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Viking



Twin Cities

PC USER GROUP

NEWSLETTER

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*TC/PC Exists to
Facilitate and Encourage
the Cooperative Exchange of
PC Knowledge and
Information Across
All Levels of Experience*

August 2017

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General Meeting Tuesday, August 8, 2017 7:00 PM

Build Your Own Stock Screener

**Summit Place
8505 Flying Cloud Drive
Eden Prairie, MN 55344**

This month Sharon Walbran will walk us through building a simple stock screener using Google Sheets. After trying out various professional stock screeners from financial firms and previewing some apps and add-ins you can buy for programs like Excel, I found that using some simple functions you can create your own and customize it the way you want. No serious programming or macros involved. I will build a watch list type screener for stocks and another for mutual funds.

At 6PM Jack Ungerleider will present Tech Topics before the General Meeting.

TC/PC is a
Member of



24-Hour Information • www.tcpc.com

Application form inside back cover

The Digital Viking

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Full page (7½ x 9½)	\$100.00
Two-thirds page (7½ x 6)	80.00
Half page (7½ x 4¾)	65.00
One-third page (7½ x 3)	50.00
Quarter page (3½ x 4¾)	40.00
Member Bus. Card (2 x 3½)	10.00

Multiple insertion discounts available.

Contact Sharon Walbran at: SQWalbran@yahoo.com

Deadline for ad placement is the 1st of the month prior to publication. All rates are per issue and for digital or camera-ready ads. Typesetting and other services are extra and must be requested in advance of submission deadlines.

Payment must accompany order unless other arrangements are made in advance. Place make checks payable to: **Twin Cities PC User Group**

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Meets once or twice per year. All members welcome to attend.

Visit www.tnpc.com for meeting details.

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and demonstrations

Special Interest Groups
Monthly Newsletter

Discounts on products
and services

Contests and prizes

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payment of each renewal

20% discount on all ads
Placed in the *Digital
Viking* Newsletter

Up to 5 newsletters mailed to
your site
(only a nominal cost for each
additional 5 mailed)

Newsletter Staff

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Jeannine Sloan

Upcoming Meetings

Tuesday, October 10th—APCUG National CyberSecurity Month - Webinar with Paul Gostischka—Tips for Staying Safe Online and Preventing Ransomware and Identity Theft

All that Glitters is not Chrome

by Greg Skalka, President, Under the Computer Hood UG, CA

January 2017 issue, Drive Light, www.uchug.org, president (at) uchug.org

I love my Chromebook. It's a very handy thing to have when you want some information off the Internet quickly. I don't have a smart phone, so the Chromebook is what I go to when I want to know the locations, hours or phone number of a business, what traffic or weather conditions are like or the answer to any other search question. I keep my Acer Chromebook 11 on our kitchen table so it is available for instant use. It is small and light, yet has an 11.6" screen and a full keyboard, so I find it much more useful (and usable) than a tablet.

When I bought my Chromebook over a year ago, I thought I understood the limitations it had in needing to be connected to the Internet for most uses, and its limited storage and processing power. It has exceeded my initial expectations and I find I often use it nearly as much as my Windows 7 laptop. I love that it boots in about ten seconds, has a very long battery life and is very portable, so I find I'm taking it more and more in situations where I'd otherwise take my 14" laptop. In spite of its advantages, I do still continue to find new annoying shortcomings in the Chrome OS, and difficulties figuring out how to perform a particular task or change a setting. Though I've come up with work-arounds for some of its limitations, my Chromebook still has enough tarnish spots in its capabilities that I doubt it will ever be a complete substitute for my laptop.

I own a lot of computing devices. I probably have more than most people, though I'm sure there are some out there that have more. I admit I am hanging on to some devices that have not been used in many years (that is another story), but there are in my household almost a dozen that I myself have used at least once in the last year. Most run Windows (two laptops, three desktops and a PDA). I don't feel I'm closed-minded, though, as I do have an Android tablet, an iPad mini (iOS) and two Chrome OS devices (Chromebook and Chromebit). I've nothing against Linux, but you don't normally find it in stores on new devices, and I've not yet found a compelling reason to install it on one of my existing devices.

From this, you would probably assume (correctly) that I use Windows most of the time. You could say I was "raised" on Windows, so I tend to judge, for good or bad, all other computing user interfaces with Windows as a reference. As an electrical engineer, I spend most of my work days working on documents, spreadsheets and designs, using software running on Windows PCs, with the traditional keyboard and mouse user interface. I've grown accustomed to the features, capabilities and limitations of Windows on reasonably-powerful Intel-based computers, typically with lots of memory and storage. In spite of the (often unfortunate) changes to the Windows user interface over many years and versions, I usually find it easier to adapt to the next thing Microsoft throws at me than something coming from a seemingly completely different mindset, like iOS or Android.

I was able to figure out how to get around on the web pretty easily on the Chromebook. The OS is based heavily on the Chrome browser, which I use most of the time at work. Though I could get a Bluetooth mouse to use with my Chromebook, the touchpad has unique features that allow me to

do almost everything easily. I don't notice any real difference in the Chromebook's ability to serve web pages as compared to my i5-processor-equipped Win7 laptop with IE; processing power is not a big factor in traversing the web.

A main point of contention for me in all non-Windows devices I've used is the file manager. I'm so used to the Windows File Manager that everything else seems alien. The Files app in Chrome is fairly similar, but I only recently found the way to see how much space is available on a drive (it is under "Settings" when looking at that drive). I still don't know if iOS even has a file manager; I have photos on my iPad that I have yet to figure out how to copy off.

My Chromebook uses at least half of its 16G of SSD memory for the OS and apps, and it says even the remaining memory is subject to use by the system. I bought a 128GB USB3 Flash drive to use with the Chromebook, which seems to work great. It would have been more useful if the Chromebook's SD memory slot were the type that keeps the memory card totally inside the body of the Chromebook; unfortunately, the SD card sticks out and is at risk for damage or breaking off.

In addition to saving and editing files in Google Docs on the Chromebook, Microsoft Office files can often be edited in "Office Compatibility Mode". This works even when working offline (no Internet connection), and allows me to take my Chromebook to meetings to take notes, or write newsletter articles on it while riding in the car. It appears to be compatible only with the most recent Microsoft Office file formats. I've had good luck with Word documents, and can edit PowerPoint slides, but I had issues the one time I tried editing an Excel spreadsheet. If I plan on taking notes or editing files offline somewhere, I always test opening the file I'm planning to edit before I leave home.

One unnerving feature of the office compatibility mode is its lack of a "save" feature in the menu. The first time I opened a Word file to edit, I made a few test changes and then closed the document. Fortunately, the changes were present when I opened it again, but I still didn't fully trust it. I finally noticed that it saves each keystroke of change back to the file as it goes; as I would press a key to add a letter, the access light on the external USB Flash drive would flash. While this saving method ensures you don't lose changes, it does wear out the Flash drive's solid-state memory faster in writing to the drive so many times.

Chrome OS is compatible with an extensive list of file types, including most office, media and image files. It can open .pdf files as well as handle compressed files like .zip and .rar. I did recently find out that Windows Media Video (.wmv) files cannot be opened by a Chrome OS device. I had created a photo slide show for my dad's 80th birthday, with the result being a .wmv video. While I did find one app that vaguely mentioned allowing .wmv files to be viewed, most of the search results for this problem suggested converting the video to a supported file type. In the end, I used my Win7 laptop to play the file.

Even files that are supported by Chrome can have problems if a lot of hardware horsepower is needed. I have an auto dashcam that records video in HD as .mp4 files. I can connect the dashcam through USB to my Win7 laptop, which can easily play the video files stored on its memory card. There might be a few slight glitches, but playback appears pretty smooth. If I connect the dashcam to my Chromebook, it can play the video files, but it takes a long time to process before they initially start playing, and the playback is very jerky.

The Chrome OS has its own web store, but since it does not have a large following, there are not that many offerings as compared to the Android app store. There are a couple of VPN apps, but the VPN service I subscribe to, Private Internet Access, does not appear to support the Chrome OS at this time. I was surprised to see that TeamViewer was available as a Chrome app. I've looked through the apps offered a number of times, but have yet to find one I wanted to install at the time.

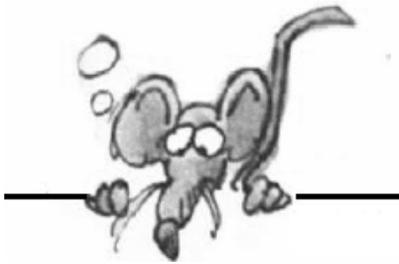
Chrome OS is also not supported that well by third-party hardware vendors. The Patriot Aero external Wi-Fi hard drive I tried to demonstrate earlier this year has apps to support its use with

Android and iOS devices, but they don't have one for the Chrome OS. I have some Western Digital My Passport USB3 external hard drives, which can be set up to use password protection and data encryption. My Chromebook can see and use the drives that are not protected, but cannot use a drive that has protection / encryption enabled, as the program on the drive that is used to enable and disable protection is not compatible with Chrome. The universal in Universal Serial Bus only applies if there is no additional software required.

Printing is another problem issue for Chromebooks, as printers would need drivers. I've not seen any printers that advertise supporting Chrome OS devices. Google claims printing can be done using Google Cloud Print. I've read some about it, but have not yet been able to figure it out. It is made more confusing by Google having a Chrome browser and a Chrome OS. So far, I've settled for taking my files to a Windows PC to print.

Chromebooks offer a lot of promise for speedy and simple computing, but they don't always fully deliver on everything a user might want to do. I love my Chromebook and will continue to use it, but it appears it can't do everything I need. I guess I won't be giving up my Windows computers anytime soon and will continue to use it, but it appears it can't do everything I need. I guess I won't be giving up my Windows computers anytime soon. 

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NIBBLERS

By Jeannine Sloan

Meet Libby

Meet Libby; a new way to borrow and read library books. Learn more about Libby >

Hot Laptop

The thinner and more compact laptops become, generally, the less amount of space is reserved for cooling internal components. But when you start moving up the CPU chain, things start heating up rather quickly, especially if you happen to carry out heavy workloads with the laptop resting on your legs. This article lists some things to consider if choosing a laptop cooler and contains a link to laptop coolers at Amazon: <https://www.windowcentral.com/laptopcoolers-may-help-protect-against-overheated-parts-and-sweaty-legs>

How to turn off sound for notifications on Windows 10

<https://www.windowcentral.com/how-turn-sound-notifications-windows-10>

Browser's Saved Password List

Browsers are apps that save passwords for users. Each one has a slightly different protocol to access these and manage them. This article gives instructions for these browsers: Mozilla Firefox, Internet Explorer, Chrome, Safari, Opera.

<https://www.bu.edu/tech/services/cccs/desktop/software/troubleshooting/removing-password-from-browsers-savedpassword-list/>

Find Saved Passwords in Windows Edge

Click on the Menu Icon in the upper right corner of the browser.

Click on Settings.

Click on Show Advanced Settings link at the bottom.

UN-check the box by 'Offer to save your web passwords' button.

Click the Managed Saved Passwords.

Under the Saved Passwords box highlight the site you want to remove the password from then click on the X button. <http://www.online-techtips.com/computer-tips/find-hidden-saved-passwords-windows/>

What's That Element Used For

This pictorial periodic table is colorful, fun, and packed with information. In addition to the element's name, symbol, and atomic number, each element box has a drawing of one of the element's main human uses or natural occurrences. The table is color-coded to show the chemical groupings. Small symbols pack in additional information: solid/liquid/gas, color of element, common in the human body, common in the earth's crust, magnetic metals, noble metals,

radioactive, and rare or never found in nature.

<http://elements.wlonk.com/ElementsTable.htm>

Remember This Site

File extension or filename suffix is usually three, four or more characters at the end of computer file names divided by a dot. File extensions are useful to computer programs and operating systems like Windows or macOS (OS X), and basically telling them, what kind of data and file type they are working with and what associated program opens the file. File-extensions.org library contains thousands of file extensions and the database is still growing. A large number of file type entries have detailed descriptions, including their current use and the list of programs that can open, view, edit, convert or play unknown file you search for. Browse file extensions beginning with special characters (# \$ @ ~ & ^ ! etc.) Browse extensions beginning with a number | Browse by File type

<https://www.file-extensions.org/>

Internet Speed Tips

If you believe you should be getting faster internet speed this article gives you some things to check. Even if you don't want to make changes you can go through the exercises and take notes. These will be a great place to start a conversation with a techie if you find possible reasons for slow wifi.

<http://www.makeuseof.com/tag/fix-internet-speed-windows-tweaks/>

Handy Household Hints

Did you know that separating bananas from the bunch makes them last longer? Or that the best way to reheat a pizza (so it retains its crispy base) is to warm it in a fry pan? No? Then read on because these must-know household hints will change your life!

<http://www.kidspot.com.au/lifestyle/home/home-solutions/10-must-know-handy-household-hints>

Computer Security Resource Center (CSRC)

The Computer Security Resource Center (CSRC) facilitates broad sharing of information security tools and practices, provides a resource for information security standards and guidelines, and identifies key security web resources to support users in industry, government, and academia.

<http://csrc.nist.gov/>

The Jetson's Are Coming

The retail store (Sears) announced today a partnership with Amazon to sell Kenmore products on the marketplace website. Some of the items will be enabled with smart technology that will

interface with Amazon's Alexa home system.
https://www.digitaltrends.com/home/sears-amazon-eal/?utm_source=feedly&utm_medium=webfeeds

Drag and Drop Hint

Here's a foolproof way to get exactly the results you want: Use the right mouse button to drag objects between folders. When you drop them, Windows displays a menu that lets you choose whether you want to move, copy, or create a shortcut.

From Ed Bott

Smart Phone Specs

Processor: Simply put, the faster a processor is and the more cores it has, the faster your phone may be.

GPU (Graphics Processing Unit): Because the GPU is packaged within the processor on a smartphone, you won't find many straight comparisons being made between GPUs in different devices.

RAM and ROM: There's random access memory, and read-only memory. 3GB of RAM is the norm. ROM (Read-Only Memory, a.k.a "internal storage" or "flash memory") commonly referred to as "storage". Most phones today come with at least 16GB of storage, though 32GB is becoming more common

External Storage: Memory card or dongle to connect flash storage device to phone

Display: Size, resolution, and color representation

The higher resolution the display is, the sharper the image quality will be.

Battery: There's a great deal of variation between smartphones when it comes to battery size. The higher the milliamp hours (mAh), the greater the capacity, and the longer your phone should last on a charge. Read more here:

https://www.digitaltrends.com/mobile/smartphone-specs-explained/?utm_source=feedly&utm_medium=webfeeds

Mapping the International Space Station with Google Street View

<https://www.youtube.com/watch?v=IBTP62jd4DA&feature=youtu.be>

The Background App Manager

is another feature in Windows 10 taken from Windows Phone and it allows you to choose which apps you want running in the background. You can find the Background App Manager in Settings->Privacy->Background apps. In history apps settings, you can turn off whichever apps you don't want strolling in the heritage. this could save you on information and battery.



Love Good Photography?

This year's EyeEm Awards shattered all previous records: In five categories, we received more than 590,000 submissions from over 88,000 photographers. This is our jury's pick of finalists—the winners will be announced at the EyeEm Festival on September 16th. Keep scrolling to see all photos, or jump directly to a category.

<https://www.eyeem.com/awards/finalists/>

DLT

Distributed Ledger Technologies—think Blockchains "Blockchain technology is a decentralized database that stores a registry of assets and transactions across a peer-to-peer network," she said. "A public registry of who owns what and who transacts what. Those transactions are secured through cryptography, and over time that transaction history gets locked in blocks of data that are then cryptographically linked together and secured. "This creates an immutable, unforgeable record of all the transactions across this network." An interesting TechRepublic article is here:

<http://tinyurl.com/y83he8kp>

Get one-click access to 18 powerful Windows tools

Every Windows installation includes a wide assortment of diagnostic and troubleshooting tools. So many, in fact, that it can be difficult to remember which is which. That's when the System Configuration utility comes in handy. Type msconfig in the Run box, press Enter, and then click the Tools tab to see the entire collection. It includes shortcuts to some familiar tools, such as Command Prompt and Registry Editor, as well as shortcuts to some Control Panel apps you'd have to dig to find otherwise. Each entry includes a description alongside the tool name. Just select the tool you want to use and then click Launch. If that sounds fairly basic, you're right. But this tab also includes a hidden feature that can help you become an expert: Look below the list to see the full command line for the current selection, so that you can create your own shortcuts or add that tool to a script. For the IP Configuration utility and Performance Monitor, select the Advanced Options check box to open the full version of the selected tool. By Ed Bott



Idea For Creating Safe Passwords

Don't use passwords, use passphrases.

<http://www.businessinsider.com/idea-for-easyto-remember-passwords-2013-12>

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Special Interest Groups (SIGs)

w Work phone h Home phone c Cell phone
* Meets at an alternate location

Most SIGs will meet at Edina Executive Plaza, Conference Room #102, 5200 Willson Road, Edina, MN

Confirm with a SIG group if they meet elsewhere.
For more info contact the SIG Leader(s) listed here.

Get SIG announcements!
Link from www.tpc.com

Board of Directors*

All members are welcome! Check www.tpc.com for location.

Selected Saturday mornings

Linux on Saturday

This is for the Linux newbie and those trying to come over from Microsoft to a different operating system.

First Saturday @ 9 AM-Noon

Note: No Meetings June-August

Jack Ungerleider 612/418-3494 c
jack@jacku.com

Tech Topics

Technical presentation/discussion on various technical topics from the following areas:

- Web/Internet
- Mobile Devices and Apps
- Playing with Programming
- DIY (3D Printing, R-Pi, other hobby electronics, etc.)

Second Tuesday @ 6:00-7:00 PM

Every month
Right before the general meeting.

Jack Ungerleider 612/418-3494 c
jack@jacku.com

Microsoft Access

All levels. Presentations by expert developers within the group and by MS reps.

Third Saturday 9:00 AM—Noon

Note: No Meetings June-August

Steve Kuhlmeiy 952/934-8492
skuhlmeiy@hotmail.com

Microsoft Office

Addresses the use, integration, and nuances of the Microsoft Office applications.

Combined with Systems on Saturday

Third Saturday of the Month

9:00 AM—Noon

Note: No Meetings June-August

Steve Kuhlmeiy 952/934-8492
skuhlmeiy@hotmail.com

Directions to Summit Place for General Meetings:

Proceed to Eden Prairie Center Flying Cloud Drive . [Flying Cloud Drive runs along the West side of the Eden Prairie Center.] Once you have driven past Eden Prairie Center (on the left) along Flying Cloud Drive you will come to a stop light at Prairie Center Drive. The next intersection with a stop light and left turn lane is Fountain Place. Turn left at Fountain Place and go straight into the parking lot. Turn left again to the first covered entry way of Summit Place. There is plenty of parking in the large parking lot in front of the first Summit Place covered entry way. When you enter the door at the first covered entry way, ask to be directed to the Performance Room for the TC/PC meeting. For a map of more detailed directions and *info on Web SIG and Board meeting*, check the TC/PC website.

Directions to **Edina Executive Plaza** for **Systems on Saturday, Access, Word and Picture Perfect SIGs**: Take Highway 100 to the 50th Street/Vernon exit. [If you have come from the north, cross back over Highway 100 to the east side.] Take the first right and go past Perkins [The golf course will be on your left.] and continue on the east frontage road (Willson Road) to the next building—5200 . There is ample parking in the building's lot. Conference Room #102 is on 1st floor.

Help yourself by helping others!

Join the team & share your knowledge with others.

Contact TC/PC at www.tpc.com

Meetings start at 7:00 PM (9:00 AM on Saturday) unless otherwise noted. *Meets at Edina Executive Plaza.

August
September

SUN	MON	TUES	WED	THU	FRI	SAT
		1	2	3	4	5
6	7	8 General Mtg Stock Screener 7PM 6PM Tech Topics	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31	1	2
3	4	5	6	7	8	9 Linux on Saturday 9AM-11AM
10	11	12 General Mtg TBA 7PM 6PM Tech Topics	13	14	15	16 MS Office and Access 9AM-Noon
17	18	19	20	21	22	23
24	25	26	27	28	29	30
<p>Note: Saturday SIGs were suspended for the summer. They are back in September.</p>						

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Rational Backup Strategy

By Dick Maybach, Member, Brookdale Computer Users' Group, NJ
January 2017 issue, BUG Bytes, www.bcuq.com, n2nd (at) att.net

In developing a plan to defend against the loss of data and software from operator, hardware, and software failures and malicious acts, it's important to take a systematic approach rather than responding to the latest sensational article or alarming ad. Your first step should be to identify the threats. Otherwise, you could end up with a Maginot Line, an expensive defense against an attack that didn't occur and was ineffective against the one that did.

Common threats to PCs and the information they hold include the following:

- Operator errors are common. You mistakenly delete a file, a directory, or an entire partition. If this involves your software, it may disable the PC.
 - Software sometimes contains coding errors that create problems, which if serious enough can crash the operating system. Simply repairing the resulting damage doesn't cure the root cause. However, often symptoms appear only under rare conditions, which means you can only repair the damage and hope these don't recur.
 - Hardware malfunction often immediately disables the PC, and the solution is to repair the failure and then restore any damaged data. Some problems, such as intermittent RAM failure can be difficult to identify and may require a visit to the shop. Disk failure is common and this requires replacement of the disk and then restoration of the software and data it held.
 - Malware is software that is designed to cause damage. Individual programs acquire colorful names, such as virus, ransomware, rootkit, and Trojan horse. Each newly discovered name results in a new commotion, but the remedy is the same for all – remove the malware and then repair the damage. A worry here is that the malware may reside for some time before damage appears, so that you back up the problem as well as your software and when you restore from a backup, you also restore the malware.
 - PC loss can occur when traveling with a laptop or when one fails to the extent that repair isn't economically practical. You must replace not only the hardware, but any original equipment manufacturer (OEM) software that is licensed only for the lost machine. You can restore only your data from backup.
- Environmental catastrophe most commonly results from burglary, fire, storm, or flood. Here you lose not only the PC, but perhaps all the material associated with it, including documentation and backup media. At some level, perhaps nuclear holocaust or asteroid strike, you probably decide you don't care as the loss associated with your PC is trivial compared to other damage.

You will surely find that no single approach will protect against all of these, and you may decide to ignore some threats.

You have two software and data repair approaches: reinstall from the original sources or recover from a snapshot of your disk taken previously. Only the latter is possible with data; the receipts needed to recreate your 2012 tax return are long gone, as are the vacation photos on your camera's SD card. However, with software, you have choices:

1. Use the original distribution media to create a fresh installation, configure it, and apply any updates for the OS and all the applications. This is tedious, but the result is a clean system, free of whatever problem (assuming it's not with your hardware) that corrupted your system. Most PCs are delivered with the operating system already on the disk and without its installation media; they have instructions on how to create a repair disk, although you may have to dig to find them. Most also have a recovery partition on the disk that you can use to recreate the initial configuration. In my experience, the hard disk is the PC component most likely to fail, which of course makes the



recovery partition unavailable. The software supplied with a PC is almost certainly sold as OEM products, which means it is licensed only for that hardware, and it often includes feature to prevent it from being used elsewhere. As a result, you need a separate set of recovery media for each PC, and you need to be able to identify to which hardware each set belongs.

Recovering the software from a backup is far simpler, because it restores all the software in one step, which has already been configured and updated. However, if the failure was the result of a developing software problem, you also install its root cause. For this reason, many keep backups made at different times, hoping that if they go back far enough, they'll find a clean one. Of course, when you restore an old backup, you most likely also restore your old data, destroying any acquired since. Your recovery plan must include a remedy for this.

There are several choices of backup media:

1. a backup directory on your system disk,
 2. a backup partition on your system disk,
 3. a separate internal backup hard disk,
 4. an external backup disk, and
- a cloud service.

Only hard disks and cloud services have the capacity to back up modern disks. Optical media capacities have not kept up with those of hard disks, and far too much of it has poor reliability. Cloud service adds security concerns, both because your data travels over the Internet and because you have entrusted it to an outside entity.

As with the backup medium, you have choices about what to back up. These include:

1. a complete disk image,
 2. all the data files in the home directory, and
- only those data files in the home directory that have changed since the last backup.

Some strategies include backing those OS and application files that have changed, but this can be risky, as these often depend on each other. If you replace a file but not something with which it interacts, the result can be an inoperable system. With software, it's safer to replace everything.

Some backup program developers recommend that your PC have constant access to the backup medium. While this insures that all your data is backed up as soon as its created, it also insures that malware also always has access to the backup. This is a good scheme for protecting against operator error, but less so for protecting against malware and software errors. For the latter, you want your backup medium to be accessible for only very short periods of time. You may decide to use two methods, one that backs up continually to protect against operator error, which are common, and a second that backs up only periodically to protect against such threats as malware.

Backup software is a poor area in which to experiment. Obtain it from well-known vendors with good reputations. Consider only products with favorable reviews from responsible experts. Microsoft includes a suite of recovery software with its operating systems, and you should have a good reason for using something different. I discussed their Windows 7 version of this in the February 2012 issue of BCUG Bytes and the Windows 10 version in the May 2016 issue, available at www.bcug.com. =

After obtaining your choice, test it as best you are able. For a thorough test, you would have to erase your disk and restore a backup, but don't do this. Instead, make a copy of just one file or directory; then backup, delete, and restore it. Compare the original and restored versions. If the recovery software includes a bootable disk, test it on the PC where you will use it to be sure it does boot. This will probably require that you make some changes in your BIOS. Record these before you change them back, as frequently, the BIOS settings must be different for internal disks and external media. You may also wish to obtain and test a reliable repair utility disk. If you suspect a virus infection, you can boot with it and the virus won't be active. This will allow you to copy your data files to an external drive without its interference. I discussed some of these tools in articles in the April, June, July, and August 2012 issues of Bytes.

My strategy is that every week I have a scheduled backup of all the data files that have changed since the previous backup. This is to an internal hard drive, separate from my system and data drives. As a result, I limit my loss from

most causes to the data I generate in one week. Once a month, or when I think of it, I back up to an external hard disk, all the data files that have changed since my last external backup. My operating system is Linux, and I have its installation USB memory stick. Almost all my applications are available from the distribution's repositories. As a result, it's convenient to restore all my software as a fresh install, and I do this every two years, even if I have no problems, just to clean out the accumulated cruft. Reviewing this plan against my list of threats, we see the following:

- An operator error can destroy at most a week's work.
- Similarly, most software errors and hardware failure can delete up to weeks of work. Although if one affects both the service and the on-line backup disk, I could lose up to a month's worth, but this is very rare.
- Malware could cost me up to a month, if it affects all the disks. But malware in Linux is uncommon and, so far, I not had this problem.
- Although I do have a laptop, I transfer any data to my desktop as soon as I get home. As a result, losing it would lose only the data acquired on that trip.
- The weak point in my plan is environmental catastrophe, as all my PC gear resides in one room, and I could lose all of it in one incident. I could improve by adding a backup file server to our home network and locating it in the basement or better by storing a backup drive at a neighbor's or in my bank deposit box or using a cloud storage service.

You should make a similar assessment of your backup plan against your own list of threats to see if it needs adjustment.

Your recovery approach of course depends on what is damaged. Your data resides in what is often called the home directory, and this can be restored only from a data backup. However, Windows may store some of your data (such as Internet favorites and e-mail data) in the system area, and recovering them requires a system restore. The operating system and applications reside in what's known as the system area. They can be recovered by restoring a system backup or by making a fresh install from the original distribution media.

If you use Microsoft's backup software, system backups are in the form of full disk images. If your system won't boot, it may be because the boot loader, or in new PCs the UEFI partition, has been damaged. These can be repaired in Windows system using the Windows recovery disk. See the MS Website for instructions. If the BIOS ROM is corrupted, a competent shop may be able to help, but you may have to return the machine its manufacturer.

How you recover depends of course on how you backed up:

1. The fastest is to restore from backup as the result will be software that is updated the last version of your data. If this includes restoring the OS, you must be able to boot from live media, which means you have to properly set up your BIOS. Later PCs use UEFI, which adds complexity.
2. If you decide to re-install the OS you can try to restore from the PC vendor's recovery partition, which places your computer to its state when you first purchased it. You will have to reinstall all your applications from their distribution disks and your data from a recent backup.
3. If the recovery partition isn't available, you'll have to use the OS distribution disk if you purchased it separately or its recovery disks if the OS was installed by the PC vendor. (This of course assumes you created these.) As a last resort, if the former isn't possible or if you doubt your abilities you can take your PC back to the vendor who sold it to you or to an independent shop to have the OS re-installed. You then must restore any applications and your data yourself. It should be clear that record-keeping is a very important component of your plan. In particular, be sure to label your external backup media and any notes. You don't want to restore from the wrong computer.

Creating and following a good backup discipline require more than trivial knowledge, thought, and time. Many computer owners choose to take a "Do nothing and hope for the best" approach or they follow the advice in the latest article or ad they've read, and neither approach is sound. As a last resort, there are commercial firms that will attempt to recover data from damaged or corrupted storage media, but the results aren't certain and the costs are high (up to multiple thousands of dollars). ☹

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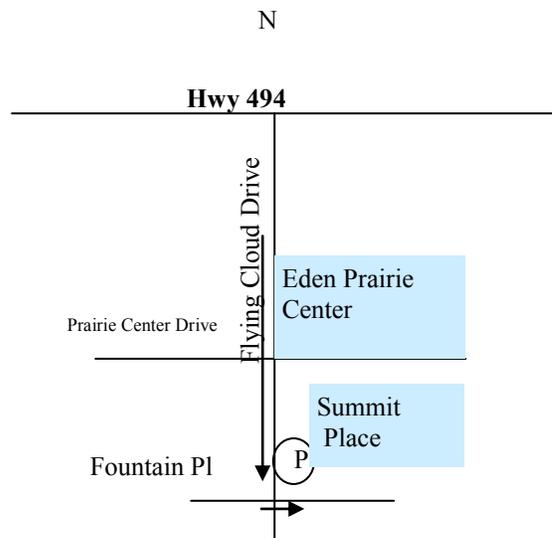
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