

# Bits of Bytes

Newsletter of the Pikes Peak Computer Application Society, Colorado Springs, CO

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Issue 4



## The Prez Sez

by John Pearce,  
President,  
P\*PCompAS

The April meeting presentation is by APCUG Speaker Rob Truman on Internet Security for Seniors. V.P. Cary Quinn has arranged for Rob Truman to help us improve our scam detection and defense. When you have a moment, take a look at Rob's [Geezer Tech](#) website for lots of good tech information. ☺



## Meeting Minutes

by Greg Lenihan,  
P\*PCompAS Secretary

President John Pearce opened the 6 March 2021 membership meeting at 9:01 am via Zoom. The minutes from February were approved by show of hands.

## OFFICER REPORTS

Vice-President Cary Quinn said Judy Taylour would be giving the presentation today.

Secretary/Newsletter Editor Greg Lenihan announced the next newsletter deadline as 20 March.

Treasurer Chuck Harris reported we have \$2225.56 in savings and \$871.29 in checking. Chuck sent a \$150 check to the church on 17 February, and the church acknowledged its receipt.

Membership Chair Ann Titus had nothing to report.

**Next P\*PCompAS meeting: Saturday, 3 April 2021**  
APCUG speaker Rob Truman is planned to present "Internet Security for Seniors."

BOD Chair/Librarian Paul Godfrey said the Board would be meeting after the meeting today. There was nothing to report for the library.

APCUG Rep Joe Nuvolini said the website is running and he posted the program for this month. The church has new security instructions when opening up and leaving. This mostly pertains to Joe and David George.

## OLD BUSINESS

A review of the treasury account has not been performed yet. Toni Logan and Cary Quinn were waiting on information from Chuck Harris.

NEW BUSINESS: None

## ANNOUNCEMENTS

The next social breakfast meeting for the digerati will be on Saturday, 20 March, at 9 am via Zoom.

Our next membership meeting is on 3 April.

John Pearce requested a new procedure, whereby those wishing to speak at our meetings raise and lower their hands using the Reactions button in the lower Zoom window.

John Pearce said he is looking at live meetings some months in the future, but also at ways to broadcast them for those that can't attend. Ann said it is called a "hybrid" meeting. Peter Rallis said his Astronomy Society has meetings and also posts to YouTube. Cary said people watching on YouTube could use Chat to comment during

the meeting. John said there were audio issues using Zoom previously at the church.

## AROUND THE ROOM

John Pearce had his HP notebook die the previous weekend. He took it to Jon Peters at SpringsGeek on 3611 Galley Road, and he recommended a new power block and battery. He ordered parts and installed them and it now works.

Joe Nuvolini had a little problem with his external hard drive plugged into his computer and moved it to his 7-port hub during the meeting. He really likes his hub. Everything works when plugged into it. If anyone wants one, contact him for the information.

Cary Quinn says that Bill Gates has his own YouTube channel, which he just subscribed to. He also had two HP laptops that worked with their power cords, but he

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**Officers**

**President: John Pearce**  
*jlpnet@comcast.net*

**Vice President: Cary Quinn**  
*cary.quinn@gmail.com*

**Secretary: Greg Lenihan**  
*glenihan@comcast.net*

**Treasurer: Chuck Harris**  
*charris7525@gmail.com*

**Staff**

**APCUG Rep/Webmaster: Joe Nuvolini**  
**Barista: David George**  
**Drawings: Cary Quinn**  
**Editor: Greg Lenihan**  
**Librarian: Paul Godfrey**  
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**Zoom screenshot of the 6 March 2021 membership meeting**



**Zoom screenshot of the digerati attending the 20 March 2021 breakfast meeting.**

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## What Is a Motherboard?

by Ian Paul, reprinted with permission from [HowToGeek.com](https://www.howtogeek.com)

Original article at: <https://www.howtogeek.com/713333/what-is-a-motherboard/>

The motherboard is where it all starts for the PC. It's the component underlying everything. There are so many different analogies you could draw, but here's our favorite: It's like the computer's nervous system. Its primary job is to send information in the form of electrical signals between the various components in your PC.

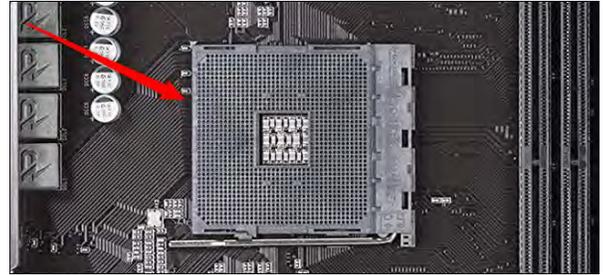
### Multiple Form Factors

There are multiple form factors of the motherboard, which are all different sizes and suited for different uses. Here's a look at [the differences between form factors like ATX, MicroATX, and Mini-ITX](#) if you want more detail on them.

In general, however, most people are looking for an ATX board unless they intend on building a more compact PC. Smaller boards are not recommended for first-time builders, as the smaller space can lead to frustration for novices.

**RELATED:** [Motherboards Explained: What Are ATX, MicroATX, and Mini-ITX?](#)

### The Essential Stuff



The CPU socket on a B450 motherboard for an AMD processor.

When we look at a bare motherboard, there are some key parts that are immediately noticeable. At one end of the board, we have the CPU socket. That socket is built to fit a specific set of AMD or Intel CPUs. An AMD CPU can never fit in an Intel-compatible board and vice versa. Not only that, but motherboard socket types can change between generations, and one generation of motherboard can be compatible with multiple generations of processors. Thus, an AMD motherboard will not automatically be compatible with any AMD CPU.

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### Meeting Minutes (Cont. from page 1)

figured out if you switch the cords, error messages were received and they would not charge correctly.

Paul Godfrey said his daughter broke the chip off a USB thumb drive and asked if he could just solder it back on. Cary said if it had real important data on it, he would recommend going to a drive saving company rather than risk it.

Greg Lenihan was talked into getting a free iPhone from Comcast and happened to see an article from Kim Komando for free iPhone, iPad, or Mac classes (<https://www.komando.com/technology/free-virtual-classes-apple/780826/>). He signed up and attended a class the next day, and thought it was very good. Peter Rallis said he is connected to a T-Mobile hotspot

through a mesh system and that is saving him money. He sometimes runs as high as 70 Mbps. He also uses magicJack for his home phone.

Toni Logan was transferring files to a flash drive and some were large. The device said there wasn't any room left, but there was plenty left. She had forgotten that she needed to reformat from FAT32 to NTFS.

Bob Kotz was looking for a shortcut he used to get to the desktop. Cary Quinn mentioned in the far-right corner of the Notification Tray that there is a vertical sliver that when clicked will take you to the desktop. Paul Godfrey mentioned pressing Win-M.

Ilene Steinkruger asked if using a VPN would keep her wi-fi

from getting switched on her phone when leaving her apartment. John Pearce uses Tunnel Bear as a VPN.

Chuck Harris lost a friend to Covid in Florida.

### PRESENTATION

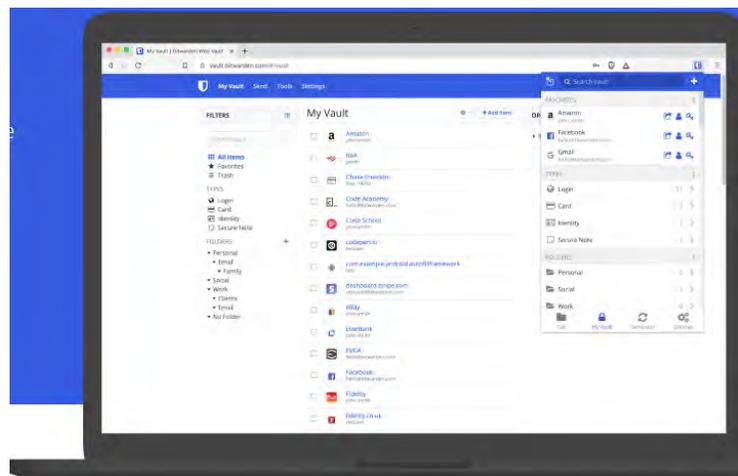
Judy Tylour from the APCUG gave an excellent presentation on what comprises the Cloud. Some things we learned about Judy is her favorite movie is "Top Gun," with her favorite song being "Take Your Breath Away" by Berlin. She likes Microsoft Edge Collections (to keep track of ideas on the Web). For those wanting to cut the cord, she mentioned "Locast" for watching broadcast TV over the Internet. For gamers, she mentioned playing games on Steam. For maintaining group mail lists, she recommends groups.io. ☺

## Set up Bitwarden (Open Source) Password Manager in Chrome

By Ann Titus, P\*PCompAS

Steps to setting up Bitwarden (refer to <https://www.youtube.com/watch?v=30Qqleb1Pu4>):

1. Create a password or preferably a passphrase that is long; unique; never used; easy to type; easy to remember; has numbers; special characters; and upper and lower case letters. The Bitwarden site has a password generator if you need help. Make certain to write it down and keep in a safe place. You can change the master password but must have the initial one in order to make a change.
2. Go to [www.Bitwarden.com](http://www.Bitwarden.com) and create an account.
  - a. Click on **Get started** at the top of the site
  - b. Under Master Password Hint, you might put where you have stored the password
  - c. If you are asked to save the password, click **NEVER > Log-in**.
3. In Google Chrome, go to browser and click on Current User (next to 3 buttons on upper right)
  - a. Click on the key and this brings up your passwords
    - 1) Uncheck "Offer to save passwords."
    - 2) Uncheck Auto Sign-in. You can import any saved passwords into Bitwarden.
  - b. Go back to the Current User and click on the middle icon (**payment**) and uncheck "save and fill payment." Plus uncheck "allow sites to check if you have payment. . ."
  - c. Go back to the Current User and click on the last icon (**location**) and uncheck save passwords.
4. Go back to [www.Bitwarden.com](http://www.Bitwarden.com), click on download, and select the browser you want to use It will take you to the web store; i.e., click Add to Chrome – add extension.
  - a. Click on extension on upper right, and then click "pin" so that Bitwarden appears on the bar.
  - b. Sign in with email and master password and log-in.
5. Create an identity.
  - a. Click + button on upper right; type is "identity"; add name. (This will help in filling out forms. Do not add SS# etc.)
  - b. Fill out the form for the site and when complete with password or phrase, click **Save**.
6. Vault (for more information go to <https://bitwarden.com/browser-start/>)
  - a. You can launch a specific website; copy a user name; copy a password.
  - b. At the bottom of the vault, you can generate a password and access the setting tab (security etc.); You can unlock with PIN and change master password.
  - c. Tab - You can add login information (add a log-in).
  - d. Bitwarden will ask if you want to add a new site to your vault. 😊



*Motherboards (Continued from page 3)*

To tell whether a motherboard is compatible with your CPU, look to the chipset, which is housed on the end opposite from the CPU socket and covered by a heatsink. It's also commonly referred to as the Southbridge.



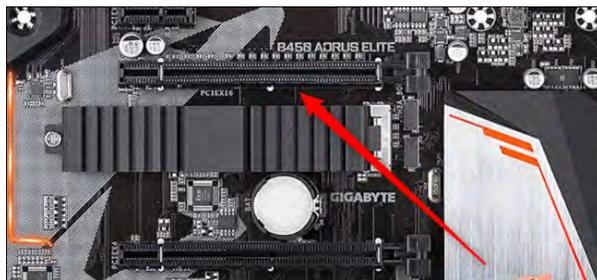
The chipset location on the MSI MPG Z390M Intel-compatible motherboard.

We have [an explainer on what a chipset is](#), but briefly, it's the part of the motherboard that acts as the “communications center and traffic controller” for your PC. It figures out if the components you've slotted into your PC are compatible with it, and controls input and output duties for components that don't communicate directly with the CPU, such as USB ports and SATA controllers.

**RELATED:** [What Is a “Chipset”, and Why Should I Care?](#)

Multiple chipsets can be compatible with a specific generation of CPU, and the chipsets are usually divided up into high-end, budget, and entry-level board types. Recent AMD chipsets at the time of writing include the X570, for example, the more budget-focused B550, and the entry-level A520.

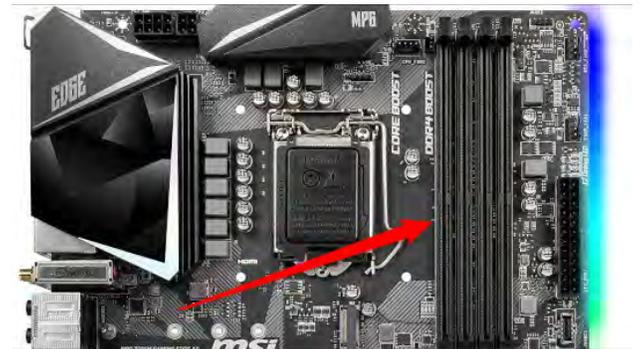
After the CPU socket and chipset, we have all the various slots on a PC. Below the CPU are the PCIe slots for graphics cards and other add-in cards such as sound cards, TV tuner cards, and Wi-Fi and Bluetooth cards (for motherboards without built-in wireless connectivity).



The PCIe x16 slot on a B450 motherboard.

The graphics card uses what's called the x16 slot. This is a PCIe slot with 16 lanes for moving

data between the graphics card and the CPU. The other slots typically have fewer than 16 lanes, even though some can be the same size as the x16.



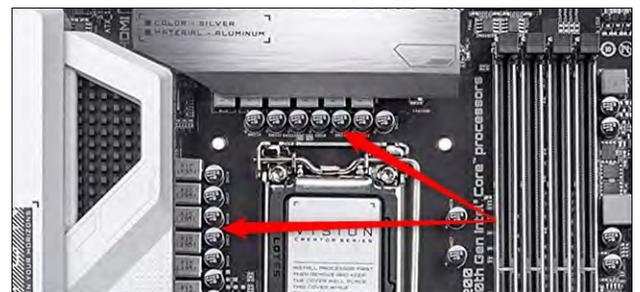
The RAM slots on an Intel-compatible motherboard.

Meanwhile, right next to the CPU socket are another set of slots for RAM modules. There are typically two or four RAM slots depending on the size and price level of your motherboard. Then, around the edges of the board, you have SATA connectors for hard drives and 2.5-inch SSDs, and a 24-pin power delivery port that connects to the PC's power supply.

Finally, we have a number of other power delivery units called headers that have pins sticking out of them. These are for items like the USB ports, front panel audio (it's the 3.5mm jack at the front of your PC case), RGB lighting, and so on. The headers are typically marked, making it easy to know which cables connect to each. Up near the CPU socket, there's also a smaller power connector for the CPU itself.

Those are the key parts of the motherboard that most first-time PC builders will deal with. Though sometimes, you may have to understand what the [CMOS battery](#) is (it's that watch battery on the motherboard) as well as jumpers.

### The VRM



The CPU VRM location on a Z490 Intel-compatible motherboard

Beyond the basic features, one subject motherboard reviewers and enthusiasts love to talk

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*Motherboards (Continued from page 5)*

about is the voltage regulator module or VRM. The VRM is not a single part, but a collection of parts working together. A high-quality VRM is a key consideration, since it factors into the motherboard's life expectancy—not to mention the motherboard's ability to keep working under the strain of overclocking.

To supply power to the CPU, the voltage coming out of the power supply needs to step down to something around 1.2 to 1.3 volts. It can go higher or lower than this depending on how power-hungry the CPU is and whether it's being overclocked. To step down the power for the CPU, the motherboard relies on its VRM. The VRM is made up of three primary components: capacitors, chokes, and MOSFETs. There is also a pulse width modulator (PWM) as well as driver integrated circuits, but when people talk about VRMs, they are usually discussing the three primary components.

Capacitors are those cylindrical items all over the motherboard. Capacitors can hold a charge and help smooth or filter the voltage delivered to components to protect against surges. Having good quality capacitors on a motherboard is important, since your system may cease to work properly if they blow. Capacitors can be replaced when they do go bad, though sometimes, a full replacement is the better option, especially if your motherboard is on the older side.

If you look around the CPU socket on a motherboard, you'll notice there's quite a collection of capacitors there. They are usually standing in front of or close to these little cube-shaped items called chokes. The chokes are there to help stabilize the voltage, and behind them are these small chips called MOSFETs (metal-oxide-semiconductor field-effect transistors). On high-quality boards, MOSFETs are usually hidden from view under a heatsink behind the chokes. On other boards, say something low budget aimed at Pentium CPUs and Core i3 CPUs, the MOSFETs may be visible near the chokes. In general, you want a board with a heatsink over the MOSFETs, since they can get very hot.

The MOSFETs help deliver the voltage required by the CPU. Then the chokes and the capacitors work to stabilize that power and protect against spikes. These parts team up to create what are called phases, which are made up of two MOSFETs, a choke, and a capacitor. The more phases a motherboard has, the

cleaner and more stable the flow, and the more potential power can be delivered to the CPU socket when overclocking.

You can sometimes tell how many phases a board has based on the number of chokes on the motherboard. A board with six chokes would have six phases, for example, but it's not always that simple.

Some board makers add more chokes per phase, thereby making it look like there are more phases than there actually are. This is not necessarily a devious move, as extra components can help share the workload, though it's not as good as having additional phases.

Gigabyte's B450 Aorus Elite v1, for example, has 11 chokes, but actually uses a 4 + 3 design where four phases deliver power to the CPU cores and have double chokes on each of those phases. Then there are another three phases that deliver power to other parts, such as the processor's integrated GPU (if applicable) or I/O die.

Worrying about VRMs and phases is not necessary if you're not overclocking. A reasonably good VRM is still important, but the biggest concern about the VRM is providing clean power and having durable components that can stand up to the pressure of overclocking.

The best way to find out about VRM quality is to read reviews. A more expensive board does not necessarily mean a higher quality VRM. It's better to consult reviews before buying in order to get independent assessments of the strength of a board's VRM.

## Motherboard Shopping



A Gigabyte gaming Mini-ITX motherboard.

We're not going to make suggestions here about the model of motherboard you should buy,

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## *Buying a Computer Monitor (Size Matters)*

By Bob Rankin, <http://askbobrankin.com>, published through the APCUG

A computer monitor (sometimes called the screen or display) is often kept for many years, even longer than the computer to which it was originally connected. So when it's finally time to replace your monitor, bigger is better of course. But there are some new "rules" that must be considered, that were perhaps unheard of when you last bought one. Read on for some of those new rules; I'll spare you the geekspeak (and maybe save you some cash)...

### Time For a New Computer Monitor?

Technology changes rapidly, but when it comes to computer screens, some rules never change. To start with, shop for a monitor in person if possible, and plan to get the biggest monitor your space and wallet permit. Yes, size matters, especially for those with older eyes. Technical specs are often meaningless compared to hands-on experience with a monitor. For example, the screen may be too reflective, or the connectors may be difficult to reach, or the adjustable stand may be difficult to adjust.

When shopping for a computer monitor, size

is usually the first consideration. Personally, I would not consider a screen size less than 24 inches. Your needs, and available desktop real estate may vary. Screens in the 22 to 24 inch range are affordable (typically under \$150), and will serve well for most home and office tasks (email, web browsing, composing documents, online video). If you are into photography, graphic arts, or serious gaming, you'll want a monitor that's 27 or more inches. Just remember that screen sizes are measured on the diagonal, just like televisions.

My personal preference is to go with dual monitors, and the pair of 27-inch monitors I've had on my desk the past few years has served me well. I think it makes a big difference in productivity, especially if you use the computer several hours a day. Quite often, I will have a web browser open on one screen, and a word processor, spreadsheet or graphics program on the other. See my related article [Dual Monitors: 7 Good Reasons to Upgrade](#).

Look for "frameless" or "thin bezel" in the description when buying a pair of monitors that will sit next to each other on your desk, and you'll

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### *Motherboards (Cont. from page 6)*

since there are so many variables that go into it—plus, motherboard models can undergo several revisions.

The best we can do is offer some basic guidance, and leave you to do your own research. The first thing to consider is the features. Do you plan to have a PC with a graphics card, a sound card, space for a future Wi-Fi adapter, and maybe a bunch of other expansion cards? Then you'll need something with enough PCIe slots to accommodate all of that.

Does it have an [M.2 slot](#) for an [NVMe SSD](#)? You'll definitely want at least one of these, since NVMe drives are so much faster than 2.5-inch SSDs and hard drives.

What about Wi-Fi and Bluetooth? Do you want those built in to the motherboard, or are you relying on the aforementioned PCIe expansion card?

Don't forget the RAM slots and the maximum memory capacity they allow for. This is critical, especially if you're trying to future proof your rig as much as possible.

Then you want to make sure that it has enough SATA ports for expansion drives, and don't forget RGB. LED lighting can look really nice, and it's easier to consider this now rather than after the computer is put together.

Once you know what you want for features, it's easier to narrow down your choices. Then, when you have a shortlist of contenders, consider VRM quality (especially if you're overclocking) by checking out reviews.

These are just some general tips, but the basic rule is this: Get the features you want that are within your price range, and then pay attention to issues such as VRM quality if you plan on overclocking.

### Conclusion

The motherboard isn't as exciting as picking up an overpowered CPU or an incredible graphics card capable of pumping out high frame rates at 4K. Nevertheless, a good quality motherboard with the features you need is a key part of your PC, and is especially important when it comes to overclocking. Doing a little bit of research to get the right board will go a long way toward creating a rocking PC build. ☺

*Buying a Computer Monitor (Continued from page 7)*

better achieve the look and feel of one large screen. And don't forget you can add an extra monitor to your laptop, if you have an available video port.

Your next consideration is screen resolution. A monitor's resolution is the number of pixels (dots) in its display matrix. You'll see terms like 720p, 1080p, HD (High Definition), FHD (Full HD), QHD (Quad HD), UHD (Ultra HD), 4K, and 8K. These all refer in some way to the number of pixels on the screen, and ultimately how crisp and clear the screen image will be. My recommendation is to avoid anything that's less than "Full HD" which is a resolution of 1920 x 1080 pixels, equivalent to modern 1080p HDTVs. Quad HD (2560 x 1440) is a step above, and until recently, 4K or UHD was top of the line, with a resolution of 3840 x 2160 pixels. You can now find 8K monitors with 7680 x 4320 pixel resolution. But unless you're a media professional with about \$4000 to spend, cross 8K off your list.

There is a sharp price jump between 24-inch full-HD and 27-inch 4K monitors; the former should cost \$150 or less, while the latter is probably in the \$400 range. (Here's an [HP 24-inch Full HD monitor](#) for just \$120 at Amazon, and an [LG 27-inch 4K Monitor](#) on sale for \$377.) If you watch lots of movies or play sophisticated games, the bigger and costlier monitor makes sense. Or, you could put that money into a big 4K television set, and stream your PC display to it.

A curved screen may be helpful on monitors 32 inches or larger. A curved screen puts the vertical edges nearer to your eyes, reducing the amount of refocusing they must do when looking from the center of the screen to one of the edges. Curved screens also reduce the amount of head-turning you must do to view every part of the screen.

And they don't have to be super-expensive. This [ASUS Gaming 32-inch 1080P Curved Monitor with speaker](#) is priced at \$289.

### More Monitor Buzzwords

The vast majority of consumer monitors sold today use LCD (Liquid Crystal Display) technology. Even in so-called LED (Light Emitting Diode) displays, the LED is a backlight behind the LCD panel. LED monitors are helpful when the brightness of the display is critical or room lighting is variable. The most expensive monitors may boast OLED (Organic LED) tech, in which each pixel provides its own illumination.

Another buzzword you may encounter is IPS (in-plane switching). IPS monitors offer deeper blacks and more accurate color rendering than LCD or LED monitors. They also have wider viewing angles, so the picture looks the same, even if you're not directly in front of it. This [ViewSonic 27-inch IPS 1080p Frameless LED Monitor](#) is a good example.

Along with IPS, you'll also find TN (Twisted Nematic) and VA (Vertical Alignment) LCD displays. Here's a quick, non-geeky overview of the three types: TN offers the best response times with lesser picture quality and viewing angles. IPS has the best picture quality and viewing angles, but lower reaction time. VA is exactly in the middle - it has good picture image, viewing angles and reaction time.

The ideal aspect ratio of a general-purpose monitor is 16:9, or approximately 1.77:1. That's the native aspect ratio of most movies, so if your monitor matches it you won't see any stretching or compression of images. If the aspect ratio is not stated explicitly, divide the horizontal display pixels by the vertical display pixels, e. g. 1,920/1,080 = 1.77.

The refresh rate of a monitor is, loosely speaking, the number of times per second that the entire display area is updated. For old-fashioned, bulky Cathode Ray Tube (CRT) monitors, the minimum acceptable refresh rate was 60 Hz, or 60 times per second. Today's flat-panel LCD monitors use a slightly different metric called the "frame rate," expressed in frames (images) per second or fps. Most LCD displays are locked at 60 fps, which is adequate for comfortable, flicker-free viewing at resolutions up to 1,920 x 1,080. But 120 fps will make 4K content much more enjoyable. The trade-off is that a faster refresh rate makes hardware work harder and possibly fail sooner.

Oh, and there's also the response rate, which is measured in milliseconds. A monitor with a good response rate will clock in at 5 ms or less. Some gaming displays boast a response rate of 1 ms.

**If you're using your computer for email, casual web browsing and word processing, you needn't worry about any of these specs, acronyms or buzzwords, except screen size. If you watch movies, do image editing, or graphic design on your computer, you should give them consideration.**

Computers and monitors often have multiple video I/O ports. Common port types are DisplayPort, HDMI, DVI, and VGA. A new monitor's video input port must match the video output port on your computer, of course. DisplayPort is best for high-end resolutions, but the HDMI standard is the simplest and fastest connection widely incorporated in monitors and computers today. Avoid VGA, which is an older technology. Don't let ports you'll never use influence your monitor purchase.

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## Create a Strong Password

by Greg Lenihan, P\*PCompAS

Graphic found at [https://www.dailyinfographic.com/wp-content/uploads/2020/09/table3\\_FBSharedImage.jpg](https://www.dailyinfographic.com/wp-content/uploads/2020/09/table3_FBSharedImage.jpg)

The graphic below is a little scary. I saw it in two articles in the past two weeks. If you have passwords that aren't very long and don't contain combinations of letters, numbers, and characters, then you don't have a secure password. Maybe you should consider a password manager.

If your password is at least 11 characters, with a combination of letters, characters, and symbols, then it would take a hacker with tools around 41 years to crack. If you are unsure whether your password is secure or not, go to <https://howsecureismypassword.net>, enter your password, and see what they say. ☺

Number of Characters	Numbers Only	Lowercase Letters	Upper and Lowercase Letters	Numbers, Upper and Lowercase Letters	Numbers, Upper and Lowercase Letters, Symbols
4	Instantly	Instantly	Instantly	Instantly	Instantly
5	Instantly	Instantly	Instantly	Instantly	Instantly
6	Instantly	Instantly	Instantly	1 sec	5 secs
7	Instantly	Instantly	25 secs	1 min	6 mins
8	Instantly	5 secs	22 mins	1 hour	8 hours
9	Instantly	2 mins	19 hours	3 days	3 weeks
10	Instantly	58 mins	1 month	7 months	5 years
11	2 secs	1 day	5 years	41 years	400 years
12	25 secs	3 weeks	300 years	2k years	34k years
13	4 mins	1 year	16k years	100k years	2m years
14	41 mins	51 years	800k years	9m years	200m years
15	6 hours	1k years	43m years	600m years	15 bn years
16	2 days	34k years	2bn years	37bn years	1tn years
17	4 weeks	800k years	100bn years	2tn years	93tn years
18	9 months	23m years	6tn years	100 ln years	7qd years

**TIME IT TAKES  
A HACKER TO  
BRUTE FORCE  
YOUR  
PASSWORD**



-Data sourced from [HowSecureisMyPassword.net](https://HowSecureisMyPassword.net)

### Computer Monitor (Cont. from pg 8)

#### Strings, Sealing Wax, and Other Fancy Stuff

If you run Windows 10, you may want a touchscreen monitor. But don't get one if you normally sit at full arm's length from the screen, or further. It's just too awkward to use a touchscreen at great distance.

The monitor stand should be adjustable to the height and viewing angle that you prefer. Pay attention to how easily the stand can be adjusted, and how firmly it supports the monitor.

Higher-priced monitors may be packed with extras like speakers,

front-panel display control buttons, or even all the components of a desktop PC. Buy what you need, not what's on sale. The fewer things inside of a monitor, the fewer things that can cause overheating and early death.

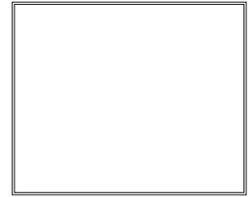
Some monitors advertise "low blue light" technology to help protect your eyes and help you sleep better. I wouldn't pay extra for that, because the Night Light software built into Windows 10 (and Night Shift for Macs) can do that as well.

Read warranties carefully; a five-year warranty doesn't help if it excludes dead pixels that develop after one year. Don't buy third-

party warranty extensions. They're pushed so hard by sellers because they are extremely profitable, and they're extremely profitable because hardly anyone ever qualifies for a replacement under their terms.

Finally, I've not found brand to be an important factor in computer monitors. Some people are loyal to ASUS, LG, Samsung, or other well-known brands, but I've had no-name monitors that have served me well. Pay attention to the specs I've mentioned above, and check consumer forums for experience with specific models before buying, and you'll do fine. ☺

**P\*PCompAS Newsletter**  
**Greg Lenihan, Editor**  
**4905 Ramblewood Drive**  
**Colorado Springs, CO 80920**  
**e-mail: [glenihan@comcast.net](mailto:glenihan@comcast.net)**



**Coming Events:**

**Next Membership Meeting: 3 April @ 9 am, via Zoom**

**Next Breakfast Meeting: 17 April @ 9 am, via Zoom**

**Newsletter Deadline: 17 April**

**Check out our Web page at: <http://ppcompas.apcug.org>**

