Cloud storage

While not exactly a device per se, cloud storage is the newest and most versatile type of storage for computers. “The cloud” is not one place or object, but rather a huge collection of servers housed in data centers around the world. When you save a document to the cloud, you’re storing it on these servers.

Because cloud storage stores everything online, it doesn’t use any of your computer’s secondary storage, allowing you to save space.

Cloud storage offers significantly higher storage capacities than USB flash drives and other physical options. This saves you from having to sift through each device to find the right file.

While external HDDs and SSDs were once favored for their portability, they, too, fall short compared to cloud storage. There aren’t many pocket-friendly external hard drives. While they’re smaller and lighter than a computer’s internal storage drive, they are still tangible devices. The cloud, on the other hand, can go with you anywhere without taking up any physical space, and without the physical vulnerabilities of an external drive.

External storage devices were also popular as a quick solution for transferring files, but they’re only useful if you can access each physical device. Cloud computing is thriving as many businesses now operate remotely. It's likely that you wouldn’t mail a USB drive overseas to send a large file to a colleague. Cloud storage acts as a bridge between remote workers, making collaboration from afar a breeze.

If you forget to bring a hard drive containing important documents to a meeting, there’s not much you can do other than go back and grab it. If you break or lose a hard drive altogether, it’s unlikely you’ll ever get that data back. These risks don’t exist for cloud storage—your data is backed up and accessible whenever and wherever you are so long as you have access to the internet.

With Dropbox, you can access any file in your account from your desktop. It’s just like storing your files locally—only they don’t use up any of your disk space. Keeping all your files saved in Dropbox means they’re always one click away. You can access them from any device with internet connection, and share in an instant.

Online Backup

Cloud storage is a great solution to store your individual files and folders, but if you want a more robust option that secures all your content, you need an online backup. Dropbox Backup is designed to remove the headaches of a broken, lost, or stolen computer by automatically backing up a copy of your files and folders that can be quickly recovered from the cloud if needed. It is also helpful if you ever need to set up a new computer or laptop. Instead of tracking down all of your content from various drives or cloud accounts, Backup gets your new computer up and running in a few clicks.

Video describing how backup makes migrating files to a new computer easy.

External storage devices

In addition to storage media contained within a computer, there are also digital storage devices that are external from computers. These are commonly used to expand storage capacity on a computer that runs low on space, allow more portability, or provide easy file transfers from one device to another.

And if you want to transfer files from external drives to the cloud, you can use external drive backup and access your files from anywhere.

External HDDs and SSDs

You can get both HDD and SSD devices as external drives. These generally offer the largest storage capacity among external options, with external HDDs offering up to 20 TB of storage and (reasonably-priced) external SSDs offering up to 8 TB of storage.

External HDDs and SSDs work in the exact same way that their internal counterparts do. Most external drives can connect to any computer; they’re not tied to one device, so they’re a decent solution for transferring files across devices.

Flash memory devices

We mentioned flash memory earlier when discussing SSDs. A flash memory device contains trillions of interconnected flash memory cells that store data. These cells hold millions of transistors that when switched on or off represent 1s and 0s in binary code, allowing a computer to read and write information.

One of the most recognizable type of flash memory device is the USB flash drive. Also known as a thumb drive or a memory stick, these small, portable storage devices have long been a popular choice for extra computer storage. Before it was quick and easy to share files online, USB-flash drives were essential for easily moving files from one device to another. However, they can only be used on devices with a USB port. Most older computers have a USB port, but newer ones may require an adapter.

These days, a USB flash drive can hold up to 2 TB of storage. They’re more expensive per gigabyte than an external hard drive, but they have prevailed as a simple, convenient solution for storing and transferring smaller files.

Aside from USB drives, flash memory devices also include SD and memory cards, which you’ll recognize as the storage medium used in digital cameras.

Optical Storage Devices

CDs, DVDs, and Blu-Ray discs are used for a lot more than playing music and videos—they also act as storage devices. Collectively they’re known as optical storage devices or optical media.

Binary code is stored on these disks in the form of minuscule bumps along a track that spirals outwards from the center of the disk. When the disk is in operation it spins at a constant speed, while a laser contained within the disk drive scans the bumps on the disk. The way the laser reflects or bounces off a bump determines whether it represents a 0 or 1 in binary.

A DVD has a tighter spiral track than a CD, allowing it to store more data despite being the same size, and a finer red laser is used in DVD drives than CD drives. DVDs also allow dual layering to increase their capacity further. Blu-Ray took things to another level, storing data on multiple layers with even smaller bumps that require an even finer blue laser to read them.

CD-ROM, DVD-ROM, and BD-ROM refer to read-only optical storage disks. The data written on them is permanent and cannot be removed or overwritten. This is why they can't be used as a personal storage. Instead, they are typically used for software installation programs.

CD-R, DVD-R, and BD-R format disks are recordable, but cannot be overwritten. Whatever data you save on a blank recordable disk will then be permanently stored on that disk. So, they can store data, but they’re not quite as flexible as other storage devices.

CD-RW, DVD-RW, and BD-RE are re-writable. This allows you can to write new data on them and erase unwanted data from them as much as you want. They’ve been overtaken by newer technology like flash memory, but CD-RWs were once the top choice for external storage. Most desktop computers and many laptops have a CD or DVD drive.

CD can store up to 700 MB of data, DVD-DL can store up to 8.5 GB, and Blu-Ray can store between 25 and 128 GB of data.

Floppy Disks

While they may be obsolete at this point, we can’t discuss storage devices without at least mentioning the humble floppy disk, aka diskette. Floppy disks were the first widely-available portable, removable storage devices. This is why most "Save" icons look the way they do, they're modeled after the floppy disk. They work in the same way as hard disk drives, although at a much smaller scale.

The storage capacity of floppy disks never exceeded 200 MB before CD-RW and flash drives became the favored storage media. The iMac was the first personal computer released without a floppy disk drive in 1998. From here, the over 30-year reign of the floppy disk very quickly declined.

Storage in computer systems

A storage device is a piece of hardware that is primarily used for storing data. Every desktop computer, laptop, tablet, and smartphone will have some kind of storage device within it. There are also standalone, external storage drives that can you can use across devices.

Storage is not only necessary for saving files, but also for running tasks and applications. Any file you create or save on your computer saves to your computer’s storage device. This storage device also stores any applications and your computer operating system.

As technology has advanced over time, data storage devices have also evolved in a major way. Nowadays, storage devices come in many shapes and sizes, and there are a few different types of storage device that cater to different devices and functions.

A storage device is also known as a storage medium or storage media. Digital storage is measured in megabytes (MB), gigabytes (GB), and, these days, terabytes (TB).

Some computer storage devices are able to hold information permanently while others can only hold information temporarily. Every computer has both primary and secondary storage, with primary storage acting as a computer’s short-term memory, and secondary as a computer’s long-term memory.

Primary Storage: Random Access Memory (RAM)

Random Access Memory, or RAM, is the primary storage of a computer.

When you’re working on a file on your computer, it will temporarily store data in your RAM. RAM allows you to perform everyday tasks like opening applications, loading webpages, editing a document or playing games. It also allows you to jump from one task to another without losing your progress. In essence, the larger the RAM of your computer, the smoother and quicker it is for you to multitask.

RAM is a volatile memory, meaning it cannot hold onto information once the system turns off. For example, if you copy a block of text, restart your computer, and then attempt to paste that block of text into a document, you’ll find that your computer has forgotten the copied text. This is because it was only stored temporarily in your RAM.

RAM makes it possible for a computer to access data in a random order, and thus reads and writes much faster than a computer’s secondary storage.

Secondary Storage: Hard Disk Drives (HDD) & Solid-State Drives (SSD)

In addition to RAM, every computer also has another storage drive that’s used for storing information on a long-term basis. This is secondary storage. Any file you create or download saves to the computer’s secondary storage. There are two types of storage device used as secondary storage in computers: HDD and SSD. While HDDs are the more traditional of the two, SSDs are fast overtaking HDD as the preferred tech for secondary storage.

Secondary storage devices are often removable, so you can replace or upgrade your computer’s storage, or move your storage drive to a different computer. There are notable exceptions, like MacBooks, which don’t offer removable storage.

Hard Disk Drives (HDD)

The hard disk drive (HDD) is the original hard drive. These are magnetic storage devices that have been around since the 1950s, though they’ve evolved over time.

A hard disk drive is comprised of a stack of spinning metal disks known as platters. Each spinning disk has trillions of tiny fragments that can be magnetized in order to represent bits (1s and 0s in binary code). An actuator arm with a read/write head scans the spinning platters and magnetizes fragments in order to write digital information onto the HDD, or detects magnetic charges to read information from it.

HDDs are used for TV recorders, servers, and laptop and PC storage.

Solid-State Drives (SSD)

Solid-state drives emerged far more recently, in the ‘90s. SSDs don’t rely on magnets and disks, instead they use a type of flash memory called NAND. In an SSD, semiconductors store information by changing the electrical current of circuits contained within the drive. This means that unlike HDDs, SSDs don’t require moving parts to operate.

Because of this, SSDs not only work faster and smoother than HDDs (HDDs take longer to gather information due to the mechanical nature of their platters and heads), they also generally last longer than HDDs (with so many intricate moving parts, HDDs are vulnerable to damage and wear).

Outside of newer PCs and high-end laptops, you can find SSDs in smartphones, tablets, and sometimes video cameras.

The best way to store large amounts of data

If you're running out of space on your devices, it's time to look into an alternative storage device. Even external storage devices such as flash drives can run out of space, break, or get lost. That's why the best way to store all your files is in the cloud. It's safer, faster, and easier to access.

Source: <https://experience.dropbox.com/get-organized/storage-devices>