



Intel® Matrix Storage Technology

Optimize Your PC Storage Performance and Reliability

We live in a digital world. We digitally create, record, edit, share, and save practically everything from the movies we watch, to the pictures we take, to the documents we store. Today's digital home demands we protect this data against loss. Intel® Matrix Storage Technology provides improved performance and reliability for systems equipped with Serial ATA* hard disk drives, today's proven PC storage solution.

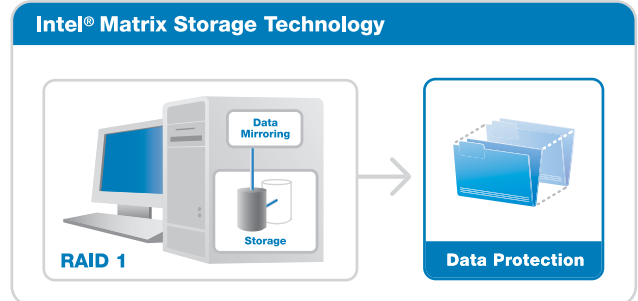


The Intel Matrix Storage Solution

Intel Matrix Storage Technology provides new levels of protection, performance, and upgradeability in 2005. Whether using one or multiple hard drives, users can take advantage of better storage and protection against data loss in the event of hard drive failure.

Valuable data is protected in case of a hard drive failure when the system is configured for any one of three fault-tolerant RAID levels: RAID 1, 10, or 5. This technology allows users to more quickly recover from a hard drive failure because copies of data are continuously stored on one or more additional hard drives. When the failed hard drive is removed and a replacement hard drive is installed, data fault tolerance is easily restored. In this way, Intel Matrix Storage Technology provides a reliable data backup solution for the digital home.

This storage technology can also improve the performance of disk-intensive applications such as video editing. By combining from 2 to 4 drives in a RAID 0 configuration, data can be accessed on each drive simultaneously, speeding up response time. Also, due to drive load balancing, even RAID 1 systems can take advantage of faster boot times and data reads.



Intel® Matrix Storage Technology, a value-added feature of Intel® 945 and 955 Express Chipsets, can protect against data loss from a hard disk drive failure by mirroring all data across two hard drives. This technology allows users to continue using a PC even if the system encounters a hard drive failure.

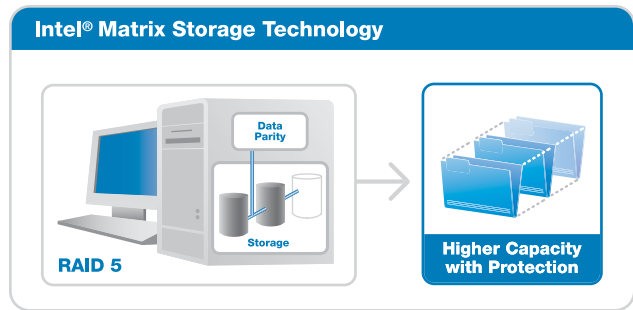
Intel Matrix Storage Technology also provides benefits to users of a single drive. Storage performance is improved through Native Command Queuing (NCQ), harnessing the quad DMA controllers in the hardware, and optimized hardware and software tuning. To warn of possible hard drive failures, SMART alerting is provided, alerting users when the drive detects potential oncoming failure. For those who wish to later upgrade to RAID capabilities, a system with Intel Matrix Storage Technology pre-installed allows a simplified upgrade to any supported RAID level without having to reinstall the operating system.

Performance with Protection: Matrix RAID

For those users who wish to combine the benefits of two RAID levels, Matrix RAID is the solution. When using two hard drives, Matrix RAID allows RAID 0 and 1 capabilities to be combined, where critical files can be stored using RAID 1, and RAID 0 can be used for non-critical items such as software. On select platforms based on Intel® 945G/P and 955X Express Chipsets, the Matrix RAID capability is expanded to include RAID 5 and RAID 10. For instance, RAID 5 and RAID 0 can be combined to provide higher performance, capacity, and fault tolerance. A user can edit digital video on a high-performance 4-drive RAID 0 array, then transfer it to RAID 5 for protected storage when complete.

Simplified Upgrade

Building or buying a PC with a single SATA hard drive, then upgrading to RAID at a later date is typically not a simple task, as it requires the reinstallation of the OS and applications. However, an Intel chipset with Intel Matrix Storage Technology can be more easily upgraded to RAID capabilities when adding one or more additional SATA hard drives. The Intel® Matrix Storage Manager software handles the configuration and migration while running in the background, allowing users to use the PC during the process. Once the migration is complete, dramatic increases in data protection or storage performance are available.



Introduced with select Intel® 945 and 955 Express Chipsets, Intel® Matrix Storage Technology brings RAID 5 capability to the desktop. On PCs equipped with three or four hard drives, RAID 5 brings higher usable capacities while protecting against data loss from a hard drive failure.

The Desktop Storage Solution

By providing integrated hardware and software solutions, Intel makes RAID and advanced storage features an affordable reality for desktop platforms. Based upon technology from Intel's enterprise products and Intel desktop hardware, Intel continues to provide a leading RAID solution that is both affordable and usable in the digital home.

When looking for a desktop PC system designed to protect your digital memories, be sure to look for an Intel chipset with Intel Matrix Storage Technology, available on select platforms based on the Intel 945G/P and 955X Express Chipsets. Contact the platform manufacturers directly to verify which of their products offer Intel Matrix Storage Technology.

Intel® Matrix Storage Technology Features and Benefits

Features	Benefits
Intel® ICH7R	Four-port SATA RAID controller, providing storage benefits of Intel® Matrix Storage Technology.
Matrix RAID	Exceptional storage performance with increased data protection on a RAID-enabled double hard drive array.
RAID BIOS ROM	Integrated into system BIOS, enables pre-OS RAID creation, naming and deletion of RAID arrays.
Intel® RAID Migration Technology	Simplified migration from a single hard drive to a RAID 0 or RAID 1 dual hard drive array without requiring OS reinstallation.
Serial ATA AHCI	Software interface providing advanced storage interface for Serial ATA, including native command queuing and native hot plug.
Intel® Matrix Storage Manager	Software solution with full management and status reporting of RAID array, including detailed reporting of storage devices.

For more information, visit: intel.com/go/matrixstorage



¹ For Intel storage performance data, please visit www.intel.com/performance/desktop/platform_technologies/storage_performance.htm.

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