

# Using SynchronEyes™ Software on a Wireless LAN



**Applies to:** SynchronEyes™ software 5.x, 6.x and 7.x

## Overview

This document provides guidelines for using SynchronEyes software on a wireless local area network (WLAN).

## Details

### Recommended Hardware/Software

Use commercial-grade access points. Don't use consumer-grade access points because they aren't designed to handle the large number of clients typically used with SynchronEyes software.

Use a commercial-grade wireless network card, such as those from Cisco or 3Com®. Although your choice of access point is more important than your choice of wireless network card, a commercial-grade wireless network card is more reliable than a consumer-grade product.

For best results, use SynchronEyes software 5.1.1 or later with Windows® 2000 operating system software or later.

### Wirelessly Connect up to 30 Students with 802.11b or 802.11g

SynchronEyes software supports up to 30 student connections per access point on an 802.11b wireless network. Connecting more than 30 students to an access point can negatively affect performance.

An 802.11g wireless network provides more bandwidth but is more susceptible to interference.

### Position Access Points in the Same Room as Student Computers

Although radio signals can pass through walls and other solid objects, these barriers can degrade signal quality and decrease the availability of network bandwidth. For best performance, ensure that student computers have a line-of-sight to the access point.

Ensure that wireless connection quality is excellent for all student computers and that a wireless network connection of at least 10 Mbps is available.

SynchronEyes software sends screen and file broadcasts to all hosts over a subnet. If several teachers are broadcasting at the same time, interference may cause poor performance, particularly on wireless networks. If possible, avoid including too many SynchronEyes classrooms on the same wireless networks subnet.

Segmenting your network into separate subnets isolates SynchronEyes software's broadcast network traffic to a particular segment of your local area network. Your network will run more efficiently when configured this way, and SynchronEyes software activity won't slow down the network.

**NOTE:** Screen and file broadcasts are the only operations that generate significant broadcast traffic.

### Use a Wired Teacher Station

Use a wired network connection for the teacher's computer because it significantly reduces the amount of traffic that SynchronEyes software places on the wireless network. A wired network connection also makes SynchronEyes software less susceptible to radio interference and less competitive for bandwidth with other network applications.

## **Minimize Interference Between Adjacent Access Points**

If you use more than one access point in the same vicinity, ensure that they're set to different channels to minimize interference between them. Although you can use channels 1 through 11, adjacent channels will overlap. Use channels as far apart as possible. For example, if you use two access points, set them to channels 1 and 11.

## **Disable Power Saving Mode for All Wireless Client Adapters**

Power Saving mode significantly impacts the performance of your wireless network, particularly when broadcasting.

For best results, disable Power Saving mode on all of the devices connected to the access point. Even if one client has Power Saving mode enabled, the wireless access point will reduce performance for this single client.

### **To disable Power Save mode:**

1. Select **Start > Control Panel > Network connections**.
2. Select your wireless network connection, and then choose **Properties**.
3. Select **Configure**.  
A list of advanced settings appears.
4. Disable the **Power Management** or **Power Saving** mode option, or select the maximum performance option.

## **Don't Mix 802.11b and 802.11g Wireless Protocols**

For best performance, use only 802.11b or 802.11g as your wireless protocol because other protocols interfere with each other. Don't mix wireless protocols whenever possible.

## **Disable IGMP or Multicast Snooping on Your Wireless Access Point**

For more information on how to check these settings for Cisco access points, see [document 92560](#).

For more information on how to check these settings for other access points, see the information you received with the access point.

## **Survey the Site**

Survey the site to determine how much radio interference is in the area and minimize or eliminate additional radio interference sources, including other wireless networks, microwave ovens, cordless phones and Bluetooth® technology.

Use a spectrum analyzer to detect radio interference. You can contract a consultant to perform a thorough site survey for you. You can, however, eliminate most sources of radio interference yourself:

- Use a tool like NetStumbler ([www.netstumbler.com](http://www.netstumbler.com)) to detect other wireless access points in the area. Set your access point to different channels (see previous).
- Avoid using 2.4 GHz cordless phones in the vicinity of your wireless network. If you must use a cordless phone, use a 900 MHz model.
- Avoid using Bluetooth technology in the same room as your wireless network. Devices that use Bluetooth technology include cell phones with file transfer or remote headphone capabilities, laptop computers equipped with Bluetooth technology and wireless devices such as keyboards or mouse devices (including the wireless USB storage device for SMART Board™ interactive whiteboards). Bandwidth-intensive applications such as FTP or HTTP file downloads can also disrupt the operation of SynchronEyes software. Furthermore, SynchronEyes software may also disrupt video or radio streaming operations.
- Avoid positioning microwave ovens near your wireless network; microwave ovens can generate a great deal of radio interference, even when placed in a different room. To minimize interference, determine the channel where interference is the greatest and then set your access point channel as far from it as possible.

**To determine the channel where interference is the greatest:**

- i. Place a water-filled microwave-safe container in a microwave oven for five minutes at high power.
- ii. Set the access point to channel 1 while the microwave is running and then transfer a large file from a local host (FTP, HTTP or Windows file transfer) to your computer.
- iii. Record the file transfer time or the transfer speed (in Kbps).
- iv. Repeat steps ii and iii with channels 2 to 11. The channel with the slowest file transfer rate has the greatest interference.

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