

- If a Sensor is available, the system automatically selects a defending Sensor for an Authorized AP. The Quarantine status of the AP then appears as **Quarantined**.
- If a Sensor is not currently available, the Quarantine status of the AP appears as **Quarantine Pending**. As soon as a Sensor is available, it starts defending the AP. The AP may appear as **Quarantine Pending** if it is not currently an active threat (the AP is inactive). The system keeps quarantining the AP until you manually remove it from quarantine.
- **Remove from Quarantine:** Available only if the AP is **manually Quarantined**, this option enables you to stop quarantine on the AP, thereby enabling wireless communication.
- **Start DoS Prevention:** Available only if the system has determined an AP to be under a DoS attack and DoS countermeasures have not already been started. This option enables you to start DoS countermeasure on a selected AP.
- **Stop DoS Prevention:** Available only if DoS Prevention is initiated on the AP, this option enables you to manually terminate DoS countermeasure on a selected AP.
- **Enable Auto-quarantine:** Enabled by default, this option ensures that the system automatically quarantines an AP, thereby honoring the specified Intrusion Prevention policy.
- **Disable Auto-quarantine:** This option ensures that the system does not automatically quarantine an AP (regardless of the policies).

*Note: The menu items **Block Wired Port**, **Mark Port as Unblocked**, **Move to Quarantine**, **Start DoS Prevention**, and **Enable Auto-quarantine** are not visible only if the WIDS license is applied.*

- **Add to Banned List:** Enables you to add the selected AP to the Banned List to prevent the AP from engaging in wireless communication.
- **Remove from Banned List:** Available only if the AP is already in the **Banned List**, this option enables you to remove the selected AP from the Banned List.
- **Start Troubleshooting:** Opens the **Troubleshoot** tab of the **AP Device** dialog, which allows you to start a troubleshooting session in either Packet Level Mode or Event Level Mode. Click <**Start Troubleshooting**> to start troubleshooting.
- **Stop Troubleshooting:** Available only if a troubleshooting session is in progress, this option enables manual termination of the session.

*Note: From SGE 6.2 release onwards, it is possible to start/ stop quarantine and troubleshooting on individual BSSID of the Merged AP.*

- **Split:** Enables you to split the merged APs.
- **Mark as Known:** Enables you to mark an External AP as Known External AP. When an AP is marked as Known External AP, the row color changes to dark blue.
- **Mark as Unknown:** Enables you to mark a Known External AP as Unknown External AP. An Unknown External AP's row color is light blue.
- **Delete:** Enables you to delete a selected AP.
- **Change Location:** Opens the **Location Tag** dialog that enables you to:
  - View the complete list of locations
  - Change the location of the selected AP (see [Manual Location Tagging](#))
- **Move to...:** Enables you to categorize the AP in your network by moving it to the Authorized, Rogue, or External folder.

*Note: The menu items **Block Wired Port**, **Mark Port as Unblocked**, and **Move to Quarantine** appear only in the AP context-sensitive menu on the **Devices** screen and not in the AP context-sensitive menu on the **Quarantined Devices** dialog. All other items are available on both the menus.*

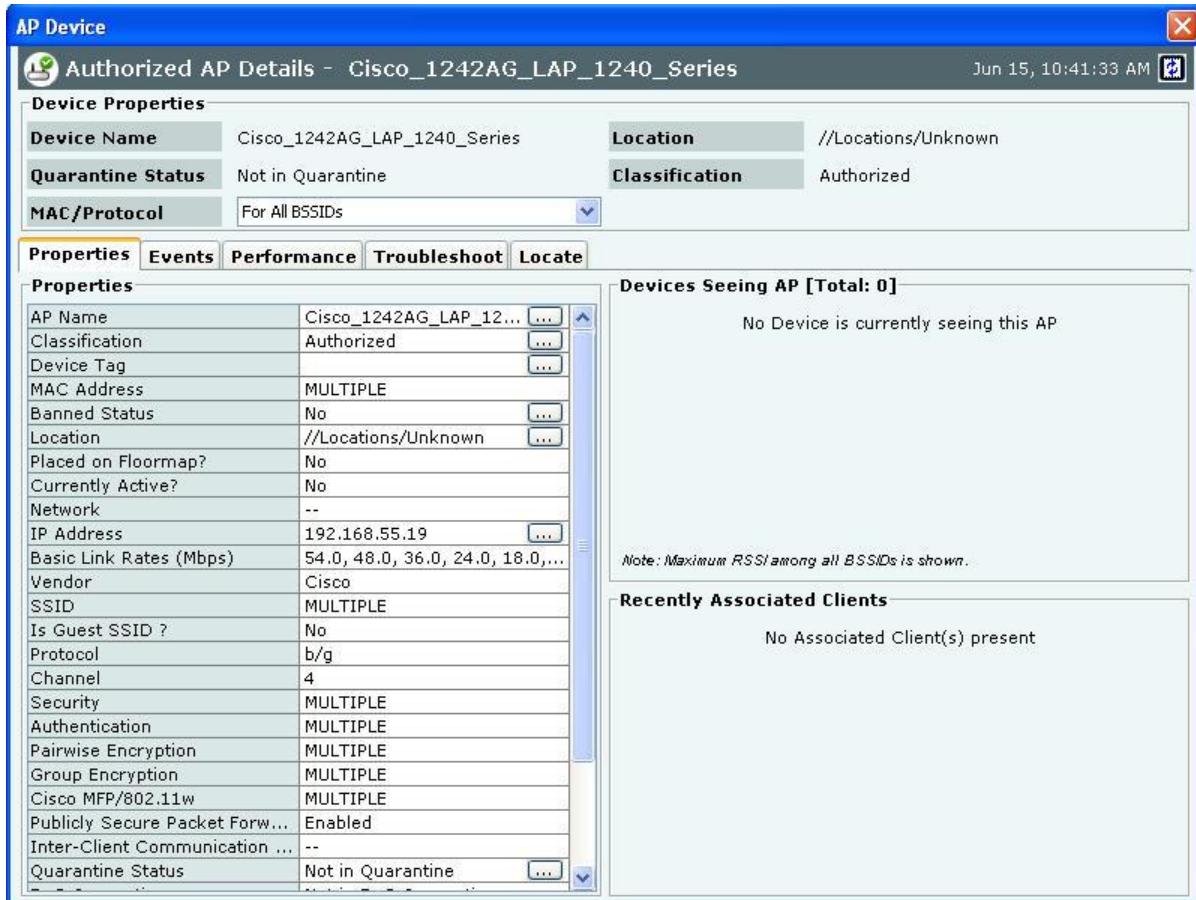
*Note: **Details**, **Performance**, **Events**, **Locate**, **Move to/Remove from Quarantine**, **Start/Stop DoS Prevention**, and **Start/Stop Troubleshooting** are the only the menu items that appear in AP context-sensitive for the BSSIDs of the Merged APs as shown in the figure below.*

The screenshot shows the SpectraGuard Enterprise interface under the 'Devices' tab. The left sidebar shows locations: Unknown, New York, and Washington. The main area displays a table of wireless access points (APs) with columns for Name, MAC Address, Security, SSID, Channel, Protocol, Vendor, Network, Location, and Up/Dow... (partially visible). A context-sensitive menu is open over a row for a Cisco AP named 'Cisco\_12...'. The menu items include Details, Performance, Events, Locate, Move to Quarantine, Start DDoS Prevention, and Start Troubleshooting. Below the table is a 'Table Summary (Total: 49)' section containing four charts: Category (stacked bar chart), Active Status (bar chart), 802.11 Protocol (stacked bar chart), and Security Settings (bar chart).

#### Merged AP Context-Sensitive Menu for the BSSIDs of the Merged APs

#### AP Details Dialog

To open AP Details dialog, right-click an AP row on the Devices screen, and select the Details menu item. The AP Details dialog has the following tabs: Properties, Events, Performance, Troubleshoot, and Locate. The Properties tab is displayed by default.



### AP Properties Tab

#### Fields in the AP Properties Tab

The **AP Properties** tab enables you to view and edit the properties of an AP.

- MAC/Protocol:** Select the MAC/Protocol from the drop-down list to display the relevant information of the selected BSSID. **MAC/Protocol** field appears only for merged APs. The Primary BSSID of the AP is shown in bold.
- AP Name:** Click  and specify the name used to identify the AP in the **AP Name** dialog. Click **Save**. The new AP name automatically displays in the **Device Name** field in the header of the **AP Details** dialog.

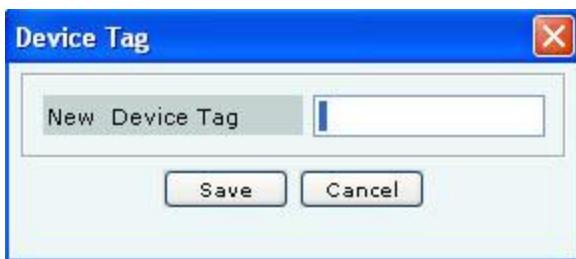


### AP Name Dialog

**Classification:** Specifies the classification of the AP—**Authorized**, **Rogue**, **External**, or **Indeterminate**. This automatically displays in the Classification field in the header of the **AP Details** dialog. Click  to open the **AP Classification** dialog. Here, you can change the AP classification to *Authorized*, *Rogue*, or *External*. Click <OK> to move the AP to the selected folder.

**AP Classification Dialog**

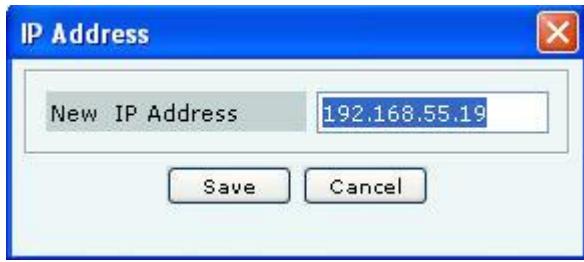
**Device Tag:** Click  to specify text that provides additional information about the AP in the **Device Tag** dialog; for example, Hawaii Conference Room, Bldg 15 – Cubicle G2, or Executive Area. Click **Save** to save the device tag.

**AP Device Tag Dialog**

- **MAC Address:** Specifies the unique 48-bit address of the AP/ 802.11 PHY modes used by the AP. MULTIPLE displays, if For All BSSIDs is selected in the MAC/Protocol field.
- **Location:** Enables you to view the name of the AP's location and the complete list of locations. This automatically displays in the **Location** field in the header of the **AP Details** dialog.
- Click  to open the **Location Tag** dialog. Here, you can view the complete list of locations and choose a location for the AP. To view the list of locations, you must first set up your list of locations on the **Locations** screen as explained in the section (see [Working with Location Folders and Location Nodes](#)).

**AP Location Tag Dialog**

- **Placed on Floormap?**: Indicates if the AP is placed on the floor map.
- **Currently Active?**: Indicates if the AP is currently active.
- **Up/Down Since**: Specifies the time since the AP is up/down.
- **Network**: Shows additional information about the IP Address and subnet that identifies the network on which the AP is located.
- **IP Address**: Click  to open the **IP Address** dialog. Specify the IP address for an *Authorized* or *Indeterminate* AP. This field is disabled for *Rogue* and *External* APs.

**AP IP Address Dialog**

- **Basic Link Rates (Mbps):** Displays a comma separated list of link rates supported by the AP.
- **Vendor:** Specifies the name of the AP manufacturer, which is inferred from the first three bytes of the MAC address.
- **SSID:** Specifies the unique identity that prospective Clients use to recognize the network. **MULTIPLE** is displayed, if **For All BSSIDs** is selected in the **MAC/Protocol** field.
- **Is Guest SSID?:** Indicates if the SSID is a guest SSID.
- **Protocol:** An 802.11 device could implement and use protocols a, b/g or a/b/g. The protocol decides the PHY layer properties and capabilities of the device.
- **Channel:** Specifies the channel number on which the AP operates.
- **Security:** Shows the security settings for the AP. If this option is enabled, the AP enforces WEP encryption on the wireless link. **MULTIPLE** is displayed, if **For All BSSIDs** is selected in the **MAC/Protocol** field.
- **Authentication:** Specifies the procedure used by APs to verify the identity of a Client. **MULTIPLE** is displayed, if **For All BSSIDs** is selected in the **MAC/Protocol** field.
- **Pairwise Encryption:** Specifies the encryption used for unicast communication between the AP and a Client. **MULTIPLE** is displayed, if **For All BSSIDs** is selected in the **MAC/Protocol** field.
- **Group Encryption:** Specifies the encryption used for broadcast or multicast communication from the AP. **MULTIPLE** is displayed, if **For All BSSIDs** is selected in the **MAC/Protocol** field.
- **Cisco MFP/802.11w:** Indicates if the AP implements pre-802.11w standard from Cisco or 802.11w standard to mitigate against the DoS attacks against AP. **MULTIPLE** is displayed, if **For All BSSIDs** is selected in the **MAC/Protocol** field.
- **Turbo Capability:** Indicates if an AP can transmit wireless signals at 108 Mbps.
- **Super AG Capability:** This field indicates that the AP supports Super AG capability. This capability provides speed and throughput of more than double of standard wireless LAN (802.11) technologies.
- **802.11n Capability:** This indicates 802.11n capability of the AP. The field provides information about whether the AP is compliant with early or standard implementations of the 802.11n standard.

*Note: You will see Turbo Capability, Super AG Capability and Pre-11n Capability only if the selected AP has these capabilities.*

- **Publicly Secure Packet Forwarding:** Specifies if the AP relays packets among wireless Clients, that is, specifies if Publicly Secure Packet Forwarding (PSPF) is disabled on the Client.
- **Inter-Client Communication Last Detected:** For WEP enabled APs, specifies the date and time when communication between two wireless Clients was last seen.

*Note: For Authorized but Mis-configured APs, any properties that violate the specified Authorized SSID template for that location are shown in red. Read the tool tip on the Console for more information.*

- **Quarantine Status:** Click to open the **Quarantine Confirmation** dialog and to quarantine the selected AP if a Sensor is available. If a Sensor is not available, the Quarantine Status of the AP is **Quarantine Pending**. Click <Yes> to quarantine the AP.

This automatically displays in the **Quarantine Status** field in the header of the **AP Details** dialog.

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**Note:** *Quarantine Status, Defending Sensor, Port Block Status, and Port Block Details* fields are **not** visible if WIDS license is applied.

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**Note:** If the selected AP is currently quarantined, a **Remove from Quarantine** button appears in the AP Properties dialog. Click <**Remove from Quarantine**> to view an **Information** message and to enable wireless communication to the AP.

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#### AP Quarantine Confirmation Dialog

**Note:** The system quarantines only those interfaces that are mis-configured (non-policy compliant). The system allows policy compliant interfaces to operate unhindered.

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- **Defending Sensor:** If an AP is quarantined, it specifies the name of the Sensor that is actively preventing the AP from engaging in wireless communication.
- **Port Block Status:** Click  to block the wired side Ethernet port to which the AP is connected. WLSE integration is needed to block wired side Ethernet port of the AP.



#### AP Port Block Status Dialog

- **Port Block Details:** Specifies the IP address of the switch and the port to which the AP is connected.
- **Beacon Interval (ms):** Specifies in milliseconds the time interval between successive beacons of the AP.
- **First Detected At:** Specifies the date and time when the AP was first detected by the system.
- **802.11n Properties:** Appears when the AP is 802.11n capable.
- **Channel Width:** Specifies whether an AP is operating on 20 MHz or 40 MHz channel width. 802.11n allows for the use of standard channel width of 20 MHz or double channel width of 40 MHz. 40 MHz channel width is achieved by using two adjacent channels to send data simultaneously.
- **Channel Offset:** For AP operating on 40 MHz channel width, channel offset specifies whether the adjacent channel used in 40 MHz operation is above or below the primary channel. This field can have following values:
  - **Above 40 MHz:** AP is currently operating on 40 MHz and adjacent channel lies above the primary channel.
  - **Below 40 MHz:** AP is currently operating on 40 MHz and adjacent channel lies below the primary channel.
- **802.11n Data Rate:** Specifies the highest 11n rate of the AP with which it communicates with the Client.
- **Short G1 for 20 MHz:** Indicates if the AP is capable of using short guard interval for 20 MHz.
- **Short G1 for 40 MHz:** Indicates if the AP is capable of using short guard interval for 40 MHz.
- **MCS Support:** Specifies the various Modulation and Coding Schemes (MCS) supported for 802.11n. The 802.11n standard defines a total of 77 MCS. Each MCS is a combination of a certain modulation (for example,

BPSK, QPSK, 64-QAM), coding rate (for example, 1/2, 3/4), guard interval (800 or 400 ns), and number of spatial streams. Support for MCS 0-15 is mandatory for 802.11n APs and support for MCS 0-7 is mandatory for 802.11n Clients.

- **Greenfield Mode:** Indicates if the AP is capable of working in the Greenfield mode. Greenfield mode is an optional high-throughput mode in the 802.11n standard, which is not backward compatible with legacy (802.11a/b/g) protocols and is expected to provide maximum performance benefits of 802.11n.
  - **Beam forming Capability:** Indicates if the AP is capable of Beamforming. Beamforming is an RF transmission method that helps in focusing the radiated RF energy directly at a receiving Client. This improves signal reception at the Client and consequently the throughput.
- To add the selected AP to the Banned List, click .
  - To delete data for the selected AP and re-initialize data gathering, click .
  - To refresh the **AP Details** screen, manually click .

#### *Devices Seeing AP Section*

Under **Device Seeing AP**, you can view a list of devices (which could be either APs or Sensors) that can see the selected AP. The details of these devices such as Device Active/Inactive icon, Name and RSSI of the AP seen by that device are displayed in the rows. To view details of a specific Device seeing the current AP, click **Name**, and a new **AP Details** or **Sensor Details** dialog appears.

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*Note: Total gives the total number of devices seeing the AP.*

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#### *Recently Associated Clients Section*

Under **Recently Associated Clients**, you can view a list of Clients that are recently associated to the selected AP. The criteria for Recent Association is either 12 hours or 100 thousand Clients (this is the total number of associations in the system and not per device). Client details such as Client Active/Inactive icon, Client Name, SSID, and Last Detected At (which shows the date and time or Present, Present when the association is currently active.) are displayed in the rows. To view details of a specific Client, click **Client Name** the **Client Details** screen opens.

#### **Fields in the AP Events Tab**

To open the **AP Events** tab, on the **Devices** screen right-click an AP row and select the **Events** menu item

**AP Device**

**Authorized AP Details - Cisco\_1242AG LAP\_1240\_Series** Jun 15, 11:00:55 AM

Device Properties		Location	//Locations/Unknown		
Device Name	Cisco_1242AG LAP_1240_Series	Classification	Authorized		
Quarantine Status	Not in Quarantine				
MAC/Protocol	00:19:A9:B7:CD:22 - b/g				
<b>Properties</b>	<b>Events</b>	<b>Performance</b>	<b>Troubleshoot</b>	<b>Locate</b>	
Filter Off					
ID		Location	Event Details	Category	Event Start T...
228		//Locations/Unknown	Mis-configured Authorized AP [Cisco_12...	Mis-conf...	Jun 14, 11:1...
150		//Locations/Unknown	Mis-configured Authorized AP [Cisco_12...	Mis-conf...	Jun 14, 11:0...
140		//Locations/Unknown	Mis-configured Authorized AP [Cisco_12...	Mis-conf...	Jun 13, 7:27:...
138		//Locations/Unknown	Mis-configured Authorized AP [Cisco_12...	Mis-conf...	Jun 13, 6:45:...
130		//Locations/Unknown	Mis-configured Authorized AP [Cisco_12...	Mis-conf...	Jun 13, 4:27:...
56		//Locations/Unknown	[Rogue] Client [Cisco_B7:CD:21] runni...	Misbehav...	Jun 13, 10:4...
111		//Locations/Unknown	Rogue AP [Cisco_B7:CD:22] is active.	Rogue AP	Jun 13, 11:2...
57		//Locations/Unknown	Rogue AP [Cisco_B7:CD:22] is active.	Rogue AP	Jun 13, 10:4...
20		//Locations/Unknown	[Rogue] Client [Cisco_B7:CD:21] runni...	Misbehav...	Jun 10, 9:14:...
21		//Locations/Unknown	Rogue AP [Cisco_B7:CD:22] is active.	Rogue AP	Jun 10, 9:14:...

Click to select or deselect all Events.

**Delete** **Acknowledge**

### AP Events Tab

The AP Events tab enables you to view the events where the AP is participating device.

**MAC/Protocol:** Select the MAC/Protocol from the drop-down list and the relevant events of the selected BSSID is displayed. **MAC/Protocol** field appears only for **merged APs**.

For the columns in the Events details screen, refer to the [Events Tab](#) chapter for more details.

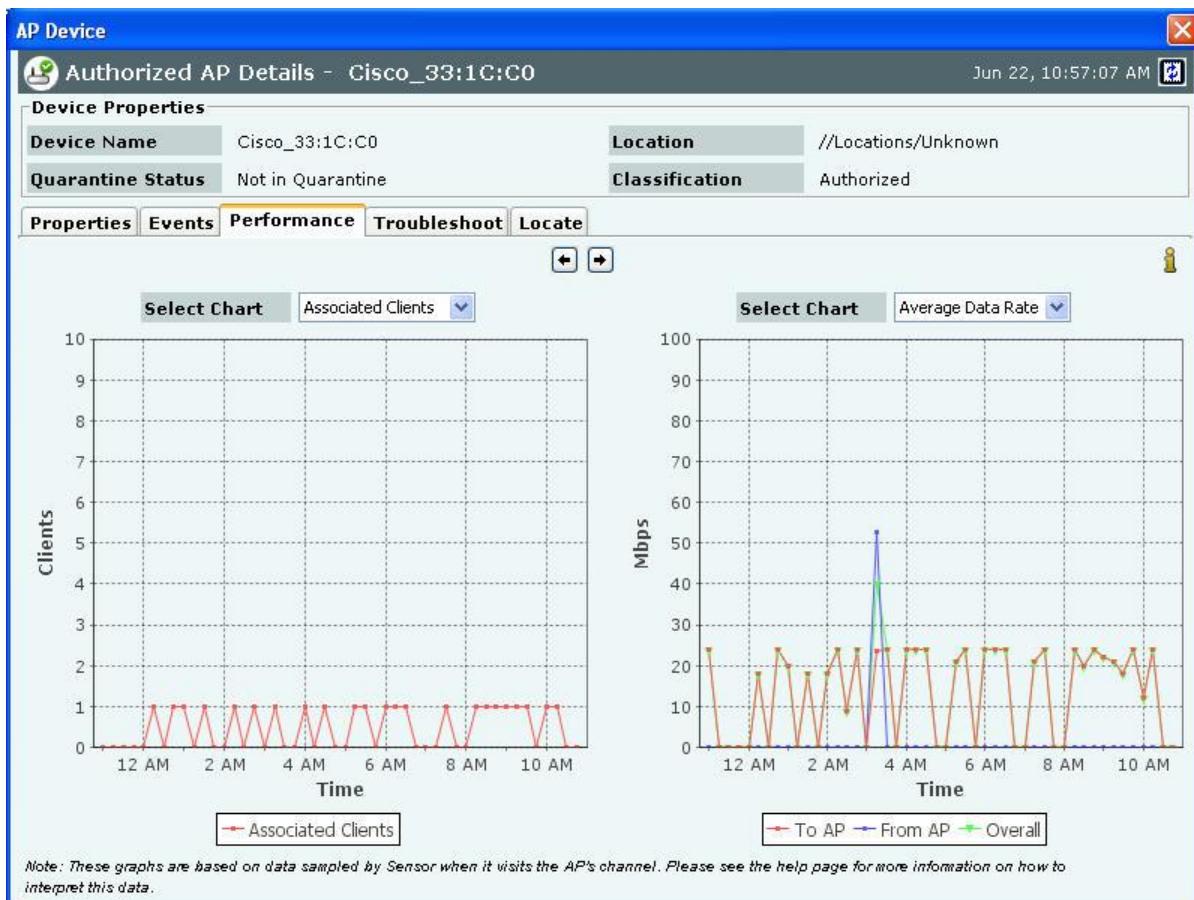
Check the **Click to select or deselect all Events** checkbox to select all the Events displayed on that page.

Click **Delete** to delete the selected events.

Click **Acknowledge** to add comments for the selected events.

### Fields in the AP Performance Tab

To open the AP Performance tab, on the **Devices** screen right-click an AP row and select the **Performance** menu item



### AP Performance Tab

**Note:** In the Performance tab, data is only available for Authorized devices.

The AP Performance tab enables you to view the data related to performance of an AP in chart form.

**MAC/Protocol:** Select the MAC/Protocol from the drop-down list and the relevant performance information of the selected BSSID is displayed. **MAC/Protocol** field appears only for **merged APs**.

Line Charts are shown on the Performance Tab. Choose one of the Chart types available from the **Select Chart** drop-down list:

- **Associated Clients:** Sensor samples the number of associations with the AP at the end of each time interval.
- **Average Data Rate:** Sensor keeps track of transmission rates of data frames in the AP's BSS and reports weighted average transmission rate over each time interval.
- **Traffic:** Sensor reports data traffic sent and received by the AP over each time interval. The channel-rotating Sensor spends only a fraction of total time on any given channel; therefore this parameter typically underestimates the actual traffic by a factor equal to the total number of channels scanned by the Sensor radio. For example, if b/g radio on the Sensor scans 11 channels in all, the measured traffic could be about 1/11th of the actual traffic if the traffic is continuous. Similarly, if a radio on the Sensor scans 30 channels in all, the measured traffic could be about 1/30th of the actual traffic. However, if the traffic comes in bursts, straightforward scaling as above cannot be applied.
- **Utilization:** Sensor keeps track of cumulative time occupancy of frames in the AP's BSS and reports the cumulative time occupancy as percentage of total scan time on the channel in each time interval.

Click to view enlarged Chart on the left hand side. Click to view enlarged Chart on the right hand side.

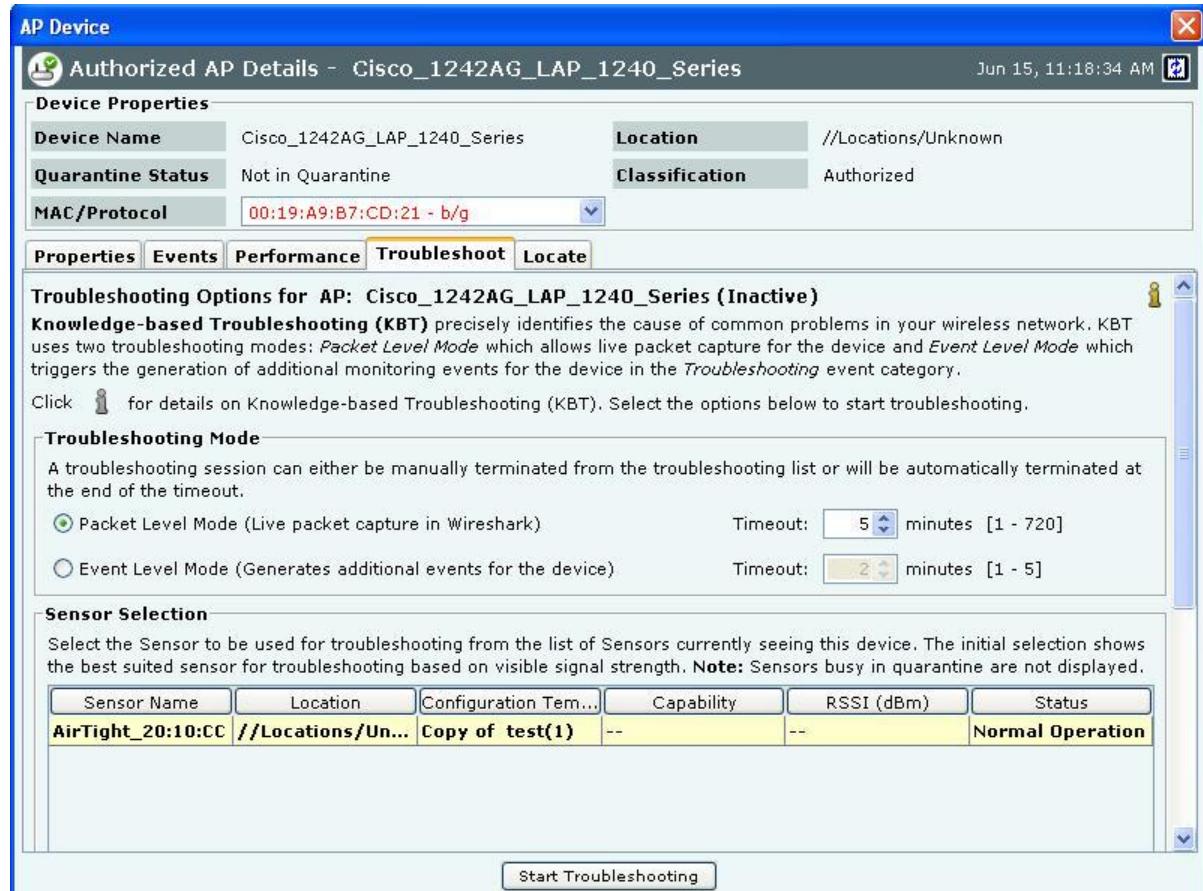
### Fields in the AP Troubleshoot Tab

The system provides Knowledge-based Troubleshooting (KBT) which enables you to precisely identify the cause of common problems in your wireless network. KBT uses a knowledge base of wireless problem symptoms and their root causes. The knowledge base is derived from extensive experimentation with WLANs.

You can initiate knowledge-based troubleshooting in one of the following modes:

- **Packet Level Mode:** Enables you to remotely capture all packets seen by a selected Sensor that is in the vicinity of a device. Selection of the Sensor can be manual or automatic.
- **Event Level Mode:** Triggers the generation of detailed monitoring events for a device in the Troubleshooting event sub-category.

To open the AP Troubleshoot tab, on the **Devices** screen right-click an AP row and select the **Start Troubleshooting** menu item.



#### Packet Level Troubleshooting for an AP

1. Select the **Troubleshooting Mode** and set the corresponding **Timeout** interval. If you select **Packet Level Troubleshooting**, ensure that the Sensor used for troubleshooting is reachable from the computer used to launch the Console.

**Note:** A troubleshooting session automatically times out or terminates after the **Timeout** irrespective of the activity. You can manually stop troubleshooting from the device context-sensitive menu by selecting **Stop Troubleshooting** or from the **Troubleshooting** tab by clicking <Stop Troubleshooting>.

2. Under **Sensor Selection**, select the Sensor to use for troubleshooting. Sensor Status appears as **Normal Operation**, **Busy in Quarantine**, or **Busy in Troubleshooting**. Within each category, Sensors are sorted based on availability and signal strength.

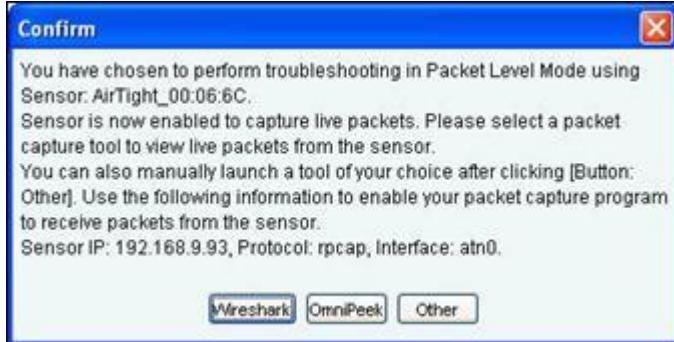
**Note:** Do not select a Sensor that is **Busy in Quarantine** or **Busy in Troubleshooting**. If you select a Sensor that is **Busy in Quarantine**, the troubleshooting operation fails.

3. Under **Protocol and Channel Selection:**

- The Protocol and Channel on which the AP is operating automatically selects by default.
- For **Merged APs** in the **MAC/Protocol** field, For all BSSIDs automatically selects by default. A message is displayed that “**Please select BSSID to troubleshoot**”. Select a BSSID from the **MAC/Protocol** field’s drop-down list to initiate troubleshooting.

**Note:** A Configuration template is assigned to each Sensor. The **Channels** list contains only those channels enabled for scanning in that Configuration template. If no channel in a **Protocol** is enabled, then the **Protocol** option is disabled. Thus, the **Channels** list and the status of the **Protocol** checkboxes change with the Sensor selected.

4. Under **Packet Selection**, choose to view all the packets visible to the selected Sensor or only the packets from the selected device visible to the Sensor.
5. Click **Start Troubleshooting** to begin the session. If the Sensor is assigned a Configuration template, where no channels are selected for scanning, an error message displays.

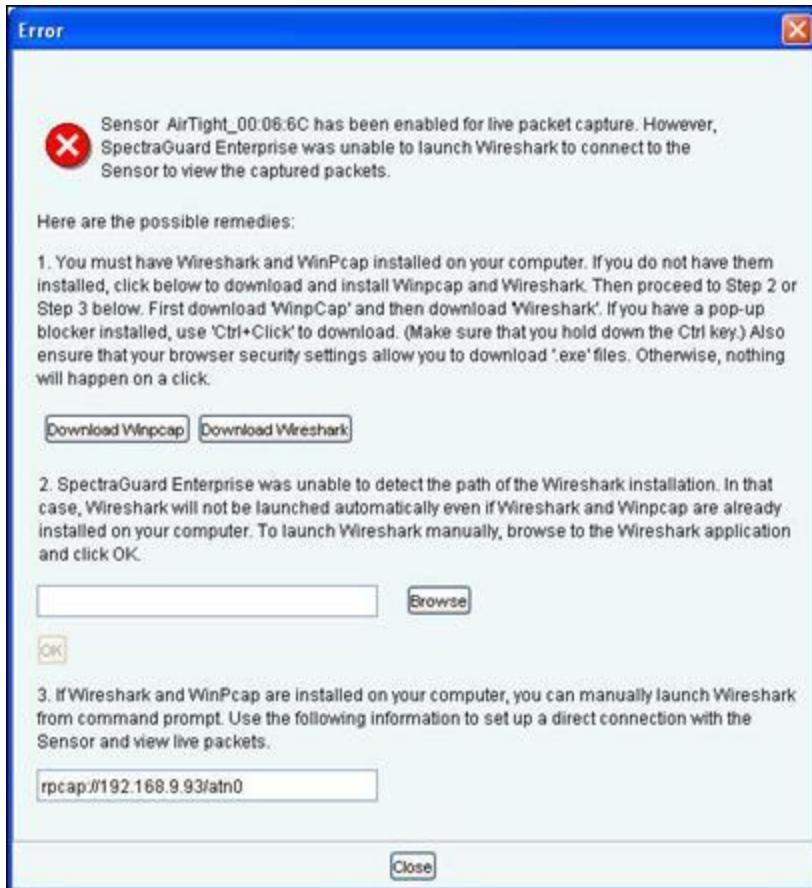


#### Packet Level Troubleshooting Confirm Dialog

6. On the **Confirm** dialog, you may have two or three packet capture tool options, depending on the licensing agreement with AirTight Inc. Select a packet capture tool.

If you have a product license that has OmniPeek support, you have three packet capture tool options – Wireshark, OmniPeek, and ‘Other’. If you have a product license that does not have OmniPeek support, you have two packet capture tool options – Wireshark and ‘Other’. Select the ‘Other’ option for other tools that you can use to capture packets. Typical packet capture tools are Tcpdump, Ethereal, Wireshark, OmniPeek, and others. You must use Tcpdump and Ethereal with Rpcap support. Tcpdump, Ethereal, and Wireshark are available freely on the Internet.

7. If you click **Wireshark**, and the application is installed correctly, the system launches the application and the packet capture session begins immediately. Alternatively, if you do not have Wireshark installed, an **Error** dialog appears.



### System unable to Launch Wireshark Dialog

8. On the **Error** dialog, there are three possibilities:
  - You can download and install Wireshark and optionally install WinPcap. Wireshark requires a compatible version of WinPcap. If the installed version and expected version mismatch, you need to install the suggested and expected version of WinPcap.
  - If the system does not find Wireshark installed at the default location, 'C:\Program Files\Wireshark', Wireshark will not launch automatically. To launch Wireshark manually, click **Browse** to specify the appropriate location and click **OK**.
  - To launch Wireshark manually from the command prompt, you need to copy and paste the link to set up a direct connection with the Sensor and view live packets.
9. If you click **OmniPeek**, ensure that the application and the OmniPeek Airtight Adapter are correctly installed. If you have these installed at some other location, click **Browse** to specify the appropriate location. The installation location for OmniPeek could be other than the default location, 'C:\Program Files\WildPackets\OmniPeek\'.
10. Click **OK**. The system launches the application and the packet capture session begins immediately. Alternatively, if you do not have the OmniPeek tool installed, you should install the same with appropriate purchase from WildPackets Inc. Airtight does not provide installation of OmniPeek.



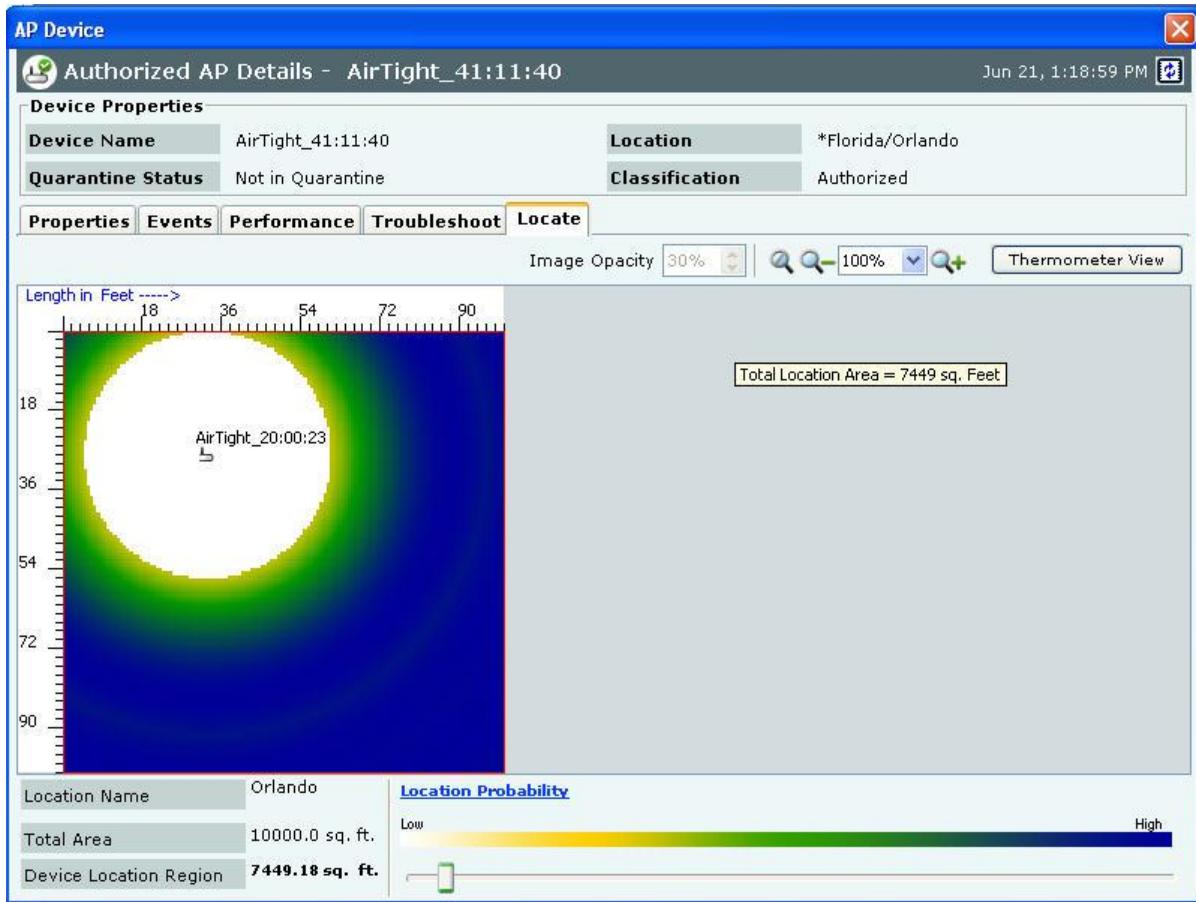
### Launching OmniPeek

#### *Points to note during Troubleshooting*

- When a troubleshooting session is in progress, a blinking  icon appears on the navigation bar.
- Once the packet capture based troubleshooting session begins from the Console and the packet capture tool is either interrupted or terminated (gracefully or abruptly), you have to first stop the ongoing troubleshooting session from the Console either manually (if it is still going on) or ensure that the session has indeed ended before you can start another packet capture session. You must then restart the fresh troubleshooting session from the Console.
- If a troubleshooting session is in progress with a chosen tool (Wireshark, OmniPeek, or user specified tool), another capture from the command prompt, using user specified capture parameters (viz. rpcap://sensor-ip/iface ) will not succeed from the same or another computer.

### Fields in the AP Locate Tab

To open the **AP Locate**, on the **Devices** screen, right-click an AP row and select the **Locate** menu item. The **Floor Map View** of an AP displays the location of the Locating Device, which is the Sensor or Controller monitoring the AP.



#### AP Locate Tab – Floor Map view

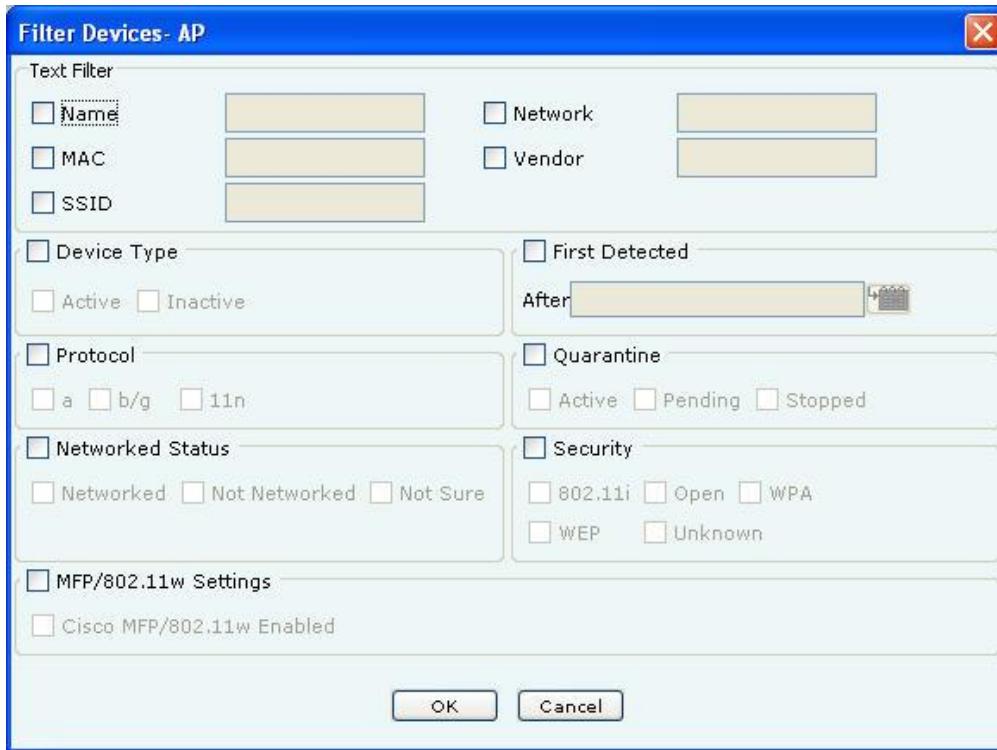
The AP Locate tab enables you to view the following details of an AP.

- **Monitoring Device Filter:** Click the Monitoring Device Filter icon and apply the appropriate filters.
- **Image Opacity:** Displays the percentage opacity of the image.
- **Location Name:** Displays the name of the selected location.
- **Total Area:** Displays the total area of the selected location.
- **Device Location Region:** Displays the total area (blue shaded region) shown for the estimated location and it decreases as the selected location probability criteria increases.
- **Location Probability:** Location Probability defines a lower bound on probability of finding the device in the blue shaded region.
- Click **Thermometer View** to view the distance from the Locating Device in feet/meter from the Sensor(s)/Controller to which the AP is visible. Refer to [Locating an AP/Client placed on the Floor Map](#) for details.

#### Filtering in APs

To focus your attention to a subset of APs based on a filtering criteria (such as device type, or of network status, and so on) system provides you with the capability to filter APs. Use the following steps to filter APs:

1. On the **Devices** screen, click the **APs** tab and click the **Filter** icon to open the **Filter Devices - AP** dialog.



### Filter Devices – AP

2. Under **Text Filter**, select one or more of the following check boxes and enter the appropriate values manually for searching data related to it:
  - Name
  - MAC
  - SSID
  - Network
  - Vendor
3. Select the **Device Type** check box, select one or more of the following check boxes:
  - Active
  - Inactive
4. Select **First Detected** check box, click the icon to specify the first detected date and time of the AP and then click <OK>. The search displays the APs, which were first detected by the system after the date as specified above.
5. Select the **Protocol** check box, select one or more of the following check boxes:
  - a
  - b/g
  - 11n
6. Select the **Quarantine** check box, select one or more of the following check boxes:
  - Active
  - Pending
  - Stopped
7. Select the **Networked Status** check box, select one or more of the following check boxes:
  - Networked
  - Not Networked
  - Not Sure
8. Select the **Security** checkbox, select one or more of the following checkboxes:
  - 802.11i

- WPA
  - Cisco MFP
  - WEP
  - Open
  - Unknown
9. To save and apply the AP filtering criteria, click **OK**. When the filter is applied it is denoted by **Filter On** on the Console, if no filter is applied it is denoted by **Filter Off** on the Console.

### ***Client Context-Sensitive Menu***

A Client is a laptop, a handheld device, or any other system that uses the 802.11 wireless medium for communication. The context-sensitive menu for Clients enables you to

- View client details
- Associated events
- Performance charts
- Edit a Client's details
- Locate a Client
- Quarantine a Client
- Enable/disable Auto-quarantine on a Client
- Troubleshoot a Client
- Delete a Client
- Change a Client's location, and category (Authorized, External, Guest, Rogue)
- Tag/untag a device as a smart device, and/or change smart device type of client device

### ***Method for Opening Client Context-Sensitive Menu***

To open a Client context-sensitive menu, click the **Devices** tab and then right-click a Client row to open the context-sensitive menu.

The screenshot shows the 'Devices' tab in the SpectraGuard Enterprise interface. At the top, there are tabs for Dashboard, Events, Devices, Locations, Reports, Forensics, and Administration. The 'Devices' tab is selected. A sub-menu for 'Selected Location: //Locations' is open, showing categories for APs, Clients, Sensors, and Networks. Under 'Clients', the 'Uncategorized' tab is selected, displaying a list of clients with columns for Name, MAC Address, Vendor, Location, Associate..., Protocol, SSID, Group, Up/Dow..., and Cell ID. Below the table is a 'Table Summary (Total: 34)' section containing three bar charts: 'Category' (Authorized: 28, Mis Behaving: 0, Rogue: 0, Guest: 0, External: 0), 'Active Status' (Active: 14, Inactive: 20), and 'SAFE Status' (Active: 34, Inactive: 0, Not Installed: 0).

### Client Context-Sensitive Menu on Devices Screen

#### Items in the Client Context-Sensitive Menu

The Client context-sensitive menus include the following items.

- **Details:** Opens the **Properties** tab of the **Client Device** dialog, which allows you to:
  - View/Edit the Client's name
  - View/Edit Client's classification
  - Assign a user-defined location tag so that you can easily locate the Client; the location of a manually tagged Client is shown with an asterisk (\*) under the **Location** column
  - Enables you to view Primary details of the Client, Devices seeing Clients, Recently Associated APs/Ad hoc Networks, Recently Probed SSIDs
- **Performance:** Opens the **Performance** tab of the **Client Device** dialog, which allows you to view performance graphs for the Client.
- **Events:** Opens the **Events** tab of the **Client Device** dialog, which allows you to view events associated with the Client, so that you can take the necessary actions.
- **Locate:** Opens the Locate tab of the Client Device dialog, which allows you to view the Client Location (see [Fields in the Client Locate Tab](#)).
- **Move to Quarantine:** Enables you to block any wireless communication to the Client, that is, quarantine the Client.
  - If a Sensor is available, the system automatically selects a defending Sensor for an Authorized Client. The Quarantine status of the Client is then **Quarantined**.
  - If a Sensor is not currently available, the Quarantine status of the Client is **Quarantine Pending**. As soon as a Sensor is available, it starts defending the Client. The Client may appear as **Quarantine Pending** if it is not currently an active threat (the Client is inactive). The system keeps quarantining the Client until you manually remove it from quarantine.

- **Remove from Quarantine:** Available only if the Client is **manually Quarantined** this option enables you to stop quarantine on the Client, thereby enabling wireless communication.
- **Enable Auto-quarantine:** Enabled by default, this option ensures that the system automatically quarantines a Client, thereby honoring the specified Intrusion Prevention policy.
- **Disable Auto-quarantine:** This option ensures that the system does not automatically quarantine a Client (regardless of the policies).
- **Reset RF Fingerprint:** Resets the data transmitted by the Client.
- **Add to Banned List:** Enables you to add the selected Client to the Banned List to prevent the Client from engaging in wireless communication.
- **Remove from Banned List:** Available only if the Client is already in the **Banned List**, this option enables you to remove the selected Client from the Banned List.
- **Start Troubleshooting:** Opens the **Troubleshoot** tab of the **Client Device** dialog, which allows you to start a troubleshooting session in either Packet Level Mode or Event Level Mode. Click <Start Troubleshooting> to start troubleshooting.
- **Stop Troubleshooting:** Available only if a troubleshooting session is in progress, this option enables you manually terminate the session.
- **Delete:** Enables you to delete a selected Client.
- **Change Location:** Opens the **Location Tag** dialog that enables you to view the complete list of locations, and change the location of the selected Client (see [Manual Location Tagging](#)).
- **Smart Device:** Allows you to change the device type or untag the smart device to a regular device.
- **Move to....** Enables you to categorize a Client in your network by moving it to the Authorized, External, Guest, or Rogue folder. If you move a Client manually, the system never re-classifies that Client automatically based on the Client classification policy. To enable automatic re-classification, you must delete that Client and let the system re-discover it.
- **Fetch SAFE Report:** Available only if a SAFE Client is **Active**, this option displays a progress bar and then fetches a fresh report from the SAFE Client.
- **Change SAFE Group:** Enables you to change the SAFE Client group for the selected SAFE Client.

---

*Note: The menu items **Fetch SAFE Report** and **Change SAFE Group** are visible only if a SAFE Client connects to the system at least once. However, if the SAFE Client goes down, **Fetch SAFE Report** is disabled and **Change SAFE Group** is enabled. The Client's group changes when it next connects to the system.*

---

### **Client Details Dialog**

You can open the **Client Details** dialog in the following manner:

On the **Devices** screen, right-click a Client row and select the **Details** menu item. The **Client Details** dialog has the following tabs: Properties, Events, Performance, Troubleshoot, and Locate. By default the **Properties** tab displays and is treated as the current tab.

The screenshot shows the 'Authorized Client Device Details - Intel\_1A:29:3E' window. It includes tabs for Properties, Events, Performance, Troubleshoot, and Locate. The Properties tab is selected, displaying detailed information about the client, such as Client Name (Intel\_1A:29:3E), User Name (WIBHU\bhavin), Classification (Authorized), MAC Address (00:16:6F:1A:29:3E), and various status flags. To the right, there are sections for 'Devices Seeing Client [Total: 0]' (No Device is currently seeing this Client) and 'Recently Associated APs/Ad hoc Networks' (No AP/Ad hoc Network(s) Present). Below these are sections for 'Recently Probed SSIDs' (listing rockon, Spectrum, Test-Me, and WXYZ).

### Client Properties Tab

#### Fields in the Client Properties Tab

The **Client Properties** tab enables you to view and edit the properties of a Client.

Under **Client Properties**, you can modify the following:

- Client Name:** Client name field displays the name of the client, derived from the MAC address, by default. Host name of the client is displayed, if it is available to the system. Click and specify the name used to identify the Client in the **Client Name** dialog. Click <Save>. The new Client name automatically displays in the Device Name field in the header of **Client Details** dialog.



### Client Name Dialog

*Note: While upgrading to SGE 6.6 or above, from an older version, the manually assigned client names, if any, are retained.*

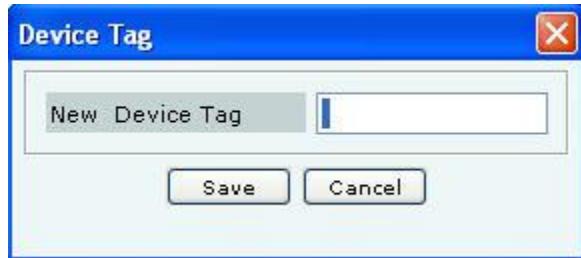
- User Name:** User name field displays the login name of the user who has logged in to the client machine. This is a non-editable field.
- Classification:** Specifies the classification of the Client – *Authorized, Rogue, Guest, or External*.

Click  to open the **Client Classification** dialog. Here, you can change the Client classification to Authorized, Rogue, Guest, or External. Click <OK> to move the Client to the selected folder. The changed Client classification automatically displays in the **Classification** field in the header of **Client Details** dialog.



**Client Classification Dialog**

- **Device Tag:** Click  to open the **Device Tag** dialog. Specify text that provides additional information about the Client.



**Client Device Tag Dialog**

- **MAC Address:** Specifies the unique 48-bit IEEE format address of the Client assigned to the network adapter by the manufacturer.
- **Banned Status:** Indicates if the Client is in the Banned Client List.
- **Location:** Enables you to view the name of the Client's usual location.

Click  to open the **Location Tag** dialog. Here, you can view the complete list of locations and choose a location for the Client. To view the list of locations, you must first set up your list of locations on the **Locations** screen as explained in the section, [Working with Location Folders and Location Nodes](#). The changed location automatically displays in the **Location** field in the header of **Client Details** dialog.



**Client Location Dialog**

- **Placed on Floormap?:** Indicates if the Client is placed on the floor map.
- **Currently Active?:** Indicates if the Client is currently active.
- **Up/Down Since:** Specifies the time since the Client is up/down.
- **Mode of Operation:** Specifies whether the Client is connected to an AP (**Infrastructure mode**) or to a peer-to-peer network (**Ad hoc mode**).
- **Ad hoc Cell ID:** Specifies the unique ID of the ad hoc network connection of which the selected Client is a member.
- **IP Address:** Specifies the IP address for an Authorized or Indeterminate Client.
- **Vendor:** Specifies the name of the Client manufacturer. The vendor name is inferred from the first three bytes of the MAC address.
- **Protocol:** 802.11 protocol in which the Client is operating currently.
- **Channel:** Specifies the channel number on which the Client operates.
- **Security:** Shows the security settings for the Client that is Open, WEP, WPA, and so on.
- **Quarantine Status:** Specifies whether the Client is quarantined. Click  to quarantine the selected Client if a Sensor is available. If a Sensor is not available, the Quarantine Status of the Client is **Quarantine Pending**. The changed quarantine status automatically displays in the **Quarantine Status** field in the header of **Client Details** dialog.

*Note: If the Client is quarantined a <Remove from Quarantine> button appears in the **Client Properties** tab. Click <Remove from Quarantine> to view an **Information** message and to enable wireless communication to the Client.*

- **Defending Sensor:** If a Client is quarantined, it specifies the name of the Sensor that is actively preventing the Client from engaging in wireless communication.
- **Network:** Shows additional information about the IP Address and subnet that identifies the network on which the Client is located.
- **Associated to AP:** Specifies the AP's BSSID to which the Client is associated to. This field appears only for the Merged APs.
- **Bridging/ICS mode:** Indicates if the Client is in Bridging/ICS mode.
- **First Detected At:** Specifies the date and time when the Client was first detected by the system.
- **SpectraGuard SAFE Properties:** Displays the properties for the selected SpectraGuard SAFE Client
  - First Name
  - Last Name
  - Hostname
  - Email
  - SAFE Version
  - SAFE Build
  - Activation Date
  - Wireless Risk Level
  - SpectraGuard SAFE status

*Note: SAFE Details are visible for only those Clients that have SAFE installed.*

To add the selected Client to the Banned List, click . This is available only for non-authorized Clients.

To delete data for the selected Client and re-initialize data gathering, click .

To refresh the **Client Details** screen, manually click . The system does not auto refresh **Client Details** dialog.

### Devices Seeing Client Section

Under **Device Seeing Client**, you can view a list of devices (which could be either Clients or Sensors) that can see the selected Client. The details of these devices such as Device Active/Inactive icon, Name and RSSI of the Client seen by

that device are displayed in the rows. To view details of a specific Device seeing the current Client, click **Name**, and a new **Client Details** or **Sensor Details** dialog appears.

---

*Note: Total gives the total number of devices seeing the Client.*

---

### Recently Associated APs/Ad hoc Networks Section

Under **Recently Associated APs/Ad hoc Networks**, you can view a list of APs/Ad hoc networks to which the Client was associated to. APs/Ad hoc Network details such as AP/Ad hoc Network Active/Inactive icon, AP Name/Ad hoc ID, SSID, Last Detected At (which shows the date and time or Present, Present when the association is currently active.) are displayed in the rows. The criteria for Recent Association is either 12 hours or 100 thousand APs/Ad hoc Networks (this is the total number of associations in the system and not per device). To view details of a specific AP/Ad hoc Network or the AP, click **AP Name/Ad hoc ID**, and the **AP Details** screen/**Ad hoc Networks** screen opens.

The following table lists the **Recently Associated APs/Ad hoc Networks** rows, their conditions, and color code.

#### Mode, Condition, and Color code of Recently Associated APs/Ad hoc Networks

Mode	Condition	Color
Infrastructure	AP is Authorized Non Guest and Client Authorized	GREEN
	AP is External and Client is Unauthorized	BLUE
	AP is Authorized Guest and Client is Non-authorized/Uncategorized	BLUE
	AP is Deleted or Client is Deleted	WHITE
	AP is Uncategorized and Client is Non-authorized/Uncategorized	WHITE
	AP is External and Client is Uncategorized	WHITE
	AP is Mis-configured	RED
	AP is Banned or Client is Banned	RED
	Client is Authorized and AP is Authorized	GREEN
	Client is Authorized and AP is Potentially Authorized	GREEN
	Client is Authorized and AP is Misconfigured Authorized	RED
	Client is Authorized and AP is Guest	RED
	Client is Authorized and AP is External	RED
	Client is Authorized and AP is Potentially External	RED
	Client is Authorized and AP is Rogue	RED
	Client is Authorized and AP is Potentially Rogue	RED
	Client is Authorized and AP is Indeterminate	RED
	Client is Guest and AP is Authorized	RED
	Client is Guest and AP is Potentially Authorized	RED
	Client is Guest and AP is Guest	GREEN
	Client is Guest and AP is External	WHITE
	Client is Guest and AP is Potentially External	WHITE
	Client is Guest and AP is Rogue	RED
	Client is Guest and AP is Potentially Rogue	RED
	Client is Guest and AP is Indeterminate	RED
	Client is Rogue and AP is Authorized	RED
	Client is Rogue and AP is Potentially Authorized	RED
	Client is Rogue and AP is Guest	RED
	Client is Rogue and AP is External	RED
	Client is Rogue and AP is Potentially External	RED
	Client is Rogue and AP is Rogue	RED
	Client is Rogue and AP is Potentially Rogue	RED
	Client is Rogue and AP is Indeterminate	RED

	Client is External and AP is Authorized	RED
	Client is External and AP is Potentially Authorized	RED
	Client is External and AP is Guest	RED
	Client is External and AP is External	WHITE
	Client is External and AP is Potentially External	WHITE
	Client is External and AP is Rogue	RED
	Client is External and AP is Potentially Rogue	RED
	Client is External and AP is Indeterminate	WHITE
	Client is Uncategorized and AP is Authorized	RED
	Client is Uncategorized and AP is Potentially Authorized	RED
	Client is Uncategorized and AP is Guest	WHITE
	Client is Uncategorized and AP is External	WHITE
	Client is Uncategorized and AP is Potentially External	WHITE
	Client is Uncategorized and AP is Rogue	RED
	Client is Uncategorized and AP is Potentially Rogue	RED
	Client is Uncategorized and AP is Indeterminate	WHITE
Ad hoc	Client is Non-authorized/Uncategorized	BLUE
	Client is Banned	RED

*Note:* Default row color is RED for both Infrastructure and Ad hoc mode.

### Recently Probed SSIDs

Under **Recently Probed SSIDs**, you can view list of SSIDs which the Client has probed. Probed SSID details are presented in rows containing the columns: SSID column which shows the SSID and Detail column which provides additional details about the SSID in terms of being in the Vulnerable/HotSpot SSID list or not.

If SSID is present in HOTSPOT or Vulnerable list of SSIDs then it is marked in Red, otherwise it is marked in white.

### Fields in the Client Events Tab

To open the **Client Events** tab on the **Devices** screen right-click a Client row and select the **Events** menu item

**Client Device**

Rogue Client Device Details - Proxim\_50:CC:89      Jun 15, 1:12:27 PM

Device Properties		Location	Classification							
Device Name	Proxim_50:CC:89	//Locations/Unknown	Rogue							
Quarantine Status	Not in Quarantine									
<a href="#">Properties</a> <a href="#">Events</a> <a href="#">Performance</a> <a href="#">Troubleshoot</a> <a href="#">Locate</a>										
Filter Off										
ID		Location	Event Details	Category	Event Start T...	Event S...				
243						//Locations/Unknown	Rogue Client [Proxim_50:CC:89] is active.	Misbehav...	Jun 14, 4:08:...	Jun 14, ...
246						//Locations/Unknown	Rogue AP [AirTight_41:00:33] is active.	Rogue AP	Jun 14, 5:16:...	Jun 14, ...
247						//Locations/Unknown	Rogue AP [AirTight_41:00:34] is active.	Rogue AP	Jun 14, 5:16:...	Jun 14, ...
157						//Locations/Unknown	Rogue AP [AirTight_41:00:34] is active.	Rogue AP	Jun 14, 11:0...	Jun 14, ...
156						//Locations/Unknown	Rogue AP [AirTight_41:00:33] is active.	Rogue AP	Jun 14, 11:0...	Jun 14, ...
119						//Locations/Unknown	Rogue AP [AirTight_41:00:33] is active.	Rogue AP	Jun 13, 2:16:...	Jun 13, ...
120						//Locations/Unknown	Rogue AP [AirTight_41:00:34] is active.	Rogue AP	Jun 13, 2:16:...	Jun 13, ...
64						//Locations/Unknown	Rogue Client [Proxim_50:CC:89] is active.	Misbehav...	Jun 13, 10:4...	Jun 13, ...
61						//Locations/Unknown	Rogue AP [AirTight_41:00:34] is active.	Rogue AP	Jun 13, 10:4...	Jun 13, ...
60						//Locations/Unknown	Rogue AP [AirTight_41:00:33] is active.	Rogue AP	Jun 13, 10:4...	Jun 13, ...
104						//Locations/Unknown	Offline:Unauthorized Client [Proxim_50:CC:89]	Misbehav...	Jun 12, 6:19:...	Jun 12, ...
13						//Locations/Unknown	Rogue Client [Proxim_50:CC:89] is active.	Misbehav...	Jun 10, 9:13:...	Jun 11, ...
10						//Locations/Unknown	Rogue AP [AirTight_41:00:34] is active.	Rogue AP	Jun 10, 9:13:...	Jun 11, ...

Click to select or deselect all Events.

[Delete](#) [Acknowledge](#)

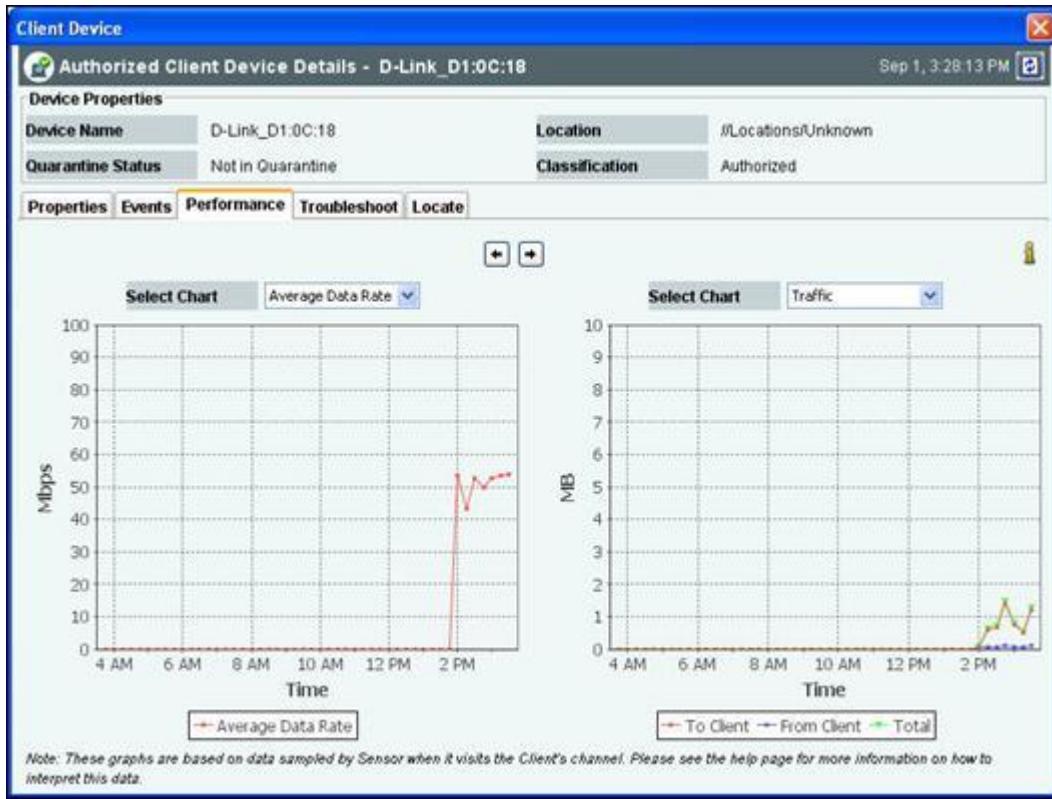
### Client Events Tab

The **Client Events** tab enables you to view the events details of a Client

- For the columns in the Events details screen, refer to the [Events Tab](#) chapter for more details.
- Check the **Click to select or deselect all Events** checkbox to select all the Events displayed on that page.
- Click **Delete** to delete the selected events.
- Click **Acknowledge** to add comments for the selected events.

### Fields in the Client Performance Tab

To open the **Client Performance** tab on the **Devices** screen right-click a Client row and select the **Performance** menu item



### Client Performance Tab

The **Client Performance** tab enables you to view the data related to Client performance in chart form.

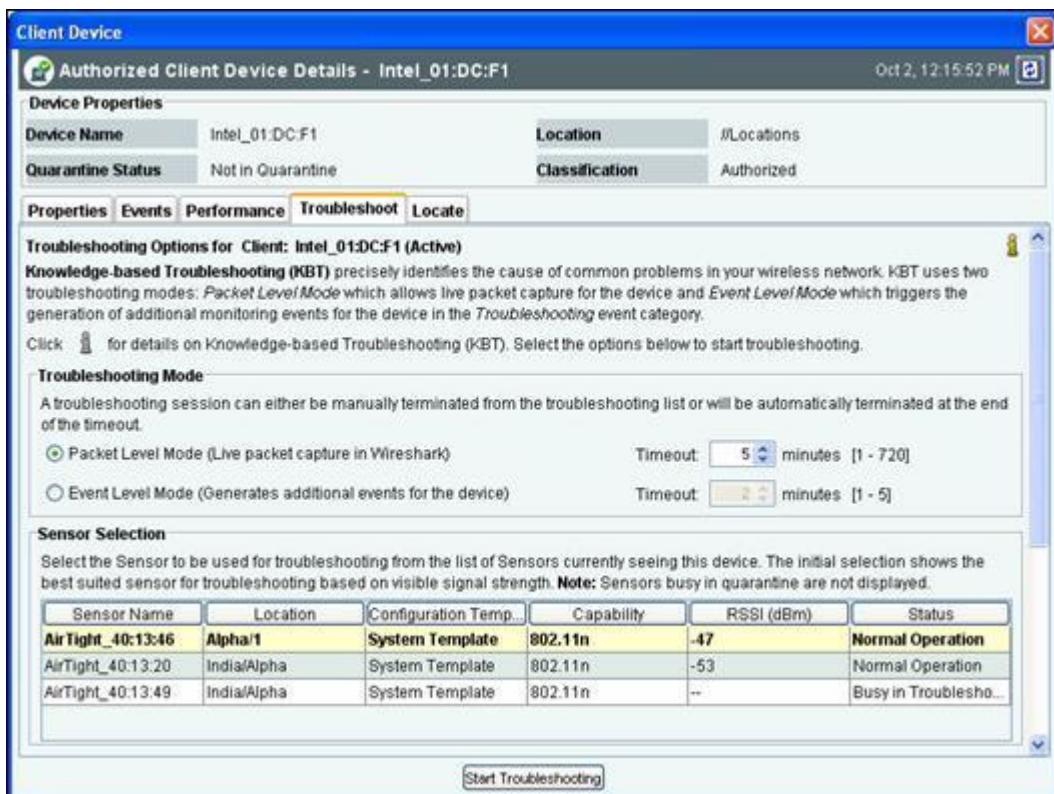
Line Charts are shown on the Performance Tab. Choose one of the Chart types available from the **Select Chart** drop-down list:

- **Average Data Rate:** Sensor keeps track of transmission rates of data frames in Client's associations (across multiple associations if that is the case) and reports weighted average transmission rate over each time interval.
- **Traffic:** Sensor reports data traffic sent and received by Client (across multiple associations if that is the case) over each time interval. The channel-rotating Sensor spends only a percentage of total time on any given channel; therefore this parameter typically underestimates the actual traffic by a factor equal to the total number of channels scanned by the Sensor radio. For example, if b/g radio on the Sensor scans 11 channels in all, the measured traffic will be about 1/11th of the actual traffic if the traffic is continuous. Similarly, if a radio on the Sensor scans 30 channels in all, the measured traffic will be about 1/30th of the actual traffic. However, if the traffic comes in bursts, straightforward scaling as above cannot be applied.

Click to view enlarged Chart on the left hand side. Click to view enlarged Chart on the right hand side.

### Fields in the Client Troubleshoot Tab

To open the **Client Troubleshoot** tab on the **Devices** screen right-click a Client row and select the **Start Troubleshooting** menu item.



### Packet Level Troubleshooting for an Client

1. Select the **Troubleshooting Mode** and set the corresponding **Timeout** interval. If you select **Packet Level Troubleshooting**, ensure that the Sensor used for troubleshooting is reachable from the computer used to launch the Console.

**Note:** A troubleshooting session automatically times out or terminates after the **Timeout** irrespective of the activity. You can manually stop troubleshooting from the device context-sensitive menu by selecting **Stop Troubleshooting** or from the **Troubleshooting** tab by clicking <Stop Troubleshooting>.

2. Under **Sensor Selection**, select the Sensor to use for troubleshooting. Sensor Status appears as **Normal Operation**, **Busy in Quarantine**, or **Busy in Troubleshooting**. Within each category, Sensors are sorted based on availability and signal strength.

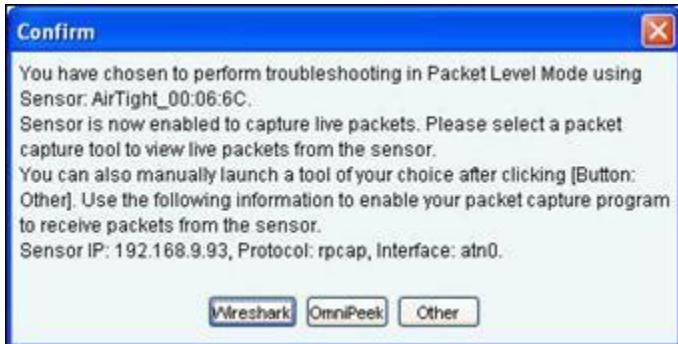
**Note:** Do not select a Sensor that is **Busy in Quarantine** or **Busy in Troubleshooting**. If you select a Sensor that is **Busy in Quarantine**, the troubleshooting operation fails.

3. Under **Protocol and Channel Selection**:
  - If the **Client is associated to an AP**, by default the Client troubleshoots on the Protocol (802.11an or 802.11b/gn) and Channel of the AP on which the Client is associated.
  - If the **Client is not associated to any AP**, then by default both the protocols **802.11an** and **802.11b/gn** are selected and **Rotate on all channels** is selected. The user can also select the 802.11n protocol, the corresponding channel(s) and width on which the chosen Sensor should initiate troubleshooting.

**Note:** A Configuration template is assigned to each Sensor. The **Channels** list contains only those channels enabled for scanning in that Configuration template. If no channel in a **Protocol** is enabled, then the **Protocol** option is disabled. Thus, the **Channels** list and the status of the **Protocol** checkboxes change with the Sensor selected.

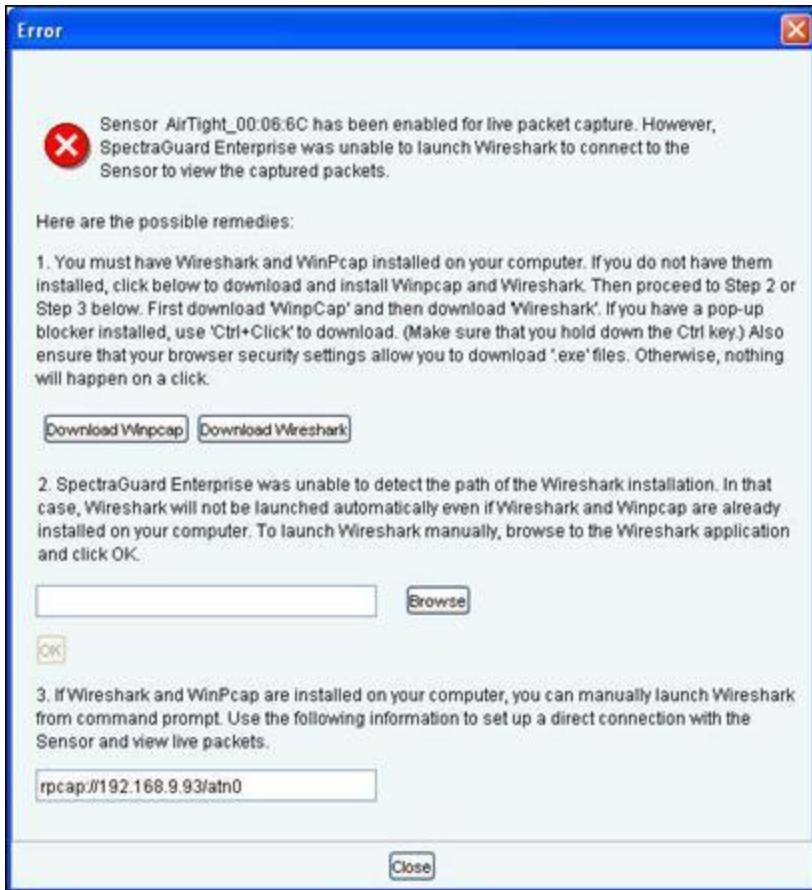
4. Under **Packet Selection**, choose to view all the packets visible to the selected Sensor or only the packets from the selected device visible to the Sensor.

5. Click <**Start Troubleshooting**> to begin the session. If the Sensor is assigned a Configuration template, where no channels are selected for scanning, an error message displays.



#### **Packet Level Troubleshooting Confirm Dialog**

6. On the **Confirm** dialog, you may have two or three packet capture tool options, depending on the licensing agreement with AirTight Inc. Select a packet capture tool. If you have a product license that has OmniPeek support, you have three packet capture tool options – Wireshark, OmniPeek, and 'Other'. If you have a product license that does not have OmniPeek support, you have two packet capture tool options – Wireshark and 'Other'. Select the 'Other' option for other tools that you can use to capture packets. Typical packet capture tools are Tcpdump, Ethereal, Wireshark, OmniPeek, and others. You must use Tcpdump and Ethereal with Rpcap support. Tcpdump, Ethereal, and Wireshark are available freely on the Internet.
7. If you click <**Wireshark**>, and the application is installed correctly, the system launches the application and the packet capture session begins immediately. Alternatively, if you do not have Wireshark installed, an **Error** dialog appears.



### System unable to Launch Wireshark Dialog

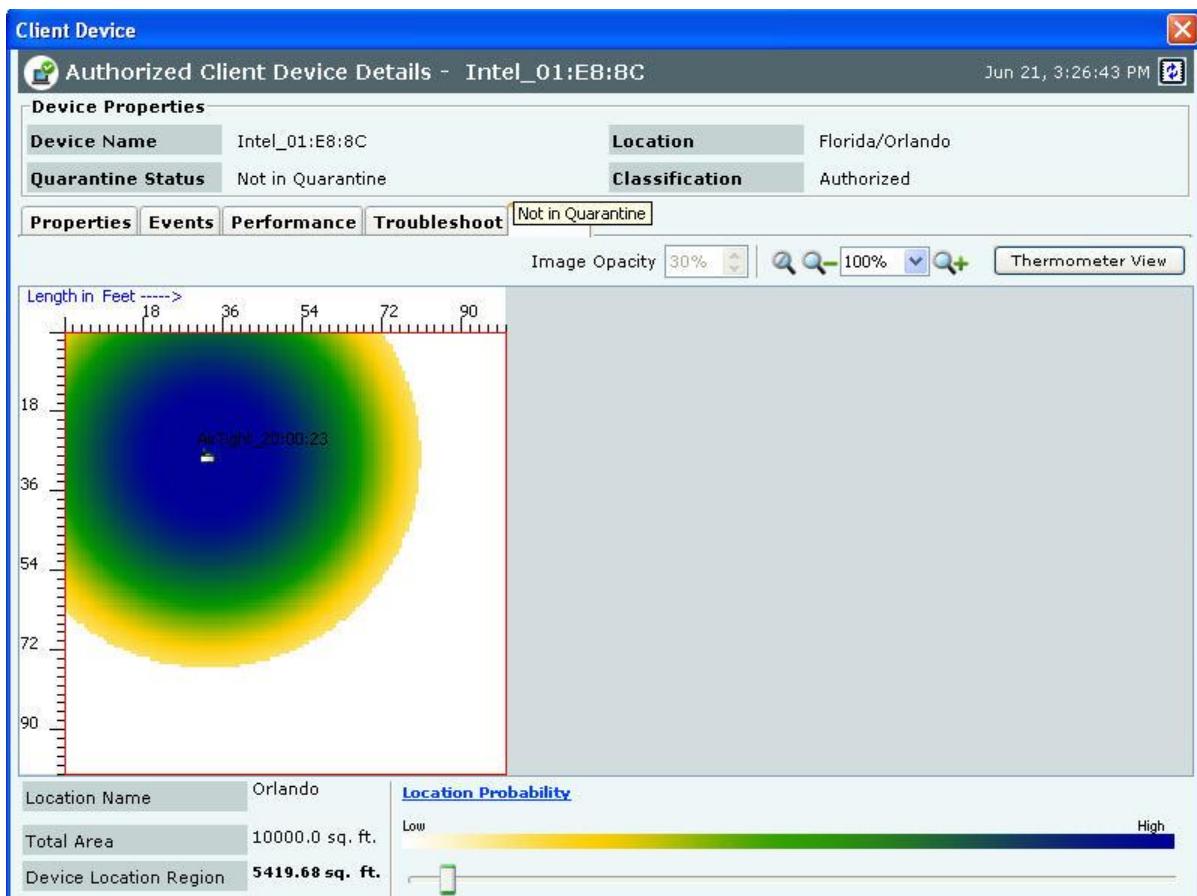
8. On the **Error** dialog, there are three possibilities:
  - You can download and install Wireshark and optionally install WinPcap. Wireshark requires a compatible version of WinPcap. If the installed version and expected version mismatch, you need to install the suggested and expected version of WinPcap.
  - If the system does not find Wireshark installed at the default location, 'C:\Program Files\Wireshark', Wireshark is not launched automatically. To launch Wireshark manually, click **Browse** to specify the appropriate location and click **OK**.
  - To launch Wireshark manually from the command prompt, you need to copy and paste the link to set up a direct connection with the Sensor and view live packets.
9. If you click **OmniPeek**, ensure that the application and the OmniPeek Airtight Adapter are correctly installed. If you have these installed at some other location, click **Browse** to specify the appropriate location. The installation location for OmniPeek could be other than the default location, 'C:\Program Files\WildPackets\OmniPeek\'.
10. Click **OK**. The system launches the application and the packet capture session begins immediately. Alternatively, if you do not have the OmniPeek tool installed, you should install the same with appropriate purchase from WildPackets Inc. Airtight does not provide installation of OmniPeek.



### Launching OmniPeek

#### Fields in the Client Locate Tab

To open the **Client Locate** tab, on the **Devices** screen, right-click a Client row and select the **Locate** menu item. The **Floor Map View** of a Client displays the location of the Locating Device which shows the probable location of the Client on the floor map, if the Sensor monitoring the Client is on the floor map.



#### Client Locate Tab – Floor Map View

The **Client Locate** tab enables you to view the following details of a Client.

- Monitoring Device Filter
- Image Opacity
- Location Name
- Total Area

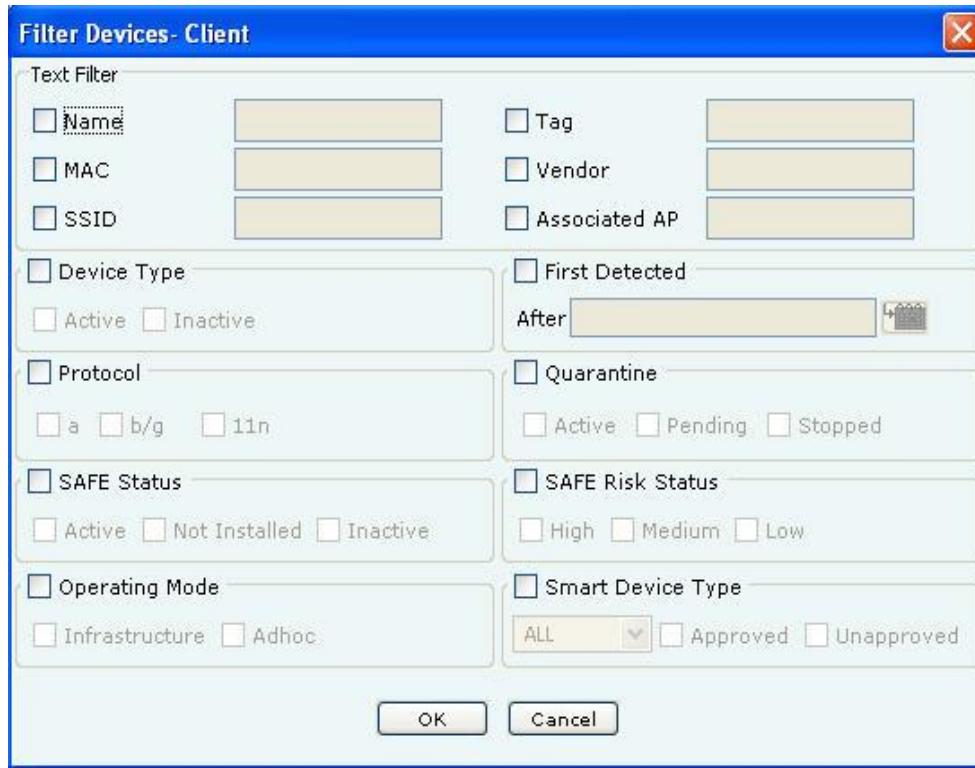
- Device Location Region
- Location Probability

Click **Thermometer View** to view the distance from Locating Device in feet/meter from the Sensor(s) to which the Client is visible. Refer to [Locating an AP/Client placed on the Floor Map](#) for details.

### Filtering in Clients

To focus your attention to a subset of Clients based on a filtering criteria (such as device type, or protocol, and so on) system provides you with the capability to filter Clients. Use the following steps to filter Clients:

1. On the **Devices** screen, click the **Clients** tab and click the **Filter** icon to open the **Filter Devices - Client** dialog.



### Filter Devices - Client

2. Under **Text Filter**, select one or more of the following checkboxes and enter the appropriate values manually for searching data related to it:
  - Name
  - MAC
  - SSID
  - Tag
  - Vendor
  - Associated AP
3. Select the **Device Type** check box, select one or more of the following check boxes:
  - Active
  - Inactive
4. Select **First Detected** check box, click the icon to specify the first detected date and time of the Client and then click <OK>. The search displays the Clients, which were first detected by the system after the date as specified above.
5. Select the **Protocol** check box, select one or more of the following check boxes:

- a
  - b/g
  - 11n
6. Select the **Quarantine** check box, select one or more of the following check boxes:
    - Active
    - Pending
    - Stopped
  7. Select the **SAFE Status** check box, select one or more of the following check boxes:
    - Active
    - Not Installed
    - Inactive
  8. Select the **SAFE Risk Status** check box, select one or more of the following check boxes:
    - High
    - Medium
    - Low
  9. Select the **Operating Mode** check box, select one or more of the following check boxes:
    - Infrastructure
    - Ad hoc
  10. Select the **Smart Device Type** check box, select the smart device type from the list, and select one of Approved, Unapproved or both Approved as well as Unapproved.
  11. To save and apply the Client filtering criteria, click **OK**. When the filter is applied it is denoted by **Filter On** on the Console, if no filter is applied it is denoted by **Filter Off** on the Console.

### **Smart Device Detection**

A smart device is a wi-fi and internet enabled, high-end, handheld digital device. Some smart devices can be used in place of a laptop or a personal computer. The system can detect smart devices automatically. The smart device detection feature is useful when it comes to defining the intrusion prevention policy. It also helps to know how many smart devices are in the network.

The system automatically detects iPhone, i PodTouch, iPad, Blackberry, Android, Nokia, Motorola, Samsung, and HTC smart devices. The system detects smart devices that are authorized or guest clients only. You can also manually tag an authorized client or a guest client as a smart device. Authorized clients can be further classified as approved or unapproved smart devices. There is no such distinction in case of guest clients.

When an authorized smart device is detected automatically for the first time, it is shown on the UI as an unapproved smart device, by default. You can manually tag an authorized smart device as an approved smart device. When a guest smart device is detected automatically for the first time, it is shown on the UI as a smart device.

The smart device for some of the device types can also get detected based on the Organizational Unique Identifier (OUI) of the MAC address of the individual devices. You can set, modify, or delete the OUIs through the server command line interface, using the **set smart device oui** command. For details on the command, refer to the 'Server Config Shell Commands' section in the 'Config Shell Commands' chapter in the Installation Guide.

The following sections describe how to manually tag/untag smart devices.

#### **Manually tagging authorized clients as smart devices**

You can manually tag one or more authorized clients as smart devices, if they have not already been detected as smart devices automatically.

#### **Tagging an authorized client as an approved smart device**

Under Devices->Clients->Categorized->Authorized tab, click to select the client row to be tagged as an approved smart device. Right-click this row to view the menu. Click **Smart Device->Approved** option to tag the client as an approved smart device. Follow the same procedure to tag an unapproved smart device as an approved smart device. The following figure shows the right-click menu options.

The screenshot shows the SpectraGuard Enterprise software interface under the 'Devices' tab. The left sidebar shows locations: Locations (Unknown, California, Minnesota). The main area displays a list of devices categorized as Uncategorized, Authorized, Rogue, Guest, or External. An iPhone device is selected, and a context menu is open, showing options like Details, Performance, Events, Locate, Move to Quarantine, Disable Auto-quarantine, Reset RF Fingerprint, Add to Banned List, Start Troubleshooting, Delete, Change Location, Smart Device (selected), Not a Smart Device, Approved Smart Device, and Change Device Type. Below the list is a 'Table Summary (Total: 17)' section with three bar charts: Category (13 Authorized, 4 Mis Behaving, 0 Rogue, 0 Guest, 0 External), Active Status (7 Active, 10 Inactive), and SAFE Status (0 Active, 17 Inactive, 0 Not Installed).

### Tagging an Authorized Client as a Smart Device

The following figure shows the approved smart device. An approved smart device is indicated by the icon.

The screenshot shows the 'Devices' tab in the SpectraGuard Enterprise User Guide. The top navigation bar includes tabs for Dashboard, Events, Devices, Locations, Reports, Forensics, and Administration. The 'Devices' tab is selected. The left sidebar shows a tree view of locations: Locations (Unknown, California, Minnesota). The main content area has a title 'Selected Location: //Locations'. Below this are tabs for APs, Clients, Sensors, and Networks. The 'Clients' tab is selected. Under 'Clients', there are two sub-tabs: 'Uncategorized' (selected) and 'Categorized'. The 'Categorized' tab has sub-tabs: All, Authorized, Rogue, Guest, and External. The main table lists clients categorized by type (e.g., Blackberry, iPhone, FLASH, Intel, Cisco-Linksys, Belkin, RLDP, Hon-Hai, Murata-Manu, Intel, A0:88:B4:03:B8, A0:88:B4:1D:F0, PV-iPhone) and location (e.g., //Locations/Unknown, a, b, b/g). The table includes columns for Smart Device Type, Name, MAC Address, User Name, Location, Associated AP, and Priority. Below the table is a 'Table Summary (Total: 17)' section with three charts: 'Category', 'Active Status', and 'SAFE Status'. The 'Category' chart shows 12 Authorized, 5 Mis Behaving, 0 Rogue, 0 Guest, and 0 External. The 'Active Status' chart shows 8 Active and 9 Inactive. The 'SAFE Status' chart shows 0 Active, 0 Inactive, and 17 Not Installed.

### Approved smart device

#### Tagging an authorized client as an unapproved smart device

Under Devices->Clients-> Categorized->Authorized tab, click the client row to be tagged as an unapproved smart device. Right-click this row and click the Smart Device->Unapproved option to tag the client as an unapproved smart device. To tag multiple clients at the same time, hold down the <Ctrl> key and click the desired rows one by one. Follow the same procedure to tag an approved smart device as an unapproved smart device. The following figure shows the menu option for unapproved smart device.

The screenshot shows the 'Devices' tab in the SpectraGuard Enterprise interface. The top navigation bar includes tabs for Dashboard, Events, Devices (selected), Locations, Reports, Forensics, and Administration. The date and time are displayed as Sep 6 2011, 03:13:35 PM (GMT -0400). A sidebar on the left shows locations: Locations (Unknown, California, Minnesota). The main area displays a table of clients under the 'Categorized' tab, with columns for Smart Device Type, Name, MAC Address, User Name, Location, Associated AP, and Pr... (partial). A context menu is open over a row for a device named 'tel\_22:33:44'. The menu options include Details, Performance, Events, Locate, Move to Quarantine, Disable Auto-quarantine, Reset RF Fingerprint, Add to Banned List, Start Troubleshooting, Delete, and Change Location. Below the table is a 'Table Summary (Total: 17)' section containing three bar charts:

- Category:** Shows counts for Authorized (12), Mis Behaving (5), Rogue (0), Guest (0), and External (0).
- Active Status:** Shows counts for Active (8) and Inactive (9).
- SAFE Status:** Shows counts for Active (0), Inactive (0), and Not Installed (17).

### Tagging a Client as Unapproved Smart Device

The following figure shows the unapproved smart device.

**Table Summary (Total: 17)**

Category	Active Status	SAFE Status
(11) Authorized (6) Mis Behaving (0) Guest (0) External	(10) Active (7) Inactive	(17) Active (0) Inactive (0) Not Installed

### Unapproved smart device

An unapproved smart device is indicated by the icon.

### Removing the smart device tag for authorized clients

Under Devices->Clients-> Categorized->Authorized tab, click the smart device (client) row to be untagged. Right-click this row and click the **Smart Device->Not a Smart Device** option to remove the smart device tag from the client device. To tag multiple clients at the same time, hold down the <Ctrl> key and click the desired rows one by one. The following figure shows the menu option to be selected to remove the smart device tag for authorized clients.

The screenshot shows the 'Devices' tab in the SpectraGuard Enterprise User Guide. The top navigation bar includes tabs for Dashboard, Events, Devices, Locations, Reports, Forensics, and Administration. The 'Devices' tab is selected. The main area shows a table of categorized devices:

Smart Device Type	Name	MAC Address	User Name	Associated AP	Protocol
Smart Device	Intel_84:F7:1E	00:26:C7:84:F7...	...	AirTight_41:17:F0	b/g [802.11n]
Smart Device	A0:88:B4:03:B8...	A0:88:B4:03:B8...	...	...	b/g [802.11n]
Smart Device	Intel_92:0B:A6	00:19:D2:92:0B...	...	...	b/g
Smart Device	Hon-Hai_1D:DC...	00:16:CF:1D:D...	WIBHU\gopi	...	b/g
Smart Device	FLASH	00:0E:35:BF:D5...	...	...	b/g
Smart Device	RLDP	00:24:97:88:72...	...	Cisco-Linksys_99:ED:68	b/g
Smart Device	Belkin_55:4D:FC	00:11:50:55:4D...	...	AirTight_41:60:B0	b/g
Smart Device	PRABHASH-TEST	00:12:17:78:DA...	...	AirTight_41:52:90	b/g
iPhone	PV-iPhone	D8:9E:3F:B5:6...	...	AirTight_41:20:F1	b/g [802.1...
iPhone	Intel_22:33:44	00:1C:BF:22:33...	...	...	--
iPhone	Senaq_21:E3:3B	00:02:6F:21:E3...	...	...	b/g
iPhone	Murata-Manu_B...	44:A7:CF:BC:1...	...	...	b/g [802.11n]
iPhone	name	12:EF:33:44:55...	user1	...	b
iPhone	MyName	12:EF:33:44:55...	MyUserName	...	a
iPhone	14:74:11:EE:0B...	14:74:11:EE:0B...	...	...	b/g
iPhone	A0:88:B4:1D:F...	A0:88:B4:1D:F...	...	...	b/g [802.11n]
iPhone	Test	00:1C:11:AA:B...	...	...	--

Below the table is a context menu for a selected device (PV-iPhone):

- Smart Device
  - Not a Smart Device
  - Approved Smart Device
  - Change Device Type
- Move to...

At the bottom, there are three bar charts:

- Category:** Shows counts for Authorized (12), Mis Behaving (5), Rogue (0), Guest (0), and External (0).
- Active Status:** Shows counts for Active (10) and Inactive (2).
- SAFE Status:** Shows counts for Active (0), Inactive (0), and Not Installed (17).

**Table Summary (Total: 17)**

### Remove the smart device tag

#### Manually Tagging Guest clients as Smart Devices

You can manually tag one or more guest clients as smart devices, if they have not already been detected as smart devices automatically. Under **Devices ->Clients-> Categorized->Guest** tab, click the client row to be selected. Right-click this row and click the **Is a Smart Device** option to tag the client as a smart device.

The screenshot shows the 'Devices' tab in the SpectraGuard Enterprise interface. The left sidebar shows locations: Unknown, California, and Minnesota. The main area displays a table of clients categorized as 'Guest'. A context menu is open over a specific client row, with the 'Smart Device' option highlighted.

Smart Device Type	Name	MAC Address	User Name	Associated AP	Protocol
Intel_66:80:F0	00:1B:77:66:A...	--	--	--	b/g
	04	00:16:6F:0D:FB...	--	--	b/g
	F0	00:16:6F:17:1A...	--	--	b/g
	44	00:1C:B3:B6:1...	vinayj	/...	b/g [802.11n]
	43	00:16:6F:6D:4F...	--	/...	b/g
	00:11:67:13:F2...	--	--	/...	b/g

**Table Summary (Total: 6)**

- Category:** Shows counts for Authorized (0), Mis Behaving (0), Rogue (0), Guest (6), and External (0).
- Active Status:** Shows counts for Active (0) and Inactive (6).
- SAFE Status:** Shows counts for Active (0), Inactive (0), and Not Installed (6).

### Tagging a Guest Client as a smart device

#### Removing the smart device tag from guest clients

You can manually remove the smart device tag from a guest client. Follow the steps given below.

- Under **Devices->Clients->Categorized->Guest**, click to select the client row.
- Right-click this row and select **Smart Device->Not a Smart Device** to remove the smart device tag.

The screenshot shows the 'Devices' tab in the SpectraGuard Enterprise interface. The left sidebar shows locations: Unknown, California, and Minnesota. The main area displays a table of smart devices with columns for Name, MAC Address, User Name, Associated AP, and Protocol. A context menu is open over a specific device row, with 'Change Device Type' selected. Below the table, there are three bar charts: Category, Active Status, and SAFE Status.

Smart Device Type	Name	MAC Address	User Name	Associated AP	Protocol
Authorized	00:1B:77:66:A...	--	...	AirTight_41:17:F0	b/g
Authorized	00:1C:B3:B6:1...	vinayj	...	AirTight_41:17:F0	b/g [802.11n]
Mis Behaving	00:16:6F:0D:FB...	--	...	--	b/g
Mis Behaving	00:16:6F:1A...	--	...	--	b/g
Mis Behaving	00:16:6F:6D:4F...	--	/...	--	b/g
Mis Behaving	00:11:67:13:F2...	--	/...	--	b/g

### Untagging a smart device

#### Changing the smart device type

You can change the smart device type of authorized and guest clients. To change the smart device type, select the authorized client or the guest client row, right-click and select **Smart Device->Change Device Type**. Here, you can select from the list of available smart devices or directly type in a new smart device type as shown in the figures below, and click **OK**.



**Change smart device type - Select from the existing list**



#### Change smart device type - Add a new device type

*Note: To delete a smart device type added from Select Type of Smart Device dialog, go to Administration->Global-Device Settings->Smart Device Type.*

#### Sensor Context-Sensitive Menu

Sensors proactively scan the network and generate events. Sensors communicate event information to the system. Sensors monitor various channels in which the 802.11 devices operate. The context-sensitive menu for Sensors enables you to:

- View a Sensor's details
- Events associated with the Sensor
- Performance Charts of the Sensor
- Edit a Sensor's properties
- Troubleshoot a Sensor
- Reboot a Sensor
- Delete a Sensor
- Change device template
- Change sensor location
- Upgrade/Repair a Sensor

#### Method for Opening Sensor Menu

To open a Sensor context-sensitive menu, click the **Devices** tab and then right-click a Sensor row to open the context-sensitive menu.

### Sensor Context-Sensitive Menu

#### Items in the Sensor Context-Sensitive Menu

The Sensor context-sensitive menu includes the following items.

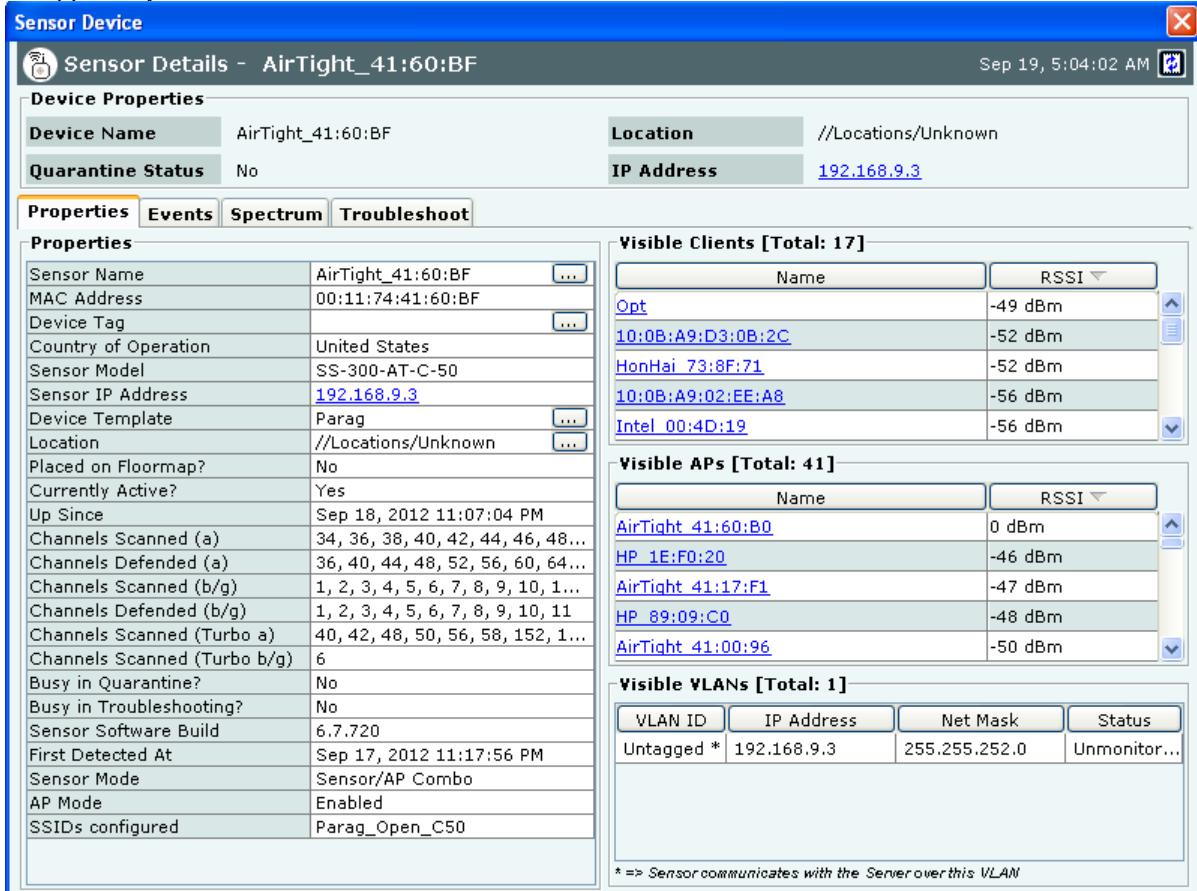
- **Details:** Opens the **Properties** tab of the **Sensor Device** dialog, which allows you to:
  - View/Edit the Sensor's name
  - Change the Configuration Template assigned to the Sensor
  - Assign a user-defined location tag so that you can easily locate the Sensor; the location of a manually tagged Sensor is shown with an asterisk (\*) under the **Location** column
  - Enables you to view Primary details of the Sensor
  - Visible Clients
  - Visible APs
  - Visible VLANs
- **Performance:** Opens the **Performance** tab of the **Sensor Device** dialog, which allows you to view performance graphs for the Sensor.
- **Events:** Opens the **Events** tab of the **Sensor Device** dialog, which allows you to view events associated with the Sensor, so that you can take whatever actions are necessary.
- **Reboot:** Enables you to restart the Sensor.
- **Delete:** Enables you to delete a selected Sensor; you are prompted to confirm this action.
- **Start Troubleshooting:** Opens the **Troubleshoot** tab of the **Sensor Device** dialog, which allows you to start a troubleshooting session in Packet Level Mode. This option is not available in case of Sensor/AP Combo.
- **Stop Troubleshooting:** Available only if a troubleshooting session is in progress, this option enables you to manually terminate the session. This option is not available in case of Sensor/AP Combo.
- **Change Device Template:** Opens the **Select Sensor Template** dialog. Refer to the section [Device Template](#) for more details. The **Select Sensor Template** dialog enables you to:
  - View the list of configured Sensor templates
  - Change the Sensor template of the selected Sensor(s)
- **Change Location:** Opens the **Location Tag** dialog that enables you to:

- View a complete list of locations
- Change the location of the selected Sensor (see [Manual Location Tagging](#))
- **Upgrade/Repair:** Opens the **Confirm Upgrade/Repair of Sensor(s) to Build X** dialog that enables you to upgrade the Sensor version or repair a Sensor.
- **Cancel Upgrade/Repair:** Enables you to cancel the repair/upgrade process for a Sensor in *Upgrade/Repair Pending* state.

## Sensor Details Dialog

You can open the **Sensor Details** dialog in the following manner:

- On the **Devices** screen, right-click a Sensor row and then select the **Details** menu item. The **Sensor Details** dialog has the following tabs: **Properties**, **Events**, **Performance**, **Spectrum** and **Troubleshoot**. The **Properties** tab appears by default and is treated as the current tab.



### Sensor Properties Tab

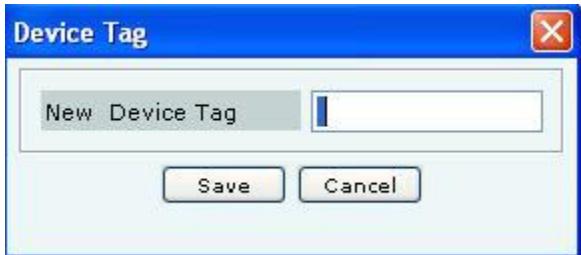
#### Fields in the Sensor Properties Tab

The **Sensor Properties** tab enables you to view/edit the properties of a Sensor and consists of the following.

- **Sensor Name:** Click  and specify the name used to identify the Sensor in the **Sensor Name** dialog. Click **Save**. The new Sensor name automatically displays in the **Device Name** field in the header of the **Sensor Details** dialog.

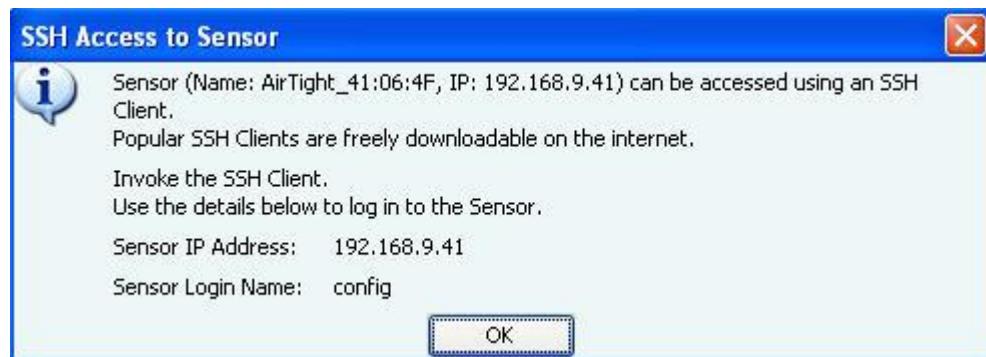
**Sensor Name Dialog**

- MAC Address:** Specifies the unique 48-bit IEEE format address of the Sensor assigned to the network adapter by the manufacturer.
- Device Tag:** Click  to specify text that provides additional information about the Sensor in the **Device Tag** dialog. Click **Save** to save the device tag.

**Sensor Device Tag Dialog**

- Country of Operation:** Specifies the country in which the Sensor operates.
- Sensor Model:** Specifies the model number of the Sensor.
- Sensor IP Address:** Specifies the Sensor's IP address, that is, the IP Layer or Layer 3 address. Click the hyperlink to open the **SSH Access to Sensor** dialog. This dialog displays the IP Address and Login Name of the Sensor you can log in to. You can access the Sensor using an SSH Client, which you can freely download from the Internet. The Sensor IP address also displays in the **IP Address** field in the header of the **Sensor Details** dialog on all tabs.

*Note: Multiple Sensor IP Addresses are displayed if IPv6 is enabled on the server CLI.*

**SSH Access to Sensor Dialog**

On connecting to the Sensor using the IP Address and Login Name, the **SSH Secure Shell** window appears. This is the Sensor Config shell.

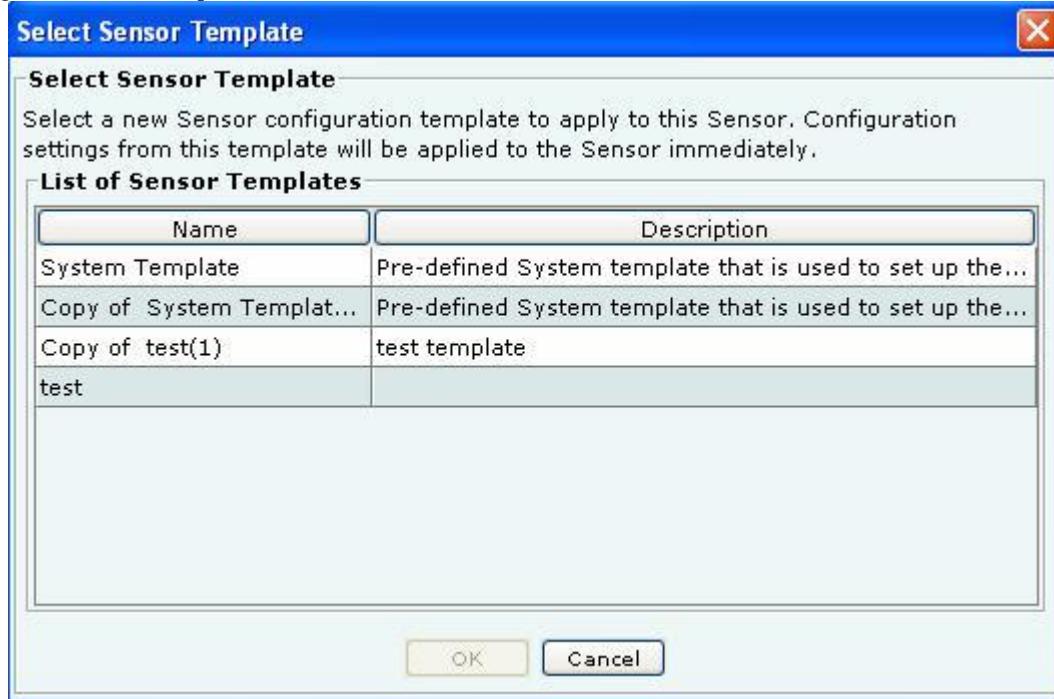
```
SSH Secure Shell 3.1.1 (Build 248)
Copyright (c) 2000-2002 SSH Communications Security Corp - http://www.ssh.com/
```

```
This copy of SSH Secure Shell is a non-commercial version.
This version does not include PKI and PKCS #11 functionality.
```

```
[Sensor] Model : [SS-300-AT-01]
[Sensor] Version : [6.6]
[Sensor] Build : [6.6.xxx]
Network Interface (eth0) MAC : 00:11:84:A5:41:06
```

### Sensor Config Shell

- **Configuration Template:** Shows the current configuration template assigned to the Sensor. Refer to the [Device Template](#) section for more details. In order to change the Sensor Configuration Template, Click  to open the **Select Sensor Template** dialog. Select the appropriate Sensor template and click <OK> to assign that Sensor template to the Sensor.



### Select Sensor Template Dialog

- **Location:** Shows you the name of the Sensor's location. The Sensor Location name always displays in the **Location** field in the header of the **Sensor Properties Tab** dialog. Click  to open the **Location Tag** dialog. Here, you can view the complete list of locations and choose a location for the Sensor. To view the list of locations, you must first set up your list of locations on the **Locations** screen as explained in the section, [Working with Location Folders and Location Nodes](#).



#### Sensor Location Tag Dialog

You cannot change the location of a Sensor placed on a floor map. If you attempt to do so, an error message appears.

A Sensor placed on a floor map is automatically assigned the location tag of that location. To change the location tag, you must first delete the Sensor from the floor map.

- **Placed on Floormap?**: Indicates if the Sensor is placed on the floor map.
- **Currently Active?**: Indicates if the Sensor is currently active.
- **Up/Down Since**: Indicates the time since the Sensor is up/down.
- **Channels Scanned (a)**: Specifies the 802.11a channels on which Sensor is configured to scan.
- **Channels Defended (a)**: Specifies the 802.11a channels on which the Sensor is configured to defend.
- **Channels Scanned (b/g)**: Specifies the 802.11 b/g channels on which Sensor is configured to scan.
- **Channels Defended (b/g)**: Specifies the 802.1b/g channels on Sensor is configured to defend.
- **Channels Scanned (Turbo a)**: For turbo APs, specifies the 802.11a channels on which the Sensor is configured to scan.
- **Channels Scanned (Turbo b/g)**: For Turbo APs, specifies the 802.11 b/g channels on which the Sensor is configured to scan.
- **Busy in Quarantine?**: Indicates if the Sensor is currently busy quarantining a device. The quarantine status is always displayed in the **Quarantine Status** field in the header of the **Sensor Details** dialog for every tab.
- **Sensor Software Build**: Shows you the build number of software loaded in the Sensor.
- **First Detected At**: Specifies the date and time when the system first detected the Sensor.
- **Busy in Troubleshooting?**: Indicates whether the Sensor is currently busy capturing packets for troubleshooting.
- **Sensor Mode**: Specifies the mode of Sensor: Sensor, ND, or Sensor/AP Combo.
- **AP Mode**: Indicates whether AP mode is enabled or disabled, that is whether the device is in AP mode or not.
- **SSIDs configured**: Specifies the SSIDs configured for the device in case AP mode is enabled. One or more SSIDs will be seen here, depending on the number of SSIDs configured in the device template for this device.

To delete data for the selected Sensor and re-initialize data gathering, click .

To refresh the **Sensor Details** screen manually click . The system does not auto refresh after a pre-defined interval.

#### **Visible Clients Section**

Under the **Visible Clients** Section, you can view a list of Clients that the selected Sensor can see. Client details such as Name and RSSI received by the Sensor are displayed in the rows. To view details of a specific Client, click **Name** the **Client Details** screen opens.

---

*Note: Total gives the total number of visible Clients that the selected Sensor can see.*

---

#### **Visible APs Section**

Under the **Visible APs** Section, you can view a list of APs that the selected Sensor can see. AP details such as Name and RSSI received by the Sensor are displayed in the rows. To view details of a specific AP, click **Name** the **AP Details** screen opens.

---

*Note: Total gives the total number of visible APs that the selected Sensor can see.*

---

#### **Visible VLANs Section**

Under the **Visible VLANs** Section, you can view a list of VLANs that the selected Sensor can see. VLAN details such as VLAN ID, IP Address, Net Mask, and Status are displayed in the rows. VLAN over which the Sensor is communicating with the server is marked with an asterix(\*)).

---

*Note: Total gives the total number of visible VLANs that the selected Sensor can see.*

---

#### **Sensor Events Tab**

To open the **Sensor Events** tab on the **Devices** screen right-click a Sensor row and select the **Events** menu item

**Sensor Device**

**Sensor Details - AirTight\_A0:1C:1F** Sep 21, 11:00:28 AM

**Device Properties**

Device Name	AirTight_A0:1C:1F	Location	*//Locations
Quarantine Status	No	IP Address	192.168.9.40

**Properties Events Performance Spectrum Troubleshoot**

**Filter Off**

ID	Location	Event Details	Category	Event Start ...	Event S...
288	RF Jamming Attack detected [in 2.4 G...	Interfer...	Sep 20, 5:30...	--	
316	Crowding of APs on Authorized AP cha...	Interfer...	Sep 20, 5:44...	Sep 21,...	
287	RF Jamming Attack detected [on chann...	Interfer...	Sep 20, 5:30...	Sep 20,...	
286	RF Jamming Attack detected [on chann...	Interfer...	Sep 20, 5:30...	Sep 20,...	
201	Crowding of APs on Authorized AP cha...	Interfer...	Sep 20, 3:44...	Sep 20,...	
255	Sensor [AirTight_A0:1C:1F] has discon...	Sensor	Sep 20, 5:24...	Sep 20,...	
244	RF Jamming Attack detected [in 2.4 G...	Interfer...	Sep 20, 5:06...	Sep 20,...	
235	RF Jamming Attack detected [on chann...	Interfer...	Sep 20, 4:38...	Sep 20,...	
231	RF Jamming Attack detected [on chann...	Interfer...	Sep 20, 4:36...	Sep 20,...	
230	RF Jamming Attack detected [on chann...	Interfer...	Sep 20, 4:36...	Sep 20,...	
232	RF Jamming Attack detected [on chann...	Interfer...	Sep 20, 4:36...	Sep 20,...	
233	RF Jamming Attack detected [on chann...	Interfer...	Sep 20, 4:36...	Sep 20,...	
227	RF Jamming Attack detected [on chann...	Interfer...	Sep 20, 4:26...	Sep 20,...	
214	RF Jamming Attack detected [on chann...	Interfer...	Sep 20, 4:12...	Sep 20,...	
213	RF Jamming Attack detected [on chann...	Interfer...	Sep 20, 4:12...	Sep 20,...	

Click to select or deselect all Events.

**Delete** **Acknowledge**

### Sensor Events Tab

The **Sensor Events** tab enables you to view the event details involving the selected Sensor.

For the columns in the Events details screen, refer to the [Events Tab](#) chapter for more details.

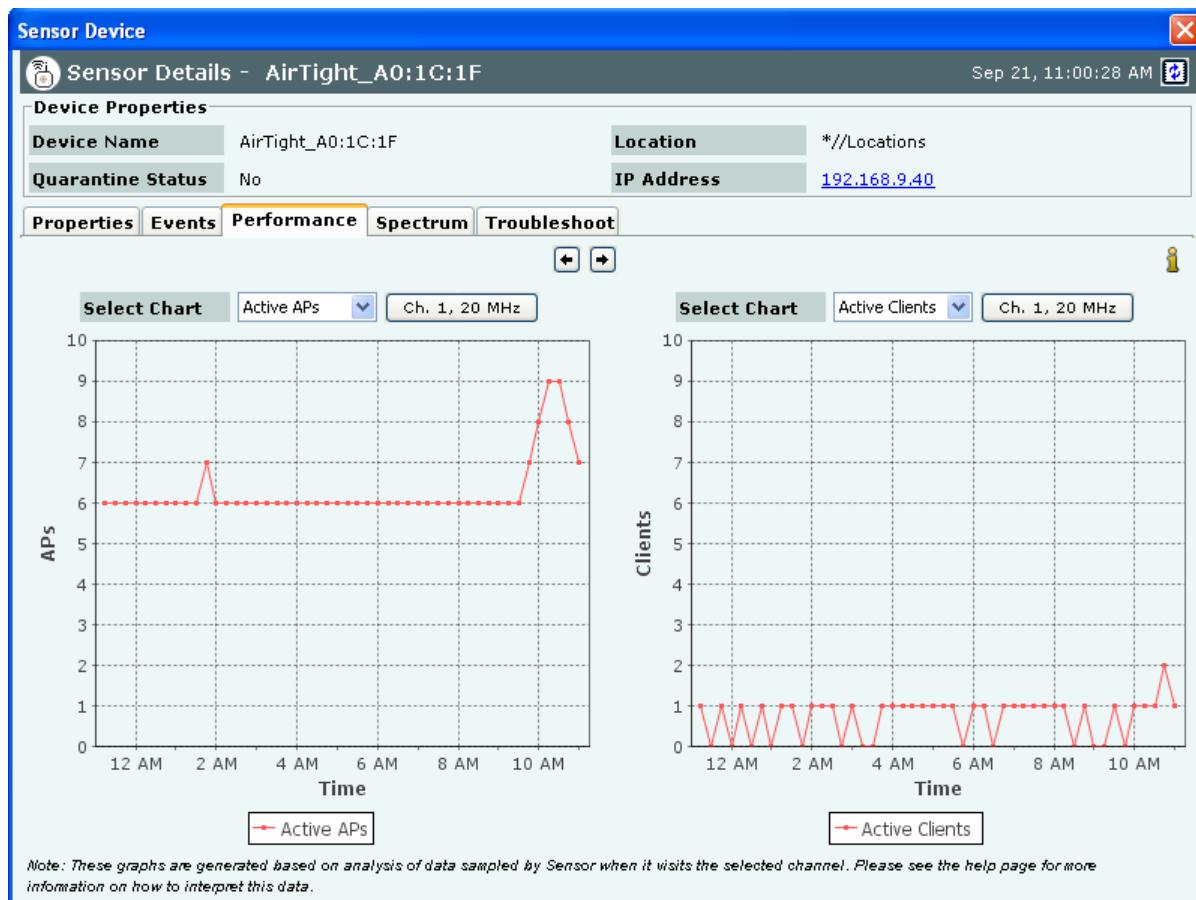
Check the **Click to select or deselect all Events** checkbox to select all the Events displayed on that page.

Click **Delete** to delete the selected events.

Click **Acknowledge** to add comments for the selected events.

### Sensor Performance Tab

To open the **Sensor Performance** tab on the **Devices** screen right-click a Sensor row and select the **Performance** menu item



### Sensor Performance Tab

The **Sensor Performance** tab enables you to view the data related to performance of a Sensor in chart form. Line Charts are shown on the Performance Tab. Choose one of the Chart types available from the **Select Chart** drop-down list:

- **Active APs:** Sensor samples the number of active APs on each channel at the end of each time interval.
- **Active Clients:** Sensor samples the number of associated Clients on each channel at the end of each time interval.
- **Interference:** Sensor reports average interference on each channel over each time interval.

A button such as **Ch. 1, 20 MHz** next to the chart type selection shows you the current channel and channel width used in the chart display. Clicking on **Ch. 1, 20 MHz** allows you to select a new channel and width. Specify the **Channel Number** and **Width** from the respective drop-downs in the **Sensor Performance Tab – Select Channel** dialog.

*Note: Width is enabled only for 11n Sensors.*



### Sensor Performance Tab – Select Channel

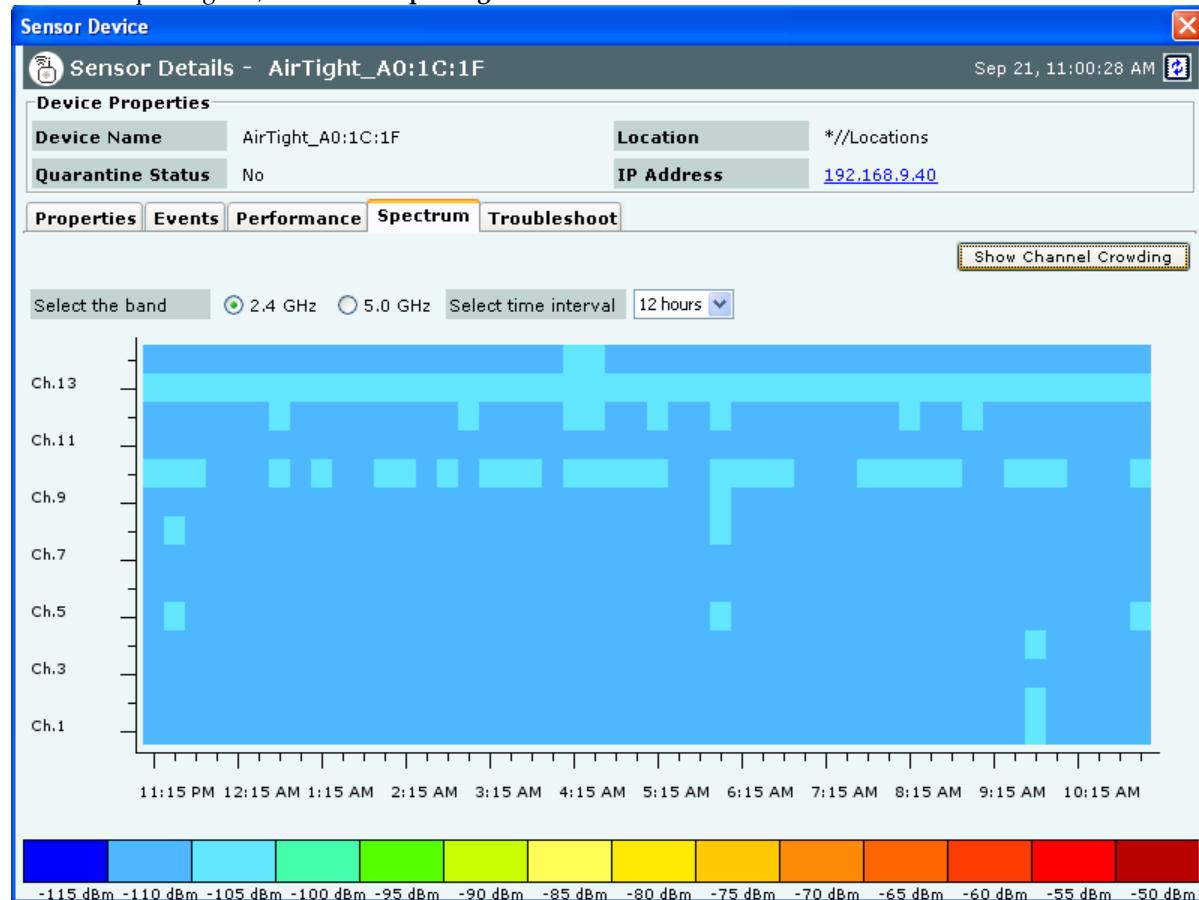
Click to view enlarged Chart on the left hand side. Click to view enlarged Chart on the right hand side

### Sensor Spectrum Tab

On the **Devices** screen, right-click a Sensor row and then select the **Details** menu item. Select the **Spectrum** tab to view the Spectrogram, or Channel Crowding details. Spectrogram is a graphical representation of the interference for the selected radio and time frame. At a given point in time, either the Spectrogram or the Channel Crowding is seen in this tab. By default you will see the Channel Crowding in this tab.

#### *Spectrogram*

To see the Spectrogram, click **Show Spectrogram**.

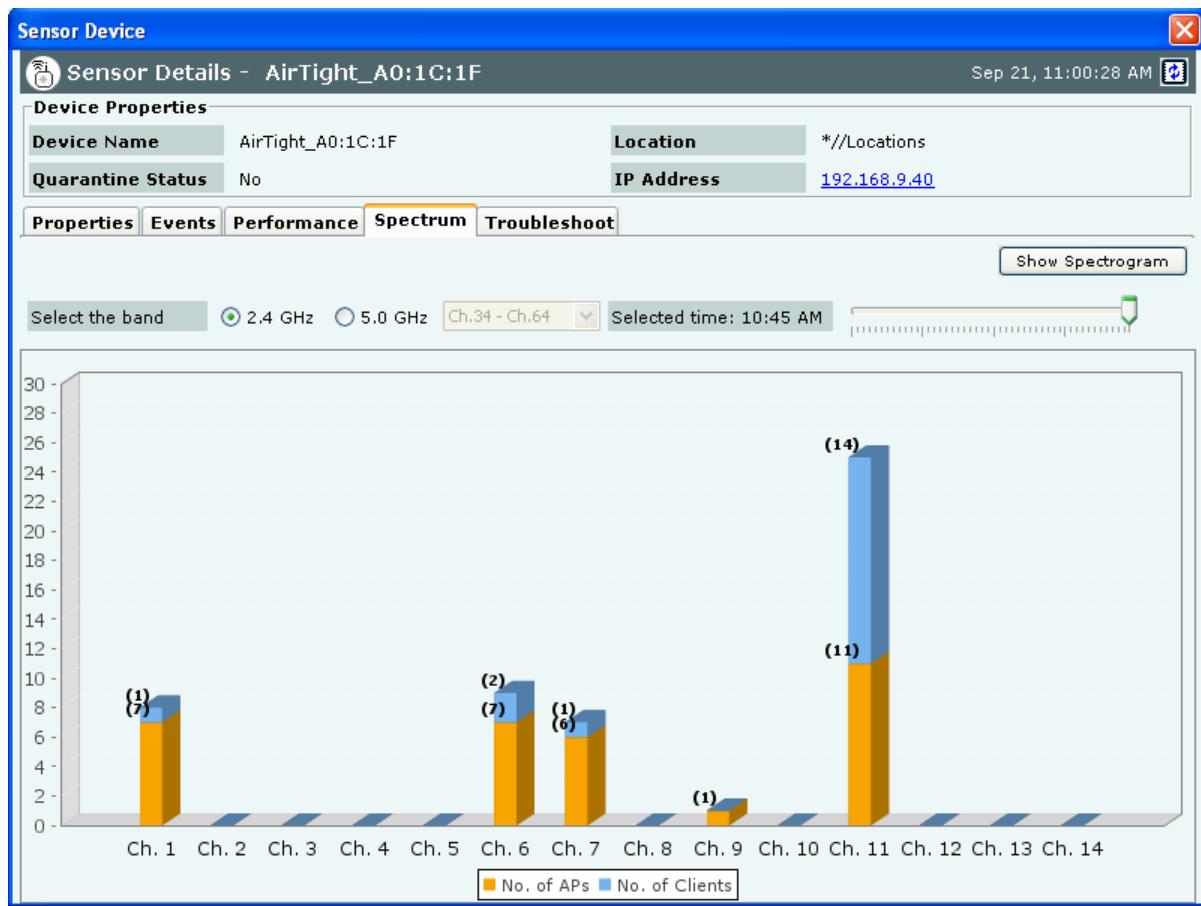


#### **Sensor Details- Spectrogram**

Select the radio band and the time interval for which the impedance is to be viewed. The legend for the power ratio is given at the bottom for reference.

#### *Channel Crowding*

Click **Channel Crowding** to view the graphical representation of the APs and clients detected on various channels by the sensor, for the selected radio and time frame.



### Sensor Troubleshoot Tab

To open the **Sensor Troubleshoot** tab on the **Devices** screen right-click a Sensor row and select the **Start Troubleshooting** menu item.

**Sensor Device**

**Sensor Details - AirTight\_A0:1C:1F**

**Device Properties**

Device Name	AirTight_A0:1C:1F	Location	*//Locations
Quarantine Status	No	IP Address	192.168.9.40

**Troubleshoot**

**Troubleshooting Options for Sensor: AirTight\_A0:1C:1F (Active)**

**Knowledge-based Troubleshooting (KBT)** precisely identifies the cause of common problems in your wireless network. KBT uses two troubleshooting modes: *Packet Level Mode* which allows live packet capture for the device and *Event Level Mode* which triggers the generation of additional monitoring events for the device in the *Troubleshooting* event category.

Click for details on Knowledge-based Troubleshooting (KBT). Select the options below to start troubleshooting.

**Troubleshooting Mode**

A troubleshooting session can either be manually terminated from the troubleshooting list or will be automatically terminated at the end of the timeout.

<input checked="" type="radio"/> Packet Level Mode (Live packet capture in Wireshark)	Timeout: <input type="text" value="5"/> minutes [1 - 720]
<input type="radio"/> Event Level Mode (Generates additional events for the device)	Timeout: <input type="text" value="2"/> minutes [1 - 5]

**Protocol and Channel Selection**

Select the protocol and channel on which the selected Sensor should initiate troubleshooting.

<input checked="" type="checkbox"/> 802.11an	<input checked="" type="checkbox"/> 802.11b/gn
<input checked="" type="radio"/> Rotate on all channels	<input checked="" type="radio"/> Rotate on all channels
<input type="radio"/> Select channel <input type="text" value="34"/> Width <input type="text" value="20 MHz"/>	<input type="radio"/> Select channel <input type="text" value="1"/> Width <input type="text" value="20 MHz"/>

**Start Troubleshooting**

#### Sensor Troubleshoot tab

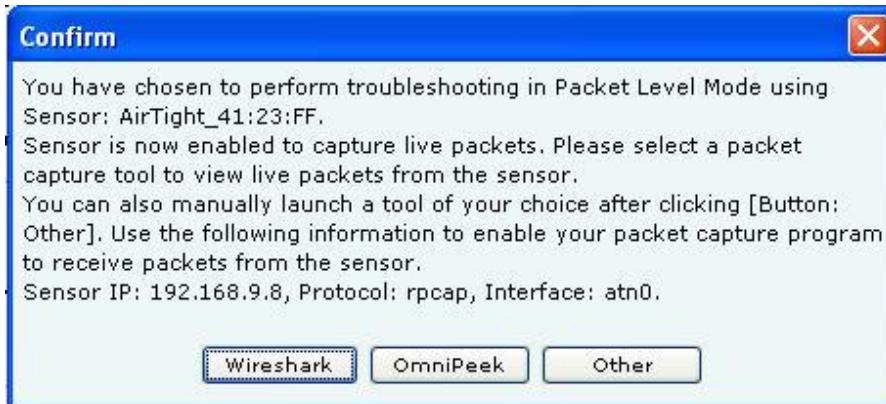
1. Select the **Troubleshooting Mode** and set the corresponding **Timeout** interval. If you select **Packet Level Troubleshooting**, ensure that the Sensor used for troubleshooting is reachable from the computer used to launch the Console.

**Note:** A troubleshooting session automatically times out or terminates after the **Timeout** irrespective of the activity. You can manually stop troubleshooting from the device context-sensitive menu by selecting **Stop Troubleshooting** or from the **Troubleshooting** tab by clicking <Stop Troubleshooting>.

2. Under **Protocol and Channel Selection**, by default both 802.11an and 802.11b/gn protocol are selected and Rotate on all channels is selected. The user can also select the 802.11n protocol, the corresponding channel(s) and width on which the chosen Sensor should initiate troubleshooting.

**Note:** A Configuration template is assigned to each Sensor. The **Channels** list contains only those channels enabled for scanning in that Configuration template. If no channel in a **Protocol** is enabled, then Troubleshooting in that protocol is not possible. Thus, the **Channels** list and the status of the **Protocol** checkboxes change with the Sensor selected.

3. Click **Start Troubleshooting** to begin the session. If the Sensor is assigned a Configuration template, where no channels are selected for scanning, an error message displays.

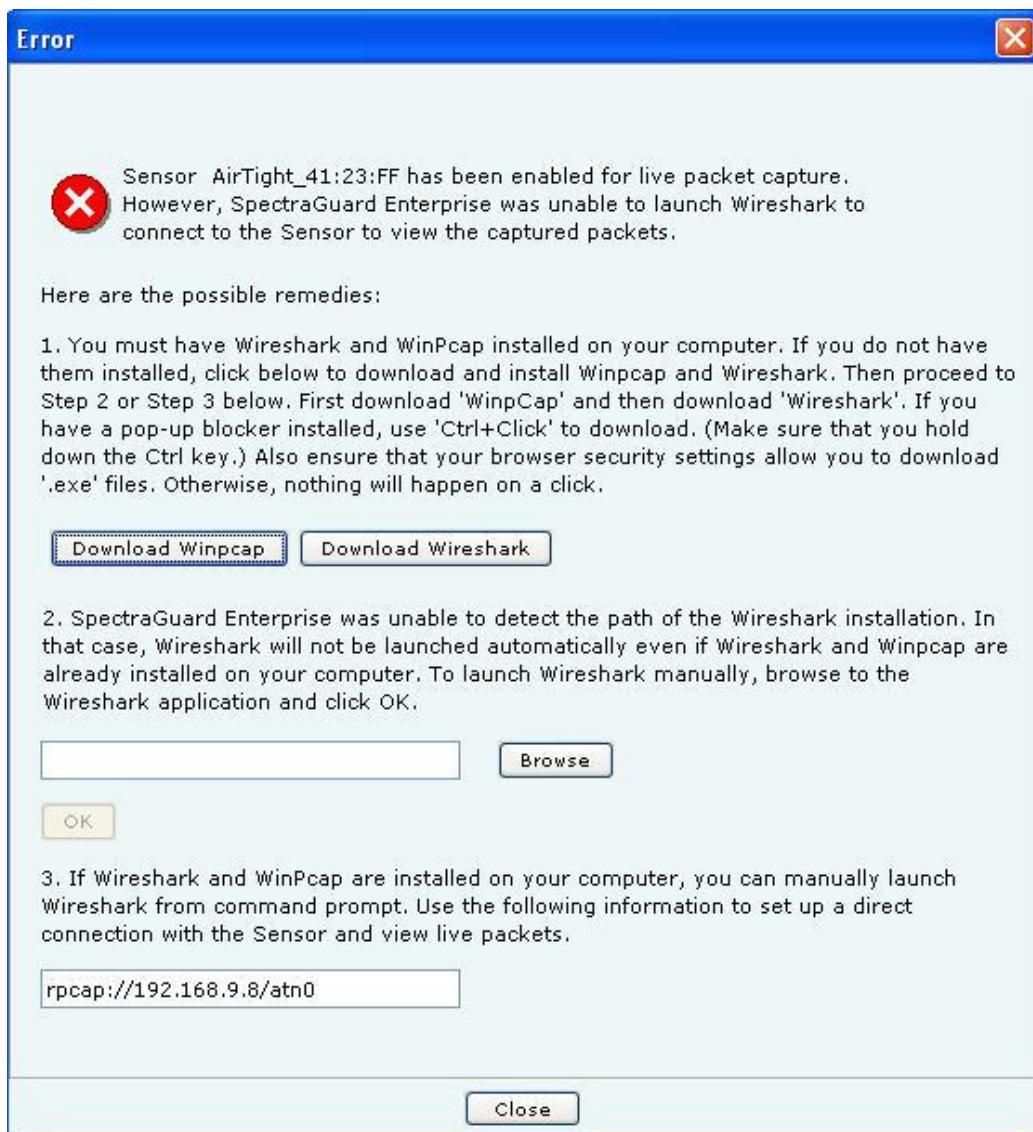


#### Packet Level Troubleshooting Confirm Dialog

4. On the **Confirm** dialog, you may have two or three packet capture tool options, depending on the licensing agreement with AirTight Inc. Select a packet capture tool.

If you have a product license that has OmniPeek support, you have three packet capture tool options – Wireshark, OmniPeek, and ‘Other’. If you have a product license that does not have OmniPeek support, you have two packet capture tool options – Wireshark and ‘Other’. Select the ‘Other’ option for other tools that you can use to capture packets. Typical packet capture tools are Tcpdump, Ethereal, Wireshark, OmniPeek, and others. You must use Tcpdump and Ethereal with Rpcap support. Tcpdump, Ethereal, and Wireshark are available freely on the Internet.

5. If you click **Wireshark**, and the application is installed correctly, the system launches the application and the packet capture session begins immediately. Alternatively, if you do not have Wireshark installed, an **Error** dialog appears.



#### System unable to Launch Wireshark Dialog

6. On the **Error** dialog, there are three possibilities:
  - You can download and install Wireshark and optionally install WinPcap. Wireshark requires a compatible version of WinPcap. If the installed version and expected version mismatch, you need to install the suggested and expected version of WinPcap.
  - If the system does not find Wireshark installed at the default location, 'C:\Program Files\Wireshark', Wireshark is not launched automatically. To launch Wireshark manually, click **Browse** to specify the appropriate location and click **OK**.
  - To launch Wireshark manually from the command prompt, you need to copy and paste the link to set up a direct connection with the Sensor and view live packets.
7. If you click **OmniPeek**, ensure that the application and the OmniPeek Airtight Adapter are correctly installed. If you have these installed at some other location, click **Browse** to specify the appropriate location. The installation location for OmniPeek could be other than the default location, 'C:\Program Files\WildPackets\OmniPeek\'.
8. Click **OK**. The system launches the application and the packet capture session begins immediately. Alternatively, if you do not have the OmniPeek tool installed, you should install the same with appropriate purchase from WildPackets Inc. Airtight does not provide installation of OmniPeek.

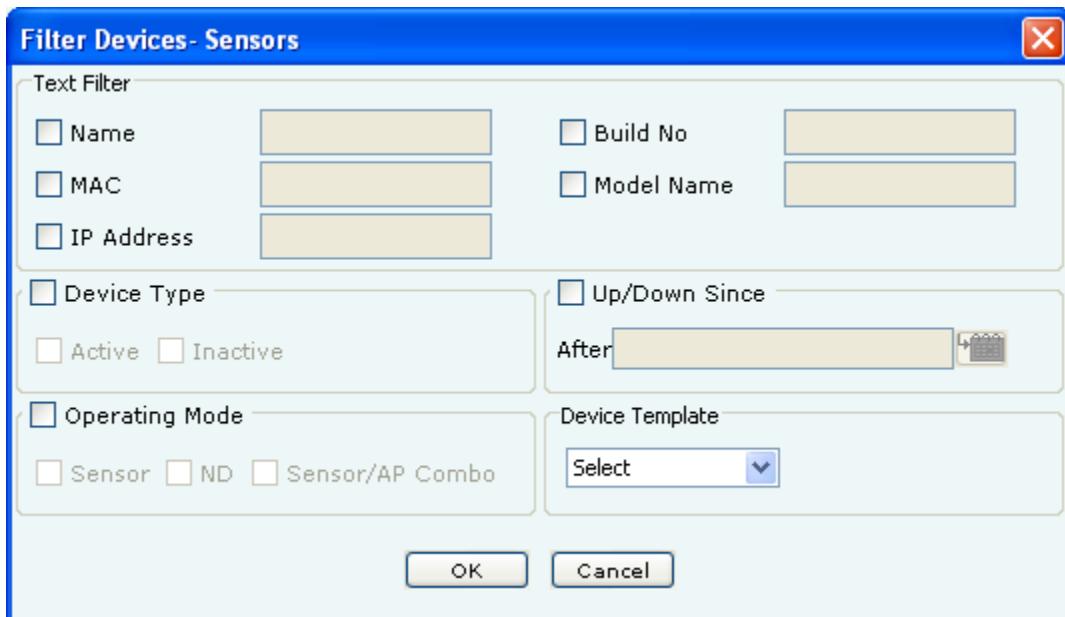


### Launching OmniPeek

#### Filtering in Sensors

To focus your attention to a subset of Sensors based on a filtering criteria (such as device type, up/down since, and so on) system provides you with the capability to filter Sensors. Use the following steps to filter Sensors:

1. On the **Devices** screen, click the **Sensor** tab and click the **Filter** icon to open the **Filter Devices - Sensors** dialog.



### Filter Devices - Sensors

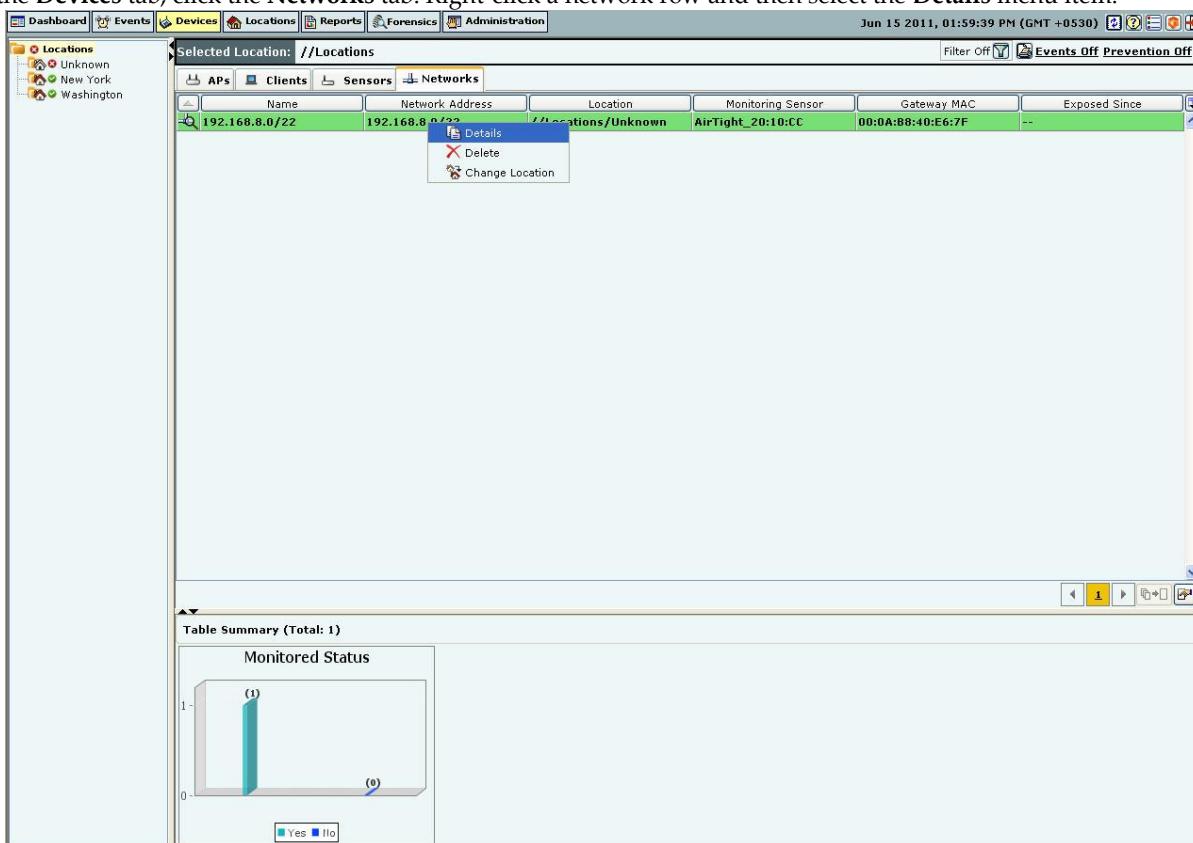
2. Under **Text Filter**, select one or more of the following check boxes and enter the appropriate values manually for searching data related to it:
  - Name
  - MAC
  - IP Address
  - Build No
  - Model Name
3. Select the **Device Type** check box, select one or more of the following check boxes:
  - Active

- Inactive
4. Select the **Up/Down Since** check box, click the  icon to specify the up/down since date and time of the Sensor and then click **OK**. The search displays the Sensors, which were first detected by the system after the date as specified above.
  5. Select the **Operating Mode** check box, select one or more of the following check boxes:
    - Sensor
    - ND
    - Sensor/AP Combo
  6. Under **Sensor Template**, select the template name from the drop down box for searching data related to it.
  7. To save and apply the Sensor filtering criteria, click **OK**. When the filter is applied it is denoted by **Filter On** on the Console, if no filter is applied it is denoted by **Filter Off** on the Console.

### Network Details Dialog

You can open the **Network Details** dialog in the following manner:

On the **Devices** tab, click the **Networks** tab. Right-click a network row and then select the **Details** menu item.

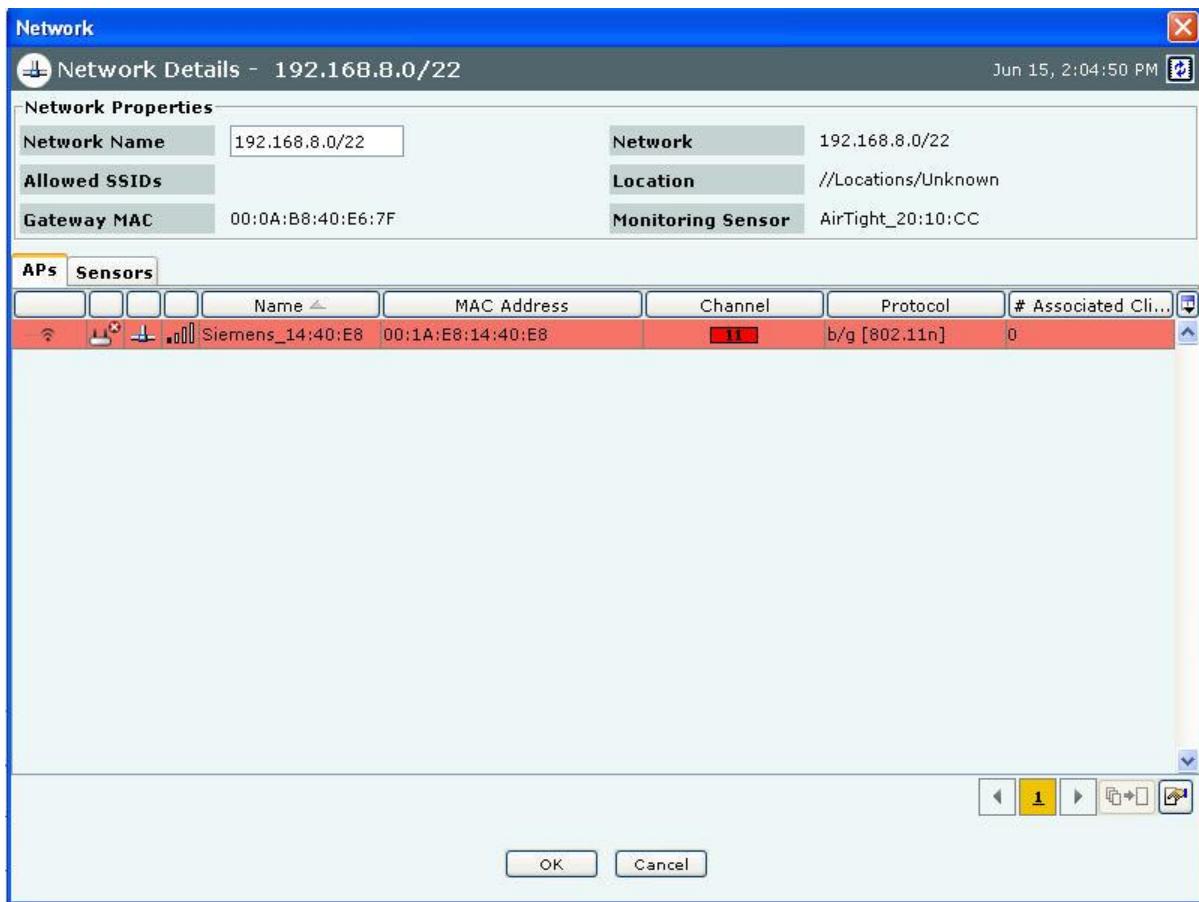


#### Navigating to Network Details dialog

The **Network Details** dialog has the following tabs: **APs** and **Sensors**.

#### APs tab

The **APs** tab appears by default. The following screen displays the **Network Details** dialog.



### Network Details – APs

All APs associated with the network, and with the location including the sub locations under that location, are seen in **APs** tab under **Network Details**.

Fields in **Network Details** are as follows:

**Network Name:** specifies the network name

**Allowed SSIDs:** : This is the list of SSIDs allowed (from SSID templates) on this network at or below the location of this network.

**Gateway MAC:** specifies the gateway MAC address.

**Network:** specifies the IP address of the network.

**Location:** specifies the network location.

**Monitoring sensor:** specifies the sensor monitoring the network.

The fields in the **APs** tab are the same as seen in Devices->AP tab.

You can select the fields that you want to view by clicking the icon.

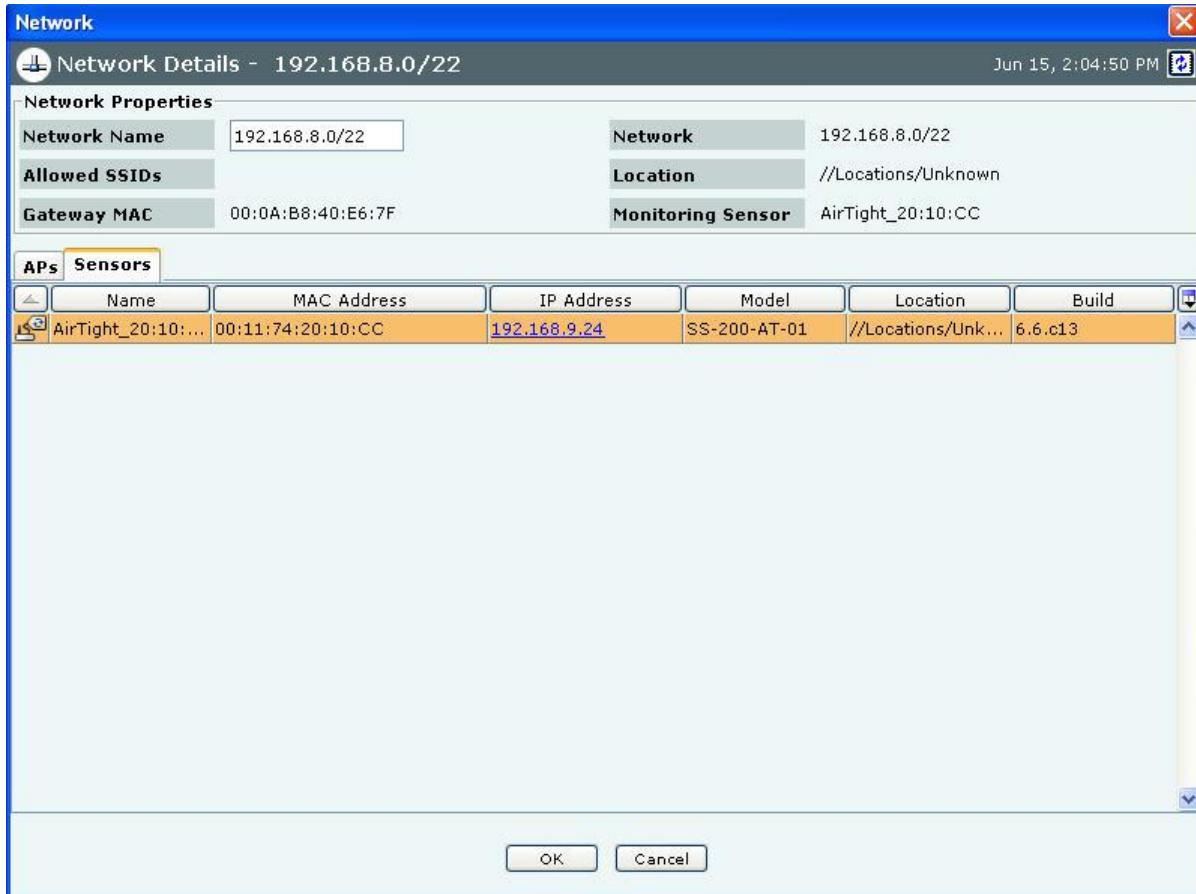
You can view the AP details dialog by double clicking any AP row.

---

*Note: Uncategorized APs are seen as rows with white background.*

---

The **Sensors** tab appears on the Network Details dialog. The following screen displays the **Sensors** tab.



#### **Network Details – Sensors**

The fields in the **Sensors** tab are the same as seen in Devices->Sensors tab.

You can select the fields that you want to view by clicking the icon.

You can view the Sensor details dialog by double clicking any sensor row.

*Note: Only currently active sensors in the network are seen in the **Sensors** tab under Network Details.*

#### **Changing the location of a network**

Location of a network is same as location of the Sensor that reported the network first. If there are multiple sensors connected to a network, location of such network is the nearest common location of all reporting sensors. To change the location of the network, right click the network row whose location you want to change. Following figure displays the method to change location.

The screenshot shows the 'Devices' tab in a software interface. The top navigation bar includes 'Dashboard', 'Events', 'Devices', 'Locations', 'Reports', 'Forensics', and 'Administration'. The date and time 'Jun 15 2011, 02:10:39 PM (GMT +0530)' are displayed. On the left, a sidebar shows 'Locations' with categories: Unknown, New York, and Washington. The main area displays a table titled 'Selected Location: //Locations'. The table has columns: Name, Network Address, Location, Monitoring Sensor, Gateway MAC, and Exposed Since. A row for '192.168.0/22' is selected, showing values: 192.168.0/22, 192.168.0/22, AirTight\_20:10:CC, 00:0A:B8:40:E6:7F, and --. A context menu is open over this row, with options: Details, Delete, and Change Location.

### **Changing the network location**

Click the **Change location** menu item.

The following screen appears on clicking **Change Location**.



### **Select the new location**

Select the new location and click **OK** to move the network to the new location. To cancel the operation, click **Cancel**. On selecting a new location, the network is seen under the new location.

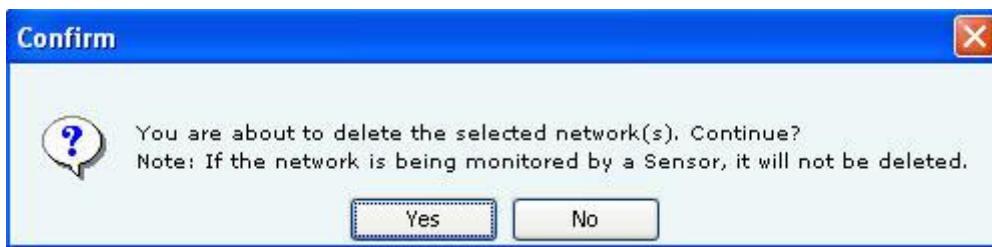
### **Deleting a network from Networks Tab**

To delete a network from the **Networks** tab, right click the network row you want to delete. Following figure displays the method to delete network from networks tab.

Name	Network Address	Location	Monitoring Sensor	Gateway MAC	Exposed Since
192.168.8.0/22	192.168.8.0/22	+ //Locations	AirTight_20:10:CC	00:0A:B8:40:E6:7F	--

#### Delete a network

Click the **Delete** option. The following message box is displayed.



#### Confirm network deletion

To delete the selected network, click **Yes**. To cancel the network deletion, click **No**.

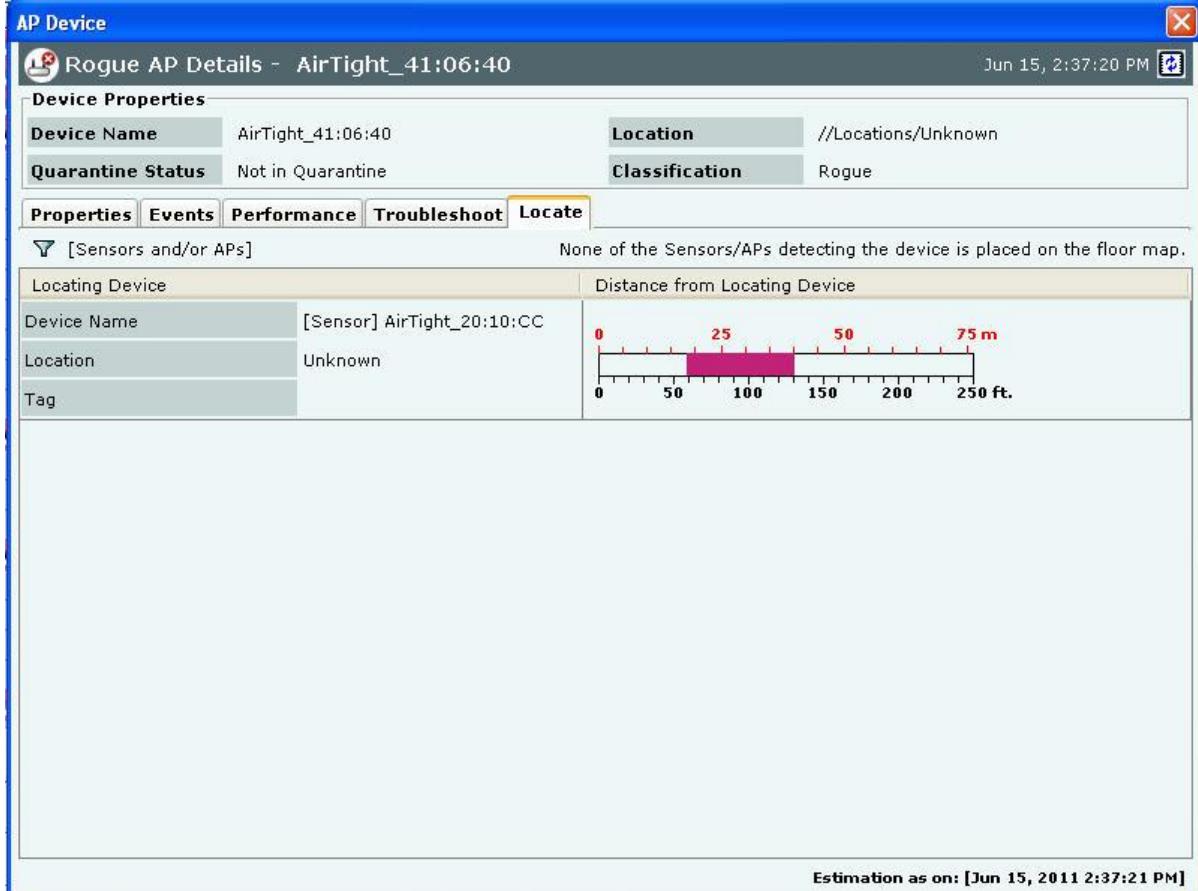
The network will not be deleted if it is being monitored by a sensor.

## Locating an AP/Client placed on the Floor Map

The system enables you to find the distance of a device from various Sensors to which it is visible and determine the possibility that the tracked device is present at a certain location on the floor map. Location tracking in a dynamic wireless environment works on probabilities. Use the following steps to locate a device:

1. Open an AP/Client list using the steps explained in the [Viewing APs/Clients List](#) section.
2. Right-click an AP/Client row.

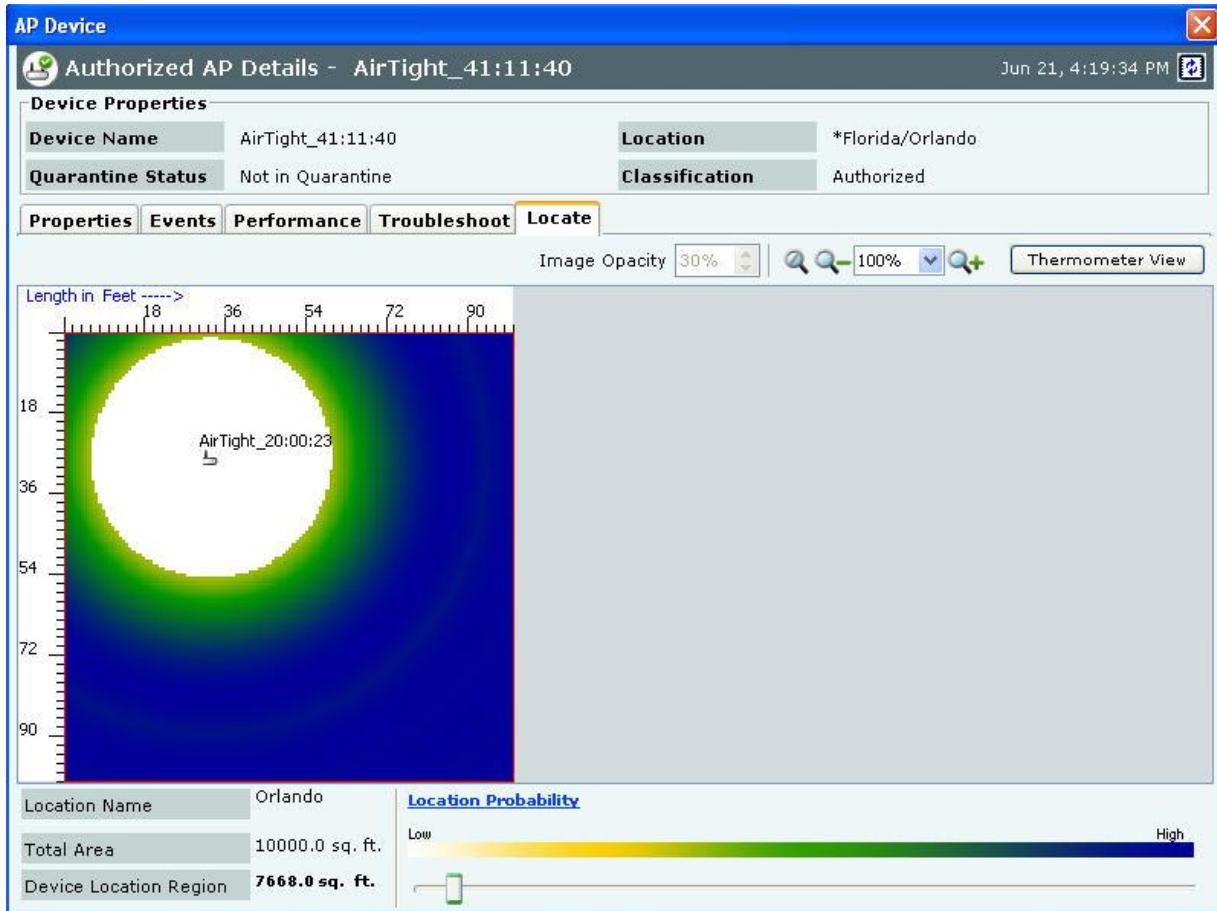
3. From the context-sensitive menu, select **Locate**. A **Tracking Location** progress bar followed by a **Locate** tab appears. The **Locate** tab displays the distance in feet and meter of the selected device from the locating device, which appears in the **Thermometer View**. Alternatively, if the device for which you are searching is not visible to any Sensor, a message appears.



#### AP Locate Tab – Thermometer View

**Distance from Locating Device** displays the approximate distance of the device (AP/Client) being located from the **Locating Device** which does RSSI measurement. RSSI measurement can be taken by the Sensor or the AP, if RSSI integration is enabled with the AP.

4. Click **Floor Map View** to view the current location of the AP/Client on the Floor Map.



#### AP Locate Tab – Floor Map View

*Note: The Floor Map View appears only if you have placed Authorized APs and Sensors on the Floor Map.*

The **Floor Map View** dialog displays color shaded regions around Sensors and APs with colors indicating the probability of the location of the device. It displays **Location Probability** slider which shows the color coding from low to high probability. Based on the slider position, the system color codes only those locations on the map where the probability of locating the device is higher than the value set in this slider bar. You can move the **Location Probability** slider to **High** to select regions where the probability of locating the device is higher.

*Note: If you move the slider to **Low**, you see locations with both low and high probabilities. The number and placement of Sensors helps determine the accuracy of location tracking. Increasing the number of Sensors enhances the location tracking accuracy.*

5. Click the  icon to open the **Monitoring Device Filter** dialog. In this dialog, you can specify which APs/Sensors at the current location or other locations used to locate the current device location on the floor map. You can specify the following:
  - To use APs and/or Sensors from the current floor only, select **Use signal data from devices at this location only**. This option computes the best possible position for the selected device on the current floor.
  - To use APs and/or Sensors from the other floors also, select **Use signal data from devices at other locations also**. This option computes the best possible position for the selected device using monitoring devices from other floors too. This may result in the selected device being tracked on some other floor.

You can also specify whether the location tracking should use data from Sensors only, APs only or both.

**Monitoring Device Filter Dialog**

## Removing a Device from Quarantine

The system enables you to remove a device from quarantine so that wireless communication can start on that device. You can remove a device from quarantine in several ways.

- If the device is automatically quarantined, you can do one of the following:
  - Right-click the device row and select **Disable Auto-quarantine**.
  - Change the Intrusion Prevention policy that quarantines the device.
  - Deselect the checkbox **Activate Intrusion Prevention for location '<selected location>'** on the Administration→Local tab→Location Properties→Intrusion Prevention Activation screen
- Change the classification of a device manually. For example, manually move an AP from the Rogue folder to the External folder by right-clicking the Rogue AP row and selecting **Move to...** and then **External**. The External AP will move out of quarantine.
- Change the security settings on the SSID template so that the AP no longer violates the specified security settings. For example, consider an AP that has become misconfigured by virtue of following the Security Settings, for example WEP at location 'Floor 1'. This AP violates the Security Settings, for example WPA in its SSID template. You can now edit the SSID template in such a way that it matches the configuration of the existing Misconfigured AP. This Misconfigured AP will now become policy compliant and thus Authorized. As a result, this AP will move out of quarantine.
- Delete the AP and let the system re-discover it. For example, consider an AP that has become a Rogue by virtue of following the Security Settings, for example WEP at location 'Floor 1'. This AP violates the Security Settings, for example WPA in its SSID template. You can now edit the SSID template in such a way that the Rogue AP now becomes policy compliant. As the system does not automatically remove Rogue APs out of quarantine, delete this Rogue AP. The system will re-discover this AP. The AP may appear in some other device folder and may be moved out of quarantine.
- If the device is manually quarantined, right-click the device row and select **Remove from Quarantine**.

## Moving an AP/Client to a Different Folder

The system enables you to re-classify a device, that is, move a device to a different folder based on fresh information. You cannot however move Categorized APs/Clients to the Uncategorized folder. Use the following steps to move a device to a specific folder:

1. Open an AP/Client list using the steps explained in the [Viewing APs/Clients List](#) section.
2. Right-click an AP/Client row.
3. From the resulting context sensitive menu, select **Move to....**
4. Select the category to which you want to move the AP/Client.

*Note: If you move an AP placed on a floor map, an Error dialog appears.*

## Merging APs

Many modern APs have multiple network interfaces and SSIDs on a single device to support 802.11a and 802.11b/g simultaneously. Each interface has a different MAC address, which causes the system to identify them as different APs. The system displays such APs in separate rows on the Console. This may lead to confusion.

Merge can be of two types:

1. **Automatic:** The system performs automatic merge of certain APs based on their MAC addresses or other available information.
2. **Manual:** The system allows you to manually merge APs based on their IP addresses or if the system does not automatically merge them based on the available information.

On selecting two or more AP rows under the **Authorized** tab, the AP context-sensitive menu shows the **Merge** option. Merge allows you to merge two or more MAC addresses (network interfaces) of one or more APs into a single AP. Select a primary AP to complete the merge operation.



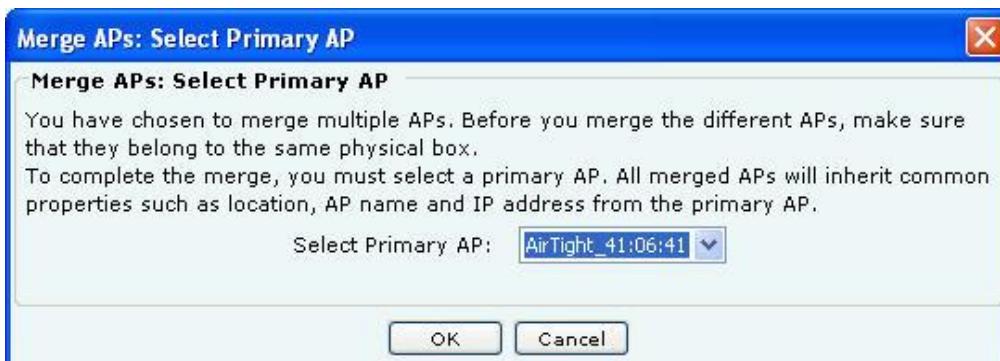
#### **AP Context-Sensitive Menu for Multiple AP Selection**

A merged AP has the following characteristics:

- Inherits common properties such as location, AP name, and IP address from the primary AP
- Identified by the  icon on the Console
- Can merge with more APs
- Can be separated into its individual interfaces using the **Split** option

Use the following steps to merge APs into a single AP:

1. Open an Authorized AP list using the steps explained in the [Viewing APs/Clients List](#) section.
2. Select the APs that you want to merge and right-click one of the selected AP rows.
3. From the resulting context-sensitive menu, select **Merge**. A **Merge APs** dialog appears.



#### **Merging an AP Dialog**

4. Select the **Primary AP**.
5. Click **OK** to merge the selected APs.

## **Splitting APs**

You need to split APs if they were merged incorrectly either manually or automatically based on the information available with the system. Use the following steps to split merged APs into individual APs:

1. Open an Authorized AP list using the steps explained in the [Viewing APs/Clients List](#) section.
2. Select the merged APs that you want to split and right-click the corresponding AP row.
3. From the resulting context-sensitive menu, select **Split**. A **Confirm** dialog appears.
4. Click **Yes** to split the selected APs.

## **Devices Tab – User Saved Settings**

The following User choices made during browsing of Devices Tab are saved by the system:

- Filtering Devices – APs, Clients, and Sensors.
- Display Columns.
- Column Width and Column order

These settings are saved on log out as well as movement to other tabs on the Console.

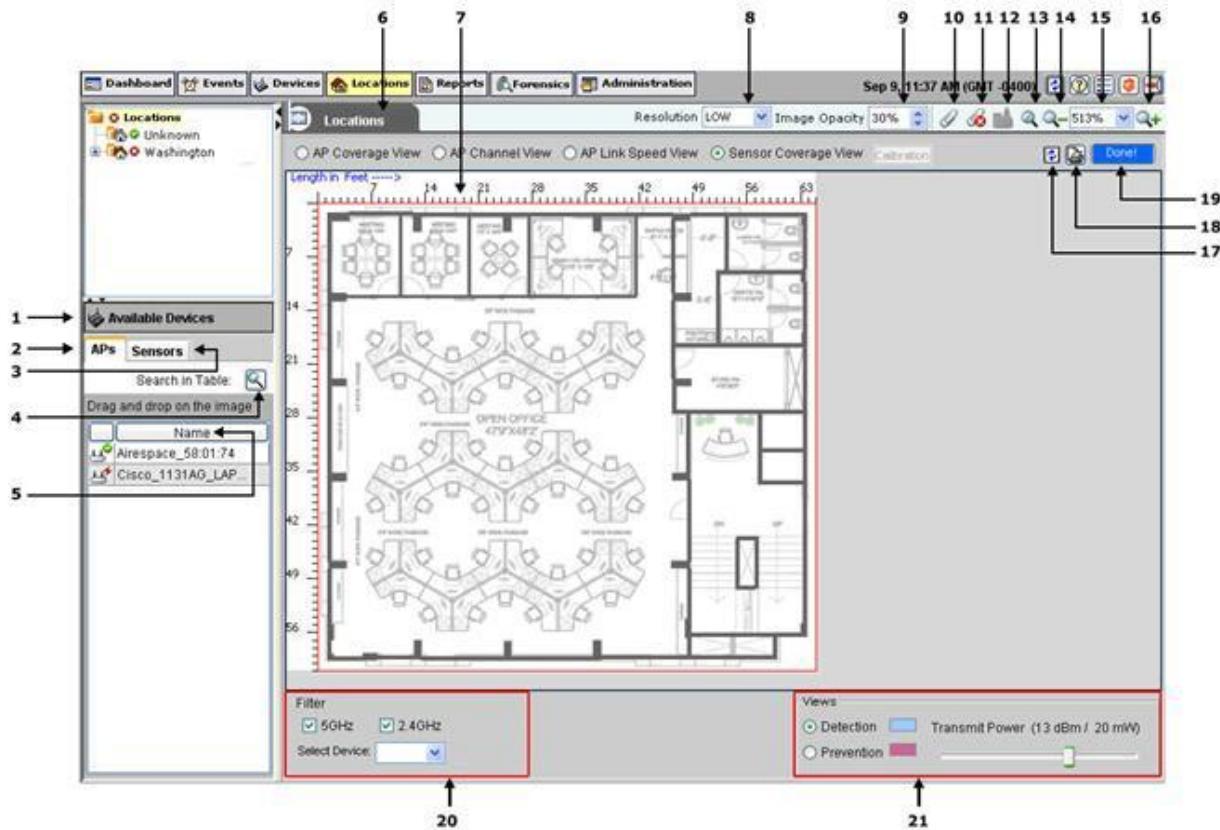
## Locations Tab

### Locations: Panel for Creating Locations

The **Locations** screen enables you to organize your network into a list of locations and view live 802.11 RF coverage maps for each location node. On the **Locations** tab, you can add, delete, and move a location folder or node, import a floor map on a location node, attach or detach an image from a location, place available locations on an attached image, and place devices on the floor map. You can also view live RF maps.

### Locations Screen

You can open the Locations screen by selecting the **Locations** tab on the navigation bar.



#### Locations Screen

The Locations screen includes two panes:

On the left, the Locations tree and a list of available locations and devices.

On the right, the image attached to the selected location, locations placed on a location folder and devices placed on a location node.

The following table lists the names and description of each component.

#### Name and description of components on the Locations screen

Sr. No.	Name	Enables you to...
1	Available Devices	View APs and Sensors available for that node.
2	Available APs	View a list of Authorized APs not tagged or placed on any location node.
3	Available Sensors	View a list of available Sensors not tagged or placed on any location node.

4	Search	Look for a device or location in the table.
5	Sort	Sort devices or locations in ascending/descending order.
6	Location Details	View the list of locations of a specific location node.
7	Ruler	View the dimensions of the floor map: in feet.
8	Resolution	Change the resolution to Low, Medium, or High.
9	Image Opacity	Control the Opacity of the image: Decrease the value to better comprehend RF coverage or increase the value to pinpoint exact device information on the floor map.
10	Attach Image on floor	Attach an image of a floor map to a location node.
11	Detach Image from floor	Detach an attached image.
12	Save	Save the properties of a location node.
13	Best Fit	Fit the layout image to the window/page. This is the default mode in which the layout image appears on the right pane.
14	Zoom Out	Zoom out of a layout image.
15	Choose/Enter Value to Zoom In/Zoom Out	Enter or choose a value from the drop-down combo box, to view the layout image in terms of an exact zoom percentage. (Minimum: 1%; Maximum: 1000%)
16	Zoom In	Zoom into a layout image for an enlarged view.
17	Refresh	Refreshes the Locations screen.
18	Printable View	Saves the printable view of the Location as jpg, png, or HTML format.
19	Done	Indicates whether the RF View computation on a location is completed.
20	Filter	Changes RF Views based on the operating band or particular radio selected.
21	Views	Displays the Detection and Prevention range of a Sensor on the selected location.

## Working with Location Folders and Location Nodes

A list of locations comprises location folders and location nodes.

**Location folders** represent organizational components such as buildings, cities, or countries.

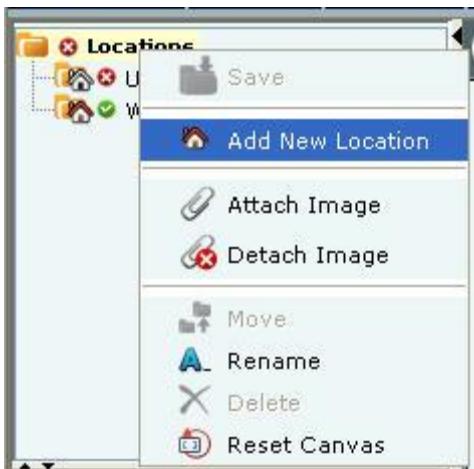
- **Root Location:** This is the root location. The factory default name for this location is **Locations**. You can rename this location. However, you cannot delete or move this location.
- **Unknown:** This is the default location folder of the root location. You cannot create, delete, rename, move, or add a location to the **Unknown** folder. When the system detects a new untagged Sensor, it tags this Sensor to the Unknown location folder. In other words, when the location tag of a location-aware entity is not known or cannot be determined, it is tagged to the Unknown folder. By default, the Unknown folder inherits all the policies except the Operating Policies from the root location. You can customize these policies (see [Local Policies](#)).

**Location nodes** represent component details such as a floor in a building. For example, Hawaii Conference Room, Bldg 15–Cubicle G2, or Executive Area.

### Adding a New Location

Use the following steps to add a location:

1. In the **Location** tree, select the location under which you wish to add a new location.
2. Right-click and from the resulting context-sensitive menu, select **Add New Location**.



#### Adding a New Location

**Add New Location**

Location Folder    Location Node

Name\*

**Specify Location Details Manually**

Select Image File	<input type="text"/> <a href="#">Browse...</a>
Unit	Feet <a href="#">▼</a>
Length	<input type="text"/> [1 - 9999]
Width	<input type="text"/> [1 - 9999]

**Import Location Details from SPM file**

Select SPM  [Browse...](#)

\*Mandatory field

[OK](#) [Cancel](#)

#### Specifying Location Properties

3. In the **Add New Location** dialog, select the type of location, that is, **Location Folder** or **Location Node**.
4. Enter a name for the new location and optionally enter the following details.
  - **Select Image File:** Click **Browse** to navigate to the path of the image that you wish to attach to the location folder or node. You can attach the image later as explained in the [Attaching an Image](#) section.
  - **Unit:** Specify the unit of measurement (feet or meters) for the location node.
  - **Length:** Specify the length of the location node.
  - **Width:** Specify the width of the location node.
  - **Select SPM:** Click **Browse** to navigate to the path of the .SPM file that you wish to import from Planner into the new location node.

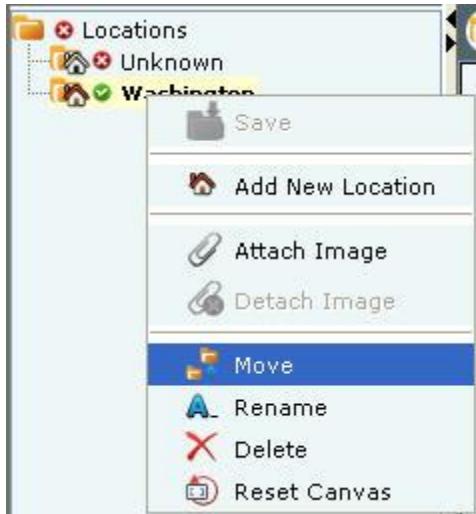
*Note: Unit, Length, Width, and Select SPM options are available only for a location node. They are grayed out for a location folder.*

5. Click **Save** to create a new location.

## Moving a Location

The system enables you to move a location to a different location folder. Use the following steps to move a location to a specific folder:

1. In the **Location** tree, select the location that you wish to move.
2. Right-click and from the resulting context-sensitive menu, select **Move**.



**Moving a Location**



**Selecting a Destination Location**

3. In the **Location Move** dialog, select the destination location folder to which you want to move the selected location. Refer to the section **Location Move** for more details.

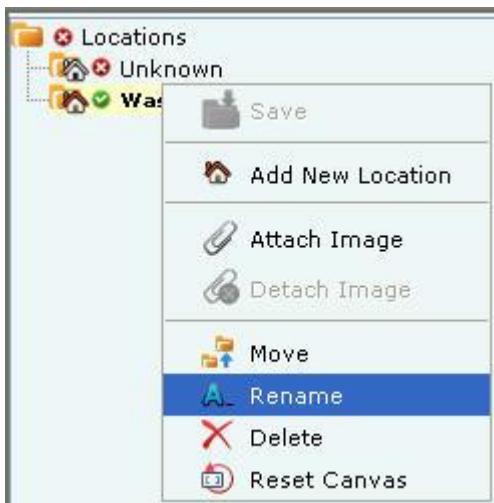
*Note: You cannot move the **Unknown** location or any location into this location.*

4. Click **OK** to move the location.

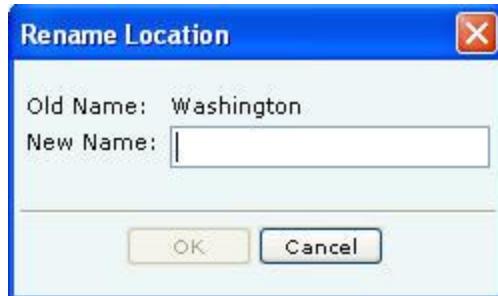
## Renaming a Location

Use the following steps to rename a location.

1. In the **Location** tree, select the location that you wish to rename.
2. Right-click and from the resulting context-sensitive menu, select **Rename**.



#### Renaming a Location



#### Specifying a New Name for a Location

3. In the **Rename Location** dialog, enter the new name for the location.
4. Click **OK** to rename the location.

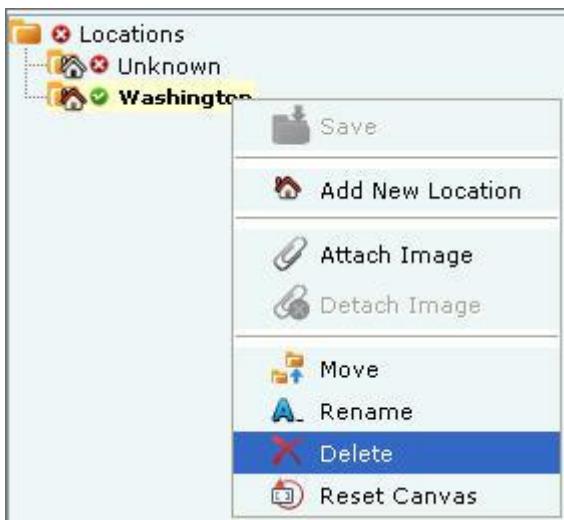
*Note:* You cannot rename the location folder **Unknown**.

#### Deleting a Location

When you delete a location folder, the system deletes all subfolders and location nodes below that folder. If there are any devices tagged to the location being deleted, these devices would either be auto tagged (according to the tagging logic) or they will be tagged to the **Unknown** location folder. Use the following steps to remove a location folder and/or a location node.

*Note:* You cannot delete the **Root Location** and **Unknown** location folders.

1. In the **Location** tree, select the location that you wish to delete.
2. Right-click and from the resulting context-sensitive menu, select **Delete**.



#### **Deleting a location**

3. Click **Yes** in the **Confirm** dialog to remove the selected location.

## Working with Images

This section shows you how to add an image to a location, delete an image from the location, and import a Planner file into a location node. It also shows you how to use the zoom feature while viewing a layout image.

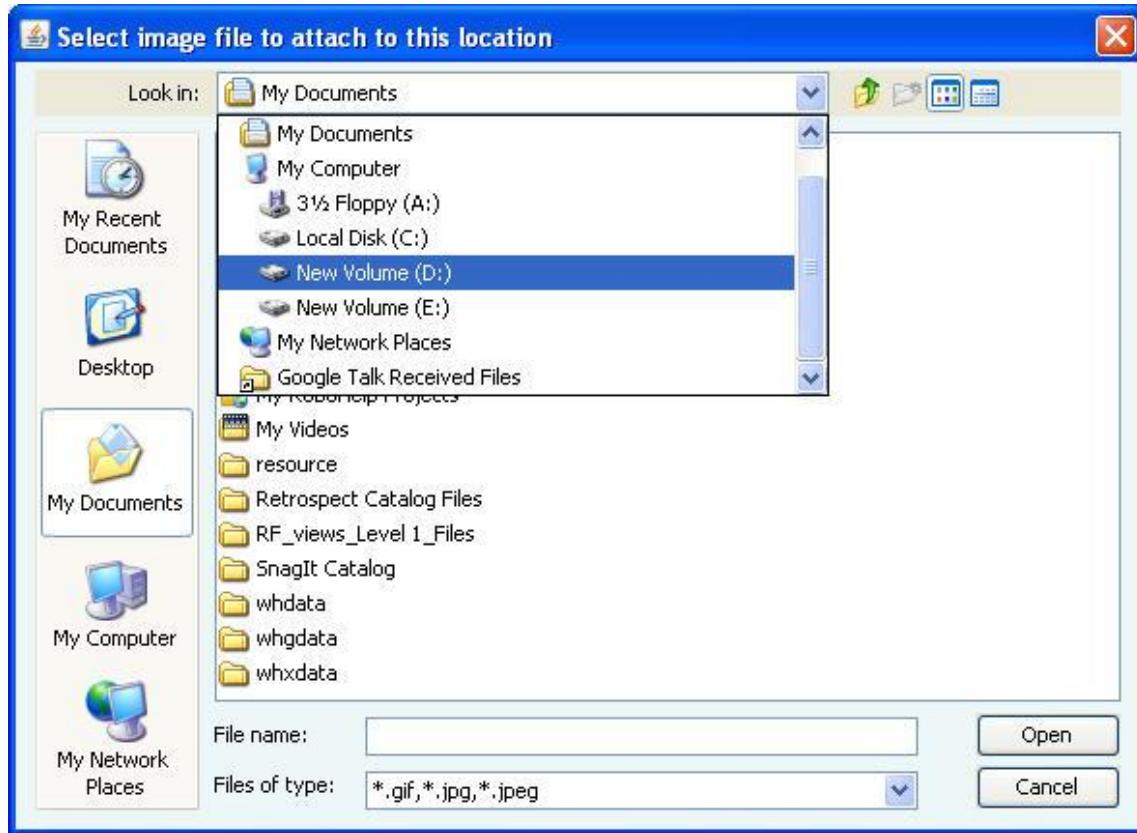
### *Attaching an Image*

Use the following steps to attach an image:

1. In the **Location** tree, select the location to which you wish to attach an image.
2. Do one of the following:
  - Right-click and from the resulting context-sensitive menu, select **Attach Image**.
  - Click the **Attach Image on floor** icon (  ) in the right corner.



#### **Attaching an Image to a Location**



#### Specifying a Path to attach an Image

3. On the Select image file to attach to this location dialog, browse to the appropriate image and then click <Open>.

#### Zooming In/Zooming Out, Opacity Control, Resolution of an Image

Considerable screen area is required to display a large sized layout (for example, 3000 x 2000 sq. ft.) defined or imported in the system. The zooming in/zooming out feature makes it easier to comprehend the RF coverage and device placement information. It also avoids excessive scrolling.

Use the following steps to zoom in/zoom out of an image and control its opacity.

1. In the **Location** tree, select the location node that has a .SPM file imported or attached image and devices placed on it.
2. Do one of the following for zooming out or zooming in:
  - Select a zoom percentage (%) from the drop-down list and then click the **Zoom out** icon or **Zoom in** icon .
  - Enter a zoom % between 1% to 1000% in the editable drop-down box and then click the **Zoom out** icon or **Zoom in** icon .
3. To change the opacity of the image, select an **Image Opacity** value. Decrease this value to better comprehend RF coverage or increase this value to pinpoint exact device placement information.
4. Select an appropriate **Resolution** for rendering of the heat maps. A lower resolution would mean much faster rendering although with a higher pixelization effect (coarser look). High resolution would mean much slower rendering due to the large number of pixel cells for which values need to be calculated.

*Note: The system proportionately resizes the RF layout display area depending on the zoom % specified by the user. Additionally, attached image, if any, and scale markings change accordingly. The system also readjusts scrollbars to keep the displayed objects center point invariant.*