(Approx. 1281 words)

Wi-Fi Hotspot and USB Tether
If you use a smartphone Wi-Fi hotspot to provide an internet connection to a single computer, the tether option may provide advantages.

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**Introduction**

Many environments do not provide either reliable Wi-Fi or high-speed Wi-Fi. In those environments, some find that the only way to provide internet access for a computer is to enable a smartphone to provide a Wi-Fi hotspot.

From the viewpoint of the computer user, that hotspot is just like any Wi-Fi service. The hotspot shows up in the computer's list of available Wi-Fi services. Connection to the hotspot usually requires a password; you can find that password on the smartphone's screen.

Any Wi-Fi hotspot does face issues affecting its performance.

First, the Wi-Fi hotspot drains the smartphone battery at an increased rate, more rapidly than when the smartphone hotspot is disabled.

Second, the smartphone's Wi-Fi hotspot offers no competition for a Wi-Fi router. A router typically has two or more antennae and supplies much greater Wi-Fi signal power than a smartphone Wi-Fi hotspot.

Since a smartphone's Wi-Fi signal is weaker than a router's signal, the distance between the smartphone hotspot and the computer is critical. Put the phone as close as possible to the computer. Move the smartphone a bit farther away, and the speed of the Wi-Fi connection available to the computer declines.

Third, due to the weak Wi-Fi signal from a smartphone, the Wi-Fi signal strength and, therefore, the internet speeds may vary because of intermittent nearby interference beyond anyone's control.

In short, tether options overcome those three issues.

If your smartphone already enables you to create a Wi-Fi Hotspot, then your smartphone likely provides one or more options to use a tether.

**Bluetooth tether**

Both recent iPhones and recent Android phones also include Bluetooth tethering capability. However, since Bluetooth involves no cable, the capability is better described as a Bluetooth hotspot.

Again, like Wi-Fi hotspots, your carrier contract may or may not allow your use of Bluetooth tethering. Also, like Wi-Fi hotspots, Bluetooth has disadvantages. For example, Bluetooth usage accelerates smartphone battery drainage. Also, Bluetooth range for useful internet data rates is quite limited and degrades over distance.

**USB Tether advantages**

USB tether simply means that the smartphone provides internet service to the computer through a USB cable. The Windows 10 and 11 operating systems automatically recognize that the USB tether provides an internet connection.

The USB cable connection provides power from the computer to the smartphone, reducing battery drainage. In addition, USB cable communication requires less power than Wi-Fi or Bluetooth, reducing battery drainage.

***Illustration 11***

**How to enable an Android phone's USB Tether**

First, attach the smartphone to a USB cable, then connect that USB cable to a USB-A socket on a computer. Most recent smartphones support USB3, so plug that cable into a USB3 socket on the computer.

After that, you use Settings on your smartphone to enable the USB Tether behavior.

Here I will show you how to enable USB Tethering behavior on my Samsung Galaxy S10 smartphone running Android 12. The main Settings app screen, shown in **illustration 1**, is the place to start. Then, on that screen, tap **Connections**, which is circled in the illustration.

In **illustration 2**, you can see the Connections screen. On that screen, tap **Mobile Hotspot and Tethering** is circled in the illustration.

In **Illustration 3**, you can see the Mobile Hotspot and Tethering screen. As shown, the USB Tethering switch is disabled. However, if a USB cable connects your smartphone and the computer, that USB Tethering switch will be enabled, like the Mobile Hotspot switch in the illustration.

***Illustration 21***

After connecting the USB cable to the smartphone and the computer, tap the enabled USB Tethering switch to turn it on.

When you do so, the computer should recognize the available internet connection via the connected USB cable within a few seconds.

**How to enable an iPhone's USB Tether**

***Illustration 31***

On my iPhone X, the equivalent Settings screen sequence to turn on a hotspot are **Settings→Cellular→Personal Hotspot**. Unfortunately, my iPhone is not currently on a carrier contract. Therefore, Cellular is ghosted (disabled) in Settings, so I cannot enable and test an iPhone personal hotspot.

The iPhone user's manual ebook on my iPhone does not document a USB tether capability. However, USB tether documentation on this iPhone support web page seems to indicate that a USB tether connecting an iPhone running iOS 15 to a computer can be accomplished without turning on any Settings switch:
[**support.apple.com/en-us/HT204023**](https://support.apple.com/en-us/HT204023)

**Ethernet tether**

You might think: my smartphone cannot connect to an Ethernet cable! On the contrary, perhaps it can, but you must spend some money to make it happen.

As you can see in illustration 3, my Samsung Galaxy S10 phone supports an Ethernet tether. To use that Ethernet tether, a smartphone must support On-The-Go (OTG) capability. The existence of that Settings Ethernet Tether switch may indicate that OTG is, in fact, supported. I happen to know by testing my S10 phone that the phone does support OTG. To use OTG with Ethernet, you must obtain a 3-way OTG adapter and a USB-to-Ethernet adapter. With the OTG connected to the phone to power, the USB side of the USB to Ethernet adapter, and an Ethernet cable connected to the Ethernet adapter and to a computer, the Ethernet Tether switch will be enabled.

Most of us already have the USB cable for a USB tether, so the USB Tether method is essentially more straightforward and cost-free than Ethernet Tether. Therefore, I suspect that the USB Tether method will be preferable for all readers of this article.

**Final Notes**

A smartphone hotspot or tether will **never be any faster than the available speed provided by the nearest cell tower**. The very nature of cell towers means that factors beyond the control of any one person will cause the download and upload speed to vary. I have measured the 4G download speed from the cell tower about two blocks away from my suburban home a few times. The speed has been as high as 12 megabits per second and as low as 1.8 megabits per second.

Carrier companies claim that 5G will improve the speeds, but there are still caveats: 5G runs at a rate greater than 4G only if you are close to a 5G-compatible cell tower. Also, for maximum speed, the cell tower must not be overloaded. Unfortunately, that condition is beyond the control of anyone other than the carrier company. Nevertheless, carrier companies are marketing 5G hotspots to businesses to use as an alternative to wired Internet connections. If that marketing succeeds, then 5G-compatible cell tower overloading may become the new 5G normal in cell towers serving residential and commercial customers.

ABOUT THE AUTHOR: John Krout has been writing about the creative uses of personal computers since the early 1980s and now writes about the creative uses of smartphones, tablets, and digital cameras. He is a retired software engineer who spent his career collecting requirements, developing designs, coding in C and C++, and writing documentation for systems large and small used by Federal government agencies. He lives in Arlington, VA, and is a member of the APCUG Speaker's Bureau.

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