Midland Computer Club
Midland Michigan

BITS AND BYTES

OCTOBER 2020

https://mcc.apcug.org/

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GENERAL CLUB MEETING
Via ZOOM

Wednesday, October 21, 2020
6:00 P.M.

Mailmask
By Larry Piper, Midland Computer Club, Midland MI

Have you ever seen an offer that looks too good to pass up? But you have reservations about giving out your email. Yes, you know you could create a second email address which is only for such times as these. But you would have to set up a separate account on your email client in order to read your junk email. Even worse you might have to go to a special website to read your junk email. You might even have to pay for this junk email service. I have a deal for you. Check out Mailmask (search with Google). It is free to use, but a bit tricky to use. Stick with me, and I will lead you through the steps.

First you have to select one of your existing email accounts. It could be your only email account. I would suggest you use a secondary email account you already are checking, if only occasionally. This way you won't clutter your main email account with probably junk emails. As an example let's say your selected email is "batman123@gmail.com".

Secondly, you go to the Mailmask website. You will find you are at https://msk.sh. (I learned the sh domain is from Saint Helena island. which is a 45 sq. mile dot in mid-Atlantic with a population of 6,600.) Next you need to come up with a key word--nothing fancy because it will be used as part of your new email address. Let's choose "bruce" to stick with the batman theme.

Next you create an account at msk.sh with the above information. They send a code to batman123@gmail.com to verify it is really you. You confirm the code (a four digit number). Now you can send a test email from the msk.sh website. The site will suggest the word "funkymonkey" or it may also use the word "test". The email you send will say it is from "funkymonkey@bruce.msk.sh" or "test@bruce.msk.sh".

Finally, you go to your email client and check batman123@gmail.com. Sure enough you have an email from funkymonkey@bruce.msk.sh or test@bruce.msk.sh. I use Thunderbird as my email client, but I see no reason why Windows 10 Mail or Outlook would not work. I also believe Mailmask would work at Google or Yahoo website; you would just have to sign in to the correct account.

There is one more surprise benefit. Mailmask allows the use of aliases. Instead of an email address that says text@... or funkymonkey@... ,you can selected any word you want. And you can change this word with every email. And you do not have to tell Mailmask ahead of time what these alias words are. Say one evening you write three emails you don't want traced to you. The emails are about possible donations. The first is to a Republican candidate, the second is to a Democratic candidate, and the third is to the Church of Scientology. So you use the keywords demo, repub and scientology in your three emails. Sure enough the next day when you check your batman123@gmail.com email account, you have three confirmation emails, one addressed to demo@bruce.msk.sh, one addressed to repub@bruce.msk.sh, and one addressed to scientology@bruce.msk.sh. You continue to receive further emails, all unwanted, from these three addresses. So now you go back to your account on https://msk.sh. You sign-in with the email batman123@gmail.com. They send this email a code, and you confirm the code. Now you go to the dashboard which shows all these aliases in alphabetic order: demo, funkymonkey, repub, scientology, and test. All are enabled. You take your mouse and disable all but "test". From now on you will not have any emails forwarded to batman123@gmail.com from the other four aliases.

Pretty neat. There are no passwords to remember at Mailmask. You use your selected email address to sign in, and then respond with the code which they send to this address. I also discovered that my test messages forwarded through Mailmask actually reached my Thunderbird account faster than a duplicate message sent directly to batman123@gmail.com. Go figure. One final comment about Mailmask is that it is free. Yes, they have a paid version, $3/mo, if your email load gets too large.

I would concede that you could forward any or all of your email addresses to one main email address--if you take the time to figure out how to do this. But spam may ruin one or more of these addresses, and the only way to halt the spam is to delete this email address. With Mailmask, you just kill the alias, and no more spam is forwarded.

Not Another Sunset!
By Greg Skalka, President, Under the Computer Hood User Group
Drive Light Newsletter—www.uchug.org—president (at) uchug.org

I have seen the sun set on a lot of technology. As tech improvements are made and new innovations come to market to brighten our days, the old devices, systems, and ways of doing things often slowly pass over the horizon and out of sight.

In most cases this is a good thing, bringing many benefits, but there are rarely any downsides, however minor. With a lot of innovations, there can still be some advantages to older ways. Young people today don't know what it is like to get up from the couch, walk to the TV and turn a knob to change the channel, yet with all that convenience, the remote control can contribute to a sedentary lifestyle. Another thing many don't remember is having to manually defrost a freezer. Self-defrosting technology saves labor but uses more energy. Automatic transmissions in automobiles made driving easier for everyone but provided poorer mileage until the technology improved. Now many automatic transmissions are manuals with a computer doing the shifting, and it is hard to find a new vehicle with a true manual transmission. A true manual can still be an advantage, however, since when so few today know how to operate them, they are less likely to be stolen or carjacked. A lot of tech innovations improve our lives in almost all aspects, and there seems little reason to retain the old ways.

Computer technology has improved greatly over 40 years. It would be hard to argue that we would be better off today with no Internet and non-portable devices controlled through a text interface or rows of switches, with large monochrome displays that can't show graphics. All the changes we've seen, from the DOS command line prompt through ten or more versions of Windows, all the versions of Apple products, from the stationary desktop through laptops, Chromebooks, tablets, smartphones, and watches, have meant that a lot of products have seen the sun set on them over the years. In most cases, we run enthusiastically towards the rising sun of new products and capabilities. In a few cases, though, it seems major tech players want to push our still useful and valued technology off a western cliff into the abyss of obscurity before we are willing to part with it, all in the interest of ringing up new sales.

I live in the Wintel (Windows-Intel) world and have seen many products and operating system sunsets. DOS was revolutionary, but Windows graphics and mouse use made leaving it easy. Windows XP was a great OS; I'm writing this on a 15-year-old PC that still runs fine (without an Internet connection), with an early version of Microsoft Word that has all I really need. MS Office is one case where I feel Microsoft has been adding "features" and changing versions primarily to squeeze more money out of users. There have been some nice feature improvements over the years, but a lot of the recent changes have been to the user interface, which I feel was just fine as it was. I'm tired of companies that feel they need to change the look and feel of their software to justify new versions and fees. I especially don't care for the idea of "subscription" software (like Office 365), where I feel I've just become a revenue stream to some company.

I know some will say I should perhaps switch to Linux, or at least to open-source (and free) office productivity software, but I unfortunately still live in a working world, where I must use my employer's MS OS and Office

I prefer not to cloud my sadly-limited mind with having to be fluent in multiple ways of doing things. I have the utmost respect for multi-lingual people, as I have really only ever spoken English, and I often don't feel I've mastered the one language.

I had a good run with Windows 7 and was sad to have to plan last year for its January 2020 security sunset. A year ago, my wife and I were running three Win7 computers (a desktop and two laptops), three Chrome OS devices (two Chromebooks and a Chromebit), a Win10 computer I hardly used, a couple of tablets, an Android Smartphone and an iPhone. I'm still transitioning to Windows 10; while my wife is happy on her new Win10 desktop, I'm still setting up the new Win10 laptop I bought myself. I try to be good and use my old Win10 computer, but like an unmotivated dieter, I still briefly cheat from time to time and reconnect the network cable on my old Win7 laptop.

I've come to terms with Windows 10, having had to use it at work extensively. The Win7 security end-of-life deadline turned out to be a boon for Microsoft and computer makers, as least in regards to my family, It caused me to buy two new desktops (I bought my mom one as well) and a laptop I might not otherwise have been in the market for. It is nice to have new, faster and better equipment, but I resent being forced into things by the deadlines of others.

While I grudgingly use Microsoft's products, I also chose devices running Google's Chrome OS to add to my tech stable. I bought my first Chromebook, an Acer Chromebook 11, in 2015. The following year, I bought an Acer Chromebit stick computer. Chrome computers are inexpensive (at least the ones I buy are), quick booting, and very portable. They are great for going on the web and for reading and light writing tasks but are too underpowered for much else. I found my Chromebook was great for web browsing, reading the newspaper, and a wonderful travel accessory. I bought a second Chromebook, a Samsung XE501-C13, in a 2018 Black Friday sale simply because I loved my first one so much I wanted to have a spare.

Photo 1: Acer and Samsung Chromebooks

Google started out of the gate with what Microsoft only went to with Windows 10 -forcing automatic OS updates on the user. Google's Chrome OS updates are small and quick, so you hardly notice they have happened. They have seldom changed the look or features, sticking mostly to security, and I don't recall hearing of anything breaking as the result of an update. Microsoft of course earned disdain from early Win10 users with forced OS updates happening at inopportune times, taking a long time and breaking existing capabilities.

I use my Chromebooks every day, but myChromebit has seen little use. It is plugged into an HDMI port on the back of our smartTV. I bought it a Bluetooth keyboard and mouse and thought I could surf the web with it like my Chromebooks, but my old eyes have problems with the small text at normal TV viewing distances. It is good for watching YouTube videos, but we don't do a lot of that. Since COVID, we have been using it every Sunday morning, as our church now broadcasts services on YouTube.

It was on one of these Sunday morning Chromebit viewing sessions that I noticed it had an odd notification: "Updates end November 2020"! With dismay, I started to research this issue. It appears Google has set up a security sunset date for each model of Chrome OS device. This was not well advertised, so users often only find out near the end of their device's security lifetime.

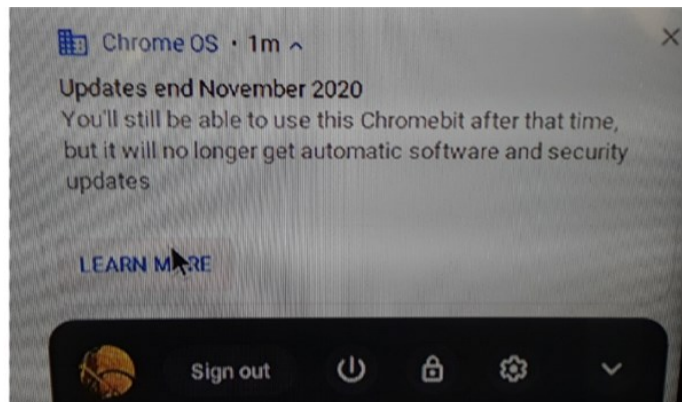Photo 2: Acer Chromebit stick computer

Photo 3: Google Sunset Notice

It turns out all Chrome OS devices have a set date beyond which no more updates will be provided, the Auto Update Expiration (AUE) date. The auto part of AUE doesn't mean much, as I didn't find any evidence you could manually update the OS after that date either. Google provides information on this at www.google.com/chromebook/older. It is not clear if the manufacturers have any input into this date, but Google certainly appears to, as there is evidence they can change it.

Google emphasizes that this does not prevent the use of the Chrome OS device after the AUE date, but the device will stop receiving Chrome OS and browser updates. These updates include:

- "Security updates, bug fixes, and new features for Chromebooks. Existing features may stop working."
- "Support for certain apps and extensions that require specific Chrome OS or browser versions."

I looked up the AUE dates for my three Chrome OS devices. To find the AUE, go to settings, then at the very bottom of the left panel, select "About Chrome OS." Select "Additional details," and in the "Update schedule" section the AUE will be shown. I found mine were:

Asus Chromebit - November 2020
Acer Chromebook - September 2021
Samsung Chromebook - June 2022

This means I'll lose updates on the Chromebit in about 6 months, and I have only a year or two left on my Chromebooks. Now I'm getting that same sinking feeling I get with Microsoft.

I found out a bit more about the AUE from some articles on Chrome enthusiast websites (chromecomputing.com and chromeunboxed.com). According to these articles, Google originally set the AUE dates based on an assumed five-year device life expectancy. The supposed goals were to keep the Chrome OS from having to maintain compatibility with older hardware, keep its reputation as a fast and reliable OS intact and incentivize hardware manufacturers to continue to create new Chrome OS products. They said Google changed to 8+ years of update support for products, starting with those released in 2020. Additionally, Google may be extending the AUE date for recent products to match their new assumed lifespan, so it is possible to find the prior AUE for a product extended.

If Google sticks with the five-year plan for my products, I will be disappointed, as that will make them more restrictive than even Microsoft. I bought the three Win7-installed computers I just retired from use between 2010 and 2012, meaning Microsoft allowed me 8-10 of operation with that OS before "forcing" me to change. I don't know if I'm careful or just lucky, but I've yet to have a computer fail; they always get retired (mostly unwillingly) first.

I guess I'll be looking for a new Chromebook come the Black Friday sales this year. And now every time I see my Chromebooks, in my mind I'll be hearing Elton John singing "Don't Let the Sun Go Down on Me."

Windows 10 in S Mode
By Carol Picard, Midland Computer Club, Midland MI

Windows 10 in S mode is designed to be a more secure operating system. S mode is available in Windows 10 versions: Home, Education, Pro, and Enterprise. If a computer indicates Windows 10 in S mode it is likely Windows 10 Home version in S mode. When purchasing a new Windows PC might have to look at the specifications carefully to determine if it is S Mode.

S Mode is marketed as a more secure version of Windows as only applications available from the Microsoft Store can be installed. This concept isn't different from other devices that only allow installing apps from an app store, e.g., Google Play Store or Apple Store. However, those stores have more offerings than what is currently available from the Microsoft Store.

For someone primarily using email, a web browser (Microsoft Edge), and word processing, S mode might be a good, secure option. If you buy a computer in S mode, give it a try. You can always convert to non-S mode.

Converting to non-S mode, which removes restrictions, is permanent - cannot go back to S mode.

This How-To Geek article contains information on S mode, what it offers, and how to convert to non-S mode.
https://www.howtogeek.com/354057/what-is-windows-10-in-s-mode/

For this article used Lenovo Ideapad 3, Intel Core i3 10th generation, 8 Gb RAM, 256 Gb SSD.

Setup
Appeared to be identical to setting up non-S mode computer. Was able to set up without using Microsoft account by not connecting to Internet during initial setup. Created multiple accounts: local account with administrative permissions; local account with standard permissions; and Microsoft Account with standard permissions.

Most of the standard Windows apps that are pre-installed in non-S mode versions appear to be available, although didn't do a side by side comparison.

Trying to install non-Store applications shows the following:
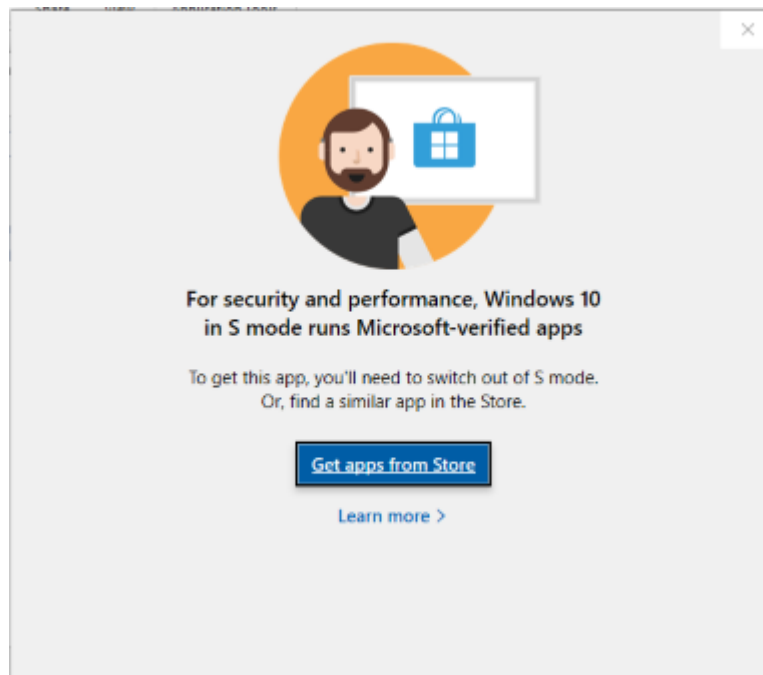
Clicking on *Learn more >* provides instructions for taking computer out of S mode.

Was unable to install a program recommended by the computer manufacturer (Lenovo) that checks for software updates. One exception to non-Store applications is ability to upgrade to latest version of Microsoft Edge from the Microsoft website.

**Executing commands from Run prompt**
While there are several commands that can be executed from Run, e.g., msconfig, control, taskmgr, etc., some are unavailable, e.g., cmd, powershell, regedit. Attempting to run those commands, get following notification:
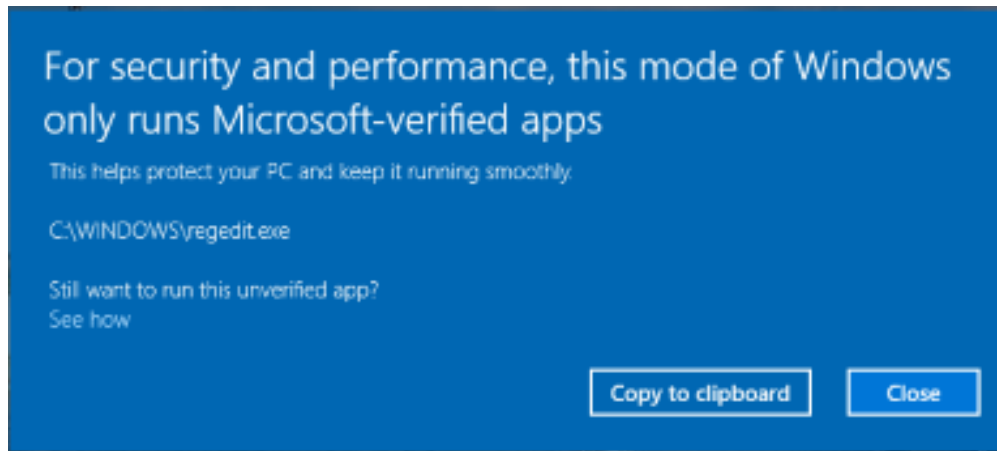
Microsoft Store
When installing apps from the Microsoft Store, might get prompt regarding signing in with Microsoft account. Read carefully. Sometimes signing in with Microsoft applies just to a specific app. In other cases, it switches your user account to a Microsoft Account. If you see option to switch to Microsoft Account or just sign in for this app, chose to just sign in for the app.

For free apps, may want to proceed without Microsoft account by clicking No, thanks.
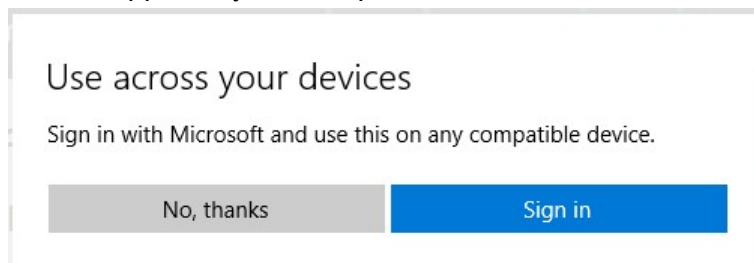
Even after responding *No, thanks* may still prompt for Microsoft Account when app is installing but can close that window.

For paid app, have to sign in with Microsoft Account because payment options are handled through a Microsoft account. May be restrictions about using paid apps across multiple devices. Read app information for specific details.

Store apps are installed individually for each user. If you install a Store app, without logging into Microsoft, you can log off from that user, log into another user, open Microsoft Store, click on three dots in upper right, click open My Library, see all of the apps downloaded on the computer and install them on another user account. Did not test whether a paid app purchased under one user account can be used under a different user account on same computer.

Bluetooth Mouse
Paired Bluetooth mouse with no problem.

Printer
Set up printers using Settings - Devices - Printers - Add Printer. For HP printers, HP Smart (which allows some advanced features, e.g., scanning) was automatically installed. Expect other printers, e.g., Canon, Epson, etc. could be added in same manner.

Antivirus
Microsoft's free antivirus - Windows Security - is pre-installed. My preference is to use just the Windows provided security. This Lenovo computer has McAfee Personal Security pre-installed but did not attempt to activate it. Additional antivirus programs are available in the Microsoft Store.

Accessing files on other devices
Was able to access files on a Network attached storage device. Could also access shared folders with other Windows computers.

Web browser/search engine
Unable to change Edge default search engine from Bing. However, from Edge can access google.com, yahoo.com, etc. and use that website's search engine.

There were some browsers available in the Microsoft Store but none that I recognized.

Although Edge is already the Default Browser, when launching Edge it kept asking if I wanted to make Edge the default browser. When clicking to make it the default, it went to Settings - Apps - Default Apps but Web Browser was not an option so it couldn't be changed there. Next time browser was opened and the question appeared noticed there was an X on the far right of the screen. Clicked on the X and the question stopped displaying.

Webcam
Computer has an internal webcam but wanted to try using an external webcam. Connected USB webcam. Windows detected the USB webcam and set it up. Camera app defaulted to internal camera and did not present option to switch to USB webcam. From Device Manager disabled internal camera and Camera app automatically used USB webcam. Disconnected USB webcam, enabled internal camera in Device Manager, and Camera app switched back to internal camera.

Zoom video conferencing
Have to use Zoom option to "join from your browser", since can't install Zoom application. Doesn't seem to be a way to test audio using zoom.us/test. However, started a meeting and was able to use audio and video and adjust audio settings.

Office Suites
Microsoft Office programs are pre-installed but require activation. Attempting to run Word, it presented option to sign in with Microsoft Account. Declined that option and it offered to run it for three days without activating. Could continue to use after three days but would lose many features.

If you already have Microsoft Office (365) subscription should be able to log into your Microsoft account and use that subscription, depending on how many computers you are licensed for. If you have license key for a stand-alone version of Microsoft Office, e.g., Office 2010 or Office 2013, don't think those could be installed and doubt the activation code would work with the pre-installed Microsoft Office applications. Can use Microsoft Office web applications for free.
https://www.microsoft.com/en-us/microsoft-365/free-office-online-for-the-web

Libre Office Vanilla is the official version approved by Libre Office and the Libre Office website links to this as the official app. Cost from Microsoft Store is $9.99.
https://blog.documentfoundation.org/blog/2020/01/27/installing-libreoffice-on-windows-10-in-s-mode/#:~:text=Installing%20LibreOffice%20on%20Windows%2010%20in%20%E2%80%9CS%20mode%E2%80%9D,that%20users%20can%20install%2C%20and%20imposes%20other%20restrictions.

Other office suites in the Microsoft Store can be easily mistaken for Libre Office
• Libra Office Suite (uses Libre Office icons) - developer HLXB - Free
• Libre Office 6.4, developer muzzumoh - $2.29
• LibreOffice Windows Store Version - developer winuwp - $9.99

There were several other Office Suites in the Microsoft Store. Some examples:
• Cool Office Suite for Windows 10 - Free - compatible with Microsoft Office (Word, Excel, PowerPoint & Txt), Google (Docs, Sheets, Slides) and Open Office format
• Open Office - Writer, Calc, Impress, Base, Draw, Math - $2.49
• WPS Office Suite - Free to install but with in-app purchases
• Neat Office - Word, Excel, PDF, Powerpoint - Free

Backup
There are backup apps in the Store but did not investigate their capabilities.
https://www.windowscentral.com/how-create-full-backup-your-windows-10-s-device

Can manually back up by connecting a flash drive or external hard drive and manually copying files.

Microsoft OneDrive is an option but for a place-in-time backup, would need to log onto OneDrive through the browser, create a folder, then manually copy Documents, Pictures, etc., to that folder. Do not set up sync for that folder. Office 365 customers get 1 TB of storage. Those who pay for OneDrive but not Office can get 100 GB for $1.99 per month. Free accounts include 5 GB of storage.

Google Drive account comes with 15 GB free to use across Google Drive, Gmail, and Google Photos. Can upgrade to Google One to get extra benefits - 100 GB $1.99/month ($19.99/year); 200 GB $2.99/ month ($29.99/year); 2 TB $9.99/month ($99.99/year). Setting up sync can result in loss of files if they are deleted either from PC or from Google Drive. Google Photos is a separate option and can have unlimited free storage for photos saved in High Quality in Google Photos. Once photos are converted to High Quality (from whatever quality they were originally taken in) they cannot be converted back to the original quality.

Other Cloud backup solutions, like iDrive, won't work because they require installing a program.

Password Manager
If password manager has extension or add-on for Edge, should be able to use it.

Other programs/apps
Checked a dozen programs/apps that I use regularly on another Windows PC (not including the ones mentioned above.) Six were available in the Microsoft Store although one indicated in-app purchases and another was not free. Six were not available from the Store, although there were apps that appeared to provide similar functionality.
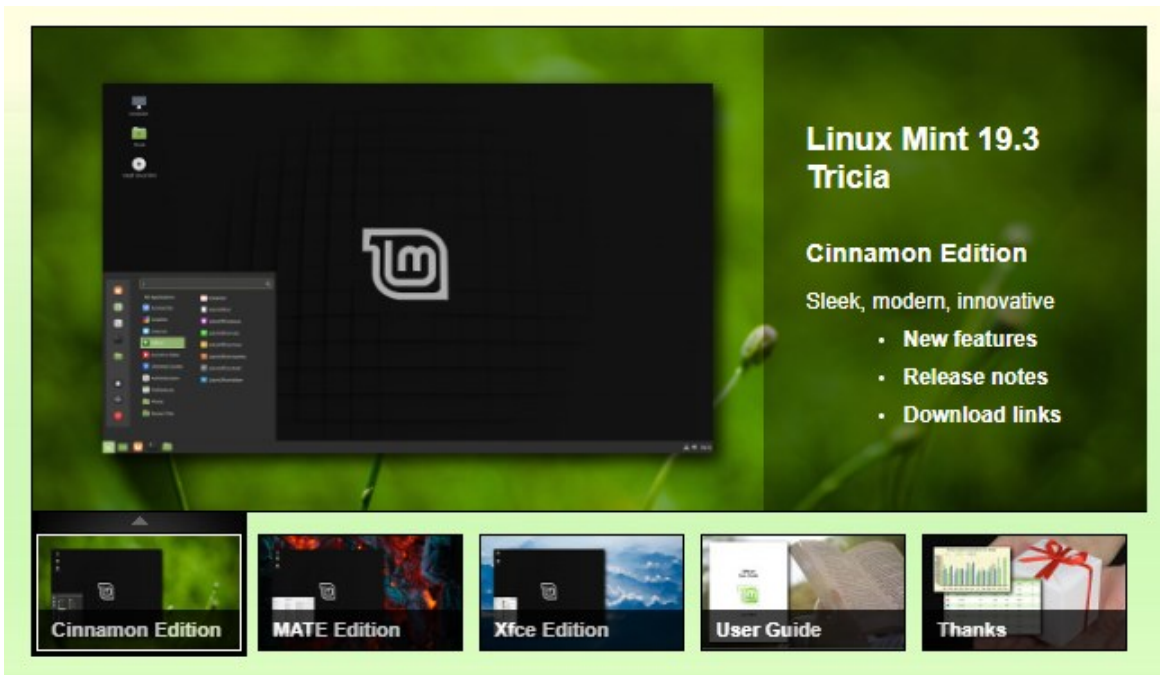

Desktop Linux Mint 19.3

By Tom Burt, Vice-President, Sun City Summerlin Computer Club
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Even though I'm predominantly a Windows 10 user, every 18 months or so, I teach a seminar on "What's New with Linux." As you might guess, it doesn't usually draw much of a crowd. My favorite "distro" (version) is Linux Mint because it's free (open source), it comes with a very nice graphical desktop (actually, a choice of three), it includes lots of bundled applications, it's well-supported and it performs great on old, low-end hardware. Also, because it is internal design, Linux is innately very secure. With Windows 7 losing support from Microsoft as of January 14th, if you're now among the Windows 7 orphans, you might want to consider installing Linux Mint to replace or run alongside Windows 7 on your "well-seasoned" PC. Following is an overview of Linux Mint 19.3, the newest version released in December 2019.

How to Get and Install Linux Mint 19.3

Browse to: https://linuxmint.com/. The home page has lots of links to information about Linux. Click one of the buttons to choose which desktop version (Cinnamon, Mate or Xfce) to download. A page of information, including download links, will appear. Click one of the "USA" download links to download a 64-bit "ISO" (DVD) image file to a folder on your PC's hard drive.

LinuxMint.org Home Page with Cinnamon Desktop Version selected

Once the Linux Mint ISO download is complete, you can burn the ISO image to a DVD to make a bootable setup DVD. Or, you can download and use a free program called **balena Etcher** (https://www.balena.io/etcher/) to convert the ISO image to a bootable USB flash drive.

To get a feel for Linux Mint, you can simply boot and run Linux Mint from the boot media without installing it. This is called a "live session". The live session desktop includes an "Install Linux" icon that will let you install Linux. In the installer, you can choose to replace the current operating system, or you can install Linux Mint alongside the current operating system. This will configure your PC to dual-boot Linux and Windows. The 64-bit Linux Mint configuration defaults are fine and the installer will automatically handle secure boot and UEFI issues.

For comprehensive Linux Mint installation instructions, see:
https://linuxmint-installation-guide.readthedocs.io/en/latest/index.html

Another alternative is to set up Linux Mint in a virtual machine. For this, I use **Oracle Virtual Box** (https://virtualbox.org). After the empty virtual machine has been set up, boot it from the Linux Mint ISO and install Linux Mint to the virtual machine's virtual hard drive. To learn more, see my **Virtual Machine seminar** at https://www.scscc.club/smnr/Virtual_Machine_Primer.pdf.
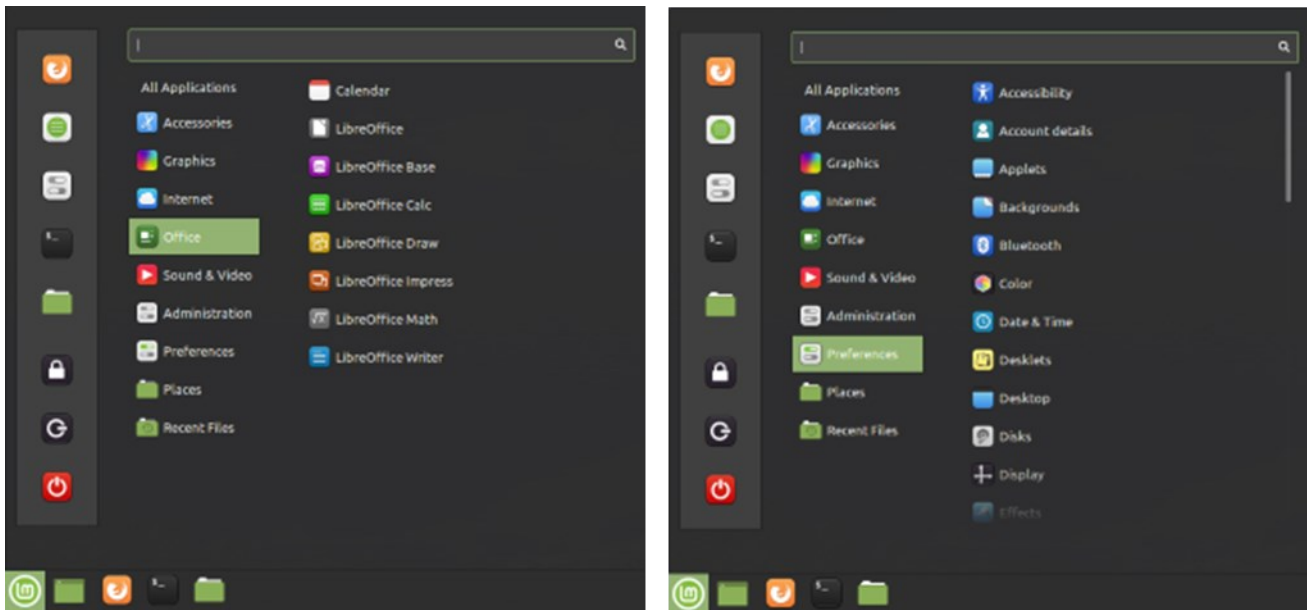
Exploring Linux Mint Cinnamon

Linux Mint with Cinnamon Desktop

Linux Mint is a Windows 7 work-alike, so it's relatively easy for a Windows user to get going with it. The above screenshot of the desktop shows desktop icons, a Task Bar with a Start button, "quick launch" icons and a tray area, and a customizable desktop background.

You open the Start Menu by clicking the button in the lower-left corner. The Start Menu has a pane at the left for launching key applications and functions, a search window at the top, a column of application categories, and, for a selected category, a list of the applications in that category. A scroll bar appears at the right edge when needed.


Linux Mint Cinnamon Start Menu Screen Shots

Among the bundled applications in Mint 19.3 is **Libre Office**, which includes a spreadsheet, word processor, presentation graphics, drawing and flowcharting, and several others. Libre Office can open and save in MS Office file formats. The Firefox web browser and the Thunderbird email program are also bundled. Mint 19.3 features a new video player named Celluloid and a music player named Rhythmbox. Accessories include a calendar, calculator, file viewer, a password manager, and a note-taking tool.

The **Preferences** settings tool allows you to customize the look and feel of Linux Mint. This includes choosing your desktop background (pictures, solid colors, gradients).

The **Update Manager** handles checking for and installing updates to Linux Mint and its applications. The Update Manager alerts when new updates are available via its tray icon, but YOU decide when to actually download and install them. To launch it, click its icon on the tray. You can select any or all of the available updates. Generally, you will want to install all of them.
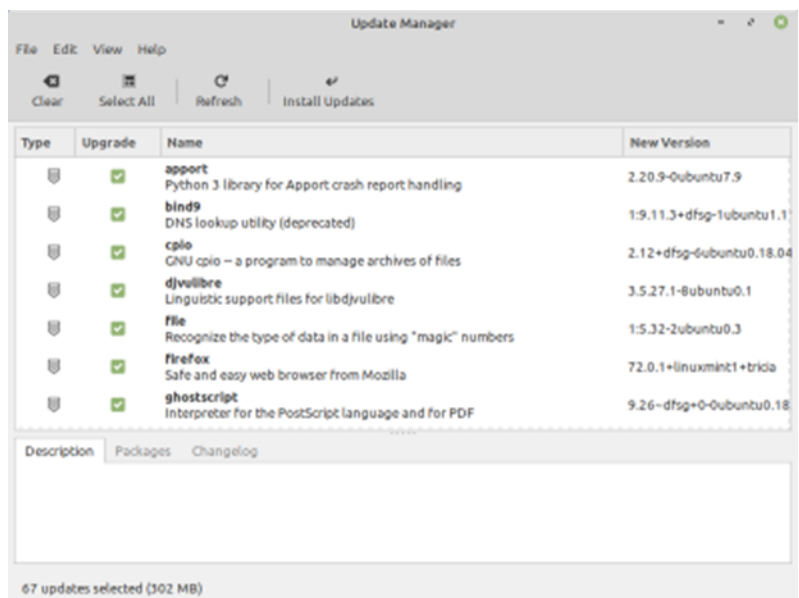
The **Software Manager** allows you to access Mint's online repository which claims over 60,000 free, open-source applications and install whichever ones you desire. Launch the Software Manager from Start Menu > Administration > Software Manager. When you click the link for an item, it opens a detail page to help you decide whether the program is what you're looking for.
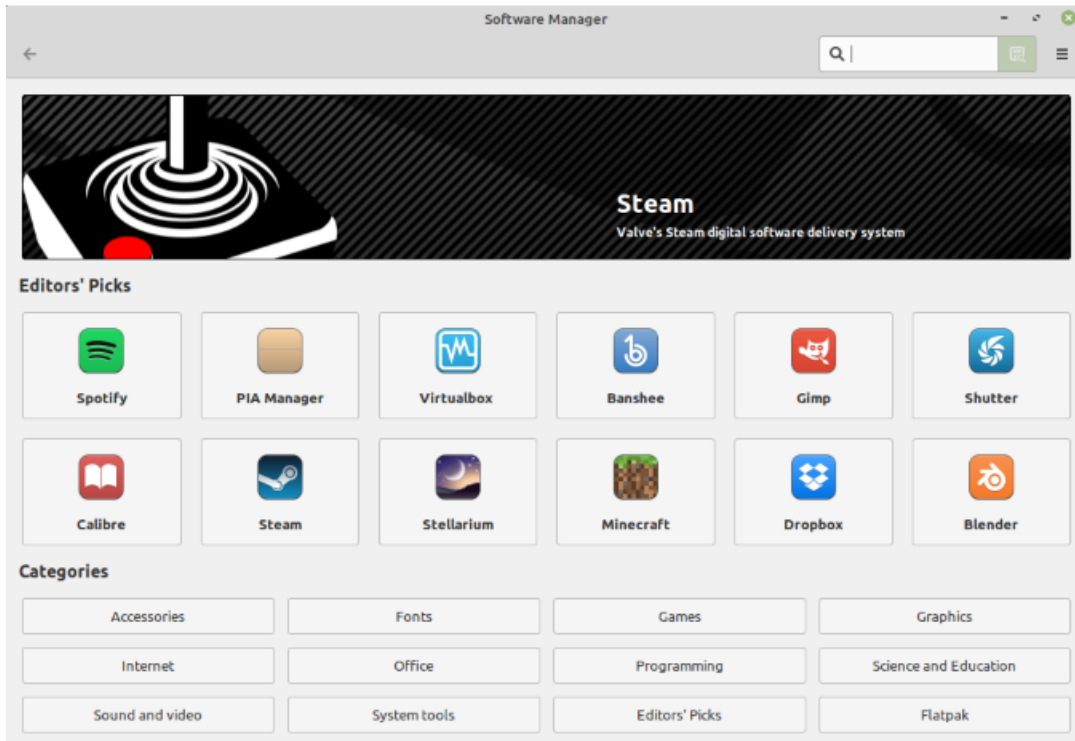
Final Thoughts

I set up Linux Mint 19.3 in a Virtual Box virtual machine to get the screenshots for this article. I booted the virtual machine from the downloaded Mint 19.3 64-bit ISO image and then double-clicked the "Install" icon on the desktop. Other than that, I made a few clicks to select language, keyboard, and time zone and entered my account credentials. The entire setup was done in about 15 minutes. I chose a desktop background and was ready to go. My virtual machine boots to the Linux desktop in about 15 seconds. What could be easier?

That's about all I can cover in my allotted space. Check out my Linux seminar handout at:
https://www.scscc.club/smnr/Desktop_Linux_Fresh_Look.pdf.

Bluetooth 5.0 – Improved Wireless Technology
By Phil Sorrentino, Contributing Writer, The Computer Club, FL
March 2020 — www.scccomputerclub.org — Philsorr (at) yahoo.com

Bluetooth 5.0 is a noticeable improvement over the previous version and is finally finding its way into new devices. If you have had problems with Bluetooth pairing or staying connected in the past, Bluetooth 5.0 may improve or even fix the problem. But, both devices will probably have to be up to the new standard.

Bluetooth is a wireless technology standard used for exchanging data between fixed and mobile devices over short distances. Both Bluetooth and Wi-Fi are examples of wireless technology that use the

unlicensed 2.4GHz frequency spectrum. Both have many applications in today's offices and homes such as: setting up networks, printing, connecting cooperating devices, and transferring data files among computers and smart devices.

Wi-Fi vs. Bluetooth.

Wi-Fi is intended as a replacement for cabling in large work areas. Bluetooth is intended as a replacement for cabling among equipment in close proximity. Wi-Fi is intended for use as a local area network (LAN). Bluetooth is intended for use in a smaller, personal area network (PAN). (Just for completeness, a Wide Area Network (WAN) is a communications network that spans large geographic areas such as cities, states, or even countries – think Internet.)

Bluetooth, nowadays, can typically be found in smartphones, laptop computers, tablets, headphones, and almost all new cars. Seven years ago I explored Bluetooth and reassured everyone that it was not a dental diagnosis. At that time, it was at version 4.0 so it's probably time to take another look. Technology is always evolving and hopefully improving.

Here is a little history for you tech history buffs. Bluetooth has been around for quite a while. Work on Bluetooth was started in 1994 and the Bluetooth 1.0 specification was released in May 1998. The initial Version specified a data rate of fewer than 1 Mbps (Megabits per second). It had many problems, and manufacturers had difficulty making their products interoperable. Bluetooth 2.0 was released in November 2004 with a faster data rate (approx. 2 Mbps). Bluetooth 3.0 was released in April 2009. Bluetooth 4.0 was released in June 2010. Bluetooth 5.0 was released in June 2016 with increased range, speed and capacity, and is the current standard. Bluetooth 5.0 is improved in many categories as shown below:

Feature	Bluetooth 5.0	Bluetooth 4.0
Speed	2 Mbps	1 Mbps
Range	40 Meters	10 Meters
Message Capacity	Larger	Small
Battery Life	Longer	Shorter
Reliability	Higher	Low
Security Control	Better	Less secure

Bluetooth was originally conceived as a wireless alternative to the old serial RS-232 data cables. Bluetooth is a network and thus can connect many devices, unlike RS-232 which was strictly serial point-to-point. Bluetooth is a wireless technology that uses short-range radio links and is intended to replace the cable(s) connecting portable and/or fixed electronic devices. The hope is that it will allow for the replacement of the many proprietary cables with one universal radio link. Bluetooth can provide a way to connect and exchange information between devices such as Smartphones, laptops, personal computers, printers, Global Positioning System (GPS) receivers, digital cameras, video games, et al.

So, Bluetooth is a communications standard for interconnecting electronic devices. To that end, it uses a form of data packet switching to transmit digital data via the wireless communications link. Bluetooth operates in the unlicensed ISM (Industrial, Scientific, and Medical) 2.4GHz frequency band, and avoids interference from other signals in that band by hopping to a new frequency after transmitting or receiving each packet. This radio technology is called frequency-hopping spread spectrum. It chops up the data being sent and transmits chunks of it on up to 79 different frequencies. (Guess who invented frequency hopping? Answer at the end of the article.)

Bluetooth is primarily designed for short-range communications with low power consumption. There are three power levels defined in the standard, 100 mW (Class 1), 2.5 mW (Class 2), and 1 mW (Class 3)

where mW (milliwatt) is a measure of transmitter output power. The higher the power level, the further the data can possibly be transmitted. Class 1 suggests an operating range of up to 100 meters, Class 2 suggests 10 meters, and Class 3 suggests 1 meter. Most of the devices I've used have been Class 2.

Because Bluetooth devices use radio (broadcast) communications, they do not have to be in the line of sight of each other. Bluetooth makes it possible for these devices to communicate with each other and transfer the information as long as they are in range.

A PC uses a Bluetooth adapter to communicate with other Bluetooth devices. While some desktop computers and most recent laptops come with a built-in Bluetooth adapter, others require an external adapter, usually in the form of a Bluetooth Dongle. Bluetooth allows multiple devices to communicate with a computer over a single adapter. Microsoft Windows 10 supports Bluetooth 5.0, but your computer may have a Bluetooth device that was built to an earlier Bluetooth version. (Along with the Bluetooth version, there are Bluetooth Profiles, but we'll leave that as a subject for a future article.)

Though you may not have thought about it, here are some of the more common applications of Bluetooth:

Wireless control of, and communications between, a mobile phone and a hands-free headset. This was one of the earliest applications.

Wireless communications with PC input and output devices, the most common being the mouse and keyboard.

Replacement of traditional wired serial communications used in test equipment, GPS receivers, medical equipment, Bar code scanners, and traffic control devices.

A link between game consoles such as the Nintendo Wii, and the Sony PlayStation and their respective controllers.

A link between a video camera and a remote Baby or Pet Monitor.

A link between a Garage Door Opener Motor and the Remote Garage Door Opener Controller.

An audio link between a Smartphone and speaker or headphones.
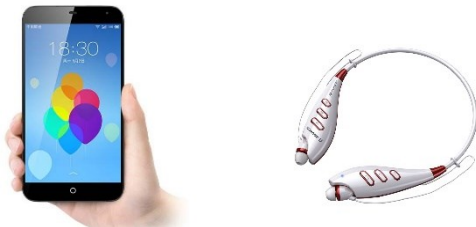
As you can see from this list, there are many reasons for computing devices to communicate with each other. And as more devices become smart, there will probably be more uses for the Bluetooth wireless technology.

Protect Your Computer Against Power Outages
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The two main causes of damage to computers, TVs, modems, and other sensitive electronics are a sudden loss of power and power fluctuations. Basic power strips do not protect your PC from any sort of electrical fluctuations; surge protectors can protect against power surges, but they offer no protection against drops in line voltage or loss of power.

To protect your computer against power outages or voltage fluctuations, you need a battery backup. UPS (Uninterruptible Power Supply) units are basically surge protectors that contain a battery inside. In the event of a power failure, your computer will seamlessly switch over to battery power and continue to run. This gives you time to shut down your machine without any damage.

Many UPS units come with software that can detect when the unit switches to battery power and shut down automatically in your absence.

There are many different UPS offerings on the market. There are small units that can keep a desktop computer running for 5-10 minutes or longer, more expensive units that can keep multiple computers running for hours.

The most important step in choosing a UPS is to buy one that has enough power to give your computer system enough time to shut down properly. While it is possible to calculate the power usage of a computer system by analyzing all of its components, for purposes of this article we can estimate the requirements of a typical computer user in our club.

UPS systems are rated VA (Volt-Amperes). Ignore how it is calculated, but a typical low-end desktop needs a UPS rated at about 480 VA while a high-end computer with a high-end video card would need a UPS rated as high as 1200=1500 VA.

Two types of UPS units have an application to home electronic systems.

The least expensive is a Standby UPS. This type of unit charges its battery and waits. When the power cuts off it will automatically switch to the battery for backup power. The switch takes milliseconds and is fast enough so that most electronics do not shut down.

For a higher cost, you can get a unit with Automatic Voltage Regulation (AVT) that corrects power fluctuations without switching to battery power. This feature protects you from instabilities in line voltage often experienced in lightning storms.

There are a few other considerations to note;

Some units include software for your computer that senses when the UPS switches over to battery power and can automatically initiate the shutdown process.

UPS units generally have a mix of power/surge protected and surge protected only outlets. Make sure that there are enough outlets for your needs.

Some UPS units include surge-protected/filtered ports for your Ethernet and Coax cables. Personally, I don't use these as I've had problems with ethernet cable performance degrading through a UPS.

Be sure to get units that have user-replaceable batteries. UPS batteries last 3-5 years. When a battery fails, you'll either need to buy batteries or but a whole new unit.

I've used Cyberpower and APC UPS units and they all worked as advertised. The two pictured below from Amazon both have shutdown software and replaceable batteries. The APC is rated at 500VA and costs $55.00. It has 5 outlets with Battery backup and two with just Surge protection. It's the model I use on most of my computers and TVs. The Cyberpower has AVR, is rated at 1000VA, and costs $109.00. It has 5 outlets with Battery backup and four with just Surge protection. I use one like it for my main computer, Internet mode, router, and my phone system.

Be careful out there! Think about having a UPS system on your computers, TV, home theater system, and even your phone system to prevent damage caused by power surges and power loss.