

ZeroNet

Decentralized web platform using Bitcoin cryptography and BitTorrent network.

ABOUT ZERONET

Why?

We believe in open, free, and uncensored network and communication.

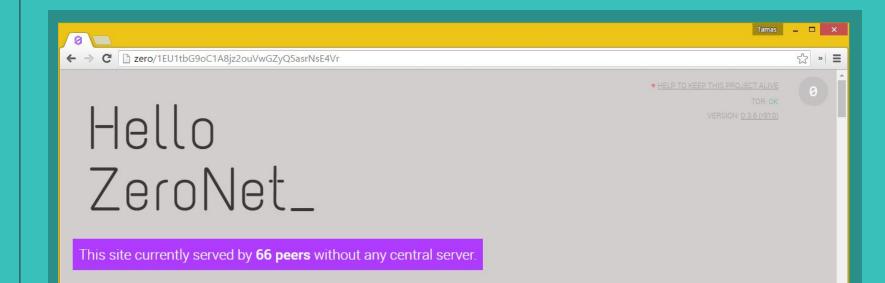
- No hosting costs
 Sites are served by visitors.
- **Impossible to shut down** It's nowhere because it's everywhere.
- No single point of failure
 Site remains online so long as at least 1 peer serving it.
- Fast and works offline
 You can access the site even if your internet is unavailable.

Current features

- Real-time updated sites
- Namecoin .bit domain support
- Multi-user sites
- Password less, Bitcoin's BIP32-based authorization
- Built-in SQL server with P2P data synchronization
- Tor network support
- Works in any browser/OS
- Open proxies: Try it without any download anything.



HOW DOES IT WORK?



THE BASICS OF ASYMMETRIC CRYPTOGRAPHY

When you create a new site you get two keys:



Private key

5JNiiGspzqt8sC8FM54FMr53U9XvLVh8Waz6YYDK69gG6hso9xu

- Only you have it
- Allows you to sign new content for your site.
- No central registry
 It never leaves your computer.
- Impossible to modify your site without it.



Public key

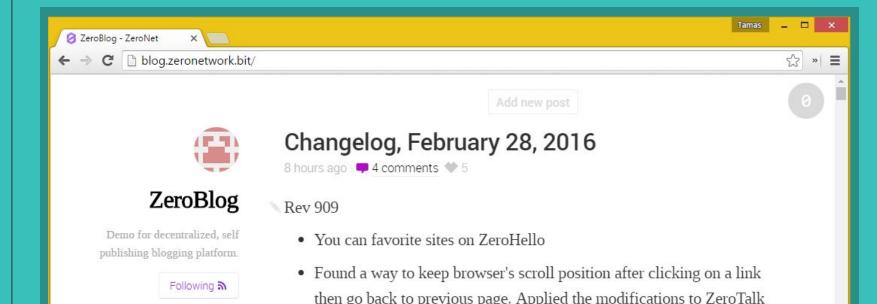
16YsjZK9nweXyy3vNQQPKT8tfjCNjEX9JM

- This is your site address
- Using this anyone can verify if the file is created by the site owner.
- Every downloaded file is verified, makes it **safe** from malicious code inserts or any modifications.

MORE INFO ABOUT CRYPTOGRAPHY OF ZERONET

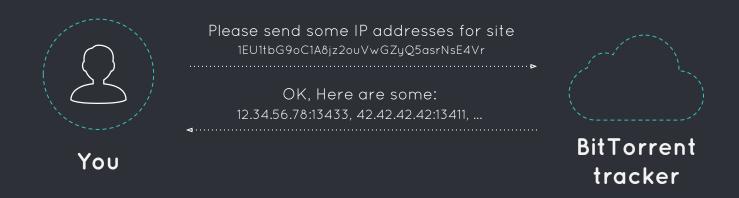
- ZeroNet uses the same elliptic curve based encryption as in your Bitcoin wallet.
- You can accept payments directly to your site address.
- Using the current fastest supercomputer, it would take around 1 billion years to "hack" a private key.

WHAT HAPPENS WHEN YOU VISIT A ZERONET SITE?



WHAT HAPPENS WHEN YOU VISIT A ZERONET SITE? (1/2)

1 Gathering visitors IP addresses:



- Asks visitors IP addresses from the BitTorrent trackers.
- Also registers you as a visitor.
- Tracker-less peer exchange also supported.

WHAT HAPPENS WHEN YOU VISIT A ZERONET SITE? (2/2)

2 Downloading site's files



- 1. Downloads a file named **content.json**, which holds all other file-names, **hashes** and the site owner's cryptographic signature.
- 2. **Verifies** the downloaded content.json file using the site's **address** and the site owner's **signature** from the file.
- 3. **Downloads other files** (html, css, js,...) and verifies them using the SHA512 hash from the content.json file.

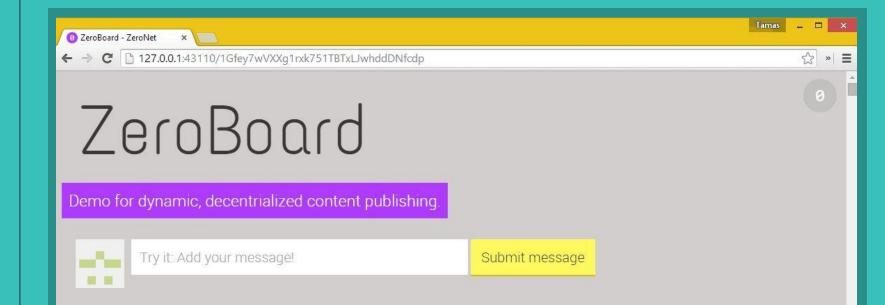
EXAMPLE OF GENERATED CONTENT. JSON FILE

```
"address": "1Name2NXVi1RDPDgf5617UoW7xA6YrhM9F",
"title": "ZeroName",
"description": "Namecoin address registry",
"files": {
  "css/all.css": {
    "sha512": "f00818c5b52013a467dc1883214b57cf6ac3dbe6da2df3f0af3cb232cd74877b",
    "size": 69952
  "data/names.json": {
    "sha512": "341e4b1eb28a9aebef1ff86c981288b7531ec957552cf9a675c631d1797a48df",
    "size": 1002
  "index.html": {
    "sha512": "b3fd5f2e61666874b06cc08150144015c0e88c45d3e7847ff8d4c641e789807d",
    "size": 2160
  "js/all.js": {
    "sha512": "4426ca2dfacd524fb995c9f7522ca4e6f70c3e524b4bd8ca67f6416f93fca111",
    "size": 90523
"signers_sign": "HOKZByY9p02Iqh5UE+Nb7N5qb2cTvhULB3euvszufDnGIVeF4mswur3PyXxGXM+tJ8kZ0FzspFRI10g0yCE0tCM=",
"signs": {
  "IName2NXVi1RDPDgf5617UoW7xA6YrhM9F": "G6X42ZmEBf66jjylSnx45Uee9J+Q07dLt1CLYULI17L78AFaUDVHYohEYUGxAFqKx75UpWGsPGSY1S7lr/Fe3EU="
"signs_required": 1,
"ignore": "(js|css)/(?!all.(js|css))",
"modified": 1429483269.681872,
"zeronet_version": "0.2.9"
```

MORE INFO ABOUT SITE VISITS

- You start serving sites as soon as you visit them.
- The downloads are prioritized for the fastest web experience.
- You can use the Tor network to hide your real IP address.
- Optional files also supported which are only downloaded if your browser requests them.

WHAT ABOUT SITE UPDATES?



ZERONET SITE UPDATES

The site owner signs the new content.json, then..

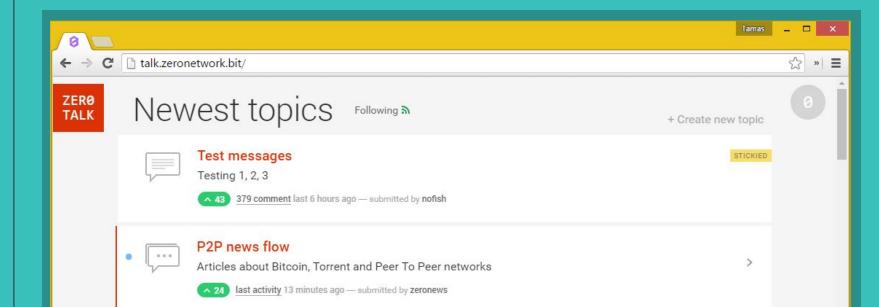


- 1. The **site owner sends** the new content.json to a few number of visitors.
- 2. The **visitor checks** if it's newer than his/her current file.
- 3. The visitor downloads the changed files.
- 4. Then he/she sends the update to other visitors.

MORE INFO ABOUT ZERONET SITE UPDATES

- The browser is notified immediately about the file changes using the WebSocket API.
 This allows real-time updated sites.
- Multi-signature sites are also possible.
- For faster and easier data access the json files can be automatically mapped to a built-in SQL database.

MULTI-USER SITES



MULTI-USER ZERONET SITES

Requesting permission from site owner:

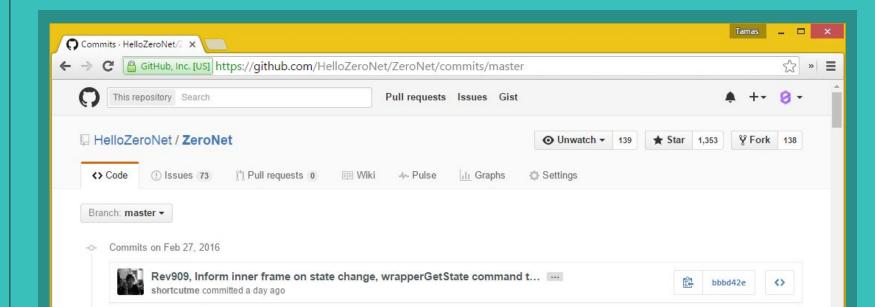


- 1. Sending your auth address to site owner.
- 2. The site owner **creates** a new file and set your auth address as the valid signer.
- The site owner publishes the new file and the changed permissions to visitors of the site.

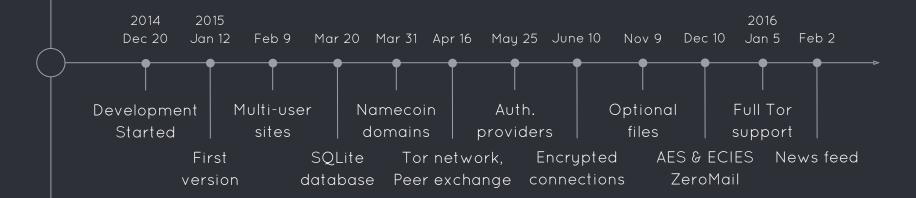
MORE INFO ABOUT MULTI-USER ZERONET SITES

- You can skip the registration process by trusting other site's users using the authorization provider feature.
- The site owner is able to remove misbehaving users.
- The user files size can be limited to help avoid spamming.
- An unique, BIP32 based, valid Bitcoin address generated for every user of the site.

CURRENT STATUS AND PLANS



CURRENT STATUS



FUTURE PLANS

- Focus on content: Social network, Github alternative,
 News site, Marketplace, etc...
- Torrent-like file splitting
- Password or public key based private sites
- I2P networks support

ZERONET IS...

- An alternative web distribution platform.
- Focused on speed, usability and user experience.
- Not trying to compete with 10+ year old projects. (Freenet, I2P)
- Not more anonymous than BitTorrent.
 (you can use Tor to hide your IP)
- Not a replacement for the current client <> server based model.

OTHER BENEFITS OF ZERONET

- 1. 100% transparent sites: Anyone able to audit the full working mechanism.
- 2. One click site cloning: Create your own version of any site.
- No backend code: Execute SQL commands directly from javascript with zero network latency.
- Instant CDN: Your content is distributed around the world.
- 5. Zero discrimination: Same, zero cost infrastructure and opportunity for anyone.
- 6. Zero trust: Impossible to modify your site without the private key.

Thanks!

YOU CAN START USING ZERONET TODAY

https://zeronet.io

@HelloZeroNet

/r/ZeroNet

#ZeroNet @ freenode