Micronet®
Faster and Easier Networks

User's Manual

Wireless LAN Outdoor Bridge

Model No.: SP915G

http://www.micronet.info

Table of Contents

Package Contents

Before installing the product, please verify the following items in the package：

- Wireless LAN Outdoor Bridge
- Quick installation guide
- Manual CD
- RF cable
- Ethernet cable
- Console cable
- Power-over-Ethernet injector
- AC Power cable
- Accessories

Note: Using a power supply with a different voltage than the one included with the Outdoor Bridge will cause damage and void the warranty for this product.

Hardware Setup

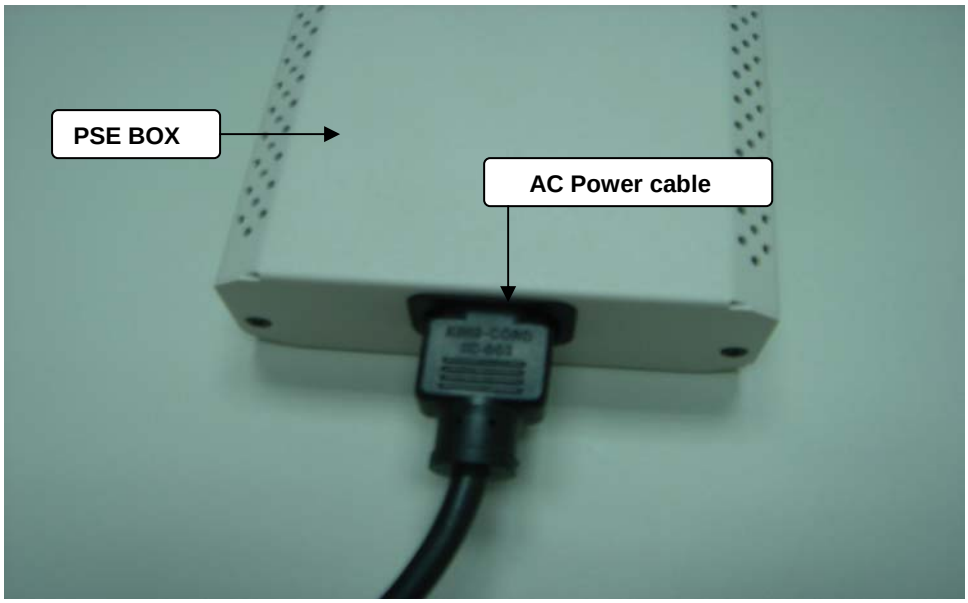
Ethernet & RS-232 Console Connector:

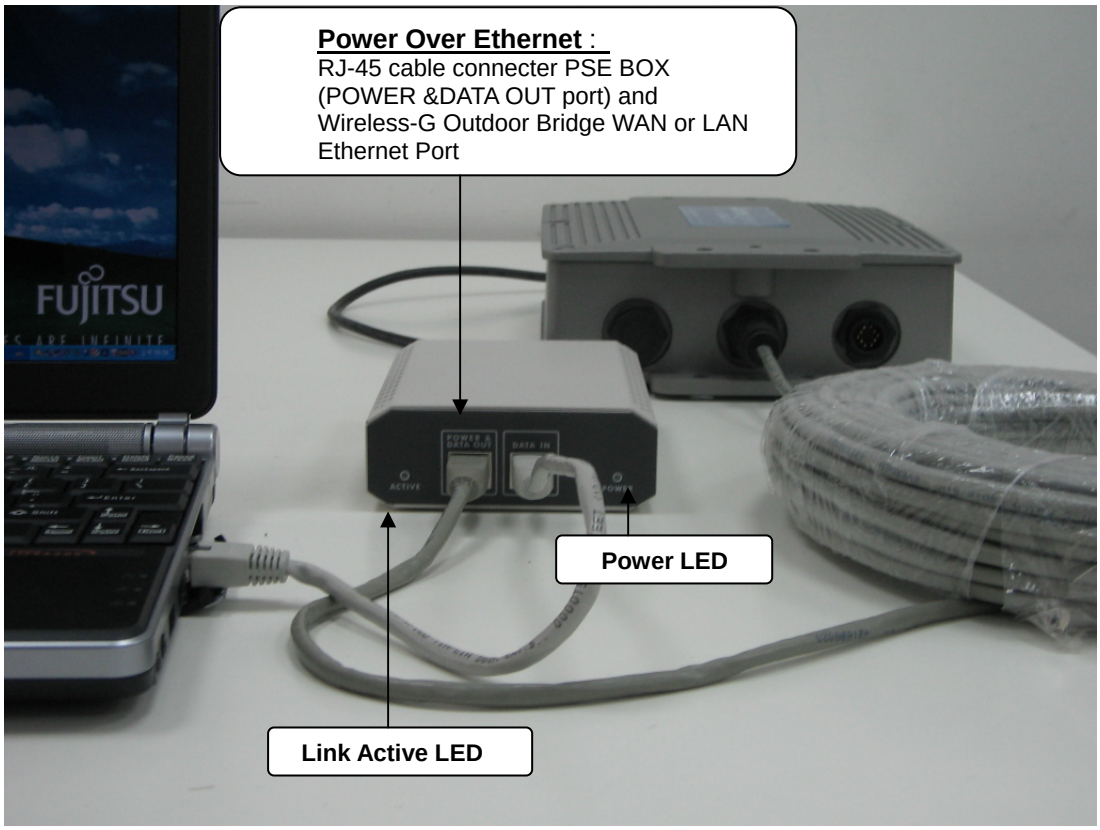
1. **Console Port** --- It is used for initial setup and configuration of the device

2. **LAN Port** --- It is used for connecting the enclosed PSE for Power Over Ethernet

3. **WAN Port** --- It used for connecting to ADSL for ISP

PSE BOX : for Power Over Ethernet (POE)





Minimum System Requirements

- Computers with Windows, Macintosh, or Linux-based operating systems with an installed Ethernet Adapter
- Internet Explorer version 6.0 or Netscape Navigator version 7.0 and above

Introduction

The SP915G Outdoor Bridge covers a long operating distance, providing an 802.11b/g outdoor WLAN which enables users to access the Internet or an organization's network.

At up to five times the speed of previous wireless devices, you can work faster and more increasing productivity efficiently. With SP915G, bandwidth-intensive applications like graphics or multimedia will benefit significantly because large files are able to move across the network quickly.

SP915G can be configured in seven different modes (Wireless WAN, Access Point, Repeater (WDS), Bridge, Client Bridge, Point-To-Point, Point-To-Multi-Point), it offers 128-bit encryption, WPA and 802.1X authentication when used with a RADIUS server, MAC address access control, and additional security features.

It has Dual Radio functionality for simultaneous AP and Bridge operations for backhaul applications. It is suitable for manufacturing plants, industrial sites, military bases, universities, hotels, airports and golf courses.

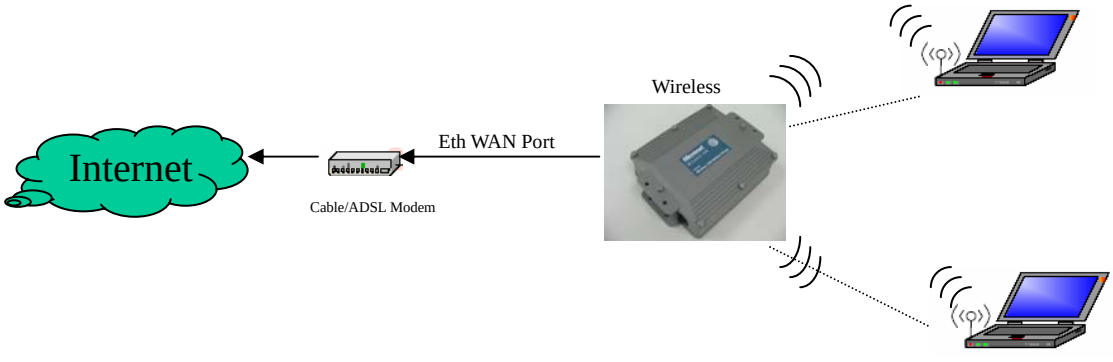
Features and Benefits

- Support IEEE 802.11b and 802.11g wireless standards
- Provide dual radio to bridge wireless networks
- Support multiple operation modes for access point, gateway, bridge and repeater
- Provide up to 100mW transmit power
- Support power over Ethernet for deployment flexibility
- Compliant with IEEE 802.11d regulatory domain
- Support 64/128-bit WEP encryption, WPA, 802.1x and Access Control List for security
- Support SNMP/Web/Console/Telnet for network management
- Built-in 20KA lightning protection
- Weather-proof and rugged enclosure for stringent outdoor environment

Four Operational Modes

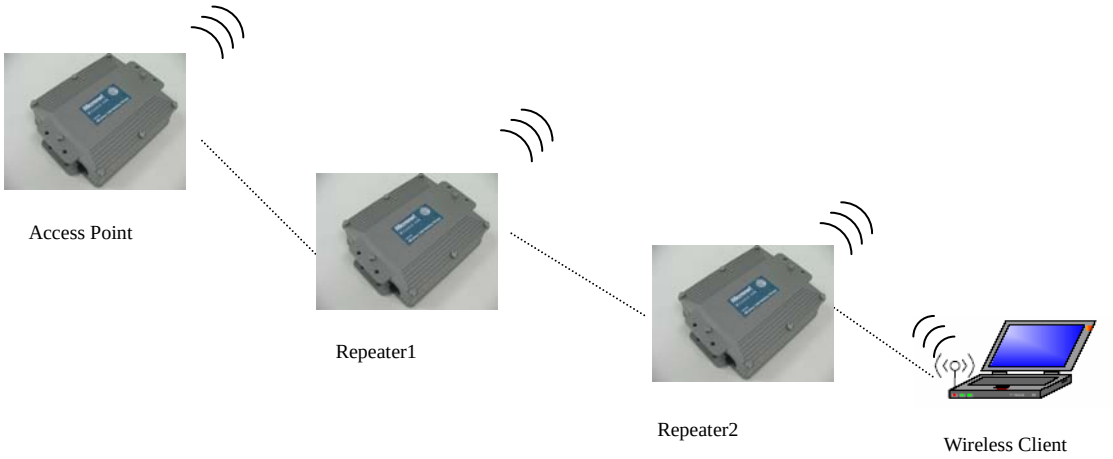
AP Mode

AP Mode



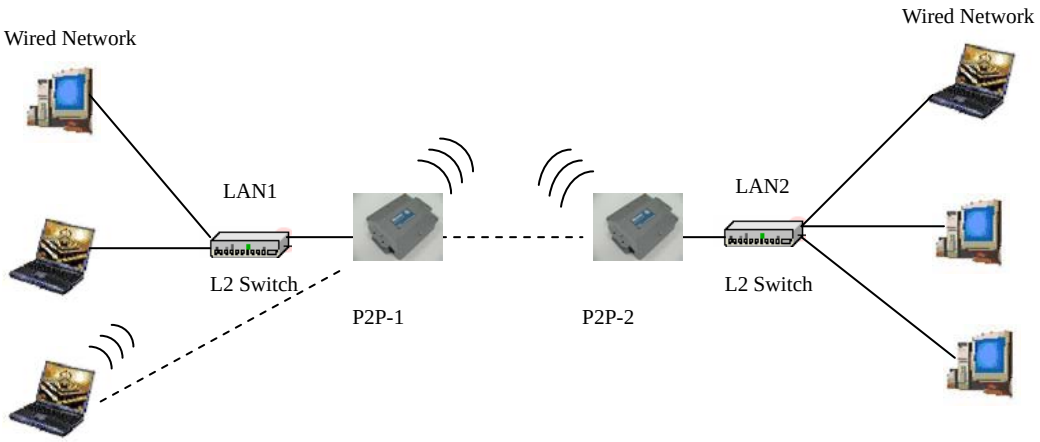
Repeater Mode

Repeater Mode



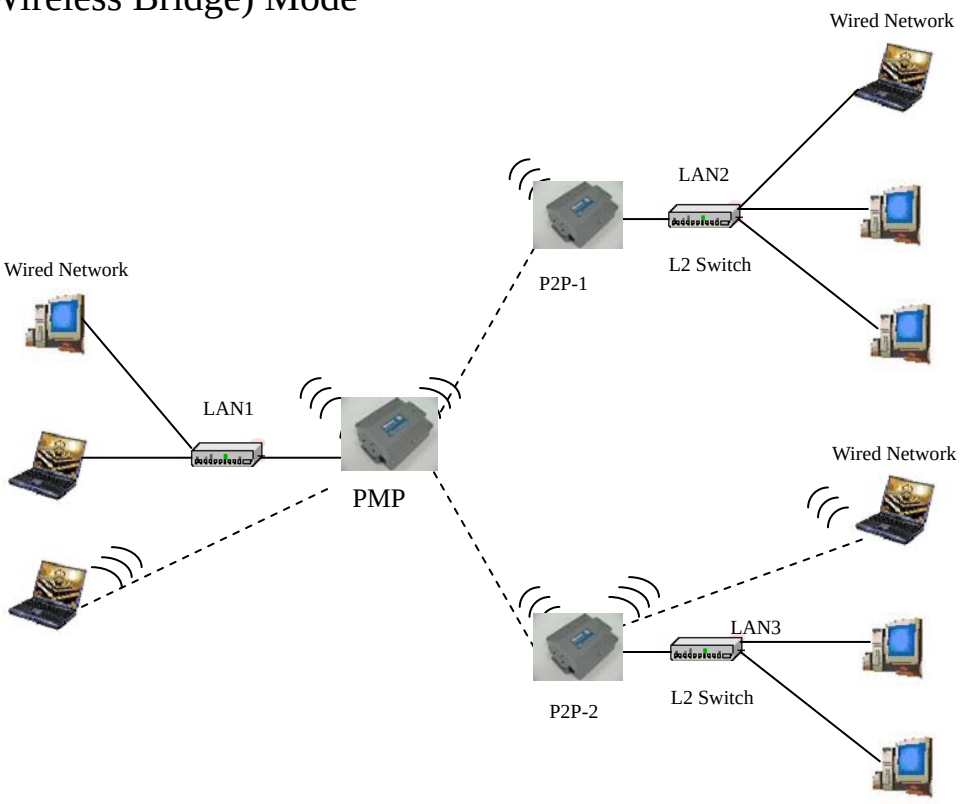
Point to Point Mode

Point to Point (P2P : Wireless Bridge) Mode



Point to Multi Point Mode

PMP (Wireless Bridge) Mode



Using the Configuration Menu

To configure the OUTDOOR BRIDGE, use a computer which is connected to the OUTDOOR BRIDGE with an Ethernet cable (see the Network Layout diagram).

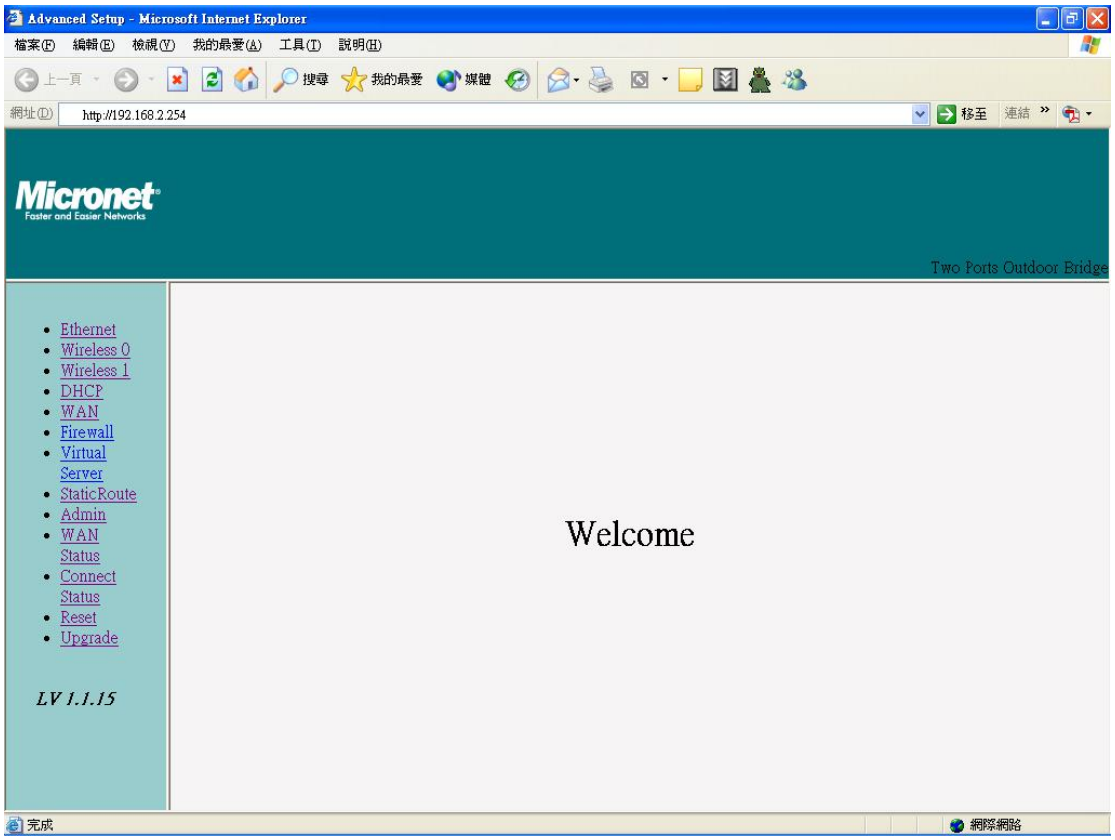
First, disable the **Access the Internet using a proxy server** function. To disable this function, go to **Control Panel > Internet Options > Connections > LAN Settings** and uncheck the enable box.

Start your web browser program (Internet Explorer, Netscape Navigator) . Type the IP address and http port of the OUTDOOR BRIDGE in the address field
(http://192.168.2.254) and press **Enter**. Make sure that the IP addresses of the OUTDOOR BRIDGE and your computer are in the same subnet.

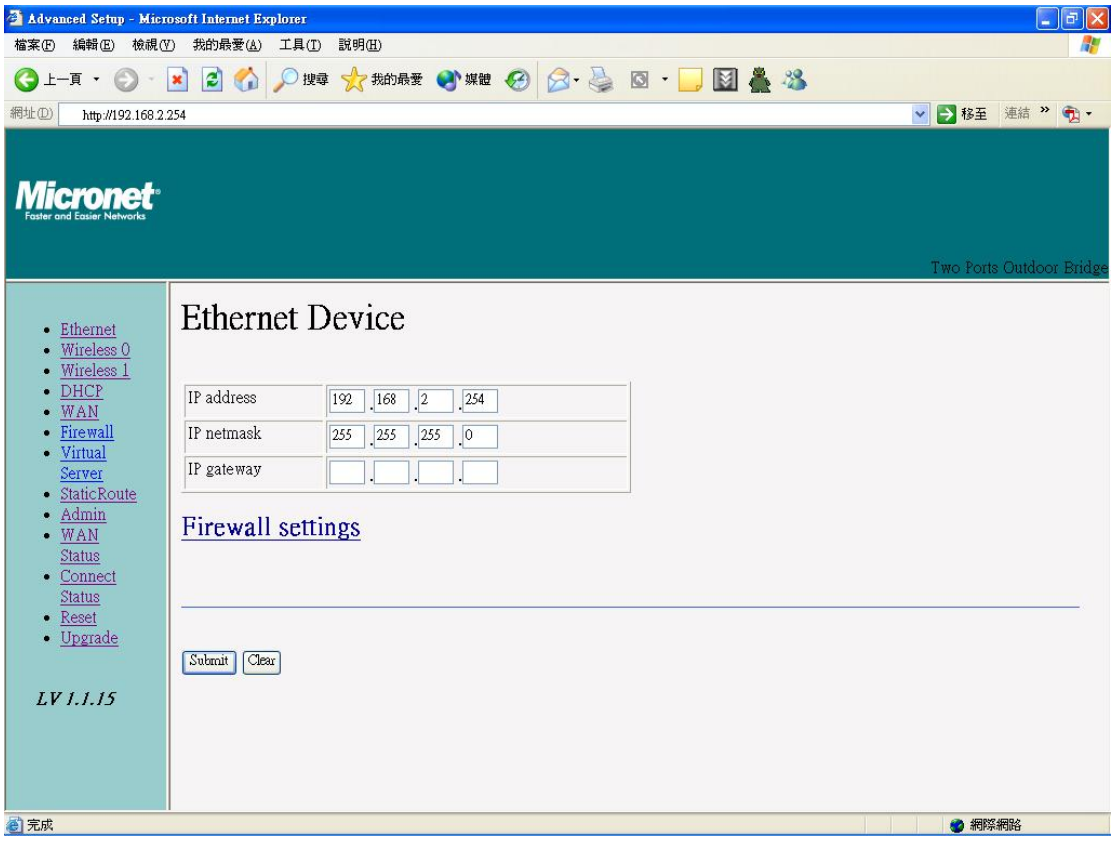
A screen will pop up and request you to enter user name and password. The default user name is “**admin**”, the default password is “**default**”

After the connection is established, you will see the user identification window as shown.

Note: If you have changed the default IP address assigned to the OUTDOOR BRIDGE, make sure to enter the correct IP address.


Advanced Setup - Microsoft Internet Explorer
檔案(F) 編輯(E) 檢視(V) 我的最愛(A) 工具(T) 說明(H)
上一頁 搜尋 我的最愛 媒體
網址(D) http://192.168.2.254
移至 連結
Micronet
Faster and Easier Networks
Two Ports Outdoor Bridge
Ethernet
Wireless 0
Wireless 1
DHCP
WAN
Firewall
Virtual Server
StaticRoute
Admin
WAN Status
Connect Status
Reset
Upgrade
LV 1.1.15
Welcome
完成
網際網路

Device IP Setting → Ethernet



LAN is short for Local Area Network. This is considered your internal network. These are the IP settings of the LAN interface for the OUTDOOR BRIDGE. These settings may be referred to as private settings. You may change the LAN IP address if needed.

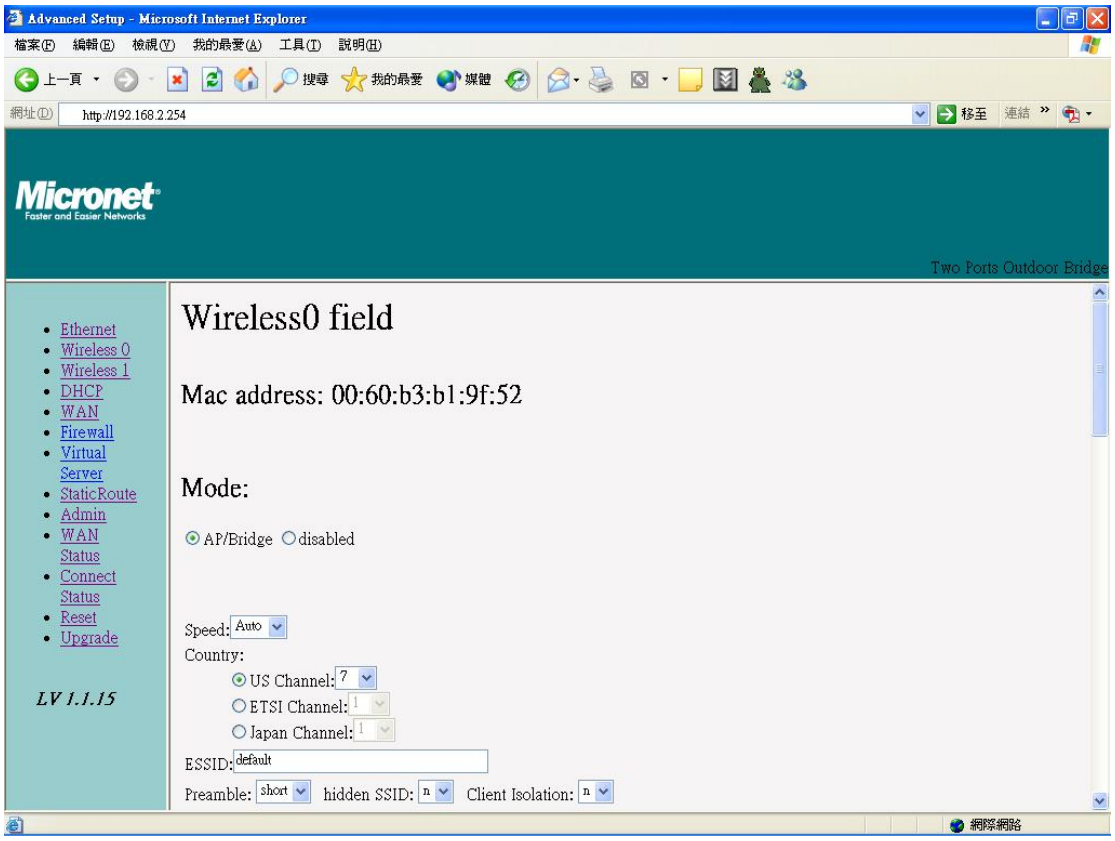
IP address: The default IP address is 192.168.2.254. Assign a static IP address that is within the IP address range of your network.

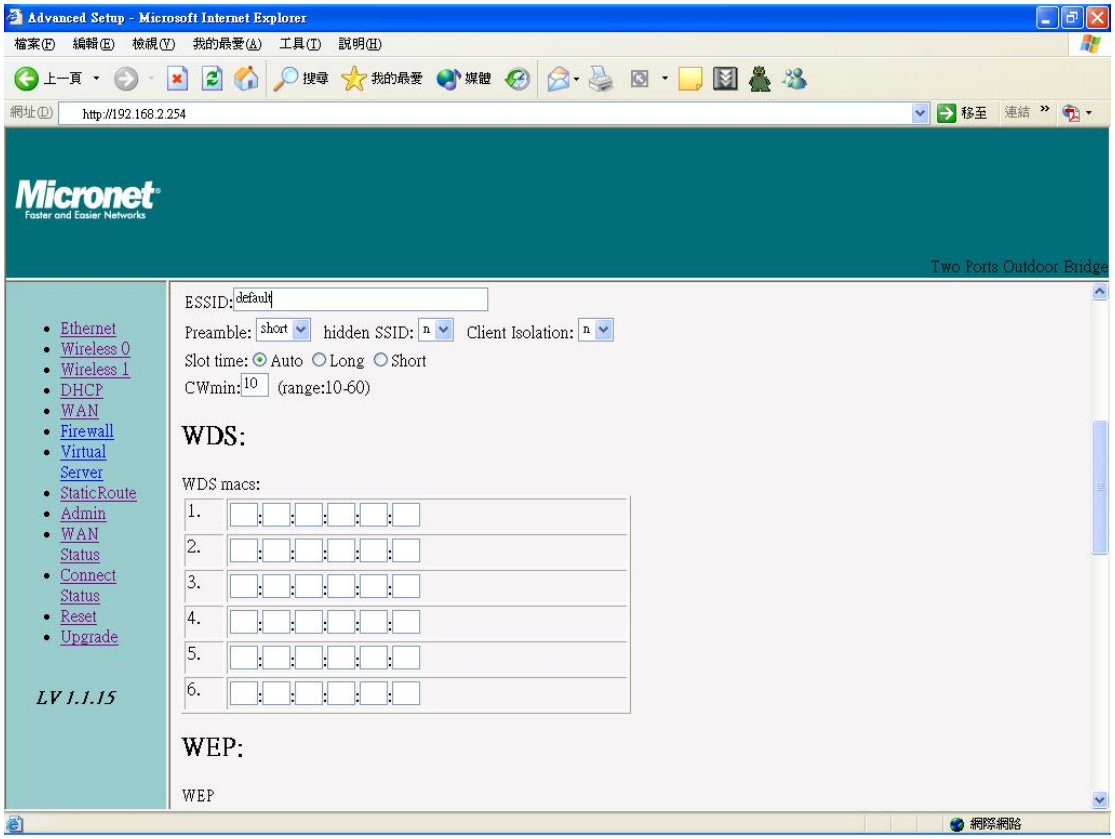
IP netmask: Enter the subnet mask. All devices in the network must share the same subnet mask..

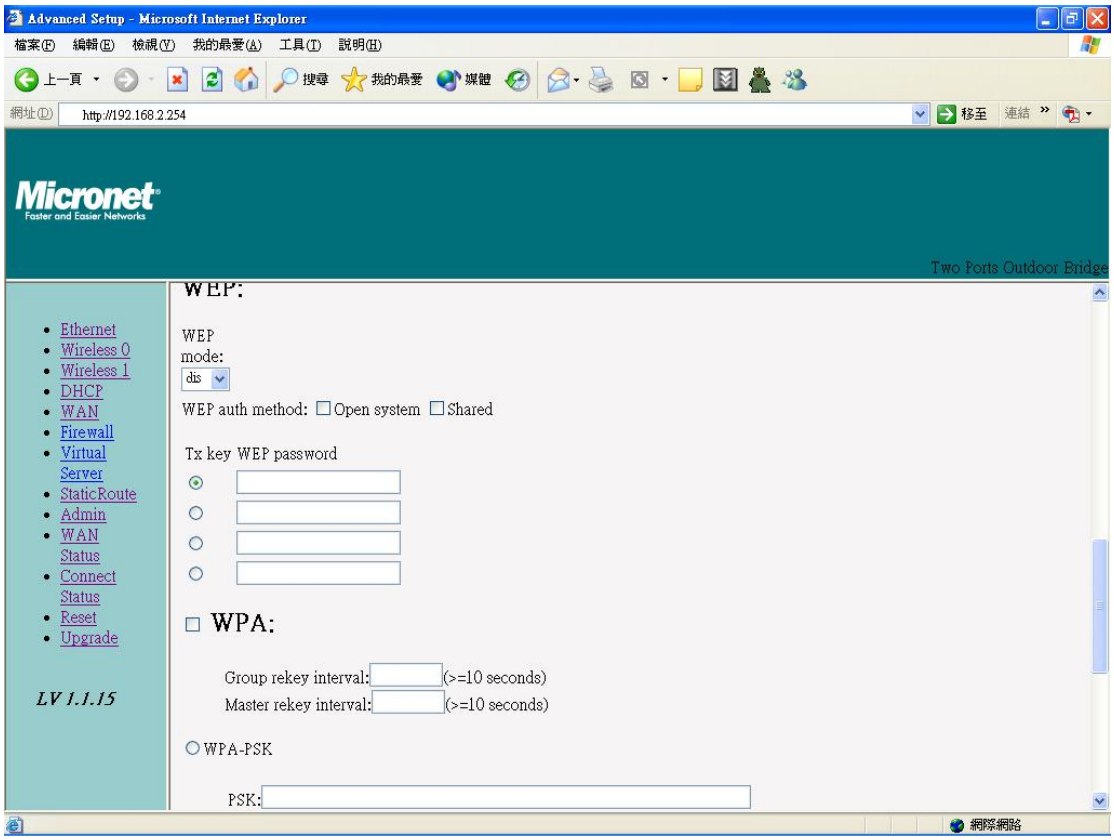
IP gateway: Enter the IP address of the gateway in your network.

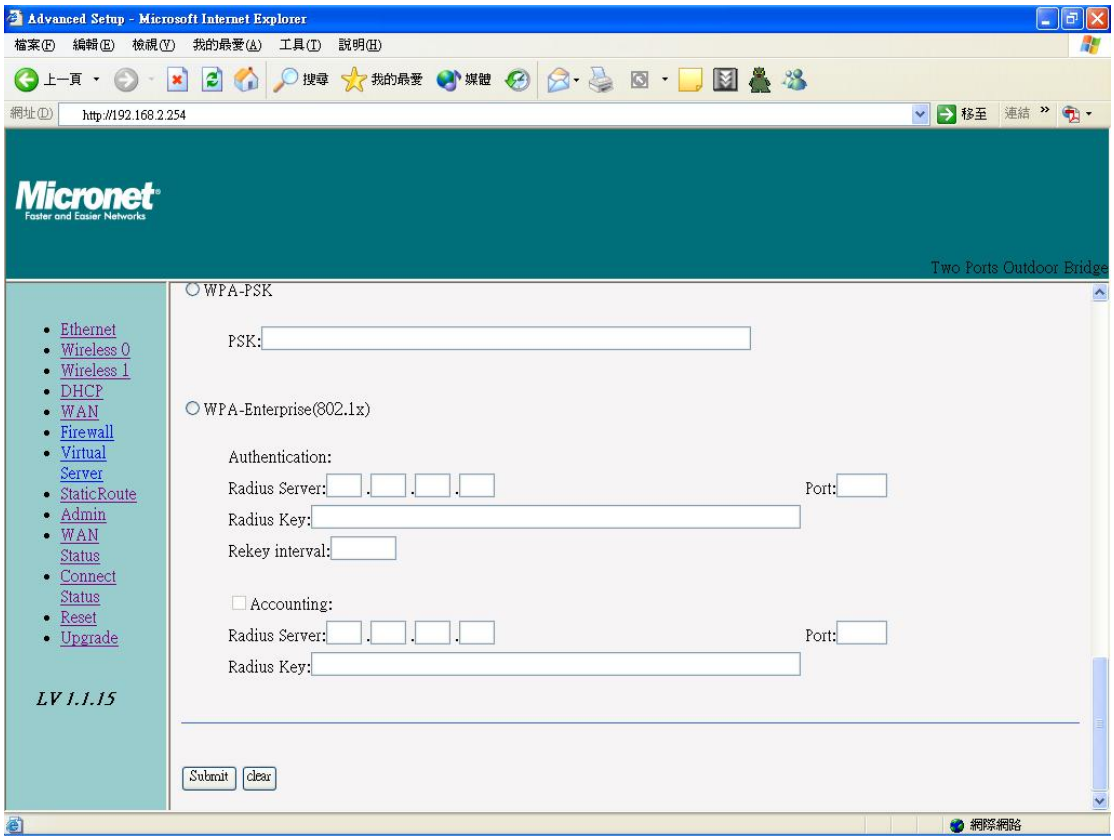
(Note: If you change any item, click “submit” to store the value. Or click “clear” to restore previous value. To make settings working click **Submit**-> **Reset**-> **Restart**.)

AP Setting --> Wireless0 or Wireless1






Advanced Setup - Microsoft Internet Explorer
http://192.168.2.254
Micronet
Faster and Easier Networks
Two Ports Outdoor Bridge
Ethernet
Wireless 0
Wireless 1
DHCP
WAN
Firewall
Virtual Server
StaticRoute
Admin
WAN Status
Connect Status
Reset
Upgrade
LV 1.1.15
WEP:
WEP mode:
dis
WEP auth method: Open system Shared
Tx key WEP password
WPA:
Group rekey interval: (>=10 seconds)
Master rekey interval: (>=10 seconds)
WPA-PSK
PSK: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Virtual Server
StaticRoute
Admin
WAN Status
Connect Status
Reset
Upgrade
LV 1.1.15
WPA-PSK
PSK:
WPA-Enterprise(802.1x)
Authentication:
Radius Server: Port:
Radius Key:
Rekey interval:
Accounting:
Radius Server: Port:
Radius Key:
Submit
clear

Mode: AP/Bridge or Disable Wireless. Select AP/Bridge if you want to set wireless in AP mode.

Speed: The speed are Auto, 1Mbps, 2Mbps, 5.5Mbps, 6Mbps, 9Mbps,11Mbps, 12Mbps, 18Mbps, 24Mbps, 36Mbps, 48Mbps, 54Mbps.

Channel: You can select 1 of 3 country setting (US: Channel 1 ~ 11, ETSI: Channel 1 ~13, Japan: Channel 1 ~ 14)(Note: Channel 14 only 802.11b mode). All devices on the network must share the same channel. (Note: The wireless adapters will automatically scan and match the wireless setting.)

ESSID: Service Set Identifier (SSID) is the name designated for a specific wireless local area network (WLAN). The SSID's factory default setting is **default**. The SSID can be easily changed to connect to an existing wireless network or to establish a new wireless network.

Preamble: Pull down select "**long**" or "**short**".

hidden SSID: Enable or Disable SSID broadcast. Pull down select "**y**" Disable SSID broadcast or "**n**" Enable SSID broadcast. Disable this feature broadcasts the SSID across the network.

Client Isolation: Pull down "**y**" isolation or "**n**" none isolation

Encryption

The OUTDOOR BRIDGE has the newest, strongest and most advanced security features available today. When used with other 802.11 WPA (Wi-Fi Protected Access) compatible products in a network with a RADIUS server, the security features include:

WPA & 802.1x represent the first line of defense against network intrusion. In the authentication process the RADIUS server verifies the identity of the client attempting to connect to the network. Unfamiliar clients will be denied access. **EAP**(Extensible Authentication Protocol) is available through the Windows XP Operating System. You will need to use the same type of EAP protocol on all

the devices in your network when using the 802.1x feature.

WPA (Wi-Fi Protected Access) authorizes and identifies users based on a secret key that changes automatically at regular intervals. **WPA** uses **TKIP** (**Temporal Key Integrity Protocol**) to change the temporal key every 10,000 packets (a packet is a kind of message transmitted over a network.) This ensures much greater security than the standard WEP security. (By contrast, the previous WEP encryption implementations required the keys to be changed manually.)

WPA-PSK allows home users that will not incorporate a RADIUS server in their network, access to WPA security. Utilizing the **Pre-Shared Key mode** of WPA, the OUTDOOR BRIDGE will obtain a new security key every time it connects to the 802.11 network. You only need to input your encryption information once in the configuration menu. No longer will you have to manually input a new WEP key frequently to ensure security. With the OUTDOOR BRIDGE and WPA-PSK, you will automatically receive a new key every time you connect, vastly increasing the safety of your communication.

Set Encryption to Open System

WEP auth method: Select **Open System** to communicate the key across the network.
WEP mode: Select **64, 128** bits.
Key Type: 64 bit support WEP password 10 bit HEX(Hexadecimal digits consist or the numbers 0-9 and the letters A-F) code. 128 bit support WEP password 26 bit HEX code.(**Note :**Currently version does not support ASIC code.)
Valid Key: Select one of the keys in the Key table to be the active key.
Key Table: Enter up to four encryption keys here.

Set Encryption to Shared Key

WEP auth method: Select **Shared Key** to communicate the key across the network.
WEP mode: Select **64, 128** bits.
Key Type: 64 bit support WEP password 10 bit HEX(Hexadecimal digits consist or the numbers 0-9 and the letters A-F) code. 128 bit support WEP

password 26 bit HEX code.(**Note :**Currently version does not support ASIC code.)
Valid Key: Select one of the keys in the Key table to be the active key.
Key Table: Enter up to four encryption keys here.

Set Encryption to Open System/Shared Key

WEP auth method: Select **Open System** and **Shared Key** to communicate the key across the network.
WEP mode: Select **64, 128** bits.
Key Type: 64 bit support WEP password 10 bit HEX(Hexadecimal digits consist or the numbers 0-9 and the letters A-F) code. 128 bit support WEP password 26 bit HEX code.(**Note :**Currently version does not support ASIC code.)
Valid Key: Select one of the keys in the Key table to be the active key.
Key Table: Enter up to four encryption keys here

Set Encryption to WPA-PSK

Authentication: WEP auth method select **dis** then select **WPA** and check **WPA-PSK**
PSK: Enter a passphrase that will be shared by all devices using WPA-PSK on the network.

Set Encryption to WPA-Enterprise(802.1x)

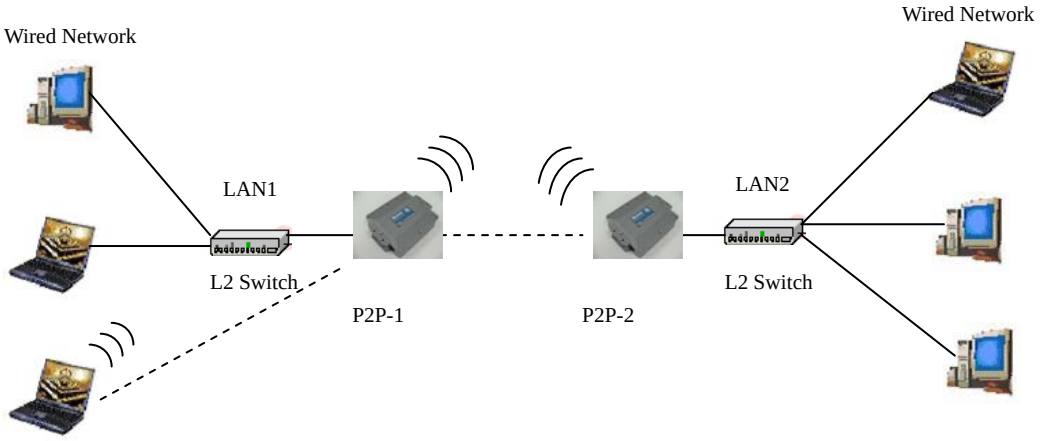
Authentication: WEP auth method select **dis** then select **WPA** and **WPA-Enterprise(802.1x)**
RADIUS Server: Enter the IP address of the RADIUS server.
Authentic Port: 1812 is the port number dedicated to the authentication function of the RADIUS server.
Accounting: Enter the IP address of the RADIUS server and port number dedicated to RADIUS accounting. The RADIUS server uses accounting to keep track of user login sessions.
Radius Key: Enter the secret Key that is required of all devices to communicate with the RADIUS server.

(Note: If you change any item, click “submit” to store the value. Or click “clear”

to restore previous value. To make settings working click **Submit**-> **Reset**-> **Restart**.)

Point to Point Mode Setting → Wireless0 or Wireless1

Point to Point (P2P : Wireless Bridge) Mode



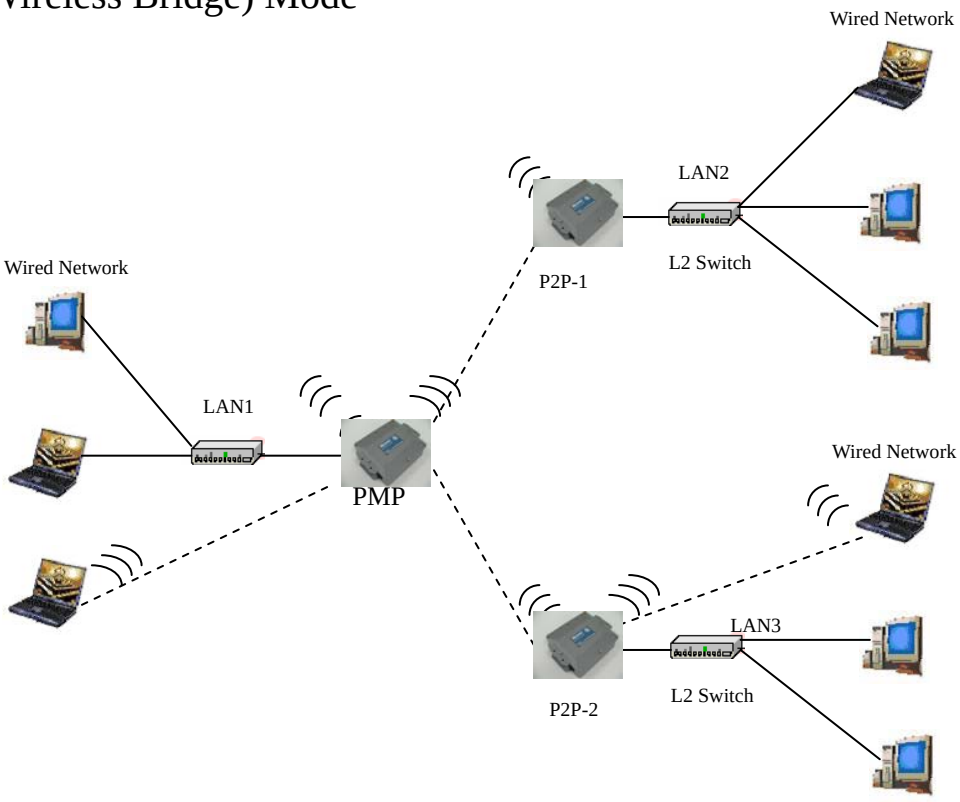
PtP mode setting is like AP mode setting, but encryption only WEP encryption method can select. When wireless0 or wireless1 in PtP mode will also do AP function, suggest disable SSID broadcast (Pull down select "**y**" in **hidden SSID** to disable SSID broadcast) and set WEP encryption.

e.g.
P2P-1 Wireless0 Mac: 00.01.02.03.04.05 Wireless1 Mac: 00.01.02.03.04.06
P2P-2 Wireless0 Mac: 00.01.02.03.04.07 Wireless1 Mac: 00.01.02.03.04.08
Set P2P-1 Wireless 1 in AP/Bridege Mode, and type P2P-2 Wireless1 Mac: 00.01.02.03.04.08 in WDS macs fields. Then set WEP encryption, and disable WPA encryption. Pull down select "**y**" in **hidden SSID** to disable SSID broadcast.
Set P2P-2 Wireless1 in AP/Bridege Mode, and type P2P-1 Wireless1 Mac: 00.01.02.03.04.06 in WDS macs fields. Then set channel the same as P2P-1

Wireless1.Set WEP encryption the same as P2P-1 Wireless1.Dsiable P2P-2 Wireless1 WPA encryption. Pull down select “**y**” in **hidden SSID** to disable SSID broadcast.

Point to Multi Point Mode Setting → Wireless0 or Wireless1

PMP (Wireless Bridge) Mode



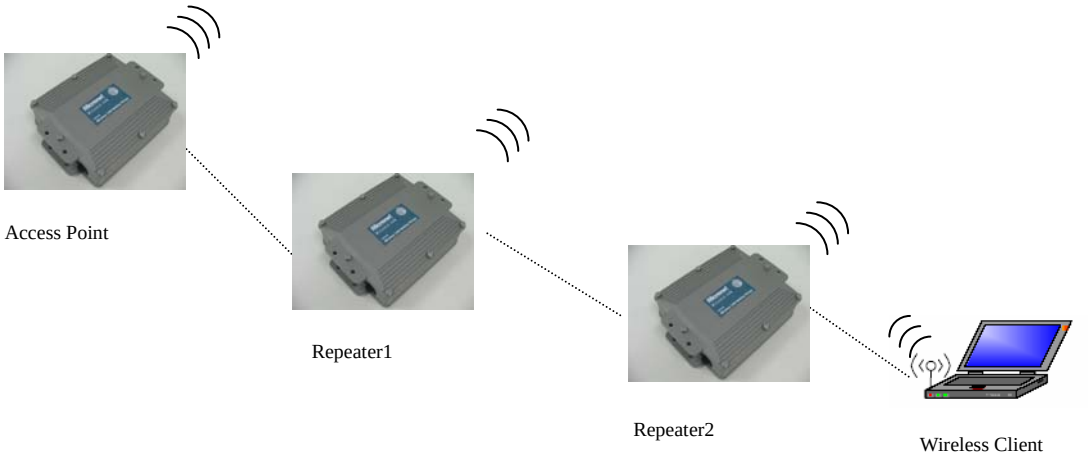
PtMP mode setting is like AP mode setting, but encryption only WEP encryption method can select. When wireless0 or wireless1 in PtMP mode will also do AP function, suggest disable SSID broadcast(Pull down select “**y**” in **hidden SSID** to disable SSID broadcast) and set WEP encryption.

e.g PMP Wireless0 Mac: 00.01.02.03.04.05 Wireless1 Mac: 00.01.02.03.04.06
P2P-1 Wireless0 Mac: 00.01.02.03.04.07 Wireless1 Mac: 00.01.02.03.04.08
P2P-2 Wireless0 Mac: 00.01.02.03.04.09 Wireless1 Mac: 00.01.02.03.04.0A
Set PMP Wireless1 in AP/Bridege Mode, and type P2P-1 Wireless1 Mac:

00.01.02.03.04.08 and P2P-2 Wireless1 Mac: 00.01.02.03.04.0A in WDS macs fields.
Then set WEP encryption, and disable WPA encryption. Pull down select “**y**” in **hidden SSID** to disable SSID broadcast.
Set P2P-1 Wireless1 in AP/Bridege Mode, and type PMP Wireless1 Mac: 00.01.02.03.04.06 in WDS macs fields. Then set channel the same as PMP Wireless1.Set WEP encryption the same as PMP Wireless1.Dsiable P2P-1 Wireless1
WPA encryption. Pull down select “**y**” in **hidden SSID** to disable SSID broadcast.
Set P2P-2 Wireless1 in AP/Bridege Mode, and type PMP Wireless1 Mac: 00.01.02.03.04.06 in WDS macs fields. Then set channel the same as PMP Wireless1.Set WEP encryption the same as PMP Wireless1.Dsiable P2P-2 Wireless1 WPA encryption. Pull down select “**y**” in **hidden SSID** to disable SSID broadcast.

Repeater Mode Setting → Wireless0 or Wireless1

Repeater Mode



Repeater mode setting is like AP mode setting, but encryption only WEP encryption method can select.

e.g AP Wireless0 Mac: 00.01.02.03.04.05 Wireless1 Mac: 00.01.02.03.04.06
Repeater1 Wireless0 Mac: 00.01.02.03.04.07 Wireless1 Mac: 00.01.02.03.04.08
Repeater2 Wireless0 Mac: 00.01.02.03.04.09 Wireless1 Mac: 00.01.02.03.04.0A
Set AP Wireless1 in AP/Bridege Mode, and type Repeater1 Wireless0 Mac: 00.01.02.03.04.07 in WDS macs fields.Then set WEP encryption, and disable WPA encryption.
Set Repeater1 Wireless0 in AP/Bridege Mode, and type AP Wireless1 Mac: 00.01.02.03.04.06 in WDS macs fields. Then set channel the same as AP Wireless1.Set WEP encryption the same as AP Wireless1.Dsiable Repeater1 Wireless0
WPA encryption. Set Repeater1 Wireless1 in AP/Bridege Mode, and type Repeater2 Wireless0 Mac: 00.01.02.03.04.09 in WDS macs fields. Set WEP encryption the same as AP Wireless1.Dsiable Repeater1 Wireless1 WPA encryption.
Set Repeater2 Wireless0 in AP/Bridege Mode, and type Repeater1 Wireless1

Mac: 00.01.02.03.04.08 in WDS macs fields. Then set channel the same as Repeater1 Wireless1.Set WEP encryption the same as AP Wireless1.Dsiable Repeater2 Wireless0
WPA encryption.

Dual Radio Setting For Simultaneous Operation

AP and Bridge

e.g. Wireless0 do AP Setting as page 11 and Wireless1 do Bridge setting as page 17 (PtP Setting) or page 18 (PtMP setting). Wireless0 and Wireless1 can do different Setting such as different channel and different Encryption

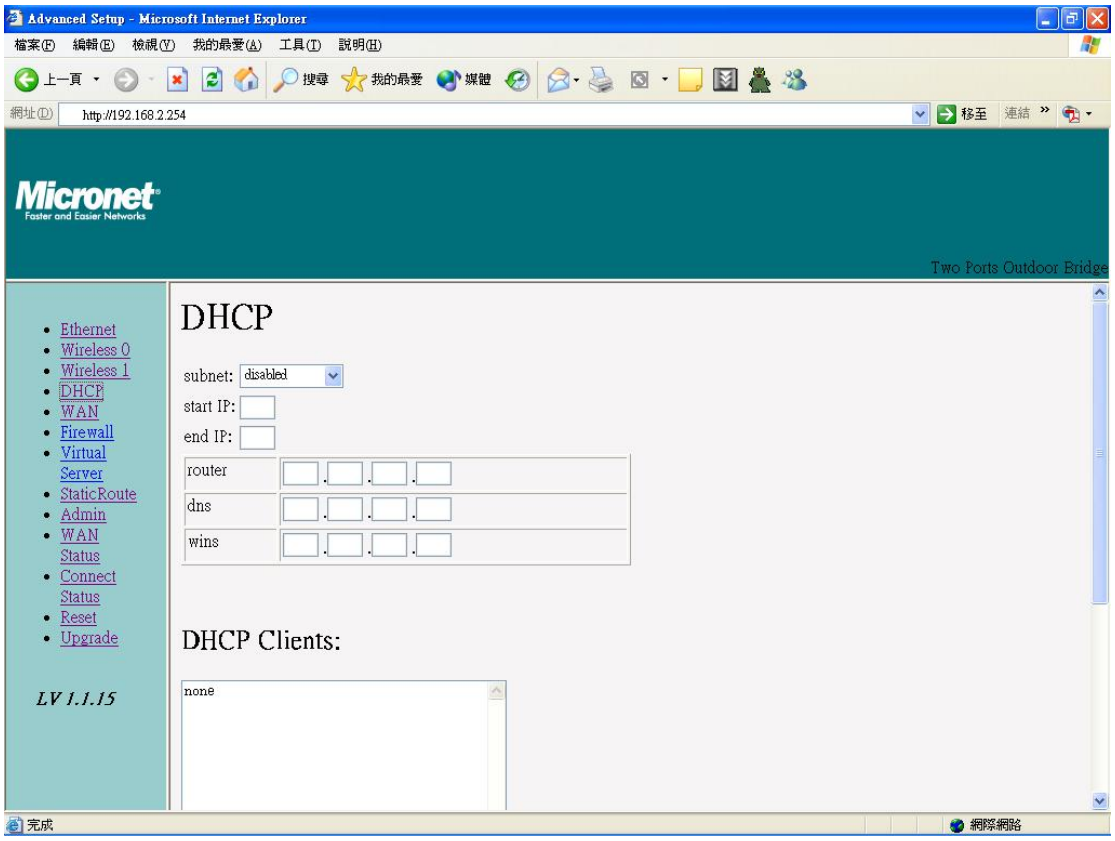
AP and AP

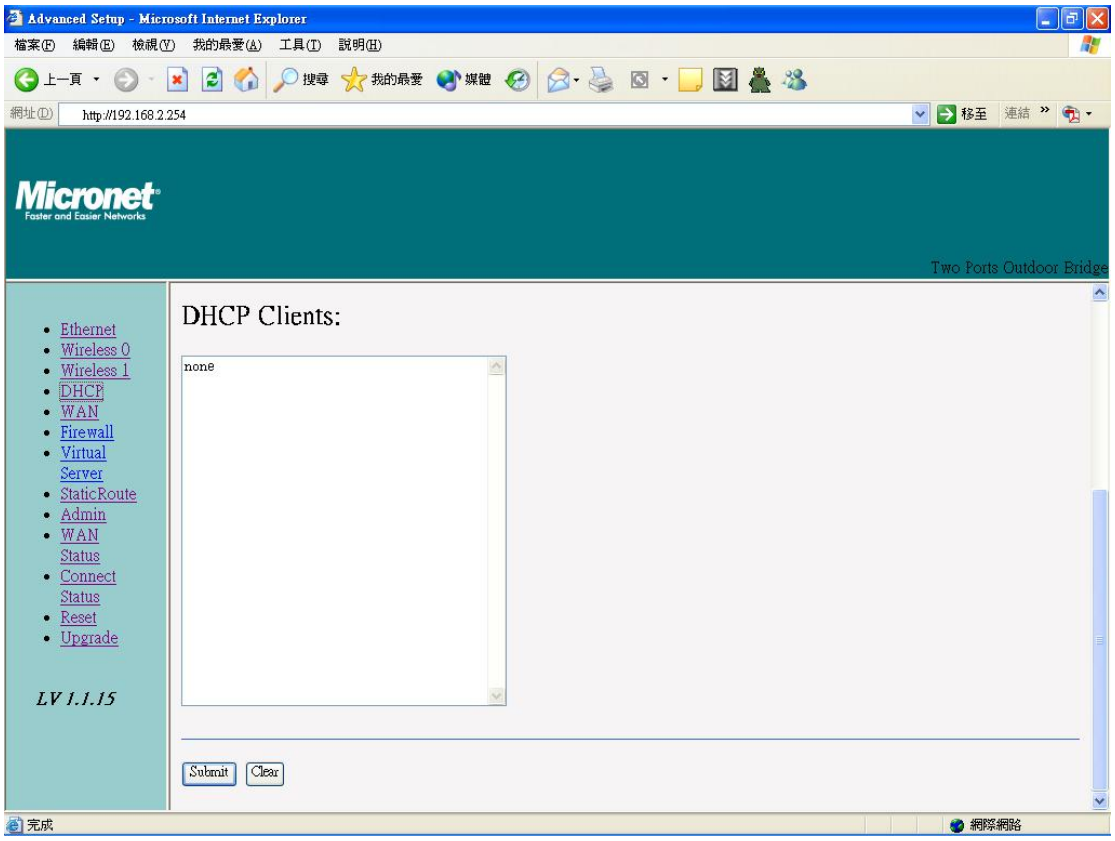
Wireless0 and Wireless1 do AP Setting as page 11. Wireless0 and Wireless1 can do different Setting such as different channel and different Encryption.

Bridge and Bridge

Wireless0 and Wireless1 do Bridge setting as page 18 (PtP Setting) or page 19 (PtMP setting). Wireless0 and Wireless1 can do different Setting such as different channel and different Encryption

DHCP Server Setting → DHCP





DHCP Server Control: Dynamic Host Configuration Protocol assigns dynamic IP addresses to devices on the network. This protocol simplifies network management and allows new wireless devices to receive IP addresses automatically without the need to manually assign new IP addresses.

Select Subnet on device IP(Such as 192.168.2.254) to allow the OUTDOOR BRIDGE to function as a DHCP server.

start IP: Input the first IP address available for assignment in your network.

end IP: Input the end IP address available for assignment in your network.

router: Input device IP

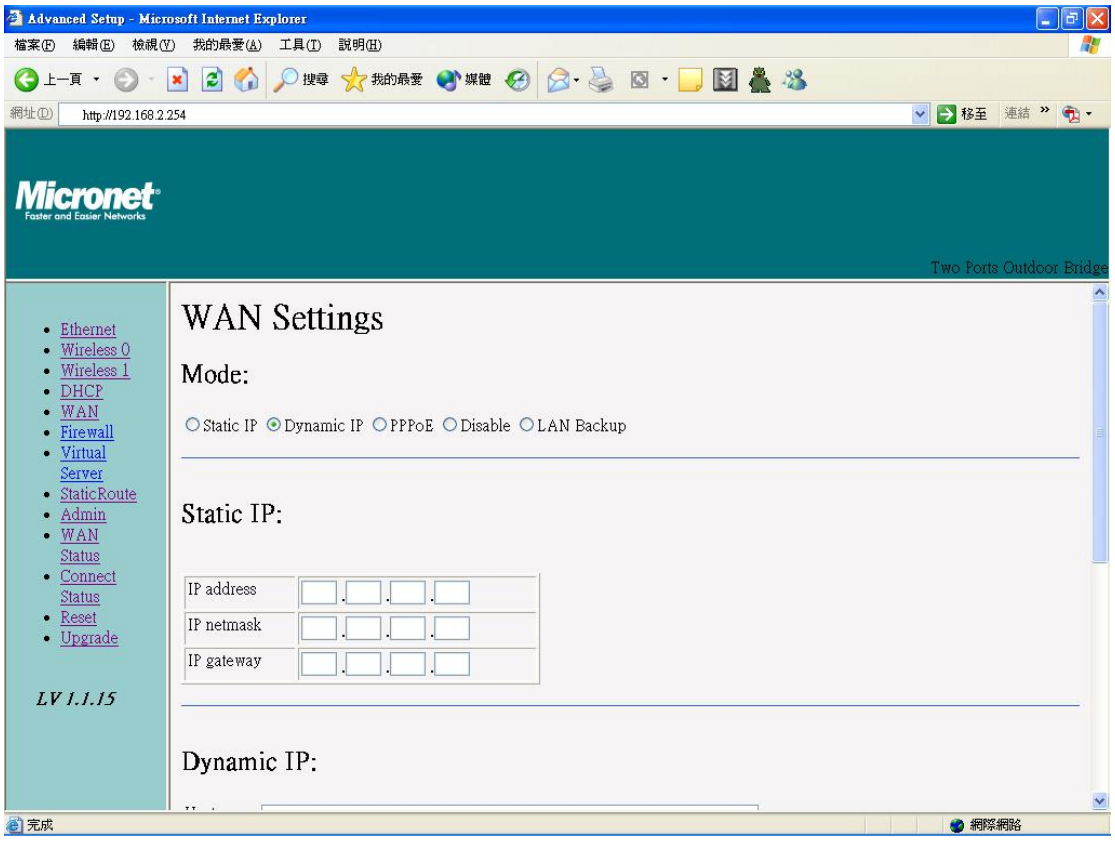
dns: Input your ISP DNS.

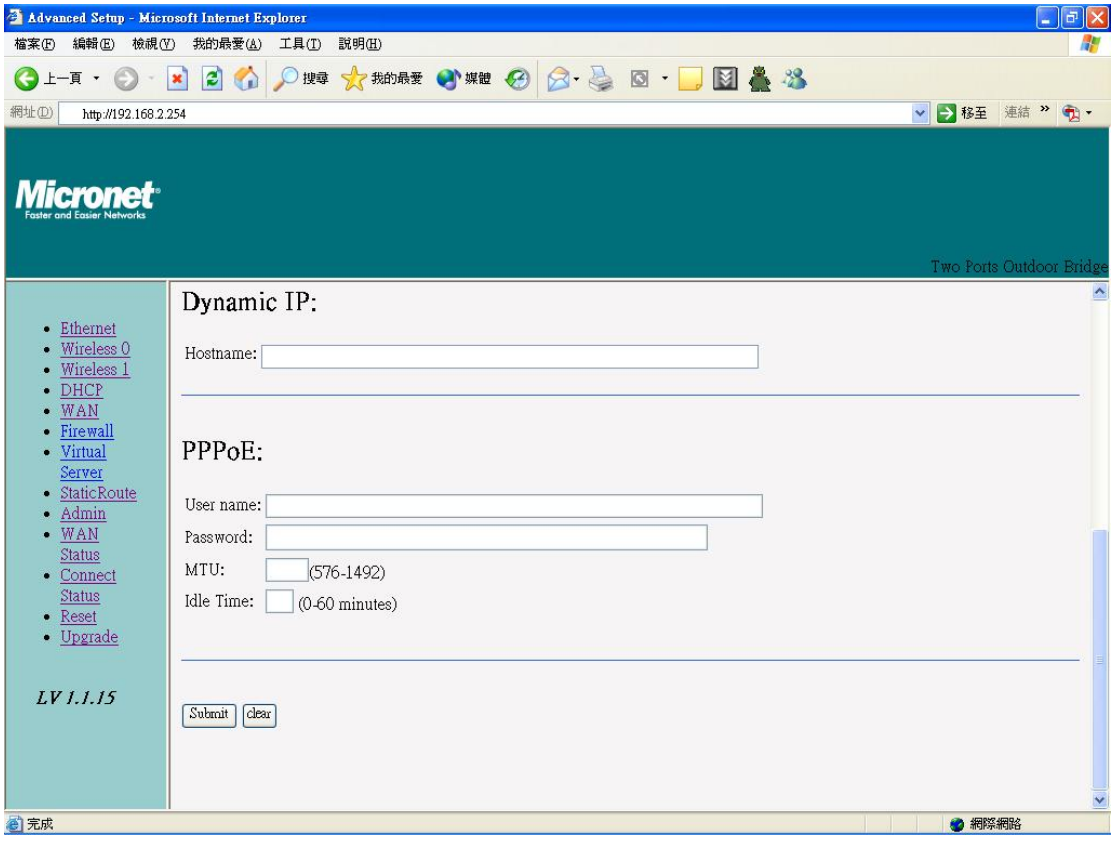
wins: Input wins server IP

DHCP Clients show the client IP and client MAC setting.

(e.g. If your device ip is 192.168.2.254, then start ip is 10 and end ip is 100. System will asign ip from 192.168.2.10 to 192.168.2.100 to client.)
(Note: If you change any item, click “submit” to store the value. Or click “clear” to restore previous value. To make settings working click **Submit**-> **Reset**-> **Restart**.)

WAN Setting → WAN





To select the connection type for WAN PORT, you can choose any of the following Mode:

• For static IP, please click **Static IP** and type IP address, IP netmask, IP gateway.

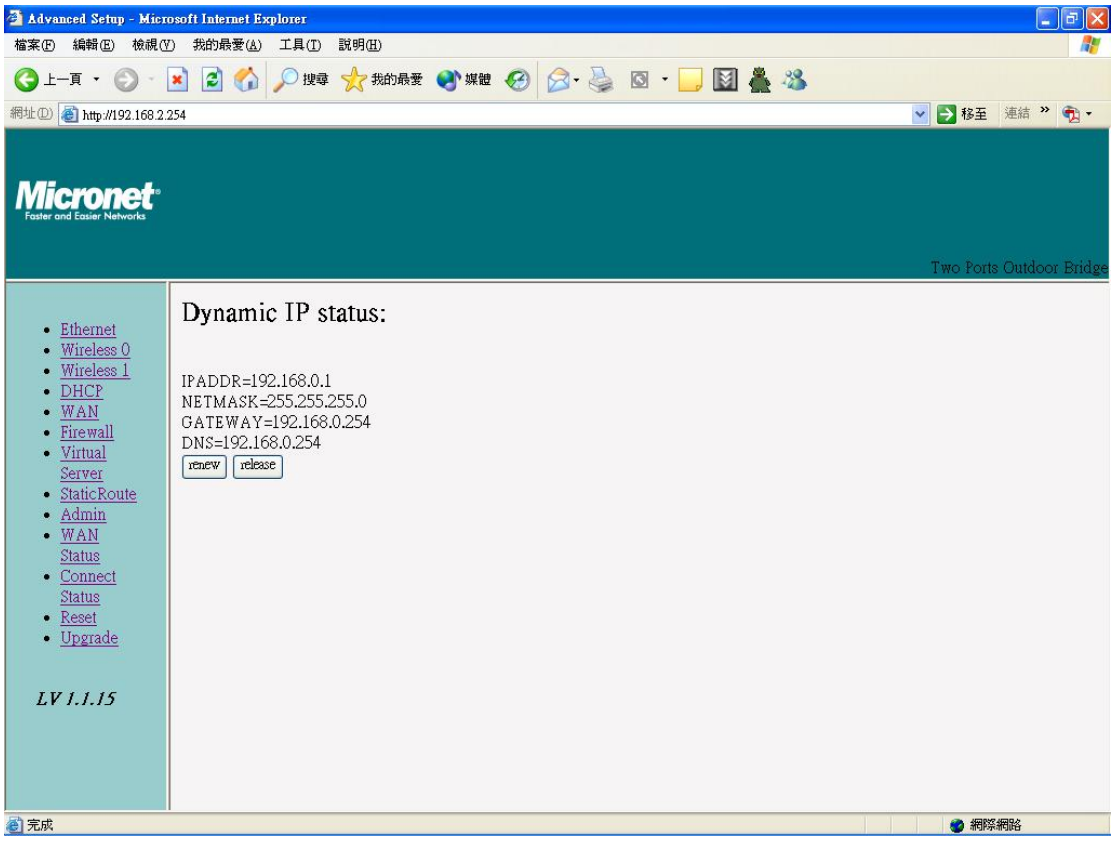
• For dynamic IP address, please click the **Dynamic IP** and type Hostname

• For xDSL and using PPPoE to connect to Internet, please click **PPPoE and type username and password.**

• For Disable WAN Port, please click **Disable.**

(Note: If you change any item, click “submit” to store the value. Or click “clear” to restore previous value. To make settings working click **Submit**-> **Reset**-> **Restart**.)

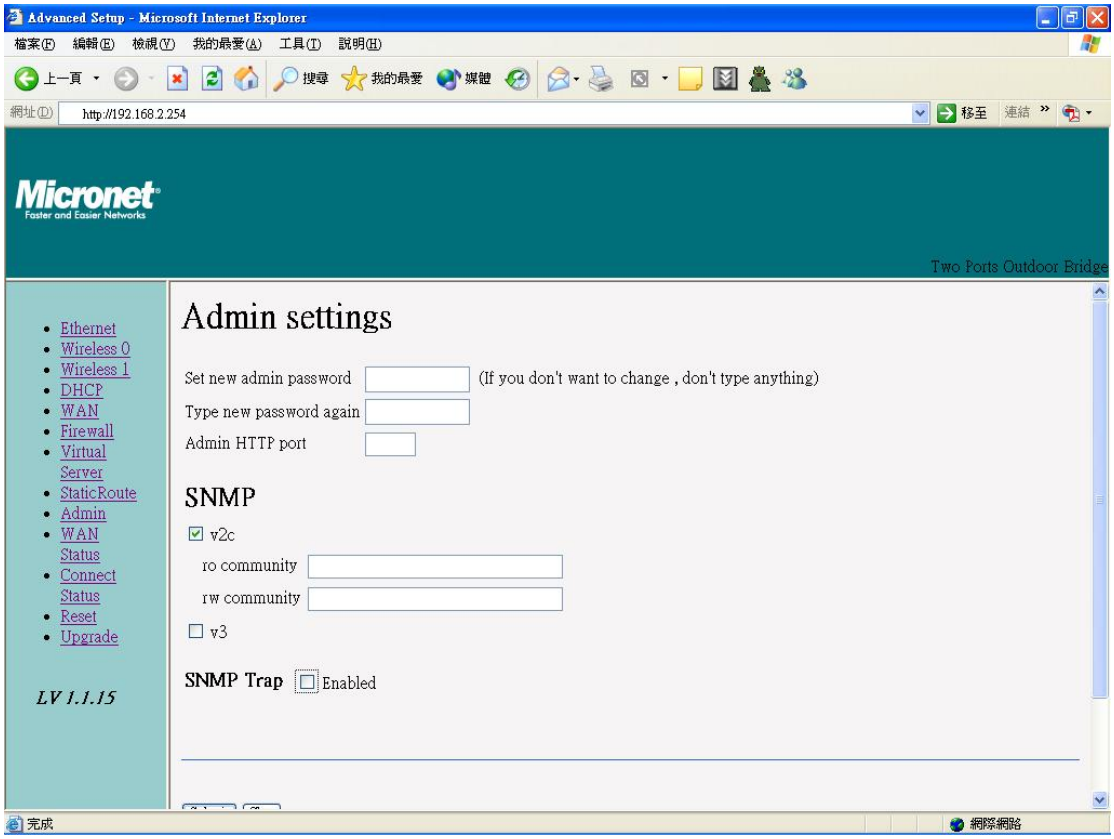
WAN Status → WAN Status

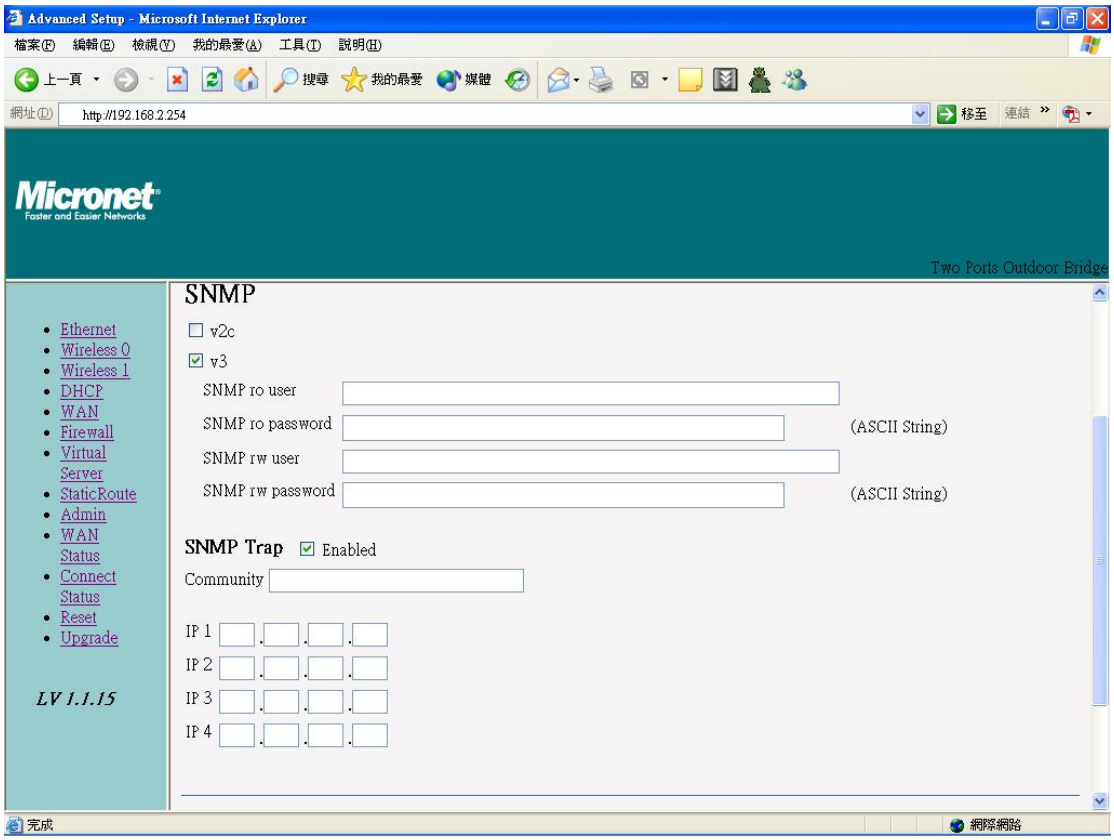


When WAN setting is **Dynamic IP** or **PPPoE** click WAN Status will show current IP status.You can click **renew** or **release** to renew or release IP at **Dynamic IP** setting, and click **disconnect** or **connect** to disconnect or

connect your ISP at **PPPoE** setting.

Admin setting → Admin

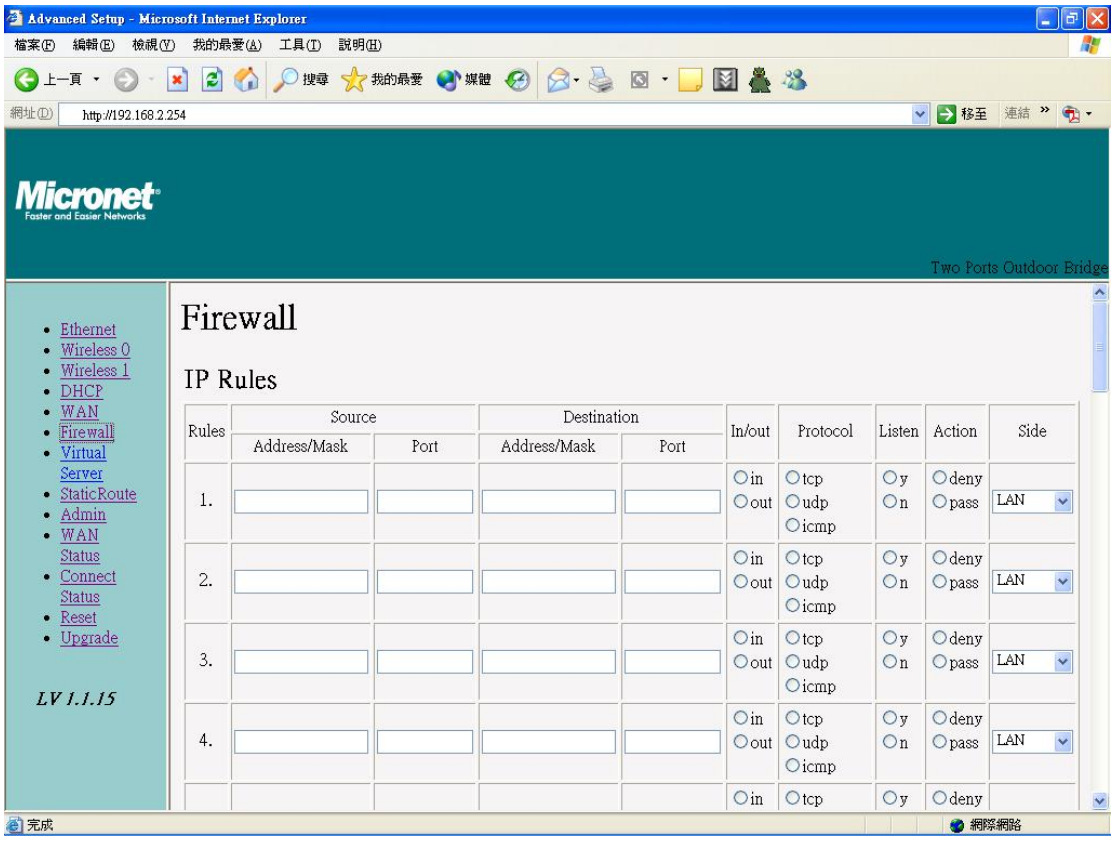


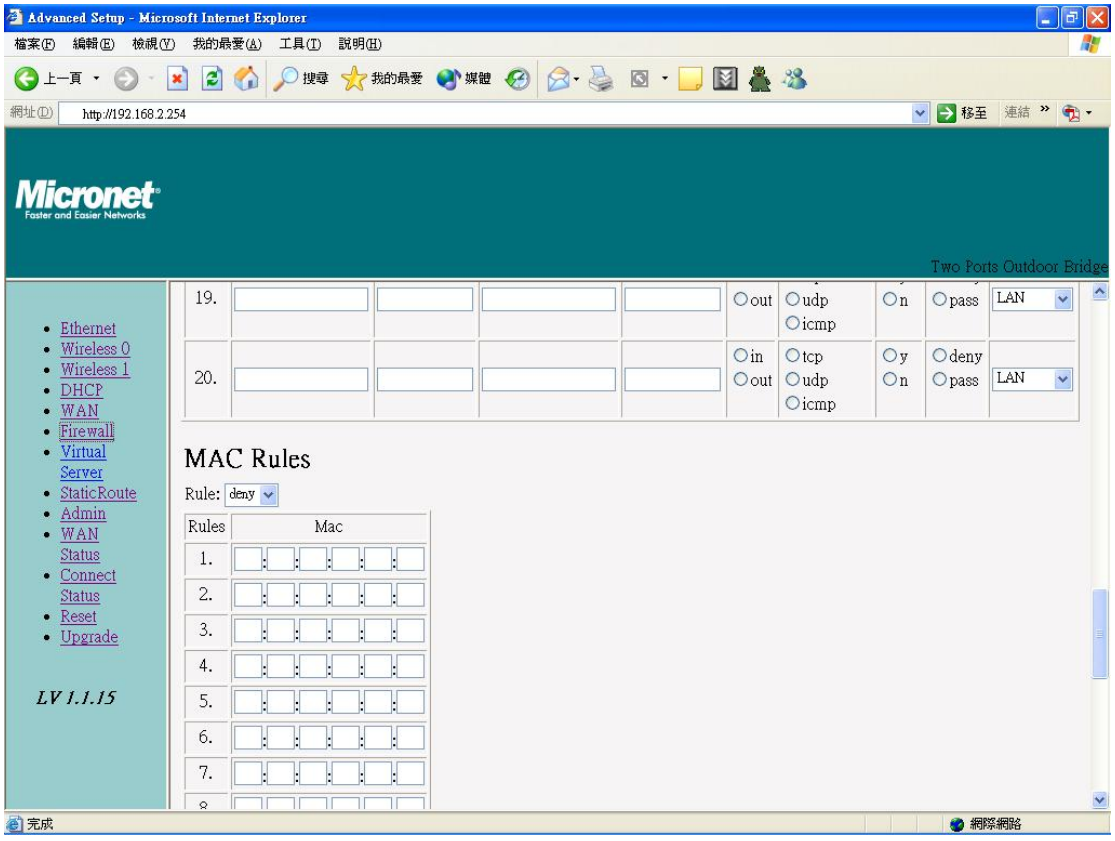


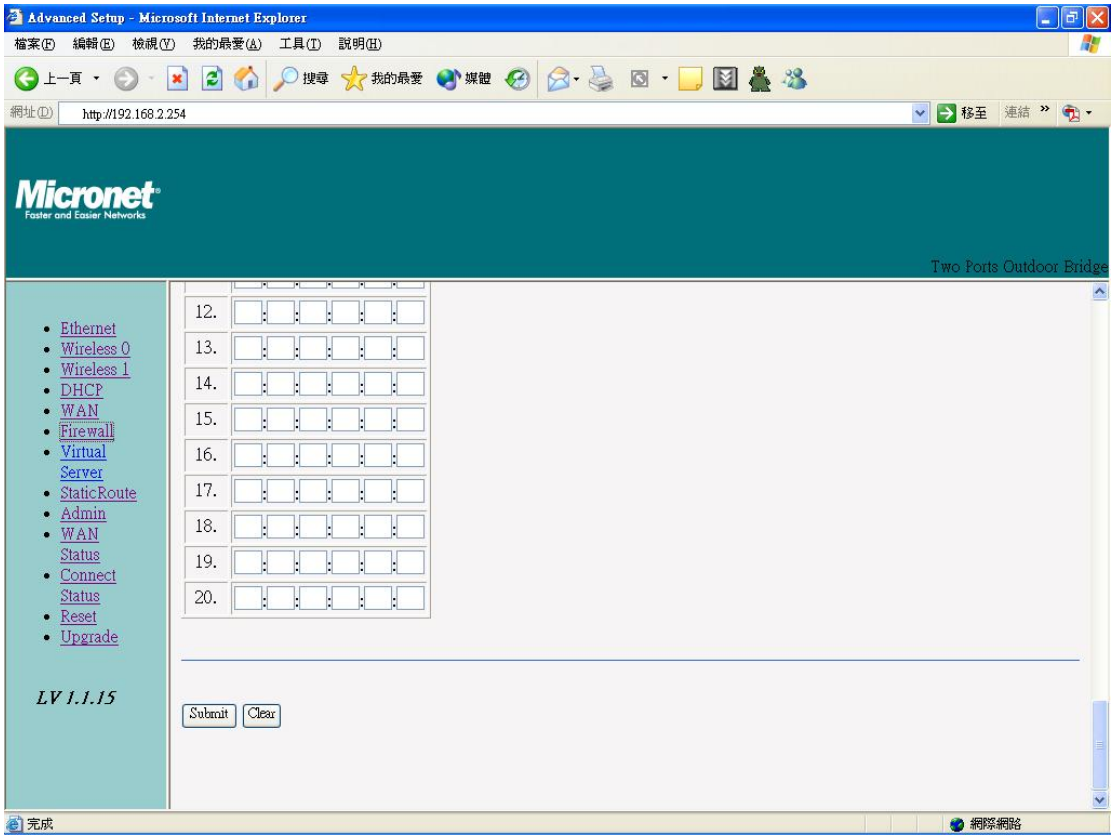
You can change login password (default password is “**default**”), SNMP user name and password, and SNMP Trap setting here.

(Note: If you change any item, click “submit” to store the value. Or click “clear” to restore previous value. To make settings working click **Submit**-> **Reset**-> **Restart**.)

Firewall setting → Firewall



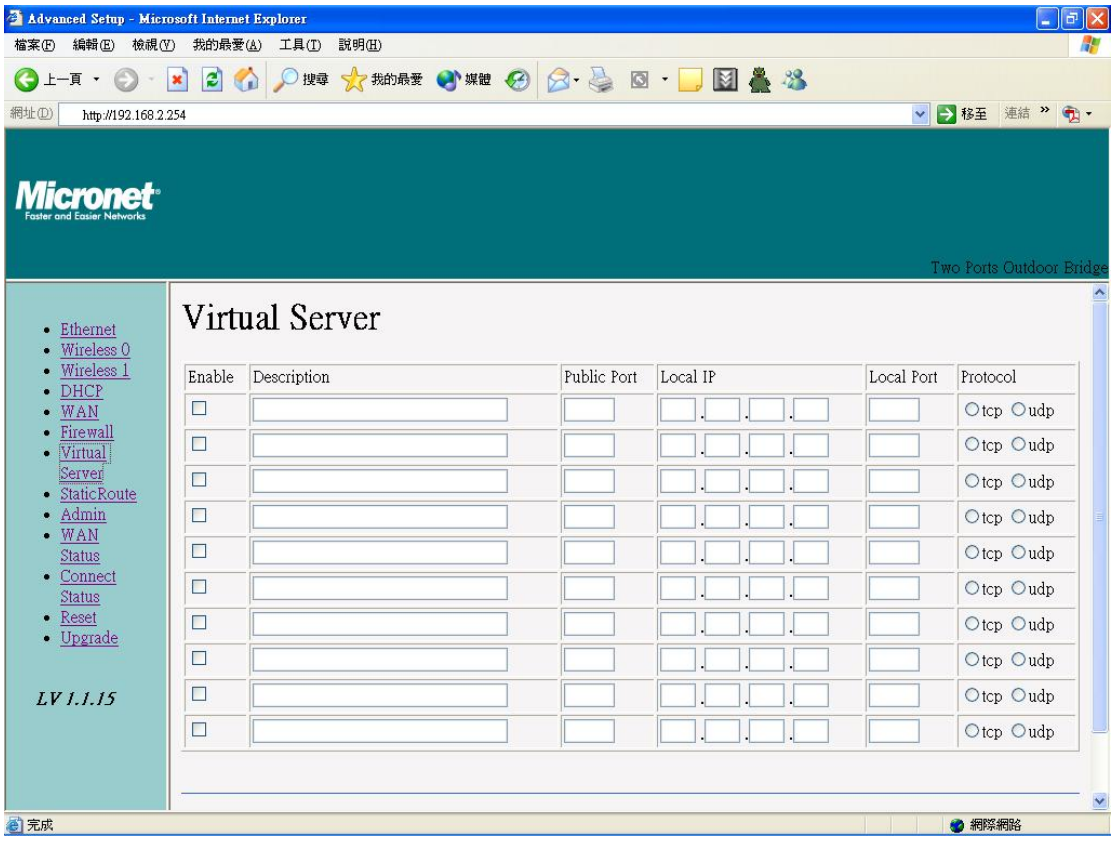




In Firewall IP Rules fields you can define 20 IP rules to deny or pass networking which fit the rules.
In Firewall MAC Rules fields you can control 20 MACs which can pass connect to system or deny from system.

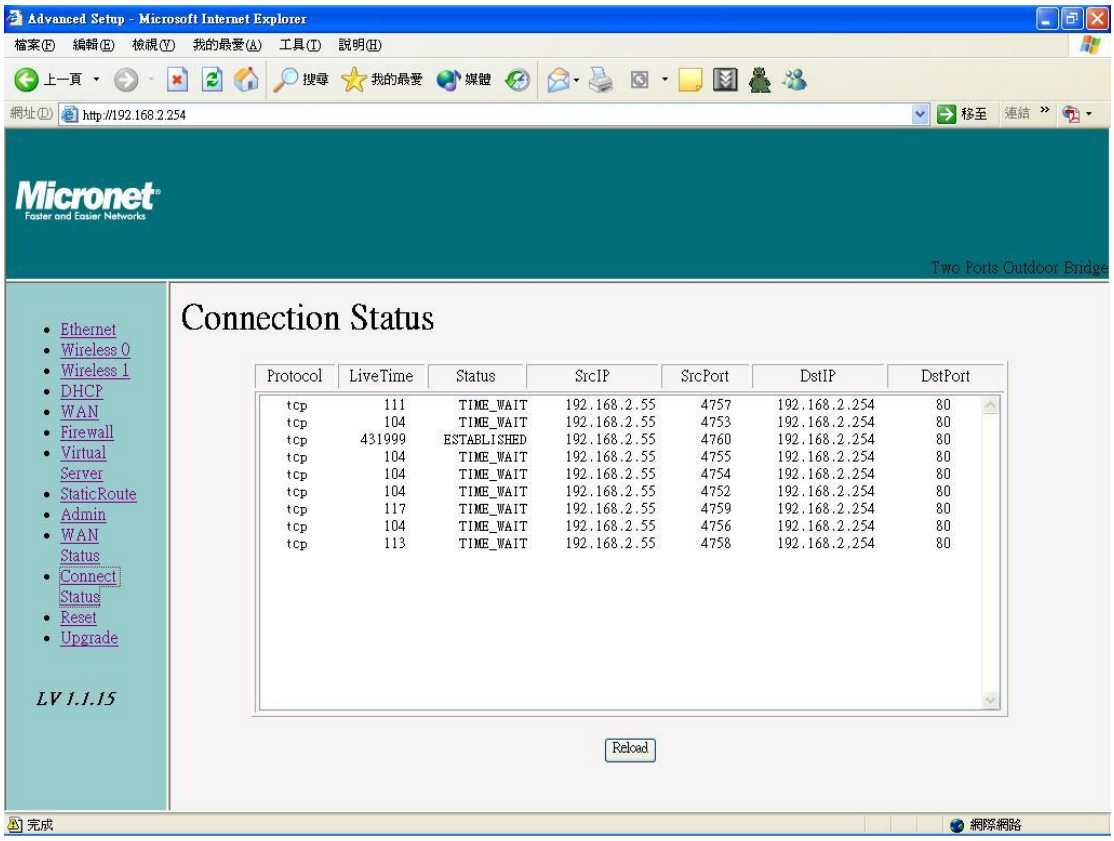
(Note: If you change any item, click “submit” to store the value. Or click “clear” to restore previous value. To make settings working click **Submit**-> **Reset**-> **Restart**.)

Virtual Server setting → Virtual Server



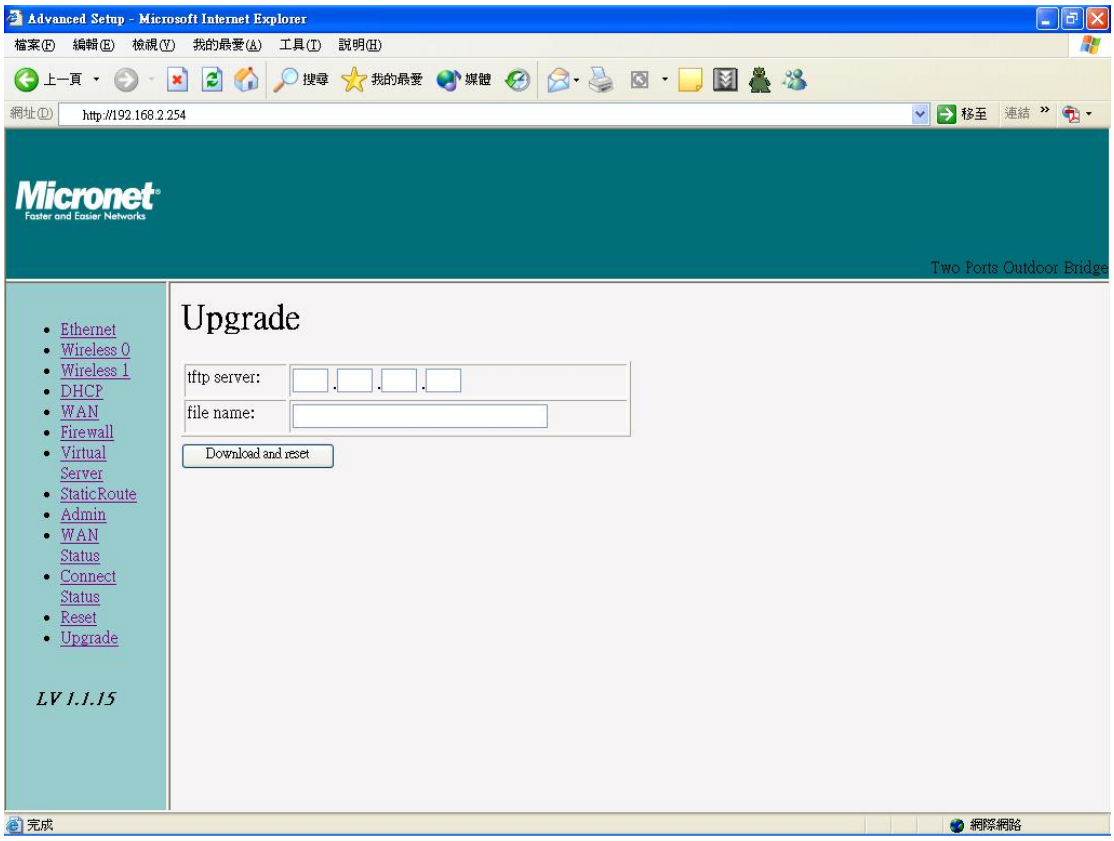
You can define 10 groups Virtual Server here.
e.g. If you build a Server at local PC(client) and Wireless-G Outdoor AP/Bridge is connect to internet have a real IP. Check Enable the rule in Virtual Server and type Description, then key-in local PC's IP in Local IP fields and port(use by the Server) in Local Port and select protocol (use by the Server). After finish those setting click **Submit**-> **Reset**-> **Restart** restart system to make settings work. The Server build at local PC will work in internet.

Connection Status



It will show the device connection status.

Firmware upgrade → Upgrade

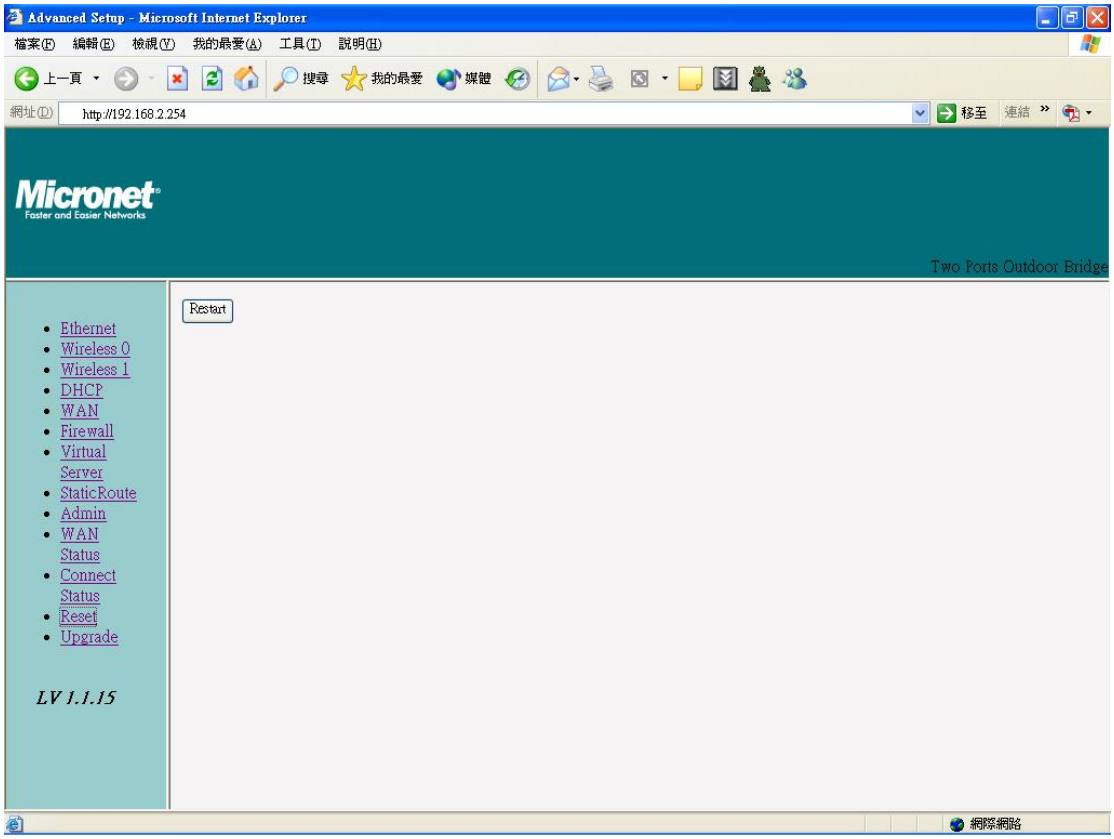


Step 1 : Set your PC IP (192.168.2.X), and close PC's firewall.

Step 2 : Open a TFTP server on your PC and put the firmware in the same direct.

Step 3 : Click on the **Upgrade** tab and then the main screen enter the PC IP address in the "tftp server :"field section 192.168.2.X , and the second option "file name" please key in the firmware file name. Then click **Download and reset**. It may take up to 2 minutes for the upgrade to complete.

Reset System → Reset



Click **Reset** → **Restart** will store settings and restart system.

Specifications

Standards	Ethernet: IEEE 802.3 / IEEE 802.3u Wireless: IEEE802.11 b /g compliant
Data Rate	54/48/36/24/18/12/11/5.5/2/1Mbps auto fallback
Security	64/128-bit WEP Data Encryption, WPA, 802.1x and Access Control List
Frequency Band	2.400~2.4835GHz (Industrial Scientific Medical Band)
Interface	10/100BASE-TX auto-negotiation RJ-45 port x 2, Auto MDI/MDI-X RS-232 serial port N-Type Connector x 2
Transmit Power	20dBm (Typical)
Operation Channel	11/N. America (FCC), 13/Europe (ETSI), 14/Japan
Operation Mode	Access Point, Bridge, Repeater and WDS (Wireless Distribution System)
Emission	FCC, CE
Operating Temperature	-30 °C - 75 °C
Operating Humidity	10% - 80% (Non-condensing)
Dimension & Weight	220 x 195 x 70 mm,2.65kg
Power Adapter	48VDC, 1A