



## Thomas-Krenn RA1224-AF HA Metro Cluster



The RA1224-AF HA Metro Cluster is one of the most powerful 2U rack solutions in the Thomas-Krenn's portfolio. Thanks to the numerous configuration options, the system is perfectly suited for many different applications – such as storage for virtualization, NAS storage, or backup and archive storage.

Thomas-Krenn.AG has been working successfully with Open-E for many years – and since 2018 with the status of Platinum Partner. The result of this great collaboration is, among others, the RA1224-AF HA Metro Cluster. Benefit from the knowledge of both companies!

Advantages of the RA1224-AF HA Metro Cluster at a glance:

- 2U with 24x NVMe bays setup.
- Guaranteed data security.
- Improved storage performance with NVMe, AMD CPU, and Mellanox network.
- Flexibly scalable and highly available.
- Data compression included.
- No limitation of snapshots and clones.

In addition to the Open-E JovianDSS certified system, Thomas-Krenn also offers individually configured servers, specifically adapted to the customer requirements.

- › Guaranteed data protection
- › Enhanced storage performance
- › Flexible scalability
- › Optimized for Data Centers
- › High Availability
- › Data integrity check
- › Data compression
- › Thin provisioning and unlimited number of snapshots

# RA1224-AF HA Metro Cluster

## Guaranteed data protection

Data is your most important resource. This is why the Open-E JovianDSS-based RA1224-AF includes several mechanisms for data protection. Automatic and scheduled multi-layer data integrity checks ensure data consistency, while unlimited snapshots and clones make it easy to implement a disaster protection strategy and to instantly roll back to a previous point-in-time. At the same time, a scheduled self-healing mechanism fixes malfunctions and automatically restores full data redundancy in the system. Even when a drive fails, the software-based spare function offers one drive to several RAID arrays, saving you money on extra hardware without compromising data safety.

## Flexible scalability

RA1224-AF will let you experience unlimited flexibility and minimize unappreciated downtime. Open-E JovianDSS uses a 128-bit file system that includes unlimited snapshots for easy backup, unlimited clones for easy duplication, unlimited capacity with volume sizes up to one Zetabyte, as well as an unlimited amount of drives which can be increased on the fly without an effort by using thin provisioning. There are no limitations and you may easily control the total cost of ownership and expand your storage infrastructure as data grows.

## Enhanced storage performance

Nowadays, enterprise storage has to provide big capacity while also being fast, affordable, and include reliable support. This is exactly what RA1224-AF has to offer. Open-E JovianDSS-based RA1224-AF is an innovative data storage system fusing the capacity of large and fast NVMe SSDs with ultra-fast RAM read and write caching to create flexible all flash based solutions that offer high performance while lowering the cost. On top of that, powerful tuning tools allow the system to optimize on I/O heavy data-bases or high throughput video editing equally well and predefined profiles save annoying testing time.

## Optimized for Data Centers

RA1224-AF is optimized for the modern data center and ready for compute-intensive applications that involve big data, intensive virtualization workloads and higher-density server configurations. The server allows administrators an intuitive management of storage infrastructures and maintaining continuous operations during updates or refreshes. By choosing RA1224-AF, you benefit from flexible CPU power, networks running with up to 100Gb/s Ethernet, as well as the knowledge and experience of Thomas-Krenn in RA1224-AF and developing servers specialized for a data center.



## Active-active failover resource switching time test results

| Total number of targets | Switching time [seconds] | Performance test results [passed/failed] |
|-------------------------|--------------------------|--|
| 2                       | 37                       | Passed                                   |
| 10                      | 29                       | Passed                                   |
| 20                      | 39                       | Passed                                   |

## High Availability solution functionality test results

| Functionality test name                             | Functionality test results [passed/failed] |
|---|--|
| Manual Failover                                     | Passed                                     |
| Automatic Failover triggering after network failure | Passed                                     |
| Automatic Failover triggering after shutdown test   | Passed                                     |
| Automatic Failover triggering after reboot test     | Passed                                     |
| Automatic Failover triggering after power-off       | Passed                                     |
| Automatic Failover triggering after I/O test        | Passed                                     |



## High Availability

RA1224-AF is a perfect option if you are looking to deploy a High Availability cluster setup with NFS or iSCSI for storing business-critical data. With the Open-E JovianDSS High Availability Cluster Feature Pack the RA1224-AF ensures reliability and redundancy through failover in case of a failure. By using the cluster management software, all features related to the cluster setup can be quickly accessed and maintained - everything is in one place and guarantees ease of use for the storage administrator. Moreover, Open-E JovianDSS includes an independent Virtual IP (VIP) address feature. With this, VIPs can be used by multiple servers and flexibly switched at all times. When a hardware failure is detected, VIPs are automatically moved from the primary to the secondary node without the client servers noticing a timeout.

## Data compression

Open-E JovianDSS-based RA1224-AF offers data compression for minimizing your storage capacity usage. Smaller data blocks mean that the system can read and write quicker, ultimately boosting performance and taking less space on your storage. In RA1224-AF you will find resource-friendly compression protocols (lz4) with low system resource utilization at medium compression rates, but also protocols that are able to achieve very high rates for archiving or backup (as gzip-9). Compression in combination with deduplication, virtualization, or high availability solutions further reduce acquisition costs, power and cooling costs, and rack space throughout the system life cycle.

## Data integrity check

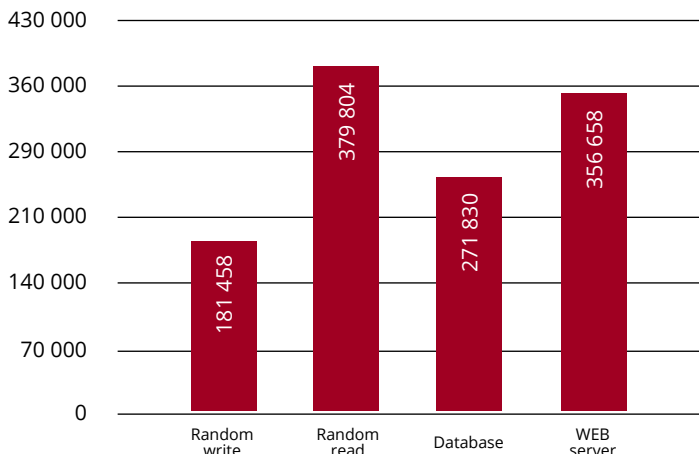
RA1224-AF storage system effectively detects data corruption, as even minor integrity violations could cause loss of data. RA1224-AF ensures reliability by check-summing individual blocks of data and once faulty blocks have been detected, they are automatically rewritten. If the same error is found several times, the data blocks are moved to different parts of the drives. Each read/write is checked automatically plus you can schedule to perform checks on not accessed blocks. All actions are done in atomic writes to ensure consistency of your data and to reduce data loss, even during power cuts.

## Thin provisioning and unlimited number of snapshots

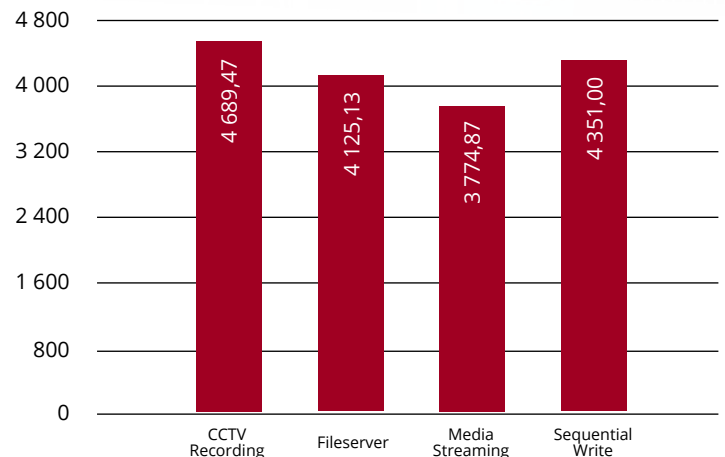
RA1224-AF uses thin provisioning to improve your storage utilization by allocating an exact amount of server space at the required time. You'll eliminate the cost of unused storage space and never again have to pre-allocate storage up front and buy too much hardware. There is no need for evaluating storage requirements and taking the risk of rebuilding the entire system when it runs out of space. Also, every RA1224-AF allows an unlimited number of snapshots - greatly simplifying backups, replications, and data recreation in case of accidental deletes or viruses. Snapshots are a must-have option for effective disaster recovery scenarios. Schedule snapshots for months, weeks, hours, or even minutes. With RA1224-AF, it is easy to manage storage capacity and set notifications when physical space shrinks.



### IOPS



### Throughput [MB/s]



# Hardware details

## For each of the 2 servers

|                      | Default configuration  | Options  |
|----------------------|--|--|
| Motherboard          | Gigabyte MZ32-AR0  | -  |
| CPU                  | 1x AMD EPYC 7232P 8-Core Processor   | 1x AMD EPYC 7252 8-core Processor<br>1x AMD EPYC 7302 16-core Processor<br>1x AMD EPYC 7343 16-core Processor    |
| RAM                  | 16x 32GB Samsung ECC   | 4x 32GB Samsung ECC<br>8x 32GB Samsung ECC<br>4x 64GB Samsung ECC<br>8x 64GB Samsung ECC<br>16x 64GB Samsung ECC |
| Storage raw capacity | 128TB  | 64TB<br>256TB  |
| Storage device       | 10x 12.8TB Micron MTFDHAL12T8TDR   | 20x 12.8TB Micron MTFDHAL12T8TDR<br>20x 6.4TB Micron MTFDHAL6T4TDR<br>20x 3.2TB Micron MTFDHAL3T2TDR             |
| Network controller   | 1x Intel® Ethernet Controller I350-AM2<br>1x Mellanox ConnectX®-5 MCX512A-ACAT<br>1x Mellanox ConnectX®-5 MCX516A-CCAT | -  |
| Form factor          | 2U   | -  |
| Boot medium          | 2x 240GB Intel® SSDSC2KG240G8  | -  |

## About Thomas-Krenn.AG

Thomas-Krenn.AG is a leading, fast growing manufacturer of individual server and storage systems. Since 2002, the company has been supplying end customers, resellers, and data center operators with high-quality hardware according to the build-to-order principle. As a solution provider for individual customer projects, Thomas-Krenn.AG also stands for the highest service quality in the areas of hardware development, contract manufacturing, product refinement, and logistics. This makes it a recognized and reliable partner for industry, system houses, service providers, and medium-sized end customers from all sectors. Thomas-Krenn.AG currently employs around 160 people and produces all servers in Germany at its headquarter in Freyung, Bavaria.

## 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 which offers excellent compatibility with industry standards, and is the easiest to use and manage. Additionally, it is one of the most stable solutions on the market and 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 37,000 installations world-wide and has received numerous industry awards and recognition, also with its product Open-E DSS V7.

For further information about Open-E, its products and partners, visit <http://www.open-e.com/>

## Partner Contact

**Thomas-Krenn.AG**  
**Speltenbach-Steinäcker 1**  
**94078 Freyung**  
**Germany**

E-mail: [info@thomas-krenn.com](mailto:info@thomas-krenn.com)  
Website: [www.thomas-krenn.com](http://www.thomas-krenn.com)  
Phone: 0049 8551 9150 0

## About the Open-E JovianDSS Server Certification

Open-E JovianDSS delivers software-defined storage which results in a wide variety of different hardware requirements such as performance, range, capacity, capability, and connectivity. To ensure compatibility and robust storage environments, all selected partners offer storage systems which are tested, benchmarked, and certified by Open-E. This way, customers are able to use solutions that require exceptional security and redundancy, without compromising performance.