



# Configuration Guide

For Managing EAPs via EAP Controller

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# 1 Overview

The EAP provides specialized functions for maintenance and management. Users can centrally monitor and manage the EAPs via EAP Controller's management interface. The EAP Controller is a management software for TP-Link EAP devices. The free EAP Controller software allows users to manage hundreds of EAPs not only when they are in the same network segment but also in different network segments.

Configuration procedures differ depending on the network topology. This guide introduces how to manage EAPs via EAP Controller in various scenarios.

# 2 Configuration

The application overview is as follows:

- Managing EAPs in the Same Subnet
- Managing EAPs in Different Subnets
  - Managing EAPs at the Same Site
    - a. Using Discovery Utility to Discover EAPs
    - b. Using DHCP Option 138 to Discover EAPs
  - Managing EAPs at Different Sites
    - a. Using Discovery Utility to Discover EAPs via VPN Tunnel
    - b. Using DHCP Option 138 to Discover EAPs via VPN Tunnel
    - c. Using Discovery Utility to Discover EAPs via NAT Port Forwarding
    - d. Using DHCP Option 138 to Discover EAPs via NAT Port Forwarding

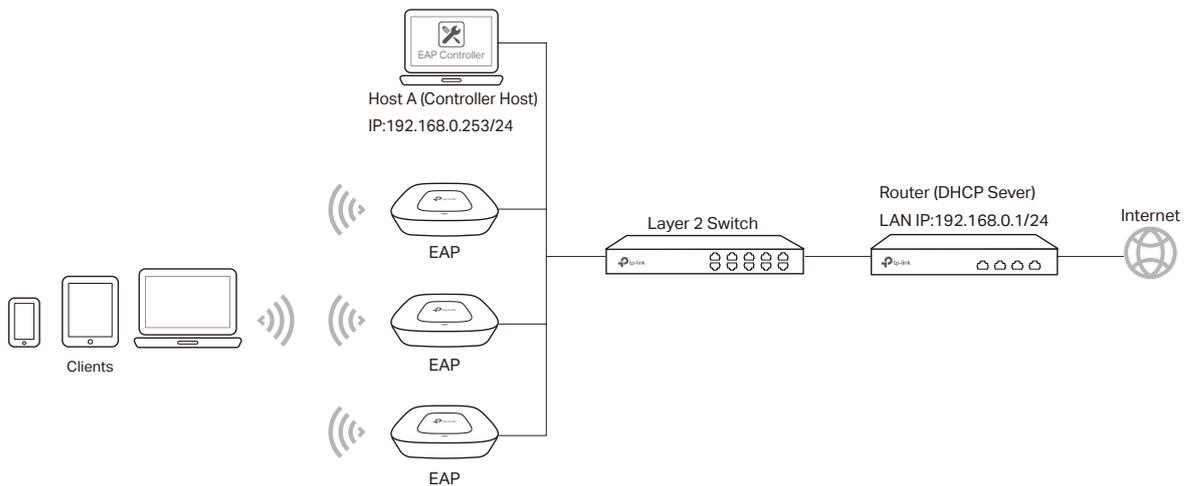
## Configuration Guideline:

- Please ensure that EAP Controller is in the white list of Windows built-in firewall or a third-party antivirus/firewall. Generally, the EAP Controller will be automatically added into the white list of Windows built-in firewall, while for other operating systems or third-party antivirus/firewall, it may need a manual step.
- Please ensure that ports 8043, 8088, 29810, 29811, 29812 and 29813 are accessible on the host where EAP Controller is installed. That is, these ports should not be occupied by other applications.

## 2.1 Managing EAPs in the Same Subnet

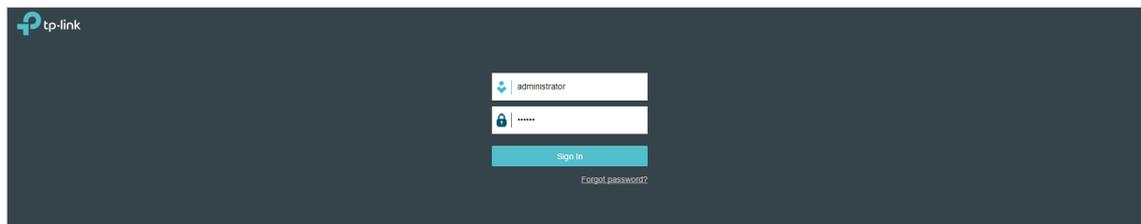
Before configuring EAP Controller to centrally manage the EAPs, confirm whether EAPs and EAP Controller are in same network segment or not.

In the following network topology, the EAP Controller and EAPs are in the same subnet. A router functions as a DHCP server to assign IP addresses to EAPs and clients. The EAP Controller should be installed on one host, known as Controller Host.



To ensure that all EAPs are adopted, follow the steps below:

- 1) Launch EAP Controller to load the login page, enter the username and password which are set in the installation of EAP Controller and click **Sign In**.



- 2) The EAP Controller and EAPs are in the same subnet, thus once the EAP is powered on, it can be discovered by EAP Controller automatically. The EAP Controller will automatically adopt the EAP using the default username and password (both are admin).
- 3) If the **Retry** button shows in the Action column, it means that the username and password of the EAP have been changed.

The screenshot shows the tp-link management interface. The 'Access Points' tab is selected. The table below shows the status of the access points. The first entry has the following details:

Name/MAC Address	IP Address	Status	Model	Hardware Version	Firmware Version	Num of Clients	Download	Upload	Action
ac:00:5b:d4:ed:bc	192.168.0.22	Pending	EAP330	2.0	1.1.0 Build 20170508 Rel. 63715	0	0 Bytes	0 Bytes	Retry

You should enter the current username and password of the EAP.

**AP username and password required**

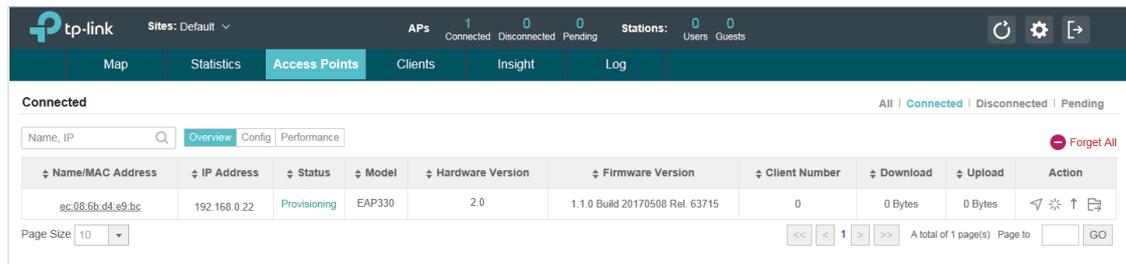
**Note: The username and password have been changed for this AP. The EAP Controller cannot adopt it automatically. Please manually enter the correct username and password.**

Username:

Password:

**Apply**

After successful adoption, the EAP will be displayed in the **Connected** list.



The screenshot shows the TP-Link management interface. At the top, there are navigation tabs: Map, Statistics, Access Points (selected), Clients, Insight, and Log. The 'Access Points' tab is active, and the 'Connected' list is displayed. The list has a search bar and tabs for Overview, Config, and Performance. The table below shows one entry with the following details:

Name/MAC Address	IP Address	Status	Model	Hardware Version	Firmware Version	Client Number	Download	Upload	Action
ec:08:5b:d4:e9:bc	192.168.0.22	Provisioning	EAP330	2.0	1.1.0 Build 20170508 Rel. 63715	0	0 Bytes	0 Bytes	🔍 ⚙️ 🗑️

At the bottom of the table, there is a 'Page Size' dropdown set to 10 and a pagination control showing 'A total of 1 page(s) Page to [ ] GO'.

## 2.2 Managing EAPs in Different Subnets

When EAP Controller and EAPs are in different subnets, the problem is how the EAPs find EAP Controller. There are two solutions:

- Running EAP Discovery Utility on a host which is in the same network segment with the EAPs to help the EAPs find the Controller Host.
- Configure DHCP option 138 on a DHCP server which supports DHCP option 138 feature, thus the DHCP server will tell the EAPs where EAP Controller is.

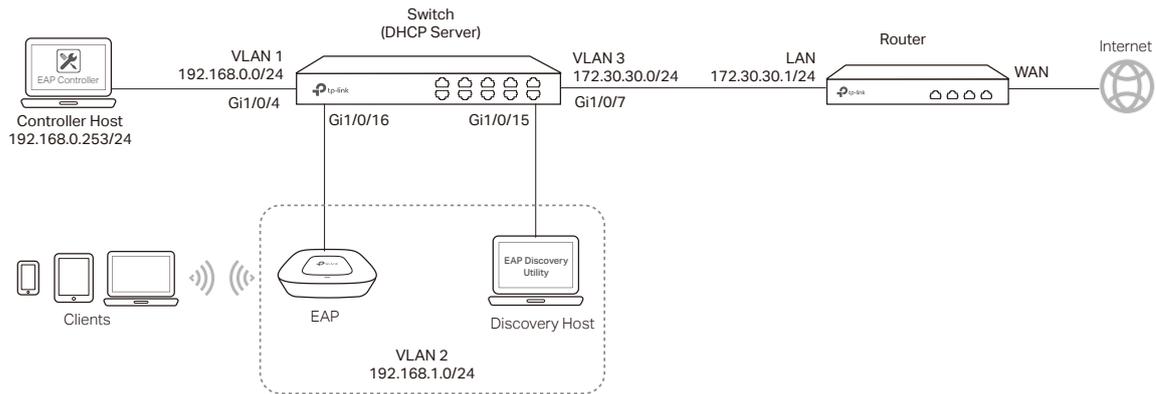
The EAP Controller can manage multiple EAP networks, which are called sites. Generally multiple sites are logically separated and located in different physical places. The following section will introduce how to manage EAPs when they are at the same site and different subnets.

### 2.2.1 Managing EAPs at the Same Site

#### Using Discovery Utility to Discover EAPs

Demonstrated with the network topology below, this section provides configuration procedures for managing EAPs in different subnets at the same site with EAP Discovery Utility.

There are three VLANs (three subnets), which are VLAN1 (192.168.0.0/24), VLAN2 (192.168.1.0/24) and VLAN3 (172.30.30.0/24). The three VLANs are divided by switch T2600G-28TS. Now we want the EAP Controller in VLAN1 to manage the EAP in VLAN2. The computer that is running EAP Discovery Utility and the EAP to be managed should be in the same VLAN. The gateway router is TP-Link router TL-ER6120.



## Step 1: Configurations on Switch

- 1) Go to **VLAN > 802.1Q VLAN > VLAN Config** to create VLAN2 and VLAN3. VLAN2 includes port4 and port5. VLAN3 includes port7. The detailed VLAN settings are shown as below.

Select	VLAN_ID	Name	Members	Operation
<input type="checkbox"/>	1	System-VLAN	1/0/1-3, 1/0/6, 1/0/8-28	<a href="#">Edit</a>   <a href="#">Detail</a>
<input type="checkbox"/>	2	vlan2	1/0/4-5	<a href="#">Edit</a>   <a href="#">Detail</a>
<input type="checkbox"/>	3	vlan3	1/0/7	<a href="#">Edit</a>   <a href="#">Detail</a>

Total VLAN: 3

- 2) Go to **VLAN > 802.1Q VLAN > Port Config** to make sure that port 4, 5, 7 and 16 have been configured as "Access" type ports. Make sure that the PVID of port4 and 5 have been configured as 2, and the PVID of port7 has been configured as 3.

VLAN Port Config					
UNIT: <b>1</b> LAGS					
Select	Port	Link Type	PVID	LAG	VLAN
<input type="checkbox"/>		<input type="text" value=""/>	<input type="text" value=""/>		
<input type="checkbox"/>	1/0/1	ACCESS	1	---	<a href="#">Detail</a>
<input type="checkbox"/>	1/0/2	ACCESS	1	---	<a href="#">Detail</a>
<input type="checkbox"/>	1/0/3	ACCESS	1	---	<a href="#">Detail</a>
<input checked="" type="checkbox"/>	1/0/4	ACCESS	2	---	<a href="#">Detail</a>
<input checked="" type="checkbox"/>	1/0/5	ACCESS	2	---	<a href="#">Detail</a>
<input type="checkbox"/>	1/0/6	ACCESS	1	---	<a href="#">Detail</a>
<input checked="" type="checkbox"/>	1/0/7	ACCESS	3	---	<a href="#">Detail</a>
<input type="checkbox"/>	1/0/8	ACCESS	1	---	<a href="#">Detail</a>
<input type="checkbox"/>	1/0/9	ACCESS	1	---	<a href="#">Detail</a>
<input type="checkbox"/>	1/0/10	ACCESS	1	---	<a href="#">Detail</a>
<input type="checkbox"/>	1/0/11	ACCESS	1	---	<a href="#">Detail</a>
<input type="checkbox"/>	1/0/12	ACCESS	1	---	<a href="#">Detail</a>
<input type="checkbox"/>	1/0/13	ACCESS	1	---	<a href="#">Detail</a>
<input type="checkbox"/>	1/0/14	ACCESS	1	---	<a href="#">Detail</a>
<input type="checkbox"/>	1/0/15	ACCESS	1	---	<a href="#">Detail</a>

- 3) Go to **Routing > Interface** to enter the IP interface for VLAN1,VLAN2 and VLAN3, and configure relevant IP addresses for these three interfaces as shown below.

Interface Config							
<b>Creating Interface</b>							
Interface ID:	<input type="text" value="VLAN"/>	<input type="text" value=""/>	(1-4094)				
IP Address Mode:	<input checked="" type="radio"/> None <input type="radio"/> Static <input type="radio"/> DHCP <input type="radio"/> BOOTP						
IP Address:	<input type="text" value=""/>	(Format: 192.168.0.1)					<input type="button" value="Create"/>
Subnet Mask:	<input type="text" value=""/>	(Format: 255.255.255.0)					
Admin Status:	<input type="text" value="Enable"/>						
Interface Name:	<input type="text" value=""/>	(Optional. 1-16 characters)					
<b>Interface List</b>							
Select	ID	Mode	IP Address	Subnet Mask	Interface Name	Status	Operation
<input type="checkbox"/>	Vlan3	Static	172.30.30.2	255.255.255.0		Up	<a href="#">Edit</a>   <a href="#">Edit IPv6</a>   <a href="#">Detail</a>
<input type="checkbox"/>	Vlan2	Static	192.168.1.1	255.255.255.0		Down	<a href="#">Edit</a>   <a href="#">Edit IPv6</a>   <a href="#">Detail</a>
<input type="checkbox"/>	Vlan1	Static	192.168.0.1	255.255.255.0		Up	<a href="#">Edit</a>   <a href="#">Edit IPv6</a>   <a href="#">Detail</a>

- 4) Go to **Routing > Static Routing > IPv4 Static Routing Config** to configure the static default routing entry which leads to the gateway router.

**IPv4 Static Routing Config**

Destination:  (Format: 10.10.10.0)  
 Subnet Mask:  (Format: 255.255.255.0)  
 Next Hop:  (Format: 192.168.0.2)  
 Distance:  (Optional. range: 1-255)

---

**IPv4 Static Route Table**

Select	Destination	Subnet Mask	Next Hop	Distance	Metric	Interface Name
<input type="checkbox"/>			<input type="text"/>	<input type="text"/>		
<input type="checkbox"/>	0.0.0.0	0.0.0.0	172.30.30.1	1	0	

---

Static routing count: 1

- 5) Go to **Routing > DHCP Server > Global Config** to enable DHCP Server function.

**Global Config**

DHCP Server  Enable  Disable

Option 60:  (Optional)

Option 138:  (Optional. Format: 192.168.0.1)

---

**Ping Time Config**

Ping Packets:  (0-10 packets, 0 for disable ping)

Ping Timeout:  (100-10000 milliseconds)

---

**Excluded IP Address**

Start IP Address:  (Format: 192.168.0.1)  
 End IP Address:  (Format: 192.168.0.1)

---

**Excluded IP Address Table**

Select	ID	Start IP Address	End IP Address
<b>No entry in the table.</b>			

- 6) Go to **Routing > DHCP Server > Pool Setting** to configure 192.168.1.0/24 IP address pool for EAPs.

**DHCP Server Pool**

Pool Name:  (8 characters maximum)

Network Address:  (Format: 192.168.0.0)

Subnet Mask:  (Format: 255.255.255.0)

Lease Time:  (1-2880 min, Default: 120)

Default Gateway:  (Optional, Format: 192.168.0.1)

DNS Server:  (Optional, Format: 192.168.0.1)

Netbios Server :  (Optional, Format: 192.168.0.1)

Netbios Node Type:  (Optional, b/p/m/h/none)

Next Server Address:  (Optional, Format: 192.168.0.1)

Domain Name:  (Optional, 0 to 200 characters)

Bootfile:  (Optional, 0 to 128 characters)

 **Note:**  
Do not forget to fill in the default gateway address and DNS server address.

## Step 2: Configurations on the Router

- 1) Go to **Transmission > Static Route** to add Static Routing for VLAN1 and VLAN 2 subnets.

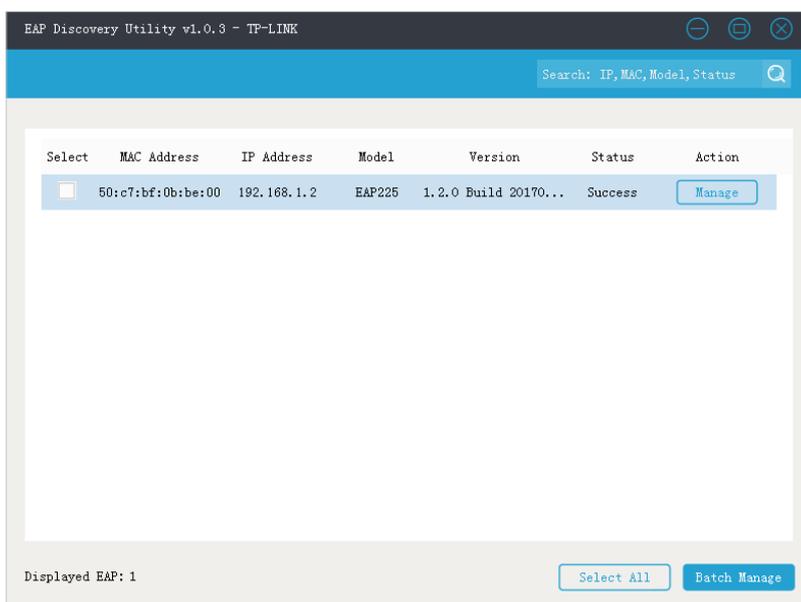
Static Route									
ID	Name	Destination IP	Subnet Mask	Next Hop	Interface	Metric	Status	Operation	
1	vlan1	192.168.0.0	255.255.255.0	172.30.30.2	LAN	0	Enabled		
2	vlan2	192.168.1.0	255.255.255.0	172.30.30.2	LAN	0	Enabled		

- 2) Go to **Transmission > NAT > Multi-NAT** to configure multi-nets NAT for subnets 192.168.0.0/24 and 192.168.1.0/24.

Multi-Nets NAT List							
+ Add - Delete							
<input type="checkbox"/>	ID	Name	Interface	Source IP Range	Status	Description	Operation
--	1	NAT_LAN_WAN1	WAN1	172.30.30.0/24	Enabled	---	---
--	2	NAT_LAN_WAN2	WAN2	172.30.30.0/24	Enabled	---	---
<input type="checkbox"/>	3	1	WAN1	192.168.0.0/24	Enabled <span style="color: red;">✘</span>	vlan1	 
<input type="checkbox"/>	4	2	WAN1	192.168.1.0/24	Enabled <span style="color: red;">✘</span>	vlan2	 
--	5	NAT_LAN_WAN3	WAN3	172.30.30.0/24	Enabled	---	---

### Step 3: Configurations on EAP Discovery Host

- 1) Connect the computer that is running EAP Discovery Utility to port5 of the switch, and connect the EAP to port4. In this way, both EAP Discovery Utility and EAP are in the same subnet (192.168.1.0/24). Then open EAP Discovery Utility to let it discover the EAP as shown below.



- 2) After EAP Discovery Utility has found the EAP, click **Manage**, then fill in the IP address of Controller host and the Username/Password of the EAP (admin/admin by default) so EAP Controller can manage this EAP.

Device Information ✕

---

Status: Success

Model: EAP225

IP Address: 192.168.1.2

MAC Address: 50:c7:bf:0b:be:00

Controller Hostname/IP:

Username:

Password:

**Note:**

After the EAP has been successfully adopted by EAP Controller, you no longer need EAP Discovery Utility. Thus, you can remove the computer that's running EAP Discovery Utility from the network.

### Step 4: Adopt and Manage EAP

- 1) Run EAP Controller. The EAP which has been configured by EAP Discovery Utility in the last step will appear in the **Pending** list as shown below, which means the EAP can be adopted and managed by EAP Controller.

The screenshot shows the TP-Link web interface with the 'Access Points' tab selected. The 'Pending' section is active, displaying a table with the following data:

Name/MAC Address	IP Address	Status	Model	Hardware Version	Firmware Version	Client Number	Download	Upload	Action
50:c7:bf:0b:be:00	192.168.1.2	Pending	EAP225	1.0	1.2.0 Build 20170828 Rel. 67446	0	0 Bytes	0 Bytes	Adopt

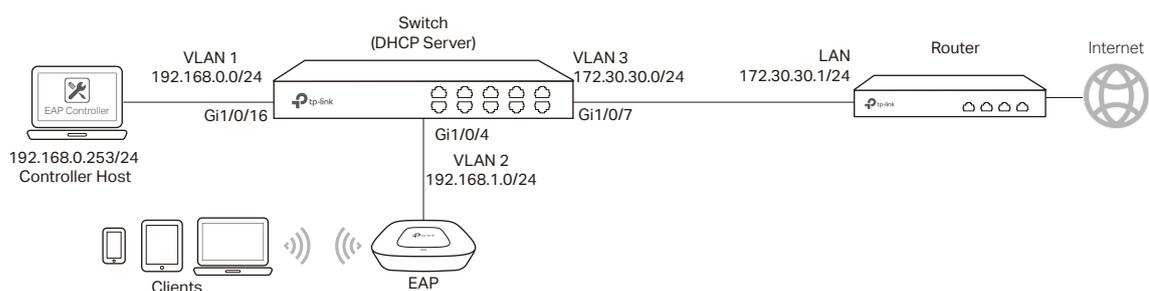
- 2) The EAP Controller will automatically adopt the EAP using the default username and password (both are admin). If the **Retry** button appears in the Action column, it means that the username and password of the EAP have been changed. You should enter the current username and password of the EAP. If the EAP appears in the **Connected** list as shown below, it means the EAP has been adopted and can be managed by EAP Controller.

The screenshot shows the TP-Link web interface with the 'Access Points' tab selected. The 'Connected' section is active, displaying a table with the following data:

Name/MAC Address	IP Address	Status	Model	Hardware Version	Firmware Version	Client Number	Download	Upload	Action
50:c7:bf:0b:be:00	192.168.1.2	Provisioning	EAP225	1.0	1.2.0 Build 20170828 Rel. 67446	0	0 Bytes	0 Bytes	Forget All

### Using DHCP Option 138 to Discover EAPs

Demonstrated with the network topology below, this section provides configuration procedures for managing EAPs in different subnets at the same site with DHCP option 138. There are three VLANs (three subnets), which are VLAN1 (192.168.0.0/24), VLAN2 (192.168.1.0/24) and VLAN3 (172.30.30.0/24). The three VLANs (three subnets) are divided by switch T2600G-28TS. Now we want the EAP Controller in VLAN1 to manage the EAP in VLAN2. The gateway router is TP-Link SMB router TL-ER6120.



## Step 1: Configurations on Switch

- 1) Go to **VLAN > 802.1Q VLAN > VLAN Config** to create VLAN2 and VLAN3. VLAN2 includes port4. VLAN3 includes port7. The detailed VLAN settings are shown as below.

Vlan Table				
Select	VLAN_ID	Name	Members	Operation
<input type="checkbox"/>	1	System-VLAN	1/0/1-3,1/0/5-6,1/0/8-28	<a href="#">Edit</a>   <a href="#">Detail</a>
<input type="checkbox"/>	2	vlan2	1/0/4	<a href="#">Edit</a>   <a href="#">Detail</a>
<input type="checkbox"/>	3	vlan3	1/0/7	<a href="#">Edit</a>   <a href="#">Detail</a>

Total VLAN: 3

- 2) Go to **VLAN > 802.1Q VLAN > Port Config** to make sure that port 4, 7 and 16 have been configured as "Access" type ports. Make sure that the PVID of port4 and 5 has been configured as 2, the PVID of port7 has been configured as 3.

VLAN Port Config					
UNIT: <input type="text" value="1"/> LAGS					
Select	Port	Link Type	PVID	LAG	VLAN
<input type="checkbox"/>		<input type="text" value=""/>	<input type="text" value=""/>		
<input type="checkbox"/>	1/0/1	ACCESS	1	---	<a href="#">Detail</a>
<input type="checkbox"/>	1/0/2	ACCESS	1	---	<a href="#">Detail</a>
<input type="checkbox"/>	1/0/3	ACCESS	1	---	<a href="#">Detail</a>
<input type="checkbox"/>	1/0/4	ACCESS	2	---	<a href="#">Detail</a>
<input type="checkbox"/>	1/0/5	ACCESS	1	---	<a href="#">Detail</a>
<input type="checkbox"/>	1/0/6	ACCESS	1	---	<a href="#">Detail</a>
<input type="checkbox"/>	1/0/7	ACCESS	3	---	<a href="#">Detail</a>
<input type="checkbox"/>	1/0/8	ACCESS	1	---	<a href="#">Detail</a>
<input type="checkbox"/>	1/0/9	ACCESS	1	---	<a href="#">Detail</a>
<input type="checkbox"/>	1/0/10	ACCESS	1	---	<a href="#">Detail</a>
<input type="checkbox"/>	1/0/11	ACCESS	1	---	<a href="#">Detail</a>
<input type="checkbox"/>	1/0/12	ACCESS	1	---	<a href="#">Detail</a>
<input type="checkbox"/>	1/0/13	ACCESS	1	---	<a href="#">Detail</a>
<input type="checkbox"/>	1/0/14	ACCESS	1	---	<a href="#">Detail</a>
<input type="checkbox"/>	1/0/15	ACCESS	1	---	<a href="#">Detail</a>

- 3) Go to **Routing > Interface** to enter the IP interface for VLAN1,VLAN2 and VLAN3, and configure relevant IP addresses for these three interfaces as shown below.

Interface Config

Creating Interface

Interface ID:  (1-4094)

IP Address Mode:  None  Static  DHCP  BOOTP

IP Address:  (Format: 192.168.0.1)

Subnet Mask:  (Format: 255.255.255.0)

Admin Status:

Interface Name:  (Optional. 1-16 characters)

Interface List

Select	ID	Mode	IP Address	Subnet Mask	Interface Name	Status	Operation
<input type="checkbox"/>	Vlan3	Static	172.30.30.2	255.255.255.0		Up	<a href="#">Edit</a>   <a href="#">Edit IPv6</a>   <a href="#">Detail</a>
<input type="checkbox"/>	Vlan2	Static	192.168.1.1	255.255.255.0		Down	<a href="#">Edit</a>   <a href="#">Edit IPv6</a>   <a href="#">Detail</a>
<input type="checkbox"/>	Vlan1	Static	192.168.0.1	255.255.255.0		Up	<a href="#">Edit</a>   <a href="#">Edit IPv6</a>   <a href="#">Detail</a>

- 4) Go to **Routing > Static Routing > IPv4 Static Routing Config** to configure the static default routing entry which leads to the gateway router.

IPv4 Static Routing Config

Destination:  (Format: 10.10.10.0)

Subnet Mask:  (Format: 255.255.255.0)

Next Hop:  (Format: 192.168.0.2)

Distance:  (Optional. range: 1-255)

IPv4 Static Route Table

Select	Destination	Subnet Mask	Next Hop	Distance	Metric	Interface Name
<input type="checkbox"/>			<input type="text"/>	<input type="text"/>		
<input type="checkbox"/>	0.0.0.0	0.0.0.0	172.30.30.1	1	0	

Static routing count: 1

- 5) Go to **Routing > DHCP Server** to enable DHCP Server function. For **Option138**, you should fill in the IP address of the Controller Host which is "192.168.0.253". The DHCP Server will then tell the EAPs where EAP Controller is, so that EAP Controller and EAPs can communicate with each other among different subnets.

**Global Config**

DHCP Server  Enable  Disable

Option 60:  (Optional) Apply

Option 138:  (Optional. Format: 192.168.0.1)

---

**Ping Time Config**

Ping Packets:  (0-10 packets, 0 for disable ping) Apply

Ping Timeout:  (100-10000 milliseconds)

---

**Excluded IP Address**

Start IP Address:  (Format: 192.168.0.1) Create

End IP Address:  (Format: 192.168.0.1)

---

**Excluded IP Address Table**

Select	ID	Start IP Address	End IP Address
No entry in the table.			

All Delete Help

- 6) Go to **Routing > DHCP Server > Pool Setting** to configure 192.168.1.0/24 IP address pool for EAPs.

**DHCP Server Pool**

Pool Name:  (8 characters maximum)

Network Address:  (Format: 192.168.0.0)

Subnet Mask:  (Format: 255.255.255.0)

Lease Time:  (1-2880 min, Default: 120)

Default Gateway:  (Optional, Format: 192.168.0.1)

DNS Server:  (Optional, Format: 192.168.0.1) Apply Cancel

Netbios Server :  (Optional, Format: 192.168.0.1)

Netbios Node Type:  (Optional, b/p/m/h/none)

Next Server Address:  (Optional, Format: 192.168.0.1)

Domain Name:  (Optional, 0 to 200 characters)

Bootfile:  (Optional. 0 to 128 characters)

### Note:

Do not forget to fill in the default gateway address and DNS server address.

## Step 2: Configurations on the Router

- 1) Go to **Transmission > Static Route** to add Static Routing for VLAN1 and VLAN2 subnets.

Static Route									
ID	Name	Destination IP	Subnet Mask	Next Hop	Interface	Metric	Status	Operation	
1	vlan1	192.168.0.0	255.255.255.0	172.30.30.2	LAN	0	Enabled		
2	vlan2	192.168.1.0	255.255.255.0	172.30.30.2	LAN	0	Enabled		

- 2) Go to **Transmission > NAT > Multi-NAT** to configure multi-nets NAT for 192.168.0.0/24 and 192.168.1.0/24 subnets.

Multi-Nets NAT List							
ID	Name	Interface	Source IP Range	Status	Description	Operation	
1	NAT_LAN_WAN1	WAN1	172.30.30.0/24	Enabled	---	---	
2	NAT_LAN_WAN2	WAN2	172.30.30.0/24	Enabled	---	---	
3	1	WAN1	192.168.0.0/24	Enabled	vlan1		
4	2	WAN1	192.168.1.0/24	Enabled	vlan2		
5	NAT_LAN_WAN3	WAN3	172.30.30.0/24	Enabled	---	---	

## Step 3: Adopt and Manage EAP

- 1) Run EAP Controller. The EAP which has DHCP option 138 configured from the last step will appear in the **Pending** list as shown below, which means the EAP can be adopted and managed by EAP Controller.

tp-link									
Name/MAC Address	IP Address	Status	Model	Hardware Version	Firmware Version	Client Number	Download	Upload	Action
50:c7:bf:0b:be:00	192.168.1.2	Pending	EAP225	1.0	1.2.0 Build 20170828 Rel. 67446	0	0 Bytes	0 Bytes	<a href="#">Adopt</a>

- 2) The EAP Controller will automatically adopt the EAP using the default username and password (both are admin). If the **Retry** button appears in the Action column, it means that the username and password of the EAP have been changed. You should enter the current username and password of the EAP. If the EAP appears in the **Connected** list as shown below, it means the EAP has been adopted and can be managed by EAP Controller.

Name/MAC Address	IP Address	Status	Model	Hardware Version	Firmware Version	Client Number	Download	Upload	Action
50:e7:bf:0b:be:00	192.168.1.2	Provisioning	EAP225	1.0	1.2.0 Build 20170828 Rel. 67446	0	0 Bytes	0 Bytes	

## 2.2.2 Managing EAPs at Different Sites

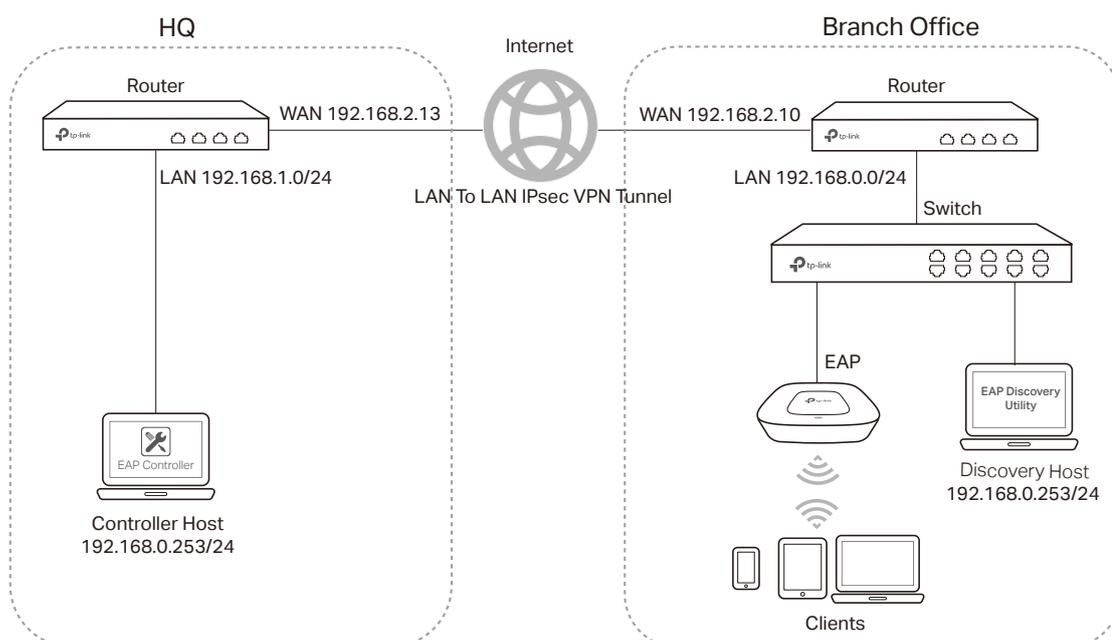
When the devices are at different sites, we will manage EAPs using EAP Controller across the internet. In this case, there are two ways to achieve remote management:

- Create a VPN connection between the local and remote networks by site to site IPsec VPN.
- Transmit traffic between the inside and outside networks by NAT Port Forwarding.

The two remote communication methods can achieve the purpose of managing EAP via EAP Discovery Utility or DHCP option138 respectively with EAP Controller. The section will give the detailed configuration steps in different cases.

### Using Discovery Utility to Discover EAPs via VPN Tunnel

Demonstrated with the network topology below, this section provides configuration procedures for managing EAPs at different sites via VPN Tunnel with EAP Discovery Utility. As shown below, the HQ and branch office are located in different places which is connected with each other through IPsec VPN tunnel. The EAP Controller and a VPN router (TL-ER6120) are in the subnet 192.168.1.0/24 of HQ. TP-Link EAP Discovery Utility, EAP and a VPN router (TL-ER6120) are in the subnet 192.168.0.0/24 of branch office.



## Step 1: VPN Settings for the Router in Branch Office

- 1) Go to **VPN > IPsec > IPsec Policy** to add an IPsec VPN Policy as the following picture shows.

IPSec Policy List

+ Add - Delete

<input type="checkbox"/>	ID	Policy Name	Mode	Remote Gateway	Local Subnet	Remote Subnet	Status	Operation
<input type="checkbox"/>	1	branch_HQ	LAN-to-LAN	192.168.2.13	192.168.0.1/24	192.168.1.0/24	Enabled	---

Policy Name:  (1-32 characters)  
 Mode:    
 Remote Gateway:  (IP Address/Domain Name)  
 WAN:    
 Local Subnet:  /   
 Remote Subnet:  /   
 Pre-shared Key:  (1-128 characters)  
 Status:  Enable

### Note:

- **Remote Gateway** should be configured with the WAN IP address of the VPN router in HQ.
- **Local Subnet** should be configured with the IP subnet of the branch office.
- **Remote Subnet** should be configured with the IP subnet of HQ.

**Phase-1 Settings**

Proposal:

Proposal:

Proposal:

Proposal:

Exchange Mode:  Main Mode  Aggressive Mode

Negotiation Mode:  Initiator Mode  Responder Mode

Local ID Type:  IP Address  NAME

Local ID:  (1-28 non-blank characters)

Remote ID Type:  IP Address  NAME

Remote ID:  (1-28 non-blank characters)

SA Lifetime:  seconds (60-604800)

DPD:  Enable

DPD Interval:  seconds (1-300)

**Phase-2 Settings**

Encapsulation Mode:  Tunnel Mode  Transport Mode

Proposal:  ▼

Proposal:  ▼

Proposal:  ▼

Proposal:  ▼

PFS:  ▼

SA Lifetime:  seconds (120-604800)

## Step 2: VPN Settings for the Router in HQ

Configuring VPN settings on TL-ER6120 in HQ is similar to "Step 1". We won't describe this in detail here.

IPSec Policy List

+ Add - Delete

☐	ID	Policy Name	Mode	Remote Gateway	Local Subnet	Remote Subnet	Status	Operation
--	1	HQ_branch	LAN-to-LAN	192.168.2.10	192.168.1.0/24	192.168.0.1/24	Enabled	---

Policy Name:  (1-32 characters)

Mode:  ▼

Remote Gateway:  (IP Address/Domain Name)

WAN:  ▼

Local Subnet:  /

Remote Subnet:  /

Pre-shared Key:  (1-128 characters)

Status:  Enable

### Phase-1 Settings

---

Proposal:

Proposal:

Proposal:

Proposal:

Exchange Mode:  Main Mode  Aggressive Mode

Negotiation Mode:  Initiator Mode  Responder Mode

Local ID Type:  IP Address  NAME

Local ID:  (1-28 non-blank characters)

Remote ID Type:  IP Address  NAME

Remote ID:  (1-28 non-blank characters)

SA Lifetime:  seconds (60-604800)

DPD:  Enable

DPD Interval:  seconds (1-300)

---

### Phase-2 Settings

---

Encapsulation Mode:  Tunnel Mode  Transport Mode

Proposal:

Proposal:

Proposal:

Proposal:

PFS:

SA Lifetime:  seconds (120-604800)

### Note:

- **Remote Gateway** should be configured with the WAN IP address of the VPN router in branch office.
- **Local Subnet** should be configured with the IP subnet of HQ.
- **Remote Subnet** should be configured with the IP subnet of the branch office.
- **Negotiation Mode** should be chosen the **Responder Mode** in HQ (**Negotiation Mode** has been chosen as **Initiator Mode** in the branch office).
- **Pre-shared key** should be filled with the same number string.

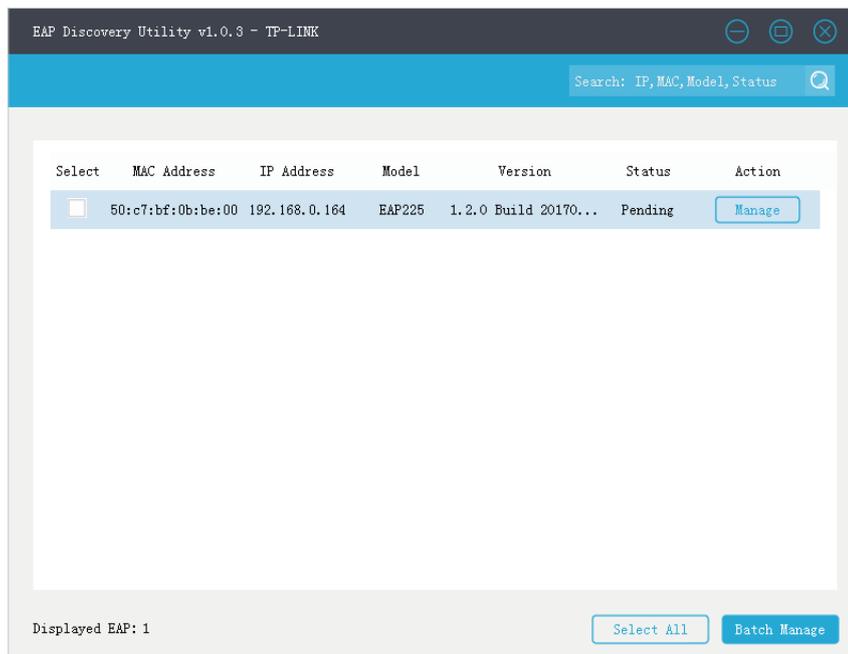
After all settings are done, the VPN tunnel will be established between HQ and the branch office as shown below.

IPSec SA List										
Entry Count: 2										Refresh
<input type="checkbox"/>	ID	Name	SPI	Direction	Tunnel ID	Data Flow	Protocol	AH Authentication	ESP Authentication	ESP Encryption
<input type="checkbox"/>	1	HQ_branch	3371926701	in	192.168.2.13<- -192.168.2.10	192.168.1.0/24 <- - 192.168.0.0/24	ESP	--	MD5	3DES
<input type="checkbox"/>	2	HQ_branch	3408079199	out	192.168.2.13-- >192.168.2.10	192.168.1.0/24 -- > 192.168.0.0/24	ESP	--	MD5	3DES

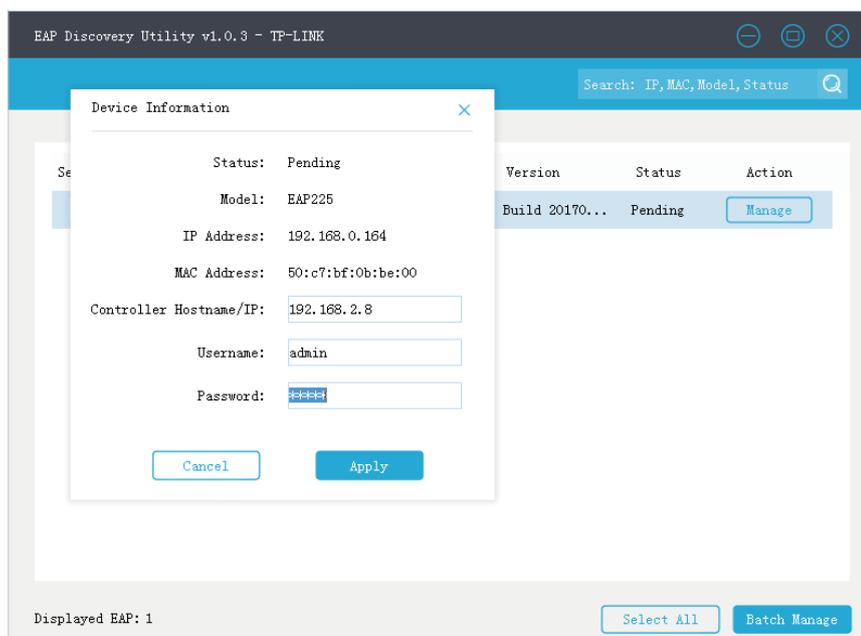
IPSec SA List										
Entry Count: 2										Refresh
<input type="checkbox"/>	ID	Name	SPI	Direction	Tunnel ID	Data Flow	Protocol	AH Authentication	ESP Authentication	ESP Encryption
<input type="checkbox"/>	1	branch_HQ	3408079199	in	192.168.2.10<- -192.168.2.13	192.168.0.0/24 <- - 192.168.1.0/24	ESP	--	MD5	3DES
<input type="checkbox"/>	2	branch_HQ	3371926701	out	192.168.2.10-- >192.168.2.13	192.168.0.0/24 -- > 192.168.1.0/24	ESP	--	MD5	3DES

### Step 3: Configurations on EAP Discovery Host

- 1) Connect the computer that is running EAP Discovery Utility and the EAP to the switch in the branch office. Then open EAP Discovery Utility to let it discover the EAP as shown below.



- 2) After EAP Discovery Utility finds the EAP, click **Manage**, and then fill in the IP address of the Controller Host and the Username/Password of the EAP (admin/admin by default) to let EAP Controller find and manage this EAP.



#### Note:

After the EAP is successfully adopted by EAP Controller, you don't need EAP Discovery Utility any more, thus you can remove the computer that is running EAP Discovery Utility from the network.

## Step 4: Adopt and Manage EAP

- 1) Run EAP Controller. The EAP which has been configured by EAP Discovery Utility in the last step will appear in the **Pending** list as shown below, which means the EAP can be adopted and managed by EAP Controller.

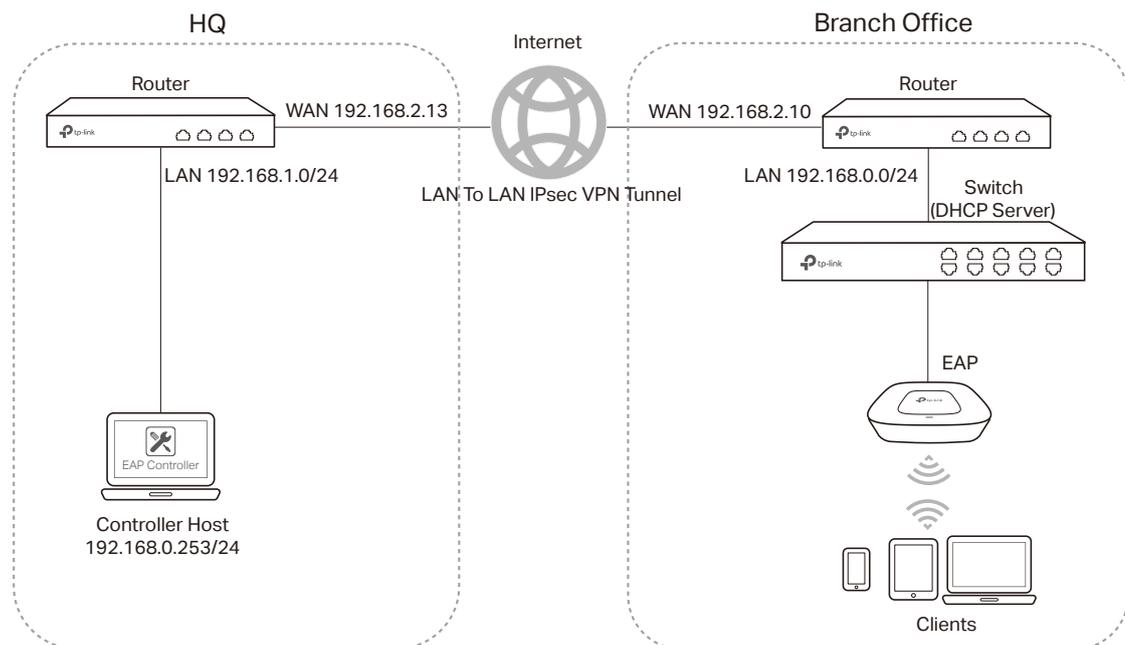
Name/MAC Address	IP Address	Status	Model	Hardware Version	Firmware Version	Client Number	Download	Upload	Action
50:c7:bf:0b:be:00	192.168.0.164	Pending	EAP225	1.0	1.2.0 Build 20170828 Rel. 67446	0	0 Bytes	0 Bytes	Adopt

2) The EAP Controller will automatically adopt the EAP using the default username and password (both are admin). If the **Retry** button appears in the Action column, it means that the username and password of the EAP have been changed. You should enter the current username and password of the EAP. If the EAP appears in the **Connected** list as shown below, it means the EAP has been adopted and can be managed by EAP Controller.

Name/MAC Address	IP Address	Status	Model	Hardware Version	Firmware Version	Client Number	Download	Upload	Action
50:c7:bf:0b:be:00	192.168.0.164	Provisioning	EAP225	1.0	1.2.0 Build 20170828 Rel. 67446	0	0 Bytes	0 Bytes	Forget All

### Using DHCP Option 138 to Discover EAPs via VPN Tunnel

Demonstrated with the network topology below, this section provides configuration procedures for managing EAPs at different sites via VPN Tunnel with DHCP Option 138. As shown below, the HQ and branch office are connected with each other through IPsec VPN tunnel. The EAP Controller and VPN router TL-ER6120 are in the subnet 192.168.1.0/24 of HQ. EAP, switch T2600G-28TS as DHCP Server (supporting DHCP option 138) and another VPN router TL-ER6120 are in the subnet 192.168.0.0/24 of branch office.



## Step 1: Configurations on the Switch in Branch Office

- 1) Go to **Routing > DHCP Server > DHCP Server** to enable DHCP Server function. For **Option138**, you should fill in the IP address of Controller Host which is "192.168.1.253". The DHCP Server will then tell the EAPs where EAP Controller is, so that EAP Controller and EAPs can communicate with each other among different subnets.

Global Config

DHCP Server  Enable  Disable

Option 60:  (Optional) Apply

Option 138:  (Optional. Format: 192.168.0.1)

---

Ping Time Config

Ping Packets:  (0-10 packets, 0 for disable ping) Apply

Ping Timeout:  (100-10000 milliseconds)

---

Excluded IP Address

Start IP Address:  (Format: 192.168.0.1)

End IP Address:  (Format: 192.168.0.1) Create

---

Excluded IP Address Table

Select	ID	Start IP Address	End IP Address
No entry in the table.			



### Note:

Change switch's default IP address from 192.168.0.1 to 192.168.0.2 to avoid IP conflict with gateway router.

- 2) Go to **Routing > DHCP Server > Pool Setting** to configure 192.168.0.0/24 IP address pool for EAPs.



IPSec Policy List

+ Add - Delete

<input type="checkbox"/>	ID	Policy Name	Mode	Remote Gateway	Local Subnet	Remote Subnet	Status	Operation
--	1	branch_HQ	LAN-to-LAN	192.168.2.13	192.168.0.1/24	192.168.1.0/24	Enabled	---

Policy Name:  (1-32 characters)  
 Mode:  ▾  
 Remote Gateway:  (IP Address/Domain Name)  
 WAN:  ▾  
 Local Subnet:  /   
 Remote Subnet:  /   
 Pre-shared Key:  (1-128 characters)  
 Status:  Enable

### Phase-1 Settings

Proposal:  ▾  
 Proposal:  ▾  
 Proposal:  ▾  
 Proposal:  ▾  
 Exchange Mode:  Main Mode  Aggressive Mode  
 Negotiation Mode:  Initiator Mode  Responder Mode  
 Local ID Type:  IP Address  NAME  
 Local ID:  (1-28 non-blank characters)  
 Remote ID Type:  IP Address  NAME  
 Remote ID:  (1-28 non-blank characters)  
 SA Lifetime:  seconds (60-604800)  
 DPD:  Enable  
 DPD Interval:  seconds (1-300)

### Phase-2 Settings

---

Encapsulation Mode:  Tunnel Mode  Transport Mode

Proposal: esp-md5-3des ▼

Proposal: --- ▼

Proposal: --- ▼

Proposal: --- ▼

PFS: none ▼

SA Lifetime: 28800 seconds (120-604800)

**Note:**

- **Remote Gateway** should be configured with the WAN IP address of the VPN router in HQ.
- **Local Subnet** should be configured with the IP subnet of the Branch Office.
- **Remote Subnet** should be configured with the IP subnet of HQ.

### Step 3: VPN Settings for the Router in HQ

Configuring VPN settings on TL-ER6120 in HQ is similar to “Step 1”. We won’t describe this in detail here.

IPSec Policy List + Add - Delete

☐	ID	Policy Name	Mode	Remote Gateway	Local Subnet	Remote Subnet	Status	Operation
--	1	HQ_branch	LAN-to-LAN	192.168.2.10	192.168.1.0/24	192.168.0.1/24	Enabled	---

Policy Name: HQ\_branch (1-32 characters)

Mode: LAN-to-LAN ▼

Remote Gateway: 192.168.2.10 (IP Address/Domain Name)

WAN: WAN1 ▼

Local Subnet: 192.168.1.0 / 24

Remote Subnet: 192.168.0.1 / 24

Pre-shared Key: 12345678 (1-128 characters)

Status:  Enable

**Phase-1 Settings**

Proposal: md5-3des-dh2 ▼

Proposal: --- ▼

Proposal: --- ▼

Proposal: --- ▼

Exchange Mode:  Main Mode  Aggressive Mode

Negotiation Mode:  Initiator Mode  Responder Mode

Local ID Type:  IP Address  NAME

Local ID:  (1-28 non-blank characters)

Remote ID Type:  IP Address  NAME

Remote ID:  (1-28 non-blank characters)

SA Lifetime: 28800 seconds (60-604800)

DPD:  Enable

DPD Interval: 10 seconds (1-300)

**Phase-2 Settings**

Encapsulation Mode:  Tunnel Mode  Transport Mode

Proposal: esp-md5-3des ▼

Proposal: --- ▼

Proposal: --- ▼

Proposal: --- ▼

PFS: none ▼

SA Lifetime: 28800 seconds (120-604800)

OK Cancel

 **Note:**

- **Remote Gateway** should be filled in with the WAN IP address of the VPN router in the branch office.
- **Local Subnet** should be filled in the IP subnet of HQ.
- **Remote Subnet** should be filled in the IP subnet of the Branch Office.
- **Negotiation Mode** should be chosen the **Responder Mode** in HQ (**Negotiation Mode** has been chosen as the **Initiator Mode** in Branch Office).
- **Pre-shared key** should be filled with the same number string.

After all settings are done, the VPN tunnel will be established between the HQ and branch office as shown below.

IPSec SA List										
Entry Count: 2 <span style="float: right;">Refresh</span>										
<input type="checkbox"/>	ID	Name	SPI	Direction	Tunnel ID	Data Flow	Protocol	AH Authentication	ESP Authentication	ESP Encryption
<input type="checkbox"/>	1	HQ_branch	3371926701	in	192.168.2.13<-192.168.2.10	192.168.1.0/24 <-192.168.0.0/24	ESP	--	MD5	3DES
<input type="checkbox"/>	2	HQ_branch	3408079199	out	192.168.2.13-->192.168.2.10	192.168.1.0/24 -->192.168.0.0/24	ESP	--	MD5	3DES

IPSec SA List										
Entry Count: 2 <span style="float: right;">Refresh</span>										
<input type="checkbox"/>	ID	Name	SPI	Direction	Tunnel ID	Data Flow	Protocol	AH Authentication	ESP Authentication	ESP Encryption
<input type="checkbox"/>	1	branch_HQ	3408079199	in	192.168.2.10<-192.168.2.13	192.168.0.0/24 <-192.168.1.0/24	ESP	--	MD5	3DES
<input type="checkbox"/>	2	branch_HQ	3371926701	out	192.168.2.10-->192.168.2.13	192.168.0.0/24 -->192.168.1.0/24	ESP	--	MD5	3DES

## Step 4: Adopt and Manage EAP

- 1) Run EAP Controller. The EAP which has DHCP option 138 configured from the last step will appear in the **Pending** list as shown below, which means the EAP can be adopted and managed by EAP Controller.

Name/MAC Address	IP Address	Status	Model	Hardware Version	Firmware Version	Client Number	Download	Upload	Action
50:c7:bf:0b:be:00	192.168.0.3	Pending	EAP225	1.0	1.2.0 Build 20170828 Rel. 67446	0	0 Bytes	0 Bytes	Adopt

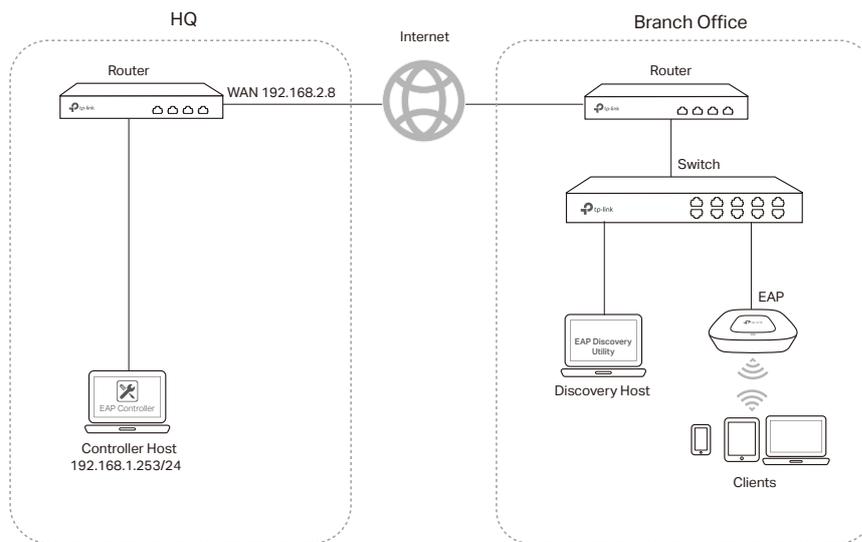
- 2) The EAP Controller will automatically adopt the EAP using the default username and password (both are admin). If the **Retry** button appears in the Action column, it means that the username and password of the EAP have been changed. You should enter the current username and password of the EAP. If the EAP appears in the **Connected** list as shown below, it means the EAP has been adopted and can be managed by EAP Controller.

Name/MAC Address	IP Address	Status	Model	Hardware Version	Firmware Version	Client Number	Download	Upload	Action
50:c7:bf:0b:be:00	192.168.0.3	Configuring	EAP225	1.0	1.2.0 Build 20170828 Rel. 67446	0	0 Bytes	0 Bytes	Forget All

## Using Discovery Utility to Discover EAPs via NAT Port Forwarding

Demonstrated with the network topology below, this section provides configuration procedures for managing EAPs at different sites via NAT Port Forwarding with EAP Discovery Utility. the HQ and branch office are connected with each other. The EAP Controller and TL-ER6120 (VPN router) are in subnet 192.168.1.0/24 of HQ. The EAP

Discovery Utility, EAP and TL-ER6120 (VPN router) are in subnet 192.168.0.0/24 of the branch office.



### Step 1: Configure Port Forwarding Rules on the Router in HQ

- 1) Go to **Advanced > NAT > Virtual Server** and configure virtual server for **All** ports, ranging from 29810 to 29814. Configure **Internal Server IP** with 192.168.01.253, which is the IP of the Controller Host.

Virtual Server List

+ Add - Delete

ID	Name	Interface	External Port	Internal Port	Internal Server IP	Protocol	Status	Operation
1	controller	WAN1	29810-29814	29810-29814	192.168.1.253	ALL	Enabled	---

Name: controller

Interface: WAN1

External Port: 29810-29814 (XX or XX-XX ,1-65535)

Internal Port: 29810-29814 (XX or XX-XX ,1-65535)

Internal Server IP: 192.168.1.253

Protocol: ALL

Status:  Enable

OK Cancel

Click **OK** and the configured NAT Port Forwarding rules will be displayed on the following page.

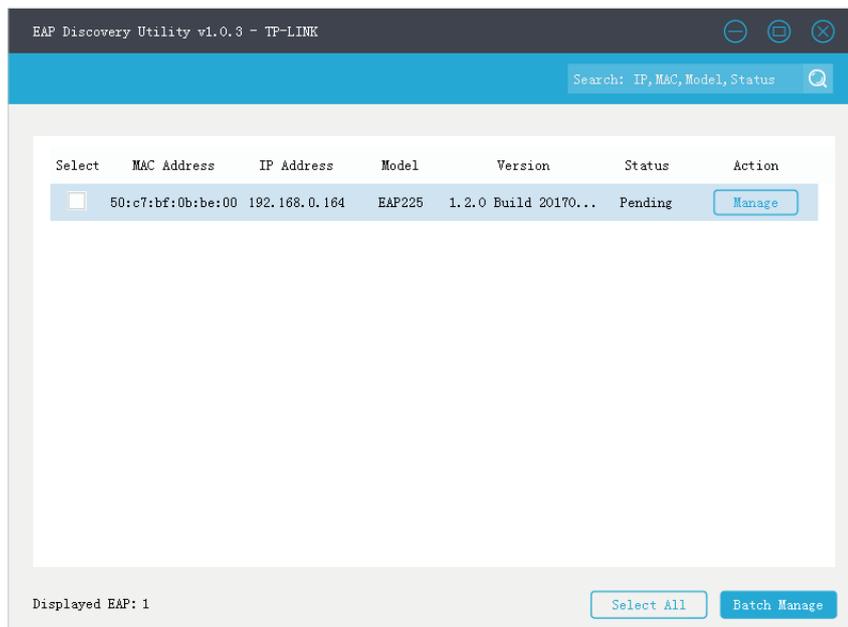
Virtual Server List

+ Add - Delete

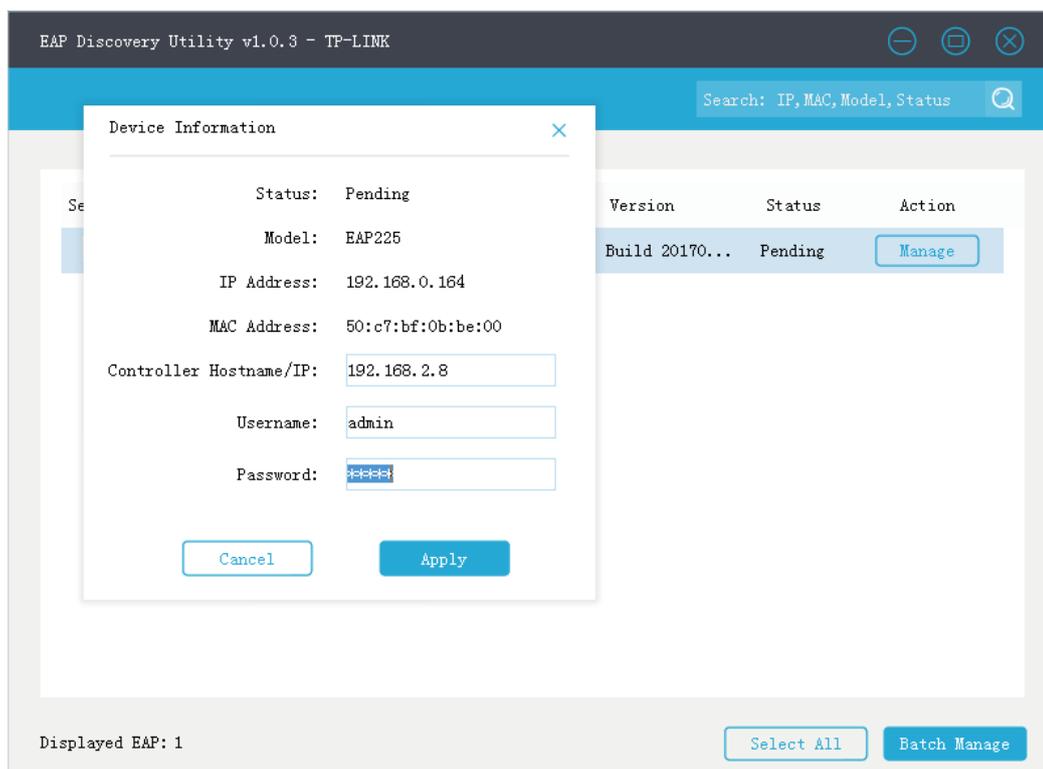
ID	Name	Interface	External Port	Internal Port	Internal Server IP	Protocol	Status	Operation
1	controller	WAN1	29810-29814	29810-29814	192.168.1.253	ALL	Enabled	

### Step 2: Configurations on the Discovery Host

- 1) Connect the computer that is running EAP Discovery Utility and EAP to the switch in branch office. Then open EAP Discovery Utility to let it discover the EAP as shown below.

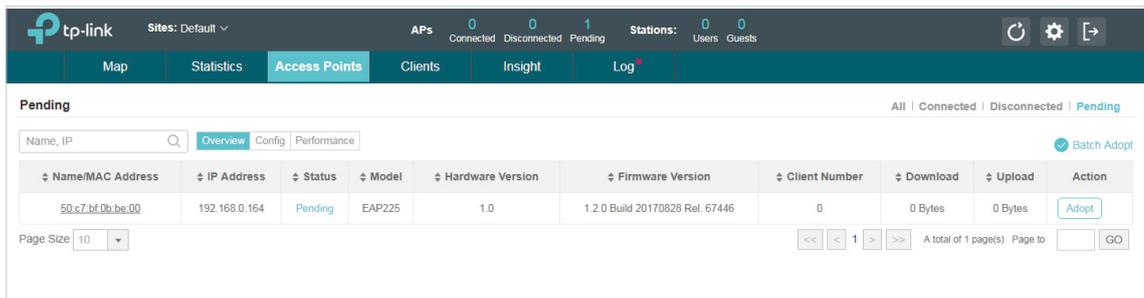


- 2) After EAP Discovery Utility finds the EAP, click **Manage**, and then fill in the WAN IP address of the router in HQ and the Username/Password of the EAP (admin/admin by default) to let EAP Controller find and manage this EAP.

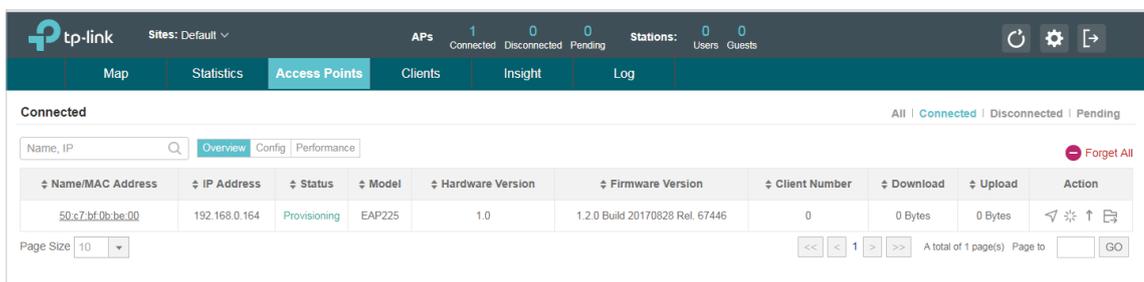


### Step 3: Adopt and Manage EAP

- 1) Run EAP Controller. The EAP which has been configured by EAP Discovery Utility in the last step will appear in the **Pending** list as shown below, which means the EAP can be adopted and managed by EAP Controller.

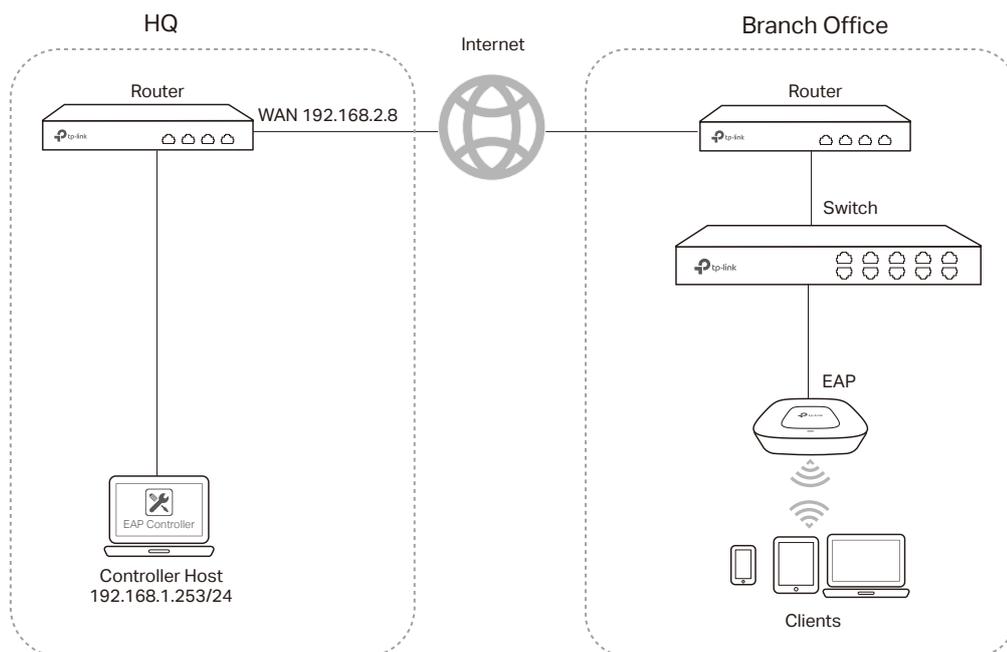


- 2) The EAP Controller will automatically adopt the EAP using the default username and password (both are admin). If the **Retry** button appears in the Action column, it means that the username and password of the EAP have been changed. You should enter the current username and password of the EAP. If the EAP appears in the **Connected** list as shown below, it means the EAP has been adopted and can be managed by EAP Controller.



### Using DHCP Option 138 to Discover EAPs via NAT Port Forwarding

Demonstrated with the network topology below, this section provides configuration procedures for managing EAPs at different sites via NAT Port Forwarding with DHCP option 138. As shown below, the EAP Controller and a VPN router (TL-ER6120) are in the subnet 192.168.1.0/24 of HQ. EAP, switch T2600G-28TS as DHCP Server (supporting DHCP option138) and another VPN router (TL-ER6120) are in the subnet 192.168.0.0/24 of Branch Office.



## Step 1: Configure Port Forwarding Rules on the Router in HQ

- 1) Go to **Advanced > NAT > Virtual Server** and configure virtual server for **All**, ranging from 29810 to 29814. Configure **Internal Server IP** with 192.168.01.253, which is the IP of the Controller Host.

Virtual Server List

+ Add - Delete

ID	Name	Interface	External Port	Internal Port	Internal Server IP	Protocol	Status	Operation
1	controller	WAN1	29810-29814	29810-29814	192.168.1.253	ALL	Enabled	---

Name:

Interface:

External Port:  (XX or XX-XX ,1-65535)

Internal Port:  (XX or XX-XX ,1-65535)

Internal Server IP:

Protocol:

Status:  Enable

Click **OK**, the configured NAT Port Forwarding rules will be displayed on the following page.

Virtual Server List

+ Add - Delete

ID	Name	Interface	External Port	Internal Port	Internal Server IP	Protocol	Status	Operation
1	controller	WAN1	29810-29814	29810-29814	192.168.1.253	ALL	Enabled	 

## Step 2: Configurations on Switch in Branch Office

- 1) Go to **Routing > DHCP Server > DHCP Server** to enable DHCP Server function. Set DHCP option 138 as the WAN IP (192.168.2.8) address of the router which is behind the EAP Controller in HQ.

**Global Config**

DHCP Server  Enable  Disable

Option 60:  (Optional) Apply

Option 138:  (Optional. Format: 192.168.0.1)

---

**Ping Time Config**

Ping Packets:  (0-10 packets, 0 for disable ping) Apply

Ping Timeout:  (100-10000 milliseconds)

---

**Excluded IP Address**

Start IP Address:  (Format: 192.168.0.1)

End IP Address:  (Format: 192.168.0.1) Create

---

**Excluded IP Address Table**

Select	ID	Start IP Address	End IP Address
No entry in the table.			

 **Note:**

Change switch's default IP address from 192.168.0.1 to 192.168.0.2 to avoid IP conflict with gateway router.

- 2) Go to **Routing > DHCP Server > Pool Setting** to configure 192.168.0.0/24 IP address pool for EAPs, and Click **Apply**.

### DHCP Server Pool

Pool Name:  (8 characters maximum)

Network Address:  (Format: 192.168.0.0)

Subnet Mask:  (Format: 255.255.255.0)

Lease Time:  (1-2880 min, Default: 120)

Default Gateway:  (Optional, Format: 192.168.0.1)

DNS Server:  (Optional, Format: 192.168.0.1)

Netbios Server :  (Optional, Format: 192.168.0.1)

Netbios Node Type:  (Optional, b/p/m/h/none)

Next Server Address:  (Optional, Format: 192.168.0.1)

Domain Name:  (Optional, 0 to 200 characters)

Bootfile:  (Optional, 0 to 128 characters)

### Step 3: Adopt and Manage EAP

- 1) Run EAP Controller. The EAP which has been configured by DHCP option 138 in the last step will appear in the **Pending** list as shown below, which means the EAP can be adopted and managed by the EAP Controller.

The screenshot shows the TP-Link web interface with the 'Access Points' tab selected. The 'Pending' section displays a table with the following data:

Name/MAC Address	IP Address	Status	Model	Hardware Version	Firmware Version	Client Number	Download	Upload	Action
50:c7:bf:0b:be:00	192.168.0.3	Pending	EAP225	1.0	1.2.0 Build 20170828 Rel. 67446	0	0 Bytes	0 Bytes	Adopt

Page Size: 10 | A total of 1 page(s) | Page to: | GO

- 2) The EAP Controller will automatically adopt the EAP using the default username and password (both are admin). If the **Retry** button appears in the Action column, it means that the username and password of the EAP have been changed. You should enter the current username and password of the EAP. If the EAP appears in the **Connected** list as shown below, it means the EAP has been adopted and can be managed by the EAP Controller.

tp-link Sites: Default ▾ APs: 1 Connected, 0 Disconnected, 0 Pending Stations: 0 Users, 0 Guests

Map | Statistics | **Access Points** | Clients | Insight | Log

**Connected** All | **Connected** | Disconnected | Pending

Name, IP  Forget All

Overview | Config | Performance

Name/MAC Address	IP Address	Status	Model	Hardware Version	Firmware Version	Client Number	Download	Upload	Action
50:c7:bf:0b:ba:00	192.168.0.3	Provisioning	EAP225	1.0	1.2.0 Build 20170828 Rel. 67446	0	0 Bytes	0 Bytes	

Page Size: 10 A total of 1 page(s) Page to:  GO

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