

Tor: Privacy for Everyone

Roger Dingledine, The Tor Project



Tor Overview

Online anonymity: open source, open network

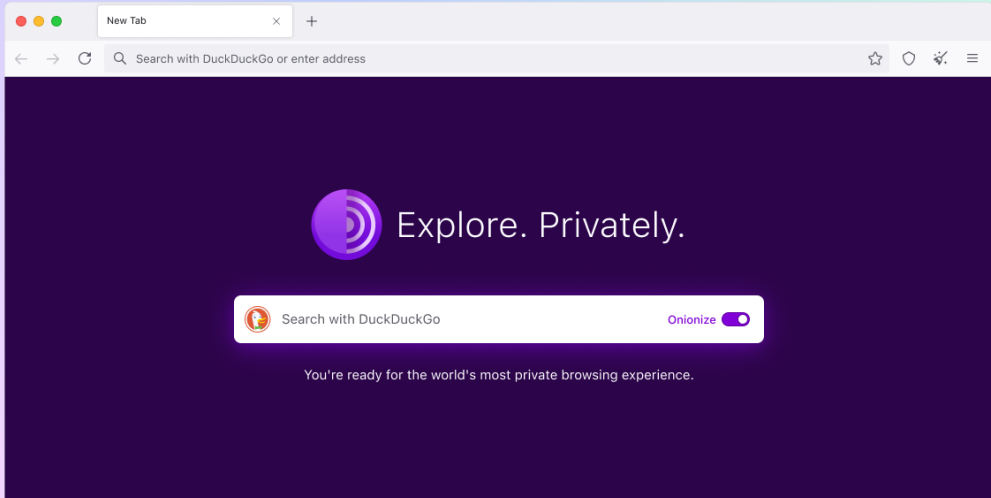
Community of devs, researchers, users, relay operators

US non-profit organization with 50ish staff

Estimated 2,000,000 to 8,000,000 daily users

Part of larger ecosystems: internet freedom, free software, censorship resistance, anonymity research

Tor Browser

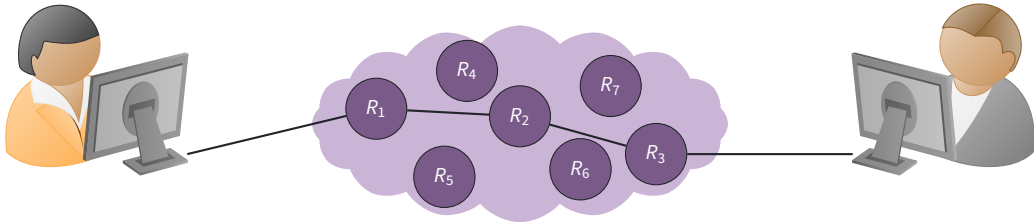


Threat Model

Alice

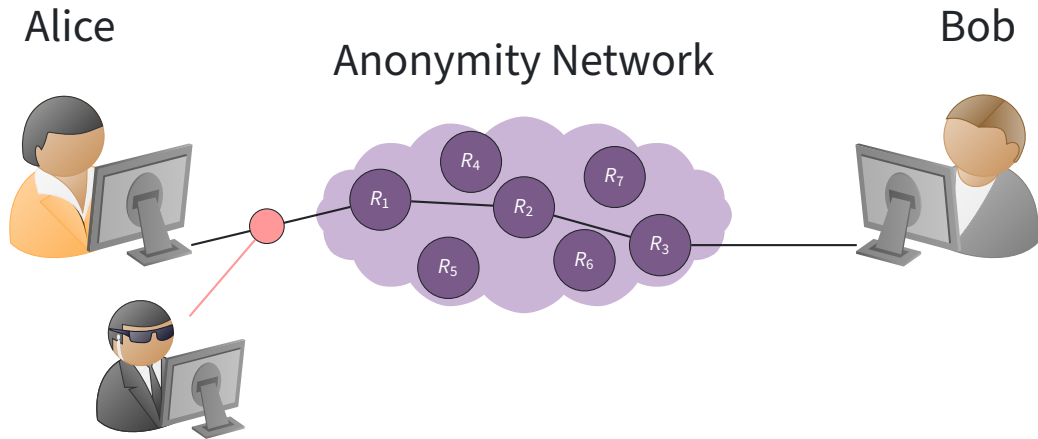
Anonymity Network

Bob

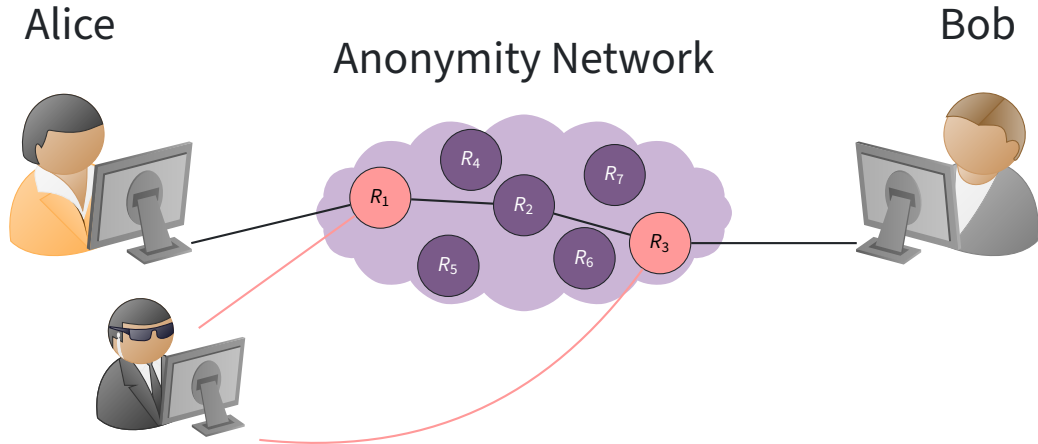


{What can the attacker do?}

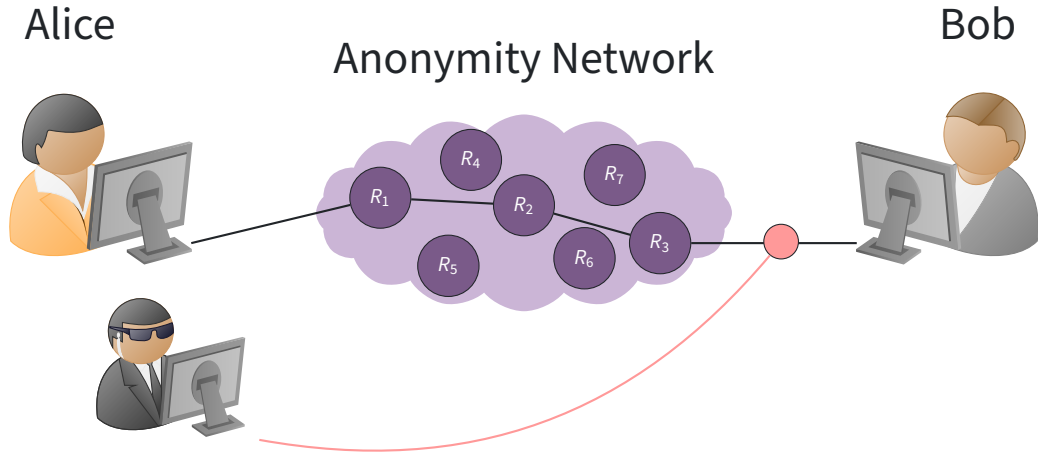
Threat Model



Threat Model



Threat Model

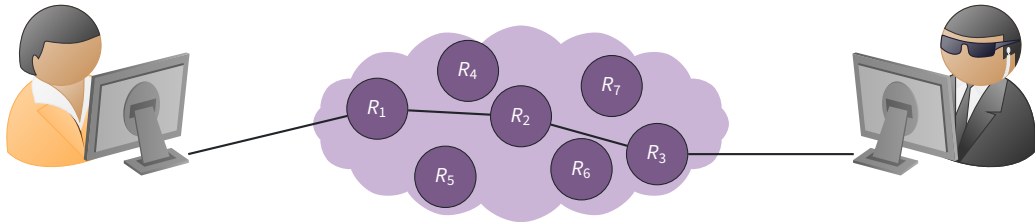


Threat Model

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Anonymity Network

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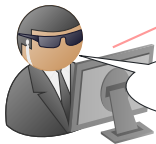
Anonymity isn't Encryption

Alice

Bob



...RG9uJ3QgdXNlIGJhc2U2NCBmb3IgZW5jcnlwdGlvbi4...



Gibberish!

Encryption just protects contents.

Communications Metadata



“We Kill People Based on Metadata.”

—Michael Hayden, former director, NSA.

Attorney General Bill Barr Will Ask Zuckerberg To Halt Plans For End-To-End Encryption Across Facebook's Apps - Tor Browser

Attorney General Bill Barr W x +

https://www.buzzfeednews.com/article/ryanmac/bill-barr-facebook-letter-halt-encryption 110%

TECH

Attorney General Bill Barr Will Ask Zuckerberg To Halt Plans For End-To-End Encryption Across Facebook's Apps

"We are writing to request that Facebook does not proceed with its plan to implement end-to-end encryption across its messaging services without ensuring that there is no reduction to user safety."

 **Ryan Mac**
BuzzFeed News Reporter

 **Joseph Bernstein**
BuzzFeed News Reporter

Last updated on October 3, 2019, at 3:28 p.m. ET
Posted on October 3, 2019, at 1:36 p.m. ET

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UK urges Meta not to roll out end-to-end encryption on Messenger and Instagram | Reuters — Tor Browser

Ola Bini declared innocent: " X UK urges Meta not to roll out X +

https://www.reuters.com/technology/uk-urges-meta-not-roll-out-end-to-end-encryption-messenger-instagram-2023-09-19/

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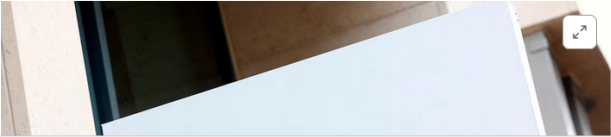
Disrupted

UK urges Meta not to roll out end-to-end encryption on Messenger and Instagram

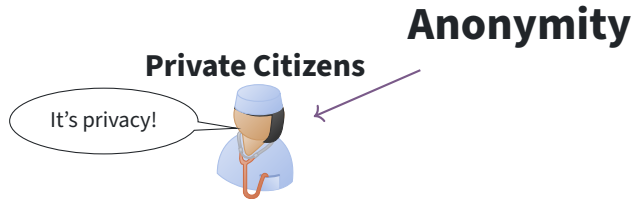
By Paul Sandle

September 19, 2023 11:09 PM UTC · Updated 6 months ago

Feedback



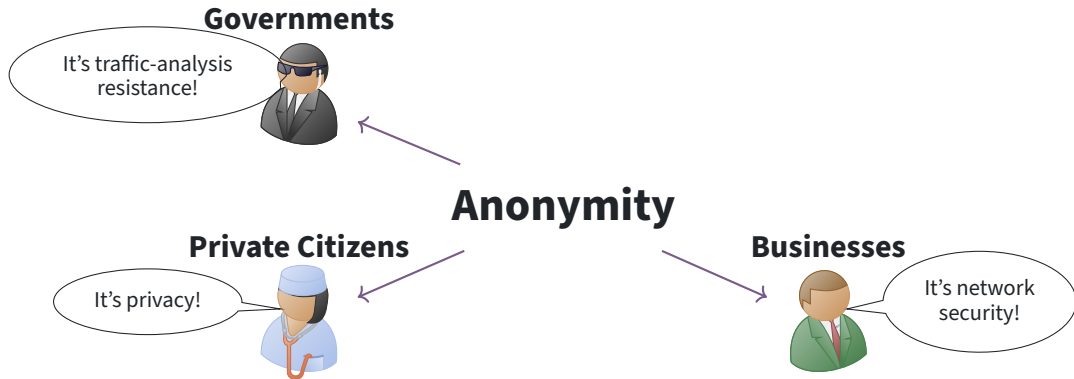
Anonymity is different for each use case



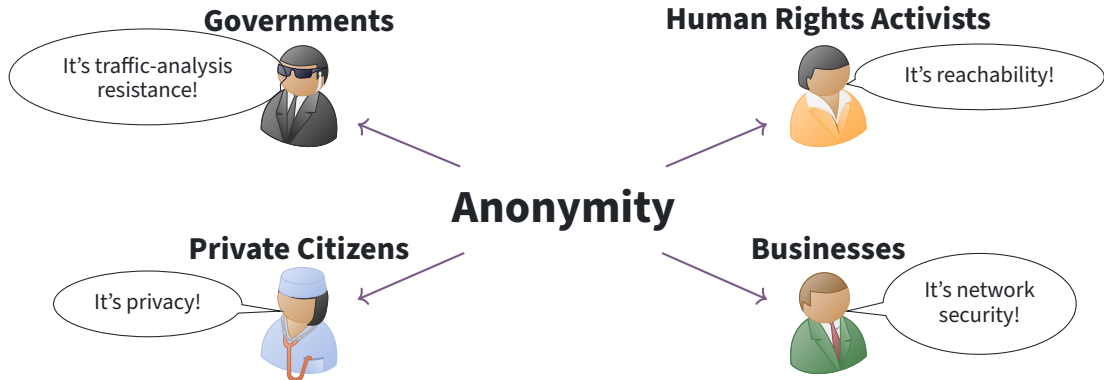
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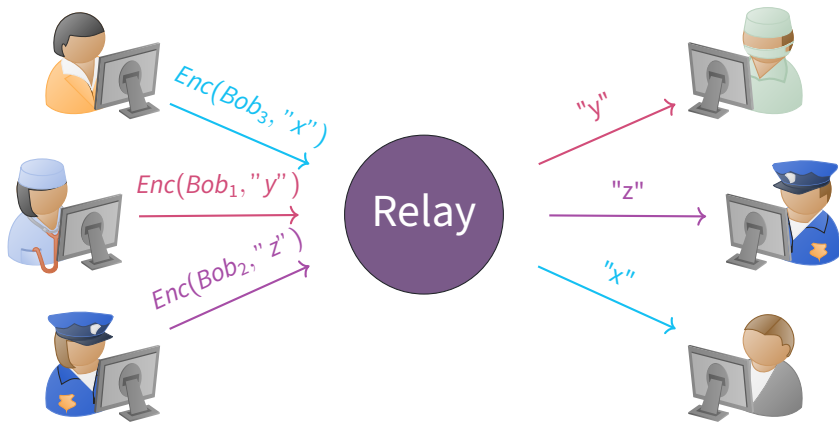
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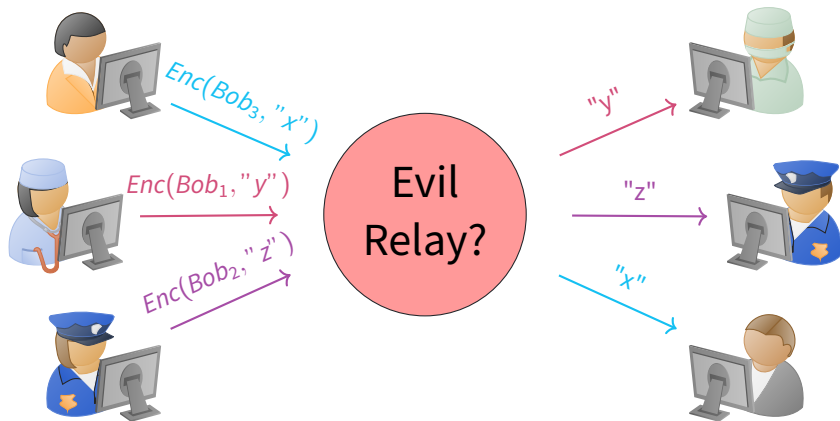


A Simple Design

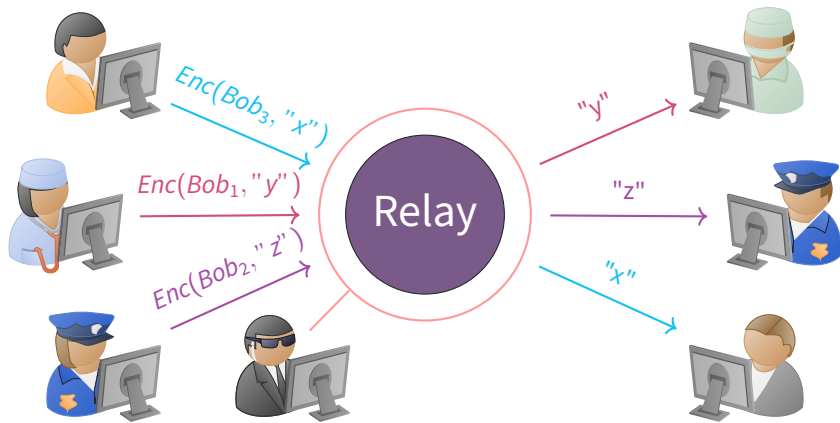


Equivalent to most commercial proxy/VPN providers.

A Simple Design

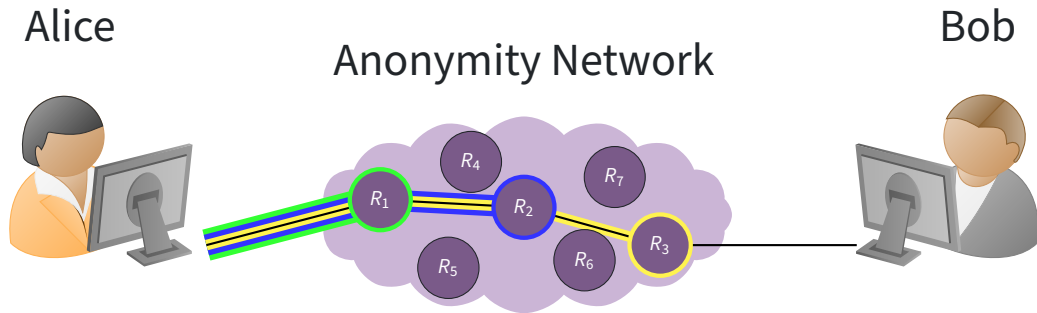


A Simple Design



Timing analysis lets an observer match up connections.

The Tor Design



Multiple relays so no single relay can link Alice to Bob.

engadget

Sections ▾

Login



Authorities reportedly ordered Google to reveal the identities of some YouTube videos' viewers

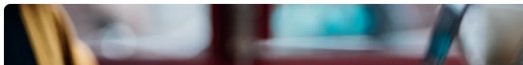
You apparently don't have to do anything illegal for law enforcement to ask for your Google data.



Mariella Moon

Contributing Reporter

Sat, Mar 23, 2024, 8:00 AM MDT · 2 min read



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the yodel

Analysis

Facebook gave police their private data. Now, this duo face abortion charges

Johana Bhuiyan

Experts say it underscores the importance of encryption and minimizing the amount of user data tech companies can store

Wed 10 Aug 2022 12.00
CEST

 Share



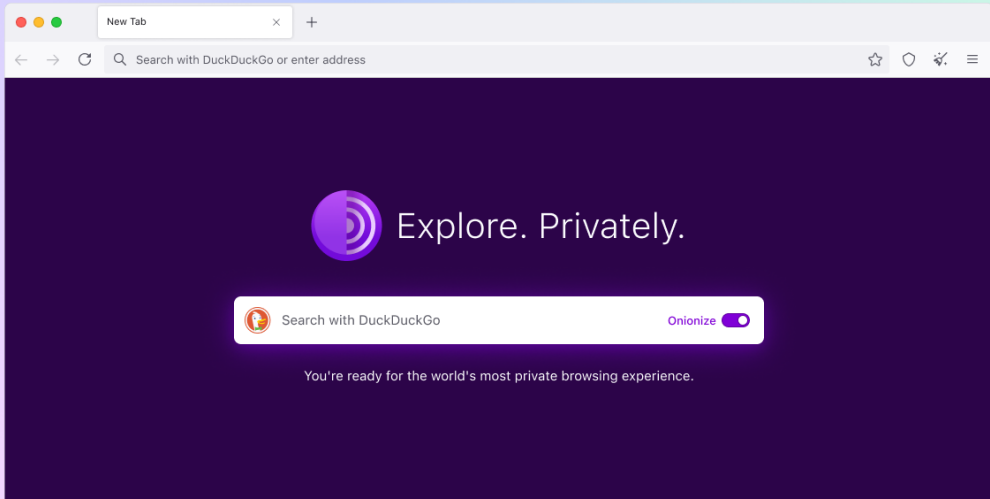
📄 Court documents revealed how tech companies contribute to criminal prosecution of abortions.

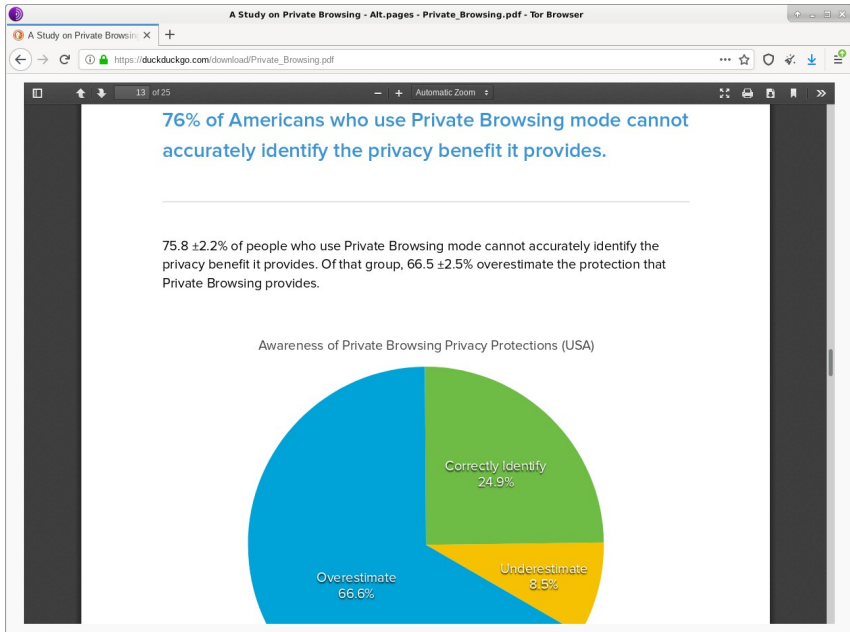
Photograph: Olivier Douliery/AEP/Getty Images

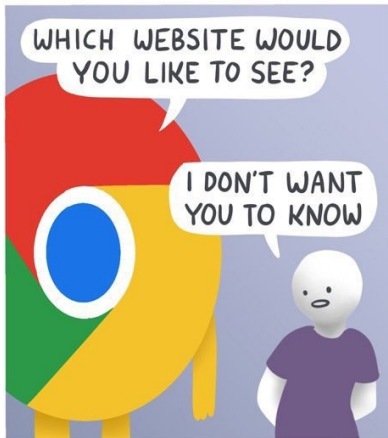
Tor's **safety** comes from **diversity**

1. Diversity of relays. The more relays we have and the more diverse they are, the fewer attackers are in a position to do traffic confirmation.
2. Diversity of users and reasons to use it. 50000 users in Iran means almost all of them are normal citizens.

Tor Browser







@SKELETON_CLAW



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Transparency for Tor is key

- Open source / free software
- Public design documents and specifications
- Publicly identified developers

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- Public design documents and specifications
- Publicly identified developers
- Not a contradiction: privacy is about choice!



Technology is not neutral

Power imbalances are central to Tor: it's more useful to vulnerable people than those who already have power.

Technology is inherently political!

Tor isn't foolproof

- Opsec mistakes
- Browser metadata fingerprints
- Browser exploits
- Traffic analysis



I WANT TO RUN A RELAY

YOU'LL NEED TO DO THE FOLLOWING

1

CHOOSE A RELAY

2

FIND ALLIES

3

GET A PRIZE

1

CHOOSE YOUR RELAY



Calls to action

Understand the risks of centralized architectures

Participate in privacy research, e.g.

<https://petsymposium.org/>

<https://foci.community/>

Volunteer as a relay!

Happy to talk more: roger@torproject.org