



ExtremeLocation User Guide

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For product documentation online, visit: <https://www.extremenetworks.com/documentation/>

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Preface

This section discusses the conventions used in this guide, ways to provide feedback, additional help, and other Extreme Networks publications.

Conventions

This section discusses the conventions used in this guide.

Text Conventions

The following tables list text conventions that are used throughout this guide.

Table 1: Notice Icons





Icon	Notice Type	Alerts you to...
	General Notice	Helpful tips and notices for using the product.
	Note	Important features or instructions.
	Caution	Risk of personal injury, system damage, or loss of data.
	Warning	Risk of severe personal injury.
<i>New!</i>	New Content	Displayed next to new content. This is searchable text within the PDF.

Table 2: Text Conventions

Convention	Description
Screen displays	This typeface indicates command syntax, or represents information as it appears on the screen.
The words enter and type	When you see the word “enter” in this guide, you must type something, and then press the Return or Enter key. Do not press the Return or Enter key when an instruction simply says “type.”
[Key] names	Key names are written with brackets, such as [Return] or [Esc] . If you must press two or more keys simultaneously, the key names are linked with a plus sign (+). Example: Press [Ctrl]+[Alt]+[Del]
<i>Words in italicized type</i>	Italics emphasize a point or denote new terms at the place where they are defined in the text. Italics are also used when referring to publication titles.

Terminology

When features, functionality, or operation is specific to a switch family, such as ExtremeSwitching™ or Summit®, the family name is used. Explanations about features and operations that are the same across all product families simply refer to the product as the *switch*.

Providing Feedback to Us

We are always striving to improve our documentation and help you work better, so we want to hear from you! We welcome all feedback but especially want to know about:

- Content errors or confusing or conflicting information.
- Ideas for improvements to our documentation so you can find the information you need faster.
- Broken links or usability issues.

If you would like to provide feedback to the Extreme Networks Information Development team about this document, please contact us using our short [online feedback form](#). You can also email us directly at internalinfodev@extremenetworks.com.

Getting Help

If you require assistance, contact Extreme Networks using one of the following methods:

- **GTAC (Global Technical Assistance Center) for Immediate Support**
 - **Phone:** 1-800-998-2408 (toll-free in U.S. and Canada) or +1 408-579-2826. For the support phone number in your country, visit: www.extremenetworks.com/support/contact
 - **Email:** support@extremenetworks.com. To expedite your message, enter the product name or model number in the subject line.
- **Extreme Portal** — Search the GTAC knowledge base, manage support cases and service contracts, download software, and obtain product licensing, training, and certifications.
- **The Hub** — A forum for Extreme customers to connect with one another, answer questions, and share ideas and feedback. This community is monitored by Extreme Networks employees, but is not intended to replace specific guidance from GTAC.

Before contacting Extreme Networks for technical support, have the following information ready:

- Your Extreme Networks service contract number and/or serial numbers for all involved Extreme Networks products
- A description of the failure
- A description of any action(s) already taken to resolve the problem
- A description of your network environment (such as layout, cable type, other relevant environmental information)
- Network load at the time of trouble (if known)
- The device history (for example, if you have returned the device before, or if this is a recurring problem)
- Any related RMA (Return Material Authorization) numbers

Extreme Networks Documentation

To find Extreme Networks product guides, visit our documentation pages at:

Current Product Documentation	www.extremenetworks.com/documentation/
Archived Documentation (for earlier versions and legacy products)	www.extremenetworks.com/support/documentation-archives/
Release Notes	www.extremenetworks.com/support/release-notes

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1 Product Overview

Architecture
Presence
Zone Tracking
Position Tracking
Device and Associate Classification and Tracking
Crowding Event Notification and Analysis
Import Location Based Services from AirDefense Service Platform
WiNG Integration With ExtremeLocation
Scheduling Reports

ExtremeLocation is a massively scalable, enterprise grade, resilient, cloud-based location and analytics solutions from Extreme Networks. With real-time location and analytics, you can engage with your customers providing personalized experience for guests and visitors. ExtremeLocation can also be used to monitor your work flows and assets to improve your overall operation and efficiency.

ExtremeLocation provides enterprises powerful location services which can scale to thousands of branch sites and 100,000 access points.

ExtremeLocation offers a range of accurate and granular location accuracy to address your deployment scenarios and includes:

- real-time and historical location analysis
- new and repeat visitor tracking
- engagement time monitoring
- site or zone specific intelligence
- assets and employee tracking

This product:

- Is enterprise grade, resilient and cloud based.
- Is massively scalable supporting thousands of sites and a large number of access points.
- Is quick to deploy and easy to manage.
- Provides enterprise quality location and analytics.
- Provides unlimited customizable dashboards for data analysis and site monitoring.
- Lets you drill down to floor level at a site to monitor assets, visitors and associates.
- Provides reports to help you proactively plan or troubleshoot issues.

Some of its main features are:

- [Presence](#)
- [Zone Tracking](#)
- [Position Tracking](#)
- [Device and Associate Classification and Tracking](#)

- [Crowding Event Notification and Analytics](#)
- [Import Location Data from AirDefense Service Platform](#)
- [Import WiNG Site Hierarchy](#)
- [Scheduling Reports](#)
- [Admin and Guest Account Management](#)
- [Category Configuration](#)

Architecture

ExtremeLocation supports multi-site multi-ap deployments providing support to thousands of sites and one hundred thousand access points. Hosted on the cloud, it provides a resilient, always available service to meet your location and analytics needs. Cloud enabled APs are must be manually configured to connect to ExtremeLocation's service when deployed for the first time.

Presence

The Presence feature enables you to react quickly to a visitor or customer to your site or venue. You could use this feature to provide a customized welcome message to the customer, as soon as they arrive, to enhance their site visit experience. Enhance the quality of engagement with the visitor by pushing coupons, offers, advertisement, and other real-time notifications to the visitor's devices.

The Presence feature provides a large amount of visit data and trends that you can use to proactively enhance customer experience and to reactively tweak your service offerings to increase your profits.

Presence does not require you to upload floor plans and does not require real-time location service calibration.

Zone Tracking

The Zone Tracking feature enables you to detect devices, visitors, and associates within a zone. A zone is an area covered by an AP or sensor. You could use the feature to track movement of visitors and associates from one zone to another, locate and track movement of assets, view which zones are popular or unpopular, and track (live and historical) how much time a visitor or associate spends in the zone.

The Zone Tracking feature provides a large amount of visit data and trends that you can use to proactively enhance the customer experience and to reactively tweak your product placements to increase visitor engagement.

The Zone Tracking feature requires you to upload a floor map of the area of interest and then create zones that meet your requirements.

Position Tracking

The Position Tracking feature enables you to accurately place a device or an associate or a visitor within five (5) to ten (10) meters of their actual location on the floor map.

This feature uses RSSI information from several APs and sensors to locate the client devices and draws it on the floor map. It also requires a RTLS calibration survey to be performed to collect RF data to improve accuracy.

Extreme Networks ExtremeLocation also provides an Android App to enable you to perform site survey using a tablet. The Android App offers zone calibration.

Device and Associate Classification and Tracking

ExtremeLocation can auto classify devices as *Visitor*, *Associate* or *Asset* based on user defined rules. Separating devices as Associates, Assets, and Visitors enhances accurate visitor analysis. It also improves asset tracking and monitoring of associate activity.

Crowding Event Notification and Analysis

Real-time crowding events can be configured globally or by site, which in turn generates real-time event notification and analytics. A site configuration for the number of visitors per associate ratio (threshold) will override the global configuration. However, events remain active based on a global timeout setting.

Active events for a category are viewed in the floor plan by zone so that you can identify which categories need immediate associate attention.

A detail widget can be configured in the dashboard to view the historical data over time to help you determine where more associates should be deployed.

Import Location Based Services from AirDefense Service Platform

ExtremeLocation now supports migrating location based services like Proximity Awareness and Analytics services directly from AirDefense Service Platform to ExtremeLocation as it provides enhanced location based services as well as superior scalability performance. Once migrated, ExtremeLocation becomes the default location service provider for your sites.

Calibration and configuration data exported from ADSP is imported into ExtremeLocation using scripts provided for this purpose. These scripts can be downloaded from within the ExtremeLocation user interface. A detailed "How To" document, [Migrating Location Based Services from ADSP to ExtremeLocation](#) is available and can be downloaded from the [Extreme Networks Documentation Site](#).

WiNG Integration With ExtremeLocation

WiNG ExtremeLocation Integration

With this release of ExtremeLocation, you can seamlessly integrate WiNG with ExtremeLocation. Once integrated, you can view all WiNG sites and WiNG adopted devices in real time from within the ExtremeLocation user interface. Changes made to a site or site settings, geo-location information for a site is immediately propagated to ExtremeLocation. For adopted access points, changes to the radio mode and hostname will be reflected in ExtremeLocation.

This enables WiNG customers, who want to use ExtremeLocation to provide enhanced locationing services, an easy pathway to synchronize their WiNG site hierarchy directly into ExtremeLocation

without any manual intervention. Here ExtremeLocation acts as a down-stream location service to WiNG. Any changes made to WiNG is automatically propagated to ExtremeLocation, however, changes made to ExtremeLocation is not updated back to WiNG.

Once the WiNG site hierarchy is synchronized with ExtremeLocation, you can configure ExtremeLocation as the location service provider for all the sites (RF Domains) managed by WiNG.

ExtremeLocation Tenant Account Number Linking in WiNG

It is now possible to configure the ExtremeLocation Tenant Account Number in your WiNG RF Domain policy and your WiNG controller. When an access point comes online, it is placed in the common pool of access points by default. This access point is now available for any Tenant to claim and use by uploading the access point's MAC address using the `.csv` import method. When the Tenant Account Number is provided, access points are assigned to the tenant with the Tenant Account Number and can only be used across any of the sites managed by this tenant. This ensures that your assets cannot inadvertently be deployed on sites that belong to other ExtremeLocation accounts.

When the Tenant Account Number is provided in the WiNG controller configuration, it links the controller with the tenant. Any modification made to WiNG sites managed by this wireless controller, such as adding new access points or sites, is tagged by the Tenant Account Number automatically.

Scheduling Reports

ExtremeLocation now supports export of the dashboard as reports. Reports are exported as **PDF** files.

ExtremeLocation's report scheduling interface enables you to create periodic reports that are emailed automatically. Schedules can be set daily, weekly, or monthly.

2 Log In to ExtremeLocation

Log In to ExtremeLocation
Sign Up for ExtremeLocation
Log In for the First Time
Forgot Password
Add or Apply License to the Account

ExtremeLocation is a subscription based service and requires you to have a valid and in-force account to access it. This topic discusses the following:

- Log in - Describes how to log in to ExtremeLocation.
- Sign up - Describes the sign up process to create an account for use with ExtremeLocation.
- Log in for the first time - Discusses the tasks and other requirements when logging in to ExtremeLocation for the first time.
- Forgot password - Discusses how to reset a lost/forgotten password.
- Contact us - Provides contact information for reaching Extreme Networks Global Technical Assistance Center (GTAC).

Log In to ExtremeLocation

Use the ExtremeLocation **Log In** screen to log in to your account. If you do not have an account, use this screen to sign up for a new account. You can also use this screen to retrieve or reset missing/forgotten credentials such as user name and password.

Access to ExtremeLocation is only available on subscription to the service. On subscribing to the service, you must also create the user credentials for logging into ExtremeLocation dashboard using an account. To sign up, select the **Sign Up** link on the **Log In** screen. For more information see [Sign Up for ExtremeLocation](#) on page 13.

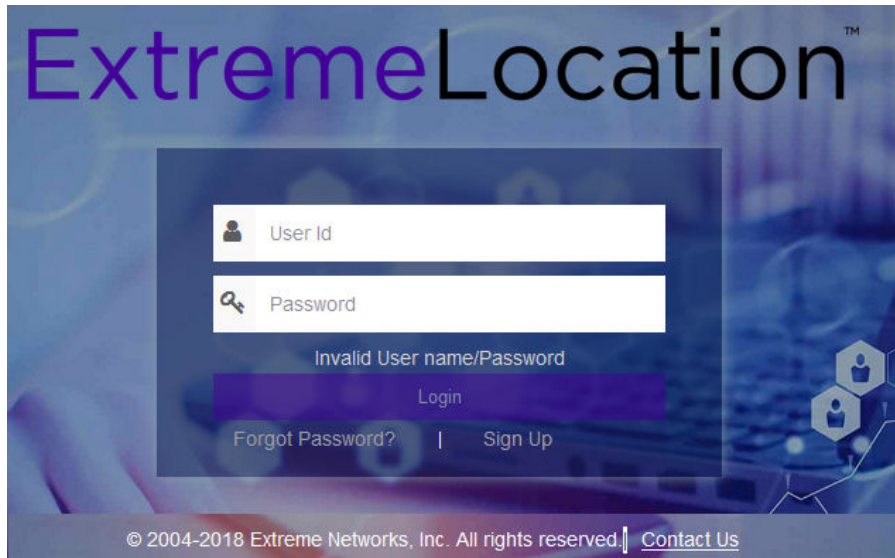


Figure 1: ExtremeLocation Login Screen

To log in into ExtremeLocation:

- 1 Provide the user name in the **User Id** field (typically the email ID that you registered with).
- 2 Provide the password for the user name in the **Password** field.
- 3 Select the **Login** button to login to the ExtremeLocation user interface.

Should you need to contact Extreme Networks customer support, select the **Contact Us** link located at the bottom of the login screen. For more information on how to contact the Extreme Networks customer support, see [Getting Help](#) on page 6.

Sign Up for ExtremeLocation

ExtremeLocation is a subscription service. You require a valid user account with ExtremeLocation to use it.

To sign up for ExtremeLocation service:

- 1 Click on the **Sign up** link below the **Login** button.
The **Sign Up** window appears.

The screenshot shows the 'Sign Up' window for ExtremeLocation. The form is set against a dark blue background with a grid pattern. The fields are as follows:

- Name ***: Organization name
- Email ***: aaa@company.com
- Phone**: (empty)
- Address**: (empty)

Below the form, there is a checkbox for 'I have read and agree to the [Terms and Conditions](#)'. Below that is a reCAPTCHA widget with the text 'I'm not a robot' and a 'reCAPTCHA Privacy - Terms' link. At the bottom of the form are 'Back' and 'Sign Up' buttons. The footer of the page reads '© 2004-2018 Extreme Networks, Inc. All rights reserved. | [Contact Us](#)'.

Figure 2: Sign Up Window

- 2 Enter a valid name for this account in the **Name** field. This is a mandatory field.
- 3 Enter a valid email id in the **Email ID** field. This email ID will serve as the log in user name for this account with ExtremeLocation. This is a mandatory field.



Note

Ensure that you have access to this email ID at all times as this email ID will be used by us to communicate with you regarding your ExtremeLocation account.

- 4 Optional: Enter a valid phone number in the **Phone** field.
- 5 Optional: Enter a valid address for communication in the **Address** field.
- 6 Select **Terms and Conditions** link to open the terms of service for ExtremeLocation. This is a PDF file that opens in a separate tab or window of your browser.



Important

Please read and understand the Terms and Conditions for the ExtremeLocation service.

- 7 Select **I have read and agree to the Terms and Conditions** option to indicate your consent to the Terms and Conditions.



Important

You cannot use the ExtremeLocation service or create your ExtremeLocation account without accepting the Terms and Conditions.

- 8 Select the **I'm not a robot** option and follow the instructions displayed. User registration cannot proceed without passing this check.

The **Sign Up** button is enabled once you have completed this step successfully.

- 9 Select the **Sign Up** button to complete the process.

Your account is set up with ExtremeLocation and the system sends emails to the ID specified in the **Email ID** field. These e-mails contain the following information:

- Your ExtremeLocation Account Number
- A link to activate the newly created account.
- An auto-generated password for use when logging in to ExtremeLocation for the first time. You will be forced to change this password during your first log in.

- 10 Should you need to exit without registering for an account, select **Back** button anytime during the registration process.

You are taken back to the ExtremeLocation **Login** screen.

On successful registration with ExtremeLocation, use the account activation link (sent to your registered email ID) to activate your account. Try to log in into your account from the ExtremeLocation log in screen using the registered email ID and the password sent to you by email. For further information, see [Log In for the First Time](#) on page 15.

Log In for the First Time

You should have the user account and password to successfully log in to your ExtremeLocation account.

When logging to ExtremeLocation for the first time, ensure that you have the following information for reference:

- Your Username and Password
- Your ExtremeLocation Account Number
- A valid License Key for this account

This information is required for logging in, changing the default password, and adding the licenses.

If you do not have any of the above information, please check the email account used to register for the account with ExtremeLocation. At the time of registration, you would have received emails from ExtremeLocation containing your account number, activation link and a temporary password for logging on for the first time. Please retain these mails for reference.

For help with account log in or other issues, please contact Extreme Support. For more information, see [Getting Help](#) on page 6.

Use the ExtremeLocation log in screen to log in to your account. This screen is also used to sign up for a new account as well as to retrieve or reset missing/forgotten credentials such as user name and password.

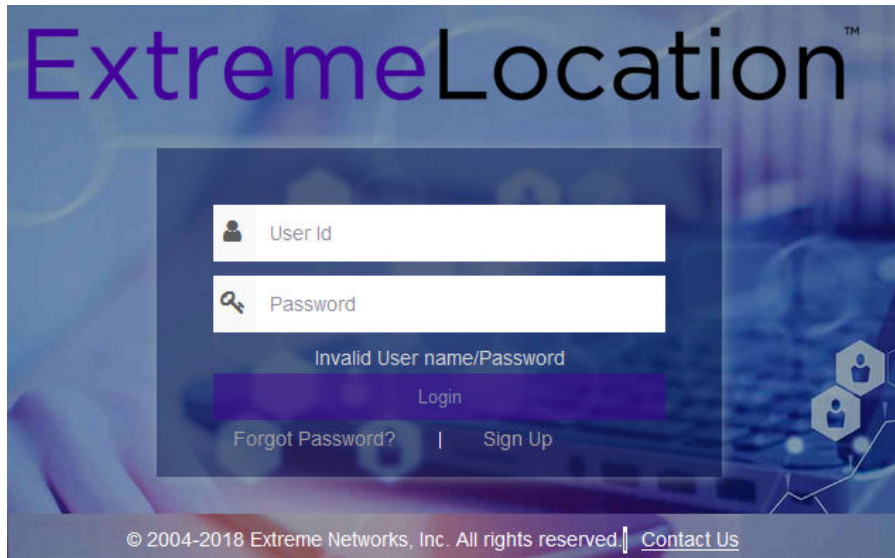


Figure 3: ExtremeLocation Log In Screen

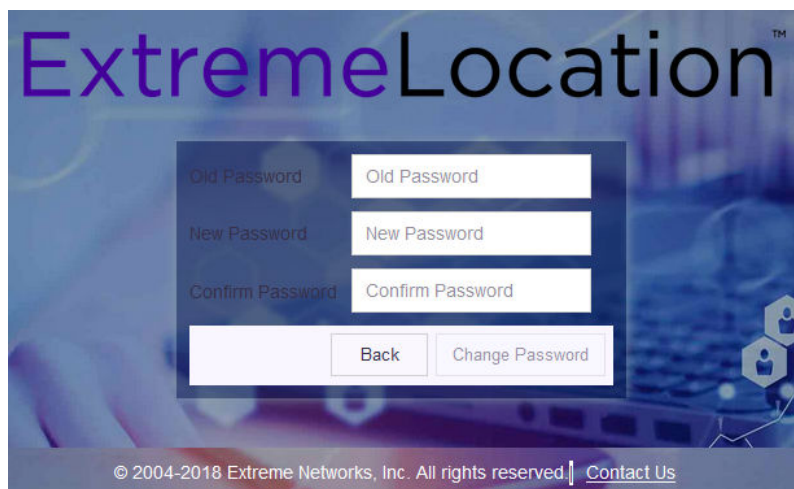
To successfully log in, you should have valid credentials that were sent to you at the time you signed up with ExtremeLocation. Your **User Id** will be the email ID that you registered with.

To log in to ExtremeLocation:

- 1 Provide the user name in the **User Id** field (typically the email ID that you registered with).
- 2 Provide the password for the user name in the **Password** field.
- 3 Select the **Login** button to login to the ExtremeLocation user interface.

Since this is the first log in, you will be forced to change your log in password.

The **Change Password** dialog appears.



- 4 Enter the old password into the **Old Password** field.
- 5 Enter the new password into the **New Password** field.
- 6 Enter the new password into the **Confirm Password** field to confirm it.

An error message is displayed if the passwords entered into the **New Password** and **Confirm Password** fields are not the same.

- 7 Select **Change Password** to save your changed password. Select **Back** at any time to exit without changing your password.

The ExtremeLocation **Dashboard** appears. You have successfully logged in to your account.

Since this is the first log in, no licenses are available for this account. The following message appears indicating the same.

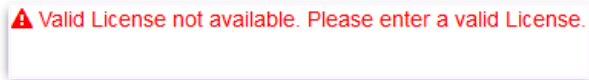


Figure 4: No License Message

For more information on adding licenses, see [Add or Apply License to the Account](#) on page 18.

Forgot Password

The **Forgot Password** dialog facilitates resetting your account's password. When you use this link, the password of your account is reset and a new password is sent to the email ID that is registered for this ExtremeLocation account and which you use for logging into this account.

When you receive your password from ExtremeLocation, log in using your email ID and the new password. On successful log in, you will be forced to change your password.

To reset your ExtremeLocation account's password:

- 1 From ExtremeLocation's **Login** screen, select the **Forgot password?** link.

The following dialog displays:

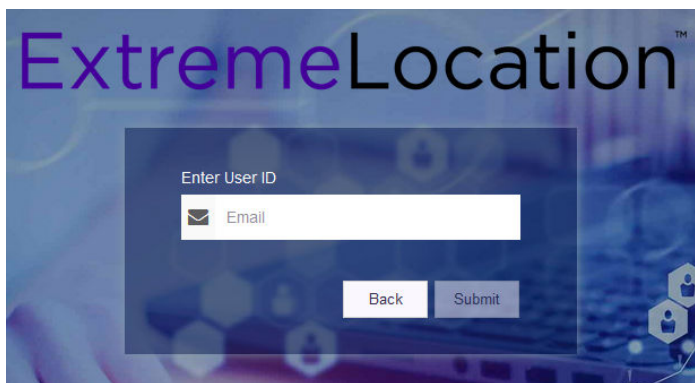


Figure 5: Forgot Password Dialog

- 2 Enter your ExtremeLocation account's email ID in the **Enter User ID** field.
This is the email ID that you use to log in to ExtremeLocation. If you enter a wrong or nonexistent email ID, an appropriate message is displayed.
- 3 Select **Submit**
Should you want to exit this process, select **Back**.
The password for the account is reset and a system generated password is sent to the email ID associated with this ExtremeLocation account. You are redirected back to ExtremeLocation Login page.

- 4 Provide the user name in the **User Id** field (typically the email ID that you registered with).
- 5 Provide the password for the user name in the **Password** field.
Use the password that was sent to your registered email ID.
- 6 Select the **Login** button to login to the ExtremeLocation user interface.
Since the system generated password was used to log in, you will be forced to change your log in password.
The **Change Password** dialog displays.

- 7 Enter the old password into the **Old Password** field.
- 8 Enter the new password into the **New Password** field.
- 9 Enter the new password into the **Confirm Password** field to confirm it.
An error message is displayed if the passwords entered into the **New Password** and **Confirm Password** fields are not the same.
- 10 Select **Change Password** to save your changed password. Select **Back** at any time to exit without changing your password.
The ExtremeLocation Dashboard displays. You have successfully reset and changed your password.

Add or Apply License to the Account

To add or apply license:

- 1 Select **Settings** from the main menu.
- 2 Select **License** from the sub menu.

The **License Details** pane opens.

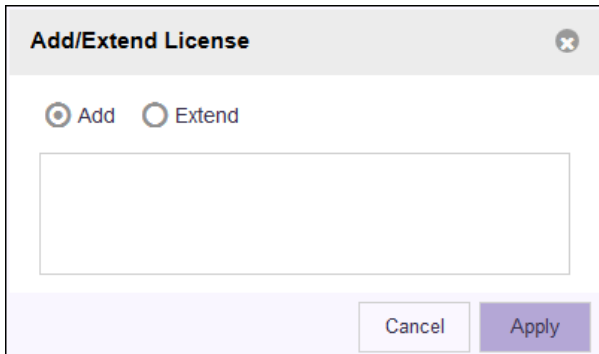
License Details				
Total:	10			
Used:	6			
Expiry Date:	08-18-3113			
License Key	No. of Device	Import Date	Expiry Date	Add/Extend
aa0aafcca8751a8efcd6d1f708e94e2d07ff5b1844df5c1bb6635b08d	10	03-13-2018	08-18-3113	Add

This dialog displays the following information:

- Total** Displays the total number of available licenses for this account. For a new account - without any licenses - this value is zero.
- Used** Displays the number of licenses in use out of those available as shown in the **Total** field. For a new account, this value is zero.
- Expiry Date** Displays the date on which the license expires. For accounts with multiple licenses, this date is the date on which the last license expires. For a new account this field displays **N/A**.

3  .

The **Add/Extend License** dialog appears. Use this dialog to add or to extend licenses for this ExtremeLocation account.



Complete the following information:

- Add** Select this option to add a new license to this account.
- Extend** Select this option to extend the validity of the combination of the current licenses and the new licenses that are being added in. The validity of the license is extended by the number of days requested when the license was generated.
- Enter License Key** Paste the license key in this space. Ensure that you do not inadvertently paste any non-printable characters in this space.

4 Select **Apply** to apply the license key.

If the license is valid for this account, the license is added to the list of licenses available for this account. If the license is an Extend license, then the validity date of the license extended by the number of days that is calculated by the ExtremeLocation system.

The table displays a list of all licenses (valid and expired) for this account.

- License Key** Displays the complete license key as provided by ExtremeLocation support.
- No. of Devices** Displays the number of device that can be used using this license.
- Import Date** Displays the date on which the license was added to this account.
- Expiry Date** Displays the date that the license will expire.
- Add/Extend** Displays the type of license.

If the license is valid, it is added to this table.

5 Optional: At any point, select the **Cancel** button to exit without adding licenses.

3 The ExtremeLocation Dashboard

- Load the Dashboard
- Create a Dashboard
- Set a Default Dashboard
- Manage Your Dashboards
- Delete the Dashboard
- Dashboard Widgets
- Scheduled Reports

Use the fully customizable ExtremeLocation Dashboard to display data for the sites managed by your ExtremeLocation account. ExtremeLocation provides a large number of widgets for you to use in the dashboard to filter to the data that is of interest for your site and your requirement. You can create any number of custom Dashboards to meet your requirements.

You can filter the data displayed on the dashboard by location or site group and further on the time duration of interest. These options, location and time, can be applied independent of each other. You can filter the data displayed on the dashboard based on the location or time or both.

Load the Dashboard

To display the ExtremeLocation dashboard:

- 1 Select **Dashboard** from the main menu.

The dashboard marked as default automatically loads.

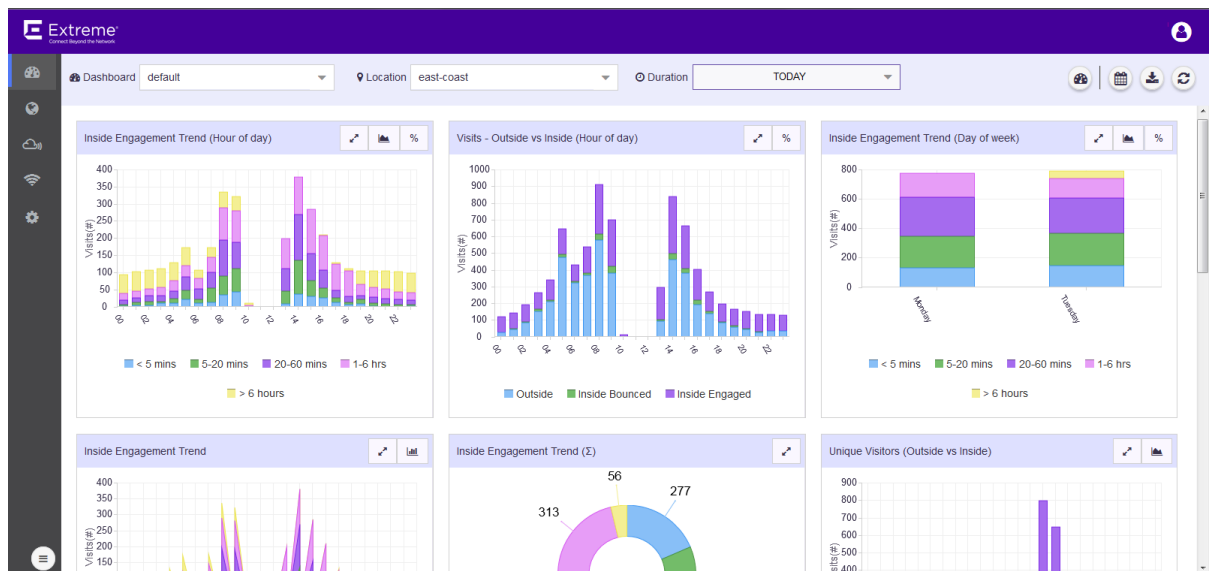




Figure 6: The Dashboard Screen

- To select a different dashboard, use the **Dashboard** drop-down list.

The selected dashboard opens and displays the configured data.

- To manually refresh the data on the screen, select the  button from  tool bar.

- Select the  button from  tool bar.

The button expands to display a drop-down list.

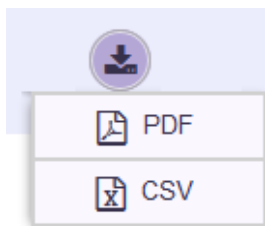


Figure 7: Dashboard Download Options

- Select the **PDF** button to save the current state of the dashboard as a Portable Document Format (PDF) file. Select the **CSV** button to save the current state of the dashboard as a Comma Separated Value (CSV) file.
- Use the **Location** drop-down list to select a site and to display the data for the selected site when multiple sites are available under this ExtremeLocation account.

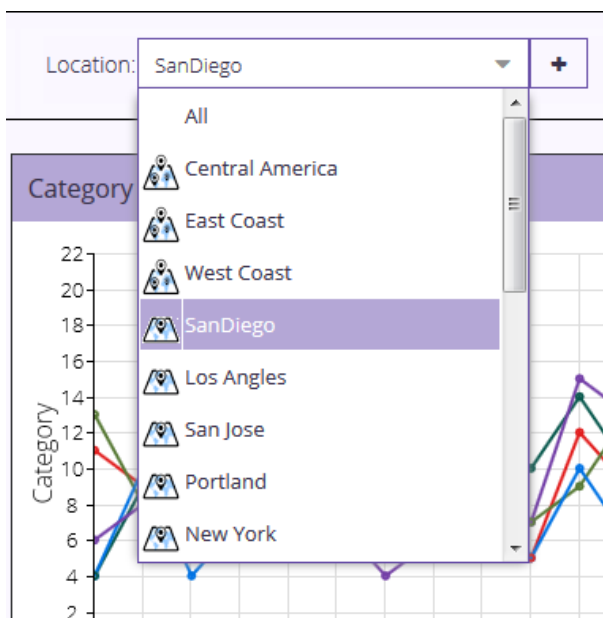


Figure 8: Location Drop-Down List

The dashboard refreshes to display data for the selected site or a group of sites.

- Use the **Duration** drop-down list to select a time duration to display data for. The drop-down provides a set of pre-configured durations for filtering data. The available pre-configured durations are:

- Today - Displays the data for the current date. Excludes data for all other dates.
- Yesterday - Displays the data for the day before the current date. Excludes data for all other dates including data for the current date.
- Last 7 Days - Displays the data for the last 7 days prior to the current date. Includes data for the current date. Excludes data for all other dates.
- Last 30 Days - Displays the data for the last 30 days prior to the current date. Includes data for the current date. Excludes data for all other dates.
- Custom Range - Displays the data for a user selected date range.

The screenshot shows a 'Duration' dropdown menu with 'TODAY' selected. Below it is a calendar for March 2018. The 'CUSTOM RANGE' option is selected, and the calendar shows dates from 4 to 10 and 27 to 31 highlighted in purple. The 'Apply' button is visible at the bottom right.

Select the start date and end date for the range from the displayed calendar and select **Apply**.

- Event - Displays the data for user created "Event" such as a sale or a conference. An Event is a user created date range that is identified with an unique name.

The screenshot shows the 'Duration' dropdown menu with 'EVENT' selected. The 'EVENT' dropdown is open, showing a list of events. The 'Apply' button is visible at the bottom right.

Use the drop-down to select the event of interest and select **Apply**. See [Create an Event](#) on page 22 to know about creating an event.

8

Periodically select the  button from  tool bar to refresh the data displayed on the current dashboard.

Create an Event

Events are date ranges that you create to easily filter data of interest during a particular duration. For example, you could create an event for filtering data during the Christmas sale period or you could create an event for a convention being held at your venue.

- 1 Select **Dashboard** from the main menu.
The dashboard marked as default automatically loads.

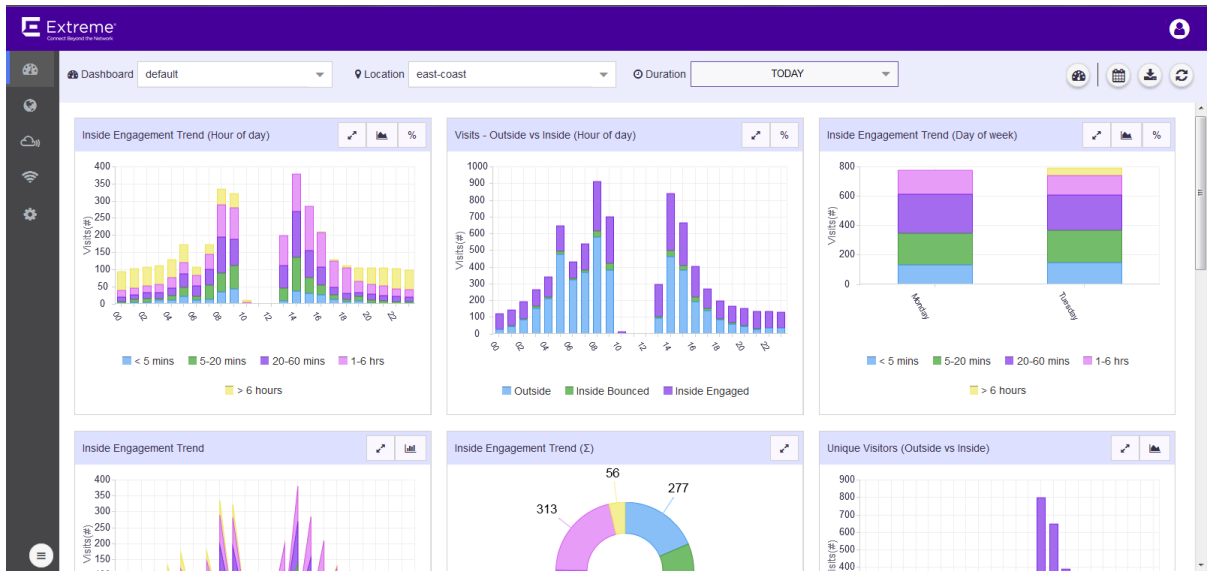


Figure 9: The Dashboard Screen

- 2 Use the **Duration** drop-down list to select a time duration to filter the data. From the drop-down list, select Event.
The **Event** dialog appears.

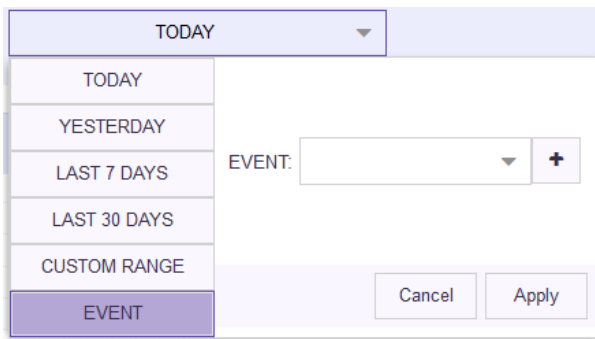
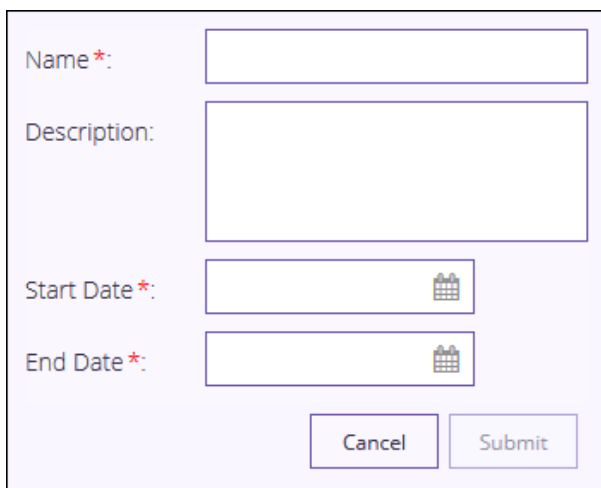


Figure 10: Event Dialog

- 3 Select the **+** button to the right of the **Event** drop-down list.
The following dialog appears.



Name Provide a name for the Event. This value is used when selecting this event for filtering data. This is a mandatory field.

Description Provide a brief description about the event.

Start Date Use the calendar control next to this field to select a start date for this event.

End Date Use the calendar control next to this field to select the end date for this event.

- 4 Select **Submit** to save this new event.

At any time, select **Cancel** to exit without creating a new event.

Download Dashboard

You can download any of your ExtremeLocation dashboards in **PDF** or **CSV** format.

To do so:

- 1 Select **Dashboard** from the main menu.
The dashboard marked as default automatically loads.

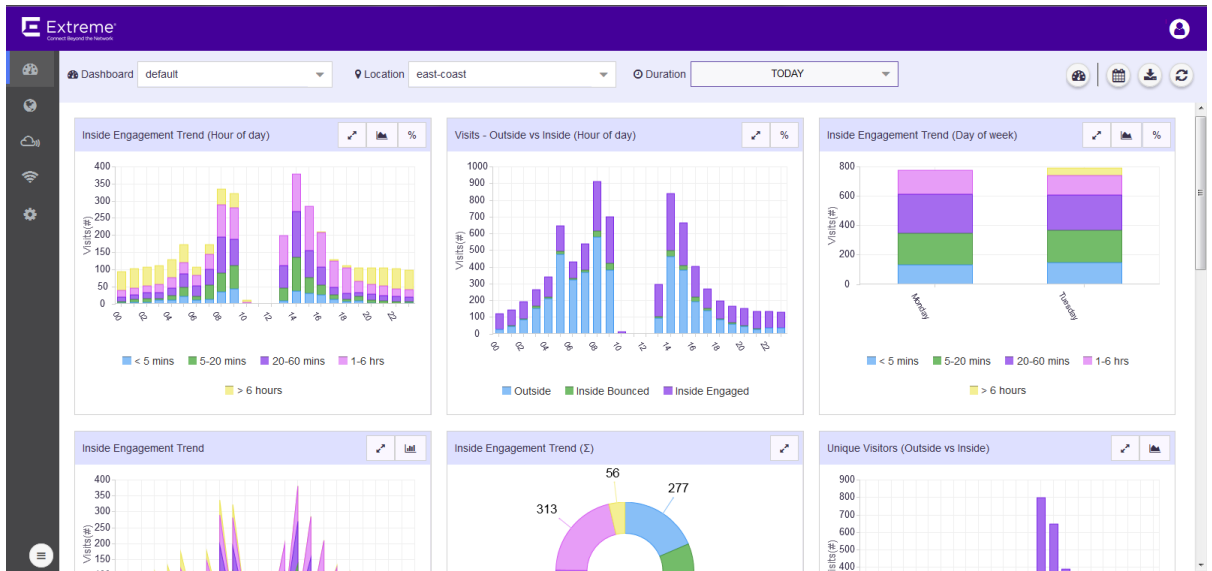


Figure 11: The Dashboard Screen

- 2 Select the **Dashboard** drop-down list to expand and display the list of available dashboards for this ExtremeLocation account.
- 3 From the list of available dashboards, select a dashboard.

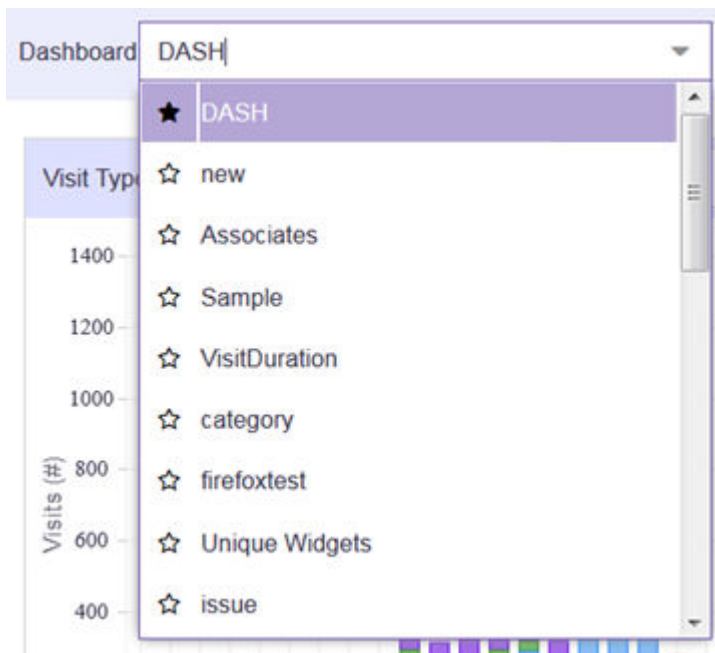




Figure 12: Dashboard List

The selected dashboard displays immediately.

- 4 Select the  button from  tool bar.
The menu expands to display the following options:

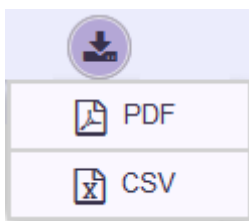


Figure 13: Dashboard Download Options

- 5 Select one of the available options to download your dashboard to your local machine.

Create a Dashboard

To create a new ExtremeLocation dashboard:

- 1 Select **Dashboard** from the main menu.
The dashboard marked as favorite automatically loads.

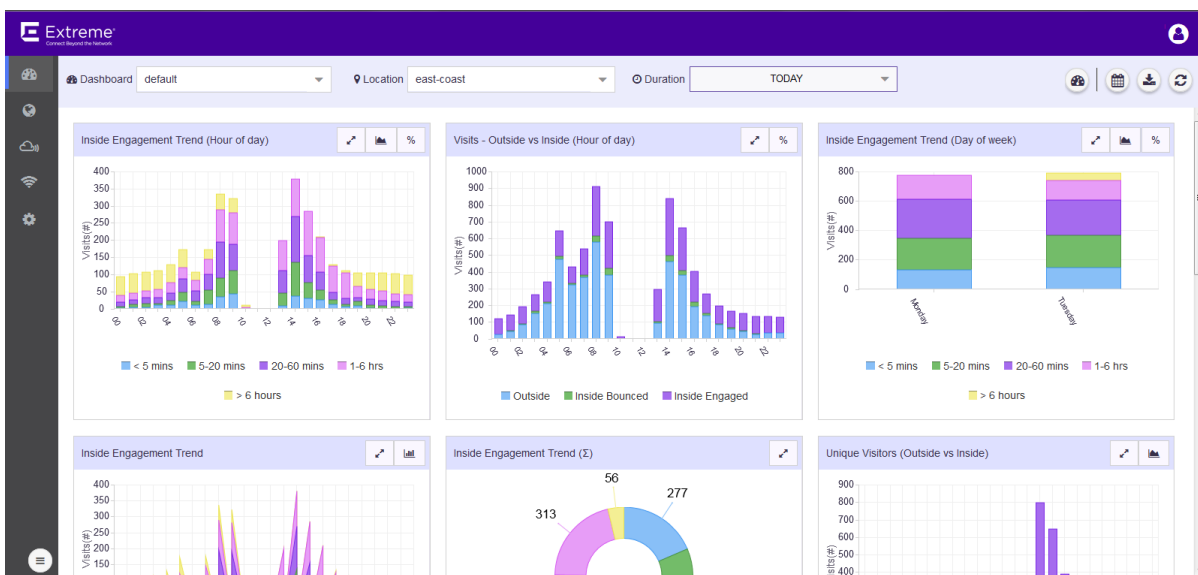


Figure 14: The Dashboard Screen

If no dashboard exists, the following is displayed on the dashboard screen.

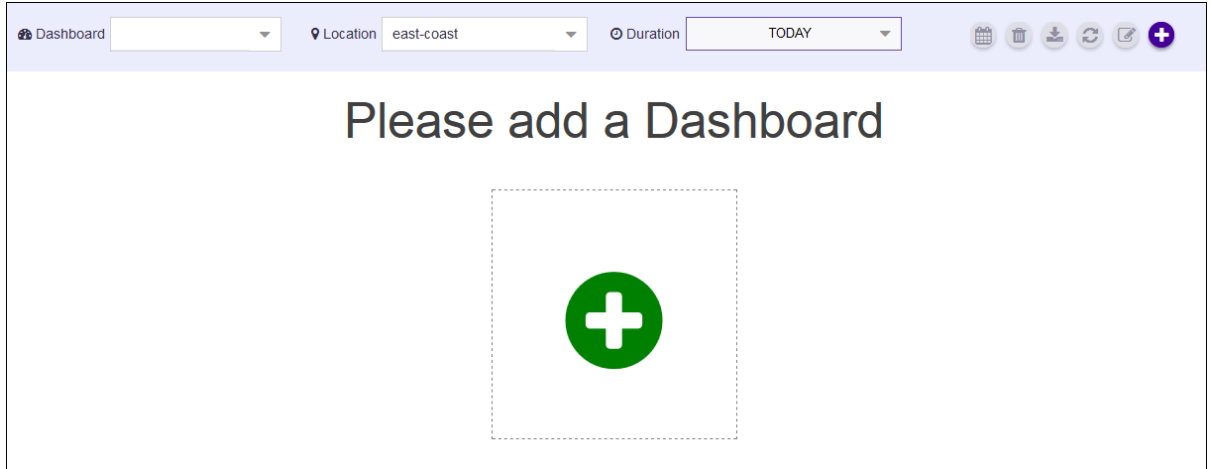







Figure 15: The Dashboard Screen When No Dashboard is Available

- 2 When no dashboard exist, click the big green circle in the middle of the screen to create a new dashboard.
- 3 If dashboards are available for this account,  button from  |    tool bar. The button expands to display a drop-down list.

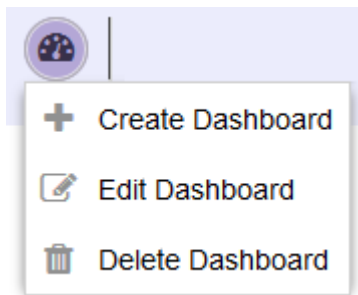


Figure 16: Manage Dashboard Options

- Select **Create Dashboard** from the drop-down list.

The following **New Dashboard** screen appears.

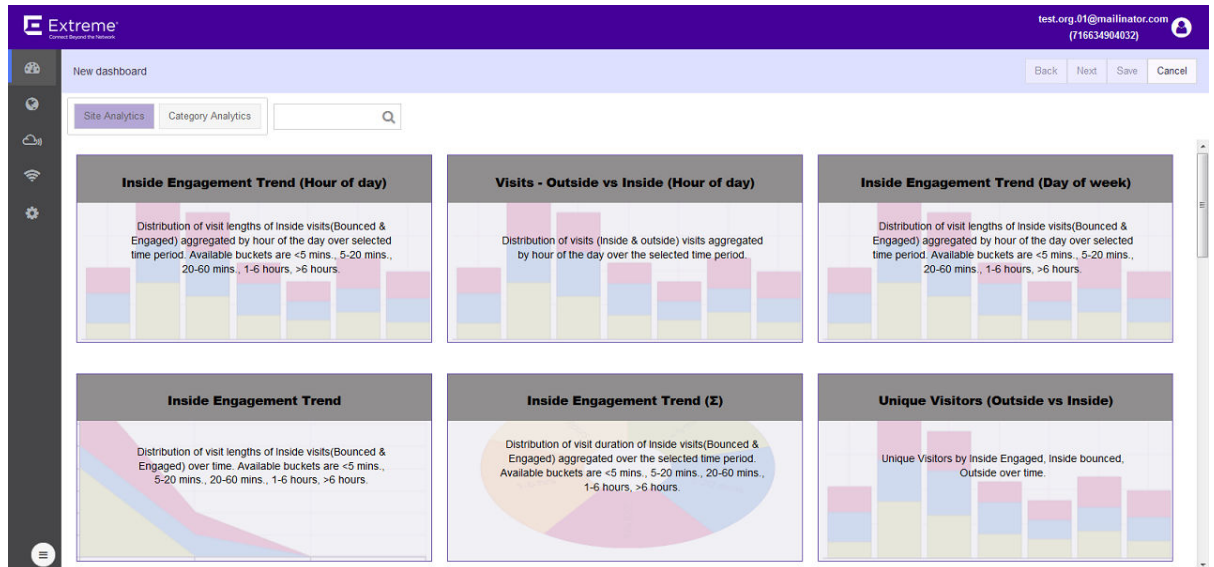


Figure 17: New Dashboard Screen

- Select one of the two available widget categories.

Widgets on the **New Dashboard** screen are classified into:

- **Site Analytics** - Use the widgets in this category to display site analytics data.
- **Category Analytics** - Use the widgets in this category to display category/zonal analytics data.

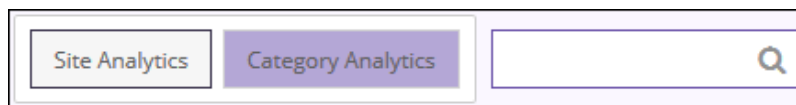


Figure 18: Widget Categories

Use the **Search** text box to drill down to the widgets of interest.

- Click the widget to select it. You can select multiple widgets to add to the dashboard at a time.

A green check mark appears on the top right of the selected widget.

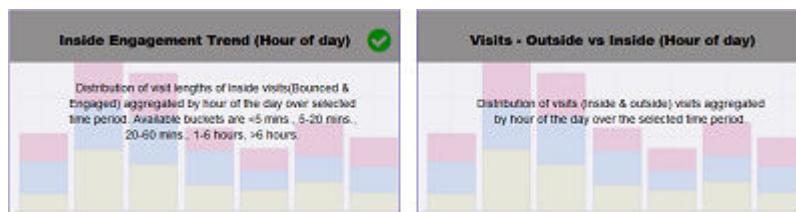


Figure 19: A Selected and an Unselected Widget

- 7 Select **Next** located to the top right, above the **New Dashboard** screen.

The following screen appears:

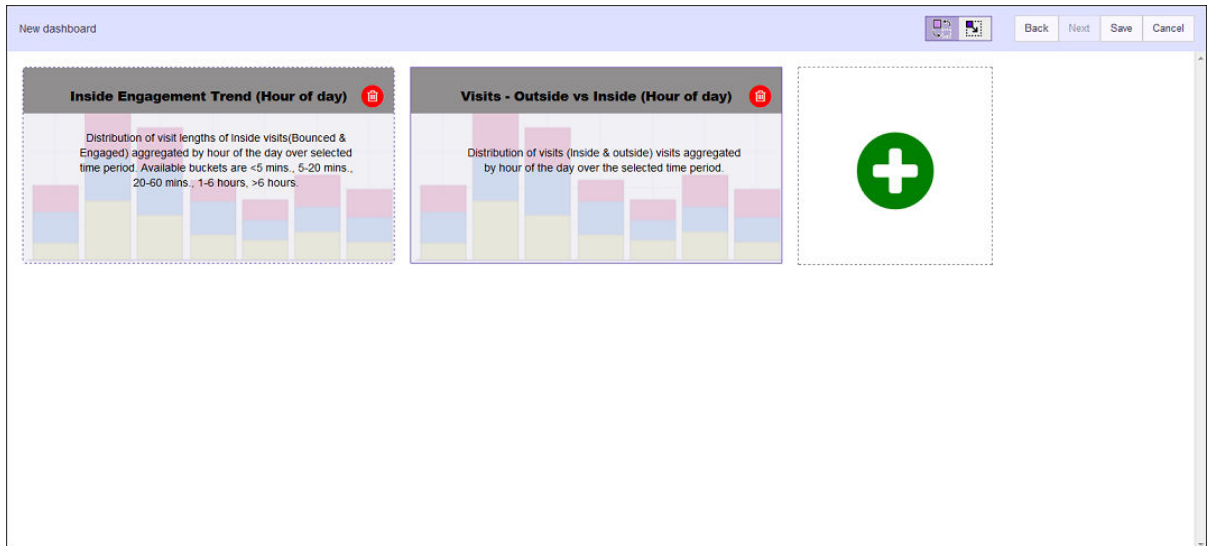


Figure 20: New Dashboard screen - Widget Placement and Sizing

To remove a widget already placed on the dashboard, use the red **x** located to the top of that widget. This immediately removes the widget from the dashboard.


- 8 Use the  buttons to rearrange or re-size the selected widgets on the new dashboard. Select a widget and drag it to the desired location on the dashboard. The other widgets on the dashboard are automatically rearranged to accommodate the moved or re-sized widget. To re-size a widget, select **Resize**. A small triangle appears in the bottom right of each widget. Click and drag this triangle to re-size the widget.
- 9 Select **Save** to save the final dashboard layout. At any time use **Back** to navigate to the previous screen. Similarly, use **Cancel** to exit without creating the dashboard. A small window appears.



Figure 21: Name the New Dashboard

- 10 Provide a name for this dashboard and select **Save**. The dashboard is saved and displays the configured data.

Set a Default Dashboard

Default dashboard is a user selected dashboard that is displayed when **Dashboard** is selected from the main menu. There can be only one default dashboard for an ExtremeLocation account.

- 1 Select the **Dashboard** drop-down list to display a list of available dashboards.
A default dashboard is indicated by a darkened star symbol to the left of its name.

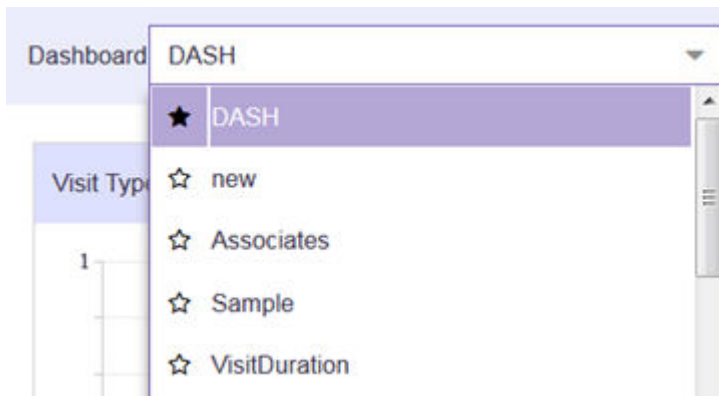


Figure 22: Default Dashboard

- 2 Select the star symbol for the dashboard to be set as the new default dashboard.
The selected star is darkened.

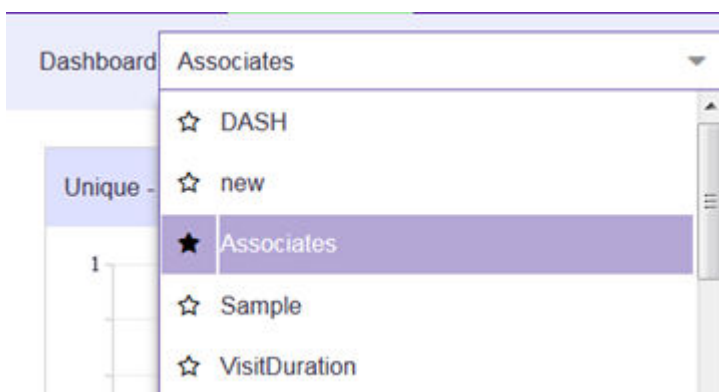


Figure 23: New Default Dashboard

From the next time the Dashboard screen is loaded, this dashboard is loaded by default.

Manage Your Dashboards

Use the tools provided in the **Dashboard** screen to edit any dashboard in your ExtremeLocation account.

To edit an existing dashboard:

- 1 Select **Dashboard** from the main menu.
The dashboard marked as default automatically loads.

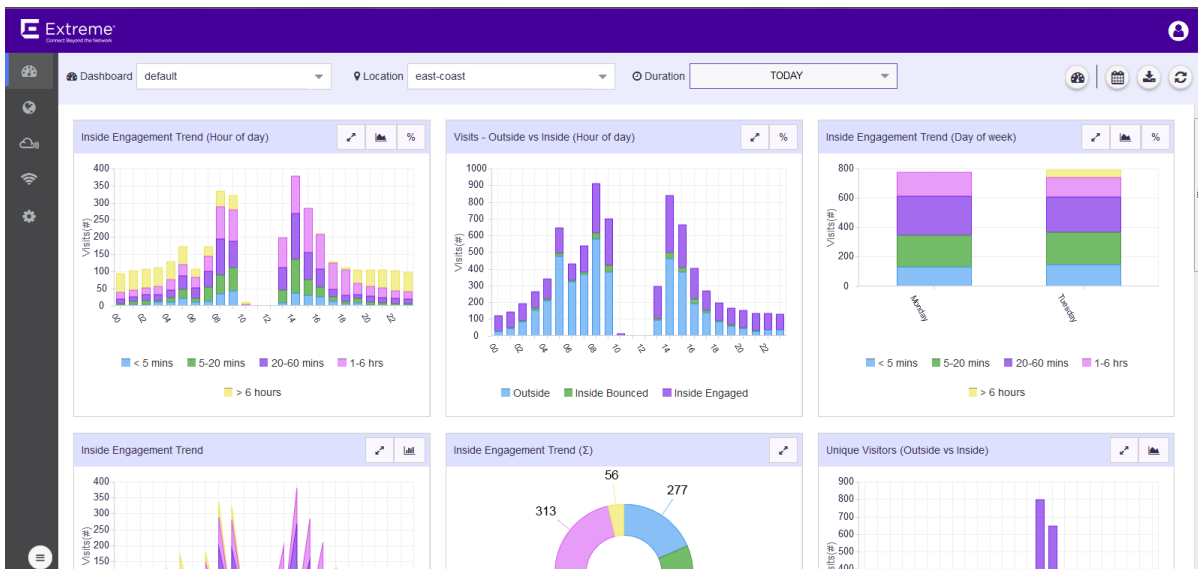


Figure 24: The Dashboard Screen

- 2 Select the **Dashboard** drop-down list to expand and display the list of available dashboards for this ExtremeLocation account.
- 3 From the list of available dashboards, select a dashboard.

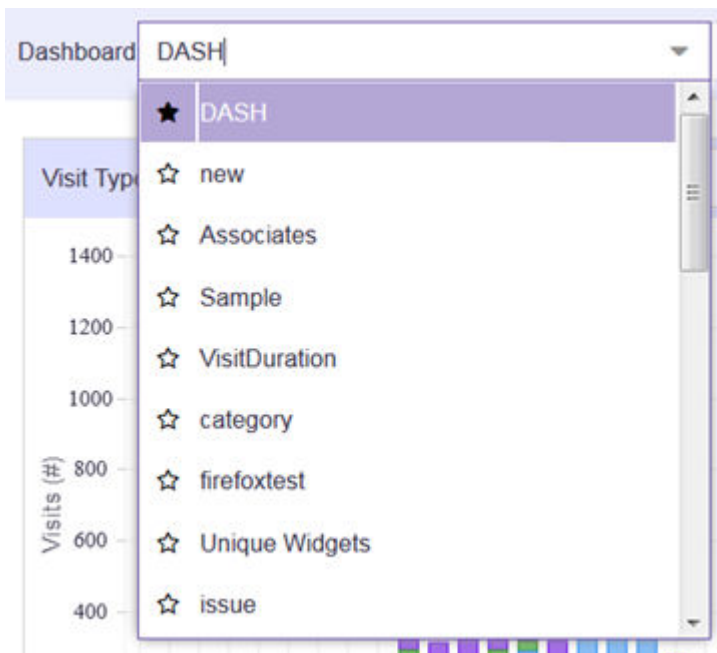




Figure 25: Dashboard List

- 4 From the drop-down list, select the dashboard that you want to edit.

- 5 Select the  button from  tool bar. The button expands to display a drop-down list.

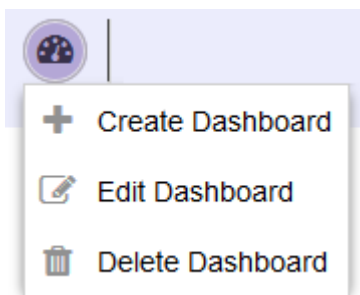


Figure 26: Manage Dashboard Options

- 6 Select **Edit Dashboard** from the drop-down list. The selected dashboard is loaded in the edit mode. Use the options to edit your dashboard.
- 7 After editing the dashboard, select **Save** to the top right of the dashboard to save the changes made to this dashboard.

Delete the Dashboard

To delete an existing dashboard:

- 1 Select **Dashboard** from the main menu. The dashboard marked as default automatically loads.

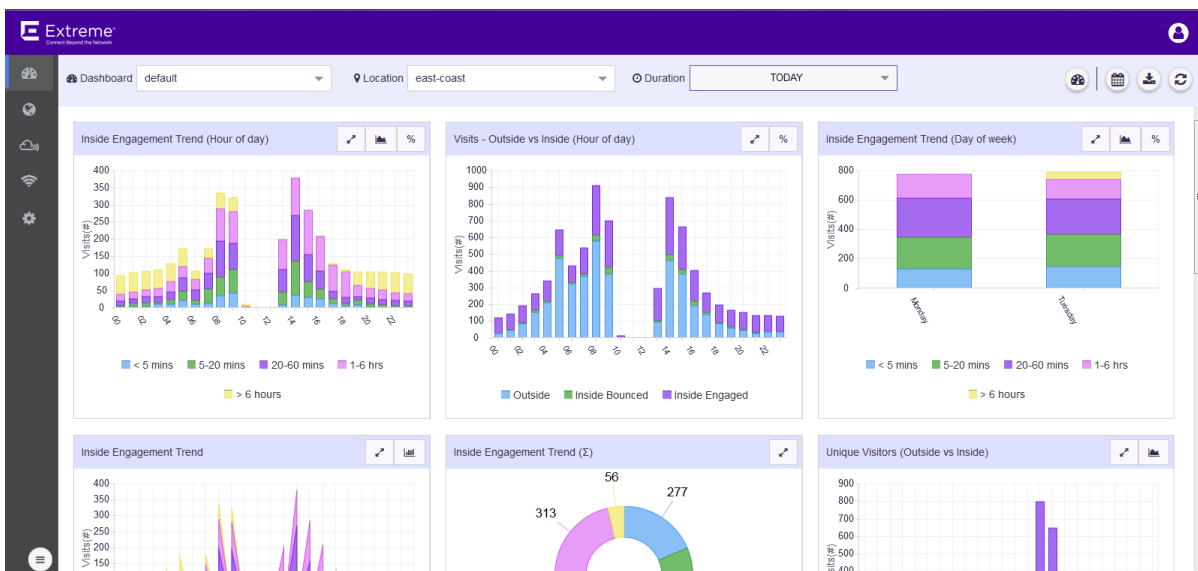


Figure 27: The Dashboard Screen

- 2 Select the **Dashboard** drop-down list to expand and display the list of available dashboards for this ExtremeLocation account.

- 3 From the list of available dashboards, select a dashboard.

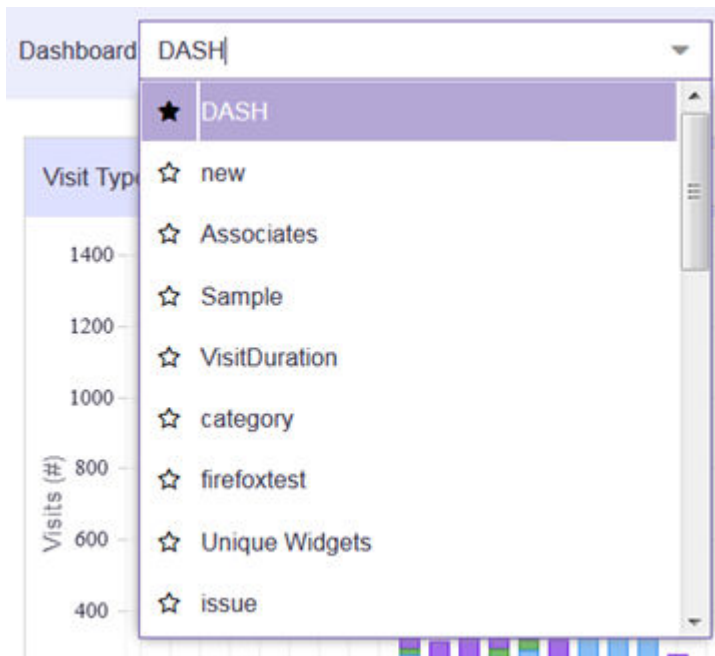







Figure 28: Dashboard List

- 4 Select the  button from  |    tool bar. The button expands to display a drop-down list.

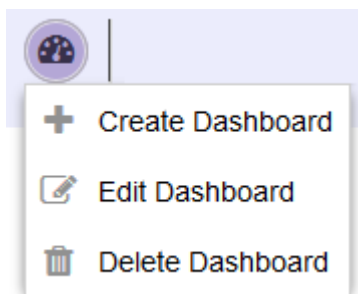


Figure 29: Manage Dashboard Options

- 5 Select **Delete Dashboard** from the drop-down list.

A confirmation dialog appears.

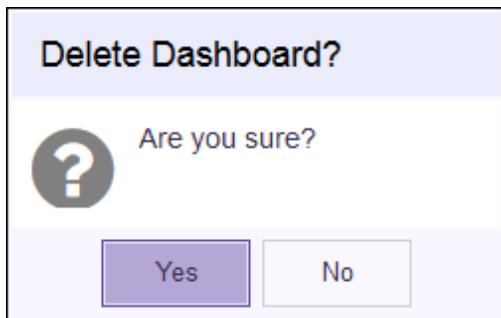


Figure 30: Delete Confirmation Dialog

- 6 Select **Yes** to delete the dashboard. Select **No** to exit this screen without deleting the selected dashboard.

If **Yes** is selected, the dashboard is immediately deleted.

Dashboard Widgets

Widgets are used to display the data of interest from a site's locationing data on the dashboard . Widgets on the **New Dashboard** screen are classified into:

- **Site Analytics** - These set of widgets display site analytics data.
- **Category Analytics** - These set of widgets display category analytics data.

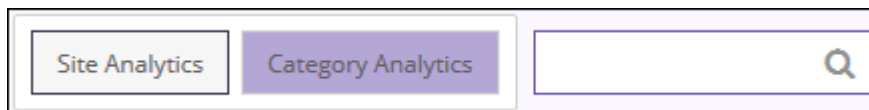


Figure 31: The Widget Categories

Use the **Search** text box to drill down to the widgets of interest.

Site Analytics Widgets

Use the Site Analytics widgets to display various site analytics data on to the dashboard. The following widgets are available

Widget	Description
Visit Type	This widget displays the device visit types distribution classified as Outside , Inside Bounced or Inside Engaged on a bar chart.
Inside Engagement Trend	This widget displays the distribution of devices classified as <i>Inside</i> a site further classified as Bounced or Engaged visitors. Data is displayed for each of these visit types for these time ranges: <ul style="list-style-type: none"> • <5 minutes (devices in site less than 5 minutes) • 5-20 minutes • 20-60 minutes • 1-6 hours • >6 hours
Inside Engagement Duration	This widget displays the average engagement duration for <i>Inside Engaged</i> visitors. Engagement duration is the time the user is engaged (stays) inside the site.
Loyalty - First vs Repeat	This widget displays the distribution of total visits classified into first time visits and repeat visits.
Visit Opportunity	This widget displays the total number of <i>Outside</i> and <i>Inside</i> visits identified by ExtremeLocation based on the devices identified by it. Each observation of the same device is counted as a separate visit.
Visit - Outside vs Inside	This widget displays the distribution of visits based on visit types. Visit types can be one of <i>Outside</i> , <i>Inside Bounced</i> or <i>Inside Engaged</i> .
Inside Engagement Trend (aggregated)	This widget displays the aggregated distribution of <i>Inside</i> visitors on visit duration. Inside visitors are further classified as Inside Bounced and Inside Engaged depending on the time duration the visitor spends in the site. Data is displayed for each of these visit types for these time ranges: <ul style="list-style-type: none"> • <5 minutes (devices in site less than 5 minutes) • 5-20 minutes • 20-60 minutes • 1-6 hours • >6 hours
Top 5 Sites (Visit)	This widget displays the top five sites sorted by the total number of inside visits observed across all of the sites. This is a good metric for venue owners to identify top-performing venues that get more footfalls compared to all other sites.
Bottom 5 Sites (Visit)	This widget displays the bottom five sites sorted by the total number of inside visits observed across all of the sites. This is a good metric for venue owners to identify poorly performing venues which have low footfalls compared to all other sites.
Top 5 Sites (Visit Duration)	This widget displays the top five sites sorted by the time the visitor is engaged (spends) in the site. This is a good metric for venue owners to identify top-performing venues that get visitors to spend more time there when compared with all other sites.
Bottom 5 Sites (Visit Duration)	This widget displays the bottom five sites sorted by the time the visitor is engaged (spends) in the site. This is a good metric for venue owners to identify poorly performing venues that visitors do not spend time in when compared with all other sites.

Widget	Description
Visits - Outside vs Inside (Day of Week)	This widget displays a chart of the total of all visits to all the sites managed by this ExtremeLocation account classified into <i>Outside</i> , <i>Inside Bounced</i> , and <i>Inside Engaged</i> visits. This data is then displayed for each day of the week.
Visits - Outside vs Inside (Hour of Day)	This widget displays a chart of the total of all visits to all the sites managed by this ExtremeLocation account classified into <i>Outside</i> , <i>Inside Bounced</i> , and <i>Inside Engaged</i> visits. This data is then displayed for each hour of the day.
Inside Engagement Trend (Hour of Day)	This widget displays a chart of the total of all visits lengths of all visitors classified as <i>Inside</i> consisting of <i>Inside Bounced</i> and <i>Inside Engaged</i> visitors for all the sites. This data is then displayed for each hour of the day classified by visit duration. Data is displayed for these time ranges: <ul style="list-style-type: none"> • <5 minutes (devices in site less than 5 minutes) • 5-20 minutes • 20-60 minutes • 1-6 hours • >6 hours
Inside Engagement Trend (Day of Week)	This widget displays a chart of the total of all visits lengths of all visitors classified as <i>Inside</i> consisting of <i>Inside Bounced</i> and <i>Inside Engaged</i> visitors for all the sites managed by this ExtremeLocation account. This data is then displayed for day of the week classified by visit duration.
Unique Visitors (Outside vs Inside)	This widget displays a chart of the total unique visits to the site further classified into <i>Inside Bounced</i> , <i>Inside Engaged</i> , and <i>Outside</i> visit types by time duration. Select the labels at the bottom of this widget to hide/view the data of interest.
Unique - Inside Engaged vs Associates vs Assets	This widget displays a chart of the unique visits to the site by <i>Inside Engaged</i> visitors, <i>Associates</i> , and <i>Assets</i> by time duration. Select the labels at the bottom of this widget to hide/view the data of interest.
Visits - Inside Engaged vs Associates vs Assets	This widget displays a chart of the total visits to the site classified by <i>Inside Engaged</i> visitors, <i>Associates</i> , and <i>Assets</i> by time duration. Select the labels at the bottom of this widget to hide/view the data of interest.
Visits - Inside Engaged vs Associates vs Assets - Totals	This widget displays a chart of the all visits to a site classified by <i>Inside Engaged</i> visitors, <i>Associates</i> , and <i>Assets</i> .

Category Analysis Widgets

Use the Category Analytics Widgets to display various category analysis data on to the dashboard. Category analytics are generated based on the category values assigned to regions or access points on the floor plan for a given site. For example, when ExtremeLocation is deployed in a retail environment, you could set your categories as *Electronics*, *Cosmetics*, *Baby Care*, etc.

The following widgets are available

Widget	Description
Category Visits - Inside Visitors vs Associates vs Assets D	This widget displays summary of visitors to a user selected category. The visits are classified as Inside Visitors, Associates and Assets and displayed for the duration specified in the Duration drop-down.
Category Visits (Visitors)	This widget displays the distribution of category visits by visitors over time. Select a category (legend) below the graph to show or hide the graph for the selected category.
Top 5 Categories (by Visits)	This widget displays the top five categories by number of visits to the category area.
Category Visits (Associates)	This widget displays the distribution of category visits by associates over time. Select a category (legend) below the graph to show or hide the graph for the selected category.
Bottom 5 Categories (by Visits)	This widget displays the bottom five categories by number of visits to the category area.
Category Visits (Assets)	This widget displays the distribution of category visits by tracked assets over time. Select a category (legend) below the graph to show or hide the graph for the selected category.
Top 5 Categories (by Visit Duration)	This widget displays the top five categories by visit duration to the category area.
Category (Visit Duration - Visitors)	This widget displays the distribution of category visits by visitors and the time duration (in minutes) spent by these visitors in that category. Select a category (legend) below the graph to show or hide the graph for the selected category.
Bottom 5 Categories (by Visit Duration)	This widget displays the bottom five categories by length of visits (in minutes) to the category area.
Category - Unique Visitors	This widget displays the distribution of unique visitors to a category/zone over time. Select a category (legend) below the graph to show or hide the graph for the selected category. Does not track repeat visitors to the category.
Category (Visit Duration - Asset)	This widget displays a graph of visit durations by assets over time.
Category (Visit Duration - Associates)	This widget displays a graph of visit durations by associates over time.
Category - Unique Assets	This widget displays a graph of the number of unique assets in each category arranged in descending order over time.
Category - Unique Associates	This widget displays a graph of the number of unique associates in each category arranged in descending order over time.
Category Visit Duration - Inside Visitors vs Associates vs Assets	This widget displays a graph of the distribution of visit durations for <i>Inside Visitors</i> , <i>Associates</i> , and <i>Assets</i> . Use the category drop-down to select a category to display data for.

Widget	Description
Category Crowding	This widget displays a graph of the distribution of crowding events over time. It shows where crowding has occurred and which categories have had more events in comparison to other categories. Use the historical data to determine where more associates should be deployed.
Category Path Analysis	This widget displays a multi-dimensional view representing the movement of visitors from one category to another. The following data is displayed: <ul style="list-style-type: none"> comparison of visitor flow across categories absolute number of visitor movements across categories direction of visitor flow across categories

Scheduled Reports

ExtremeLocation supports export of the current dashboard in PDF format. You can also create dashboards that displays data of interest and configure periodic data export which is mailed to specified email accounts. Dashboard reports can be scheduled to run daily, weekly, or monthly.

List Scheduled Reports

To list the reports scheduled for execution:

- 1 Select **Dashboard** from the main menu.

The dashboard marked as default automatically loads.

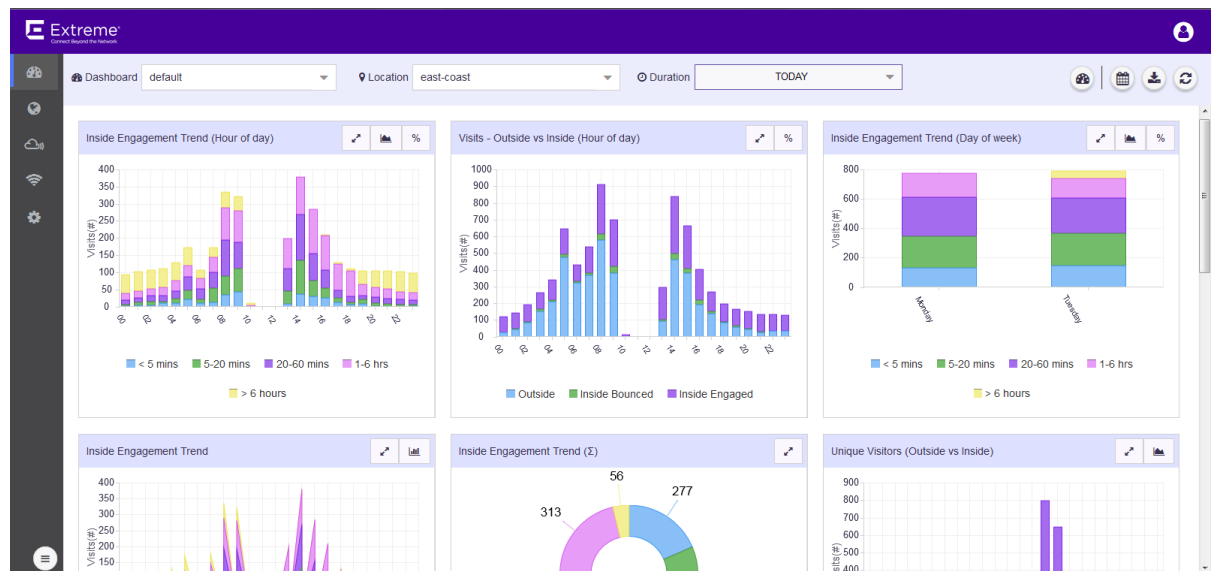




Figure 32: The Dashboard Screen

- 2 Select the  button from  tool bar. The **Scheduled Reports** screen displays.

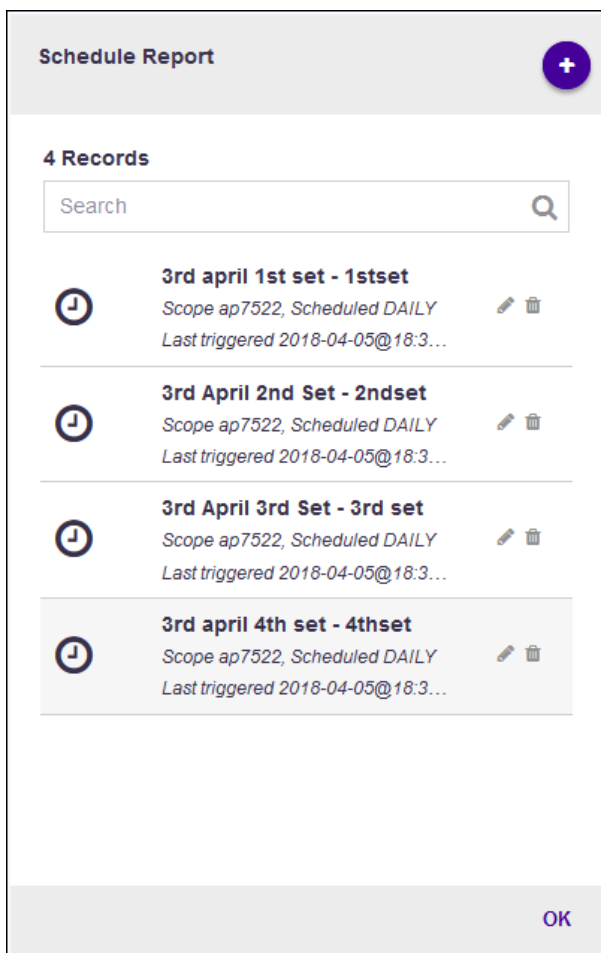


Figure 33: Manage Dashboard Options

- 3 Hover over a scheduled report to view details about that scheduled report.



Note

ExtremeLocation tries to display all details about the scheduled report within the main **Schedule Reports** window. ExtremeLocation displays the details on hover when the screen resolution/width is not enough to display the complete details in the main window.

- 4 Select the **OK** button to exit **Scheduled Reports** screen.

Create a Scheduled Report

To create a scheduled report:

- 1 Select **Dashboard** from the main menu.
The dashboard marked as default automatically loads.

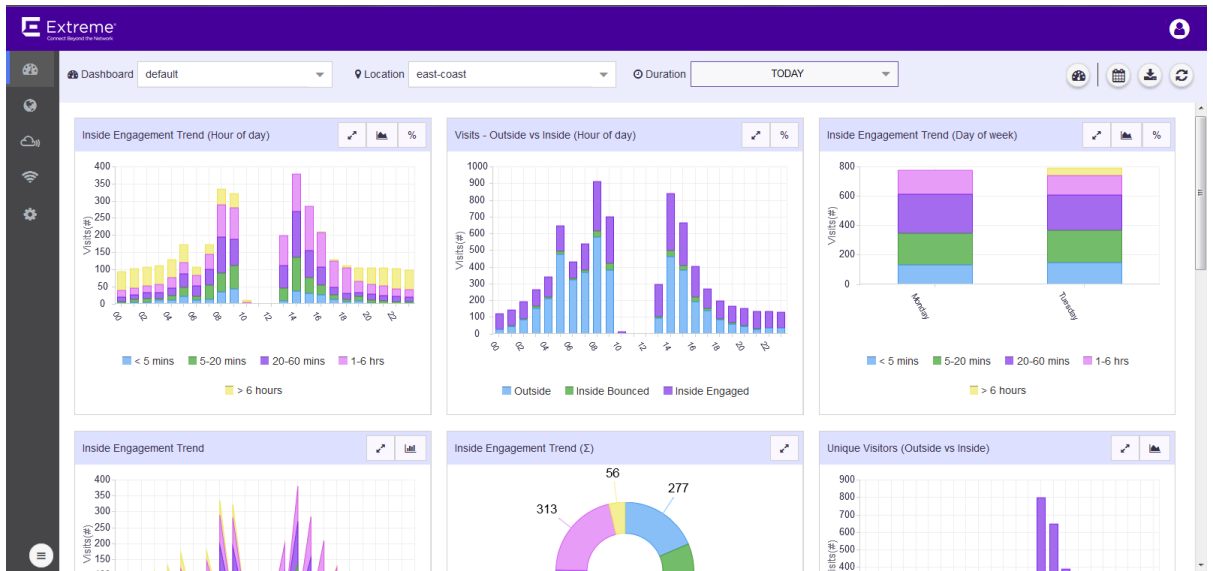




Figure 34: The Dashboard Screen

- 2 Select the  button from  tool bar.
The **Scheduled Reports** screen displays.

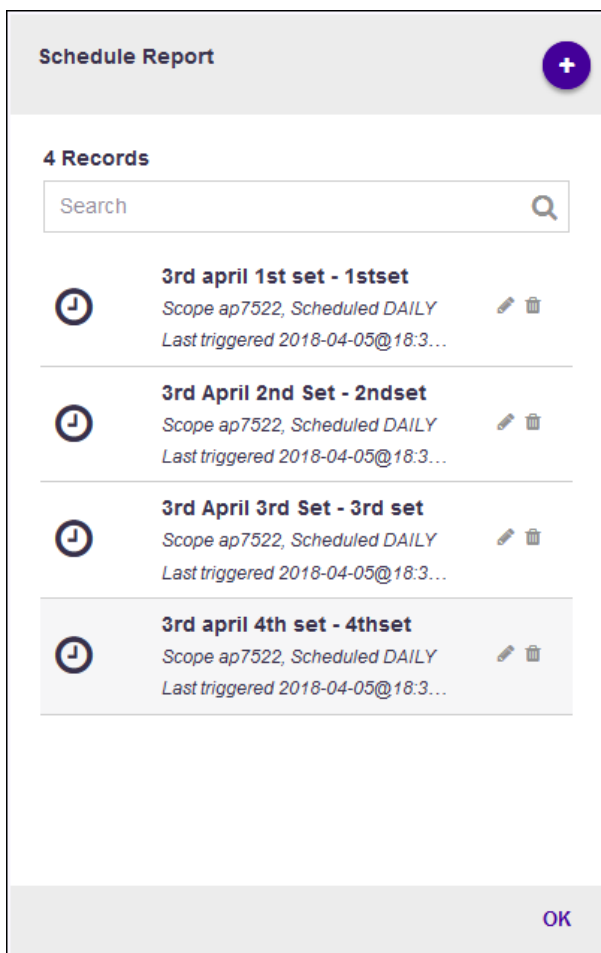


Figure 35: Manage Dashboard Options

3


Select the  located to the top right of the **Schedule Reports** screen. The **Create Schedule Report** window displays.

Figure 36: Create Schedule Report Window

- 4 Provide the following information to create a new scheduled report:

Field	Description
Schedule Name	Provide a meaningful name for this scheduled report.
Dashboard	From the drop down list, select the dashboard to create this report from.
Location	From the drop down list, select the location for which this report is to be generated. To select all the locations, select All from the drop down list.
Recurrence Format	Select the report generation frequency from one of: <ul style="list-style-type: none"> Daily - The report is generated once a day. Weekly - The report is generated once a week. Monthly - The report is generated once a month.
Export Format	Export to PDF is only supported at present for scheduled reports.
Email To	Provide up to 3 distinct email addresses to send this scheduled report to when it is generated.

- 5 Select **Create** to create this scheduled report.
At any point, select **Cancel** to exit without creating a scheduled report.
- 6 Select the **OK** button to exit **Scheduled Reports** screen.

Edit a Scheduled Report

To edit a scheduled report:

- 1 Select **Dashboard** from the main menu.
The dashboard marked as default automatically loads.

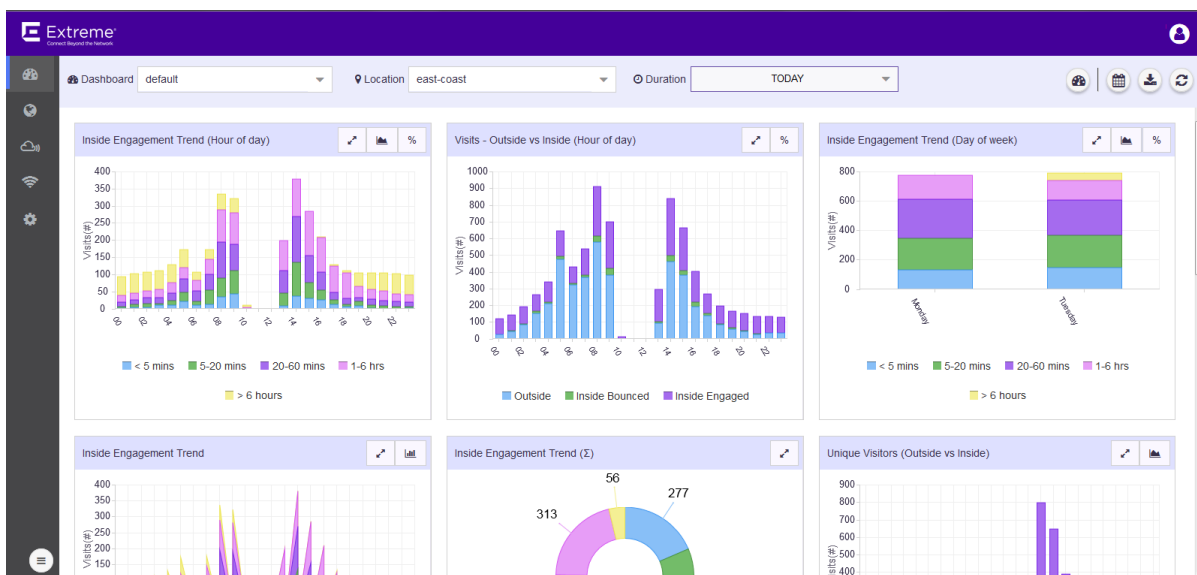




Figure 37: The Dashboard Screen

- 2 Select the  button from  tool bar.
The **Scheduled Reports** screen displays.

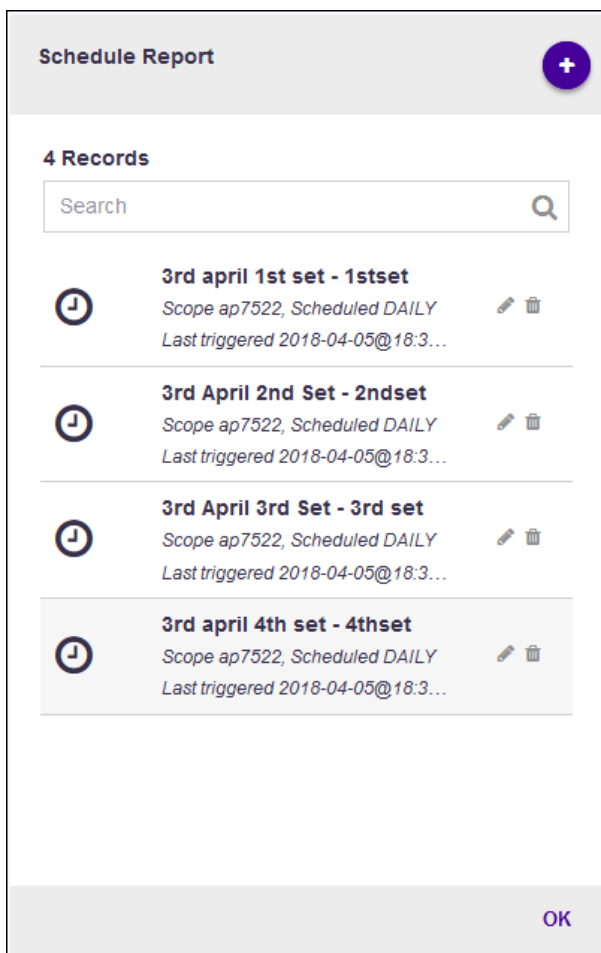





Figure 38: Manage Dashboard Options

- 3 Select the small  from the   tool bar that is available next to each scheduled report in the list.

The Update Schedule Report screen displays.

Figure 39: Update Schedule Report Window

4 Refer to the following while editing your scheduled report:

Field	Description
Schedule Name	This field cannot be modified.
Dashboard	From the drop down list, select the dashboard to change to for this scheduled report.
Location	From the drop down list, select the location for which this report is to be generated. To select all the locations, select All from the drop down list.
Recurrence Format	Select the report generation frequency from one of: <ul style="list-style-type: none"> • Daily - The report is generated once a day. • Weekly - The report is generated once a week. • Monthly - The report is generated once a month.



Field	Description
Export Format	Export to PDF is only supported at present for scheduled reports.
Email To	Provide up to 3 distinct email addresses to send this scheduled report to when it is generated.

- 5 Select **Create** to save edits made to this scheduled report.
At any point, select **Cancel** to exit without editing this scheduled report.
- 6 Select the **OK** button to exit **Scheduled Reports** screen.

Delete a Scheduled Report

To edit a scheduled report:

- 1 Select **Dashboard** from the main menu.
The dashboard marked as default automatically loads.

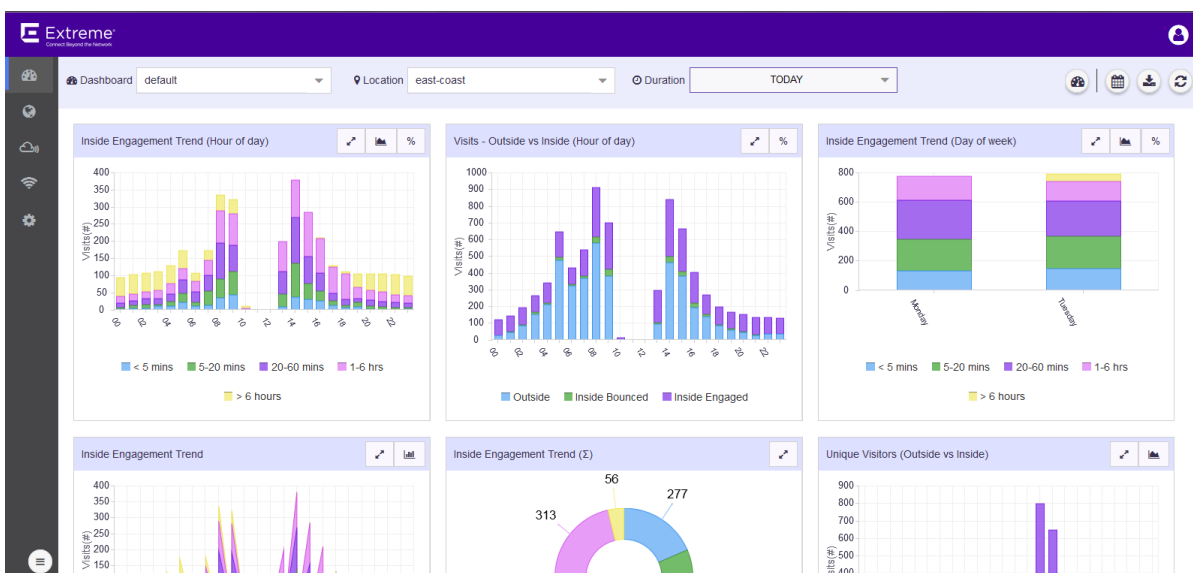




Figure 40: The Dashboard Screen

- 2 Select the  button from  tool bar.
The **Scheduled Reports** screen displays.

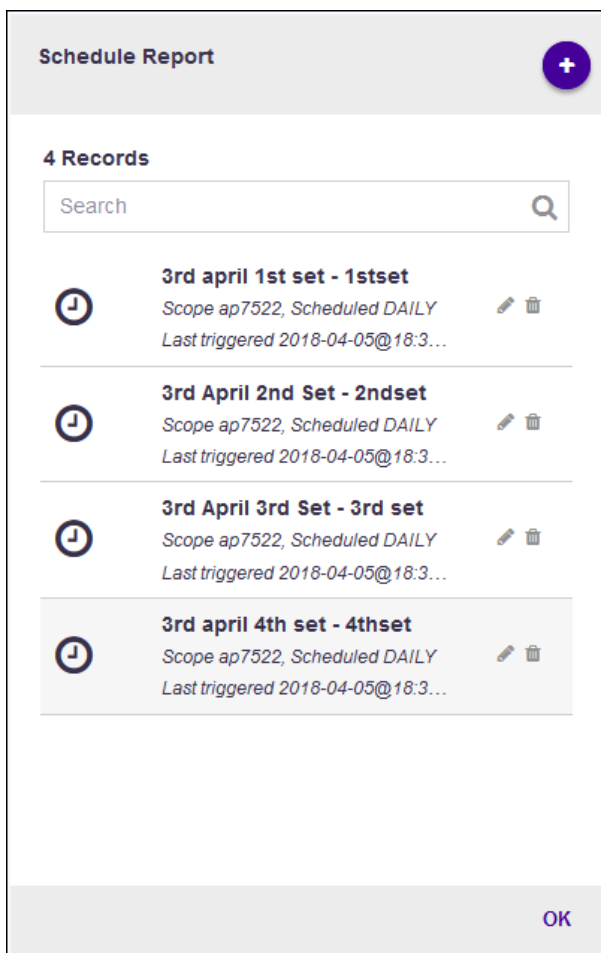





Figure 41: Manage Dashboard Options

- 3 Select the small  from the   tool bar that is available next to each scheduled report in the list.

The **Delete Schedule** window displays.

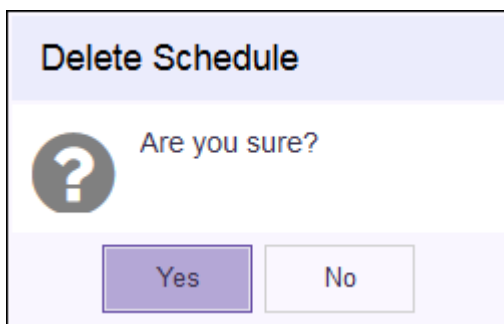


Figure 42: Delete Schedule Window

- 4 Select **Yes** to delete this scheduled report.
Select **No** to exit without deleting this scheduled report.
- 5 Select the **OK** button to exit **Scheduled Reports** screen.

4 Map View

Maps - Main Screen

Common Tools

Add a Site

Add a Floor

Client View

Heatmap View

Crowding View

The ExtremeLocation account configuration such as creating and managing sites, creating and managing categories and other activities are performed through the **Maps** screen. The following activities can be performed:

- Create a Site.
- Create a Site Group.
- Allocate licenses to a Site.
- Allocate Access Points on a Site.
- Place an Access Point on a floor map in a Site.
- Create Regions/Category/Zones for a Site.
- View the Heatmap for each floor on the Site.
- View crowding events by region on a floor.

Maps - Main Screen

The main window of ExtremeLocation's **Maps** screen displays a view of all the sites configured for this ExtremeLocation account. The view is zoomed in so that you can view all the configured sites at the same time.

To view the ExtremeLocation **Maps** screen:

- 1 Select **Maps** from the main menu.

The **Maps** screen appears.

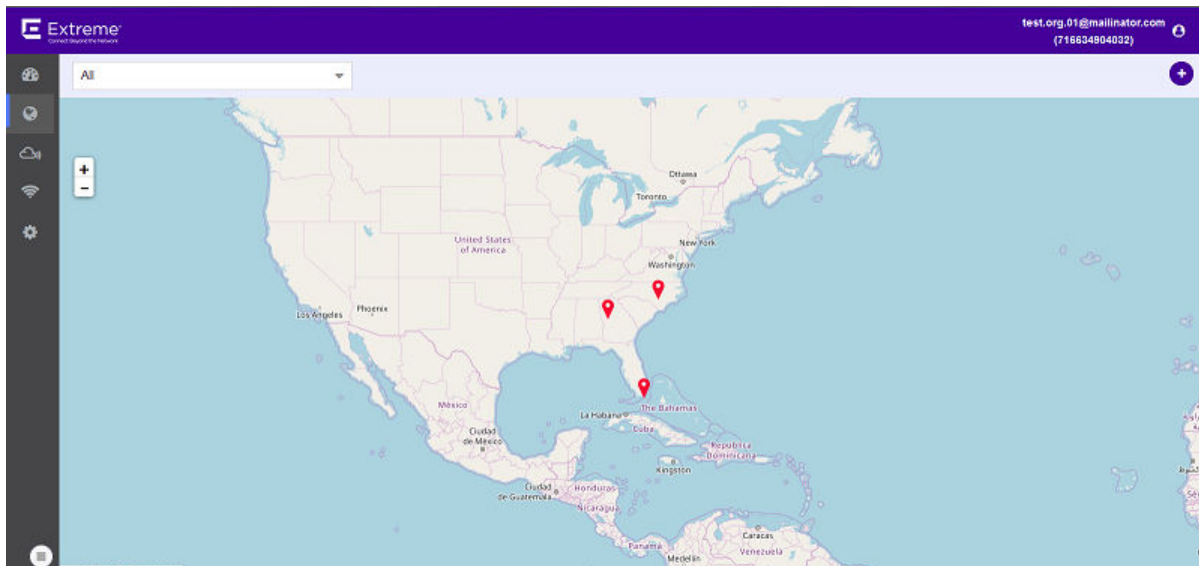


Figure 43: Maps Screen

The screen displays a map of all configured sites for this ExtremeLocation account. Each configured site is marked with a colored marker. The color of the marker indicates if the site is seeing an increase or decrease in visits. RED indicates a drop in visits while GREEN indicates an increase in visits.

The size of the icon indicates any increase or decrease in total visits to the site compared to the day before. The icon size changes for every 20 percent(%) change in visits to the site as compared to the previous day.

Select each site marker to display a pop-up with the latest statistics for the site.

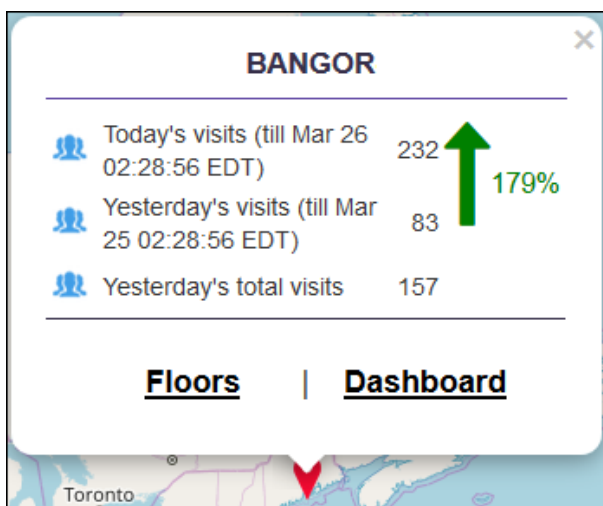


Figure 44: Site Information

Use the **Floors** link to directly view the default floor map for this site. Similarly, use the **Dashboard** link to view the default dashboard for this site.

The **Site Information** pop-up displays the following site trends:

Today's Visits	Displays the total number of visits to the site till the time displayed in this field. This information is for today.
Yesterday's Visits	Displays the total number of visits to the site yesterday till the time displayed in this field. This time is the same time as considered for displaying Today's Visit data.
Yesterday's Total Visits	Displays the total number of visits to the site for the whole day yesterday.
Trend	The trend icon is an Arrow displayed next to the data that gives a visual indication of the visit trends. A GREEN upward pointing arrow indicates an increase in visits. A RED downward pointing arrow indicates a decrease in visits. The percentage (%) change in value is also displayed in the appropriate color.

- 2 Use the drop-down list on the top left of the **Maps** screen to view a list of sites managed by this ExtremeLocation account and select a Site or Site Group from the list.

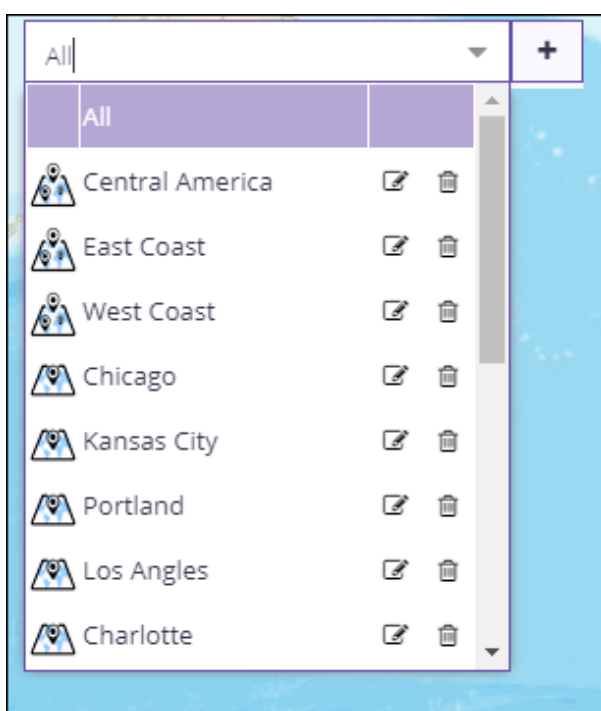


Figure 45: Sites and Site Groups

The drop-down list displays a list of the configured Site Groups followed by the list of individual sites for this ExtremeLocation account.

When a Site Group is selected, the **Maps** screen zooms to an appropriate zoom level to show all the sites in the group at the same time.

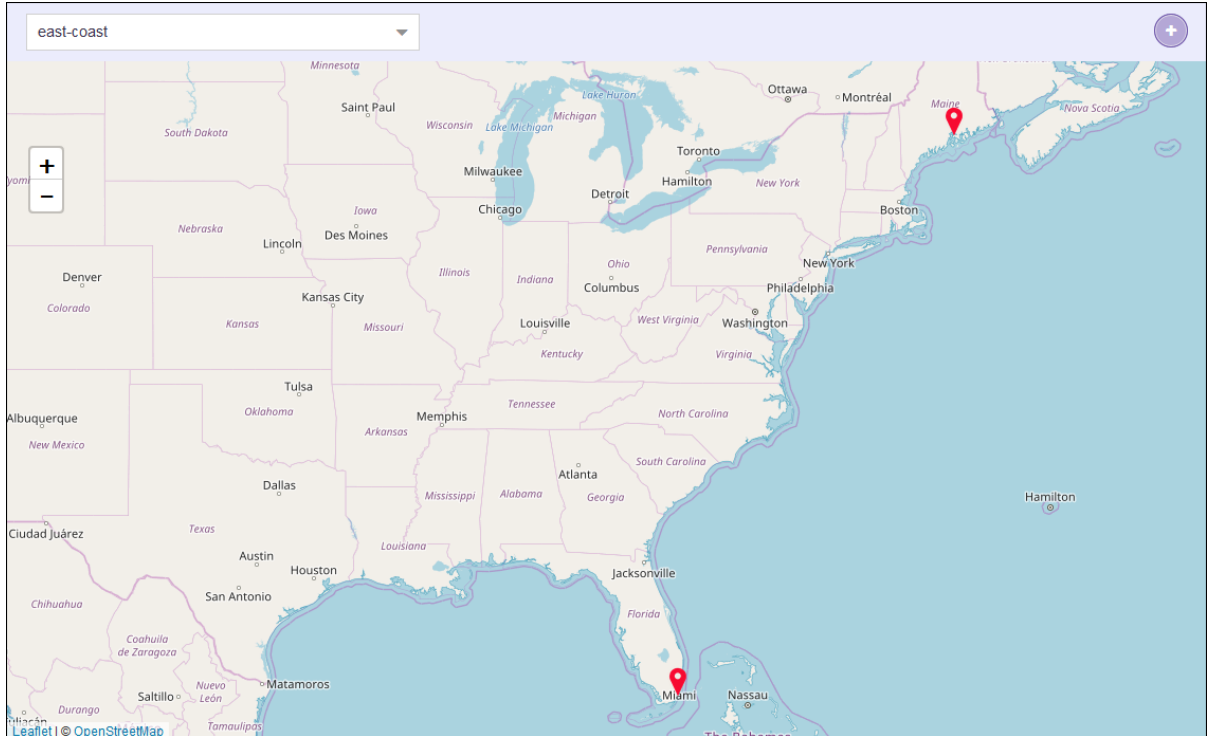


Figure 46: Site Group view

When a Site is selected, the **Maps** screen shows the icon for the selected site and hides all other sites in this ExtremeLocation account.

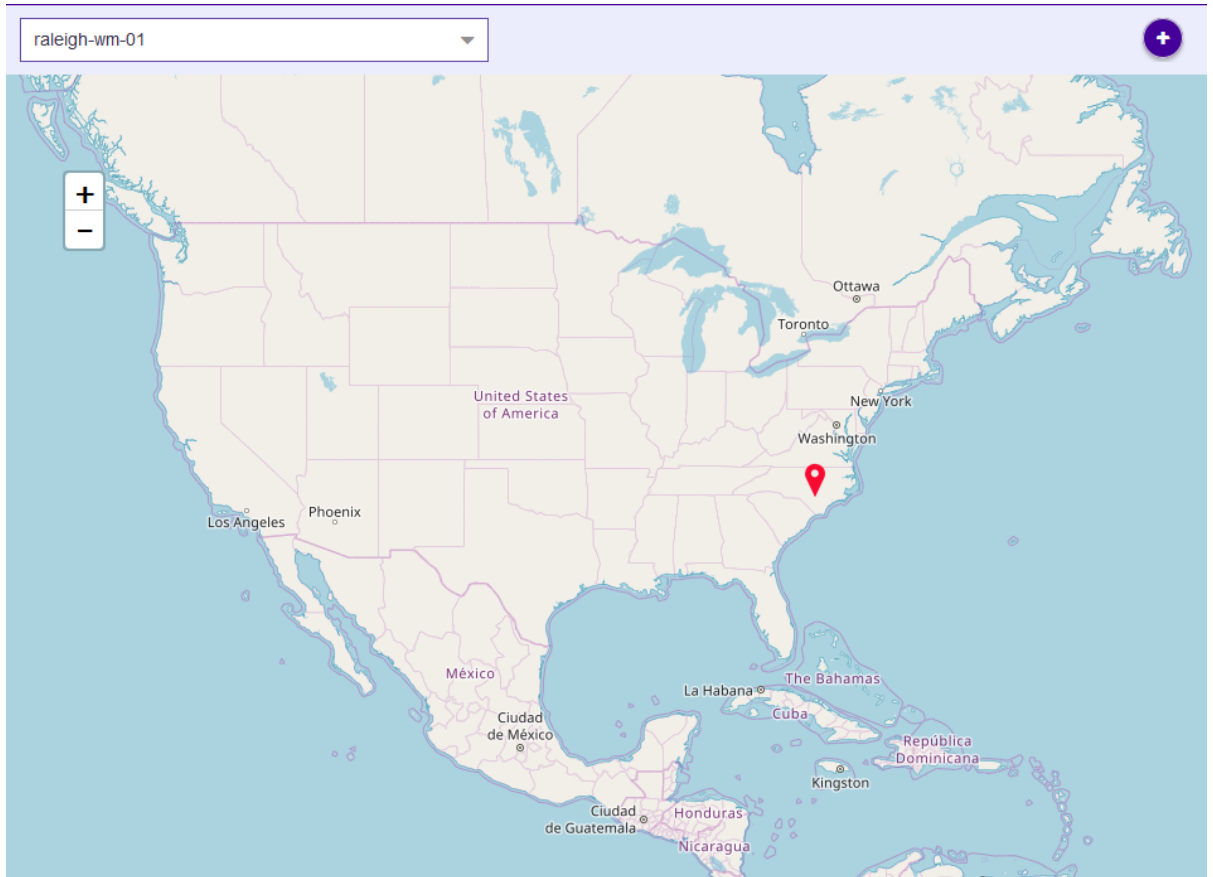



Figure 47: Site view

3



Use the  to the left of the screen to manually zoom in or out in the ExtremeLocation Maps screen.

- 4 Select the site of interest.

The **Site Information** dialog opens.

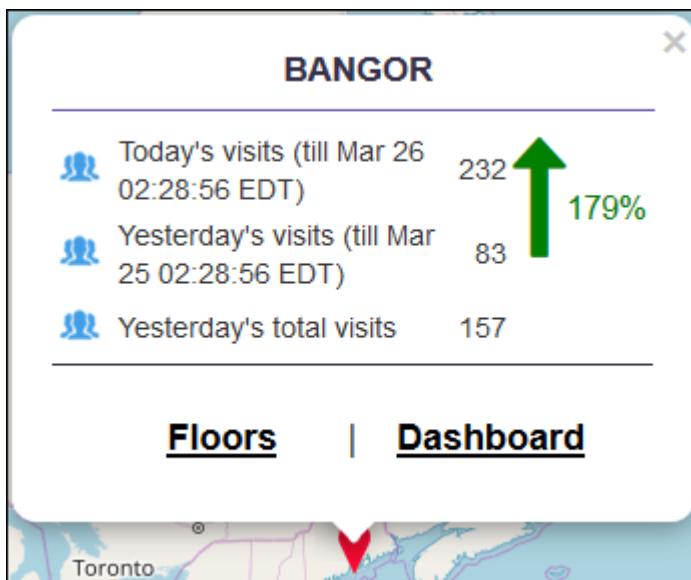


Figure 48: Site Information

From the dialog, select one of the following links:

- **Floors** - Displays the default floor map for this site. See [Client View](#) on page 78.
- **Dashboard** - Displays the default dashboard for this site. See [The ExtremeLocation Dashboard](#) on page 20.

Common Tools

The **Floor Map** view provides a set of tools to setup and manage a floor on a site.



Figure 49:

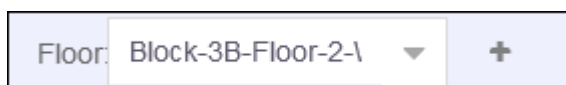
The following tools are available in the **Floor Map** view:



Select this icon to go back to the **Maps** screen.

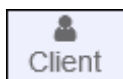
Site : Bentoville

This area displays the current site's name.



Use the **Floor** drop-down to select the floor on the site.

Use the  icon to add a new floor.



Select this icon to display the Client View. Use this to view client activity and other related data.



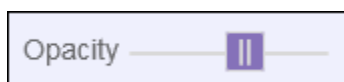
Select this icon to display the access point View. Use this view to manage access points, regions, and categories for this floor.



Select this icon to display a heat map for this floor. Use the heat map of activities on the floor.



Select this icon to display the crowding events. Use this view to manage crowding events on this floor that need immediate attention.



Use the **Opacity** slider to set the opacity of the Floor Map.



Select this switch to show or hide the region boxes on the floor map.



Use this icon to manually refresh the data being displayed.

Add a Site

Sites are locations that are monitored using the ExtremeLocation system. A site is a physical area such as a store, hotel or a hospital or a venue such as a shopping mall or airport for which you capture locationing data. A typical site is made up of one or more floors which are further divided into logical areas or zones. Zones or categories are used to logically separate the floor for ease of locationing and visitor tracking.

For each floor in a site, you must upload a floor map if you want to use the zone or position tracking feature. You need not upload a floor map if you want to use the presence feature only. Use the floor map to accurately mark the locations of the access points installed on the floor. The access points gather the location data for all visitors to the floor and this information is used along with the mapped zones or categories to accurately track visits and visitors to the floor and to each zone on the floor.

To create a new Site:

- 1 Select **Maps** from the main menu.
The **Maps** screen appears.

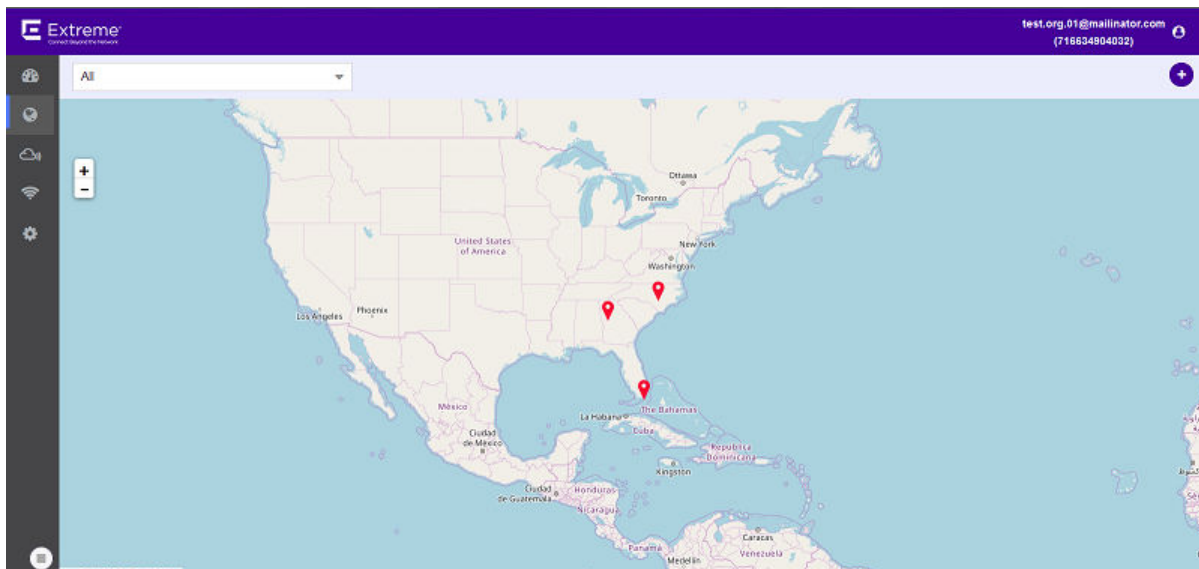


Figure 50: Maps Screen



- 2 Use  located to the right side of the screen to add a new site to this ExtremeLocation account.
The following dialog displays.

Figure 51: New Site Dialog

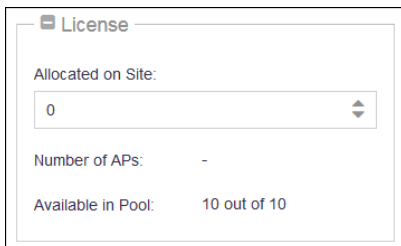
- 3  Use the blinking site placement icon located at the center of the **Maps** screen to accurately place the site on the displayed map.
 Drag the site placement icon to a location nearest to the actual location on the map. Use the map's zoom control and drag feature to place the icon at the site's exact geo-location on the map.
 The exact location coordinates (latitude and longitude) and the time zone for the location are populated in the dialog.
- 4 Provide the following information for creating the new site.

Name	Provide a name for this site. The site's name should be descriptive such that identifying the site among similar sites becomes easier. This is a mandatory field.
Description	Provide a brief description about the site. The information in this field should describe the site in more detail than the name.
Location - lat	Displays the exact latitude of the location of the blue site placement icon. You can also enter a latitude value in this field to move the site placement icon to the specified location.
Location - lon	Displays the exact longitude of the location of the blue site placement icon. You can also enter a longitude value in this field to move the site placement icon to the specified location.

Time Zone	Use this field to set the time zone for the location. When a site is located using the site placement icon, this field is automatically populated with the correct time zone for the location. You can also use the drop-down list to select the correct time zone for this location. This is a mandatory field.
Map to Site Group	Use the drop-down list and select the Site Group to assign this to this site. Site groups are a logical grouping of sites that share some similar characteristics. Assigning a Site Group is not mandatory. For more information on Site Group, see Add a Site Group on page 59.

- 5 Select the **License** label to expand it. Use the **Allocated on Site** spinner control to set the number of licenses allocated for use at this site.

The **Allocated on Site** control sets the number of licenses allocated and available for use at this site.



The screenshot shows a 'License' section with three fields: 'Allocated on Site' (a spinner control showing '0'), 'Number of APs' (displaying '-'), and 'Available in Pool' (displaying '10 out of 10').

Figure 52: Assign License

The area displays the following information:

Allocated on Site Use the spinner control to set the number of access point licenses to be assigned to this site.



Note

You cannot assign more licenses than those available for use. The number of available licenses is displayed in the **Available in Pool** field.

Number of APs Displays the number of access points assigned to this site.

Available in Pool Displays the number of licenses available for assignment. It also displays the total number of licenses available for this ExtremeLocation account.

The total number of **Used** and **Available** licenses are also displayed alongside the **Allocated** field.

When a license is assigned to the site, it reduces the total number of licenses available for use for this ExtremeLocation account. The number of licenses that can be allocated to this site cannot exceed the total number of licenses available with this ExtremeLocation account.

Each access point added to the site consumes one license and is reflected in the **Used** field.

- 6 Select the **AP Placement** label to expand it.

The AP Placement control assigns access points to the site using their MAC addresses.

Note

When adding MAC addresses of ExtremeWireless access points with two LAN ports, add the MAC address of the LAN port marked as 'Lan 1'. The following ExtremeWireless access points have two LAN ports.



- AP3917
- AP3935
- AP3965

Use the **Upload CSV File type** control to upload a list of Access Points to be assigned to this site. The list of assigned access points must be placed in a Comma Separated Value (CSV) file before uploading to the site.

Selecting the **Click here for Sample CSV** downloads a `.csv` file that can be used as a template for the file containing the list of access point MAC Addresses to be assigned to this site. Use the **Browse** button to navigate to the `.csv` file on the local PC.

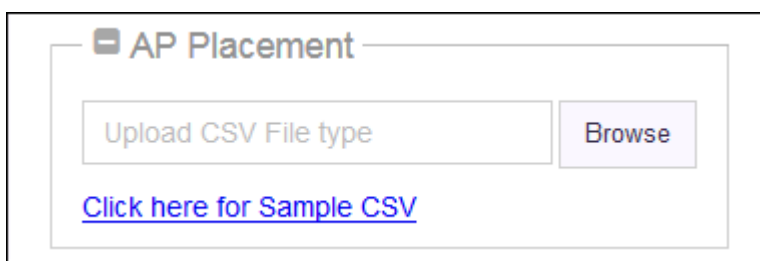


Figure 53: AP Placement

To assign a single access point to a site, use the `.csv` file as a template to enter the MAC address of the access point and upload the `.csv` file.

- 7 Select the **Save** button to save and create the new site.

At any point of time, select the **Cancel** button to exit without creating the site.

The new site is created with the information provided in this dialog. The site becomes available for use immediately.

- Use the **Maps** view to locate your new site and select it.
The site's information is displayed as a pop-up dialog.

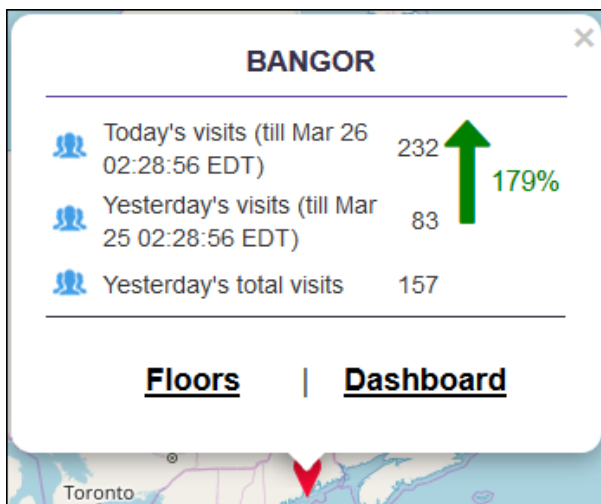


Figure 54: Site Information Pop-up

The next step is to add a floor to the site. To add a new floor, see [Add a Floor](#) on page 64.

Add a Site Group

Use Site Groups to logically group similar sites as a single unit for ease of use when viewing or comparing the performance of this logical grouping of sites with other similar logical groupings.

For example, if you want to compare the performance of one group of sites, say, those on the eastern part, with, say, those on the western part, it is easy to create two groups "East Coast" and "West Coast" with the individual sites grouped under them. You can then use these site groups to compare performances between these sites.

- 1 Select **Maps** from the main menu.
The **Maps** screen appears.

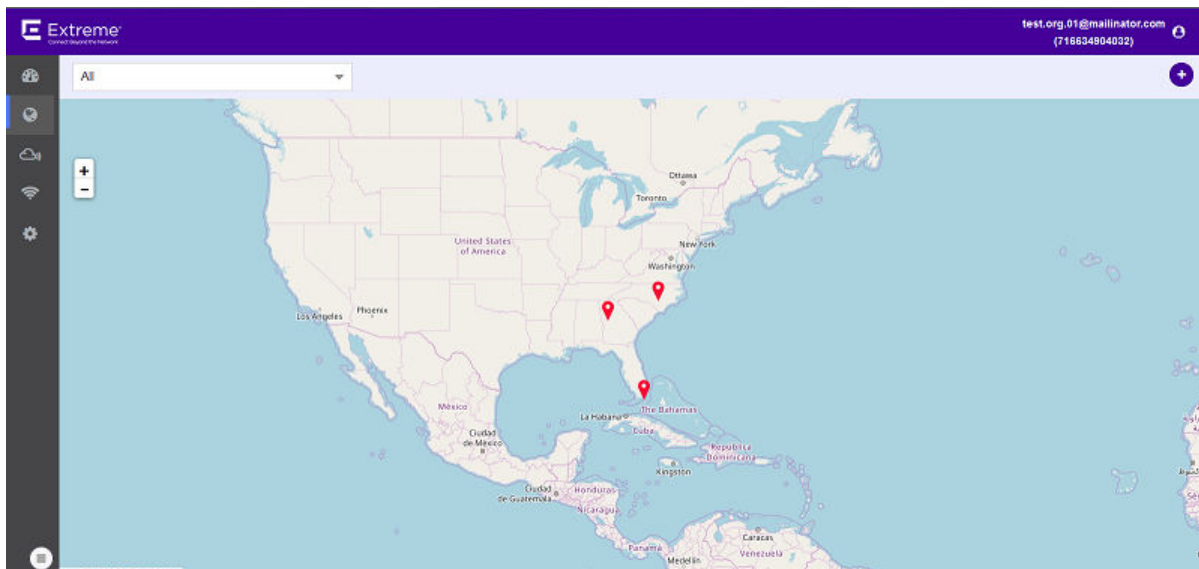



Figure 55: Maps Screen

- 2 Use  located to the right side of the screen to add a new site to this ExtremeLocation account.
The following dialog displays.

Site/Site Group ✕

Site Site Group

Name*:

Description:

Location*:

Time Zone*:

Map to Site groups:

— + License —

— + AP Placement —

Figure 56: New Site Dialog

3 Select **Site Group**.

The following dialog appears:

Figure 57: Site Group Dialog

4 Provide the following information for creating the new site group.

Name Provide a name for this site group. The site group's name should be descriptive such that the name identifies the basic criteria on which the sites are grouped. For example, the name can be "East Coast" for all sites in the east coast or could be "Single Floor" for all sites that have only one floor. This is a mandatory field.

Description Provide a brief description about the site group. The information in this field should describe the site group in more detail than its name.

Parent Use this drop-down list to select a parent site group for this site group. Use this field to establish a hierarchy of site groups.

Add Sites Use this drop-down list to add sites to this site group.

5 Select the **Save** button to save and create the new site.

At any point of time, select the **Cancel** button to exit without creating the site group.

The new site group is created with the information provided in this dialog. The site group becomes available for use immediately.

Delete a Site or Site Group

To delete an existing site from an ExtremeLocation account:

- 1 Select **Maps** from the main menu.
The **Maps** screen appears.

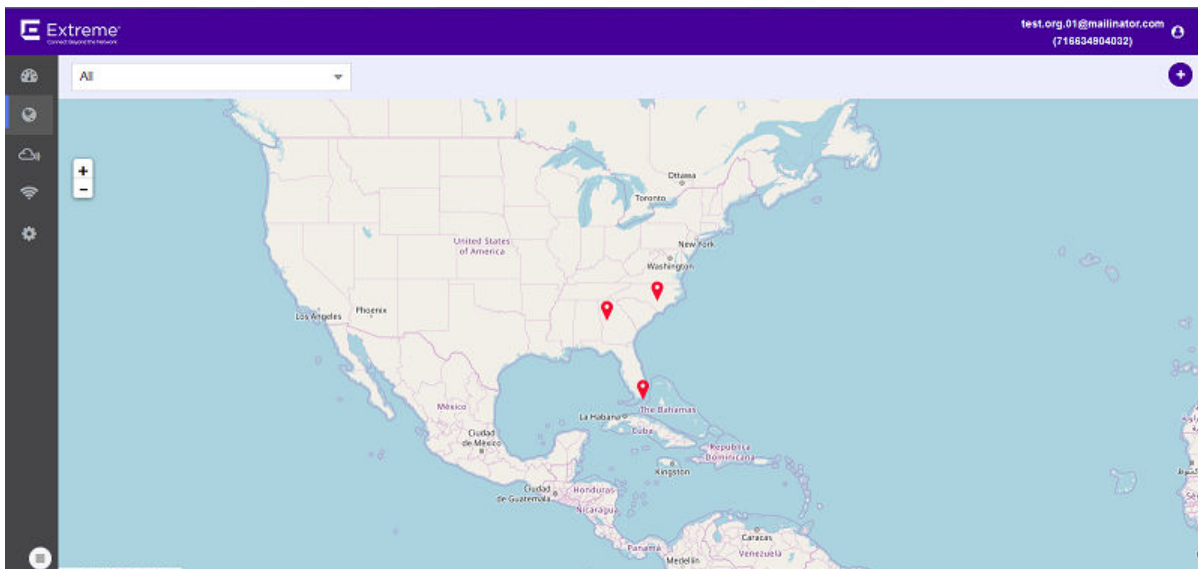


Figure 58: Maps Screen

- 2 Select the **Sites** drop-down list to expand it.
The **Sites** drop-down list expands to display the sites and site groups configured for this ExtremeLocation account.

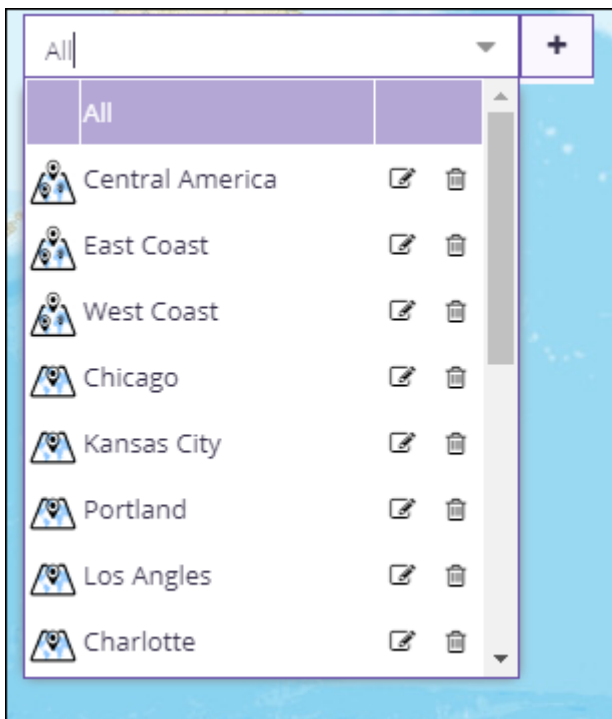


Figure 59: Sites List

- 3 Select the **Trash** icon next to the name of the site or the site group that you want to delete.
A confirmation dialog appears.



Figure 60: Delete Site dialog

- 4 Select **Yes** to delete the site or the site group. Select **No** to exit without deleting the site or site group.
When **Yes** is selected, the site or the site group is immediately deleted.



Note

When a site group is deleted, the sites that were grouped under the site group are not deleted.

Add a Floor

A Floor is a physical division on the site. A site must have one floor and can have multiple floors. Optionally, you can assign each floor on the site a floor map. Floor map is not required if you only require presence information. Floor map is required for zone and position tracking. This information is then used by ExtremeLocation to provide locationing and other services.

- 1 Select the **Floors** link on the pop-up.
The **Maps** screen displays any floor that is already configured for this site.

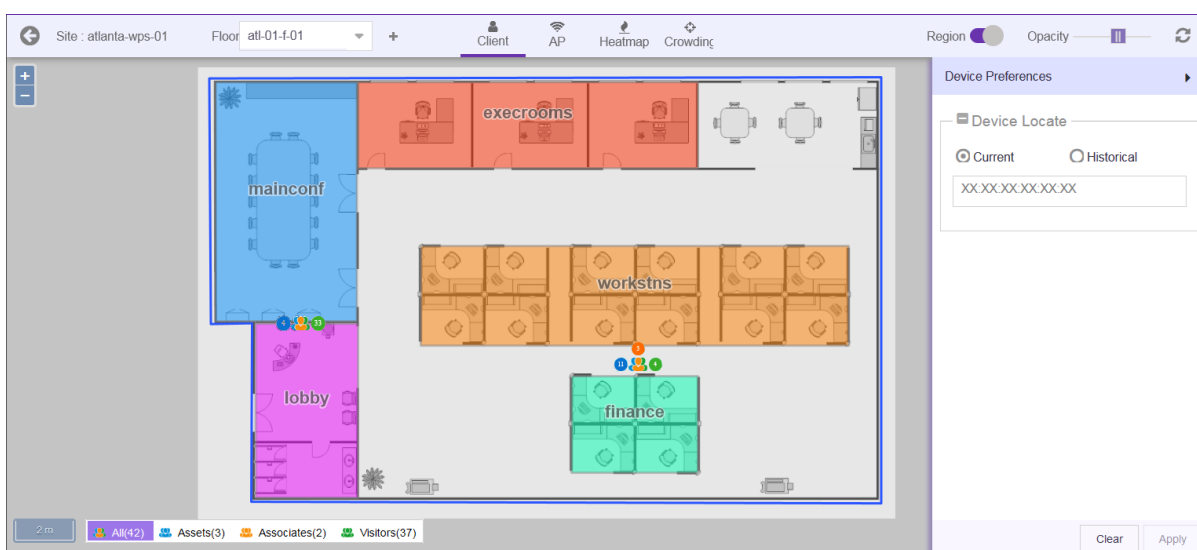
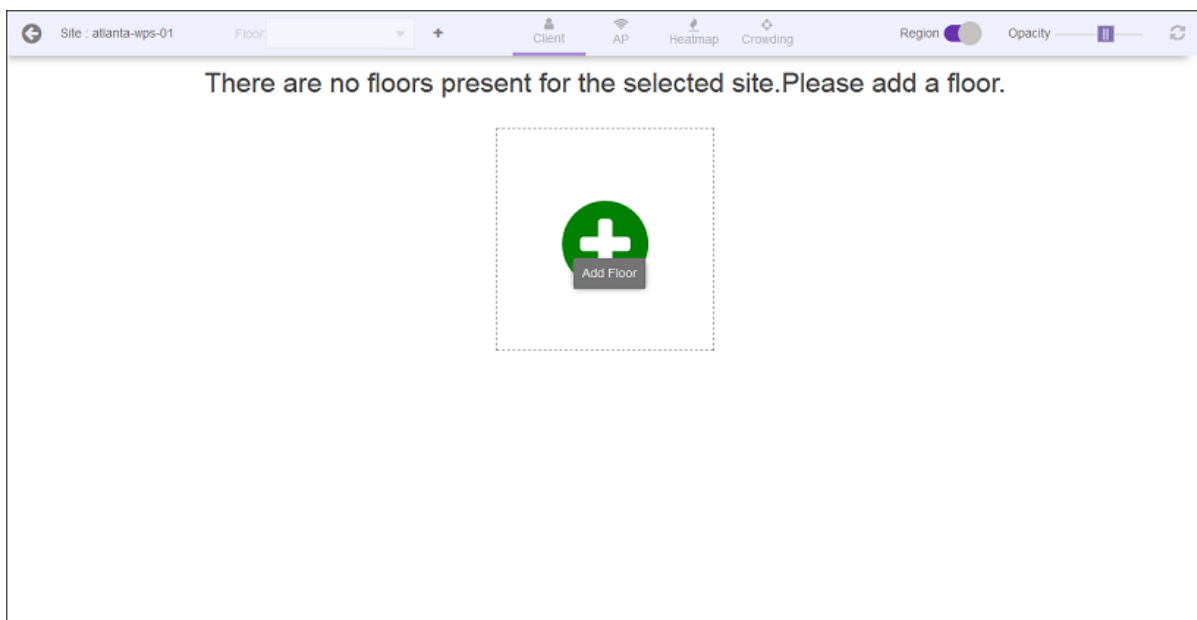


Figure 61: Floor Map

If no floors are configured, the **Maps** screen displays the following.

Figure 62: No Floors Configured





- 2 When the site has floors, use the  icon located to the left of the **Floors** drop-down list to add a new floor.



Figure 63: Add Floors Button

If the site has no floors, use the  icon to add a floor or you can use the big green circle on the screen to add the new floor.

The **Add Floor** dialog appears.

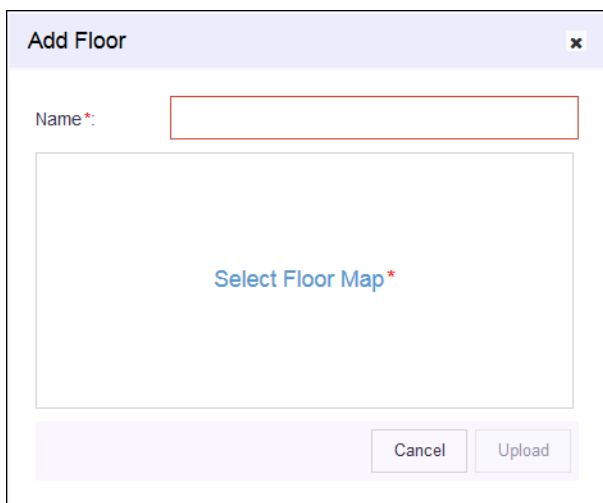


Figure 64: Add Floor Dialog

- 3 Use the **Name** field to provide a name for this floor. The floor's name should be descriptive such that identifying the floor among other floors in the site becomes easier. This is a mandatory field.
- 4 Select the **Select Floor Map** label to add a floor map to be associated with this floor. You cannot add a floor without adding its floor map. This is a mandatory action.

The Operating System's **File Open** dialog appears. Use this dialog to navigate to the image file containing the floor's map and add it. A thumbnail of the floor map is added to the dialog.

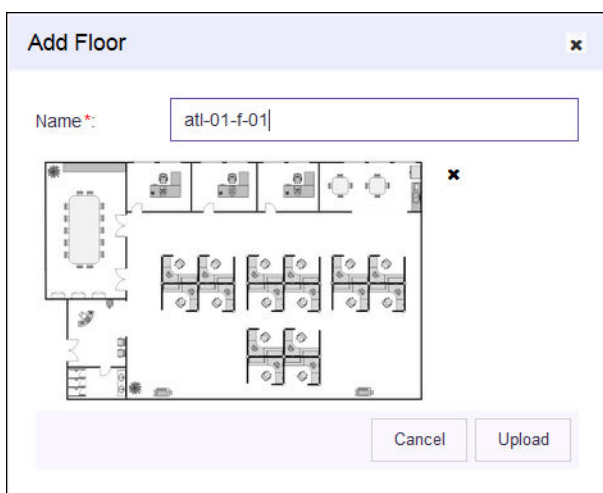


Figure 65: Floor Map Loaded

You can use the small 'x' located next to the thumbnail image to remove the floor map image from this dialog.

- Select the **Upload** button to upload the floor map and create the new floor.
At any point of time, select the **Cancel** button to exit without creating the floor.
The new floor is created with the information provided in this dialog. The floor reloads and the following screen appears.

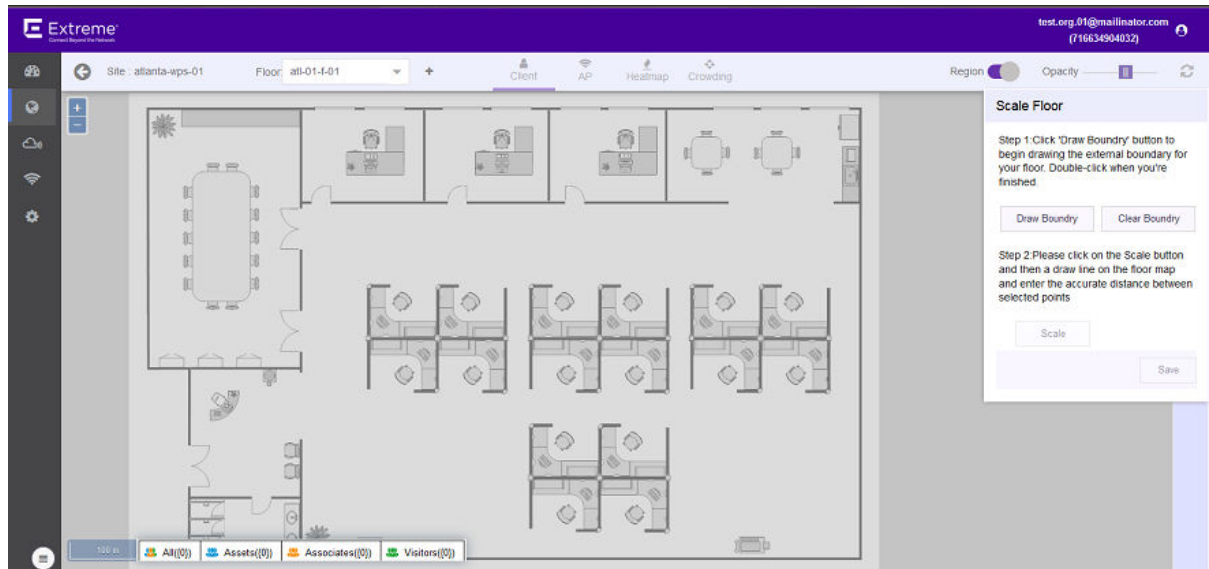


Figure 66: Scale Image Screen

- In the **Scale Floor** dialog, select **Draw Boundary**. (The area within the boundary is used to determine device location.) To anchor the beginning of the boundary line, click a corner of the outside boundary. Click each corner to anchor the line. The drawing line zigzags across the image as you anchor each corner. When you reach the last corner (which is also your starting point), double-click the last corner to disable the pen tool.

The entire outside boundary is drawn and the **Scale** button is enabled.



Note

If you make a mistake, select **Clear Boundary** to remove the entire boundary and start over.

- Select **Scale**. Choose two points on the floor map for which you know the actual physical distance. Click on the first point and drag your pointer to the other point.



Note

Proper scaling is fundamental to the accuracy of the location data for this site. Verify that the scaling information is as accurate as possible.

A line is drawn on the map between the two points.

- Enter the physical distance value in the **Scale Floor** dialog.

Scale Floor

Step 1: Click 'Draw Boundry' button to begin drawing the external boundary for your floor. Double-click when you're finished.

Step 2: Please click on the Scale button and then a draw line on the floor map and enter the accurate distance between selected points

px

equals

Figure 67: Add Scaling

- Select the **Save** button.

The dialog briefly displays the scaling factor. The scaling factor is also displayed at the bottom left of the **Floors** screen.

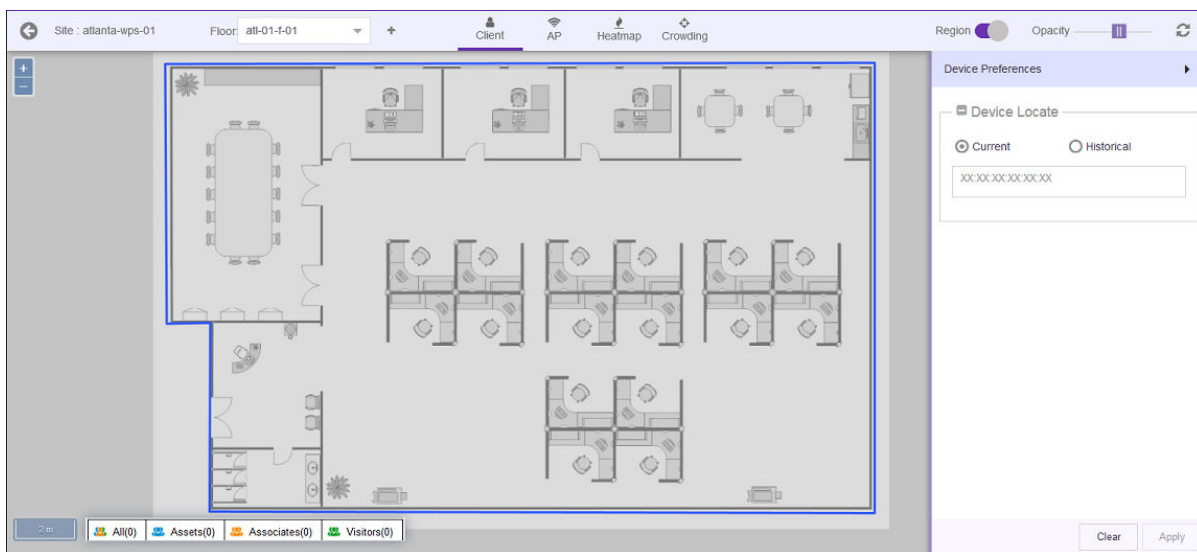


Figure 68: New Floor

Maps - Delete a Floor

To delete an existing floor from a site:

- 1 Select **Maps** from the main menu.
The **Maps** screen appears.

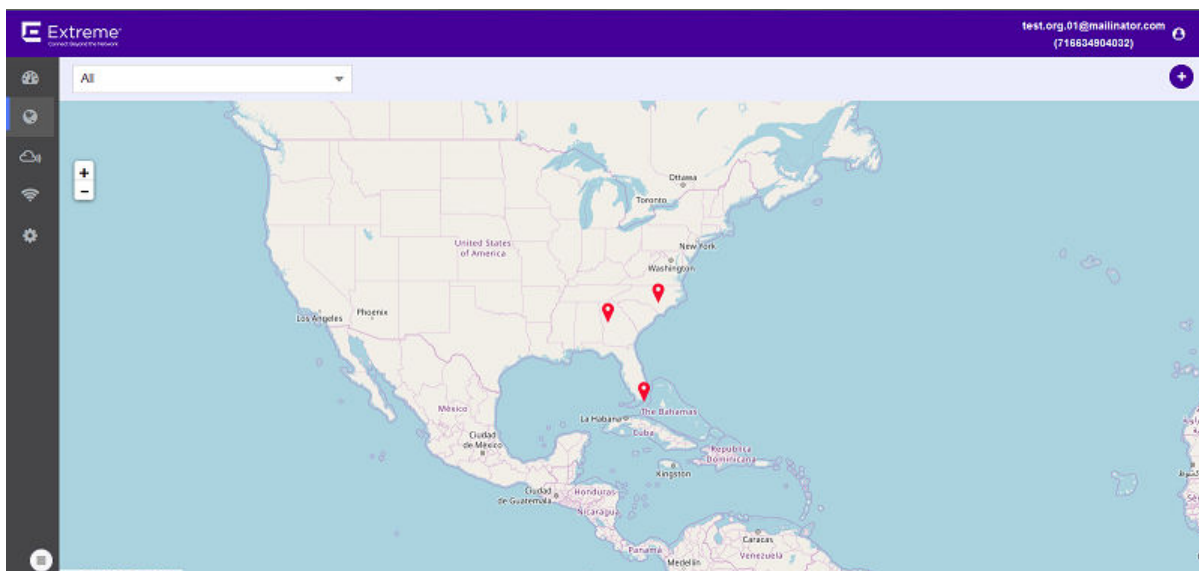


Figure 69: Maps Screen

- 2 Use the **Map** view to locate your site and select it.
The site's information is displayed as a pop-up dialog.

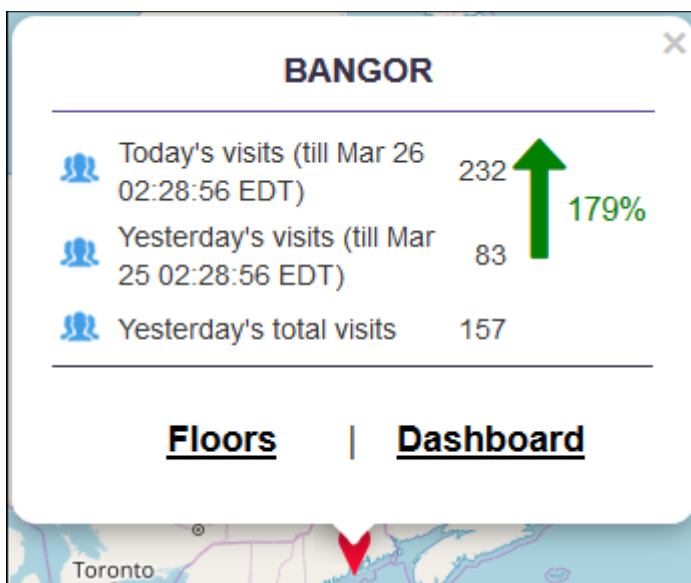


Figure 70: Site Information Dialog

- 3 Select the **Floors** link on the pop-up.

The **Maps** screen displays any floor that is already configured for this site.

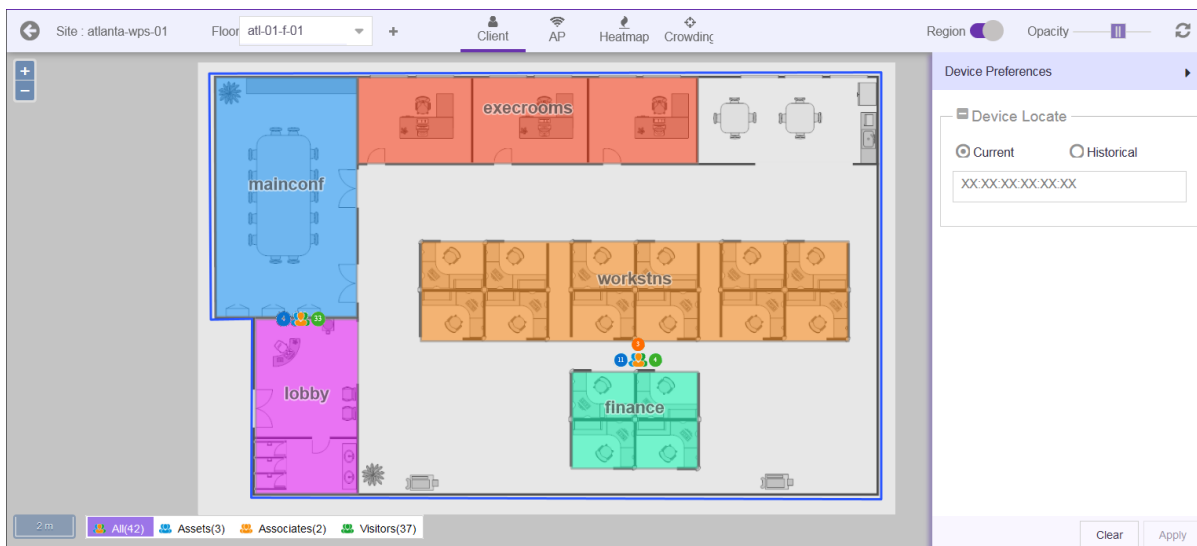


Figure 71: Floor Map

- 4 Select the **Floors** drop-down to expand it.

The list expands to display the available floors for this site.

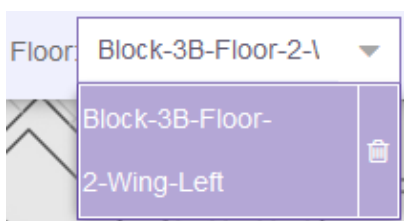
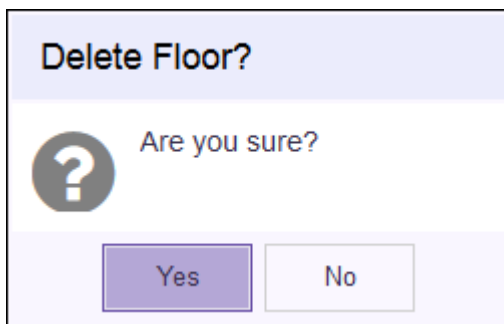


Figure 72: Floor List

- 5 Select the **Trash** icon next to the floor name that you want to delete.

A confirmation dialog appears.



- 6 Select **Yes** to delete the floor. Select **No** to exit without deleting the floor.

When **Yes** is selected, the floor is immediately deleted.

Add an Access Point

Access points provide the infrastructure for ExtremeLocation service. ExtremeLocation uses the access point's radio's sensor capability to provide the locating and tracking services within its service area. Access points must be added to a site's floor for viewing the visits and heat map for the floor.

To add an access point to the floor:

- 1 Select  from the  toolbar.

The following screen appears.

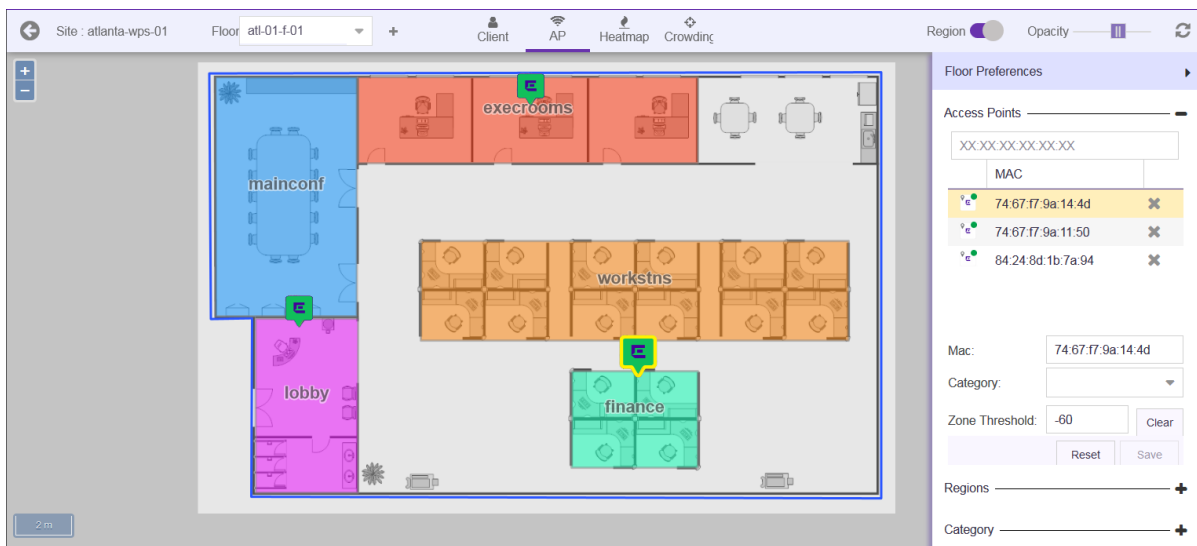




Figure 73: Maps Screen - Add Access Point

By default, the **Floor Preferences** area displays the **Access Points** assigned to this site.

- 2 From the list of access points, select an unplaced access point and drag it to its location on the floor map.

An unplaced access point can be identified by the  icon and will also have a Trash icon alongside it. Use the Trash icon to remove this access point from the list. Trashed access points will be available for re-deployment across all the sites for this ExtremeLocation account.

An access point placed on the floor map is identified by the  icon and will have a small 'x' icon alongside it. Use the 'x' icon to remove the access point. This access point can then be re-deployed to an another floor of this site.



Caution


When re-deploying an access point, please note that all previous analytics data will be lost and cannot be recovered.

You can also select and drag an access point to a re-locate it to a different location on the floor.


Note

When an access point is placed on a floor map and is unable to contact the



ExtremeLocation server, its icon changes to . For more information on the various states that an access point can be in, see [Access Point Status Icons in Map View](#) on page 77

- 3 Set the **Category** to which this access point belongs. Use the drop-down list to select the appropriate category. Multiple categories cannot be selected. Any data sent by this access point is tagged with this category.

You can create a new category by selecting the  button next to the **Category** list.

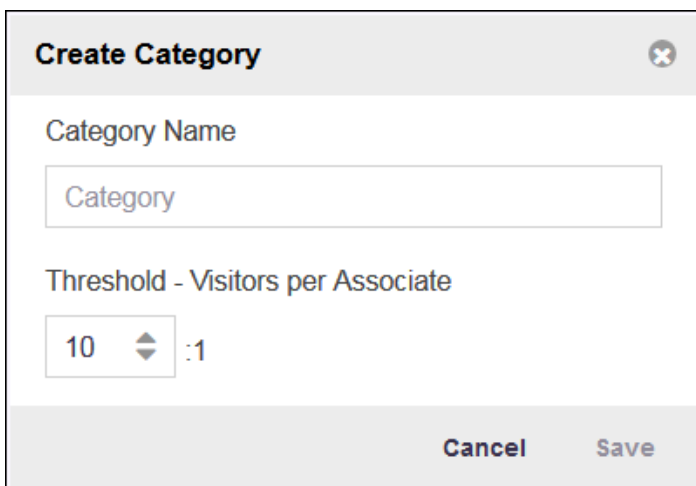


Figure 74: Create Category Dialog

Provide a name for the new category in the text box.

- 4 Set the **Threshold - Visitors per Associate** value for triggering the crowding feature. This value is the threshold of number of visitors to the number of associates above which a Crowding event is triggered. In this example, if the ratio of 10 visitors per associate is exceeded, a Crowding event is triggered.

For more information, see [Crowding View](#) on page 84

- 5 Select **Save** to apply the changes made to the **Category** and **Zone Threshold** fields and apply these values to the access point. At any point, use **Reset** to reset the values in the **Category** and **Zone Threshold** fields to their previous values.

Add a Region

Regions are locations on map that identify an area on a floor. For example, in a shop, the cosmetics aisle can be marked with the region 'Cosmetics'. Similarly, in an office, the area where the Accounts team is

located can be marked with the region 'Accounts'. This segregation of the floor into logical regions enable you to get an idea of the visits in that particular region of the floor.

To create a region:

- 1 Select the  button from the  toolbar.

The following screen appears.

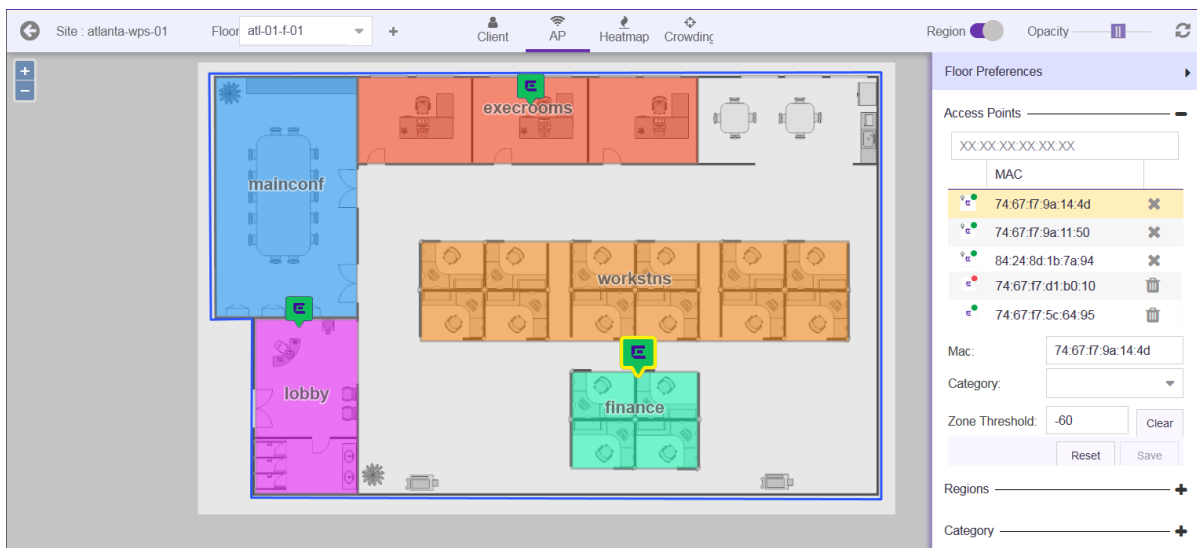


Figure 75: Maps Screen - Access Point Screen

By default the **Floor Preferences** dialog displays the access points assigned to this site.

- 2 Select the **Regions** label to expand it.

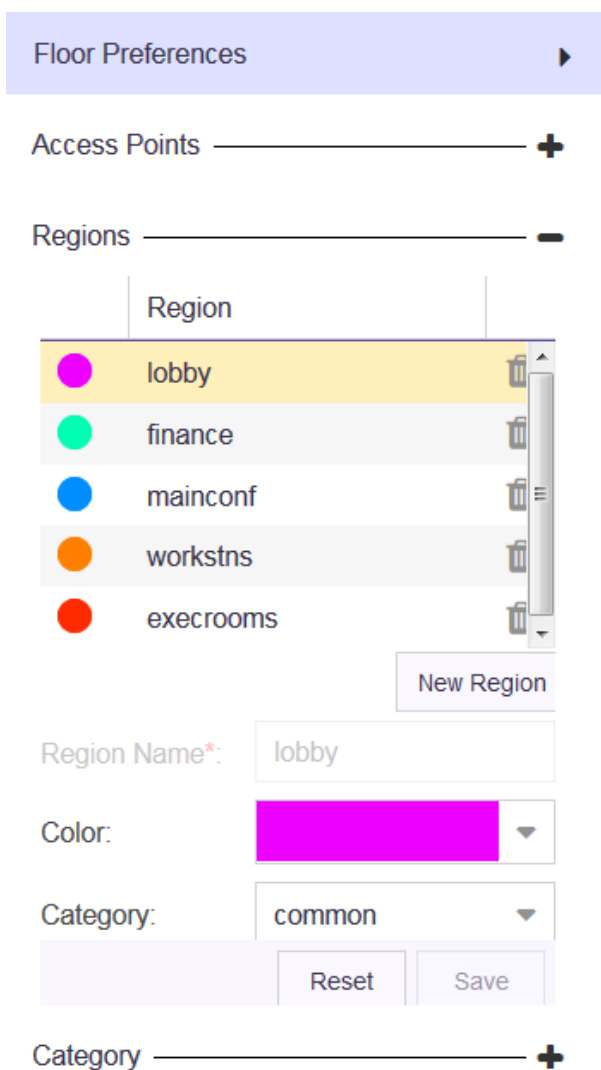


Figure 76: Regions Pane

The **Regions** pane displays a list of configured regions for this floor map. Select a region in the list to identify it on the floor map. The selected region is highlighted on the floor map with a thick border around it.

- 3 Select the **New Region** button to add a new region.
The **Region Name** text box is enabled.
- 4 Enter a valid Region name.

- 5 Use the **Color** control to select a unique color for this region.

Selecting an unique color enables you to quickly identify a region in a floor with multiple regions.
The following dialog appears.

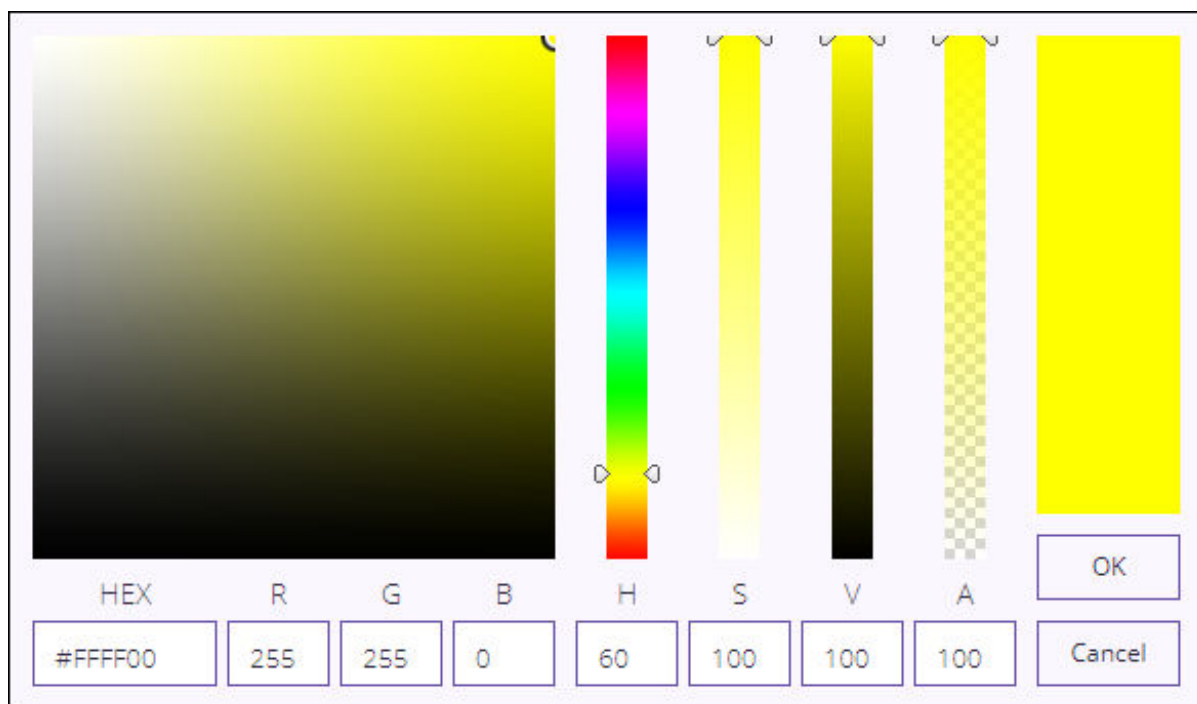


Figure 77: Region Color Picker

Set the HEX, RGB, or the HSVA parameters to define your color. In this dialog, setting any value changes the values in the other fields to reflect the same color in their respective notations.



Attention

The "ALPHA" channel is not used when defining a region's color.

Select **OK** to set the selected color as the region's color. At any time, select **Cancel** to exit without setting the color.

The selected color is set as the region's color.

- 6 Select the region's **Category** using the drop-down list. When set, this category value has precedence over the category set on the access points that are placed in this region.

Use the  button to add a new category if it does not exist.

- 7 Draw a rectangular area on the floor map to mark the region.

A region is created and placed on the floor map.

- 8 Select **Save** to save the new region.

At any time select **Reset** to exit without creating a new region.

Delete Region

To delete a region:

- 1 Select the **Regions** label to expand it.

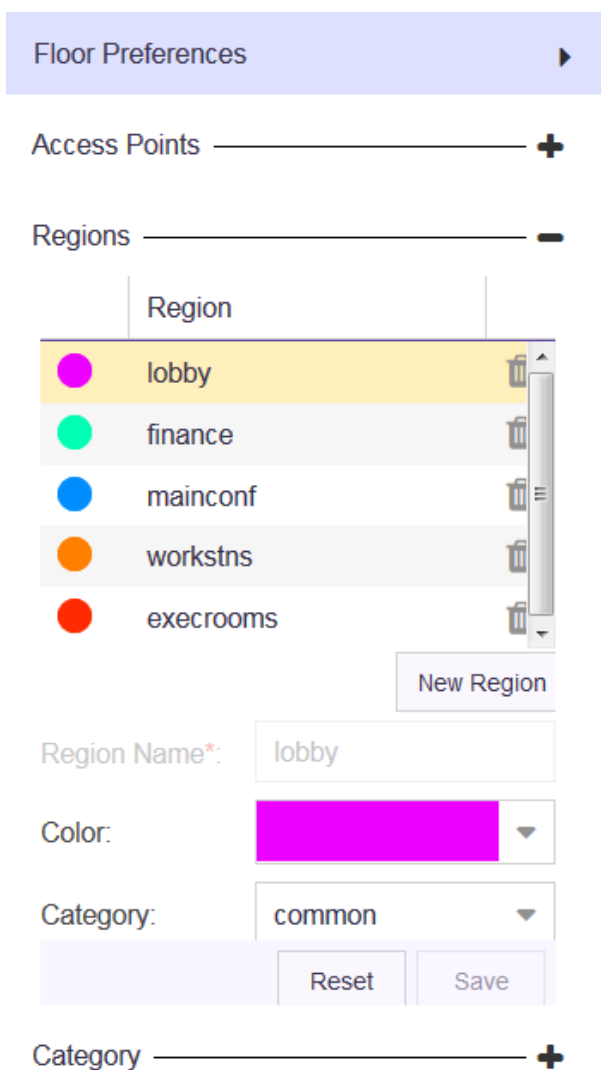
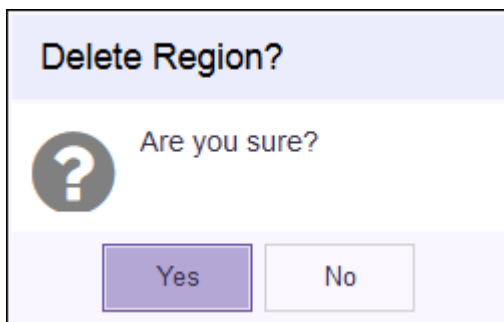


Figure 78: Regions Pane

The **Regions** pane displays a list of configured regions for this floor map. Select a region in the list to identify it on the floor map. The selected region is highlighted on the floor map with a thick border around it.

- 2 Select the **Trash** icon next to the region's name to delete it.

A confirmation dialog appears.



- 3 Select **Yes** to delete the region. Select **No** to exit without deleting the region.

When **Yes** is selected, the region is immediately deleted and is removed from the **Regions** area.







Access Point Status Icons in Map View

ExtremeLocation can display the live status of the access points added to an user account. Generally, access points can be in the following states:

placed / unplaced	These states indicate the placement status of the access point with respect to the floor map. The access point is considered placed when its icon is seen on the floor map. Otherwise the access point is considered unplaced.
active / inactive	The access point is considered active if it can be seen by the ExtremeLocation system and ExtremeLocation can communicate with the access point. Otherwise the access point is considered inactive.
selected / not- selected	When the access point's icon is selected by clicking on the icon, it is considered as selected. Otherwise it is considered not-selected.

The access point can be in any combination of the above three (3) general states.

Refer to the following table to understand the different states an access point can be in.

	placed active access point
	placed inactive access point
	placed active selected access point
	placed inactive selected access point
	unplaced active access point
	unplaced inactive access point

Client View

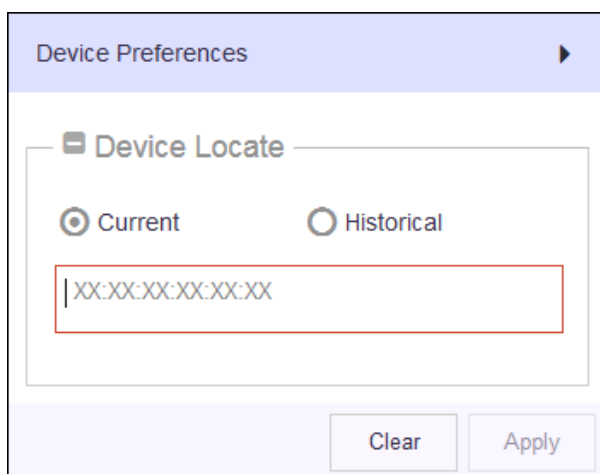
The **Client View** screen displays a map of all clients visible for the floor. Use this screen and its controls to filter and view the different client types (Assets, Associates, and Visitor) for this floor on a site.

To view client details:

- 1 Refer to topic **Common Tools** on page 53 for information on the common tools available for use in the **Maps** screens.
- 2 Select the **Floors** link to display the **Floor View**.
- 3 From the **Device Preferences** area, use the **Device Locate** area to locate a specific device.

Set the following values:

Current Select this option to find and display current information about a particular device using its MAC address.



The screenshot shows a dialog box titled "Device Preferences" with a right-pointing arrow. Inside, there is a section titled "Device Locate" with a minus sign icon. Below this, there are two radio buttons: "Current" (which is selected) and "Historical". Underneath the radio buttons is a text input field with a red border containing the placeholder text "XX:XX:XX:XX:XX:XX". At the bottom right of the dialog, there are two buttons: "Clear" and "Apply".

Locate - Historical Select this option to find and display information about a particular device's visit history by providing its MAC address, the date of interest, and the time range of interest.

- 4 Use the **Device Classification** toolbar at the bottom left of the map view to select the device types to display.

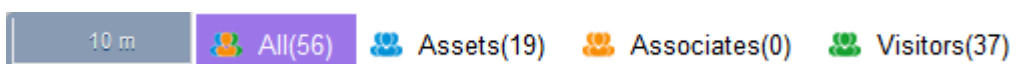


Figure 79: Device Classification Toolbar

By default, the **Floors** view displays all the devices seen on the floor. The **Device Classification** toolbar enables you to quickly filter to the devices category you are interested in.

- Asset** Select this option to show only the devices marked or classified as Assets.
- Associates** Select this option to show only the devices marked or classified as Associates.
- Visitors** Select this option to show only the devices marked or classified as Visitors.
- All** Select this option to show all the devices.

The screen refreshes to display the data for the selected device classification.



Figure 80: Client View - Visitors Only

- 5 Select **Current** from the user interface and provide the MAC address of the device of interest in the text box. Select **Apply** to fetch the data for the device.

The screen refreshes to display data for the selected MAC address, with the specified device marked on the floor map.

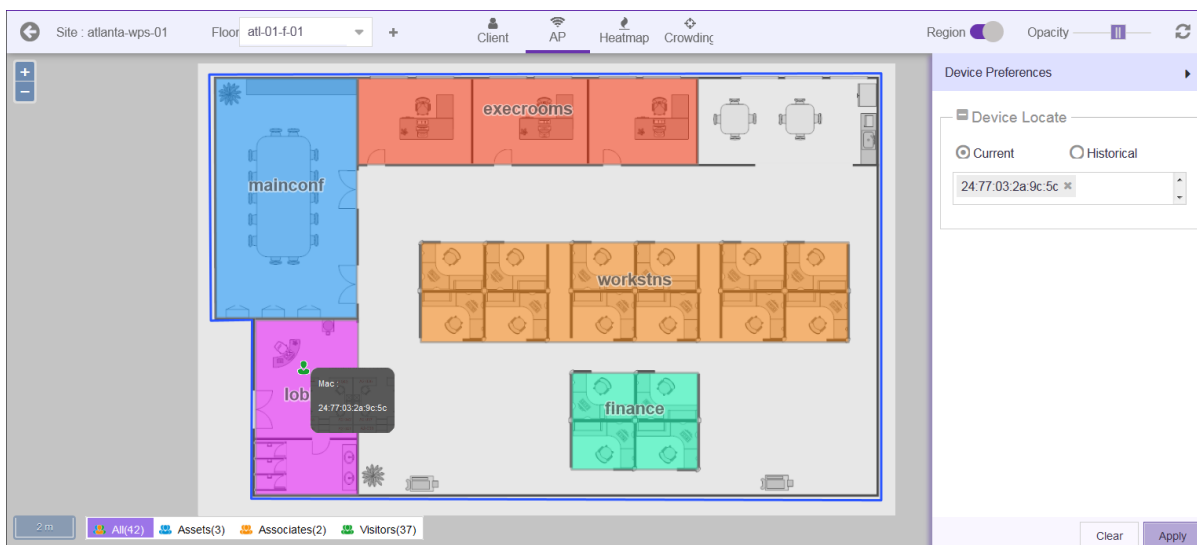


Figure 81: Locate Device Using MAC Address

At any time, select **Clear** to clear the search results.

- 6 Select **Historical** from the user interface to display historical data for a device. Once done, select **Apply** to fetch the data for the device.

Provide the following additional parameters:

Date Use the calendar control to select the date to fetch the data for.

Time From Use the drop-down list to select the hour from which data should be fetched for the date specified in **Date** field. You can edit the minutes for this field by typing the value.

Time Till Use the drop-down list to select the hour till which data should be fetched for the date specified in **Date** field. You can edit the minutes for this field by typing the value.

MAC Address Enter the MAC Address of the device of interest.

The screen refreshes to display data for the selected MAC address, with the specified device marked on the floor map.

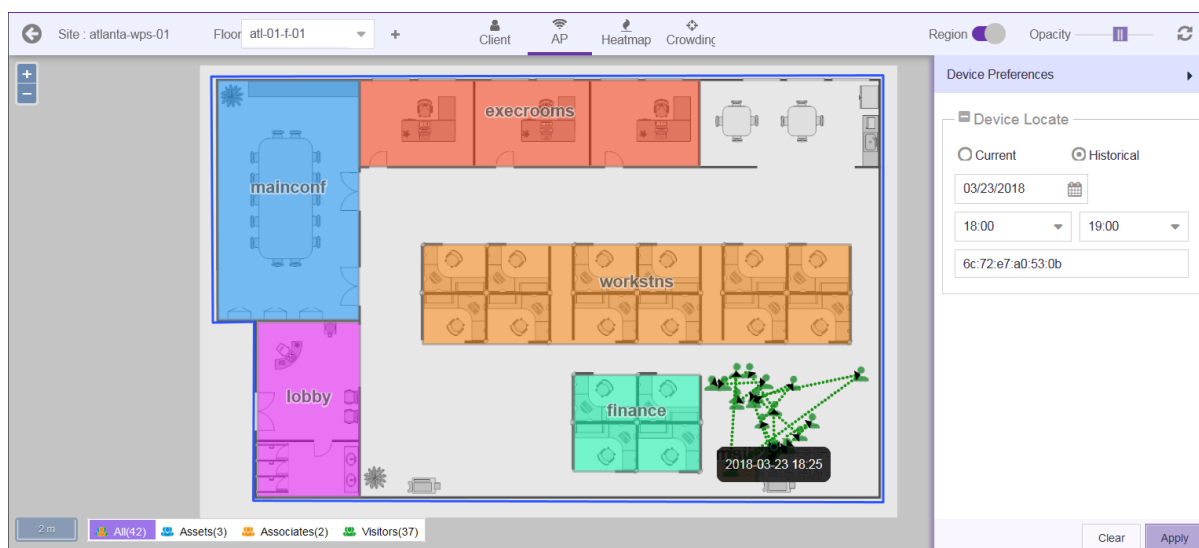


Figure 82: Historical Device Data Using MAC Address

At any time, select **Clear** to clear the search results.

Heatmap View

The **Heat Map** view displays a visual representation of device activity on the floor using color gradation indicating areas with heavy activity to areas of low or no activity.

To view the heat map:

- 1 Select **Maps** from the main menu.
The **Maps** screen appears.

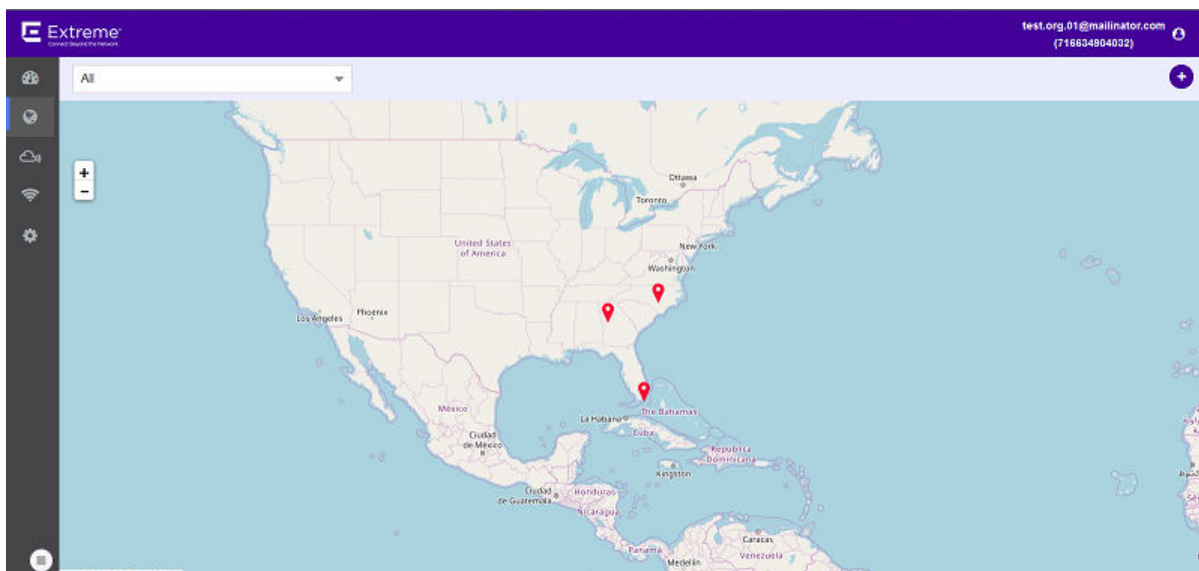


Figure 83: Maps Screen

- 2 Use the **Map** view to locate your site and select it.
The site's information is displayed as a pop-up dialog.

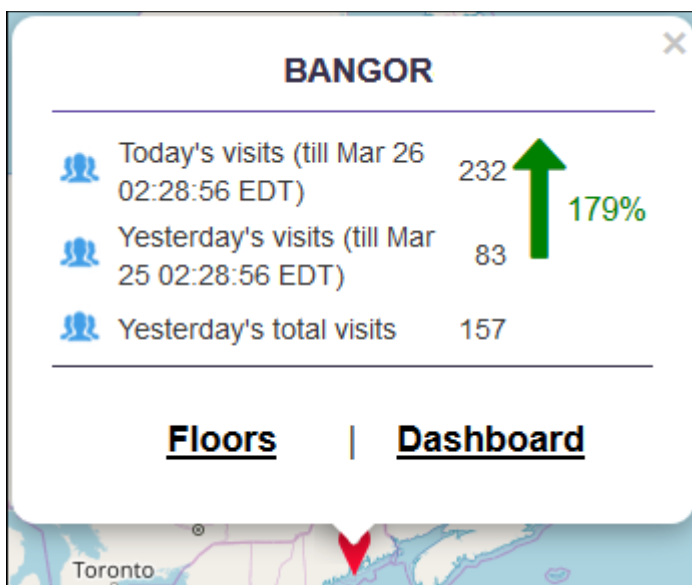


Figure 84: Site Information Dialog

- 3 Select the **Floors** link on the pop-up dialog.

The **Maps** screen displays the floor that is configured as the default floor for this site. The default floor is identified by a dark star next to its name in the **Floor** drop-down list.

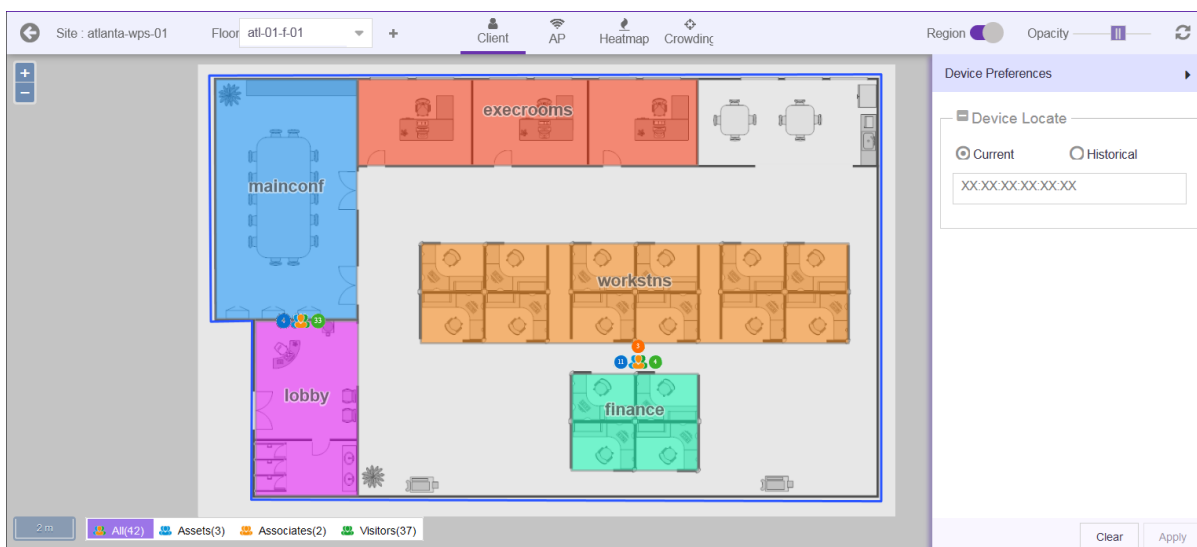


Figure 85: Floor Map

- 4 Select **Heatmap** from the **Client**, **AP**, **Heatmap**, **Crowding** toolbar.

The following heat map screen appears.

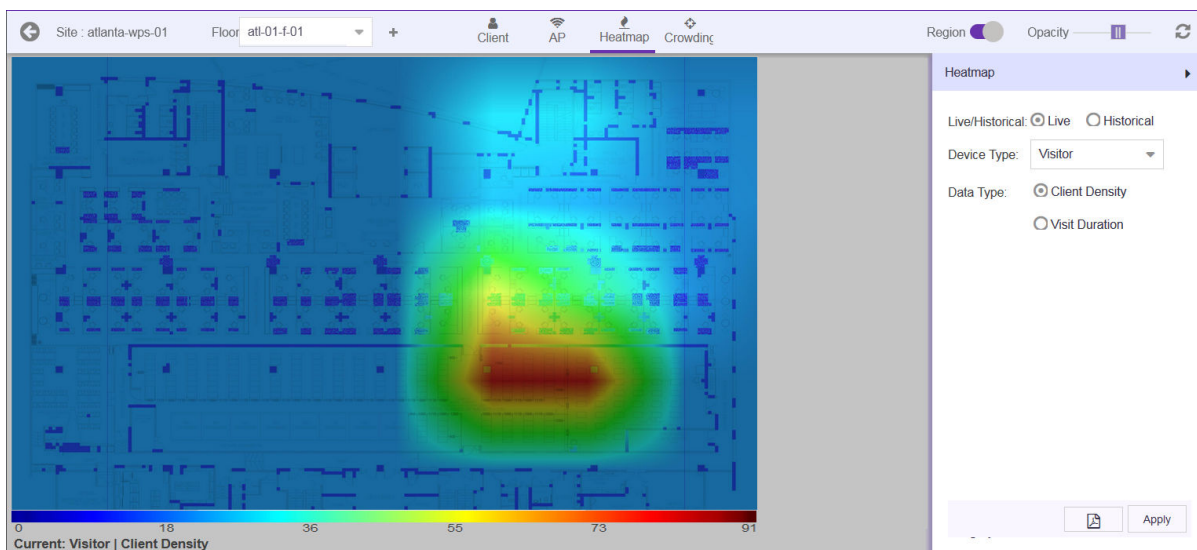


Figure 86: Maps Screen - Heatmap

By default the **Heatmap** area displays the Live Client Density heatmap for Visitors. The heatmap is color graded in the range of colors BLUE to RED where the color BLUE indicates no visitors and the color RED indicates maximum density of visitors.

- 5 From the **Heatmap** area, select the criteria to display the heatmap data.
Configure the following top level parameters to view the heatmaps:

Live Select this option to display the live heatmap on the screen. Use the **Device Type** and **Data Type** fields to fetch the required data for the heatmap.

Historical Select this option to display the historical heatmap on the screen. Use the **Date**, **Device Type** and **Data Type** fields to fetch the required data for the heatmap.

- 6 Select **Live** option to display the live data on the heatmap.

The **Heatmap** screen displays the **Visitors > Client Density** data by default.

Configure these additional parameters to customize the data to display on this screen:

Device Type Lists the device type to show on the heatmap. Select the appropriate device type from the drop-down list.

Data Type Select the appropriate option to one of the two available data types.

Client Density Select this option to view client density data for the selected **Device Type**.

Visit Duration Select this option to view visit duration data for the selected **Device Type**.

- 7 Select **Historical** option to display historical data on the heatmap.

The **Heatmap** screen displays the **Visitors > Client Density** data by default for the previous day. Previous day is one day before today.

Configure these additional parameters to customize the data to display on this screen:

Date Use the calendar control to set the date for which to display historical data.



Note

Historical data is available for one eighty days (180) days before today.


Device Type Lists the device type to show on the heatmap. Select the appropriate device type from the drop-down list.

Data Type Set the data type value to one of the two available options.

Client Density Select this option to view client density data for the selected **Device Type**.

Visit Duration Select this option to view visit duration data for the selected **Device Type**.

- 8 Select **Apply** to fetch the data for the defined criteria.

Use the  button to export the heatmap as a *Portable Document Format* (PDF) file.

The **Heatmap** screen displays hourly maps for this floor from 00:00 hours till 23:59 hours for the selected day. This will be repeated till you exit the screen or change the parameters and select **Apply** again.

Crowding View

The Crowding View shows a visualization of crowding events by region on a floor plan. Crowding events occur when the number of visitors to associate ratio is exceeded.



Note

These real-time events are categorized and can be configured under the **Settings** menu.

To access the Crowding View:

- 1 Select **Maps** from the main menu.
The **Maps** screen appears.

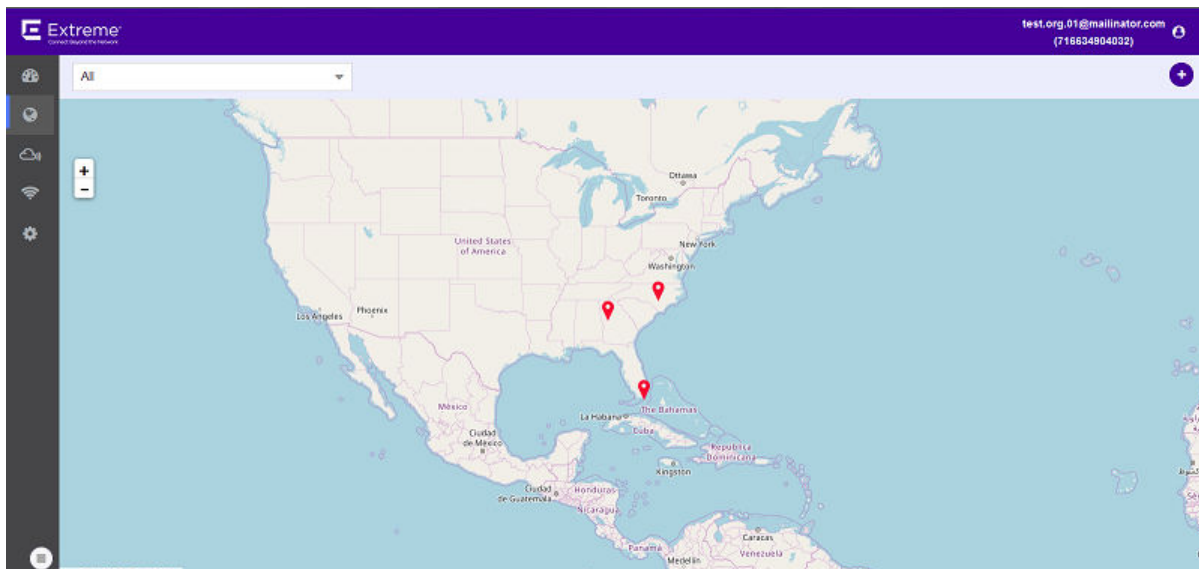


Figure 87: Maps Screen

- 2 Use the **Map** view to locate your site and select it.
The site's information is displayed as a pop-up dialog.

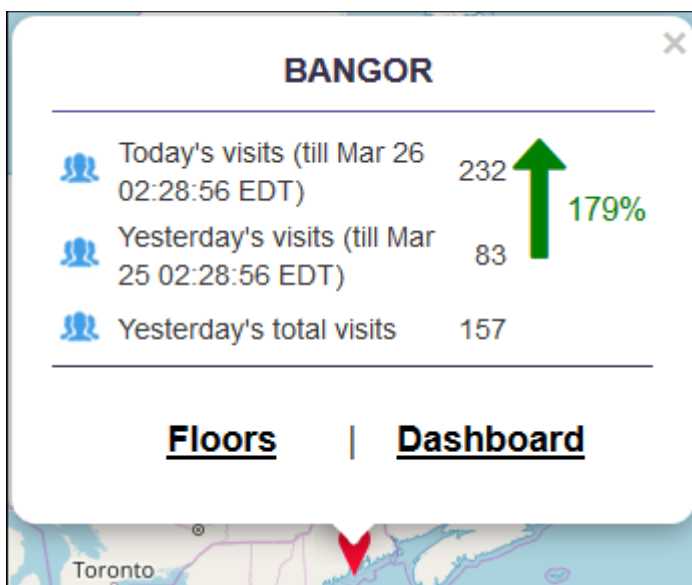


Figure 88: Site Information Dialog

- 3 Select the **Floors** link on the pop-up dialog.

The **Maps** screen displays the floor that is configured as the default floor for this site. The default floor is identified by a dark star next to its name in the **Floor** drop-down list.

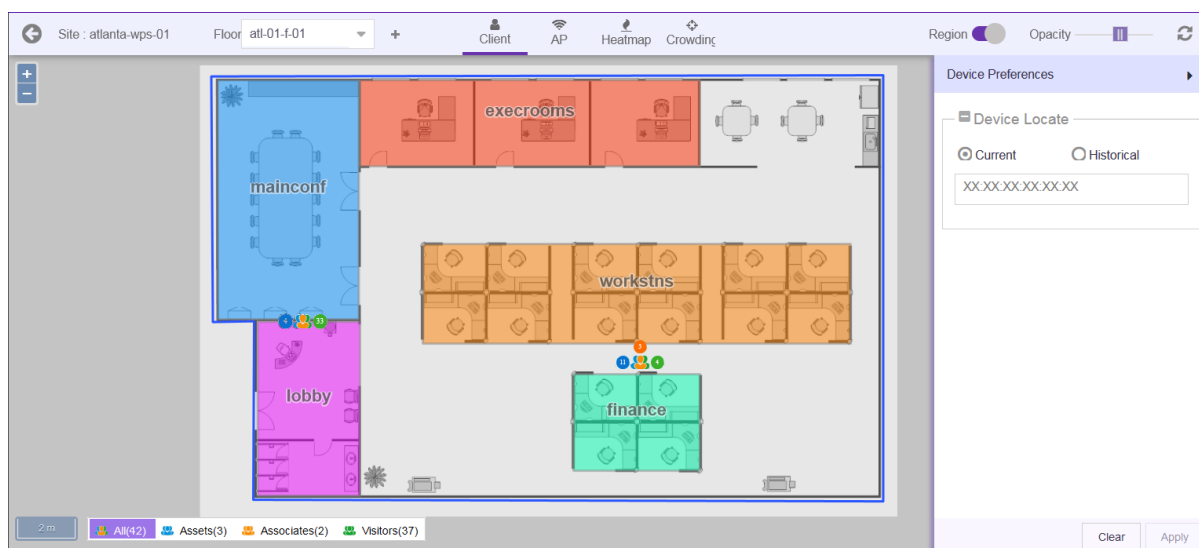


Figure 89: Floor Map

- 4



Select **Crowding** from the toolbar on the top right.

The **Crowding Events** screen displays and the floor plan and highlights the zones that have crowding events.

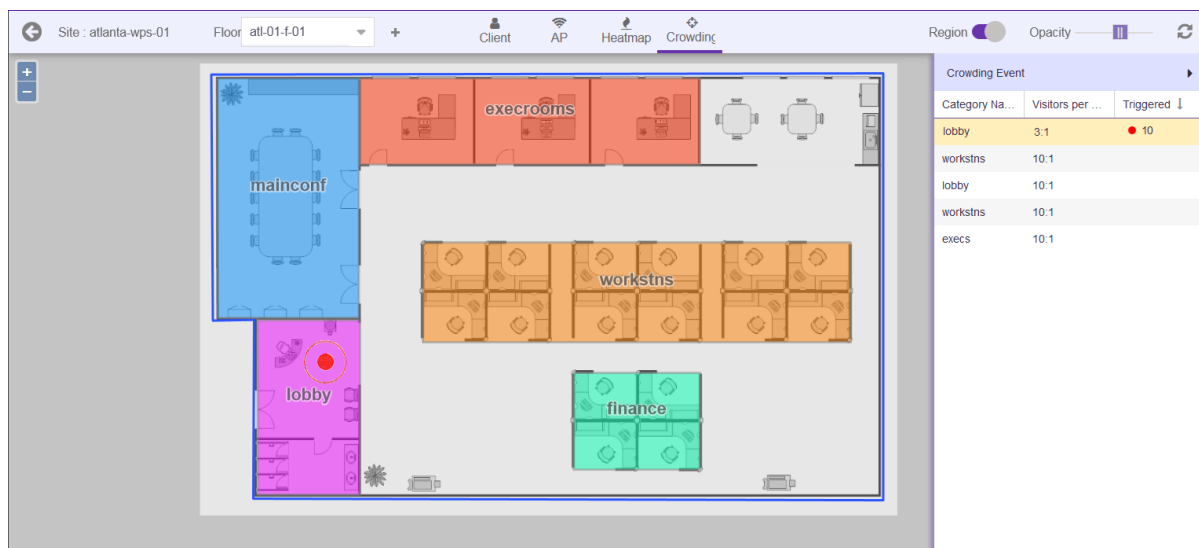


Figure 90: Crowding Events on Floor

5 Devices

Devices - Site Live Data Devices - Site Historical Data

The **Devices** screen displays a log of all devices seen in a selected site. Information can be filtered based on search criteria to display the data of interest.

The available options are:

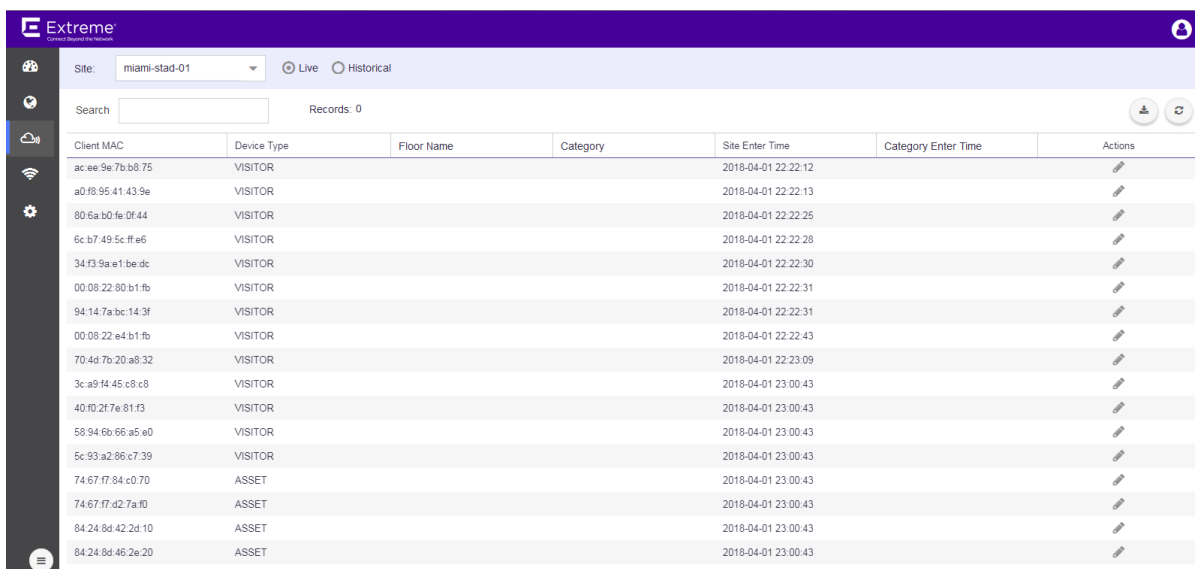
- **Live Data** - Displays live location data for devices identified in the selected site.
- **Historical Data** - Displays the location data for a period and information type selected by the user.

Devices - Site Live Data

This screen displays the live location data from the selected site.

- 1 Select a site from the **Site** drop-down list.

The screen refreshes to display the location data for this site.



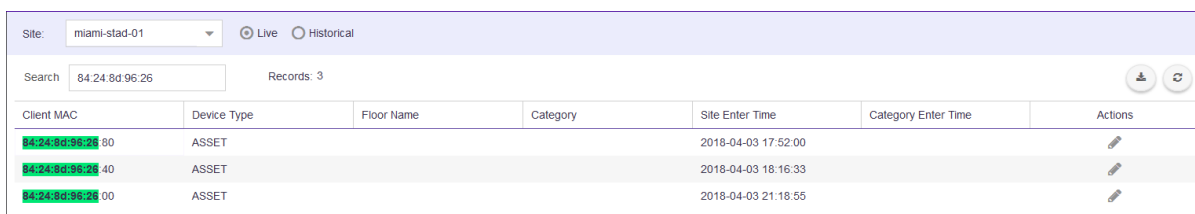
Client MAC	Device Type	Floor Name	Category	Site Enter Time	Category Enter Time	Actions
ac:ee:9e:7b:b8:75	VISITOR			2018-04-01 22:22:12		
a0:f8:95:41:43:9e	VISITOR			2018-04-01 22:22:13		
80:6a:b0:fe:0f:44	VISITOR			2018-04-01 22:22:25		
6c:b7:49:5c:ff:e6	VISITOR			2018-04-01 22:22:28		
34:f3:9a:e1:be:dc	VISITOR			2018-04-01 22:22:30		
00:08:22:80:b1:fb	VISITOR			2018-04-01 22:22:31		
94:14:7a:bc:14:3f	VISITOR			2018-04-01 22:22:31		
00:08:22:e4:b1:fb	VISITOR			2018-04-01 22:22:43		
70:4d:7b:20:a8:32	VISITOR			2018-04-01 22:23:09		
3c:a9:f4:45:c8:c8	VISITOR			2018-04-01 23:00:43		
40:f0:2f:7e:91:f3	VISITOR			2018-04-01 23:00:43		
58:94:6b:66:a5:e0	VISITOR			2018-04-01 23:00:43		
5c:93:a2:86:c7:39	VISITOR			2018-04-01 23:00:43		
74:67:f7:84:c0:70	ASSET			2018-04-01 23:00:43		
74:67:f7:d2:7a:f0	ASSET			2018-04-01 23:00:43		
84:24:8d:42:2d:10	ASSET			2018-04-01 23:00:43		
84:24:8d:46:2e:20	ASSET			2018-04-01 23:00:43		

Figure 91: Live Location Data for a Site

- 2 If the **Live** option is not selected, select it. **Live** is the default option for this screen.
- 3 Review the data displayed on this screen to look for devices and activities of interest.

- Client MAC** This field displays the Client device's MAC address.
- Device Type** This field displays the device type. This is the classification of the identified device. Devices can be classified as one of **Visitor**, **Asset**, or **Associate**.
- Floor Name** This field displays the floor on which the device was identified.


- Category** This field displays the area where this device was identified or seen. A category is a user defined part of a site that logically divides the site based on the usage of the area. For example, "Warehouse", "Lobby", "Canteen" or similar.
- Site Enter Time** This field displays the time the identified device was first seen and identified on this site.
- Category Enter Time** This field displays the time the identified device was first seen in a category.
- 4 Use the **Search** field to filter to data of interest. Enter a search string in this field. Search terms are not case sensitive. The displayed data is automatically sorted based on the search string. The search string is also highlighted wherever found in the displayed data.

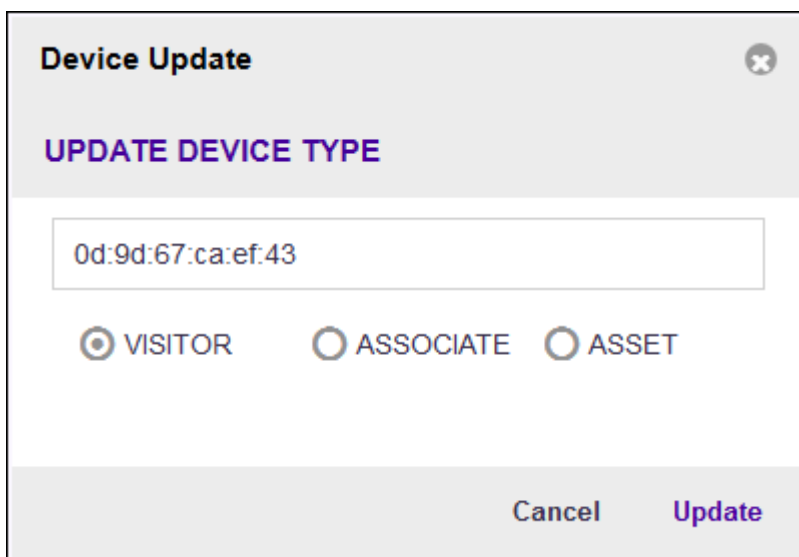


The screenshot shows a search interface for a site named 'miami-stad-01'. The search field contains '84:24:8d:96:26' and shows 3 records. The table below lists the results:

Client MAC	Device Type	Floor Name	Category	Site Enter Time	Category Enter Time	Actions
84:24:8d:96:26:80	ASSET			2018-04-03 17:52:00		
84:24:8d:96:26:40	ASSET			2018-04-03 18:16:33		
84:24:8d:96:26:00	ASSET			2018-04-03 21:18:55		

Figure 92: Search Function

- 5 Use the  in the **Actions** column to edit the device's automatic device type classification. The **Update Device Type** window displays





The screenshot shows the 'Device Update' window with the title 'UPDATE DEVICE TYPE'. A text input field contains the MAC address '0d:9d:67:ca:ef:43'. Below the input field are three radio button options: 'VISITOR' (selected), 'ASSOCIATE', and 'ASSET'. At the bottom of the window are 'Cancel' and 'Update' buttons.

Figure 93: Update Device Type screen

Select the appropriate **Device Type** using the available options in this screen.

Once done, select the **Update** button to update the device's device type classification. At any time, select the **Cancel** button to exit without modifying the automatic device type classification.

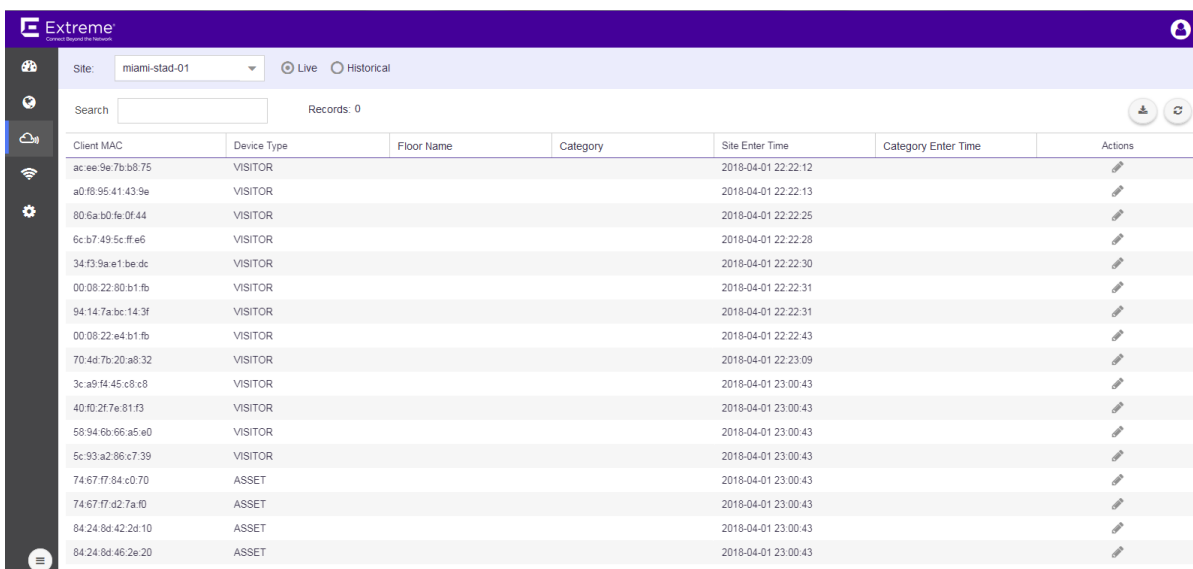
- 6 Occasionally use  button to refresh data. The data in this screen does not refresh automatically. The screen has to be manually refreshed to view the latest data.

- Use the  button to download the list of devices to your local PC as a .csv (comma separated value) file.

Devices - Site Historical Data

This screen displays the historical location data from the selected site. You can use the parameters to filter data.

- Select a site from the **Site** drop-down list.
The screen refreshes to display the Live location data for this site.



Client MAC	Device Type	Floor Name	Category	Site Enter Time	Category Enter Time	Actions
ac:ee:9e:7b:b0:75	VISITOR			2018-04-01 22:22:12		
a0:f8:95:41:43:9e	VISITOR			2018-04-01 22:22:13		
80:6a:b0:fe:0f:44	VISITOR			2018-04-01 22:22:25		
6c:b7:49:5c:ff:e6	VISITOR			2018-04-01 22:22:28		
34:f3:9a:e1:be:dc	VISITOR			2018-04-01 22:22:30		
00:08:22:80:b1:fb	VISITOR			2018-04-01 22:22:31		
94:14:7a:bc:14:3f	VISITOR			2018-04-01 22:22:31		
00:08:22:e4:b1:fb	VISITOR			2018-04-01 22:22:43		
70:4d:7b:20:a8:32	VISITOR			2018-04-01 22:23:09		
3c:a9:14:45:c8:c8	VISITOR			2018-04-01 23:00:43		
40:10:2f:7e:81:f3	VISITOR			2018-04-01 23:00:43		
58:94:6b:66:a5:e0	VISITOR			2018-04-01 23:00:43		
5c:93:a2:86:e7:39	VISITOR			2018-04-01 23:00:43		
74:67:f7:84:c0:70	ASSET			2018-04-01 23:00:43		
74:67:f7:d2:7a:f0	ASSET			2018-04-01 23:00:43		
84:24:8d:42:2d:10	ASSET			2018-04-01 23:00:43		
84:24:8d:46:2e:20	ASSET			2018-04-01 23:00:43		

Figure 94: Location Data for a Site

- If the **Historical** option is not selected, select it.
The user interface changes to display more fields to refine the historical data.



Site: Live Historical Date: By:

Figure 95: Historical Data Filter Fields

- Use the calendar control to set the **Date** to filter historical data. The default value for this field is one day less than the current date. You can display data for the last thirty (30) days from today.
- Use the **By** drop-down list to classify by either **Site Visit** or **Category Visit**.

The screen refreshes to show the location data classified as follows:

- Site Visit** - Displays the location data for all the devices monitored at the site.
- Category Visit** - Displays the location data for all devices monitored at the site and shows the category last visited by each device.

- Select **Site Visit** from the **By** drop-down list.
Review the data displayed on this screen to look for devices and activities of interest.

Site: Live Historical Date: By: Show

Search Records: 3021

Client MAC	Device Type	Visit Type	First Seen Time	Last Seen Time
6c.ab.31.49.34.e1	VISITOR	Inside Engaged	2018-04-03 15:04:49	2018-04-03 17:51:29
04.b1.67.c2.e5.73	VISITOR	Inside Engaged	2018-04-03 15:04:49	2018-04-03 18:32:51
34.f3.9a.e1.be.dc	VISITOR	Inside Engaged	2018-04-03 15:04:49	2018-04-03 19:36:48
74.e5.f9.f2.cb.37	VISITOR	Inside Engaged	2018-04-03 15:04:49	2018-04-03 20:18:51
48.51.b7.b1.1f.39	VISITOR	Inside Engaged	2018-04-03 15:04:50	2018-04-03 17:45:42
64.80.99.f9.d0.35	VISITOR	Inside Engaged	2018-04-03 15:04:50	2018-04-03 20:02:30
bc.2f.3d.35.1e.70	VISITOR	Inside Engaged	2018-04-03 15:04:50	2018-04-03 20:07:08
94.65.9c.a6.83.c1	VISITOR	Inside Engaged	2018-04-03 15:04:50	2018-04-03 20:34:59
94.65.9c.a6.82.8b	VISITOR	Inside Engaged	2018-04-03 15:04:50	2018-04-03 20:41:05
64.cc.2e.16.04.c3	VISITOR	Inside Engaged	2018-04-03 15:04:50	2018-04-03 21:09:29
34.f3.9a.dd.80.83	VISITOR	Inside Engaged	2018-04-03 15:04:51	2018-04-03 17:34:10
40.4d.7f.b6.7b.12	VISITOR	Inside Engaged	2018-04-03 15:04:51	2018-04-03 17:49:59
64.80.99.f9.ce.ff	VISITOR	Inside Engaged	2018-04-03 15:04:51	2018-04-03 17:55:44
f8.94.c2.8d.04.10	VISITOR	Inside Engaged	2018-04-03 15:04:51	2018-04-03 18:03:02
f8.94.c2.9b.1b.3f	VISITOR	Inside Engaged	2018-04-03 15:04:51	2018-04-03 18:14:23
74.e5.f9.f2.cb.a5	VISITOR	Inside Engaged	2018-04-03 15:04:51	2018-04-03 18:21:30

Figure 96: Site Visit Data

- Client MAC** This field displays the Client device's MAC address.
- Device Type** This field displays the device type. This is the classification of the identified device. Devices can be classified as one of **Visitor**, **Asset**, or **Associate**.
- Visit Type** This field displays the device's visit type classification.
- First Seen Time** This field displays the exact time when the device was first seen in the site or in a specific category.
- Last Seen Time** This field displays the exact time when the device was last seen in the site or in a specific category.

6 Select **Category** **visit** from the **By** drop-down list.

Review the data displayed on this screen to look for devices and activities of interest.

Site: Live Historical Date: By: Show

Search Records: 821

Client MAC	Device Type	Floor Name	Category	First Seen Time	Last Seen Time
1c.4d.70.1e.48.08	VISITOR	all-01-f-01	lobby	2018-04-03 17:30:22	2018-04-03 17:33:31
4c.49.e3.7f.cc.13	VISITOR	all-01-f-01	lobby	2018-04-03 17:30:27	2018-04-03 17:33:25
f8.94.c2.8d.04.10	VISITOR	all-01-f-01	execs	2018-04-03 17:30:29	2018-04-03 17:33:31
cc.9f.7a.86.32.25	VISITOR	all-01-f-01	lobby	2018-04-03 17:30:31	2018-04-03 17:32:14
48.51.b7.b1.1d.b3	VISITOR	all-01-f-01	lobby	2018-04-03 17:30:37	2018-04-03 17:33:26
94.65.9c.a6.84.b1	VISITOR	all-01-f-01	lobby	2018-04-03 17:30:54	2018-04-03 17:33:09
90.61.ae.7d.31.33	VISITOR	all-01-f-01	lobby	2018-04-03 17:31:14	2018-04-03 17:33:23
34.f3.9a.dd.80.83	VISITOR	all-01-f-01	lobby	2018-04-03 17:31:29	2018-04-03 17:33:30
50.82.d5.8a.cc.47	VISITOR	all-01-f-01	workstns	2018-04-03 17:31:49	2018-04-03 17:33:18
f8.da.0c.15.b5.c5	VISITOR	all-01-f-01	execs	2018-04-03 17:32:05	2018-04-03 17:32:59
d4.63.c6.76.fc.58	VISITOR	all-01-f-01	execs	2018-04-03 17:32:08	2018-04-03 17:32:09
cc.9f.7a.86.32.25	VISITOR	all-01-f-01	execs	2018-04-03 17:32:14	2018-04-03 17:33:26
74.e5.f9.f2.cb.a5	VISITOR	all-01-f-01	execs	2018-04-03 17:32:39	2018-04-03 17:32:39
cc.9f.7a.f6.61.8f	VISITOR	all-01-f-01	lobby	2018-04-03 17:32:42	2018-04-03 17:33:14
c4.d9.87.49.b9.c5	VISITOR	all-01-f-01	workstns	2018-04-03 17:33:08	2018-04-03 17:33:21
88.b4.a6.23.71.c2	VISITOR	all-01-f-01	lobby	2018-04-03 17:33:18	2018-04-03 17:33:20

- Client MAC** This field displays the Client device's MAC address.

Device Type This field displays the device type. This is the classification of the identified device. Devices can be classified as one of **Visitor**, **Asset**, or **Associate**.

Floor Name This field displays the floor on which the device was identified.

Category This field displays the area where this device was identified or seen. A category is a user defined part of a site that logically divides the site based on the usage of the area. For example, "Warehouse", "Lobby", "Canteen" or similar.

First Seen Time This field displays the exact time when the device was first seen in the site or in a specific category.

Last Seen Time This field displays the exact time when the device was last seen in the site or in a specific category.

- 7 Use the **Search** field to filter to data of interest. Enter a search string in this field.

Search terms are not case sensitive.

The displayed data is automatically sorted based on the search string. The search string is also highlighted wherever found in the displayed data.

The screenshot shows a search interface for a site named 'miami-stad-01'. The search criteria is '84:24:8d:96:26', resulting in 3 records. The table below shows the details of these records.

Client MAC	Device Type	Floor Name	Category	Site Enter Time	Category Enter Time	Actions
84:24:8d:96:26:80	ASSET			2018-04-03 17:52:00		
84:24:8d:96:26:40	ASSET			2018-04-03 18:16:33		
84:24:8d:96:26:00	ASSET			2018-04-03 21:18:55		

Figure 97: Search Function

6 Access Points

Access Point Status Data

The **Access Points** screen displays a log of all access points used or available for use with in the ExtremeLocation account. Access point information can be filtered based on search criteria to display only those access points of interest.

By default, this screen displays live status for access points in the selected site or for all sites configured for this ExtremeLocation account.

Access Point Status Data

This screen displays the live access point status for the selected site. By default the status of all access points (deployed or yet to be deployed) for all the sites managed by this ExtremeLocation account is displayed.

- 1 Select a site from the **Site** drop-down list.

The screen refreshes to display the access point status for the selected site.

AP MAC	Host Name	Site Name	Floor Name	Last Seen	Status
84:24:8d:1b:b2:dc		atlanta-wps-01	atl-01-f-01	2018-04-04 14:45:50 IST	●
84:24:8d:83:0a:b8		atlanta-wps-01	atl-01-f-01	2018-04-04 14:45:57 IST	●
84:24:8d:83:2e:00		atlanta-wps-01	atl-01-f-01	2018-04-04 14:45:20 IST	●
84:24:8d:82:95:70		atlanta-wps-01	atl-01-f-01	2018-04-02 14:43:23 IST	●

Figure 98: Access Point Status for a Site

- 2 Review the data displayed on this screen to look for access points of interest.

AP MAC This field displays the access point's MAC address.

Host Name This field displays the host name.

Site Name This field displays the site where the access point is deployed.

Floor Name This field displays the floor in which the access point is displayed.

Last Seen This field displays the time this access point was last seen.

Status This field displays the current status of the access point. A red dot indicates that the access point is offline.



- 3 Use the **Search** field to filter to data of interest. Enter a search string in this field.

Search terms are not case sensitive.

The displayed data is automatically sorted based on the search string. The search string is also highlighted wherever found in the displayed data.

AP MAC	Host Name	Site Name	Floor Name	Last Seen	Status
b4:2d:56:8a:7d:8c		AP7662	2floor	2018-04-12 18:10:52 IST	●
b4:2d:56:8a:7d:41		AP7662	2floor	2018-04-12 17:36:55 IST	●
b4:2d:56:8a:7d:9b		AP7662	2floor	2018-04-12 23:01:53 IST	●
b4:2d:56:8a:7d:46		AP7662	2floor	2018-04-12 17:50:07 IST	●

Figure 99: Search Function

- 4 Occasionally use  button to refresh data.
The data in this screen does not refresh automatically. The screen has to be manually refreshed to view the latest data.
- 5 Use the  button to download the list of access points to your local PC as a `.csv` (comma separated value) file.

7 Settings

User Management
System Settings
Add or Apply License to the Account
Configure a Category

The **Settings** menu sets global preferences and configuration parameters for this ExtremeLocation account. The following global settings can be managed:

- User Management - Manages users for this ExtremeLocation account. ExtremeLocation supports multiple users for a single account. Manage all your users from this screen. See [User Management](#) on page 94.
- System Settings - Manages the various system settings for this ExtremeLocation account.
 - Device Classification - Sets the parameters for device classification at the site level. See [Device Classification Settings](#) on page 101.
 - Thresholds - Sets the various thresholds for data capture for analysis. See [Device Classification Thresholds](#) on page 104.
 - Subscriber Settings - Sets the configuration for sending data capture logs to a remote server. See [Subscribe Settings](#) on page 108.
 - API Keys - Sets and manages the API Keys for this ExtremeLocation account. See [API Keys](#)
- License - Manages licenses associated with this ExtremeLocation account. Add or Extend licenses through this screen.
- Category - Manages categories for the "Crowding" feature. Add, edit, or remove categories through this screen.

User Management

User accounts are supported for Admin (Administrator) and Guest roles.

- **Admin Role**
 - Supports a maximum of 10 users.
 - Has read/write access and can perform any operations.
 - Can create, update, delete, and view Admin and Guest user accounts.
 - Can provide a list of sites and site groups to guest users.
- **Guest Role**
 - Supports read only operations.
 - Use to provide users view only access to site statistics.
 - Site and Site Group access can be controlled by any account with Admin role.

New user accounts go through the same onboarding process as a new tenant account. The email address must be verified and the user must change the password at the first login.

To create or manage user accounts, select **Settings > User Management**. See [Create and Manage User Accounts](#) on page 95 for more details.

Create and Manage User Accounts

Administrator privileges are required to create and manage user accounts.

To create or manage a user account:

- 1 Select **Settings > User Management**. (By default, User Management should display when you first select **Settings**.)

The **User and Configuration Management** pane opens and displays the list of user accounts.

- 2 To create a new account, select .

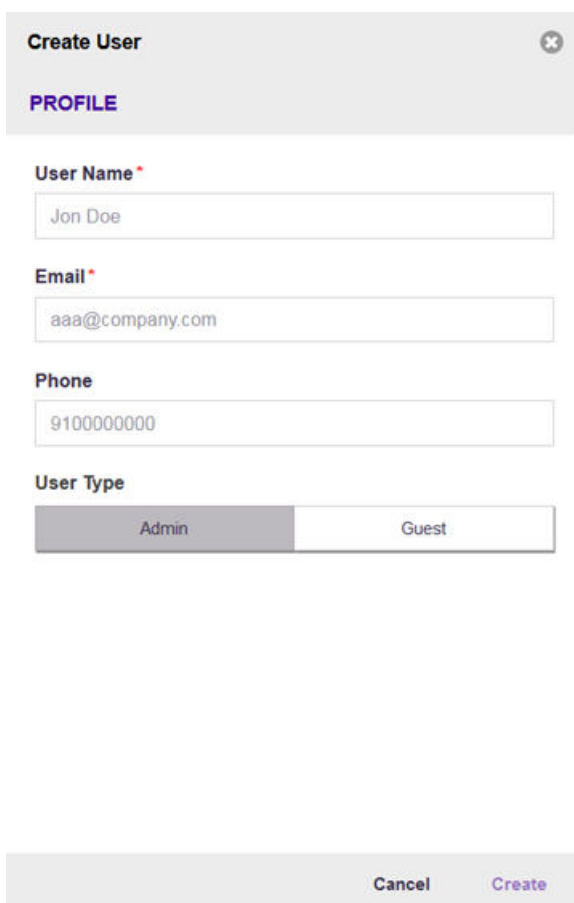
The **Create User** dialog opens.



Note

To edit an existing user, select the pencil icon for that account under the **Actions** column and edit the settings in the **Update Profile** dialog. To delete an account, select the trash icon for that account in the **Actions** column.

- 3 Edit the fields.



Create User ✕

PROFILE

User Name *
Jon Doe

Email *
aaa@company.com

Phone
9100000000

User Type

Admin Guest

Cancel Create

Figure 100: Create User Dialog

User Name (Required) Enter the user name.

Email (Required) Enter a unique email address for the user. The account registration information will be emailed to them automatically using this value after the account is created.

Phone (Optional) Enter a contact phone number.

User Type Select the account privileges to be assigned to this account: **Admin** or **Guest**.

- **Admin** - An Admin account will have extensive privileges to manage the system. See [User Management](#) on page 94.
- **Guest** - A Guest account is a restricted account. Restrict the account's scope of activity using the **Assign Scope** drop-down list. See [User Management](#) on page 94.

- 4 Select **Create**.

The account is created and added to the list of accounts.

User Account

Menus under the **User Account** item (located in the top right of the screen) enables a user to manage their own ExtremeLocation profile and password.



Note

To create a user account, see [Create and Manage User Accounts](#) on page 95.

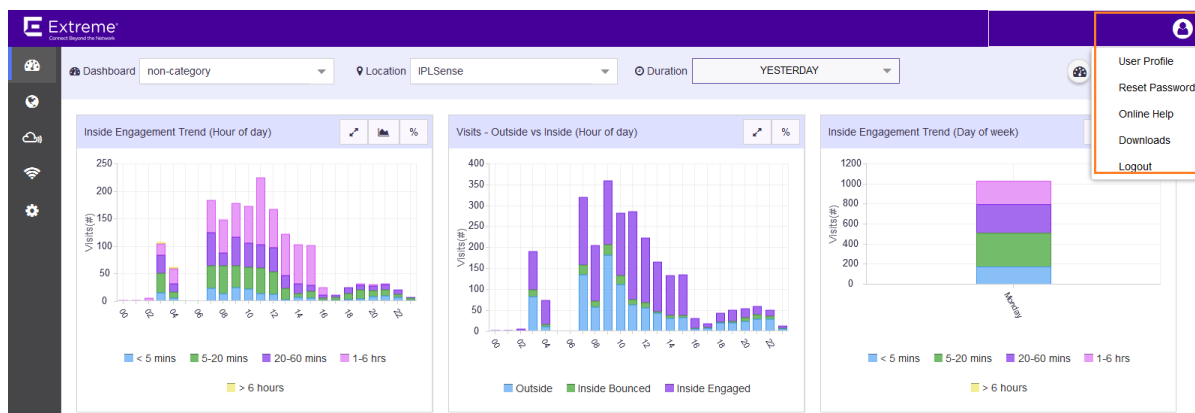


Figure 101: User Account Menu

The following activities can be performed:

- **User Profile** - Use this menu item to manage your current (logged in) ExtremeLocation account. For managing your account information, see [Your User Profile](#) on page 97.
- **Reset Password** - Use this menu item to reset or change your account's password. For more information see [Reset Password](#) on page 99.
- **Online Help** - Use this menu item to view the online help included with ExtremeLocation.
- **Downloads** - Use this menu item to download extra scripts and utilities for use with ExtremeLocation. For information on the various options, see [Downloads](#) on page 100.
- **Logout** - Use this menu item to logout of ExtremeLocation.



Note

Licenses are managed under **Settings**. For further information, see [Add or Apply License to the Account](#) on page 18.

Your User Profile

As an administrator or guest user, you can modify your ExtremeLocation account details:

- 1 Select the **User Account** icon on the top right of the screen.
A drop-down menu displays.

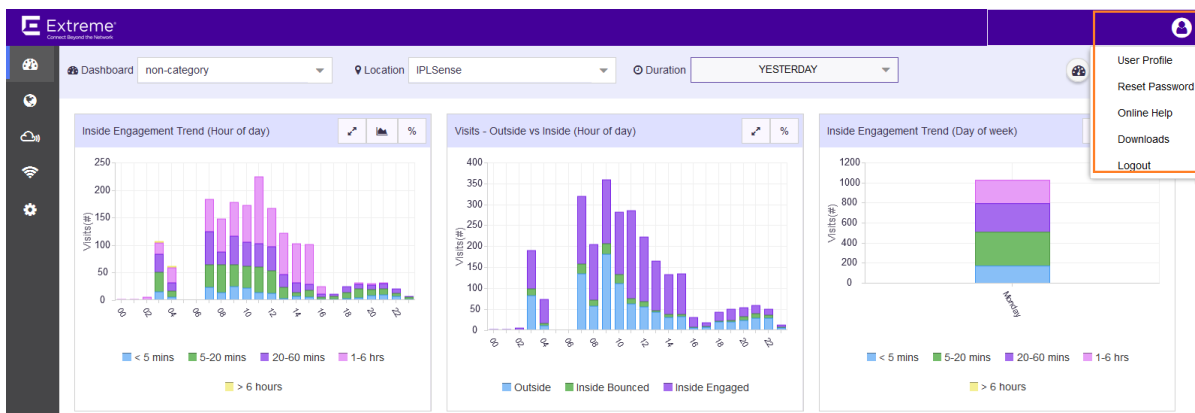


Figure 102: User Profile Menu

- 2 Select **User Profile**.
The **User Profile** dialog appears.

The 'User Profile' dialog box is shown with the following fields:

- Account**: <account number>
- Email**: <user email address>
- Name**: TestOrg01
- Phone**: (empty field)
- Address**: (empty text area)

At the bottom of the dialog, there are two buttons: 'Cancel' and 'Save'.

Figure 103: User Profile Dialog

This dialog displays the following information:

- Account** Displays the account number. This field cannot be modified.
- Email** Displays the registered email address for this account. This field cannot be modified.
- Name** Displays the name provided at the time of account registration.
- Phone** Displays the contact phone number provided at the time of account registration. This field is blank if no information is available.

Address Displays the contact address provided at the time of account registration. This field is blank if no information is available.

- 3 If required, update the **Name**, **Phone** and/or **Address** fields. Once done, select **Save** to save the changes.

To exit without saving the changes, select **Cancel** at any time.

The modified information is updated for this account.

- 4 Select the small **X** button to the right of the title bar to close the dialog.

The dialog closes and the ExtremeLocation dashboard appears.

Reset Password

To change the password for your ExtremeLocation account:

- 1 Select the **User Profile** icon on the top right of the screen.
A drop-down menu displays.

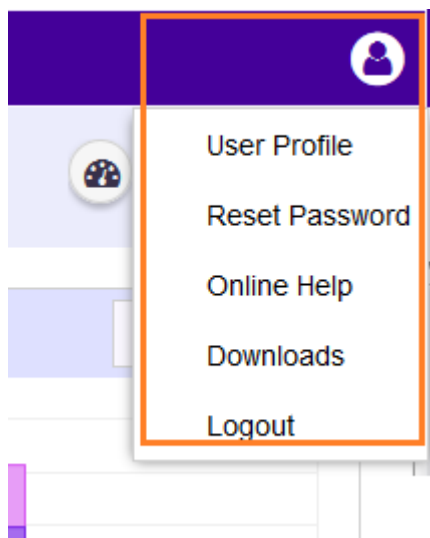


Figure 104: User Profile Menu

- 2 Select **Reset Password**.
The **Reset Password** dialog appears.

Figure 105: Reset Password Dialog

This dialog displays the following fields:

- | | |
|-------------------------|--|
| Old Password | Enter the current password for this account in this field. |
| New Password | Enter the new password for this account here. |
| Confirm Password | Re-enter the password entered in the New Password field here. |

- 3 Select **Change Password** to save the changed password for this account.
To exit without changing the existing password, select the **Cancel** at any time.

The new password is updated to this account and can be used from the next log in.

- 4 Select the small **X** button to the right of the title bar to close the dialog.
The dialog closes and the ExtremeLocation dashboard appears.

Downloads

The Downloads option provides the following:

- **Notification WebServer** - This option downloads a compressed file containing a copy of the Apache Tomcat Webserver. This server can be used for testing the sample API Webserver.
- **Sample Webserver Code** - This option downloads sample web server code as a compilable Eclipse project.
- **Sample API Code** - This option downloads sample API codes as a compilable Eclipse project.
- **ADSP Migration Script** - This option downloads a script that migrates ADSP location data into ExtremeLocation.

For more information on ExtremeLocation APIs and on how to deploy the sample webserver application, refer to *ExtremeLocation API Reference Guide*. This guide can be downloaded from [Extreme Networks Documentation Site](#).

For more information on ExtremeLocation ADSP Migration script, refer to *ExtremeLocation Migrating Location Based Services from ADSP to ExtremeLocation* guide. This file can be downloaded from [Extreme Networks Documentation Site](#)

Log Out of ExtremeLocation

To log out of ExtremeLocation:

- 1 Select the **User Profile** icon on the top right of the screen.

A drop-down menu displays.

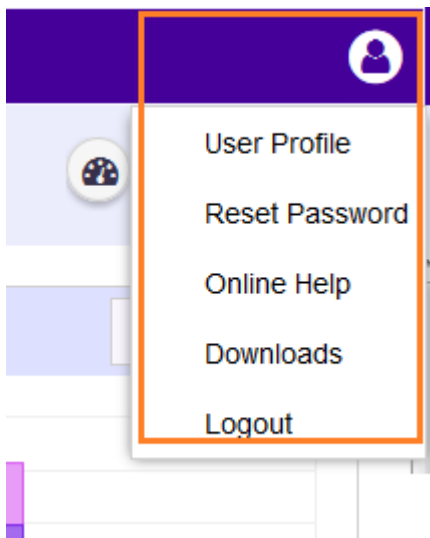


Figure 106: User Profile Menu

- 2 Select **Logout**.

You will immediately be logged out of ExtremeLocation Dashboard and the ExtremeLocation Login Screen appears.

System Settings

The **System Settings** menu item contains a collection of important settings that you use to configure the performance of the ExtremeLocation system for this account. This menu had the following configuration options:

- **Device Classification** - The Device Classification screen sets the different parameters for automatic and manual device classification. Device classification is used in location and device analysis. See
- **Threshold** - The Threshold screen sets the different thresholds for Presence, Zone, and Age Out settings. See
- **Subscriber Settings** - The Subscriber Setting screen sets the information required for ExtremeLocation to push events and notifications to remote server for analysis. See
- **API Keys** - Sets and manages the API Keys for this ExtremeLocation account. See [API Keys](#)

Device Classification Settings

Devices are classified into one of the following types:

- Assets
- Associates
- Visitors
- Associate Personal Devices

Devices are classified as `visitor` when they are identified for the first time at the ExtremeLocation site. This is the default behavior.

Once a device has been classified as `visitor`, the device is monitored for further classification. Some of the parameters used for device re-classification are the SSID to which the device associates and the time duration the device is seen at a site. Both these parameters are user configurable and are used to fine tune device classification.

ExtremeLocation also classifies personal devices of Associates as a separate category. Use this classification to ignore any data for these personal devices from any analysis and from being displayed in Client View on the floor map.

Device Classification Types

- **Assets:** Devices such as access points, POS, that are considered as an organization's Assets are classified under this device classification.
- **Associates:** Devices such bar-code scanners, RFID readers, Mobile Phones that an associate carries on person and uses to perform specific task or tasks related to the Associate's job function are classified as Associates.
- **Visitor:** This is the default classification applied to any device that is seen at the site for the first time. Generally, this classification applies to any device that is carried by any customer or vendor visiting the site. Depending on other conditions, a device is re-classified to one of the other types from this classification.
- **Associate Personal Device:** This is a special classification reserved for those device that an Associate carries for personal use and which are different from those devices that is used for carrying out official tasks. You can choose to ignore devices that are classified in this type from being included in any analytics.

To set the parameters for device classification:

- 1 Select **Settings > System Settings > Device Classification**.

The Device Classification and Management window opens.

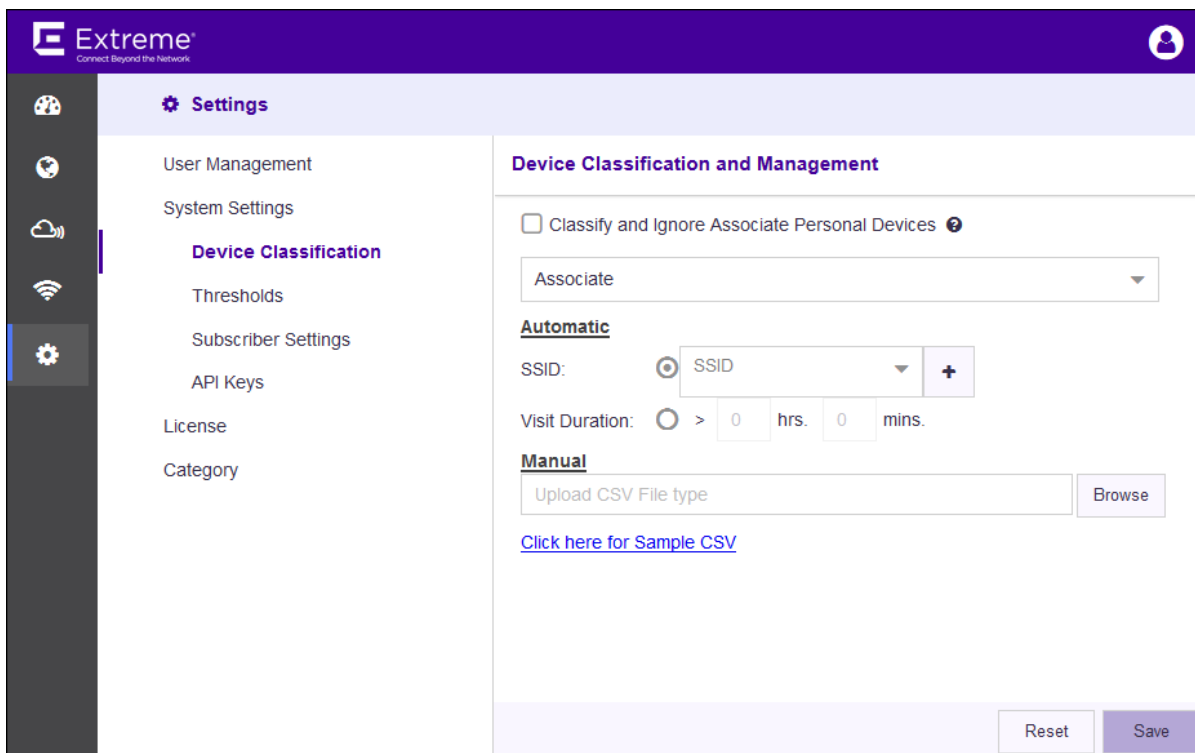


Figure 107: Device Classification and Management window

- 2 Select the **Classify and Ignore Associate Personal Devices** option to ignore any device not classified as either "Associate" or "Asset" and that have spent more than four (4) hours in the site. Use this option to ignore any personal devices such as mobile phones that an "Associate" might carry on person for personal use. When this option is disabled, a message displays warning that currently classified and ignored devices will be treated as "Visitor" devices.
- 3 Set the **Automatic** classification configuration options to classify the identified devices automatically based on set rules. Use the drop-down to select one of the pre-existing classifications.

Devices can be classified either as **Asset** or **Associate**. This classification is based on one of the following rules:


- **SSID** - Devices are classified based on the SSID that the device associates itself to at the site.
- **Visit Duration** - Devices are classified based on the duration the device remains at the site.



Note

Device Classification can be done automatically or manually.

When classifying devices automatically using SSIDs, you must manually provide the SSID that is

used for the classification. Use the  button to add SSIDs manually. The following field appears when you select the button.

Automatic

SSID: SSID

Visit Duration: > hrs. mins.

Enter a valid SSID into the **SSID** field and select **Add** to add the entered SSID to the list. Then, select the appropriate SSID from the **SSID** drop-down list to create your classification rule.

- 4 Set the **Manual** classification of devices by uploading a *Comma Separated Value* file to the ExtremeLocation server.

Use the **Click here for Sample CSV** link to download a sample file to base your manual device classification data CSV file.



Note

Device Classification can be done automatically or manually.

- 5 Select **Save** to save the changes made to the **Device Classification** parameters.
At any time, select the **Reset** button to revert the changes made to the device classification parameters.

Device Classification Thresholds

Use the fields in this window to classify visitors to the site, set thresholds for device categorization based on zones, and set the different age outs for devices seen at the site.

To configure the different thresholds:

- 1 Select **Settings > System Settings > Thresholds**.

The **Threshold Configuration and Management** window opens.

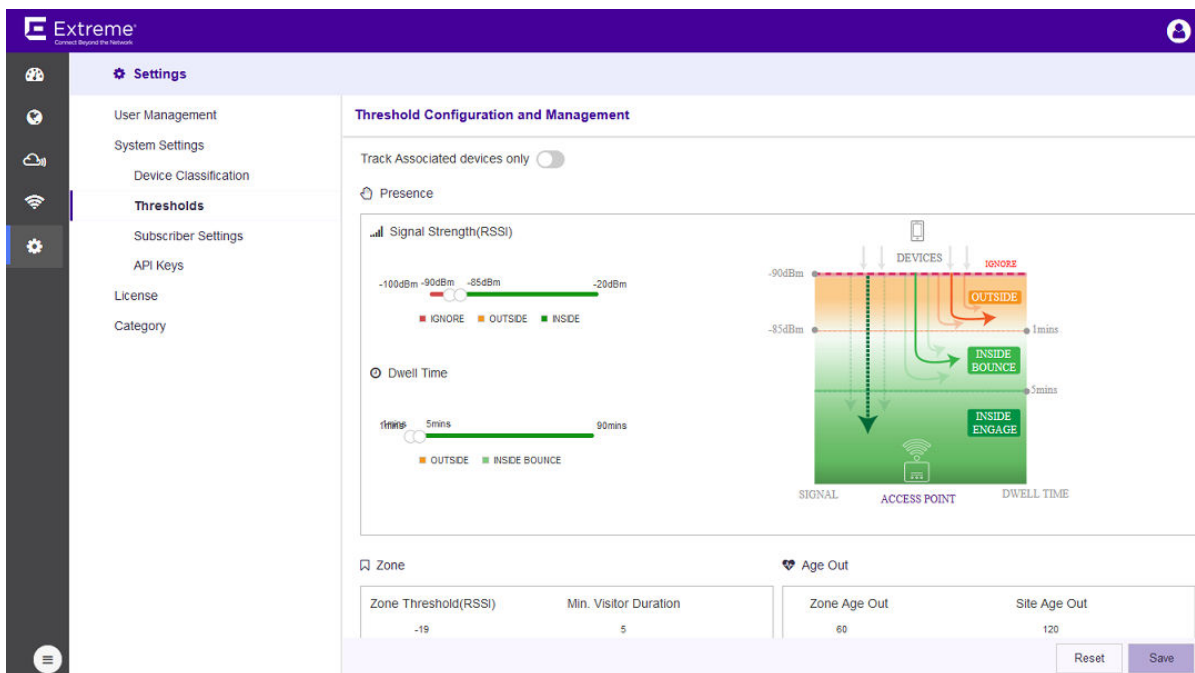


Figure 108: Threshold Configuration and Management window

- 2 Select the **Track Associated devices only** control to track associated devices only. All other devices are ignored.
- 3 Set the following **Presence** values:

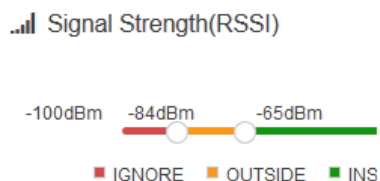


Figure 109: Signal Strength (RSSI) slider

Use the **Signal Strength** slider to set the values for device classification as one of Ignored Devices, Outside Devices, and Inside Devices.

- A device is ignored if the signal strength (RSSI) of the device is below the signal strength value set by the first slider knob. This is indicated by the red portion of the **Signal Strength (RSSI)** slider. These devices will not be tracked for analysis.
- A device is considered as "Inside" if the signal strength (RSSI) of the device is above the signal strength value set by the second slider knob. This is indicated by the green portion of the **Signal Strength (RSSI)** slider.
- A device with a signal strength reading between the two knobs of the **Signal Strength (RSSI)** slider is considered as "Outside". This is indicated by the orange portion of the **Signal Strength (RSSI)** slider.

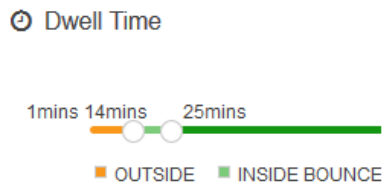


Figure 110: Dwell Time slider

Use the **Dwell Time** slider to set the values for device classification as one of Outside, Inside Bounce, or Inside.

- A device is classified as "Outside" if the device is seen in the site for a duration that is less the duration set by the first slider knob. This threshold is indicated by the red portion of the **Dwell Time** slider.
- A device is classified as "Inside" if the device is seen in the site for a duration greater than the duration set by the second slider knob. This threshold is indicated by the dark green portion of the **Dwell Time** slider.
- A device that is seen at the site for a duration between the times indicated by the two knobs of the **Dwell Time** slider is considered as "Inside Bounced". This duration is indicated by the light green portion of the **Dwell Time** slider.

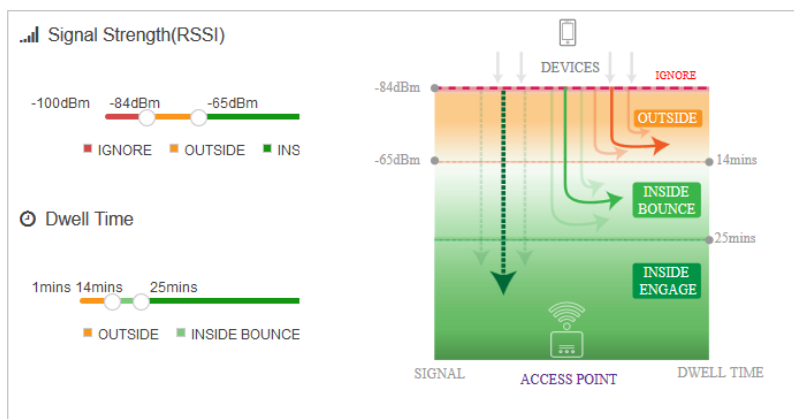


Figure 111: Presence Configuration Graph

Use the graph located to the right of the **Signal Strength (RSSI)** and **Dwell Time** sliders to get a visual representation of the values used for device classification.

- 4 Set the following **Zone** classification values.

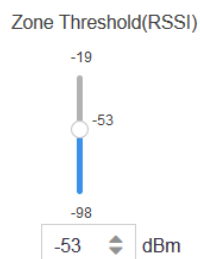


Figure 112: Zone Threshold (RSSI) slider

Use the **Zone Threshold (RSSI)** slider to set the threshold RSSI value above which a device is classified into a category.

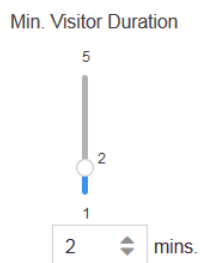


Figure 113: Min. Visitor Duration slider

Use the **Min. Visitor Duration** slider to set the duration in minutes. A device is classified into a category only if it is observed for a duration that is longer than the value set by this slider.

- 5 Set the following **Age Out** timeout values.

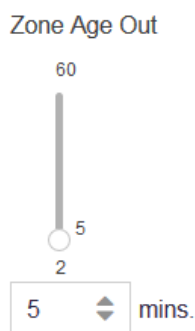


Figure 114: Zone Age Out slider

Use the **Zone Age Out** slider to set the zone or category age out value. This slider sets the time (in minutes), after which, if a visitor's location information is not received from the ExtremeLocation service, the visitor is considered to have left the category or region.

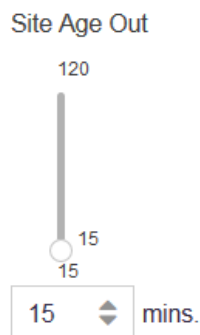


Figure 115: Site Age Out slider

Use the **Site Age Out** slider to set the age out value. This slider sets the time (in minutes), after which, if a visitor has not been seen by any sensor in a site, the visitor is considered to have left the site.

- 6 Select **Save** to save the changes made to the **Threshold** parameters.

At any time, select the **Reset** button to revert the changes made to the threshold parameters.

Subscribe Settings

When an event is generated for any site in your ExtremeLocation account, it is sent to your remote web server in real-time. Filters, if any, are applied to the events before being transmitted. Filters are used to control the event types to be passed to your web server.

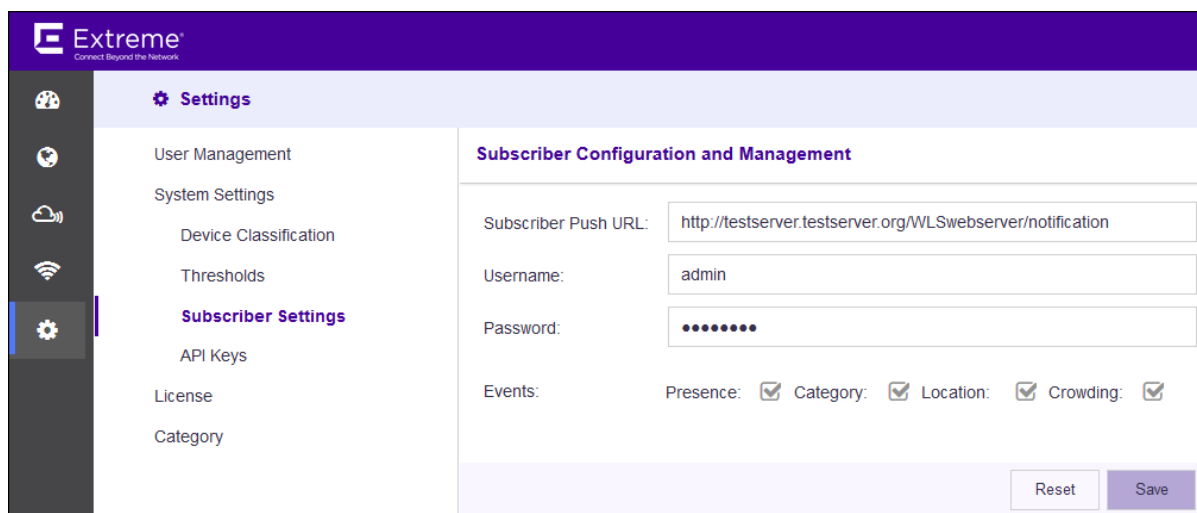
Use the Subscriber Settings window to configure the information required for ExtremeLocation to connect to your server. Also use this screen to filter the event types of interest for your deployment.

At your end, a web server or service must be configured to receive the data. This web server can then pass on the received data to third party application data processors for further action or it can store the data locally.

To configure ExtremeLocation to connect to your remote web server:

- 1 Select **Settings > System Settings > Subscriber Settings**.

The **Subscriber Classification and Management** window opens.



The screenshot shows the 'Subscriber Configuration and Management' window. On the left is a navigation menu with 'Subscriber Settings' highlighted. The main area contains the following fields and options:

- Subscriber Push URL:**
- Username:**
- Password:**
- Events:** Presence: Category: Location: Crowding:

At the bottom right, there are 'Reset' and 'Save' buttons.

Figure 116: Subscriber Classification and Management window

- 2 Provide the following to configure the Subscriber Settings:

Subscriber Push URL

Configure the remote web server where all events types selected in the **Events** field is transferred to in real-time.



Note

The web server must listen on one of the standard ports, 443 (https) or 80 (http). ExtremeLocation does not support web servers listening on ports other than these two ports.

Username

Set the user name valid for accessing the remote web server.

Password

Set the password for the above user name.

- Events** Select the events that will be pushed to the remote web server in real-time.
- **Presence** - All events of the type **Presence** will be included when events are pushed to the remote server.
 - **Category** - All events of the type **Category** will be included when events are pushed to the remote server.
 - **Location** - All events of the type **Location** will be included when events are pushed to the remote server.
 - **Crowding** - All events of the type **Crowding** will be included when events are pushed to the remote server.

- 3 Select **Save** to save the changes made to the **Subscriber Settings** parameters.

At any time, select the **Reset** button to revert the changes made to the subscriber settings parameters.

API Keys

Queries from your ExtremeLocation account to the ExtremeLocation server using APIs now require a Key - that uniquely identifies your account - be passed as a parameter in each API call.

Your ExtremeLocation account is allocated an unique key. For existing accounts, this key must be generated before you can continue to use the ExtremeLocation APIs to interact with the ExtremeLocation servers.

New ExtremeLocation accounts are created with unique API keys.

The API screen also displays the last five (5) expired APIs that were generated for your ExtremeLocation account. However, at any point of time, the latest API Key is the only valid key for querying the ExtremeLocation server. The other keys are considered expired and cannot be used. These expired keys are provided for reference.

To view and manage API Keys for your ExtremeLocation account:

- 1 Select **Settings > System Settings > API Keys**.

The **API Key Generation** window opens.

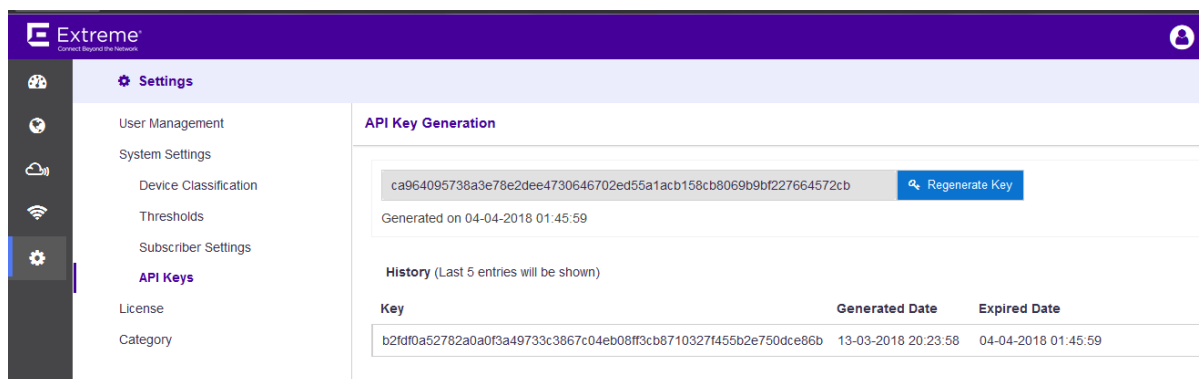


Figure 117: API Key Generation window

- 2 Select the **Regenerate Key** button to regenerate your API Key.

API Key Generation

67926a267e8d25ac468daef7e4c2fe10c8cf2ca888907b4cf497e5717cae37a
🔍 Regenerate Key

Generated on 04-04-2018 02:07:08

History (Last 5 entries will be shown)

Key	Generated Date	Expired Date
ca964095738a3e78e2dee4730646702ed55a1acb158cb8069b9bf227664572cb	04-04-2018 01:45:59	04-04-2018 02:07:08
b2fdf0a52782a0a0f3a49733c3867c04eb08ff3cb8710327f455b2e750dce86b	13-03-2018 20:23:58	04-04-2018 01:45:59

Figure 118: Regenerated Keys

You can regenerate your API key any number of times. However, only the last key is active for use with ExtremeLocation.

You must regenerate your API key when you feel your existing key has been compromised. Use the new API key to enhance security for your ExtremeLocation account and prevent unauthorized access to its data.

Your new API key immediately replaces your existing key. Your old key is immediately considered inactive and is added to the list of keys in the **History** area.

Add or Apply License to the Account

To add or apply license:

- 1 Select **Settings** from the main menu.
- 2 Select **License** from the sub menu.

The **License Details** pane opens.

License Details +

Total: 10

Used: 6

Expiry Date: 08-18-3113

License Key	No. of Device	Import Date	Expiry Date	Add/Extend
aa0aafcca8751a8efcd6d1f708e94e2d07f5b1844df5cfbb6635b08d	10	03-13-2018	08-18-3113	Add

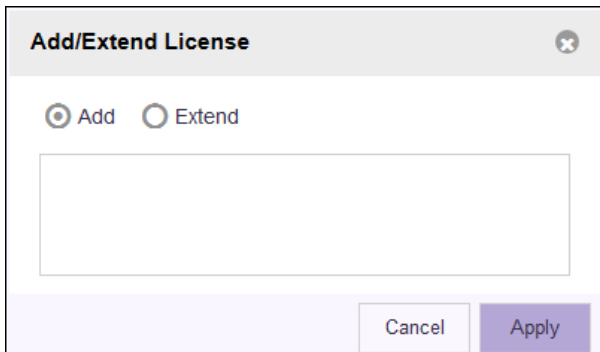
This dialog displays the following information:

- Total** Displays the total number of available licenses for this account. For a new account - without any licenses - this value is zero.
- Used** Displays the number of licenses in use out of those available as shown in the **Total** field. For a new account, this value is zero.

Expiry Date Displays the date on which the license expires. For accounts with multiple licenses, this date is the date on which the last license expires. For a new account this field displays **N/A**.

3  .

The **Add/Extend License** dialog appears. Use this dialog to add or to extend licenses for this ExtremeLocation account.



Complete the following information:

Add Select this option to add a new license to this account.

Extend Select this option to extend the validity of the combination of the current licenses and the new licenses that are being added in. The validity of the license is extended by the number of days requested when the license was generated.

Enter License Key Paste the license key in this space. Ensure that you do not inadvertently paste any non-printable characters in this space.

4 Select **Apply** to apply the license key.

If the license is valid for this account, the license is added to the list of licenses available for this account. If the license is an Extend license, then the validity date of the license extended by the number of days that is calculated by the ExtremeLocation system.

The table displays a list of all licenses (valid and expired) for this account.

License Key Displays the complete license key as provided by ExtremeLocation support.

No. of Devices Displays the number of device that can be used using this license.

Import Date Displays the date on which the license was added to this account.

Expiry Date Displays the date that the license will expire.

Add/Extend Displays the type of license.

If the license is valid, it is added to this table.

5 Optional: At any point, select the **Cancel** button to exit without adding licenses.

Configure a Category

Use this procedure to configure categories globally for settings such as threshold and crowding, which trigger real-time crowding events. Global visitor to associate ratios settings can be overridden at the site level.



Note

Site level categories are configured by navigating to **Sites > Floors > Access Points**. See [Add an Access Point](#) on page 71 for more details.

To configure a category globally:

- 1 Select **Settings > Category**

The **Category Configuration** window opens.

The screenshot shows the 'Category Configuration' page in the Extreme Location settings. The left sidebar contains navigation options: Settings, User Management, System Settings, Device Classification, Thresholds, Subscriber Settings, API Keys, License, and Category. The main content area is titled 'Category Configuration' and includes a '+ Add' button. Under 'Crowding', there are settings for 'Minimum Visitor Count' (set to 5) and 'Event Time Out' (set to 30 Minutes), with a 'Save' button. Below this is a 'Category Details' section with a search box. A table lists existing categories:

Category Name	Visitors per Associate	Actions
execs	10	
common	10	
lobby	10	
workstns	10	

Figure 119: Category Configuration

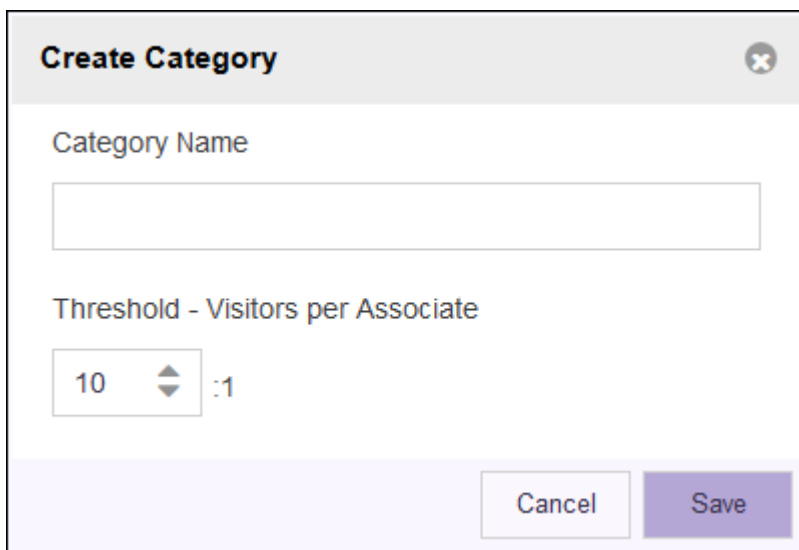
- 2 To create a new category, select  .



Note

Alternatively, select an existing category from the list and select the pencil icon to edit the category. You can also use the **Category Details** search box to find an existing category to edit.

The **Create Category** dialog opens.



Create Category ✕

Category Name

Threshold - Visitors per Associate

:1

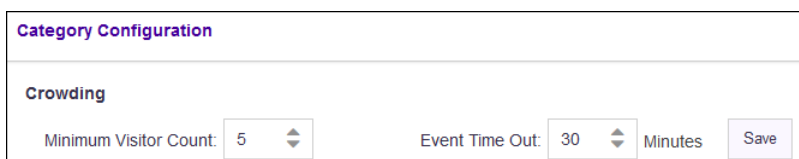
Figure 120: Create Category Dialog

- 3 Edit the fields and select **Save**.

Category Name	Enter a unique name for the category.
Threshold - Visitors per Associate	Enter the number of visitors to associate ratio (per zone) that will trigger a real-time crowding event for just this category. Default: 10 visitors.

The new category is created and displays in the **Category Name** list.

- 4 Under **Crowding**, edit the fields and select **Save**.



Category Configuration

Crowding

Minimum Visitor Count: Event Time Out: Minutes

Figure 121: Crowding Pane

Minimum Visitor Count Set the minimum number of visitors to associate per zone that will trigger a **global** real-time crowding event.



Note

If there are no associates in a category, an event is triggered when the Minimum Visitor Count is exceeded. If there are associates in the category, then the Threshold is used to trigger the events.

Event Time Out Set the number of minutes that will transpire between events being triggered for that region. **Default:** 30 minutes

The **Crowding** configuration is applied globally.

A Configure ExtremeWireless Access Points

Configuring ExtremeWireless WiNG Access Points
Configuring ExtremeWireless Access Points

ExtremeWireless WiNG Access Points

The following ExtremeWireless WiNG access points are supported by ExtremeLocation.

- AP7522
- AP7532
- AP7562
- AP8432
- AP8533

For more information on using ExtremeWireless WiNG access points at your ExtremeLocation site, see [Configuring ExtremeWireless WiNG Access Points](#) on page 114.

ExtremeWireless Access Points

The following ExtremeWireless access points are supported by ExtremeLocation.

- ExtremeWireless AP3912
- ExtremeWireless AP3915
- ExtremeWireless AP3916
- ExtremeWireless AP3917
- ExtremeWireless AP3935
- ExtremeWireless AP3965

For more information on using ExtremeWireless access points at your ExtremeLocation site, see [Configuring ExtremeWireless Access Points](#) on page 148

Configuring ExtremeWireless WiNG Access Points

An ExtremeWireless WiNG access point can be used with ExtremeLocation in two (2) modes. In the "Radio Share" mode, the access point acts as a sensor when off channel scan is done.

In the "Dedicated Sensor" mode, the access point radios are configured to be dedicated sensors. The radios do not support providing services to wireless clients and are dedicated to the purpose of gathering information about wireless clients and their activities.

To Deploy ExtremeWireless WiNG access points in Radio Share Mode

The following configurations must be performed to deploy ExtremeWireless Access Points in the Radio Share mode.

- 1 Enable the access point radios to work in the radio share mode. See [Radio Share Configuration](#) on page 115.
- 2 Configure the RF Domain Policy to point to the ExtremeLocation server. See [RF Domain Configuration](#) on page 123

To Deploy ExtremeWireless WiNG access points in Dedicated Sensor Mode

The following configurations must be performed to deploy ExtremeWireless Access Points in the Dedicated Sensor mode.

- 1 Enable the access point radios to become dedicated sensors. See [Standalone Sensor Configuration](#) on page 119.
- 2 Configure the RF Domain Policy to point to the ExtremeLocation server. See [RF Domain Configuration](#) on page 123
- 3 Configure the Sensor Policy to select the channels for scanning and other parameters. See [Sensor Policy Configuration](#) on page 127.
- 4 Link the Sensor Policy to the RF Domain for the configuration to be assigned to all access points in that domain. See [RF Domain - Sensor Policy Configuration](#) on page 129

Basic Access Point Configuration

If you have existing ExtremeWireless WiNG access points, you can either configure them to share their radios or configure them as dedicated sensors.

To deploy ExtremeWireless WiNG access points with shared radio usage, see [Radio Share Configuration](#) on page 115.

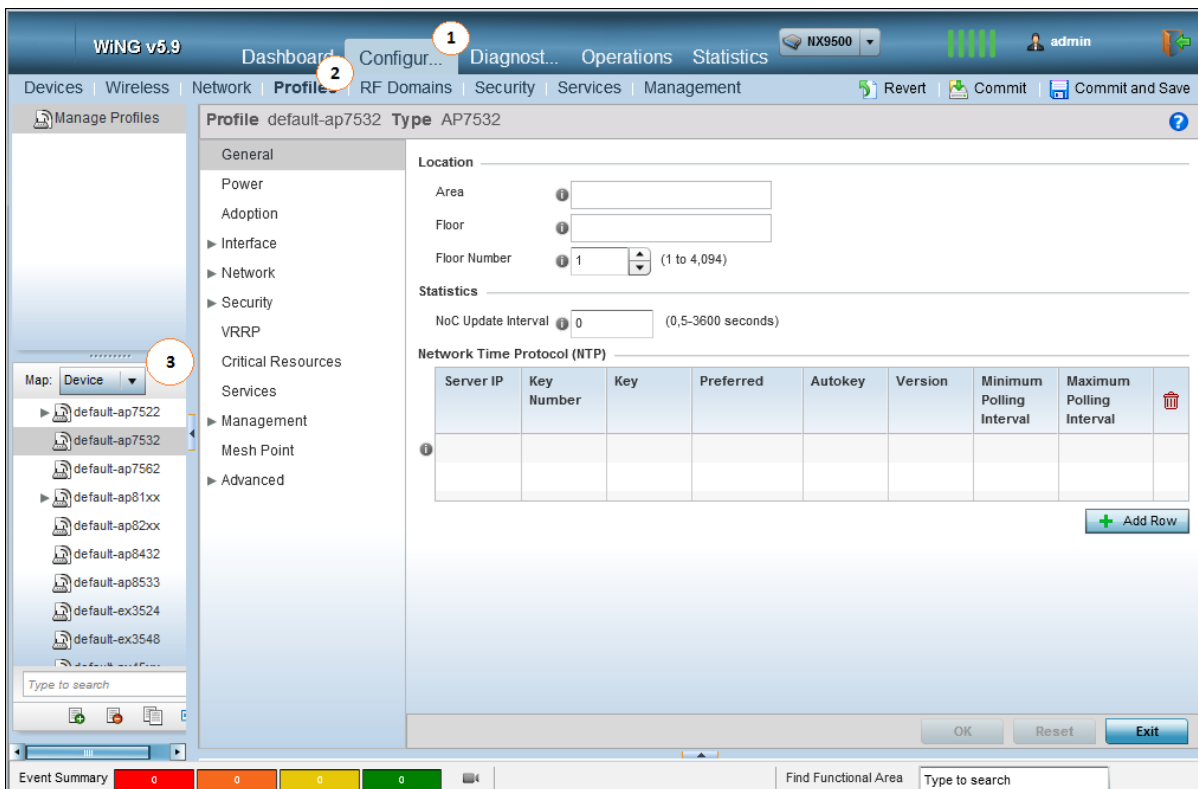
To deploy ExtremeWireless WiNG access points as standalone sensors, see [Standalone Sensor Configuration](#) on page 119.

ExtremeWireless WiNG access points can also be deployed in an environment where ExtremeLocation co-exists with AirDefense Service Platform. In such deployments, (where the WiNG access point acts as a dedicated sensor or in the radio share mode) the access point's configuration information is pushed to it from AirDefense Service Platform and not from any WiNG controller the access point is adopted to. To deploy ExtremeWireless WiNG access points in a mixed ExtremeLocation and ADSP deployment, see [Mixed ExtremeLocation and ADSP Installation](#) on page 121.

Radio Share Configuration

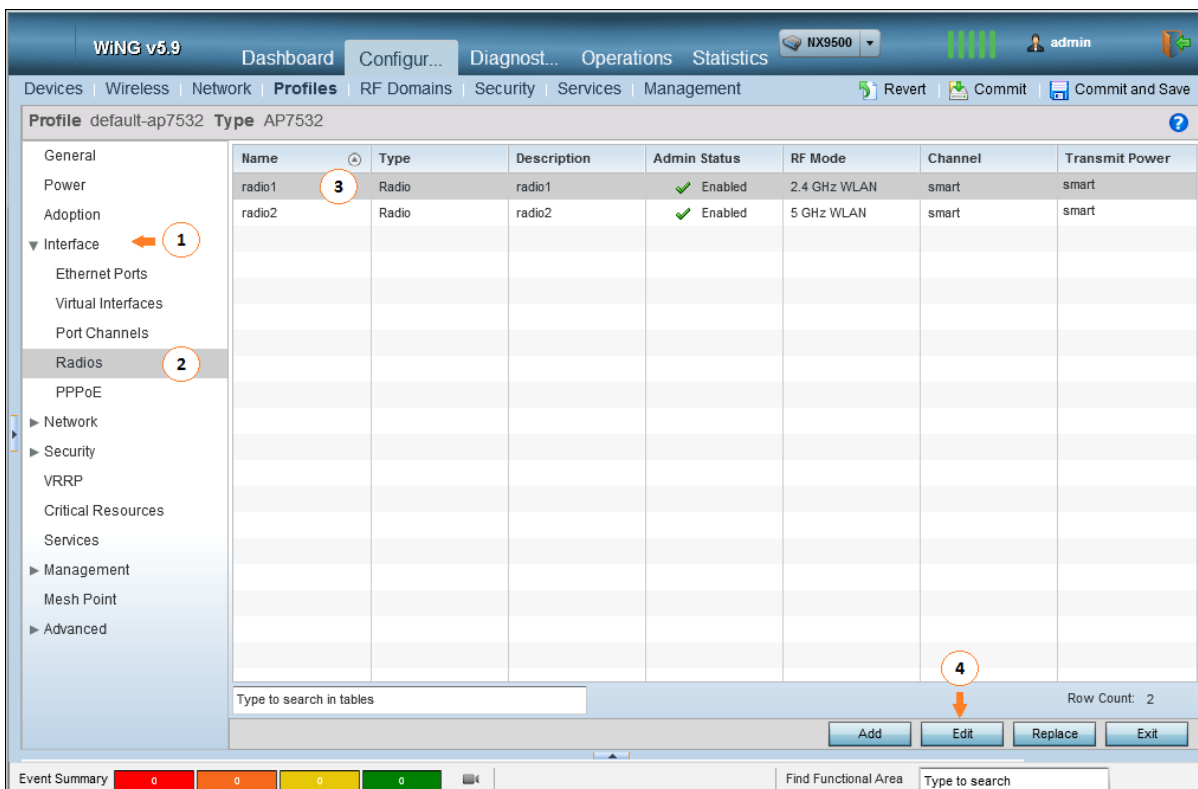
When set to the "Radio Share" mode, the access point radio acts as a sensor when off channel scan is done. To configure the access point radio in the "Radio Share" mode:

- 1 Select **Configuration > Profiles > <your AP's profile>**



Your access point type's profile loads.

- 2 Select **Interface > Radios > <the radio to configure>** and then select the **Edit** button.



The selected radio's configuration window loads.

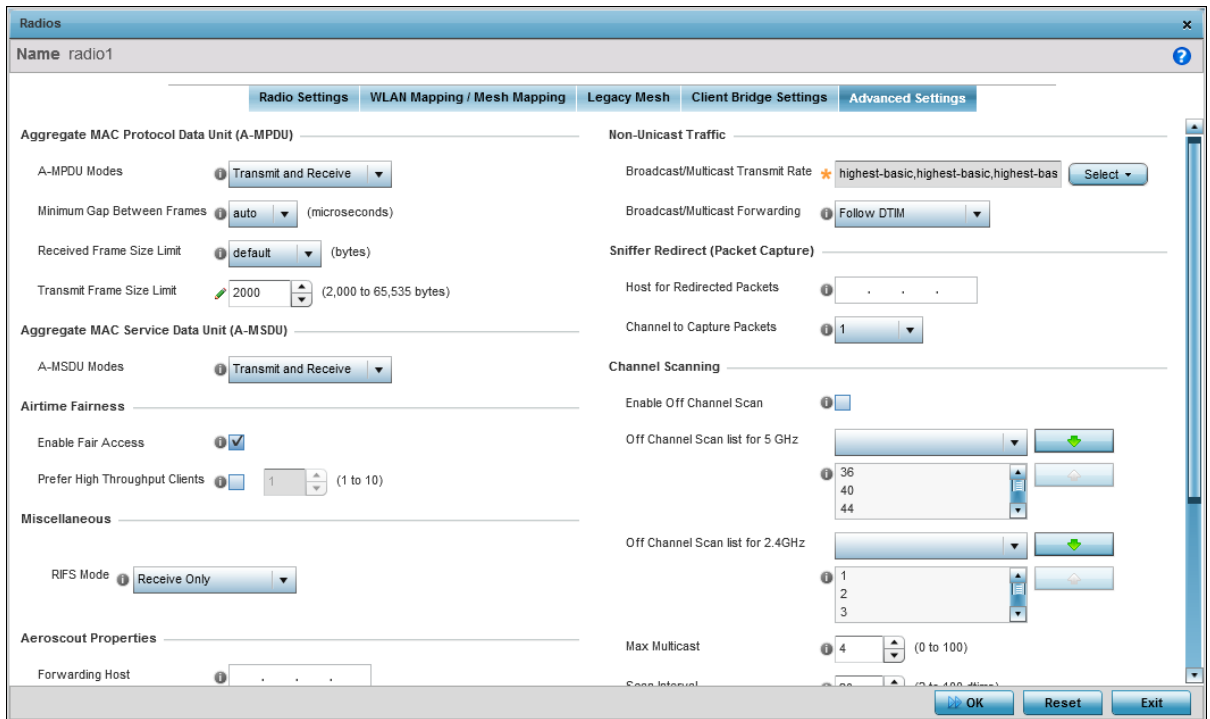
- 3 Select **Radio Settings** if not selected.
- 4 From the **Radio Share** > **Feed WLAN Packets to Sensor** control, select the **Promiscuous** option.



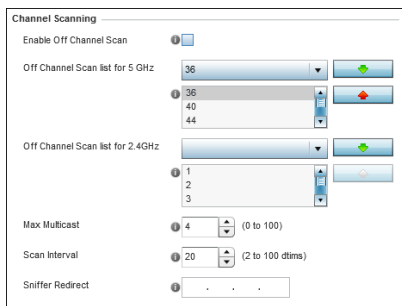
Note

Radio Share mode has to be enabled individually for each radio band (2.4 GHz and 5.0 GHz.)

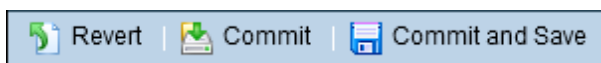
- By default, a radio in the Radio Share mode acts as sensor during off channel scans. To enable off-channel scan, select the **Advanced Settings** tab.



- Optional: From the **Channel Scanning** control, select the **Enable Off Channel Scan** option.



- Review the other parameters for this configuration and modify them if required.
- Select the **OK** button and then select the **Exit** button to save changes made to the radio configuration.
- From the top right corner of the screen select the **Commit and Save** button to commit and save changes to the profile.



Standalone Sensor Configuration

When set to the "Sensor" mode, the access point radio is dedicated to the task of gathering locationing information for the area in which it is deployed. While in the Sensor mode, the access point does not transmit or receive data traffic.

Note

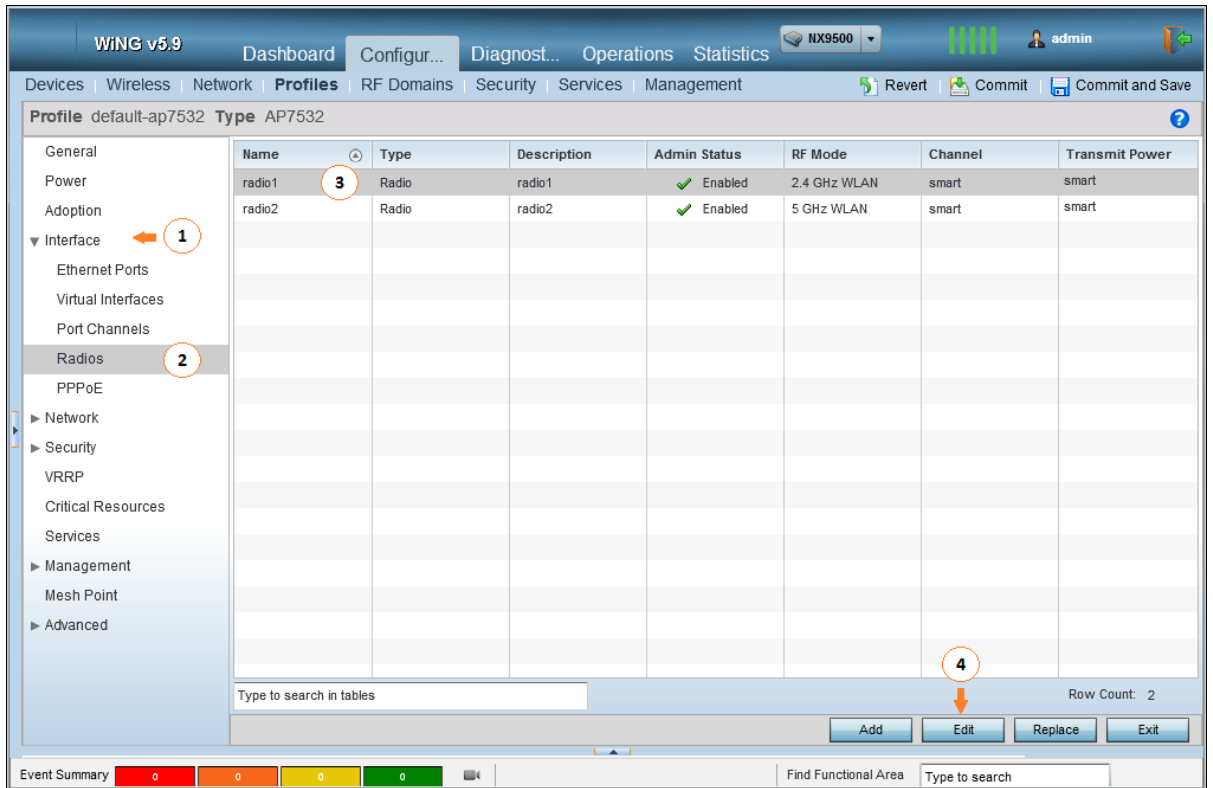
A tri-radio access point such as the AP8533 does not need further configuration changes as one of the three radios is configured as a full-time dedicated sensor radio.

Name	Type	Description	Admin Status	RF Mode	Channel	Transmit Power
radio1	Radio	radio1	Enabled	2.4 GHz WLAN	smart	smart
radio2	Radio	radio2	Enabled	5 GHz WLAN	smart	smart
radio3	Radio	radio3	Enabled	Sensor	smart	smart

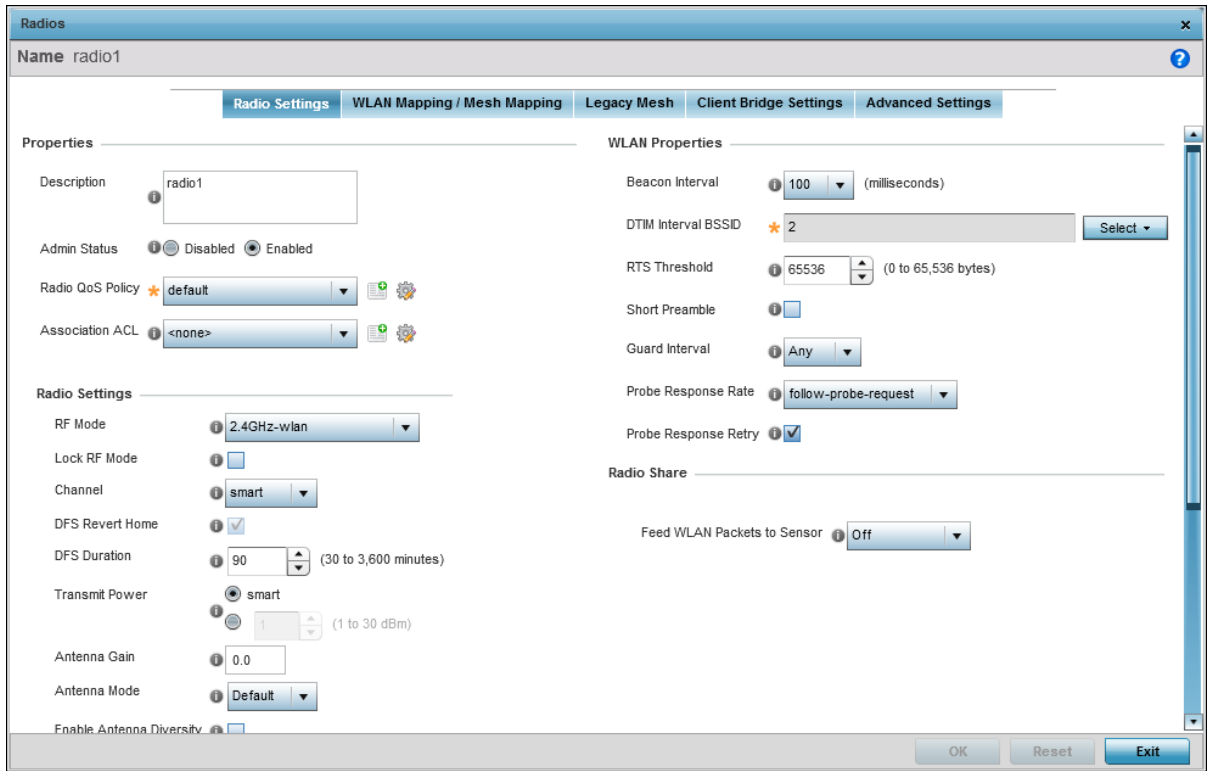
- 1 Select **Configuration > Profiles > <your AP's profile>**

Your access point type's profile loads.

- 2 Select **Interface > Radios > <the radio to configure>** and then select the **Edit** button.

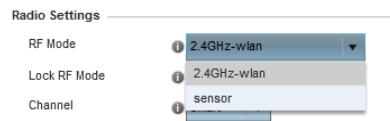


The selected radio's configuration window loads.



- 3 Select **Radio Settings** if not selected.

- 4 From the **Radio Settings > RF Mode** control, select the `sensor` option.



Note

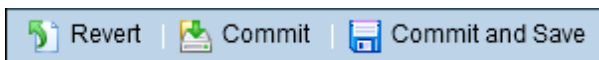
On certain APs such as AP7522, AP7532, and AP7562 RF Mode has to be set to `sensor` on both the radio band (2.4 GHz and 5.0 GHz.) for the access point to work as a dedicated sensor.



Note

On AP8432, only the first radio can be set as a sensor.

- 5 Select the **OK** button and then select the **Exit** button to save changes made to the radio configuration.
- 6 From the top right corner of the screen select the **Commit and Save** button to commit and save changes to the profile.



Mixed ExtremeLocation and ADSP Installation

For deployments where ExtremeLocation is to be installed alongside an existing AirDefense Service Platform (ADSP) installation, additional configurations must be performed for those access points that are intended to act as ADSP Sensors.

The configuration for the access points that act as ADSP sensors is pushed directly from ADSP. Configuration changes received from the controller to which the access point is adopted to is overridden by the configuration changes pushed by ADSP.

ADSP Server Configuration on WING Controllers

The configuration settings required to enable access points to send sensor data to a remote ADSP server is set in the WiNG controller's RF Domain Policy. Use the **Sensor** page in the RF Domain configuration on the Wireless Controller.

To know more about configuring the RF Domain, see the following documents:

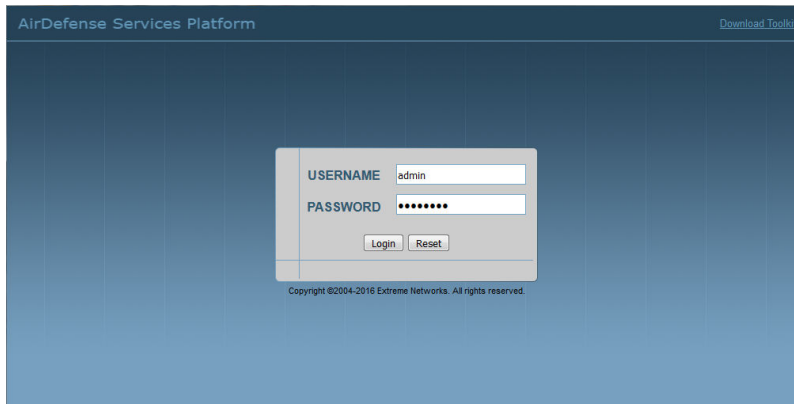
- The latest ExtremeWireless WiNG Wireless Controller and Service Platform System Reference Guide located at <http://documentation.extremenetworks.com>.
- The latest AirDefense Service Platform User Guide located at <http://documentation.extremenetworks.com>.

Configuring ADSP Sensor Operation

These configuration steps are performed on your ADSP server.

Use the **Sensor Operation** screen to configure the settings that ADSP sends to the sensors registered with it. Some of the parameters that can be configured are Scan Settings, Scan Modes, Scan Weight, and other parameters.

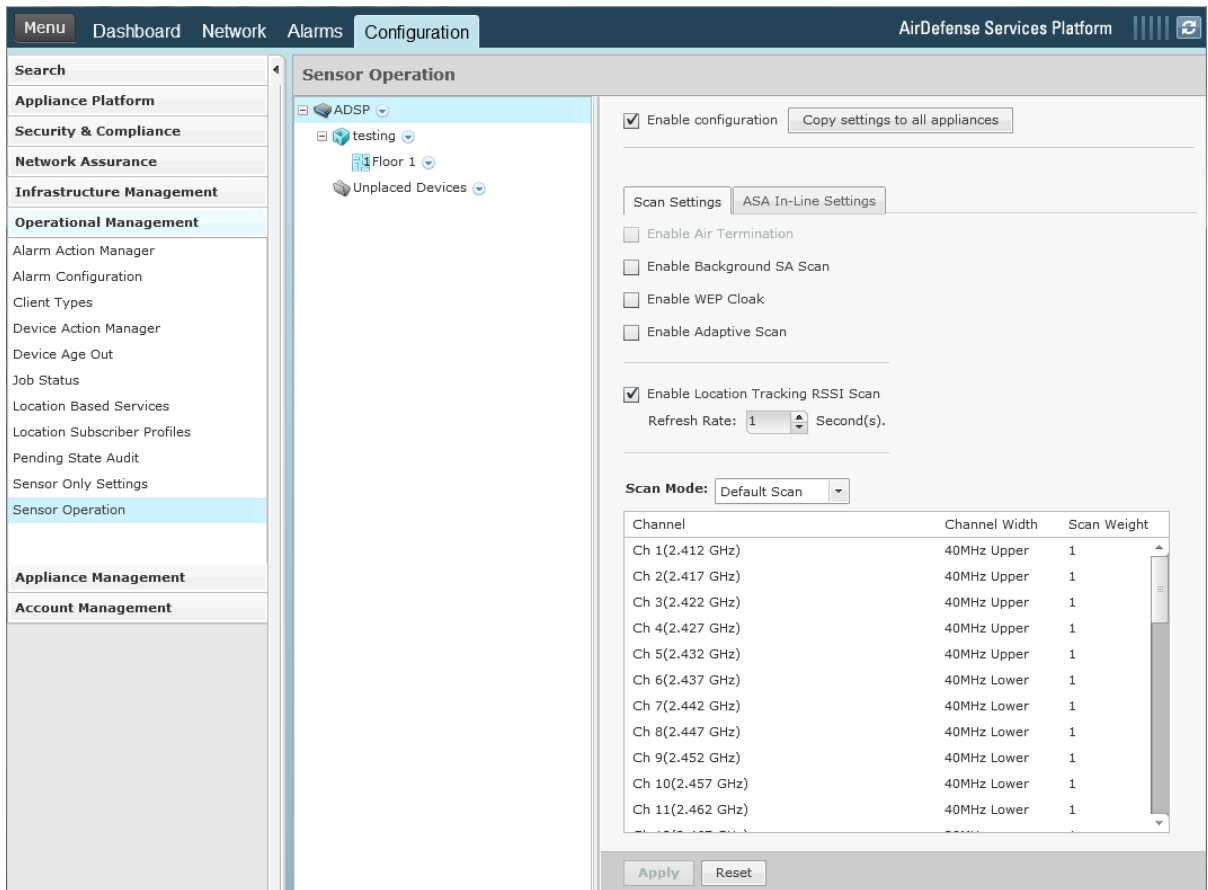
- 1 Login in to the AirDefense Server from its login screen.



Provide a valid login user name its password to access the ADSP user interface.

- 2 Select the **Configuration** menu from the toolbar on the top of the screen.
- 3 Select the **Operational Management** item from the menu on the left of the screen to expand it.
- 4 Select the **Sensor Operation** item from the **Operational Management** sub menu.

The **Sensor Operation** screen displays.



- 5 From the **Sensor Operation** screen, select the **ADSP** item if it is not selected by default.
The **Sensor Operation** screen changes to display the configuration parameters for the ADSP system.

- 6 Select one of the following **Scan Mode** options.

Default Scan	Select this option to use the default values. When selected, all the 2.4 GHz and 5.0 GHz channels are scanned.
Custom Scan	Select this option to get fine grained control on the channels to be scanned in the 2.4 GHz and 5.0 GHz spectrum.
Channel Lock	Select this option to lock the channel scan to a single channel in either the 2.4 GHz or 5.0 GHz spectrum.

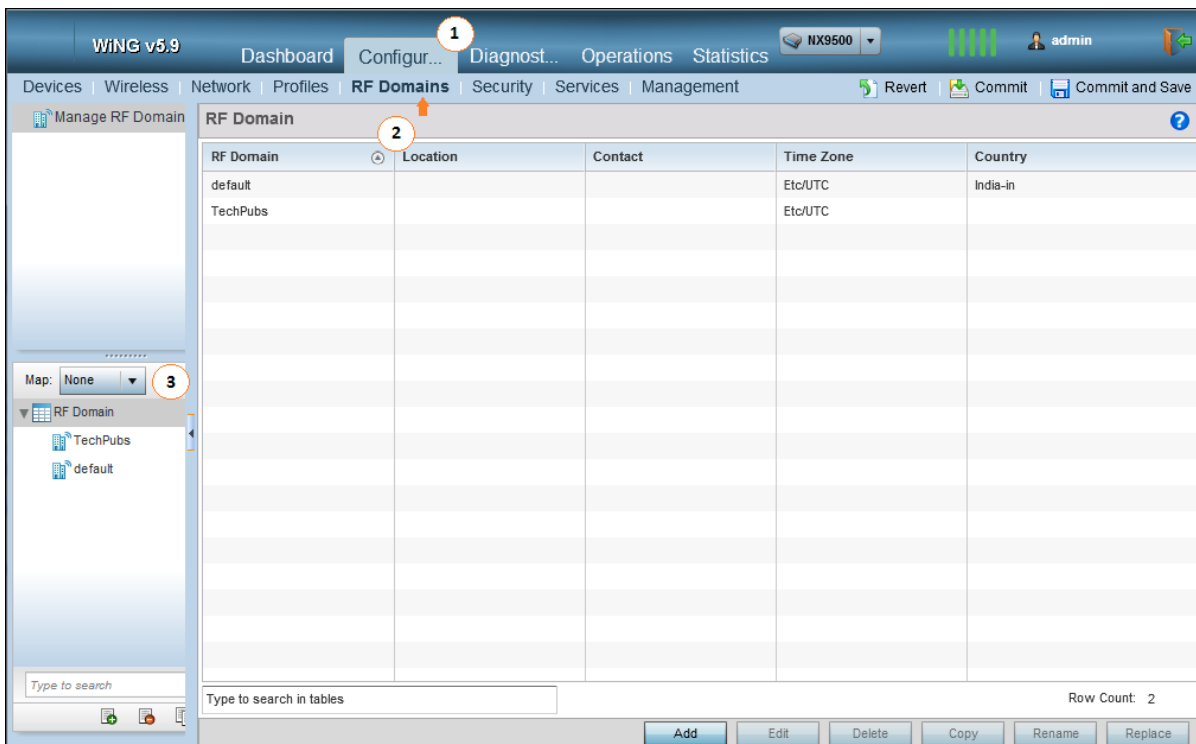
- 7 Select **Save** to save changes made to the ADSP Sensor Operations parameters.

RF Domain Configuration

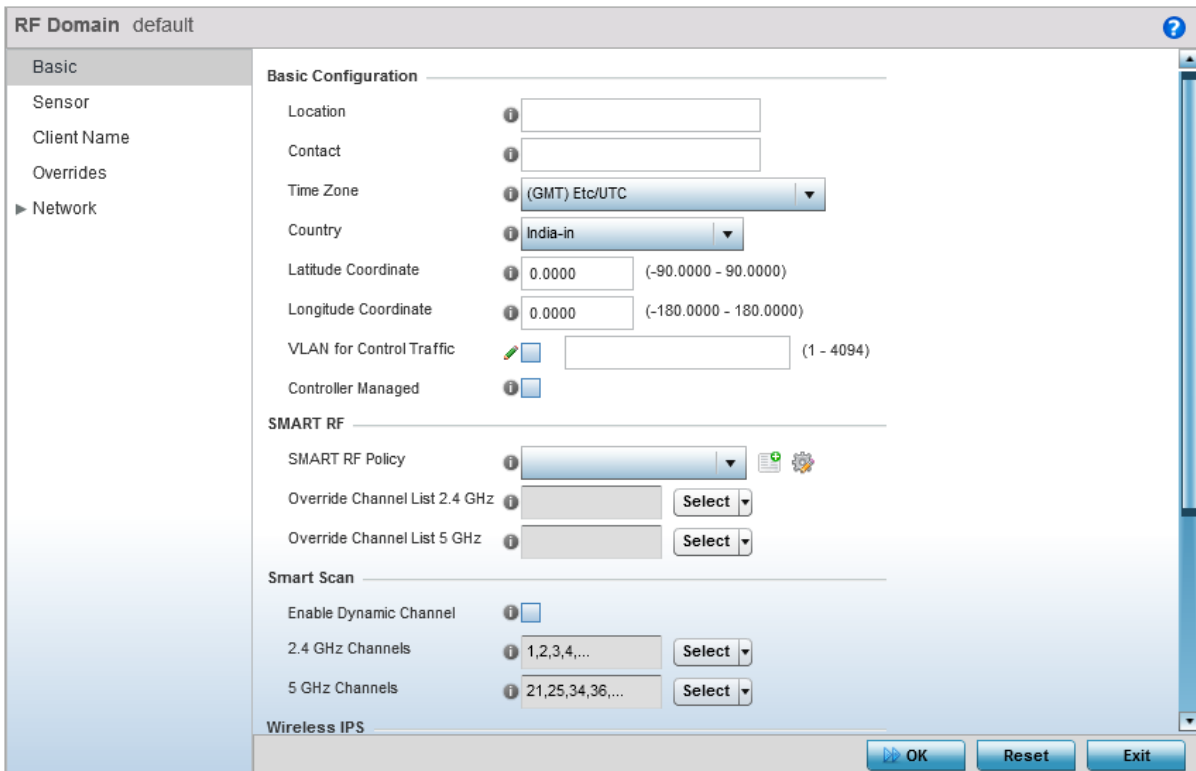
For ExtremeLocation to work, the RF Domain policy's sensor configuration must point to an existing Sensor policy or to a newly created Sensor Policy.

To set the RF Domain's Sensor configuration:

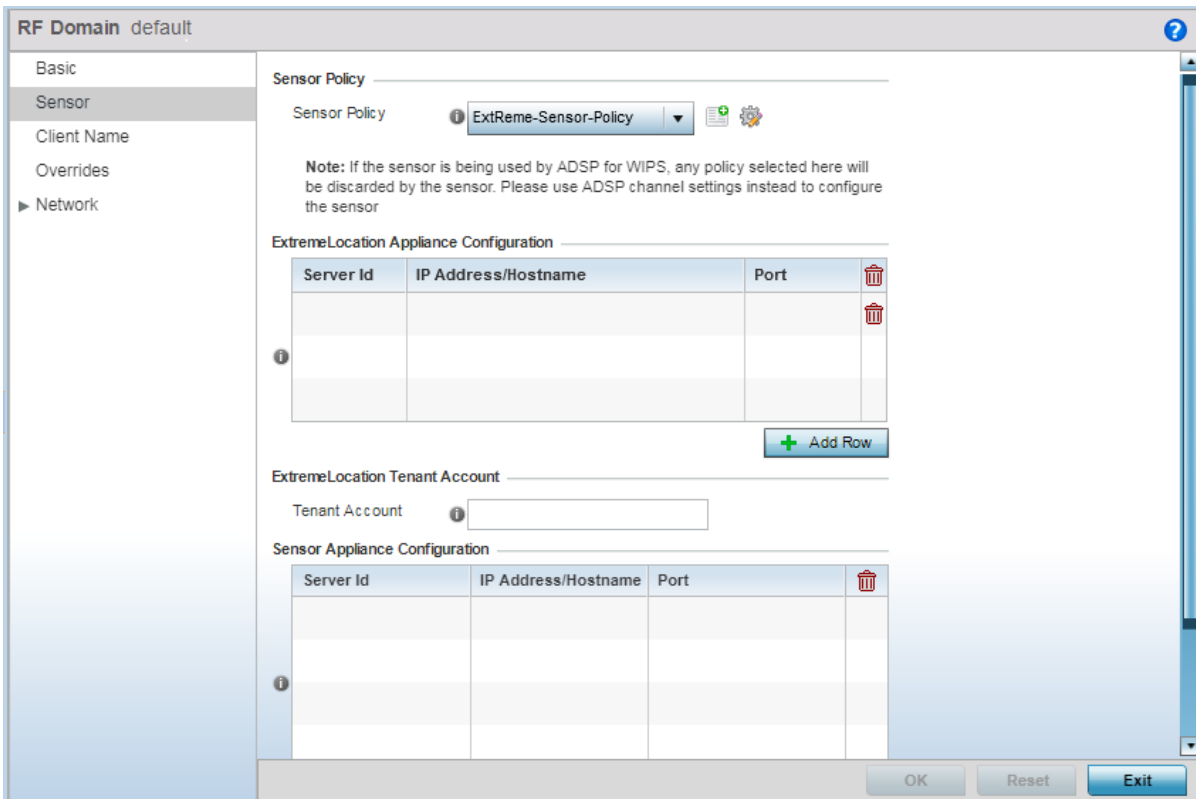
- 1 Select **Configuration > RF Domains > <The correct RF Domain>**.



The RF Domain screen displays.



- 2 Select **Sensor** from the menu on the left. The Sensor screen displays.



- 3 Select **+ Add Row** from within the **Location Tracking System** list.

This adds a new row in the **Location Tracking System** table. Only one row can be configured for this table.

Provide the following information:

Server Id Use the spinner control to assign a numeric ID for the ExtremeLocation server. The default ID value is 1.

IP Address/ Hostname Provide the host name of the ExtremeLocation server. Host name cannot exceed 64 characters or contain an underscore.

The URL to be configured is:

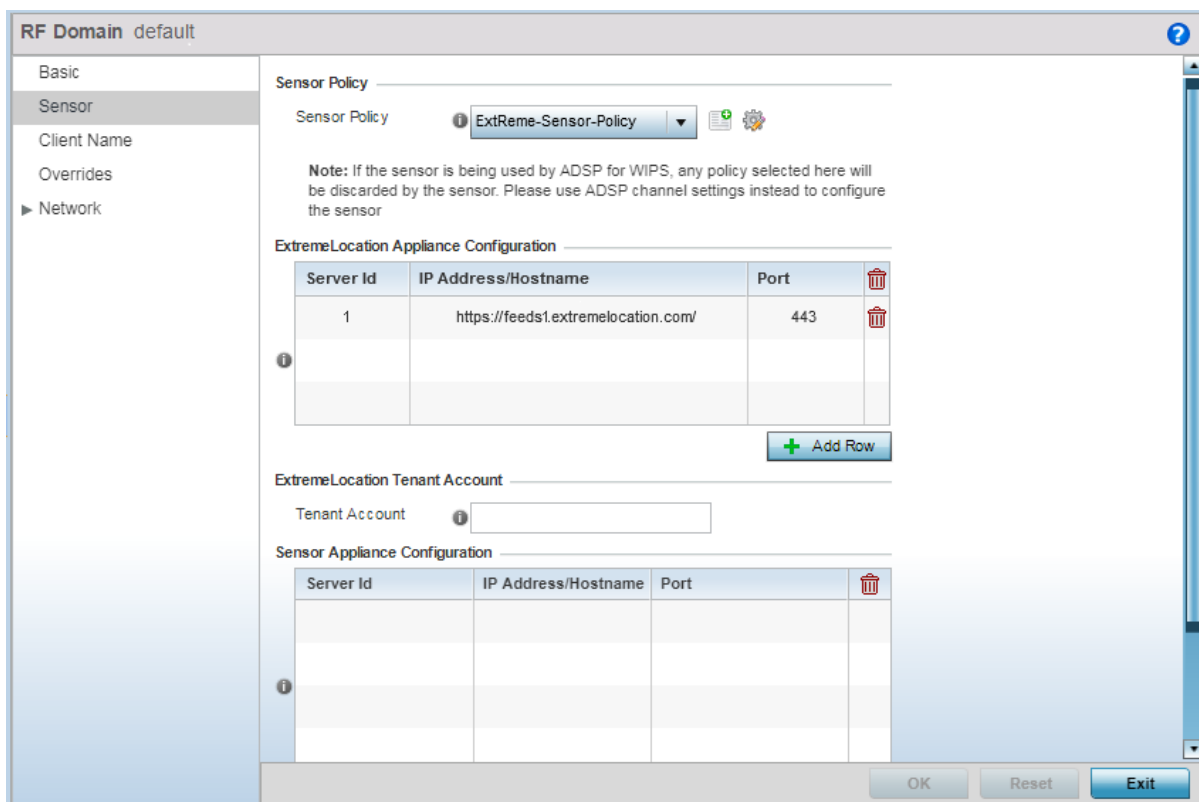
- <http://feeds1.extremelocation.com>




Note

This field must not contain the IP address of the above server. Due to load balancing, the IP address might change periodically.

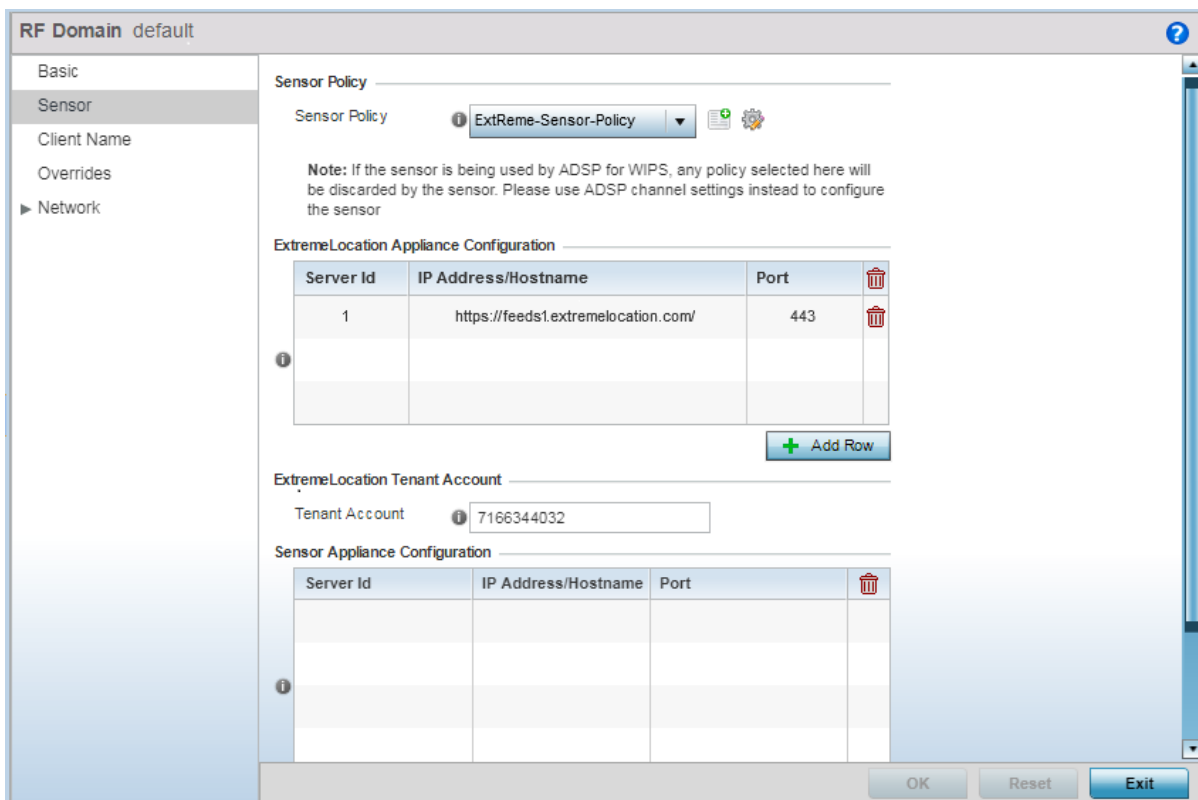
Port Use the spinner control to specify the port of the ExtremeLocation server. The default port is 443.



- 4 In ExtremeLocation locate your tenant account number. This number is located next to the  at the top right of your screen.



- Specify your ExtremeLocation Tenant Account Number in the **Tenant Account** field .

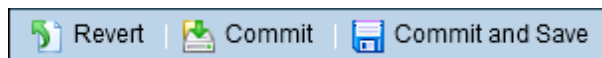


- Select **OK** to save the changes to the RF Domain Sensor configuration, or select **Reset** to revert to the last saved configuration.

- 7 Select **Basic** from the **RF Domain** menu on the left.
The RF Domain basic configuration screen appears.

Figure 122: RF Domain Basic Configuration Screen

- 8 Select the **Country** drop-down to expand it and select the country of operation for this access point.
- 9 Select **OK** to save the changes to the RF Domain Basic configuration, or select **Reset** to revert to the last saved configuration.
- 10 Select **Exit** to exit the RF Domain configuration screen.
- 11 From the top right corner of the screen select the **Commit and Save** button to commit and save changes to the RF Domain.



Sensor Policy Configuration

The access point radio can function as a sensor and upload information to a dedicated ExtremeLocation server (external to the access point). When an access point radio functions as a sensor, it is, in the sensor mode, able to scan across all legal channels within the 2.4 and 5.0 GHz bands. The access point works in conjunction with the ExtremeLocation server to provide locationing service.

- 1 Select **Configuration > Wireless > Sensor Policy** from the access point user interface.
The sensor policy screen appears.

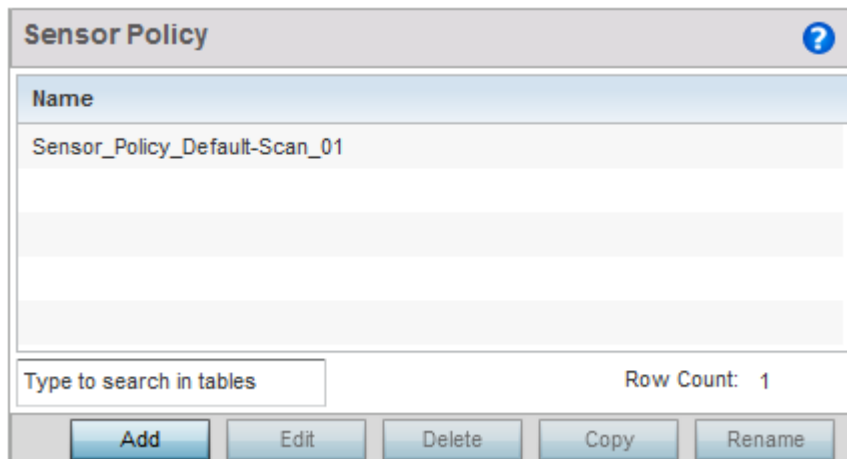


Figure 123: Wireless Sensor Policy Screen

- 2 Select **Add** to define a new sensor policy.
The following screen appears.

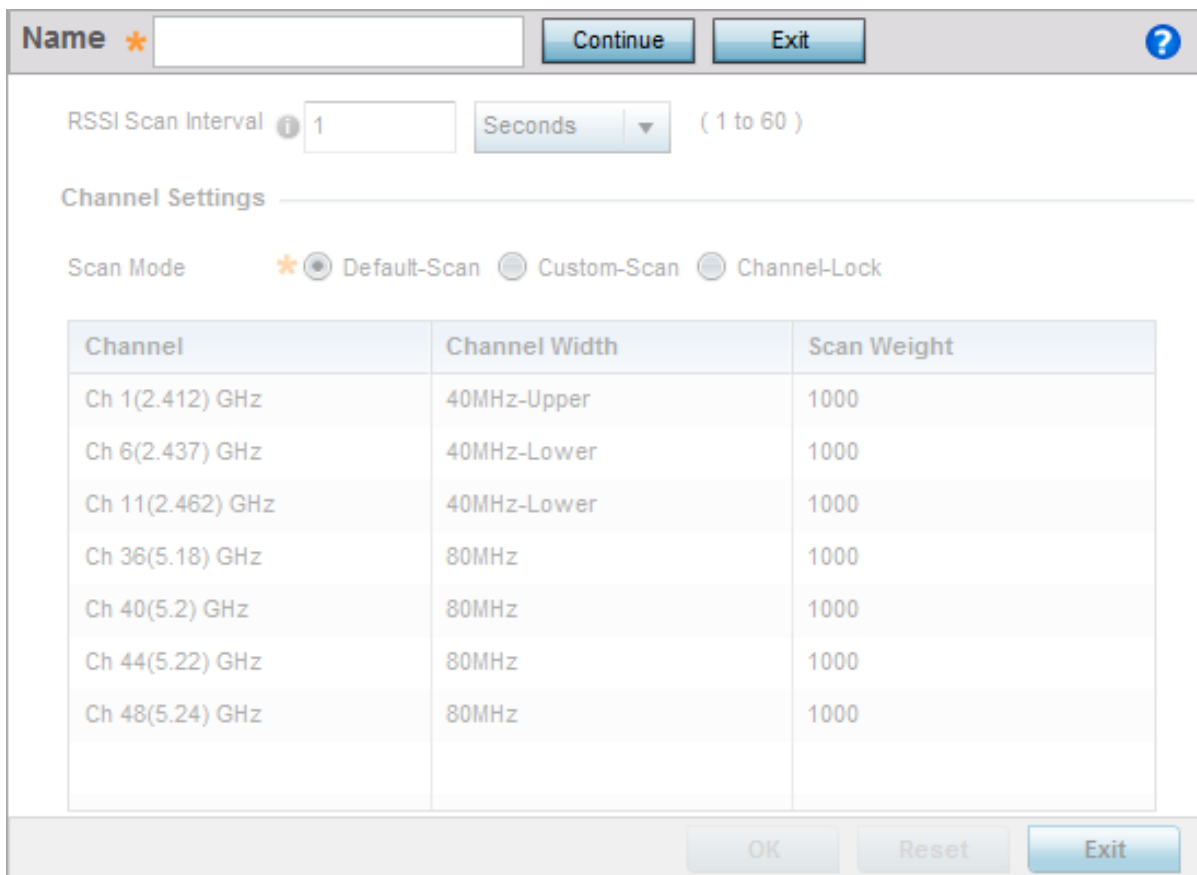


Figure 124: Add new Sensor Policy Screen

- 3 Provide a name in the **Name** field.
Sensor policy name cannot exceed 32 characters and cannot contain space.
- 4 Select **Continue** to create the Sensor policy.
- 5 Select **Exit** to exit this screen without creating a new sensor policy.
The Sensor Policy addition screen displays with the **Scan Mode** set to `Default-Scan`. The user configurable parameters on this screen differ with the selected **Scan Mode**.
- 6 Set the **RSSI Scan Interval** value in the range of 1 to 60 seconds. The default value is set to 10 seconds.

It is recommended that the **RSSI Scan Interval** be set to these following values depending on your deployment requirements.

- For Presence Detection - Set this value to 60 seconds or 1 minute
- For Zone Tracking - Set this value to 10 seconds
- For Positioning & Sensor Calibration - Set this value to 1 second

For dedicated sensors, set the **Channel Dwell Times** to the following (recommended) values:

- For Presence Detection - Set this value to 60 seconds or 1 minute
- For Zone Tracking - Set this value to 250 milliseconds

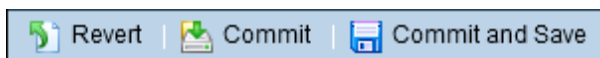
- 7 Select the **Scan Mode** setting appropriate to your requirement.

Note



Scan Mode should be set to determine the channel list for dedicated sensors. It is recommended that the Channel List should be limited to the operating channels of the deployment. For the 5.0GHz band, it is recommended that the DFS channels not be included in Channel Scan list. Client devices are prohibited from actively probing on these DFS channels.

- 8 Select **OK** to save the changes to the Sensor Policy configuration, or select **Reset** to revert to the last saved configuration.
- 9 From the top right corner of the screen select the **Commit and Save** button to commit and save changes to the Sensor Policy.

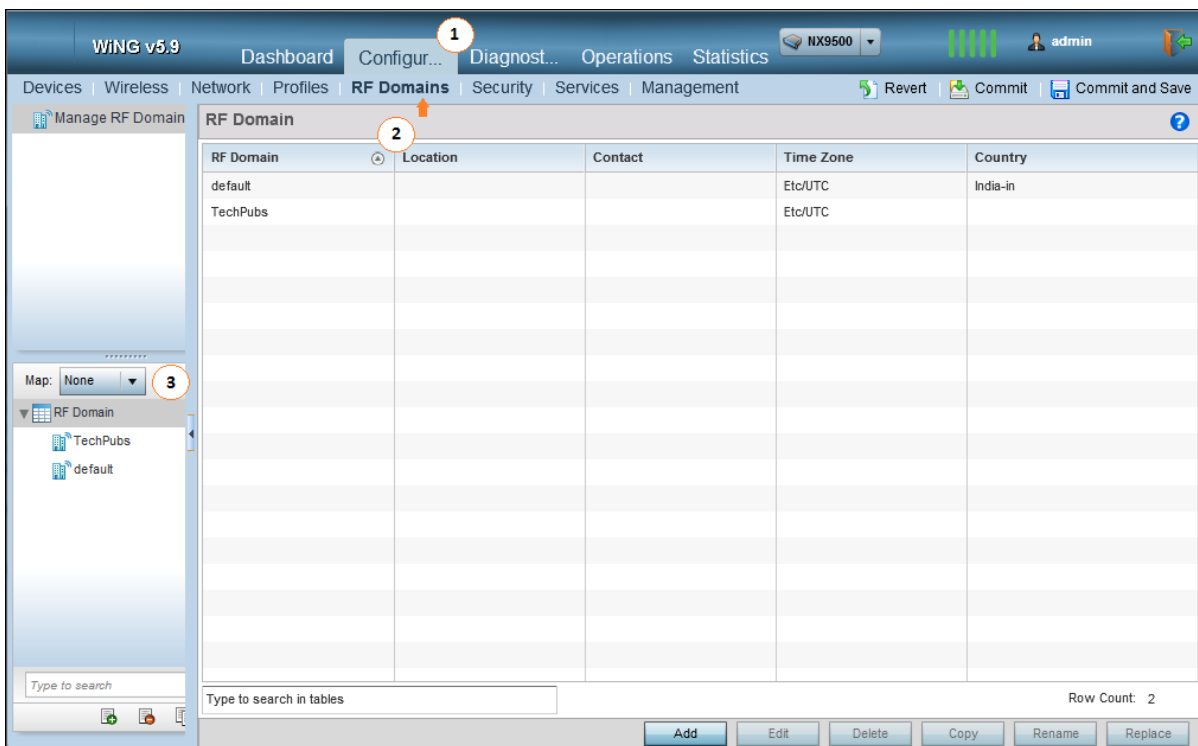


RF Domain - Sensor Policy Configuration

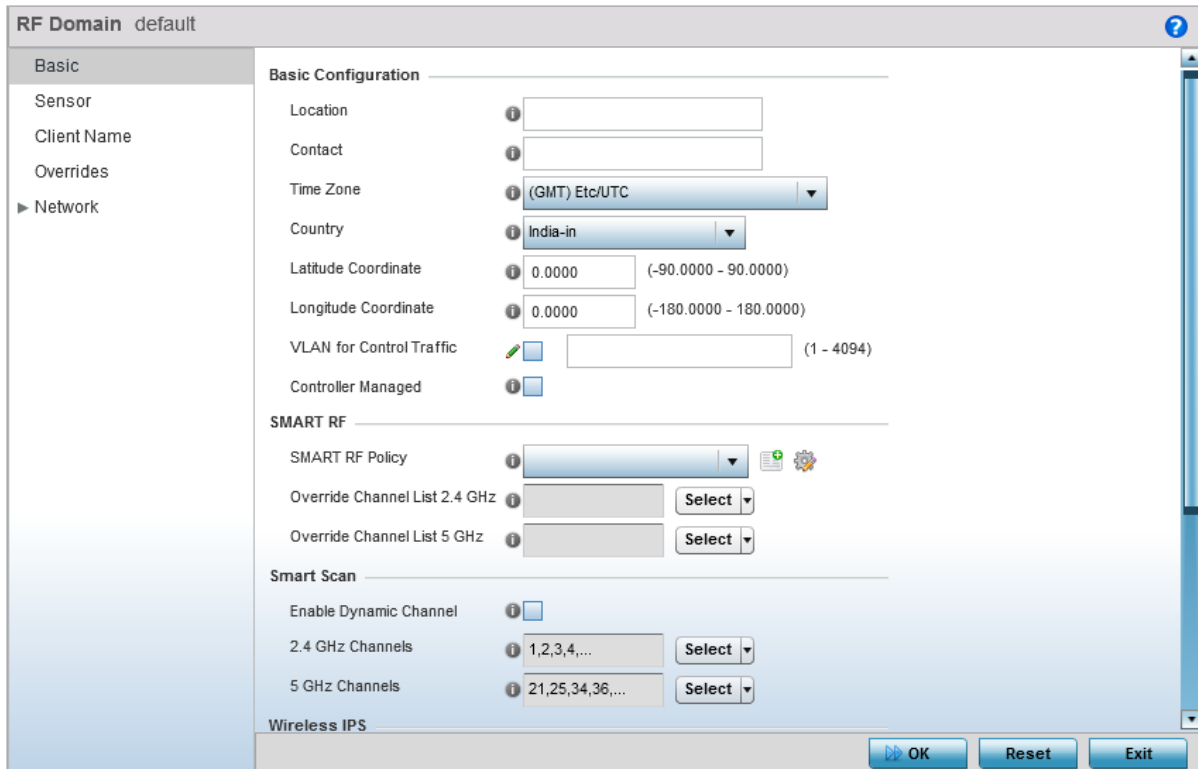
For ExtremeLocation to work, the RF Domain policy must have a Sensor Policy applied to it. See [Sensor Policy Configuration](#) on page 127 for more information on creating a Sensor policy.

To set the RF Domain's Sensor Policy configuration:

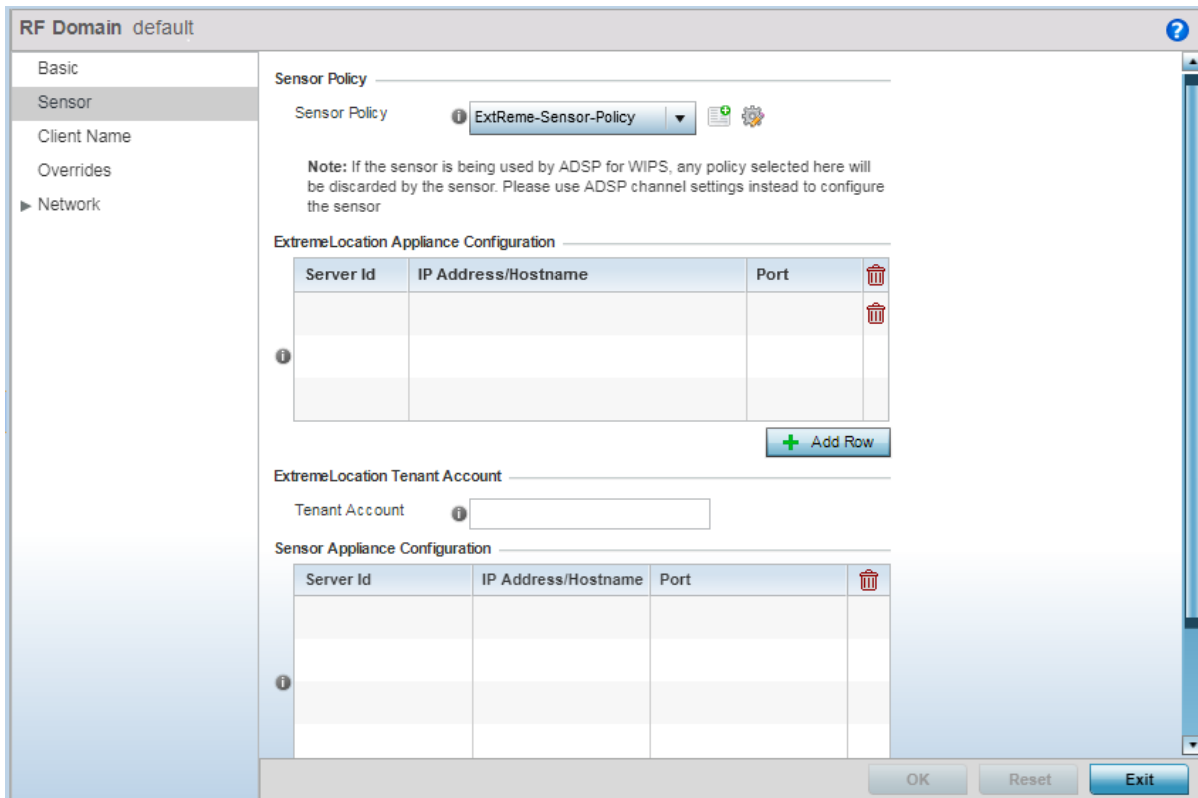
- 1 Select **Configuration > RF Domains > <The correct RF Domain>**.



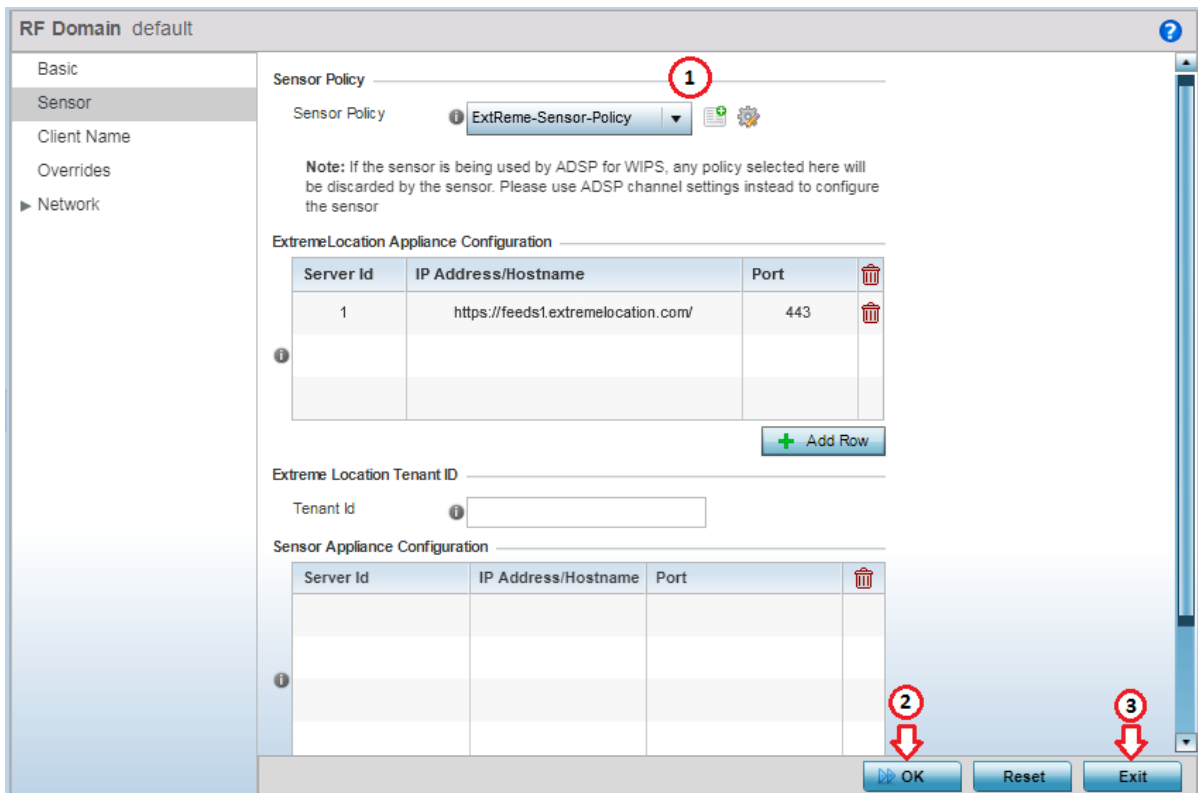
The RF Domain screen displays.



- 2 Select **Sensor** from the menu on the left. The Sensor screen displays.



- 3 From the **Sensor Policy** field, select the appropriate sensor policy.



- 4 Select **OK** to save the changes to the RF Domain Sensor configuration, or select **Reset** to revert to the last saved configuration.
- 5 Select **Exit** to exit the RF Domain configuration screen.
- 6 From the top right corner of the screen select the **Commit and Save** button to commit and save changes to the RF Domain.



Extreme Location and WiNG Integration

WiNG ExtremeLocation Integration

With this release of ExtremeLocation, you can seamlessly integrate WiNG with ExtremeLocation. Once integrated, you can view all WiNG sites and WiNG adopted devices in real time from within the ExtremeLocation user interface. Changes made to a site or site settings, geo-location information for a site is immediately propagated to ExtremeLocation. For adopted access points, changes to the radio mode and hostname will be reflected in ExtremeLocation.

This enables WiNG customers, who want to use ExtremeLocation to provide enhanced locationing services, an easy pathway to synchronize their WiNG site hierarchy directly into ExtremeLocation without any manual intervention. Here ExtremeLocation acts as a down-stream location service to WiNG. Any changes made to WiNG is automatically propagated to ExtremeLocation, however, changes made to ExtremeLocation is not updated back to WiNG.

Once the WiNG site hierarchy is synchronized with ExtremeLocation, you can configure ExtremeLocation as the location service provider for all the sites (RF Domains) managed by WiNG.

The latest WiNG software version provides specific CLI only commands that enable you to quickly integrate WiNG and ExtremeLocation. On executing these commands on your WiNG controller RF Domain context, WiNG site hierarchy is synchronized with ExtremeLocation.

ExtremeLocation Tenant Account Number Linking in WiNG

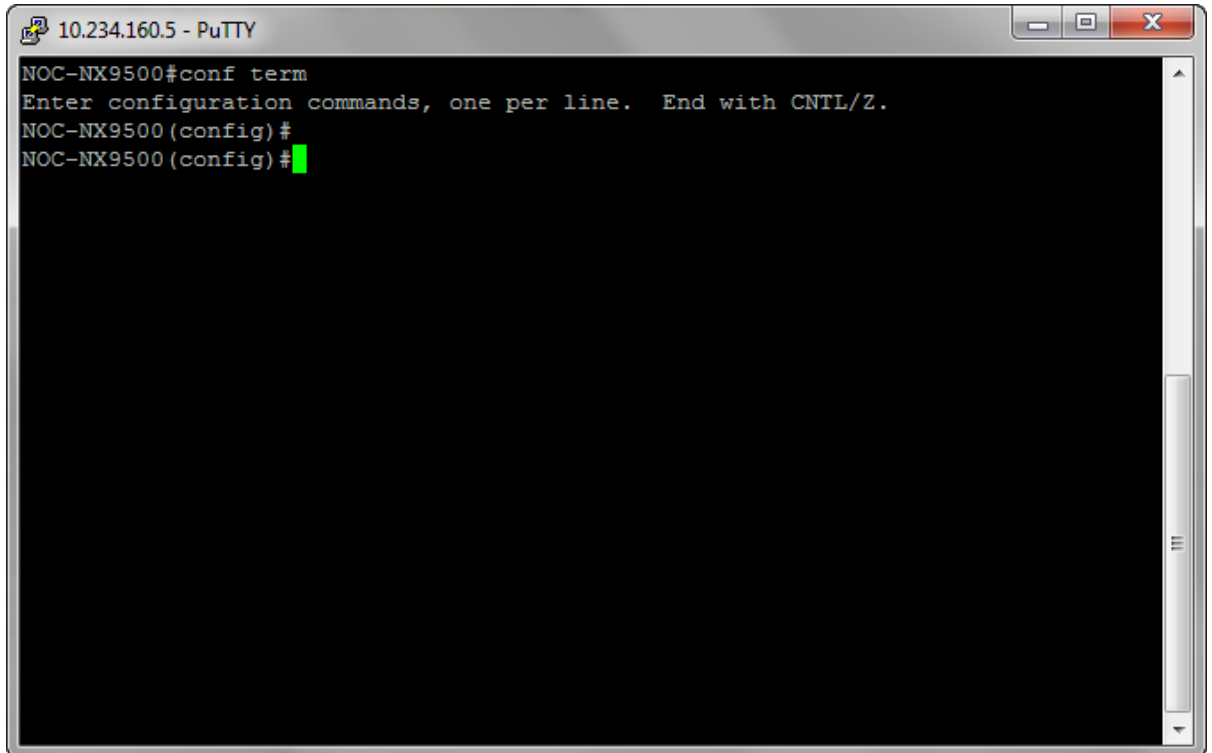
It is now possible to configure the ExtremeLocation Tenant Account Number in your WiNG RF Domain policy and your WiNG controller. When an access point comes online, it is placed in the common pool of access points by default. This access point is now available for any Tenant to claim and use by uploading the access point's MAC address using the `.csv` import method. When the Tenant Account Number is provided, access points are assigned to the tenant with the Tenant Account Number and can only be used across any of the sites managed by this tenant. This ensures that your assets cannot inadvertently be deployed on sites that belong to other ExtremeLocation accounts.

When the Tenant Account Number is provided in the WiNG controller configuration, it links the controller with the tenant. Any modification made to WiNG sites managed by this wireless controller, such as adding new access points or sites, is tagged by the Tenant Account Number automatically.

WiNG Integration with ExtremeLocation

To view all WiNG's sites and WiNG adopted devices from within ExtremeLocation:

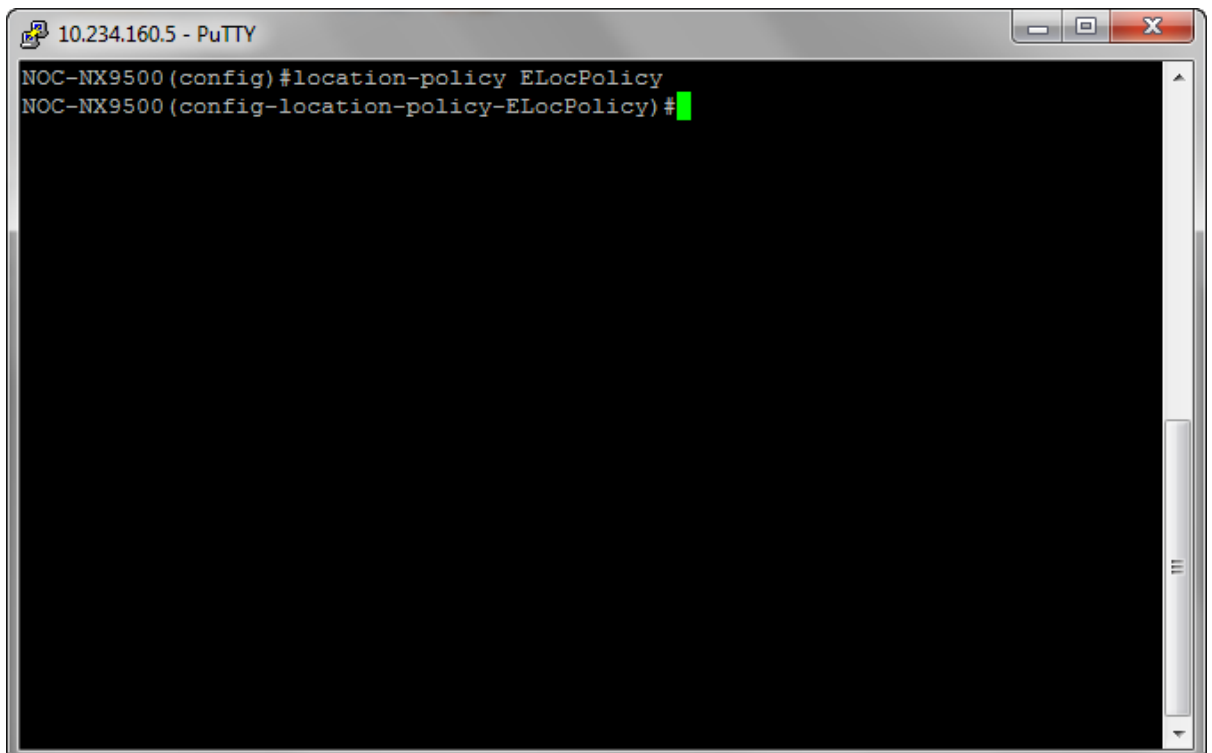
- 1 Login to the CLI interface on your WiNG Controller using the `admin` credentials. Then navigate to its configuration context using `en` command followed by the `conf term` command.



```
10.234.160.5 - PuTTY
NOC-NX9500#conf term
Enter configuration commands, one per line.  End with CNTL/Z.
NOC-NX9500 (config) #
NOC-NX9500 (config) #
```

- 2 Create a new *Location Policy* and provide it a valid name using the `location-policy <policy-name>` command.

A new `location-policy` is created and you are taken into its context.



```
10.234.160.5 - PuTTY
NOC-NX9500 (config) #location-policy ELocPolicy
NOC-NX9500 (config-location-policy-ELocPolicy) #
```

- 3 From within the `location-policy` context, configure the ExtremeLocation server using the following command:

```
server-host 1 ip feeds1.extremelocation.com port 443
```

- 4 Configure the `Location Key` using the following command. Here, *Location Key* is the *API Key* available from within the ExtremeLocation user interface.

```
location-key <API Key>
```

API Key for your ExtremeLocation account can be retrieved from within your ExtremeLocation account.

Navigate to the **Settings > System Settings > API Keys** to display the **API Key Generation** screen.

Copy the API Key in the gray text box and paste it into this command.



- 5 Enable this `location-policy` using the following command:

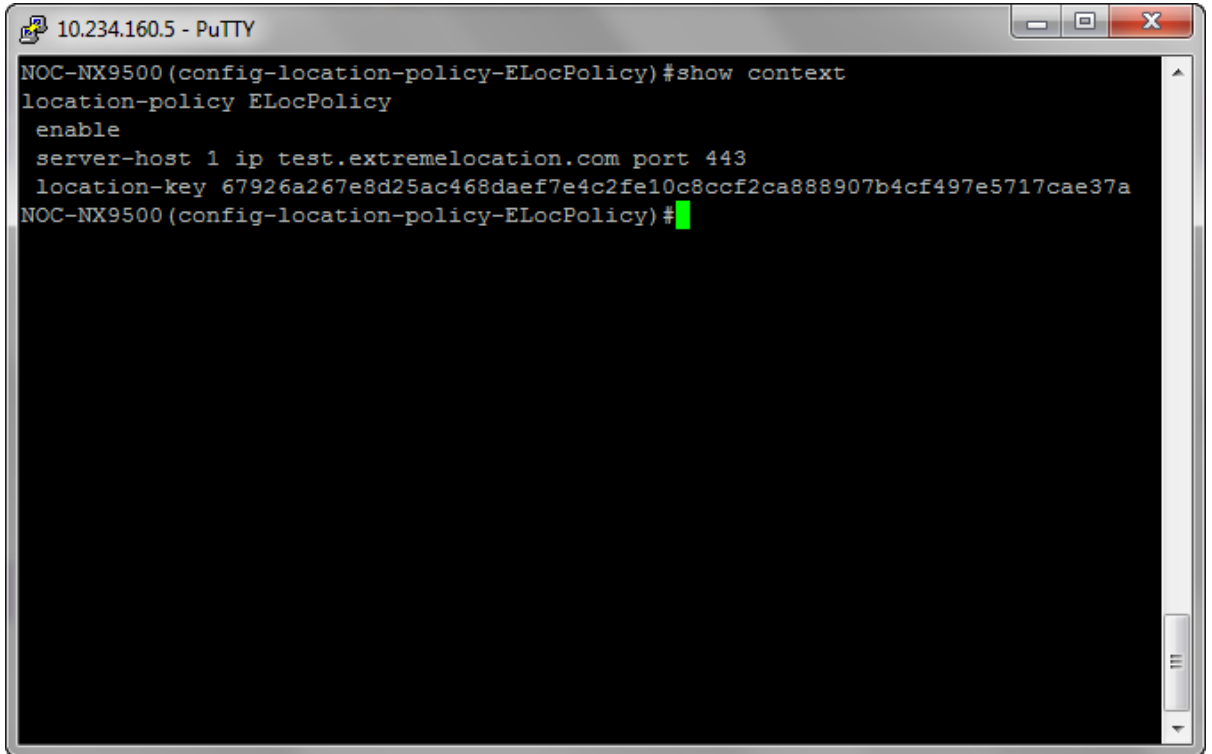
```
enable
```

The `location-policy` is now ready for use. You cannot use the `location-policy` without enabling it.

- 6 Verify the location-policy configuration with the following command:

```
show context
```

The current configuration for the `location-policy` is displayed.

A screenshot of a PuTTY terminal window titled "10.234.160.5 - PuTTY". The terminal shows the following configuration for a location-policy named "ELocPolicy":

```
NOC-NX9500 (config-location-policy-ELocPolicy) #show context
location-policy ELocPolicy
enable
server-host 1 ip test.extremelocation.com port 443
location-key 67926a267e8d25ac468daef7e4c2fe10c8ccf2ca888907b4cf497e5717cae37a
NOC-NX9500 (config-location-policy-ELocPolicy) #
```

If required, make appropriate changes to this configuration.

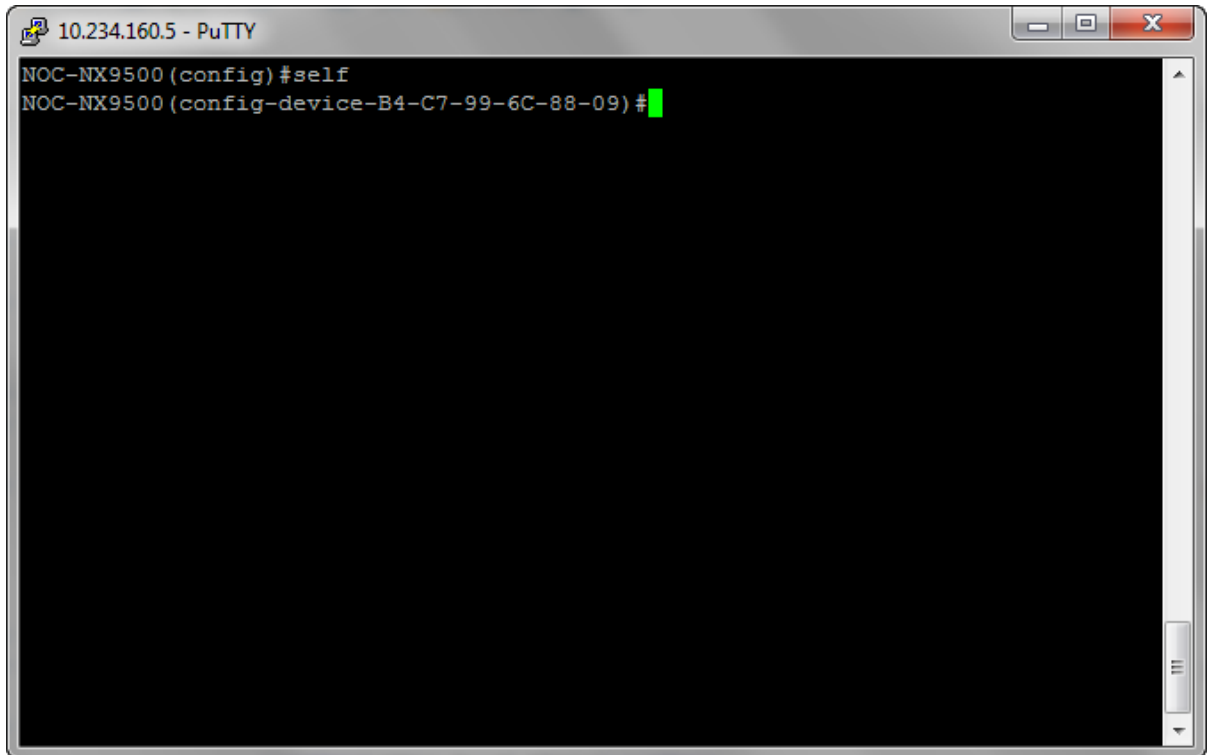
- 7 Commit the changes made to this `location-policy` by using the following command:

```
commit write memory
```

The `location-policy` is saved.

- 8 Exit out of the `location-policy` context by using `exit` command.

- 9 Navigate to the WiNG controller's configuration context using the `self` command.
The context changes to the WiNG Controller's configuration context.



```

10.234.160.5 - PuTTY
NOC-NX9500 (config) #self
NOC-NX9500 (config-device-B4-C7-99-6C-88-09) #

```

- 10 To use the `location-policy`, it has to be applied to this WiNG Controller. To do so, use the command:
- ```
use location-policy <your location-policy name>
```
- 11 Commit the changes made to this WiNG Controller context by using the following command:
- ```
commit write memory
```

The `location-policy` is applied to the WiNG Controller and is now available for use.

The WiNG Controller will now be able to communicate with the ExtremeLocation server and update its site and site hierarchy to the ExtremeLocation server. It uses the provided API Key to identify the correct ExtremeLocation account and updates the site and site hierarchy to the linked account.

Linking ExtremeLocation Tenant Account Number with WiNG

ExtremeLocation Tenant Account Number Linking in WiNG

It is now possible to configure the ExtremeLocation Tenant Account Number in your WiNG RF Domain policy and your WiNG controller. When an access point comes online, it is placed in the common pool of access points by default. This access point is now available for any Tenant to claim and use by uploading the access point's MAC address using the `.csv` import method. When the Tenant Account Number is provided, access points are assigned to the tenant with the Tenant Account Number and can only be used across any of the sites managed by this tenant. This ensures that your assets cannot inadvertently be deployed on sites that belong to other ExtremeLocation accounts.


When the Tenant Account Number is provided in the WiNG controller configuration, it links the controller with the tenant. Any modification made to WiNG sites managed by this wireless controller, such as adding new access points or sites, is tagged by the Tenant Account Number automatically.

Linking your ExtremeLocation Tenant Account Number with WiNG can be done from both the WiNG CLI and the WiNG User Interface. Extreme Networks recommends that you link your ExtremeLocation Tenant Account Number with WiNG for ease of use and increased security of your deployments.

ExtremeLocation Tenant Account Number Integration

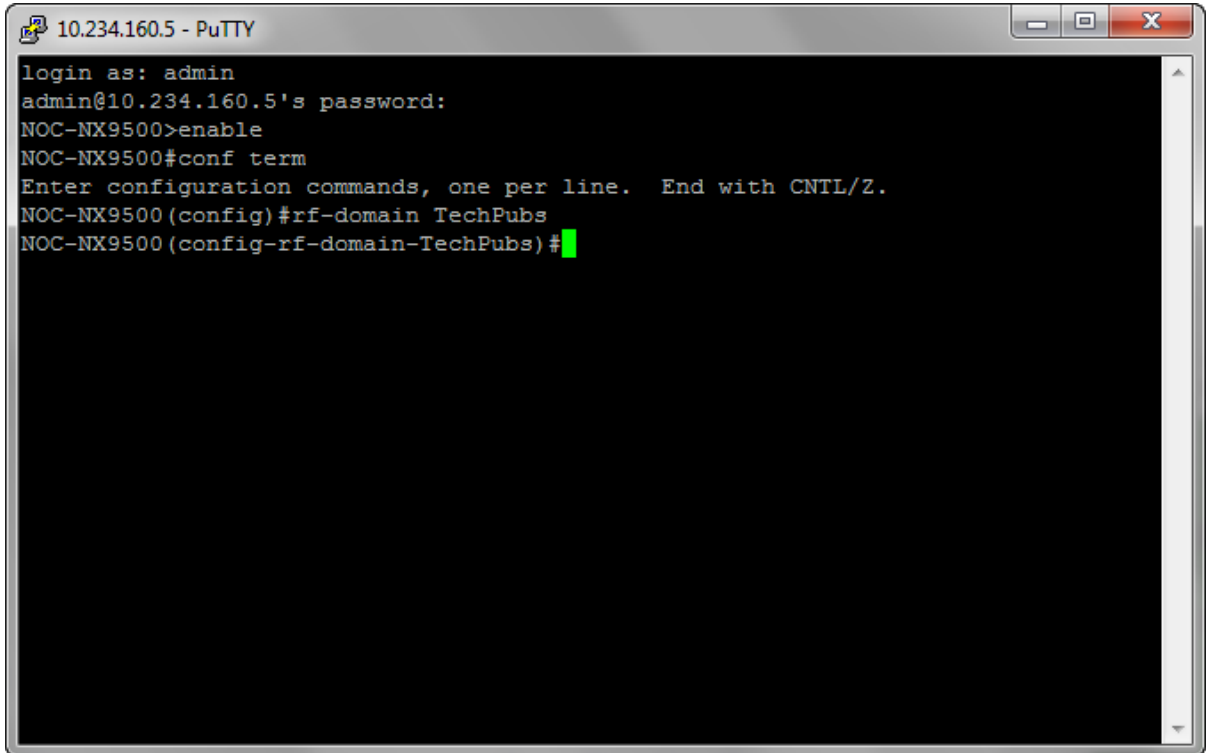
To link your tenant account number to WiNG using the WiNG CLI:

- 1 Login to the CLI interface on your WiNG Controller using the `admin` credentials. Then navigate to its configuration context using `en` command followed by the `conf term` command.




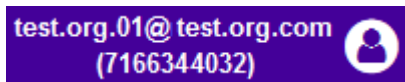
```
10.234.160.5 - PuTTY
NOC-NX9500#conf term
Enter configuration commands, one per line. End with CNTL/Z.
NOC-NX9500 (config) #
NOC-NX9500 (config) #
```

- 2 Enter the RF Domain context using the command `rf-domain <your RF Domain>`.
You are taken to the RF Domain's context.



```
10.234.160.5 - PuTTY
login as: admin
admin@10.234.160.5's password:
NOC-NX9500>enable
NOC-NX9500#conf term
Enter configuration commands, one per line.  End with CNTL/Z.
NOC-NX9500 (config)#rf-domain TechPubs
NOC-NX9500 (config-rf-domain-TechPubs)#
```

- 3 In ExtremeLocation locate your tenant account number. This number is located next to the  at the top right of your screen.

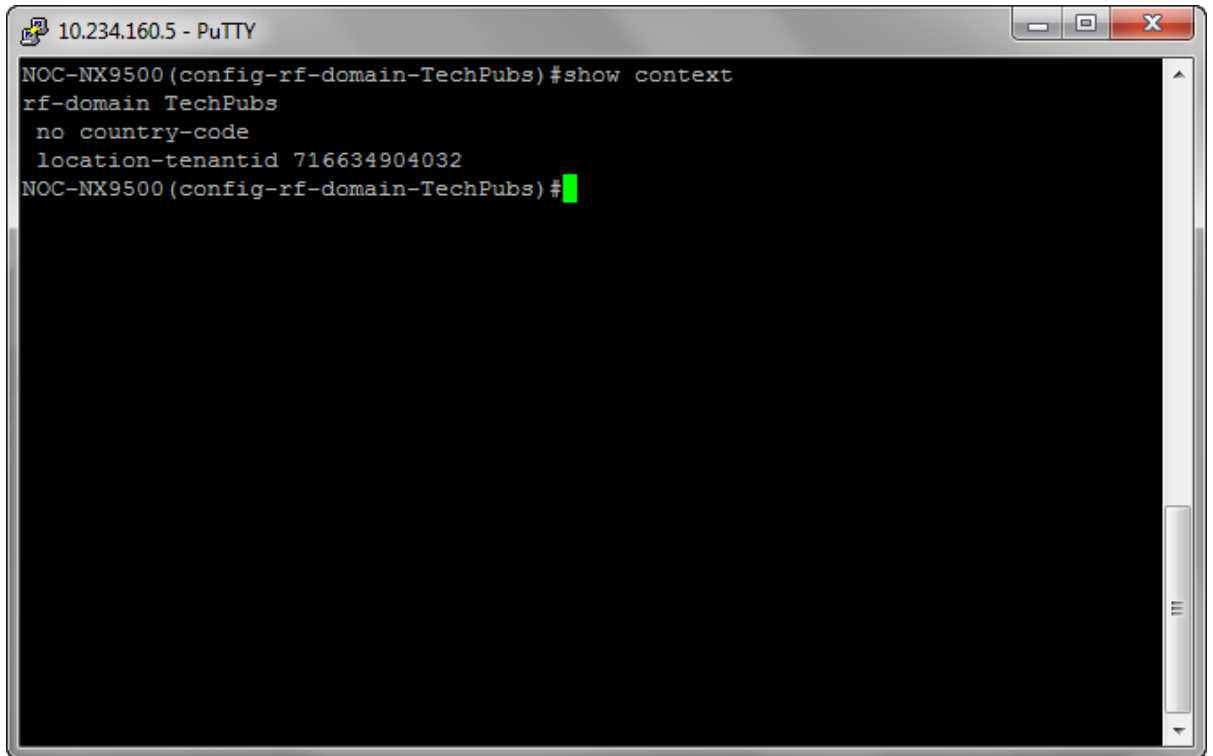


- 4 From within the `rf-domain` context, execute the following command and pass the tenant account number as a parameter to this command.
`location-tenantid <your tenant account number>`

- 5 Verify the location-tenantid configuration with the following command:

```
show context
```

The current configuration for the `rf-domain` is displayed.



The screenshot shows a PuTTY terminal window titled "10.234.160.5 - PuTTY". The terminal displays the following text:

```
NOC-NX9500 (config-rf-domain-TechPubs)#show context
rf-domain TechPubs
no country-code
location-tenantid 716634904032
NOC-NX9500 (config-rf-domain-TechPubs)#
```

If required, make appropriate changes to this configuration.

- 6 Commit the changes made to this `rf-domain` by using the following command:

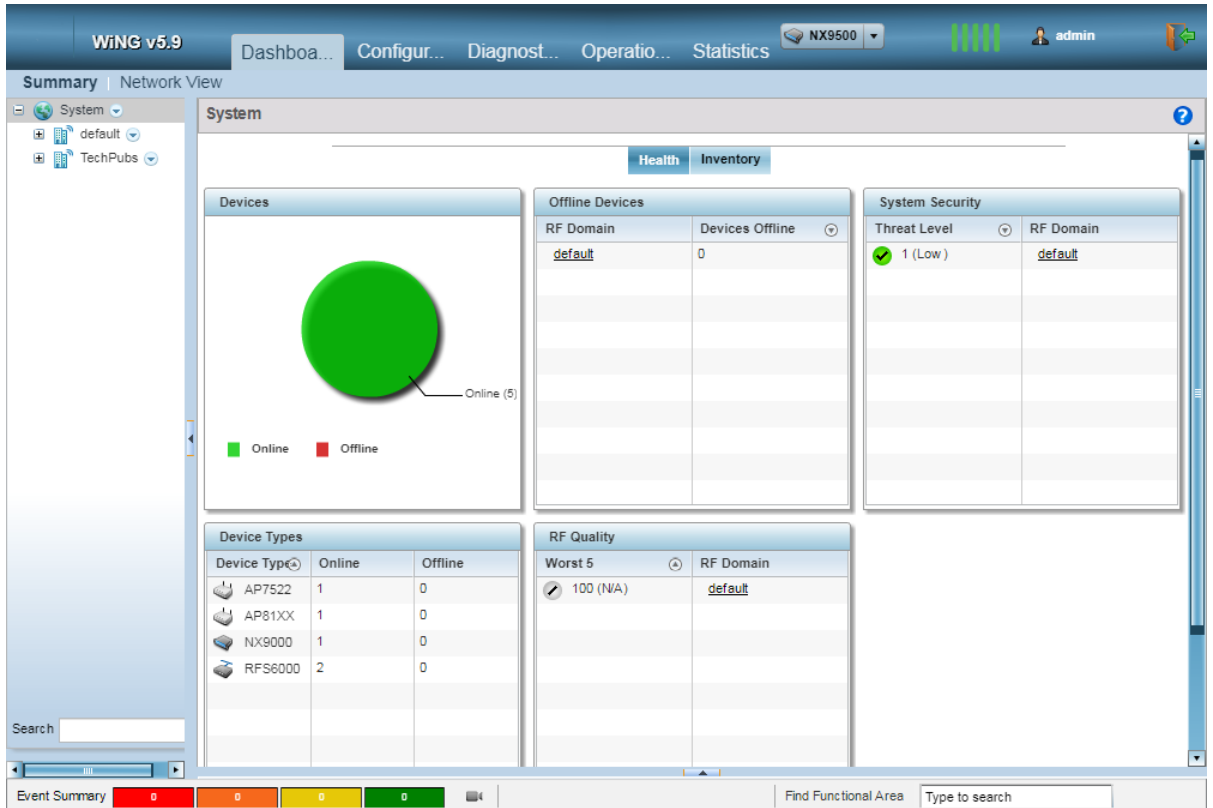
```
commit write memory
```

The `rf-domain` is saved.

ExtremeLocation Tenant Account Number Integration Using WiNG GUI

To link your tenant account number to WiNG using the WiNG GUI:

- 1 Login to your WiNG Controller.
On successful login, the **Dashboard** screen appears.



- 2 Select **Configuration > RF Domains**.

The RF Domains screen appears.

The screenshot shows the WING v5.9 configuration interface. The top navigation bar includes tabs for Dashboard, Configuration, Diagnostics, Operations, and Statistics. The current page is 'RF Domains' under the 'Configuration' tab. The interface displays a table of RF Domains with the following data:

RF Domain	Location	Contact	Time Zone	Country
default			Etc/UTC	India-in
TechPubs			Etc/UTC	

The interface also includes a left sidebar with a tree view showing 'RF Domain' and its sub-items 'TechPubs' and 'default'. At the bottom, there are buttons for 'Add', 'Edit', 'Delete', 'Copy', 'Rename', and 'Replace'. The 'Row Count' is displayed as 2.

- From the **RF Domain** list, select the RF Domain to edit and then select the **Edit** button.
The selected RF Domain policy is loaded and the following screen appears.


The screenshot displays the WING v5.9 configuration interface for an RF Domain. The top navigation bar includes tabs for Dashboard, Configuration, Diagnostics, Operations, and Statistics. The main menu shows various categories like Devices, Wireless, Network, Profiles, RF Domains, Security, Services, and Management. The left sidebar shows a tree view of RF Domains, with 'TechPubs' selected. The main content area is titled 'RF Domain TechPubs' and contains several configuration sections:

- Basic:** Location, Contact, Time Zone (set to (GMT) Etc/UTC), Country, Latitude Coordinate (0.0000), Longitude Coordinate (0.0000), VLAN for Control Traffic (checked), and Controller Managed (checked).
- SMART RF:** SMART RF Policy (set to <none>), Override Channel List 2.4 GHz (Select), and Override Channel List 5 GHz (Select).
- Smart Scan:** Enable Dynamic Channel (checked), 2.4 GHz Channels (1,2,3,4,...), and 5 GHz Channels (21,25,34,36,...).
- Wireless IPS:** WIPS Policy (Select).
- Statistics:** Update Interval (n, 0.5-300 seconds).

At the bottom, there are buttons for OK, Reset, and Exit. The status bar at the very bottom shows an Event Summary with colored indicators and a search field for functional areas.

- 4 From the navigation menu on the left, select **Sensor** menu item.

The **Sensor** screen appears.

- 5 In ExtremeLocation locate your tenant account number. This number is located next to the  at the top right of your screen.



- 6 In the WiNG GUI paste the *Tenant Account Number* value into the **ExtremeLocation Tenant Account** field's **Tenant Account** field.
- 7 From the top right, select the **Commit and Save** button to save changes made to this RF Domain Policy.

Linking ExtremeLocation Tenant Account Number with WiNG Controller

ExtremeLocation Tenant Account Number Linking in WiNG

It is now possible to configure the ExtremeLocation Tenant Account Number in your WiNG RF Domain policy and your WiNG controller. When an access point comes online, it is placed in the common pool of access points by default. This access point is now available for any Tenant to claim and use by uploading the access point's MAC address using the `.csv` import method. When the Tenant Account Number is provided, access points are assigned to the tenant with the Tenant Account Number and can only be used across any of the sites managed by this tenant. This ensures that your assets cannot inadvertently be deployed on sites that belong to other ExtremeLocation accounts.

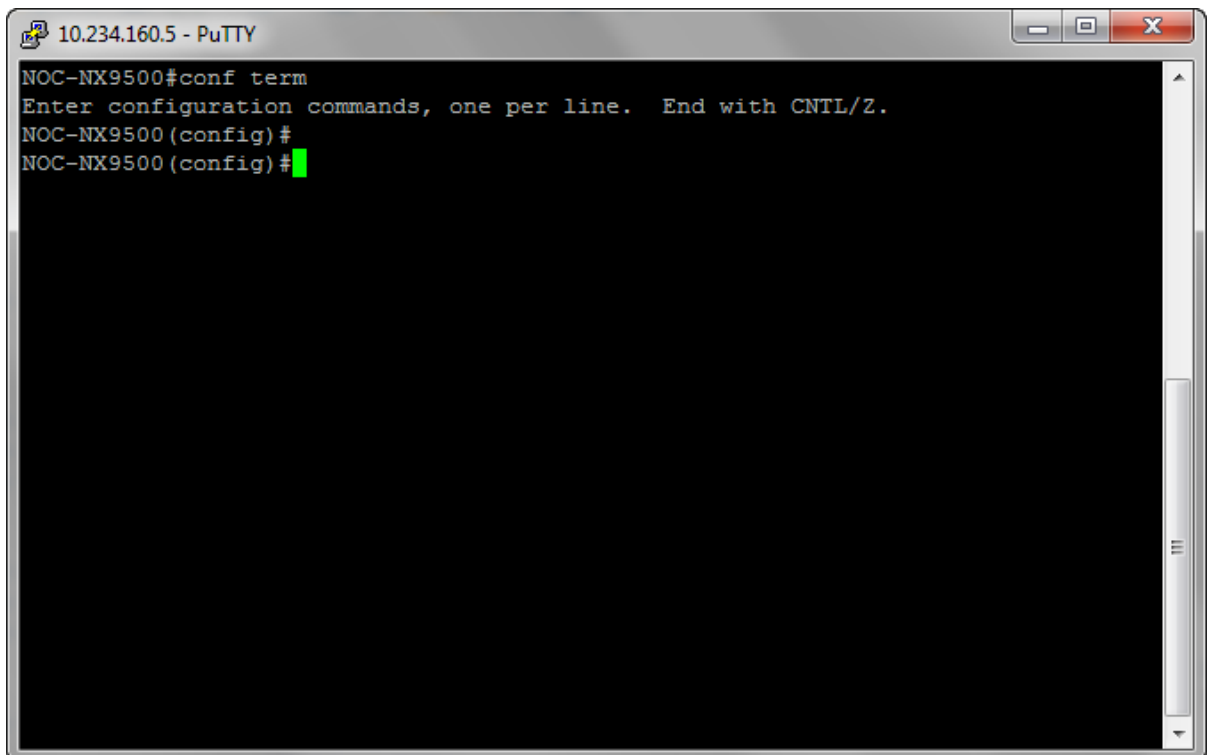
When the Tenant Account Number is provided in the WiNG controller configuration, it links the controller with the tenant. Any modification made to WiNG sites managed by this wireless controller, such as adding new access points or sites, is tagged by the Tenant Account Number automatically.

Linking your ExtremeLocation Tenant Account Number with WiNG controller can be done from the WiNG CLI only. Extreme Networks recommends that you link your ExtremeLocation Tenant Account Number with WiNG Controller for ease of use and increased security of your deployments.

ExtremeLocation Tenant Account Number Integration With WiNG Controllers

To link your tenant account number to a WiNG controller using the WiNG CLI:

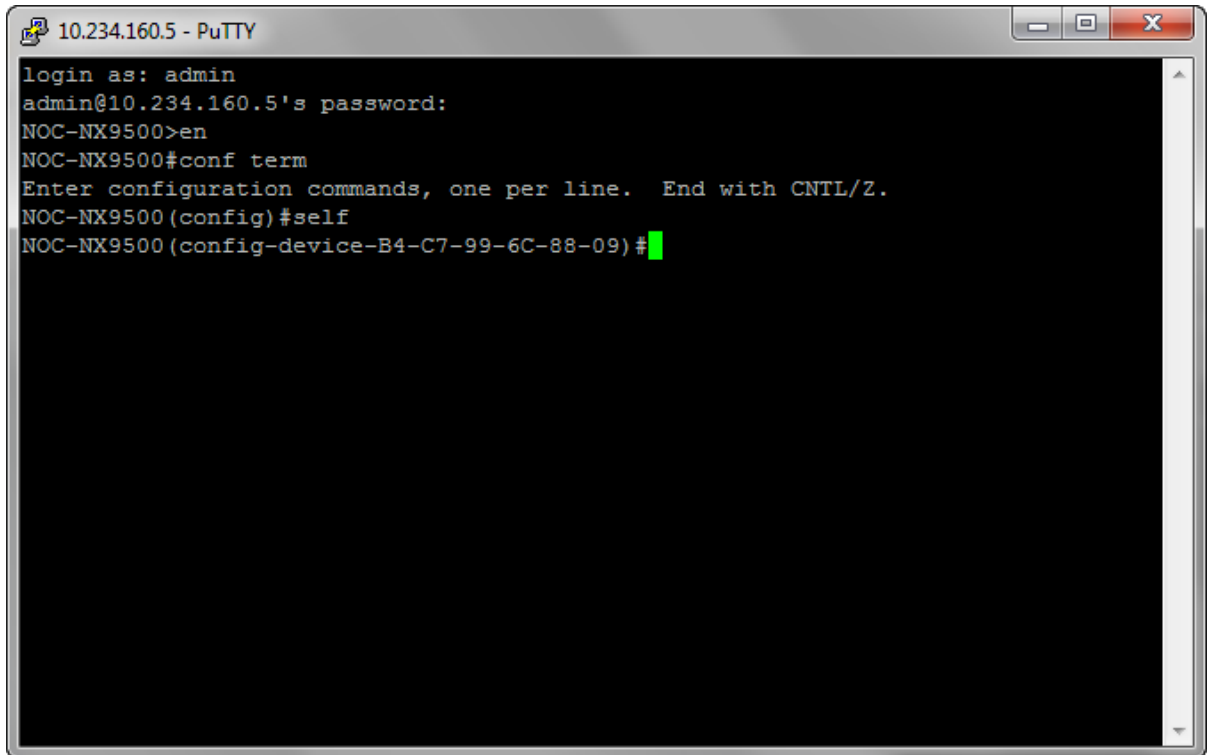
- 1 Login to the CLI interface on your WiNG controller using the `admin` credentials. Then navigate to its configuration context using `en` command followed by the `conf term` command.



```
10.234.160.5 - PuTTY
NOC-NX9500#conf term
Enter configuration commands, one per line. End with CNTL/Z.
NOC-NX9500 (config) #
NOC-NX9500 (config) #
```


- 2 Enter the WiNG controller's context using the `self` command.

You are taken to the WiNG controller's context.



```
10.234.160.5 - PuTTY
login as: admin
admin@10.234.160.5's password:
NOC-NX9500>en
NOC-NX9500#conf term
Enter configuration commands, one per line.  End with CNTL/Z.
NOC-NX9500 (config)#self
NOC-NX9500 (config-device-B4-C7-99-6C-88-09)#
```

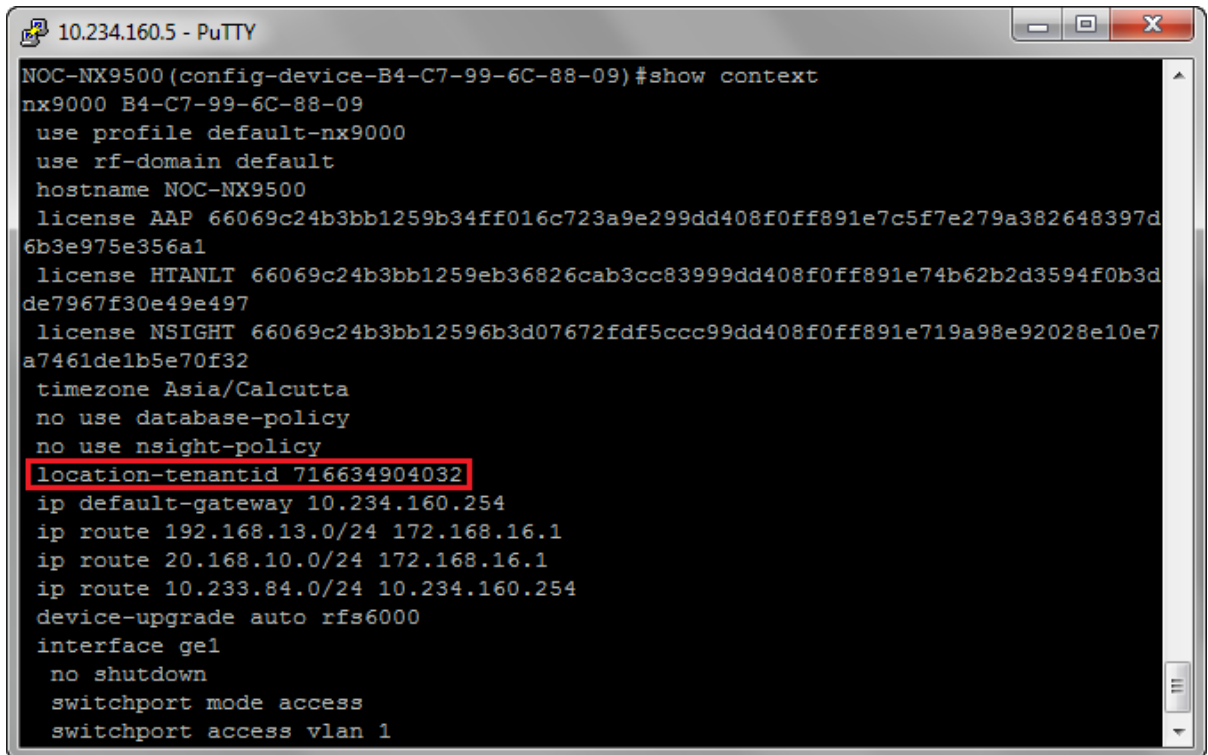
- 3 From within the `self` context, execute the following command:

```
location-tenantid <your tenant id>
```

- 4 Verify the location-tenantid configuration with the following command:

```
show context
```

The current configuration for the WiNG controller is displayed.



```
10.234.160.5 - PuTTY
NOC-NX9500 (config-device-B4-C7-99-6C-88-09)#show context
nx9000 B4-C7-99-6C-88-09
use profile default-nx9000
use rf-domain default
hostname NOC-NX9500
license AAP 66069c24b3bb1259b34ff016c723a9e299dd408f0ff891e7c5f7e279a382648397d
6b3e975e356a1
license HTANLT 66069c24b3bb1259eb36826cab3cc83999dd408f0ff891e74b62b2d3594f0b3d
de7967f30e49e497
license NSIGHT 66069c24b3bb12596b3d07672fdf5ccc99dd408f0ff891e719a98e92028e10e7
a7461de1b5e70f32
timezone Asia/Calcutta
no use database-policy
no use nsight-policy
location-tenantid 716634904032
ip default-gateway 10.234.160.254
ip route 192.168.13.0/24 172.168.16.1
ip route 20.168.10.0/24 172.168.16.1
ip route 10.233.84.0/24 10.234.160.254
device-upgrade auto rfs6000
interface gel
no shutdown
switchport mode access
switchport access vlan 1
```

If required, make appropriate changes to this configuration.

- 5 Commit the changes made to this WiNG controller by using the following command:

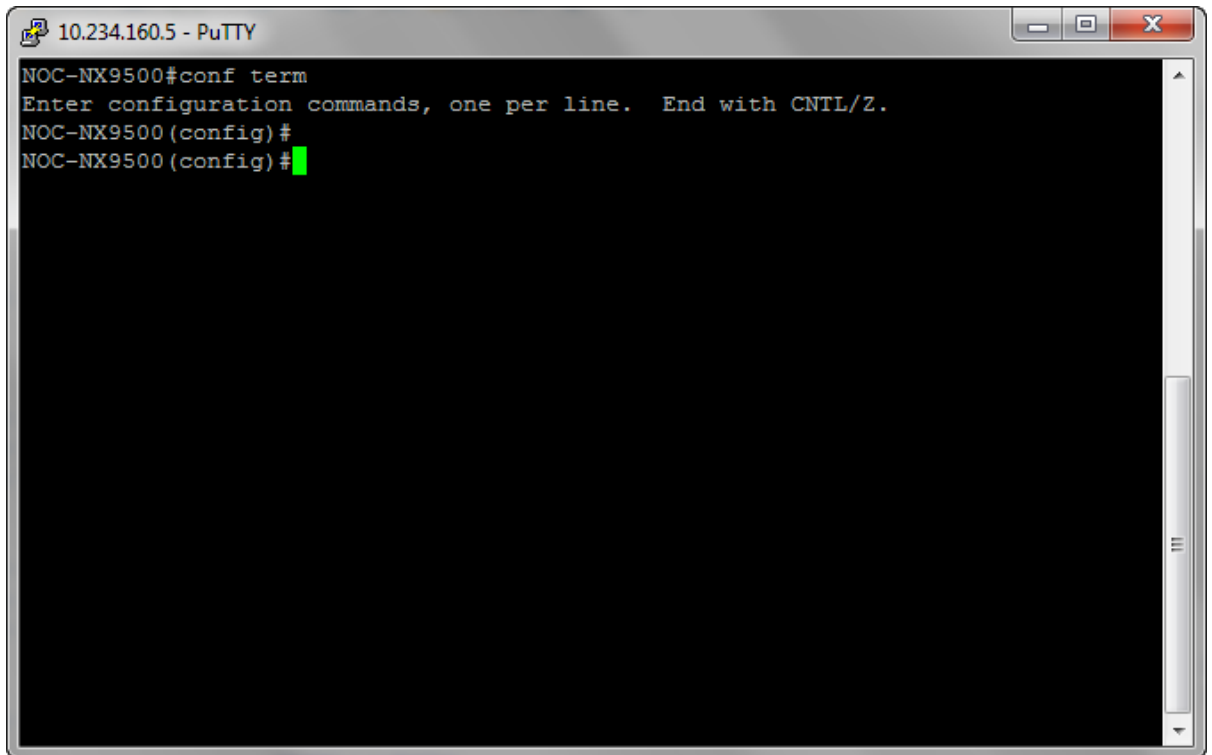
```
commit write memory
```

The configuration changes made to this WiNG controller is saved.

ExtremeLocation Tenant Account Number Integration With WiNG Controllers - Removing Tenant Account Number

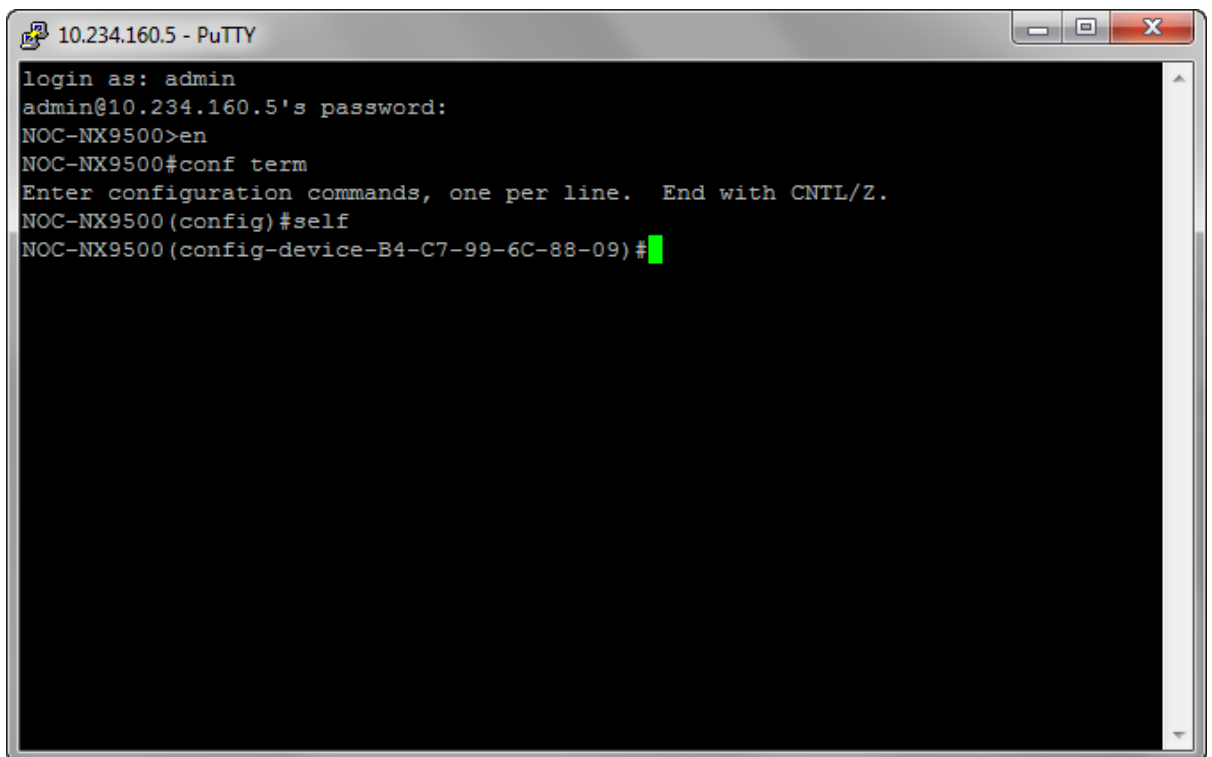
To remove the linked tenant account number to your WiNG controller using the WiNG CLI:

- 1 Login to the CLI interface on your WiNG controller using the `admin` credentials. Then navigate to its configuration context using `en` command followed by the `conf term` command.



```
10.234.160.5 - PuTTY
NOC-NX9500#conf term
Enter configuration commands, one per line.  End with CNTL/Z.
NOC-NX9500 (config) #
NOC-NX9500 (config) #
```

- 2 Enter the WiNG controller's context using the `self` command.
You are taken to the WiNG controller's context.



```
10.234.160.5 - PuTTY
login as: admin
admin@10.234.160.5's password:
NOC-NX9500>en
NOC-NX9500#conf term
Enter configuration commands, one per line.  End with CNTL/Z.
NOC-NX9500 (config) #self
NOC-NX9500 (config-device-B4-C7-99-6C-88-09) #
```

- From within the `self` context, execute the following command:

```
remove-override location-tenantid
```

- Verify the location-tenantid configuration has been removed from the WiNG controller with the following command:

```
show context
```

The current configuration for the WiNG controller is displayed.

```
10.234.160.5 - PuTTY
NOC-NX9500 (config-device-B4-C7-99-6C-88-09)#remove-override location-tenantid
NOC-NX9500 (config-device-B4-C7-99-6C-88-09)#show context
nx9000 B4-C7-99-6C-88-09
  use profile default-nx9000
  use rf-domain default
  hostname NOC-NX9500
  license AAP 66069c24b3bb1259b34ff016c723a9e299dd408f0ff891e7c5f7e279a382648397d
6b3e975e356a1
  license HTANLT 66069c24b3bb1259eb36826cab3cc83999dd408f0ff891e74b62b2d3594f0b3d
de7967f30e49e497
  license NSIGHT 66069c24b3bb12596b3d07672fd5ccc99dd408f0ff891e719a98e92028e10e7
a7461de1b5e70f32
  timezone Asia/Calcutta
  no use database-policy
  no use nsight-policy
  ip default-gateway 10.234.160.254
  ip route 192.168.13.0/24 172.168.16.1
  ip route 20.168.10.0/24 172.168.16.1
  ip route 10.233.84.0/24 10.234.160.254
  device-upgrade auto rfs6000
  interface gel
    no shutdown
    switchport mode access
    switchport access vlan 1
```

If required, make appropriate changes to this configuration.

- Commit the changes made to this WiNG controller by using the following command:

```
commit write memory
```

The configuration changes made to this WiNG controller is saved.

Configuring ExtremeWireless Access Points

ExtremeWireless access points are a range of 802.11ac Wave 2 and 802.11abgn indoor and outdoor access points that deliver enterprise-grade performance and security for areas ranging from small service areas such as residence halls, patient rooms, or conference rooms to large and very large areas such as warehouses, manufacturing plants, parks, or stadiums.

The following ExtremeWireless access point models are supported:

- ExtremeWireless AP3912
- ExtremeWireless AP3915
- ExtremeWireless AP3916
- ExtremeWireless AP3917

- ExtremeWireless AP3935
- ExtremeWireless AP3965

**Note**

Both indoor and outdoor access point models are supported.

**Note**

For the following ExtremeWireless access points that have 2 LAN ports, use the port labeled "LAN 1" to connect to the controller.

- AP3917
- AP3935
- AP3965

This chapter describes these steps to configure access points for use with ExtremeLocation:

- Enabling support for ExtremeLocation on ExtremeWireless Controllers. See [Enabling support for ExtremeLocation on ExtremeWireless Controllers](#) on page 149.
- Enabling support for ExtremeWireless access points in a mixed ExtremeLocation and AirDefense Service Platform deployment. See [Configuring AirDefense Sensor Support](#) on page 153.

Enabling support for ExtremeLocation on ExtremeWireless Controllers

To enable support for ExtremeLocation on ExtremeWireless controllers:

- 1 Navigate to the login page of the ExtremeWireless Controller and login using your credentials.

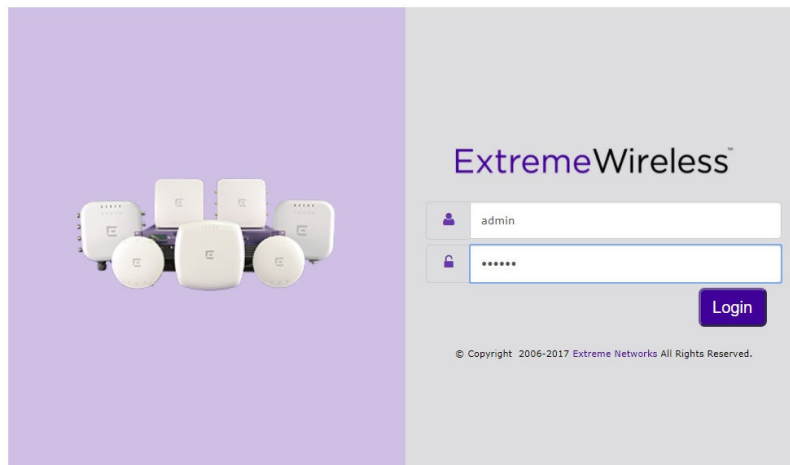


Figure 125: ExtremeWireless Controller Login Screen

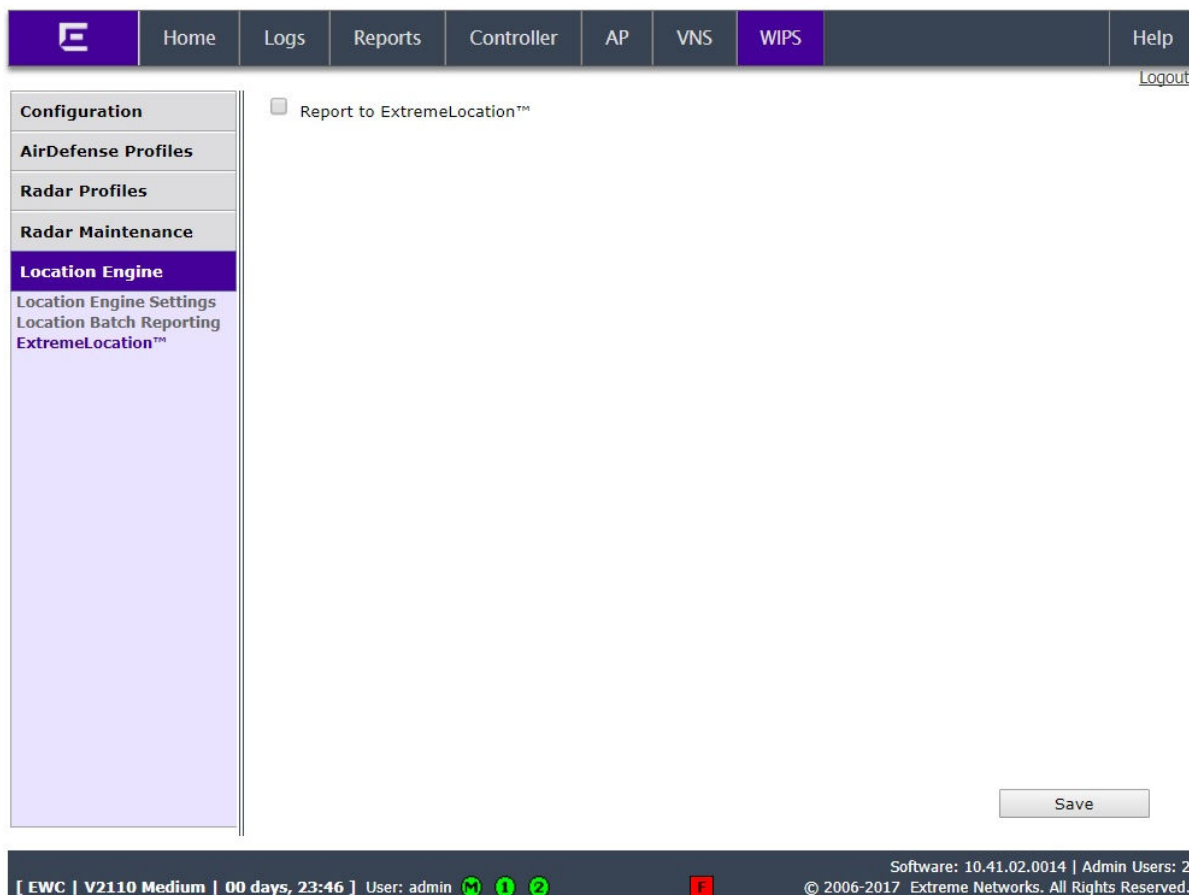
- From the menu on the top, select the **WIPS** menu item.

The **WIPS Configuration** screen appears.

The screenshot shows the WIPS Configuration screen. At the top, there is a navigation bar with the following items: Home, Logs, Reports, Controller, AP, VNS, **WIPS**, and Help. A [Logout](#) link is located in the top right corner. On the left side, there is a sidebar menu with the following items: **Configuration**, Engine Settings, AirDefense Profiles, Radar Profiles, Radar Maintenance, and Location Engine. The main content area contains a single checkbox labeled "Security Analysis Engine" which is checked. A "Save" button is located in the bottom right corner of the main content area. At the bottom of the screen, there is a status bar with the following information: [EWC | V2110 Medium | 12 days, 05:51] User: admin (with status icons M, 1, 2), Software: 10.41.02.0014 | Admin Users: 1, © 2006-2017 Extreme Networks. All Rights Reserved.

- 3 Select the option **Location Engine > ExtremeLocation**

The following screen displays.



- 4 Select the **Report to ExtremeLocation** option to enable configuring the parameters for sending location data to the remote ExtremeLocation servers.

The following screen displays:

The screenshot shows the WIPS configuration page in the Extreme Networks management console. The navigation bar includes Home, Logs, Reports, Controller, AP, VNS, WIPS, and Help. The left sidebar shows the Configuration menu with options like AirDefense Profiles, Radar Profiles, Radar Maintenance, and Location Engine. The main content area is titled 'Report to ExtremeLocation™' and includes a 'WIPS' button. The configuration fields are:

- Server Address: feeds-us.extremeloca
- Minimum RSS reporting: -85 dBm
- Report every: 1 second(s)

 Below these fields is a section for 'APs' with a search bar and a table of access points. The table has columns for a checkbox and 'Name'. The listed APs are:

AP Name	Selected
1617Y-1127500000	<input checked="" type="checkbox"/>
1646Y-1396700000	<input checked="" type="checkbox"/>
1701Y-1208900000	<input checked="" type="checkbox"/>
1701Y-1211400000	<input checked="" type="checkbox"/>
1701Y-1222000000	<input checked="" type="checkbox"/>
1710Y-1580500000	<input checked="" type="checkbox"/>
1727D10040510000	<input checked="" type="checkbox"/>
1730Y-1015100000	<input checked="" type="checkbox"/>
1651Y-1369300000	<input type="checkbox"/>

 A 'Save' button is located at the bottom right of the AP selection area. At the bottom of the screen, a status bar shows a success message: 'ExtremeLocation™ configuration saved successfully' along with system information like 'Software: 10.41.02.0014 | Admin Users: 2' and '© 2006-2017 Extreme Networks. All Rights Reserved.'

- 5 Set the **Server Address** of the ExtremeLocation server.
The following is the URL for the ExtremeLocation server.
- *Sensor Server for US Customers*
- 6 Set the **Minimum RSS Reporting** value. This is the RSS value below which location information is not sent to the ExtremeLocation server.
- 7 Set the **Report every** controller to the reporting interval in seconds. This is the time period (in seconds) after which the location data is sent to the remote ExtremeLocation server.
- 8 from the **AP** field, select the access points to which the ExtremeLocation configuration will be pushed when this configuration is saved.
- 9 Select **Save** to save the changes to the Wireless Controller configuration.

For further configuration of ExtremeWireless access points to enable them to work with ExtremeLocation, refer to the latest ExtremeWireless Users Guide located at <http://documentation.extremenetworks.com>.

Configuring AirDefense Sensor Support

Use the configuration described in this section to configure ExtremeWireless access points to act as AirDefense Sensors when using AirDefense Service Platform alongside ExtremeLocation in a mixed deployment.

ADSP assigns individual licenses to sensors that are allowed to send data to ADSP for analysis. ExtremeWireless access points managed by ExtremeWireless Controllers must be configured so that they are visible to an ADSP server to push configurations to these access points.

The following configurations must be performed:

- Configure the ExtremeWireless Controller by creating an ADSP profile and assign the access points that will act as sensors for ADSP.
- Configure the ADSP server to push ADSP configuration to these access points.

Creating ADSP Profile on an Extreme Networks Controller

For an access point that is managed by an ExtremeWireless controller to act as a sensor for ADSP, it must be made visible to the ADSP server for it (the ADSP server) to push configuration to the access points. This is done by creating an ADSP profile and assigning access points to it. These access points will then receive configuration updates from ADSP and also act as ADSP sensors.

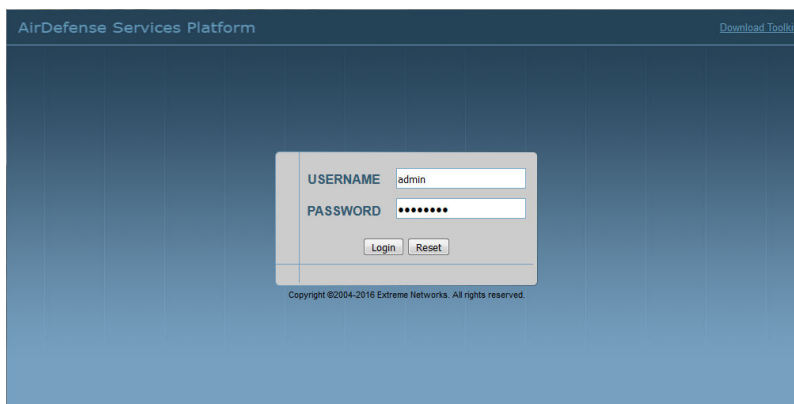
To learn how to create an ADSP profile, refer to the latest ExtremeWireless Users Guide located at <http://documentation.extremenetworks.com>.

Configuring ADSP Sensor Operation

These configuration steps are performed on your ADSP server.

Use the **Sensor Operation** screen to configure the settings that ADSP sends to the sensors registered with it. Some of the parameters that can be configured are Scan Settings, Scan Modes, Scan Weight, and other parameters.

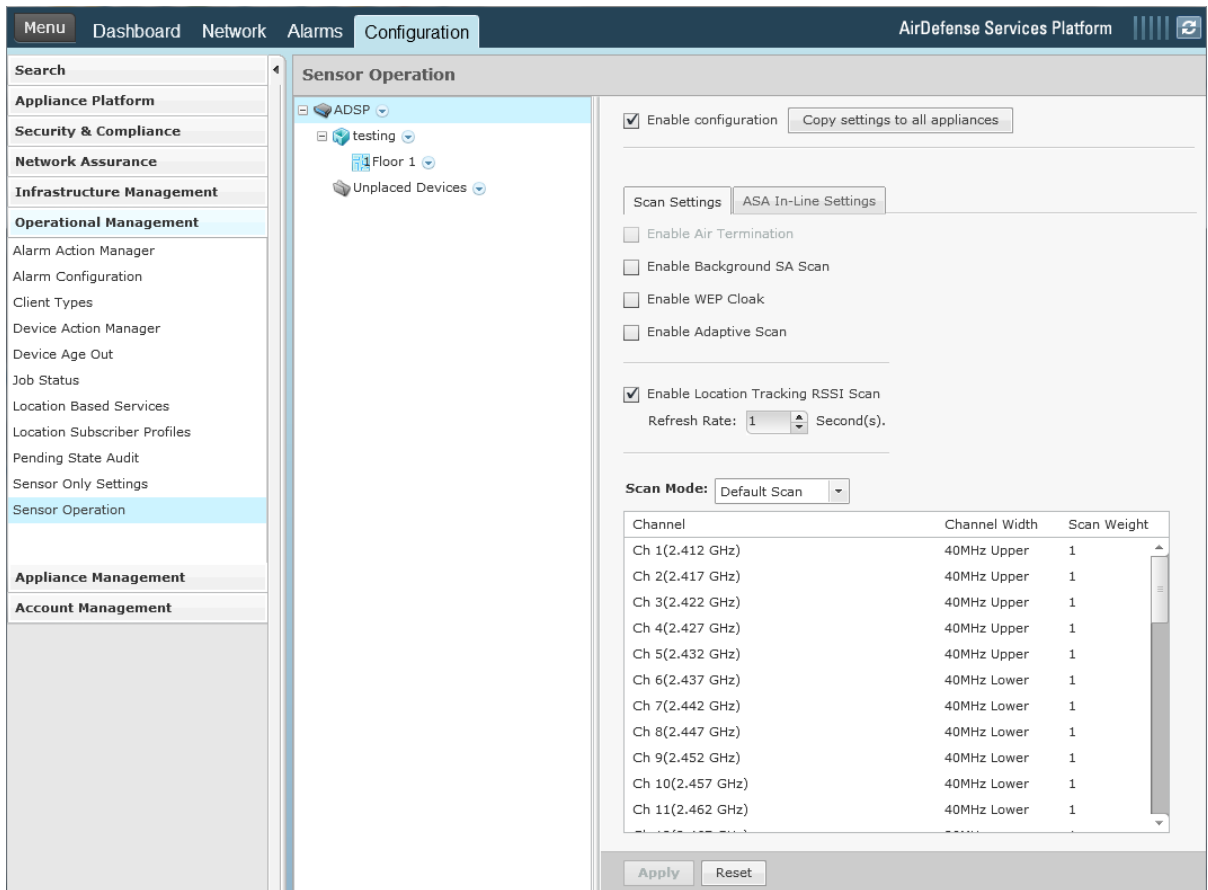
- 1 Login in to the AirDefense Server from its login screen.



Provide a valid login user name its password to access the ADSP user interface.

- 2 Select the **Configuration** menu from the toolbar on the top of the screen.
- 3 Select the **Operational Management** item from the menu on the left of the screen to expand it.

- 4 Select the **Sensor Operation** item from the **Operational Management** sub menu.
The **Sensor Operation** screen displays.



- 5 From the **Sensor Operation** screen, select the **ADSP** item if it is not selected by default.
The **Sensor Operation** screen changes to display the configuration parameters for the ADSP system.
- 6 Select one of the following **Scan Mode** options.

Default Scan	Select this option to use the default values. When selected, all the 2.4 GHz and 5.0 GHz channels are scanned.
Custom Scan	Select this option to get fine grained control on the channels to be scanned in the 2.4 GHz and 5.0 GHz spectrum.
Channel Lock	Select this option to lock the channel scan to a single channel in either the 2.4 GHz or 5.0 GHz spectrum.

- 7 Select **Save** to save changes made to the ADSP Sensor Operations parameters.

Glossary

ad hoc mode

An 802.11 networking framework in which devices or stations communicate directly with each other, without the use of an AP.

ARP

Address Resolution Protocol is part of the TCP/IP suite used to dynamically associate a device's physical address (MAC address) with its logical address (IP address). The system broadcasts an ARP request, containing the IP address, and the device with that IP address sends back its MAC address so that traffic can be transmitted.

ATM

Asynchronous Transmission Mode is a start/stop transmission in which each character is preceded by a start signal and followed by one or more stop signals. A variable time interval can exist between characters. ATM is the preferred technology for the transfer of images.

BSS

Basic Service Set is a wireless topology consisting of one access point connected to a wired network and a set of wireless devices. Also called an infrastructure network. See also [*IBSS \(Independent Basic Service Set\)*](#).

Chalet

Chalet is a web-based user interface for setting up and viewing information about a switch, removing the need to enter common commands individually in the CLI.

CHAP

Challenge-Handshake Authentication Protocol is one of the two main authentication protocols used to verify a user's name and password for PPP Internet connections. CHAP is more secure because it performs a three-way handshake during the initial link establishment between the home and remote machines. It can also repeat the authentication anytime after the link has been established.

CLI

Command Line Interface. The CLI provides an environment to issue commands to monitor and manage switches and wireless appliances.

Data Center Connect

DCC, formerly known as DCM (Data Center Manager), is a data center fabric management and automation tool that improves the efficiency of managing a large virtual and physical network. DCC provides an integrated view of the server, storage, and networking operations, removing the need to use multiple tools and management systems. DCC automates VM assignment, allocates appropriate network resources, and applies individual policies to various data objects in the switching fabric (reducing VM sprawl). Learn more about DCC at <http://www.extremenetworks.com/product/data-center-connect/>.

DoS attack

Denial of Service attacks occur when a critical network or computing resource is overwhelmed so that legitimate requests for service cannot succeed. In its simplest form, a DoS attack is indistinguishable

from normal heavy traffic. ExtremeXOS software has configurable parameters that allow you to defeat DoS attacks.

DSSS

Direct-Sequence Spread Spectrum is a transmission technology used in Local Area Wireless Network (LAWN) transmissions where a data signal at the sending station is combined with a higher data rate bit sequence, or chipping code, that divides the user data according to a spreading ratio. The chipping code is a redundant bit pattern for each bit that is transmitted, which increases the signal's resistance to interference. If one or more bits in the pattern are damaged during transmission, the original data can be recovered due to the redundancy of the transmission. (Compare with [*FHSS \(Frequency-Hopping Spread Spectrum\)*](#).)

EAP-TLS/EAP-TTLS

EAP-TLS Extensible Authentication Protocol - Transport Layer Security. A general protocol for authentication that also supports multiple authentication methods, such as token cards, Kerberos, one-time passwords, certificates, public key authentication and smart cards.

IEEE 802.1x specifies how EAP should be encapsulated in LAN frames.

In wireless communications using EAP, a user requests connection to a WLAN through an access point, which then requests the identity of the user and transmits that identity to an authentication server such as RADIUS. The server asks the access point for proof of identity, which the access point gets from the user and then sends back to the server to complete the authentication.

EAP-TLS provides for certificate-based and mutual authentication of the client and the network. It relies on client-side and server-side certificates to perform authentication and can be used to dynamically generate user-based and session-based WEP keys.

EAP-TTLS (Tunneled Transport Layer Security) is an extension of EAP-TLS to provide certificate-based, mutual authentication of the client and network through an encrypted tunnel, as well as to generate dynamic, per-user, per-session WEP keys. Unlike EAP-TLS, EAP-TTLS requires only server-side certificates.

(See also [*PEAP \(Protected Extensible Authentication Protocol\)*](#).)

ESRP

Extreme Standby Router Protocol is an Extreme Networks-proprietary protocol that provides redundant Layer 2 and routing services to users.

Extreme Access Control

EAC, formerly NAC™, featuring both physical and virtual appliances™, is a pre- and post-connect solution for wired and wireless LAN and VPN users. Using Identity and Access appliances and/or Identity and Access Virtual Appliance with the [*Extreme Management Center*](#) software, you can ensure only the right users have access to the right information from the right place at the right time. EAC is tightly integrated with the Intrusion Prevention System (IPS) and Security Information and Event Manager (SIEM) to deliver best-in-class post-connect access control. Learn more about EAC at <http://www.extremenetworks.com/product/extreme-access-control/>.

Extreme Application Analytics

EAA, formerly Purview™, is a network powered application analytics and optimization solution that captures and analyzes context-based application traffic to deliver meaningful intelligence about applications, users, locations, and devices. EAA provides data to show how applications are being used.

This can be used to better understand customer behavior on the network, identify the level of user engagement, and assure business application delivery to optimize the user experience. The software also provides visibility into network and application performance allowing IT to pinpoint and resolve performance issues in the infrastructure whether they are caused by the network, application, or server. Learn more about EAA at <http://www.extremenetworks.com/product/extremeanalytics/>.

Extreme Management Center

Extreme Management Center (Extreme Management Center), formerly Netsight™, is a web-based control interface that provides centralized visibility into your network. Extreme Management Center reaches beyond ports, VLANs, and SSIDs and provides detailed control of individual users, applications, and protocols. When coupled with wireless and Identity & Access Management products, Extreme Management Center becomes the central location for monitoring and managing all the components in the infrastructure. Learn more about Extreme Management Center at <http://www.extremenetworks.com/product/management-center/>.

ExtremeCloud

ExtremeCloud is a cloud-based network management Software as a Service (SaaS) tool. ExtremeCloud allows you to manage users, wired and wireless devices, and applications on corporate and guest networks. You can control the user experience with smarter edges – including managing QoS, call admission control, secure access policies, rate limiting, multicast, filtering, and traffic forwarding, all from an intuitive web interface. Learn more about ExtremeCloud at <http://www.extremenetworks.com/product/extremecloud/>.

ExtremeSwitching

ExtremeSwitching is the family of products comprising different switch types: **Modular** (X8 and 8000 series [formerly BlackDiamond] and S and K series switches); **Stackable** (X-series and A, B, C, and 7100 series switches); **Standalone** (SSA, X430, and D, 200, 800, and ISW series); and **Mobile Backhaul** (E4G). Learn more about ExtremeSwitching at <http://www.extremenetworks.com/products/switching-routing/>.

ExtremeWireless

ExtremeWireless products and solutions offer high-density WiFi access, connecting your organization with employees, partners, and customers everywhere they go. The family of wireless products and solutions includes APs, wireless appliances, and software. Learn more about ExtremeWireless at <http://www.extremenetworks.com/products/wireless/>.

ExtremeXOS

ExtremeXOS, a modular switch operating system, is designed from the ground up to meet the needs of large cloud and private data centers, service providers, converged enterprise edge networks, and everything in between. Based on a resilient architecture and protocols, ExtremeXOS supports network virtualization and standards-based SDN capabilities like VXLAN gateway, OpenFlow, and OpenStack Cloud orchestration. ExtremeXOS also supports comprehensive role-based policy. Learn more about ExtremeXOS at <http://www.extremenetworks.com/product/extremexos-network-operating-system/>.

FHSS

Frequency-Hopping Spread Spectrum is a transmission technology used in Local Area Wireless Network (LAWN) transmissions where the data signal is modulated with a narrowband carrier signal that 'hops' in a random but predictable sequence from frequency to frequency as a function of time

over a wide band of frequencies. This technique reduces interference. If synchronized properly, a single logical channel is maintained. (Compare with [*DSSS \(Direct-Sequence Spread Spectrum\)*](#).)

IBSS

An IBSS is the 802.11 term for an ad hoc network. See [*ad hoc mode*](#).

MIC

Message Integrity Check (or Code), also called 'Michael', is part of WPA and TKIP. The MIC is an additional 8-byte code inserted before the standard 4-byte ICV appended in by standard WEP to the 802.11 message. This greatly increases the difficulty in carrying out forgery attacks.

Both integrity check mechanisms are calculated by the receiver and compared against the values sent by the sender in the frame. If the values match, there is assurance that the message has not been tampered with.

netmask

A netmask is a string of 0s and 1s that mask, or screen out, the network part of an IP address, so that only the host computer part of the address remains. A frequently-used netmask is 255.255.255.0, used for a Class C subnet (one with up to 255 host computers). The ".0" in the netmask allows the specific host computer address to be visible.

PEAP

Protected Extensible Authentication Protocol is an IETF draft standard to authenticate wireless LAN clients without requiring them to have certificates. In PEAP authentication, first the user authenticates the authentication server, then the authentication server authenticates the user. If the first phase is successful, the user is then authenticated over the SSL tunnel created in phase one using EAP-Generic Token Card (EAP-GTC) or Microsoft Challenged Handshake Protocol Version 2 (MSCHAP V2). (See also [*EAP-TLS/EAP-TTLS*](#).)

SSL

Secure Socket Layer is a protocol for transmitting private documents using the Internet. SSL works by using a public key to encrypt data that is transferred over the SSL connection. SSL uses the public-and-private key encryption system, which includes the use of a digital certificate. SSL is used for other applications than SSH, for example, OpenFlow.

syslog

A protocol used for the transmission of event notification messages across networks, originally developed on the University of California Berkeley Software Distribution (BSD) TCP/IP system implementations, and now embedded in many other operating systems and networked devices. A device generates a messages, a relay receives and forwards the messages, and a collector (a syslog server) receives the messages without relaying them.

syslog uses the UDP as its underlying transport layer mechanism. The UDP port that has been assigned to syslog is 514. (RFC 3164)