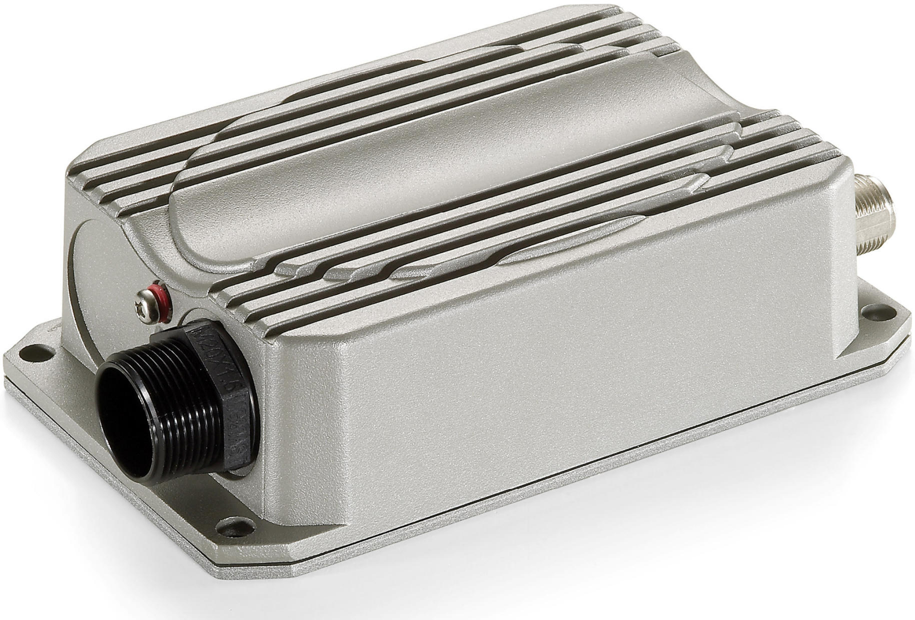
WAB-3003
108M 11g Outdoor PoE AP

User's Manual V1.0



Regulatory Information

Declaration of Conformity with Regard to the 1999/5/EC (R&TTE Directive) for

European Community, Switzerland, Norway, Iceland, and Liechtenstein

Model: WAB-3003

For 2.4 GHz radios, the devices have been tested and passed the requirements of the following standards, and hence fulfills the EMC and safety requirements of R&TTE Directive within the CE marking requirement.

- Radio: EN 300.328$_{:2006}$
- Radio: EN 50392$_{:2004}$
- EMC: EN 301.489-1$_{:2005}$, EN 301.489-17$_{:2002}$,
- EMC: EN 55022$_{:2006}$ Class B, EN 55024$_{:1998}$ + A1$_{:2001}$ + A2:$_{2003}$ including the followings:

    EN 61000-3-2, EN 61000-3-3.

    EN 61000-4-2, EN 61000-4-3, EN 61000-4-4,

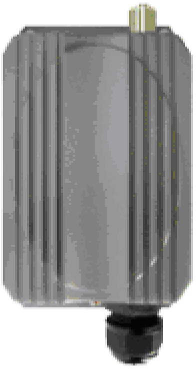
    EN 61000-4-5, EN 61000-4-6, EN 61000-4-11
- Safety: EN 60950-1$_{:2001}$ + A11$_{:2004}$,

Table of Contents

1.Introduction

1.1 Overview

This manual is designed for **system integrators**, **field engineers** and **network administrators** to set up **WAB-3003 108M 11g Outdoor PoE AP** in their network environments. It contains step-by-step procedures and graphic examples to guide users with networking knowledge to complete the installation.

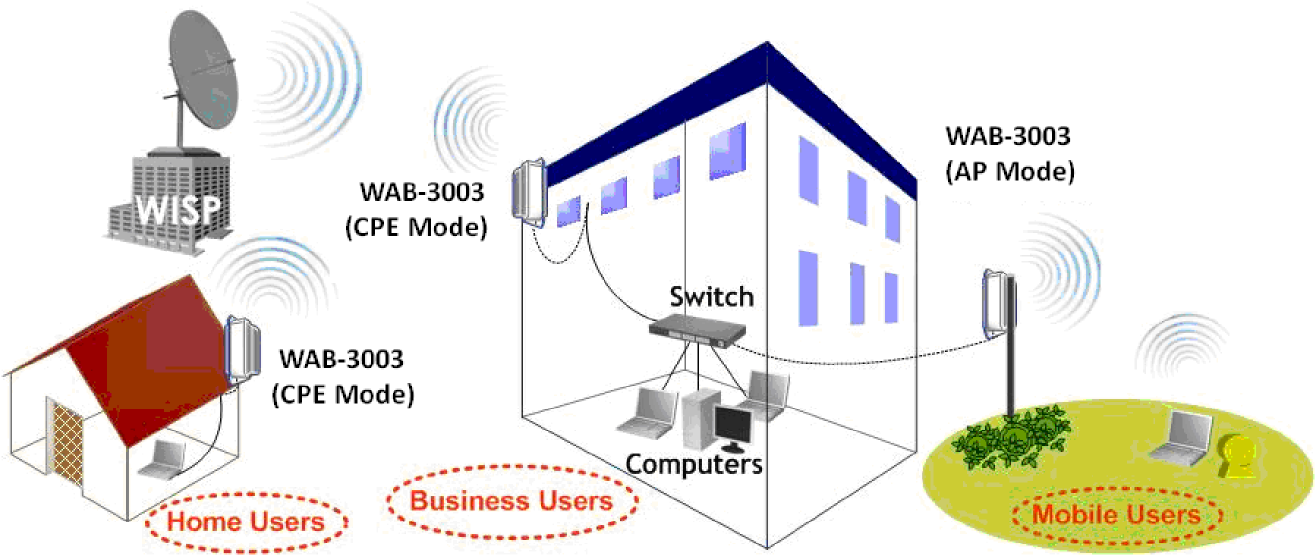


WAB-3003 (with N type antenna)

The 802.11 b/g compliant **WAB-3003** is a multi-mode Last-Mile Broadband solution for Wireless Internet Service Provider (WISP). It can be used as an outdoor Customer Premises Equipment (CPE mode) to receive wireless signal over the last mile, helping WISPs deliver wireless broadband Internet service to new residential and business customers, where wired broadband Internet service, such as cable and DSL, cannot serve. In addition, it can be deployed as a traditional fixed wireless Access Point (AP mode), either indoors or outdoors.

The **WAB-3003** is compact in size and weatherproof. Coming with a mounting kit, it can be mounted on a pole or wall. Specifically developed for outdoor usage, the fully-hardened, IP68-rated **WAB-3003** can withstand wind, rain, lightning, power surges, and extreme temperatures.

The following is a network diagram for a typical WISP application.



WAB-3003 Long range wireless transmission

The **WAB-3003** can be deployed in various environments, for example:

- Hot zones such as business districts, office complexes, airports, hotels, conference centers, recreation areas, and shopping malls.
- Wireless CPE for Multi Dwelling Unit (MDU) /Multi Tenant Unit (MTU), such as apartments, dormitories, and office complexes.
- Outdoor access point for school campuses, enterprise campuses, or manufacture plants.
- Indoor access point for hotels, factories, or warehouses where metal industrial grade devices are preferred.
- Public hotspot operation for café, parks, convention centers, shopping malls, or airports.
- Wireless coverage for indoor and outdoor ground for private resorts, acre estate/home's yards, or gulf course communities.

1.2 Functionalities

- Acts as a "**Wireless Modem**" to bring wireless bandwidth to home and office buildings.
- **Wireless Bandwidth Allocation** (uplink/downlink) delivered to each building depending on different subscription plans.
- Full range of **wireless security** mechanisms such as WEP, WPA and WPA2 (802.11i) that are important for enterprise wireless deployments.
- Acts as a **Home Router** for **IP Sharing** and firewall, all-in-one installation solution - no need for extra router.
- Purposely built rugged access point for harsh **outdoor / industrial** conditions.
- **Weatherproof** and watertight from its rugged aluminum housing (IP68 Approved).
- **Power over Ethernet (PoE)** built-in for single cable installation.
- On board **Ethernet surge protection**.
- **Multiple operation modes** :
  - AP Base Station Mode
  - WISP CPE Mode
  - WDS Bridge Mode
  - Universal Repeater Mode

1.3 Document Conventions

Caution:	Represents essential steps, actions, or messages that should not be ignored.
Note:	Contains related information that corresponds to a topic.
SAVE	Indicates that clicking this button will save the changes you made, but you must reboot the system upon the completion of all configuration settings for the changes to take effect.
CLEAR	Indicates that clicking this button will clear what you have set before the settings are applied.

2. *System Overview*

2.1 Package Contents

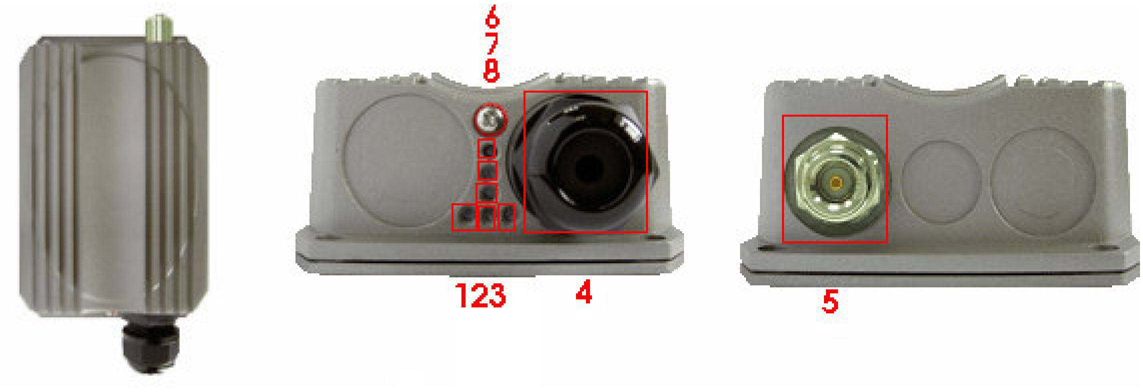
The standard package of **WAB-3003** includes:

WAB-3003	x 1
Quick Installation Guide (QIG)	x 1
CD-ROM (with User’s Manual and QIG)	x 1
PSE with AC cable	x 1
Mounting Kit	x 1
Water Proof Connector (installed)	x 1

Caution:
It is highly recommended to use all the components supplied to ensure best performance of the system.

2.2 Panel Function Description

WAB-3003

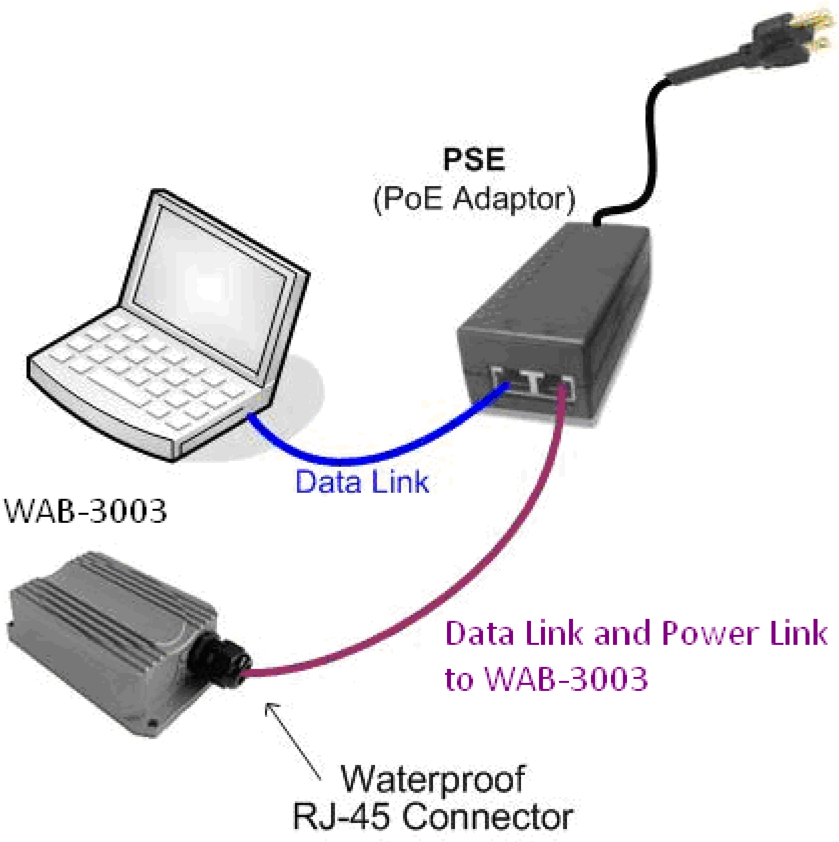


1	**WLAN**	Green LED **ON** indicates system ready
2	**Wireless Signal Strength**	For showing the signal strength situation
3	**Ethernet**	Green LED **ON** indicates connection, **OFF** indicates no connection, and **BLINKING** indicates transmitting data.
4	**PoE Connector**	For connecting to the Power Sourcing Equipment (PSE)
5	**N-type Connector**	For connecting to an antenna
6	**Power**	Red LED **ON** indicates power on, and **OFF** indicates power off
7~8	**Wireless Signal Strength**	For showing the signal strength situation (7: Yellow; 8: Green)

*3.*Installation

3.1 Hardware Installation

The following diagram is a **basic network topology** which can be used for testing and configuring the **WAB-3003**.



Installation Steps:

Step 1. Connect an antenna to the connector.

Step 2. Connect the PSE (POWER & DATA OUT) to the PSE 1 connector on the lower panel.

Step 3. Connect one end of an Ethernet cable to the PSE 2 connector on the lower panel and connect the other end to a computer.

Step 4. Connect the power cord to the PSE.

Step 5. Power on the PSE in order to supply power to the **WAB-3003**.

3.2 Basic Configuration

3.2.1 Introduction to Web Management Interface

WAB-3003 provides a user friendly web management interface for configuration. As **WAB-3003** is a dual-mode system which can be configured as either an access point (AP Mode) or a gateway (CPE Mode) based on your needs, it is required to follow the respective installation procedures provided to properly set up the desired mode for this system.

- **Default IP Address of Web Management Interface:**

  The default IP address and Subnet Mask for the CPE mode and AP mode are as follows:

Mode	**AP Mode**	**CPE Mode**
IP Address	192.168.0.1	192.168.0.1
Subnet Mask	255.255.255.0	255.255.255.0

- **Default User Name and Password:**

  The default **User name** and **Password** for the **root** and **admin** accounts are as follows:

Mode	**AP Mode**	**CPE Mode**	
Management Account	**Root Account**	**Root Account**	**Admin Account**
User Name	root	root	admin
Password	admin	admin	password

There are two system management accounts for AP & CPE modes to maintain the system, **root** and **admin**, and each has different levels of management capabilities. The **root** account is empowered with full privileges while the **admin** account is with partial ones; there is only one management account for AP mode, **root**. For more information on the privileges of these two accounts, please refer to **Appendix A. System Management Account Privileges**.

< AP Mode – Default Mode >

<u>Step 1</u>**: IP Segment Set-up for Administrator PC**

Set a static IP address on the same subnet mask as **WAB-3003** in TCP/IP of the administrator PC, such as the following example. Do not duplicate the IP address used here with the IP address of **WAB-3003** or any other devices within the same network.

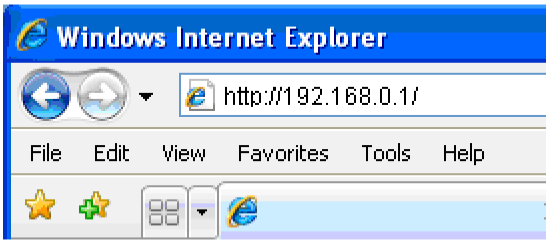
>> Example of IP Segment:

The valid range of IP address is 1 ~ 254. However, **1** must be avoided as it is already used by **WAB-3003**. Below depicts an example of using **100** (the underlined value can be changed as desired).

- IP Address: 192.168.0.1<u>00</u>
- Subnet Mask: 255.255.255.0

Step 2: Launch Web Browser

Launch a web browser to access the web management interface of AP mode by entering the default IP address, **http://192.168.0.1/**, in the URL field, and then press ***Enter***.

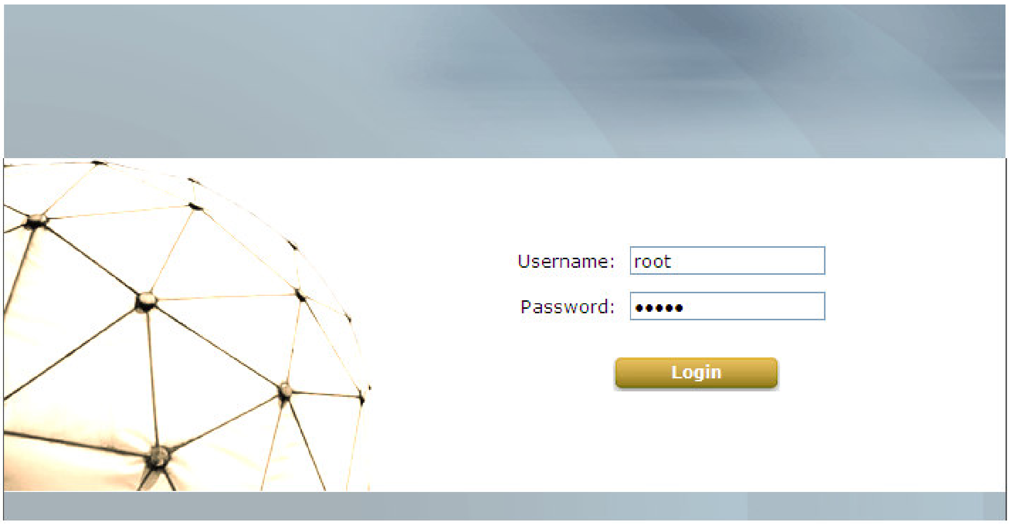


Caution:
Using an incorrect default IP address will result in no Login page shown on the web browser. Please make sure a correct IP address is used for the desired mode; refer to ***Section 3.2.1 Instruction to Web Management Interface*** *for detailed default IP addresses.*

Step 3: System Login

The system manager Login Page will then appear.

Enter **"root"** in the *User name* field and **"admin"** in the *Password* field, and then click ***OK*** to log in.



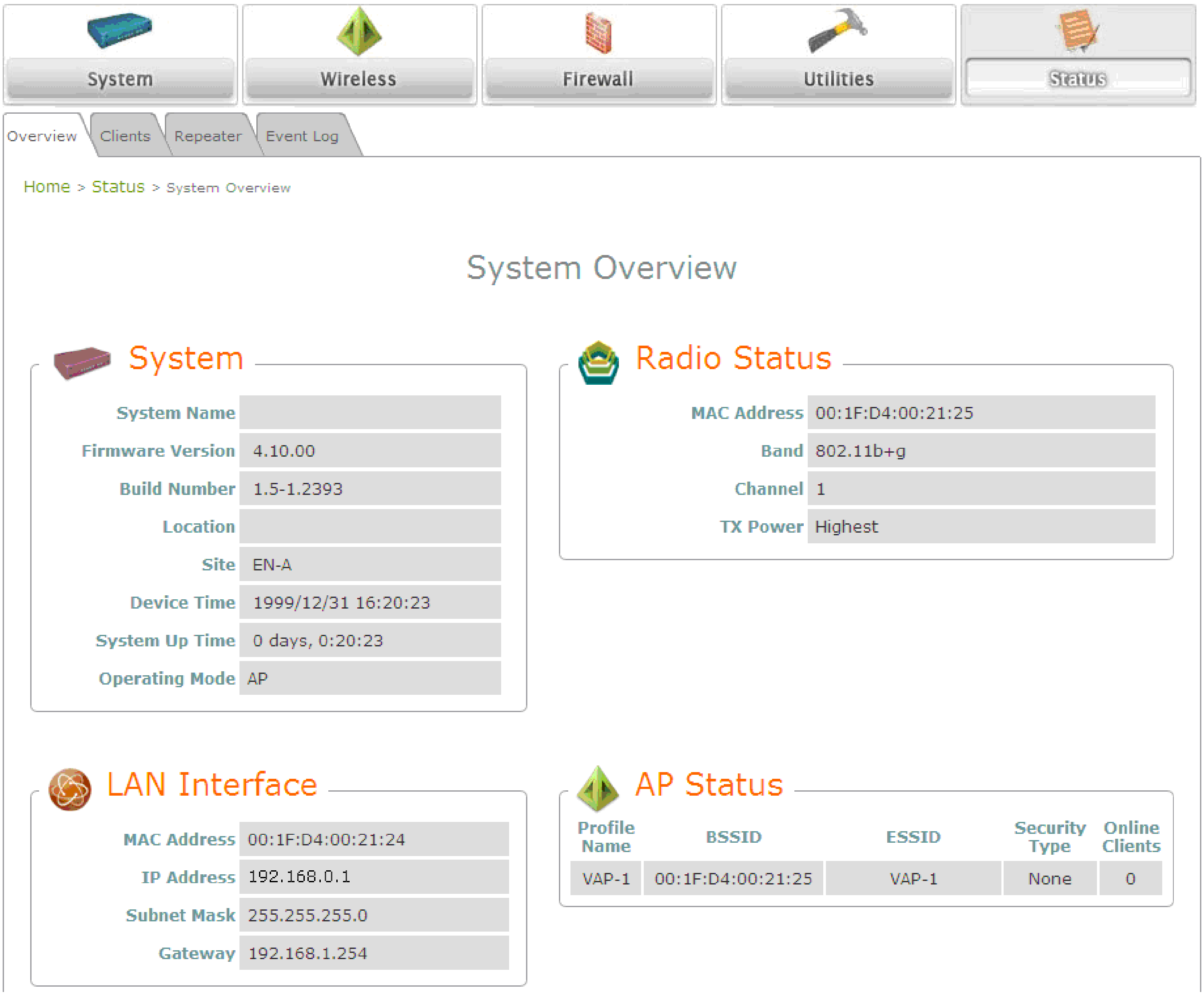
Username: root

Password: •••••

Step 4: Login Success

The **System Overview** page will appear after a successful login.

To logout, simply click on the Logout button on the top right hand corner of the management interface.



System Overview

System

System Name	
Firmware Version	4.10.00
Build Number	1.5-1.2393
Location	
Site	EN-A
Device Time	1999/12/31 16:20:23
System Up Time	0 days, 0:20:23
Operating Mode	AP

Radio Status

MAC Address	00:1F:D4:00:21:25
Band	802.11b+g
Channel	1
TX Power	Highest

LAN Interface

MAC Address	00:1F:D4:00:21:24
IP Address	192.168.0.1
Subnet Mask	255.255.255.0
Gateway	192.168.1.254

AP Status

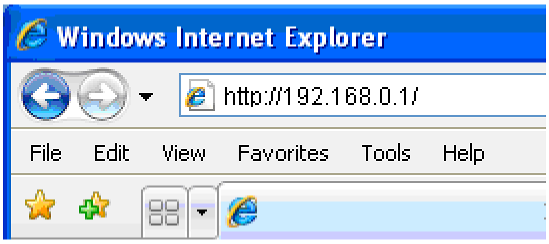
Profile Name	BSSID	ESSID	Security Type	Online Clients
VAP-1	00:1F:D4:00:21:25	VAP-1	None	0

Note:
By default, AP mode is enabled. Therefore, the administrator must login to the system via the AP mode login page at the first time. The administrator is then able to switch between modes afterwards. For information on switching between modes, please refer to **Section 4.1.2 Operating Mode**.

< CPE Mode >

Step 1: Launch Web Browser

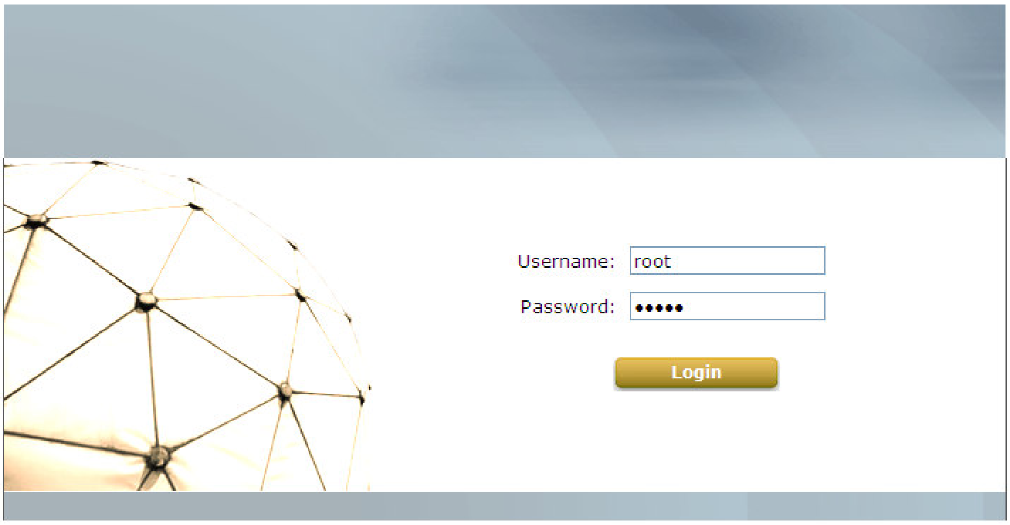
Launch a web browser to access the web management interface of CPE mode by entering the default IP address, **http://192.168.0.1/**, in the URL field, and then press ***Enter***.



Step 2: System Login

The system manager Login Page will then appear.

Enter **"root"** in the *User name* field and **"admin"** in the *Password* field, and then click ***OK*** to log in. Below depicts an example of using the **root** manager account.



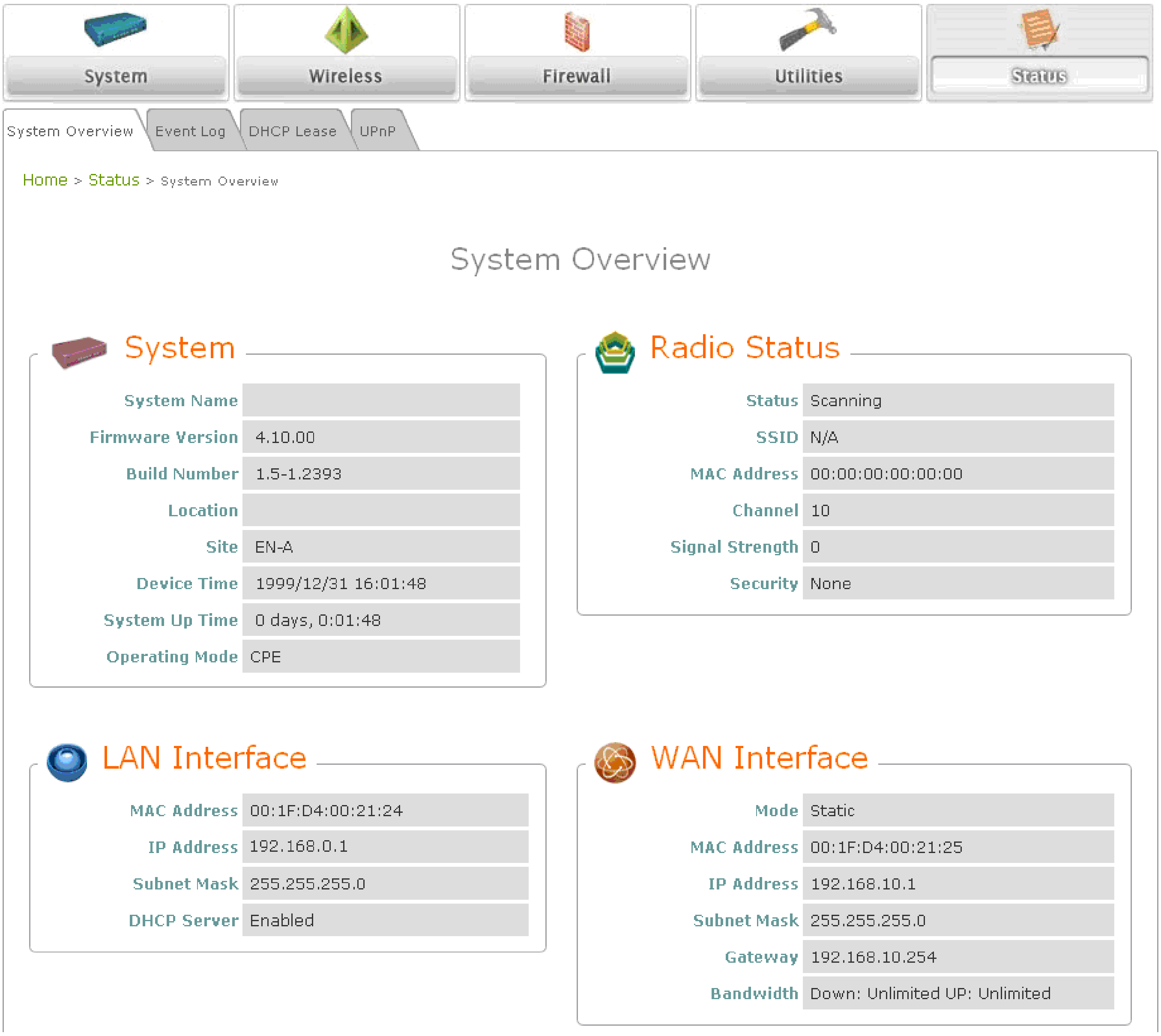
Username: root

Password: •••••

Step 3: Login Success

After a successful login into **WAB-3003**, a **System Overview** page of web management interface will appear.

To logout, simply click on the ***Logout*** button at the upper right hand corner of the interface.



System Overview

System

System Name	
Firmware Version	4.10.00
Build Number	1.5-1.2393
Location	
Site	EN-A
Device Time	1999/12/31 16:01:48
System Up Time	0 days, 0:01:48
Operating Mode	CPE

Radio Status

Status	Scanning
SSID	N/A
MAC Address	00:00:00:00:00:00
Channel	10
Signal Strength	0
Security	None

LAN Interface

MAC Address	00:1F:D4:00:21:24
IP Address	192.168.0.1
Subnet Mask	255.255.255.0
DHCP Server	Enabled

WAN Interface

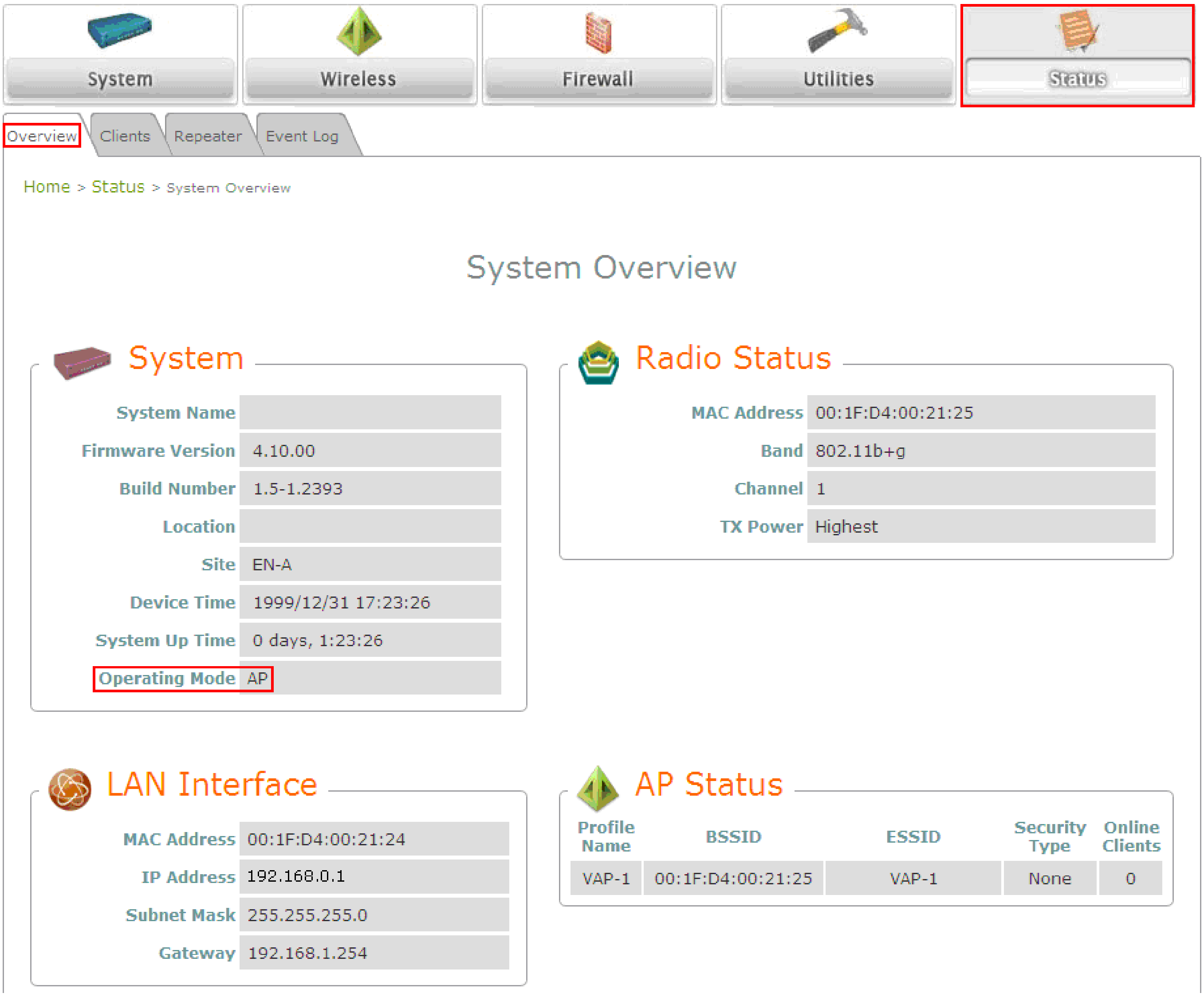
Mode	Static
MAC Address	00:1F:D4:00:21:25
IP Address	192.168.10.1
Subnet Mask	255.255.255.0
Gateway	192.168.10.254
Bandwidth	Down: Unlimited UP: Unlimited

3.2.2 Quick Configuration

WAB-3003 is a dual-mode system which can be configured as either an access point (**AP Mode**) or a gateway (**CPE Mode**) based on deployment needs. This section provides a step-by-step configuration procedure for installing CPE mode and AP mode respectively.

< AP Mode – Default Mode>

Step 1: Mode Confirmation



System Overview

System

System Name	
Firmware Version	4.10.00
Build Number	1.5-1.2393
Location	
Site	EN-A
Device Time	1999/12/31 17:23:26
System Up Time	0 days, 1:23:26
Operating Mode	AP

Radio Status

MAC Address	00:1F:D4:00:21:25
Band	802.11b+g
Channel	1
TX Power	Highest

LAN Interface

MAC Address	00:1F:D4:00:21:24
IP Address	192.168.0.1
Subnet Mask	255.255.255.0
Gateway	192.168.1.254

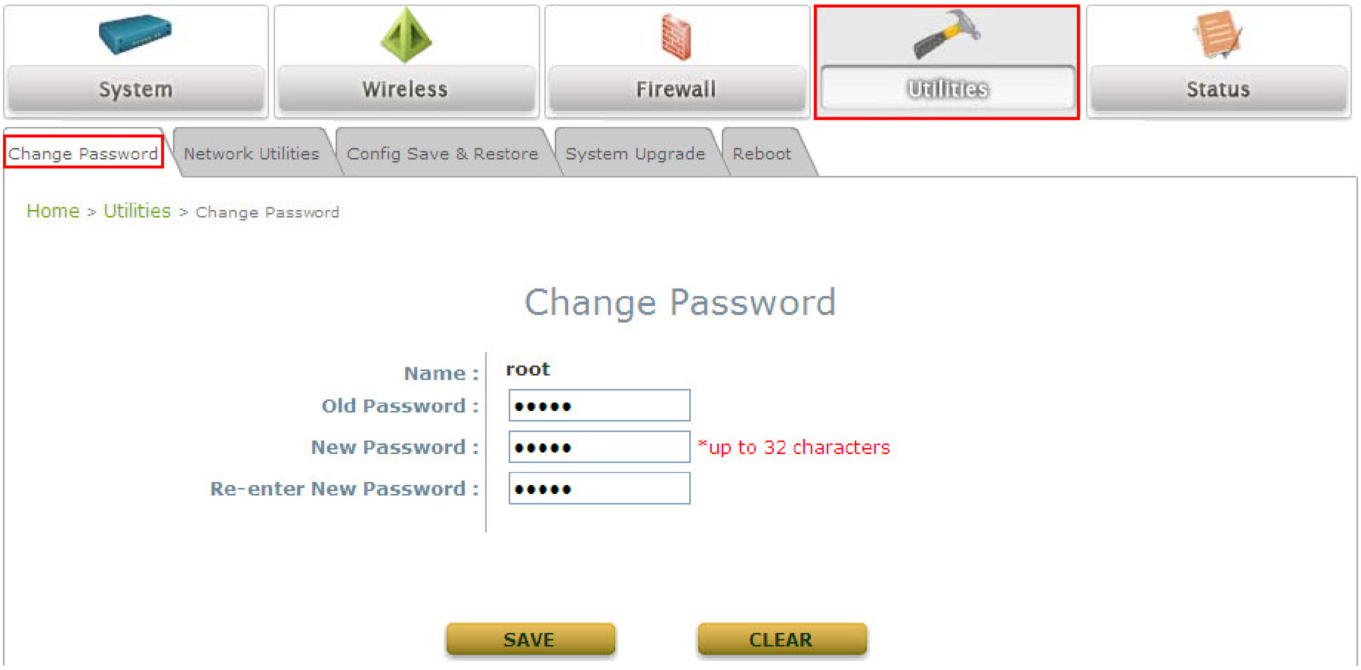
AP Status

Profile Name	BSSID	ESSID	Security Type	Online Clients
VAP-1	00:1F:D4:00:21:25	VAP-1	None	0

- Ensure that the *Operating Mode* is currently at **AP** mode.
- Click on the **Status** button and then select the **System Overview** tab. The *Operating Mode* is at the **System** section on the **System Overview** page.

Note:
For more information on switching to AP mode, if it is not currently active, please refer to **AP Mode Section 4.1.2 Operating Mode**.

Step 2: Change Password



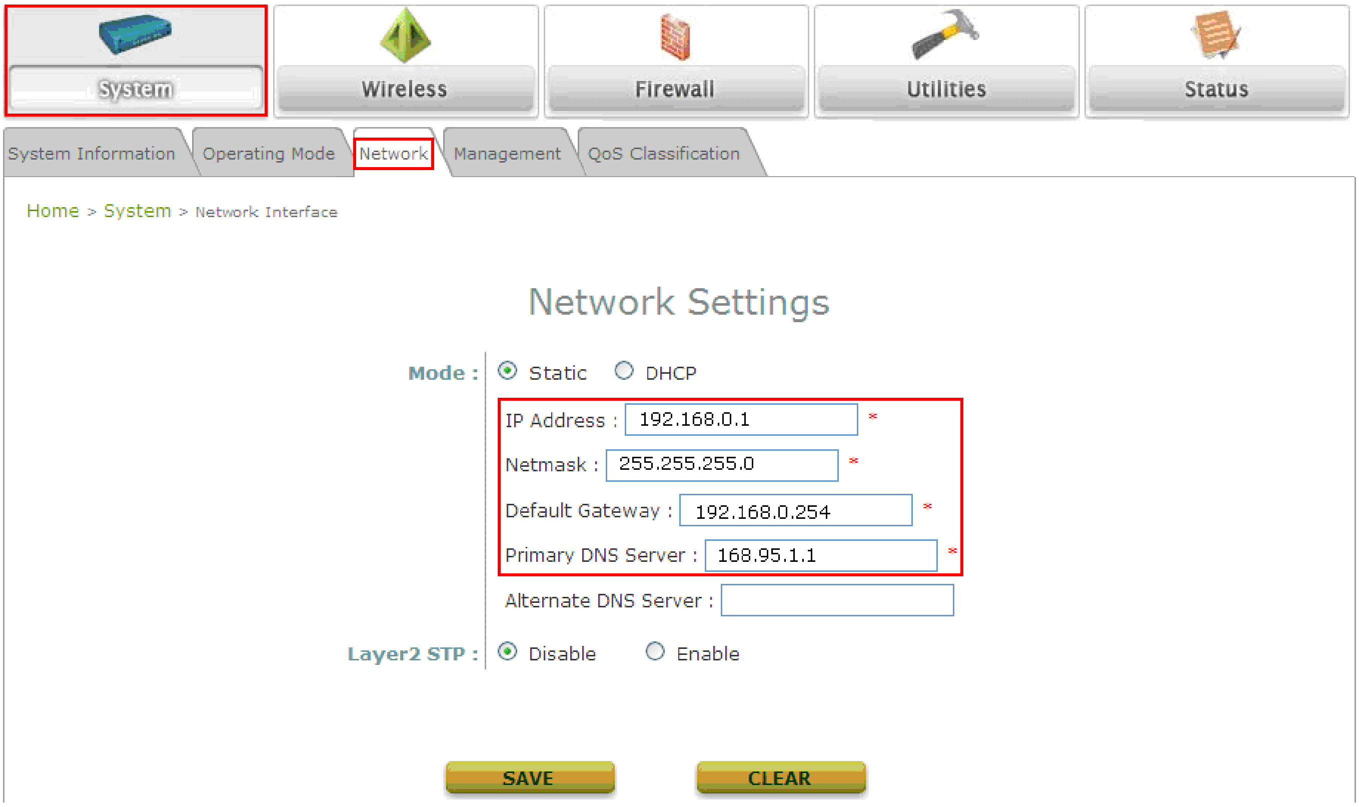
Home > Utilities > Change Password

Change Password

Name : root
Old Password : •••••
New Password : ••••• *up to 32 characters
Re-enter New Password : •••••

- ➤ Click on the **Utilities** button and then select the **Password** tab.
- ➤ Enter a new password in the *New Password* field and retype it in the *Re-enter New Password* field.
- ➤ Click ***SAVE*** to save the changes.

Step 3: Network Settings



Home > System > Network Interface

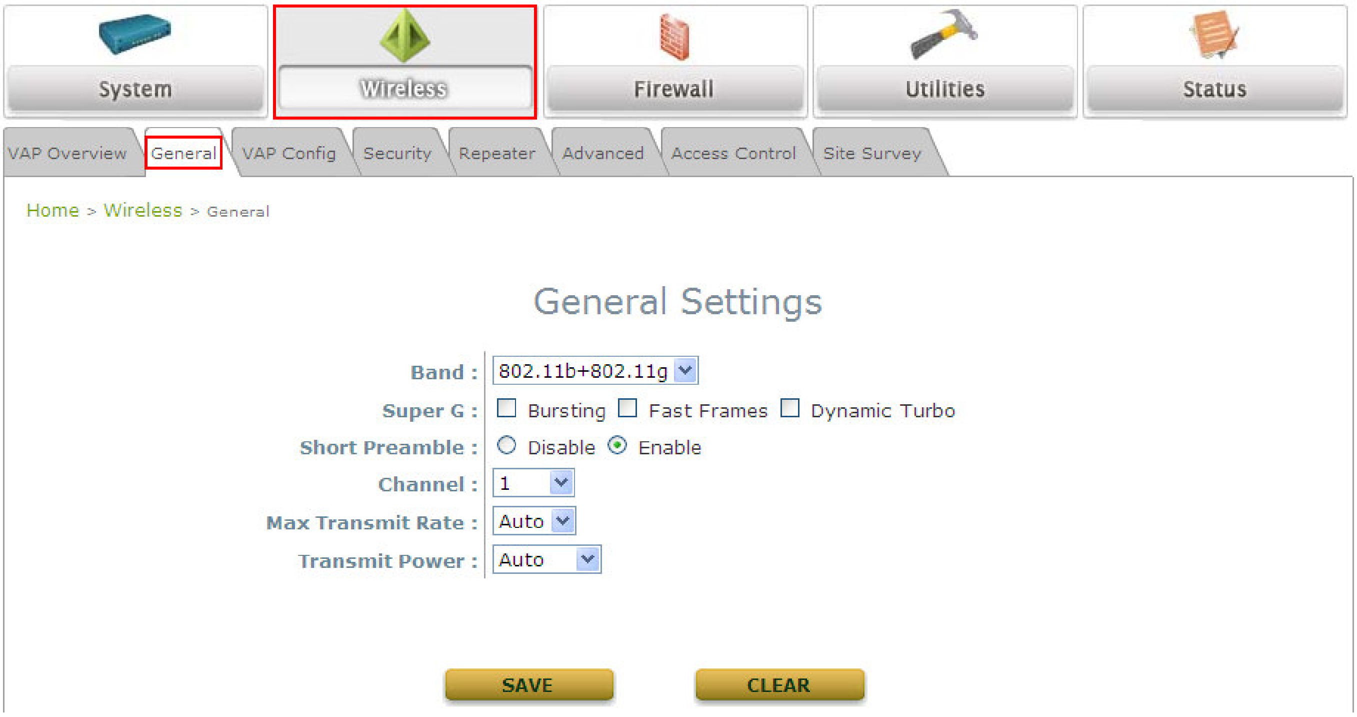
Network Settings

Mode : ● Static ○ DHCP
IP Address : 192.168.0.1 *
Netmask : 255.255.255.0 *
Default Gateway : 192.168.0.254 *
Primary DNS Server : 168.95.1.1 *
Alternate DNS Server :
Layer2 STP : ● Disable ○ Enable

【Settings here are for example only. 】

- Click on the **System** button and then select the **Network** tab.
- Enable *Static*, and then enter the related information in the fields marked with red asterisks.
- Click ***SAVE*** to save the settings.

Step 4: SSID Settings

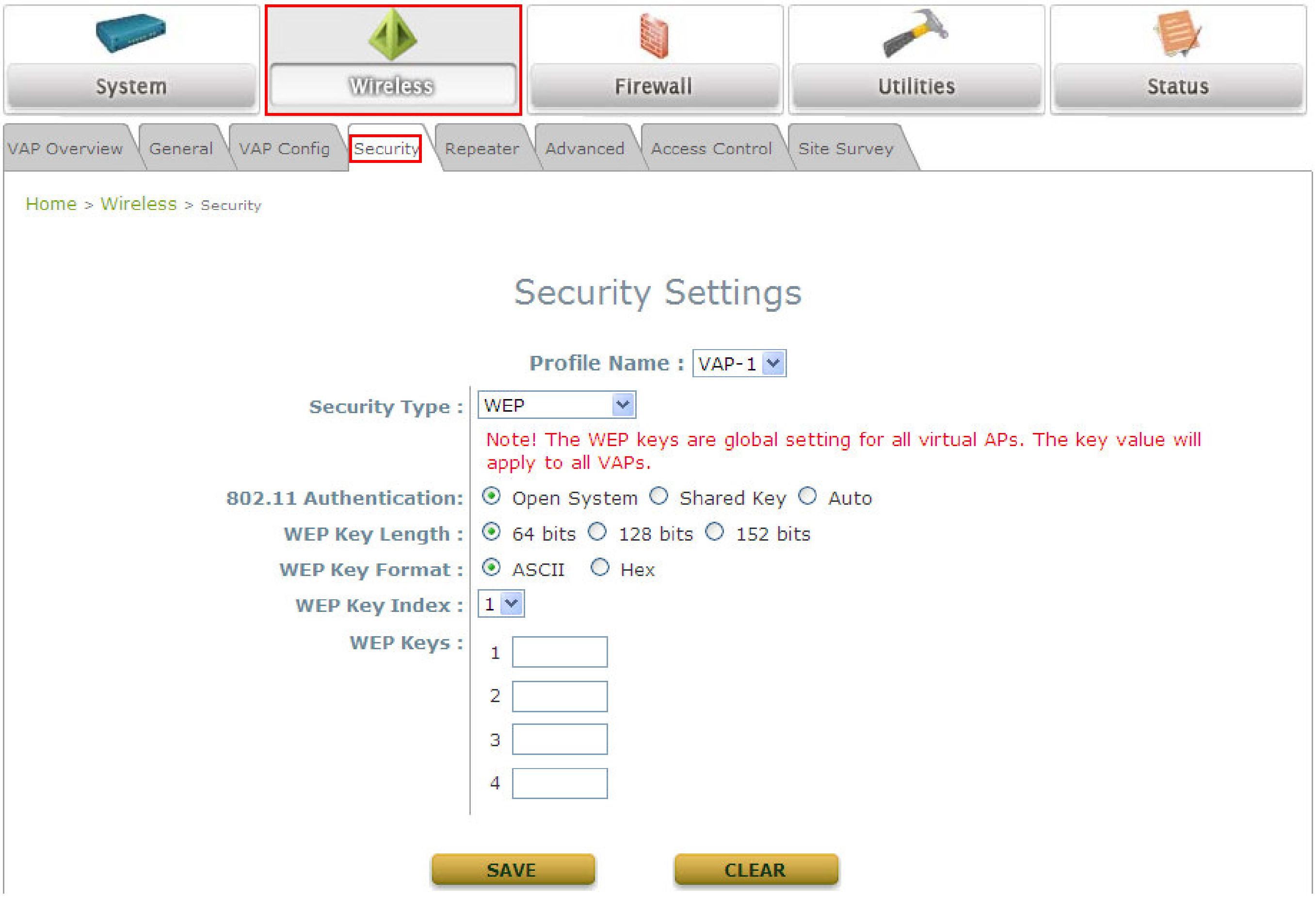


General Settings

Band : 802.11b+802.11g
Super G : □ Bursting □ Fast Frames □ Dynamic Turbo
Short Preamble : ○ Disable ● Enable
Channel : 1
Max Transmit Rate : Auto
Transmit Power : Auto

- Click on the **Wireless** button and then select the **General** tab.
- **Band:** Select an appropriate band from the drop-down list box.
- Click ***SAVE*** to save the settings.

Step 5: Security Settings



Security Settings

Profile Name : VAP-1

Security Type : WEP

Note! The WEP keys are global setting for all virtual APs. The key value will apply to all VAPs.

802.11 Authentication: ● Open System ○ Shared Key ○ Auto

WEP Key Length : ● 64 bits ○ 128 bits ○ 152 bits

WEP Key Format : ● ASCII ○ Hex

WEP Key Index : 1

WEP Keys : 1 2 3 4

- Click on the **Wireless** button and then select the **Security** tab.
- Select the desired *VAP Profile and Security Type* from the drop-down list boxes. The above figure depicts an example of selecting VAP-1 and **WEP**.
- Enter the information required in the blank fields.

Caution:
*You must use the same information provided here to configure the network devices that are to be associated with **WAB-3003**.*

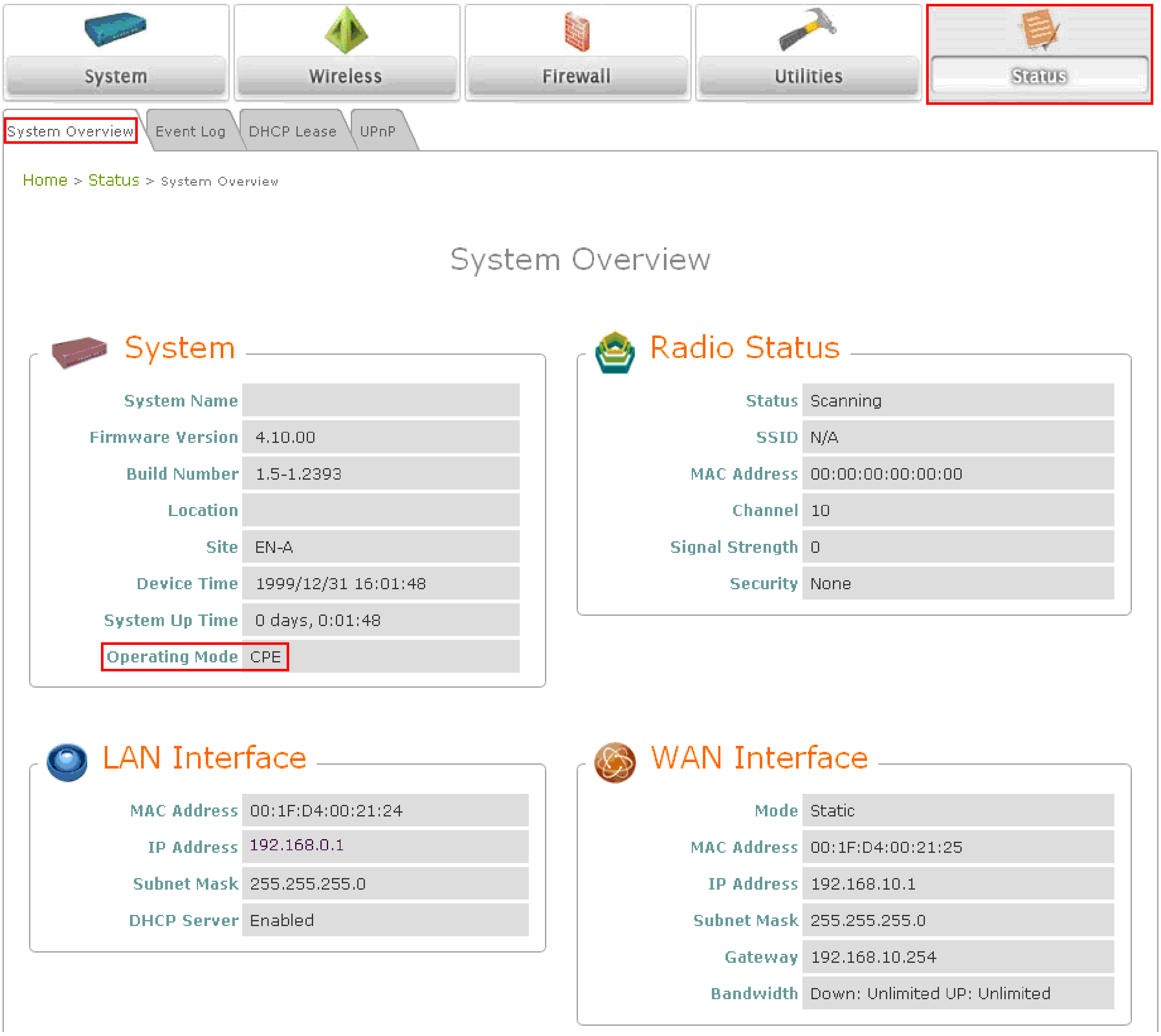
- Click ***SAVE*** to save all settings configured so far; all updated settings will take effect upon reboot.

Congratulations!

The AP mode is now successfully configured.

< CPE Mode >

Step 1: Mode Confirmation



System Overview

System

System Name	
Firmware Version	4.10.00
Build Number	1.5-1.2393
Location	
Site	EN-A
Device Time	1999/12/31 16:01:48
System Up Time	0 days, 0:01:48
Operating Mode	CPE

Radio Status

Status	Scanning
SSID	N/A
MAC Address	00:00:00:00:00:00
Channel	10
Signal Strength	0
Security	None

LAN Interface

MAC Address	00:1F:D4:00:21:24
IP Address	192.168.0.1
Subnet Mask	255.255.255.0
DHCP Server	Enabled

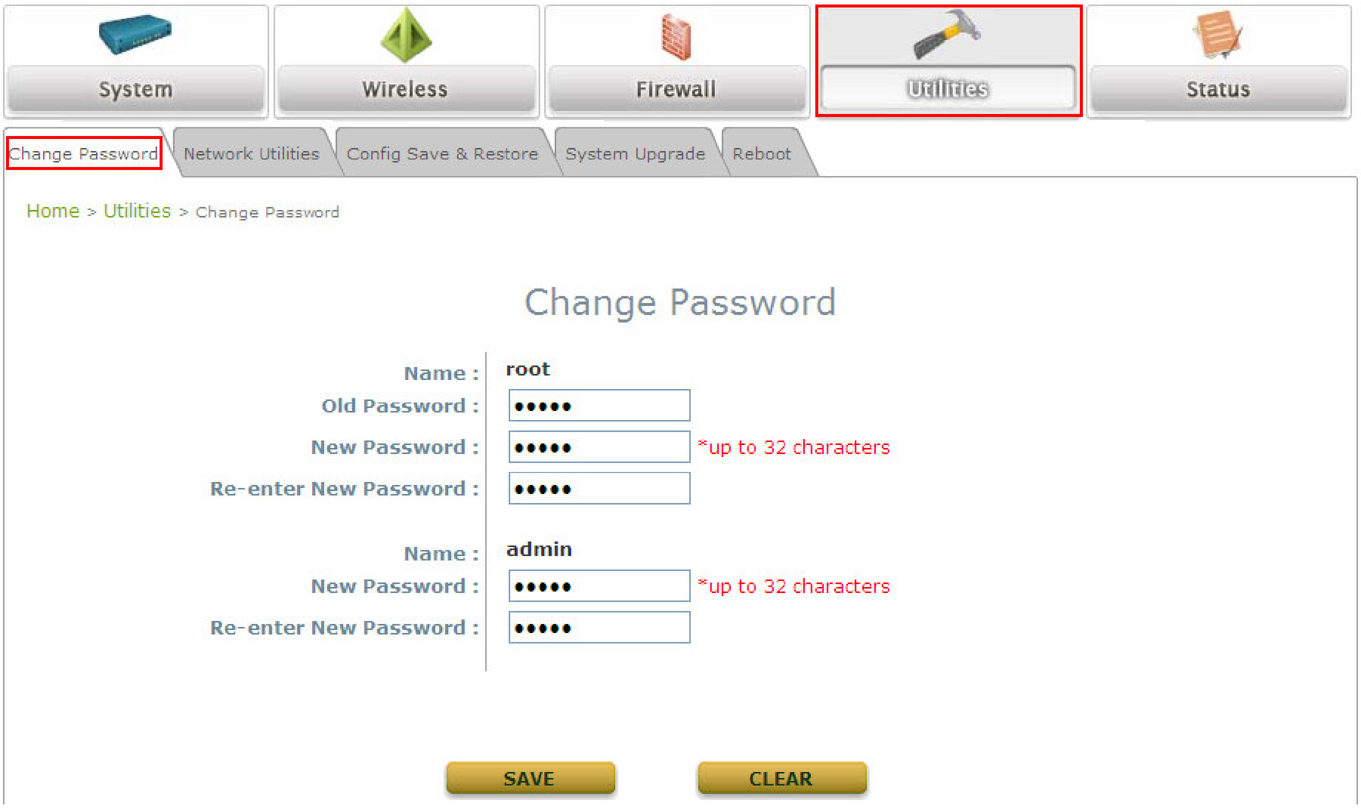
WAN Interface

Mode	Static
MAC Address	00:1F:D4:00:21:25
IP Address	192.168.10.1
Subnet Mask	255.255.255.0
Gateway	192.168.10.254
Bandwidth	Down: Unlimited UP: Unlimited

- Ensure that the *Operating Mode* is currently at **CPE** mode.
- Click on the **Status** button and then select the **System Overview** tab. The *Operating Mode* is at the **System** section on the **System Overview** page.

Note:
*For more information on switching to CPE mode, if it is not currently active, please refer to **Section 5.1.2 Operating Mode**.*

Step 2: Change Password



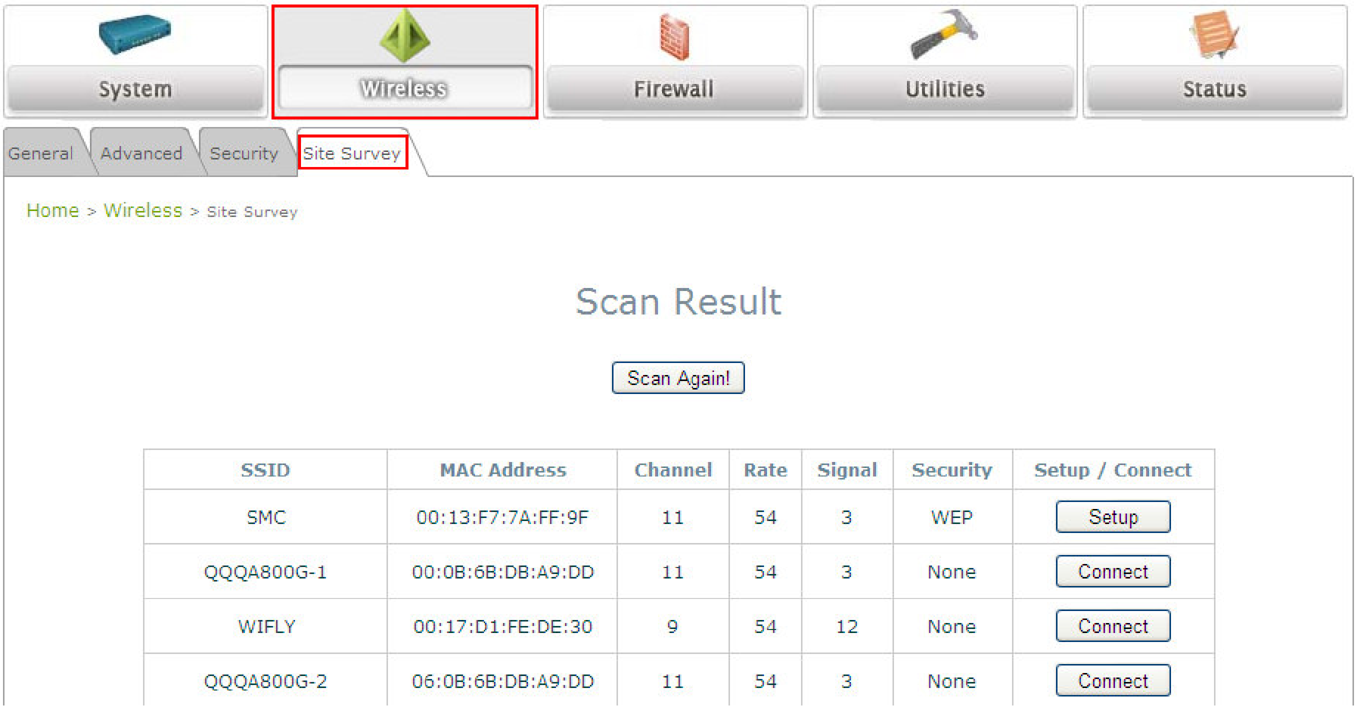
Change Password

Name : root
Old Password : •••••
New Password : ••••• *up to 32 characters
Re-enter New Password : •••••

Name : admin
New Password : ••••• *up to 32 characters
Re-enter New Password : •••••

- Click on the **Utilities** button and then select the **Change Password** tab.
- **Change Root Account Password**
  - Enter the old password in the *Old Password* field, which default password is **"admin"**.
  - Enter a new password in the *New Password* field and retype it in the *Re-enter New Password* field.
- **Change Admin Account Password**
  - Enter a new password in the *New Password* field and retype it in the *Re-enter New Password* field.
- Click ***SAVE*** to save the changes.

Step 3: Site Survey



SSID	MAC Address	Channel	Rate	Signal	Security	Setup / Connect
SMC	00:13:F7:7A:FF:9F	11	54	3	WEP	Setup
QQQA800G-1	00:0B:6B:DB:A9:DD	11	54	3	None	Connect
WIFLY	00:17:D1:FE:DE:30	9	54	12	None	Connect
QQQA800G-2	06:0B:6B:DB:A9:DD	11	54	3	None	Connect

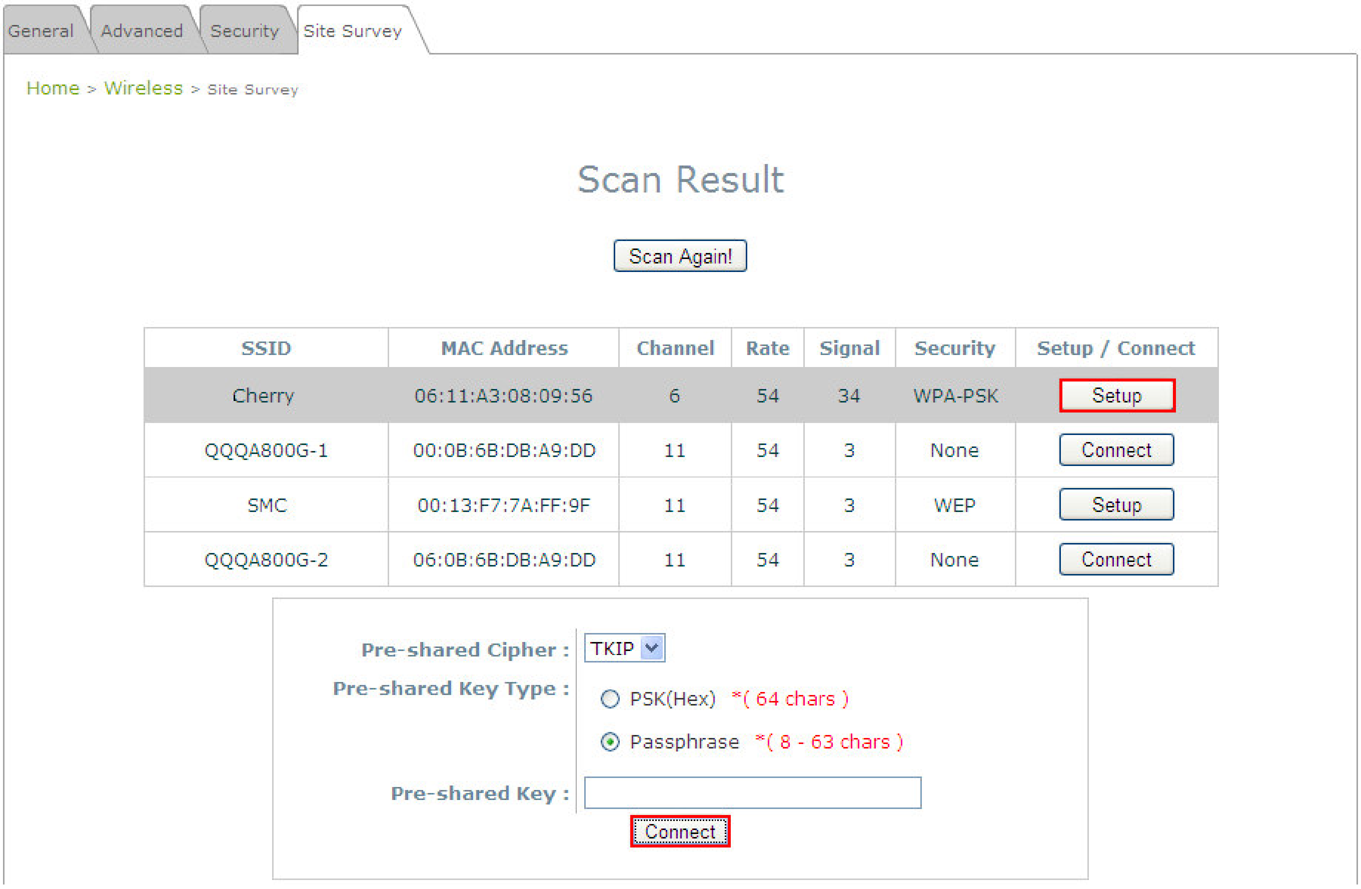
【The scan result displayed here is an example only.】

- Click on the **Wireless** button and then select the **Site Survey** tab.
- The system will automatically scan and display all available APs in the same **WAB-3003's** coverage area.
- Click ***Scan Again*** if the APs to be associated with are not listed on the **Scan Result** list.

Step 4: Select AP to be Associated

- Select an AP to be associated with from the **Scan Result** list provided in **Step 3**.

Step 5: Security Settings



Scan Result

SSID	MAC Address	Channel	Rate	Signal	Security	Setup / Connect
Cherry	06:11:A3:08:09:56	6	54	34	WPA-PSK	Setup
QQQA800G-1	00:0B:6B:DB:A9:DD	11	54	3	None	Connect
SMC	00:13:F7:7A:FF:9F	11	54	3	WEP	Setup
QQQA800G-2	06:0B:6B:DB:A9:DD	11	54	3	None	Connect

Pre-shared Cipher : TKIP

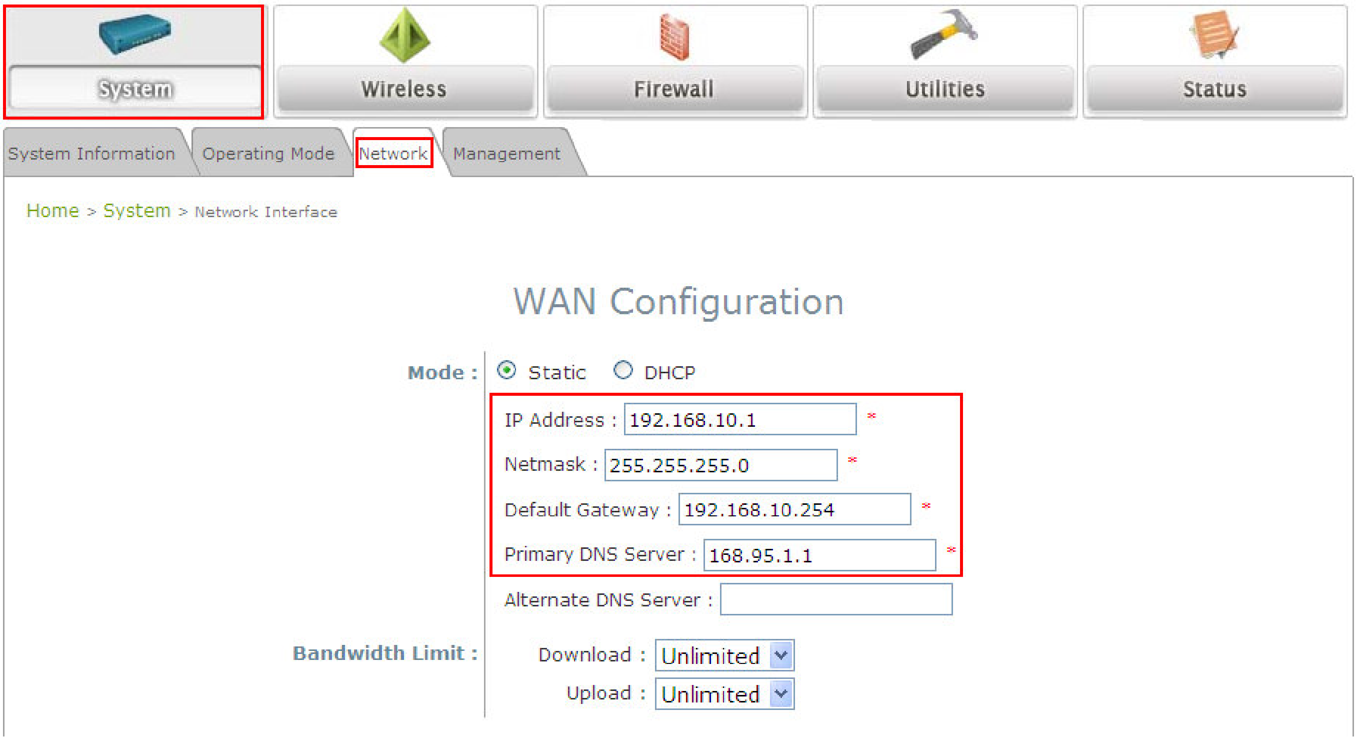
Pre-shared Key Type : ○ PSK(Hex) *(64 chars) ● Passphrase *(8 - 63 chars)

Pre-shared Key :

- The above figure depicts an example of selecting **Cherry** (encrypted via WPA-PSK security type).
- Click ***Setup***, and then a related encryption configuration box will appear.
- Enter the information required in the configuration box. Information to be entered must be exactly the same as configured in this **AP**.
- Click ***Connect*** to start the connection.

Step 6: Network Interface Configuration

- Click on the **System** button and then select the **Network** tab.



WAN Configuration

Mode : ● Static ○ DHCP

IP Address : 192.168.10.1 *

Netmask : 255.255.255.0 *

Default Gateway : 192.168.10.254 *

Primary DNS Server : 168.95.1.1 *

Alternate DNS Server :

Bandwidth Limit : Download : Unlimited Upload : Unlimited

【Settings here are for example only.】

WAN Configuration

- Enable *Static*, and then enter the related information in the fields marked with red asterisks.
- Click ***SAVE*** to save the settings.

Dynamic DNS Configuration

- The **Dynamic DNS** section is on the same page as **WAN Configuration** section.
- When enabled, choose the service *Provider* with provided *Host Name*, *User Name/E-mail*, and *Password/Key*.
- Click ***SAVE*** to activate all settings configured so far.

LAN Configuration

- The **LAN Configuration** section is on the same page as **WAN Configuration** section.
- Enter the *IP Address* and *Netmask* of the LAN port.
- Click ***SAVE*** to save all settings configured so far; all updated settings will take effect upon reboot.

Congratulations!

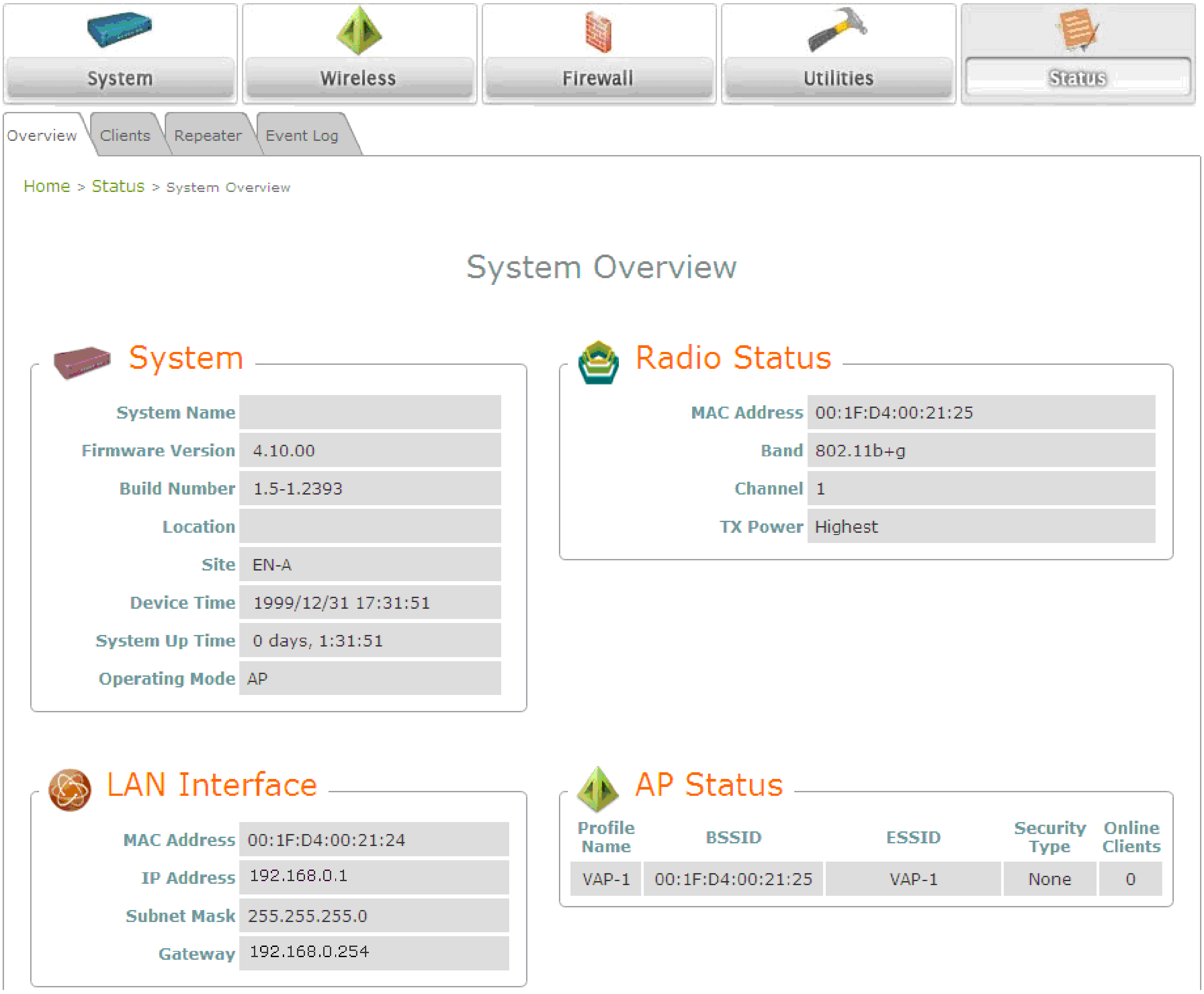
The CPE mode is now successfully configured.

*4.*AP Mode Configuration

When AP mode is activated, the system can be configured as an Access Point, or a Repeater, or an Access Point with Repeater depending on deployment needs. This chapter will guide you through setting up the AP mode with graphical illustrations. The following table shows all the functions of WAB-3003 in its AP mode.

OPTION	**System**	**Wireless**	**Firewall**	**Utilities**	**Status**
FUNCTION	System Information	VAP Overview	Firewall List	Change Password	System Overview
	Operating Mode	General Settings	Service	Network Utilities	Associate Client Status
	Network Settings	VAP Configuration	Advanced	Configuration Save & Restore	Repeater Information
	Management Services	Security Settings		System Upgrade	Event Log
	QoS Classification	Repeater Settings		Reboot	
		Advanced Wireless Settings			
		Access Control Settings			
		Site Survey			

Table 4-1: AP Mode Functions



System Overview

System

System Name	
Firmware Version	4.10.00
Build Number	1.5-1.2393
Location	
Site	EN-A
Device Time	1999/12/31 17:31:51
System Up Time	0 days, 1:31:51
Operating Mode	AP

Radio Status

MAC Address	00:1F:D4:00:21:25
Band	802.11b+g
Channel	1
TX Power	Highest

LAN Interface

MAC Address	00:1F:D4:00:21:24
IP Address	192.168.0.1
Subnet Mask	255.255.255.0
Gateway	192.168.0.254

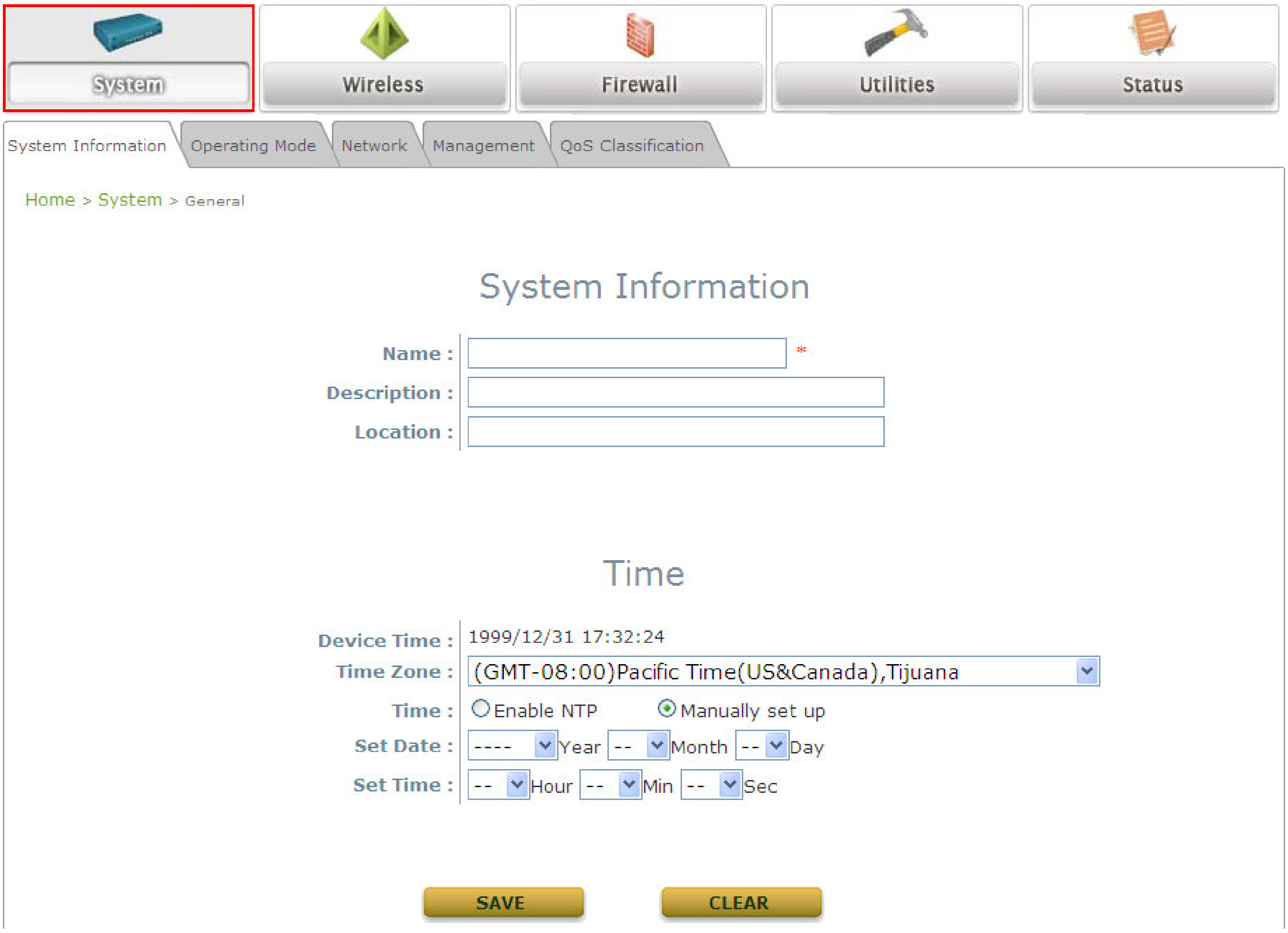
AP Status

Profile Name	BSSID	ESSID	Security Type	Online Clients
VAP-1	00:1F:D4:00:21:25	VAP-1	None	0

Figure 4-1: AP Mode Main Page

4.1 System

This section provides information for configuring the following functions: **System Information**, **Operating Mode**, **Network Settings**, **Management Services, and QoS Classification**.



System Information

Name : *
Description :
Location :

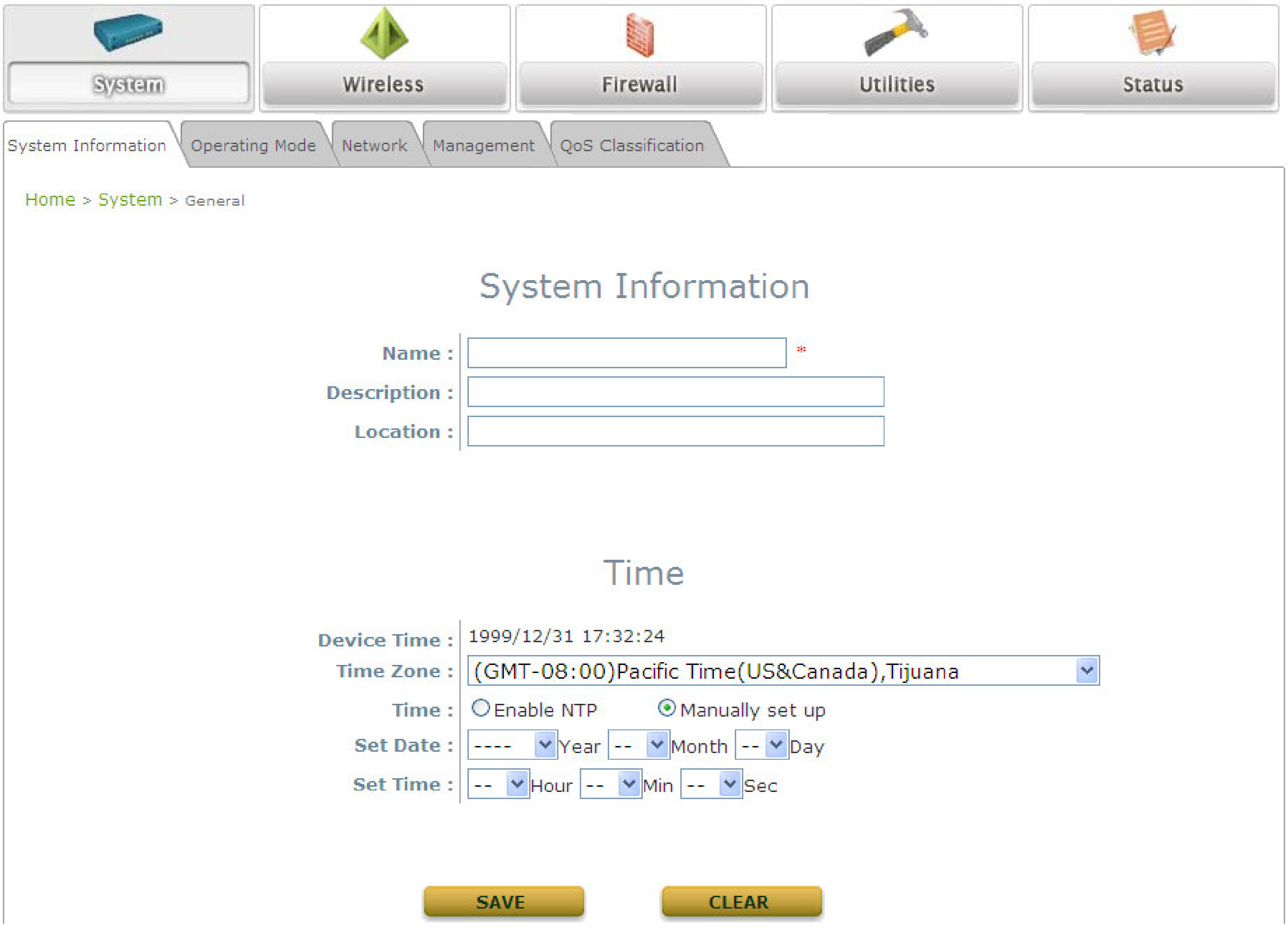
Time

Device Time : 1999/12/31 17:32:24
Time Zone : (GMT-08:00)Pacific Time(US&Canada),Tijuana
Time : ○ Enable NTP ● Manually set up
Set Date : ---- Year -- Month -- Day
Set Time : -- Hour -- Min -- Sec

Note:
A system restart is required when a reminding message appears after clicking the ***SAVE*** button; all settings entered and saved will take effect only after the system restart.

4.1.1 System Information

For maintenance purpose, it is required to specify the system name, its location and corresponding basic parameters. Fields such as *Name*, *Description* and *Location* are used for mnemonic purpose. It is recommended to have different values in each AP.



System Information

Name : *

Description :

Location :

Time

Device Time : 1999/12/31 17:32:24

Time Zone : (GMT-08:00)Pacific Time(US&Canada),Tijuana

Time : ○ Enable NTP ● Manually set up

Set Date : ---- Year -- Month -- Day

Set Time : -- Hour -- Min -- Sec

- **System Information**

  For maintenance purpose, it is recommended to have the following information stated as clearly as possible. Fields Name, Description, and Location are used for mnemonic purpose. It is recommended to have different values in each wireless device.

  - *Name*: The system name used to identify this system
  - Description: Further information of the system.
  - *Location*: The information on geographical location of the system for the administrator to locate the system easily.

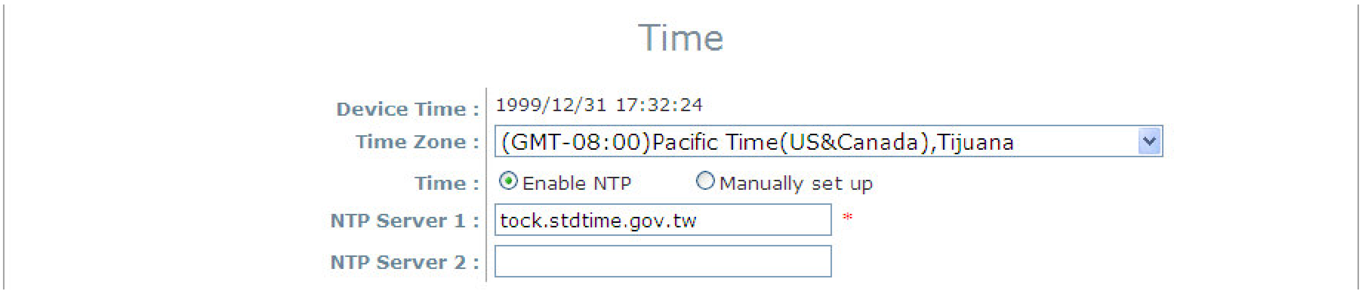
- **Time**

  Time settings allow the system time synchronized with NTP server or manually set.

  - *Device Time*: Display the current time of the system.
  - *Time Zone*: Select an appropriate time zone from the drop-down list box.
  - *Synchronization*: Synchronize the system time either by NTP server or manual setup.

(1) **Enable NTP:**

By selecting ***Enable NTP***, WAB-3003 can synchronize its system time with the NTP server automatically. While this method is chosen, at least one NTP server's IP address or domain name must be provided. If FQDN (full qualified domain name) is used as the IP address of NTP server, the DNS server must also be activated (please refer to **4.1.3 Network Settings**).

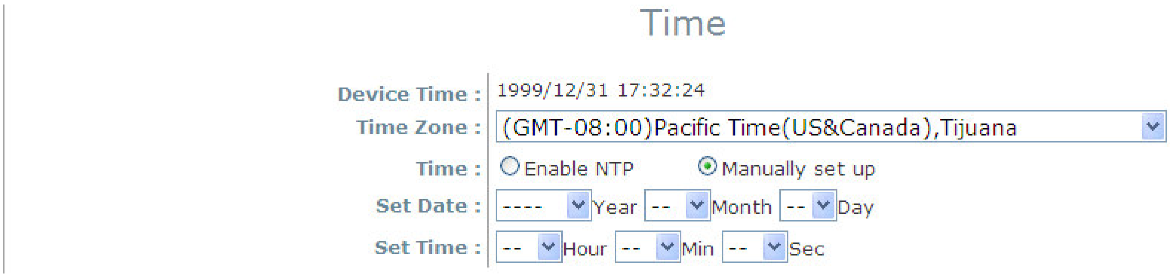


Time

Device Time :	1999/12/31 17:32:24
Time Zone :	(GMT-08:00)Pacific Time(US&Canada),Tijuana
Time :	● Enable NTP ○ Manually set up
NTP Server 1 :	tock.stdtime.gov.tw *
NTP Server 2 :	

(2) **Manually set up:**

By selecting *Manually set up*, the administrator can manually set the system date and time.



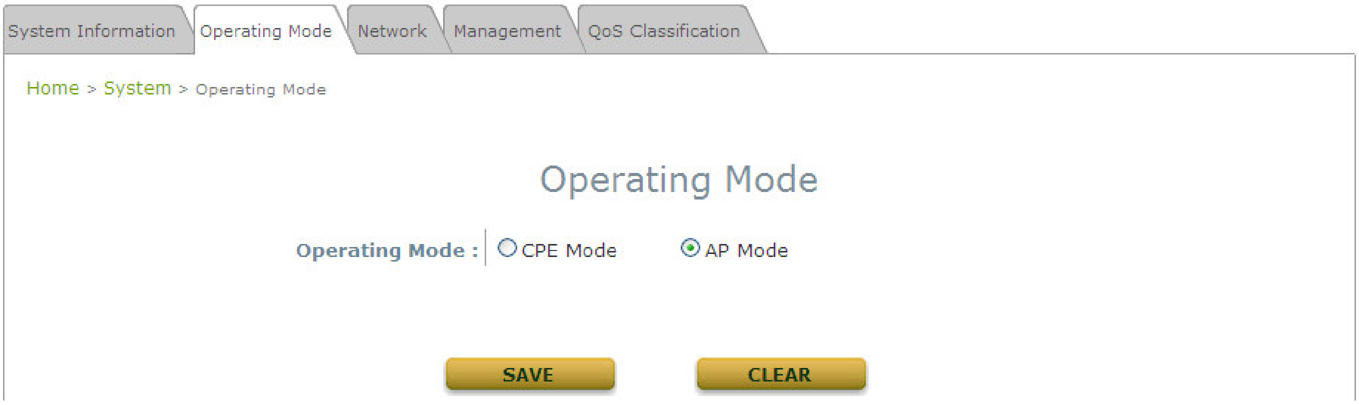
Time

Device Time :	1999/12/31 17:32:24
Time Zone :	(GMT-08:00)Pacific Time(US&Canada),Tijuana
Time :	○ Enable NTP ● Manually set up
Set Date :	---- Year -- Month -- Day
Set Time :	-- Hour -- Min -- Sec

- *Set Date*: Select the appropriate *Year*, *Month*, and *Day* from the drop-down list box.
- *Set Time*: Select the appropriate *Hour*, *Min*, and *Sec* from the drop-down list box.

4.1.2 Operating Mode

WAB-3003 supports two operation modes: CPE mode and AP mode. The administrator can set the desired mode on this page, and then configure the system according to deployment needs.



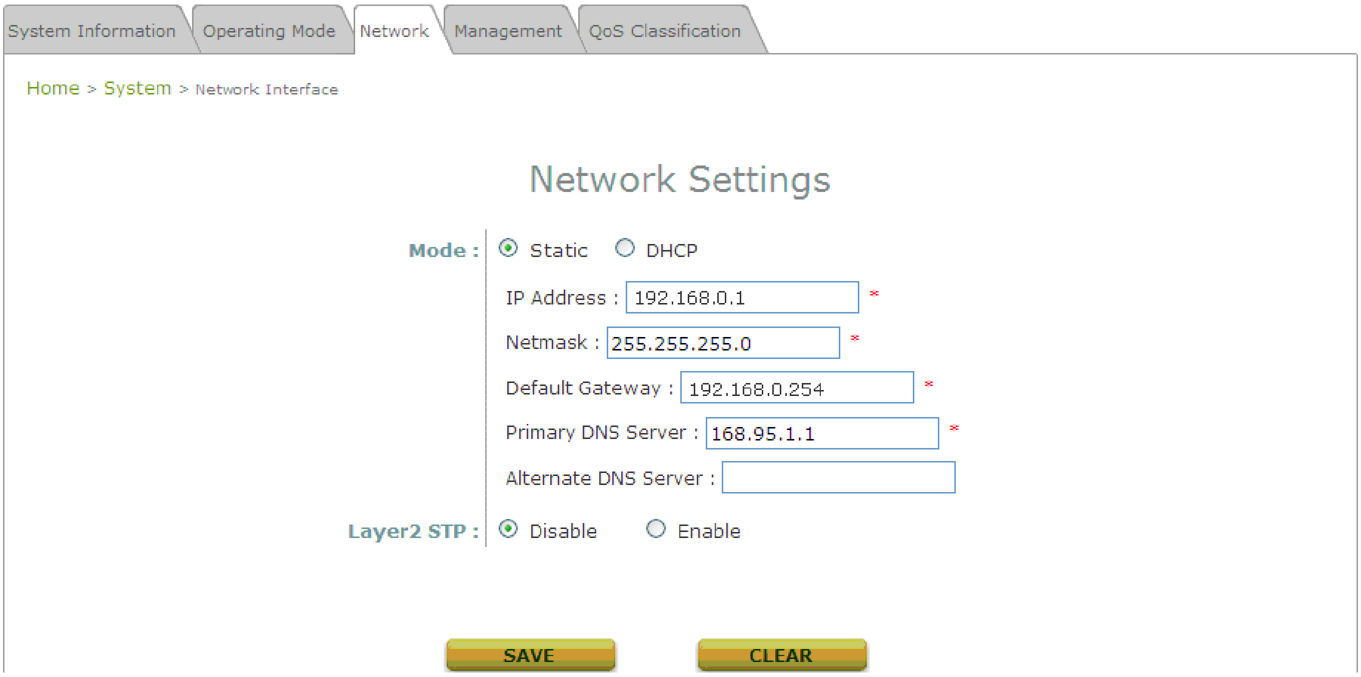
Operating Mode : ○ CPE Mode ● AP Mode

- **Operating Mode:** Select the desired mode and then click ***SAVE*** to save the setting.

Note:
After clicking ***SAVE***, the system will immediately ask for a reboot to activate the selected mode.

4.1.3 Network Settings

LAN settings can be configured on this page.



Network Settings

Mode : ● Static ○ DHCP

IP Address : 192.168.0.1 *

Netmask : 255.255.255.0 *

Default Gateway : 192.168.0.254 *

Primary DNS Server : 168.95.1.1 *

Alternate DNS Server :

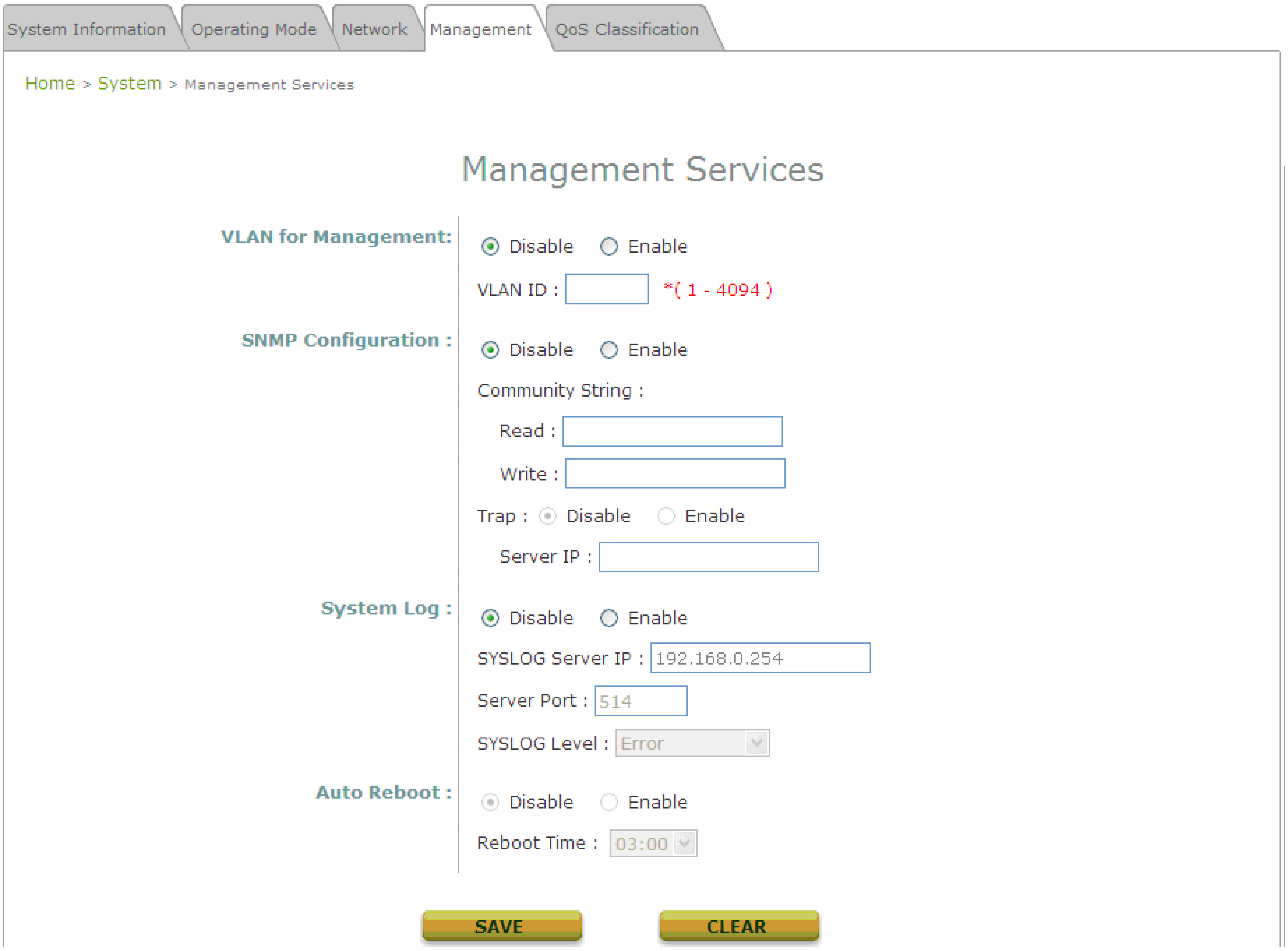
Layer2 STP : ● Disable ○ Enable

- **Mode:** Determine the way to obtain the IP address, by *DHCP* or *Static* manually set.
  - **Static:** Static setting is set these parameters manually. The basic parameters need to provide such as IP address, subnet mask and Gateway.
    - **IP Address:** The IP address of the LAN port.
    - **Netmask:** The Subnet mask of the LAN port.
    - **Gateway:** The Gateway IP address of the LAN port.
    - **Primary/Secondary DNS Server:** Please provide at least on DNS server's IP address.
  - **DHCP:** The option is provided when a DHCP server is provided in the network. The following IP address/Netmask/Gateway setting will be disabled.

- **Layer 2 STP:** Depends on the configuration of the system including wired and wireless settings, when it is configured to bring several networks, we need enable STP.

4.1.4 Management Services

The system supports **VLAN**, **SNMP**, **Remote Syslog**, and **Auto Reboot** functions for easy management. These functions can be configured on this page.



Management Services

VLAN for Management: ● Disable ○ Enable
VLAN ID : ______ *(1 - 4094)

SNMP Configuration : ● Disable ○ Enable
Community String :
Read : ______
Write : ______
Trap : ● Disable ○ Enable
Server IP : ______

System Log : ● Disable ○ Enable
SYSLOG Server IP : 192.168.0.254
Server Port : 514
SYSLOG Level : Error

Auto Reboot : ● Disable ○ Enable
Reboot Time : 03:00

- **VLAN for Management:** The Ethernet traffic from the system can be tagged with VLAN tag with specific ID.
- **SNMP Configuration:** By enabling SNMP service, the remote SNMP manager could obtain the system status.
    - **Enable/ Disable:** Select *Enable* to activate this function or *Disable* to inactivate it.
    - **Community String:** The community string is required when accessing the Management Information Base (MIB) of the system.
        - **Read:** Enter the community string to access the MIB with Read privilege.
        - **Write:** Enter the community string to access the MIB with Write privilege.
    - **Trap:** When enabled, events on Cold Start, Interface UP & Down, and Association & Disassociation can be reported to an assigned server.
        - **Enable/ Disable:** Select *Enable* to activate this function or *Disable* to inactivate it.
        - **Server IP Address:** Enter the IP address of the assigned server for receiving the trap

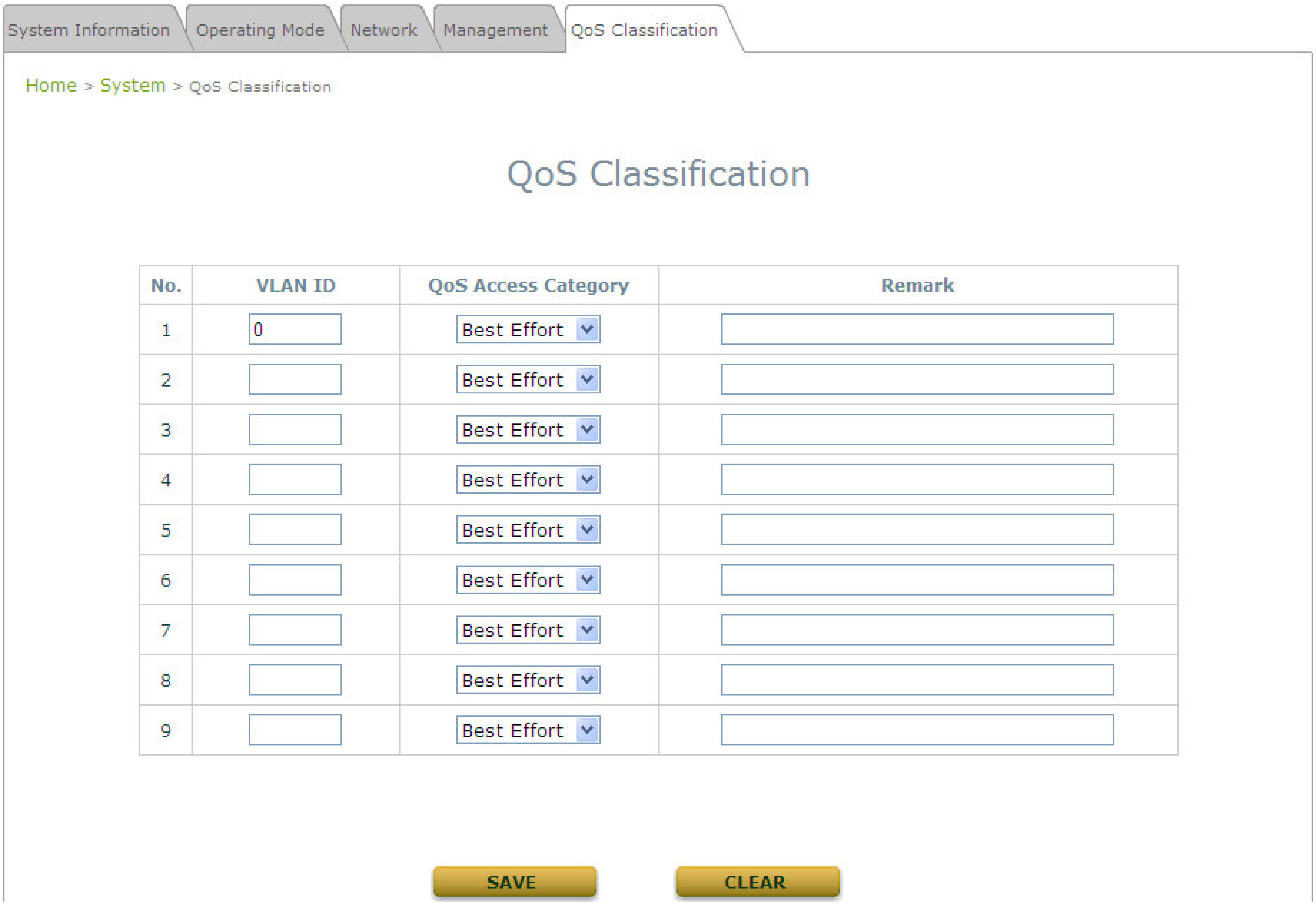
report.

- **Syslog Configuration:** By enabling this function, specify a remote syslog server which could accept system log messages from the system remotely. Therefore, by reading the syslog message in the remote server, review activities of all installed the system in the network.
  - **Enable/ Disable:** Select *Enable* to activate this function or *Disable* to inactivate it.
  - **Server IP:** The IP address of the Syslog server for receiving the reported events.
  - **Server Port:** The port number of the Syslog server.
  - **Log Level:** Select the desired level of received events from the drop-down list box.

- **Auto Reboot:** The option can be enabled to reboot system automatically with preferred Reboot Time from drop-down list.
  - **Enable/ Disable:** Select *Enable* to activate this function or *Disable* to deactivate it.
  - **Reboot Time:** Select an appropriate time from the drop-down list box. Since all users on the network will be disconnected during reboot, it is suggested to set the reboot time during an off-peak period to reduce impacts on online users.

4.1.5 QoS Classification

The system supports function of QoS classification where specified **VLAN ID** can be assigned to a specific **QoS access category** for priority handling of traffics.

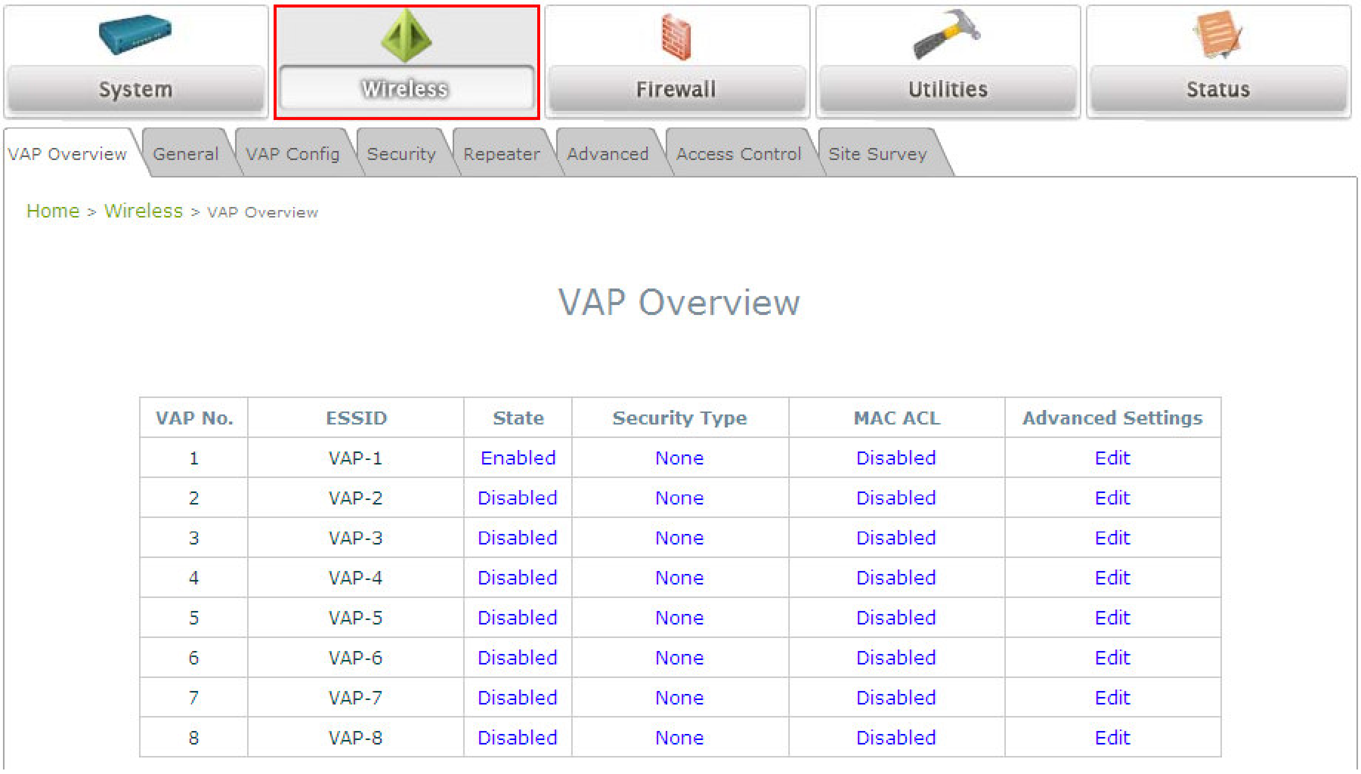


QoS Classification

No.	VLAN ID	QoS Access Category	Remark
1	0	Best Effort	
2		Best Effort	
3		Best Effort	
4		Best Effort	
5		Best Effort	
6		Best Effort	
7		Best Effort	
8		Best Effort	
9		Best Effort	

4.2 Wireless

The administrator can configure the following wireless settings on this page: **VAP Overview, General Settings, VAP Configuration, Security Settings, Repeater Settings, Advanced Wireless Settings, Access Control Settings,** and **Site Survey**. The system supports up to eight Virtual Access Points (VAPs). Each VAP can have its own settings including ESSID, VLAN ID, security settings, etc. Such VAP capability enables different levels of service to meet actual requirements.

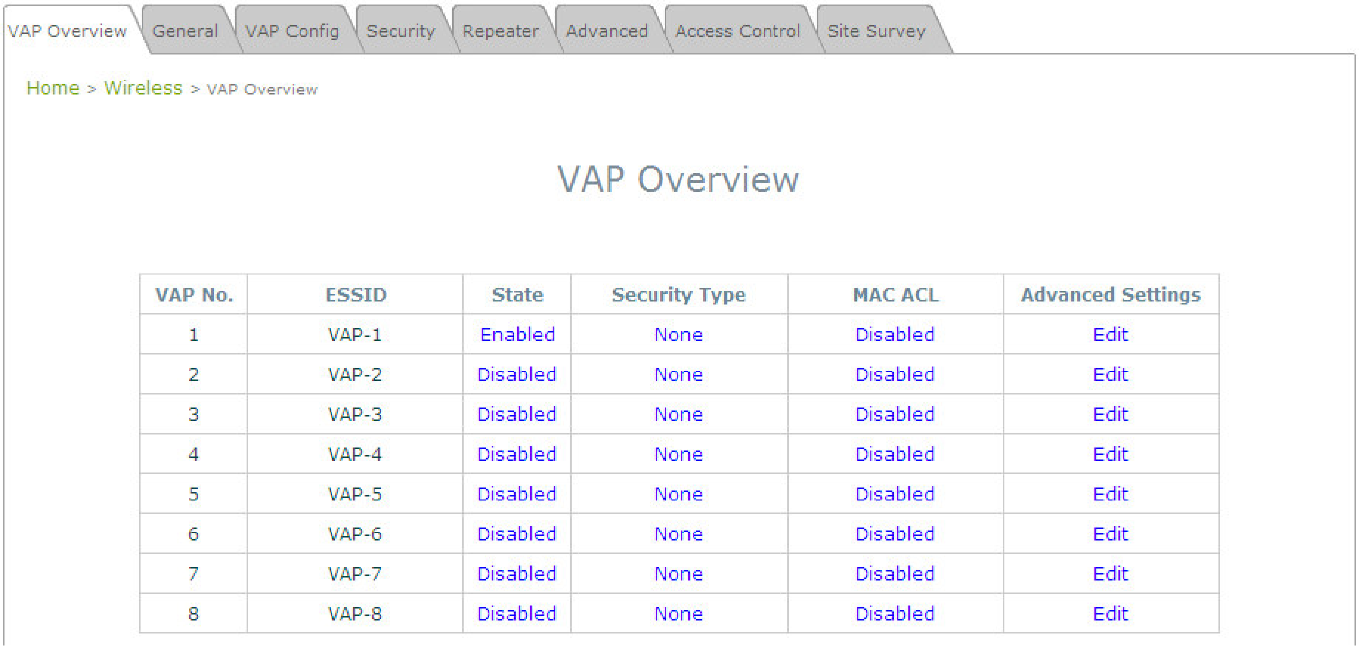


VAP Overview

VAP No.	ESSID	State	Security Type	MAC ACL	Advanced Settings
1	VAP-1	Enabled	None	Disabled	Edit
2	VAP-2	Disabled	None	Disabled	Edit
3	VAP-3	Disabled	None	Disabled	Edit
4	VAP-4	Disabled	None	Disabled	Edit
5	VAP-5	Disabled	None	Disabled	Edit
6	VAP-6	Disabled	None	Disabled	Edit
7	VAP-7	Disabled	None	Disabled	Edit
8	VAP-8	Disabled	None	Disabled	Edit

4.2.1 Virtual AP Overview

An overall status is collected in this page, including *Enable/Disable State*, *Security Type*, *MAC ACL* state, and *Advanced Settings*. The system has 8 VAPs; each has its own settings. In this table, please click on the hyperlink for further configuration of each VAP respectively.



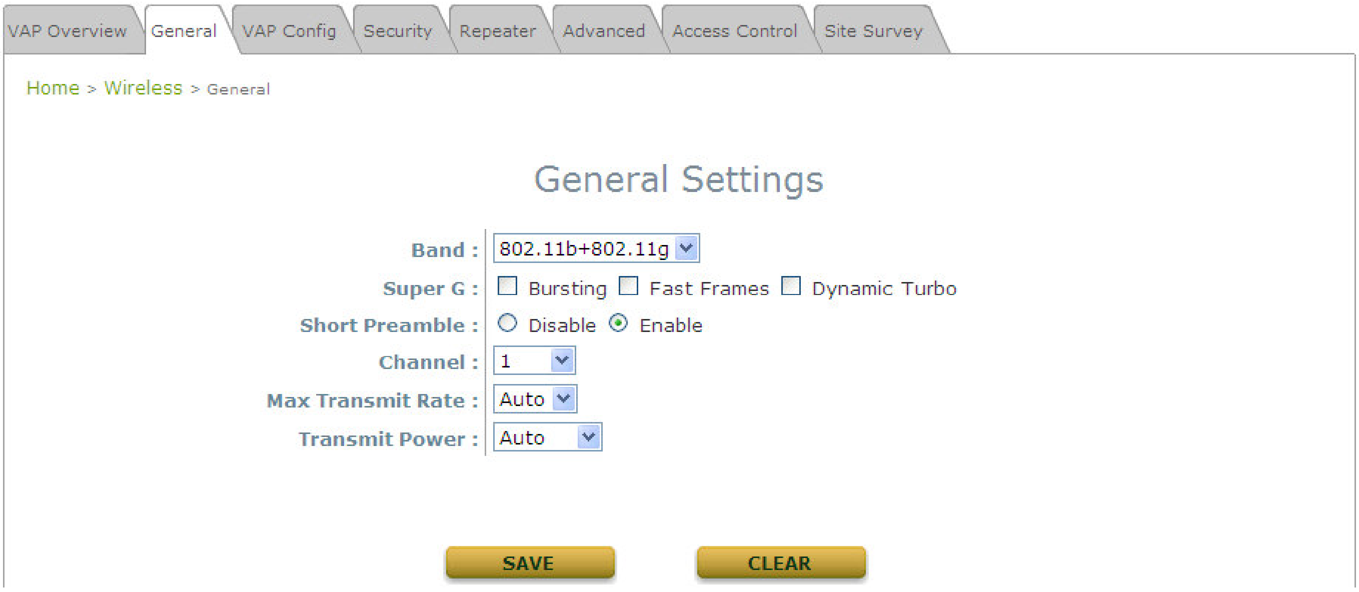
VAP Overview

VAP No.	ESSID	State	Security Type	MAC ACL	Advanced Settings
1	VAP-1	Enabled	None	Disabled	Edit
2	VAP-2	Disabled	None	Disabled	Edit
3	VAP-3	Disabled	None	Disabled	Edit
4	VAP-4	Disabled	None	Disabled	Edit
5	VAP-5	Disabled	None	Disabled	Edit
6	VAP-6	Disabled	None	Disabled	Edit
7	VAP-7	Disabled	None	Disabled	Edit
8	VAP-8	Disabled	None	Disabled	Edit

- **State:** The hyperlink showing *Enable* or *Disable* connects to the screen of **VAP Configuration**.
- **Security Type:** The hyperlink showing security type connects to the screen of **Security Settings**.
- **MAC ACL:** The hyperlink showing *Allow* or *Disable* connects to the screen of **Access Control Settings**.
- **Advanced Settings:** The hyperlink of advanced settings connects to the screen of **Advanced Wireless Settings**.

4.2.2 General Settings

This section is for configuring the system RF settings.



General Settings

Band :	802.11b+802.11g
Super G :	□ Bursting □ Fast Frames □ Dynamic Turbo
Short Preamble :	○ Disable ● Enable
Channel :	1
Max Transmit Rate :	Auto
Transmit Power :	Auto

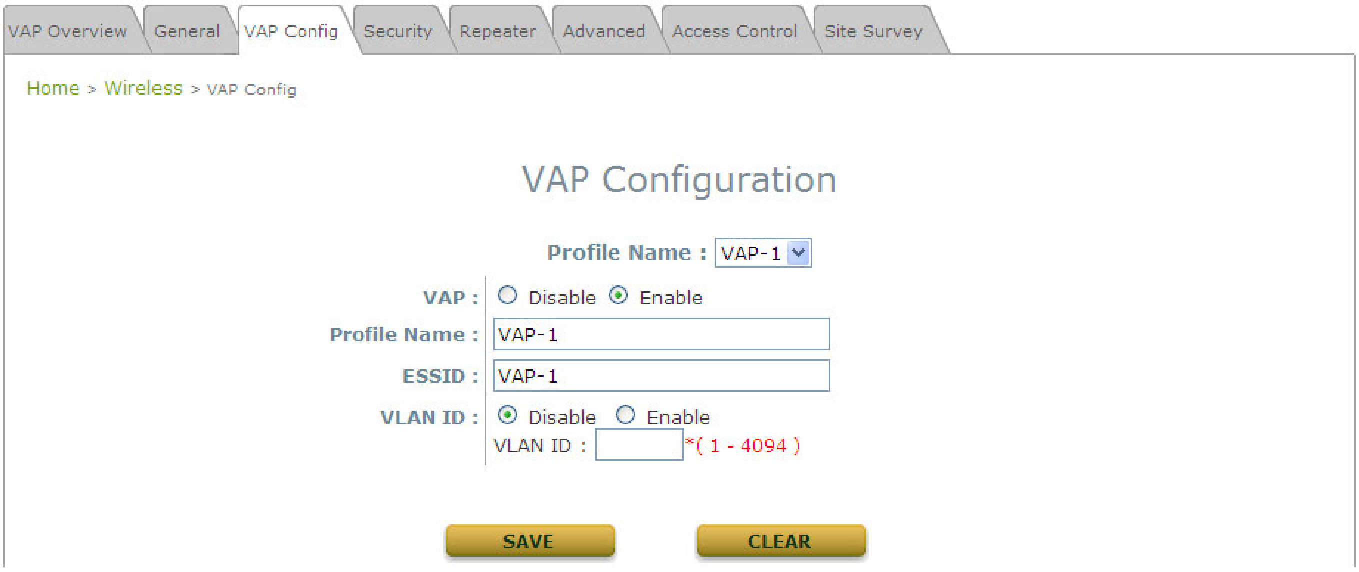
- **Band:** Select an appropriate wireless frequency band of this system. Select one frequency band from *Disable*, *802.11b*, *802.11g* or mixed mode *802.11b+802.11g*.
- **Super G:** Options of Bursting, Fast Frames, and Atheros' featured Dynamic Turbo can be selected to boost wireless throughput.
- **Short Preamble:** The option can be turned on the enable Short-Preamble frames.
- **Channel:** Select the appropriate channel from the drop-down list box to correspond with your network settings, for example, Channel 1-11 is available in North America and Channel 1-13 in Europe, or choose the default *Auto*.
- **Max Transmit Rate:** Select transmit rate from *1M* to *54M* or *Auto*.
- **Transmit Power:** Select from the lowest to highest power level or choose *Auto*.

The RF settings in this page will be applied to all VAPs.

Under normal circumstances, the available RF configurations are illustrated as below:

Band	**Super G**	**Short Preamble**	**Channel**	**Max Transmit Rate**	**Transmit Power**
Disable	N/A	N/A	N/A	N/A	N/A
802.11b	N/A	Disable/Enable	Auto, 1~11, 13, or 14	1M, 2M, 5.5M, 11M	Auto, Lowest, Low, Medium, High, Highest
802.11g	Bursting, Compression, Fast Frames, Dynamic Turbo	Disable/Enable	Auto, 1~11 or 13	6M, 9M, 12M, 18M, 24M, 36M, 48M, 54M	
802.11b+802.11g	Bursting, Compression, Fast Frames, Dynamic Turbo	Disable/Enable	Auto, 1~11, 13, or 14	1M, 2M, 5.5M, 6M, 9M, 11M, 12M, 18M, 24M, 36M, 48M, 54M	

4.2.3 VAP Configuration



VAP Configuration

Profile Name :	VAP-1
VAP :	○ Disable ● Enable
Profile Name :	VAP-1
ESSID :	VAP-1
VLAN ID :	● Disable ○ Enable VLAN ID : *(1 - 4094)

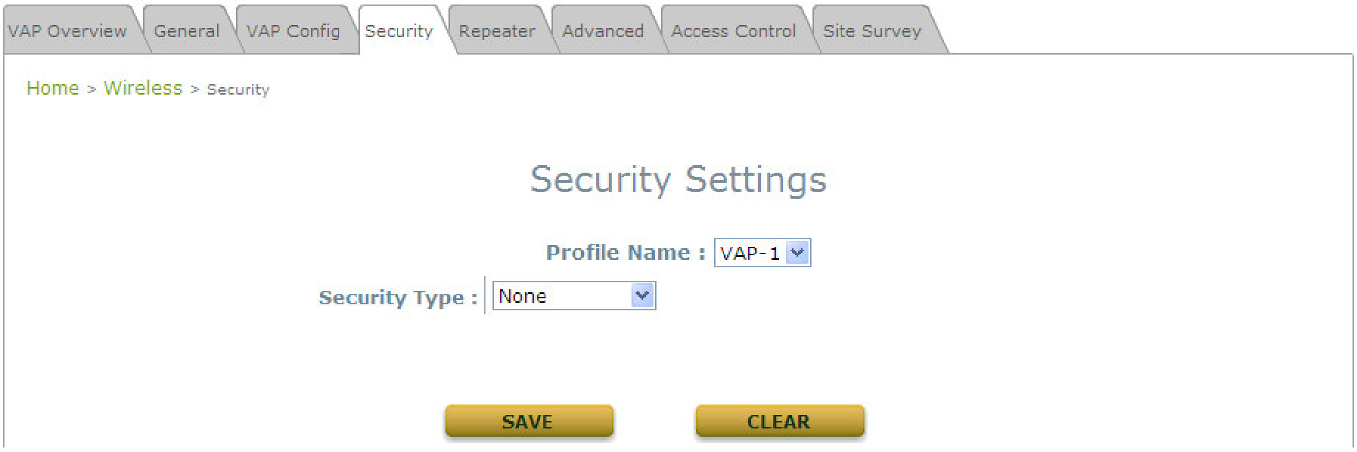
To enable each VAP, the administrator must configure each VAP manually. The settings of each VAP are collected as its profile.

- **Enable VAP:** Enable or disable VAP function.
- **Profile Name:** The profile name of each VAP for identity/management purpose.
- **ESSID:** ESSID (Extended Service Set ID) indicates a unique SSID used by a client device to associate with a specified VAP. ESSID determines the service level assigned to a client.
- **VLAN ID:** The system supports tagged VLANs (virtual LANs). To enable VLAN function, each VAP must have a unique VLAN ID; valid values are ranged from 1 to 4094.

4.2.4 Security Settings

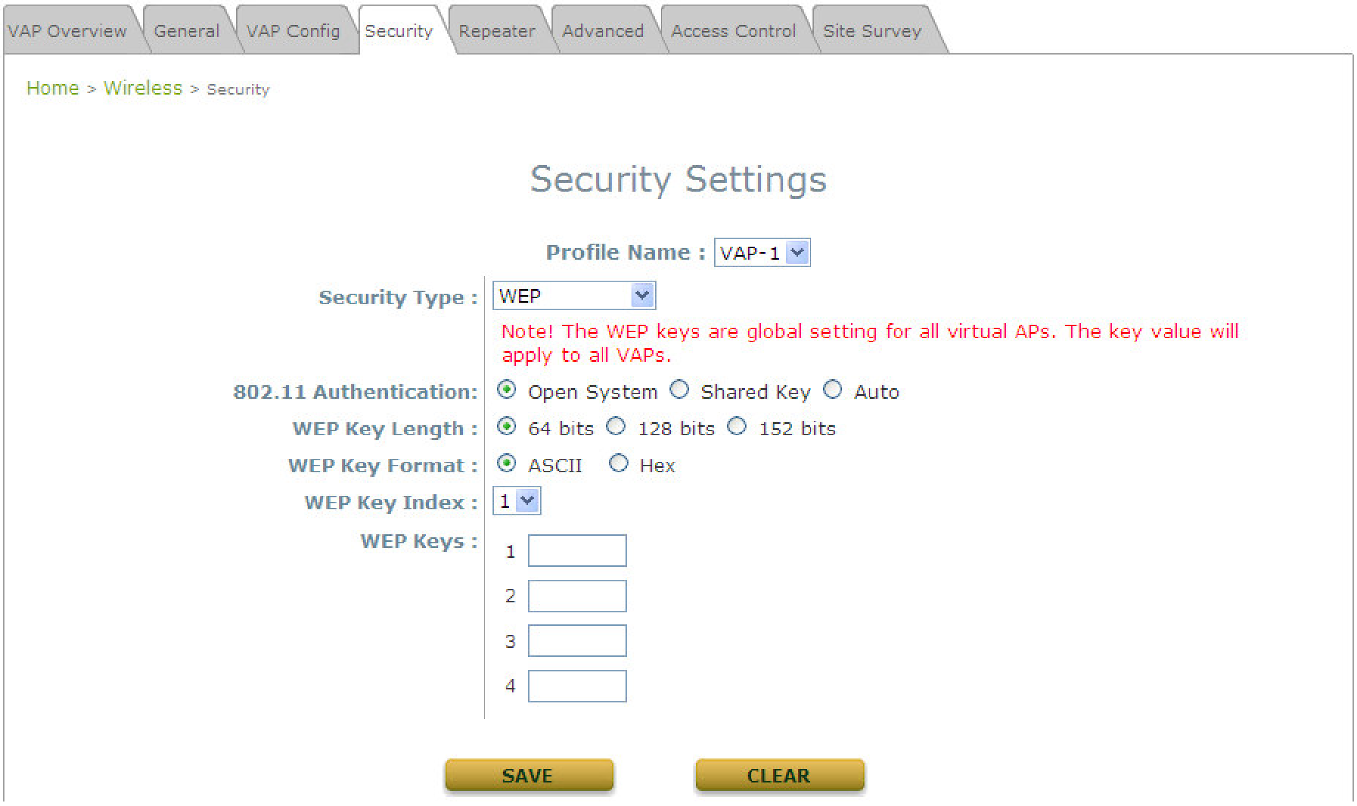
The system supports various user authentication and data encryption methods in each VAP profile. Thus the administrator can depend on the need to provide different service levels to clients. The security type includes **None**, **WEP**, **802.1X**, **WPA-PSK**, and **WPA-RADIUS**.

- **None:** No authentication is required.



Profile Name : VAP-1
Security Type : None

- **WEP:** WEP (Wired Equivalent Privacy) supports key length of 64/128/152 bits.



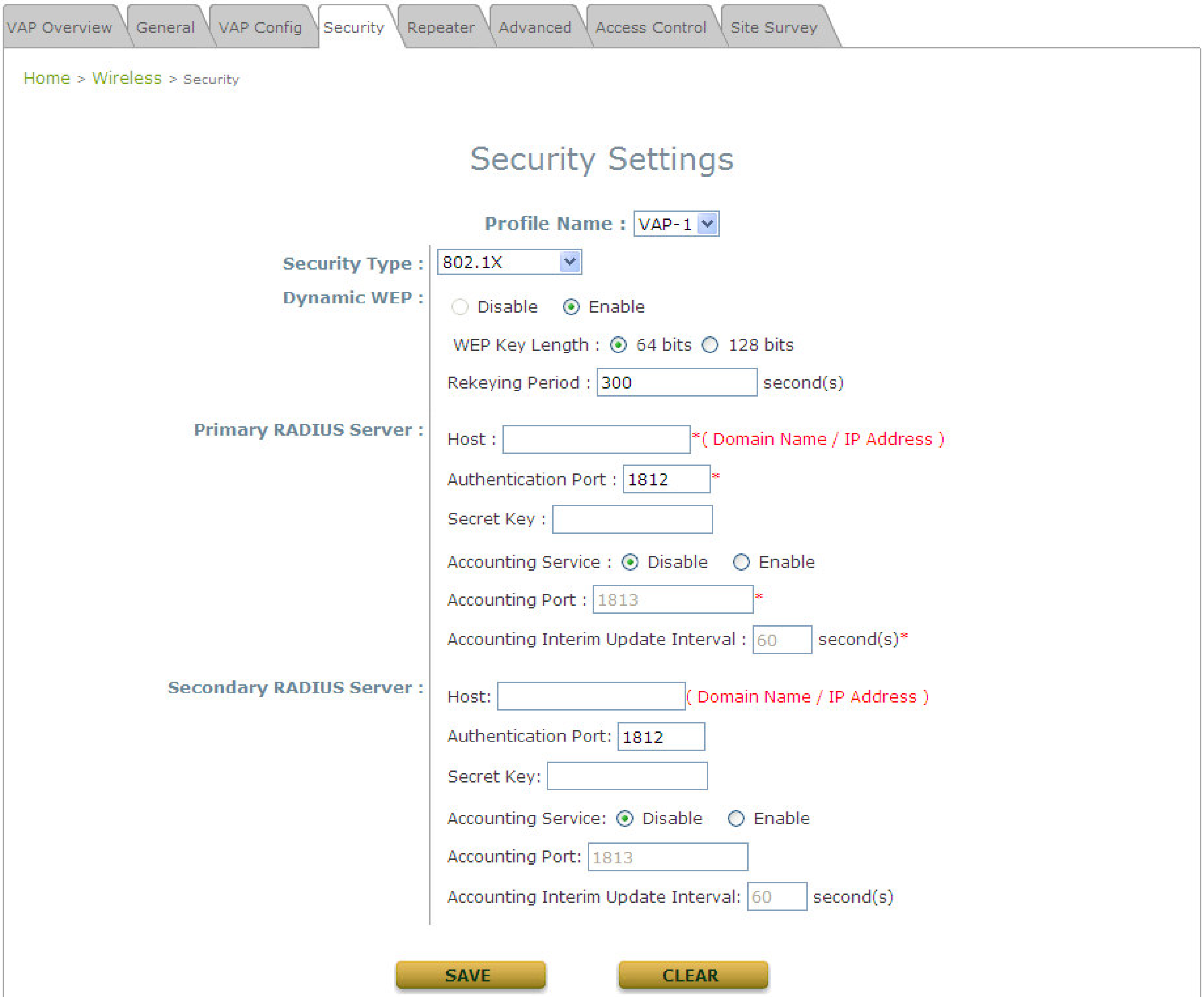
Profile Name : VAP-1
Security Type : WEP
Note! The WEP keys are global setting for all virtual APs. The key value will apply to all VAPs.
802.11 Authentication: ● Open System ○ Shared Key ○ Auto
WEP Key Length : ● 64 bits ○ 128 bits ○ 152 bits
WEP Key Format : ● ASCII ○ Hex
WEP Key Index : 1
WEP Keys : 1 2 3 4

- **802.11 Authentication:** Select from *Open System*, *Shared Key*, or *Auto*.
- **WEP Key Length:** Select from *64-bit*, *128-bit*, or 152-bit key length.
- **WEP Key Format:** Select from *ASCII* or *Hex* format for the WEP key.
- **WEP Key Index:** Select a key index from 1 through 4. The WEP key index is a number that specifies which WEP key to use for the encryption of wireless frames during data

transmission.

- ➢ **WEP Keys:** Provide WEP key value; the system supports up to 4 sets of WEP keys.

- **802.1X:** Provide RADIUS authentication and enhanced WEP.



Home > Wireless > Security

Security Settings

Profile Name : VAP-1

Security Type : 802.1X

Dynamic WEP : ○ Disable ● Enable

WEP Key Length : ● 64 bits ○ 128 bits

Rekeying Period : 300 second(s)

Primary RADIUS Server :

Host : *(Domain Name / IP Address)

Authentication Port : 1812 *

Secret Key :

Accounting Service : ● Disable ○ Enable

Accounting Port : 1813 *

Accounting Interim Update Interval : 60 second(s)*

Secondary RADIUS Server :

Host: (Domain Name / IP Address)

Authentication Port: 1812

Secret Key:

Accounting Service: ● Disable ○ Enable

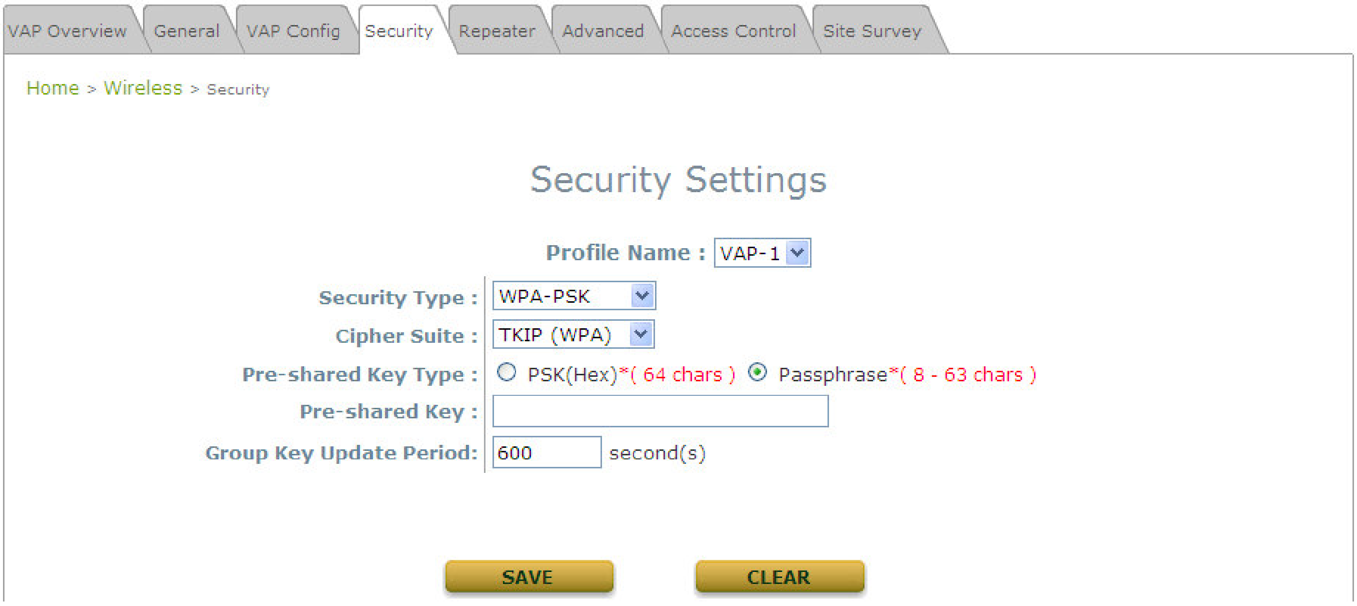
Accounting Port: 1813

Accounting Interim Update Interval: 60 second(s)

- ➢ **Dynamic WEP Settings:**
  - ○ **Dynamic WEP:** By enabling this function, the system will automatically generate WEP keys for encrption.
  - ○ **WEK Key Length:** Select from *64-bit* or *128-bit* key length.
  - ○ **Rekeying Period:** The time interval for the WEP key to be updated; the time unit is in second.
- ➢ **Primary RADIUS Server Settings:**
  - ○ **Host:** Enter the IP address or domain name of the RADIUS server.
  - ○ **Authentication Port:** The port number used by the RADIUS server. Specify a port number or use the default, 1812.
  - ○ **Secret Key:** The secret key for the system to communicate with the RADIUS server.
  - ○ **Accounting Service:** Enable or disable the accounting service.
  - ○ **Accountin Port:** The port number used by the RADIUS server. Specify a port number

or use the default, 1813.

- **Accounting Interim Update Interval:** The time interval for the accounting to be updated; the time unit is in second.
- **WPA-PSK:** Provide shared key authenticaiton in WPA data encryption.



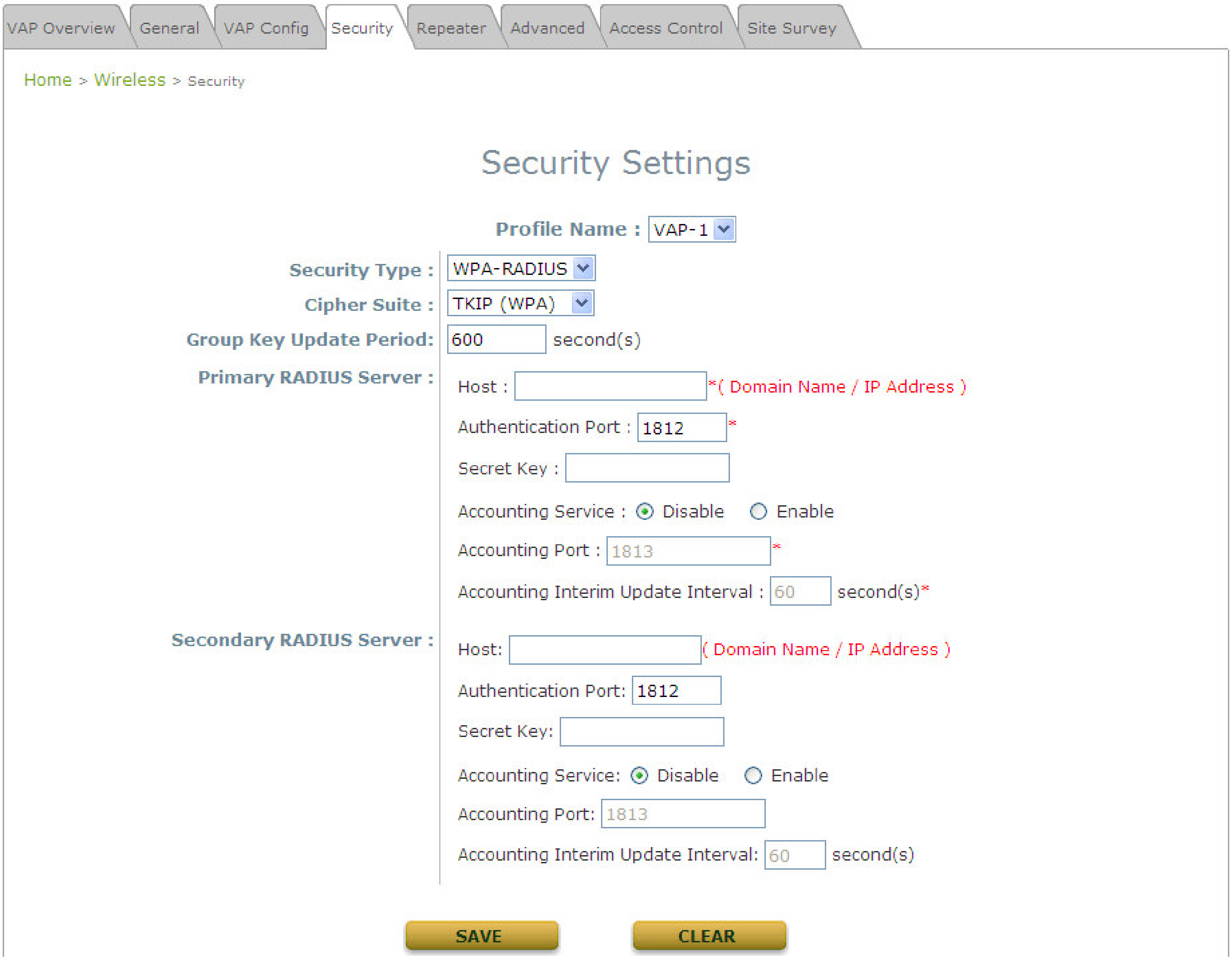
Security Settings

Profile Name : VAP-1

Security Type :	WPA-PSK
Cipher Suite :	TKIP (WPA)
Pre-shared Key Type :	○ PSK(Hex)*(64 chars) ● Passphrase*(8 - 63 chars)
Pre-shared Key :	
Group Key Update Period:	600 second(s)

- **Cipher Suite:** Select an encryption method from *TKIP (WPA)*, *AES (WPA)*, *TKIP(WAP2)*, *AES (WAP2)*, or *Mixed*.
- **Pre-shared Key Type:** Select a pre-shared key type: *PSK (Hex)* or *Passphrase*.
- **Pre-shared Key:** Enter the key value for the pre-shared key; the format of the key value depends on the key type selected.
- **Group Key Update Period:** The time interval for the Group Key to be renewed; the time unit is in second.

- **WPA-RADIUS:** Authenticate users by RADIUS and provide WPA data encryption.



Security Settings

Profile Name : VAP-1

Security Type : WPA-RADIUS

Cipher Suite : TKIP (WPA)

Group Key Update Period: 600 second(s)

Primary RADIUS Server :

Host : *(Domain Name / IP Address)

Authentication Port : 1812 *

Secret Key :

Accounting Service : ● Disable ○ Enable

Accounting Port : 1813 *

Accounting Interim Update Interval : 60 second(s)*

Secondary RADIUS Server :

Host: (Domain Name / IP Address)

Authentication Port: 1812

Secret Key:

Accounting Service: ● Disable ○ Enable

Accounting Port: 1813

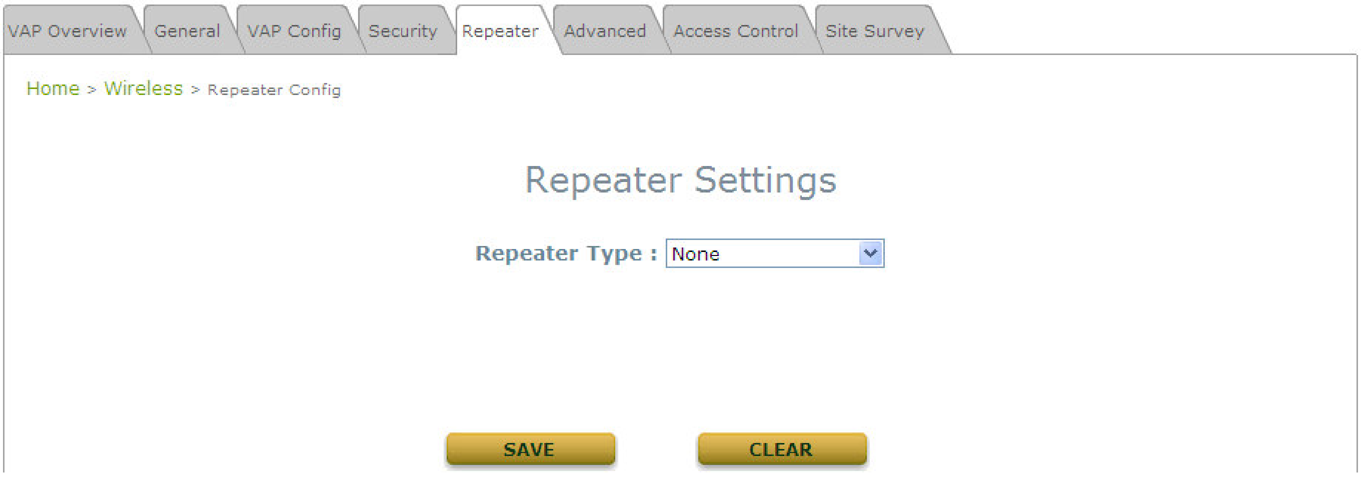
Accounting Interim Update Interval: 60 second(s)

- **WPA Settings:**
  - **Cipher Suite:** Select an encryption method from *TKIP (WPA)*, *AES (WPA)*, *TKIP(WAP2)*, *AES (WAP2)*, or *Mixed*.
  - **Group Key Update Period:** The time interval for the Group Key to be renewed; the time unit is in second.
- **Primary RADIUS Server Settings:**
  - **Host:** Enter the IP address or domain name of the RADIUS server.
  - **Authentication Port:** The port number used by the RADIUS server. Specify a port number or use the default, 1812.
  - **Secret Key:** The secret key for the system to communicate with the RADIUS server.
  - **Accounting Service:** Enable or disable the accounting service.
  - **Accountin Port:** The port number used by the RADIUS server. Specify a port number or use the default, 1813.
  - **Accounting Interim Update Interval:** The time interval for the accounting to be updated; the time unit is in second.

4.2.5 Repeater Settings

The system can serve as an Access Point, a Repeater, or an Access Point with Repeater depending on deployment needs. Select a *Repeater Type* from the drop-down list box and proceed with the related settings.

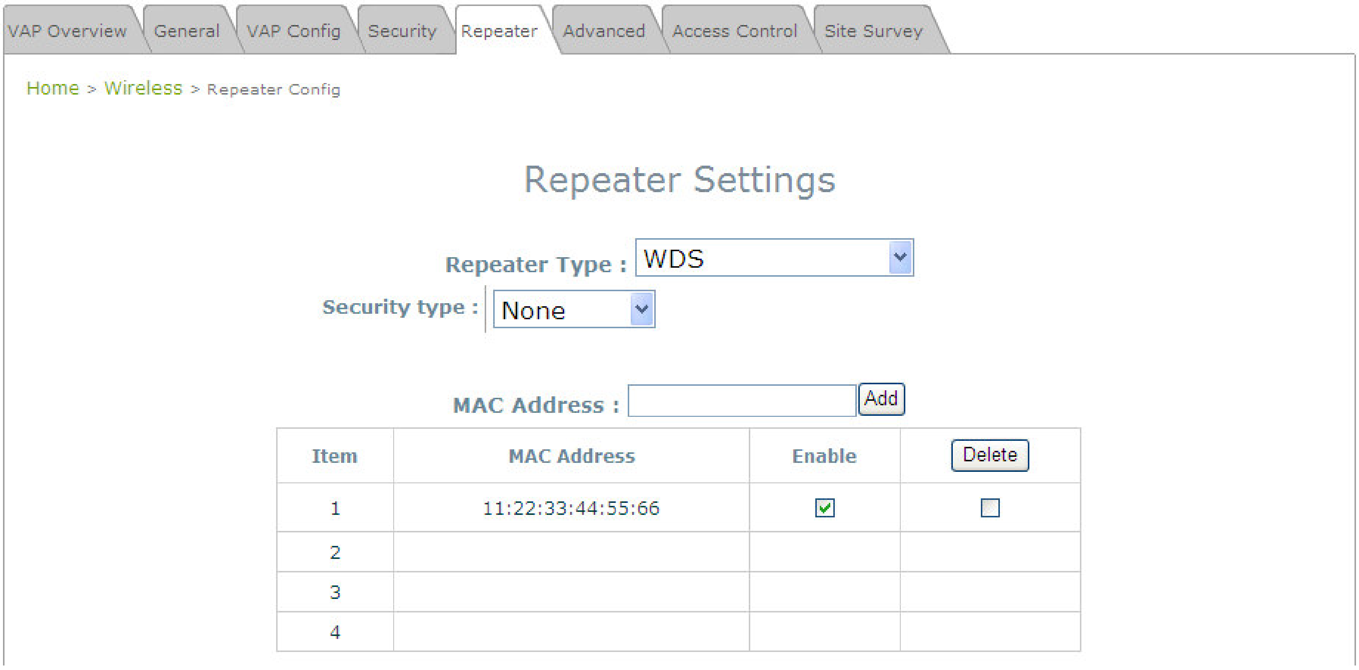
- **None:** When None is selected, the system is acting as an Access Point only; therefore, no further configuration is required here



Repeater Settings

Repeater Type : None

- **WDS:** The device supports up to 4 WDS peers. After providing WDS peer's MAC address, click on ***Add*** to add this link to the table shown on User Interface.



Repeater Settings

Repeater Type : WDS

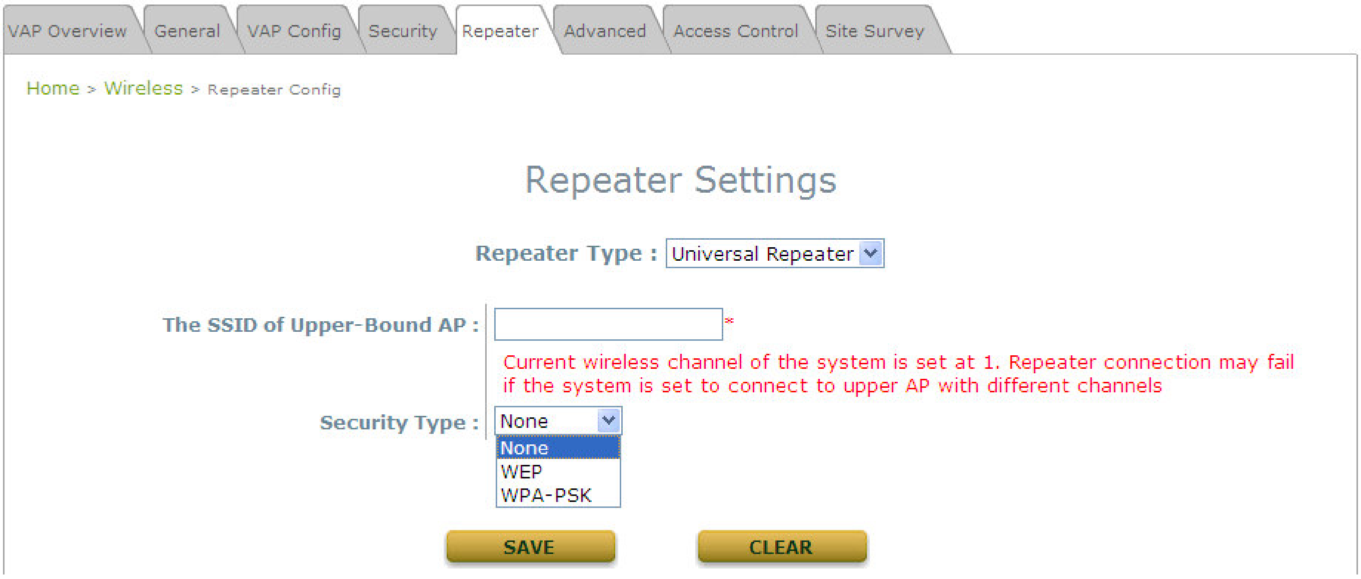
Security type : None

MAC Address :

Item	MAC Address	Enable	Delete
1	11:22:33:44:55:66	☑	□
2			
3			
4			

- **MAC:** Enter the MAC address of the WDS peer. Click ***Add*** to add it into the list.
- **MAC Address:** Display the MAC address of the WDS peer.
- **Enable:** Check ***Enable*** to activate the specified WDS link.
- **Delete:** Check ***Delete*** box and click ***Delete*** button to remove the specified WDS peer from the list.
- **Security Type:** Select an appropriate security type for the WDS link, either ***None***, ***WEP*** or ***TKIP/AES***; the type selected needs to be the same as the one configured at the WDS peer.

- **Universal Repeater:** If Universal Repeater is chosen, please provide the SSID of upper-bound AP for uplink connection; Security Type (None, WEP, or WPA-PSK) can be configured for this Repeater connection. Please note the security type configured here needs to be the same as upper-bound AP to be connected.



Repeater Settings

Repeater Type : Universal Repeater

The SSID of Upper-Bound AP : *

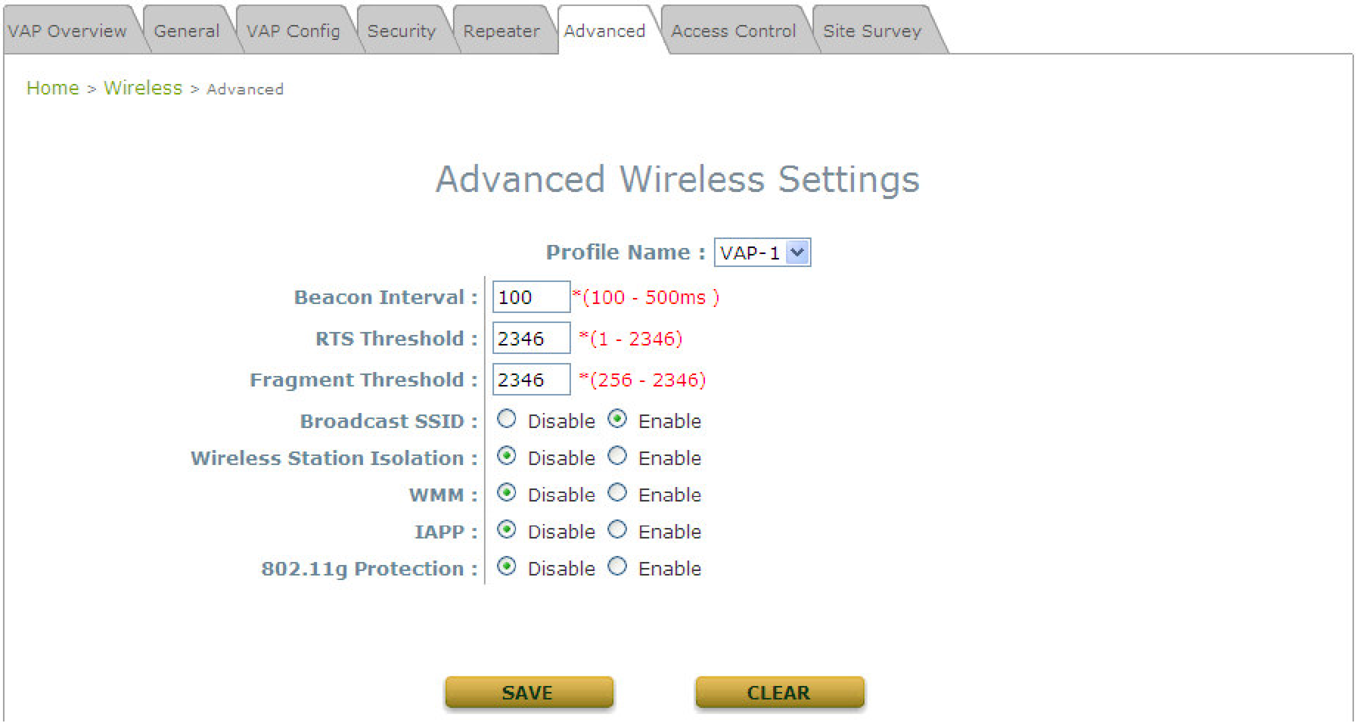
Current wireless channel of the system is set at 1. Repeater connection may fail if the system is set to connect to upper AP with different channels

Security Type : None

- **The SSID of Upper-Bound AP:** Specify the SSID of the upper-bound AP that the system is used to extend that AP's wireless service coverage.
- **Security Type:** Select the security type used by the upper-bound AP, ***None***, ***WEP*** or ***WPA-PSK***. Security settings configured here must be the same as the upper-bound AP.

4.2.6 Advanced Wireless Settings

The advanced wireless settings for the system's VAP profiles allow customization of data transmission settings. The administrator can tune the following parameters to improve network communication performance if a poor connection occurs.



Advanced Wireless Settings

Profile Name :	VAP-1
Beacon Interval :	100 *(100 - 500ms)
RTS Threshold :	2346 *(1 - 2346)
Fragment Threshold :	2346 *(256 - 2346)
Broadcast SSID :	○ Disable ● Enable
Wireless Station Isolation :	● Disable ○ Enable
WMM :	● Disable ○ Enable
IAPP :	● Disable ○ Enable
802.11g Protection :	● Disable ○ Enable

- **Beacon Interval:** Enter a value between 100 and 500 ms. The default is 100 milliseconds. The specified value represents the amount of time between beacon signal transmissions.
- **RTS Threshold:** To control station access to the medium and to alleviate this effect of the hidden terminal problem, the administrator can tune this RTS threshold value. A lower RTS Threshold setting can be useful in areas where many client devices are associating with WAB-3003 or in areas where the clients are far apart and can detect only WAB-3003 and not each other.
- **Fragmentation Threshold:** A unicast frame larger than this threshold will be fragmented before transmission. If a significant number of collisions are occurring, the administrator can try to set a smaller value of the threshold to see whether it helps. A smaller value results in smaller packets but allows a larger number of packets in transmission. A lower Fragment Threshold setting can be useful in areas where communication is poor or disturbed by a serious amount of radio interference.
- **Broadcast SSID:** Disabling this function will prevent the system from broadcasting its SSID. If you disable broadcast of the SSID, only devices that have the correct SSID can connect to the system.
- **Station Isolation:** By enabling this function, all stations associated with the system can only communicate with the system.
- **WMM**: The default is *Disable*. Wi-Fi Multimedia (WMM) is a Quality of Service (QoS) feature that

prioritizes wireless data packets based on four access categories: voice, video, best effort, and background. Applications without WMM and applications that do not require QoS are assigned to the best-effort category, which receives a lower priority than voice and video. In short, WMM decides which data streams are the most important and assign them a higher traffic priority.

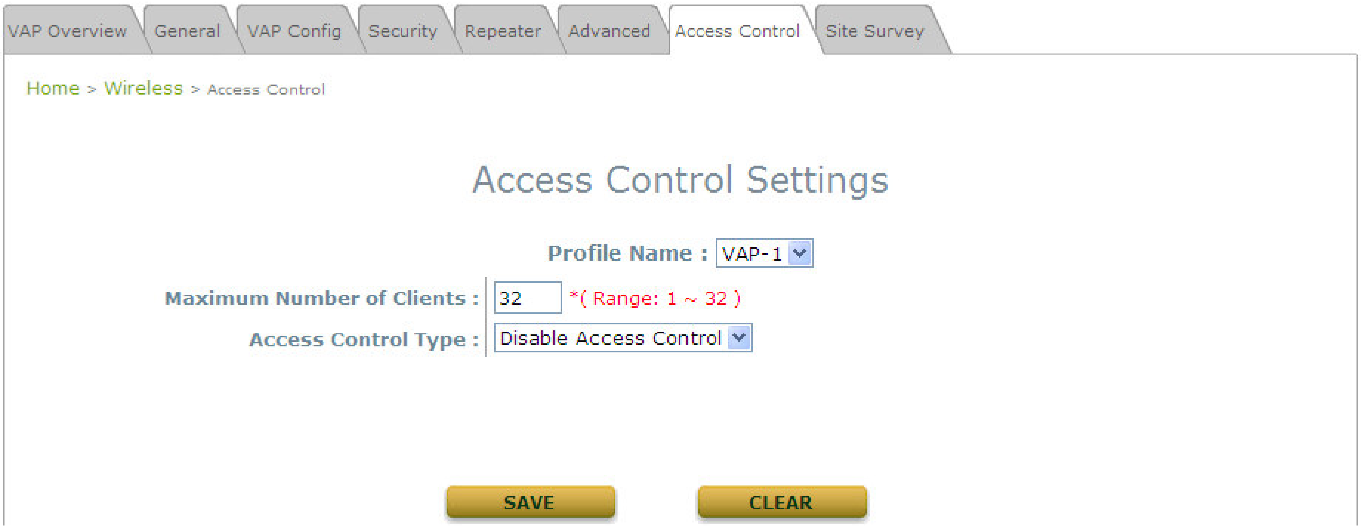
< To receive the benefits of WMM QoS >

- The application must support WMM.
- You must enable WMM in this system.
- You must enable WMM in the wireless adapter in your computer.

- **IAPP:** IAPP (Inter Access Point Protocol) is a protocol by which access points share information about the stations that are connected to them. By enabling this function, the system will automatically broadcast information of associated wireless stations to its peer access points. This will help wireless stations roam smoothly among IAPP-enabled access points in the same wireless LAN.
- **802.11g Protection:** When enabled, the associated 802.11g stations will benefit from this function since their transmission speed will not be affected by the surrounding 802.11b stations.

4.2.7 Access Control Settings

The administrator can restrict the wireless access of client devices based on their MAC addresses.



Access Control Settings

Profile Name : VAP-1

Maximum Number of Clients : 32 *(Range: 1 ~ 32)

Access Control Type : Disable Access Control

- **Maximum Number of Clients**

  The system supports various methods of authenticating clients for using wireless LAN. The default policy is unlimited access without any authentication required. To restrict the station number of wireless connections, simply change the **Maximum Number of Stations** to a desired number. For example, while the number of stations is set to 20, only 20 stations are allowed to connect to the specified VAP.

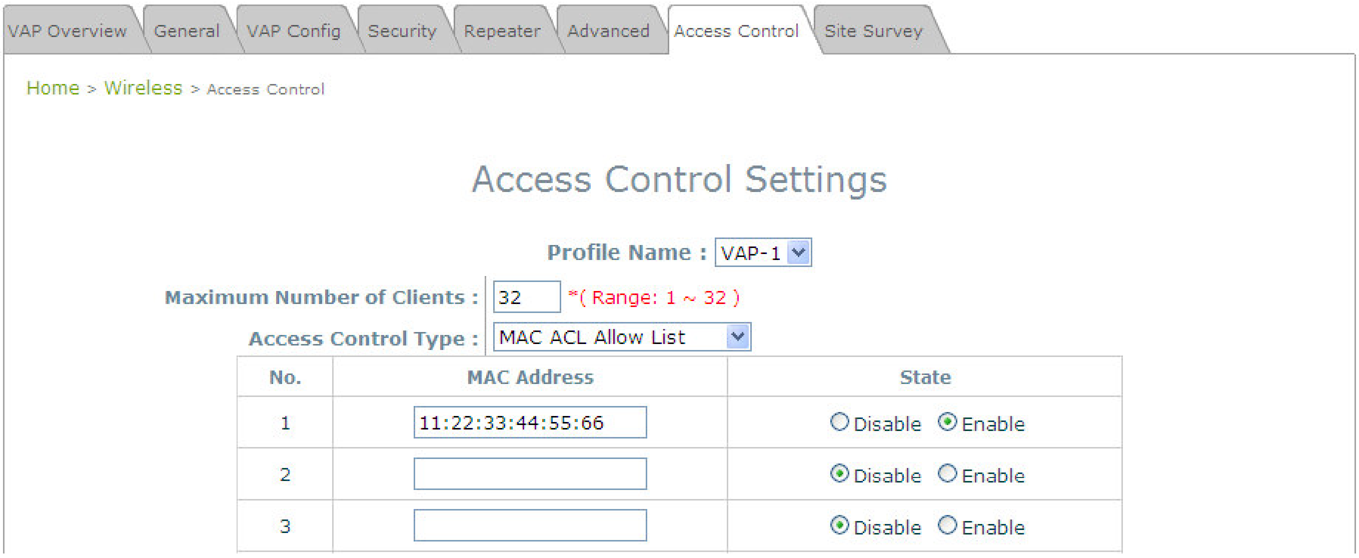
- **Access Control Type**

  The selected **Access Control Type** will be the activated policy while the rest will be omitted. The following is a list of the supported methods for MAC ACL control:

  (1) **Disable Access Control**
  No MAC address check required.

(2) **MAC ACL Allow List**

Deny all except those in the Allow List. When selecting *MAC ACL Allow List*, all wireless connections to the specified VAP will be denied except the MAC addresses listed in the Allow List ("allowed MAC addresses"). The administrator can disable any allowed MAC address to connect to the VAP temporarily by checking *Disable*. For example, 11:22:33:44:55:66 is in the Allow List; to temporarily deny its access, check *Disable* in the **State** section.



Home > Wireless > Access Control

Access Control Settings

Profile Name : VAP-1

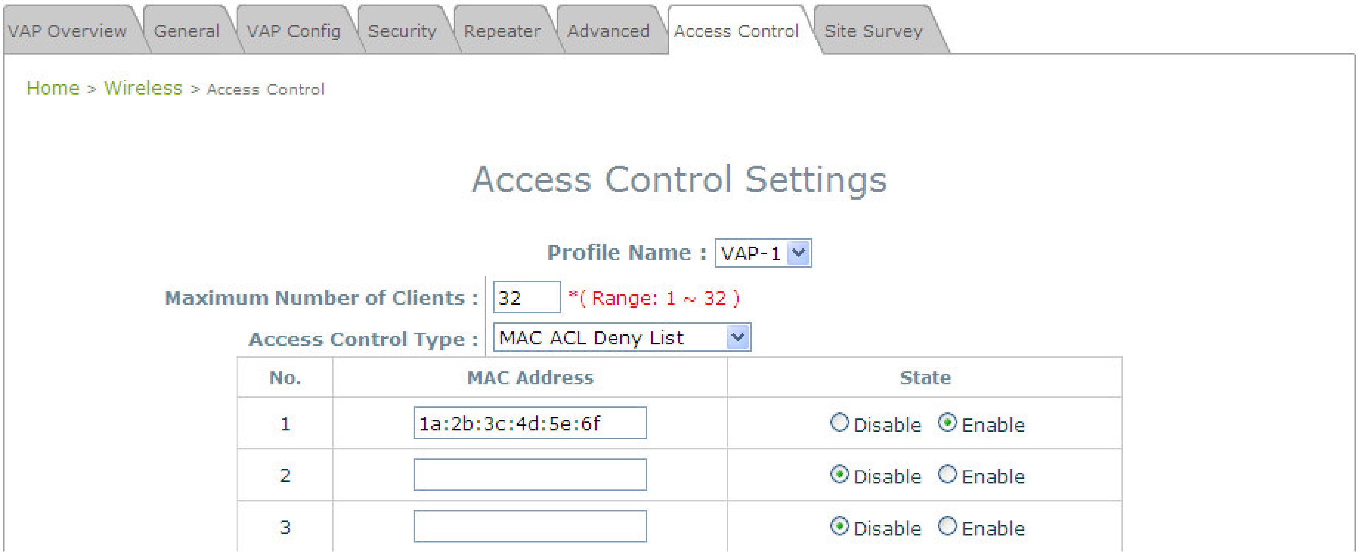
Maximum Number of Clients : 32 *(Range: 1 ~ 32)

Access Control Type : MAC ACL Allow List

No.	MAC Address	State
1	11:22:33:44:55:66	○ Disable ● Enable
2		● Disable ○ Enable
3		● Disable ○ Enable

(3) **MAC ACL Deny List**

Allow all except those in the Deny List. When selecting *MAC ACL Deny List*, all wireless connections to the specified VAP will be allowed except the MAC addresses listed in the Deny List ("denied MAC addresses"). The administrator can allow any denied MAC address to connect to the VAP temporarily by checking *Enable*.



Home > Wireless > Access Control

Access Control Settings

Profile Name : VAP-1

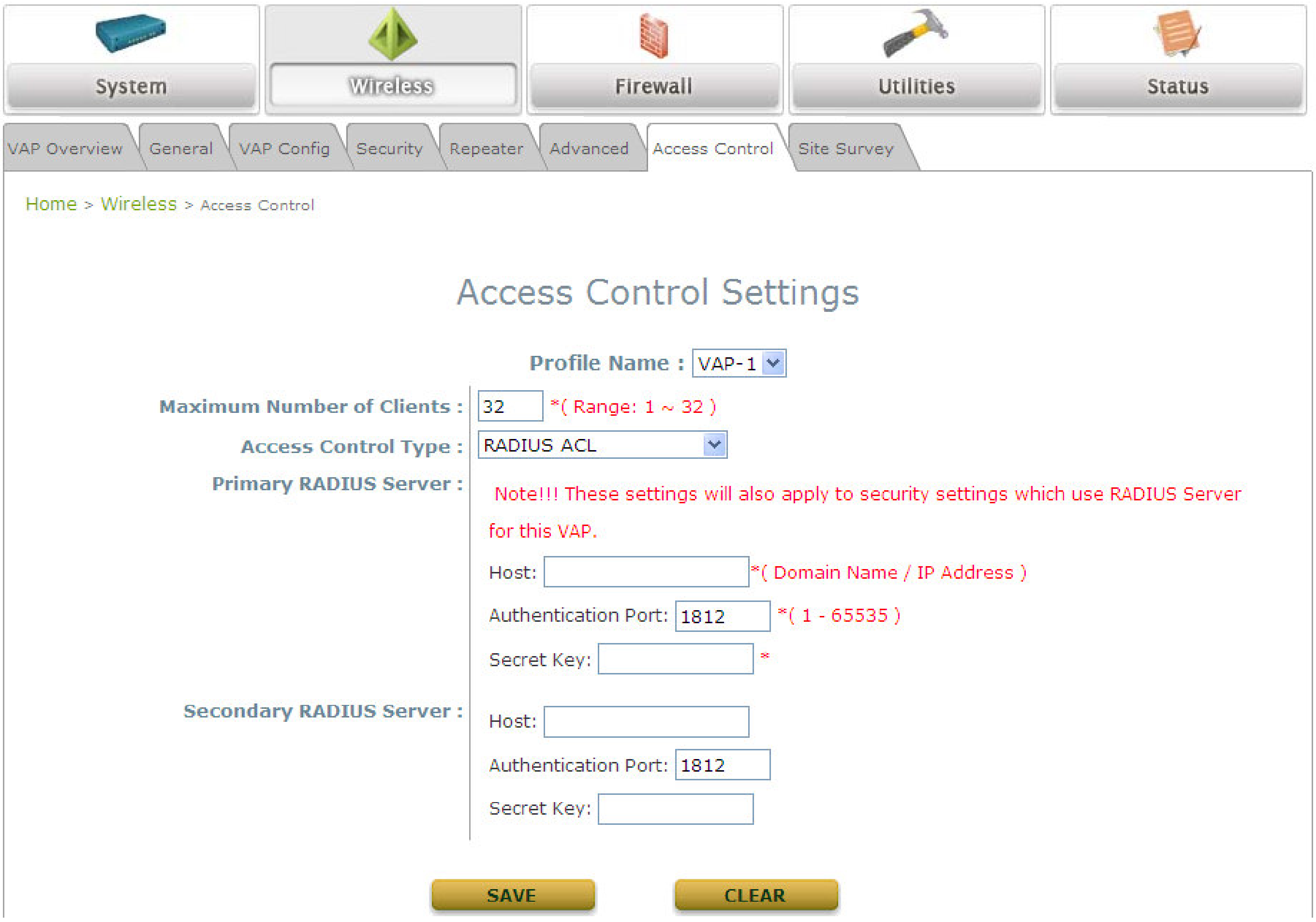
Maximum Number of Clients : 32 *(Range: 1 ~ 32)

Access Control Type : MAC ACL Deny List

No.	MAC Address	State
1	1a:2b:3c:4d:5e:6f	○ Disable ● Enable
2		● Disable ○ Enable
3		● Disable ○ Enable

(4) **RADIUS ACL**

Authenticate incoming MAC addresses by RADIUS. When selecting *RADIUS ACL*, all incoming MAC addresses will be authenticated by RADIUS. Please note that each VAP's MAC ACL and its security type (showing on the **Security Settings** page) share the same RADIUS configuration.



Access Control Settings

Profile Name : VAP-1

Maximum Number of Clients : 32 *(Range: 1 ~ 32)

Access Control Type : RADIUS ACL

Primary RADIUS Server :

Note!!! These settings will also apply to security settings which use RADIUS Server for this VAP.

Host: *(Domain Name / IP Address)

Authentication Port: 1812 *(1 - 65535)

Secret Key: *

Secondary RADIUS Server :

Host:

Authentication Port: 1812

Secret Key:

4.2.8 Site Survey

The system can scan and display all surrounding available access points (APs) when Universal Repeater is enabled. Site Survey is a useful tool to provide information about the surrounding wireless environment; available APs are shown with their respective SSID, MAC Address, Channel, Rate setting, Signal reading and Security type. The administrator can click Setup or Connect to configure the wireless connection for Universal Repeater according to the mentioned readings.

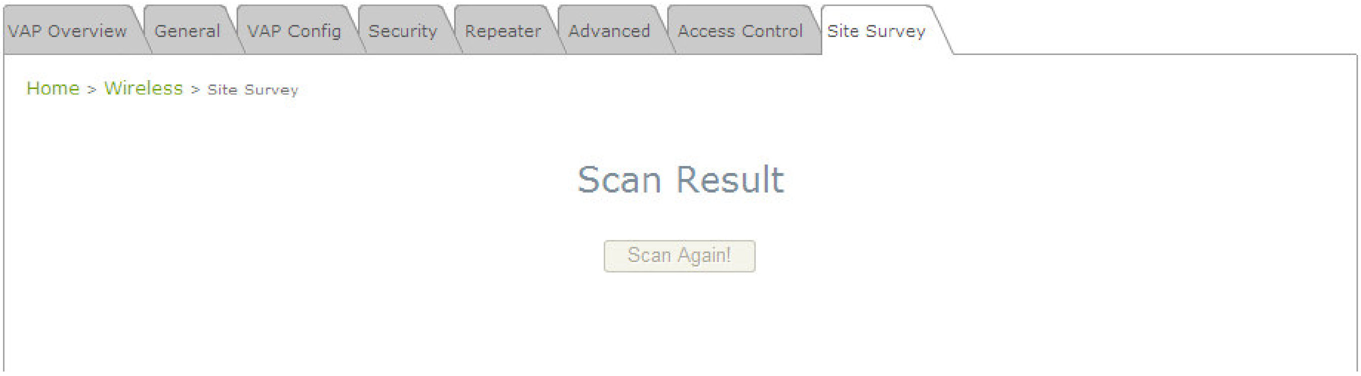
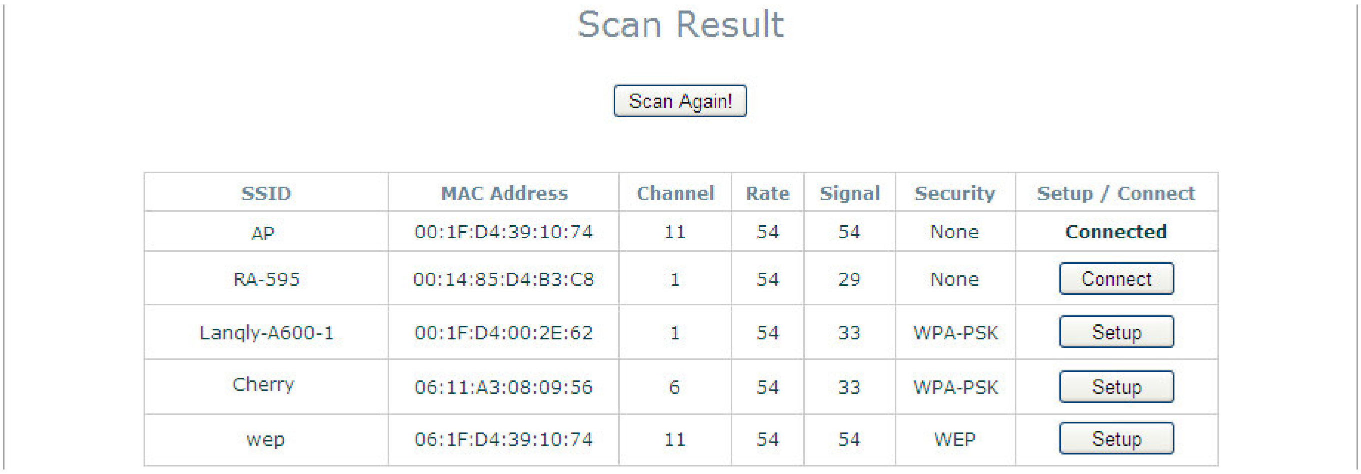


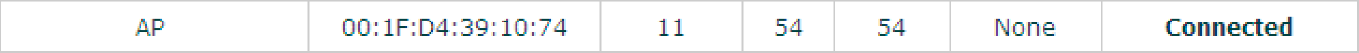
Figure 4-2-8-1: Site Survey- when repeater function is disabled.



SSID	MAC Address	Channel	Rate	Signal	Security	Setup / Connect
AP	00:1F:D4:39:10:74	11	54	54	None	**Connected**
RA-595	00:14:85:D4:B3:C8	1	54	29	None	Connect
Lanqly-A600-1	00:1F:D4:00:2E:62	1	54	33	WPA-PSK	Setup
Cherry	06:11:A3:08:09:56	6	54	33	WPA-PSK	Setup
wep	06:1F:D4:39:10:74	11	54	54	WEP	Setup

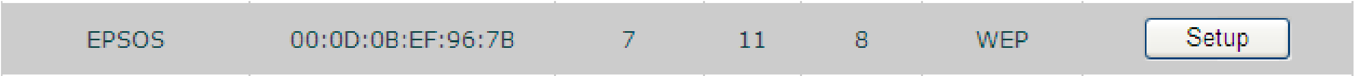
Figure 4-2-8-2: Site Survey- when repeater function is enabled (example only)

- **SSID:** The SSID (Service Set ID) of the AP found in the system's coverage area.
- **MAC Address:** The MAC address of the respective AP.
- **Channel:** The channel number currently used by the respective AP or repeater.
- **Rate:** The transmitting rate of the respective AP.
- **Signal:** The signal strength of the respective AP.
- **Security:** The encryption type used by the respective AP
- **Setup/ Connect:**
  - ➢ **Connect:** Click ***Connect*** to associate with the respective AP directly; no further configuration is required.



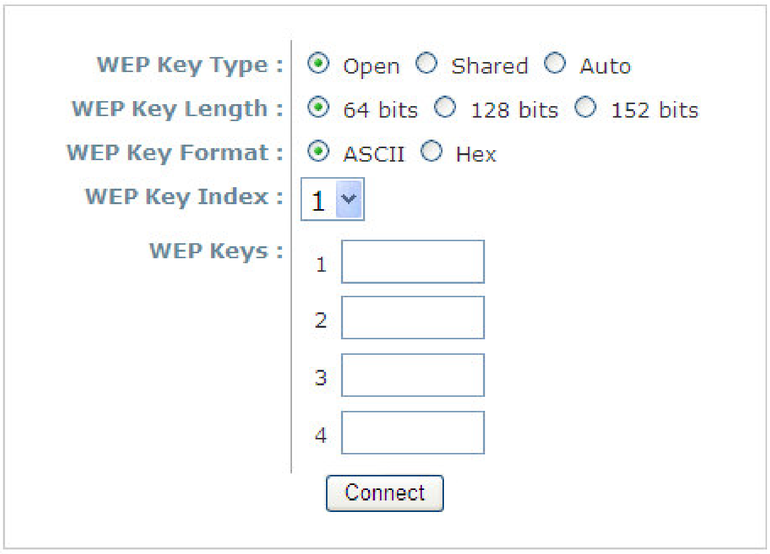
AP	00:1F:D4:39:10:74	11	54	54	None	**Connected**

  - ➢ **Setup:** Click ***Setup*** to configure security settings for associating with the respective AP.
    - ○ **WEP:** Click ***Setup*** to configure the WEP setting for associating with the target AP.



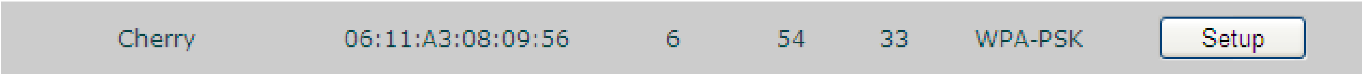
EPSOS	00:0D:0B:EF:96:7B	7	11	8	WEP	Setup

The following configuration box will then appear at the bottom of the screen. For more information on the WEP security settings, please refer to **Section 4.2.4. Security Settings**.



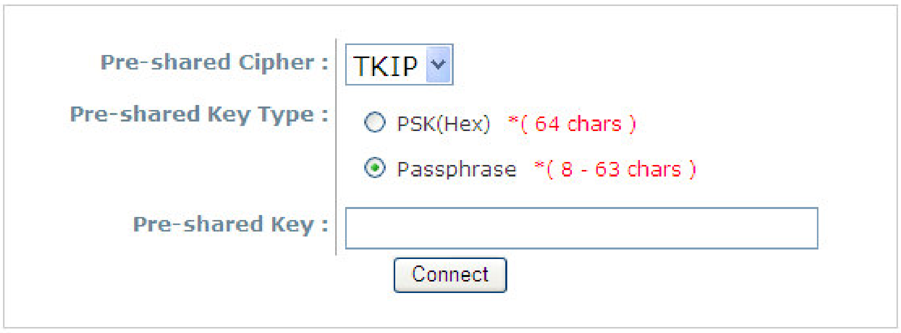
WEP Key Type : ● Open ○ Shared ○ Auto
WEP Key Length : ● 64 bits ○ 128 bits ○ 152 bits
WEP Key Format : ● ASCII ○ Hex
WEP Key Index : 1
WEP Keys : 1 ___ 2 ___ 3 ___ 4 ___

- ○ **WPA-PSK:** Click ***Setup*** to configure the WPA-PSK setting for associating with the target AP.



Cherry	06:11:A3:08:09:56	6	54	33	WPA-PSK	Setup

The following configuration box will then appear at the bottom of the screen. For more information on the WPA-PSK security settings, please refer to **Section 4.2.4. Security Settings**.



Pre-shared Cipher : TKIP

Pre-shared Key Type :
○ PSK(Hex) *(64 chars)
● Passphrase *(8 - 63 chars)

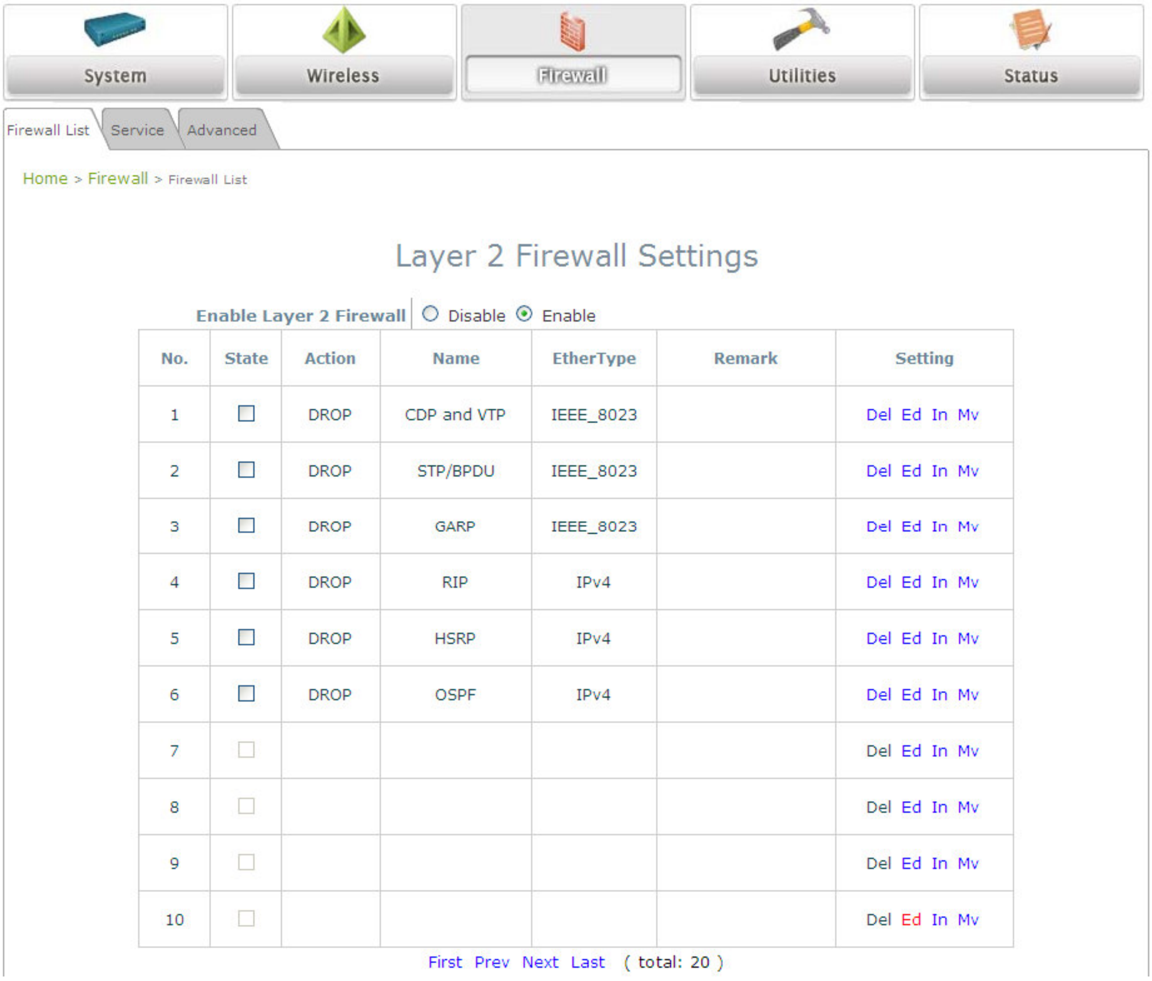
Pre-shared Key :

4.3 Firewall

The system provides an added security feature, L2 firewall, in addition to typical AP security. Layer-2 firewall offers a firewall function that is tailored specifically for layer 2 traffics, providing another choice of shield against possible security threats coming from/going to WLAN (AP interfaces); hence, besides firewall policies configured on gateways, this extra security feature will assist to mitigate possible security breach.

4.3.1 Layer 2 Firewall Settings

It provides an overview of firewall rules in the system; 6 default rules with up to total 20 firewall rules are available for configuration.



Layer 2 Firewall Settings

Enable Layer 2 Firewall ○ Disable ● Enable

No.	State	Action	Name	EtherType	Remark	Setting
1	□	DROP	CDP and VTP	IEEE_8023		Del Ed In Mv
2	□	DROP	STP/BPDU	IEEE_8023		Del Ed In Mv
3	□	DROP	GARP	IEEE_8023		Del Ed In Mv
4	□	DROP	RIP	IPv4		Del Ed In Mv
5	□	DROP	HSRP	IPv4		Del Ed In Mv
6	□	DROP	OSPF	IPv4		Del Ed In Mv
7	□					Del Ed In Mv
8	□					Del Ed In Mv
9	□					Del Ed In Mv
10	□					Del Ed In Mv

First Prev Next Last (total: 20)

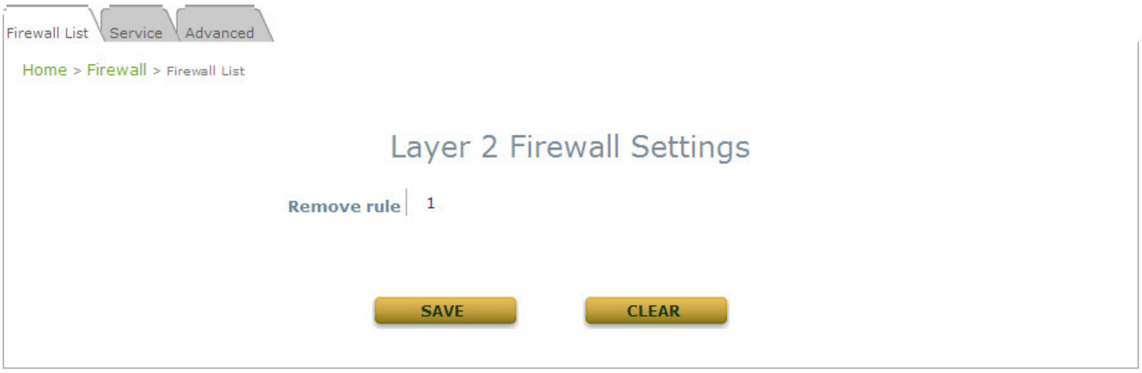
From the overview table, each rule is designated with the following fields:

- **No.:** The numbering will decide the priority to let system carry out the available firewall rules in the table.
- **State:** The check marks will enable the respective rules.
- **Action**: "DROP" denotes a block rule; "ACCEPT" denotes a pass rule.
- **Name:** It shows the name of rule.

- **EtherType:** It denotes the type of traffics subject to this rule.
- **Remark:** It shows the note of this rule.
- **Setting:** 4 actions are available; "Del" denotes to delete the rule, "Ed" denotes to edit the rule, "In" denotes to insert a rule, and "Mv" denotes to move the rule.

>>To delete a specific rule,

"Del" in "Setting" column of firewall list will lead to the following page for removal confirmation. After "SAVE" button is clicked and system reboot, the rule will be removed.



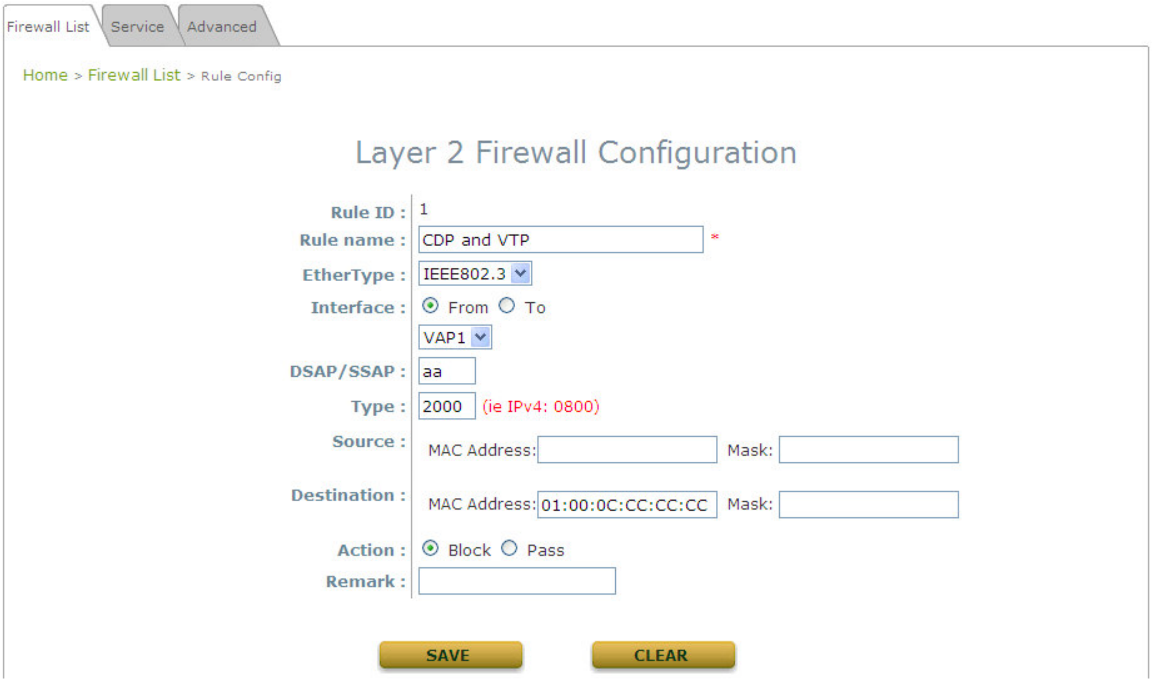
Home > Firewall > Firewall List

Layer 2 Firewall Settings

Remove rule	1

>>To edit a specific rule,

"Ed" in "Setting" column of firewall list will lead to the following page for detail configuration. From this page, the rule can be edited form scratch or from an existing rule for revision.



Home > Firewall List > Rule Config

Layer 2 Firewall Configuration

Rule ID :	1
Rule name :	CDP and VTP *
EtherType :	IEEE802.3
Interface :	● From ○ To VAP1
DSAP/SSAP :	aa
Type :	2000 (ie IPv4: 0800)
Source :	MAC Address: Mask:
Destination :	MAC Address: 01:00:0C:CC:CC:CC Mask:
Action :	● Block ○ Pass
Remark :	

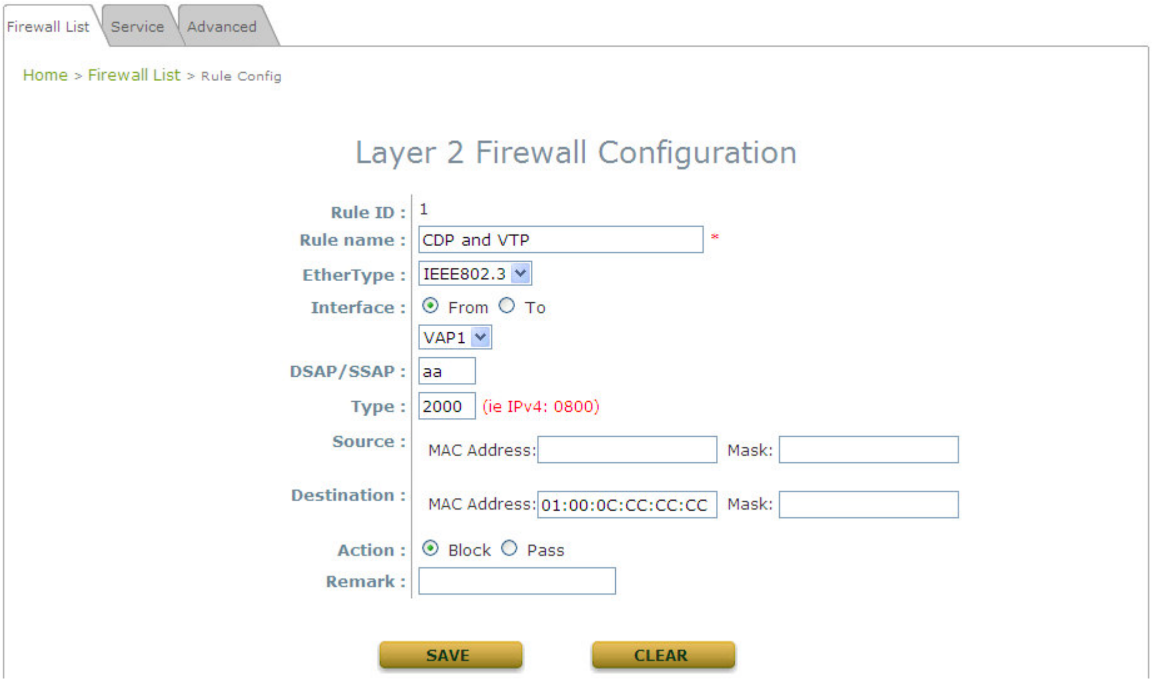
- **Rule ID:** The numbering of this specific rule will decide its priority among available firewall rules in the table.
- **Rule name:** The rule name can be specified here.
- **EtherType:** The drop-down list will provide the available types of traffics (ALL, IPv4, IEEE802.3, 802.1Q, ARP, and RARP) subject to this rule.
- **Interface:** It can indicate inbound/outbound direction with desired interfaces (VAP1~VAP8)
- **Service (when EtherType is IPv4):** Select the available upper layer protocols/services from the drop-down list.
- **DSAP/SSAP (when EtherType is IEEE802.3):** The value can be further specified for the fields in 802.2 LLC frame header.
- **Type (when EtherType is IEEE802.3):** The field can be used to indicate the type of encapsulated traffics.
- **Vlan ID (when EtherType is 802.1Q):** The Vlan ID is provided to associate with certain VLAN-tagging traffics.
- **Priority (when EtherType is 802.1Q):** It denotes the priority level with associated VLAN traffics.
- **Encapsulated Type (when EtherType is 802.1Q):** It can be used to indicate the type of encapsulated traffics.
- **Opcode (when EtherType is ARP/RARP):** This list can be used to specify the ARP Opcode in ARP header.
- **Source:** MAC Address/Mask indicates the source MAC; IP Address/Mask indicates the source IP address (when EtherType is IPv4); ARP IP/MAC & MASK indicate the ARP payload fields.
- **Destination:** MAC Address/Mask indicates the destination MAC; IP Address/Mask indicates the destination IP address (when EtherType is IPv4); ARP IP/MAC & MASK indicate the ARP payload fields.
- **Action:** The rule can be chosen to be "Block" or "Pass".
- **Remark:** The note of this rule can be specified here.

When the configuration for firewall rules is provided, please click "**SAVE**" and reboot system to let the firewall rules take effect.

>>To insert a specific rule,

"In" in "Setting" column of firewall list will lead to the following page for detail configuration with rule ID for the current inserted rule.

From this page, the rule can be edited form scratch or from an existing rule for revision.

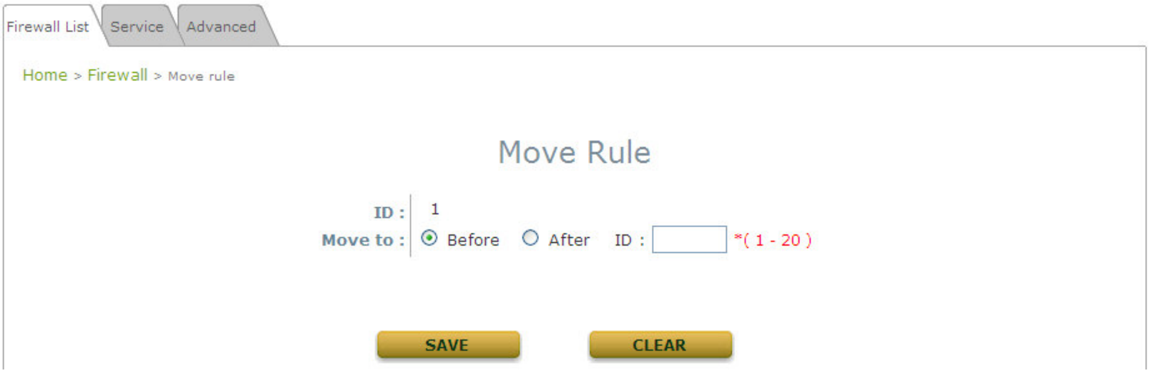


Layer 2 Firewall Configuration

Rule ID :	1
Rule name :	CDP and VTP *
EtherType :	IEEE802.3
Interface :	● From ○ To VAP1
DSAP/SSAP :	aa
Type :	2000 (ie IPv4: 0800)
Source :	MAC Address: Mask:
Destination :	MAC Address: 01:00:0C:CC:CC:CC Mask:
Action :	● Block ○ Pass
Remark :	

>>To move a specific rule,

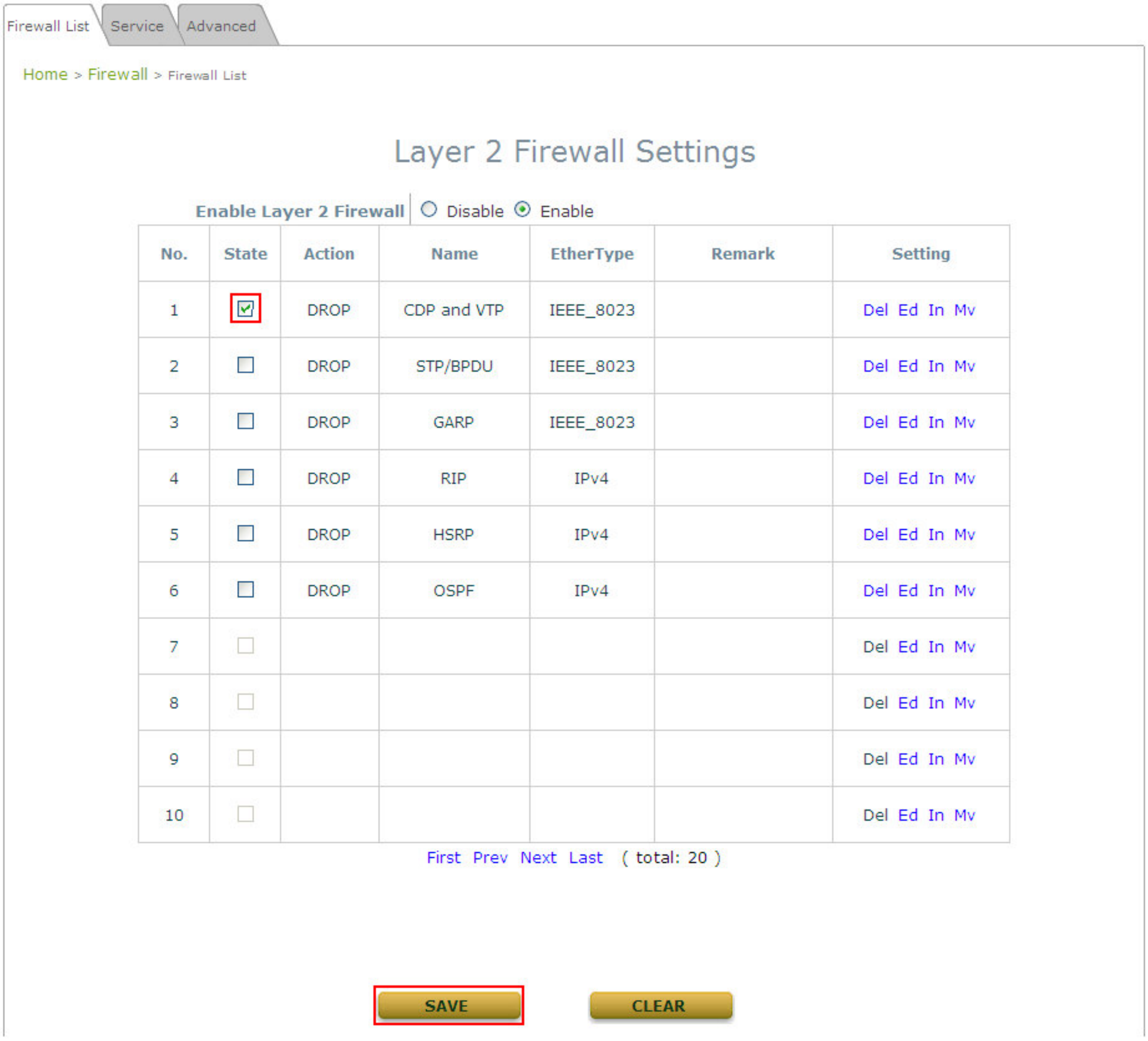
“Mv” in “Setting” column of firewall list will lead to the following page for re-ordering confirmation. After “**SAVE**” button is clicked and system reboot, the order of rules will be updated.



Move Rule

ID :	1
Move to :	● Before ○ After ID : *(1 - 20)

Please make sure all desired rules (state of rule) are **checked** and **saved** in overview page; the rule will be enforced upon system reboot.



Layer 2 Firewall Settings

Enable Layer 2 Firewall ○ Disable ● Enable

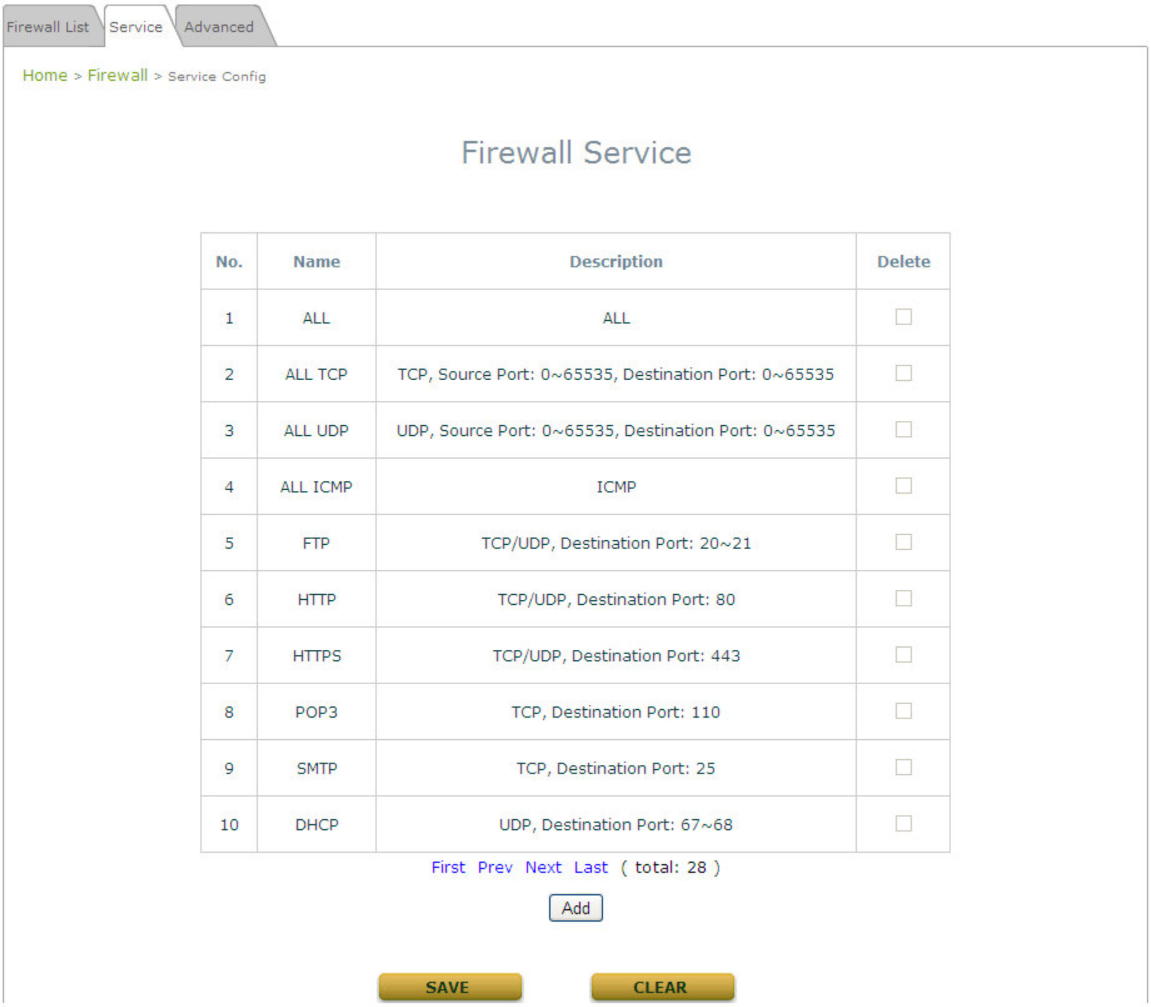
No.	State	Action	Name	EtherType	Remark	Setting
1	☑	DROP	CDP and VTP	IEEE_8023		Del Ed In Mv
2	□	DROP	STP/BPDU	IEEE_8023		Del Ed In Mv
3	□	DROP	GARP	IEEE_8023		Del Ed In Mv
4	□	DROP	RIP	IPv4		Del Ed In Mv
5	□	DROP	HSRP	IPv4		Del Ed In Mv
6	□	DROP	OSPF	IPv4		Del Ed In Mv
7	□					Del Ed In Mv
8	□					Del Ed In Mv
9	□					Del Ed In Mv
10	□					Del Ed In Mv

First Prev Next Last (total: 20)

Layer 2 Firewall Settings (Check State)

4.3.2 Firewall Service

The administrator can add or delete firewall services here; the services in this list will become options to choose in firewall rule (when EtherType is IPv4).



Firewall Service

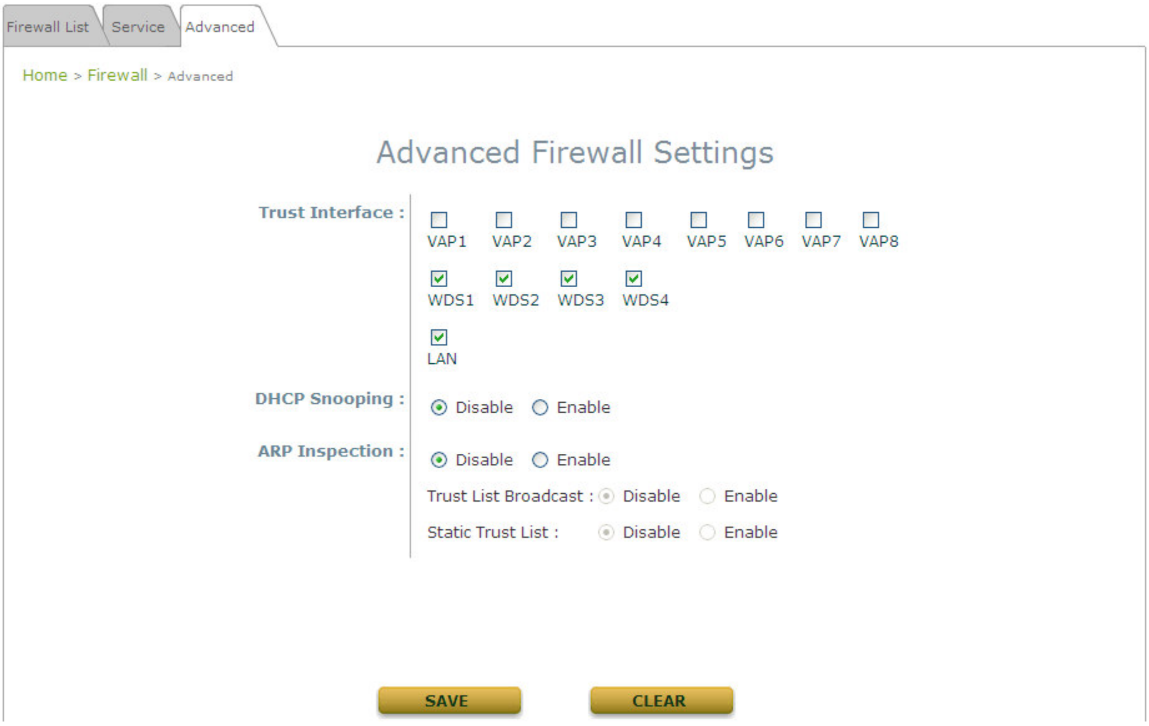
No.	Name	Description	Delete
1	ALL	ALL	□
2	ALL TCP	TCP, Source Port: 0~65535, Destination Port: 0~65535	□
3	ALL UDP	UDP, Source Port: 0~65535, Destination Port: 0~65535	□
4	ALL ICMP	ICMP	□
5	FTP	TCP/UDP, Destination Port: 20~21	□
6	HTTP	TCP/UDP, Destination Port: 80	□
7	HTTPS	TCP/UDP, Destination Port: 443	□
8	POP3	TCP, Destination Port: 110	□
9	SMTP	TCP, Destination Port: 25	□
10	DHCP	UDP, Destination Port: 67~68	□

Overview of Firewall Services

There are 28 firewall services available in default settings; these default services cannot be deleted but can be disabled. If changes are made, please click SAVE to save the settings before leaving this page.

4.3.3 Advanced Firewall Settings

Advanced firewall settings are used to supplement the firewall rules, providing extra security enhancement against DHCP and ARP traffics traversing the available interfaces of system.



Advanced Firewall Settings

Trust Interface : □ VAP1 □ VAP2 □ VAP3 □ VAP4 □ VAP5 □ VAP6 □ VAP7 □ VAP8
☑ WDS1 ☑ WDS2 ☑ WDS3 ☑ WDS4
☑ LAN

DHCP Snooping : ● Disable ○ Enable

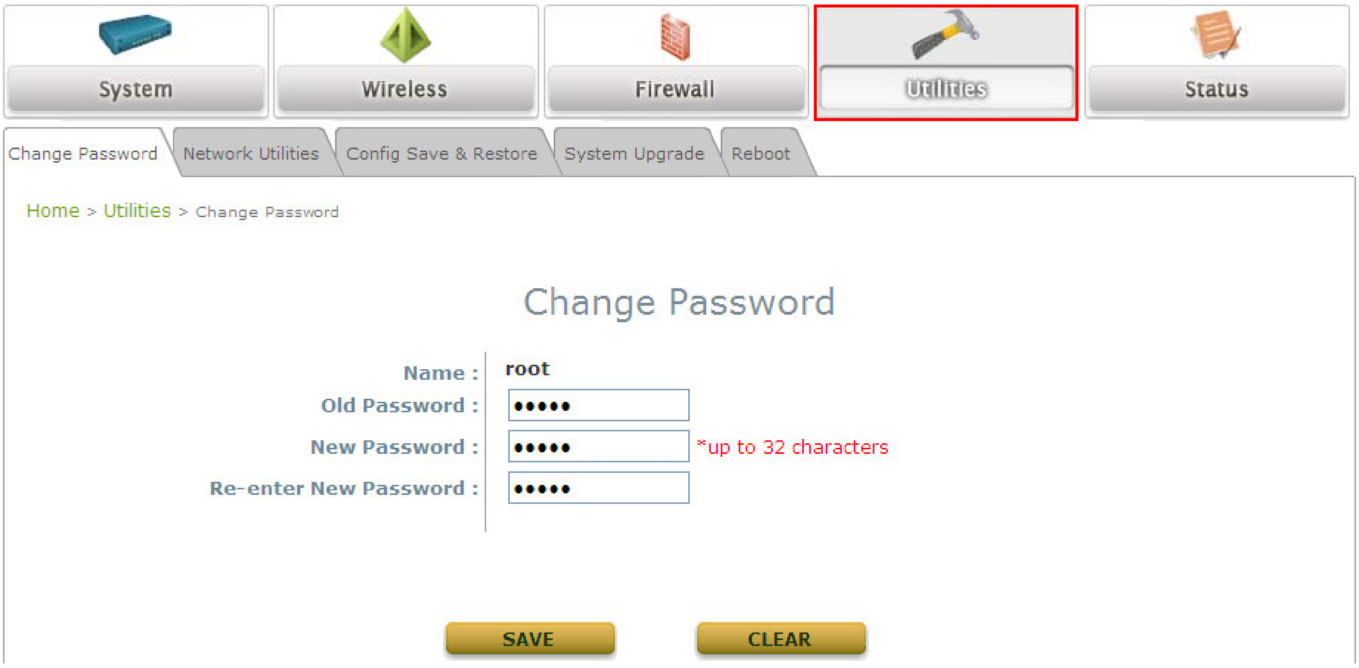
ARP Inspection : ● Disable ○ Enable
Trust List Broadcast : ● Disable ○ Enable
Static Trust List : ● Disable ○ Enable

- **Trust Interface:** Each interface can be checked individually to mark as trusted interfaces; security enforcements on DHCP/ARP like DHCP snooping and ARP inspection will be carried out on non-trusted interfaces.
- **DHCP Snooping:** When enabled, DHCP packets will be validated against possible threats like DHCP starvation attack; in addition, the trusted DHCP server (IP/MAC) can be specified to prevent rogue DHCP server.
- **ARP Inspection:** When enabled, ARP packets will be validated against ARP spoofing. **Trust List Broadcast** can be enabled to let other WAB-3003 (with L2 firewall feature) learn the trusted MAC/IP pairs to issue ARP requests. **Static Trust List** can be used to add MAC or MAC/IP pairs to issue ARP request. Other network nodes can still send their ARP requests; however, if their IP appears in the static list (with different MAC), their ARP requests will be dropped to prevent eavesdropping.

If any settings are made, please click ***SAVE*** to save the configuration before leaving this page.

4.4 Utilities

The administrator can maintain the system on this page: **Change Password**, **Network Utilities**, **Configuration Save & Restore**, **System Upgrade**, and **Reboot**.



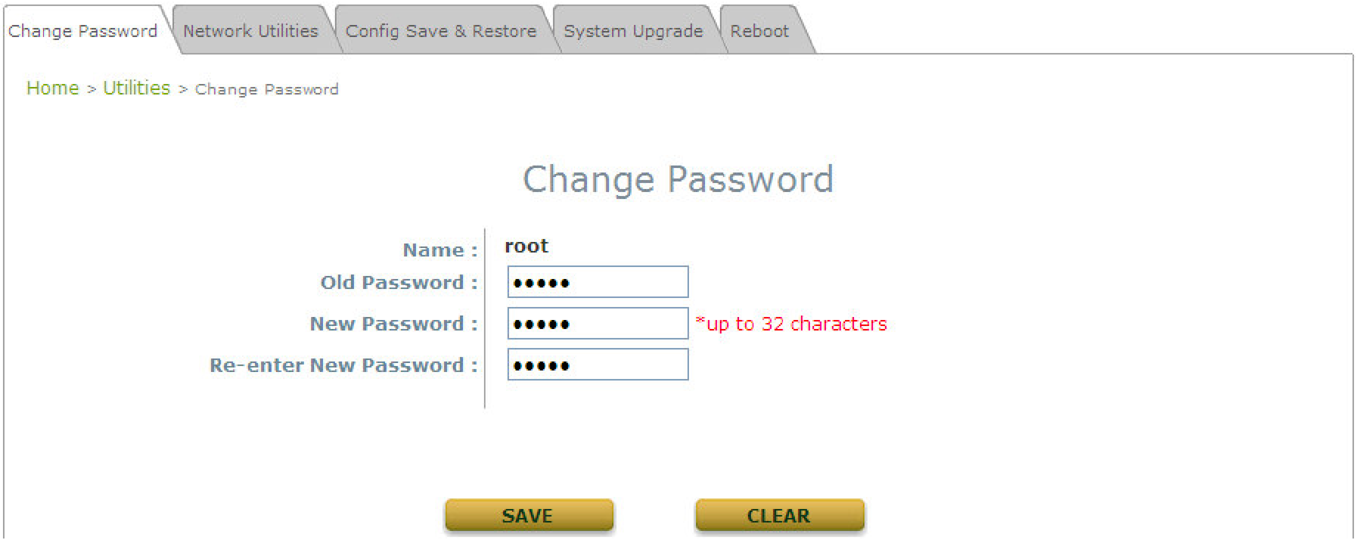
Change Password

Name : root
Old Password : •••••
New Password : ••••• *up to 32 characters
Re-enter New Password : •••••

SAVE CLEAR

4.4.1 Change Password

The administrator can update or change password. The system provides one management account for AP mode, **root** account. The administrator can change password on this page.



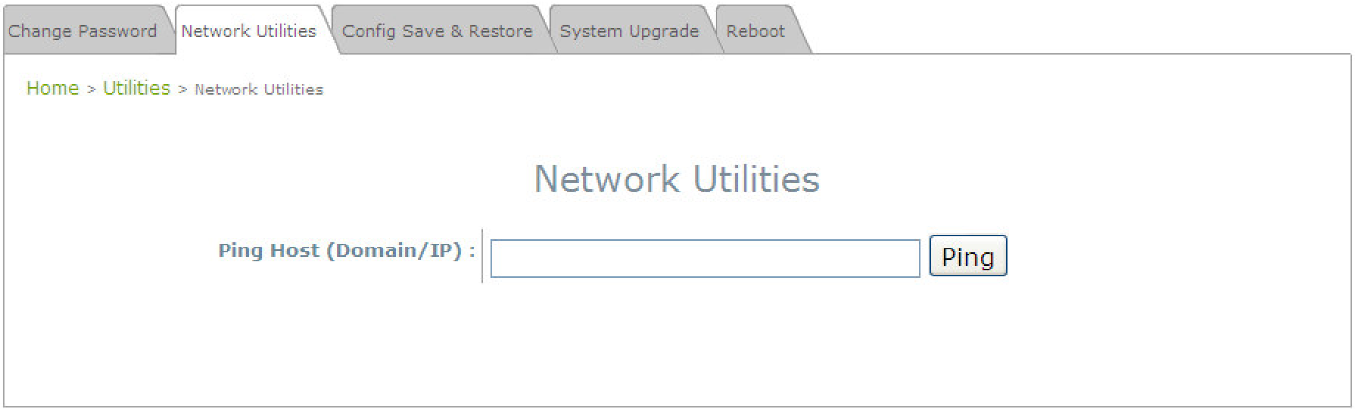
Change Password

Name :	root
Old Password :	●●●●●
New Password :	●●●●● *up to 32 characters
Re-enter New Password :	●●●●●

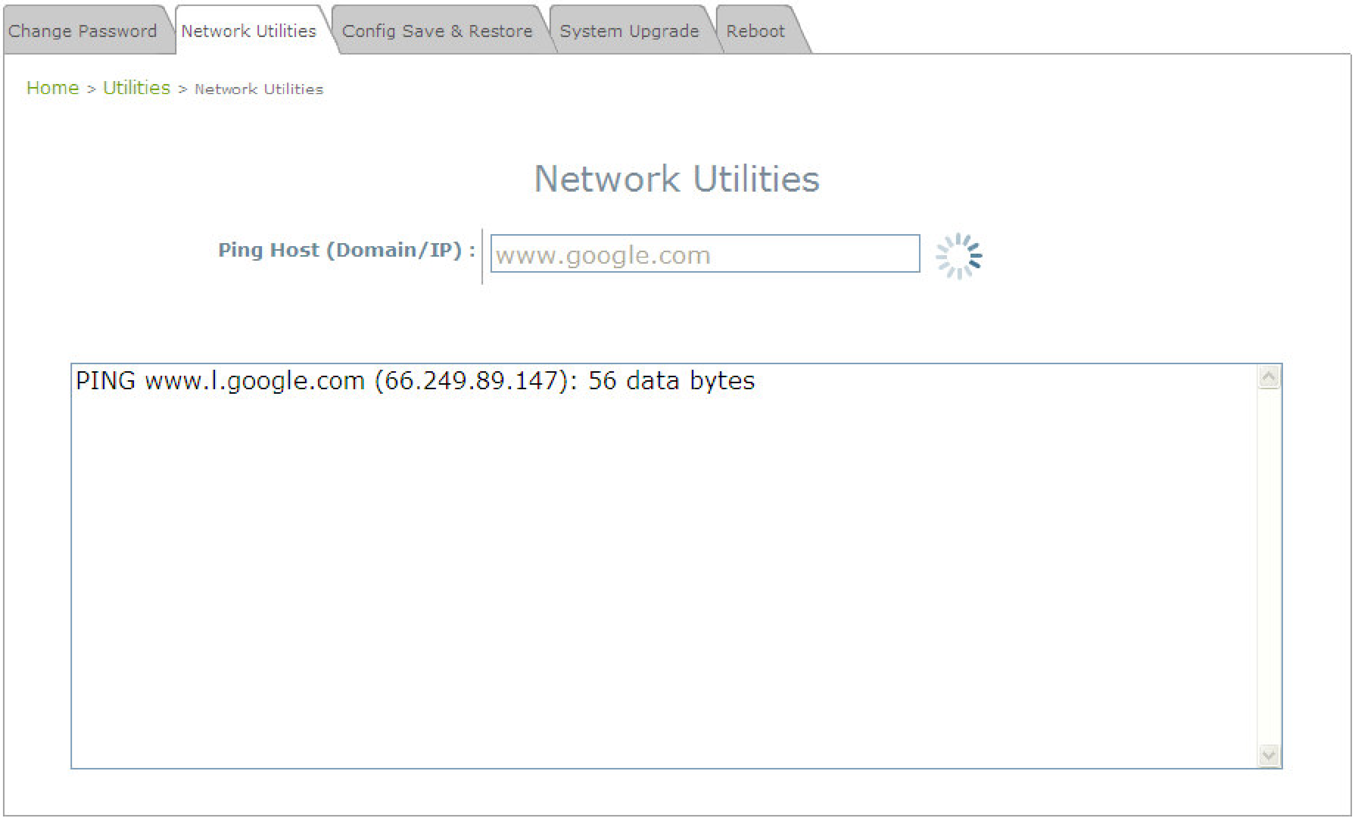
- **“root” account:** Enter the original password (**“admin”**) and a new password, and then re-enter the new password in the *Re-enter New Password* field. Click ***SAVE*** to save the new password.

4.4.2 Network Utilities

The administrator can check the network connectivity via this function. The current provided network utility is Ping and the target host FQDN-compliant name or IP address can be provided to test network connection.



- **Ping Host (Domain/ IP):** Enter the domain name or IP address of a target device for diagnosis purpose, for example, www.google.com.tw, and click ***Ping*** to proceed. The ping result will be shown in the **Result** field.

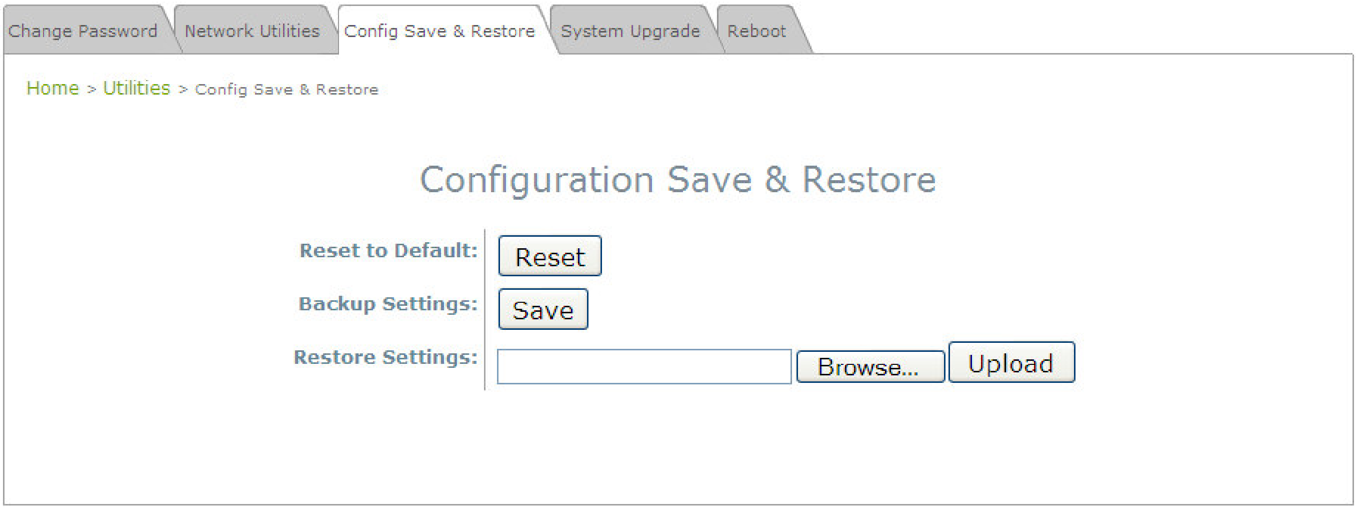


Ping Host (Domain/IP) : www.google.com

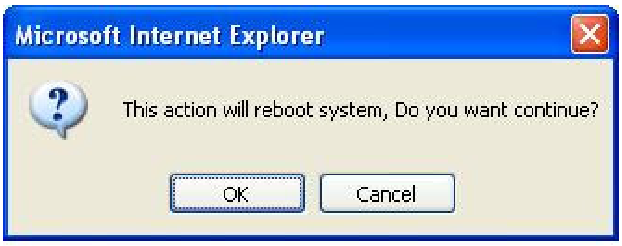
```
PING www.l.google.com (66.249.89.147): 56 data bytes
```

4.4.3 Configuration Save & Restore

This function is used to backup or restore the current settings. The system can be restored to the default setting by clicking on Reset. The setting of the device can be backup to a file. It can be used to duplicate setting to the other WAB-3003 device.



- **Reset to Default:**
  - Click ***Reset*** to load the factory default settings of WAB-3003. A pop-up screen will appear to reconfirm the request to restart the system. Click ***OK*** to proceed, or click ***Cancel*** to cancel the restart request.



This action will reboot system, Do you want continue?

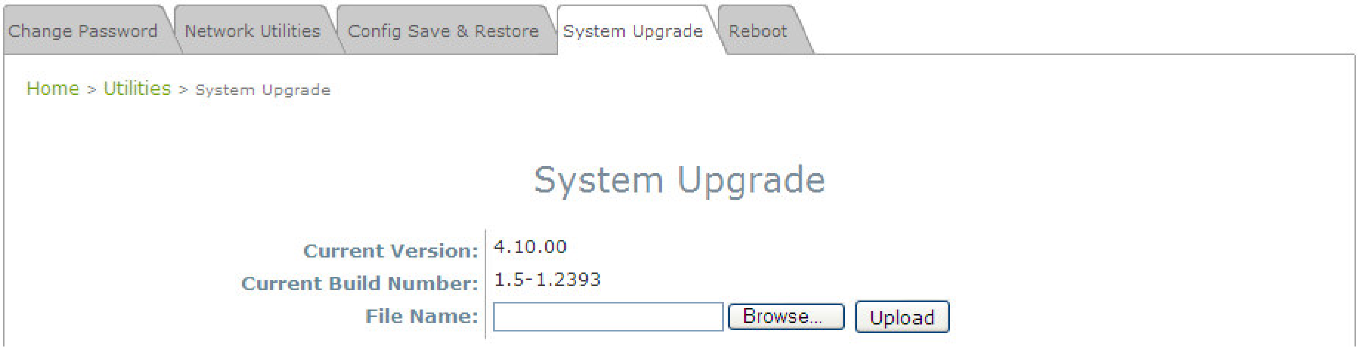
  - A warning message as displayed below will appear during the reboot period. The system power must be turned on before the completion of the reboot process.
  - The **System Overview** page will appear upon the completion of reboot.

- **Backup Settings:** Click ***Save*** to save the current system settings to a local disk such as the hard disk drive (HDD) of a local computer or a compact disc (CD).

- **Restore Settings:** Click ***Browse*** to search for a previously saved backup file, and then click ***Upload*** to restore the settings. The backup file will replace the active configuration file currently running on the system.

4.4.4 System Upgrade

To upgrade the system firmware, click ***Browse*** to search for the new firmware file, and then click ***Apply*** to execute the upgrade process. The first step is to acquire the correct firmware file and supply it in the User Interface field. During firmware update, please don't turn off the power to prevent from damaging the device permanently.



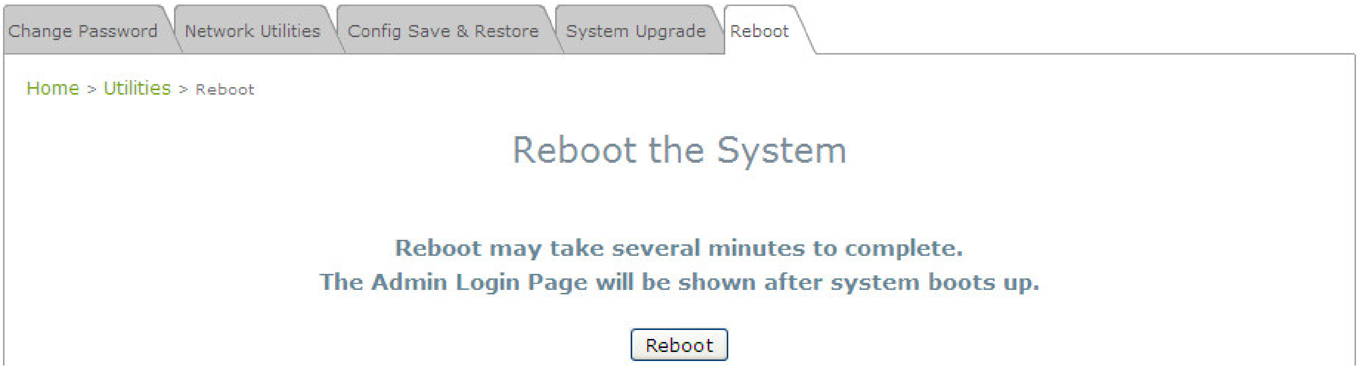
Current Version: 4.10.00
Current Build Number: 1.5-1.2393
File Name:

Note:

- To prevent data loss during firmware upgrade, please back up the current settings before proceeding further.
- Please restart the system after the upgrade. Do not interrupt the system, i.e. power on/off, during the upgrade or restart process since it may cause damage to the system.

4.4.5 Reboot

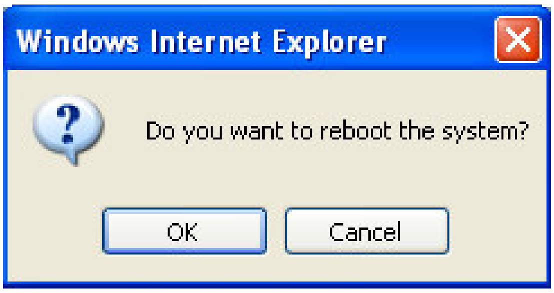
The administrator can reboot the device remotely. Click ***Reboot*** to restart the system immediately.



Reboot the System

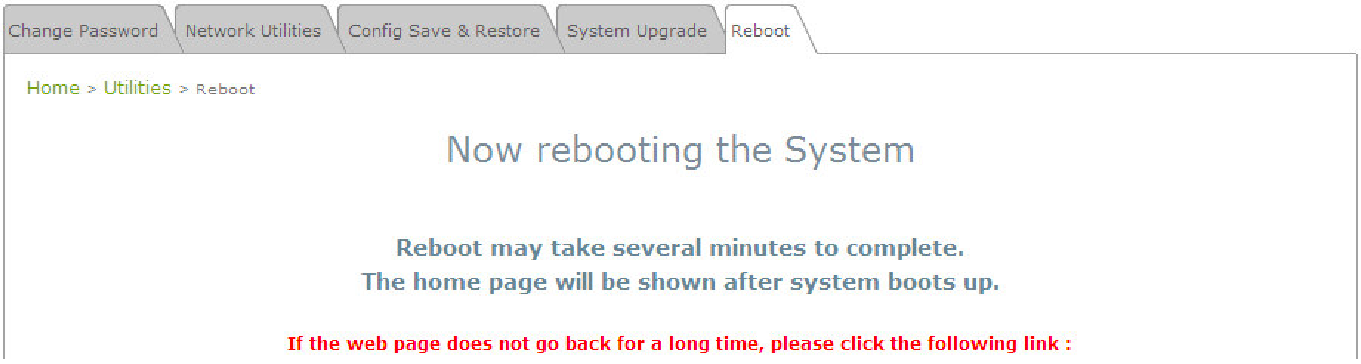
Reboot may take several minutes to complete.
The Admin Login Page will be shown after system boots up.

A pop-up screen will appear to confirm the request to restart the system. Click ***OK*** to proceed, or click ***Cancel*** to cancel the restart request.



Do you want to reboot the system?

A warning message as displayed below will appear during the reboot period. The system power must be turned on before the completion of the reboot process.



Now rebooting the System

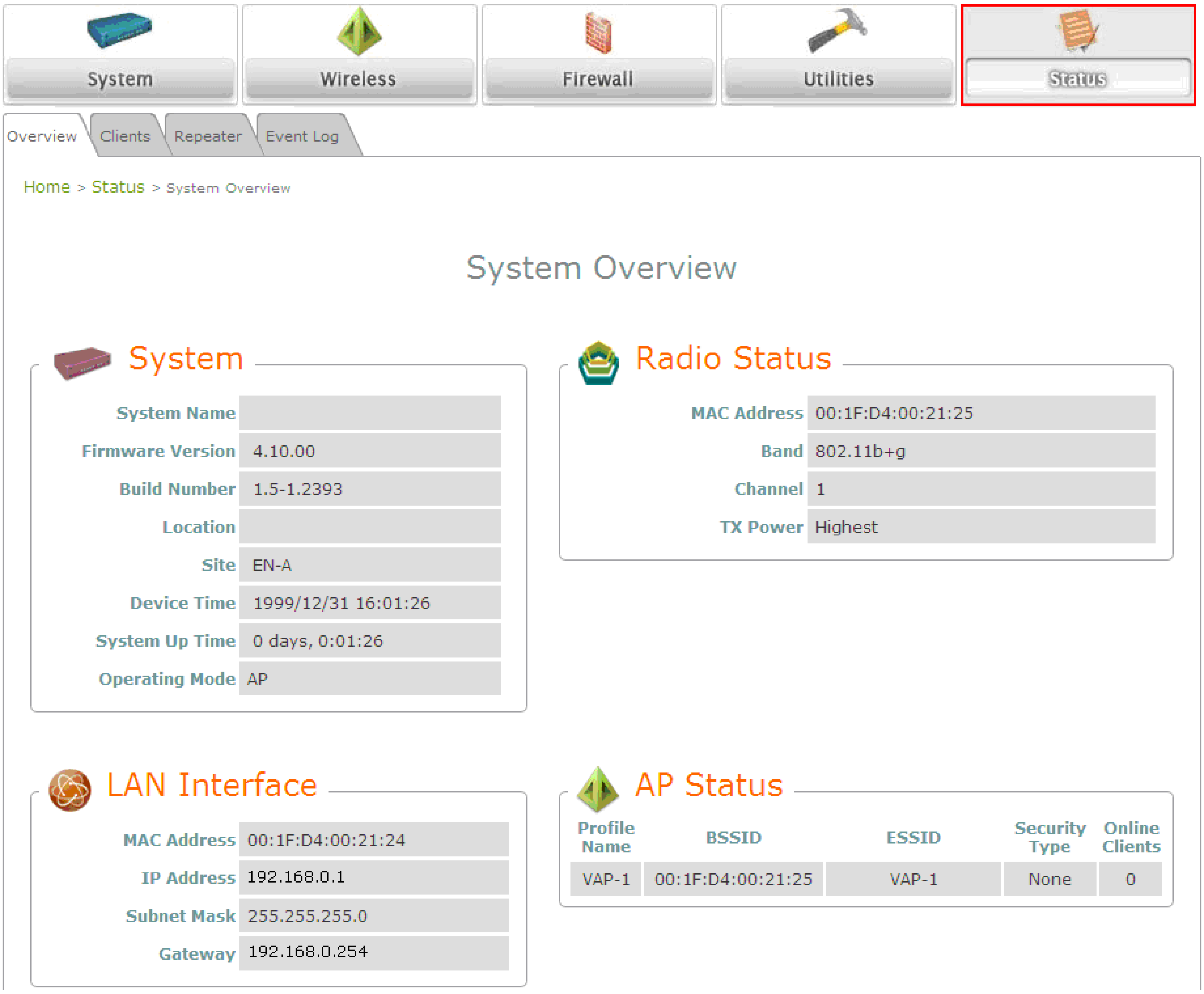
Reboot may take several minutes to complete.
The home page will be shown after system boots up.

If the web page does not go back for a long time, please click the following link :

The **System Overview** page will appear upon the completion of reboot.

4.5 Status

This section displays the status of **System Overview**, **Clients**, **Repeater,** and **Event Log**.



System Overview

System

System Name	
Firmware Version	4.10.00
Build Number	1.5-1.2393
Location	
Site	EN-A
Device Time	1999/12/31 16:01:26
System Up Time	0 days, 0:01:26
Operating Mode	AP

Radio Status

MAC Address	00:1F:D4:00:21:25
Band	802.11b+g
Channel	1
TX Power	Highest

LAN Interface

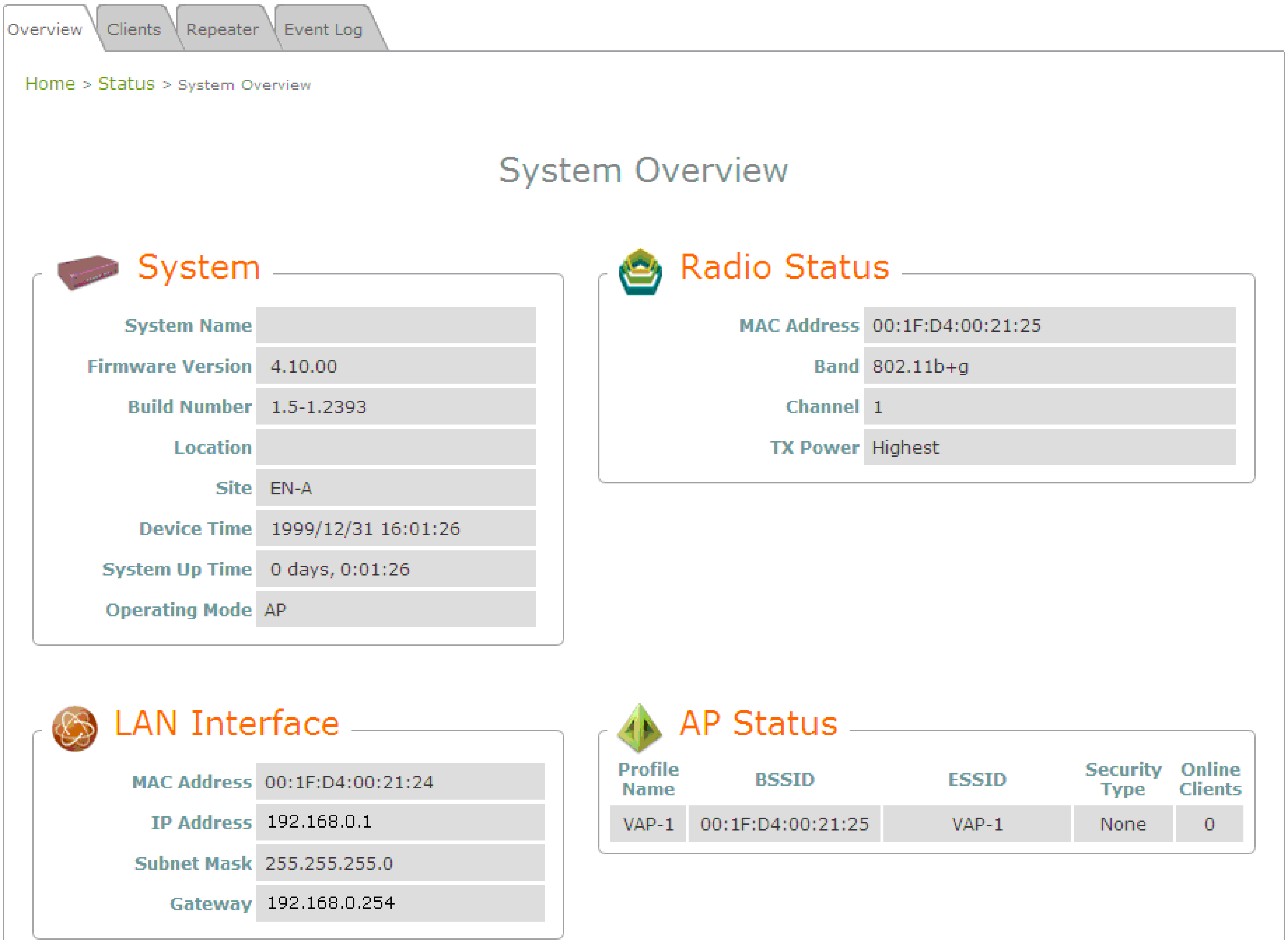
MAC Address	00:1F:D4:00:21:24
IP Address	192.168.0.1
Subnet Mask	255.255.255.0
Gateway	192.168.0.254

AP Status

Profile Name	BSSID	ESSID	Security Type	Online Clients
VAP-1	00:1F:D4:00:21:25	VAP-1	None	0

4.5.1. System Overview

The **System Overview** page provides an overview of the system status for the administrator.



Home > Status > System Overview

System Overview

System

System Name	
Firmware Version	4.10.00
Build Number	1.5-1.2393
Location	
Site	EN-A
Device Time	1999/12/31 16:01:26
System Up Time	0 days, 0:01:26
Operating Mode	AP

Radio Status

MAC Address	00:1F:D4:00:21:25
Band	802.11b+g
Channel	1
TX Power	Highest

LAN Interface

MAC Address	00:1F:D4:00:21:24
IP Address	192.168.0.1
Subnet Mask	255.255.255.0
Gateway	192.168.0.254

AP Status

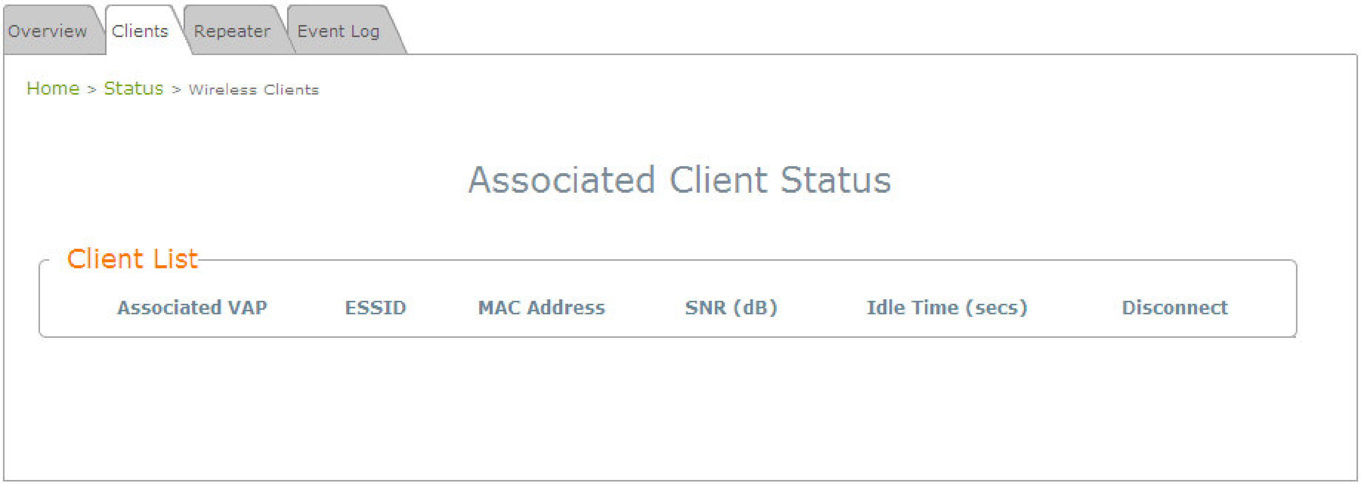
Profile Name	BSSID	ESSID	Security Type	Online Clients
VAP-1	00:1F:D4:00:21:25	VAP-1	None	0

The description of the table is shown below:

ITEM		**DESCRIPTION**
System	**System Name**	The name provided in System Information.
	Firmware Version	The present firmware version of the system.
	Build Number	The Build Number of the firmware.
	Location	The location provided in System Information.
	Site	The firmware version for specific region.
	Device Time	The current time on the device.
	System Up Time	The system elapsing time since last reboot.
	Operating Mode	Either CPE or AP.
LAN Interface	**MAC Address**	The MAC address of LAN Interface.
	IP Address	The IP address of the LAN Interface.
	Subnet Mask	The Subnet Mask of the LAN Interface.
	Gateway	The gateway of LAN interface.
Radio Status	**MAC Address**	The MAC address of RF interface.
	Band	The operating band.
	Channel	The operating channel.
	Tx Power	The level of transmitted power.
AP Status	**BSSID**	The BSSID (MAC) of AP.
	ESSID	The assigned ESSID of AP.
	Security Type	The security type of AP.
	Online Client	The number of online clients associated with AP.

4.5.2. Associated Client Status

The administrator can remotely oversee the status of all associated clients on this page. Associated client's MAC, SNR and Idle Time are listed in the table.



Associated Client Status

Client List

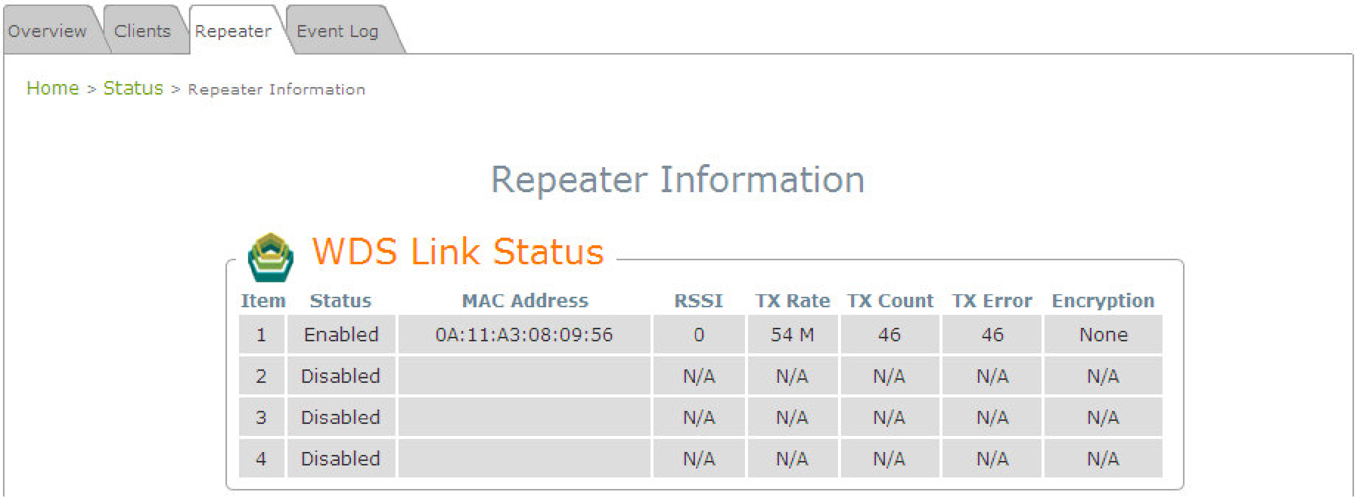
Associated VAP	ESSID	MAC Address	SNR (dB)	Idle Time (secs)	Disconnect

- **ESSID:** The Extended Service Set ID which the client is associated with.
- **MAC Address:** The MAC address of associated clients.
- **SNR:** The Signal to Noise Ratio of respective client's association.
- **Idle Time:** Time period that the associated client is inactive; the time unit is in second.

4.5.3. Repeater Information

The administrator can review detailed information of the repeater function on this page. Information of repeater's status, mode and encryption is provided.

- **WDS Link Status:** The table will be displayed when WDS mode is selected. For more information on the repeater type, please refer to **Section 4.2.5 Repeater Settings**.
  - **Status:** The status of the repeater function either *Enabled* or *Disabled*.
  - **MAC Address:** The MAC Address of the WDS peer.
  - **RSSI:** Received Signal Strength Indication, a measurement of received radio signal over WDS link.
  - **Tx Rate:** The transmit rate of the Repeater.
  - **Tx Count:** The accumulative number of transmission counts.
  - **Tx Error:** The accumulative number of transmission errors.
  - **Encryption:** The encryption type used: *None*, *WEP*, or *WPA-PSK*.



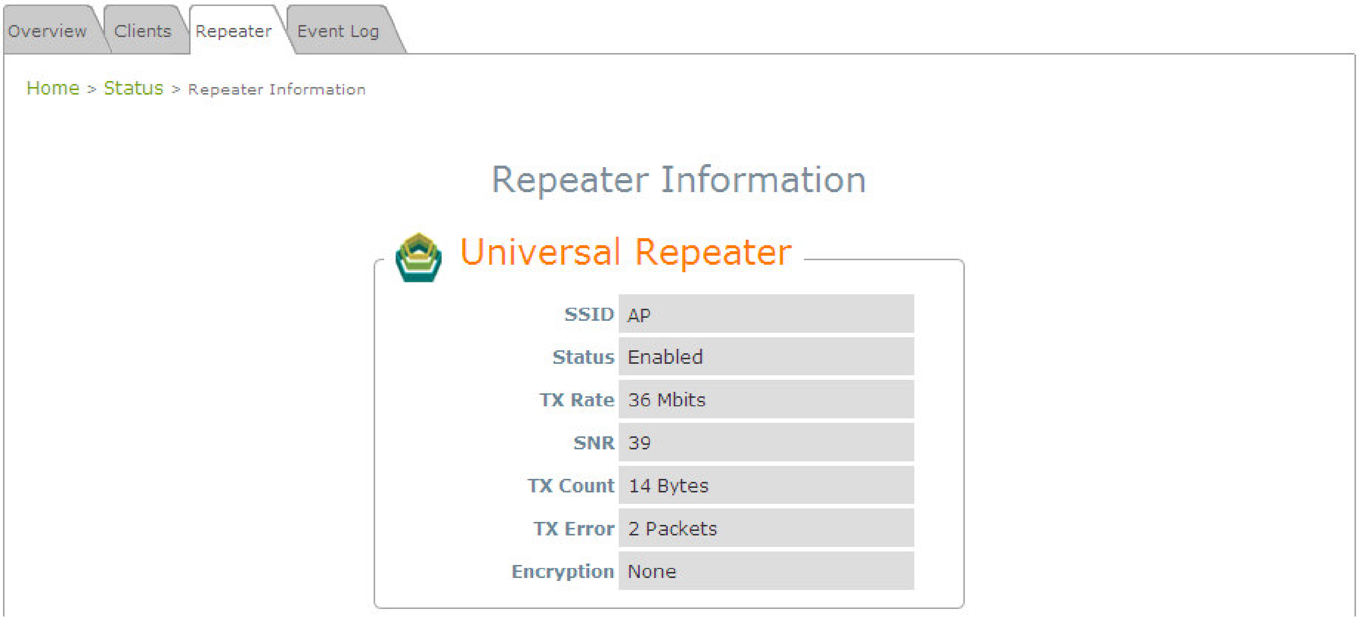
Repeater Information

WDS Link Status

Item	Status	MAC Address	RSSI	TX Rate	TX Count	TX Error	Encryption
1	Enabled	0A:11:A3:08:09:56	0	54 M	46	46	None
2	Disabled		N/A	N/A	N/A	N/A	N/A
3	Disabled		N/A	N/A	N/A	N/A	N/A
4	Disabled		N/A	N/A	N/A	N/A	N/A

Fig. 4.5.3-1 WDS

- **Universal Repeater:** The table will be displayed when Universal Repeater mode is selected. For more information on the repeater type, please refer to **Section 4.2.5 Repeater Settings**.
  - **SSID:** SSID of the upper-bound AP to be associated with.
  - **Tx Rate:** The transmit rate of the Repeater.
  - **SNR:** The SNR (Signal to Noise Ratio) indicates the relative signal strength between the upper-bound AP and the system.
  - **Tx Count:** The accumulative number of transmission counts.
  - **Tx Error:** The accumulative number of transmission errors.
  - **Encryption:** The encryption type used: *None*, *WEP*, or *WPA-PSK*.



Repeater Information

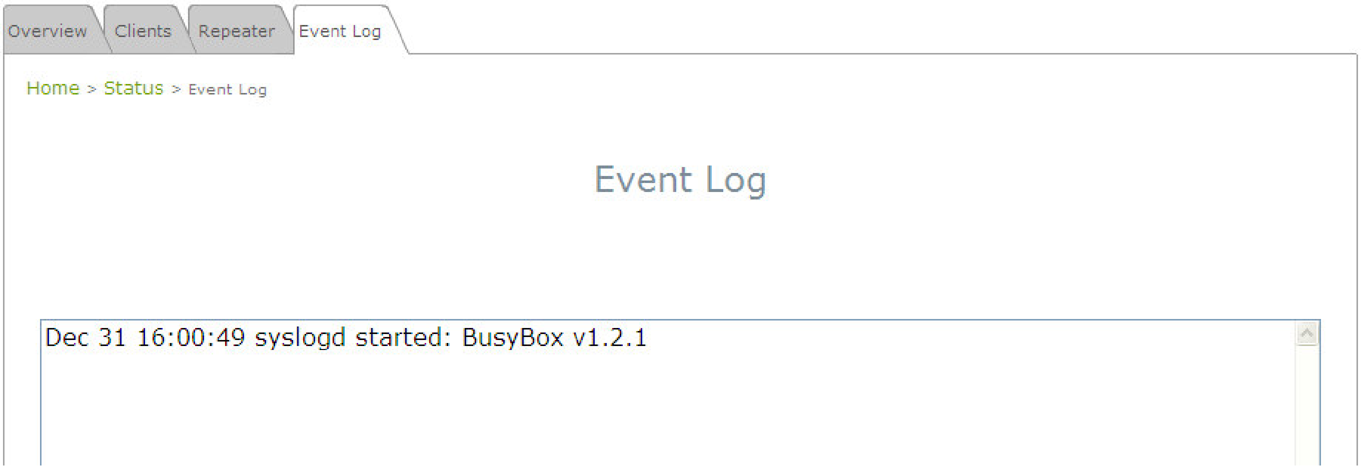
Universal Repeater

SSID	AP
Status	Enabled
TX Rate	36 Mbits
SNR	39
TX Count	14 Bytes
TX Error	2 Packets
Encryption	None

Fig 4.5.3-2 Universal Repeater

4.5.4. Event Log

Event log provides the records of the system activities. All the system events are shown here.



```
Dec 31 16:00:49 syslogd started: BusyBox v1.2.1
```

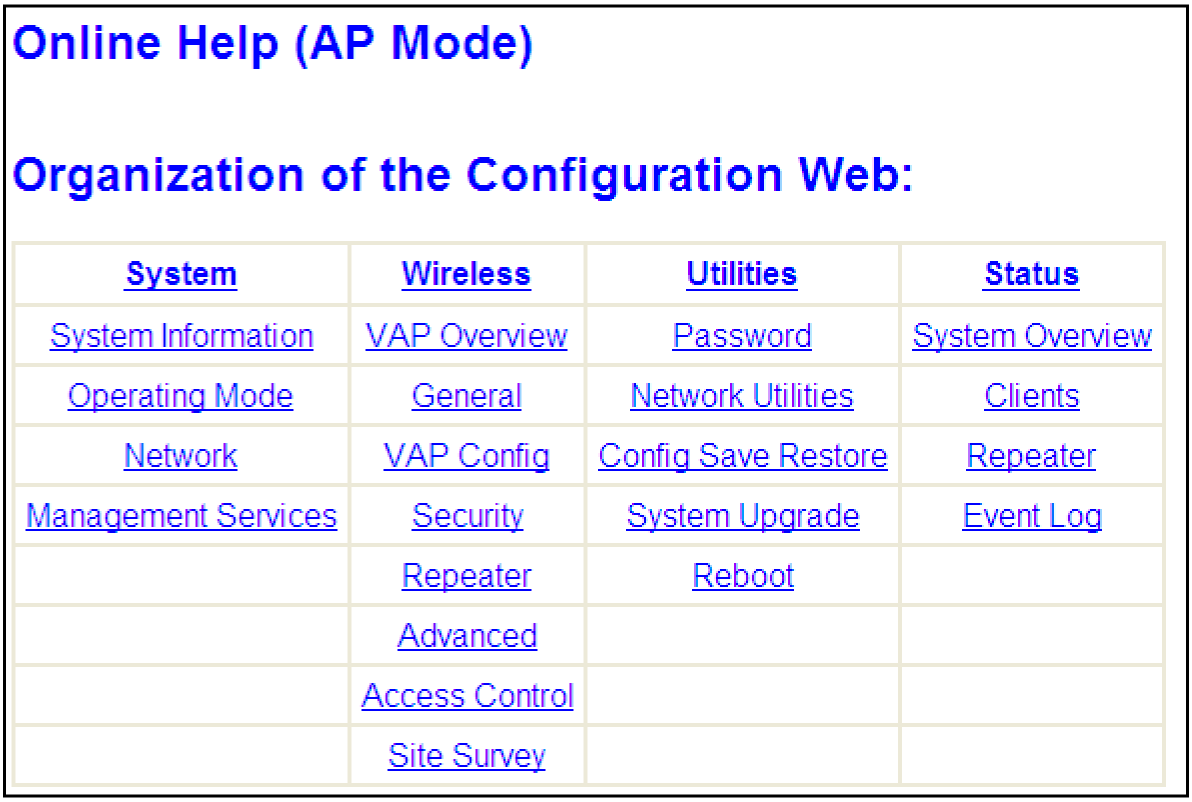
Note:
As the Event Log is stored in RAM, it will be refreshed after the system is restarted. The system also supports a Syslog reporting function of reporting the events to an external Syslog server.

- **Date/ Time:** The date and time when the event happened.
- **Hostname:** Indicate which Host records this event. Note that all events in this page are local events and this field of all events is the same. However, in remote Syslog service, this field will help the network administrator identify which event is from this system. For more information, please refer to **Section 4.1.4 Management Services**.
- **Process name (with square brackets):** Indicate which process with the specific event is associated.
- **Description:** Description of the event.

4.6 Online Help

The ***Help*** button is at the upper right hand corner of the display screen.

Click ***Help*** for the **Online Help** window, and then click the hyperlink of the desired topic for further information.



Online Help (AP Mode)

Organization of the Configuration Web:

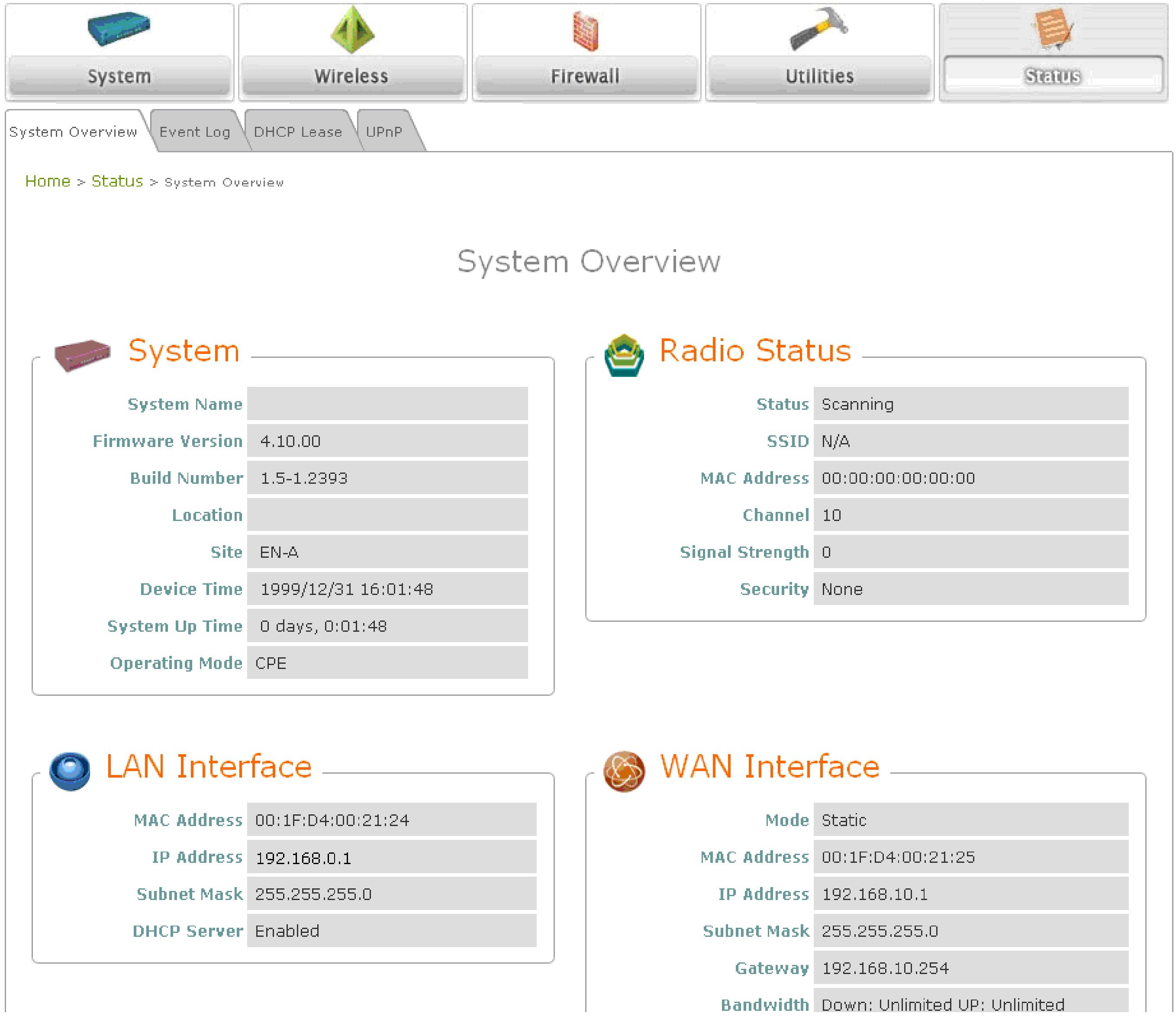
System	Wireless	Utilities	Status
System Information	VAP Overview	Password	System Overview
Operating Mode	General	Network Utilities	Clients
Network	VAP Config	Config Save Restore	Repeater
Management Services	Security	System Upgrade	Event Log
	Repeater	Reboot	
	Advanced		
	Access Control		
	Site Survey		

5.CPE Mode Configuration

When CPE mode is activated, the system acts as a gateway where it connects to the WAN wirelessly and provides Ethernet connection to users via wired LAN. This chapter will guide you through setting up the CPE mode with graphical illustrations. The following table shows all the functions of **WAB-3003** in its CPE mode.

OPTION	**System**	**Wireless**	**Firewall**	**Utilities**	**Status**
FUNCTION	System Information	General Setting	IP/Port Forwarding	Change Password	System Overview
	Operating Mode	Advanced Wireless Settings	Demilitarized Zone	Network Utilities	Event Log
	Network Settings	Security Settings		Configuration Save & Restore	DHCP Lease
	Management Services	Site Survey		System Upgrade	UPnP Status
				Reboot	

Table 5-1: CPE Mode Functions



System Overview

System

System Name	
Firmware Version	4.10.00
Build Number	1.5-1.2393
Location	
Site	EN-A
Device Time	1999/12/31 16:01:48
System Up Time	0 days, 0:01:48
Operating Mode	CPE

Radio Status

Status	Scanning
SSID	N/A
MAC Address	00:00:00:00:00:00
Channel	10
Signal Strength	0
Security	None

LAN Interface

MAC Address	00:1F:D4:00:21:24
IP Address	192.168.0.1
Subnet Mask	255.255.255.0
DHCP Server	Enabled

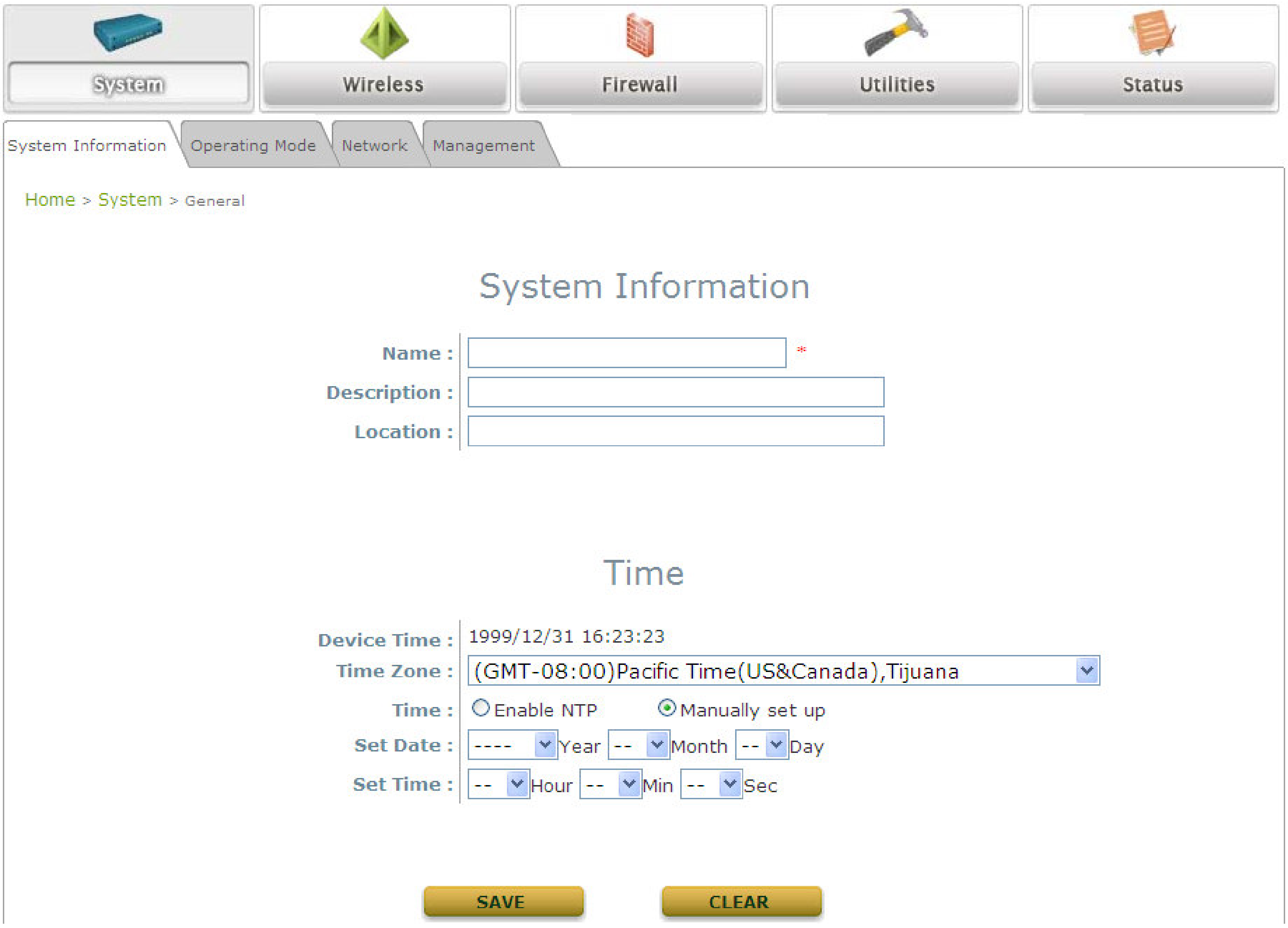
WAN Interface

Mode	Static
MAC Address	00:1F:D4:00:21:25
IP Address	192.168.10.1
Subnet Mask	255.255.255.0
Gateway	192.168.10.254
Bandwidth	Down: Unlimited UP: Unlimited

Figure 5-1: CPE Mode Main Page

5.1 System

This section provides information in configuring the following functions: **System Information**, **Operating Mode**, **Network Settings**, and **Management Services**.



System Information

Name : *
Description :
Location :

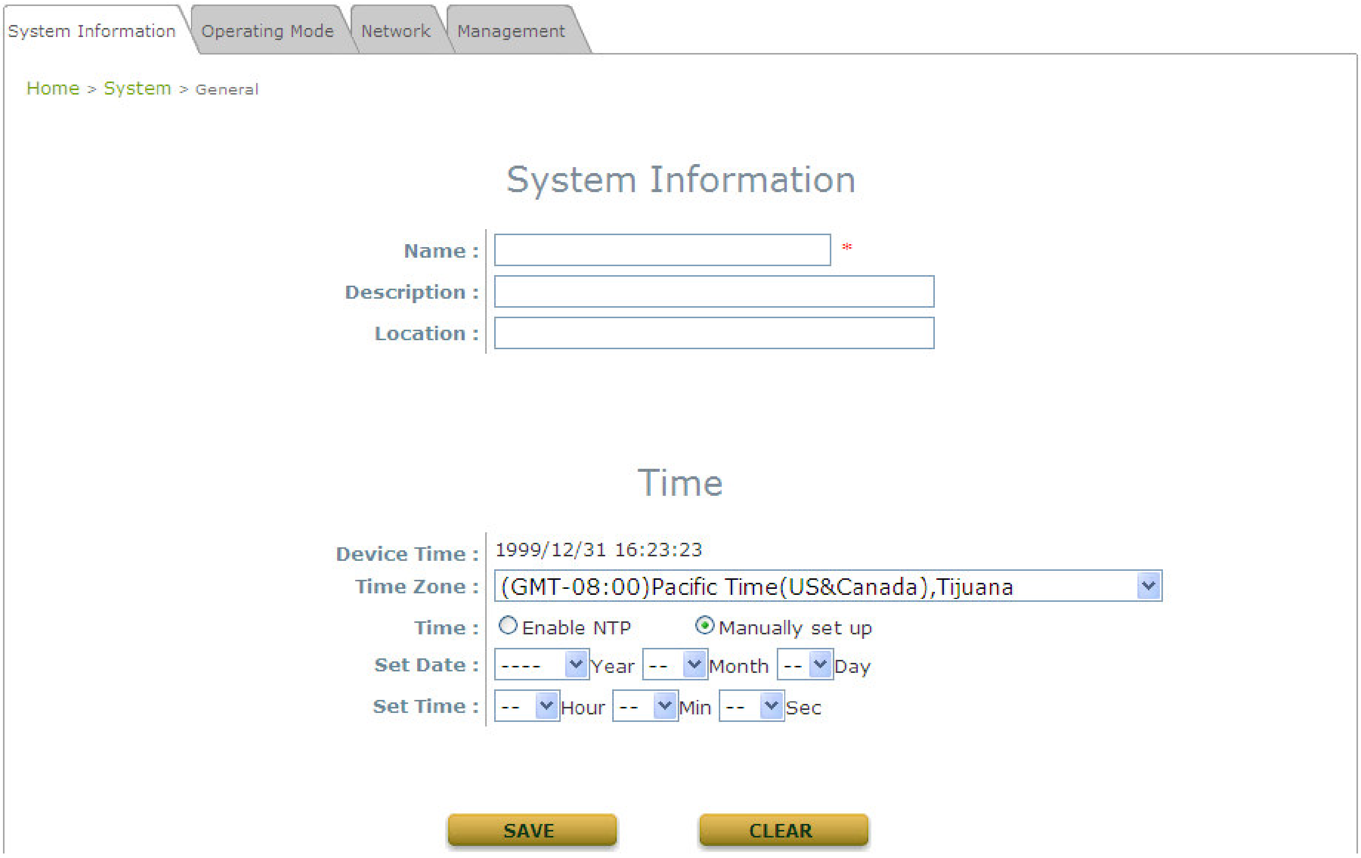
Time

Device Time : 1999/12/31 16:23:23
Time Zone : (GMT-08:00)Pacific Time(US&Canada),Tijuana
Time : ○ Enable NTP ● Manually set up
Set Date : ---- Year -- Month -- Day
Set Time : -- Hour -- Min -- Sec

Note:
A system restart is required when a reminding message appears after clicking the ***SAVE*** button; all settings entered and saved will take effect only after a system restart.

5.1.1 System Information

For maintenance purpose, it is required to specify the system name, its location and corresponding basic parameters. Fields such as *Name*, *Description* and *Location* are used for mnemonic purpose. It is recommended to have different values in each AP.



System Information

Name : *

Description :

Location :

Time

Device Time : 1999/12/31 16:23:23

Time Zone : (GMT-08:00)Pacific Time(US&Canada),Tijuana

Time : ○ Enable NTP ● Manually set up

Set Date : ---- Year -- Month -- Day

Set Time : -- Hour -- Min -- Sec

- **System Information**

  For maintenance purpose, it is recommended to have the following information stated as clearly as possible. Fields Name, Description, and Location are used for mnemonic purpose. It is recommended to have different values in each wireless device.

  - *Name*: The system name used to identify this system
  - *Description*: Further information of the system.
  - *Location*: Information about the geographical location of the system, which can help the administrator locate it easily.

- **Time**

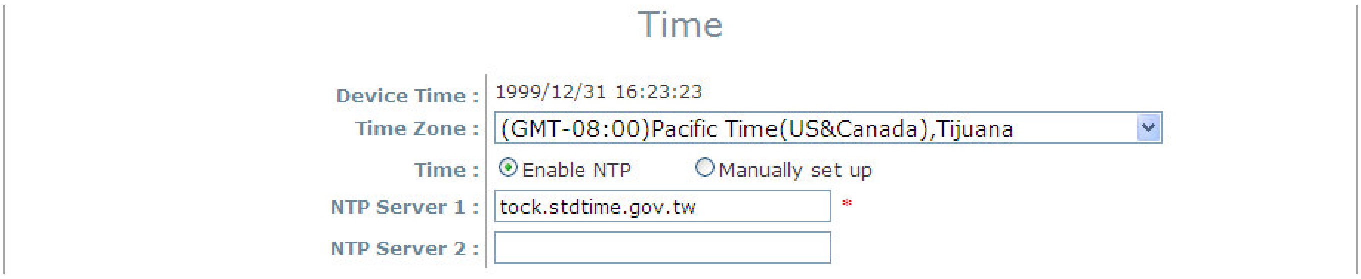
  Time settings allow the system time synchronized with NTP server or manually set.

  - *Device Time*: Display the current time of the system.
  - *Time Zone*: Select an appropriate time zone from the drop-down list box.

- *Synchronization*: Synchronize the system time either by NTP server or manual setup.

(1) **Enable NTP:**

By selecting ***Enable NTP***, WAB-3003 can synchronize its system time with the NTP server automatically. While this method is chosen, at least one NTP server's IP address or domain name must be provided. If FQDN (Full Qualified Domain Name) is used as the IP address of NTP server, the DNS server must also be activated (please refer to **5.1.3 Network Settings**).



Time

Device Time : 1999/12/31 16:23:23

Time Zone : (GMT-08:00)Pacific Time(US&Canada),Tijuana

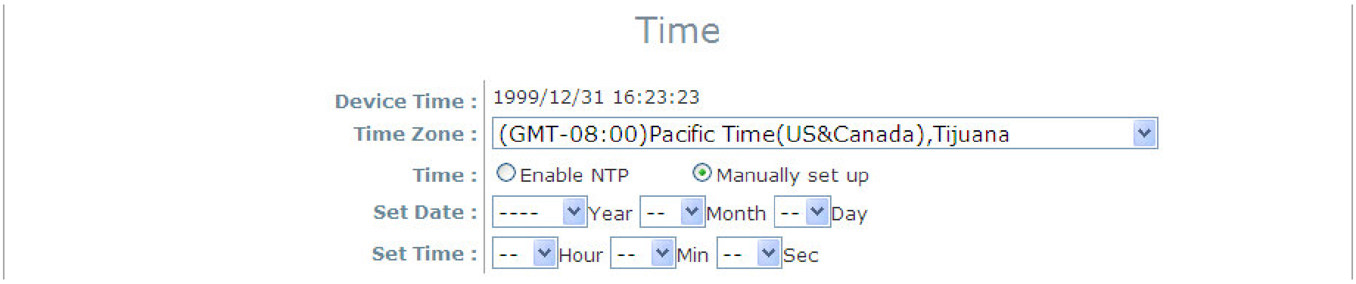
Time : ● Enable NTP ○ Manually set up

NTP Server 1 : tock.stdtime.gov.tw *

NTP Server 2 :

(2) **Manually set up:**

By selecting *Set* ***manually set up***, the administrator can manually set the system date and time.



Time

Device Time : 1999/12/31 16:23:23

Time Zone : (GMT-08:00)Pacific Time(US&Canada),Tijuana

Time : ○ Enable NTP ● Manually set up

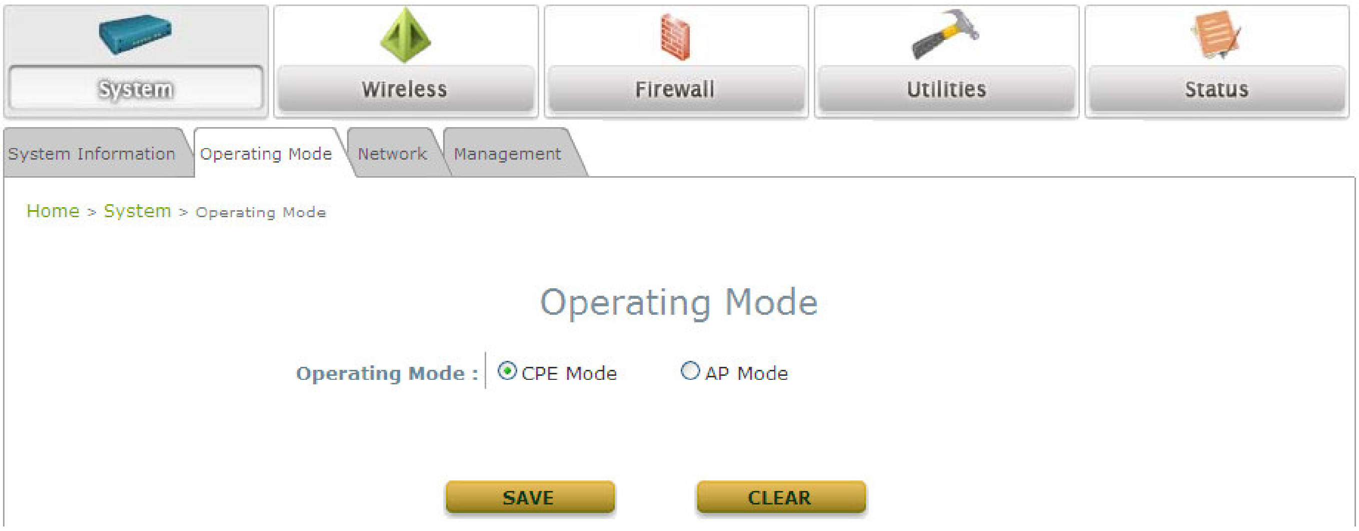
Set Date : ---- Year -- Month -- Day

Set Time : -- Hour -- Min -- Sec

- *Set Date*: Select the appropriate *Year*, *Month*, and *Day* from the drop-down list box.
- *Set Time*: Select the appropriate *Hour*, *Min*, and *Sec* from the drop-down list box.

5.1.2 Operating Mode

WAB-3003 supports two operation modes: CPE mode and AP mode. The administrator can set the desired mode on this page, and then configure the system according to deployment needs.



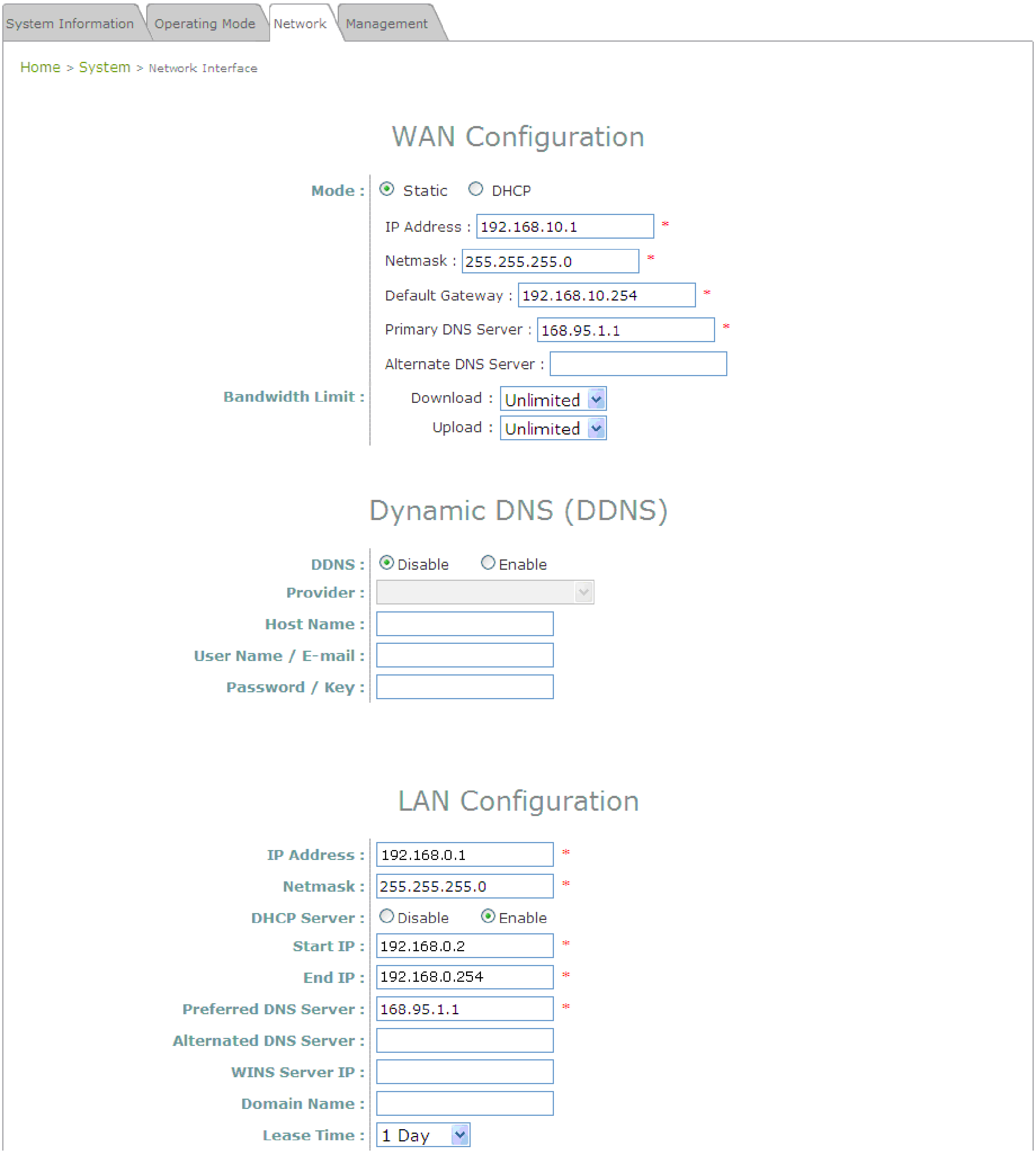
Operating Mode : ● CPE Mode ○ AP Mode

- **Operating Mode:** Select *CPE Mode* and then click ***SAVE*** to save the setting.

Note:
After clicking **SAVE**, the system will immediately ask for a reboot to activate the selected mode.

5.1.3 Network Settings

WAN and LAN settings can be configured on this page.



WAN Configuration

Mode : ● Static ○ DHCP

IP Address : 192.168.10.1 *

Netmask : 255.255.255.0 *

Default Gateway : 192.168.10.254 *

Primary DNS Server : 168.95.1.1 *

Alternate DNS Server :

Bandwidth Limit : Download : Unlimited

Upload : Unlimited

Dynamic DNS (DDNS)

DDNS : ● Disable ○ Enable

Provider :

Host Name :

User Name / E-mail :

Password / Key :

LAN Configuration

IP Address : 192.168.0.1 *

Netmask : 255.255.255.0 *

DHCP Server : ○ Disable ● Enable

Start IP : 192.168.0.2 *

End IP : 192.168.0.254 *

Preferred DNS Server : 168.95.1.1 *

Alternated DNS Server :

WINS Server IP :

Domain Name :

Lease Time : 1 Day

- **WAN Configuration:** Determine the way to obtain the IP address, by Static or DHCP.
  - **Mode:** Determine the way to obtain the IP address, by *DHCP* or *Static*.
    - **Static:** The administrator can manually set up the static WAN IP address.
      - **IP Address:** The IP address of the WAN port.
      - **Netmask:** The subnet mask of the WAN port.

- **Gateway:** The gateway IP address of the WAN port.
- **Primary DNS Server:** The IP address of the primary DNS (Domain Name System) server.
- **Secondary DNS Server:** The IP address of the substitute DNS server.

- **DHCP:** This connection type is applicable when the system is connected to a network with the presence of a DHCP server; all related IP information required will be provided by the DHCP server automatically.

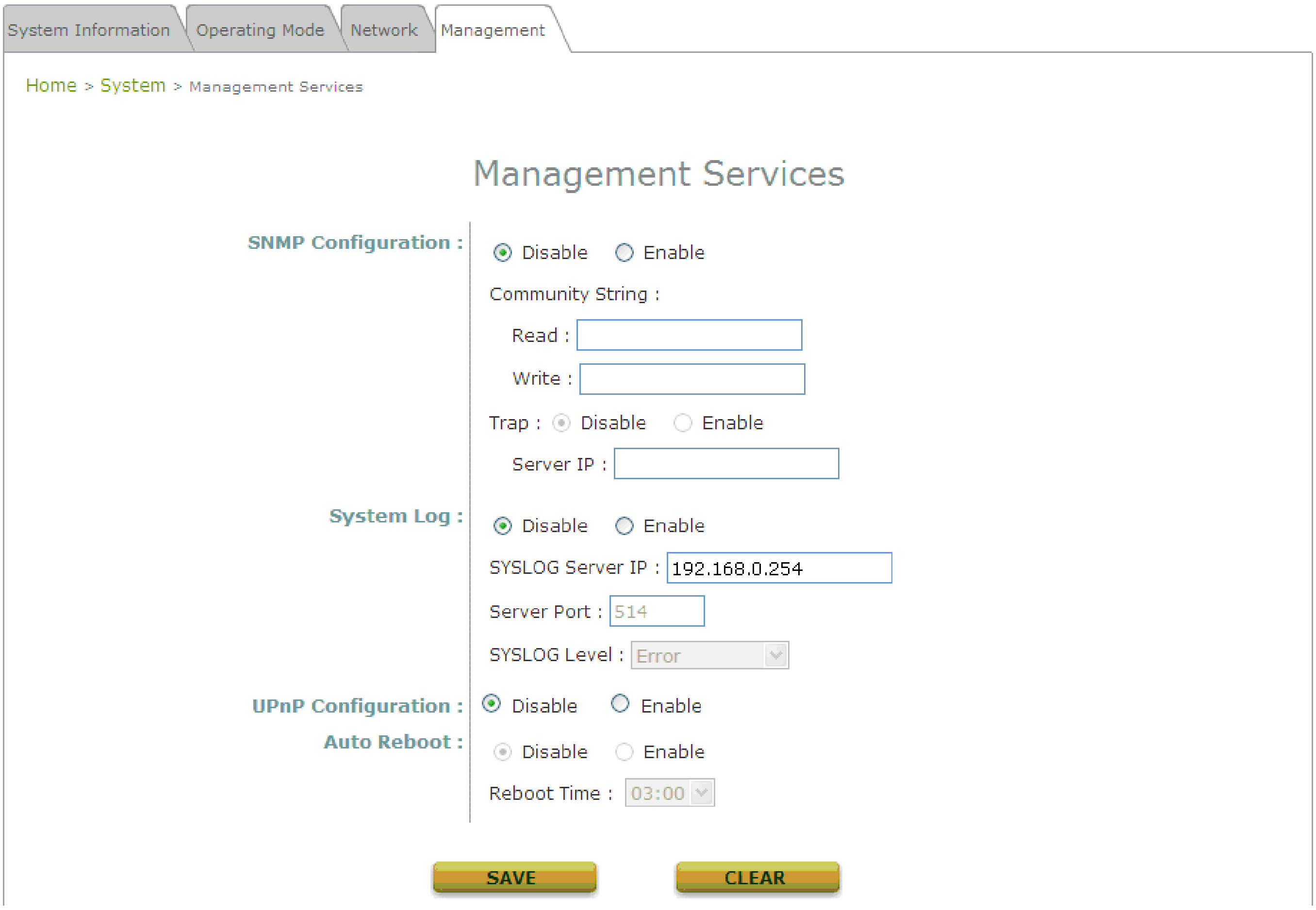
- **Bandwidth Limit:**
  - **Download:** The maximum download bandwidth of WAN interface to be shared by clients.
  - **Upload:** The maximum upload bandwidth of the WAN interface to be shared by clients.

- **Dynamic DNS:** The option can be enabled to bind FQDN-compliant Host Name with this device. If enabled, the service Provider must be chosen from the drop-down list with provided Host Name, User Name, User Email and Password.
  - **DDNS:** Select *Enable* to activate this function or *Disable* to inactivate it.
  - **Provider:** The name of the DDNS provider that the system is registered with. Select a DDNS provider from the drop-down list box.
  - **Host Name:** The FQDN registered with the selected DDNS provider.
  - **User name/ E-mail:** The account ID, user name or e-mail, registered with the DDNS provider.
  - **Password/ Key:** The password of the account registered with the DDNS provider.

- **LAN Configuration:** Configure LAN and DHCP settings on this page. IP Address and Netmask are required fields to set up LAN interface.
  - **IP Address:** The IP address of the LAN port.
  - **Netmask:** The Subnet mask of the LAN port.
  - **DHCP Server:** If enabled, devices connected to this system can obtain an IP address automatically.
    - **Enable/ Disable:** Select *Enable* to activate this function or *Disable* to inactivate it.
    - **Start IP / End IP:** Specify the range of IP addresses to be distributed by the DHCP server to clients.
    - **Preferred DNS Server**: Enter the IP address of a preferred DNS server; this field is required.
    - **Alternate DNS Server:** Enter the IP address of a secondary DNS server; this is optional.
    - **WINS Server IP:** Enter the IP address of a WINS (Windows Internet Name Service) server; this is optional.
    - **Domain Name**: Enter the domain name for this network.
    - **Lease Time**: It can be chosen from the drop-down list to renew Leased LAN IP.

5.1.4 Management Services

The system supports **SNMP**, **Syslog**, **UPnP**, and **Auto Reboot** functions for easy management. These functions can be configured on this page.



Management Services

SNMP Configuration : ● Disable ○ Enable
Community String :
Read :
Write :
Trap : ● Disable ○ Enable
Server IP :

System Log : ● Disable ○ Enable
SYSLOG Server IP : 192.168.0.254
Server Port : 514
SYSLOG Level : Error

UPnP Configuration : ● Disable ○ Enable

Auto Reboot : ● Disable ○ Enable
Reboot Time : 03:00

- **SNMP Configuration:** By enabling SNMP function, the administrator can obtain the system information remotely.
  - **Enable/ Disable:** Select *Enable* to activate this function or *Disable* to inactivate it.
  - **Community String:** The community string is required when accessing the Management Information Base (MIB) of the system.
    - **Read:** Enter the community string for accessing the MIB with Read privilege.
    - **Write:** Enter the community string for accessing the MIB with Write privilege.
  - **Trap:** When enabled, events on Cold Start, Interface UP & Down, and Association & Disassociation can be reported to an assigned server.
    - **Enable/ Disable:** Select *Enable* to activate this function or *Disable* to inactivate it.
    - **Server IP Address:** Enter the IP address of the assigned server for receiving the trap report.

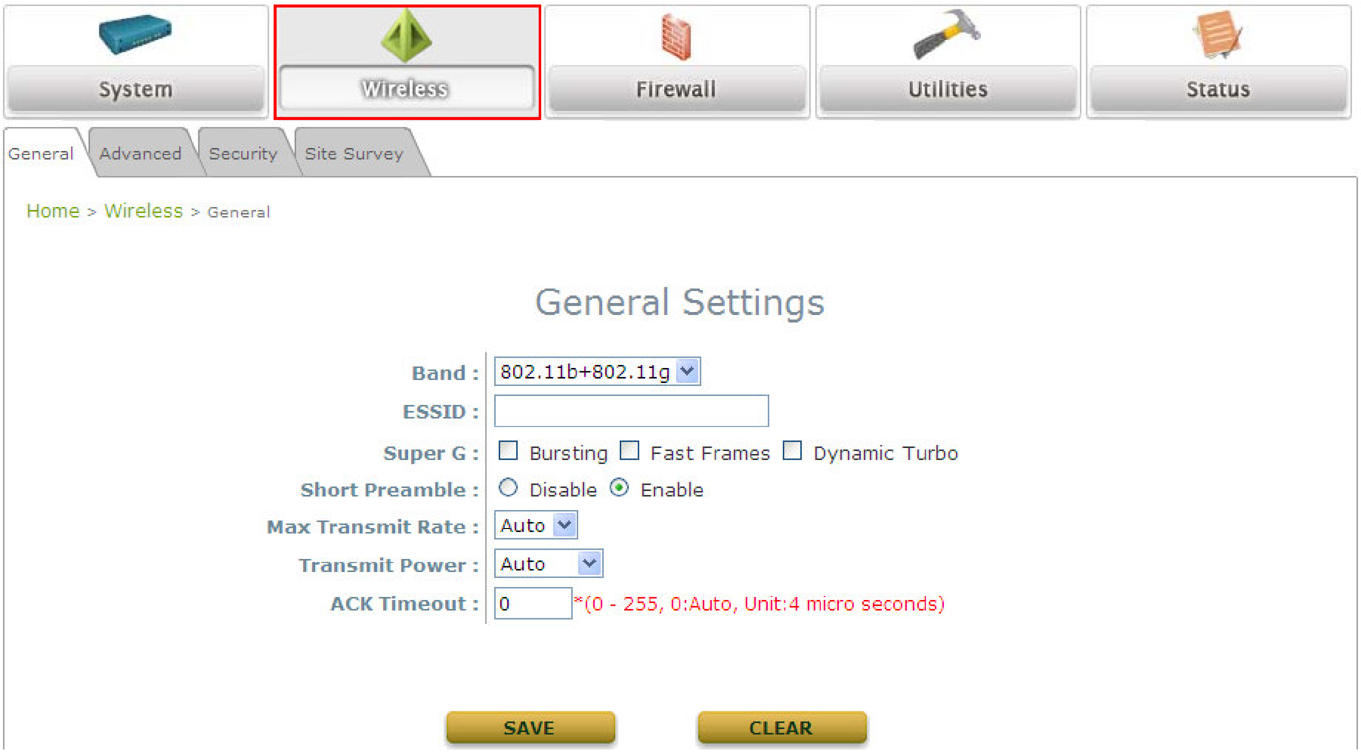
- **Remote Syslog:** By enabling this function, specify a remote Syslog server to accept system log messages from the system remotely.
  - **Enable/ Disable:** Select *Enable* to activate this function or *Disable* to inactivate it.
  - **Server IP:** The IP address of the Syslog server for receiving the reported events.
  - **Server Port:** The port number of the Syslog server.
  - **Syslog Level:** Select the desired level of received events from the drop-down list box.

- **UPnP Configuration:** This option can be enabled if UPnP service is required by LAN device.
  - **Enable/ Disable:** Select *Enable* to activate this function or *Disable* to inactivate it.

- **Auto Reboot:** The system can be functioning in a healthier state when this service is enabled.
  - **Enable/ Disable:** Select *Enable* to activate this function or *Disable* to inactivate it.
  - **Reboot Time:** Select an appropriate time from the drop-down list box. Since all users on the network will be disconnected during reboot, it is suggested to set the reboot time during an off-peak period to reduce impacts on the online users.

5.2 Wireless

This section is for configuring wireless settings for this system to associate with its uplink access point.



General Settings

Band : 802.11b+802.11g

ESSID :

Super G : □ Bursting □ Fast Frames □ Dynamic Turbo

Short Preamble : ○ Disable ● Enable

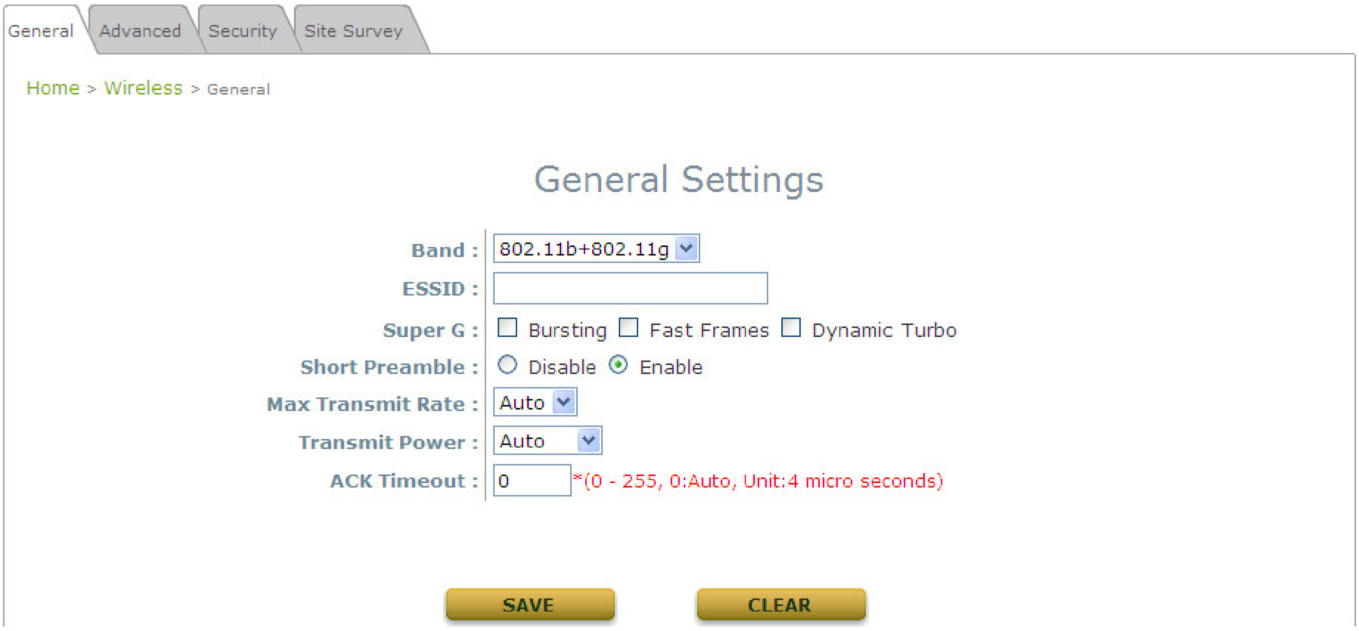
Max Transmit Rate : Auto

Transmit Power : Auto

ACK Timeout : 0 *(0 - 255, 0:Auto, Unit:4 micro seconds)

5.2.1 General Settings

This section is for configuring the system RF settings.



General Settings

Band : 802.11b+802.11g

ESSID :

Super G : □ Bursting □ Fast Frames □ Dynamic Turbo

Short Preamble : ○ Disable ● Enable

Max Transmit Rate : Auto

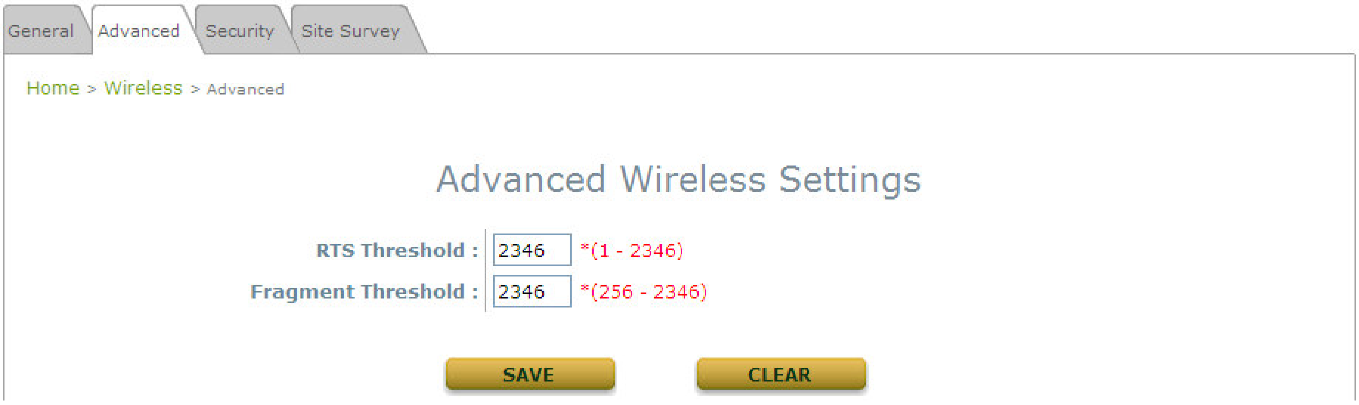
Transmit Power : Auto

ACK Timeout : 0 *(0 - 255, 0:Auto, Unit:4 micro seconds)

- **Band:** Select an appropriate wireless band: *802.11b*, *802.11g* or mixed mode *802.11b+802.11g*, or select *Disable* if the function is not required.
- **ESSID:** The ESSID (Service Set ID) of the client device that the system is to be associated with.
- **Super G:** Options of Bursting, Fast Frames, and Atheros' featured Dynamic Turbo can be selected to boost wireless throughput.
- **Short Preamble:** The short preamble with a 56-bit synchronization field can improve WLAN transmission efficiency. Select *Enable* to use Short Preamble or *Disable* to use Long Preamble with a 128-bit synchronization field.
- **Max Transmit Rate:** The maximum wireless transmitting rate. Select the desired rate from the drop-down list box. The system uses the highest possible rate when *Auto* is selected.
- **Transmit Power:** The signal strength transmitted from the system. Select among *Auto*, *Lowest*, *Low*, *Medium*, *High,* and *Highest* from the drop-down list box.
- **ACK Timeout:** When packet loss is increasing over longer distance, ACK Timeout can be used to alleviate this issue.

5.2.2 Advanced Wireless Settings

The administrator can set the RTS threshold and fragmentation threshold on this page. In most circumstance, the default settings can meet general requirements. If occasionally wireless network needs to be tuned, the following parameters will assist with that purpose.



Advanced Wireless Settings

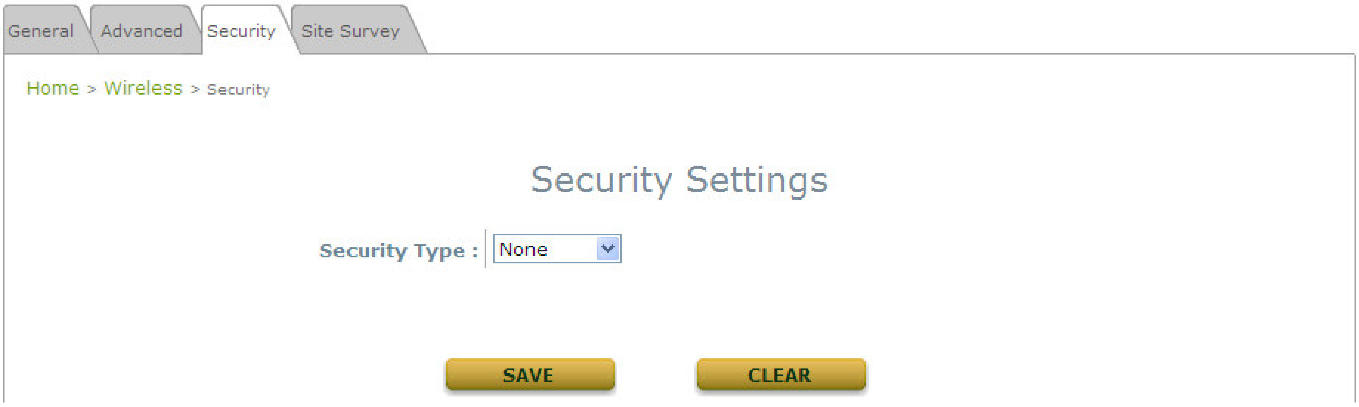
RTS Threshold : 2346 *(1 - 2346)

Fragment Threshold : 2346 *(256 - 2346)

- **RTS Threshold:** To control station access to the medium and to alleviate this effect of the hidden terminal problem, the administrator can tune this RTS threshold value. A lower RTS Threshold setting can be useful in areas where many client devices are associating with WAB-3003 or in areas where the clients are far apart and can detect only WAB-3003 and not each other.
- **Fragmentation Threshold:** A unicast frame larger than this threshold will be fragmented before transmission. If a significant number of collisions are occurring, the administrator can try to set a smaller value of the threshold to see whether it helps. A smaller value results in smaller packets but allows a larger number of packets in transmission. A lower Fragment Threshold setting can be useful in areas where communication is poor or disturbed by a serious amount of radio interference.

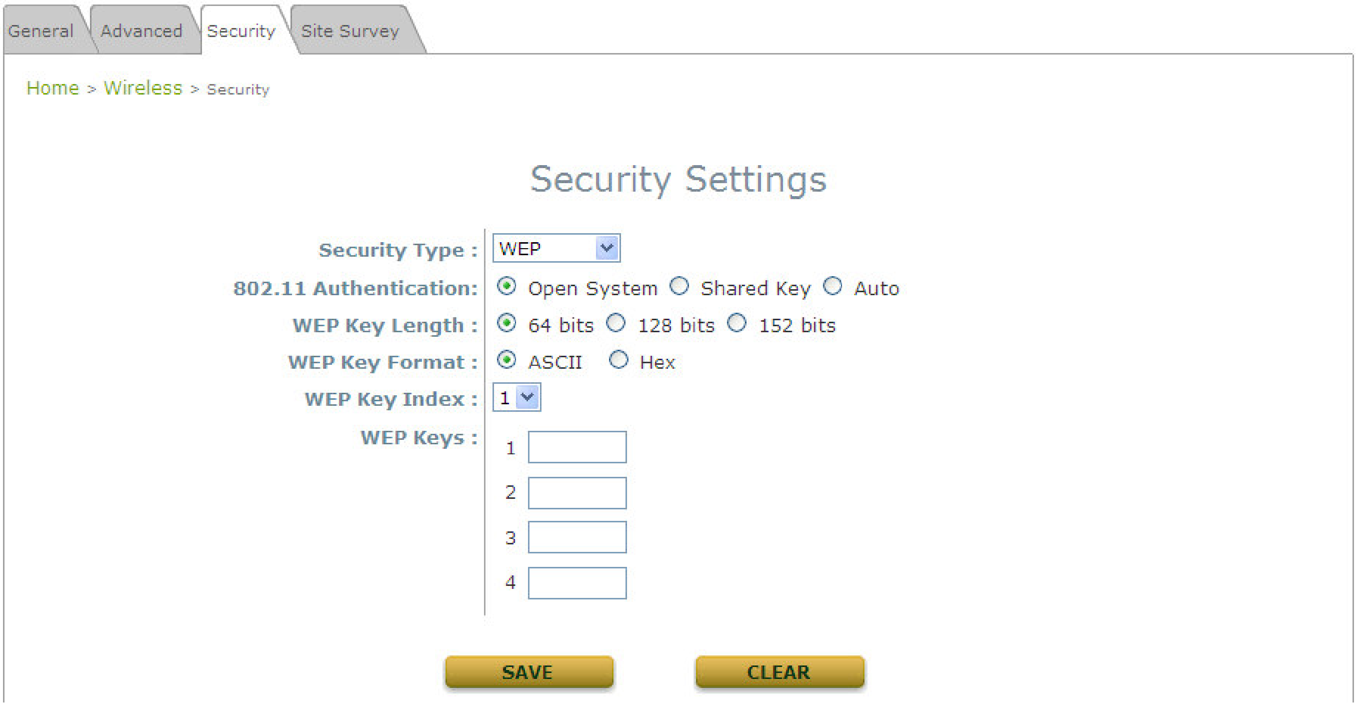
5.2.3 Security Settings

The system supports various authentication and data encryption methods. The security type includes: None, WEP and WPA-PSK.



Security Type : None

- **None:** No authentication is required.
- **WEP:** WEP (Wired Equivalent Privacy) supports key length of 64/128/152 bits.



Security Type : WEP

802.11 Authentication: ● Open System ○ Shared Key ○ Auto

WEP Key Length : ● 64 bits ○ 128 bits ○ 152 bits

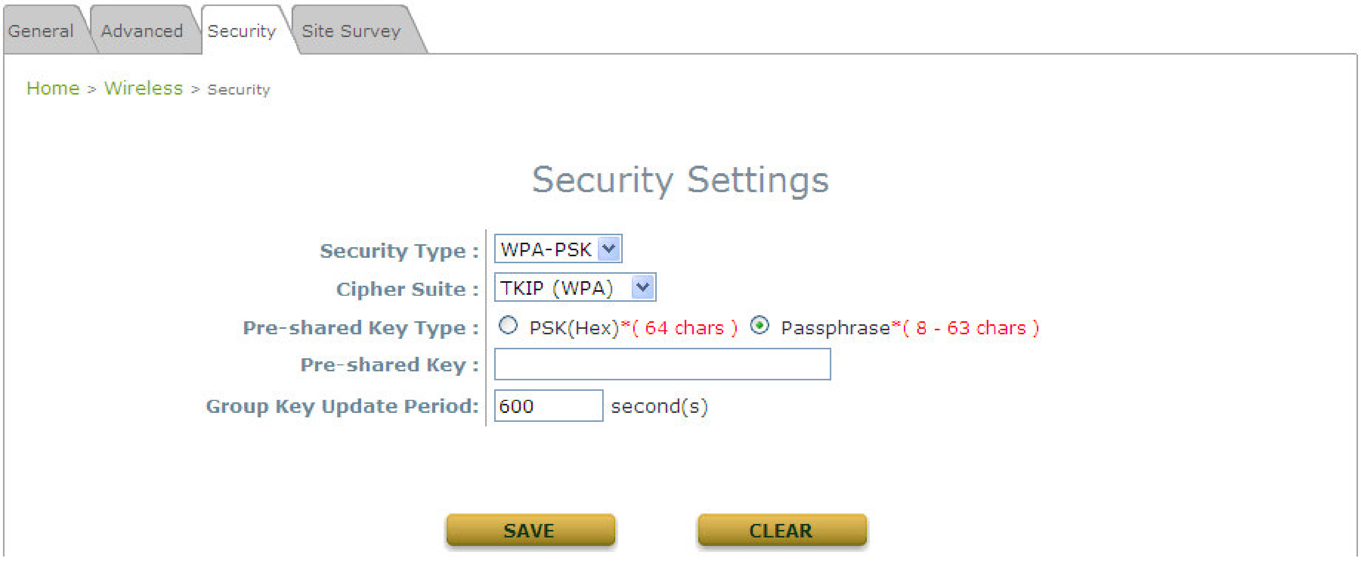
WEP Key Format : ● ASCII ○ Hex

WEP Key Index : 1

WEP Keys : 1 □ 2 □ 3 □ 4 □

- ➢ **802.11 Authentication:** Select from *Open System*, *Shared Key*, or *Auto*.
- ➢ **WEP Key Length:** Select from *64-bit* or *128-bit* key length.
- ➢ **WEP Key Format:** Select from *ASCII* or *Hex* format for the WEP key.
- ➢ **WEP Key Index:** Select a key index from 1 through 4. The WEP key index is a number that specifies which WEP key to use for the encryption of wireless frames during data transmission.
- ➢ **WEP Keys:** Provide WEP key value; the system supports up to 4 sets of WEP keys.

- **WPA-PSK:** WPA-PSK (WI-Fi Protected Access Pre-shared Key) supports pre-shared key authentication and WPA data encryption (TKIP/AES).



Security Settings

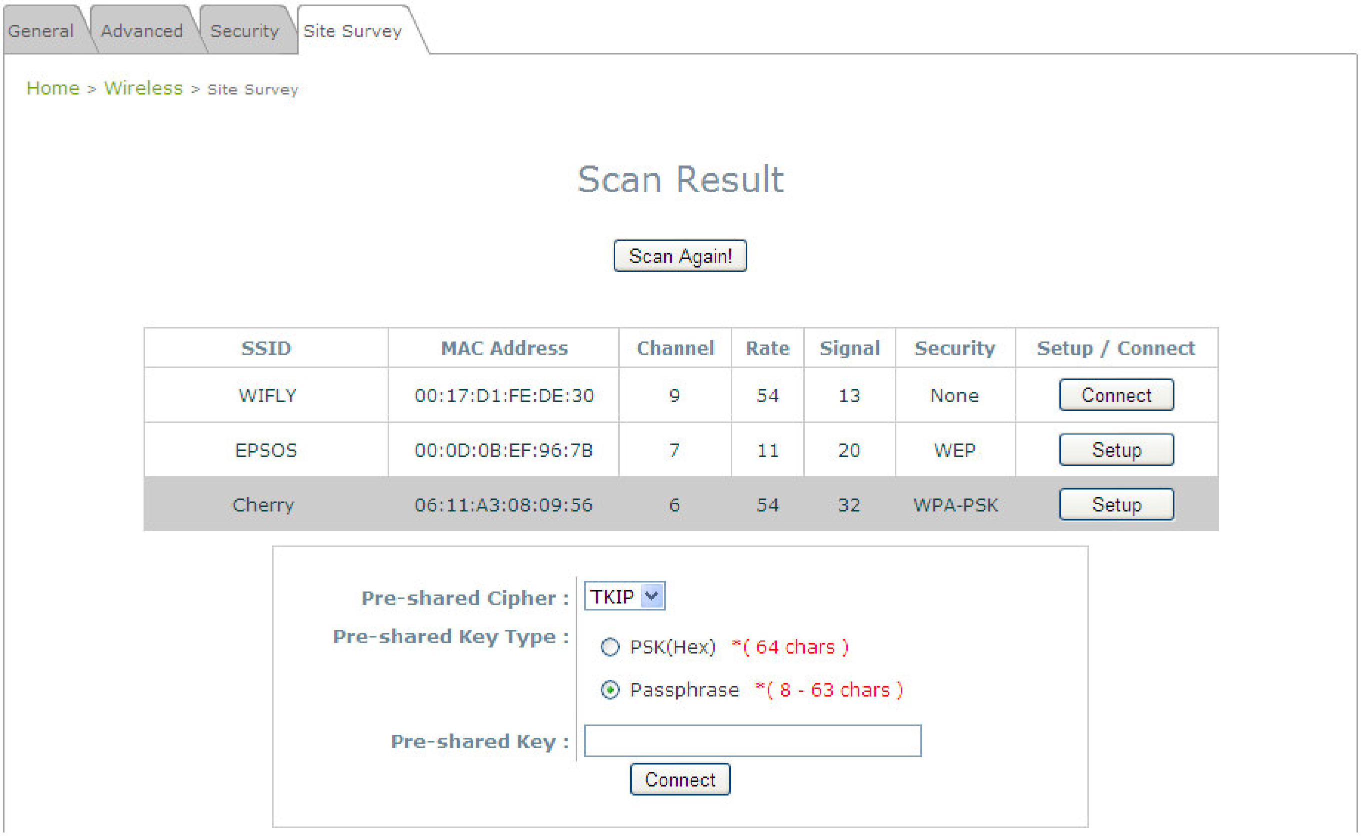
Security Type :	WPA-PSK
Cipher Suite :	TKIP (WPA)
Pre-shared Key Type :	○ PSK(Hex)*(64 chars) ● Passphrase*(8 - 63 chars)
Pre-shared Key :	
Group Key Update Period:	600 second(s)

- **Cipher Suite:** Select an encryption method from *TKIP(WPA/WPA2)* and *AES* (WPA/*WPA2*).
- **Pre-shared Key Type:** Select a pre-shared key type: *PSK (Hex)* or *Passphrase*.
- **Pre-shared Key:** Enter the key value for the pre-shared key; the format of the key value depends on the key type selected.
- **Group Key Update Period:** The time interval for the Group Key to be renewed. Enter the time length required; the time unit is in second.

5.2.4 Site Survey

The system can scan and display all surrounding available access points (APs). The administrator can then select an AP to be associated with the system on this page.

Site Survey is a useful tool to provide information about the surrounding wireless environment; available APs are shown with their respective SSID, MAC Address, Channel, Rate setting, Signal reading and Security type. The administrator can click Setup or Connect to configure the wireless connection according to the mentioned readings.



Scan Result

SSID	MAC Address	Channel	Rate	Signal	Security	Setup / Connect
WIFLY	00:17:D1:FE:DE:30	9	54	13	None	Connect
EPSOS	00:0D:0B:EF:96:7B	7	11	20	WEP	Setup
Cherry	06:11:A3:08:09:56	6	54	32	WPA-PSK	Setup

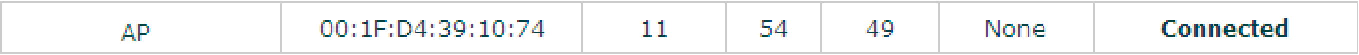
Pre-shared Cipher : TKIP

Pre-shared Key Type : ○ PSK(Hex) *(64 chars) ● Passphrase *(8 - 63 chars)

Pre-shared Key :

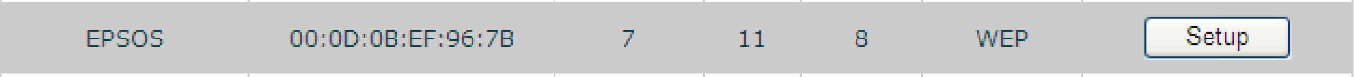
Figure 5-2-4-1: AP Scan Result (example only)

- **SSID:** The SSID (Service Set ID) of the AP found in the system's coverage area.
- **MAC Address:** The MAC address of the respective AP.
- **Channel:** The channel number currently used by the respective AP.
- **Rate:** The transmitting rate of the respective AP.
- **Signal:** The signal strength of the respective AP.
- **Security:** The encryption type used by the respective AP.
- **Setup / Connect:**
  - ➢ **Connect:** Click ***Connect*** to associate with the respective AP directly; no further configuration is required.



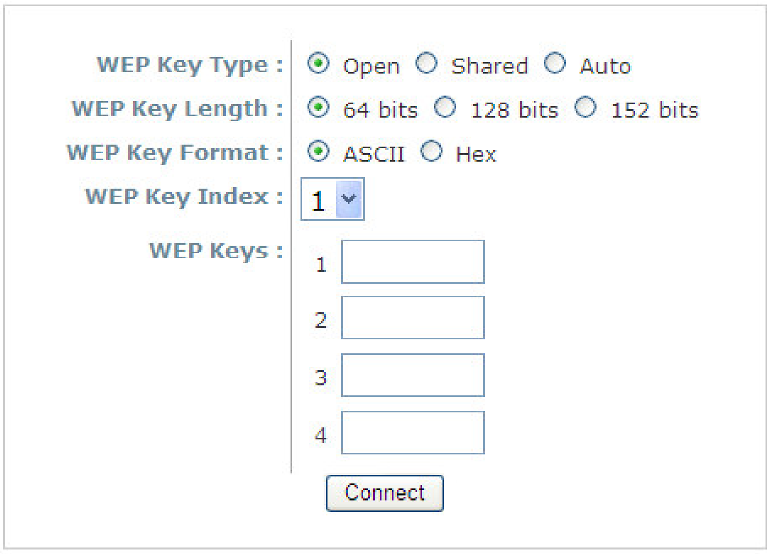
AP	00:1F:D4:39:10:74	11	54	49	None	**Connected**

- **Setup:** Click ***Setup*** to configure security settings for associating with the respective AP or repeater.
  - **WEP:** Click ***Setup*** to configure the WEP setting for associating with the target AP.



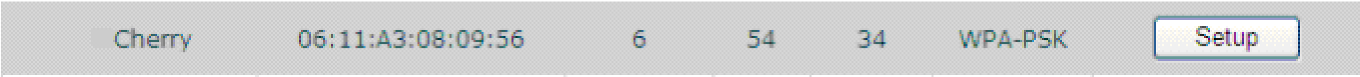
EPSOS	00:0D:0B:EF:96:7B	7	11	8	WEP	Setup

The following configuration box will then appear at the bottom of the screen. For more information on the WEP security settings, please refer to **Section 5.2.3 Security Settings**.



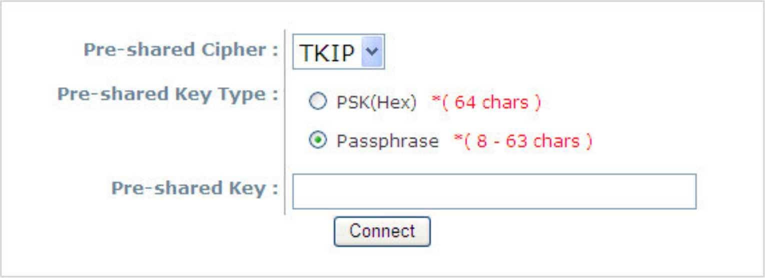
WEP Key Type : ● Open ○ Shared ○ Auto
WEP Key Length : ● 64 bits ○ 128 bits ○ 152 bits
WEP Key Format : ● ASCII ○ Hex
WEP Key Index : 1
WEP Keys : 1 2 3 4

  - **WPA-PSK:** Click ***Setup*** to configure the WPA-PSK setting for associating with the target AP.



Cherry	06:11:A3:08:09:56	6	54	34	WPA-PSK	Setup

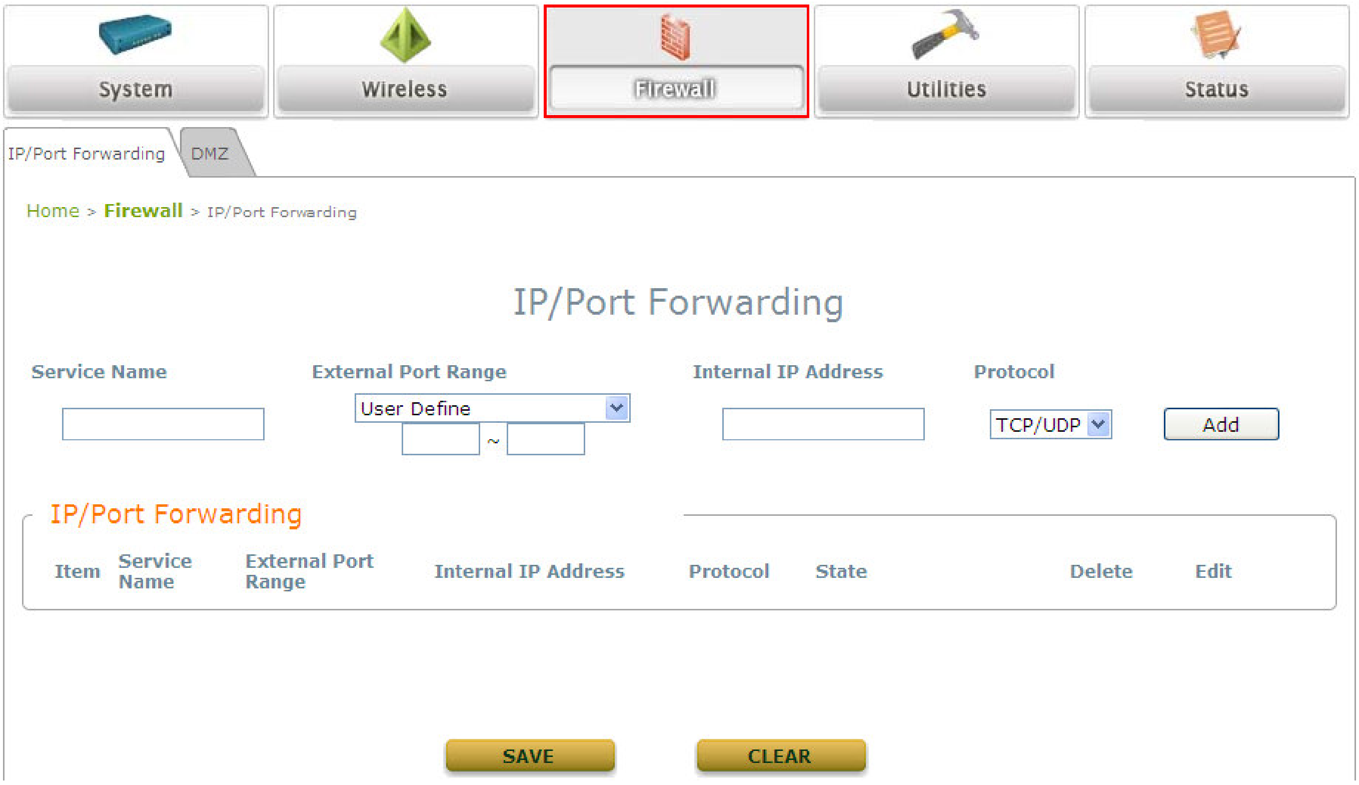
The following configuration box will then appear at the bottom of the screen. For more information on the WPA-PSK security settings, please refer to **Section 5.2.3- Security Settings**.



Pre-shared Cipher : TKIP
Pre-shared Key Type : ○ PSK(Hex) *(64 chars)
● Passphrase *(8 - 63 chars)
Pre-shared Key :

5.3 Firewall

The system supports the following firewall functions: IP/ Port forwarding and DMZ (Demilitarized Zone). The administrator can allow a certain part of the network to be exposed to the Internet in limited and controlled ways for special purposes such as game and voice applications.



IP/Port Forwarding

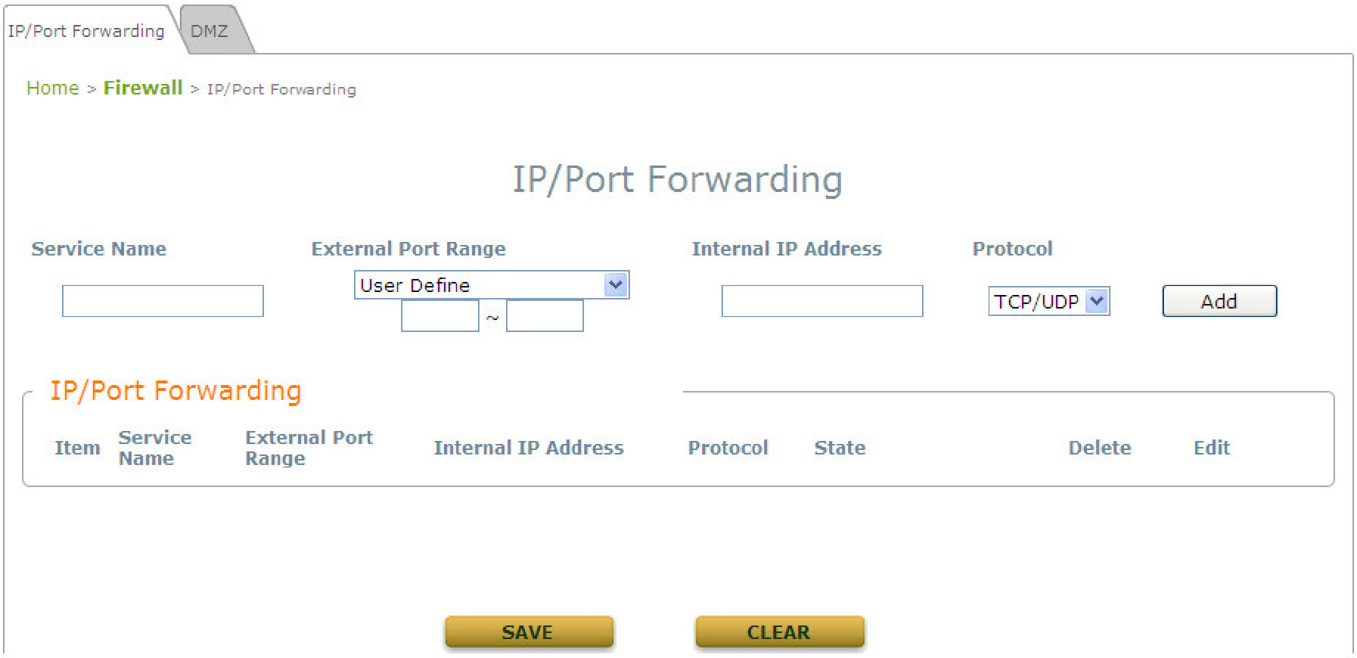
Service Name | External Port Range: User Define ~ | Internal IP Address | Protocol: TCP/UDP | Add

IP/Port Forwarding

Item	Service Name	External Port Range	Internal IP Address	Protocol	State	Delete	Edit

5.3.1 IP/ Port Forwarding

A certain part of the network can be exposed to the Internet in a limited and controlled way for special-purpose Internet services such as on-line game or video conferencing on this page. Please ensure that the internal port to be used is not occupied by other applications.


IP/Port Forwarding | DMZ

Home > Firewall > IP/Port Forwarding

IP/Port Forwarding

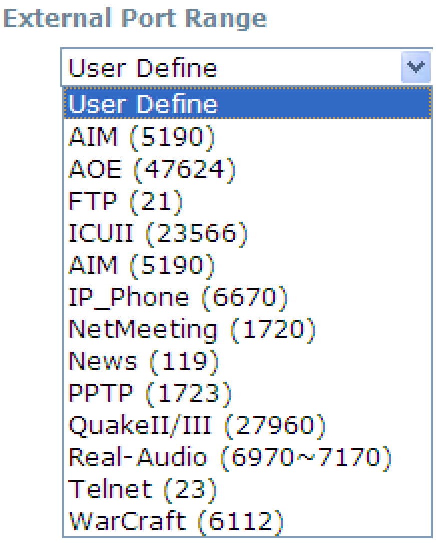
Service Name	External Port Range	Internal IP Address	Protocol	
	User Define ~		TCP/UDP	Add

IP/Port Forwarding

Item	Service Name	External Port Range	Internal IP Address	Protocol	State	Delete	Edit

SAVE CLEAR

- **Service Name:** The administrator can provide an easy remembered alias for the specific forwarding.
- **External Port Range:** The external port for forwarding traffic can be selected from the drop-down list or specified by choosing *User Define* to set the range manually.

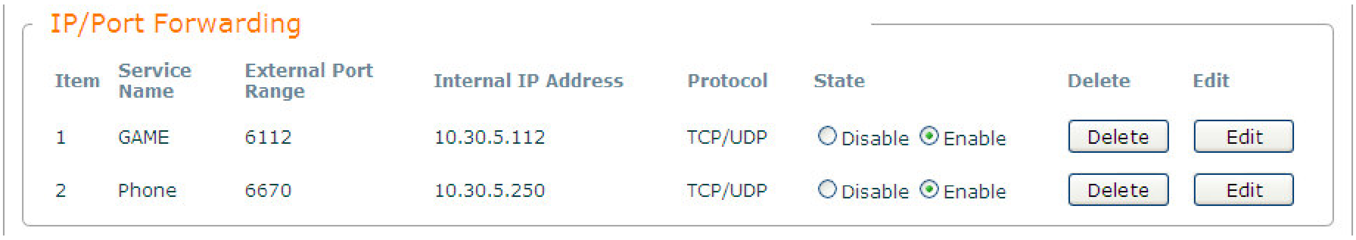

External Port Range

User Define

User Define
AIM (5190)
AOE (47624)
FTP (21)
ICUII (23566)
AIM (5190)
IP_Phone (6670)
NetMeeting (1720)
News (119)
PPTP (1723)
QuakeII/III (27960)
Real-Audio (6970~7170)
Telnet (23)
WarCraft (6112)

- **Internal IP Address:** Enter the LAN IP address to receive the forwarding traffic.
- **Protocol:** Forwarding traffic protocol can be selected from drop-down list to be *TCP/ UCP*, *TCP* or *UDP*.

- **Add:** Click ***Add*** to activate the new service.
- **IP/ Port Forwarding:** Details of current services available. Click ***Delete*** to remove the specified service. Click ***Edit*** to configure the current setting.

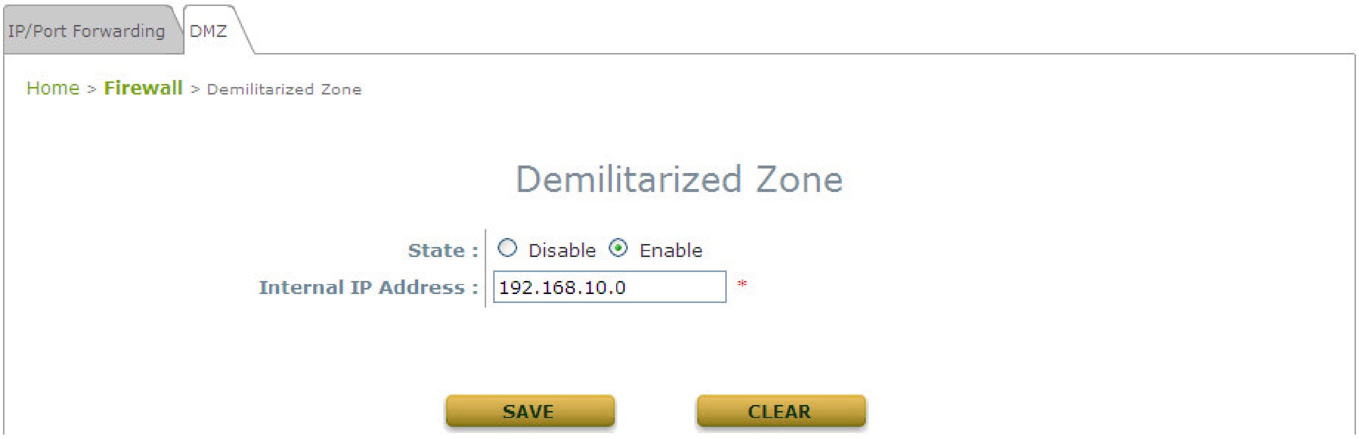


IP/Port Forwarding

Item	Service Name	External Port Range	Internal IP Address	Protocol	State	Delete	Edit
1	GAME	6112	10.30.5.112	TCP/UDP	○ Disable ● Enable	Delete	Edit
2	Phone	6670	10.30.5.250	TCP/UDP	○ Disable ● Enable	Delete	Edit

5.3.2 Demilitarized Zone

The DMZ (Demilitarized Zone) allows one local computer or server (used as a DMZ host) to be exposed to the Internet for special-purpose Internet services such as functioning as a web server. External users can access the DMZ host without authentication.



Demilitarized Zone

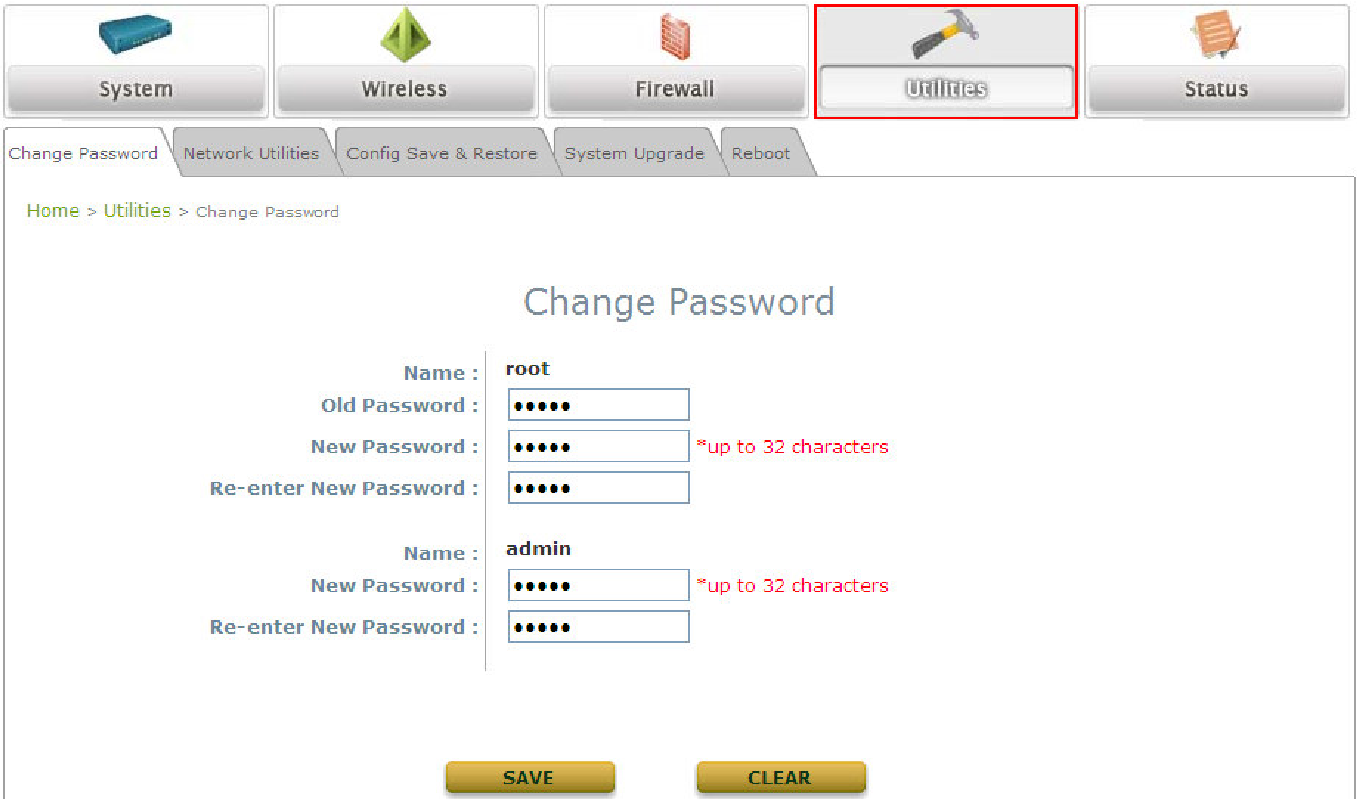
State : ○ Disable ● Enable

Internal IP Address : 192.168.10.0 *

- **Enable:** Select *Enable* to activate this function or *Disable* to deactivate it.
- **Internal IP Address:** Fill in the internal IP address to allow system forwarding traffic other than those specifically listed in IP/Port Forwarding.

5.4 Utilities

The system provides **Change Password**, **Network Utilities**, **Configuration Save & Restore**, **System Upgrade**, and **Reboot** functions for maintenance.



Change Password

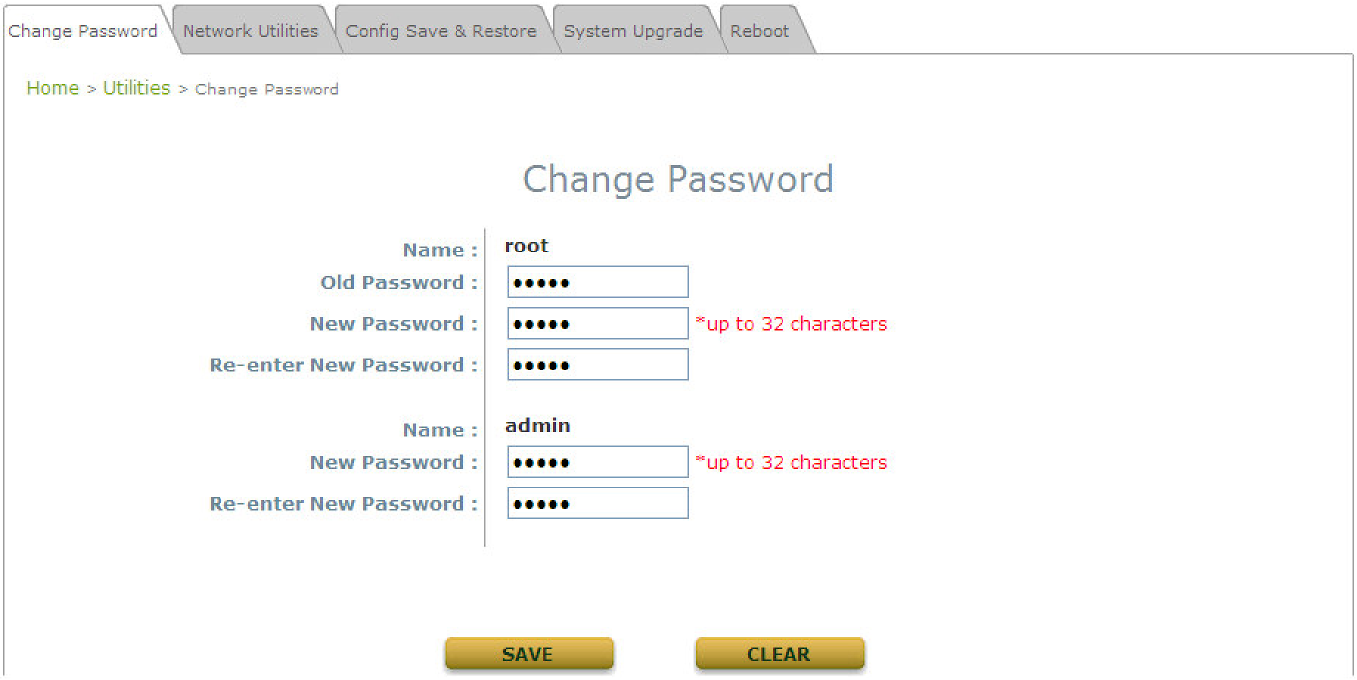
Name : root
Old Password : •••••
New Password : ••••• *up to 32 characters
Re-enter New Password : •••••

Name : admin
New Password : ••••• *up to 32 characters
Re-enter New Password : •••••

5.4.1 Change Password

The administrator can update or change password. The system provides two management accounts for CPE mode, **root** and **admin**. The **root** account is empowered with full privileges while the **admin** account is with partial. For more information on the respective privileges of these two management accounts, please refer to **Appendix A. System Management Privileges**.

- **"root" account management:** The **root** administrator is entitled to changing passwords for both the **root** and **admin** account.



Name : root
Old Password : •••••
New Password : ••••• *up to 32 characters
Re-enter New Password : •••••

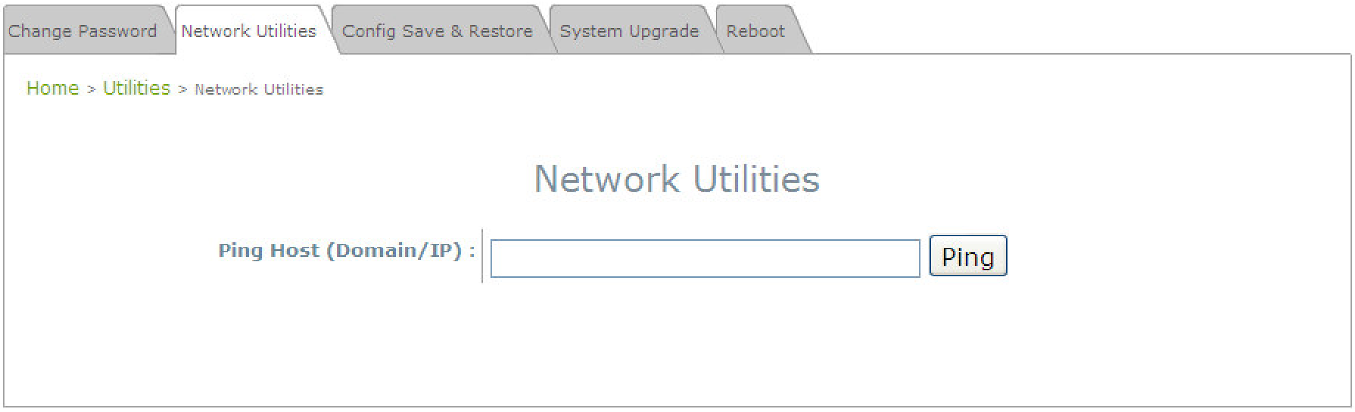
Name : admin
New Password : ••••• *up to 32 characters
Re-enter New Password : •••••

- **"root" account:** Enter the original password (**"admin"**) and a new password, and then re-enter the new password in the *Re-enter New Password* field. Click ***SAVE*** to activate the new password.

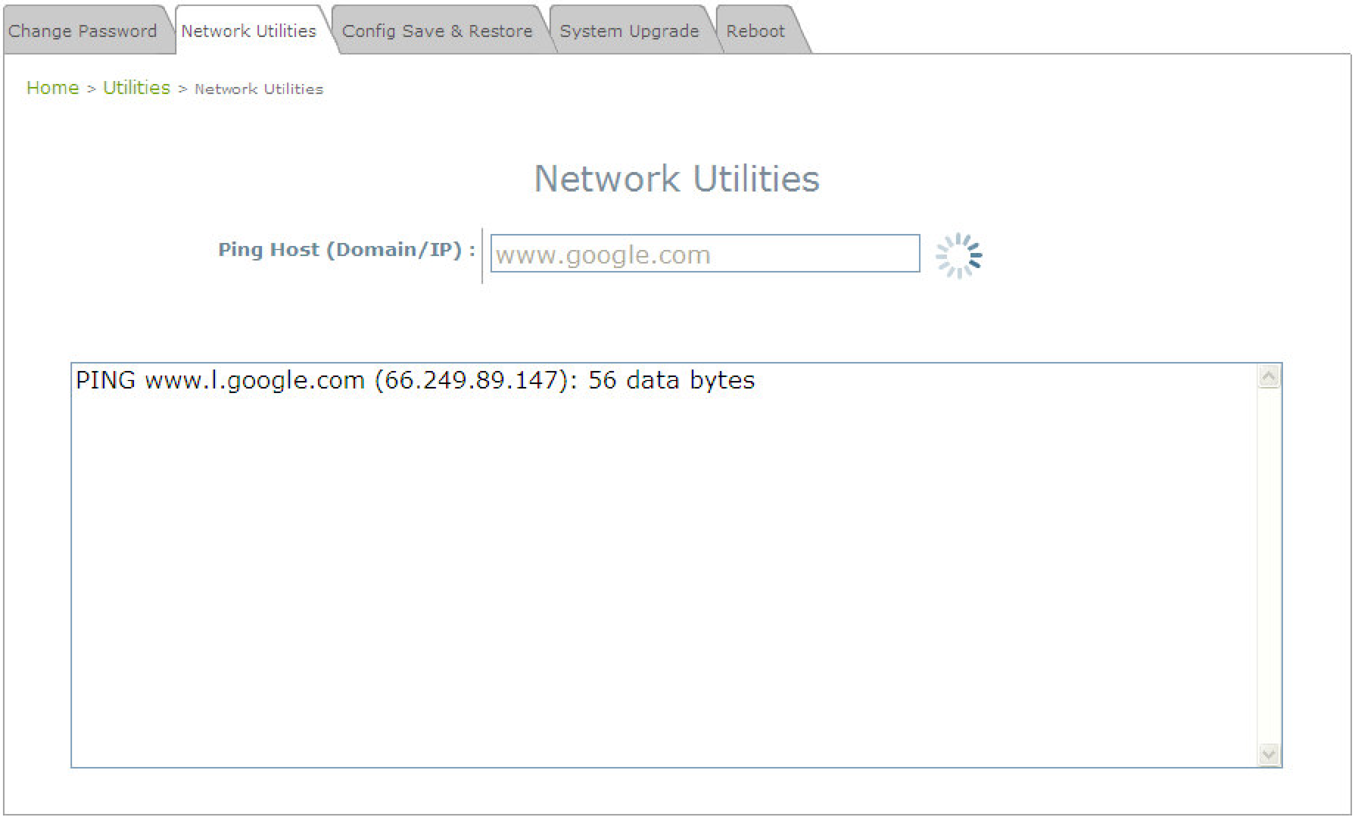
- **"admin" account:** Enter a new password, and then re-enter it in the *Re-enter New Password* field. The **root** administrator is acting as a superintendent here; thus, entering the old password is not required. Click ***SAVE*** to activate the new password.

5.4.2 Network Utilities

The administrator can check the WAN and LAN connectivity via this function. The current provided network utility is Ping and the target host FQDN-compliant name or IP address can be provided to test network connection.



- **Ping Host (Domain/ IP):** Enter the domain name or IP address of a target device for diagnosis purpose, for example, www.google.com.tw, and click ***PING*** to proceed. The ping result will be shown in the **Result** field.

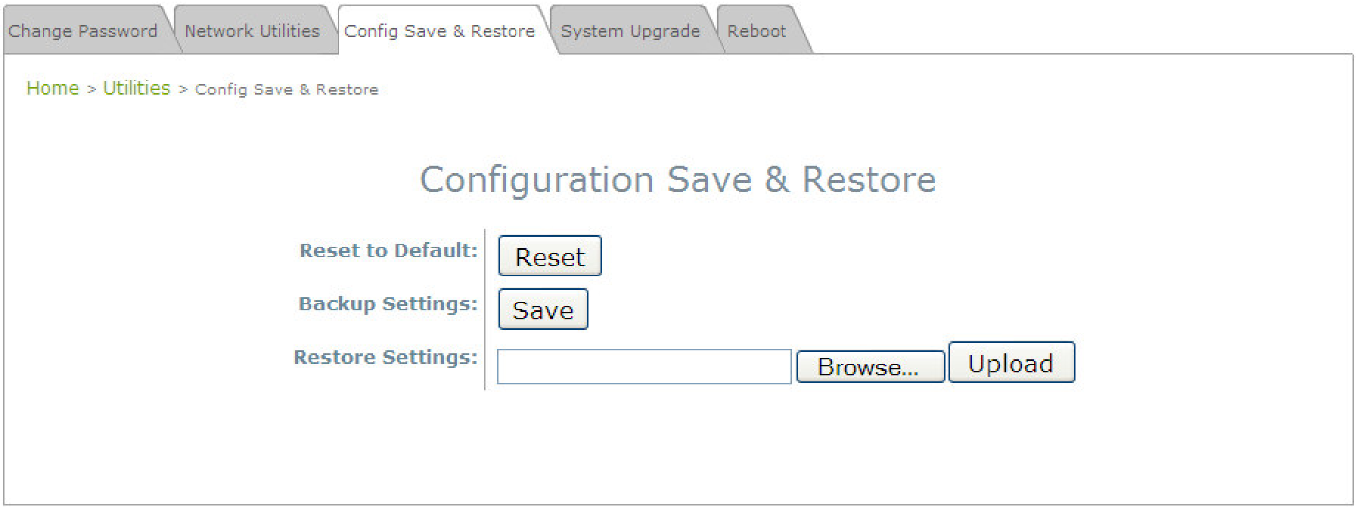


Ping Host (Domain/IP) : www.google.com

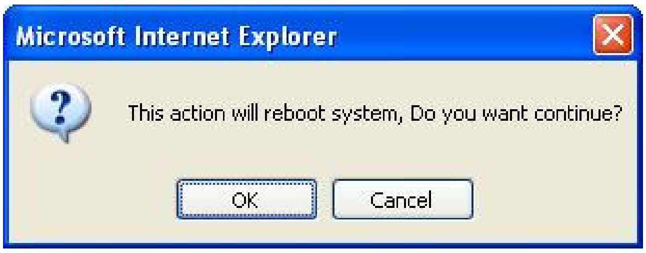
```
PING www.l.google.com (66.249.89.147): 56 data bytes
```

5.4.3 Configuration Save & Restore

This function is used to backup or restore the current settings. The system can be restored to the default setting by clicking on Reset. The setting of the device can be backup to a file. It can be used to duplicate setting to the other WAB-3003 device.



- **Reset to Default:**
  - ➢ Click ***Reset*** to load the factory default settings of WAB-3003. A pop-up screen will appear to reconfirm the request to restart the system. Click ***OK*** to proceed, or click ***Cancel*** to cancel the restart request.

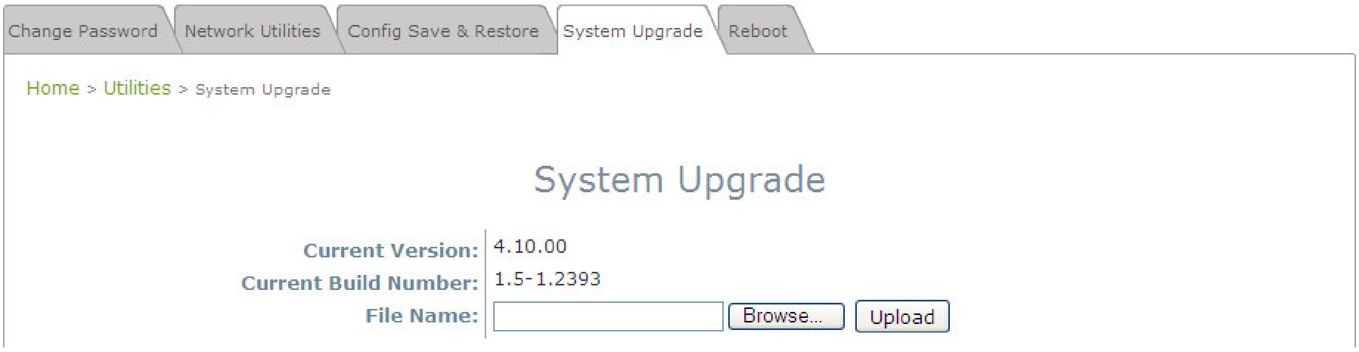


This action will reboot system, Do you want continue?

  - ➢ A warning message as displayed below will appear during the reboot period. The system power must be turned on before the completion of the reboot process.
  - ➢ The **System Overview** page will appear upon the completion of reboot.
- **Backup Settings:** Click ***Save*** to save the current system settings to a local disk such as the hard disk drive (HDD) of a local computer or a compact disc (CD).
- **Restore Settings:** Click ***Browse*** to search for a previously saved backup file, and then click ***Upload*** to restore the settings. The backup file will replace the active configuration file currently running on the system.

5.4.4 System Upgrade

To upgrade the system firmware, click ***Browse*** to search for the new firmware file, and then click ***APPLY*** to execute the upgrade process. The first step is to acquire the correct firmware file and supply it in the User Interface field. During firmware update, please don't turn off the power to prevent from damaging the device permanently.



System Upgrade

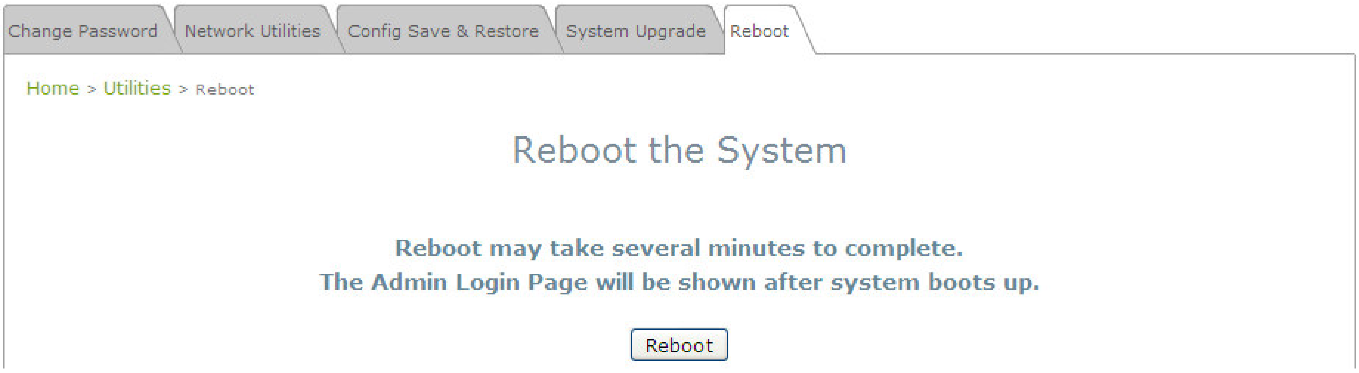
Current Version: 4.10.00
Current Build Number: 1.5-1.2393
File Name:

Note:

- To prevent data loss during firmware upgrade, please back up the current settings before proceeding further.
- Please restart the system after the upgrade. Do not interrupt the system, i.e. power on/off, during the upgrade or restart process as this may damage the system.

5.4.5 Reboot

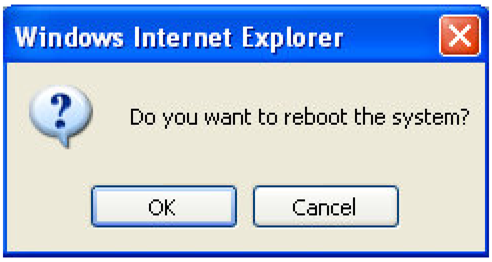
The administrator can reboot the device remotely. Click **Restart** to restart the system immediately.



Reboot the System

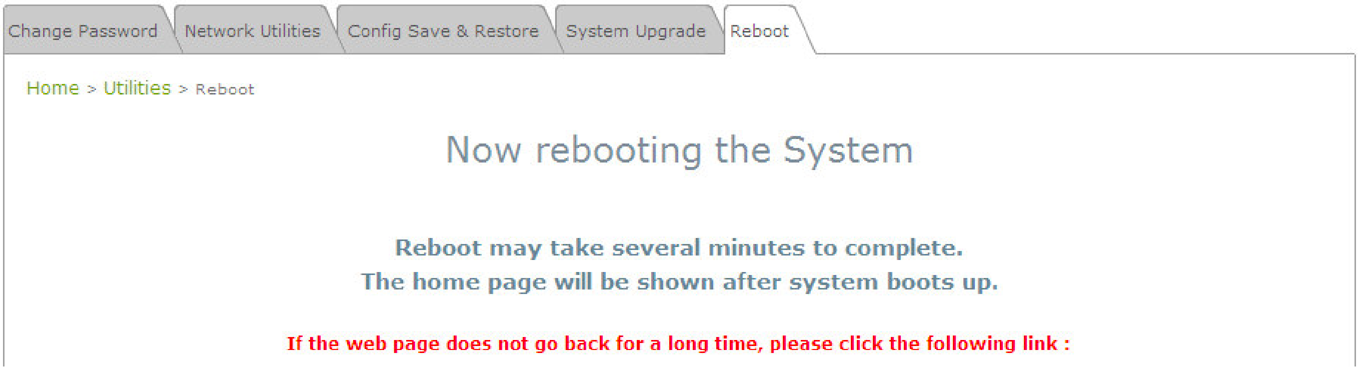
Reboot may take several minutes to complete.
The Admin Login Page will be shown after system boots up.

A pop-up screen will appear to confirm the request to restart the system. Click ***OK*** to proceed, or click ***Cancel*** to cancel the restart request.



Do you want to reboot the system?

A warning message as displayed below will appear during the reboot period. The system power must be turned on before the completion of the reboot process.



Now rebooting the System

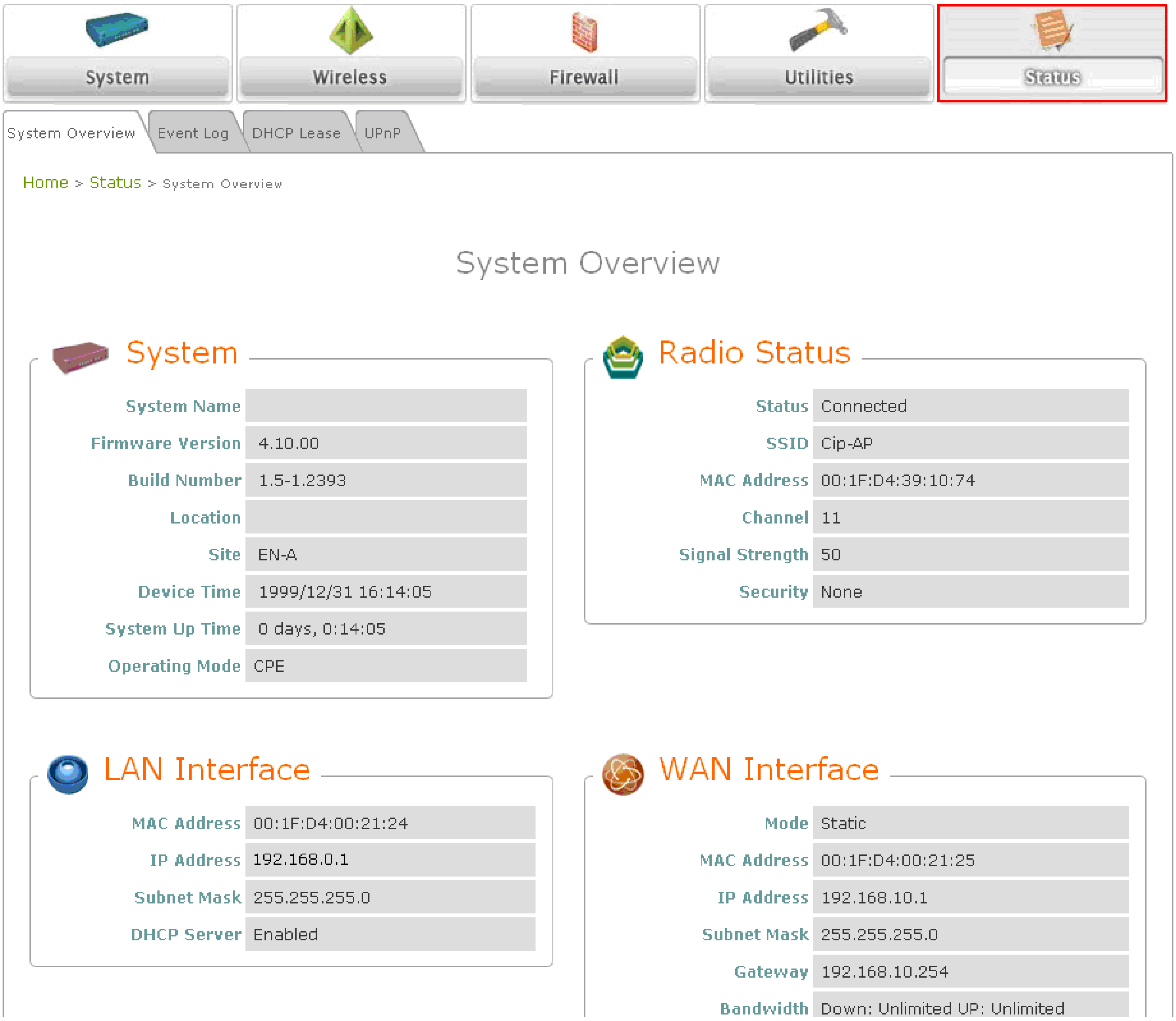
Reboot may take several minutes to complete.
The home page will be shown after system boots up.

If the web page does not go back for a long time, please click the following link :

The **System Overview** page will appear upon the completion of reboot.

5.5 Status

This section displays the status of **System Overview**, **Event Log**, **DHCP Lease** and **UPnP**.



System Overview

System

System Name	
Firmware Version	4.10.00
Build Number	1.5-1.2393
Location	
Site	EN-A
Device Time	1999/12/31 16:14:05
System Up Time	0 days, 0:14:05
Operating Mode	CPE

Radio Status

Status	Connected
SSID	Cip-AP
MAC Address	00:1F:D4:39:10:74
Channel	11
Signal Strength	50
Security	None

LAN Interface

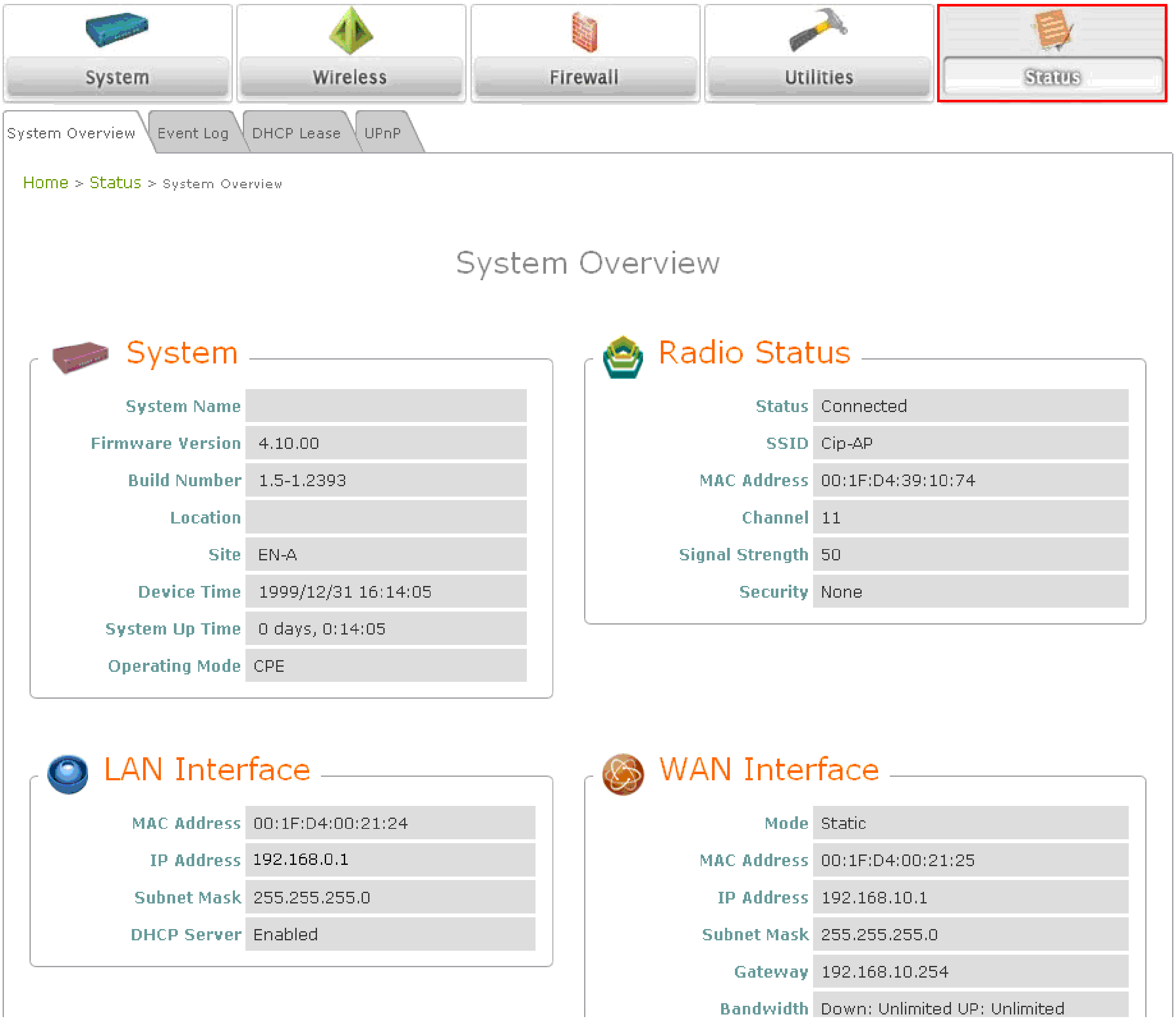
MAC Address	00:1F:D4:00:21:24
IP Address	192.168.0.1
Subnet Mask	255.255.255.0
DHCP Server	Enabled

WAN Interface

Mode	Static
MAC Address	00:1F:D4:00:21:25
IP Address	192.168.10.1
Subnet Mask	255.255.255.0
Gateway	192.168.10.254
Bandwidth	Down: Unlimited UP: Unlimited

5.5.1 System Overview

The **System Overview** page provides an overview of the system status for the administrator.



System Overview

System

System Name	
Firmware Version	4.10.00
Build Number	1.5-1.2393
Location	
Site	EN-A
Device Time	1999/12/31 16:14:05
System Up Time	0 days, 0:14:05
Operating Mode	CPE

Radio Status

Status	Connected
SSID	Cip-AP
MAC Address	00:1F:D4:39:10:74
Channel	11
Signal Strength	50
Security	None

LAN Interface

MAC Address	00:1F:D4:00:21:24
IP Address	192.168.0.1
Subnet Mask	255.255.255.0
DHCP Server	Enabled

WAN Interface

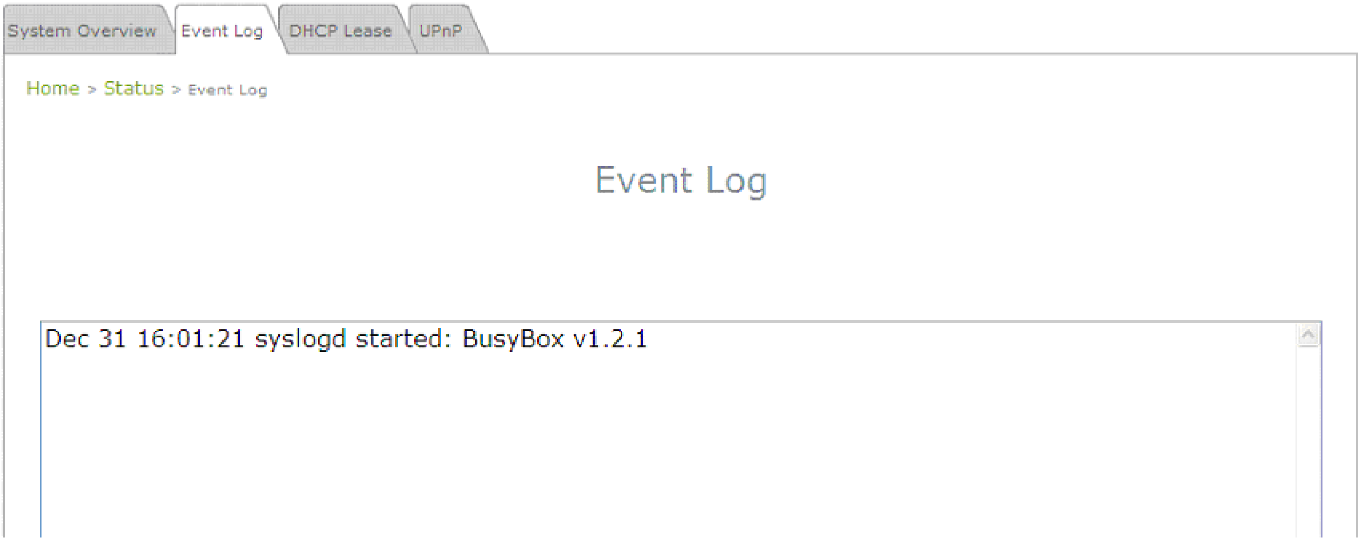
Mode	Static
MAC Address	00:1F:D4:00:21:25
IP Address	192.168.10.1
Subnet Mask	255.255.255.0
Gateway	192.168.10.254
Bandwidth	Down: Unlimited UP: Unlimited

The description of the table is shown below:

ITEM		**DESCRIPTION**
System	**System Name**	The name provided in System Information.
	Firmware Version	The present firmware version of the system.
	Build Number	The Build Number of the firmware.
	Location	The location provided in System Information.
	Site	The firmware version for specific region.
	Device Time	The current time on the device.
	System Up Time	The system elapsing time since last reboot.
	Operating Mode	Either CPE or AP.
LAN Interface	**MAC Address**	The MAC address of LAN Interface.
	IP Address	The IP address of the LAN Interface.
	Subnet Mask	The Subnet Mask of the LAN Interface.
	DHCP Server	DHCP server status.
Radio Status	**Status**	The RF status.
	SSID	The SSID of the associated AP.
	MAC Address	The MAC address of the associated AP.
	Channel	The operating channel.
	Signal Strength	The signal strength reading of the wireless connection.
	Security	The security type used for wireless connection.
WAN Status	**Mode**	The method to obtain IP for the WAN interface.
	MAC Address	The MAC address of the WAN (RF) Interface.
	IP Address	The IP address of the WAN interface.
	Subnet Mask	The Subnet Mask of the WAN interface.
	Gateway	The gateway IP address.
	Bandwidth	The bandwidth setting of the WAN interface.

5.5.2 Event Log

Event log provides the records of the system activities. All the system events are shown here.



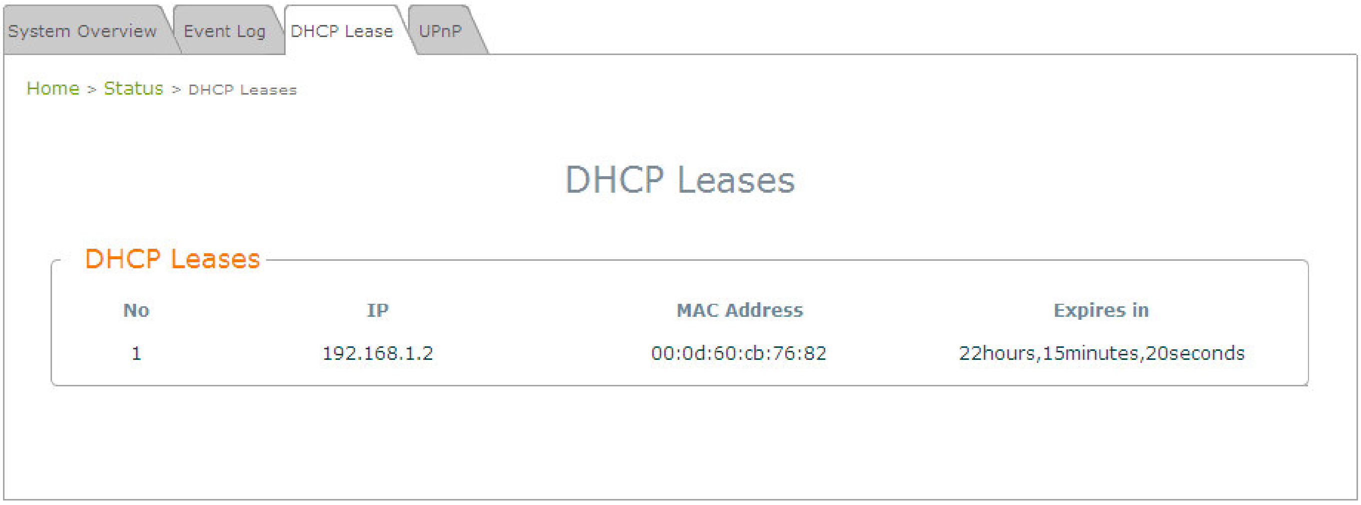
```
Dec 31 16:01:21 syslogd started: BusyBox v1.2.1
```

Note:
As the Event Log is stored in RAM, it will be refreshed after the system is restarted. The system also supports a Syslog reporting function of reporting the events to an external Syslog server.

- **Date/ Time:** The date and time of the record when the event happened.
- **Hostname:** Indicate which Host records this event. Note that all events in this page are local events and this field of all events is the same. However, in remote syslog service, this field will help the network administrator identify which event is from this system. For more information, please refer to **Section 5.1.4 Management Services**.
- **Process name (with square brackets):** Indicate which process with the specific event is associated.
- **Description:** Description of the event.

5.5.3 DHCP Leases

The table provides information about the leased LAN IP address with binding MAC address and expiration time.



DHCP Leases

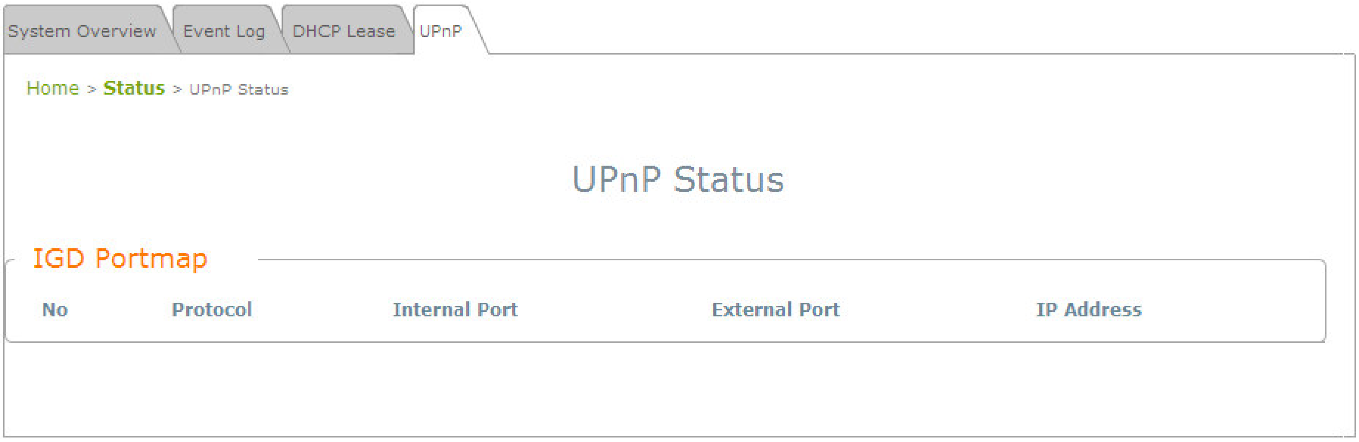
DHCP Leases

No	IP	MAC Address	Expires in
1	192.168.1.2	00:0d:60:cb:76:82	22hours,15minutes,20seconds

- **No:** The item number of the LAN IP leased.
- **IP:** The IP address assigned by DHCP server to a specific LAN device.
- **MAC Address:** The MAC address of the LAN device.
- **Expires in:** The expiration time of the leased IP address.

5.5.4 UPnP Status

The table provides information about the UPnP overview such as Protocol, Internal Port, External Port, and IP Address.



Home > **Status** > UPnP Status

UPnP Status

IGD Portmap

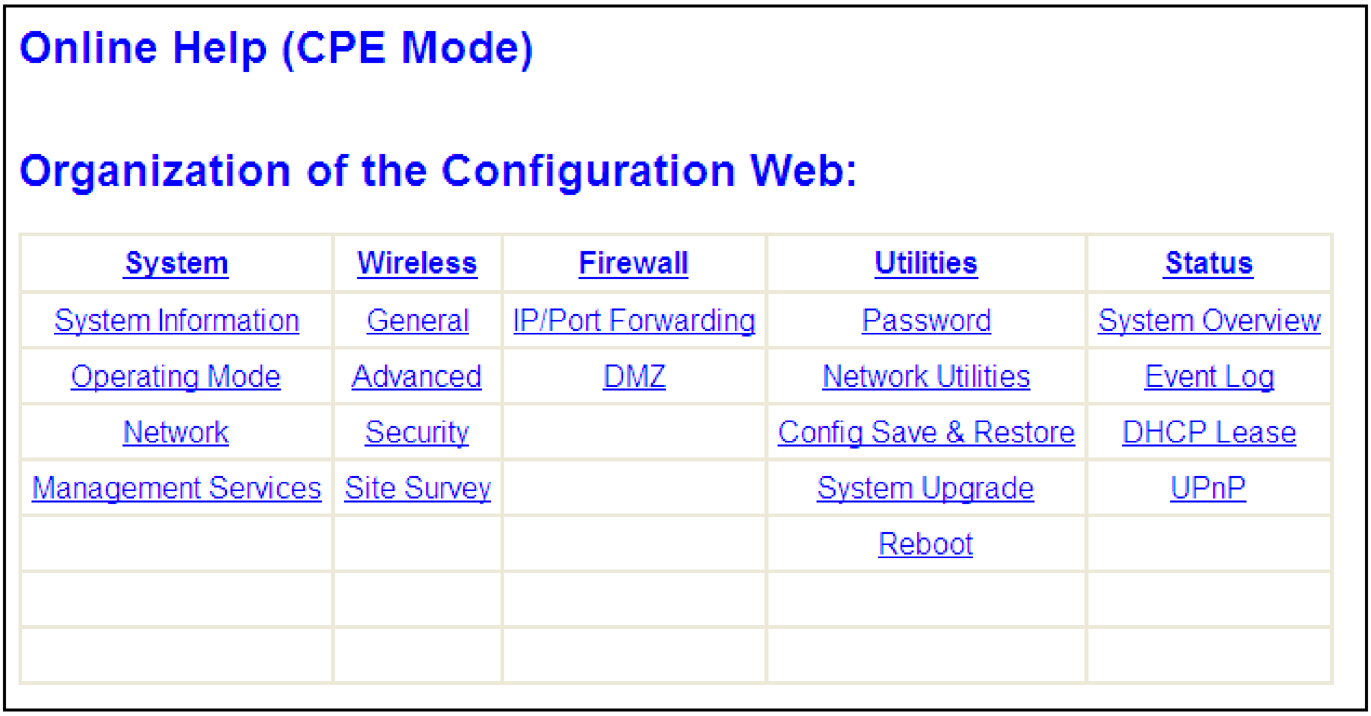
No	Protocol	Internal Port	External Port	IP Address

- **IGD Portmap:**
  - **No:** The item number of an UPnP device.
  - **Protocol:** The Protocol used by the UPnP device.
  - **Internal Port:** The internal port number of the UPnP device.
  - **External Port:** The mapped external port number of the system.
  - **IP Address:** The IP address of the UPnP device.

5.6 Online Help

The ***Help*** button is at the upper right hand corner of the display screen.

Click ***Help*** for the **Online Help** window, and then click the hyperlink of the desired topic for further information.



Online Help (CPE Mode)

Organization of the Configuration Web:

System	Wireless	Firewall	Utilities	Status
System Information	General	IP/Port Forwarding	Password	System Overview
Operating Mode	Advanced	DMZ	Network Utilities	Event Log
Network	Security		Config Save & Restore	DHCP Lease
Management Services	Site Survey		System Upgrade	UPnP
			Reboot	

Appendix A. System Management Account Privileges

The system provides two system management accounts for CPE mode, **root** and **admin**. The **root** account is empowered with full privileges while the **admin** account is with partial.

The management privileges of the admin account are shown in the following table.

Main Menu	Sub Menu	Group	Admin Privilege
System	System Information	System Information	Read
		Time	Read
	Operating Mode	Operating Mode	Read
	Network	WAN Configuration	Read
		Dynamic DNS	Read & Write
		LAN Configuration	Read & Write
	Management Services	SNMP Configuration	Read
		Syslog Configuration	Read
		UPnP Configuration	Read & Write
		Auto Reboot	Read
Wireless	General	General Settings	Read
	Advanced	Advanced Wireless Settings	Read
	Security	Security Settings	Read
	Site Survey		Read
Firewall	IP/Port Forwarding		Read & Write
	DMZ		Read & Write
Utilities	Password	Admin Password	Read & Write
	Network Utilities		Read & Write
	Config Save & Restore	Reset to Default	Read
		Backup Settings	Read & Write
		Restore Settings	Read
	System Upgrade		Read
	Reboot		Read & Write