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BITS AND BYTES

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ARTICLE INDEX

Shopping for a New Smartphone — Page 2

By Tom Burt, Vice President, Sun City Summerlin Computer Club

Talk, Texts, Data – How much, and for how much? — Page 5

By Phil Sorrentino, By Phil Sorrentino, Newsletter Contributor, Sarasota Technology Users Group

Tech Travels 2.5 — Page 7

by Greg Skalka, President, Under the Computer Hood User Group

Recycling a PC — Page 9

By Dick Maybach, Brookdale Computer User Group

QR Codes: What They Are and How to Use Them — Page 12

By Dorothy Fitch, Editor, GVR Computer Club, AZ

Interesting Internet Finds October 2021 — Page 14

By Steve Costello

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**GENERAL CLUB MEETING
VIA ZOOM**

**Wednesday, April 27, 2022
6:00 P.M.**

Shopping for a New Smartphone

By Tom Burt, Vice President, Sun City Summerlin Computer Club
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I've been looking at new smartphones for a few months, and now, with "Black Friday" and "Cyber Monday" sales in full force, it seemed like an interesting topic for a monthly column. As with most technology, the purchase process has become very complex. Smartphones have evolved to where you're buying a mobile computer that can also make calls on the cellular phone network.

At Casa de Burt, both Mrs. and I have been using fairly simple, low-end LG Android phones with 5-inch screens, modest cameras, and minimal storage. Originally, we had these mainly for emergency use when out and about. However, inevitably, they become more integral to one's daily existence in the modern technical world. Also, LG is exiting the smartphone business, and our phones' versions of Android are well out of support, so compatibility with future apps is a growing concern.

Carrier Technology (4G / 5G)

The cellular phone/data network has evolved over the years through successive generations: 2G, 3G, 4G, 4G LTE, and now 5G. A 6G standard is already in the works. If you're interested in a deep dig, here's an extensive article describing the history and current state of signaling technology: https://en.wikipedia.org/wiki/Cellular_network.

Older generations of the 3G GSM and CDMA standards are being phased out. As a result, older cell phones that can only access GSM or CDMA cell networks may no longer work after mid-April 2022. If buying a new phone, check to see if it's compatible with T-Mobile/Sprint, Verizon, or AT&T. Most new unlocked phones are compatible with all three.

All newer phones support 4G and 4G LTE; many support 5G. The main difference between 4G and 5G is that 5G offers higher data speeds. If you're not getting reliable 5G service from your carrier, there's little benefit in having a 5G phone.

Phone Brand and Hardware Specs

The major makers of cell phones include Apple, Samsung, LG, Motorola, and Google. Apple and Samsung are the major players in the US, with a combined 78% market share. LG announced its exit from the mobile phone business as of July 31, 2021.

Key hardware features to pay attention to are:

Processor cores and speed

New Apple iPhones use custom Apple-designed 6-core processor chips (A14, A15) that support the ARM (Advanced RISC Machines) instruction set with Apple extensions. New Android phones use ARM architecture processors primarily from Qualcomm (Snapdragon series), Samsung (Exynos series), MediaTek (Dimensity series), HiSilicon (Kirin series), and Google (Tensor series). In addition, the latest Android phones are coming with 8-core 64-bit processors running at up to 2.8 GHz clock speeds, so they compare well to mid-range desktop processors.

As you might expect, a higher-end processor yields better performance for running apps on our phone.

RAM memory

New smartphones come with 1G-byte to 4 G-bytes of internal RAM (memory for running active programs). More RAM is better but will increase the price of the phone. I'd recommend at least 2 G-bytes of RAM for running newer versions of Android (10 or 11).

Onboard solid-state storage

Newer phones now offer anywhere from 16 G-bytes to 512 G-bytes of onboard solid-state data storage. The data stored includes the operating system, all apps, and end-user data. If you use your phone to store videos, pictures, or music, you'll want a phone with at least 32 G-bytes of storage. Most phones allow you to add a SD flash card for additional storage.

Screen size and pixel resolution

Most new phones have a physical screen size close to 6.5 inches by 3 inches. Resolutions (pixels per inch) vary, with higher resolutions costing more. A typical mid-range screen (Moto G) is 1600 x 720 – about 267 pixels per inch. Some Apple 13 iPhones with Retina displays have 460 pixels per inch resolution.

Wi-Fi connectivity

Virtually all smartphones can connect to a Wi-Fi router and connect to the Internet for web surfing, email, and many “connected” apps. Most phones now support connecting via either the 2.4 GHz or 5 GHz bands using the 802.11AC standard. Some newer phones now also support the Wi-Fi 6 (802.11AX) standard. When shopping, look for 802.11AX or Wi-Fi 6 to “future proof” your phone. However, 802.11AC (Wi-Fi 5) is still OK.

Bluetooth connectivity

Bluetooth is a short-range radio connection alternative to Wi-Fi. It's handy for connecting to your car's in-dash entertainment console for hands-free phone operation or for connecting your phone to a Bluetooth headset (again for hands-free calling). With appropriate apps, you can also use Bluetooth to connect to other users' phones when there's no Wi-Fi router nearby.

Motion sensing / Accelerometer

Many newer phones have a built-in accelerometer. These are often used by gaming and virtual reality apps so that your phone's motion can be tracked, allowing it to function as a game controller or a game weapon. Or it might be used to sense activity while you're working out.

Headphone Jack

A headphone jack is important if you want to plug in wired headphones so you can listen to music or videos on your phone without disturbing others. However, there are also inexpensive rechargeable wireless Bluetooth earbuds that allow you to listen, even if the phone lacks a headphone jack.

USB connector

Newer Android phones come with a USB-C (small, symmetric) connector that can be used to charge and pass data between the phone and another device. Older phones used a “micro-USB” d-shaped connector. The charging cable for your phone should have the correct connector on one end and a USB-A (rectangular) connector on the other.

Battery Life

Most new smartphones have batteries rated 4000 to 5000 milliamp hours, translating to 36 to 40 hours of talk time. Generally, a higher capacity battery gives more talk time, but this will also depend on the processor speed, the amount of RAM and storage, the apps you use, and how much data is transferred over the Wi-Fi connection.

Phone Software Features

Apple iPhones run Apple's proprietary iOS (12, 13, or 14) operating system. Phones from other makers primarily run Google's Android operating system; newer phones typically run Android 10 or 11. In addition, some inexpensive Chinese phones may be running Linux-based operating systems that can also run Android apps. For example, Huawei, which is now banned in the U.S., uses HarmonyOS in its Chinese smartphones.

Out of the box, the features of a smartphone are determined by its operating system and the built-in apps. For example, for the Apple iPhone, the Apple app store offers an extensive catalog of additional free and paid iOS-compatible applications. Similarly, the Google Play store offers an extensive catalog of free and paid Android-compatible applications for Android phones.

Baseline bundled apps for all phones include a phone app (includes contacts), a text messaging app, the settings app, a file manager app, a camera app, and an app to interface to either the Apple app store or

the Google Play store. You will also find a photo viewer, a music player, a video player, a web browser, and an email app. Your phone carrier may also add vendor-specific apps.

Many new phones offer facial or fingerprint recognition to secure your phone while not requiring a PIN or password to unlock the screen.

Shopping Options

You can buy a new phone at many retail stores or at online retailers. Many of these are packaged with a prepaid plan from one of the carriers. You can also buy phones directly from the various carriers at the retail or online stores. Often, the carriers have the best pricing, but the phones will be “locked” to that carrier’s network. “Unlocked” phones (compatible with many or all carriers) can be bought, but prices tend to be higher. Be careful buying phones on eBay – especially “used” phones.

Many carriers offer phones at large discounts but require an expensive phone plan to get reasonable pricing.

After you buy the phone, you may need to get a SIM (Subscriber Identity Module) card for it from your preferred carrier and then activate the phone on that carrier’s network.

Buying a New Phone from a Carrier’s Phone Store – Experiences

As noted above, you can often find some really good deals by shopping your current carrier’s online or brick-and-mortar store. Of course, phones you buy from your carrier will be “locked” to that carrier’s network, but if you like your current plan, that should not be a problem.

Mrs. Burt has a low-cost prepaid phone plan with Boost Mobile (a subsidiary of T-Mobile / Sprint). As a result, we could buy her a very nice Motorola Moto G Pure phone for \$59.99 (pre-Black Friday special). In the Boost Mobile website screenshot, the price had dropped to \$49.99 on Black Friday). The Moto G Pure has 3GB of RAM and 32GB of onboard storage and is powered by a MediaTek 8-core CPU and runs Android 11. So for Mrs. Burt, it’s a perfect fit for her needs. Once the new phone arrived, it was easy to activate her new Moto G on the Boost Mobile website, keeping her current phone number.

My experience with the AT&T website was less successful. All their phones for regular plans are offered on a 36-month time contract. You pay a certain amount per month (\$5 to \$20, depending on the phone) and, after 36 months, you own the phone. However, you have to buy a plan that costs at least \$75 a month to get those good prices! After 36 months, you can trade the old phone in and get a new one, starting another 36-month time contract. Effectively, the customer is renting the phone.

The AT&T prepaid plans offer a small selection of phones for flat purchase prices. However, all these phones are locked to the AT&T network.

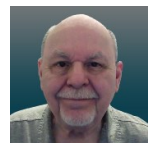
I looked at Verizon, and their plans, phone prices, and terms are about the same as AT&T’s.

I finally decided to switch from AT&T to Boost Mobile and get a Moto G Power phone (\$67 on Cyber Monday) for myself.

Final Thoughts

Your choice of smartphone depends a lot on your connectivity needs and how you use the phone as a mobile computer. Phones eventually wear out, but most succumb to mishaps like getting dropped, dunked, or lost. With care, a phone should last five years or more – long enough to where it will become obsolete before it wears out.

Lastly, in buying a smartphone, don’t forget its phone functionality. You won’t be happy if your phone drops calls or has poor reception. Read the online reviews before buying and look for comments about phone reception.



Talk, Texts, Data – How much, and for how much?

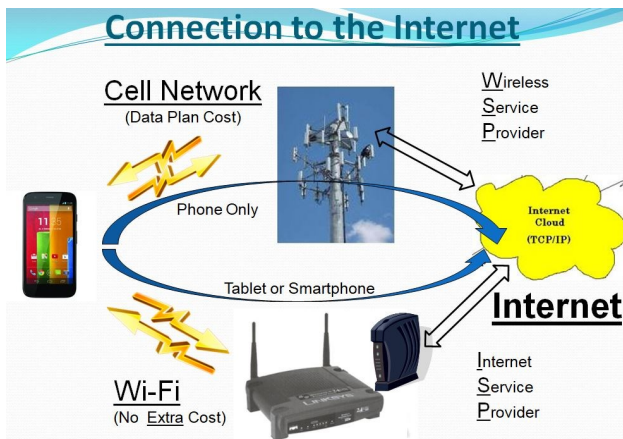
By Phil Sorrentino, By Phil Sorrentino, Newsletter Contributor, Sarasota Technology Users Group
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As you probably know by now, along with a smartphone comes a phone plan. This plan defines how you will be charged, by your Wireless provider, for using your phone. Some of the more popular Wireless providers are AT&T, Verizon, & T-Mobile, because those three companies own the three major wireless networks in this country. In addition to those three, there are resellers like Consumer Cellular, Mint Mobile, Ting, and Boost Mobile. (A reseller is an organization that sells wireless services under its own name but uses the networks of other service providers, for example, Ting uses T-Mobile.) If you have a “completely unlimited” plan, that is, no limits on the number of talk minutes, texts, and especially data, the rest of this article is just academic because you pay one price no matter how or how much you use your phone, but if you don’t have a completely unlimited plan, this may be interesting. Many plans that sound like (completely) unlimited plans are unlimited talk and text with typically a very large Data allotment, but not complete data. (A completely unlimited plan for a single phone may be around \$70/month, but less if you have multiple lines. For example, I have seen an unlimited plan advertised as \$37.50/month each for two lines; that’s \$75/month for two unlimited lines.)

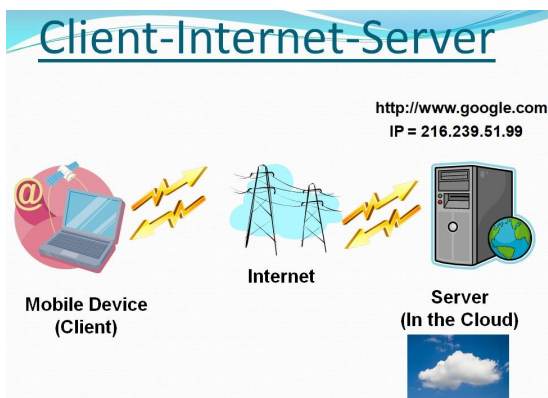
“**Talk**” time is the number of minutes you can use your phone for voice cellular phone calls. This would be the time you spend on your phone talking to people who are using smartphones, flip phones, or even home phones. Phone calls are from phone to phone, so you need a phone number for the phone call recipient. Phone calls typically go via the cellular phone network (cell phone towers), though you may be able to use wi-fi calling under certain conditions. Talk minutes are relatively inexpensive; they are almost free with most plans. If you want a plan with only talk minutes, they can currently be had for around \$20/month with unlimited minutes or about \$15/month with around 250 minutes. Talk used to be the whole reason for having and using a phone, but now there are many more uses for the smartphone.

“**Texts**” is the number of typically short typed-in messages that are sent immediately to the phone number you have chosen from your contact list. Texts (text messages) can only be sent from one phone to another, so you need a phone number to be the recipient of the text message. (Smartphone, Flip phone, probably not a home phone.) Texts typically go via the cellular phone network (cell phone towers) but can go via wi-fi if you are in the vicinity of a wi-fi router. (Note: Data is used for attachments to texts.) Texts have become a fairly common way to keep in touch with people because of their instant messaging nature. A text is immediately sent to the recipient, giving him the message and the ability to answer immediately or at a future time.

“**Data**” is the amount of “data” that is transmitted over the cellular phone network (cell phone towers). Data allotments typically come in GigaByte or half GigaByte increments (some may even be in hundreds of MegaBytes). Data allotments may be on a per-line basis, or with some plans, the data can be shared among a group of phones in a so-called family plan. When you are out and about, even traveling in your car, all the data transmitted to and from your phone is charged against your monthly data allotment. Fortunately, when you are not out and about and you are in the vicinity of a wi-fi router, the data that gets transmitted is not charged against your monthly data allotment. (You have already paid the Internet Service Provider for the use of the wi-fi as part of your monthly Internet bill.)



Data may be transmitted from your phone by any widget or open App. (Keep in mind that widgets are open as long as your phone is not powered off. Fortunately, most widgets use very little data.) Many Apps need a constant flow of data to keep their information current; Maps and Waze are two apps that come to mind. All of the Apps on your phone are designed to be the Client in the Client-Server computing model. These Apps can only do their job when connected to their server. (The internet provides the connection via cell phone towers or wi-fi.)



If an App is not closed after it is used, it may still be transmitting data to, and receiving data from its server, even if you are not looking at one of its screens. So, if you don't have an unlimited plan, make sure you close any app you will not use. If you don't want to use any data at a given time, most phones can turn off the Data, typically in "Settings." Make sure you leave yourself a reminder to turn Data back on afterward. (With the Data turned off, you will still be able to make and receive voice calls and probably texts, though you will probably not be able to receive attachments, like pictures, to texts.) Data is really what makes the smartphone so useful and versatile. Data makes the smartphone a personal digital assistant with endless uses, gives you access to enormous databases, and provides answers almost instantaneously.

As you can see from the amount of information describing talk, texts, and data, the emphasis is on data. The cost of most plans is directly correlated to the amount of data; it almost seems that talk and texts are just about thrown in at no extra charge. It is the fact that your smartphone can interact with a much more capable server at the other end of the internet that gives your smartphone all of its various amazing capabilities. It is data that lets us check our email, consult our calendar, find the nearest Japanese restaurant, keep in touch with people, and research and purchase items on Amazon or many other retailers on the internet, all without us moving from the comfort of our homes, offices, or automobiles.

President's Corner

Tech Travels 2.5

by Greg Skalka, President, Under the Computer Hood User Group
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My wife and I are back from another vacation trip, a week-long stay in northern Arizona to celebrate our anniversary. This comes not long after a week trip to Idaho in August to visit friends. Every time we travel, we can learn what tech techniques work when away from home and what does not. I thought I'd have everything worked out for the Arizona trip for smooth tech travels, having had the recent rehearsal on the Idaho trip. Things change, new experiences come up, and situations are different, however, so I always find something new to add to my list of tech travel do's and don'ts.

Different circumstances bring up new problems as well as new solutions. We found rental cars in short supply and expensive when we were planning on our Idaho trip, so we chose to fly instead of drive. This limited what we could bring along, so I left some things home. I brought only my 14" HP Windows 10 laptop, leaving my Chromebook behind. For the Arizona trip, rental cars had come back down in price, allowing us to drive and have the luxury of more cargo space in a small SUV. The default for this trip became "take it if we might need it," so extra clothes, several coolers, plentiful snacks and water, and the extra tech got to come along.

I had in the past always traveled with one of my Chromebooks since they are so small, light, and quick to start up and connect to the web. The Idaho trip was the first I'd done with the Win10 laptop, and I found it to be nearly as light and quick as my Chromebook. In addition, the laptop had the advantage of superior application compatibility and greater processing power with its I7 processor, so it could run my Thunderbird email client, something the Chromebook could not do. Despite my prior travel experience, I decided to take both on the Arizona trip since I had the space. I only used the Chromebook once (reading the newspaper pdf while riding in the car on the first day), so I think I will go with experience and leave the Chromebook at home in the future.

I probably need to think about buying a new Chromebook; however, by June 2022, mine will no longer receive any further Google Chrome OS and browser updates. Every Chrome OS device has an AUE (Auto Update Expiration) date, which Google sets. After this date, the Chromebook will run but not be eligible for security and feature updates. So, just as Windows users are eventually forced to buy new computers when their old ones don't run new OS versions, Google is culling out the older, weaker Chrome devices and generating sales for their device maker clients.

We stayed in three different locations on our Arizona trip. Our first two nights were in Cottonwood, AZ, about 30 minutes southeast of Sedona. This allowed us to enjoy Sedona but stay for about 1/3 the hotel costs. Next, we did some hiking, took a jeep tour, and visited many local scenic locations. We then traveled to Flagstaff and stayed two nights, visiting the local meteor crater, Sunset Crater Volcano National Monument, and Wupatki National Monument. We also drove to higher elevations northwest of Flagstaff to see the fall colors of the aspen trees.

Our final two nights were in Williams, AZ, where we stayed at the Grand Canyon Railway Hotel. On our last full day, we rode on the Grand Canyon Railway to the Grand Canyon, took a bus tour along the south rim, and returned to Williams on the train. The railway, hotel, affiliated Fred Harvey Restaurant, and many of the facilities at the Grand Canyon are run by Xanterra, a concessionaire for the National Park Service. Though we planned our vacation initially as a visit to Sedona, for me, the highlight turned out to be the train ride and visit the Grand Canyon.

We used lots of technology on our trip. I brought AAA paper maps as backups, but we relied primarily on Google maps (run on my Android smartphone) for our navigation. I connected to the hotel internet and used my laptop to find attractions and dining options, plan our next day, and get my email and San Diego e-newspaper from home. Checking the weather online became necessary, as it snowed a little in Flagstaff the night before we arrived.

In addition to Google Maps, I ran the Gas Buddy app on my phone to find low-cost gas on our travels (when we were not near a Costco). The phone camera was handy for taking photos of trail maps posted at the trailheads when we didn't have paper maps. It was helpful to have photos of the car and the license plate on our phones for reference with a rental car. Finally, I could use the smart home camera and control apps on my phone to check on our house while we were away and confirm we had no intrusions or other issues.

Since we would be hiking, I brought my handheld GPS receiver as a backup should we get confused on a trail. We didn't do much hiking, as my wife preferred photography to exertion. We both brought digital cameras to record our adventures; I took more than 2000 pictures on the trip. I brought my action cam (small video camera) but only used it on the jeep tour in Sedona.

One thing that became important in taking so many photos was battery management. I have two batteries for my Panasonic Lumix digital camera, and I tried to make sure both were charged before each day of adventuring. The power adapters and charging cables came out every night at the hotel, each one seeking a wall outlet. I brought an ac travel power adapter, providing three outlets from one wall socket, but didn't have to use it, as our hotels usually had an ample supply of ac connections. We also brought my car dash cam to use in the rental car, so we had to keep the two battery packs I brought for it charged up. So any time we were in the car, I was charging my phone from the car USB socket or the 12V to USB adapter I brought.

We had one long day on the road where I did run low on camera battery power. So rather than cut back on picture taking, I alternated with a small Nikon pocket point and shoot digital camera I had brought "just in case." I was also concerned about my phone battery on one day, and we were not in the car much, so I switched the phone to airplane mode for a time to conserve power.

To carry cold drinks and snacks in the car, I brought my 12V-powered electric cooler. A 110V ac converter provided the 12V for it when we were in our hotel room. In addition, I brought a towel to cover the cooler and keep the sun off it when we were parked somewhere during the day. The towel also kept things in the back of the car hidden from theft-minded eyes.

Our hotel internet access was pretty good most of the time. Our three stays were with three different hotel companies, resulting in three different experiences. The first two hotels required a password for access to their Wi-Fi. So I always connected using my VPN, Private Internet Access (PIA), though I didn't do anything more sensitive over the connection than accessing my email. A VPN was essential for our third hotel stay, as they had open Wi-Fi there. I sure was glad I had verified my PIA VPN was working and up to date before we left.

I did fall down on the job in navigation preparation for our trip. I failed to remember to download offline maps for the areas we would be visiting for Google Maps before leaving. Google Maps relies on two communications channels for navigation - internet access (usually a cellular signal when driving) and GPS signals from overhead satellites. The internet connection allows Maps to search for the destination you enter, plot a route, and get real-time traffic and detour information while on your way. The Maps app loads enough route information when you establish a route to navigate to your destination, even if it is a location where no cell coverage exists. If you have to reroute or start a route in a location without a cellular data signal, however, Maps may not be able to do it. Having a saved file of map data for the area on your phone allows Maps to navigate without a data connection (but with no traffic information, of course). We saw this happen when leaving the Meteor Crater but could follow the road back to the Interstate and a cell signal.

A bigger problem for Google Maps is the lack of a GPS signal. An adequate signal from four orbiting GPS satellites is required to allow a receiver (your phone) to get a 3-D position fix. Unfortunately, occasionally geography or position will cause a loss of line of sight to enough satellites for the receiver to be unable to determine your position. This happened to us twice on our trip; we had to proceed with our best guess for navigation until enough satellites came into view again (glad we had those paper maps).

Our trip was a lot of fun, with no real mishaps along the way. Of course, we depended a lot on technology, which enhanced our travels, but we were prepared with backup methods and contingency plans when the rare glitch occurred.

Recycling a PC

By Dick Maybach, Brookdale Computer User Group

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There are two issues to address when you decide to discard an old PC (1) finding somebody who wants it and (2) removing your data from it. The first is more difficult for older units, but not impossible; our local Goodwill was delighted to get an XP-era desktop with a keyboard and mouse but no display. I had replaced Windows XP with a current version of Linux to make it Internet-safe. I wouldn't have been comfortable donating a machine with an operating system that couldn't be kept current.

Your first step in selling a PC or giving it to a charity or a friend is to figure out what it is. For Windows 10, type "settings" in the search window, then go to Settings, to System, and finally to About to see the window is shown in Figure 1. (For the remainder of this article, I'll shorten such commands to "settings" > Settings > System > About.)

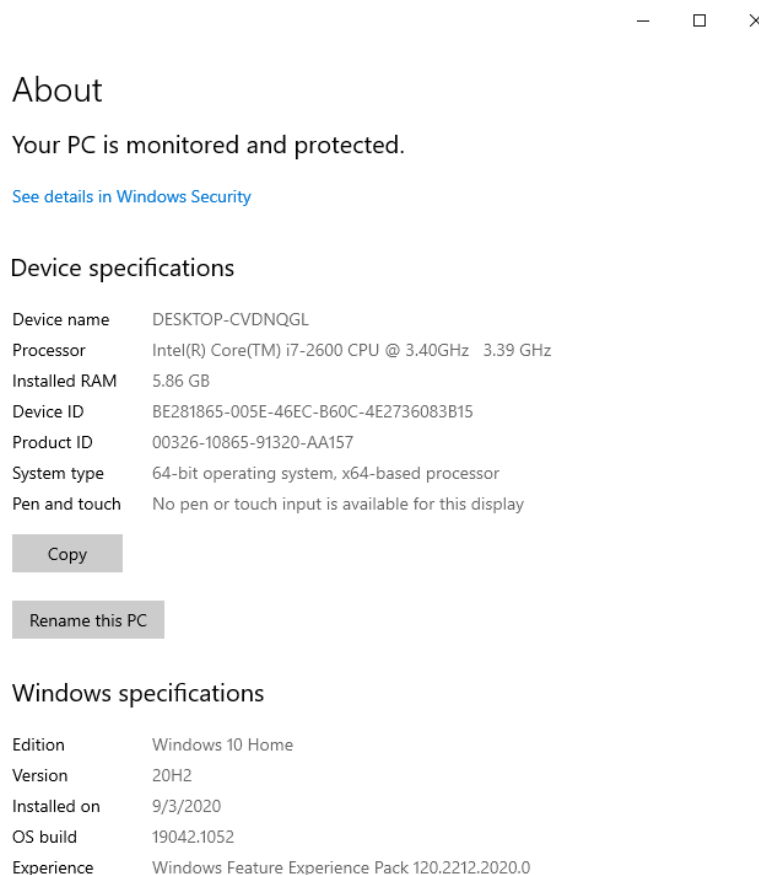


Figure 1. Windows 10 Device Specifications Screen.

Similar procedures work for other versions of Windows, see <https://www.tenforums.com/tutorials/132836-check-what-processor-cpu-windows-pc.html>. A key item here is whether the hardware is 32 or 64 bit. Although Microsoft still supports 32-bit processors, they are obsolete, and most Linux versions require 64-bit processors. Another key item is the version of Windows. You do nobody a favor by giving them a PC with an obsolete operating system, as it isn't safe to use on the Internet. The traditional remedy is to replace the OS with Linux, but it may take some searching to find one for a 32-bit CPU.

An alternative to the Windows tool is a live USB drive such as PartedMagic, available at <https://partedmagic.com/> for \$13, Figure 2. Unfortunately, you must be careful, as it's sold only as a subscription, and if you don't cancel it within three months, your credit card will be billed another \$13. I'm disappointed that the supplier has decided to take this approach. If you choose to go ahead, be sure to download both the current version (which runs only on 64-bit machines) and the old one, pmagic_2020_05_20.iso (which runs on 32-bit machines and all the 64-bit ones I've tried). Figure 2 is a screenshot of the latter.



Figure 2. PartedMagic Home Screen.

The information you need appears in the third line of text in the top right corner of the desktop, “CPU Details: x86_64, 3392 MHz” here. You can see more details by selecting the System Profiler icon on the desktop or bottom left icon, then System Information and exploring the Hardware Lister.

Is your PC worth recycling? A 64-bit one certainly is, and a 32-bit one maybe, if it isn't too old. One with Windows XP, a cathode-ray-tube display, and legacy accessory ports (PS-2 for its keyboard and mouse and VGA for display) is probably ready for the landfill, but do check with a local charity. With a solid-state display and USB ports, a more modern one is more likely to be usable. Windows 10 supports 32-bit machines for now, although there are signs that this may end. You can still find a few Linux distributions that do, <https://www.makeuseof.com/linux-distros-with-32-bit-support/>, even though most require 64 bits.

You should remove all your data before selling your old PC, giving it away, or disposing of it. Deleting files isn't enough, as these are easily recovered. They must be wiped; that is, over-written with unrelated data. This is especially convenient with recent versions of Windows, <https://www.pcmag.com/how-to/how-to-wipe-your-hard-drive>. For Windows 10, type “settings” > Settings > Update & Security > Recovery > Get started (under Reset this PC) to see Figure 3.

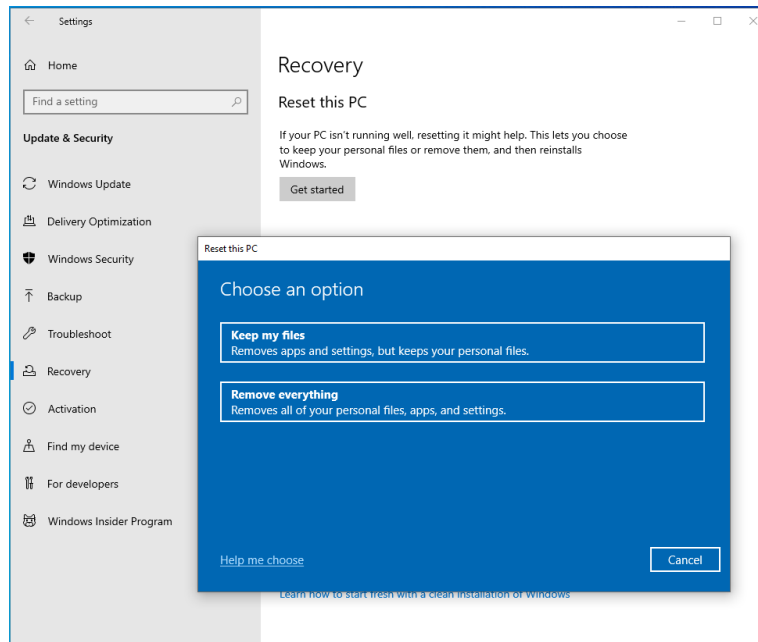


Figure 3. Windows 10 Reset Screen.

The “Remove everything” option will sanitize your PC but leave Windows 10 installed. Although similar options are available in older Windows versions, they are less useful since these are no longer supported. In such cases, my choice would be to wipe the disk of everything and install Linux, which results in an operable PC. But, of course, the operating system is immaterial for those who want to surf the Internet and exchange e-mail.

Disk wiping utilities are common, and one is included in PartedMagic, mentioned above. First, select Disk Cleaning on PartedMagic’s home screen as shown in Figure 2, then select the Block Wiping tab to see Figure 43. (The options under the Secure Erase tab use utilities included on many hard disks.) I prefer Nwipe, a clone of DBAN, <https://tiptopsecurity.com/how-to-securely-wipe-your-hard-drive-with-dban-erase-your-data-for-good/> and available separately.

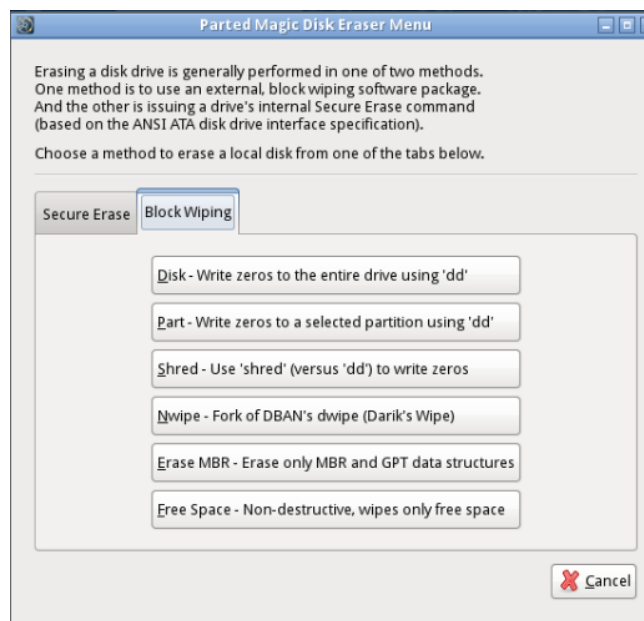


Figure 4. PartedMagic Disk Eraser Windows.

The wipe process will probably take several hours, but it takes no supervision, so you can start it and walk away. If the process fails, the safe remedy is to remove the disk and physically destroy it by taking it to the curb and using a hammer. Do this even if your machine is headed for a landfill. You may be tempted to omit it, thinking you have nothing to hide. However, if you've ever used the PC to access the Internet, it has your browsing history, with the sites you've visited and perhaps their passwords, if you've used it for e-mail, it has your messages, and if you've used it to prepare your taxes, it has your old returns. How would you feel if such data were displayed on a website? By the way, that your PC isn't operable doesn't mean its disk can't be read. In this case, the only safe option is to remove the disk, give it the hammer treatment, and discard the PC separately.

Even though it requires some effort, PC recycling is worthwhile. One that you consider too old and slow to be useful can be valuable to a person or organization that doesn't have one.

Modern cell phones also contain sensitive data, which should be deleted before being discarded or traded in. Follow this procedure for Android phones. Start the Settings app, then System > Advanced > Reset Options > Erase all data (factory reset) and follow the instructions. You will have to answer several "Are you sure?" questions, and the process will take several minutes. This isn't long enough for a secure delete process, and I suspect that a determined hacker could recover the data, but at least it's protected from casual ones.

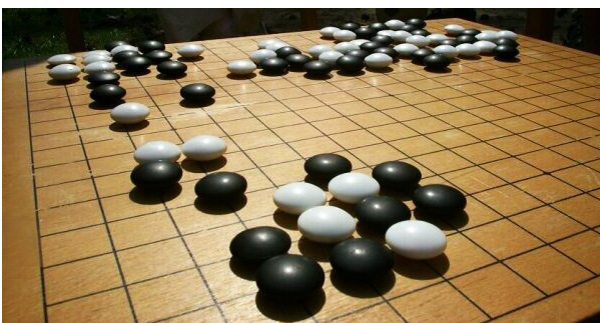
QR Codes: What They Are and How to Use Them

By Dorothy Fitch, Editor, GVR Computer Club, AZ
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QR codes are popping up more and more frequently these days, and I began to wonder what they were all about. So, I did some investigating and tried creating and using them. It was a lot easier than I had expected and rather entertaining.

What is a QR code? Like barcodes on items at supermarkets, a QR code (short for Quick Response) is a two-dimensional way to store a lot of information. Known as a matrix barcode, the QR code was first designed in 1994 in Japan by [Denso Wave](#), a subsidiary of Toyota Motor Corporation. Its goal was to "increase the efficiency in product tracking, item identification, time tracking, document management, and general marketing.... Because a QR code carries information in both vertical and horizontal directions, it can store several hundred times the amount of data carried by a bar code. In fact, over 7,000 numeric characters can be encoded in one QR code." [Read more.](#)

The QC code's design was inspired by Go, an ancient Japanese strategy game that uses black and white stones in a grid. Masahiro Hara, the person assigned to develop a solution for Denso Wave, [had his "aha" breakthrough](#) while playing Go during a lunch break. This led to the invention of the QR code.



Go board with black and white stones that are placed on a grid.
(image from commons.wikimedia.org, a great source for free photos)

A QR code can link to a website, share contact information, send a text message, make a phone call, open a restaurant menu, allow you to check in for an appointment, play a video, and much more.

I created QR codes to link to specific websites that would be difficult to enter on a phone. By scanning the QR codes, you can immediately open up the web page. Try them out!

How to scan a QR code:

On an iPhone, use the built-in camera, which can automatically read QR codes. [Read 'Scan a QR Code with your iPhone, iPad, iPod touch' at Apple Support.](#)

On an Android phone, there are several ways to scan a QR code, depending on your specific model. There are many free apps available in the Google Play store that can scan QR codes, but you may not need one. The camera in newer versions of Android (10 and up) can scan them automatically. Try this to check: point the camera at a QR code and hold for a few seconds. If the camera doesn't scan it, long-press the Home button, then press the Google Lens icon (shown below), just to the left of the microphone icon at the bottom of the screen. Tap the shutter button to search for its meaning. You should see the URL for the website and link directly to it. I also found I could easily use a free QR code scanner without installing the app. Swipe down from the top of the phone and click the Search (question mark) icon to get to the Finder Search. Type QR, then locate and click the QR Scanner icon. Once it scans the code, press OPEN to follow the link. [Read more about how to scan QR codes on an Android phone.](#)



Google Lens icon, referenced above

How to create a QR code:

I created the QR codes using this free website: gogr.me. All I had to do was type in the web address I wanted the code to take me to; it automatically generated the QR code, which I could then download. Try scanning these QR codes and see where they take you.



What's special about February 8?



Read a good classic book!

In addition to using QR codes to link to websites, you can also create ones that store text: not SMS text messages, but plain text, as in a birthday message or poem.



Can you read this fun limerick?

I've cheated a bit in this article. For those who prefer not to attempt to scan the QR codes, you can just click each image to access its content. Usually, QR codes are printed and you couldn't do that!

Here's a challenge for you, though: create a QR code and email it to a teenager. They will think you are so cool, knowing about QR codes!

Interesting Internet Finds October 2021

By Steve Costello
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While going through the more than 300 RSS feeds, I often run across things that I think might interest other user group members.

The following are some items I found interesting during September 2021.

A Warning About Downloader Software

<https://cynmackley.com/2021/09/06/a-warning-about-downloader-software/>

Are you, or have you been, looking for downloader software to download YouTube videos? If so, you need to read this post before doing so.

What Is The Fn Key On Your Keyboard And What Does It Do?

<https://www.online-tech-tips.com/computer-tips/what-is-the-fn-key-on-your-keyboard-and-what-does-it-do/>

You have just gotten your first laptop, and you see the Fn key; do you know what the Fn key does and how to access it? You can find the answers in the post linked above, which has the best explanation I have seen.

How To Use Revo Uninstaller

<https://davescomputertips.com/how-to-use-revo-uninstaller/>

If you are a Microsoft Windows user and need to uninstall an application, Revo Uninstaller is what to use for the best results. This post has the best instructions for using Revo that I have seen so far. (I have been using the Portable version of Revo Uninstaller.) Read this post and try Revo for yourself.

Do You Have Bluetooth On Your PC

<https://www.addictivetips.com/windows-tips/pc-bluetooth-windows-10/>

Bluetooth is helpful to me. I have an older laptop, now running Windows 10, and I want to use Bluetooth to get some files from a tablet. At first, I couldn't find a way to access Bluetooth. Then, I read this post and found I just needed to download a current driver to get it to work. (I used a Bluetooth adapter for an even older Dell with Linux Mint that did not have Bluetooth.)

Computer Won't Stay Connected To Wi-Fi. How To Fix?

<https://www.techtricksworld.com/computer-wont-stay-connected-to-wi-fi/>

This problem happens to everyone, at least everyone I know. Wi-Fi not staying connected is aggravating. Check out this post for solutions to try the next time it happens to you. (Note: Most times for me, rebooting solves the problem.)

Seven Cord-Cutting Misconceptions Cleared Up

<https://www.techhive.com/article/3633649/seven-cord-cutting-misconceptions-cleared-up.html>

Just like with COVID, there are a lot of misconceptions about cord-cutting floating around on the Internet. Check out this post for clarification before deciding what you want to do.

Is Your Ethernet Cable Faulty? Signs To Watch Out For

<https://www.howtogeek.com/751443/is-your-ethernet-cable-faulty-signs-to-watch-out-for/>

Coincidentally, last week my wired desktop speed dropped way down. I switched to Wi-Fi the speed was back to where it usually is. I switched out the ethernet cable for a new one the speed was back. A physical inspection of the old cable showed the connector was coming away from the wire. If you see a similar problem with your wired PC, check out this post.

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