



# TRENDNET<sup>®</sup>



## User's Guide

**TEW-690AP**  
1.02

## **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.

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.

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.

### **IMPORTANT NOTE:**

#### **FCC Radiation Exposure Statement:**

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

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.

## **European Union Notice:**










Radio products with the CE marking comply with the R&TTE Directive (1999/5/EC), the EMC Directive (89/336/EEC) and the Low Voltage Directive (73/23/EEC) issued by the Commission of the European Community.









Compliance with these directives implies conformity to the following European Norms:

- EN 60950 Product Safety
- EN 300 328 Technical requirement for radio equipment
- EN 301 489-1/-17 General EMC requirements for radio equipment

## **Trademark recognition**

All product names used in this manual are the properties of their respective owners and are acknowledged.

 Český [Czech]	<i>TRENDnet</i> tímto prohlašuje, že tento <i>TEW-690AP</i> je ve shodě se základními požadavky a dalšími příslušnými ustanoveními směrnice 1999/5/ES.
 Dansk [Danish]	Undertegnede <i>TRENDnet</i> erklærer herved, at følgende udstyr <i>TEW-690AP</i> overholder de væsentlige krav og øvrige relevante krav i direktiv 1999/5/EF.
 Deutsch [German]	Hiermit erklärt <i>TRENDnet</i> , dass sich das Gerät <i>TEW-690AP</i> in Übereinstimmung mit den grundlegenden Anforderungen und den übrigen einschlägigen Bestimmungen der Richtlinie 1999/5/EG befindet.
 Eesti [Estonian]	Käesolevaga kinnitab <i>TRENDnet</i> seadme <i>TEW-690AP</i> vastavust direktiivi 1999/5/EÜ põhinõuetele ja nimetatud direktiivist tulenevatele teistele asjakohastele sätetele.
 English	Hereby, <i>TRENDnet</i> , declares that this <i>TEW-690AP</i> is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.
 Español [Spanish]	Por medio de la presente <i>TRENDnet</i> declara que el <i>TEW-690AP</i> cumple con los requisitos esenciales y cualesquiera otras disposiciones aplicables o exigibles de la Directiva 1999/5/CE.
 Ελληνική [Greek]	ΜΕ ΤΗΝ ΠΑΡΟΥΣΑ <i>TRENDnet</i> ΔΗΛΩΝΕΙ ΟΤΙ <i>TEW-690AP</i> ΣΥΜΜΟΡΦΩΝΕΤΑΙ ΠΡΟΣ ΤΙΣ ΟΥΣΙΩΔΕΙΣ ΑΠΑΙΤΗΣΕΙΣ ΚΑΙ ΤΙΣ ΛΟΙΠΕΣ ΣΧΕΤΙΚΕΣ ΔΙΑΤΑΞΕΙΣ ΤΗΣ ΟΔΗΓΙΑΣ 1999/5/EK.
 Français [French]	Par la présente <i>TRENDnet</i> déclare que l'appareil <i>TEW-690AP</i> est conforme aux exigences essentielles et aux autres dispositions pertinentes de la directive 1999/5/CE.
 Italiano [Italian]	Con la presente <i>TRENDnet</i> dichiara che questo <i>TEW-690AP</i> è conforme ai requisiti essenziali ed alle altre disposizioni pertinenti stabilite dalla direttiva 1999/5/CE.
Latviski [Latvian]	Ar šo <i>TRENDnet</i> deklarē, ka <i>TEW-690AP</i> atbilst Direktīvas 1999/5/EK būtiskajām prasībām un citiem ar to saistītajiem noteikumiem.
Lietuvių [Lithuanian]	Šiuo <i>TRENDnet</i> deklaruoja, kad šis <i>TEW-690AP</i> atitinka esminius reikalavimus ir kitas 1999/5/EB Direktyvos nuostatas.

 Nederlands [Dutch]	Hierbij verklaart <i>TRENDnet</i> dat het toestel <i>TEW-690AP</i> in overeenstemming is met de essentiële eisen en de andere relevante bepalingen van richtlijn 1999/5/EG.
 Malti [Maltese]	Hawnhekk, <i>TRENDnet</i> jiddikjara li dan <i>TEW-690AP</i> jikkonforma mal-ħtiġijiet essenzjali u ma provvedimenti oħrajn rilevanti li hemm fid-Dirrettiva 1999/5/EC.
 Magyar [Hungarian]	Alulírott, <i>TRENDnet</i> nyilatkozom, hogy a <i>TEW-690AP</i> megfelel a vonatkozó alapvető követelményeknek és az 1999/5/EC irányelv egyéb előírásainak.
 Polski [Polish]	Niniejszym <i>TRENDnet</i> oświadcza, że <i>TEW-690AP</i> jest zgodny z zasadniczymi wymogami oraz pozostałymi stosownymi postanowieniami Dyrektywy 1999/5/EC.
 Português [Portuguese]	<i>TRENDnet</i> declara que este <i>TEW-690AP</i> está conforme com os requisitos essenciais e outras disposições da Directiva 1999/5/CE.
 Slovensko [Slovenian]	<i>TRENDnet</i> izjavlja, da je ta <i>TEW-690AP</i> v skladu z bistvenimi zahtevami in ostalimi relevantnimi določili direktive 1999/5/ES.
Slovensky [Slovak]	<i>TRENDnet</i> týmto vyhlasuje, že <i>TEW-690AP</i> spĺňa základné požiadavky a všetky príslušné ustanovenia Smernice 1999/5/ES.
 Suomi [Finnish]	<i>TRENDnet</i> vakuuttaa täten että <i>TEW-690AP</i> tyyppinen laite on direktiivin 1999/5/EY oleellisten vaatimusten ja sitä koskevien direktiivin muiden ehtojen mukainen.
 Svenska [Swedish]	Härmed intygar <i>TRENDnet</i> att denna <i>TEW-690AP</i> står i överensstämmelse med de väsentliga egenskapskrav och övriga relevanta bestämmelser som framgår av direktiv 1999/5/EG.

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# Getting Started

Congratulations on purchasing the TEW-690AP! This manual provides information for setting up and configuring the TEW-690AP. This manual is intended for both home users and professionals.

## PACKAGE CONTENTS

- TEW-690AP
- CD\_ROM (Utility and User's Guide)
- Multi-Language Quick Installation Guide
- 1 x network cable (0.6m / 2ft)
- Power adapter (12V DC, 1A)



Using a power supply with a different voltage than the one included with your product will cause damage and void the warranty for this product.

## MINIMUM SYSTEM REQUIREMENTS

### Installation Requirements

- Web Browser: Internet Explorer (6 or higher)
- A computer with a network adapter or wireless adapter properly installed.
- A router with an available network LAN port.
- An available DHCP Server –routers usually have a built-in DHCP server.

# Introduction

TRENDnet's 450Mbps Wireless N Access Point, model TEW-690AP, supports Access Point, Wireless Distribution System (WDS), and Repeater mode functionality.

Advanced Multiple Input Multiple Output (MIMO) antenna technology with three spatial streams per antenna, generates a maximum theoretical wireless throughput of 450Mbps and exceptional wireless coverage.

A Gigabit Ethernet port maintains high performance wired connections. Wi-Fi Protected Setup (WPS) integrates other WPS supported devices at the touch of a button. Advanced features include 4 SSIDs per wireless band, different encryption for each SSID, WMM Quality of Service data prioritization, WPA2-RADIUS encryption, and a convenient on/off power switch.

## FEATURES

- High performance 450Mbps wireless n access point
- 1 x 10/100/1000Mbps Auto-MDIX Gigabit LAN port
- 1 x WPS button
- 1 x Reset button
- On/off power switch (EU Version)
- Diagnostic LEDs
- Wi-Fi compliant with IEEE 802.11n standard
- Backwards compatible with IEEE 802.11g/b devices
- Features Wireless Distribution System (WDS) and Repeater modes for wireless network expansion
- Supports 64/128-bit WEP, WPA/WPA2-PSK, and WPA/WPA2-RADIUS wireless security
- Mac filter feature for added security
- Wi-Fi Multimedia (WMM) Quality of Service (QoS) data prioritization
- Multiple Input Multiple Output (MIMO) antenna technology
- Define up to 3 additional SSIDs
- One touch wireless connection using the WPS button
- Maximum reliability, throughput, and connectivity with automatic data rate switching
- Easy user setup wizard and intuitive Web browser configuration
- Coverage of up to 100 meters indoor (328ft.) and 300 meters outdoor (948ft.) \*
- 3-year limited warranty



# HARDWARE OVERVIEW



Front View	<b>WLAN LED</b> A solid light indicates that the wireless segment is ready. This LED blinks green during wireless data transmission.
	<b>WPS LED</b> This LED blinks green during WPS function is enabled.
	<b>LAN LED</b> A solid light indicates a connection to a Router on the LAN port. This LED blinks green during data transmission
	<b>POWER LED</b> A solid green light indicates a proper connection to the power supply
	<b>WPS Button</b> Press the button to enable WPS function.



<b>Rear View</b>	<b>Auto MDI/MDIX 10/100/1000Mbps LAN Port</b> This port automatically senses the cable type when connecting to Router.
	<b>DC-IN</b> The DC power input connector is a single jack socket to supply power to the TEW-690AP. Please use the Power Adapter provided on the TEW-690AP package.
	<b>Power Switch (EU version)</b> On/off Switch



<b>Side View</b>	<b>Reset button</b> Restores device to factory default settings
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# Installation Considerations

The TEW-690AP allows you to access your network by using a wireless connection from virtually anywhere within its operating range. Keep in mind that the number, thickness and location of walls, ceilings, or other objects that the wireless signals must pass through, may limit the range. Typical ranges vary depending on the types of materials and background RF (radio frequency) noise in your home or business. The key to maximizing wireless range is to follow these basic guidelines:

1. Adjust your wireless devices so that the signal is traveling in a straight path, rather than at an angle. The more material the signal has to pass through the more signal you will lose.
2. Keep the number of obstructions to a minimum. Each obstruction can reduce the range of a wireless device. Position the wireless devices in a manner that will minimize the amount of obstructions between them.
3. Building materials can have a large impact on your wireless signal. In an indoor environment, try to position the wireless devices so that the signal passes through less dense material such as dry wall. Dense materials like metal, solid wood, glass or even furniture may block or degrade the signal.
4. Antenna orientation can also have a large impact on your wireless signal. Use the wireless adapter's site survey tool to determine the best antenna orientation for your wireless devices.
5. Interference from devices that produce RF (radio frequency) noise can also impact your signal. Position your wireless devices away from anything that generates RF noise, such as microwaves, radios and baby monitors.
6. Any device operating on the 2.4GHz frequency will cause interference. Devices such as 2.4GHz cordless phones or other wireless remotes operating on the 2.4GHz frequency can potentially drop the wireless signal. Although the phone may not be in use, the base can still transmit wireless signal. Move the phone's base station as far away as possible from your wireless devices.

If you are still experiencing low or no signal consider repositioning the wireless devices or installing additional access points. The use of higher gain antennas may also provide the necessary coverage depending on the environment.

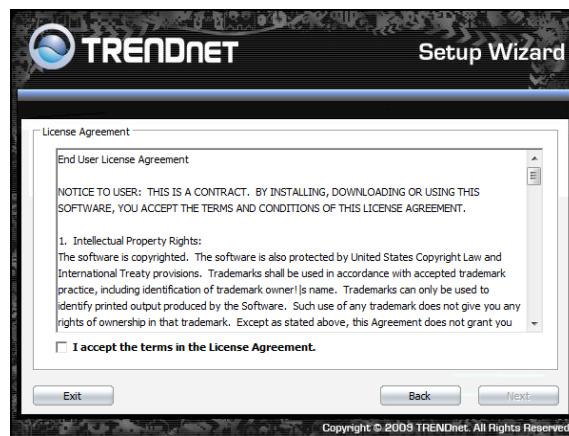
# Getting Started

For a typical wireless setup at home or office, please do the following:

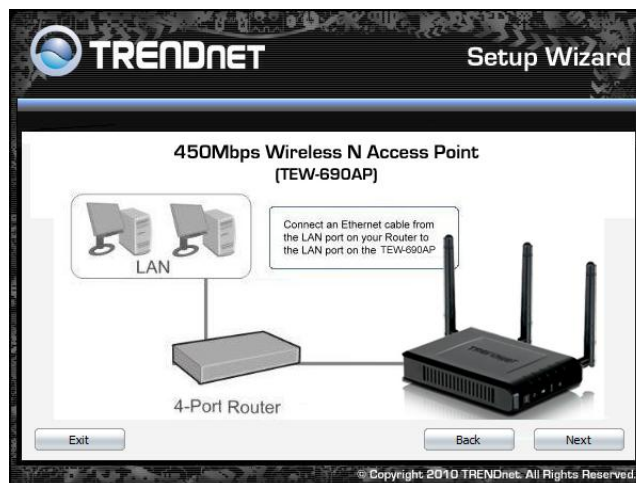
1. Insert Setup Wizard CD into your CD-ROM drive.
2. The Welcome screen appears on your monitor. Click **Setup Wizard** button.



3. Read the License Agreement and click **Next** to continue the installation.



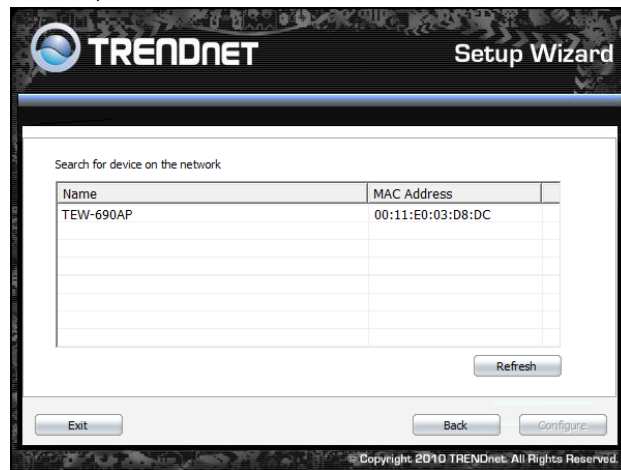
4. Connect an Ethernet cable from the LAN port on your Router to the LAN port on the TEW-690AP, click **Next button** to continue.



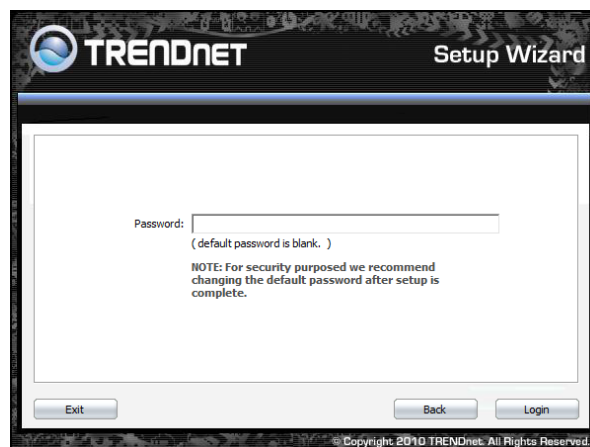
1. Plug in the power adapter of the TEW-690AP and plug in the device that you will be connecting together. Verify the Power & Ethernet LEDs are light. *EU Version please make sure the power switch is on the On position*



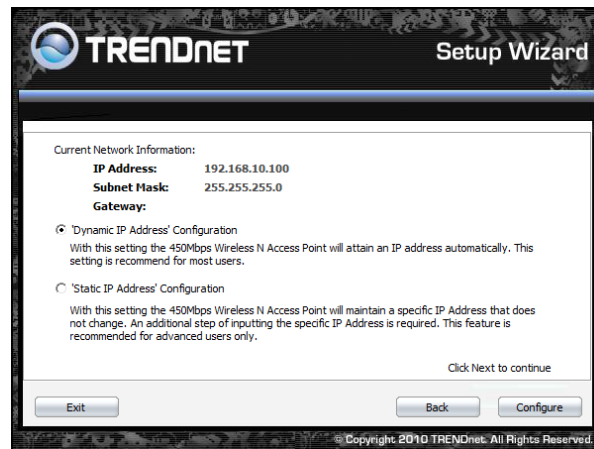
5. Your computer will detect TEW-690AP and the Device List screen appears on your monitor. Click **Configure** button to continue (default TEW-690AP IP Address is 192.168.10.100).



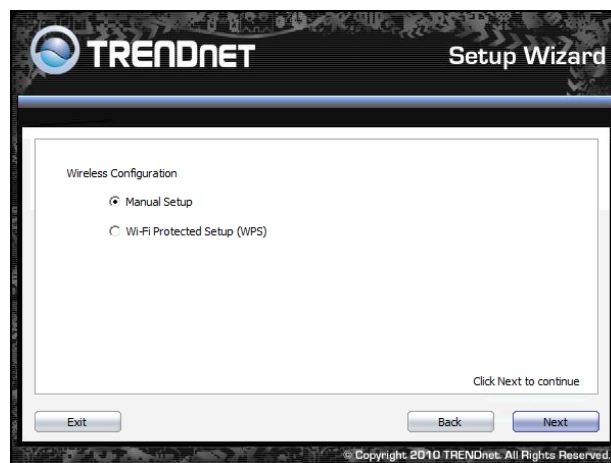
6. Enter password for the Access Point. The default password is “**admin**”. Click **Login** button to continue.



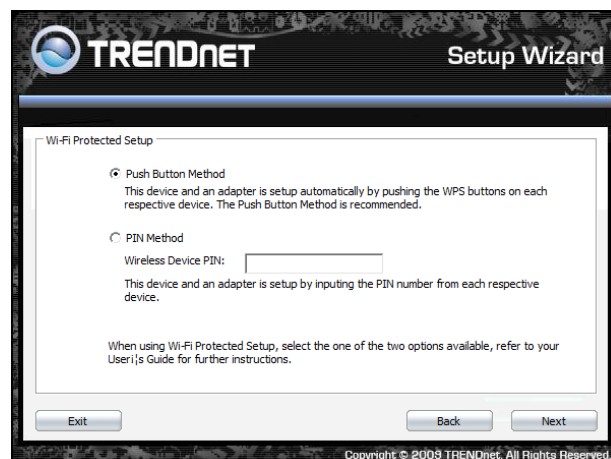
7. To attain an IP address automatically, you can select “**Dynamic IP address configuration**”; to change IP address, you can select “**Static IP address configuration**” and click **Next** button to continue.



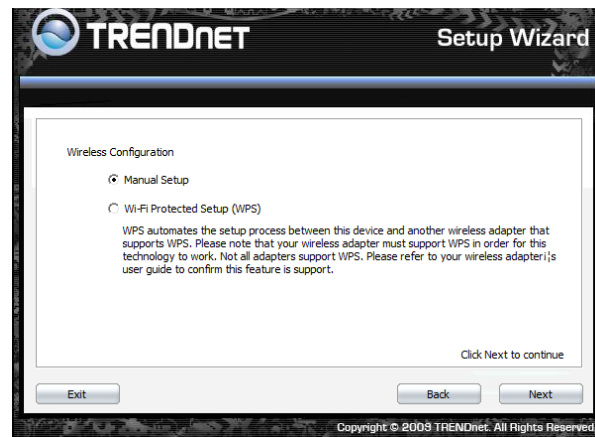
8. The default IP address is 192.168.10.100, you can choose to obtain network setting automatically, or set the IP address manually. After setting, click **Configure** to continue.



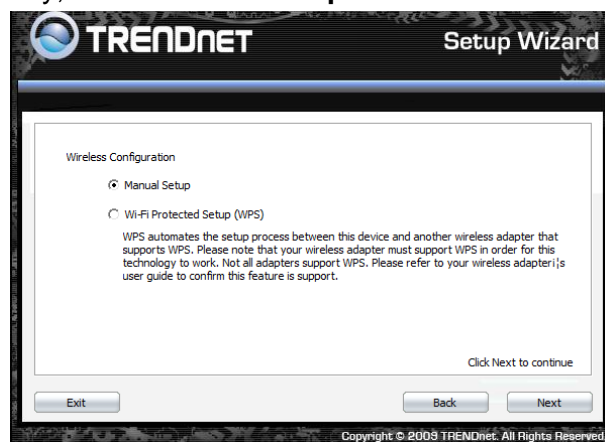
9. Use **Push Button Method**, click **Connect** button to continue. You also need to enable WPS function of the wireless client device to make connection.



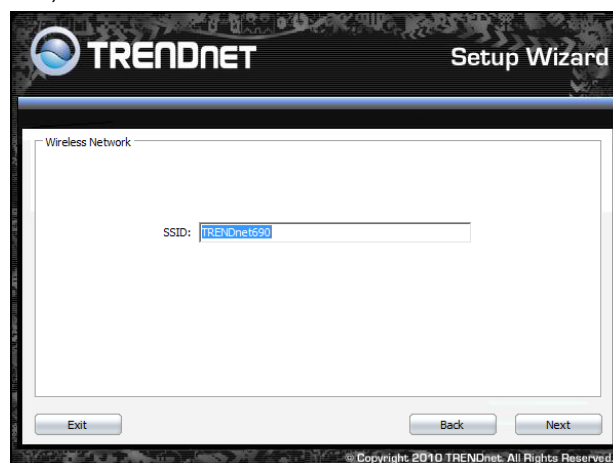
10. Use **Push Button Method**, click **Connect** button to continue. You also need to enable WPS function of the wireless client device to make connection. Use **PIN Method** and enter your wireless client PIN number on **Wireless Device PIN**, and then click **Connect** button to make wireless connection.



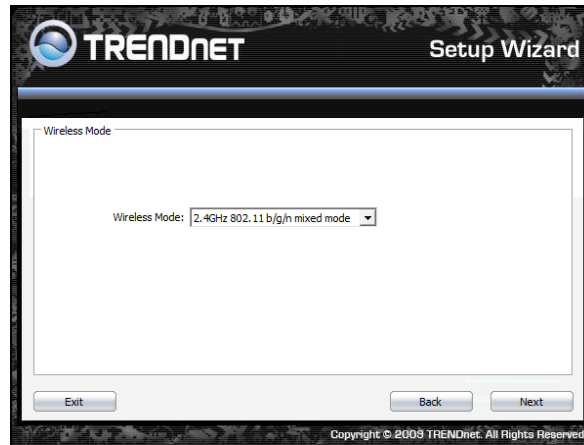
11. To set TEW-690AP security, select **Manual setup** and click **Next** button



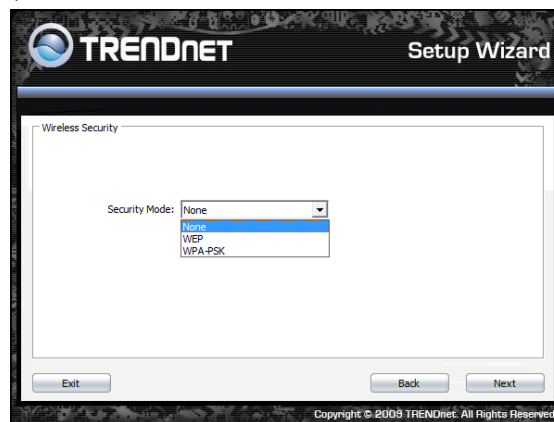
12. Enter **SSID** of TEW-690AP, click **Next** button.



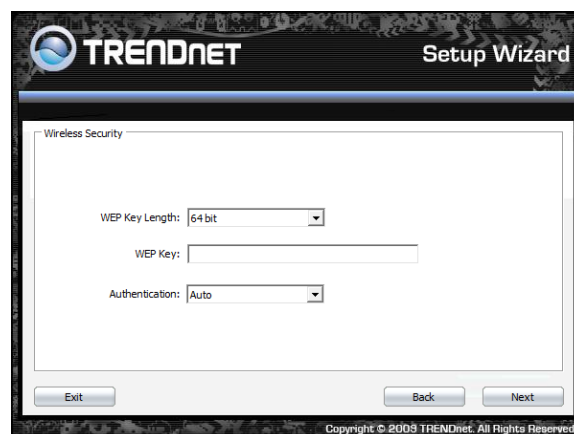
13. Choice Wireless Mode.



14. To disable **Security Mode**, select **None** and click **Next** button.

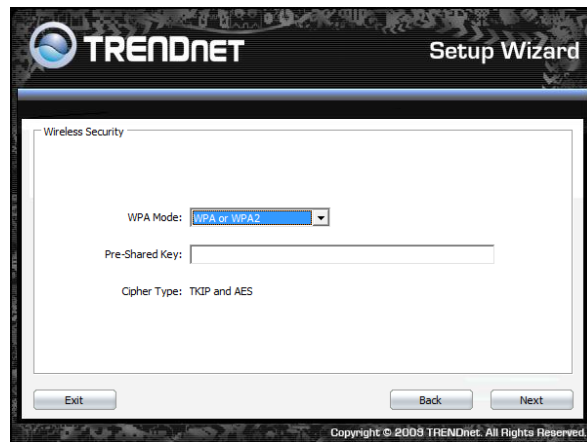


15. To use WEP security, select **WEP** and click **Next** button. Select **64-bit** or **128-bit** WEP key length, and enter your WEP key. For 64-bit encryption, enter 10 hexadecimal characters, For 128-bit encryption, enter 26 hexadecimal characters. Click **Next** to continue the setting.

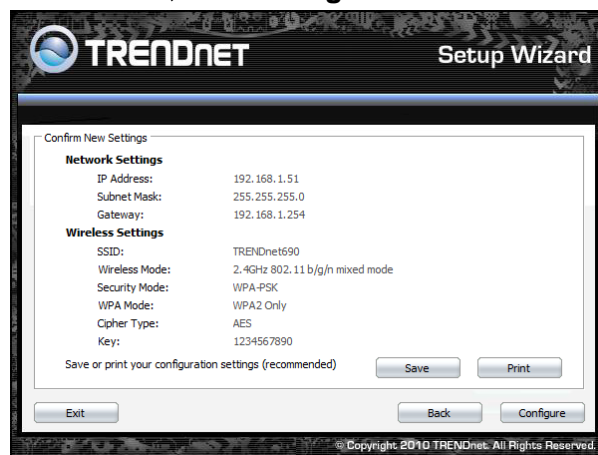


16. To use WPA or WPA2 security, select **WPA or WPA2** and click **Next** button. Select **WPA Mode:** **WPA Only**, **WPA2 Only**, **WPA or WPA2**, and set **Pre-Shared Key** by entering 8 ~ 63 characters. Click **Next** to continue the setting.





17. Confirm your new settings. It is recommended that you save or print your wireless settings with the **Save** or **Print** buttons. Once finished, click **Configure** to continue.



18. Congratulations you have configured you TEW-690AP.



# Using the Configuration Menu

Whenever you want to configure your TEW-690AP, you can access the Configuration Menu by opening the Web-browser and typing in the IP Address of the TEW-690AP.

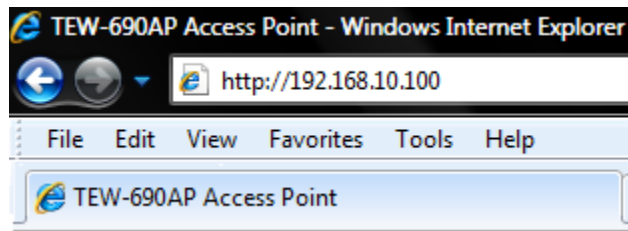
- Open the Web browser.
- Type in the current **IP Address** of the AP (i.e. <http://192.168.10.100>).



If you have changed the default IP Address assigned to the TEW-690AP (192.168.10.100), make sure to enter the correct IP Address.

#### NOTE

- Type **admin** in the **User Name** field.
- The **Password** is **admin**.
- Click **Login In**.



When you log into the unit the initial screen you will see is the status page that provides system information and network configurations .

**TRENDnet** 450Mbps Wireless N Access Point  
TEW-690AP

**Network**  
**Wireless**  
**Administrator**

- Management
- Upload Firmware
- Settings Management
- **Status**

**Status**

The device status.

**System Info**

<b>Firmware Version</b>	0.0.0.30, 16-Aug-2010
<b>System Up Time</b>	0:1:2

**Network Configurations**

<b>MAC Address</b>	00:11:E0:03:D8:DC
<b>Connected Type</b>	Static IP
<b>IP Address</b>	192.168.10.100
<b>Subnet Mask</b>	255.255.255.0
<b>Default Gateway</b>	

**Wireless LAN**

<b>Wireless Radio</b>	Radio On
<b>MAC Address</b>	00:11:E0:03:D8:DC
<b>Network Name (SSID)</b>	TESTESTEST
<b>Channel</b>	11
<b>Security Mode</b>	WPA2-PSK

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# Network

## LAN SETTING

**TRENDnet** 450Mbps Wireless N Access Point  
TEW-690AP

**Network**

- **LAN Setting**
- Wireless**
- Administrator**

### Local Area Network (LAN) Settings

You may choose different connection type suitable for your environment. Besides, you may also configure parameters according to the selected connection type.

Mode Setting	
LAN Connection Type	Static IP
Static Mode	
IP Address	192.168.10.100
Subnet Mask	255.255.255.0
Default Gateway	

**Apply** **Cancel**

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These are the settings of the LAN (Local Area Network) interface for the Access Point. The Access Point's local network (LAN) settings are configured based on the IP Address and Subnet Mask assigned in this section. The IP address is also used to access this Web-based management interface.

### LAN Connection Type

Choose "**Static IP (fixed IP)**" if your router does not support DHCP or if for any other reason you need to assign a fixed address to the AP. In this case, you must also configure the following fields.

#### IP Address

The IP address of the AP on the local area network. Assign any unused IP address in the range of IP addresses available for the LAN. For example, 192.168.10.100.

#### Subnet Mask

The subnet mask of the local area network.

#### Default Gateway

The IP address of the router on the local area network.

Choose "**DHCP (Auto Config)**" if your router supports DHCP and you want the router to assign an IP address to the AP.

# Wireless

The wireless section is used to configure the wireless settings for your Access Point. Note that changes made in this section may also need to be duplicated on wireless clients that you want to connect to your wireless network.

To protect your privacy, use the wireless security mode to configure the wireless security features.

The Wireless tab provides the following configuration options: Basic, Advanced, MAC Filter, Security, WPS and Station List.

## ACCESS POINT

The screenshot displays the configuration interface for a TRENDnet 450Mbps Wireless N Access Point (TEW-690AP). The interface is divided into a left sidebar and a main content area. The sidebar contains tabs for Network, Wireless, and Administrator. The Wireless tab is selected, showing sub-options: Basic (selected), Advanced, MAC Filter, Security, WPS, and Station List. The main content area is titled 'Basic Wireless Settings' and includes a descriptive text: 'You could configure the minimum number of Wireless settings for communication, such as Network Name (SSID) and Channel. The Access Point can be set simply with only the minimum setting items.'

**Wireless Network**

Repeater Mode Support	<input type="radio"/> Enable <input checked="" type="radio"/> Disable
Repeater MAC Addr.	<input type="text"/> (Optional) (ex: 00:11:22:33:44:55)
Wireless Mode	2.4GHz 802.11 n only
Wireless Name(SSID)	TRENDnet690
Multiple SSID1	<input type="text"/>
Multiple SSID2	<input type="text"/>
Multiple SSID3	<input type="text"/>
Broadcast Network Name (SSID)	<input checked="" type="radio"/> Enable <input type="radio"/> Disable
BSSID	00:11:20:03:D8:DC
Frequency (Channel)	2462MHz (Channel 11)

**Wireless Distribution System(WDS)**

WDS Mode	Disable
----------	---------

**HT Physical Mode**

Operating Mode	<input checked="" type="radio"/> Mixed Mode <input type="radio"/> Green Field
Channel BandWidth	<input type="radio"/> 20 <input checked="" type="radio"/> 20/40
20/40 Coexistence	<input checked="" type="radio"/> Disable <input type="radio"/> Enable
Guard Interval	<input type="radio"/> Long <input checked="" type="radio"/> Auto
MCS	Auto
Reverse Direction Grant(RDG)	<input type="radio"/> Disable <input checked="" type="radio"/> Enable
Extension Channel	2442MHz (Channel 7)

Apply Cancel

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## Repeater Mode Support

Repeater Mode Support allows you to “repeat” a wireless signal from an existing access point.

Select the radio button to enable or disable “Repeater Mode Support”. When enabled you have the option of defining the specific access point to repeat off of by entering in the remote access points or wireless router’s wireless MAC address into the “Repeater MAC Addr. (Optional)” field. You must also configure the TEW-690AP with the same SSID, channel and wireless encryption settings of the remote access point.

<b>Repeater Mode Support</b>	<input checked="" type="radio"/> Enable <input type="radio"/> Disable
<b>Repeater MAC Addr.</b>	<input type="text"/> (Optional) (ex: 00:11:22:33:44:55)

Repeater Mode Support



## Wireless Mode

If all of the wireless devices you want to connect with this Access Point can connect in the same transmission mode, you can improve performance slightly by choosing the appropriate "Only" mode. If you have some devices that use a different transmission mode, choose the appropriate "Mixed" mode.

<b>Wireless Mode</b>	<div>2.4GHz 802.11 n only ▼</div> <div>2.4GHz 802.11 b/g mixed mode</div> <div>2.4GHz 802.11 n only</div> <div>2.4GHz 802.11 b/g/n mixed mode</div>
<b>Wireless Name(SSID)</b>	

Wireless Modes

**802.11b/g mixed mode (2.4GHz)** - This wireless mode works in the 2.4GHz frequency range and will allow both wireless b and wireless g client to connect and access the TEW-690AP at 11Mbps for wireless b, at 54Mbps for wireless g and share access at the same time. Although the wireless b/g operates in the 2.4GHz frequency, it will allow the use of other 2.4GHz client devices (Wireless n/g @ 54Mbps) to connect and access at the same time.

**802.11n only (2.4GHz)** - This wireless mode works in the 2.4GHz frequency range and will only allow the use of wireless n client devices to connect and access the TEW-690AP up to 300Mbps\*. Although the wireless n operates in the 2.4GHz frequency, this mode will only permit wireless n client devices to work and will exclude any other wireless mode and devices that are not wireless n only.

**802.11b/g/n mixed mode (2.4GHz)** - This wireless mode works in the 2.4GHz frequency range and will only allow the use of wireless g client devices to connect and access the TEW-690AP at 11Mbps for wireless b, 54Mbps for wireless g and up to 300Mbps\* for wireless n and share

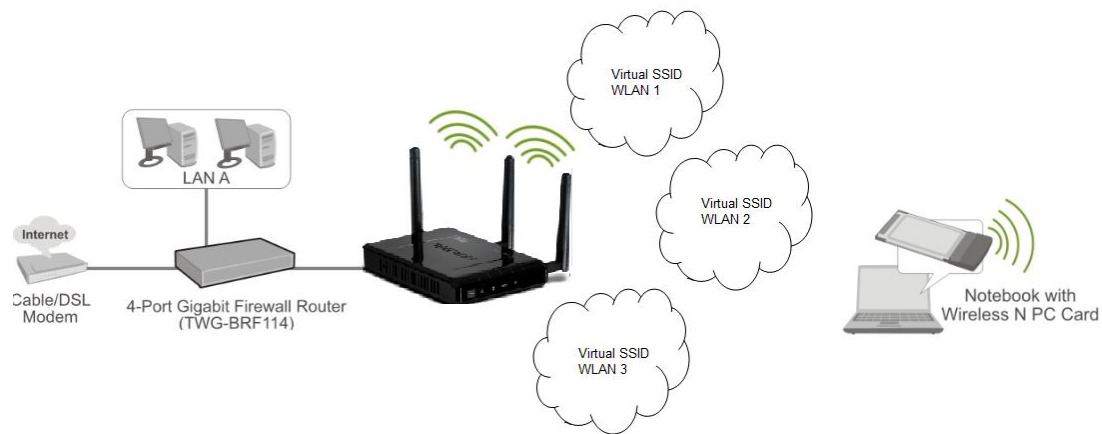
access at the same time. Although the wireless b/g/n operates in the same 2.4GHz frequency, it will allow the use of other 2.4GHz client devices (Wireless b/g/n) to connect and access at the same time.

## Wireless Name (SSID)

When you are browsing for available wireless networks, this is the name that will appear in the list (unless Broadcast Network Name is set to Disable, see below). This name is also referred to as the SSID. For security purposes, it is highly recommended to change from the pre-configured network name. Add up to three additional SSIDs to create virtual wireless networks from one wireless Access Point.

## Multiple SSID #

This Access Point support multiple SSID function, you can assign three more SSID for the TEW-690AP. Create virtual SSID wireless networks (WLAN) with different type of wireless security for each virtual WLAN that is created. When using the wireless adapter wireless site survey tool, there will be additional wireless network to connect with once the feature is enabled.



## Multiple SSID (Virtual WLANs)

### Add Additional Wireless Network Name (SSID)

To add additional Wireless Network Names simply add the name to the Multiple SSID field and click on apply at the bottom of the page. When finished, go to the Security section in this Users Guide for wireless security configuration.

<b>Wireless Name(SSID)</b>	TRENDnet690
<b>Multiple SSID1</b>	
<b>Multiple SSID2</b>	
<b>Multiple SSID3</b>	
<b>Broadcast Network Name (SSID)</b>	<input checked="" type="radio"/> Enable <input type="radio"/> Disable
<b>BSSID</b>	00:11:E0:03:D8:DC
<b>Frequency (Channel)</b>	2462MHz (Channel 11) ▼

## Multiple SSIDs

## Broadcast Network Name (SSID)

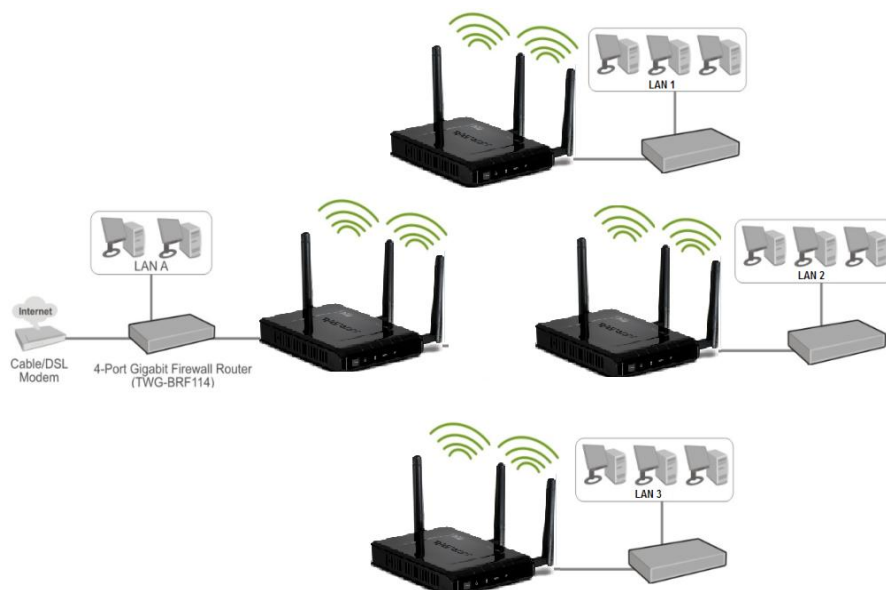
This option allows you to hide your wireless network. When this option is set to enable, your wireless network name is broadcast to anyone within the range of your signal. If you're not using encryption then they could connect to your network. When this mode is disabled, you must enter the Wireless Network Name (SSID) on the client manually to connect to the network.

## Frequency (Channel)

A wireless network uses specific channels in the wireless spectrum to handle communication between clients. Some channels in your area may have interference from other electronic devices. Choose the clearest channel to help optimize the performance and coverage of your wireless network.

## WDS Mode

When WDS is enabled, this access point functions as a wireless bridge and is able to wirelessly communicate with other access points via WDS links. A WDS link is bidirectional; both end points must support WDS and each access point must know the MAC Address of the other. Each access point will be configured with the remote access point's MAC address and vice versa. Make sure all access points are configured with the same SSID, channel and wireless encryption settings.



Wireless Distribution System(WDS)	
WDS Mode	Enable ▼
AP MAC Address	<input type="text"/>
AP MAC Address	<input type="text"/>
AP MAC Address	<input type="text"/>
AP MAC Address	<input type="text"/>

WDS configuration option enabled

## Operating Mode

If you have both wireless g and wireless n client devices included on your wireless network at the same time, you should choose **Mixed Mode**. And if you only have wireless n client devices on your wireless network, you can choose **Green Field** to enjoy high throughput.

## Channel Bandwidth

The "20/40" MHz option is usually best. The other option is available for special circumstances.

## 20/40 Coexistence

When Disable is chosen, your network will operate under 20/40 mode.

## Guard Interval

Using "Auto" option can increase throughput. However, it can also increase error rate in some installations, due to increased sensitivity to radio-frequency reflections. Select the option that works best for your installation.

## MCS

The Modulation and Coding Scheme (MCS) is a value that determines the modulation, coding and number of spatial channels. This parameter represents transmission rate. By default (Auto) the fastest possible transmission rate will be selected. You have the option of selecting the speed if necessary.

Fix MCS rate for HT rate 0-15

## Reserve Direction Grant (RDG)

Disable or enable reserve direction grant. Default is enabled.

## Extension Channel

When 20/40 channel bandwidth has been chosen, you should select extension channel to get higher throughput.

HT Physical Mode	
Operating Mode	<input checked="" type="radio"/> Mixed Mode <input type="radio"/> Green Field
Channel BandWidth	<input type="radio"/> 20 <input checked="" type="radio"/> 20/40
20/40 Coexistence	<input checked="" type="radio"/> Disable <input type="radio"/> Enable
Guard Interval	<input type="radio"/> long <input checked="" type="radio"/> Auto
MCS	Auto ▼
Reverse Direction Grant (RDG)	<input type="radio"/> Disable <input checked="" type="radio"/> Enable
Extension Channel	2442MHz (Channel 7) ▼



## ADVANCED

### Beacon Interval

Beacons are packets sent by a wireless Access Point to synchronize wireless devices. Specify a Beacon Period value between 20 and 1000. The default value is set to 100 milliseconds.

### Data Beacon Rate (DTIM)

A DTIM is a countdown informing clients of the next window for listening to broadcast and multicast messages. When the wireless Access Point has buffered broadcast or multicast messages for associated clients, it sends the next DTIM with a DTIM Interval value. Wireless clients detect the beacons and awaken to receive the broadcast and multicast messages. The default value is 1. Valid settings are between 1 and 255.

### Fragment Threshold

This setting should remain at its default value of 2346. Setting the Fragmentation value too low may result in poor performance.

### RTS Threshold

This setting should remain at its default value of 2347. If you encounter inconsistent data flow, only minor modifications to the value are recommended.

### Short Preamble

Use to synchronize communication timing between devices on a network. Disable by default.

### Short Slot

Enable or disable short slot. Default is enabled.

## MAC FILTER

The MAC address filter section can be used to filter network access by machines based on the unique MAC addresses of their network adapter(s). It is most useful to prevent unauthorized wireless devices from connecting to your network. A MAC address is a unique ID assigned by the manufacturer of the network adapter.

**TRENDnet** 450Mbps Wireless N Access Point TEW-690AP

**Network**

**Wireless**

- Basic
- Advanced
- **MAC Filter**
- Security
- WPS
- Station List

**Administrator**

### MAC Filtering Settings

You may setup MAC based firewall rules to protect your network from invalid access.

#### Wireless MAC Filter Policy

**Policy**

**Apply** **Cancel**

#### Add MAC Address

**MAC Address**   
(Ex: 00:11:22:33:44:55)

**Comment**

**Add** **Cancel**

#### Allow MAC Address to connection in system

No.	MAC Address	Comment
<b>Delete Selected</b> <b>Cancel</b>		

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### Policy

Three policies can be selected - Disable, Allow All & Reject All.

### MAC Address

Add MAC Address to follow Policy setting (64 MAC Address filter entries)

# SECURITY

The screenshot shows the TRENDnet web interface for a 450Mbps Wireless N Access Point (TEW-690AP). The left sidebar contains navigation tabs: Network, Wireless, and Administrator. Under the Wireless tab, there are sub-links: Basic, Advanced, MAC Filter, Security (highlighted), WPS, and Station List. The main content area is titled "Wireless Security Setting". It includes a warning message: "Setting wireless security. AP-client's security policy only supports NONE, WEP (OPEN, SHARED), WPAPSK and WPA2PSK (TKIP, AES)." Below this, there are three sections: "Select SSID" with a dropdown menu showing "TRENDnet690"; "Security Mode -- 'TRENDnet690'" with a dropdown menu showing "WPA2-PSK"; and "WPA" settings including "WPA Algorithms" (radio buttons for TKIP, AES, and TKIP/AES, with AES selected), "Pass Phrase" (text field with "1234567890"), and "Key Renewal Interval" (text field with "3600" and "seconds" label). At the bottom of the WPA section are "Apply" and "Cancel" buttons. The footer of the interface reads "Copyright © 2010 TRENDnet. All Rights Reserved."

## SSID choice

Choose the SSID which need to implement security.

## Security Mode

You can disable security mode, or you can choose following modes to enable security – Disable, WEP-OPEN, WEP-SHARED, WEP-AUTO, WPA, WPA-PSK, WPA2, WPA2-PSK, WPA-PSK/WPA2-PSK, WPA/WPA2

# WPS

You can setup security easily by choosing PIN or PBC method to do Wi-Fi Protected Setup.

**TRENDnet** 450Mbps Wireless N Access Point  
TEW-690AP

**Network**  
**Wireless**  
• Basic  
• Advanced  
• MAC Filter  
• Security  
• **WPS**  
• Station List  
**Administrator**

### Wi-Fi Protected Setup

You could setup security easily by choosing PIN or PBC method to do Wi-Fi Protected Setup.

#### WPS Config

WPS

#### WPS Summary

WPS Current Status	Idle
WPS Configured	Yes
WPS SSID	TRENDnet690
WPS Auth Mode	WPA2-PSK
WPS Encrypt Type	AES
WPS Default Key Index	2
WPS Key(ASCII)	1234567890
AP PIN	02521244

#### WPS Progress

WPS mode ☒ PIN ☐ PBC

Client PIN

#### WPS Status

WSC:Idle

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## WPS mode

Two WPS modes can be selected – PIN & PBC. If PIN is selected, you should enter PIN code of your wireless client device to get wireless connection with this AP.

## Wireless Station List

You can monitor stations which associated to this AP.

The screenshot shows the TrendNet web interface for a 450Mbps Wireless N Access Point (TEW-690AP). The left sidebar contains a menu with 'Network', 'Wireless', and 'Administrator' sections. The 'Wireless' section is expanded, showing 'Basic', 'Advanced', 'MAC Filter', 'Security', 'WPS', and 'Station List' (which is selected). The main content area is titled 'Station List' and contains the text 'You could monitor stations which associated to this AP here.' Below this is a table with the following columns: Client, MAC Address, Aid, PSM, MimoPS, MCS, BW, SGI, and STBC. The table is currently empty. The footer of the interface reads 'Copyright © 2010 TRENDnet. All Rights Reserved.'

## Administrator

This Administrator section is used to set password for access to the Web-based management, also provide function of firmware upgrade.

The Administrator tab provides the following configuration options: Management, Upload Firmware, settings, Management and Status.

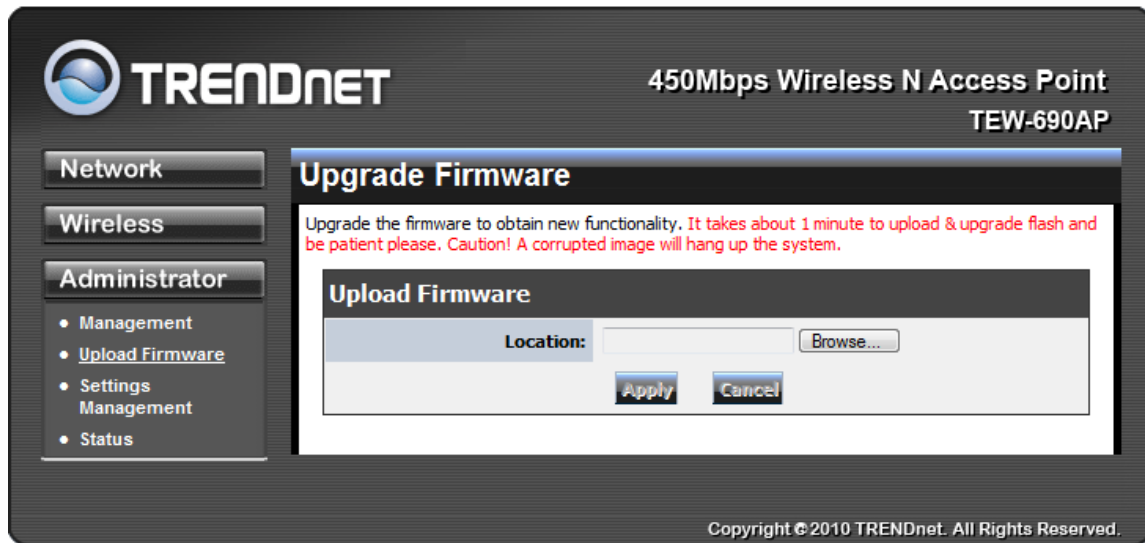
## SYSTEM MANAGEMENT

At this page, you can configure administrator account and password.

The screenshot shows the TrendNet web interface for a 450Mbps Wireless N Access Point (TEW-690AP). The left sidebar contains a menu with 'Network', 'Wireless', and 'Administrator' sections. The 'Administrator' section is expanded, showing 'Management', 'Upload Firmware', 'Settings Management', and 'Status' (which is selected). The main content area is titled 'System Management' and contains the text 'You may configure administrator account and password.' Below this are two sections: 'Administrator Settings' and 'Device Name Settings'. The 'Administrator Settings' section has fields for 'Account' (set to 'admin'), 'Password' (with a red note '(Max Length: 16 characters)'), 'Password Confirm', and 'Idle Timeout' (set to '300' with a note '(60-3600 seconds)'). There are 'Apply' and 'Cancel' buttons. The 'Device Name Settings' section has a field for 'Device Name' (set to 'TEW-690AP') and 'Apply' and 'Cancel' buttons. The footer of the interface reads 'Copyright © 2010 TRENDnet. All Rights Reserved.'

## UPLOAD FIRMWARE

By assigning firmware location, you can upload firmware at this page.




## SETTINGS MANAGEMENT

You can save system settings by exporting them to a configuration file, restore them by importing the file, or reset them to factory default.



# STATUS

You can check system information and network configurations on this page.

 **TRENDnet**

450Mbps Wireless N Access Point  
TEW-690AP

Network

Wireless

Administrator

- Management
- Upload Firmware
- Settings Management
- Status

## Status

The device status.

### System Info

<b>Firmware Version</b>	0.0.0.30, 16-Aug-2010
<b>System Up Time</b>	0:5:11

### Network Configurations

<b>MAC Address</b>	00:11:E0:03:D8:DC
<b>Connected Type</b>	Static IP
<b>IP Address</b>	192.168.10.100
<b>Subnet Mask</b>	255.255.255.0
<b>Default Gateway</b>	

### Wireless LAN

<b>Wireless Radio</b>	Radio On
<b>MAC Address</b>	00:11:E0:03:D8:DC
<b>Network Name (SSID)</b>	TRENDnet690
<b>Channel</b>	11
<b>Security Mode</b>	WPA2-PSK

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# Glossary

## **A**

### **Access Control List**

ACL. This is a database of network devices that are allowed to access resources on the network.

### **Access Point**

AP. Device that allows wireless clients to connect to it and access the network

### **Ad-hoc network**

Peer-to-Peer network between wireless clients

### **Address Resolution Protocol**

ARP. Used to map MAC addresses to IP addresses so that conversions can be made in both directions.

### **Advanced Encryption Standard**

AES. Government encryption standard

### **Alphanumeric**

Characters A-Z and 0-9

### **Antenna**

Used to transmit and receive RF signals.

### **ASCII**

American Standard Code for Information Interchange. This system of characters is most commonly used for text files

### **Attenuation**

The loss in strength of digital and analog signals. The loss is greater when the signal is being transmitted over long distances.

### **Authentication**

To provide credentials, like a Password, in order to verify that the person or device is really who they are claiming to be

### **Automatic Private IP Addressing**

APIPA. An IP address that that a Windows computer will assign itself when it is configured to obtain an IP address automatically but no DHCP server is available on the network

## **B**

### **Backward Compatible**

The ability for new devices to communicate and interact with older legacy devices to guarantee interoperability

### **Bandwidth**

The maximum amount of bytes or bits per second that can be transmitted to and from a network device

### **Beacon**

A data frame by which one of the stations in a Wi-Fi network periodically broadcasts network control data to other wireless stations.

### **Bit rate**

The amount of bits that pass in given amount of time

### **Bit/sec**

Bits per second

### **BOOTP**

Bootstrap Protocol. Allows for computers to be booted up and given an IP address with no user intervention

### **Broadcast**



Transmitting data in all directions at once

### **Browser**

A program that allows you to access resources on the web and provides them to you graphically

## **C**

### **CAT 5**

Category 5. Used for 10/100 Mbps or 1Gbps Ethernet connections

### **Client**

A program or user that requests data from a server

### **Collision**

When do two devices on the same Ethernet network try and transmit data at the exact same time.

### **Cookie**

Information that is stored on the hard drive of your computer that holds your preferences to the site that gave your computer the cookie

## **D**

### **Data**

Information that has been translated into binary so that it can be processed or moved to another device

### **Data-Link layer**

The second layer of the OSI model. Controls the movement of data on the physical link of a network

### **dBd**

Decibels related to dipole antenna

### **dBi**

Decibels relative to isotropic radiator

### **dBm**

Decibels relative to one milliwatt

### **Decrypt**

To unscramble an encrypted message back into plain text

### **Default**

A predetermined value or setting that is used by a program when no user input has been entered for this value or setting

### **DHCP**

Dynamic Host Configuration Protocol: Used to automatically assign IP addresses from a predefined pool of addresses to computers or devices that request them

### **Digital certificate:**

An electronic method of providing credentials to a server in order to have access to it or a network

Direct Sequence Spread Spectrum

DSSS: Modulation technique used by 802.11b wireless devices

### **DNS**

Domain Name System: Translates Domain Names to IP addresses

### **Domain name**

A name that is associated with an IP address

### **Download**

To send a request from one computer to another and have the file transmitted back to the requesting computer

### **Duplex**

Sending and Receiving data transmissions at the same time

### **Dynamic IP address**

IP address that is assigned by a DHCP server and that may change. Cable Internet providers usually use this method to assign IP addresses to their customers.

## **E**

### **EAP**

Extensible Authentication Protocol

### **Encryption**

Converting data into cyphertext so that it cannot be easily read

### **Ethernet**

The most widely used technology for Local Area Networks.

## **F**

### **File server**

A computer on a network that stores data so that the other computers on the network can all access it

### **File sharing**

Allowing data from computers on a network to be accessed by other computers on the network with different levels of access rights

### **Firewall**

A device that protects resources of the Local Area Network from unauthorized users outside of the local network

### **Firmware**

Programming that is inserted into a hardware device that tells it how to function

### **Fragmentation**

Breaking up data into smaller pieces to make it easier to store

### **FTP**

File Transfer Protocol. Easiest way to transfer files between computers on the Internet

### **Full-duplex**

Sending and Receiving data at the same time

## **G**

### **Gain**

The amount an amplifier boosts the wireless signal

### **Gateway**

A device that connects your network to another, like the internet

### **Gbps**

Gigabits per second

### **Gigabit Ethernet**

Transmission technology that provides a data rate of 1 billion bits per second

### **GUI**

Graphical user interface

## **H**

### **Half-duplex**

Data cannot be transmitted and received at the same time

### **Hashing**

Transforming a string of characters into a shorter string with a predefined length

### **Hexadecimal**

Characters 0-9 and A-F

### **Hop**

The action of data packets being transmitted from one AP to another

**Host**

Computer on a network

**HTTP**

Hypertext Transfer Protocol is used to transfer files from HTTP servers (web servers) to HTTP clients (web browsers)

**HTTPS**

HTTP over SSL is used to encrypt and decrypt HTTP transmissions

**Hub**

A networking device that connects multiple devices together

**I****ICMP**

Internet Control Message Protocol

**IEEE**

Institute of Electrical and Electronics Engineers

**IGMP**

Internet Group Management Protocol is used to make sure that computers can report their multicast group membership to adjacent APs

**IIS**

Internet Information Server is a WEB server and FTP server provided by Microsoft

**Infrastructure**

In terms of a wireless network, this is when wireless clients use an Access Point to gain access to the network

**Internet**

A system of worldwide networks which use TCP/IP to allow for resources to be accessed from computers around the world

**Internet Explorer**

A World Wide Web browser created and provided by Microsoft

**Internet Protocol**

The method of transferring data from one computer to another on the Internet

**Internet Protocol Security**

IPsec provides security at the packet processing layer of network communication

**Internet Service Provider**

An ISP provides access to the Internet to individuals or companies

**Intranet**

A private network

**Intrusion Detection**

A type of security that scans a network to detect attacks coming from inside and outside of the network

**IP**

Internet Protocol

**IP address**

A 32-bit number, when talking about Internet Protocol Version 4, that identifies each computer that transmits data on the Internet or on an Intranet

**IPsec**

Internet Protocol Security

**IPX**

Internetwork Packet Exchange is a networking protocol developed by Novell to enable their Netware clients and servers to communicate

**ISP**

Internet Service Provider

## **J**

### **Java**

A programming language used to create programs and applets for web pages

## **K**

### **Kbps**

Kilobits per second

### **Kbyte**

Kilobyte

## **L**

### **LAN**

Local Area Network

### **Latency**

The amount of time that it takes a packet to get from the one point to another on a network. Also referred to as delay

### **LED**

Light Emitting Diode

### **Legacy**

Older devices or technology

### **Local Area Network**

A group of computers in a building that usually access files from a server

### **LPR/LPD**

"Line Printer Requestor"/"Line Printer Daemon". A TCP/IP protocol for transmitting streams of printer data.

### **L2TP**

Layer 2 Tunneling Protocol

## **M**

### **MAC address**

A unique hardware ID assigned to every Ethernet adapter by the manufacturer.

### **Mbps**

Megabits per second

### **MDI**

Medium Dependent Interface is an Ethernet port for a connection to a straight-through cable

### **MDIX**

Medium Dependent Interface Crossover, is an Ethernet port for a connection to a crossover cable

### **MIB**

Management Information Base is a set of objects that can be managed by using SNMP

### **Modem**

A device that Modulates digital signals from a computer to an analog signal in order to transmit the signal over phone lines. It also Demodulates the analog signals coming from the phone lines to digital signals for your computer

### **MPPE**

Microsoft Point-to-Point Encryption is used to secure data transmissions over PPTP connections

### **MTU**

Maximum Transmission Unit is the largest packet that can be transmitted on a packet-based network like the Internet

### **Multicast**

Sending data from one device to many devices on a network

## **N**

### **NAT**

Network Address Translation allows many private IP addresses to connect to the Internet, or another network, through one IP address

### **NetBEUI**

NetBIOS Extended User Interface is a Local Area Network communication protocol. This is an updated version of NetBIOS

### **NetBIOS**

Network Basic Input/Output System

### **Netmask**

Determines what portion of an IP address designates the Network and which part designates the Host

### **Network Interface Card**

A card installed in a computer or built onto the motherboard that allows the computer to connect to a network

### **Network Layer**

The third layer of the OSI model which handles the routing of traffic on a network

### **Network Time Protocol**

Used to synchronize the time of all the computers in a network

### **NIC**

Network Interface Card

### **NTP**

Network Time Protocol

## **O**

### **OFDM**

Orthogonal Frequency-Division Multiplexing is the modulation technique for both 802.11a and 802.wireless g

### **OSI**

Open Systems Interconnection is the reference model for how data should travel between two devices on a network

### **OSPF**

Open Shortest Path First is a routing protocol that is used more than RIP in larger scale networks because only changes to the routing table are sent to all the other APs in the network as opposed to sending the entire routing table at a regular interval, which is how RIP functions

## **P**

### **Password**

A sequence of characters that is used to authenticate requests to resources on a network

### **Personal Area Network**

The interconnection of networking devices within a range of 10 meters

### **Physical layer**

The first layer of the OSI model. Provides the hardware means of transmitting electrical signals on a data carrier

### **Ping**

A utility program that verifies that a given Internet address exists and can receive messages. The utility sends a control packet to the given address and waits for a response.

### **PoE**

Power over Ethernet is the means of transmitting electricity over the unused pairs in a category 5 Ethernet cable

**Port**

A logical channel endpoint in a network. A computer might have only one physical channel (its Ethernet channel) but can have multiple ports (logical channels) each identified by a number.

**PPP**

Point-to-Point Protocol is used for two computers to communicate with each other over a serial interface, like a phone line

**PPPoE**

Point-to-Point Protocol over Ethernet is used to connect multiple computers to a remote server over Ethernet

**PPTP**

Point-to-Point Tunneling Protocol is used for creating VPN tunnels over the Internet between two networks

**Preamble**

Used to synchronize communication timing between devices on a network

**Q****QoS**

Quality of Service

**R****RADIUS**

Remote Authentication Dial-In User Service allows for remote users to dial into a central server and be authenticated in order to access resources on a network

**Reboot**

To restart a computer and reload its operating software or firmware from nonvolatile storage.

**Rendezvous**

Apple's version of UPnP, which allows for devices on a network to discover each other and be connected without the need to configure any settings

**Repeater**

Retransmits the signal of an Access Point in order to extend its coverage

**RIP**

Routing Information Protocol is used to synchronize the routing table of all the APs on a network

**RJ-11**

The most commonly used connection method for telephones

**RJ-45**

The most commonly used connection method for Ethernet

**RS-232C**

The interface for serial communication between computers and other related devices

**RSA**

Algorithm used for encryption and authentication

**S****Server**

A computer on a network that provides services and resources to other computers on the network

**Session key**

An encryption and decryption key that is generated for every communication session between two computers

**Session layer**

The fifth layer of the OSI model which coordinates the connection and communication between applications on both ends

**Simple Mail Transfer Protocol**

Used for sending and receiving email

**Simple Network Management Protocol**

Governs the management and monitoring of network devices

**SIP**

Session Initiation Protocol. A standard protocol for initiating a user session that involves multimedia content, such as voice or chat.

**SMTP**

Simple Mail Transfer Protocol

**SNMP**

Simple Network Management Protocol

**SOHO**

Small Office/Home Office

**SPI**

Stateful Packet Inspection

**SSH**

Secure Shell is a command line interface that allows for secure connections to remote computers

**SSID**

Service Set Identifier is a name for a wireless network

**Stateful inspection**

A feature of a firewall that monitors outgoing and incoming traffic to make sure that only valid responses to outgoing requests are allowed to pass through the firewall

**Subnet mask**

Determines what portion of an IP address designates the Network and which part designates the Host

**Syslog**

System Logger -- a distributed logging interface for collecting in one place the logs from different sources. Originally written for UNIX, it is now available for other operating systems, including Windows.

**T**

**TCP**

Transmission Control Protocol

**TCP/IP**

Transmission Control Protocol/Internet Protocol

**TCP Raw**

A TCP/IP protocol for transmitting streams of printer data.

**TFTP**

Trivial File Transfer Protocol is a utility used for transferring files that is simpler to use than FTP but with less features

**Throughput**

The amount of data that can be transferred in a given time period

**Traceroute**

A utility displays the routes between your computer and specific destination

**U**

**UDP**

User Datagram Protocol

**Unicast**

Communication between a single sender and receiver

**Universal Plug and Play**

A standard that allows network devices to discover each other and configure themselves to be a part of the network

**Upgrade**

To install a more recent version of a software or firmware product

**Upload**

To send a request from one computer to another and have a file transmitted from the requesting computer to the other

**UPnP**

Universal Plug and Play

**URL**

Uniform Resource Locator is a unique address for files accessible on the Internet

**USB**

Universal Serial Bus

**UTP**

Unshielded Twisted Pair

**V**

**Virtual Private Network**

VPN: A secure tunnel over the Internet to connect remote offices or users to their company's network

**VLAN**

Virtual LAN

**Voice over IP**

Sending voice information over the Internet as opposed to the PSTN

**VoIP**

Voice over IP

**W**

**Wake on LAN**

Allows you to power up a computer through its Network Interface Card

**WAN**

Wide Area Network

**WCN**

Windows Connect Now. A Microsoft method for configuring and bootstrapping wireless networking hardware (access points) and wireless clients, including PCs and other devices.

**WDS**

Wireless Distribution System. A system that enables the interconnection of access points wirelessly.

**Web browser**

A utility that allows you to view content and interact with all of the information on the World Wide Web

**WEP**

Wired Equivalent Privacy is security for wireless networks that is supposed to be comparable to that of a wired network

**Wi-Fi**

Wireless Fidelity

**Wi-Fi Protected Access**

An updated version of security for wireless networks that provides authentication as well as encryption

**Wide Area Network**

The larger network that your LAN is connected to, which may be the Internet itself, or a regional



or corporate network

**Wireless ISP**

A company that provides a broadband Internet connection over a wireless connection

**Wireless LAN**

Connecting to a Local Area Network over one of the 802.11 wireless standards

**WISP**

Wireless Internet Service Provider

**WLAN**

Wireless Local Area Network

**WPA**

Wi-Fi Protected Access. A Wi-Fi security enhancement that provides improved data encryption, relative to WEP.

**X**

**xDSL**

A generic term for the family of digital subscriber line (DSL) technologies, such as ADSL, HDSL, RADSL, and SDSL.

**Y**

**Yagi antenna**

A directional antenna used to concentrate wireless signals on a specific location

**802.11**

A family of specifications for wireless local area networks (WLANs) developed by a working group of the Institute of Electrical and Electronics Engineers (IEEE).

# Specifications

Hardware	
<b>Standards</b>	IEEE 802.3, IEEE 802.3u, IEEE 802.3ab, IEEE 802.11b, IEEE 802.11g, and IEEE 802.11n
<b>Interface</b>	1 x 10/100/1000Mbps Auto-MDIX Gigabit LAN port
<b>Access Control</b>	64 MAC Address filter entries
<b>LED Indicator</b>	Wireless, LAN, WPS, Power
<b>Buttons</b>	Reset button – restores factory default settings WPS button – enables WPS function On/off power (EU version)
<b>Power</b>	12V DC, 1A power adapter
<b>Power Consumption</b>	4.5 Watts (max)
<b>Dimensions (LxWxH)</b>	120 x 84 x 24 mm (4.7 x 3.3 x 1.0 in.)
<b>Weight</b>	160 g (5.6 oz.)
<b>Temperature</b>	Operating: 0° ~ 40° C (32° ~ 104° F) Storage: -20° ~ 60° C (-4° ~ 140° F)
<b>Humidity</b>	Max. 90% (non-condensing)
<b>Certifications</b>	CE, FCC
Wireless	
<b>Frequency</b>	2.412 ~ 2.472 GHz
<b>Antenna</b>	3 x 2dBi detachable antennas
<b>Data Rate (auto fallback)</b>	802.11b: up to 11Mbps 802.11g: up to 54Mbps 802.11n: up to 450Mbps
<b>Output Power</b>	802.11b: 18dBm (typical) 802.11g: 15dBm (typical) 802.11n: 15dBm (typical)
<b>Receiving Sensitivity</b>	802.11b: -84dBm (typical) 802.11g: -72dBm (typical) 802.11n: -69dBm (typical)
<b>Encryption</b>	64/128-bit WEP, WPA/WPA2-PSK, WPA/WPA2-RADIUS
<b>Channels</b>	1~11 (FCC), 1~13 (ETSI)

\*Maximum wireless signal rates are referenced from IEEE 802.11 theoretical specifications. Actual data throughput and coverage will vary depending on interference, network traffic, building materials and other conditions.

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