



WAB-6120

150Mbps Wireless Outdoor PoE AP

User Manual

V1.0

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About This Manual

This user manual is intended to guide professional installer to install the LEVELONE 150MBPS WIRELESS POE AP Wireless CPE and how to build the infrastructure centered on it. It includes procedures to assist you in avoiding unforeseen problems.

Conventions

For your attention on important parts, special characters and patterns are used in this manual:

Note:

• This indicates an important note that you must pay attention to.

A Warning:

• This indicates a warning or caution that you have to abide.

Bold: Indicates the function, important words, and so on.

Federal Communication Commission Interference Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. To avoid the possibility of exceeding radio frequency exposure limits, you shall beep a distance of at least 100cm between you and the antenna of the installed equipment. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

The availability of some specific channels and/or operational frequency bands are country dependent and are firmware programmed at the factory to match the intended destination. The firmware setting is not accessible by the end user.

Warranty

Standard hardware warranty is for one (1) year from date of shipment from Distributor. Warrants that hardware will conform to the current relevant published specifications and will be free from material defects in material and workmanship under normal use and service.

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Chapter 1 Introduction

Introduction

Designed for outdoor environment application, the LEVELONE 150MBPS WIRELESS POE AP is a high-performance last-mile broadband solution that provides reliable wireless network coverage. As an IEEE 802.11b/g compliant wireless device, the LEVELONE 150MBPS WIRELESS POE AP is able to give stable and efficient wireless performance, while designed with IEEE 802.11n standard and high output power makes it possible to deliver several times faster data rate than normal wireless device and higher bandwidth with longer range for outdoor applications.

The LEVELONE 150MBPS WIRELESS POE AP supports four wireless communication connectivity (AP, Wireless Client, WDS and AP Repeater), allowing for various application requirements thus helping to find the key to the "last mile" with least effort.

With high output power and reliable performance, the LEVELONE 150MBPS WIRELESS POE AP is an ideal wireless broadband solution for wireless Internet service providers and system integrators!

Appearance



Figure 1 LEVELONE 150MBPS WIRELESS POE AP

Key Features

- Compliant with IEEE 802.11b/g and IEEE 802.11n as well
- Support Power Through Ethernet which is supplied with 12V.
- High reliable watertight housing endures almost any harsh environments
- Four operating modes including AP, Wireless Client, WDS and AP Repeater
- Support 64/128/152-bit WEP and 802.1X, WPA, WPA2, WPA&WPA2, WPA-PSK, WPA2-PSK, and WPA-PSK&WPA2-PSK
- User-friendly Web and SNMP-based management interface

Typical Application

This section describes the typical applications of LEVELONE 150MBPS WIRELESS POE AP. By default, it is set to AP mode which allows it to establish a wireless coverage; besides, it is also able to join any available wireless network under wireless client mode. The LEVELONE 150MBPS WIRELESS POE AP is able to deliver stable and efficient broadband connectivity for various applications.



Figure 2 Typical Application

Besides, the LEVELONE 150MBPS WIRELESS POE AP can also be applied into the following environments:

- Cost-effectively provide long distance backhaul for remote areas (e.g. village, oil well, island, mountain and etc.)
- Establish local backhaul for campus, farm and factory
- Provide and access for video streaming or surveillance for industrial and mining enterprises

Chapter 2 Hardware Installation

This chapter describes safety precautions and product information you have to know and check before installing LEVELONE 150MBPS WIRELESS POE AP.

Preparation before Installation

Professional Installation Required

Please seek assistance from a professional installer who is well trained in the RF installation and knowledgeable in the local regulations.

Safety Precautions

- 1. To keep you safe and install the hardware properly, please read and follow these safety precautions.
- If you are installing LEVELONE 150MBPS WIRELESS POE AP for the first time, for your safety as well as others', please seek assistance from a professional installer who has received safety training on the hazards involved.
- 3. Keep safety as well as performance in mind when selecting your installation site, especially where there are electric power and phone lines.
- 4. When installing LEVELONE 150MBPS WIRELESS POE AP, please note the following things:
 - Do not use a metal ladder;
 - Do not work on a wet or windy day;
 - Wear shoes with rubber soles and heels, rubber gloves, long sleeved shirt or jacket.
- 5. When the system is operational, avoid standing directly in front of it. Strong RF fields are present when the transmitter is on.

Installation Precautions

To keep the LEVELONE 150MBPS WIRELESS POE AP well while you are installing it, please read and follow these installation precautions.

- Users MUST use a proper and well-installed surge arrestor with the LEVELONE 150MBPS WIRELESS POE AP; otherwise, a random lightening could easily cause fatal damage to LEVELONE 150MBPS WIRELESS POE AP. EMD (Lightning) DAMAGE IS NOT COVERED UNDER WARRNTY.
- Users MUST use the "Power cord & PoE Injector" shipped in the box with the LEVELONE 150MBPS WIRELESS POE AP. Use of other options will cause damage to the LEVELONE 150MBPS WIRELESS POE AP.
- 3. Users MUST power off the LEVELONE 150MBPS WIRELESS POE AP first before connecting the external antenna to it. Do not switch from built-in antenna to the external antenna from WEB management without physically attaching the external antenna onto the LEVELONE 150MBPS WIRELESS POE AP; otherwise, damage might be caused to the LEVELONE 150MBPS WIRELESS POE AP itself.

Product Package

WAB-6120 PoE Injector DC Adapter Clamp RJ-45 Ethernet Cable Quick installation Guide CD Manual

Note:

• Product CD contains Quick Installation Guide and User Manual!

Pole Mounting Ring

Power Cord & PoE Injector

 Users MUST use the "Power cord & PoE Injector" shipped in the box with the LEVELONE 150MBPS WIRELESS POE AP. Use of other options will cause damage to the LEVELONE 150MBPS WIRELESS POE AP.

Hardware Installation

Connect up

1. The bottom of the LEVELONE 150MBPS WIRELESS POE AP is a movable cover. Grab the cover and pull it back harder to take it out as the figure shown below.

Figure 3 Move the Cover

2. Plug a standard Ethernet cable into the RJ45 port.

Figure 4 Cable Connection

3. Slide the cover back to seal the bottom of the LEVELONE 150MBPS WIRELESS POE AP.

Figure 5 Seal the Bottom

4. Plug the power cord into the DC port of the PoE injector as the following right picture shows.

Figure 6 Connect to PoE Injector

5. Plug the other side of the Ethernet cable as shown in Step 3 into the PoE port of the PoE injector and get the complete set ready.

Figure 7 Complete Set

Pole Mounting

 Turn the LEVELONE 150MBPS WIRELESS POE AP over. Put the pole mounting ring through the middle hole of it. Note that you should unlock the pole mounting ring with a screw driver before putting it through LEVELONE 150MBPS WIRELESS POE AP as the following right picture shows.

Figure 8 Pole Mounting – Step 1

 Mount LEVELONE 150MBPS WIRELESS POE AP steadily to the pole by locking the pole mounting ring tightly.

Figure 9 Pole Mounting – Step 2

3. Now you have completed the hardware installation of LEVELONE 150MBPS WIRELESS POE

AP.

Figure 10 Pole Mounting – Step 3

Using the External Antenna

If you prefer to use the external antenna with N-type connector for your application instead of the built-in directional antenna, please follow the steps below.

 Grab the black rubber on the top of LEVELONE 150MBPS WIRELESS POE AP, and slightly pull it up. The metal N-type connector will appear.

Figure 11 Move the Rubber

 Connect your antenna with the N-type connector on the top of LEVELONE 150MBPS WIRELESS POE AP.

- If you are going to use an external antenna on LEVELONE 150MBPS WIRELESS
 POE AP, get some cable in advance.
- Be aware of the force you use while connecting to the N-type connector, inappropriate force may damage the N-type connector!

Warning:

 Users MUST power off the LEVELONE 150MBPS WIRELESS POE AP first before connecting the external antenna to it. Do not switch from built-in antenna to the external antenna from WEB management without physically attaching the external antenna onto the LEVELONE 150MBPS WIRELESS POE AP; otherwise, damage might be caused to the LEVELONE 150MBPS WIRELESS POE AP itself.

Chapter 3 Basic Settings

Factory Default Settings

We'll elaborate the LEVELONE 150MBPS WIRELESS POE AP factory default settings. You can re-acquire these parameters by default. If necessary, please refer to the "<u>Restore Factory Default</u> <u>Settings</u>".

Table 1 LEVELONE 150MBPS WIRELESS POE AP Factory Default Settings

Features	5	Factory Default Settings
Usernam	ne	admin
Passwor	d	admin
Wireless	Device Name	apXXXXXX (X represents the last 6 digits of Ethernet MAC address)
Operatin	g Mode	AP
Data Rat	te	Auto
	IP Address	192.168.1.1
	Subnet Mask	255.255.255.0
LAN	Gateway	0.0.0.0
	Primary DNS Server	0.0.0.0
	Secondary DNS Server	0.0.0.0
Spanning	g Tree	Enable
802.11 N	lode	802.11b/g/n
Channel	Number	6
SSID		Wireless
Broadca	st SSID	Enable
HT Prote	ect	Disable
Data Rat	ie	Auto
Output P	ower	100% (Full)
Channel	Mode	20MHz
WMM		Enabled
RTS Thr	eshold (byte)	2346
Fragmer	ntation Length (byte)	2346
Beacon	Interval	100
DTIM Int	erval	1
Space in	Meter	0
Flow Co	ntrol by AP	Disable
Security		Open System

Encryptic	n	None
Wireless	Separation	Disable
Access C	Control	Disable
	Enable/Disable	Enable
	Read Community Name	Public
SINIVIE	Write Community Name	Private
	IP Address	0.0.0.0

System Requirements

Before configuration, please make sure your system meets the following requirements:

- A computer coupled with 10/ 100 Base-TX adapter;
- Configure the computer with a static IP address of 192.168.1.x, as the default IP address of LEVELONE 150MBPS WIRELESS POE AP is 192.168.1.1. (X cannot be 0, 1, nor 255);
- A Web browser on PC for configuration such as Microsoft Internet Explorer 6.0 or above, Netscape or Firefox.

How to Login the Web-based Interface

The LEVELONE 150MBPS WIRELESS POE AP provides you with user-friendly Web-based management tool.

Open Web browser and enter the IP address (Default: 192.168.1.1) of LEVELONE 150MBPS
 WIRELESS POE AP into the address field. You will see the login page as below.

Wireles	s Broadband Access Point
Name	admin
Password	Login Reset

Figure 12 Login Page

Enter the username (Default: admin) and password (Default: admin) respectively and click "Login" to login the main page of LEVELONE 150MBPS WIRELESS POE AP. As you can see, this management interface provides five main options in the black bar above, which are Status, System, Wireless, Management and Tools.

Statuc	System	Wireless	Management	Tools
Status	System	Witeless	Management	TOOIS
Information »	A 150 A			
	Informatio	n		
Connections	This page shows the cu	urrent status and some bas	ic settings of the device.	
Network Flow	1			20 ¹ 0
	System Informatio	n		
Bridge Table	Model Name			
ARP Table	Device Name	ap20fabc		
	MAC Address	00:19:70:20:	fa:bc	
DHCP Client List	Country/Region	United State	s	
	Firmware Version	2.0.1		
	LAN Settings			
	IP Address	192.168.1.1		
	Subnet Mask	255.255.255	5.0	
	Gateway IP Address	0.0.0.0		
	MAC Address	00:19:70:20:	fa:bc	

Figure 13 Main Page

Note:

• The username and password are case-sensitive, and the password should be no

more than 19 characters!

Basic System Settings

For users who use the LEVELONE 150MBPS WIRELESS POE AP for the first time, it is recommended that you begin configuration from "**Basic Settings**" in "**System**" shown below:

Status	System	Wireless	Management	Tools
Basic Settings »	Deale Ce	41.0.0.0		
' Settings(Bridge)	Basic Settings.	ttings		
^o Settings(Router)				
RADIUS Settings	Network Modes:	Bridge 💌		
Theorem Securitys	Device Name :	ap20fabc	(max. 15 characters and no spaces)	
Time Settings	Country/Region:	United States	×	
Firewall Settings		. <u></u>	x 7 <u>4</u> x	

Figure 14 Basic System Settings

Basic Settings

Network Mode: Specify the network mode, including Bridge and Router. It is easy to configure parameters in Bridge Mode; however, users must pay extra attention to the way they configure the device when it is set to Router Mode. For details, please refer to "**IP Settings (Router)**".

Device Name: Specify the device name, which is composed of no more than 15 characters with (0-9), (A-Z), (a-z) or (-).

<u>Country Region</u>: The availability of some specific channels and/or operational frequency bands is country dependent.

IP Settings (Bridge)

This is available only under Bridge network mode. Open "**IP Settings (Bridge)**" in "**System**" as below to configure the parameters for LAN which connects to the LAN port of LEVELONE 150MBPS WIRELESS POE AP. In this page, users may change the settings for IP Address, Subnet Mask, and DHCP Server.

Status	System	Wireless	Management	Tools
Basic Settings				
	Bridge IP S	ettings		
<pre>Settings(Bridge) >></pre>	Use this page to configur	e the parameters for loca	area network which connects to th	ne LAN port
Settings(Router)	of your Access Point. He	re you may change the se	etting for IP address, subnet mask,	DHCP.
RADIUS Settings	IP Address Assignm	ent		
	O Obtain IP Address Au	tomatically		
Time Settings	Use Fixed IP Address	a and a carry		
Firewall Settings	IP Address :	192.168.1.1		
	Subnet Mask :	255.255.255.0		
	Gateway Ip Address :	0.0.0		
	DNS 1:	0.0.0		
	DNS 2:	0.0.0		
	Spanning Tree:	Enabled	Disabled	

Figure 15 IP Settings (Bridge)

Obtain IP Address Automatically: If a DHCP server exists in your network, you can check this option, thus the LEVELONE 150MBPS WIRELESS POE AP is able to obtain IP settings automatically from that DHCP server.

Note: When the IP address of the LEVELONE 150MBPS WIRELESS POE AP is changed, the clients on the network often need to wait for a while or even reboot before they can access the new IP address. For an immediate access to the bridge, please flush the netbios cache on the client computer by running the "nbtstat –r" command before using the device name of the LEVELONE 150MBPS WIRELESS POE AP to access its Web Management page.

<u>Use Fixed IP Address</u>: Check this option. You have to specify a static IP address, subnet mask, default gateway and DNS server for LEVELONE 150MBPS WIRELESS POE AP manually. Make sure the specified IP address is unique on your network in order to prevent IP conflict.

Spanning Tree: Spanning Tree Protocol (STP) is a link management protocol for AP which provides path redundancy while preventing loops in a network. STP allows only one active path at a time between the access points but establish the redundant link as a backup if the initial link fails.

IP Settings (Router)

This is available only under Router mode. Open "IP Settings (Router)" in "System" below to Chapter 3 Basic Settings Page 18 configure the parameters of LEVELONE 150MBPS WIRELESS POE AP for accessing the Internet.

	System	Wireless	Management	Tools
Basic Settings	Router IP S	Settings		
P Settings(Bridge)	Use this page to config access method to Stati	ure the parameters for acc c IP, DHCP, PPPOE.	essing to the Internet. Here you ma	y change the
P Settings(Router) >>	WAN Settings:			
RADIUS Settings	WAN Access Type:	Static IP 💌		
Time Settings	IP Address :	192.168.0.99		
Firewall Settings	Subnet Mask:	255.255.255.0		
	Default Gateway :	192.168.0.254		
	DNS 1:	0.0.0		
	DNS 2:	0.0.0		
	LAN Settings:			
	IP Address ;	192.168.1.1		
	Subnet Mask :	255.255.255.0		

Figure 16 IP Settings (Router)

<u>WAN Settings</u>: Specify the Internet access method to Static IP, DHCP or PPPOE. Users must enter WAN IP Address, Subnet Mask, Gateway settings provided by your ISPs.

LAN Settings: When DHCP Server is disabled, users can specify IP address and subnet mask for LEVELONE 150MBPS WIRELESS POE AP manually. Make sure the specified IP address is unique on your network in order to prevent IP conflict. When DHCP Server is enabled, users may specify DHCP IP Address Range, DHCP Subnet Mask, DHCP Gateway and Lease Time (15-44640 minutes).

Warning:

- In AP mode, LEVELONE 150MBPS WIRELESS POE AP must establish connection with another wireless device before it is set to Router mode. In Router mode, it is impossible for users to access device via wired port, for WAN is on wired port and LAN is on wireless port. Users can access device through the wireless device connected with LEVELONE 150MBPS WIRELESS POE AP.
- In CPE mode, users can access LEVELONE 150MBPS WIRELESS POE AP via its wired port, for WAN is on wireless port and LAN is on wired port when device is set to

Router mode.

 Bridge mode and AP Repeater mode are similar to AP mode when device is set to Router mode; WAN is on wired port and LAN is on wireless port. Thus users must also connect LEVELONE 150MBPS WIRELESS POE AP with another wireless device before it is set to Router mode and access LEVELONE 150MBPS WIRELESS POE AP via the connected wireless device.

RADIUS Settings

RADIUS (Remote Authentication Dial-In User Service) is a server for remote user authentication and accounting; playing a central role in the network in providing the capabilities of authenticating, authorizing, accounting, auditing, alarming and etc. It allows an organization to maintain user profiles in a central database that all remote servers can share.

Status	System	Wireless	Management	Tools
Basic Settings		ttinge		
IP Settings(Bridge)	Use this page to set the	radius server settings.		
IP Settings(Router)				
RADIUS Settings >>	Authentication RAI	JIUS Server:		
Time Settings	P Address	1812		
Firewall Settings	Shared Secret			
-	Reauthentication Time :	3600	Seconds	
	Global-Key Update			
	every 3600 Secon	ds		
	○ every 1000 x1000	Packets		

Open "RADIUS Settings" in "System" to make RADIUS configuration.

Figure 1715 RADIUS Settings

Authentication RADIUS Server

This is for RADIUS authentication. It can communicate with RADIUS through IP Address, Port and

Shared Secret.

IP Address: Enter the IP address of the Radius Server;

Port: Enter the port number of the Radius Server;

<u>Shared Secret</u>: This secret, which is composed of no more than 31 characters, is shared by the LEVELONE 150MBPS WIRELESS POE AP and RADIUS during authentication.

<u>Re-authentication Time</u>: Set the time interval between two authentications.

<u>Global-Key Update</u>: Check this option and specify the time interval between two global-key updates.

Time Settings

Compliant with NTP, the LEVELONE 150MBPS WIRELESS POE AP is capable of keeping its time in complete accord with the Internet time. Make configuration in "**Time Settings**" from "**System**". To use this feature, check "**Enable NTP Client Update**" in advance.

Status	System	Wireless	Management	Tools			
Basic Settings	Time Or Wi						
P Settings(Bridge)	You can synchronize S	Time Settings You can synchronize System Log's time stamp with a public time server over the Internet.					
P Settings(Router)	Current Time :	Current Time : Yr 2000 Mon 1 Day 1 Hr 0 Mn 24 Sec 43					
RADIUS Settings	Time Zone Select :	(GMT)Greenwich Mean	I Time: Dublin, Edinburgh, Lisbon, Lon	don 💌			
A	Enable NTP client	update					
Time Settings >>	O NTP server :	192.5.41.41 - North Ar	merica. 😒				
		10000000000000000000000000000000000000					

Figure 18 Time Settings

Current Time

Display the present time in Yr, Mon, Day, Hr, Min and Sec.A

Time Zone Select

Select the time zone from the dropdown list.

NTP Server

Select the time server from the "**NTP Serve**r" dropdown list or manually input the IP address of available time server into "**Manual IP**".

Hit "Apply" to save settings.

Firewall Settings

The firewall is a system or group of systems that enforce an access control policy between two networks. It may also be defined as a mechanism used to protect a trusted network from an un-trusted network. LEVELONE 150MBPS WIRELESS POE AP has capabilities of Source IP Filtering, Destination IP Filtering, Source Port Filtering, Destination Port Filtering, Port Forwarding as well as DMZ. This is available only under Router Mode.

Source IP Filtering: The source IP filtering gives users the ability to restrict certain types of data packets from your local network to Internet through LEVELONE 150MBPS WIRELESS POE AP. Use of such filters can be helpful in securing or restricting your local network.

Status	System	Wireless	Management	Tools
Basic Settings	Source	DEiltoring		
P Settings(Bridge)	Entries in this table	are used to restrict certain to	voes of data packets from your local n	network to
^o Settings(Router)	Internet through th local network.	e Gateway. Use of such filter	s can be helpful in securing or restricti	ing your
RADIUS Settings		- ID Fillesia		
Time Settings	Local IP Address:	e iP Filtenng]	
Firewall Settings	Comment:		9-1	
Src IP Filtering »		Apply	Cancel	
Dest IP Filtering				
Src Port Filtering	Current Filter Tab	le:		-
Dest Port Filtering	Local IP	Address Com	ment select	Ealt
Port Forwarding		Delete Selected	Delete All Cancel	
3				

Figure 19 Source IP Filtering

Destination IP Filtering: The destination IP filtering gives you the ability to restrict the computers in LAN from accessing certain websites in WAN according to specified IP addresses. Check the "**Enable Source IP Filtering**" checkbox and enter the IP address of the clients to be restricted. Hit **Apply** to make the setting take effect.

Status	System	Wireless	Management	Tools
Basic Settings	Destinatio	on IP Filtering		
IP Settings(Bridge)	Entries in this table	are used to restrict the comp	d outers in LAN from accessing cert	ain websites in
IP Settings(Router)	WAN according to IF	Paddress.	-	
RADIUS Settings	Enable Destin	ation IP Filtering		
Time Settings	Destination IP Addre	ISS :]	
Firewall Settings				
Src IP Filtering		Apply	Cancel	
Dest IP Filtering 🐝	Current Filter Table	6:		
Src Port Filtering	Destination I	IP Address Com	ment Select	Edit

Figure 20 Destination IP Filtering

Source Port Filtering: The source port filtering enable you to restrict certain ports of data packets from your local network to Internet through LEVELONE 150MBPS WIRELESS POE AP. Use of such filters can be helpful in securing or restricting your local network.

Status	System	Wireless	Managen	nent	Tools
Basic Settings	Source	Dort Filtoring			
Settings(Bridge)	Entries in this table	e are used to restrict certain po	orts of data packets fr	rom vour local netwo	rk to
Settings(Router)	Internet through the local network.	he Gateway. Use of such filters	can be helpful in sec	curing or restricting y	our
RADIUS Settings		no Red Ellering			
Time Settings	Port Range :				
Firewall Settings	Protocol :	Both 😒	1		
Src IP Filtering	Comment .				1
Dest IP Filtering		Apply Changes	s Cancel		
Src Port Filtering w	Current Filter Ta	ble :		- AL	
Dest Port Filtering	Source Por	rt Range Protocol	Comment	Select Ed	lit
Port Forwarding		Delete Selected	Delete All Cano	cel	
DM7					

Figure 21 Source Port Filtering

Destination Port Filtering: The destination port filtering enables you to restrict certain ports of data packets from your local network to Internet through LEVELONE 150MBPS WIRELESS POE AP. Use of such filters can be helpful in securing or restricting your local network.

3	8				
Status	System	Wireless	Manageme	nt	Tools
Basic Settings	Dectinati	on Port Filtori	na		
IP Settings(Bridge)	Entries in this table	are used to restrict certain po	ing orts of data packets from	n your local network	< to
IP Settings(Router)	Internet through the local network.	ne Gateway. Use of such filters	can be helpful in securi	ng or restricting you	31
RADIUS Settings	Enable Desti	nation Port Filtering			
Time Settings	Port Range :				
Firewall Settings	Protocol : Comment :	Both 😒	1		
Src IP Filtering					
Dest IP Filtering		Apply Change	s Cancel		
Src Port Filtering	Current Filter Tab	ole :			
Dest Port Filtering »	Dest Port	Range Protocol	Comment	Select Edit	
Dest Fastureding		1 211 21 1 1		1	

Figure 22 Destination Port Filtering

Port Forwarding: The port forwarding allows you to automatically redirect common network services to a specific machine behind the NAT firewall. These settings ne are only necessary if you wish to host some sort of server like a web server or mail server on the private local network behind LEVELONE 150MBPS WIRELESS POE AP's NAT firewall.

Status	System	Wireless	Management	Tools
Basic Settings	Port For	warding		
IP Settings(Bridge)	Entries in this tab machine behind t	e allow you to automatically re he NAT firewall. These settings :	direct common network services to a are only necessary if you wish to ho	a specific st some sort
IP Settings(Router)	of server like a w NAT firewall.	eb server or mail server on the	private local network behind your G	Jateway's
RADIUS Settings	Cooble Port	Forwardina		
Time Settings	IP Address :]	
Firewall Settings	Protocol:	Bath		
Src IP Filtering	Comment:			
Dest IP Filtering				
Src Port Filtering		Apply	Cancel	
Dest Port Filtering	Current Port For	warding Table:	commont Coloct	Exist
Port Converding		ness rividedi Politikaligi	e comment Select	Lun

Figure 23 Port Forwarding

DMZ: A Demilitarized Zone is used to provide Internet services without sacrificing unauthorized access to its local private network. Typically, the DMZ host contains devices accessible to the Internet traffic, such as Web (HTTP) servers, FTP servers, SMTP (e-mail) servers and DNS servers.

				Logout
Status	System	Wireless	Management	Tools
Basic Settings	DMZ			
IP Settings(Bridge)		one is used to provide Internet	t services without sacrificing unautho	rized access
IP Settings(Router)	to its local private such as Web (HTT	network. Typically, the DMZ h P) servers, FTP servers,SMTP	nost contains devices accessible to In ? (e-mail) servers and DNS servers.	ternet traffic,
RADIUS Settings	Enable DMZ			
Time Settings	DMZ Host IP Addre	0.0.0.0		C.
Firewall Settings		Apply Chang	es Cancel	
Src IP Filtering				
Dest IP Filtering				
Src Port Filtering				
Dest Port Filtering				
Port Forwarding				
DM7				

Figure 24 DMZ

Basic Wireless Settings

Open "Basic Settings" in "Wireless" as below to make basic wireless configuration.

Status	System	Wireless	Management	Tools
Basic Settings »				
Security Settings	Wireless Bas	ic Settings	sess LAN clients which may connec	t to your
Advanced Settings	Access Point. Here you may	change wireless mod	e as well as wireless network parar	neters.
Access Control	Disable Wireless LAN I	nterface		
MIDE Carthan	Wireless Mode :	AP	Site Survey	
wbs Settings	Wireless Network Name (SSID):	Wireless		
	Broadcast SSID:	💿 Enabled 🔘 I	Disabled	
	802.11 Mode :	802.11b/g/n 💉		
	HT protect:	🔿 Enabled 💿 I	Disabled	
	Channel Number:	6 💌		
	Antenna:	Internal (8 dBi)	O External (N-Type)	
	Output Power :	Full 💉		
	Data Rate:	Auto		
	Channel mode:	20MHZ 💙		
	Extension channel protection	None 💌		

Figure 16 Basic Wireless Settings

Disable Wireless LAN Interface

Check this option to disable WLAN interface, then the wireless module of LEVELONE 150MBPS WIRELESS POE AP will stop working and no wireless device can connect to it.

Wireless Mode

Four operating modes are available on LEVELONE 150MBPS WIRELESS POE AP.

<u>Wireless Client</u>: The LEVELONE 150MBPS WIRELESS POE AP is able to connect to the AP and thus join the wireless network around it.

<u>AP</u>: The LEVELONE 150MBPS WIRELESS POE AP establishes a wireless coverage and receives connectivity from other wireless devices.

Bridge: The LEVELONE 150MBPS WIRELESS POE AP establishes wireless connectivity with other APs by keying in remote MAC address. Please refer to the "WDS Setting" for detailed configuration.

<u>AP Repeater</u>: The LEVELONE 150MBPS WIRELESS POE AP servers as AP and Bridge concurrently. In other words, the LEVELONE 150MBPS WIRELESS POE AP can provide connectivity services for CPEs under WDS mode.

• Wireless Network Name (SSID)

Chapter 3 Basic Settings

This wireless network name is shared among all associated devices in your wireless network. Keep it identical on all those devices. Note that the SSID is case-sensitive and can not exceed 32 characters.

Broadcast SSID

Under AP mode, hiding network name is necessary when you are in a wireless environment that may have potential risk. By disabling broadcast SSID, the STA can not scan and find LEVELONE 150MBPS WIRELESS POE AP, so that malicious attack by some illegal STA could be avoided.

802.11 Mode

The LEVELONE 150MBPS WIRELESS POE AP can communicate with wireless devices of 802.11b/g or 802.11b/g/n. You can also select Auto and make it work under an appropriate wireless mode automatically.

HT Protect

Enable HT (High Throughput) protect to ensure HT transmission with MAC mechanism. Under 802.11n mode, wireless client can be divided into HT STA and Non-HT STA, among which the one with HT protect enabled gets higher throughput.

Channel Number

Channel varies much as the available band differs from country to country. Select a proper operating channel in the drop-down list according to your situation.

Antenna

By default, LEVELONE 150MBPS WIRELESS POE AP uses its built-in antenna for directional transmission; however, if you prefer to use an external antenna for your case-dependent applications, you can switch from "Internal (8 dBi)" to "External (N-Type)".

Note:

 You are able to choose "External (N-Type)" only when you have well done installing the external antenna; otherwise, it might damage LEVELONE 150MBPS WIRELESS POE AP itself.

Output Power

Specify the signal transmission power. The higher the output power is, the wider the signal can cover, but the power consumption will be greater accordingly. Usually **"Full**" is preferred.

Data Rate

Usually "**Auto**" is preferred. Under this rate, the LEVELONE 150MBPS WIRELESS POE AP will automatically select the highest available rate to transmit. In some cases, however, like where there is no great demand for speed, you can have a relatively-low transmit rate for compromise of a long distance.

Channel Mode

Four levels are available: 5MHz, 10MHz, 20MHz and 40MHz. The last one can enhance data throughput, but it takes more bandwidth, thus it might cause potential interference.

Extension Channel Protection Mode

This is to avoid conflict with other wireless network and boost the ability of your device to catch all 802.11g transmissions. However, it may decrease wireless network performance. Compared to CTS-Self; the transmission amount of CTS-RTS is much lower.

Enable MAC Clone

Available only under wireless client mode, it hides the MAC address of the AP while displays the one of associated wireless client or the MAC address designated manually.

Site Survey

Under wireless client mode, the LEVELONE 150MBPS WIRELESS POE AP is able to perform site survey, through which, information on the available access points will be detected.

Open "Basic Settings" in "Wireless", by clicking the "Site Survey" button beside "Wireless Mode" option, the wireless site survey window will popup with a list of available wireless networks around. Select the AP you would like to connect and click "Selected" to establish connection. The wireless site survey window can also be viewed by opening the "Site Survey" page in "Tools".

elect	SSID	Channel	MAC Address	Wireless Mode	Signal	Security
0	Z-Com_W32_204	1	00:15:eb:00:02:04	b/g	-86	NONE
0	Z-Com_W32_204_WPA2	1	0e:15:eb:00:02:04	b/g	-87	WPA2

Figure 17 Site Survey

Chapter 4 Advanced Settings

Advanced Wireless Settings

Open "Advanced Settings" in "Wireless" to make advanced wireless settings.

				Logout
Status	System	Wireless	Management	Tools
Basic Settings	WMM Support:	🖲 Enabled 🔵 Disabled		
Security Settings	A-MPDU aggregation A-MSDU aggregation	 Enabled Disabled Enabled Disabled 		
Advanced Settings »	Short GI	💿 Enabled 🔘 Disabled		
Access Control	RTS Threshold: Fragment Threshold:	2346 (1-2346) 2346 (256-2346)		
WDS Settings	Beacon Interval:	100 (20-1024 ms)		
	DTIM Interval:	1 (1-255)		
	Preamble Type:	🔿 Long 💿 Short		
	IGMP Snooping:	💿 Enabled 🔘 Disabled		
	Wireless Separation:	O Enabled 💿 Disabled		
	RIFS:	📀 Enabled 🔘 Disabled		
	Link Intergration:	🔘 Enabled 💿 Disabled		
	Max. Station Num:	32 (0-32)		
	Space In Meter:	J	0 (0-100	1000m)
	ACK Timeout:	100 (100-767 microsecond	Y	

Figure 18 Advanced Wireless Settings

WMM Support

WMM (Wi-Fi Multimedia) is a subset of 802.11e. It allows wireless communication to define a priority limit on the basis of data type under AP mode only, thus those time-sensitive data, like video/audio data, may own a higher priority than common one. To enable WMM, the wireless client should also support it.

A-MPDU/A-MSDU Aggregation

The data rate of your AP except wireless client mode, could be enhanced greatly with this option enabled; however, if your wireless clients don't support A-MPDU/A-MSDU aggregation, it is not recommended to enable it.

Short GI

Under 802.11n mode, enable it to obtain better data rate if there is no negative compatibility issue.

RTS Threshold

The LEVELONE 150MBPS WIRELESS POE AP sends RTS (Request to Send) frames to certain receiving station and negotiates the sending of a data frame. After receiving an RTS, that STA responds with a CTS (Clear to Send) frame to acknowledge the right to start transmission. The setting range is 0 to 2346 in byte. Setting it too low may result in poor network performance. Leave it at its default of 2346 is recommended.

Fragmentation Length

Specify the maximum size in byte for a packet before data is fragmented into multiple packets. Setting it too low may result in poor network performance. Leave it at its default of 2346 is recommended.

Beacon Interval

Specify the frequency interval to broadcast packets. Enter a value between 20 and 1024.

DTIM Interval

DTIM, which stands for Delivery Traffic Indication Message, is contained in the data packets. It is for enhancing the wireless transmission efficiency. The default is set to 1. Enter a value between 1 and 255.

Preamble Type

It defines some details on the 802.11 physical layer. "Long" and "Short" are available.

IGMP Snooping

IGMP snooping is the process of listening to IGMP network traffic. By enabling IGMP snooping, the AP will listen to IGMP membership reports, queries and leave messages to identify the ports that are members of multicast groups. Multicast traffic will only be forwarded to ports identified as members of the specific multicast group or groups.

• Wireless Separation

Wireless separation is an ideal way to enhance the security of network transmission. Under the mode except wirless client mode, enable "Wireless Separation" can prevent the communication among associated wireless clients.

RIFS

RIFS (Reduced Interframe Spacing) is a means of reducing overhead and thereby increasing network efficiency.

Link Integration

Available under AP/Bridge/AP repeater mode, it monitors the connection on the Ethernet port by checking "**Enabled**". It can inform the associating wireless clients as soon as the disconnection occurs.

Max. Station Num

Available only under AP mode, it defines the maximum amount of wireless clients allowed to be connected.

• Space in Meter/ACK Timeout

To decrease the chances of data retransmission at long distance, the LEVELONE 150MBPS WIRELESS POE AP can automatically adjust proper ACK timeout value by specifying distance of the two nodes.

Flow Control

It allows the administrator to specify the incoming and outgoing traffic limit by checking "Enable Traffic Shaping". This is only available in Router mode.

Note:

 We strongly recommend you leave most advanced settings at their defaults except "Distance in Meters" adjusted the parameter for real distance; any modification on them may negatively impact the performance of your wireless network.

Wireless Security Settings

To prevent unauthorized radios from accessing data transmitting over the connectivity, the LEVELONE 150MBPS WIRELESS POE AP provides you with rock solid security settings.

Security Settings

Open "Security Settings" in "Wireless" as below:

Status	System	Wireless	Management	Tools
Basic Settings	Convertine Con			
Security Settings **	Custom WLAN's security	profile settings.		
Advanced Settings	2 .			
Access Control	Network Authentication:	Open System 🚩		
Access Control	Data Encryption:	None 💌		
WDS Settings	Кеу Туре:	Hex 😒		
	Default Tx Key:	Key 1 😒		
	WEP Passphrase:		Generate Keys	
	Encryption Key 1:			
	Encryption Key 2:			
	Encryption Key 3:	9		
	Encryption Key 4:			

Figure 19 Security Settings

Network Authentication

Open System: It allows any device to join the network without performing any security check.

Shared Key: Data encryption and key are required for wireless authentication.

Legacy 802.1x: As an IEEE standard for port-based Network Access Control, it provides the rights to access the wireless network and wired Ethernet. With User and PC identity, centralized authentication as well as dynamic key management, it controls the security risk of wireless network to the lowest. To serve the 802.1x, at least one EAP type should be supported by the RADIUS Server, AP and wireless client.

<u>WPA with RADIUS</u>: With warrant (username, password and etc.) offered by user, this kind of authentication can be realized with specific RADIUS server. This is the common way to be adopted in large enterprise network.

WPA2 with RADIUS: As a new version of WPA, only all the clients support WPA2, can it be available. If it is selected, AES encryption and RADIUS server is required.

WPA&WPA2 with RADIUS: It provides options of WPA (TKIP) or WPA2 (AES) for the client. If it is selected, the data encryption type must be TKIP + AES and the RADIUS server must be set.

WPA-PSK: It is a simplified WPA mode with no need for specific authentication server. In this so-called WPA Pre-Shared Key, all you have to do is just pre-enter a key in each WLAN node and this is the common way to be adopted in large and middle enterprise as well as residential network.

WPA2-PSK: As a new version of WPA, only all the clients support WPA2, can it be available. If it is selected, the data encryption can only be AES and the passphrase is required.

WPA-PSK&WPA2-PSK: It provides options of WPA (TKIP) or WPA2 (AES) encryption for the client. If it is selected, the data encryption can only be TKIP + AES and the passphrase is required.

Data Encryption

If data encryption is enabled, the key is required and only sharing the same key with other wireless devices can the communication be established.

None: Available only when the authentication type is open system.

64 bits WEP: It is made up of 10 hexadecimal numbers.

128 bits WEP: It is made up of 26 hexadecimal numbers.

152 bits WEP: It is made up of 32 hexadecimal numbers.

TKIP: Temporal Key Integrity Protocol, which is a kind of dynamic encryption, is co-used with WPA-PSK, etc.

AES: Advanced Encryption Standard, it is usually co-used with WPA2-PSK, WPA, WPA2, etc.

TKIP + AES: It allows for backwards compatibility with devices using TKIP.

Note:

- We strongly recommend you enable wireless security on your network!
- Only setting the same Authentication, Data Encryption and Key in the LEVELONE 150MBPS WIRELESS POE AP and other associated wireless devices, can the communication be established!

Access Control

The Access Control appoints the authority to wireless client on accessing LEVELONE 150MBPS WIRELESS POE AP, thus a further security mechanism is provided. This function is available only under AP mode.

Open "Access Control" in "Wireless" as below.

				Logout
Status	System	Wireless	Management	Tools
Basic Settings	Wireless	Access Contr	ol	
Advanced Settings	If you choose 'Allowe control list will be abl wireless clients on th	d Listed', only those clients e to connect to your Access e list will not be able to conn	whose wireless MAC addresses are i Point. When 'Deny Listéd' is selected ect the Access Point.	n the access I, these
Access Control »	Access Control Mode MAC Address:	Disable		
		(Apply) (Cancel	
		MAC Address	Select E	dit
		Delete Selected	Delete All Refresh	

Figure 20 Access Control

Access Control Mode

If you select "**Allow Listed**", only those clients whose wireless MAC addresses are in the access control list will be able to connect to your AP. While when "**Deny Listed**" is selected, those wireless clients on the list will not be able to connect the AP.

MAC Address

Enter the MAC address of the wireless client that you would like to list into the access control list, click "**Apply**" then it will be added into the table at the bottom.

Delete Selected/All

Check the box before one or more MAC addresses of wireless client(s) that you would like to cancel, and click "**Delete Selected**" or "**Delete All**" to cancel that access control rule.

WDS Settings

Extend the range of your network without having to use cables to link the Access Points by using the Wireless Distribution System (WDS): Simply put, you can link the Access Points wirelessly. Open "**WDS Settings**" in "**Wireless**" as below:

Status	System	Wireless	Management	Tools		
Basic Settings	WDS Setting					
Security Settings	wbs setting	5				
dvanced Settings	Wireless Distribution System uses wireless media to communicate with other APs, like the Ethernet does. To do this, you must set these APs in the same channel and set MAC addresses of other APs which you want to communicate with in the table and then enable the WDS. This function can work only in Bridge and AP. Repeater mode.					
Access Control						
WDS Settings >>	Local MAC Address:	00:19:70:20:fa:bc				
home and a second secon	Remote AP MAC Address1:					
	Remote AP MAC Address2:					
	Remote AP MAC Address3:					
	Remote AP MAC Address4:					
	_					
		Apply Car	icel			

Figure 30 WDS Settings

Enter the MAC address of another AP you wirelessly want to connect to into the appropriate field and

click "Apply" to save settings.

• WDS Settings is available only under Bridge and AP Repeater Mode.

Chapter 5 Management

SNMP Management

The LEVELONE 150MBPS WIRELESS POE AP supports SNMP for convenient remote management. Open "**SNMP Configuration**" in "**Management**" shown below. Set the SNMP parameters and obtain MIB file before remote management.

Status	System	Wireless	Management	Tools
SNMP Configuration »	SNMP Co	onfiguration		
Password Settings	Use this page to set	SNMP settings.		
Firmware Upload				
Configuration File	🗹 Enable SNM	Р		
	Protocol Version	V3 💌		
	Server Port	161		
	Get Community	public		
	Set Community	private		
	Trap Destination	0.0.0.0		
	Trap Community	public		
	Configure SNMF	v3 User Profile		
	-			

Figure 31 SNMP Configuration

Enable SNMP

Check this box to enable SNMP settings.

Protocol Version

Select the SNMP version, and keep it identical on the LEVELONE 150MBPS WIRELESS POE AP and the SNMP manager.

Server Port

Change the server port for a service if needed; however you have to use the same port to use that service for remote management.

Get Community

Specify the password for the incoming Get and GetNext requests from the management station. By Chapter 5 Management Page 37 default, it is set to public and allows all requests.

Set Community

Specify the password for the incoming Set requests from the management station. By default, it is set to private.

Trap Destination

Specify the IP address of the station to send the SNMP traps to.

Trap Community

Specify the password sent with each trap to the manager. By default, it is set to public and allows all requests.

Configure SNMPv3 User Profile

For SNMP protocol version 3, you can click "Configure SNMPv3 User Profile" in blue to set the details

of SNMPv3 user. Check "Enable SNMPv3 Admin/User" in advance and make further configuration.

				Logout C
Status	System	Wireless	Management	Tools
SNMP Configuration >>	Configure SNMPv3 L	Iser Profile		
Password Settings	Enable SNMPv3A	dmin		
Firmware Upload	User Name:	SNMPv3Admin]	
Configuration File	Password: Confirm Password:	•••••		
	Access Type:	Read/Write 💌	1.	
	Authentication Protocol:	MD5 💌		
	, may r moon.	none S		
	Enable SNMPv3U	ser		
	User Name:	SNMPv3User		
	Password;			
	Confirm Password:			
	Access Type:	Read Only 👻		
	Authentication Protocol:	MD5 💌		
	Privacy Protocol :	Nona		

Figure 32 Configure SNMPv3 User Profile

User Name

Specify a user name for the SNMPv3 administrator or user. Only the SNMP commands carrying this user name are allowed to access the LEVELONE 150MBPS WIRELESS POE AP.

Password

Specify a password for the SNMPv3 administrator or user. Only the SNMP commands carrying this

password are allowed to access the LEVELONE 150MBPS WIRELESS POE AP.

Confirm Password

Input that password again to make sure it is your desired one.

• Access Type

Select "Read Only" or "Read and Write" accordingly.

Authentication Protocol

Select an authentication algorithm. SHA authentication is stronger than MD5 but is slower.

Privacy Protocol

Specify the encryption method for SNMP communication. None and DES are available.

None: No encryption is applied.

DES: Data Encryption Standard, it applies a 58-bit key to each 64-bit block of data.

Password

From "**Password Settings**" in "**Management**", you can change the password to manage your LEVELONE 150MBPS WIRELESS POE AP.

Enter the new password respectively in "**New Password**" and "**Confirm Password**" fields; click "**Apply**" to save settings.

Status	System	Wireless	Management	Tools
NMP Configuration	Passwor	d Settings		
Password Settings >>	Use this page to s	et the password of this Access	Point.	
Firmware Upload				- ii
Configuration File	New Password:	t:		
	-			
		Apply	Cancel	

Figure 33 Password

The password is case-sensitive and its length can not be exceed 19 characters!

Upgrade Firmware

Open "Firmware Upload" in "Management" and follow the steps below to upgrade firmware locally or remotely through LEVELONE 150MBPS WIRELESS POE AP's Web:

Status	System	Wireless	Management	Tools
SNMP Configuration	Upgrade	Firmware		201
Fassword Settings	This page allows yo	ou upgrade the device firmwa	re to a new version. Please do not po	ower off the
Firmware Upload **	This page allows yo device during the u	ou upgrade the device firmwa pload because it may crash ti	re to a new version. Please do not po he system.	ower off the

Figure 34 Upgrade Firmware

- Click "Browse" to select the firmware file you would like to load;
- Click "Upload" to start the upload process;
- Wait a moment, the system will reboot after successful upgrade.

Note:

• Do NOT cut the power off during upgrade, otherwise the system may crash!

Backup/ Retrieve Settings

It is strongly recommended you back up configuration information in case of something unexpected. If tragedy hits your device, you may have an access to restore the important files by the backup. All these can be done by the local or remote computer.

Open "Configuration File" in "Management" as below:

Status	System,	Wireless	Management	Tools
NMP Configuration	Configur	ation File		
Password Settings	This page allows yo	ou to save current settings to a	a file or load the settings from the fil	e which was
Firmware Upload	saved previously. I the device.	Besides, you could reset the c	urrent configuration to factory defaul	t or reboot
Configuration File	Save Settings to File	e: Save		
Configuration File 😕	Save Settings to Fil Load Settings from	e: Save File:	(浏览) Upload	

Figure 35 Backup/Retrieve Settings

• **Backup Settings**

By clicking "Save", a dialog box will pop up. Save it, then the configuration file like ap.cfg will be saved to your local computer.

Retrieve Settings e

By clicking "Browse", a file selection menu will appear, select the file you want to load, like ap.cfg;

Click "Upload" to load the file. After automatically rebooting, new settings are applied.

Restore Factory Default Settings

The LEVELONE 150MBPS WIRELESS POE AP provides two ways to restore the factory default

settings:

Restore factory default settings via Web

From "Configuration File", clicking "Reset" will eliminate all current settings and reboot your device,

then default settings are applied.

Status	System	Wireless	Management	Tools
NMP Configuration	Configura			
Password Settings		o save current settings to a	a file or load the settings from the file	e which was
Firmware Upload	saved previously. Bes the device.	ides, you could reset the cu	urrent configuration to factory defaul	t or reboot
		(Favo)		
Configuration File »	Save Settings to File.	Save		
Configuration File >>	Load Settings from File	save	[] [] [] [] [] [] [] [] [] []	

Figure 21 Restore Settings

Restore factory default settings via Reset Button

If software in LEVELONE 150MBPS WIRELESS POE AP is unexpectedly crashed and no longer reset the unit via Web, you may do hardware reset via the reset button. Press and hold the button for at least 5 seconds and then release it until the PWR LED gives a blink.

Reboot

You can reboot your LEVELONE 150MBPS WIRELESS POE AP from "Configuration File" in "Management" as below:

Click "**Reboot**" and hit "**Yes**" upon the appeared prompt to start reboot process. This takes a few minutes.

Status	System	Wireless	Management	Tools
SNMP Configuration	Configura	tion Eile		
Password Settings		to save current settings to	a file or load the settings from the fil	e which was
Firmware Upload	saved previously. Bes	sides, you could reset the c	current configuration to factory defaul	t or reboot
Firmware Upload	saved previously. Bes the device. Save Settings to File:	sides, you could reset the c	urrent configuration to factory defaul	t or reboot
Firmware Upload	saved previously. Bes the device. Save Settings to File: Load Settings from Fil	e:	current configuration to factory defaul 阅览 Upload	t or reboot
Firmware Upload	saved previously. Bes the device. Save Settings to File: Load Settings from Fil Reset Settings to Defa	e:	current configuration to factory defaul 阅览	t or reboot

System Log

System log is used for recording events occurred on the LEVELONE 150MBPS WIRELESS POE AP,

including station connection, disconnection, system reboot and etc.

Open "System Log" in "Tools" as below.

Status	System		Wireless	Management	Tool
System Log »	Swata				
Site Survey	Syste	т сод	4 - 1		
Ding Watchdog	Use this pag	je to set remo	ote log server and show th	e system log.	5
Ping watchdog	Remote S	vslog Serv	er:		
	-				
	Enable	Remote Syste	og		
	IP Address		0.0.0		
	Port		514		
		Time	Apply Ca	incel	
	#	nine	Source	message	
		00:00:18	00.19:70:27:EB:E7	WLAN Service stopped.	
	1	00:00:40	The second		
	2	00:00:18	00:19:70:27:EB:E7	WLAN service stated.	
	2	00:00:18	00:19:70:27:EB:E7 00:19:70:27:EB:E7	WLAN service started.	
	2 3 4	00:00:18 00:00:18 00:00:18 00:00:18	00:19:70:27:EB:E7 00:19:70:27:EB:E7 00:19:70:27:EB:E7 00:19:70:27:EB:E7	WLAN service started. WLAN service started.	
	2 3 4 5	00:00:18 00:00:18 00:00:18 00:00:18 00:00:18	00:19:70:27:EB:E7 00:19:70:27:EB:E7 00:19:70:27:EB:E7 00:19:70:27:EB:E7 00:19:70:27:EB:E7	WLAN service stopped. WLAN service started. WLAN service stopped.	
	1 2 3 4 5 6	00:00:18 00:00:18 00:00:18 00:00:18 00:00:18 00:00:19	00:19:70:27:EB:E7 00:19:70:27:EB:E7 00:19:70:27:EB:E7 00:19:70:27:EB:E7 00:19:70:27:EB:E7	WLAN service stopped. WLAN service stopped. WLAN service stopped. WLAN service stopped. WLAN service started.	

Figure 38 System Log

Remote Syslog Server

Enable Remote Syslog: Enable System log to alert remote server.

IP Address: Specify the IP address of the remote server.

Port: Specify the port number of the remote server.

Site Survey

Only available under Wireless Client mode, site survey allows you to scan all the APs within coverage.

Open "Site Survey" in "Tools" as below and select the desired AP to connect.

	Wire	less Bro	oadban	d Access P	oint		Logou
Status	System		Wireles	s Mai	nagement		Tools
System Log	Wire	less Sit	e Surv	vey			
Ping Watchdog	This page could choo	provides tool to ose to connect i	scan the wire t manually wh	eless network. If any Ad en client mode is enabl	ccess Point or ed.	IBSS is found	d, you
Ping Watchdog	This page could choo Select	provides tool to ose to connect i SSID	c scan the wire t manually wh Channel	eless network, If any Ad en client mode is enabl MAC Address	wireless Mode	IBSS is found Signal Strength	d, you Security
Ping Watchdog	This page could choo Select	provides tool to ose to connect i SSID MISVOIP	c scan the wire t manually wh	eless network. If any Ad en client mode is enabl MAC Address 00:60:b3:35:92:59	Wireless Mode b/g	IBSS is found Signal Strength -68	d, you Security WEP
Ping Watchdog	Select	provides tool to ose to connect i SSID MISVOIP 7F-MIS	Channel	eless network. If any Ar en client mode is enabl MAC Address 00:60:b3:35:92:59 00:0f:b5:03:ff:82	Wireless Mode b/g b/g	Signal Strength -68 -47	Security WEP NONE
Ping Watchdog	Select	provides tool to ose to connect i SSID MISVOIP 7F-MIS sirius	Channel 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	eless network. If any Ar en client mode is enabl MAC Address 00:60:b3:35:92:59 00:0f:b5:03:ff:82 00:21:a0:03:b8:c0	Wireless Mode b/g b/g b/g	Signal Strength -68 -47 -95	Security WEP NONE WPA
Ping Watchdog	Select	SSID MISVOIP 7F-MIS sirius MIS-AP1	Channel 1 11 11 11 10	eless network. If any Aven client mode is enable MAC Address 00:60:b3:35:92:59 00:0f:b5:03:ff:82 00:21:a0:03:b8:c0 00:07:40:e8:ae:8e	Wireless Mode b/g b/g b/g b/g b/g	Signal Strength -68 -47 -95 -69	Security WEP NONE WPA NONE

Ping Watch Dog

If you mess your connection up and cut off your ability the log in to the unit, the ping watchdog has a chance to reboot due to loss of connectivity.

	1944		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	100
Status	System	Wireless	Management	Tools
System Log				
Site Survey	Ping Watchd	og		
	This page provides a tool to specified value, the watchdo	configure the Ping W	/atchdog. If the failcount of the Pin rice.	g reaches to a
Ping Watchdog >>				
	Enable Ping Watchdog			
	IR Address to Disc	192.168.1.10		
	IP Address to Ping			
	Ping Interval	300 s	seconds	
	Ping Interval Startup Delay	300 s	seconds seconds	

Ping Watchdog

<u>Enable Ping Watchdog</u>: To activate ping watchdog, check this checkbox.

IP Address to Ping: Specify the IP address of the remote unit to ping.

Ping Interval: Specify the interval time to ping the remote unit.

Startup Delay: Specify the startup delay time to prevent reboot before the LEVELONE 150MBPS

WIRELESS POE AP is fully initialized.

Failure Count To Reboot: If the ping timeout packets reached the value, the LEVELONE

150MBPS WIRELESS POE AP will reboot automatically.

Chapter 6 Status

View LEVELONE 150MBPS WIRELESS POE AP Basic Information

Open "**Information**" in "**Status**" to check the basic information of LEVELONE 150MBPS WIRELESS POE AP, which is read only. Click "**Refresh**" at the bottom to have the real-time information.

Status	System	Wireless	Management	Tools
Information >>				
hannahannahan)	Information	1 I		
Connections	This page shows the cu	rrent status and some basic	settings of the device.	
Network Flow				
Hetwork From	System Informatio	0		
Bridge Table	System monutes			
ADD T-LL	Model Name	an 20febe		
ARP Table	MAC Address	00:19:70:20:fs	the	
DHCP Client List	Country/Region	United States		
	Firmware Version	2.0.1		
	LAN Settings			
	IP Address	192.168.1.1		
	Subnet Mask	255.255.255.0)	
	Gateway IP Address	0.0.0		
	MAC Address	00:19:70:20:fa	a:bc	

Figure 22 Basic Information

View Association List

Open "Association List" in "Connection" from "Status" to check the information of associated wireless

clients. All is read only. Click "Refresh" at the bottom to view the current association list.

Status	System	Wireless	Mar	nagement	Tools
Information					
Connections »	Association This table shows the MAG	LISt Address, IP Address an	nd RSSI for ea	ch associated wireless clien	ıt.
Connections » Network Flow	Association This table shows the MAG	List Address, IP Address a	nd RSSI for ea	ch associated wireless clien	ıt
Connections >> Network Flow	Association This table shows the MAG MAC Address	List Address, IP Address an IP Address	nd RSSI for ea	ch associated wireless clien Association Time	1t.

View Network Flow Statistics

Open "Network Flow" in "Status" to check the data packets received on and transmitted from the

wireless and Ethernet ports. Click "Refresh" to view current statistics.

Status	System	Wi	reless	Management	Tools
Information	Netwo	гк н іоw	Statistics		
Connections	Ethernet netwo	vorks.	inters for transmission and	a reception regarding to wireles	is and
Network Flow >>	Poll Interval :	5	(0-65534) sec Set 1	Interval Stop	
Bridge Table	Wire	less LAN			
	1		Received	Transmitted	
ARP Table	Unic	cast Packets	121	0	
HCP Client List	Broa	adcast Packets	116	2	
	Mult	ticast Packets	264	0	
	Tota	al Packets	501	2	
	Tota	al Bytes	50332	170085	
	Ether	rnet			
			Received	Transmitted	
	Tota	al Packets	4608	6896	
	Tota	al Bytes	387447	998514	

Figure 24 Network Flow Statistics

Poll Interval

Specify the refresh time interval in the box beside "**Poll Interval**" and click "**Set Interval**" to save settings. "**Stop**" helps to stop the auto refresh of network flow statistics.

View Bridge Table

Open "Bridge Table" in "Status" as below. Click "Refresh" to view current connected status..

Status	System	Wirele	55	Management	Tools
Information	Deides T	ahle.			
Connections	This table shows b	adre oridge table.			
Network Flow		117			
Prideo Toblo	MAC	Address	Interface	Ageing Time	er(s)
bridge rable s	00-0c-7	76-59-86-e2	LAN	0.00	
ARP Table	00-19-	70-20-fa-bc	Bridge		

View ARP Table

Open "ARP Table" in "Status" as below. Click "Refresh" to view current table.

	System	Wir	eless Mar	nagement	Tool
Information					
Connections	This table shows A	ARP table.			
Network Flow	-			S	
Dalas Tabl	IP /	Address	MAC Address	Interface	I)
Bridge Table	192	.168.1.2	00.60 B3 CD FF F2	br0	
	100	168 0 264	00-00-00-00-00-00	eth0	
	400	169 0 264	00-00-00-00-00-00	eth0	

View Active DHCP Client Table

Open "DHCP Client List" in "Status" as below to check the assigned IP address, MAC address and

time expired for each DHCP leased client. Click "Refresh" to view current table.

Status	System W	ireless Mar	agement	Tools
Information		Hand Table		
	ACTIVE DHCP C	lient lable		
Connections	This table shows the perioded	Paddress MAC address and tin	an evolved for each DHCP I	ancad
Connections Network Flow	This table shows the assigned client.	P address, MAC address and tin	ne expired for each DHCP I	eased
Connections Network Flow Bridge Table	This table shows the assigned client.	P address, MAC address and tin MAC Address	ne expired for each DHCP I	eased

Figure 44 DHCP Client Table

Chapter 7 Troubleshooting

This chapter provides troubleshooting procedures for basic problems with the LEVELONE 150MBPS WIRELESS POE AP. For warranty assistance, contact your service provider or distributor for the process.

Q 1. How to know the MAC address of LEVELONE 150MBPS WIRELESS POE AP?

MAC Address distinguishes itself by the unique identity among network devices. There are two ways available to know it.

• Each device has a label posted with the MAC address. Please refer below.

Figure 25 MAC Address

On the LEVELONE 150MBPS WIRELESS POE AP Web-based management interface, you can view the MAC Address from "<u>View</u> LEVELONE 150MBPS WIRELESS POE AP <u>Basic</u> <u>Information</u>".

Q 2. What if I would like to reset the unit to default settings?

You may restore factory default settings in "Configuration File" from "Management".

Q 3. What if I would like to backup and retrieve my configuration settings?

You may do the backup by generating a configuration file or retrieve the settings you have backed up previously in "**Configuration File**" from "**Management**".

Q 4. What if I can not access the Web-based management interface?

Please check the followings:

• Check whether the power supply is OK; Try to power on the unit again.

- Check whether the IP address of PC is correct (in the same network segment as the unit);
- Login the unit via other browsers such as Firefox.
- Hardware reset the unit.

Q 5. What if the wireless connection is not stable after associating with an AP under wireless client mode?

- Since the LEVELONE 150MBPS WIRELESS POE AP comes with a built-in directional antenna, it is recommended make the LEVELONE 150MBPS WIRELESS POE AP face to the direction where the AP is to get the best connection quality.
- In addition, you can start "Site Survey" in "Wireless Basic Settings" to check the signal strength. If it is weak or unstable (The smaller the number is, the weaker the signal strength is.), please join other available AP for better connection.

Appendix A. ASCII

WEP can be configured with a 64-bit, 128-bit or 152-bit Shared Key (hexadecimal number or ACSII).

As defined, hexadecimal number is represented by 0-9, A-F or a-f; ACSII is represented by 0-9, A-F,

a-f or punctuation. Each one consists of two-digit hexadecimal.

ASCII	Hex	ASCII	Hex	ASCII	Hex	ASCII	Hex
Character	Equivalent	Character	Equivalent	Character	Equivalent	Character	Equivalent
!	21	9	39	Q	51	i	69
"	22		3A	R	52	j	6A
#	23	•	3B	S	53	k	6B
\$	24	<	3C	Т	54	-	6C
%	25	II	3D	U	55	m	6D
&	26	>	3E	V	56	n	6E
6	27	?	3F	W	57	0	6F
(28	@	40	Х	58	р	70
)	29	А	41	Υ	59	q	71
*	2A	В	42	Z	5A	r	72
+	2B	С	43	[5B	S	73
,	2C	D	44	١	5C	t	74
-	2D	Е	45]	5D	u	75
	2E	F	46	٨	5E	V	76
/	2F	G	47	-	5F	W	77
0	30	Н	48	`	60	х	78
1	31	_	49	а	61	у	79
2	32	J	4A	b	62	Z	7A
3	33	К	4B	С	63	{	7B
4	34	L	4C	d	64		7C
5	35	М	4D	е	65	}	7D
6	36	N	4E	f	66	~	7E
7	37	0	4F	g	67		
8	38	Р	50	h	68		

Table 2 ACSII

Appendix B. GPL Declamation

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1. Definition

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5. Public Software Name and Description

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			license terms	Reference
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	1999, 2000, 2001, 2002,	s.redhat.c		dhat.com/ecos/e
	2003 Red Hat, Inc.	om/private		cos-license/
		/gnupro-xs		
		cale-03042		
		2/redboot-i		
		ntel-xscale		
		-030630.tar		
		.Z		
Busybox		http://www	GNU GENERAL PUBLIC	http://www.gnu.o
		.busybox.	LICENSE Version 2	rg/licenses/old-li
		net/downl		censes/gpl-2.0.ht
		oads/busy		ml
		box-1.01.ta		
		r.bz2		
brctl	Copyright (C) 2000	http://nchc	GNU GENERAL PUBLIC	http://www.gnu.o

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		idge-utils-		
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	Stoenescu	2		
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	and	4.8.tar.gz		
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		util/		
ntpclient	Copyright 1997, 1999,	http://dooli	GNU GENERAL PUBLIC	http://www.gnu.o
	2000, 2003 Larry	ttle.icarus.	LICENSE Version 2	rg/licenses/old-li
	Doolittle	com/ntpcli		censes/gpl-2.0.ht
		ent/ntpclie		ml
		nt_2003_1		
		94.tar.gz		
procps	Author: Albert Cahalan,	http://proc	GNU GENERAL PUBLIC	http://www.gnu.o
	Michael K. Johnson,	ps.sourcef	LICENSE Version 2	rg/licenses/old-li
	Jim Warner, etc.	orge.net/p	GNU LIBRARY	censes/gpl-2.0.ht
		rocps-3.2.	GENERAL PUBLIC	ml
		7.tar.gz	LICENSE Version 2	http://www.gnu.o
				rg/licenses/old-li
				censes/library.ht
				ml

vsftpd	Author: Chris Evans	ftp://vsftpd	GNU GENERAL PUBLIC	http://www.gnu.o
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		g/users/ce		censes/gpl-2.0.ht
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		gz		
linux		ftp://ftp.ker	GNU GENERAL PUBLIC	http://www.gnu.o
		nel.org/pu	LICENSE Version 2	rg/licenses/old-li
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		ux-2.6.20.3		
		.tar.bz2		