

Intel® Desktop Board D955XBK

Configuring RAID

Configuring the BIOS for Intel® Matrix Storage Technology

1. Assemble your system and attach two or more SATA hard drives to the black SATA connectors.
2. Enter system BIOS Setup by pressing the <F2> key after the Power-On-Self-Test (POST) memory tests begin.
3. Go to **Advanced Drive Configuration Configure SATA as**; ensure **RAID** is selected.
4. Then save your settings by pressing <F10>.

Creating Your RAID Set

1. Upon re-boot, you will see the following Intel Matrix Storage Manager option ROM status message on the screen: Press<Ctrl- I> to enter the RAID Configuration Utility.

Press<Ctrl-I> and enter the RAID Configuration Utility.

2. In the Intel Matrix Storage Manager option ROM Main Menu, select option #1: Create RAID Volume. Enter a volume name and press <Enter>.

NOTE: The RAID Volume name must be in English alphanumeric ASCII characters.

3. Use the arrow keys to select RAID 0 or RAID 1 (if only two SATA drives are available), RAID 5 and RAID 10 (these options will only appear if three or four SATA drives are installed respectively). Press <Enter> once you have selected the RAID LEVEL.
4. Select the drives to be used in the RAID array (only if there are more than two drives available) and press <Enter>.
5. Select the strip size, if necessary, and press <Enter>.
6. Enter the size of the volume (if you enter less than the maximum volume size, you can then create a second RAID array on the remaining portion of your volume) and press <Enter>.
7. Finally, press <Enter> to **Create Volume**.
8. Exit the Option ROM user interface by pressing <Esc> or going to the EXIT option in the MAIN MENU.

Loading the Intel Matrix Storage Technology RAID Drivers and Software

1. Begin Windows Setup by booting from the Windows installation CD.
2. At the beginning of Windows Setup, press <F6> to install a third party SCSI or RAID driver. When prompted, insert the floppy disk labeled **RAID Driver**. Install the **Intel 82801GR SATA RAID Controller** driver.
3. Finish the Windows installation and install all necessary drivers.

4. Install the Intel Matrix Storage Console software via the Intel Express Installer CD included with your desktop board or after downloading it from the Internet at <http://support.intel.com/support/motherboards/desktop/>. The Intel Matrix Storage Console software can be used to manage the RAID configuration.

Setting Up a "RAID Ready" System

The Intel Matrix Storage Technology Console software offers the flexibility to upgrade from a single Serial ATA drive to RAID without reinstalling the operating system, when a second SATA hard drive is added to the system.

Follow the steps described in the headings from this section:

"Configuring the BIOS for Intel Matrix Storage Technology" and "Loading the Intel Matrix Storage Technology RAID Drivers and Software".

Once additional SATA drives have been added, open the Intel Matrix Storage Technology Console Software and follow the directions to update to a RAID setup.

Operating System:

Windows* 2000, Windows* 2000 Advanced Server, Windows* 2000 Server, Windows* XP 64-Bit Edition, Windows* XP 64-Bit Edition Version 2003, Windows* XP Home Edition, Windows* XP Media Center Edition, Windows* XP Professional, Windows* XP Professional x64 Edition

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 protection against loss in the event of hard drive failure and enhanced performance.

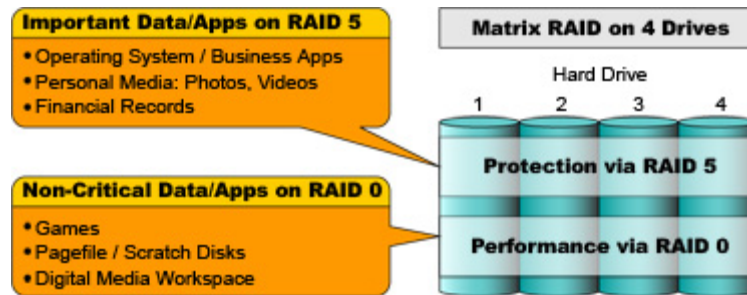
Valuable digital memories are protected against a hard drive failure when the system is configured for any one of three fault-tolerant RAID levels: RAID 1, 10, or RAID 5. By seamlessly storing copies of data on one or more additional hard drives, any hard drive can fail without data loss or system downtime. When the failed drive is removed and a replacement hard drive is installed, data fault tolerance is easily restored. In this way, Intel Matrix Storage Technology provides the level of data protection necessary for the digital home PC.

Intel Matrix Storage Technology can also improve the performance of disk intensive retrieval applications such as editing home video. By combining from two to four drives in a RAID 0 configuration, data can be accessed on each drive simultaneously, speeding up response time on data-intensive applications. Also, due to drive load balancing, even RAID 1 systems can take advantage of faster boot times and data reads.

Intel Matrix Storage Technology provides benefits to users of a single drive as well. Storage performance is improved through Native Command Queuing (NCQ), harnessing the quad DMA controllers in the hardware, and optimized hardware & 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 RAID 1 to be combined, where critical files can be stored on RAID 1, and RAID 0 can be used for non-critical items such as software. For 2005, 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.



The Desktop Storage Solution: Intel® Chipsets with Intel® Matrix Storage Technology

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.

In 2005, Intel Matrix Storage Technology continues its support of hardware storage features. 3Gb/s support doubles the hard drive to chipset transfer rate as compared to 915 and 925 Express Chipsets, providing additional responsiveness and headroom. By including support for Serial ATA Advanced Host Controller Interface (AHCI), Native Command Queuing (NCQ) provide additional performance & faster boot times, hot plug capability to allow drives to be added or removed with the PC running, and staggered spin up to reduce power loads on machines with multiple drives.

Intel Matrix Storage Technology can be found on select platforms based on the Intel® 955X, 945G and 945P Express chipsets. Contact the platform manufacturers directly to verify which of their products offer Intel Matrix Storage Technology.

Intel® Matrix Storage Technology Benefits

In today's digital age, safekeeping of digital content such as photographs, video, audio and personal records, is extremely important. Should a PC's hard drive fail, these digital memories can be lost forever. Additionally, high-speed storage capabilities improve the performance of demanding applications and games. Whether users want to load huge files into Adobe Photoshop* faster, create large CD/DVD images with Nero* in record time, or want to be the first on the map in a Doom* 'frag' tournament, Intel Matrix Storage Technology is a key part of the solution for these and many other disk-intensive applications.

Video content, digital photos, music libraries, realistic3-D gaming environments and even TV programs recorded live from satellite can all be stored on today's desktop PC. With gigabytes of data being transferred to and from the hard drive, storage performance counts. Intel Matrix Storage Technology helps deliver results in this media-rich computing environment.

Simplified Upgrade

Building or buying a PC with a single Serial ATA 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 Serial ATA hard drive(s). The Intel® Matrix Storage Manager software (included with platforms supporting Intel Matrix Storage Technology) handles the configuration and migration while running in the background, allowing users to surf the Web or read e-mail during the process. Once the migration is complete, dramatic increases in data protection or storage performance are available.

Choose Intel® Matrix Storage Technology

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.

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	Seamless 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.