Alma Mater Studiorum · Università di Bologna

Department of computer science and engineering - DISI

Filecoin in practice

Lorello Luca Salvatore Tsiotas Giorgio

Part I

Socioeconomic context

Public opinions on Filecoin

Hype (1, 2) (1/3)

Months of Hype

In July 2020, Filecoin announced their initial *Space Race* competition to be held in August, where miners on Filecoin's testnet would be "*competing for up to 4M FIL in prizes as they race to onboard as much storage space as possible.*" According to the Space Race website, 360 minters took part in the competition, onboarding 230 PiB (258milion gigabytes) in the three-week competition period. The second Space Race kicked off mid-September.

On the 27th of September, Filecoin stated that their mainnet would go live once the (epoch) block 148'888 had been reached "*We expect this epoch to land around Oct 15, which will begin a period of monitoring and problem solving to ensure the* network *is nominal…*". Furthermore, they announced their celebratory mainnet *Lift-off Week*, starting from the 19th — 23rd of October.

True to their estimate, the mainnet went live on the 15th of October at ~14:45 UTC, with a week of pure hype leading to the launch. Over the week leading up to the launch Kraken, Gemini, Huobi, OKEx and as of yesterday, Binance — with Gemini's Tyler Winkelvos tweeting "*Filecoin $FIL, the most anticipated crypto since the launch of Ethereum and Bitcoin itself, is here!*"

A sudden surge in Filecoin social media activity appears to be driven by Chinese miners and speculators.

This recent excitement around Filecoin appears to be largely driven by China, despite Filecoin being a US-based company. As the founder of Ethereum Classic Labs James Wo said this of the phenomenon:

> "In China, Filecoin is so hot while DeFi is not. To make hotspot, you have to let people participate. Purchasing mining machines is much easier than purchasing tokens in China."

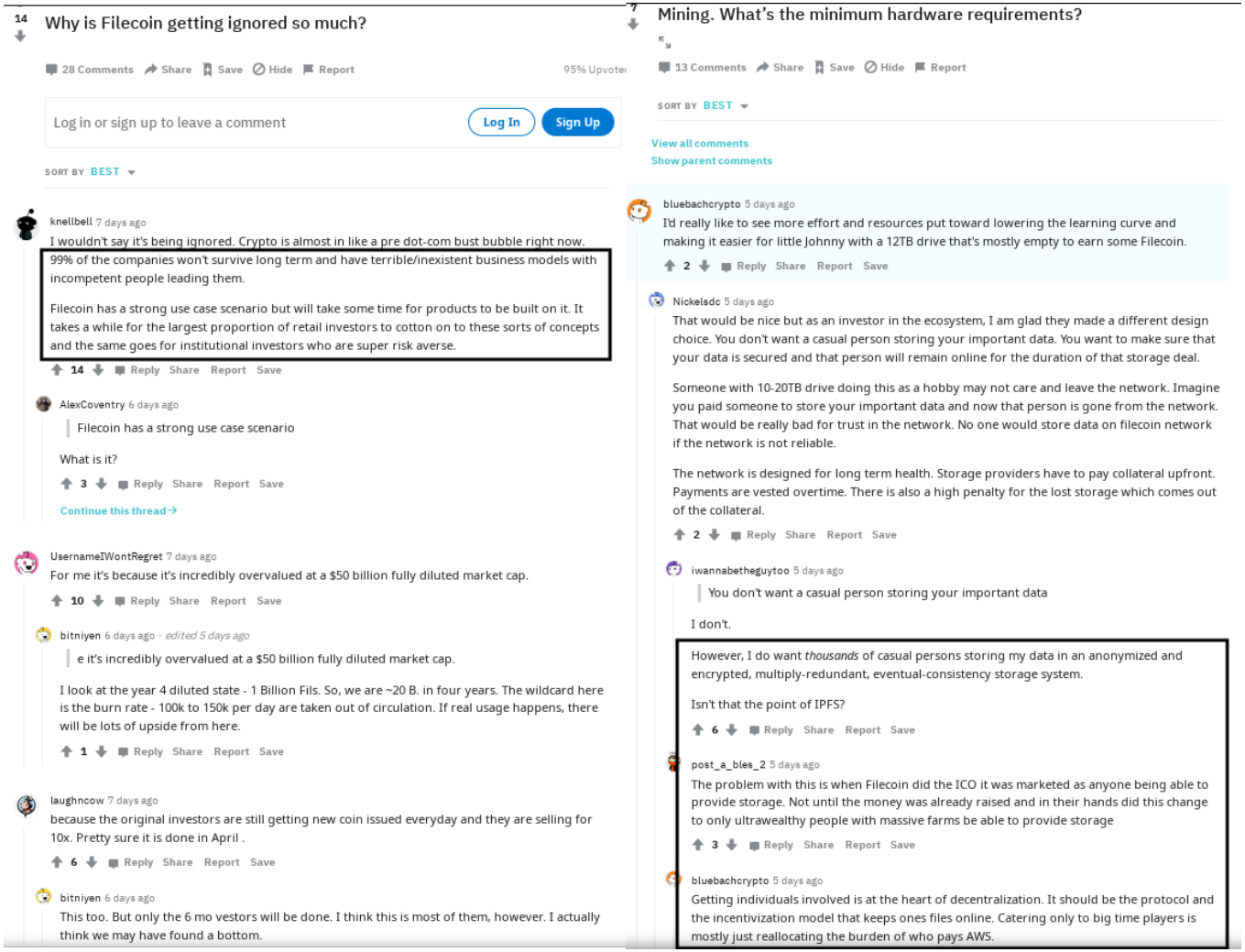
As with Bitcoin mining, most Filecoin mining is happening in China. Eight out of the ten largest miners on the Filecoin testnet are in China. Though, experts suggest that this could be less to do with Filecoin and more to do with the popularity of mining in China.

> "Crypto mining has always been a popular thing in China," said Andy Tian, co-founder of 1475, a Filecoin mining hardware manufacturer.

Apart from mining, the investors are betting big on Filecoin Futures, which are dependent on the mainnet's launch. Filecoin's current 24-hour futures trading volume is more than $50 million, according to CoinGecko.

Public opinions on Filecoin

Controversies (1, 2) (2/3)



14 Why is Filecoin getting ignored so much?

28 Comments Share Save Hide Report 95% Upvoted

Log in or sign up to leave a comment Log In Sign Up

SORT BY BEST

knellbell 7 days ago
I wouldn't say it's being ignored. Crypto is almost in like a pre dot-com bust bubble right now. 99% of the companies won't survive long term and have terrible/inexistent business models with incompetent people leading them.

Filecoin has a strong use case scenario but will take some time for products to be built on it. It takes a while for the largest proportion of retail investors to cotton on to these sorts of concepts and the same goes for institutional investors who are super risk averse.

14 Reply Share Report Save

AlexCoventry 6 days ago
> Filecoin has a strong use case scenario

What is it?

3 Reply Share Report Save

Continue this thread →

UsernameIWontRegret 7 days ago
For me it's because it's incredibly overvalued at a $50 billion fully diluted market cap.

10 Reply Share Report Save

bitniyen 6 days ago · *edited 5 days ago*
> e it's incredibly overvalued at a $50 billion fully diluted market cap.

I look at the year 4 diluted state - 1 Billion Fils. So, we are ~20 B. in four years. The wildcard here is the burn rate - 100k to 150k per day are taken out of circulation. If real usage happens, there will be lots of upside from here.

1 Reply Share Report Save

laughncow 7 days ago
because the original investors are still getting new coin issued everyday and they are selling for 10x. Pretty sure it is done in April .

6 Reply Share Report Save

bitniyen 6 days ago
This too. But only the 6 mo vestors will be done. I think this is most of them, however. I actually think we may have found a bottom.

Mining. What's the minimum hardware requirements?

13 Comments Share Save Hide Report

SORT BY BEST

View all comments
Show parent comments

bluebachcrypto 5 days ago
I'd really like to see more effort and resources put toward lowering the learning curve and making it easier for little Johnny with a 12TB drive that's mostly empty to earn some Filecoin.

2 Reply Share Report Save

Nickelsdc 5 days ago
That would be nice but as an investor in the ecosystem, I am glad they made a different design choice. You don't want a casual person storing your important data. You want to make sure that your data is secured and that person will remain online for the duration of that storage deal.

Someone with 10-20TB drive doing this as a hobby may not care and leave the network. Imagine you paid someone to store your important data and now that person is gone from the network. That would be really bad for trust in the network. No one would store data on filecoin network if the network is not reliable.

The network is designed for long term health. Storage providers have to pay collateral upfront. Payments are vested overtime. There is also a high penalty for the lost storage which comes out of the collateral.

2 Reply Share Report Save

iwannabetheguytoo 5 days ago
> You don't want a casual person storing your important data

I don't.

However, I do want *thousands* of casual persons storing my data in an anonymized and encrypted, multiply-redundant, eventual-consistency storage system.

Isn't that the point of IPFS?

6 Reply Share Report Save

post_a_bles_2 5 days ago
The problem with this is when Filecoin did the ICO it was marketed as anyone being able to provide storage. Not until the money was already raised and in their hands did this change to only ultrawealthy people with massive farms be able to provide storage

3 Reply Share Report Save

bluebachcrypto 5 days ago
Getting individuals involved is at the heart of decentralization. It should be the protocol and the incentivization model that keeps ones files online. Catering only to big time players is mostly just reallocating the burden of who pays AWS.

Public opinions on Filecoin

Is Filecoin a scam? (1, 2, 3, 4, 5) (3/3)

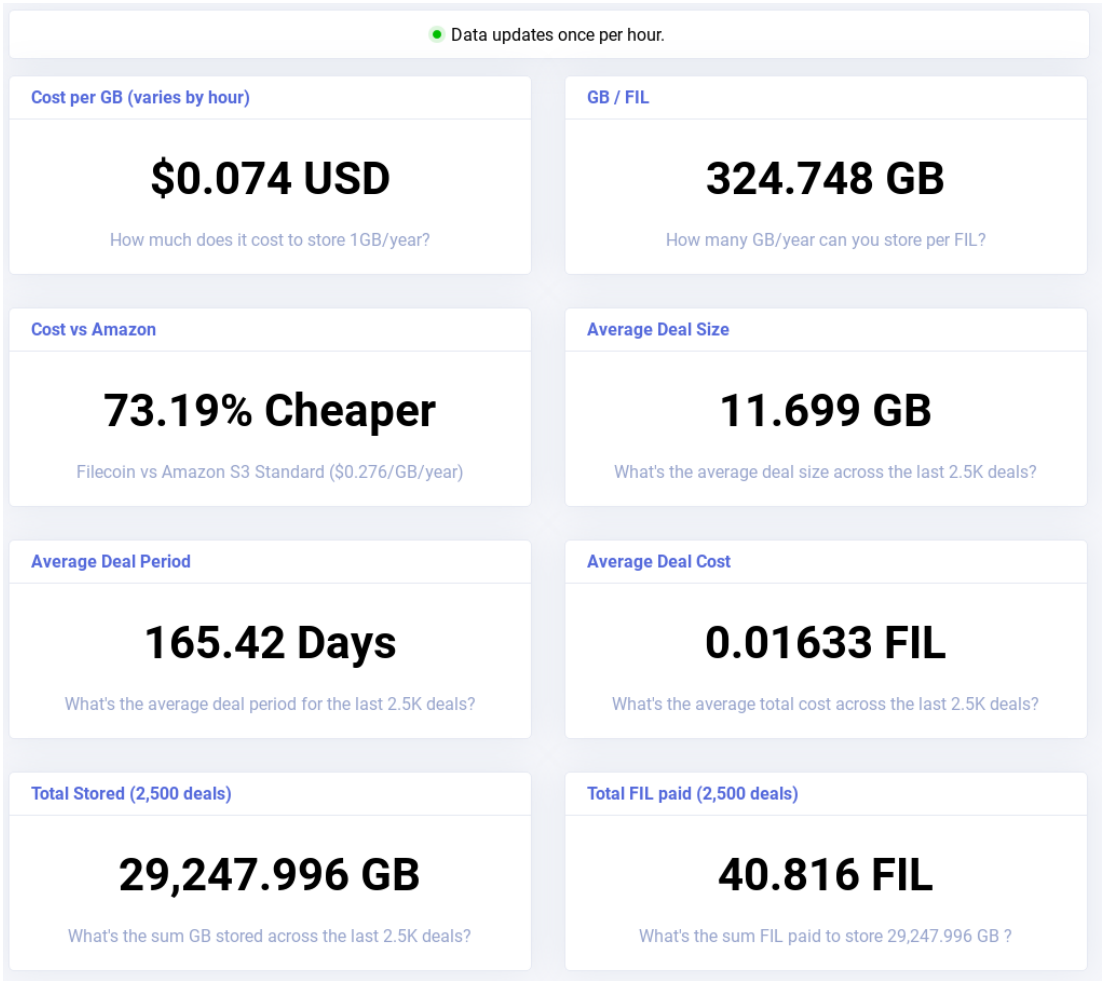
Justin Sun also backed his claims by sharing a screenshot of a Filecoin founder's account that reflected the founder receiving 1.5 million FIL on October 15, which happens to be the same day Filecoin launched.

But the screenshot (seen below) also shows that 800,000 FIL tokens were later transferred to the crypto exchange Huobi which Sun believed to be the main reason why FIL tokens price dropped.

Filecoin is controversial, even in South Korea. Some pyramid scheme companies are selling Filecoin mining machines, and this causes continuous damages. They are openly and actively working on YouTube, portals, and social media to attract customers. Most of the victims who have been trapped by them are ignorant about Filecoin. And it is possible that they still do not know about the series of incidents happening now. If the information does not circulate, damages will continue to grow.

How much it costs me to store a file?

https://filstats.com



How's Filecoin Mainnet doing?

https://stats.filecoin.io

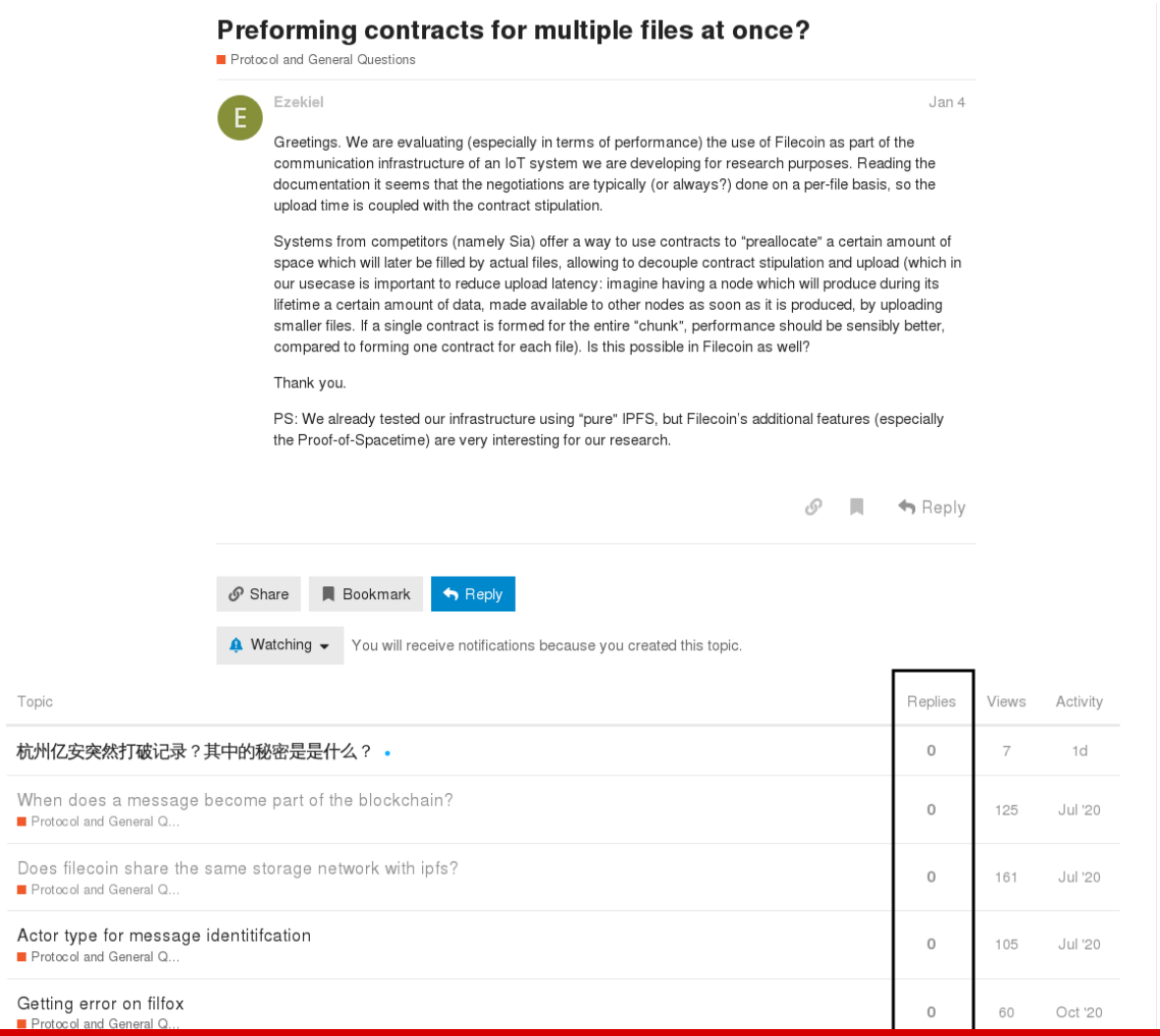
Can I see proofs without a Filecoin node?

https://proofs.filecoin.io

v28-proof-of-spacetime-fallback-merkletree-poseidon_hasher-8-8-0-559e581f022bb4e4ec6e719e563bf0e026ad6de42e56c18714a2c692b1b88d7e.meta	QmWS…5XRT	27 B
v28-proof-of-spacetime-fallback-merkletree-poseidon_hasher-8-8-0-559e581f022bb4e4ec6e719e563bf0e026ad6de42e56c18714a2c692b1b88d7e.params	Qmdt…Tt1i	192 MB
v28-proof-of-spacetime-fallback-merkletree-poseidon_hasher-8-8-0-559e581f022bb4e4ec6e719e563bf0e026ad6de42e56c18714a2c692b1b88d7e.vk	QmZC…kDoF	14 kB
v28-proof-of-spacetime-fallback-merkletree-poseidon_hasher-8-8-2-2627e4006b67f99cef990c0a47d5426cb7ab0a0ad58fc1061547bf2d28b09def.meta	QmdH…A8mP	27 B
v28-proof-of-spacetime-fallback-merkletree-poseidon_hasher-8-8-2-2627e4006b67f99cef990c0a47d5426cb7ab0a0ad58fc1061547bf2d28b09def.params	QmeA…GK1V	63 GB
v28-proof-of-spacetime-fallback-merkletree-poseidon_hasher-8-8-2-2627e4006b67f99cef990c0a47d5426cb7ab0a0ad58fc1061547bf2d28b09def.vk	QmWV…f1T7	2.4 MB
v28-proof-of-spacetime-fallback-merkletree-poseidon_hasher-8-8-2-b62098629d07946e9028127e70295ed996fe3ed25b0f9f88eb610a0ab4385a3c.meta	QmdH…A8mP	27 B
v28-proof-of-spacetime-fallback-merkletree-poseidon_hasher-8-8-2-b62098629d07946e9028127e70295ed996fe3ed25b0f9f88eb610a0ab4385a3c.params	QmVk…mXAz	200 MB
v28-proof-of-spacetime-fallback-merkletree-poseidon_hasher-8-8-2-b62098629d07946e9028127e70295ed996fe3ed25b0f9f88eb610a0ab4385a3c.vk	Qmbf…SuBm	14 kB
v28-stacked-proof-of-replication-merkletree-poseidon_hasher-8-0-0-sha256_hasher-032d3138d22506ec0082ed72b2dcba18df18477904e35bafee82b3793b06832f.meta	Qmej…K3Fa	20 B
v28-stacked-proof-of-replication-merkletree-poseidon_hasher-8-0-0-sha256_hasher-032d3138d22506ec0082ed72b2dcba18df18477904e35bafee82b3793b06832f.params	QmWc…B17h	1.1 GB
v28-stacked-proof-of-replication-merkletree-poseidon_hasher-8-0-0-sha256_hasher-032d3138d22506ec0082ed72b2dcba18df18477904e35bafee82b3793b06832f.vk	Qmam…JqHr	4.7 kB
v28-stacked-proof-of-replication-merkletree-poseidon_hasher-8-0-0-sha256_hasher-6babf46ce344ae495d558e7770a585b2382d54f225af8ed0397b8be7c3fcd472.meta	QmSv…YsxR	25 B
v28-stacked-proof-of-replication-merkletree-poseidon_hasher-8-0-0-sha256_hasher-6babf46ce344ae495d558e7770a585b2382d54f225af8ed0397b8be7c3fcd472.params	QmYB…EZjC	2.0 GB
v28-stacked-proof-of-replication-merkletree-poseidon_hasher-8-0-0-sha256_hasher-6babf46ce344ae495d558e7770a585b2382d54f225af8ed0397b8be7c3fcd472.vk	QmWi…d8nH	4.7 kB
v28-stacked-proof-of-replication-merkletree-poseidon_hasher-8-0-0-sha256_hasher-ecd683648512ab1765faa2a5f14bab48f676e633467f0aa8aad4b55dcb0652bb.meta	QmWg…Cq4H	23 B
v28-stacked-proof-of-replication-merkletree-poseidon_hasher-8-0-0-sha256_hasher-ecd683648512ab1765faa2a5f14bab48f676e633467f0aa8aad4b55dcb0652bb.params	QmPX…QwZH	1.4 GB
v28-stacked-proof-of-replication-merkletree-poseidon_hasher-8-0-0-sha256_hasher-ecd683648512ab1765faa2a5f14bab48f676e633467f0aa8aad4b55dcb0652bb.vk	QmYC…zs99	4.7 kB
v28-stacked-proof-of-replication-merkletree-poseidon_hasher-8-8-0-sha256_hasher-82a357d2f2ca81dc61bb45f4a762807aedee1b0a53fd6c4e77b46a01bfef7820.meta	QmWS…5XRT	27 B
v28-stacked-proof-of-replication-merkletree-poseidon_hasher-8-8-0-sha256_hasher-82a357d2f2ca81dc61bb45f4a762807aedee1b0a53fd6c4e77b46a01bfef7820.params	Qmen…JQzJ	47 GB
v28-stacked-proof-of-replication-merkletree-poseidon_hasher-8-8-0-sha256_hasher-82a357d2f2ca81dc61bb45f4a762807aedee1b0a53fd6c4e77b46a01bfef7820.vk	Qmf9…2kzb	32 kB

Our experience

Forum (1/2)



Preforming contracts for multiple files at once?

Protocol and General Questions

Ezekiel — Jan 4

Greetings. We are evaluating (especially in terms of performance) the use of Filecoin as part of the communication infrastructure of an IoT system we are developing for research purposes. Reading the documentation it seems that the negotiations are typically (or always?) done on a per-file basis, so the upload time is coupled with the contract stipulation.

Systems from competitors (namely Sia) offer a way to use contracts to "preallocate" a certain amount of space which will later be filled by actual files, allowing to decouple contract stipulation and upload (which in our usecase is important to reduce upload latency: imagine having a node which will produce during its lifetime a certain amount of data, made available to other nodes as soon as it is produced, by uploading smaller files. If a single contract is formed for the entire "chunk", performance should be sensibly better, compared to forming one contract for each file). Is this possible in Filecoin as well?

Thank you.

PS: We already tested our infrastructure using "pure" IPFS, but Filecoin's additional features (especially the Proof-of-Spacetime) are very interesting for our research.

Reply

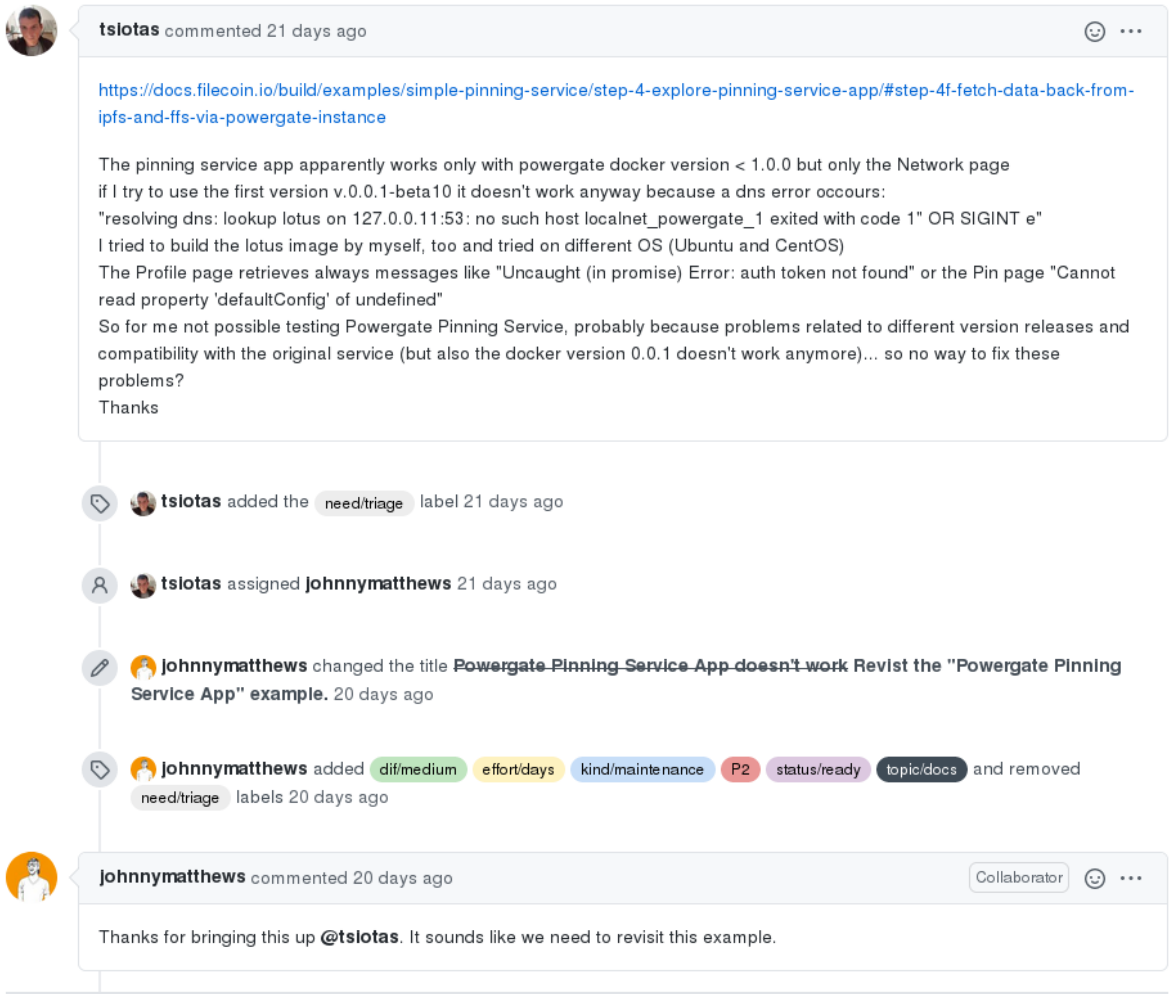
Share | Bookmark | Reply

Watching — You will receive notifications because you created this topic.

Topic	Replies	Views	Activity
杭州亿安突然打破记录？其中的秘密是是什么？	0	7	1d
When does a message become part of the blockchain? — Protocol and General Q...	0	125	Jul '20
Does filecoin share the same storage network with ipfs? — Protocol and General Q...	0	161	Jul '20
Actor type for message identitifcation — Protocol and General Q...	0	105	Jul '20
Getting error on filfox — Protocol and General Q...	0	60	Oct '20

Our experience

Github issues (2/2)



tslotas commented 21 days ago

https://docs.filecoin.io/build/examples/simple-pinning-service/step-4-explore-pinning-service-app/#step-4f-fetch-data-back-from-ipfs-and-ffs-via-powergate-instance

The pinning service app apparently works only with powergate docker version < 1.0.0 but only the Network page
if I try to use the first version v.0.0.1-beta10 it doesn't work anyway because a dns error occours:
"resolving dns: lookup lotus on 127.0.0.11:53: no such host localnet_powergate_1 exited with code 1" OR SIGINT e"
I tried to build the lotus image by myself, too and tried on different OS (Ubuntu and CentOS)
The Profile page retrieves always messages like "Uncaught (in promise) Error: auth token not found" or the Pin page "Cannot read property 'defaultConfig' of undefined"
So for me not possible testing Powergate Pinning Service, probably because problems related to different version releases and compatibility with the original service (but also the docker version 0.0.1 doesn't work anymore)... so no way to fix these problems?
Thanks

tslotas added the need/triage label 21 days ago

tslotas assigned **johnnymatthews** 21 days ago

johnnymatthews changed the title ~~Powergate Pinning Service App doesn't work~~ **Revist the "Powergate Pinning Service App" example.** 20 days ago

johnnymatthews added dif/medium effort/days kind/maintenance P2 status/ready topic/docs and removed need/triage labels 20 days ago

johnnymatthews commented 20 days ago Collaborator

Thanks for bringing this up **@tslotas**. It sounds like we need to revisit this example.

Part II

Running Filecoin

Filecoin infrastructure

Available networks (1/6)

Mainnet

- Primary Filecoin network
- Sector sizes: 32GiB, 64 GiB
- Minimum power to participate in consensus: 10TiB

Butterfly

- Test network for core implementers, reset frequently
- Sector sizes: 512MiB, 32GiB, 64 GiB
- Minimum power to participate in consensus: 1GiB

Nerpa

- Test network for app developers, sealing is faster (25 mins)
- Sector sizes: 512MiB, 32GiB, 64 GiB
- Minimum power to participate in consensus: 4GiB

Calibration

- Primary test network, simulates Mainnet behavior (real deals are made between miners and users) as demo/calibration for new miners and users
- Sector sizes: 512MiB, 32GiB, 64 GiB

Localnet

- Configurable parameters (sector sizes, blockchain epoch duration, etc.)
- Sealing is mocked, allowing sensibly faster deal making
- A pool of simulated miners is generated at startup (with deterministic addresses)
- Miners are configured to always accept every deal they receive

Filecoin infrastructure

Lotus (2/6)

Lotus is a full-featured implementation of Filecoin node and miner. Comes in three flavors:

- `lotus`: Filecoin user node (manages FIL wallet, storage and retrieval deals and validates transactions)
- `lotus-miner`: Filecoin miner
- `lotus-worker`: node which assists miners

Online networks

The current state of each network can be checked out from https://github.com/filecoin-project/lotus.git

- `git checkout master`
- `git checkout ntwk-butterfly`
- `git checkout ntwk-nerpa`
- `git checkout ntwk-calibration`

Localnet

The localnet implementation can be cloned from https://github.com/textileio/lotus-devnet

- Sector sizes: 2KiB, 512KiB
- Block production rate configurable
- Mock sealing
- Simulated miners

File lifecycle in Lotus:

1. IPFS blocks and their CIDs are compressed into a CAR (content-addressable archive)
2. The client makes a deal with a miner
3. The CAR file is transferred to the miner
4. The file is stored in a sector which is sealed
5. The miner submits constantly proofs to the network

Filecoin infrastructure

Mining hardware requirements (3/6)

The hardware requirements for Filecoin mining are tied to the computational resources needed to seal a sector and generating regular Proof of Spacetime for every sealed sector (WindowPoSt).
For reference, the requirements listed below correspond to 32GiB sectors, as used by Mainnet and some testnets (calibration, nerpa):

- A miner will need an **8+ core CPU**
- **128 GiB of RAM** are needed at the very least. This should be complemented with **256 GiB of swap** on a very fast NVMe SSD storage medium
- A **powerful GPU** is recommended
- Filecoin network parameters are over 100GiB and need to be read and verified during Miner start. As mentioned above, lack of RAM needs to be addressed with a fast swap drive or file. For this reasons, a minimal amount of **1TiB NVMe-based disk space for cache** storage is recommended. This disk should be used to store data during the sealing process, to cache Filecoin parameters and serve as general temporal storage location. Additional hard drives for the final storage of "sealed sectors", the Lotus chain, etc. will be needed as well.

"The above requirements will not increase in the presumable future, and money spent on hardware should provide users with many years of reliable service, paying for themselves several times over."
(https://docs.filecoin.io/mine/hardware-requirements)

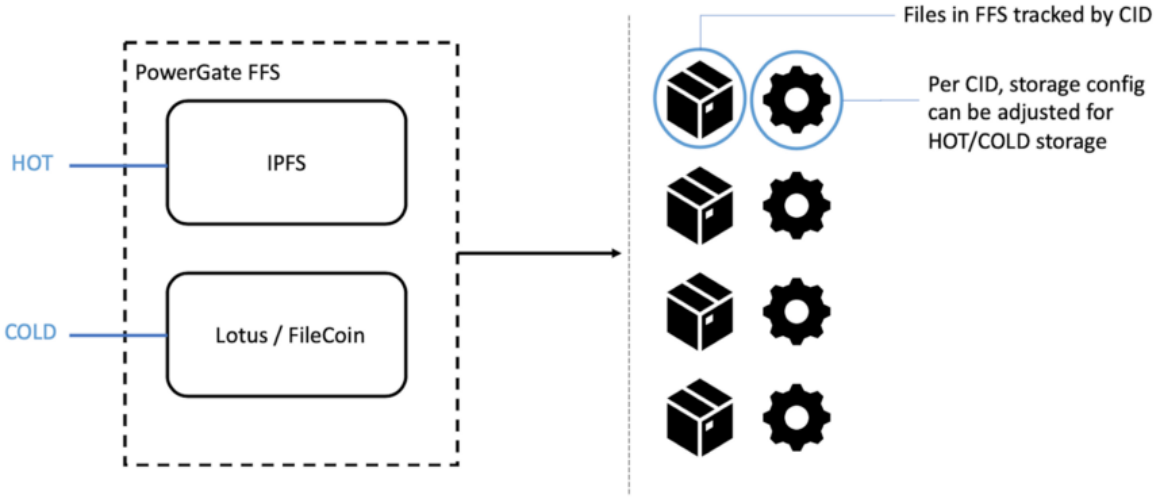
Filecoin infrastructure

Powergate (4/6)

Powergate is a file storage API which wraps IPFS and Filecoin. Files (tracked by CID) can be stored in Powergate in two modes (by default a copy will be saved in both modes):

- Hot storage: the file is stored on the IPFS network
- Cold storage: the file is stored on the Filecoin network

For cold storage, Powergate collects informations about miners like (power, price and ranking) and automatically selects the best satisfying the configuration associated with the file's CID.



Filecoin infrastructure

Reputation in Powergate (5/6)

Powergate builds three indexes related to on-chain and off-chain data.

- The Miners index provides processed data regarding registered miners (on-chain and off-chain), such as: total miner power, relative power, online status, geolocation, and more
- The Ask index provides a fast-retrieval up to date snapshot of miner's asking prices for data storage
- The Faults index provides history data about miners faults while proving their storage on-chain

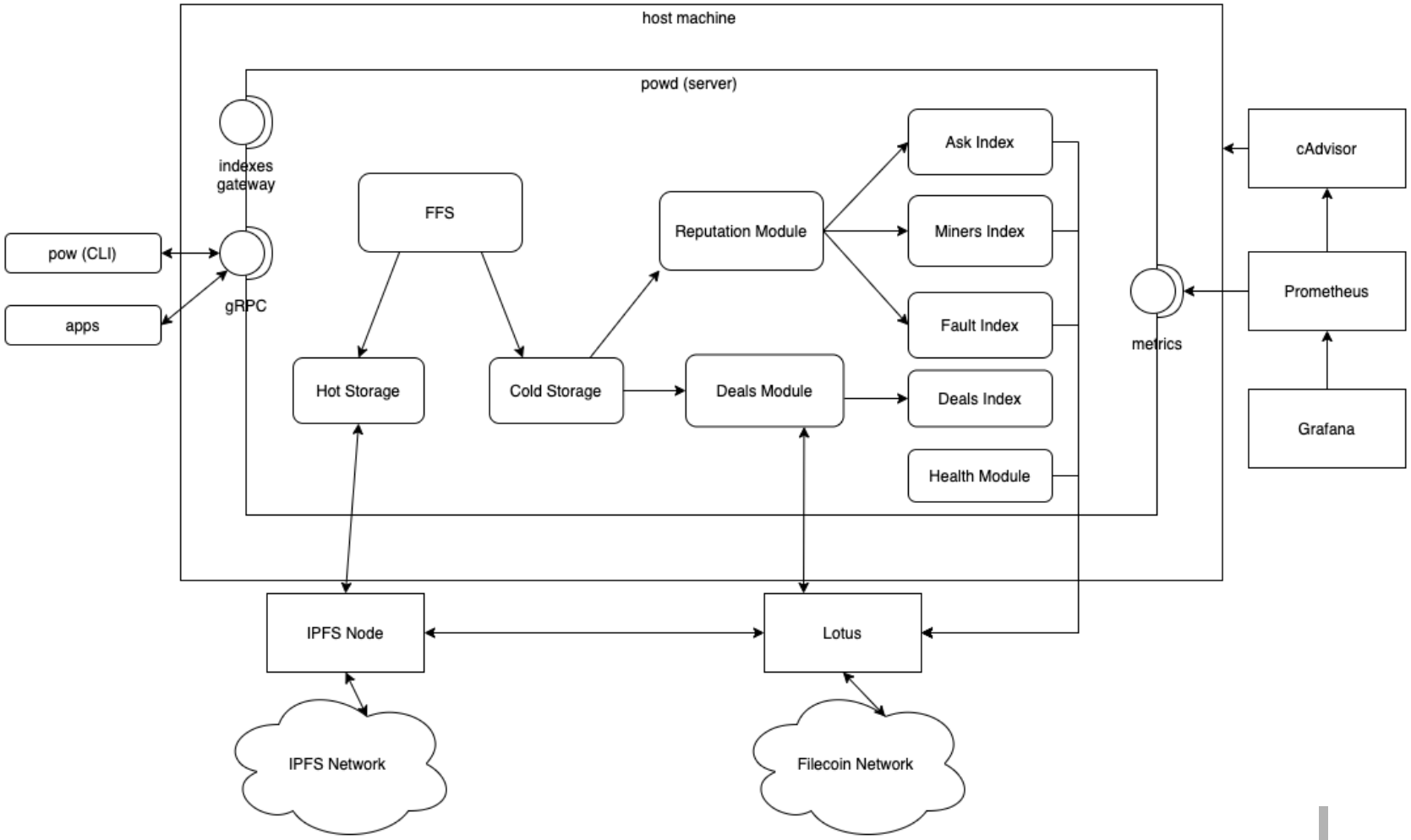
Built on top of the previous indexes, a Reputation module constructs a weighted-scoring system that allows to sort miners considering multiple on-chain and off-chain data, such as: compared price to the median of the market, low storage-fault history, power on network, and external sources.

API changes

From version 0.9.x to version 1.0 the API interface of Powergate has changed. Before this update informations on the miners' reputation could be retrieved using the APIs, after the update it's no longer possible (although internally Powergate still uses the reputation to select the best miner).

Filecoin infrastructure

Powergate architecture (6/6)



Filecoin deals

What's inside Powergate's storage options? (1/2)

```
/app # ./pow config default -t 6190def8-0637-41d1-8378-6115ba3a0049
{
  "hot": {
    "enabled": true,
    "allowUnfreeze": false,
    "unfreezeMaxPrice": "0",
    "ipfs": {
      "addTimeout": "30"
    }
  },
  "cold": {
    "enabled": true,
    "filecoin": {
      "replicationFactor": "1",
      "dealMinDuration": "518400",
      "excludedMiners": [],
      "trustedMiners": [],
      "countryCodes": [],
      "renew": {
        "enabled": false,
        "threshold": "0"
      },
      "address": "f3uzaveqggfymgl4cbxgbtyxu4dbux2jobziegpy627ucfvfsss744adaacpnzmybowndjzlabbtclkpfo765q",
      "maxPrice": "0",
      "fastRetrieval": false,
      "dealStartOffset": "0"
    }
  },
  "repairable": false
}
```

Filecoin deals

Sector status (2/2)

A sector (and therefore all the deals stored within it) can be in one of the following states:

- `Precommitted`: The miner is sealing the sector
- `Committed`: The miner has created the PoRep and submitted it
- `Active`: The miner continuously produces PoSt and submits them
- `Faulty`: A proof for the sector was not generated
- `Recovering`: The sector was declared faulty before generating the proof
- `Terminated`: The sector expired, the miner removed it from the network or was `Faulty` for 14 consecutive proofs

Part III

Appendix

Powergate CLI

Launching the Localnet (1/2)

Powergate comes preinstalled into three separate Docker containers (one for Powergate itself, one for Lotus and one for IPFS).

1. Download a release (`powergate-docker-v<version>.zip`) from https://github.com/textileio/powergate/releases and unzip it
2. Edit `docker-compose-localnet.yaml` to expose port `8080:8080` (as well as the default `5001:5001`) from the IPFS container
3. Start Powergate with the provided `Makefile` (eg. `BIGSECTORS=true make localnet`)
4. A terminal on each container can be run as usual:
   - `docker exec -it localnet_powergate_1 sh`
   - `docker exec -it localnet_lotus_1 sh`
   - `docker exec -it localnet_ipfs_1 sh`
5. The IPFS interface can be accessed from `http://<ip>:5001/webui`
6. If the IPFS node is not on `localhost`, the daemon needs to be configured to accept all connections: `ipfs config -json API.HTTPHeaders.Access-Control-Allow-Origin '["*"]'`

Powergate CLI

Creating a user and making a deal (2/2)

1. Launch a shell inside Powergate container: `docker exec -it localnet_powergate_1 sh`
2. Create a new user: `./ pow admin create`
3. Create a CID for a file: `./pow data stage -t <user-token> <file>`
4. Store the file: `./pow config apply -w -t <user-token> <file-cid>`
5. Wait for Powergate to finish uploading and negotiating the deal (for cold storage)

```
/app # ./pow admin user create
{
  "user":  {
    "id":  "608313e6-18a1-41c5-a273-d789d59fa058",
    "token":  "6190def8-0637-41d1-8378-6115ba3a0049"
  }
}
/app # ./pow data stage -t 6190def8-0637-41d1-8378-6115ba3a0049 myfile.txt
{
  "cid":  "QmRUt2gmGHZkTtjXWYSWYwCcb4wwJF2GH9udCNRGoP4FbF"
}
/app # ./pow config apply -w -t 6190def8-0637-41d1-8378-6115ba3a0049 QmRUt2gmGHZkTtjXWYSWYwCcb4wwJF2GH9udCNRGoP4FbF
{
  "jobId":  "f5a6ce42-0a50-46a8-9311-6528ac6e9a6f"
                JOB ID                |        STATUS         | MINER  | PRICE |          DEAL STATUS
--------------------------------------+-----------------------+--------+-------+-------------------------------
  f5a6ce42-0a50-46a8-9311-6528ac6e9a6f | JOB_STATUS_EXECUTING |        |       |
                                       |                       | f01000 |   119 | StorageDealAwaitingPreCommit
```

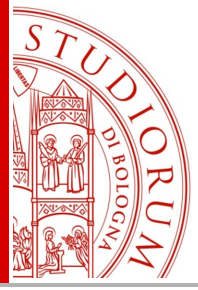
Powergate Node.js

Boilerplate (1/3)

A JavaScript Powergate client can be cloned from https://textileio.github.io/js-powergate-client or installed in Node.js with `npm i @textile/powergate-client`
The following boilerplate can be used for any Powergate-based application:

```
import fs from "fs"
import { createPow, powTypes } from "@textile/powergate-client"

const host = "http://0.0.0.0:6002" // or whatever powergate instance you want
const pow = createPow({ host })
```



Powergate Node.js

Example APIs (2/3)

```
// get wallet addresses associated with the user
const { addressesList } = await pow.wallet.addresses()
// create a new address associated with the user
const { address } = await pow.wallet.newAddress("my new address")
// get build information about the powergate server
const res = await pow.buildInfo()
// cache data in IPFS in preparation to store it
const buffer = fs.readFileSync(‘path/to/a/file‘)
const { cid } = await pow.data.stage(buffer)
// store the data using the default storage configuration
const { jobId } = await pow.storageConfig.apply(cid)
// watch the job status to see the storage process progressing
const jobsCancel = pow.storageJobs.watch((job) => {
if (job.status === powTypes.JobStatus.JOB_STATUS_CANCELED) {
console.log("job canceled")
} else if (job.status === powTypes.JobStatus.JOB_STATUS_FAILED) {
console.log("job failed")
} else if (job.status === powTypes.JobStatus.JOB_STATUS_SUCCESS) {
console.log("job success!")
}
}, jobId)
```

Powergate Node.js

Example APIs (3/3)

```
// watch all log events for a cid
const logsCancel = pow.data.watchLogs((logEvent) => {
console.log(‘received event for cid ${logEvent.cid}‘)
}, cid)
// get information about the latest applied storage configuration,
// current storage state, and all related Powegate storage jobs
const { cidInfo } = await pow.data.cidInfo(cid)
// retrieve data stored in the user by cid
const bytes = await pow.data.get(cid)
// send FIL from an address managed by the user to any other address
await pow.wallet.sendFil(addressesList[0].address, "<some other address>",
     BigInt(1000))
```