



Observations on the Use of Flash Cookies
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The following observations are intended to be informational and should in no way be considered a full and complete examination of the use of flash cookies.

General Definitions

A. Adobe's Definition:

“Data files that can be created on your computer by the sites you visit. Shared objects are most often used to enhance your web-browsing experience.”

“A local shared object is exactly like a browser cookie, except that it can also store data more complex than simple text.”¹

B. Wikipedia's Definition:

“Local Shared Objects (LSO), commonly called flash cookies, are collections of cookie-like data stored as a file on a user's computer. LSOs are used by all versions of Adobe Flash Player and Version 6 and above of Macromedia's now-obsolete Flash MX Player.”²

Note: The primary difference between a typical browser cookie and a flash cookie is that the flash cookie is able to store much more, complex, information. In addition, flash cookies are NOT controlled by a user's browser settings and they are the same for each domain, regardless of the web browser.

Privacy Concerns

A. Awareness

- a. Flash cookies are relatively unknown to most users
- b. The vast majority of website's privacy policies do not contain any information about flash cookies³

B. Re-spawning cookies

- a. Information in the flash cookie may be used to recreate DELETED browser cookies³

C. Users are unable to easily delete Flash Cookies

- a. Deleting browser cookies does NOT remove Flash Cookies

D. Users are unable to easily disable Flash Cookies

- a. Browser settings do not apply



- E. Flash Cookies have no expiration date⁴
- F. Cookie owners (domain.com) can access and store specific personal and technical information without a user's knowledge or consent
 - a. System information
 - b. User names⁴
- G. Flash cookies can exist and store data even without visible flash applications⁴

Reach

- Adobe Flash is installed on 99% of PCs⁵
- A July 2009 study noted that 54 of the top 100 sites use Flash Cookies³

Purpose / Uses

- A. Enhance user experiences
 - a. General Adobe settings *
 - i. Display settings
 - ii. Privacy settings
 - iii. Local storage settings
 - iv. Microphone settings
 - v. Camera settings
 - vi. Various pop-up settings (privacy, storage, etc)¹
 - b. Other settings
 - i. Volume control
 - ii. Playlist queue
 - iii. Video genre preferences
 - c. Store login information
- B. Track user activity
 - a. Viewed advertisements (1st & 3rd Party)
 - b. Clicked advertisements
 - c. Visitor duration
 - d. Geo location
- C. Re-spawning cookies
 - a. The "unethical" practice of recreating deleted browser cookies

**Users can choose to set the General Adobe Settings on a domain by domain basis or choose to use a global setting. These settings can be modified within Adobe's website at: http://www.macromedia.com/support/documentation/en/flashplayer/help/settings_manager.html*



Technical Information

- A. Size
 - a. Default cookie size is 100 kb (browser cookies are 4 kb)
 - b. User can modify and choose between:
 - i. 0, 10 kb, 100 kb, 1 mb, 10 mb, unlimited
- B. Expiration
 - a. Never
- C. Location
 - a. Same for ALL browsers
 - b. Buried in the hidden application settings directory:
 - i. *"C:\Documents and Settings\USER\Application Data\Macromedia\Flesh Player"*
 - c. Two folders within directory
 - i. #SharedObjects (actual cookies)
 - ii. Macromedia.com (global and domain level settings)
- D. File Type
 - a. ".sol"

Controlling Flash Cookies

- A. Deleting Flash Cookies
 - a. Manually
 - i. Go to the macromedia folder within the application settings directory (noted above in Technical Information C)
 - ii. Delete all contents within the following folders
 - 1. #SharedObjects
 - 2. macromedia.com (not www.macromedia.com)
 - iii. Adobe has created a user interface that can be used to delete flash cookies by site (or all sites). Refer to Appendix I for screenshot or go to the following URL for real time access:
http://www.macromedia.com/support/documentation/en/flashplayer/help/settings_manager07.html
 - 1. Delete website
 - 2. Delete all sites



- b. Applications
 - i. Stand alone application
 - 1. Flash Cookie Cleaner
(<http://www.flashcookiecleaner.com/>)
 - ii. Browser plug-in
 - 1. Better Privacy (Firefox)

B. Disabling Flash cookies

- a. Go to
http://www.macromedia.com/support/documentation/en/flashplayer/help/settings_manager03.html
- b. Move the slider to “None”
- c. Uncheck “Allow third party Flash content to store data on your computer”
- d. Uncheck “Store common Flash components to reduce download times”

Flash Cookies & Privacy Policies

The majority of companies that use flash cookies do not disclose this practice in their privacy policies. A 2009 study from UC Berkeley noted that only 4 of the top 100 websites mention flash cookies in their privacy policies (of the 89 that set a flash cookie).³

It is difficult to determine exactly how each site uses flash cookies but most use them for user preferences (such as volume) as well as visit and viewing statistics. We observed that while most of the variable names are human readable, nearly all of the values are in binary form.

Some examples of companies who have disclosed this practice can be found below.

Yahoo –

“The Adobe Flash Player is a powerful application and web tool that allows rapid development of highly dynamic content. Flash (and similar applications) use technology to remember settings, preferences and usage similar to browser cookies but these are managed through a different interface than the one provided by your web browser. Yahoo! employs Adobe Flash Cookies in certain situations where we use Flash to provide special content such as video clips or animation. You can access your Flash management tools from Adobe’s web site directly.”

<http://info.yahoo.com/privacy/us/yahoo/cookies/>



eBay –

“We use Flash cookies, which are cookies written with Flash technology, to help ensure that your account security is not compromised and to spot irregularities in behavior to prevent your account from being fraudulently taken over.”

<http://pages.ebay.com/help/account/cookies-web-beacons.html>

QuantCast –

“... we use Flash cookies in connection with our Market Research Services to measure certain Flash content such as animation, games and videos. Similarly to browser cookies, Flash cookies are used to remember settings, preferences and usage, but are managed through a different interface than the one provided by your web browser. If you want to delete Flash cookies, please access your Flash Player settings management tool available on Adobe's web site. However, if you do not accept cookies (whether browser or Flash cookies), you may not be able to use all portions of the Quantcast.com Site or all functionality of the Services.”

<http://www.quantcast.com/docs/display/legal/Privacy+Policy>

Recent Press / Publications

- A. Clearspring lawsuit (August 16, 2010) -
<http://www.dmwmedia.com/news/2010/08/16/disney-warner-records-sued-over-clearspring-tracking-cookies>

- B. Quantcast (MTV, ESPN, MySpace, Hulu, ABC) lawsuit (July 28, 2010) -
<http://www.wery.com/4178-zombie-flash-cookies-lawsuit.html>

- C. Specific Media lawsuit (August 25, 2010) -
http://www.mediapost.com/publications/?fa=Articles.showArticle&art_aid=134408

- D. UC Berkeley Study, “Flash Cookies and Privacy” (July 2009)
http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1446862

- E. You Deleted Your Cookies? Think Again (August 10, 2009) -
<http://www.wired.com/epicenter/2009/08/you-deleted-your-cookies-think-again/>



References/Footnotes

1. Adobe Flash Player: What is a Local Shared Object?
<http://www.adobe.com/products/flashplayer/articles/Iso/#globalnav>
2. Wikipedia - "Local Shared Object"
http://en.wikipedia.org/wiki/Local_Shared_Object
3. Adobe – Flash Player Statistics
http://www.adobe.com/products/player_census/flashplayer/
4. Flash Cookies and Privacy (UC Berkeley Report) -
http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1446862
5. Why Flash Cookies Should Be Banned for Advertising -
<http://blog.rapleaf.com/why-flash-cookies-should-be-banned-for-advertising/>

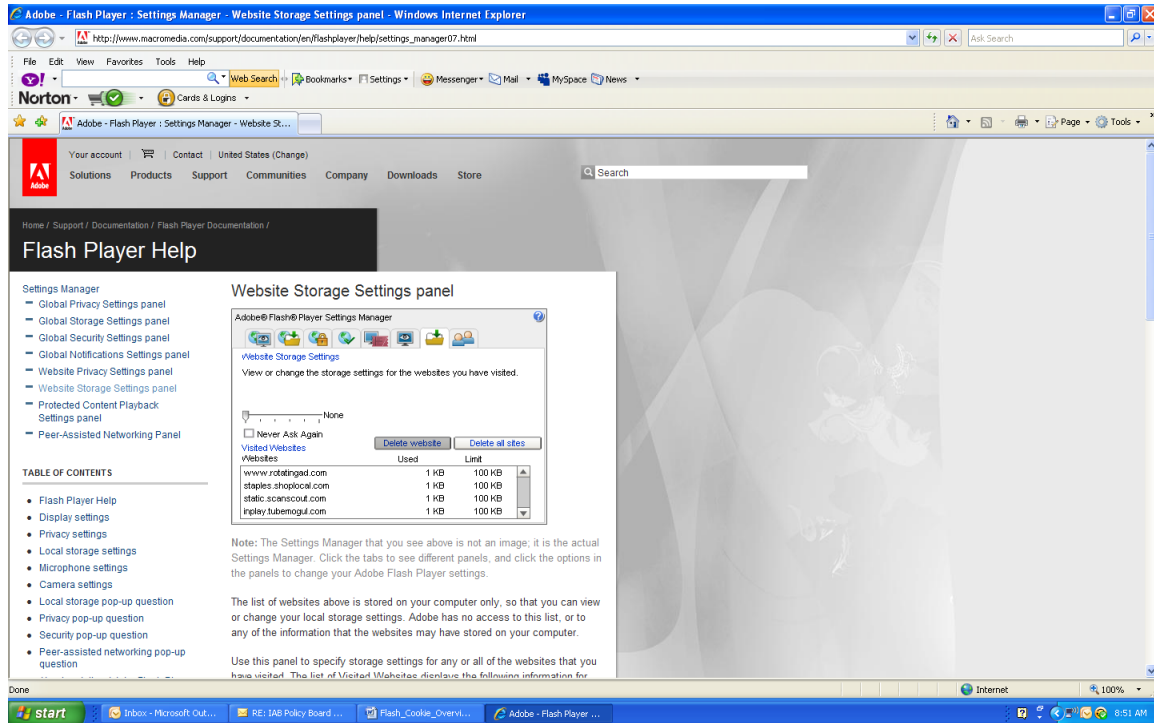
Other Resources

Creating Flash Cookies – <http://www.permadi.com/tutorial/flashSharedObject/index.html>

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Appendix I - Adobe Flash Manager User Interface



http://www.macromedia.com/support/documentation/en/flashplayer/help/settings_manager07.html

Note: As noted above, the Settings Manager that you see above is not an image; it is the actual Settings Manager.