The Highest Security with an All-Flash Open-E JovianDSS Solution in a Data Center

MMiT, based in Kiel, Germany, is a renowned regional and national IT service provider, operating directly from Germany's Internet hub, Frankfurt am Main. The company provides its customers with an extensive range of services and solutions directly from their TÜV-certified data center.

Ensuring High Availability of your data, anytime and from anywhere is already a market standard. As a Cloud and Internet services provider, MMiT puts constant matching to the market and thoughtful response to customer needs as top priorities.

MMiT's Business Goals:

- High Availability for two fire compartments within a data center
- All-Flash data storage solution for the best performance
- Long data retention time in the backup server (snapshots)
- Fast and flexible storage extension options
- Short recovery time
- High data integrity
- Affordability and cost-effectiveness

Challenges

Given the demanded performance and rapidly increasing volume sizes, a state-of-the-art, adaptable infrastructure became essential for MMiT. Thus, to have a field for the development and to correspond to the constantly increasing requirements, MMiT felt obliged to shift to appropriate computing power and create a secure and future-proof maintenance strategy. Additionally, the new system should be able to provide **the highest protection against the consequences of everyday threats** (such as ransomware), as well as ensure fast **data recovery in case of data loss** due to unexpected events, like fire, flood, thefts or just a power outage.

Particular emphasis was also placed on expense control. One of the priorities throughout the whole solution research was a sensible investment that includes a profitable price/performance ratio. As for the enterprise features, the ZFS file system was shortlisted as the preferred one, as it brings together data integrity and High Availability, as well as protection against the ransomware attacks consequences.

The other goal was to rearrange the hardware setup, still running on Windows Hyper-V, and to create the basis for a flexible infrastructure, including a change of the hypervisor to Proxmox.

Tailor-made solution

With all the above-mentioned requirements for a clustered system, including also an intuitive backup solution, Oliver Timm, the managing director of MMiT, turned to N-TEC, the Munich-based server and storage solution integrator.

As a result of many years of positive experience and satisfying projects with N-TEC and Open-E, a fully redundant storage system with Open-E JovianDSS as the software-defined storage (SDS) was proposed to meet MMiT's challenges. Just as expected - the proposed solution fulfilled all their demands.

Continuous availability

The new data storage solution anticipated a two-node configuration to be set up as an **active-active metro cluster**, in order to achieve **load balancing** and **significantly increased performance**. All-Flash storage (SSD) fits this scenario perfectly, making the whole concept harmonized with the remaining quality components, at the same time providing highest performance.

What is more, thanks to the synchronous data mirroring via Ethernet in Advanced Metro HA Cluster Feature Pack in Open-E JovianDSS it is possible to set up a distance of up to approx. 50km between the nodes (Dual Storage). Additionally, the company can split the infrastructure into different zones within the data center. This ensures even more security as, like demanded, High Availability for two server nodes works for two fire compartments within this data center. Thus, the company is protected in any scenario.

Protection against ransomware effects

Special attention was paid to the off-site backup server. With On & Off-site Data Protection in Open-E JovianDSS, this extra server is able to receive data directly from the metro cluster, and store an **unlimited number of fully consistent snapshots according to a retention plan** customized to their needs. MMiT is thus able to revert to any point in time that has been previously defined which makes it the no.1 solution for dealing with harmful effects of ransomware attacks.

Plus, On- and Off-site Data Protection feature is very flexible, as it covers a wide range of disaster recovery plans without the need to use additional third party tools. This ZFS technology allows building **extremely versatile backup solutions**. The smart part of this solution is the fact that only the data that has changed during the working day or within the snapshot cycles is replicated. Depending on the time-defined interval regular backups are created - here, a full backup is performed every 10 minutes, reducing the load on the network to a minimum. This way one can completely eliminate the daily administrative routine for tedious backup processes.

Compatibility and affordability

As for the ZFS file system - Open-E JovianDSS is ZFS- and Linux-based, so the built-in-extraordinary features of the ZFS file system, e.g. pooled storage, copy-on-write, RAID-Z and many more, are reflected in the software's package. Also, the Linux-based architecture of the software provides much better **hardware compatibility** than competing products based on other operating systems.

Last but not least, the solution proposed by N-TEC and Open-E is one of the most affordable on the market, so MMiT's inquiry for a **profitable price/performance ratio** has also been met. Exceptional savings were not the main factor in this project so the company has invested in a number of security layers to stay protected in case of any event, and yet the solution turned out to be very **cost-effective**.

Advanced Metro HA Cluster and On & Off-site Data Protection
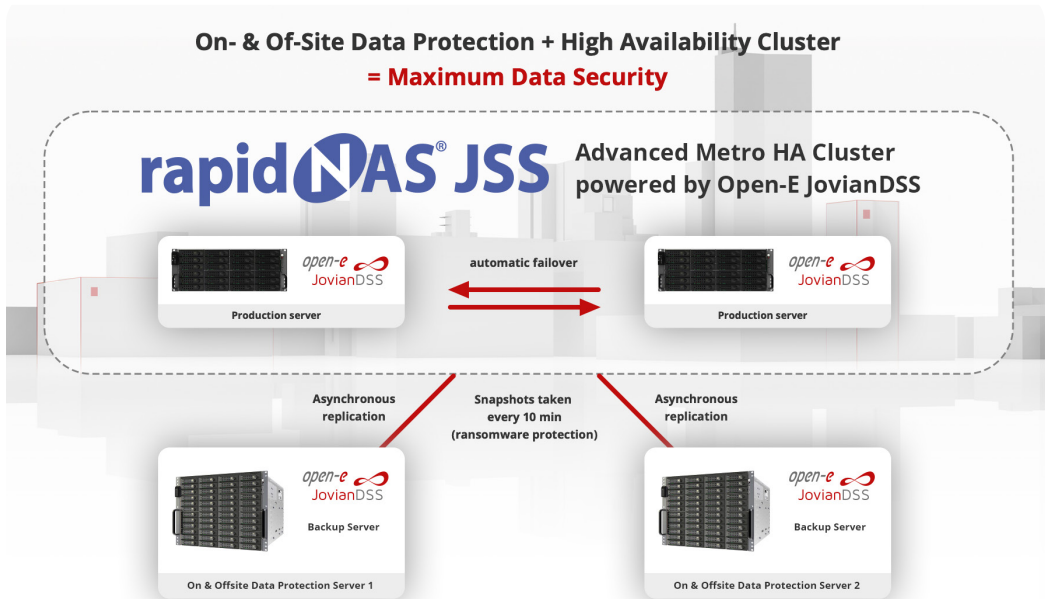
Hardware details:

Configuration per cluster node

Server:	rapidNAS JSS224-G8
Processor:	2x Intel® Xeon® Gold 5122 Processor, 3.60GHz Basistakt, 4 Cores – 8 Threads
RAM:	128GB DDR4
RAID:	HW SAS RAID Controller with Supercap
Network Interfaces:	4x 10GBASE-SR Ports
Write Log:	2x 400GB SSD
Read Cache:	1x 960 GB SSD
SSD:	6x 3.84TB SSD
zPool:	RAID 6 – Active-Passive configuration
Storage Capacity:	13,98TiB ca. ~15TB usable

Metro Cluster Configuration Licensing

2x Open-E JovianDSS Basic License

2x Open-E JovianDSS Storage Extension 32TB

1x Shared HA Cluster Feature Pack

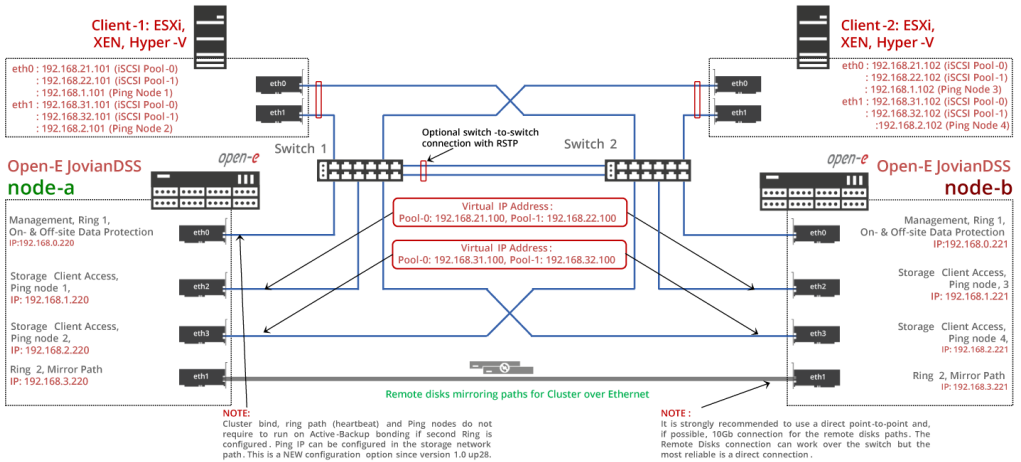**2x Premium Support – 3 years from Open-E**

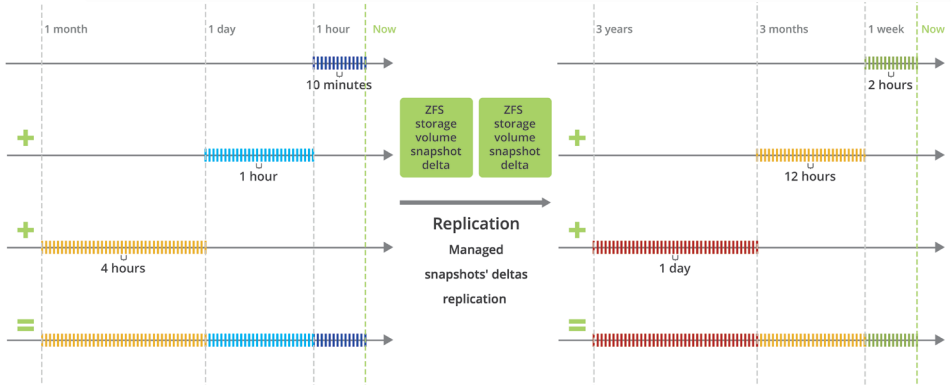## Backup Server Configuration Licensing

1x Open-E JovianDSS Basic License

1x Open-E JovianDSS Storage Extension 224TB

1x Standard Support – 3 years from Open-E

Network Configuration

Client-1: ESXi, XEN, Hyper -V

eth0 : 192.168.21.101 (iSCSI Pool-0)
: 192.168.22.101 (iSCSI Pool-1)
: 192.168.1.101 (Ping Node 1)
eth1 : 192.168.31.101 (iSCSI Pool-0)
: 192.168.32.101 (iSCSI Pool-1)
: 192.168.2.101 (Ping Node 2)

Client -2: ESXi, XEN, Hyper -V

eth0 : 192.168.21.102 (iSCSI Pool-0)
: 192.168.22.102 (iSCSI Pool-1)
: 192.168.1.102 (Ping Node 3)
eth1 : 192.168.31.102 (iSCSI Pool-0)
: 192.168.32.102 (iSCSI Pool-1)
:192.168.2.102 (Ping Node 4)

Switch 1

Optional switch -to-switch connection with RSTP

Switch 2

Open-E JovianDSS node-a

Management, Ring 1,
On- & Off-site Data Protection
IP:192.168.0.220

Storage Client Access,
Ping node 1,
IP: 192.168.1.220

Storage Client Access,
Ping node 2,
IP: 192.168.2.220

Ring 2, Mirror Path
IP: 192.168.3.220

eth0

eth2

eth3

eth1

Virtual IP Address :
Pool-0: 192.168.22.100, Pool-1: 192.168.22.100

Virtual IP Address :
Pool-0: 192.168.31.100, Pool-1: 192.168.32.100

Open-E JovianDSS node-b

Management, Ring 1,
On- & Off-site Data Protection
IP:192.168.0.221

Storage Client Access,
Ping node, 3
IP: 192.168.1.221

Storage Client Access,
Ping node 4,
IP: 192.168.2.221

Ring 2, Mirror Path
IP: 192.168.3.221

eth0

eth2

eth3

eth1

Remote disks mirroring paths for Cluster over Ethernet

NOTE:
Cluster bind, ring path (heartbeat) and Ping nodes do not require to run on Active-Backup bonding if second Ring is configured . Ping IP can be configured in the storage network path . This is a NEW configuration option since version 1.0 up28.

NOTE :
It is strongly recommended to use a direct point-to-point and, if possible, 10Gb connection for the remote disks paths. The Remote Disks connection can work over the switch but the most reliable is a direct connection .

Example retention plan

Every 10 minutes, a snapshot of the metro cluster is asynchronously replicated to the backup server, which results in the following retention on the target:

12 hours every 10 minutes	3 months every 12 hours
1 week every 2 hours	3 years every 1 week
4 weeks every 4 hours	

Customer Feedback

"I am amazed by Open-E's software – the Open-E JovianDSS. Countless administrative options including fully automated, round-the-clock backups have made our everyday life noticeably easier. N-TEC's approach to this project was extremely engaging and convincing. All expectations were fully met - and in most cases even far exceeded. It's not only our customers who now benefit enormously from this solution but we as a company too, as we were able to drastically reduce our time expenditure in many areas of activity.

Especially the option of being able to restore data states - at any time, in the shortest possible time – gives us a sense of security. Our customers can rest assured that threats like ransomware attacks will remain a phenomenon that we only know from media reports.
I'm looking forward to expanding our main system and purchasing our second backup server. Due to the continuous growth, we were able to upgrade all our systems with hard disks and licenses and respond as needed in an economic sense."

Oliver Timm, Managing Director, MMiT GmbH

About MMiT

MMiT GmbH is a full-service provider for digital infrastructure. Private cloud solutions have been offered since 2008. What is more, the development of individual software solutions for all customers (SaaS) as well as a rental model for hardware (HaaS) such as PCs, notebooks, monitors, printers and copiers are an addition to the range of services, reducing the capital commitment of the customers. MMiT also offers an excellent service package (ISP) for all services. For more information, visit **www.MMiT.cloud**

About N-TEC

For 20 years, N-TEC has been creating high-performance data storage concepts for companies, with cost-effective, universal, and scalable data storage solutions. A great knowledge, many years of practical experience in the field of enterprise storage technologies, and close cooperation with the leading manufacturers in the industry enable N-TEC to offer its customers solutions that are tailor-made to their requirements. High-performance NAS systems, iSCSI and FC SAN, as well as high availability data storage solutions, are as much a part of the product portfolio as audit-proof archives and backup solutions. In addition, N-TEC offers almost all servers and storage solutions for rent. Further information at **www.n-tec.eu**

About Open-E

Open-E, founded in 1998, is a well-established developer of IP-based storage management software. Its flagship product, Open-E JovianDSS, is a robust, award-winning storage application that offers excellent compatibility with industry standards. It's also the easiest to use and manage. Additionally, it is one of the most stable solutions on the market and an undisputed price performance leader. Thanks to its reputation, experience, and business reliability, Open-E has become the technology partner of choice for industry-leading IT companies. Open-E accounts for over 38,000 installations worldwide. Open-E has also received numerous industry awards and recognition for its product, Open-E DSS V7.
For further information about Open-E, its products, and partners, visit **www.open-e.com**

More information:

MMiT GmbH
+49 43 17 99 44 90 | info@MMiT.cloud

N-TEC GmbH
+49 89 95 84 07 0 | info@n-tec.eu

Open-E GmbH
+49 89 80 07 77 0 | info@open-e.com