SNAPSHOT INSIGHT

Report: The State of DeStor 2024

The Register polls ITDMs' attitudes to the nascent, yet rapidly unfolding landscape of decentralized data storage.

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Digital thought leaders are talking about an emerging concept of data as an asset class and its transformational potential in the exponential age.

The backdrop to the discussion is the ubiquity of data and the explosion of data volumes. Data as a form of value is a well-established facet of the new era, evidenced by the rise of crypto currencies. The evolution of infrastructures that store data-as-an-asset is less advanced and will be a consideration for all IT decision makers in the near future.

The choice for ITDMs will be to stick with the current model of centralized storage or move to the nascent mode of decentralization, which brings benefits of data control through integrity, privacy/security, and accessibility backed by massive scale. With global data creation projected to exceed 180 zettabytes by 2025 (Statista), finding the means of data storage that ticks all these boxes is a growing priority. The sheer number of mobile devices now generating that data alongside the exponential growth of big data analytics and GenAI appears to be pushing current, traditional (centralized) storage methods to their limits.

At present, around 60 percent of corporate data is stored centrally in the public cloud, according to Thales Group, a two-fold increase in under a decade. Employee data (44 percent) and customer data (44 percent) are the most common data categories stored by companies in the cloud, according to Netwrix Cloud Data Security Report, 2022.

Tellingly, both latter categories have seen a drop from the 50 per cent recorded in 2019 as security chiefs rowed back from the public cloud when employees went home to work during the pandemic. Cybersecurity and geopolitical conflicts, separately, are among the top worries of CEOs, according to PwC's CEO Survey. Together, the combined risks pose an even bigger challenge that demands immediate action. Reinforcing this finding is that over half of Netwrix respondents said external actors are the main threat to their IT environment - frequent, costlier data breaches and ransomware attacks will prompt organizations to review the suitability of centralized storage. For instance, 79% of Americans are concerned about how companies use their data, according to Pew Research Center.

But concerns go beyond security alone and are neatly summarized by Ashish Nadkarni, Group VP, Infrastructure Systems, Platforms and Technologies, IDC. "Challenges include [not only] security [but also] availability, unexpectedly high costs around data mobility, cloud provider lock-in, and compliance and regulatory obstacles." Crucially, too, there needs to be a capacity to create bespoke solutions for emerging and different classes of data assets.

Centralized cloud services have served corporations well to date in their search for convenient and scalable answers to growing storage requirements. But their reliance on single entities to manage and safeguard data poses risks such as data

breaches, privacy infringements and potential downtime. Consolidating vast amounts of sensitive information certainly streamlines data management and access. But it also presents a target for bad actors seeking to exploit vulnerabilities in the system. Further, by entrusting their data to these centralized platforms, users relinquish control over how it is stored, accessed and utilized.

As concerns over data privacy and security grow - and centralized methods struggle to scale affordably - decentralization offers a new proposition. A decentralized model puts control back in the hands of data owners who can securely store their information, in service of the business outcomes that need to be achieved.

The decentralized network opens a broad base for service capabilities and can be uniquely designed for business outcomes depending on what is most important to the data owner. Outcomes include low cost, privacy, security, GDPR, resilience, among others, and users can pick and choose decentralization technologies that match their needs. For example, a strong preference for data privacy and security would incorporate encryption, sharding, multi-geolocation.

The Register set out to discover ITDMs' attitudes to the nascent, yet rapidly unfolding landscape of decentralized data storage by canvassing readers' opinions.

USER AWARENESS NEEDS WORK

We started by asking 'what is your familiarity with decentralized storage technologies like Filecoin, Storj and Arweave?' Around one third of respondents (29.3 percent) had some degree of familiarity with the named storage technologies. Unsurprisingly, perhaps, a two thirds-plus majority (70.7 percent) professed no understanding of decentralized storage technologies. Other responses confirm the pioneering stage of the technology with a tiny cluster of super-users decentralizing nearly a majority or all of their storage, with another six percent hot on their heels. The vast majority however (72.7 percent) have yet to make a foray into decentralization for their storage needs while a significant 12.6 are dabbling in it.

What is your familiarity with decentralized storage technologies like Filecoin, Storj and Arweave?

Not familiar at all

70.7%

Heard of them, but never used

21.8%

Somewhat familiar, we have experimented with them

6.4%

Very familiar, we use them extensively
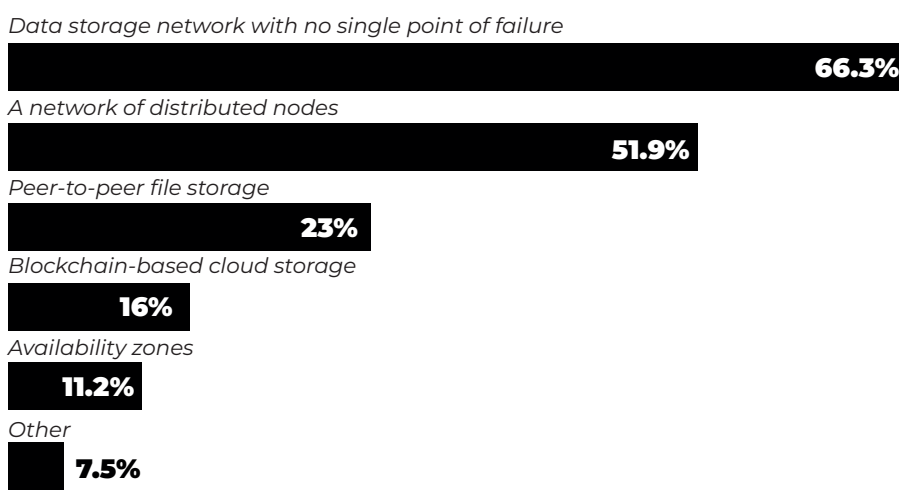
1.1%

This is perhaps reminiscent of the long tail of users who were late to GenAI but have been enthusiastic adopters and experimenters since it exploded on the scene at the end of 2022. Usage of GenAI went from zero in 2022 to 65 percent by May 2024 when McKinsey published its findings.

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For novices, the underlying principle is simple enough to grasp: storage is distributed across multiple nodes typically owned and operated by separate providers meaning there's no single point of failure, improving information availability, redundancy, and access speeds by allowing simultaneous information retrieval from different nodes or locations.

Filecoin's unique selling point is the combined benefit of the two technologies it uses: IPFS provides the foundation for distributing data and complete immutability. Layered on top of that are the blockchain proofs that provide mathematical verification of storage space commitment and data existence.

When asked, 'What does decentralized storage mean to you?' two facets resonated with respondents: data storage network with no single point of failure and a network of distributed nodes. A grasp of these attributes likely reflects respondents' priorities of reliability and redundancy. In our modern, data-centric society, handling, securing and making available large volumes of information is paramount. Any downtime is punished, whether by financial penalties from regulators or by a tarnished reputation that diminishes the brand.

What does decentralized storage mean to you?

Data storage network with no single point of failure

66.3%

A network of distributed nodes

51.9%

Peer-to-peer file storage

23%

Blockchain-based cloud storage

16%

Availability zones

11.2%

Other

7.5%

Other defining attributes of decentralized storage offered by the survey chimed less loudly with the surveyed audience, namely peer-to-peer file storage, blockchain-based file storage and availability zones. In a peer-to-peer network, data is divided into smaller segments and encrypted prior to being dispersed among the nodes in the network, making data resilient and reachable faster. Likewise, respondents would likely recognize in Blockchain the guarantee of data integrity and trace ownership, as blocks of data are linked cryptographically into an uneditable, digital chain.

INTEREST IN, AND CONCERNS ABOUT, DECENTRALIZED STORAGE SOLUTIONS

Data security and scalability topped the Big Five incentives for ITDMs considering a move to decentralized storage, echoing the sentiment revealed in the previous question. This was followed by a roughly equal preference - hovering around 10

percent - in its ability to bolster an organization's resilience in the realms of geo-political, data privacy and cost effectiveness.

Just halfway through 2024, some of the most damaging data breaches have been inflicted in recent history with over 1 billion records stolen in the US to date. Small wonder that data security figures high on the wish list for prospective decentralized storage adopters against a backdrop of growing mistrust of third parties that fail to protect centralized data. Decentralized storage is resistant to cyberattacks and data breaches because of its distributed architecture - data is replicated across nodes and therefore protected when a single node is hacked.

Cost effectiveness comes bottom of the wish list, perhaps reflecting a fresh pragmatism among decision-makers who've had to manage IT infrastructures during recent external shocks. The pandemic surfaced new priorities of resilience and

What prompts your interest in decentralized storage solutions?

| Data security	Scalability	Geo/Political	Data privacy	Cost-effectiveness	Other
32.7%	25.1%	11.1%	10.5%	9.9%	10.5%
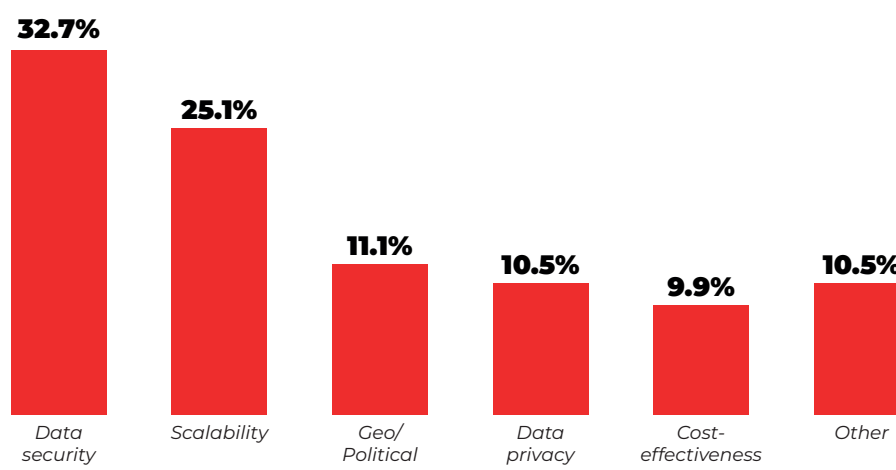
business continuity that trumped cost-cutting, a trend that persists, as The Foundry's _State of the CIO Survey, 2024_ confirms: "CIO's are spending more time on security management … and less time on cost management".

While cost effectiveness may no longer be top of the IT agenda, data wastage is a growing reality. And it will only become a larger concern as exponential increases in data usage are compounded by current models that require over-provisioning. "The economic model of the cloud is essentially that the more you can commit to use, the better the deal will be," says Stephen Edwards, a digital expert at PA Consulting. _A Data Waste Index Report_ for example noted that 41 percent of data currently stored by UK organizations is unused and unwanted.

Consistent with other survey responses, security and privacy topped the list of concerns, although it's worth noting this preoccupation is aired during review and due diligence stages, not after deployment. Complexity of technology is a likelier blocker at this stage: the concept of decentralized storage may be daunting to some IT departments and a shortage of blockchain specialists may stymie rollout. As the arguments for decentralized storage gain traction in the coming months, these skills will be at a premium.

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## What concerns do you have about using decentralized storage?
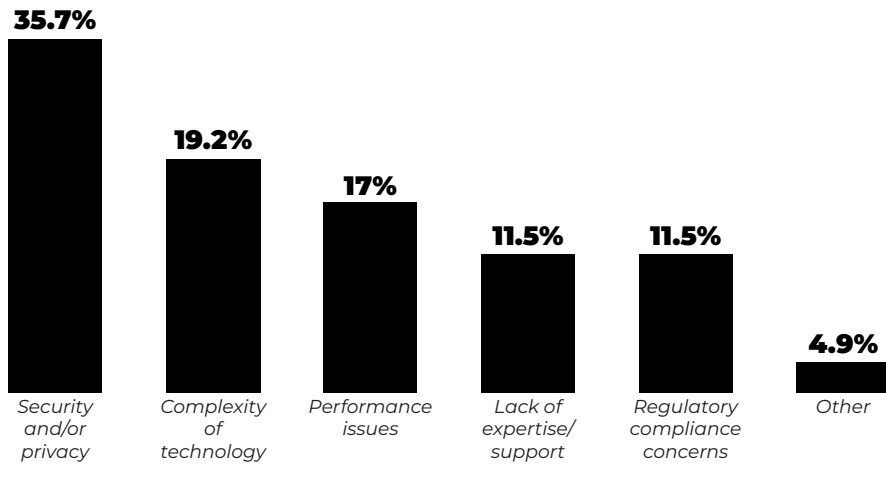
Concerns about regulatory compliance in what is still an evolving landscape are fairly minimal, level-pegging alongside perceived skills shortages at 11.5 per cent. However, any ambiguities concerning the law and regulations would have to be called out and addressed to win the backing of the mainstream corporate community.

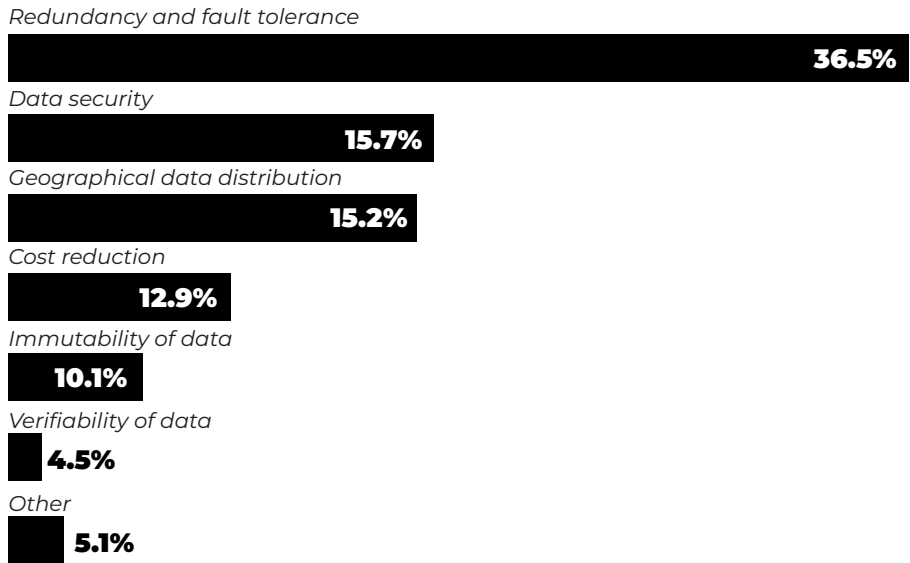## COMPARISONS TO TRADITIONAL CLOUD STORAGE

An emphatic 62 percent of respondents are convinced by the argument that decentralized storage is at least as or more reliable than current centralized cloud offerings. However, while the insurgent technology may have won the debate for technical preeminence, its success and adoption rest on providers gaining sufficient scale and spread of distributed nodes to provide viable solutions.

The performance and reliability of distributed storage can be affected by the number of active nodes and their geographical distribution. In their current, immature phase, early networks might not be able to match the on-demand scalability provided by

How do you perceive the reliability of decentralized storage compared to traditional cloud storage solutions like AWS, Azure, GCP and Wasabi?

Equally reliable **Less reliable** **More reliable**
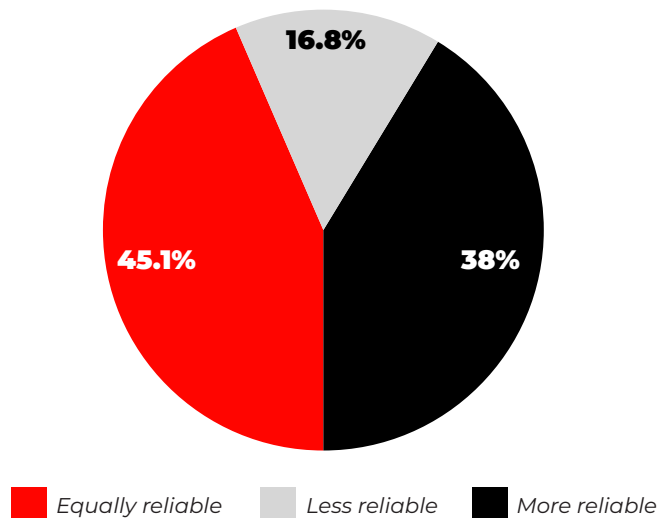
Which of the following decentralized storage features are most appealing to your organization?

Redundancy and fault tolerance

36.5%

Data security

15.7%

Geographical data distribution

15.2%

Cost reduction

12.9%

Immutability of data

10.1%

*Verifiability of data*

4.5%

Other

5.1%

cloud storage providers with large data centers. For customers with moderate storage demands in particular, decentralized storage may occasionally be more expensive than cloud storage with expenses hiked by transaction fees related to the underlying blockchain technology.

No surprise again, that redundancy and fault tolerance (36.5 percent) is the feature most coveted by respondents as it is the core proposition of the distributed storage model. Data security and geographic data distribution are level pegging at 15.7 and 15.1 percent respectively. The desire to disperse data storage across a wider geography speaks to more turbulent geo-political times. Business leaders beset by external shocks-climate events, political regime change and pandemics-don't want to put all their eggs in one basket.

Cost reduction will always be on the agenda for ITDMs and opportunities are offered by Filecoin's dynamic market model where storage costs are determined by supply and demand. Storj uses micropayment channels, convenient and efficient for small-scale transactions. Arweave's one-off payment for tamper-proof storage will appeal to

What percentage of your organization's data is stored with decentralized storage?

72.7%

12.6%

6.6%

6%

2.2%

0%*   *1-25%*   *26-50%*   *51-75%*   *76-100%*

* (we do not use decentralized storage)
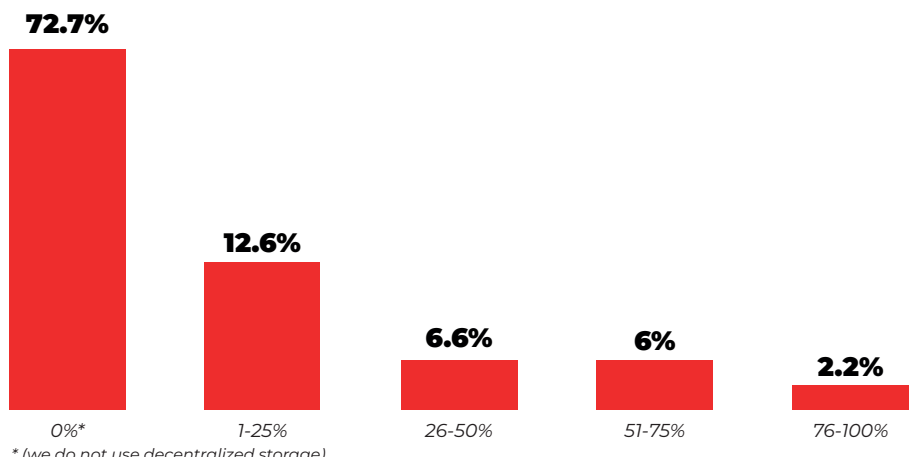
the constituency seeking safe haven for sensitive archive data. Immutability appeals to a hefty 10 percent of respondents and Filecoin's tight integration with IPFS will appeal to those enthusiasts.

USE CASES AND FUTURE ADOPTION EXPECTATIONS

The survey delivers some useful insights into the applications and use cases where organizations are most likely to seek support from decentralized storage. Archival gets the most votes (27.8 percent), with another 21.1 percent is considering storing operational data on a decentralized network - and these intentions are in line with recognized strengths of decentralized storage. For institutions and organizations that need to store data permanently and prove its authenticity - historical and medical records, research data, archival materials and digital art - decentralized storage will likely become the go-to method.

What type of data would your organization consider storing with decentralized* storage?

We would not store data on decentralized networks
32.2%

Archival data
27.8%

Operational data
21.1%

Personal data of customers
6.1%

AI data
5.6%

Intellectual property
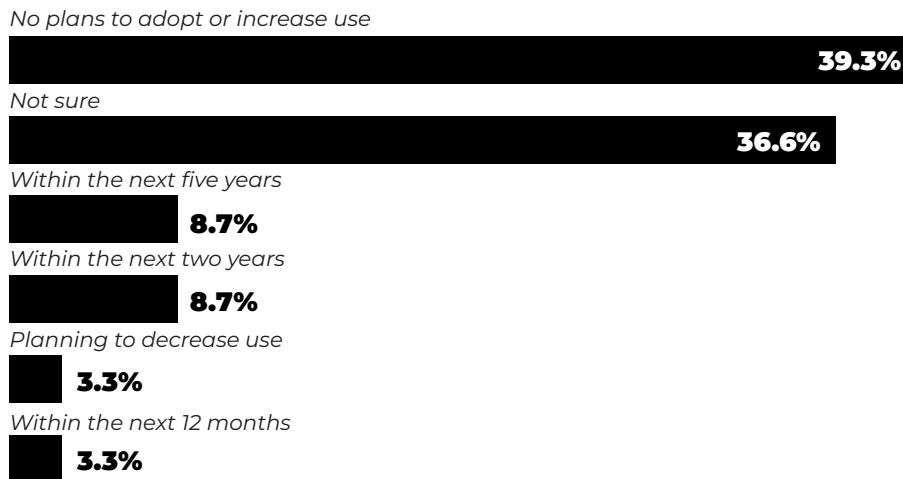**4.4%**

Financial data
2.8%

At present, customer data, AI, intellectual property and financial data figure less prominently in ITDMs' intentions as potential storage types, although the technology is billed as highly suitable for decentralized finance: smart contracts, powered by blockchain technology, automate frictionless transactions, ensuring secure and immutable storage of financial data, leading to enhanced transparency and reduced risk of fraud.

Backup and disaster recovery are other obvious contenders to capitalize on the enhanced security features of distributed storage, as is content delivery and streaming: provision of these content services benefit from an underlying distributed network for efficient data transfer.

One fifth of respondents are confidently planning adoption, undeterred by the immaturity of the market. Whether ITDMs take the plunge and invest in decentralized storage or not, rapidly growing storage requirements must be addressed somehow. Global market research firm Markets and Markets estimates that the value of the global cloud storage market will reach $137 billion by 2025 up from $99.2 in 2023.

When do you expect your organization to adopt or increase its use of decentralized storage over the next 5 years?

No plans to adopt or increase use

39.3%

Not sure

36.6%

Within the next five years

8.7%

Within the next two years

8.7%

Planning to decrease use

3.3%

Within the next 12 months

3.3%

CONCLUSION

As travel into the exponential world continues apace, ITDMs will shoulder the burden of responsibility for managing the new, preeminent asset class - data. They will wish to do their due diligence on a new technology and ensure it delivers the promised outcomes of cheaper, more secure, compliant and resilient. Decentralized data storage is forecast to play its part and Gartner predicts that by 2025, 10 percent of global enterprise data will be stored on blockchain platforms.

Three factors will encourage the shift: the growing security threat in a volatile world heightens the vulnerability of a centralized model; cloud-based offerings will struggle both to scale and to be cost effective as appetite for the new asset class continues unabated. Once users are comfortable with the technology and evolving regulatory questions are satisfied, more ITDMs and their boards will opt to be data owners in a new Web3 era.

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