A homegrown web

☆ Self-hosting sites with Tor

What will happen today

The loose structure I have planned:

- ☐ A few (non-technical) ways to think about self-hosting
- ☐ Overview of Tor and what it is
- ☐ Technical deep-dive of onion websites
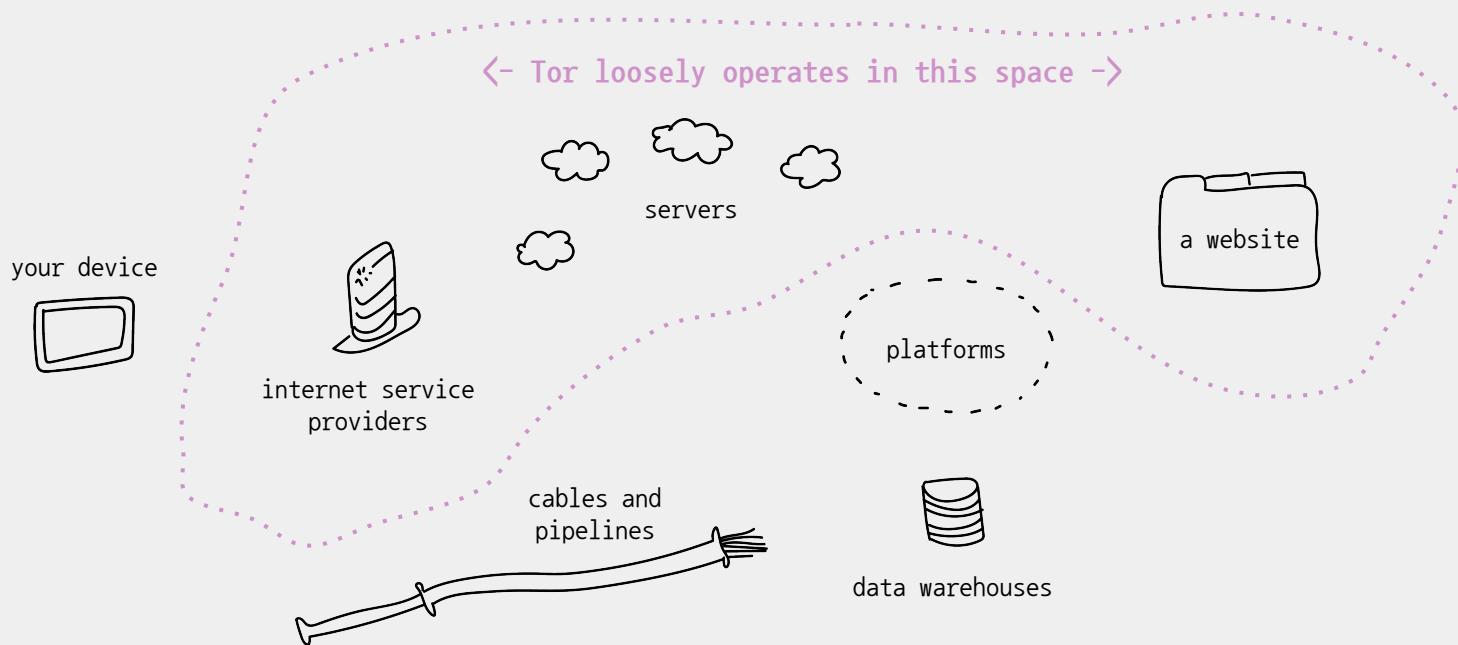- ☐ Self-hosting exercise intro

I'm practicing a bunch of ideas out loud with you, and I also want to invite you to practice with me.

Ask questions at any time!

I'll share a small feedback survey and the slides afterwards.

My proposition: technology skillshare is an exercise in imagination.

1. Understanding how technologies operate is an opportunity to understand that they're not inevitable or permanent.

2. There are real alternatives that exist in the world right now. They present avenues, both material and ideological, for disinvestment from present conditions and systems of harm.

3. It creates space for us to imagine, design, and build new futures. It puts us in a better position to sabotage existing systems.

<- Tor loosely operates in this space ->

servers

a website

your device

internet service
providers

platforms

cables and
pipelines

data warehouses

What Tor offers us is:

☐ A space to learn about one tiny piece of the internet
☐ A real strategy for resisting surveillance and censorship
☐ An opportunity to participate in network stewardship
☐ Encouragement to think beyond the present towards internet(s) we want

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A very not-scientific diagram of some internet infrastructure

Tor is a privacy-enhancing and censorship-circumvention tool.

At its simplest, Tor is a way to route network requests through a series of proxies that help obscure the identity of the computer making the request.

Tor is often associated with the "dark web" and people doing illegal things. This history and public perception is important! Who benefits when privacy-enhancing tools have a bad reputation?

You might use Tor:

- [ ] To obscure your information from third-party data collection and tracking
- [ ] To access content where it might be censored or blocked by a central authority
- [ ] To share (sensitive) information privately, securely, and anonymously
- [ ] To use and participate in more distributed networks

your device   a website
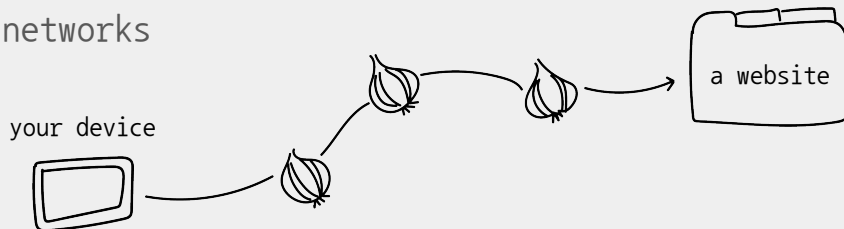
Tor, the software

aka *little-t tor, tor daemon*

An open-source program that's used to connect to the Tor network, as well as runs nodes and publish content on the network
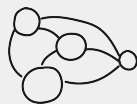
we can look at the source code

The Tor Network

A network of volunteer-run computers (aka *nodes, proxies, virtual tunnels*) around the world running the Tor program; these nodes perform different roles in the network.

let's explore the metrics

Onion websites

aka *hidden services, onion services*

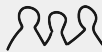Websites that can only be accessed through the Tor network

The Tor Browser

A web browser (based on Firefox) that uses the Tor network to access the internet and onion websites. It also makes a number of other privacy improvements.
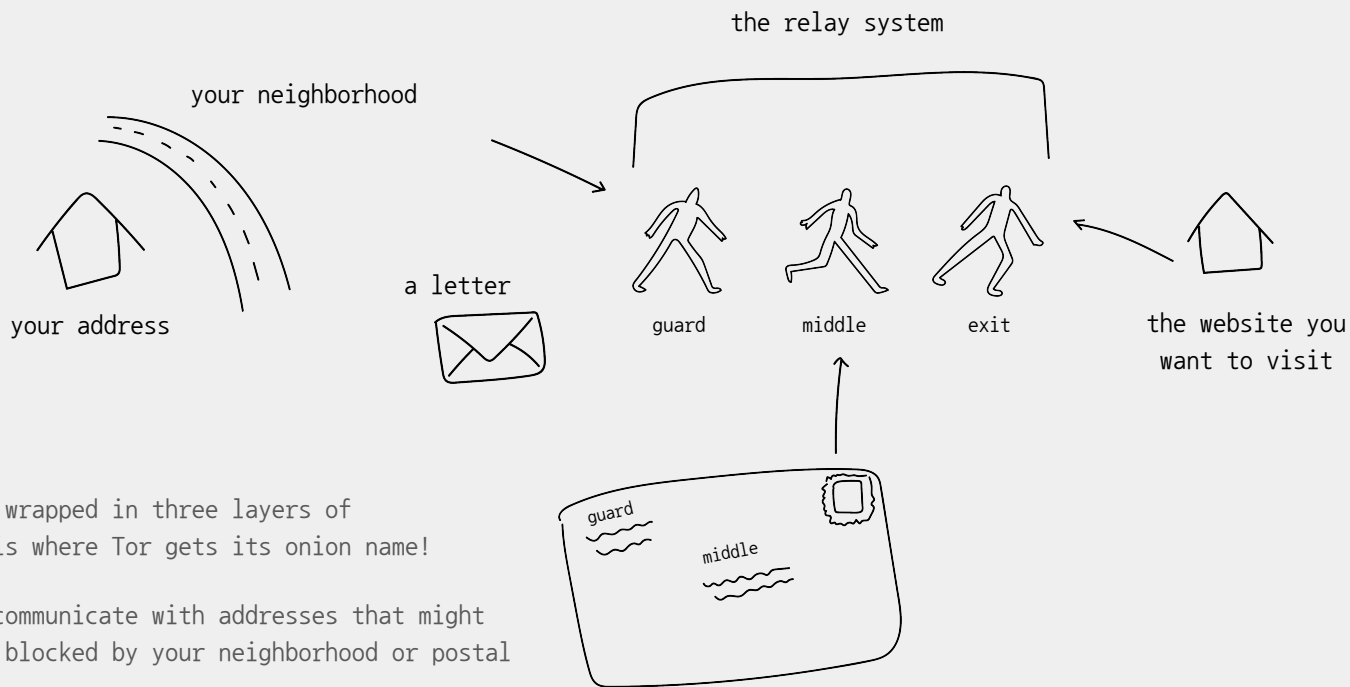
we can download it or browse the faqs

The Tor Project

The 501(c)(3) non-profit organization that develops the Tor software; their mission is human rights focused.
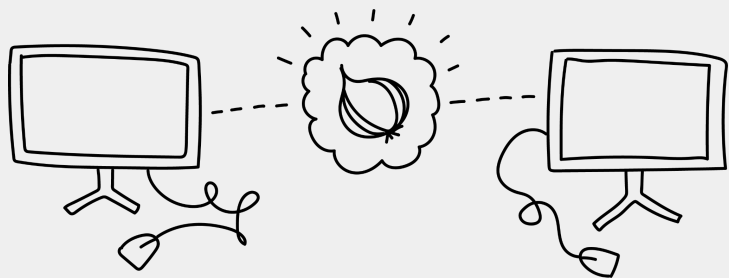
watch the state of the onion video

The Tor Ecosystem

the relay system

your neighborhood

a letter

guard middle exit

your address

the website you
want to visit

🌐 Your letter is wrapped in three layers of
routing—this is where Tor gets its onion name!

🌐 Allows you to communicate with addresses that might
be censored or blocked by your neighborhood or postal
service

🌐 Offers (more) anonymous communication for you

guard

middle

The Tor network uses multiple couriers that are distributed

How are we using onion services?

We're approaching onion services from a creative, small technology, homemade web lens:

- ☐ To have more ownership of our own infrastructure by hosting websites on our own machines
- ☐ To share information, files, and experiences in a way that values privacy by design
- ☐ To play in the dirt of the internet

your neighborhood

your address

a letter

phone book

trusted
introductions

the onion
website to visit

*all communications are using two or
three couriers to relay their letters

rendezvous point

You and the onion service can now route your letters to the rendezvous courier

A fun sample exercise

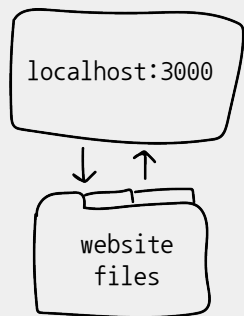https://github.com/lizzthabet/itp-onion-demo

I have a demo repository that contains all the files you need to host an onion website on your own computer. :)

There are two demo tracks:

- [ ] one with more configuration where you'll learn how Tor needs to be configured and involves running the Tor daemon
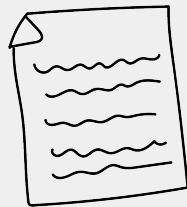- [ ] one where you can download a helpful program to that will handle on the configuration for you.
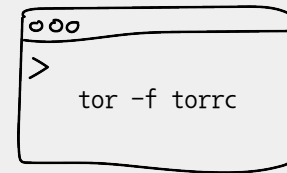
A fun sample exercise: how it works

localhost:3000

website files

torrc

HiddenServicePort 80 127.0.0.1:3000

```
> 
  tor -f torrc
```

1. Run a local web server that handles requests for your website.

2. Create a tor config file for the hidden service that points incoming requests at the local web server.

3. Run the tor daemon with the config. Tor will create the hostname and a set of public + private keys for your onion site. Your site is online!

What does Tor do as a self-hosting tool?

There are many ways to host your own websites. Tor is only one of them!

I've found Tor specifically useful, because:

- You don't need to configure your home router or worry about a firewall. Tor does something called NAT hole punching out-of-the-box, which means you can easily run a website from your own machine that can be accessed outside of your local network.
- You don't need a domain name or to configure DNS. Tor creates a unique hostname for your website and populates that information over its network.
- You don't need to worry about exposing your IP address to the wider internet. Tor is built with anonymity, security, and privacy in mind.

But it has some drawbacks, like:

- People require a Tor client, like Tor Browser, to access your site.
- Tor may be intimidating to configure confidently and accessible resources are difficult to find

> "What does it mean to think about those histories that are difficult to remember well—either because the present in some way requires erasing what happened in the past or because particular past events have become so taken-for-granted that it is hard to imagine that the world was once different.

[...]

> When classification becomes commonsensical it can become difficult to recall that they were created and, sometimes, contested. Attending to contestation reminds us that what happened in the past was not inevitable. And since the past persists and consists in the present, no particular future is inevitable either."

Alexis Shotwell, "'Women don't get AIDS, they just die from it'" in *Against Purity: Living Ethically in Compromised Times* (p. 16–17)

Self-hosting as a form of contesting the past and working towards futures we want