

# Software for your Storage

## iSCSI-R3

open-e



### Open-E iSCSI-R3



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is a cost-effective operating system, pre-installed and pre-configured, which turns a computer system into a powerful network storage device in about 10 minutes.

Combination of enterprise features and intuitive, simple WebGUI management makes the iSCSI-R3 a perfect choice for everyone.

#### Open-E iSCSI-R3

offers the highest data throughput, latency and performance by supporting multiple network connections, Fibre Channel and up to 32 CPUs. Available with advanced software features like Multi-Snapshot, IP-Sec and Multiple Management Level, the Open-E iSCSI-R3 delivers tremendous value for any size business.

## BENEFITS

- **High Data Throughput**  
Optimized Storage Software, 10 GbE-, TOE-, Intel® I/O AT, Fibre Channel and Multi-CPU Support.
- **High Security**  
Clustering Support, IPsec, Snapshot with Scheduling, OS on USB-DOM, minimize Downtime, CHAP Authentication and Network UPS Support, Shadow copy of OS.
- **High Flexibility**  
Support for all leading SCSI, Serial SCSI, Serial ATA and IDE Controllers, FC HBAs, NICs and Networking Chipsets, iSCSI HBAs and Software Initiators.
- **Easy Management**  
Web-based, password-protected User Interface, Console Tool and an integrated Volume Manager.

iSCSI is an IP-based storage networking standard to manage storage over long distances. iSCSI is used to link data storage devices and to facilitate data transfers over intra- and internet. The iSCSI target modules (ITMs) are managed by the administrator as local hard drives. Due to the ubiquity of IP networks, iSCSI can enable location-independent data storage and retrieval.

iSCSI allows low-cost centralization of storage without the usual expense and incompatibility normally associated with Fibre Channel storage area networks (SANs). It is especially appealing since it facilitates solutions that provide rapid and efficient transport of block-level I/O data, where simplicity, flexibility, and price/performance are critical IT decision factors. Unlike Fibre Channel SAN, iSCSI can run over existing Ethernet networks providing easy migration and administration since iSCSI leverages existing knowledge of Ethernet and iSCSI.

The Open-E iSCSI-R3 software increases the capabilities and performance of storage data transmission in the SAN market. It offers the best combination of data throughput, security, compatibility, management, costs and flexibility. The Open-E iSCSI-R3 software is a complete operating system, which turns a computer system into a powerful network storage device in about 10 minutes. Pre-installation of the OS on the USB-DOM ensures minimum downtime and the protection of the OS against viruses. Integrated technologies from SAN, like snapshot with scheduling, IPsec, Adaptive Load Balancing, Online Logical Volume Expansion and the support for multi-CPU's, 10Gb Ethernet cards and Fibre Channel, makes Open-E iSCSI-R3 a serious alternative to Fibre Channel SANs.

**ADMINISTRATION**

Web-based Graphical User Interface	✓
Secured Administration Access	✓
Console Tools	✓
Tuning Tools	✓
Remote Access for Console	✓
Multiple Management Levels	✓
Automated Updating of OS	✓
Rollback to previous OS	✓
Task Manager	✓
Schedule Manager	✓

**NETWORK MANAGEMENT**

DHCP Client	✓
Multiple Network Interface Card Support	✓
Teaming/Bonding (including Adapter Fault Tolerance)	✓
10 Gb Ethernet Support	✓
Infiniband Support	✓
Proxy settings	✓
IP-sec	✓
Jumbo Frames Support	✓

**STORAGE MANAGEMENT**

Software iSCSI Initiator	✓
Software RAID 0, 1, 5, 6 with E-Mail Notification	✓
Degraded Mode for Software RAID 1, 5, 6	✓
S.M.A.R.T. with E-Mail Notification	✓
Multiple Hardware RAID Controller Support	✓
Multiple FibreChannel HBA Support	✓
Support for over 16TB Logical Volumes	✓
Multiple Snapshot (multiple active snapshots per one LV at a time)	✓
Multiple Logical Volume & Groups	✓
Online Logical Volume Expansion	✓
Support for Online Capacity Expansion	✓

**MONITORING**

Hardware Monitoring	✓
SNMP v2, v3	✓
E-Mail Notification	✓
Log Function	✓

**HARDWARE SUPPORT**

Multiple CPU Support (32x)	✓
UPS and Network UPS Support	✓

**SPECIFIC iSCSI FUNCTIONALITY**

IP Address Restrictions for a Target	✓
CHAP User Management	✓
MPIO Support	✓
Volume Replication	✓

**OTHER**

USB-DOM Interface for 30% faster booting and improved hardware compatibility	✓
Support for SWAP	✓
Help with search and index	✓
Extended save & restore settings	✓
Connections Status	✓
Sessions Management	✓
Initially Supported Storage Capacity (TB)*	16

\*Storage Capacity can be extended by additional licenses

**Multipathing (MPIO)**

Open-E iSCSI-R3 multipathing allows using redundant logical “paths”- multiple connections - between the server and the storage device. In case that one or more of the logical path fails, users can still access their data using the alternate paths.

**InfiniBand Support**

The Open-E iSCSI-R3 supports 10GbE, FC HBA and Infiniband for additional flexibility in high speed network environments.

**New system update with optional rollback to previous system**

To optimize the updating process of the Open-E software the USB-DOM contains a shadow copy of the OS. In case of an update failure the storage system can be switched easily to the former version of the Open-E software. This technology is also known from some motherboards BIOS update.

**Volume Replication**

Open-E iSCSI-R3 provides an extra layer of fault tolerance as you mirror two iSCSI target volumes, similar to disk mirroring (RAID 1). By allocating one iSCSI target as the primary data storage device and the second as a destination iSCSI target, data will synchronously be written to both iSCSI targets using a dedicated network connection. The primary iSCSI target will be replicated in real time, so that the data will be available if the primary storage system becomes unavailable.

**Target Password Protection**

Open-E iSCSI-R3 Targets can be protected from unauthorized access by a password, allowing administrators to control the access of an iSCSI Target.

**Multi CPU Support**

Open-E iSCSI-R3 supports multi CPU systems to improve overall performance of the ITM, by reducing latency across connections and increasing bandwidth for the TCP/IP processing.

**Hardware and Software RAID**

Open-E iSCSI-R3 supports SCSI, Serial ATA and IDE controllers of all leading hardware RAID controller manufacturers. The integrated software RAID 0, 1, 5 and 6 provides more flexibility and cost savings while creating iSCSI storage solutions. By mirroring hardware RAID arrays, the probability of failure can be reduced. The Open-E iSCSI-R3 offers highest flexibility in redundancy, performance, costs and storage volume.

**iSCSI Initiator Support**

Open-E iSCSI-R3 is compatible with iSCSI software initiators from Microsoft, Linux and others. It also supports iSCSI HBAs from Adaptec, Alacritech, Intel and QLogic.

**Supported FC HBAs**

Open-E iSCSI-R3 supports most FC HBAs from Emulex and QLogic for connecting external FC-SAN storage to iSCSI -R3 system. Thanks FC-HBA support, iSCSI-R3 can be used as FC-iSCSI Gateway.

**Snapshot**

Snapshot is an immediate point-in-time image of the logical volume (LV). The snapshot image can be used for both consistent and temporary backup, while users still have uninterrupted and complete access to the LV. Also, if a user accidentally deletes or incorrectly modifies a file, that file can be recovered from a previous snapshot image. Open-E iSCSI-R3 supports “Multi-Snapshot with Scheduling” to create snapshots at predefined points in time (e.g. automatically every hour).

**Secured Administration Access**

Administrators can access and configure the iSCSI Target Module through the webbased, password-protected user interface, using Secured Administration Access (SSL). Open-E iSCSI allows assignment of multiple administrators with different administrator rights.

**Multiple Network Interface Card (NIC) Support**

Open-E iSCSI supports usage of 2 or more network cards to access separate subnetworks. It allows administrators to select services to be enabled on a specified NIC.

**Adaptive Load Balancing (ALB)**

Adaptive Load Balancing enhances data throughput by automatically routing data through alternative paths as application change.

**Adapter Fault Tolerance (AFT)**

Adapter Fault Tolerance assures greater reliability by providing a secondary network adapter which automatically takes over if the primary network adapter fails.

**TCP/IP Offload Engine (TOE) and Intel® I/O AT support**

TOE lowers the host-system CPU communications overhead. It increases bandwidth, reduces message latency across connections and improves the overall performance. Open-E iSCSI-R3 supports 10GbE cards with TOE and Intel® I/O AT, accelerating the iSCSI protocol for block-level storage traffic between servers and ITMs.

**IPsec**

IPsec (IP security) is a standard for securing Internet Protocol (IP) communications by encrypting and authenticating all IP packets. It provides security for the network layer.

**UPS Support**

Uninterruptible Power Supply (UPS) eliminates the effects of a temporary power outage and provides safe shutdown, without loss of data, in case of power failure. The UPS device can be connected by Serial or USB cable to the iSCSI Appliance. Open-E iSCSI-R3 supports Network UPS to ensure safe shutdown of all Open-E iSCSI-R3 Targets in the network.

**Hardware Monitoring**

Open-E software allows users to monitor hardware status using motherboard's sensors, including: temperatures, voltages, fans speeds.