Building a PC in 2014

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Introduction

Is building your own PC hard?

Assembling the parts isn't hard at all, just scary for new builders. There are plenty of Youtube videos that do a stellar job of that. You really don't need anything more than a standard screwdriver to put a computer together.

As an example, here is Austin Evans assembling a low end computer. A perfect newbie build guide.

https://www.youtube.com/watch?v=XsyxM_j3Y4U

Here's a higher end build that can easily rival any OEM gaming build from LinusTechTips.

https://www.youtube.com/watch?v=roFb3TNePIg

Who this book is for

This book is a poor introduction to new users. There are much better books for that.

You also do not need this book for build guides. You can go to r/buildapcforme to post what you need. Usually, someone gives a parts list that you can buy. Your recommended to only do if your willing to order the parts that day. While I do include a few parts list, they do go out of date very quickly. Some parts go on sale on internet sites for only hours at a time to attract traffic.

This book instead will teach why you they selected those parts. Just because someone posted a build does not mean it was a good one. You will learn why they selected certain parts. You will learn about the current market and get a feel for the buildapc scene.

Will I save money?

On low end builds, no. The cost, usually is about the same or a little more. The biggest expense is a Windows license which can cost 80-120 dollars while Dell or HP is rumored to pay only $14.

On high end builds, yes. You can easily save money. You can build a maxed out single GPU system often for under $1,500 dollars while a equivalent Alienware may go for $3,000-4,000.

Why should I build my own computer?

You will learn an important skill. If a part breaks you will know how to replace it, since you built your computer. Many places will charge you $300 to replace a $50 part. Many places that repair computers have an unsavory reputation (BestBuy Geeksquad) that will try to sell you a part that you could get for much cheaper online.

You will get higher quality parts than you would get from most major OEM's. OEM's often skimp on unimportant parts that most consumers often don't know to be aware of. Such as offbrand power supplies that can not handle a full load, slow hard drives or buggy motherboards.

You skip the bloatware that gets shipped with most major PC's.

Check out r/buildapc

If you want to ask questions on building a PC, have someone check your build, or you encounter trouble r/buildapc is the place to go. Just ask your question. Both newbies and veterans ask for help. Don't worry about looking like a newbie; by reading this book, you already know more than most newbies who post.

Are you connected with r/buildapc?

As a mod or any other official way? No. I do spend way too much time on buildapc answering questions and looking at builds.

As always with these books, no warranty is given or implied.

Where to Buy

Computer Parts: use PCPartPicker to find the best deals

Amazon

No introduction is needed for the famous smile. I will simply list some of the best known reasons.

- Famous free shipping for orders over $35.
- No restocking or shipping fee for defective returns.
- Prices arn't as good as they used to be.
- Used to only charge sales tax in Washington state. Now charges sales tax in mutiple states. If you run a business, this can save you time since you do not need to personally send tax to the state on your large office purchases.
- The above points may not matter with a third party reseller.

Newegg

An online only tech store known for their excellent deals and good service. Their also known for taking on patent trolls that harm the tech industry.

- Usually offers the best prices on average.
- Sometimes offers free shipping on select parts.
- Only charges sales tax in California.
- When you research a product, the Newegg product description usually has the most complete information.

NCIX

NCIX is a chain of tech stores in Canada and the north east United States. Their also one of the main sponsors of LinusTechTips, one of my favorite Youtube tech channels-that's more than a good enough reason to check them out.

- Free Shipping on orders over $100.
- Will build and setup a full computer for you for an extra $50 and guarantee that build for a year.

Microcenter

Microcenter is a series of stores in the United States that has a devote following on r/buildapc and r/buildapcforme.

- Known for excellent Core i5/motherboard deals that easily beat Amazon and Newegg.
- If you bring in a PcPartPicker list they will often price match against Newegg and Amazon.
- Most of their deals have to be pick up in store.
- There are only a few Microcenter stores (often 1 per state) and they tend to be a long drive. Consider yourself lucky if you live near one.

Places to avoid

Fry's, TigerDirect and BestBuy. BestBuy's issues are well known, especially with GeekSquad. TigerDirect has a history of offering steep rebates and not honoring them. Fry will often have great deals and only a limited stock to try to get you into the store to sell you on other products with a higher margin.

Cables, adapters, and printer ink; buy them at Monoprice

Never buy cables and adapters from the store. Buying cables and adapters from the store is one of the easiest ways to get ripped off. Stores often sell say a 6 foot HDMI cable for $20 which you you can get from Monoprice for $4 with cheap shipping.

Monoprice is an online store known for excellent, low cost, vanity free products. Their shipping is cheap, no restock fee, accepts returns in 30 days and no clamshell packaging. http://www.monoprice.com

You can also get cheaper printer ink with remanufactured cartridges.

Check out this Lifehacker article for more information.

http://lifehacker.com/five-cheap-things-you-didnt-know-were-worth-buying-fro-757129552

Please note that I have not received any sponsorships from the above companies. What I write is my own experience or the experience I read from others. I do sell books through Amazon's KDP program, but I do not get any special treatment.

Power Supply Units (PSU)

No part of a modern computer build causes more newbie-bait issues than the power supply. Newbies either overspend (900 Watt Plantium for a single mid end GPU), or, even worse, underspend by buying an off brand PSU. The latter is more dangerous since a cheap PSU could fry your hardware and start a fire. If it can not deliver a steady, clean stream of power, your hardware could be damaged.

Recommedations

Unlike everything else in your computer, it is not uncommon to keep the power supply around for many years. It's worth it to put in some extra money into the PSU to get one that doesn't need to be replaced when you buy a hungry graphics card. Power supplies are rated in Watts (W). They come in different configurations such as modular and none modular, which simply means if cables can be plugged into the PSU or not. Nonmodular PSU's are often cheaper and smaller than modular PSU's, which is considered a premium feature for larger builds. You can get more information from this link:

http://www.hardwaresecrets.com/article/181

For a single GPU system you are recommended to get a 550-600W 80+ Bronze PSU. More than that is overkill unless your planning on getting a second GPU or putting in a ton of mechanical hard drives, which I recommend a 80+ Gold PSU.

The top 3 brands for PSU's are Antec, Corsair and Seasonic.

There are other high quality brands that I haven't listed but these are the top 3.

Remember, just because it says it's a 600W power supply doesn't mean you should go up to 600W's. The power usage of a computer varies depending on what devices you have plugged into the USB ports, fan usage on hotter days and especially if your gaming or not. A PSU also limits you in your future expansions. A good rule of thumb is to make sure that your ideal system only uses less than 80% of the rated power supply.

80+ Certification

The Tech industry is dominated by defacto standards like 80+ Certification from Ecos Consulting. They mandate a certain level of energy efficiency. For gaming, you really don't care about this. It will take you years to earn back whatever premium you payed with most builds. What you do care about is that this standard is seen as a measure of the quality of a power supply.

Bronze and Gold branded PSU's are the two most popular types bought.

The Dangers of Off Brand PSUs

Hardware Secrets reveiled a few lessor brands resold PSU's that faked certifications. You can read the full article for details, but these were the following brands that were shamed:

> Coolmax, KMEX, Aerocool & Spire.
>
> Aerocool seemed to be the more innocent of the offenders. They contacted Eco Consulting and got their PSU's certified after reading the article.
>
> Spire is the best example of an off brand power supply that does not deliver what it promised. According to Hardware Secrets, one of their PSU's was rated as 650W and could only deliver 550W.

http://www.hardwaresecrets.com/article/Power-Supplies-With-Fake-80-Plus-Badges/1054

Summary

> If your PSU can not deliver a steady, clean stream of power, your hardware could be damaged.
>
> A 550W or 600W 80+ Bronze PSU is more than enough for a single GPU gaming computer. You should not go below 80+ Certification.
>
> Antec, Corsair and SeaSonic are the 3 best known brands. You can not go wrong buying them.
>
> An offbrand power can damage your computer simply because they do not deliver what they promise, especially if you use a high end graphics card that pushes the PSU.

Cases

Cases are, for the most part, an aesthetic choice and therefore subjective. I really can't recommend which case you should buy as I have my own particular biases (Corsair and Silverstone). I highly recommend just typing in the case name that your thinking of in Youtube and looking at the reviews from good channels.

What I can tell you is the information between the different types. The case is one of the few parts of a computer you should spend a little extra on as it will last alot longer than the rest of the computer.

The majority of desktop PC's you see on the market use aa form factor, a standardize case design, called mATX. They typically have one or two 5.25 inch bays (for your DVD player) and two 3.5 inch bays for two hard drives.

The biggest thing you had to worry about is if your CPU cooler or graphics card will fit in your case. If you buy an ATX case from a good brand, most likely it can fit any GPU you throw in it.

Size

There are larger and smaller form factors out there. A larger form factor would be a full ATX case, or even larger, a full tower case. These case designs are humongous, offering storage for several 2.5 inch bays

On the smaller side is ITX. This case design can go down to those little 'cube' computers you see from makers like Brix. Or it can scale up to a nice media case like the Corsair 250D. Silverstone later in 2014 will be launching an ITX game console case that can hold a full size graphics card, they use a riser card. A riser card is a PCI Express card that extends it's slot in a 90 degree angle, allowing you to fit a graphics card in narrow, console like case.

What you must get

- USB 3.0 front ports. On the front of the case you will see USB ports that you can plug your USB storage drives into. USB 3.0 is blue unlike the usual metalic grey. You want to get USB 3.0 because it usually is 5 times faster. Naturally the USB device must support this functionality as well.

- A 2.5 inch drive, or a case that comes with a frame to store the 2.5 inch drive. If it doesn't and your using an SSD, just use velcro, but this usually comes standard with all non-ITX cases.

Brands

Corsair, founded by former AMD engineers, they brought innovation to the case scene. Pioneering large, easy to work with cases that have an outstanding build quality.

These are the two cases I would recommend to new users:

Carbide 200R (ATX) Easy to use case, especially with an mATX motherboard. Obsidian 250D (ITX) One of the best, no compromises ITX case on the market.

OS: Linux & SteamOS

Now many of you have heard of Linux. You may have also heard about SteamOS and are wondering what it has to do with Linux. Well good news, I can tell you, i've been using Linux since I was 11 and was a refugee from the monstrosity that was Windows 98.

Linux is part of an open operating system where the code is under a Free Software license that we call Linux for short. It is maintained by both volenteers and large companies. It's an open operating system that can run on very small devices such as your mobile phone (Android) and very large super computers that model weather patterns, find cures for diseases, or allows the NSA to spy on the entire Internet.

SteamOS

Since it's an open system, Valve decided to make their own version of Linux and call it SteamOS.

Benefits of Linux

Convenience, one tool manages updates for ALL your software and drivers.

Pitfalls with Linux

Linux does not get along with cheap hardware. Many cheap wifi or bluetooth usb dongles that gives you wireless internet access will not work with Linux. These dongles are so cheap they have to intergrate deep into the Windows or the Mac OS operating system which is not only slow, but also a security risk. Because of these factors Linux support is seen as a sign of quality and security. Make sure any external hardware you buy supports Linux by checking the packaging, looking online or asking on reddit.com/r/linux

Some newer AMD graphics cards do not work with Linux. AMD has a horrible track record of delivering proper driver updates for Linux to support newer cards like the 290X as of March 2014.

Newer Intel processors often require you to install the latest version of Ubuntu Linux to run correctly.

Channels that I Watch

In no particular order, these are the Youtube channels that I watch for pc parts. There might be better channels out there, there might not be, but these are the ones that I personally have found very useful.

*> Austin Evans *> Linus Tech Tips *> TastyPC *> Tek Syndicate *> Jayz Two Cents

NewEgg TV is also a nice channel, but they do hold back on critism of vendors, since they do sell parts.