EnGenius

Wireless Access Point
Installation Guide ▪ 1.0

SAFE FLEET
Law Enforcement

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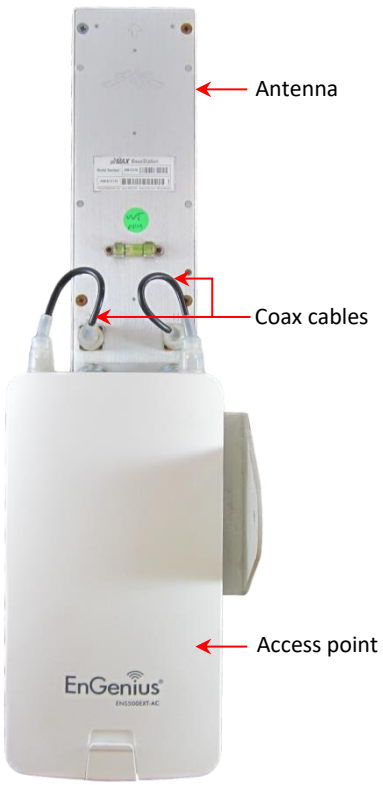
Introduction

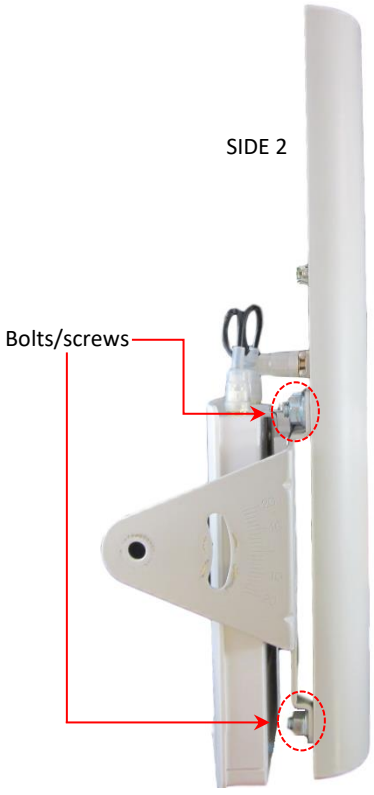
This document describes how to install and configure the EnGenius ENS500EXT-AC access point and peripherals. It includes the critical settings required to deploy Flashback2s, Flashback3s, and FlashbackHD in-car DVRs. This document is *not* meant to configure the access point to its "ideal" configuration, as some settings are unique to the client's existing network and Wi-Fi environment. All the settings and steps discussed in this document describe the typical or "default" configuration for most Flashback installations. It assumes that the EnGenius access point is either new or has been reset to its factory defaults.

The EnGenius ENS500EXT-AC is designed for external mount only.

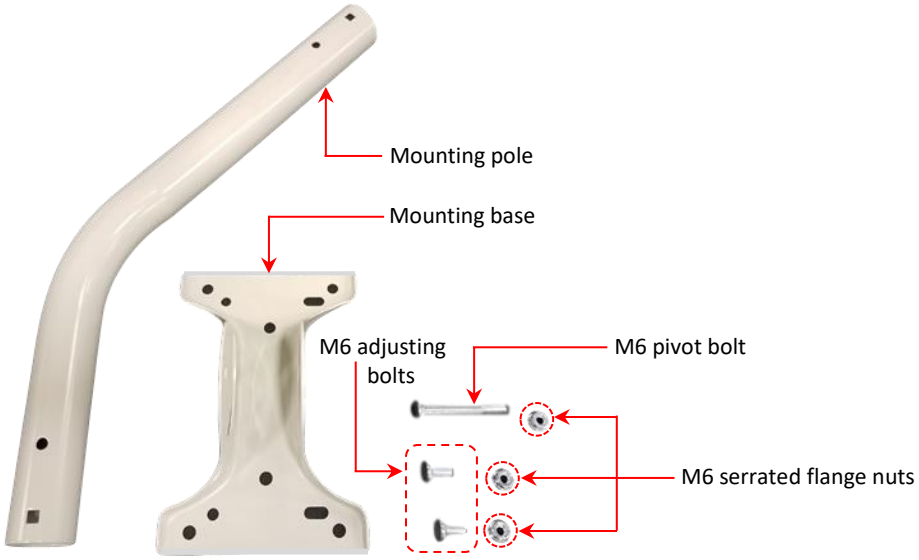
1 Attach Access Point to Antenna

Using the bolts and screws provided, mount the access point to the antenna. Use the provided coax cables to plug the access point into the two antenna ports.





2 Assemble Mounting Bracket and Attach to Antenna/Access Point

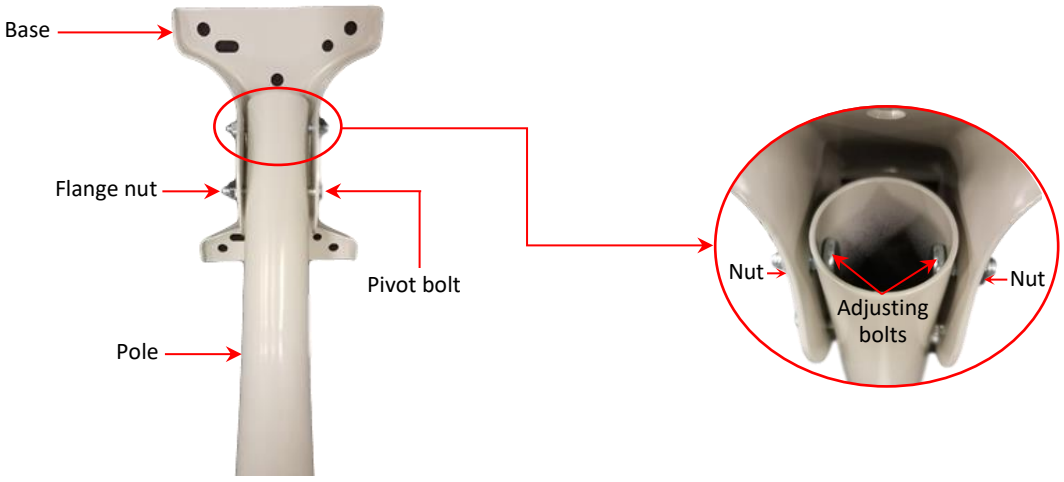


Universal Antenna Mounting Bracket Parts Kit

a. Install the mounting base to the mounting surface (see **NOTE** below).

NOTE: Surface mounting hardware is *not* supplied with the mounting kit—the field technician performing the installation needs to supply this hardware.

b. Install the pole to the mounting bracket using the M6 pivot bold and (1) M6 flange nut. Tighten as required. Do not crush pole.



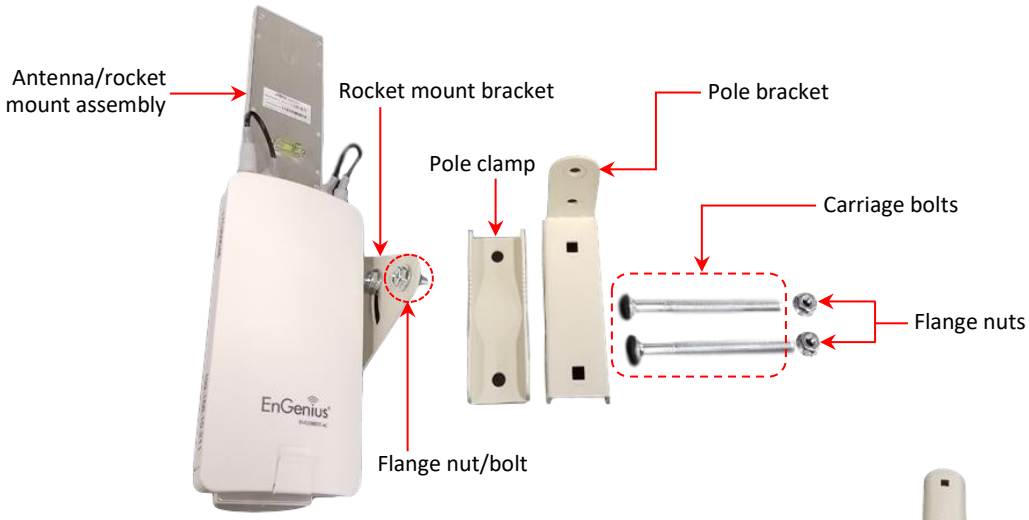
c. Install the (2) M6 adjusting bolts from the inside of the pole, as pictured above. Install the (2) M6 flange nuts from the outside. Tighten as required. Do not crush pole.

d. Adjust the pole to the required mounting angle.

e. Locate the parts for the antenna/rocket mount assembly (included):

- ❒ Antenna (1)
- ❒ Rocket mount bracket (1)
- ❒ Rocket M5 (1)
- ❒ RF cables (2)
- ❒ Flange bolts (2)
- ❒ Flange nuts (2) See **NOTE** below.
- ❒ Pole bracket (1)
- ❒ Pole clamp (1)
- ❒ M8x120 carriage bolts (2)
- ❒ Flange nuts (2)

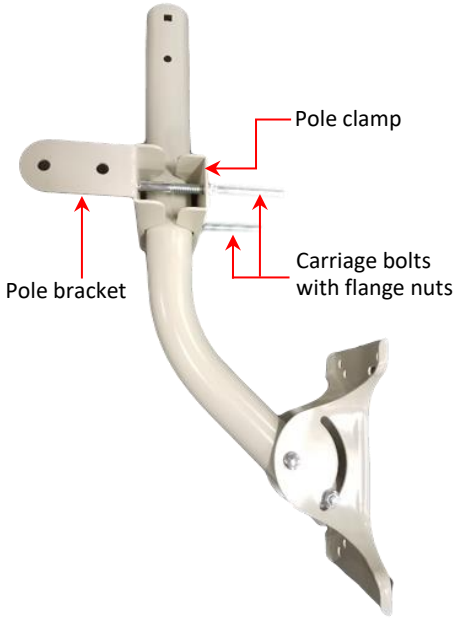
Antenna/Rocket Mount Assembly Parts Kit



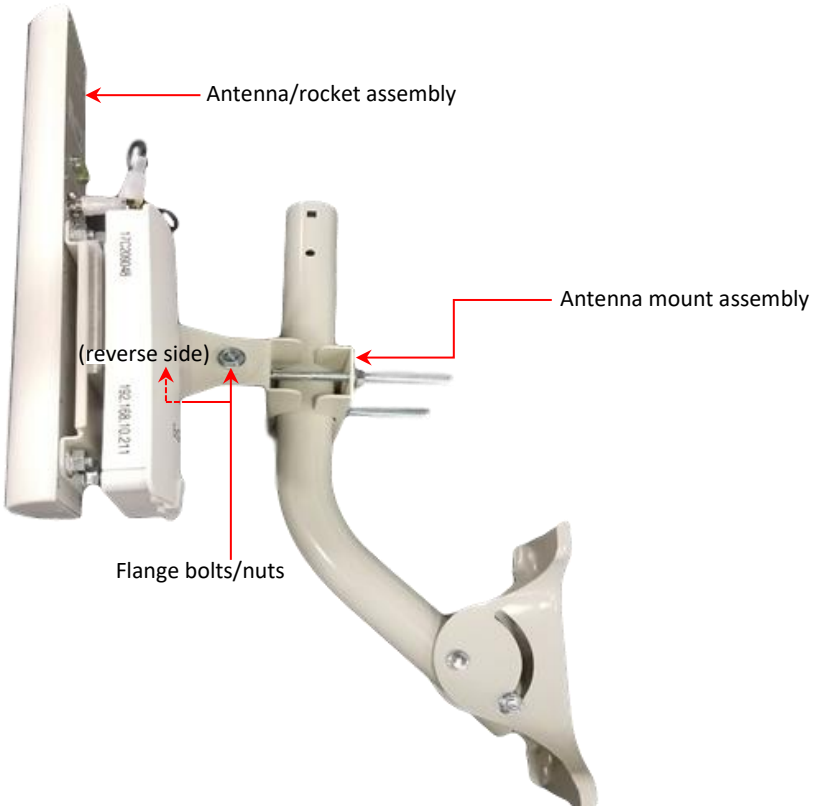
NOTE: Remove flange nuts prior to attaching to the pole bracket.

f. Install the antenna kit to the antenna mount assembly, as shown. Install the pole bracket and pole clamp using the hardware supplied with the kit: (2) M8x120 carriage bolts, and (2) flange nuts.

Tighten as required. Do not crush pole.



g. Install the antenna/rocket assembly to the antenna mount assembly as shown. Use the flange bolts and nuts supplied with the kit. Tighten as required.



3 Mount Hardware to Exterior of Building

Location

Install the antenna in a central location of the police parking area. In order for videos to transmit properly, all vehicles must be within 300 feet of the antenna.

Leveling bubble

Height of Antenna Mount

If possible, mount the antenna at least 20 feet off the ground. This will keep the antenna away from objects (e.g., trucks, cars, trees, bushes, etc.) that could have an adverse effect on its performance,

Antenna "Pointing"

One of the most important installation factors is with the pointing, or angling, of the antennas. The *top* of the antenna is where the leveling bubble is. This bubble is used to level the antenna in the *upright* position. Once the bubble is centered, you can lock down and recheck it to ensure that it's still level. This is a side-to-side (plumb) alignment, *not* a front-to-back alignment. The front-to-back level is referred to as the *angle* of the antenna. The antenna's tilting angle should have a down-tilt of 4 degrees. This means that if it is mounted with no up or down tilt, it will be pointing its focus at 4 degrees into the ground. In order to calculate the focal point, please take the -4 degree tilt in the downwards direction into account.

Proper Grounding of AP

Grounding guidelines are governed by state and local code according to the installation's location. If you are installing a secondary grounding rod, it needs to be connected to the marked grounding lug. This will allow the lighting arrestors to discharge any static current to ground. There should also be a lighting arrestor for the POE side of the deployment.

See Figure 1 on the next page.

(Continued)

4 Run Ethernet Cable Through Exterior Wall

Attach the Ethernet cable to the access point. Next, drill a thru hole large enough to accommodate the Ethernet cable. Run the cable through the hole into the building's interior. Finally, use a sealant* to close the space around the exterior hole.

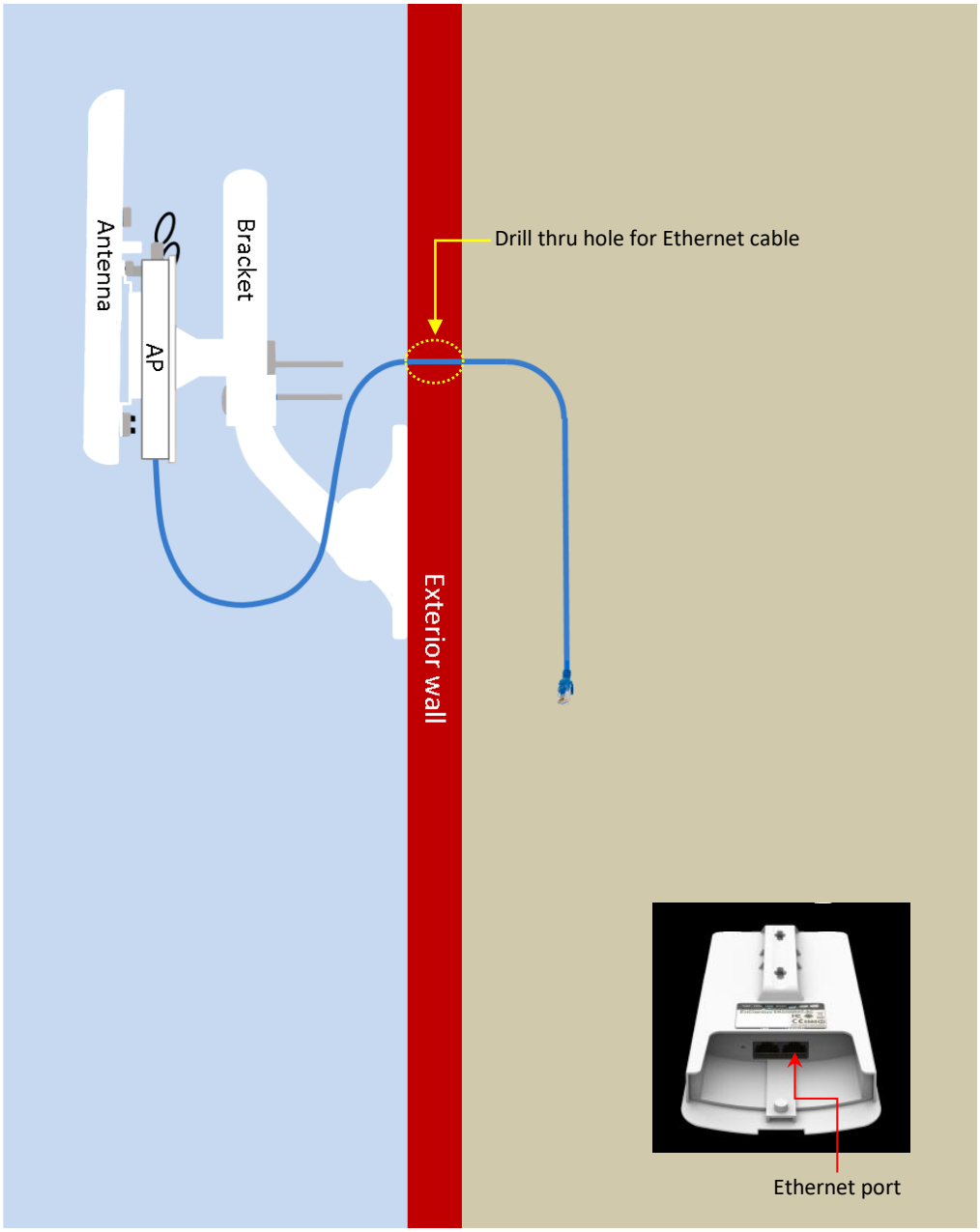


Figure 1: Antenna access point mounted on building exterior with Ethernet cable run to building interior

* Do **not** use a standard RTV sealant. The chemicals within RTV sealants will break down the coax jacket over time.

5 Connect Access Point to Server via POE Injector or Switch

In order to power up the unit, power must be applied to the 10/100/1000 Mbps Power-Over-Ethernet (POE) RJ45 Port on the bottom of the unit via a POE Device. There are two supported POE configurations:

- ❒ The supplied **POE injector** can be used to power the device regardless of whether a POE switch is used or not. See Figure 2 on the next page.
- ❒ If a **POE switch** is used, the supplied Ubiquiti Instant 802.3af POE Adapter must be placed in-line between the access point and the POE Switch. See Figure 3 on page 9.

WARNING: Do not use the POE injector *and* the POE adapter in the same setup. Choose one or the other.

If you chose to use a POE injector in your installation, it's recommended that you use the one included with your EnGenius access point. POE Injectors from other vendors are not supported.

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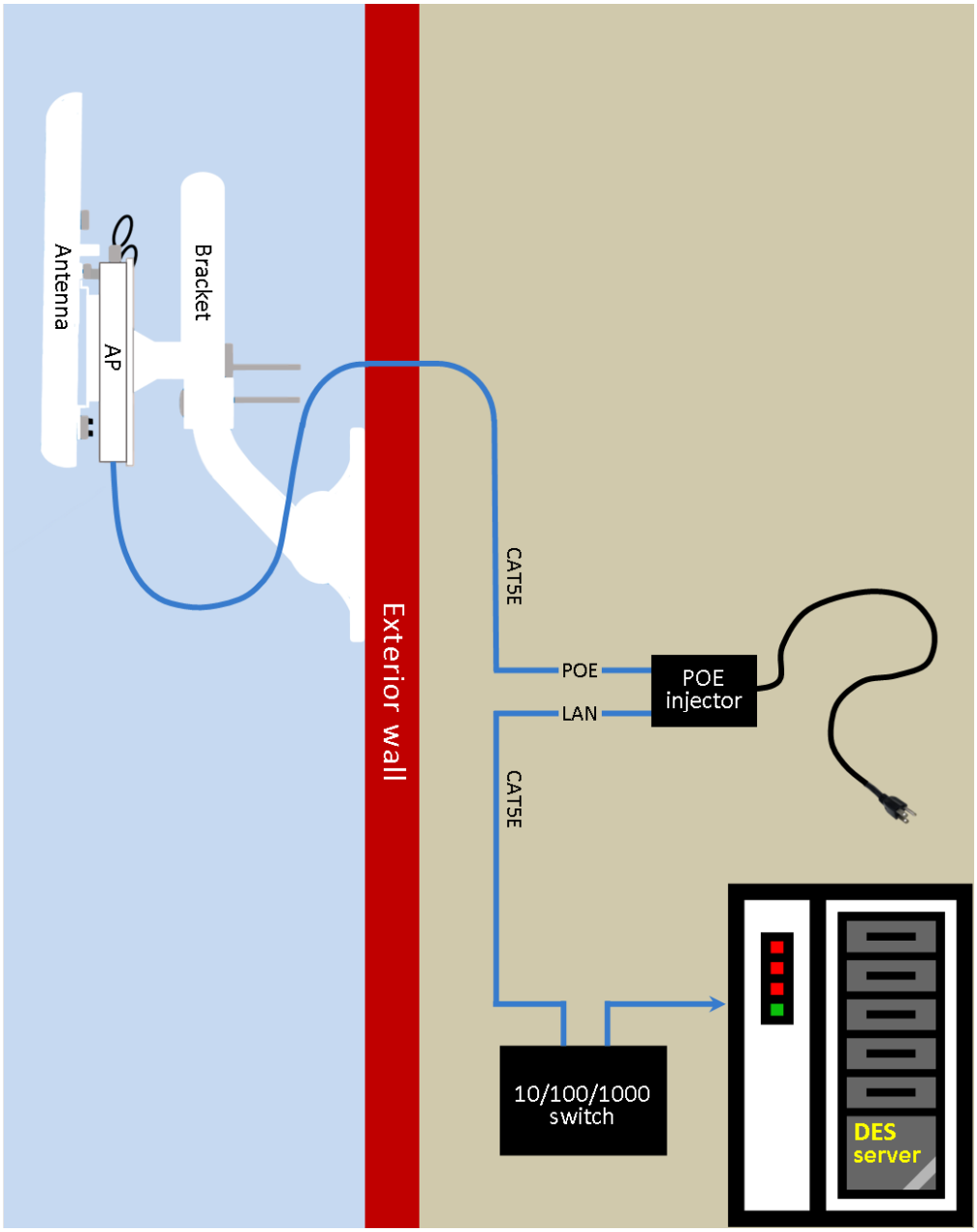


Figure 2: Access Point Configuration 1, with POE injector

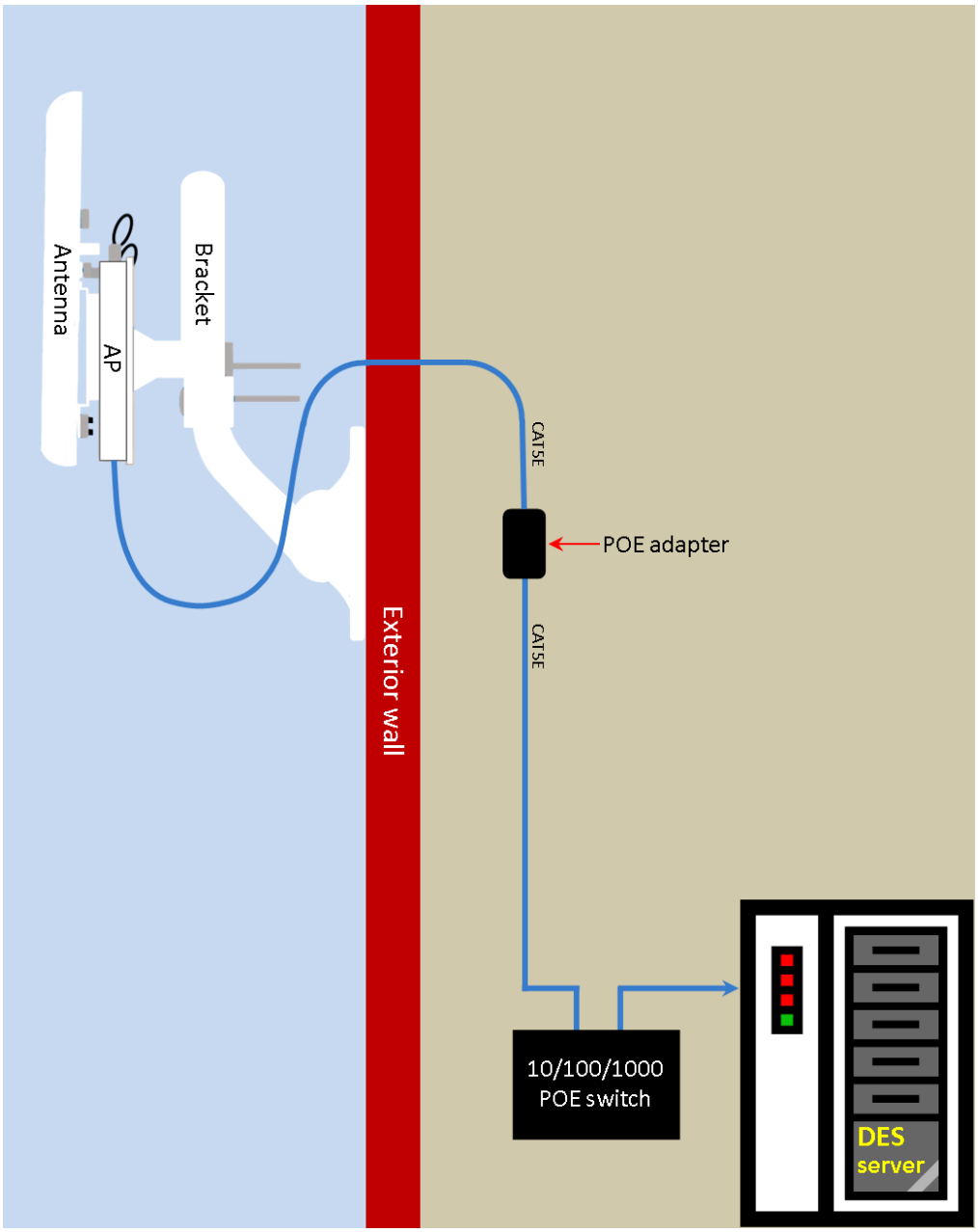


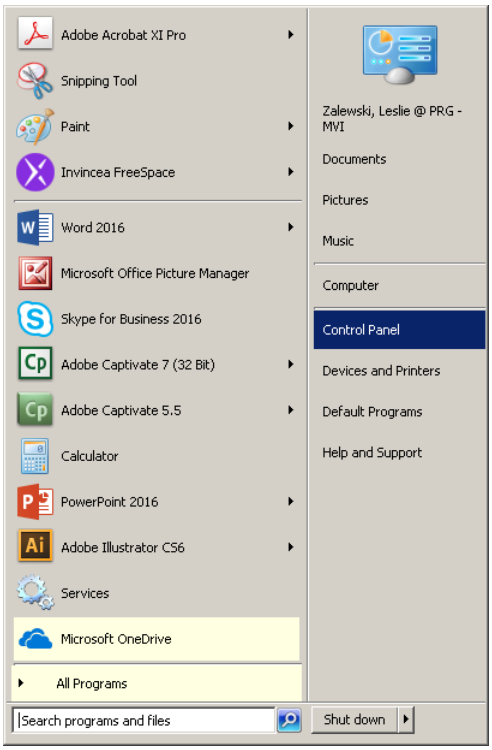
Figure 3: Access Point Configuration 2, with POE adapter

6 Establish a PC Connection

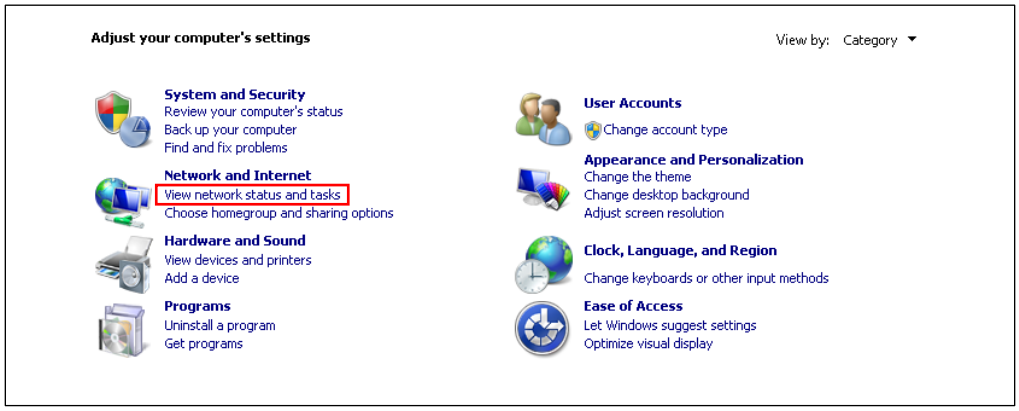
There are two ways to connect to the access point for configuring the software. You can connect the access point directly to a PC via the PC's Ethernet port, or you can connect it to a switch that the PC is also connected to. In either case, you will have to make some changes on the local PC in order to access the access point's software interface. The default IP address of the EnGenius ENS500EXT-AC is **192.168.1.1**. The PC will either need to be on this network, or the PC's default gateway will need to be set to **192.168.1.1**.

The following procedure is based on Windows 7. If you have a different version of Windows, your steps may be slightly different.

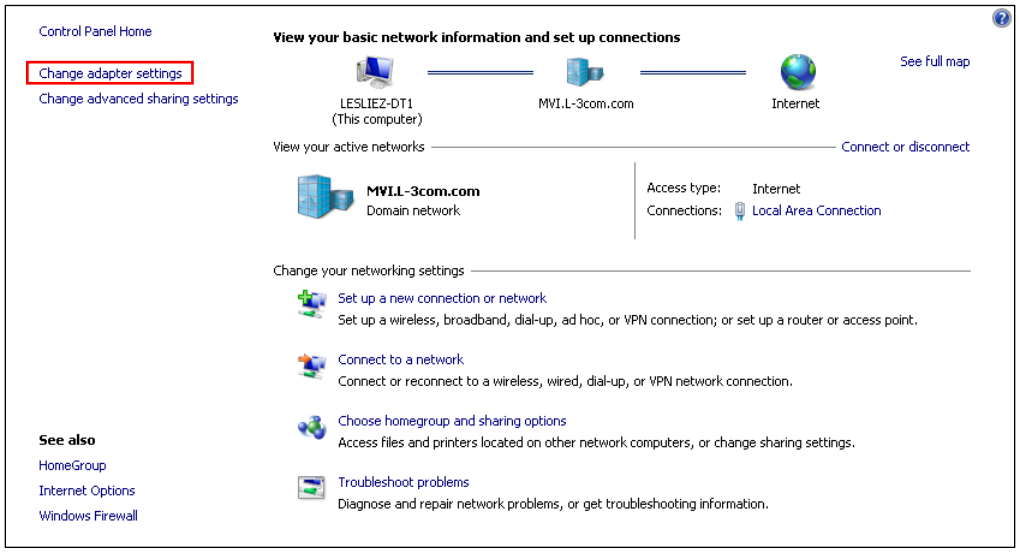
1 Click the **Start** button and select **Control Panel** from the right column.



2 Proceed to the *Network and Internet* section and click **View network status and tasks**.



3 Select **Change adapter settings** from the left column.



4 Click on **Local Area Connection**.

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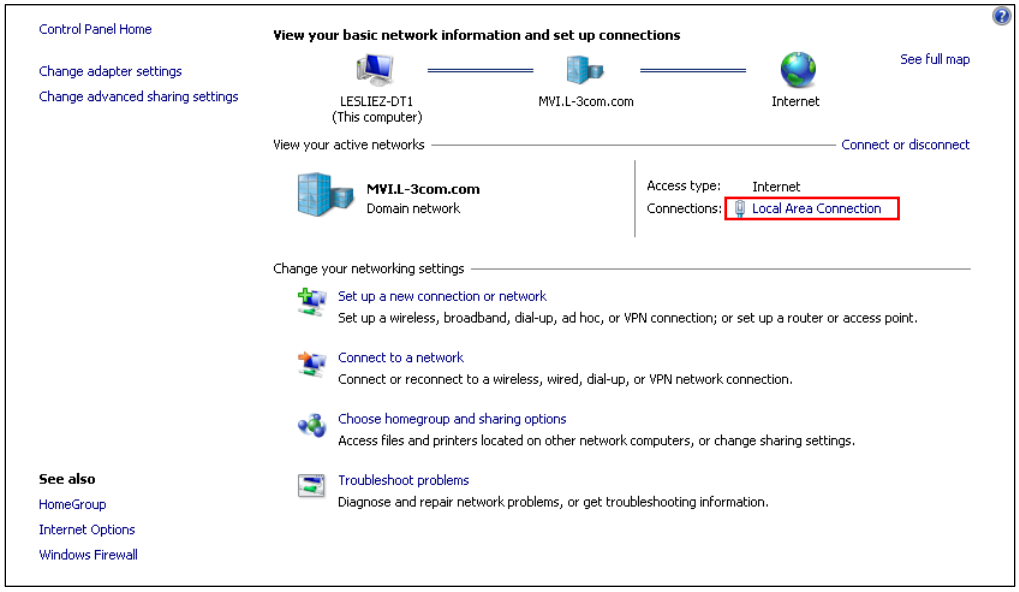
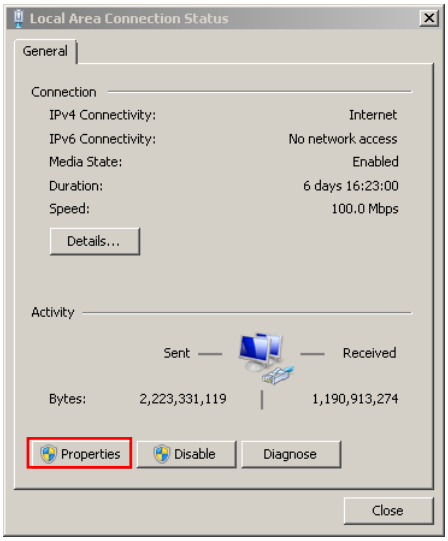
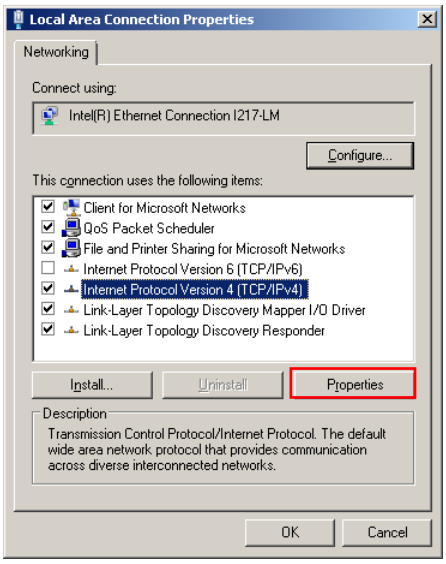


5 Click the **Properties** button.



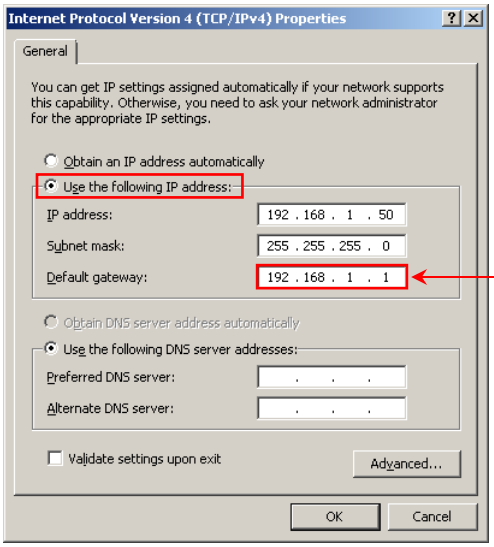
6 Click on **Internet Protocol Version 4 (TCP/IPv4)** to highlight it, then click the **Properties** button.



7 Select the **Use the following IP address** radio button, as pictured below.

8 Proceed to the *IP address* field and enter an IP address that is different from the access point's address (192.168.1.1) and *Subnet mask.*

9 If the access point is plugged directly into the PC, enter **192.168.1.1** in the *Default gateway* field. Otherwise proceed to the next step.



10 Click **OK** to save your changes.

7 Configure the Access Point Software

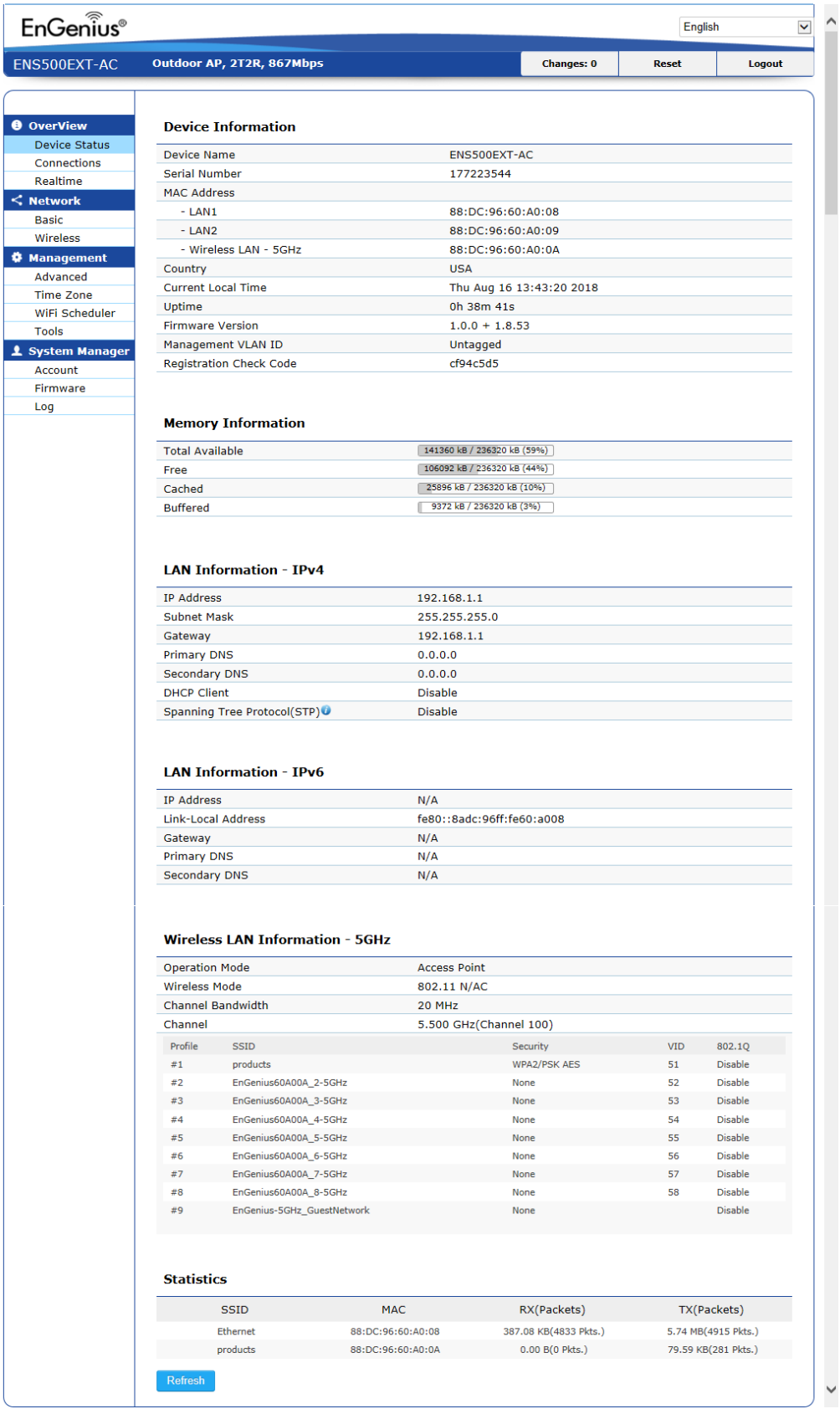
1 Open up a browser window and navigate to **192.168.1.1**. The Login Screen displays.

The default username and password is **admin** / **admin**.

2 Enter **admin** in the *Username* field.

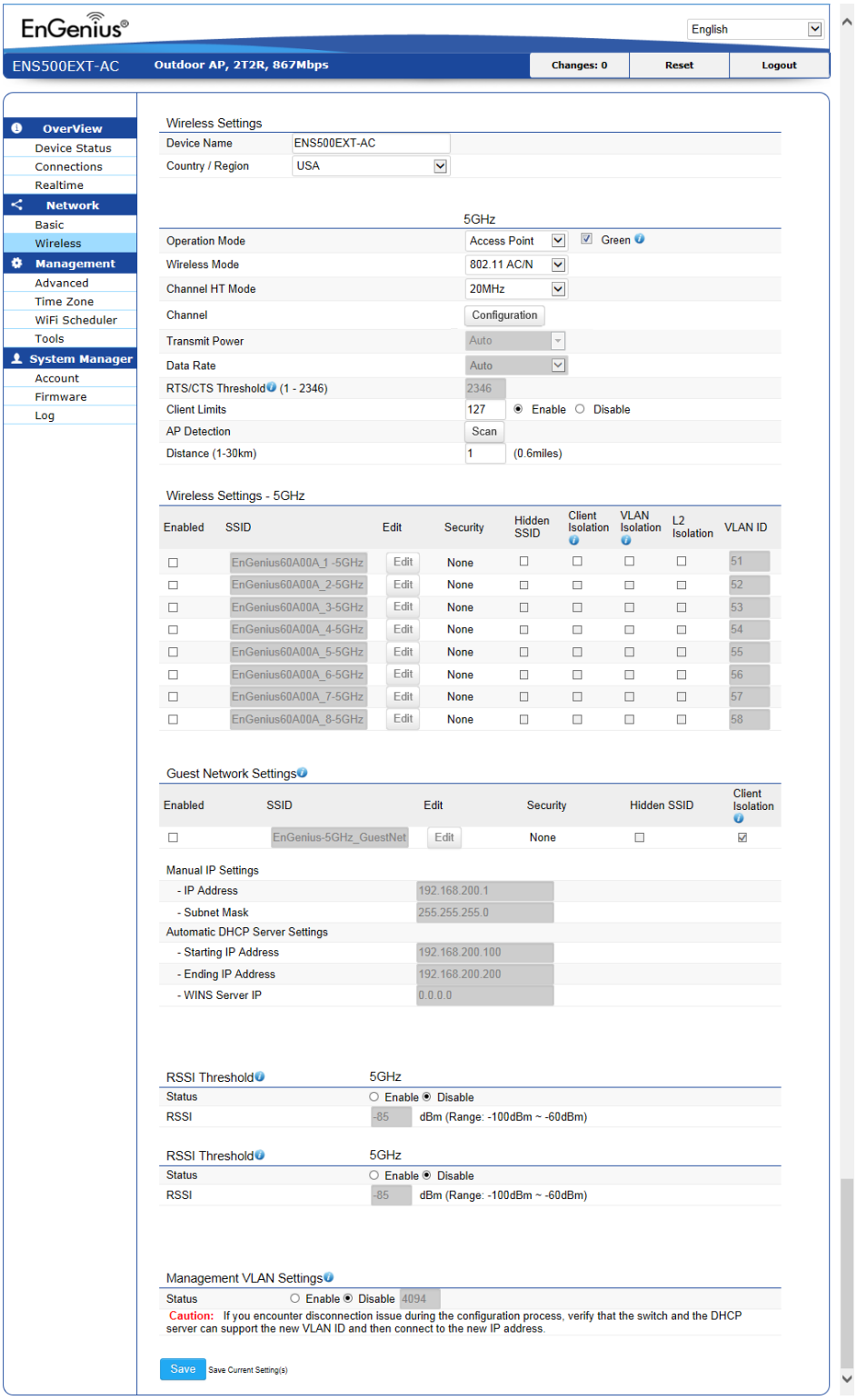
3 Enter **admin** in the *Password* field.

4 Click **Login**. The Device Status screen displays, as pictured on the next page.



Wireless Settings

1 Go to the left column and click **Wireless**. The Wireless settings display.



2 To change the access point's default name, enter a new value in the *Device Name* field. Otherwise proceed to the next step.

3 Select **801.11 AC/N** from the *Wireless Mode* drop-down list.

4 Deselect the **Green** checkbox.

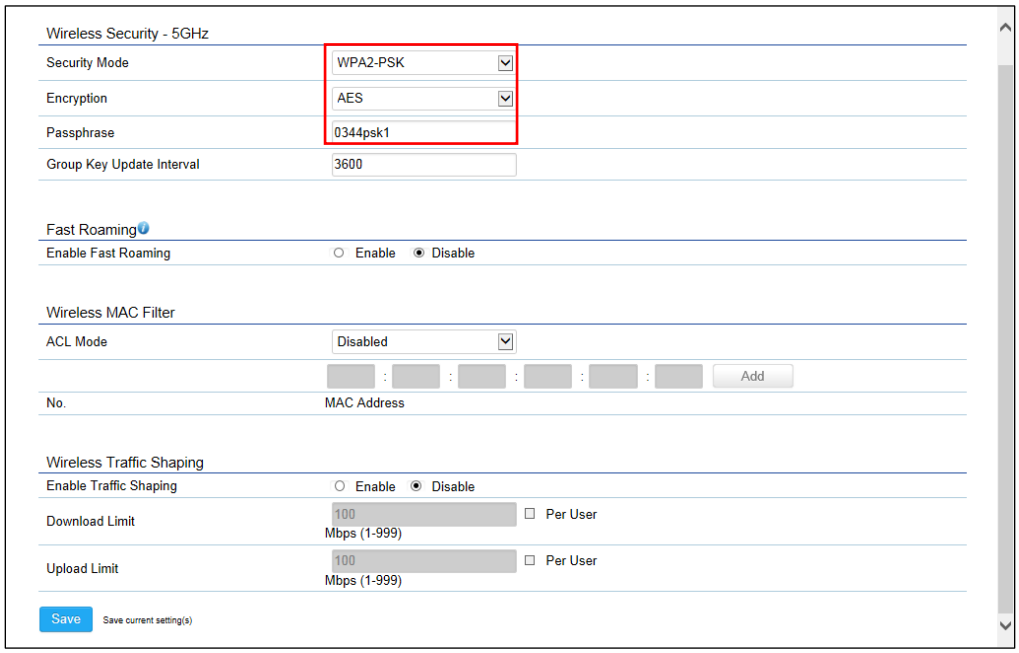
5 Select **23 dBm** from the *Transmit Power* drop-down list.

6 Proceed to the *Wireless Setting – 5GHz* section and select the *Enabled* checkbox at the top of the list. The field becomes editable.

7 Enter a name for your wireless network in the *SSID* column.

8 Click **Save**.

9 Click the **Edit** button. The following screen displays.



10 Select **WPA2-PSK** from the *Security Mode* drop-down list (top of page).

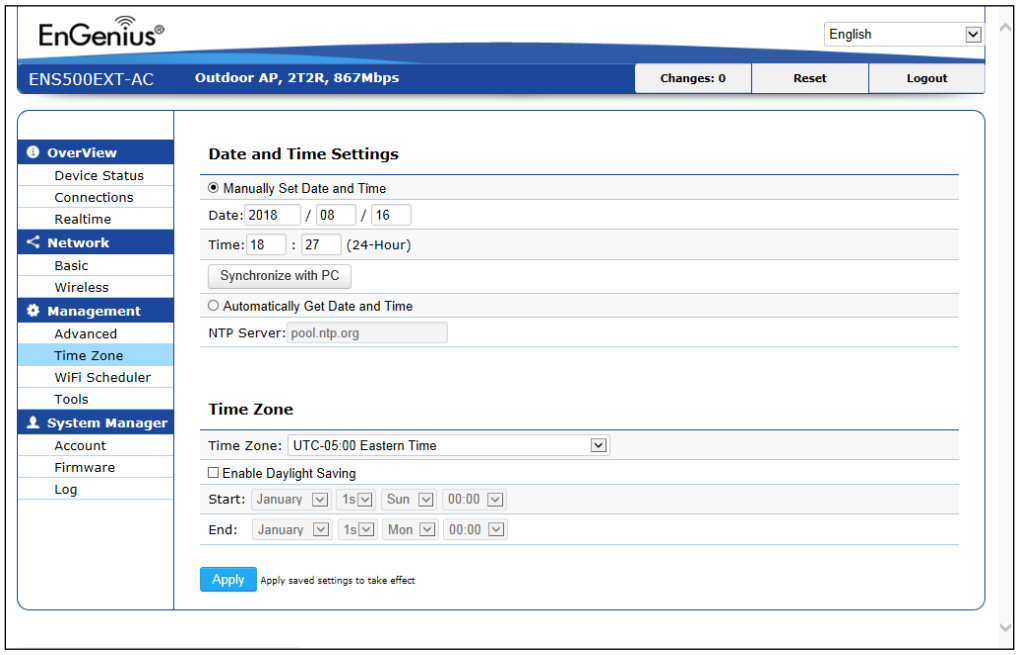
11 Select **AES** from the *Encryption* drop-down list.

12 Enter a password in the *Passphrase* field. This will allow other devices to access the access point.

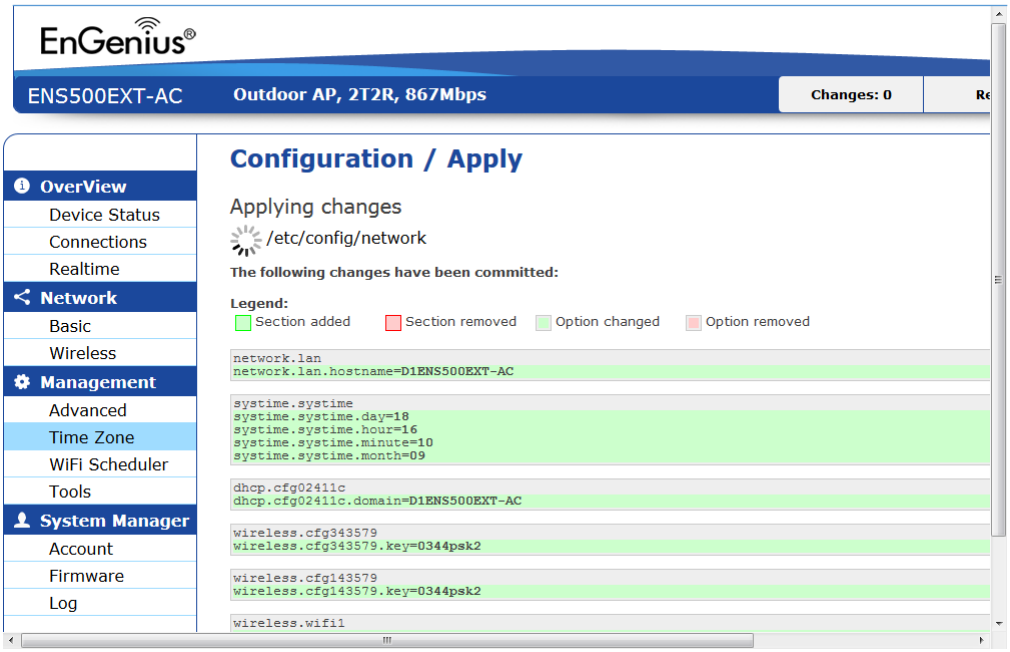
13 Click **Save**.

Time Zone Settings

1 Go to the left column and click **Time Zone**. The following screen displays.



2 Click the **Synchronize with PC** button. The system copies your PC's time settings to EnGenius. While the transfer is in progress, a status screen displays.



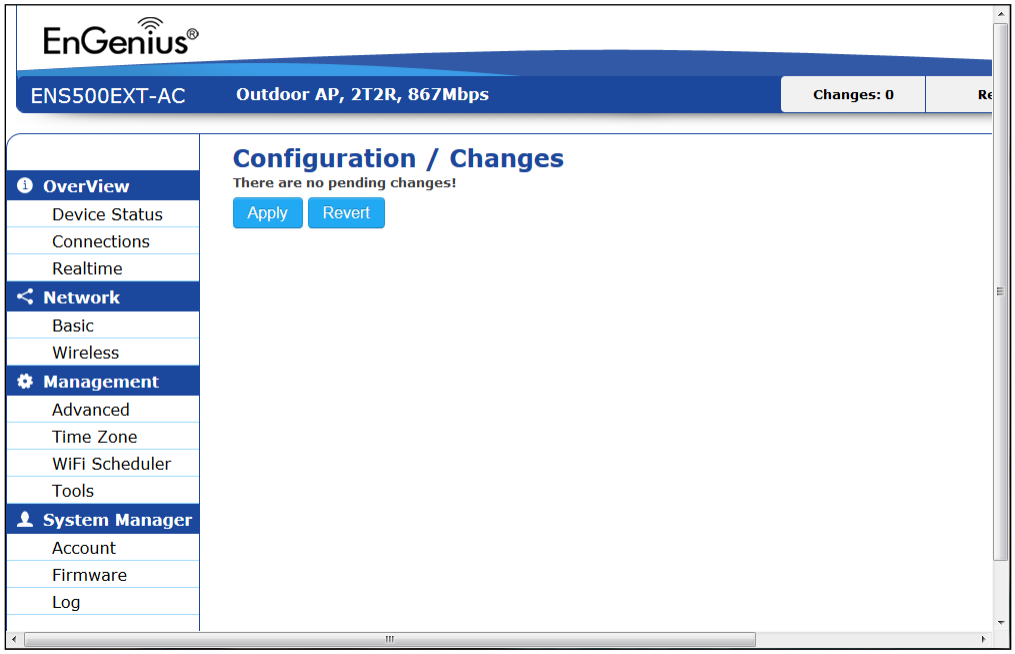
When the transfer is complete, the Time Zone screen redisplays.

3 Select your agency's time zone from the *Time Zone* drop-down list.

4 If your agency is located in a region that observes daylight savings time, select the *Enable Daylight Saving* checkbox. Otherwise proceed to the next step.

5 Click **Apply**.

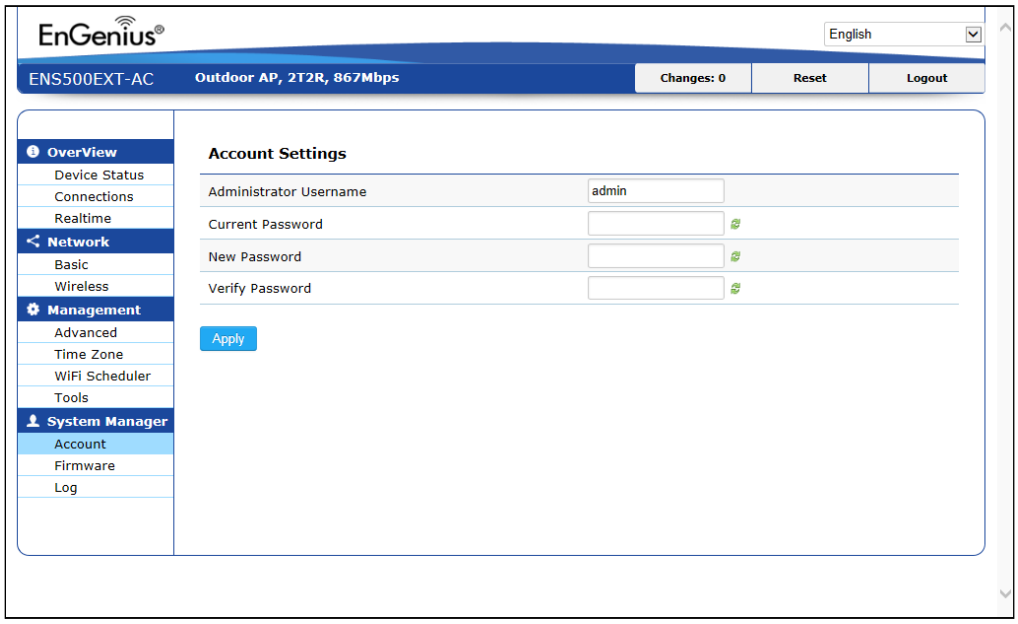
6 Go to the top of the screen and click the **Changes** button. The following screen displays.



7 Click **Apply**. The system will begin applying your changes. This may take a minute or longer.

Account Settings

1 Go to the left column and click **Account**. The Account screen displays.



2 Enter **admin** in the *Current Password* field.

3 Enter your new password in the *New Password* field.

4 Re-enter your new password in the *Verify Password* field.

5 Click **Apply**. The Login screen redisplays.

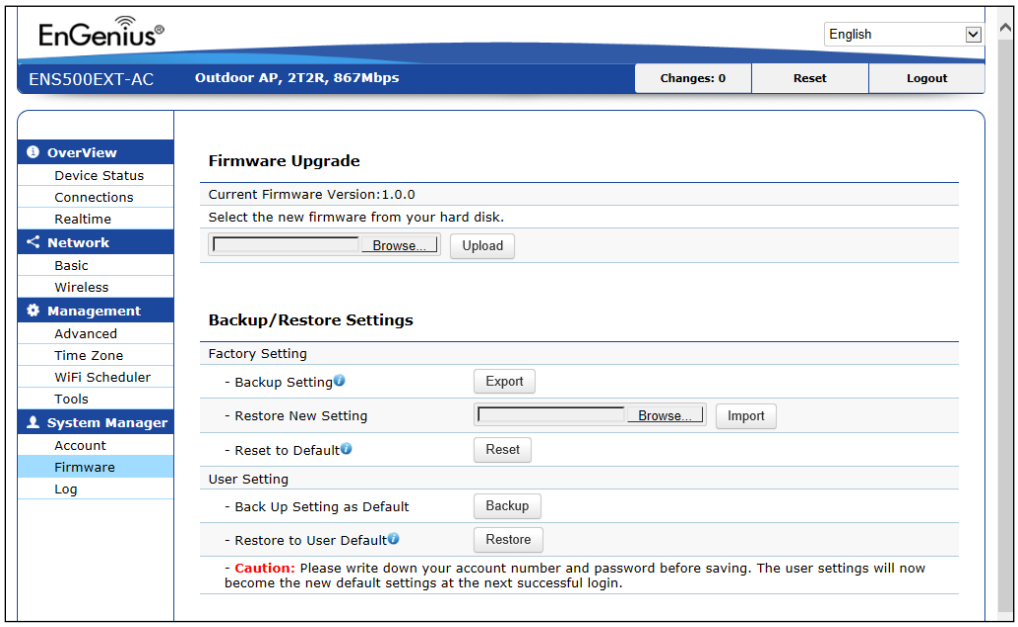
6 Login again using your new password.

Backup Settings

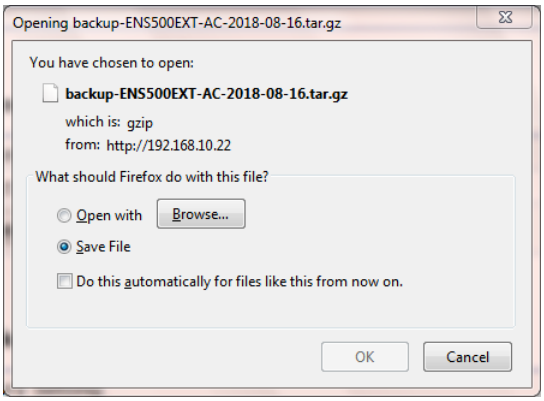
You can save your access point configurations in a local file for safe keeping. This file can then be used to restore the access point settings and/or apply them to another access point.

Save the Access Point Settings

1 Go to the left column and click **Firmware**. The following screen displays.



2 Click the **Export** button to the right of the *Backup Setting* field. The following popup displays.



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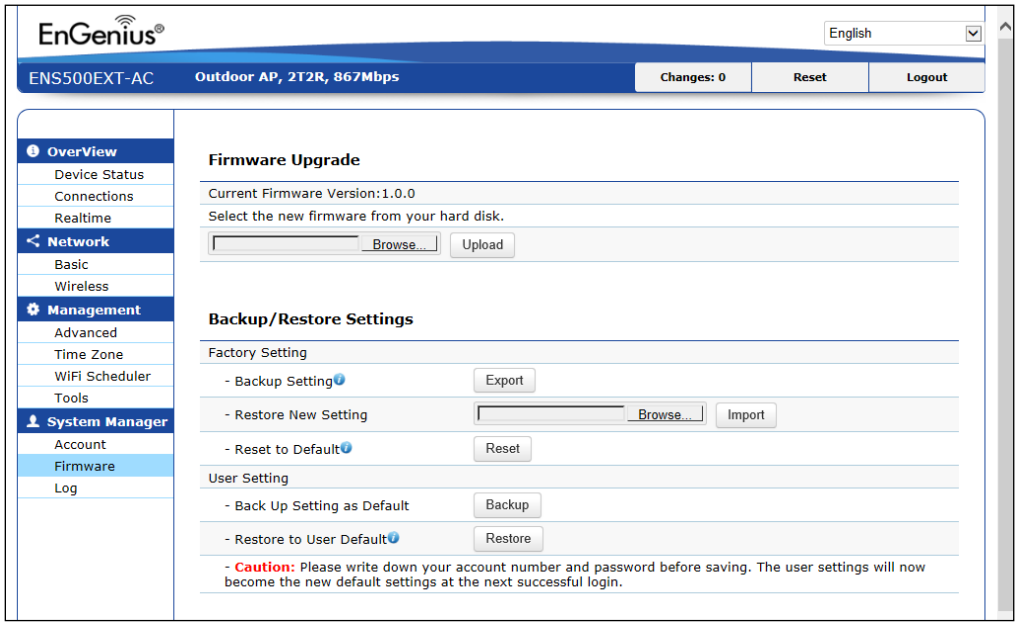
3 Click **OK**. The system copies the access point configuration file to your Downloads folder.

Restore the Access Point Settings

1 Go to the left column and click **Firmware**. The following screen displays.

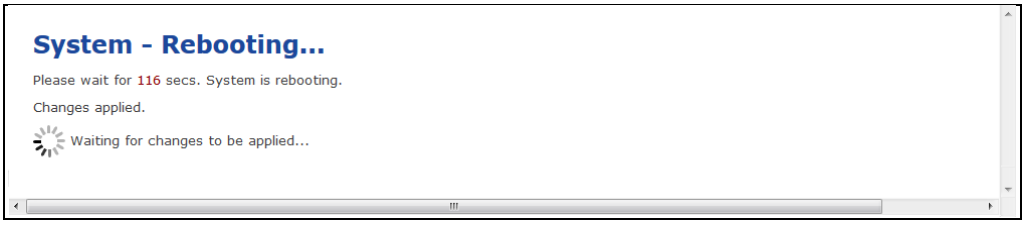


2 Proceed to the *Restore New Setting* field and click the **Browse** button.

3 Navigate to your Downloads folder.

4 Double-click on the configuration file you wish to restore such as **backup-ENS500EXT-AC-2018-08-16.tar.gz**.

5 Click **Import**. The system begins uploading the backup file. While the upload is in progress, a status message displays.



When the upload is complete, the Login menu redisplays.

Supported 802.11 Standards

Wireless Network Mode	Channel Width	Wireless Channel	Flashback Application
A-Only	N/A	5180-5825 MHz	FB2. FB3/HD will communicate, but **N** speeds will not be realized.
N-Only (5 GHz)	40 MHz	5180-5825 MHz	FB3/HD only. **N** speeds will be realized.
A/N	20/40 MHz	5180-5825 MHz	FB2 and FB3/HD. FB3/HD will communicate at **N** speeds as long as *no* FB2s are present on access point.
AC/N	20/40/80 MHz	5180 – 5825 MHz	Same as NA-Mixed with F4W added.

Contact Information

Our goal at Mobile-Vision is to provide you with the most dependable, rugged equipment for your mobile workforce. To ensure that you get the most from your investment, Mobile-Vision technical experts are available for training and questions. We take pride in our ability to provide you with the most comprehensive support available. This minimizes downtime and allows your workforce to concentrate on the "task at hand."

For service and/or technical support, contact:

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