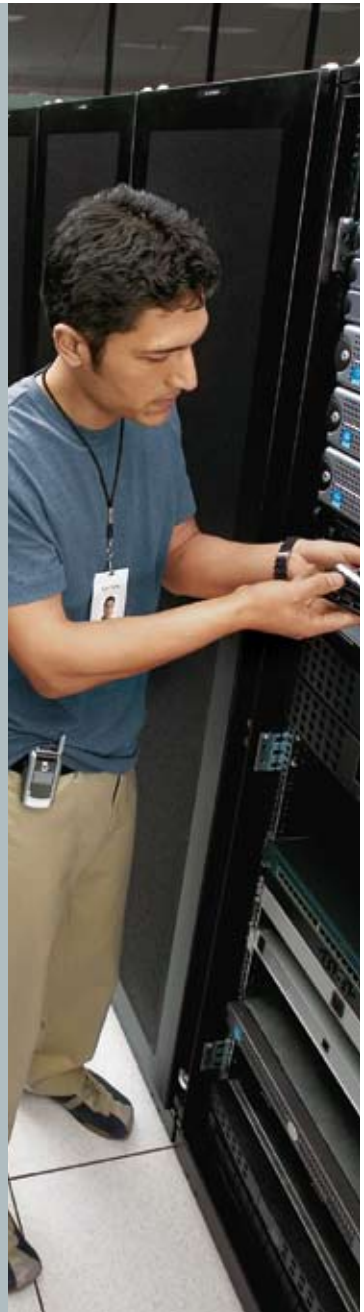
SOLUTION RECIPE

Intel® SSR212MC2 and Open-E™ Flexible storage solutions

with Intel® SSR212MC2 and Open-E DSS



Solution recipe for storage servers from Intel®

Intel® provides unique solution recipe for its Intel® channel partner program members, who want to be able to offer their customers precise and targeted IT solutions. They explain how the most high-performance IT products can come from Intel® modules and the best programmes from software providers. The Intel® solution recipe in front of you shows how you can use the newest generation of Intel® storage servers (SSR212MC2) together with the storage operating system Open-E Data Storage Server (DSS) for solid, flexible, high-performance, and easy to operate storage solutions.
If you would like to use the described solution, the Solution Deployment Guide will help you further. This document explains all of the important steps for the deployment, installation, and use of Intel® SSR212MC2 and Open-E.

Term definitions

Fibre Channel: Standard protocol for high speed transfers into → storage area networks; access to hard drives is block-based;

Intel® I/O Acceleration Technology (I/OAT): Efficient input/output processing Dual-Core and Quad-Core Intel® Xeon® processors, eliminate bottlenecks;

Intel® SSR212MC2: Hardware platform for the storage server from Intel®; Codename McKay Creek; 2 units, rack-mounted, 12x SAS-/SATA connections;

iSCSI: Storage-over-TCP procedure; carries out the operation of storage protocols such as SCSI via TCP/IP;

NAS (Network Attached Storage): Storage devices connected directly to the local network;

Open-E DSS: An easy to operate storage operating system, preinstalled on an internal USB flash module, for the setting up of → NAS or → SAN;

SAN (Storage Area Network): Network for the connexion of storage subsystems, separated from the servers;

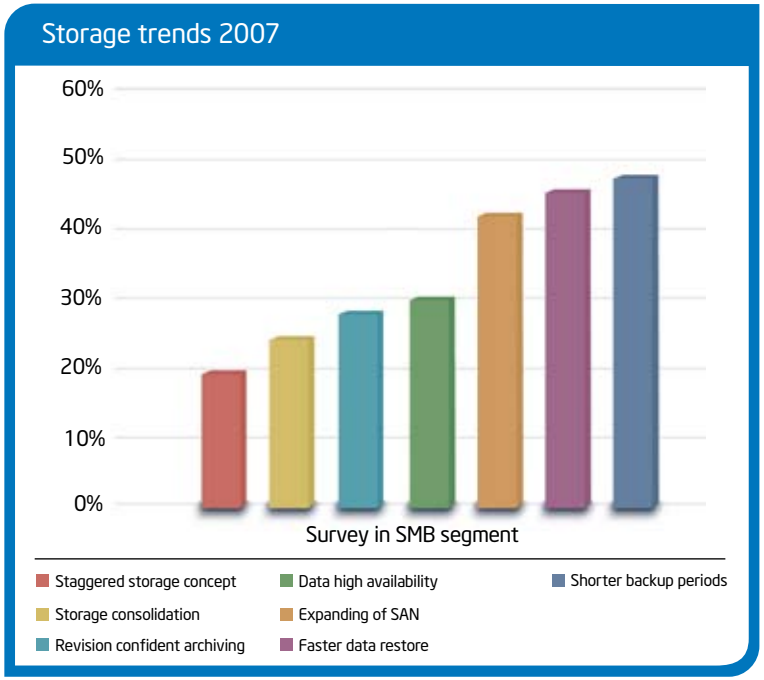
SAS (Serial Attached SCSI): Series successor standard from SCSI; uses fast point-to-point connections;

Contents

New challenges for storage systems

The business of companies of every size is defined by their processes and the data used. Data security, rapid availability, short backup and restore times are an absolute imperative. Especially for small and medium-sized companies, the requirements are even greater, and their for stored data often represents the entire foundation of the business.

»How can companies sustainably catch up on the constantly increasing need for storage and higher performance?« Companies without a suitable storage strategy, feel the effects directly:



What storage projects are medium-sized companies planning to use for 2007? Carried out in the second half of 2006. by Smart Research224 questionnaires have been evaluated.

- **Rapidly increasing costs** through constant expansion, reorganisation, and adaptation of the storage environment
- **High administrative effort** for complex enterprise storage solutions not suited to small and medium-sized businesses
- **Legal problems** caused by the non-observance of legally prescribed archiving obligations
- **Non-optimal efficiency** of the existing storage solutions (mostly only between 35 and 50 per cent)
- **Problems with process management:** Companies can no longer react flexibly to market requirements
- **Risks due to breakdowns:** Provided backup/restore functions do not take effect in the event of data loss
- **Lack of scalability:** Connecting additional storage systems requires great effort or isn't possible
- **Inadequate performance:** Storage strategy is not equal to requirements; backups and restoration are too slow

Especially for small and medium-sized businesses, Intel® offers ideal storage platforms, for example, the SSR212MC2 based on the high performance Intel® Xeon processors with Intel® I/O Acceleration Technology. Intel® also recommends the innovative storage software Open-E Data Storage Server (DSS).

Intel® SSR212MC2 unites high-performance enterprise functions with affordable expansion possibilities through the observance of industry standards.

Solution overview for Intel® SSR212MC2 and Open-E DSS

A tailored storage strategy is the driver for streamlined processes in companies. The storage platform SSR212MC2 from Intel® provides all the necessary prerequisites, and in combination with the storage software from Open-E an important edge in business.

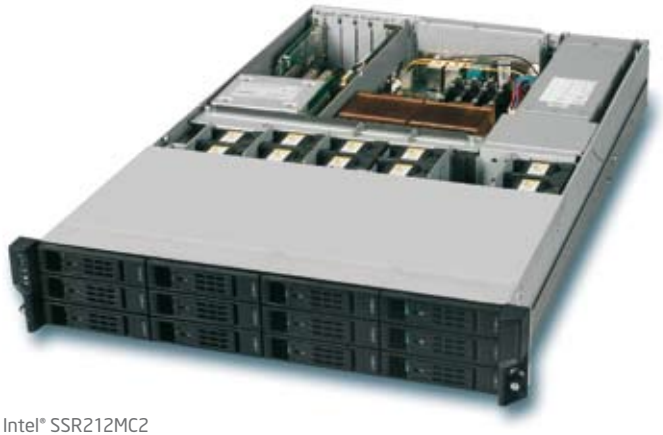
With high performance multi-core processors, Intel® provides exactly the right foundation for your applications and users.

Customers thereby profit from the integrated I/O Acceleration Technology, with which eliminates bottlenecks in your network in a targeted fashion. Your IP storage systems are thereby operable to use and will be fast enough for all requirements.

The simple use of standard components makes the SSR212MC2 of special interest to small and medium-sized businesses. It is thereby possible to use the flexibility to handle a variety of network connectivity's, up to 12 SATA or SAS hard drives and even as a mixed mode. There are optional functions like an 10-Gbit network interface cards, RAID controllers, and NICs with an iSCSI boot.
With Open-E Data Storage Servers, customers get an operating system that is tailored for the Intel® storage platform. Due to the comprehensive support of the platform, customers can completely exploit all the advantages.

Regardless of whether they decide in favour of network attached storage or a storage area network, with Open-E Data Storage Server they can easily set up the storage strategy that is best suited to their needs.

Your backups run fluidly and quickly, and you can restore data in a fraction of the time previously spent. The complete control of all possible tasks takes place through the unique Open-E web interface, quickly and without any detours. You don't need to first install administration tools, and can instead start right away.



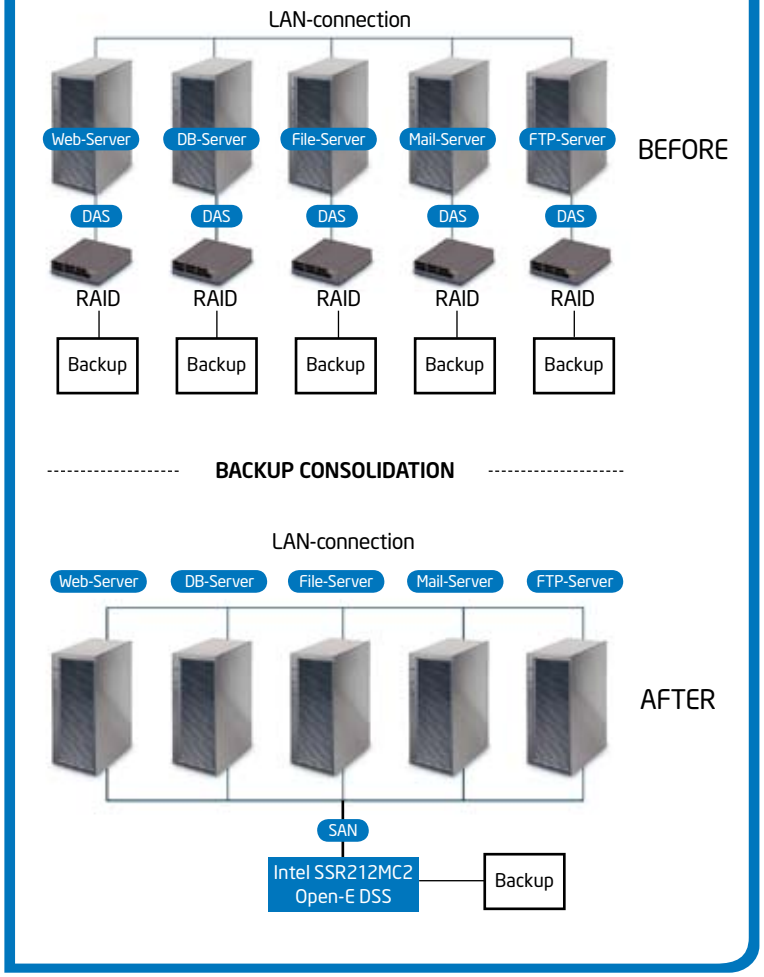
Intel® SSR212MC2

Open-E DSS

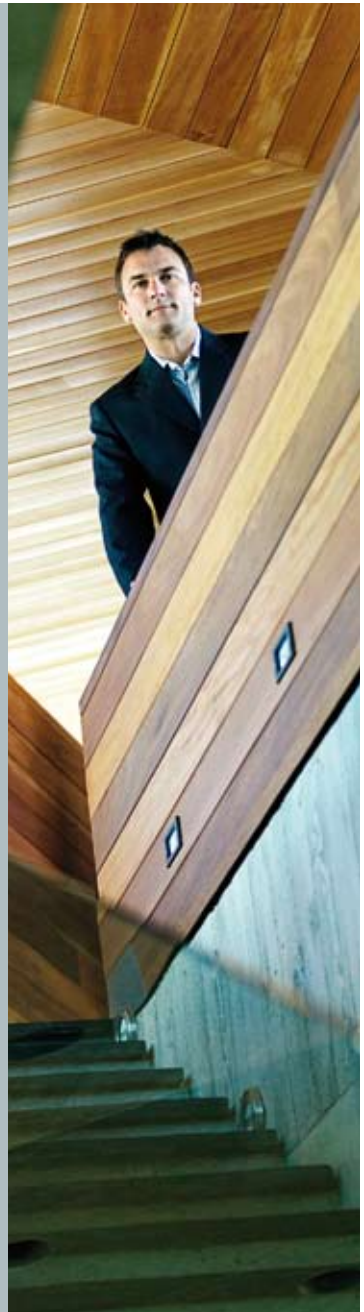
Following the implementation of an appropriate storage strategy, companies profit from the following effects:

BEFORE	AFTER
a lot of island-solutions	central storage-system
high costs high administration overhead	low costs easy web-based management
few flexibility	flexible extensibility with standard components
backup strategies are hard to implement	integrated security mechanisms and easy to use backup-tools
a lot of bottlenecks, very hard to monitor	easy to use central monitoring
bad scalability	top scalability
bad working load	optimal working load

Storage consolidation with SSR212MC2 and Open-E DSS



The server landscape is pre-equipped with directly connected storage devices. Following the consolidation, SSR212MC2 and Open-E DSS assume the storage tasks via a SAN connexion.



Key technologies: Save quickly and securely

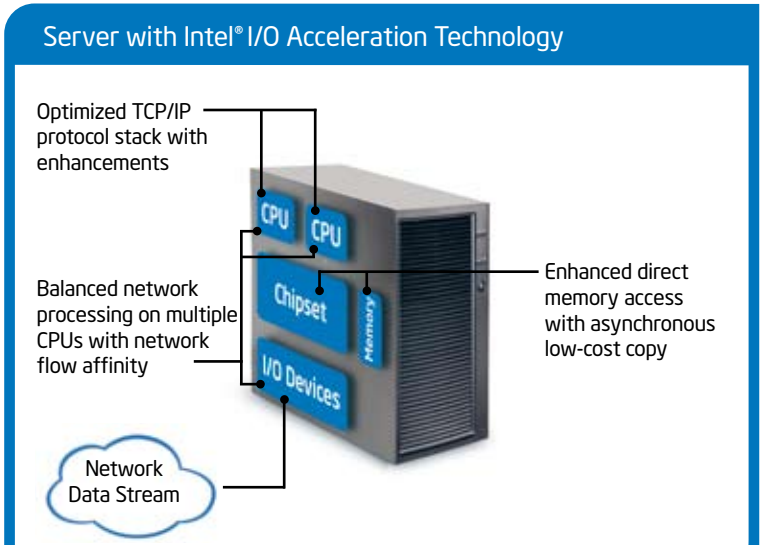
Intel®, in co-operation with Open-E, supplies you with components that are necessary for providing your customers with the optimal storage solution. You can flexibly use the high-performance components for all kinds of storage solutions. The Open-E DSS operating system supports the new Intel® storage platform in every way. Thanks to the intensive co-operation between Intel® and Open-E, customers profit from the rather well-harmonised products and professional support.

Intel® I/O Acceleration Technology

This new technology considerably accelerates. Instead of "considerably accelerates", I would suggest the word "improves" the network data transfer of the new Intel® storage server (double the throughput compared to earlier server platforms). The normal protocol overhead of TCP/IP is thereby reduced I/OAT by up to 40 per cent, and distributes the remaining I/O load cleverly to chip set, RAM, CPU, and NICs. This whole explanation is incorrect All of the LAN features such as bonding or VLAN are of course thereby maintained. It is not only the clearly better performance that speaks in favour of I/O AT, but Intel® also has improved the scalability and breakdown security. It is possible to use I/O AT with up to eight simultaneously working network interface cards.

Multi-Core Technology

Enormously increased performance technologies, as well as reduced energy consumption speaks volumes for the Dual-Core and Quad-Core Intel® Xeon® processor functionality. Open-E DSS makes use of all the advantages of these Multi-Core platforms.
The top features of the 5300 series are: Intel® Core micro architecture, fully buffered DIMM memory, and Intel® Smart Cache as guarantors for high performance storage platforms. Manufactured in the 65 nanometre process, the CPUs bring the reserves for all of your storage tasks with them. Nothing stands in the way of optimising your processes anymore.



Open-E DSS for top performance: The operating system uses the most up-to-date hardware technologies of the Intel® Multi-Core processors, such as Intel® I/O Acceleration Technology. This means secure, and most importantly, fast, flexible, and expandable storage systems.

iSCSI Boot

A special highlight: The optionally available network interface cards are equipped with an iSCSI boot function, which was previously only reserved for expensive iSCSI HBAs. It is therefore now possible to boot the server from an image in the SAN. That is an indispensable feature, especially for virtualisation solutions. Another advantage: You can implement simple backup/restore concepts in the SAN with the complete boot images.

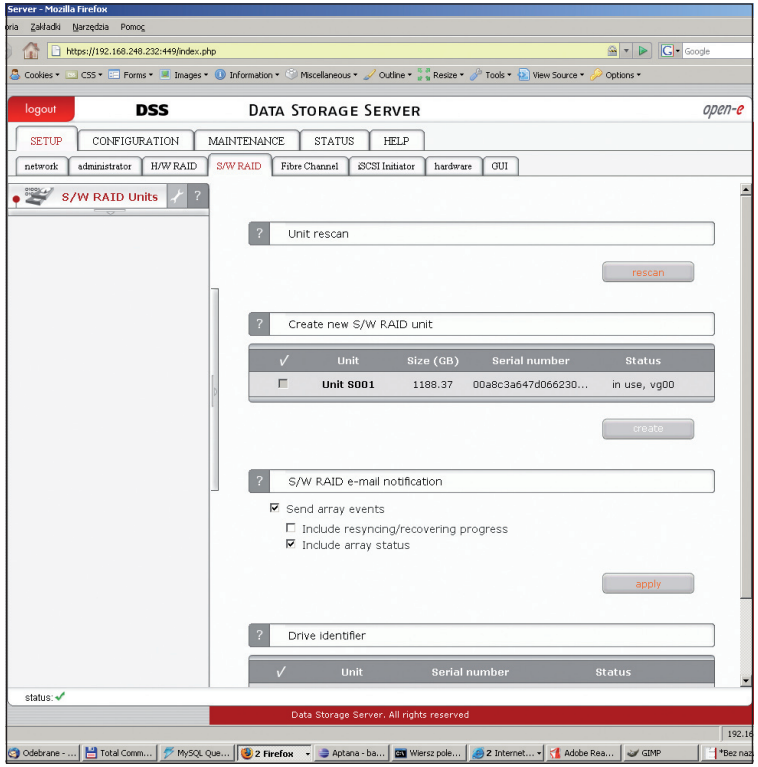
Open-E DSS

Open-E DSS, the compact and reliable storage operating system, stands out from other solutions due to its numerous unique selling points: It is delivered entirely preinstalled and preconfigured on an internal USB-DOM (disk-on-module) flash module, which is plugged into the server system. There are no complex installation routines. Simply plug the module and you can get started with setting up NAS or SAN in 5 minutes.
The Open-E Data Storage Server recognises the complete hardware and automatically installs the drivers of the SAS and RAID controllers, FC-HBAs and Ethernet cards. The flexible foundation of the operating system ensures fast, stable, and secure operation. Via the intuitive web interface, even the setting up of complex storage systems remains simple and clear.

- **Easy installation,** administration and monitoring of the storage systems
- **Top performance** thanks to support for the newest Intel® technologies
- **Exceptional scalability** through the support of industry standards
- **Support of a variety of hardware components** for RAID or SAS (Certification for Intel® SSR212MC2)
- **Solid security** through comprehensive backup functions and the separation of the operating system and user data

Intel® SSR212MC2 and Open-E are optimally harmonised, and enable the fast and efficient realisation of all the storage plans of your customers based on the standard components.

Innovative functions, such as the clever combination of SAS and SATA technology, make it possible for your customers to increase availability and flexibility as easily as possible. The support for all of the important storage technologies, such as iSCSI and Fibre Channel, provides the basis for centralised management, and secure data management that extends to rather efficient disaster recovery scenarios.



Easy administration through a webbrowser for Open-E DSS

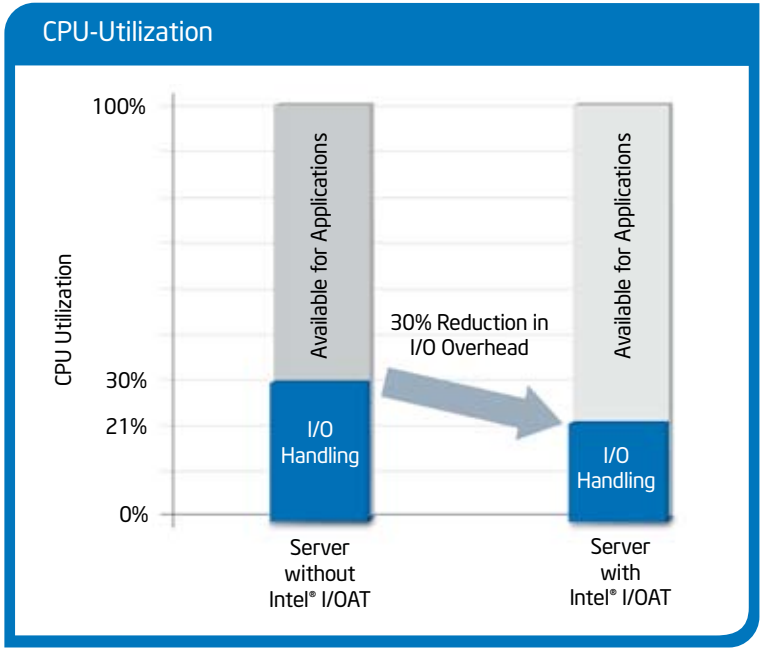
Solution advantages

As an Intel® reseller, with storage solutions based on the Intel® SSR212MC2 platform and the certified Open-E software, you have a technological edge at your disposal. The main advantage: with your support, your customers can optimise their processes for the long-term and can be sure that they will receive professional support at all times.

Arguments for your customers

More flexibility: Due to the flexible expandability with standard components such as SAS-/SATA hard drives and RAID controllers, as well as the setting up of NAS or SAN, customers can compile their own individual memory solution. The possibilities extend from file server services to high-availability storage for databases.

Better scalability: Be fully equipped today for the storage requirements of tomorrow. With Intel® SSR212MC2 and Open-E, your customers can start small (for example with NAS) and expand step-by-step (for example FC-SAN). The storage solution grows with the requirements of the processes. Thus, for instance, you can expand the supported hard drive memory with additional license keys of 4, 8, 16, 32, or 64 TByte.

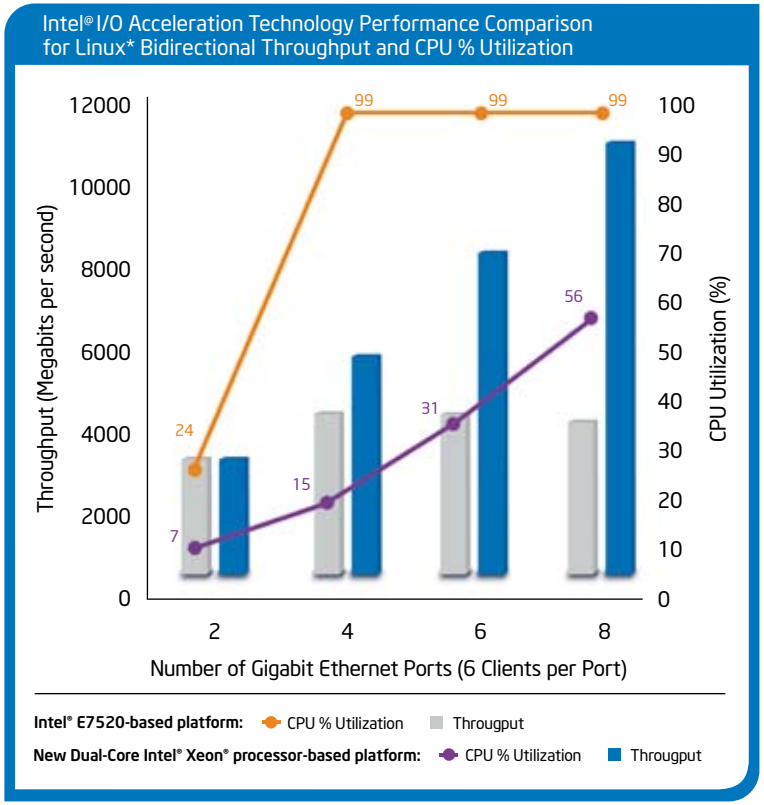


Higher performance: With the sophisticated technology of the Intel® Multi-Core architecture with I/O AT and the broad support of Open-E for these technologies, the SSR212MC2/Open-E team accelerates IT processes.

Simple administration: Regardless of whether NAS, SAS, backup, replication, or a system snapshot, with the innovative web interface of Open-E, the setting up of storage solutions becomes child's play.

Integrated security and increased availability: Broad support for RAID, backups, replication, snapshots, along with the robust, preconfigured operating system Open-E DSS provides an additional layer of data protection for data security. The strict separation of the operating system and user data also provides protection against the spreading of viruses.

Low costs: Through the simple use of standard components, customers can compile an optimal storage system at an affordable price, for example, starting with affordable SATA hard drives and later converting to high-performance SAS data carriers. The easy commissioning and administration also removes a significant burden from the time budget of your IT department.



Solution recipe

Intel® and Open-E have developed a solution handbook that provides your technicians with targeted instruction in the setting up of high performance storage systems, explains the installation and answers important questions (www.intel.com/go/solutions).

Know-how and practical examples

With an Intel® storage server and the Open-E DSS operating system, you can start with a number of storage solutions. Here a few examples:

Storage consolidation with virtualisation

Open-E DSS and Intel® SSR212MC2 are ideally suited for IT infrastructures with virtualisation. Users can, for example, establish test environments, operate legacy systems, implement disaster recovery concepts, or undertake server consolidation. Concrete implementations generally run with, for example, VMware ESX servers or Xen. The storage server thereby works as a fast iSCSI target.

Accelerate backup/restore

According to a survey carried out by the market research institute Smart Research concerning the most urgent storage tasks for 2007, the reduction of backup times is at the very top of the to-do lists in IT departments.
Storage servers from Intel® and Open-E DSS are exceptionally well-suited for this. In place of distributed backups, which the connected systems only utilise a fraction of, you can centralise your data backups with the presented solution. You can thereby better utilise the storage systems and obtain faster and more reliable backups. For reference projects, the utilisation of the storage systems used increased from 30 per cent for a DAS following the centralisation in the SAN to up to 85 per cent.

Video streaming via IP cameras

The team of Intel® storage servers and Open-E DSS is especially suitable for applications with large amounts of data and high demands of data throughput. The reason: The built-in Intel® I/OAT and optimal support of this technology by Open-E DSS. Entirely new possibilities are thereby made available for customers in the video streaming area. In this way, for example, surveillance cameras can be combined with central storage to which the data is streamed via a fast network connexion. A second field of usage could also be in a medical environment. Examination results create large quantities of data; live recordings of operations and also place very high demands on the storage server used.

Solution support

Intel® and Open-E have subjected the storage solutions from Intel® SSR212MC2 and the Open-E products to the most comprehensive testing and certification processes in order to guarantee security, performance, stability, and conformity with the standards.

Intel® and Open-E support you with your storage projects in marketing, sales, and technology.

A German language Solution Deployment Guide, which explains the establishment of storage solutions based on Intel® SSR212MC2 and Open-E in a practical fashion, can be found at www.intel.com/go/solutions.

You can acquire Intel® SSR212MC2 hardware from the familiar, usual sources.

In order to receive information and technical support for Intel® hardware components, please continue to address your enquiries to your existing Intel® Support Services (http://www.intel.com/support).

You can find the relevant Intel® reseller at http://www.intel.com/reseller

You can find Open-E licences and an up-to-date list of the respective reseller online at http://www.open-e.com/reseller

Customers can receive a comfortable test possibility of the software, at no charge, in the form of a demo CD from Open-E DSS (http://www.open-e.com/demo-cd)

Further reading

Background and technical information about Intel® SSR212MC2: www.intel.com/products/server/storage/index.htm

You can find further information about other Intel solutions at: www.intel.com/go/solutions

Background, quick-start guides, white papers, and technical information about Open-E and Open-E products: www.open-e.com/products

Intel Literature Center: 1-800-548-4725