



## Viewing Your WLAN Radio Environment with Location Manager

---

The Location Manager gives you a graphical view of the access points (APs) on each floor of your building(s). Use Location Manager to:

- Enter information about building and floor environments (see [Adding Buildings to Location Manager, page 10-3](#))
- Specify the location of APs on each floor (see [Adding Devices to the Floor, page 10-19](#))
- Display graphically the APs and their predicted coverage for each floor of your building (see [Understanding the Location Manager Window, page 10-34](#))
- View the relative location of unknown or rogue APs (see [Displaying the Location of Unknown or Rogue Radios, page 10-29](#))
- Use the Assisted Site Survey to determine optimal radio transmit power, channel selection, and beacon interval (see [Using the Assisted Site Survey Wizard, page 10-43](#))

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.

# Prerequisites for Using Location Manager

Before using Location Manager, you must have

- Installed Java Runtime version 1.4.2 or higher. When you click on Location Manager, the Location Manager screen displays what version of Java Runtime version you have installed and gives you a link to install the correct version if necessary.
- Discovered, inventoried, and managed all devices. See [Managing Devices, page 3-1](#).
- 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 “Setting Up Devices” chapter in the *Installation and Configuration Guide for the CiscoWorks Wireless LAN Solution Engine, Release 2.9*. This guide is shipped with each WLSE, or you can view it online on Cisco.com.

## Launching Location Manager

You can launch Location Manager in two ways:

- By clicking the Location Manager tab, then clicking **Location Manager > 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.

### Related Topics

- [Understanding the Location Manager Window, page 10-34](#)
- [Getting Started with Location Manager, page 10-3](#)

# Getting Started with Location Manager

There are two tasks you need to perform in order to use all the features of Location Manager:

- Enter information about your buildings (see [Adding Buildings to Location Manager, page 10-3](#)).
- Specify the location of APs on each floor (see [Adding Devices to the Floor, page 10-19](#)).

To understand more about the Location Manager window, see [Understanding the Location Manager Window, page 10-34](#).

## Adding Buildings to Location Manager

When you launch Location Manager for the first time, use the Building Tool to enter building and floor information. If you have previously launched Location Manager and want to add building information, select **Edit > Add Building** or right-click on **All Locations** and select **Add Building**.



### Note

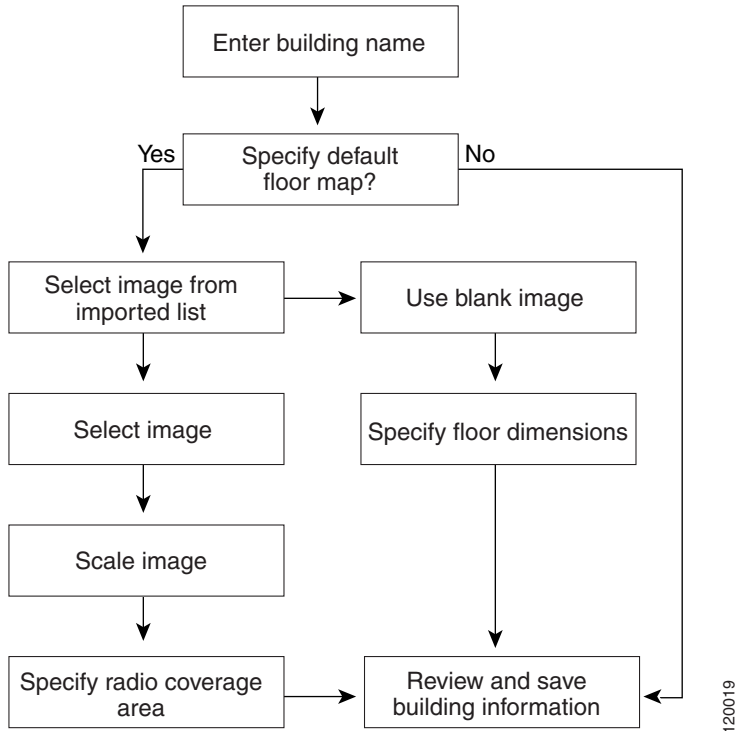
---

The buildings you add appear 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.

---

The Building Tool appears and walks you through the process shown in [Figure 10-1](#).

Figure 10-1 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 you 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, and Address 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 10-5](#).
- 

## 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 10-6](#).

If you clicked **No Default Floor Map**, you need to review and save the information you entered. See [Saving Building Information, page 10-10](#).

---

## 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 10-8](#).

If you specified **Use Blank Image**, enter the floor dimensions. See [Entering Floor Dimensions, page 10-6](#).

---

## Entering Floor Dimensions

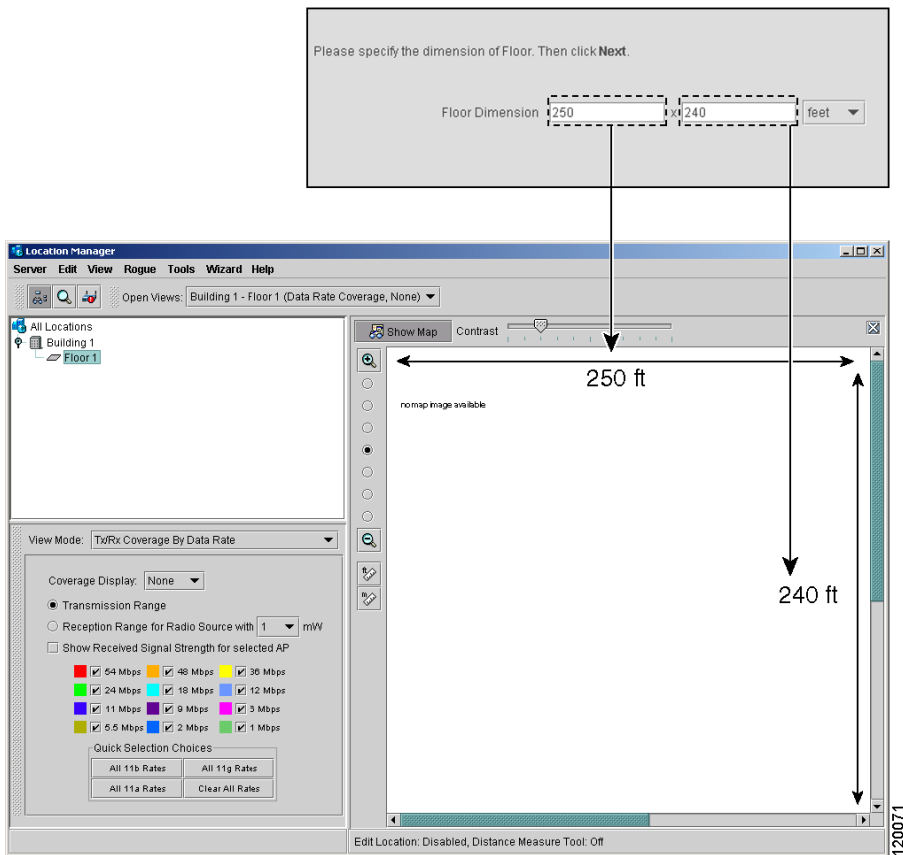
If you selected to use a blank image, the Building Tool displays a form to enter the floor dimensions.

### Procedure

---

- Step 1** Enter a value in each Floor Dimension field. [Figure 10-2](#) illustrates how the values you enter correspond to the resulting floor image.

Figure 10-2 Specifying Floor Dimensions



**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 building information you entered. See [Saving Building Information, page 10-10](#).

## 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.

- 
- 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 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**.



---

**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 10-8](#).

---

## 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 10-9](#).
- 

## 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 10-10](#).

---

## 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 10-10](#).

---

### Related Topics

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

## 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 10-11](#).
- 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

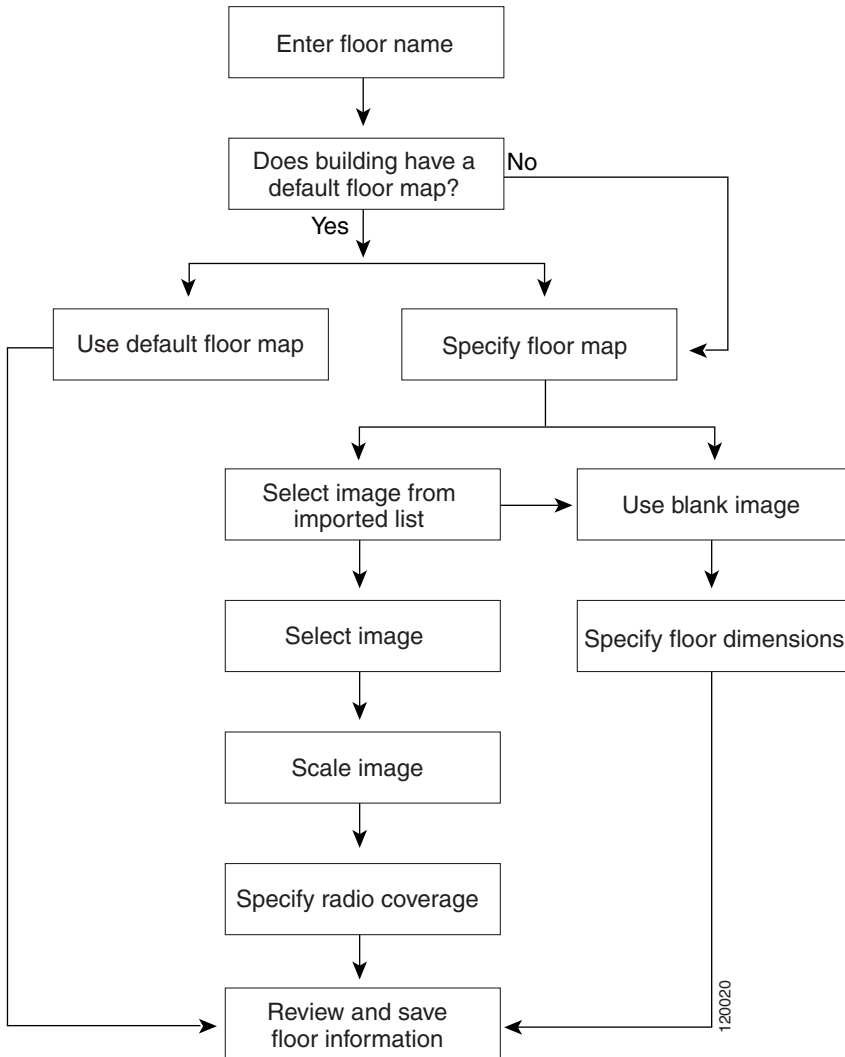
- [Adding Floors to Location Manager, page 10-11](#)

The building(s) you added appear 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.

## 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 10-3](#).

Figure 10-3 Building Tool Steps for Adding Floor Information



## Entering Floor Information

### Procedure

---

- Step 1** Right-click on a building and select **Add Floor**, or click on a building and then 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 10-13](#).

---

## 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 10-14](#).

- 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 10-18](#).

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 10-14](#).

---

## 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 10-16](#).

If you specified **Use Blank Image**, you need to enter the floor dimensions. See [Entering Floor Dimensions, page 10-14](#)

---

## Entering Floor Dimensions

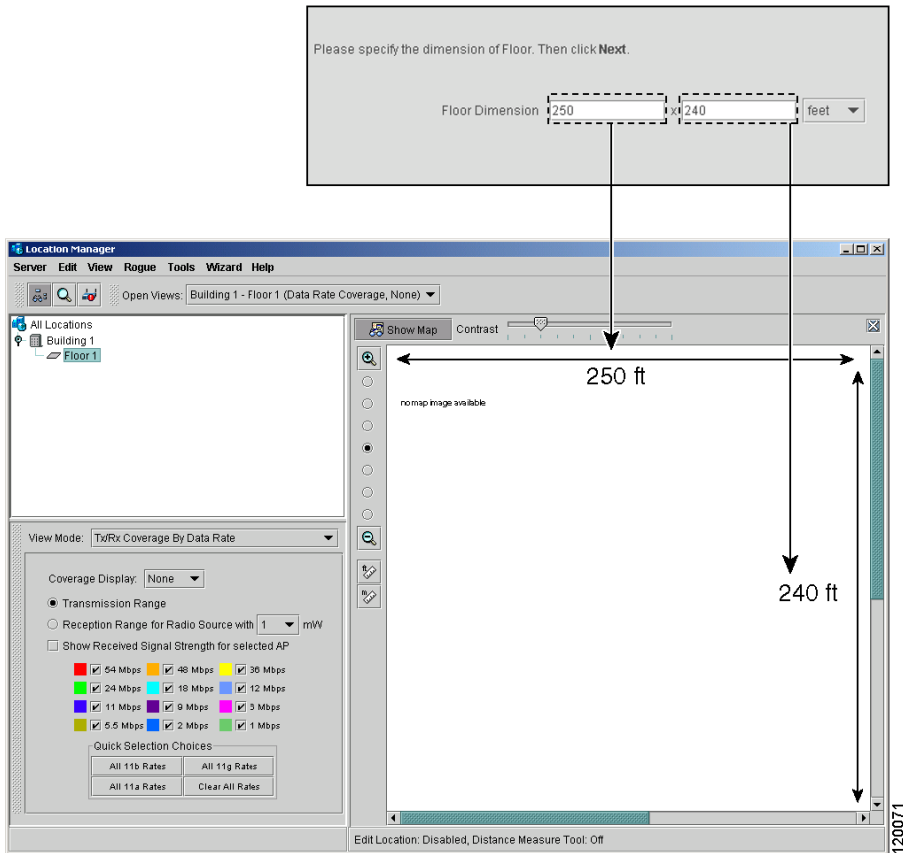
If you selected to use a blank image, the Building Tool displays a form to enter the floor dimensions.

### Procedure

---

- Step 1** Enter a value in each Floor Dimension field. [Figure 10-2](#) illustrates how the values you enter correspond to the resulting floor image.

Figure 10-4 Specifying Floor Dimensions



**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 10-18.

## 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, the click **Next**.
- You now need to specify the scale of the image you selected. See [Specifying the Scale of the Image Map, page 10-16](#).
- 

## 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 10-17](#).

---

## Specifying the 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 save and review the floor information you entered. See [Saving Floor Information, page 10-18](#).

---

## 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 10-18](#).

---

### Related Topics

- [Adding Devices to the Floor, page 10-19](#)

## 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 10-11](#).
  - 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 the Floor

After you add a new 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 [Managing Devices, page 3-1](#).

**Procedure**

- 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.

**Note**

You do not need to place the devices in the exact location on the image map, but 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 is 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 10-54](#).

You can disable the RM Capability Verifier from running when you add APs to the floor by unchecking that setting in **Edit > Preferences**. See [Setting User Preferences, page 10-20](#).

- 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 9-14.

---

#### Related Topics

- [Understanding Location Manager Device Icons](#), page 10-40
- [Setting User Preferences](#), page 10-20
- [Verifying Radio Management Capability](#), page 10-54

## Setting 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 10-54.)
  - 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 [Selecting a View Mode, page 10-21](#).



---

**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.

## Selecting a View Mode

The 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 building name instead of a floor name, Summary is the only option available in the View Mode menu. See [Summary View Mode, page 10-22](#).)
- Edit Location (see [Edit Location View Mode, page 10-22](#))
- Tx/Rx Coverage by Data Rate (see [Tx/Rx Coverage by Data Rate View Mode, page 10-23](#))
- Tx/Rx Coverage by Signal Strength with Overlaps (see [Tx/Rx Coverage by Signal Strength With Overlaps View Mode, page 10-24](#))
- Tx/Rx Coverage by Signal Strength without Overlaps (see [Tx Coverage by Signal Strength Without Overlaps View Mode, page 10-25](#))
- Unknown Radio Location Estimation (see [Unknown Radio Location Estimation, page 10-26](#))

## 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 2-2](#))
- Minor Alarms—P3, P4, and P5 alarms (see [Displaying Fault Information, page 2-2](#))
- 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 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 10-22](#).)

---

## 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 10-52](#)).

**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 who's 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 who's 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 choose a value from the mW pulldown menu. If you pick a larger value, for example 5mW, the colored region becomes 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 who's 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 who's 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

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 [Displaying the Location of Unknown or Rogue Radios](#), page 10-29)
- 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.
- 

## Understanding 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**

- [Displaying the Location of Unknown or Rogue Radios, page 10-29](#)

## Displaying Information About Rogue Access Points

When Radio Monitoring detects a rogue AP, a new fault is generated. (See [Understanding Rogue AP Detection, page 9-89](#) 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 [Displaying the Location of Unknown or Rogue Radios, page 10-29](#)).

**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 Unknown APs, page 9-93](#)

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

---

**Related Topics**

- [Managing Unknown APs, page 9-93](#)
- [Understanding Rogue AP Detection, page 9-89](#)
- [Displaying the Location of Unknown or Rogue Radios, page 10-29](#)

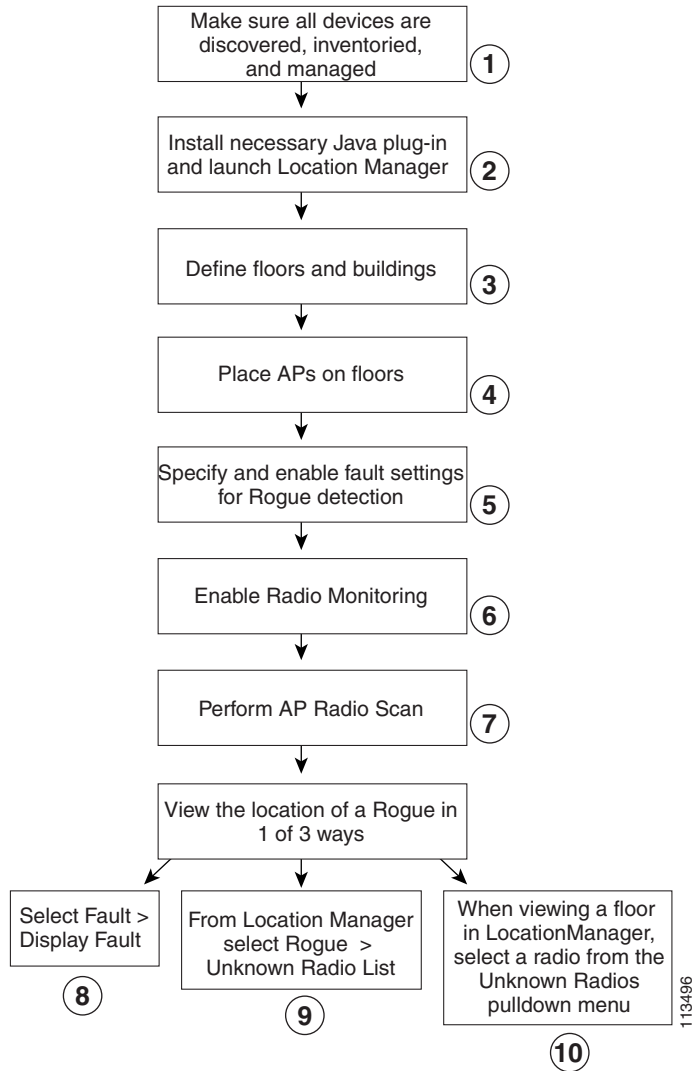
## Displaying the Location of Unknown or Rogue Radios

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 several steps:

Figure 10-5 Recommended Setup To Detect Rogue Radios



Number	Description
1	See <a href="#">Managing Devices</a> , page 3-1.
2	See <a href="#">Prerequisites for Using Location Manager</a> , page 10-2.
3	See <a href="#">Adding Buildings to Location Manager</a> , page 10-3.
4	See <a href="#">Understanding Location Manager Device Icons</a> , page 10-40.
5	See <a href="#">Assigning Rogue AP Detection Network Settings</a> , page 9-92.
6	See <a href="#">Using Radio Monitoring to Collect RM Data</a> , page 9-57.
7	See <a href="#">Using AP Radio Scans to Collect RM Data</a> , page 9-26. This step is not required for Rogue AP detection, but it is required to see the AP's coverage display.
8	See <a href="#">Understanding Rogue AP Detection</a> , page 9-89.
9	See <a href="#">Displaying the Location of Unknown or Rogue Radios</a> , page 10-29.
10	See <a href="#">Location Manager Window</a> , page 10-36.

### 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 10-1](#).

**Table 10-1 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 10-2](#).

**Table 10-2 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. <sup>1</sup>
Switch Port	The port of the switch to which the rogue AP is connected.
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 <a href="#">Understanding WLSE Time Displays, page 1-13</a> ).

1. 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 Location and Suppression, page 9-103](#).

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 9-57](#)).

---

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**

- [Assigning Rogue AP Detection Network Settings, page 9-92](#)
- [Displaying Information About Rogue Access Points, page 10-28](#)

## Understanding the Location Manager Window

The options available on the Location Manager window change depending on the what you chose to view. The following sections explain the options that are displayed when you chose these views:

- [All Locations or Building View, page 10-35](#)
- [Floor View, page 10-38](#)

## All Locations or Building View

When you launch Location Manager for the first time and when you select **All Locations** or a building name in the navigation tree, the Location Manager window looks similar to [Figure 10-6](#). See [Table 10-3](#) for an explanation of the numbered fields.

Figure 10-6 Location Manager Window

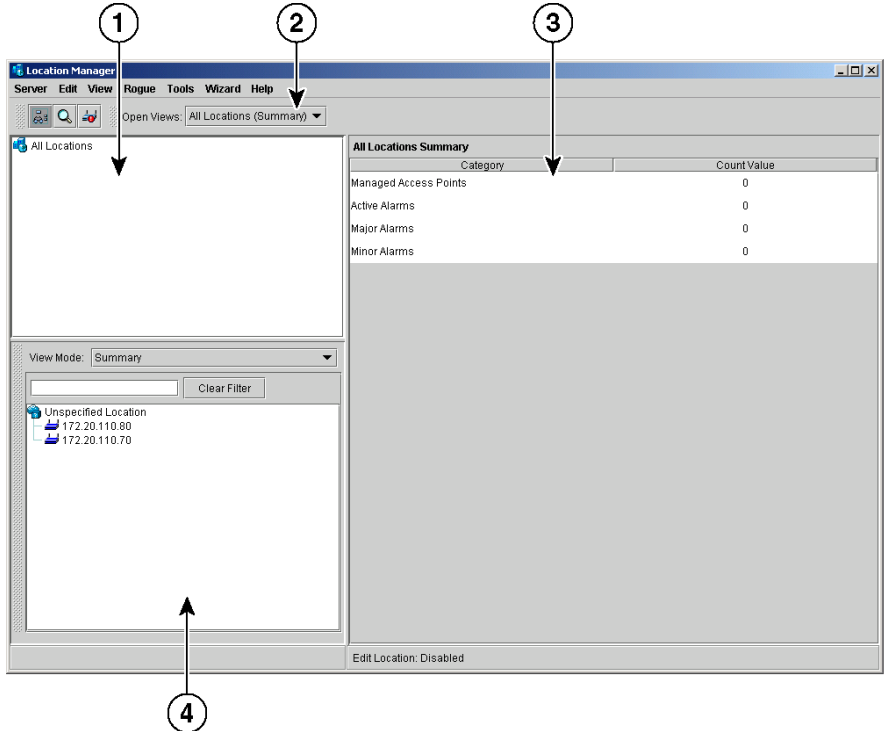


Table 10-3 describes the Location Manager fields that are numbered above.

120015

**Table 10-3 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 buildings and floors that have been added.</p> <ul style="list-style-type: none"> <li>• If you click on <b>All Locations</b>, the All Locations Summary appears in field 3. See <a href="#">All Locations and Building Summary, page 10-38</a>.</li> <li>• If you click on a building, the Building Summary and the Radio Manager Feature Status appear in field 3.</li> <li>• If you double-click on a building name or expand a building folder, you see the floors that have been added to that building.</li> <li>• If you click on a floor name, the floor map is displayed in field 3. See <a href="#">Floor View, page 10-38</a> for more information. You can modify what information is displayed when you click on a floor name by setting user preferences (see <a href="#">Moving Devices on Location Manager Image Map, page 10-51</a>).</li> <li>• If you double-click on a device name, the device is centered in the floor map in field 3.</li> </ul>
2	<p>The Open Views pulldown menu lists the buildings and floors that you have previously viewed. See <a href="#">Selecting a View Mode, page 10-21</a>.</p>
3	<p>The All Locations Summary displays information about all the buildings and floors that have been previously added to Location Manager. (See <a href="#">All Locations and Building Summary, page 10-38</a>.)</p>
4	<p>The View Mode pane contains the View Mode pulldown menu (see <a href="#">Selecting a View Mode, page 10-21</a>) and lists discovered, inventoried, and managed devices not assigned to a building or floor (see <a href="#">Managing Devices, page 3-1</a>).</p>

When you click on a floor name in the navigation tree, the Location Manager window changes. See [Floor View, page 10-38](#).

#### Related Topics

- [Moving Devices on Location Manager Image Map, page 10-51](#)

## 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 2-2](#))
- Minor Alarms—P3, P4, and P5 alarms (see [Displaying Fault Information, page 2-2](#))

When you expand the All Locations folder, you see a list of the buildings and corresponding 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 about the specific building.

When you click on a floor, the All Locations Summary is replaced with the corresponding floor map image. See [Floor View, page 10-38](#) 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 10-7](#) illustrates the floor view. See [Table 10-4](#) for an explanation of the numbered fields.

Figure 10-7 Location Manager Floor View

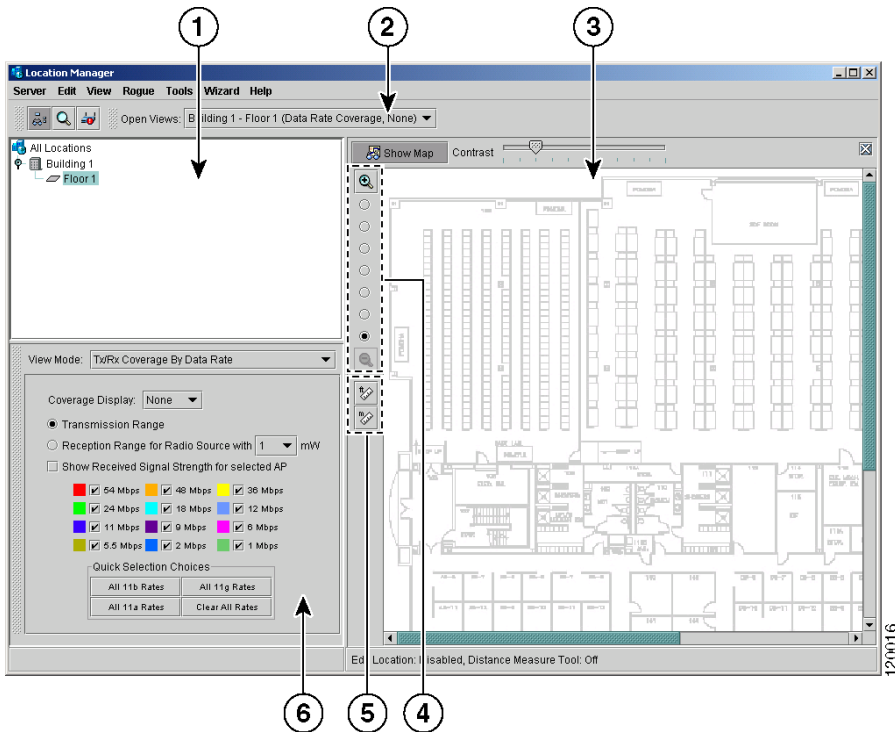


Table 10-4 Floor View Window Descriptions

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 <a href="#">Selecting a View Mode</a> , page 10-21.
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 <a href="#">Zooming In and Out</a> , page 10-58.

Number	Description
5	Measuring tool. See <a href="#">Using Location Manager Measuring Tool, page 10-57</a> .
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 <a href="#">Selecting a View Mode, page 10-21</a> .

## 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 10-5](#). 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 2-2](#).

**Table 10-5 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 different 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 10-41](#)).

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 9-14](#).

#### Related Topics

- [Modifying Information Displayed with Device Icons, page 10-41](#)
- [Displaying Information About Rogue Access Points, page 10-28](#)

## Modifying Information Displayed with Device Icons

From the **View** menu, you can select what information to display with the device icons on the Location Manager floor map. [Table 10-6](#) 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 10-6 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 <b>Devices &gt; Discover &gt; Discover &gt; Advanced Options</b> , NameFormat. See <a href="#">Selecting the Device Name Format</a> , page 3-56.	 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  <b>Note</b> Scanning-only APs have an “S” in place of the radio channel.

Table 10-6 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 style="text-align: center;">100mW</p>  <p style="text-align: center;">10.0.0.0</p> <p><b>Note</b> 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 style="text-align: center;">11Mbps</p>  <p style="text-align: center;">10.0.0.0</p> <p><b>Note</b> Scanning-only APs display “N/A.”</p>

## Using the 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 10-44.
2. **AP Radio Scan**—See [Performing AP Radio Scan](#), page 10-45.
3. **Client Walkabout**—See [Performing a Client Walkabout](#), page 10-46.
4. **Radio Parameter Generation**—See [Generating Radio Parameters](#), page 10-47.



---

**Note** Because the more devices included in an Assisted Site Survey Wizard session increases the time 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 10-45](#)).
-

## 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 9-27](#).

- 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 10-46](#)).

## 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 9-42](#).

### Procedure

- 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 9-43](#).
  - Skip Client Walkabout—If the location data is accurate, you can skip the client walkabout and go directly to [Generating Radio Parameters, page 10-47](#).

- Step 2** If you select to start client walkabout Setup, you need to enter at least one client MAC address, and up to five addresses, that 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 9-43](#)).

- Step 5** Click **Next** to go to the next step (see [Generating Radio Parameters, page 10-47](#)).

## 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 internally utilizing 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 9-77.

**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 Radio Manager tab (**Radio Manager > RM 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.
- 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 1** Click **Next** to view the calculation results and apply the configuration to the APs. Radio Manager displays the calculation results. These results specify 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 <b>CCK</b> power and <b>OFDM</b> power are also displayed.
Channel	Recommended channel for the AP

Field	Description
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 <a href="#">Assigning Constraints and Goals, page 9-81</a> ).
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"> <li>• Data collected from all client walkabouts.</li> <li>• Predicted walkabout data if no walkabouts were performed.</li> </ul> <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** 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

- [Understanding AP Radio Scans, page 9-27](#)
- [Understanding Client Walkabouts, page 9-42](#)

## 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 10-22](#)

---

### 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 10-40](#)

# 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 10-22](#)

---

### 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 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.

---

## 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 [Setting User Preferences, page 10-20](#)).

### 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**.
- 

## 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 2-10](#).
-

# 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 Location Manager Tools

Location Manager includes several tools that you can use:

- Export a floor image (See [Exporting a Floor Image](#), page 10-56.)
- Print a floor image (See [Printing a Floor Image](#), page 10-57.)
- Measuring Tool (See [Using Location Manager Measuring Tool](#), page 10-57.)
- Contrast Sliding Tool (See [Using Location Manager Contrast Sliding Tool](#), page 10-58.)
- Zoom Tool (See [Zooming In and Out](#), page 10-58.)

# Exporting a Floor Image

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

### Procedure

---

- Step 1** 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 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 building(s). (See [Adding Floors to Location Manager, page 10-11.](#))

---

### 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.