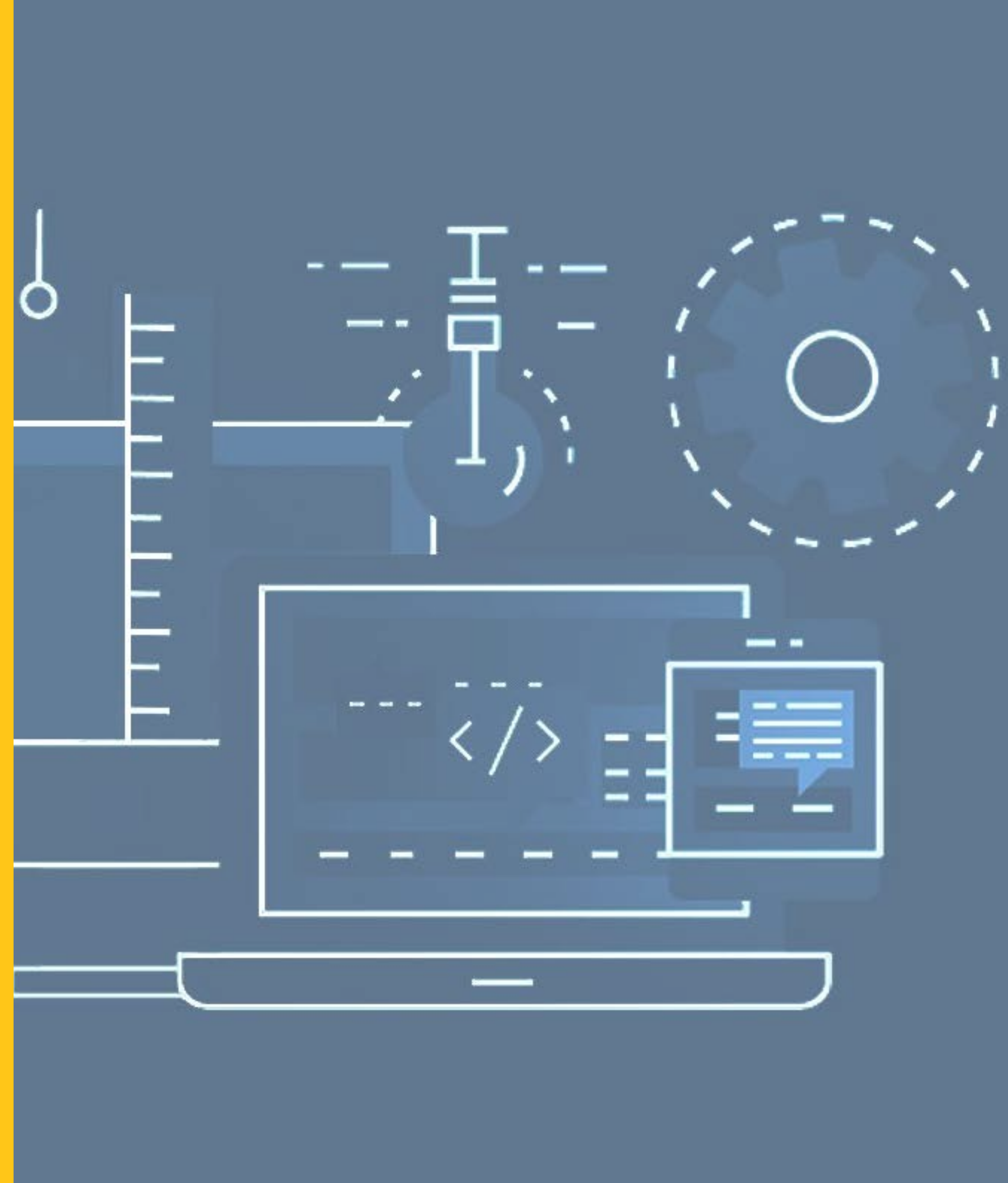


SHELLY GRAHAM, 08/01/2022

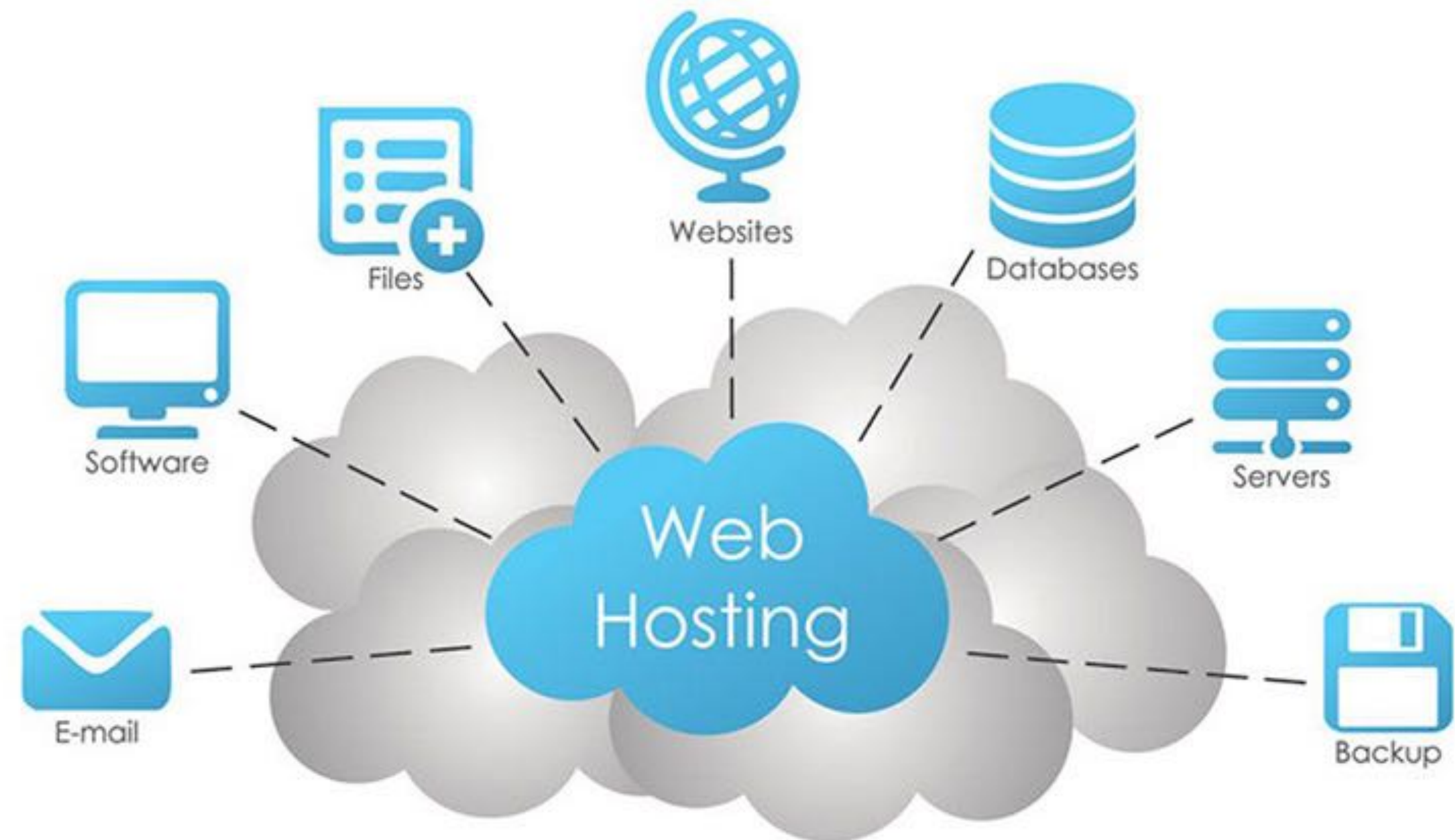
# WEB DEV 4

## SUMMER 2022

Week4: Hosting & HTTP(S)



# WEEK 4: HOSTING & HTTP(S)



# HOSTING

## How does web hosting work?





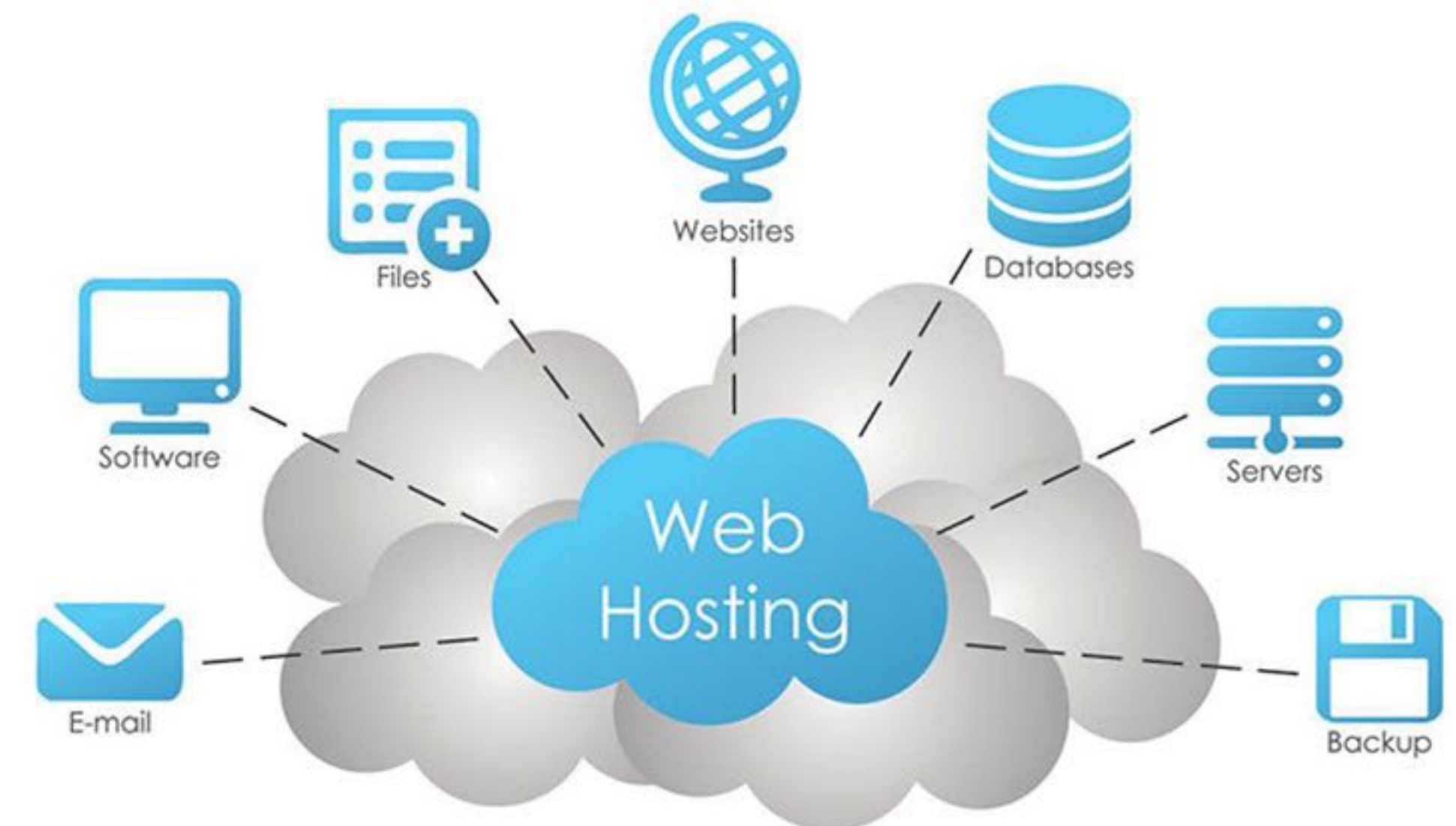
# WHAT IS WEB HOSTING?

- Network of infrastructure that keeps your website available 24/7
- Buying the physical disk space on a server as well as the bandwidth (network connection of server, traffic in and out of website)
- This can be virtual in a data cloud or on an actual hard drive
- It all starts with a server, a powerful computer directly connected to the internet, stored in a high-security facility = data center!
- Data center provides the network connection and the power for:
  - Temperature-controlled backup systems, lots of physical security, hardware, etc.
- Meanwhile, users want a user-friendly panel where they can change and operate their hosting
- Website build programs handle the hosting for you (of course you pay for it)
- With your own website, you have the freedom to choose hosting provider but also have to handle it on your own
- Hosting ≠ domain name → domain is just a license to use a name



# BEFORE YOU CHOOSE YOUR HOSTING SERVICE

- What is your goal?
- How many websites are you hosting?
- What kind of website(s) are you hosting? Custom, CMS (e.g. Wordpress), WBP (e.g. Wix)
- How much traffic are you expecting? Global vs. local?
- Start of low, you can always upgrade!



# HOSTING TYPES

	Pros	Cons
Shared Hosting	Most commonly used, cheap and quick setup, usually for 1-3 websites	Can be slow due to multiple websites being hosted
Reseller Hosting	Like shared hosting but for unlimited websites, income potential due to host selling	Can be slow due to multiple websites being hosted
Virtual Private Server (VPS)	More control due to dedicated resources like root access	Price, also not scalable if you have more traffic down the road
Dedicated Hosting	Your own server with your own control	Price: \$75-200 per month!
Cloud Hosting	Very fast and scalable	Pricey and mainly for larger applications
Managed WP Hosting	Very secure due to implemented optimization for WP	Can be pricey, less control

# HOW DO I HOST?

- Personal preference!
- You can have everything under one roof or split it all up!
- It can be confusing because domain registrars and web hosting services offer all-in-one products

Registrar	DNS	Web Hosting	Email Hosting
GoDaddy	Google Domain	HostGator	NameCheap
NameCheap	Cloudflare	BlueHost	Hostinger

# WEB HOSTING PROVIDERS - MOST POPULAR

## BLUEHOST

- You have to buy yearly before you can choose a monthly hosting service
- Easy 1-Click install
- Fast service
- No dark patterns

## HOSTGATOR

- Expensive, only cheap if you buy for several years
- Simple, easy panel
- Slow support
- No way to increase backup storage!

## DREAMHOST

- Easy to use panel
- Free daily backups!



# WEB HOSTING PROVIDERS

## WIX/SQUARESPACE...

- Easy Interface/panel
- Good support
- No say in quality and security of your hosting

## SITEGROUND

- Monthly hosting option BUT \$15 signup fee?!
- Cluttered panel, no easy navigation
- Looks old/dated
- Support isn't the greatest

## HOSTINGER

- You see a deal on landing page, but deal is always there...
- Temporary URL for free! (until domain name is pointing to hosting server)
- Easy add-ons

# WEB HOSTING PROVIDERS - PERSONAL CHOICE

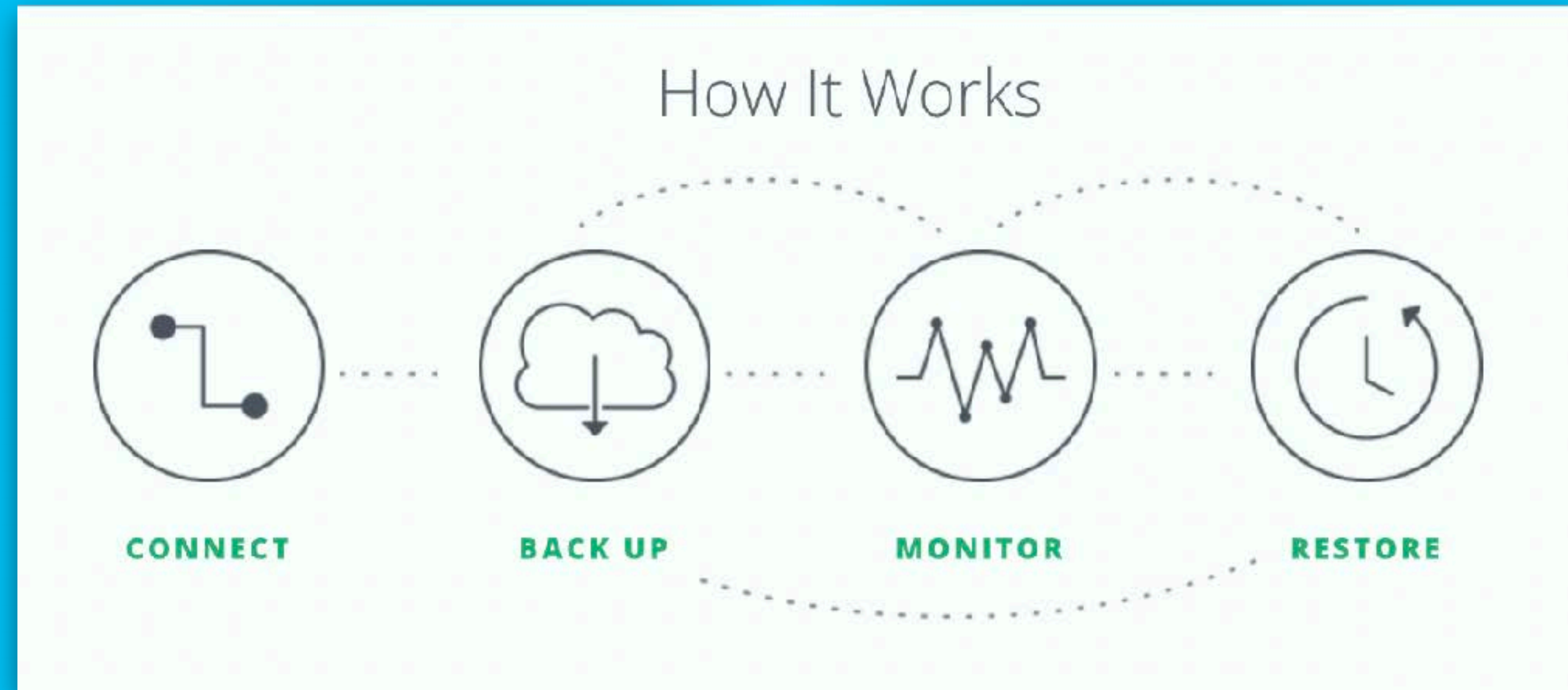
## NAMECHEAP

- Very affordable ~\$4/month
- Easy, straight-forward interface
- Fast!
- Backups aren't free



# CODEGUARD PROTECTION

- Time-saving and precise automated backup solution, featuring differential backups and full-site recovery.
- After the initial backup, future backups are differential. Will save you storage space by only saving changes made



# CPANEL

- Most popular control panel
- Allows you to manage key areas of your hosting like e-mail setup, domain forwarding, spam protection, data backup etc.

Most important things:

FILE MANAGER

EMAIL

FTP ACCOUNT

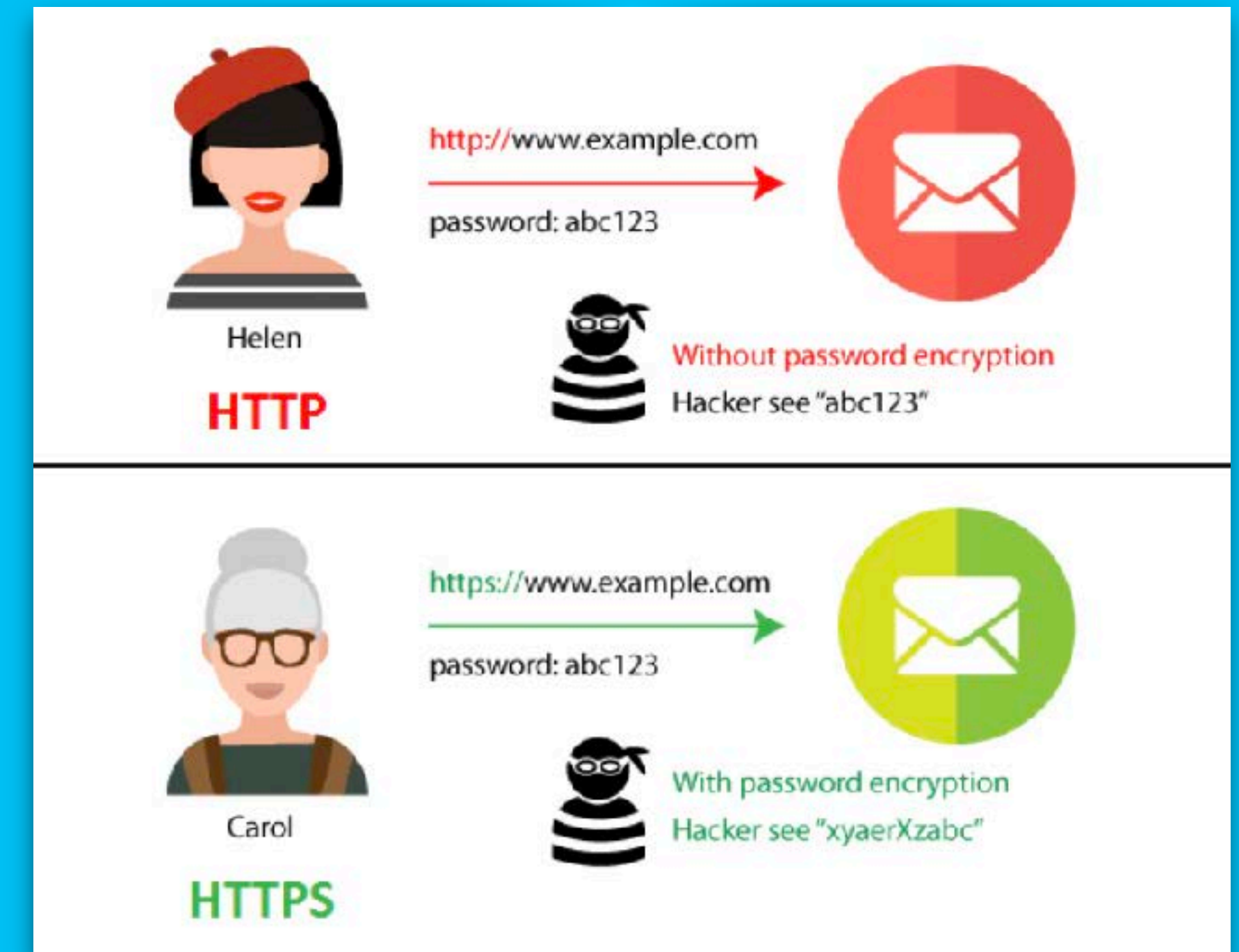


# DNS RECORD

- Domain Name Server
- Has multiple records but two important ones are:
  - A record = address record, points your domain to IP address
  - MX record = mail exchange record = email server
  - MX server is responsible for accepting emails on behalf of your domain name
- You can have lots of different mx records, pointing to an array of mail servers for load balance.

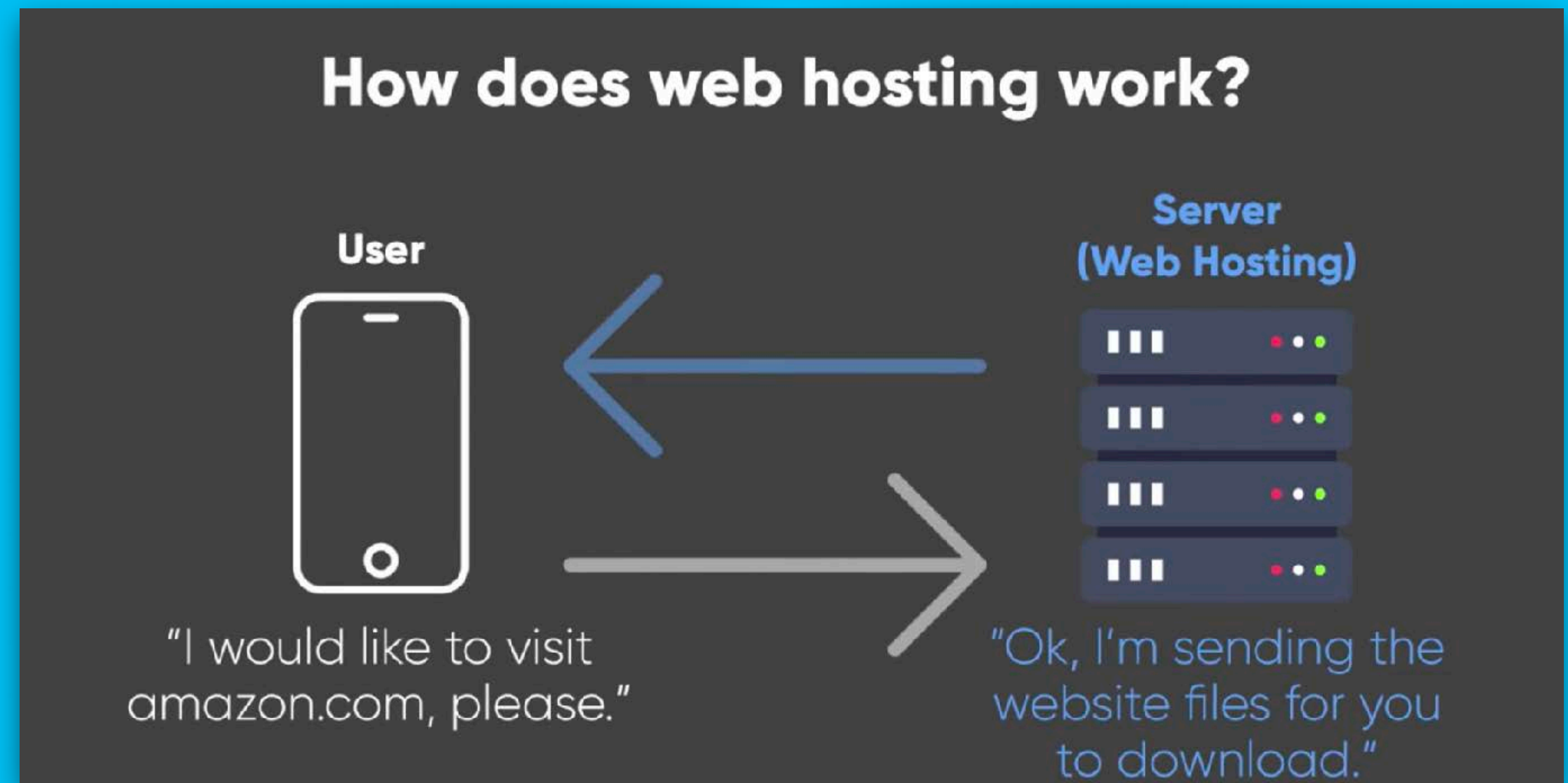
Record Type	Purpose
Addresses	
A	Maps a fully qualified domain name (FQDN) to an IPv4 address
AAAA	Maps a FQDN to an IPv6 address
Aliases	
CNAME	Maps a FQDN to another FQDN
DNAME	Maps all subdomains of a FQDN to another FQDN
Servers	
NS	Maps a subdomain to a FQDN of a name server
MX	Maps an email domain to a FQDN of a mail server

# HTTP(S)



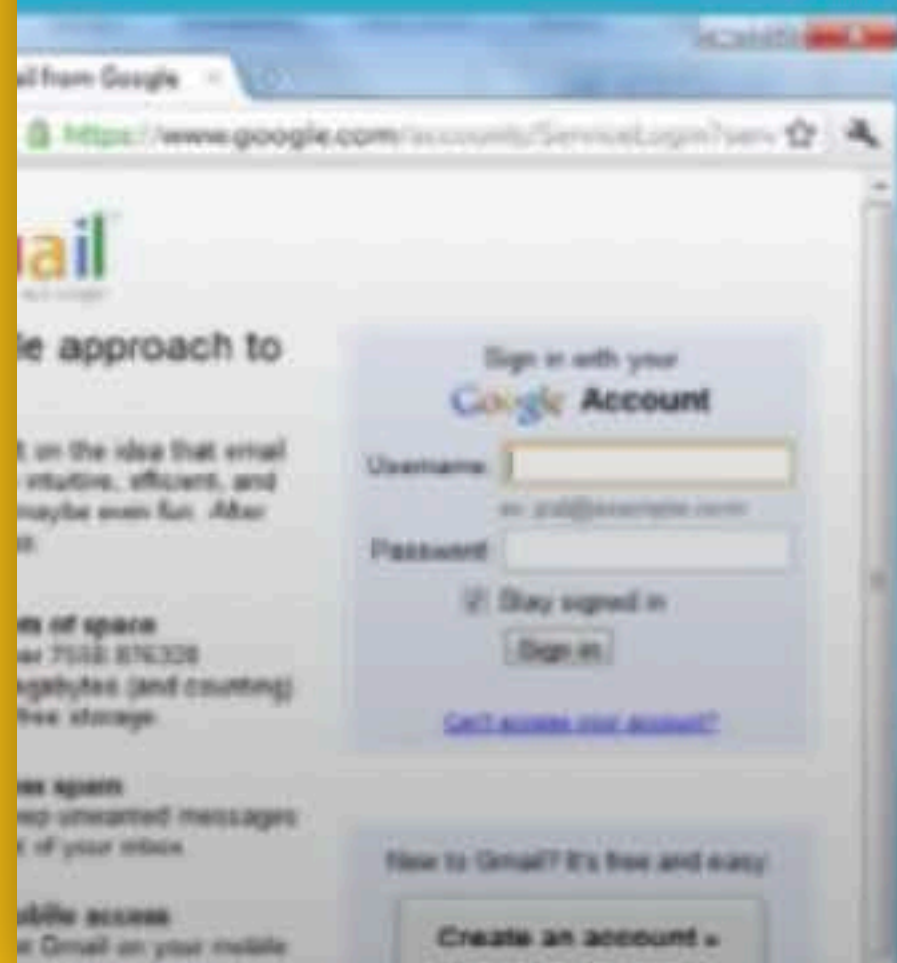
# WHAT IS HTTP

- Hypertext Transfer Protocol
- Foundation of data communication on the internet
- But it's not secure :(





VERIZON



Username : user1  
Password : mypassword



SERVER

Username : user1  
Password : mypassword

GOOGLE



# EAVESDROPPING

- Secretly listen to a conversation
- Can be done with hard- and software to your hard- and software
- If we share the same internet connection, it's even easier to get fished



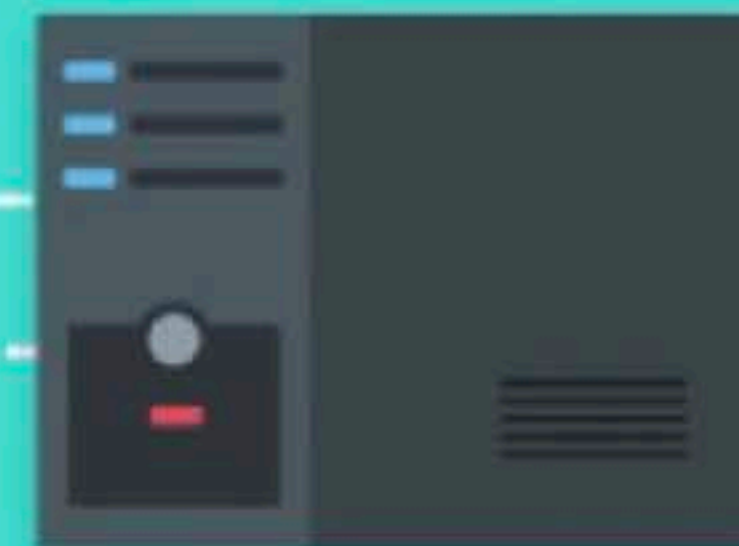
**IF YOU WANT A SECURE CONNECTION BETWEEN  
YOU AND THE INTERNET WE NEED:**

**ENCRYPTION**





# ENCRYPTION



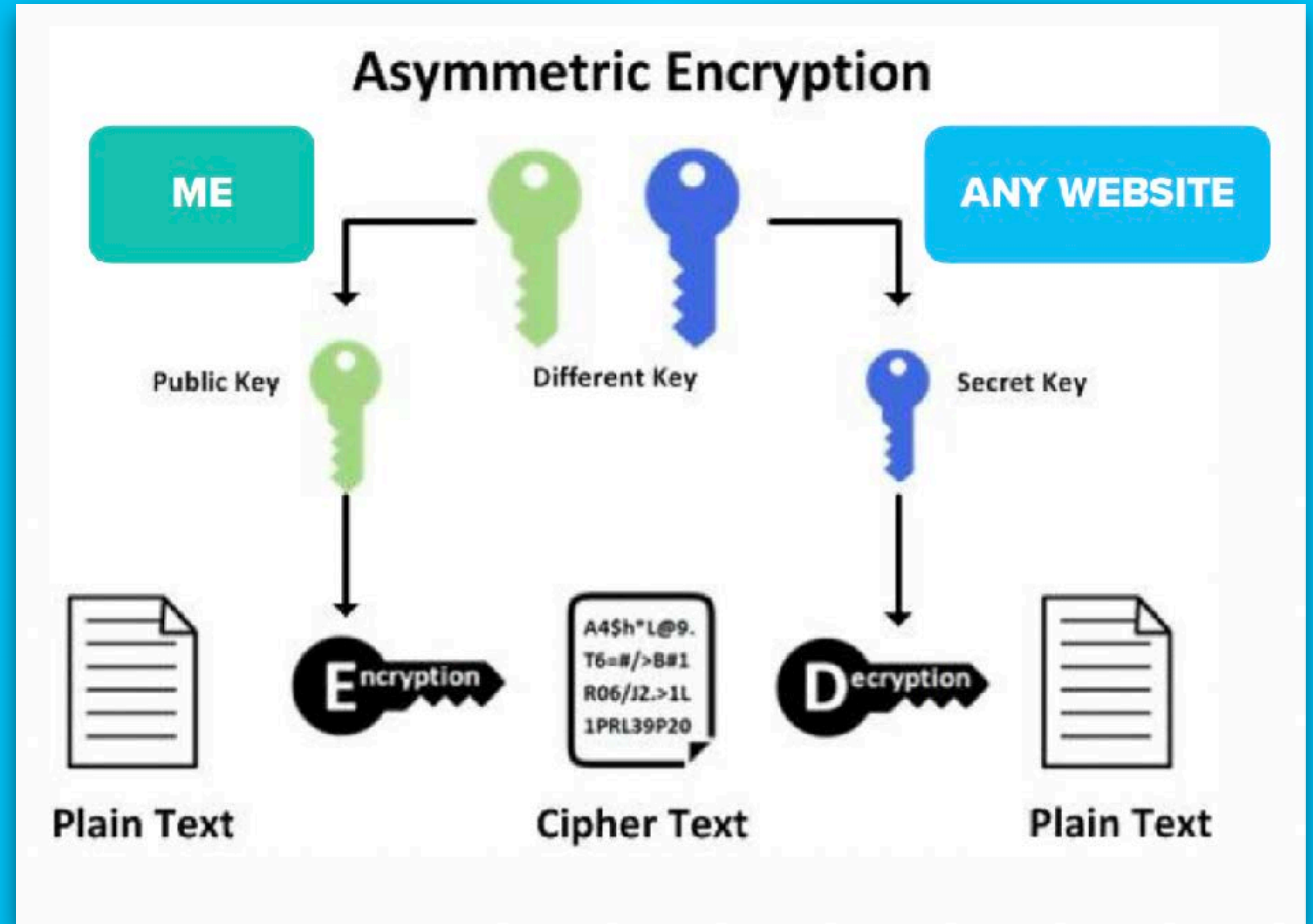
**CLIENT/YOU**

**SERVER**



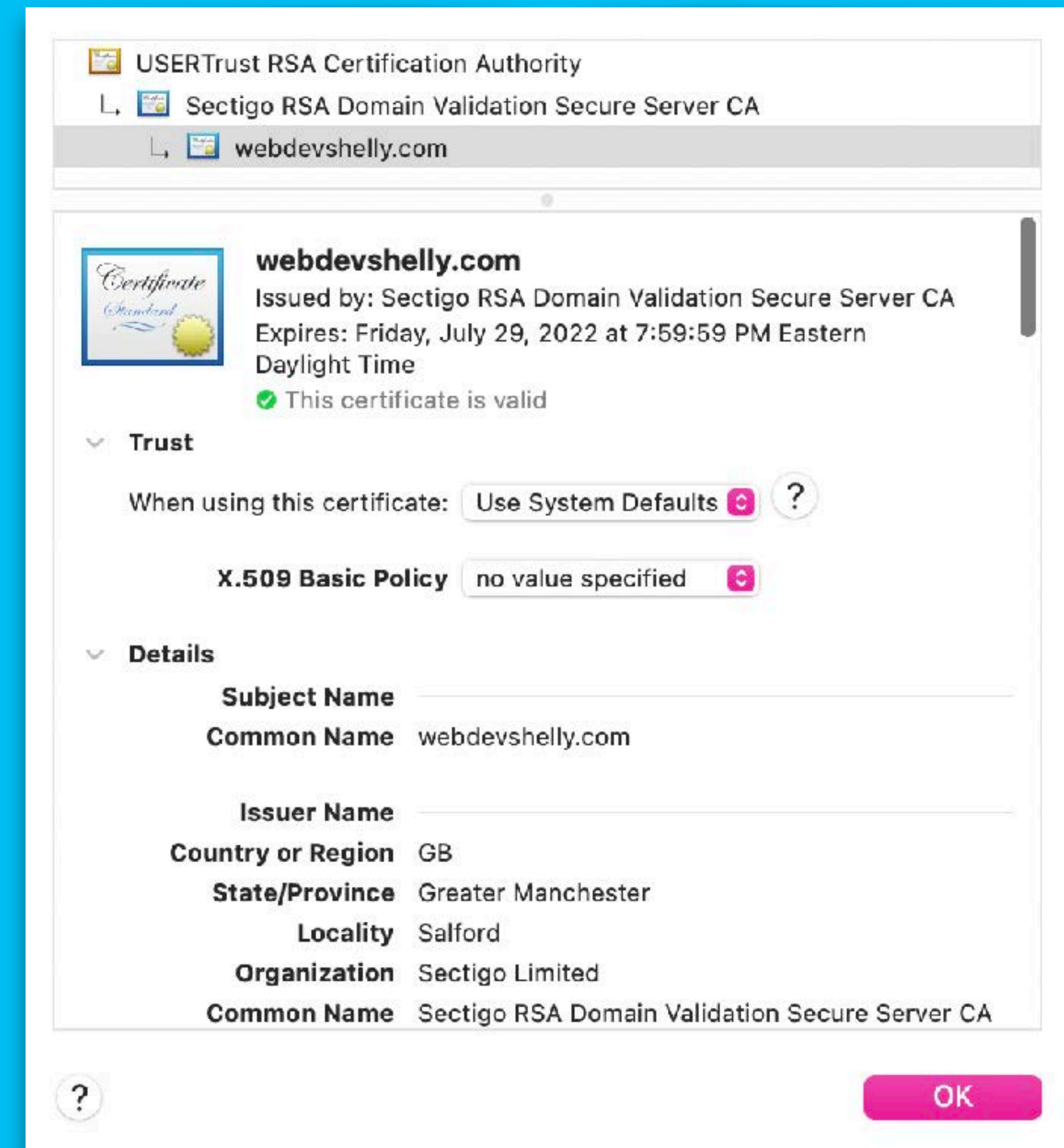
# CRYPTOGRAPHY

- Science of hiding information
- Turns plain text into cipher text through the encryption process



# SSL

- SSL = Secure Socket Layer, sometimes also PositiveSSL
- A digital certificate that authenticates a website's identity and enables an encrypted connection
- You purchase this extra layer of security through your hosting provider, usually for a minimum of 1 year
- The hosting provider will send you a public and private key to authenticate your site with via cPanel



# HTTP + SSL = HTTPS

- SSL = Secure Socket Layer
- Sometimes also HTTP over TLS (Transport Layer Security)
- HTTPS encrypts all data sent online and you need a special key to decrypt the data
- Allows secure connections from a web server to a browser
- SSL is used to secure credit card transactions, data transfer and logins, and more recently is becoming the norm when securing browsing on Social Media platforms
- With HTTPS, hackers can still eavesdrop but can't make sense of the data

## HTTPS @ Website



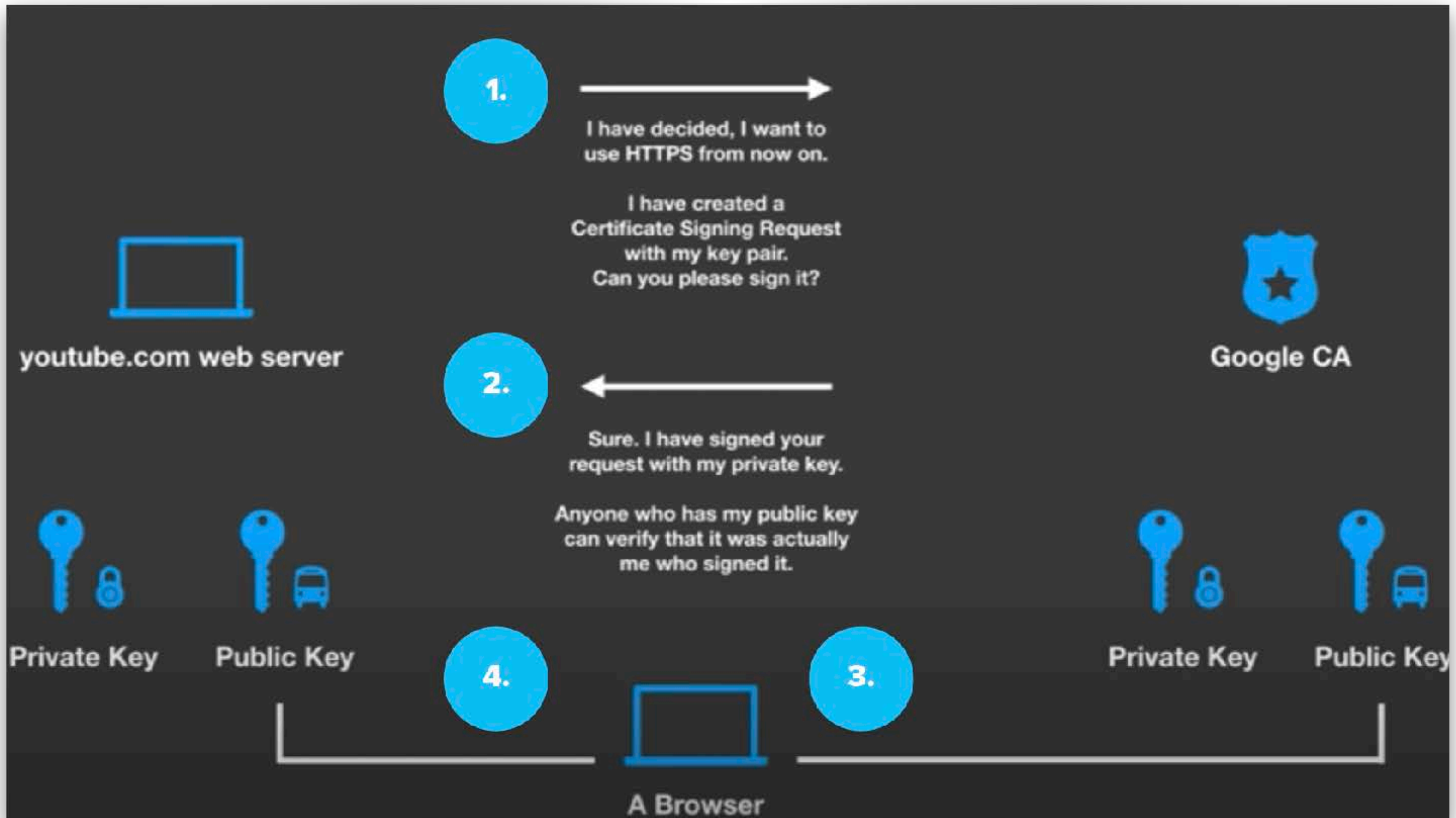


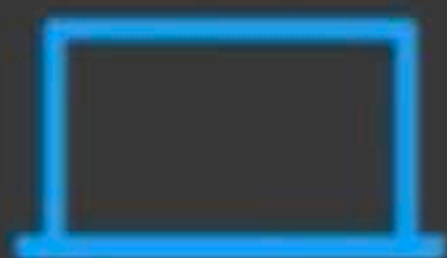
# CERTIFICATE AUTHORITY (CA)

- **Company/Organization that acts to validate the identities of entities (such as websites, email addresses, companies, or individual persons) and bind them to cryptographic keys through the issuance of electronic documents known as digital certificates.**
- **An applicant for a digital certificate will generate a key pair consisting of a private key and a public key, along with a certificate signing request (CSR). A CSR is an encoded text file that includes the public key (and other information that will be included in the certificate)**
- **After generating the CSR, the applicant sends it to a CA, who independently verifies that the information it contains is correct and, if so, digitally signs the certificate with an issuing private key and sends it to the applicant.**
- **When the signed certificate is presented to a third party (such as when that person accesses the certificate-holder's website), the recipient can cryptographically confirm the CA's digital signature via the CA's public key. Additionally, the recipient can use the certificate to confirm that signed content was sent by someone in possession of the corresponding private key, and that the information has not been altered since it was signed.**
- **Good against middle man hackers who pretend to be someone they're not!**



## BOTH PARTIES NEED TO CREATE A UNIQUE KEY PAIR, CONSISTING OF PRIVATE AND PUBLIC KEY IN ORDER TO COMMUNICATE THROUGH HTTPS





Your Browser

3.

Oh, I know and trust Google,  
I also know Google CA's  
Public key. I will verify this.

1.

Give me youtube.com

2.

Sure, here's my certificate,  
containing my public key.  
It was signed by Google CA.

4.

I trust Google CA,  
So looks like you're indeed  
who you say you are.

I have created a new secret  
key and encrypted it with  
your public key

6.

We are the only two  
machines on the entire  
Internet who know this  
new secret key.

From now on let's encrypt  
all of our communication  
with this key!



https://youtube.com

5.

Smart Choice. Only I have my  
private key and can decrypt this  
so I now have your new secret  
as well!

**QUESTIONS?**

# HOMEWORK - PROJECT 2

- Please select a hosting provider and choose a hosting plan for your portfolio website. We've went over many services in class, do some price shopping and pick a hosting provider of your choice.
- Use the provided Adobe XD file to recreate the layout.
- Export all the images you need from the file and optimize them with the tools and techniques we've already learned. Combine your new knowledge about SEO & Accessibility and make this website fully accessible.
- We only have the mobile and desktop design for the homepage. Add an additional design for the tablet/small desktop breakpoint. It should fit seamlessly between mobile and desktop layout. The design offers 3 subpages (Web Design, About, Location & Contact). Choose 1 subpage to integrate into your homepage.
- As usual, the page must be fully responsive.
- Finally, add you finished website to your newly purchased domain and have it LIVE on the wire!
- Submit a link to your GitHub repo as well as your portfolio website.

**FIN**