# ABC SYSTEMS AG

APPLIED BRAINWARE & COMPUTER SYSTEMS

open-e

# ABC StorageNode SMC-2029-3R HA Metro Cluster

OPEN-E JOVIANDSS
CERTIFIED ★★★ CERTIFIED
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HIGH AVAILABILITY
CERTIFIED CLUSTER

ABC SYSTEMS is focused on data management with clusters and on delivering design, implementation, support and remote monitoring or operating of the infrastructure. Their powerful ABC StorgeNode SMC-2029-3R HA Metro Cluster is a perfect fit for mission-critical, enterprise-level storage applications which presents a variety of advantages to users working with Data Deduplication, Data Replication and Business Continuity, as well as CPU-Intensive Storage, Virtual Storage, Single-Instance Storage and Virtual Tape Library customer environments.

Combined with the powerful Open-E JovianDSS, the system is a high-performing and reliable storage solution with no single points of failure. The system comes with two Intel® Xeon® Silver 4112 CPU 2.60GHz processors.

The simple GUI allows flexible storage provisioning for mission-critical storage and High-Availability clusters. All the built-in features like On- and Off site Data Protection, unlimited number of snapshots, compression, tiered SSD caching, in-line deduplication make the ABC StorageNode SMC-2029-3R HA Metro Cluster with the ZFS-based Open-E JovianDSS a powerful High Availability storage solution. Additionally, with this solution users are guaranteed with simplicity of the initial setup which in turn solves the problem of costly fees.

› Guaranteed data protection
› Enhanced storage performance
› Hardware independence
› Flexible scalability
› High Availability
› Tiered RAM and SSD Cache
› Data compression and in-line deduplication
› Thin, thick and over-provisioning

# ABC StorageNode SMC-2029-3R HA Metro Cluster

## Enhanced storage performance

Nowadays, enterprise storage has to provide big capacity while also being fast, affordable and include reliable support. This is exactly what ABC StorageNode SMC-2029-3R HA Metro Cluster has to offer. It comes as innovative all flash or hybrid storage system fusing the capacity of HDDs with the performance of SSDs in a single solution that offers high performance while lowering cost. Additionally, by leveraging capacity optimization technologies and advanced tiered SSD and RAM caching, ABC StorageNode SMC-2029-3R provides an overall efficiency boost and increased cache performance. On top of that, powerful tuning tools allow the system to optimize on I/O heavy databases or high throughput video editing equally well and predefined profiles save annoying testing time.

## Flexible scalability

The ABC StorageNode SMC-2029-3R HA Metro Cluster 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 unlimited amount of disks which can be increased on the fly without 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.

## Guaranteed data protection

Data is your most important resource. This is why the Open-E JovianDSS-based ABC StorageNode SMC-2029-3R HA Metro Cluster 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 disk fails, the software-based spare function offers one disk to several RAID arrays, saving you money on extra hardware without compromising data safety.

## Hardware independence

Commodity hardware can save you a significant amount of money and allows you to customize a storage system specific to your needs. But you need to be an expert if you want to create a solution which is perfectly adapted to the requirements of your environment. With Open-E JovianDSS we benefit from the best hardware compatibility on the market and the ABC StorageNode SMC-2029-3R HA Metro Cluster uses hardware components which are ideal for performance, reliability and compatibility. This way we can choose the hardware you need – depending on price, performance, quality and availability – and you won't waste money on unnecessary components. True hardware independence.

## Active-active failover resource switching time test results

| Total number of targets | Switching time [seconds] | Performance test results [passed/failed] |
|---|---|---|
| 2 | 23 | Passed |
| 10 | 29 | Passed |
| 20 | 29 | 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 |

# All-flash storage system for mission-critical environments

## High Availability

The ABC StorageNode SMC-2029-3R HA Metro Cluster is a perfect option if you are looking to deploy a High Availability cluster setup with SMB, NFS or iSCSI for storing business-critical data. ABC StorageNode SMC-2029-3R HA Metro Cluster 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) addresses 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 clients noticing a timeout.
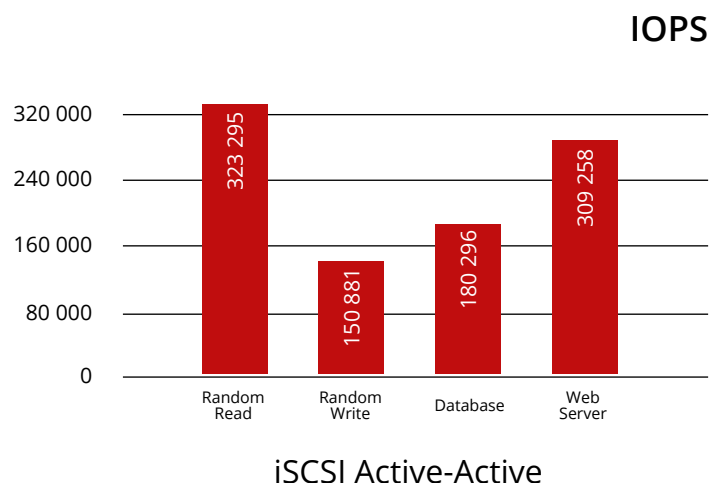
## Data compression and in-line deduplication

The ABC StorageNode SMC-2029-3R HA Metro Cluster offers data compression for minimizing storage capacity usage and ultimately boosting performance and taking less space on your storage. 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). The in-line deduplication feature in ABC StorageNode SMC-2029-3R HA Metro Cluster removes redundant data and minimizes storage capacity usage. The software checks each block for redundancy in the system and if it finds a match the new block isn't written; instead, a shortcut leading to the original block is created. Such a system can reach a deduplication ratio of 3:1 or more, which means that if you place 3TB of data it will only use 1TB of physical disc space. This feature is especially interesting for highly repetitive data, i.e. in VDI, server virtualization or backup, where much higher deduplication ratios can be reached.
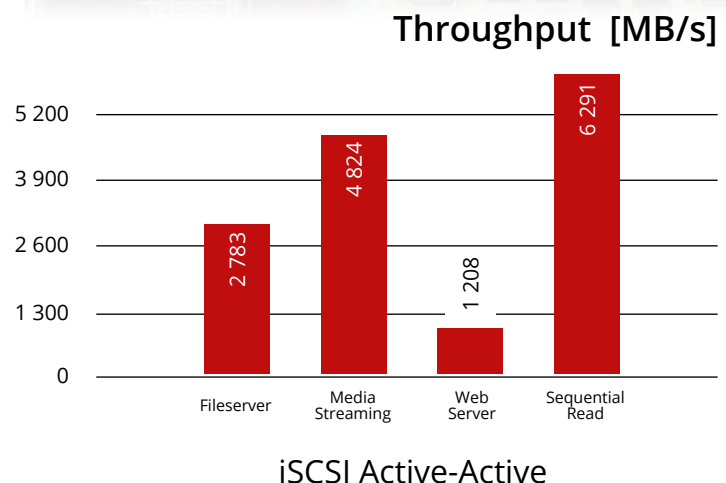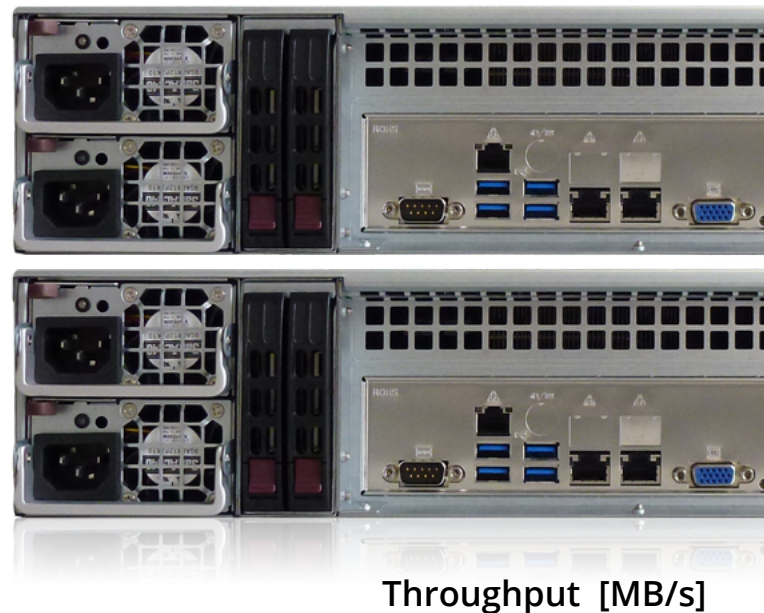
## Tiered RAM and SSD Cache

Open-E JovianDSS-based ABC StorageNode SMC-2029-3R HA Metro Cluster works as a tiered storage environment - dramatically speeding up access to frequently accessed files. It uses a caching algorithm to cache "often used" and "recently used" data separately and provides the best performance for your storage by tiering hot data between RAM and SDD Cache. In ABC StorageNode SMC-2029-3R HA Metro Cluster data is always saved on HDDs and only Hot Data is stored in RAM and SSD to ensure data safety and increase performance.

## Thin provisioning and unlimited number of snapshots

The ABC StorageNode SMC-2029-3R HA Metro Cluster uses thin provisioning to improve your storage utilization by allocating an exact amount of storage 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. With ABC StorageNode SMC-2029-3R HA Metro Cluster it is easy to manage storage capacity and set notifications when physical space shrinks.

## Test Parameters

» 2-Node Advanced Metro HA Cluster
» 3 parallel SAS3 RAID Controller per Node

**NOTE: Some of the Certification tests saturated the Ethernet interfaces.**

### IOPS

| Test | IOPS |
|------|------|
| Random Read | 323 295 |
| Random Write | 150 881 |
| Database | 180 296 |
| Web Server | 309 258 |

iSCSI Active-Active

### Throughput [MB/s]

| Test | MB/s |
|------|------|
| Fileserver | 2 783 |
| Media Streaming | 4 824 |
| Web Server | 1 208 |
| Sequential Read | 6 291 |

iSCSI Active-Active

# Hardware details

## For each of the 2 servers

|  | Default configuration | Options |
|---|---|---|
| Motherboard | Supermicro X11DPH-T | - |
| CPU | 2x Intel® Xeon® Silver 4112 CPU 2.60GHz | Up to 3.6GHz, 56 Core |
| RAM | 12x 32GB hynix HMA84GR7AFR4N-VK | Up to 16 DIMM of 128GB |
| Storage raw capacity | 91TB | Up to 182TB (10.18) |
| HDDs | 24x Intel® SSD DC S4500 Series | Up to 24x 7.68TB SDD (10.18) |
| Read cache | RAM / SSD tiered | Up to 2TB RAM |
| Write log | RAM / SSD tiered | Up to 2TB RAM |
| Hard drive interface | 3x Supermicro AOC-S3108L-H8iR | incl. 3x 8GB CacheVault BBU |
| Network interface | 1x Intel® Ethernet Controller X722 for 10GbE<br>2x Mellanox ConnectX®-4 EN MCX416-BCAT | 100GbE, 32FC |
| Form factor | 2U | - |

# ABC SYSTEMS AG

## APPLIED BRAINWARE & COMPUTER SYSTEMS

## About ABC SYTEMS AG Applied Brainware & Computer Systems

1981 founded, independent System Integrator for customer optimized high availability and performance infrastructures. ABC mainly focuses on data management (storage, backup, archive) with clusters of up to nPB and servers, based on broad experience and innovative concepts over 30 years. Services include design, implementation, support and remote monitoring or operating of the infrastructure whether sold, rented or leased, installed internally or externally in data centers - also as managed service package. For further information about ABC Systems AG, its products and partners, visit http://www.abcsystems.ch

## 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 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 30,000 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/

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## 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.