

Open-E & Ecumenical Hainich
Clinic gGmbH

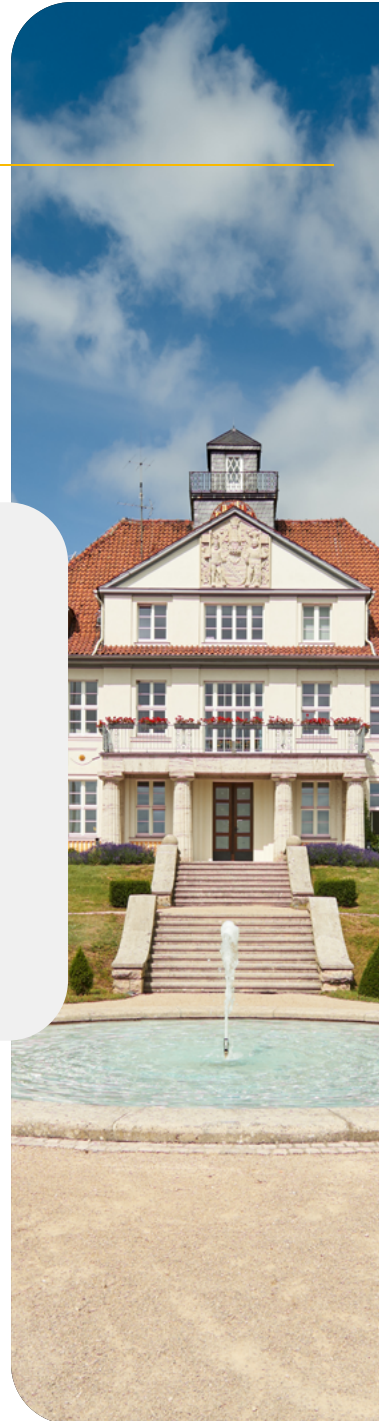
ALL-FLASH GUARDIAN OF PATIENT DATA – OPEN-E JOVIANDSS IN HEALTHCARE

Key Facts

- High-availability cluster spanning the entire campus
- Intuitive management for the entire IT infrastructure team
- Sensitive patient data – no outsourcing to the cloud
- Data mirroring and redundancy for maximum protection



Ökumenisches
Hainich Klinikum



Requirements and Objectives

Customer Profile

The Ecumenical Hainich Clinic (ÖHK) in Thuringia, Germany, is a renowned specialist hospital with a long history and a broad range of medical services. As an academic teaching hospital affiliated with the Friedrich Schiller University of Jena, ÖHK provides comprehensive care in the fields of neurology, psychiatry, psychotherapy, and psychosomatics.

The hospital's IT infrastructure supports around 1,400 employees and spans a campus of one square kilometer, comprising numerous buildings for staff and patients, including administration, medical wards, social services, residential areas, examination and treatment rooms, and even a church.

The Challenge

ÖHK's IT infrastructure had to meet the highest standards of data security to ensure compliance with the strict requirements for protecting highly sensitive patient information. At the same time, it was crucial that all data be highly available and accessible at all times. Ideally, this data would also be stored in two physically separate locations to be resilient against potential failure scenarios such as power outages, natural disasters, or other environmental risks. The overarching goal was to meet all relevant security standards comprehensively and reliably.

Additionally, growing digital threats like ransomware attacks raised the demand for a solution that would enable ÖHK to minimize the consequences of such destructive events. The system needed to provide the highest level of security, be as resilient as possible to cyber threats, and at the same time represent a modern, forward-looking investment. It was the right time to look for a new data storage system that would fulfill all those requirements and future-proof the hospital's infrastructure.

Initial Situation before Implementing Open-E JovianDSS

The existing **8Gbit DataCore Fibre Channel system** was aging and posed high ongoing maintenance costs due to the additional switches required. The total cost of ownership was no longer justified its use. For this reason, the decision was made to transition to a more modern architecture based on iSCSI and Ethernet.

At the time, approximately 98% of all systems at ÖHK were already virtualized in order to create a resource-efficient and scalable infrastructure – including many critical applications and services. Due to existing in-house expertise, the VMware platform was retained during the transition.

Solution Concept with Open-E JovianDSS

ÖHK was looking for a data storage solution that would deliver **both high data security and long-term cost efficiency**. Various approaches were evaluated to meet the hospital's specific requirements. Following an in-depth consultation with Open-E, a solution concept was developed that secures the hospital's IT infrastructure operations with a high-performance storage system.

The initial step was to implement an **Open-E JovianDSS Non-Shared (Metro) Cluster** with two nodes located 200 meters apart in separate fire zones. This setup ensures full data redundancy through **2-way mirroring and synchronous replication over Ethernet**.

As storage needs grew, the infrastructure was expanded to meet new demands. ÖHK added another Metro Cluster system with **4-way mirroring** to further increase data protection and extend capacity. Although a competing product was proposed by another hardware partner during this phase, ÖHK made a deliberate decision to stick with the existing system. The consistently positive experience with **Open-E JovianDSS** in terms of reliability, management, and scalability was a key factor in this decision.

Another decisive reason for choosing and continuing with Open-E JovianDSS was the **intuitive interface** and the existing knowledge within the IT team. This enabled the hospital to create a **robust and trusted ecosystem** for managing its data storage – one that can be expanded as needed over time.

Customer Testimonial

Ultimately, we decided on a solution with Open-E JovianDSS (SDS) because we liked its graphical user interface (GUI), the system overview, and the ease of use.

We also prefer to standardize and harmonize our IT landscape wherever possible, which further reduces complexity and provides us with a stable, high-performance platform for the future.

— René Herwig, Team Leader

Results

Technology

The implementation of Open-E JovianDSS enabled ÖHK to design a storage system that delivers a **wide range of essential functions** to meet its IT goals. With **data compression**, the hospital can use its hardware and storage capacity more efficiently, helping it achieve an optimal total cost of ownership (TCO).

Open-E JovianDSS also allows the creation of an **unlimited number of snapshots and clones**. This powerful feature helps minimize the impact of ransomware attacks while ensuring the **immutability of the stored data**. The storage management system offers a **tiered architecture with RAM and SSD caching**, which increases performance and speeds up access to frequently used data.

Thanks to the **hypervisor-agnostic** nature of Open-E JovianDSS, the system can support a wide variety of virtualization platforms. At ÖHK, a proven virtualization solution is used to run the majority of its infrastructure as virtual machines. Through the **consistent virtualization of nearly all systems**, ÖHK has optimized its IT resources, reduced physical hardware needs, and created a **highly efficient and scalable infrastructure**.

To ensure both **high performance and robust data protection**, the hospital implemented the system as an **All-Flash Non-Shared Cluster**. With a comprehensive fiber-optic cabling strategy, full redundancy is guaranteed at all levels – which is especially critical for processing highly sensitive patient data.

Conclusion

By implementing Open-E JovianDSS, ÖHK was able to significantly improve both its data management and administration capabilities. The new infrastructure not only meets the highest security and availability requirements but also provides the flexibility to adapt to future needs. Extended redundancy offers additional protection against data loss or corruption.

Open-E's consulting services proved to be a valuable asset, helping design a tailored solution that precisely matched the hospital's requirements.

Technical Architecture of the Solution

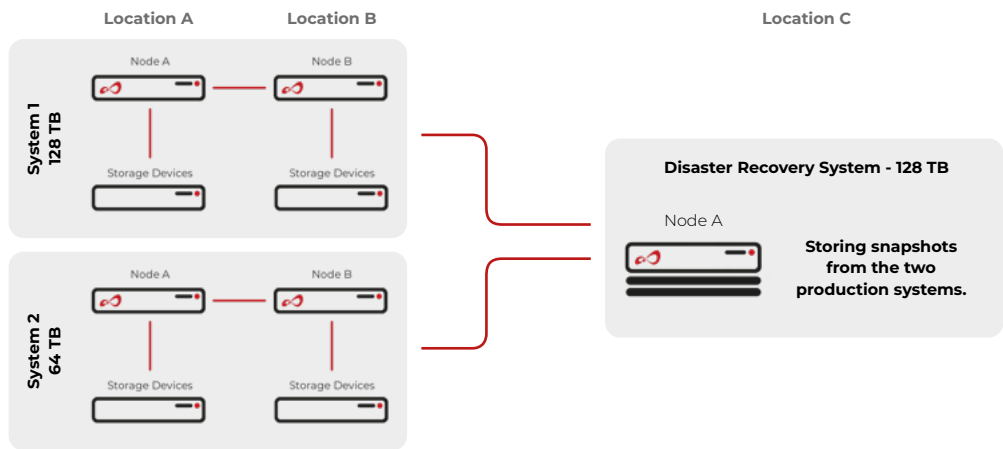
ÖHK relies on a scalable, high-availability storage solution based on **Open-E JovianDSS**. Two independent Metro Clusters are distributed across two locations and offer synchronous data replication as well as automatic failover. The setup is complemented by a remote snapshot system for off-site protection.

This architecture ensures maximum data security, high availability, and reliable recovery, even in the event of a complete data center failure.

The solution integrates seamlessly into ÖHK's VMware environment and is flexible enough to scale for future demands.

Schematic Overview

By combining synchronous mirroring within the Metro Cluster (on-site) and asynchronous remote backup to a third location (off-site), the solution meets the highest standards for data protection, availability, and recoverability – even in the case of a full data center outage.



**High Availability Cluster + On & Off-Site Data Protection
= Maximum Data Security**

Open-E JovianDSS Licensing System – Flexible and Scalable

Open-E JovianDSS uses a license-based model that allows organizations to tailor their storage environment to growing demands. ÖHK chose a proven licensing package consisting of base licenses, capacity extensions, and the High Availability Cluster Feature Pack.

Base License

Each system requires a base license to enable Open-E JovianDSS on each cluster node.

Capacity Extensions

Storage capacity can be expanded flexibly in various steps, allowing systems to scale easily as data requirements grow.

High Availability Pack

This feature pack ensures seamless failover between cluster nodes – maximizing uptime and availability, even in the event of hardware failure.

Premium Support

The 5-year Premium Support package provides ÖHK with comprehensive coverage, from software updates to expert technical assistance directly from Open-E.

The combination of flexible licensing, modular structure, and high-quality support makes Open-E JovianDSS the ideal storage solution for organizations seeking scalability, availability, and ease of management.

Data Storage OS Licenses

	Production System 1 (since 2021) Metro Cluster across two locations	Production System 2 (since 2023) Metro Cluster across two locations
Open-E JovianDSS Licenses	2x Open-E JovianDSS Base 2x 128TB Extension 2x Metro Cluster HA Pack 5-Year Premium Support	2x Open-E JovianDSS Base 2x 64TB Extension 2x Metro Cluster HA Pack 5-Year Premium Support

Thanks to the flexible licensing model, ÖHK was able to tailor its storage solution precisely to current and future requirements – ensuring long-term scalability and investment protection.

The most important Open-E JovianDSS features, tailored to meet the requirements of ÖHK, at a glance:

- ✓ **High Availability:** Non-Shared (Metro) Cluster with synchronous mirroring for full redundancy
- ✓ **Snapshot Management:** Snapshots every 15 minutes for fast recovery in case of data loss
- ✓ **Scalability:** Modular, expandable system for future storage and infrastructure growth
- ✓ **Ease of Use:** Intuitive GUI for simple administration and reduced IT complexity
- ✓ **Data Security:** Ransomware protection and data loss prevention through mirroring and snapshots
- ✓ **Virtualization:** Efficient resource utilization and centralized management for optimized IT performance with VMware



We'll be happy to advise you – with no obligation – on how a similar solution can be implemented in your infrastructure.

About Ökumenisches Hainich Klinikum gGmbH

Ökumenisches Hainich Klinikum gGmbH is an academic teaching hospital of the University Hospital Jena (Friedrich Schiller University) and a specialist clinic for neurology, psychiatry, psychotherapy, psychosomatics, child and adolescent psychiatry, and psychotherapy. With a tradition of over 100 years, it is the largest psychiatric hospital in Thuringia. It serves the northwest of Thuringia, with a catchment area of around 700,000 people, across nine locations.

The hospital's main site is located within a listed park and villa complex and houses modern examination and treatment facilities for neurology, neuropsychology, psychotherapy, and psychiatry. It also runs several outpatient centers across cities like Eisenach, Bad Frankenhausen, Bad Langensalza, Bad Salzungen, Eisenach, Gotha, Heilbad Heiligenstadt, and Sömmerda. More information: www.oehk.de

About Open-E

Founded in 1998, Open-E is a leading developer of IP-based storage management software. Its flagship product, Open-E JovianDSS, is a robust storage application known for its outstanding compatibility with industry standards and its simplicity in deployment and use.

Open-E JovianDSS is one of the most stable and cost-effective solutions on the market. Thanks to its proven reliability and performance, Open-E is a trusted technology partner for many leading IT companies. With over 40,000 installations worldwide, Open-E has earned a strong reputation and received multiple industry awards. More information: www.open-e.com



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