

# THE NUMBER CRUNCHING GAME

By Friday13

Greetings, fellow readers, and welcome to another month of Hard and Fast, where extreme gaming hardware are pushed to the limit, and then some more.

Traditionally, gaming hardware has always been all about number-crunching – processing as many instructions as possible, this leading to faster frame rates and improved graphical special effects. Apart from a few notable exceptions, this has always been the case.

How the numbers are being crunched wasn't always important; upping clock speeds to crunch more numbers per second was the standard and accepted way of doing things. The more numbers that can be fed through a processor, the more vertexes, mathematical formulae, texture detail, pixel information, animation and more can be processed, resulting in higher quality graphics and faster frame rates.

Hardware manufacturers have begun approach the limits of the clock speed game. Making things faster ultimately leads to more heat emission, and this requires ridiculously large heat sink and cooler designs in order to keep the hardware working under nominal temperatures; just take a look at today's high end graphics cards and imagine how much bigger they can get before things start really getting out of hand.

The solution that most hardware manufacturers appear to agree on is to segregate the processing and distribute the work to several logical units, or cores. Each core is an independent work unit that can handle as much work as the other. So instead of increasing the amount of number crunching per second, you

effectively double it by having another core work side-by-side. That's the idea for multi-core CPUs, and also SLI graphics cards – having two graphics cards with two independent GPUs can split up the work load to be handled in a more efficient manner.

Actually, the idea of SLI isn't new. Any old timer from the very early days of 3D acceleration should remember 3Dfx and their at-the-time revolutionary Voodoo 2 chipset. You could hook up two cards and they would work together to provide faster frame rates for games that supported the chipset.

If SLI is so great, why didn't the trend continue from those early days? If you spend some time in Google, you may find various reasons but at that time, perhaps SLI didn't offer enough performance to warrant the high cost of getting two individual cards for the task. Gamers could already get "acceptable" performance with a single graphics card, so the need wasn't as great as now. This was also the time when NVIDIA were just beginning to make a name for themselves, and the RIVA TNT was a name that was synonymous with performance.

What's the problem right now again? Ah, yes – the clock speed race is reaching a practical limit. Heat is a major problem. It's better to run slower on two cores than to run twice as fast on one core. So SLI is reintroduced by NVIDIA, and the technology might just be compelling enough to stay permanently this time. It's still too early to tell, but in the meantime let's just appreciate the blazing fast frame rates that we can get from running Doom 3 at Ultra High quality mode.



Back to this issue's line-up of reviews: We have quite a number of 3D graphic accelerators to look at this month. There are two humongous powerhouses – the NVIDIA-based WinFast PX6800 Ultra TDH and the ATI-based Sapphire X850XT Platinum Edition – plus a more affordable GeCube ATI RADEON card based on the X700 Pro chipset. If you're looking for a reasonable-looking but efficient CPU cooler then you might be interested in the Gigabyte G-Power Pro cooler. We also have another fast LCD display for you to look at – the LG Flatron L1750SQ is a 17-inch ultra-slim display unit featuring a response time of 8ms and a crisp and sharp display for all your gaming and multimedia needs.

We also have two Intel products on our line-up – an Intel 650 processor offering EMT64 technology which is basically Intel's version of 64-bit computing architecture, and the veteran Desktop Board D915PCY which provides basic functionality and is based on the Intel 915P Express chipset.

That's seven extreme hardware products to keep you occupied for the month. Until then, watch your ammo, check your six and stay sharp, people!

## APACER 150X SD CARD

Touted as the world's first 150X Secure Digital Card by Apacer, this 1.1 compatible flash card comes in capacities up to 2 GB, making it superb for digital cameras, PDAs, digital video cameras, MP3 players, camera phones and other cool crap you have that need SD storage with high read/write speeds.



The Apacer 150X SD card has a super fast read speed of 22.54 MB/sec (150X compatible) and write speed of 15 MB/sec. Capacities available: 256 MB, 512 MB, 1GB, and 2GB card.

**Price:** 2GB - RM899

**Contact:** Datapool Systems Sdn Bhd 03 4041 1442  
M-Link System (M) Sdn Bhd 03 7728 9003

## APACER HC212

### "OCEAN WAVE" FLASH DRIVE

Thumb drives don't have to be boring. Get your flash on with Apacer's HC212 'Ocean Wave' spirally USB2.0 flash drive, which comes in four colours: white, dark gray, pink and blue, with different colours on the inside. Also handy is its built-in LED indicator which shows the device status when data is being transferred. Perfect for those game replays and wallpapers.



**Price:** 128MB - RM79; 256MB - RM109

**Contact:** Datapool Systems Sdn Bhd 03 4041 1442  
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