CHAPTER 10

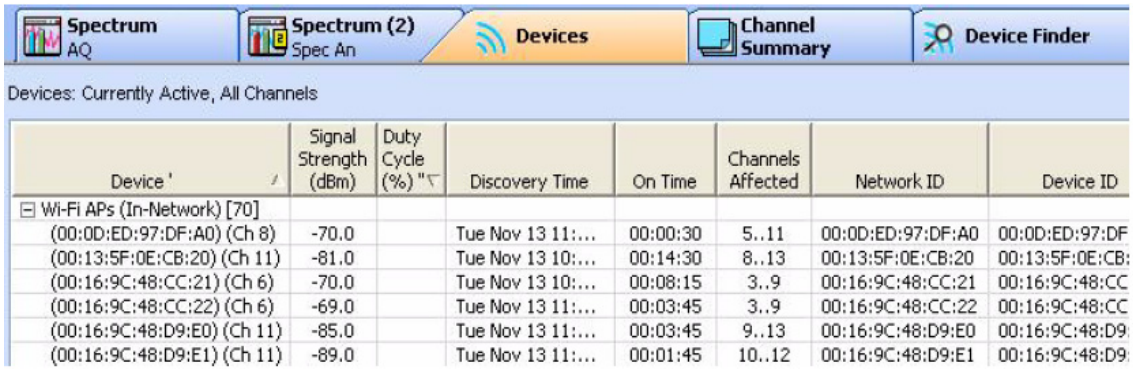
# Devices View

The **Devices View** shows detailed statistics for each device, including both currently active devices and historical devices. Devices listed here include both network devices and interferers.
You access this view by selecting the **Devices** tab. The data in **Devices View** is organized in tabular form. (The following list of fields is provisional, and subject to change without notice.)

- **Device**—The name of the interfering device.
- **Signal Strength (dBm)**—Average received signal strength (log average) for pulses from the device.
- **Duty Cycle (%)**—Measured duty cycle for this device.
- **Discovery Time**—When the device was first detected.
- **On Time**—Amount of time the device has been on since it was detected.
- **Channels Affected**—Channels affected by transmissions from this device.
- **Network ID** —Network address for this device, if available (for example, the BSSID for 802.11 device, or the piconet address for Bluetooth devices).
- **Device ID**—The device address for the device, if available. Examples would be the MAC address for 802.11 access points, the device address for Bluetooth devices, and so on.

If there is more than one instances of a device type, the number of instances will be indicated in brackets (for example, **[5]**) in the **Device Name** field.

***Figure 10-1 Devices View***




**Note** In the default view, all of the columns do not display. You can add or delete columns. For more information see "Adjusting The Column Display."

# Working With Devices View

## Devices View and the Active Devices Panel

Normally, when the **Devices View** is in the foreground, Cisco Spectrum Expert Software automatically hides the **Active Devices** panel. However, you can have both **Devices View** and the **Active Devices** panel on display at the same time. See "Active Devices" for more information.

## Adjusting The Column Display

- **Resize Columns**—You can resize the columns by using the mouse to select the dividing line between columns, and sliding the line to the left or right.
- **Change Column Order**—You can change the order of columns by left-clicking-and-holding on a column heading, and dragging the column to the left or right. (This works exactly the same as moving columns in the Windows Explorer.)

**Note** The **Device Name** column is always the first column when viewing in the Tree View. You cannot switch the placement of this column.

- **Add or Delete Columns**—Not all of the available columns needs to be on display at one time. In fact, in the default view, several columns are normally omitted.
- You can add any of the available columns by right-clicking on the column headings. From the pop-up menu, select **Add Column ‡ <column name>**.
- You can delete a column by right-clicking on any column heading. From the pop-up menu, select **Remove Column**.
- **Saving The Current Column Settings**—Your current column settings are automatically saved when you exit the Cisco Spectrum Expert Software.
- **Restore The Default Column Settings**—You can restore the default column configuration by right-clicking on the column headings. From the pop-up menu, select **Use Default Column Settings**.
- **Column Definitions**—To obtain a definition for any column, hover the mouse pointer over the column heading. A definition for that column heading appears in a tooltip window.

## Selecting The Display Type

There are two viewing modes available in **Devices View**.

- **Tree View**—In this view, devices in column one (**Device Name**) are organized hierarchically, first under a device type heading, then under a network master (for example, access point, base station) heading. This is the default view after start-up. The following device type headings apply for the tree view:
  - Wi-Fi APs (In Network) (Wi-Fi product only)
  - Wi-Fi APs (Known) (Wi-Fi product only)
  - Wi-Fi APs (Unknown) (Wi-Fi product only)
  - Wi-Fi Ad-Hocs (Wi-Fi product only)
  - Bluetooth Piconets

  - Cordless Phones
  - Microwave Ovens
  - Continuous Transmitters
  - Burst Transmitters
  - Chirp Transmitters
- **List View**—In this view, there is no hierarchical organization for **Device Name** data.

**Note** In the default List View, the **Device Name** column is not the first column; a new column, Categories, appears first.

You can switch between these two viewing modes by selecting the **Tree View** or **List View** radio buttons in the **Device Controls** panel at the left side of the application. (If the **Device Controls** panel is not showing, select **View > Control Panel**.)

## Setting The Time Range

You can set the time range and channel for which devices will be listed by using the drop-down list box on the **Device Controls** panel.


## Sorting The Display

You can sort the data in the **Devices View** by any of the column headings.

- **Primary Sort Column**—The primary sort is invoked by left-clicking on the column heading. The primary sort column is indicated with a single tick-mark.
- **Secondary Sort Column**—The secondary sort is invoked by shift-clicking on a column heading. The secondary sort column is indicated with a double-tick mark.

The sorts do *not* affect the outline headings in the **Device Name** column (the first column) for the hierarchical viewing mode; for this mode the sort is applied only to the data at the lowest level in the hierarchy for each outline heading. The default sort order is:

- **Primary**—Device (ascending)
- **Secondary**—Duty Cycle (descending)

### Ascending and Descending Sort Order

For any given column, you can toggle between ascending sort order and descending order simply by clicking on the column heading. (If the column is currently sorted in ascending order, clicking once sets it to descending order; clicking again restores it to ascending order.)

This works exactly the same for the secondary sort column – repeated shift-clicking toggles between ascending and descending order.

## Keeping Your Eye On A Particular Device

If there is a particular device that is of interest to you, you can keep an eye on the device simply by clicking on it. Your selected row will be highlighted. As new devices as detected (or disappear from view), the **Device List** will auto-scroll and auto-sort. However, Cisco Spectrum Expert Software will make sure your highlighted row always remains in view. (In other words, auto-scrolling and auto-sorting will be adjusted so that the highlighted row always remains visible on Cisco Spectrum Expert Software.)

## Locating A Device

The Cisco Spectrum Expert Software's **Device Finder** mode enables you to use your laptop as a "sniffer" to track down a specific interfering device. **Device Finder** is discussed in detail in "Device Finder Mode."

**Tip** To get started, you can right-click on any interfering device shown in the **Devices View**. Assuming the device is currently transmitting, you can select **Find This Device** from the pop-up menu. This starts the **Device Finder** mode. If the selected device is not currently active, the **Find This Device** option will be grayed out.

**Note** The **Device Finder** can only locate certain types of devices. If you right-click on a device that can't be located, you will not be able to access the **Find This Device** option. Also, a device must be currently active (transmitting) in order to find it. If, in **Devices View**, you click on a device which is not currently transmitting, you will not be able to access the **Find This Device** option.

## Obtaining Detailed Information On A Device

To obtain detailed information for any device, double-click on the device in the list. A pop-up dialog box appears showing detailed information for that device.

# Miscellaneous Device Issues

This section describes miscellaneous issues that affect data displayed in the **Device View**.

## Signal Bounce and Fading

Narrowband signals—such as signals from analog FM cordless phones or analog video cameras—are prone to "fading." Signals naturally fade (grow weaker) with increased distance from an RF signal source. But as a technical term, "fading" refers to the fact that as a signal travels; it bounces and reflects off of multiple surfaces. So, at some distance from a single source, that single source of RF power results in multiple signals (all from the same source) crisscrossing each other.

When a single RF signal—reflected from multiple directions—crosses paths with itself, the result is signal *interference*. Signal interference can be constructive (resulting in a stronger signal at a given point), or

destructive (resulting in a weaker signal, or even no signal, at a distance not at all far from the original source).

The result is that, at a given receiving antenna, the signal can vary greatly in power when the antenna is moved just a few inches in any direction. To further complicate matters: As people and other objects in the environment move, the source signal is reflected differently. So even if the receiving antenna stays in one place, signal strength can vary unpredictably over time.

As a result, when Cisco Spectrum Expert Software is detecting a narrowband interferer, the detection status may toggle on and off due to fading. Fading occurs in most indoor environments, and the fluctuations in the received signal level are typically correlated to the rate of motion for nearby people/objects.

## Near/Far Effect

The presence of strong signals may further impair the ability of the classification software to detect weaker signals. This is the so-called near/far effect, which is caused when the strong and weak signals use up the limited dynamic range of the receiver. (In other words, the receiver can only handle so much signal strength, in total, at one time. So if the receiver is getting two signals, the strong one can essentially swamp the weaker one.)

**Example**: When you walk near one cordless phone while you are simultaneously listening to another cordless phone that's far away (for example, at your next-door neighbor's house), you may find that you lose the weaker signal. When you turn off the near-by cordless phone, you may find that you can detect the weaker signal again.

These effects cannot be removed by Cisco Spectrum Expert Software. The only thing we can do is make you aware of them, so that you can understand why it is that certain interferers fade in and out of view at times.

## Device Detection Time

In general, the time required for Cisco Spectrum Expert Software to detect and classify devices, and reclassify their status if they go from being On to Off, will vary depending on the RF environment and location of devices relative to the Sensor card. Most devices (other than 802.11) should take 5 to 30 seconds. However, 802.11a/b/g devices and 802.11 frequency hoppers may take as long as ten minutes to be detected.