

Copyright © 2006 by PLANET Technology Corp. All rights reserved. No part of this publication may be reproduced, transmitted, transcribed, stored in a retrieval system, or translated into any language or computer language, in any form or by any means, electronic, mechanical, magnetic, optical, chemical, manual or otherwise, without the prior written permission of PLANET.

PLANET makes no representations or warranties, either expressed or implied, with respect to the contents hereof and specifically disclaims any warranties, merchantability or fitness for any particular purpose. Any software described in this manual is sold or licensed "as is". Should the programs prove defective following their purchase, the buyer (and not PLANET, its distributor, or its dealer) assumes the entire cost of all necessary servicing, repair, and any incidental or consequential damages resulting from any defect in the software. Further, PLANET reserves the right to revise this publication and to make changes from time to time in the contents hereof without obligation to notify any person of such revision or changes.

All brand and product names mentioned in this manual are trademarks and/or registered trademarks of their respective holders.

## Revision

Quick Start Guide for PLANET 802.11a/b/g Wireless LAN Indoor MESH AP

Model: MAP-2100

Rev: 1.1 (April, 2006)

Part No. EMQ-MAP2100

## Table of Contents

1. Preference .....	3
2. Package Contents.....	3
3. Before Installation .....	3
4. Network Planning.....	4
5. Hardware Installation Procedures .....	7
6. Startup the MESH AP.....	7
7. Startup the first client connection .....	9
8. Further Configuration .....	13

## 1. Preference

---

This Quick Start Guide illustrates basic information to start up the MAP-2100, please refer to the following for the first time start up. More information can be found in the CD-ROM, it is strongly recommended to check both documents to help you better understanding the Mesh Access Point.

## 2. Package Contents

---

The following items should be included:

- Indoor Mesh AP x 1
- Power Adapter x 1
- 2.4/5GHz Dipole Antenna x 2
- Quick Start Guide x 1
- Management Utility and User's manual CD x 1

If any of the above items are damaged or missing, please contact your dealer immediately.

## 3. Before Installation

---

1. For the MAP-2100, the default IP address will base on the MAC address of the device you get.

For example, the **WAN** MAC address: 00-30-4f-4b-**09-30**. The last two hexadecimal set, **09h** and **30h** will be converted into decimal number, **9** and **48** as the IP address of the MAP-2100.

So, for MAP-2100, the IP address status will as following:

- ➔ WLAN 0: 10.9.48.1 (Radio 1, Wireless Backhaul)
- ➔ LAN / WLAN 1: 172.9.48.1 (Radio 2, Wireless AP & LAN)

The MAC address information can be found on the bottom of the MAP-2100.



### Hint

For future maintain or support purpose, it is also suggested to list the MAC address of the MESH AP into a table for all the MESH AP you install. The information can be used for future maintain such as device "Reset to default"

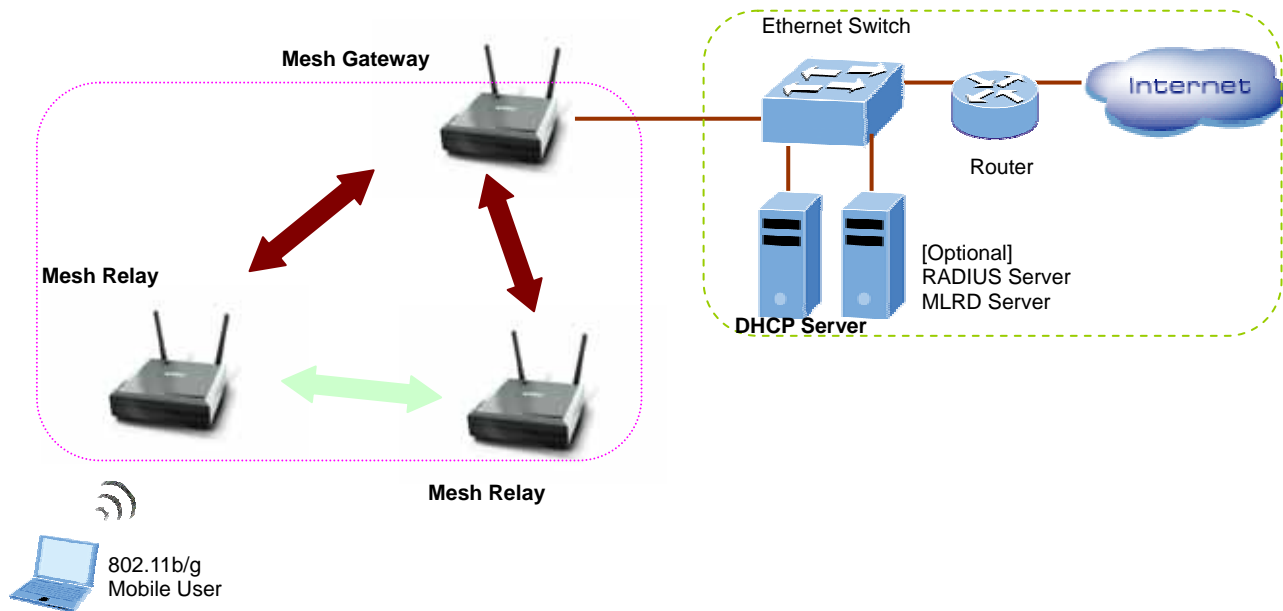
---

3. To provide the Internet Access, the network should also provide the connectivity to the Internet for the MAP-2100.

## 4. Network Planning

### 4.1 Installation topology

The basic MESH Network topology can be planned as following.



1. The MAP-2100 can be configured either a gateway or a relay via web interface. The basic service set can be one Mesh gateway and one or two Mesh relays.
2. The Internet connection is required if the mesh network planned to provide the connectivity for Internet for all the mobile users.
3. RADIUS server or MLRD (Mobile Location Register Daemon) server are optional servers that vary on the installation site.

Each MAP-2100 support up to 250 user registration, the basic set above then can support 750 users registration. To expand the network coverage, simply just base on the real network environment to add on the new Mesh Relay or Mesh Gateway.



#### Note

The MAP-2100 supports 250-user registration; however, the overall network performance may vary on the real environment and application in many aspects, such as the bandwidth to the Internet, the services / sessions that the clients implement.

### 4.2 Installation consideration

#### 4.2.1 Hardware

Please review the points below for the Hardware install consideration

#### a. MAP-2100

The MAP-2100 can be configured either a gateway or a relay via web interface. When the MAP-2100 is set in gateway mode, both of its WAN and LAN RJ-45 ports are functional. If the MAP-2100 is configured in relay mode, its WAN port is not available.

#### b. IEEE802.11a or b/g

In general, it is suggested to fix the operating mode to IEEE802.11a as backhaul connection (Radio 1) and IEEE802.11b/g as Access Point connection (Radio 2).



#### Note

Please refer to your local regulation for the wireless frequency band. The MAP-2100 support 5GHz and 2.4GHz, in some area, please follow the local regulation to configure the MAP-2100 to the correct frequency.

---

#### c. Antenna Type

In general, it is suggested to use omni-antenna for both backhaul and local AP. However, the antenna installation will vary on environment.



#### Note

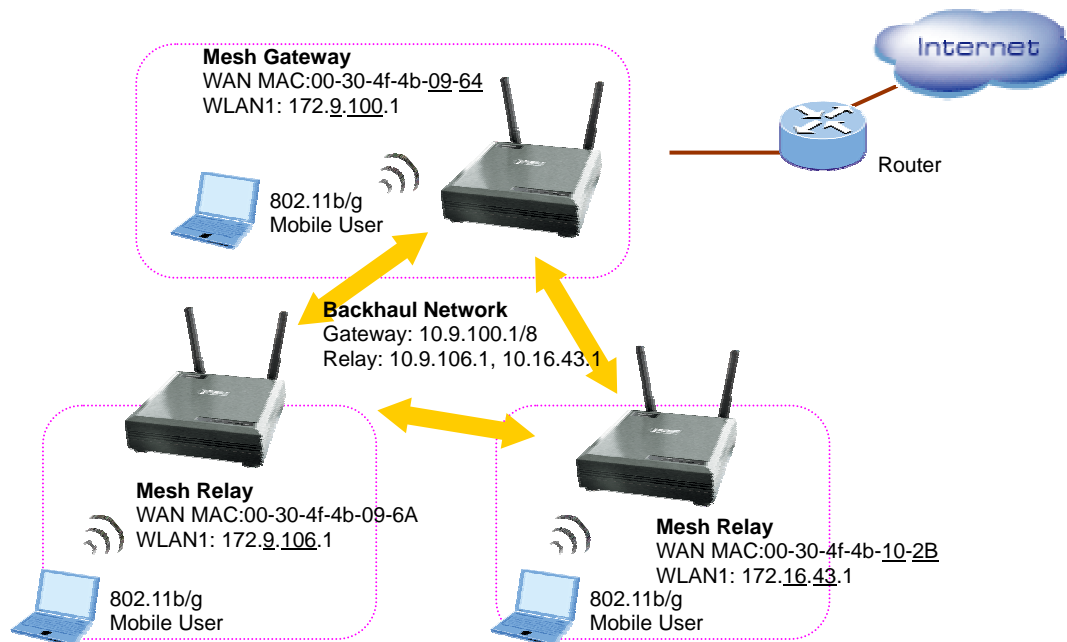
Please refer to your local regulation for the wireless output power. The MAP-2100 support level output power adjustment. In some areas, please follow the local regulation to configure the output power together with the antenna.

---

### 4.2.2 Network Subnet

The MAP-2100 use 172.xx.yy.zz/24 for local network service, and 10.xx.yy.zz/8 for backhaul connection by default.

The example shows the default setting while the first time boot up the whole system.



Three MAP-2100 with WAN MAC address: 09-64, 09-6A, 10-2B will forming the default backhaul network: 10.9.100.1, 10.93.106.1 and 10.16.43.1 as in the example, where 10.9.100.1 will be the gateway of the 10.xx.yy.zz network.

The three AP service networks will also base on the MAC address to forming the 172.xx.yy.zz/24 subnet as the default service IP subnet.



### Hint

1. You can see the text mode network topology from web interface of the three MAP-2100. Or from the management utility. Please refer to the User Guide or Management Utility Guide for more.
  2. By default, WLAN 1 / LAN port of MAP-2100 are:
    - NAT: ON.
    - DHCP: ON
    - Zero Configure (PnP IP): OFF
    - WLAN 1 SSID: PLANET
    - WLAN 1 SSID broadcast: OFF
    - WLAN 1 Frequency band: Auto (802.11a/b/g)
  3. It is suggested to start up the first installation from LAN port of MAP-2100 base on the default IP setting.
- 

The above example shows the default network subnet setting of the Mesh network. For more information of re-forming the whole network topology, such as re-structure the IP network, turn off the NAT, turn on the backhaul security, etc, please refer to the user guide to have the MAP-2100 configured for the network.

#### 4.2.2 Software consideration

The MAP-2100 provides the three management interfaces:

- Secured Web access
- Management utility
- SNMP

For the first time management, please follow the below section to access the MAP-2100 through web browser.

The management utility help to central manage the MESH AP network. This utility can be installed in a Windows PC that be located in the AP services network, for example, 172.xx.yy.zz/24 network, or can be installed in the Internet. For more information about Management utility, please also refer to the management utility guide.

To support mobile IP, the MLRD server is required. This MLRD server should be installed in the same subnet to the Mesh Gateway for optimal performance. For more information about MLRD server, please refer to the user guide of the MLRD server.

---

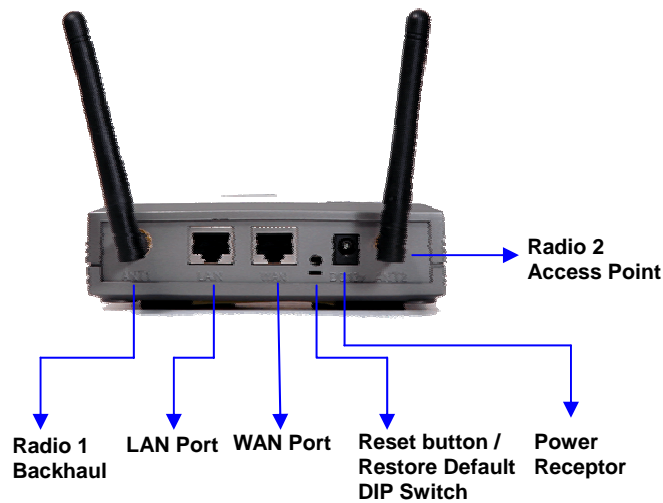
## 5. Hardware Installation Procedures

Before you proceed with the installation, it is necessary that you have enough information about the MAP-2100.

1. Locate an optimum location for the MAP-2100. Plan for the output frequency of the MAP-2100, 2.4GHz or 5GHz.
2. Assemble the antennas to MAP-2100 follow the frequency band plan. Try to place them to a position that can best cover your wireless network. The antenna's position will enhance the receiving sensitivity.

When installing antenna(s), follow these general tips:

- ◆ For most elevated antenna installations, we recommend you to ask the professional installers for proper installation and safety.
- ◆ For the safety reasons, you are recommended never to touch a high-gain antenna when it is transmitting or point it at any part of your body.
- ◆ Please, follow carefully the instructions with your antenna.
- ◆ Keep antennas away from metal objects/obstructions (heating and air-conditioning ducts, large ceiling trusses, building superstructures, and major power cabling runs).
- ◆ Use a directional antenna when you establish a link between two buildings. A directional antenna must be properly aligned to the point at the other antenna, line-of-sight.
- ◆ Locate an omni-directional antenna in the middle of the desired coverage area if possible.
- ◆ Place the antenna as high as possible to increase the coverage area.
- ◆ Outdoor antennas should be mounted at a sufficient height to prevent the radio path from above the obstructions such as trees and buildings.
- ◆ Antenna towers should keep a safe distance from overhead power lines. The recommended safe distance is twice the tower height.



3. Using Category 3 or higher UTP or STP cable, connect the LAN port of MAP-2100 to a 10Mbps or 10/100Mbps Ethernet hub or switch, and connect the management station to a hub or switch on the same LAN.
4. Connect the power adapter to the receptor on MAP-2100 and plug the other end to a wall outlet or power strip.



### Note

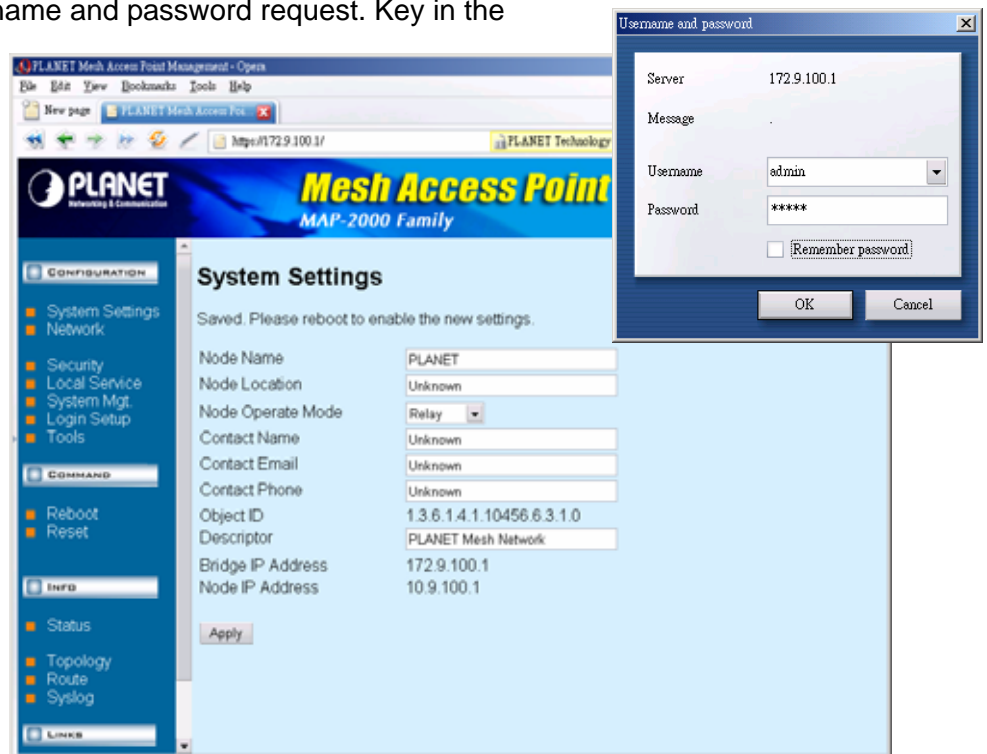
ONLY use the power adapter supplied with the MAP-2100. Otherwise, the product may be damaged.

## 6. Startup the MAP-2100

To get the initial management of the MAP-2100, please follow the following steps.

1. Connect the MAP-2100's LAN port to an active network.
2. Connect the PC to the network as well.
3. Check the WAN MAC address of the MAP-2100. For example, 00-30-4f-4b-09-64.
4. Convert the last two set of hexadecimal number into two decimal number. For example, (09H-64H), into (9.100). Then the LAN/WLAN1 interface will use the IP address: 172.9.100.1 as default.
5. Setup the PC into the same IP subnet of the MAP-2100, for example, 172.9.100.2

6. Key in the URL, <https://172.9.100.1> to bring up the management interface of the MAP-2100.
7. The browser pop-up the user name and password request. Key in the password and username with "admin"
8. Now, the MAP-2100 is ready for services





## 7. Startup the first client connection

### 7.1 Knowing the default MESH AP setting

The default settings of MESH AP for client access are as below:

#### Wireless Access Point:

[Network -> WLAN-> Radio2]

SSID: PLANET

Hide SSID: Enabled

Wireless Frequency: Auto



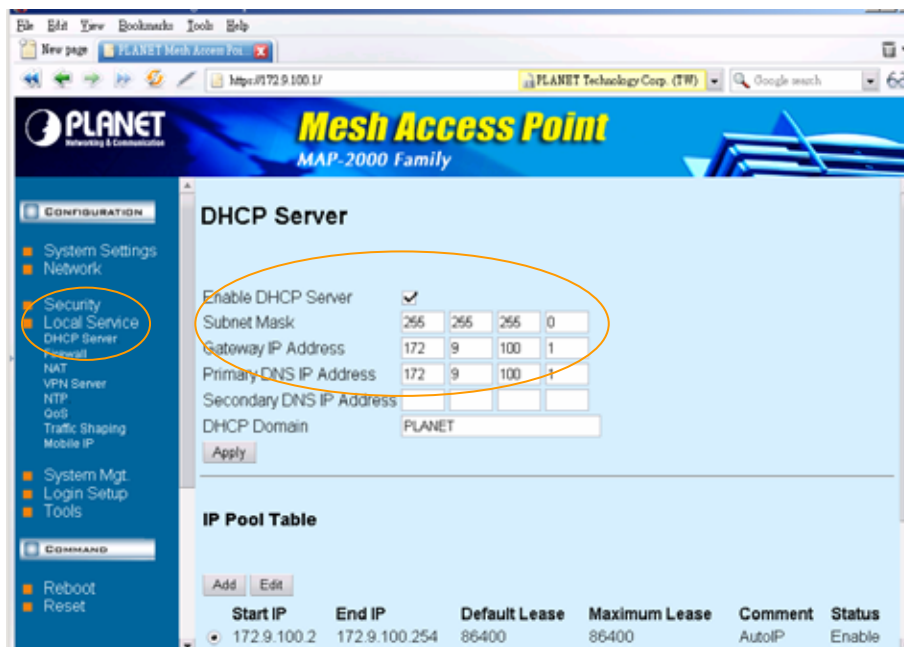
#### Hint

1. To make sure the first connection accurately, it is suggested to configure / double check the Radio 2 to 802.11g.
2. Turn off Hide SSID can help to quick finding the AP if there is no security concern for this first installation.

#### LAN IP Configuration:

[Local Services -> DHCP Server]

DHCP: Enable

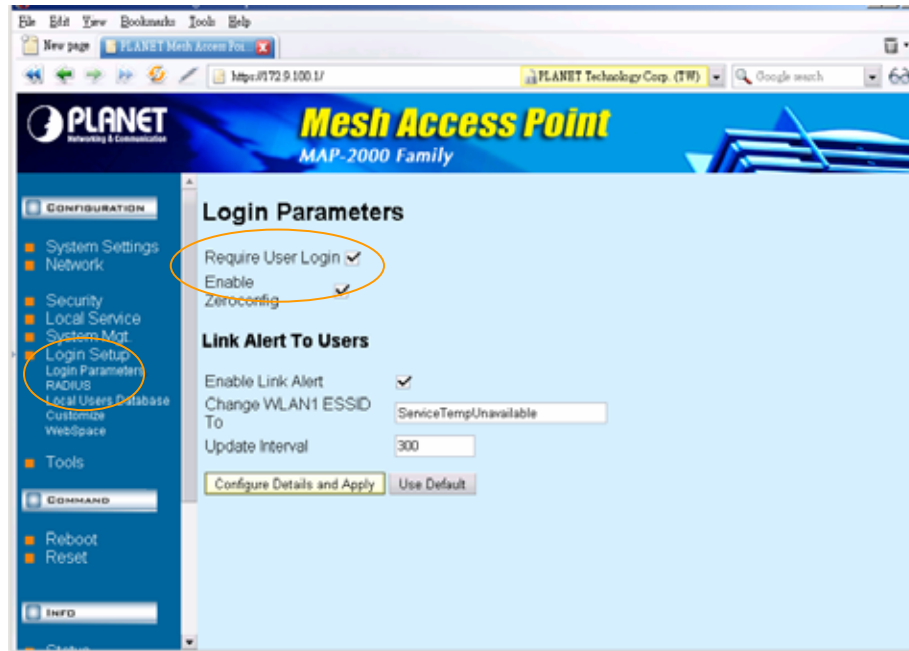


## Access Configuration:

[Login Setup -> Login parameters]

Require User Login: Enable

Zero Config (PnP IP): Enable



### Hint

With "Require User Login" turned off, the manager can quickly use and check client access without requiring user name, password.

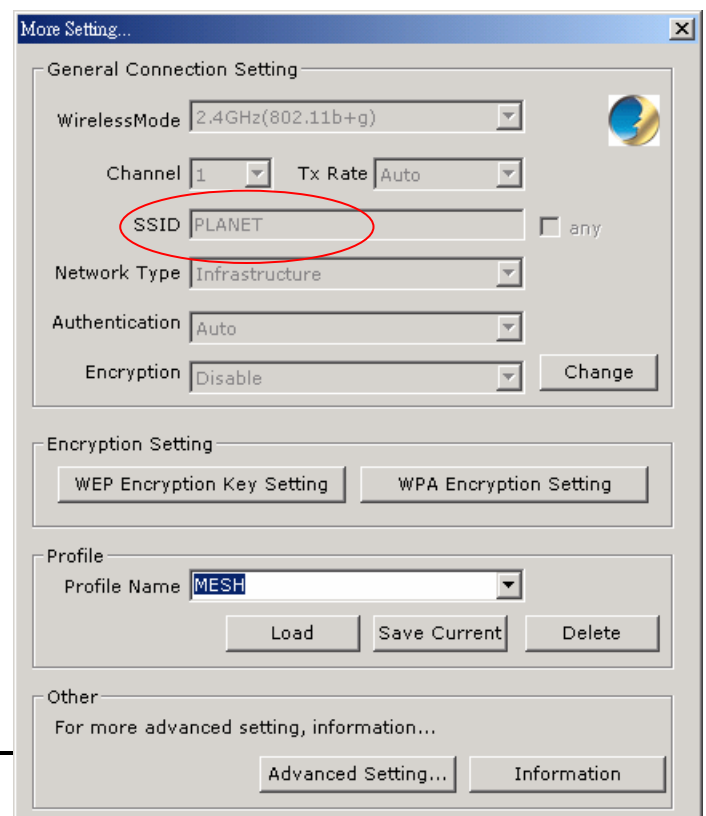
With this feature turned ON, the MESH AP will ask for password, either from Local User Database or from RADIUS where the setting are empty by default.

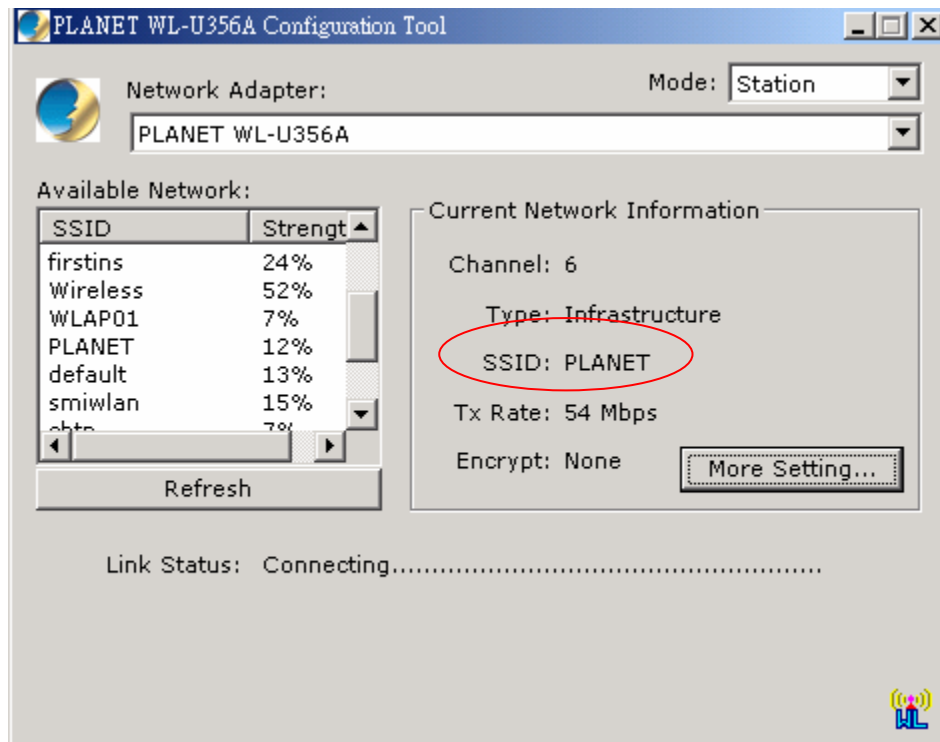
## 7.2 Steps to configure the client PC and get connected to MESH AP

Please follow the steps below for the client PC setup.

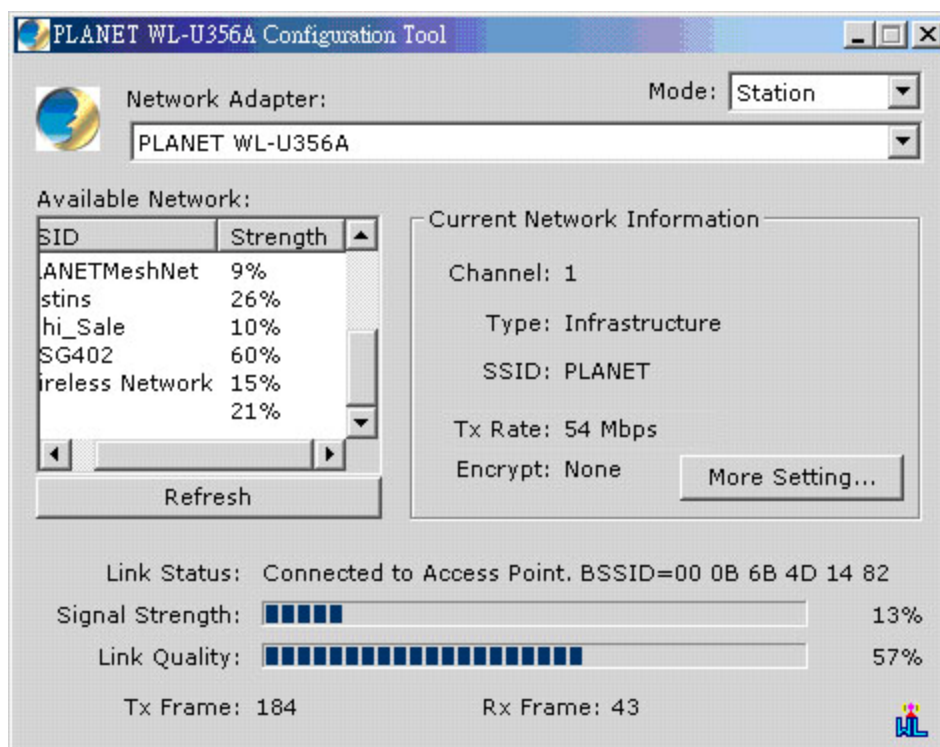
In the following we will base on the 11g USB adapter as example.

1. Configure the Wireless profile as the figure from your client PC. That is, key in the SSID as PLANET.
2. The Wireless LAN adapters starts the connecting once apply the setting.





3. The link is connected.



4. Configure to make the Wireless adapter use DHCP to get the IP address. Then, with the command IPCONFIG to check the IP address the PC get from the DHCP server. Then check if it matches the WAN MAC address to the MESH AP you would like to test. As the example, the MESH AP is with MAC address: 09h-64h (9.100), so, the IP address of the PC are 172.9.100.2.

```
C:\WINNT\system32\cmd.exe
Microsoft Windows 2000
(C) Copyright 1985-2000 Microsoft Corp.

C:\>ipconfig

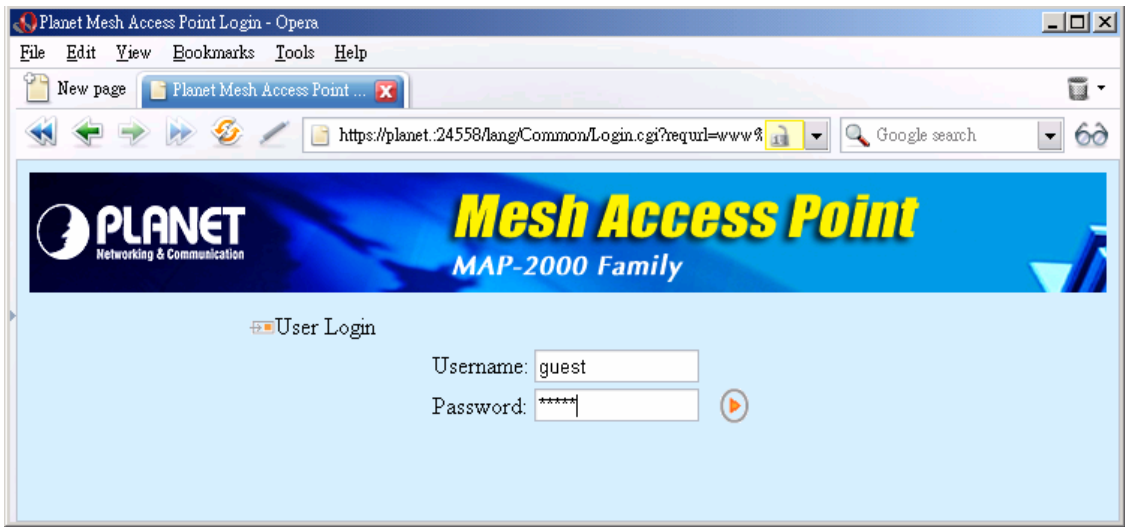
Windows 2000 IP Configuration

Ethernet adapter 區域連線:

    Connection-specific DNS Suffix  . : PLANET
    IP Address. . . . . : 172.9.100.2
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . : 172.9.100.1

C:\>_
```

- 5. Now, the Wireless client gets the IP address from the MESH AP.
- 6. Then startup the Internet Browser. With “Require User Login” option disabled, the client should access the Internet right away. And with require user login, the pop-up screen will ask for the user name and password.



## **8. Further Configuration**

For advanced settings of MESH AP, please refer to the user's manual in the CD. The CD will including:

- User Guide for Web Management
- Management Utility
- User Guide for Management Utility

If you have any difficulty on resolving the problem while installing or using the device, please feel free to contact your local dealer or PLANET Technical Support.