Testing & Evaluation Sheet

DuckDuckGo

1. Tool Overview

Name:	DuckDuckGo
Category:	Privacy Search Engine/ Anonymity
Purpose:	A privacy focused search engine that doesn't track users, log personal data or personalize search results based on prior activity. It blocks trackers and offers anonymous browsing.
Date Tested	4/17
Status:	Deployed ☑ Operational - Actively running/maintained ☐ In Testing - Currently being evaluated or piloted ☐ Inactive/Deprecated - No longer maintained or functional
Deployment Architecture:	☐ A standalone software - Runs entirely locally (e.g., runs on computer and doesn't depend on external server) ☐ A locally hosted service with separate server and client component - Run both backend/frontend yourself (e.g., backend could be on a local network, or self-hosted on cloud) ☐ A service with a local client that's hosted by a third party - You install a client on your device, but it connects to and depends on a remote server (e.g., Signal: install app (client), but Signal's servers handle message relaying, etc.) ☑ A service that is hosted by a third party but can also be self-hosted
Version:	2025.4.7

2. Installation & Setup

OS Compatibility	1. Desktop: Windows, macOS 2. Mobile: Android, iOS 3. Desktop Browser Extension: Chrome, Edge, Firefox, Opera
Installation Manual:	Yes

Installation Steps:	4. Option 1: Making DuckDuckGo your default search engine
	    a. On Google Chrome, Click the **⋮ Menu** icon in the toolbar. Click **Settings** in the dropdown.
	    b. Click ⌕ **Search engine**.
	    c. Select DuckDuckGo from the dropdown
	 5. Option 2: Download the Browser
	    a. Click on the Download browser button
	    b. Open DuckDuckGo installer in Downloads
	    c. Select Install

Mention if command-line setup or special configurations are needed	• No command-line setup or special configurations are needed
Common Installation Issues & Fixes:	None
User Documentation:	Yes
Required Technical Knowledge	None

3. Testing & Evaluation

Category	Details	Score
Operational Functionality:	**Functionality** • Browser Extension: Yes, the tool works as described. • Browser: Yes ☐ The tool is mostly non-functional with many broken features and bugs. ☐ Several broken features or bugs ☐ Minor bugs or issues ☐ Mostly functional with few bugs or no bugs ☑ Fully functional with no bugs **Internet Dependence:** • Browser Extension:The tool does not have offline functionality as it requires the user to connect to the internet • Browser: The tool does not have offline functionality as it requires the user to connect to the internet Browser Extension: *Using throttling, was able to force it to use 3G network*	4

	○ As expected was able to load pages but was slower **Localization & Language Support** ● Browser Extension: Supports over 70+ languages ○ Traditional Chinese, Simplified Chinese, Vietnamese, Japanese, Thai, Sinhala, Korean, kurdish, etc ● Does not appear to have a community for localization **Mobile Accessibility** ● DuckDuckGo has a designated mobile app both for iOS and Android ● Mobile app works on iPhone and works as intended	
Usability for Non-Technical Users	**Ease of Installation & Deployment** ● **Browser Extension**:The installation process is easy to do. No command lines are required. Steps are provided by DuckDuckGo ● **Browser**: The installation process is easy to do. No command lines are required. Steps are provided by DuckDuckGo ● **Browser Extension**: DuckDuckGo provides simple and easy steps for users to understand how to download the software [1] ● Setup guides, FAQ's do not include a date of last update ● Browser Extension Under 5 minutes as it is time dependent on network as you are downloading a file ● Browser: 20+ minutes as the file was larger. After downloading the software it gives you a couple of prompts to click through, and then you can use the software **User Onboarding Experience** ● Yes, DuckDuckGo website has documentation for first time users[2] **Technical Experience Level Required** ● The tool is easy to navigate, once the user has downloaded & set up the either the extension or the browser they will be able to browse the internet in the same way as Google Chrome ● The interface is menu driven and very intuitive for users	5

---

[1] https://duckduckgo.com/app?origin=funnel_marketing_searchresults
[2] https://duckduckgo.com/duckduckgo-help-pages/get-duckduckgo/

| Security & Privacy Strength | **Encryption Standards**
● HTTPS Upgrading - They search to see if a website can be upgraded to be an encrypted website. If so it will use the encrypted version.
Known Strength resilience
● On its own, it can't bypass government restrictions however DuckDuckGo can be paid with Tor which can mask your IP address allowing you to bypass geo-restrictions. [3]
● Potential security flaws from 3rd party audits [4]
  ○ Security experts found a Universal Cross-site Scripting (uXSS) vulnerability
  ○ DuckDuckGo protection stops when users click through external websites allowing your IP address to be visible
● Hidden Data Collection Practices
  ○ 3rd party Tracking agreements - Allows DuckDuckGo's Browser "lets Microsoft trackers run on third-party sites"
  ○ Browser fingerprinting concerns - " tries to override browser APIs … [b]ut this method fails to stop fingerprinting fully because websites can still collect enough data to create unique user profiles"
  ○ Local storage vulnerabilities - "Android app has a serious weakness in its local storage. HTML5 local storage stays intact even after users clear cookies, cache, and force-stop the app."
Comparison with Known Standards
● DuckDuckGo aligns with privacy-focused benchmarks by not storing personal data, search history, or IP addresses, exceeding the data collection practices of standard search engines like Google. Its privacy features, including tracker blocking and HTTPS upgrades, meet or surpass common industry standards. However, past reliance on third-party services like Microsoft tracking fell short of full zero-trust expectations. Its open-source status supports transparency but lacks the community contributions seen in other open-source privacy tools. | 4 |

---

[3] https://www.jamesparker.dev/can-i-use-tor-to-access-government-censored-content/
[4] https://growthscribe.com/why-duckduckgo-is-bad/

	Data Minimization ● DuckDuckGo doesn't collect IP address when doing searches ● Doesn't record your search history **Privacy Policy Accessibility and Clarity** ● They have since updated their data handling after their 2022 scandal. Before it came out the information about Microsoft 3rd party trackers were clear in their policy. ● They have a clear privacy policy describing what information they have access to. The vocabulary in the document is not technical, making it easy for users who don't know the law to read and understand.	
Maintenance/Sustainability	**Community support** ● There is not a large community on Github, with the most recent issue request being opened 2 weeks **Development active status** ● Last updated 02/21/2025 ● Development team decently responsive, but few issues get made on the github ● Last update usually within hours so quite often **Funding and Sponsorship** ● It earns its revenue from "privacy-respecting search ads". It is a privately held company. ● The software seems to be financially stable	4
Performance / Effectiveness & Reliability	**Testing Environment Setup:** ● **Device:** HP 11th Gen Intel(R) Core(TM) i7-11800H @ 2.30GHz ● **OS:** Windows 64 ● **Network:** Wifi **User Experience Observations** ● Browser: The software is smooth with no visible lags or delays ● Browser Extension: The software causes no lags or delays. It is a smooth experience **Speed & Responsiveness:** ● Browser Extension: *Searching up New York Times from the search engine* | Metric	DuckDuckGo	Google | |---|---|---| | Load Time | 9.13 seconds | 24.66 seconds |	4.5

Total Finish Time	45.53 seconds	24.66 seconds
Resources Loaded	4.6 MB	3.6 MB
Data Transfered	151 kB	1.6 MB

- Browser: As previously mentioned no lags or delays

Resource Usage:

- Browser Extension: *Searching up New York Times from the search engine*

Metric	DuckDuckGo	Google
CPU	0.4	1.2
Memory Footprint	64,712	86,904

- Browser: *Searching up New York Times from the search engine*

Metric	DuckDuckGo
CPU	13.4
Memory Footprint	1314

Network Performance:
- DuckDuckGo extension showed lower bandwidth usage and faster load times, suggesting a more efficient network performance.

Reliability
- DuckDuckGo is widely reviewed, especially after their 2022 tracking controversy
- While some individuals highly praise this software, others express more critical views.

Deployment Considerations:	**Open Source & Transparency:** - Code is open source for verification **Cloud vs. Local Deployment:** - Already deployed as both a browser and browser extension.

	Dependencies: ● To use the software it does not require any special dependencies or installations ● If you want to make edits you might need to install dependencies ● To test locally Node.js is needed **Post-Deployment Maintenance** ● The tool automatically updates and minimal maintenance is needed on the user's end after deployment ● The code is moderately easy to fork **Merge/Sustainability:** ● They are not accepting contributions to the Github

4. Testing Scenarios

● **Search Functionality**	● Browser & Browser Extension: Able to do basic searches and complex searches providing relevant information
● **Location-based Results**	● Browser & Browser Extension: Provides restaurant in the general area (~ 15 miles) area but does not have specific location of computer
● **HTTP Website**	● Browser & Browser Extension: Allows user to visit HTTP websites that are not encrypted ● *Note: Does give a pop-up indicating that this is not a secure website*

5. Insights & Recommendations

Key Findings	**Strengths:** ● Ease of use: Simple installation, clean UI and low barrier for non-technical users ● Low resource usage: Doesn't require a large amount of CPU, memory and bandwidth ● Cross platform Support: Available on desktop, mobile, and a browser extension **Weaknesses:** ● Limited transparency historically: Past issues with Microsoft tracker exceptions and partial privacy compromises ● Small Open-source Community: Limited peer-reviewed contributions

	• *This software seems to be blocked in China and presumably will be blocked in other countries with high censorship*
Suggested Improvements	Add a privacy summary showing to increase transparency
Alternative Tools:	• Brave Search – fully independent index, integrated into privacy browser. • Startpage – Google-powered results with anonymous front-end. • Swisscows – uses semantic search and offers better results in some European languages. • Qwant – privacy-focused EU-based search engine with similar goals.
License	Apache-2.0 license

Cost/Resource Implications	**Total Cost of Ownership:**
	• The main core features of DuckDuckGo is free however they offer a privacy pro subscription which includes
	   ○ VPN
	   ○ Personal Information Removal
	   ○ Identity Theft Restoration
	• Installation is decently easy and does not require IT expertise

Why is this useful to civil societies in authoritarian environments?	The software is a lightweight, easy to use browser/browser extension that allows users to more seamlessly integrate security into their life. DuckDuckGo provides unfiltered content which would be crucial for organizations seeking information without the bias of algorithm.

Notes	**Tracking & Privacy Protection**
	  a. 3rd-Party Tracker Loading Protection - Blocks hidden third party trackers from loading on websites
	  b. 3rd-Party Cookie Protection - Prevents cookies from tracking you across sites
	  c. 1rst-Party Cookie Protection - Limits how much first-party cookies can be used to track behaviors
	  d. CNAME Cloaking Protection - Detects and blocks trackers that disguise themselves as first-party resources
	  e. Fingerprinting Protection - Prevents advertisers from using device/browser settings to create a unique ID
	  f. Link Tracking Protection - Removes tracking parameters from links before you click on them

	g. Referrer Tracking Protection - Strips identifying information from the referrer header when clicking links
	h. Embedded Social Media Protection - Blocks embedded social content (like Facebook widgets) that track users even if you don't interact with them
	
	User Privacy Controls
	    a. Global Privacy Control (GPC) - Sends a signal to a website requesting not to sell or share personal information
	    b. Cookie Pop-up Protection - Automatically hides or declines cookie consent prompts