
WHAT COMPUTER SHOULD I BUY?

A GUIDE TO BUYING A NEW COMPUTER

2012 EDITION

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INTRODUCTION

There are many different kinds of computers to choose from and finding the one that is right for you and fits your budget can be difficult. The purpose of this book is to describe the parts of the computer and the benefits and pitfalls of these parts so that you can make an educated decision on your computer purchase. This guide covers Windows based computers.

The target audience for this document is anyone that wants to catch up on the latest computer lingo in order to make educated decisions when buying a computer. This book is written with a focus towards the computer novice while also providing up to date info that is useful to novice and expert alike. This book is great for the Grandmas and Grandpas, the first time computer buyers, and the casual computer user. Here you will find the bits and pieces of computers explained in simple terms so that you can make wise decisions when purchasing a computer, and to understand the lingo when discussing your purchase with store sales staff, or friends and family.

PC VS. MAC

Before we begin I want to touch briefly on the PC versus Mac debate. The two major types of computer systems are PCs (Windows based) and Macs (Apple). There are advantages and disadvantages of both. The Mac is generally more user friendly than the PC and is less prone to virus attacks. Macs are often used in schools and in the advertising, graphic arts, and marketing fields. The downside to the Mac is mostly price. Macs are typically more expensive than their PC counterparts.

The PC is generally more common and sees higher total sales numbers. The PC runs the Microsoft Windows Operating System. When you hear the term "PC" it typically refers to a Microsoft Windows based computer. The PC is often the computer of choice for business environments. This is due to the wide acceptance, and also due to the fact that most companies are invested in Windows based servers, which integrate more seamlessly with Windows Desktops (PCs.) The PC is often less expensive than the Mac, especially when shopping the low end of the price spectrum.

RULES OF THUMB FOR COMPUTER BUYING

There are a few simple rules of thumb that will serve you well in your computer buying journey.

1. Buy as much computer as you can afford

Since computers are very technology driven, and newer technology always costs more, then it stands to reason that more expensive computers will have more of the newest technology. This means the more expensive computers will generally run faster and perform better than their lower priced peers. More expensive computers with more of the latest technology will also have a longer usable life. The typical lifespan for a new computer is three to five years. A more expensive computer will have a lifespan towards the longer end of that spectrum.

2. Any new computer will meet the basic needs of the average home computer user

This sounds contrary to rule one, but if you are buying a computer for personal use in your home, you do not necessarily need the fastest, most expensive computer available. In fact, if you are buying a computer for home use any computer on the market should meet your needs.

That should take some of the pressure off, knowing that you really cannot go wrong. I have several computers in my home, one of which is a six year old computer that I use for Internet, writing, word processing, simple spreadsheets, and storing our family pictures. It works perfectly well for my home computer needs.

Most people do not need the latest and greatest computers for home use. Typical home use consists of Internet surfing, email, word processing, simple spreadsheets, basic photo retouching, and watching videos. If that sounds like you, then most any computer on the market will meet your needs. If you are into graphic intensive video games, frequent audio or video editing, or something else that is outside of the norm, only then would you be required to look at something a little more powerful and more expensive.

3. The sweet spot is in the middle

The sweet spot where you get the best value in computer buying is somewhere in the middle of the price spectrum. This middle area will get you a computer that will perform well and have a good lifespan.

4. Your computer is obsolete the minute you buy it

This statement may be a little overdramatic, but it has some truth to it. Technology changes at such a rapid pace, that within a few weeks or months of buying a computer, something newer and faster will become available.

On average you will need to buy a new computer every two to five years to keep up with technology. If you want to keep up with the computer buying Joneses, you will have to buy a new computer every year to stay on top of the latest cutting edge technology.

Don't sweat it too much. The average computer buyer doesn't need the newest whiz bang computer. It's much easier to just jump into a middle of the road computer and use it until it no longer meets your needs.

WHERE TO BUY YOUR PC

MAJOR RETAIL STORE

Computers are available from a variety of sources. The first place you might think to look is at one of the big (brick and mortar) retailers, such as Best Buy, Wal-Mart, or Office Depot. The big retailers offer a variety of different computer choices and can be easy to shop at. You pick the computer you want, pay for it, and walk out the door. Another reason to shop at a big retailer is convenience. You get to take your computer home that very day. If you have a problem with the computer and need to return or exchange it, you might find it easier to deal with a live person face to face. (Be sure to educate yourself on the store's return policies and restocking fees before making a purchase.) You can also find good deals and sales at the big retailers, especially as new models come out and older inventory needs to be moved to make way for the new.

MAJOR ONLINE RETAILER

Another way to buy a computer is over the Internet through a web based retailer, like Amazon, TigerDirect, or NewEgg. Through web based retailers you have access to a wider variety of brands and models. Many of these retailers also have sections for reviews and ratings from customers that have purchased these products. This is a good way to gauge the buyer satisfaction or annoyances. The downside is that you have to wait a little longer, since they'll have to ship your computer. Also, any problems need to be dealt with over the phone and returns would be by mail (or other shipping method) rather than in person.

DIRECT FROM THE MANUFACTURER

Similar to buying from web based retailers is purchasing directly from the manufacturer, like Dell, HP, Toshiba, Sony, or Acer. This is typically done over the Internet, although it could be done by phone as well. For this method, you'll need to decide on a brand in advance, but within that brand you have the freedom to pick and choose all the components that go into your computer, upgrading any parts that you feel necessary. This ability to customize the computer is one of the biggest benefits from buying direct. The downside is this customization will take more time as the computer is built to your specifications. Then you have the same shipping and return issues as with the web based retailers.

INDEPENDENT RETAILER OR BUILD YOUR OWN

The final alternative is to buy a no name clone or to build your own. There are many small companies out there that are building computers to sell locally. You'll often be dealing with the owner of the store or at the very least, staff that report directly to the owner. At independent retailers customer service is (or at least should be) a very high priority. You are likely to get very good service and also good advice. Another benefit is that you can get a computer built to your exact specifications, using the best parts from a variety of manufacturers. The downside is the

warranty service. Check with the store about their warranty options before making a purchase. Some stores may offer warranties, but others may leave it up to you, the consumer, to place warranty service requests with the manufacturer of each individual component.

QUESTIONS TO ASK

The price from all types of resellers is likely to be similar and competitive. The quality across the different manufactures is vastly better now than it was in the past. Most major brands now have good quality and reliability. If you want specific information on quality and support, I recommend checking out ratings from Consumer Reports. Three things to check for on any computer purchase, and something than many people overlook are:

- 1) Does the manufacturer have a toll free technical support phone number? (Most do, but if you are buying a custom built clone, some of the component makers may not.)
- 2) Is the technical support based in your country of origin or is it outsourced to another country?
- 3) What is the length of term on the warranty coverage? (Most manufacturers offer warranty lengths from one to three years.)

COMPONENTS OF A COMPUTER

CPU

The CPU, or central processing unit, is the brain of the computer. The CPU controls all the action that occurs inside the computer. Intel and AMD are the two main manufacturers of CPUs. Intel is the market leader, and will probably stay that way for quite some time, but the AMD offerings are usually comparable (and sometimes better) than the those from Intel. The current generation of processor is usually described in terms of number of cores and processor speed.

CORE

This term was first introduced to the mainstream in 2006. In laymen's terms it is basically the number of processors on a single chip; Duo or Dual meaning two processors and Quad meaning four processors. More is usually better, and this will definitely be the case when all software begins to take advantage of multiple cores. In addition to the number of cores, be sure to take processor speed into account. The best values will usually be a compromise between number of cores and processor speed.

PROCESSOR SPEED

Processor speed is more accurately defined as clock rate. I usually just use the term "speed," as that's how the term is usually used in normal conversation. This is the GHz (gigahertz) that you will see tacked on to the end of the processor name or specifications. In general a higher value for GHz means a faster speed. Most processors (or cores) currently range from 1.50 Ghz to 3.60 Ghz.

Recommendation: Gamers or extremely high end users may want to buy the best available. For everyone else, I recommend buying in the middle to upper middle section of the technology curve. It is here you will find the best value for your money. The newest technology is always the most expensive, and when a new chip comes out, the previous model usually drops in price. The oldest chips will be cheaper, but will become outdated more quickly. An easy way to determine what is in the middle of the technology curve, without having to worry about terminology, is to simply look at the price points and pick one in the middle of the range.

PROCESSOR (CPU) TYPES

This section gives specific information regarding CPUs, and has a tendency to change quickly. (The information in the previous section is more general and therefore more timeless.) This section goes into more detail on the current technology so you can be aware of what is currently available. Important Note: This information changes quickly so I recommend checking with the manufacturer for all the latest news and product lineups. Also, these charts are a high level overview. Each processor has several different versions that have different specifications. To see which processor

Intel recommends, check out this link:

<http://www.intel.com/consumer/products/processors/comparison.htm>

INTEL'S 2012 PROCESSOR LINEUP

Intel 2012 Processor Quick Reference Desktop Models		
Name	Cores	Speed
i7 Extreme	4 or 6 cores	3.20 to 3.46 Ghz
i7	4 or 6 cores	2.53 to 3.50 Ghz
i5	2 or 4 cores	2.40 to 3.60 Ghz
i3	2 cores	2.93 to 3.40 Ghz
Pentium	2 cores	1.60 to 3.73 Ghz
Celeron	1 or 2 cores	1.60 to 2.70 Ghz
Atom	1 or 2 cores	1.60 Ghz

Intel 2012 Processor Quick Reference Laptop Models		
Name	Cores	Speed
i7 Extreme	4 cores	2.00 to 2.70 Ghz
i7	2 or 4 cores	1.06 to 2.80 GHz
i5	2 cores	1.07 to 2.66 Ghz
i3	2 cores	1.30 to 2.66 Ghz
Pentium	1or 2 cores	1.00 to 3.46 Ghz
Celeron	1 or 2 cores	1.06 to 2.30 Ghz
Atom	1 or 2 cores	0.80 to 2.13 Ghz

AMD'S 2010 PROCESSOR LINEUP

AMD 2012 Processor Quick Reference Desktop Models		
Name	Cores	Speed
FX	4, 6, 8 cores	3.10 to 4.20 Ghz
A-Series	2, 3, 4 cores	2.10 to 2.90 Ghz
Phenom II	2, 3, 4 cores	2.70 to 3.70 Ghz
Athlon II	2 cores	2.50to 3.40 Ghz
Sempron	1 core	2.70 to 2.90 Ghz

AMD 2012 Processor Quick Reference Laptop Models		
Name	Cores	Speed
A-Series	2 or 4 cores	2.50 to 2.70 Ghz
E-Series	1 or 2 cores	1.30 to 1.65 Ghz
C-Series	1 or 2 cores	1.00 to 1.33 Ghz

WHICH PROCESSOR IS BEST

A basic rule of thumb is to buy as much processor as you can afford. If you can afford a CPU with the newest technology, then by all means, buy that. The processor is the hardest and most expensive part of a computer to upgrade. Many of the other components can be upgraded more easily. This means that the most important decision in buying a computer is choosing the processor. Of course, you may not need the fastest processor available. If you are using the computer for web browsing or typing school papers, then a lower end model will do just fine. If you are going to be doing some heavy gaming, designing graphics, or running multiple large applications, then you should buy towards the higher end of the spectrum. As I mentioned earlier, the best value is typically one or two levels behind the newest technology.

RAM (MEMORY)

RAM, Random Access Memory, is commonly just referred to as “Memory.” Memory is measure in Gigabytes, abbreviated GB. This is the second most important decision for your computer purchase. RAM is used by the computer as a temporary storage area for active programs and processes. Any data that you are using or inputting is temporarily stored in the RAM, where it can be manipulated and used by the computer. With RAM there are a couple of things to consider: How much, and what type and clock speed.

HOW MUCH MEMORY

How much is the easiest question to answer. In general, the more memory the better. More memory allows the computer to store more active processes. When a computer runs out of (RAM) memory, it begins using hard disk space as a substitute. This is referred to as “Virtual Memory” or “Swap Space,” and is much slower than using (RAM) memory. To limit this, you should beef up the computer with plenty of memory. The good news is, memory is one of the easier upgrades, so if you can’t afford it now, you can always upgrade later.

MEMORY TYPE AND SPEED

Most new computers will use the newest type of memory available. Currently this is DDR3 memory. Older computers may use DDR2 or DDR. All you really need to know is that any single type of memory isn’t universally accepted in any computer. **Each computer will require a specific type of memory.** This generally applies to type and speed.

Recommendation: To take the guess work out of upgrading memory, I recommend purchasing memory upgrades from Crucial.com. They have great prices and they have a terrific wizard for selecting memory that is appropriate for your computer.

MOTHERBOARD

The motherboard is the circuit board which everything in the computer plugs into. The CPU, memory (RAM,) disk drives, keyboard, mouse, and monitor all plug into the motherboard. If you are buying a name brand computer from a manufacturer or retail store you won’t typically need to concern yourself with choosing an appropriate motherboard. Companies like Dell, HP, Sony, etc, will choose the motherboard for you as they will use that works best with their systems.

If, however, you are choosing to build your own computer or buying from an independent retailer, you will have a variety of choices. The main concerns will be the type of processor supported, the number and type of expansions slots, and the number and type of memory slots. You’ll also need to consider whether you want things like sound and video built in, or if you want to purchase separate, upgraded, cards. The best way to start is to decide on a processor first, and then search for a motherboard that will support that processor. From here you can whittle down the list based on your other requirements.

DISK DRIVES

Disk drives are a very important part of the computer, but choosing them is relatively easy. There are several types of disk drives: Hard drives, floppy drives, CD/DVD drives, external hard drives, and flash drives.

HARD DRIVES

The hard drive is the device that stores all the data within the computer. It stores the operating system files, the program files, and lots of data (like pictures of the grandkids.) Within the operating system, you will typically see the hard drive as the “C:” drive, although sometimes they can take on additional drive letters.

Tip: Some individuals tend to confuse hard drive storage with memory. While technically any device that stores data can be referred to as memory, the common usage is to refer to RAM as memory and Hard Disk as storage. RAM or memory is short term storage (for use by the system,) and hard disk is used for long term storage (of files and programs.)

As mentioned above, the hard disk is the primary method for storing files and data. Thus, the primary question becomes: “How much storage space do I need?” The answer is typically as much as you can get, but I prefer to look at your needs and price points. Disk storage is sized in terms of bytes. Typically you will see hard drives referred to in sizes of Gigabytes (GB), although you may see some in Terabytes (TB, which is 1000 Gigabytes.)

Your storage needs depend on how you plan to use your computer. Are you just surfing the Internet and emailing your friends? Those uses don’t require much disk space. Are you snapping photos of the kids or grandkids with your digital camera? This use would require more disk space so that you have room to store all those photos.

Maybe you plan to download a lot of music or video. If you plan to download video or music and store them on your computer you’ll need a lot of disk space, but if you just plan to listen to music online or view videos on YouTube, then less space is required. It all comes down to what you are planning to store on your computer. Here is a chart indicating how much space is required for a few different activities. It should help you get an idea of disk sizing.

The second metric I look at for disk sizing is price point. The newest biggest drives are always the most expensive, so it’s often wise to select something a bit smaller to get a better value.

If you are buying a computer from a major retailer or manufacturer, then all you really need to worry about is size. If you are building your own or buying from an independent retailer, then there are a couple other terms you may want to be familiar with: Interface and speed. Interface refers to the type of connector used to plug the drive into the computer. Most drives now are SATA drives which replaced the older technology of IDE and EIDE. The speed is referred to in terms of RPM (revolutions per minute.) With speed, it’s best to go with a higher number, and thus a faster speed.

On the Horizon: Traditional hard drives rely on a spinning magnetic disk. Due to the fact that it contains these moving parts, it can be more vulnerable to failure. A new type of

drive, called a solid state drive, is starting to enter the scene. This type of drive has no moving parts and stores data on chips, similar to a flash drive. As the technology improves the prices will come down, and these solid state drives will likely replace the current generation of spinning magnetic disk hard drives.

CD/DVD DRIVE

I'm lumping together CD and DVD drives as you will rarely see a single function CD drive anymore. All DVD drives have the ability to read both CDs and DVDs, and all DVD writers (burners) have the ability to read and write to both CDs and DVDs. It is also becoming increasingly common for systems to include a DVD writer, although some manufacturers will list a DVD (reader) drive to save cost. The cost, however, is minimal so I recommend upgrading to a DVD writer.

In its basic form a DVD writer will allow you to read and write to DVDs. Writing to a DVD is a useful feature for archiving or backing up data (documents, pictures, etc.) DVDs are cheap to buy and last for a long time (when stored properly.) Typical DVDs are rated for 25 years of storage. **A DVD holds 4.7 GB** of data. As a point of reference, a **CD holds 750 MB** (or .75 GB) of data. There are a couple of other types of DVD that you may want to be aware of: Dual Layer and BluRay.

Dual Layer DVDs hold 8 GB of data. Most DVD readers or writers can read dual layer DVDs, but to write them, you'll need to make sure you have a dual layer capable DVD writer. Most new DVDs include this feature. Note: my experience with Dual Layer DVDs has not been great; I have experienced a high failure rate when writing these disks and the quality of the disk seem to vary between brands.

BluRay DVDs hold 25 to 50 GB of data. It's a new technology created by Sony, and it's what you see all the High Definition movies released on. You will need a special BluRay drive to be able to read this format, as a standard DVD drive is not capable of reading BluRay. Production release DVDs can hold up to 50 GB, but the consumer version is currently limited to 25 GB. Within the last year, BluRay writer drives have become much more affordable. The BD-R disks are still a bit expensive however.

EXTERNAL HARD DRIVES

External hard drives are used for storing additional data or backing up your primary hard drive. These devices plug into your computer using a USB, Firewire, or ESATA cable. Most common right now is a USB connection, although I'm seeing more and more devices start to offer ESATA as an improved alternative. External hard drives come in a variety of capacities and form factors. Some are small enough to fit in a pocket while others are a bit larger. Since these external hard drives are simply internal hard drives packaged in a hard shell, the capacities are the same as internal drives.

FLASH DRIVES

A flash drive is a storage device that is small and portable. It has a USB interface and easily plugs into any computer. They are powered by the USB port, so no extra cables are needed. A flash drive is typically used for storing items for transfer from one computer to another, and has essentially replaced the function of a floppy disk (which is mostly obsolete.) Typical capacity for these devices range from 4 GB to 64GB, but as technology advances, that number continues to grow.

PERIPHERALS

A peripheral is a device attached to a computer, but whose primary function depends on the computer. These include input devices like the keyboard and mouse and output devices like a monitor or printer.

KEYBOARD

Using the keyboard is the primary way to input data into the computer. I am sure you know what a keyboard is so I will not go into much detail to describe it, but I will tell you of a few different kinds of keyboards. Keyboards are often described by the way they connect to the computer. A USB keyboard attaches by a cable to the USB port in your computer. A wireless keyboard attaches wirelessly, usually to a small box that is then attached to the USB port. Bluetooth keyboards attach wirelessly to a Bluetooth enabled computer (not all computers support Bluetooth.) On older computers you may still see a small round connector; this is for a PS/2 keyboard. If you do a lot of typing, you might consider an ergonomic keyboard, which is curved to better fit the angles of your arms as you type, and is more comfortable for the wrists.

MOUSE

The mouse is a very important input device because it makes getting around in your computer easier. The mouse controls an arrow which can be moved anywhere on the screen. The mouse is good for doing tasks such as moving items on the screen, opening programs, or highlighting text. There are several types of mice and several input devices similar to mice. Alternatives to the mouse include the trackball, touchpad, and touchscreen.

A standard PC mouse has two buttons and a scroll wheel. This standard mouse will accomplish most any task that a mouse needs to accomplish. Some higher end mice come with more buttons, which can be assigned to specific tasks, like acting as the “back” button in your web browser. Most mice use a laser to sense their position, although you may still find some that use a little roller ball mounted in the bottom of the mouse. Don’t even bother with a roller ball mouse as the rollers tend to foul up; go with a laser mouse instead. (Note: Laser mice don’t work on glass or reflective surfaces.) Mice also come in a variety of shapes and sizes. While the standard mouse is acceptably comfortable, other shapes might work better for you. Choosing a shape or size comes down to personal preference, and if you choose to go with an upgraded mouse, I recommend trying one out of the box to see how well it fits your hand and how comfortable it feels.

Terminology: The mouse comes with its own set of terms.

Click - A click is a press of one of the mouse buttons.

Right Click and Left Click – The right click and left click refer to the button you are using for the click.

Double Click - A double click which refers to clicking twice in rapid succession.

Scroll Wheel - The scroll wheel allows you to scroll up or down a page displayed on the screen.

Drag and Drop – A drag and drop is a process of clicking on an item, holding the button in, moving the item onscreen, and then dropping the item by releasing the mouse button.

The **trackball** is similar to a mouse, but has a ball on top that is controlled by the thumb. Some people prefer these over mice, but it's really just a matter of preference. A trackball is sometimes easier for children to use because they can let go of the ball to click the buttons, although most children can quickly adapt to either device.

The **touchpad** is typically found on laptops. It's a small rectangular pad that uses your finger to control the movements of the arrow.

The **touchscreen** is rapidly becoming common place, especially among mobile devices. Most computers are not available with touchscreens. Touchscreens are most popular on cell phones and tablet computers. Look for this technology to continue advancing in the near future.

MONITOR

The monitor is the primary output device on a computer. There are a variety of different types, sizes, and resolutions, as well as several different types of connectors. I will outline this information so that you can get a good handle on the lingo and make a wise decision when purchasing a monitor.

MONITOR TYPE

There are a couple different types of monitor. It wasn't long ago that we had big honkin' CRT (cathode-ray tube) monitors sitting on our desks. Now, most folks have moved to the LCD (liquid crystal display) monitors. LCD monitors are thin and take up little space on the desktop.

MONITOR SIZE

Sizes vary greatly, and are measured diagonally across the viewable space on the monitor, exactly the same as TV sizes are measured. Choosing a size depends on personal preference and price. You'll want to find one that "feels" right in the space you will be using it. As a general rule, bigger is better, as long as you keep in mind the available desk space and the distance from the user. Price point may determine the size more than other factors.

MONITOR RESOLUTION

Resolution is described in pixels. Generally a higher maximum resolution is more desirable as it will generate a sharper image. As a point of reference, a 19 inch monitor is typically viewed at 1280x1024 (1280 pixels wide by 1024 pixels tall.) Keep in mind; you don't need to view the monitor at the maximum resolution, you can change the resolution within Windows. You may want to do this if the icons and text on the monitor are too small; you can reduce the resolution to make the icons appear larger.

ASPECT RATIO

Like TVs, most monitors are now sold as "Wide Screen," meaning they have a 16:9 aspect ratio. The older style "Letterbox" screens are 4:3. There is also an in-between with a 16:10 aspect ratio. The downside to this whole widescreen phenomenon is that smaller screens are now even smaller. That is although they are wider, they are much shorter. One of the reasons for monitors going to a widescreen format is so that manufacturers can standardize the glass across computer monitors and TVs. So ultimately the consumer reaps some benefit in the form of lower prices.

CONNECTORS

Not long ago, there was only one type of display connector, the good ole' VGA connector. The VGA connector is an analog connection, and therefore had room for improvement in this digital age. This improvement brought forth the digital DVI connector. Most (but not all) monitors have inputs for either type of connector. It's easy to distinguish the two connectors, VGA are typically Blue and DVI are typically White.

A couple of newer connectors are slowly making their way to computers and computer monitors. These include the HDMI connector, which is the standard for newer TVs, and the Display Port (and Mini Display Port) connector. If you decided to go with either of these connectors, just make sure both the computer and the monitor have the needed connections.

DUAL MONITORS

If one monitor is good, two is even better. Dual monitors are particularly useful if you often find yourself switching between applications. Instead of switching back and forth, you can just put one application on the primary monitor and the other application on the secondary monitor. Moving back and forth is seamless, as the second monitor acts as an extension of the first. Windows natively supports the ability to connect more than one monitor to the computer. On the hardware side, you need either a video card that supports two monitors, or an additional (single port) video card. If you plan to use two monitors, then I recommend purchasing your computer with a video card that natively supports two monitors. By keeping both monitors on the same video card, you limit conflicts and potential configuration issues.

VIDEO CARD

The video card is the part of the computer that sends the images to the monitor. Many new computers have the video card built into the motherboard. A built in video card is acceptable for most individuals. If you do a lot of gaming, heavy graphics or video editing, or CAD (computer aided drafting,) then you might want to upgrade to a non-built in video card. You may also need to upgrade if you wish to run dual monitors. There are a couple of considerations when choosing a video card. First, make sure the connector will work with the monitor you plan to use (VGA or DVI being the most widely accepted.) Second, pay attention to the memory on the Video Card. Video cards contain their own memory chips, which helps images load faster. More is better, with ranges of 64 MB up to 1 GB. One final item to note, if you are building your own system, or if you are upgrading an existing system, you'll need to pay attention to the type of slot the video card plugs into. You need to make sure the video card is made for the type of slots available in your motherboard (typically PCI Express or AGP.)

SOUND CARD

Like the video card, the sound card is usually built into the computer's motherboard. Unless you require high end sound from your computer, these built in sound cards will work just fine.

CASE

One of the easier decisions in the whole computer buying process is deciding on the type of case. Cases generally come in three forms: Tower, Desktop, or Small Form Factor (or Slim). Towers are typically the larger variety of case, and have the most room for expansion. They are usually placed on the floor, although some prefer to place them on the desk. Desktops are slightly smaller than towers, yet still offer room inside for expansion. As the name implies, desktops are designed to sit on top of a desk. Small Form Factors (SFF or Slim) are the smallest size of case. Their small size makes them great for placing anywhere. However, they do have a couple of limitations. The slots for additional components like graphics cards or sound cards are often half height, meaning you may be limited in your choices. Their small size also limits space for additional disk drives, both hard drive and CD/DVD drives. Small Form Factor cases are also more prone to cooling and heat issues since there is less space for proper ventilation.

COMMUNICATION DEVICES

There are a number of ways to make your computer communicate with other computers. The following sections will cover the common methods and devices.

NETWORK CARD

The network card has become very common and is typically built into the computer's motherboard. A network card allows you to attach your computer to a network, or to attach it to a high speed internet modem. Network cards are standard on most computers now. The only option to consider with Network cards is the speed. Speed is measured in Megabits per second (MB/S.) Network cards will be either 10, 100, or 1000 MB/S. The faster the better, and with price differences minimal, you might as well opt for the 1000 MB/S (also called Gigabit) card. Note that a 10 MB/S card is still faster than most high speed internet connections, so the increased speed of the network card will not necessarily speed up your Internet connection.

WIRELESS NETWORK CARD

A wireless network card is similar to a network card, except it operates over the air instead of through cables. A wireless network card is often referred to as a WLAN (wireless local area network) card, to distinguish it from a cell phone based WWAN adapter. WLAN cards are classified by technology standards and referred to by letters: A, B, G, N. The further down the alphabet you get, the newer the standard, and the faster and/or the greater the range. Most WLAN cards you'll see today are either G or N. Note: to use a WLAN card, you'll need a wireless access point. In the home environment, this is usually a Wireless Router attached to, or built into, your cable or DSL modem.

WWAN CARD

A WWAN adapter is a device that connects your computer to the Internet through a cellular telephone network. These are typically used on laptops so folks can access the Internet while traveling. To use WWAN you will need a separate Data plan from your cellular network provider.

MODEM

The modem has largely been replaced by a combination of the network card and an external Cable or DSL modem. Some computers still come with modems, but are mostly used when access or cost prohibits you from using the high speed alternative of cable or DSL.

PRINTERS

Printers fall into two main categories, ink jet or laser jet. Each has its own set of benefits, and choosing one depends on your own personal needs. There is also a third subset call All-In-Ones or Multifunction Devices that combine the functions of several devices.

INK JET PRINTERS

Ink jet printers squirt little droplets of ink onto the paper. The ink dries almost instantly and the quality is very good. Ink jet printers are the most cost effective printer for low volume color printing. When purchasing an ink jet printer, be aware of the cost of replacement ink cartridges, as these will add up to more than the cost of the printer over time.

LASER PRINTERS

Laser printers produce the best quality print, but are often more expensive than ink jet printers. Laser printers use a dry toner which is fused to the paper with heat. Black and white laser printers are reasonably priced, and are more cost effective than ink jets if you plan to do a large volume of black and white prints. Color laser printers are also available and offer better quality than ink jets, but are a relatively expensive alternative to their ink jet counterparts.

Many printer models now offer the option of being networked, either by wire or wireless. This is a great option if you have more than one computer in the house as it allows everyone access to print to a single shared printer.

SCANNERS, ALL-IN-ONES, MULTI FUNCTION PRINTERS

A scanner is a device that allows you to copy a written page or picture directly into your computer. The stand alone scanner has become mostly obsolete, with a multi function device taking its place. These devices typically combine a printer, a scanner, and a fax machine into a single device. This could be a good alternative if you want some flexibility out of your printer.

PROTECT YOUR INVESTMENT

With all the money you put into your computer system, it would be tragic to be destroyed by a power spike. Equally as tragic, or perhaps more so, would be losing the data on a hard drive due to drive failure. It's important that we protect our investments, both the hardware and the data.

PROTECT YOUR HARDWARE

SURGE PROTECTOR

A surge protector is an easy and inexpensive way to protect against this. A surge protector will blow a fuse if it gets hit by a surge of electricity, thus protecting your computer from being fried. A surge protector is not complete insurance, however. If you get a direct lightning strike, a surge protector will not do much good. The only sure protection against lightning strikes is to unplug your computer during thunderstorms.

BATTERY BACKUP (UPS)

Another alternative is a Battery Backup (UPS.) UPS stands for uninterrupted power supply. It protects against surges and power outages. It contains a battery backup which will keep your computer running for a short time after the power goes out. This is something you will be thankful for after you have typed about ten pages and the power goes off. You will have enough time to save your work and turn off the computer before the battery runs out.

PROTECT YOUR DATA

A hard drive (the device containing all your data) can fail at any time and without warning. This is due to the fact that it has moving parts that can fail over time. You can prepare yourself to better handle this situation when it arises.

ORIGINAL MEDIA AND ACTIVATION KEYS

Make sure you save all the original disks that came with your computer. Note that some computers don't come with disks but rather come with instructions for you to make your own copies or backups of this media. Make sure you have these disks, as this will be the only way for you to return your computer to its original state after a hard drive failure. Also make sure that you keep the activation keys or serial numbers to activate the software. Most software will require activation after an install or reinstall.

BACKUP YOUR DATA

Your data (files, documents, pictures) is likely the most valuable part of your computer. Things like family photos, school papers, or business documents. Luckily it's easier than ever to keep this data backed up. Basically we have an easy, medium, and hard way of doing this.

The hard way is to backup all your data to CD or DVD. This is a manual process and could be quite time consuming depending on the amount of data you are backing up. If you use this method, be sure to check the disk after you copy the data to make sure that it is readable and that all the data copied successfully. This is the least expensive method.

The medium way is to use an external hard drive. Many of these drives come with a backup utility that will make it easy to select files to backup and create a schedule for backups to run automatically. External drives have larger capacities than CD and DVD making it easier to backup a large amount of data.

The easiest way is to backup using an online service. This requires a high speed internet connection, and copies the data to a secure off-site server. This is great because it will keep your data safe in the case of physical damage to your home or computer, like fire or natural disaster. It's easy to use because it allows you to select files to backup and then set a schedule so it happens automatically. It's also scalable with a seemingly unlimited amount of storage possible. This is likely the most expensive method, as it requires a monthly fee to use the service.