500PRO click the “My Network Places” choose the [properties].



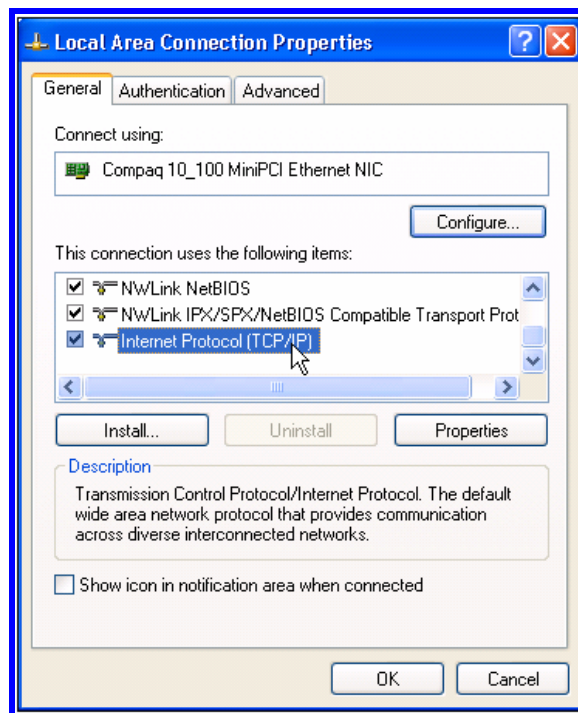
[Figure 14. First step of setting the Host PC]

(8) Check the “Local Area Connection”, click the mouse right button then [Properties].



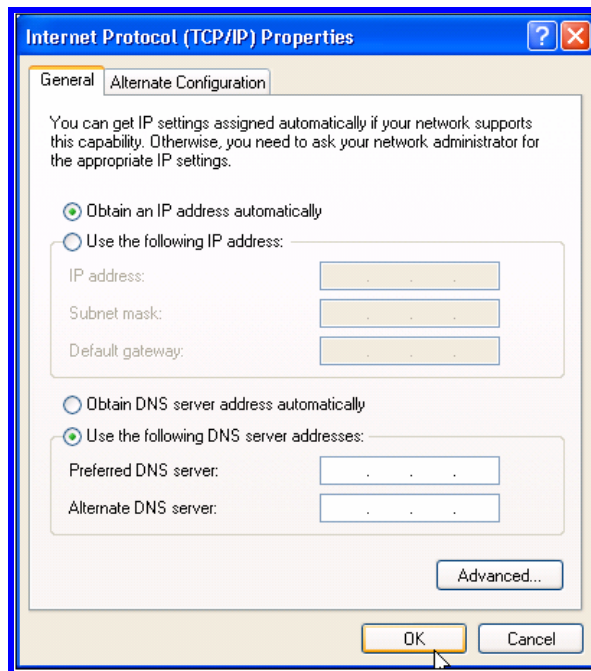
[Figure 15. Second step of setting the Host PC]

(9) Chose Internet Protocol[TCP/IP] Tab and double click the item.



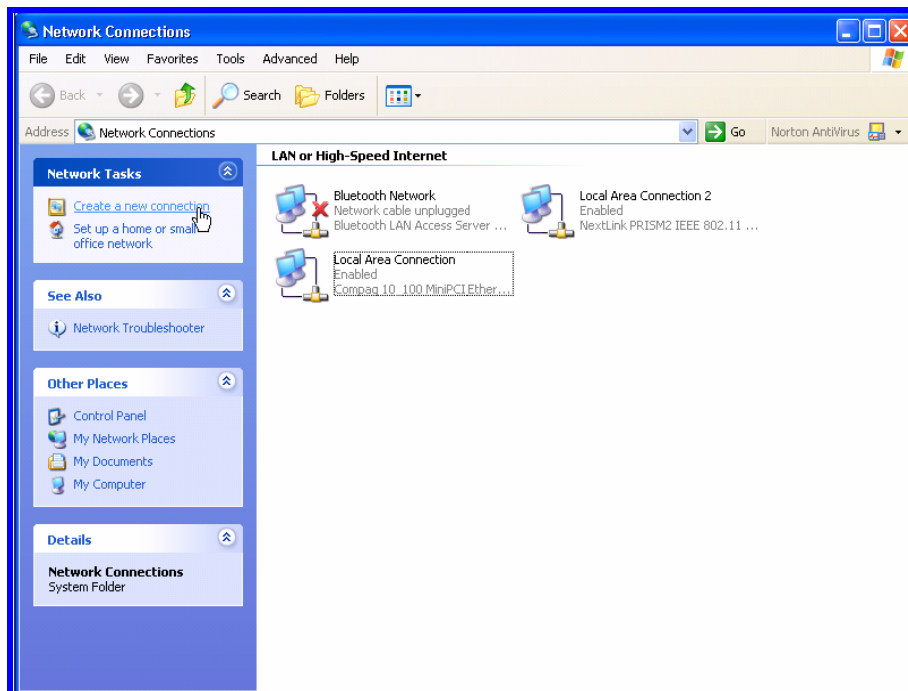
[Figure 16. Third step of setting the Host PC]

(10) Check the "Obtain an IP address automatically" then click the [OK] button.



[Figure 17. Forth step of setting the Host PC]

(11) You should make PPPoE connection so click the "Create a nee connection"



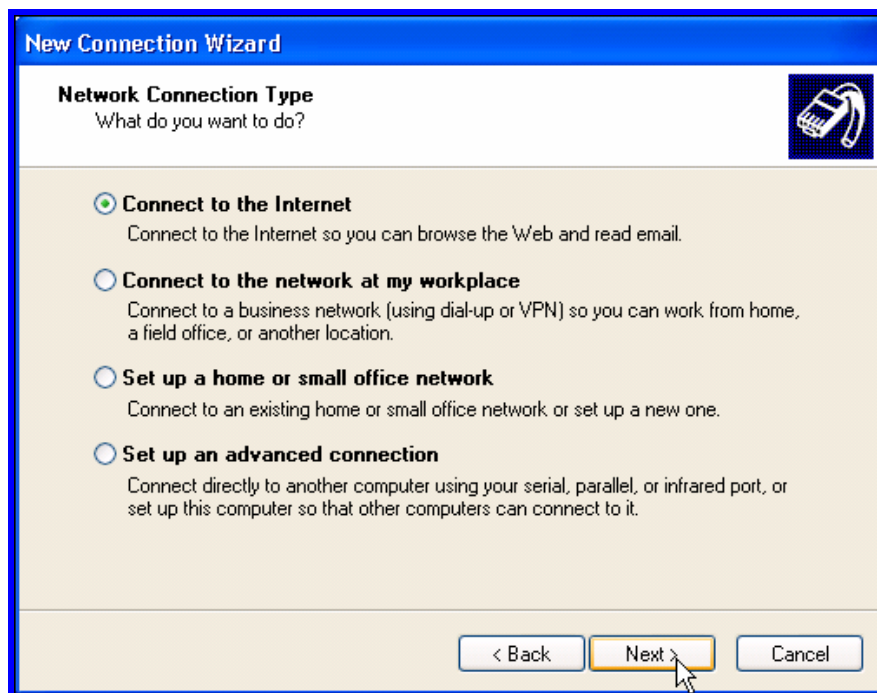
[Figure 18. First step of creating a PPPoE connection]

(12) New Connection Wizard appears, click [Next] button.



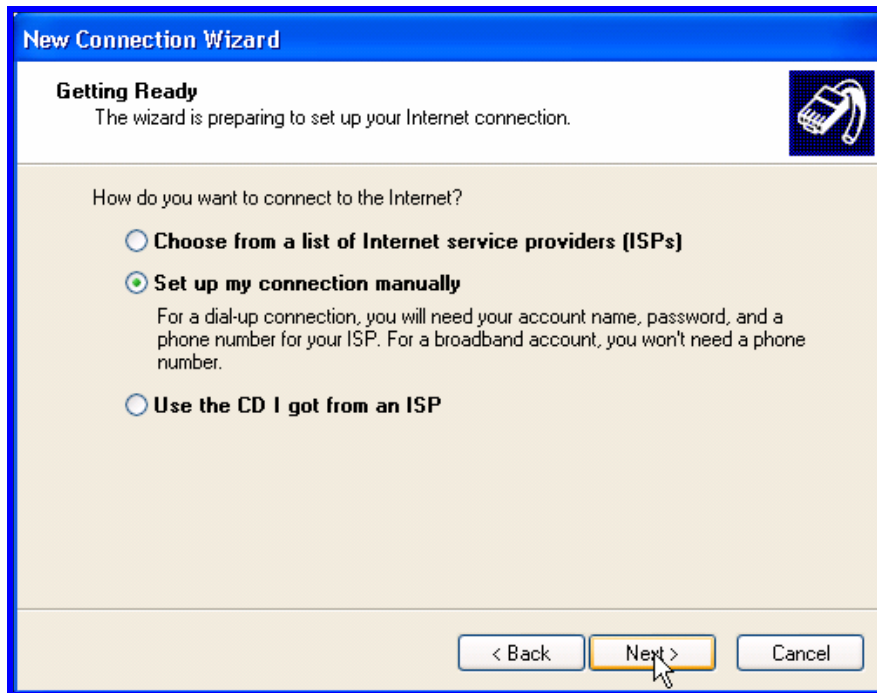
[Figure 19. Second step of creating a PPPoE connection]

(13) Check "Connect to the Internet" then click [Next] button.



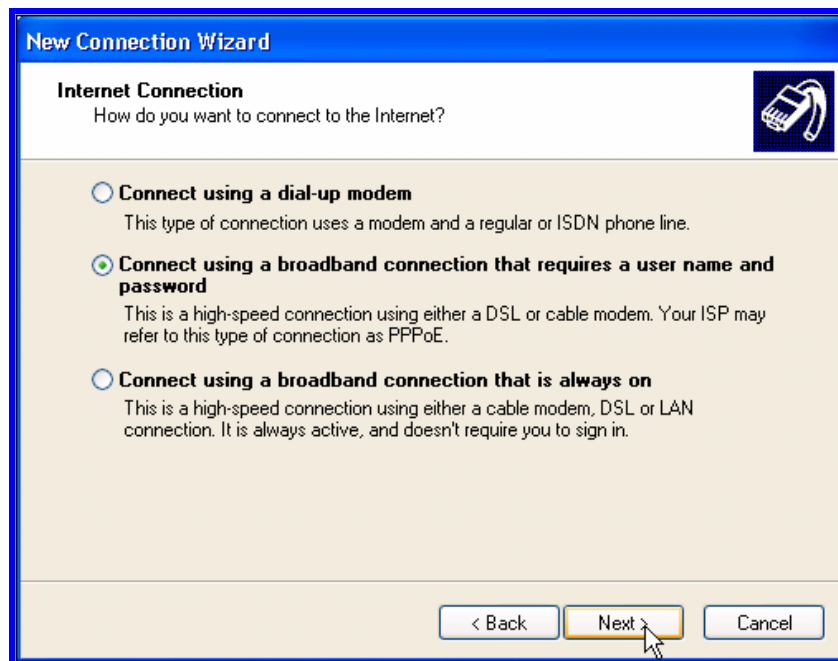
[Figure 20. Third step of creating a PPPoE connection]

(14) Check "Set up my connection manually" then click [Next] button.



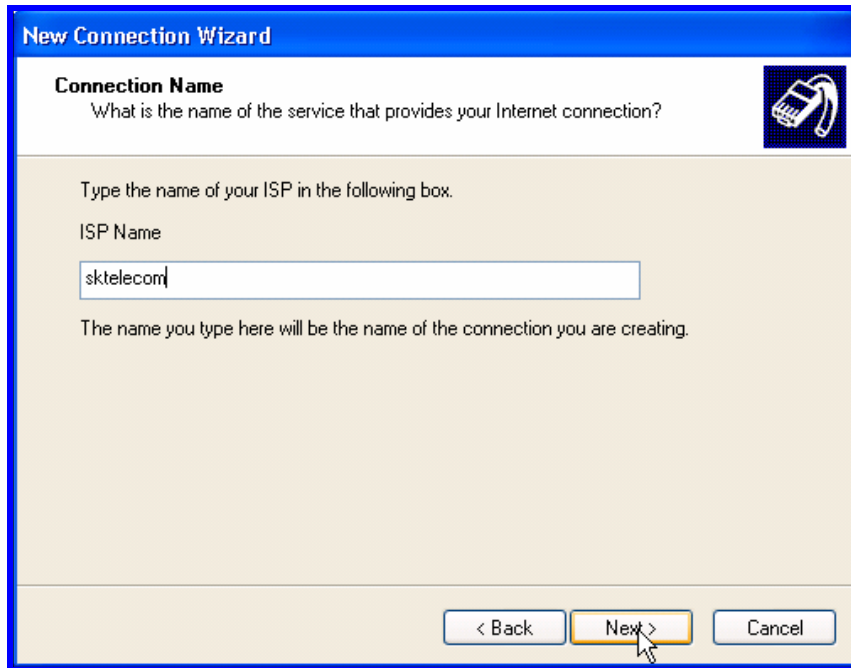
[Figure 21. Forth step of creating a PPPoE connection]

- (15) Check "Connect using a broadband connection that requires a user name and password" then click [Next] button.



[Figure 22. Fifth step of creating a PPPoE connection]


(16) Write the ISP Name what you want. In this example write ISP name then click [Next] button.



The screenshot shows a Windows-style dialog box titled "New Connection Wizard". The main heading is "Connection Name" with a sub-question: "What is the name of the service that provides your Internet connection?". Below this, there is a text box labeled "ISP Name" containing the text "sktelecom". A note states: "The name you type here will be the name of the connection you are creating." At the bottom right, there are three buttons: "< Back", "Next >" (highlighted with a mouse cursor), and "Cancel".

[Figure 23. Sixth step of creating a PPPoE connection]

(17) Write User name/Password/Confirm password what you use. Then click [Next] button.



The screenshot shows the next step in the "New Connection Wizard" dialog box, titled "Internet Account Information". The sub-heading is "You will need an account name and password to sign in to your Internet account." Below this, there is a text box labeled "User name:" containing "sktelecom". There are two empty text boxes for "Password:" and "Confirm password:". Below the text boxes are three checked checkboxes: "Use this account name and password when anyone connects to the Internet from this computer", "Make this the default Internet connection", and "Turn on Internet Connection Firewall for this connection". At the bottom right, there are three buttons: "< Back", "Next >" (highlighted with a mouse cursor), and "Cancel".

[Figure 24. Sixth step of creating a PPPoE connection]

- (18) All setting is finished, check "Add a shortcut to connection and close this wizard, click Finish" then click [Finish] button.



[Figure 25. Seventh step of creating a PPPoE connection]

- (19) PPPoE connection program appears then click [Connect] button.



[Figure 26. PPPoE connection application program]

(20) Connecting window appears, trying to connect MM-5500PRO.



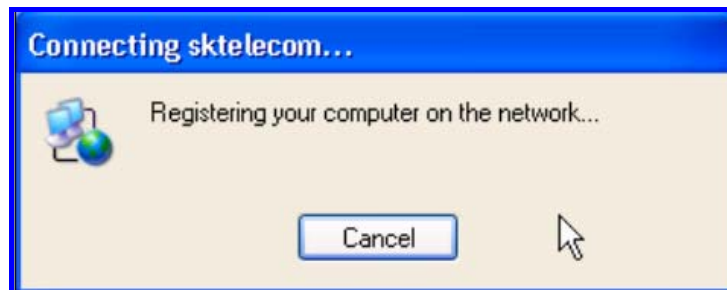
[Figure 27. Connecting between PC and MM-5500PRO]

(21) After connection between PC and MM-5500PRO, then go to the verifying stage.



[Figure 28. Verifying username and password]

(22) Changing Registering stage, the Host PC connecting on the network.



[Figure 29. Registering PC on the network]

(23) Click the [Start] button then choose Internet Explorer.

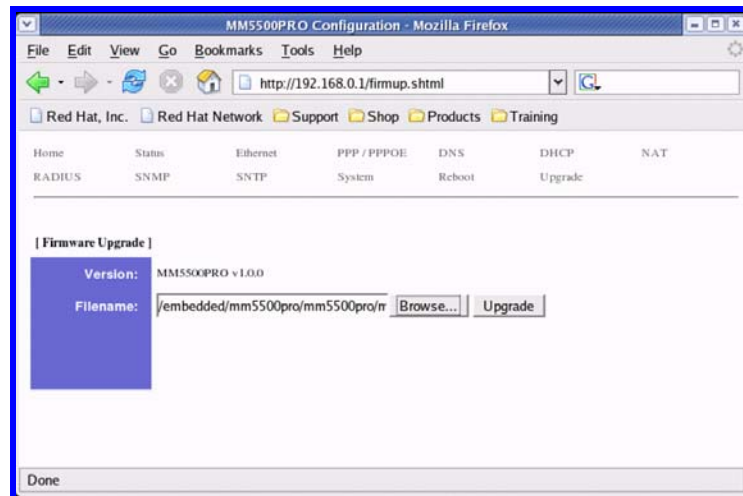


[Figure 30. Starting Internet Explorer]

7. Firmware Upgrade

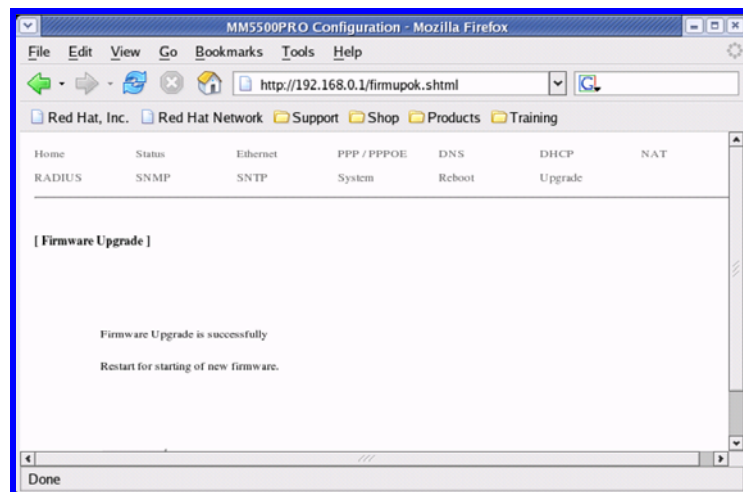
Firmware is for MM-5500PRO. When the firmware is to be upgrade or to be download, use like this.

- (1) Connect Power cable on MM-5500PRO.
- (2) Follow the chapter 4, connect MM-5500PRO's configuration web page.
- (3) Click "Upgrade" menu then PPP/PPPOE page appears.
- (4) Click the **Browse...** button and search the firmware file.
- (5) Select the firmware file then "OK".



[Figure 31. Firmware Upgrade]

(6) Click the **Upgrade** button then below Figure 31 appears.



[Figure 32. Firmware Upgrade finished]

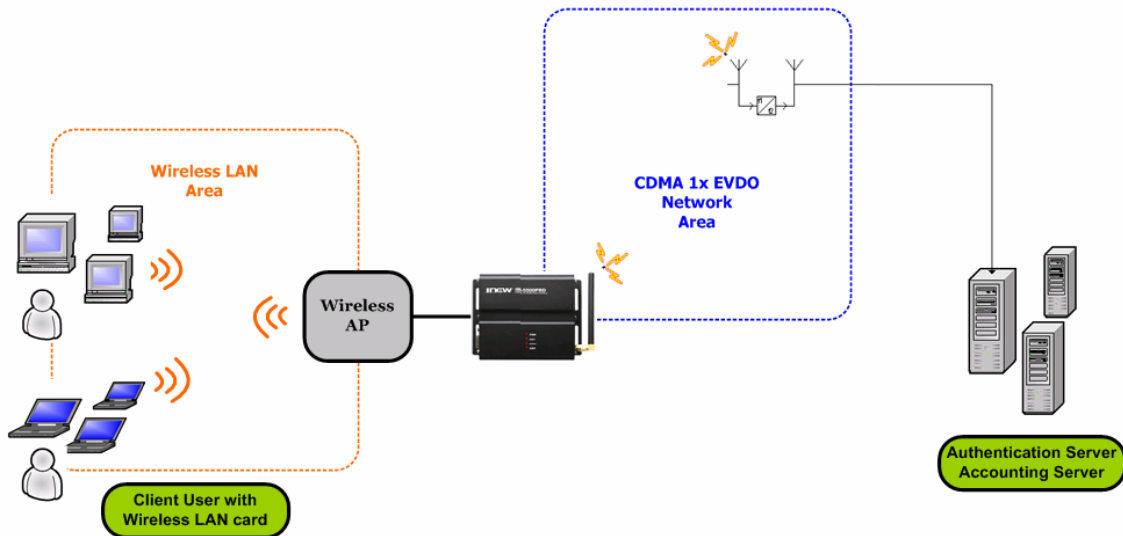
(7) Execute web browser and explore internet.

8. Radius Test

There is no needed RADIUS on normal using wireless AP but if connect user PC using RADIUS protocol, there are some needed to define below.

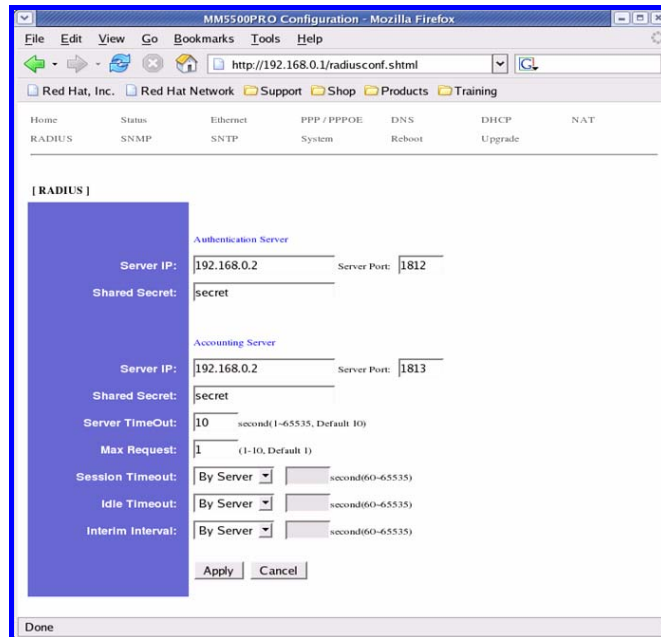
- (1) Wireless AP supports RADIUS protocol to communicate with MM-5500PRO.
- (2) ISP(Internet Service Provider) supports subnet mask 255.255.255.xxx (because Client PCs should get their IP from RADIUS Server).
- (3) RADIUS Client Software is installed on Client PC.

- (4) Get the RADIUS Server information including Authentication Server IP/Port and Accounting Server IP/Port.
- (5) IP of MM-5500PRO should be registered in advance.(But now MM-5500PRO gets Dynamic IP from ISP so after get the IP from MM-5500PRO then let the RADIUS server know the MM-5500PRO's IP. In the future if MM-5500PRO using RADIUS protocol, MM-5500PRO needed Static IP from ISP).



[Figure 33. RADIUS Authentication and Accounting Network]

- (6) Connect Power cable on MM-5500PRO.
- (7) Follow the chapter 4, connect MM-5500PRO's configuration web page.
- (8) Click "RADIUS" menu then RADIUS page appears.



[Figure 34. RADIUS Setting Page]

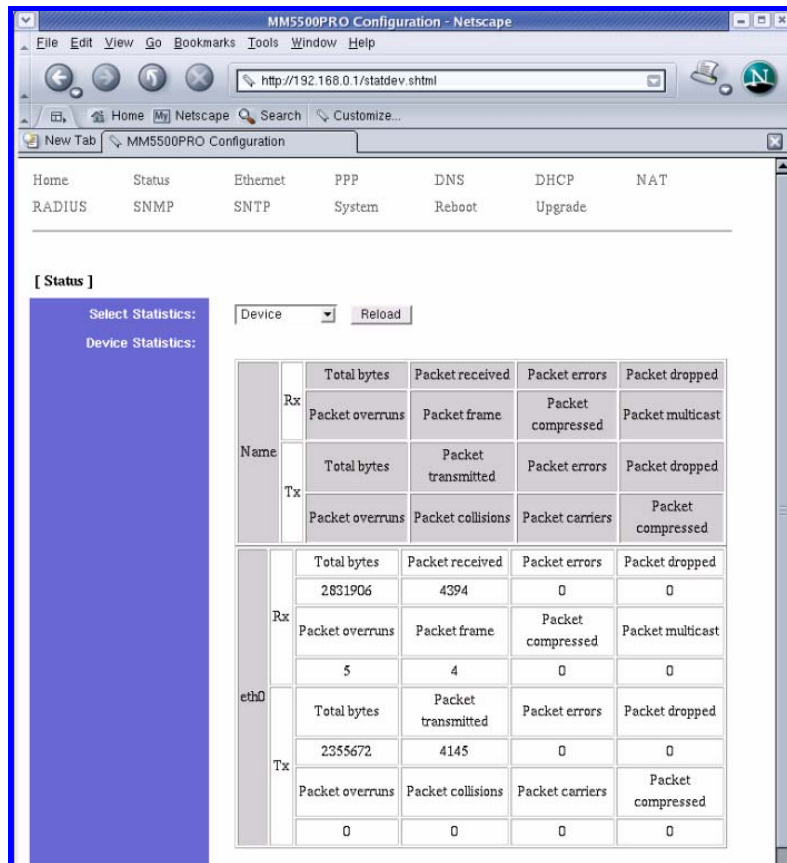
ITEM	Description
Authentication Server	Server IP : xxx.xxx.x.x Server Port : xxxx Shared Secret : depend on Authentication Server
Accounting Server	Server IP : xxx.xxx.x.x Server Port : xxxx Shared Secret : depend on Authentication Server
Server Timeout	Second of time out (depend on network speed)
Max.Request	Time of Request (normal 2~3 times)
Session Timeout	Default by server
Idle Timeout	Default by server
Interim Interval	Default by server

- (9) All setting finished, execute the RADIUS Client Software that is installed on Client PC then connect on Internet.

9. Appendix

Below pages are descriptions of other configuration pages.

(1) "Status" page shows current protocol status.



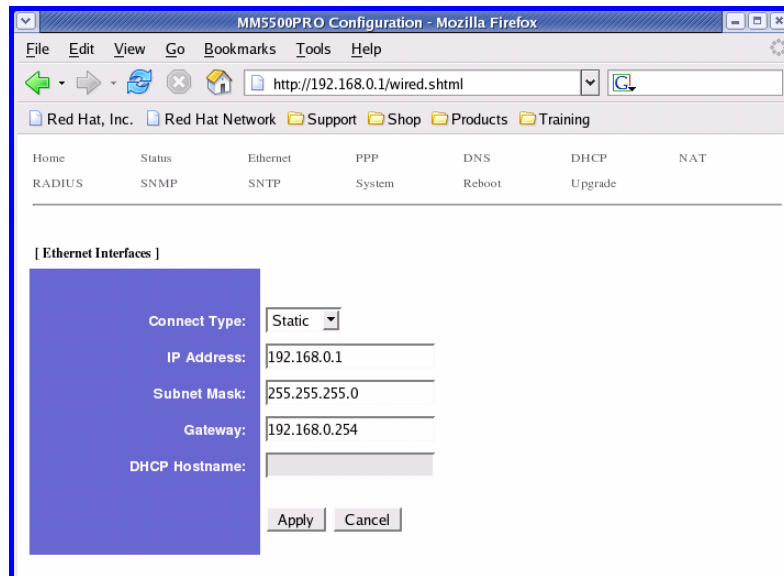
[Figure 35. Status Page]

ITEM	Description
Select Statistics	Information of Target - Device - ARP - IP - ICMP - TCP - UDP - ROUTE

Device Statistics

Each status & Information

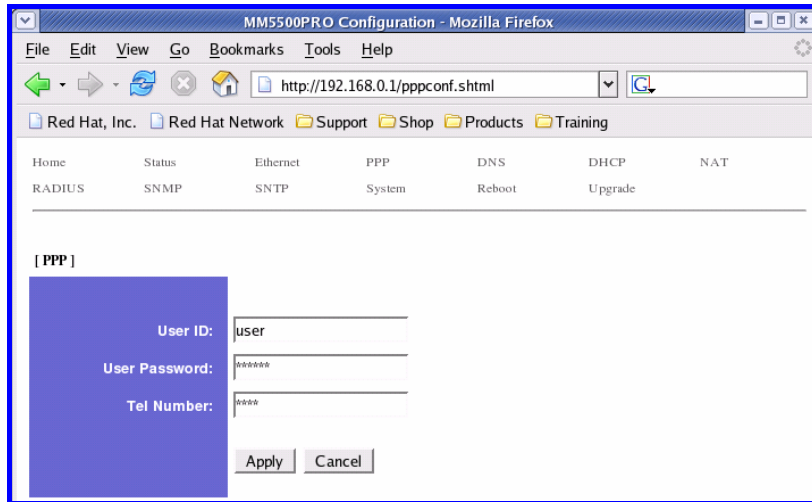
(2) "Ethernet" page shows the information of Ethernet interface.



[Figure 36. Ethernet Page]

ITEM	Description
Connect Type	Static: Should be Always (Dynamic: Will be omit)
IP Address	eth0 IP
Subnet Mask	Subnet mask IP Address
Gateway	Gateway Address
DHCP Hostname	(Will be omit)

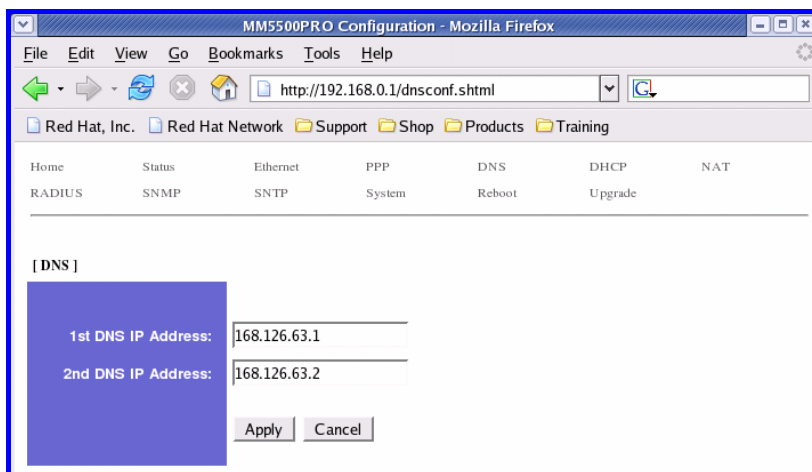
(3) "PPP" page shows the information of PPP authentication.



[Figure 37. PPP Page]

ITEM	Description
User ID	Received ID from ISP
User Password	Password
Tel Number	Calling number

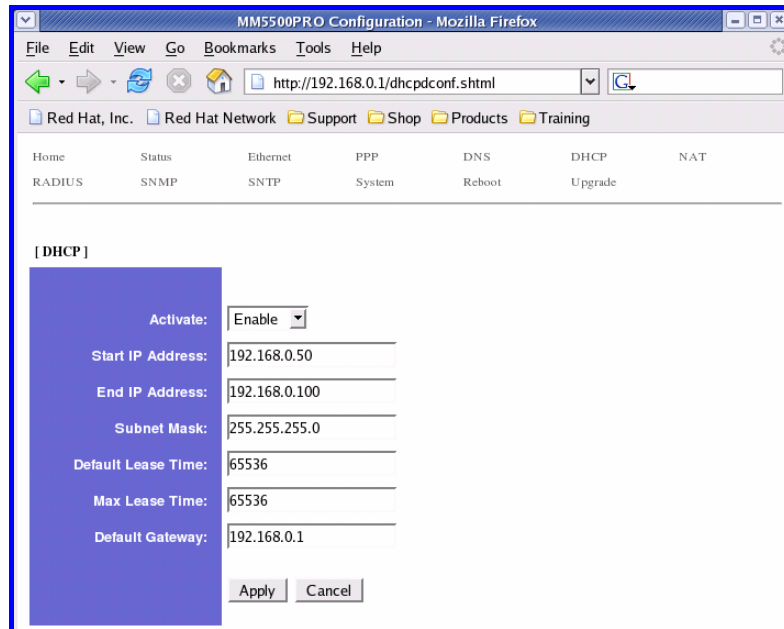
(4) "DNS" page shows the information of setting DNS IP Address.



[Figure 38. DNS Page]

ITEM	Description
1 st DNS IP Address	First DSN IP (Optional)
2 nd DNS IP Address	Second DSN IP (Optional)

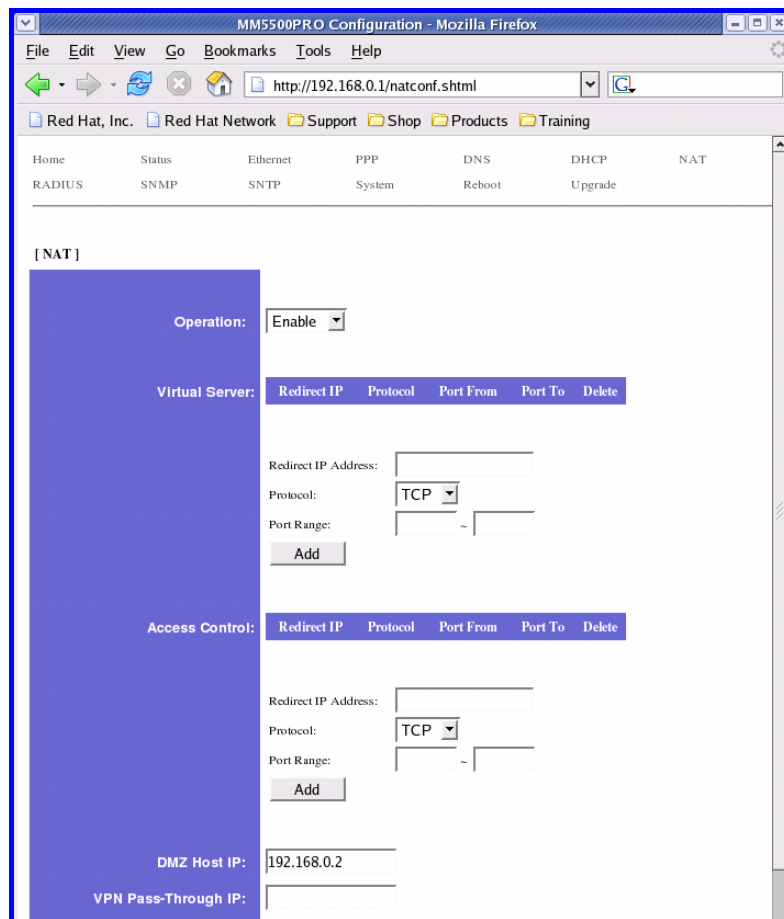
(5) "DHCP" page shows the information of setting DHCP.



[Figure 39. DHCP Page]

ITEM	Description
Activate	Enable/Disable: DHCP server on-off
Start IP Address	Start address local IP(start range)
End IP Address	End address local IP(End range)
Subnet Mask	Subnet mask IP Address
Default Lease Time	Default Time of assigning IP
Max Lease Time	Maximum Time of assigning IP
Default Gateway	Gateway IP Address

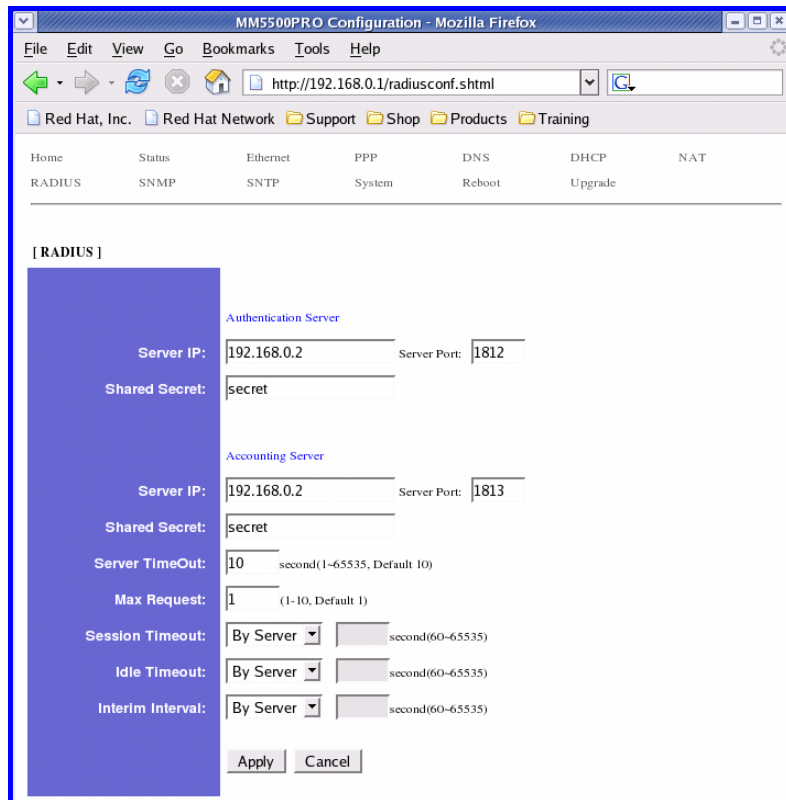
(6) "NAT" page shows the information of setting NAT.



[Figure 40. NAT Page]

ITEM	Description
Operation	Enable/Disable: NAT on-off
Virtual Sever	User can select/configure NAT option
Access Control	End address local IP(End range)
DMZ Host IP	Setting DMZ Host IP Address
VPN Pass-Through IP	VPN IP Address

(7) "RADIUS" page shows the information of setting RADIUS.

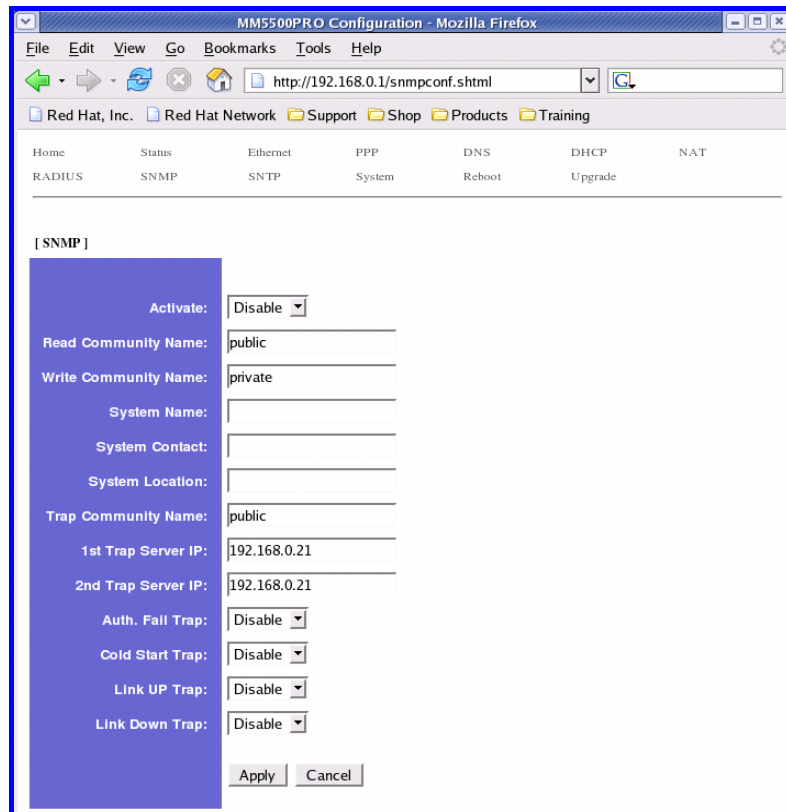


[Figure 41. RADIUS Page]

ITEM	Description
Server IP	Authentication Server IP & Port
Shared Secret	RADIUS Secret Key
Server IP	Accounting Server IP & Port
Shared Secret	Accounting Secret Key
Server TimeOut	Waiting Time of Accounting Server
Max Request	Repeat time of accounting request
Session Timeout	Available time of session status
Idle Timeout	Available time of Idle status

Interim Interval	Frequent time of accounting packet
------------------	------------------------------------

(8) "SNMP" page shows the information of setting SNMP.

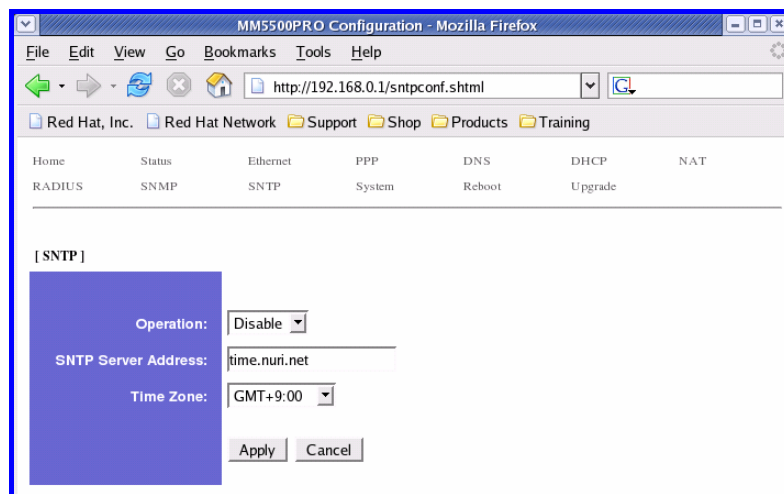


[Figure 42. SNMP Page]

ITEM	Description
Activate	Enable/Disable
Read Community Name	Setting Reading authority
Write Community Name	Setting Writing authority
System Name	Setting system name
System Contact	Setting system contact
System Location	Setting system location
Trap Community Name	Setting Trap community

1 st Trap Server IP	Setting 1 st Trap Server IP
2 nd Trap Server IP	Setting 2 nd Trap Server IP
Auth. Fall Trap	Warning message to Trap server
Cold Start Trap	First booting message to Trap server
Link UP Trap	Normal status message to Trap server
Link Down Trap	Abnormal status message to Trap server

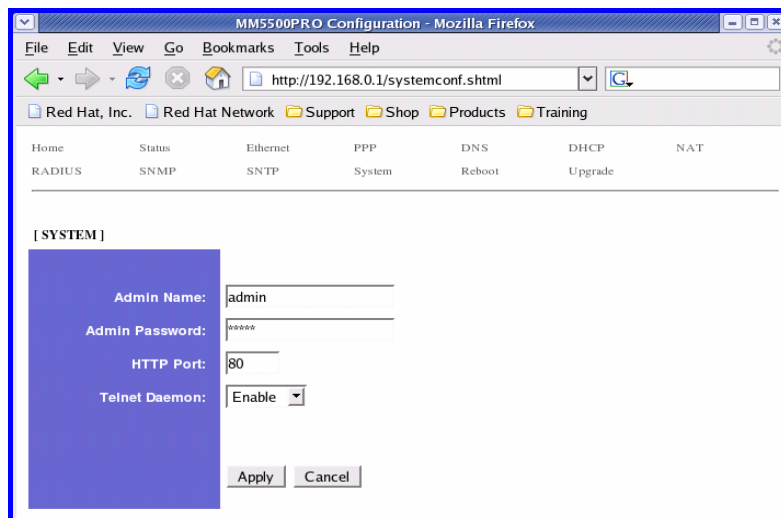
(9) "SNTP" page shows the information of setting SNTP.



[Figure 43. SNTP Page]

ITEM	Description
Operation	Enable/Disable: SNTP on-off
SNTP Sever Address	Setting SNTP server
Time Zone	Setting SNTP time zone

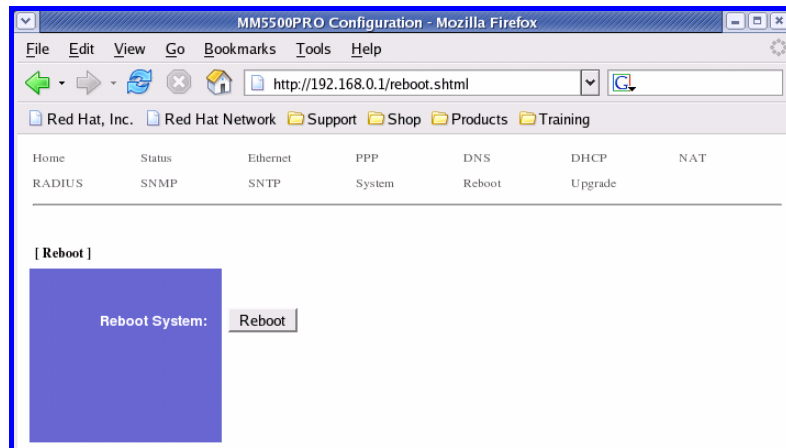
(10) "System" page shows the information of System.



[Figure 44. System Page]

ITEM	Description
Admin Name	Name of Administrator
Admin Password	Setting Admin password
HTTP Port	HTTP Port number
Telnet Daemon	Enable/Disable Telnet

(11) "Reboot" page makes MM-5500PRO reboot.



[Figure 45. Reboot Page]

ITEM	Description
Reboot System	Reboot MM-5500PRO

(All document finished)

Thank you.