SFC-R730-HA3

OPEN-E JovianDSS
★ ★ ★
CERTIFIED   CERTIFIED
open-e
HIGH AVAILABILITY
READY

The MCCS SFC-R730-HA3 Storage for Clouds is an Enterprise modular storage system combining the power of the Dell PowerEdge and PowerVault family series hardware and Open-E JovianDSS software. The system can be set up in various configurations, from a single node up to an advanced Metro High Availability Cluster with snapshot replication options.

The system uses the Dell PowerEdge R730 series and other Dell hardware as the basic building blocks to create high performance and low latency storage nodes. For the PowerVault Disk enclosures, the MD1400 (2U, 12 x 3.5 inch disks), MD1420 (2U, 24 x 2.5 inch disks) or the MD3060e (4U, 60 x drives mixed 3.5 inch / 2.5 inch) may be used and combined to attach up to 240+ Disks on 12Gbs SAS.

The overall cluster performance of SFC-R730-HA3 is significantly increased as both nodes process I/Os and provide simultaneous and balanced access to the logical devices. With Open-E JovianDSS and the dual or triple redundant hardware setup in disks, controllers, nodes, cabling, power supplies

and network. Single Points of Failure are eliminated and the server is perfectly optimized for mission-critical, Enterprise-level storage environments.

Key features of the system:

- High Availability storage server optimized for mission-critical, storage applications on Enterprise level
- Fully redundant, fault-tolerant system supporting hot swappable compute nodes, storage drives and dual / triple / quad HBA controllers and networking
- Two compute nodes in an Active-Active configuration, each supporting two Intel® Xeon® Processors of the E5-2600 v4 product family
- Supports three-way mirror design (one is none) for increased RTO, RPO, SLA and performance resilliant rebuilds
- Modular design to expand with Dell storage enclosures MD1400/MD1420 and MD3060e
- Optimized for 10Gbps networking
- Enterprise-quality hardware and software SLAs including 24/7/365 support (optional)

› Guaranteed data protection
› Enhanced storage performance
› Flexible scalability
› Simplified management
› High Availability
› Data integrity check
› Thin provisioning
› Tiered RAM and SSD Cache
› Unlimited number of snapshots and clones

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Advantages

Guaranteed data protection
Data is your most important resource. This is why the Open-E JovianDSS-based SFC-R730-HA3 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.

Enhanced storage performance
Nowadays, enterprise storage has to provide big capacity while also being fast, affordable and include reliable support. This is exactly what SFC-R730-HA3 has to offer. Open-E JovianDSS-based SFC-R730-HA3 is an innovative 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, SFC-R730-HA3 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.

Features

High Availability
The SFC-R730-HA3 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 SFC-R730-HA3 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 client servers noticing a timeout.

Data integrity check
The SFC-R730-HA3 storage system effectively detects data corruption, as even minor integrity violations could cause loss of data. SFC-R730-HA3 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.

Flexible scalability
The SFC-R730-HA3 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.

Simplified management
Managing Open-E JovianDSS and its extensive features is easy and intuitive compared to many competing solutions on the market. The WebGUI provides a quick overview and management of all storage resources and features. After extensive analyses of storage usage and user interaction the clicks per step in each functionality have been reduced to a minimum, i.e. in creating iSCSI targets or when expanding the size of your storage. This way, you are able to quickly and easily manage SFC-R730-HA3 with Open-E JovianDSS, barely involving actions of a storage administrator.

High Availability server for mission-critical Enterprise storage applications

Thin provisioning

SFC-R730-HA3 uses thin provisioning to improve your storage utilization by allocating just the exact amount of server space at the time it is required. You'll eliminate the cost of unused storage space and never again have to pre-allocate storage up front and buy too much hardware. In SFC-R730-HA3 there is no need for evaluating storage requirements and take the risk of rebuilding the entire system when it runs out of space. With this system it is easy to manage storage capacity and set notifications when physical space shrinks. This is a highly scalable solution – just add physical disks as your data grows.

Tiered RAM and SSD Cache

Open-E JovianDSS-based SFC-R730-HA3 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 SFC-R730-HA3 data is always saved on HDDs and only Hot Data is stored in RAM and SSD to ensure data safety and increase performance.

Unlimited number of snapshots and clones

Every Open-E JovianDSS-based SFC-R730-HA3 allows an unlimited number of snapshots and clones – greatly simplifying back-ups, replications and data recreation in case of accidental deletes or viruses. Snapshots are read-only points-in-time and allow for easy roll-back. They are a must-have option for effective disaster recovery scenarios and in SFC-R730-HA3 you may schedule snapshots for months, weeks, hours or even minutes. Whereas, a clone is a writable copy of a snapshot and allows to easily duplicate virtual machines and scale out for virtual networks instantly and without duplicating data.

The tests with the SFC-R730-HA3 were done in Active-Active mode with two test systems and a customer client. With more servers using the system, you will gain higher results due to more processors load spread with more cores and threads being used. Optionally tuning the combination of CPU choice and disk configuration can tailor the performance to any workload. From low latency high performance setup to highly scalable archiving storage. The tests were conducted with fi o benchmarker.

## Active-active failover resource switching time test results

Total number of targets	Switching time [seconds]	Performance test results [passed/failed]
2	20	Passed
10	25	Passed
20	27	Passed

High Availability solution functionality test results

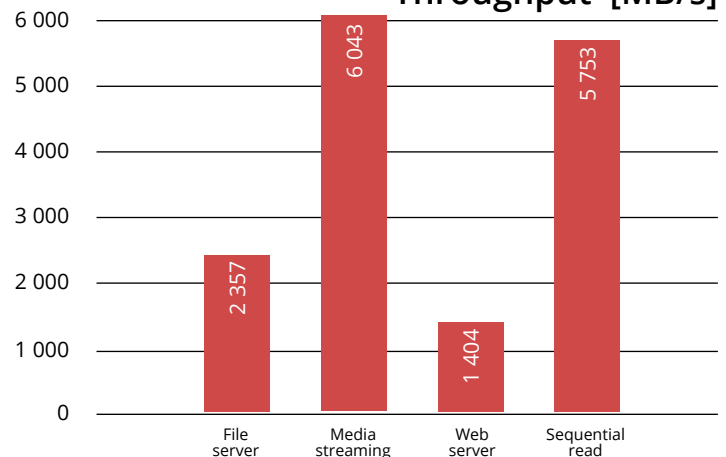| Functionality test name	Functionality test results [passed/failed]
Manual Failover	Passed
Automatic Failover triggering after network failure	Passed
Automatic Failover triggering after shutdown test	Passed
Automatic Failover triggering after reboot test	Passed
Automatic Failover triggering after poweroff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

IOPS

Random Read: 384 046
Database: 92 870
Media streaming: 96 938
Web server: 344 354
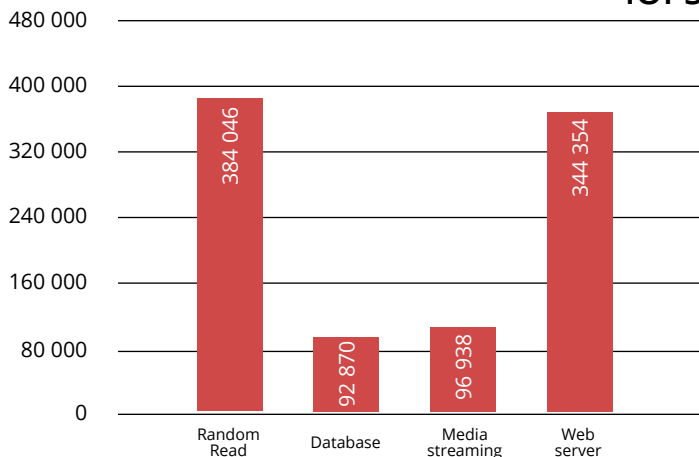
iSCSI Active-Active

Throughput [MB/s]

File server: 2 357
Media streaming: 6 043
Web server: 1 404
Sequential read: 5 753

iSCSI Active-Active

SFC-R730-HA3

Hardware information

	Default configuration	Options
CPU	Intel® Xeon® Processor E5-2603 v4 1.70GHz	Intel® Xeon® processor E5-2600 v4 with up to 22 cores
RAM	128MB DDR4 ECC REG	Up to 24 DIMMs of high-capacity DDR4 memory (max 3TB)
RAW capacity	30 Disks 4TB / 120TB	Different disk size type and enclosures options available. Raw capacity up to 60 disks per Md3060e with 240 disks in 16U. Each SAS12G/H830 controller with 4 enclosures redundantly in a daisy chain. Maximum raw redundant capacity with 4 HBAs max.: 950+ disks
HDDs	4TB HGST HUS726040ALS214 4TB SEAGATE ST4000NM0025 200GB TOSHIBA PX04SHB020 400GB TOSHIBA PX04SMB040 SSDs with 25 DWPD high endurance	Performance: 2.5" SSD: up to 1.6TB HD: 10 and15krpm: 300GB up to 1.8TB SAS 3.5": 7200rpm: 2TB up to 6TB SAS Archiving and backup: 3.5": up to 12TB SAS disks
Read cache	2 x PX04SHB040 400GB / 800GB Enterprise SSD	Multiple single read cache SSDs optional for each Pool.
Write log	4 x 200GB SSD (2 x per pool)	Additional mirrored ZILs to increase Pool speed. Mirrored ZIL required for each Pool.
Hard drive interface	SAS	FC enclosures available
Network interface	4 x 10GbE SFP/UTP 2 x 1GbE 1 x DRAC (OOBM)	Optional 40GbE+ / 10Gb or 1GbW NICs
Form factor	2U nodes and 2U enclosures	Additional 4U disk enclosures available (md3060e)
IO Slots	Up to 7 x PCIe 3.0 plus dedicated PERC slot	-
Controllers	Per R730 12Gbps SAS HBA or PERC H830 12G Per Md1400 2 x SAS 12G redundant controllers	-
Enclosures	MD1400 (12 x 3.5" disks)	24 x MD1420 2.5", MD3060e All with redundant controllers.
Weight	Per R730 from 18.9kg up to 31.5kg max. Per MD1400 from 9kg to 28.59kg max	-
Power	Titanium efficiency 750W AC power supply; 1100W DC power supply; Platinum efficiency 495W, 750W, 1100W AC power supply	-

The SFC-R730-HA3 is based on a modular solution design: You buy only what you need, then add capacity as your data storage requirements grow.

MCSS

MCCS is an all-round IT service provider, specialized in consulting, delivery, implementation, maintenance and management of high quality and reliable IT infrastructures.

We maintain your IT with the greatest care and attention – in all markets. SMEs, large business and enterprise: take advantage of our knowledge and expertise. We are there for you from start to finish, understanding and meeting your IT needs is our challenge.

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About Open-E

Open-E is a well-established developer of IP-based storage management software. Open-E JovianDSS and Open-E DSS V7 are robust, award-winning enterprise storage applications which offer excellent compatibility with industry standards, and are the easiest to use and manage. Additionally, they are some of the most stable solutions on the market and undisputed price/performance leaders. Open-E accounts for over 27,000 installations world-wide and has received numerous industry awards and recognition. Thanks to our reputation, experience and business reliability, Open-E has become the technology partner of choice for industry-leading IT companies.

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.