



# The Cisco CMX Analytics Service

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## Overview of the Analytics Service

The Cisco Connected Mobile Experiences (Cisco CMX) Analytics service provides a set of data analytic tools for analyzing Wi-Fi device locations. The Analytics service helps organizations use the network as a data source to view visitors' behavior patterns and trends, which will in turn help businesses improve visitor experience and boost customer service.

The Analytics service enables you to:

- Analyze Wi-Fi device locations.
- Estimate the number of new visitors (visitors seen for the first time) and repeat visitors (recognized from an earlier visit), the amount of time they spend at a venue, and the frequency of their visits within a venue.
- Gain detailed insight into the behavior patterns of visitors moving and interacting within a venue.
- Analyze business performance by measuring the effect of in-venue marketing.
- Improve customer satisfaction through sufficient staffing during peak hours, proper signage, and making changes in underutilized areas.

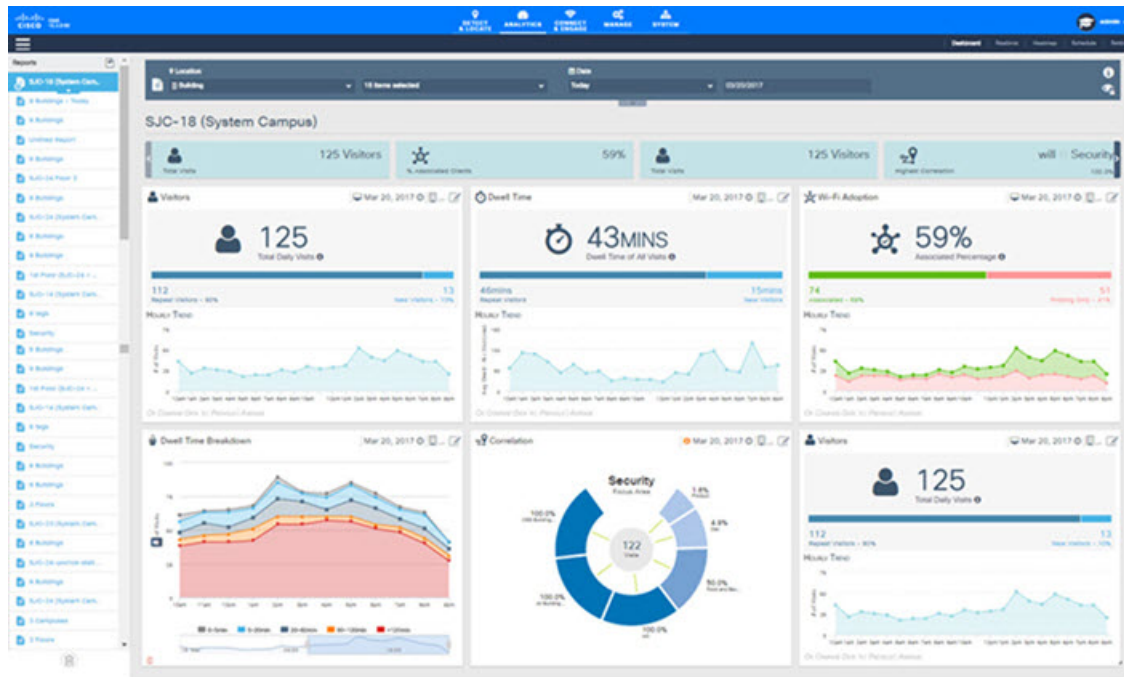
## The Analytics Dashboard

The Analytics service's Dashboard is designed to help you visualize and understand various parameters associated with visitors' movement within a given zone. You can use the Dashboard on a daily basis to examine current trends or events. You can also customize the Dashboard with different widgets, as per your requirements.

## Accessing the Analytics Dashboard

### Procedure

- Step 1** Log in to Cisco Connected Mobile Experiences (Cisco CMX).  
**Step 2** Choose **Analytics > Dashboard**.




- Step 3** Using the left pane of the Dashboard, navigate to the desired report using the deployment hierarchy (heterarchy). The details pertaining to that report are displayed on the Dashboard.

## Filtering the Data Displayed in the Analytics Dashboard

The data displayed in the Dashboard is filtered to include devices that are seen for more than 5 minutes and less than 8 hours.

To change the dwell time (the amount of time a visitor spends at a location):

### Procedure

- Step 1** Log in to Cisco Connected Mobile Experiences (Cisco CMX).  
**Step 2** Choose **Analytics > Dashboard**.  
**Step 3** Click the Expander icon  below the **Location and Date** pane.

The **Edit Report** window is displayed. For more information, see [Edit a Report, on page 8](#).

- Step 4** Specify the **Dwell Threshold** values.
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## Viewing a Device Count and Average Dwell Time Report

### Procedure

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- Step 1** Log in to Cisco Connected Mobile Experiences (Cisco CMX).
- Step 2** Choose **Analytics > Dashboard**.
- Step 3** Click the location you want to analyze, **Region, Building, Floor, Zone, or Tags**.
- Step 4** From the **Location** and **Date** pane, choose the timeframe for the report. The available options are:
- **Now**—The number of active devices in the last 15 minutes.
    - Note** In Cisco CMX Release 10.2.3, the **Now** option in the **Date & Time Filters** drop-down list is no longer available
  - **Today**—The report you specified is run for the current day and the generated results are displayed.
  - **Yesterday**—The report you specified is run using the previous day's values and the generated results are displayed.
  - **This Week**—The report you specified is run using the current week's values (Monday to Sunday) and the generated results are displayed.
  - **Last Week**—The report you specified is run using the previous week's values (Monday to Sunday) and the generated results are displayed.
  - **Last 2 Weeks**—The report you specified is run using past two weeks' values and the generated results are displayed.
  - **This Month**—The report you specified is run using this month's values and the generated results are displayed.
  - **Last Month**—The report you specified is run using the previous month's values and the generated results are displayed.
  - **Last 3 Months**—The report you specified is run using the past three months' values and the generated results are displayed.
  - **This Year**—The report you specified is run using this year's values and the generated results are displayed.
  - **Last Year**—The report you specified is run using the previous year's values and the generated results are displayed.
  - **Custom Range**—The report you specified is run using the date values you specified in the Start and End date fields.
- A report based on the chosen criteria is displayed in the Dashboard and contains the following widgets:
- Visitors widget

- In the Device Count report, information about the total number of visitors, along with percentage of repeat visitors and new visitors is displayed.
- In the Dwell Time report, the average dwell time of all the visitors, along with the dwell time of repeat and new visitors is displayed.
- Compared Data to widget—A comparative result of repeat visitors vs. new visitors is displayed. The available options are:
  - Previous
  - Average—The average value is calculated by averaging the current period and the previous period. If you select This Week in the Date pane, the previous to compared with is last week, and the average is over last week and this week.
- A line chart with a summary view and a detailed view of the criteria selected—You can customize the X-axis and Y-axis by applying the following filter criteria:
  - View Unique Devices or View Absolute Visits
  - Locations—Campus, Building, Floor, Zone, Zone Tag
  - Values—Ascending, Descending, Alphabetical

## Analytics Reports

The Analytics Dashboard provides reports to understand and monitor the behavior pattern of visitors within a particular venue.

The Analytics service's report facility also provides a more regular and manager-oriented set of information through parameterized templates to measure various trends and patterns that occur over a period of time in a particular zone. You can create new reports as well as modify the existing reports. You can schedule a report at a customized frequency, print the reports, and download the reports in PDF, Excel, or HTML formats. You can either choose to auto-generate or customize a report.



**Note** In Cisco CMX Release 10.2.2:

- the Unique Device widget is no longer available for analytics reports
- reports where multiple zones and floors are selected can result in duplicate device counts when a device visits more than one zone or floor. So if a device visits zone 1 and zone 2, the device count is displayed as 2. However, this is not so in Cisco CMX Release 10.2. Hence a higher device count can be registered in a 10.2.2 report as opposed to 10.2.

A workaround for this is to tag multiple campus/building/floors/zone with the same TAG and create reports at the TAG level.

## Creating and Managing Customized Reports

To create your own reports, pick the locations, date/time, and various widgets, and decide how they should be displayed in the Analytics Dashboard. Your reports will be listed in the left pane under **Reports**. Click a report name to view the corresponding details in the Dashboard.

*Figure 1: Analytics Reports*





**Note** The maximum number of widgets you can include when creating a new report is 9. If you add more than 9 widgets, this message is displayed: *Analytics only supports 9 widgets in a report. Please reduce the number of widgets.*

If there is no report present in the dashboard, the **Create New Report** window is automatically displayed.

The following is the list of custom report-related tasks that you can perform:

### Create a Custom Report

#### Procedure

- Step 1** Log in to Cisco Connected Mobile Experiences (Cisco CMX).
- Step 2** Choose **Analytics > Dashboard**.
- Step 3** In the left pane of the Dashboard, click  next to **Reports**. The **Create New Report** window is displayed.
- Step 4** To create a custom report, click **Customized** in the **Report Type** row in the right pane.
- Step 5** From the **Focus Area Filter** drop-down list, choose the locations that you want to analyze. The location types are **Building**, **Campus**, **Floor**, and **Zone**.
- Step 6** From the **Date & Time filters** drop-down list, choose the date and time range you want to run the report for.
- Step 7** In the Add Widgets  area, click **Add Widget to Report +** to include any of the following widgets to the report:
  - **Visitors**—Shows the number of visitors detected in the network.
  - **Average Dwell Time**—Shows the amount of time visitors spent at a location.
  - **Correlation**—Shows the relationship between devices and visits between locations.
  - **Path**—Shows where visitors went before and after visiting a location.
  - **Wi-Fi Adoption**—Shows how many devices are connected to the Wi-Fi network.
  - **Dwell Time Breakdown**—Shows dwell-time distribution for selected areas, for example:
    - 20 percent of the visitors stayed less than an hour
    - 50 percent stayed for 1 to 2 hours
    - 30 percent stayed for more than 2 hours

- Note**
- The **Add Widget** is not available for the **Auto-Generate** report type.
  - For each widget in the report, you can click **Edit/View Options** to edit the display options. The options available are **Chart**, **Summary**, and **Table**. By default, the **Summary** option is selected.

**Step 8** From the **Advanced Widget Filter** ▼ area, choose the devices that you want to filter in the report.

**Step 9** From the **Associated/Probing Devices** drop-down list, choose an option.

**Step 10** You can set a threshold for dwell time. This is the amount of time spent by a client device (visitor) at a given location. Select the minimum and maximum time from the corresponding drop-down lists in the **Dwell Threshold** ▼ area.

- From the **Minutes To** drop-down list, choose the minimum time, in minutes.
- From the **Hours** drop-down list, choose the maximum time, in hours.
- Click **No Filters**, if filtering is not to be applied while generating the report. When you click this option, the dwell-time threshold values are automatically set in the range of 0 to 24.
- Check the **Stationary Devices** check box if you want to include stationary devices while filtering.

If stationary devices filtering must be included in the report, ensure that the dwell threshold maximum time is 24 hours. Stationary device filtering is only available for widgets with a count, such as **Visitors** and **Average Dwell Time**.

**Step 11** Click **Done**.

Based on the **Focus Area and Date** filters that you specified, the report name is generated. The new report name is listed in the left pane under **Reports**.

The following is a list of tasks that can be performed after a Custom report is created:

- Schedule a Report—To schedule a report:
  - Click the report for which you want to create a scheduled report.
  - Click the **Expander** icon that is displayed.
  - Click the **Clock** icon (Schedule) to schedule the report.
  - In the **SELECT REPORT OPTION** dialog box, choose **HTML**, **PDF**, or **Excel** and click **Next**.

**Note** When exporting a report with widgets such as **Visitor Count**, **Dwell Time**, **Dwell Time Breakdown**, or **Wi-Fi Adoption**, you can choose to display **Hourly Trend** (by default) or **Compare Data to** information. If **Compare Data to** chart is included for any of these widgets, when exporting, downloading or scheduling a report, the **Hourly Trend** information is displayed.

- PDF Report—Enables you to schedule a report in PDF format. You can customize the PDF report parameters.
  - In the **Header** text box, specify a Header for the PDF report.
  - Click **Select a Logo** to choose a logo for the PDF report. You can align the placement of the logo to left, center, or right.
  - If you want to provide comments, enter your comments in the **Add your comments here** field.

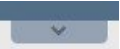
- In the **Footer** field, specify a footer for the PDF report.
  - Enter the email address of the recipients to send the report to.
  - Enter the start date and time from which the report has to be generated.
  - Select the frequency of the report—**One Time**, **Daily**, or **Weekly**.
  - Excel Report—Enables you to schedule a report in excel format.
    - Enter the email address of the recipients to send the report to.
    - Enter the start date and time from which the report has to be generated.
    - Select the frequency of the report—**One Time**, **Daily**, or **Weekly**.
  - HTML Report—Enables you to schedule a report in HTML format.
    - Enter the email address of the recipients to send the report to.
    - Enter the start date and time from which the report has to be generated.
    - Select the frequency of the report—**One Time**, **Daily**, or **Weekly**.
- e. Click **Schedule**.
- Print a Report—To print a report:
    - a. Click the report that you want to print.
    - b. Click the **Expander** icon that is displayed.
    - c. Click the **Print** icon to print the report.
    - d. Click **Next**.
  - View Scheduled Report Manager—To view the scheduled reports, choose **Analytics > Schedule**. The **Scheduled Report Manager** page displays the following information:
    - **Report ID**—Shows the report ID.
    - **Report Title**—Shows the report title.
    - **Username**—Shows the name of the user who created the scheduled report.
    - **Start From**—Shows the date and time from which the report is scheduled to run.
    - **Recipients**—Shows the email addresses of recipients.
    - **History**—Displays the history of the scheduled report.
    - **Actions**—Modifies or deletes the scheduled report.
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## Edit a Report

You can use the **Edit Report** window to edit the report parameters and generate an updated report.

### Procedure

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- Step 1** Log in to Cisco Connected Mobile Experiences (Cisco CMX).
- Step 2** Choose **Analytics > Dashboard**.
- Step 3** Click the Expander icon  below the **Location and Date** pane. The window **Edit Report** window is displayed.
- Step 4** Edit the report parameters and then click **Done**. The Dashboard window is refreshed and the updated report is displayed.
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## Create a Scheduled Custom Report

Besides creating customized reports, you can add a logo, text, header, and footer to a report to align it with your organization. The reports can be scheduled at a customized frequency for a targeted set of recipients.

### Procedure

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- Step 1** Log in to Cisco CMX.
- Step 2** Choose **Analytics > Dashboard**.
- Step 3** In the left pane of the Dashboard, expand the report name, and click **Schedule**. The **Select Report Option** dialog box is displayed. The following options are available:
- **HTML Report**
  - **PDF Report**
- Step 4** Click the radio button corresponding to the kind of report you require and click **Next**. If you select the PDF option, the following customization options are available:
- **Header**—Add a header to the report and provide a name. You can customize the position of the header text by using the right, top, and left arrow keys.
  - **Logo**—Add a logo to the report by clicking the **Logo** icon. A few default logos are available to choose from. You can also upload a logo by clicking **Upload a Logo**.
  - **Comments**—Add comments about the report by entering the corresponding text in the **Add your comments Here** field. You can move the sections by clicking the **Up** or **Down** arrow keys on the left side of the different components present in the sections in the report.
  - **Footer**—Add footer text at the bottom of the report.



**Note** When scheduling a report with widgets such as **Visitor Count**, **Dwell Time**, **Dwell Time Breakdown**, or **Wi-Fi Adoption**, you can choose to display **Hourly Trend** (by default) or **Compare Data to** information. If **Compare Data to** chart is included in any of your widgets, when downloading or scheduling a report, the **Hourly Trend** information is displayed.

- Step 5** Click **Next**.  
The **Schedule Report** widget is displayed.
- Step 6** Enter the email addresses of the recipients to send the report to.
- Step 7** Enter the start date and time of the period for which the report has to be generated.
- Step 8** Select the frequency of the report, **One Time**, **Daily**, or **Weekly**.
- Step 9** Click **Schedule**.

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## Configure Custom Time Ranges for an Analytics Report

In Cisco CMX Analytics, the **Create New Report** window includes the date and time range option to select a specific period of time for creating Analytics reports. After creating or modifying these time ranges, you can proceed to select the corresponding range from the **Date and Time Filters** drop-down list, for example, Early Morning (12am -3:59am).

You can also modify the existing ranges or define custom time ranges for generating Analytics reports. You can configure the custom time using either the Cisco CMX GUI or CLI.

### Add a New Time Range Using the Cisco CMX GUI

#### Procedure

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- Step 1** Log in to Cisco Connected Mobile Experiences (Cisco CMX).
- Step 2** Choose **Analytics > Settings**.  
The **Analytics Settings** window is displayed with a list of the available time ranges.
- Step 3** To add a new custom time range, click **Add**.

The **Add Time Ranges** dialog box is displayed.

**Step 4** In the **Annotation** field, enter a new name for the time range.

**Step 5** Use the time range slide bar to pick a new time range.

**Step 6** Click **Save**.

- Note**
- Any updates to the time range values will result in recomputation of the data.
  - The new time is displayed in the **Global TimeRanges** drop-down list.
  - By default, the interval time for a new time range is 15 minutes.

## Add a New Time Range Using CLI

### Procedure

**Step 1** Log in to root through SSH.

**Step 2** Use the CLI to edit the *analytics.params.json* file and change the time ranges. Optionally, you can use a third-party SFTP client to edit the file.

- Enter `cd /opt/cmxc/etc/`
- Enter `vi analytics.params.json`

**Step 3** (Optional) Delete all the older Analytics reports and reprocess the data with the new time ranges:

```
<USERNAME>:<PASSWORD> -X DELETE
"http://<IPADDRESS>:5556/api/analytics/v1/batch/daysProcessed/HistoricalVisitsJobProducer"
<USERNAME>:<PASSWORD> -X DELETE
http://<IPADDRESS>:5556/api/analytics/v1/batch/daysProcessed/TodayVisitsJobProducer
```

**Step 4** To restart the Analytics services, use the **cmxctl analytics restart** command. This updates and displays all the new time ranges in the CMX UI. All the historical data will also be reprocessed using the new time ranges.

**Note** If the Analytics services are not restarted, only the unmodified time ranges will be available.

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## Download a Customized Report

You can use the Analytics service to download customized reports in PDF, Excel, or HTML formats.

### Procedure

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**Step 1** Log in to Cisco CMX.

**Step 2** Choose **Analytics > Dashboard**.

**Step 3** In the left pane of the Dashboard, expand the corresponding report name, and click **Download**.

The **Select Report Option** dialog box is displayed. The following options are available:

- **PDF Report**
- **Excel Report**
- **HTML Report**

**Step 4** Click the radio button corresponding to the format that you want the report to be downloaded in.

If you select the PDF option, the following customization options are available:

- **Header**—Add a header to the report and provide a name. You can customize the position of the header text by using the right, top, and left arrow keys.
- **Logo**—Add a logo to the report by clicking the **Select a Logo** icon. A few default logos are available to choose from. You can also upload a logo by clicking **Upload a Logo**.
- **Comments**—Add comments about the report by entering text in the **Add your comments** field. You can move the sections by clicking the **Up** or **Down** arrow keys on the left side of the different components present in the sections in the report.
- **Footer**—Add footer text at the bottom of the report.
- If you select **Excel Report**, the data for all the Dashboard widgets will be exported as tables in the report. If you want to download reports with filtering options, choose the **Table** report option from the **Edit/View Options** for each widget.

**Note** When downloading a report with widgets such as **Visitor Count**, **Dwell Time**, **Dwell Time Breakdown**, or **Wi-Fi Adoption**, you can choose to display **Hourly Trend** (by default) or **Compare Data to** information. If **Compare Data to** chart is included in any of your widgets, when downloading or scheduling a report, the **Hourly Trend** information is displayed.

**Step 5** Click **Next**.

The customized reports are downloaded in the selected format.


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## Delete a Customized Report

You can delete any of the custom reports that you created.

### Procedure

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- Step 1** Log in to Cisco Connected Mobile Experiences (Cisco CMX).
  - Step 2** Choose **Analytics > Dashboard**.
  - Step 3** In the left pane of the **Dashboard**, hover the cursor over a report, and click the **Delete**  icon.
- 

## Creating an Analytics Report Based on Associated or Probing Only Devices

You can create filtered analytics reports based on all visitor devices associated to the network (regardless of SSID) and on all visitor devices detected by the network. These are categorized as **Associated** and **Probing Only** devices. In addition, any devices filtered by the Location service is also excluded from analytics reports.

### Procedure

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- Step 1** Log in to Cisco Connected Mobile Experiences (Cisco CMX).
  - Step 2** Choose **Analytics > Reports** to display the **Create New Report** window.
  - Step 3** From the **Associated/Probing Only Devices** widget, select **Associated** or **Probing Only**, or select both.  
If both are selected, all associated and probing only devices will be displayed (meaning, no filtering) in the Visitor Count area on the Analytics Dashboard.
  - Step 4** Click **Done**.  
The Visitor Count information on the Analytics Dashboard reflects the following:
    - If the **Associated** option is selected, a green Wi-Fi icon appears next to the **Visitor Count** heading. The visitor count displayed is the number of devices associated to the SSID.
    - If the **Probing Only** option is selected, a gray Wi-Fi icon appears next to the **Visitor Count** heading. The visitor count displayed is the number of devices probing only by the SSID.
    - If both options are selected (meaning, no filtering), no icon appears.
- 

## Viewing Global Alerts for Critical Services

The Global Alerts window displays information for all Cisco CMX service. You can navigate to this window from the respective Cisco CMX service window.


## Procedure

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**Step 1** Log in to Cisco Connected Mobile Experiences (Cisco CMX).

**Step 2** Choose **Analytics > Dashboard**.

The **Dashboard** window is displayed.

**Step 3** In the top-right corner of the window, click the **Alerts**  icon.

The **Live Alerts** window is displayed with the global alert details for critical and major alerts. For more information about alerts, see [Viewing Live System Alerts](#).

**Tip** For the Analytics service, Job Processor runs multiple jobs in the background. The Analytics service's Dashboard displays success alerts when the job processor completes all the jobs.

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## Customized Widgets

Customized widgets enable you to view and analyze specific activities to better suit the objective of your analysis. For example, you can create a widget that focuses on visitor (client) activity in a zone of interest. The customized widget will gather and present only the data pertaining to visitor activity, and enable the analysis and interpretation of this data. The information in the customized widgets enable you to take meaningful decisions based on client activity.



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**Note** Customized widgets can be generated only by Advanced users.

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## The Visitors Widget

The Visitor widget provides a detailed summary of the visitor (client device) count in an area of focus.

The Visitor widget can be viewed in the following formats:

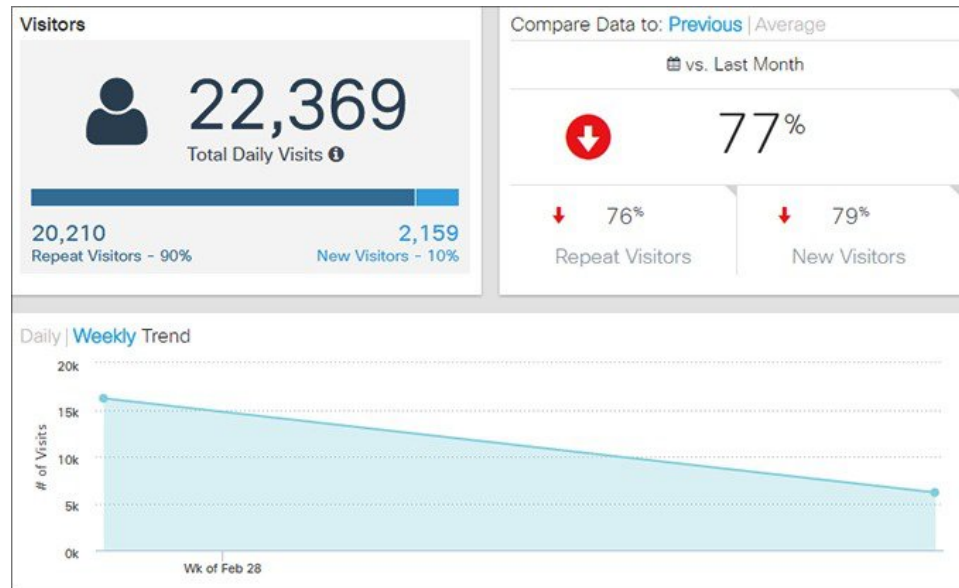
- **Summary**—This is the default view. This view consists of the **Visitors**, **Compare Data to**, and **Hourly Trend** charts. A breakup of new and repeat visitors is also provided. The **Compare Data to** chart presents comparative data for the current day and the previous day. You can also compare the current data with the average visitor count per day. A breakup distribution of repeat and new visitors is also shown as percentage. A graph shows the visitor count per hour from 12:00 a.m. to 12:00 p.m.
- **Chart**—A line chart with a summary view of the number of total visitors along the Y-axis and the activity at a given time of the day along the X-axis is displayed. You can configure the chart based on the following views:
  - **View Unique Devices or View Absolute Visits**
  - **Locations**—Campus, Building, Floor, Zone, By Hour
  - **Values**—Ascending, Descending, Alphabetical

The Y-axis value provides alternate views of the number of visitors and percentage of total visitors. Hover your cursor at any point along the line to view the connected and probing data at that instance.

- **Table**—Visitor count attributes are presented in a tabular format.

The following trends are available for each view:

- **View Unique Devices**
- **View Absolute Visits**



## The Dwell Time Widget

The Dwell Time widget presents detailed summary of the time spent by visitors (client devices) at a location.

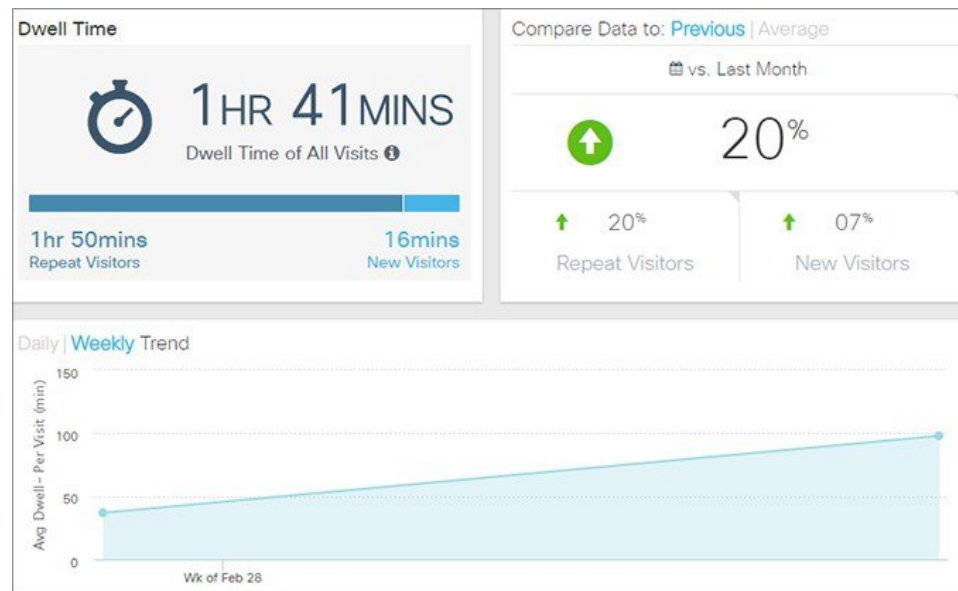
Average dwell time can be viewed in the following formats:

- **Summary**—This is the default view. The summary view consists of the **Average Dwell Time**, **Compare Data to**, and **Daily Trend** charts. A breakup of new and repeat visitors is also provided. The **Compare Data to** chart presents comparative data for the current day and the previous day. You can also compare the current data with the average visitor count per day. A breakup distribution of the repeat and new visitors is also shown as percentage. A graph shows the visitor count per hour from 12:00 a.m. to 12:00 p.m.
- **Chart**—A line chart with a summary view of the number of total visitors along the Y-axis and the activity at a given time of the day along the X-axis is displayed. You can configure the chart based on the following views:
- **Table**—Visitor count attributes are presented in a tabular format. You can view the following details:
  - Location
  - Parent Area(s)
  - Day

- Time
- Dwell Time

The following trends are available for each different view:

- **View Unique Devices**
- **View Absolute Visits**



## The Correlation Widget



**Note** The Correlation widget of Cisco CMX 10.2 is referred to as Crossover widget in Cisco CMX Release 10.1.

The Correlation widget provides a detailed summary of correlation of client devices between two locations. Correlation data can be used to determine the relation between two zones. Low correlation between zones indicates lack of access between the two zones. For example, you can expect a high correlation between the food court and the cinema in a shopping mall. The Correlation widget can be viewed in the following formats:

- **Correlation**—Provides an interactive graphical representation of the correlation between zones. You can configure the correlation between zones by filtering according to the focus areas, building, or absolute versus unique devices.
- **Table**—The table format lists the data in a tabular format with the following columns:
  - **Area**—The zone around which correlation is configured.
  - **Grouping**—The focus area for which the correlation data is collected.
  - **Correlation**—The correlation data, in percentage, between the zone (Area column) and the focus area.

The following trends are available for each view:

- **View Unique Devices**
- **View Absolute Visits**

## The Path Analysis Widget

The Path Analysis widget analyses the paths taken by visitors (or client devices) before and after visiting a focus location, and provides a graphical representation of the paths.

- The green (left) side represents where a device is coming from, for example, immediately before entering the focus zone.
- The blue (right) side represents where a device goes to, for example, immediately after exiting the focus zone.

Hovering your cursor over the focus reveals a breakdown based on:

- Percentage of paths that either started or ended in the focus zone.
- Percentage of paths that either arrived or departed from the focus zone.

Hovering your cursor over a green section shows the number of paths that entered the focus zone originated in this zone.

Hovering your cursor over a blue section shows the number of paths that originated in the focus zone ended in this zone.




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**Note** All paths are calculated based on the overall data set defined, but only the top 15 (by percentage) paths can be displayed in the widget due to space constraints.

In a generated report with **Path Analysis** widget, the **Focus on** drop-down displays the focus area with the correct floor level granularity.

The **Edit Widget** link allows you to define the heterarchy level from which the data pool is collected from, and then define the specific focus of this widget. That way, you can add more than one widget to the report and perform side-by-side comparisons of one zone with another.

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## The Wi-Fi Adoption Widget

You can now view real-time analytics reports in the Cisco CMX GUI. This tab that shows you a Wi-Fi adoption widget based off of the REAL TIME information. The **NOW** parameter for Analytics has been removed.

The Wi-Fi Adoption widget displays a detailed summary of the number of clients that are associated with a network, and the clients that are probing the network:

- **Probing Only**—Refers to the client devices that are detected by APs in the network when they are probing the network.
- **Associated**—Refers to the client devices that have established a connection with an AP at least once during the time period selected in the report.



Associated status can be viewed in the following formats:

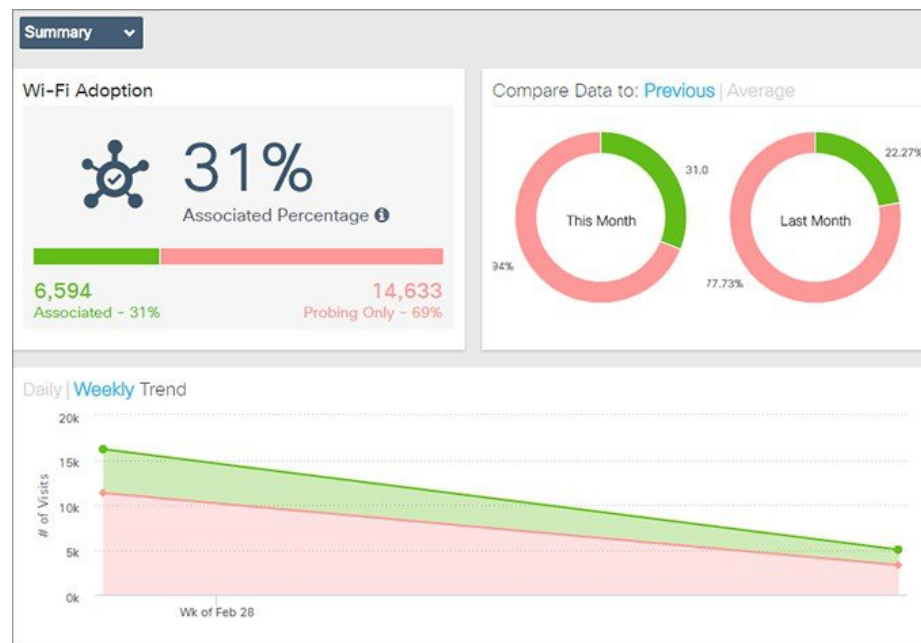
- **Summary**—This is the default view. The Summary view consists of the **Associated Status**, **Compare Data to**, and **Hourly Trend** charts.
- **Chart**—A line chart with a summary of associated and probing clients. The view can toggle to show associated clients in terms of percentage and total clients. The X-axis can be based either on location or time. A line chart with a summary view and a detailed view of the criteria selected is also available. You can customize the X and Y axis by applying the following filter criteria:
  - View Unique Devices or View Absolute Visits
  - Locations--Campus, Building, Floor, Zone, By Hour
  - Values--Ascending, Descending, Alphabetical

Hover your mouse pointer at any point along the line to view the connected and probing data at that instance.

- **Table**—Connected and detected attributes of clients are presented in a tabular format.

The following trends are available for each different view:

- View Unique Devices
- View Absolute Visits



## The Dwell Time Breakdown Widget

The Dwell Time Breakdown widget displays the dwell time distribution for selected areas.

Dwell Time Breakdown can be viewed in the following formats:

- **Summary**—This is the default view. The summary view consists of the **Dwell Time Breakdown**, **Compare Data to**, and **Daily Trend** charts. The dwell time breakdown is displayed in the following ranges:
  - **0-5 minutes**
  - **5-20 minutes**
  - **20-60 minutes**
  - **60-120 minutes**
  - **>120 minutes**
- **Chart**—A line chart with a summary view of the dwell-time breakdown in the time ranges of **0-5 minutes**, **5-20 minutes**, **20-60 minutes**, **60-120 minutes**, and **> 120 minutes**. You can configure the chart based on the following views:
  - **View Unique Devices or View Visits**
  - **Locations**—Allows you to filter by any of these values: Campus, Building, Floor, Zone, Day, Hour of Day, Hour, Region, Building, Floor, Zone, Tag
  - **Sort order**—Ascending, Descending, Alphabetical
- **Table**—The tabular view provides information about the dwell-time breakdown in the time ranges of **0-5 minutes**, **5-20 minutes**, **20-60 minutes**, **60-120 minutes**, and **> 120 minutes**.




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**Note** This view allows you to search for records within the table. The search text box is available above the table.

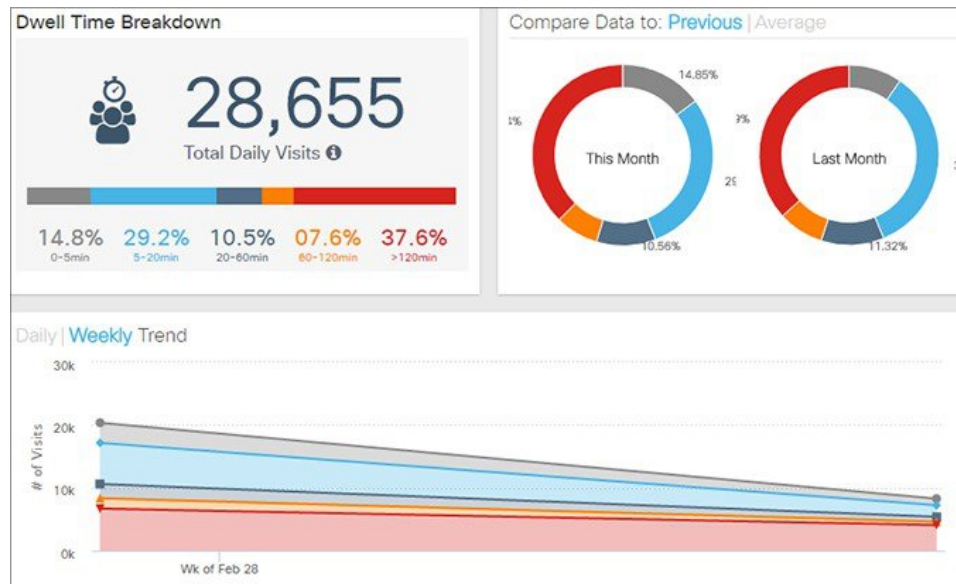
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**Note** The Dwell Time filters are not available for the Dwell Time Breakdown widget.

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## Creating Customized Widgets

### Procedure

- Step 1** Log in to Cisco Connected Mobile Experiences (Cisco CMX).
- Step 2** Choose **Analytics > Dashboard**.
- Step 3** In the left panel of the Dashboard, click the **Add** icon next to **Custom Reports**.  
The **Create New Report** window is displayed.
- Step 4** Choose **Customized** from the Report Type widgets row in the right pane.
- Step 5** Choose the locations that you want to analyze from the **Focus Area Filter** drop-down list.  
The location types are **Building, Campus, Floor, Zone**.
- Step 6** Choose the date and time range you want to run the report for from the **Date & Time filters** drop-down list.  
Click the dot at the bottom of the **Add Widget** area to scroll to the next set of options. You can select multiple widgets to combine in one overall widget.
- Step 7** In the **Add Widgets**  area click the **Add+** icon to include any of the following widgets to the report:  
Click the dot at the bottom of the **Add Widget** area to scroll to the next set of options. You can select multiple widgets to combine into one overall widget.
- Step 8** You can set a threshold for dwell time. This is the amount of time spent by a client device (visitor) at a given location. Select the minimum and maximum time from the drop-down options in the **Advanced Widget Filters**  area.
- Step 9** Click **Done**.  
The widget is created.

**Step 10** Click the report title to name to your report.

**Step 11** Click **Save**.

## Create a Realtime Report

### Procedure

**Step 1** Log in to Cisco Connected Mobile Experiences (Cisco CMX).

**Step 2** Choose **Analytics > Realtime**.

**Step 3** In the left pane of the Dashboard, click  next to **Now Reports**. The **Create New Report** page is displayed.

**Step 4** From the **Focus Area Filter** drop-down list, choose the floor that you want to analyze.

**Step 5** In the Add Widgets  area, click the **Add Widget to Report +** to include any of the following widgets to the report:

- **Realtime Device Count**—Shows the number of devices currently detected on the Wi-Fi network. You can add a maximum of three Realtime device Count widgets to generate the report.

**Step 6** Click **Done**.

Based on the **Focus Area Filter** filters that you specified, the report name is generated. The new report name is listed in the left pane under **Now Reports**.

## Performing Heatmap Analysis

A heatmap is a graphical representation of client movement, which shows areas having a large concentration of devices in red, and those with less activity in blue.



**Note** If you have an exclusion area, the heatmap will not consider that area for analysis.

### Procedure

**Step 1** Log in to Cisco Connected Mobile Experiences (Cisco CMX).

**Step 2** Choose **Analytics > Heatmap**.

**Step 3** In the **Activity Heatmap** window, click the **Date** icon and select the date.

**Step 4** Click the **Time** icon to show or hide the display of time.

**Step 5** Choose from the following options:

- From the **Campus** drop-down list, select the campus on which you want to run the heatmap analysis. The drop-down list contains all the campuses that are synchronized with Cisco CMX.
- From the **Building** drop-down list, select the building on which you want to run this analysis. The drop-down list contains all the buildings that are synchronized with Cisco CMX.
- From the **Floor** drop-down list, select the floor on which you want to run the analysis.

- Step 6** Click the **Heatmap** and **Zone** icons to display heatmap distribution and zones respectively.
- Step 7** Click the **Zoom in (+)** and **Zoom out (-)** buttons to increase or decrease the view of the map.
- Step 8** Click **Realtime** to view heatmap data.
- Step 9** Click **Playback** to play back the client movement for the selected date.

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## Using the Schedule Manager

To access the Schedule Manager window, log in to Cisco CMX, and choose **Analytics > Schedule**. The **Schedule Manager** window is displayed with the following information:

- **Report ID**—Shows the report IDs of scheduled reports.
- **Report Title**—Shows the titles of reports.
- **Username**—Shows the user who created the scheduled report.
- **Start From**—Shows the date from which reports will be emailed to recipients.
- **Recipients**—Shows the email addresses of recipients.
- **History**—Shows the status of past reports.
- **Action**—Click **Delete** to delete a scheduled report.

## Set SSID Filter Parameters for Analytics Service

In the Analytics service, use the **SSID Filter** tab to exclude the SSIDs. You also can click the **Refresh** option to get any updates to the SSIDs.



**Note** If you filter out an SSID in the Location service, it will be automatically filtered out in the Analytics service too.

The **SSID Filter** feature helps you to filter out clients that need not be tracked by Cisco CMX. Cisco CMX will block the SSIDs associated with these clients. Cisco CMX requires the association event (INFO message on NMSP) to be reported daily to continue blocking of these SSIDs.

Cisco CMX has a scheduled job running every midnight to clean up the blocked SSIDs and clients associated with these SSIDs. However, **Location** service still continues to process these clients associated with blocked SSIDs. Devices that are stationary such as a barcode scanner are always in a static location and hence do not

send association information frequently. These devices should be associated with blocked SSIDs. As they do not send association event, Cisco CMX will try to track them again.

If you want Cisco CMX to not clear the blocked SSID's through midnight job, follow the steps:

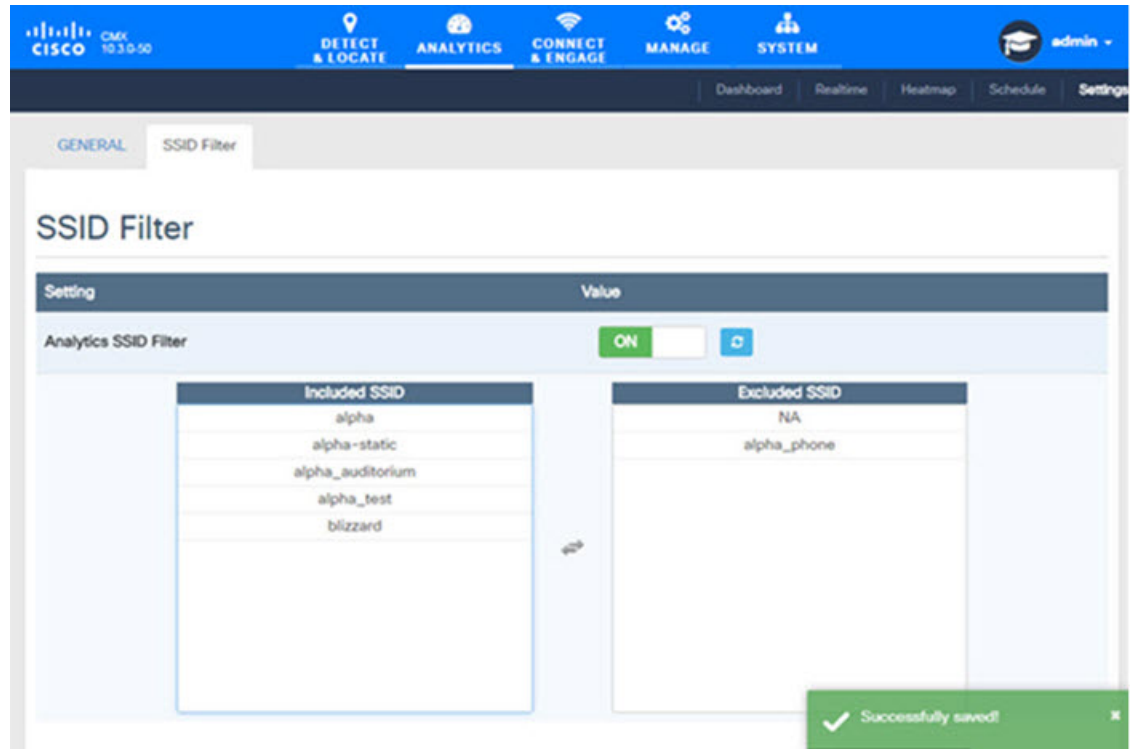
1. To set the featureflag configuration, run the following command:  
**cmxctl config featureflags location.filteredssidscleanupatmidnight false**
2. To restart Cisco CMX agent, run the following command:  
**cmxctl agent restart**
3. To stop location and NMSP services, run the following commands:  
**cmxctl location stop**  
**cmxctl nmsplb stop**
4. To start location and NMSP services, run the following commands:  
**cmxctl location start**  
**cmxctl nmsplb start**

With Cisco CMX Release 10.6.2, feature flag configuration (`location.computelocthroughassociatedap`) for computing location through associated access points is turned on and this enhancement helps Cisco CMX to track and show more associated clients. Depending upon the feature flag configuration settings, the **location.filteredssidscleanupatmidnight** job is configured in a way to include and exclude clean up of blocked SSIDs. The scheduled job periodically polls the association events every one hour to get associated client events more frequently and thereby reducing the reporting time.

## Procedure

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- Step 1** Log in to Cisco Connected Mobile Experiences (Cisco CMX).
- Step 2** Choose **Analytics > Settings**.
- Step 3** Click the **SSID Filter** tab.  
The **SSID Filter** window is displayed.



**Step 4** To enable the SSID Filter, click **Analytics SSID Filter**.

A green **ON** option indicates that SSID filtering is on. The SSID Filter list displays the SSIDs from all the controllers. All duplicate instances of SSIDs are merged and displayed as a single ID. The **Included SSID** list will be empty if there are no associated clients.

In the **Included SSID** list, the value **NA** indicates that SSID is not applicable. This option is available only for the **Analytics** service.

**Note** With Cisco CMX Release 10.5.1 or later, Cisco CMX relies on controller notification (INFO messages) to populate the SSID list. For all earlier Cisco CMX releases, this was achieved using SNMP polling.

**Step 5** To filter out an SSID, click the corresponding SSID in the **Included SSID** list. This SSID is moved to in the **Excluded SSID** list.

## Disable Cisco CMX Analytics Service (CLI)

### Before you begin

Use CLI to disable Cisco CMX Analytics Service. There is no option to disable Cisco CMX Analytics Service on Cisco CMX UI.

## Procedure

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- Step 1** Connect to Cisco CMX through the console.
- Step 2** To disable Cisco CMX Analytics Service, run the **cmxctl disable analytics** command.
- Step 3** To restart location services, run the **cmxctl restart location** command.
- Step 4** (Optional) To restart the location services, run the following commands:
- a. **cmxctl stop location**
  - b. **cmxctl start location**
-