

Bits of Bytes

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

Volume XLIII

February 2023

Issue 2



The Prez Sez

by Cary Quinn, President, P*PCompAS

Cryptocurrency is not a scam, it's a tool.

Unfortunately it's a tool that many people are using as the new way to run scams. Caveat Emptor.

February Tech Days:

Tuesday February 7, 2023

Safer Internet Day

<https://www.saferinternetday.org/en-US/>

Monday, February 13

World Radio Day

<https://www.un.org/en/observances/radio-day>

also Monday, February 13

National Clean Out Your

Computer Day ☺

Meeting Minutes

by Greg Lenihan,
P*PCompAS Secretary

President Cary Quinn called the 7 January 2023 membership meeting to order at 9:23 am, after encountering some problems setting up Zoom. David George made the coffee, and Greg Lenihan brought doughnuts. There was one guest, Cheryl Zumwalt, daughter of Gene Bagenstos. A \$1 donation is requested from members for doughnuts and coffee. A motion was made to approve the December minutes published in the newsletter and the motion passed.

Next P*PCompAS meeting: Saturday, 4 February 2023

Our annual CES review is upon us! Joe Nuvolini has agreed to look into what is new and in vogue as the computer and electronics industries get back up to speed.

OFFICER REPORTS

President Cary Quinn said an agenda is being worked on for this year.

Secretary/Newsletter Editor Greg Lenihan announced the next newsletter deadline is 21 January. He passed around the last printed newsletter he will be bringing to meetings.

Treasurer Toni Logan stated we received \$30 in membership dues for the coming year. Checking stands at \$51.74, savings at \$2783.35, for a combined total of \$2835.09.

Membership Chair Ann Titus again thanked the anonymous donor that paid everyone's dues for this year.

Librarian Paul Godfrey had nothing to report.

APCUG Rep/Webmaster Joe Nuvolini had nothing to report.

BOD Chair Ann Titus had nothing to report.

OLD BUSINESS: None

NEW BUSINESS: None

ANNOUNCEMENTS

The next social breakfast meeting will be Saturday, 21 January, at Perkins, starting at 8:00 am.

Our next membership meeting is Saturday, 4 February 2023.

AROUND THE ROOM

Joe Nuvolini says he needs a new printer with a scanner. Greg Lenihan says he bought an Epson

Ecotank for his wife this Christmas. Toni Logan says she has had good luck with Epson.

Cary Quinn said he took a laptop apart, and after putting it back together, he had four screws left over. Taking it apart again, he had two screws left. He finally got it put together.

Harvey McMinn says Microsoft Edge has problems when he uses it. Nuvo says he doesn't like the way it uses Bing for searches. Nuvo has had better results on YouTube using Chrome.

Gene Bagenstos jokingly said he doesn't mind leftover screws putting things together, but gets upset when he can't find the screws. He asked whether it was time to upgrade to Windows 11. Cary Quinn said he would hold off for now.

Ann Titus asked to be shown how to prevent a PC from upgrading to Windows 11. Cary went to Steve Gibson's website at grc.com. On the webpage,

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President Cary Quinn at the January meeting with remote attendees on screen

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Barbara McMinn



Members in attendance at the January meeting.



Several of the digerati at the January breakfast. (Picture by Cheryl Bryant.)

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P*PCompas welcomes any comments, letters, or articles from members and non-members alike. Please send any articles to the editor (see last page for address). The editor reserves the right to reject, postpone, or edit for space, style, grammar, and clarity of any material submitted.

When Do You Really Need to Upgrade Your PC?

by Dave McQuilling, reprinted with permission from [ReviewGeek.com](https://www.reviewgeek.com)

Original article at: <https://www.reviewgeek.com/122719/when-do-you-really-need-to-upgrade-your-pc/>

Upgrading a PC or a laptop can be an expensive affair. While cheap options are sometimes available, you could spend several hundred dollars or even a couple of thousand dollars on a new device. Wanting to avoid a pricy upgrade is understandable, but when do you need a new machine?

The answer is: it depends. Everyone has different circumstances, both financial and practical. But there are a few general rules for people like gamers and PC builders, as well as some red lines that should apply to everyone. The following piece should give you an idea of when it might be time to retire an old computer and treat yourself to something new.

Security is the most important consideration

With any operating system, hackers and bad actors are constantly probing its code to find parts to exploit. Companies like Microsoft then

work to fix those exploits as quickly as possible, so their customers aren't left vulnerable to threats. However, technology companies tend to withdraw support for their older operating systems eventually. Windows 7 was the latest Microsoft OS [to have its support pulled](#) back in 2020, and Windows 8 will soon follow.

If your PC cannot run a newer operating system, you should consider upgrading. A security breach means sensitive files, personal data, bank accounts, and credit cards could all be at risk. You don't need to have the latest OS available to stay safe — Windows 10 users should receive [support and security updates until 2025](#) at the earliest. But when the time comes and the most advanced OS your machine can run is no longer supported, get an upgrade. The chances are something with similar specs to your old rig won't cost that much by then.

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Meeting Minutes (Cont. from page 1)

he clicked Freeware > Utilities > InControl. Downloading and installing the InControl app prevents automatic updating/upgrading.

Donna Armitage uses an iPad with USB-C to connect to her TV and found she needed a hub with power delivery (PD) so her iPad did not discharge as fast.

Warren Hill has been using Windows 11 for a couple of weeks and finds that it is okay and hasn't had any problems. Nuvo said his brother-in-law could not download IRS info because of the age of two of his computers.

Harvey McMinn said he had a bad snowstorm at night and his Starlink connection went down. The next morning everything worked fine because the built-in heater took care of the snow.

Toni Logan's sister had an old iPad that died. Her son bought a used one for \$300 and her sister

was amazed at how much faster it ran. Toni warns that you must back up your photos and important files to the Cloud, or risk losing them when the device fails. Toni's 90th birthday fell on a bowling night and they threw her a birthday party. Toni says she is trying to research how long the league has been around by looking at old newspapers online .

Paul Godfrey was trying to help a friend with her computer that kept giving a notification sound at start up. Paul also tried loading Libre Office on her machine but it kept asking for an administrative password, but his friend did not know it.

Greg Lenihan mentioned he would like to see presentations on backups (Macrium Reflect), sandboxing, and that presentations can be given for many Google apps (like Keep or Sites).

Cary Quinn showed a way to find browser passwords in Chrome. In Chrome he went to Autofill >

Password Manager. Click the small eyeball to see the password. Cary has been taking his many USB thumb drives and putting them on lanyards. Then he uses masking tape attached to the lanyard to specify what is on the thumb drive.

PRESENTATION

Ann Titus provided two videos by Hewie Poplock from "Tech for Seniors" on YouTube. The first video explained the Immersive Reader that is built in the Edge browser. Find an article, and right-click to open the Immersive Reader. You can change fonts and colors and even have it read to you at a speed you desire. The other video called "How to Find Anything Using Everything on a PC" was for a search tool called "Everything" by voidtools.com that you install on your PC and it finds anything almost instantly. ☺

When to Upgrade PC? (Continued from page 3)

Gamers should keep an eye on the console market



Console gaming [is more popular than PC gaming](#), which may work out for gamers. Most mainstream games have a console release alongside a PC release. So theoretically, the hardware requirements to run said games on average settings will remain roughly the same throughout that generation.

Five to six years usually pass between console generations, but the mere release of a new Playstation or Xbox shouldn't send you scrambling for a computer upgrade. Aside from a few "exclusives," games studios usually take a couple of years to shift away from an older console and start producing games exclusively for newer ones. This is because it takes a while for console gamers to upgrade to the latest machine. There are a few reasons for this, including a lack of initial availability and a small library of next-generation exclusive in the early days. We've even hit the point where [there are diminishing returns](#) regarding the capabilities of each new console.

So the bottom line is, if your rig can comfortably play every new release early on in the current console generation — it should be able to handle everything that comes out during that generation and even a couple of years beyond. The exception is if you want to max out the graphical settings on every new release or try out new technologies as they emerge. [Ray tracing](#) is a good example. The first GPU that could handle ray tracing [came out in 2018](#) — it was also cutting edge and pretty expensive. Had you spent your budget on a console that could exceed a PlayStation 4's capabilities, you would need an expensive upgrade to try out this new tech. Even if your PC meets the specs of a current top-of-the-line console, you still won't be able to play at 120hz with ray tracing enabled. Features like true 4K and HDR may also be beyond your machine's capabilities.

Upgrading individual parts Is Cheaper



Desktop PCs tend to be modular, so there is the option of upping your rig's specs by simply swapping out one or two of the parts for a more recent and powerful version. A new processor or graphics card can significantly boost your PC's performance and may be enough to put it on par with a current machine. Some upgrades are straightforward too. Extra RAM must be clipped into empty channels on the motherboard or swap out the old sticks with larger ones. Something like an SSD needs wiring to a spare SATA port and power.

However, PC parts need to be compatible, and there will be a time when something like a motherboard is no longer compatible with the latest RAM, processors, or graphics cards. At this point, it's time to buy something new or effectively build yourself a new rig.

Still, with a desktop, you can save money here. Some parts like solid-state drives, hard drives, cases, and power supply units are likely to work with future builds just as well as in a previous build. So even if a total overhaul is necessary, you may be able to scavenge enough parts from your old rig to save yourself a significant amount of money.

Desktops live longer

In addition to their upgradability, a desktop's design adds to its lifespan. Heat can kill or drastically reduce the lifespan of electronic components. If a PC isn't kept clean, a thick jacket of dust will also insulate those components, impact performance, and further reduce their lifespans.

A desktop is far easier to cool. Aside from options like air and water cooling, PC builders can also play around with fan configurations and airflow. There is more room in the case for heat to radiate away, and desktop PCs are also far easier to keep clean. If you own a desktop

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[HOWTO] Hard Drive Recovery Services

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

An AskBob reader asks: “My hard drive was making a clicking sound, and now it won’t boot up correctly. Should I try to fix it myself, or send it to a hard drive repair service? Here is my advice...”

Time For a Hard Drive Recovery Service?

We tend to assume that our computers are infallible, but it’s usually a matter of time before some form of data loss occurs. Just like a car, a computer can break down and parts wear out. Hard

drives are no exception. And as much as we know we should back up all our important files, how many of us do that on a regular basis? Fortunately, there are many ways to recover from a hard drive failure.

Of course, if your computer is still under warranty, it’s best to contact the company where it was purchased, or if you have a Mac, take it to one of their Apple Stores. No warranty? There are some common hard disk problems that you can fix yourself, with a bit of self-education. For now,

let’s assume you have hard drive failure with no backups of your files, and focus on what you can do to recover your data.

In some cases, it’s not physical damage that makes a hard drive appear to be kaput. Before you pry your drive open with a can opener, consider the do-it-yourself route using a specialized software tool. A free program called TESTDISK is very powerful, with the ability to fix partition tables, recover deleted

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When to Upgrade PC? (Continued from page 4)

PC and notice your GPU is building a layer of dirt, a quick blast with some compressed air or a [thorough going over with a PC vacuum](#) will soon fix that. Laptops also restrict airflow due to their size and shape. I’m currently typing this while lying down, and the notebook I am typing on is on my chest. My gut is blocking one of the laptop’s air intake vents, so if the fans need to kick up, they will have a more challenging job cooling the machine. I have never blocked my desktop’s intake fan with my stomach.

Beyond cleaning and cooling, you have to consider components like screens, batteries, and charging wires. Batteries have a more limited lifespan than most components, and when a laptop’s battery loses its ability to hold a charge, the laptop loses most of its functionality. After a few years of being twisted, bent, and wrapped, a laptop charging cable can become damaged. This will require a repair with a soldering gun or a fairly expensive replacement. As mentioned, a desktop can last through a console generation or even as long as its operating system receives support. On the other hand, a laptop lasts [between three and five years](#) on average.

Your computer will start letting you know when it’s time

I have a pretty old ASUS, it’s at least five years old and 100% showing its age. The keys are falling off, [it bluescreens a lot](#), it has



problems with the Wi-Fi, and the battery is almost toast. To compound the battery issue, it will only let me know it needs plugging in on very rare occasions — instead just preferring to die on me if I accidentally knock the charger out for more than two minutes. Speaking of the charger, the one I’m using is charger #2, and it is currently being kept alive through a combination of bread ties and my shoddy soldering work.

None of these issues are recent; the laptop was fine for at least three and a half years before it began developing problems. Those issues have gradually gotten worse, and it is hitting the point where I have to buy a new one. When purchasing the old ASUS, I did opt for something in the upper mid-range, which means the specs are still enough to deal with the things I need a laptop to handle. But the unreliability and lack of portability are too much, and it’s time to retire the old beast to a cupboard.

So when is it time to get a new PC or laptop? If you’re anything like me, it’s when your old one gets so unstable you can barely use it anymore.

☺

Microsoft Won't Sell You Windows 10, But You Can Still Buy It

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

Original article at: <https://www.howtogeek.com/867214/microsoft-wont-sell-you-windows-10-but-you-can-still-buy-it>

Microsoft is focusing all its attention on Windows 11, and even though Windows 10 still works fine for now, [support will end in October 2025](#). Windows 10 is now taking one of its first steps to retirement.

Microsoft sells licenses for [Windows 10](#) and [Windows 11](#) on its online store, but the listings for Windows 10 have been updated to say that they will not be available after January 31, 2023. Past that date, you'll only be able to purchase

a Windows 11 license. Microsoft told *The Verge* in a statement, "an update was made to the Windows 10 product page to ensure customers have the latest information on purchasing options for Windows 10."

The end of Windows 10 sales from Microsoft is a milestone towards the operating system's retirement, but it might have a minimal impact.

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Hard Drive Recovery (Cont from page 5)

partitions and boot sectors, rebuild FATs (file access table) and MFTs (master file table). It sounds geeky, but TESTDISK saved my bacon once when I thought my hard drive was completely hosed. It appeared that all my files were gone, but actually just the partition table was mangled. TESTDISK scanned the drive, rebuilt the partitions and all my files reappeared!

[SpinRite](#) is a commercial hard drive utility that can help to maintain hard disk drives, increase drive longevity, and repair many problems. Errors can accumulate over time on a hard drive, as the data naturally degrades. If you have trouble booting up, opening certain files or programs, or if you're getting random errors, SpinRite may solve the problem.

YouTube also has some [instructional videos](#) for repairing specific hard drive brands and models. It can be very helpful to get step-by-step instructions, but unless you're fairly geeky, trying to save the hard drive yourself may cripple it even further.

Using a Hard Drive Recovery Service

If none of these DIY approaches solve the problem, or they just seem too daunting, the next best choice would be to engage an expert. The practice of retrieving data from damaged or inoperable

disk drives is known as data recovery. If it's imperative that you retrieve data from a drive that is physically damaged, there is still hope. Data recovery services give you the option of sending your damaged drive to their engineers who will evaluate your hard disk, extract a file listing from it, and will retrieve any data possible. This type of service ain't cheap, though. The standard evaluation cost is usually around \$100 (USD). Afterwards, the actual data recovery fee can run anywhere from \$500 to \$2500, depending on the amount of data and labor involved.

If you want to start local, electronics or office stores such as Best Buy or Staples can do the chore for you. At Best Buy, data recovery services start at \$259. They will even send out a member of their Geek Squad if you need service in your home or office. There are also specialized data recovery services such as [OnTrack Data Recovery](#) and [Salvage Data](#), which offer multiple solutions. Whether your problem is human or electrical, personal or business oriented in origin, they work on any system, and all types of hard drives. These companies have multiple certifications and security credentials, to give you peace of mind when sending your hard drive out for repair.

[DTI](#) is another company that can service your hard drive in a clean

room environment, and they are authorized by all major hard drive manufacturers. They even go so far as to answer the question of why you should trust them. "Quote From NASA: 'Lockhead Martin referred us' end quote." Their remote data recovery service usually costs less than \$100.00 and if there is no recoverable data, there is no charge.

Why is data recovery so expensive? This type of work requires a first-class "clean room" environment, with anti-static flooring, ventilation systems, temperature and humidity controls, microscopes and other specialized equipment. Clean room engineers should have engineering or electronics degrees, and must also wear hazmat-style suits to prevent any smoke or dust particles, fingerprints, or hair from contaminating the exposed disk surfaces. In cases where the physical media is damaged due to fire or flood, engineers can force the hard drive's read head around the damaged areas using specialized electronic devices and software.

After your disk is repaired, I recommend that you purchase an external hard drive and begin a daily regimen of backing up all your important files. The expense will be well worth the security and the costly repairs at another date and time. ☺

Tech Trick: How to Take a Full Webpage Screenshot with Your Browser

by Albert Khoury at Komando.com (tip from 1/24/23)

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When browsing the internet, information is stored in your browser cache so you can quickly go back to a page without waiting for it to download again. While convenient, it slows down your computer. [Tap or click here for instructions on clearing your browser cache.](#)

Screenshots let you capture exactly what's on your screen, be it a recipe, photo, app or conversation. But what if you want to capture an entire webpage without having to take a bunch of screenshots?

Some browsers have screenshot tools that make capturing what's beyond the viewable area easy — a screenshot you can scroll through to see everything. No extensions or third-party apps are required!

Capture a scrolling screenshot with Firefox

Firefox has a straightforward process to capture an entire webpage:

- Open a webpage in Firefox and right-click on an empty part of the page.
- Select **Take Screenshot** from the drop-down list.
- Select **Save full page** from the menu in the upper right.
- The file will be saved to Firefox's default download location.

RELATED: [You can screenshot an entire webpage on your iPhone – Here's how](#)

Capture a scrolling screenshot with Chrome

The world's most popular browser doesn't require an extension for a scrolling screenshot, but the steps are more involved than others. You have to go through the developer tools. But don't worry! We've got you covered:

- Open a webpage in Chrome and press **Ctrl + Shift + I** to open DevTools.
- Click the **three-dot** menu in the upper right and select **Run command** and type the word **screenshot**.
- Click the **Capture full size screenshot** option.
- The file will be saved to Chrome's default download location.
- **Close DevTools** when you're done by clicking the **X** in the upper right.

Capture a scrolling screenshot with Edge

While you can capture an entire screen in Windows by hitting the **Windows key + Print Screen**, you won't see what's offscreen. But Microsoft's Edge browser lets you do more:

- Open a webpage in Edge and click the **three-dot menu icon** in the top-right corner.
- Select **Web capture**, then click the **Capture full page** option.
- You'll see a new scrolling window containing the webpage.
- Click the **save icon** (it looks like a floppy disk) to save the image to Edge's default download location.

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Buy Win 10 (Cont. from page 6)

Windows 10 licenses are also [sold through stores like Amazon](#), and it's not clear if those listings are going away anytime soon. Both operating systems appear to use the same licensing system, at least for now,

and [some people have reported success](#) with activating a Windows 10 PC with a key designed for Windows 11.

Activation keys for Windows 7 were available for a few years after Microsoft itself stopped selling

them, but mostly through OEM key resellers of dubious quality (and legality). It's possible the same ecosystem will crop up for Windows 10, especially since many PCs on Windows 10 are blocked off from (officially) upgrading to Windows 11.

☺

The Internet Archive is the Web's Best Kept Movie Secret

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

Original article at: <https://www.howtogeek.com/854418/the-internet-archive-is-the-webs-best-kept-movie-secret/>



The internet has more content than one human could experience, yet much is already lost! This is true of movies in particular. Most early films were lost [decades ago](#), but with modern technology, we don't need to lose any more.

What Is the Internet Archive?

[The Internet Archive](#) is a digital library founded in 1996 by [Brewster Kahle](#). The Internet Archive aims to provide free access to all knowledge by collecting and preserving digital content, including websites, books, software, music, and more.

The Internet Archive began as a way to preserve and make accessible the rapidly growing amount of digital content on the internet. It started by using web crawlers to collect and archive websites, creating a digital version of the "[Wayback Machine](#)" that allows users to see how a website looked at a particular point in time. Over time, the Internet Archive has expanded to include various digital media, including books, music, software, and videos.

RELATED: [What Is the Wayback Machine, and Why Is It Important?](#)

Today, the Internet Archive is a nonprofit organization supported by [donations](#) and grants. It continues to collect and preserve digital content and make it available to the public for free.

The Internet Archive Hosts Some True Classic Movies

The Internet Archive has a vast collection of movies, including many classic, independent, and foreign films. Some of the most interesting and notable movies preserved on the Internet Archive include:

[The General](#) (1926): A silent comedy film directed by and starring Buster Keaton.

[Metropolis](#) (1927): A German expressionist science fiction film directed by Fritz Lang.

[Nosferatu](#) (1922): A German Expressionist horror film directed by F. W. Murnau.

[The Cabinet of Dr. Caligari](#) (1920): A German Expressionist horror film directed by Robert Wiene.

[The Red Balloon](#) (1956): A French fantasy film directed by Albert Lamorisse.

[Battleship Potemkin](#) (1925): A silent film directed by Sergei Eisenstein.

[The Night of the Living Dead](#) (1968): A horror film directed by George A. Romero.

[The Mummy](#) (1932): A horror film directed by Karl Freund.

These are just a few examples of the many fascinating and important movies preserved on the Internet Archive. If you are a movie buff, you can explore the Internet Archive's collection to discover more hidden gems and classic films. Not to mention lost episodes of TV shows, or TV pilots that never made it to screen!

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Screenshot (Cont. from page 7)

Capture a scrolling screenshot with Safari

Like Chrome, Safari's process for capturing full pages involves using developer tools. Still, it's just a few steps:

- Open a webpage in Safari and click **Safari** on the menu bar, then select **Preferences**.

- Go to the **Advanced** tab and check the box next to the **Show Develop menu in the menu bar**.
- Go to the webpage you want to capture and click **Develop** on the menu bar and then select **Show Web Inspector**.
- A DevTools panel will open. **Right-click** or **Control-**

Click on the first line starting with **HTML** and select **Capture Screenshot** (make sure you're in the **Elements** tab).

- Select a location and a filename for your screenshot. Click **Save** when you're done.
- Close DevTools when you're done.

Internet Archive (Cont. from page 8)

The Archive Goes Way Beyond Movies

As mentioned above, in addition to movies, the Internet Archive has a vast collection of other types of digital content. Some of the other types of content available on the Internet Archive include:

- **Books:** The Internet Archive has a collection of over 36 million books.
- **Music:** The Internet Archive has a collection of over two million recordings of music, including recordings of live concerts, radio broadcasts, and other audio content.
- **Software:** The Internet Archive has a collection of over 950,000 software programs and games, including many classic and historical examples.
- **Television:** The Internet Archive has a collection of over three million television programs, including episodes of classic TV shows, news programs, and more.
- **Websites:** The Internet Archive has a

collection of over 780 billion web pages, including many historical versions of websites.

- **Audio recordings:** The Internet Archive has a collection of over 15 million audio recordings, including lectures, interviews, and other audio content.
- **Images:** The Internet Archive has a collection of over 4.5 million images, including photographs, illustrations, and other visual media.

How Is the Internet Archive Legal?

The Internet Archive is essentially an online public library operating within the bounds of copyright law and works with rights holders to ensure that the content it collects and preserves is made available legally. In many cases, the content on the Internet Archive is in the public domain or is licensed under [Creative Commons](#) or other open licenses that allow for free distribution and use. ☺

This Tool Can Boot Multiple Oses From a USB Drive

by Corbin Davenport, reprinted with permission from [HowToGeek.com](#)

Original article at: <https://www.howtogeek.com/852667/this-tool-can-boot-multiple-oses-from-a-usb-drive/>



Ventoy has been a popular utility for a while, allowing you to store multiple bootable [ISO images](#) on a single USB drive. Now there's an update rolling out that makes it even better.

Booting a PC into a [Windows installer](#), Linux distribution, or other CD/USB image usually requires wiping a USB drive and overwriting it with one image at a time. That means using several USB drives if you want to keep around install/recovery images for multiple operating systems. Ventoy solves this problem with a multi-boot setup — once it is installed on a USB drive, you can copy as many ISO images as you want to a single flash drive using any file manager, and then select the one you want at startup.



Ventoy 1.0.84 was just released, which has two main changes. First, you can now switch languages in the boot menu by pressing the L key. The tool also now works with drives formatted as FAT32 with [a capacity of 32 GB or more](#). That means you can have more drives formatted as FAT32, ensuring they work for transferring files with just about any operating system, while also using them as a multi-boot drive. However, [FAT32 can't store files larger than 4 GB in size](#), which might not be enough for some bootable system images.

You can learn more about Ventoy and try it out from [the project's official website](#). I've been using it for a while, and not having to constantly overwrite flash drives (or use a special writing tool each time) is definitely handy. ☺

P*PCompAS Newsletter
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Coming Events:

Next Membership Meeting: 4 February beginning at 9 am (see directions below)

Next Breakfast Meeting: 18 February @ 8:00 am, Perkins, 3295 E. Platte Ave.

Newsletter Deadline: 18 February

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

