

A Taxonomy of Privacy-Protecting Tools to Browse the World Wide Web

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There is a growing public concern regarding big data and intelligence surveillance on unsuspecting Internet users, and an increase in public conversation around what does privacy really mean in the digital realm. Technologies have been developed to help the general public protect their privacy, average users found the tools complex and difficult to decipher. This research looks at these complexities by reviewing six (6) publicly recognized technologies promoted to help users protect their privacy while browsing the web and addresses the important aspects each technology including promises, privacy realities, technical construct, ease of use and drawbacks to average users.

Table 1: Research Results

Tool	Anonymity vs. Pseudonymity	Traceability	Security Channels	Ease of Use
Steganos Online Shield™ 365	Provides both anonymity and some pseudonymity features in their suite of tools and paid version. Free versions provide basic anonymity.	Users are not 100% untraceable in any of the tools but the mere factor that the company will divulge user information if required to do so. Additionally they admittedly sell user data to 3rd parties.	Security is provided through proxy services and VPN services using Steganos Online Shield™ 365. Other products provide additional channels of security.	The free version is almost too easy to use as it downloads without warning. Paid versions are less user friendly.
HideMe	Provides basic anonymity to users with IP address being traced back to HideMe. As a free service creating a pseudonym is possible.	Users are untraceable from the outside world, however, HideMe technology is capturing user data making the links back possible.	Security is provided through VPN and proxy services	Almost too easy for users therefore caution should be taken.
Guardster™	Provides both anonymity and pseudonymity at varying degrees through their suite of technologies.	Traceability is reduced as users move up the suite of options. The free version appears weakest in traceability.	Security is provided through proxy services, HTTPS and SSL Tunnels	Less user friendly especially as users move into the paid VPN, SOCKS and SSL configurations.
HTTPS Everywhere	Provide privacy-protecting anonymity only.	Users are protected from eavesdroppers tracing back.	Security is provided through proxy services, HTTPS and SSL	Extremely user friendly with EFF's community to help users. Also HTTPS is now default for many browser including Google - however it is not enough
DuckDuckGo	Provide private browsing it is up to the user to hide their own identities.	In combination with Tor it is untraceable, without using Tor with DuckDuckGo there are traces of users data left behind.	Security is provided through proxy services, HTTPS and SSL	Designed to be highly user friendly, DuckDuckGo achieves this — combined with Tor is gets more complicated for users.
Ixquick	Provide private browsing it is up to the user to hide their own identities.	At first glance it does not appear traceably technologically — however further research is needed.	Security is provided through proxy services, HTTPS and SSL	Provides users an instantly available search engine with promises privacy.



Research Questions:

- What technologies are available to protect privacy by anonymizing user identities and web browsing traffic?
- What are the advantages and drawbacks of each technology in this study?
- What are the features and promises made by the technologies company?

Table 2: Anonymity and Pseudonymity

Traceable Anonymity	A system that leaves the identifying components of the sender in the hands of an intermediary.
Untraceable Anonymity	A system in which the author of the message is not discoverable.
Untraceable Pseudonymity	A system in which the author is known, but the author's real Identity is concealed.
Traceable Pseudonymity	A system which creates the link between a user's "fake name" and real identity.

