



## CHAPTER 4

# Cisco Spectrum Expert Setup

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The chapter discusses the physical setup of the Cisco Spectrum Expert, along with software installation.



### Note

Be sure to install the Cisco Spectrum Expert Software before installing the Sensor card into your computer. If you have installed the Sensor card first, see the “[Repairing a “Backwards” Installation](#)” section for more information.

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## Downloading the Cisco Spectrum Expert Software



### Note

Install the Cisco Spectrum Expert Software *before* installing the Sensor card in the slot in your computer.

To download the Cisco Spectrum Expert Software, follow these steps:

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- Step 1** Go to <http://www.cisco.com/kobayashi/sw-center/sw-wireless.shtml>.
  - Step 2** Under Cisco Spectrum Expert, click the [Cisco Spectrum Expert Software Release](#) link.
  - Step 3** Select the most current download (.exe) file for your operating system.
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## Installing the Cisco Spectrum Expert Software

To install the Cisco Spectrum Expert Software, follow these steps:

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- Step 1** Click on the downloaded executable setup program to initiate the installation wizard.
  - Step 2** If security warning screens appear, click **Run** or **Yes** to confirm and continue.
  - Step 3** From the **Welcome** screen, click **Next**.
  - Step 4** On the **License Agreement** screen, review the Cisco Software license agreement and select the **I accept the terms in the license agreement** checkbox.
  - Step 5** Click **Next**.
  - Step 6** On the **Customer Information** screen, enter your User Name and Organization.

**Step 7** Click **Next**.

**Step 8** On the **Destination Folder** screen, click **Next** to confirm the default install destination.

## Installing the Sensor Card in the Laptop Slot



**Note**

Install the Cisco Spectrum Expert Software before installing the Sensor card into an available slot in your computer.

The Sensor card contains Cisco custom hardware, the SAgE chip, for detecting RF spectrum activity.



**Note**

Cisco Spectrum Expert 4.1 only supports second generation Cisco production sensor cards. These cards can be identified by the Cisco label with the model number of 210c and an 11 character alpha/numeric serial number. The older cards can continue to operate and are supported using the released 3.3.52 version of software available on Cisco.com.

To install the Sensor card, follow these steps:

**Step 1** Insert the Sensor card into an open slot (i.e., a PCMCIA Card slot) on your laptop.



**Note**

The pins go in first with the LEDs on the card facing upward.

**Step 2** Press the card gently but firmly into place.

**Step 3** Windows XP and Vista should automatically detect the hardware and install the necessary drivers for the Sensor card.



**Note**

Once the installation is complete, a Windows XP or Vista pop-up window indicates that the hardware has been installed.

**Step 4** When a dialog box indicates the installation is complete, click **Finish**.

## Attaching the External Antenna

The Sensor card has an internal antenna, however we recommend using the external omni antenna (included) for improved detection sensitivity. An external directional antenna can also be ordered from Cisco (optional).



**Caution**

To avoid damaging both the connector and the Sensor card, use caution when detaching the external antenna.

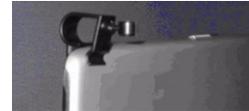
**Caution**

Significant repetition (over 500 times) of connecting and disconnecting the external antenna may degrade the connector's performance.

## Omni Antenna

To attach the omni antenna, follow these steps:

**Step 1** Attach the antenna holder clip to the top of the computer's display panel.



**Step 2** Slide the antenna vertically into the round, horizontal holder with the swivel base above the antenna holder clip.



**Step 3** Install the antenna's cable into the external jack on the Sensor card using the cable plug (MMCX male connector).



## Directional Antenna

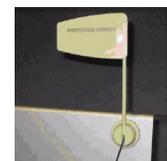
To attach the directional antenna, follow these steps:

**Step 1** Mount the Velcro strip to the back of the PC using the strip's adhesive backing.

**Step 2** Attach the plastic holder to the Velcro strip.

**Step 3** Slide the antenna's support staff into the slot holder.

**Step 4** Install the antenna's cable into the external jack on the Sensor card using the cable plug (MMCX male connector).



See the [Directional Antenna, page 4-3](#) for more information on how to make effective use of the directional antenna.

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## Removing the External Antenna



### Caution

Care must be taken when removing (disconnecting) the external antenna. If the plug is not removed carefully, either the MMCX antenna jack on the Sensor card, or the Sensor card itself may be permanently damaged.

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Why didn't Cisco use a more robust connector for the antenna? Certain technical requirements create limits on the connector that can be used. It must be thin enough to fit in a Sensor card. Also, the extremely high frequencies involved demand a special connector which can carry these frequencies across the connection with minimal signal loss. Very few connectors can meet these stringent requirements, and we have selected what we believe is the best connector for the purpose at hand. Unfortunately, it is relatively fragile, and requires careful handling to avoid damage.

The antenna should **NEVER** be disconnected by pulling on the antenna lead (the wire connecting the antenna to the Sensor card) to avoid causing damage to the cable, connector, and Sensor card.



### Caution

Failure of the user to follow the instructions below can cause the antenna or Sensor card to become inoperable, and failure to properly disconnect the antenna may lead to voiding the warranty.

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Essentially, the requirements for removing the external antenna is to make sure you are pulling the plug straight out of the jack.



### Note

You may find it easier to detach the antenna if you first remove the Sensor card from the slot. This way, you can hold the Sensor card in one hand, while grasping the antenna jack in the other. See the [“Swapping or Removing the Sensor Card”](#) section for more information.

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To safely remove the plug, follow these steps:

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**Step 1** Grasp the plug—the part at the end of the antenna wire—at the end of the antenna lead where it is mated to the Sensor card.

The best method is to “pinch” the connector with the thumb and forefinger, and with the nails, or the tips of the fingers, under the shoulders of the connector.

**Step 2** Pull the connector firmly and make sure that it is perpendicular to the edge of the card.

Carefully get a grasp on the plug—we recommend you actually use your fingernails, sliding them so as to create a gap between the plug and the jack—and gently but firmly pull the plug in a direction that is directly at right angles to the Sensor card and is perpendicular to the laptop, if the Sensor card is still inserted in the laptop. To the extent possible, you should be gripping the plug with equal, balanced pressure from opposing sides, using two or three fingers.

What you do *not* want to do is to apply any pressure to the left or right, or up or down. We recommend you avoid a twisting motion as well.

## Using the Directional Antenna

The purpose of the directional antenna is to focus RF detection activity in a given direction. This can be useful with all Cisco Spectrum Expert Software features, but is especially useful with the **Device Finder** (see the “[Device Finder Mode](#)” section for more information).

## Swapping or Removing the Sensor Card

Normally, you would not want to remove the Sensor card while the Cisco Spectrum Expert Software is running. However, you can in fact remove the Sensor card, and reinsert it, without degrading system performance.

If you do remove the Sensor card while the software is running, a pop-up window will appear directing you to reinsert the card, and hit **[OK]** to continue.

## Cisco Spectrum Expert Software Startup

When Cisco Spectrum Expert Software and the Sensor card are installed, Cisco Spectrum Expert Software can identify sources of interference in the neighborhood of your network.

**Note**

If your computer has an 802.11 interface, it should be enabled in order to detect Wi-Fi devices. Note that if you are connected to an AP or ad-hoc network through the 802.11 interface, you will occasionally see strong signals on the spectrum plots that are measurements of your own 802.11 transmissions. But as long as your network transmissions are not excessive, Cisco Spectrum Expert Software will still operate correctly in the presence of these signals.

To start the Cisco Spectrum Expert Software, follow these steps:

**Step 1** From the Start menu, select **All Programs > Cisco > Cisco Spectrum Expert** or click the desktop icon.

**Note**

If you receive a Windows security alert for a Spectrum Expert-related program called **Sensord**, select the **Unblock** option.

**Step 2** From the **Connect to Sensor** dialog box, choose from:

- Sensor Card with Internal Antenna
- Sensor Card with External Antenna
- Spectrum Capture File



**Note** If you choose **Spectrum Capture File**, click **Browse** to identify the applicable file.

**Step 3** To identify these settings as default, select the **Automatically start sensor connection with these settings next time application is launched** check box.

**Step 4** Click **OK** to access the Cisco Spectrum Expert Software application.

**Note**

Upon starting Cisco Spectrum Expert Software, you may see a dialog box indicating that there is no 802.11 capability in your laptop. Cisco Spectrum Expert Software will work, but will not detect 802.11 devices. See “[Cisco Spectrum Expert Software and Your Laptop](#)” for more information.

**Note**

Depending on the country in which you are located, you may need to change the settings before you can make effective use of Spectrum Expert.

**Step 5** Select **Tools > Settings** to change the application settings, if necessary.

**Step 6** Select the **Channel Settings** or **Monitored Bands** buttons at left. See “[Console Settings](#)” for more information.

From here, you can use all the features of Cisco Spectrum Expert Software. See “[Cisco Spectrum Expert Solution](#)” for more information.

## Repairing a “Backwards” Installation

**Note**

The Cisco Spectrum Expert Software should be installed *before* you insert the Sensor card into your PCMCIA slot.

If you have installed the Sensor card hardware first, the software installation process may not work correctly and Cisco Spectrum Expert Software may not recognize the Sensor card in your laptop. This section contains instructions on how to fix this situation, should it arise.

The installation process automatically installs the software drivers required by the Sensor card. If you install the Sensor card first, the necessary device drivers are not present.

If a message appears indicating that the necessary device drivers are not present, follow these steps:

**Step 1** Click the **Don’t prompt me again to install the software**.

**Step 2** Select **Finish**.

**Step 3** Install the Cisco Spectrum Expert Software. See “[Installing the Cisco Spectrum Expert Software](#)” for more information.

After installing the software, Windows XP or Vista may or may not automatically recognize the Sensor card. Both of these situations are addressed below.

### Automatic Hardware Recognition By Windows XP, Windows 7 Or Vista

Windows XP, Windows 7 or Vista may automatically recognize that the necessary drivers are now present to support the Sensor card. Windows XP, Windows 7 or Vista will install the drivers for you, and you can go ahead and use Cisco Spectrum Expert Software.

One way to find this out is simply to start the software. If the program starts successfully, this indicates it has found the Sensor card and it is ready for use.

Another way to check that the drivers are properly installed is to select:

- **Start > Settings > Control Panel**
- Double-click on the **System** icon.
- Select the **Hardware** tab.
- On the **Hardware** tab, select **Device Manager**.

If the Sensor card—with supporting software drivers—is properly installed, then there will be an icon for **Spectrum analysis devices**. Open that icon (double-click on it), and underneath you will see listed the **Cisco Spectrum Expert Sensor**. (SAGe is the spectrum-analyzer-on-a-chip in the Sensor card.)

You can close the Device Manager, and get to work with the Cisco Spectrum Expert Software.

## Cisco Spectrum Expert Software and Your Laptop

There are several important issues you need to be aware of, in terms of how your laptop interacts with Cisco Spectrum Expert Software. These are discussed below.

### Laptop Resource Utilization

In general, Cisco Spectrum Expert Software is a resource-intensive software, using a relatively large amount of CPU cycles. In particular, when you are using the **Power vs. Time** spectrum plot, or the **Device Finder**, you can expect that any other software running on the laptop will run slowly.

### Spurious Signal Detection

Every laptop computer emits RF signals which can be detected by Cisco Spectrum Expert Software. While we have implemented various algorithms to avoid classifying these as interferers, the signals will sometimes be classified as continuous interferers and they will always be visible in all the spectrum plots. This issue is more prevalent when using the Sensor card's internal antenna.

## Upgrading The Cisco Spectrum Expert Software

An upgrade to Cisco Spectrum Expert 4.1 is considered a major upgrade because during installation any previous versions of Cisco Spectrum Expert Software are automatically uninstalled, after which, Cisco Spectrum Expert 4.1 installs as a “fresh” installation. All generated files, such as Spectrum View configurations, CCF files, screen captures and data exports will be preserved by the upgrade process. However, local settings such as Bands/Channels selection, default views and alerts configurations will not be preserved.



#### Note

Previous versions of Cisco Spectrum Expert Software were Cognio-branded. For example, Cognio-branded Spectrum Expert 3.1 can be upgraded to Cisco-branded Spectrum Expert 4.1.

