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The Magazine for Future-Proof Cloud Infrastructures and Digital Sovereignty

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DR. MARIUS FELDMANN

Chief Operating Officer (COO)
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Foreword:
Impulses for Digital Sovereignty

Dear readers,

A responsible digital transformation is one of the essential prerequisites for the future viability of our economy and public administration. In light of today's international challenges, it is crucial not to lose control over one's own data in the course of this transformation. Those who fail to do so risk losing their autonomy in decision-making.

In this first issue of our magazine, we therefore dedicate ourselves to a topic that particularly concerns us as a cloud service and cloud technology provider rooted in Dresden: **digital sovereignty.**

Sovereignty should not be mistaken for autarky or isolation. Rather, digital sovereignty is about the ability to identify - and where necessary, eliminate - dependencies on individual vendors when it comes to digital solutions and infrastructures. Before we discuss options for action, however, we must first understand the starting point when examining digital dependencies. To that end, **we analyze the risks that arise** when companies allow themselves to be locked into proprietary ecosystems (vendor lock-in). We also show how one can make their own digital independence measurable through appropriate metrics.

These challenges can be met with offerings that deliberately provide alternatives. In this issue, we introduce the **Sachsen-Stack**, a prime example of how the competencies of multiple providers are bundled into a comprehensive IT solution offering. The Sachsen-Stack is a coordinated portfolio by the Digitalwirtschaft Sachsen industry association and represents a collection of products and services that enable building holistic IT solutions from infrastructure through applications to cross-cutting concerns such as security and operations and maintaining them throughout their lifecycle. It is a valuable example of how regional expertise in the IT domain can be pooled to safeguard digital sovereignty.

To ensure we do not overlook the physical layer beyond the world of software, our article on **data centers** examines the role of infrastructure. In particular, we take a closer look at energy efficiency and discuss how data centers can be sensibly planned and operated.

Finally, we dive into another detailed topic: virtualization tools that, among other things, enable digital sovereignty through their consistent open-source foundation. **We compare OpenStack and Proxmox VE** to determine which solution is best suited for which scenarios.

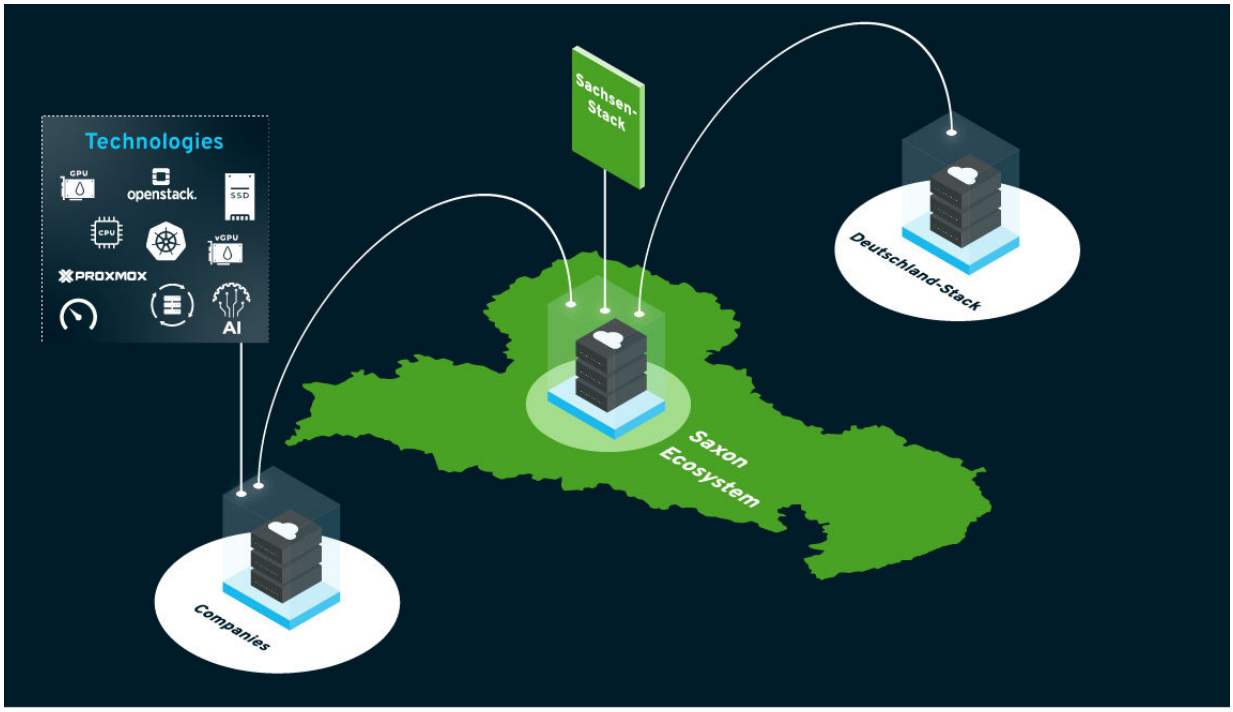
With this issue, we invite you to see digital sovereignty not as a marketing term but as the result of strategic foresight, regional cooperation, and technical excellence. We hope that the diverse topics in this issue will provide multiple impulses in this regard.

Enjoy the read!
Dr. Marius Feldmann

THE SACHSEN-STACK

The technology stack that was already there

Dr. Maria Vaquero (Cloud&Heat Technologies GmbH)



Saxon IT companies have quietly been building the components of a technology stack to build digital infrastructures for years without anyone giving it a name. Now it has one: the Sachsen Stack.

The IT world loves well-designed technology stacks, and for good reason. A stack describes a collection of components that work together seamlessly, with each layer building on the one beneath it to deliver complete solutions. As cloud infrastructures and digital services become increasingly complex, and the number of available technologies, platforms, standards and providers continues to grow, selecting the right combination has become a challenge in its own right. That is why curated technology ecosystems (such as the Deutschland-Stack Initiative) are currently attracting a great deal of attention: they help to bring structure to this complexity and provide guidance in building reliable digital solutions.

But a technology stack is more than the sum of its technical components. Behind every technology, application and infrastructure layer are people and organizations that develop, integrate and operate these solutions. Enter the Sachsen Stack.

WHAT IS THE SACHSEN STACK?

Let's start with what it is not: a new standard competing with existing ones, a new specification, or an attempt to reinvent technologies that already exist.

Instead, it's the collection of technologies, products, expertise and offerings from Saxon companies that together cover surprisingly large parts of a modern, sovereign digital infrastructure (from hardware to cloud infrastructure, cloud platforms, applications, cybersecurity, consulting and operations). It's a showcase of what Saxony already contributes to digital infrastructure, and a reminder that innovation doesn't only happen in hyperscaler headquarters or international tech hubs. No, it happens in Dresden, Leipzig or Chemnitz — the same region, after all, that gave the world the toothpaste, the coffee filter, the milk chocolate and the bra.

In other words: the Sachsen Stack isn't an abstract concept on a presentation slide, but a list of offerings already deployed and used by companies and public institutions. It's grown organically from the R&D and product development work of highly competent, experienced and collaborative

companies based in Saxony. These companies have now joined forces in the Unternehmensverband Digitalwirtschaft Sachsen to give visibility to the strength of Saxon digital technologies and their potential for users in the Saxon public sector and private companies.

The association started simply by giving a name to something that had been there all along. First used as a working term for the association's collective offering, "Sachsen Stack" has since become an established term that the association and its members now use to communicate what the region is capable of delivering.

As one of the founding members, Cloud&Heat Technologies contributes its own piece of this regional stack: energy-efficient data center infrastructure, open-source-based cloud services and appliances for on-premises deployments, plus the operations and development expertise to run them. It's one example of what the Sachsen Stack looks like in practice, but far from the only one.

ANOTHER STACK?“ – NOT QUITE.

Whenever a new initiative appears, the first reaction is often predictable: "Another stack. Do we really need one?"

Not in this case. The Sachsen Stack isn't a competing architecture, especially not alongside initiatives like the Deutschland Stack. The relationship between the two is complementary, not competitive.

The Deutschland Stack provides a common foundation for digital solutions in Germany: a framework of interoperable, sovereign and open building blocks and standards. The Sachsen Stack, in turn, makes visible the companies, expertise and products that already contribute to those building blocks. Put simply: the Deutschland Stack describes the architecture; the Sachsen Stack showcases an ecosystem that builds it.

This distinction matters, because a stack isn't only technology; it also needs organizations that develop, integrate and operate it. Many companies in Saxony are already active in exactly these areas, and their offerings align naturally with key components of the Deutschland Stack, particularly at the infrastructure layer: open-source technologies such as OpenStack and Kubernetes, and standards like the Sovereign Cloud Stack (SCS), are already used to build offerings that are part of the Sachsen Stack today.

The interesting observation, then, isn't that Saxony has created an alternative stack, but rather that many of the ingredients for a sovereign digital infrastructure are already here: cloud infrastructure and open-source expertise, identity and security, automation, networking and storage, hardware, training, AI platforms, consulting and operations. The Sachsen Stack simply makes this ecosystem easier to recognize and connect.

THE GEOGRAPHY OF DIGITAL SOVEREIGNTY

Digital sovereignty is often discussed as if it begins with complex architecture diagrams. But it ultimately depends on something more tangible: people who can build and operate systems, companies that invest in good technological approaches, teams that write support contracts and teams that deliver on them.

Saxony has a notably dense concentration of exactly these capabilities, even if they don't always get the attention they deserve: cloud providers, application developers, system integrators, open-source contributors, research institutions and consulting companies. Some build infrastructure. Some build platforms. Some build applications. Together, they make sure that digital infrastructures keep running on Monday morning.

There's a further advantage that rarely shows up in architecture diagrams: proximity. In a regional ecosystem, partners know each other, projects find suppliers faster and ideas become products more easily. Regionality doesn't solve technical problems by itself but when expertise is concentrated, collaboration gets a lot easier.

SO, WHAT‘S NEXT FOR THE SACHSEN STACK?

Giving something a name is only the first step. The Unternehmensverband Digitalwirtschaft Sachsen is now working to drive the use of the Sachsen Stack forward, both within Saxony and beyond.

At the beginning of July 2026, the association held a kick-off workshop in Leipzig, presenting a small group of regional organizations with use cases involving national and regional public institutions, alongside ideas for further lighthouse projects.

The goal is not just visibility, but connection: helping public institutions and private companies find the right combination of Saxon providers for their specific needs, while helping companies discover where their own offerings complement one another. The association is keeping up the momentum. Beyond joint participation in several upcoming events, it's also planning its own conference at the beginning of October 2026.

The Sachsen Stack didn't need to be built from scratch. It needed to be named, connected and made visible. This work has only just begun.

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WHAT DIGITAL DEPENDENCY RISKS IS MY BUSINESS EXPOSED TO?

An overview of the most pressing risks companies face due to digital dependencies.

Anastasia Vöhringer & Marcel Beyer (DISQU GmbH)

The digital transformation has touched nearly every company. Cloud services, Software-as-a-Service (SaaS), platforms from international providers, and external IT service providers have become an integral part of the modern business world. But while these solutions may seem convenient and cost-effective, they also pose significant risks, especially when a company's digital sovereignty falls by the wayside.

This article highlights some of the most critical risks companies face. Although the risks listed here are the most common problems encountered, this list is by no means exhaustive, the potential risks are simply too diverse for that.

ECONOMIC VULNERABILITY AND FINANCIAL DEPENDENCE

One of the greatest risks companies face when using external digital services is financial dependence. At the outset, providers often entice customers with attractive introductory offers and deep discounts. But what happens if those discounts are suddenly eliminated or the provider raises its prices significantly?

Cloud providers and SaaS products, in particular, like to advertise with low initial prices that then rise shortly after the customer has set up its account in the system. Providers are well aware of their customers' dependence, which often leads customers to accept with the price increases.

One example of this is Microsoft's regular price adjustments, for instance, starting in April 2025, prices for cloud services such as Microsoft 365, Teams, and Azure increased by up to 40 percent, followed by an additional increase of up to 33 percent starting in July 2026. These price increases are clearly much higher than inflation or the growth rates of most companies. For companies that are increasingly relying on the cloud, this means a massive rise in costs that could strain many budgets. [1] [2]

Another example of such drastic price increases are Atlassian's Data Center products. In July 2023, as well as in 2025, Atlassian announced price increases for its Data Center products. In each instance, prices rose by 15 to 25 percent. These changes affected thousands of companies across various industries that rely on Atlassian solutions for project management, knowledge management, and version control. [3]

Such price increases can leave companies vulnerable to economic leverage, since switching to another provider is often expensive and technically complex.

LOSS OF DIGITAL COMPETENCE AND INNOVATION CAPACITY

Companies that reduce their IT staff in the name of supposed cost savings lose valuable in-house know-how. A well-known example is the automotive industry, which in the past often outsourced software development to external providers. As a result, these companies lost key capabilities and are now struggling to rebuild their in-house expertise. This loss of expertise is currently in danger of becoming one of the reasons why the German automotive industry is falling behind internationally.

Volkswagen, for example, is facing problems with its software subsidiary, Cariad. In July 2022, issues in software development came to light that led to delays of several years in the launch of new vehicle models. To this day, Volkswagen is struggling to develop an attractive infotainment system for its vehicles. Based on its recent collaboration with Rivian in the U.S., Volkswagen appears to have realized internally that it can no longer catch up in the area of software development. The price it pays for this is yet another dependency. [4]

In the long term, this means that the company will be less and less able to develop innovative solutions on its own or respond quickly to technological changes. Ultimately, this lack of innovation could lead to the company's long-term failure.

DATA SOVEREIGNTY AND REGULATORY EXPOSURE

Data is one of a company's most valuable resources. Yet many companies put their most sensitive information at risk by relying on cloud services from international providers that operate under foreign legal systems.

The U.S. CLOUD Act allows U.S. authorities to access personal data stored in data centers in Europe and other parts of the world at any time without prior authorization. [5]

This can lead to significant legal conflicts, as the U.S. CLOUD Act conflicts with the GDPR. These issues are becoming increasingly acute due to the policies of the current U.S. administration, as legal frameworks that previously allowed data transfers from the EU to the U.S. are breaking down. We reported on this in detail on our blog in January and July. [6][7]

Furthermore, there is always the risk of unauthorized access, misuse, or disclosure of sensitive data to third parties, a nightmare for any company.

OPERATIONAL OUTAGES

Digital dependency also means that a company is vulnerable if the external service provider unexpectedly goes out of business, is acquired, or discontinues its service.

One example of this is the Amazon Web Services (AWS) outage in December 2021, which lasted several hours and caused millions in losses for numerous customers worldwide due to business interruptions and lost revenue.

A technical failure can occur even when operating in-house or when using independent service providers. However, a company can protect itself from geopolitical tensions by carefully selecting its service providers (or by operating its own infrastructure). Furthermore, the design and deployment of infrastructure components can be structured in such a way that the infrastructure can be migrated to other providers or rebuilt there within a short period of time. However, this assumes that you are not locked into a particular vendor.

LOSS OF IP AND RESTRICTIVE CONTRACT TERMS

When digital sovereignty is lost, it is not just data that is at risk. Intellectual property (IP), patents, and important innovations can also be jeopardized by unfavorable contract terms and licensing provisions. A classic example of this is the use of AI services without giving any thought to how they handle the data entered.

A clear example of the risks of losing intellectual property by using AI services without carefully reviewing the terms of service is the case of OpenAI, the company behind ChatGPT. OpenAI's terms of service stipulate that content users enter into the AI may be used by OpenAI to operate, improve, and further develop its services. This means that confidential or proprietary information entered into the AI could potentially be incorporated into the AI's training and thus no longer remain the exclusive property of the original company. For example, a company that enters internal strategy documents or innovative product ideas into the AI could unintentionally disclose its own trade secrets. This can lead to a loss of control over intellectual property and indirectly give competitors access to sensitive information. [8]

But even if such use is not permitted under the terms of service, in many cases there is at least the technical possibility of doing so. If the services are not under the user's own administrative control, and may even be located abroad, the user must place their trust in the provider and will still face a problem in the event of damage.

CONCLUSION: CONSCIOUSLY SHAPING DIGITAL SOVEREIGNTY

The risks described here should serve as a wake-up call for companies to critically examine their digital strategy. The greatest danger of digital dependencies often lies in the fact that they develop gradually and go unnoticed. Companies only realize how deep their dependence has become when it is already too late and they face significant costs to regain control. Digital sovereignty means not only protection against external risks, but also ensuring long-term innovation and competitiveness. Companies that take action now, strengthen their internal capabilities, and consciously develop independent, sustainable solutions will protect themselves in the long term against the dramatic consequences of digital dependencies.

[1] https://www.heise.de/news/Bis-zu-40-Prozent-teurer-Microsoft-plant-saftige-Preiserhoehungen-10039322.html
[2] https://borncity.com/news/microsoft-365-preiserhoehung-bis-33-ab-1-juli-2026/
[3] https://valiantys.com/en/blog/atlassian-administration/fy25-data-center-pricing-changes/
[4] https://www.tagesschau.de/wirtschaft/unternehmen/volkswagen-elektroautos-rivian-software-100.html
[5] https://www.heise.de/select/ix/2018/7/1530927567503187
[6] https://disqu.de/blog/executive-order-in-weniger-als-50-tagen-auf-us-clouds-verzichten/
[7] https://www.disqu.de/blog/ftc-verliert-unabhaengigkeit-folgen-fuer-europa/
[8] https://openai.com/de-DE/policies/terms-of-use/

FIND ALL 8 WORDS RELATED TO THE TOPIC OF DIGITAL SOVEREIGNTY:

X	D	N	M	E	N	W	A	L	D	E	X	H	T	U	H	Y	P	U	Y	Y	I	□	Y	N	W	E	Z	U
B	K	S	Q	C	C	U	A	Y	T	E	U	L	Y	C	S	N	I	H	Z	W	G	T	Q	J	S	R	K	H
A	N	I	A	M	B	I	O	I	P	T	R	E	S	I	L	I	E	N	C	E	U	R	I	U	S	K	D	W
Q	S	Z	R	E	P	S	Q	N	Y	I	H	Y	D	B	F	U	Q	E	A	L	N	A	A	F	O	N	F	T
S	J	A	U	C	S	D	L	D	M	C	X	P	A	I	R	Y	T	C	T	L	S	N	Y	T	V	A	U	W
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L	G	R	X	A	G	A	E	X	D	R	U	A	C	H	X	T	G	J	N	R	T	T	E	X	Y	C	F	O
P	W	W	E	H	U	N	L	D	S	D	G	N	Q	T	U	Q	R	W	E	X	D	I	D	J	H	X	O	T

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- Data Sovereignty Loss
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- Service Provider Outages

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DATA CENTERS AS URBAN INFRASTRUCTURE: OPPORTUNITIES FOR CITIES THROUGH DIGITAL SOVEREIGNTY AND HEAT MANAGEMENT

Interview on the transformation of critical IT systems into central energy providers – and how the symbiosis of AI, sustainability, and local value creation impacts the economic location of Dresden.

Stefan Kuitunen (Cloud&Heat Technologies GmbH)

We are currently experiencing a profound transformation – economically, technologically, and socially. Data, digital services, and artificial intelligence are gaining more and more importance. What role do data centers play in this change – and why are they increasingly becoming a central infrastructure of modern cities?

SK: Data centers are now part of the critical infrastructure, just like roads, power, heat, and water networks. Without them, everything comes to a standstill – from contactless payment at the bakery to the highly complex control of traffic flows or AI-supported diagnoses in medicine. The increasing use of AI applications further reinforces the trend towards an ever-increasing demand for computing power and data processing – and this must physically take place somewhere.

What many underestimate: Data centers are no longer just "server halls," but highly complex, energy-intensive systems and part of Germany's energy infrastructure. In times of energy and heat transition, they are increasingly moving closer to densely populated areas and thus require intelligent integration into urban structures. This is exactly where we come in as a local cloud service and IT technology provider – we do not think of data centers in isolation, but as an integral part of modern cities, including energy and heat concepts.

Why is the demand currently growing so strongly – and what role can locations like Dresden play in this?

SK: The demand is growing from several directions at the same time: digitization of administration, Industry 4.0, cloud migrations, and above all AI are driving the demand exponentially. At the same time, requirements for data sovereignty and latency are increasing – data should be processed regionally, not somewhere in the world.



To stay with the example of Dresden: The region has a strong industrial base, an excellent research landscape, and already has a very good digital infrastructure today. This makes it an ideal location for so-called edge and core data centers. We see enormous potential here, especially because local value creation, sustainability, and technological excellence can be well combined.

Your company has made a name for itself, especially with the use of waste heat from data centers. What opportunities does this concept offer for sustainable urban districts – for example, for the heat supply of residential or educational buildings?

SK: From our point of view, the use of waste heat is one of the biggest levers for sustainable urban development. A data center produces heat all year round – and very reliably. It is no longer justifiable to release this unused heat into the environment with the additional use of electrical energy for the cooling process.

Through potential analyses and the development of waste heat utilization concepts, we support data centers in making an active contribution to the heat supply of residential areas, schools, or office buildings, for example. This significantly reduces the demand for fossil energy sources and improves the overall energy balance of a district. Particularly interesting in this context is the use of liquid-cooled servers, as these can provide the waste heat for potential reuse at a higher temperature level. At the same time, this reduces the auxiliary energy requirement of the data center, saving the operator additional costs.

Cloud&Heat emerged from a spin-off of TU Dresden and has made a name for itself in the cloud and data center industry over more than 15 years. What role do research and universities play in the data center sector?

SK: Research and development are part of the technological development on the cloud and data center market. A large part of our extensive know-how in the construction and operation of sustainable IT infrastructures, we have acquired ourselves or in the course of contract work for renowned customers and partners. Of course, we always keep an eye on technical innovations, but these are mostly not yet fully matured and proven in long-term operation. As a cloud and IT infrastructure provider, ensuring stable operation of our cloud and data center infrastructure is always at the forefront, so we only rely on proven technologies.

Research facilities and universities – but also regionally based start-ups, SMEs, and large corporations – play a significant role from an utilization perspective. Together, they have an enormous demand for computing power that can be processed locally. Especially against the background of the increasing demand for digitally sovereign infrastructures, the above mentioned institutions are increasingly looking for German and European solutions. Dresden or Saxon institutions do not have to look far beyond the city or state borders. As a local cloud service and IT infrastructure provider, we can intelligently link the demands for energy-efficient IT infrastructure and powerful cloud resources and look forward to inquiries from companies and research institutions from the region.

For Dresden, we see a clear location advantage in this. The region has the potential to establish itself as a model region for sustainable and sovereign digital infrastructure – and such networks are a relevant catalyst for this.

If we look ten years ahead: What role could data centers play in the future for sustainable urban development, innovation, and talent acquisition – and what opportunities do you see for Dresden and the region in particular?

SK: In ten years, data centers will be much more integrated into urban systems – as a data platform, as a heat source, as an innovation driver, and as an anchor of digital European sovereignty. But that's not all: Evaluating data centers solely on their hardware level is short-sighted. We hope that data centers, but also IT infrastructures in the smaller sense, will be digitally sovereign and more independent of US-American providers in ten years. Especially in newly planned projects, the requirement for digitally sovereign software on energy-efficient hardware must be considered from the outset.

Dresden and Saxony already have a variety of providers in the software and hardware sectors, as well as companies with the corresponding operating experience. Now it is a matter of bringing these together. Associations and initiatives, such as ALASCA e.V., Silicon Saxony, or the Digital Economy Saxony Association e.V., form a solid basis here.

This is also decisive for talent acquisition: Highly modern infrastructure attracts companies – and thus also talents. Anyone who offers attractive, sustainable, and technologically leading locations will be clearly at an advantage in the competition for skilled workers.

For Dresden, we see a great opportunity here: The combination of research, industry, and growing digital infrastructure is ideal. If it succeeds in consistently thinking together the topics of waste heat utilization, sustainable energy and heat supply, and digitally sovereign high-tech data centers, the region can take a leading role in Europe.

And that's exactly what we're working on – not just as a cloud service and cloud technology provider, but as an active contributer of this societal transformation process.

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PROXMOX VE OR OPENSTACK: VIRTUALIZATION AND CLOUD INFRASTRUCTURE COMPARED

When to Choose Proxmox vs. OpenStack?

Franziska Feldmann & Jakob Buschhaus (Cloud&Heat Technologies GmbH)



In the world of IT infrastructure, we often encounter solutions that, at first glance, seem to do the same thing: they enable us to create and manage virtual machines (VMs). However, when delving into Proxmox VE and OpenStack, it quickly becomes apparent that these two projects are based on fundamentally different philosophies. The central question is not "Which tool is better?" but rather, "Which operating model do I want to support?"

PROXMOX VE: THE SWISS ARMY KNIFE OF VIRTUALIZATION

Proxmox Virtual Environment (VE) combines various tools into a single platform, going far beyond a mere management tool. It integrates KVM virtualization and LXC containers, as well as clustering (enabling high availability of VMs and containers), storage management (e.g., ZFS, Ceph, LVM), and a firewall—all accessible through a single web interface. The wide range of supported storage technologies ensures high compatibility with existing infrastructures and offers good adaptability to individual requirements during a new setup. The integrated firewall provides basic control over network traffic at various levels (further measures depend on the specific security strategy and environment).

Proxmox VE offers tight integration with the Proxmox Backup Server. This allows for efficient backup tooling for LXC containers and VM backups to be set up and integrated into the existing Proxmox environment. Overall, Proxmox VE enables a relatively quick setup of a virtualization platform, suitable for both homelabs and production environments.

Practical Use Cases for Proxmox:

SMEs: Instead of running a separate physical server for each application (e.g., email server, video conferencing tool, or file storage), an SME uses Proxmox VE for virtualization. This allows multiple virtual machines and containers to run on the physical servers. If the Proxmox nodes are configured as a cluster with appropriate storage and HA configuration, virtual machines can be automatically restarted on another node in case of a node failure, such as a hardware defect.

Test and Development Environments: An administrator wants to quickly test various operating systems (Windows, Ubuntu, CentOS) or applications, "freeze" them using snapshots, and revert to a previous state in seconds if errors occur.

OPENSTACK: THE FOUNDATION FOR YOUR OWN SCALABLE CLOUD

OpenStack, on the other hand, is a complete Infrastructure-as-a-Service (IaaS) platform. You can think of it as an "operating system for the data center." OpenStack is designed to provide an infrastructure where users can serve themselves. The core of OpenStack is API control and the concept of "Multi-Tenancy." This means you can create logically isolated areas (e.g., projects) for different departments or customers. These users can then create their own resources via a dashboard or command line without the system administrator having to manually intervene each time.

Practical Use Cases for OpenStack:

Internal Corporate Cloud: A large company with thousands of employees wants to enable its development teams to spin up on-demand test environments. Instead of submitting a ticket and waiting days for a VM, developers authenticate with OpenStack and create the necessary resources themselves via the dashboard or command line.

Public Cloud Provider: A provider wants to offer a service like AWS or Azure but based on open-source technologies on a smaller scale. They use OpenStack to bundle compute, storage, and network resources and rent them out to external customers, with each customer seeing and managing only their own resources (domains, projects, VMs, etc.).

DIRECT COMPARISON: WHERE LIES THE DIFFERENCE?

To simplify the decision, the differences can be categorized into three areas:

Complexity: Proxmox is "Plug-and-Play." In a homelab or test environment, you install it and get started. A production setup is also relatively quick to build (depending on the environment). OpenStack, however, is a complex ecosystem of many different modules (for networking, storage, compute) whose installation and maintenance often require expert knowledge or specialized deployment tools.

Scalability: Proxmox clusters are technically designed for up to 32 nodes. This is more than sufficient for many scenarios (multiple clusters can be an option otherwise). OpenStack, on the other hand, has no fixed architectural upper limit. Through its distributed, loosely coupled services architecture (Nova, Neutron, Cinder), deployments with significantly more nodes and VMs can be operated.

Operating Model: In Proxmox, resource allocation is primarily handled by the administrator. While users can gain limited access through roles and permissions, self-service is an optionally configurable feature, not the fundamental principle of the architecture as it is in OpenStack. In OpenStack, end-users independently manage their projects via API or dashboard, with their own quotas and networks.

CONCLUSION: WHICH SOLUTION IS THE RIGHT ONE?

The choice between Proxmox and OpenStack is a matter of scale and goal.

Choose Proxmox if you are looking for a reliable, easy-to-use solution to optimize your physical hardware, automate backups, and have an overview of your servers. It is the perfect choice for anyone needing efficient virtualization.

Choose OpenStack if you want to operate a platform where many independent, isolated users can independently obtain resources—with their own networks, quotas, and self-service access, without users seeing or influencing each other. It is the choice for anyone looking to establish their own scalable cloud infrastructure.

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