



## CHAPTER 8

# Monitoring Location Servers and Site

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This chapter describes how to monitor location servers by configuring and viewing alarms, events, and logs.

It also describes how to use Cisco WCS to view location server, client and asset tag status.

This chapter contains the following sections:

- [Working with Alarms, page 8-2](#)
- [Working with Events, page 8-4](#)
- [Working with Logs, page 8-5](#)
- [Generating Reports, page 8-6](#)
- [Monitoring Location Server Status, page 8-9](#)
- [Monitoring Wireless Clients, page 8-10](#)
- [Monitoring Wireless Clients Using Search, page 8-12](#)
- [Monitoring Chokepoints, page 8-21](#)

# Working with Alarms

This section describes how to view, assign, and clear alarms and events on location servers using Cisco WCS. Details on how to have email notifications for alarms sent to you is described as well as how to define those types (all, critical, major, minor, warning) of alarm notifications that are sent to you.

## Viewing Alarms

To view location server alarms, follow these steps:

- Step 1** In Cisco WCS, choose **Monitor > Alarms**.
- Step 2** Click the **Advanced Search** link (top-right). A configurable search panel for alarms appears (see Figure 8-1).

**Figure 8-1 Search Alarm Panel**

Severity	Failure Source	Time	Acknowledged
Warning	AP AP001c.58dc.c86a, Interface 802.11b/g		No
Warning	AP AP001c.58df.9cee, Interface 802.11b/g		No
Critical	Mobility Services Engine h sanity		No
Warning	Rogue AP 00:1d:e6:24:61:cc		No
Warning	Rogue AP 00:1d:e6:24:61:cd		No
Warning	Rogue AP 00:1d:e6:24:61:c9		No
Warning	Rogue AP 00:18:74:d0:ea:cb		No
Warning	Rogue AP 00:1c:57:41:4a:49		No
Warning	Rogue AP 00:19:a9:a4:df:d9	2/19/09 5:42:53 PM	No
Warning	Rogue AP 00:1c:57:41:4c:a9	2/19/09 5:42:53 PM	No
Warning	Rogue AP 00:1d:e6:24:2e:6c	2/19/09 5:42:53 PM	No

- Step 3** Select **Alarms** as the Search Category.
- Step 4** Select the Severity of Alarms to display. Options are All Severities, Critical, Major, Minor, or Warning.
- Step 5** Select **Mobility Service** from the Alarm Category.
- Step 6** Select the time frame for which you want to review alarms by selection the appropriate option from the Time Period drop-down menu.  
Options range from minutes (5, 15 and 30) to hours (1 and 8) to days (1 and 7). To display all select **Any time**.
- Step 7** Check the **Acknowledged State** check box to exclude the acknowledged alarms and their count from the Alarm Summary window.
- Step 8** Check the **Assigned State** check box to exclude the assigned alarms and their count from the Alarm Summary window.

- Step 9** Select the number of alarms to display on each window from the Items per Page drop-down menu.
- Step 10** To save the search criteria for later use, check the **Save Search** check box and enter a name for the search.
- Step 11** Click **Go**. Alarms summary panel appears with search results.



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**Note** Click the column headings (Severity, Failure Object, Owner, Date/Time and Message) to sort alarms.

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- Step 12** Repeat [Step 2](#) to [Step 11](#) to see Context-Aware notifications for the mobility services engine. Enter **Context Aware Notifications** as the alarm category in [Step 5](#).
- 

## Assigning and Unassigning Alarms

To assign and unassign an alarm to yourself, follow these steps:

- 
- Step 1** Display the Alarms window as described in the [“Viewing Alarms” section on page 8-2](#).
- Step 2** Select the alarms that you want to assign to yourself by checking their corresponding check boxes.



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**Note** To unassign an alarm assigned to you, uncheck the box next to the appropriate alarm. You cannot unassign alarms assigned to others.

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- Step 3** From the Select a command drop-down menu, choose **Assign to Me** (or **Unassign**) and click **GO**.  
If you choose **Assign to Me**, your username appears in the Owner column. If you choose **Unassign**, the username column becomes empty.
- 

## Deleting and Clearing Alarms

If you delete an alarm, Cisco WCS removes it from its database. If you clear an alarm, it remains in the Cisco WCS database, but in the clear state. You should clear an alarm when the condition that caused it no longer exists.

To delete or clear an alarm from a location appliance, follow these steps:

- 
- Step 1** Display the Alarms window as described in the [“Viewing Alarms” section on page 8-2](#).
- Step 2** Select the alarms that you want to delete or clear by checking their corresponding check boxes.



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**Note** If you delete an alarm, Cisco WCS removes it from its database. If you clear an alarm, it remains in the Cisco WCS database, but in the Clear state. You clear an alarm when the condition that caused it no longer exists.

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- Step 3** From the Select a command drop-down menu, choose **Delete** or **Clear**, and click **Go**.
-

## Emailing Alarm Notifications

Cisco WCS lets you send alarm notifications to a specific email address. Sending notifications through email enables you to take prompt action when needed.

You can select the alarm severity types (critical, major, minor and warning) that are emailed to you.

To send alarm notifications, follow these steps:

- 
- Step 1** Display the Alarms window as described in the [“Viewing Alarms” section on page 8-2](#).
- Step 2** From the Select a commands drop-down menu, choose **Email Notification**, and click **Go**. The Email Notification window appears.
-  **Note** A SMTP Mail Server must be defined prior to entry of target email addresses for email notification. Choose **Administrator > Settings > Mail Server Configuration** to enter the appropriate information. You can also select the Administration > Mail Server link, if displayed, on the Email Notification window noted above.
- 
- Step 3** Click the **Enabled** box next to the **Mobility Services**.
- Step 4** Click the **Mobility Services** link. The panel for configuring the alarm severity types (critical, major, minor and warning) that are reported for the location servers appears.
- Step 5** Check box(es) next to all the alarm severity types for which you want email notifications sent.
- Step 6** In the To field, enter the email address or addresses to which you want the email notifications sent. Each email address should be separated by commas.
- Step 7** Click **OK**.

You are returned to the Email Notification window. The changes to the reported alarm severity levels and the recipient email address for email notifications are displayed.

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## Working with Events

You can use Cisco WCS to view location server and location notification events. You can search and display events based on their severity (critical, major, minor, warning, clear, info) and event category.

You can search by the following event categories:

- By network coverage: coverage holes and interference
- By link: mesh links
- By notifications: location notifications
- By product type: access points (rogue and non-rogue), clients, controllers, and location servers
- By security

Additionally, you can search for an element’s events by its IP address, MAC address, or Name.

A successful event search displays the event severity, failure object, date and time of the event, and any messages for each event.

To display events, follow these steps:

- 
- Step 1** In Cisco WCS, choose **Monitor > Events**.
- Step 2** In the Events window:
- To display the events for a specific element and you know its IP address, MAC address, or Name, enter that value in the Search field (top-right). Click **Go**.
  - To display events by severity and event category, click the **Advanced Search** link (top-right). Select **Events** as the Search Category and then select the appropriate options from the Severity and Event Category. Click **Go**.
- Step 3** If Cisco WCS finds events that match the search criteria, it displays a list of these events.



**Note** For more information about an event, click the failure object associated with the event. Additionally, you can sort the events summary by each of the column headings.

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## Working with Logs

This section describes how to configure logging options and how to download log files.

### Configuring Logging Options

You can use Cisco WCS to specify the logging level and types of messages to log.

To configure logging options, follow these steps:

- 
- Step 1** In Cisco WCS, choose **Services > Mobility Services**.
- Step 2** Click the name of the location server that you want to configure.
- Step 3** Choose **System > Advanced Parameters** (left). The advanced parameters for the selected location server appears.
- Step 4** Scroll down to the Logging Options section and choose the appropriate option from the Logging Level drop-down menu.

There are four logging options: **Off**, **Error**, **Information**, and **Trace**.



**Caution** Use **Error** and **Trace** only when directed to do so by Cisco Technical Assistance Center (TAC) personnel.

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- Step 5** Check the **Enabled** check box next to each option listed in that section to begin logging of its events.
- Step 6** Click **Save**.
-

## Downloading Location Server Log Files

If you need to analyze location server log files, you can use Cisco WCS to download them into your system. Cisco WCS downloads a zip file containing the log files.

To download a zip file containing the log files, follow these steps:

- 
- Step 1** In Cisco WCS, choose **Services > Mobility Services**.
  - Step 2** Click the name of the location server to view its status.
  - Step 3** Choose **System > Logs** (left).
  - Step 4** Click **Download Logs**.
  - Step 5** Follow the instructions in the File Download dialog box to save the zip file on your system.
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## Generating Reports

In Cisco WCS, you can generate a device utilization and location utilization report for a location server. By default, reports are stored on the Cisco WCS server.

Once you define the report criteria, you can save the device and location utilization reports for future diagnostic use and run them on either an ad hoc or scheduled basis.

You can define the following criteria for a device utilization report:

- Which location server or servers to monitor
- How often the report is generated
- How the data is graphed on the charts
- Whether the report is emailed or exported to a file

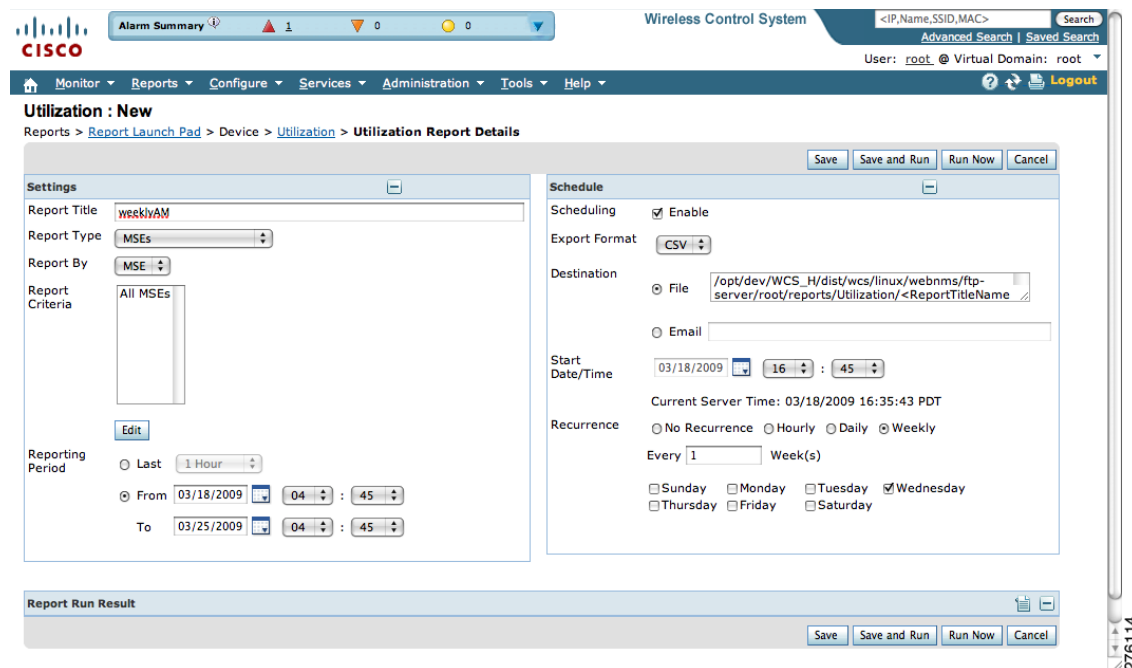
You can view the following in a location utilization report:

- Chart 1 summarizes and graphs CPU and memory utilization
- Chart 2 summarizes and graphs client count, tag count, rogue client count, rogue access point count, and ad hoc rogue count

## Creating a Location Server Utilization Report

- 
- Step 1** In Cisco WCS, choose **Reports > Report Launch Pad**.
  - Step 2** Choose **Device > Utilization**.
  - Step 3** Click **New**. The Utilization: New window appears (see [Figure 8-2](#)).

Figure 8-2 Device &gt; Utilization Window



- Step 4** In the Settings panel (left), enter a report title.
- Step 5** The Report Type and Report By selections are always MSE (even when a location server).
- Step 6** Select either a specific location server or **All MSEs** from the drop-down MSE menu.



**Note** Entering All MSEs reports location servers and mobility services engines.

- Step 7** Enter the reporting period. You can define the report to collect data hourly, weekly basis, or at a specific date and time. The selected reporting period type will display on the x-axis.



**Note** The reporting period uses a 24-hour rather than 12-hour clock. For example, select hour 13 for 1:00 PM.

- Step 8** In the Schedule panel (right), check the **Enable Schedule** check box.
- Step 9** Select the export format (CSV or PDF) from the Export Report drop-down menu.
- Step 10** Select either **File** or **Email** as the destination of the report.
- If you select the File option, a destination path must first be defined at the **Administration > Settings > Report** window. Enter the destination path for the files in the Repository Path field.
  - If you select the Email option, an SMTP Mail Server must be defined prior to entry of target email address. Choose **Administrator > Settings > Mail Server Configuration** to enter the appropriate information.
- Step 11** Enter a start date (MM:DD:YYYY) or click the calendar icon to select a date.
- Step 12** Specify a start time using the hour and minute drop-down menus.
- Step 13** Click one of Recurrence buttons to select how often the report is run.



**Note** The days of the week appear on the screen only when the weekly option is chosen.

**Step 14** When finished with all of the above steps, do one of the following:

- Click **Save** to save edits. The report is run at the designated time and the results are either emailed or saved to a designated file as defined in the Schedule panel.
- Click **Save and Run** to save the changes and run the report now. The report is run and the results are either emailed or saved to a designated file as defined in the Schedule panel. The report runs again at the scheduled time.
  - At the results window, click **Cancel** to cancel the defined report.
- Click **Run Now** if you want to run the report immediately and review the results in the WCS window. The report runs regardless of any pending, scheduled run of that report. Results appear at the bottom of the window. Click **Save** if you want to save the report criteria you entered.



**Note** You can also click **Run Now** to check a report scenario before saving it or to run reports as necessary.

**Step 15** If you selected the Save or Save and Run option, click either **Reports > Saved Reports** (or **Reports > Scheduled Runs** if it has not yet run and is scheduled to run). The Utilization Reports summary window appears (see [Figure 8-3](#)).

**Figure 8-3 Utilization Reports Summary Window**

Report Title*	Report Type	Scheduled	Next Scheduled Run	Last Run	Download	Run Now
<input type="checkbox"/> WeeklyAM	Utilization	Enabled	03/18/2009 17:30:00 PDT			

Buttons: [New](#) [Enable Schedule](#) [Disable Schedule](#) [Delete](#)

If the report is scheduled, it is shown as enabled and the next scheduled run date is noted.

If the report has run and is not scheduled to run again, it is shown as expired.

If the report has run and is scheduled to run again, it is shown as disabled.

**Step 16** To enable, disable, or delete a report, check the check box next to the report title and click the appropriate button.



## Viewing Saved Utilization Charts

To download a saved report, follow these steps:

- 
- Step 1** In Cisco WCS, choose **Reports > Saved Reports**.
  - Step 2** Click the **Download** icon for your report. It is downloaded and saved in the defined directory or emailed.
- 

## Viewing Scheduled Utilization Runs

To review status for a scheduled report, follow these steps:

- 
- Step 1** In Cisco WCS, choose **Reports > Scheduled Runs**.
  - Step 2** Click the **History** icon to see the date of the last report run.
  - Step 3** Click the **Download** icon for your report. It is downloaded and saved in the defined directory or emailed.
- 

## Monitoring Location Server Status

This section describes how to view location server status and how to enable status information polling.

### Viewing Location Server Current Information

To view the current status of a location server, follow these steps:

- 
- Step 1** In Cisco WCS, choose **Services > Mobility Services**.
  - Step 2** Click the name of a location server to view its status.
  - Step 3** Click **System > Advanced Parameters** to display location server status.



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**Note** For details on configuring advanced parameters, refer to the [“Configuring Advanced Parameters”](#) section on page 4-5.

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Information for the selected location server found on the Advanced Parameters window is summarized in [Table 8-1](#).

**Table 8-1** Advanced Parameters for Location Servers

Page Heading	Description
General Information	Product name, version, time server started operation, time zone, hardware restarts, active sessions, number of tracked elements and tracked element limit.  <b>Note</b> A major alert appears on the Advanced Parameter window if the tracked elements limit of 2,500 for the location server is reached.
Cisco UDI	Product identifier, version identifier, and serial number.
Logging Options	Types of occurrences and level (off, information, error, trace) being logged.  <b>Note</b> Use <b>Error</b> and <b>Trace</b> only when directed to do so by Cisco Technical Assistance Center (TAC) personnel.
Advanced Parameters	Number of days to keep events, Session Time out, Interval between data cleanup and enabled/disable status of Advanced Bug operation.  <b>Note</b> To modify these values, refer to the <a href="#">“Viewing and Configuring Advanced Parameters”</a> section on page 4-4.
Advanced Commands	Commands: Reboot Hardware, Shutdown Hardware, Clear Configuration and Defragment Database.

## Monitoring Wireless Clients

### Monitoring Wireless Clients Using Maps

On a Cisco WCS map, you can view the name of the access point that generated the signal for a client, its strength of signal, and when the location information was last updated for the client. Move the cursor over the client icon on the map to display this information.

You can also view the client details window, which provides statistics (such as client association, client RSSI, and client SNR), packets transmitted and received values, events, and security information for that client.

To determine a client’s location status on a map and view its client details window using maps, follow these steps:

- 
- Step 1** In Cisco WCS, choose **Monitor > Maps**.
  - Step 2** Choose the building and floor on which the mobility services engine and its clients are located.
  - Step 3** Check the **Clients** check box in the Floor Settings panel (left), if it is not already checked (see [Figure 8-4](#)).

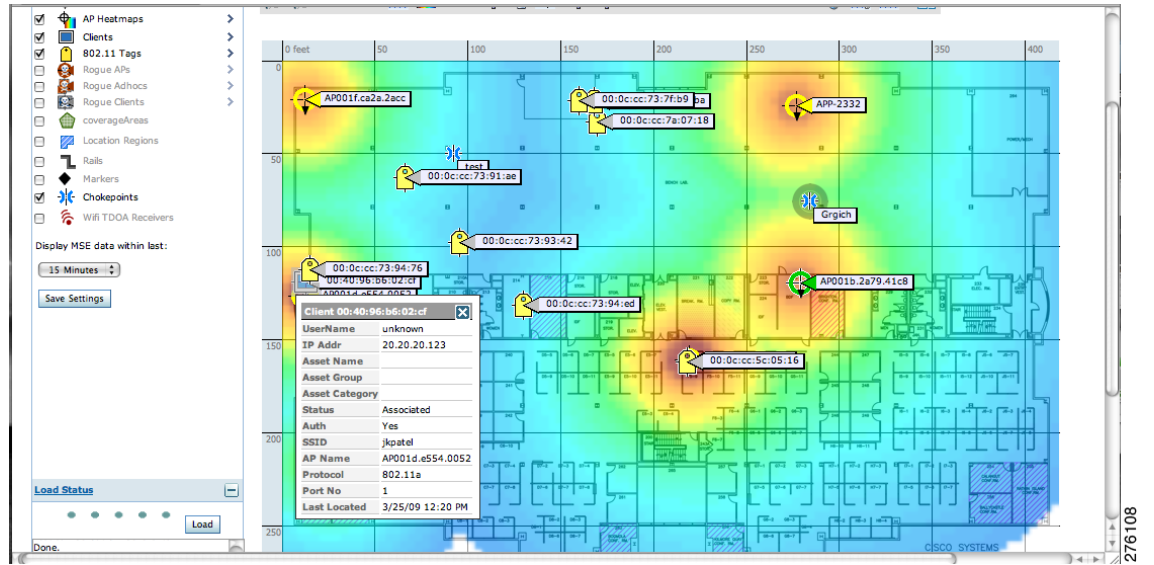



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**Note** Do not click **Save Settings** unless you want to save changes made to the floor settings across all maps.

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Figure 8-4 Monitor > Maps > Building > Floor Window



**Step 4** Move the cursor over a client icon (blue square) and a summary of its configuration appears in a pop-up panel.

**Step 5** Click the client icon to see client details (see Figure 8-5 and Figure 8-6).

Figure 8-5 Client Details Window (1 of 2)

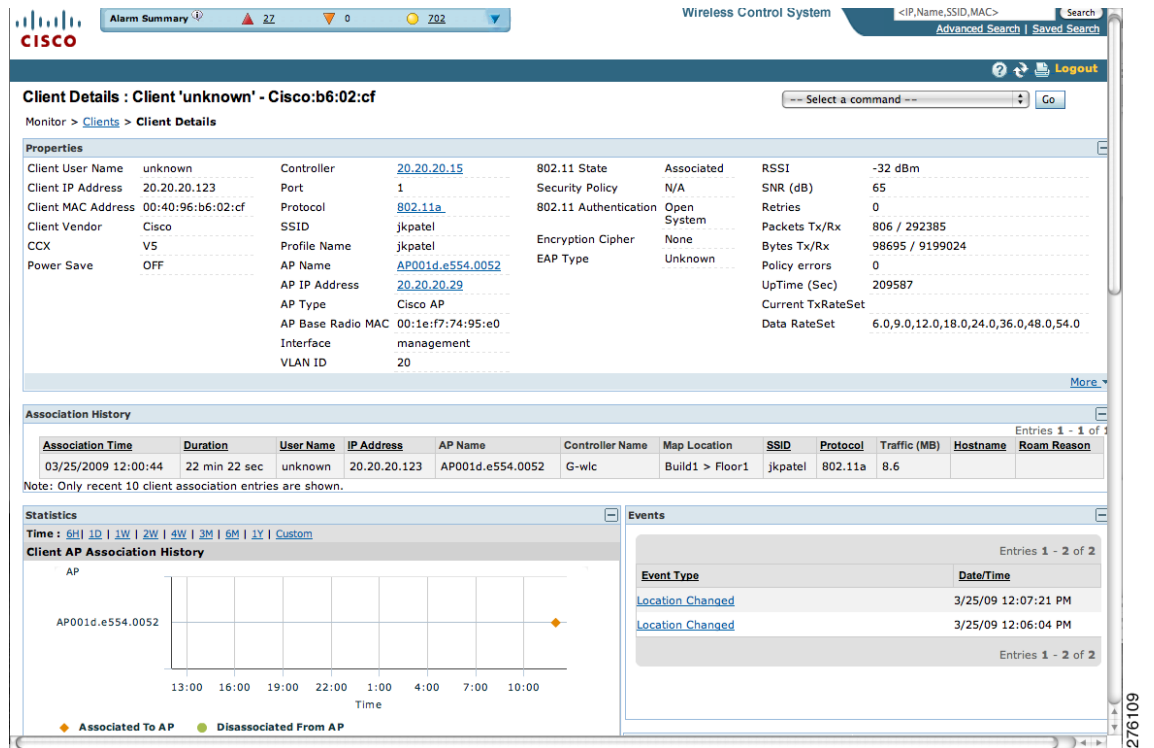
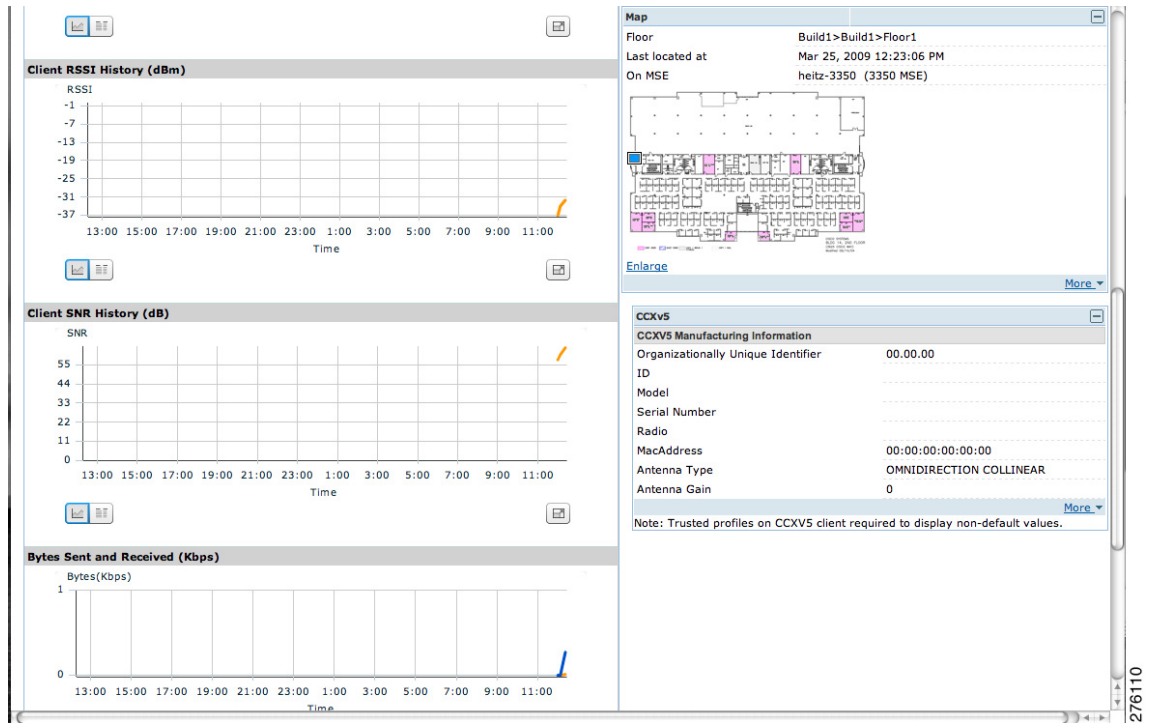


Figure 8-6 Client Details Window (2 of 2)



## Monitoring Wireless Clients Using Search

You can view client information in summary and in detail at the **Monitor > Clients** window and on maps (Monitor > Maps).

To view client information, follow these steps:

- Step 1** In Cisco WCS, choose **Monitor > Clients**.  
The Clients summary window appears.
- Step 2** Select **Clients Detected by MSEs** from the Show drop-down menu. Click **Go**.

A summary of all clients detected by all mobility services engines and location appliances managed by Cisco WCS displays (see Figure 8-7).

Figure 8-7 Monitor &gt; Clients Window

Client User Name	Client IP Address	Client MAC Address	Vendor Name	AP Name	Controller Name	Map Location	SSID	Profile Name	VLAN	Protoc
<Unknown>		00:16:44:b1:b4:96	Lite-on			Build1>Build1>Floor1	N/A			802.1
<Unknown>	0.0.0.0	00:40:96:b2:a3:44	Cisco	AP001f.ca2a.2acc		Build1>Build1>Floor1	N/A			802.1
<Unknown>	0.0.0.0	00:40:96:b4:eb:ce	Cisco	AP001a.a2fe.c69c		Build1>Build1>Floor2	N/A			802.1
<Unknown>	0.0.0.0	00:40:96:a4:f8:ca	Cisco	AP001d.a280.c41e		Build1>Build1>Floor1	N/A			802.1
<Unknown>	0.0.0.0	00:40:96:b2:84:2e	Cisco	AP001b.2a79.41cc		Build1>Build1>Floor1	N/A			802.1
<Unknown>	0.0.0.0	00:40:96:ac:1c:6f	Cisco	AP001d.e554.0052		Build1>Build1>Floor1	N/A			802.1

- To find a specific client by its IP address, name, SSID or MAC address, enter that value into the Search field in the navigation bar (not all search values apply to all clients).

For example, if you enter a MAC address in the search field, the following window appears (see Figure 8-8).

Figure 8-8 Search by MAC address Results

Item Type	Item Count	Monitor	Configuration
Client	1	<a href="#">View List</a>	
Alarm	1	<a href="#">View List</a>	

- To see more configuration details about the client, click **View List** for the client item type. Details shown include associated devices (access point, controller), map location, VLAN, protocol, and authentication type.
- To see alarms for the client, click **View List** for the alarm item type. A listing of all active alarms for that client noting severity, failure source (alarm description), owner of alarm (if assigned), date and time of the alarm, and whether or not alarm is acknowledged (see Figure 8-9).

Figure 8-9 Alarm Summary for Client

Severity	Failure Source	Owner	Date/Time	Message	Acknowledged
Warning	<a href="#">Location Change Mobile Station</a> 00:40:96:ac:1c:6f		3/24/09 10:34:16 AM	Location has changed for Mobile Station with MAC 00:40:96:ac:1c:6f ...	No

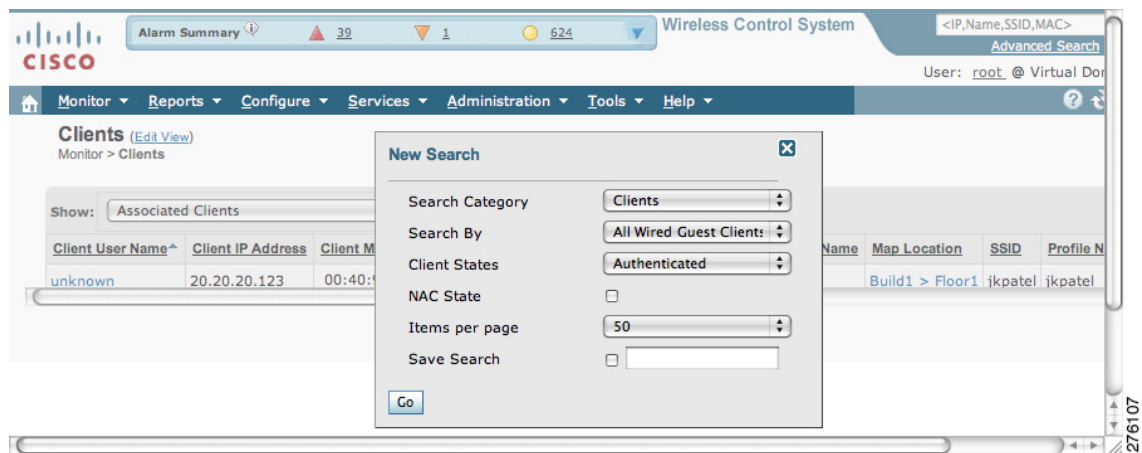


**Note** You can also assign or unassign the alarm, email it, delete or clear it, and acknowledge and unacknowledge it at this window by selecting the appropriate option from the Select a command drop-down menu.

- b. To search for a client or multiple clients by device, network, map location and type of client (regular, rogue, or shunned), use Advanced search located in the navigation bar.

You can further define the client category by: all clients, all excluded clients, all wired guest clients, and all logged in clients using the Search By drop-down menu (see [Figure 8-10](#)).

**Figure 8-10** Advanced Search Window



**Step 3** Click on the appropriate client.

## Monitoring Tags

You can monitor tag status and location on Cisco WCS maps as well as review tag details on the **Monitor > Tags** window. You can also use Advanced Search to monitor tags.

### Monitoring Tags Using Maps

On a Cisco WCS map, you can view the name of the access point that generated the signal for a tagged asset, its strength of signal, and when the location information was last updated for the asset. Move the cursor over the tag icon on the map to display this information.

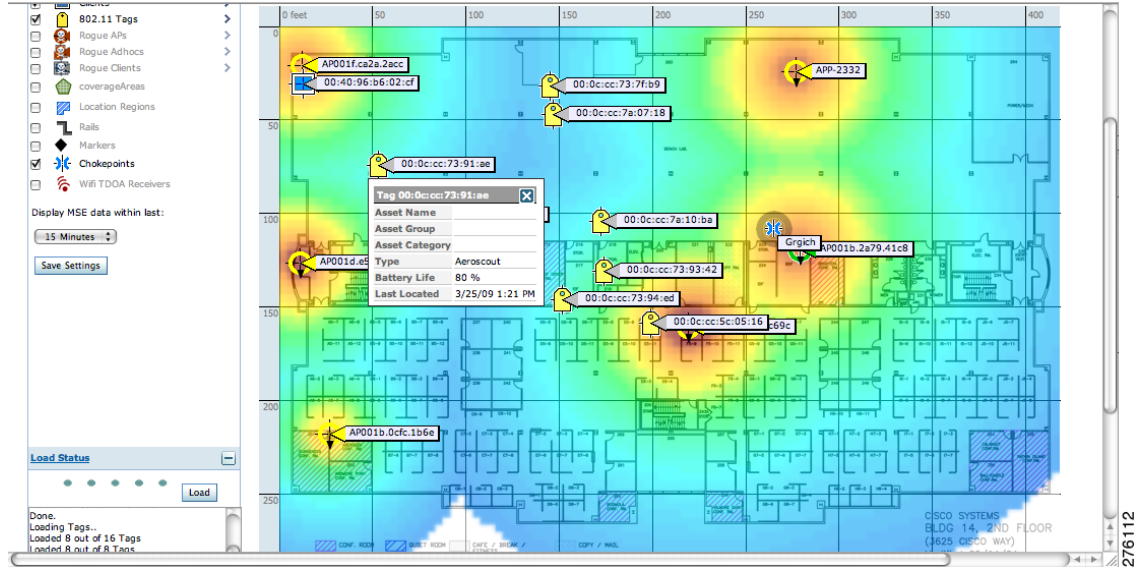
To enable tag location status on a map, follow these steps:

- Step 1** In Cisco WCS, choose **Monitor > Maps**.
- Step 2** Choose the building and floor on which the mobility services engine and tag are located.
- Step 3** Check the **802.11 Tags** check box in the Floor Settings panel (left), if it is not already checked (see [Figure 8-11](#)).



**Note** Do not click **Save Settings** unless you want to save floor setting changes across all maps.

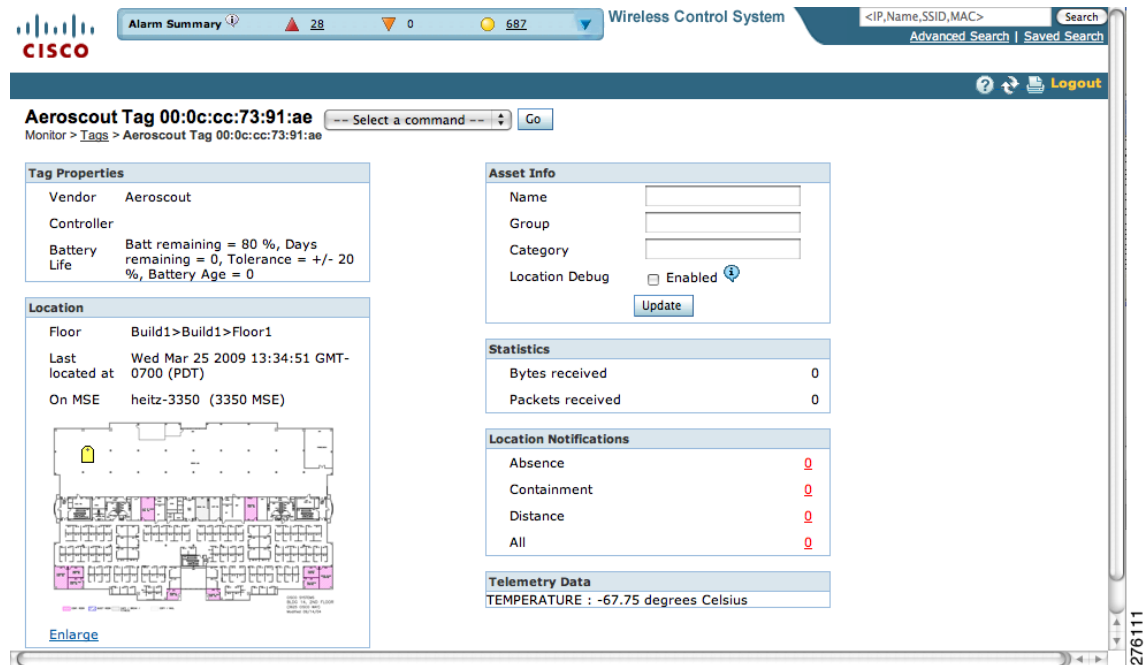
**Figure 8-11** Monitor > Maps > Building > Floor > Tag Window



**Step 4** Move the cursor over a tag icon (yellow tag) and a summary of its configuration appears in a pop-up panel.

**Step 5** Click the tag icon to see tag details (see Figure 8-12).

**Figure 8-12** Tag Details Window





- Step 6** To see location history for the tag, select **Location History** from the Select a command drop-down menu. Click **Go** (see Figure 8-13).

**Figure 8-13** Tag Location History Window

The screenshot shows the Cisco Wireless Control System interface. The main content area is titled "Aeroscout Tag 00:0c:cc:73:91:ae" and displays the "Location History" for this tag. The interface includes a navigation bar at the top with options like Monitor, Reports, Configure, Services, Administration, Tools, and Help. The tag information section shows the MAC address as 00:0c:cc:73:91:ae and the battery status as 80%. The location history table shows six entries, all from Wed Mar 25 2009, with the location consistently being Build1>Build1>Floor1 and the battery status at 80%.

Time Stamp	Floor	Battery Status
Wed Mar 25 2009 13:26:34 GMT-0700 (PDT)	Build1>Build1>Floor1	80 %
Wed Mar 25 2009 13:23:59 GMT-0700 (PDT)	Build1>Build1>Floor1	80 %
Wed Mar 25 2009 13:21:24 GMT-0700 (PDT)	Build1>Build1>Floor1	80 %
Wed Mar 25 2009 13:16:55 GMT-0700 (PDT)	Build1>Build1>Floor1	80 %
Wed Mar 25 2009 13:14:19 GMT-0700 (PDT)	Build1>Build1>Floor1	80 %
Wed Mar 25 2009 13:02:43 GMT-0700 (PDT)	Build1>Build1>Floor1	80 %

## Monitoring Tags Using Search

You can search for tags by asset type (name, category and group), by MAC address, by system (controller or MSE), and by area (floor area and outdoor area).



**Note** Search by MSE includes location appliances.

You can further refine your search using the Advanced search parameters and save the search criteria for future use. Choose **Saved Searches** located in the navigation bar to retrieve saved searches.

When you click on the MAC address of a tag location in a search results window, the following details appear for the tag:

- Tag vendor
- Controller to which tag is associated
- Telemetry data (CCX v1 compliant tags only)
  - Telemetry data displayed is vendor-specific; however, some commonly reported details are GPS location, battery extended information, pressure, temperature, humidity, motion, status, and emergency code.
- Asset Information (Name, Category, Group)
- Statistics (bytes and packets received)
- Location (Floor, Last Located, MSE, map)
- Location Notification (Absence, Containment, Distance, All)
- Emergency Data (CCX v1 compliant tags only)



To search for tags, follow these steps:

- Step 1** Choose **Monitor > Tags**. The Tag Summary window appears (see [Figure 8-14](#)).

**Figure 8-14** Monitor > Tags Window

Device Name	Device Address	Total Tags
loc-server (2710 LocServer)	20.20.20.20	0
mse-3310 (3310 MSE)	20.20.20.17	8
heitz-3350 (3350 MSE)	20.20.20.40	8

- a. To view a summary of tags associated with a specific location appliance or mobility services engine, click the **Total Tags** link (see [Figure 8-15](#)).

**Figure 8-15** Total Tags Listing by Mobility Services Engine and Location Appliance

MAC Address	Asset Name	Asset Group	Asset Category	Vendor Name	MSE	Controller	Battery Status	Map Location
<a href="#">00:0c:cc:7a:10:ba</a>	-	-	-	Aeroscout	mse-3310	<a href="#">20.20.20.15</a>	Normal (80 %)	<a href="#">Build 1 &gt; Build 1 &gt; Floor 1</a>
<a href="#">00:0c:cc:7a:07:18</a>	-	-	-	Aeroscout	mse-3310	<a href="#">20.20.20.15</a>	Normal (80 %)	<a href="#">Build 1 &gt; Build 1 &gt; Floor 1</a>
<a href="#">00:0c:cc:73:94:ed</a>	-	-	-	Aeroscout	mse-3310	<a href="#">20.20.20.15</a>	Normal (80 %)	<a href="#">Build 1 &gt; Build 1 &gt; Floor 1</a>
<a href="#">00:0c:cc:73:94:76</a>	-	-	-	Aeroscout	mse-3310	<a href="#">20.20.20.15</a>	Normal (80 %)	<a href="#">Build 1 &gt; Build 1 &gt; Floor 1</a>
<a href="#">00:0c:cc:73:93:42</a>	-	-	-	Aeroscout	mse-3310	<a href="#">20.20.20.15</a>	Normal (80 %)	<a href="#">Build 1 &gt; Build 1 &gt; Floor 1</a>
<a href="#">00:0c:cc:73:91:ae</a>	-	-	-	Aeroscout	mse-3310	<a href="#">20.20.20.15</a>	Normal (80 %)	<a href="#">Build 1 &gt; Build 1 &gt; Floor 1</a>
<a href="#">00:0c:cc:73:7f:b9</a>	-	-	-	Aeroscout	mse-3310	<a href="#">20.20.20.15</a>	Normal (80 %)	<a href="#">Build 1 &gt; Build 1 &gt; Floor 1</a>
<a href="#">00:0c:cc:5c:05:16</a>	-	-	-	Aeroscout	mse-3310	<a href="#">20.20.20.15</a>	Normal (80 %)	<a href="#">Build 1 &gt; Build 1 &gt; Floor 1</a>



**Note** If the listing of tags is lengthy, you can use Search or Advanced Search to isolate a specific tag.

- b. To search for a specific tag, if you know its MAC address, name or VLAN ID (not all search values apply to all tags) use **Search** which is found in the navigation bar.
- c. To search for a specific tag or multiple tags using a broader range of search categories such as device (MSE or controller), map location (floor or outdoor area), asset name or category, or tag vendor use **Advanced Search** which is found in the navigation bar (see [Figure 8-16](#)).
1. In the Advanced Search panel, select **Tags** as the search category.
  2. Select the additional tag search criteria. Refer to [Table 8-2](#) for a list of search criteria and their possible values.
  3. Click **Go** when all advanced search parameters are selected. Results are shown in [Figure 8-17](#).

**Note**

If no tags are found based on the selected search criteria, a message appears noting this as well as the reason why the search was unsuccessful and possible actions.

**Figure 8-16** Advanced Search Panel for Tags

The screenshot shows the Cisco Wireless Control System interface. The top navigation bar includes 'Monitor', 'Reports', 'Configure', 'Services', 'Administration', 'Tools', and 'Help'. The main content area is titled 'Tag List' and contains a table with columns: MAC Address, Asset Name, and Asset Group. A 'New Search' dialog box is open, showing search criteria for tags. The criteria are: Search Category: Tags, Search for tags by: Floor Area, Search In: MSEs, Last detected within: 15 Minutes, Campus: Default Campus, Building: Build1, Floor Area: Floor1, Tag Vendor: Aer Scout (checked), Telemetry Tags only: checked, Items per page: 50, and Save Search: unchecked. A 'Go' button is at the bottom of the dialog.

**Figure 8-17** Advanced Search Results for Tag

The screenshot shows the Cisco Wireless Control System interface displaying search results for tags. The results table has the following columns: MAC Address, Asset Name, Asset Group, Asset Category, Vendor Name, MSE, Controller, Battery Status, and Map Location. The results are as follows:

MAC Address	Asset Name	Asset Group	Asset Category	Vendor Name	MSE	Controller	Battery Status	Map Location
<a href="#">00:0c:cc:73:93:42</a>	-	-	-	Aer Scout	mse-3310	<a href="#">20.20.20.15</a>	Normal (80 %)	<a href="#">Build1 &gt; Build1 &gt; Floor1</a>
<a href="#">00:0c:cc:73:91:ae</a>	-	-	-	Aer Scout	mse-3310	<a href="#">20.20.20.15</a>	Normal (80 %)	<a href="#">Build1 &gt; Build1 &gt; Floor1</a>
<a href="#">00:0c:cc:5c:05:16</a>	-	-	-	Aer Scout	mse-3310	<a href="#">20.20.20.15</a>	Normal (80 %)	<a href="#">Build1 &gt; Build1 &gt; Floor1</a>
<a href="#">00:0c:cc:73:93:42</a>	-	-	-	Aer Scout	heitz-3350	<a href="#">20.20.20.16</a>	Normal (80 %)	<a href="#">Build1 &gt; Build1 &gt; Floor1</a>
<a href="#">00:0c:cc:73:91:ae</a>	-	-	-	Aer Scout	heitz-3350	<a href="#">20.20.20.15</a>	Normal (80 %)	<a href="#">Build1 &gt; Build1 &gt; Floor1</a>
<a href="#">00:0c:cc:5c:05:16</a>	-	-	-	Aer Scout	heitz-3350	<a href="#">20.20.20.15</a>	Normal (80 %)	<a href="#">Build1 &gt; Build1 &gt; Floor1</a>

**Note**

If you click the MAC address of any of these tags, a Tag details window appears similar to that in [Figure 8-12](#).

[Table 8-2](#) lists search criteria and their possible values.

**Table 8-2 Tag Search Criteria and Values**

Search Criteria	Variable Search Criteria	Possible Values
Search for tags by (Tier 1 search criteria)	—	All Tags; Asset Name, Asset Category or Asset Group; MAC Address; Controller or MSEs; Floor Area or Outdoor Area. <b>Note</b> MSE search includes both location servers and mobility services engines.
Search In (Tier 2 search criteria)	—	WCS Controllers or MSE. <b>Note</b> WCS Controller option indicates that the search for controllers is done within WCS. <b>Note</b> MSE search includes both location servers and mobility services engines.
Last detected within	—	Options are from 5 minutes to 24 hours.
Variable search criteria. (Tier 3 search criteria) <b>Note</b> Possible search criteria determined by the <b>Search for tags by</b> (Tier 1 search) value.	If <b>Search for tags by</b> value is: <ol style="list-style-type: none"> <li>1. Asset Name, then enter Tag Asset Name.</li> <li>2. Asset Category, then enter Tag Asset Category.</li> <li>3. Asset Group, then enter Tag Asset Group.</li> <li>4. MAC Address, then enter Tag MAC Address.</li> <li>5. Controller, then select Controller IP address from drop-down menu.</li> <li>6. MSE (when system is a location server), then choose a location server IP address from drop-down menu.</li> <li>7. Floor Area, then choose Campus, Building and Floor Area.</li> <li>8. Outdoor Area, then choose Campus and Outdoor Area.</li> </ol>	
Show Telemetry Tags only	—	Check box to display telemetry tags. Leaving option unchecked displays all tags. <b>Note</b> Option only seen when MSE (select for location servers), Floor Area or Outdoor Area are selected as the Search for tags by option. <b>Note</b> Only those vendor tags that support telemetry appear.
Tag Vendor	—	Check box to select tag vendor from drop-down menu. <b>Note</b> Option does not display when Asset Name, Asset Category, Asset Group or MAC Address are the search criteria for tags.

**Table 8-2** Tag Search Criteria and Values

Search Criteria	Variable Search Criteria	Possible Values
Save Search	—	Check box to name and save search criteria. Once saved, entry appears under Saved Searches heading (left-panel).
Items Per Page	—	Select the number of tags to display per search request. Values range from 10 to 500.

## Overlapping Tags

When multiple tags are within close proximity of one another a summary tag is used to represent their location on a WCS map (**Monitor > Maps**). The summary tag is labeled with the number of tags at that location.

When you move the mouse over the overlapping tag on the map, a panel appears with summary information for the overlapping tags (see [Figure 8-18](#)).

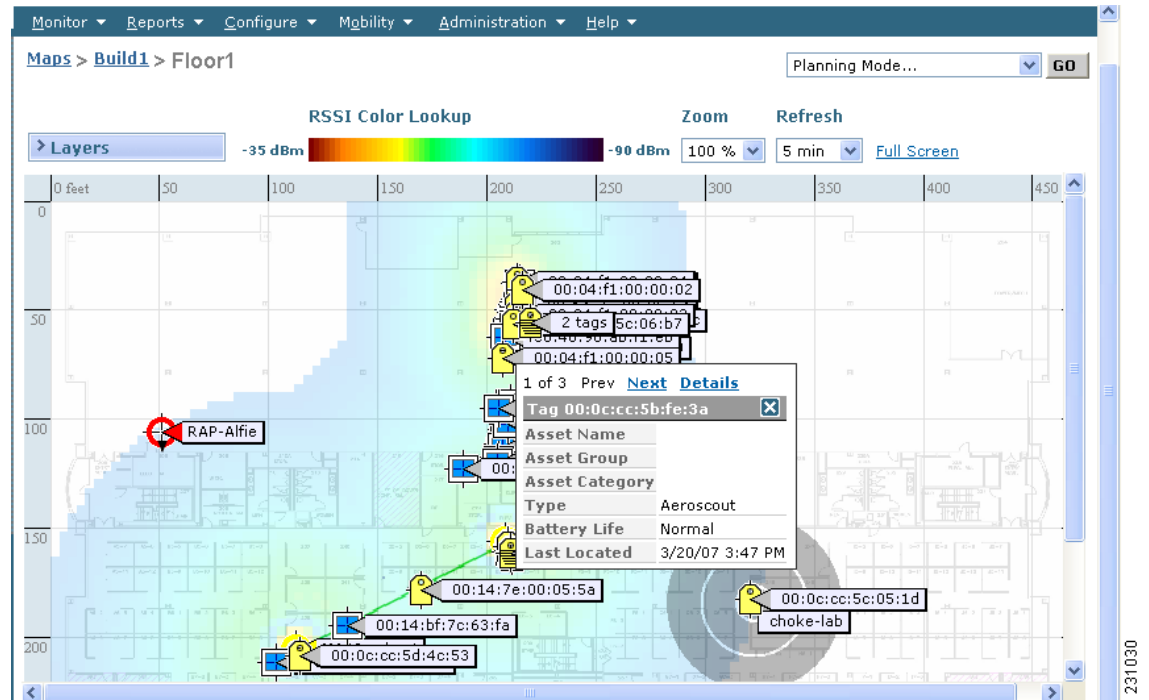
Select the Prev and Next links to move between the individual tag summary panels. To see detailed information on a specific tag, select the Details link while viewing the tag's summary information.



### Note

- Summary information for tags includes: Tag MAC address, Asset Name, Asset Group, Asset Category, Vendor (Type), Battery life and Last Located data (date and time). If the tag is Cisco CX v.1 compliant, telemetry information also appears.
- Detailed information for tags includes this additional information: IP address of associated controller, statistics, location notifications, location history and whether the location debug feature is enabled.
  - To view location history for a tag, select that option from the Select a command drop-down menu and click **GO**.
  - To return to the details screen from the location history window, select the Tag Detail option and click **GO**.

Figure 8-18 Overlapping Tags Window



## Monitoring Chokepoints

A chokepoint must be assigned to a map for its location to be monitored.

Refer to the “[Adding Chokepoints to the Cisco WCS](#)” section on page 7-13 of this configuration guide. After adding the TDOA receiver to a map, you must synchronize the network designs (Services > Synchronize Services) with the mobility services engine for it to appear on the map.

If a chokepoint is not assigned to a map, you are not able to find that chokepoint using Search or Advanced Search.

All chokepoint setup is done using the *AeroScout System Manager*.



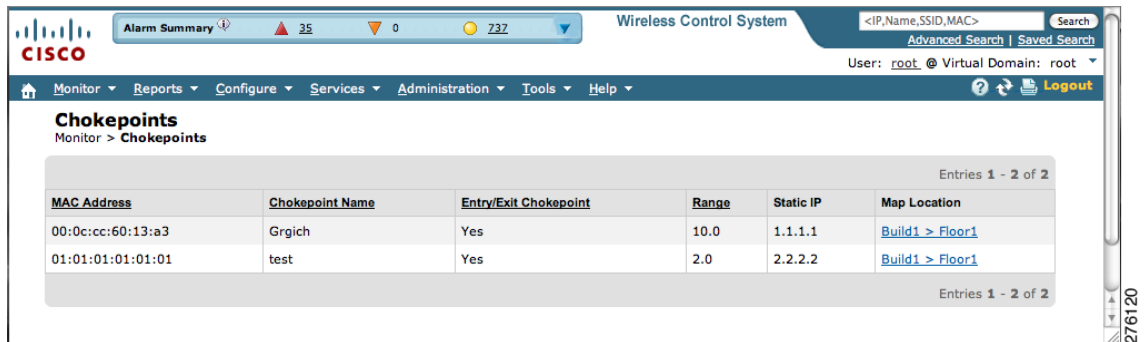
**Note** Refer to the *AeroScout Context-Aware Engine for Tags, for Cisco Mobility Services Engine Users Guide* for configuration details at the following link: <http://support.aeroscout.com>.

To monitor chokepoints, follow these steps:

- Step 1** Choose **Monitor > Chokepoints**. The Chokepoint summary window appears showing all mapped chokepoints.
- Step 2** To refine the search criteria when an extensive list appears, search by MAC address or chokepoint name.
  - a.** To initiate a search for a chokepoint by its MAC address or chokepoint name, enter that value in the Search field of the navigation bar. Click **Search** (see [Figure 8-19](#)).

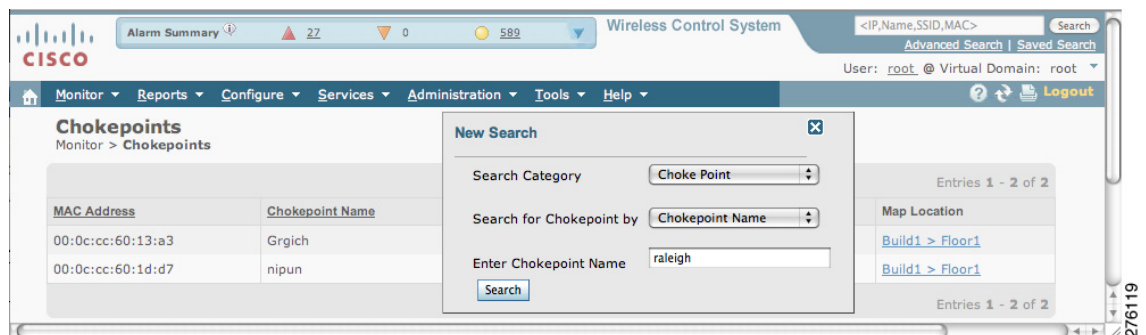
**Figure 8-19 Search for Chokepoint by MAC Address**

Figure 8-19 shows a search by MAC address. Figure 8-20 shows the results. If no match exists, a message appears in the results window.

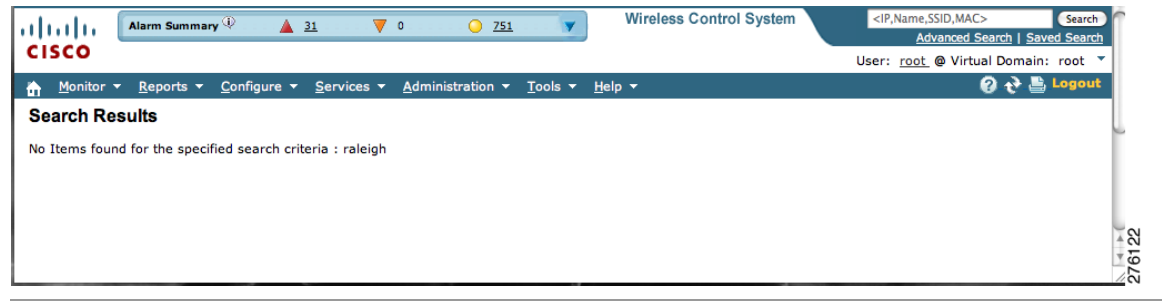
**Figure 8-20 MAC Address Search Results for a Chokepoint Indicating a Match**

- b. To initiate an advanced search for a chokepoint by its MAC address or name, click **Advanced Search** in the navigation bar.
  1. Select **Chokepoint** as the search category.
  2. Select either **Chokepoint Name** or **MAC Address** from the Search for Chokepoint by drop-down menu.
  3. Enter either the chokepoint name or MAC address.
  4. Click **Search**.

This example shows an advanced search using the chokepoint name (see Figure 8-21).

**Figure 8-21 Chokepoint Name Advanced Search Panel**

If no match exists, a message appears in the window (see Figure 8-22). Otherwise the search result appears.

**Figure 8-22** Chokepoint Advanced Search Results Indicating No Match

## Monitoring Wi-Fi TDOA Receivers

A Wi-Fi TDOA receiver must be assigned to a map for its location to be monitored.

Refer to the “[Adding Wi-Fi TDOA Receivers to Cisco WCS](#)” section on page 7-19 of this configuration guide. After adding the TDOA receiver to a map, you must synchronize network designs (Services > Synchronize Services) with the mobility services engine for it to appear on the map.

If a TDOA receiver is not assigned to a map, you cannot find it using Search or Advanced Search.

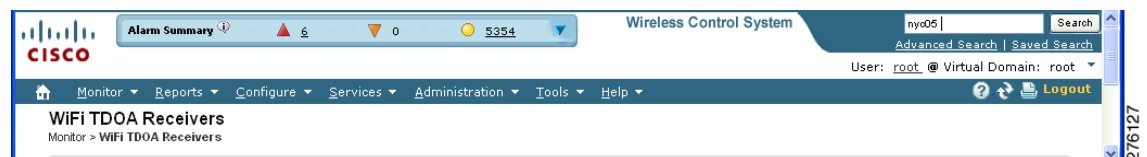
All TDOA receiver setup is done using the *AeroScout System Manager*.



**Note** Refer to the *AeroScout Context-Aware Engine for Tags, for Cisco Mobility Services Engine Users Guide* for configuration details at the following link: <http://support.aeroscout.com>.

To monitor TDOA Receivers, follow these steps:

- Step 1** Choose **Monitor > WiFi TDOA Receivers**. The WiFi TDOA Receivers summary window appears showing all mapped TDOA receivers.
- Step 2** To refine the search criteria when an extensive list appears, search by MAC address or TDOA receiver name.
  - a. To initiate a search for a TDOA receiver by its MAC address or name, enter that value in the Search field of the navigation bar. Click **Search** (see [Figure 8-23](#)).

**Figure 8-23** Monitor > WiFi TDOA Receivers Search Window

[Figure 8-24](#) shows an example of advanced search using the TDOA Wi-Fi receiver name. Click **View List** to see a full list of Alarms.

If no match exists, a message appears in the results window.

Figure 8-24 Search Results Window

Item Type	Item Count	Monitor	Configuration
Alarm	1	<a href="#">View List</a>	

- b. To initiate an advanced search for a TDOA receiver by its MAC address or name, click Advanced Search in the navigation bar.
  1. Select **WiFi TDOA Receiver** as the search category.
  2. Select either **WiFi TDOA Receivers Name** or **MAC Address** from the Search for WiFi TDOA Receiver by drop-down menu.
  3. Enter either the TDOA receiver name or MAC address.
  4. Click **Search**.

This example shows an advanced search using the MAC address (see [Figure 8-25](#)).

Figure 8-25 Advanced Search Panel

**New Search**

Search Category: **Wifi TDOA Receiver**

Search for WiFi TDOA Receiver by: **MAC Address**

Enter WiFi TDOA Receiver MAC Address: **76:24:e5:2c:78:00**

[Figure 8-26](#) shows the search results.

If no match exists, a message appears in the results window.

Figure 8-26 WiFi TDOA Receivers Advanced Search Results Indicating a Match

MAC Address	WiFi TDOA Receiver Name	Static IP	Oper Status	Map Location
76:24:e5:2c:78:00	boston03	1.2.3.5	Down	<a href="#">Cisco &gt; Building14 &gt; FifthFloor</a>