Monitor and Troubleshoot Your Network Using Site Analytics

- About Site Analytics, on page 1
- Site Analytics Dashboard Insights, on page 3
- View Site Analytics, on page 6
- Configure Site Analytics Settings, on page 10

About Site Analytics

Site Analytics provides you with visibility for network troubleshooting and allows you to drill down to the most problematic site, building, and floor or AP. You can set thresholds for KPIs and monitor the trend per KPI before the issue occurs.

You can define KPI thresholds that can be used to inform you of network-wide issues. Based on a KPI value, you can determine the site with the worst performance and drill down to the specific building and floor to find the problem. You can analyze issues pertaining to onboarding attempts, onboarding duration, roaming attempts, roaming duration, coverage, and connection speed.

The **Site Analytics** window helps you answer the following questions when investigating performance issues:

- **What**: Use the KPIs to find out more about a problem. The KPI cards display the name of the KPI, the success rate of the KPI, and the name and score of the worst performer. If a KPI threshold is being met, the KPI score is shown in black. If the percentage is less than the threshold value, the score is shown in red.

  The following categories are available:

  - **Onboarding Attempts**: Measures the percentage of wireless clients that are able to successfully onboard to an AP in the given site. An SLA is met when a wireless client successfully joins the network, and an SLA is a failure when a wireless client doesn't successfully join the network. For example, 100 clients attempt to onboard to the network. 50 clients onboard successfully, and 50 fail to onboard. The **Onboarding Attempts** KPI value is 50%.

  - **Onboarding Duration**: Measures the percentage of successfully onboarded wireless clients that are able to onboard to an AP within the configured threshold time. If a wireless client fails to onboard, it is not counted in the metric. If a wireless client successfully onboards, but takes longer than the configured SLA duration, it is counted as a failure. For example, out of the 50 clients who onboarded

successfully, 30 clients took less than 10 seconds, and 20 clients took more than 10 seconds. So, the **Onboarding Duration** KPI value is 60%.

- **Roaming Attempts**: Measures the percentage of wireless clients that are able to successfully roam from one AP to another AP in the given site. An SLA is met when a wireless client successfully roams and joins the network via another AP, and is considered a failure when the wireless client doesn't successfully join the network. For example, 100 clients attempted to roam in a given duration. 50 clients roamed successfully, and 50 failed to roam. The **Roaming Attempts** KPI value is 50%.
- **Roaming Duration**: Measures the percentage of wireless clients that are able to successfully roam from one AP to another AP within the configured threshold time. If a wireless client fails to roam successfully, it is not counted in this metric. If a wireless client successfully roams, but takes longer than the configured threshold for roaming duration, it is counted as a failure. For example, out of the 50 clients who roamed successfully, 30 clients took less than 10 seconds, and 20 clients took more than 10 seconds. The **Roaming Duration** KPI value is 60%.
- **Connection Speed**: Measures the percentage of time that wireless clients have data traffic with over-the-air data rates that are higher than the configured threshold rate. For example, among the data rates sampled by the controller for the 50 successfully onboarded clients, 200 samples were higher than the threshold of 11 Mbps and 50 samples were lower. The **Connection Speed** KPI value is 80%.
- **Coverage**: Measures the percentage of time that wireless clients have data traffic with RSSI values that are higher than the configured threshold value. For example, among the RSSI values of the 50 successfully onboarded clients sampled by the controller, 200 samples were higher than the threshold of -72 dBm and 50 samples were lower. The **Coverage** KPI value is 80%.

- **When**: Click the time-range setting (24 Hours) to specify the time period to use for the KPIs, timeline slider, and heatmap.
- **Where**: Drill down from the site level to the building, floor, and device level.
  - Easily identify poor performing sites and buildings and their corresponding KPI values by their red or green color in the heatmap. Green indicates that the KPI threshold is being met, and red indicates that the KPI is not being met.
  - Drill down to the building level, where you can see several key factors that have contributed to the low KPI score.
  - View access points in a floor heatmap that shows their health status and device details.
  - View a list of access points on a given floor along with each access point's specific KPI score and client count.
  - Click an access point to display its **Device 360** window.

The Site Analytics dashboard is available from the Assurance health dashboard **AI Analytics** menu option.

The **AI Analytics** menu option also provides access to AI Network Analytics tools. For information about these tools, see Observe Network Trends and Gain Insights.

Site Analytics Dashboard Insights

Site Analytics helps you monitor KPIs in your wireless networks. The KPIs are onboarding attempts, onboarding duration, roaming attempts, roaming duration, connection speed, and coverage. You can set performance thresholds for each of these KPIs. Then, you can monitor them on the **Overall** heath dashboard or the **Site Analytics** dashboard.

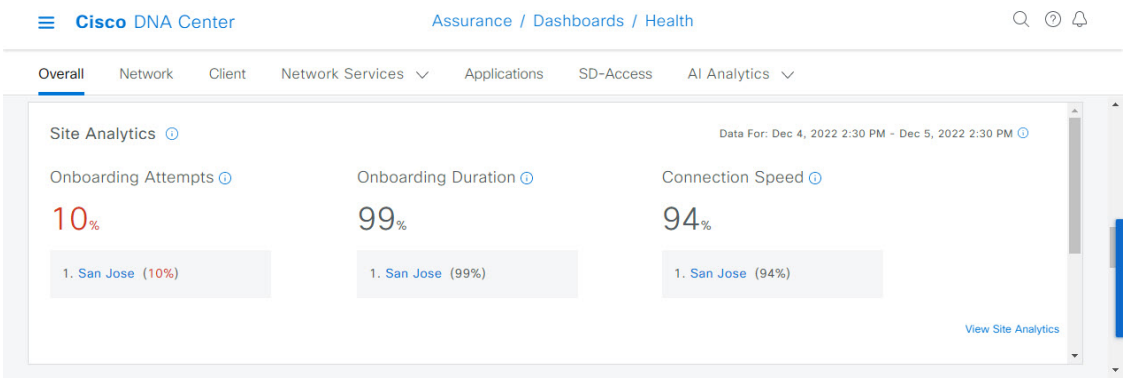
The **Overall** health dashboard has a **Site Analytics** dashlet, which shows the scores of your KPIs. If the performance of any of these KPIs dips below your configured threshold, the sites with the lowest performance are displayed. From the **Site Analytics** dashboard, you can drill down to the floor and device level to pinpoint exactly where the issue is, when it happened, and what the root cause is.

Let's look at the following example to determine what the issue is, when it happened, and where.

You set the onboarding attempts KPI to 85%. This KPI means that if at least 85 out of 100 onboarding attempts succeed, the site meets its performance criteria, at least in this KPI category.

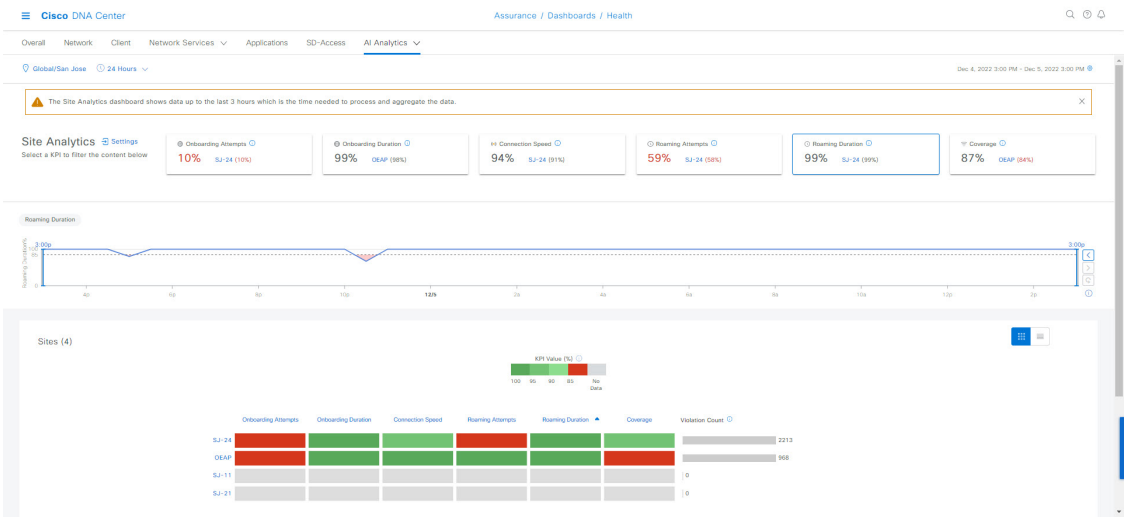
From the **Overall** health dashboard, with the Global drop-down list (Global) set to **Global**, the **Site Analytics** dashlet shows that the San Jose site is the worst performing site with only 10% of the onboarding attempts being successful. This percentage means that 10 out of 100 onboarding attempts were successful. To learn more about how a KPI is calculated, hover your cursor over the **i** icon next to the KPI name.

Figure 1: Overall Health Dashboard Showing Site Analytics Dashlet



To find out where the impact is and what is contributing to the failure, you can click the name of the site, San Jose. The **Site Analytics** dashboard is displayed. Notice that the Global drop-down list (Global) displays **Global/San Jose** as the scope. Analytics for the buildings in the San Jose site are shown, including the worst performing building for each KPI.

Figure 2: Site Analytics for a Site Showing Timeline Slider and Heatmap Graphic

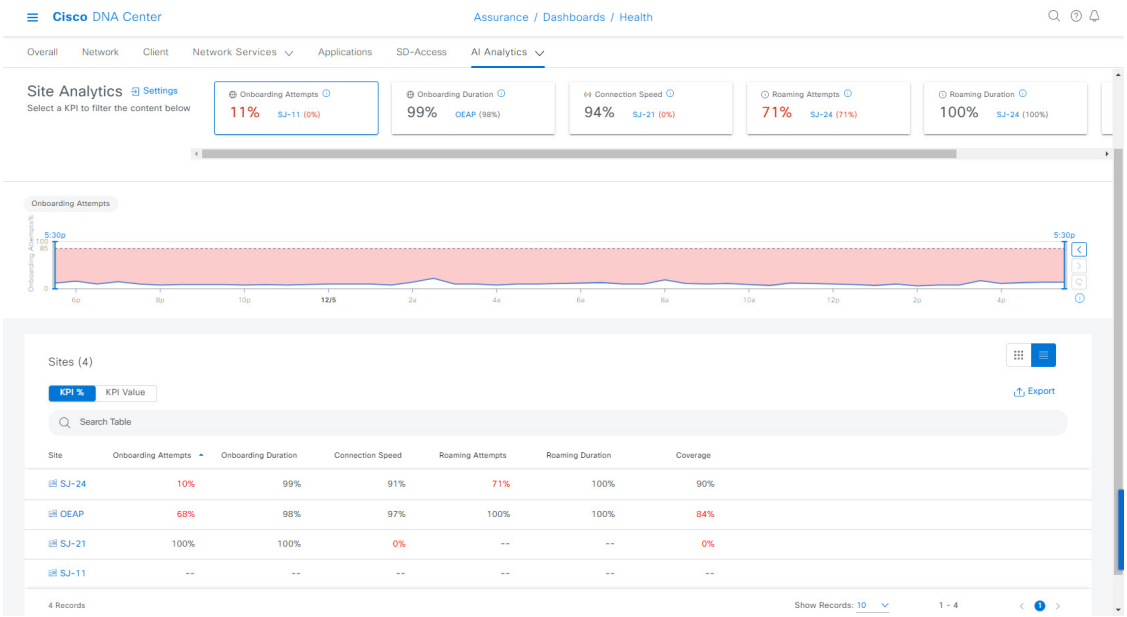


In the timeline slider, the baseline is at 85%, and the trendline shows the percentage of successful onboarding attempts over a 24-hour period (as set in the time-range setting (24 Hours).

So, the San Jose site has an onboarding issue, but where specifically? Below the timeline slider is a heatmap that shows color-coded data. The green bars indicate degrees of success based on the percentage of the KPI value. Darker green signifies a higher percentage of success and lighter green signifies a lower percentage of success. Red bars indicate failed KPIs, and gray bars indicate no data. The **Violation Count** indicates the raw number of KPI failures for a building.

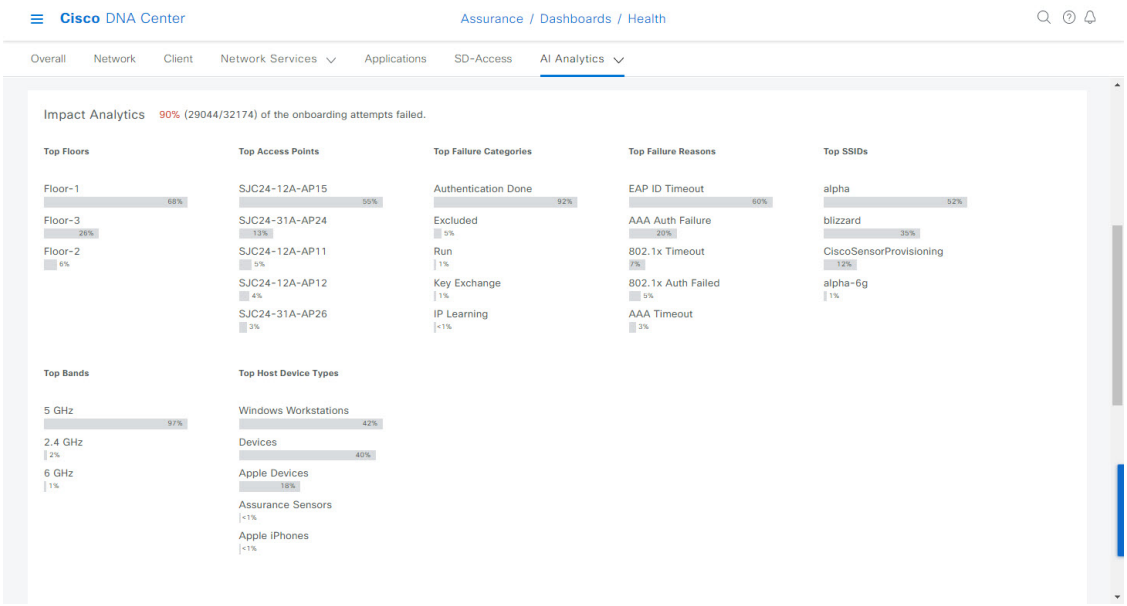
Hover your cursor over the red bars to display information about the site and the particular KPI. Alternatively, click the **List View** toggle button ( ) to display the details for all the buildings and KPIs.

Figure 3: Site Analytics for a Site Showing Timeline Slider and Heatmap Table



According to the data shown, building SJ-24 has the highest onboarding attempts failures. To see the impact analysis, click the name of the building, in this case SJ-24.

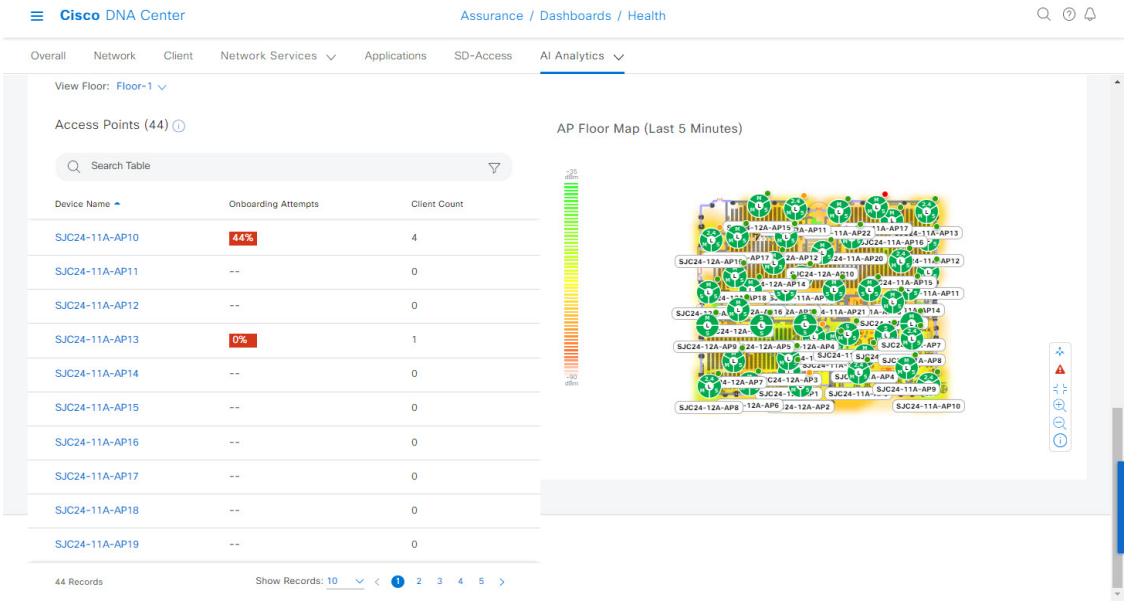
Figure 4: Site Analytics for a Building Showing the Impact Analysis



The **Site Analytics** dashboard for the floors is displayed, including the **Impact Analysis** dashlet with various information, such as the top floors, top access points, top failure categories, top failure reasons, and so on.

Scroll down to see the AP floor map.

Figure 5: Site Analytics for a Floor Showing the Access Points Table and Floor Heatmap



The **View Floor** drop-down list shows the floor that is selected.

The table shows the devices on the selected floor, the percentage of successful onboarding attempts, and the number of clients that were successfully able to onboard.

In the floor heatmap, hover your cursor over an AP to display more information about it. To the right of the heatmap is a toolbar. If you are unfamiliar with the icons on the heatmap, click the **i** icon to display the map legend.

Click a device in the table to display the **Device 360** window for that device. For example, click the SJC24-11A-AP10 device, which has a 45% successful onboarding. The **Device 360** shows very detailed information to help you troubleshoot the issue further. For information, see Monitor and Troubleshoot the Health of a Device.

View Site Analytics

Monitor and troubleshoot issues pertaining to onboarding, roaming, connection rates, and wireless coverage for sites, buildings, and floors.

Before you begin

- AI Network Analytics must be enabled for site analytics data to be collected. Click the **Enable AI Network Analytics** link to go directly to the **Cisco AI Analytics** window where you can configure this system setting. For more information, see Configure Cisco AI Network Analytics.

  If AI Network Analytics isn't enabled, Assurance displays an example dashlet with sample data.

- Configure site analytic settings. For details, see Configure Site Analytics Settings, on page 10.

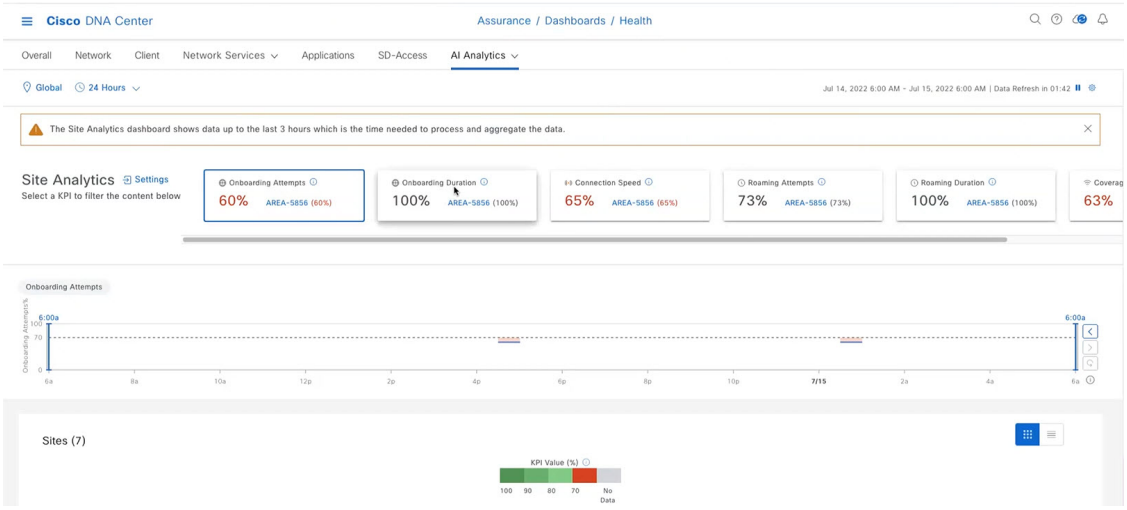
Step 1 Click the menu icon (☰) and choose **Assurance** > **Health**.

The **Overall** health dashboard appears.

Step 2 Choose **AI Analytics** > **Site Analytics**.

The **Site Analytics** health dashboard appears. The information that is displayed depends on the location chosen in the Global drop-down list (Global). If a Global is selected, all of the sites in the network are shown. If a site is selected, all of the buildings in the site are shown. If a building is selected, all of the floors in the building are shown. For the purposes of explaining Site Analytics in this guide, we begin with the Global location.

Figure 6: Site Analytics Health Dashboard



Step 3 Use the top menu bar for the following functionality:

Item	Description
Global **Location** pane	• Click Global to choose the site, building, or floor from the Site hierarchy.
Time range	Enables you to display data for the last 3 hours, 24 hours, or 7 days.

Step 4 In the **Site Analytics** area (at the Global or site level), do one of the following:

- Click a KPI category. The timeline slider is updated to reflect the KPI that you have chosen.

  Each KPI category includes the aggregated KPI value (as a percentage) and the sites or buildings with the lowest performance in each category. The following categories are available:

  - **Onboarding Attempts**: Measures the percentage of wireless clients that are able to successfully onboard to an AP in the given site. An SLA is met when a wireless client successfully joins the network, and an SLA is a failure when a wireless client doesn't successfully join the network. For example, 100 clients attempt to onboard to the network. 50 clients onboard successfully, and 50 fail to onboard. The **Onboarding Attempts** KPI value is 50%.

  - **Onboarding Duration**: Measures the percentage of successfully onboarded wireless clients that are able to onboard to an AP within the configured threshold time. If a wireless client fails to onboard, it is not counted in the metric. If a wireless client successfully onboards, but takes longer than the configured SLA duration, it is counted as a failure. For example, out of the 50 clients who onboarded successfully, 30 clients took less than 10 seconds, and 20 clients took more than 10 seconds. So, the **Onboarding Duration** KPI value is 60%.

  - **Roaming Attempts**: Measures the percentage of wireless clients that are able to successfully roam from one AP to another AP in the given site. An SLA is met when a wireless client successfully roams and joins the network via another AP, and is considered a failure when the wireless client doesn't successfully join the network. For example, 100 clients attempted to roam in a given duration. 50 clients roamed successfully, and 50 failed to roam. The **Roaming Attempts** KPI value is 50%.

- **Roaming Duration**: Measures the percentage of wireless clients that are able to successfully roam from one AP to another AP within the configured threshold time. If a wireless client fails to roam successfully, it is not counted in this metric. If a wireless client successfully roams, but takes longer than the configured threshold for roaming duration, it is counted as a failure. For example, out of the 50 clients who roamed successfully, 30 clients took less than10 seconds, and 20 clients took more than 10 seconds. The **Roaming Duration** KPI value is 60%.
- **Connection Speed**: Measures the percentage of time that wireless clients have data traffic with over-the-air data rates that are higher than the configured threshold rate. For example, among the data rates sampled by the controller for the 50 successfully onboarded clients, 200 samples were higher than the threshold of 11 Mbps and 50 samples were lower. The **Connection Speed** KPI value is 80%.
- **Coverage**: Measures the percentage of time that wireless clients have data traffic with RSSI values that are higher than the configured threshold value. For example, among the RSSI values of the 50 successfully onboarded clients sampled by the controller, 200 samples were higher than the threshold of -72 dBm and 50 samples were lower. The **Coverage** KPI value is 80%.

- To display information about a site or building and its performance, click the site or building name in the KPI category.
- To view information about a KPI category in the timeline slider, click the KPI category.

Step 5 Use the timeline slider with the stacked chart, to display information about the selected KPI for the selected time range.

Use the timeline slider for the following functionality:

- The dotted horizontal line in the timeline and the stacked chart represents the configured threshold value.
- Hover your cursor within the timeline to view the KPI percentage for a specific time range.
- Hover your cursor over the chart to view the view the KPI information for a specific time range. For example, Onboarding Attempts are represented using the following the color-codes:
  - ●: Total number of Good Attempts
  - ●- Total number of Poor Attempts
- Click and drag the timeline boundary lines to specify the time range. This sets the context for KPI data that is displayed below the timeline.
- Use the arrow buttons on the right of the timeline to view data for up to 30 days.

Step 6 In the **Site** area, use the Heatmap view for the following:

Items	Description
Heatmap View	Click this toggle button to display the data for the corresponding the KPI values in the heatmap view. You can choose the Hierarchical Site or Building view from the drop-down list to display the corresponding building or site level heatmap data. Heatmap data is color-coded. Green bars indicate degrees of success based on the percentage of the KPI value. Red bars indicate failed KPIs, and grey bars indicate no data. The **Violation Count** indicates the raw number of KPI failures for a particular site or building. Click the down arrow next to a KPI column to sort the KPI in ascending or descending order. The order is based on the violation count.
Summary dashlet	You can view the number of impacted entities such as sites, buildings, floors, and access points. The color-coded charts shows the distributions and insights for the based on the KPIs. Click View Details to open a slide-in pane with additional details.

Step 7 In the **Site** area, use the Bubble view for the following:

Items	Description
Bubble View	Click this toggle button to display the data for the corresponding the KPI values in the bubble view. You can choose the Hierarchical Site or Building view from the drop-down list to display the corresponding building or site level heatmap data. You can use the **Count** drop-down list to the filter the KPI data displayed in the bubble chart based on **AP Count** or **Client Count**. Bubble chart data is color-coded. Green circles indicate degrees of success based on the percentage of the KPI value. Red circles indicate failed KPIs. Grey circles indicate no data. The size of the circle represents the number of clients and APs connected. A small circle has a lower client count and the large circle has a higher client count. Hover your cursor over a bubble chart to display details. In the **Summary** dashlet, you can view the number of impacted entities such as sites, buildings, floors, and access points. The color-coded charts shows the distributions and insights for the based on the KPIs. Click **View Details** to open a slide-in pane with additional details.

Step 8 In the **Site** area, use the Table view for the following:

Items	Description
Table View	Click this toggle button to display the data of the specific site or building for the KPI categories in the table format. You can choose the Hierarchical Site or Building view from the drop-down list to display the building or site level data for each KPIs. Export - Click the Export button to export the table to the CSV file.
Summary dashlet	You can view the number of impacted entities such as sites, buildings, floors, and access points. The color-coded charts shows the distributions and insights for the based on the KPIs. Click View Details to open a slide-in pane with additional details.

Step 9 Drill down to the building-level view by clicking a building name in either the **Site Analytics** area or in the heatmap.

The building-level view includes the following additional areas:

- **Impact Analysis**: The information that is displayed depends on the KPI category that is selected. For example, if the **Onboarding Attempts** category is selected, the information in the **Impact Analysis** area relates to the onboarding attempt failures. The information includes the top access points, top failure categories, top SSIDs, top bands, and so on.
- **Access Points** table: For the floor selected in the **View Floor** drop-down list, the access points, onboarding attempts, and client counts are shown. The client count for each access point is the number of distinct clients that have connected to the network over the selected time range.

  To display the **Device 360** for a particular device, click the device name.
- **AP Floor Map (Last 5 Minutes)**: For the floor selected in the **View Floor** drop-down list, the heatmap displays a floor map view showing the existing access points and their status.

  In the heatmap, hover your cursor over an AP to display more information about it. To the right of the heatmap is a toolbar where you can display the status of the wireless controller and zoom in and out. If you are unfamiliar with the icons on the heatmap, click the **i** icon to display the map legend.

Configure Site Analytics Settings

This procedure shows you how to configure the thresholds for key client performance metrics.

Step 1 Click the menu icon (☰) and choose **Assurance** > **Site Analytics Settings**.

The **Site Analytics Settings** window appears.

Step 2 To change the threshold **KPI Value %**, do the following:

a) Click **Edit**.
b) In the slide-in pane, enter the target percentage for the site performance metrics. This threshold defines a healthy percentage of KPI data points for any site. The target for green (GOOD) is 100% and cannot be changed. The target for red (POOR) must be a number between 0 and 95. These target values affect all the client performance metrics.

Step 3 From the **KPI Name** column, click the KPI name link.

The slide-in pane for the KPI appears.

Step 4 Configure the KPI threshold settings:

- If the KPI threshold is quantitative, you can customize the threshold value for what is considered a good health score.
- To return to the default setting, click **View Default Setting**.

Step 5 Click **Apply**.

A confirmation dialog box is displayed.