

## **Podcomplex Guides**



## **Going Mobile: Laptop Buying Guide**

## 1. Laptops for Sale – But What's the Difference?

There are a number of things you need to know about a laptop before buying it. Whether these things are important to you will depend on what you want to use it for - so this means that there is no absolute 'best laptop' out there.

In terms of raw performance, you could go with an Alienware or Rock laptop - these tend to be targeted at gamers, and many of them have dual graphics cards and very large screens.

However, these would also be very bulky and heavy, and really quite useless for someone who wants to travel a lot and only plays low-power games such as World of Warcraft - or a business user who will never play games at all. If you are in this category, then you should pay particular attention to the size and weight of the machine, as well as its battery life. It might even be worthwhile investing in a second battery if you take a lot of long-haul flights...

To be honest, even the cheapest laptop available today is more than adequate for general office use - word processing, surfing the Internet, simple multimedia work such as ripping CDs, watching DVDs, or basic image editing.

You'll only need to be concerned about processor performance if you play the latest video games or work with audio or video in a more serious way - such as video editing using Final Cut Pro or Adobe Premiere, 3D image rendering or multichannel audio sequencing.

If you just want to work with Excel spreadsheets, Word and PowerPoint, then the only thing that's going to strain your PC is the amount of bloatware, adware or viruses on it. If you find that your computer can't do these basic things, then you need to do a spring-clean on your operating system. For some tips on how to keep your computer running smoothly, have a look at this [PC maintenance guide](#).

## 2. Laptop Discount Coupons

If you have decided it's time to get yourself a new machine, then you really should have a look around for discount vouchers or coupons. Many top manufacturers periodically offer significant reductions in this way - HP and Dell being the most common examples.

Obviously, if you're buying a state-of-the-art laptop such as the DELL XPS series, this can amount to quite a decent saving - you can get a couple of hundred quid off just for copying and pasting a password!

I only discovered this trick recently, but when I find a discount coupon I'll put a link to it here, so make sure to check back whenever you're looking for a laptop sale bargain!

### Laptop Sale Coupon Codes

[Here's a link to the latest voucher offers for DELL in Ireland](#)

[Here's a link to the latest voucher offers for DELL in the UK](#)

### 3. What Should I Look For In A Laptop?

When you first decide to buy a new laptop, you might think that all you have to do is go down to the computer store, find one that looks nice (and isn't too expensive), buy it and head home.

This might seem a bit simplistic - but in actual fact, most people won't go too far wrong with this approach.

If you only need a laptop for word processing, surfing the Internet, watching DVDs or looking at photographs, then even the cheapest model on sale today will do the job perfectly well. It's only when you want to run more demanding programs or have a lot of programs open at the same time that system performance will become an issue for you.

#### Do I Need The Latest Model?

If you're worried about whether you need a hi-spec machine, the first question you should ask yourself is this:

⇒ Will I be playing video games?

If the answer is no, then you can probably cut back on the specifications straight away.

Computer games are the only consumer programs that really push the performance limits of a typical computer (we're talking about home users here, not multimedia professionals). Many people play games only occasionally, and even then they are probably not processor-intensive titles – *World of Warcraft* or *The Sims* are no problem at all for even the wimpiest of modern machines.

If you want to use your computer to play the latest games, or edit video or audio using programs such as *Final Cut Pro* or *Cubase*, then you will have special requirements which I'll cover later on. For the moment, we're dealing with the requirements of the vast majority of home computer users.

Remember, you'll encounter a lot of hype when you go to buy a new laptop – the manufacturers and stores want you to buy the latest, most expensive model because that's where their biggest profit margins are.

However, there is a law of diminishing returns in effect here – if you spend twice as much money on a laptop, it's very unlikely that you'll get a laptop that's twice as powerful. The secret to getting the best deal possible on a laptop is to identify where the 'sweet spot' in the product line is.

## Look For The Sweet Spot

The ‘sweet spot’ is the specification where you get the most bang for your buck – if you spend less, you won’t be getting the best value in terms of features, and if you spend more you’ll just be getting ripped off on incremental performance gains that you probably won’t notice anyway.

As of early 2008, I would estimate that the *overall* sweet spot for laptops is probably around the €1000 (£750) mark – but this is directly linked to your personal requirements and should not be taken as an absolute recommendation. I make this very broad estimation based on the entire range of specifications and prices on the market today, and deriving an optimum price/performance range from that.

Because different people will use their laptop for different things, your personal laptop ‘sweet spot’ may be in a different range entirely. You will probably also need to determine the sweet spot for each manufacturer separately – not all brands will have the same spread of features and prices.

As a laptop represents a significant investment of money, it’s worth doing a bit of research and shopping around to get it right.

## So how do I spot the spot?

If you want to know you’re getting value for money, you’ll need to understand some of the technical specifications and terminology of computer hardware. The fundamental components of a computer haven’t really changed much over the past ten years, but the technologies behind them have improved exponentially (in some cases). I’ll provide a simple overview of these components in the next section.

As I already mentioned, if you don’t have any particular performance requirements, then you will probably be OK judging a laptop purely on its looks, size and weight – and then getting the cheapest one that suits these criteria.

If you won’t be moving it around much, then size, weight and battery life are not really significant. If you want to bring it with you everywhere, then you’ll want a light machine with a good battery life. Unfortunately, the battery is one of the heaviest elements of a computer – bigger batteries mean longer life, but they also increase the weight. You’ll need to find a balance between the two that suits your needs.

## 4. Computer Components and Specifications Guide

### What Do I Look For In A Computer?

These are the first things to consider:

- ⇒ Processor
- ⇒ Memory
- ⇒ Hard Disk
- ⇒ Graphics Card

Then you might want to look at these:

- Battery
- Optical Drive (CD/DVD)
- Wireless Card (Wi-Fi)
- Screen Size and Resolution
- Overall Design, Size and Weight
- Connectivity  
(USB/FireWire/Ethernet/Bluetooth/Express Card/Memory Card Reader)

### Extras:

Warranty  
Technical Support  
Operating System  
Peripherals (printer, external monitor, mouse, external sound card etc.)

## The Processor

The processor is probably the first component that you'll be bamboozled with. The two main manufacturers of processors are Intel and AMD, and both make very good products. From about 1999 until 2003 these companies were locked in a 'clock speed war' where the processor speed was used as the primary selling point. Every couple of months a new processor was released which claimed to be the fastest in the world, and the 'performance crown' switched hands several times. However, once the 3.4GHz speed level was reached, overheating problems meant that they had to look at other ways of improving the performance of their processors– which means that it's not as easy to compare processors as it used to be.

Energy efficiency is now an important driver of the processor market, particularly for laptops. More efficient processors consume less power, which leads to greater battery life. The move to dual-core processing has greatly increased the power of computers, and quad-core processors are already starting to appear. However, the speed of the processors is still a factor to consider.

As of early 2008, the Intel Core 2 Duo is the best performer out there, so this should be your starting point for choosing a new laptop. AMD processors are not too far behind, but I would only buy one now if I was on a tighter budget and couldn't get a Core 2 Duo system that met my needs exactly.

If you're looking at a Core 2 Duo System, you'll probably see some specs that look like this (taken from the Dell.ie website):

Intel® Core™ 2 Duo Processor T5250 (1.50 GHz, 2 MB L2 cache, 667 MHz FSB)

Intel® Core™ 2 Duo Processor T7250 (2.00 GHz, 2 MB L2 cache, 800 MHz FSB) [add € 90.00 or €4/month<sup>1</sup>]

Intel® Core™ 2 Duo Processor T7500 (2.20GHz,800MHz,4MB L2 cache) [add € 200.00 or €7/month<sup>1</sup>]

Intel® Core™ 2 Duo Processor T7700 (2.40GHz,800MHz,4MB L2 cache) [add € 340.01 or €12/month<sup>1</sup>]

But what does all this mean?

The processor is the engine of your computer and is the most complicated component to assess. In this guide I'll be using specification examples from the Dell website, as this is usually a reasonable indication of what the current standards are for the overall market (at least on the Intel side of things). As the Core 2 Duo is the best performer at the moment, this is a reasonable sample for illustrating the main things to look at when choosing a laptop.

The specifications of the processor can be broken into three sections:

1. Processor Speed
2. L2 Cache
3. FSB Speed

Let's have a look...

## 1. Processor Speed (GHz)

⇒ **Processor Speed (clock speed) is measured in gigahertz (GHz) – this indicates how many calculations the processor can perform in one second.**

If you have two processors from the same product line, the one with the higher processor speed will be better.

A dual-core processor has two processors, both of which run at the same speed. So, an Intel Core 2 Duo 1.8 GHz computer will actually have two processors, both running at a clock speed of 1.8 GHz.

Both Intel and AMD have many product lines with many confusing names, and different types of processors with the same clock speed can vary enormously in absolute performance terms.

For example, a 2GHz Intel **Celeron** processor is not as good as a 2GHz Intel **Pentium** processor. This is because the Celerons have less cache (see point 2 below) and often have lower FSB speeds (see point 3 below).

⇒ **Processor Speed Sweet Spot: 2GHz (dual-core)** *(January 2008)*



## 2. L2 Cache (MB)

⇒ **L2 cache (level two cache) is a high-speed memory buffer that passes frequently-used information to the processor. It's faster than system memory and can greatly increase performance for many tasks.**

The L2 cache sits beside the processor and retains data that the processor uses on a regular basis. This means that the processor doesn't have to go to the main memory (which is slower) or to the hard drive (which is a lot slower) to get the information it needs.

If you really want to know more about how it works, you can visit [Tom's Hardware](#).

All you really need to know is this: for cache, the more the merrier.

In a Core 2 Duo system, the cache is shared by two processors – so if you have 4Mb of L2 cache, each processor gets 2Mb. Athlon 64 X2 and Pentium D processors have dedicated L2 caches for each core.

4MB is a great amount of cache to have, although 2 MB is good too. I wouldn't recommend going for less than 2 MB unless price is the main priority.

⇒ **L2 Cache Sweet Spot: 2 MB** *(January 2008)*

## 3. FSB (front-side bus, MHz)

⇒ **The FSB connects the processor to the main system memory. A faster connection enables information to move more quickly through the system, improving overall performance.**

This isn't purely a processor feature, but it is included in the processor specifications. The front-side bus is what connects the processor and your RAM - so the faster it is, the better your system will perform.

FSB is measured in megahertz (MHz). The top FSB spec at the moment is 800 MHz, followed by 667 MHz and 533 MHz FSB speeds.

⇒ **FSB Sweet Spot: 800/667 MHz** *(January 2008)*

## The Price of The Cutting Edge

The table below shows a selection of Intel processor models, with the highest performing processors at the top. As you can see, if you want the very fastest processor then you'll have to pay a rather ridiculous amount extra for very little performance gain (prices are indicative estimates).

Models (Desktop Line)	Speed (GHz)	FSB (MHz)	Cache (Mb)	Price
Core 2 Duo T7800	2.6	800	4	\$530
Core 2 Duo T7700	2.4	800	4	\$316
Core 2 Duo T7500	2.2	800	4	\$241
Core 2 Duo T7300	2	800	4	\$222
Core 2 Duo T7250	2	800	2	\$209
Core 2 Duo T7100	1.8	800	2	\$189

For example, the performance increase between the T7500 and the T7800 will not be noticed by most users, and is probably in the region of 5%. However, the T7800 costs over twice as much – so unless you really need to have the fastest machine available, you should stay in the sweet spot.

You'll notice that the price increases at a reasonably regular rate through the lower spec models, but at the top the price gaps become increasingly large. The sweet spot for processors is usually around the point at which the price difference between a particular model and the one above it becomes much greater than that to the one below.

### ⇒ Overall Processor Sweet Spot:

Intel® Core™ 2 Duo Processor T7250 (2.00 GHz, 2 MB L2 cache, 800 MHz FSB

Intel® Core™ 2 Duo Processor T7500 (2.20 GHz, 4 MB L2 cache, 800 MHz FSB

*(January 2008)*

## Random Access Memory (RAM)

⇒ **Random Access Memory is also referred to as system memory, and it is measured in megabytes (MB), or preferably gigabytes (GB).**

System memory has a huge impact on the performance of your computer. After the processor, it's probably the single most important component for overall system performance.

If you're buying a laptop, you'll probably want to buy it with the RAM you want already installed. In this case, you should get as much RAM as you can afford - you just can't have too much memory!

As most PCs now come with Vista, you'll want at least 2GB of memory. RAM is actually quite cheap, so I would say that 2GB is now a minimum recommended level for any new computer - PC or Mac, Windows or Linux.

Installing new memory in a laptop is quite easy, but does require some care. In many cases, it may be a lot cheaper to buy a laptop with a smaller amount of RAM, then buy the extra memory you need elsewhere and hire a professional to install it for you. If you install it yourself, it will definitely be a lot cheaper.

⇒ **RAM Sweet Spot: 2 GB** *(January 2008)*

## Hard Disk Storage

⇒ **The hard disk (hard drive) is where your operating system, programs and other files are stored. There are two main ways of evaluating hard disks - by storage capacity (GB) and access speed (RPM).**

### Hard Disk Capacity

Hard drives store all the information your computer needs, and the bigger they are, the more stuff you can keep on them. Laptop hard drives start in the 80GB range nowadays, which is quite a lot – if you're just using it for office documents and photographs, you'll probably never even need this much.

If you're storing lots of audio files, video files or will be installing many large programs, then you can get laptop hard drives in the 200GB range.

To be honest, hard drive size isn't really a crucial factor for most people. If you don't need much storage space, even the smallest hard drive will do the trick. If you need a lot of storage space, you can get an external hard drive and put your media files on that.

Even if you don't need lots of storage space, you should back up everything onto an external hard drive anyway. Hard drives are prone to fail, and if you only have your data stored in one place then you are inevitably going to lose it one day.

### Hard Disk Speed

The other thing to watch for on a hard drive is its spin speed, measured in revolutions per minute (RPM). Laptops tend to have slower hard drives (5400 RPM) because these require less power and make less noise when operating.

A 5400 RPM hard drive will perform perfectly well for 95% of users. If you are editing lots of audio or video, then you might want to get a 7500 RPM model, but it will decrease battery life and increase noise levels slightly.

## SATA or SSD?

There is one more thing to consider in this section – although this is not something you need to know unless you really want to be on the bleeding edge of new technologies and performance.

Most laptops still use SATA hard drives, which have moving parts. However, solid state drives are gaining popularity – these use very little energy and have no moving parts.

Unfortunately, Solid State Drives do have a number of disadvantages; the biggest of these is that they are very expensive.

Although SSDs have very fast random access times - which allows your computer to boot up quickly, for example – they are still quite poor at sequential reads and writes. This means they are not so good at multimedia streaming.

Overall, there is no compelling reason to choose SSD over SATA at the moment, unless you need to have the lightest, most energy efficient laptop possible, no matter what the cost.

As the technology improves, however, the drawbacks of SSD will eventually be overcome – it is likely that many laptops will come with solid state drives fitted as standard over the next couple of years.

## Graphics/Video Card

⇒ **The graphics card contains a graphics processing unit (GPU) which takes much of the visual display work away from the main processor. A more advanced graphics card allows more detail to be displayed on screen, and can achieve higher frame rates (faster processing).**

Laptop graphics come in two basic varieties: integrated or dedicated.

### Integrated Graphics

This is the cheapest and most common type of graphics solution found in laptops. Basically, instead of having a separate graphics card, the graphics processor is built into the main system motherboard. This type of graphics processor usually shares system memory with the main processor.

Such integrated graphics controllers are sometimes described as having 256MB of shared memory. On a system that has 1GB of system memory, this means that 256MB of system memory can be set aside for video, leaving only 744MB of RAM for the operating system to work with.

### Dedicated Graphics

A dedicated graphics card comes with its own video RAM, which is faster than main system memory. Because the video card has its own memory, the operating system is free to use all installed standard RAM for other tasks.

The actual graphics processor on a dedicated card will also be more powerful than an integrated solution, and does not use up system resources in the same way.

Dedicated graphics cards come in a variety of performance levels, although even the cheapest dedicated card should greatly outperform an integrated solution.

Graphics cards may be compared by processor clock speed, memory speed and type, amount of memory, calculations per second, frame rate or rendering rate.