Peripherals

- Peripherals are devices that you **connect to your computer externally** to add functionality.
    - **Examples:** A mouse, keyboard, monitor, printer, or external hard drive.

USB (Universal Serial Bus) Devices

1. **Most Popular Connection Type:**
    - USB is used for many gadgets like flash drives, external storage, and webcams.
2. **USB Versions:**
    - **USB 2.0:** Common but slower (transfer speed of up to **480 Mb/s**).
    - **USB 3.0:** Faster (up to **5,000 Mb/s**, or 5 Gb/s).
    - **USB 3.1:** Even faster (up to **10,000 Mb/s**, or 10 Gb/s).
    - This Mb/s is **Megabits per second** ho hai. Not byte.
3. **Understanding Data Speeds:**
    - **Mb/s (Megabit per second):** Unit of data transfer rate.
    - **MB (Megabyte):** Unit of data storage (1 MB = 8 Mb).
    - **Example:** To transfer a 1 MB file in one second, you need an **8 Mb/s connection**.
4. **Backward Compatibility:**
    - Older USB devices (e.g., USB 2.0) can still be plugged into newer USB ports (e.g., USB 3.0), but you'll only get the older speed.
5. **Port Colors:**
    - **USB 2.0:** Usually black.
    - **USB 3.0:** Usually blue.
    - **USB 3.1:** Usually teal (but colors may vary by manufacturer).

USB Type-C

- **The New Standard:** A small, reversible connector that's becoming universal.
    - **Advantages:**
        - Transfers data, power, audio, and video.
        - Used for charging phones, laptops, and connecting monitors.
    - **Example:** Many modern laptops and smartphones now only have USB-C ports for charging and data transfer.

Display Peripherals

1. **DVI (Digital Visual Interface):**
    - Outputs only **video**.
    - **Example:** If you're presenting slides on a projector with DVI, you'll need a separate cable for audio.
2. **HDMI (High-Definition Multimedia Interface):**
    - Outputs both **video and audio**.
    - **Example:** HDMI is commonly used for connecting TVs and monitors.
3. **DisplayPort:**
    - Outputs both **video and audio** with high resolution and refresh rates.
    - **Example:** Used in gaming monitors or high-end computer setups.
4. **USB Type-C:**

- Can do **everything**: video, audio, data transfer, and power.
- **Example:** A laptop with USB-C can connect to a monitor and charge at the same time using a single cable.

Key Takeaways for IT Support:

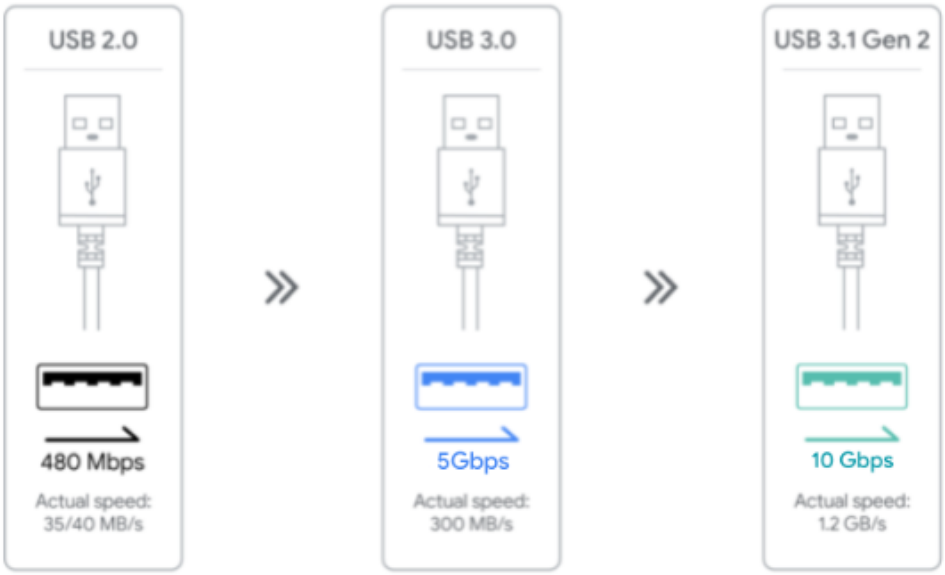
1. **Know Your Ports:**
   - Be able to identify and differentiate between USB versions and display connectors.
2. **Check Compatibility:**
   - Use the correct USB version and connector type to get the desired performance.
3. **Educate Users:**
   - Help users understand why their devices may not perform as expected (e.g., a USB 2.0 device in a USB 3.0 port won't get 3.0 speeds).
4. **Common Use Cases:**
   - Connecting peripherals like monitors, keyboards, mice, or external drives.
   - Setting up displays for presentations or gaming.

Connector Types

A computer has many physical ports or connectors. We can use these connectors to connect devices that add functionality to the computing such as keyboard, mouse, or monitor. These external devices are called peripherals.

USB Connectors:

USB Connectors transfer data and power to devices that are connected to a computer. They are the most popular connectors. There are three types of connectors. They are:
USB 2, USB 3, and USB 3.1 connectors.



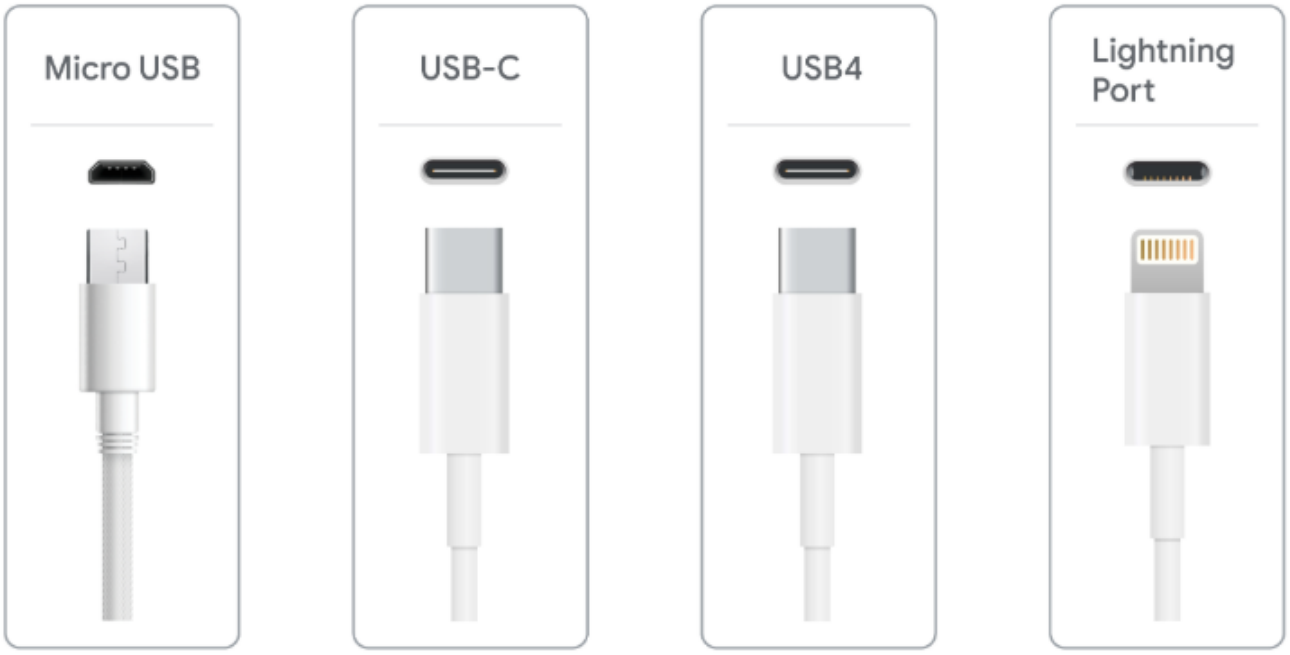
There are three generations of USB type A connectors in use today: USB 2.0, 3.0, and 3.1. Here are the differences between the three generations:

- USB 2.0: Black port on the computer, 480 Mbps transfer speed
- USB 3.0: Blue port on computer, 5 Gbps transfer speed
- USB 3.1: Teal port on the computer, 10 Gbps transfer speed

USB ports are backwards compatible, meaning a USB port can connect any of the three generations of USB type A connectors. The connected cable will determine the speed of data transfer. Connecting a USB 3 to a USB 2 port will result in 480 megabits (Mbps) per second of speed.

Micro USB, USB-C & Lightning Port

Micro USB, USB-C, USB4 (Thunderbolt), and Lightning Ports are smaller connectors that carry more power than older USB connectors and have faster data transfer speeds. These connectors are used for devices like smartphones, laptops, and tablets.

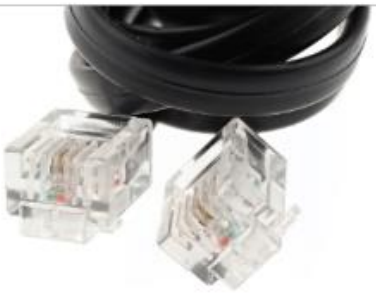


- **Micro USB** is a small USB port found on many non-Apple cellphones, tablets, and other portable devices.
- **USB-C** is the newest reversible connector with either end having the same build. USB-C cables replace traditional USB connectors since they can carry significantly more power and transfer data at 20 Gbps.
- **USB4** uses Thunderbolt 3 protocol and USB-C cables to transfer data at speeds of 40 Gbps and provide power as well.

Communication Connectors

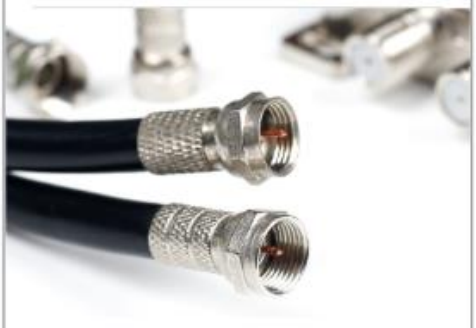
Different cable connectors are used to share information between devices and connect to the internet. IT professionals maintain network systems that use different types of communication connectors.

Plain Old Telephone Service (POTS)



Digital Subscriber Line (DSL)

Cable Internet



Fiber-optic cables