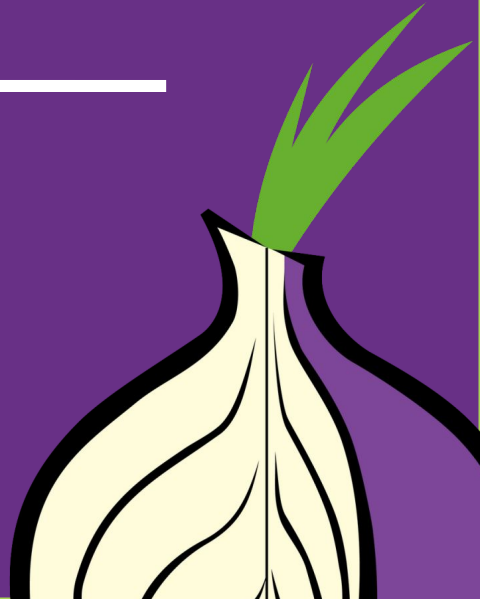


# All About Tor

---



# Agenda

- Fill in this section
- With your agenda for the day
- To help your audience stay focused!

# Let's begin

- Do you use Tor?
- If not, why not?
- If yes, do you have any questions, concerns, issues, or doubts about using it?
- Do you teach others about Tor?



# What is Tor?

- Free software and an open network
- Mitigates against tracking, surveillance and censorship
- Run by a US non-profit and volunteers from all over the world
- It's Tor, not TOR

# Why do we need Tor?

- Government mass and targeted surveillance
- The business model of the internet: big data, advertising, non-consensual tracking
- Surveillance threats from family, bosses, bad people on the internet

# Why do you need Tor?

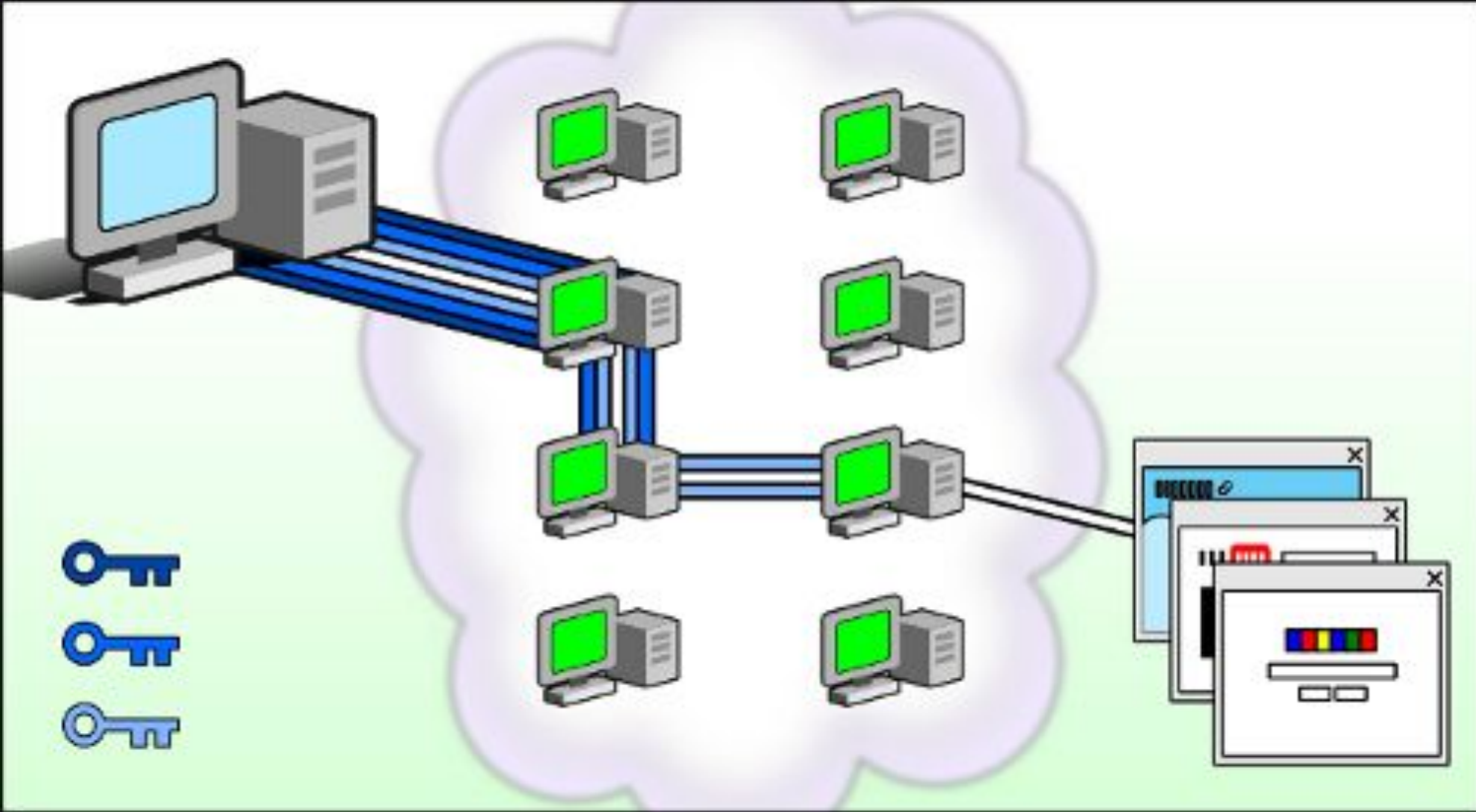
- Let's discuss the work you do
- Adversaries and challenges
- Mitigations
- How Tor can help



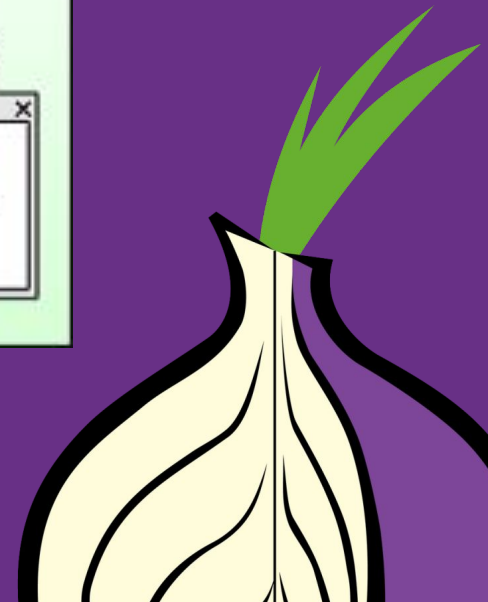
# little-t Tor or core tor

- Tor the network daemon (a computer program)
- Presents a SOCKS or http proxy
- Location and source anonymity, similar to a VPN or regular proxy (but better!)
- Network of relays in many parts of the world





# How Tor relays work



# Tor Browser

- little-t tor plus patched Firefox
- Anyone snooping can't see the websites you visit
- Websites can't track you or see other sites you visit
- Prevents other privacy violations like fingerprinting or 3rd party cookies
- Writes nearly nothing to disk
- No browser history
- Cross platform: Windows, macOS, Linux and Android

108 **CENSORED** 40

**Obscures your Real IP Address**



**Prevents Network Observation**



**Prevents Location Determination**



**Blocks Fingerprinting**



**Prevents Cross-Site Correlation**



**Isolates Cookies & Scripts**



**Writes Nothing to Disk**



**No Browser History**



New to Tor Browser?  
Let's get started.

Tor Browser  
8.0.5

# Tor Browser


×

**Welcome**

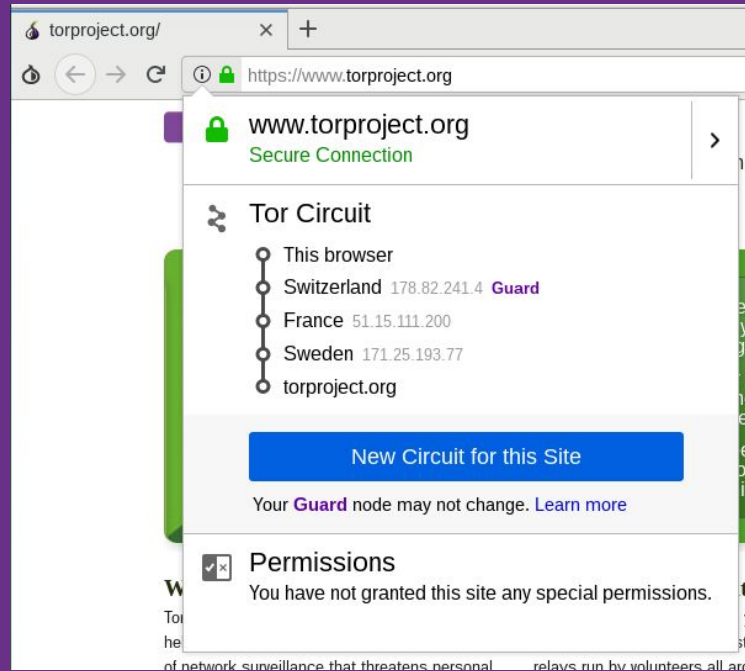
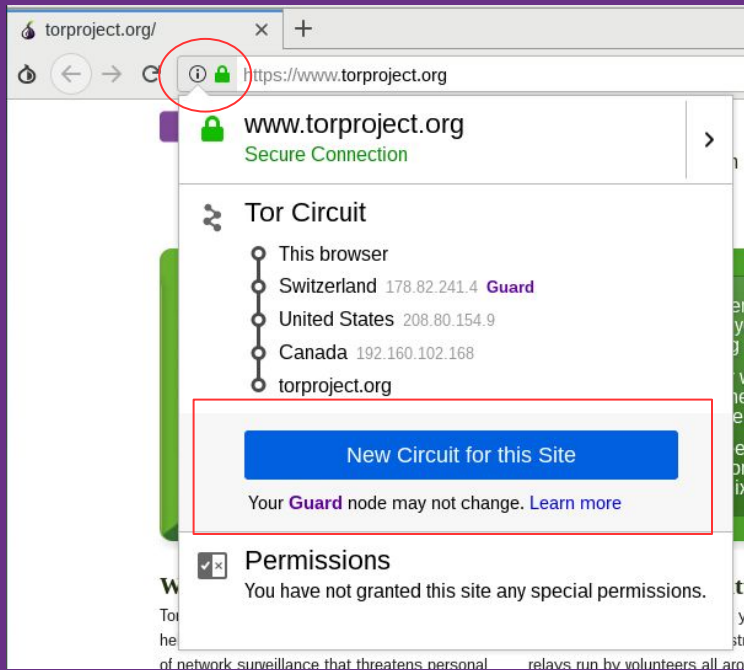
- Privacy
- Tor Network
- Circuit Display
- Security
- Experience Tips
- Onion Services

**You're ready.**

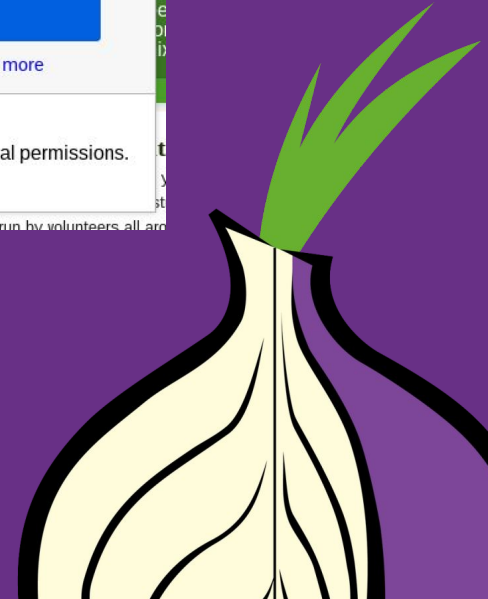
Tor Browser offers the highest standard of privacy and security while browsing the web. You're now protected against tracking, surveillance, and censorship. This quick onboarding will show you how.



**Start Now**



**Clicking on the site information menu will show your current circuit (and “New Circuit for this site” option)**

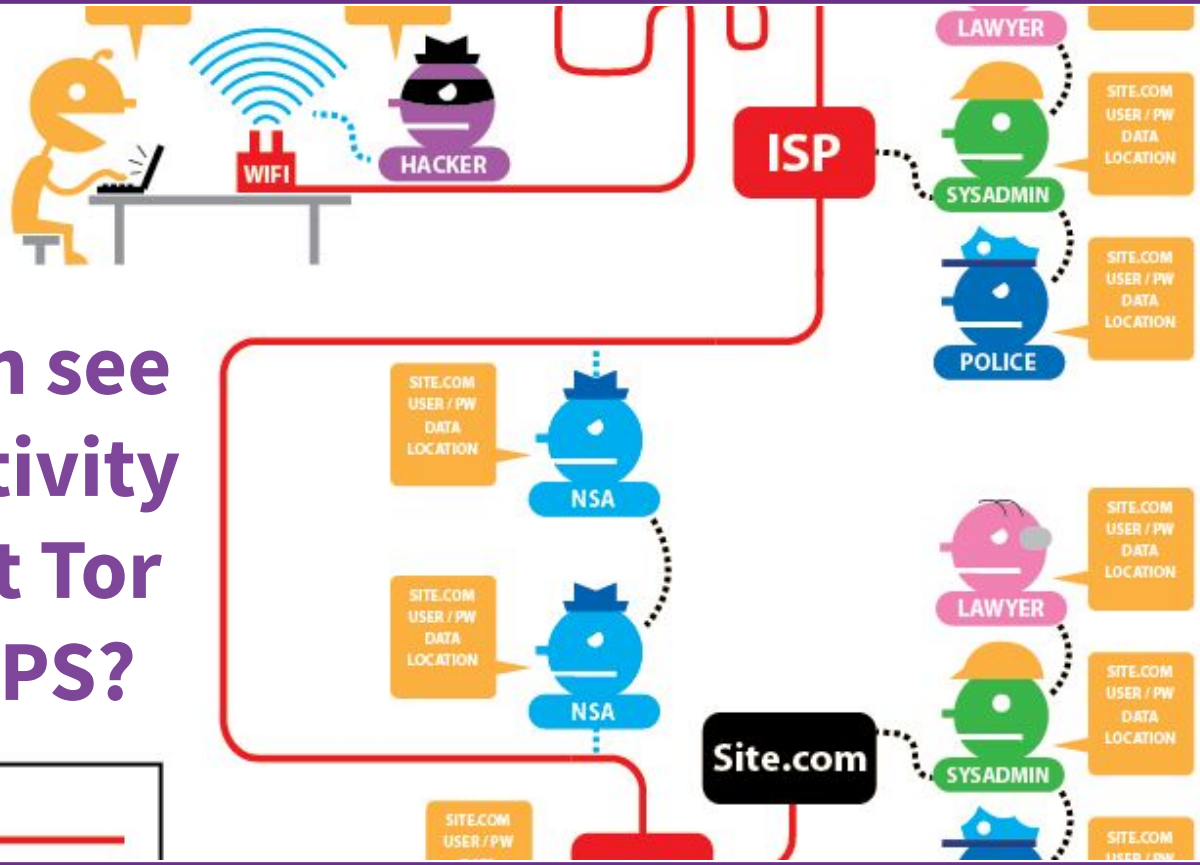


# Using Tor Browser

- Default search engine: DuckDuckGo
- Bundled with NoScript, HTTPS Everywhere
- You should not add any other extensions nor enable any plugins (eg Flash)!
- Best practices
  - Websites won't know anything about you unless you login and tell them

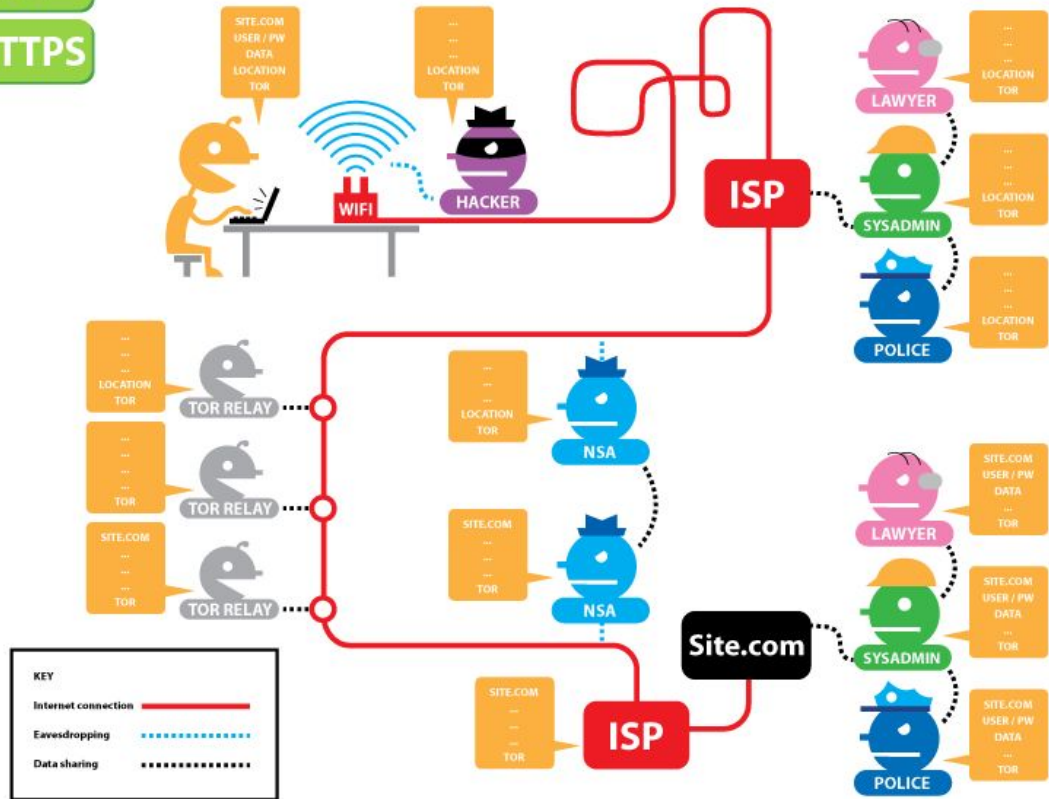
# Who can see your activity without Tor or HTTPS?

KEY  
Internet connection



# Who can see your activity with Tor and HTTPS?

Tor  
HTTPS





# Downloading Tor Browser

- The safest way to download is from [torproject.org](https://torproject.org)
- If [torproject.org](https://torproject.org) is blocked, try mirrors
  - <http://tor.calyxinstitute.org/>
  - <https://tor.eff.org/>
- Or try GetTor
  - email [gettor@torproject.org](mailto:gettor@torproject.org) and in the message write “windows”, “osx” or “linux” (no quotes, no subject line)
  - Or message [@get\\_tor](https://twitter.com/get_tor) on twitter with eg “osx ar” (include two letter language code)

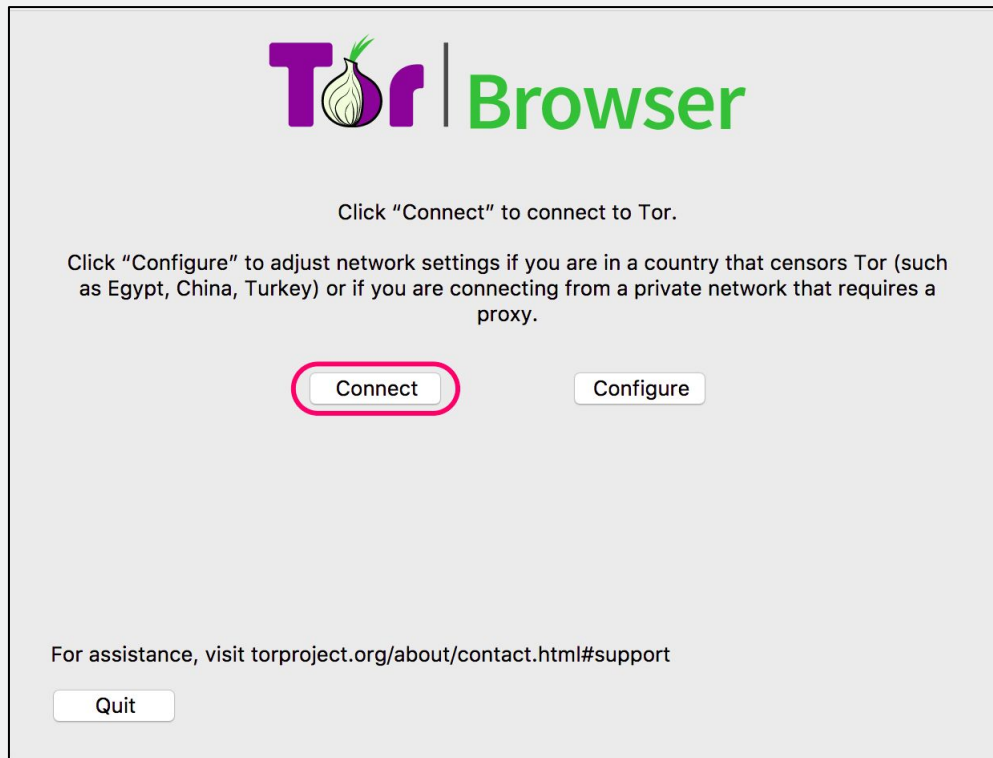
# Tor Browser in other languages

- Go to <https://torproject.org>
- Click “Download Tor”
- Dropdown menu for languages

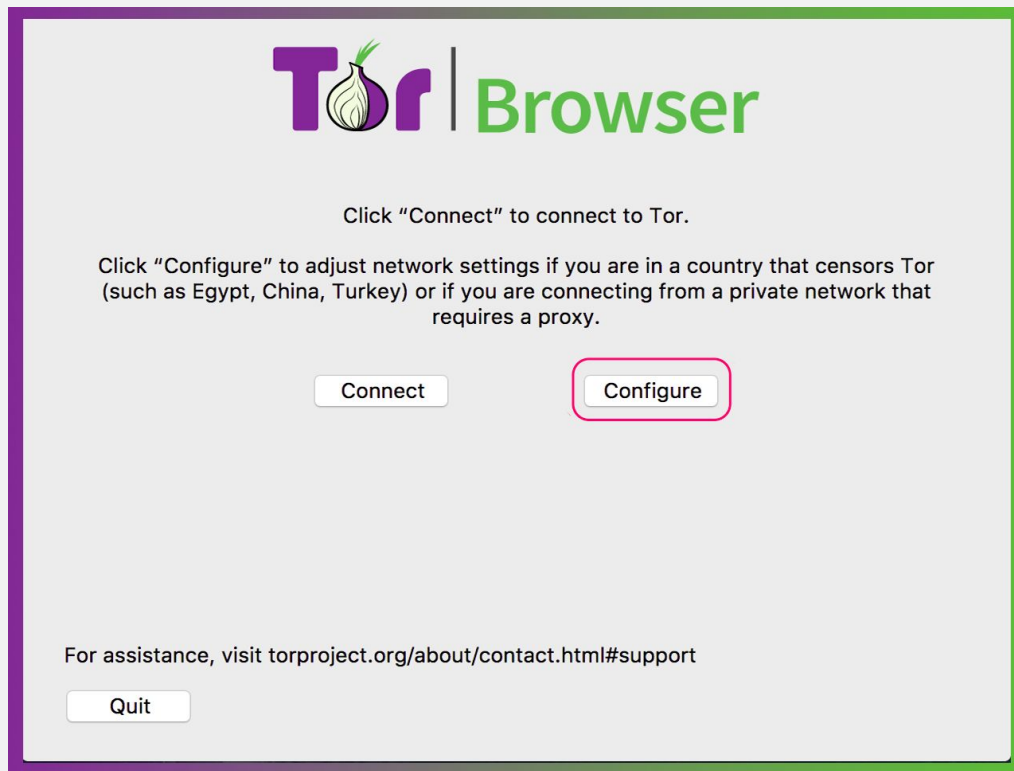


Language	Microsoft Windows (8.0.5)	Apple MacOS (8.0.5)	GNU/Linux (8.0.5)
English (en-US)	32/64-bit (sig) • 64-bit (sig)	64-bit (sig)	32-bit (sig) • 64-bit (sig)
العربية (ar)	32/64-bit (sig) • 64-bit (sig)	64-bit (sig)	32-bit (sig) • 64-bit (sig)
Català (ca)	32/64-bit (sig) • 64-bit (sig)	64-bit (sig)	32-bit (sig) • 64-bit (sig)
Dansk (da)	32/64-bit (sig) • 64-bit (sig)	64-bit (sig)	32-bit (sig) • 64-bit (sig)
Deutsch (de)	32/64-bit (sig) • 64-bit (sig)	64-bit (sig)	32-bit (sig) • 64-bit (sig)
Español (es-ES)	32/64-bit (sig) • 64-bit (sig)	64-bit (sig)	32-bit (sig) • 64-bit (sig)
فارسی (fa)	32/64-bit (sig) • 64-bit (sig)	64-bit (sig)	32-bit (sig) • 64-bit (sig)
Français (fr)	32/64-bit (sig) • 64-bit (sig)	64-bit (sig)	32-bit (sig) • 64-bit (sig)
Gaeilge (Irish) (ga-IE)	32/64-bit (sig) • 64-bit (sig)	64-bit (sig)	32-bit (sig) • 64-bit (sig)
עברית (he)	32/64-bit (sig) • 64-bit (sig)	64-bit (sig)	32-bit (sig) • 64-bit (sig)
bahasa Indonesia (id)	32/64-bit (sig) • 64-bit (sig)	64-bit (sig)	32-bit (sig) • 64-bit (sig)
islenska (is)	32/64-bit (sig) • 64-bit (sig)	64-bit (sig)	32-bit (sig) • 64-bit (sig)
Italiano (it)	32/64-bit (sig) • 64-bit (sig)	64-bit (sig)	32-bit (sig) • 64-bit (sig)
日本語 (ja)	32/64-bit (sig) • 64-bit (sig)	64-bit (sig)	32-bit (sig) • 64-bit (sig)
Korean (ko)	32/64-bit (sig) • 64-bit (sig)	64-bit (sig)	32-bit (sig) • 64-bit (sig)
Norsk bokmål (nb-NO)	32/64-bit (sig) • 64-bit (sig)	64-bit (sig)	32-bit (sig) • 64-bit (sig)
Nederlands (nl)	32/64-bit (sig) • 64-bit (sig)	64-bit (sig)	32-bit (sig) • 64-bit (sig)
Polish (pl)	32/64-bit (sig) • 64-bit (sig)	64-bit (sig)	32-bit (sig) • 64-bit (sig)
Português (pt-BR)	32/64-bit (sig) • 64-bit (sig)	64-bit (sig)	32-bit (sig) • 64-bit (sig)
Русский (ru)	32/64-bit (sig) • 64-bit (sig)	64-bit (sig)	32-bit (sig) • 64-bit (sig)

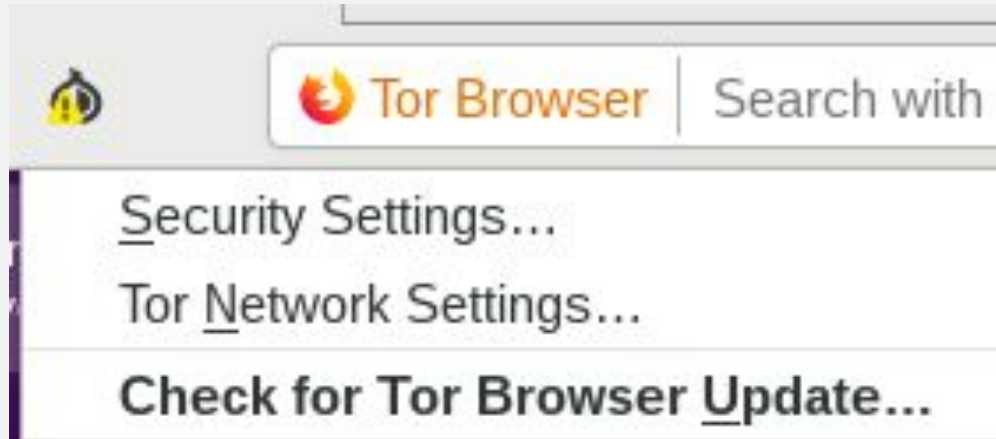
# Running Tor Browser the first time



# Running Tor Browser the first time



# Updating Tor Browser



# Updating Tor Browser



# Uninstalling Tor Browser

- Uninstalling Tor Browser is as easy as moving the folder to the trash! Then, empty the trash.
- Default Tor Browser folder locations:
  - Windows: desktop
  - MacOS: applications folder
  - Linux: home, or look for a name like “tor-browser\_en-US”

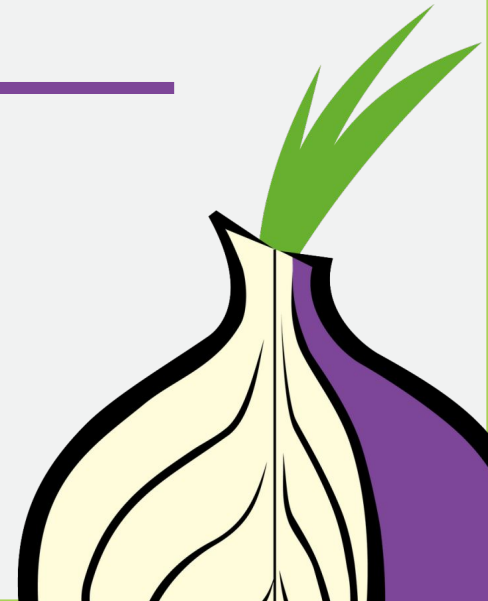
# Troubleshooting Tor Browser

- Is your system clock correct?
- Is the browser already running?
- Are you being censored?
- Is your antivirus or firewall blocking Tor?
- Do you have a very old operating system?
- Try uninstalling and reinstalling
- Get help at <https://support.torproject.org>



# More Tor Browser

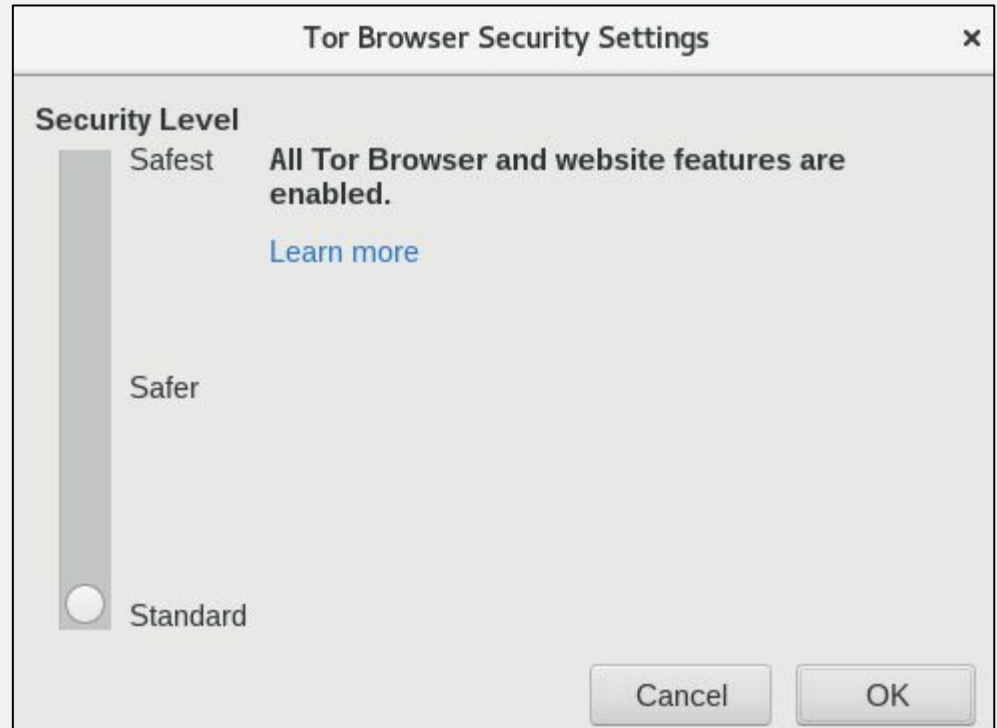
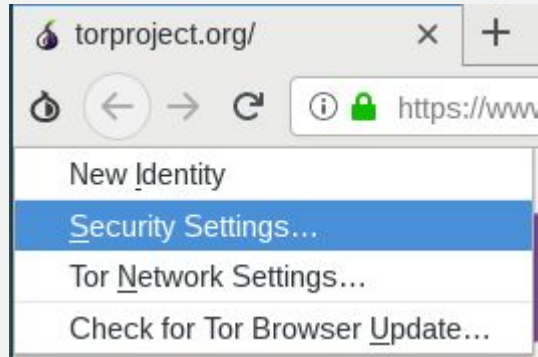
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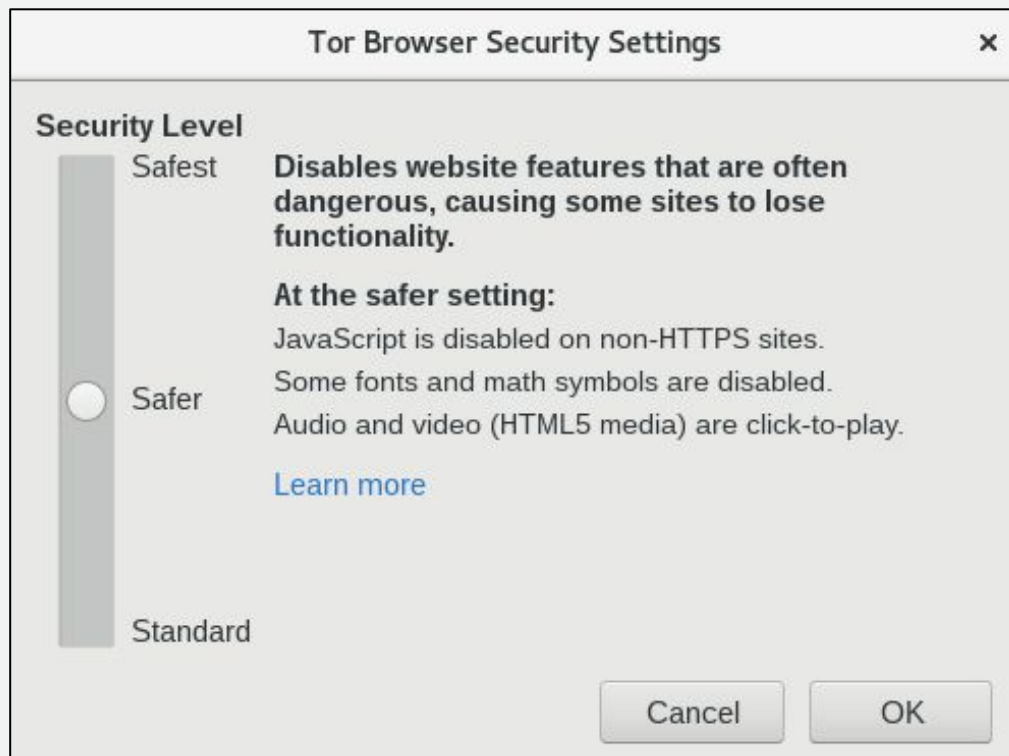
# The “onion” menu

- New Identity: completely refreshes Tor Browser and its circuits; wipes all history; closes all tabs
- Security settings: change slider
- Tor network settings: censorship mitigation options; access to Tor log
- Check for Tor Browser update

# Security Slider

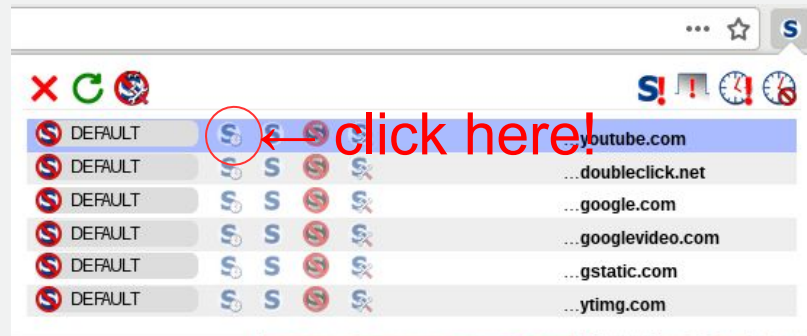


# Security Slider



# NoScript

- It's not advisable to change settings in the “options” menu
- For example, adding sites to the “whitelist” can result in fingerprinting
- Instead, only “temporarily trust” blocked objects



# DuckDuckGo

- DuckDuckGo is the default search engine in Tor Browser
- Using Tor Browser prevents DDG from tracking users, even if they wanted to (they claim not to)
- Duckduckgo.com or <https://3g2upl4pq6kufc4m.onion/>

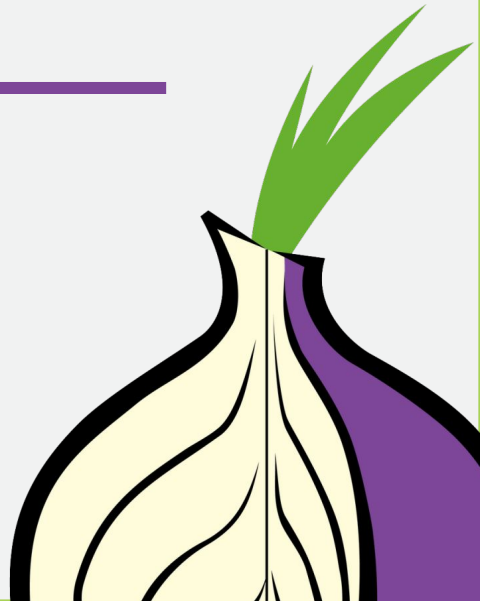


# Plugins, add-ons, Javascript

- Do not add any new add-ons/extensions to Tor, and don't enable any plugins
  - For example, Flash plugin can reveal your real location
- Javascript is enabled by default, but is sanitized to preserve anonymity
- To prevent possible Javascript vulnerabilities, use the “safest” setting in the security slider

# Mobile Tor

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# Things to know about mobile Tor

- The design of mobile devices makes full privacy impossible
- Mobile Tor is best for censorship prevention
- Can also provide better privacy for some threat models
- We're making it better all the time and better options for mobile devices are coming out soon

# Orbot: Tor for Android



## Anonymity Online

Protect your privacy. Defend yourself against network surveillance and traffic analysis.

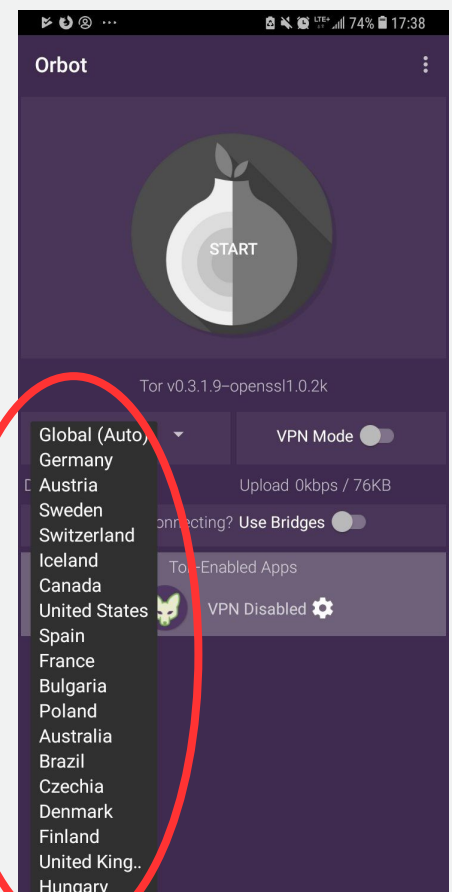
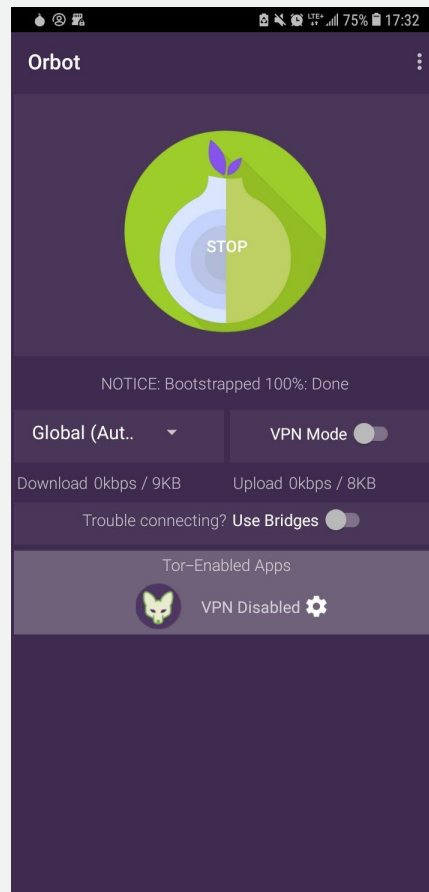


Download Tor 

- ▶ Tor prevents people from learning your location or browsing habits.
- ▶ Tor is for web browsers, instant messaging clients, and more.
- ▶ Tor is free and open source for Windows, Mac, Linux/Unix, and Android

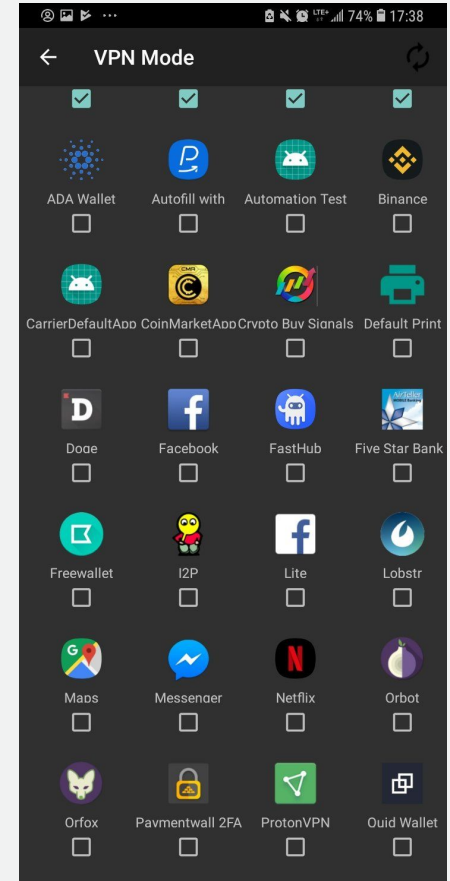
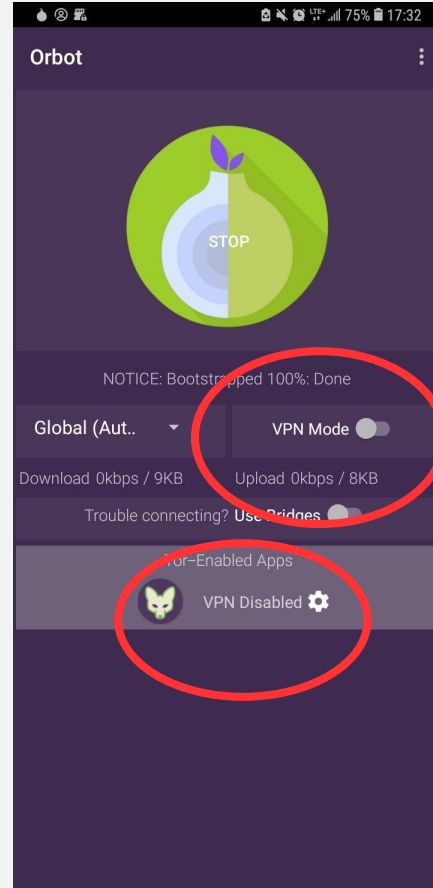
# Using Orbot

- Tor proxy for Android
- Find it on the Play Store
- Use it to run other apps through Tor (like Twitter)
- Click start to run
- You can choose your exit country if you want (some countries don't have exits!)



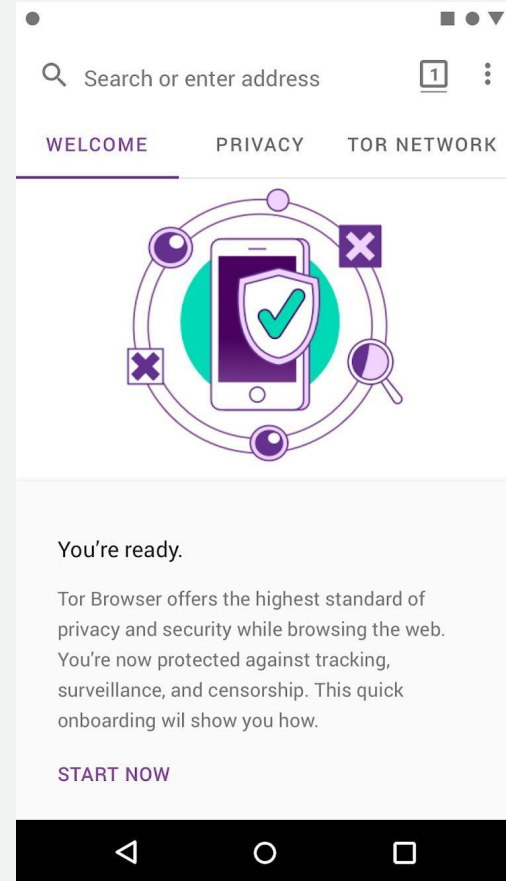
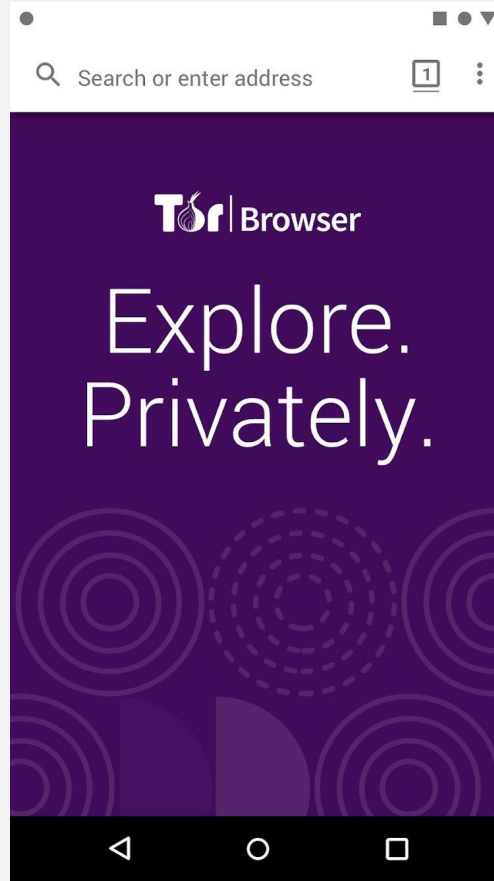
# Using Orbot

- Toggle “VPN mode” on main screen
- Then click “Orbot-enabled apps”
- Then select the apps you want to proxy with Tor



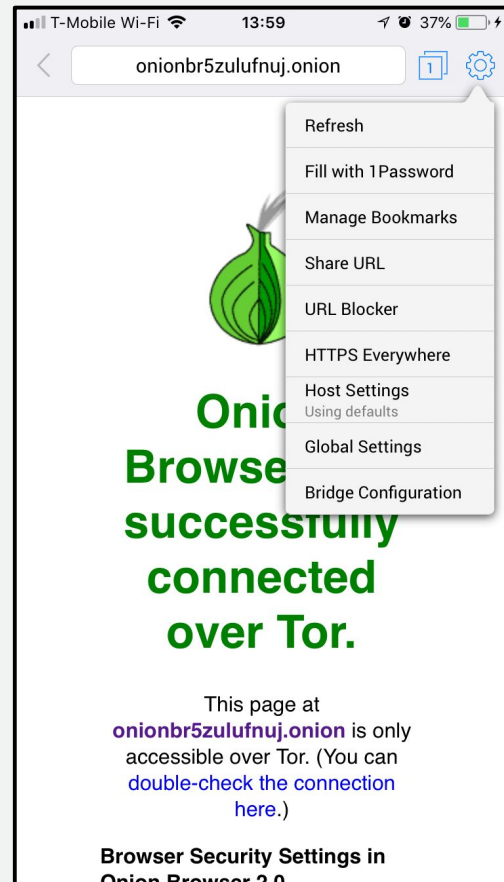
# Using Tor Browser for Android

- Find it in the [Play Store](#)



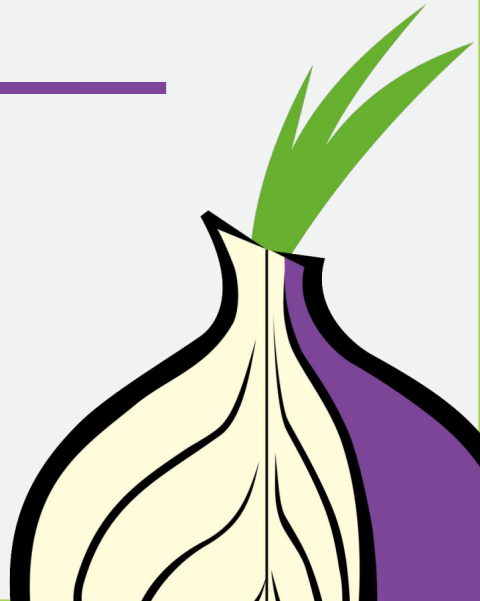
# Onion Browser

- Tor Browser for iOS
- Find it in the app store
- Lots of fake Tor Browsers in the iOS store
- Very rudimentary
- Crashes on sleep



# How do I get help using Tor?

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# Help using Tor

- Tor Browser Manual: [tb-manual.torproject.org](https://tb-manual.torproject.org)
- (TB Manual is in 17 languages)
- Support Portal: <https://support.torproject.org>
- Open mailing lists: <https://lists.torproject.org>
- Chat: IRC OFTC network - easy access through <https://webchat.oftc.net> channel #tor
- <https://tor.stackexchange.com>

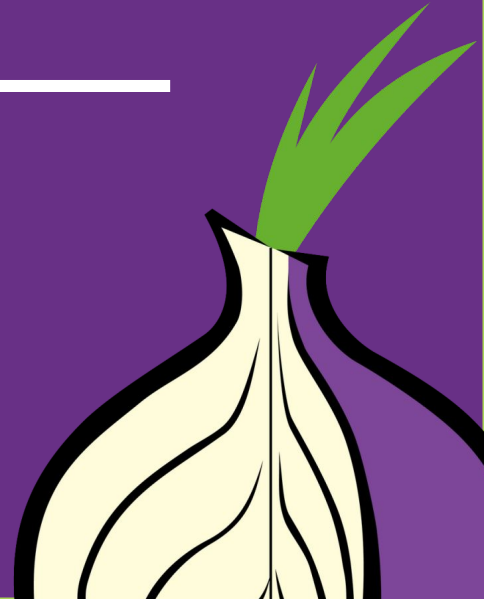


# If you find a bug in Tor

- <https://trac.torproject.org>
- Create a login
- Search for your issue to find any existing tickets
- If no ticket opened, open a new ticket with detailed description of the problem

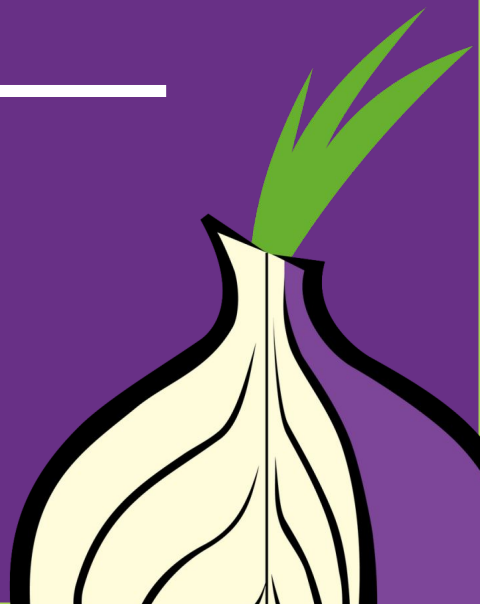
# Circumventing censorship with Tor

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# What do you do when Tor is blocked?

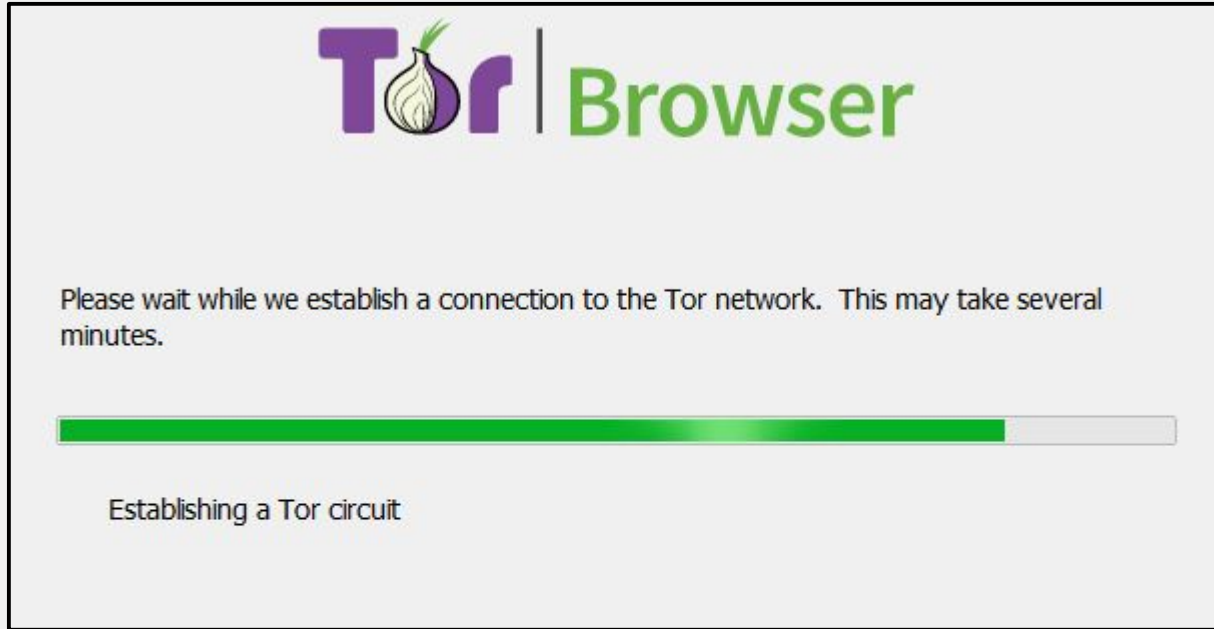
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# When torproject.org is blocked

- **Mirrors**
  - <https://tor.eff.org/>
  - <http://tor.calyxinstitute.org/> (if https is blocked)
- **GetTor email:** [gettor@torproject.org](mailto:gettor@torproject.org)
  - Contact from a Yahoo, Gmail, or Riseup account
- **GetTor Twitter:** send a direct message to @get\_tor with operating system and two letter language code
- **Flash drive with Tor** on it from someone you trust
- Get the EXE, DMG, tar.xz, don't copy the installed folder
- Downloading Tor from a random website is dangerous!

# I downloaded Tor Browser, but it won't connect

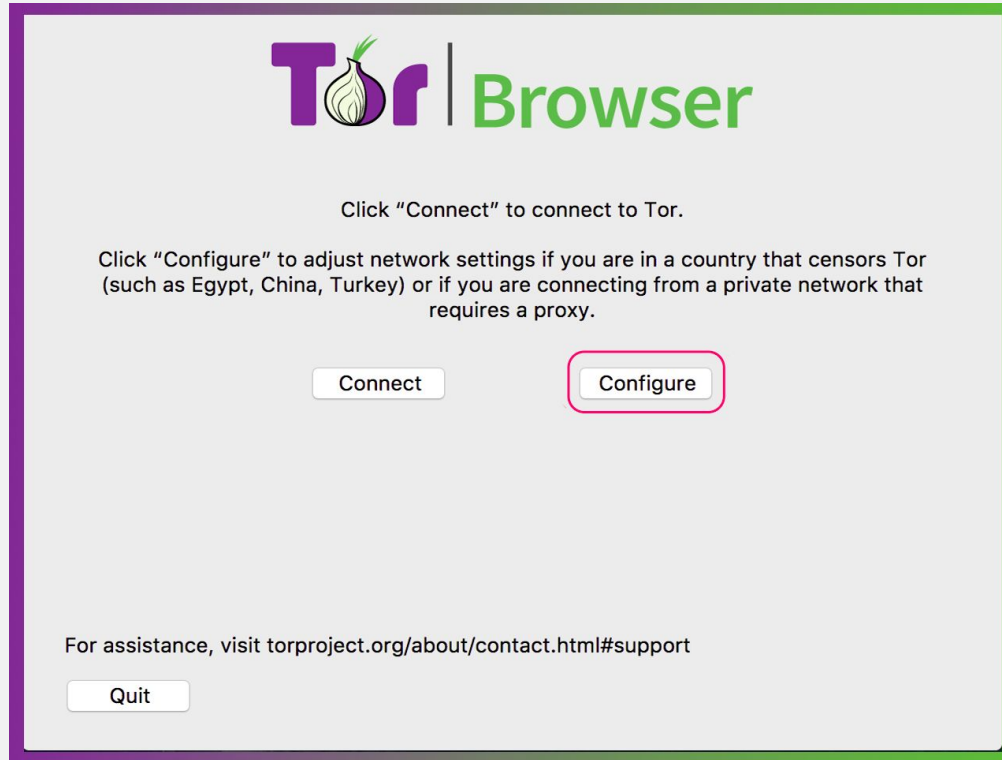


If this screen takes a long time and does not connect, you may need a bridge or pluggable transport

# Bridges and pluggable transports

- Bridges are relays that are not listed publicly
- Get bridges directly from Tor Browser (moat)
- Or from the website <https://bridges.torproject.org> or send an email to [bridges@torproject.org](mailto:bridges@torproject.org) from a Gmail, Yahoo, or Riseup.net account
- Or get a bridge address from a trusted person
- Pluggable transports can be used like bridges to disguise Tor traffic (also called “built-in bridges”)

# Bridges and pluggable transports



The screenshot shows the Tor Browser interface. At the top, the Tor logo (a purple onion) is followed by the text "Tor | Browser" in purple and green. Below this, there is a central instruction: "Click 'Connect' to connect to Tor." followed by "Click 'Configure' to adjust network settings if you are in a country that censors Tor (such as Egypt, China, Turkey) or if you are connecting from a private network that requires a proxy." Two buttons are visible: "Connect" and "Configure". The "Configure" button is highlighted with a red rectangular border. At the bottom, there is a "Quit" button and a link for assistance: "For assistance, visit [torproject.org/about/contact.html#support](https://torproject.org/about/contact.html#support)".

**Tor** | Browser

Click "Connect" to connect to Tor.

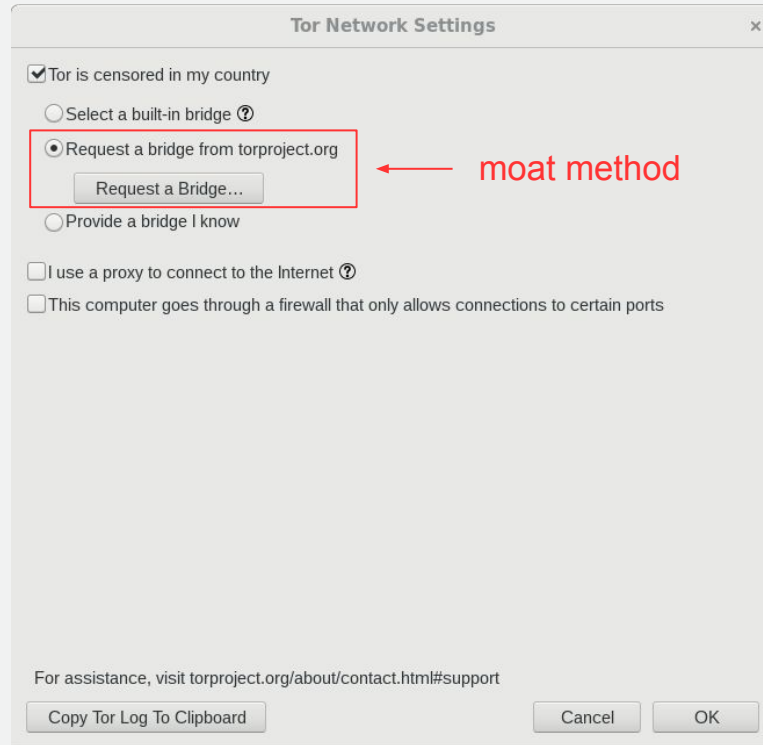
Click "Configure" to adjust network settings if you are in a country that censors Tor (such as Egypt, China, Turkey) or if you are connecting from a private network that requires a proxy.

Connect      Configure

Quit

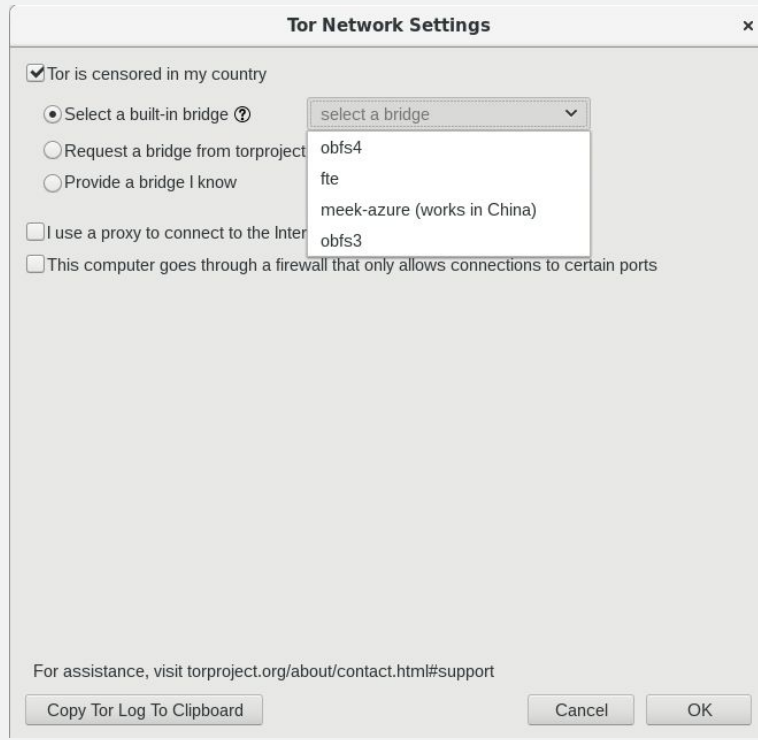
For assistance, visit [torproject.org/about/contact.html#support](https://torproject.org/about/contact.html#support)

# Bridges and pluggable transports





# Bridges and pluggable transports



# Pluggable transports

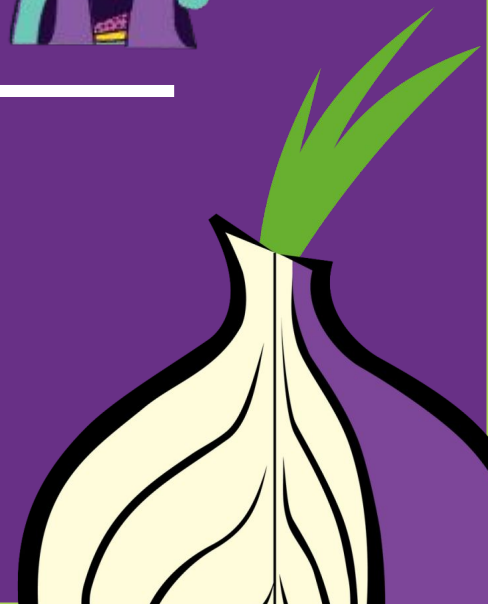
- **obfs4**: makes Tor traffic look random; works in many situations including China (if not, try meek)
- **fte**: makes Tor traffic look like regular HTTP traffic
- **meek-azure**: makes it look like Microsoft traffic; works in China
- **obfs3**: makes Tor traffic look random

# OONI

- Open Observatory of Network Interference (<https://ooni.torproject.org>)
- Country-level reports of specific censorship tools in use on certain websites
- View their reports (<https://explorer.ooni.torproject.org>)
- Or use your own OONI Probe to test websites

# Sharing content anonymously with Tor

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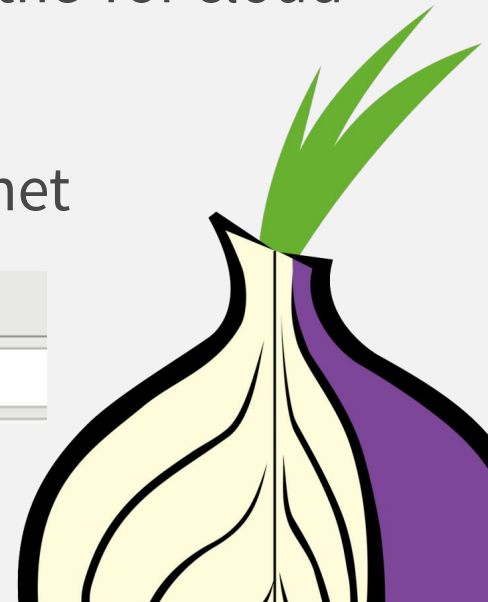
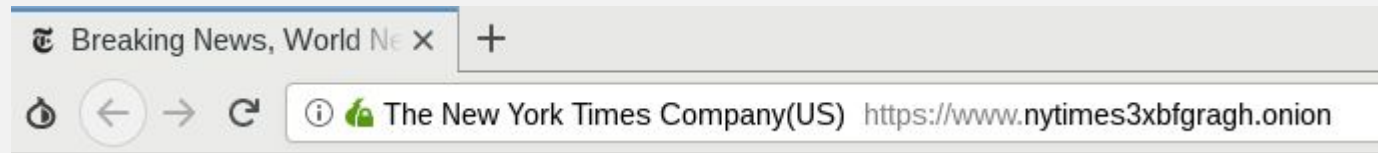
# What are onion services?

**The regular internet allows adversaries to see what you are sharing and with whom, whether you're using Dropbox etc, downloading it from email or through your browser...**

**...so Tor devised a sneaky way to hide both the file data and the related metadata!**

# Onion services

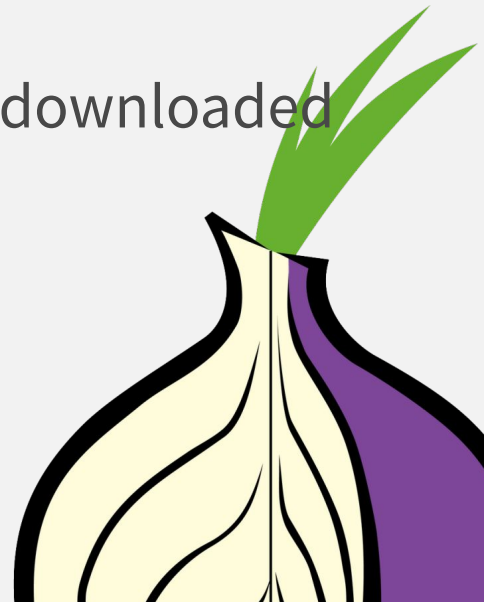
- Protection for both the user and the server
- User learns about xyz.onion
- Client and service meet at rendezvous point in the Tor cloud
- End-to-end encrypted without HTTPS
- Connections never go out to the “vanilla” internet

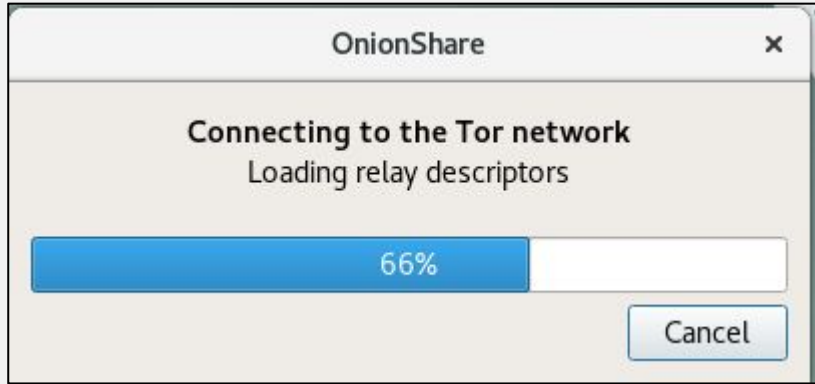




# OnionShare

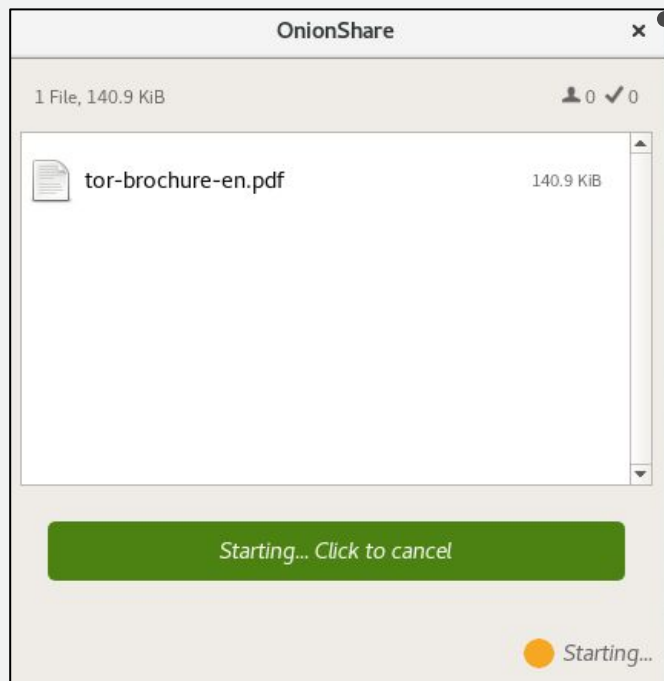
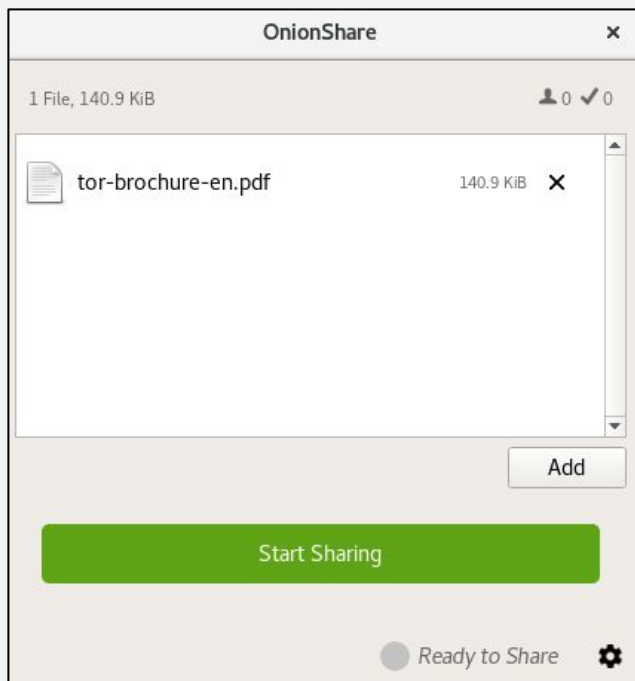
- Secure, private, anonymous file sharing done easy, built on top of the Tor network
- Uses onion services to securely send files
- Creates an onion service where the file can be downloaded
- No need to trust third parties like Dropbox
- Download from <https://onionshare.org>



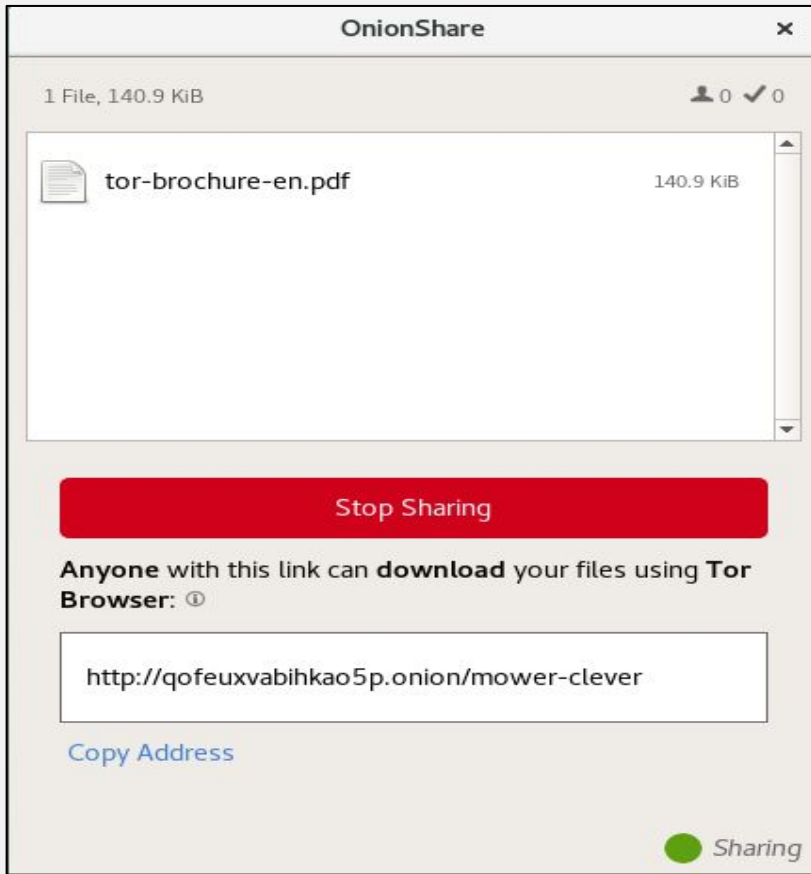


- OnionShare connects to Tor network
- Click “add” then find the file you want to share.

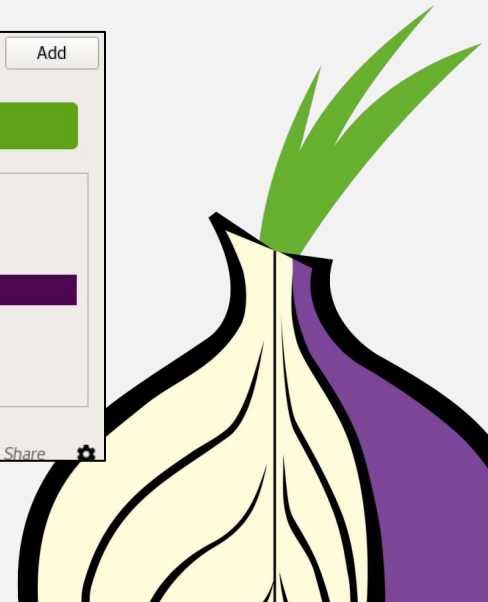
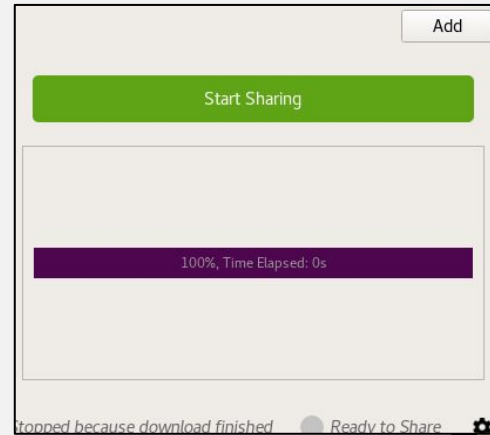




Once the file is added, click “start sharing”



- Copy the xyz.onion link and send it to your contact
- Contact installs Tor Browser
- When they finish downloading you'll see this →



# Thank You

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Your contact here

