THE BLOCK

The DePIN Report

Authors Alessandro Angelucci Gabriel Saunders

2025

SPONSORED BY io.net

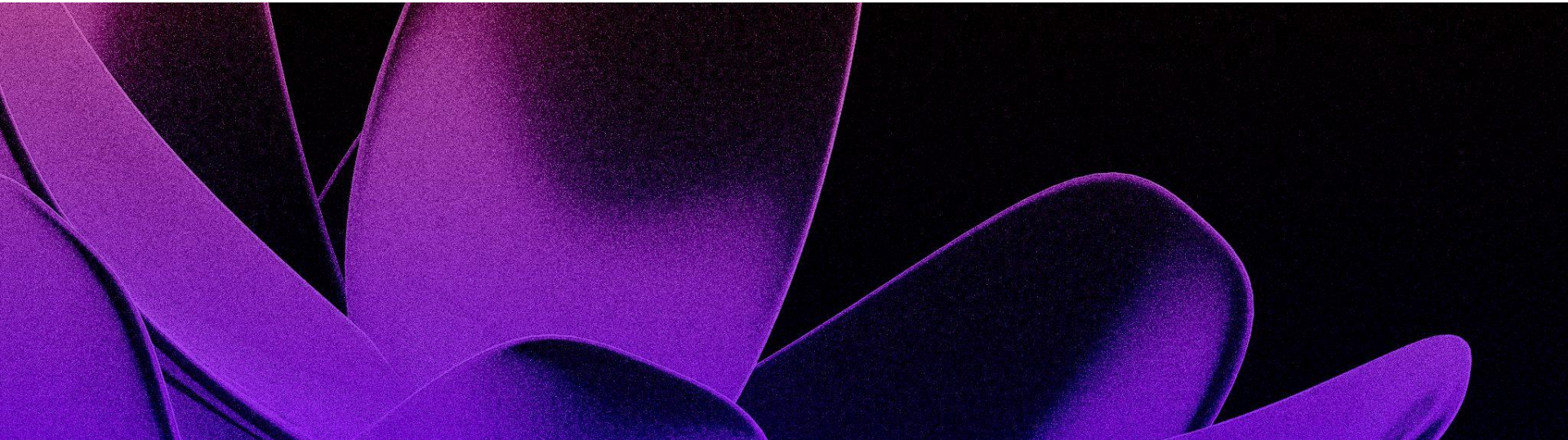
Table of Contents

THE BLOCK

Introduction

2025

SPONSORED BY io.net



Executive Summary

The DePIN Report provides an in-depth, data-driven overview of the Decentralized Physical Infrastructure Network ecosystem, highlighting the key players, trends, challenges, and opportunities shaping its evolution. By consolidating data from leading DePIN projects, funding movements, market dynamics, and technological advancements, this report offers a comprehensive view of the sector's development over time. As DePIN continues to redefine global infrastructure through decentralized coordination, these insights will serve as a valuable resource for stakeholders looking to understand its trajectory and engage meaningfully in its future development.

Authors

Alessandro Angelucci
Research Analyst
Email
LinkedIn
X

Gabriel Saunders
Research Analyst
Email
LinkedIn
X

THE BLOCK

The Block is the leading information services platform for digital assets. Our unmatched expertise across news, research, and data provides objective insights into how this emerging industry intersects with technology, finance, and public policy.

We empower smart decisions for those who invest in, work with, or make decisions about digital assets.

io.net is a decentralized GPU network designed to provide scalable, cost-efficient, and high-performance computing for AI and ML applications. Originally developed to support institutional-grade quantitative trading, io.net pivoted to solving the global GPU shortage by aggregating underutilized compute power from independent data centers, crypto miners, and consumer GPUs. By leveraging a distributed network and advanced orchestration tools, io.net offers on-demand compute infrastructure at a fraction of the cost of traditional cloud providers.

Report Methodology

To ensure granular insights and data integrity, this report employs a rigorous multi-source research approach.

- **On-Chain & Industry Data**: Aggregating research, project documentation, VC funding reports, and leading DePIN dashboards.
- **Expert Insights**: Interviewing founders, investors, and researchers for qualitative context.
- **Market & Performance Analysis**: Assessing sector trends, funding flows, and project benchmarks.
- **Comparative Tracking**: Mapping sectoral shifts and emerging patterns.

All data is current as of March 31, 2025.

Introduction to DePIN

Decentralized Physical Infrastructure Networks represent a new frontier in blockchain innovation, enabling distributed, user-driven networks for compute, storage, connectivity, sensors, and beyond. Through token incentives and permissionless participation, DePIN challenges traditional infrastructure models, reducing reliance on centralized entities and unlocking new models of ownership and governance.

Core Benefits:

- Accessibility
- Scalability
- Redundancy
- Censorship Resistance
- Privacy

Economic Impact:

- New Revenue Streams
- Optimized Utilization
- Disintermediation
- Global Participation
- Sustainable Incentives
- Institutional Interest

The History of DePIN

DePIN emerged from early efforts to connect real-world infrastructure to blockchain networks. While the term gained prominence in 2023-2024, its conceptual roots trace back to pioneering projects like Helium and Filecoin, which proved that individuals could contribute physical resources in exchange for token rewards. These early models validated the concept of permissionless, community-owned infrastructure networks, laying the foundation for a broader DePIN movement.

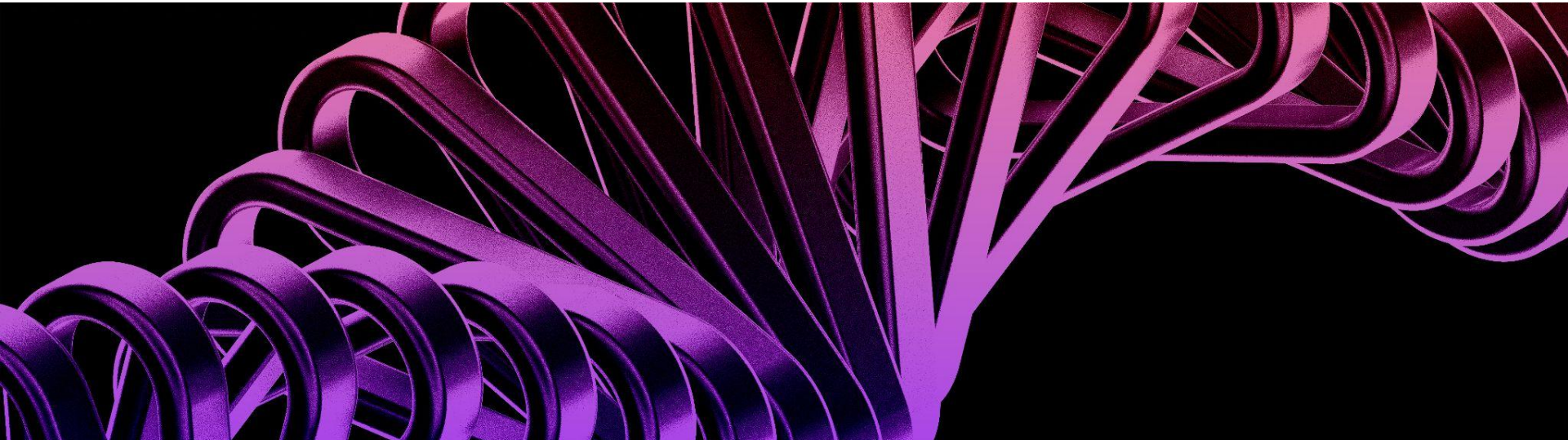
What began as isolated experiments has since matured into a dynamic and rapidly expanding design space spanning multiple sectors. Today, DePIN signals a structural shift away from centralized infrastructure provisioning and toward open, incentivized networks. This transformation is redefining how physical infrastructure is deployed, owned, coordinated, and governed.

THE BLOCK

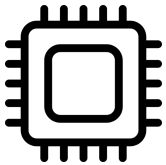
Market Segmentation

2025

SPONSORED BY io.net



Market Segmentation


Computation


Storage


Connectivity


Sensors


Other

Computation Networks

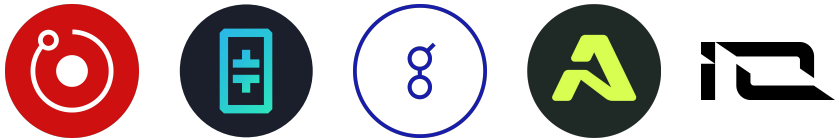
Decentralized computation networks provide open access to distributed CPU and GPU resources, supporting both general-purpose and specialized workloads. By coordinating independent compute providers, these networks minimize censorship, optimize resource utilization, and lower barriers to high-performance computing.

Key Sectors

- General purpose compute
- Specific purpose compute

Physical Infrastructure

- GPUs
- CPUs
- ASICs



Render Network

Render Network connects artists and creators with underutilized GPU power, enabling decentralized rendering of complex 3D, VR, and AI-generated content at scale.

By distributing rendering workloads across a global network of node operators, the platform reduces the time and cost traditionally associated with centralized GPU rendering.

It supports applications in media, design, gaming, and generative AI, while leveraging blockchain infrastructure to coordinate tasks, secure payments, and reward contributors.

Ticker: $RENDER. **Chain**: Solana. **Launched**: April 2020.

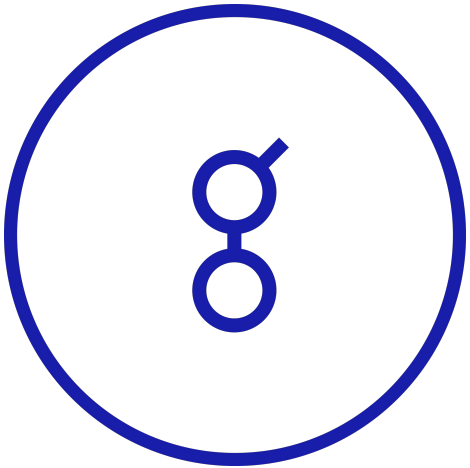
Theta Network

Theta Network combines a decentralized edge infrastructure with a smart contract platform to support media workloads and compute-intensive tasks. It utilizes thousands of globally distributed edge nodes to provide access to distributed compute while on-chain mechanisms handle payments, staking, and task validation.
Designed for use cases spanning live streaming, video processing, and AI development, the network increasingly serves researchers, enterprises, and content platforms looking for scalable alternatives to traditional infrastructure.

Ticker: $THETA, $TFUEL. **Chain**: Theta Chain. **Launched**: March 2019.

Golem

Golem provides a decentralized marketplace for sharing idle compute resources, focused on enabling flexible, permissionless access to CPU-based processing power.
Users can rent out unused hardware to support a wide range of tasks including research, rendering, and microservices.
With support for containerized environments, automated job scheduling, and fine-grained task customization, Golem caters to developers building parallelized applications and long-tail computing workloads on a cost-efficient, open-source infrastructure.



Ticker: $GLM. **Chain**: Ethereum, Polygon. **Launched**: April 2018.

Aethir

Aethir delivers decentralized cloud infrastructure by pooling enterprise-grade GPUs into a distributed global network optimized for AI, gaming, and virtualized compute workloads.
The platform allows resource providers to monetize idle hardware while offering users low-latency access to on-demand compute through containerized deployment.
Focused on scalability and performance, Aethir supports use cases ranging from cloud gaming to LLM training, and partners with Web3, telecom, and AI firms to integrate high-throughput edge GPU resources.

Ticker: $ATH. **Chain**: Arbitrum, Ethereum, Solana. **Launched**: June 2024.

io.net

io.net aggregates underutilized GPUs from independent data centers, miners, and other hardware networks to deliver enterprise-grade compute for AI and machine learning workloads.

Designed to lower the cost and increase the availability of GPU resources, the network enables developers, researchers, and startups to deploy scalable ML models across a decentralized infrastructure.

The platform supports distributed training, inference, and reinforcement learning, with built-in orchestration and fault tolerance to support Python-based AI pipelines.

Ticker: $IO. **Chain**: Solana. **Launched**: June 2024.

Other Notable Computation Projects

Phala

Enabling confidential AI computing, leveraging trusted execution environments for secure, verifiable, and privacy-preserving workloads.

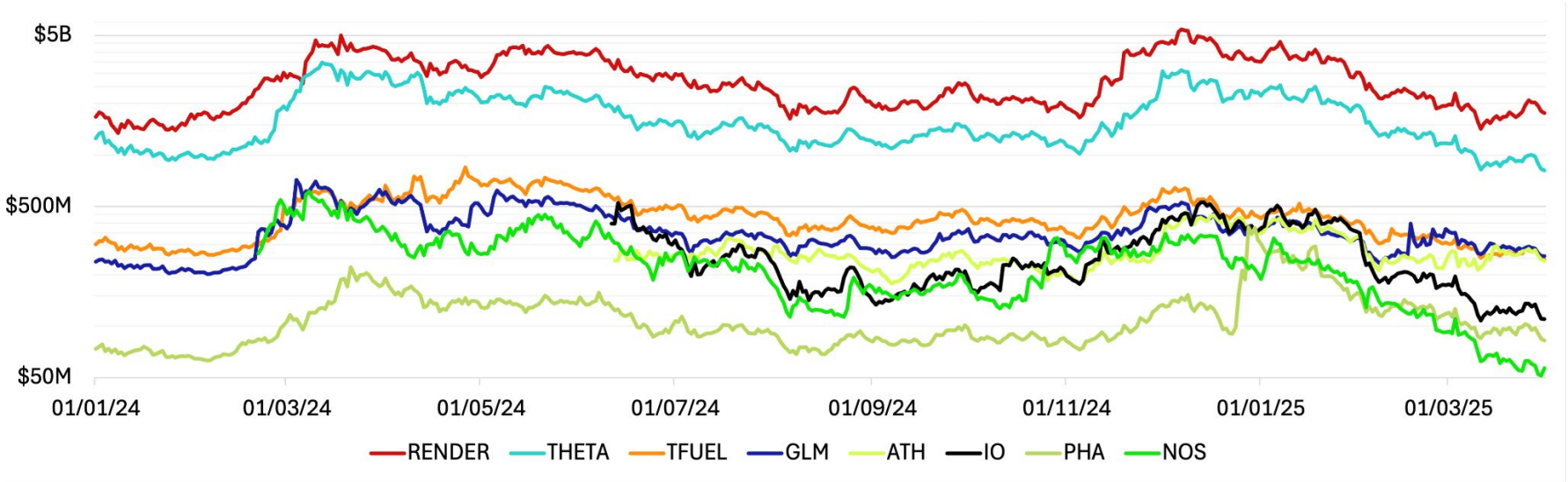
Ticker: $PHA

Nosana

Expanding decentralized GPU access, offering affordable AI inference by connecting businesses with underutilized compute resources.

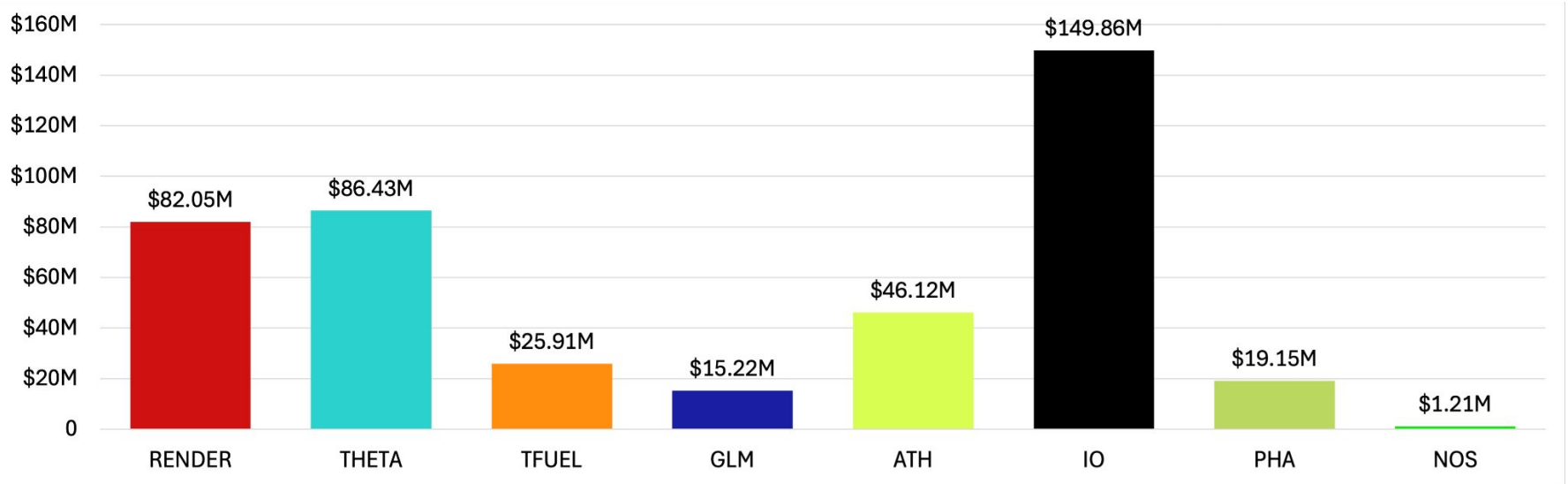
Ticker: $NOS

Market Caps Since 2024



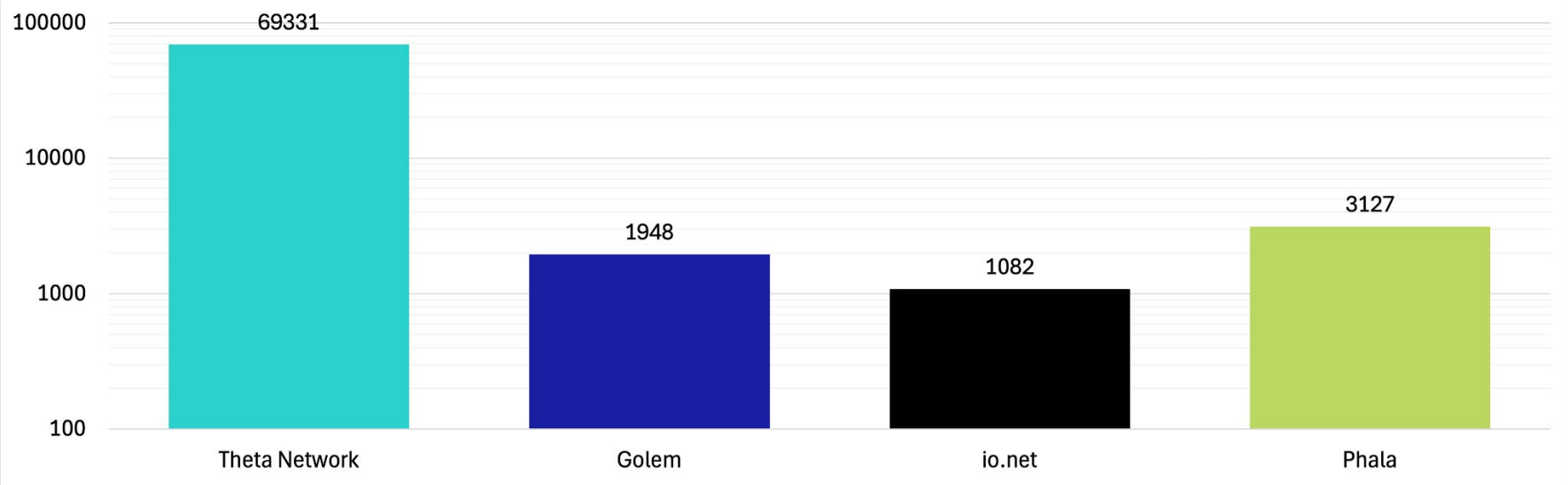
Source: CoinGecko

Average Daily Volume Since Launch



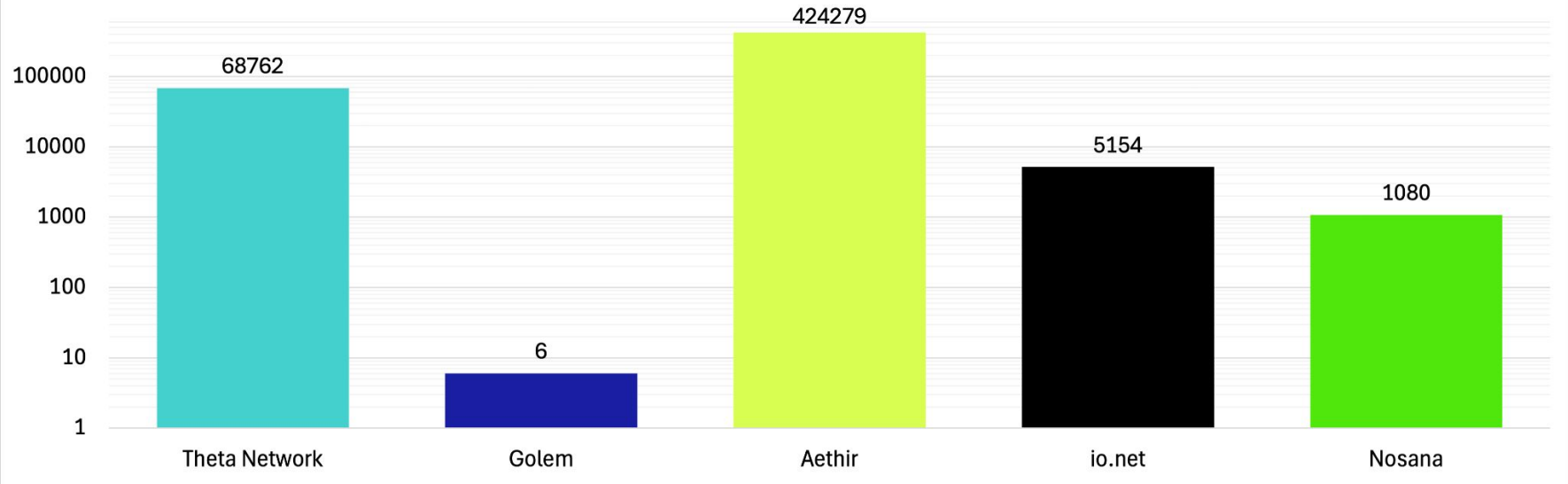
Source: CoinGecko

Total CPU Capacity



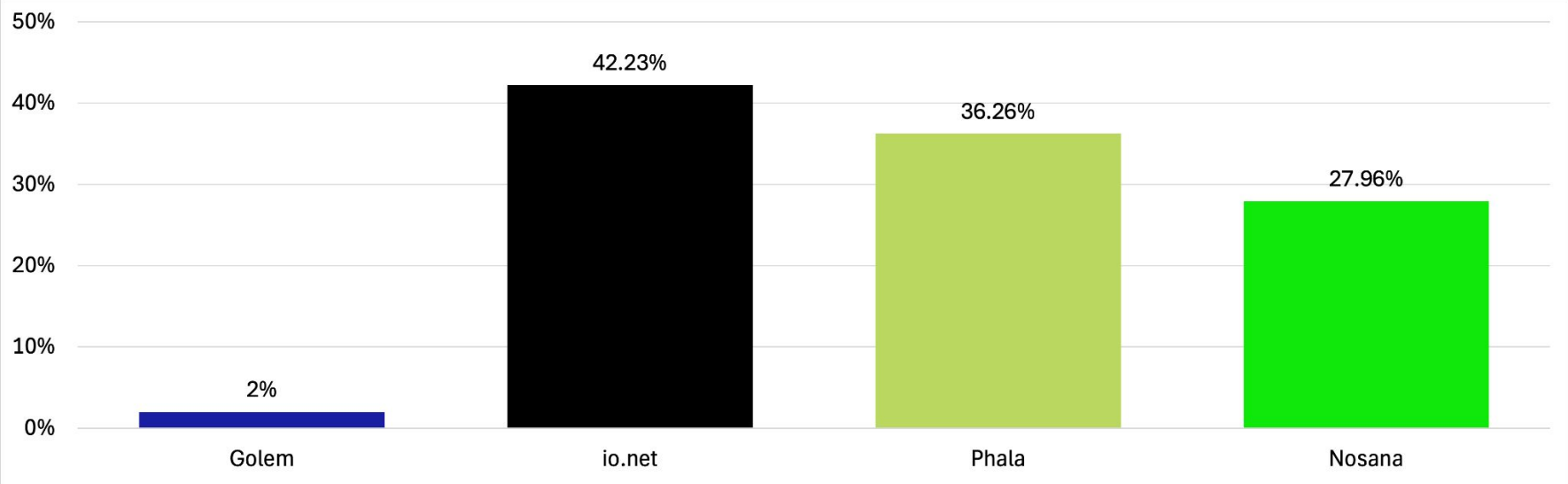
Source: Theta Network, Golem, io.net, Phala

Total GPU Capacity



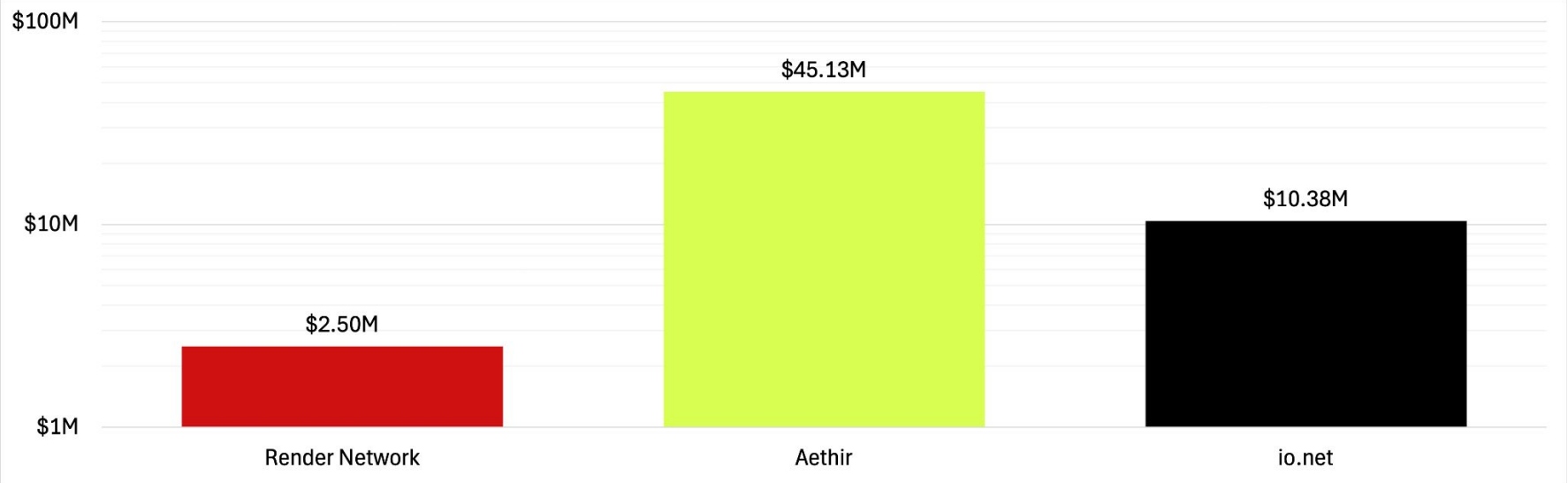
Source: Theta Network, Golem, Aethir, io.net, Nosana

Utilization Rate



Source: Golem, io.net, Phala, Nosana

Total Revenue Since Launch



Source: DePIN.Ninja, io.net

Tech & Design Trends

Edge-Optimized:
Edge nodes reduce latency and enhance responsiveness, bringing compute closer to end users, and enabling applications like video streaming, real-time inference, and immersive gaming to perform more efficiently.

Modular Tooling:
Modular APIs and SDKs streamline the deployment of AI workloads, abstracting backend orchestration, and allowing developers to focus on model logic and scalability without managing infrastructure complexities.

Privacy-Preserving:
Trusted Execution Environments (TEEs) and split-execution architectures protect sensitive data during computation, making them essential for regulated industries and sensitive applications.

Standout Partnerships

- **io.net** partnered with Dell as an official cloud service provider, integrating its GPU network into Dell's infrastructure and signaling institutional confidence in the platform's scalability and reliability.
- **Theta Network** counts numerous academic institutions among its EdgeCloud users, including NTU Singapore, Seoul National University, and Michigan State University, where researchers use edge compute across fields like language processing and video analytics.
- **Phala** joined the NVIDIA Inception Program to advance confidential AI by integrating GPU-based TEEs, enabling verifiable machine learning and secure model inference across decentralized infrastructure.
- **Golem** supported Allchemy's groundbreaking academic study on origin-of-life simulations, running billions of molecular-level reactions in parallel using distributed CPU resources.
- **Aethir** teamed up with the Avalanche Foundation to support the infraBUIDL(AI) program, fast-tracking AI projects into Aethir's $100 million Ecosystem Fund and providing GPU compute grants to help launch next-generation applications on Avalanche.

Case Study: IO Intelligence

IO Intelligence is an AI infrastructure and API platform that seamlessly integrates open-source AI models and intelligent agents with io.net's decentralized GPU clusters. It empowers developers to access pre-trained models and agents via API calls, drastically reducing complexity, cost, and setup time for AI-powered applications.

7 Specialized AI Agents:

- Summarizing
- Sentiment analysis
- Entity recognition
- Moderation
- Classification
- Translation
- Custom tasks

30 Leading Models Including:


DeepSeek


Llama


Mistral


AceMath


Gemma

Case Study: IO Intelligence

IO Intelligence streamlines AI development by providing a flexible API and an intuitive web platform for seamless integration, scalability, and privacy-first AI execution.

- **Split-Execution Architecture**: Keeps privacy-sensitive tasks local, while scaling intensive workloads to IO Cloud.
- **Built-in Vector Database**: Enables real-time AI queries & scalable analytics for faster insights.
- **Developer-Friendly Integration**: Reduces deployment time by abstracting AI infrastructure complexities.
- **Optimized Resource Allocation**: Ensures cost-efficient compute usage, allowing developers to focus on innovation rather than infrastructure.

Case Study: IO Intelligence

IO Intelligence unlocks practical, high-impact applications by bridging powerful models with scalable infrastructure. Its flexibility makes it suitable for both enterprise-scale AI and fast-moving development teams.

- **Smart Finance**: Powers AI-driven portfolio analysis, risk modeling, and market predictions while keeping sensitive financial data secure.
- **Advanced AI Development**: Provides plug-and-play natural language processing, autonomous decision-making, and AI-assisted code generation.
- **Real-Time Applications**: Scales dynamically to ensure low latency and high throughput, supporting both small-scale inference and large-scale training.

Case Study: IO Intelligence

Positioned at the convergence of model access, agent orchestration, and scalable inference, IO Intelligence complements core layers of the decentralized AI ecosystem.

Through its support for modular agents, Python-native execution, and verifiable task routing across io.net's globally distributed GPU clusters, IO Intelligence aligns closely with the growing demand for composable, interoperable, and trust-minimized AI systems.

As Web3-native applications continue to mature, IO Intelligence provides a censorship-resistant, privacy-conscious, and developer-friendly foundation for deploying, coordinating, and scaling intelligent workloads across decentralized infrastructure.

Storage Networks

Decentralized storage networks facilitate distributed data storage and retrieval. By ensuring data sovereignty, enhancing availability, leveraging redundancy, and applying cryptographic security, these networks provide a resilient and censorship-resistant foundation for digital information management.

Key Sectors

- File storage
- P2P sharing
- Databases

Physical Infrastructure

- Hard disks
- Solid-state drives
- Virtual disks

Filecoin

Filecoin is a decentralized storage network that turns cloud storage into an open marketplace, where users pay to store data and storage providers earn rewards for keeping that data available over time.
Built on a foundation of cryptographic proofs and economic incentives, Filecoin enables scalable, verifiable, and cost-efficient storage infrastructure without reliance on centralized entities.
The protocol supports a wide range of use cases, from archiving Web2 datasets to powering decentralized applications, with enterprise partnerships, retrieval markets, and integrations across Web3 ecosystems.

Ticker: $FIL. **Chain**: Filecoin. **Launched**: August 2017.

Arweave

Arweave is a permanent data storage protocol that allows users to pay once to store information forever. Using a novel blockweave architecture and sustainable endowment model, it ensures that data remains immutable and accessible across generations.

Designed for archiving critical records, hosting web apps, and preserving digital history, Arweave supports a robust ecosystem of tools and services, including the permaweb and content publishing platforms.

Its storage layer underpins applications in media, NFT metadata, decentralized identity, and institutional archiving, with growing adoption across public and private sectors.

Ticker: $AR. **Chain**: Arweave. **Launched**: June 2018.

Sia

Sia is a distributed cloud storage platform that connects users with underutilized storage capacity around the world, creating a trustless and private alternative to traditional providers.
Files are encrypted, split into fragments, and redundantly stored across a global network of hosts, ensuring data availability and security.
The network facilitates storage contracts and payments between renters and hosts, and is governed by the non-profit Sia Foundation focused on long-term protocol stewardship.

Ticker: $SC. **Chain**: Sia. **Launched**: June 2015.

Other Notable Storage Projects

Autonomi

Aggregating spare device capacity, forming a decentralized, private, and autonomous data storage and communications layer for a secure internet.

Ticker: $ANT

shdwDrive

Reimagining cloud infrastructure through mobile devices, delivering performant, scalable, and verifiable storage with seamless developer integration.

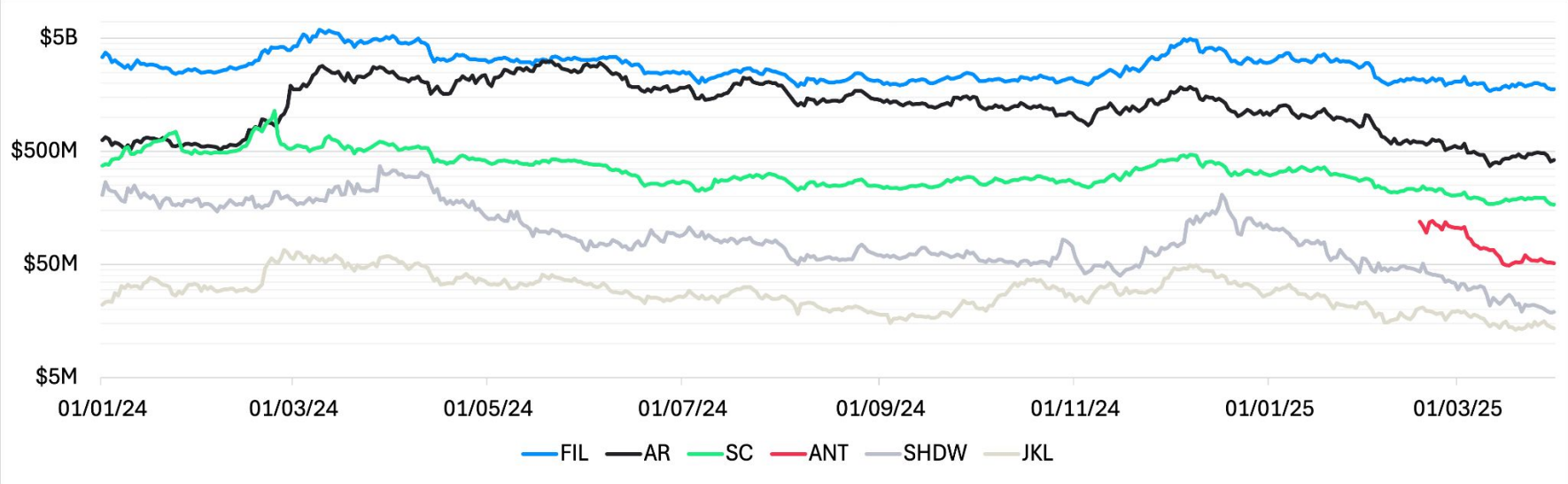
Ticker: $SHDW

Jackal

Enhancing data security and resilience, integrating advanced storage proofs and access control for scalable, self-custodial file management.

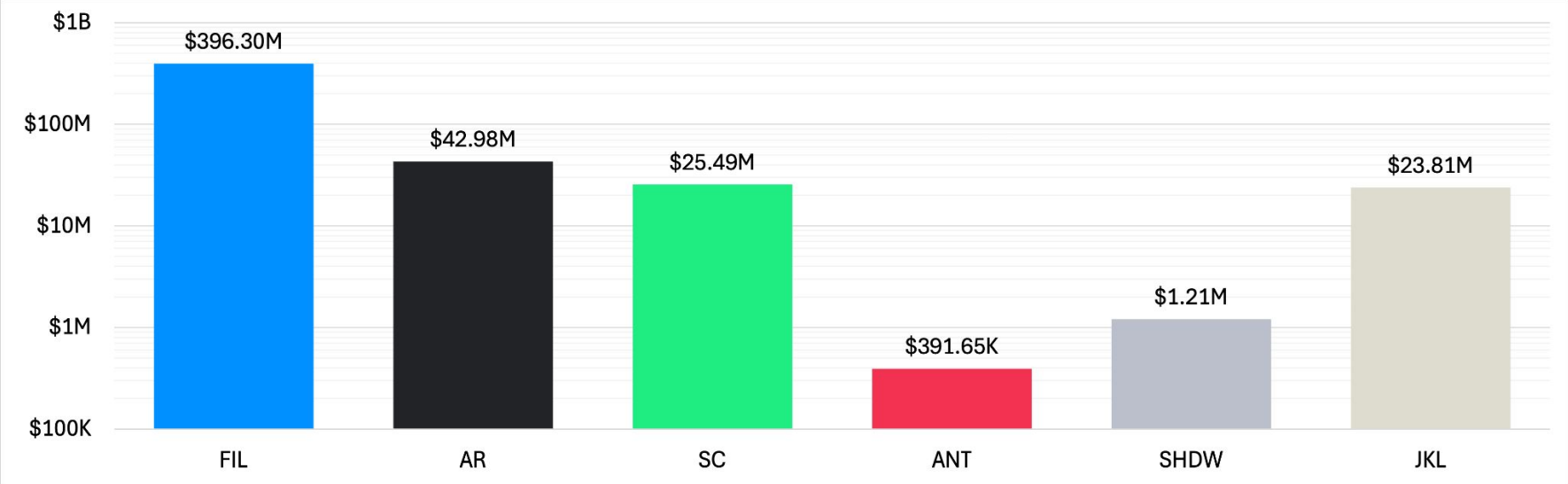
Ticker: $JKL

Market Caps Since 2024



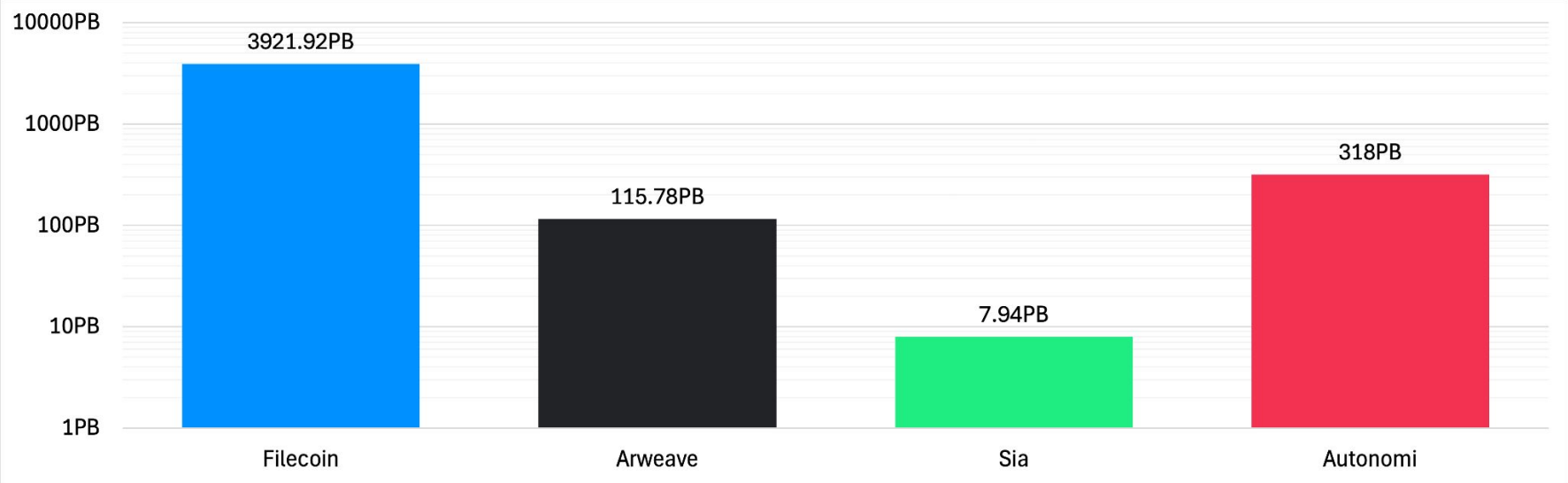
Source: CoinGecko

Average Daily Volume Since Launch



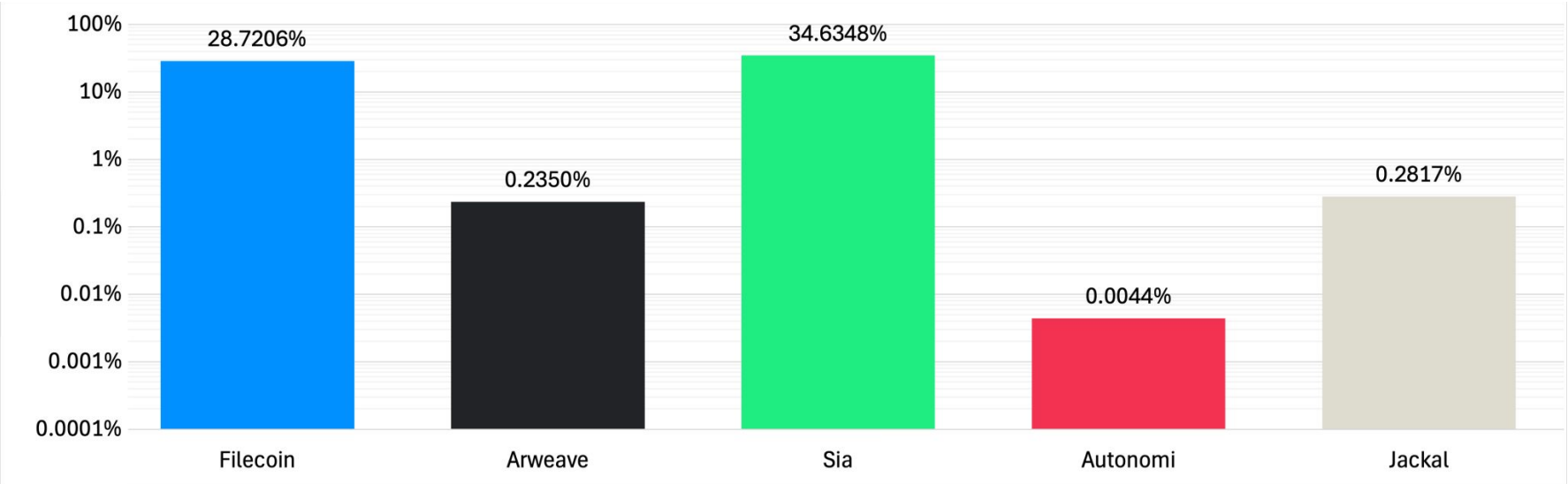
Source: CoinGecko

Storage Capacity



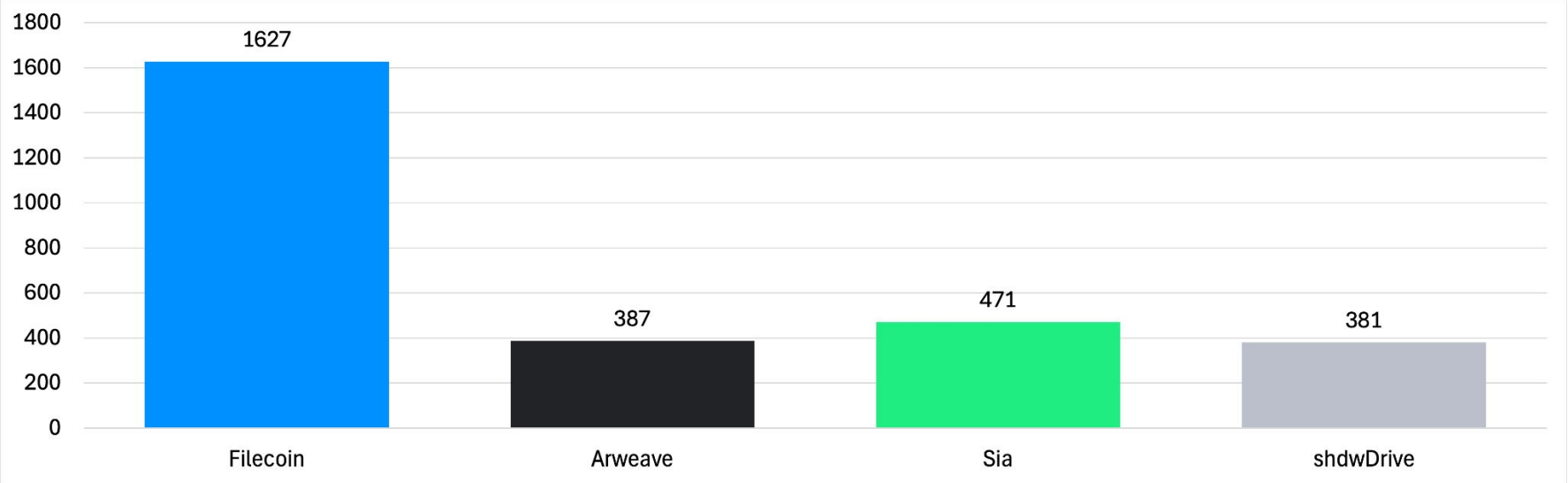
Source: Starboard, ViewBlock, Sia Central, Autonomi

Utilization Rate



Source: Starboard, ViewBlock, Sia Central, Autonomi, Jackal

Active Providers



Source: Starboard, ViewBlock, Sia Central, Dune

Tech & Design Trends

One-Time Payments:
Endowment-backed models enable data to be stored permanently with a single upfront fee, eliminating recurring costs and shifting the economic model of cloud storage.

Encryption by Default:
Client-side encryption ensures that storage providers never have access to unencrypted user data, making them ideal for privacy-critical applications.

Modular Gateways:
Modular gateway infrastructure that separates storage from retrieval enhances scalability and decentralization while supporting specialized functions like serving and indexing.

Standout Partnerships

- **Filecoin** partnered with SingularityNET to integrate decentralized AI infrastructure, forming a long-term collaboration focused on ethical AI, secure data provenance, and scalable metadata storage, underpinning the infrastructure behind the Artificial Superintelligence Alliance and AI Knowledge Graphs.
- **Jackal** collaborated with Landslide Network to deliver decentralized, on-chain storage to Avalanche, enabling developers to build scalable, storage-centric dApps with self-sovereign data control, flexible retention options, and cross-chain accessibility.
- **Autonomi** partnered with FYEO to integrate quantum-resistant encryption into decentralized identity infrastructure via KryptPass, securing credential storage and advancing privacy-preserving standards across Web3 authentication.

Case Study: AR.IO

AR.IO is a decentralized network designed to bridge the gap between permanent storage and real-time access, ensuring Arweave data can be efficiently indexed, queried, and retrieved. By incentivizing the expansion of independent Arweave gateways, AR.IO enhances the permaweb's decentralization, service resilience, and fault-tolerant data retrieval.

The Pillars of the Permaweb:

- Seamless interoperability between decentralized and traditional systems.
- Built-in resilience through distributed access.
- True data sovereignty without reliance on centralized intermediaries.
- Guaranteed transparency with verifiable, tamper-proof data.
- Enduring permanence ensuring immutable access for generations to come.

Case Study: AR.IO

The permaweb provides a way of ensuring information remains accessible indefinitely, thereby preserving historical records and preventing data loss through censorship, platform changes, or server deletions. However, the permaweb cannot thrive if it relies on infrastructure that is centralized, costly, and cumbersome.

How AR.IO Helps:

- Reduces reliance on the arweave.net gateway, fostering a decentralized and resilient network.
- Enhances scalability and accessibility by distributing data service across independent gateways.
- Empowers developers with high-performance, immutable data to build next-gen applications.

Case Study: AR.IO

Key Components of AR.IO's Infrastructure:

- Modular gateways support custom indexing, caching, and serving, adaptable to any deployment.
- Arweave Name System (ArNS) offers human-readable domains for seamless access to permanent data.
- Decentralized network architecture ensures fault tolerance, censorship resistance, and high-speed services.

How AR.IO Gateways Interact with Arweave:

- Gateways operate above the base storage layer, providing fast, structured data access.
- Unlike Arweave's mining nodes, which secure the network and replicate data, gateways focus on serving data and indexing transactions for large-scale querying.

Benefits of Operating an AR.IO Gateway:

- Flexible deployments for individual developers and enterprises.
- Earn $ARIO rewards for reliable participation.
- Built-in analytics for tracking performance and network health.

Case Study: AR.IO

As adoption of the permaweb grows, AR.IO ensures it can meet the performance, reliability, and accessibility demands of real-world applications without compromise.

- Censorship resistance even in the face of political uncertainties and deplatforming.
- Data integrity and availability mitigates link rot and ensures information persistence for future generations.
- Significantly reduced latency, improved service times, and viable permanent storage for high-demand applications.

>66%

Of links to sites in the last 9 years are dead

~64%

Of internet users are concerned about government censorship

~58%

Of internet users live in countries where bloggers face jail for political, social, or religious content

Source: Ahrefs, GO-Globe

Connectivity Networks

Decentralized connectivity networks provide open access to internet and telecommunications infrastructure. By expanding accessibility, enhancing service resilience, and offering an alternative to traditional monopolized service providers, these networks benefit both individuals and IoT applications.

Key Sectors

- Cellular
- Wi-Fi
- LoRaWAN

Physical Infrastructure

- Hotspot gateways
- Signal amplifiers/boosters
- Antennas
- Cavity filters

Helium

Helium is a wireless network providing LoRaWAN IoT and 5G mobile connectivity through a hybrid architecture that combines user-operated hotspots with traditional infrastructure, enabling efficient scaling and resilience.
In addition to user-driven coverage, Helium offers carrier offload capabilities, allowing major telecom providers to route data through its infrastructure.
This enables mobile carriers to divert traffic from overloaded infrastructure to Helium hotspots, improving network efficiency and extending coverage into high-demand or underserved areas.

Ticker: $HNT ($MOBILE, $IOT deprecated). **Chain**: Solana. **Launched**: July 2019.

World Mobile

World Mobile provides decentralized mobile connectivity by deploying user-operated telecom nodes that convert satellite and fiber backhaul into localized cellular service.
Its mission is to deliver affordable, resilient internet access to underserved and disaster-affected regions, while empowering individuals to participate economically by operating network nodes.
Designed for flexibility, the system supports scalable deployments across varied geographies and infrastructure conditions.

Ticker: $WMTX. **Chain**: World Mobile, Base, Ethereum, Cardano, BNB. **Launched**: May 2022.

Roam

Roam is a global Wi-Fi network that unifies public hotspots and supports OpenRoaming standards to deliver seamless internet connectivity.
The platform enables automatic and secure access across millions of Wi-Fi locations, using decentralized identifiers and verifiable credentials for privacy-preserving authentication.
With lightweight mobile integration and a built-in rewards system, Roam offers a scalable web3-native solution for app developers and everyday users alike.

Ticker: $ROAM. **Chain**: Solana. **Launched**: May 2023.

Other Notable Connectivity Projects

Nodle

Utilizing smartphones as network nodes, creating a decentralized infrastructure for IoT connectivity and data transmission.

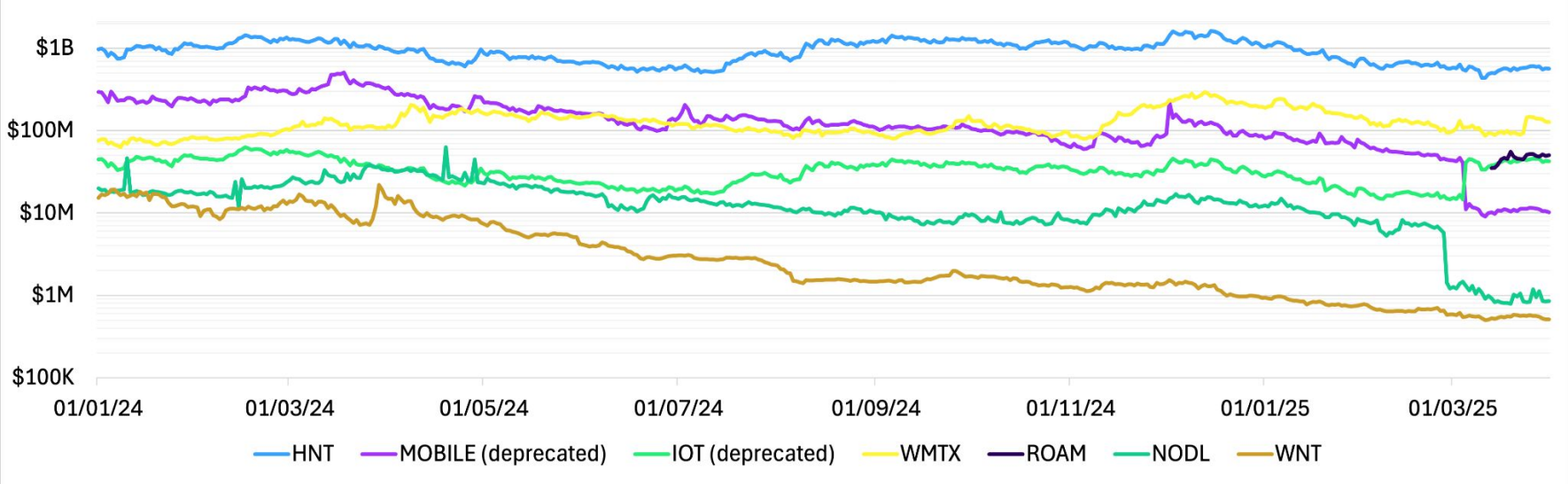
Ticker: $NODL

Wicrypt

Enabling decentralized internet sharing through user-operated Wi-Fi hotspots, reducing mobile internet costs and expanding global connectivity.

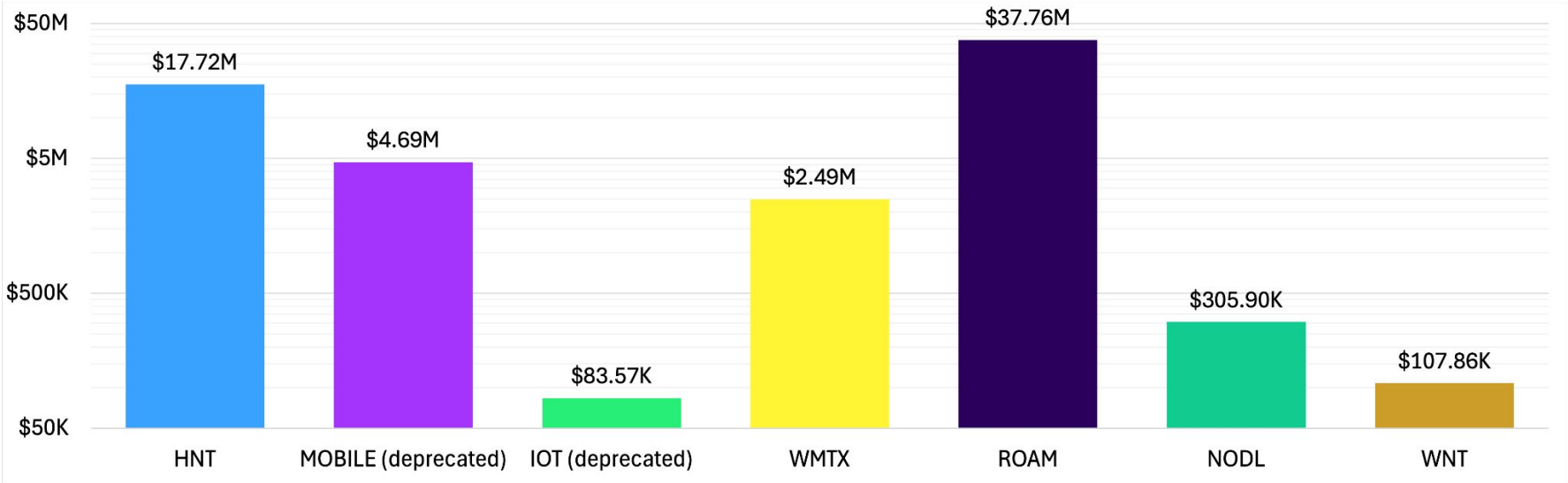
Ticker: $WNT

Market Caps Since 2024



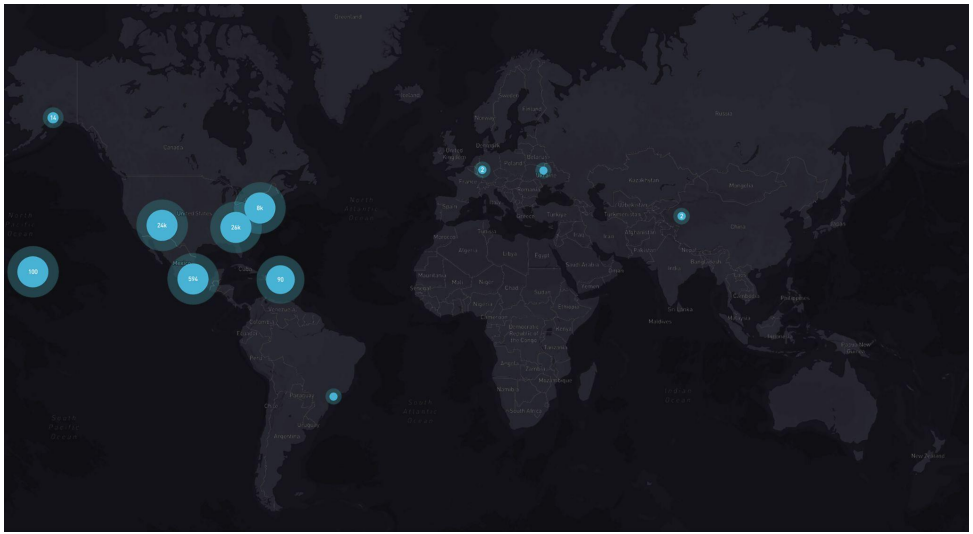
Source: CoinGecko

Average Daily Volume Since Launch



Source: CoinGecko

Helium Mobile Dashboard



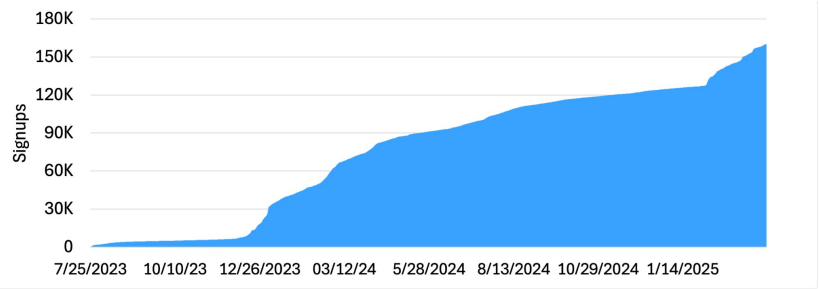
63,806

Hotspots Deployed

1.84PB

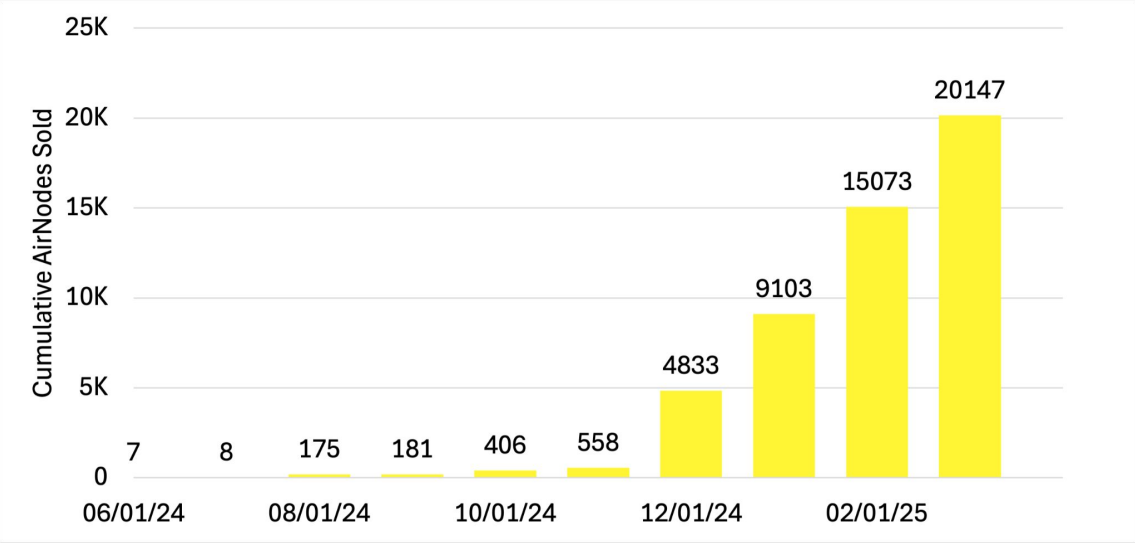
Cumulative Throughput

Since 2025/01/01



Source: Helium

World Mobile Dashboard



$5,042,497

Total Revenue

1,694,802

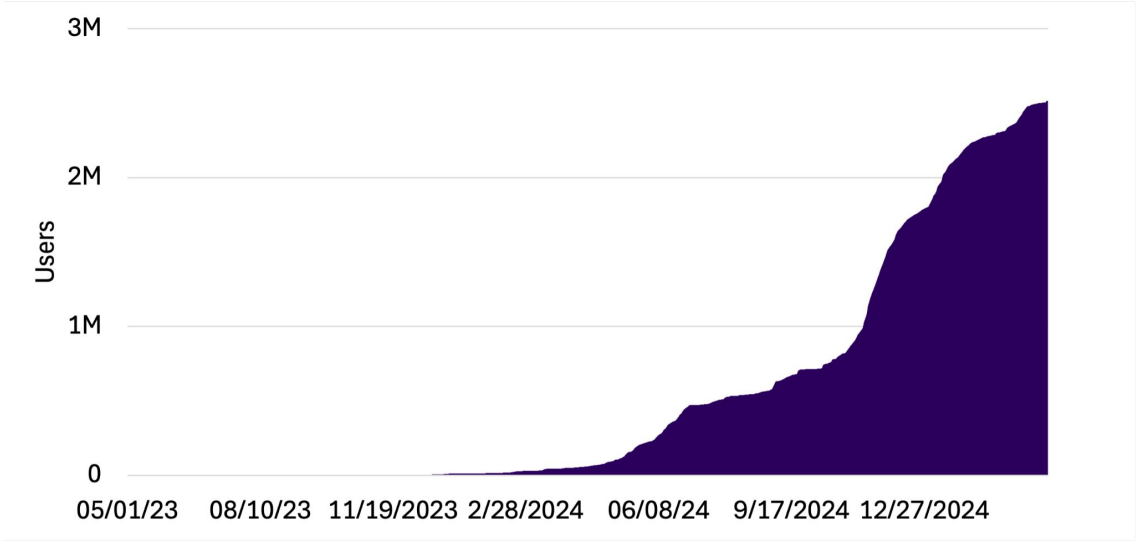
Total Users

40.18PB

Throughput Since 2025/01/01

Source: World Mobile

Roam Dashboard



3,060,625
Total Wi-Fi Nodes

255,669,499
Total Check-Ins

5,096,811,717
Total Points Issued

Source: Roam

Tech & Design Trends

Spectrum Strategy:
Initial deployments leveraging Citizens Broadband Radio Service (CBRS) for private 5G are increasingly giving way to Wi-Fi-centric architectures, driven by lower hardware costs, broader compatibility, and reduced regulatory friction.

Interoperable Identity:
Decentralized identifiers and verifiable credentials provide secure, privacy-preserving authentication across domains, enabling seamless access to Wi-Fi or mobile services without traditional sign-in hurdles.

Standout Partnerships

- **Helium** partnered with AT&T to integrate its Wi-Fi hotspot network into AT&T's Passpoint system, enabling seamless mobile traffic offload, automatic roaming, and expanded coverage, while also boosting rewards for hotspot operators.
- **World Mobile** launched a $25 million Grant Program in collaboration with global accelerator Tenity to catalyze DePIN innovation, supporting startups building decentralized communications, on-chain governance, and identity infrastructure.
- **Roam** joined the Wireless Broadband Alliance (WBA) to scale its OpenRoaming network to over 3 million global hotspots, becoming the WBA's first blockchain-native identity provider for seamless, secure Wi-Fi access.

Case Study: World Mobile

When Hurricane Helene devastated North Carolina in September 2024, it wiped out cell service, power, and internet access across vast areas. World Mobile responded by rapidly deploying AirNodes to reconnect disaster-stricken communities.

Key Takeaways:

- Within days of the disaster, World Mobile airlifted AirNodes into remote areas via Black Hawk helicopter.
- AirNodes transformed Starlink backhaul into localized cell service with a one-mile radius.
- Delivered mobile access for emergency calls, critical information, and family communication, demonstrating DePIN's real-world impact.

Case Study: World Mobile

World Mobile's AirNodes are plug-and-play telecom nodes that provide cellular and data connectivity wherever power and satellite backhaul are available. Designed for speed and simplicity, they enable rapid deployment in both disaster zones and underserved areas, extending mobile coverage far beyond the reach of traditional infrastructure.

AirNode Benefits:

- Portable: Compact enough to fit in a suitcase and deployable in under 15 minutes, allowing for agile response in crisis situations.
- Self-Sustaining: Runs on local power and leverages satellite connectivity, requiring no pre-existing telecom infrastructure.
- Revenue-Generating: AirNode operators can earn up to $1,000/month, making it viable for both humanitarian and commercial deployments.

Case Study: World Mobile

World Mobile's response to Hurricane Helene was powered by community coordination and interoperability with traditional and Web3-native partners:

World Mobile
AirNode
Deployment

Starlink
Satellite
Backhaul

Sinch
eSIM &
Numbering

Local NGOs
On-the-Ground
Distribution

Case Study: World Mobile

World Mobile's Hurricane Helene mission showcases how connectivity DePINs can do more than disrupt traditional telecom. By combining portable AirNodes, satellite backhaul, and Web3 incentives, the mission redefined what resilient, people-powered infrastructure can achieve in crisis zones.

Broader Impact:

- Disaster Resilience: Operates independently of centralized towers and fiber
- Equity in Access: Reaches communities where traditional infrastructure is unavailable or disrupted.
- Economic Participation: Local AirNode operators earn rewards while serving their community.

Sensor Networks

Decentralized sensor networks enable the collection, validation, and sharing of real-time environmental and operational data. By distributing data acquisition across independent participants, these networks improve reliability, transparency, and scalability across various industries.

Key Sectors

- Mapping & geopositioning
- Mobility telemetry
- Health monitoring

Physical Infrastructure

- Cameras
- GPS devices & GNSS reference stations
- Vehicle telemetry systems
- Weather stations
- Wearables

Hivemapper

Hivemapper is a decentralized mapping network that transforms real-world driving into a global data asset.
By equipping contributors with dashcams and rewarding them with tokens, Hivemapper captures real-time, street-level imagery that keeps digital maps fresh, detailed, and accurate.
Unlike traditional mapping services that rely on expensive fleets and infrequent updates, Hivemapper's approach enables scalable and cost-efficient coverage, especially in underserved regions.
Hivemapper's data is used by major players in logistics, ride-sharing, and navigation to improve routing, road safety, and infrastructure planning.

Ticker: $HONEY. **Chain**: Solana. **Launched**: November 2022.

Geodnet

Geodnet operates a decentralized network of Global Navigation Satellite System base stations that deliver real-time, centimeter-accurate positioning data.
By leveraging rooftops and remote installations globally, the network provides the correction signals necessary for high-precision use cases, including autonomous vehicles, agricultural machinery, construction equipment, and surveying tools.
Geodnet improves on traditional positioning systems by offering affordable, real-time kinematic precision without relying on expensive proprietary infrastructure.

Ticker: $GEOD. **Chain**: Polygon, Solana. **Launched**: June 2022.

DIMO

DIMO turns cars into connected data assets by enabling drivers to access, share, and monetize their vehicle's telemetry.
With a plug-and-play hardware device and mobile app, DIMO collects real-time data such as location, speed, battery health, diagnostics, and more, empowering a growing ecosystem of mobility applications.
The network supports use cases in insurance, maintenance, ride-sharing, and smart city infrastructure, while giving users full control over their data and earning opportunities through participation.

Ticker: $DIMO. **Chain**: Polygon. **Launched**: December 2021.

WeatherXM

WeatherXM is a community-powered weather network that deploys distributed weather stations to collect hyperlocal atmospheric data.
Designed to overcome the sparse coverage and proprietary limitations of legacy weather services, WeatherXM provides open, verifiable datasets for forecasting, agriculture, climate research, and decentralized applications.
Contributors earn token rewards based on data quality and station uptime, while developers and enterprises access real-time weather feeds via a permissionless API.

Ticker: $WXM. **Chain**: Arbitrum, Ethereum. **Launched**: May 2024.

Other Notable Sensor Projects

Silencio

Crowdsourcing urban noise data through smartphones, creating a real-time sound pollution map for public health, urban planning, and business insights.

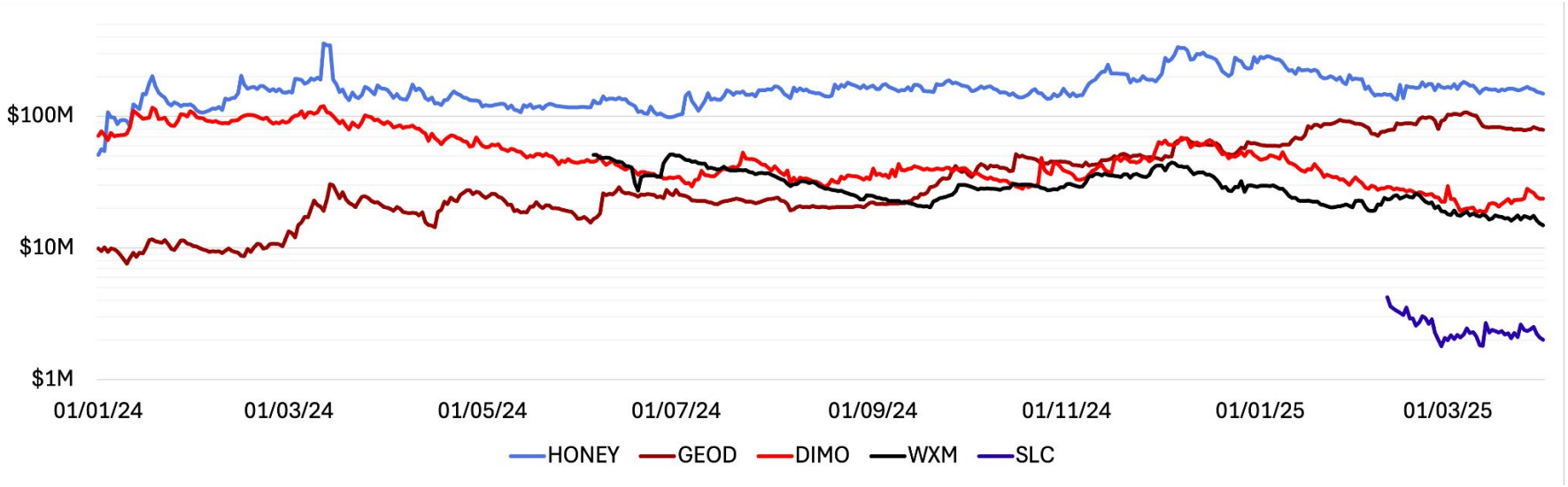
Ticker: $SLC

Pulse

Monitoring fitness, sleep, and nutrition through a wearable device, delivering personalized health insights and incentivizing users to maintain healthy habits.

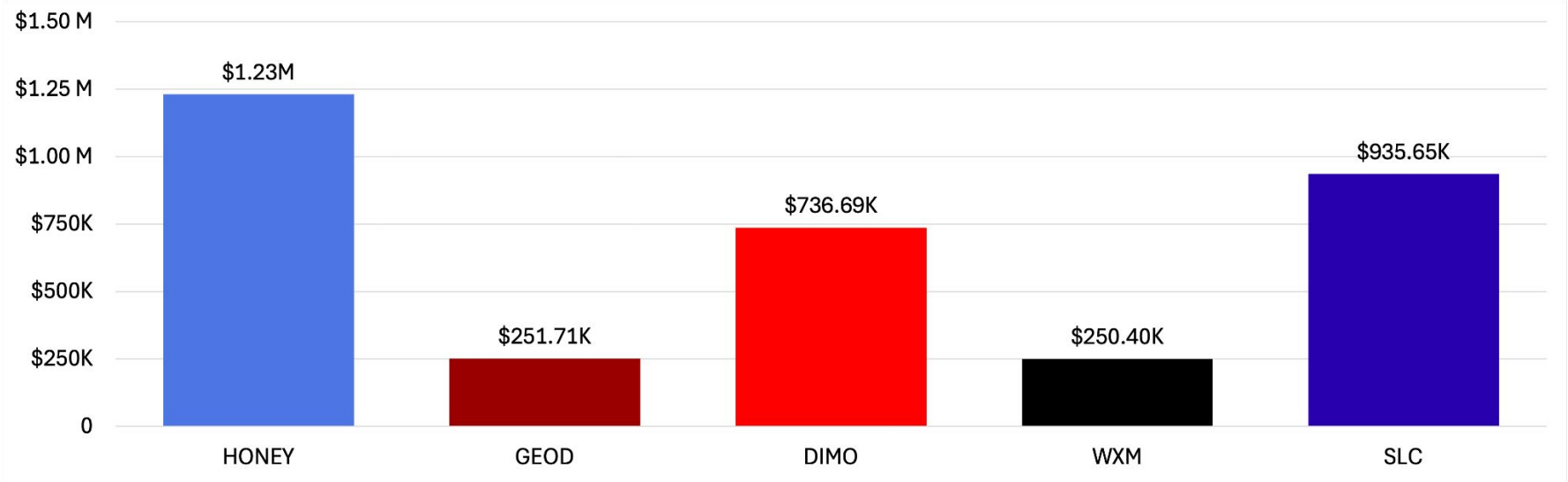
Ticker: Pre-TGE

Market Caps Since 2024



Source: CoinGecko

Average Daily Volume Since Launch



Source: CoinGecko

Hivemapper Dashboard

Global Coverage	**31%**
Unique KM Mapped	**18.87M**
Total KM Mapped	**476.26M**

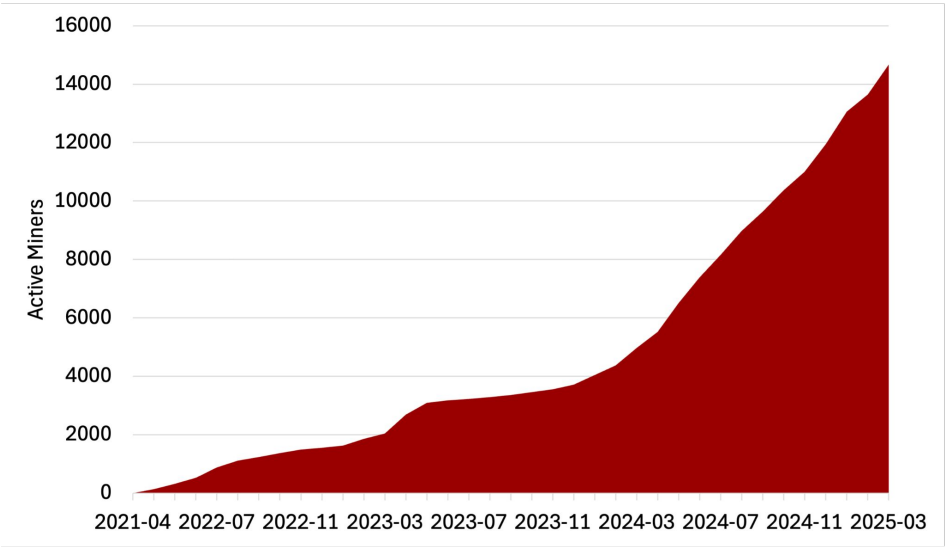
Region Coverage

27%	20%	23%	37%
USA	Canada	Europe	East Asia

Source: Bee Maps

Geodnet Dashboard

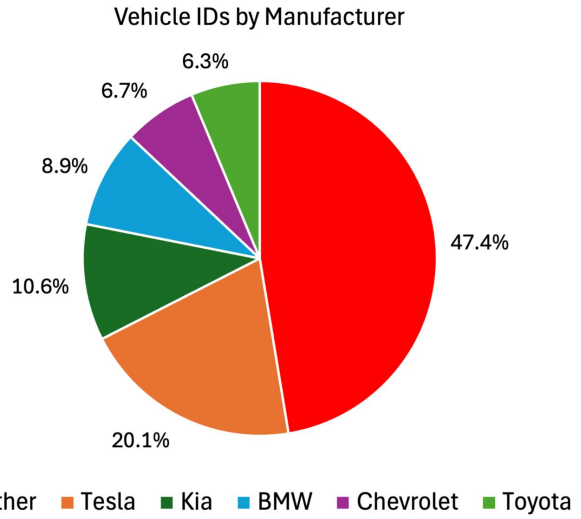
Miners	**14,668**
Covered Countries	**142**
Covered Cities	**4,377**
$GEOD Issued To Miners	**137,367,284**
$GEOD Burned	**12,050,432**
Burned $GEOD Value	**$1,901,007**



Source: Dune

DIMO Dashboard

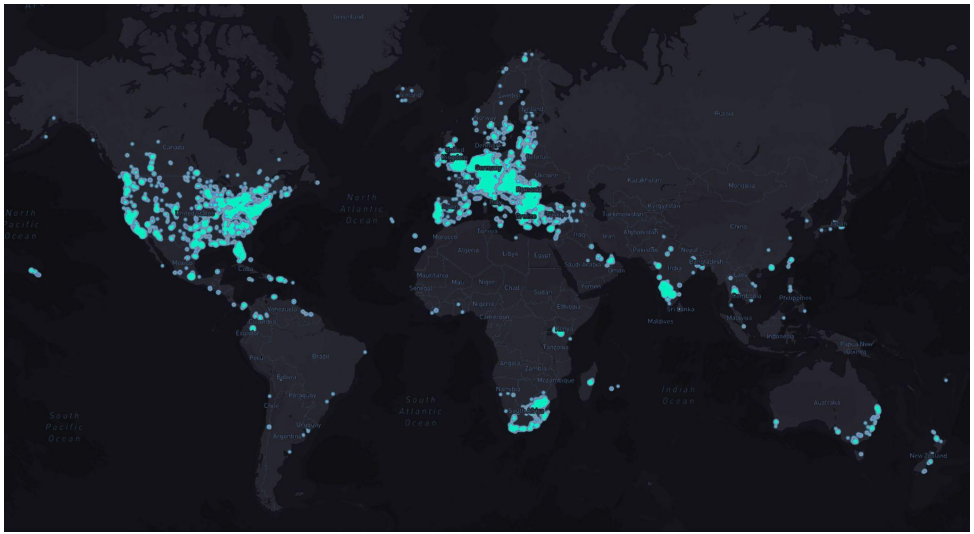
Vehicle IDs	**173,272**
Vehicle ID Holders	**80,019**
Developer Licenses	**278**
Total Revenue	**$347,155**



Source: Dune

WeatherXM Dashboard

Active Weather Stations	**7,561**
Weather Station Days	**3.8M**
Allocated $WXM Rewards	**6,381,518**
Claimed $WXM Rewards	**3,751,828**
Unique User Claims	**3,539**



Source: WeatherXM, Dune

Tech & Design Trends

Smartphone Native: Smartphones and wearables minimize hardware costs and enable global scalability through app-based or embedded sensor deployments.

Modular Devices: Third-party or open-hardware sensors improve accessibility, promote decentralization, and enable broader community participation through hardware-agnostic protocols.

Data Bounties: Tools that allow users or data consumers to request specific sensor data align contributor incentives with localized demand.

On-Device Validation: Mechanisms like signal quality checks and data scoring ensure integrity, optimize rewards, and filter out low-value submissions before transmission.

Standout Partnerships

- **Hivemapper** partnered with HERE Technologies to power path-based and point-based map maintenance systems with standardized street-level imagery for applications like speed limit compliance, bridge clearance validation, and real-time navigation updates.
- **WeatherXM** teamed up with Truemarkets to launch decentralized, verifiable weather prediction markets, using hyperlocal, quality-scored data as an on-chain oracle for resolving market outcomes, enabling fair and transparent hedging, forecasting, and risk modeling based on real-time readings.
- **Geodnet** partnered with DroneDeploy to provide integrated RTK access for drone-based surveying and documentation across construction, mining, and utilities, addressing a key precision bottleneck in enterprise drone adoption while expanding station coverage through on-demand deployments.

Case Study: Hivemapper

Hivemapper creates real-time, high-quality maps using community-contributed road imagery and rewards contributors with crypto incentives.

Key Partnerships:

- HERE Technologies
- Mapbox
- TomTom
- Trimble

Core Differentiators:

- Incentivized contribution model
- Specialized hardware
- Unique data points
- Community empowerment

Market Reach:

- Over 200 million vehicles utilizing maps updated with Hivemapper data
- Global coverage across multiple industries and use cases

Case Study: Hivemapper

Key Use Cases:

- Enterprise Map Updates: Major mapmakers integrate Hivemapper data to maintain accurate and up-to-date maps.
- Ride-Sharing Optimization: Improves routing and navigation for transportation services.
- Logistics Enhancement: Streamlines route planning and delivery precision for supply chain and logistics providers.
- Autonomous Vehicle Development: Provides critical real-time data for self-driving systems.
- Underserved Community Development: Supports economic development in regions lacking adequate mapping coverage and infrastructure.

Case Study: Hivemapper

In Spring 2024, Hivemapper began its partnership with Corinth, Mississippi's Economic Development Division to address critical gaps in local road infrastructure mapping

Challenge:

- Outdated map data hindering economic development
- Limited resources for conventional solutions
- Need for cost-effective, continuous updates

Solution:

- Local deployment of Hivemapper dashcams
- Community-led data collection across all roads
- Ongoing updates via incentivized contributions

Results:

- Complete, up-to-date mapping of the region
- Improved planning for local government
- New income opportunities for contributors
- Scalable model for sustained map maintenance

Case Study: Hivemapper

Hivemapper is redefining global mapping by shifting control to communities and evolving to serve a broader market.

Why It Matters:

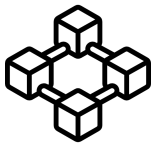
- Democratized Map Ownership: Empowers local contributors and underserved regions
- Sustainable Model: Token incentives ensure ongoing participation and map freshness
- Proven Value: Integrated by major partners including HERE, TomTom, and Trimble
- Scalable Economics: Designed to reach deflationary equilibrium as adoption grows

Looking Ahead:

- Tiered Hardware Options: From premium dashcams to accessible devices for emerging markets
- Smartphone Integration: Unlocking mapping via existing global devices
- Enterprise Expansion: Tailored data products for industry-specific needs

Other Networks

Other DePINs operate in emerging, niche, or cross-disciplinary domains, addressing unique infrastructure needs that do not fit conventional classifications. By leveraging distributed architectures and cryptographic incentives, these networks optimize resource distribution, enhance security, and foster open-access alternatives to traditionally centralized infrastructure, extending their impact across industries.



Smart Contract & Ledger Platforms

Web3 Cloud

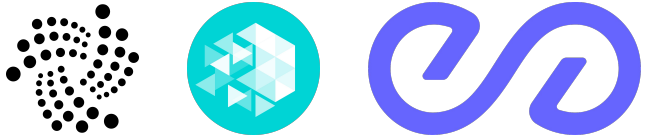
Artificial Intelligence

Indexing & Oracles

Energy

Smart Contract & Ledger Platforms

Smart contract & ledger platforms provide the purpose-built foundational infrastructure for DePINs, enabling secure transactions, asset ownership, and programmable automation. By leveraging diverse distributed ledger implementations, these platforms optimize scalability, interoperability, and efficiency for DePIN applications. As the backbone of decentralized coordination, they facilitate trustless data exchange, on-chain resource management, and seamless integration between digital and physical networks.



Standout Smart Contract & Ledger Platforms

IOTA

Powering scalable, feeless transactions with its Tangle DLT, optimizing data and asset exchange for real-world applications.

Ticker: $IOTA

IoTeX

Delivering a modular infrastructure for DePINs, enabling seamless integration between blockchain, IoT, and decentralized applications.

Ticker: $IOTX

peaq

Providing performant infrastructure for DePINs, offering modular smart contract functionality, cross-chain interoperability, and scalable processing.

Ticker: $PEAQ

Web3 Cloud

Web3 cloud networks provide a comprehensive suite of decentralized cloud services, integrating storage, compute, networking, and streaming into a unified infrastructure. Unlike computation or storage focused DePINs, Web3 cloud platforms offer a generalized architecture designed to support all core services equally. This integrated approach enables flexible, scalable support for diverse workloads, from AI training and data hosting to media delivery and edge computing, driving efficiency and resilience across DePIN ecosystems.

Standout Web3 Cloud Projects

Akash

Delivering a permissionless cloud platform for compute, storage, and memory, supporting containerized workloads across AI, web services, and APIs.

Ticker: $AKT

AIOZ

Providing scalable infrastructure for storage, streaming, and AI computation, optimizing content delivery through a peer-to-peer edge network.

Ticker: $AIOZ

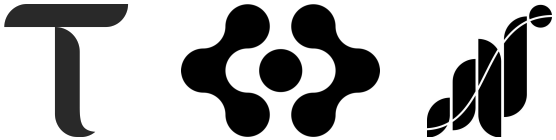
Flux

Powering a full-stack compute and storage ecosystem with high-performance infrastructure for Web3 applications and services.

Ticker: $FLUX

Artificial Intelligence

Artificial Intelligence DePINs enable the distributed provisioning of computing power, model training, and inference services, creating open-access AI infrastructure. As demand for AI computation grows, these networks provide scalable and cost-efficient alternatives, unlocking new opportunities for AI accessibility and innovation.



Standout AI Projects

Bittensor

Enabling a marketplace for digital commodities, where subnets coordinate training, inference, and other computational AI tasks through incentive-driven collaboration

Ticker: $TAO

Artificial Superintelligence Alliance

Uniting Fetch.ai, SingularityNET, Ocean Protocol, and CUDOS to advance decentralized AI through open-access AGI, compute, and data marketplaces.

Ticker: $FET

Grass

Monetizing unused internet bandwidth, enabling users to contribute to AI-driven data aggregation while earning rewards for network participation.

Ticker: $GRASS

Indexing & Oracles

Decentralized indexing and oracle networks facilitate seamless access to both on-chain and real-world data. By indexing blockchain data and verifying external inputs, these networks provide structured, queryable datasets and trusted information sources for smart contracts and DePIN applications. As the demand for accurate, real-time data grows, indexing and oracle networks enhance the scalability, usability, and interoperability of decentralized infrastructure, bridging the gap between digital and physical systems.

Standout Indexing & Oracle Projects

The Graph

Powering decentralized data indexing and querying, enabling efficient access to blockchain data for dApps through a scalable subgraph framework.

Ticker: $GRT

XYO

Bridging the physical and digital worlds by providing a decentralized network for data verification and real-world data aggregation.

Ticker: $XYO

Energy

Decentralized energy networks facilitate peer-to-peer power generation, storage, and distribution, integrating diverse energy sources to enhance sustainability and grid adaptability. By leveraging decentralized coordination and smart incentives, these networks foster efficient, resilient, and community-driven energy systems.

However, this sector remains in its early stages, with most projects still in beta or pre-TGE phases. While the projects highlighted here are pioneering decentralized energy solutions, their inclusion is based on innovation, vision, and potential impact rather than established market presence. As the sector matures, on-chain metrics and adoption data will provide a clearer picture of leading energy DePINs.

Standout Energy Projects

Starpower

Aggregating and optimizing distributed devices to enhance grid stability, improve energy efficiency, and enable virtual power plant applications.

Ticker: $STAR

Daylight

Transforming homes into energy producers by integrating systems that manage generation and distribution with seamless upgrades and real-time monitoring.

Ticker: Pre-TGE

Fuse

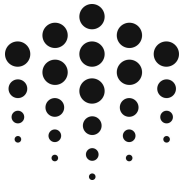
Operating and expanding renewable energy sites, reinvesting profits into wind and solar projects to provide cheaper, greener, and more accessible electricity.

Ticker: Pre-TGE

Case Study: Artificial Superintelligence Alliance

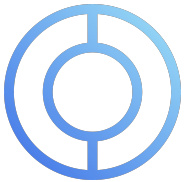
Formed in June 2024, the Artificial Superintelligence Alliance unified four complementary infrastructure protocols into a vertically integrated DePIN ecosystem spanning agents, data, intelligence, and computation.

Fetch.ai
AI Agents & Automation



Ocean Protocol
Data Marketplace

SingularityNET
AGI Development



CUDOS
Compute Infrastructure

Case Study: Artificial Superintelligence Alliance

The ASI Alliance exemplifies how composability drives exponential utility across DePINs. By unifying tokenomics, pooling infrastructure, and integrating services, the alliance competes with centralized cloud providers while maintaining decentralization.

Independent protocols now function as interoperable modules within a cohesive infrastructure stack:

- **Unified Governance**: Coordinated decision-making across protocols under a shared vision.
- **Cross-Protocol Utility**: $FET adopted as a unified medium of exchange.
- **Shared Liquidity & Developer Ecosystems**: Accelerated adoption, talent flow, and protocol interoperability.

Case Study: Artificial Superintelligence Alliance

CUDOS powers the compute backbone of the ASI ecosystem, providing high-performance infrastructure for AI workloads across alliance protocols.

Network Architecture:

- 16 global datacenter partners providing specialized AI hardware
- 4,700+ active GPUs including H100, H200, and Blackwell clusters
- All contributors operate on sustainable energy with carbon capture (including some nuclear sources)

DePIN Economics:

- Unlocks value from idle datacenter capacity through tokenized demand
- Compute usage scales with broader DePIN growth
- Infrastructure leveraged by external miners for AI workloads
- 90% GPU utilization indicates strong product-market fit for generative AI

Case Study: Artificial Superintelligence Alliance

The ASI Alliance showcases powerful DePIN network effects, where interconnected infrastructure layers generate multiplicative value.

Resource Sharing:

- SingularityNET provisions GPUs for internal AI R&D and leases excess capacity to CUDOS
- Developer collaboration across protocols accelerates innovation and interoperability
- $FET serves as a unified payment layer across alliance services

Demand Generation:

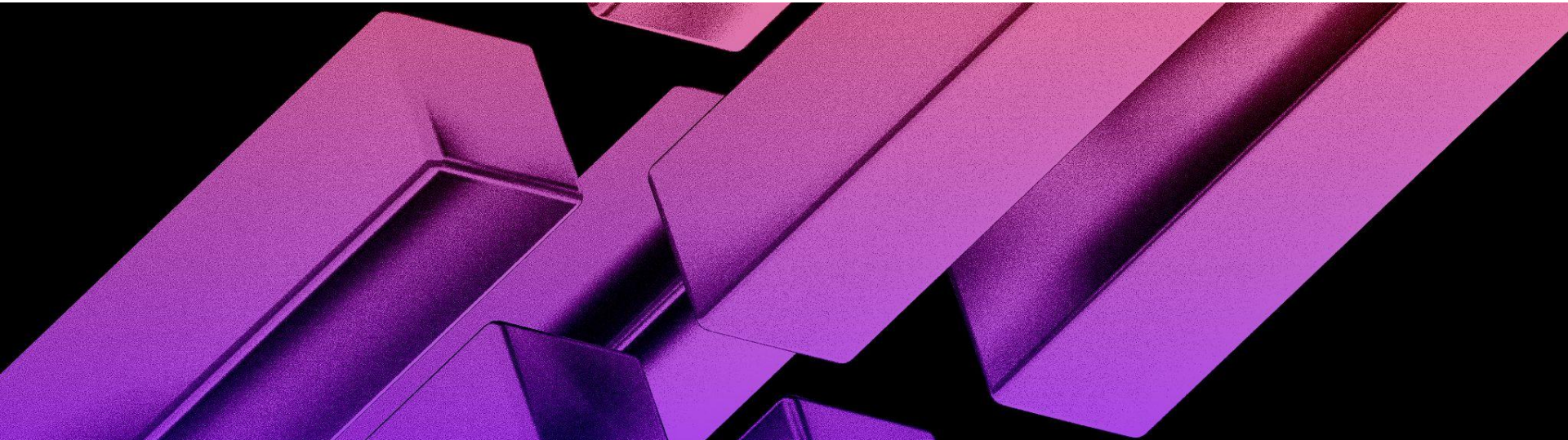
- Ocean Protocol drives compute demand through on-chain data processing and analysis
- Fetch.ai agents require scalable inference across decentralized environments
- Multi-agent systems utilize CUDOS to operate across geographies in real-time

THE BLOCK

Barriers & Solutions

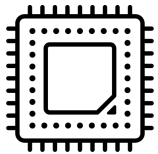
2025

SPONSORED BY IO.NET

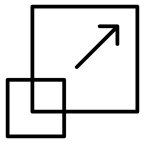


Technical Barriers to DePIN Adoption

Scaling distributed hardware systems presents significant challenges. Variability in quality, availability, and security complicates coordination, while network performance, regulatory constraints, and economic viability remain key hurdles to adoption.



Hardware Onboarding



Network Scalability

Data Security & Privacy

Regulatory Landscape

Hardware Onboarding

- **Costs**: While some DePIN projects leverage existing idle resources, others require specialized equipment. Although these devices are expected to become profitable over time, high initial investments and token-reward volatility create barriers for supply-side participants.

- **Availability**: AI-driven semiconductor investments have surged, but escalating trade tensions risk triggering another global chip shortage. Moreover, specialized hardware for sensor networks requires extensive R&D, leading to long lead times and constrained supply.

- **Interoperability**: A lack of composability between devices and protocols limits upside potential, creating inefficiencies that restrict supplier profitability and network scalability by hindering merged mining and multi-network participation.

Network Scalability

- **Congestion**: As DePINs grow, higher payloads and larger network sizes can lead to bottlenecks, reducing efficiency and increasing transaction costs. Optimized data routing, layer 2 scaling solutions, and off-chain processing help alleviate congestion and maintain smooth operations.

- **Geography**: Uneven node distribution weakens network resilience and increases centralization risks, while underrepresentation in certain regions limits coverage and service availability, compounding inefficiencies.

- **Latency**: High latency in decentralized networks degrades performance, making real-time applications unreliable. Moreover, long data travel distances and inefficient relay mechanisms contribute to delays, disrupting user experience and operational efficiency.

Data Security & Privacy

- **Cyber-Attacks**: Decentralized networks introduce a broader attack surface, increasing the risk of data breaches and unauthorized access. Without robust security measures, malicious actors can exploit vulnerabilities in distributed infrastructure.

- **Privacy & Legal Compliance**: Regulatory frameworks like GDPR, CCPA, and similar data laws impose strict mandates on data handling, retention, and user consent. DePIN projects must balance global performance with local compliance to avoid penalties and service restrictions.

- **Sector-Specific Limitations**: Industries such as finance, healthcare, and defense often operate under stringent data-sharing limitations. These restrictions make it difficult to adopt decentralized infrastructure that requires distributed access and interoperability, posing a challenge to adoption in regulated sectors.

Regulatory Landscape

- **Cross-Jurisdictional Complexity**: Operating across national borders, DePIN projects often confront inconsistent regulatory requirements and legal definitions. These jurisdictional mismatches complicate compliance, especially when infrastructure spans multiple continents and legal systems.

- **Evolving Policies**: The legal and political climate around digital assets remains volatile. Government and institutional attitudes toward decentralization and crypto infrastructure can shift rapidly, creating uncertainty for long-term planning. Regulatory reversals or abrupt policy changes can disrupt entire networks, forcing costly pivots or even shutdowns.

- **Institutional Adoption**: Unclear guidelines and fragmented enforcement deter risk-averse stakeholders, especially enterprises that require clear legal frameworks. Without coherent global standards, DePIN growth can remain limited by institutional hesitation and fragmented governance models.

Case Study: DoubleZero

DoubleZero is a decentralized network that powers high-performance distributed systems with high-bandwidth, low-latency communication. By leveraging underutilized fiber-optic networks and integrating advanced routing technologies, DoubleZero aims to optimize global connectivity for high-throughput blockchain networks like Solana.

Key Features:

- Optimized routing minimizes latency and improves validator communication
- Permissionless contributor participation fosters resilience and decentralization
- Enhanced security and filtration mitigates congestion and prevents spam
- Blockchain-agnostic architecture supports a variety of performant distributed systems

Case Study: DoubleZero

As blockchain networks scale, inefficiencies limit transaction throughput and impact overall user experience. Traditional internet infrastructure is not designed to support the high-speed, low-latency demands of decentralized systems.

Challenges:

- Existing infrastructure limits high-volume transaction processing
- Suboptimal network paths increase latency and delay consensus
- Dependence on traditional ISPs creates bottlenecks and security vulnerabilities

Solutions:

- Leverages dark fiber and optimized infrastructure to increase available bandwidth
- Deploys dedicated routing and edge filtering to reduce congestion and minimize spam
- Improves validator synchronization with optimized, deterministic packet delivery

Case Study: DoubleZero

Key Infrastructure Components:

- Concentric Rings Architecture: Dual-layer design where the outer ring filters/verifies traffic and the inner ring builds consensus via dedicated bandwidth lines.
- DoubleZero Exchange Points: Decentralized hubs for scalable metro-area data center interconnectivity.
- Dedicated Fiber Links: Contributor-provided dark fiber underpins the distributed network backbone.
- FPGA Network Devices: Specialized hardware for efficient filtration, signature checks, and routing.

Efficiency Improvements:

- Ingress/Egress: Network-edge filtering reduces validator workload.
- Data Flow: Transactions follow deterministic, low-latency paths.
- Coordination: Smart contracts manage SLAs.

Participant Benefits:

- Validators: Faster processing with less computational demand.
- Users: Quicker finality and improved reliability.
- Contributors: Monetized idle fiber.

Case Study: DoubleZero

Infrastructure Impact:

- Reduces reliance on traditional ISPs
- Eliminates bandwidth bottlenecks
- Enhances security and network resilience

Performance & Deployment:

- Achieves up to 1 million TPS in test environments
- Improves network capacity by leveraging underutilized fiber infrastructure
- Expanding across metro regions, with global deployments underway

Blockchain Impact:

- Empowers distributed systems to scale without sacrificing performance
- Lowers entry barriers for new validators and projects
- Pioneers a new economic model for decentralized communication

THE BLOCK

Tokenomics

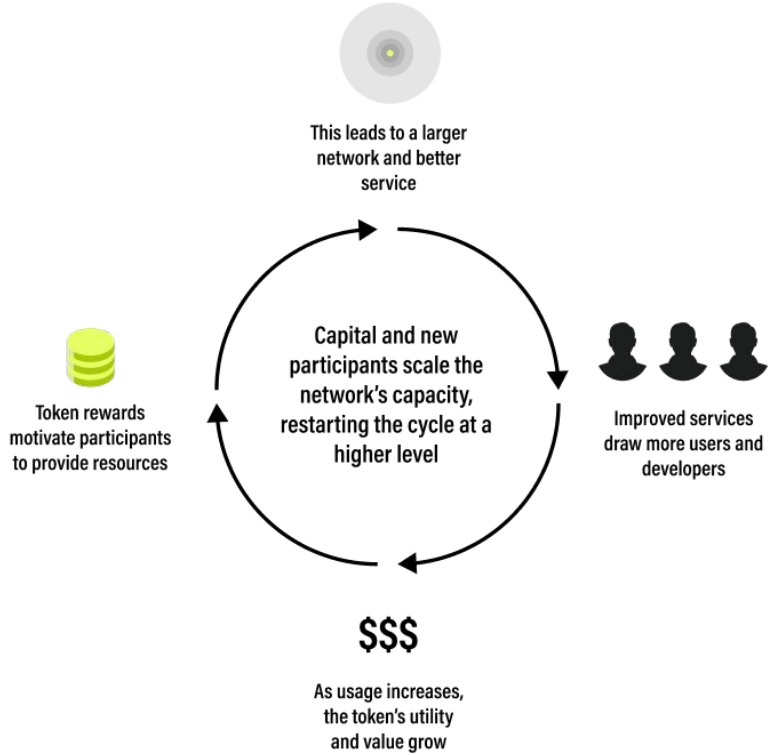
2025

SPONSORED BY io.net

The DePIN Flywheel

The DePIN Flywheel is a positive feedback loop that aligns incentives with sustained network growth:

- Token rewards attract infrastructure providers.
- Supply-side growth improves services.
- Improved services attract builders and users.
- Increased usage leads to value growth and improved utility.



Tokenomics Considerations

DePIN tokenomics align incentives between participants and ensure long-term sustainability. By structuring supply and demand mechanics effectively, token models can drive adoption, maintain economic stability, and support decentralized governance, while ensuring continued engagement from both supply-side providers and end-users.

Why Tokenomics Matter:

- Incentives: Rewards must attract suppliers without overburdening users or creating unsustainable emission dependencies.
- Inflation: Excessive emissions erode value and discourage long-term participation.
- Stability: Volatile or concentrated token ownership deters infrastructure investment and increases manipulation risk.

Key Tokenomics Considerations:

- Blockchain choice
- Issuance model
- Multi-token model
- Onboarding mechanisms
- Burn-mint equilibrium

Blockchain Choice

Standalone L1:
All network functionality is maintained on a purpose-built, project-specific platform, enabling improved control and customization at the expense of greater development, maintenance, and onboarding challenges.

Examples: Theta Network, Arweave, & Sia.

Hosted:
Deployed on existing layer 1 networks, enabling simplified deployment, management, and onboarding at the risk of reduced scalability and increased external dependencies.

Examples: Hivemapper (Solana), Autonomi (Arbitrum), & Nodle (ZKsync).

Issuance Models

Issuance models define the mechanisms by which DePINs emit token incentives as participant rewards.

Fixed:
The network issues a predetermined amount of tokens to be shared among suppliers for their contributions, generally following a diminishing model to bootstrap early contributions while ensuring long-term disinflation.

Examples: io.net & Helium

Performance-Based:
Rewards are issued dynamically based on network performance metrics, aligning incentives directly with usage and growth.

Examples: Theta Network & Hivemapper

Hybrid:
Rewards are issued through a combination of fixed and performance-based models, balancing long-term sustainability with network-driven incentives.

Examples: Filecoin & Aethir

Multi-Token Model

Some DePIN projects utilize a multi-token model to separate governance, operational utility, and rewards. This approach can enhance network efficiency, security, and user engagement by assigning distinct roles to different tokens.

However, adoption of multi-token models remains limited. Of the standout projects examined in this report, only Theta Network maintains such a structure, using $THETA for governance and $TFUEL for operations.

In contrast, Helium has deprecated its $MOBILE and $IOT tokens in favor of a unified $HNT model via HIP 138, citing a need to simplify the ecosystem and increase token utility.

Onboarding Mechanisms

Node Purchase:
Suppliers must buy purpose-built hardware to participate, ensuring high-quality infrastructure but creating a financial barrier to entry.

Examples: DIMO & World Mobile

Staking:
Suppliers must stake tokens as collateral to ensure commitment and reliability. Staked tokens can be slashed for inefficiencies or malicious behavior, aligning incentives with network health.

Examples: io.net & Filecoin

Hybrid:
Suppliers may be required to purchase hardware, stake tokens, or both, offering flexibility while reinforcing network security.

Examples: Aethir & Geodnet

Idle Resources:
Suppliers contribute unused compute, storage, or bandwidth with no additional upfront node purchase or staking requirements, maximizing accessibility.

Examples: Golem & Sia

Burn-Mint Equilibrium

The Burn-Mint Equilibrium (BME) is a mechanism to balance token supply and demand by burning tokens to offset new issuance. This approach helps regulate inflation, preserve token value, and align incentives across participants, particularly in networks where demand fluctuates over time.

Common Burn Sources Include:

- Transaction fees/network usage: Fees paid by users are burned rather than recycled.
- Token buy-backs: The protocol purchases tokens from the market and burns them to reduce supply.
- Stake/payment slashing: Penalized behavior results in tokens being permanently removed from circulation.

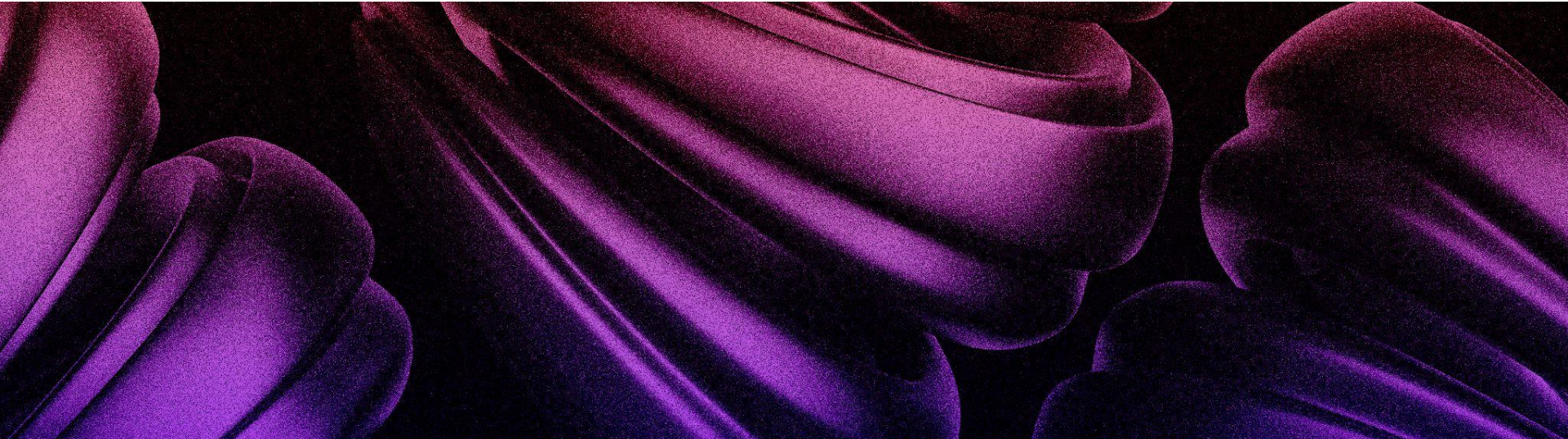
Example: Render Network implements a BME in which artists burn $RENDER to receive non-fungible work credits, which are then distributed to node operators. The network mints new tokens (or allocates from a reserve) to reward operators based on completed work and reputation, dynamically adjusting issuance to match marketplace demand.

THE BLOCK

Investments

2025

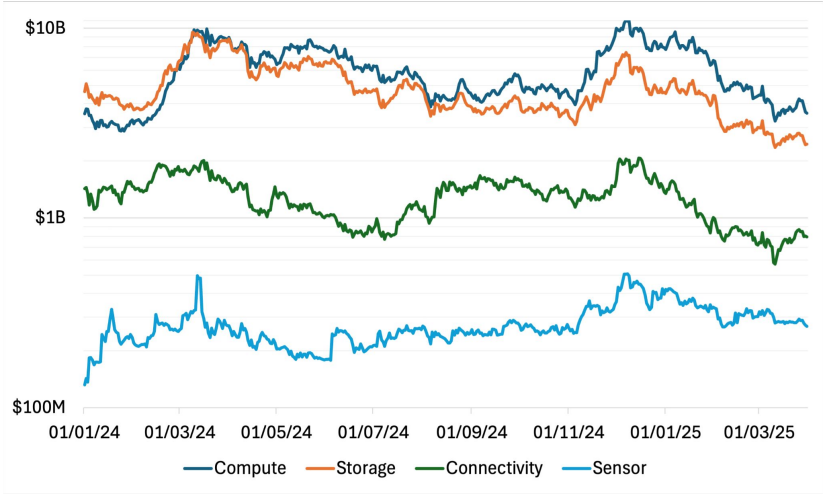
SPONSORED BY io.net



Sector Growth

By summing the market capitalizations of featured projects, we create sector-level aggregates to track performance across DePIN verticals.

- Compute and storage led by a wide margin, each surpassing $10B at their Q4 2024 peaks and showing a strong 77.6% correlation.
- Connectivity and sensor sectors were smaller but followed similar trends, reflecting broader macro pressures across DePIN markets.
- All sectors experienced substantial drawdowns since late 2024, indicating widespread market weakness rather than isolated corrections.

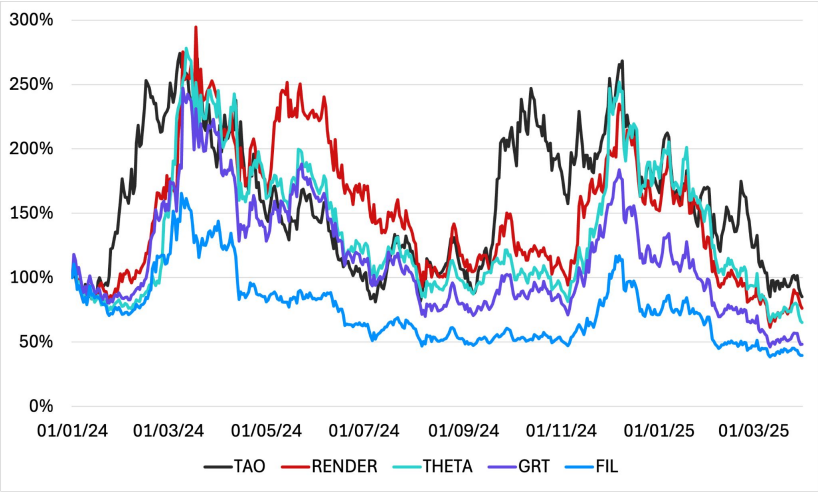


Source: CoinGecko

Top Project Trends

An analysis of the top five DePIN tokens by market cap reveals strong price correlation across the ecosystem, reinforcing the impact of macro sentiment and shared narratives on token performance.

- TAO decoupled twice in 2024 and again briefly in 2025, consistently outperforming peers.
- RENDER broke out sharply in Q1 2024 and decoupled in Q2 2024 before reverting to sector trends by year-end.
- THETA, GRT, and FIL moved in close alignment.
- By the end of Q1 2025, all tokens remained well off their 2024 peaks

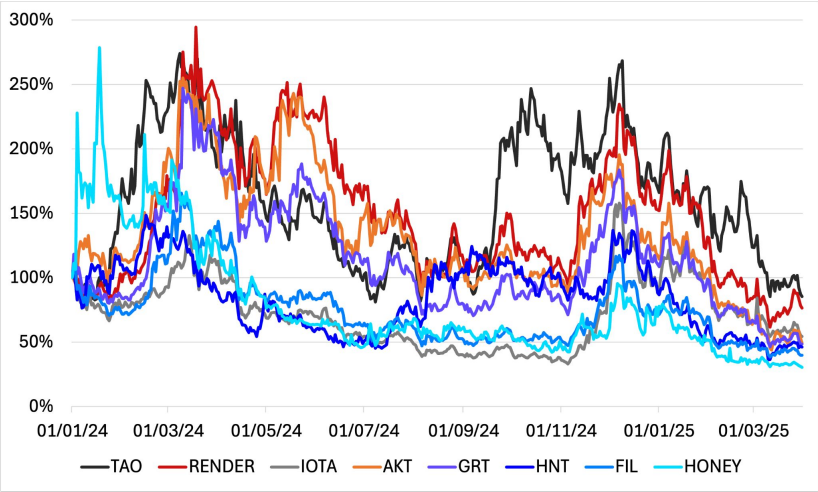


Source: CoinGecko

Sector Leader Trends

Looking at the top market cap project from each sector, we observe clear divergences in relative performance.

- TAO and RENDER posted sharp rallies but saw steep retracements, trading more like high-beta tech proxies.
- AKT, GRT, and HONEY enjoyed notable rallies but failed to sustain them, with fragile recoveries and deep drawdowns.
- FIL, HNT, and IOTA delivered muted gains and prolonged losses, despite their position as more established networks.

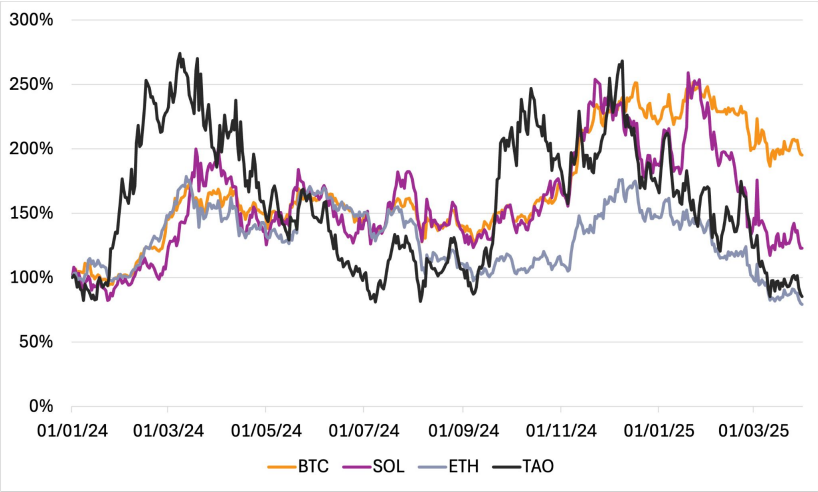


Source: CoinGecko

Benchmark Performance

While Bittensor's TAO token outperformed other DePINs during multiple rallies in 2024, its trajectory remained closely tied to broader risk assets, particularly Solana. Despite strong early gains, TAO retraced repeatedly alongside SOL and ETH, gradually eroding its relative outperformance.

Ultimately, Bittensor's longer-term performance was capped by this correlation, underscoring how even stand out DePIN tokens remain influenced by broader market cycles.



Source: CoinGecko

Fundraising

Venture capital activity in DePIN has been strong since early 2024, reflecting growing confidence in decentralized infrastructure as a foundational layer of Web3.
VCs backed over 150 projects, signaling broad conviction in the ecosystem's long-term scalability and real-world impact.
Among more than 500 unique investors, Borderless Capital, NGC Ventures, and Foresight Ventures stood out as the most active backers by deal count.

$744,813,188+

Total VC investments since 01/01/2024

165+

Disclosed Deals since 01/01/2024

89+

Undisclosed Deals since 01/01/2024

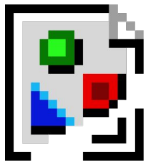
Source: The Block Pro

Largest Deals

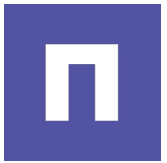
IoTeX
$50M Token Sale

Glow
$30M Seed

io.net
$30M Series A



DoubleZero
$28M Token Sale

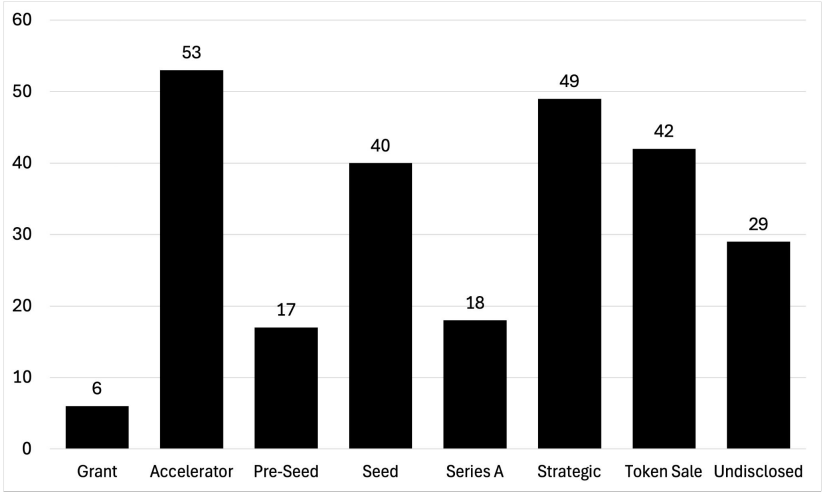


Nillion
$25M Series A

Source: The Block Pro

Funding Stages

DePIN projects attracted capital across nearly every stage of the funding lifecycle, with the highest number of deals occurring at the Accelerator, Strategic, and Token Sale stages.
While Pre-Seed and Series A deals were less common, the data suggests strong investor appetite for early validation and ecosystem alignment.
This distribution highlights the unique fundraising dynamics of the DePIN ecosystem, where both traditional venture paths and crypto-native mechanisms coexist.



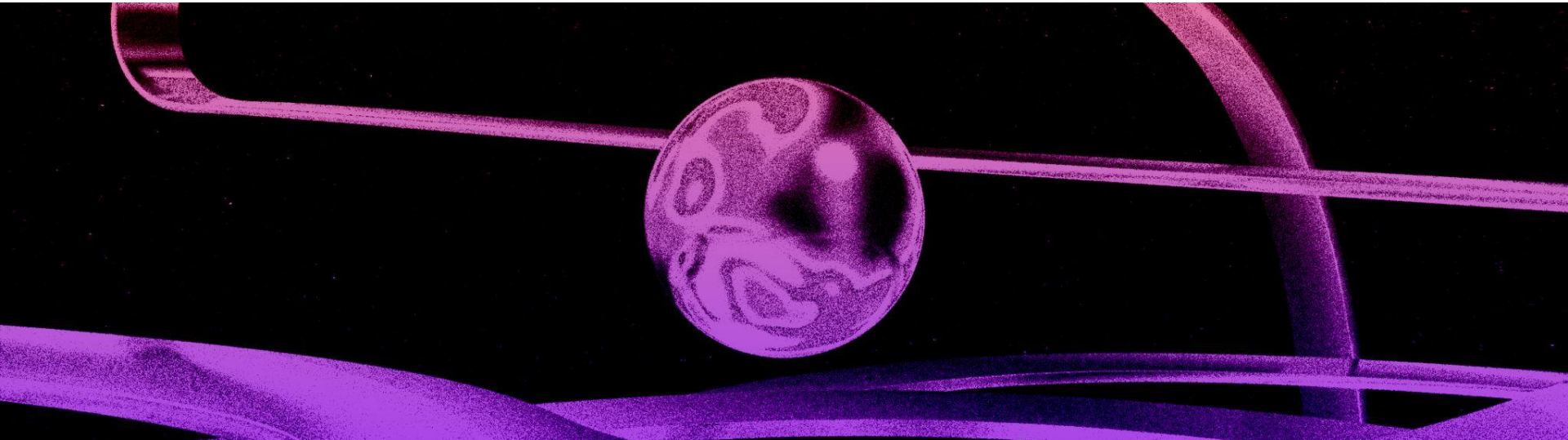
Source: The Block Pro

THE BLOCK

Future Outlook

2025

SPONSORED BY io.net



The Future of Infrastructure

As the digital and physical worlds continue to converge, DePIN marks a fundamental shift in how critical infrastructure is deployed and managed. Instead of relying on centralized entities, DePINs coordinate distributed participants who contribute, operate, and govern infrastructure collectively.

By aligning global incentives through tokenized systems, DePIN lays the groundwork for an open-access internet built on resilient, inclusive, and scalable foundations. These networks are purpose-built to address the demands of an increasingly interconnected world, where infrastructure must be adaptable, transparent, and equitably accessible.

As physical infrastructure continues to merge with digital intelligence and real-time coordination, DePIN provides a framework where infrastructure is not only shared, but also trusted, verifiable, and transparently operated at scale.

Equity and Inclusion

This transformation is not only technical but deeply social. DePIN has the potential to empower underserved communities, improve disaster resilience, and expand access to essential services in ways that traditional infrastructure models cannot.

From Hivemapper's community-powered mapping in rural Mississippi to World Mobile's rapid deployment of mobile service after Hurricane Helene, DePINs are proving their value at the edges of traditional coverage. These examples show how user-owned infrastructure can respond faster, reach further, and serve more equitably than centralized alternatives.

As more regions adopt DePIN solutions, we are witnessing the rise of an infrastructure paradigm where access is not dictated by geography or capital, but by contribution and collaboration.

The Age of AI

As AI and automation reshape global economies, DePIN provides a necessary counterbalance. It ensures that the physical infrastructure powering the AI era remains open and inclusive rather than dominated by a handful of corporations.

By aggregating hardware and rewarding participation, DePIN unlocks new sources of supply while enabling global participation in the AI economy. This helps level the playing field for developers, researchers, and builders who lack access to traditional cloud infrastructure.

Crucially, it makes AI development more democratic and aligned with global values, where model training, inference, and deployment can be coordinated in a permissionless manner.

Looking Ahead

DePIN's future will be shaped by ongoing improvements in technical design, usability, and regulatory clarity. As networks scale and integrate across sectors and services, DePIN is positioned to become a default infrastructure layer for the decentralized internet and real-world applications alike.

In a world facing rising infrastructure demands and growing access gaps, DePIN offers not only an alternative, but a superior model. It distributes control, increases resilience, and creates opportunities for participation at every level.

As awareness spreads and platforms become more interoperable, the growth of DePIN is poised to accelerate. The result is not just a new way to build infrastructure, but a new way to share its benefits globally, sustainably, and inclusively.