



## CHAPTER **3**

# Synchronizing Location Servers with Cisco Wireless LAN Controllers and Cisco WCS

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This chapter describes how to synchronize Cisco wireless LAN controllers and Cisco WCS with locations servers.

This chapter contains the following sections:

- [“Keeping Location Servers Synchronized”](#) section on page 3-2
- [“Viewing Synchronization Information”](#) section on page 3-6

# Keeping Location Servers Synchronized

This section describes how to synchronize controllers, WCS and location servers manually and automatically.

Before a location server can collect any data, you must do two things:

1. Associate the server with a controller and synchronize them using Cisco WCS. Refer to the “[Associating a Location Server with a Controller](#)” section on page 3-2.
2. Verify that the timezone is set on the associated controller. Refer to the “[Setting and Verifying Timezone on a Controller](#)” section on page 3-3.



## Note

Be sure to verify software compatibility between the controller, Cisco WCS and the location server before synchronizing. Refer to the latest location server release note at the following link: [http://www.cisco.com/en/US/products/ps6386/prod\\_release\\_notes\\_list.html](http://www.cisco.com/en/US/products/ps6386/prod_release_notes_list.html)



## Note

Communication between the location server and Cisco WCS and the controller is in universal time code (UTC). Configuring NTP on each system provides devices with the UTC time. The location server 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 location server.

## Associating a Location Server with a Controller

Before a location server can collect any data, you must associate the server with a controller and synchronize them using Cisco WCS. After the initial synchronization, you can resynchronize the controllers and location servers at any time.



## Note

Controller names must be unique for synchronizing with location servers. If you have two controllers with the same name, only one will be synchronized.

To associate and synchronize a location server and a controller, follow these steps:

- Step 1** Click **Mobility > Synchronize Services** to display the Synchronize Cisco WCS and Server(s) window.
- Step 2** Select the **Controllers** tab.  
Cisco WCS displays a list of possible controllers.
- Step 3** To associate a location server with a controller, click the corresponding **Assign** link of that server.
- Step 4** In the controllers dialog box that appears, check the check box of each controller that you want the location server to be associated. Click **OK** when selection is complete.

A red asterisk (\*) appears next to the Assign link. To undo assignments, click **Reset**. To go back to the Mobility Services window without making any changes, click **Cancel**.

When the Cisco WCS and location server databases are synchronized, a green two-arrow icon appears in the Sync. Status column of every synchronized controller entry.

**Note**

To disassociate a controller from a location server, click the Assign link next to the location server. In the controllers dialog box that appears, uncheck the appropriate check box for each controller. Click OK and then click **Synchronize**.

## Setting and Verifying Timezone on a Controller

For controller releases 4.2 and greater, if a location server (release 3.1 or greater) is installed in your network, it is mandatory that the time zone be set on the controller to ensure proper synchronization between the two systems; and, a highly recommended setting in networks that do not have location servers.

Universal Time Code (UTC) is used as the standard for setting the system time zone for the controller.

You can automatically set the time zone during initial system setup of the controller or manually set it on a controller already installed in your network.

Follow these steps to manually set the time and time zone on an existing controller in your network using the CLI:

- Step 1** Configure the current local time in UTC on the controller by entering the following commands.

```
(Cisco Controller) >config time manual 09/07/07 16:00:00
(Cisco Controller) >config end
```

**Note**

When setting the time, the current local time is entered in terms of UTC and as a value between 00:00 and 24:00. For example, if it is 8 AM Pacific Standard Time (PST) in the US, you enter 16:00 (4 PM PST) as the PST time zone is 8 hours behind UTC.

- Step 2** Verify that the current local time is set in terms of UTC by entering the following command.

```
(Cisco Controller) >show time
Time..... Fri Sep 7 16:00:02 2007
Timezone delta..... 0:0
```

- Step 3** Set the local time zone for the system by entering the following commands.

**Note**

When setting the time zone, you enter the time difference of the local current time zone with respect to UTC (+/-). For example, Pacific Standard Time (PST) in the United States (US) is 8 hours behind UTC time. Therefore, it is entered as -8.

```
(Cisco Controller) >config time timezone -8
(Cisco Controller) >config end
```

- Step 4** Verify that the controller displays the current local time with respect to the local time zone rather than in UTC by entering the following command.

```
(Cisco Controller) >show time
Time..... Fri Sep 7 08:00:26 2007
Timezone delta..... -8:0
```



**Note** The time zone delta parameter in the **show time** command displays the difference in time between the local time zone and UTC (8 hours). Prior to configuration, the parameter setting is 0.0.

## Synchronizing Cisco WCS and Location Servers

After adding a location server to Cisco WCS, you add network designs (campus, building, and outdoor maps), event groups or controller information (name and IP address) to the location server.

After the network designs are stored in the Cisco WCS and location server databases, you can re-synchronize the two databases at any time.

To synchronize Cisco WCS network designs with the location server, follow these steps:

**Step 1** Click **Mobility > Synchronize Services** to display the Synchronize Cisco WCS and MSE(s) window.

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

- a. To assign a network design to a location server, click its corresponding **Assign** link.



**Note** A network design might comprise a large campus with several buildings, each monitored by a different location server. Therefore, you might need to assign a single network design to multiple location servers.

In the Network Designs panel that appears, check the check box of each network design that you want to apply to the location server. 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 location server with a controller, click the **Assign** link for that location server.

In the Controllers panel that appears, check the check box next to each controller to which you want the location server associated. Click **OK**.



**Note** Controller names must be unique for synchronizing with a location server. 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**.

- c. To assign an event group to a location server, 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 location server. 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 Cisco WCS and location server databases.

When the Cisco WCS and location server databases are synchronized, a green two-arrow icon appears in the Sync. Status column for each synchronized network design entry.



**Note** To unassign a network design from a location server, uncheck the server's check box in the Assign to servers dialog box and click **OK**. Then, click **Synchronize**. A two-arrow icon with a red circle appears in the Sync. Status column.

## Configuring Automatic Location Service Database Synchronization

Manual synchronization of WCS and location server databases is immediate. However, future deployment changes (such as changes to maps and access point positions) can yield incorrect location calculations and asset tracking until resynchronization reoccurs. To prevent out-of-sync conditions, use Cisco WCS to enable automatic synchronization. This policy ensures that synchronization between WCS and location service databases is triggered periodically and any related alarms are cleared.

To configure automatic synchronization, follow these steps:

- Step 1** In Cisco WCS, click **Administration > Background Tasks**.
- Step 2** Check the **Mobility Service Synchronization** check box.
- Step 3** Click the **Mobility Service Synchronization** link and the Task > Mobility Service Synchronization window appears.
- Step 4** To set the location server to send out-of-sync alerts, check the Out of Sync Alerts **Enabled** check box.
- Step 5** To enable automatic synchronization, check the Auto Synchronization **Enabled** check box.



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

- 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**.

## Out-of-Sync Alarms

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

- Elements have been modified in Cisco WCS (the auto-sync policy will push these elements)
- Elements have been modified in location servers (the auto-sync policy will pull these elements)
- Elements other than controllers exist in the location server but not in Cisco WCS (the auto-sync policy will pull these elements)

- Elements have not been assigned to any location server (the auto-sync policy doesn't apply)

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

- Location server is deleted




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**Note** When you delete a location server, the out-of-sync alarms for that server are also deleted. In addition, if you delete the last available location server, the following alarm, *Elements not assigned to any location server* is also deleted.

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- 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)



**Note**

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By default, out-of-sync alarms are enabled. You can disable them in Cisco WCS by choosing **Administration > Scheduled Tasks**, clicking the **Mobility Service Synchronization** link, unchecking the **Auto Synchronization** check box, and clicking **Submit**.

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## Viewing Synchronization Information

This section describes how to view location service synchronization status and history.

### Viewing Location Service 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 location servers.

To view synchronization status, follow these steps:

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

**Step 2** Select the **Network Designs**, **Controllers**, or **Event Groups** tab.

Depending on the command you have chosen, Cisco WCS displays a list of elements (network designs, controllers, or event groups). In the list, the Sync. Status column shows the synchronization status. A green two-arrow icon indicates that its corresponding element is synchronized with the specified location server. A gray two-arrow icon with a red circle indicates that its corresponding item is not synchronized with the location server.

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## Viewing Location Service Synchronization History

You can view the location service synchronization history for the last 30 days. 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:

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**Step 1** In Cisco WCS, click **Mobility > Synchronization History**

**Step 2** Click the column headers to sort the entries.

In the Synchronization History window, the Sync Direction column indicates whether information is pushed to the location server or pulled by the location server. The Generated By column indicates whether the synchronization was manual or automatic.

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■ Viewing Synchronization Information