

One Software for Data Storage, Backup & Disaster Recovery

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, 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 default LZ4 compression and optional In-line Deduplication

✓ Data Acceleration

Dynamic caching between RAM, SSD and HDD, most recent and most frequent (hot data) cache algorithm, random to sequential conversion on writes

✓ Data Virtualization

Default 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, 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 Check_MK

✓ Flexible technical support options

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

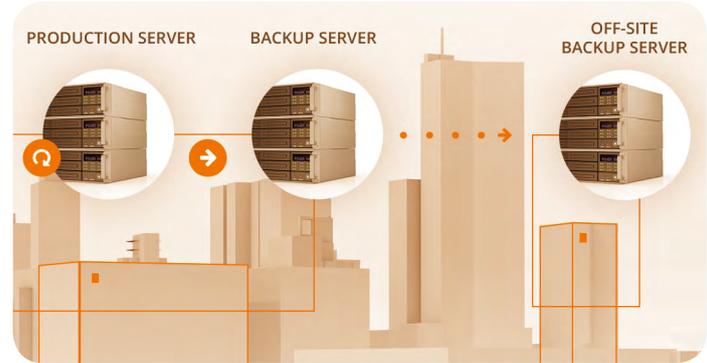
✓ Robust storage environments and compatibility

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 5 minutes ago or 2 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 SMB, NFS and iSCSI 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 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 5 ms. The Feature Pack also supports configurations of the Open-E JovianDSS Standard HA Cluster Feature Pack.

- ✓ 1Gbps, 10Gbps, 40Gbps Ethernet support for maximum speed
- ✓ Distance of up to 50 miles (80 km) in case of point to point fibre optic connection
- ✓ Perfect fit also for standard cluster solutions
- ✓ 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



Storage and Backup for Virtual Environments

Combined with VMware vSphere ESXi, Open-E JovianDSS is a cost-effective, flexible and scalable solution for virtualization that offers highest performance and data efficiency. In a virtual environment, Open-E JovianDSS provides the storage appliance, a physical data storage server or Storage Virtual Appliance, accessed via the iSCSI or NFS protocol. Additionally, the storage has a built-in native backup and recovery functionality. The compatibility is confirmed through the "VMware Ready for Storage" certification, including the products ESXi 6.5, 6.0 U3, 6.0 U2 and 6.0 U1, 5.5. The software also contains built-in VMware Tools, including VMware storage and network drivers.

- ✓ Storage and Backup for virtual environments, either as a stand-alone data storage server or a Storage Virtual Appliance (SVA)
- ✓ Fast implementation and ease of use – installed as a storage for ESXi within minutes
- ✓ VMware Ready™ Storage certification
- ✓ Inexpensive, capacity-based product licenses and technical support options, compared to other storage software
- ✓ Accepted solution on the market – 95% of Open-E's customers use our software for virtualization with VMware



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 2.6MHz 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 Ethernet, 100GbE coming soon 40Gbps IP over InfiniBand iSCSI NFS v3 SMB up to 3.0.2 / CIFS |
| 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, NFS and SMB Self-healing against silent data corruption Disk Multipathing |
| 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 |
| Management | WebGUI, Console UI, CLI SNMP and REST API E-mail notification Roll-back to previous configuration |
| 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, Microsoft Windows, Microsoft Hyper-V, Microsoft Active Directory, Citrix, Linux, RHEL, MacOS, 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

Open-E is a well-established developer of IP-based storage management software. Open-E JovianDSS, Open-E DSS V7 and the free Open-E DSS V7 SOHO are robust, award-winning 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 30,000 installations worldwide and has received numerous industry awards and recognition. Thanks to its 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 www.open-e.com