

CRYPTO JOURNAL

Knowledge is power and the power is in your hands



ARWEAVE

Type: Blockchain
Function: Permanent decentralised storage

Staking Portfolio

DApp: Pancake Swap
Ecosystem: Binance Smart Chain
Initial Investment: 115.43994 CAKE
APR: 22.35% (subj. to change)
Profit to-date: 1.3791 CAKE
Total Balance: 116.7778 CAKE
Duration: 6 months
Unlock on: Jul 31, 2023

DAPP: Solend
Ecosystem: Solana
Initial Investment: 3.3 mSOL
APR: 2.13% (subj. to change)
Profit to-date: 0.00013562 mSOL
Total Balance: 3.300017209 mSOL
Duration: unlimited



Image from blockchaincryptobits.com

It's reasonable to assume that everyone understands how storage works these days. You create a file and store it on your machine or "on the cloud" on Google Drive, Apple iCloud or Amazon's AWS.

These companies own thousands of machines that store your stuff and charge you money for storing it with them. However, if anything were to happen to those companies or those machines got hacked, your stuff could be affected. That's centralised storage in a nutshell.

In this issue, we're going to look at a decentralised way of storing things and a crypto project called Arweave as an example of how this is done.

Disclaimer: The information presented is for educational purposes only. All content is a combination of research and opinion. Info sources are cited throughout

Icons by Iconathon from The Noun Project

Decentralised Storage

When it comes to storing stuff online, there are two kinds: private and public. Private stuff is things cthat we create on our own that we take ownership of and we choose where we want to store them. Public stuff is web pages or information that we want access to but not something we are personally responsible for.

A key factor here is **accessibility**. You know where you keep your own stuff. But what about stuff on the web?

Take YouTube for example. Where do the thousands of videos get stored? Well, since YouTube is part of Google, we assume that Google has a whole houseful of machines to store them. If anything happened to those machines though, no more YouTube videos. That particular video you liked a lot might be gone forever from your life. :(

There's also another interesting note about **how things are stored online**. In order to retrieve things, we have to know where it is to get it. This is done by typing in the URL, which is the location of where the information is at. However, there is no guarantee that the information will always be there.

The URL is like the address to someone's house. You may know the people who live there now, but they might not live there forever.

Centralised storage solutions come with their own set of risks including:

- Trust in the company providing the storage to protect your data
- Content can be censored

This is how the idea for **decentralised storage** came about in the broadest sense. Aside from offering an alternative way of storing data, it addresses the risks that come with centralised storage and a new way to access data online.

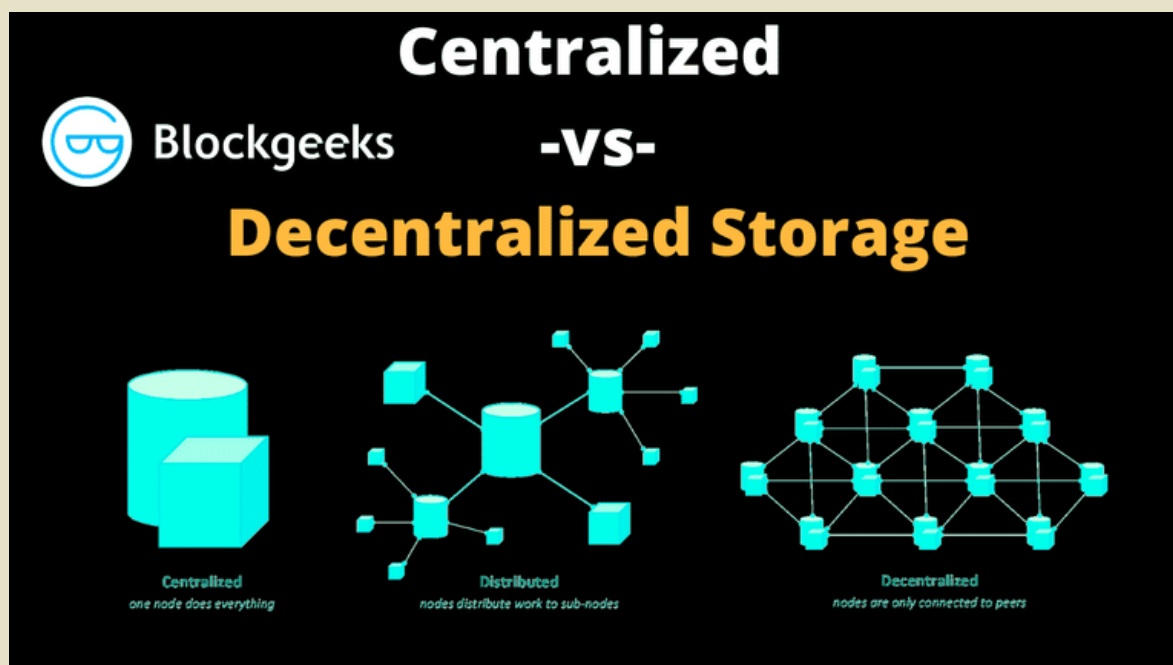


Image from blockgeeks.com

InterPlanetary File System (IPFS)

What is IPFS?

Imagine you wrote a school report and your friend wanted to take a look at it. Instead of putting it on the cloud owned by a company, you allow your friend access to your machine to read the report.

When your friend downloads the report, (s)he can also share it with someone else, thus helping you to distribute that report to others.

That's kinda what IPFS does in a nutshell. It's a decentralised way for people to share data that is stored everywhere around the world.

The IPFS network makes it hard to censor content, speeds up web searches, and supports a more resilient Internet for everyone.

Short for InterPlanetary File System, IPFS was a project developed by Protocol Labs, who later worked on a second-generation kind of storage called Filecoin.

How IPFS Works

Instead of typing in a URL that will then bring you to the content, IPFS searches by content instead of by location.

As a user, you'd need to install the IPFS application on your computer first before you can use it. This enables your computer to be linked to all the other computers in the IPFS system. This makes you a **node** in the network.

Let's say you downloaded some files on robotic dogs. These files, obtained from the IPFS network, are stored on your machine.

You're now an active participant on the network too. This is because the IPFS will also include your machine when searching for content relating to robotic dogs.

If someone who is in your neighbourhood is also looking for information about robotic dogs on IPFS, it would be a lot quicker for IPFS to get that information from your machine as opposed to someone who lives in another city or country.

However, if you turned off your computer, then IPFS can't access the files on your computer anymore.

If you decide to delete the files one day, those files also "drop out" of the network.

This is one of the disadvantages of IPFS, which is the impermanence of the data stored. One way it mitigates this is through **pinning**.

How Pinning Works

In order to free up disk space on the IPFS nodes, an automatic resource management program aptly called "Garbage Collection" goes through the network, cleaning up data that is no longer in use.

If you don't want your data to be "cleaned up", you pin it on the IPFS network, thus saving it and making it available for everyone until it's unpinned.

You can do this on your own but you can also use **Pinning Services**, i.e. third parties who perform the pinning action for you.

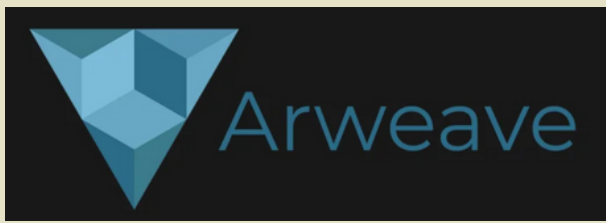


Image from cryptosrus.com



What It Does

Type: Blockchain project

Ecosystem: own blockchain

Function: permanent decentralised storage

- "Broker" for online storage space
- Provides infrastructure for storing data, apps, and documents in a permanent fashion.
- Pay a one-time storage fee for approximately 200 years of storage
- Rewards people for storing permanent data held in "common good".
- Project assumes a 0.5% per year decline in storage costs even though actual rate is 30.75% annual rate decline over 50 years.
- Has about 300 nodes spread across the world.
- 5000 transactions per second.

How It Works

- Pins data on IPFS, making it permanently accessible on the IPFS network.
- Acts as both a storage and pinning service.
- uses Blockweave - data stored in a graph of blocks instead of blockchain structure
- **Consensus Mechanism:** Succinct Random Proofs of Access (SPoA) aka Proof of Access (PoA)
- Each block is linked to 2 previous blocks and one following block.
- Content moderation through:
 - miners - can refuse to store any data
 - network gateways for filtered access
 - Arweave-based dApps can filter data prior to showing to users



Which traditional space is affected?

Centralised storage providers such as Google, Apple, and AWS are some of the ones who now have to contend with this new kid on the block.

This also has the potential to change the way we think of data storage. Instead of parking it with a company, we now have the option to store it decentrally.



Who started this?

- Founders - **Sam Williams** and **William Jones**
- Original name Archain in 2017, changed to Arweave in 2018.
- Seed investors - Union Square Ventures, Andreessen Horowitz \$5 million in 2019
- \$8.3 million additional funding in 2020



What Makes it Unique?

- Building their own version of the World Wide Web known as **Permaweb**.
 - built on top of the HTTP protocol
- **"Wildfire"** mechanism - incentivises miners to share data with each other, making it easy for new miners to join the network.

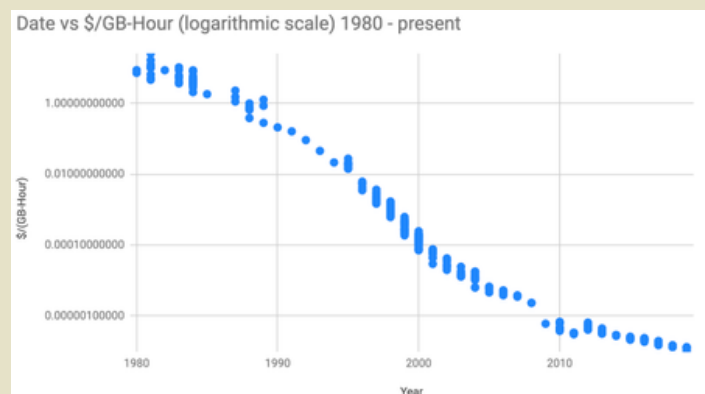


Image from Arweave Yellow Paper



Tokenomics (AR)

Supply: 66 million total,

Circulation: 50,108,502

Initial Price: \$0.73 (June 2018)

All-time High (ATH) \$89.24/token (Nov 2021)

Function:

- Used as gas fees to pay for storage
- Mining rewards to miners

Token Distribution:

- 55 million generated at genesis (June 2018) to be paid out to miners.
- 11 million paid out gradually over the years through the storage endowment fund.
- Transaction fees are paid towards the storage endowment fund and then distributed to the miners.
- Storage endowment fund invest capital to generate interest which pays for future storage costs.
- no token-burning mechanism



What to watch out for !

- What if the endowment runs out of funds before the 200 years is over? How will data storage be charged?
- What happens to the data after 200 years?
- **Usability** - there is a bit of an entry barrier to using Arweave due to need of their own wallet.
- Archival bots
 - help to scour internet to collect all news to be stored on the permaweb.
 - too many might make it unusable for regular users?
- Regulatory risk in the future?
- **Other Competitors**
 - STORJ, Filecoin, Siacoin



People and Partners

Partners

- **The Graph (GRT)** indexes data in Arweave
- **Bundlr** network converts any cryptocurrency to AR to pay for storage fees.
- Internet Archive - to store news on what's going on.

Key Players

Users

- store historical data for the following blockchains: SOL, AVAX, DOT, ATOM, NEAR
- could be in the running to store data for ETH after The Purge
- Mirror protocol - decentralised version of Medium for blogging.

Miner / Node operators

- decide what they want to store, no consensus mechanism needed.
- publicly liable for what gets stored, thus having accountability.
- mine by accessing "recall block" or "recall chunk" randomly placed in previous chunk to add to the blockchain.
 - mining rewards come from:
 - Transaction fees
 - Inflationary tokens
 - endowment payments

DAO

- handle decision-making in Arweave community



Image from

<https://www.arweave.org/technology#permaweb>



How far It Could Go

"Who controls the past controls the future; who controls the present controls the past". - quote from Arweave Medium article

Arweave has great ambitions to reshape the way history is recorded. Often we hear that it's written by the victors (whether that's the good or bad side). What Arweave aims to do is to store all the related facts so that the future will be able to review them and make their judgments at their leisure.

This has already happened with their archive of the Hong Kong protests from Apple Daily, an alternative to the mainstream media that might have to acquiesce to the mainland Chinese authorities. It's also about the Kerch Strait incident reported by Sputnik, the English mouthpiece of Russia that did not carry a pro-Russian stance in its first version, which was quickly taken down to be replaced with a second version more inline with how the Russian authorities want.

It's also to preserve the stories of minorities in most mainstream societies so that their side can be told.

From a more practical side, Arweave wants to be home to Web3 websites, where users access these sites via URL, but the base layer, handled by Arweave, connects to their blockchain, instead of single servers.

Already, it's got a few large blockchains as customers, storing their historical transaction data. It's also the chain of choice for many in the NFT world as the images themselves are actually stored on blockchains like Arweave, not the ones minting where making the trades.

Another use case and potential customer group are archives and museums. These institutions are tasked with preserving history and what better place to store it than in a decentralised space that gives you at least 200 years' worth of storage upfront if not more?

The services that Arweave is offering is easy to understand and beneficial to many aspects of society. As long as it continues to refine and develop its offerings, there is great potential for this project in the future. Perhaps it might not achieve the same level of popularity in Main Street (not too many of us need to store stuff for 200 years!), the foundation it lays could be a bedrock for society in the future.

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LET'S GO

Fantasy portfolio

Initial Capital: \$10,000

Asset(s) invested: 4 for \$6,000

Total Balance: \$4,000

Investment level

Polkadot @ 133.6 units for \$14.97

Current price (Feb 24): \$7.0696
(-52.77%)

Chainlink @ 112.8 units for \$17.73

Current price (Feb 24): \$7.9439 (-55.19%)

Terra @ 24.77 units for \$80.72

Sold for Loss: -\$2000

3 slots available @ \$2,000/slot.

Secondary tier

Sandbox @ 325.73 units for \$3.07

Current price (Feb 24): \$0.7598 (-62.43%)
4 slots available @ \$1,000/slot.

Trading tier

5 slots available @ \$500/slot.

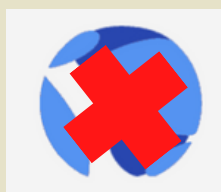
Investment Grade



\$14.97 /
133.6 units



\$17.73 /
112.8 units



\$80.72 /
24.77 units



Secondary Level



\$3.07 /
325.73 units



Trading Tier

