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The Future is Decentralized Data Storage February 2018

Data is becoming the world's most valuable resource. The question of where and how to store it is becoming increasingly important.



Decentralized data storage is a model of networked online storage in which data is stored on multiple computers. Decentralized storage does not directly employ dedicated servers for the actual storage of data, thereby eliminating the need for a significant hardware investment. Rather, each node contributes storage that may be in excess of what it actually is using. A node in the decentralized storage network can both consume and contribute data storage to the cloud.

However, migration from on-premise storage to cloud storage has been the major theme of the past decade.

Cloud Storage Today

The total market for cloud storage is huge and continues to grow. Amazon, Google, Facebook, Apple and Microsoft each control a huge share of the world's data in their clouds. However, storing data in these clouds is insecure, expensive, centralized, and puts lots of trust in these large corporations. Centralized servers containing valuable information are targets for hackers. The fact that these companies take custody of customer data means that there is always a risk of theft.

Decentralized cloud storage options are just now coming into play. Complimenting this movement is a significant growth of decentralized storage networks using blockchain technology. Companies such as Filecoin, Storj, Safe Network, Sia, and Swarm are heading this new technology.

Blockchain-based decentralized storage is cheaper, more secure, faster, and more distributed than existing cloud solutions. Massive amounts of storage space sit unused on people's hard drives around the world. The influx of this storage space into the global market would drive down storage costs. Blockchain can do this in a secure peer-to-peer fashion. It would allow users to monetize storage space that otherwise would sit idle.

Decentralized Storage

Single-system and cloud-based databases are highly centralized. This makes them a beacon for hackers. There are also several single points of failure in these systems. The failure of a server or a storage array can take down these databases if these systems have not been duplicated for redundancy. This is a worrying combination. Extraordinarily large amount of data are being stored in centralized databases, creating a risk at a scale seldom seen.

Decentralized data storage does not encounter these problems because it uses geographically distributed nodes. An attack or an outage at a single point will not have a devastating effect on the storage system because nodes in other locations will continue to function.

2017 was the year that blockchain burst into the public consciousness. Decentralized cloud protocols will reshape parts of the Internet infrastructure and application delivery mechanisms. Speculation is that blockchain could underpin the next phase of the Internet, creating the decentralized worldwide web. This is one of the most interesting aspects of blockchain technology.

With multiple competing decentralized storage networks, there will be differences in prices for storage. Suppliers will shift to markets in which there is a higher demand and therefore higher prices for storage. 3rd parties will build utilities that monitor prices and automatically shift suppliers between markets to maximize profits.

But many issues have emerged around the underlying characteristics of blockchain technology and decentralized data. Perhaps the primary concern is scalability. It is estimated that there will be over 20 billion connected devices by the year 2020. These will all require the management, storage, and retrieval of enormous amounts of data.

Two technologies are helping to solve the scalability issue:

- Sharding – Databases are partitioned along logical lines. Shards are stored together and accessed by decentralized applications using a unique partition key.
- Swarming – Decentralized storage utilizes large groups of nodes referred to as swarms. Swarms reduce latency and increase speed by retrieving data from the nearest and fastest node.

Devices in the shards and swarms are not owned by a single company. Therefore, storage can be bought from a new marketplace of multiple vendors.

Summary

Decentralized storage offers a more secure, efficient, and scalable solution to a data-hungry world. There is no single point of failure that can take the storage system down. Decentralized storage has the potential to provide the immense scalability required to meet the needs of the billions of devices that will be connected to the Internet.

Acknowledgements

Information for this article was taken from the following sources:

[The State of Decentralized Storage, Multicoïn Capital; September 27, 2017.](#)

[Blockchain and Data Storage: The Future is Decentralized, Dataconomy; January 2, 2018.](#)

[Wikipedia \(Cooperative Storage Cloud\)](#)