

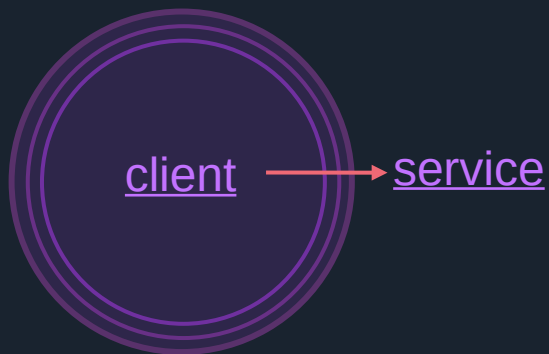
Onion Services

Tor State of the Onion 2025



Onion Services intro

Just Tor



.onion services



community.torproject.org/onion-services/overview



Onion Service benefits

- For users: additional **privacy safeguards**, such as **improved anonymity** and **end-to-end encryption**.
- For service operators: also brings **censorship resistance** and built-in **protections against denial of service (DoS)**.
- For the Tor network: **alleviates the load on exit nodes**, since it's connections don't need to reach the exits.



Onion Service references

- Intro: community.torproject.org/onion-services/overview
- In depth: @cve's talk on GPN23:
media.ccc.de/v/gpn23-52-onion-services-design-protocol-and-implementation



Onion Service and certificates

- Certificates: authenticates and validates connections.
- Not strictly required by Onion Services, but brings additional features:
onionservices.torproject.org/research/proposals/usability/certificates
- RFC 9799 - ACME for .onion: datatracker.ietf.org/doc/rfc9799
- Thanks Q for the work!
- Next steps: implementation and deployment.
- Meanwhile: Practical Certificates for Onion Services:
onionservices.torproject.org/apps/base/certificates



Onion Discovery

- An .onion address:
`archivep75mbjunhxc6x4j5mwjmomymb573v42baldlqu56ruil2oiad.onion`
- This is hard to type and memorize!



SecureDrop Onion Names (2020)

- Example: `forbiddenstories.securedrop.tor.onion`
- Built as an alias system in Tor Browser.
- Hard to scale and distribute.



Onion Discovery research

- Full reference:
onionservices.torproject.org/research/proposals/usability/discovery
- We are ready to to this research and are actively **seeking for funding** to do so.
- If you are someone who is in a position to fund this specific project, here is your opportunity to make a difference.



Growing Onion Services

Onionize existing websites with just a few commands:

```
$ onionspray build
```

```
$ onionspray create myproject example.org mypro
```

```
$ onionspray start myproject
```

Voilà! Proxy to example.org up an running:

myproq6lzzulf2we4w3iywviwpuc5muxenx4hwlvjzexo7yc2psnaeid.onion

Tutorial: onionservices.torproject.org/apps/web/onionspray/tutorial



Onion Service automation

- Onionspray Ansible Role:
gitlab.torproject.org/tpo/onion-services/ansible/onionspray-role -- thanks to mediapart.fr and @zoug :)
- Onimages: container images for Onion Services:
onionservices.torproject.org/apps/base/containers



Thank you!

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