

Mesh51

802.11b/g Mesh Outdoor AP

User Guide

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Introduction

ALFA *Mesh51* Outdoor AP can expand your existing network without any extra configurations and wiring.

Mesh51 Outdoor AP supports Mesh Mode, Repeater Mode and AP Mode.

Features

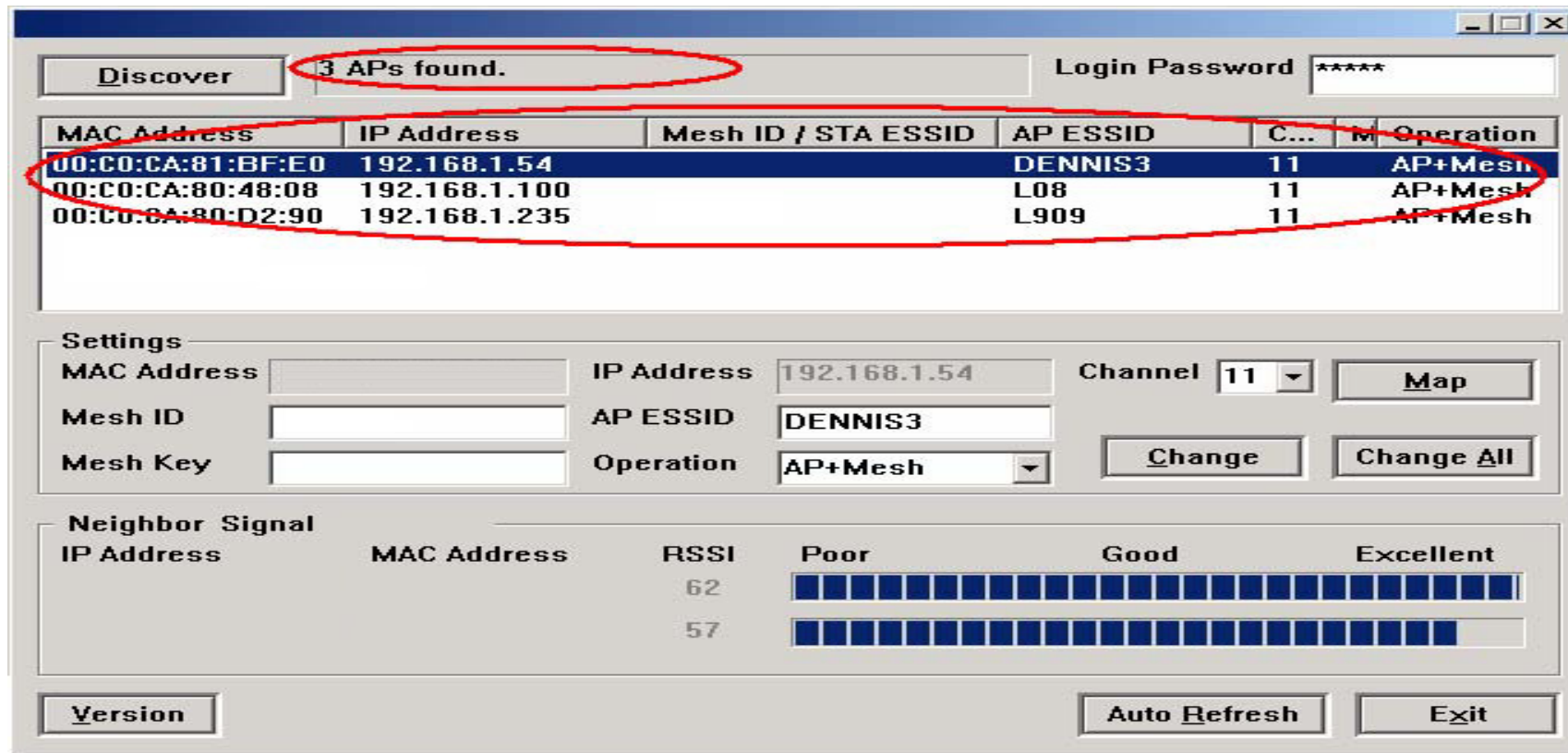
- **Plug & Play**
- **Low Cost & Reliable**
- **High Performance**
- **Portable Size**
- **Auto-Discovering**
- **Easy Configure by *Mesh51* Management Software**

***Mesh51* Management Software**

- ***Mesh51* Management Software Version 1.0.10**
- **Search all *Mesh51* AP automatically**
- **Configure one or all *Mesh51* AP**
- **Display neighbor *Mesh51* signal**
- **Auto-Refresh signal of *Mesh51* AP**
- **Display *Mesh51* network map**

Mesh51 Management Software

- When start the *Mesh51* Management Software (MeshMgr-V1.0.10), it will search all of the *Mesh51* AP in the network automatically.



Mesh51 Management Software

- Click the "Discover" button to search all the Mesh51 AP in the network.

The screenshot displays the Mesh51 Management Software interface. At the top, there is a "Discover" button circled in red. To its right, a status bar shows "3 APs found." and a "Login Password" field with "*****". Below this is a table listing discovered APs. The table has columns for MAC Address, Mesh ID / STA ESSID, AP ESSID, C..., M, and Operation. The first row is highlighted in blue. Below the table is a "Settings" section with fields for MAC Address, IP Address (192.168.1.54), Channel (11), Mesh ID, AP ESSID (DENNIS3), Mesh Key, and Operation (AP+Mesh). There are "Map", "Change", and "Change All" buttons. At the bottom is a "Neighbor Signal" section with a table showing IP Address, MAC Address, and RSSI values (62 and 57) next to signal strength bar graphs. At the very bottom are buttons for "Version", "Auto Refresh", and "Exit".

MAC Address	Mesh ID / STA ESSID	AP ESSID	C...	M	Operation
00:00:0A:81:BF:E0	192.168.1.54	DENNIS3	11		AP+Mesh
00:C0:CA:80:48:08	192.168.1.100	L08	11		AP+Mesh
00:C0:CA:80:D2:90	192.168.1.235	L909	11		AP+Mesh

Mesh51 Management Software

- Double-Click the selected *Mesh51* AP will start the IE Browser for you to setup the *Mesh51* AP.

The screenshot displays the Mesh51 Management Software interface. At the top, there is a 'Discover' button and a status bar indicating '3 APs found.' To the right, a 'Login Password' field contains '*****'. Below this is a table listing discovered APs. The first row is highlighted in blue and has a red circle around it, indicating it is the selected AP. The table columns are: MAC Address, IP Address, Mesh ID / STA ESSID, AP ESSID, C..., M, and Operation. Below the table is a 'Settings' section with input fields for MAC Address, Mesh ID, and Mesh Key, and dropdown menus for IP Address (192.168.1.54), AP ESSID (DENNIS3), and Operation (AP+Mesh). There is also a 'Channel' dropdown set to 11 and buttons for 'Map', 'Change', and 'Change All'. At the bottom, there is a 'Neighbor Signal' section with a table showing IP Address, MAC Address, and RSSI values (62 and 57), along with signal strength indicators (Poor, Good, Excellent). At the very bottom, there are buttons for 'Version', 'Auto Refresh', and 'Exit'.

MAC Address	IP Address	Mesh ID / STA ESSID	AP ESSID	C...	M	Operation
00:C0:CA:81:BF:E0	192.168.1.54		DENNIS3	11		AP+Mesh
00:C0:CA:80:48:08	192.168.1.100		L08	11		AP+Mesh
00:C0:CA:80:D2:90	192.168.1.235		L909	11		AP+Mesh

Settings

MAC Address: IP Address: 192.168.1.54 Channel: 11

Mesh ID: AP ESSID: DENNIS3

Mesh Key: Operation: AP+Mesh

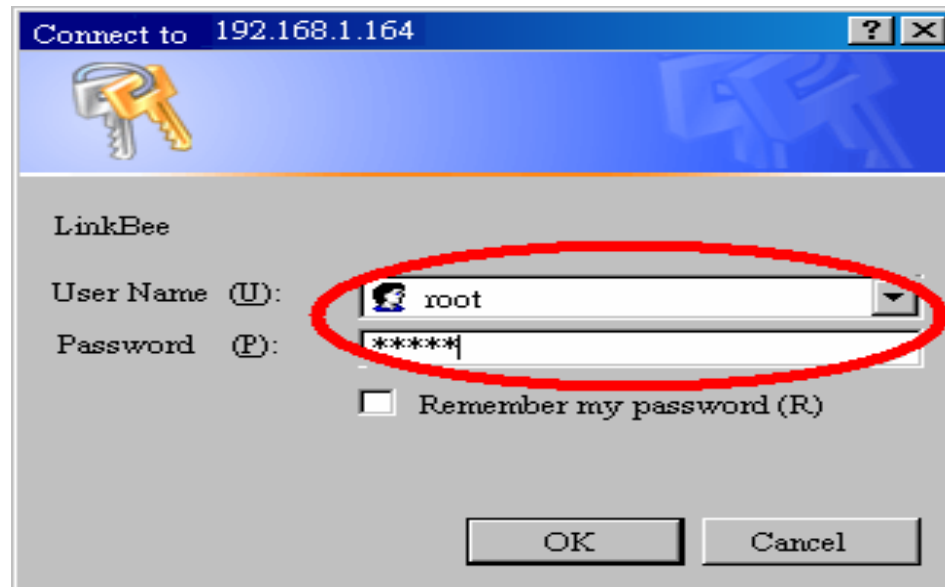
Neighbor Signal

IP Address	MAC Address	RSSI	Poor	Good	Excellent
		62	████████████████████	████████████████████	████████████████████
		57	████████████████████	████████████████████	████████████████████

Version

Mesh51 Management Software

- Enter “**User ID**” & “**Password**” to login the *Mesh51* AP



Mesh51 Management Software

- ***Mesh51* AP Settings :**
 - **Mesh ID** : Mesh network ID, 0 – 32 Bytes
 - **STA ESSID** : ESSID for [**Repeater Mode**] only.
 - **Mesh Key** : Encryption key between ***Mesh51*** AP,
0 – 40 Bytes
 - **AP ESSID** : WiFi AP ESSID, 0 – 32 Bytes
 - **RF Channel** : WiFi RF Channel , 1 – 11 Channel
 - **Operation** : [**AP+Mesh**], [**AP+STA**], [**AP**] Mode.

Mesh51 Management Software

- Click the “**Operation**” to select different mode, [AP+Mesh], [AP+STA] and [AP] Mode.

The screenshot displays the Mesh51 Management Software interface. At the top, there is a 'Discover' button and a status indicator '2 APs found.'. A 'Login Password' field contains '*****'. Below this is a table of discovered APs:

MAC Address	IP Address	Mesh ID / STA ESSID	AP ESSID	C...	M	Operation
00:C0:CA:81:BF:E0	192.168.1.54		DENNIS3	11		AP+Mesh
00:C0:CA:80:D2:90	192.168.1.235		L909	11		AP+Mesh

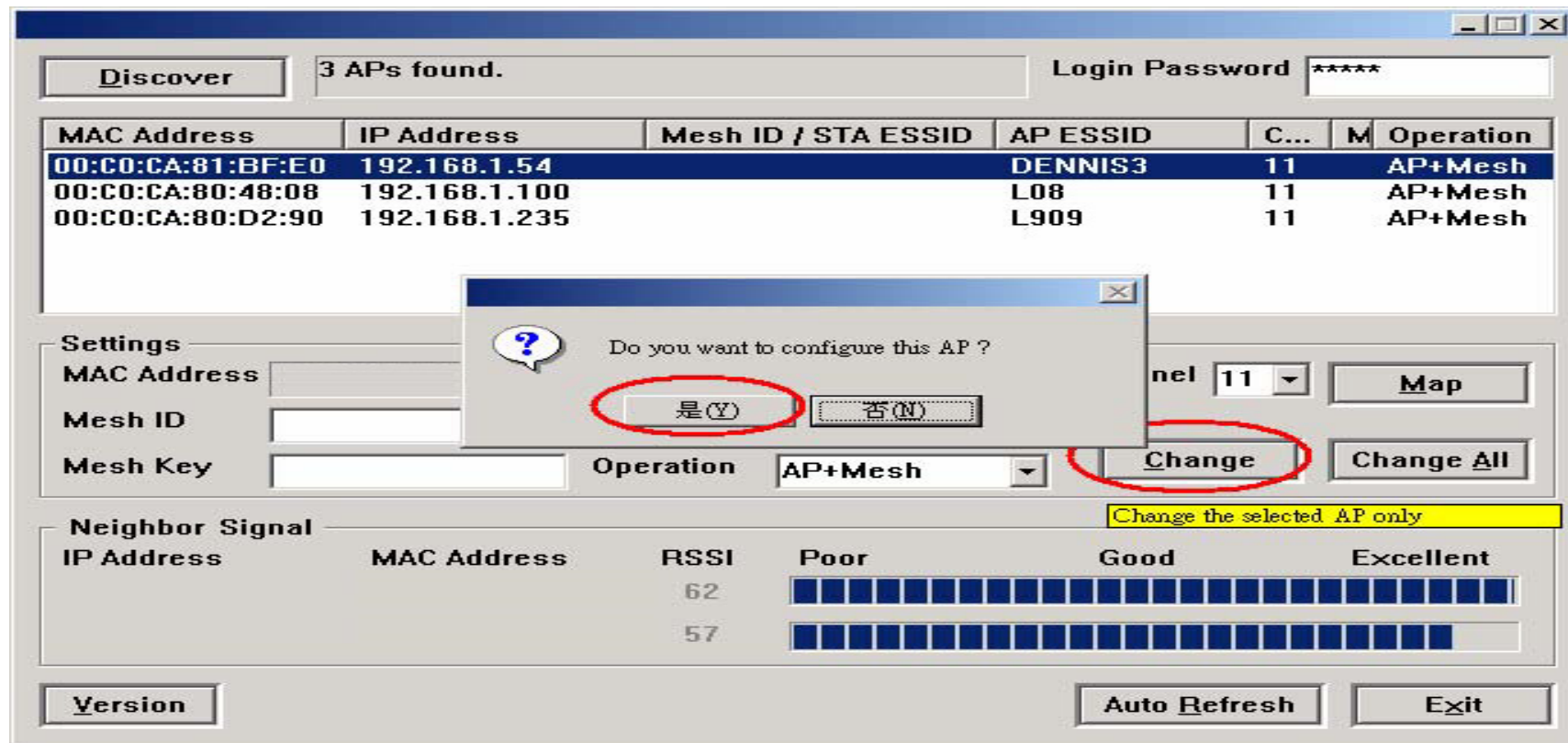
Below the table is the 'Settings' section. The 'STA ESSID' field is circled in red. The 'Operation' dropdown menu is also circled in red, showing options: AP+STA, AP+Mesh, AP+STA, and AP. The 'AP+STA' option is currently selected. Other settings include IP Address (192.168.1.54), Channel (11), and AP ESSID (DENNIS3). There are buttons for 'Map', 'Change', and 'Change All'.

The 'Neighbor Signal' section shows two neighbors with their IP addresses, MAC addresses, and RSSI values. The first neighbor has an RSSI of 60, and the second has an RSSI of 30. Signal strength bars are provided for each neighbor, with 'Good' and 'Excellent' labels.

At the bottom, there are buttons for 'Version', 'Auto Refresh', and 'Exit'.

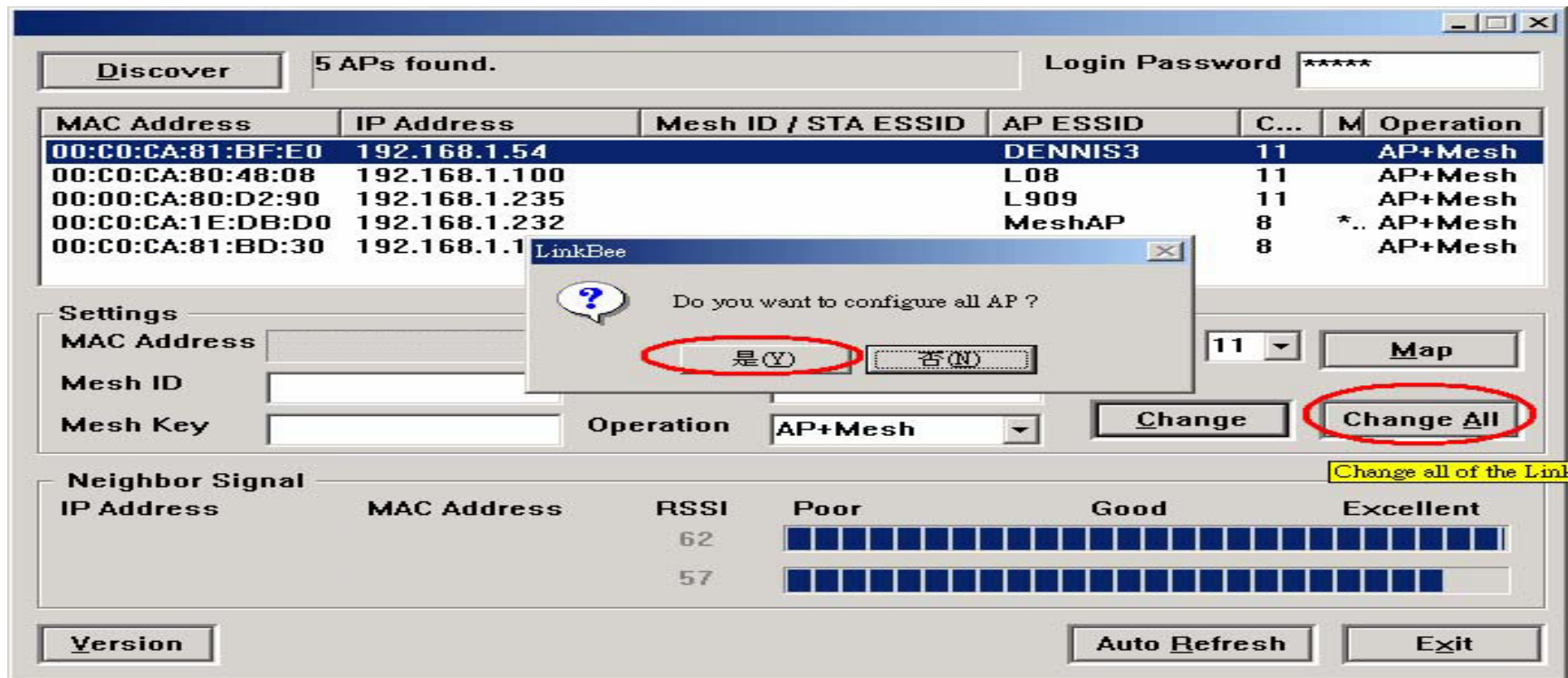
Mesh51 Management Software

- Click the **“Change”** button can update [Channel] , [Mesh ID], [Mesh Key] , [ESSID] and [Operation] for selected **Mesh51** AP, **Mesh51** AP will reboot automatically.



Mesh51 Management Software

- Click the **“Change All”** button to update [Channel] , [Mesh ID] and [ESSID] for all the *Mesh51* APs in the network, all *Mesh51* APs will reboot automatically.



Mesh51 Management Software

- Select different *Mesh51* AP in the AP list, it will display [Neighbor Mesh51 Signal] for each *Mesh51* AP.

The screenshot displays the Mesh51 Management Software interface. At the top, there is a 'Discover' button and a status bar indicating '5 APs found.' A 'Login Password' field contains '*****'. Below this is a table listing discovered APs:

MAC Address	IP Address	Mesh ID / STA ESSID	AP ESSID	C...	M	Operation
00:C0:CA:81:BF:E0	192.168.1.54		DENNIS3	11		AP+Mesh
00:C0:CA:80:48:08	192.168.1.100		L08	11		AP+Mesh
00:C0:CA:80:D2:90	192.168.1.235		L909	11		AP+Mesh
00:C0:CA:1E:DB:D0	192.168.1.232		MeshAP	8	*..	AP+Mesh
00:C0:CA:81:BD:30	192.168.1.162		L	8		AP+Mesh

Below the table is a 'Settings' section with input fields for MAC Address, Mesh ID, Mesh Key, IP Address (192.168.1.54), AP ESSID (DENNIS3), and Operation (AP+Mesh). A 'Channel' dropdown is set to 11. Buttons for 'Map', 'Change', and 'Change All' are present.

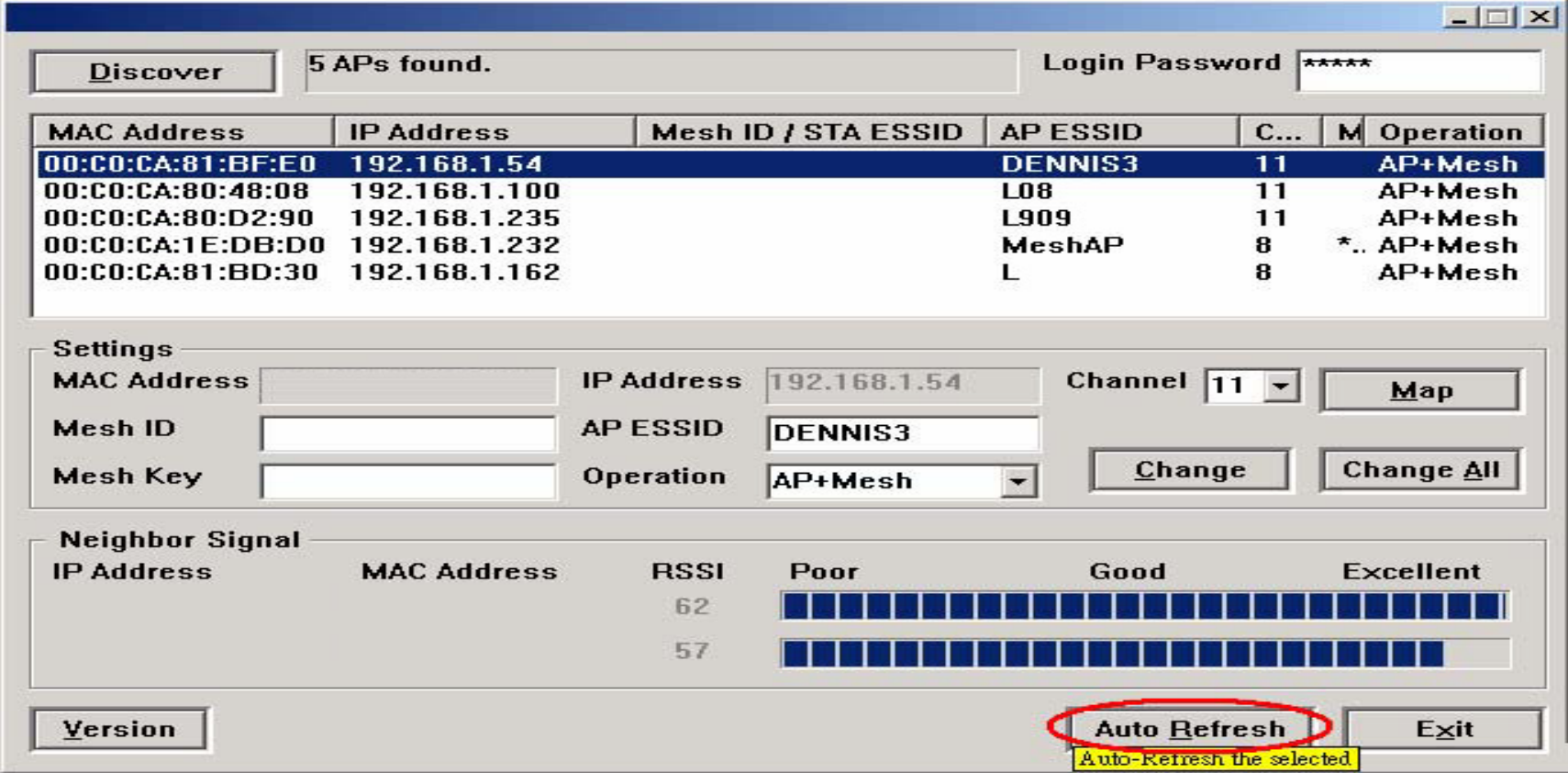
The 'Neighbor Signal' section is circled in red. It contains a table with columns for IP Address, MAC Address, RSSI, and signal strength bars. The signal strength is categorized into Poor, Good, and Excellent.

IP Address	MAC Address	RSSI	Signal Strength
		62	[Signal strength bar]
		57	[Signal strength bar]

At the bottom, there are buttons for 'Version', 'Auto Refresh', and 'Exit'.

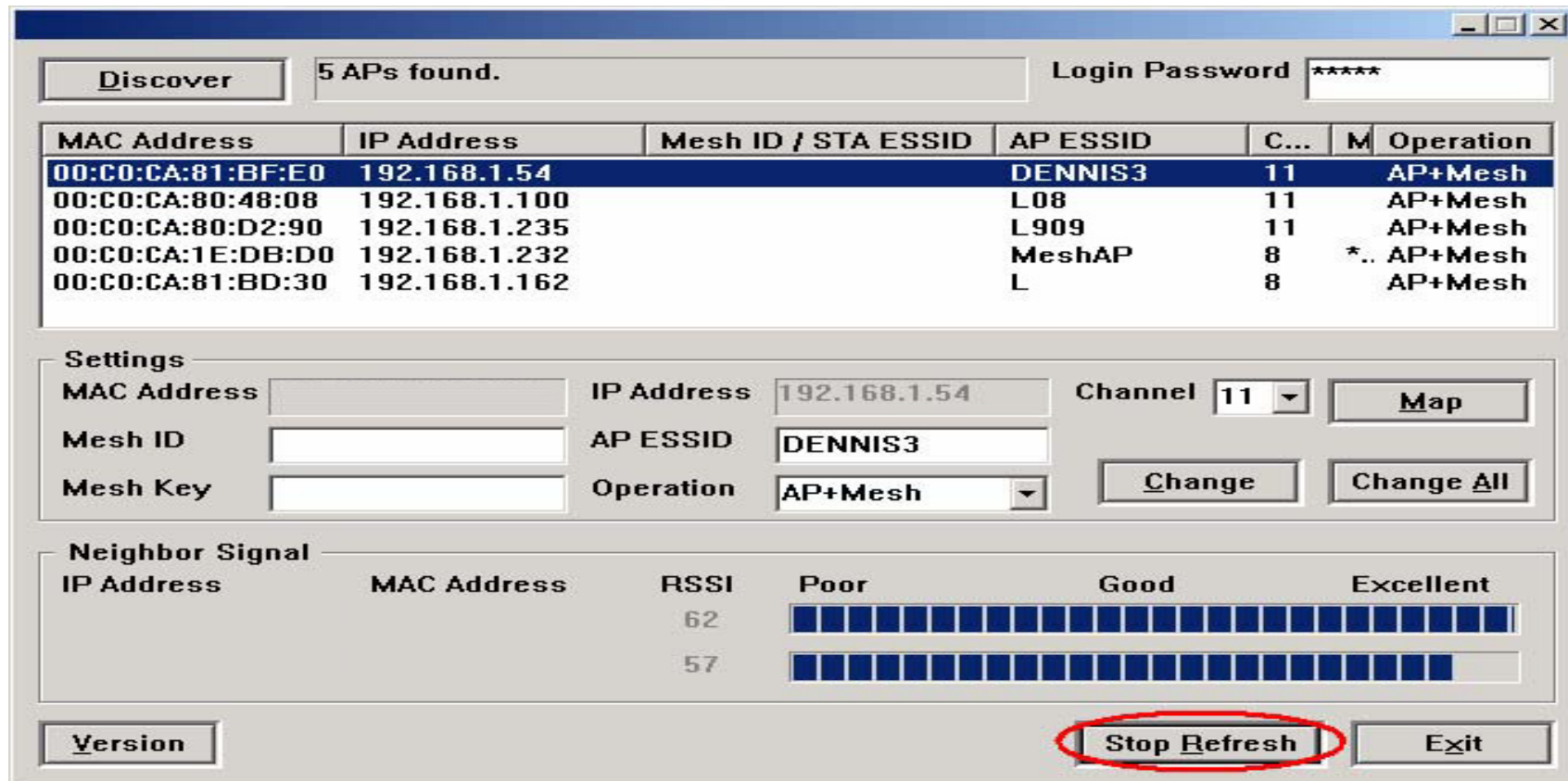
Mesh51 Management Software

- Click the “**Auto-Refresh**” button will refresh the selected *Mesh51* AP info every 5 seconds



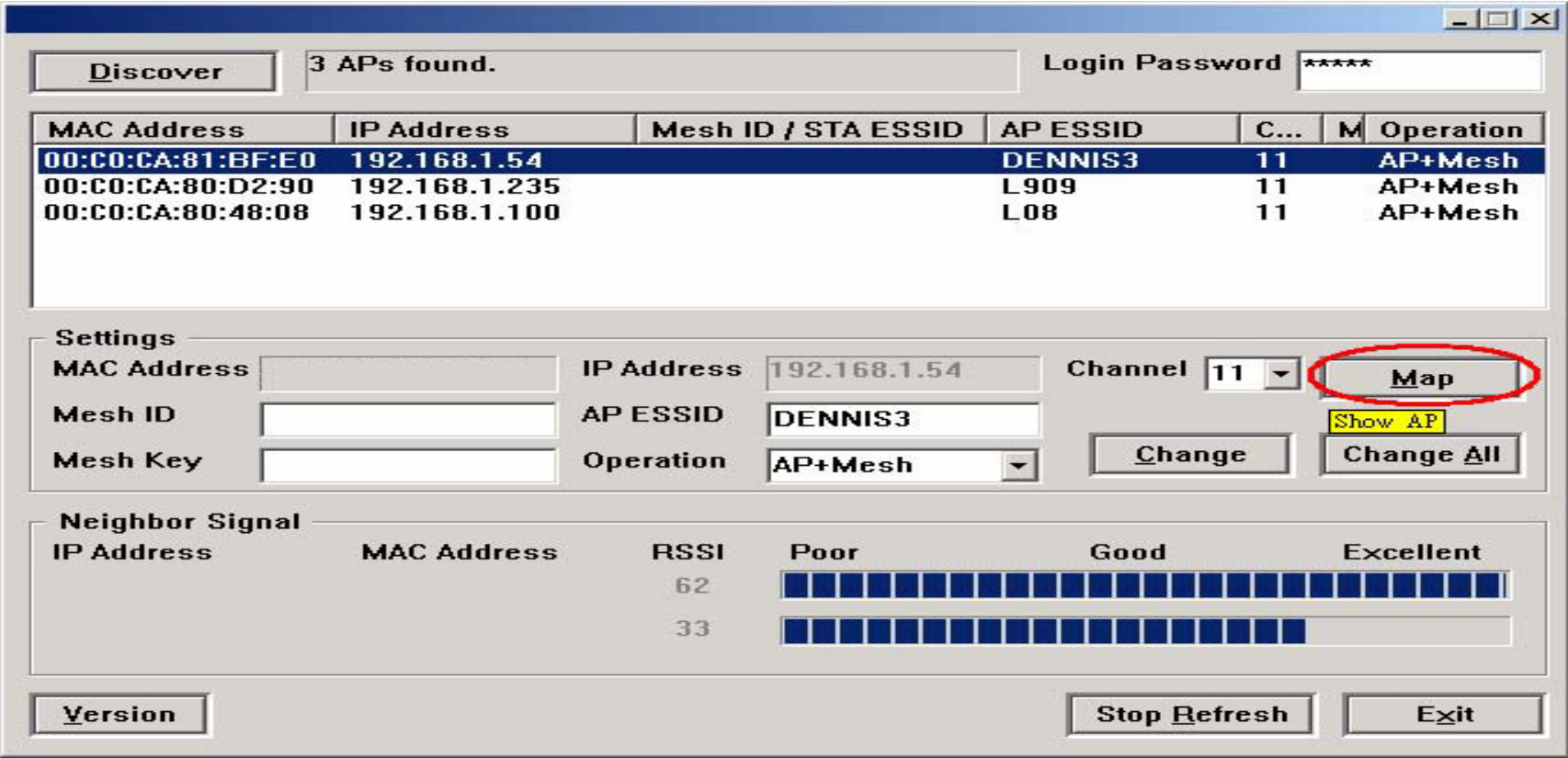
Mesh51 Management Software

- Click the “**Stop-Refresh**” button to stop.



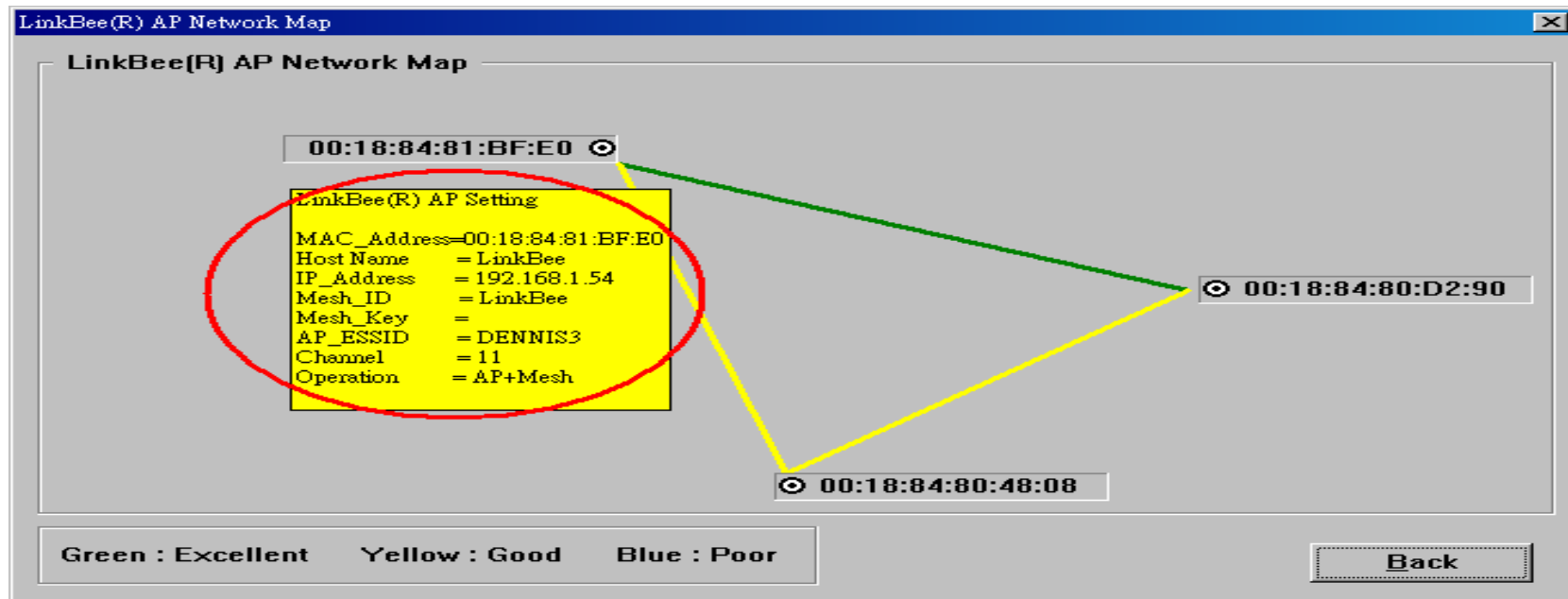
Mesh51 Management Software

- Click the “Map” button will show the Network Map.



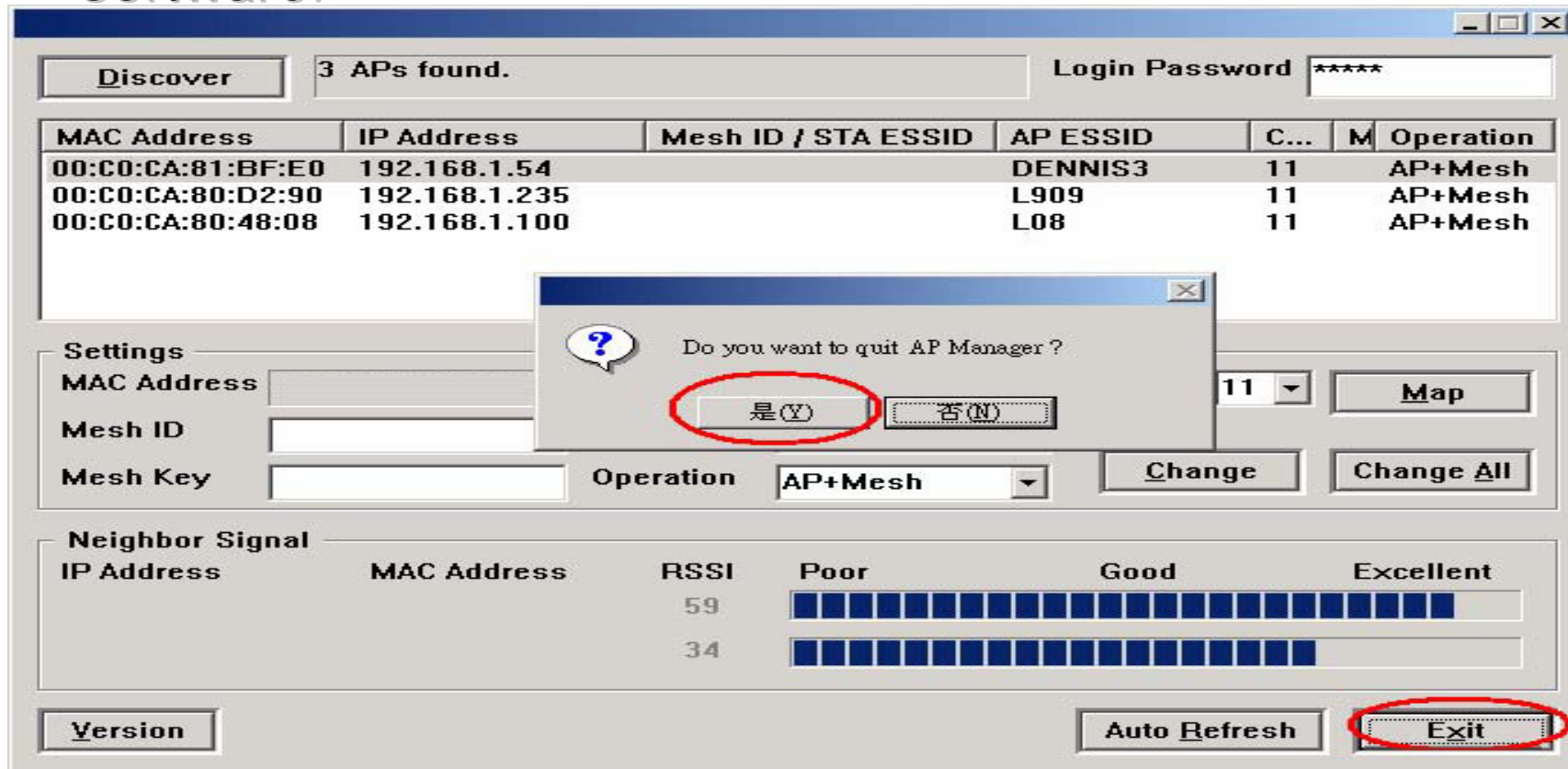
Mesh51 Management Software

- Move the mouse on the MAC address will display the *Mesh51* AP settings.
- Click the “**Back**” button will close the Network Map.



Mesh51 Management Software

- Click the “**Exit**” button will quit *Mesh51* Management Software.



Mesh51 Management Software

- Click the “**Version**” button will show the software version of *Mesh51* Management Software.

The screenshot displays the Mesh51 Management Software interface. At the top, there is a 'Discover' button and a status indicator '3 APs found.'. A 'Login Password' field contains '*****'. Below this is a table of discovered APs:

MAC Address	IP Address	Mesh ID / STA ESSID	AP ESSID	C...	M	Operation
00:C0:CA:81:BF:E0	192.168.1.54		DENNIS3	11		AP+Mesh
00:C0:CA:80:D2:90	192.168.1.235		L909	11		AP+Mesh
00:C0:CA:80:48:08	192.168.1.100		L08	11		AP+Mesh

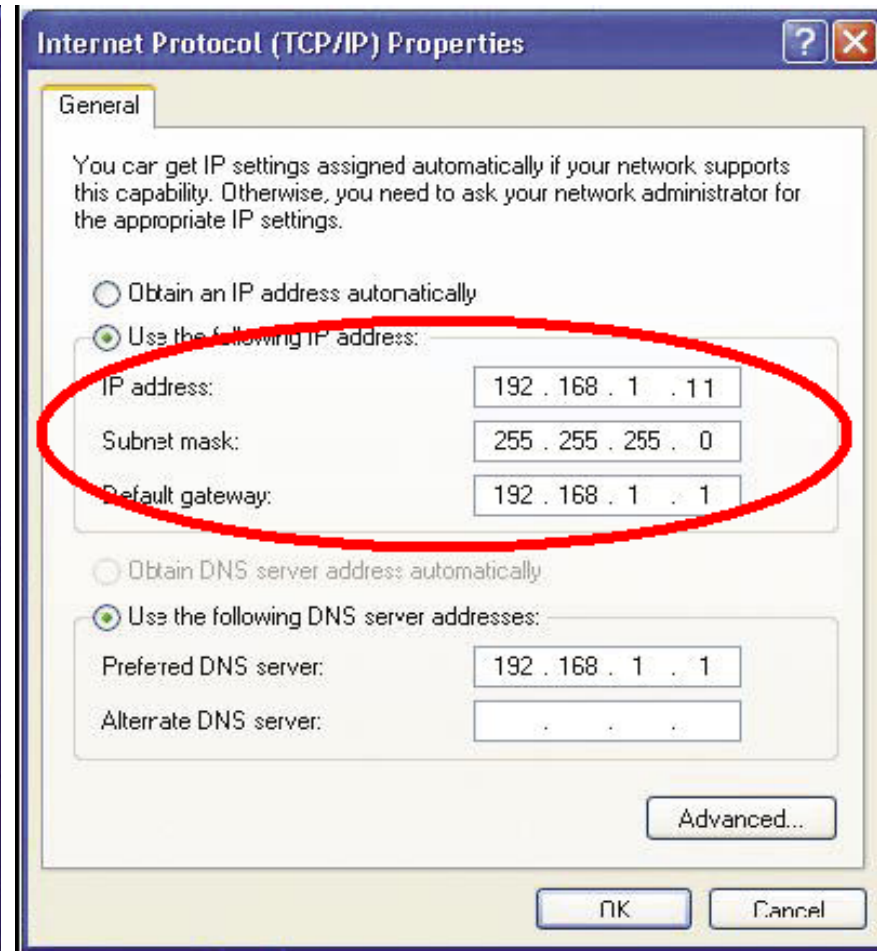
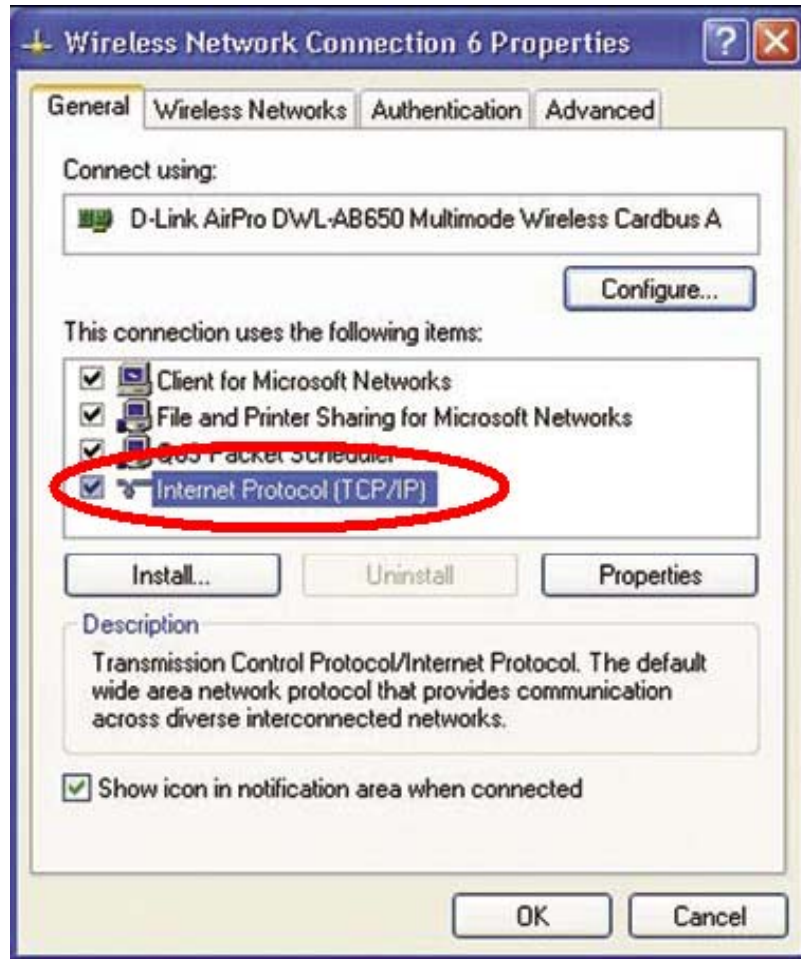
Below the table are 'Settings' and 'Neighbor Signal' sections. The 'Settings' section includes fields for 'MAC Address', 'Mesh ID', and 'Mesh Key', and an 'IP Address' field with the value '192.168.1.54'. The 'Neighbor Signal' section has fields for 'IP Address' and 'MAC Address'. To the right, there is a 'Channel' dropdown set to '11', a 'Map' button, and 'Change' and 'Change All' buttons. Below these are two signal strength bars labeled 'Good' and 'Excellent'. At the bottom left, a 'Version' button is circled in red, with a tooltip that reads 'Show AP Manager Version'. A dialog box titled 'AP Manager' is open, showing 'Version 1.0.4', 'Build Date : 2008-07-23', and 'All Rights Reserved', with a '確定' (OK) button.

Configure *Mesh51*

- Login *Mesh51* AP
- Mesh Mode
- Repeater Mode
- AP Mode

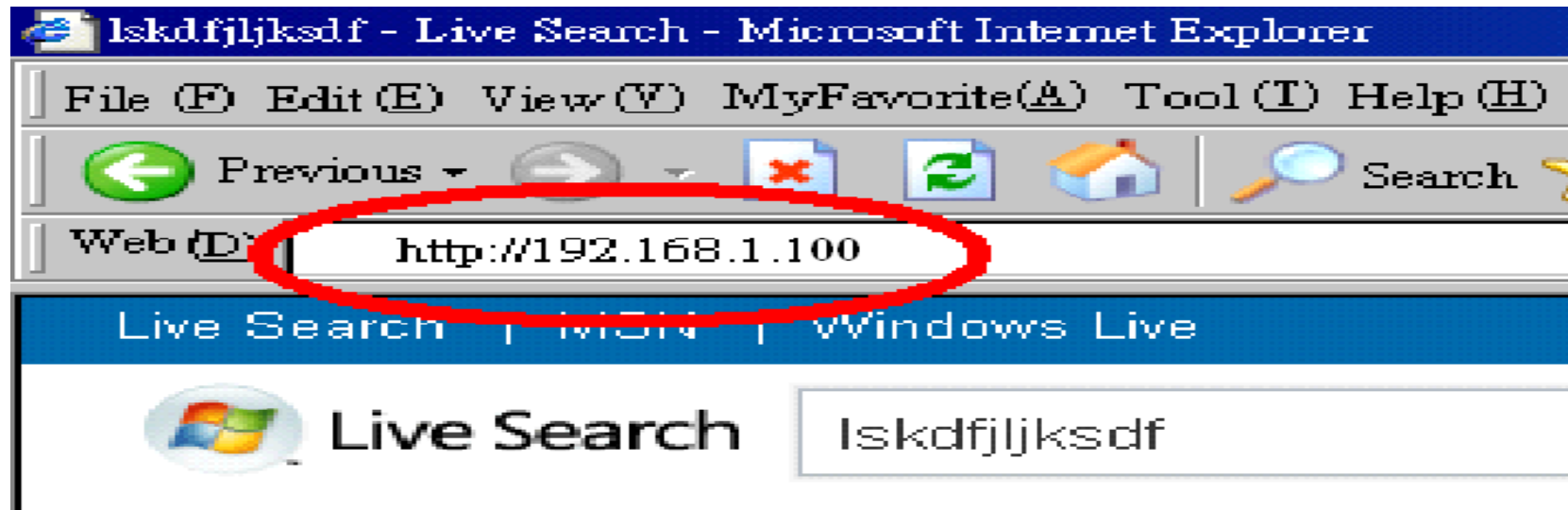
Login Mesh51

- Step 1 : Change PC IP Address



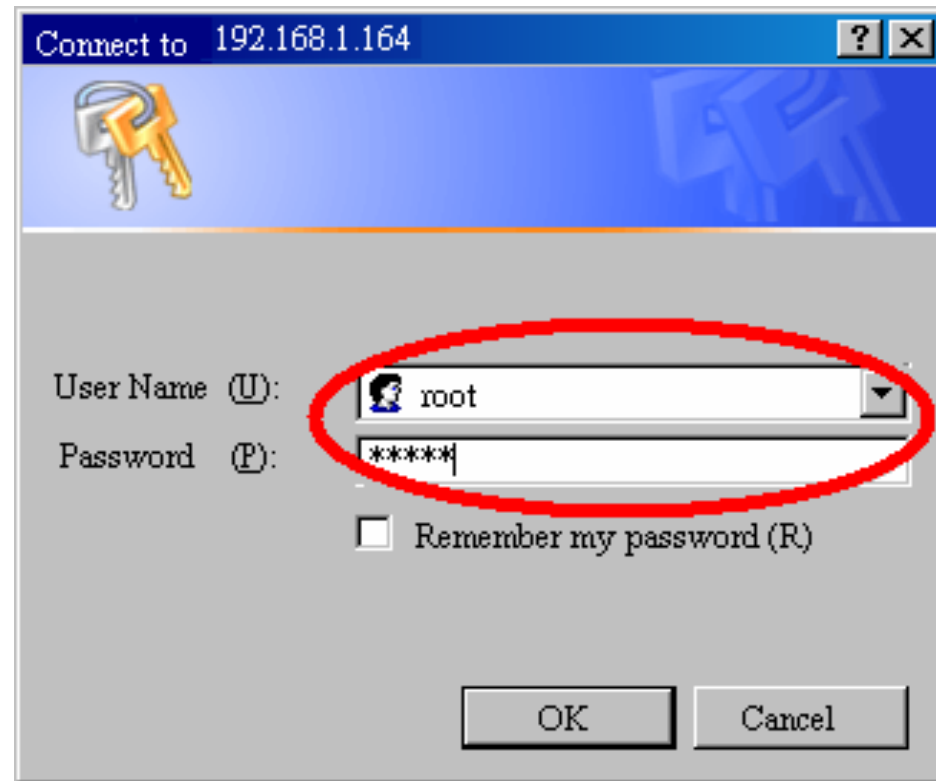
Login *Mesh51*

- **Step 2** : Default IP : **192.168.1.100**



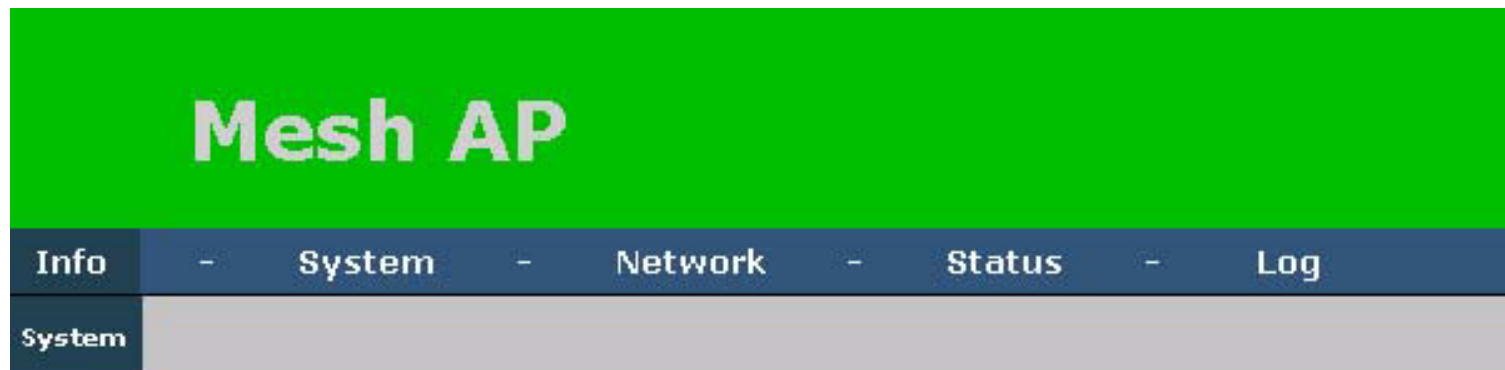
Login *Mesh51*

- **Step 3** : Enter ID & Password
- **Default ID: root**
- **Default Password :admin**



Configuration Screen

- *Mesh51* configuration screen :

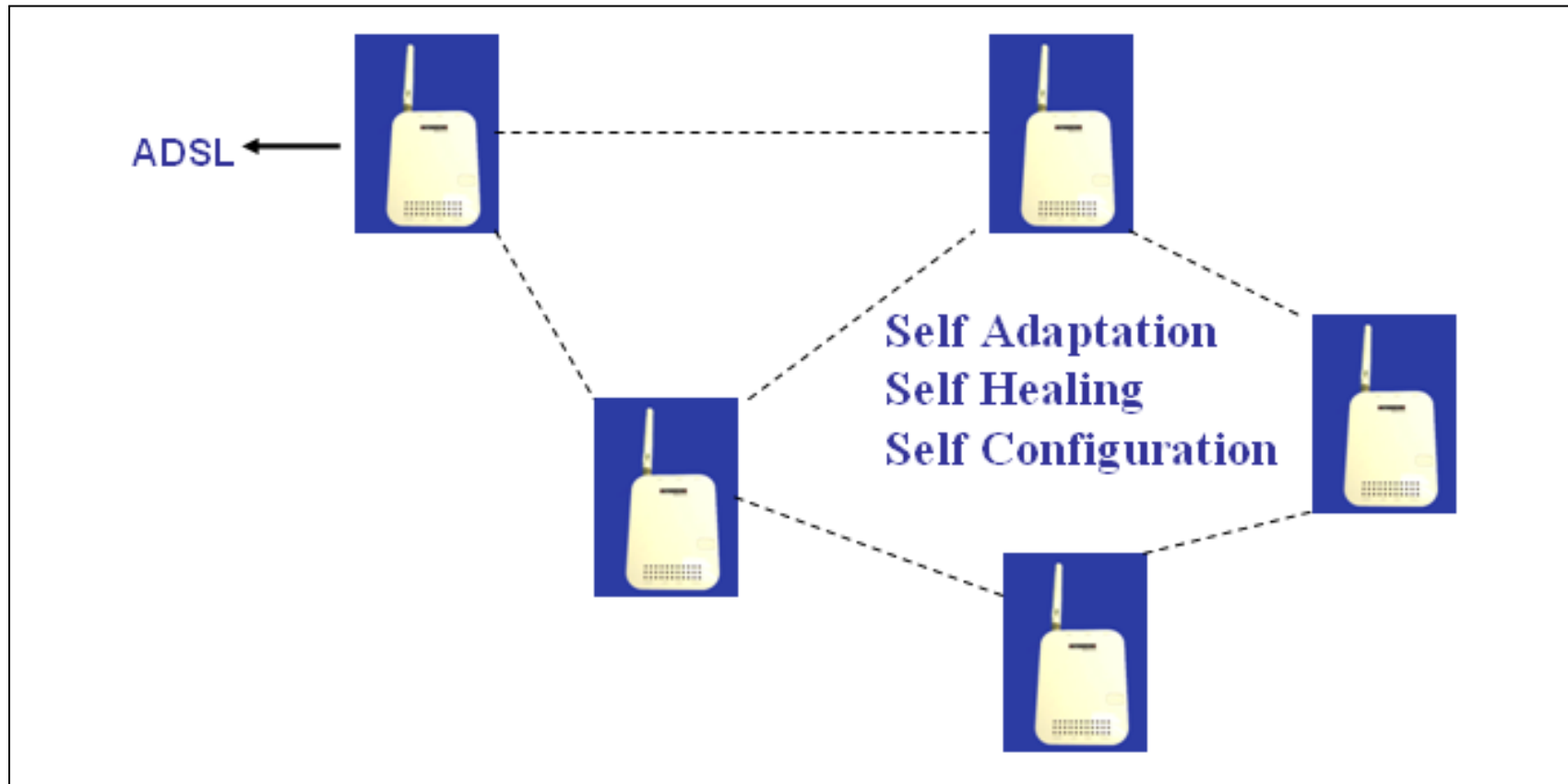


System Information

Model	Mesh AP
Firmware	V1.1.9*
Kernel	Linux 2.6.21.5 #64 Tue Jun 24 14:53:35 CST 2008
MAC	00:C0:CA:81:BF:E0
Board	Atheros AR2315
Username	admin
Registration	OK

Mesh Mode

- Block Diagram :

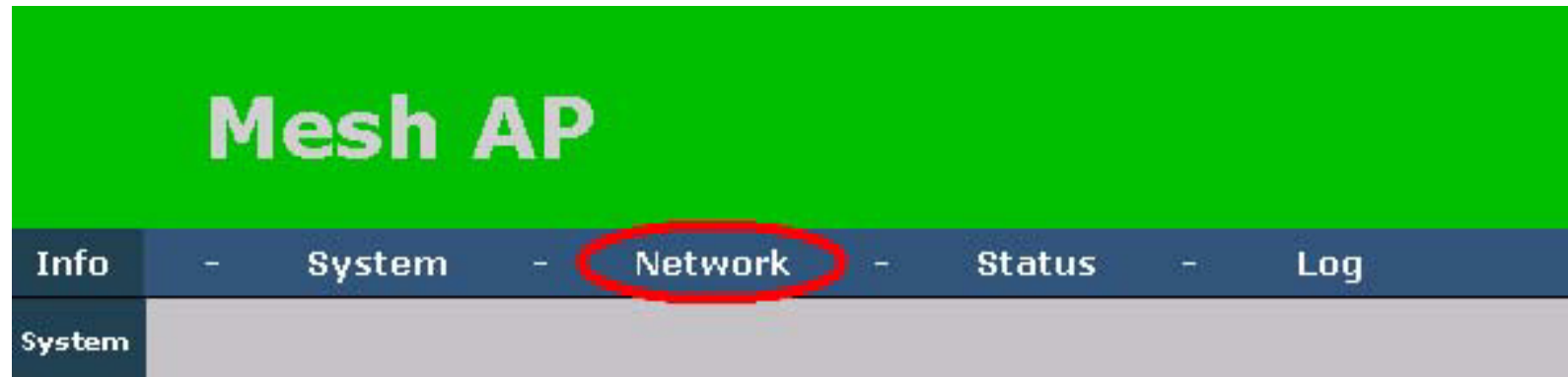


Mesh Mode

- Default *Mode* : Mesh Mode
- Default *Mesh ID* : Mesh
- Default *Channel Domain* : FCC (Ch#1 – Ch#11)
- Default *Channel* : 11

Mesh Mode

- **Step 1** : Select [Network]



System Information

Model	Mesh AP
Firmware	V1.1.9*
Kernel	Linux 2.6.21.5 #64 Tue Jun 24 14:53:35 CST 2008
MAC	00:C0:CA:81:BF:E0
Board	Atheros AR2315
Username	admin
Registration	OK

Mesh Mode

- Step 2 : Select [Wireless]



Network Configuration

Configuration

Connection Type	<input type="text" value="Static IP"/>
IP Address	<input type="text" value="192.168.1.54"/>
Netmask	<input type="text" value="255.255.255.0"/>
Default Gateway	<input type="text" value="192.168.1.2"/>

DNS Servers

<input type="text" value="168.95.1.1"/>	<input type="button" value="Add"/>	Remove
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Mesh Mode

- Step 3 : Select [AP + Mesh]



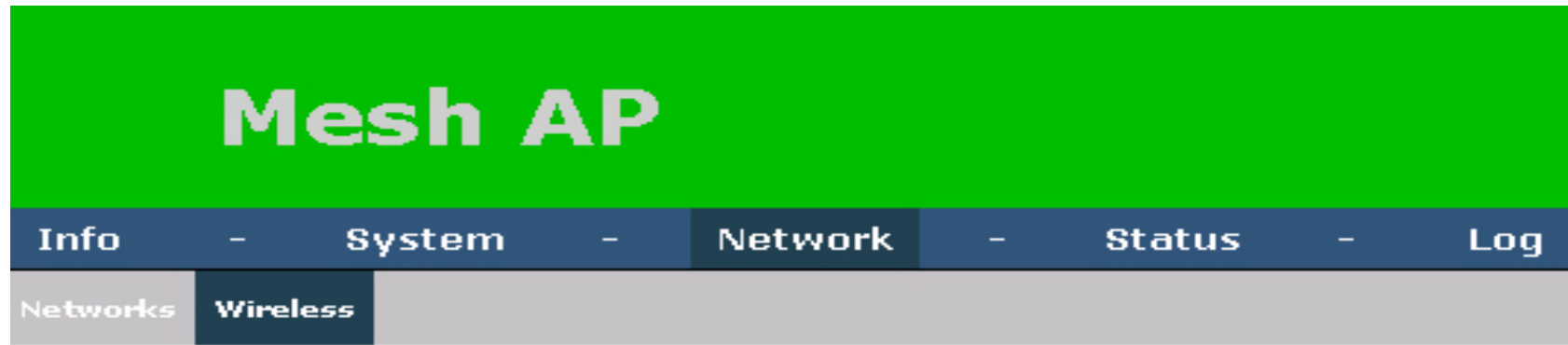
Wireless Configuration

General Wireless Setting

Operation	AP+Mesh
Mode	802.11B/G
Channel Domain	FCC
Channel	1
Wireless Distance (In Meters)	300

Mesh Mode

- Step 4 : Select [Channel]



Wireless Configuration

General Wireless Setting

Operation	<input type="text" value="AP+Mesh"/>
Mode	<input type="text" value="802.11B/G"/>
Channel Domain	<input type="text" value="FCC"/>
Channel	<input type="text" value="1"/>
Wireless Distance (In Meters)	<input type="text" value="300"/>

Mesh Mode

- **Step 5** : Select [**Encryption Type**] chose [Disabled] or [AES]
- [AES Pass phrase] : Create a encryption between *Mesh51* AP.

Mesh Configuration

Mode	Mesh
WMM	<input type="radio"/> On <input checked="" type="radio"/> Off
TX Rate	Auto
Tx Power	18 dbm
RTS	
Fragmentation	
MESH ID	LinkBee
Encryption Type	AES
AES Passphrase	12345678

Mesh Mode

- Step 6 : Select [ESSID] or [Encryption Type]

AP Configuration	
Mode	Access Point ▼
WMM	<input type="radio"/> On <input checked="" type="radio"/> Off
TX Rate	Auto ▼
Tx Power	18 dbm ▼
RTS	<input type="text"/>
Fragmentation	<input type="text"/>
ESSID	Mesh
Encryption Type	Disabled ▼

Mesh Mode

- **Step 7** : Click [**Save Change**]

STA Configuration

Mode	<input type="text" value="Client"/>
WMM	<input type="radio"/> On <input checked="" type="radio"/> Off
TX Rate	<input type="text" value="6M"/>
Tx Power	<input type="text" value="18 dbm"/>
RTS	<input type="text"/>
Fragmentation	<input type="text"/>
ESSID	<input type="text" value="WIFLY"/>
Encryption Type	<input type="text" value="Disabled"/>

STA Configuration:

Setting STA parameters.

It is needed when Operation is AP+STA.

Save Changes

Save Flash «
Clear Changes «

Mesh Mode

- Changes are saved in temporary memory.



Wireless Configuration: Settings saved

General Wireless Setting

Operation	<input type="text" value="AP+Mesh"/>
Mode	<input type="text" value="802.11B/G"/>
Channel Domain	<input type="text" value="FCC"/>
Channel	<input type="text" value="1"/>
Wireless Distance (In Meters)	<input type="text" value="300"/>

Mesh Mode

- **Step 8** : Click [**Save Flash**] to save permanently

STA Configuration

Mode	<input type="text" value="Client"/>
ESSID Broadcast	<input checked="" type="radio"/> On <input type="radio"/> Off
WMM	<input type="radio"/> On <input checked="" type="radio"/> Off
TX Rate	<input type="text" value="Auto"/>
Tx Power	<input type="text" value="18 dbm"/>
RTS	<input type="text"/>
Fragmentation	<input type="text"/>
ESSID	<input type="text" value="WIFLY"/>
Encryption Type	<input type="text" value="Disabled"/>

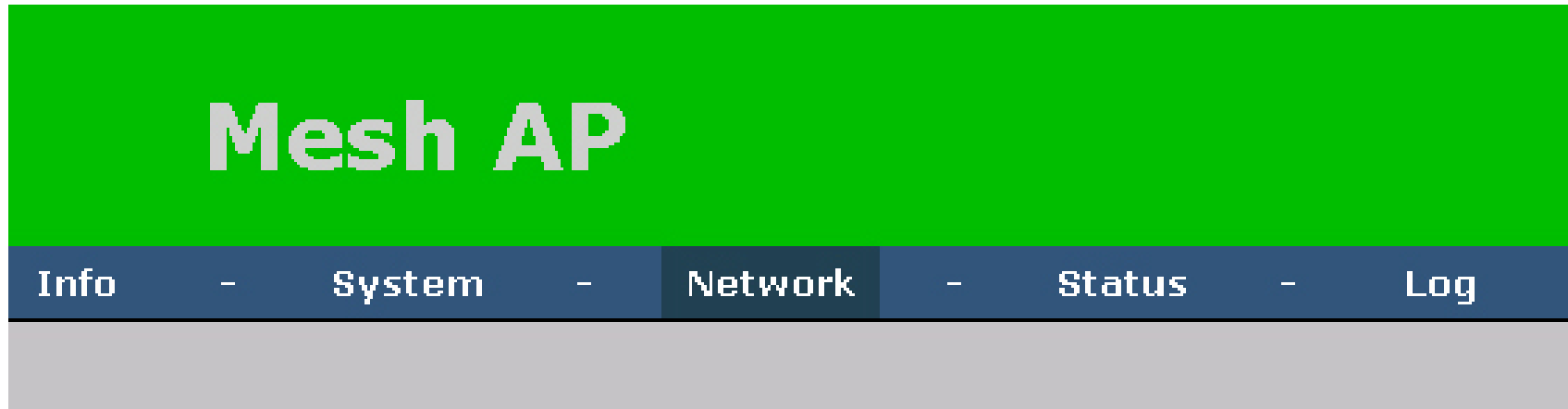
STA Configuration Help:
Setting STA parameters.
It is needed when Operation is AP+STA.

Save Changes

Save Flash

Mesh Mode

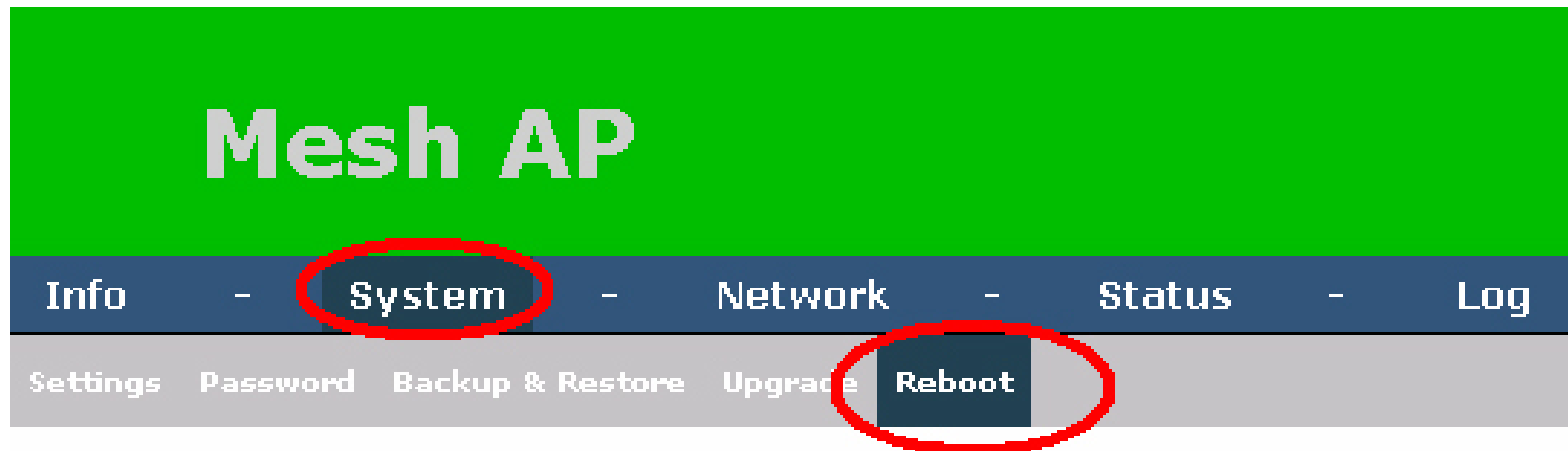
- Saving Completed, please reboot the *Mesh51* AP.



Save your configuration on flash...Please reboot.

Mesh Mode

- **Step 9** : Go to the [Reboot Page] and click button to reboot *Mesh51*



Repeater Mode

- Block Diagram :

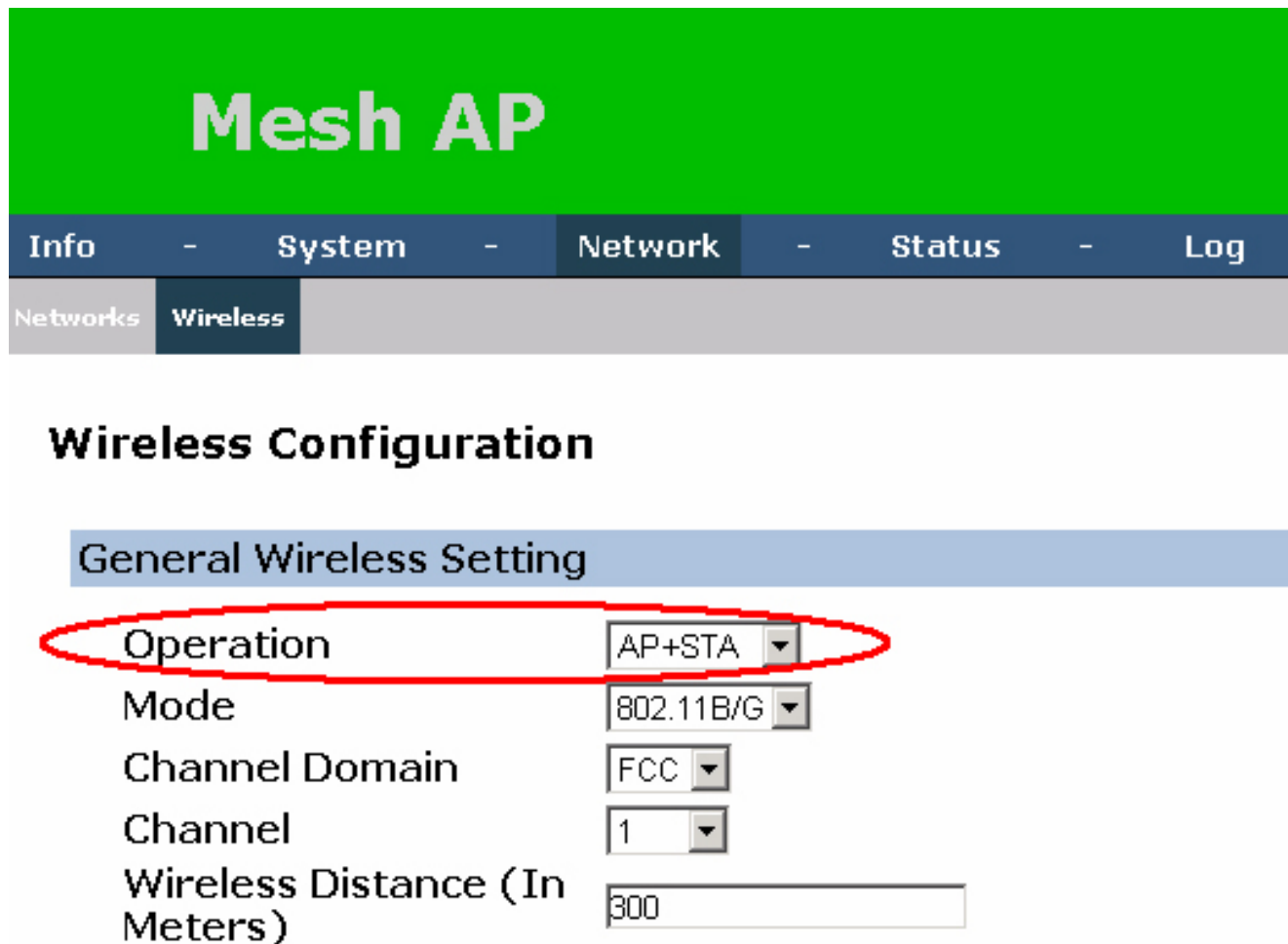


Repeater Mode

- Support **Open / WEP** Key
- Support *WDS-Capable* AP

Repeater Mode

- Step 1 : Select [AP + STA]



The screenshot shows the configuration interface for a Mesh AP. At the top, there is a green header with the text "Mesh AP". Below this is a navigation bar with tabs for "Info", "System", "Network", "Status", and "Log". Under the "Network" tab, there are sub-tabs for "Networks" and "Wireless". The "Wireless" sub-tab is active, and the page title is "Wireless Configuration". Below this, there is a section titled "General Wireless Setting". In this section, the "Operation" dropdown menu is highlighted with a red circle and set to "AP+STA". Other settings include "Mode" set to "802.11B/G", "Channel Domain" set to "FCC", "Channel" set to "1", and "Wireless Distance (In Meters)" set to "300".

General Wireless Setting	
Operation	AP+STA
Mode	802.11B/G
Channel Domain	FCC
Channel	1
Wireless Distance (In Meters)	300

Repeater Mode

- Step 2 : Change [ESSID]

STA Configuration	
Mode	Client ▾
WMM	<input type="radio"/> On <input checked="" type="radio"/> Off
TX Rate	Auto ▾
Tx Power	18 dbm ▾
RTS	<input type="text"/>
Fragmentation	<input type="text"/>
ESSID	B <input type="text"/>
Encryption Type	Disabled ▾

Repeater Mode

- **Step 3** : Select [Encryption Type], [Disabled] or [WEP]

STA Configuration	
Mode	<input type="button" value="Client"/> ▾
WMM	<input type="radio"/> On <input checked="" type="radio"/> Off
TX Rate	<input type="button" value="Auto"/> ▾
Tx Power	<input type="button" value="18 dbm"/> ▾
RTS	<input type="text"/>
Fragmentation	<input type="text"/>
ESSID	<input type="text" value="B"/>
Encryption Type	<input type="button" value="WEP"/> ▾
Passphrase	<input type="text" value="cxzdXC6fGrVYPdxWtJNn"/>
	<input type="button" value="Generate 40bit Keys"/>
	<input type="button" value="Generate 128bit Key"/>
WEP Key 1	<input type="radio"/> <input type="text"/>
WEP Key 2	<input type="radio"/> <input type="text"/>
WEP Key 3	<input type="radio"/> <input type="text"/>
WEP Key 4	<input type="radio"/> <input type="text"/>

Repeater Mode

- Step 4 : Set [Passphrase]
Click [Generate 40/128 Bit Key]

STA Configuration	
Mode	Client
WMM	<input type="radio"/> On <input checked="" type="radio"/> Off
TX Rate	Auto
Tx Power	18 dbm
RTS	
Fragmentation	
ESSID	B
Encryption Type	WEP
Passphrase	atonic's
	<input type="button" value="Generate 40bit Keys"/>
	<input type="button" value="Generate 128bit Key"/>
WEP Key 1	<input checked="" type="radio"/> <input type="text"/>
WEP Key 2	<input type="radio"/> <input type="text"/>
WEP Key 3	<input type="radio"/> <input type="text"/>
WEP Key 4	<input type="radio"/> <input type="text"/>

Repeater Mode

- WEP Key Generated

The image shows a configuration interface for a wireless network. The title 'STA Configuration' is circled in red. Below it, various settings are listed. 'Encryption Type' is set to 'WEP' and 'Passphrase' is 'atonic'. Two buttons, 'Generate 40bit Keys' and 'Generate 128bit Key', are visible. Below these, four WEP keys are listed, with the first key '085f35928e' selected. The entire WEP key section is circled in red.

STA Configuration	
Mode	Client
WMM	<input type="radio"/> On <input checked="" type="radio"/> Off
TX Rate	Auto
Tx Power	18 dbm
RTS	
Fragmentation	
ESSID	B
Encryption Type	WEP
Passphrase	atonic
	Generate 40bit Keys
	Generate 128bit Key
WEP Key 1	<input checked="" type="radio"/> 085f35928e
WEP Key 2	<input type="radio"/> 501ced8e61
WEP Key 3	<input type="radio"/> f2945de7c3
WEP Key 4	<input type="radio"/> 34849882c3

Repeater Mode

- Step 5 : Select [ESSID] or [Encryption Type]

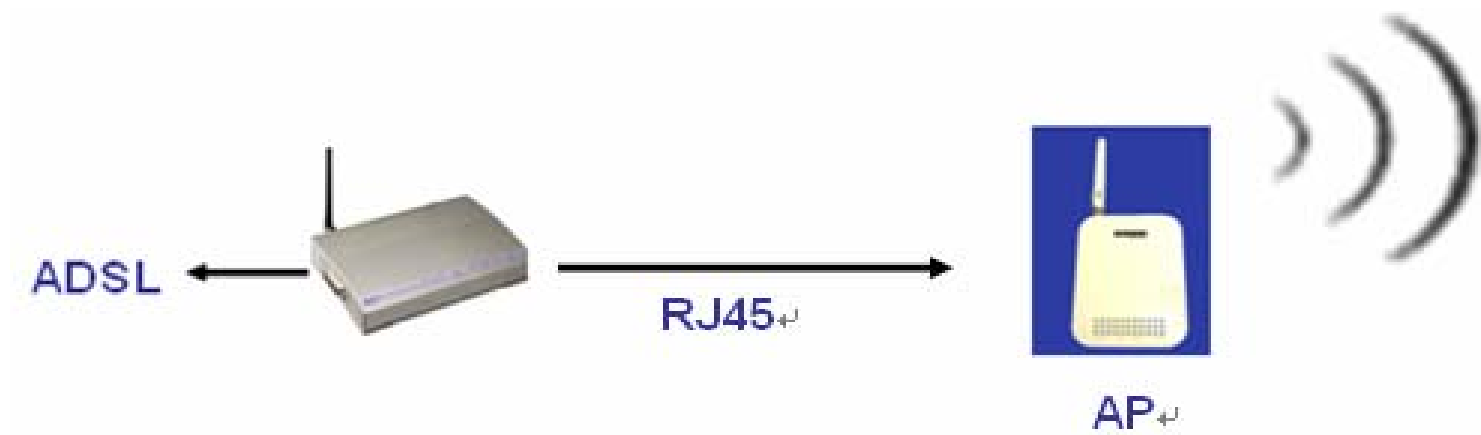
AP Configuration	
Mode	Access Point
WMM	<input type="radio"/> On <input checked="" type="radio"/> Off
TX Rate	Auto
Tx Power	18 dbm
RTS	
Fragmentation	
ESSID	Mesh
Encryption Type	Disabled

Repeater Mode

- **Step 6** : Click [**Save Change**]
- **Step 7** : Click [**Save Flash**]
- **Step 8** : Reboot *Mesh51* AP

AP Mode

- Block Diagram :

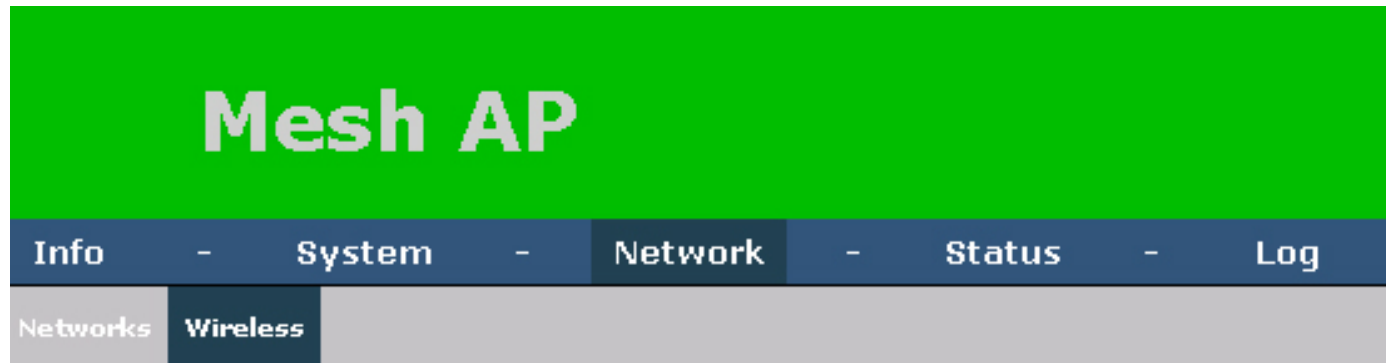


AP Mode

- Support **Open / WEP 64/128 Bit Key**
- Support **WPA-PSK, WPA2-PSK**
- Cipher Type : **TKIP, AES**
- Support **WPA-EAP, WPA2-EAP**
- Support **TLS/TTLS/PEAP**
- Support QoS : **WMM**

AP Mode

- Step 1 : Select [AP]



Wireless Configuration

General Wireless Setting

Operation	AP
Mode	802.11B/G
Channel Domain	FCC
Channel	1
Wireless Distance (In Meters)	300

AP Mode

- Step 2 : Change [ESSID]

AP Configuration	
Mode	Access Point
WMM	<input type="radio"/> On <input checked="" type="radio"/> Off
TX Rate	Auto
Tx Power	18 dbm
RTS	
Fragmentation	
ESSID	Mesh
Encryption Type	Disabled

AP Mode

- Step 3 : Select [Encryption Type]

The screenshot shows a configuration interface for an Access Point. The 'AP Configuration' section is highlighted with a red oval. The 'Encryption Type' dropdown menu is also highlighted with a red oval and is open, showing the following options: Disabled, WEP, WPA (PSK), WPA2 (PSK), WPA (RADIUS), and WPA2 (RADIUS). The 'WEP' option is currently selected.

Parameter	Value
Mode	Access Point
WMM	<input type="radio"/> On <input checked="" type="radio"/> Off
TX Rate	Auto
Tx Power	18 dbm
RTS	
Fragmentation	
ESSID	Mesh
Encryption Type	Disabled (Selected: WEP)

Dynamic WDS Configuration

Parameter	Value
Mode	

AP Mode

Encryption Type : **WEP**

Please refer to page 39 - 41

AP Mode

- Encryption Type : **WPA-PSK** or **WPA2-PSK**
- WPA PSK : **8 – 63** Characters

AP Configuration	
Mode	Access Point
WMM	<input type="radio"/> On <input checked="" type="radio"/> Off
TX Rate	Auto
Tx Power	18 dbm
RTS	
Fragmentation	
ESSID	Mesh
Encryption Type	WPA (PSK)
WPA PSK	••••••••••

AP Mode

- Encryption Type : **WPA-EAP** or **WPA2-EAP**
- RADIUS IP Address : RADIUS Server IP
- RADIUS Port : **1812**
- RADIUS Server Key : **1 - 32** Characters

AP Configuration	
Mode	Access Point
WMM	<input type="radio"/> On <input checked="" type="radio"/> Off
TX Rate	Auto
Tx Power	18 dbm
RTS	
Fragmentation	
ESSID	Mesh
Encryption Type	WPA (RADIUS)
RADIUS IP Address	192.168.1.228
RADIUS Port	1812
RADIUS Server Key	testing123

AP Mode

- QoS : Enable/Disable **WMM**

AP Configuration	
Mode	Access Point ▼
WMM	<input checked="" type="radio"/> On <input type="radio"/> Off
TX Rate	Auto ▼
Tx Power	18 dbm ▼
RTS	<input type="text"/>
Fragmentation	<input type="text"/>
ESSID	Mesh
Encryption Type	Disabled ▼

AP Mode

- **Step 4** : Click [**Save Change**]
- **Step 5** : Click [**Save Flash**]
- **Step 6** : Reboot *Mesh51* AP

Set *Mesh51* AP IP

- Static IP Mode : Change AP IP Address.



Network Configuration

Configuration

Connection Type

IP Address

Netmask

Default Gateway

Set *Mesh51* AP IP

- DHCP Mode :



Network Configuration

Configuration

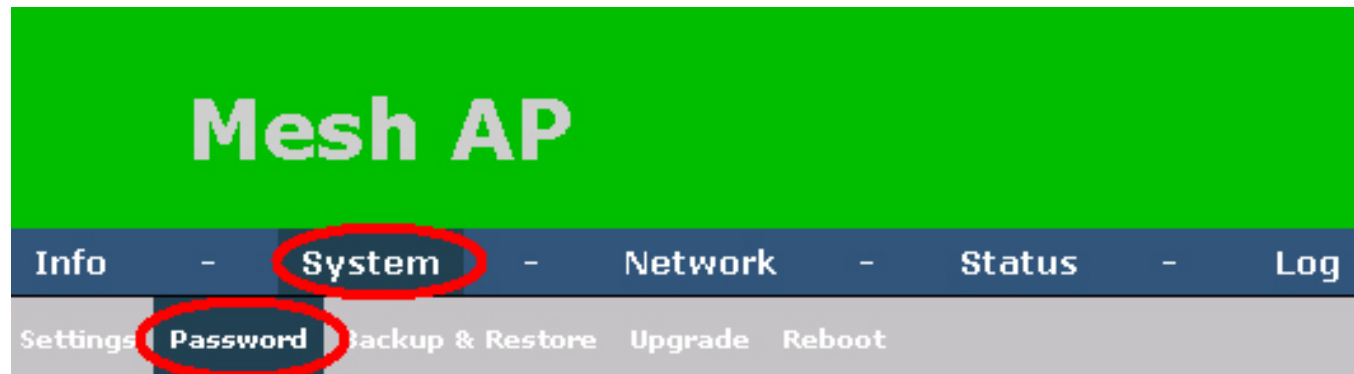
Connection Type

IP Address

Netmask

Set Login Password

- Change login password.



Password

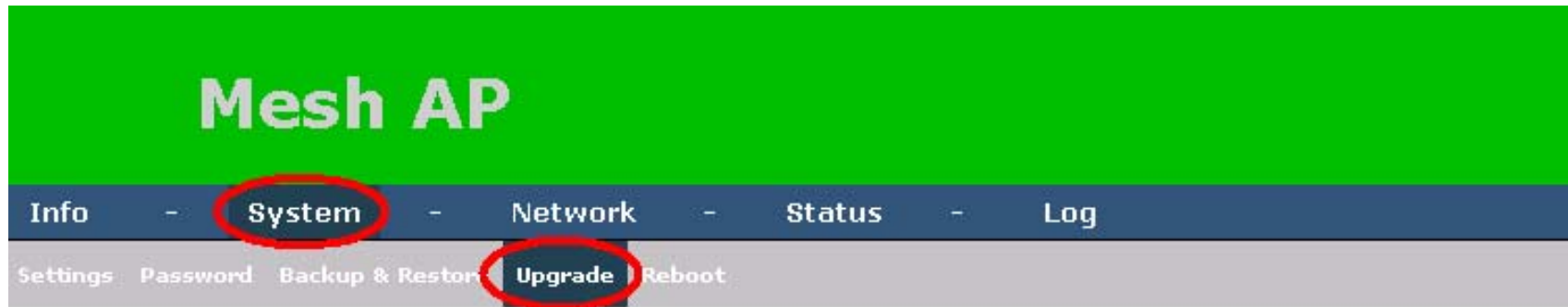
Password Change

New Password:

Confirm Password:

Software Upgrade

- **Step 1** : Click [**Browse**] button.

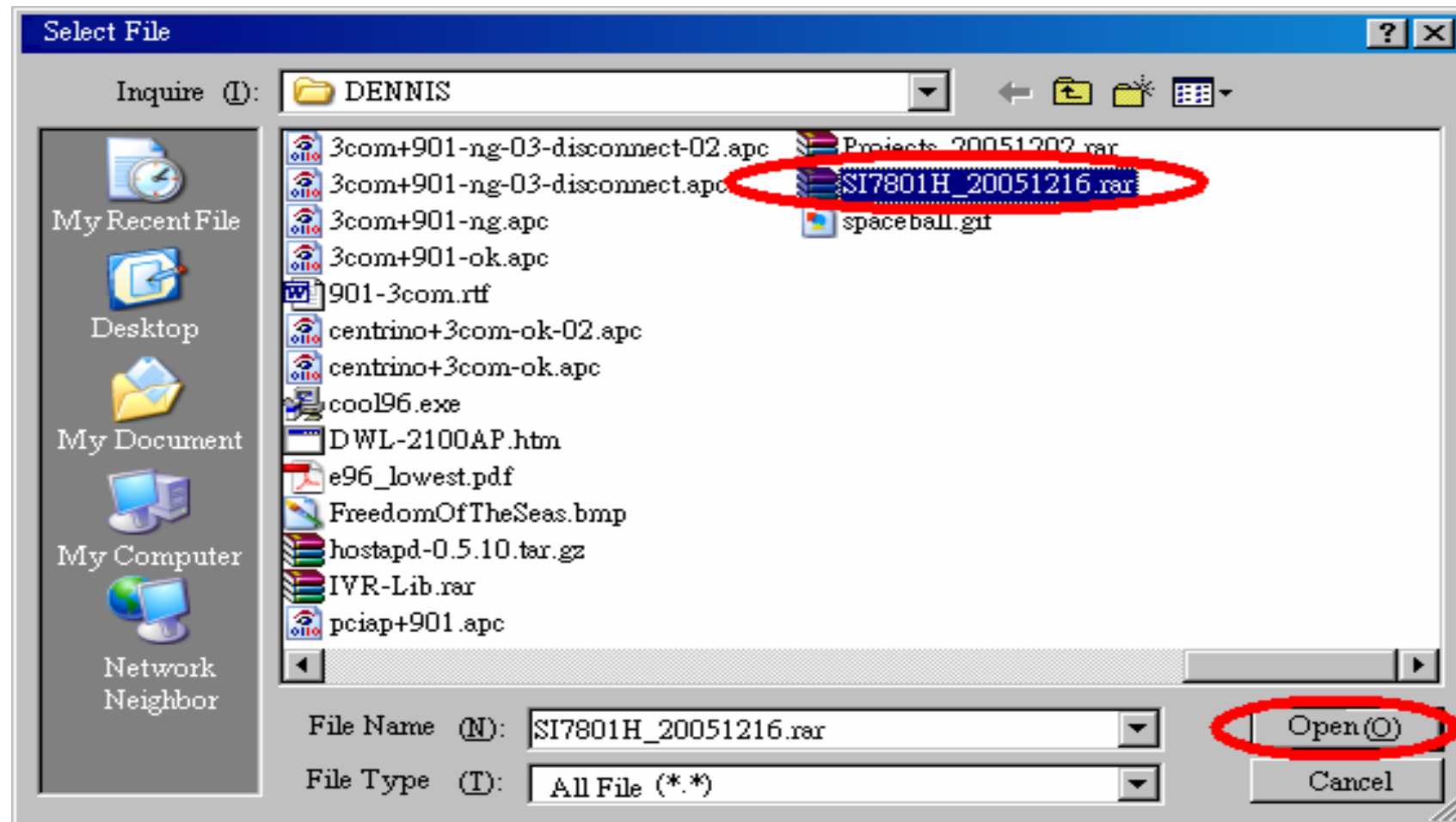


Firmware Upgrade

Firmware image to upload:

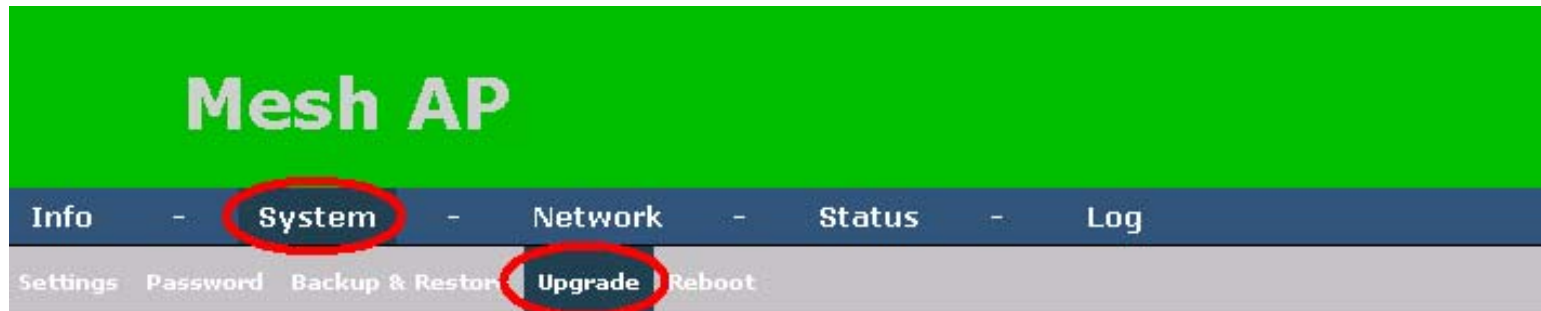
Software Upgrade

- **Step 2** : Select firmware and click **[Open]** button.



Software Upgrade

- **Step 3** : Click [**Upgrade**] button.



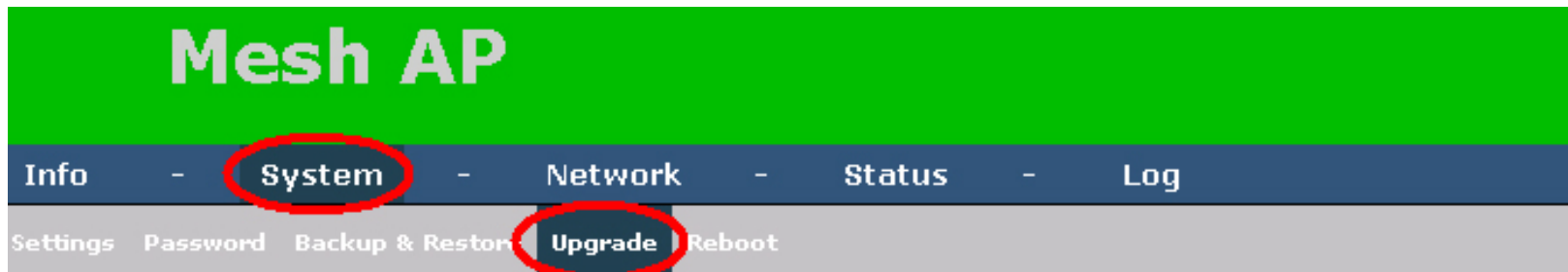
Firmware Upgrade

Firmware image to upload:



Software Upgrade

- Software Upgrading



Firmware Upgrade

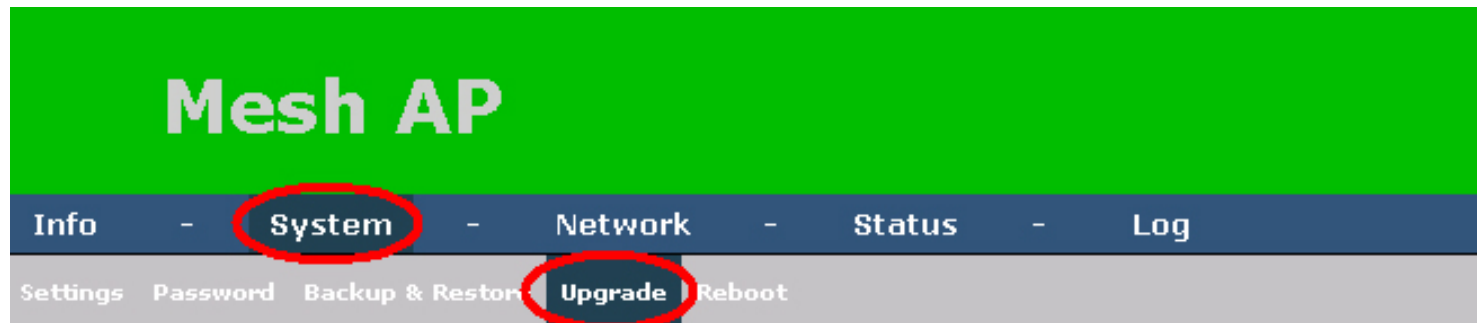
Upgrading firmware, please wait (5 minites) ...

Unlocking mtd2 ...

Erasing mtd2 ...

Software Upgrade

- Software Upgrade Completed, Rebooting



Firmware Upgrade

```
Upgrading firmware, please wait (5 minites) ...  
Unlocking mtd2 ...  
Erasing mtd2 ...  
Unlocking mtd2 ...  
Writing from /tmp/CNksJk to mtd2 ...  
done.  
Rebootng.
```

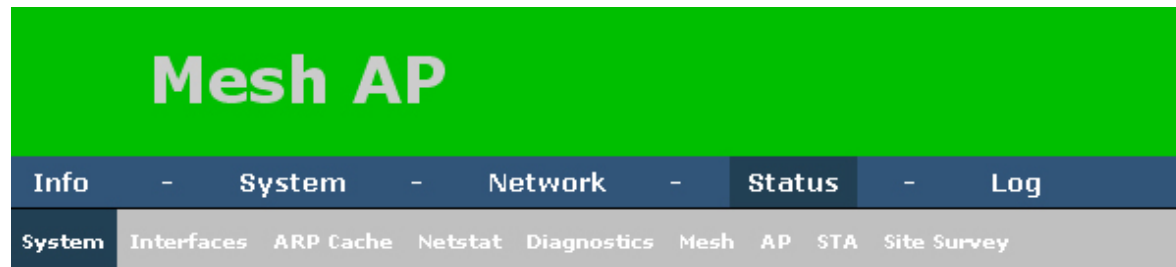
Status-system

RAM Usage:

- This is the current RAM usage. The amount free represents how much applications have available.

Tracked Connections:

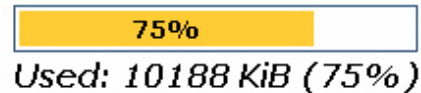
- This is the number of connections in your router's contrack table.



Device Status

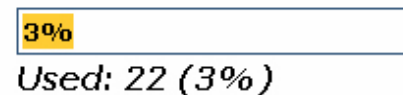
RAM Usage

Total: 13620 KiB



Tracked Connections

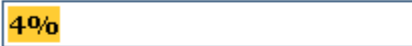

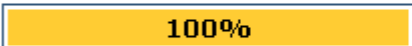

Maximum: 1024



Status-system

Mount Usage:

- This is the amount of space total and used on the filesystems mounted to your router.

Mount Usage	
/tmp <i>none</i>	 112KiB of 2928KiB
/dev <i>tmpfs</i>	 0KiB of 512KiB
/ <i>mini_fo:/tmp/root</i>	 1664KiB of 1664KiB
/jffs <i>/dev/mtdblock4</i>	 228KiB of 1024KiB

Status-Interface

Info - System - Network - **Status** - Log

System **Interfaces** ARP Cache Netstat Diagnostics Mesh AP STA Site Survey

Interfaces

DNS Servers

DNS Server 1	127.0.0.1
DNS Server 2	168.95.1.1

LAN

MAC Address	00:C0:CA:81:BF:E0	LAN:
IP Address	192.168.1.54	LAN stands for Local Area Network.
Received	40.8k pkts (4.2 MiB)	
Transmitted	3.8k pkts (602.5 KiB)	

LOOPBACK

IP Address	127.0.0.1	LOOPBACK:
Received	2.9k pkts (228.2 KiB)	A loopback interface is a type of 'circuitless IP address' or 'virtual IP' address, as the IP address is not associated with any one particular interface (or circuit) on the host or router. Any traffic that a computer program sends on the loopback network is addressed to the same computer.
Transmitted	2.9k pkts (228.2 KiB)	

Status-ARP Cache

Info - System - Network - Status - Log

System Interfaces **ARP Cache** Netstat Diagnostics Mesh AP STA Site Survey

ARP Cache

Address Resolution Protocol Cache (ARP)

MAC Address	IP Address	HW Type	Flags	Mask
00:05:5D:DF:9C:CD	192.168.1.129	ETHER	C (completed)	*
00:00:00:00:00:00	192.168.1.1	ETHER	0x0	*

Status-Netstat

Info	-	System	-	Network	-	Status	-	Log
System	Interfaces	ARP Cache	Netstat	Diagnostics	Mesh	AP	STA	Site Survey

Netstat

Ethernet/Wireless Physical Connections

IP address	HW type	Flags	HW address	Mask	Device
192.168.1.129	0x1	0x2	00:05:5D:DF:9C:CD	*	br-lan
192.168.1.1	0x1	0x0	00:00:00:00:00:00	*	br-lan

Routing Table

Kernel IP routing table

Destination	Gateway	Genmask	Flags	MSS Window	irtt	Iface
192.168.1.0	0.0.0.0	255.255.255.0	U	0 0	0	br-lan
10.0.0.0	0.0.0.0	255.0.0.0	U	0 0	0	br-lan
0.0.0.0	192.168.1.1	0.0.0.0	UG	0 0	0	br-lan

Router Listening Ports

Active Internet connections (only servers)

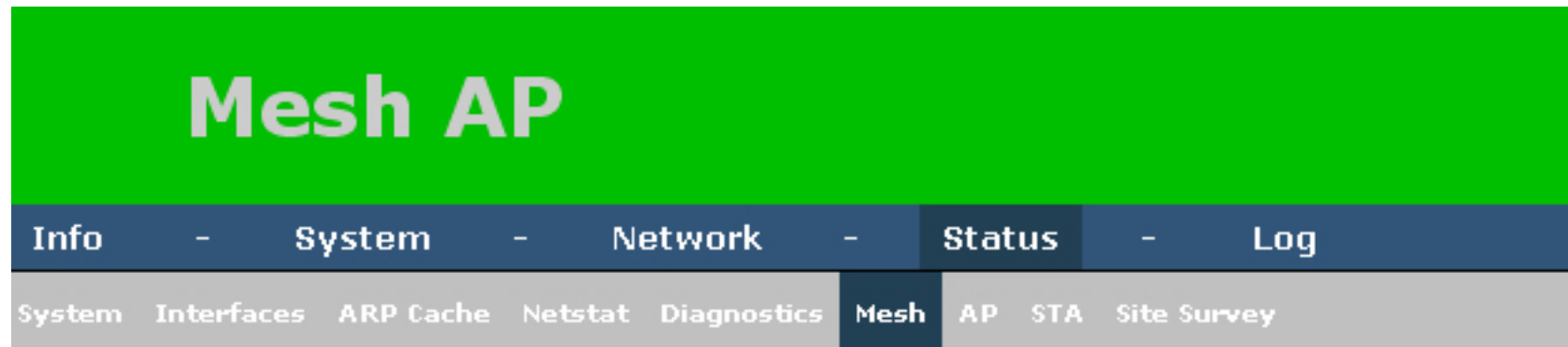
Proto	Recv-Q	Send-Q	Local Address	Foreign Address	State
tcp	0	0	0.0.0.0:80	0.0.0.0:*	LISTEN
udp	0	0	0.0.0.0:32768	0.0.0.0:*	
udp	0	0	0.0.0.0:52525	0.0.0.0:*	
raw	1200	0	0.0.0.0:1	0.0.0.0:*	0

Status-Diagnostics

The screenshot displays the Mesh AP web interface. At the top, a green header contains the text "Mesh AP". Below this is a navigation bar with tabs for "Info", "System", "Network", "Status", and "Log". Under the "Network" tab, there is a sub-menu with options: "System", "Interfaces", "ARP Cache", "Netstat", "Diagnostics", "Mesh", "AP", "STA", and "Site Survey". The "Diagnostics" option is currently selected. Below the navigation bar, the page title "Diagnostics" is shown. A light blue bar labeled "Network Utilities" contains two rows of input fields and buttons. The first row has an input field with "google.com" and a "Ping" button. The second row has an input field with "google.com" and a "TraceRoute" button. The bottom of the page is a solid dark blue bar.

Status- Mesh & AP & STA

- The Mesh & AP & STA & Site Survey are show the current status of the Mesh51.



Mesh Status

There are no neighboring nodes now.

Log- Log settings

Info - System - Network - Status - Log

Log Settings Syslog Kernel

Log Settings

Remote Syslog

Server IP Address	<input type="text"/>
Server Port	<input type="text" value="514"/>

Local Log

Log type	<input type="text" value="Circular"/> ▼
Log Size	<input type="text" value="16"/> KiB

Log- Syslog

Info - System - Network - Status - Log

Log Settings Syslog Kernel

Syslog View

Syslog Messages

```
Jan 1 00:00:13      syslog.info syslogd started: BusyBox v1.4.2
Jan 1 00:00:13      user.notice kernel: klogd started: BusyBox v1.4.2 (2008-03-11 18:37:04 CST)
Jan 1 00:00:14      user.info kernel: device eth0 entered promiscuous mode
Jan 1 00:00:16 kernel: wlan: 0.8.4.2 (svn r2568)
Jan 1 00:00:18      user.warn kernel: ath_hal: module license 'Proprietary' taints kernel.
Jan 1 00:00:18      user.info kernel: ath_hal: 0.9.30.13 (AR5212, AR5312, RF2316, TX_DESC_SWAP)
Jan 1 00:00:18 kernel: ath_rate_minstrel: Minstrel automatic rate control algorithm 1.2 (svn r2568)
Jan 1 00:00:18 kernel: ath_rate_minstrel: look around rate set to 10%
Jan 1 00:00:18 kernel: ath_rate_minstrel: EWMA rolloff level set to 75%
Jan 1 00:00:18 kernel: ath_rate_minstrel: max segment size in the mrr set to 6000 us
Jan 1 00:00:18      user.info kernel: wlan: mac acl policy registered
Jan 1 00:00:19 kernel: ath_ahb: 0.9.4.5 (svn r2568)
Jan 1 00:00:19 kernel:
Jan 1 00:00:19 kernel: Nehemiah_proc
Jan 1 00:00:19 kernel: ath_pci: switching rfkill capability off
Jan 1 00:00:19 kernel: ath_nci: switching per-packet transmit power control off
```

Log- Kernel

Info - System - Network - Status - Log

Log Settings Syslog Kernel

Kernel Ring Buffer

Current messages

```
Linux version 2.6.21.5 (nehemiah@nehe) (gcc version 4.1.2) #74 Fri Jul 25 16:31:01 CST 2008
CPU revision is: 00019064
Determined physical RAM map:
  memory: 01000000 @ 00000000 (usable)
Initrd not found or empty - disabling initrd
On node 0 totalpages: 4096
  DMA zone: 32 pages used for memmap
  DMA zone: 0 pages reserved
  DMA zone: 4064 pages, LIFO batch:0
  Normal zone: 0 pages used for memmap
Built 1 zonelists. Total pages: 4064
Kernel command line: console=ttyS0,9600 rootfstype=squashfs,jffs2 init=/etc/preinit
Primary instruction cache 16KB, physically tagged, 4-way, linesize 16 bytes.
Primary data cache 16KB, 4-way, linesize 16 bytes.
Synthesized TLB refill handler (20 instructions).
Synthesized TLB load handler fastpath (32 instructions).
```

Factory Default

- Step 1 : Power up Mesh51 AP
- Step 2 : Wait for 3 minutes.
- Step 3 : Press the “**Factory Reset**” button under the *Mesh51* AP for 3 times.
- Step 4 : Wait for *Mesh51* to reboot.

Troubleshooting

- Q : [Repeater Mode] can not connect ?
- A : Add a WDS setting in remote AP.
- Q : Configuration is not effective ?
- A : Reboot the Mesh AP.
- Q : Configuration is not saved after reboot?
- A : Click [Save Flash] before reboot.

Technical Specifications

Interface

- 1 x RJ-45 10/100Mbps port
- 1 x 802.11b/g wireless interface

QoS

Wireless Multimedia Extensions ; WMM(802.11e)

Wireless Features

- Interoperable with 802.11b/g compliant equipments
- Auto data rate switch with 1,2,5.5,6,9,11,12,18,24,36,48,54 Mbps for 11 b/g
- External Antenna
- System Throughput 16 Mbps
- Frequency Domain : FCC, ETSI

Range

- 1) Indoor Range : 60 m
- 2) Outdoor AP to AP : 200 m
- 3) Outdoor AP to Client : 200 m

With 7dBi patch antenna -

- 4) Outdoor AP to AP : 500 m
- 5) Outdoor AP to Client : 300 m

Security Features

- WEP 64/128-bit
- WPA-PSK (TKIP/AES), WPA-EAP
- WPA2- PSK (TKIP/AES), WPA2-EAP

Management Features

- Web Based Management
- *Mesh51* Management Software Utility
- TFTP/HTTP download
- SNMP
- Event log
- System Information
- Change Administrator Password
- System reboot

Throughput

- 1) One Hop : 13 Mbps
- 2) Two Hops : 5.4 Mbps
- 3) Three Hops : 4.2 Mbps
- 4) Four Hops : 3 Mbps

*Depend on the wireless adapter