Physical Storage: Hard Drives

Before we get into computer storage, we need to fill in some gaps. I'm referring to things like gigabytes, bits, etc. But we actually haven't talked at all about what those metrics mean. Sorry, I got a gigabit ahead of myself. As you might have guessed, these terms refer to data sizes. The smallest unit of a data storage is a bit. A bit can store one binary digit, so it can store a one or a zero. The next largest unit of storage is called a byte, which is comprised of eight bits. A single byte can hold a letter, number or symbol. The next largest unit is referred to as a KB bite. But we typically use the term kilobyte. A kilobyte is made up of 1,024 bytes. Here's a quick data conversion chart. How much does 500 gigabyte even mean? Let's take a look at the size of an average music file, which is about three megabytes. On a 500 gigabyte machine, that's approximately 165,000 music files. That's a lot of music. We saw all of our computers data on our hard drive, which allows us to store our programs, music, pictures, etc. Have you ever had an issue with your computer and lost all the data that was on your hard drive? Yeah, me too. It was the worst. This actually happens a lot and you'll probably encounter it as an IT support specialist. Make sure you backup your data to be safe. This means you should copy or save your data somewhere else just in case something goes wrong and your hard drive crashes. That way, you won't lose all your data. There are two basic hard drive types used today. Hard describes or HDDs uses a spinning platter and a mechanical arm to read and write information. The speed that the platter rotate allows you to read and write data faster. This is commonly referred to as RPM or revolution per minute. A hard drive with a higher RPM is faster. So if you go out and buy a hard drive today, you might see something like a 500 gigabyte, with 5,400 rpm. HDDs are prone to a lot more damage because there are a lot of moving parts. This susceptibility to damage went away with a new type of storage called solid state drive or SSD. SSDs have no moving parts. Are you familiar with a USB stick? SSDs operate in a similar way. The information is stored on microchips and data travels a lot faster than HDDs. The form factor for SSDs is also slimmer compared to their HDD cousins. Sounds great, doesn't it? So why doesn't everyone use SSDs? Well, both have their pros and cons. HDDs are more affordable, but they're more prone to damage. SSDs are less risky when it comes to losing data, but they're also more expensive. So you may not buy as much memory storage in SSDs than what you can get in HDDs. Believe it or not, there are even hybrid SSD and HDD drives out there. They offer SSD performance where you need it for things like system performance, such as putting your computer along with hard disk drives, but less important stuff like basic file storage. There are a few interfaces that hard drives use to connect our system. ATA interfaces are the most common ones. The most popular ATA drive is a Serial ATA or SATA, which uses one cable for data transfers. SATA drives are hot swappable, great term, don't you think? It means you don't have to turn off your machine to plug in a SATA drive. SATA drives move data faster and use a more efficient cable like this one than its predecessors. SATA has been the de facto interface for HDDs today. But people quickly found that using the SATA cable wasn't good enough for some of the blazing fast SSDs that were coming on the market. The interface couldn't keep up with the speeds of the newest SSDs. So another interface standard was created called NVM express, or NVMe. Instead of using a cable to connect your drive to your machine, the drive was added as an expansion slot, which allows for greater throughput of data and increased efficiency.

in the modern day sdds are better than hdds

Revision #3
Created 2023-05-29 09:28:34 UTC by naruzkurai
Updated 2023-05-29 10:25:50 UTC by naruzkurai