open-e JovianDSS

e-shelter

HIGH PERFORMANCE DATA STORAGE SERVER

FOR DATA CENTER PROVIDERS

CUSTOMER

e-shelter

e-shelter develops and runs high availability data centers. They design, build, operate and secure physical and technical infrastructure on their own premises. To their customers, e-shelter provides the opportunity to keep IT and network systems highly available and secure in the most effective environment, whether it is for colocation housing, the rapid implementation of a cloud solution or a long-term project. e-shelter delivers its services from European data centers located in Germany, Switzerland, Austria, the Netherlands and the UK.

The e-shelter innovation lab

e-shelter provides its customers with a „Home to the cloud." Their data center and colocation services offer a home for customers' IT and connecting customers and partners together with applications and technologies. Beyond space, power, and physical protection, e-shelter offers new ways for technology providers, business partners, and end users to innovate with cloud technology all within a vibrant community.

The e-shelter innovation lab is where new ideas in cloud technology become reality. Partners can join the community of customers, partners, and the world's most advanced cloud technology providers. Partners can evaluate their innovations faster and at lower cost with dozens of other partners who collaborate and provide market-leading tools in a test environment hosted in Europe's largest data center network.

CHALLENGE

Within the infrastructure and ecosystem of the innovation lab, e-shelter needed a reliable and high performance storage solution that could be used for various iSCSI targets with size ranging from 10TB to 40TB.

SOLUTION

e-shelter's innovation lab partner Toshiba Electronics Europe GmbH selected the high performance Supermicro server with dual Xeon CPUs and high speed 10Gb Ethernet. Toshiba supplied enterprise-class hard drives (HDDs) for the main data storage. Open-E was selected as the operating system vendor as its flagship product, Open-E JovianDSS, provided both the rock-solid stability and the fastest possible performance with the added bonus of very competitive pricing and first-class technical support.

Licensed capacity: 128TB
High availability: No, Single Node
Disks type: HDD

Rainer Werner Kaese

Senior Manager

Business Development Storage Products

Toshiba Electronics Europe GmbH

TOSHIBA

www.toshiba-storage.com

The setup was installed and brought into production at e-shelter on August 30, 2017. Apart from a single planned shutdown in Nov 2018 due to a JovianDSS update, there hasn't been a single disk failure nor a second of downtime since then. The e-shelter Innovation Lab team, partners and Toshiba Electronics Europe GmbH are very pleased with the impressive performance and stability of Open-E's JovianDSS.

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HARDWARE

Storage Server

Server	Supermicro X10 Series Server, 2U
Processor	2x Intel® Xeon® Series CPU
RAM	128GB RAM, Registered ECC
HBA	Microsemi Controller ASR8885
NICs	10Gbit/sec RJ45 Ethernet
NICs	2 x Supermicro AOC-STG-I2T Network Card, 10Gbit/sec RJ45 Ethernet, X540 chip
Storage	**Read Cache** 2x 1.6TB Enterprise SSD **Write Cache (ZFS Intend Log)** 2x 1.6TB Enterprise SSD

JBOD

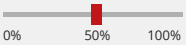
JBOD	60 Bay Dual Expander Toploader JBOD from Celestica
HDDs	**Data Storage** 60x Toshiba HDD MG04SCA40EA, 4TB 7200rpm SAS 12GB/s

ESTIMATED STORAGE PERFORMANCE RATING

Zpool Read Performance Rating	12.9x Single Disk
Zpool Write Performance Rating	8.5x Single Disk

ZPOOL CAPACITY EFFICIENCY

Zpool Capacity Efficiency



STORAGE CHARACTERISTICS

Storage redundancy type	2-way Mirror
Zpool Data Disk Groups Layout	x 30 groups Data disk Parity disk
Gross unformatted storage capacity [1]	240 TB
Net unformatted storage capacity [2]	120 TB
Gross formatted storage capacity [3]	218.40 TiB [6]
Net formatted storage capacity [4]	109.20 TiB [6]
Usable data storage capacity [5]	98.28 TiB (108 TB) [6]

[1] Gross unformatted storage capacity: The unformatted capacity of all disks, before RAID or disks mirroring is applied.
[2] Net unformatted storage capacity: The unformatted capacity of all disks, after RAID or disks mirroring is applied.
[3] Gross formatted storage capacity: The formatted capacity of all disks, before RAID or disks mirroring is applied. This capacity is used to calculate the licensed capacity for RAID Z-1, Z-2 and Z-3.
[4] Net formatted storage capacity: The formatted capacity of all disks, after RAID or disks mirroring is applied. This capacity is used to calculate the licensed capacity for mirrored arrays
[5] Usable data storage capacity: The cvactual usable capacity that is exported to the storage client. It is the result of multiplying net formatted storage capacity with the pool max used capacity factor.
[6] Formatted storage capacity is shown in TiB (240 bytes units), the same way operating systems calculate it. Hard drive manufacturers use TB (1012 byte units) based on the required license capacity. Because of that a freshly formatted hard disk or RAID array volume is smaller than the nominal capacity, e.g. formatting a 1TB hard disk
will result in 931 GB space on drive, despite the 1000GB claim on the label. More info in the article on our blog.

COUNTRY

Germany

DEPLOYED TO PRODUCTION

August 30th, 2017

VERTICAL MARKET

Managed Service Provide (MSP)