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bluechip STORAGEline R52204s – HA Shared Storage Cluster

Reliable storage solutions are the core of companies that aim for a virtualized storage infrastructure and implementation of failure -resistant High Availability storage environments. The answer to such a demand is the bluechip STORAGEline R52204s – HA Shared Storage Cluster, a product which provides highest security of business-critical company data.

The bluechip STORAGEline R52204s – HA Shared Storage Cluster can be seamlessly consolidated with existing networks in order to guarantee a solid storage of big amounts of data, and fulfilling demanding storage requirements in virtualized environments.

All bluechip STORAGEline R52204s – HA Shared Storage Clusters include Intel® Xeon®

Processors and offer up to 336TB of storage capacity.

With the Open-E JovianDSS Data Storage Software and bluechip hardware, users can establish powerful and cost-efficient NAS and High availability SAN systems based on iSCSI or Fibre Channel.

bluechip is Open-E's long-term Platinum Partner which is why the company has a vast knowledge of Open-E software, therefore offering complex support options, no matter if needed for the initial installation of the server or daily operations like maintenance or capacity extensions.

> Guaranteed data protection
> Hardware independence
> Optimal resource utilization
> Flexible scalability
> High Availability
> Data integrity check
> Data compression and in-line deduplication
> Thin, thick and over-provisioning

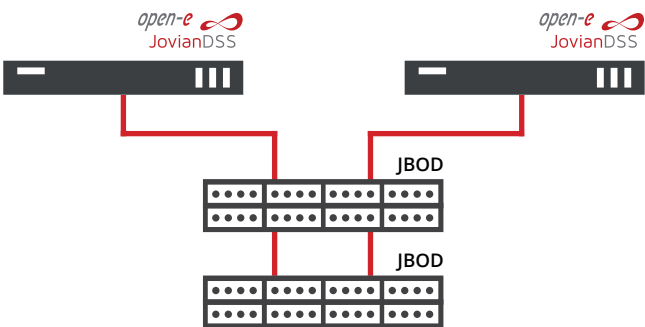# bluechip STORAGEline R52204s – HA Shared Storage

Guaranteed data protection

Data is your most important resource. This is why the Open-E JovianDSS-based bluechip STORAGEline R52204s – HA Shared Storage 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 is 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 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 Jovian DSS we benefit from the best hardware compatibility on the market and the bluechip STORAGEline R52204s – HA Shared Storage 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.

Optimal resource utilization

The bluechip STORAGEline R52204s – HA Shared Storage Cluster fully utilizes your storage resources thanks to many high-end features included in Open-E JovianDSS. These features are especially crucial when deploying virtual environments. With deduplication and compression you are able to virtually increase your storage size and use thin provisioning to easily grow physical storage capacity without downtime. More efficient use of disk space also allows for longer disk retention periods. Tiered caching will allow reaching high performance values from all disks which can be managed and monitored in the bluechip STORAGEline R52204s – HA Shared Storage Cluster. This solution fully leverages hybrid storage, combining high performance and high capacity at an affordable price.

Flexible scalability

The bluechip STORAGEline R52204s – HA Shared Storage 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 Zettabyte, 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.

Active-active failover resource switching time test results

Total number of targets	Switching time [seconds]	Performance test results [passed/failed]
2	21	Passed
10	27	Passed
20	27	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

The bluechip STORAGEline R52204s – HA Shared Storage 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. bluechip STORAGEline R52204s – HA Shared Storage 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.

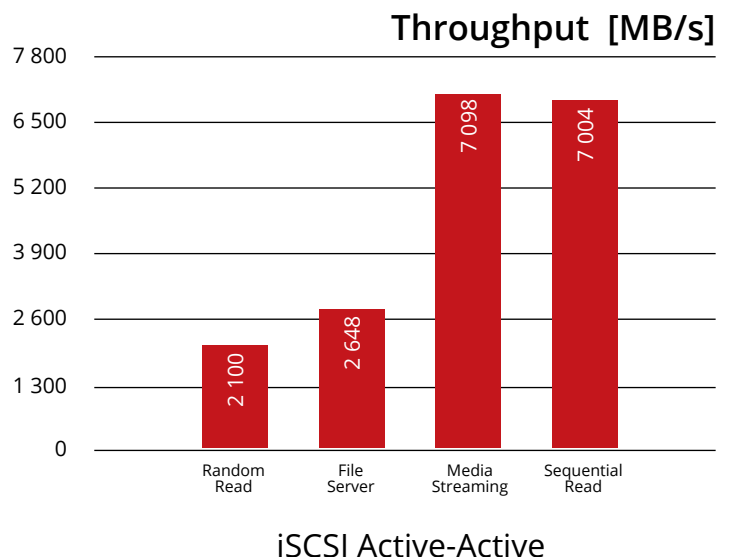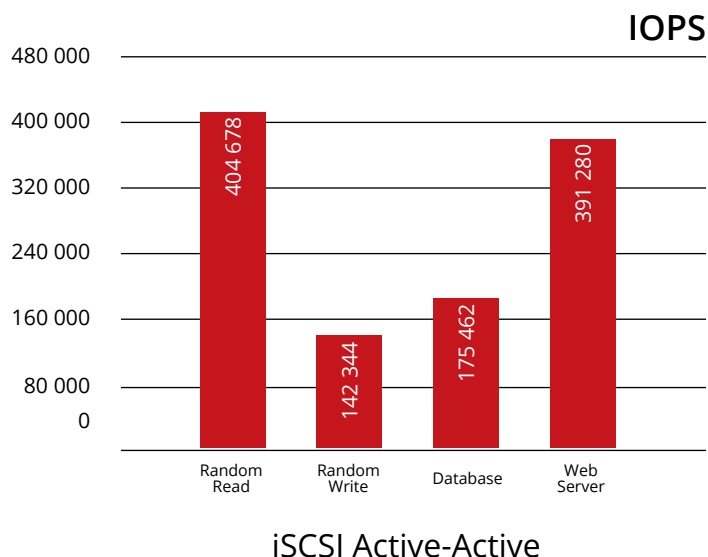## Data compression and in-line deduplication

The bluechip STORAGEline R52204s – HA Shared Storage 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 the bluechip STORAGEline R52204s – HA Shared Storage 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.

Data integrity check

The bluechip STORAGEline R52204s – HA Shared Storage Cluster storage system effectively detects data corruption, as even minor integrity violations could cause loss of data. The bluechip STORAGEline R52204s – HA Shared Storage Cluster 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 HDD. 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, thick and over-provisioning

The bluechip STORAGEline R52204s – HA Shared Storage 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 the bluechip STORAGEline R52204s – HA Shared Storage Cluster it is easy to manage storage capacity and set notifications when physical space shrinks.

IOPS

Random Read	Random Write	Database	Web Server
404 678	142 344	175 462	391 280

iSCSI Active-Active

Throughput [MB/s]

Random Read	File Server	Media Streaming	Sequential Read
2 100	2 648	7 098	7 004

iSCSI Active-Active

Hardware details

Server head R52204s
For each of the 2 servers

Default configuration	
Motherboard	Supermicro X11DPi-N
CPU	2 x Intel® Xeon® Gold 5122 Processor 3.60GHz
RAM	8 x 16GB Kingston KSM26RS4/16HAI
Storage raw capacity	6TB
Hard drive interface	1 x Microsemi Adaptec SmartHBA 2100-4i4e
Network interface	1 x Intel® Ethernet Controller X722 for 1GbE 2 x Intel® Ethernet Converged Network Adapter X520-DA2 2 x Intel® Ethernet Converged Network Adapter X550T
Form factor	2U

JBOD Intel JBOD2224S2DP
For each of the 2 JBODs

Default configuration	
HDD's	20 x 300GB Seagate ST300MM0048
Read cache SSD's	Samsung PM1633a 960GB
Write log SSD's	Samsung PM1633a 960GB
Form Factor	2U
Power	2x 460W Redundant Power Supply

Individual configurations are available on:
https://www.bluechip.de/konfigurator/server/

About bluechip

For more than 25 years, bluechip has developed, built and sold servers, workstations, desktop PCs, laptops and tablet PCs, tailored to individual customer requirements, for both simple and sophisticated business needs from a wide variety of fields. We are now able to refer to several hundred thousand satisfied users. You can put together your desired system very simply using the online configurator in the bluechip online shop – or ask your personal bluechip sales contact. In addition, we provide our specialist retailers, systems houses and resellers with a broad-based portfolio of cloud services, peripheral devices, laptops and components.

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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/

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.