#1 Software for Data Storage, Backup & Business Continuity

Open-E JovianDSS is a ZFS- and Linux-based Data Storage Software designed especially for enterprise-sized Software Defined Storage environments. With its unique features, the product ensures highest data reliability and integrity with optimal data storage, protection and recovery. The software addresses the needs of Enterprises, SMB users, Data Centers and Cloud Providers seeking a unified NAS and SAN solution with On- and Off-site Data Protection, consistent Snapshots, Thin Provisioning, Compression, Deduplication and more.

OPEN-E JOVIANDSS ENTERPRISE-GRADE BENEFITS

High Availability
Active-Active or Active-Passive dual node HA Cluster for iSCSI / NFS / SMB over Ethernet, Fibre Channel and SAS

Data Protection
On- and Off-site Data Protection, offering built-in backup of everything and instant Disaster Recovery, as well as multiple backup destinations with user-defined
Interval-Retention plans

Reliability and redundancy
Atomic Transaction Writes, Data and Metadata Checksumming, Self-Healing, N-Mirrors, up to Triple-Parity, optionally mirrored boot medium

Data Optimization
Very efficient compression algorithms, e.g., the default LZ4, and optional In-line Deduplication

Data Acceleration
Two-level caching (SSD and RAM) to optimize the access time to the most recent and the most frequently used data, random writes are converted into sequential writes

Data Virtualization
Thin and Over Provisioning with pooled storage model, unlimited and instant Snapshots and Clones

Scalability
Up to about 5PB in single namespace with the ZFS technology on Linux OS

Unified storage model
One storage supporting multiple protocols (file- and block-based) - iSCSI, FC and NFS, SMB (CIFS)

Quick and simple storage management
Easy-to-use WebGUI with intuitive navigation, Console UI and scriptable CLI / API and REST API

Convenient monitoring
Open-E JovianDSS monitoring system (on WebGUI, SNMP), as well as monitoring with industry-standard platforms like Nagios or Checkmk

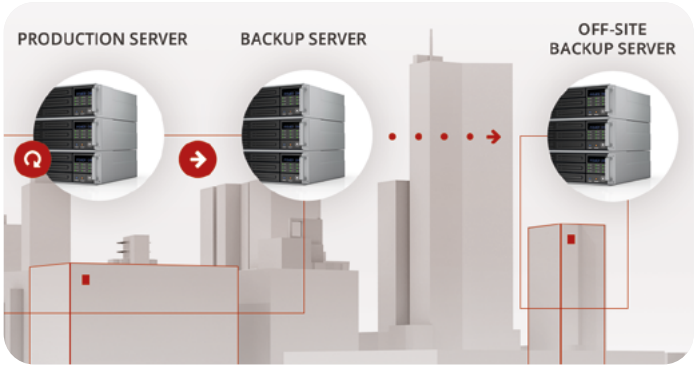
Flexible technical support options
Technical support provided by Open-E Partners or directly by Open-E's Support Team

Robust storage environments and compatibility
Open-E JovianDSS Certified Storage Server Program - Partner systems tested, benchmarked and certified in our labs

On- and Off-site Data Protection

Open-E JovianDSS combines several technologies to create the On- and Off-site Data Protection feature - a strategy for **Backup and Disaster Recovery** that allows an instant restore of crucial company data in case of an unexpected disaster. It enables consistent Snapshots for virtual machines and asynchronous replication to local or remote destinations. The rotational Snapshots are stored according to a retention-interval plan for flexible backup that can be customized to specific user needs. Additionally, Open-E JovianDSS with On- and Off-site Data Protection does not require any backup agent.

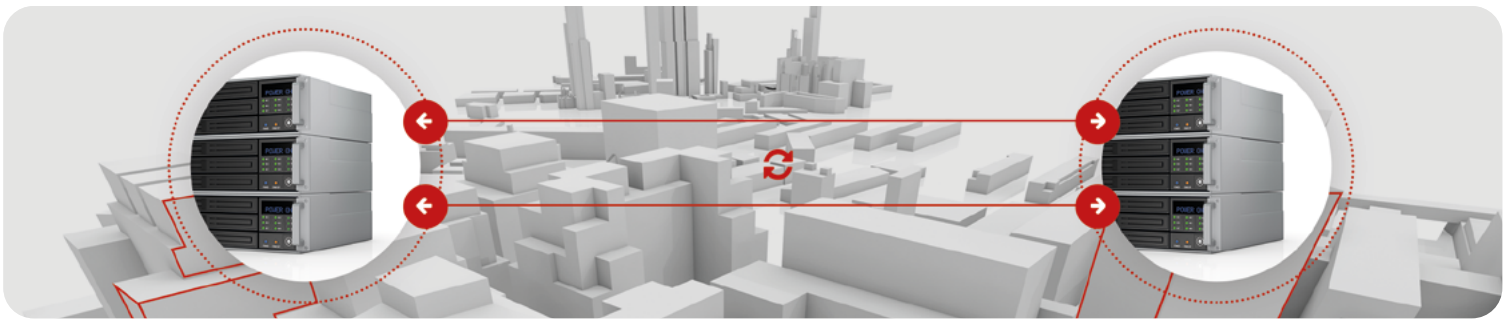
- Easy-to-use, efficient backups of mission-critical data
- Scalability and ability to store backups on separate servers on- and off-site to ensure maximum data security
- Optional instant disaster recovery with unparalleled flexibility – restore from a few minutes ago or a few years in the past if needed
- Provides data security and ensures Business Continuity in combination with a High Availability Cluster



Advanced Metro HA Cluster

Open-E JovianDSS includes failover functionality for iSCSI, FC and NFS, SMB (CIFS) enabling you to set up High Availability Load-Balanced Storage Clusters that ensure reliability and redundancy through failover in case of a server crash. By using the Open-E JovianDSS Advanced Metro High Availability Cluster Feature Pack, you can create High Availability for two server nodes with storage mirror over Ethernet using a storage system at each location (Dual Storage). Since the connection of cluster communication and data mirroring between nodes works over Ethernet, the nodes might be located far from each other as a (stretched) metro storage cluster. It can be 50 miles (80 km) in case of point to point fibre optic connection, or even more when using an additional switch between nodes - provided that network latency will not exceed 5ms. The Feature Pack also supports configurations of the Open-E JovianDSS Standard HA Cluster Feature Pack.

- 1Gbps, 10Gbps, 40Gbps, 100Gbps, 200Gbps Ethernet support for maximum speed
- Perfect for both rack (from 12” / 30cm) and metro (up to 50 miles / 80km) clusters
- Allows use of less expensive SATA drives
- Easy to configure and manage
- Compared to SAS or FibreChannel, JBODs are not required
- Optional use of RAID controllers



Data Storage and Backup for Diverse Virtual Environments

Open-E JovianDSS offers a cost-effective, flexible, and highly scalable storage solution, designed with a hypervisor-agnostic approach to seamlessly integrate with your chosen virtualization platform. This includes VMware ESXi, Proxmox VE, Microsoft Hyper-V, Citrix, and more, ensuring optimal performance and data efficiency regardless of your environment. Open-E JovianDSS can be deployed as a physical data storage server or a Storage Virtual Appliance, accessible via iSCSI or NFS protocols.

Proxmox VE: Full support for the Proxmox QEMU Guest Agent, enabling advanced features like accurate VM status reporting and guest filesystem freezing for consistent backups.

VMware: certified „VMware Ready Storage", compatible with ESXi 8.0, 6.7, 6.5, 6.0, and 5.5. Includes built-in VMware Tools with essential storage and network drivers.

- Flexible deployment as either a physical or virtual storage appliance.
- Built-in functionality for creating and restoring virtual machine backups.
- Fast implementation and ease of use, facilitating rapid deployment across hypervisors.
- Inexpensive, capacity-based product licenses and comprehensive technical support.
- Proven and widely adopted solution, with 80% of Open-E's customers utilizing the software for virtualization.

Hyper-converged Storage Environments

Hyper-convergence is a software-defined way of storage management which combines storage, networking, compute, and virtualization technologies in only one physical unit. Hyper-converged environments with Open-E JovianDSS, used as a Storage Virtual Appliance (SVA), provide administrators with an integrated solution, including a cluster with one or more JBODs attached. This results in high performance, High Availability, and reliability for Enterprise setups as the HA cluster environment balances the load, and ensures uninterrupted service with failover in case one node fails. Due to only one required set of hardware per location such a solution is cost-effective and can be flexibly scaled when requirements grow.

- Reduced amount of total hardware - instead of four physical servers, only two are necessary to create an HA cluster
- Option to use commodity hardware which drastically reduces investment costs
- Easy to use interface and high performance through Software Defined Storage
- Flexibility and agility in virtualized environments with VMware or other hypervisors
- Cost-effectiveness and scalability

Open-E JovianDSS specifications

Specifications	Description
Base OS	Linux
File system	ZFS
Architecture	64-bit
Minimum hardware requirements	Quad-core CPU 2.6GHz 16GB RAM HBA SAS / FC for standard clusters or SATA controller in case of Single Node or Cluster over Ethernet
Connections and storage protocols	1Gbps, 10Gbps, 40Gbps, 100Gbps, 200Gbps Ethernet 40Gbps IP over InfiniBand iSCSI NFS v3 FC (Fibre Channel) SMB up to 3.1.1 / CIFS IPv4 NVMe over Fabrics (NVMe-oF) - Initiator support
Data integrity and availability	ZFS 256-bit block level checksums Mirror (eq. RAID 10), RAID-Z1, -Z2, (eq. RAID 5, 6), -Z3 On- and Off-site Data Protection Active-Active or Active-Passive dual node HA Cluster for iSCSI, FC and NFS, SMB (CIFS) Self-healing against silent data corruption Disk Multipathing RDMA Self Encrypted Drives (SED) Support SSD TRIM Support
Data optimization	RAM, SSD and HDD hybrid pool Tiered Caching Unlimited Snapshots Unlimited Clones (writable Snapshots) Thin Provisioning Over Provisioning Inline Data Deduplication Inline Compression ZFS Special Devices NVMe Partitions
Management	WebGUI, Console UI, CLI SNMP and REST API E-mail notification Roll-back to previous configuration
Examples of supported HA configurations	Cluster in a Box (CiB) Common Storage Cluster over SAS Cluster over SAS with internal SAS expander Cluster with multiple JBODs over SAS or FC (Stretched) Metro Cluster over Ethernet And more...
Supported environments	VMware VAAI support for iSCSI and NFS (vStorage APIs for Array Integration), Proxmox VE, Microsoft Windows, Microsoft Hyper-V, Microsoft Active Directory, Linux, RHEL, macOS, Citrix, XEN, OpenStack
Licensing and feature packs	One license per server Additional storage license depending on capacity Open-E JovianDSS Standard HA Cluster Feature Pack Open-E JovianDSS Advanced Metro HA Cluster Feature Pack

About Open-E

Founded in 1998, Open-E is a well-established developer of IP-based storage management software. Its flagship product, Open-E JovianDSS, is a robust, award-winning storage application that offers excellent compatibility with industry standards. It's also the easiest to use and manage. Additionally, it is one of the most stable solutions on the market and an undisputed price-per-formance leader. Thanks to its reputation, experience, and business reliability, Open-E has become the technology partner of choice for industryleading IT companies. Open-E accounts for over 40,000 installations worldwide.

For further information about Open-E, its products and partners, visit **www.open-e.com**

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