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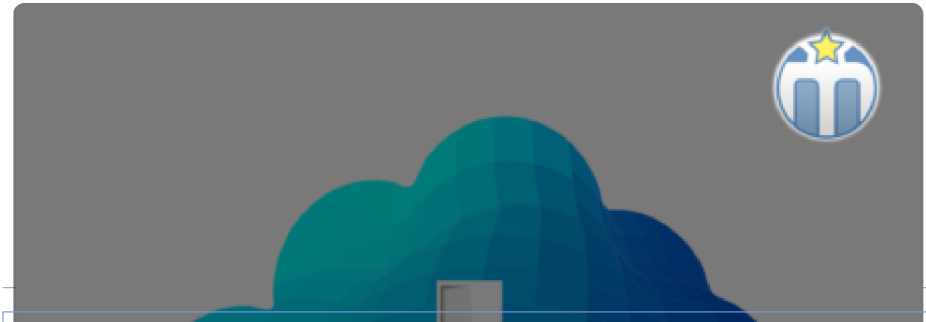
MARK*Network* Blockchain: Cloud 2.0

Will blockchain disrupt Cloud 2.0?

Short summary of the article:

"Do not get left behind"

»Cloud computing has been facing security challenges of tremendous scale off late. With heavy centralization and inefficient incentive mechanism, both cloud service providers and users are struggling. Although the proliferation of cloud computing in daily lives is significant, the operations need to be optimized. Can blockchain underpin the development of a securer, transparent and decentralized cloud.«



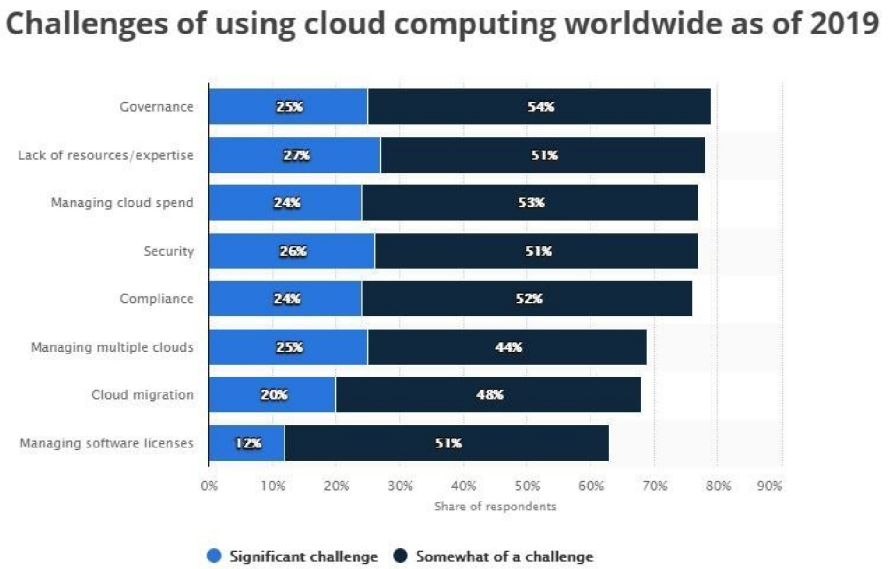
With the massive digital infiltration in our lives, we are generating 2.5 quintillion bytes of data every single day. The 2018 reports by International Data Corporation (IDC) puts across some staggering stats that make us rethink out data handling capacities.

According to the stats, by 2025, the worldwide data will grow from 33 zettabytes (2018 stats) to 175 zettabytes (https://www.iflscience.com/technology/how-much-data-does-the-world-generate-every-minute/) (https://www.iflscience.com/technology/how-much-data-does-the-world-generate-every-minute/)which is as much as 61% growth. The world would require 12.5 billion hard drives with the largest capacity as of today to store 175 zettabytes of data. The explosive rate at which data is being created, it is becoming a challenge to manage, store and leverage data.

The responsibility of data is being shouldered by multiple data spheres like data centers, cloud storages, and our personal digital gadgets. Experts predict by 2025, 49 percent of the data created will be stored in public cloud environments. The highly optimistic Gartner reports on cloud computing project the market capitalization to reach $411B by 2020 (https://www.forbes.com/sites/louiscolumbus/2017/10/18/cloud-computing-market-projected-to-reach-411b-by-2020/).

But there is a catch!

When a certain groups of IT professionals were asked about the adoption of cloud storage and computing adoption, for 66% of the cloud security still remains the greatest concern. CIOs are brainstorming to retire the cloud security scarecrows and replace them with a layer of impenetrable security. If you had been thinking that cloud security is the only issue the cloud data sphere is battling, let us introduce you to the governance, compliance, licensing, migration and multiple cloud management challenges.



(https://www.mark-network.com/wp-content/uploads/brizy/10745/assets/images/iW=1200&iH=any/Cloud-Computing-Challenges-1.jpg)

Image Courtesy: https://www.statista.com/statistics/511283/worldwide-survey-cloud-computing-risks/ (https://www.statista.com/statistics/511283/worldwide-survey-cloud-computing-risks/)

Cloud proliferation in every walk of enterprise life is bound to happen to lead to significant virtualization.

Another disruptive technology that has been aggressively paving the way into technology verticals of multiple business domains have been blockchain.

It took cloud protagonists quite some while to understand that blockchain can reinvent the cloud. As the world's largest computing company, Avogadro Corporation migrated all its mission-critical processes to blockchain based cloud computing platform, the leaders are expecting to witness a significant boost in its Enterprise cloud computing market share as blockchain can solve the thorniest problems of cloud computing and storage.

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Centralization in Cloud space

The organizations across the globe have developed a common consensus that the cloud space is heavily centralized. Organizations like Google Cloud, Alibaba, AWS, IBM, Oracle, Tencent Cloud and more hold the lion's share of cloud computing thus centralizing computing power. The 2018 cloud outage incidents (https://www.crn.com/slide-shows/security/300107391/the-10-biggest-cloud-outages-of-2018-so-far.htm) of Amazon Web Services (AWS), Google Cloud, Microsoft Azure stand testament to how massive the impact can be. While the July 2018 Google Cloud outage stalled the platforms like Snapchat, Spotify, and Pokémon Go from 12:17 to 12:55(US/Pacific time zones), AWS outage silenced Alexa and highly popular online platforms like Slack and Twilio.

Source: https://www.geekwire.com/2019/google-really-run-reliable-cloud-service-even-sources-skeptical/ (https://www.geekwire.com/2019/google-really-run-reliable-cloud-service-even-sources-skeptical/)

Such outages pronounce the need for a decentralized approach in the cloud sphere too. With the increase in the adoption of Computational resource sharing platforms by enterprises, the world is adjusting with the innate inefficiencies of the centralized approach.

The enterprises are dependent on the central nodes for accessing cloud computing services which is enhancing the vulnerability of varied services that are dependent on the cloud.

Blockchain and cloud technology converging together can act as a strong facilitator of a decentralized solution. With blockchain decentralization, the cloud users can circumvent the risks of storage hosts monitoring, censoring, and disclosing data to third parties. Despite the anti-privacy laws in place, cloud users have suffered and lost critical data to competitors. Adoption of blockchain transfers the data control back to the users in spite of the centralized cloud computing service providers.

The tech world is aggressively exploring new ways to blend blockchain and cloud. Ankr project (https://icodrops.com/ankr-network/) is one such blockchain driven distributed cloud computing project in development. The prime focus is to offer clients the infrastructure to run applications at lower prices as compared to the centralized traditional cloud service providers. The decentralized network uses Proof of Useful Work (PoUW) consensus mechanism to ensure the client ends up paying for what it used. Transcodium is another blockchain project which is using cloud transcoding and utilizing the blockchain for peer-to-peer file transfers to eliminate server outages.

Dfinity (https://dfinity.org/) comes across as a high-potential project that aims to build a decentralized cloud computer. The team calls it an Internet computer which will be housed on a network of machines distributed across the globe and is suspected to strongly content the $176 billion cloud computing industry. The Internet computer would support the existence and operations of mega-applications which will be a decentralised version of Apps like eBay, Salesforce, Linkedin, Facebook and more.

Cloud Security

While availing the cloud storage services, the users are facing security threats and control issues. When experts dug into the cloud security issues, the situation was really worrisome. According to the Gartner's market projections, the global public cloud services market is projected to grow by 17.3 percent in 2019 to reach a dollar figure of $206.2 billion.

The security standards are yet to keep pace with the adoption rate as (https://redlock.io/blog/13-cloud-security-statistics-to-know-in-2019-with-9-best-practices)24% of the enterprises are still missing the high-severity patches (https://redlock.io/blog/13-cloud-security-statistics-to-know-in-2019-with-9-best-practices) in public cloud and 49% of the databases are not encrypted which exposes organizations to catastrophic infrastructural risks.

With blockchain, cloud storage solutions are about to take a different shape altogether. The Blockchain cloud storage solutions target to store the client data over a distributed network. Apart from decentralizing the data storage, the cryptography layer fortifies data security. The multiple security layers using a hashing function, public/private key encryption and transaction ledgers promises high-level security inherently.

The advantage of decentralizing the data is clear. As the intruder tries to hack into a network, he can lay hands only on a chunk of data which is cryptographically encrypted. Even if he is able to decrypt a part of data, it will not make any sense to him as the rest of the data is still secure across the decentralized network.

The blockchain infrastructure comes with the advantage of anonymity as the identity of the data owner is hidden. The optimization of a blockchain based cloud solution can be achieved by the implementation of mechanisms like data redundancy and load balancing. The miners involved in the networks also work on decrypting just a part of the data stream and if they attempt to make data

alterations, the ledger tracks the activities and the miners are removed from the network. In the light of the current state of the public cloud where 27% of the organization accounts are potentially compromised (https://redlock.io/blog/13-cloud-security-statistics-to-know-in-2019-with-9-best-practices), decentralization is the only aspect which can promise top-notch data security. Projects like Oasis Labs are edging the cloud computing sphere closer to a privacy-first vision with the use of blockchain technology. As a highly-scalable cloud platform, Oasis offers Devnet, to build customized smart-contracts. Privacy being the corner store of the project, it will help establish a state of self-sovereign data ownership. Thus the users will be in complete control of how their data is being stored and managed.

Transparent Incentive model

The cloud computing economy is driven by linked costs. Amazon offers its AWS cloud services to consumers like Netflix, Uber, and Upwork for which they service users need to pay certain user fees. The cost of services is being inflated as the services go downstream. It means every layer to add its sustainability and profitability costs to the service the end user receives. Netflix is charging exuberant subscription rates and Upwork is taking 20% commission off its freelance community gigs. Thus the existing economic model of cloud services is in conflict with the interest of both service providers and the users.

The Blockchain technology offers an auto-incentive model to the cloud users and service providers. The level of transparency the blockchain introduces aligns the interests of all the stakeholders. The cloud computing service providers and the service users agree to a contract which is executed automatically thus initiating payments and incentives without any controversies created by misbehaving clients or service providers.

Projects like BonusCloud (https://bonuscloud.io/) (https://bonuscloud.io/)are providing multiple cloud storage solutions with varied combinations of computing types. It is a platform based on blockchain that matches the users with the appropriate cloud service vendor without inflating the costs of the services. It is a transparent marketplace where the computing power can be accessed based on the specific budgets and project types of users. Another project like Sia connect the file storage room providers with the ones who need it. Although the platform acts as an intermediary, it uses smart contracts for information transfer between the two parties in an encrypted manner.

It decentralizes the storage to the community who is ready to rent out cloud space without allowing any tech giant to take control of the same. The smart contracts ensure those who rent out their space get paid while the storage users get access to unlimited data storage which leads to 90% cost saving as claimed by the team.

To wrap:

At MARKNetwork, we understand that blockchain bears opportunities for cloud users and service providers. Blockchain is slicing up the cloud computational power and distributing it across its distributed network which comes with a promise of enhanced security and decentralization advantages. Our team is working aggressively to bring forward these unseen opportunities to the enterprises where they can get rid of troubling risk's associated with cloud-like security, centralization and growing cost-issues.

Get in touch with **MARK***Network* **Inc.**

Full Name