A LAWYER'S GUIDE FOR BUYING A LAPTOP

If you've shopped for a laptop computer lately, you already know that it can be confusing, particularly if you're looking for a Windows machine (where the options are nearly unlimited). This article explains what to look for, what to avoid, and how to make an informed decision. This article should be helpful regardless of which operating system you prefer. Further, the term "PC," as used herein, refers to both Windows and Mac computers. PC stands for personal computer, meaning a computer designed for use by one person at a time. Although Apple's advertisements seem to declare that its computers are something other than PCs, they are not (all MacBooks and iMacs are PCs).

This article won't help you find the cheapest laptop possible. However, if your laptop is the primary tool you use to produce work product, then it's probably the last thing you should cut corners on. If that's what you're looking for, there are many compilations of the best "budget" laptops.[1] The following recommendations prioritize power, portability, and reliability.

Laptop configurations and models change constantly, so there's little point in identifying a particular model, and less so a configuration, to buy. Instead, here's what to look for in a new laptop, component-by-component, with an explanation of each PC part, so you'll understand what you're buying.

TYPE OF LAPTOP COMPUTERS SUITABLE FOR A LAWYER

I'm not going to explain every possible classification here because many of them are inappropriate for a law office (such as "gaming" laptops). You want a laptop designed for business use (rather than a home user/consumer PC). Business models tend to have longer product cycles and offer tried-and-true configurations that have been thoroughly tested. They typically offer better warranties (onsite service and accidental damage protection), physical durability, and built-in security.

You may also have heard of an "ultrabook" as a laptop category. Ultrabook is a specification for a laptop promulgated by Intel.[2] An ultrabook is a thin, light, and powerful laptop with excellent battery life, touchscreen capability, and advanced security. Of course, many manufacturers offer business ultrabooks.

More recently, Intel introduced a successor to the Ultrabook classification called Evo.[3] Intel says that Evo is for those who "[w]ant a laptop that has it all." And who doesn't want that? For a manufacturer's laptop to qualify for the Evo designation, it should possess: 1) an 11th generation (or later) Intel Core processor with Intel Iris X graphics; 2) support for Wi-Fi 6 technology; 3) the ability to run for at least nine hours on battery power; 4) fast "wake from sleep" technology; and 5) Thunderbolt 4 connections for external docks, high-resolution screens, and other peripherals.

An Evo-compliant laptop may be a traditional clamshell, 2-in-1 hybrid, or 2-in-1 convertible. Examples of traditional form factor machines include the Dell XPS 13 and the Lenovo ThinkPad X1 Carbon. A hybrid 2-in-1 is a laptop where the screen can be detached from the keyboard base and used as a touchscreen tablet (see a Microsoft Surface Pro 9, for example). The screen on a convertible 2-in-1 doesn't detach but can be flipped back, swiveled, or slid into a position to be used like a touchscreen tablet (see an HP Spectre x360, for example).

---

[1] See *Computer & Laptop Reviews & Top Picks*, *Lifewire*, and *The Best Laptop Under $500*, by Thorin Klosowski and Kimber Streams, *Wirecutter*.

[2] See http://www.intel.com/content/www/us/en/2-in-1/laptop-tablet.html.

[3] See https://www.intel.com/content/www/us/en/products/systems-devices/laptops/evo.html.

WHAT TO KNOW ABOUT PROCESSORS

3/5/7/9 DESIGNATION

In a nutshell, an Intel i9 processor is more powerful than an i7; an i7 is more powerful than an i5; and an i5 is more powerful than an i3.

GENERATIONS

Intel has released 12 "generations" of the 3/5/7/9 processors, so the current release is creatively called "12th gen." If you're buying something new and it doesn't indicate that the processor is 12th generation, make sure you ask. By looking at the first number following the 3/5/7/9 designation, you can also tell what generation a processor is. For example, a configuration that includes an i7-12700H processor is 12th generation. The 12 that begins the five-digit number following the i7 indicates that it's a 12th-generation processor. If that number were 11, it would be 11th generation. Every generation of processors gets a little faster and adds various other benefits. Laptop and desktop processors are developed and released on different schedules. For the full rundown on what the 12th generation processors provide, see the [Intel press release](#).

PROCESSOR RECOMMENDATION

If you only use your PC for e-mail, Internet browsing, and light applications like word processing, an i3 would probably be fine if you're on an extreme budget, but you should start with the i5 versions. If you're using more demanding applications (such as case management systems, document management systems, or legal accounting programs), consider a 12th-generation i5 or i7. All major manufacturers have 12th-generation offerings out at this point, but there are a lot of new computers out there with 11th generation processors. So looking for the latest generation processor makes sense unless you want to save money by buying an older one. Between the 5, 7, and 9, an i5 or i7 is suitable for almost all legal professionals. If you have more demanding applications like photo/video editing or speech recognition, you may consider moving up to an i9, although the size, heat, and power requirements will increase considerably. While it may be true that "[f]or most users, the extra features and processing power of the Core i7 [over an i5] won't be worth the cost difference between the two tiers,"[4] we've never met anyone who regretted choosing more power.

GRAPHICS OR DISPLAY ADAPTER

The graphics adapter is the part of a computer that processes the images to be displayed on the screen or monitor. Two basic architectural approaches for a graphics adapter are integrated and discrete. Integrated means "locating a computer's display circuitry in the chipset on the motherboard rather than on a separate plug-in card." Discrete graphics adapters are typically a separate circuit board inside the computer and are more powerful than integrated adapters. Integrated graphics adapters are generally sufficient for legal users since the applications are not demanding from a graphics/video perspective. However, you may want to consider a discrete graphics adapter if any of the following apply to you:

- You want to connect to a high-resolution monitor (4K or 3840 x 2160);
- You want to connect to 2 or 3 monitors simultaneously, especially with 4k or 5k resolution;
- You need to engage in video editing; or
- You run graphics-intensive applications on your computer, like computer-aided-design ("CAD") programs or games.[5]
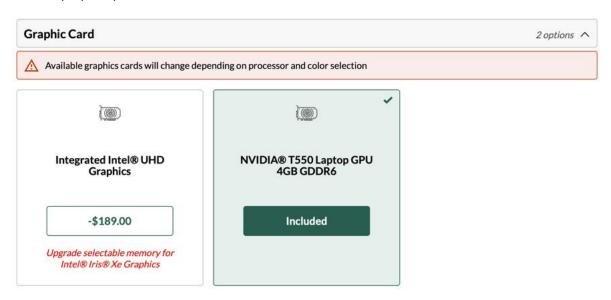
You can do all the foregoing with integrated video, but the computer's performance may suffer.

Having said all of that, the model of computer you choose may offer you no choice in display adapter. If it's a business computer, it may only provide integrated video. Again, no one ever regrets better performance. Below is a screenshot of a configuration from a Lenovo ThinkPad T16. The Nvidia T550 Laptop GPU is a discrete video option.

---

[4] [*Intel Core i5 vs. i7: Which CPU is Right for You?*](#), by John Martindale and Jacob Roach, December 21, 2022, *Digital Trends*.

[5] Graphics-intensive programs may be required in some practice areas, such as construction, patents, or scientific work. However, as a rule, legal professionals should avoid installing games on work computers. Games, and most personal-oriented software, are less likely to be securely programmed and timely patched. Therefore, they serve as a more likely vector for malware and hacking (see this [LastPass story](#) as an example). For games and personal activities, buy a separate computer.

Intel UHD (in the first option) means integrated video.[6] As you can see, there's not a huge price jump to get a much more powerful display adapter.

In addition to the price increase for discrete graphics – $189 in the ThinkPad example – the laptop has a higher starting price – $1,650 for the ThinkPad – than similarly-capable machines without extra graphics power. They also weigh more. There are few to no thin & light options with discrete graphics.
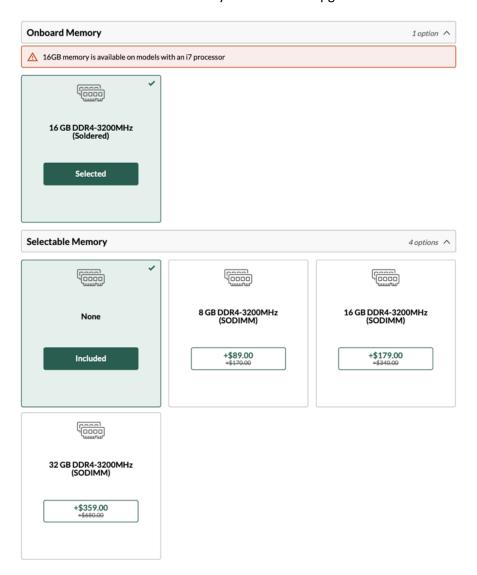
MEMORY OR RAM

Get at least 16 GB of RAM for normal business usage. If possible, get the memory on one memory chip. Most laptops have two memory sockets on board, so if you get all your memory on one chip, you can easily add another later as an upgrade. However, the thinner and lighter the laptop you choose, the more likely the memory and the hard drive storage (see below) are unchangeable, built into the computer at the factory. Whatever choice you make at purchase time, that's all it will ever have. This is 100% true with Mac laptops already and is increasingly the case with Windows machines as well.

If the laptop you desire has the option to add memory later, make sure it ships with the most memory on the fewest chips. For example, a laptop with 16 GB of memory could come as one 16 GB chip or two 8 GB chips. If you get 16 GB comprised of two 8 GB chips, then to upgrade your memory, you'll have to discard half of what you already have. If you're wavering on the amount of RAM to buy now, remember that, for many Windows laptops, but not for Mac laptops, it's usually an easy DIY project to upgrade your RAM later. Companies like Crucial make it easy to upgrade RAM because their website allows you to determine what type of memory your computer requires, and their prices are very competitive.

---

[6] See https://en.wikipedia.org/wiki/Intel_Graphics_Technology.

Additionally, some manufacturers, particularly for their "desktop replacement" style laptops with i7 or i9 processors, like the ThinkPad T16, may have two distinct memory options – one that is built-in to the motherboard and must be chosen at purchase time and a second bank of memory that one can upgrade later.

HARD DRIVE OPTIONS
TYPES OF DRIVES

There are three kinds of hard drives, mechanical (HDD - Hard Disk Drive), solid-state (SSD - Solid State Drive), and hybrid (SSHD). We strongly recommend SSDs in laptops, but they're not completely necessary in desktops. Go with an SSD if you can afford it. Here's a good explanation of the differences between HDD and SSD:

> "The traditional spinning hard drive is the basic non-volatile storage on a computer. That is, information on it doesn't "go away" when you turn off the system, unlike data stored in RAM. A hard drive is essentially a metal platter with a magnetic coating that stores your data, whether weather reports from the last century, a high-definition copy of the original Star Wars trilogy, or your digital music collection. A read/write head on an arm (or a set of them) accesses the data while the platters are spinning.
>
> An SSD performs the same basic function as a hard drive, but data is instead stored on interconnected flash-memory chips that retain the data even when there's no power flowing through them. These flash chips (often dubbed "NAND") are of a different type than the kind used in USB thumb drives, and are typically faster and

4

more reliable. SSDs are consequently more expensive than USB thumb drives of the same capacities."[7]

Note also that HDDs have a speed rating in terms of RPM. This refers to the speed at which the drive's magnetic platters rotate. The faster they rotate, the faster your computer can access information. Avoid 5,400 rpm drives because they're too slow. Instead, look for a 7,200 rpm drive or faster.

A hybrid drive combines a tiny SSD with an HDD in the same device. They're far less expensive than SSDs and offer modest performance improvements. Having said that, get an SSD if it's available. They cost more, but they're worth it. SSDs are much faster than mechanical or hybrid drives; they use less electricity, generate less heat, and have no moving parts, making them less likely to "crash."

SIZE
We recommend a 256 GB or 512 GB SSD for most legal users. The smaller size should be fine if you store almost everything on a server or the cloud. However, larger storage needs might force you to choose an HDD rather than an SSD. It's easy to find 1 TB (1,000 GB) or larger HDD options in a laptop. Finding higher-capacity SSDs used to be more difficult, but higher-end manufacturers, like Lenovo and Apple, offer 1TD or more. Indeed, Apple's pro machines can be equipped with an SSD up to 8 TB, at a considerable price premium.

SCREEN OPTIONS
SCREEN SIZE
What size screen you choose is a matter of personal preference. Many current laptops have 13.3" screens, which is extremely popular among manufacturers. Most people have no problem seeing things on a 13.3" screen. Many models offer a 15.6-inch screen, but we don't recommend going larger than that. Remember that a bigger screen generally means a heavier laptop and less battery life, but that may be worth the trade-off, depending on your usage.

RESOLUTION
If you have a choice of resolutions on the screen, choose a higher resolution option if you intend to plug external monitors into your laptop and use it primarily in that arrangement. Higher resolution screens mean that everything will be sharper, but also smaller. As such, it does little good to get a high-resolution screen that renders everything so small that you can barely see it. This is not an issue if you are connecting to an external monitor because the external monitors are much larger. For example, the native resolution on a modern MacBook Pro is an amazing 2560 x 1600. However, it made some things so small that one could barely see them. Reducing the resolution to 1440 x 900 made things much better.

TOUCH
Many laptops now offer a touch screen. Even if you don't think you'll use it, there's no reason to avoid one of these. It's handy when reading a document or scrolling down a web page, primarily because we're accustomed to it from phones and tablets. No Apple laptops offer a touch screen, but many Windows competitors do.

RECOMMENDATION
We recommend a 13.3" or 14" touch screen if your eyesight is good enough to see things easily on a smaller screen.

OPERATING SYSTEM CONSIDERATIONS
WINDOWS PC
If all your software is certified to work with Windows 11, you should go with Windows 11 Pro (not Home), 64-bit. Pro's advantage is that it includes BitLocker to secure your hard drive with encryption, which is vital for mobile devices with client data.

MAC
There are no operating system choices to make.

---

[7] *SSD vs. HDD: What's the Difference?*, by Tom Brant, *PCMag*, August 26, 2022.

WARRANTY OPTIONS

RECOMMENDED SYSTEM WARRANTY

Ideally, you want a three-year, next-business day, onsite warranty with 24x7 technical support. If you think you'll use your computer longer, most manufacturers allow you to extend your warranty to 4 or 5 years. However, we recommend cycling out computers every three years, so we don't get a warranty beyond that. Mail-in or carry-in warranties will extend your downtime and likely cause you some waiting and frustration. In our opinion, warranties that require shipping the computer somewhere or taking it to a store are unacceptable.

WARRANTIES FROM THE MANUFACTURER ARE BETTER

For example, if you buy a Dell desktop from Amazon.com, they don't offer Dell factory warranties. Instead, they offer third-party warranties, which are, in our experience, vastly inferior to those purchased directly from Dell (like Dell's ProSupport warranties).

TECHNICAL SUPPORT

Seek North American-based support from representatives for whom English is their first language. Nothing is more frustrating than trying to explain a problem to someone you can't understand. It's worth asking the question before you buy the computer - where is the support based? If technical support is offshore and you can't upgrade to something better, you might want to keep looking.

ACCIDENTAL DAMAGE PROTECTION

If you are worried that you might accidentally break your laptop, this is an excellent added measure of protection. We recommend this protection for laptop computers, but it's probably not worth it for a desktop. It protects you against liquid spills, drops, falls, and surges (electrical). Manufacturers like Apple, Lenovo, and Dell offer this kind of coverage, and it's surprisingly inexpensive for three years.

SECURITY ISSUES

ANTIMALWARE AND FIREWALL SOFTWARE

At a minimum, you need antivirus software and a firewall. Broadly, antivirus software keeps malware off your computer and a firewall keeps hackers out. Windows 11 computers have both things built in, but the built-in options (like Windows Defender) typically rank low in antivirus reviews. Macs include a firewall but not an antivirus program, so you should buy one. Some big players for Windows or Mac include Bitdefender (a favorite), McAfee, Kaspersky, Webroot, and Symantec.

FINGERPRINT READER

Fingerprint (biometric) readers allow you to block unauthorized computer users and log in quickly without entering a password. Many manufacturers include free encryption software with your system when selecting this option. This lets you encrypt your computer so it is unusable without a valid fingerprint swipe. The added level of security is well worth the added cost.

HARD DRIVE ENCRYPTION

You need to encrypt the hard drive if you have confidential client information on your desktop PC. If you have a MacBook, it comes with an encryption program called FileVault.[8] If you have Windows 11 Pro, you have an included encryption program called BitLocker.[9]

BUNDLED OFFICE SUITE

If you get Microsoft Office preinstalled on your new computer, the software license typically restricts it to be installed only once and only on the computer it came with. Therefore, more lawyers are choosing to get Microsoft Office as part of a Microsoft 365 bundle. You can transfer those installations of Office from one computer to another, get both the Windows and Mac versions, and install it on up to 5 PCs and Macs you use.

---

[8] See https://support.apple.com/en-us/HT204837.

[9] See *A Beginner's Guide To BitLocker, Windows' Built-In Encryption Tool*, by Ian Paul, August 1, 2016, *PCWorld*.

KEYBOARDS

Many laptop models offer backlit keyboards, which are wonderful in low-light situations. If you're a touch typist, it's also worth test-driving the keyboard before you buy, if possible. Keyboards are not all created equal, even within the same brand.

BATTERY

Laptop batteries are measured in terms of "cells." The more cells in your battery (3, 4, 6 & 9 are typical), the longer you'll be able to operate unplugged. You should also know that the bigger the battery, the heavier your laptop will be. If the laptop you choose has user-swappable batteries, a feature that's becoming rarer, just as with swappable memory and hard drives, then perhaps get an extra one as a backup. Otherwise, you can buy external laptop battery chargers for emergencies. These external batteries charge via USB or USB-C and can "top off" USB-C-powered computers, smartphones, and tablets.

WEBCAM AND MIC

Any business laptop should have a built-in webcam and integrated mic so you can participate in Web meetings, Zoom, Teams, and use other similar services without buying any additional accessories.

OPTICAL DRIVE/DVD

Today, most laptops do not include an optical drive of any type. While software used to come on DVD, today it's all downloaded. If you need an optical drive, you're better off getting an external drive that connects via USB and can use it when needed. You can buy a nice USB-C external DVD drive for about $35 online.

PORTS

A port is a connection point for attaching peripherals or other external devices to your computer. When buying a laptop today, look for Thunderbolt 3 or USB-C ports. The newest models will have Thunderbolt 4 / USB-C 4 ports. These ports use the same cables, and devices are interchangeable between them. These new, high-speed ports can transfer data while supplying power. Thunderbolt is faster than USB-C in terms of data transfer, but devices that work with USB-C will work with Thunderbolt. However, Thunderbolt devices will not necessarily work with USB-C ports, even though the physical connectors look identical. The Thunderbolt device may demand a higher data speed than USB-C can provide.

DOCKING STATIONS OR PORT REPLICATORS

A docking station or port replicator (a "dock") is a peripheral that connects to your laptop and allows you to connect many other devices to your laptop simultaneously. In many cases, a dock can also provide power to your laptop. For example, the CalDigit TS4 Plus Thunderbolt dock is a top-rated model. One Thunderbolt cable connects to the laptop and provides charging power and access to 18 ports on the dock, including four traditional USB ports, 2.5 GbE gigabit ethernet, optical audio, two USB-C ports, a two Thunderbolt ports, a DisplayPort connection, and an SD card slot, all through one cable to the MacBook.

Connected to the dock, one can have two 24" monitors, an external keyboard, mouse, a Ricoh ScanSnap iX1600 scanner, a network cable (providing Internet and connectivity), and a Logitech 4k webcam. As a result, connecting the one little Thunderbolt cable to the laptop automatically connects the laptop to all those peripherals. When ready to go home at the end of the day, simply unplug the dock and leave with the laptop. At home, you could have another dock with all the same peripherals connected so you could work from either location in the same manner. This may not sound like a big deal, but having a dock is a huge convenience. Further, if your laptop doesn't have enough built-in ports for you to connect to all those things simultaneously, a dock is really the only way to do it. The CalDigit TS4 Plus (MSRP $400) is one of many Thunderbolt docks on the market.