Spyware and Adware

*Michael J. Ackerman, Ph.D.**

Everyone who uses the Internet and surfs the Web complains about pop-up advertisements. Fortunately, the latest versions of both Netscape and Internet Explorer Web browsers have a feature that suppresses many pop-up ads. The fact that you are receiving these ads, however, may be symptomatic of other computer security problems.

. . . the fact that you are receiving [pop-up] ads may be symptomatic of other computer security problems.

Many pop-up ads are just an annoyance. The owner of the Web site that you are visiting has sold advertising space to businesses by promising to send their messages as pop-up ads whenever someone visits the Web site. This deal may have been struck with several advertisers, in which case the ads are sent out in a random order as each new user enters the Web site.

Did you ever notice that some Web sites that you may have registered with in the past greet you by name when you return? This is done through the mechanism of *cookies*. When you register, the Web site puts an identifying file—a cookie—on your computer. When you return, the Web site looks for this file and its unique contents as a mechanism of identification. The ability to accept cookies is designed into all browsers.

It was not long before some Web sites were putting a cookie on every visitor's computer so the Web-site owner could track how often a given visitor returned to the site. Soon people discovered that a Web site could look not only for its own cookie but also at all the other cookies that had been placed on the computer by other Web sites. Based on this history of where you have been visiting, the Web site could send you an appropriate pop-up ad instead of the previous practice of sending a random ad. The advertisers claim that they are no longer sending you junk mail but are providing you with a service by sending you information about opportunities that you should be interested in. Somehow I am not sure that most recipients would agree. This dissatisfaction has led to the introduction of pop-up blockers in Web browsers that block the display of these annoyances.

The use of a pop-up blocker is not without its own problems.

The use of a pop-up blocker is not without its own problems. Many Web sites have a feature that allows you to click on an icon, usually for supplementary or more detailed information, and that information appears in a small window. For example, on an airline Web site, clicking on the flight number brings up a small window containing information on type of plane, meals served (one can still dream), classes of service available, etc. This window is displayed through the same mechanism as pop-up ads, so the pop-up blocker will unfortunately block this requested information as well. This is why Web browsers that contain the pop-up blocker feature have a prominent icon to switch the feature off and on.

Web-site programmers needed to find a way around this problem. One solution uses your Web browser's Java capabilities. Java is a computer language that is designed to be compact yet powerful. Programs written in Java will run on almost any computer, with no need to worry about type or operating system. Programs written in Java, known as Java applets, can be downloaded quickly through the Web and allow a Web site to have some impressive display and interactive features. This capability was originally a problem because Java applets could also act as computer viruses. Improvements in Web browsers have limited the parts of the computer that these applets can access and what functions they can perform. The important thing to remember is that the downloading of an applet is initiated and requested by the user through the browser, so it bypasses the pop-up blocker.

The task of keeping applets from being a vector for the delivery of viruses has so far been successful.

The task of keeping applets from being a vector for the delivery of viruses has so far been successful. Using applets for unsolicited advertising has so far been unsuccessful since the downloading of an applet must be initiated by the requesting computer. But an applet can contain

*Assistant director for High Performance Computing and Communications, National Library of Medicine, Building 38A, Room B1N30, 8600 Rockville Pike, Bethesda, MD 20894; e-mail: ackerman@nim.nih.gov. This article was written by the author in his private capacity. No official support or endorsement by the National Library of Medicine is intended or should be inferred.

code that will do more than the user requested and without being seemingly malicious. Welcome to the world of *adware* and *spyware*.

THE WORLD OF ADWARE AND SPYWARE

Some might say that adware and spyware are really just another form of computer virus. In a practical sense, this may be true, but in a technical sense, there is a difference. Viruses are generally part of unsolicited files and attack parts of the software that ordinarily should not be touched. They are generally specific to the computer type and operating system. This is why anti-virus software is possible. Adware and spyware, on the other hand, are attached to solicited software, operate on any type of computer and operating system, and don't attack off-limits software. This makes them very hard to detect before they are installed.

***Adware typically records all the Web sites you visit and reports this aggregated usage information so that you can be sent appropriate e-mail advertising, also known as* spam.**

Typically adware and spyware do no *direct* harm. Their purpose is to monitor your computer activity and to report it to a given location on the Internet. Adware typically records all the Web sites you visit and reports this aggregated usage information so that you can be sent appropriate e-mail advertising, also known as *spam*.

Spyware is software that collects and transmits personally identifiable information for your computer to someplace on the Internet without your knowledge. It typically records everything you do on your computer, whether or not you are connected to the Internet, including the recording of account logins and passwords. When you reconnect to the Internet, spyware reports this information to an Internet location. One can only guess what the recipient does with the account addresses, names, and passwords.

Spyware is software that collects and transmits personally identifiable information for your computer to someplace on the Internet without your knowledge.

Fortunately, you can do something about spyware and adware. Two highly regarded programs, available free for download over the Internet, are designed to find and eliminate both adware and spyware from your computer. One program is called Ad-Aware from Lavasoft (www.lavasoft.de); the other is Spybot (www.spybot.info). Each takes a different approach to the problem, so many people believe that both programs are necessary for removing spyware and adware from your computer.

Fortunately, you can do something about spyware and adware.

Just like virus software, these programs require constant updates. The updates can also be downloaded free of charge from the Web site. Both sites will give you further information on the use and limitations of their programs. They are worth a visit. ■