

# What is “The Cloud”?

A Wilmette Library Technology Program

9/27/2022



---

There are no answers.

The internet is magic.

(just kidding)



---

## What is Data?

“Computer data is information processed or stored by a computer. This information may be in the form of text documents, images, audio clips, software programs, or other types of data.

Computer data may be processed by the computer's CPU and is stored in files and folders on the computer's hard disk.

At its most rudimentary level, computer data is a bunch of ones and zeros, known as binary data. Because all computer data is in binary format, it can be

created, processed, saved, and stored digitally. This allows data to be transferred from one computer to another using a network connection or various media devices. It also does not deteriorate over time or lose quality after being used multiple times.”

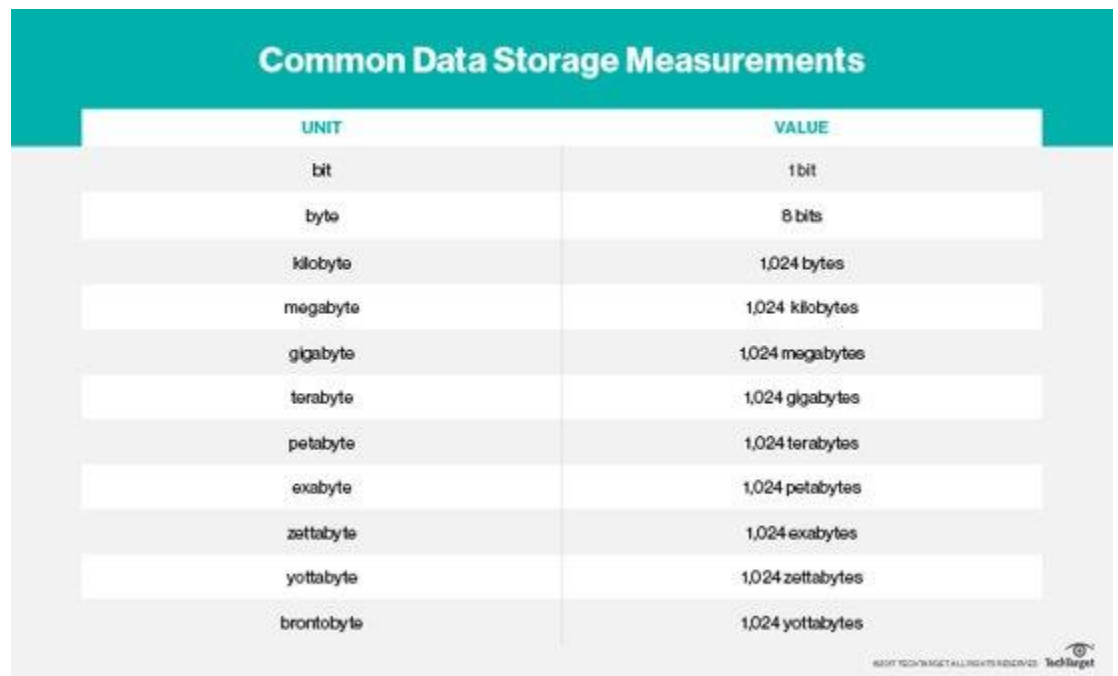
Source: <https://techterms.com/definition/data>

---

## The Scope of Data

Werner Buchholz is credited with coining the term byte in 1956, while helping design IBM's 7030 Stretch, the first transistorized supercomputer. Byte = 8 bits of data, kilobyte = 1,024 bytes.

“Computers really like the number ‘1024’ because its binary code is “10000000000” (a one and ten zeroes).”



UNIT	VALUE
bit	1 bit
byte	8 bits
kilobyte	1,024 bytes
megabyte	1,024 kilobytes
gigabyte	1,024 megabytes
terabyte	1,024 gigabytes
petabyte	1,024 terabytes
exabyte	1,024 petabytes
zettabyte	1,024 exabytes
yottabyte	1,024 zettabytes
brontobyte	1,024 yottabytes

Sources:

<https://www.101computing.net/why-is-there-1024-bytes-in-a-kilobyte-instead-of-1000/>

<https://www.techtarget.com/searchstorage/definition/How-many-bytes-for>

---

## Real World Applications

The most common types of data we experience is text data, audio data, visual data, and video data (an audio/visual data combination).

Text. A five page paper might be 100 kilobytes because text is compact, requiring few bytes compared to audio or visual data. Another comparison is that Wikipedia is a giant warehouse of textual knowledge and it is only 20.69 gigs right now.

Audio. A 3-minute song might be about 3 megabytes.

Pictures. A high resolution digital photograph might be about 5 megabytes

Video data. A standard definition 2 hour home movie, which is often between 750 megabytes and 1 gigabyte (~1000 megabytes = ~1 gigabyte).

Source: <https://web.stanford.edu/class/cs101/bits-gigabytes.html>

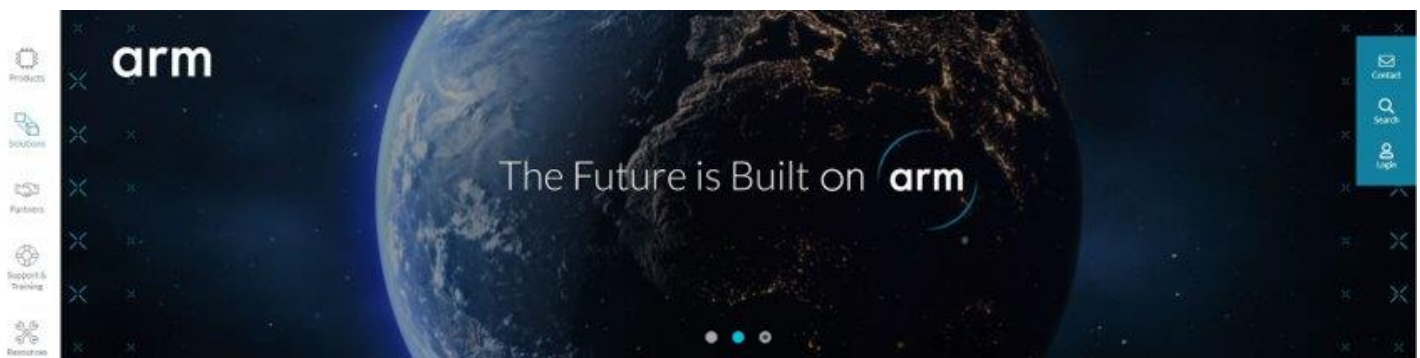
---

## What's Gigahertz then?

Gigahertz is like 'miles per hour.' It's a measurement of speed. It is the unit by which we measure how fast a computer's can process data, not data itself.

Gigahertz is a measure of speed, roughly the rate that a CPU can do its simplest operation per second.

Higher gigahertz CPUs tend to be more expensive to produce and they use more power (and as a result give off more heat) - a challenge for putting fast CPUs in small devices like phones. The ARM company is famous for producing chips that are very productive with minimal power and heat. Almost all cell phones currently use ARM CPUs.



## ☁ Now it is time to talk about The Cloud ☁



“The Internet” is a global network of interconnected computers.

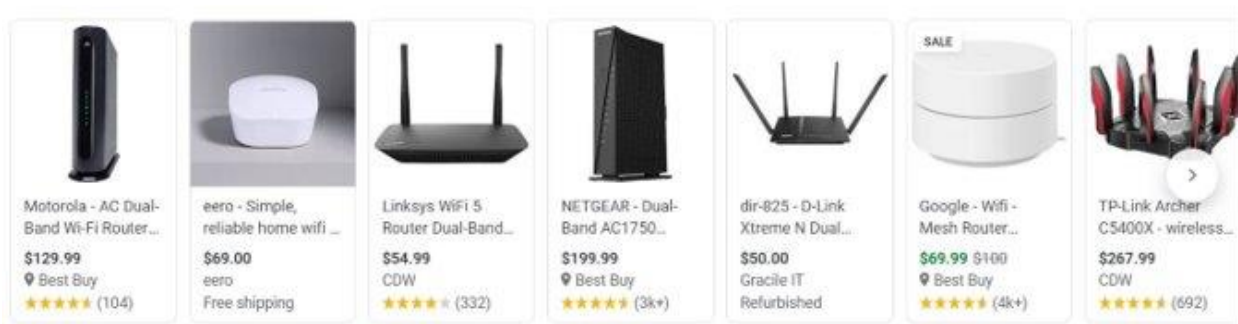
“The Cloud” refers to server computers that connect to the internet and offer all internet users an online place to store their files.

---

## LAN and WAN: A Matter of Physical Distance

In the past, programs and files were stored on a server that networked with cables all the computers in one’s building at work or school. All those computers were on the same Local Access Network (LAN).

WLAN is a ‘Wireless Local Access Network.’ Most homes and small companies start out with a LAN and then they buy a router to turn that LAN Wireless, thereby making a WLAN.



Cloud Services offer similar capabilities to anyone with access to the internet, making it a Wide Access Network (WAN).

# Internet Service Providers: Explained

Originally, the 'backbones of the internet' was a network of wires created by The Advanced Research Projects Agency Network (ARPANET). This project spanned across the US and allowed early adopters to connect and expand the world wide web.



Nowadays, ARPANET is no longer relevant, and what was once wires connecting major US cities now spans throughout every ocean and into every country via coaxial or fiber optic cables.

Still, it takes special expertise to connect and distribute data on this network, so most people have it done for them through ISP services.

Sources: <https://www.racksolutions.com/news/blog/how-do-data-centers-connect-to-the-internet/>  
<https://www.britannica.com/topic/ARPANET>

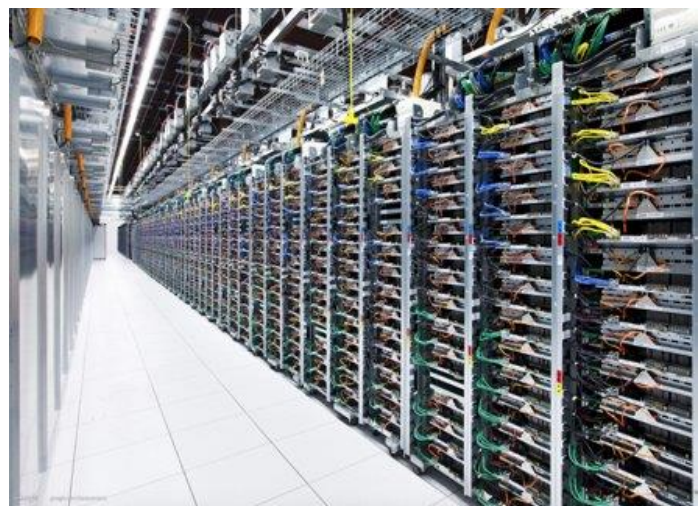
---

## “The Cloud” is just a bunch of WAN data centers

This is one of Google’s data centers in Oklahoma!

ISPs are always data centers that connect to each other; data centers are not always ISPs.

Those who own and operate data centers have the capital and expertise to be their own ISP







## How to use the Cloud

You are already likely using the cloud!

Common Examples:

- Email
- Social Media
- Video and music streaming
- Software Updates
- File Storage

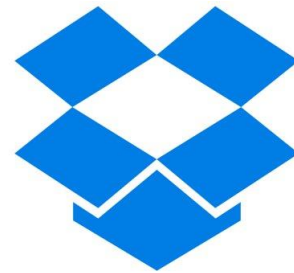


---

## Cloud Based File Storage Services Overviews!

### Dropbox

- 2 GB storage free with Dropbox Account
- Independent Ecosystem; offers Microsoft Integrations though
- Robust sharing tools
- \$9.99 / month for 2 TB
- Has program and/or mobile device apps for Windows, Apple, and Android and iOS
- Dropbox can store any type of file
- It has a simple, elegant design that is easy to use



Source: <https://www.dropbox.com/plans?trigger=homepagefoot>

---

### iCloud

- 5 GB storage free with Apple ID
- Part of the Apple ecosystem
- \$0.99/month for 50 GB, \$2.99 for 200 GB, \$9.99 for 2 TB
- Native to Apple. A Windows client exists, but no support for Android.



- Integrates with Mac and iOS devices by default, syncs between Apple devices with ease

Source: <https://support.apple.com/en-us/HT201318#mac>

---

## Google Drive

- 15 GB free with Google Account
- Part of the Google ecosystem
- Robust sharing and collaboration tools
- \$1.99/month for 100 GB, \$2.99 for 200 GB, \$9.99 for 2 TB (Google One)
- Works with Google Photos, Docs, Sheets, and Slides, which take up no storage space
- Has Windows, Apple programs; iOS, and Android apps
- Convenient and intuitive to use



Source: <https://one.google.com/about>

---

## Microsoft One Drive

- 5 GB free with Microsoft Account (storage only)
- Part of the Microsoft ecosystem
- Robust sharing and collaboration tools
- \$19.99/yr for 100 GB (storage only), \$69.99 for 1 TB (OneDrive Premium Features start at this tier), \$99.99 for 6 TB
- Works with Microsoft Word, Excel, and other Office apps at the higher tiers (Office 365)
- Has Windows, Apple, and Android app
- Especially great for businesses and advanced productivity



Source: <https://onedrive.live.com/about/en-US/plans/>



# What is “The Cloud”?



Thank you so much for registering for Wilmette Library’s technology class  
What is “The Cloud”?

If you would like to meet and talk more about this topic, Wilmette Library’s Digital Services staff offers one-to-one meetings to Wilmette Library cardholders. Contact Digital Services Manager, Lauren Kelly, at [lkelly@wilmettelibrary.info](mailto:lkelly@wilmettelibrary.info) to express interest.

Thank you again and take care,  
Linnea Lundberg  
[llundberg@wilmettelibrary.info](mailto:llundberg@wilmettelibrary.info)