Adobe Systems Incorporated
345 Park Avenue
San Jose, CA 95110-2704
Phone 408 536.6000
Fax 408 537.6000

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Via electronic filing

Office of the Secretary
Federal Trade Commission
Room H-135 (Annex P2)
600 Pennsylvania Avenue, N.W.
Washington, DC 20580

Dear Sir/Madam:

Re: Comments from Adobe Systems Incorporated – Privacy Roundtables Project No. P095416

Adobe Systems Incorporated (Adobe) respectfully submits these comments in connection with the Federal Trade Commission's second Privacy Roundtable, Project No. P095416.

Executive Summary

Applications and Web sites built for use with Adobe® Flash® Player are enjoyed by the vast majority of computer users today. Many of these applications depend on Local Storage[1] to store data necessary to make the applications easy to use in a way that is consistent with the user's expectations.

However, we are aware of one use of Flash Local Storage that is inconsistent with the user's expectations. This is the practice of using Local Storage to back up browser cookies for the purpose of restoring them after they have been deleted by the user. This restoration happens without the user's knowledge and express consent.

Adobe condemns this type of misuse of Local Storage. We encourage developers to use technology responsibly, and certainly not in ways that circumvents the user's intentions or reasonable expectations.

We are also committed to supporting research into the types and extent of the misuse of Local Storage so that we can develop a complete understanding of how Local Storage is used and misused as well as the prevalence of the misuse. This research will help us understand if there are actions we can take or support that will limit or help prevent the misuse. These actions may

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[1] Local Storage is referred to as Local Shared Objects in Flash programming

involve a mix of technology tools and regulatory efforts, such as the Federal Trade Commission's use of its authority under Section 5 of the FTC Act.

Adobe has approached the major browser companies to determine whether there is an efficient way to provide users the opportunity to control their Flash Local Storage settings when they set their browser privacy settings. In addition, Adobe is making changes to Flash Player that will enhance privacy protections for users of applications built on the Adobe Flash Platform. These changes will be reflected in Flash Player 10.1 due out in the first half of this year.

Introduction

This Comment addresses the use of Flash Local Storage available for use by applications running in the Adobe Flash Player runtime.

As described further below, using Local Storage a developer can store information on a user's machine related to that developer's application in order to provide a better experience for the user. Unfortunately, one misuse of Local Storage has been to circumvent the user's intent to clear browser/HTTP cookies and the values stored in those cookies. This particular use of Local Storage, i.e. using them to recreate a deleted HTTP cookie, is also referred to as "browser cookie re-spawning." The research paper published by Chris Hoofnagle et al[2] in August 2009 has provoked broader discussion in privacy circles about Flash Local Storage and the potential for abuse of the technology.

As the Federal Trade Commission continues to focus on how technology affects consumer privacy, Adobe welcomes the opportunity to submit this Comment on the use of Local Storage. In this Comment we will clarify what Local Storage is and how it is used and misused. We will also provide some history and insight into the development of Flash Player and Flash Local Storage (Flash Local Storage is sometimes incorrectly referred to as *Flash cookies*). Finally, we will provide details explaining Adobe's position on Local Storage misuse and the steps Adobe is taking to provide better privacy protection for users of Flash Player.

Adobe's Position

Adobe condemns the practice of using Local Storage to back up browser cookies for the purpose of restoring them later without user knowledge and express consent. This practice, also referred to as "browser cookie re-spawning," circumvents the user's intent to clear browser cookies and should not be used. Flash Player is an innovative, popular technology that has been instrumental in shaping the Web as we know it today. Adobe encourages users of the Adobe Flash Platform to use our technology responsibly and certainly not in ways that circumvents a user's privacy intentions.

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[2] See Soltani, Canty, Mayo, Thomas, and Hoofnagle, FLASH COOKIES AND PRIVACY, School of Information Summer Undergraduate Program in Engineering Research at Berkeley (SUPERB), U.C. Berkeley School of Law University of California, Berkeley, August 10, 2009, *available at* http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1446862.

A Brief History of Flash Player

In 1995, the Web was all about text. There was no easy way to create rich and engaging graphics and animation for display in Web browsers. The creators of FutureSplash, the ancestor of today's Flash Player, had originally created a graphics technology for pen computing tablets, but this technology was ahead of its time. The team looked for other ways to distribute this technology. In 1996, Netscape introduced a browser technology that allowed developers to extend the browser and FutureSplash was brought to the Web via this technology. The first big success of the new technology came in August of 1996, when Microsoft used FutureSplash to create the most TV-like experience on the Internet at that time with MSN. This was quickly followed by Disney's use of FutureSplash for the animation and user interface for the Disney Daily Blast.

Macromedia acquired FutureSplash in 1996 and released it as Macromedia Flash 1.0. Over the next few years, Macromedia added innovative new capabilities, such as sound, simple scripting to create interactive Web experiences, and video. The technology gained in popularity for Web sites, casual games, and rich media advertising.

As Flash Player increased in sophistication, so did the content built using Flash technology. In 2002, Macromedia launched Flash Player 6 and coined the term "rich Internet application" (RIA) to describe a more robust Web application that could be deployed across different types of browsers and operating systems, and that offered users, including enterprises, a more compelling and interactive experience than was previously unavailable on the Web. In December 2005, Adobe acquired Macromedia and continued the development of Flash Player to offer richer experiences on the Web.

Today, over 75 percent of online videos viewed worldwide are delivered using the Flash technology, making it the No.1 platform for video on the Web. Major broadcasters and media companies, including Disney.com, MLB.com, and DIRECTV, rely on the Adobe Flash Platform for delivering video on the Web. The platform also powers social network sites such as YouTube and MySpace.

According to an Adobe internal survey, over 70 percent of Web-based games are built using Flash technology. One Flash game developer did his own research into the space in July 2007[3] and found more than 14,000 games spread across 30,000 game portals with hundreds of new games launching every month.

RIAs provide engaging experiences that increase customer loyalty and user productivity. Sherwin-Williams, paint supplier, provides an application for color visualization that runs in Flash Player where users can upload images of their home interiors and apply Sherwin William

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[3] http://lostgarden.com/2009/07/flash-love-letter-2009-part-1 html.

colors for an accurate representation of what the colors will look like on their walls[4]. Other innovative uses of the Adobe Flash Platform can be found at http://www.adobe.com/cfusion/showcase/index.cfm?event=finder&productid=342063&loc=en_us.

Local Storage in Flash Player

To build a platform that could support the development of robust applications, a number of new capabilities were added to Flash Player. The addition of Local Storage was a feature designed to support RIAs. Web applications require the ability to store information so that once the application is closed by the user, the information (such as user preferences) can be retrieved the next time the user loads the application. This information is stored locally on the user's computer, and is available only to the domain that stored it.

Local Storage allows Web sites with applications built to run in Flash Player to store data associated with those applications on the user's computer for use when the user revisits that site. Many Web sites use this feature to save information such as the user's work, online game progress or high scores, login data, and/or preferences. Local storage can improve the browsing experience by eliminating the need for users to reenter information each time they visit a site.

Local Storage can store simple text as well as more complex data. Local Storage, by itself, cannot do anything to or with the data on a computer. The storage is just a container to hold information such as user preferences which the Web developer deems appropriate to help make the user experience easy, intuitive, and consistent with the user's expectations in context.

There are many use cases for Local Storage. The following are some of the most common ones:

- *Application preferences* – The ability for an application to remember a user's choice made while visiting a Website. These can range from a convenience feature to a critical aspect of the application.

  For example, many video Web sites will use Local Storage to store the volume preference for the video playback experience. Once a user adjusts the volume setting, it is remembered so that the user does not need to reset it when moving from one video to the next or upon future visits to the same video site. By using Local Storage for this purpose, the user experience becomes faster because the user is not required to first create a user account that would then be used to associate the user with user-specific volume setting.

  Without the ability to store preferences, more sophisticated applications would not be able to provide the quality Web experience users have come to expect. For example, if the user did not have the ability to store his choice of a custom dictionary in an online

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[4] http://www.sherwin-williams.com/do_it_yourself/paint_colors/visualizer/.

word processor, he would need to select it each time he visited the site. As another example, other Web sites or Web applications that use Flash Player may allow the user to configure or customize her own user interface. That information can be stored in Local Storage and used by the application the next time the user visits the site, as the user would expect.

- *Caching* – Many online applications consist of a large number of files and data that need to be downloaded during each visit, to load user preferences, such as language preferences or other user-specific application data. By storing this data in Local Storage, the local data can be used instead of requesting it from the server every time the application is loaded. This optimization results in a faster start-up time for the user when she visits the site.

- *Saved Data* – Applications generally need to "maintain state" for the user, so the application can be returned to the same point where the user left it. Games are a good example of this and are one of the most recognizable types of content that run in Flash Player. Many large-scale games are designed to be played across multiple sessions or visits. In most games, Local Storage is updated regularly with the progress. Thus, the user can leave the game, return to it at a later time, and continue from where he left off, just as he would expect.

- *Temporary Data* – Web applications and Web sites that don't require the reloading of a page or that don't require the user to navigate the page through links have become common, yet, the browser navigation model has struggled to keep up. As a result, using the browser navigation (e.g. the "Forward" and "Back" buttons) may accidentally take the user away from a site or an application she was using. Most often, once the Web page is gone, so is the unsaved data in the application. Many Flash applications address this problem by storing temporary data in Local Storage so that the user can return and continue where she left off.

  For example, many users employ online photo editing sites to manage images before sharing them with friends. What happens when a user makes changes to an image, but accidentally hits the browser's "Back" button before saving the changes? Often, those changes will be lost. By using Local Storage, the application can save all the changes the user made so that she can pick up where she left off instead of requiring her to start from scratch.

User Control of Flash Local Storage

 Users can currently manage their Flash Local Storage settings through the Flash Player Settings user interface (UI) or the Flash Player Settings Manager. The Flash Player Settings UI can be accessed by right-clicking on content written for Flash Player. The Flash Player Settings Manager Website is available at www.adobe.com/go/settingsmanager. The Settings Manager provides users, among other things, the ability to manage Local Storage, such as viewing and/or

deleting information associated with visited sites that use Local Storage and adjusting the amount of storage space associated with a specific site or application is able to use on their computer. It also allows configuration of global Flash Player preferences such as blocking all sites from writing to Local Storage. As discussed below, Adobe is modifying the Flash Player user interface in the next version to make it easier for users to find and change their privacy settings.

Local Storage Used by Others

As RIAs have increased in popularity and volume over the last eight years, the concept of Local Storage is being implemented in other Web technologies. For example, the emerging HTML5 standard defines Local Storage capabilities for use by Ajax (JavaScript-based) applications running in Web browsers. The Microsoft Silverlight plug-in also includes a Local Storage mechanism called "Isolated Storage." In every case where rich Internet applications are possible, Local Storage is available, with capabilities and limitations similar to those available on the Adobe Flash Platform. The concepts of Local Storage across these technologies are fundamentally the same. The fact that browsers and other technologies are validating the Local Storage model introduced in Flash Player back in 1996 both underscores that Local Storage is distinct from the existing browser cookie system and the underlying need for responsible use of Local Storage in modern Web applications.

Misuse of Flash Local Storage on the Web

While the vast majority of Web sites and developers use Local Storage capabilities to provide a better user experience, Local Storage is sometimes misused for "re-spawning" browser/HTML cookies by certain Web site operators or ad networks. Re-spawning browser cookies is a process that recreates or restores a browser cookie a user has chosen to manually or automatically delete. Re-spawning is typically accomplished by sending a copy of the cookie data to a plug-in that supports Local Storage, such as Adobe Flash Player, Google Gears, Microsoft Silverlight or Sun's Java. The data can then be retrieved from the Local Storage to recreate the browser cookie as it existed prior to deletion by the user thereby directly circumventing the user's expressed intent.

As stated earlier, Adobe condemns the practice of using Local Storage to back up browser cookies for the purpose of restoring them later without user knowledge and express consent.

Upcoming Changes to Flash Player

 Adobe recognizes the importance of protecting user privacy, and is approaching the issue through industry engagement as well as by looking into technical solutions that make it easier for users to stay in control of their privacy when using Adobe technologies.

First, in Flash Player 10.1, available now in beta at
http://labs.adobe.com/technologies/flashplayer10, Adobe is modifying the Flash Player user
interface to make it easier for users to find and change their privacy settings. Now users will be
able to directly access the Settings Manager from the Flash Player context menu. One of Adobe's
priorities has been to address concerns raised by users regarding the difficulty in finding and
understanding these settings. Further enhancements to address the usability of the Settings
Manager are planned for the coming year.

Second, Flash Player 10.1 also enables support for the private browsing mode found in many
Web browsers. Private browsing allows users to browse the Web without storing any browsing
history on the user's computer. Flash Player private browsing mode is triggered by the Web
browser's private browsing mode and Flash Player 10.1 will **automatically** manage stored data
in accordance with a Web browser's private browsing settings so no additional user action is
required. Flash Player 10.1 supports integration with the private browsing modes of the
following browsers: Google Chrome 1.0+, Microsoft Internet Explorer 8.0+, and Mozilla Firefox
3.5+. Support for Flash Player private browsing mode in Apple Safari will be enabled by Apple
in a future release of Safari. For more information on the private browsing support in Flash
Player, please visit
http://www.adobe.com/devnet/flashplayer/articles/privacy_mode_fp10.1.html.

Users will benefit from these changes in Flash Player as soon as they upgrade to Flash Player
10.1, which will be publicly available during the first half of this year. These new features will
apply to any use of Flash Player from that point forward.

Working with the Browser Companies

In addition to the user interface and feature changes described above, Adobe has approached the
major browser companies to determine whether there is an efficient way to provide users the
opportunity to control their Flash Local Storage when they set their browser privacy settings.
Building upon the progress we have made together in integrating new private browsing modes
with Flash Local Storage behavior, improving the coordination between our products would
enable users to manage their online privacy preferences where they have learned to set them.
Adobe will continue to pursue these efforts and encourage browsers companies to work
expeditiously with us to address the needs of our common customers.

Adobe also encourages browser companies to allow users to set preferences and clear Local
Storage of other technologies, including storage that may be used by HTML5-compatible
browsers. Without this additional step, we may very well succeed in remedying the misuse of
Flash Local Storage only to see the practice shift to other available technologies that employ
Local Storage.

Adobe is Committed to Research of Extent and Types of Misuse

While Adobe believes the use of Local Storage in Flash Player to circumvent user intent is an
inappropriate privacy practice, we recognize that this is a complicated, evolving debate,
involving complicated and evolving practices. In his recent white paper on the use of Local

Storage[5], Eric T. Peterson, explains that it is possible to honor user choice while using Flash Local Storage to reset browser cookie values with clear notice and express user consent.

This raises interesting and important questions. How many sites are using Local Storage to reset browser cookie values in ways that honor the user's express consent? Which sites and how many sites are doing this? How many sites are inappropriately using Local Storage? Is re-spawning being used primarily for secondary purposes, such as marketing? Does it matter? **Adobe believes it is important to get a better understanding of the landscape in order to have a basis to decide on the range of "bad" and "good" uses of Local Storage, and whether there are any actions that companies that own these technologies, can take to address those misuses.**

Adobe is committed to supporting research to determine the various types and extent of the misuse of Local Storage. We are eager to participate in the discussion of which uses are and are not privacy friendly. We will support appropriate action, in consultation with the development, advocacy, regulatory, and legislative communities, to eradicate bad, unintended uses of Local Storage.

Regulation and Legislation

Adobe Supports the Commissions' Use of its Authority to Police Unfair and Deceptive Acts and Practices in Commerce. As has been discussed by others in Comments to the FTC, Adobe believes that existing legislation and regulation provide the Commission with robust enforcement authority against deceptive or unfair trade practices, including the use of Local Storage to re-spawn cookies users have deleted.

Nonetheless, the Commission's Section 5 authority is just one of literally dozens of pieces of Federal and State legislation and regulation covering consumer privacy today. Depending on the type of data, geographic jurisdiction, or nature of the infraction, the consumer is protected by an often confusing array of government entities with some responsibility for enforcement. The current fractured approach to privacy enforcement also presents an increasing risk over time that personal data will be regulated differently depending on whether it was collected or used online or via more traditional physical or telephonic means.

Adobe Supports Comprehensive Privacy Legislation. To ensure continuing consumer confidence in the Internet and in online commerce, Adobe supports the passage by Congress of comprehensive personal privacy legislation. Comprehensive Federal privacy legislation can and should empower, protect, and inform consumers. Such legislation should not affect innovation that is good for consumers and competition, or the many positive and necessary uses of data.

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[5] *The Use of Flash Objects in Visitor Tracking: Brilliant Idea or Risky Business?;* Eric T. Peterson, Web Analytics Demystified; http://www.bpaww.com/Bpaww_com/Pages/PR10FlashCookies.aspx; pp 9-10.

Conclusion

The use of Adobe Flash Player has been instrumental in innovating and forming the Web as we know it today. Adobe proactively encourages our customers to use all Adobe products in responsible, ethical ways. We do not support the use of our products in ways that intentionally ignore the user's expressed intentions. In particular, with regard to Flash Player, as we have made clear, Adobe condemns the practice of using Local Storage to back up browser cookies for the purpose of restoring them later without user knowledge and express consent.

Adobe continuously investigates new ways to help ensure our customers' right to privacy. We recognize that technology is always evolving and that attention to privacy issues is a process and not a one-time event. We welcome a continued conversation with our users, Web developers, the FTC, legislators, and privacy advocates regarding the statements we have made in this Comment, the actions we are taking and will continue to take, and how best to eradicate the misuse of Local Storage to re-spawn cookies after the user has deleted them. Adobe plans to support research to better understand the uses and misuses of Local Storage beyond those discussed in this submission to help us determine what other changes might be effective to match user expectations of their right to privacy on the Web.

Respectfully submitted,

MeMe Jacobs Rasmussen
VP, Associate General Counsel
Chief Privacy Officer