

Desktop

Intel® Desktop Boards Now with Dual-Graphics Support

Jeff Bake
Staff Product Marketing Engineer
User-Centered Platform Solutions Division
Intel Corporation

Dan Ragland
Staff Technical Marketing Engineer
User-Centered Platform Solutions Division
Intel Corporation

Overview

CrossFire technology is a recently introduced product from ATI Technologies designed to dramatically improve the graphics performance of hardware and software applications designed for gamers and other high-end users. Now, the Intel® 955X Express chipset, as well as the Intel® Desktop Board D955XBK based on it, is compatible with CrossFire technology. This means designers of applications for these markets can build those products on Intel®-based desktop platforms running Intel® Pentium® processors.

Intel® Desktop Board D955XBK Ideal for Graphics-Intensive Applications

Graphics-intensive applications developers can now comfortably build products that run on desktop computers based on the Intel® Pentium processor Extreme Edition and other Intel® Pentium® processors. This is because the Intel® 955X Express chipset, as well as the Intel® Desktop Board D955XBK based on it, supports the recently announced CrossFire dual-graphics technology from ATI Technologies.

Specifically, it is the board's support of dual PCI Express* x16 slots—one running at x16 and one running at x4 that is electrically routed from the ICH7R—that makes the board compatible with CrossFire technology. Such compatibility enables the board to provide developers of gaming and other high-end applications a dramatically higher level of performance. This includes a frame rate up to twice as fast and image-quality improvements, even at the highest screen resolution, of up to 80 percent over improvements available with the help of prior ATI graphics technologies.

In addition to support for dual PCI Express x16 slots, the Intel Desktop Board D955XBK (available also in a BTX form factor as D955XCS) provides an extended set of features required for advanced gamers and other power users, including the following:

- Support for dual-core processing, Intel® EM64T, and Intel® Memory Pipeline Technology
- Support for dual-channel DDR2 533/667 memory
- Eight Serial ATA ports supporting Native SATA (3.0 Gbps) RAID with Native Command Queuing (NCQ)
- Eight high-speed USB 2.0 ports, IEEE 1394a and 1394b connectors (up to 800Mbps), and one Intel® PRO/1000 Network Connection
- Support for Intel® High Definition Audio that enables a 24-bit/192KHz-capable audio solution with 7.1-channel Dolby Surround Sound and Master Studio certification

How CrossFire Technology Works

CrossFire technology is based on the deployment of two graphics processing units (GPUs), one on each of two cards that are connected by an external cable. This cable runs from the DVI connector on an ATI Radeon X800 or X850 graphics card to the DMS connector on the newly announced ATI CrossFire Edition co-processor card.

In the CrossFire default load-sharing mode, SuperTiling, the cable carries a partially rendered image from the graphics card to the co-processor card, where an onboard compositing engine combines the image with a partially rendered frame to output a complete image. The CrossFire compositing engine is designed to support diverse graphics cards, advanced compositing modes, and the rapid implementation of next-generation enhancements. CrossFire also supports the commonly known Scissors and Alternate Frame-Rendering (AFR) modes of load sharing, but uses SuperTiling as the default because it can provide the most efficient processing of most images in Direct3D applications running on 16-pipe cards. SuperTiling mode provides greater performance advantages because it divides the processing workload for a given frame among multiple separate subsections, instead of dividing the workload among only two subsections (as with Scissors mode), or dividing the workload among alternating frames.

Developers can deploy existing ATI anti-aliasing modes in combination with any of the three CrossFire load-sharing modes, and users can operate any given application in any of the three modes.

CrossFire vs. Competitive Technologies

CrossFire technology works with all 3D gaming applications. It provides the greatest performance enhancements to applications that stress the graphics subsystem, but is designed to provide image-quality improvements to all gaming applications. This is because CrossFire enables dual-GPU rendering on any

application, in contrast to competitive solutions that support only those applications profiled in proprietary drivers.

Another contrast with competitive technologies is that CrossFire provides higher super-anti-aliasing and anisotropic filtering and enables greater adjustment of display configurations and experimentation with advanced 3D settings. This means that monitors connected to desktop computers equipped with CrossFire technology can support high levels of image quality at the highest screen resolution, even in the most demanding 3D titles, without the need for special game software or patches.

Because of the backwards compatibility of CrossFire technology, developers and resellers that have already purchased an Intel Desktop Board 955X can incorporate CrossFire capabilities into their applications without having to perform any upgrades.

Summary

Developers of hardware and software for high-end video gaming applications have been familiar with the performance advantages of products from ATI Technologies for years. Many developers may also be familiar with the ATI dual-GPU technology known as CrossFire since its launch earlier in 2005. Now, with the support of the Intel Desktop Board 955XBK for CrossFire technology, developers can deliver products providing gamers and other high-end users the performance advantages of CrossFire and Intel Desktop Boards alike.

For More Information

For more information on CrossFire technology, visit the ATI Technologies CrossFire Web site at <http://www.ati.com/technology/crossfire/>. For more information on the Intel® Desktop Board 955XBK, visit <http://support.intel.com/design/motherbd/bk/index.htm>.

Author Bio

Jeff Bake is staff product marketing engineer in the User-Centered Platform Solutions Division of Intel Corporation. In his six years at Intel, Bake has played a leading role in the launch of the Intel® Pentium® processor Extreme Edition and high-end desktop board products. He holds a B.A. in American studies from Brigham Young University and an M.B.A. from Portland State University.

Dan Ragland is staff technical marketing engineer in the User-Centered Platform Solutions Division of Intel Corporation. Since joining Intel in 1998, he has authored Technology @ Intel Magazine articles on system design considerations and fast BIOS boot techniques; he also holds a patent related to USB bandwidth optimizations. Ragland earned a B.S. in computer science from Portland State University.