

## **PRESENTATIONS FOR THE ONLINE** **APCUG SPEAKERS BUREAU**

Francis Chao, a member of the [Tucson Computer Society](#) in Arizona, is prepared to present any of the following programs to your computer user group. Clicking on the titles of most of these presentations will open up the presentation slides in PDF format. However, most of Francis' presentations are live demonstrations of actual software and hardware with presentation slides only used to provide introductions and explanations of the live demonstrations.

- **REPLACING A SATA SSD WITH A M.2 SSD (E)**

This presentation will consist of an illustrated description of my experience with replacing a 3 1/2-inch SATA SSD in Windows 10 computers with a M.2 NVME SSDs:

- Oriignal 3 1/2-inch SATA compared to the new M.2 NVME SSD
- Speed advantages of M.2 NVME over M.2 NVME SSDs
- Passive heat sinks and silicon rubber pads are sometimes adequqte for heat dissipation
- S.M.A.R.T. values often fail to predict M.2 SSD failures but S.M.A.R.T. temperature readings can reveal problems caused by overheating
- M.2 extenders and fan-based heat sinks are often required when M.2 SSDs run too hot

- **INSTALLING "CAT 8" CABLING--A DO-IT-YOURSELF GUIDE (E)**

This presentation will consist of practical guide for installing "Category 8" cabling for your home or business network:

- Why you should use "Cat 8" instead of "Cat 5", "Cat 6", or "Cat 7"
- During installation or storagte, use plastic jack-to-jack connectors to protect the ends of "Cat 8" cables that are already terminated with "RJ45" plugs
- When "Cat 8" cables are in actual use, use metal jack-to-jack connectors
- Use short runs of flat "Cat 8" cables under carpets that have a lot of foot traffic
- Use "Cat 8" "RJ45" plugs and jacks that do not require crimpers
- Migrate existing legacy "Cat 5", "Cat 6", and "Cat 7" networks by gradually replacing existing cable runs with "Cat 8" cables
- Use ink-holding 145 sized C tags to identify cable ends instead of nylon cable tie tags
- Use white HellermannTyton cable ties to avoid using cheaper generic cable ties
- Use fire stop pillows to plug up through-wall holes after installing "Cat 8" cables through them
- Use white split corrugated tubing and/or soft cable sheathing to protect exposed "Cat 8" cables
- Use state-of-the-art "Powerline Networking" links in areas where "Cat 8" cables cannot be installed

- **USING A "WINDOWS 11 OR 10" COMPUTER, OR A "LINUX" COMPUTER TO TAKE FULL CONTROL OF AN ANDROID CELL PHONE** (E)

This presentation will consist of several live demonstrations of using a Windows 11 or 10 computer or a "Linux" computer to take full control of an Android cell phone: Using two no-cost software apps, an Android phone will show up in a Windows 11 or 10 computer or in a Linux computer as a window that looks exactly like the screen of the Android phone. From this window inside your "Windows.." computer or you can take or make cell phone calls and text messages. From this window inside your "Windows.." or Linux, you can get to use of the apps inside your Android cell phone. Using the mouse, keyboard, and/or track pad of your "Windows.." or "Linux" computer, you can respond to text messages many times faster than you can from the screen of your Android cell phone:

- Using the bundled Windows "Phone Link" app to take complete control of an Android cell phone
- Using the free "scrcpy" app in a Windows.. computer to take complete control of an Android cell phone
- Using the free "scrcpy" app in a "Linux" computer to take complete control of an Android cell phone

- **DUAL BOOTING BETWEEN WINDOWS 10/11 AND LINUX (E)**

If you configure an existing Windows.. computer so it has both Windows.. and Linux on it, you can boot whichever of the two operating systems is best for a specific task. The net result is that, at any single point in time, you can run either Windows.. or Linux, but not both at the same time.

- If Windows 10 or 11 is not already installed, install it first using a bootable installation media CD from Microsoft's "Media Creation Tool" Web pages
- Download the installation .ISO file from the Web site of the desired Linux distribution
- Boot up your computer using the bootable live CD, bootable live DVD, or the bootable USB thumb drive that you created from the installation .ISO file of the desired Linux distribution
- At the step where the Linux installation wizard partitions shrinks down the existing Microsoft C: drive partition of your SSD or HD to create a new EXT partition(s) for the Linux operating system, determine how large of a bootable Linux EXT partition and how small of a bootable Windows NTFS partition that you wish to have
- You can use the Clonezilla bootable live CD to clone or create a back up image of a dual boot SSD or HD
- You can use Macrium Reflect Free in a separate Windows 10 or 11 computer to clone or create a back up image of a dual boot SSD or HD
- Procedure for rebooting from Windows.. into Linux..
- Procedure for rebooting from Linux into Windows..
- Use the free "GRUB Customizer" app from inside Linux to configure the GRUB bootloader that provide you the initial dual boot menu when you start up or re-start the computer
- Some recoverable annoyances when you use Linux to access an NTFS hard drive that "belongs" to the Windows.. operating system

- **A DEMONSTRATION OF THE MOST POPULAR LINUX DISTRIBUTIONS (E)**

To help you pick a Linux distribution, here are short demonstrations and descriptions of the 10 most popular distributions of Linux:.

- **"MX Linux"**
- **"EndeavourOS"**
- **"Linux Mint"**
- **"Manjaro"**
- **"Pop!\_OS"**
- **"Ubuntu"**
- **"Fedora"**
- **"Debian"**
- **"OpenSUSE Tumbleweed"**
- **"Garuda"**

For each of these Linux distributions, we will attempt to show you the following apps:

- **"Zoom Meetings Client"**
- **"LibreOffice"**
- **"Mozilla Firefox"**
- **"Kaffeine" live over-the-air television**

- **SWITCHING FROM WINDOWS 10 OR 11 TO LINUX AND THEN BACK TO WINDOWS, ETC (WITHOUT DUAL BOOTING) (E)**

If you configure an existing Windows.. with second SSD that runs Linux and put in some hardware for switching between the existing "Windows.." SSD and the newly-installed Linux SSD, you can boot whichever of the two operating systems is best for specific task. The net result is that, at any single point in time, you can run either Windows.. or Linux.., but not both at the same time.

- Installing an M.2 extension to move the M.2 SSD outside of a laptop
- Installing an M.2 extension to move the M.2 slot outside of a desktop computer
- Installing an M.2 to SATA data converter to get more SATA data ports for a desktop computer
- Installing a SATA data cable for use of a SATA data port outside of a desktop computer
- Installing a separate SSD for Linux for your existing Windows.. computer.
- Installing the Linux operating system using a DVD or CD OR a bootable flash drive
- Procedure for starting up the computer in Windows..
- Procedure for starting up the computer in Linux..
- Procedure for rebooting from Windows.. into Linux..
- Procedure for rebooting from Linux into Windows..
- Some recoverable annoyances when you use Linux to access an NTFS hard drive that "belongs" to the Windows.. operating system

- **SOME LINUX TRICKS (E)**

- Making LibreOffice apps export to Microsoft Office formats to avoid problem with users of "Microsoft Office" apps
- Making Website shortcuts in Linux..
- Making app shortcuts in Linux
- Making "Symbolic Links" in Linux
- Installation tricks using both the "Terminal" app and graphical installation apps to help each other
- Using "Universal Time Coordinate" versus using "Local Time" zone
- Switching between the X11 Xwindows protocol and the Wayland windowing protocol as a workaround for problems with "Teamviewer" and "Microsoft Teams" and "Zoom" screen sharing
- Running a virtual machine for compatibility with Windows.. only apps and office suites
- Using cross-platform apps to avoid "you cannot get there from here" problems

- **POWERLINE NETWORKING (E)**

Powerline Networking is now as fast as wired Ethernet cabling if: you use the latest models of Powerline Networking adapters and if

you learn little about electrical circuit breaker panels:

- Live demonstration of a real state-of-the-art Powerline Networking connection
- Only buy the latest models of HomePlug and/or G.hn powerline adapters
- Use trial-and-error or circuit breaker analysis to avoid slowdowns caused by your electrical circuit breaker panel
- Use a different powerline standard than your neighbors to avoid interference

- **INSTALLING AN OVER-THE-AIR TV TUNER CONNECTED TO THE KAFFEINE APP RUNNING INSIDE "MX LINUX" OR "UBUNTU" (E)**

You can use install a Hauppauge USB tuner and then connect it to the Kaffeine app running inside the free version of "Ubuntu Desktop" Linux or "MX Linux.."

- Step 1: Parts and software needed
- Step 2: Hardware installation of the Hauppauge TV tuner
- Step 3: Install the Kaffeine app
- Step 4: Install drivers for the TV tuner
- Step 5: Scan for TV channels

- **INSTALLING AN OVER-THE-AIR TV TUNER CONNECTED TO THE "WINTV" APP RUNNING INSIDE "WINDOWS 11", "WINDOWS 10", OR "WINDOWS 7" (E)**

You can use install a Hauppauge USB tuner and then connect it to Hauppauge's "WinTV" app to have a fully-functional over-the-air television and program recorder inside your "Windows 11", "Windows 10" or "Windows 7" computer

- Step 1: Parts and software needed
- Step 2: Hardware installation of the Hauppauge TV tuner
- Step 3: Install the Kaffeine app
- Step 4: Install drivers for the TV tuner
- Step 5: Scan for TV channels

- **USING A SMART CELL PHONE TO ACCESS A "WINDOWS.." COMPUTER** (E)

This presentation will consist of live demonstrations to show you how to use your Android cell phone or iPhone to access your "Windows.." computer.

- Use Microsoft's "Remote Desktop Connection" app in your cell phone to take control of your "Windows.." computer if your "Windows.." computer is running "Windows 10 Pro" or "Windows 11 Pro"
- Use the "VNC" app's free "Viewer" in your cell phone to take control of your "Windows.." computer, if your "Windows.." computer is running "Windows 10 Home", "Windows 10 Pro", "Windows 11 Home", or "Windows 11 Pro"

- **EXTENDING YOUR WIRED AND/OR WIRELESS LOCAL NETWORK** (E)

This presentation will consist of live demonstrations to show you how to extend the reach of your wired or wireless local network.

- Using Cat 5 or Cat 5e or Cat 6 or Cat 7 or Cat 8 cabling to make a wired extension
- Using HomePlug and/or G.Hn power line networking to utilize the existing AC power cabling to extend your local network
- Using "Multimedia Over Coax Alliance" (MoCA) devices to extend an existing wired Ethernet network or an existing wireless Wi-Fi network
- Using Wi-Fi boosters, extenders, and mesh devices to extend a wireless Wi-Fi network
- Using multiple low-cost routers and combining them with Cat 5/5e/6/7/8 cabling and/or HomePlug and/or G.Hn power line networking
- Using multiple routers to protect your important computer assets from the security weaknesses of "Internet of Things" devices
- Using a tethered cell phone as a main or backup Internet provider
- Using a "Fixed 5G" Internet connection as a main or backup Internet provider
- For the budget-strapped computer user, the cheapest way to extend a wired or wireless local network is usually to purchase a second router and connect it to the existing router with a power-line link or a Cat 5/6/7/8 "Ethernet" wire

- **UNDERSTANDING AND TROUBLESHOOTING Wi-Fi EXTENDERS AND Wi-Fi MESH NETWORKS(E)**

This presentation will consist of live demonstrations to show you how "Wi-Fi Extenders" and "Wi-Fi Mesh Networks" operate.

Knowledge is power: If you understand how they work, you can configure and move these devices so that they provide your home or business with faster Internet and local network speeds and better spatial coverage for both Wi-Fi and wired Ethernet access.

- Use the free versions of "Acrylic Wi-Fi" and "Netspot" to evaluate the signal levels of your Wi-Fi router(s), your Wi-Fi extenders, and your Wi-Fi mesh "nodes"
- A live demonstration of a mesh-capable Wi-Fi router and a mesh Wi-Fi "extender with "handoffs" as you move a cell phone, tablet, or laptop between the coverage areas of the two devices
- Determine the existing coverage "circles" of your existing Wi-Fi router(s), your Wi-Fi extenders, and your Wi-Fi mesh "nodes"
- Move your Wi-Fi devices to avoid overlap for their coverage "circles"
- Determine if any wireless "backhaul" connections are causing significant slowdowns in your Internet and local network speeds.
- Install temporary or permanent Cat 5/6/7/8 cables or later-model powerline links to remedy any wireless "backhaul" connections are causing significant slowdowns in your Internet and local network speeds.
- Determine if additional Wi-Fi extenders and Wi-Fi mesh nodes are needed to provide coverage for existing "dead spots".
- Make use of old Wi-Fi routers or additional low-cost routers to extend your current Wi-Fi coverage instead of purchasing more expensive Wi-Fi extenders or Wi-Fi mesh units



- **INSTALLING A "Wi-Fi 6" ADAPTER OR A "Wi-Fi 6E" ADAPTER TO SPEED UP THE WIRELESS Wi-Fi CONNECTION OF YOUR WINDOWS.. OR MacOS COMPUTER(E)**

You can usually speed up your Windows.. or MacOS.. computer's wireless Wi-Fi connection by installing a USB "Wi-Fi 6" adapter or a PCIe "Wi-Fi 6E adapter as explained at

[http://aztcs.apcug.org/meeting\\_notes/winhardsig/networks/4-USB-Wi-Fi-adapters.pdf](http://aztcs.apcug.org/meeting_notes/winhardsig/networks/4-USB-Wi-Fi-adapters.pdf)

for advice on USB "Wi-Fi 6" adapters

and

[https://aztcs.apcug.org/meeting\\_notes/winhardsig/networks/Wi-Fi/Win11-to-Wi-Fi6E.pdf](https://aztcs.apcug.org/meeting_notes/winhardsig/networks/Wi-Fi/Win11-to-Wi-Fi6E.pdf)

for advice on PCIe "Wi-Fi 6E" adapters

- **LOCAL NETWORK STRATEGIES (E)**

Judicious use of modern local networking technologies can make your home network faster, more efficient, more reliable, and less expensive.

- Two Guiding Concepts: Internet bandwidth speed and Local Network speed
- Wired networking options: Cat 5/6/7/8 cabling, AC Powerline "Homeplug AV" and "G.hn", and Multimedia Over Coax Alliance (MoCA)
- Wireless networking options
- All of the above non-cabling options are now almost as fast as Cat 5/6/7/8 cabling

- **USING MULTIPLE INTERNET PROVIDERS (E)**

For any single Windows.., macOS.., or Linux.. computer, you can provide more than one broadband Internet connection. This broadband redundancy will increase the overall reliability of your Internet access, decreasing the probability of the failure of your online activities such as participation in Zoom meetings.

- Internet Providers That You Might Have Or Can Get:
  - Traditional cable modem providers and DSL from telephone companies
  - "Fixed Wireless Access" is a low-cost Internet option from cellular providers
- Using Up to Three Internet Connections For Your Computer
- Do Not Use Both Wired and Wireless Connections At The Same Time
- "Speedtest" and "Speakeasy" Speed Tests Yield Synergistic Internet Speeds With Multiple Internet Providers

- **"FIXED WIRELESS ACCESS" FOR LOW-COST HOME INTERNET SERVICE** (E)

"T-Mobile", "AT&T Wireless", "Verizon" and other cell phone companies are rapidly introducing low-cost "Fixed 5G Access" for homes across the U.S. This presentation will consist of a live demonstration of a "T-Mobile Home Internet" connection which costs about \$55 per month with no bandwidth caps.

- This service costs \$55 per month. If the end use is willing to allow T-mobile to automatically charge a credit card each month, the cost per month is reduced to \$50 per month
- T-Mobile provides you with a Nokia "Wireless Modem" that usually connects to two of their cell phone towers simultaneously.
- There is no monthly fee for using this Nokia "Wireless Modem"
- Their Nokia "Wireless Modem" provides you with up to four separately-named Wi-Fi "Wireless Access Points".
- Their Nokia "Wireless Modem" provides you with a no-frills integrated router that provides you with two Gigabit Ethernet ports
- We attached a separately-purchased Wi-Fi router to increase the number of wired Ethernet ports
- Since this Internet service has to share cell phone towers with cell phones and is not the primary priority for cell phone towers, the download and upload speeds that are experienced will vary much more than regular "broadband" Internet service providers.
- Reviewers of this low-cost Internet service have had positive comments

- **USING ZOOM'S "TAKE CONTROL" OR MICROSOFT'S "REMOTE ASSISTANCE" TO HELP SOMEONE WITH THEIR "WINDOWS.." COMPUTER (E)**

You can help other folks with their computers without catching any of their diseases! This presentation will consist of live demonstrations to show you how to use your "Zoom Meetings Client" or Microsoft's "Quick Assist" or Microsoft's "Remote Assistance" to help a Windows.. computer without being physically present at their home or business. Francis will use two virtual machines with each connected to a difference Internet service provider to show you how these two remote control capabilities look from the standpoint of the helper's computer AND the helped person's computer.

- A live demonstration of Zoom's "**Take Control**" feature
- A live demonstration of the bundled "**Quick Assist**" in "Windows.."
- A live demonstration of the bundled "**Remote Assistance**" in "Windows.."

- **FREE ALTERNATIVES TO "MICROSOFT OFFICE" (E)**

This presentation will consist of live demonstrations of two alternative software programs that are free alternatives to the not-free "Microsoft Office" suite of not-free software programs. We will compare each of these free software programs to the latest version of "Microsoft 365" to give you an idea of whether you can stand the incompatibilities with the not-free "Microsoft Office" programs that the freebies are analogous with:

- A live demonstration of Softmaker's "**FreeOffice**" compared to "**Microsoft 365**"
- A live demonstration of The Document Foundation's "**LibreOffice**" compared "**Microsoft 365**"

- **A DEMONSTRATION OF FASTER Wi-Fi TECHNOLOGIES (E)**

If you think that Wi-Fi is much slower than wired Ethernet connections, then you have not been keeping up with the massive improvements that have been made in the past four years. Most home and small business owners are still stuck on the super-slow 802.11N speed which is also known as Wi-Fi 4. This presentation will be a live demonstration and comparison of Wi-Fi 5, Wi-Fi 6, and Wi-Fi 6E. These relatively recent improvements in Wi-Fi technologies will improve the speed and reliability of your wireless computers, tablets, cell phones, cameras, and other wireless devices:

- A live demonstration of Gigabit Ethernet (for comparison)
- A live demonstration of legacy 802.11N (= Wi-Fi 4)
- A live demonstration of 802.11AC (= Wi-Fi 5)
- A live demonstration of 802.11 AX at 5 Gigabits per second (= Wi-Fi 6)
- A live demonstration of 802.11 AX at 6 Gigabits per second (= Wi-Fi 6E)
- A live demonstration of using all three Wi-Fi frequency bands (2.45 GHz, 5 GHz, and 6 GHz) simultaneously in a high-end router in order to provide better video surveillance, Wi-Fi cell phone and tablet support, and faster Internet access for your computers--all at the same time

- **"MX Linux" (E)**

"MX Linux" is a distribution of Linux that is relatively easy for users of "Windows 11" and "Windows 10" to learn

- We have a copy of "MX Linux" running inside a real Intel i9 computer
- Unlike Microsoft's "Windows 11", the ".lite" version of "MX Linux" can run in extremely low-end computer hardware
- We will demonstrate "MX Linux" running inside a "VMware" virtual machine inside a modest "Windows 10" computer. This virtual machine is running inside "VMware Workstation 16 Player" which is free for private, in-home use.
- We will also demonstrate "MX Linux" running inside a "VirtualBox" virtual machine inside a modest "Windows 11" computer. This virtual machine is running inside "Oracle VM Virtual" which is also free for private, in-home use.

- **AN INTRODUCTORY LOOK AT "WINDOWS 11" (E)**

Please pick and choose any or all of the following "mini topics":

**1-A First Look at "Windows 11"**

is explained at

[http://aztcs.apcug.org/meeting\\_notes/winhardsig/win11/1-Win11basics.pdf](http://aztcs.apcug.org/meeting_notes/winhardsig/win11/1-Win11basics.pdf)

**2-Windows 11's New Features**

are explained at

[http://aztcs.apcug.org/meeting\\_notes/winhardsig/win11/2-Win11-new\\_features.pdf](http://aztcs.apcug.org/meeting_notes/winhardsig/win11/2-Win11-new_features.pdf)

**3-Windows 11's Deprecated Features**

are explained at

[http://aztcs.apcug.org/meeting\\_notes/winhardsig/win11/3-Win11-deprecated.pdf](http://aztcs.apcug.org/meeting_notes/winhardsig/win11/3-Win11-deprecated.pdf)

**4-Actions for Resolving Hardware Incompatibilities for Upgrading to "Windows 11"**

are described at

[http://aztcs.apcug.org/meeting\\_notes/winhardsig/win11/4-Win11-resolving-incompatible.pdf](http://aztcs.apcug.org/meeting_notes/winhardsig/win11/4-Win11-resolving-incompatible.pdf)

**5-Hacks To Force Your Existing "Unhealthy" Windows.. Computer to Upgrade Up to "Window 11"**

are described at

[https://aztcs.apcug.org/meeting\\_notes/winhardsig/win11/6-Hacks-force-Win11-upgrade.pdf](https://aztcs.apcug.org/meeting_notes/winhardsig/win11/6-Hacks-force-Win11-upgrade.pdf)

**6-Information on purchasing an activation key for "Windows 11"**

or purchasing a computer with "Windows 11" installed inside it

is described at

[http://aztcs.apcug.org/meeting\\_notes/winhardsig/win11/5-Win11-purchase.pdf](http://aztcs.apcug.org/meeting_notes/winhardsig/win11/5-Win11-purchase.pdf)

**7-Installing "Windows 11" into a Virtual Machine in an incompatible computer**

are described at

[http://aztcs.apcug.org/meeting\\_notes/winhardsig/win11/7-Win11-into-vm-noncompliant.pdf](http://aztcs.apcug.org/meeting_notes/winhardsig/win11/7-Win11-into-vm-noncompliant.pdf)

**8-Strategies for dealing with the October 14, 2025 "End of Life" for "Windows 10"**

are described at

[http://aztcs.apcug.org/meeting\\_notes/winhardsig/win11/8-Win10-EOL-strategies.pdf](http://aztcs.apcug.org/meeting_notes/winhardsig/win11/8-Win10-EOL-strategies.pdf)

- **HACKS TO FORCE YOUR "WINDOWS 10" COMPUTER TO UPGRADE UP TO "WINDOWS 11" (E)**

Do not be discouraged by Microsoft's stringent hardware requirements for their new-fangled "Windows 11" operating system. This presentation will consist of a three live demonstrations to show you how to force an "inadequate" "Windows 10" computer to accept an upgrade up to "Windows 11". Each of these short demonstrations will utilize a different method for forcing "Windows 11" to install into your old, tired "Windows 10" computer:

- **Microsoft's "MoSetup" Registry Hack** works for a "Windows 10" computer that has a version 1.2 or version 2.0 "Trusted Platform Module". See <https://support.microsoft.com/en-us/windows/ways-to-install-windows-11-e0edbbfb-cfc5-4011-868b-2ce77ac7c70e>
- **coofcookie's "Windows11Upgrade\_CZ"** app works even if your computer has no "Trusted Platform Module", an inadequate amount of RAM, and an inadequate CPU
- **AveYo's skip\_tpm\_check.cmd** script works even if your computer has no "Trusted Platform Module", an inadequate amount of RAM, and an inadequate CPU. See [http://aztcs.apcug.org/meeting\\_notes/winhardsig/win11/6A-AveYo-force-Win11-upgrade.pdf](http://aztcs.apcug.org/meeting_notes/winhardsig/win11/6A-AveYo-force-Win11-upgrade.pdf)

- **"WINDOWS.." OPERATING SYSTEM NUMBERING (E)**

This presentation will consist of a live demonstration of how you can determine the exact Microsoft product number of the version of Windows.. that your computer is running.

- Basic terminology of Windows.. product numbers
- Ways to determine the exact Microsoft product number

- **USING A "WINDOWS 11" OR "WINDOWS 10" COMPUTER TO TAKE FULL CONTROL OF AN ANDROID CELL PHONE (E)**

This presentation will consist of several live demonstrations of using a "Windows 10" computer to take full control of a Android cell phone:

Using two free techniques, an Android phone will show up in a "Windows 10" computer as a window that looks exactly like the screen of the Android phone.

From this window inside your "Windows 10" computer, you can take or make cell phone calls and text messages. From this window inside your "Windows 10" computer, you can get to any of the apps inside your Android cell phone. Using the mouse, keyboard, and/or track pad of your "Windows 10" computer, you can respond to text messages many times faster than you can from the screen of your Android cell phone:

- A live demonstration showing the use of the bundled "Your Phone Companion" app in "Windows 10" to take complete control of an Android cell phone that is running Microsoft's free "Your Phone Companion" app.
- A live demonstration showing the use of a free "VNC" client in a "Windows 10" computer to take complete control a an Android cell phone that is running the free "Droid VNC Server" app

- **EARLY USES OF Wi-Fi 6E** (E)

Even before the Covid pandemic, the 2.45 Gigahertz and the 5 Gigahertz radio frequency bands have been, and are still often, jam-packed with more users and devices that they can carry. In March 2020, the FCC opened up the 6 Gigahertz radio frequency bands for use by Wi-Fi use. This huge new set of channels will make computers, cell phones, tablets, and associated routers run faster and more reliably.

- Three Radio Frequency Bands for Wi-Fi: 2.45 GHz, 5 GHz, and 6 GHz
- Some Terminology for Wi-Fi 6E
- Technological Challenges
- Wi-Fi 6E Cell Phones
- Wi-Fi 6E Routers
- Only Easy Way to Get Wi-Fi 6E Running
- Three Ways to Get Wi-Fi 6E for a Windows computer
- Using all three Wi-Fi Radio Frequency bands at the same time to get faster and more reliable use of you broadband and "Wireless Fixed Access" Internet service.

- **USING A WEBCAM TO SPY ON SOMETHING** (E)

This presentation will consist of several live demonstrations of real and virtual Webcams with extensive how-to documentation on installing for each type of Webcam:

- Using Remote Access To View and Control Cameras Located On Other Computers On Your Local Network
  - TightVNC's free "VNC Server" and UltraVNC's "VNC Viewer"
  - Microsoft's bundled "Remote Access Protocol"
- Using a Cell Phone as a Webcam
  - for a "Windows.." computer
  - for a macOS computer
- Using Skype's Auto-Answer Capability to Communicate with your Dog, Cat, or Small Child
- Using a "Wyze Cam" to Send Video Motion Alerts, Perform Video Motion Recordings, View Video On Demand, and Do 24-hour Video Recordings
- Using "Contacam" to Send Video Motion Alerts to your Cell Phone(s) and Email Addresses



- **CLONING A SSD FOR YOUR WINDOWS COMPUTER (E)**

Cloning SSDs is one way to proactively back up your data files and provide for a quick repair when a bootable SSD fails in the (soon, near) future! The process of procuring a new, blank SSD and cloning it from an existing source SSD is also a great way to provide more usable storage space in your existing Windows computer.

- Free cloning apps versus non-free cloning apps
- Selecting a new SSD to purchase
- Preparing a new SSD to be a clone target
- Preparing the old existing SSD to be the clone source
- Two ways to clone SSDs
- Using the cloning app
- After cloning an SSD, do not try to boot up your Windows.. computer with both the original source SSD and the new target SSD attached at the same time
- After cloning an SSD, you can use "Disk Management" to expand C: partition of the newly-created target SSD

- **USING "ZOOM" TO REMOTELY TAKE CONTROL OF SOMEONE ELSE'S COMPUTER (E)**

If you have the Zoom Meetings Client app or Zoom Cloud Meetings installed on your computer or mobile phone, and someone else has the Zoom Meetings Client installed on their computer, you can use Zoom to take control of the other person's computer remotely to show them something or even to repair their computer:

- A live demonstration of using Zoom to control someone else's computer (using two virtual computers for a Zoom session that is independent from the Zoom session that is being used for this presentation).
- Preparing your free or Pro Zoom account for remote access into other's computers
- Installing Zoom Meetings Client" into someone else's computer
- Any attendee of your Zoom meeting can then initiate remote control of another attendee's computer

- **GOOGLE ACCOUNTS, GOOGLE BRAND ACCOUNTS, AND YOUTUBE CHANNELS (E)**

To make the best use of your Google Account and YouTube channels, this presentation explains their relationships:

- Two kinds of channels at YouTube
- YouTube is a wholly-owned but independently-operated subsidiary of Google
- "Personal channel" is automatically made at YouTube.com if you first log into any Google service
- When you go to youtube.com/accounts, and you attempt to create a new channel, you create both a new Brand account at Google AND a new channel with a business or other name at YouTube
- Despite the above complexity: a Google account lets you access a Google Brand account which then lets you access a YouTube channel with a business or other name. However, you do not access them in that order.

- **MX LINUX (E)**

MX Linux has risen to the top in popularity according to Distrowatch.com:

MX Linux is a mid-weight distribution (distro) that runs faster and is much easier to configure and use relative to the other popular Linux distros.

- MX Linux is a super-configurable, fast, mid-weight Linux distribution that you can use either in a virtual machine or as the actual operating system for a PC
- A Quick Demo of MX Linux
- System Requirements for MX Linux
- Installing MX Linux
- XFCe Desktop Environment is Default for MX Linux
- Panel is Part of XFC Desktop Environment
- Thunar File Manager on the Panel
- Whisker Menu launcher on the
- Panel Apps
  - LibreOffice is the default free office suite but..
- Install and Use FreeOffice for an easier initial learning experience

- **GOOGLE DUO (E)**

The "Google Duo" app gives you the ability to make quality video and voice calls between any of the following devices: Android cell phones, iPhones, iPads, Windows PCs, macOS computers, and Linux computers:

- Live demonstration showing both an Android phone's screen and an iPhone's screen communicating with each other and various computers
- Video and voice communications between all phones, tablets, and computers (= "Face Time killer")
- Low-light video calls
- Knock Knock video preview as an optional feature
- Invite Links to connect to other people's devices
- Totally free conference calls lasting up to 24 hours (without the 40-minute limit for "Zoom" calls on free "Zoom" accounts)

- **CELL PHONE BASICS (E)**

Your iPhone or Android mobile phone is actually 6 separate radio transmitter-receivers in a very compact device. If you get a working understanding of the details of these 6 transmitter-receivers, you can make better use of your mobile phone and save money:

- 6 transmitter-receivers in an iPhone or Android cell phone:  
Cellular transceiver, Wi-Fi transceiver, Global navigation Satellite System (GNSS) receiver = GPS, etc.), Bluetooth transceiver, Near-field Communication (NFC) and FM radio receiver
- Not having a data plan so that Wi-Fi is the cell phone's only Internet connection
- Having a data plan but using mainly Wi-Fi for the cell phone's Internet access
- Various apps use different combinations of the 6 transmitter-receivers
- Use the "MyGPSCoordinates" and/or "GPS Status" apps to get your latitude/longitude location from the GNSS receiver
- "Cellular 911"
- 3G shutdown
- Cell phone tracking

- **CELLULAR SERVICE ANALYSIS (E)**

Knowledge is power:

By using various Websites before you buy a cell phone or a cell phone service AND by using various cell phone apps after you buy the phone or service, you can get better service at a better price:

- Use the "nPerf" Web site and the "nPerf" app to get a street-level map to show which cell carrier has 5G, 4G/LTE, 3G, or 2G service:  
See [http://aztcs.apcug.org/meeting\\_notes/winhardsig/cell-phones/5Gvs4G-maps.pdf](http://aztcs.apcug.org/meeting_notes/winhardsig/cell-phones/5Gvs4G-maps.pdf)
- Use the "Cellmapper" app to determine whether your cell phone running is 5G, 4G/LTE, 3G, or 2G:  
See [http://aztcs.apcug.org/meeting\\_notes/winhardsig/cell-phones/cellphonerunning5Gor4G.pdf](http://aztcs.apcug.org/meeting_notes/winhardsig/cell-phones/cellphonerunning5Gor4G.pdf)
- Use the "Opensignal" app to determine the location and direction of the cell tower site that a cell phone is connected to:  
See  
[http://aztcs.apcug.org/meeting\\_notes/winhardsig/cell-phones/Opensignal-tower-map.pdf](http://aztcs.apcug.org/meeting_notes/winhardsig/cell-phones/Opensignal-tower-map.pdf)

- **5G EMERGING TECHNOLOGY IN THE UNITED STATES (E)**

Here is a quick, concise summary about 5G at the present time:

- Advantages of 5G
- 5G Is Available in Two Flavors: "5G Non-standalone" and "5G Standalone":  
Use apps to determine which flavor your 5G cell phone is using
- 5G uses 3 radio frequency bands: Low band, Mid-band, and High band
- 5G marketing terminology  
is explained at:  
[https://aztcs.apcug.org/meeting\\_notes/winhardsig/cell-phones/4-5G-marketing.pdf](https://aztcs.apcug.org/meeting_notes/winhardsig/cell-phones/4-5G-marketing.pdf)
- 5G "Fixed Wireless Access" will provide lower-cost Internet access compared to traditional cable company modems and telephone company DSL as explained at  
[https://aztcs.apcug.org/meeting\\_notes/winhardsig/cell-phones/FWA/20-5G-FWA-home.pdf](https://aztcs.apcug.org/meeting_notes/winhardsig/cell-phones/FWA/20-5G-FWA-home.pdf)
- Use the "nPerf" Web site and the "nPerf" app to get a street-level map to show which cell carrier has 5G, 4G/LTE, 3G, or 2G service as explained at  
[http://aztcs.apcug.org/meeting\\_notes/winhardsig/cell-phones/5Gvs4G-maps.pdf](http://aztcs.apcug.org/meeting_notes/winhardsig/cell-phones/5Gvs4G-maps.pdf)

- **CELL PHONE TETHERING (E)**

If your smart 5G-capable "Android" or "iPhone" cell phone has a "data plan" or a wireless connection to a "Wi-Fi router", it can be "tethered" to a computer, a tablet, another cell phone or to a router .

- When you do so, your smart Android or iPhone cell phone can provide Internet access to the computer, tablet, another cell phone, or to a router.
- Your 5G cell phone can be your main Internet provider for your computer or it can be set up as a redundant "hot standby" or a "cold standby" Internet provider for a computer.
- Using a cell phone as the Internet connection for a computer is much safer relative to using a public Wi-Fi hotspot
- Etc.

- **USING VIRTUAL MACHINES IN FREE VIRTUAL MACHINE PROGRAMS IN A "WINDOWS.." COMPUTER (E)**

If you install a free "Virtual Machine Program" into an existing Windows computer, you can use it to create virtual machines. These virtual machines are software entities that act like real hardware computers. You can then install any version of Windows or any distribution of Linux into a virtual machine. Using virtual machines provides you with a simulated hardware environment that isolates operating systems and software apps prevents them from conflicting with existing hardware and/or software apps in your physical Windows computer.

- [Overview of virtual machine programs running "guest operating systems"](#)
- [Installing free "virtual machine programs"](#)
- [Virtual networks created by virtual machine programs](#)
- [Copying or moving virtual machines in VMware Workstation Player](#)
- [Copying or moving virtual machines in Oracle VM VirtualBox](#)
- [Copying or moving virtual machines in Hyper-V](#)

- **USB-C** (E)

USB-C ports started showing up in computers about 8 years ago. A "USB-C" port is an ovoid rectangle that is about one quarter the size of a USB 3 Type A port. However, it is actually a USB 2 port, a USB 3.1 port, a Thunderbolt 3 port, an HDMI port, an audio port, a Displayport port, a charging-only port or any combination of the previously-listed port types.

The exact capabilities of any specific USB-C port in any specific computer that you buy will be determined by the manufacturer of the computer.

**Thunderbolt 3 devices are not always plug-and-play:**

You sometimes need to open the "Thunderbolt" app in a computer and click on the problematic "Thunderbolt" device to turn it on.

If you do not know this, you might get the impression that a newly-inserted Thunderbolt 3 device is not working.

For step-by-step instructions on how to jump-start a problematic Thunderbolt 3 device, please see

[http://aztcs.apcug.org/meeting\\_notes/winhardsig/USB3/Thunderbolt3fix.pdf](http://aztcs.apcug.org/meeting_notes/winhardsig/USB3/Thunderbolt3fix.pdf)

- "USB-C" to "USB A" adapters
- "USB A" to "USB-C" adapters
- USB hubs with both USB-C and USB A downstream ports
- Using "Device Manager" and "USBTreeView" to troubleshoot problematic USB connections
- Using 2.5 Gigabit USB adapters and 5 Gigabit USB adapters to resolve problems with overheating and/or intermittent USB (1) Gigabit adapters

- **RESOLVING SOUND PROBLEMS IN "WINDOWS.." COMPUTERS** (E)

Windows 11, Windows 10, Windows 8, and Windows 7 computers have many sound-enabled devices that automatically re-configure themselves as "default" when you do not want them to do so. During this presentation, we can use "Remote Desktop" remote access into another computer to demonstrate these problems and show you how to avoid having them interfere with your use of online meeting systems such as Zoom, TeamViewer, and Skype.

- To get rid of hum in speaker and mic lines, use active USB extension cables instead of analog audio cables

- **COMPUTER SOUND EQUIPMENT (THAT I RECOMMEND)** (E)

Here are some sound products for computers that I recommend:

Bose speakers

Koss headset

Creative Sound Blaster USB sound card

HDE USB 2 Extension Cable

and

UGREEN Y Audio Splitter Cable

We recommend these products because each item has unique capabilities that distinguish them from their competitors.

- **SOUND CONFIGURATION IN A "WINDOWS.." COMPUTER THAT IS RUNNING "ZOOM"** (E)

To get your speaker and microphone audio working right in a Windows computer that is running "Zoom":

Big Step 100:

Enable/test and disable the wanted and unwanted "Playback" and "Recording" audio devices.

Big Step 200:

Start up the Zoom app and adjust the Windows "Volume Mixer" to make sure that the "Zoom Meetings" volume slider is not muted.

Big Step 300:

Start up a test meeting (with just yourself in it) and use the Zoom app's audio test feature.

- **WIPING "HARD DRIVES OF "WINDOWS.." COMPUTERS" TO PREPARE THEM FOR DONATION OR GIFTING (E)**

Most used computers are donated or sold with all sorts of recoverable data files and photo files on their old hard drives. Here is what we learned about wiping hard drives when we were asked to sanitize 10 computers for a small business.

- The free CCleaner Portable app's wipe does a good enough job in most cases
- The free MooO Disk Wiper app removes data from more areas
- Use them both for extra safety
- "Full Format" does the best wipe but it removes the Windows operating system which makes your computer less useful to the person or organization that you transferred your computer to
- Use the free Recuva app to see how good of a job CCleaner and MooO Disk did on cleaning the "free space" in your computer

- **USING FREE CLOUD STORAGE--AN OVERVIEW (E)**

You can use free cloud storage services to store data files and digital photos for free. The benefits of storing data files are:

- Reduce the probability of losing data files and photos due to hard drive crashes and operator error.
- Facilitates collaboration between multiple people working on the same project
- Provides you with the ability to synchronize data files and digital photo albums between multiple computers, tablets, and cell phones.



- **A COMPARISON OF "ONEDRIVE", "GOOGLE DRIVE", "BOX", "DROPBOX, AND iCloud" (E)**

This detailed comparison between the five cloud storage services provides you with objective information for selecting which ones to use:

- **[USING MICROSOFT'S ONEDRIVE" CLOUD STORAGE](#) (E)**

Microsoft's OneDrive provides you with 5 Gigabytes of free storage space. The data files and digital photos that you store on OneDrive can be accessed from Windows, Apple MacOS, Linux, and Android computers, tablets, and cell phones but it is especially well-integrated with the Windows 10 "Start Menu" and the "File Explorer."

- **[USING "GOOGLE DRIVE" CLOUD STORAGE](#) (E)**

"Google Drive" gives you 5 Gigabytes of free storage up on Google's server farms. You can upload and download entire folders of data files or digital photos at the same time using most Web browser but uploads and downloads using Google's "Chrome" browser are especially fast, compared to uploads of folders for "OneDrive" and "Box".

- **[USING "BOX" CLOUD STORAGE](#) (E)**

"Box" gives you 5 Gigabytes storage up on their server farms. You can upload and download entire folders of data files or digital photos at the same time using most Web browser but uploads and downloads using Google's Chrome browser are especially fast, compared to uploads of folders for OneDrive and "Box". "Box" has the best online viewing and editing of data files because they offer their own viewer, viewing and editing with Zoho, and viewing and editing with Google Docs.

- **[USING APPLE'S "iCLOUD" CLOUD STORAGE](#) (E)**

iCloud gives you an initial 5 Gigabytes storage up on Apple's server farms. To obtain this amount of storage, you need to first obtain an Apple ID by either filling in the form at Apple Website or by using the screens inside the iTunes program. Then you can use this Apple ID to obtain an iCloud account from inside a Mac running OS X 10.7 or higher, or from a recent model iPad, or from a recent model iPhone.

- **OVER-THE-AIR TELEVISION RECEPTION FOR FREE (E)**

You can receive digital television stations over-the-air for free. You will get less channels relative to those provided by cable television services and satellite dish services. However, the monthly cost for cable television and satellite dish service has been rising faster than the rate of inflation so this over-the-air technology can save you lots of money, if it is adequate for your needs:

- Digital television in North America uses the ATSC standard. ATSC stands for Advanced Television Systems Committee. Over-the-air ATSC television channels have been available since the first half of 2009. "
- ATSC is also known as 8VSB which stands for 8-level vestigial sideband modulation
- Steps for setting up over-the-air television reception
  - Step 1: Do an online site survey at <http://antennaweb.org>
  - Step 2: Do a pilot test of television reception at your actual physical location
  - Step 3: Procure equipment: an ATSC television or an ATSC tuner for an existing, old television set, or an ATSC-capable tuner for an existing computer.
  - Step 4: Install and configure equipment.

- **TELEVISION SIGNALS FOR YOUR REAL OR VIRTUAL TELEVISION SET (E)**

You can watch television with either a real television set or with a virtual television that resides inside your Windows, Mac, or Linux computer. Your real or virtual television set can get television signals from either a cable television provider or over-to-air for free with an indoor or outdoor antenna.:

- Television Signal Options:
  - ATSC Over-The-Air
  - NTSC Over-The-Air (mostly obsolete)
  - Clear QAM from a cable provider. (Most cable television providers no longer offer clear QAM channels to their subscribers.)
  - Encrypted QAM from a cable provider. (Needs a set top box from your cable provider.)
- Reception Options
  - Television set
  - Tuner and television software inside a computer
  - Standalone Linux-based TV tuner
- Timeline
  - ✓ 1941 - Black-and-white over-the-air NTSC television
  - ✓ 1949 - Black-and-white cable NTSC television
  - ✓ 1953 - Color NTSC over-the-air television
    - 2009-06-12 - NTSC to ATSC transition for most NTSC television stations, with an exception for low powered, translator, and Class A stations which were allowed to continue broadcasting with NTSC signals.
  - ✓ 2015-09-01 NTSC to ATSC transition for all NTSC low-powered, translators, and Class A television stations
  - ✓ 2017-11-16 - FCC approves a voluntary rollout of ATSC 3.0 television channels along with a mandatory 5-year period for simulcasting with legacy ATSC 1.0 signals
  - ✓ 2020 - ATSC 3.0 channels (= Next Gen TV) start appearing with 5 years of simulcasting with ATSC 1.0 required by the FCC
  - ✓ 2020 - ATSC 3.0-capable television sets and tuners start appearing at retailers
  - ✓ 2023 - End of 5-years of mandated simulcasting with ATSC 1.0 so that only ATSC 3.0 stations remain in existence
- A Television Tuner For Your Computer
- Steps for setting up your real or virtual television set

- **REPAIRING AND/OR RECOVERING DATA FROM EXTERNAL HARD DRIVES OR EXTERNAL SSDs (E)**

Like all hard drives, all external hard drives eventually fail. Using SATA data and power cables and/or USB hard drive adapters or enclosures, you can recover the data from or even repair the better-built models of external hard drives:

- Connecting a 2.5-in. hard drive or a SATA SSD to a USB port
- Connecting a 3.5-in. hard drive to a USB port
- Installing an add-on fan to a 3.5-in hard drive
- Attaching a SATA internal hard drive or a SATA SSD to your computer with a SATA data cable and a SATA power cable
- Two possible hardware configurations inside an external hard drive
- When a part inside an external hard drive or an external SSD breaks, you can save money and end up with a more reliable device if you substitute quality third-party parts as described at [http://aztcs.apcug.org/meeting\\_notes/winhardsig/harddrives/external/Parts-for-external.pdf](http://aztcs.apcug.org/meeting_notes/winhardsig/harddrives/external/Parts-for-external.pdf)

- **BUILD YOUR OWN EXTERNAL HARD DRIVE ENCLOSURES (E)**

The external hard drives and external hard drive enclosures that are available at retail are all designed and constructed to be cheap. None of them last very long. You can build yourself hard drive enclosures and external hard drives that are much more reliable than the ones that are available at retail. If you do so, you can usually build them at a price than is lower than the cost of buying the external hard drives and the external hard drive enclosures that are currently available at retail:

- A cheaper way to attach a SATA internal hard drive or a SATA SSD to a computer is to use a SATA data cable and a SATA power cable, instead of attaching a SATA internal hard drive or SSD to a USB port
- To build your own external hard drive enclosures or external SSD enclosures, you can use quality third-party parts as described at [http://aztcs.apcug.org/meeting\\_notes/winhardsig/harddrives/external/Parts-for-external.pdf](http://aztcs.apcug.org/meeting_notes/winhardsig/harddrives/external/Parts-for-external.pdf)

- **STREAMING MEDIA: BASICS, MEDIA CAPTURE, AND SCREEN RECORDING** (E)

The videos and audios that you view or listen to in a Web browser arrive in your computer in three ways:  
streaming without files,  
sequential file chunks,  
and  
single file downloads.

You can use various software programs to save these media items for future viewing or listening

- Legal issues of media capture and screen recording
- Endless streaming media
- Single file streaming
- Streaming sequential chunks
- Media capture (at the network stack)
- Torture test for media capture software
- Screen recording
- Media capture versus screen recording

- **REPLAY CAPTURE SUITE PROGRAMS** (E)

Replay Capture Suite has 8 not-free programs that can be used for:

- media capture at the network stack
- screen recording at the Graphics Device Interface
- online music
- media file conversion
- media file splitting and editing
- media and data file encryption
- recording Skype sessions

- **FREE SOFTWARE FOR MEDIA CAPTURE, AND SCREEN RECORDING** (E)

We have discovered several great free software programs for doing "media capture" and "screen recording":

- "aTube Catcher" for media capture
- "Flashback Express" for screen recording
- "iSpring Free Cam" for screen recording

- **FREE SOFTWARE FOR EDITING VIDEO RECORDINGS** (E)

We have discovered two great free software programs for editing video recordings:

- Microsoft's "Video Editor" is bundled inside "Windows 10"
- "Videopad" by "NCH" is free for non-commercial home use

- **FREE SOFTWARE FOR EDITING DIGITAL PHOTOS** (E)

We have discovered four great free software apps for editing digital photos:

- Microsoft's "Photos" is bundled inside Windows 11 and Windows 10
- "Google Photo" is a free "Web app that can be accessed from an Internet-connected Web browser
- "Adobe Photoshop Express" is a free app
- "GIMP" is a full-featured Free and Open Source app

- **EMAIL BASICS** (E)

A typical email system consists of three servers up in the Internet cloud. Your end-user computer communicates with these three servers in order to send and receive email messages. To help you understand your options for sending and receiving email, let us tell you about how email works:

- Three Cloud-based Servers For The Typical Email Service:  
a server for sending email,  
a server for receiving email,  
and  
a Web server.
- Access "Webmail" using a Web browser such as "Internet Explorer"
- Access the sending and receiving servers directly using a local "Email client program" that is installed on the hard drive of your local computer
- Advantages and disadvantages of "Webmail" compared to using an "Email client program"
- Using both "Webmail" and an "Email client program" to for maximum convenience and problem resolution

- **EMAIL--ADVANCED TOPICS AND TECHNIQUES** (E)

The diversity of options in email software, servers, and hardware platforms provides you with lots of ways to save money, time, and hard drive space:

- Offline Access to Webmail
- Three Cloud-based Servers For the Typical Email Service
- Protocols For Sending Email
- Protocols For Receiving Email
- Email Client Software:
  - ✓ [UWP apps versus Legacy Programs](#)
- Where Is My Email Stored?
- Selecting An Email Service
  - ✓ [Litmus Email Analytics' Email Usage Data](#)
  - ✓ [Security Lapses of Email Providers](#)
- Disadvantage of Email Address from Your Broadband Internet Service
- Verizon and AT&T Are Exceptions to the Above
- [Verizon's Acquisitions of AOL Mail and Yahoo!Mail](#)
- Microsoft Account Creation
- [Saving Email Locally on the Hard Drive of Your Computer](#)
- ["Google Takeout" Website Allows You to Download All of Your Gmail Into a Single Mbox File](#)
- Dormancy When Not Used
- Email Away From Home
- Security Defenses for Webmail
- Security Defenses for An Email Client Program
- [Sending SMS Text To A Cell Phone](#)
- [Accessing "Yahoo!Mail" from a Email Client Program Inside A "Windows.." Computer](#)
- [Apple iCloud email in "Windows 10"](#)



- **HOW YOU CAN SILENCE THAT NOISY COMPUTER (B)**

There are two ways to silence that noisy computer of yours:

Method 1:

Make it quieter or buy a quieter computer

Method 2:

Move the main computer unit  
away from your keyboard-monitor-mouse

- Using free software to measure the sound level of a computer
- Buying silent computers.
- Adding in liquid cooling sometimes helps
- Sound-reducing computer parts sometimes help
- Move your computer away from your monitor-keyboard-mouse by using active extension cables

- **MOVING YOUR MONITOR, KEYBOARD, MOUSE, WEBCAM, HEADSET, SPEAKER, AND MICROPHONE FARTHER AWAY FROM YOUR COMPUTER (E)**

Using fiber-based HDMI cables and active "USB 3" extension cables, you can now place flatscreen monitors, mice, keyboards, and some USB devices up to 32 feet away from your computer. These technological advancements make it possible for you to place your computer in the next room by running cables through a hole in a wall:

- Extensions for audio cables
- Moving your keyboard, mouse, monitor, etc. farther from your computer
- Installing conventional HDMI cables
- Installing passive USB 3 extension cables and powered USB 3 hubs
- Installing HDMI cables with Redmere Technology
- Installing active USB 3 extension cables

- **REVO UNINSTALLER PORTABLE (B)**

"Revo Uninstaller Portable" is a free software program that helps you clean up your hard drive and the Windows "Registry" after it runs the uninstall wizard that is part of all "desktop app" programs that run in "Windows..".

- When you use "Programs and Features" in "Windows.." to remove a program, bad things are left behind!
- "Revo Uninstaller Portable" cleans up the hard drive and the Windows "Registry"
- "Revo Uninstaller Portable" Is a "portable application"
- Programs that "Revo Uninstaller Portable" can remove:  
"Desktop apps" and "Universal Windows Platform" (UWP) apps.
- Getting "Revo Uninstaller Portable"
- Using "Revo Uninstaller Portable"

- **"WINDOWS 11" AND "WINDOWS 10" ACTIVATION (I)**

Windows 11's and Windows 10's activation process is different from any previous "Windows.." operating system product.

- There are two ways to activate "Windows 10":  
"Digital License" Activation and "Product Key" Activation
- When you get a free upgrade to "Windows 10" from Windows 7, 8, or 8.1, you get a "Digital License" activation
- Both ways to activate "Windows 10" store the Uniquely Universal Identifier (UUID) of your computer's motherboard up in Microsoft's activation servers in the Internet cloud.
- The "Anniversary Update" converts a "Product Key" activation to "Digital License" activation for copies of "Windows 10" that were original activated a "Windows 10 Product Key".
- Two ways to linking Your "Microsoft Account" to a "Digital License" activation
- If you link your Microsoft Account to your Windows account, you get the ability to use the "Activation Troubleshooter" in "Windows 10" to activate after changing out your computer's motherboard. However, you then have to log into "Windows 10" with your "Microsoft Account". If you go back to logging into "Windows 10" with a "Local Account", you lose your ability to use the "Windows 10 Activation Troubleshooter" to change your computer's motherboard.
- If you activate "Windows 10" with a purchased "Windows 10 Product Key" and then you replace the hard drive but keep the same motherboard, you can do a "fresh install" with an Installation Media DVD or USB thumb drive. During the "fresh install" process, you can either "Skip activation" or enter in your purchased "Windows 10 Product Key". If you enter in your "Windows 10 Product Key", your "fresh install" will have a "Product Key" license. If you "Skip activation", your "fresh install" will have a "Digital License".

- **"USING THE FREE "WINDOWS 11 ENTERPRISE EVALUATION" (B)**

There are three ways for you to run the free "Windows 10 Enterprise Evaluation". It is close enough to the other editions of "Windows 10.." so that you can use it to test hardware and compatibility with your existing computer(s).

- What is the "Windows 11 Enterprise Evaluation"?
- System requirements
- Ways for you to run the "Windows 10 Enterprise Evaluation":
  - Method 1: Installing it into a real, physical computer.
  - Method 2: Installing it into a virtual machine.

- **ADDING EXTERNAL PARTS TO REPAIR OR IMPROVE A COMPUTER (B)**

You can add external parts to make cost-effective temporary or permanent repairs or improvements to a computer:

- Parts of a computer fail In two ways
- Use "USBTreeView" to troubleshoot
- Disabling failed parts in a computer
- Reasons to add an external part to your computer
- Examples of external parts
- Portable and AC-Powered Monitors
- USB hubs
- External DVD/CD drives
- External hard drives and external hard drive enclosures to boot up a computer
- Gigabit Ethernet wired network adapters
- USB 3-based 802.11ac Wi-Fi wireless network adapters
- External USB mouse
- External USB keyboard
- USB sound card
- USB 3-based "DisplayLink" adapters

- **WHAT TO DO WHEN YOUR COMPUTER WILL NOT BOOT (B)**

If your computer will not boot up, here are some logical troubleshooting steps for you to follow from the simple and obvious to more complex procedures.

- Basic troubleshooting of any computer
- Change boot order during initial boot up
- Booting with a bootable DVD or CD disc, a bootable USB flash drive, or a bootable HDD
- Troubleshooting a "Windows.." desktop computer
- Troubleshooting a "Windows.." laptop computer
- Troubleshooting a Mac "OS X" computer
- Restore a "Windows.." computer from a "system image backup"

- **SOME SIMPLE TECHNIQUES FOR MAKING A "WINDOWS.." COMPUTER EASIER TO USE** (E)

This is a hands-on demonstration of some simple tricks for making your "Windows.." computer more user friendly and efficient:

- Unhide file extensions
- Pre-pend year-month-day to file and folder names
- Circle trick for checking the aspect ratio of your monitor screen
- Copy-paste or cut-paste to the right pane of "Windows Explorer" or "File Explorer" (instead of to the left pane)
- Drag down or up before copy-paste or cut-paste to avoid inadvertently putting into folders
- Use the paste button to avoid copy-paste or cut-paste into folders
- Use a text file as an intermediate step to strip out formatting
- Right click-rename or f2 and then copy to copy the name of a file instead of the file
- netplwiz or control userpasswords2 to make Windows.. log you in automatically when you power up your computer
- Use Windows' "Preview" for faster previews relative to third-party programs
- USE Ctrl+Shift+Esc or Ctr+Alt+Delete and the "Task Manager" to avoid mousing over or clicking on hazardous URLs
- When sending document files to other computer users, it is best to use the .doc, .xls, and .ppt file formats
- Use printable paper rulers when you need a ruler
- When in doubt, use the right mouse button to click on something
- Ctrl + and Ctrl - to enlarge and reduce the text in most Web pages

- **POWERLINE NETWORKING** (E)

"Powerline networking" has improved greatly in speed and reliability. It is now comparable in speeds to "Gigabit Ethernet":

- A live demonstration of a "powerline network" that connects a broadband modem, a router, and an end-user computer
- Extending your existing network with powerline networking transceivers
- Power networking standards: "HomePlug AV2" and "G.hn"
- Reviews of powerline networking devices
- Using Powerline Networking to speed up a default "mesh network" configuration
- Setting independent groups of powerline networking transceivers

- **ANALYZING AND RESOLVING Wi-Fi PROBLEMS** (E)  
To analyze and resolve Wi-Fi problems, you can install free software utility programs for your "Windows.." or Mac "OS X" computer. These programs give you numerical and graphical information that you can use:
  - Free Wi-Fi software for your "Windows.." or Mac "OS X" computer
  - Received Signal Strength Indication (RSSI)
  - Selecting the right Wi-Fi channel
  
- **RESOLVE BOTTLENECKS IN YOUR LOCAL AREA NETWORK** (E)  
To get the best Internet download and upload speeds for your local network, you can use your computer to measure the actual Internet "bandwidth" at different points in your local network. Then you can bypass or replace the troublemaking network devices. A demonstration of a real bottleneck in a typical home network:
  - Big Step 100:  
Measure Internet bandwidth at various locations on your home network
  - Big Step 200:  
Measure local network speeds at various locations on your home network
  
- **TESTING USB PORTS, CABLES, AND DEVICES** (E)  
Using three free software programs, you can test USB ports, cables, and equipment in order to resolve problems:
  - Use the free "USBTreeView" software program to check for basic functioning and stability
  - Use the free "FlashBench" software program to put a "USB 2" or "USB 3" port through a series of real world tests: "Writes" and "Reads" of real files to a USB flash drive, a mechanical hard drive, or a solid state drive
  - Use the free "CrystalDiskMark Portable" software program for more extensive comparison testing

- **DATA PRESERVATION ISSUES AND STRATEGIES (B)**

Hard drives and all data storage media, like every other part, of your computer have a 100 percent failure rate. That means that you have to proactively plan ahead in order to avoid the loss of data files and photo files when a hard drive or data storage media eventually fails:

- There are two surviving hard drive manufacturers: Seagate and Western Digital
- Reliability data gathered by "BackBlaze" company show that HGST hard drives are more reliable than Western Digital hard drives which are more reliable than Seagate hard drives
- Strategies for dealing with the certainty of hard drive failure:
  - Data File/Folder Backups To Internal and External Hard Drives
  - Redundancy using Microsoft's bundled "Storage Spaces", and "RAID" hard drive arrays.
  - Storing Data Files and Photo Files in the Internet "Cloud" with "OneDrive", "Google Drive", "Box", etc.
  - Imaging of Hard Drives with bundled Microsoft software
  - Imaging of Hard Drives with third party software such as "Macrium Reflect Free", "Clonezilla", or "Acronis True Image"
  - Data Recovery Software such as "Recuva"
  - "Fix when broke" using a cleanroom services such as "DriveSavers" or "OnTrack"

- **MAC "OS X" COMPUTERS AND HOW THEY DIFFER FROM "WINDOWS.." COMPUTERS (B)**

Let's look at the pricing and models AND the user interface of Apple's Mac "OS X" computers and compare them to "Windows.." computers:

- Four Models of Macs
  - "Mac Mini" is a small-form-factor computer
  - "iMac" is an "All in One"
  - "MacBooks" are laptops
  - "Mac Pro" is full-sized tower
- Pricing of Macs
- User Interface of Macs
  - "Menu Bar" is always visible on the top of the screen
  - "Dock" is similar to the "Task Buttons" in the center of the Windows.. "Taskbar".
  - "Finder" icon in the "Dock" is similar to "Windows Explorer" in "Windows.."
  - Keyboard differences
- Running "Windows.." Inside Macs
  - Method 1: Running "Windows.." inside a virtual machine running in "Parallels Desktop", "VMware Fusion", or "Oracle VM VirtualBox".
  - Method 2: Running "Windows.." inside a "Boot Camp" partition



- **MAKING "WINDOWS.." EASIER TO USE BY SHOWING FILE EXTENSIONS AND BY PROVIDING LOGICAL NAMES FOR FILES AND FOLDERS** (B)

All versions of "Windows.." from "Windows 95" to "Windows 8.1" suffer from various problems that Microsoft has inadvertently designed into them. Here are some tips and tricks for making "Windows.." easier to use including turning on the display of file extensions, and providing logical names for files and folders:

- Problems caused by the default of "Hide file extensions of known file types"
- Turning off "Hide file extensions of known file types"
- File and folder naming with year-month-day prepended
- Naming of the files that you send to other "Windows.." computer users

- **EXTEND THE USEFULNESS OF YOUR "WINDOWS..", MAC "OS X", OR LINUX COMPUTER WITH PERIPHERAL AND VIRTUAL ADD-ONS (E)**

You can use peripheral and/or virtual add-ons to enhance the usefulness of your computer.

- With the addition of real hardware peripherals such as fax modems, TV tuners, and Webcams, your computer can perform the same functions as real fax machines, TV sets, and video surveillance systems.
- You can use free software to create virtualized computer hardware to massively expand the variety of operating systems and software applications that you can operate.
- By combining virtualized computer hardware and real hardware peripherals, you can obtain synergistic benefits such as super secure Web access.

- **VIRTUAL FAX MACHINE INSIDE YOUR COMPUTER (E)**

You can use a fax modem and fax software instead of a real fax machine:

- [Fax transmission and reception from "Windows.."](#)
- [Fax transmission and reception from Mac "OS X"](#)
- [Fax transmission and reception from "Ubuntu" Linux](#)

- **TELEVISION INSIDE YOUR COMPUTER (E)**

You can create a working virtual television set inside your computer by installing a television tuner and running television viewing software such as "Windows Media Center", "WinTV", or "Kaffeine":

- [TV Inside Your "Windows.." or Mac "OS X" Computer](#)
- [TV Inside Your "Ubuntu" Linux Computer](#)
- [TV Inside Your "MX Linux" Computer](#)

- **MAKING THE FREE "LIBREOFFICE" PROGRAM DEFAULT TO THE .DOC, .XLS, AND .PPT FILE FORMATS OF "MICROSOFT OFFICE.." (B)**

The free "LibreOffice" suite of software programs is a great alternative to not-free "Microsoft Office..". However, you should set the various programs inside "LibreOffice" to default to the most common file formats of .DOC, .XLS, and .PPT in order to have maximum compatibility. Let us show you the steps for making "LibreOffice Writer", "LibreOffice Calc", and "LibreOffice Impress" get along with "Microsoft Word", "Microsoft Excel", and "PowerPoint".

- **[TROUBLESHOOTING PRINTER PROBLEMS IN A "WINDOWS.." COMPUTER](#) (B)**

We will show you how to use various screens in the Windows "Control Panel" and the "Services Console" to troubleshoot and resolve problems in the "print spooler", the "print processor", and the "port monitor" to resolve problems that are more complex than the usually-misleading fixes that are suggested by the "Troubleshoot" wizards that "Windows.." provides for your various printers.

- **[TROUBLESHOOTING PRINTER PROBLEMS IN A "MacOS" COMPUTER](#) (B)**

We will show you how to use various screens in the "System Preferences" window and the "Terminal" app to troubleshoot and resolve problems.

- **MAINTAINING AND REPAIRING HARD DRIVES FOR WINDOWS COMPUTERS (E)**

When confronted with hard drive problems, you should perform low-risk, less invasive procedures first, followed by increasingly aggressive, higher-risk procedures. As you perform these increasingly invasive procedures, you will either repair the hard drive and return it to service or you will decide that it is beyond economical repair:

- [Always Click on "Cancel" when an "Initialize Disk" box pops up\(unless you have just attached an unformatted hard drive or USB flash drive device to your computer\)](#)
- [Maintenance and Repair Strategy](#)
- ["Error-checking" in "Windows.." to Resolve Bad Clusters](#)
- ["Soft Repairs" with Utilities in Linux](#)
- [Data Recovery with Utilities in Linux](#)
- [Radical "Surgery" to Extend the Life of Failed Hard Drives:](#)  
If you are unable to recover the data files from a failed hard drive and it's platters are still spinning, you can usually use "Disk Management" in "Windows" to create partitions to "block out" the bad sections of the hard drive, in order to extend the useful life of the hard drive.

- **USING A LOCAL AREA NETWORK (LAN) TO SHARE FILES BETWEEN WINDOWS COMPUTERS, MAC "OS X" COMPUTERS, OR LINUX COMPUTERS (I)**

If you have "Windows.." and/or Mac "OS X" computers OR "Windows.." and/or Linux computers on your local area network (LAN), you can use a few network tricks to share files between them.

- **USING VIRTUALIZATION OF HARDWARE TO SAVE MONEY, TIME, AND SPACE** (E)

You can save money, space, and time by using the virtual software "devices" to simulate all or part of real, physical equipment:

- "Microsoft Fax" instead of a real fax machine
- A USB TV tuner and "WinTV" or "Windows Media Center" instead of a television set
- The free virtual DVD/CD drive instead of a real DVD/CD drive
- Software-based "virtual machines" and "virtual hard drives" instead of real computer hardware and real hard drives.
- Virtual networks and virtual network devices instead of real network devices

- **CHOOSING A VIRTUAL MACHINE PROGRAM FOR YOUR "WINDOWS.." COMPUTER** (B)

There are three free virtual machine programs that you can run inside your "Windows.." computer: "VMware Workstation Player", "Oracle VM VirtualBox", and "Hyper-V". Each of these programs let you create and clone "virtual machines" which are complete software-based computers. Since they are all free, you can run all of them in your "Windows" computer--but not at the same time. The compelling reasons for picking one of the virtual machine programs are presented to you to help you pick the best one for your needs.

(The presentation slides for all of our presentations on virtual machines are located at

[http://aztcs.apcug.org/meeting\\_notes/winhardsig/virtualmachines/virtualmachines-concise.pdf](http://aztcs.apcug.org/meeting_notes/winhardsig/virtualmachines/virtualmachines-concise.pdf)

and

[http://aztcs.apcug.org/meeting\\_notes/winhardsig/virtualmachines/comparison-vm-programs.pdf](http://aztcs.apcug.org/meeting_notes/winhardsig/virtualmachines/comparison-vm-programs.pdf)

and

[http://aztcs.apcug.org/meeting\\_notes/winhardsig/virtualmachines/virtualmachines-longterm.pdf](http://aztcs.apcug.org/meeting_notes/winhardsig/virtualmachines/virtualmachines-longterm.pdf)

and

[http://aztcs.apcug.org/meeting\\_notes/winhardsig/win8/win8-Hyper-V.pdf](http://aztcs.apcug.org/meeting_notes/winhardsig/win8/win8-Hyper-V.pdf)

- **BENEFITS OF USING VIRTUAL MACHINES** (E)

Let us show you how virtual machines can save you time, money, and space. You can use "virtual machines" to perform activities that you would otherwise have to do with real computers. When you use virtual machines in free "virtual machine programs", it is like getting a pile of computers to use for free with all of them residing inside your existing physical "host" computer. When you run virtual machine programs, you can use fewer real computers because you can create "virtual machines" instead of keeping old computers around or buying additional new computers.

- **FREE ONLINE COMPUTER TRAINING** (E)

Your computer and its Internet connection can provide you with hundreds of hours of free training that you can access in the comfort of your home. The Tucson Computer Society has a collection of categorized hyperlinked shortcuts to Web sites that have free computer training. These shortcuts include free training from the Web sites of Adobe and Microsoft. You also can get free and non-free training from the Web sites of training organizations such as Lynda.com, Hewlett Packard, SeniorNet, Oasis, and various public libraries.

- **SPEEDING UP "WINDOWS 11" OR "WINDOWS 10"** (I)

We have prepared extensive step-by-step instructions for you to use to speed up your "Windows 11" or "Windows 10" computer(s). We will use an actual "Windows 11" virtual machine to show you how to use the "System" applet in the control panel to perform various speedup tweaks including "supersizing" the virtual memory "swap file". Then we will show you how to run "services.msc" in "Microsoft Management Console" to turn off and disable unneeded services, which will speed up your "Windows 11" or "Windows 10" computer.

- **SHARING FILES AND PRINTERS BETWEEN "WINDOWS 11", "WINDOWS 10", "WINDOWS 8.1", "WINDOWS 7", AND "WINDOWS XP" COMPUTERS (E)**

When you need to share files and/or printers between "Windows 11" computers, "Windows 10" computers, and computers running earlier versions of "Windows..", you have to use traditional file/printer sharing. You might also have to use IP addresses to "kick start" the sharing process. Using virtual machines running "Windows 10", "Windows 8.1", "Windows 7" "Windows Vista", and "Windows XP", we will show you how file and printer sharing can be done between disparate versions of "Windows..".

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