

metalstack.cloud Delivers Kubernetes as a Service with Lightbits

Cloud Service Providers (CSPs) have experienced significant growth, driven by the acceleration of cloud-first strategies across various industry sectors. Key trends include the rise of containerization and Kubernetes (K8s) orchestration and a growing focus on data security and compliance. CSPs face several challenges today in meeting their customers' needs. These challenges include ensuring high-performance, scalable, multi-tenant, and resilient infrastructure, while maintaining data security and compliance with regulations such as General Data Protection Regulation (GDPR, or DSGVO as it's known in Germany), and delivering cost-effective solutions that can compete with hyperscale cloud providers.

Kubernetes Platform as a Service, Powered by Lightbits

metalstack.cloud is a new cloud-native offering by x-cellent technologies, a German-based technology consultancy with Kubernetes (K8s) in their DNA and a strong history in helping companies navigate their digital transformation. Their mission is to deliver a high-performance, secure, and compliant cloud infrastructure, addressing the specific needs of organizations that demand robust data protection and conformity with regulatory requirements.

Launched in 2023, metalstack.cloud provides a Bare Metal-managed K8s platform aimed at the German SMB market and customers running enterprise-grade container applications that require data protection, GDPR/DSGVO compliance, and the highest possible performance. It was developed to fill a void in the highly regulated financial services sector in EMEA, that lacked a K8s as a Service offering with strong tenant separation, simplicity, performance and self-service API.

The Challenge: Multi-Tenancy Security Combined with Best-in-Class Performance

The cloud software landscape for bare metal provisioning is very limited. The team considered Ubuntu MaaS, Openstack Ironic, and some others, but none of them could meet the following criteria: speed of deployment of ~minute, simple operations, lightweight API, and sophisticated networking automation. They also evaluated open source Ceph and other storage solutions.

For their evaluation, the team decided the storage solution had to:

- deliver best-in-class performance
- be completely API-driven and K8s-native
- deliver the best possible tenant separation with near to zero noisy neighbor impacts
- deliver the same simple provisioning experience and performance customers are used to receiving from the hyperscalers

In addition, the storage solution had to be cost-efficient so they could maximize their margins, but also pass on to their customers costs savings comparable to what they would pay hyperscalers for their highest performance storage.

The team chose the Lightbits Cloud Data Platform as the storage system to fuel its service, remarking that "Simply no other storage solution had the same price/performance ratio and tight integration with K8s. Plus, the achievable low latency is outstanding."



Industry

Platform as a Service (PaaS)

Environment & Workloads

Kubernetes run on Bare Metal

Business Requirements

- Kubernetes-Native
- Multi-tenant
- High Performance
- API-Driven
- Cost-Efficient

Solution

Lightbits Cloud Data Platform on Supermicro Servers with the customers' existing 100G L3 networking integrating seamlessly into the customer's multi-tenant Kubernetes environment via the Lightbits CSI plugin.



Business Benefits

- Flexibility. The system runs on any cloud or hardware configuration enabling the most cost-efficient configurations with seamless K8s integration via CSI plugin.
- Independent Scaling. The ability to scale in any direction.
- Efficiency. Persistent storage at local Flash performance.
- Cost-Efficiency. High performance storage that aligns with the economics of hyperscale cloud providers.

The Solution: Lightbits Cloud Data Platform

metalstack.cloud is a set of microservices that implements K8s as a service on bare metal and enables elastic cloud infrastructure. It leverages K8s clusters so that end users can easily, securely, and cost-effectively launch their apps on the platform without having to worry about server hardware, networking, and storage management. The architecture is based on their open-source software, metal-stack.io, which was developed for the highly regulated financial sector.

Lightbits software plays a pivotal role in this architecture by providing high-performance, efficient, and persistent storage. From the inventors of NVMe® over TCP (NVMe/TCP), it's a perfect fit for metalstack.cloud's emphasis on performance and efficiency. The team benefits from the storage speed in terms of latency and throughput, while allowing them to leverage their existing 100G L3 network which serves the storage and the applications. No new networking technology was required.

"I cannot imagine any other storage solution which would have the same price/feature/performance ratio. It's a more flexible, simpler, and higher performing alternative to Ceph and other enterprise storage solutions. And the way we work together with the whole team at Lightbits is extraordinary."

Stefan Majer, Chief Technology Officer at x-cellent technologies GmbH

The Advantages of Using Lightbits

The integration of Lightbits software into the metalstack.cloud platform has provided exceptional speed in terms of latency and throughput, eliminated the need for additional network technologies, and allowed customers to consume storage in a self-service manner. Moreover, the partnership with Lightbits has led to the development of features like multi-tenancy and client-side encryption, enhancing the platform's capabilities.

Lightbits software offers several business and technical benefits. These benefits include:

- **High Performance:** Lightbits provides exceptional latency and throughput, meeting the demands of metalstack.cloud's customers for high-performance storage.
- **Resiliency:** The Lightbits solution ensures data resiliency, minimizing downtime and data loss.
- **Cost-Efficiency:** Lightbits allows metalstack.cloud to offer competitive pricing for high-performance storage, aligning with the economics of hyperscale cloud providers.

Overall, the collaboration between metalstack.cloud and Lightbits has enabled the delivery of fast, resilient, and secure services to customers, meeting their demanding and complex cloud storage needs while maintaining competitive pricing and adherence to regulatory requirements. This integration has set a new standard for cloud-native services, particularly for those demanding the highest levels of data protection and performance.

Lightbits for Kubernetes

Storage has the potential to be a drag on K8s potential value. Local Flash or DAS invariably leads to poor storage resource utilization and high costs, threatening to impede K8s portability, which is one of the technology's most compelling benefits. The most effective resolution is the Lightbits software-defined, disaggregated storage solution. Lightbits offers the levels of performance required by popular apps running on K8s, while preserving K8s portability and agility making it possible to enjoy the advantage of K8s without compromising on storage performance or scalability. Lightbits provides low-latency performance that is as close as possible to local Flash and can support hundreds of K8s clusters from a single storage cluster without inhibiting K8s container portability model.

For more information on Lightbits: www.lightbitslabs.com

For more information on metalstack.cloud: <https://metalstack.cloud/en>

For more information on Lightbits on Supermicro SuperServers: <https://www.lightbitslabs.com/supermicro/>

To get started contact your Lightbits or Supermicro representative today.