



# ExtremeCloud Business Insights for Venues Version 24.06 User Guide

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# Preface

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Read the following topics to learn about:

- The meanings of text formats used in this document.
- Where you can find additional information and help.
- How to reach us with questions and comments.






## Text Conventions

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Unless otherwise noted, information in this document applies to all supported environments for the products in question. Exceptions, like command keywords associated with a specific software version, are identified in the text.

When a feature, function, or operation pertains to a specific hardware product, the product name is used. When features, functions, and operations are the same across an entire product family, such as ExtremeSwitching switches or SLX routers, the product is referred to as *the switch* or *the router*.

**Table 1: Notes and warnings**

Icon	Notice type	Alerts you to...
	Tip	Helpful tips and notices for using the product
	Note	Useful information or instructions
	Important	Important features or instructions
	Caution	Risk of personal injury, system damage, or loss of data
	Warning	Risk of severe personal injury

**Table 2: Text**

Convention	Description
screen displays	This typeface indicates command syntax, or represents information as it is displayed on the screen.
The words <i>enter</i> and <i>type</i>	When you see the word <i>enter</i> 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 <i>type</i> .
<b>Key names</b>	Key names are written in boldface, for example <b>Ctrl</b> or <b>Esc</b> . If you must press two or more keys simultaneously, the key names are linked with a plus sign (+). Example: Press <b>Ctrl+Alt+Del</b>
<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.
<b>NEW!</b>	New information. In a PDF, this is searchable text.

**Table 3: Command syntax**

Convention	Description
<b>bold text</b>	Bold text indicates command names, keywords, and command options.
<i>italic text</i>	Italic text indicates variable content.
[ ]	Syntax components displayed within square brackets are optional. Default responses to system prompts are enclosed in square brackets.
{ <b>x</b>   <b>y</b>   <b>z</b> }	A choice of required parameters is enclosed in curly brackets separated by vertical bars. You must select one of the options.
<b>x</b>   <b>y</b>	A vertical bar separates mutually exclusive elements.
< >	Nonprinting characters, such as passwords, are enclosed in angle brackets.
...	Repeat the previous element, for example, <i>member [member...]</i> .
\	In command examples, the backslash indicates a “soft” line break. When a backslash separates two lines of a command input, enter the entire command at the prompt without the backslash.

## Documentation and Training

Find Extreme Networks product information at the following locations:

[Current Product Documentation](#)

[Release Notes](#)

[Hardware and Software Compatibility](#) for Extreme Networks products

[Extreme Optics Compatibility](#)

[Other Resources](#) such as articles, white papers, and case studies

## Open Source Declarations

Some software files have been licensed under certain open source licenses. Information is available on the [Open Source Declaration](#) page.

## Training

Extreme Networks offers product training courses, both online and in person, as well as specialized certifications. For details, visit the [Extreme Networks Training](#) page.

## Help and Support

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

### Extreme Portal

Search the GTAC (Global Technical Assistance Center) knowledge base; manage support cases and service contracts; download software; and obtain product licensing, training, and certifications.

### The Hub

A forum for Extreme Networks 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.

### Call GTAC

For immediate support: (800) 998 2408 (toll-free in U.S. and Canada) or 1 (408) 579 2800. For the support phone number in your country, visit [www.extremenetworks.com/support/contact](http://www.extremenetworks.com/support/contact).

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

- Your Extreme Networks service contract number, or serial numbers for all involved Extreme Networks products
- A description of the failure
- A description of any actions 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

## Subscribe to Product Announcements

You can subscribe to email notifications for product and software release announcements, Field Notices, and Vulnerability Notices.

1. Go to [The Hub](#).
2. In the list of categories, expand the **Product Announcements** list.
3. Select a product for which you would like to receive notifications.
4. Select **Subscribe**.
5. To select additional products, return to the **Product Announcements** list and repeat steps 3 and 4.

You can modify your product selections or unsubscribe at any time.

## Send Feedback

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The User Enablement team at Extreme Networks has made every effort to ensure that this document is accurate, complete, and easy to use. We strive to improve our documentation to help you in your work, so we want to hear from you. We welcome all feedback, but we especially want to know about:

- Content errors, or confusing or conflicting information.
- Improvements that would help you find relevant information.
- Broken links or usability issues.

To send feedback, email us at [documentation@extremenetworks.com](mailto:documentation@extremenetworks.com).

Provide as much detail as possible including the publication title, topic heading, and page number (if applicable), along with your comments and suggestions for improvement.

## General Data Protection Regulations

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ExtremeCloud Business Insights for Venues is designed with privacy in mind for customers subject to the EU General Data Protection Regulations (GDPR) and incorporates safeguards supporting GDPR compliance. For more information, see:

- *Data Protection and Privacy* at [www.extremenetworks.com/about-extreme-networks/company/legal/data-privacy-and-protection](http://www.extremenetworks.com/about-extreme-networks/company/legal/data-privacy-and-protection).
- *Privacy and Cookies Policy* at [www.extremenetworks.com/about-extreme-networks/company/legal/privacy-and-cookies-policy](http://www.extremenetworks.com/about-extreme-networks/company/legal/privacy-and-cookies-policy).





# Welcome to ExtremeCloud Business Insights for Venues

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- [About the Interface](#) on page 9
- [Access the Application](#) on page 11
- [Change User Password](#) on page 12

ExtremeCloud Business Insights for Venues helps you see how your venue's wireless network is being used. You can choose from a variety of dashboards and charts that display client data usage over the Wi-Fi network during venue events.

Business Insights lets you:

- Select from existing historical, live, and comparative dashboards.
- Customize new dashboards with the data that you want to see.
- Create access point to location mappings to make it easier to track data usage at different venue locations.
- Select the applications that you want to track.
- Run pre-flight checks to test the network.

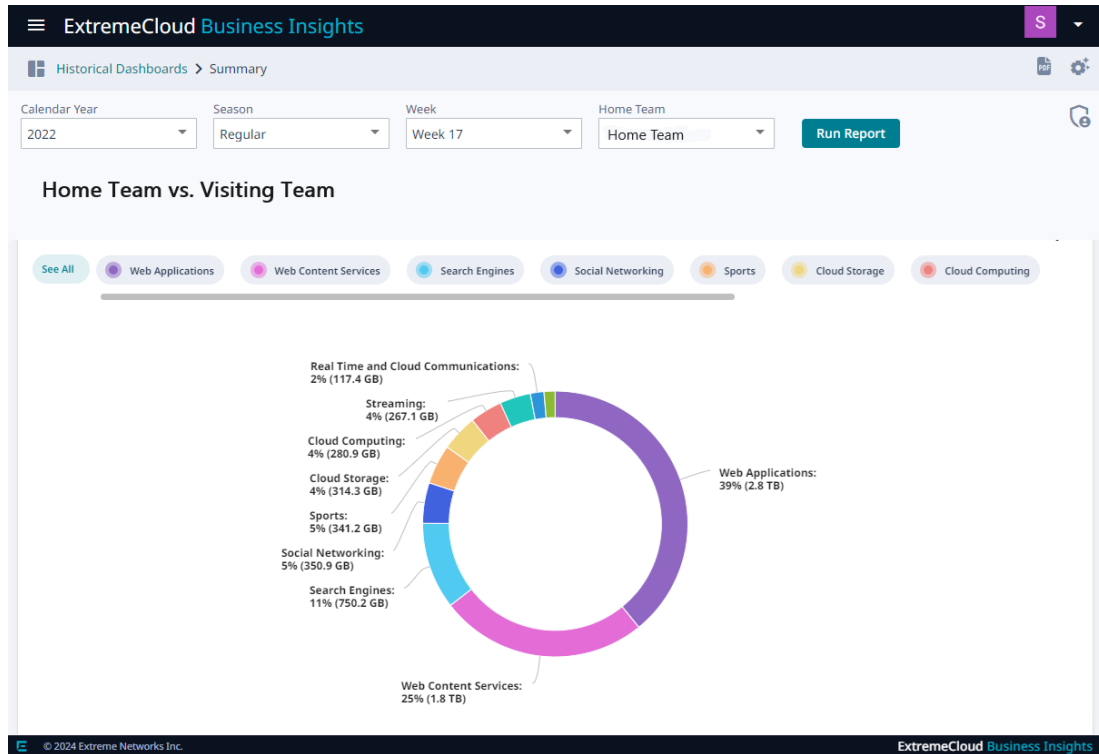
Related Topics

- [About the Interface](#) on page 9
- [Access the Interface](#) on page 11
- [Change User Password](#) on page 12

## About the Interface

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ExtremeCloud Business Insights for Venues uses dashboards and charts to display data usage by wireless clients during venue events.



**Figure 1: The Business Insights Desktop**

To access the navigation menu, select the Business Insights navigation icon . The following menu items are available:

**Dashboards on page 13**

Select this navigation item to display the following submenu items:

- **Historical**—Dashboards that display data for a completed event.
- **Live**—Dashboards that display data for an event that is currently taking place. For live events, the data is updated in real time.
- **Comparative**—Dashboards that compare data for multiple events. Includes the Suites Engagement Dashboard.
- **Custom**—Dashboards that you create and customize to display the data that you want to see.

**Locations on page 24**

Select this navigation item to display the following submenu item:

- **Mappings**—Create labels to map your access points to venue locations.

**Chart Library on page 28**

Browse hundreds of available charts. You can add any charts that you find useful to one of your custom dashboards.

**User Management on page 29**

If you have the required Administrator permissions, use this menu to manage users on the system. You can add, update, or delete users. In addition, you can change passwords for users.

### Custom Events on page 34

View data for custom events that are outside the normal schedule. You can also add or delete custom events from the schedule.

### Custom Markers on page 36

Upload a csv file or Excel spreadsheet with custom markers that you can apply to an event in order to mark important moments.

### Pre Flight Checks on page 38

Run pre flight checks at a venue in order to test network readiness and to look for potential issues.

### Tracked Applications on page 41

Select the applications for which data will be collected.

### Schedule on page 41

View the calendar of events by month, week, or day.

### Data Studio on page 41

Create and edit your own custom charts that get added to the Chart Library.

### Preferences on page 44

Set up preferences for the Business Insights viewing environment.



#### Note

Some of the menu items are available only if you have Administrator permissions. For details, see "Permissions" under [User Access](#) on page 31.

## Access the Application

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Business Insights is a web-based application. To access the application:

1. Within a web browser, open the application URL that your administrator has provided.
2. Log in with your Business Insights credentials. If you don't have credentials, contact your administrator.



#### Note

To log out of the application, select the  icon in the top right of the header and then select **Logout**.

**Note**

If you see either of the following banners display in the interface, note the following:


- ***Please link your venue with your Extreme Portal account***—In this case, licensing has not been applied to your venue.
- ***License limit exceeded***—In this case, the venue's license usage has exceeded license capacity.

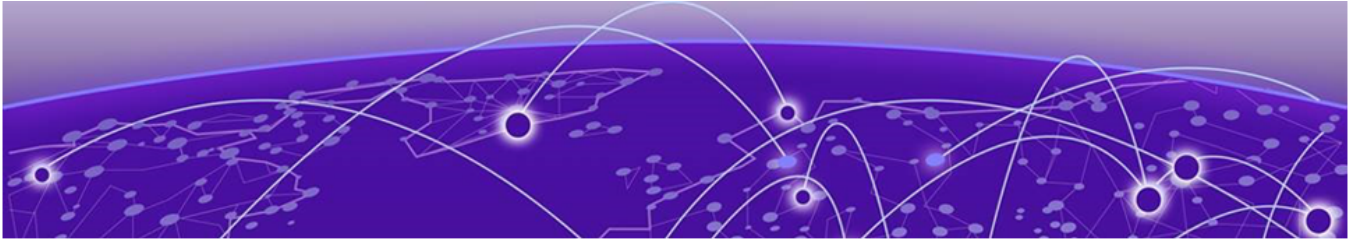
In either case, contact your Extreme Networks representative or an administrator who has the **License** permission so that they can assign license capacity to the venue.

## Change User Password

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Use this procedure to change your user password:

1. In the top right of the Business Insights header, select , then select **Change Password**.
2. In the **Password** field, enter the new password.
3. In the **Confirm Password** field, re-enter the new password.
4. Select **Update**.



# Dashboards

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[Historical Dashboards](#) on page 16

[Live Dashboards](#) on page 17

[Comparative Dashboards](#) on page 18

[Custom Dashboards](#) on page 20

ExtremeCloud Business Insights for Venues displays event data in dashboards. Each dashboard contains charts and figures that show wireless client data usage during one or more events.

Business Insights groups dashboards under four categories that are available under the **Dashboards** navigation item:

- **Historical**—Dashboards that display data for a completed event.
- **Live**—Dashboards that display data for an event that is currently taking place. For live events, the data is updated in real time.
- **Comparative**—Dashboards that compare data for multiple events. Includes the Suites Engagement Dashboard.
- **Custom**—Dashboards that you create and customize to display the data that you want to see.



## Note

By default, Business Insights reports event data in one-minute intervals.

## Dashboard and Chart Requirements

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Many dashboards and charts have extra requirements. For example, many dashboards and charts require you to deploy ExtremeCloud IQ Controller.





To view requirements, hover your mouse over the **Dashboard Description** or **Chart Description** tooltip icon ⓘ for the applicable dashboard or chart.

If a dashboard or chart shows no data, you may not meet the requirements for that data. Review the requirements in the tooltips. If the chart or dashboard still does not work, check with an Extreme Networks representative to ensure that your network meets the minimum requirements.


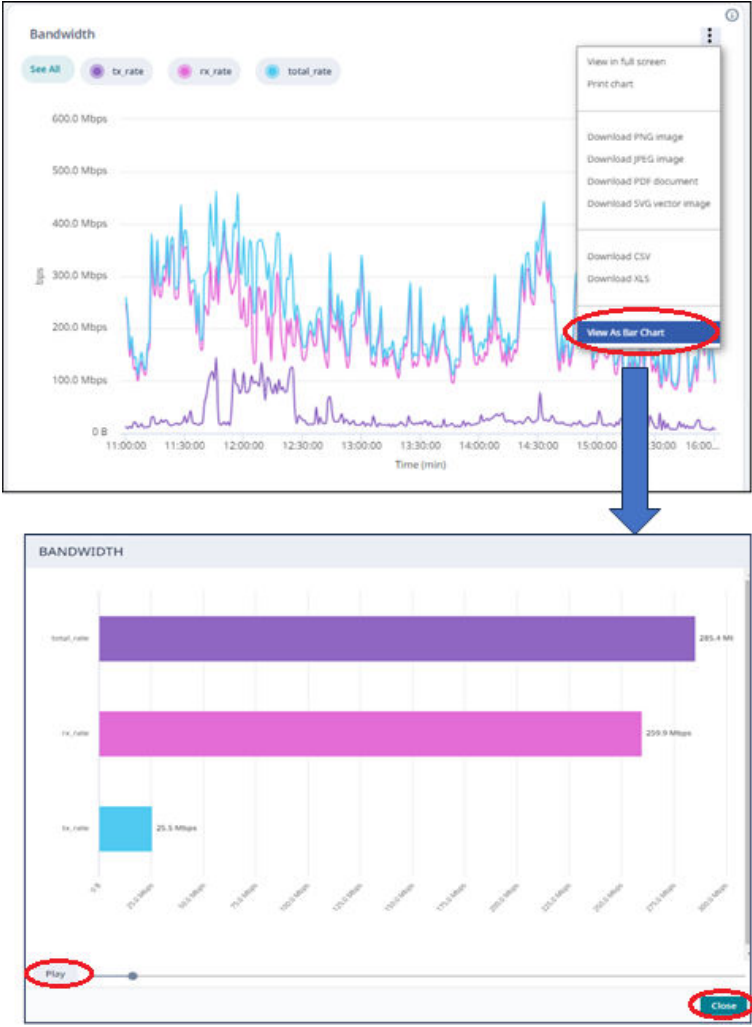
## Common Dashboard and Chart Icons

While working in dashboards, use the following icons and controls to customize how your dashboard and charts display.



**Table 4: Common Dashboard and Chart Icons**

Icons	Description
	The tooltip provides dashboard descriptions (where available) and chart descriptions. For the description, hover your mouse over the tooltip that appears within a dashboard label or within a chart.
	<b>Dashboard Settings</b> —Use this icon to change the dashboard layout. Within a dashboard, click this icon and then select the desired layout.
	<b>Create New Dashboard</b> —Within the Custom Dashboards page, click the plus (+) icon to create a new custom dashboard.
	<b>Download Dashboard (PDF)</b> —Click this icon to download the displayed dashboard in PDF format.

**Table 4: Common Dashboard and Chart Icons (continued)**

Icons	Description
	<p><b>Chart context menu</b>—Click this icon in the top right of a chart and select from a list of available actions, for example you can:</p> <ul style="list-style-type: none"> <li>• Print the chart</li> <li>• Download the chart (in pdf, jpg, png, or svg file format)</li> <li>• Download chart data (in csv or xls file format)</li> <li>• <b>View As Bar Chart</b> (for time series charts only)—Select this option to view time series data as a bar chart video where the bars move over time according to how the data changes during the life of the event. Click <b>Play</b> to start the video, click <b>Pause</b> or click on the timeline to stop the viewer at a specific moment, and click <b>Close</b> to close the video.</li> </ul> <div data-bbox="557 667 1304 1686">  </div> <p><b>Figure 2: View as Bar Chart</b></p>

**Table 4: Common Dashboard and Chart Icons (continued)**

Icons	Description
	<p><b>See All</b>—Within applicable charts, click and unclick this label to display or hide all categories from the chart display.</p> <p><b>Note:</b> You can also display and hide individual categories from the chart using either of these methods:</p> <ul style="list-style-type: none"> <li>• Hover your mouse over a specific chart category to highlight the graph entry for that category.</li> <li>• Click and unclick specific chart category labels to add or remove those categories from the chart display.</li> </ul>
	<p><b>Delete</b>—Click the trashcan icon to delete a custom dashboard or event.</p>

#### Related Topics

[Historical Dashboards](#) on page 16

[Live Dashboards](#) on page 17

[Comparative Dashboards](#) on page 18

[Custom Dashboards](#) on page 20

## Historical Dashboards

Historical dashboards display data for completed events, for example games that were played last weekend. Each dashboard consists of one or more charts.


To access a historical dashboard, go to **Dashboards > Historical**. From the **Historical Dashboards** landing page, you can view a specific dashboard by doing either of the following:

- Select the panel for that dashboard.
- Type the name of the dashboard into the search bar and press **Enter**.

#### Related Topics

[Run a Historical Dashboard Report](#) on page 16

## Run a Historical Dashboard Report

1. Select the Business Insights navigation icon  and select **Dashboards > Historical**.
2. Select the dashboard that you want. For example, the **Summary** dashboard.
3. From the drop-down menus across the top of the page, select values that match a specific venue event.
4. Optional. If the dashboard includes additional filter menus, select the filtering values.






### 5. Select **Run Report**.

The charts in the dashboard populate with data for the selected data points.



#### Note

The following options are available:

- To change the dashboard layout, select  (Dashboard Settings) and select the layout.
- To download the dashboard to PDF, select  (Download Dashboard (PDF)).
- To show or hide graph categories from the display, select and unselect the graph labels. You can also select and unselect the **See All** label to show or hide all categories from the display.
- To take an action on a specific chart, select  (Chart context menu) and then select the action. For example, you can:
  - Print the chart
  - Download the chart (png, jpg, pdf or svg format)
  - Download the chart data (csv or xls format).

#### Related Topics

[Historical Dashboards](#) on page 16

## Live Dashboards

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Live dashboards display data for events that are currently taking place. The charts in the dashboards are refreshed regularly to show data in real time. The Live dashboards option contains the same basic set of dashboards as the default historical dashboards, except that the data is refreshed regularly with live, real-time data.


You can access live dashboards from the navigation menu by choosing **Dashboards** > **Live**. To open a specific live dashboard, from the **Live Dashboards** landing page, do either of the following:

- Select the applicable dashboard panel.
- Type the name of the dashboard into the search bar and press **Enter**.

#### Related Topics

[Run a Live Dashboard Report](#) on page 17

## Run a Live Dashboard Report

1. Select the Business Insights navigation icon  and then select **Dashboards** > **Live**.
2. Select the dashboard type. For example, **Live Social Media**.
3. From the **Venue** drop-down, select the venue for which you want to view live data.



#### Note

You can choose only from events that are currently taking place.




- Optional. If the dashboard includes additional filter menus, select the filtering values.
- Select **Run Report**.

The charts in the dashboard populate with data for the selected event. Data in the charts is refreshed regularly.



#### Note

The following options are available:

- To change the dashboard layout, select  (Dashboard Settings) and select the layout.
- To download the dashboard to PDF, select  (Download Dashboard (PDF)).
- To show or hide graph categories from the display, select and unselect the graph labels. You can also select and unselect the **See All** label to show or hide all categories from the display.
- To take an action on a specific chart, select  (Chart context menu) and then select the action. For example, you can:
  - Print the chart
  - Download the chart (png, jpg, pdf or svg format)
  - Download the chart data (csv or xls format).

#### Related Topics

[Live Dashboards](#) on page 17

## Comparative Dashboards

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Comparative dashboards contain dashboards and charts that compare data for more than one event, including:

- Dashboards and charts that compare data for different events under the same team (for example, different games played by the same team at the same venue or all of a team's home games during a given season)
- Dashboards and charts that compare events that fall under different teams or venues (for example, all games under a specific customer in the same week).

To access the **Comparative Dashboards** landing page, select **Dashboards > Comparative** from the navigation menu. To access a specific comparative dashboard, from the landing page, do either of the following:

- Select the applicable dashboard panel.
- Type the name of the dashboard into the search bar and press **Enter**.




#### Note

The scope of data that is available within a dashboard or chart depends on your user type. For example, a user for a specific team and venue can compare data only for events that fall under both the team and venue whereas a customer-level user can compare event data for all teams under that customer. For more detailed information, see [User Access](#) on page 31.

## Related Topics

- [Run a Comparative Dashboard Report](#) on page 19
- [Suites Engagement Dashboard](#) on page 19
- [Run the Suites Engagement Dashboard Report](#) on page 20

## Run a Comparative Dashboard Report




1. Select the Business Insights navigation icon  and then select **Dashboards > Comparative**.
2. Select the comparative dashboard type. For example, **Network Summary**.
3. Using the drop-down menus across the top of the window, select the criteria for comparison (for example, games played during a season by a given team).
4. Select **Run Report**.

The charts in the dashboard populate with data for the selected events.



### Note

The following options are available:

- To change the dashboard layout, select  (Dashboard Settings) and select the layout.
- To download the dashboard to PDF, select  (Download Dashboard (PDF)).
- To show or hide graph categories from the display, select and unselect the graph labels. You can also select and unselect the **See All** label to show or hide all categories from the display.
- To take an action on a specific chart, select  (Chart context menu) and then select the action. For example, you can:
  - Print the chart
  - Download the chart (png, jpg, pdf or svg format)
  - Download the chart data (csv or xls format).

## Related Topics

- [Comparative Dashboards](#) on page 18
- [Run the Suites Engagement Dashboard Report](#) on page 20

## Suites Engagement Dashboard

Large venues offer box suites for rent where fans can enjoy the game in a private setting. The **Suites Engagement Dashboard** demonstrates the value of a box suite by illustrating how these suites are being used. This dashboard can be found under **Dashboards > Comparative** and tracks a number of metrics for different suites at the venue, including:

- Suite Utilization
- Occupancy (ratio of connected devices to seating capacity)
- Dwell time (ratio of device dwell time to game duration, expressed as a percentage)


The Dashboard displays a variety of figures and charts that illustrate occupancy and dwelling time at different events in a season, at different suites in the venue, and across seasons as well.

#### Related Topics

[Run the Suites Engagement Dashboard Report](#) on page 20

## Run the Suites Engagement Dashboard

Run the Suites Engagement Dashboard to view utilization information for a specific venue suite.




1. Select the Business Insights navigation icon  and then select **Dashboards > Comparative**.
2. Select **Suites Engagement**.
3. Select the venue **Home Team** from the drop-down menu and then select **Run Report**.
4. In the **Suite Utilization** area, select the table cell that corresponds to the data that you want. For example, select the table cell that matches the specific suite (row) and season (column) for which you want to view data.

The dashboard pulls up historical figures and charts for that suite during that season.



#### Note

The following options are available:

- To change the dashboard layout, select  (Dashboard Settings) and select the layout.
- To download the dashboard to PDF, select  (Download Dashboard (PDF)).
- To show or hide graph categories from the display, select and unselect the graph labels. You can also select and unselect the **See All** label to show or hide all categories from the display.
- To take an action on a specific chart, select  (Chart context menu) and then select the action. For example, you can:
  - Print the chart
  - Download the chart (png, jpg, pdf or svg format)
  - Download the chart data (csv or xls format).

## Custom Dashboards

Use **Custom Dashboards** to create your own dashboards with the charts and data that you want to see. Populate your dashboard with the charts that you want using either of these methods:

- Add any of the hundreds of existing charts that are available in the **Chart Library**.
- If there are no charts with the data that you want, use the **Data Studio** to create a custom chart with the metrics that you want.

Once your custom dashboard is created, run a dashboard report on any new events that arise to view your customized dashboard for that event.

#### Related Topics

[Create a Custom Dashboard](#) on page 21

[Run a Custom Dashboard Report](#) on page 22

[Edit an Existing Custom Dashboard](#) on page 23


## Create a Custom Dashboard

Create a custom dashboard that displays the charts and data that you want to see. You can use the dashboard to run a report on any event.

### Before You Begin

- Browse the [Chart Library](#) on page 28 to preview existing charts that you may want for your dashboard.
- If there are no charts with the data that you want, use the [Data Studio](#) on page 41 to create a new custom chart.

To create a custom dashboard:

1. Select the Business Insights navigation icon  and select **Dashboards > Custom**
2. Select the (+) icon to create a new dashboard.
3. In the **Create Dashboard** popup, complete the following fields:
  - **Dashboard Name**—Enter a dashboard name.



#### Note


If you use the Business Insights SDK, this name will be used for the dashboard. Note that you can access the SDK at <https://test.pypi.org/project/extreme-venue-sdk>.

- **Dashboard Title**—Enter the dashboard title that displays in the interface for the dashboard. The title must be alphanumeric and cannot have spaces or special characters.
  - **Dashboard Description**—Enter a text description that will display if you do a mouseover of the dashboard's tooltip on the main **Custom Dashboards** screen.
  - **Edit Dashboard**—Select this check box to open the new dashboard in edit mode immediately. Otherwise, if you leave this check box unselected, the new dashboard gets created and added to your Custom Dashboard list, but you will need to complete the dashboard setup later.
  - **Dashboard Type**—From the drop-down, select the type of dashboard that you want to create (historical data or live data).
4. Select **Create**.
    - If you select **Edit Dashboard**, the new dashboard is created and opens in edit mode right away. Go to the next step.
    - If you left **Edit Dashboard** unselected, you can use the [Edit an Existing Custom Dashboard](#) on page 23 procedure later to add charts to the dashboard.

- For each chart that you want to add, select and drag the chart onto the dashboard page.



#### Note

To remove a chart from the dashboard, select the trashcan icon  in the top right of the chart.

- Select **Save**.

#### Related Topics


[Live Dashboards](#) on page 17

[Historical Dashboards](#) on page 16

[Create a Custom Chart](#) on page 42

## Run a Custom Dashboard Report

Run a report for a specific event using an existing custom dashboard.




- Select the Business Insights navigation icon  and then select **Dashboards > Custom**.
- Select the dashboard that you want to view.
- Choose a specific event by selecting values that match the event from the drop-down menus across the top.
- Select **Run Report**.

The charts in the dashboard populate with data for the selected event.



#### Note

The following options are available:

- To change the dashboard layout, select  (Dashboard Settings) and select the layout.
- To download the dashboard to PDF, select  (Download Dashboard (PDF)).
- To show or hide graph categories from the display, select and unselect the graph labels. You can also select and unselect the **See All** label to show or hide all categories from the display.
- To take an action on a specific chart, select  (Chart context menu) and then select the action. For example, you can:
  - Print the chart
  - Download the chart (png, jpg, pdf or svg format)
  - Download the chart data (csv or xls format).



#### Related Topics

[Create a Custom Dashboard](#) on page 21


[Create a Custom Chart](#) on page 42

## Edit an Existing Custom Dashboard

Apply edits to an existing custom dashboard, for example you can add or remove charts from the dashboard.

1. Select the Business Insights navigation icon  and then select **Dashboards > Custom**.
2. For the dashboard that you want to edit, select the  icon in the top right of the dashboard label and then select **Edit Dashboard**.

The dashboard opens in edit mode.

3. Make any edits that you want to the dashboard:
  - To add a chart, select and drag the chart onto the dashboard.
  - To remove a chart, select the trashcan icon  in the top right of the chart. and select **Delete**.
4. Select **Save**.



### Note

You can also delete a custom dashboard from the **Custom Dashboards** page.

For the dashboard that you want to delete, select the  icon in the top right of the dashboard label, select **Delete Dashboard**, and then select **Delete**.



# Locations

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[Create Access Point to Location Mapping](#) on page 24

[Location Calculation Methods](#) on page 25

The **Locations** page provides a mapping of venue access points and their location in the venue. You can use this page to create human-readable labels and then apply that label to a group of access points. Data for each access point in the group gets categorized under the access point group.

The **Locations** page contains the following tabs:

- **Mappings**—Lets you create labels that group your access points by venue location. See the subsequent procedure for a description of how to create a mapping.
- **Inferred Locations**—Displays access points that are assigned to a location via a regular expression or pattern.
- **Unmapped Locations**—Displays access points that are provisioned for the venue, but which are not assigned a location. As access points get assigned to locations, they get removed from this tab.



#### Note

To use Locations with ExtremeCloud Business Insights for Venues, you must deploy ExtremeCloud IQ Controller.



#### Note

The mapping configuration on the **Locations** page of Business Insights is used by the **Location** dashboard. However, the **Location - Triangulation** dashboard does not use this mapping. The dashboard pulls the mapping from ExtremeCloud IQ Controller.

## Related Topics

[Create Access Point to Location Mapping](#) on page 24

[Location Calculation Methods](#) on page 25

## Create Access Point to Location Mapping

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Use this procedure to create labels that map your venue access points to human-readable locations.

1. Select the Business Insights navigation icon  and select **Locations > Mappings**.




2. From the **Venue** drop-down menu, select the venue.
3. Select the **Mappings** tab.
4. Expand the category to view existing mappings in that category. For example, **Sections** or **Suites** may be categories.

**Note**

To add a new category, select **Add Category**, select the category, and then select **Add**.

5. To create a new mapping, select the (+) icon to add a new line and enter the following:
  - **Label**—Enter a readable label to identify the mapping. For example, `Lower Bowl - Southwest`.
  - **Regular Expression**—Enter either a regular expression to identify a range of access points or list each access point separated by the | symbol. For example, `AP2300|AP2301|AP2302`.
6. To add a new access point under an existing label, edit the **Regular Expression** field to include the access point as per the rule in the previous step.
7. Repeat steps 4 and 5 to create as many labels as you need for your access points.
8. Select **Save**.

**Note**

- To delete a location mapping, select the adjacent **X** icon.
- To view of list of access points to which a location mapping applies, select the  (Show matched Access Points) icon that is adjacent to the location mapping.

## Location Calculation Methods

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ExtremeCloud Business Insights for Venues uses the following methods for determining client location:

- AP association
- Triangulation

The following table compares the two calculation methods.

**Table 5: Comparison of Location Calculation Methods**

	AP Association	Triangulation
Used by...	<b>Location</b> dashboard	<b>Location - Triangulation</b> dashboard
Location Calculation	Client location is assigned to the location of the AP to which the client associates.	Client location is calculated using Received Signal Strength (RSS) readings from multiple APs so that a specific location on the venue floor plan can be determined.
Configuration	Configure AP groups and labels on <b>Locations</b> page of Business Insights. You must also deploy ExtremeCloud IQ Controller.	Configure Location tracking on ExtremeCloud IQ Controller. No specific configuration required on Business Insights, which ingests the configuration from the controller. The configuration includes importing the venue floor plan, assigning zones, and provisioning APs..



**Note**

Location tracking works for associated clients only. Clients that do not associate to an AP cannot be tracked because their MAC addresses are randomized.



# Administration Options

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- [Chart Library](#) on page 28
- [User Management](#) on page 29
- [Custom Events](#) on page 34
- [Custom Markers](#) on page 36
- [Pre Flight Checks](#) on page 38
- [Tracked Applications](#) on page 41
- [Schedule](#) on page 41
- [Data Studio](#) on page 41
- [Preferences](#) on page 44
- [Assign Licenses](#) on page 45
- [Business Insights SDK](#) on page 48


ExtremeCloud Business Insights for Venues includes the following pages, which let you create customizations for charts and dashboards, administer user and event lists, set preferences, and test the network.

- [Chart Library on page 28](#)—Browse hundreds of charts to see which charts provide the data you need. You can add particularly useful charts to a custom dashboard.
- [User Management on page 29](#)—Add and manage the list of users who can access the system. Assign administrator permissions to any users who will administer the systems.
- [Custom Events on page 34](#)—View data for custom events that are outside the normal schedule. You can also add or delete custom events.
- [Custom Markers on page 36](#)—Upload a csv or excel spreadsheet with customized indicators that mark important moments such as scoring plays or intermissions. The markers will display in time series charts for the event.
- [Pre Flight Checks on page 38](#)—Run checks to test network readiness and to troubleshoot potential issues.
- [Tracked Applications on page 41](#)—Use Tracked Applications to select the list of applications for which you want to collect data.
- [Schedule on page 41](#)—View your venue’s event schedule.
- [Data Studio on page 41](#)—Create customized charts that show the data that you want to see. You can use the Chart Library to view the customized chart and can also add the chart to a custom dashboard.


- [Preferences on page 44](#)—Use preferences to set the default landing page, color palette and chart type.
- [Assign Licenses on page 45](#)—Use the **License** page to link the venue account to the Extreme Licensing Portal and to assign license capacity for a venue.
- [Business Insights SDK on page 48](#)—Use the SDK to access APIs that you can use with Business Insights.

## Chart Library

The **Chart Library** page contains hundreds of charts that you can access to view data usage for a specific event using a range of different parameters. You can browse through the hundreds of charts that are available and can add any chart that you find useful to a custom dashboard so that you can access the chart quicker.


1. Select the Business Insights navigation icon  and then select **Chart Library**.
2. Select a specific event by choosing values from the drop-down menus that match that event and venue.
3. Select **Run Report**.
4. In the left navigation bar, select each check box that is adjacent to a chart that you want to view.

The selected charts display in the view.

5. Optional. To take action on a chart, select the  icon in the top right of the chart and select the action. For example, you can:
  - Print the chart
  - Download the chart (in pdf, png, jpg, or svg formats)
  - Download the chart data (csv or xls format)




### Note

For a **Chart Description**, hover your mouse over the tooltip  that displays in the top right corner of a given chart. The description also includes any extra chart requirements. For example, many charts require you to deploy ExtremeCloud IQ Controller.



### Note

To sort or filter the chart list, select the  (**Sort/Filters**) icon and do one of the following:

- To sort the list, select **Sort** and choose **Ascending** or **Descending** order.
- To filter the list to display only charts of a specific type (for example, line charts), select **Filter** > **Chart Type** and select the chart type.

## What to do Next

If you don't see charts with the data that you want, use Data Studio to create your own custom chart. For details, see [Create a Custom Chart](#) on page 42.

## User Management

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The **User Management** page lists all user accounts in the system. To sort a column alphabetically, select the column heading.

Use the widgets below the list to control the number of accounts displayed and to scroll up and down. By default, 20 users are displayed.

Use the icons at the top of the page to:



— **Add User**

Add a new user. See [Add User](#) on page 29.



— **Edit User**

Change a user's attributes or permissions. See [Edit or Update a User](#) on page 30.



— **Delete User**

Remove a user's account. See [Delete a User](#) on page 30.



— **Update Password**

Change a user's password. See [Update Password \(Administrator\)](#) on page 30.





— **Refresh**

Refresh the User list.

For general information about user types and access permissions, see [User Access](#) on page 31.

### Add User



To add a new user:

1. Select the Business Insights navigation icon  and select **User Management**.
2. Select the  (Add User) icon.
3. Select the user type:
  - **User for a Customer (All Venues)**—Creates a user that associates to a specific **Customer**, for example the NFL.
  - **User for a Customer (Specific Venue)**—Creates a user that associates to a specific **Venue**, for example Arrowhead Stadium.
  - **User for a Customer (Specific Venue and Team)**—Creates a user that associates to a specific **Team**, for example Chiefs.
4. Select **Continue**.

5. Enter the user's attributes. Note the following:
  - If you are defining a user for a specific venue or team, you can select those attributes here.
  - **Sign On Type** can be **Single Sign On** or **Local**. If you select **Local**, you are prompted to create a password for the user. There are no restrictions on required characters or password length.
6. In the boxes to the right, select the user's permissions. For example, a user can have permission to add and update users but not delete them. Leave all the boxes cleared to create a user with no special permissions.
7. Select **Create**.



## Edit or Update a User

To edit or update a user:

1. Select the Business Insights navigation icon  and select **User Management**.
2. Select a user in the User list.
3. Select the  (Edit User) icon.
4. Update the user attributes as needed. You can change the user display name, email address, and permissions.
5. Select **Update**.

## Delete a User

To delete a user:

1. Select the Business Insights navigation icon  and then select **User Management**.
2. Select one or more users in the User list.
3. Select the  (Delete User) icon.
4. Select **Delete** to confirm the deletion.



## Update Password (Administrator)

Administrators can use this procedure to update a password for an existing user:



### Note

This procedure requires Administrator privileges. If you don't have Administrator privileges, you can use [Change User Password](#) on page 12 to change your user password.

1. Select the Business Insights navigation icon  and then select **User Management**.
2. Select the user whose password you want to update.
3. Select the  (Update Password) icon.
4. Enter a new password for the user. There are no restrictions on required characters or password length.

5. Enter the password again to confirm it.
6. Select **Update**.

## User Access

Business Insights uses user types and permissions to determine what users can access:

- User types govern which events a user can access along with the scope of data that is available.
- Permissions govern which Business Insights navigation menu items and User Management icons are available to a user.

### *User Types*

Each user must be assigned as one of three user types. The user type determines the event access (which events a user can access) and scope of data (the data that is

available for those events). The following table summarizes the three user types and the level of event access and data scope for each user type.

**Table 6: User Types in Business Insights**

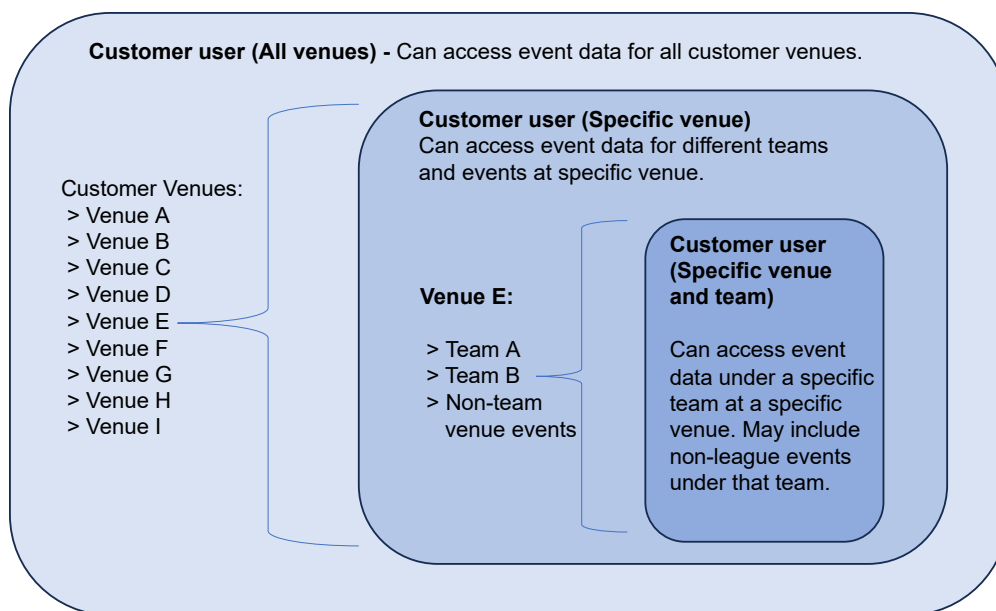
User Type	Description of User Access
User for a Customer (All venues)	<p>On the <b>User Management</b> page, users with this user type get listed in the <b>Customer</b> column. The following access applies:</p> <ul style="list-style-type: none"> <li>• <b>Event Access</b>—Has access to all events that are associated to that customer, irrespective of which venue hosts the event and which team is playing. For a league, this user has access to all events at league venues including non-league events (for example, concerts).</li> <li>• <b>Data Scope</b>—Has access to data for all venues and teams under that customer. For example, this user can use comparative charts to compare results for all teams in the league. With the required permissions, this user can see: <ul style="list-style-type: none"> <li>◦ Within User Management, can see all users under the customer.</li> <li>◦ Within Locations, can see location mappings for all venues under the customer.</li> <li>◦ Locations data within charts and dashboards for all venues.</li> </ul> </li> </ul>
User for a Customer (Specific venue)	<p>On the <b>User Management</b> page, users with this user type get listed in the <b>Venue</b> column. The following access applies:</p> <ul style="list-style-type: none"> <li>• <b>Event Access</b>—Has access to all customer events that are associated to that venue including both league events and non-league events such as concerts. If the venue houses two teams, this user can access events for both teams. The user does not have access to events that take place at other league venues, including events where the venue's home team is visiting another team's stadium.</li> <li>• <b>Data Scope</b>—Has access to data from a specific venue only. This user cannot see data from other venues, unless the data is part of a customer-published figure (for example, league averages). If this user has the required permissions, they can see: <ul style="list-style-type: none"> <li>◦ Within User Management, this user can see only users for that venue or users for that venue's team.</li> <li>◦ Within Locations, can see locations mappings for their own venue only.</li> <li>◦ Locations data within charts and dashboards for all events at the venue.</li> </ul> </li> </ul>
User for a Customer (Specific venue and team)	<p>On the <b>User Management</b> page, users with this user type get listed in the <b>Team</b> column. The following access applies:</p> <ul style="list-style-type: none"> <li>• <b>Event Access</b>—Has access to all customer events for a specific team that take place at a specific venue. For a league, this user can access events only for the specified team that take place at the specified venue. The user cannot access: <ul style="list-style-type: none"> <li>◦ Events for other teams that play at the same stadium.</li> </ul> </li> </ul>



**Table 6: User Types in Business Insights (continued)**

User Type	Description of User Access
	<ul style="list-style-type: none"> <li>◦ Events where the specified team is visiting another team's stadium.</li> <li>◦ Non-league events such as concerts.</li> <li>• <b>Data Scope</b>—Has access to data that pertains to that team and venue only. This user cannot access data for other events at the venue (for example, if the venue houses two teams, the user can access data for their team only). With the required permissions, this user can see: <ul style="list-style-type: none"> <li>◦ Within User Management, the user can see other users for that team only. This user cannot see users at the venue level, customer level, or users for other teams under the customer.</li> <li>◦ Within Locations, this user cannot see Locations mappings for their venue. However, they can see locations info for the venue within charts for team events.</li> </ul> </li> </ul>

The following image illustrates event data scope for different user levels. Each block represents the event data that is available for users at that level.

**Figure 3: Event Data Scope for Different User Levels***Permissions*

Permissions govern which Business Insights menu items and action icons display regardless of the user type. A default user with no permissions can access the following pages:

- Dashboards
- Schedule
- Data Studio

To increase a user's access, you can assign any of the permissions in the following table. Each permission that you assign gets added to the default access to which the user is entitled. You can assign multiple permissions to a single user.

**Table 7: Permissions in Business Insights**

Permission	Description
Administrator	Provides user access to all menu items in the Business Insights navigation menu. This permission is required to be able to access the <b>User Management</b> page.
Add User	Provides user access on the <b>User Management</b> page to add a user to Business Insights.
Delete User	Provides user access on the <b>User Management</b> page to delete a user from Business Insights.
Update User	Provides user access on the <b>User Management</b> page to update a user in Business Insights.
Change Password	Provides user access on the <b>User Management</b> page to change a password for another user.
License	Provides user access to the <b>License</b> page in Business Insights. This user can assign license capacity for all venues and teams to which their user type provides access.



**Note**

When managing users, administrators cannot exceed the scope that their user type provides. For example, an administrator for a Specific Venue cannot manage users at the All Venues level. However, the Specific Venue administrator can manage users at the Specific Venue and Team level who are under the same venue as the administrator.

## Custom Events

The **Custom Events** page lists all custom events that are defined in the system. Custom events are events that do not get added automatically by the customer API. You can use the user interface to add or delete custom events. For a sports venue, custom events may include non-league events such as concerts.

Select the column headings if you want to sort entries alphabetically or chronologically according to the entries in that column. Use the widgets at the bottom of the page to control the number of events that display and to scroll up and down. By default, 20 events are displayed.

Select the following icons to:



— **Add Event**

Add a new custom event. See [Add Custom Event](#) on page 35.

**— Delete Event**

Remove a custom event. See [Delete Custom Event](#) on page 35.

**— Refresh**



Refresh the Custom Events list.

**— Open Dashboard**

Open dashboards for a custom event. See [Open Dashboards for Custom Event](#) on page 36.

## Add Custom Event

Add a custom event to the venue event schedule.

1. Select the Business Insights navigation icon  and then select **Custom Events**.
2. Select the  (Add Event) icon.
3. In the **Create Event** window:
  - Enter a name for the event.
  - Select the event venue from the drop-down list. The time zone is calculated automatically, based on the venue you selected.
  - Enter the starting date and time for the event, in the format `mm/dd/yyyy, hh:mm:ss`. Use 24-hour format, for example `17:00:00` for 5:00 p.m.



**Tip**

Select , to the right of the **Event Start Time** field, to specify the starting date and time using calendar and clock widgets.

- Specify the event's duration – the amount of time for which you want to collect data – in days, hours, or minutes.
4. Select **Create**.

## Delete Custom Event

To delete one or more custom events:



1. Select the Business Insights navigation icon  and then select **Custom Events**.
2. Select one or more events in the Custom Events list.
3. Select the  (Delete Event) icon.
4. Select **Delete** to confirm the deletion.

**Note**

When you delete an event, ExtremeCloud Business Insights for Venues preserves the event's data so that you can use it again.


## Open Dashboards for Custom Event

You can use the **Custom Events** page to open historical or live dashboards for any custom event. Optionally, use the **Compare** feature to open two dashboards side by side for that event.

1. Select the Business Insights navigation menu  and then select **Custom Events**. Depending on your user type, the page displays all custom events under the customer or only the events from a specific venue or team.
2. For the applicable event, select the adjacent  (Open Dashboard) icon.
3. From the **Dashboard** drop-down, select the dashboard that you want to open.
4. Optional. From the **Compare** drop-down menu, select a second dashboard to view. The second dashboard opens on the same page beside the first dashboard.
5. To close the dashboards, select **Close**.



### Note

Select  (Download to PDF) if you want to download the dashboard data to a PDF file.




### Note

If you want to view a custom dashboard for a custom event, you must use the **Custom Dashboards** page. See [Run a Custom Dashboard Report](#) on page 22.

## Custom Markers

Custom Markers let you add timestamped indicators to time series charts for an event so that you can view data usage at that moment in time. For example, you can use Custom Markers to mark the kickoff, scoring plays, intermissions, and other notable moments that you want to highlight.

1. Select the Business Insights navigation icon  and then select **Custom Markers**.
2. From the drop-down menus across the top, select an event and then select **Select Event**.
3. Do either of the following:
  - Select and drag your upload file from your desktop to the Business Insights desktop.
  - Select **Select CSV/Excel file**, then browse to your upload file and select **Open**.
4. Select **Submit Markers**.



### Note

For information on supported upload file formats, see [Supported File Formats for Custom Marker Upload](#) on page 37.

## Supported File Formats for Custom Marker Upload

Business Insights supports Excel spreadsheets or CSV files for Custom Marker uploads. The upload file must contain the following fields: **ts**, **group**, and **title**. The following table provides field descriptions:

**Table 8: Field Definitions for Custom Marker Upload Files**

Field	Description
ts	<p>A timestamp that represents the moment in time where the marker gets inserted in the event to which the upload file applies. The times must be in 24-hour format. Supported formats are:</p> <ul style="list-style-type: none"> <li>MM/DD/YY HH:MM (for example, 12/23/22 23:01)</li> <li>MM/DD/YY HH:MM:SS (for example, 12/23/22 23:01:13)</li> </ul> <p><b>Note:</b> The times are specific to the timezone where you are located currently. During uploading, the times get converted from the uploader's local timezone to the event timezone. For example, if the uploader timezone is UTC -0400 and the event venue timezone is UTC -0700, the uploaded marker values get converted -0300 hours back (12/23/22 23:01 to 12/23/22 20:01).</p>
group	The group column represents a group name (e.g., Quarters/Scoring Plays/Periods). All markers with the same group name are grouped together.
title	The title column represents a display name of the marker (for example, kickoff).

### Excel Spreadsheet Example

ts	group	title
10/21/22 20:00	Periods	Start of match
10/21/22 20:11	Scoring Plays	Home team scores (1-0)
10/21/22 20:18	Scoring Plays	Visiting team scores (1-1)
10/21/20:48	Periods	End of first half (1-1)

### CSV File Example

ts,group,title

10/21/22 20:00, Periods, Start of match

10/21/22 20:11, Scoring Plays, Home team scores (1-0)

10/21/22 20:18, Scoring Plays, Visiting team scores (1-1)



10/21/22/20:50, Periods, End of first half (1-1)

## Pre Flight Checks

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Pre flight checks let you test a venue's network readiness prior to a live event. Pre flight checks are run on the day of the event. They may be run after the venue has started tracking live data for the event, but prior to the scheduled start time of the event. However, you can also run pre flight checks during the scheduled event.


To run a check:

1. Select the Business Insights navigation icon , and then select **Pre Flight Checks**.
2. Select the appropriate venue. You can enter the venue name in the **Search** box or scroll to the appropriate venue.
3. To configure the Pre flight check, select the  (Configuration) icon for the venue and do the following:
  - a. Under **Enabled Checks**, select the tests that you want to run.
  - b. Under **AP Check**, enter the IP address targets that you want to target for the check. Insert a comma between each address.



### Note



We recommend that you don't run AP checks during a scheduled event as some checks may take the AP offline.

- c. Expand the Location categories and check each location that you want to include in the check.
  - d. Select **Save**.
4. To run the check, select the  (Start Pre Flight Check) icon for that venue.

The results display in the window. Refer to the following sections for more information on the checks that are run and the results that are returned.



### Note

- To download the results in a PDF file, select the  (Download Pre flight Check) icon for that venue.
- To delete the check results, select the  (Clear Pre flight Check) icon for that venue.

## Types of Checks

Pre flight checks includes the following types of checks:



### Note

The list of checks may vary from the documented list depending on which products you've integrated with Business Insights.

**Table 9: Pre Flight Checks**

Check Type	Description
XIQ-C Ingestion	<p>This check tests whether ExtremeCloud IQ Controller (XIQ-C) is sending data as expected by checking when the "MU Table" and "AP Table" of a venue were last updated. The check returns the following results:</p> <ul style="list-style-type: none"> <li>• The check is rejected if the venue is not configured for ingestion from ExtremeCloud IQ Controller.</li> <li>• The check passes if both the "MU Table" and "AP Table" for the venue have been updated in the last 20 minutes.</li> <li>• Otherwise, the check fails.</li> </ul>
Traffic Sensor ingestion	<p>This check tests whether raw data is being ingested through the traffic sensor and that this raw data is being processed into entries in the application table. The check returns the following results:</p> <ul style="list-style-type: none"> <li>• The check is rejected if the venue is not configured for traffic sensor ingestion.</li> <li>• The check passes when both the raw flows table and the application table for the venue have been updated in the last 20 minutes.</li> <li>• Otherwise, the check fails</li> </ul>
Upcoming Events	<p>This check tests whether there are upcoming or ongoing events scheduled for a venue. The check returns the current event (if one exists) and the next scheduled event.</p> <p>The check categorizes events as "upcoming" or "ongoing" using the following logic:</p> <ul style="list-style-type: none"> <li>• If the start time is in the past, or is the same as the current time, the event gets reported as an "ongoing" event.</li> <li>• If the start time is in the future, the event gets reported as an "upcoming" event.</li> </ul>
Diagnostic Check: Event Selectors Endpoint	<p>This check tests whether the selectors that are used to find the current live event for a venue are being generated as expected. The check first sees whether there is a live event currently running at the venue and rejects running the check if there is not. The check looks through all the selectors for live events, matches them with the live events in the venue schedule, and confirms that each live event in the schedule has a corresponding selector.</p> <ul style="list-style-type: none"> <li>• The check is rejected if there is no current live event at the venue.</li> <li>• The check passes if selectors can be found for each live event at the venue.</li> <li>• Otherwise, the check fails if selectors cannot be found for all of the live events at the venue. This includes situations where selectors can be found for some (but not all) of the live events at the venue.</li> </ul>

**Table 9: Pre Flight Checks (continued)**

Check Type	Description
Diagnostic Check: Event Timezone Endpoint	<p>This check tests whether the time zone for the current live event at the venue matches the time zone for the venue that was set in the configuration.</p> <ul style="list-style-type: none"> <li>• The check is rejected if there is no current live event at the venue.</li> <li>• The check passes if time zones for the event and the venue are successfully retrieved and match.</li> <li>• Otherwise, the check fails.</li> </ul>
Diagnostic Check: Charts Run Endpoint	<p>This check tests whether the venue can receive data and is able to transform the data into charts. The check first sees if the venue has the right configurations to receive both ExtremeCloud IQ Controller data and traffic sensor data. The check then tests whether there is currently a live event at the venue and attempts to create a chart from the received data.</p> <ul style="list-style-type: none"> <li>• The check is rejected if there is no current live event at the venue.</li> <li>• The check passes if a chart is created successfully.</li> <li>• Otherwise, the check fails.</li> </ul>
AP Check: Basic Wired Connectivity	<p>This check tests whether selected network access point devices can connect to the local internet's wired connection. The check connects to ExtremeCloud IQ Controller at the venue, which signals to the selected APs to emulate being a wired client and to ping the default gateway to verify internet access. The check takes the average roundtrip times for each AP's ping test</p> <ul style="list-style-type: none"> <li>• The check passes if all of the average ping times are under 5ms.</li> <li>• The check returns a warning if any average ping time is greater than 5ms, but all average ping times are less than 20ms.</li> <li>• The check fails if any average ping time is greater than 20ms.</li> <li>• The check is rejected if ExtremeCloud IQ Controller is not configured or if there are no APs or network configured.</li> </ul>

## Check Results

The following table provides a description of the check results.

**Table 10: Check Results**


Field	Description
Check Type	Lists the checks that Business Insights completes on this venue.
Status	<p>Status of the check. Valid values are:</p> <ul style="list-style-type: none"> <li>• Success</li> <li>• Failure</li> <li>• Info</li> </ul>
Start	Start time for the check.
End	End time for the check.
Message	A message that provides details about the check results.



## Tracked Applications

---

On the **Tracked Applications** page, you can select the applications that you want to track on the **Selected Application** dashboards. Data usage for the applications that you select is available on the noted dashboards.



1. Select the Business Insights navigation menu icon  and then select **Tracked Applications**.

The **Tracked Applications** displays the list of applications by category. Business Insights tracks data for the applications that are checked.

2. Select the applications that you want to track.
3. Select **Save**.




### Note

- Select the  (View Selected Applications) icon to view a summary of only the applications that you are tracking.
- Select the  (Clear all Selected Applications) icon to clear your current list of applications.

## Schedule

---

To view a calendar schedule of events for all venues, select the Business Insights navigation icon  and then select **Schedule**.

By default, Business Insights displays events by calendar month. Use the following buttons to adjust the view:

- Select **Month**, **Week**, or **Day** buttons to limit the display to the desired range.
- Select **Previous** or **Next** to move to the previous or subsequent calendar entry.

To search for a specific event, enter text in the **Search** box.



### Note

The **Schedule** page displays both standard events and custom events:

- Standard events get added or deleted from the schedule automatically by the customer API. For a sports league, standard events include the league schedule.
- Custom events can be added or deleted from the schedule using the Business Insights interface. For a sports league, custom events may include concerts. To add or remove a custom event from the schedule, see [Custom Events](#) on page 34.

## Data Studio

---

Use Data Studio to build queries that create custom charts that display the data that you want to see. After you build your query, preview how the chart looks before you save it. After you create a new chart, the chart gets added to the **Chart Library** and

becomes available for custom dashboards. Later on, you can use Data Studio to edit any existing custom chart.


#### Related Topics

[Create a Custom Chart](#) on page 42

[Edit an Existing Custom Chart](#) on page 44

## Create a Custom Chart

Use Data Studio to create a custom chart that displays the data that you want to see.

1. Select the Business Insights navigation icon  and then select **Data Studio**.
2. Select **Create Chart**.
3. Under **Chart Details**, select values from the following drop-down fields:
  - **Chart Type**—Select **Time Series**, **Bar** or **Pie**.
  - **Data Source**—Select the source of the data. Choose from **Access Point Table**, **Mobile Unit Table** or **Application Table**.



#### Note

Data for the Access Point and Mobile Unit tables are sourced from the controller that you deploy. Data for the Application Table is sourced from traffic sensor data.

- **Metric**—Choose the aggregation logic to display for the selected measurement, for example maximum, minimum, or mean.
- **Metric Operation**—Choose the aggregation logic to display for the selected measurement, for example maximum, minimum, or mean.
- **Group By**—Choose how to organize the data, for example by access point name or operating system.



#### Note

The actual values under each drop-down may change slightly depending on which options you select and on your implementation of Business Insights.

4. Select **Open Query Builder** and construct a query.

A query is a set of conditions, associated by AND or OR operators. For example, you might want to collect data for the set of APs with a particular name AND IP address, OR with the same manufacturer.

The following image shows a sample query being defined in the Query Builder.

The screenshot shows the 'Query Builder' interface. It features a top bar with 'AND' and 'OR' logic operators. Below this, there are three main rule entries. The first entry is 'Access Point Name == AP5010'. The second entry is 'SSID == Network3'. The third entry is a nested ruleset containing 'Channel Frequency == 5'. Each rule entry has a '+ Rule' and '+ Ruleset' button, and a red 'X' delete button. At the bottom right, there are 'Cancel' and 'Apply' buttons.

**Figure 4: Query Builder Example**

- Select **+ Rule** to define a condition, for example `Location != Concourse`. To add the rule, within the boxes select the criteria (like `Location`) and operations (like `!=`).
  - To define additional conditions, select **+ Rule** again, define the new conditions as you defined the first condition. Associate the conditions with each other using **AND** or **OR**.
  - To create a group of conditions, select **+ Ruleset** and define rules within the ruleset. Then use **AND** or **OR** to associate the rules within the ruleset, and to associate the ruleset with other rules and rulesets you have defined.
5. When you are finished building the query, select **Apply** to save it.
  6. Select a specific event on which to run a preview report:
    - a. Choose an event by selecting appropriate values from the drop-down menus across the top of the main window.
    - b. Select **Run Report**.  
ExtremeCloud Business Insights for Venues applies your query to the selected event and then builds a chart based on the criteria that you selected in step 3. If you are not satisfied with how the chart looks, modify chart details and run new reports until you are satisfied with the chart.
  7. Select **Save** and enter the following details:
    - **Chart Name**—Enter the Chart Name that identifies the chart within the ExtremeCloud Business Insights for Venues SDK.
    - **Chart title**—Enter the title that displays at the top of the chart.
    - **Chart Description**—Enter a chart description for the custom chart.
  8. Select **Save**.

The new chart gets added to the **Chart Library** and can be added to any of your custom dashboards.



## Related Topics

[Run a Custom Dashboard Report](#) on page 22


[Create a Custom Dashboard](#) on page 21

## Edit an Existing Custom Chart

Use Data Studio to edit an existing custom chart.

1. Select the Business Insights navigation icon  and then select **Data Studio**.
2. Select **Edit Charts**.
3. For the chart that you want to edit, select the **Chart Actions** icon  within the chart label and then select **Edit Chart**.  
If there are no charts with the data you want, search for the chart by entering the chart name in the **Search** box.
4. Under **Chart Details**, edit any of the drop-down options that you want to change.
5. If you want to edit the query, select **Open Query Builder** and do the following:
  - a. Edit any rules and rulesets to which you want to apply changes. You can edit, add or remove rules and rulesets.
  - b. Select **Apply**.
6. Preview how the chart looks:
  - a. Select an event by choosing appropriate values from the drop-down windows across the top of the right window.
  - b. Select **Preview Chart**.
7. Select **Save**.


**Note**

You can also use the Edit Charts options within Data Studio to delete an existing custom chart. In step 3 above, select the Chart Actions icon  for the applicable chart and select **Delete Chart**.

## Preferences

Use the **Preferences** page to set the following:

- Default landing page after login
- Default Chart Type
- Color Palette for charts

1. Select the Business Insights navigation icon  and select **Preferences**.
2. Select the **User Preferences** tab.
3. Set the **Default Landing Page** by selecting one of these options:
  - **Default**—Use the system default landing page.
  - **Custom**—Choose a specific dashboard page as default. From the **Dashboard Type** and **Dashboard** drop-downs, select a specific page. For example, choose Historical and Social Media to set Social Media historical dashboard as default.

4. Select **Save**.
5. Select the **Chart Preferences** tab.
6. From the **Chart Type** drop-down, select the default chart type (for example, Line charts, stacked charts, pie charts, bar chart).
7. For the **Chart Color Palette**, select one of these options:
  - **Default**—System default colors apply.
  - **Custom**—Customize the color palette. Select a color category on the left of the page. In the popup, select the color that you want to assign to the category or enter the hexadecimal color value. Repeat for each category that you want to customize.
8. Select **Save**.

## Assign Licenses


Use the **License** page to link the venue account to the Extreme Licensing Portal and to assign license capacity for a venue.



### Note

- Administrators with the **License** permission can access venue licensing information based on the user type of the administrator. For example, an administrator at the **Customer** level can view and update licensing for all venues under that customer whereas an administrator at the **Venue** level can view and update licensing for a specific venue only.
- Only administrators who have the **License** permission can view and use the **License** page.
- To assign license capacity, you must have purchased licenses already.
- To link the venue account to the Extreme Licensing Portal, you need a user account with sign in access to the portal.

Contact your Extreme Networks representative if you need help with any of these requirements.

1. Select the Business Insights navigation menu  and then select **License**.
2. If the listed venues are not linked to an Extreme Portal account, do the following to link the account to the portal:
  - a. Select **Link to Extreme Portal**.
  - b. Sign in to the Extreme Licensing Portal using credentials for a user account that has access to the portal.
 

After the linkage is complete, the linked licensing account information displays at the top of the page.
3. In the Business Insights interface, assign license capacity for each venue:
  - a. In the **LICENSE** field, set the venue license capacity to a value that is greater than or equal to the number of clients that you expect to use the Wi-Fi network over a 24-hour period.
  - b. Select the adjacent **Update** button to save the license capacity.

- c. Repeat these steps until you have assigned license capacity for each venue.



**Note**

For detailed information about the fields on the **License** page, see [Licensing Field Descriptions](#) on page 46.

## Licensing Field Descriptions

The following table describes the fields that display on the **License** page.





**Table 11: Licensing Field Descriptions**

Field	Description
Link to Extreme Portal	Select this button to link the venues under a customer account to the applicable Extreme Portal account. Business Insights checks the portal for licensing capacity that this customer has purchased and populates the <b>License</b> page with the license totals that are available for allocation to venues.  <b>Note:</b> This button displays only if the account is NOT linked to the Extreme Portal.
<b>Linked Customer Fields—The fields in this section appear only for linked customer accounts.</b>	
Name	The name of the customer.
Shared CUID	The unique customer identifier.
Total licenses	The total number of licenses that the customer has purchased.
Remaining licenses	The total number of licenses for this customer that are not assigned to venues. This value can be derived with the following formula: Remaining licenses = Total licenses - Total assigned licenses  <b>Note:</b> Any new license capacity that you assign gets subtracted from the value in this field. For example, if you have 50,000 remaining licenses and you assign 30,000 licenses to venues, you have 20,000 remaining licenses.
Unlink from Extreme Portal	Select this button to unlink the venues under a customer account from the applicable Extreme Portal account. Selecting this option removes the license allocation for all displayed venues. To reassign the license capacity to these venues, you will need to link the account once again.
<b>Licensing Fields</b>	
VENUE	The name of the venue.

**Table 11: Licensing Field Descriptions (continued)**

Field	Description
LICENSES	<p>The license capacity (the number of client licenses) that is allocated to this venue for use during a 24-hour period. You can edit this value to assign or remove license capacity for the venue.</p> <p><b>Update</b>—After you edit the capacity, select the adjacent <b>Update</b> button to save the setting and to update the license fields on this page.</p> <p><b>Note:</b> Assign a value that is greater than, or equal to, the total number of clients that you expect to use the Wi-Fi network during event days. For example, the value in this field should always be greater than or equal to the value of the <b>CLIENT COUNT (PAST 24 HOURS)</b> field.</p> <p><b>Note:</b> Any new license capacity that you assign gets subtracted from the value of the <b>Remaining licenses</b> field.</p>
CLIENT COUNT (PAST 24 HOURS)	<p>The number of clients, based on unique MAC addresses, or IP addresses if MACs are not available, that accessed the venue's Wi-Fi network during the previous 24-hour period. This field gets updated once per day with the totals for the previous day.</p> <p><b>Note:</b> To maintain a Green status, make sure that this value does not exceed the venue license capacity (as per the <b>LICENSES</b> field).</p>

**Table 11: Licensing Field Descriptions (continued)**

Field	Description
STATUS	<p>The status of license allocation and usage at the venue. Each venue receives one of the following three color-coded statuses:</p> <ul style="list-style-type: none"> <li data-bbox="623 422 1463 537">  <b>Green</b>—Venue is licensed adequately with no issues. The venue's current license allocation (as per the LICENSE field) meets the total client demand (as per the CLIENT COUNT field).         </li> <li data-bbox="623 575 1463 720">  <b>Yellow</b>—An issue exists with license allocation for this venue. For example, the number of clients using the Wi-Fi network (as per the CLIENT COUNT (PAST 24 HOURS) field) has exceeded the venue's license capacity (as per the LICENSE field).         </li> </ul> <p>Refer to the adjacent MESSAGE field for detailed information on why the status is yellow, including details on how to resolve the issue.</p> <p><b>Note:</b> Multiple violations may lead to service restrictions.</p> <ul style="list-style-type: none"> <li data-bbox="623 940 1463 1056">  <b>Red</b>—Services at this venue are affected or halted by a high-severity licensing issue. Refer to the adjacent MESSAGE field for details, including information on how to resolve the issue and restore services.         </li> </ul> <p><b>Note:</b> If you see a red status icon  beside the <b>License</b> field in the navigation menu, check the <b>License</b> page for venue licensing issues.</p>
MESSAGE	<p>Provides additional information on the STATUS field. If the status is <b>Yellow</b> or <b>Red</b>, the message provides the reason for the status and details on how you can resolve the issue.</p>

## Business Insights SDK

To access APIs that you can use with Business Insights, go the following site, which provides a Python SDK, installation instructions, and examples of how to use the SDK with Business Insights.

<https://test.pypi.org/project/extreme-venue-sdk>





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