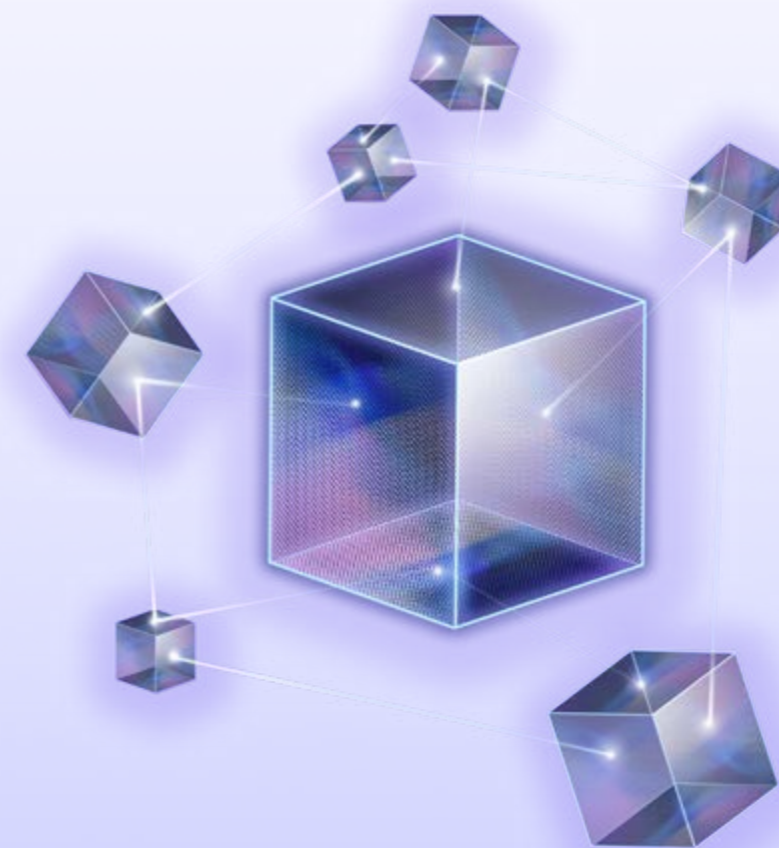




The Blockchain Blueprint

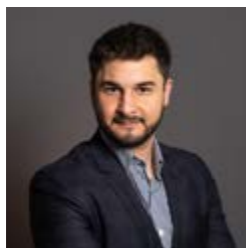
A guide to scaling, strategic planning and futureproofing your Web3 business



The Blockchain Blueprint

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INTRODUCTION

Blockchain technology has almost limitless potential.

The industry is growing fast: research estimates that the market today is around eight times larger than it was five years ago. It is clear that the full benefits of blockchain have yet to be realised, and in particular, there is significant scope for it to be embedded across the enterprise. However, as a complex and often poorly understood technology, there is still much work to do to achieve this goal.

The aim for this book is to share knowledge, to help professionals and organizations grow their understanding and also to improve the awareness of what blockchain can really do for you and your business.

This book has been written as an explainer and as support for growing blockchain companies. It starts by looking at business strategy and growth before delving into technology, the ecosystem and even look at blockchain's impact and relationship with broader society. It focuses on four main areas:

1. **Startup Strategy:** How to start, grow and scale your business
2. **Technology:** How blockchain technology works, and important technology considerations for blockchain builders
3. **The Blockchain Ecosystem:** What are the use cases, and what is the future of blockchain?
4. **Blockchain and Society:** How does blockchain support communities, what are the challenges, and how can OVHcloud support you?

At OVHcloud, we have a team of experts fully versed in blockchain technology. They are proud advocates for the ethos of blockchain and what it means for cloud infrastructure in turn. This team has been instrumental in deploying fast, high-performance and cost-effective solutions to blockchain organizations around the world and have also been indispensable in the creation of this guide.

“As some of you will know, my own fascination with blockchain began almost a decade ago when I invested in crypto without carrying out proper research – and promptly lost most of it! Since then, I have got to know many blockchain companies, learnt a great deal about how the technology works, and have gained enormous respect for this fast-moving, community- and innovation-driven market.

It has been my great pleasure to work with the blockchain ecosystem for the last few years, and spearhead OVHcloud's strategic planning and execution. I look forward to taking the support for blockchain that we offer at OVHcloud to the next level in years to come and would like to say a big thank you to the team that has supported this initiative.”

OMAR ABI ISSA

Global Director for Blockchain, Web3, and AI

01

Startup Strategy

How to start, grow, and scale your business

In this chapter, we'll be looking at growing a business. Many of the challenges that blockchain startups face are common to *all* startups, so we'll be starting our discussions at a very broad level before homing in on blockchain.

Interestingly, in Peter Thiel's landmark book *Zero to One*, Thiel suggests that many founders fall into the trap of scaling their business 'horizontally' and focus only on producing more, rather than doing something genuinely different (scaling 'vertically').

However, although great innovation does need to scale to sell and be sustainable, it also needs to respect a third dimension: time. Innovation must keep adapting or it'll be disrupted – sometimes violently. In 2000, the Siebel user conference was disrupted by Salesforce staff protesting that there was a better way to operate without on-premises software. It turned out that Salesforce was right, and by the time it was acquired by Oracle, Siebel's market value had dropped dramatically.

What can we learn from this? If you don't disrupt yourself, another company will. Smart startups must think in three dimensions: horizontally, vertically *and* temporally.

► **X and Y: Balancing the Horizontal with the Vertical**

Scaling is always difficult for startups. Having a great idea is a high-energy moment. It's exciting and full of potential.

Sustained growth, on the other hand, is hard work. Both start-ups and scale-ups are constantly working to exploit new markets. They try to reach the 'blue oceans' where they can differentiate themselves and create new spaces with little or no competition. This means understanding where they can make the most impact.

Many startup ideas are created to solve business problems. However, most businesses and consumers experience these problems differently, and before businesses scale (and 'go horizontal') it's important to learn enough about the market and audience so that your solution is truly innovative and useful. For example, consider:

- Who (or which businesses) experience this challenge?
- Are there multiple audiences, and how do they see the problem?
- For each audience group, what competition is there, and what is the sales cycle like?
- How can you get feedback from each group and specialise before you scale?

► **Data-driven Decision-making**

This kind of information isn't always easy to obtain but it's the bedrock for your organizational growth. Having a firm foundation will help you understand how to address the serviceable, obtainable market – and both parts of this are important. There's no point trying to address a market which can't be reached, or one that doesn't need your product!

But how do you obtain this data without a large R&D budget? There are a few smart ways to make sure that you're working with some data rather than none, including:

- Feedback from your sales team: This can help you to build a market strategy based in reality, but do remember to focus on the big picture, not individual anecdotes
- Talk to customers and prospects directly: Remember that it can be as helpful to understand why people don't buy from you as well as why they do
- Reports from market research agencies and analyst organizations: These can be invaluable. You might not be able to buy full reports from analysts, you can usually gain insights from what is available
- Social listening: Look at user communities on networks like Reddit or LinkedIn and learn what people want, are talking about or buying
- Other industry reports: Market research organisations don't have a monopoly. You can look at industry associations in your sector, which often release free or freemium reports
- Founder networking: Other startups can provide invaluable information about experiences of the market

This data will enable you to gain a bird's eye view on the vertical markets, understand the use cases within them, and then effectively subverticalise so that your product has the maximum impact and is more aligned with the needs of the serviceable obtainable market you are targeting.

► **Establishing Business Architecture for Successful Temporal Growth**

The more data you gather, the more you'll be able to fine-tune your offering and increase the likelihood of growing vertically (i.e. doing something different). In turn, this will help you to shape your business strategy and organizational shape. For example, you should consider whether you are a low-cost, high-volume business, or a bespoke, experiential consultancy focused on top-quality service.

As a small organization, this might not seem relevant now, particularly if you've got fewer than ten employees. However, it's important to build sustainable growth into your company DNA, because the third element of business growth – time – can creep up on you easily!

Therefore, it's important to think about factors including:

Staffing

How are your teams structured? If you trebled in size, would they still work? Remember that growth is not the same as growing well: try to treat your business like a well-tended bonsai tree. Many founders scale teams too quickly and lose some of the agility that comes from working in a small team. Death by committee is a very real danger and too many cooks in the kitchen leave no dinner on the table!

When you're ready to scale horizontally, losing some agility is usually acceptable, but it's important to be aware of the trade-off.

The Runway

In the early stages of business, customer acquisition will usually cost more than average revenue per customer. It's ok to burn through cash, but bear in mind the runway; when funding runs out, or you scale to a certain level, how much can you afford to spend on customer acquisition, and what does this mean for your product price? A lot of innovative startups offer low-cost products and high-level support, and then drop out of the market when they realise that it's not a sustainable strategy. Look at the profitability curve over time and plan accordingly.

PEST

In the long-term, you could consider both SWOT and PEST analyses. For example, think about what sectoral regulation is coming up, and what does this mean for your organization? What other economic, social and technological factors are there, what will their impact be and when will it happen?

IT Infrastructure

It's also important to consider what other infrastructure is supporting your business. Technology infrastructure for your MVP is (and should be) very different to the infrastructure for production. When you're working towards a prototype or nearing an MVP, you're still in the experimental stage. Here, it's good to iterate quickly, so you should give yourself permission to use infrastructure that gives

you flexibility and uses built-in automations allowing cross-collaboration with other products and tools that will enable the functionality that you need.

At this stage, organizations are generally looking for public cloud providers offering this functionality. This means that they're not wasting time fine-tuning the details, and can simply innovate, ultimately increasing the value of the finished product. However, don't be fooled – it does come with a price tag.

Then, when you're in production and scaling horizontally, your solution needs to be sustainable: the cost of your infrastructure will affect the price of your product and therefore your commercial competitiveness, not to mention the runway if you're scaling.

At the same time, consider what this cloud infrastructure technology means for your staffing requirements: how skilled a workforce do you need and what does this mean for your business location, training, time to market and other risks or dependencies? If you use more automation, would you reduce staffing costs without affecting product quality – but how do you do this without locking your business into proprietary systems? Remember that overall, it's important to stay agile, profitable and with the minimal risk dependencies or lock-in.

Overall, choosing the right infrastructure provider for blockchain requires careful consideration. For example, consider the following.

Criteria	What should you look for	Why is this important?
Hybrid/multi-cloud strategy enablement	Interoperable solutions that enable you to interconnect different products and services, including the ability to connect to solutions from other providers, as well as any on-premises or colocation setup. For example, our own OVHcloud Connect service fits into this category.	Interoperable blockchain solutions open the door to higher decentralisation of blockchain networks as well as robust disaster recovery and high availability options.
Compliance measures	A contractual commitment to broad regulations such as GDPR, as well as sector compliance that meets the requirements of specific industries.	Regulatory pressure surrounding blockchain is likely to intensify. Depending on your sector you may require industry-specific compliance certification.
Transparency in pricing	There should be no charge for ingress and egress traffic.	Ingress and egress traffic refer to data moving in and out of the cloud. Without a guarantee of zero charge, your monthly billing may become unpredictable.
Openness and reversibility	This should include a careful choice of cloud products that embrace open-source values.	This is crucial for future migrations, and multi cloud strategies, as well as decreasing business risk.
Security, scalability	Robust security solutions and tools, such as anti-DDoS protection included as standard. Hardware encryption solutions such as Intel Trust Domain Extensions (TDX), AMD SEV and Nvidia TEE.	Companies working in blockchain often deal with security threats which demands a robust security response from the infrastructure layer. As they grow, blockchain technologies rely on enterprise grade security to meet their increased workload.
Service Level Agreements (SLAs).	Expect a Service Level Agreement (SLA) of no less than 99.9% infrastructure uptime.	The SLA provides consumers with a guarantee on uptime rates. This means the provider must compensate a customer for any downtime that may occur beyond the SLA agreement.
Multi-regionality	Aim for a provider that offers the choice of infrastructure you need to scale with the technology stack that you want to scale with, in datacentres occupying priority addressable customer markets that fit your expansion plans.	Locating in the right facilities in the right market can confer greater competitive advantage, latency reduction (which will improve system responsiveness) and a favourable geopolitical regulatory environment can help to accelerate business process.



Bear and Bull Markets

All markets fluctuate, but Web3 often sees pronounced trends. Although it's hard to predict when conditions will change, it's possible for startups to thrive in both kinds of market.

Bear Markets: When supply outstrips demand and spending is falling, it's a good time to go back to the labs, strengthen your product and collect as much data as you can from customers and users. Be aware that valuations can be five times greater during bull markets, but fundraising during bear markets is very difficult. Consequently, spend time refining your go-to-market strategy, onboarding new users and customers – in turn, this raises revenue, which will turbocharge investment rounds.

Bear markets are tough, but they don't last forever. When the available supply of goods drops, scarcity rises, and a bull market may be coming. This is the time to look at the competition again, see what the strong players are doing, and get your house in order. Part of your approach at this time should be to take (or re-take) ownership of your technology stack. As we have said before, although public cloud stacks can accelerate your MVP development, transitioning to dedicated infrastructure like bare metal cloud or dedicated servers with open-source technology is critical for long-term scalability and independence.

Bull Markets: When the market is rising, and demand outstrips supply, it's time to go to market and sell, making as much buzz and noise as you can! Most organizations grow during this time, which reinforces the need for robust and scalable solutions, especially as startups and established players navigate different strategies for growth.

Scaling Web3 infrastructure during a crypto bull market is a delicate balance between speed and sustainability. It's important not to compromise on product quality or scalability – but you don't want to miss any opportunities, either.

Seeking Help to Grow Vertically

Finally, it's also helpful to have mentors who can guide you. As a general rule, startups should aim to:

- Work with more than one mentor
- Have a specific goal or plan with each mentor
- Work with mentors who have worked towards the goal that you're working towards, and who have broad and deep experience in a number of areas
- Consider joining a startup accelerator for easier access to technology, and once you've graduated, join the alumni organization for easier access to mentoring and a potential new audience – as well as meeting other likeminded organizations

Sharks and Goldfish

All these areas are enormously important and managing them can be a juggling act that requires a close-knit team. In essence, successful founders must constantly be considering:

1. What problem am I solving and how do organizations or consumers experience this?
2. How do I learn more and fine-tune my idea to do something different and reach the blue ocean?
3. How do I ensure this is a sustainable concept over time so that my business is an agile shark in the blue ocean and not a goldfish waiting to be eaten?

Running a startup or scaleup business is a uniquely enjoyable and uniquely challenging endeavour, but to be truly successful, teams must learn to think in three dimensions. Having a great idea is crucial and so is scaling – but keeping a careful eye on time, and evolving your business is the difference between dominating the market and becoming an old, irrelevant dinosaur.



“Over the past decade, we’ve had the privilege of helping countless entrepreneurs turn their visions into reality. Here’s to the incredible founders, teams, and partners who’ve been part of this journey.”

Octave KLABA

Founder and Chairman of OVHcloud

The element of time is also crucial in our next chapter, which looks at technology considerations in detail, as well as a number of use cases, and also how to adapt to macro-economic considerations like sectoral and in-country regulation.

02

Blockchain Architecture in Practice

How blockchain technology works, and important technology considerations for blockchain builders

Satoshi Nakamoto may have invented Bitcoin, but cryptographers have been theorizing about secure, trustless systems since 1982. In fact, early block-based systems were first deployed in 1991 by a group of security professionals.

As many of us will know, one of the challenges with conventional databases and document management systems is that they need human oversight. Databases also need updating, are prone to errors and vulnerable to tampering.

Like many IT systems, they also need high availability, continuous synchronization and redundant backup. This is a particular challenge for databases, because to be accurate they need to be a 'single source of truth'. Backup systems will often be old and out-of-date in the event of a primary system failure.

Blockchain helps to solve these issues. With cryptographic links between blocks, it uses a decentralized database that needs no administrator; ownership belongs to the entire participating group. Blockchain systems often run across hundreds or thousands of computers, ensuring resiliency, high availability and constant synchronization.

Blockchain is highly flexible. Depending on the type (permissionless vs permissioned) anyone (or selected users) can build on chain. Control over the database stays with the group of people who operate the chain. Any 'brute force' attacks attempting to change the chain requires modification of over half of the total information on the blockchain itself. Most attempts to falsify the chain without this level of control quickly show up as inconsistencies between data on different blocks and result in a loss of consensus.

Ultimately, blockchain is a robust system that enables organizations to benefit from decentralized, secure and transparent operations. But how does this work in practice?

Blockchain Architectures: Segmentation

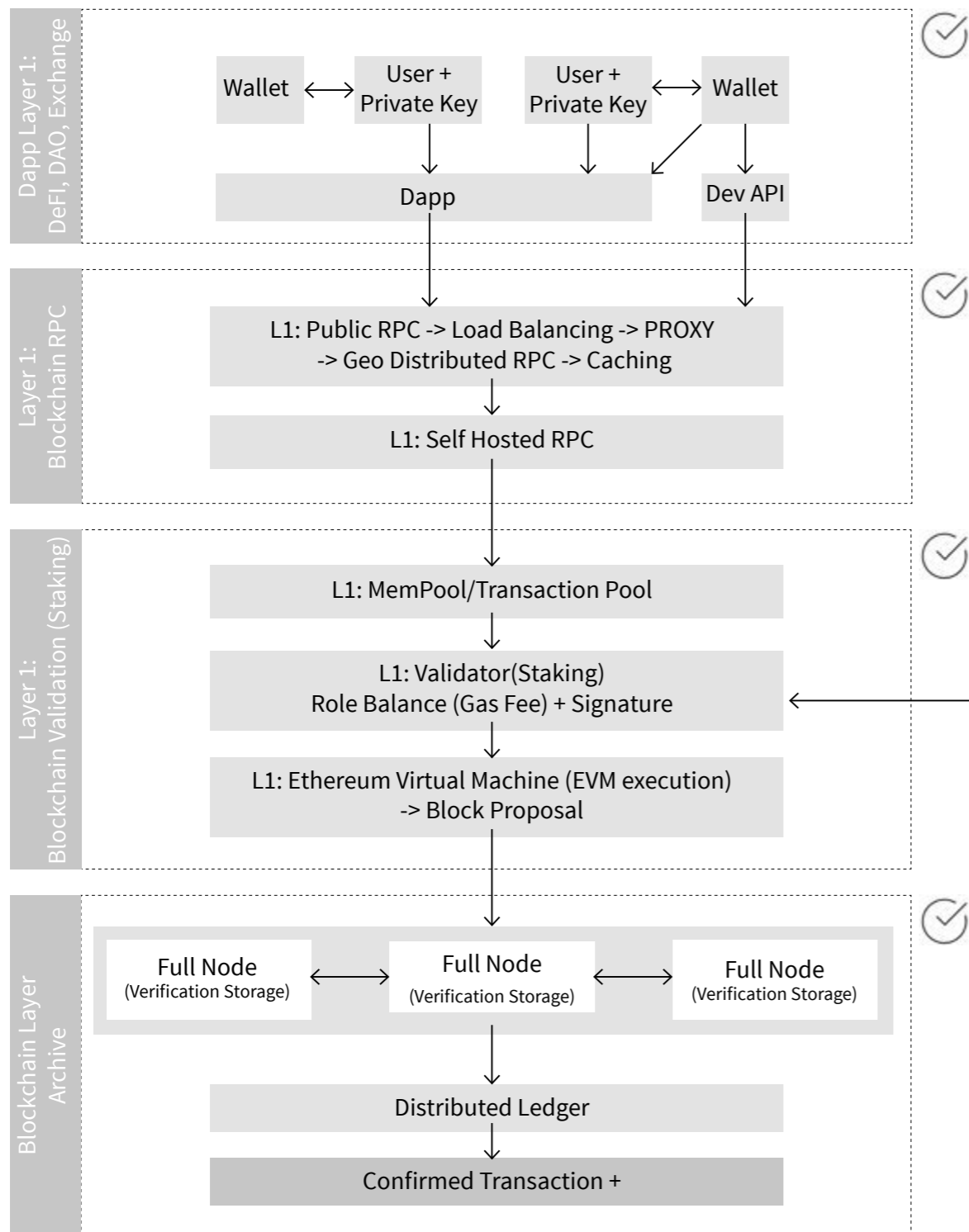
In blockchain, there are two main divisions: permissioned vs. permissionless, and public vs. private.

Public blockchains are open to all users

- Permissionless blockchain networks allow anyone to view the entirety of the blockchain, providing complete transparency
- Permissioned blockchains are limited to a select group of users

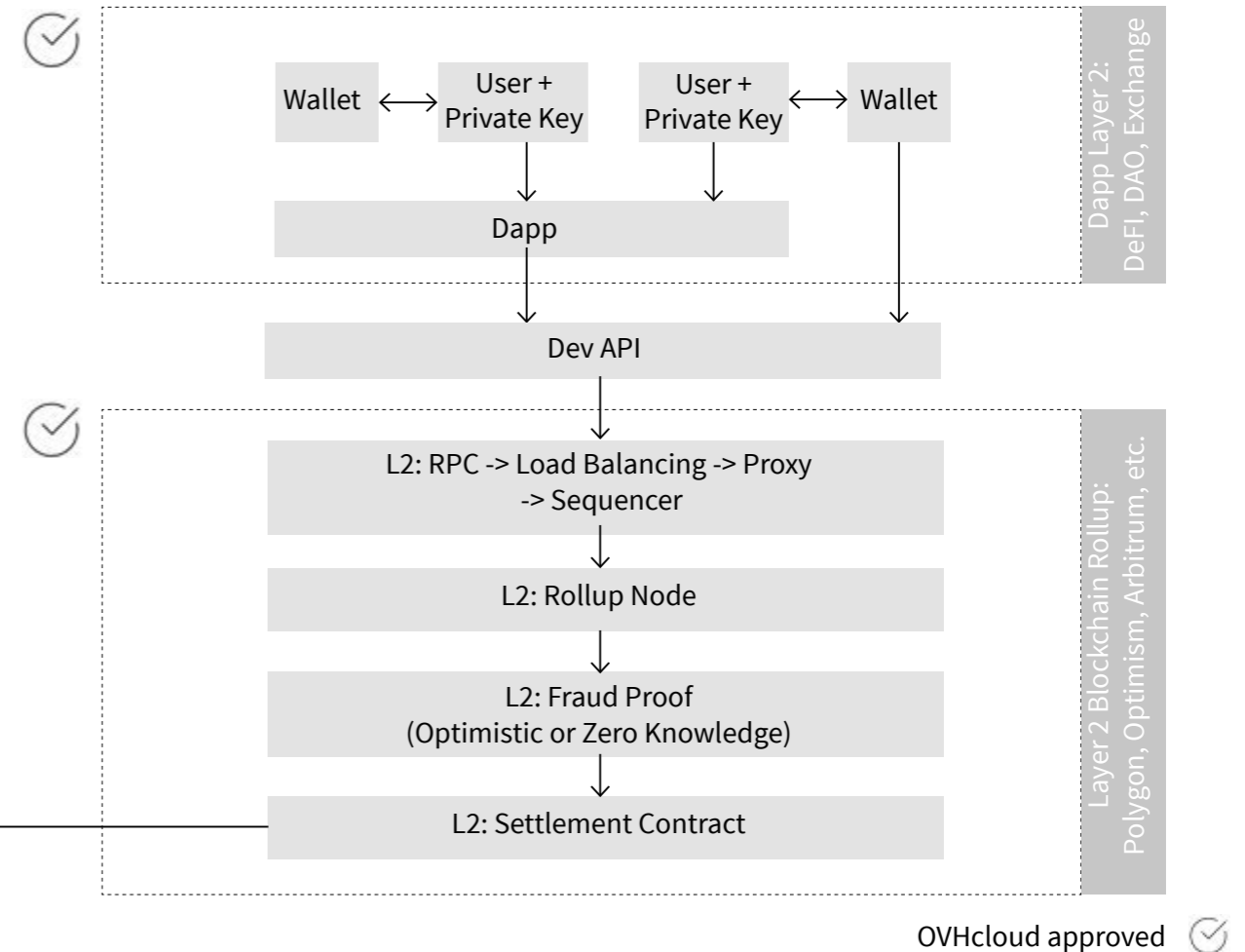
Private blockchains are more restricted





In the diagram, we can see a typical architecture for a proof of stake consensus mechanism. It incorporates:

- The user-facing app, such as a wallet, and their private key for authenticating the transaction with the distributed application (dApp).
- When two users want to exchange currency (for example) and the conditions of the dApp (i.e. mutual authentication) are met, then the dApp nodes start to process the transaction within the blockchain or create a smart contract.



- In a Layer 1 Network, the public RPC (remote procedure call) node acts as a gateway to the blockchain network. To ensure that a high volume of transactions can be handled, this may be intermediated by a load balancer, proxy or cache. Eventually, the transaction makes its way to the self-hosted RPC, getting closer to the validation layer.
- After the RPC node, the transaction enters a MemPool or Transaction Pool where it is held with other transactions that are awaiting validation. In a proof of work system, the transaction would be passed to a mining node, but in proof of stake, it moves to a staking validator which establishes the fee for validating the transaction before securing the transaction (staking) and passing it into the peer-to-peer network and the ledger itself.
- After this, the transaction must be incorporated into the block. The blockchain is (as the name suggests) a long chain of blocks, each storing many transactions with different attributes like time stamps, hashes etc. This must be formalized in an orderly fashion, so the data is sent to the Ethereum Virtual Machine (for example) block proposer. This establishes which transaction comes next in the blockchain.
- Once added, the block is distributed to the local database and then propagated across the peer to peer (P2P) network so that there is consensus. The data is validated and the block is now part of the ledger. The transaction is confirmed and the validator is paid for their part in the work.

However, with a high volume of transactions, particularly when transactions are low-value (for example, minor currency transfers) it would be easy for Layer 1 Networks to get clogged up. For this reason, we have Layer 2 Networks, which add an application layer that handles high volumes of smaller work. These are the decentralised exchanges (Dexs), decentralized finance (DeFi) and decentralized autonomous organizations (DAOs) that work to handle such transactions.

In a Layer 2 Network:

As per Layer 1, there is the user-facing app, such as a wallet, and their private key for authenticating the transaction with the distributed application (dApp).

- When two users want to exchange currency, for example, and the conditions of the dApp (i.e. mutual authentication) are met, then the dApp nodes start to process the transaction within the blockchain or by creating a smart contract.
- The transaction then reaches a rollup node, where it is combined with other transactions and recorded off the main chain. This ensures that the L1 chain remains as efficient as possible, and does not get bogged down in processing a high volume of minor transactions.
- The rollup also conducts its own fraud checks to ensure authenticity. Once these are completed satisfactorily, it becomes a settlement contract, and the transaction is almost complete. Rollups mainly use two methods to assess transactions, Zero Knowledge and Optimistic.

Optimistic Rollups assume that the transactions are valid and only verify them if a problem is detected. This gives Optimistic Rollups very high throughput. However, in case there are issues, Optimistic Rollups also include a contesting period where transactions can be challenged within a certain time.

Zero Knowledge Rollups use zero-knowledge proofs that check the transactional validity without disclosing information about the transaction itself. This is less powerful than an in-depth fraud check but does provide proof of validity without the waiting time of a full transactional analysis.

- The batch of transactions is then passed to the PoS validator as above. It is ultimately established into the L1 blockchain as a single large transaction made up of many smaller transactions.

Further considerations for blockchain developers

▶ A. Verification

One very significant decision for blockchain developers is the verification method, also known as consensus. Verification checks the transaction, ensuring that it is valid and checks that the same transaction doesn't occur twice, for example. The two main ways that transactions are verified in blockchain are Proof of Work (PoW) and Proof of Stake (PoS).

PoW is the 'original' verification method and uses cryptography to 'mine' a new block for the chain and verify transactions through computational power. The miners can be based anywhere and receive a reward for their work on validating each block. However, PoW is an exceptionally energy-intensive process, with PoS using up to 99% less energy to operate ¹.

OVHcloud's infrastructure is designed to be energy-efficient by default.

We optimise hardware usage, build and design our own server frames and racks, use water-cooling for our servers in datacentres, and offer predictable, high-performance compute requiring much lower energy and water consumption.

For blockchain infrastructure operation, that means you can run your nodes or validators efficiently, without excess cost or carbon emissions.

In a PoS network, people and organizations that hold a significant number of tokens (the operational cryptocurrency for that network) can become validators. Each network has its own requirements for the number of tokens needed to be invested within the staking nodes as well as hardware-based requirements to standardize effectiveness and performance for the transaction validation process on the network.

The network selects a candidate to approve each transaction, based on the amount of cryptocurrency that they're willing to put forward to verify transactions (their 'proof of stake') as well as number of nodes, lack of slashing, factoring and jailing (which is a process to punish less reliable or more poorly performing validators). The transaction is then validated by this party, with other validators checking it as well, and all participants get a reward.

Furthermore, because this process doesn't rely on algorithms that become more complex as the network grows, it is both more scalable and more energy-efficient than PoW. On the other hand, PoS can encourage users to hoard cryptocurrency, because a greater stake means greater influence over the network!

It's important to be aware of both sets of considerations, especially when designing applications and networks for enterprises. Enterprises want low-latency, high-throughput solutions, but they also want to be aligned with sustainability goals.

▶ B. Public Permissioned, Public Permissionless and Private Blockchains

If you're building an application or network for blockchain, you will probably already know how it operates at a conceptual level. But in case you're building one from the ground up, there are two more categories to be aware of.

¹ Ibañez, J.I. and Rúa, F. (2023). The Energy Consumption of Proof-of-Stake Systems: Replication and Expansion. [online] Social Science Research Network. doi:<https://doi.org/10.2139/ssrn.4324137>.



Public vs. Private Blockchains

Public blockchains allow anyone to access and participate in their networks; this is important for applications like currencies or government and civic applications. Private blockchains are usually used by enterprises or organizations for very specific purposes, and access to them is strictly controlled and often invitation-only. In a private blockchain, the owner has the ultimate power to make changes to the blockchain itself, as well as controlling access.

In a public blockchain, anyone can read the data on the chain, making it a more open and transparent network.

Permissioned vs. Permissionless Blockchains

Permissioned blockchains have clearly set roles: for example, only specific users can make changes to the blockchain or perform certain activities. This is important for a number of enterprise applications when expert knowledge is required for interacting with the blockchain, or when data is particularly sensitive, for example in financial settings.

Permissionless blockchains allow anyone to join and make changes – for example, when conducting financial transactions, it's important that anyone can use the blockchain. The major cryptocurrencies like Bitcoin, Solana and Ethereum in their common forms are all permissionless blockchains. These kinds of networks allow almost any user to participate in their consensus process, as long as certain criteria are met.

▶ C. Security

Keeping transactions secure and valid is a key component of blockchain architecture. The fact that blocks of data are connected together in a chain and agreed upon by a consensus mechanism means that data integrity is very hard to compromise.

In turn, blockchain networks must be kept secure to remain operational and preserve user trust. As we've said, public and private blockchain networks do this in different ways to suit their needs; private and permissioned blockchain networks restrict access to ensure that only certain people have control over the system.

Permissionless blockchains use specific consensus mechanisms to ensure trustworthiness in their trustless systems. As we've said, the most commonly used consensus mechanisms are Proof of Stake and Proof of Work.

However, unlike PoW networks, PoS networks are vulnerable to '51% attacks'. If a user controls the majority of the blockchain, they can control which transactions are verified and even change certain transactions on the chain. However, this is usually mitigated by the system intercepting attempts to verify fraudulent transactions before the party has this much control of the network. Verifying a

fraudulent transaction can result in 'slashing', which is removal of the tokens that the validator has staked to ensure the validity of the transaction!

Another common attack that utilizes blockchain's architecture is a sandwich attack. In a sandwich attack, the attacker – usually a miner or validator – identifies a transaction about to happen, then places a transaction immediately before and immediately after it.

OVHcloud datacentres are equipped with a special and high-performance hardware stack, including a DDoS mitigation node. This works for both local protection and also as a part of a global system, which means it can unload to other places during big attacks.

Packets can go directly to a datacentre's racks and servers or via deep analysis and mitigation methods, in the case of suspicious traffic.

OVHcloud has recently developed highly customised arrangements for networks with very high throughput, like Solana.

This chain of events can affect factors including the price of the cryptocurrency, temporarily driving it up and adversely affecting the transaction in the middle. Again, this can result in slashing and can erode user trust in the blockchain.

Fortunately, most blockchain networks use a range of security measures, including resource allocation, fraud protection, smart contract monitoring, execution rules and proof of history validation to make sure that the chain operates smoothly and fairly. We won't look at each of these in detail, but one interesting infrastructure consideration that we will look at is denial of service protection.

Almost everyone in technology knows what a denial of service (DoS) attack is: an overwhelming flood of data (either in terms of volume or processing requirements) that overwhelms and shuts down the network. This is usually orchestrated by malicious users or organizations through co-opted devices (botnets) distributed around the world.

However, blockchain networks have one major challenge: at peak times, networks can be flooded with legitimate transactions that look like DoS attacks. As a result, infrastructure which is not custom-tuned for blockchain transactions can run the risk of rejecting legitimate transactions and interfering with user activities as valid traffic will be blocked. This makes it incredibly important for blockchain application providers and organizations in the ecosystem to work together to understand traffic characteristics so that networks can function effectively.



OVHcloud's Blockchain Security in Focus

Today, OVHcloud has custom-built architecture for networks like Solana to help avoid network security tools flagging 'false positives'. Solana can create a block every forty milliseconds, and OVHcloud's custom-tuned DDoS profile for Solana can avoid blocking genuine traffic which may appear to be a denial-of-service attack, thanks to the high volume of network transactions.

Confidential computing is also an important part of many blockchain activities, ensuring that data is protected during processing. At OVHcloud, we can support confidential computing applications by providing a range of secure infrastructure environments, including Intel SGX / TDx, Nvidia TEE and AMD SEV, protecting applications and helping blockchain organizations to comply with sector-specific regulation such as HIPAA, GDPR and PCI-DSS.

OVHcloud also offers identity and access management capabilities that help organizations to control user access to blockchain systems. For example:

1. User and group management (IAM): Users can create and manage users and groups, and assign permissions and access rights.
2. Role-based access control: Organisations can define roles and assign them to users and groups, controlling access to specific resources and actions.
3. Multi-factor authentication: Businesses can enable multi-factor authentication, requiring users to provide additional verification factors, such as codes or biometric data, to access cloud resources.
4. Single sign-on: OVHcloud's IAM capabilities support single sign-on, enabling users to access multiple cloud resources with a single set of credentials.

Finally, OVHcloud has its own key management software, helping organizations to secure their cloud resources. This includes:

1. Centralized key management: Businesses can manage all their encryption keys in a single, centralized platform.
2. Key generation and rotation: The KMS can generate and rotate keys automatically, ensuring that keys are regularly updated and secure.
3. Key encryption: Keys are encrypted at rest and in transit, using industry-standard encryption algorithms.
4. Access control: Users can control access to their keys, using features such as role-based access control and multi-factor authentication.

OVHcloud Security in Practice: Super Protocol delivers Confidential Decentralisation using OVHcloud Advance-6 Dedicated Servers and Public Cloud

[Super Protocol](#) is one of the world's first decentralised and confidential [cloud computing](#) protocols – the next generation of clouds designed specifically

with Web3 needs in mind. Super Protocol is built as a decentralised network of confidential computing nodes, welcoming compute providers to join the community and monetize their confidential computing resources.

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

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

Confidential computing compatibility, price and performance were the main requirements set by the Super Protocol team. Based on these requirements, 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 via the OVHcloud Start-Up Program, which offers free cloud credits, training and marketing support for start-ups. Joining this program enabled Super Protocol to expand its testnet and staging infrastructure to OVHcloud's trusted cloud, which features transparent PAYG billing, guaranteed resources, automated backup, [load balancer](#) and [anti-DDoS protection](#).

Super Protocol also spent credits on [OVHcloud Managed Kubernetes](#) – a fully managed service that enables IT teams to create and deploy containers, without having to worry about management and maintenance. This service was used to handle external requests as part of the testnet cluster.

As Super Protocol is built on confidential computing technology, it needed [bare metal](#) servers with Intel SGX-enabled processors, as well as the power to handle heavy workloads. After testing servers offered by other major cloud providers, Super Protocol found the perfect solution with OVHcloud Advance-6 Dedicated Servers. Built on Intel SGX and 3rd Gen Intel Xeon Scalable Processors, these powerful servers were able to process Super Protocol computation orders in just 6 minutes and 22% faster than other providers.

As OVHcloud offers its Advance-6 servers in multiple geolocations, Super Protocol was also able to benefit from the highest possible availability and as a starting point chose Canada, Germany and UK. The servers were deployed across Super

Protocol's testnet, staging and development clusters, and connected to the public cloud services using [OVHcloud's vRack private network](#).

Thanks to its partnership with OVHcloud, Super Protocol was able to expand the capacity and reach of its decentralised confidential network. [OVHcloud Bare Metal servers](#) delivered the high-performance and confidential computing capabilities it needed, whilst OVHcloud Public Cloud provided a scalable, secure and reliable cloud. Managed Kubernetes added further value, helping to drive 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

As all this infrastructure is hosted in multiple geolocations, Super Protocol can also rest assured that there will be high availability and no downtime – essential when processing demanding Web3 workloads for its customers.

▶ **D. Network / Connectivity**

Many blockchain solutions are extremely sensitive to latency. Blockchain systems rely on a network of connections, and every small increment of latency can add up to impact the user experience. Blockchain applications such as high-frequency trading solutions for DeFi, not to mention consensus mechanisms for cryptocurrencies all require lightning-fast speeds.

There are a variety of ways to accelerate connections and decrease latency for blockchain developers from an infrastructure perspective:

- **Low-latency networks:** Many network and cloud providers offer specialised low latency networks, such as dedicated fibre connections between datacentre sites, or guaranteed server and rack placement for guaranteed latency between certain locations.
- **Content delivery networks / edge processing:** Content delivery networks serve popular or specified content from locations closer to the user, rather than sending all traffic requests to the core. This has historically been done for media-heavy applications such as video streaming and downloading, but works equally well for decreasing latency for some blockchain applications.

Furthermore, some blockchain solutions do not touch the public internet, which means that they need private fibre optic connections between datacentres.

OVHcloud Networking Solutions

OVHcloud offers a variety of specialised solutions for improving latency and maintaining confidential connections between sites. We understand the need for speed and operate our own global network that interconnects datacentres together. This is also connected to the Internet via several Points of Presence (PoP) and together, offers the best fault tolerance, security, low latency, and traffic control. Our network provides:

- 100 Tbps global network capacity
- 44 datacenters implemented across 4 continents
- 44 redundant PoPs worldwide

OVHcloud launched vRack in 2014, which enables companies to create their own private network across all OVHcloud regions. It connects Public Cloud, Hosted Private Cloud and Bare Metal servers on a secure Layer 2 network, which makes it feel as though your OVHcloud servers are already part of your datacentre. vRack provides unlimited bandwidth and easy integration, enabling blockchain companies to build scalable infrastructures while keeping data flow private.

We also provide OVHcloud Connect, which is a private connection between an organizational network and OVHcloud's services. It can offer speeds between 200 Mbps (guaranteed) and 10 Gbps (guaranteed), offering improved latency compared to the public network (internet).

▶ **E. Ethos**

When creating a blockchain application or sub-system, it's also important to consider the broader ethos of your supplier ecosystem.

▪ **Distributed**

At the time of writing, approximately 34% of the Ethereum mainnet was hosted with one single infrastructure provider, whereas Solana is reasonably well distributed across different cloud service providers.

Although the stability of the network is not at risk, given the scale and redundancy of large hosting providers today, this degree of centralization does pose governance risks. For example, if adverse privacy policies were put into place in these regions, then a large proportion of the network would come under threat.

However, this isn't the only dimension of centralization to be aware of. For example, many parts of a provider's infrastructure may already be decentralized. Single providers can have hosting facilities in multiple different locations in the same country, using hardware and software technologies from different suppliers, providing redundant power and network infrastructure. Different arms of a company can also exist in different jurisdictional areas as different legal entities, such as in Europe and the US, where data privacy and residency laws differ radically.

On the other hand, large hosting providers will have their own preferences about what they host and how. They will also be subject to the laws and policies of their country of residence, as well as industry-specific internal policies.

These factors can be complicated but are very important to understand if the characteristics of the data supply chain are to match the underlying principles of blockchain itself, which includes decentralization, fairness and security by default.

- [Transparent and Democratic](#)

Blockchain is built on a foundation which is trustless and transparent, and it's important that blockchain builders create their applications and systems on infrastructure and using processes which mirror these values. For example, many blockchain creators prefer to use open source software, which is open to all and does not lock other creators into proprietary systems over which they have no control.

This ethos also applies to other infrastructure considerations as well. For example, whether the cost model of the cloud or infrastructure provider is clear and transparent, and whether your system should be based on bare metal / dedicated servers which give administrators full root access and control, or a public cloud solution which offers superior automation capabilities but without the raw power of bare metal.

What infrastructure is available to blockchain organizations?

OVHcloud offers a range of infrastructure solutions that cater to blockchain infrastructure requirements. There are a number of differences between public cloud and bare metal cloud – beyond price – which can have a significant impact on startups and scaleups. Public cloud usually includes many more pre-automated components, including provisioning, backup and auto-scaling functionality. Although bare metal cloud comes with far greater responsibility for these things, it also comes with greater power: a dedicated server will give organisations far more processing power for what they are spending.

In a smaller organization, where speed and keeping labour costs down is critical, using public cloud can make far more sense, but technical teams should keep a close eye on their costs and requirements as they scale.

OVHcloud's cloud infrastructure includes:

Bare Metal

A [dedicated server](#) gives the user total flexibility to design the software layer, so you get the control you need to design and manage your machine. With cloud-based bare metal servers, the hardware is maintained by the provider. The solution is delivered with networking features such as enhanced public connectivity bandwidth options, and private vLAN connectivity, helping you meet clustering and scalability requirements.

Public Cloud

[Public Cloud](#) solutions are well-suited to the needs of blockchain companies. The technology's underlying bare-metal resources are shared with more than one business, making it affordable, and easy to scale up and down.

Public Cloud solutions enable users to increase efficiency through automation, and there are also specialised orchestration tools like Kubernetes, with a fully managed master node layer and automations. This form of cloud-based infrastructure, known as Managed Kubernetes, is often used by blockchain developers because it decreases the time-to-market as well as the need for hardware maintenance. By harnessing the right technologies, DevOps teams can spend more time focusing on proper meaningful projects rather than monitoring and maintenance.

Hosted Private Cloud

[Hosted private cloud](#) platforms help tackle the pain point of shared resources. Unlike Dedicated Servers, which are Infrastructure-as-a-Service (IaaS), Hosted Private Clouds are more likely to be Platform-as-a-Service (PaaS) solutions. These clusters are equipped with specialised Hypervisor solutions, from companies such as Nutanix, and VMware by Broadcom. These solutions include integrated, ready-to-use features offering capabilities such as infrastructure management and monitoring, custom virtualised networking, automation, plus disaster recovery and backup options.

These solutions offer improved redundancy features, such as service uptime due to high availability. This improves fault tolerance as the product itself is designed with a minimum of two hosts. If one of the underlying nodes goes down, the overall infrastructure is still operable. In short, hosted private cloud can be designed so that there is no single point of failure.

Cloud-based Platform as-a-Service solutions are best suited to the blockchain industry. More specifically, hosted private cloud products offer orchestration tools to develop private containerised environments. VMware and Nutanix offer orchestration products, such as Tanzu or Nutanix Kubernetes engine. These solutions are fully scalable, secure and private.

Blockchain in practice: Stakely

Stakely is a leading provider of non-custodial staking nodes, enabling its users to earn rewards for staking their cryptocurrency holdings. Stakely currently supports over 40 Proof-of-Stake (PoS) blockchain networks and offers low fees for its customers, whilst maintaining a secure and high-quality node infrastructure.

Stakely chose OVHcloud to host its Cosmos SDK sentry nodes on OVHcloud Advance Servers, whilst the signer nodes were hosted on virtual machines using OVHcloud Public Cloud Instances.

03

Blockchain Use Cases

What are the common use cases in blockchain, and what is the future of the industry?

The use of blockchain around the world has grown exponentially in the last two decades. But with growth comes complexity, which can result in latency, slowing down blockchain processes. As a result, blockchain organisations now have to look at how to optimise at every level, including factors such as speed, price and networking performance.

Indeed, many blockchain systems revolve around trading, so minimising latency is critical. As we have seen with Layer 2 blockchain networks, innovative and cost-effective systems have sprung up to support all parts of the ecosystem, from reducing this latency to managing anti-fraud functionality.

In this chapter, we will look at a number of blockchain use cases that support the ecosystem, from essential roles like decentralized applications, RPCs and validation as well as looking further ahead to the future of blockchain and AI. In general, these functions can be split into those who occupy the front end and those who innovate at the back end.

Front end blockchain creators

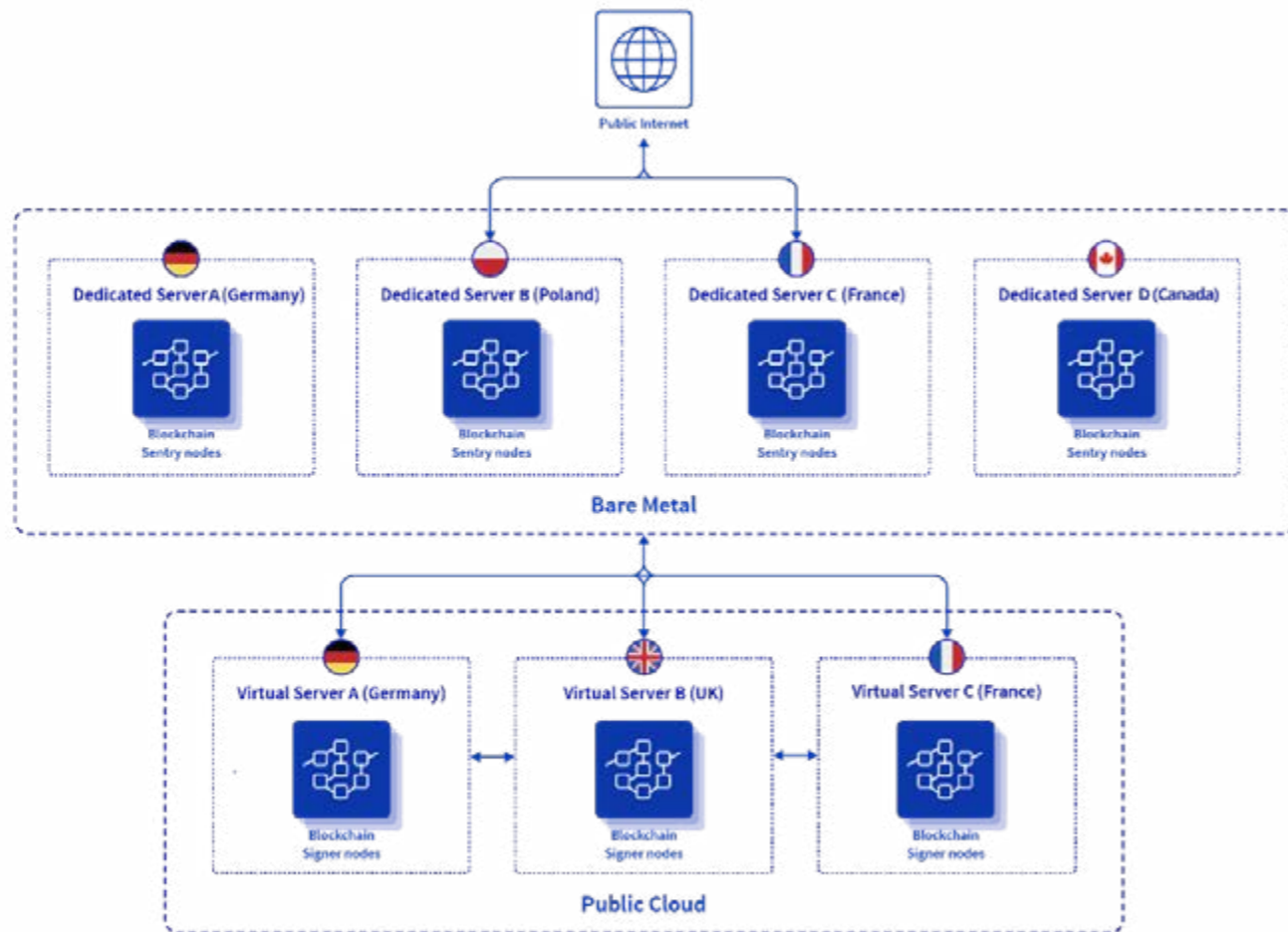
Many innovators working in the front-end space are Software-as-a-Service providers and software houses. They often specialize in Decentralized application (dApp) and exchange (DEX) creation, as well as Decentralized Finance (DeFi) applications consumed by large fin-tech and fin-ops companies or even Decentralized Autonomous Organizations (DAOs). Use cases for blockchain technology have also surged in gaming, the metaverse (VR/AR/XR), Internet of Things (IoT), art, NFTs, and AI.

Back end blockchain creators

There are also many creators innovating in the back-end space. This includes blockchain infrastructure providers such as RPC providers, proof of stake network validators, rollup as a service providers not to mention mining pools.

Architecture in Practice: RPCs and Rollups as a Service

1. **RPC:** In a Layer 1 Network, the public RPC (Remote Procedure Call) node acts as a gateway to the blockchain network. To ensure that a high volume of transactions can be handled, this may be intermediated by a load balancer, proxy or cache. Eventually, the transaction makes its way to the self-hosted RPC, getting closer to the validation layer.
2. **Rollups as a Service:** In a Layer 2 Network, Rollups as a Service (RaaS) providers allow users to create their own rollup chain using a service provider, rather than building their own from scratch. This functionality is often used



Using Public Cloud Instances, the signer nodes were hosted on several virtual machines. Public Cloud Instances retain the same availability and Anti-DDoS features as dedicated servers, but offer increased scalability and simplicity, as resources can be customised and scaled at the click of a button. This was ideal for hosting the signer nodes, as they contain the private keys from the validators and perform signatures, which are then broadcast to the network via the sentry nodes.

Thanks to its partnership with OVHcloud, Stakely gained a powerful yet energy-efficient platform to host its blockchain infrastructure. Both the Advance Servers and Public Cloud Instances deliver the speed and performance required to support blockchain technology, with multiple security and bandwidth features to protect transaction data and ensure high availability for Stakely and its customers. In addition, OVHcloud's global datacentres support the distributed infrastructure required by blockchain, whilst its eco-friendly servers deliver peace of mind for companies like Stakely, who are building a more sustainable future for the blockchain industry.

In this chapter, we've looked at some important considerations for building your blockchain startup. In the next, we'll look more broadly at some of the other kinds of organizations that occupy the blockchain ecosystem, as well as some of the infrastructure considerations that affect them.

by gaming companies and Decentralised Exchanges (DEXs) to handle spikes in demand. Furthermore, because this is provided ‘as a service’ blockchain organizations don’t need to provide their own infrastructure or even support team. However, it is still important that the RaaS offering gives you the right functionality for your need, including the appropriate level of support, scalability and any important technical considerations.

We’ve already looked at Zero Knowledge and Optimistic Rollups within our Blockchain in Practice section. Rollups are an important way of handling a large volume of lower value transactions, and fall into two categories:

- Optimistic Rollups assume that the transactions are valid and only verify them if a problem is detected.
- Zero Knowledge Rollups use zero-knowledge proofs, which check the transactions’ validity without disclosing information about the transaction itself.

Staking businesses operate nodes equipped with cryptocurrency assets that ensure the legitimacy of transactions. These businesses operate 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 utilising 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 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.

Many blockchain companies offer the back-end network itself, whether it’s a private blockchain solution, such as Hyperledger fabric, or the public blockchains, such as the Ethereum network. Some networks already offer inter-blockchain communication protocols (IBC), such as Cosmos.

There are companies that operate in both front-end and back-end spaces. They usually have comprehensively designed private blockchain solutions, often in industries such as retail and logistics. These businesses are known as System Integrators (SI’s). They usually own the hardware in their datacentres and build the front-end software layer, as well as tailoring the back-end functionality. This is mostly offered as a service for businesses.

After a worked example in practice, we will look at a few of these types in more detail.

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

[Bware Labs](#) (now part of Alchemy) delivers a powerful blockchain infrastructure built to meet the challenges of Web3. The company aims to play a major role in blockchain adoption worldwide, 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 couple of 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 can also support blockchain projects as a validator and bridge operator.

To host Blast, Bware Labs was using a [virtual private server \(VPS\)](#) solution from a major cloud provider. However, as Blast started gaining traction with customers, the hosting solution needed to be scaled-up to cope with demand – leading to a rapid increase in infrastructure and network costs, as well as decreased performance. Bware Labs therefore required an alternative hosting solution that could be scaled easily, whilst optimising cost and performance.

“Our collaboration with OVHcloud has been very fruitful since we started using the platform. We are always happy to collaborate with professional individuals and companies, and OVHcloud offers such a possibility.”

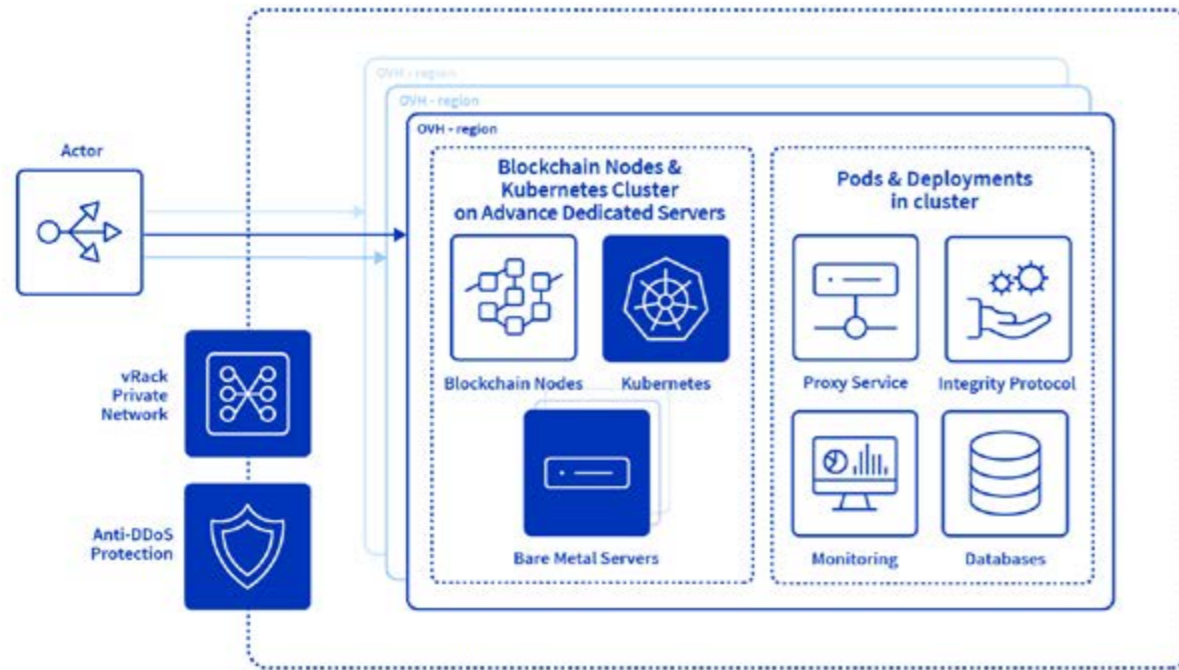
Flavian Manea, CEO at Bware Labs

As [VPS hosting](#) shares its resources with multiple users, this can reduce performance, so Bware Labs needed to replace its VPS solution with a dedicated hosting solution. Adopting dedicated hosting would enable Blast to better handle increased traffic, whilst also offering more control around security and scalability.

After testing products from several major cloud providers, Bware Labs found the perfect solution in OVHcloud Advance Dedicated Servers – a powerful range of servers designed for hosting complex and critical infrastructure.

Built on next-generation components, Advance Servers deliver high-performance and high-speed connectivity. They contain Intel® Software Guard Extensions (SGX) hardware for increased data protection, and network-boosting features, such as Link Aggregation, to reduce the risk of downtime during peak traffic. Advance Servers also contain ultra-fast NVMe storage, which is built to handle complex workloads.

With over 44 datacentres worldwide, OVHcloud offers a robust global infra, enabling its customers to benefit from high availability in multiple locations. This was perfect for Bware Labs, as Blast has a distributed architecture and hundreds of users worldwide. To connect this architecture to its Advance Servers, Bware Labs used OVHcloud’s vRack Private Network, which offers a simple platform for connecting and managing complex architecture, whilst retaining availability and shielding traffic from the internet. This would deliver further network resilience for Blast as it scaled, whilst also ensuring protection for user data.



Partnering with OVHcloud enabled Bware Labs to deliver Blast – one of the fastest blockchain API platforms on the market. Advance Servers delivered the performance Blast needed to handle peak traffic, whilst OVHcloud’s global datacentre footprint and vRack Private Network delivered fast, secure and resilient network availability. This, combined with a transparent commercial model, ensured Blast was able to scale cost-effectively, whilst maintaining speed and performance.

“We are happy with the way our platform behaves using OVHcloud services. We are really impressed with the flat-fee for certain networking capabilities and, of course, with the quality of support.”

Flavian Manea, CEO at Bware Labs

Blockchain Use Cases in Depth

1. Validators

In a PoS network, consensus is achieved differently to PoW. PoS bypasses the time- and resource-intensive process of mining new blocks through solving complex equations and instead uses a community-based process where parties with presence on the network are allocated the validation process in return for a financial ‘stake’.

Each network selects a validator using a different process, but it usually involves

the amount of tokens or currency that they hold, and how much they are willing to put forward as a stake. For example, in Avalanche, the stakers must put forward a minimum of 2,000 AVAX and must set up their own node.

During the validation process, the validator checks the data and adds it to the proposed block. Other validators will double-check the transaction. Each network has its own minimum number of double-checkers; in Ethereum, for example, this is 128.

In many networks, this block of users is rotated so that the same users are not constantly validating the chain. This improves the trustworthiness of the chain. A linkage is then created between the new block and the old one, final processes are carried out (for example, on Ethereum there is confirmation that at least 66% of validators have agreed on the block) and then the block is considered final.

In return for validating transactions, validators receive tokens from the network. It’s worth noting that there’s a difference between block rewards (the reward paid to PoW miners and PoS validators) and gas fees, which are the transaction fees paid by users to compensate the validators for their computing power in validating the transaction. This is unlike Fiat currencies, where merchants or receivers pay the processing fees.

Validator nodes need fast infrastructure to keep processing latency low. This means multi-core CPUs, high levels of RAM and fast storage (usually solid state). In addition, nodes must be connected to a fast network with reliable uptime. However, it’s important to match the architecture to the task: smaller blockchain networks or proof of concept experiments may not need such powerful infrastructure, for example. If you are connecting to an existing blockchain network, the hardware prerequisites should be listed within the documentation, along with recommended configurations for existing major providers.

2. Oracles

Oracles connect blockchains to external systems for better execution of smart contracts. Smart contracts often need off-chain information, which is inaccessible to smart contracts, and Oracles obtain, verify and relay this information. They are effectively an API between a smart contract and the ‘real world’, but much more complex.

Oracles are an extremely sensitive part of the blockchain ecosystem and need watertight security to protect against external attacks and tampering attempts. They also need robust internal processes to ensure that the external data they obtain is trustworthy!

Latency can be important for Oracles, but it depends on the application. For example, in the case of a smart contract for an insurance payment, a delay of several seconds would not be noticed by a user. However, other applications may be more sensitive to latency.

3. Chain abstraction

There's no doubt that blockchain and crypto has become more accessible in the last decade, but there's still a long way to go. Chain abstraction takes all of the complexity and manages it away from the user, giving them a clearer, simpler Web3 world: it's the equivalent of moving blockchain from DOS to Windows!

At the same time, chain abstraction enables greater interoperability between chains, allowing Solana assets to be used on Ethereum, without complex (and irreversible) bridging, and vice versa, for example.

Chain abstraction is one of the newest areas of blockchain and has incredible potential, offering a far better user experience, especially for non-technical users.

There are relatively few chain abstraction organizations 'in the wild' today. Given the complexity that abstractors must manage, low latency and good interconnections are an absolute must from an infrastructure point of view. However, further requirements will depend on what is being abstracted away from the user, and the ultimate aim of the system.

4. Blockchain and AI

The convergence of AI and blockchain presents some very exciting opportunities. Although neither AI nor blockchain are new technologies, we are still at the very beginning of seeing where these two areas can support each other. However, there are a number of 'quick wins' emerging, which include the likes of:

- **Visibility:** Blockchain can help with AI's explicability. AI has historically been seen as a 'black box' where inputs are often divorced from outputs. Blockchain's ability to trace transactions can give AI another layer of visibility, providing an audit trail and enhancing trust. This is particularly important in agentic AI, where AI makes decisions and takes actions on its own.
- **Automation:** The convergence of smart contracts and AI agents can be used to automate certain processes based on external events, taking decisions when certain criteria are met. AI can also assess smart contracts for errors, continuously helping to improve quality.
- **Federated Learning:** Federated learning is the sharing of data between different machine learning models, while protecting data privacy. This has some clear challenges, especially in how trust is established between participants. However, blockchain systems are good at checking and rewarding the validity of transactions between two unknown parties. Within a federated learning system, smart contracts check the quality of models, and measures are put in place to discourage malicious participants.

Federated learning allows for a more decentralised machine learning process, removing the vulnerabilities associated with a central authority mechanism and using blockchain's strengths to support the advancement of ML and AI.

Within federated learning, security and good process are crucial to ensuring that the system is trustworthy. Speed and low latency are also critical to make sure that learnings are shared promptly.

As we've seen, the blockchain ecosystem is thriving and constantly expanding. Many of these sectors are key foundations of the community, while others are helping to drive it forwards. This brings us close to the end of our guide, but before we wrap up, we'll take a quick look at blockchain's broader relationship with society at both a micro- and macro-level.



04

Looking Ahead: Blockchain's transformational potential

How does blockchain support communities, what are the challenges, and how can OVHcloud support you?

In this guide we have looked at a range of issues, from how to thrive as a blockchain startup to choosing your infrastructure and architecture, as well as the kinds of organizations that exist in the broader ecosystem to tips for startup founders from both business and technical perspectives.

However, it's also important to look at the ecosystem outside of blockchain, including its potential impact on public authorities and society at large. Blockchain is a transformational technology and we shouldn't underestimate its potential.

Blockchain's hungry secret

All technologies have an impact on our planet. AI's global energy consumption will potentially double between 2024 and 2030, for example. Blockchain's impact may not be as profound, but is significant, particularly when such enormous energy savings can be made by switching consensus mechanisms from proof of work to proof of stake.

According to the [White House²](#), the total power usage for the cryptocurrency economy is around 180 billion kW hours per year, which is more than the electricity used by all of Australia in the same time period. Blockchain may offer a transparent, trustworthy system, but if it is power-hungry and inefficient, then it's not a fit system for modern use, particularly in the public domain.

However, this is not a true picture of blockchain. As we have seen, PoW is highly power intensive, whereas PoS is much more efficient. PoS nodes do not necessarily use the full compute resource capacity, making it a much more sustainable and energy-efficient blockchain solution.

To illustrate the impact of this, when the Ethereum consensus mechanism switched from PoW to PoS, its power consumption [dropped](#) by over 99%. Ethereum's PoS system now uses one twenty-fifth of the power used by PayPal and twenty-four thousand times less than the gold mining industry, or to give a more practical example, around the same amount of power as a medium-sized supermarket.

This has a very real impact on blockchain organizations. For example, here at OVHcloud, we do not host PoW blockchain applications because of their excessive power consumption. Hetzner has previously said that it will not host crypto mining or even staking applications.

²Alzoubi, Y.I. and Mishra, A. (2023). Green blockchain – A move towards sustainability. *Journal of Cleaner Production*, [online] 430(1), p.139541. doi:<https://doi.org/10.1016/j.jclepro.2023.139541>. [Accessed 08 October 2025]

At OVHcloud, we are firm supporters of more power-efficient technologies. Ethereum is able to deliver results at scale, efficiently. According to [academic studies from UCL](#), it has half the number of validators as Bitcoin but handles five times more transactions per second, not to mention solutions such as Polygon and Solana also working on a PoS basis, which can drastically impact the amount of transactions that are then passed into the Ethereum chain. This is clear evidence that there are blockchain systems capable of delivering power-efficient solutions across the globe.

Blockchain and society

At the same time, blockchain has enormous potential for supporting broader society. It can help us to create transparent and trusted systems. Identity and property records could use blockchain systems, with transactions being certified in a clear, traceable and unchangeable way. Blockchain can play a crucial role in eSignature solutions, ensuring that all signatories are who they say they are, and that records are securely stored. In fact, almost any kind of ownership can be proven using a blockchain solution with on-chain records.

Data breaches and identity fraud have become common in recent years, and blockchain offers a way of making records more resilient. Blockchain infrastructures are designed to be ‘trustless’, relying on many supporting validators; these validators secure the network and ensure that the transactions are correctly processed on-chain, helping to minimize the chance of fraud. Identity management on blockchain could also verify people’s identity without relying on one centralized store, which has clear applications in the area of e-voting, for example.

Of course, it’s not this simple. Every link in a blockchain network can be trusted because of how the system as a whole is built, and to mirror this it’s important that the human and organizational network behind the systems can be trusted as well. For example, staking providers must be selected in a fair and transparent process, with open competition.

Looking to the Future

Our industry’s direction of travel is clear: digital transformation is unavoidable. It brings faster, better, smarter ways of doing business and enables organizations across the world to focus on the things that matter, not the supporting infrastructure. But with this, trust and safety have become essential. Trust is the currency that underpins all of our transactions, and blockchain has the power to be a critical part of this process across not only validation and smart contract processes, but also cybersecurity and other zero-trust architectures.

However, trust needs to work at scale, and this is where cloud plays a key part – and more importantly, this trust requires a cloud which is built on the same ethos as the technology it supports. Blockchain, its infrastructure and its supporting ecosystem must be built on a scalable, secure, transparent and decentralized

technology stack, all aligned in the same direction. This is critical for the future of the industry.

It’s clear that blockchain can and will play a key part in the ongoing AI revolution. With Generative AI’s hallucinatory issues, AI as an industry faces a trust crisis. Blockchain can help to build trust across many AI systems by verifying outputs and providing much-needed transparency and traceability.

The blockchain ecosystem is constantly improving its own usability and integrations. In future, we will certainly see more multi-chain interoperability through chain abstraction, as well as linkages with external systems via Oracles. Chain abstraction will also be critical in making blockchain simpler and easier to use, and all of these developments will help it to move from being a niche technology to an essential layer embedded across the enterprise.

Blockchain won’t simply be an enterprise or developer tool. We will see more public-private partnerships taking advantage of blockchain’s transparency and fair, secure processes. In fact, blockchain has the potential to support and transform almost every system on the planet – we just need to keep driving it forwards, together.

OVHcloud: A cloud provider built on the blockchain technology ethos

OVHcloud is a different kind of cloud provider, built on the same ethos and principles as the blockchain ecosystem. We offer secure, distributed, transparent infrastructure which is already being used by leading blockchain organizations around the world. We support all sizes of blockchain companies, from small, founder-led businesses to mid-size consultancies and builders, as well as enterprise deployments.

OVHcloud has over 450,000 servers in 44 datacentres 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 territories, including a separate business in the US, giving us the ability to ensure true data sovereignty for the companies we work with. We have custom-built solutions for blockchain organizations including technology for Solana validators that ensures that network traffic is not misidentified as a DoS attack.

Our billing is transparent and easy to understand, and we’re also committed to sustainability. We use watercooled servers in every datacentre we own, making us more efficient than most other companies. Because of our commitment to sustainability, there are a small number of blockchain applications that we don’t support, including Proof of Work and mining applications.

We have a unique industrial model, where all of our servers are assembled and disassembled in two factories in France and Canada. This gives us the power to re-use and recycle components into our affordable, lower spec server ranges including KimSufi and SoYouStart.

We make sustainability easy for you too. For most of our offerings, you can download a carbon calculator at the end of the month or year, which tells you the exact impact of your cloud usage, including the ‘share’ of its operational impact, like running our office locations. This transparency and fairness is an integral part of our business.

We’re committed to innovation. In addition to our commitment to blockchain, we offer a number of AI-specific IaaS and PaaS solutions, as well as offering quantum solutions so that whatever your future plans, we can support you.

And you don’t have to take our word for it. Research organizations like Markets and Markets have assessed our capabilities and ranked us as a Star in their evaluation quadrants, specifically for the blockchain industry.



Markets and Markets Blockchain Market Global Forecast to 2030 (2025)

The OVHcloud Partner Program

[The OVHcloud Partner Program](#) is an ecosystem of over 1900 partners worldwide. It was created to empower organizations to leverage OVHcloud infrastructure to build solutions and services for their customers. It gives you the opportunity to expand your cloud offering, providing choice for your customers, and differentiating you from competitive alternatives.

We take a personalised approach to communicating with our Partners. Partners get direct access to our sales and technical teams to support them in any way that they need.

We promote our partners in our Partner Directory, provide training, dedicated Partner Account Managers, access to OVHcloud’s R&D and Partner Advisory Boards, as well as market development funds. Being an OVHcloud partner is a two-way street, and we hold regular events to learn more about your experiences and how we can support you better.

Blockchain Partnership in Practice: Mizar crypto trading platform works with Dynix and OVHcloud to build dedicated infrastructure on Base and Solana for real-time data analytics and trading

Mizar is a crypto trading platform that unifies Distributed Finance (DeFi) and Centralised Finance (CeFi) trading by offering advanced automation, free analytics, and powerful copy-trading tools across major exchanges. With features such as on-chain analytics, automated trading bots, and a marketplace for copying top traders, Mizar enables users to optimize their strategies and manage risk efficiently.

Mizar’s native \$MZR token allows for significant fee reductions, making sophisticated trading accessible and cost-effective for both beginners and professionals.

Blockchains like Base (built on the OP Stack, part of the Ethereum L2 ecosystem) and Solana (a high-speed L1 network) are growing rapidly. As a result, it is important for platforms like Mizar to offer support for these chains to tap into fast-growing markets.

Furthermore, by supporting chains like Base or Solana, Mizar can offer users access to a wider range of trading pairs, DeFi protocols, and liquidity pools. Traders often want to access opportunities across multiple blockchains, so this capability is important.

As such, Mizar needed to build two Base mainnet full nodes and one Solana dedicated RPC node for real-time data analytics, wallet intelligence, and trading optimization on both Base and Solana blockchains.

It was important that the nodes had the following characteristics:

- High network bandwidth and low latency for rapid communication with the blockchain and other services, while remaining protected including measures such as DDoS security
- Ready for deployment in production in a few days, not weeks.
- Nodes should be online 24/7 to avoid missing blocks or trading opportunities.
- Real-time monitoring for node health, sync status, and performance metrics.
- Analytics services built-in, empowering Mizar users to optimise their strategies and manage risk efficiently.

After comparing service vendors' offerings and a consultation process, Mizar decided to engage with Web3 DevOps consultancy Dysnix.

The Dysnix team began to plan the new solution, focused on ensuring uninterrupted hosting services. At the same time, ensuring rapid hardware replacement was important; acquiring new hardware that met Solana node requirements within 1-2 days could be challenging, potentially leading to downtime from unexpected disconnects.

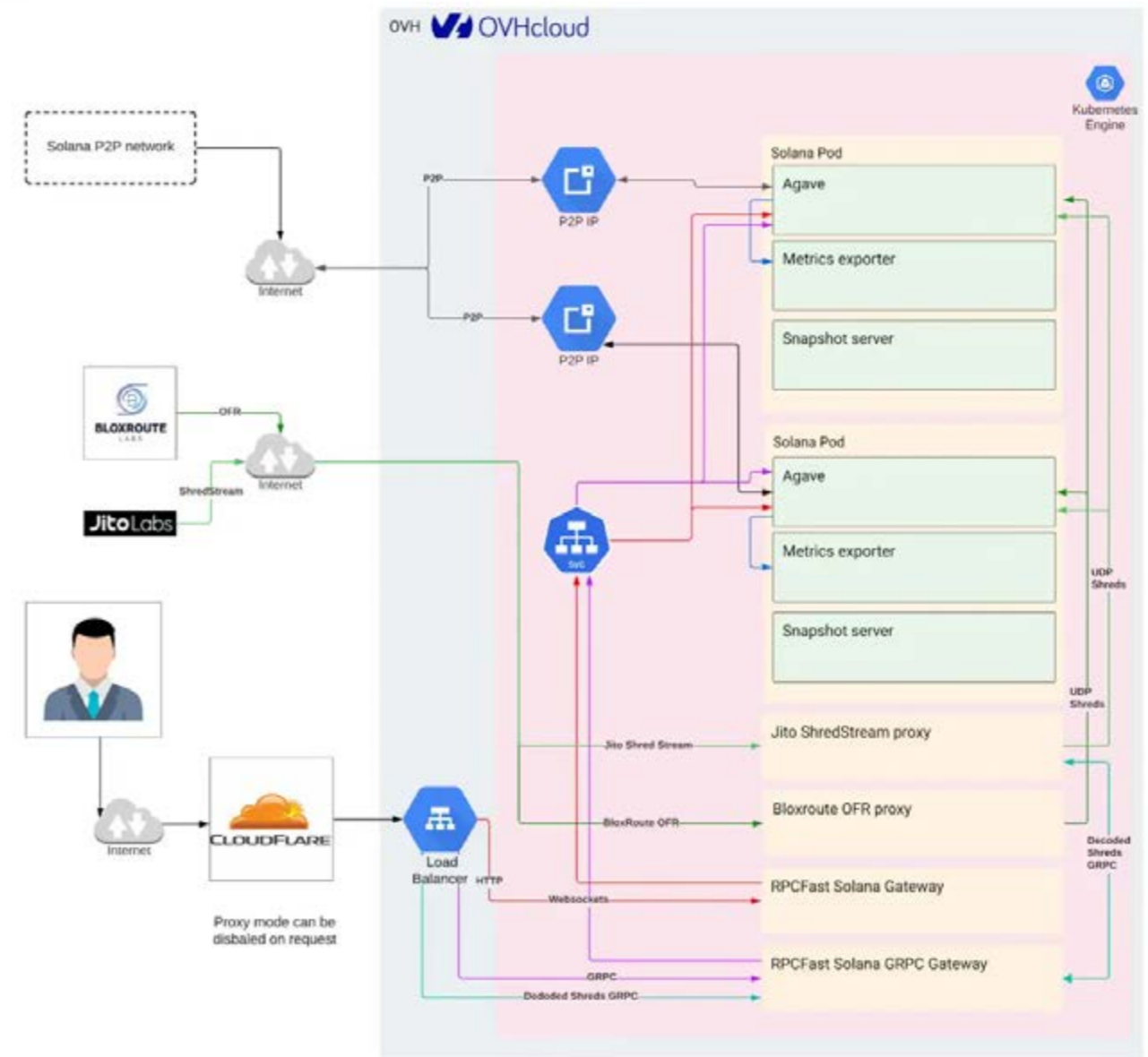
"We wanted to deliver the best possible solution for Mizar, giving them high performance at a reasonable price," said Daniel Yavorovych, CTO at Dysnix. "With all Solana mainnet requirements, this can be an uneven process! We knew that we would need a CPU with a decent clock speed (>3.2GHz) and a high number of cores. In addition, RPC nodes also require tons of RAM, so 512GB is suited for nodes without additional account-indexes enabled. We'd partnered with OVHcloud before and approached the team to support with the solution."

Dysnix worked with OVHcloud to create interconnected public cloud and bare metal servers. This allowed them to leverage the power of dedicated bare metal and the flexibility of the cloud for the Kubernetes control plane and low-load essentials like monitoring and logging systems.

OVHcloud supports the setup of a hybrid infrastructure, so Dysnix chose to use bare metal servers as worker nodes and deployed their K8s control plane directly onto cloud instances.

"Using Kubernetes helps us manage the full lifecycle of blockchain nodes, including load balancing, automatic pruning, and initialization from fresh snapshots," continued Yavorovych. "We also implemented a custom solution that enables us to reduce the initial bootstrap times of Solana nodes from 6+ hours to just 15 minutes."

Solana nodes require substantial resources, utilizing approximately 80TB of bandwidth per month (40TB inbound + 40TB outbound) and demand fast, stable uplinks. Furthermore, OVHcloud guarantees scalability of the solution without extra costs, including ingress and egress traffic, for example.



Dysnix chose OVHcloud's Scale-a3 servers with AMD EPYC 9354 processors as the foundation for the solution.

The solution includes two Base Mainnet full nodes primarily for data collection and trading-related analytics. These play an important role in the infrastructure as Mizar processes all DeFi-related activity on Base, including swaps, liquidity events, and smart contract interactions on major protocols.

The Dysnix team also delivered Grafana dashboards for monitoring node health, performance, RPC requests, data flow, and analytics. The system is built for real-time responsiveness, and the Base nodes allow Mizar to capture and process events with low latency, enabling advanced analysis pipelines for token movement, wallet behaviors, and liquidity changes.

The node deployment was delivered on time and to Mizar's specifications. The team now has a high-performance, dedicated Solana RPC node to support real-time data fetch, ingestion, and trading operations. The nodes deliver consistent, stable, and predictable performance under the current load conditions.

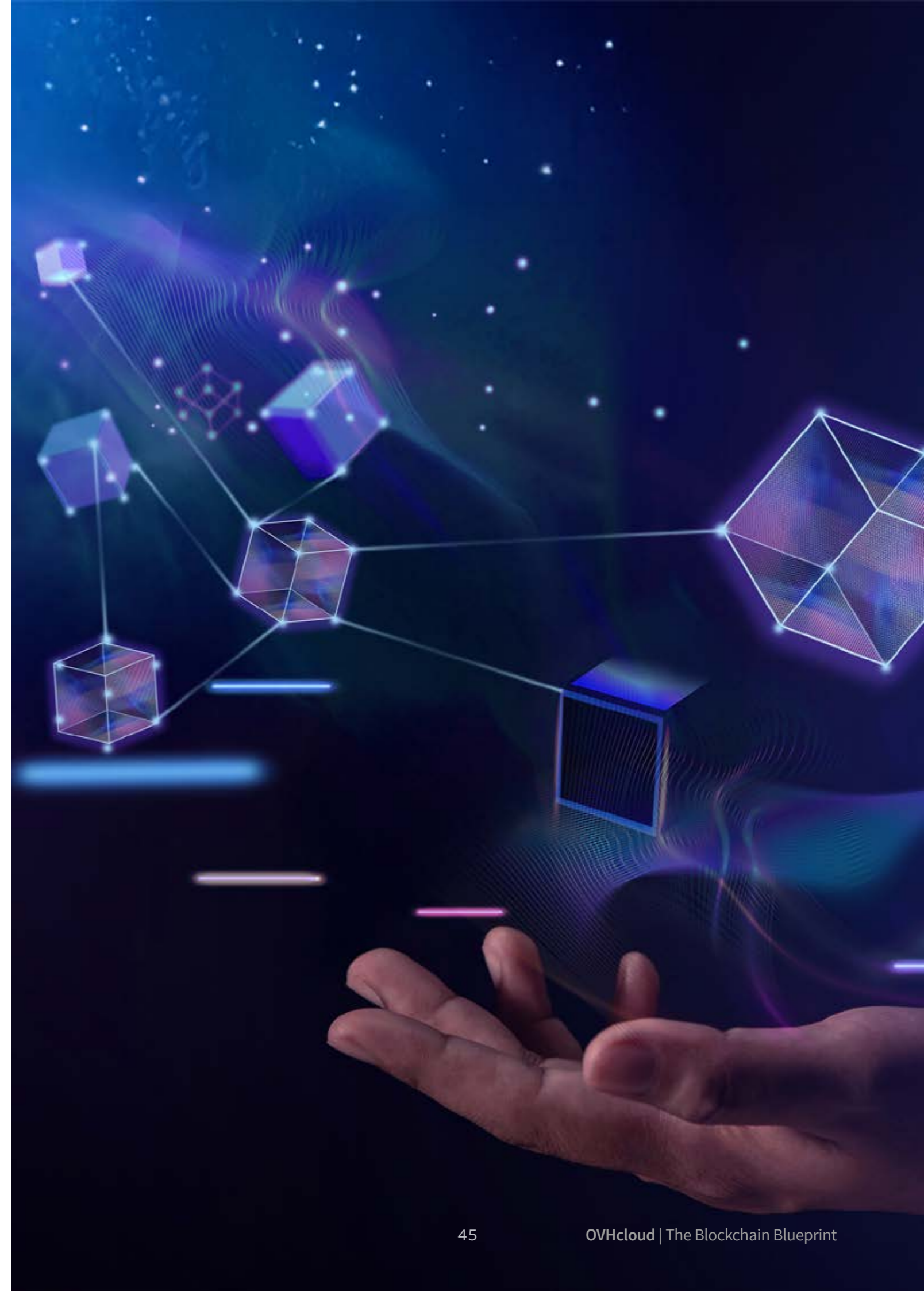
Mizar's team can now ingest every swap, pool creation, add/removal of liquidity, and any other event associated with all the major Solana DEX protocol using Yellowstone gRPC for low-latency, high-throughput data streaming. Compared to built-in Solana websockets, it performs significantly faster and offers advanced filtering capabilities, enabling developers to create trading bots and other tools more easily and efficiently.

The swaps are used for Mizar's advanced wallet analytics and to build a candlestick chart that updates nearly in real time. The platform analyzes all Solana wallets to find the most profitable ones, and the platform's AI labels each wallet based on their behavior. Finally, Mizar uses swaps and wallet analytics to create advanced, real-time analytics for each token, helping traders find excellent opportunities.

The Dysnix team also integrated Jito's ShredStream and Yellowstone gRPC (Geyser), making sure that Mizar receives DEX events more quickly than its competitors.

"The performance of the Base nodes has been outstanding," said Francesco Ciuci, CEO and Co-Founder at Mizar. *"We have a highly reliable solution which is responsive under high load, as well as being integrated seamlessly with our monitoring and alerting systems. The sync speed, request latency, and consistency of log delivery have all met our expectations for production-grade systems."*

"I am very satisfied with the service, the nodes are stable, and we have direct contact with great tech support. It took just 2-3 days to get the Solana node running from when it was requested," concluded Ciuci. *"The gRPC stream is the fastest way to get live data from Solana, and the RPC calls have minimal latency. The dashboard provided by the team to monitor the nodes is really insightful and transparent. I use it every few days to check if everything is running smoothly. I think the Dysnix team is very professional and the quality of the service they provide is awesome."*



OVHcloud | Marketplace

[The OVHcloud Marketplace](#) is a one-stop shop for our community's SaaS and PaaS businesses. Built on our ethical and transparent cloud, it helps organizations find ways to digitize their entire business or subscribe to solutions for personal use. It allows builders to find solutions across collaboration, cybersecurity, business administration as well as specialised vertical software, while simultaneously promoting our SaaS and PaaS partners.

OVHcloud **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: Ideal for early-stage startups developing a proof of concept and beginning their journey. Support includes €10,000 worth of free cloud credits and 6 hours of one-on-one consultations with an engineer to build on our cloud.

Scale: Designed for scale-ups looking to refine their offering, grow their user base, and expand. Support includes up to €100,000 worth of additional cloud credits and up to 20 hours of strategic support.

How do you build the technology foundation for a growing blockchain business?

Drawing on the expertise of blockchain, Web3, startup and infrastructure teams from around the world, this guide from OVHcloud provides a blueprint for how to build and scale a blockchain business. Covering topics from selecting mentors and optimising business infrastructure, the kinds of organisations in the technology ecosystem, the wider role of blockchain in society and the future of Web3, this reference provides an indispensable guide for anyone working in the industry.

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