Installation & Setup of your Access Networks Ruckus Wireless System

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Ruckus best practices access point placement

The performance of your wireless network is greatly impacted by access point location and orientation. It is important to install each access point away from obstructions and sources of interference and to ensure that the top of the access point is pointing in the general direction of its wireless clients.

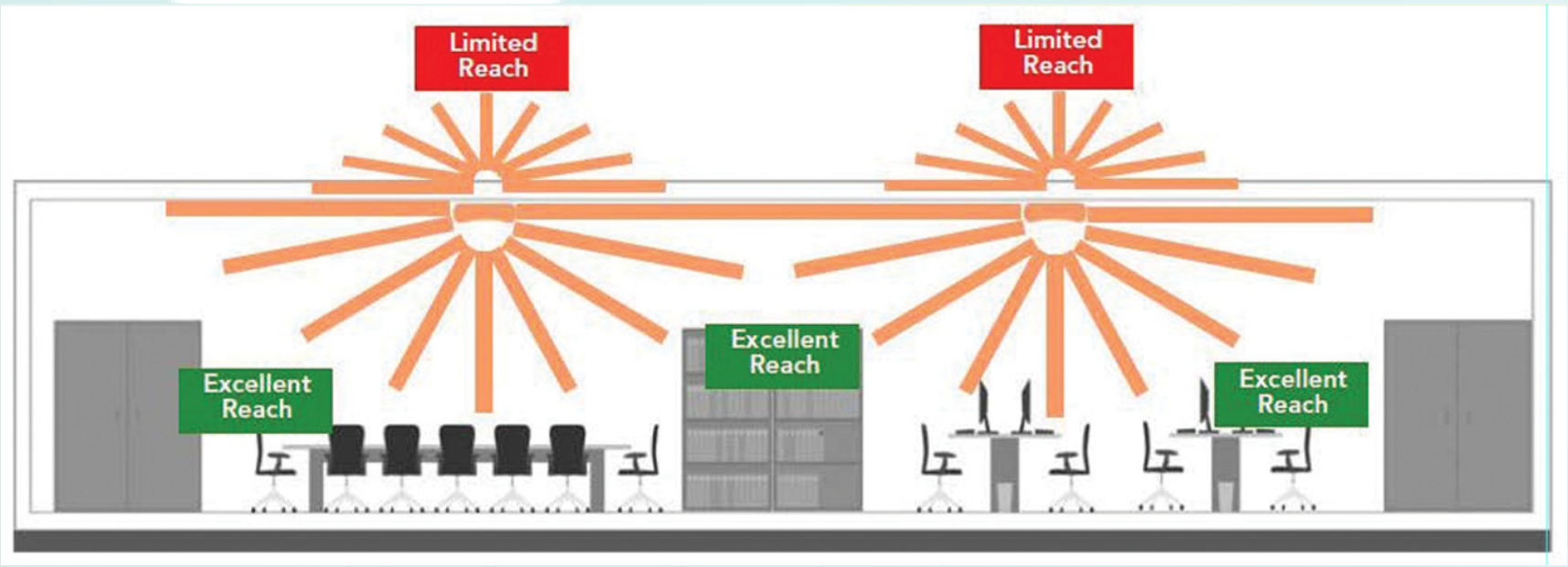
Building materials used in construction will affect the radio signal penetration of the access points. For example, drywall construction permits greater wireless range than concrete block construction. Physical obstructions such as concrete pillars, steel beams, large appliances and mirrors can block or hinder wireless communications. Avoid installing access points in locations where there are obstructions between sending and receiving devices.

Devices that emit radio waves such as wireless phones, microwave ovens, ZigBee, Z-Wave and WiSA devices can cause interference and potentially block wireless signals. Certain types of light fixtures can also cause interference.

Wireless coverage will vary from one residence to another. Please note that dual-band systems with both 2.4GHz and 5GHz require a higher density of access points due to lower range and coverage by 5GHz radios. This is true for all WiFi equipment manufacturers. We also recommend use of the 5GHz band whenever possible to avoid interference generated by other wireless devices, microwave ovens and neighboring wireless networks. Use of the 5GHz band also allows for wireless channel bonding for faster speeds and throughput.

NOTE: If you purchased an 802.11ac access point, the 802.11ac standard is only supported by the 5GHz radio. In this case, your 2.4GHz radio will operate at 802.11n speeds.

Where possible, use pre-made network cables rather than hand-made cables. For in-wall wiring terminated using wall jacks and patch panels, please ensure that all cable runs have been tested and certified.



How to install your Access Networks Ruckus Wireless system

1. Connect either of the network ports on the front of your ZoneDirector to an Ethernet switch on your wired network, and power the ZoneDirector with the included AC power adapter. The ZoneDirector will be assigned a DHCP IP address by your DHCP server (most likely your router). The ZoneDirector can be mounted on a shelf or with the included 1U rack ears.

2. Connect the wireless access points to an Ethernet switch on the same network as the ZoneDirector. If your switch does not provide Power over Ethernet (POE) you will need to purchase AC power adapters or PoE injectors to power the access points. Each access point will be assigned a DHCP IP address by your DHCP server. It is not recommended that you assign static IP addresses to individual access points, however it is recommended that you assign location names to each access point for easy identification. Please refer to Page 13 for instructions regarding "How to assign location names to access points". It may take up to 10 minutes for the access points to be automatically provisioned and firmware upgraded before they are active on your network.

3. Use an Ethernet cable to connect your computer to a network switch on the same network as the ZoneDirector and wireless access points.

4. Follow the instructions in the subsequent sections of this manual in order to discover the IP address of your ZoneDirector and complete the "ZoneDirector Setup Wizard". Upon completion of the "ZoneDirector Setup Wizard", log into the ZoneDirector interface in order to make wireless configuration changes. All settings and access point configuration are accomplished via the ZoneDirector interface, not the interface of the individual access points.

Discovering the DHCP IP address of your ZoneDirector

To ensure network connectivity between the ZoneDirector and your existing wired network, we configure the ZoneDirector and access points to obtain an IP address by DHCP. During deployment, we recommend configuring the ZoneDirector with a static LAN IP address, then configuring the router on site to forward TCP port 443 to that IP address. Since all management of the wireless network is done through the ZoneDirector, the access points do not need to be configured with static IP addresses and should be left configured for DHCP.

In order to log into your Ruckus ZoneDirector and configure a static IP address, you will first need to know its current DHCP IP address. There are several ways to find the current DHCP IP address of your ZoneDirector.

1. **If you have administrative access to the DHCP server for the network**, you will find the ZoneDirector in the list of DHCP clients. The default hostname of the ZoneDirector will be "**ruckus**".
2. **A network scanning utility such as angry IP Scanner, or LanScan for Mac computers**, can be used to scan the network and list the hostnames, MAC addresses and IP addresses of active network devices. Depending on your network configuration and the network scanner you are using, device hostnames may not be listed. Furthermore, all Ruckus ZoneDirectors and wireless access points are configured with the same default hostname, "**ruckus**". The best way to determine which host is your ZoneDirector is by looking up its MAC address in the scan results. The MAC address of the ZoneDirector can be found on the label affixed to the underside of the unit.
3. **If one of the above-mentioned options is not feasible**, you may connect directly to your ZoneDirector at its default IP address - 192.168.0.2. In the absence of an available DHCP server, the ZoneDirector can be accessed at this IP address by configuring your computer with an IP address on the same subnet and connecting your computer directly to the ZoneDirector's Ethernet port using a standard Ethernet patch cable. **This technique will only work if the ZoneDirector remains disconnected from the network from the time that it is powered on until the time it is connected to your computer.**

The Ethernet adapter of your computer will need to be configured with the following IP settings in order for you to successfully contact the ZoneDirector:

- IP address: 192.168.0.3
- Subnet Mask: 255.255.255.0

The Default Gateway and DNS Server settings need not be configured in order to access the ZoneDirector using this technique; however your computer may require these settings before allowing you to apply the configuration changes to your Ethernet adapter. If necessary, configure these additional settings as follow:

- Default Gateway: 192.168.0.254
- DNS Server: 8.8.8.8

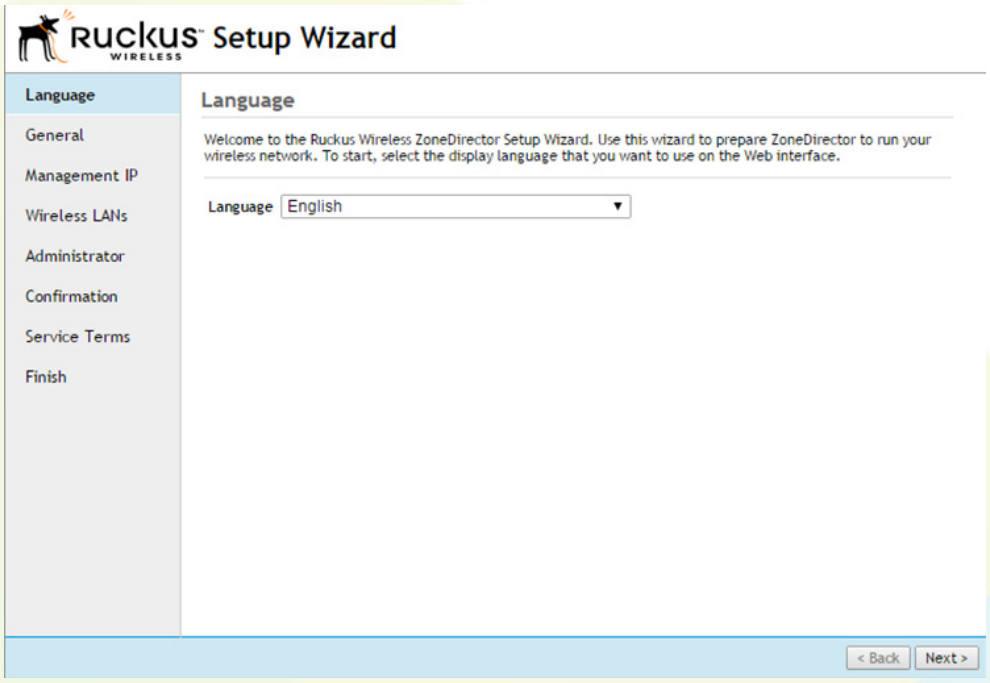
Once your Ethernet adapter has been configured as indicated above, please open Chrome, Firefox or Safari and type **https://192.168.0.2** into the address bar.

NOTE: Internet Explorer is often problematic and is not recommended.

ZoneDirector Setup Wizard

Step 1

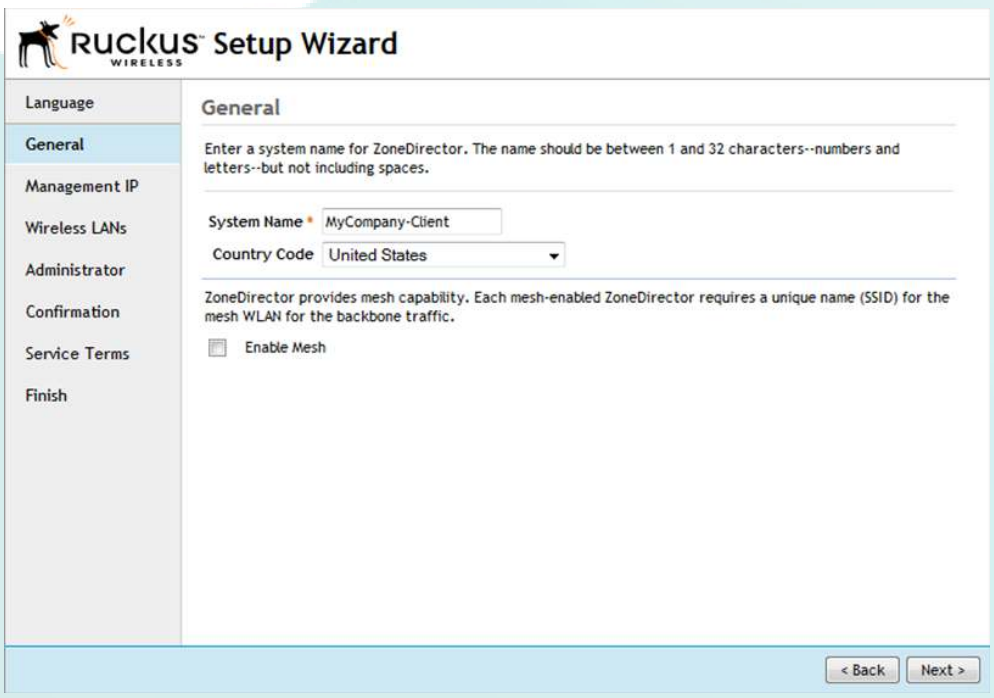
- Select your preferred display language from the drop-down box and select **Next**.



Step 2

- Enter a system name. We suggest that you use the format "MyCompany-Client".
- Leave the country code at the default value of "United States".
- **Do not check "Enable Mesh".**
- Select **Next**.

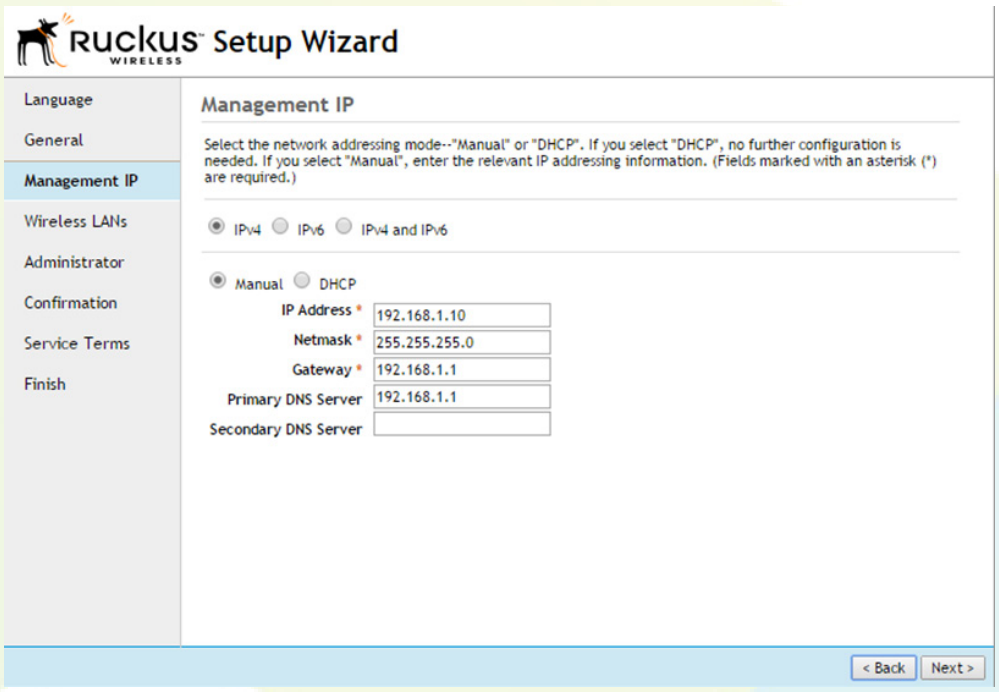
NOTE: Mesh is not recommended for most projects and should only be used as a last resort when it is not possible to run a network cable to an access point's location. Specifically, all control systems are sensitive to network latency that is created by mesh networks. Please contact us before enabling Mesh.



ZoneDirector Setup Wizard continued

Step 3

- Select the "**IPv4**" and "**Manual"** radio buttons; then enter your desired IP settings. *Note: By default, the ZoneDirector will obtain an IP address via DHCP. For most installations the Netmask, Gateway and Primary DNS Server settings will remain the same and you will simply need to select an available IP address that is outside of the DHCP scope used on your network.*
- Select **Next**.

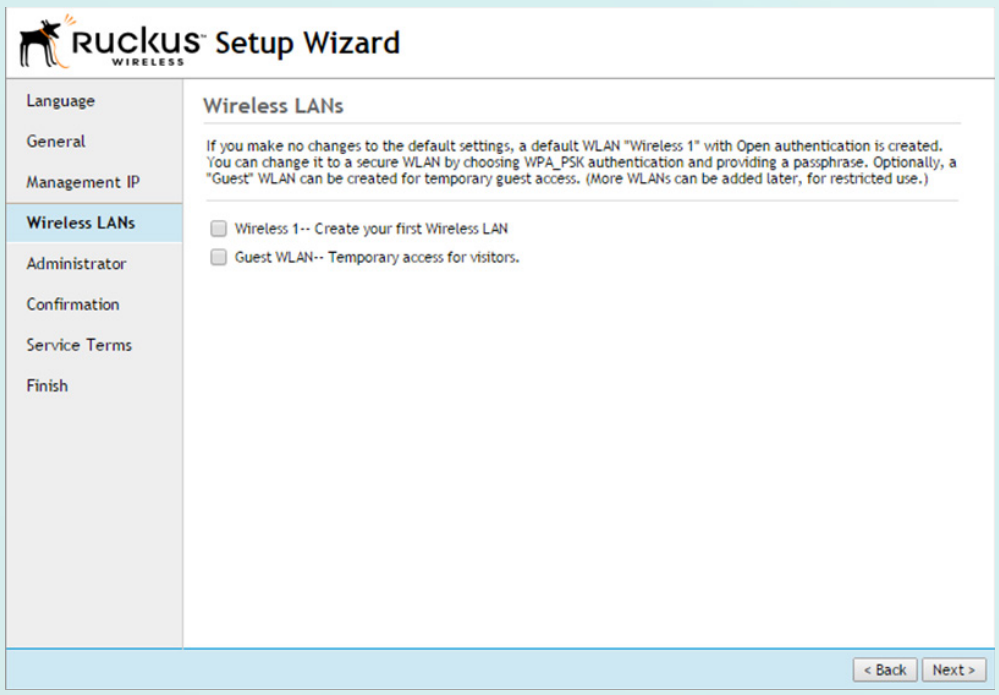


Step 4

- Uncheck the checkbox next to "Wireless 1 - Create your first Wireless LAN".

NOTE: In later steps you will find three pre-configured Wireless LANs that can be modified to your client's needs. You will have greater control over WLAN settings by creating or editing existing WLANs from the ZoneDirector interface after the intial setup has been completed.

- Select **Next**.

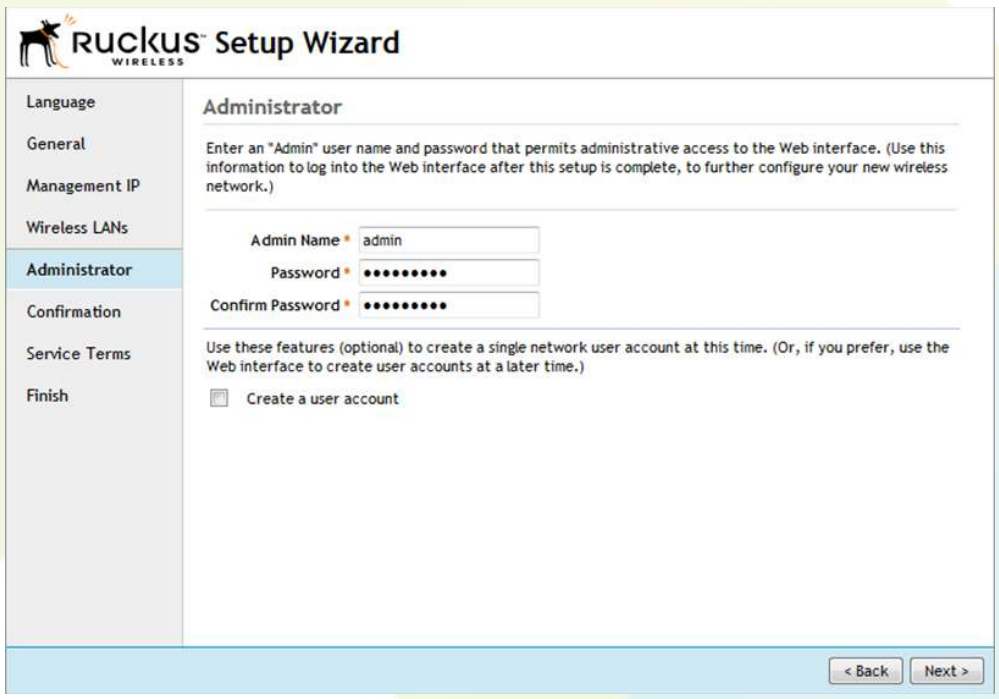


ZoneDirector Setup Wizard continued

Step 5

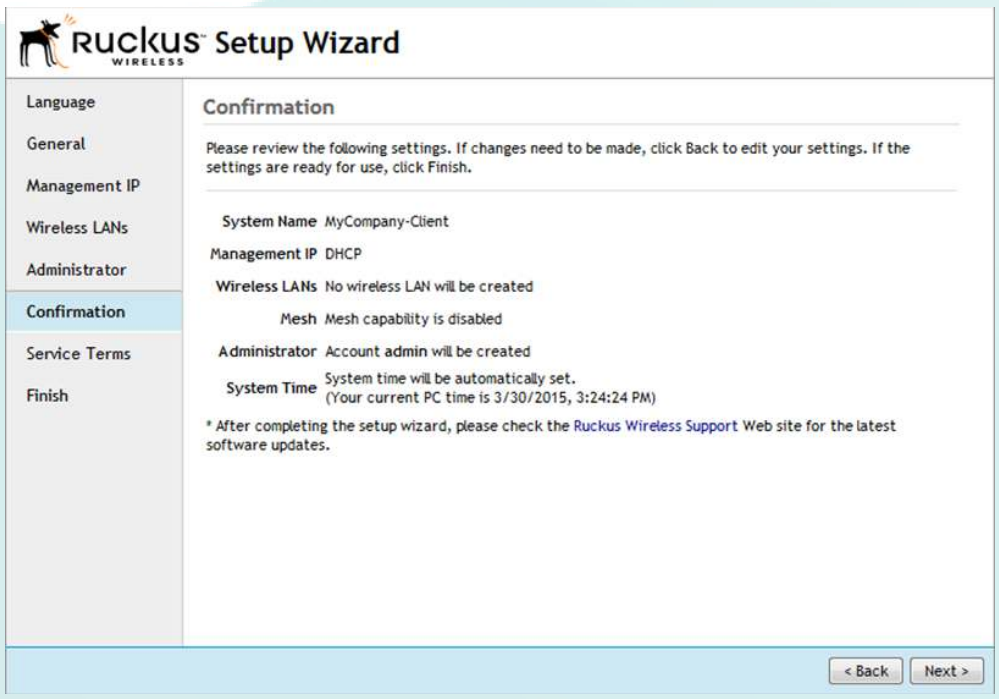
- Enter your desired **Admin Name** and **Password**.
- Use the worksheet provided on Page 17 of this document to record the Admin Name and Password entered here.
- Select **Next**.

NOTE: In order to be eligible for support, the System Name, Admin Name, Password and Serial Number must be provided to Access Networks by email to **support@accessca.com.**



Step 6

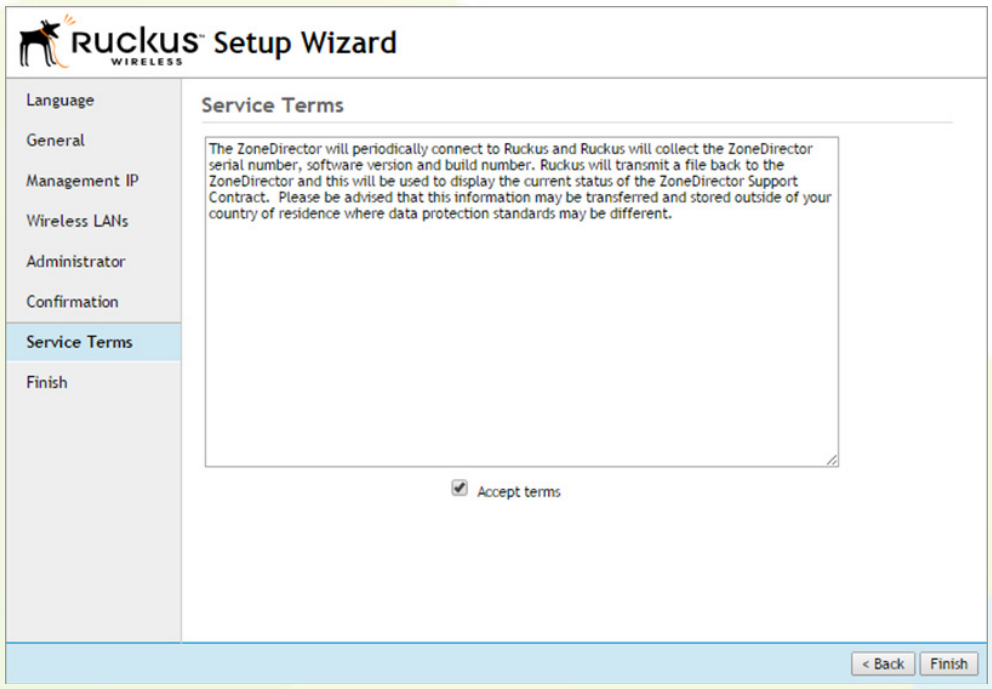
- Review the information shown and if everything is correct, select **Next**. If changes need to be made, select **Back** and make the necessary changes.



ZoneDirector Setup Wizard continued

Step 7

- Check the "**Accept terms**" checkbox and select **Finish**



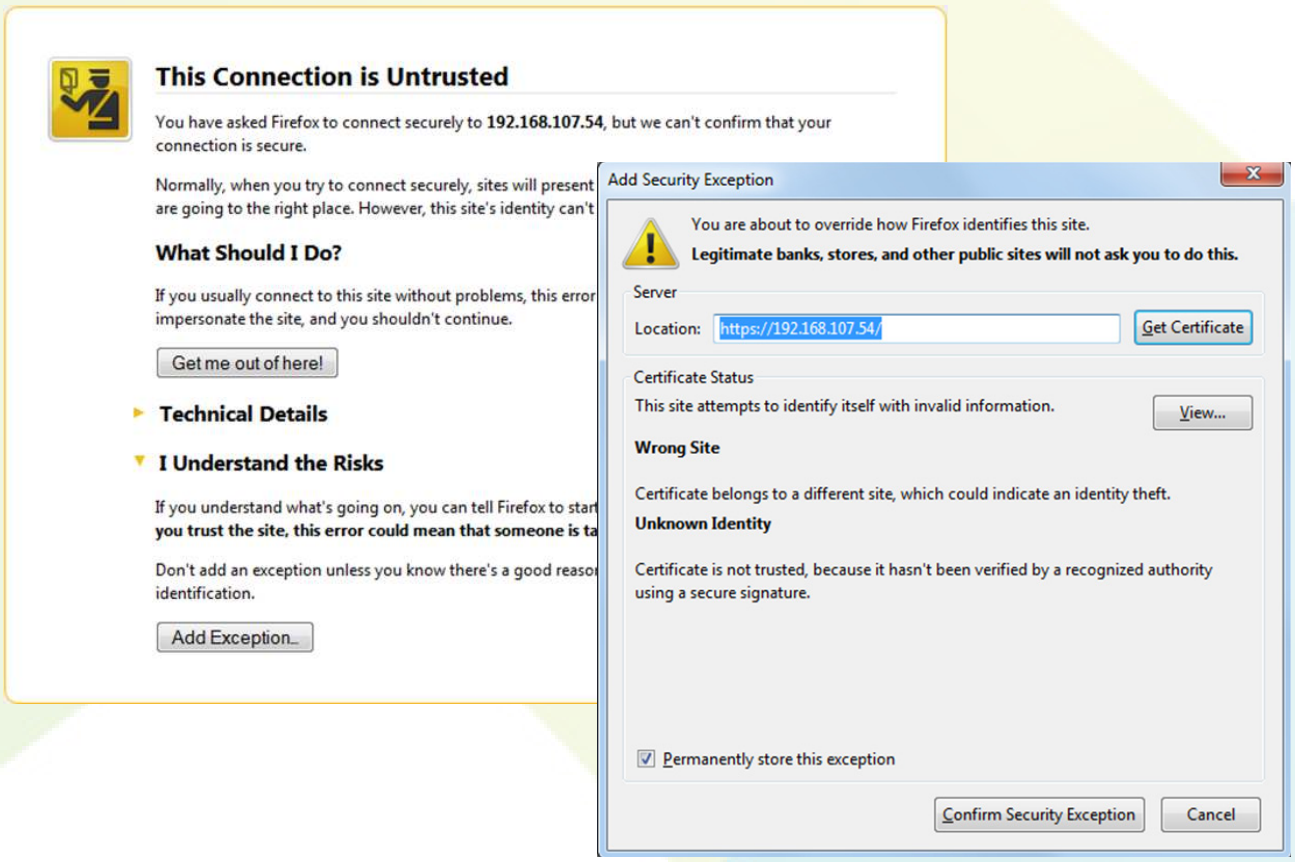
Step 8

- Select the link provided, and you will be redirected as shown below.

ZoneDirector Setup Wizard continued

Step 9

- Select **OK** or **Add Exception** when prompted by your web browser to confirm the secure connection certificate.
- Select **OK** or **Confirm Security Exception** in the new window that appears, before being redirected to the ZoneDirector log in page.
- The example below was taken from Firefox. The exact process in each web browser will be slightly different.

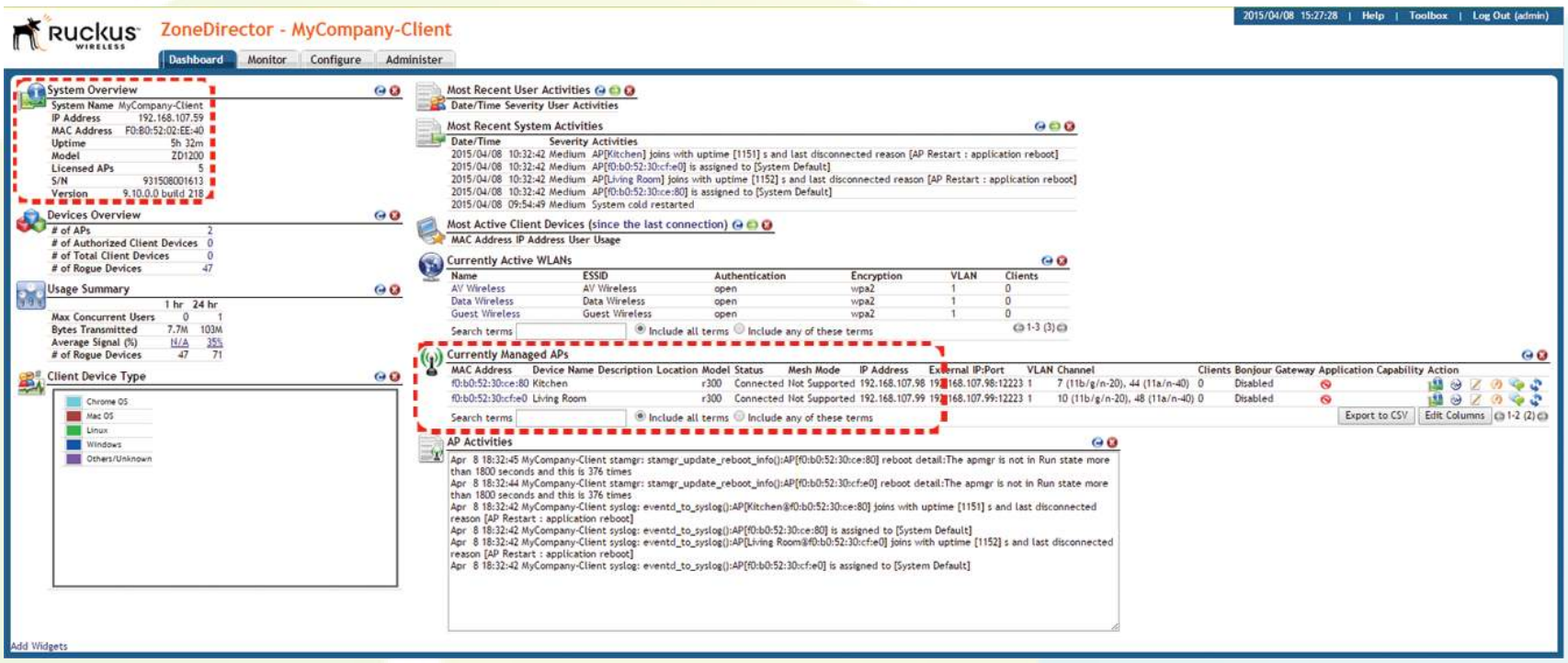


Step 10

- Enter the **Admin Name** and **Password** that you chose at Step 5, and select **Log in**.

The ZoneDirector Dashboard

Once you have logged into your ZoneDirector you may add and arrange widgets on the **Dashboard** page as desired by selecting the **Add Widgets** link in the lower left corner of the page. From the **Dashboard** page, please verify the system settings that you entered during the setup wizard and confirm that the status of all access points is listed as "**Connected**".



Port forwarding

In order for Access Networks to be able to provide support, firmware updates or troubleshooting assistance, port forwarding needs to be configured in your router. **Due to the numerous models and variations of routers, this is not a service offered by Access Networks.** Please consult your user manual or online resources such as **portforward.com** for instructions regarding how to forward TCP port 443 to your ZoneDirector.

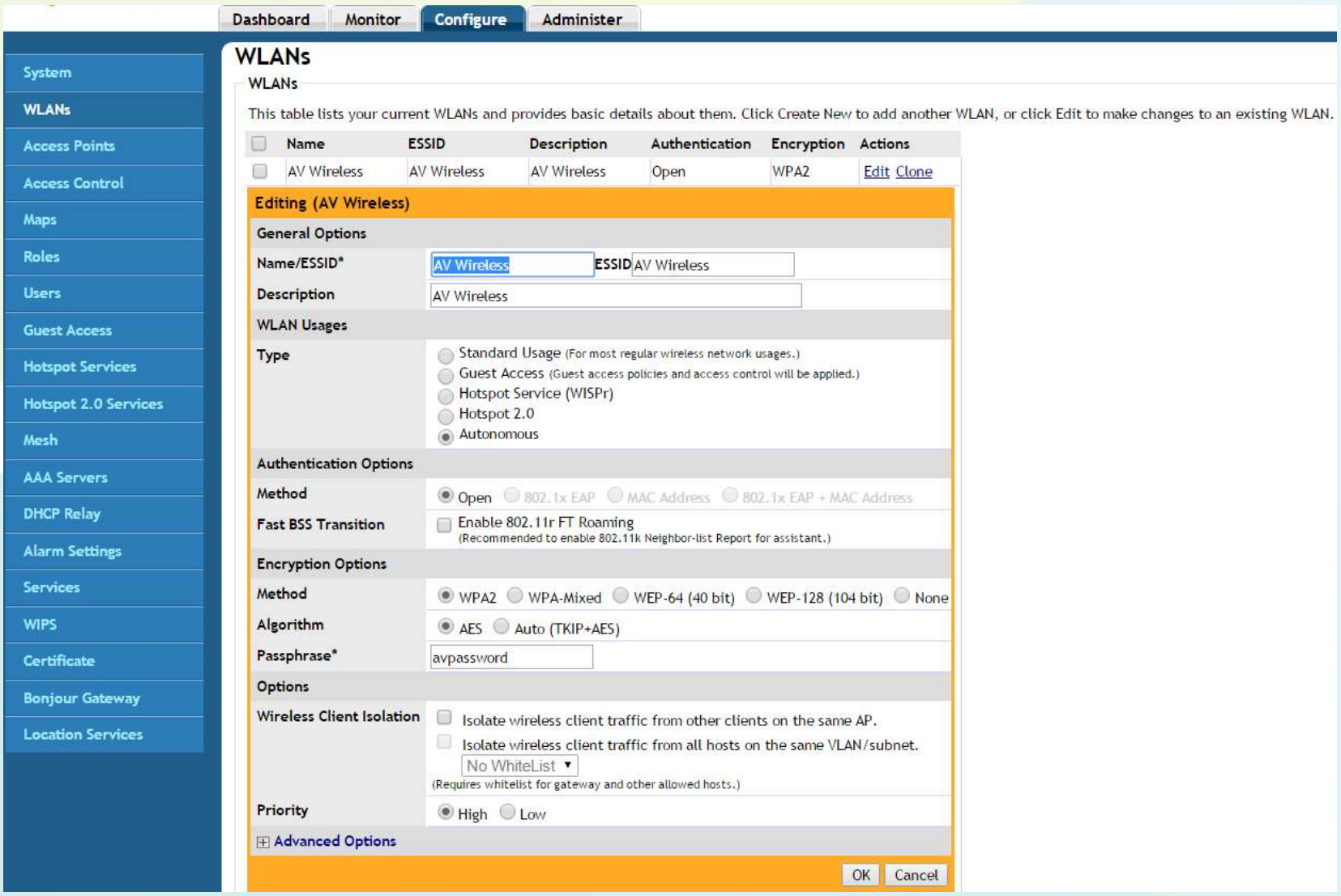
Pre-configured wireless SSIDs and Passphrases

SSID	Passphrase	Encryption Type
AV Wireless	avpassword	WPA2/AES
Data Wireless	datapassword	WPA2/AES
Guest Wireless	guestpassword	WPA2/AES

How to modify an existing SSID or Passphrase

1. Log into your ZoneDirector.
2. Select the **Configure** tab at the top of the screen. *Note: if the **Configure** tab is grayed out, the user credentials with which you are logged in do not have administrative rights. Please log in as a user with administrative rights.*
3. Select **WLANs** from the list on the left side of the screen.
4. From the list of WLANs at the top of the page, locate the SSID you wish to change and select the **Edit** hyperlink to the right of the SSID.
5. The **ESSID** field defines what gets broadcast, however for simplicity we recommend also setting the **Name/ESSID** field and **Description** field to the same value.
6. To change the **Passphrase** for the SSID, simply edit the value in the **Passphrase** field.
7. When you are finished making changes, select **OK**.

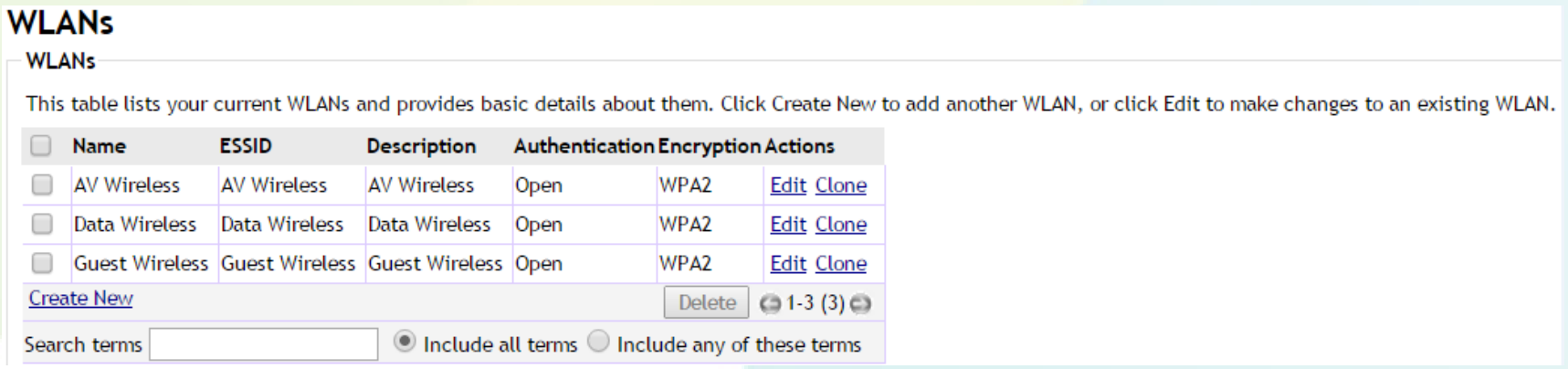
NOTE: It is highly recommeded that you leave **Encryption Options** set to WPA2/AES. WPA2/AES is more secure and less resource intensive than older encryption methods such as WEP or WPA.



How to create a new SSID

1. Log into your ZoneDirector.
2. Select the **Configure** tab at the top of the screen. *Note: If the **Configure** tab is grayed out, the user credentials with which you are logged in do not have administrative rights. Please log in as a user with administrative rights.*
3. Select **WLANs** from the list on the left side of the screen.
4. To create an additional SSID using an existing SSID as a template (the recommended method), choose the existing SSID that you wish to use as the template and select the **Clone** hyperlink to the right of that SSID.
    - Edit the **Name/ESSID**, **ESSID**, **Description** and **Passphrase** fields as necessary. When you are finished making changes select **OK**.
5. Alternatively, to create a new SSID from scratch, select the **Create New** hyperlink located below the list of current WLANs.
    - Configure the new SSID with your desired settings. When you are finished making changes select **OK**.

NOTE: It is highly recommended that you set **Encryption Options** to WPA2/AES. WPA2/AES is more secure and less resource intensive than older encryption methods such as WEP or WPA.



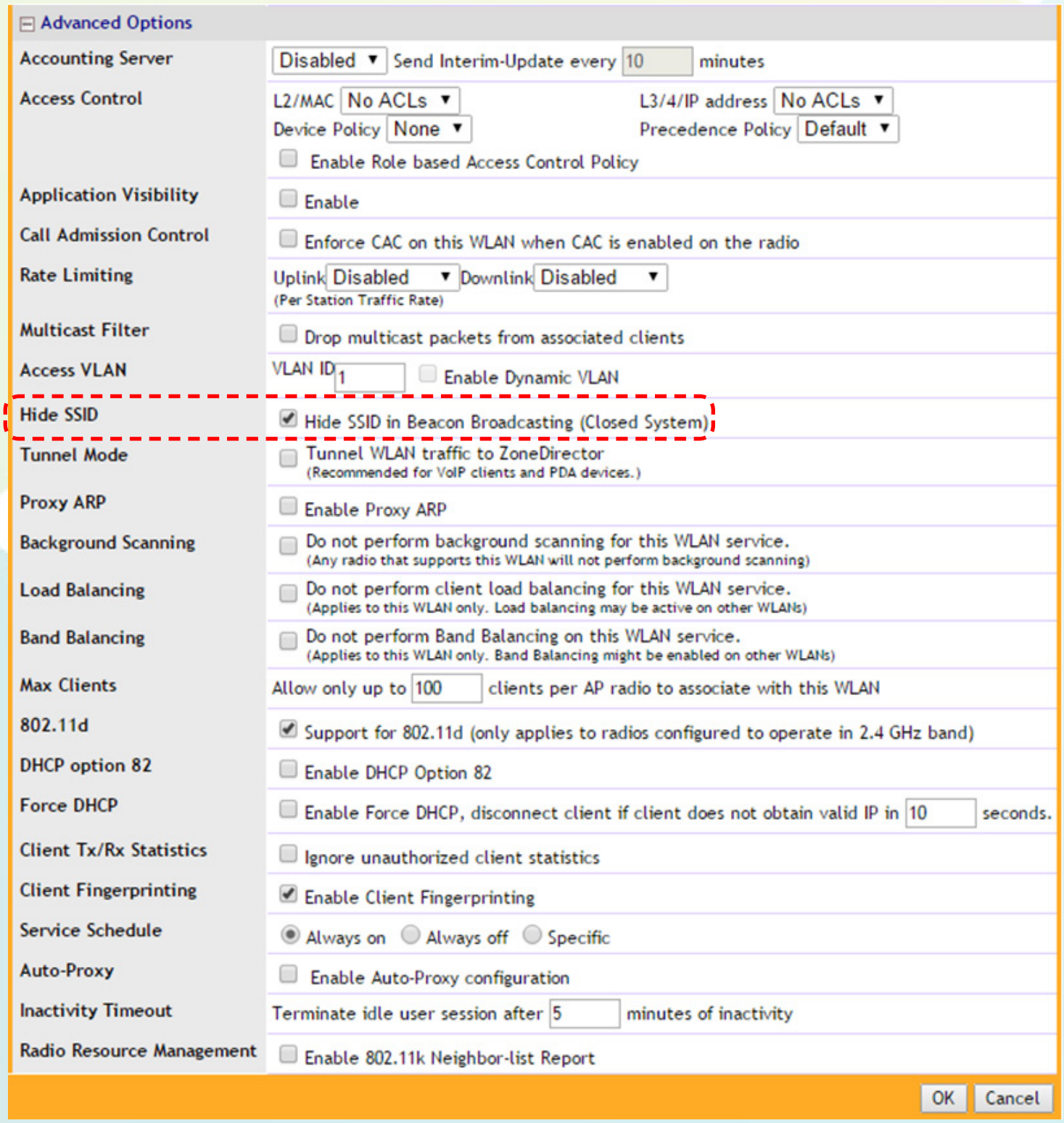
How to delete an SSID

1. Log into your ZoneDirector
2. Select the **Configure** tab at the top of the screen. *Note: If the **Configure** tab is grayed out, the user credentials with which you are logged in do not have administrative rights. Please log in as a user with administrative rights.*
3. Select **WLANs** from the list on the left side of the screen.
4. Select the checkbox to the left of the SSID you wish to delete.
5. Select **Delete**.

How to hide an SSID

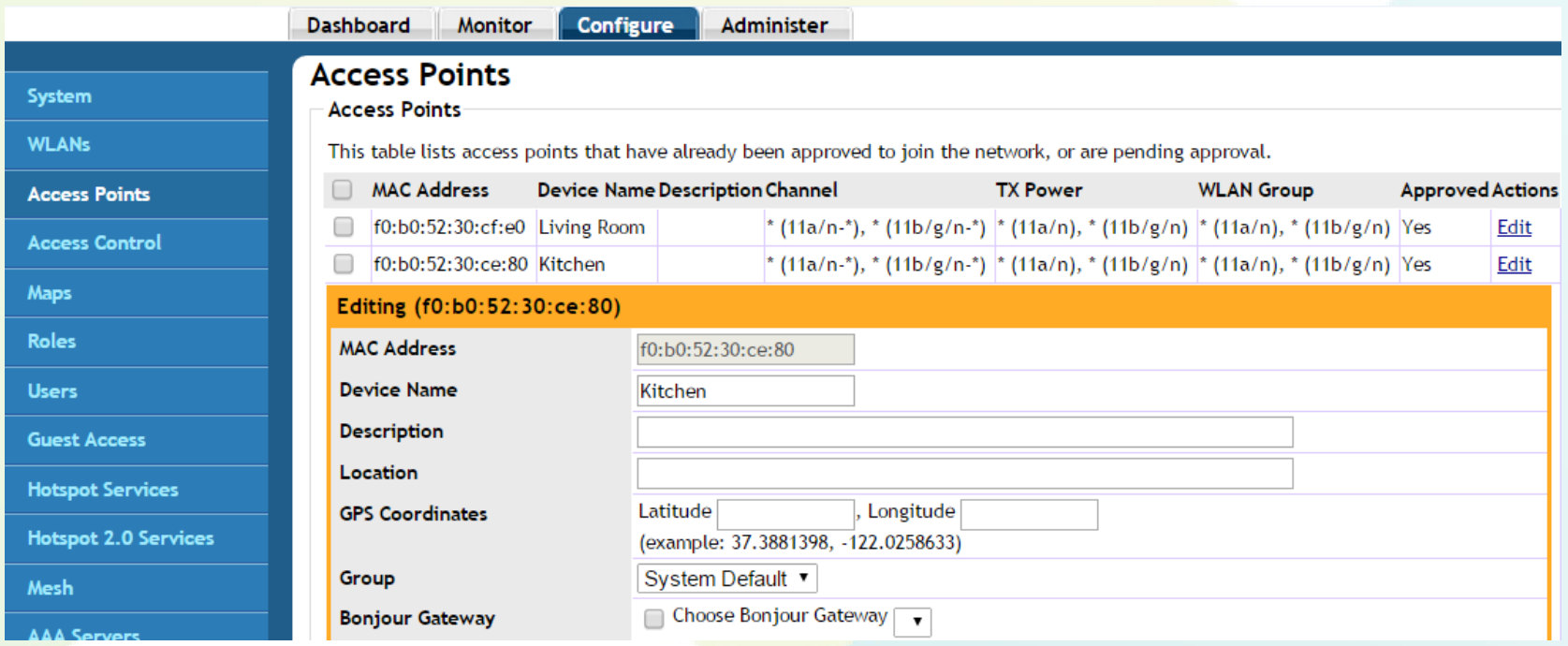
Some devices may experience connectivity issues when connecting to a hidden SSID. If you are planning to use a hidden SSID, it is best to create the hidden SSID, then configure the wireless devices to connect to that SSID as opposed to hiding an SSID that devices are already connected to. *Note: When configuring devices to connect to a hidden SSID, you will need to manually enter the SSID name on each device. Depending on the type of device and the number of devices you have to configure, this can be a moderately time consuming process. For this reason when configuring a hidden SSID, we suggest using a short SSID such as "AV".*

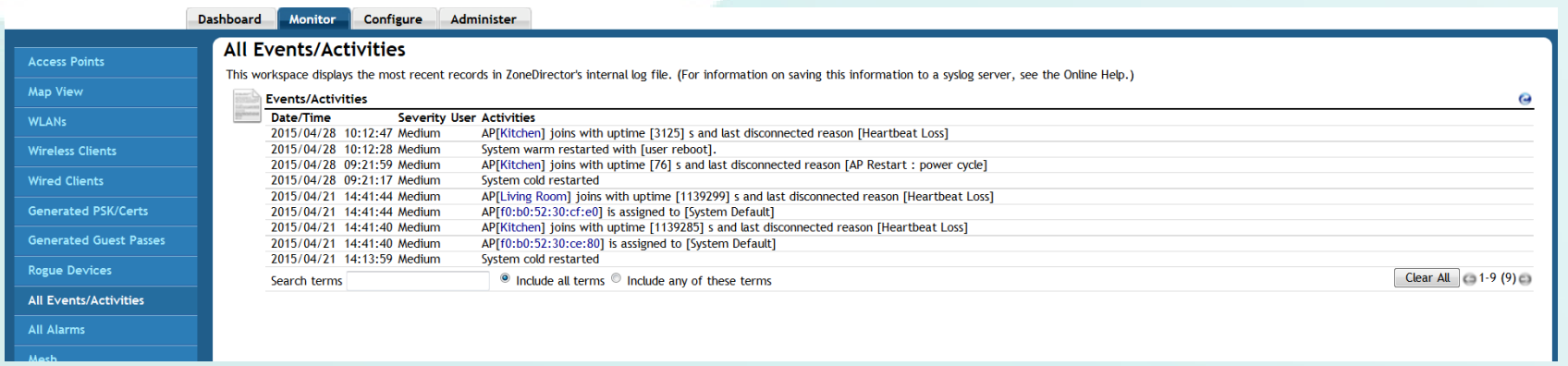
1. Follow steps 1 through 4 under "How to modify an existing SSID or Passphrase" on Page 10.
2. Select the **Advanced Options** hyperlink at the bottom left of the WLAN Editing window.
3. Check the box next to **Hide SSID**. When you are finished making changes, select **OK**.



How to assign location names to access points

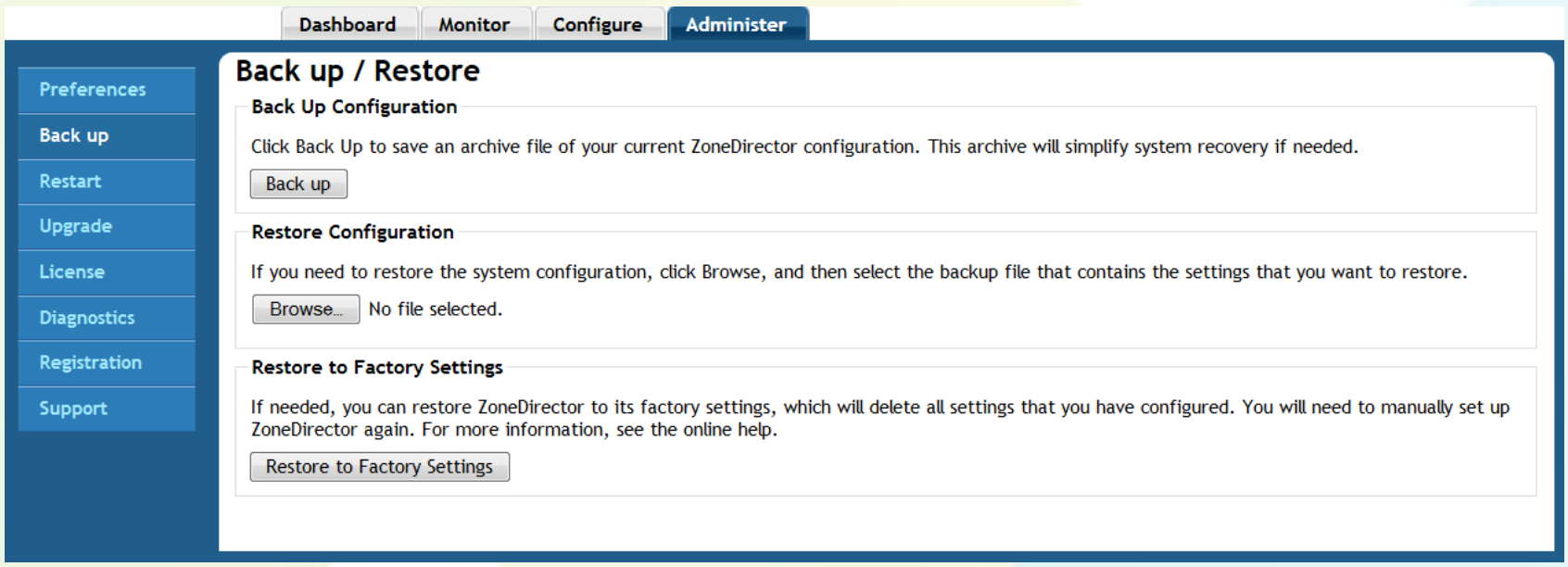
1. Log into your ZoneDirector.
2. Select the **Configure** tab at the top of the screen. *Note: if the **Configure** tab is grayed out, the user credentials with which you are logged in do not have administrative rights. Please log in as a user with administrative rights.*
3. Select **Access Points** from the list on the left side of the screen.
4. From the list of access points at the top of the page, locate the MAC address of the access point you wish to name and select the **Edit** hyperlink to the right.
5. We recommend you use the **Device Name** field to indicate the location of each access point as this field is referenced in the **Events/Activities** table and log files as shown below.





How to back up your ZoneDirector configuration

1. Log into your ZoneDirector.
2. Select the **Administer** tab at the top of the screen. *Note: If the **Administer** tab is grayed out, the user credentials with which you are logged in do not have administrative rights. Please log in as a user with administrative rights.*
3. Select **Back up** from the list on the left side of the screen.
4. Select the **Back up** button under **Back up Configuration**.
5. You will be prompted to save the file. Select **OK**.

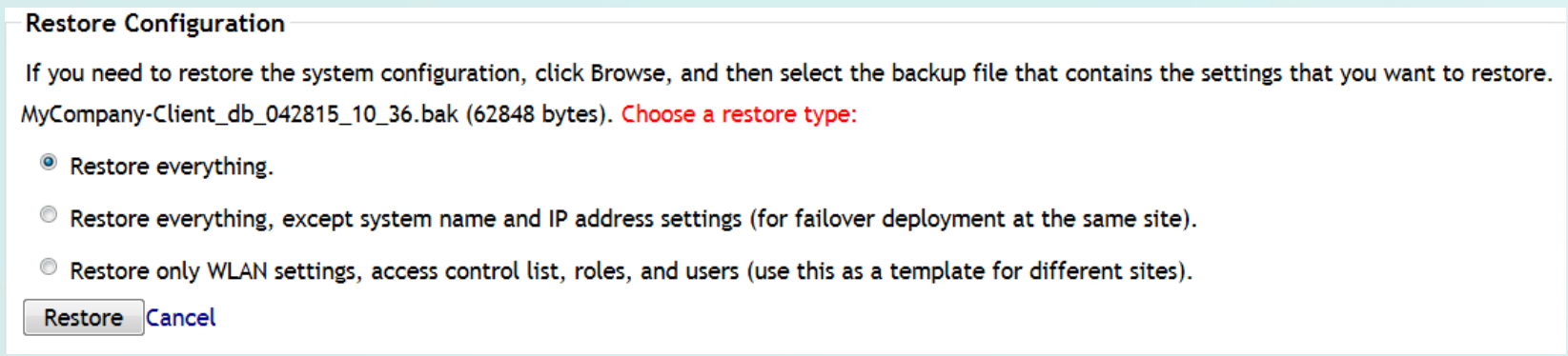


How to restore your ZoneDirector configuration

Follow steps 1 through 3 provided in the section above titled "How to back up your ZoneDirector". Then, from the **Back up / Restore** page, select the **Choose File** button under **Restore Configuration** and locate your backup file. The backup file will have a **.bak** file extension.

You will be presented with three radio buttons regarding which settings you wish to restore.

NOTE: If you select the "**Restore everything**" radio button, ALL current ZoneDirector settings will be overwritten.



How to pin reset your ZoneDirector

To pin reset your ZoneDirector to factory default configuration, using a straightened paperclip, press and hold the **RESET** button for 8 - 10 seconds then release.

NOTE: Pin resetting the ZoneDirector will erase ALL configuration settings. Please ensure that you have a backup of your ZoneDirector configuration before pin resetting.

How to upgrade your ZoneDirector firmware

NOTE: All new ZoneDirectors are shipped with the latest stable firmware release from Access Networks, so there is no need for an immediate firmware upgrade. Should you need to upgrade your ZoneDirector's firmware at a later date, please contact **support@accessca.com** to obtain the firmware image.

To upgrade your ZoneDirector:

1. Log into your ZoneDirector.
2. Select the **Administer** tab at the top of the screen. *Note: If the **Administer** tab is grayed out, the user credentials with which you are logged in do not have administrative rights. Please log in as a user with administrative rights.*
3. Select **Upgrade** from the list on the left side of the screen.
4. Select the **Choose File** button under **Software Upgrade**.
5. Browse to the location of the firmware file that you downloaded from Dropbox.
6. Follow the prompts. You will be asked to backup your current configuration for safety. Please do so.

NOTE: The upgrade process can take up to 30 minutes to update the ZoneDirector and all connected access points. When the upgrade is complete the ZoneDirector will automatically restart and you will be presented with the login page.

7. Log into your ZoneDirector and check the **System Overview** dashboard widget to verify that the firmware version has been upgraded. The **Status** column of the **Currently Managed APs** widget should also be checked to verify that all access points have been upgraded and are listed as **Connected**. For further information, please refer to the screenshot and instructions found on Page 9.

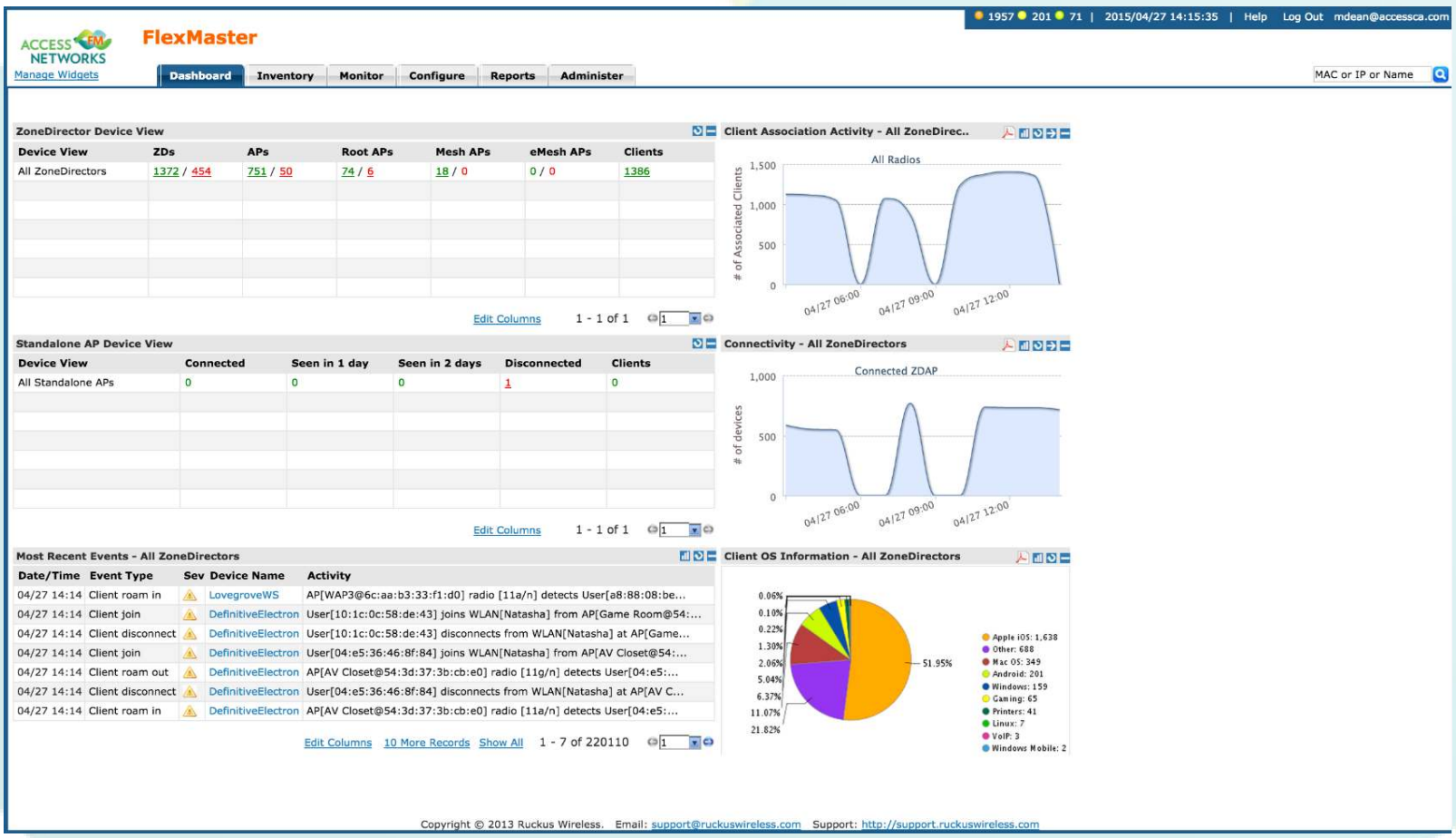
Accessing your FlexMaster remote management account

To set up your optional FlexMaster remote management account, please send an email to **support@accessca.com** with your company name. Once your account has been set up, we will send you an email with a link to our FlexMaster server. Your username will be your email address, and a temporary password will be generated for you. You may use the temporary password to access your account and then change the password as follows:

1. Select the **Administer** tab at the top of the screen.
2. Select **Users & Assignment** from the list on the left side of the screen.
3. Select the blue **Edit** hyperlink next to your user account. This will bring up a window that will allow you to enter your new password. Once you have entered your new password in both the **Password** and **Confirm Password** fields, please select the **OK** button.

In order for each of your ZoneDirectors to appear on the **Inventory** tab within your FlexMaster account, you must submit a support request for Access Networks to assign the ZoneDirector to your FlexMaster account. To do so, please send an email to **support@accessca.com** with your company name, ZoneDirector serial number and system name. Please allow one business day for Access Networks to configure your FlexMaster account and assign your ZoneDirector(s) to your account.

As shown below, the FlexMaster **Dashboard** has multiple widgets that will give you an overview of all your deployments. Selecting the **Inventory** tab will show you a list of all ZoneDirectors linked to your FlexMaster account and the status of each ZoneDirector. Selecting a blue serial number hyperlink of a specific ZoneDirector will log you into that ZoneDirector provided that port forwarding has been configured on the router as indicated on Page 9.



Customer ZoneDirector information

System Name: _____

Serial Number: _____

Admin Name: _____

Password: _____

Customer wireless information

SSID	Passphrase	Encryption Type
		WPA2 /AES
		WPA2 /AES
		WPA2 /AES