The Digital VIKING
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Twin Cities PC USER GROUP NEWSLETTER
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TC/PC Exists to Facilitate and Encourage the Cooperative Exchange of PC Knowledge and Information Across All Levels of Experience

December 2024

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General Meeting

Tuesday, December 10, 2024

7:00 PM

HTTPS Explained

Presenter: Gene Olson

Via Zoom Only

What is HTTPS and why is it important to me as a computer user? Gene Olson will give us an in-depth look at HTTPS, HyperText Transfer Protocol Secure, at this month's meeting. He will explain what HTTPS is, how it is different from HTTP, and why that is important for our secure surfing of the Internet and more. Join us for an interesting discussion this month.

January 2025 Meeting Topic: Show Us Your Gadget!!

Note: All TC/PC Meetings and SIG Groups will be virtual until further notice. Visit tcpc.com for info.

Tech Topics with Jack Ungerleider via Zoom at 6pm before the General Meeting.

The Digital Viking

The Digital Viking is the *official monthly publication of the Twin Cities PC User Group, a 501(c)(3)organization and an all-volunteer organization dedicated to users of IBM-compatible computers. Subscriptions are included in membership. We welcome articles and reviews from members.* The Digital Viking is a *copyrighted publication and reproduction of any material is expressly prohibited without permission. Exception: other User Groups may use material if unaltered and credited.*

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Editor Sharon Walbran

Starlink – It may be in your future

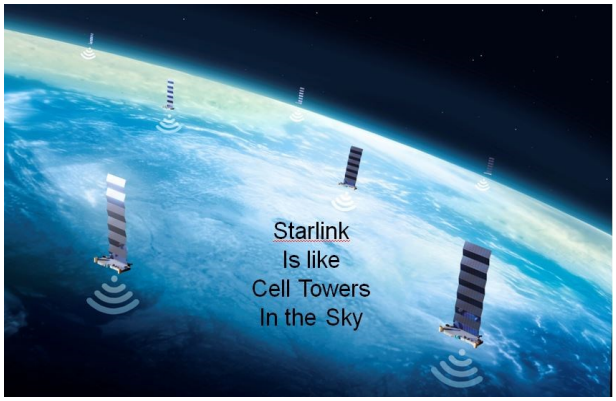
By Phil Sorrentino, Secretary & Newsletter Contributor
Sun City Center Computer Club
https://scccomputerclub.org/
philsorr (at) yahoo.com

Starlink is a satellite constellation built and operated by SpaceX, currently providing satellite internet access coverage to over 53 countries. Starlink is the world's first and largest satellite constellation using a Low Earth Orbit to deliver broadband internet capable of supporting streaming, online gaming, and video calls. Starlink will become a critical element in the client-server technology used by the internet in many areas worldwide.

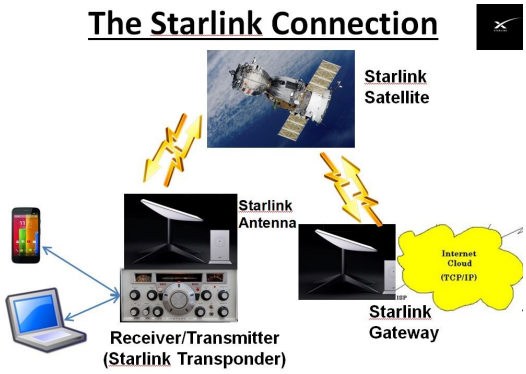
Client-server technology is the network architecture that connects our devices to powerful Servers at the far ends of the country and, in some cases, the world. The internet provides this connection, so the devices and servers appear close in adjoining rooms. To make this a reality, the internet connection must be high-speed. This type of internet connection is called a low-latency connection. A connection that is so fast that a message might go from New York to Los Angeles and back in less than .1 seconds (100 ms). Starlink can deliver high-speed, low-latency internet to users worldwide, though it may be a little expensive now.

To take advantage of the Servers on the internet, our devices (computers, smartphones, tablets) must be able to connect. Either of the two mechanisms traditionally does this. If you are stationary, typically in a building, you can connect to the internet through your Internet Service Provider and more than likely connect via a wireless wi-fi network. If you are moving in a vehicle, you can connect through your Wireless Internet Provider via the Cell Towers in all major populated areas and along most major highways in the US. Access to the internet is excellent in the US. Ninety percent of the people in the US have an internet connection available to them. New Jersey and Connecticut have the best broadband coverage at about 99%. As expected, the major cities, Washington DC, Philadelphia, San Francisco, and New York, have the highest internet participation. But the rest of the world is not covered very well. Europe has a participation rate of about 90%, but the numbers are much lower for underdeveloped countries like India at about 48% and China at about 70%. With all things considered, worldwide internet participation is reported to be about 60%, which leaves a large population without access to the internet.

The Starlink satellite constellation currently has around 4,500 satellites and will eventually have around 12,000. They will cover most of the earth, providing an internet connection to any site with a direct view of the satellites as they pass overhead. Think of the satellites as Cell Towers in the Sky.



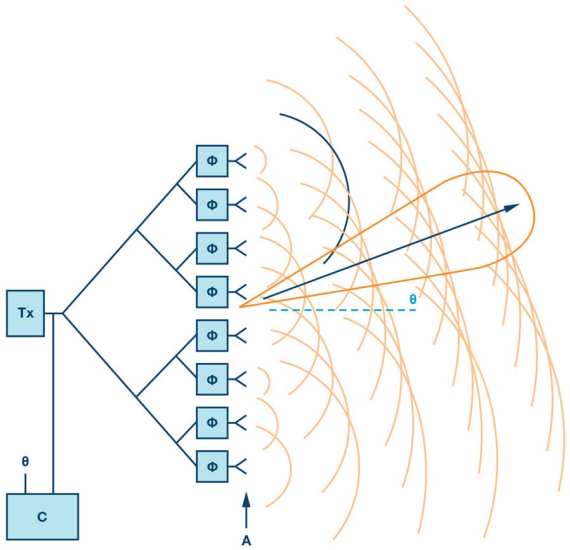
The Starlink satellites are in Low Earth Orbit (LEO), about 340 miles above the earth, and have a speed that creates a 90-minute orbit around the planet, about 17,000 mph. When the constellation is entirely built out, a satellite will be accessible by almost every place on the earth. A device will send/receive data to/from the internet via the Starlink Transponder, overhead satellite, other satellites, and finally, the Starlink Gateway (Ground Station). The connection of the Starlink transponder to the overhead satellite will continue until the satellite moves out of view and another satellite comes into view. At this time, the connection from the transponder will switch to the new satellite, and the data flow will continue.



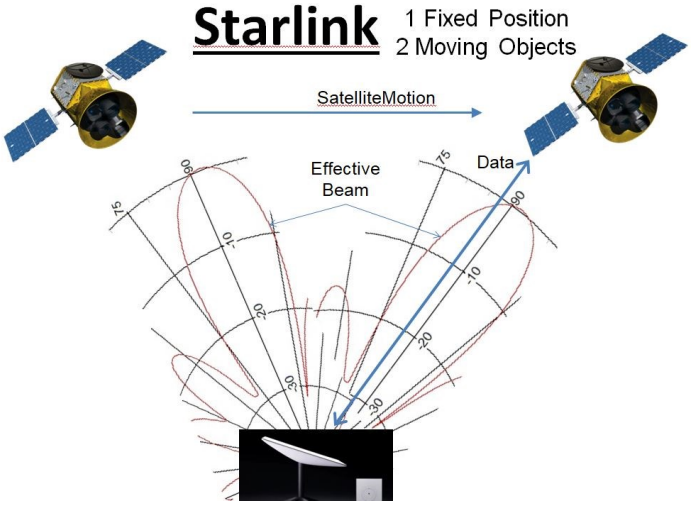
The Starlink Transponder controls tracking the satellites when they are in view and switching the data stream to a new satellite. The heart of the transponder is a sophisticated computer-controlled phased array antenna system.

Phased array antennas are a key component of the Cell Tower Communications systems we use as we travel on the Interstate highway. The phased array antenna was invented by Karl Ferdinand Braun in 1905. The initial experimental antenna was a three-element array that transmitted a beam whose direction could be aimed electronically in 3 specific directions, 120 degrees apart. The military experimented with phased arrays in the 1970s, the first industrial phased array systems were introduced in the 1980s, and Cell Tower antennas appeared in the 1990s. Today's phased array antennas have large numbers of elements and can form several very narrow beams and steer them independently in very small angle increments. The technology behind phased array systems is steeped in the propagation of electrical energy from Gauss's laws for static electric and magnetic fields to Maxwell's equations that relate electric and magnetic fields to each other. It is a collection of technology concepts that would make Nikola Tesla proud.

Just a little technical talk. A phased array antenna is a collection of antenna elements assembled such that the radiation pattern of each element constructively combines with neighboring antennas to form an effective radiation pattern called the main lobe. The main lobe transmits radiated energy in the desired direction, while the antenna is designed to destructively interfere with signals in undesired directions, forming nulls and side lobes. The antenna array is designed to maximize the energy radiated in the main lobe while reducing the energy radiated in the side lobes to an acceptable level. The radiation direction can be manipulated by changing the amplitude and phase of the signal fed into each antenna element.



Phased Array pattern showing antenna elements creating a central lobe.
As we travel down the highway, the closest cell tower tracks us with a phased array antenna that allows us to connect to the internet. The tracking allows the Cell Tower System to transition a vehicle to the next Cell Tower in the direction the vehicle is moving, thus allowing the communications to continue uninterrupted as the vehicle is handed off from cell tower to cell tower. This is all coordinated using the phased array antennas on the Cell Towers.



This cell tower hand-off is similar to the hand-off used to transition from one satellite to another as the satellites move in the sky. The phased array antenna in the Starlink Transponder tracks the satellites and coordinates the hand-off when needed so that the communications continue without interruption.

Starlink is an enormous project that combines many technologies to hopefully provide global access to the internet so that we all can take advantage of the Servers at the other end of the internet, just as if they were in the adjoining room. It may just be in your future.

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Rescuezilla – A Flexible Backup Solution

By Alan German, Treasurer
Ottawa PC Users' Group, Ontario, Canada
https://opcug.ca
Published in Ottawa PC News (May 2023)
Editor: brigittelord (at) opcug.ca

For several years, my disk imaging backup program of choice has been Macrium Reflect Free Edition; however, recently, Macrium's developers announced that the free version is to be discontinued. Security updates will be provided until January 1, 2024, after which, although the program can still be used, no new features or support will be provided. Consequently, this seems to be a good time to seek out an alternative backup solution for the long term.

The other aspect of this issue is my growing preference for Linux over Windows, especially given that none of my computers will support Windows 11, and the end-of-life date for Windows 10 is October 2025. However, my previous experiences with disk imaging programs for Linux have found these lacking the flexibility and ease of use offered by their Windows counterparts.

For example, Clonezilla has an old-style, text-based interface that is somewhat complex and difficult to navigate. The program can create a backup using either its *save disk* or *saveparts* feature. *Savedisk* allows the entire disk to be restored but will not restore single partitions. In contrast, *save parts* will restore one or more partitions but will not restore the master boot record or the partition table and so can't be use to restore the entire disk. Clearly, this is not very helpful when it comes to flexibility in restoring disks and/or partitions.

But now, there is a new kid on the block – *Rescuezilla* – that offers a user-friendly, graphical user interface, clearly-defined icons and menus for specific tasks, and the flexibility to save and restore both disks and partitions.

Rescuezilla can be downloaded as an ISO file (the current version is *rescuezilla-2.4.1-64bit.jammy.iso*) that can be used to create a bootable USB flash drive. As the "jammy" portion of the file name indicates, the USB boots into a version of Ubuntu Linux; however, this operating system is initially hidden from the end user as Rescuezilla loads in full-screen mode.

The main menu provides *Backup* and *Restore* options, in addition to icons for *Clone*, *Verify Image*, and *Image Explorer*. The latter option is a work in progress and is intended to allow mounting a disk partition directly from the backup image in order to extract individual files and folders. However, for our present purposes we will just consider the main two options for *Backup* and *Restore*.

Selecting *Backup* launches a wizard that steps through the required process. Firstly, the source drive that is to be backed up is selected from a menu of available disks. *Back* and *Next* buttons on the individual screens allow easy navigation. The subsequent screen, *Step 2: Select Partitions to Save*, allows selection of the partitions that are to be included in the backup. Windows users should note that since we are using a Linux system, no drive letters are used. Rather, the partitions are listed with drive and partition numbers, the size of the drive, the file system, and any partition label.

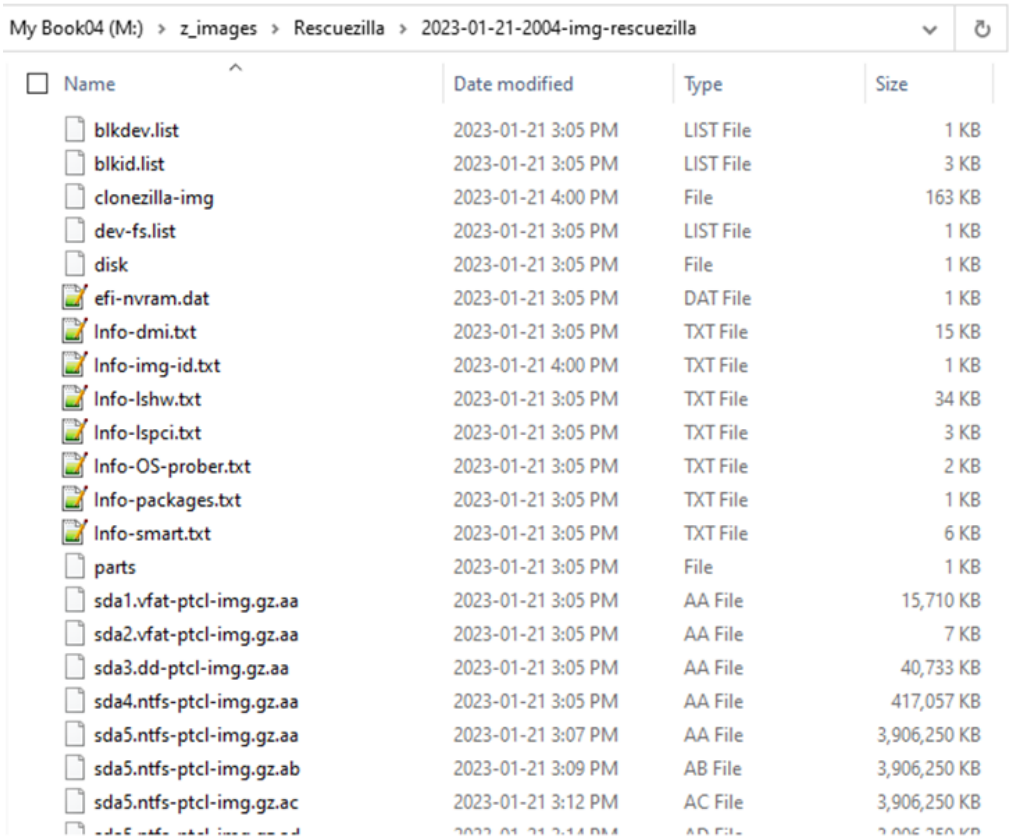
If not all the partitions are to be backed up (or restored), it's clearly important to be able to identify the desired partition using the information that is displayed. For example, the screenshot shows the partitions for a disk that dual boots Windows 10 and Linux. The Windows partition (Drive C:), Partition 5, is labeled as Windows 10, while the Linux partition, Partition 9, is using the ext4 file system.

By default, all of the available partitions are checked and so, to make a full disk image backup, we just have to press the *Next* button. The subsequent screen allows selection of the destination drive on which the disk image is to be stored. This is followed by a similar screen that selects a folder on the destination drive as the storage location. Once again, a Linux protocol specifies a mount point as */mnt/backup*. This can be refined by using the *Browse* button to point to a specific folder on the destination drive, e.g.,*/mnt/backup/z_images/Rescuezilla*.

The next screen provides a default name for the backup image (e.g., *2023-01-21-2004-img-rescuezilla*), allows this name to be customized, and displays an option to include descriptive text. This is followed by a screen on which the compression algorithm and level can be specified. These can readily be left at their default settings of gzip and 6, respectively.

The final screen provides a summary of settings selected, including the source drive and the partitions to be backed up. Clicking on *Next* starts the backup process, which then runs unattended.

The resulting image takes the form of a folder with multiple files that are clearly a mix of administrative information and segments of compressed partitions (e.g., sda5.ntfs-ptcl-img.gz.aa, …gz.ab, …gz.ac). In my baseline test, the overall file compression was approximately 60%.



Name	Date modified	Type	Size
blkdev.list	2023-01-21 3:05 PM	LIST File	1 KB
blkid.list	2023-01-21 3:05 PM	LIST File	3 KB
clonezilla-img	2023-01-21 4:00 PM	File	163 KB
dev-fs.list	2023-01-21 3:05 PM	LIST File	1 KB
disk	2023-01-21 3:05 PM	File	1 KB
efi-nvram.dat	2023-01-21 3:05 PM	DAT File	1 KB
Info-dmi.txt	2023-01-21 3:05 PM	TXT File	15 KB
Info-img-id.txt	2023-01-21 4:00 PM	TXT File	1 KB
Info-lshw.txt	2023-01-21 3:05 PM	TXT File	34 KB
Info-lspci.txt	2023-01-21 3:05 PM	TXT File	3 KB
Info-OS-prober.txt	2023-01-21 3:05 PM	TXT File	2 KB
Info-packages.txt	2023-01-21 3:05 PM	TXT File	1 KB
Info-smart.txt	2023-01-21 3:05 PM	TXT File	6 KB
parts	2023-01-21 3:05 PM	File	1 KB
sda1.vfat-ptcl-img.gz.aa	2023-01-21 3:05 PM	AA File	15,710 KB
sda2.vfat-ptcl-img.gz.aa	2023-01-21 3:05 PM	AA File	7 KB
sda3.dd-ptcl-img.gz.aa	2023-01-21 3:05 PM	AA File	40,733 KB
sda4.ntfs-ptcl-img.gz.aa	2023-01-21 3:05 PM	AA File	417,057 KB
sda5.ntfs-ptcl-img.gz.aa	2023-01-21 3:07 PM	AA File	3,906,250 KB
sda5.ntfs-ptcl-img.gz.ab	2023-01-21 3:09 PM	AB File	3,906,250 KB
sda5.ntfs-ptcl-img.gz.ac	2023-01-21 3:12 PM	AC File	3,906,250 KB

Restoring from a backup image is essentially the reverse of the backup process. The image file on the backup disk is identified; the partition(s) to be restored and the disk on which the partition(s) is to be restored are selected. I tried a number of restorations, including just my dedicated data drive, which I could verify against a file-by-file backup stored on a USB flash drive. I also restored the Linux operating system partition and swap area (Partitions 9 and 10), and the entire drive. In each of the latter cases, success was confirmed by the fact that the disk subsequently booted normally into both Linux and Windows via the GRUB boot menu.

For me, these tests have confirmed that *Rescuezilla* is a viable backup-restore solution for my system. For Linux users, the processes and nomenclature will be straightforward. Windows users will perhaps need to pay attention to the listings of disks, partitions, and folders, as the designations (e.g., mount points) are quite different between Linux and Windows. However, that being said, the fact that *Rescuezilla* functions as a live-USB provides a ready-made backup option for both operating systems and can be used even if the PC refuses to boot normally from the hard drive.

Bottom Line

Rescuezilla (Open source)
Version 2.4.1
https://rescuezilla.com

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President's Corner

To Charge or Not to Charge? (That's Only One of Many Questions)

by Greg Skalka, President, Under the Computer Hood User Group
www.uchug.org
president (at) uchug.org

We have many batteries in our lives because we use a lot of battery-powered technology. Of all those devices, big and small, the one battery-powered device that almost every person has at this point in human civilization is the smartphone. Even in developing countries where water distribution and sanitation systems are woefully lacking, cell phone infrastructure is often very robust and advanced.

Over 8 billion people live on the planet today. Around 7 billion smartphones and approximately 16 billion mobile devices make these devices a shared human experience. From the migrant or homeless person to the CEO, from whatever ideology, religion, political tribe, gender, or gender identity we may be part of, we are all the same in one way: we are all out there looking for a place to charge our phones.

I've written a few columns recently about the wide range of battery-powered devices we use and how to care for them: small battery devices (like electric toothbrushes and earbuds) and medium-sized battery devices (like laptops, hand tools, and smartphones). Being a near-universal device, the smartphone needs a bit more elaboration on its charging. It is unique in that it is almost always on; I doubt anyone turns their phone off (entirely powered down) at night. Nothing else we use is depended on for so much.

I used to think that charging battery-powered devices was fairly straightforward. All you had to do was pick an inactive time, plug the device into a wall-powered charger until it was fully charged, and you were ready to go again. Most devices weren't run so much that you regularly ran out of power when using them. A spare battery could keep you going for those devices where that could be an issue. I bought two extra batteries for my Panasonic Lumix digital camera to make sure photo-taking could last all day on my vacation trips. I have two battery packs for my DeWALT cordless drill, so I don't run out of power in the middle of a day of home improvement.

Some devices are designed to be on continuous charge when not being used. Our Roomba floor vacuum stays parked on its charging base when not cleaning. My Braun electric toothbrush and hair trimmer are stored in their charging cradles. It may not be the best for its battery, but I always keep my HP laptop plugged in (I use it like a desktop computer and only occasionally run it on the battery).

Our phones are not like these devices; we need them to be on all the time. We use them a lot, and we take them everywhere. Tethered operation won't work; we generally can't swap batteries, and though we can power and charge from a USB battery pack if needed, this typically limits our mobility.

When my wife and I had ordinary cell phones, we usually charged them overnight every night. After I got my first smartphone, a Samsung Galaxy J3, in 2017, I did the same. I believe I always used the AC charger (with USB output) and cable that came with the phone. I used this phone for five years (and still have it); the battery seemed to work pretty well during that time. Ultimately, it may have been down about 20% in usable capacity, but that was not the primary reason I looked for a replacement. My old phone could no longer run all the apps I needed, so in mid-2022, I got a Samsung Galaxy S22. Its battery seemed to last longer, but it was probably larger and more advanced. I initially charged it overnight with the charger and cable that came with it.

The battery management system (BMS) of the S22 is undoubtedly more sophisticated than the one in the J3. The S22 displays time and battery capacity remaining (as a percentage of full charge) with a single screen tap (though it is dimmed in intensity, making it harder for old eyes to read). It can also operate in fast charge mode. When charged from a typical USB source (charger or battery pack), it displays "Charging," along with the charge level and an estimated time remaining to full charge. At 64% full, it might indicate it would take 1 hour and 15 minutes to full level. When charged from a charger or battery pack capable of fast charging, the phone displays "Fast charging," the equivalent fill time estimate might be shown as 37 minutes.

My ideas about charging overnight changed after reading the article "Recharging your Battery" by Kurt Jefferson, editor of the newsletter for the Central Kentucky Computer Society (https://ckcs.org), which was republished in our group's November 2022 newsletter. The thrust of this APCUG PUSH article is that the batteries in smarter products should only be charged to between 40% and 80% of capacity, not left to be charged to 100% overnight, as many folks do. The main reason stated was the problem of additional heat from being on the charger all night. I have read other articles and heard from others who are adamant about the need to charge 40-80% to prolong battery life.

One problem with the 40-80% method is that it is much less convenient. It is easy to plug your phone in at bedtime and unplug it in the morning, knowing you now have a full charge for the day. Charging to a specified charge level means watching the phone while charging; I'm unaware of how to set the phone to shut off charging at 80% full.

Charging to 80% also means giving up 20% of the phone's operating time compared to a full charge. I typically use only 30-40% of my phone's battery capacity daily, which varies with usage. A day of driving with Google Maps and handling my navigation can drain my battery by late afternoon.

The most challenging part for me in switching to the 40-80% plan was finding a consistent charge time. I settled on early in the morning as, at that time, I would spend around an hour at my desk at work, allowing the charging to be (sort of) monitored. This worked for a while, as the fast charging mode meant I only had to be around the phone for about 30 minutes. Unfortunately, the only power outlet in my cubicle was under the work surface, so I had to crawl under it to plug in and unplug it.

Last holiday, I learned about USB battery packs that can charge phones using fast charging modes. In the 2022 Black Friday sales, I bought myself a Baseus 65W, 20,000 mAh power bank. It can fast charge a Samsung S22, so I can take it to work and charge my phone there each morning without crawling under my desk. Its capacity allows me to charge my phone daily for about a week under normal usage. It is supposed to be the largest-capacity lithium-type battery that can be taken on a plane. It has a digital display that can show its capacity, charging voltage, and current when providing power to another device. I liked it so much that I got a second one and bought a third in this year's Black Friday sales.

Now, I charge my phone almost exclusively from these battery packs. I've partially bought into the 40-80% charging philosophy; I seldom let my phone go below 40%, but I'll usually charge to around 90% rather than 80%. To me, to have that extra 10% capacity is worth a little lower battery lifespan. Of course, I'll occasionally not pay attention to it as much as I should, and I find it has charged 100%. To me, it is kind of like being on a diet; you can follow it most of the time, but cheating on occasion is not fatal.

I've read many articles on battery charging, but the most useful source of information is Battery University, a free educational website (https://batteryuniversity.com) sponsored by Cadex Electronics, a battery-oriented company in Canada. This site has a lot of information on all types of batteries. It has many articles about how Li-ion batteries work, how they should be charged, and how to get the most life out of them. There are several rules to maximize battery life, some easier to follow than others.

I follow many Battery University recommendations in taking care of my phone battery, but I sometimes feel it is impractical to follow them all fervently. The battery that lives the longest is the one that is seldom used, but where is the fun and usefulness in that?

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Unchecky: A Review

Stop installing unwanted software.
By Jasmine Blue D'Katz
Lake County Area Computer Enthusiasts
http://www.lcace.org/
cynthia.g.simmons (at) gmail.com

I have been using several programs suggested by Bob Gostischa (Tech for Senior) and Judy Taylour (APCUG), and recently, I had to rebuild one of my computers, and the program Unchecky gave me lots of help reinstalling the software.

Unchecky is a free, open-source program that automatically unchecks unwanted, preselected boxes during software installation. It is a lifesaver for anyone who has ever been frustrated by the sneaky tactics used by some installers to trick users into installing additional software or signing up for unwanted services.

How it Works

Unchecky works by monitoring your computer for software installation processes. When it detects an installer, it automatically scans the installer for pre-selected boxes. If it finds any, it unchecks them for you. This way, you can be sure that you are only installing the software you want, without any unwanted extras.

Benefits of Using Unchecky

There are many benefits to using Unchecky. Here are just a few:

Saves time: Unchecky can save you a lot of time by automatically unchecking unwanted boxes. No more clicking through endless installation screens!

Saves money: Unchecky can help you save money by preventing you from installing unwanted software you might have to pay for.

Protects your privacy: Unchecky can help protect your privacy by preventing you from installing

software that tracks your activity or collects your personal information.

Easy to use: Unchecky is extremely easy to use. There are no settings to configure, and it runs silently in the background.

Is Unchecky Safe?

Unchecky is entirely safe to use. It is a reputable program with a large and active community of users. It is also open source, so you can be sure its code is clean and free of malware.

Overall

Unchecky is an essential tool for anyone who wants to take control of their software installations. It is free, easy to use, and can save you time, money, and frustration. I highly recommend it to everyone.

Here are some additional things to keep in mind about Unchecky:

Unchecky does not work with all installers. Some installers are designed to bypass Unchecky and other similar programs.

Unchecky may not always be able to detect all unwanted boxes. Double-checking the installation screens yourself is always a clever idea before clicking "Install."

Unchecky is not a replacement for common sense. It is important to be careful about what software you install, even if Unchecky can uncheck the unwanted boxes.

I would also like to add that Unchecky is an excellent program for anyone concerned about their privacy. By preventing you from installing unwanted software, Unchecky can help protect your personal information from being collected and used by third parties.

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Meetings start at 7:00 PM (9:00 AM on Saturday) unless otherwise noted. *Virtual Meetings during Covid pandemic.

December

January

Sun	Mon	Tues	Wed	Thu	Fri	sat
1	2	3	4	5	6	7
8	9	10 7pm General Mtg HTTPS Explained 6pm Tech Topics	11	12	13	14 Linux on Saturday SIG 9am—Noon
15	16	17	18	19	20	21 MS Office SIG (includes Access) 9am—Noon
22	23	24	25	26	27	28
29	30	31	1	2	3	4
5	6	7	8	9	10	11 Linux on Saturday SIG 9am—Noon
12	13	14 7pm General Mtg Show Us Your Gadget 6pm Tech Topics	15	16	17	18 MS Office SIG (includes Access) 9am—Noon
19	20	21	22	23	24	25
26	27	28	29	30	31	

Twin Cities PC USER GROUP

You have just read an issue of The Digital Viking.

Would you like to receive this delivered directly to your email or business each month?

As a member of TC/PC, the Twin Cities Personal Computer Group, one of the benefits is reading this monthly publication at www.tcpc.com..

As a member of TC/PC, you may attend any or all of the monthly Special Interest Group (SIG) meetings and be eligible for software drawings. The small membership fee also includes access to real-live people with answers via our helplines, discounts, and various other perks.

Does membership in this group sound like a good way to increase your computer knowledge?

It's easy to do! Simply fill in the form below and mail it to the address shown.
(If you use the form in this issue, you will receive an extra month for joining now.)

12/24

Here's the info for my TC/PC Membership:

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Company name_____

Address_____

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I'm signing up for:

❍ Individual/Family Membership ($18)
❍ Business Membership ($100)
If an existing member your # _____

Make checks payable to:

Twin Cities PC User Group
341 County Rd C2 W
Roseville, MN 55113

Or sign up on our website:

http://www.tcpc.com

❍ Check #_____ ❍ Bill me
❍ New member ❍ Renewal ❍ Prior member

I'm interested in:

❍ Training classes ❍ Volunteering
❍ Special Interest Groups: New User, Access, etc.
List here:

December 10, 2024
7:00 pm

General Meeting

HTTPS Explained

Presenter: Gene Olson

Via Zoom Only

Twin Cities PC USER GROUP

341 County Rd C2 W
Roseville, MN 55113

FIRST CLASS MAIL