Newer laptops often come loaded with a port that accepts a reversible plug and supports very fast transfer speeds. Do you know what it is? If you guessed the Thunderbolt 3 or USB 3.1 port, you’re right, and therein lies the problem.

Both data transfer protocols use the same connector, but their potential uses vary. It can be challenging to understand the differences between the two ports and whether your laptop is packing one or the other.

Once you understand the difference, however, it’s easy to figure out which port is which and how to use them.

What Is Thunderbolt 3?

Thunderbolt 3 is a proprietary (for now) data and video transfer protocol developed by Intel. To use it, PC makers need to obtain certification from Intel. Not every company wants to do that.

That’s too bad because Thunderbolt 3 is incredibly fast. It’s much faster than current maximum speeds for USB. The current top version of USB is **USB 3.1 Gen 2**, which is capable of speeds up to 10 Gigabits per second (Gbps). That is only one-quarter of the maximum speed of Thunderbolt 3, which has a maximum capability of 40 Gbps.

What’s the Difference Between Thunderbolt and USB 3.1?
Before we get to what Thunderbolt 3 can do compared to USB 3.1, let’s talk about what it looks like. Both Thunderbolt 3 and USB 3.1 use the USB Type-C connector and port.

To tell the difference, Thunderbolt 3 ports, cables, and gear are typically labeled with an arrow-shaped like a lightning bolt. USB ports can also have lightning bolts, but these signify that the USB port is capable of charging small items such as smartphones even when the laptop is turned off. If it’s Thunderbolt 3 the lightning bolt appears as you see above.

Now, here’s the critical point about Thunderbolt 3 and USB: A Thunderbolt 3 port can also function as a USB port, but a USB port cannot work as Thunderbolt 3.

Thunderbolt 3 has a “fallback” option, where if it cannot communicate with a connected device as a Thunderbolt unit, then it tries the USB protocol. When using USB, the Thunderbolt 3 port is limited to the USB speeds of the connected device, not the blazing fast speeds of Thunderbolt.

Thunderbolt speeds don’t just mean you can transfer a two-hour 4K video to an external drive that much faster. You can also connect up to two 4K displays at 60Hz over DisplayPort. USB 3.1 Gen 2 supports video as well in what’s called “Alt Mode” where you can connect directly to a DisplayPort monitor–HDMI is also possible. However, Alt Mode is that it’s an optional feature that OEMs have to enable. Thunderbolt 3, by comparison, supports video out of the box.

With Thunderbolt 3, you can also daisy chain up to six additional devices to your source machine. This means you plug device A into the Thunderbolt 3 port on your laptop, and then you connect device A to device B and so on. All devices have to be using Thunderbolt 3. If you use a USB 3.1 device as Device C, for example, then the daisy chain stops at that point.
Also, keep in mind that your laptop will need the computing resources to deal with all those connected Thunderbolt devices. Daisy chaining is typically used to connect multiple displays, but it could also be used to chain up several monitors and external hard drives off of a single port.

Samsung supports daisy-chaining for monitors with USB 3.1, but generally, this feature is not as well supported as it is with Thunderbolt 3.

Finally, Thunderbolt 3 can support PCIe devices such as external graphics card docks, while USB 3.1 does not. PCIe support allows gamers to turn a laptop without much in the way of graphics support into a pretty good gaming machine. The trick is that computer makers have to support this feature in their laptops as support for PCIe graphics cards is not automatic.

Which Computers Include Thunderbolt 3?

The easiest way to make sure you get Thunderbolt 3 is to buy a Mac. Apple puts the port on all its current machines, including its laptops, desktops, and all-in-ones.

On the Windows side, if you want a Thunderbolt 3 port out of the box, then you’re looking for a laptop. Some pre-built desktops support Thunderbolt 3, but typically you need to buy an expansion card to add Thunderbolt 3 to a Windows desktop.

Laptops are a different story with select (and often pricier) models carrying Thunderbolt 3 ports. Some examples include the Alienware M17, Asus ZenBook S UX391, and the Lenovo ThinkPad X390 Yoga.

What’s the Future for Thunderbolt?
It’s not clear if Intel plans on updating Thunderbolt to version 4, but the future for Thunderbolt 3 is very clear. *Intel’s Thunderbolt protocol is merging into USB4*. The specification for USB4 was announced in the summer of 2019, with USB4 based products rolling out in 2020 or 2021.

USB4 will have the same maximum transfer speed of 40Gbps as Thunderbolt 3, as well as the same ability to display video and daisy chain devices. Once USB4 devices start rolling out, we expect that Thunderbolt 3 will eventually disappear.

Companies can create devices that are just as capable as Thunderbolt 3 without the licensing issues from Intel. Supporting Thunderbolt 3 is an option with USB4, which is great news for older devices, but there’s little reason to create new Thunderbolt 3 devices when USB4 is available.

Ultimately, we might see a world where only USB4 with its Type C connector reigns supreme, and pretty much everything can just connect through that port, including storage devices, monitors, security keys, and more.

Of course, that future will probably take years to arrive. Computer makers will likely continue to include standard USB ports on laptops to support legacy equipment of both home and enterprise users without the need for adapters.

With that USB4-tinged future so far away, it still pays to know the difference between a USB Type C port and Thunderbolt 3.

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