Overview

This chapter describes the role of the Cisco 3300 series Mobility Services Engine (MSE), a component of the Cisco Connected Mobile Experience, within the overall Cisco Unified Wireless Network (CUWN).

Additionally, Context-Aware Service (CAS) software, a service supported on the mobility services engine and a component of the CMX, is addressed.

About the Cisco Context-Aware Mobility Solution

The foundation of the CMX solution is the controller-based architecture of the CUWN. The CUWN contains the following primary components: access points, wireless LAN controllers, the Cisco Prime Infrastructure management application, and the Cisco 3300 series mobility services engine.

Cisco 3300 Series Mobility Services Engine

The Cisco 3300 series MSE operates with CAS, which is a component of the CMX solution.

There are two models of the MSE :

- Cisco 3355 Mobility Services Engine
- Virtual Appliance

Context-Aware Service (CAS)

CAS allows a mobility services engine to simultaneously track thousands of mobile assets and clients by retrieving contextual information such as location, temperature, and availability from Cisco access points.

CAS relies on *Cisco Context-Aware Engine for Clients and Tags* for processing the contextual information it receives. The *Cisco Context-Aware Engine for Clients and Tags* processes data received from Wi-Fi clients and Wi-Fi tags.

ContextAware Tab

You can access the ContextAware tab in the Prime Infrastructure home page. This tab provides you with important Context-Aware Service software information.

The following factory default components appear on the ContextAware tab:

- MSE Historical Element Count—Shows the historical trend of tags, clients, rogue APs, rogue clients, interferers, wired clients, and guest client counts in a given period of time.

> **Note** The MSE Historical Element Count information is presented in a time-based graph. For graphs that are time-based, the top of the graph page includes a link bar that displays 6h, 1d, 1w, 2w, 4w, 3m, 6m, 1y, and Custom. When selected, the data for that time frame is retrieved and the corresponding graph is displayed.

> **Note** The MSE historical element count for the dashlets are obtained from MSE every five minutes and is aggregated in the Prime Infrastructure database at regular intervals. For a given virtual domain, element counts are obtained from the MSE based on floors assigned to that virtual domain. These counts are aggregated and displayed in the dashlet.

- Rogue Element Detected by CAS—Shows the indices of the Rogue APs and Rogue Clients in percentage. It also provides a count of the number of Rogue APs and Rogue Clients detected by each MSE within an hour, 24 hours, and more than 24 hours.

  Rogue AP Index is defined as the percentage of total active tracked elements that are detected as Rogue APs across all the MSEs on Prime Infrastructure.

  Rogue Client Index is defined as the percentage of total active tracked elements that are detected as Rogue Clients across all the MSEs on Prime Infrastructure.

- Location Assisted Client Troubleshooting—You can troubleshoot clients using this option with location assistance. You can provide a MAC address, username, or IP address as the criteria for troubleshooting.

  For more information about Location assisted client troubleshooting, see the Location Assisted Client Troubleshooting from the ContextAware Dashboard, on page 4.

- MSE Tracking Counts—Represents the tracked and non-tracked count of each of the element types. The element type includes tags, rogue APs, rogue clients, interferers, wired clients, wireless clients, and guest clients.

Note The non-tracked element count is available only in the root domain.

- Top 5 MSEs—Lists the top five MSEs based on the percentage of license utilization. It also provides the count for each element type for each MSE.

In the component, click the count link to get a detailed report. Use the icons in a component to switch between chart and grid view. Use the Enlarge Chart icon to view the grid or chart in full page.

Licensing Information for Clients and Tags

You must purchase licenses from Cisco to retrieve contextual information on tags and clients from access points.

- It is a common license for tags and clients (Base Location License).

- For more information on tags, clients, rogue clients, and rogue access points, see Context-Aware Service Planning and Verification.

- License for tags and clients are offered in various quantities, ranging from multiples of 1,10, and100 access points. Up to 50,000 Wi-Fi clients and Wi-Fi tags (combined count) are supported depending on the mobility services engine hardware.

- MSE 3355 can track up to 2500 APs and VM can track up to 5000 APs for Base and advanced location services. Maximum number of clients that can be tracked for MSE 3355 and VM are 25,000 and 50,000 respectively.

Viewing Contextual Information

The collected contextual information can be viewed in graphical user interface format in Prime Infrastructure on the centralized WLAN management platform.

Note However, before you can use Prime Infrastructure, initial configuration for the mobility services engine is required using a command-line interface console session. See the Cisco 3355 Mobility Services Engine Getting Started Guide at the following URL: http://www.cisco.com/en/US/products/ps9742/tsd_products_support_series_home.html.

After its installation and initial configuration are complete, the mobility services engine can communicate with multiple Cisco Wireless LAN Controllers (WLC) to collect operator-defined contextual information. You can then use the associated Prime Infrastructure to communicate with each mobility services engine to transfer and display selected data.

You can configure the mobility services engine to collect data for clients, rogue access points, rogue clients, mobile stations, and active RFID asset tags.

- Location Assisted Client Troubleshooting from the ContextAware Dashboard, on page 4

Location Assisted Client Troubleshooting from the ContextAware Dashboard

You can use the ContextAware tab in the Prime Infrastructure home page to troubleshoot a client. Specify a MAC address, username, or IP address as the search criteria, and click Troubleshoot. The Troubleshoot page appears. Through the dashboard, troubleshooting information is displayed for wireless clients that belong to a given virtual domain. In case of the associated clients, troubleshooting information is displayed only if it belongs to a floor in the given virtual domain. In case of probing clients, troubleshooting information is displayed in the root domain.

You can view the Context Aware History report on the Context Aware History tab. You can filter this report based on the MSE name. You can further filter the report based on the Timezone, State, or All. The states can be either associated or dissociated.

If you choose Timezone then you can choose any of the following:

- Date and Time

  or

- Any one of these values from the drop-down list:

    ◦ **Last 1 Hour**

    ◦ **Last 6 Hours**

    ◦ **Last 1 Day**

    ◦ **Last 2 Days**

    ◦ **Last 3 Days**

    ◦ **Last 4 Days**

    ◦ **Last 5 Days**

    ◦ **Last 6 Days**

    ◦ **Last 7 Days**

    ◦ **Last 2 Weeks**

    ◦ **Last 4 Weeks**

Alternately, you can use the Generate Report link to generate a Client Location History report. You can also opt to export the report to CSV or PDF format, or you can e-mail the report using the icons available in the report page.

For more information on the Prime Infrastructure home page ContextAware tab, see the ContextAware Tab, on page 2.

Event Notification

A mobility services engine sends event notifications to registered listeners over the following transport mechanisms:

- Simple Object Access Protocol (SOAP)

- Simple Mail Transfer Protocol (SMTP)

- Simple Network Management Protocol (SNMP)

- Syslog

Note Prime Infrastructure can act as a listener receiving event notifications over SNMP. Without event notification, Prime Infrastructure and third-party applications need to periodically request location information from location-based services.

The pull communication model, however, is not suitable for applications that require more real-time updates to location information. For these applications, you can configure the mobility services engine push event notifications when certain conditions are met by the registered listeners.