C H A P T E R **3**

Synchronizing Mobility Services Engines

This chapter describes how to synchronize Cisco wireless LAN controllers and Cisco WCS with mobility services engines.

This chapter contains the following sections:

- "Keeping Mobility Services Engines Synchronized" section on page 3-2
- "Viewing Synchronization Information" section on page 3-5

Keeping Mobility Services Engines Synchronized

This section describes how to synchronize Cisco WCS and mobility services engines manually and automatically.

After adding a mobility services engine to Cisco WCS, you can synchronize network designs (campus, building, and outdoor maps), event groups or controller information (name and IP address) with the mobility services engine.

> **Note**   Be sure to verify software compatibility between the controller, Cisco WCS and the mobility services engine before synchronizing. Refer to the latest mobility services engine release note at the following link: http://www.cisco.com/en/US/products/ps9742/tsd_products_support_series_home.html.

> **Note**   Communication between the mobility services engine and Cisco WCS and the controller is in universal time code (UTC). Configuring NTP on each system provides devices with the UTC time. The mobility services engine and its associated controllers must be mapped to the same NTP server and the same Cisco WCS server. An NTP server is required to automatically synchronize time between the controller, Cisco WCS, and the mobility services engine.

Synchronizing Cisco WCS and a Mobility Services Engine

To synchronize Cisco WCS network designs, a controller or event groups with the mobility services engine, follow these steps:

Step 1   Click **Mobility > Synchronize Services** to display the Mobility Services > Synchronize WCS and MSE(s) window. A three-tabbed window appears.

> **Note**   The Devices column lists the system name of the mobility services engine and the active service on that device. Services are noted in parenthesis next to the device name. Services supported are Context-Aware Software (C), and Wireless Intrusion Prevention Service (W).

Step 2   Select the appropriate tab (network designs, controllers, or event groups).

a.   To assign a network design to a mobility services engine, click its corresponding **Assign** link.

> **Note**   A network design might comprise a large campus with several buildings, each monitored by a different mobility services engine. Therefore, you might need to assign a single network design to multiple mobility services engines.

In the Network Designs panel that appears, check the check box of each network design that you want to apply to the mobility services engine. Click **OK** when the selection is complete.

A red asterisk (*) appears next to the Assign link. To undo assignments, click **Reset**. To go back to the Synchronize WCS and MSE(s) window without making any changes, click **Cancel**.

b.   To associate a mobility services engine with a controller, click the **Assign** link for that mobility services engine.

In the Controllers panel that appears, check the check box next to each controller to which you want the mobility services engine associated. Click **OK** (Figure 3-1).

> **Note**   The controller must support the service that is configured on the mobility services engine (as noted in the supported services column). If not, when you click **OK**, a warning message appears noting that the service is not supported on that controller.
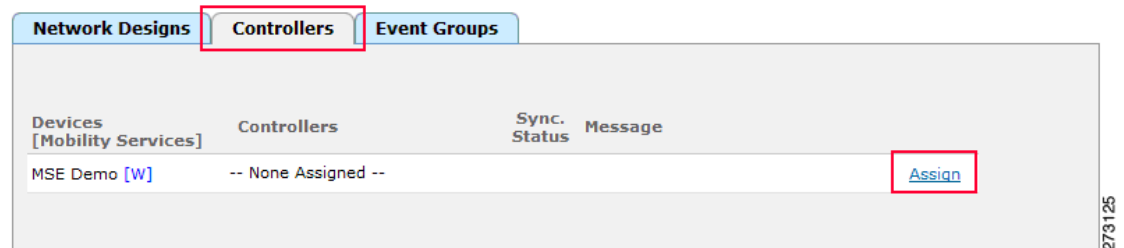
> **Note**   Controller names must be unique for synchronizing with a mobility services engine. If you have two controllers with the same name, only one controller synchronizes.

A red asterisk (*) appears next to the Assign link. To undo assignments, click **Reset**. To go back to the Synchronize WCS and MSE(s) window without making any changes, click **Cancel**.

Figure 3-1   Assign > Controllers

Mobility Services> Synchronize WCS and MSE(s)

Network Designs	Controllers	Event Groups

Devices [Mobility Services]	Controllers	Sync. Status	Message	
MSE Demo [W]	-- None Assigned --			Assign

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c. To assign an event group to a mobility services engine, click its corresponding **Assign** link.

In the Event Groups panel that appears, check the check box for each event group that you want to assign to the mobility services engine. Click **OK**.

A red asterisk (*) appears next to the Assign link. To undo assignments, click **Reset**. To go back to the Synchronize WCS and Server(s) window without making any changes, click **Cancel**.

Step 3   Click **Synchronize** to update the mobility services engine database.

When items are synchronized, a green two-arrow icon appears in the Sync. Status column for each synchronized entry.

> **Note**   To unassign a network design, controller or event group from a mobility services engine, click the **Assign** link next to the system. In the panel that appears, uncheck the check box for the corresponding network design, controller or event group. Click **OK.** Then, click **Synchronize**. The name of the removed network design, controller or event group is replaced with *None Assigned*.

Configuring Automatic Database Synchronization and Out of Sync Alerts

Manual synchronization of Cisco WCS and mobility services engine databases is immediate. However, future deployment changes (such as changes to maps and access point positions) can yield incorrect information until resynchronization reoccurs.

To prevent out-of-sync conditions, use Cisco WCS to enable automatic synchronization. This policy ensures that synchronization between Cisco WCS and mobility services engine databases is triggered periodically and any related alarms are cleared.

To configure automatic synchronization, follow these steps:

Step 1   In Cisco WCS, choose **Administration > Background Tasks**.

Step 2   Check the **Mobility Service Synchronization** check box. Select **Enable Task** from the Select a command drop-down menu if not already enabled. Click **GO**.

Step 3   Click the **Mobility Service Synchronization** link and the Task > Mobility Service Synchronization window appears.

Step 4   To set the mobility services engine to send out-of-sync alerts, check the Out of Sync Alerts **Enabled** check box. By default, out-of-sync alarms are enabled.

> **Note**   Uncheck the Out of Sync Alerts **Enabled** check box to disable forwarding of out-of-sync alarms.

> **Note**   For a summary of out of sync alerts that are sent, refer to the "Out-of-Sync Alarms" section on page 3-4.

Step 5   To enable automatic synchronization, check the Auto Synchronization **Enabled** check box.

> **Note**   Automatic synchronization does not apply to network designs, controllers, or event groups that have not yet been assigned to a mobility services engine. However, out-of-sync alarms will still be generated for these unassigned elements. For automatic synchronization to apply to network designs, controllers, or event groups, you need to manually assign them to a mobility services engine.

Step 6   Enter the time interval in hours that the automatic synchronization is to be performed.

By default, auto-sync is disabled.

Step 7   Click **Submit**. You are returned to the **Administration > Background Tasks** screen and the Mobility Service Synchronization task displays an enabled state.

Out-of-Sync Alarms

Out-of-sync alarms are of Minor severity (yellow), and are raised in response to the following conditions:

- Elements are modified in Cisco WCS (the auto-sync policy pushes these elements)
- Elements are modified in the mobility services engine (the auto-sync policy pulls these elements)

- Elements other than controllers exist in the mobility services engine database but not in Cisco WCS (the auto-sync policy pulls these elements)
- Elements are not assigned to any mobility services engine (the auto-sync policy does not apply)

Out-of-sync alarms are cleared when the following occurs:

- Mobility services engine is deleted

> **Note**   When you delete a mobility services engine, the out-of-sync alarms for that system are also deleted. In addition, if you delete the last available mobility services engine, the alarms for the following event: *elements not assigned to any server* will also be deleted.

- Elements are synchronized manually or automatically
- User manually clears the alarms (although the alarms may reappear in the future when the scheduled task is next executed)

Viewing Synchronization Information

This section describes how to view synchronization status and history.

Viewing Mobility Services Engine Synchronization Status

You can use the Synchronize Servers command in Cisco WCS to view the status of network design, controller, and event group synchronization with a mobility services engine.

To view synchronization status, follow these steps:

Step 1   In Cisco WCS, choose **Mobility > Synchronize Services**.

Step 2   From the **Synchronize** drop-down menu, select either the **Network Designs**, **Controllers**, or **Event Groups** tab.

In the panel that appears, check the Sync. Status column for the synchronization status. A green two-arrow icon indicates that the mobility services engine is synchronized with the specified network design, controller or event group. A gray two-arrow icon with a red circle indicates that its corresponding item is not synchronized with a given server.
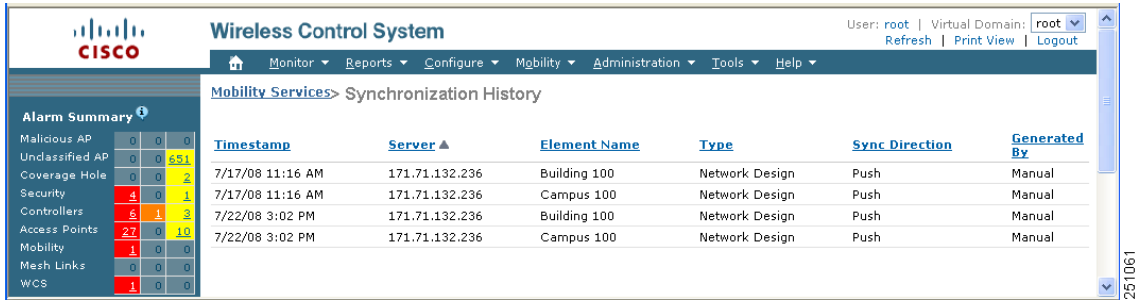
Viewing Synchronization History

You can view the synchronization history for the last 30 days for a mobility services engine. This is especially useful when automatic synchronization is enabled as alarms are automatically cleared. Synchronization history provides a summary of those cleared alarms.

To view synchronization history, follow these steps:

Step 1   In Cisco WCS, choose **Mobility > Synchronization History**. The Synchronization History window appears (.

Figure 3-2   *Mobility > Synchronization History*

Step 2   Click the column headers to sort the entries. describes the column headings.

In the Synchronization History window, the Sync Direction column indicates whether information is pushed into the mobility services engine or pulled by the mobility services engine. The Generated By column indicates whether the synchronization was manual or automatic.