



MassBrowser

Unblocking the Censored Web
for the Masses, by the Masses



Milad Nasr, Hadi Zolfaghari, Amir Houmansadr, Amirhossein Ghafari

University of Massachusetts, Amherst



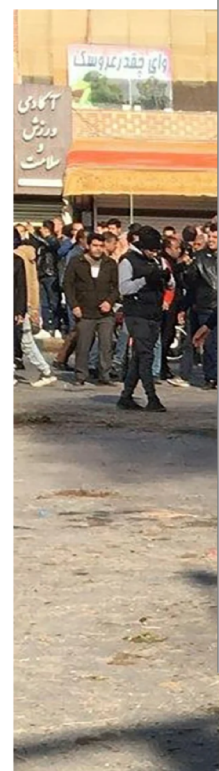
Internet Censorship

How the Iranian Government Shut Off the Internet Syria tightens control over internet

After years of

zens.

► Free-speech watchdog says Syrian authorities are tightening their control over internet usage in the country.





Censorship Circumvention Tools



ExpressVPN



NordVPN



Shortcomings of Current Designs



Easy to Block



Costly



Poor QoS



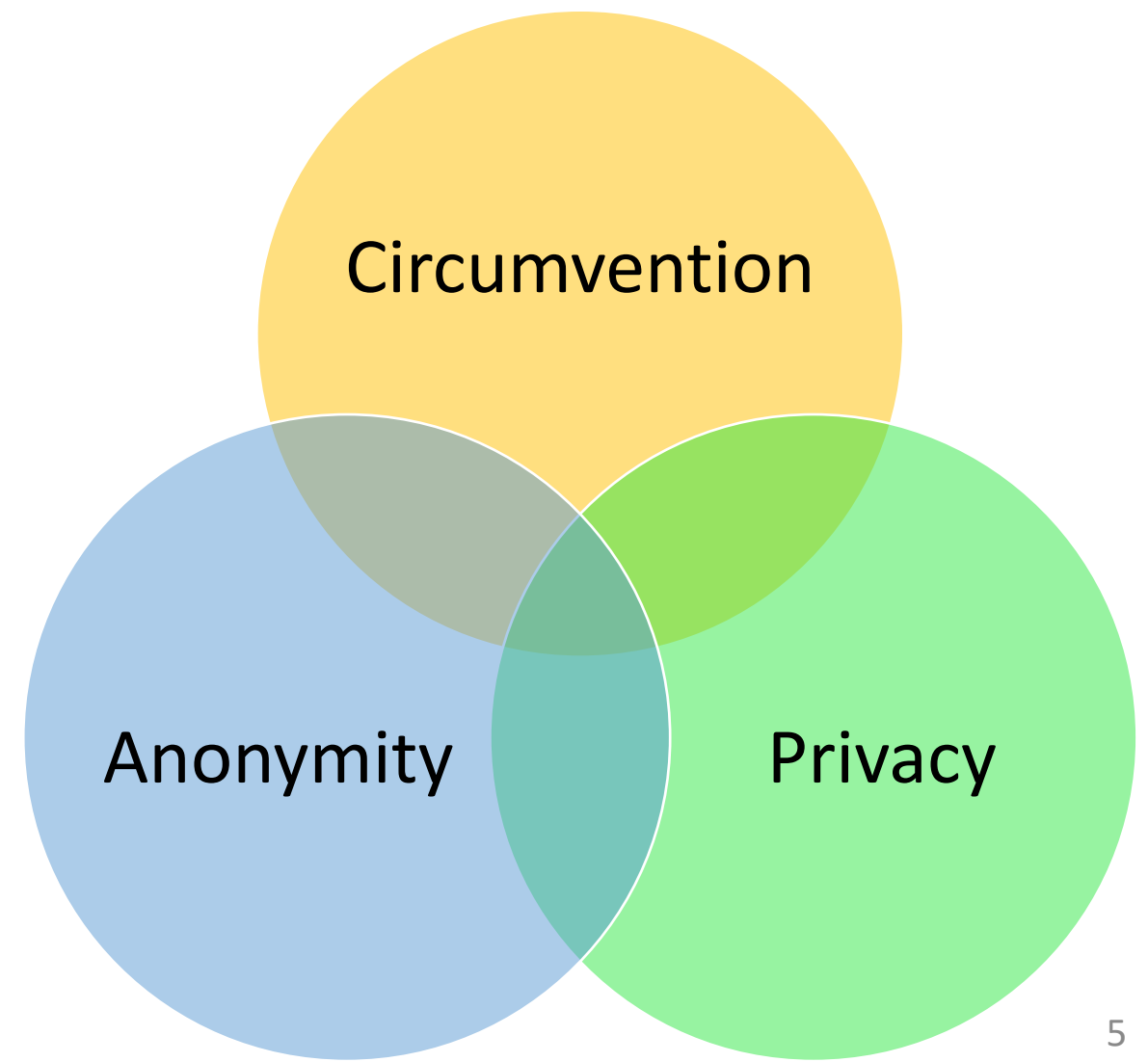
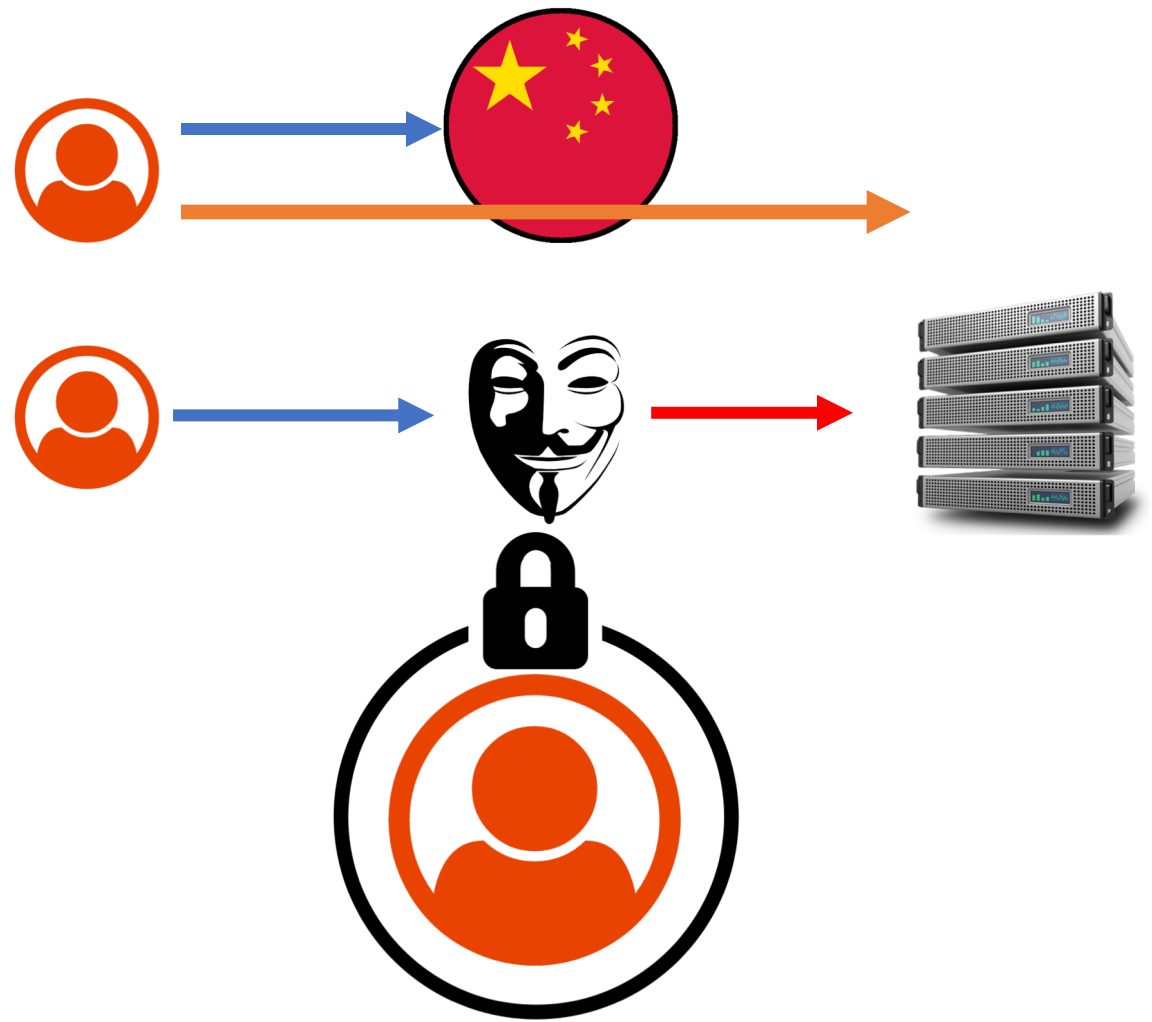
No User-Control



Hard to Deploy



Key Reason: They Bundle Properties





Our Observation: The Mass of Users Just Want Circumvention

Publ

Shadowsocks Free Servers Lists



Evozi Team

1 year ago

Follow

- <http://shadow.tunnelz.online/>
- <https://free-ss.site/>
- <https://us.ishadowx.net/>
- <https://free.gyteng.com/>
- <https://go.freess.org/>
- https://www.ssrtool.com/tool/free_ssr
- <https://get.ss8.fun/>



Our Approach



Design a System Optimized for Circumvention

Privacy/Anonymity provided optional



MassBrowser



Key Design Principles

- Optimizing load on proxies
- Volunteer based proxies
- Clients help other clients
- User-adjustable privacy/anonymity
- Incentivizing volunteers
- Cost optimization



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**Optimizing only
on circumvention**

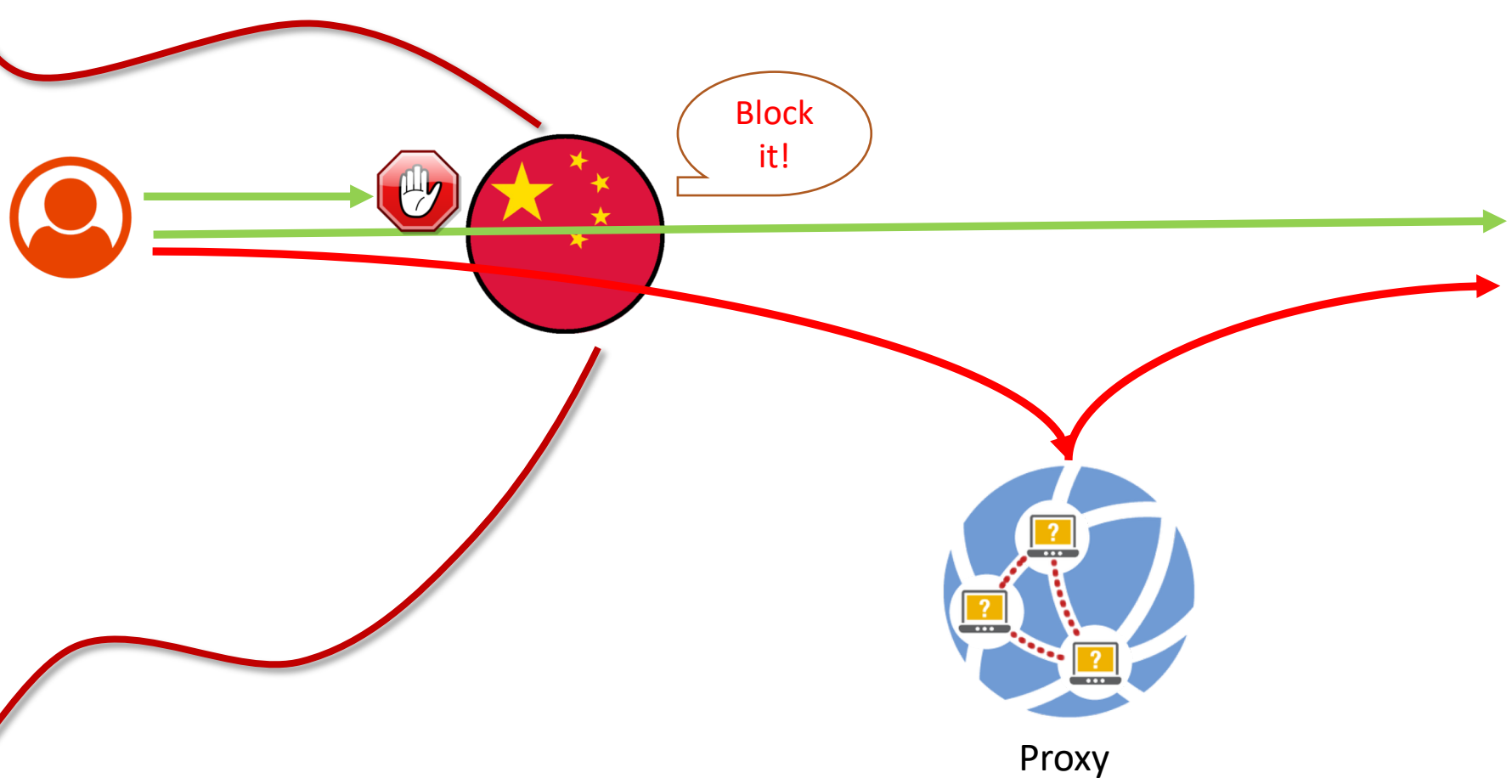


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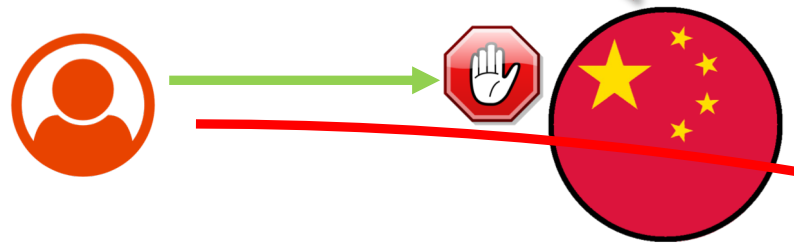


Proxy-based Systems

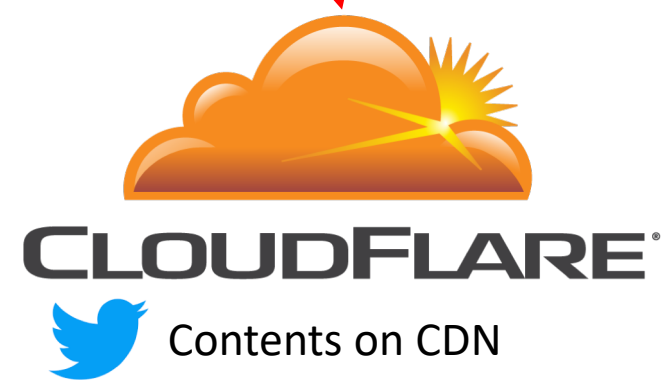




CacheBrowsing



twitter.com





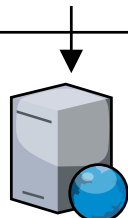
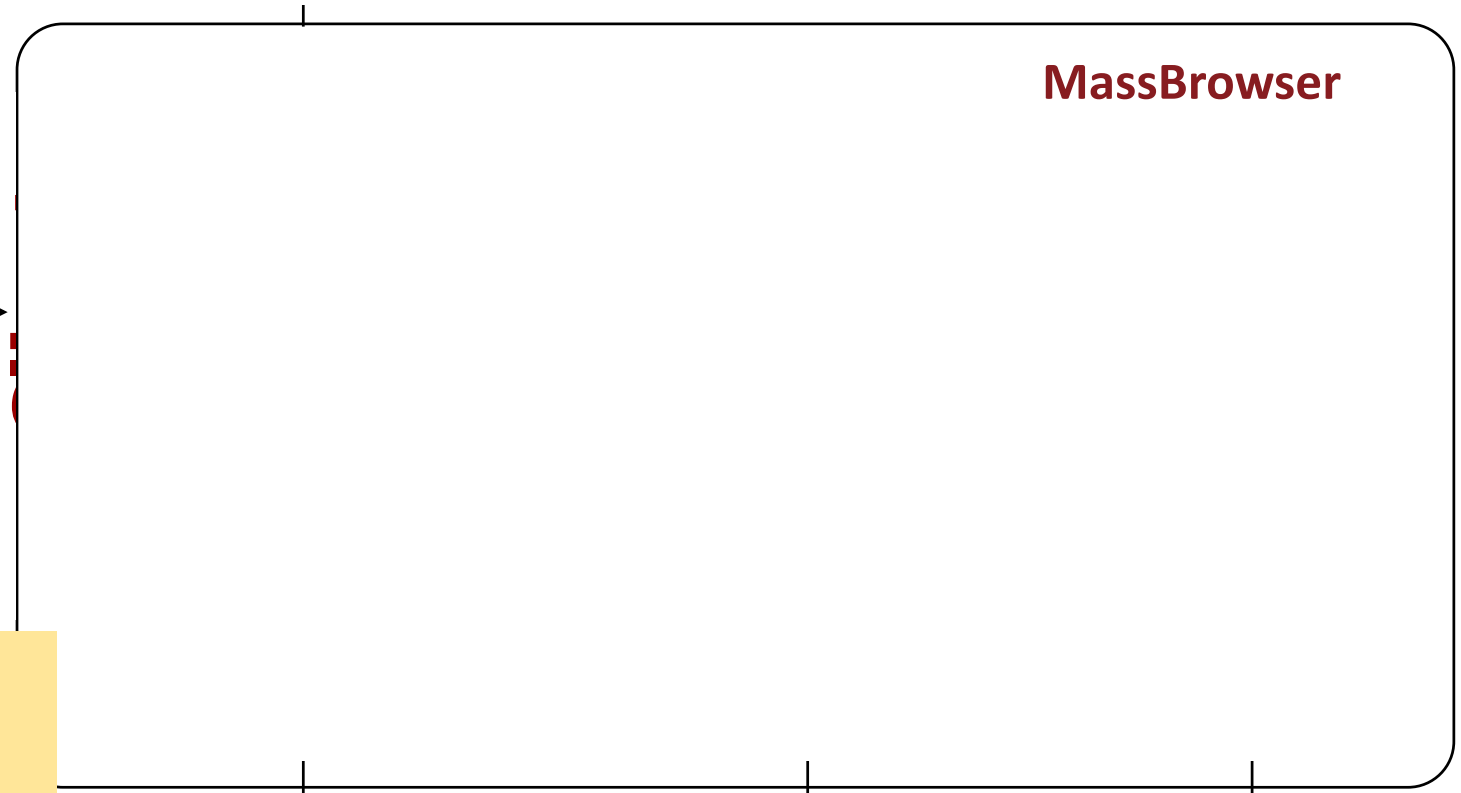
Optimizing Load on Proxies



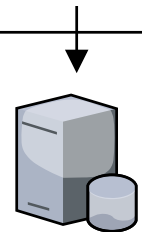
www.bbc.com

MassBrowser

41% of Top 1000 Alexa website contents are cache browsable



Content Publisher



CDN Server

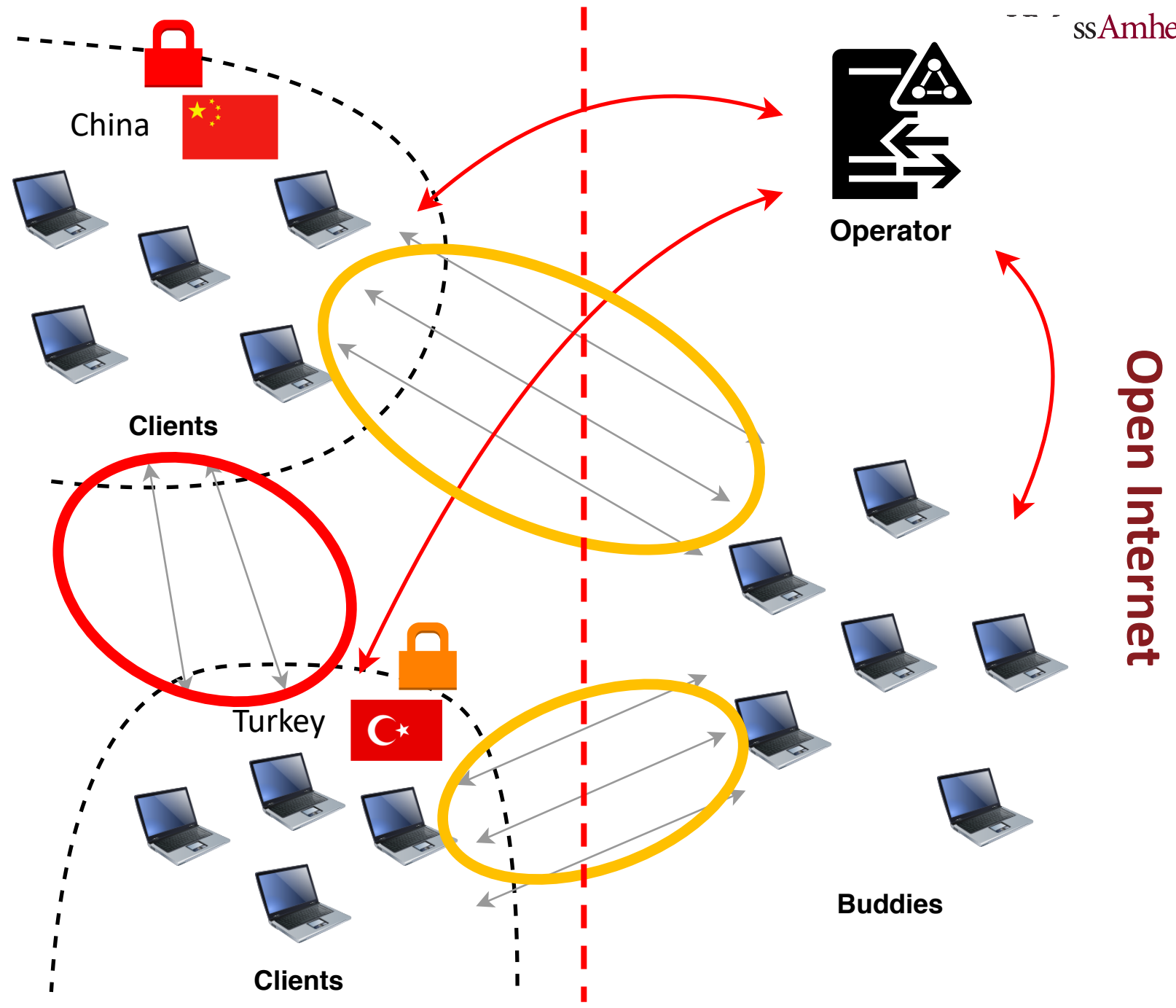


Proxy via Buddies



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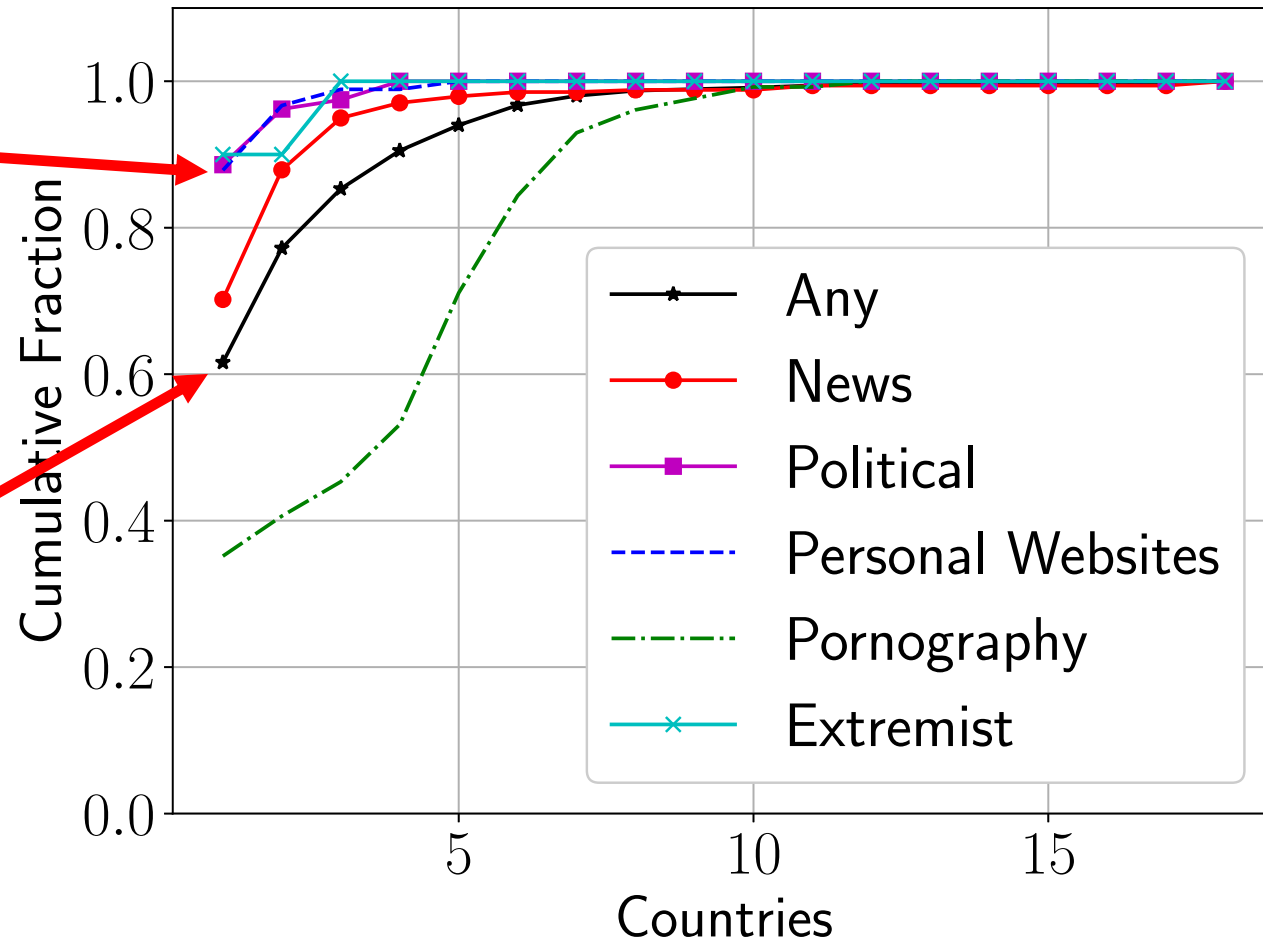




Clients Helping Each Other!

About 90% of political and news censored contents are country specific

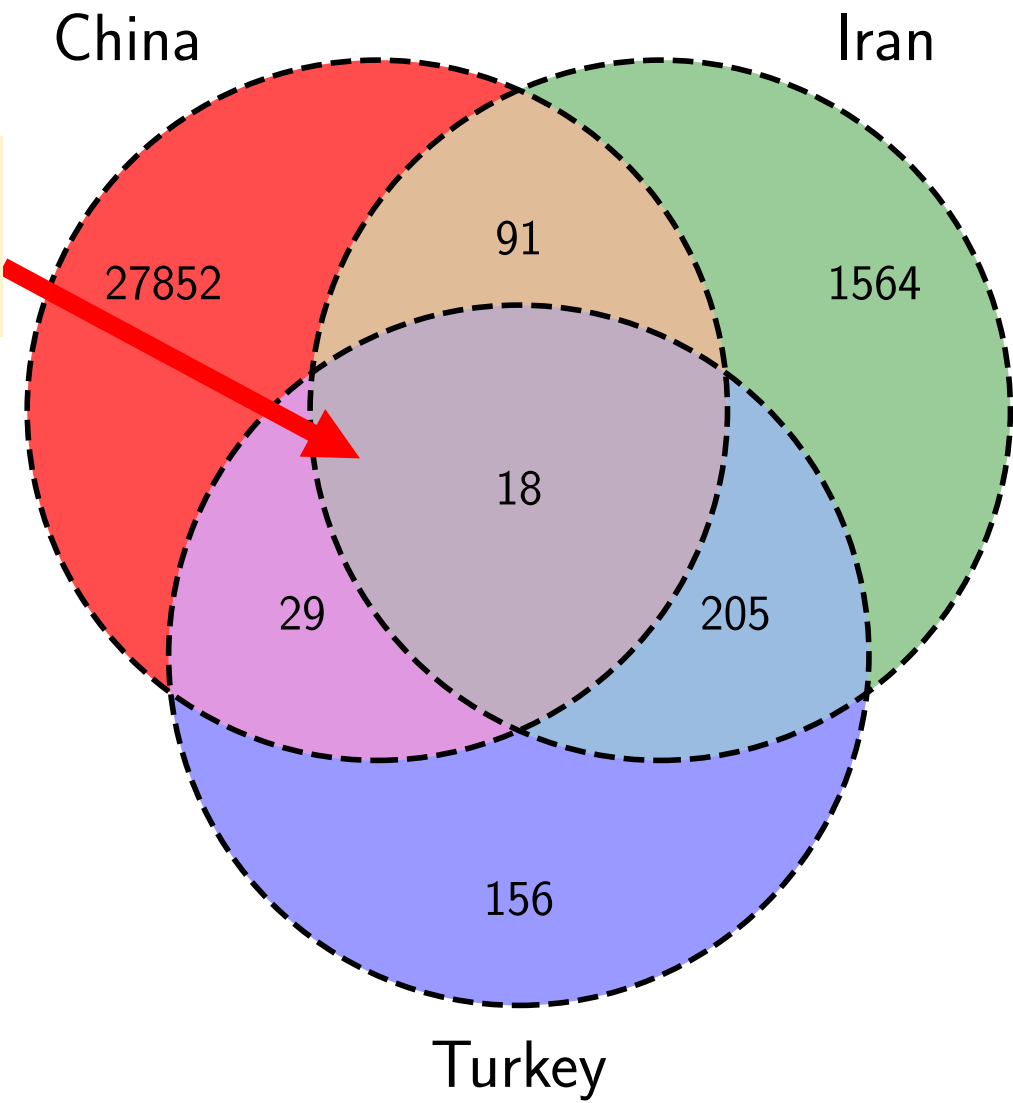
More than 60% of censored contents are country specific





An Example!

Only 18 websites are blocked in all three



*Top 1M websites

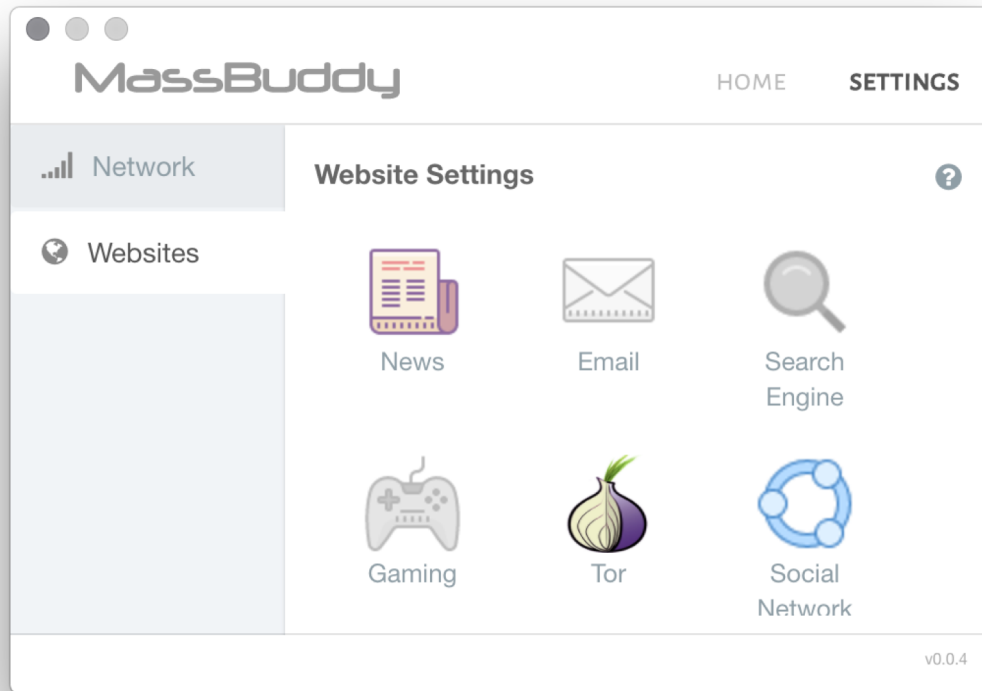


Key Design Principles

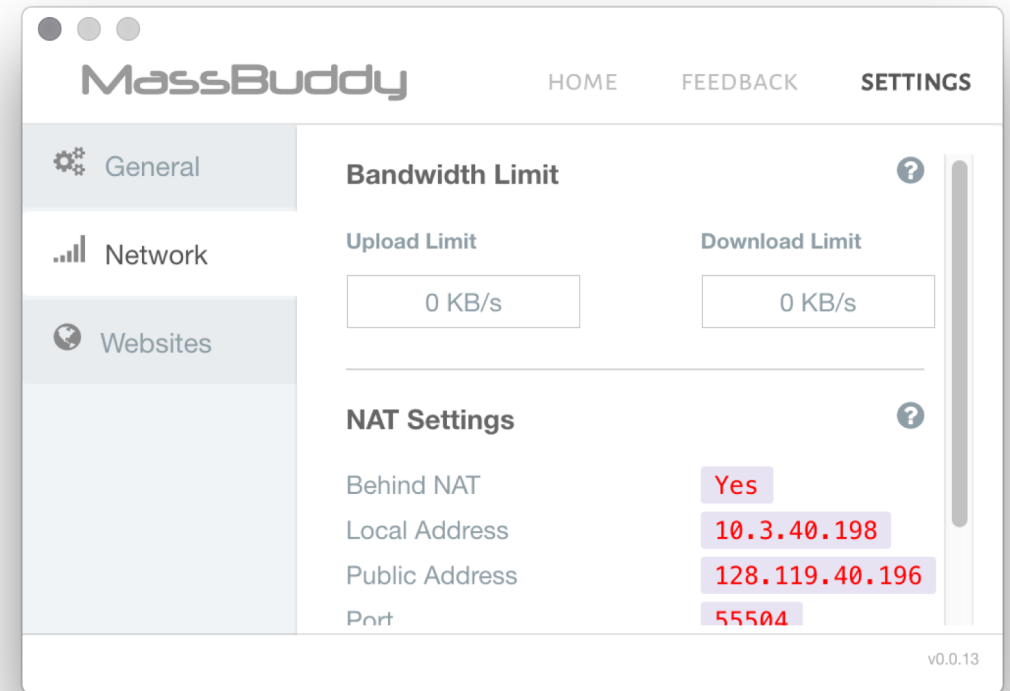
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Incentivizing Volunteer Proxies



Buddies can whitelist!



Buddies can control usage!



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Users Can Trade off QoS vs. Privacy

- **Cost:**
 - MassBrowser is about 200 times cheaper than Tor's meek

- **Performance:**

Website	Tor (s)	MassBrowser + Tor (s)	MassBrowser (s)
Google.com	19.6	20.3	2.6
Youtube.com	27.3	25.6	6.3
Facebook.com	27.4	30.4	6.6
Baidu.com	7.5	10.1	1.7
Wikipedia.com	29.5	22.3	1.1

*experiments done in Iran



The Current State of The Project

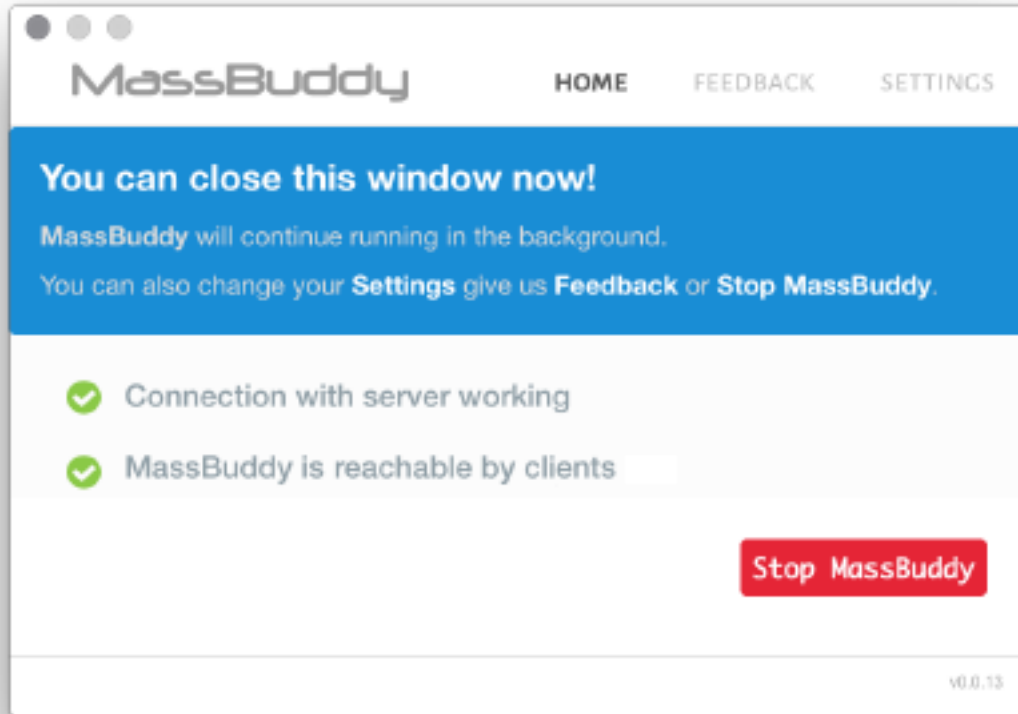


Development Status

- Near three years of active development!
- 100K lines of code
- More than 10 people helped in the development
- Undergoing code review and security audit by a third-party
- Internationalization is undergoing

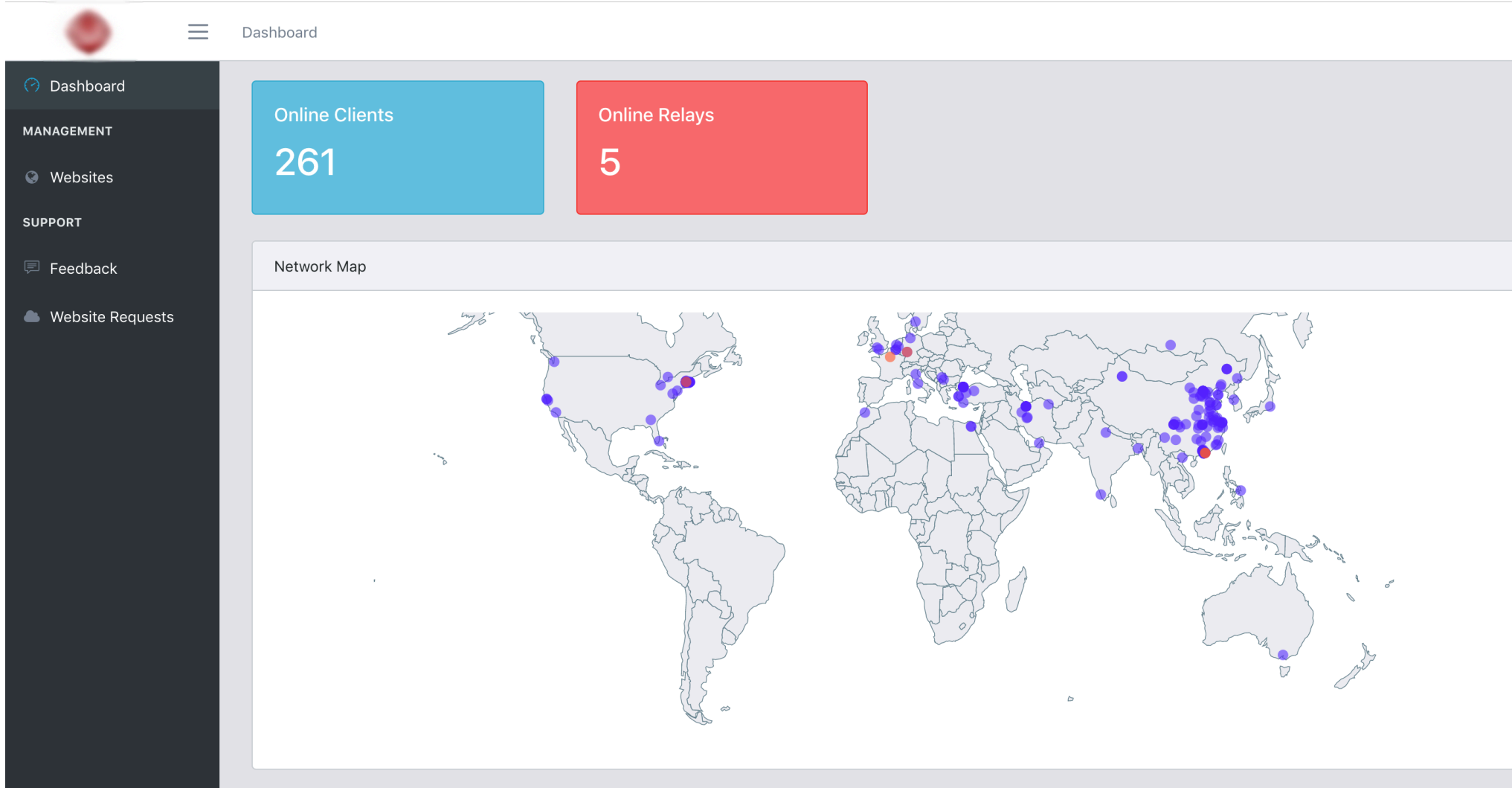


Working Client and Buddy





Currently Invitation-based Only





We Need Your Help!

- If you are in an uncensored region:
 - **Become a Buddy!**



Windows



Mac



Source Code

- Become an **early adopter**
- Get involved with the **development**



Thanks to so many people who helped in the testing and development of MassBrowser

- “It's very good to use!!!!!!”
- “It's very very interesting and amazing~”
- “Hello, I am in China. I am using mass browser and tor browser now. Now I can use the websites blocked by the Chinese government, and the speed is very good. Thank you very much.”
- “Great relaying capability!”
- “Great, works really well!”
- ...

UMassAmherst

College of Information
& Computer Sciences

COMPUTING FOR THE COMMON GOOD



[MassBrowser.cs.umass.edu](https://massbrowser.cs.umass.edu)

@massbrowser

Join us!

Milad Nasr

milad@cs.umass.edu

<https://people.cs.umass.edu/~milad/> | @srxzr



Domain Fronting

