Building Successful
Blockchain Infrastructure

Contents

01

Understanding the Ecosystem

There are countless creators in the IT universe that are currently building blockchain ecosystems, both in the front-end and the back-end space. Infrastructure strategy is fundamental to building a viable blockchain offering, and there is a range of key variables that will determine infrastructure success.

This guide will help front- and back-end creators to build effective infrastructure strategies, optimize their spend and be prepared for regulatory and compliance challenges. It will also look into some technological considerations in greater depth.

By the end of this guide, you should have a foundational understanding of not only strategic considerations such as the importance of reversibility in cloud, basic regulatory and compliance requirements, but also the benefits and challenges of public cloud, bare metal and hosted private cloud technologies. This will enable you to build a successful blockchain infrastructure that matches the overall ethos of the blockchain ecosystem itself: secure, distributed, and transparent.

"Understanding infrastructure variables will help keep your costs and management overhead low, without compromising on efficiency, flexibility, or regulatory oversight."

Omar Abi Issa
Global Director for Blockchain, Web3, and AI

▶ Creators in the front-end space

Many innovators working in the front-end space are Software-as-a-Service (SaaS) providers and software companies. Many specialize in the creation of decentralized applications (Dapps) and decentralized exchanges (DEXs), as well as Decentralized Finance (DeFi) applications consumed by large fintech and fin-ops companies or even Decentralized Autonomous Organizations (DAOs). Use cases for blockchain technology have also surged in gaming, the metaverse (VR/AR/XR), the Internet of Things (IoT), art, Non-Fungible Tokens (NFTs), and AI.

▶ Creators in the back-end space

There are also many innovators focused on the back end. This includes mining pools – large clusters equipped with highly powerful, efficient, multi-GPU based dedicated servers. Staking businesses are similar but less resource intensive. They operate nodes equipped with cryptocurrency assets that ensure the legitimacy of transactions. These entities typically manage blockchain validation on Proof of Stake (PoS) networks.

Companies such as Blockchain-as-a-Service (BaaS) providers also fall under this umbrella. Their expertise involves utilizing ready-to-connect services. They have ready-to-go solutions that are based on nodes equipped with a specific software stack that are interoperable with the peer-to-peer (P2P) network. These solutions may also be based on automation nodes (APIs) that are ready to be integrated with both front-end and back-end software layers.
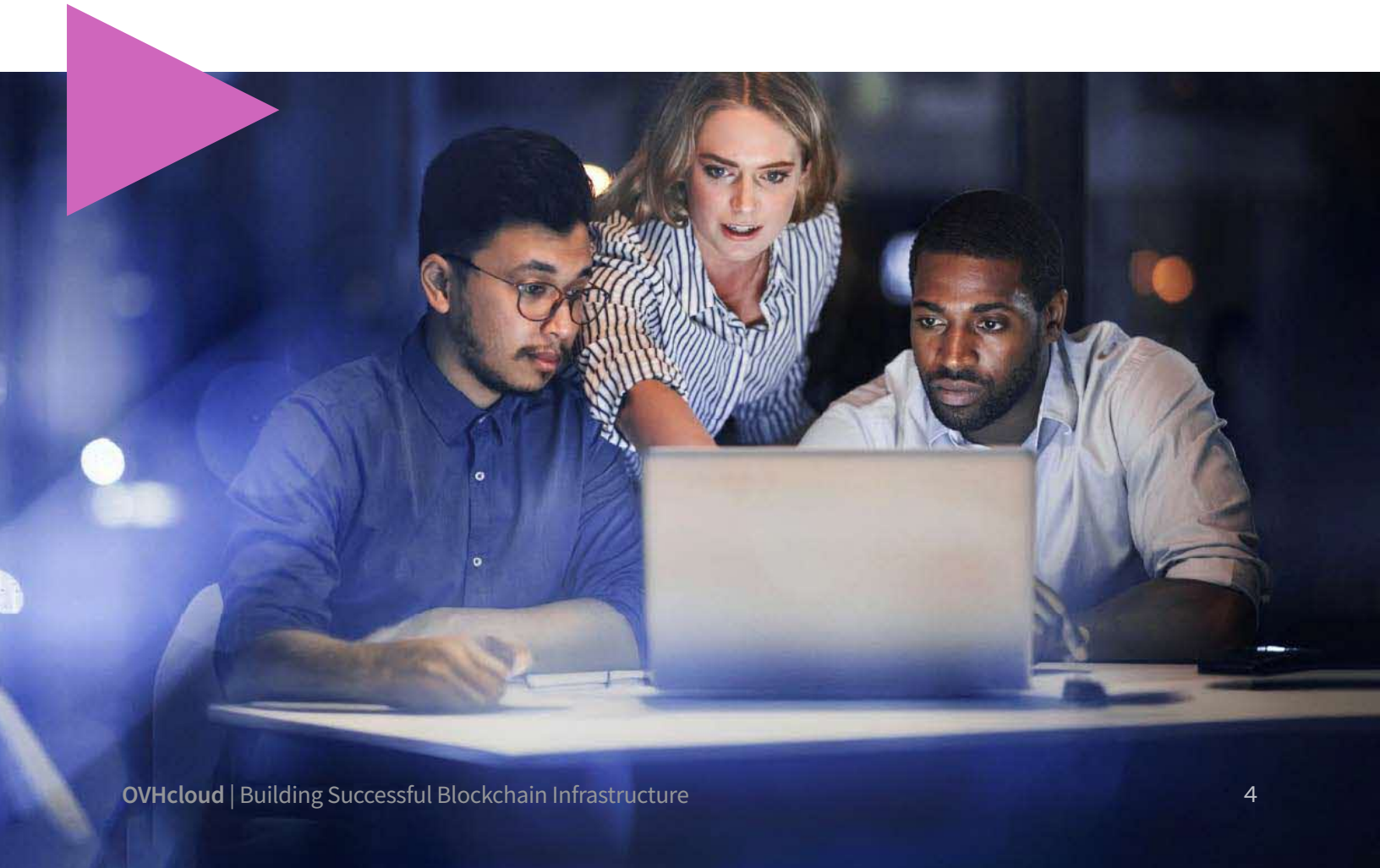
The choices businesses make during the early-stage development of their infrastructure setup can accelerate the chances of success.

Many blockchain providers offer the back-end network itself, whether through private blockchain frameworks such as Hyperledger Fabric or public blockchains like the Ethereum network. Some also enable the Inter-Blockchain Communication Protocol (IBC), as in the case of Cosmos.

There are also companies that operate in both front-end and back-end spaces. These businesses are often System Integrators (SIs), which deliver comprehensive private blockchain solutions for industries such as retail and logistics. SIs typically own the hardware in their data centers, build the front-end software layer, and customize the back-end functionality, usually offering this as a service for businesses.

However, private solutions have limitations. They may be decentralized over several countries or continents. Solutions may also be limited to decentralization among a few nodes in a single data center, depending on the use case.

02

Infrastructure Strategy Variables

Building a sustainable blockchain database is one challenge; building one that is efficient, cost-effective, and compliant is another. Achieving this requires careful planning and understanding of how the underlying infrastructure impacts the success of a blockchain business.

OPEX vs. CAPEX

Increasingly, companies opt for OPEX-based expenditure models rather than traditional CAPEX models. CAPEX requires large, up-front capital investments in infrastructure. In contrast, OPEX models allow businesses to pay only for the resources they consume, offering greater elasticity and transparency—particularly valuable in the start-up and scale-up phases, where budgets are limited and demand is unpredictable.

Cloud infrastructure exemplifies the OPEX model. Services are billed as recurring operational expenses and inherently scalable, enabling businesses to align costs with actual demand. This approach reduces management overhead, improves efficiency, and minimizes financial risk by avoiding overinvestment in infrastructure that may not be fully utilized.

The flexibility of cloud services also lowers the minimum user threshold for project profitability. By enabling companies to set margins per end-user or consumer, early-stage blockchain adopters can maximize cost-effectiveness with just a small pool of users. OPEX is key for businesses facing high uncertainty or volatility in demand.

Cloud computing is intrinsically aligned with OPEX. Organizations can rapidly provision resources for testing, development, or proofs of concept and release them within hours – or even minutes – without long-term obligations. This agility is crucial in blockchain, where projects often require rapid experimentation and validation before scaling.

That said, not all cloud providers are equal. Each offers distinct pricing structures, performance guarantees, and ecosystem integrations. Careful evaluation is essential to ensure that the chosen OPEX model aligns with the technical and business requirements of the organization.

OPEX is key for businesses facing high uncertainty or volatility in demand.
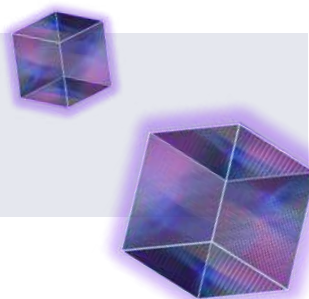
Companies should choose a cloud provider based on these key attributes:

Criteria	What to look for	Why it is important
Hybrid/multi-cloud strategy enablement	Interoperable solutions with standardized APIs, orchestration tools, and support for on-premises or colocation setups.	Ensures portability of blockchain workloads, reduces vendor lock-in, and supports robust disaster recovery across multiple environments.
Compliance measures	Contractual commitments to major standards such as SOC 2 Type II, HIPAA, PCI DSS, and state-level privacy laws.	U.S. regulatory requirements are fragmented across industries and states. Compliance ensures blockchain workloads can be trusted in regulated sectors such as finance, healthcare, and government.
Transparency in pricing	Clear, predictable billing for compute, storage, and network usage. Transparent pricing for ingress and egress traffic, with no hidden fees.	Blockchain applications often require significant data movement. Unpredictable egress charges can lead to major cost overruns without clear guarantees.
Openness and reversibility	Cloud products that support open-source frameworks and provide data export tools, migration APIs, and container-based portability.	Crucial for future migrations, multi-cloud strategies, and avoiding vendor lock-in.
Security and scalability	Robust protections such as anti-DDoS included as standard, hardware encryption (e.g., Intel Software Guard Extensions (SGX)), and solutions designed to scale from the ground up.	Blockchain workloads face persistent security threats that demand robust protection from the infrastructure layer. As they grow, blockchain technologies require enterprise-grade security to handle increased workloads.
Service Level Agreements (SLAs)	Minimum SLA of 99.99% uptime for critical blockchain workloads, with clearly defined remedies, credits, and exclusions.	High availability is essential for blockchain validators and enterprise systems. Strong SLAs improve reliability and ensure accountability for downtime.

At an infrastructure level, there is a range of viable cloud technologies that cater to blockchain infrastructure requirements, including:

Bare Metal

Bare-metal servers provide full control over hardware, making them ideal for blockchain workloads that demand high performance, low latency, and strong security. Cloud-based bare-metal solutions offload hardware maintenance to the provider while offering advanced networking features, such as high-bandwidth public connectivity and private VLANs, which support blockchain clustering and scalability.

These servers can also leverage confidential computing capabilities, including Intel SGX/TDX and AMD SEV, to enable hardware-level encryption that protects sensitive transactions, private keys, and smart contract execution. In the U.S., these features are particularly valuable for meeting regulatory and compliance standards such as SOC 2, HIPAA, and PCI DSS, while providing predictable performance for enterprise and financial services blockchain applications.

Public Cloud

Public cloud platforms abstract the underlying hardware and share resources among multiple tenants, offering scalable, flexible, and cost-efficient infrastructure for blockchain workloads. Automation and orchestration tools—including Terraform, Ansible, OpenStack CLI, and Managed Kubernetes—enable blockchain developers to deploy and manage nodes quickly, reducing operational overhead and accelerating time-to-market.

Managed Kubernetes supports containerized blockchain nodes, automated upgrades, and horizontal scaling, enabling DevOps teams to focus on research and development rather than infrastructure maintenance. Public cloud providers also maintain pre-certified compliance with U.S. standards such as SOC 2, HIPAA, and PCI DSS, simplifying regulatory adherence for blockchain projects.

While public cloud offers less direct control over hardware compared to bare metal, it is well-suited for blockchain applications that prioritize agility, rapid deployment, and managed compliance, including startups, supply chain networks, and scalable enterprise solutions.
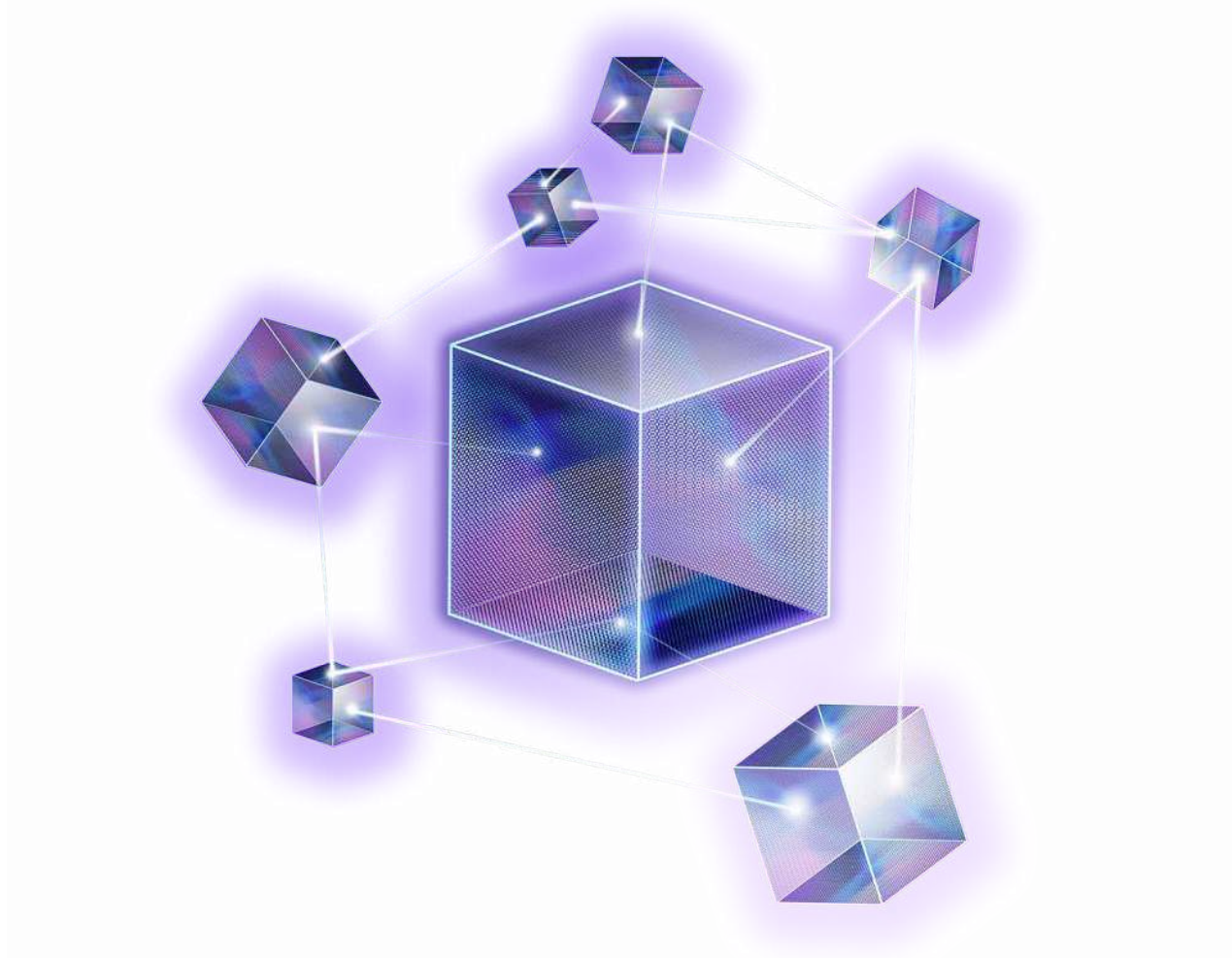
Hosted Private Cloud

Hosted private cloud platforms address the pain point of shared resources. Unlike Dedicated Servers, which fall under Infrastructure-as-a-Service (IaaS), hosted private clouds are typically delivered as Platform-as-a-Service (PaaS) solutions. These clusters often run on specialized hypervisors from companies such as Nutanix and VMware, which provide software to manage the underlying infrastructure. These solutions come with integrated, ready-to-use features, such as infrastructure management and monitoring, custom virtualized networking, automation, disaster recovery and backup capabilities. They also offer improved redundancy and fault tolerance, since the architecture is designed with at least two hosts. If one node fails, the overall infrastructure remains operational. In short, hosted private cloud can be designed to avoid a single point of failure.

Hosted private cloud products are well-suited to blockchain workloads, particularly for developing private, containerized environments. Vendors such as VMware and Nutanix provide orchestration platforms—like VMware Tanzu and Nutanix Kubernetes Engine— that enable scalable, secure, and private deployments.

03

A Cloud Provider Built on the Blockchain Technology Ethos

OVHcloud is built on the same ethos and principles as the blockchain ecosystem. We deliver secure, distributed, transparent infrastructure already trusted by leading blockchain organizations worldwide. Our services support blockchain companies of all sizes—from founder-led startups to mid-size consultants and builders, as well as enterprise deployments.

OVHcloud operates 450,000 servers across 44 data centers on 4 continents. We are committed to open-source technologies, championing initiatives like OpenStack. We offer a wide range of cloud infrastructure options across different regions, including a dedicated U.S. business. We also provide custom-built solutions for blockchain organizations, such as technology for Solana validators that helps ensure network traffic is not misidentified as a DoS attack.

Our billing is transparent and predictable, and we are equally committed to sustainability. Every data center we own uses water-cooled servers, making us more efficient than most providers. Because of our sustainability principles, there are a small number of blockchain applications we do not support, including Proof of Work and mining workloads.

We also offer a unique industrial model: all of our servers are assembled and disassembled in two factories in France and Canada. This enables us to reuse and recycle components into affordable, lower-spec server ranges such as KimSufi and SoYouStart. Sustainability is designed into our customer experience as well. Most of our offerings include access to a carbon calculator that provides a monthly or yearly breakdown of the environmental impact of your cloud usage, including a share of operational overhead (e.g., powering office locations). This transparency and fairness are integral to our business.

Finally, we are committed to innovation. In addition to blockchain-focused solutions, we provide AI-specific IaaS and PaaS offerings, as well as quantum solutions, ensuring we can support your future roadmap, wherever it leads.

Startup Program

The OVHcloud Startup Program is focused on giving startups and scale-ups the boost they need to thrive.

Free cloud credits and hands-on technical support help our program participants to accelerate what they do by using our secure, reliable, and cost-efficient cloud, whether they're in the early stages of building an MVP or scaling up to sell more products later down the line. Think of the program as a supportive path from ideation to growth. We want to make sure startups and scale-ups have everything they need at every step.

On joining the OVHcloud Startup Program, businesses choose between two tiers based on their growth stage: Start and Scale.

Start: For early-stage startups developing a proof of concept. Support includes 12 months of $1,000 in free monthly cloud credits and 6 hours of one-on-one consultations with an OVHcloud engineer.

Scale: For scale-ups refining their offering, growing their user base, and expanding. Support includes 12 months of $10,000 in free monthly cloud credits and up to 20 hours of strategic support.

04

OVHcloud in Practice

Bware Labs

Bware Labs partners with OVHcloud to deliver one of the fastest blockchain API platforms on the market

The background

Bware Labs delivers a powerful blockchain infrastructure built to meet the challenges of Web3. The company aims to play a major role in global blockchain adoption, offering a growing ecosystem of products designed for successful Web3 innovation.

Bware Labs' flagship product – Blast – is one of the world's fastest blockchain API platforms. Using hundreds of globally distributed third-party node providers, Blast offers instant access to the most relevant networks in the blockchain space, enabling Web3 developers to meet their infrastructure needs and start building in just a few clicks.

Other products in the Bware Labs ecosystem include Faucets, Snapshots, and support for AppChains on Avalanche and Polygon. As a reliable and secure platform, Bware Labs also supports blockchain projects as a validator and bridge operator. It is trusted by 18 blockchain providers to secure their networks, with over 10,000 active delegators and a total value locked (TVL) of $300 million.

The challenge

To host Blast, Bware Labs was using a virtual private server (VPS) solution from a major cloud provider. However, as Blast gained traction with customers, the hosting solution needed to scale rapidly to cope with demand – leading to sharp increases in infrastructure and network costs, as well as decreased performance. Bware Labs therefore required an alternative hosting solution that could scale easily while optimizing both cost and performance.

"Our collaboration with OVHcloud has been very fruitful since we started using the platform and we are especially thankful to our account manager. We are always happy to collaborate with professional individuals and companies, and OVHcloud offers such a possibility."

Flavian Manea
CEO at Bware Labs

The solution

Because VPS hosting shares resources with multiple users, it can reduce performance. To overcome this, Bware Labs needed to replace its VPS solution with a dedicated hosting solution.

Adopting dedicated hosting would allow Blast to handle increased traffic more effectively, while providing greater control over security and scalability. After testing products from several major cloud providers, Bware Labs selected OVHcloud Advance Dedicated Servers—a powerful range of servers built for complex and critical infrastructure.

Advance Servers are built on next-generation components that deliver high performance and high-speed connectivity. They feature Intel® Software Guard Extensions (SGX) hardware for enhanced data protection, as well as network-boosting capabilities such as Link Aggregation, which reduces the risk of downtime during peak traffic. They also include ultrafast NVMe storage designed to handle complex workloads.

These capabilities made Advance Servers ideal for hosting Blast, which required scalability while maintaining consistent speed and performance for users. Intel SGX technology further secured user data by isolating and encrypting it within dedicated enclaves, protecting against theft or corruption.

With 33+ data centers worldwide, OVHcloud provides a robust global infrastructure that supports high availability across multiple regions. This was especially valuable for Blast's distributed architecture and hundreds of users worldwide. To connect this architecture to Advance Servers, Bware Labs leveraged OVHcloud vRack Private Network, a simple platform for connecting and managing complex architectures, while keeping traffic protected and helping ensure network resilience as Blast scaled.

OVHcloud also offered transparent, pay-as-you-go billing, easily monitored via the control panel. This flexible commercial model enabled Bware Labs to control costs as it scaled and avoid paying for unnecessary resources. To ensure rapid business continuity in the event of an incident or downtime, Bware Labs added OVHcloud Business Support for 24/7 technical support and fast response times.

The result

By partnering with OVHcloud, Bware Labs was able to deliver Blast—one of the fastest blockchain API platforms on the market—on a secure, resilient, and high-performance infrastructure. OVHcloud Advance Servers provided the performance needed to handle peak traffic, while OVHcloud's global data center footprint and vRack Private Network ensured fast, secure and resilient network availability. Combined with transparent billing and responsive support, this enabled Blast to scale cost-effectively, while maintaining speed and performance.

Bware Labs and OVHcloud look forward to continuing their partnership, expanding the reach of Blast, and further empowering Web3 developers worldwide.

Super Protocol

The background

Super Protocol is one of the world's first decentralized and confidential cloud computing protocols—next generation of cloud infrastructure designed specifically with Web3 needs in mind. It is built as a decentralized network of confidential computing nodes, welcoming compute providers to join the community and monetize their confidential computing resources.

Clients' code and data are protected by Intel® SGX confidential computing hardware, which isolates data inside encrypted enclaves to protect it from OS and hypervisor breaches. No one—not even the server owner—has access to the code and data in use inside the enclave, making it safer for clients to use third-party servers.

The challenge

Super Protocol began the process of expanding its decentralized confidential infrastructure, which requires high-performance servers with Intel SGX confidential computing technology. This has been a particular challenge, as SGX-enabled servers are in high demand due to the rapidly growing market for confidential computing.

The solution

Confidential computing compatibility, price, and performance were the main requirements set by the Super Protocol team. Based on these criteria, Super Protocol chose OVHcloud and adopted the following solutions:

• OVHcloud Public Cloud

• OVHcloud Managed Kubernetes

• OVHcloud Advance-6 Dedicated Servers

Super Protocol was able to access OVHcloud Public Cloud services through the OVHcloud Startup Program, which offers free cloud credits, training, and marketing support for startups. Joining this program enabled Super Protocol to expand its testnet and staging infrastructure to OVHcloud's trusted cloud, which features transparent pay-as-you-go billing, dedicated resources, automated backup, load balancers, and anti-DDoS protection.

Super Protocol also invested in OVHcloud Managed Kubernetes—a fully managed service that enables IT teams to create and deploy containers, without the burden of management and maintenance. This service was used to handle external requests as part of the testnet cluster.

Because Super Protocol is built on confidential computing technology, it needed bare metal servers with Intel SGX-enabled processors as well as the capacity to handle heavy workloads. After testing servers from other major cloud providers, Super Protocol found the best fit with OVHcloud Advance-6 Dedicated Servers. Built on Intel SGX and 3rd Gen Intel® Xeon® Scalable Processors, these powerful servers processed computation orders in just 6 minutes—22% faster than competitors. With Advance-6 servers available in multiple geographies, Super Protocol deployed its infrastructure across Canada, Germany, and the UK, connecting testnet, staging, and development clusters to public cloud services using OVHcloud's vRack private network.

The result

Thanks to its partnership with OVHcloud, Super Protocol expanded the capacity and reach of its decentralized confidential network. OVHcloud Bare Metal servers delivered the high-performance and confidential computing capabilities it needed, while OVHcloud Public Cloud provided scalable, secure, and reliable cloud infrastructure. Managed Kubernetes added further value, driving efficiency by removing the burden of container management.

"We are very excited to work with OVHcloud, they are a reliable and high-performing partner. They have seamlessly delivered the growth of Super Protocol's confidential computing infrastructure on which the future of Web3 is being built."

Yulia Gontar
COO at Super Protocol

With this infrastructure hosted in multiple geolocations, Super Protocol is assured high availability and low downtime—essential for processing demanding Web3 workloads for its customers.

05

OVHcloud for Blockchain

With an ever-increasing number of businesses working in the blockchain industry, new and creative ways of powering blockchain services are emerging. The choices companies make during the early stages of infrastructure development can significantly influence their chances of success.

The most popular infrastructure approach involves purchasing either semi-managed or fully managed cloud products with ready-made software layers and additional functionalities to enhance network management. Integrated automation, monitoring, and out-of-the-box backup solutions can be added to ensure high availability, including disaster recovery options. It is vital for companies to consider infrastructure strategies such as multi-product, multi-cloud, or hybrid-cloud approaches.

Getting these early-stage decisions right reduces infrastructure management overhead, giving teams the flexibility to focus their energy and talents on R&D. Bare-metal servers usually come with root access and cloud-integrated security layers, but they can be highly demanding in terms of the internal workforce required to build and maintain infrastructure.

Estimating ingress and egress traffic when working with major cloud service providers is a challenge, and it represents a real pain point for companies operating blockchain infrastructure. Most cloud providers charge additional fees that are added to the cost of the infrastructure itself. This lack of predictability makes it almost impossible to accurately estimate infrastructure operating costs.

Many key variables need to be considered before technical decision-makers finalize their infrastructure plans. These include:

- **Infrastructure strategy**—Connectivity and interoperability of products and services

- **Financial strategy**—Decisions around OPEX vs. CAPEX

- **Transparency**—Your provider's approach to data traffic fees and predictable billing

- **Compliance**—Readiness for future regulatory requirements

EMERGING LEADERS · STARS · PARTICIPANTS · PERVASIVE PLAYERS
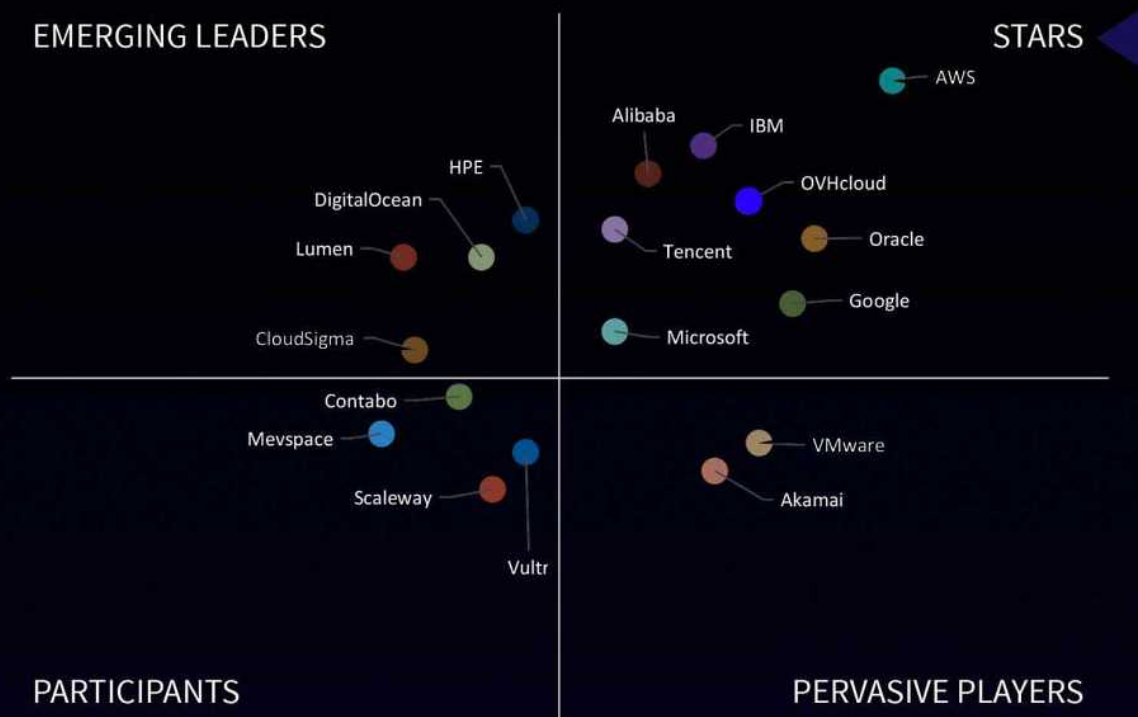
Copyright 2024 www.marketsandmarkets.com
*Markets and Markets 2024 'Blockchain Market Global Industry Forecast to 2029' report*

Markets and Markets identify OVHcloud as one of the star players that provide robust blockchain infrastructure and customized solutions. They possess innovative offerings and adopt growth strategies to achieve technological consistency in the blockchain space.

"Importantly, blockchain developers should partner with a provider who offers dedicated support. A strong partnership with your provider will ensure infrastructure supports your business ambition, while easing management overheads and keeping costs optimised."

Omar Abi Issa

Global Director for Blockchain, Web3, and AI
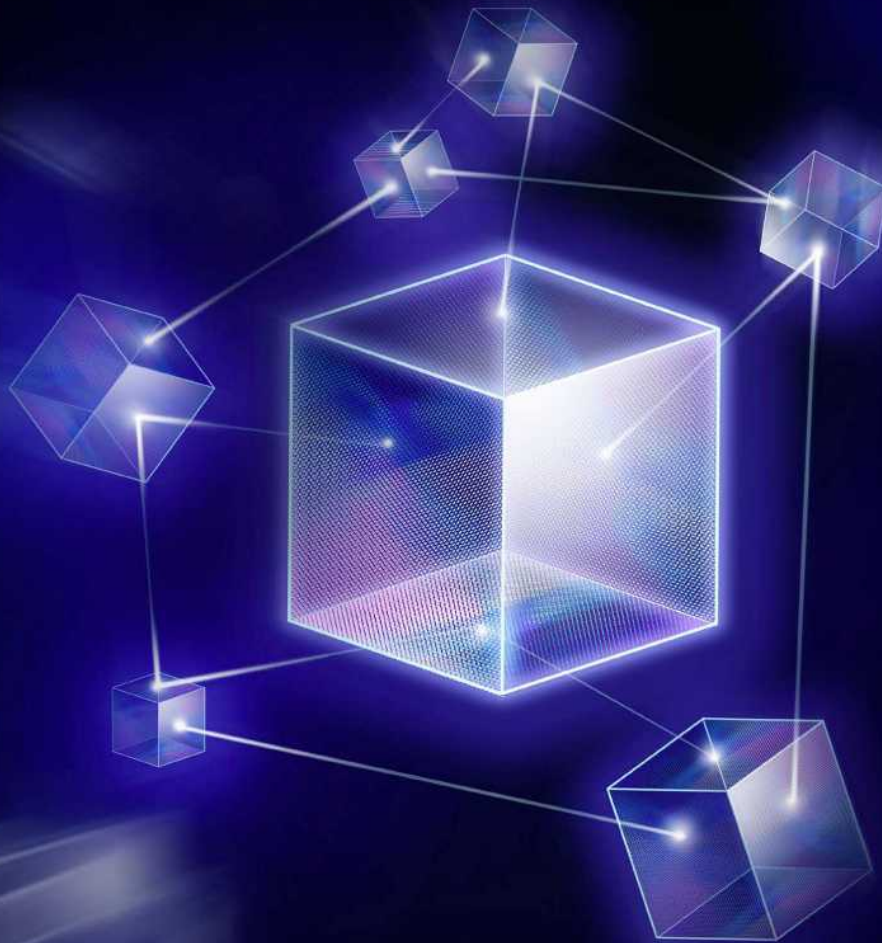
About OVHcloud

OVHcloud US is a subsidiary of OVHcloud, a global player and Europe's leading cloud provider operating more than 450,000 servers within 44 data centers across four continents. For over 20 years, the company has relied on an integrated model that provides complete control of its value chain, from the design of its servers to the construction and management of its data centers, including the orchestration of its fiber-optic network. This unique approach allows it to independently cover all the uses of its 1.6 million customers in more than 140 countries. OVHcloud now offers latest generation solutions combining performance, price predictability, and total sovereignty over their data to support their growth in complete freedom.