

# What is USB4? How is it different from previous USB standards?

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## Specifications of USB4

Comparing USB4 with Thunderbolt is not a coincidence. Intel contributed the Thunderbolt protocol specification to the USB Promoter Group (Promoter Group is an industry organization, responsible for developing USB specifications, while USB-IF supports the development and application of public data. USB technology).

When the USB4 port begins to appear on laptops and other devices, it promises to deliver speeds of up to 10 Gigabit / sec (Gbps). This is twice the current maximum speed of USB 3.2 Gen 2x2. With other USB versions, USB4 will be backward compatible with USB 2.0 and above and in some cases, the USB port will even work with Thunderbolt 3.

1. Differentiate between USB 2.0 and USB 3.0

## Many speeds

USB4 does not only have a single standard, instead, it has two different speeds. In addition to the potential for maximum speeds of 40Gbps, it also has a speed of 20Gbps. If this speed is not enough, USB4 also has a third option, 10Gbps in the specifications. However, according to USB-IF, this is simply a backup speed to support backward compatibility. In other words, don't expect USB4 devices to be limited to this lowest speed.

It is still not clear how the two main USB4 speeds will work in practice. USB4 with a speed of 40 Gbps is called Gen 3x2 and a speed of 20 Gbps is called Gen 2x2. These are technical terms for device manufacturers, not the terms used for symbol tables on your computer.

USB-IF says branding guidelines will be announced in early 2020. At that time, they will clearly announce the level of performance for users in general.

This is good news because the current USB 3.2 terms bundled with Gen 1, Gen 2 and Gen 2x2 are confusing enough.

## **Backward compatibility**

Like other versions of USB, this version is backward compatible with previous versions, specifically from USB 2.0 and up. This means that if you have an external USB 2.0 hard drive to back up, you can still connect it to the USB4 port. To work, you need a USB Type-A (USB standard) converter to USB Type-C and the drive is still limited to the speed of USB 2.0.

Also, the USB Type-C cables you have now probably won't be good enough for USB4. It will still support older speeds, but if you want to speed up transfers, you need new cables and new equipment.

## **Thunderbolt 3 backwards compatibility**



USB-IF says that USB4 is backward compatible with Intel's Thunderbolt 3, which also uses a Type-C connector because USB4 incorporates Thunderbolt 3 specifications. However, USB4 is not required to support Thunderbolt 3. Although Intel has given USB-IF the right to use the free Thunderbolt 3 specification, it is not a Thunderbolt 3 brand.

Any device manufacturer wishing to advertise a USB4 port that is backward compatible with Thunderbolt 3 will need to receive Intel certification. That is why Intel's data transfer technology is not particularly popular.

There may be a few Intel-based motherboards that impact Thunderbolt 3 certified USB4 ports, but most PC builders will rely on expansion cards to support Thunderbolt 3 devices.

Laptops are a bit different. Thunderbolt 3 is not widely available, but it is more common on clamshell on desktop. For example, Thunderbolt 3-capable laptops are commonly used with external graphics card docks.

When it's time to replace an old laptop with a new laptop with USB4, it's important to ensure support for older Thunderbolt 3 devices. If not, you will have to discard your old peripherals or find an older standard laptop support via USB4.

## **Dynamic bandwidth sharing**

One of the good features of USB 4 is that it pays attention to the amount of bandwidth the device needs when sharing resources. A common example is when you run an external storage device and monitor at the same time.

The USB is smart enough to keep the frame rate high for the screen while giving the external hard drive the speed it needs to transfer data.

## Powering via USB everywhere



All USB 4 devices will include USB Power Delivery (USB PD) technology, which can power up to 100 watts through the USB port.

USB PD uses smart charging to ensure the charged device receives as much power as it can collect. The two devices will agree on the charge level so that charging is not too fast or too slow, depending on the needs of the device.

## USB4 is a type of port

USB4 is considered a port size revolution that makes USB more popular in everyday use. Micro-USB ports are mainly used for phone charging and new Type-C ports with more speed options.

All to point out that USB is a mess of cables and confusion. Because USB4 attaches to Type-C connectors, we can see a single port type that fits every device and a single cable connector for everything.

However, we would not expect that the global revolution will occur soon, as laptop manufacturers may continue to bring Type-A ports into laptops to provide the ability to Backward compatible dongle for businesses and home users.

Plus, even if Type-C eventually becomes popular, there will be plenty of speed variations among the different "flavors" of USB.

It's still not clear when USB4 will start coming out. Device manufacturers are generally willing to adopt new USB technologies relatively quickly compared to other standards. Perhaps we can wait until mid or late 2020 and even 2021.

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