

Privacy Issues of Private Browsing

Christos Lakiotis, Nikolaos Tsalis

p3100233@dias.aueb.gr, ntsalis@aueb.gr

Information Security & Critical Infrastructure Protection (INFOSEC) Laboratory
Dept. of Informatics, Athens University of Economics & Business (AUEB), Greece



Private browsing goals

Private browsing achieves its goal, when a local attacker that **takes control of a given machine at time T** can extract no information about any private session before T. Private browsing is also used as a mean to hide user's identity from web sites, allowing that way anonymous browsing that will prevent web sites to connect user's private activity with public

Experiment description

In order to validate or invalidate the manufacturers' statements about their private browsing some experiments were held aiming to search for residual items after a standardized private session. The experiments tested the most popular browsers: Google Chrome, Mozilla Firefox, Opera, Safari, Internet Explorer. The items searched in all these browsers are in the following table.

ITEMS SEARCHED AFTER PRIVATE BROWSING
BOOKMARKS
BROWSER PREFERENCES
BROWSING HISTORY
COOKIES
DOWNLOADS
DOWNLOADS HISTORY
EXTENSIONS/ADD-ONS/PLUG-INS DATA
FORM AND SEARCH BAR HISTORY
ITEMS STORED IN CACHE
ITEMS STORED IN RAM
OFFLINE WEB CONTENT
PASSWORDS
WEBSITE PREFERENCES
UPDATED FOLDER TIMESTAMPS

Experiment results

The experiments firstly showed that in most browsers tested their description of private browsing had many differences with the findings.

BROWSER	FIELDS MATCHING DESCRIPTION	DESCRIPTION ACCURACY
GOOGLE CHROME	10/14	71%
MOZILLA FIREFOX	9/14	64%
OPERA	8/14	57%
SAFARI	8/14	57%
INTERNET EXPLORER	6/14	42%

All browsers failed to hide a lot of data associated with private browsing.

BROWSER	DELETED ITEMS	PRIVATE BROWSING EFFICIENCY
GOOGLE CHROME	6/14	42%
MOZILLA FIREFOX	6/14	42%
SAFARI	6/14	42%
OPERA	5/14	35%
INTERNET EXPLORER	5/14	35%

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