

RAW SPEED

Ewen Bell looks at effective ways to spend less time waiting to process RAW files – without giving up the advantages of mobile computing.

The huge variety of laptops on the market is dazzling and it's easy to get lost in a world of geeky specifications and marketing hyperbole. Even the Apple store has enough choices to add confusion to what seems like a simple task. We take a look at some new technologies aimed at making your RAW processing task faster.

Generational change

Intel has led the way in manufacturing processors for over a decade, and while there are other options on the market they tend to offer small savings on budget rather than big leaps in performance. The latest wave from Intel are the 3rd Generation Ivy Bridge processors, which look modest on paper but scream performance when put to task.

Drawing slightly less wattage but delivering more computing power, the Ivy Bridge processor family adds roughly 30% more grunt, and in some cases the new chips can halve the time to complete image editing tasks. Manufacturers have quietly moved over their models to the new processors, so you have to look carefully to avoid being sold one of the 2nd Generation models still lying on the shop floor.

If 30% doesn't sound like much of a big deal, just imagine what a difference it makes when churning through several hundred RAW files, completing a 60 minute task in about 40 minutes. The bigger your files, the more this matters – and if you upgraded from a 12MP D700 to a 36MP D800, you'll already be well and truly feeling the pinch.

GRUNT ON THE GO

Good news for shooters who like to roam: new-gen laptops boast processing power to rival many desktop solutions.

■ Golden Triangle Elephant Camp, northern Thailand
Canon 1DMkIV; EF24mm f/1.4L II USM lens; 1/1600sec; f/2; ISO 1600



LAPTOP VS DESKTOP

Laptops use variants of the latest processors that run cooler and draw less battery power at the expense of grunt. Desktop systems offer faster speeds at a lower price, but you can still purchase enough portable performance to replace your desktop if need be. The major limitation when switching from a desktop to a laptop solution is the choice of display and being confined to a single internal hard drive.

The quicker chips also handle memory access and multi-tasking better, both of which aid in the overall "snappiness" of the system when running either Windows or Mac OS X.

Watts up

At the high end of mobile processor performance, you still won't match the desktops for speed, but you can get pretty close all the same. The trade-off for better laptop performance is reduced battery life. Low-voltage processors keep their cool under high loads but their ability to crunch through big files does take a hit. Replacing your desktop with a mobile solution is definitely feasible.

However, the main processor is not the only performance feature that drains your juice. A dedicated graphics processor will impact battery life, but also offer superior editing speed. The 3rd Generation Intel chips have their own built-in graphic support that is lean on power consumption – and can be switched off by the operating system to save power when all you're editing is text documents.

Memory matters

Having a seriously fast processor proves worthless if you can't feed it fast enough, and that's where memory capacity comes in. Boosting the RAM in your workstation can remove those bottlenecks created with large image files as the system resorts to disk access to complete a task. It's critical if you like to keep multiple tasks on the go at the same time, such as browsing the internet while your images process in the background.

Windows and Mac OS X share a similar appetite for RAM, with 4GB regarded as the bare »



■ Want lightning performance with RAW processors such as Capture One? Invest in faster storage.

minimum if you want to use the machine for something useful; 8GB is far more suitable, and double that again is not unreasonable. When you order it online and install yourself, RAM is cheap – voiding the warranty in the process, but side-stepping the factory mark-up.

Sometimes your workstation memory can fall short, however, like when the graphic support claims a chunk of it. Cheaper desktops and many laptops employ built-in support for graphics which borrow memory from your RAM banks. Borrowing RAM simply means you can have it back when the computer is switched off.

Dedicated graphics

Memory and processor speeds matter in a wide variety of situations but one piece of hardware

matters most when simply browsing through a folder filled with RAW files, the Graphics Processor Unit (GPU). You may know them as “video cards”, which denotes the impact gaming has made on personal computing, and many benefits from fast gaming technology have flowed through to RAW file processing. A dedicated GPU or video card will take the load off your main processor and deliver a double benefit.

Not only do most RAW workflow programs take advantage of the chip technology inside a GPU, but the graphics hardware usually includes its own memory supply – which is both faster and isolated. Instead of cannibalising the memory set aside for desktop work, the GPUs use their own memory to deliver superior rendering of your images.

THUNDERBOLT VERSUS USB 3.0

External disk access is inherently slow, even under USB 2.0 or Firewire speeds. The next generation of USB 3.0 devices are five times faster than Firewire and go a long way towards bringing internal disk speeds to an external drive. Apple users can also choose Thunderbolt-based external drives, which double the speeds achieved by USB 3.0. PC users will need to wait a while longer before Windows and PC hardware catches up with the Apple crowd.

It all adds up to very fast preview speeds as you jump from one image to the next, and delivers more grunt to other tasks when working in several applications at the same time. Apple put a premium on GPU support, and you’ll usually find them in the top-end workstations rather than notebooks. Similarly, the Ultrabook category of Windows-based laptops have been sparse for GPU options, but the latest crop of laptops arriving in Australia are delivering some attractive alternatives.

If you’re planning to add a serious external monitor to a laptop for processing RAW files, then a GPU is essential. Driving a 1920x1280 HD display takes a lot of computational power, a task best off loaded to a GPU rather than slowing down the main processor.

Solid storage

In the same way increasing memory capacity can help feed a hungry processor, boosting your storage speed can help feed a bunch of your RAW files to memory. If you employ Photoshop for editing images one by one, disk speed won’t be a major impedance – but when making the most of workflow solutions such as Lightroom and Capture One, disk access becomes critical.

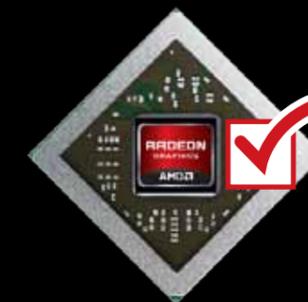
Using external USB drives for RAW processing is the worst possible case. Internal drives are many times faster and the speed hit when working on an external drive is immediately evident. Faster internal drives also mean faster editing, which is why there’s a premium placed on 7200rpm disks over 5400rpm versions. The fastest internal drives are not drives at all, but solid memory alternatives. »

■ **A very Stampy Christmas**
 Canon 1DMkIV; EF24mm f/1.4L II USM lens; 1/4000sec; f/2; ISO 100



PERFORMANCE CHECKLIST

- 3rd Generation Intel Processor (Ivy Bridge)
- Dedicated graphics controller (GPU)
- 4GB of RAM minimum, 8GB is better
- SSD storage for fastest RAW file workflow



8GB RAM ✓



SHOPPING BY NUMBERS

Looking for the fast and furious 3rd Generation Intel chips can be tricky, but Intel have numbered the processors to make life a bit easier. For example, an i7-2640M might be a Core i7 processor, but the "2" in 2640M denotes the 2nd Generation architecture. It's a fast dual-core chip, but the new ones do a lot more work at the same speed. A laptop packing the Core i7-3270QM is one of the 3rd Generation chips with four processors instead of just two, which is one of the reasons they perform so much better.



■ **Fancy footwork**
Canon 1DMkIV; EF24mm f/1.4L II USM lens; 1/800sec; f/2; ISO 400

Flash storage or Solid State Drives (SSD) have become more reliable and affordable in the past 12 months. Reading or writing files from an SSD device is much faster than hard drives and draws less power to operate. Early SSD devices lost performance on high volumes of small files, but the latest technology actually puts SSD performance ahead of hard drives in every respect.

Price remains the major drawback for SSD

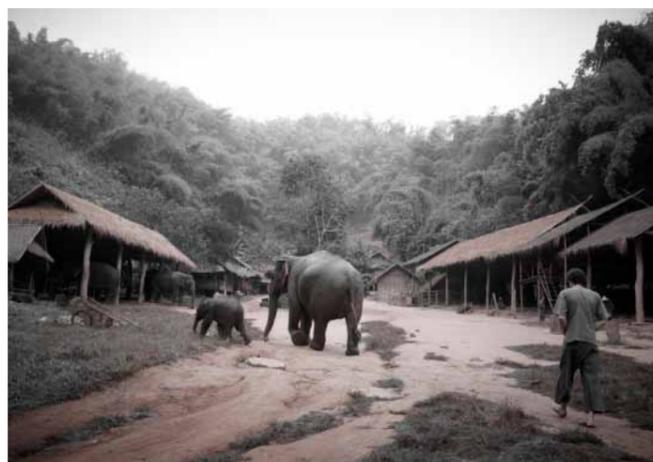
storage, with a 256GB SSD suitable for many laptops costing around \$250. That's a modest amount of storage for photographers, especially if your laptop is used for downloading cards while travelling. Compare that to a 1TB hard drive, which usually costs half the price. For project work, however, an SSD upgrade can yield tidy benefits. Just drop your work-in-progress onto the internal SSD and enjoy blazing fast disk access as you flick through a few thousand RAW files.

MEMORY LAPSE

When shopping for a laptop, take special note of the memory limitations rather than the existing memory configuration. 4GB memory simms cost around \$25 but some models don't support adding more than 4GB in total, or only have a single memory slot. 8GB is ideal for photo editing – and remains one of the most affordable ways to bump up your laptop's performance.



■ **Pachyderm peck**
Canon 1DMkIV; EF24mm f/1.4L II USM lens; 1/1000sec; f/2; ISO 800



■ **A dedicated GPU = fast preview speeds when cycling through big files.**

HOT BOXES

The combination of screen quality and internal processor power put these laptops on our radar for good value and fast processing.

» DETAILS

- Processor:** Quad Core i7 2.1GHz
- Memory:** 4GB (expandable to 16GB)
- Storage:** 750GB SATA Hard Disk
- Display:** 1600x900 pixels with 14" backlit LED
- GPU:** Radeon AMD Radeon HD 7670M with 1GB
- Ports:** USB3.0 x2, USB2.0 2, HDMI, SDXC/MS slot
- Battery:** 5 hours
- RRP:** \$1499



SONY VAIO E SERIES 14" PREMIUM

A wolf in sheep's clothing, the newest version of the Sony E Series looks tame enough from the outside but still packs a lot of premium features and grunt. A 3rd Generation quad core processor is matched with a dedicated Radeon GPU for faster photo editing.

APPLE MACBOOK PRO 15"

Even without the Retina Display option, the new MacBook Pro range is exceptional, offering the latest processors with lots of RAM, fast external ports and truly slim design. The standard 15" model still puts most Windows laptops to shame.

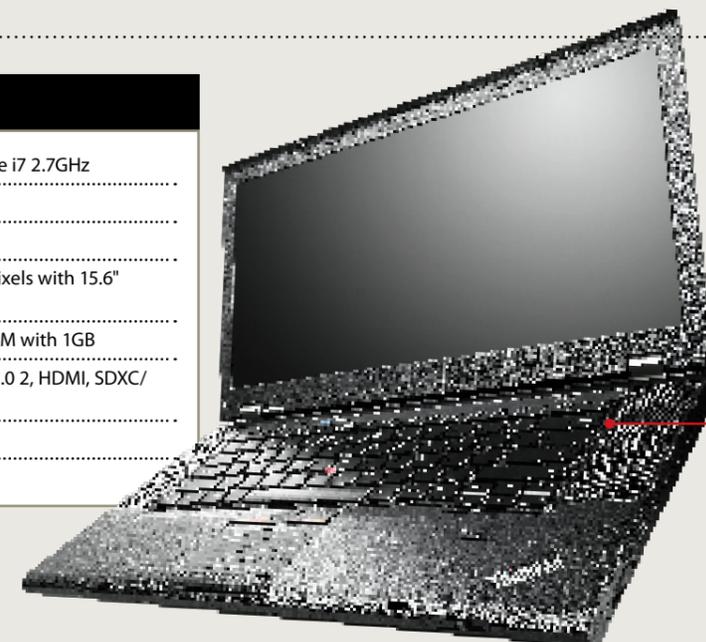


» DETAILS

- Processor:** Quad Core i7 2.3GHz
- Memory:** 8GB
- Storage:** 500GB SATA Hard Disk
- Display:** 1680x1050 pixels with 15.4" backlit LED
- GPU:** NVIDIA GeForce GT 650M with 512MB
- Ports:** USB3.0 x2, Thunderbolt x2, SDXC slot, HDMI
- Battery:** 7 hours
- RRP:** \$2239

» DETAILS

- Processor:** Quad Core i7 2.7GHz
- Memory:** 16GB
- Storage:** 128GB SSD
- Display:** 1920x1080 pixels with 15.6" backlit LED
- GPU:** NVIDIA NVS 5400M with 1GB
- Ports:** USB3.0 x2, USB2.0 2, HDMI, SDXC/MS slot
- Battery:** 18 hours
- RRP:** \$3875



LENOVO THINKPAD T530

Supporting a Full HD display, incredible battery life and the option of built-in RAID configurations, the ThinkPad T series tops our list for performance. However, you'll need a serious budget to buy the best.