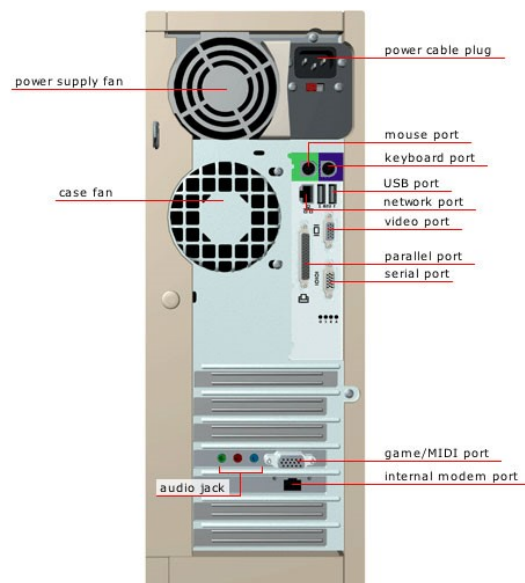


ITEC495 V1WW – Capstone
Assignment 4.1 – Hardware Paper
Professor Wayne Smith

Over the past 2 decades, the computer has evolved in many ways to make life easier for the user. One of the biggest changes to the case and connectivity of the computer has been the evolution of the USB port. USB is short for universal serial bus (Daintith & Wright, 2008).

About 15 years ago, when one wanted to plug something like a printer or even a network card into your computer, one had to turn off your PC, plug it into serial ports and parallel ports and then install the software that worked the device. The PC also had to be turned back off to remove the device.



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Image 1.1 – Back of A PC Where Ports are Located Source: (Tower Case Back View, 2002)



Image 1.2 A USB Plug Source: (USB, 2008)

With the invention of the USB port, connecting a device to a PC has changed. It has expanded and made much easier. The term “Plug-n-Play” was born. The USB port made it possible to be able to plug multiple items into a PC while it’s on and to be able to start using the devices without having to install most of the drivers (USB, 2008).

The USB port was originally created by Intel, Compaq, Microsoft, Digital, IBM, and Northern Telecom and version 1.0 was released in 1996. It supported speeds of 1.5Mbps/s to 12Mbps/s at a full transfer rate (USB in a Nutshell, 2007). The USB bus was able to hold up to 127 devices at a time. Initially, each USB host held 2 USB external ports. They steadily increased them to holding 4-5 external and 1 internal port for internal hardware like hard drives.

In 2000, USB version 2.0 was released and was standardized by 2001. This time, Hewlett-Packard, Intel, Lucent, NEC, Phillips, and Microsoft had joined to create it. The USB 2.0 is able to handle a full transfer rate of 480Mbps (USB 2.0 High Speed USB

FAQ, 2009). It also has the capability of holding up to 4 hubs, although it's recommended to hold only 2 to avoid bottlenecking. Its other purpose is to increase the different kinds of devices capable of being plugged into a PC. During version 2.0's reign, USB official became the de facto standard of use of external devices for PCs.

Like everything else, the USB was upgraded again in late 2008. The latest upgrade makes it version 3.0's version 1.0, but since it boasts a speed 10 times faster than 2.0, it is being called SuperSpeed USB (SuperSpeed USB 3.0 FAQ, 2009). Its full transfer rate is noted as high as 4.8Gbps and the other features are increased bus power and device current draw. It also offers connectors and cables to increase the transfer rate as well as backwards compatibility with version 2.0.

There are a multitude of devices that rely on the USB port to connect to the PC and to networks. One device is the USB Drive Kit (Computer Desktop Encyclopedia, 2008). The USB Drive Kit allows users to create an external drive that connects through the USB port. The USB port allows the drive to access the wires and power it needs to operate.

From Computer Desktop Encyclopedia
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Image 1.3 USB drive kit Source: (Computer Desktop Encyclopedia, 2008)

The most common device that uses the USB Port is the USB flash drive. The USB flash drive is external storage device that replaced the floppy disk. It's no bigger than a finger and can come in sizes that hold more than 16 gigs of space. As its name indicates, it only plugs into a USB drive, thus wouldn't be able to be accessed on a legacy PC without buying a special connector.

Another device that uses the USB port is a port replicator (Computer Desktop Encyclopedia, 2008). Port replicators are used to connect a laptop to device like a monitor, keyboard and mouse to allow it to function like a desktop PC.

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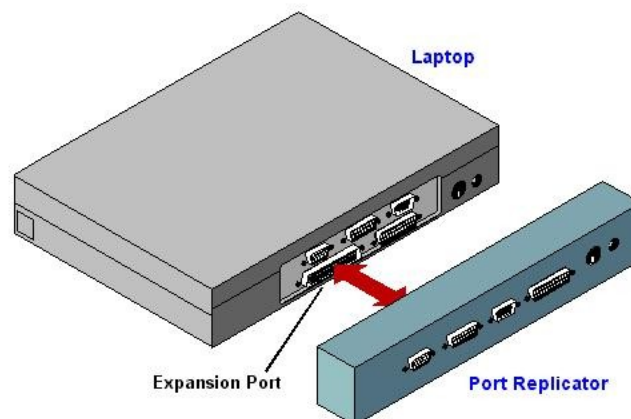


Image 1.4 Port Replicator as it connects to a laptop. Source (Computer Desktop Encyclopedia, 2008)

Other devices that connect to a USB port consist of keyboards, printers, wireless network cards, Ethernet cards, web cams, digital cameras, camcorders, microphones, and mostly every other external peripheral devices that need to connect to a computer.

While there are many benefits to USB ports, there is also a margin of security risks. The term that is associated with data theft through a USB port is podslurping (Rolls, 2008). Podslurping is where an employee connects their iPod or MP3 player to the computer through their USB port and uses the iPod or MP3 player as a storage device to save the stolen data on. This makes the USB port a large vulnerability to company systems. Some companies have started disabling unused USB ports to avoid podslurping.

Firewire is, at this point, the biggest competition that USB might potentially face in the future (Hardware and Drivers: Firewire, 2009). Firewire has been released by Apple and has them boasting that they are one of the fastest peripheral standards. It is used on all Apple computers in lieu of USB ports. At this point, there's no real verification that Firewire is better than USB.

The next evolutionary step for USB is to go wireless, which may not be too far in the future.

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