

How does the Internet Work?

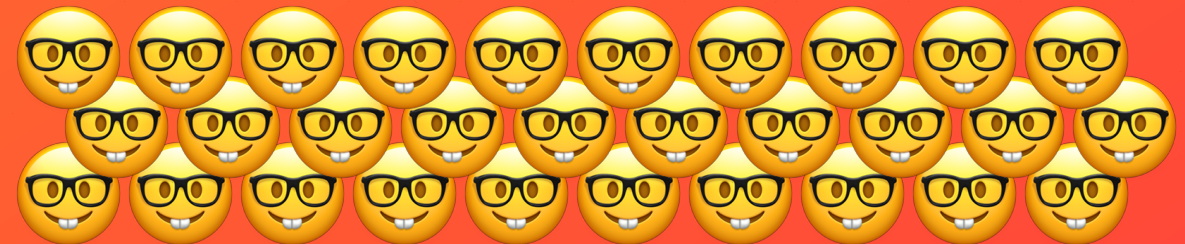
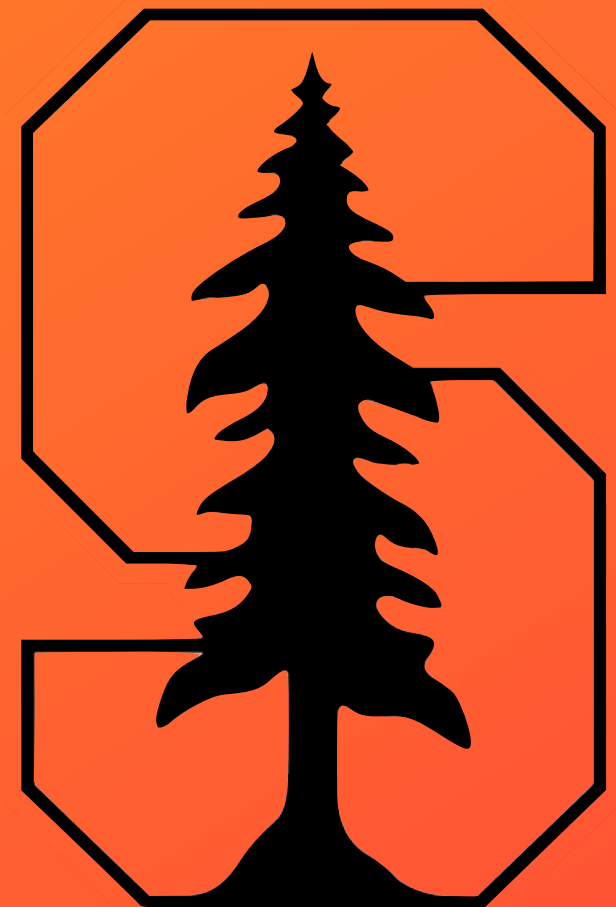
On a basic level, that is

**It all began in
California**

California is filled with 🧐

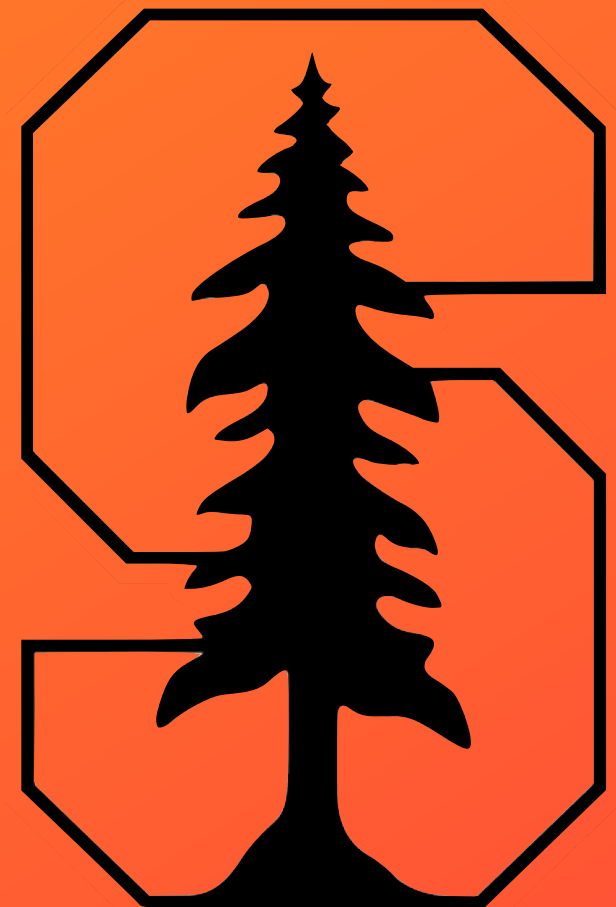
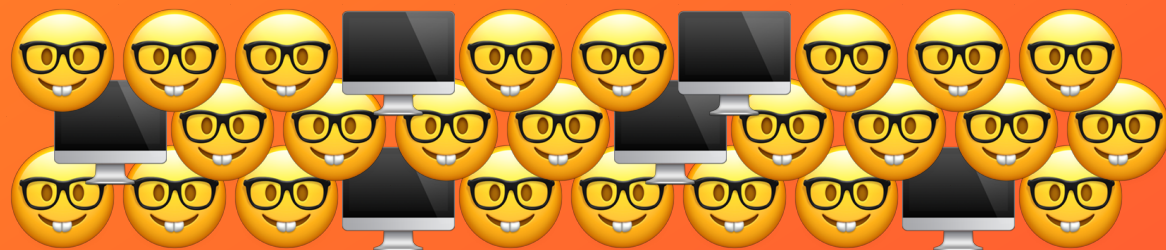
Two Nerd-driven Communities

UCLA



Two Nerd-driven Communities

UCLA



We will do ever-bigger
calculations



1x



2x



**Double the calculation,
double the size**



3x



**Triple the calculation,
triple the size**



1x

\$10



2x

\$100



3x

\$1,000



Sure, we can probably
pay that



1x

\$10



2x

\$100



3x

\$1,000



⋮

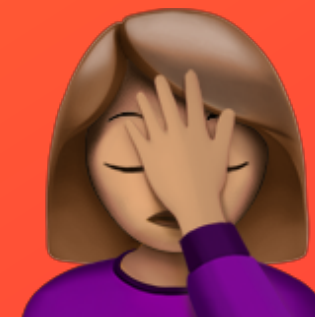
⋮

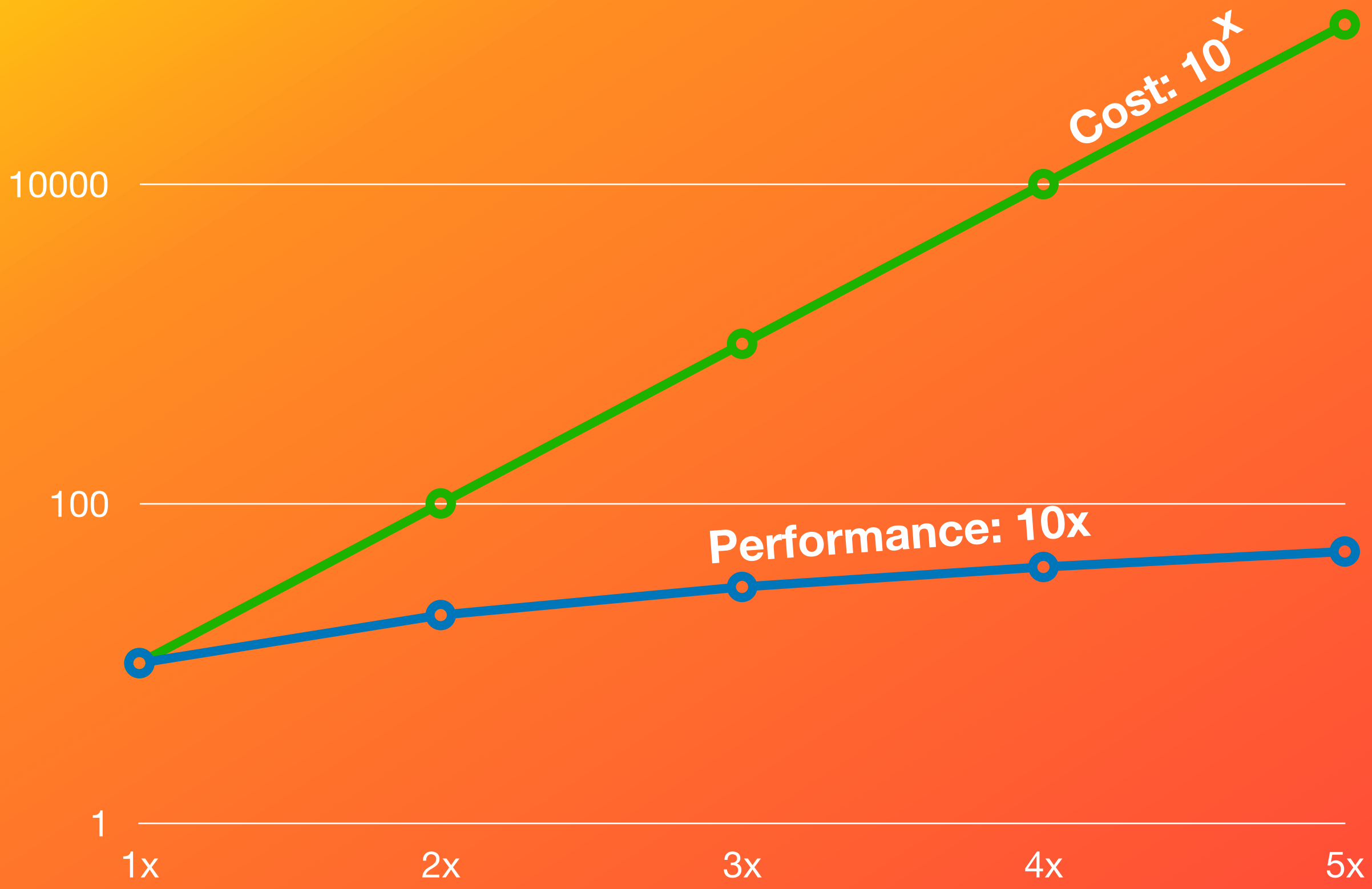
⋮

⋮

6x

\$1,000,000



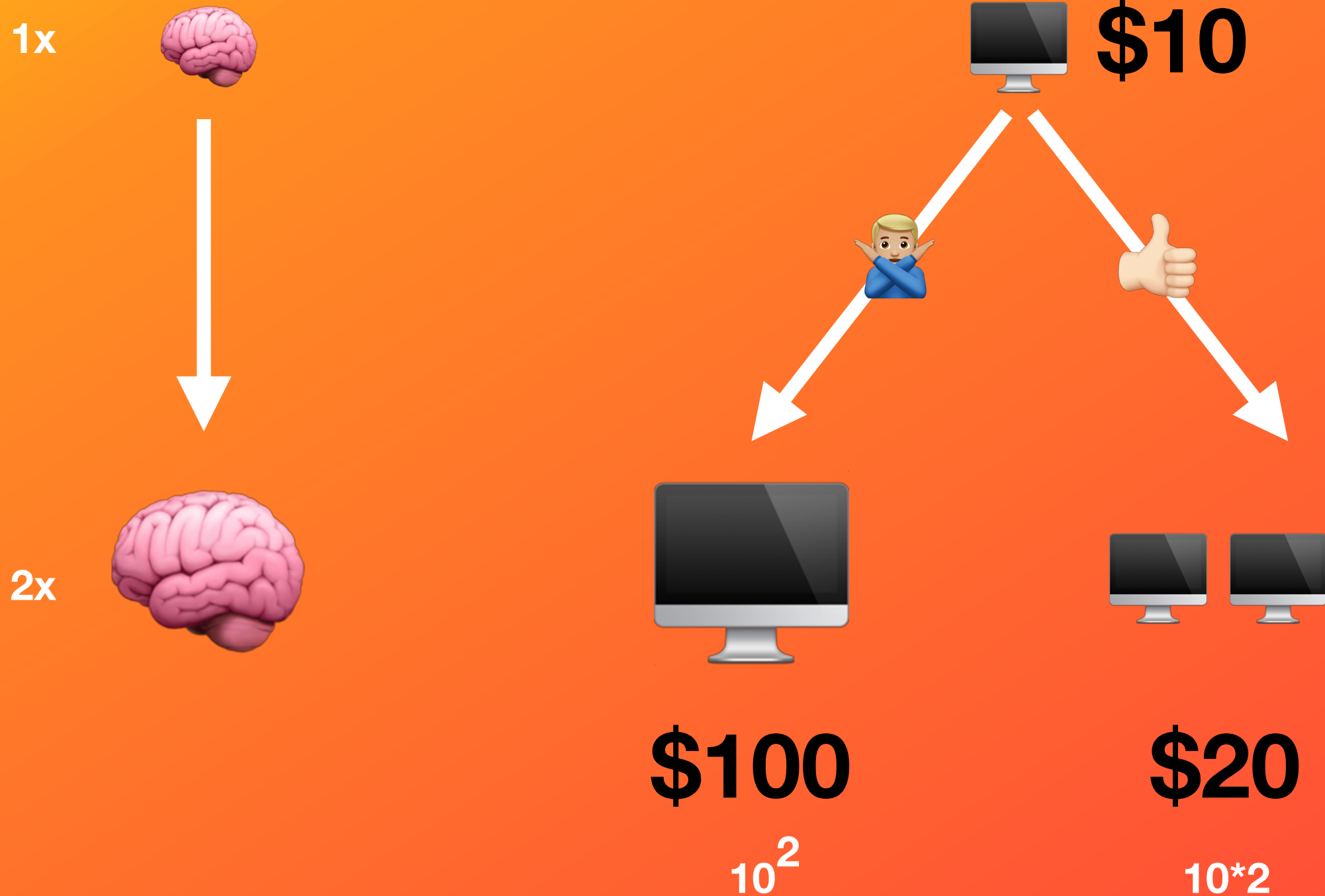


Cost: 10^x

Performance: 10^x

What if...

What if...



**So, why get multiple
computers involved?**

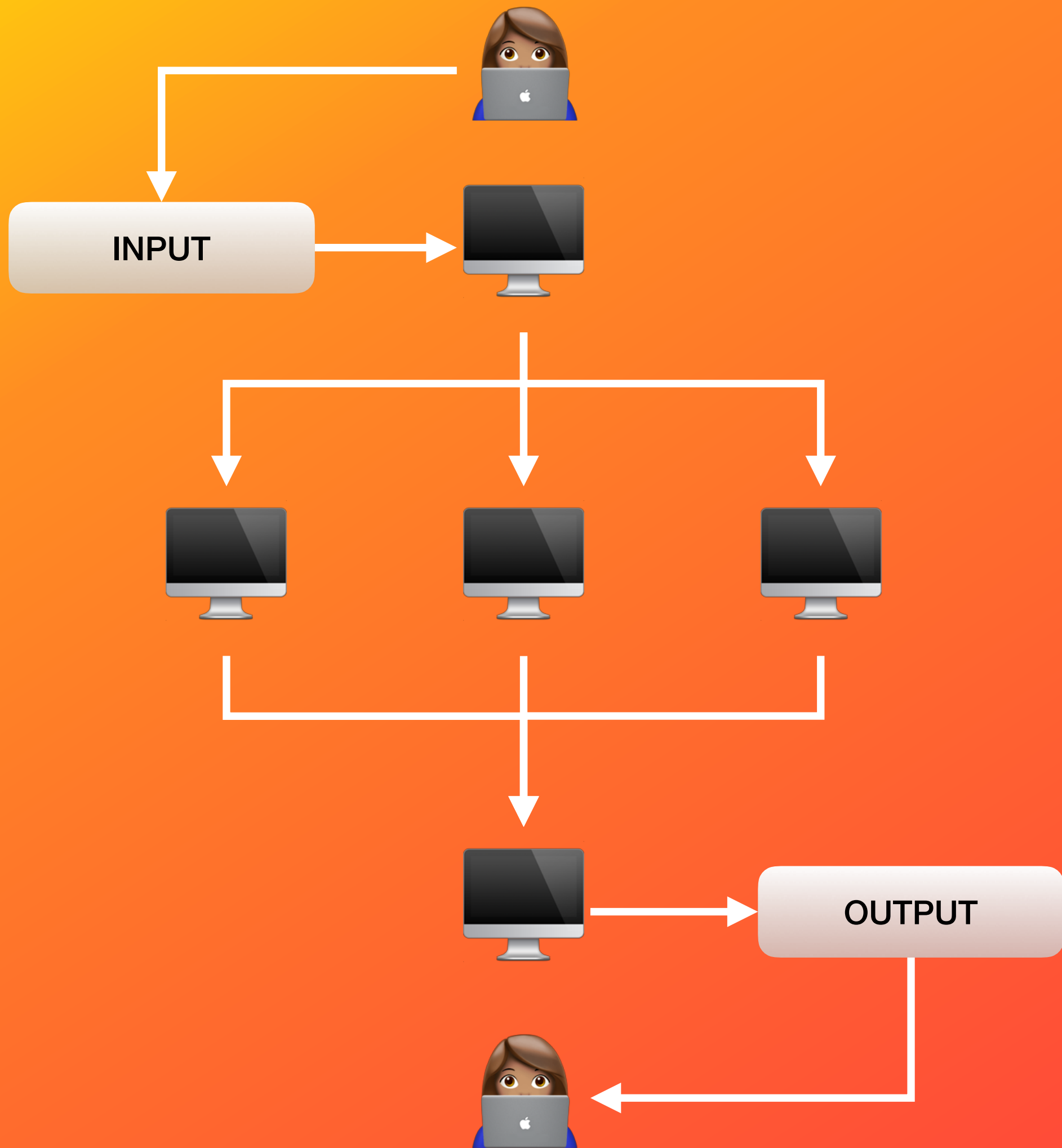


INPUT



OUTPUT





Cheaper AND Faster

Cheaper AND Faster

Plus, having different nodes of computation is useful for error-handling and security management since you don't entirely depend on a single computer being working properly on a single location

The Problem: Moving bits around

Arpanet



The first
computer - computer
communication network
in history

=

The First Internet

Arpanet

The First Internet



Is there somethin' else?

The US army had interests in developing a way to augment computational power by joining nodes of computation

Arpanet

The First Internet

💰 LOTS OF FUNDING!



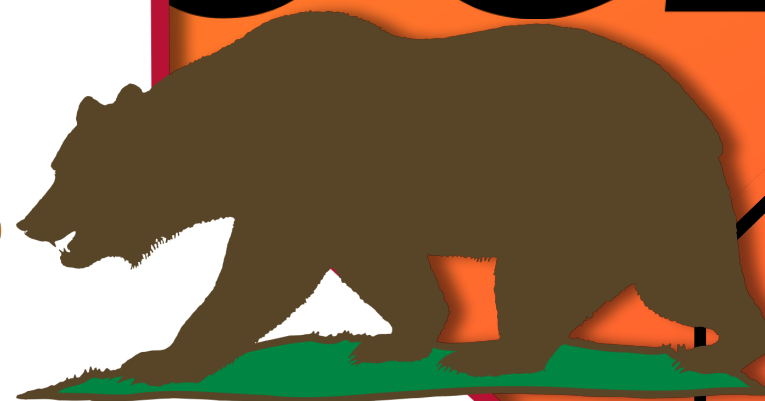
1969

🧐 talkin' to 🧐

=

💻 talkin' to 💻

Palo Alto



CALIFORNIA



Arpanet

Los Angeles

UCLA



🧐 talkin' to 🧐

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💻 talkin' to 💻



How it all moves

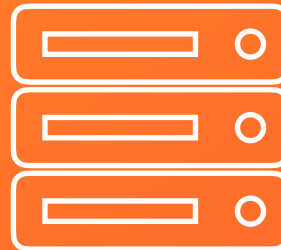
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How it all moves

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Database



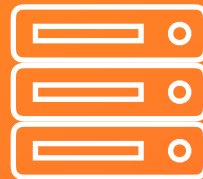
Server



Client

How it all moves

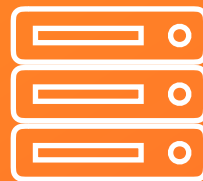
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It's all really just 1's and 0's
(bits) moving around cables
and waves that connect all the
computers in the world

How it all moves

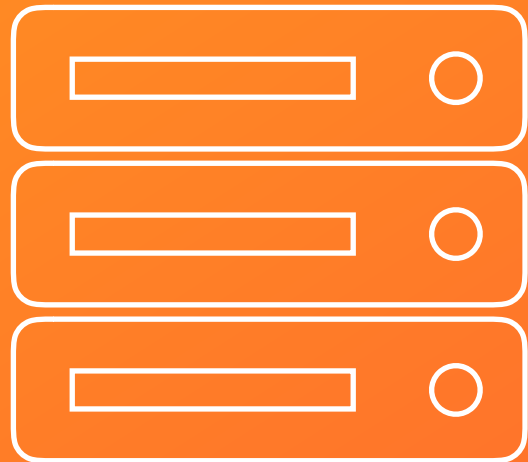
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Databases are places where
we store bits to recover them
for later or collective use

How it all moves

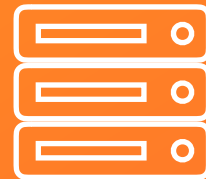
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Servers are always-on
computers that *respond* bits to
clients upon *requests*

How it all moves

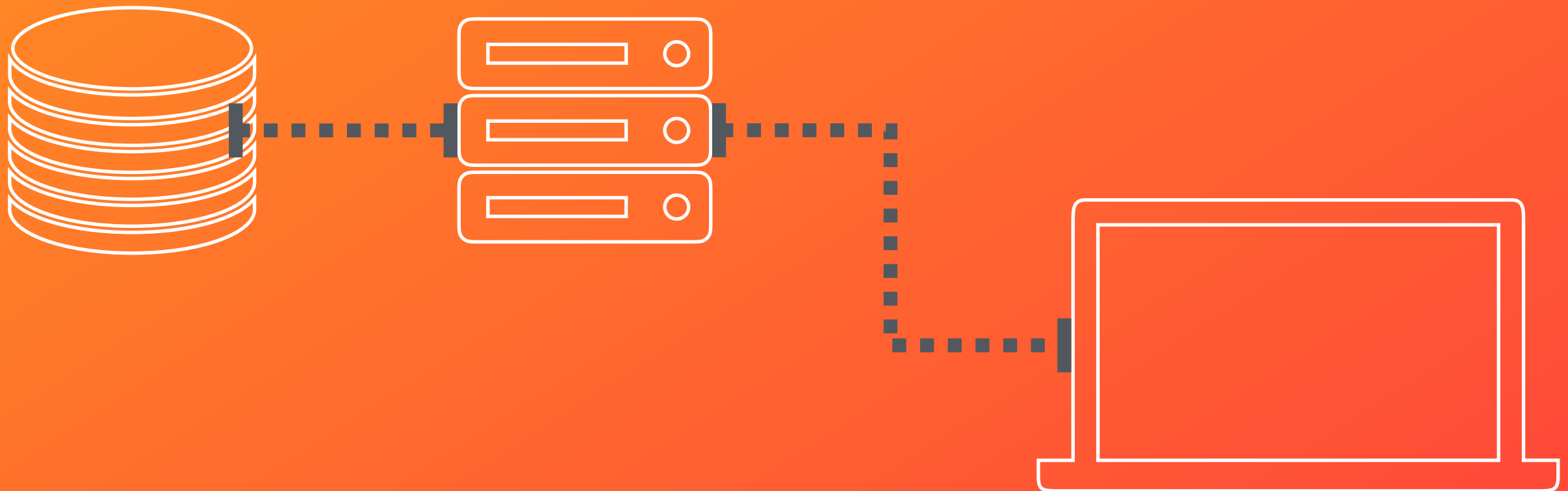
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Clients are computers

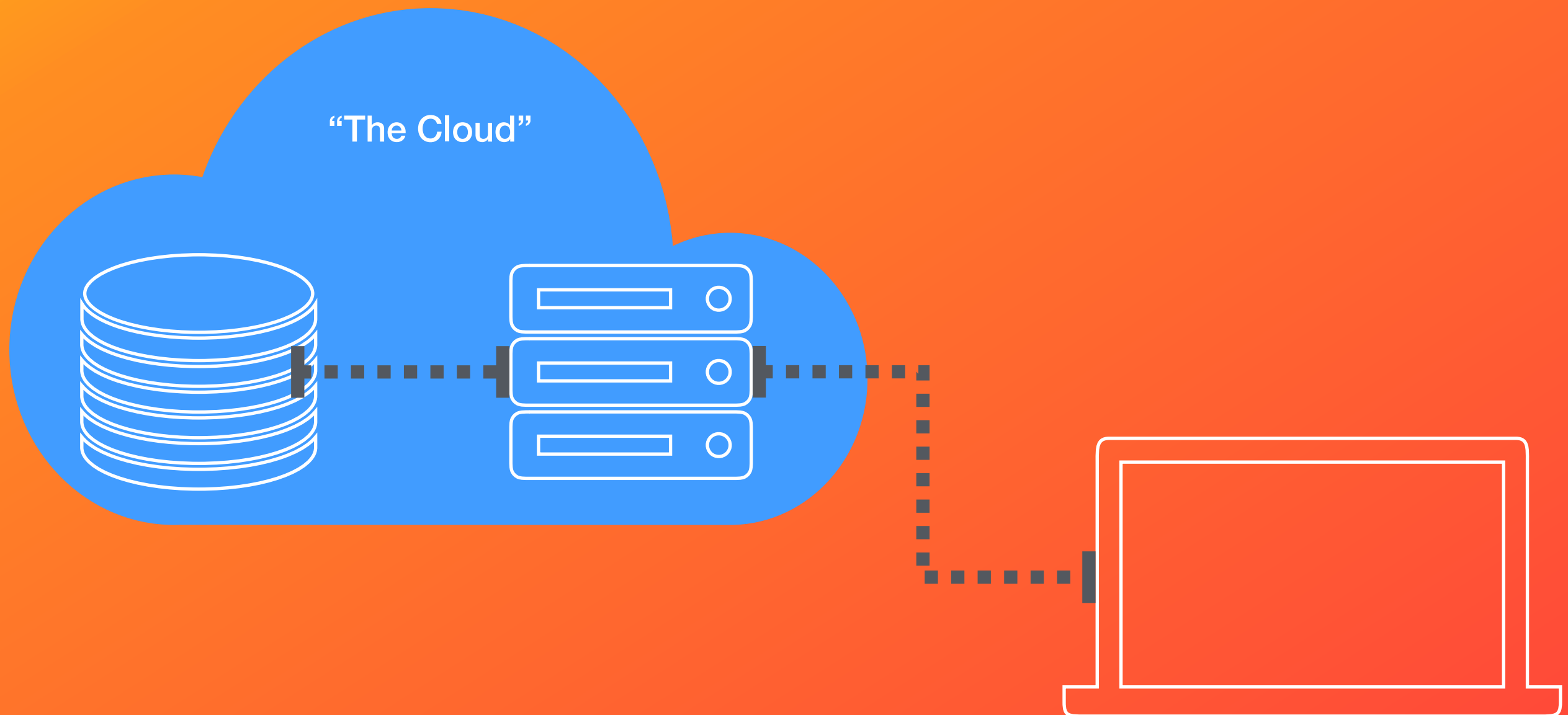
How it all moves

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How it all moves

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How it all moves

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The Facebook Example

How it all moves

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**The
Facebook
Example**

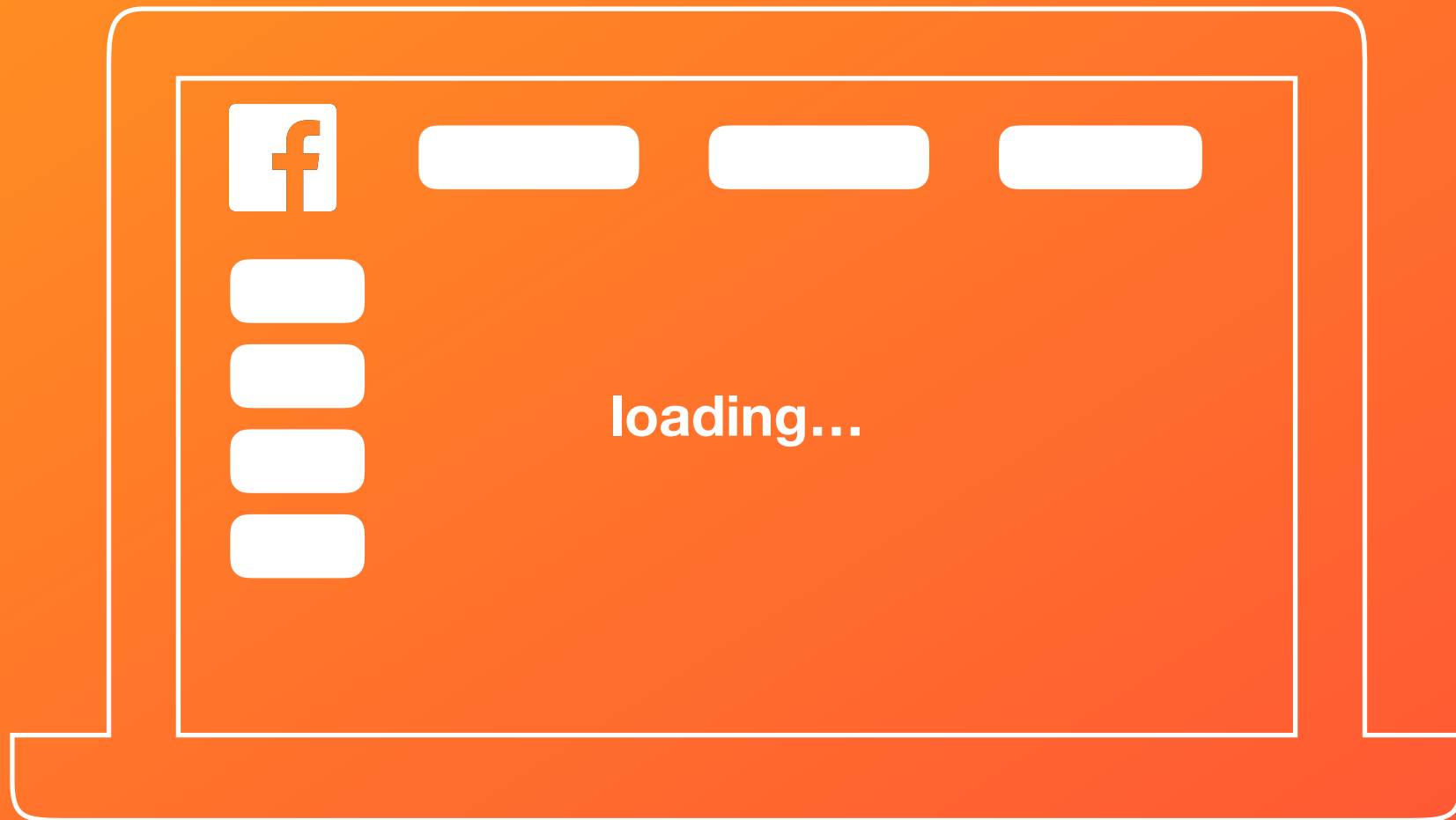
loading...

1

How it all moves

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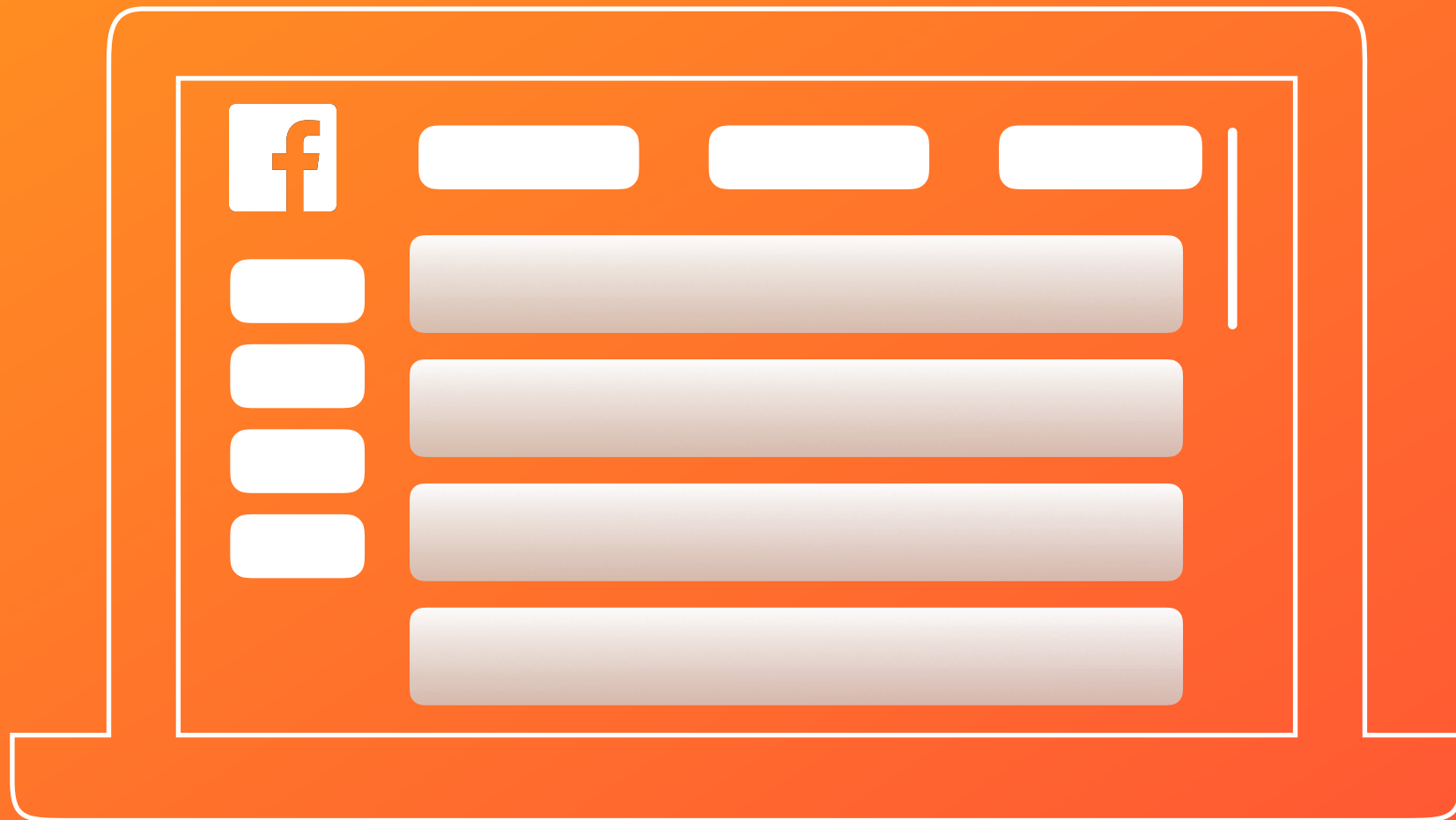
The Facebook Example



How it all moves

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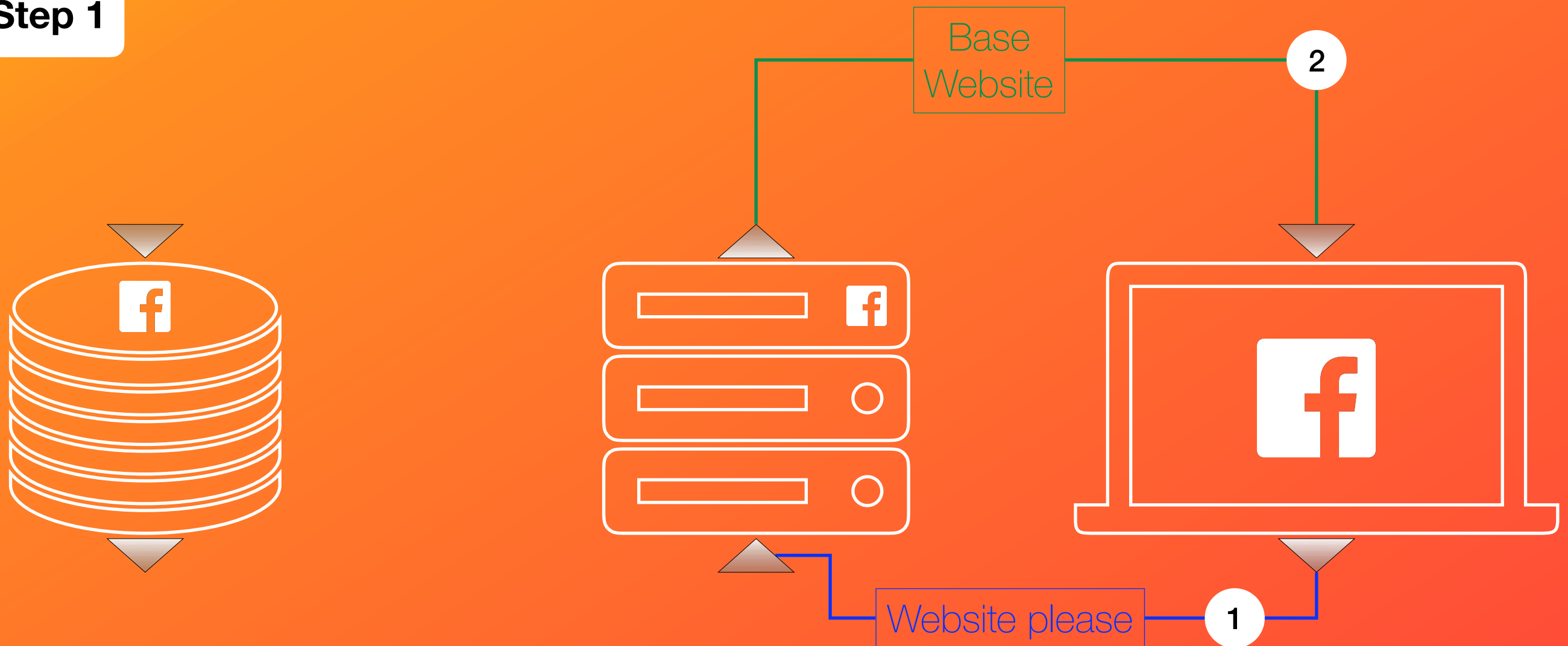
The Facebook Example



How it all moves

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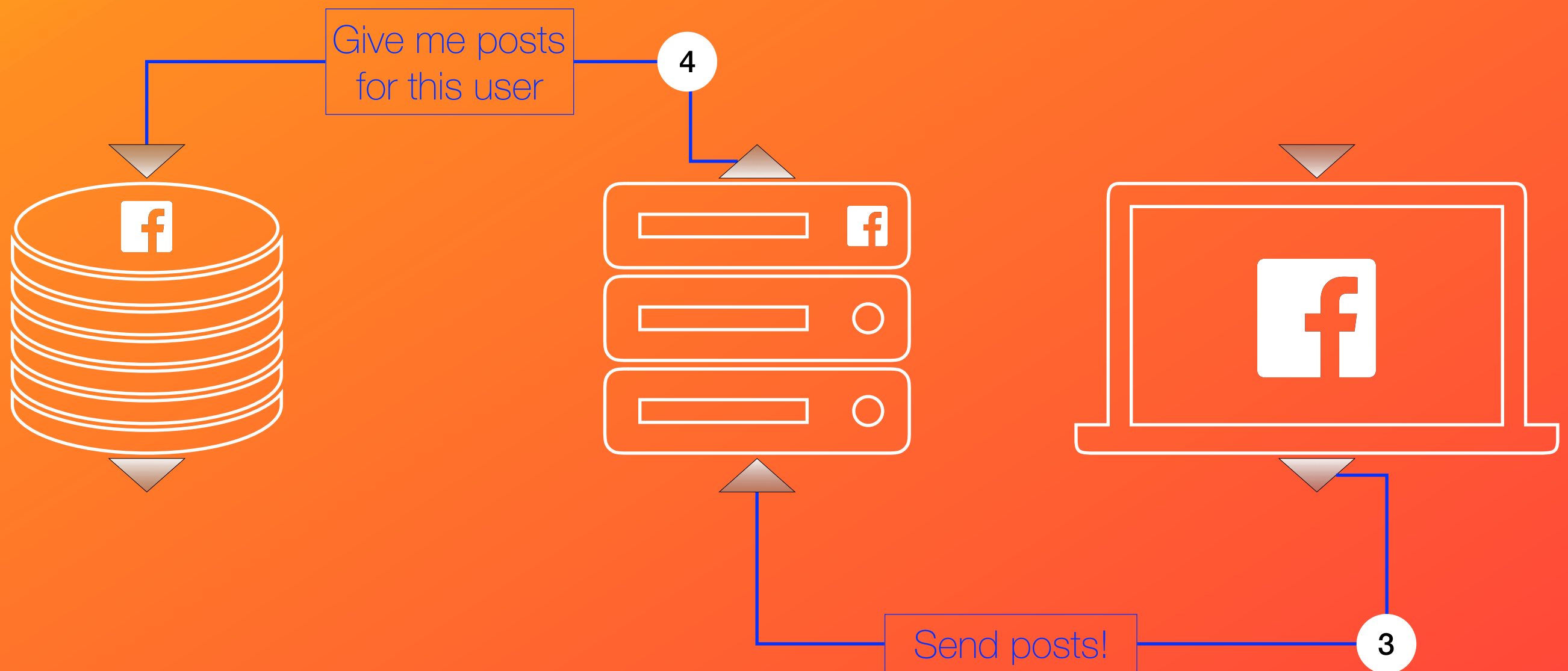
Step 1



How it all moves

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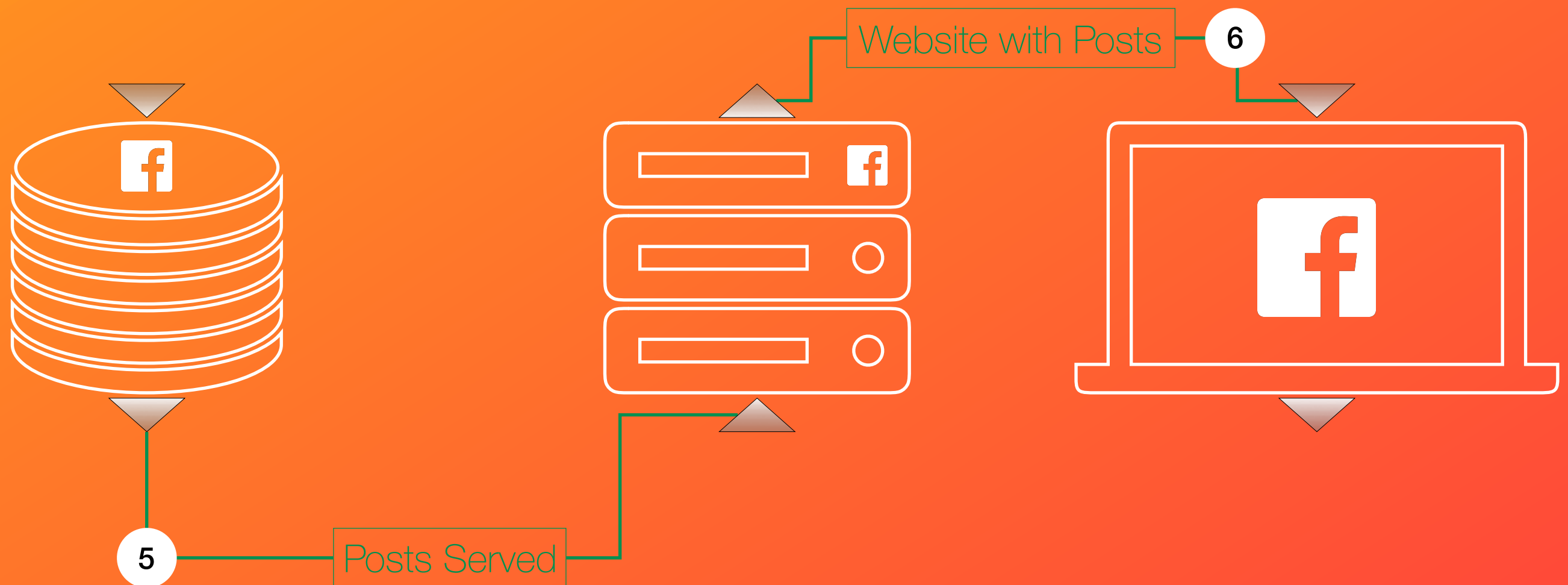
Step 2



How it all moves

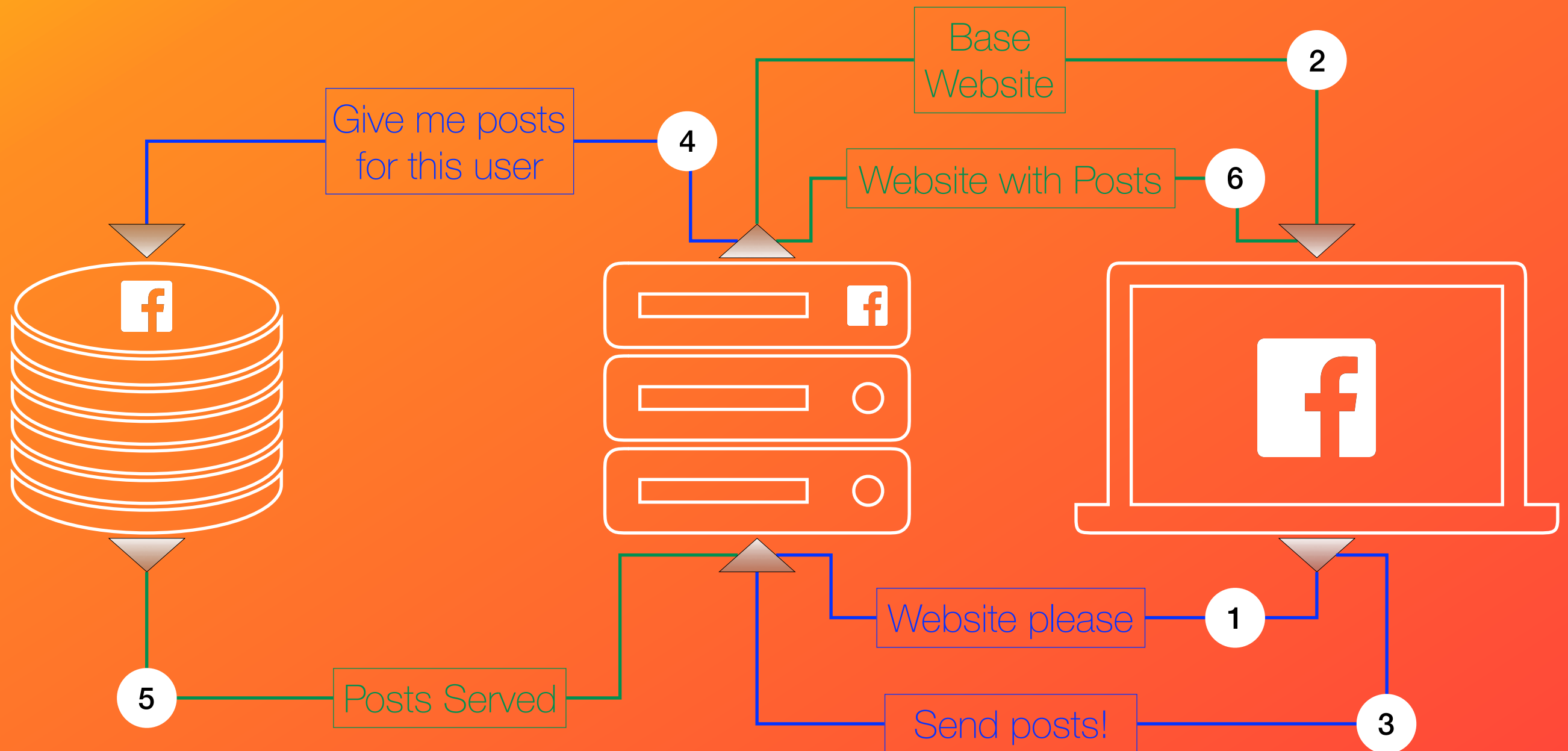
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Step 3



How it all moves

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Activity!

- Install **VS code**
- Install **Node JS**
- If windows, Install **Cygwin**

- Open **Terminal** (mac) or **Cygwin** (windows)
- Run command **npm i http-server -g**
- Run command **mkdir my-server**

- Open **VS Code**
- Open **my-server** folder
- Create file **index.html**
- Add some code!

- Run command **http-server ./my-server -p 1337**
- Navigate to **http://localhost:1337**

Useful docs @

- [w3schools.com](https://www.w3schools.com)

Takeaways_mod1

- Horizontal > Vertical scaling
- Computers communicating is a good thing
- Computers talk in bits
- The internet is all about standards of communication