



Managing Your WLAN Radio Environment by Sites

Use the functions under the Sites tab to manage your WLAN network based on the physical location of your devices and your wireless environments.



Note

Before you can use the functions under the Sites tab, you need to configure your network for radio management (see [Configuring Your Network for Radio Management, page 12-5](#)).

- Location Manager—gives you a graphical view of the access points (APs) on each floor of your buildings, lets you view the relative location of unknown or rogue APs, and includes the Assisted Site Survey wizard. See [Using Location Manager, page 14-2](#).
- AP Radio Scan—detects all neighbor's APs and produces path loss data used for rogue location estimations, radio parameter generation, and coverage display data. See [Using AP Radio Scans to Collect RM Data, page 14-58](#).
- Client Walkabout—helps provide optimal coverage for the radio parameter generator by generating additional data. See [Using Client Walkabouts to Collect RM Data, page 14-73](#).
- Assisted Configuration—provides configurations for your APs based on measurement data collected from client walkabouts and AP radio scans. See [Generating Radio Parameters, page 14-90](#).

- **Manage Data**—allows you to delete previously collected radio location measurements, including links and path loss data. See [Managing RM Data, page 14-106](#).

Using Location Manager

The Location Manager gives you a graphical view of the access points (APs) on each floor of your buildings, lets you view the relative location of unknown or rogue APs, and use the Assisted Site Survey wizard to determine optimal radio transmit power, channel selection, and beacon interval.

Before using Location Manager, you must enter information about site, building, and floor environments (see [Setting Up Location Manager, page 14-3](#))

The Location Manager supports up to 1,500 buildings per location with a maximum of 100 floors per building and a maximum of 100 APs per floor.

You can launch Location Manager in two ways:

- By clicking the Sites tab, then clicking **Location Manager**, and then **Launch**.
- By selecting **Faults > Display Faults** and clicking the link in the Address, Description, or Timestamp fields in the Fault Summary Table for an unknown access point. A new window displays the Rogue Access Point Details report. From the Rogue Access Point Details report, click on **Location Manager** to launch Location Manager.

Prerequisites for Using Location Manager

Before using Location Manager, you must have completed the following:

- Installed Java Runtime version 1.4.2_04 or higher. When you click on Location Manager, the Location Manager screen displays the version of Java Runtime version you have installed and displays a link to install the correct version if necessary.
- Discovered, inventoried, and managed all devices. See [Device Discovery and Management, page 4-1](#).

- Authenticated the devices with WDS. IOS Access Points or Wireless LAN Services Modules (WLSM) must be configured for Wireless Domain Service (WDS) and for LEAP authentication. For information on the minimum requirements for device setup, see the document *Configuring Devices for Management by the CiscoWorks Wireless LAN Solution Engine* on Cisco.com.

The following sections explain how to use Location Manager:

- [Setting Up Location Manager, page 14-3](#)
- [Using Location Manager Functions, page 14-21](#)
- [Understanding the Location Manager Window, page 14-48](#)

Setting Up Location Manager

To use all the features of Location Manager, you must enter information about your sites and buildings. When you launch Location Manager for the first time, use the Building Tool to enter campus/site, building, and floor information.



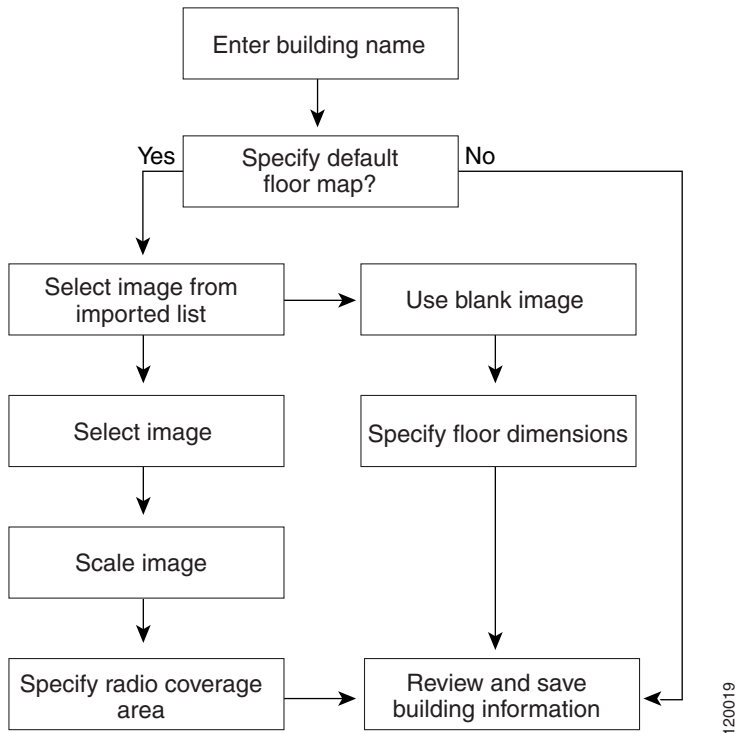
Note

The sites, buildings, and floors that you add appear alphabetically in the Location Manager navigation tree as well as the Physical Location folder under **Devices > Group Management**. You can modify the contents of the Physical Location folder using Location Manager only.

Procedure

- Step 1** If you have previously launched Location Manager and want to add site information, select **Edit > Add Site** or right-click on **All Locations** and select **Add Site**. The Site Tool appears. Enter the name of the site, then click **OK**.
- Step 2** If this is the first time you've launched Location Manager, the Building Tool appears and walks you through the process shown in [Figure 14-1](#).

Figure 14-1 Building Tool Steps for Adding Building Information



Entering Building Information

Procedure

- Step 1** When you launch Location Manager for the first time, a form appears indicating no building or floor information was found and asks if you want to add a new building using the Building Tool. Click **Yes**.
The Building Tool opens.

- Step 2** Enter information in the Building Name, Contact (optional), and Address (optional) fields. The following table shows the character limits for each field on the Create Building Information form:

Field	Maximum Character Length
Building Name	64 characters
Contact	64 characters
Address	256 characters

- Step 3** Click **Next**. The Default Floor Map form appears. See [Choosing a Default Floor Map, page 14-5](#).
-

Choosing a Default Floor Map

After you enter a building name, you need to decide if you want to use a default floor map that you can use for all floors in the building.

Procedure

- Step 1** Select a floor map setting:
- Click **Specify Default Floor Map** to specify a default map that all floors in the building can use. If the floors in the building have a similar floor plan, you can use the same floor map for all floors in the building which can save you time when entering floor information.
 - Click **No Default Floor Map** if you do not want to use a default map for all floors in the building.
- Step 2** Click **Next**.
- If you clicked **Specify Default Floor Map**, the Select Image Map Type form appears. See [Entering Default Floor Map Information, page 14-6](#).
- If you clicked **No Default Floor Map**, you need to review and save the information you entered. See [Saving Building Information, page 14-10](#).
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Entering Default Floor Map Information

If you chose to specify a default floor map for all floors in the building, you need to enter information about the floor map image file.

Procedure

- Step 1** Select one of the following options:
- Click **Select an Imported Image** to chose an image (.gif, .jpg, .jpeg, or .png) that already exists.
 - Click **Use Blank Image** to chose a blank image that represents the floor area.

- Step 2** Click **Next**.

If you specified **Select an Imported Image**, the Building Tool displays an image list. See [Selecting the Image Map, page 14-8](#).

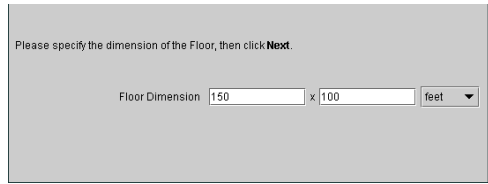
If you specified **Use Blank Image**, enter the floor dimensions. See [Entering Floor Dimensions, page 14-6](#).

Entering Floor Dimensions

If you selected the blank image, the Building Tool displays a form to enter the floor dimensions.

Procedure

- Step 1** Enter a value in each Floor Dimension field. [Figure 14-2](#) illustrates how the values you enter correspond to the resulting floor image.

Figure 14-2 Specifying Floor Dimensions

Please specify the dimension of the Floor, then click **Next**.

Floor Dimension: x

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Step 2 From the pulldown menu, select feet or meters.

Step 3 Click **Next**.

Now you need to review and save the building information you entered. See [Saving Building Information, page 14-10](#).

Selecting the Image Map

When you use the Building Tool and chose to select an image from an image list, the Building Tool displays a list of image files on the server.

Procedure

- Step 1** The Select Image Map form lists the image files on the server. If your image file appears in the Select Image File window, skip to Step 4.
- Step 2** To add a new image file, click **Add to List**. The Upload File Selection window appears.
- Step 3** Browse to the location of your image file. Click on your image file, then click **Select**. Your file is uploaded and added to the Select Image Map list.



Note If your image filename has any spaces, the spaces are replaced with underscores (_). For example, if your image filename is *my floor image.jpg*, it will become *my_floor_image.jpg* in Location Manager.

- Step 4** Click on the image file, then click **Next**.



Note The larger an image resolution is, the longer it takes to upload to the server and the more memory it uses. Therefore, we recommended that your image be less than 300KB and less than 1,000x1,000 pixels.

You now need to specify the scale of the image you selected. See [Specifying the Scale of the Image Map, page 14-9](#).

Specifying the Scale of the Image Map

The Building Tool displays the image file and asks you to enter information about the scale of the image.

Procedure

- Step 1** Click and drag the red squares of the red scaler tool so that the line corresponds to an area in your building for which you know the exact distance in feet or meters.
- Step 2** Enter the distance that corresponds to the scaler in the field provided.



Note The more accurate your measurement is, the more accurate Location Manager can determine the location of any interferers.

- Step 3** Click **Next**.
- You now need to specify the radio coverage area. See [Specifying Radio Coverage Area, page 14-9](#).
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Specifying Radio Coverage Area

After you specify the scale of the floor map image, you need to enter information about what areas in the floor map image are included in the radio coverage area.

Procedure

- Step 1** Using the Coloring Tool to add areas or the Eraser Tool to remove areas, specify the area of the floor in which you want to optimize the radio configurations. During the Radio Parameter Generation calculation, Location Manager tries to optimize the radio settings within the area that is shaded.

There are several tools to help you shade the desired area:

- The first two icons let you add and remove areas by grid sections. Click on each section you want to add or remove.
- The second two icons let you add and remove larger sections. Hold down and drag your mouse to select areas you want to add or remove.

The colored icons let you change the color used in the image map.

Step 2 Click **Next**.

You now need to review and save the information you entered. See [Saving Building Information, page 14-10](#).

Saving Building Information

The Review and Save form displays the information you entered in the Building Tool.

Procedure

Step 1 If all the information displayed in the form is correct, click **Save**.

Step 2 If you need to modify any information you previously entered, click **Previous** to return to the form you need to change.

After you click **Save**, you can use the Building Tool to create a new floor for the building you just created. See [Choosing the Next Step, page 14-10](#). By default, the new building is listed under Campus Site. All sites and buildings are listed alphabetically in the Location Manager window.

Related Topics

- [Choosing the Next Step, page 14-10](#)
- [Renaming Campus Sites, page 14-11](#)
- [Adding Floors to Location Manager, page 14-11](#)

Choosing the Next Step

After you save the building information, you can:

- Click **Close** to exit the Building Tool.
- Click **Add New Floor** to enter information about the floors in the building. See [Adding Floors to Location Manager, page 14-11](#).

- Click **Modify Existing Floor** to change a floor that was previously added. This option appears only if you have already added a floor to the building.

Related Topics

- [Adding Floors to Location Manager, page 14-11](#)

The buildings you added appear alphabetically under Campus Sites in the Location Manager navigation tree as well as the Physical Location folder under **Devices > Group Management**. You can modify the contents of the Physical Location folder using Location Manager only.

Renaming Campus Sites

By default, when you create a new building, it is listed alphabetically under Campus Site. You can rename the Campus Site folder to any 64-character name you wish.

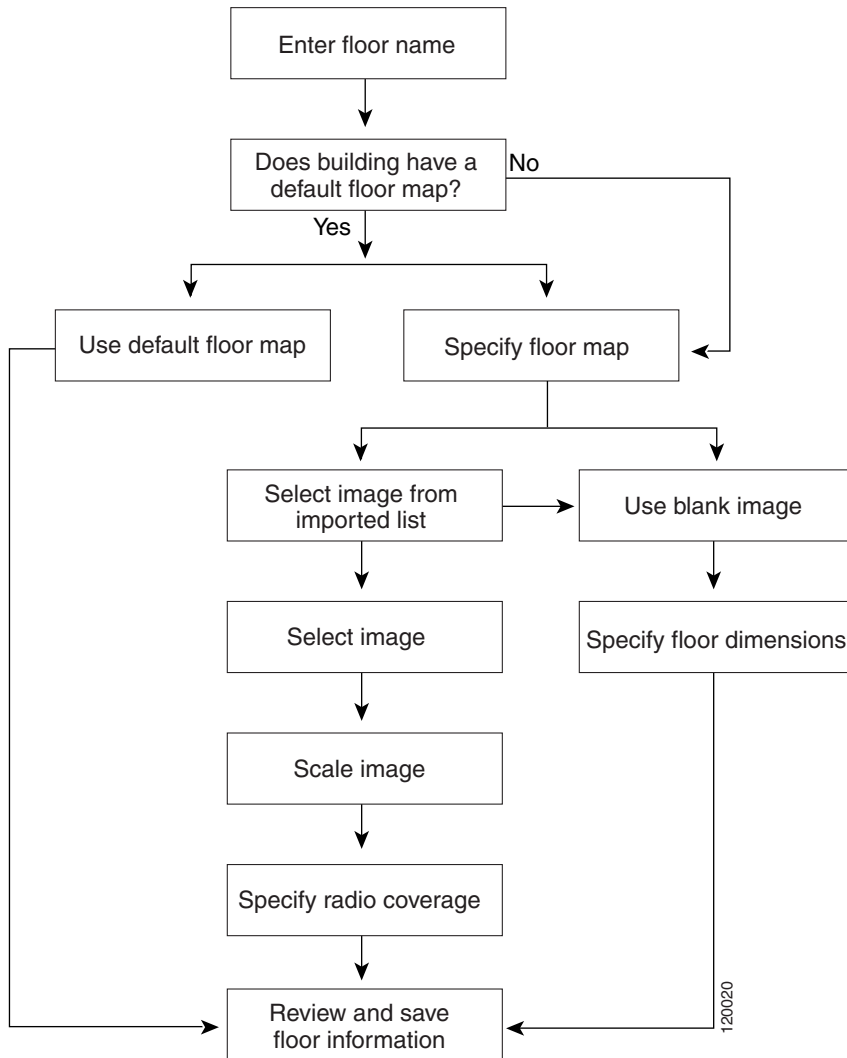
Procedure

- Step 1** Right click on Campus Site, then click **Edit Site**.
- Step 2** Enter the new name of the campus or site, then click **OK**. The new name appears in the Location Manager navigation tree.
-

Adding Floors to Location Manager

After you have added building information to Location Manager, you can add information about each of the floors. The Building Tool helps you enter floor information and walks you through the process shown in [Figure 14-3](#).

Figure 14-3 Building Tool Steps for Adding Floor Information

**Note**

By default, floors are listed in alphabetical order. To change the order of the floors in a building, see

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Entering Floor Information

Procedure

- Step 1** Right-click on a building and select **Add Floor**, or click on a building and select **Edit > Add Floor**. The Building Tool appears and displays the name of the building you selected in the Building Name field.
- Step 2** Enter a name in the Floor Name field. You can specify up to 64 characters in the Floor Name field.
- Step 3** Click **Next**.
- You now need to enter floor map information. See [Entering Floor Map Information, page 14-13](#).
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Entering Floor Map Information

The Building Tool displays information about whether the building you selected has a default floor previously assigned to it.

Procedure

- Step 1** Select a floor map setting. If you previously specified a default floor map for the building, chose one of these options:
- Click **Use the Default Floor Map** to use the default map that was previously applied to the building.
 - Click **Specify New Floor Map Settings** to select a floor map, other than the default floor map assigned to the building, for this floor.
- If you did not previously specify a default floor map for the building, chose one of these options described in [Selecting an Image Map Type, page 14-14](#).
- Step 2** Click **Next**.
- If you selected to use the default floor map, the Building Tool displays information about the default floor map you selected. Review the data and save it if correct. See [Saving Floor Information, page 14-18](#).

If you specified to use a new floor map, you need to enter information about the floor map image. See [Selecting an Image Map Type, page 14-14](#).

Selecting an Image Map Type

If you chose to use a new floor map, the Building Tool asks you to choose the type of image.

Procedure

- Step 1** Select the type of floor map:
- Click **Select an Imported Image** to choose an image that already exists.
 - Click **Use Blank Image** to choose a blank image that represents the floor area.

- Step 2** Click **Next**.

If you specified **Select an Imported Image**, the Building Tool displays an image list. See [Selecting the Image Map, page 14-16](#).

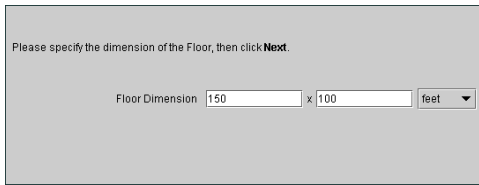
If you specified **Use Blank Image**, you need to enter the floor dimensions. See [Entering Floor Dimensions, page 14-14](#)

Entering Floor Dimensions

If you selected blank image, the Building Tool displays a form to enter the floor dimensions.

Procedure

- Step 1** Enter a value in each Floor Dimension field. [Figure 14-2](#) illustrates how the values you enter correspond to the resulting floor image.

Figure 14-4 Specifying Floor Dimensions

Please specify the dimension of the Floor, then click **Next**.

Floor Dimension x

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Step 2 From the pulldown menu, select whether the value is feet or meters.

Step 3 Click **Next**.

Now you need to review and save the floor information you entered. See [Saving Floor Information](#), page 14-18.

Selecting the Image Map

When you chose to select an image from an imported image list, the Building Tool displays a list of images on the server.

Procedure

- Step 1** The Select Image Map form lists the image files on the server. If your image file appears in the Select Image File window, skip to Step 4.
- Step 2** To add a new image file, click **Add to List**. The Upload File Selection window appears.
- Step 3** Browse to the location of your image file. Click on your image file, then click **Select**. Your file is uploaded and added to the Select Image Map window.



Note If your image filename has any spaces in, the spaces are replaced with underscores (_). For example, if your image filename is *my floor image.jpg*, it will become *my_floor_image.jpg* in Location Manager.

- Step 4** Click on the image file, then click **Next**.
You now need to specify the scale of the image you selected. See [Specifying the Scale of the Image Map, page 14-16](#).
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Specifying the Scale of the Image Map

The Building Tool displays the image file and asks you to enter information about the scale of the image.

Procedure

- Step 1** Click and drag the red squares of the red scaler tool so that the line corresponds to an area in your building for which you know the exact distance in feet or meters.
- Step 2** Enter the distance that corresponds to the scaler in the field provided.



Note The more accurate your measurement is, the more accurate Location Manager can determine the location of any interferers.

Step 3 Click **Next**.

You now need to specify the radio coverage area. See [Specifying the Radio Coverage Area, page 14-17](#).

Specifying the Radio Coverage Area

After you specify the scale of the floor map image, you need to enter information about which areas in the floor map image are included in the radio coverage area.

Procedure

Step 1 Using the Coloring Tool to add areas or the Eraser Tool to remove areas, specify the area of the floor in which you want to optimize the radio configurations. During the Radio Parameter Generation calculation, Location Manager tries to optimize the radio settings within the area that is shaded.

There are several tools to help you shade the desired area:

- The first two icons let you add and remove areas by grid sections. Click on each section you want to add or remove.
- The second two icons let you add and remove larger sections. Hold down and drag your mouse to select areas you want to add or remove.

The colored icons let you change the color used in the image map.

Step 2 Click **Next**.

You now need to save and review the floor information you entered. See [Saving Floor Information, page 14-18](#).

Saving Floor Information

The Review and Save form displays the information you entered in the Building Tool.

Procedure

- Step 1** If all the information displayed in the form is correct, click **Save**.
- Step 2** If you need to modify any information previously entered, click **Previous** to return to the information you need to change.

After you click **Save**, you can use the Building Tool to add another new floor to the building. See [Choosing the Next Step, page 14-18](#).

Related Topics

- [Adding Devices to Floors, page 14-18](#)

Choosing the Next Step

After you have saved the floor information, you can:

- Click **Add New Floor** to add another new floor to the building. See [Adding Floors to Location Manager, page 14-11](#).
- Click **Modify Existing Floor** to change a floor that was previously added. This option appears only if you have already added a floor to the building.

Adding Devices to Floors

After you add a new campus site, building, and new floor(s), you can place the devices on the floor map for each floor.



Note

You must discover, inventory, and manage all devices before adding them to Location Manager. See [Device Discovery and Management, page 4-1](#).

Procedure

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- Step 1** In the Location Manager navigation tree, click a floor name on which you want to add devices.
- Step 2** From the View Mode pulldown menu, select **Edit Location**.
- Step 3** To add devices to the floor map, from the list of devices in the Unspecified Location list, click and hold on a device name and drag it to its approximate location on the image of the floor map.



Caution

Place the devices on the floor map as close as possible to their exact location on the floor. Do not place the devices arbitrarily on the floor image.

If you move the devices on the floor map, all corresponding radio data (radio monitoring, radio scan, and client walkabout data) is deleted. If after moving the devices you do not perform a new radio scan and client walkabout (optional), the default radio measurement data is used for the internal calculation for radio coverage, assisted configuration, and estimation of rogue location.

The closer the device on the map matches its location on the floor, the more accurate coverage displays will be and the more accurate Location Manager will be when giving information about unknown radios and interferers.

After you place an AP on the floor map, the RM Capability Verifier is automatically started. The RM Capability Verifier checks the AP for connectivity, registration with WDS, and capabilities that are listed under the Test Description Field and displays the results. See [Verifying Radio Management Capability, page 14-35](#).

You can disable the RM Capability Verifier when you add APs to the floor by unchecking that setting in **Edit > Preferences**. See [Setting Location Manager User Preferences, page 14-20](#).

- Step 4** Move your mouse over an AP icon and a pop-up window appears showing the name, IP address, Ethernet MAC address, and the status of the AP's infrastructure mode:
- If Infrastructure Mode is *No*, the AP is not registered with WDS.
 - If Infrastructure Mode is *Yes*, the AP is registered with WDS. The parent WDS address is displayed along with additional information about the AP.

For more information about WDS, see [What is WDS and Why Do I Need It?](#), page 12-9.

Related Topics

- [Reordering Floors](#), page 14-20
- [Understanding Location Manager Device Icons](#), page 14-54
- [Selecting a Location Manager View Mode](#), page 14-39
- [Verifying Radio Management Capability](#), page 14-35

Reordering Floors

By default, the sites and buildings you add are listed in alphabetical order in the Location Manager navigation tree. Floors are listed in the order in which they were created. You can change the order in which the floors are listed.

Procedure

- Step 1** Right click on the floor whose order you want to modify.
 - Step 2** Select **Move Up** or **Move Down** from the pop-up menu to change its order in the list.
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Setting Location Manager User Preferences

You can set your preferences for how Location Manager displays information.

Procedure

- Step 1** Select **Edit > Preferences**. The User Preferences form opens. You can
 - Select **Remember current location for next time** to have Location Manager automatically display the last-viewed floor or building when you launch Location Manager.

- Select **Display coverage for operational radio interfaces only** to display coverage for APs that are functional. If this box is checked (default), the coverage for radios that are determined to be down are not displayed.
- Select **Run Radio Manager Verifier the first time APs are placed** to run the Radio Management verification automatically when you place an AP on the floor map. See [Verifying Radio Management Capability, page 14-35](#).
- Specify how you want Location Manager to respond when you click on a floor:
 - Open View in Current Window—Displays floor map in the current window.
 - Open View in New Window—Opens a new window in which the floor map is displayed.
- Specify which View Mode you want Location Manager to open with when you click on a floor. You can select any of the View Modes. See [Using Location Manager Functions, page 14-21](#).



Note You can override which View Mode to open with by right-clicking on a floor name and selecting a different option.

Step 2 Click **OK** to apply the changes and return to Location Manager.

Using Location Manager Functions

Location Manager provides several tools and functions to help you manage your WLAN radio environment. This section contains:

- [Using the Location Manager Assisted Site Survey Wizard, page 14-22](#)
- [Displaying Information About Rogue Access Points, page 14-29](#)
- [Displaying the Location of Unknown or Rogue Radios, page 14-30](#)
- [Verifying Radio Management Capability, page 14-35](#)
- [Locating Devices in Location Manager, page 14-36](#)
- [Editing Antenna Placement, page 14-37](#)

- [Selecting a Location Manager View Mode](#), page 14-39
- [Viewing Interference Reports](#), page 14-45
- [Obtaining Server Information](#), page 14-45
- [Using the Location Manager Window Tools](#), page 14-46

Using the Location Manager Assisted Site Survey Wizard

The Assisted Site Survey walks you through the process of determining the optimal radio transmit power and channel selection to optimize throughput and coverage for a given area. It helps you select APs, run an AP radio scan job, perform a client walkabout, and generate radio parameters for the selected APs.

The Assisted Site Survey takes you through the following steps:

1. **AP Selection**—See [Selecting the APs](#), page 14-22.
2. **AP Radio Scan**—See [Performing AP Radio Scan](#), page 14-23.
3. **Client Walkabout**—See [Performing a Client Walkabout](#), page 14-25.
4. **Radio Parameter Generation**—See [Generating Radio Parameters](#), page 14-26.



Note

Because the more devices included in an Assisted Site Survey Wizard session the more time is required for completion, it is recommended that you run a separate Assisted Site Survey Wizard session for each building or for each floor.

Selecting the APs

Procedure

- Step 1** From the Location Manager window, select **Wizard > Assisted Site Survey**. The Assisted Site Survey Wizard appears.
- Step 2** Select the APs you want to participate in the site survey:
- To select all APs in a building, click on the building name, then click **Add**.
 - To select all APs on a floor, click on the floor name, then click **Add**.
 - To select individual APs, click on the AP name, then click **Add**.

Step 3 To remove an AP that you previously selected, click on the AP name, then click **Remove**.

Step 4 Click **Next** to go to the next step, **Filter By PHY**.

Step 5 Select the type of 802.11 radio that will participate in the assisted site survey.



Note Only radios of the selected types take part in the assisted site survey. If a selected AP has no interfaces of the desired radio types, this is noted in the job run log.

Step 6 Click **Next** to go to the next step (see [Performing AP Radio Scan, page 14-23](#)).

Performing AP Radio Scan

After you selected the APs to participate in the assisted site survey, the wizard checks to see if there is any existing radio scan data for the APs you selected. If there is no previous scan data, the wizard asks you to run a new radio scan setup. In addition, the following information is displayed in the table:

Field	Description
Name	Name of the AP
IP Address	IP address of the AP
Radio Type	The type of radio
Radio MAC	The MAC address of the radio
Last Scan Time	Time the most recent radio scan job started. If this field indicates <i>None</i> , you need to run a new radio scan.

Procedure

Step 1 Select one of the following options:

- Start new radio scan setup—The wizard starts a new radio scan job. Select this option if there is no previous radio scan date for the selected APs.

- Use previous radio scan data—The wizard uses the data collected from the most recent radio scan job. Use this option if all APs have a time stamp in the “Last Scan Time” field.



Note A running scan job temporarily degrades wireless LAN service, which might affect client associations. To minimize any disruption, run scan jobs during off-hours.

- Step 2** If you select to start a new radio scan setup, you need to specify the AP’s maximum transmit power setting for the radio scan procedure. The default is 100mW. See [Understanding AP Radio Scans, page 14-59](#).
- Step 3** To start the new radio scan, click **Start**. You’ll see informational messages appear in the text box and when the scan is complete, the form will display the following information:

Field	Description
Name	Name of the AP
IP Address	IP address of the AP
Radio Type	The type of radio
Radio MAC	The MAC address of the radio
Last Scan Time	Time the most recent radio scan job started

- Step 4** Click **Next** to go to the next step (see [Performing a Client Walkabout, page 14-25](#)).

Related Topics

- [Understanding AP Radio Scans, page 14-59](#)
- [Using AP Radio Scans to Collect RM Data, page 14-58](#)

Performing a Client Walkabout

Performing a client walkabout is an optional procedure in the Assisted Site Survey Wizard. If the APs you selected have data from a previous Client Walkabout session, this information is displayed in the wizard. For more information, see [Understanding Client Walkabouts, page 14-73](#).

Procedure

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- Step 1** Select one of the following options:
- Start Client Walkabout Setup—The wizard walks you through the steps of setting up a client walkabout. See [Guidelines for Running a Client Walkabout, page 14-75](#).
 - Skip Client Walkabout—If the location data is accurate, you can skip the client walkabout and go directly to [Generating Radio Parameters, page 14-26](#).
- Step 2** If you select to start client walkabout Setup, you need to enter at least one client MAC address, and up to five IP addresses. These addresses will move around during the walkabout.
- Step 3** Select the AP power setting. You might choose to enter a lower power setting when, for example, the default power level might affect a neighboring network.
- Step 4** Click **Start** to start the client walkabout. When the client walkabout is complete, click **Stop** and the following information is displayed:

Field	Description
Name	Name of the AP
IP Address	IP address of the AP
Radio Type	The type of radio
Radio MAC	The MAC address of the radio
Total WA Data	Accumulated data from previous walkabouts.
New WA Data	Data from the current walkabout session.

While you are running a client walkabout session, the data in the Total WA Data and New WA Data fields should increase. If these fields remain at zero, make sure you have set up the walkabout session correctly (see [Guidelines for Running a Client Walkabout, page 14-75](#)).

Step 5 Click **Next** to go to the next step (see [Generating Radio Parameters, page 14-26](#)).

Related Topics

- [Understanding Client Walkabouts, page 14-73](#)
- [Guidelines for Running a Client Walkabout, page 14-75](#)

Generating Radio Parameters

You need to set channel constraints and transmit power constraints for the APs you selected. The wizard can help you configure your APs by using measurement data collected from a client walkabout and AP radio scanning. The wizard recommends optimal radio transmit power, channel selection, and beacon interval (optional), and then applies these configuration settings to the APs, if desired. For more information, see [Creating a New Assisted Configuration Task, page 14-98](#).



Tip

To get optimal channel settings, run the radio parameter generation on a per building basis. That is, include all APs in one building in a single radio parameter generation job.



Note

When you generate parameters from the Assisted Site Survey Wizard, you cannot edit or run that parameter generation job from the Sites tab (**Sites > Assisted Configuration**).

Procedure

Step 1 Click on one of the Constraints options:

- All APs—Applies the constraints to all APs you selected to participate in the site survey
- Individual AP—Allows you to specify constraints for individual APs.

- Step 2** Select the Channel Sets. Use ctrl-click to select more than one channel set. The radio parameter generation feature will give you a suggested channel within the channels you select. Click **Presets** to choose from a pre-selected set of channels.
- Step 3** If you click **Presets**, the Select Channel Sets window appears. Click on a channel set, then click **Select**. The channels you selected appear in the Channel Sets field.
- Step 4** Enter a value in the Minimum and Maximum Transmit Power fields. You might choose to enter a lower power setting when, for example, the default power level might affect a neighboring network. You must enter a numerical value greater than zero and less than 100.
- Step 5** Under Goal, enter a numerical value for the expected maximum number of clients per AP, and a numerical value for the expected average number of clients per AP. You must enter a numerical value greater than zero and less than 500.
- Step 6** Select whether to enable black hole mitigation. If you select this option, Radio Manager recommends a beacon interval, which is slightly altered from what the AP is configured to, for the APs. If you do not select the Black Hole Mitigation option, Radio Manager will not recommend a beacon interval.
- Step 7** Select **Ignore Rogues and Friendly APs** to have the parameter generation algorithm ignore all rogue and friendly APs and consider interference from managed APs only.
- Step 8** Select **Ignore Client Walkabout Location Data** to have the parameter generation algorithm ignore any data collected during client walkabout. You might want to use this option if your client walkabout data is not up to date or is no longer relevant. The calculation generation completes faster by selecting this option, but the result might
- Step 9** Click **Start** to start the configuration parameter calculation. A status bar appears indicating the progress of the parameter generation. When the radio parameter generation is complete, a message appears at the bottom of the screen.
- Step 10** Click **Log** to view the progress and run log of the parameter calculation. The bottom of the log window shows statistics and a summary of the parameter calculation.
- Step 11** To stop the parameter calculation, click **Stop**.
- Step 12** Click **Next** to view the calculation results and apply the configuration to the APs. Radio Manager displays the calculation results. These results show the following information:

Field	Description
Name	Name of the AP
Transmit Power	Recommended transmit power for this AP. If the radio type is 11g, the CCK power and OFDM power are also displayed.
Channel	Recommended channel for the AP
Beacon Interval	Recommended beacon interval for the AP. If you did not select the Enable Black Hole Mitigation option, this column displays the value to which the AP is currently configured (see Assigning Constraints and Goals, page 14-100).
Estimated Max Throughput	<p>The estimated maximum megabytes per second that the AP can process.</p> <p>The maximum throughput is an estimated value that is calculated from either:</p> <ul style="list-style-type: none"> • Data collected from all client walkabouts. • Predicted walkabout data if no walkabouts were performed. <p>Using the walkabout data and the potential RF configuration parameters, an analysis is performed to predict the degree of transmit collisions and contention that may result in the coverage area for each AP, given a predefined ratio of AP-to-client and client-to-AP traffic. The collision and contention values are then applied to the theoretical throughput maximum to come up with the real predicted throughput.</p>

Step 13 Select **Write NVRAM on Success** to have the new configuration changes copied from the AP's running configuration to its startup configuration.

Step 14 After reviewing the calculation results, click **Preview** to preview the changes in the Location Manager window or click **Apply Configuration** to apply the configuration changes to the APs.



Note The configuration on your devices will not change unless you click **Apply Configuration**.

The Apply Status column in the table indicates if the configuration was successfully applied.

Related Topics

- [Creating a New Assisted Configuration Task, page 14-98](#)

Displaying Information About Rogue Access Points

When Radio Monitoring detects a rogue AP, a new fault is generated. (See [Understanding Rogue AP Detection, page 15-16](#) for more information.) When you select the link in the Address, Description, or Timestamp fields in the Fault Summary Table for an unknown access point, the Rogue Access Point Details window displays information about the rogue AP such as details about the unknown access point, beacon and location information, switch port tracing, reporting access points, and fault history. You access the faults window from WLSE, not from within Location Manager.

You can also view this information, except for switch port tracing, from the Location Manager Unknown Radio List (see [Understanding the Location Manager Window, page 14-48](#)).

Procedure

- Step 1** From WLSE, select **Faults > Display Faults**. The Fault window appears.
- Step 2** Click the link in the Description or Timestamp fields in the Fault Summary Table for an unknown access point.

A new window displays the Rogue Access Point Details report. For information about this report, see [Managing Rogue APs, page 15-30](#)

For more information about faults, see [Displaying Fault Information, page 3-2](#).

Related Topics

- [Understanding Rogue AP Detection, page 15-16](#)
- [Understanding the Location Manager Window, page 14-48](#)

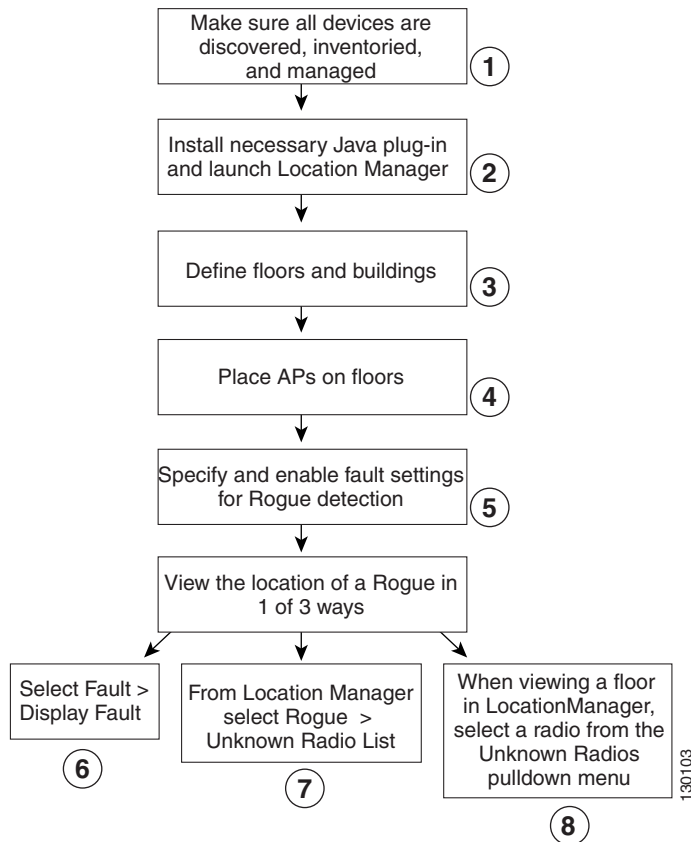
Displaying the Location of Unknown or Rogue Radios

Location Manager helps you see the approximate location of unknown (rogue or friendly) radios in your network by using the received signal strength from all detecting APs to locate the unknown radio relative to the detecting APs.

Location Manager can also estimate the distance between the detecting AP and the unknown radio.

Before you can detect Rogue radios and view their coverage areas, you need to perform the following steps:

Figure 14-5 Recommended Setup To Detect Rogue Radios



Number	Description
1	See Device Discovery and Management , page 4-1.
2	See Prerequisites for Using Location Manager , page 14-2.
3	See Setting Up Location Manager , page 14-3.
4	See Understanding Location Manager Device Icons , page 14-54.
5	See Setting the Rogue AP Detection Policy , page 15-21.
6	See Understanding Rogue AP Detection , page 15-16.

Number	Description
7	See Understanding the Location Manager Window, page 14-48 .
8	See Location Manager Window, page 14-49 .

**Note**

Radio Monitoring is enabled by default. See [Using Radio Monitoring to Collect RM Data, page 13-2](#)).

**Note**

Although running AP Radio Scan is not required for Rogue AP detection, it is required to see the AP's coverage display. See [Using AP Radio Scans to Collect RM Data, page 14-58](#).

Procedure

- Step 1** In the Location Manager window, click on the Unknown Radio List icon or select **Rogue > Unknown Radio List**. The Unknown Radio List window opens displaying a list of all unknown radios interfaces.

**Note**

If you click on a floor, the Unknown Radios pulldown menu lists the unknown radios on the floor that you are currently viewing. You can click on a unknown radio from this pulldown menu. Unknown Radios on a different floor from the floor you are currently viewing do not appear on the pulldown menu.

You can click on any column in the Unknown Radio List form to sort the information by that column. By default, the information is sorted by BSSID.

- Step 2** From the Unknown Radio Type pulldown menu at the top of the Unknown Radio List window, select which devices you want to view:
- Rogue—APs that have not been identified as Friendly. By default, all unknown radios are classified as Rogue until you change them to Friendly.
 - Friendly—APs that you know exists, for example, a neighboring network's AP, but that you are not going to modify in any way.

The window refreshes to display the devices of the unknown radio type you selected.

- Step 3** Click on a device name. The Unknown Radio List window refreshes with data specific to that device as shown in [Table 14-1](#)

Table 14-1 Unknown Radio List Information Fields

Field	Description
BSSID	Basic Service Set (BSS) identifier.
Rogue Status	The state of the device.
Vendor	The name of the vendor that manufactured this AP.
Detection Timestamp	The date and time the unknown radio was detected
PHY Type	The physical interface type (11a, 11b, or 11g) of the radio interface.
SSID	Service set identifier used by client devices to associate with an access point.
Beacon Interval	The beacon interval on which the rogue AP is transmitting.
Beacon Channel	The channel on which the rogue AP is transmitting.
Data Rates	The data rates supported by this interface (in Mbps).

The **Switch Port Detection** field shows information about the switch port and who reported it as show in [Table 14-2](#)

Table 14-2 Unknown Radio List Switch Port Detection Fields

Field	Description
Switch IP Address	The IP address of the switch to which the rogue AP is connected. If the switch IP address is <i>Unknown</i> , the IP address of the switch that the unknown radio is connected to could not be determined. ¹
Switch Port	The port of the switch to which the rogue AP is connected.

Table 14-2 Unknown Radio List Switch Port Detection Fields (continued)

Field	Description
Traced MAC Address	The MAC address of the rogue AP.
Timestamp	The time, based on the client browser, the rogue AP switch port was detected (see Understanding WLSE Time Displays, page 1-15).

- To find the switch port to which the rogue AP is connected, the Switch Port Location feature uses the rogue AP's BSSID that it hears over the air to make a heuristic guess of the rogue's Ethernet MAC address. This might not be possible, however, if its Ethernet MAC address and BSSID do not follow the one-off rule, where the MAC address is the same or one-off of the BSSID. For more information, see [Understanding Switch Port Tracing and Suppression, page 15-36](#).

The **Reported By** field shows the device(s) that detected the unknown radio:

- If the **APs** checkbox is selected, the Reported By field displays the APs that detected the selected unknown radio.
- If the **Clients** checkbox is selected, the Reported By list contains the IP address of the AP that the detecting client is associated to, not the IP address of the client itself. The RSSI value is shown as *not available*.

If the device you selected does not have a building name listed in the Building field, the **Location Estimation** field indicates the estimated location as unknown.

Step 4 Click **Change to Friendly** (if you selected Rogue from the Unknown Radio Type pulldown) to change the status of the selected unknown radio from Rogue to Friendly.

If you selected Friendly from the Unknown Radio Type pulldown, you can click **Change to Rogue** to change the status of the selected unknown radio from Friendly to Rogue.

Step 5 Click **Display Location** to view the approximate location of the unknown radio on the floor map. The possible location of the unknown radio shaded is in color where the darkest shade indicates the most probable location.



Note If the Estimated Location indicates “Unknown,” the Display Location button is greyed out. The location might be unknown because you didn’t specify the location of the reporting APs on the floor map before the APs detected the unknown radio. In this case, after specifying the location of the reporting APs on the Location Manager floor map, run Radio Monitoring again to get the estimated location (see [Using Radio Monitoring to Collect RM Data, page 13-2](#)).

Because Location Manager does not know the transmit power of the unknown radio, you might need to change the display options.



Tip If the Unknown Radio List dialog box is covering the Location Manager window, you might need to close the dialog box to see the unknown radio displayed on the building map in Location Manager.

Step 6 To delete a rogue AP when you have determined that it no longer exists, you can remove it by clicking **Delete**.

Related Topics

- [Setting the Rogue AP Detection Policy, page 15-21](#)
- [Displaying Information About Rogue Access Points, page 14-29](#)

Verifying Radio Management Capability

You can verify that your APs, the WDS, and the WLSE are configured correctly for Radio Management, which might help troubleshoot any problems you encounter. The first time you place an AP on the floor map, the Radio Management verification runs automatically. You can suppress this feature by setting your preference in the User Preferences. See [Selecting a Location Manager View Mode, page 14-39](#)).

Procedure

- Step 1** Right-click on the device whose Radio Management capability you want to verify and select **Verify RM Capability**. The RM Capability Verifier window opens. The Devices column lists all devices on which you have run the RM Capability Verifier.
- The RM Capability Verifier checks the AP for connectivity, registration with WDS, and capabilities that are listed under the Test Description Field.
- Step 2** Check the Test Status column. OK indicates the test passed. Failed indicates a problem.
- Step 3** If a test fails, click on the failed test, and the Suggested Action field displays information about how to fix the problem.
- Step 4** To re-run the RM Capability Verifier, click **Re-run**.
-

Locating Devices in Location Manager

You can search for devices in the Location Manager window.

Procedure

- Step 1** From the Location Manager window, select **Tools > Find AP**. The Find AP window appears.
- Step 2** From the pulldown menu, select whether to search by device name, IP Address, or MAC Address.
- Step 3** Select either Containing or Exactly Matching.
- Step 4** Enter the text string to search for in the text field.
- Step 5** Click **Search**. The Find AP form displays the device or devices that match your search criteria.
- Step 6** Click on the name of the device you want to locate, then click **Locate AP** at the bottom of the form.
- The AP you selected appears in the center of the floor map.
-

You can right-click on any AP and select **Device Details**. A new browser opens displaying the AP Summary Report for the AP you selected.

Editing Antenna Placement

If you have a directional antenna or an external antenna, you can modify the antenna placement in Location Manager to specify the direction the antenna is pointing in, to specify the height of the antenna, and to specify any cable loss. Changing the antenna placement affects radio parameter calculation, rogue location estimation, and coverage display. After you change the antenna placement, you need to schedule an AP radio scan and schedule a new radio parameter generation job.

**Note**

You must be in Edit Location View Mode to modify the antenna placement. See [Edit Location View Mode, page 14-40](#)

Procedure

Step 1 Right-click on the device whose antenna you want to modify and select **Edit Antenna > radio type**. Select **2.4 GHz** for .11b and .11g radios; select **5 GHz** for .11a radios.

If you are not in Edit Location View Mode, a message appears asking if you want to change to Edit Location View Mode. Click **Yes**.

Step 2 In the Antenna Placement form, select an option from the Antenna Type pulldown menu, which contains the list of supported antennas. If you are unsure what type of antenna you are using, leave the default antenna. The description of the antenna you specified is displayed.

**Note**

If the antenna used by the AP is not listed on the Antenna Type pulldown menu, select *Unspecified 2.4 GHz* for .11b/g radios or *Unspecified 5GHz* for .11a radios. The Unspecified antenna is treated as 2.2 dBi omni antenna.

Step 3 If your AP has an omni antenna, skip this step. (You will not be allowed to enter any values.) Enter values in the Azimuth (direction) and Downtilt (from horizon) fields:

- The Azimuth (direction) is the angle where the directional antenna points to on the horizontal plane. The angle ranges from 0 to 359 degrees clockwise. You can either enter a numerical value or drag the arrow to the direction you specify. The red arrow indicates the direction in which the antenna points.
- The Downtilt (from horizon) is where the directional antenna points down away from the horizontal plane. The angle ranges from -90 to 90 degrees, Enter a positive degree if the angle is pointing down; enter a negative degree if the angle is pointing up. You can either enter a numerical value or drag the arrow to the arrow to the direction you specify.

Click the right arrow under the photo of the antenna to see direction references.

Step 4 Enter the height of antenna from the floor in the **Height (from floor bottom)** field and select whether the value is in feet or meters. Make sure you enter the height for the antenna, not the height for the AP, which might be different.

Step 5 If your AP has an internal antenna, an antenna integrated with an AP or an AP's radio card, skip this step. For an external antenna, enter the additional attenuation (or loss) in dB in the **Additional Cable Loss** field. The default value is 0 dB.

If you use the original cable that came with the antenna, you must keep the default value of 0 dB, unless there is a non-zero cable loss specified in the antenna's specifications. If you use a cable extension to the antenna, you must enter a positive value in dB. To estimate the value you need to enter if you use any cable extension, consult the cable manufacturer. The manufacturer typically provides the cable loss in meters or in feet; you can multiply this value by the length of the cable and round it to the nearest number. If you are not sure of the value you need to enter, leave the default value (0 dB) unchanged.

Step 6 Click **OK** to apply the changes and return to the Location Manager window. Click **Apply** to apply the changes and leave the Antenna Placement form open.



Note

After you change the antenna placement, you need to schedule an AP radio scan, schedule a client walkabout (optional), and schedule a new radio parameter generation job.

Selecting a Location Manager View Mode

The Location Manager View Mode pulldown menu appears in the pane beneath the navigation tree and allows you to quickly change what information is displayed in the image map.

When you click on a floor in the Location Manager navigation tree, the View Mode menu contains these options:

- Summary (If you click on a site or building name instead of a floor name, Summary is the only option available in the View Mode menu. See [Summary View Mode, page 14-39](#).)
- Edit Location (see [Edit Location View Mode, page 14-40](#))
- Tx/Rx Coverage by Data Rate (see [Tx/Rx Coverage by Data Rate View Mode, page 14-40](#))
- Tx/Rx Coverage by Signal Strength with Overlaps (see [Tx/Rx Coverage by Signal Strength With Overlaps View Mode, page 14-42](#))
- Tx/Rx Coverage by Signal Strength without Overlaps (see [Tx Coverage by Signal Strength Without Overlaps View Mode, page 14-43](#))
- Unknown Radio Location Estimation (see [Unknown Radio Location Estimation View Mode, page 14-44](#))

Summary View Mode

If you select **Summary** from the View Mode pulldown menu, Location Manager displays summary information which includes:

- Managed Access Points—Number of managed APs
- Major Alarms—P1 and P2 alarms (see [Displaying Fault Information, page 3-2](#))
- Minor Alarms—P3, P4, and P5 alarms (see [Displaying Fault Information, page 3-2](#))
- Radio Manager feature status. This information appears only if you click on a floor name in the Location Manager navigation tree.



Note If you click on a site or building name instead of a floor name in the Location Manager navigation tree, **Summary** is the only option available in the View Mode menu. See [Summary View Mode, page 14-39](#).)

Edit Location View Mode

When you select **Edit Location** from the View Mode pulldown menu, the image map does not change; however, you can now move the devices to a different location on the floor map. You can also edit antenna placement in the **Edit Location** View Mode (see [Editing Antenna Placement, page 14-37](#)).



Note **Edit Location** is available when you click on a floor name in the Location Manager navigation tree. If you click on a building name, the **Edit Location** option is greyed out.

Procedure

-
- Step 1** In the View Mode pulldown menu, select **Edit Location**.
 - Step 2** Click on the device you want to move.
 - Step 3** You can either drag the device to a new location on the map, or you can select **Edit > Cut** from the menu or by right-clicking on the device.
 - Step 4** If you select **Edit > Cut**, click on the new location for the device (or to move it to a different floor but at the same location, click on different floor), then select **Edit > Paste** from the menu or by right-clicking on the device.
The device appears in the new location on the image map.
-

Tx/Rx Coverage by Data Rate View Mode

When you select **Tx/Rx Coverage by Data Rate** from the View Mode pulldown menu, the image map refreshes the display the coverage area of the devices you selected.



Note **Tx/Rx Coverage by Data Rate** is available when you click on a floor name in the Location Manager navigation tree. If you click on a building name, the **Tx/Rx Coverage by Data Rate** option is greyed out.

Procedure

- Step 1** From the View Mode pulldown menu, select **Tx/Rx Coverage by Data Rate**.
- Step 2** From the Coverage Display pulldown menu, select the radio interface whose coverage you want to display in the image map.
- Step 3** Select which range to display:
- **Transmission Range**—shows the coverage area of each data rate specified at any given place on the floor map. You can see which area is covered at which data rate.
 - **Reception Range**— shows that the AP can detect a radio source with the specified mW at the different data rates. The colors in the floor map correspond to the data rates.
- If you select Reception Range, you need to chose a value from the mW pulldown menu. If you pick a larger value, for example 5mW, the colored regions become larger because the reception range has been increased.
- Step 4** Click **Show Received Signal Strength for Selected AP** to view how strong a signal is for a particular area. The darker the color, the stronger the signal strength. Due to attenuation, the received signal strength for an AP is lower than the transmit power that is set on the AP.
- Step 5** Click on the data rates (in Mbps) you want to display. The color next to each data rate indicates the corresponding color that is displayed on the floor map. You can also click on one of the Quick Selection Choices, which automatically selects the signals that correspond to the specified radios.
-

Tx/Rx Coverage by Signal Strength With Overlaps View Mode

When you select **Tx/Rx Coverage by Signal Strength With Overlaps** from the View Mode pulldown menu, the image map refreshes the display the coverage area by signal strength of the devices you selected. You can use this option to see if you have a hole, which appears as a white spot, in your coverage on the specified floor.

**Note**

Tx/Rx Coverage by Signal Strength With Overlaps is available when you click on a floor name in the Location Manager navigation tree. If you click on a building name, the **Tx/Rx Coverage by Signal Strength With Overlaps** option is greyed out.

Procedure

- Step 1** From the View Mode pulldown menu, select **Tx/Rx Coverage by Signal Strength with Overlaps**.
- Step 2** From the Coverage Display pulldown menu, select the radio interface whose coverage you want to display in the image map.
- Step 3** Select which range to display:
 - **Transmission Range**—shows how far the transmit signal can reach given the cutoff value you specify in the Display Cutoff pulldown menu. The colors displayed on the floor map correspond to the different channels. The darker the color, the stronger the signal strength.
 - **Reception Range**— displays (in yellow) the areas in which the AP can detect a radio source with the specified mW.

If you select Reception Range, you need to chose a value from the mW pulldown menu. If you pick a larger value, for example 5mW, the colored region become larger because the reception range has been increased.
- Step 4** Click **Show Received Signal Strength for Selected AP**, then click on an AP to view a grid of RSSI values overlaid on the current coverage display. The predicted RSSI value is displayed for each point on the map.



Note For 802.11g radios, the estimated Received Signal Strength is based on the configured **CCK** (Complementary Code Keying) transmit power only and is not affected by the **OFDM** (Orthogonal Frequency Division Multiplexing) power setting.

- Step 5** From the Display Cutoff pulldown menu, select a value for which you want to display each AP's signal strength. For example, if you select 80% (-55dBm), the floor map displays the area in which the AP signal strength is at least 80% (-55dBm).
-

Tx Coverage by Signal Strength Without Overlaps View Mode

When you select Tx/Rx Coverage by Signal Strength Without Overlaps from the View Mode pulldown menu, the image map refreshes the display the transmit coverage by signal strength of the devices you selected. You can use this option to see if you have a hole, which appears as a white spot, in your coverage on the specified floor.



Note **Tx Coverage by Signal Strength Without Overlaps** is available when you click on a floor name in the Location Manager navigation tree. If you click on a building name, the **Tx Coverage by Signal Strength Without Overlaps** option is greyed out.

Procedure

- Step 1** From the View Mode pulldown menu, select **Tx Coverage by Signal Strength with Overlaps**.
- Step 2** From the Coverage Display pulldown menu, select the radio interface whose coverage you want to display in the image map.

The floor map shows which AP's signal strength is the strongest at any given location on the floor. The color used in the floor map corresponds to the AP's channel.

- Step 3** Move your mouse to any area on the floor map, and a line is drawn to the AP whose signal is the strongest in that location. The AP's received signal strength is also displayed automatically.



Note For 802.11g radios, the estimated Received Signal Strength is based on the configured **CCK** (Complementary Code Keying) transmit power only and is not affected by the **OFDM** (Orthogonal Frequency Division Multiplexing) power setting.

Unknown Radio Location Estimation View Mode

When you select **Unknown Radio Location Estimation** from the View Mode pulldown menu, you can select different display options for the unknown radios to change the information that is displayed on the floor map. Changing display options can help you find the unknown radio by increasing the area in which you're likely to find the unknown radio



Note **Unknown Radio Location Estimation** is available when you click on a floor name in the Location Manager navigation tree. If you click on a building name, the **Unknown Radio Location Estimation** option is greyed out.

Procedure

- Step 1** Select Unknown Radio Location Estimation from the View Mode pulldown menu.
- Step 2** From the Unknown Radios pulldown menu, select an unknown radio. The pulldown menu contains MAC addresses of the unknown radio interfaces on the specific floor you are viewing. If you want to see all unknown radios, regardless of their location, select **Rogue > Unknown Radio List**. (See [Understanding the Location Manager Window](#), page 14-48)
- Step 3** Select a value for the Transmit Power Assumption. The default transmit power is 50mW and 100mW.

You can click on different transmit power options to see a different area on the floor map in which the unknown radio might be located. If you select all transmit powers, the floor map displays all possible areas that the selected unknown radio might be located.

- Step 4** Click **Use Exclusion Algorithm**. By default, the Exclusion Algorithm is selected so that, in its calculations, Location Manager includes the APs in the general area that did not detect the unknown radio. If you deselect the Exclusion Algorithm option, only the APs that detected the unknown radio are used in the location calculation.
-

Viewing Interference Reports

You can quickly run an interference report from Location Manager.

Procedure

- Step 1** Right-click on a device on which you want to detect interference, then select **Interference Report**.
The WLSE Fault Details window opens. See [Viewing Fault Details, page 3-10](#).
-

Obtaining Server Information

From Location Manager, you can:

- Verify Server Status

To verify the status of your server, select **Server > Status**. The Server Status window appears displaying the IP address of the server and the time the server was started. The Server status form also displays the following information:

- UserID—Username of the person who launched Location Manager
 - Client Address—Address of the client machine that launched Location Manager
 - Login Time—Time that the user launched Location Manager
- View Server Messages

To view server messages after you configure your floor plan with APs, select **Server > Message**. The Message Server Message Log window appears displaying messages about your server. This information might be helpful when troubleshooting issues, for example, if the AP display coverage isn't correct.

Using the Location Manager Window Tools

Location Manager provides the following tools:

- [Exporting a Floor Image, page 14-46](#)
- [Printing a Floor Image, page 14-46](#)
- [Using Location Manager Measuring Tool, page 14-47](#)
- [Using Location Manager Contrast Sliding Tool, page 14-47](#)
- [Zooming In and Out, page 14-48](#)

Exporting a Floor Image

You can save a floor image view that you can use for troubleshooting or debugging purposes.

Procedure

- Step 1** From the Location Manager window, select **Tools > Export View Image**. The Save Image As form appears.
- Step 2** Navigate to the location in which you want to save the image, enter a name in the File Name field, then click **Save**. The exported image file is saved with a *.png* extension.
-

Printing a Floor Image

You can print a floor image view that you can use for troubleshooting or debugging purposes. To print an image, from the Location Manager window, select **Tools > Print View Image**.

Using Location Manager Measuring Tool

The Location Manager Distance Measure Tools allow you to measure the distance (in either feet or meters) between APs and perform other measure functions.

**Note**

The Distance Measure Tool icons appear only when you have added floor information to your buildings. (See [Adding Floors to Location Manager](#), page 14-11.)

Procedure

Step 1 In the Location Manager window, click on either Distance Measure Tool icon. The icon with ft indicates feet, and the icon with m indicates meters.

The icon you selected is shaded grey, and the bottom of the Location Manager displays the following message:

Distance Measure Tool: On

Step 2 Click and drag your mouse anywhere on the floor map to start your measurement from.

Step 3 Drag your mouse to the desired location. You'll see the measurement display as you're dragging the mouse.

Step 4 To end the measurement, lift your finger from the mouse.

**Note**

If the Distance Measure Tool is enabled, the Edit Location tool is disabled automatically.

Using Location Manager Contrast Sliding Tool

You can modify the background contrast in the image of your floor map by using the Location Manager Contrast sliding tool.

- To make the background image lighter, move the sliding bar to the left.
- To make the background image darker, move the sliding bar to the right.

Zooming In and Out

When using Location Manager, you might need to zoom in and out to see APs displayed on the floor map. You can zoom in and out by selecting a radio button to the left of your floor image. There are 7 radio buttons that correspond to the following zoom levels:

- 32 pixels per foot
- 16 pixels per foot
- 8 pixels per foot
- 4 pixels per foot
- 3 pixels per foot
- 2 pixels per foot
- 1 pixel per foot

To return to the normal view, select the fourth radio button (4 pixels per foot) in the list.

Understanding the Location Manager Window

The following sections explain the parts of the Location Manager window and what information is displayed in each part.

- [All Locations or Building View, page 14-48](#)
- [Floor View, page 14-51](#)

All Locations or Building View

When you launch Location Manager for the first time and select **All Locations** or a campus site name in the navigation tree, the Location Manager window looks similar to [Figure 14-6](#). See [Table 14-3](#) for an explanation of the numbered fields.

Figure 14-6 Location Manager Window

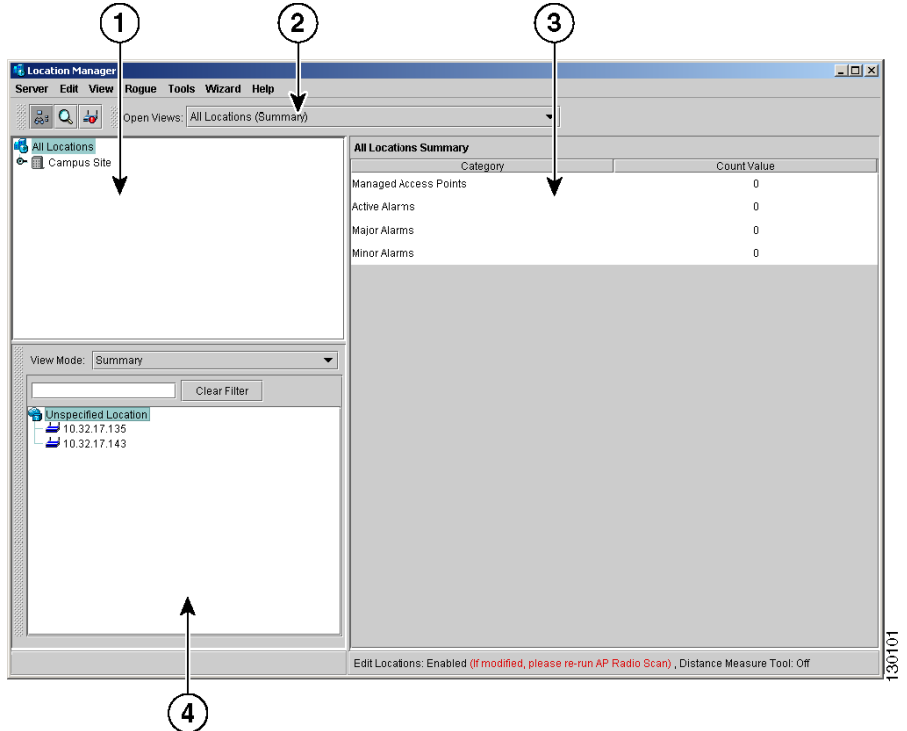


Table 14-3 describes the Location Manager fields that are numbered above.

Table 14-3 Location Manager Window Descriptions

Number	Description
1	<p>By default, the Location Manager navigation tree displays All Locations as the top folder. If you have previously launched Location Manager, the All Locations folder contains the sites, buildings, and floors that have been added.</p> <ul style="list-style-type: none"> • If you click on All Locations or a campus site name, the summary appears in field 3. See All Locations and Building Summary, page 14-51. • If you click on a building, the Building Summary and the Radio Manager Feature Status appear in field 3. • If you double-click on a building name or expand a building folder, you see the floors that have been added to that building. • If you click on a floor name, the floor map is displayed in field 3. See Floor View, page 14-51 for more information. You can modify what information is displayed when you click on a floor name by setting user preferences (see Setting Location Manager User Preferences, page 14-20). • If you double-click on a device name, the device is centered in the floor map in field 3.
2	<p>The Open Views pulldown menu lists the sites, building, and floors that you have previously viewed. See Using Location Manager Functions, page 14-21.</p>
3	<p>The All Locations Summary displays information about all the sites, buildings and floors that have been previously added to Location Manager. (See All Locations and Building Summary, page 14-51.)</p>
4	<p>The View Mode pane contains the View Mode pulldown menu (see Using Location Manager Functions, page 14-21) and lists discovered, inventoried, and managed devices not assigned to a building or floor (see Device Discovery and Management, page 4-1).</p>

When you click on a floor name in the navigation tree, the Location Manager window changes. See [Floor View, page 14-51](#).

Related Topics

- [Setting Location Manager User Preferences, page 14-20](#)

All Locations and Building Summary

When you first launch Location Manager, the default view is All Locations. The window on the right displays the All Locations Summary which contains the following information:

- Managed Access Points—Number of managed APs
- Major Alarms—P1 and P2 alarms (see [Displaying Fault Information, page 3-2](#))
- Minor Alarms—P3, P4, and P5 alarms (see [Displaying Fault Information, page 3-2](#))

When you expand the All Locations folder, you see a list of the sites and corresponding buildings and floors that have been entered in to Location Manager.

The Building Summary, which appears when you click on a building name, displays the same information as the All Locations Summary, but the information is specific to the building you selected.

When you click on a floor, the All Locations Summary is replaced with the corresponding floor map image. See [Floor View, page 14-51](#) for more information.

Using the Open Views Menu

The Open Views pulldown menu at the top of the Location Manager window provides quick access to any views you recently viewed. When you click on a building or floor in the All Locations list, the name of the building or floor is added to the Open Views pulldown menu. When you select an option from the Open Views menu, Location Manager displays your selection with the same view mode and same coverage display setting you specified when you last viewed it.

Floor View

When you click on a floor name in the Location Manager navigation tree, the window changes to display additional options and menus. [Figure 14-7](#) illustrates the floor view. See [Table 14-4](#) for an explanation of the numbered fields.

Figure 14-7 Location Manager Floor View

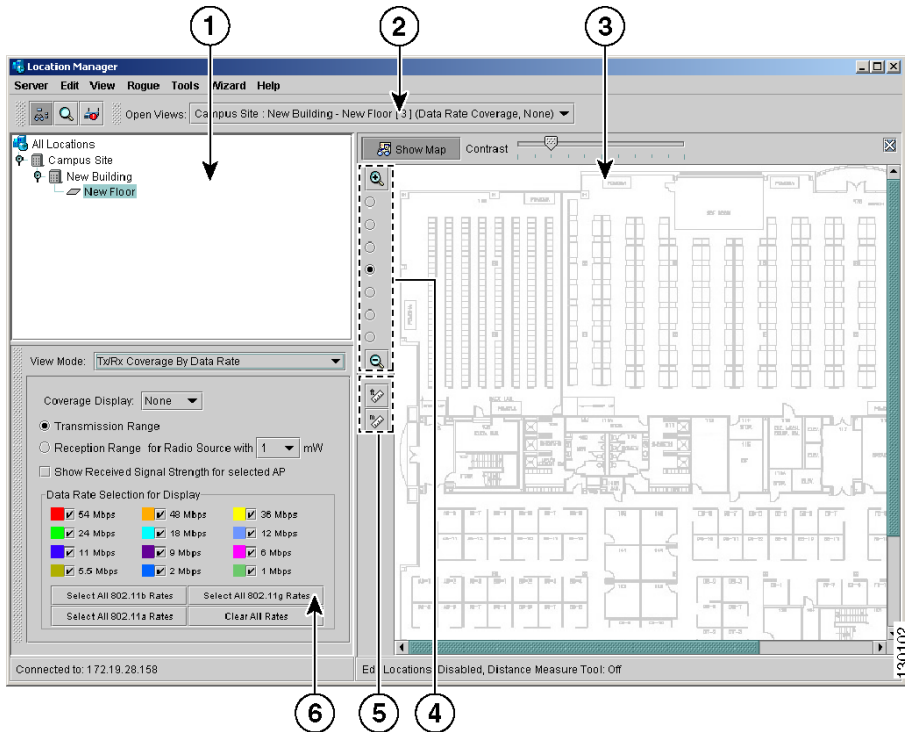


Table 14-4 Floor View Window Descriptions

Number	Description
1	The Location Manager navigation tree. If you click on a floor name, the floor map is displayed in field 3. If you double-click on a device name, the device is centered in the floor map in field 3.
2	The Open Views pulldown menu lists the buildings and floors that you have previously viewed. See Using Location Manager Functions , page 14-21.
3	This field displays the floor image map of the floor you selected in the navigation tree.
4	Zoom options for the floor image map. See Zooming In and Out , page 14-48.

Number	Description
5	Measuring tool. See Using Location Manager Contrast Sliding Tool, page 14-47 .
6	The View Mode pulldown menu contains viewing options that modify the information that is displayed on the floor image map. For more information on selecting a view mode and the resulting coverage display, see Using Location Manager Functions, page 14-21 .

Understanding Location Manager Coverage Display

Location Manager displays the predicted coverage of the APs that you place on a floor map. The coverage prediction is based on the current AP settings as well as the floor dimensions you entered, the location in which you placed the APs on the floor map, the AP-to-AP measurements taken during AP Radio Scan, and the direction and coverage of the AP's antenna. The most important factors affecting AP-to-AP measurement data are signal attenuation in the air (known as path loss) and multi-path reflection in the building.

Coverage display does not take in to account any environmental effects; therefore, the predicted coverage area might not be exactly the same as the real coverage area, especially around the boundary of the building and areas outside the building. The coverage display reflects the transmit power level of the AP; the higher the power level is set on the AP, the larger the area that AP will cover, and thus, a larger coverage area is displayed on the floor map.

Coverage display is two-dimensional and per floor. Coverage display does not show the coverage of an AP on a different floor, even though an AP might have a very strong signal that covers a different floor.



Note

Client Walkabout does not modify the Location Manager coverage display. Client Walkabout is used for the generation of parameters during the Assisted Site Survey and does not have an effect on the coverage display.

Related Topics

- [Understanding the Location Manager Window, page 14-48](#)

Understanding Location Manager Device Icons




After you have placed the devices on the floor map, the devices are represented by icons as shown in [Table 14-5](#). The color of the icons correspond to the devices' fault status:

- Red indicates the device has major (P1 or P2) faults.
- Yellow indicates the device has minor (P3, P4, or P5) faults.
- Green indicates the device has no faults.

The color of the buildings and icons in the location tree also correspond to their fault status.

For more information about faults, see [Displaying Fault Information, page 3-2](#).

Table 14-5 Device Icons Used in Location Manager

Icon	Meaning
	AP with no faults
	Interference reporting AP with minor faults
	Scanning-only AP with major faults

Based on the options you select in the **View** menu, the information that is displayed with the device icons might be different (see [Modifying Information Displayed with Device Icons](#), page 14-55).

You can right-click on any AP and select **Device Details**. A new browser opens displaying the AP Summary Report for the AP you selected.

You can your mouse over an AP icon and a pop-up window appears showing the name, IP address, Ethernet MAC address, and the status of the AP's infrastructure mode:

- If Infrastructure Mode is *No*, the AP is not registered with WDS.
- If Infrastructure Mode is *Yes*, the AP is registered with WDS. The parent WDS address is displayed along with additional information about the AP.

For more information about WDS, see [What is WDS and Why Do I Need It?](#), page 12-9.

Related Topics

- [Modifying Information Displayed with Device Icons](#), page 14-55
- [Displaying Information About Rogue Access Points](#), page 14-29

Modifying Information Displayed with Device Icons

From the **View** menu, you can select which information to display with the device icons on the Location Manager floor map. [Table 14-6](#) explains what information is displayed with each View option.



Note

Labels are displayed for each radio. If an AP has both an .11a and .11g radio, information about both radios is displayed.

Table 14-6 Location Manager View Menu Options







Location Manager Menu Sequence	Option Selected	Information Displayed on the Floor Map	Example
View > AP Label	Name	Device name (as specified in Devices > Discover > Discover > Advanced Options , NameFormat. See Selecting the Device Name Format , page 4-61.)	 ap-1.cisco.com
	IP Address	Device IP address	 10.0.0.0
	Ethernet MAC Address	Device Ethernet MAC address	 000c8515xxxx
View > Radio Channel	n/a	Radio channel of each radio interface (channel 9 in the example). The color corresponds to the channel color.	 10.0.0.0 Note Scanning-only APs have an “S” in place of the radio channel.

Table 14-6 Location Manager View Menu Options (continued)

Location Manager Menu Sequence	Option Selected	Information Displayed on the Floor Map	Example
View > Transmit Power	n/a	Transmit power (in mW) of each radio interface (100 mW in the example)	<p>100mW</p>  <p>10.0.0.0</p> <p>Note Scanning-only APs display “N/A.”</p>
View > Data Rate	n/a	Data rate (in Mbps) of each radio interface (11 Mbps in the example).	<p>11Mbps</p>  <p>10.0.0.0</p> <p>Note Scanning-only APs display “N/A.”</p>

Moving Devices on Location Manager Image Map

If you already placed a device on your Location Manager image map and need to change its location, you can move it to a new location by following these steps.



Note

You must be in Edit Location View Mode to change the location of a device. See [Edit Location View Mode, page 14-40](#)

Procedure

- Step 1** In the View Mode pulldown menu, select **Edit Location** or select **Edit > Enable Edit Location**.
- Step 2** Click on the device you want to move.

- Step 3** You can either drag the device to a new location on the map, or you can select **Edit > Cut** from the menu or by right-clicking on the device.
- Step 4** If you select **Edit > Cut**, click on the new location for the device (or to move it to a different floor but at the same location, click on different floor), then select **Edit > Paste** from the menu or by right-clicking on the device.
- The device appears in the new location on the image map.
-

Related Topics

- [Understanding Location Manager Device Icons, page 14-54](#)

Using AP Radio Scans to Collect RM Data

AP Radio Scan produces path loss data that is used for rogue location estimations, radio parameter generation data, self healing monitoring, and coverage display data. These topics provide procedures for collecting AP Radio Scan data:

- [Understanding AP Radio Scans, page 14-59](#)
- [Guidelines for Running AP Radio Scans, page 14-61](#)
- [Viewing AP Radio Scan Jobs, page 14-62](#)
- [Managing AP Radio Scan Jobs, page 14-65](#)
- [Creating a New AP Radio Scan Job, page 14-67](#)
- [Viewing AP Radio Scan Job Run Logs, page 14-72](#)

Related Topics

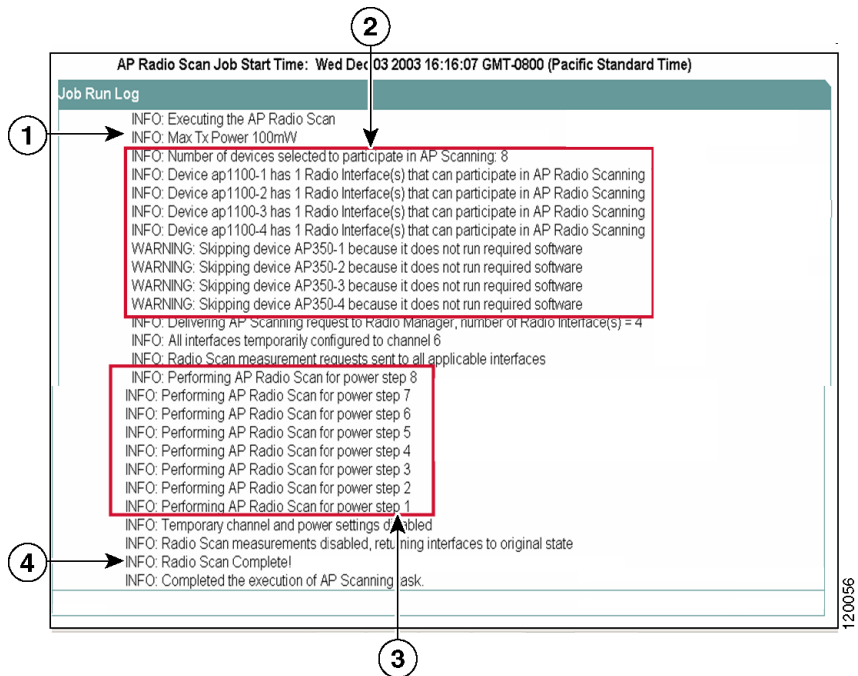
- [Understanding Radio Management, page 12-8](#)
- [Collecting Radio Location Data, page 12-18](#)

Understanding AP Radio Scans

Each AP broadcasts beacons and simultaneously listens for neighboring beacons. AP Radio Scan uses the resulting AP-to-AP measurements to establish the path loss model for the WLAN. You should run AP Radio Scan during initial setup, then periodically to capture any changes (for example, when APs are added, deleted, or moved).

How It Works

During the scanning process, AP Radio Scan performs the following tasks:



1	<p>Sets the selected APs to transmit beacons on the same channel at maximum transmit power. The maximum power threshold is user configurable.</p> <p>During a scan, AP frequencies, data rates, and power levels are temporarily changed. Then, for each AP, the channel is fixed and the procedure steps through the power levels up to the specified maximum transmit power level.</p> <p>Note The radio scan uses temporary configuration parameters so the AP can revert back to its normally configured parameters if the AP is reset or loses connection with the WLSE during the procedure.</p>
2	<p>Measures the signal strength and calculates the path loss of each AP.</p>
3	<p>Repeats this step, with the APs transmitting at successively lower power levels until the lowest setting is reached, to determine the power step calibration of each AP.</p>
4	<p>Saves this information in the database as AP radio locations, sets all APs back to their original power and channel settings, and notifies the user when the scan is complete.</p>

Data Produced

The result of AP Radio Scan is a snapshot of the radio frequency interference at each AP and a set of signal strength measurements indicating the level at which each AP receives each neighbor AP. When the neighbor AP is controlled by WLSE, the Radio Manager uses that AP's current transmit level to compute the path loss between the two APs, which it saves to characterize the radio frequency environment. When the neighbor AP is not under WLSE control, the Radio Manager saves the received signal strength.

These results are used in Assisted Configuration, Location Manager, Radio Manager Reports, and Faults to:

- Determine how an AP is positioned relative to other APs
- Determine the amount of path loss due to obstructions (such as walls) between APs
- Compute rogue location estimations, radio parameter generation data, and coverage display data

Guidelines for Running AP Radio Scans

Prerequisites

Before running an AP Radio Scan job, you must:

1. Configure your network for radio management (see [Configuring Your Network for Radio Management, page 12-5](#)). If your network is not properly configured, *none of the Radio Manager functions will work*.



Note

Be sure that the community string you are using provides write access. To run AP Radio Scan, you *must* have SNMP write access. Most other WLSE functions only require read access.

2. Define the location elements (buildings and floors) and place the APs on the floor images (optional, but recommended—see [Setting Up Location Manager, page 14-3](#), [Adding Floors to Location Manager, page 14-11](#), and [Adding Devices to Floors, page 14-18](#)). This will help you get the best results from Location Manager displays.



Note

If you deploy only a single AP, WLSE cannot gain any knowledge about the building's radio environment. In this case, WLSE applies a default indoor path loss model and displays the coverage using this model. Without any measurements, WLSE assumes the transmission characteristics are the same in all directions, so the coverage display appears as circular.

Tips

- If you do not run AP Radio Scan, the Coverage Display in the Location Manager will be computed using the default pass loss model. Because no path loss measurement data has been collected, the coverage views could be distorted.
- You should run an AP radio scan during initial setup, then periodically during brief maintenance periods when the WLAN is not in use to capture any changes made to the APs (for example, when APs are added, deleted, or moved).

- A running scan job temporarily degrades wireless LAN service, which might affect client associations. To minimize any disruption, schedule scan jobs to run during off-hours (for example, 2:00AM).

**Note**

AP Radio Scan jobs affect an access point's performance. With all APs configured to the same channel and maximum power, there is some degradation in throughput. In addition, while the APs step through their various power settings, there might be some loss of coverage. This only lasts for the length of the AP scan (3 to 4 minutes).

- When you run a new AP radio scan, the previously-collected radio location information for the selected APs is deleted automatically.
- Instead of using AP Radio Scan, you can use the Assisted Site Survey wizard, which is part of Location Manager, to walk you through the process of determining the optimal radio transmit power and channel selection. This wizard interface steps you through AP radio scan, client walkabout, and radio parameter generation (see [Using the Location Manager Assisted Site Survey Wizard, page 14-22](#)).

Related Topics

- [Understanding AP Radio Scans, page 14-59](#)

Viewing AP Radio Scan Jobs

Use the default AP Radio Scan screen to view radio scan jobs.

**Note**

Your login determines whether you can use this procedure.

Before You Begin

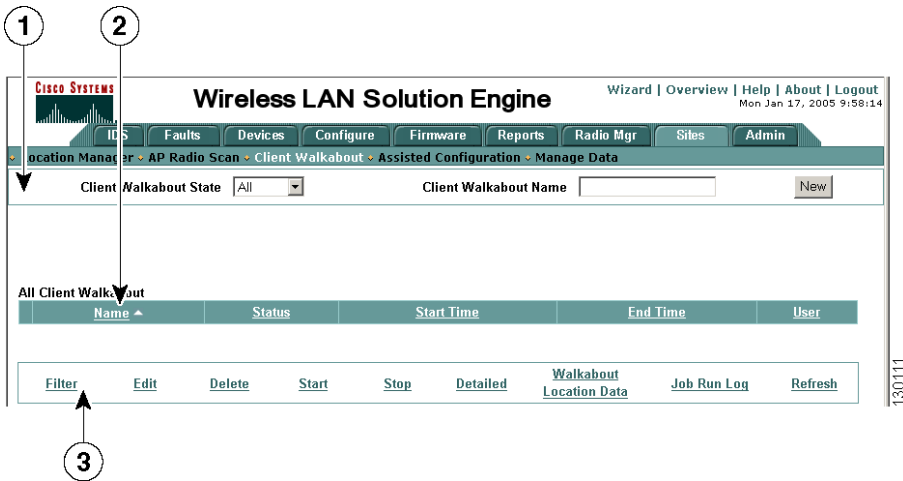
Before you can view the list of AP Radio scan jobs, you must:

- Satisfy the AP Radio Scan prerequisites (see [Guidelines for Running AP Radio Scans, page 14-61](#)).
- Create at least one job (see [Creating a New AP Radio Scan Job, page 14-67](#)).

Procedure

Step 1 Select **Sites > AP Radio Scan**. The AP Radio Scan screen appears.

Figure 14-8 Sample AP Radio Scan Screen



1	Job state selection list
2	List of jobs
3	Job management buttons

Step 2 From the Job State list, select the type of job you want to view:

- **Scheduled**—Lists all AP radio scan jobs that have been scheduled
- **Unscheduled**—Lists all AP radio scan jobs that have not been scheduled
- **Running**—Lists all AP radio scan jobs that are currently running
- **All**—Lists all AP radio scan jobs

The screen refreshes to show you details about the specified jobs. The information displayed depends on the selected job state:

Table 14-7 Job Details—Scheduled and Unscheduled

Field	Description
Job Name	The job name.
Recurring	Indicates if the job is run periodically (Yes or No).
Next Schedule	For scheduled jobs, this indicates when the job will run. For completed jobs, this is the time the job ran.
Owner	The user who last edited the job.

Table 14-8 Job Details—Running

Field	Description
Job Name	The job name.
Recurring	Indicates if the job is run periodically (Yes or No).
Job Start Time	The time the job started.
Percent Complete	The percent of the job that has completed running.
Next Schedule	The job is not a recurring job.
Owner	The user who last edited the job.

Table 14-9 Job Details—All

Field	Description
Job Name	The job name.
Recurring	Indicates if the job is run periodically (Yes or No).
Job State	The state of the job. Note A job in the DidNotStart state must be rescheduled.
Next Schedule	For scheduled jobs, this indicates when the job will run. For completed jobs, this is when the job ran.
Last Run Status	The status of the job the last time it was run.
Owner	The user who last edited the job.

- Step 3** From this window, you can use the job management buttons (see [Figure 14-8](#)) to manage your AP radio scan jobs (see [Managing AP Radio Scan Jobs, page 14-65](#)).
-

Related Topics

- [Using AP Radio Scans to Collect RM Data, page 14-58](#)
- [Sorting Table Data, page 1-18](#)

Managing AP Radio Scan Jobs

The buttons below the table of AP radio scan jobs (see [Viewing AP Radio Scan Jobs, page 14-62](#)) allow you to manage these jobs.



Note

Your login determines whether you can use these procedures.

Before You Begin

Before you can manage an AP Radio scan job, you must:

- Satisfy the AP Radio Scan prerequisites (see [Guidelines for Running AP Radio Scans, page 14-61](#)).
- Create at least one job (see [Creating a New AP Radio Scan Job, page 14-67](#)).

Procedure

- Step 1** Select **Sites > AP Radio Scan**. The AP Radio Scan screen appears (see [Figure 14-8 on page 14-63](#)).
- Step 2** From the Job State list, select the type of job you want to manage. The screen refreshes to show the corresponding jobs.



Note

AP radio scan jobs created using the Assisted Site Survey Wizard cannot be edited or run using the **Sites > AP Radio Scan** tab. To manage these jobs, see [Using the Location Manager Assisted Site Survey Wizard, page 14-22](#).

Step 3 Click the radio button for the job you want to manage, then click one of the buttons that appear after the list of jobs:

- **Filter**—This button displays a limited set of AP radio scan jobs, making it easier to search for a particular job by name. The filter remains in effect until the page is refreshed.



Note You can use % as a wildcard: for example, entering %name% displays all the jobs that contain the word “name.”

- **Edit**—Use this button to edit jobs from the displayed list of previously-created jobs.



Note If you have deleted the image that was associated with the job you are editing, the job will show that no image has been selected.

- **Run Now**—Use this button to run the currently selected job immediately. This option clears all other schedule settings.
- **Stop**—Use this button to stop a running AP Radio Scan job.
- **Delete**—Use this button to delete jobs from the displayed list of jobs. Jobs that are scheduled, unscheduled, completed, or did not start can be deleted. Jobs that are running cannot be deleted.
- **Copy Job**—Use this button to create a new job using the data (maximum transmit power and selected APs) from a previously-created job.



Note This procedure does *not* copy the schedule data.

- **Job Run Log**—Use this button to view the run log for a selected job (see [Viewing AP Radio Scan Job Run Logs, page 14-72](#)).
 - **Refresh**—To be certain that you are looking at the latest information, click the **Refresh** button to refresh the job list after you have made changes to one or more AP radio scan jobs.
-

Related Topics

- [Using AP Radio Scans to Collect RM Data, page 14-58](#)
- [Sorting Table Data, page 1-18](#)

Creating a New AP Radio Scan Job



Note

Your login determines whether you can use this procedure.

Before You Begin

Before you can create a new AP radio scan job, you must satisfy the AP Radio Scan prerequisites (see [Guidelines for Running AP Radio Scans, page 14-61](#)).

Procedure

-
- Step 1** Select **Sites > AP Radio Scan**. The AP Radio Scan job creation screen appears.
- Step 2** Enter a name for the job and click **New Job**. For guidelines on job names, see [Appendix B, “Naming Guidelines.”](#)
- The window refreshes with the Job Creation menu in the left pane and the Job Name dialog box in the right pane.



Note

Clicking on any subtab before you have saved your entries in the Job Creation window will reset the window and you will lose all the information you entered.

- Step 3** Select the following numbered choices in the left pane to create and run the AP radio scan jobs:



Note

These steps, except Schedule Job, must be completed, but do not have to be done in order. You can omit scheduling the job and edit the job later to provide a schedule.

1. **Job Name**—See [Name the Job and Select the Maximum Transmit Power, page 14-68](#).

2. **Select AP**—See [Select the APs](#), page 14-69.
 3. **Filter By PHY**—See [Select Radio Types](#), page 14-69.
 4. **Schedule Job**—See [Schedule the Job](#), page 14-69.
 5. **Finish**—See [Finish the Job](#), page 14-71.
-

Name the Job and Select the Maximum Transmit Power

Procedure

- Step 1** From the menu in the left pane, click **Job Name**.
- Step 2** Enter the following information:

Field	Description
Job Name	Enter a unique name for the job. For guidelines on naming jobs, see Appendix B, “Naming Guidelines.”
Description	Enter a description of the job. For guidelines on entering descriptions, see Appendix B, “Naming Guidelines.”
Maximum Transmit Power	You can choose to enter a lower power setting when, for example, the default power level might affect a neighboring network.

- Step 3** Go to the next step, [Select the APs](#).
-

Select the APs

Procedure

- Step 1** From the menu in the left pane, click **Select AP**. All managed devices are listed in the Device selector in the middle pane.
- Step 2** Select the devices you want to include in the job (see [Using the Device Selector, page 1-17](#)).
- Step 3** Go to the next step, [Select Radio Types](#).
-

Select Radio Types

Procedure

- Step 1** From the menu in the left pane, click **Filter By PHY**.
- Step 2** Select the type of 802.11 radio that will perform the AP radio scan. By default, both options (11a and 11b/11g) are selected.



Note Only radios of the selected types will take part in the scan. If a selected AP has no interfaces of the desired radio types, this is noted in the job run log.

- Step 3** Go to the next step, [Schedule the Job](#).
-

Schedule the Job

When scheduling an AP radio scan job, you can:

- Create multiple scan jobs, but only one job can be run at a time.
- Select **Run Now** to start the job immediately, or you can schedule the job for a future date and time.

- Save a job without scheduling it, then edit the job later to add the scheduling information.

**Note**

A running scan job temporarily degrades wireless LAN service, which might affect client associations. To minimize any disruption, schedule scan jobs to run during off-hours.

Procedure

Step 1 From the menu in the left pane, click **Schedule Job**.

Step 2 Enter the following information:

Field	Description
Run Now	Click to run the job. The job will run after you click Save (see Finish the Job, page 14-71). Note This option ignores all of the other scheduling options (Start Date, Start Time, and Repeat).
Start Date	From the lists, select the month, day, and year you want your job to run.
Start Time	From the list, select the hour and minutes of the day you want your job to run.
Repeat	
Enable	Check to run the job repeatedly.
Every	Indicate how often you want the job to repeat by entering a numerical value, then selecting an interval of time: Hours, Days, Weeks, or Months. Note Selecting this option runs the job periodically, starting with the date and time that you entered in the Start Date and Start Time lists.

Step 3 Go to the next step, [Finish the Job](#).

Finish the Job

Procedure

- Step 1** From the menu in the left pane, click **Finish** to save your settings. The Finish dialog appears.
- Step 2** Click **Save** to save the AP Radio Scan jobs settings. The job will be added to the list of scheduled jobs or run immediately, depending on whether you scheduled the job for a later time or chose Run Now in the scheduling screen.



Note If a warning message appears saying that WLSE server is ahead of or behind your local time, see [Understanding Time Discrepancy Problems in Job Scheduling, page 1-16](#)

The screen refreshes and the AP Radio Scan Job Save Summary window displays the following information:

Field	Description
Name	Name of the job.
Description	Job description, if any.
Maximum Power	The maximum power setting selected for the job.
Selected APs	Names of the devices selected for the job.
Schedule	Scheduled date and time for the job, or <i>No Schedule</i> if the job has not been scheduled. You do not have to complete the scheduling information—you can save a job without scheduling it, then edit the job later to add the schedule.

At the scheduled time, the AP Radio Scan job will begin scanning for neighboring APs. The job stops automatically after all the required APs respond with the appropriate radio measurements.

- Step 3** To view the progress of a running job, select **Sites > AP Radio Scan > Job Run Log** (see [Viewing AP Radio Scan Job Run Logs, page 14-72](#)).
- Step 4** To stop the job manually, see [Managing AP Radio Scan Jobs, page 14-65](#).

- Step 5** After the AP Radio Scan has completed successfully, you should:
- a. Run a client walkabout (optional, but recommended)—see [Using Client Walkabouts to Collect RM Data, page 14-73](#).
 - b. Configure your APs—see [Using Assisted Configuration, page 14-93](#).
-

Viewing AP Radio Scan Job Run Logs

Use the Job Run Log button to view the run log for a selected job. The job run log displays information about running and completed AP Radio Scan jobs.

Procedure

- Step 1** Select **Sites > AP Radio Scan > Job Run Log**.

The Job Runs table appears in a separate browser window. This table contains the following information for each run:

Field	Description
Select Run	Select this button to see the details for that run. The details for the selected job run appear below the list of runs for that job.
Job Start Time	The time the job started.
Job End Time	The time the job ended.
Job Status	The status of the job.
Percent Complete	The percent of the job that completed.

The job run log appears below this table.

- Step 2** To view the details for a different job run, select another run from the Job Runs table and click **Job Run Log**.
-

Related Topics

- [Managing AP Radio Scan Jobs, page 14-65](#)

Using Client Walkabouts to Collect RM Data

Client Walkabout allows you create, view, and manage client walkabout jobs. Client walkabout measurements can help determine AP coverage, and are used to provide optimal coverage for the radio parameter generator. These topics describe the procedures for managing Client Walkabout jobs:

- [Understanding Client Walkabouts, page 14-73](#)
- [Guidelines for Running a Client Walkabout, page 14-75](#)
- [Viewing Client Walkabout Jobs, page 14-78](#)
- [Managing Client Walkabout Jobs, page 14-80](#)
- [Creating a New Client Walkabout, page 14-82](#)
- [Running the Walkabout, page 14-87](#)

Related Topics

- [Understanding Radio Management, page 12-8](#)
- [Collecting Radio Location Data, page 12-18](#)

Understanding Client Walkabouts

**Note**

Client Walkabout is currently supported only when using Cisco cards or non-Cisco client adapters that are compliant with Cisco Compatible Extensions version 2 (CCXV2). For the client adapters that support this feature, see the *Supported Devices Table for the CiscoWorks Wireless LAN Solution Engine, 2.11*, on Cisco.com.

After running AP Radio Scan, you can run a client walkabout. A client walkabout is an optional step that reports all detected APs and provides optimal coverage for the radio parameter generator (see [Generating Radio Parameters, page 14-90](#)).



Note Running a client walkabout does *not* modify the Location Manager coverage display. Client walkabout data is used only by the radio parameter generator and the Assisted Site Survey Wizard (see [Using the Location Manager Assisted Site Survey Wizard, page 14-22](#)).



Note If no client walkabout data is available, default walkabout data is synthesized based on radio scan and radio monitoring data.

How It Works

During a client walkabout, you walk the client (typically a laptop) around the desired coverage area. During the walkabout, you can use up to five clients, each identified by its 802.11 MAC address, to cover different areas. Walk these client stations around the area of WLAN or a portion of the WLAN where you want proper coverage. During the walkabout:

- The APs are set to the same channel.
- The transmit power in the APs is increased so that the power required to cover the edges of the WLAN can be determined.

As you walk the coverage area, the serving AP changes as the client moves from one BSS to another. As long as the client remains inside the coverage area, the serving AP continually commands it to measure and report the signal strength and background radio frequency energy it receives from neighboring APs. All measurements are passed to the Radio Manager, which incorporates them into its RF environment database. This database provides the information that is used to compute the next radio configuration.

Data Produced

Although these measurements are not accompanied by location information, sets of measurements correspond to specific locations in the WLAN coverage area. The Radio Manager uses these measurements to create measurement objects, each

containing path losses to the strongest controlled APs and received signal strength from uncontrolled sources at a specific location. These results are used in Assisted Configuration, Location Manager, and Radio Manager reports.

Guidelines for Running a Client Walkabout

Prerequisites

Before you can run a client walkabout job, you must:

1. Configure your network for radio management (see [Configuring Your Network for Radio Management, page 12-5](#)). If your network is not properly configured, *none of the Radio Manager functions will work*.
2. Configure the walkabout client to associate with the APs selected for the walkabout.

General

- If you do not perform a client walkabout, you *must* enter a floor plan that includes the distances between APs (see [Adding Floors to Location Manager, page 14-11](#)).
- Instead of using Client Walkabout, you can use the Assisted Site Survey wizard, which is part of Location Manager, to walk you through the process of determining the optimal radio transmit power and channel selection. This wizard interface steps you through AP radio scan, client walkabout, and radio parameter generation (see [Using the Location Manager Assisted Site Survey Wizard, page 14-22](#)).

Configuring Your Access Points

- When you set up your APs, *do not* enable the option in the ACU (Aironet Client Utility) that periodically scans for a better AP if the threshold is below a specified value. *This feature conflicts with Radio Manager procedures*.
- Although there is no limit to the number of APs that may participate in a walkabout and no performance impact when you include a large number of APs, the total number of *data points* collected during a walkabout job does affect the processing time of Assisted Configuration:
 - The more data points, the longer it takes to calculate the parameters.

- Too few data points might skip locations between APs, which could result in a recommended transmit power that is higher than expected.

Performing the Walkabout

To set the coverage area, walk the client around the area. Use these guidelines as you walk:

- Only one walkabout job can be active at any time.
- Walk at a slow, measured pace. The client takes measurements every 10 seconds, so if you walk too quickly, you will not collect enough data points.
- Walk a grid pattern that covers the entire area.
- Walk the edges of the network.
- Emphasize areas where you want coverage, such as conference rooms and other enclosed areas.
- When you have finished collecting the data, *stop the walkabout*. The client will continue taking measurements if you do not explicitly stop the process.
- Client walkabout data collection is cumulative, so you can stop and start as often as necessary.
- For a network that contains both 11a and 11b/g radios (for example, when you are using a AP1200 dual mode AP), both types of radios must participate in a Client Walkabout operation to generate location data. Data collected using the 11b clients during a Client Walkabout *cannot be used* for 11a network planning. You can mix the two types of clients together in the same Client Walkabout procedure, but you must collect the Client Walkabout data using both types of clients.
- To delete the current client walkabout data, use the Manage Data tab (see [Managing RM Data, page 14-106](#)).

To minimize the time it takes to calculate the radio parameters, try to use these guidelines when performing the walkabout:

- Walk around the proximity of each AP for which you want coverage for approximately 2 minutes. At a rate of capturing one walkabout location every 10 seconds, this will yield about 12 walkabout locations over a 2-minute period. For a floor that contains 10 APs, this translates to a 20-minute walkabout that covers the perimeter of the floor as well as the areas between different APs.

- If you use the Location Manager's RM Assisted Wizard (see [Using the Location Manager Assisted Site Survey Wizard, page 14-22](#)), you can also see the walkabout results in a table that includes each AP and the number of walkabout locations that can hear that AP. If a location can hear multiple APs, it will be counted multiple times, once per AP. Therefore, the sum of the total location numbers across all selected APs may be (and almost always is) larger than the total number of actual walkabout locations.
- You can run Assisted Configuration either on a per-building or per-floor basis. You will usually get better channel combinations if you run Assisted Configuration for an entire building.
- A longer walkabout will generate more location data. Although collecting more location samples can improve the parameter generation results, it will also increase the number of computations. For a floor consisting of the 10 APs described above, a WLSE takes 10 to 12 minutes or less to complete the parameter generation process—*without* other jobs, such as inventory, configuration, discovery, or other Radio Manager tasks running simultaneously.

**Note**

Because the WLSE 1130 and WLSE 1130-19 are higher performance products, their parameter generation speed will be significantly better than a WLSE1105.

Related Topics

- [Understanding Client Walkabouts, page 14-73](#)
- [Running the Walkabout, page 14-87](#)

Viewing Client Walkabout Jobs

Use the default Client Walkabout screen to view client walkabout jobs.



Note

Your login determines whether you can use this procedure.

Before You Begin

Before you can view the list of client walkabout jobs, you must:

- Satisfy the Client Walkabout prerequisites (see [Guidelines for Running a Client Walkabout](#), page 14-75).
- Create at least one client walkabout job (see [Creating a New Client Walkabout](#), page 14-82).

Procedure

Step 1 Select **Sites > Client Walkabout**. The Client Walkabout screen appears.

Figure 14-9 Sample Client Walkabout Screen

The screenshot shows the CiscoWorks Wireless LAN Solution Engine interface. The breadcrumb trail is: Location Manager > AP Radio Scan > Client Walkabout > Assisted Configuration > Manage Data. Below the breadcrumb, there is a section for 'RM Assisted Configuration' with a dropdown menu set to 'All' and a 'New' button. The main content area is titled 'All Radio Configuration Jobs' and contains a table with the following data:

	Name ^	Scheduled	Status	Next Schedule	User
C	test	No	-		admin

Below the table is a row of action buttons: Filter, Edit, Copy, Delete, Details, Run Log, and Refresh. Callout 1 points to the Cisco logo, callout 2 points to the 'Client Walkabout' breadcrumb, and callout 3 points to the 'Filter' button.

1	Client walkabout state selection list
2	List of walkabouts
3	Walkabout management buttons

Step 2 From the Client Walkabout State list, select the type of walkabout you want to view (Running or All). The window refreshes and the walkabouts are displayed.

Field	Description
Name	The client walkabout name.
Status	The status of the walkabout.
Last Run Started	The time the last run of this client walkabout was started.
Last Run Stopped	The time the last run of this client walkabout was stopped.
Owner	The user who last edited the job.

Step 3 From this window, you can use the walkabout management buttons (see [Figure 14-9](#)) to manage your client walkabout jobs (see [Managing Client Walkabout Jobs](#)).

Related Topics

- [Guidelines for Running a Client Walkabout, page 14-75](#)
- [Sorting Table Data, page 1-18](#)

Managing Client Walkabout Jobs

The buttons below the table of client walkabout jobs (see [Viewing Client Walkabout Jobs](#), page 14-78) allow you to manage these jobs.



Note

Your login determines whether you can use these procedures.

Before You Begin

Before you can manage client walkabout jobs, you must:

- Satisfy the Client Walkabout prerequisites (see [Guidelines for Running a Client Walkabout](#), page 14-75).
- Create at least one client walkabout job (see [Creating a New Client Walkabout](#), page 14-82).

Procedure

-
- Step 1** Select **Sites > Client Walkabout**. The Client Walkabout screen appears (see [Figure 14-9 on page 14-78](#)).
- Step 2** From the Client Walkabout State list, select the type of walkabout you want to manage (Running or All). The screen refreshes to show the corresponding jobs.



Note

Client walkabout jobs created using the Assisted Site Survey Wizard cannot be edited or run using the **Sites > Client Walkabout** tab. To manage these jobs, see [Using the Location Manager Assisted Site Survey Wizard](#), page 14-22.

- Step 3** Click the radio button for the job you want to manage, then click one of the buttons that appear after the list of client walkabouts:
- **Filter**—This button displays a limited set of client walkabouts, making it easier to search for a particular walkabout by name. The filter remains in effect until the page is refreshed.



Note

You can use % as a wildcard: for example, entering %name% displays all the walkabouts that contain the word “name.”

- **Edit**—Allows you to edit previously-created walkabouts.
- **Delete**—Deletes the selected walkabout from the displayed list of previously-created walkabouts. Walkabouts that are running cannot be deleted.
- **Start**—Starts the selected client walkabout.
- **Stop**—Stops the walkabout that is currently running.
- **Detailed**—Allows you to view the details of the selected client walkabout.

The Client Walkabout Details window shows the following information for each job:

Field	Description
Name	Name of the walkabout.
Description	Walkabout description, if any.
Power Mode	AP power setting selected for the walkabout.
Max. Power	The value of the AP power setting. This field is populated only if you entered a value in Use No More Than __ mW (see Enter Walkabout Options, page 14-86).
Selected APs	Names of the AP devices selected for the walkabout.
Client MAC Address	The list of client MAC addresses to be used during the walkabout.
Status	The status of the walkabout.
Last Run Started	The time the last run of this client walkabout was started.
Last Run Stopped	The time the last run of this client walkabout was stopped.

- **Walkabout Location Data**—Allows you to view the AP locations collected during a client walkabout job.



Note

AP location information is available only for the *most recently completed* walkabout. If a new walkabout job is in progress, this information is not available for the latest completed walkabout.

The Client Walkabout Details window shows the following information:

Field	Description
AP Name	The name of the access point
IP Address	The IP address for that access point.
Number of Location Data	The number of location data points collected for that access point.

- **Job Run Log**—Use this button to view the run log for a selected walkabout (see [Viewing Client Walkabout Run Logs, page 14-89](#)).
- **Refresh**—Allows you to refresh the list of walkabouts to make sure you are looking at the latest information.

Related Topics

- [Understanding Client Walkabouts, page 14-73](#)

Creating a New Client Walkabout



Note

Your login determines whether you can use this procedure.

Before You Begin

Before you can run a client walkabout, you must satisfy the Client Walkabout prerequisites (see [Guidelines for Running a Client Walkabout, page 14-75](#)).

Procedure

Step 1 Select **Sites > Client Walkabout**.

Step 2 Click **New**.

The window refreshes with the Client Walkabout menu in the left pane and the Client Walkabout Name dialog box in the right pane.



Note Clicking on any subtab before you have saved your entries in the Job Creation window will reset the window and you will lose all the information you entered.

Step 3 Select the following numbered choices in the left pane to create a client walkabout:



Note All these steps must be completed, but do not have to be done in order.

1. **Name**—See [Name the Walkabout, page 14-83](#).
2. **Select AP**—See [Select the APs, page 14-84](#).
3. **Filter By PHY**—See [Select Radio Types, page 14-85](#)
4. **Enter Client MAC**—See [Enter Client MAC Addresses, page 14-85](#)
5. **Options**—See [Enter Walkabout Options, page 14-86](#)
6. **Finish**—See [Finish Creating the Walkabout, page 14-86](#)

Step 4 Run the client walkabout (see [Running the Walkabout, page 14-87](#)).

Name the Walkabout

Procedure

Step 1 From the menu in the left pane, click **Name**.

Step 2 Enter the following data:

Field	Description
Job Name	Enter a unique name for the walkabout. To make each job easy to identify, consider including the floor number or a similar identifier in the job name. For additional naming convention guidelines, see Appendix B, “Naming Guidelines.”
Description	Enter a description of the walkabout. For guidelines on entering descriptions, see Appendix B, “Naming Guidelines.”

Step 3 Go to the next step, [Select the APs](#).

Select the APs

Procedure

Step 1 From the menu in the left pane, click **Select AP**. All managed devices are listed in the Device selector in the middle pane.

Step 2 Select the APs you want to include in the job (see [Using the Device Selector, page 1-17](#)).



Note In each walkabout job, include only the APs on that floor (see [Guidelines for Running a Client Walkabout](#)).

Step 3 Go to the next step, [Select Radio Types](#).

Select Radio Types

Procedure

- Step 1** From the menu in the left pane, click **Filter By PHY**.
- Step 2** Select the type of 802.11 radio that will perform the client walkabout. By default, both options (11a and 11b/11g) are selected.



Note Only radios of the selected types will take part in the walkabout. If a selected AP has no interfaces of the desired radio types, this is noted in the Job Run Log.

- Step 3** Go to the next step, [Enter Client MAC Addresses](#).
-

Enter Client MAC Addresses

Procedure

- Step 1** From the menu in the left pane, click **Enter Client MAC**.
- Step 2** Enter the 802.11 MAC addresses for up to five clients, or select up to five MAC addresses from the Most Recent pulldown list. These are the clients that will move around during the walkabout.



Note Entering a MAC address that consists of more than 12 characters will generate an error message.

- Step 3** Go to the next task, [Enter Walkabout Options](#).
-

Enter Walkabout Options

During a walkabout, the transmit power in the APs is increased so that the power required to cover the edges of the WLAN can be determined. Use this option to reset the maximum transmit power level used by the APs.

Procedure

Step 1 From the menu in the left pane, click **Options**.

Step 2 Select the AP power setting.

You can choose to enter a lower power setting when, for example, the default power level might affect a neighboring network.

Step 3 Go to the next task, [Finish Creating the Walkabout](#).

Finish Creating the Walkabout

Before selecting this option, you must name the walkabout, select the devices, enter the client MAC addresses, and choose the AP power setting option.

Procedure

Step 1 From the menu in the left pane, click **Finish** to save your settings. The Finish dialog appears.

Step 2 Click **Save** to add the walkabout to the list of client walkabout jobs.



Note If a warning message appears saying that WLSE server is ahead of or behind your local time, see [Understanding Time Discrepancy Problems in Job Scheduling, page 1-16](#).

The screen refreshes and the Client Walkabout Summary window shows the following information:

Field	Description
Name	Name of the walkabout.
Description	Walkabout description, if any.
Power Mode	AP power setting selected for the walkabout.
Maximum Power	The value of the AP power setting. This field is populated only if you entered a value in Use No More Than __ mW (see Enter Walkabout Options, page 14-86).
Devices	Names of the AP devices selected for the walkabout.
Client MAC Address	The list of client MAC addresses to be used during the walkabout.

Step 3 Run the walkabout (see [Running the Walkabout, page 14-87](#)).

Running the Walkabout

When you start a client walkabout, the walkabout job starts immediately and continues until you stop the procedure. Only one client walkabout job can be active at any time.



Note

The Client Walkabout feature temporarily degrades wireless LAN service, which might affect client associations. You should run a walkabout job during off-hours to minimize any disruptions to the network.

Before You Begin

Before you can run a client walkabout, you must create a client walkabout job (see [Creating a New Client Walkabout, page 14-82](#)).

Procedure

Step 1 Take the client (typically a laptop) to the area where the walkabout will be run.

Step 2 Select **Sites > Client Walkabout**. A list of the current Client Walkabout jobs appears.



Note Client walkabout jobs created using the Assisted Site Survey Wizard cannot be run using the **Sites > Client Walkabout** tab. To manage these jobs, see [Using the Location Manager Assisted Site Survey Wizard, page 14-22](#).

Step 3 Select the name of the client walkabout job that you want to run from the list.

Step 4 Click **Start**.

Step 5 To set the coverage area, walk the client (the laptop) around the area (see [Guidelines for Running a Client Walkabout, page 14-75](#)).

Step 6 When you have finished collecting the data, *stop the walkabout*. Select the walkabout job name from the list and click **Stop**.



Note The client will continue taking measurements if you do not explicitly stop the process.

Step 7 To view the results of the walkabout:

- Click **Detailed** to view walkabout details (see [Managing Client Walkabout Jobs, page 14-80](#)).
- Click **Walkabout Details** to view the AP locations collected during a walkabout (see [Managing Client Walkabout Jobs, page 14-80](#)).
- Use the Location Manager to view the results of the walkabout job (see [Managing Your WLAN Radio Environment by Sites, page 14-1](#)).

- Step 8** After the client walkabout has completed successfully, you are ready to generate the radio parameters and configure your APs (see [Using Assisted Configuration, page 14-93](#)).

Viewing Client Walkabout Run Logs

Use the Job Run Log button to view the run log for a selected job. The job run log displays information about running and completed AP Radio Scan jobs.

Before You Begin

Before you can view a client walkabout run log, you must create and run a client walkabout job (see [Creating a New Client Walkabout, page 14-82](#) and [Running the Walkabout, page 14-87](#)).

Procedure

- Step 1** Select **Sites > Client Walkabout**. The list of Client Walkabout jobs appears.
- Step 2** Select a job from the list and click **Job Run Log**.

The Job Runs table appears in a separate browser window. This table contains the following information for each run:

Field	Description
Select Run	Select this button to see the details for that run. The details for the selected job run appear below the list of runs for that job.
Job Start Time	The time the job started.
Job End Time	The time the job ended.
Job Status	The status of the job.
Percent Complete	The percent of the job that completed.

The job run log appears below this table.

- Step 3** To view the details for a different job run, select another run from the Job Runs table and click **Job Run Log**.
-

Generating Radio Parameters

You can use selections under the Radio Manager or Location Manager tabs to recommend optimal radio transmit power, channel selection, and beacon interval (optional) for each AP, then apply these configuration settings. There are two ways to generate radio parameters and configure your APs:

- Use Assisted Configuration
Use this option after you have collected data from a AP radio scanning and a client walkabout.
- Use the Assisted Site Survey Wizard
Use this option, which is part of Location Manager, when you want to use a wizard interface to step through AP radio scan, client walkabout, and radio parameter generation (see [Using the Location Manager Assisted Site Survey Wizard, page 14-22](#)).

The following topics describe how to use Assisted Configuration to generate radio parameters and configure your APs:

- [Understanding Radio Parameter Generation, page 14-91](#)
- [Using Assisted Configuration, page 14-93](#)

Related Topics

- [Creating a New Assisted Configuration Task, page 14-98](#)
- [Understanding Radio Management, page 12-8](#)

Understanding Radio Parameter Generation

Radio Manager can generate optimal radio parameters for a given selection of APs. The radio parameters include:

- AP operating channel
- AP Tx power level and client power level
- AP beacon interval

Assisted Configuration calculates the optimal radio transmit power, channel selection, and beacon interval (optional), and then applies these configuration settings to the APs, if desired.

**Note**

If you use Assisted Configuration to change the AP power and channel, the WLSE database will reflect the change within several seconds (using an on-demand inventory on those changed APs to update the data). However, if you change the AP's configuration directly using the AP's interface, WLSE will not know about the change until it performs the next scheduled inventory (the default is 12-hour intervals).

How It Works

Assisted Configuration uses data collected from client walkabouts and AP radio scans to calculate the optimal settings for the APs. The radio parameter generation process (RPG)—and the amount of time this process takes— depends on the following factors:

- The number of managed radios involved.
- The number of allowed channels and power steps involved. The more available radio channels and power steps, the more solutions there are to evaluate and the longer RPG will take to finish.
- The number of radios links each managed radio can hear as its neighbor. This includes other managed neighboring APs but can also include non-managed APs (such as friendly neighbor APs, rogue APs, and non-802.11 interference). The more radio links it has to other devices, the longer it takes RPG to process all of these constraints.

**Note**

Assisted Configuration chooses power and channel settings that will balance the radio transmissions across the entire radio space, not just the managed APs. If surrounding unknown APs are more heavily skewed towards one channel, that channel will likely be minimized within the managed APs. In this case, when viewing the channel plan for managed APs, it may appear that all channels have not been evenly spread across the managed APs. This behavior can be overridden by selecting the option to ignore unknown radios from the constraints selection page. In this case the RPG algorithm will make its channel selections based only on managed APs.

- The number of walkabout points (actual or generated). If a walkabout is performed, RPG examines only the locations collected during the walkabout sessions. If no walkabout is performed, walkabout locations are automatically generated. The number of generated walkabout locations is dependent on the floor size. RPG ensures that each walkabout (actual or generated) point has adequate coverage and throughput.
- The areas of coverage. The larger the areas to be covered, the more data points RPG will check. (This directly impacts the generated walkabout points.)
- The selected radio bands. RPG runs 11a (5GHz) and 11b/11g (2.4GHz) bands separately. If you choose both bands, RPG will separate them internally.
- The number of simultaneous jobs. RPG uses a significant amount of the WLSE CPU, so simultaneous jobs will greatly impact the completion time of the RPG process.

Data Produced

Assisted Configuration recommends optimal radio transmit power, channel selection, and beacon interval (optional) for the managed APs.

Related Topics

- [Using Assisted Configuration, page 14-93](#)
- [Creating a New Assisted Configuration Task, page 14-98](#)
- [Using the Location Manager Assisted Site Survey Wizard, page 14-22](#)

Using Assisted Configuration

Use Assisted Configuration to configure your APs. This feature uses the measurement data collected from client walkabouts and AP radio scans. The following topics describe how to run Assisted Configuration:

- [Guidelines for Running Assisted Configuration, page 14-93](#)
- [Viewing Assisted Configuration Tasks, page 14-94](#)
- [Managing Assisted Configuration Tasks, page 14-96](#)
- [Creating a New Assisted Configuration Task, page 14-98](#)

Guidelines for Running Assisted Configuration

Prerequisites

Before you run Assisted Configuration, you must:

1. Run AP Radio Scan on the devices you select for an Assisted Configuration job (see [Guidelines for Running AP Radio Scans, page 14-61](#)).



Note If you delete RM measurement data, you must re-run AP Radio Scan on those devices before running an Assisted Configuration job.

If you have not run (or re-run) AP Radio Scan on the selected devices before running Assisted Configuration, the Radio Manager will assume no radio links exist for these devices and use the default RM measurement data. In that case, *the recommended radio settings generated by Assisted Configuration will not be optimum.*

2. Perform a Client Walkabout (optional but recommended) or add the device information in Location Manager (see [Guidelines for Running a Client Walkabout, page 14-75](#) and [Managing Your WLAN Radio Environment by Sites, page 14-1](#)).

Tips

- To get optimal channel settings, run Assisted Configuration on a *per building* basis. That is, include all APs in one building in a single Assisted Configuration task.
- Assisted Configuration runs on a per-floor basis (2-D perspective).
- Instead of using Assisted Configuration, you can use the Assisted Site Survey Wizard (part of Location Manager) to use a wizard interface to step through AP radio scan, client walkabout, and radio parameter generation (see [Using the Location Manager Assisted Site Survey Wizard, page 14-22](#)).
- Use the WLSE to make any configuration changes. If you must make a manual change to the AP, run another inventory job to update the WLSE database.
- You can push the parameters recommended by Assisted Configuration to the APs.



Caution

If you use the AP's interface to make a change to the AP and an AP radio scan is run before WLSE's next inventory, WLSE will remember the *old setting*, set the new channel for the AP radio scan, then *restore the old setting*. This overwrites the changes done manually on the AP.

Related Topics

- [Understanding Radio Parameter Generation, page 14-91](#)

Viewing Assisted Configuration Tasks



Note

Your login determines whether you can use this option.

Before You Begin

Before you can view the assisted configuration tasks, you must:

- Satisfy the Assisted Configuration prerequisites (see [Guidelines for Running Assisted Configuration, page 14-93](#)).

- Create at least one assisted configuration task (see [Creating a New Assisted Configuration Task](#), page 14-98).

Procedure

- Step 1** Select **Sites > Assisted Configuration**. The Assisted Configuration screen appears.

Figure 14-10 Sample Assisted Configuration Screen

The screenshot shows the Cisco Wireless LAN Solution Engine interface. At the top, there's a navigation bar with tabs: Faults, Devices, Configure, Firmware, Reports, Radio Manager, Location Manager, and Administration. Below this is a sub-menu: Radio Monitoring, AP Radio Scan, Client Walkabout, RM Assisted Configuration, Self Healing, Auto Re-Site Survey, and Manage R. The 'RM Assisted Configuration' dropdown is set to 'All'. Below this is a table titled 'All Radio Configuration Jobs' with columns: Name, Scheduled, Status, Next Schedule, and User. The table contains one row: 'test', 'No', '-', '22:59:00 10/29/0003', 'admin'. Below the table are buttons: Filter, Edit, Copy, Delete, Details, Run Log, and Refresh. Three numbered callouts (1, 2, 3) point to the navigation menu, the table, and the buttons respectively.

1	Radio configuration job selection list
2	List of radio configuration jobs
3	Job management buttons

- Step 2** From the pulldown menu, select the type of configuration tasks you want to view:
- **All**—Lists all configuration tasks
 - **Planning**—Lists configuration tasks whose constraints are still being calculated by the Assisted Configuration engine.



Note A configuration job stays in the Planning state if something disrupts the network, for example, a server crashes or is restarted.

- **Unscheduled**—Lists all configuration tasks that have not been scheduled
- **Scheduled**—Lists all configuration tasks that have been scheduled
- **Completed**—Lists all completed configuration tasks

The screen refreshes to show you details about the specified configuration tasks. By clicking on the corresponding column heading, you can sort the configuration tasks by name, status, next schedule, or owner.

- Step 3** From this window, you can manage existing assisted configuration tasks (see [Managing Assisted Configuration Tasks, page 14-96](#)).
-

Managing Assisted Configuration Tasks

The buttons below the list of existing assisted configuration tasks (see [Viewing Assisted Configuration Tasks, page 14-94](#)) allow you to manage these tasks.



Note

Your login determines whether you can use these options.

Before You Begin

Before you can manage the assisted configuration tasks, you must:

- Satisfy the prerequisites for running Assisted Configuration (see [Guidelines for Running Assisted Configuration, page 14-93](#)).
- Create at least one Assisted Configuration task (see [Creating a New Assisted Configuration Task, page 14-98](#)).

Procedure

- Step 1** Select **Sites > Assisted Configuration**. The Assisted Configuration screen appears (see [Figure 14-10 on page 14-95](#)).
- Step 2** From the Assisted Configuration pulldown menu, select the configuration tasks you want to edit. The screen refreshes to show the corresponding tasks.



Note Parameter generation jobs created using the Assisted Site Survey Wizard cannot be edited or run using the **Sites > Assisted Configuration** tab. To manage these jobs, see [Using the Location Manager Assisted Site Survey Wizard, page 14-22](#).

Step 3 Click on the radio button next to the task you want to manage, then click one of the buttons that appear after the lists of tasks:

- **Filter**—This button displays a limited set of radio configuration jobs, making it easier to search for a particular job by name. The filter remains in effect until the page is refreshed.



Note You can use % as a wildcard: for example, entering %name% displays all the walkabouts that contain the word “name.”

- **Edit**—Allows you to edit assisted configuration tasks that were previously created.
 - **Copy**—Allows you to create a new assisted configuration task that is similar to a previously created configuration task, you can make a copy of an existing configuration task and then make modifications to the copied task.
 - **Delete**—Allows you to delete assisted configuration tasks that were previously created.
 - **Details**—Allows you to view details of selected configuration tasks.
 - **Run Log**—Use this button to view the run log for a selected configuration job.
 - **Refresh**—Refreshes the list of configuration tasks to make sure you are looking at the latest information. You might also need to refresh the configuration tasks if you have a configuration in the Planning state.
-

Creating a New Assisted Configuration Task

You can use Assisted Configuration to configure the power level, channel settings, and beacon interval of an AP or a group of APs. Using AP Scan and Client Walkabout data, Assisted Configuration generates optimal values for the radio parameters of a given group of APs.



Note

Your login determines whether you can use this option.

Before You Begin

Before you can create a new assisted configuration task, you must satisfy the Assisted Configuration prerequisites (see [Guidelines for Running Assisted Configuration](#), page 14-93).

Procedure

- Step 1** Select **Sites > Assisted Configuration**. The assisted configuration information appears.



Note

Clicking on any subtab (for example, Radio Monitoring or Client Walkabout) before you have saved your entries in the Jobs window will cause the window to reset and you will lose all the information you entered.

- Step 2** Enter a task name in the blank field and click **New**. The screen refreshes with the Job Name dialog box in the right pane, and the Task Creation job in the left pane.

- Step 3** Select the following numbered choices in the left pane to create a new assisted configuration task:

1. **Name**—See [Naming the Configuration Task](#), page 14-99.
2. **Select Devices**—See [Selecting Devices](#), page 14-99.
3. **Filter by PHY**—[Filtering by Radio Type](#), page 14-100.
4. **Constraints/Goals**—See [Assigning Constraints and Goals](#), page 14-100.
5. **Calculate Parameters**—See [Calculating Parameters](#), page 14-103.
6. **Results**— See [Viewing the Calculated Results](#), page 14-104.

7. **Schedule**—See [Scheduling the Configuration Job](#), page 14-105.

8. **Finish**— See [Finishing the Task](#), page 14-106.

Naming the Configuration Task

Procedure

Step 1 From the menu in the left pane, click **Name**.

The screen refreshes so you can enter information about the new task. You will see the name you entered in the Task Name field.

Step 2 Enter the following information:

Field	Description
Task Name	Enter a unique name for the job. For guidelines on naming jobs, see Appendix B, “Naming Guidelines.”
Description	Enter a description of the job. For guidelines on entering descriptions, see Appendix B, “Naming Guidelines.”

Step 3 Go to the next step, [Selecting Devices](#).

Selecting Devices

Procedure

Step 1 From the menu in the left pane, click **Select Devices**. All managed devices are listed in the Device selector in the middle pane.

Step 2 Select the devices you want to include in the job (see [Using the Device Selector](#), page 1-17).



Note AP Radio Scan must already have been run on any devices you select.



Note If you have deleted RM measurement data, you must re-run AP Radio Scan on those devices.

Step 3 Go to the next step, [Filtering by Radio Type](#).

Filtering by Radio Type

Procedure

Step 1 From the menu in the left pane, click **Filter By PHY**.

Step 2 Select the type of 802.11 radio that you want to include in the assisted configuration task.



Note Only radios of the selected types are included in the assisted configuration task. If a selected AP has no interfaces of the desired radio types, this is noted in the job run log.

Step 3 Go to the next step, [Assigning Constraints and Goals](#).

Assigning Constraints and Goals

Procedure

Step 1 Select whether you want to apply the constraints to:

- All APs that you selected
- Individual APs

If you selected to apply the constraints to individual APs, a list box appears in which you can select the AP on which to apply the constraints. Click on the AP name in the list box.

Step 2 Select the channel set option:

- Recommended—Use the channels Radio Manager recommends in the Recommended field.
- Custom—Select the channels from the Custom selection box. You can Ctrl-click to select more than one channel from the selection box.



Note Some channels are not approved for use in specific regulatory domains. [Table 14-10](#) lists the regulatory domains and their valid, approved channel sets.

Table 14-10 Regulatory Domains and Their Approved Channel Sets¹

Radio Type	Regulatory Domain	Approved Channel Set
802.11b/g	FCC (United States)	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11
	DOC (Canada)	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11
	ETSI	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13
	Spain	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13
	France	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13
	Belgium	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13
	MKK (Japan)	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14 (b only)
	Singapore	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13
	Taiwan	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11
	Israel	5, 6, 7, 8
	Australia	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11
	China	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13

1. Not all radios support all approved channel sets listed.

Radio Type	Regulatory Domain	Approved Channel Set
802.11a	FCC (United States)	36, 40, 44, 48, 52, 56, 60, 64, 149, 153, 157, 161
	DOC (Canada)	36, 40, 44, 48, 52, 56, 60, 64, 149, 153, 157, 161
	ETSI	36, 40, 44, 48, 52, 56, 60, 64, 100, 104, 108, 112, 116, 120, 124, 128, 132, 136, 140
	Spain	36, 40, 44, 48, 52, 56, 60, 64, 100, 104, 108, 112, 116, 120, 124, 128, 132, 136, 140
	France	36, 40, 44, 48, 52, 56, 60, 64
	Belgium	36, 40, 44, 48, 52, 56, 60, 64, 100, 104, 108, 112, 116, 120, 124, 128, 132, 136, 140
	MKK (Japan)	34, 38, 42, 46
	Singapore	36, 40, 44, 48
	Taiwan	52, 56, 60, 64, 149, 153, 157, 161
	Israel	N/A
	Australia	36, 40, 44, 48, 52, 56, 60, 64, 149, 153, 157, 161
	China	149, 153, 157, 161, 165

- Step 3** Enter values for the minimum and maximum transmit powers. You might choose to enter a lower power setting when, for example, the default power level might affect a neighboring network. You must enter a numeric value greater than zero and less than 100.

**Note**

The recommendation is to give WLSE the full range of power settings (that is, 1mW to 100mW) when it generates radio parameters. The minimum and maximum fields are included to handle any special cases that WLSE could not know about. For example, you could have an agreement with a neighboring office that you will not configure an AP higher than 50mW. Or you may have special knowledge about the environment where it is known that an AP should not be configured at less than 5mW. It is these types of cases where the minimum and maximum fields should be changed from something other than the default.

- Step 4** If you want to restrict the data that is used when calculating radio parameters, select one or both of these options:
- Ignore Rogue APs and Friendly APs when calculating Radio Parameters. You might want to use this option if you have an excessive number of radios in your network, for example, 2-3 rogue or friendly radios per available channel.
 - Ignore Walkabout Location Data when calculating Radio Parameters. You might want to use this option if your client walkabout data is not up-to-date or is no longer relevant. The calculation generation completes faster by selecting this option, but the result might not be as accurate as when collected data is used in the calculation.
- Step 5** Enter values for the expected maximum number of clients per AP and the expected average number of clients per AP. You must enter a numeric value greater than zero and less than 500.
- Step 6** Select whether to enable black hole mitigation. If you select this option, Radio Manager recommends a beacon interval (which is slightly altered from what the AP is configured to) for the APs. If you do not select the Black Hole Mitigation option, Radio Manager displays the beacon interval to which the AP is currently configured.
- Step 7** Go to the next step, [Calculating Parameters, page 14-103](#).
-

Calculating Parameters

Procedure

- Step 1** From the menu in the left pane, click **Calculate Parameters**. The Calculate Parameters screen appears.
- Step 2** Click **Calculate**.

As the Radio Manager calculates the parameters, a progress bar indicates the progress it is making in its calculations.



Note Depending on the number of APs selected for the job and how much data was collected during Client Walkabout, the calculating parameters step could take a while to complete.

- Step 3** To stop the parameter calculation, click **Stop Calculations**.
- Step 4** Go to the next step, [Viewing the Calculated Results](#).
-

Viewing the Calculated Results

Procedure

- Step 1** From the menu in the left pane, click **Results**.

After Radio Manager calculates the parameters for the assisted configuration job, it displays the calculation results. These results provide the following information:

Field	Description
Name	Name of the AP
Transmit Power	Recommended transmit power for this AP. If the radio type is 11g, the CCK power and OFDM power are also displayed.
Channel	Recommended channel for the AP
Beacon Interval	Recommended beacon interval for the AP. If you did not select the Enable Black Hole Mitigation option, this column displays the value to which the AP is currently configured (see Assigning Constraints and Goals , page 14-100).

Field	Description
Estimated Max Throughput	<p>The estimated maximum megabytes per second that the AP can process.</p> <p>The maximum throughput is an estimated value that is calculated from either:</p> <ul style="list-style-type: none"> • Data collected from all client walkabouts. • Predicted walkabout data if no walkabouts were performed. <p>Using the walkabout data and the potential RF configuration parameters, an analysis is performed to predict the degree of transmit collisions and contention that may result in the coverage area for each AP, given a predefined ratio of AP-to-client and client-to-AP traffic. The collision and contention values are then applied to the theoretical throughput maximum to come up with the real predicted throughput.</p>

Step 2 To review these results in the Location Manager, click **Preview**.

Step 3 Go to the next step, [Scheduling the Configuration Job](#).

Scheduling the Configuration Job

Procedure

Step 1 From the menu in the left pane, click **Schedule**. The Schedule Assisted Configuration Job screen appears.

Step 2 To start the assisted configuration task immediately, click **Run Now**.

Step 3 To run the assisted configuration task at a later time, under Run Later, select a Month, Day, Year to run the configuration task. You must also specify the start time by selecting the hour and minute to start the job.

Step 4 Go to the next step, [Finishing the Task](#).

Finishing the Task

Procedure

Step 1 From the menu in the left pane, click **Finish**.



Note If a warning message appears saying that WLSE server is ahead of or behind your local time, see [Understanding Time Discrepancy Problems in Job Scheduling, page 1-16](#).

The Done form appears indicating that the job has completed or has been scheduled (if you scheduled it to run later).

Related Topics

- [Viewing the Radio Configuration Parameters, page 11-20](#)

Managing RM Data

You can use Manage Data to delete previously-collected radio location measurements, including links and path loss data.

Use this feature only under these circumstances:

- When new APs have been added.
- After any major reconfiguration of a floor (changes in the physical environment).
- If you notice any inconsistencies in reports.

When you run a new AP radio scan, the radio location information for the selected APs is automatically deleted.



Note Your login determines whether you can use this option.

Procedure

Step 1 Select **Sites > Manage Data**.

Step 2 Choose the radio location measurements to be deleted:

- **Delete Radio Measurements**—Deletes the AP radio locations collected during AP radio scans and radio monitoring.

**Note**

When you choose this option, *all features that rely on AP radio scans are affected*. After deleting the radio measurement data, for example, you must re-run AP Radio Scan on the selected devices before you can use Assisted Configuration, self healing, rogue AP detection, or the Location Manager coverage displays.

- **Delete Walkabout Measurements**—Deletes the client radio locations collected during client walkabouts.

**Note**

When you choose this option, *all data collected during the client walkabouts is removed*.

Step 3 From the menu in the left pane, click **Select Devices**. All managed devices are listed in the Device selector in the middle pane.

Step 4 Select the devices (see [Using the Device Selector, page 1-17](#)). Only measurements for the selected devices will be deleted.

Step 5 From the menu in the left pane, click **Filter By PHY**.

Step 6 Select the 802.11 radio types. Only measurements for radios of the selected types will be deleted.

Step 7 From the menu in the left pane, click **Finish**. The data for the selected devices and radio types is deleted immediately.

Related Topics

- [Using AP Radio Scans to Collect RM Data, page 14-58](#)
- [Using Client Walkabouts to Collect RM Data, page 14-73](#)

- [Using Radio Monitoring to Collect RM Data, page 13-2](#)