

Scaling to the billions

A beginner's guide

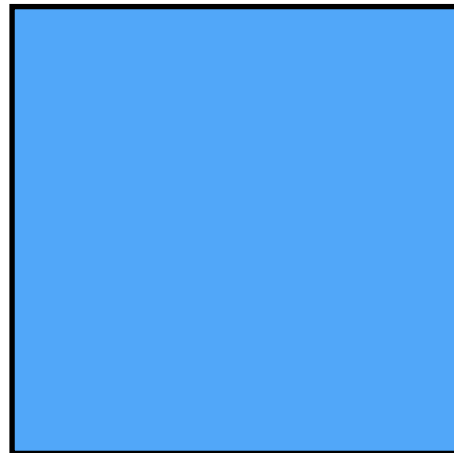
About the beginner

- Information Security Engineer
- Docker Fan
- Distributed Systems Designer (lately)

How do we scale?

Infrastructure

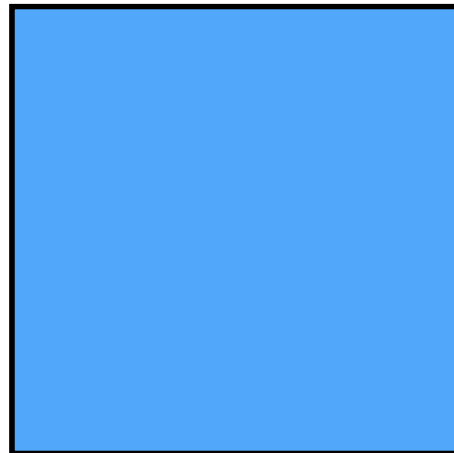
Vertical Scaling



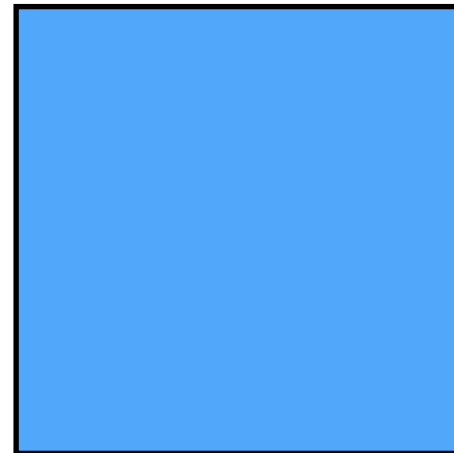
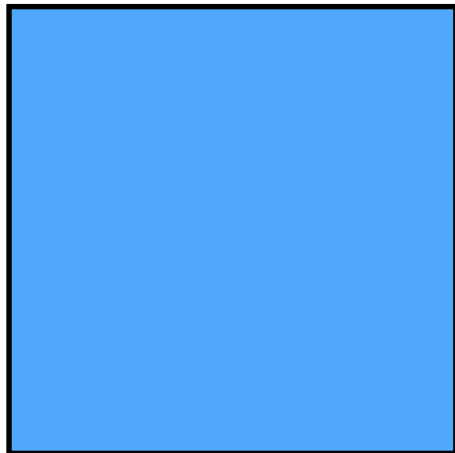
Vertical Scaling



Horizontal Scaling



Horizontal Scaling



Vertical Scaling



Vertical Scaling



Vertical scaling



Vertical Scaling





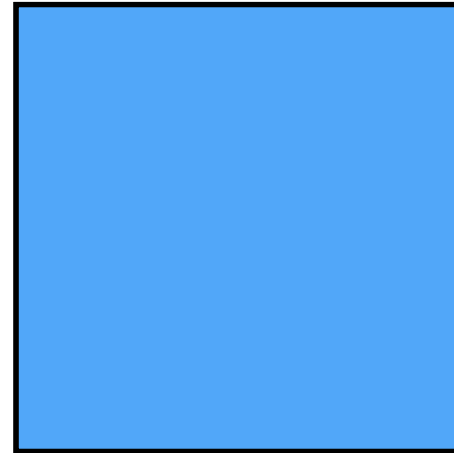
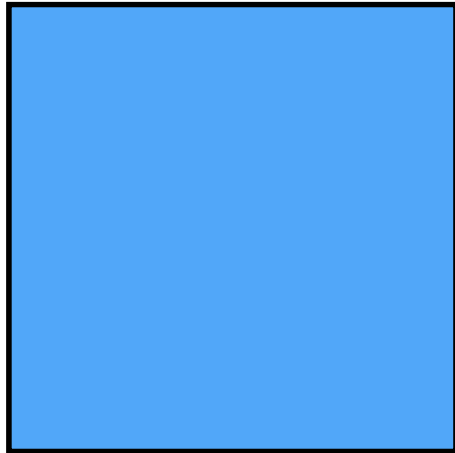
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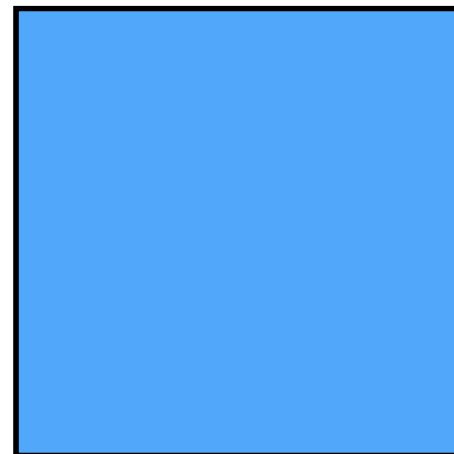
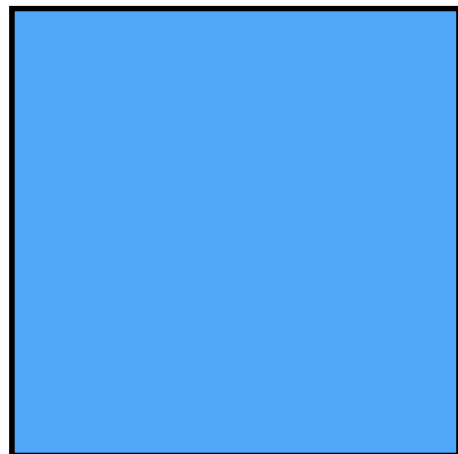
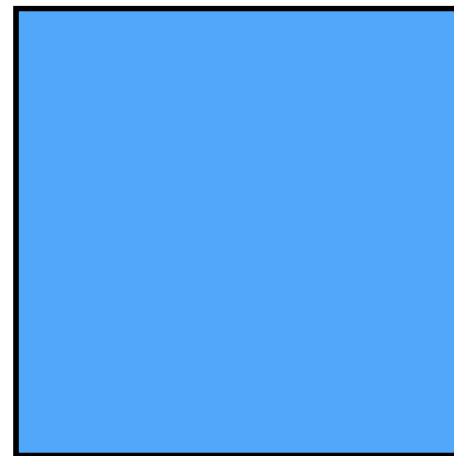
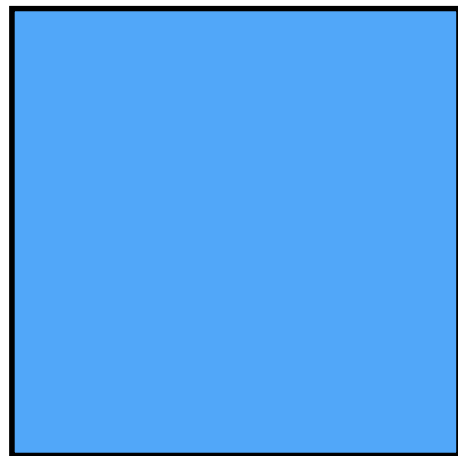
Reload

[Details](#)

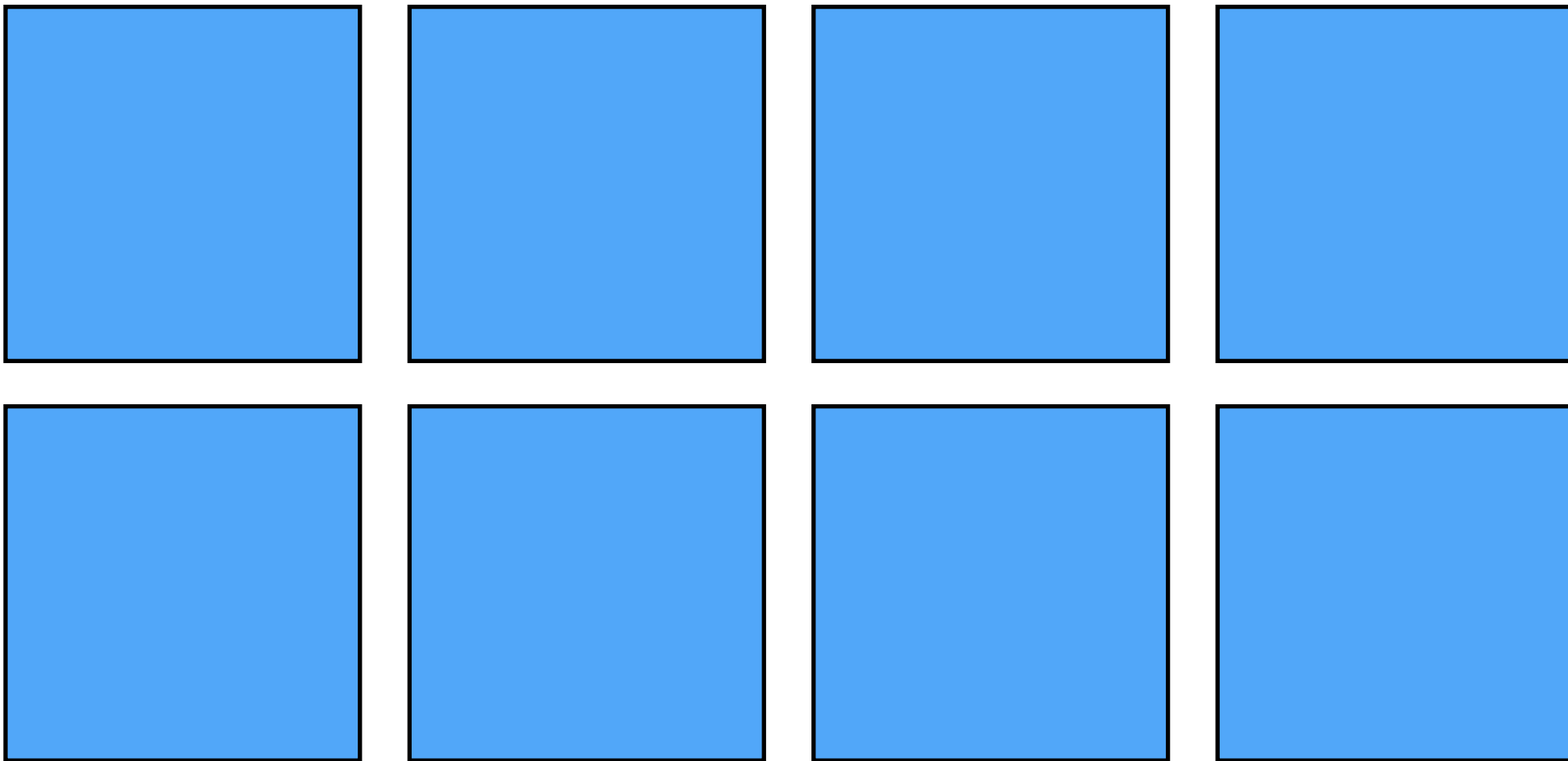
Horizontal Scaling



Horizontal Scaling

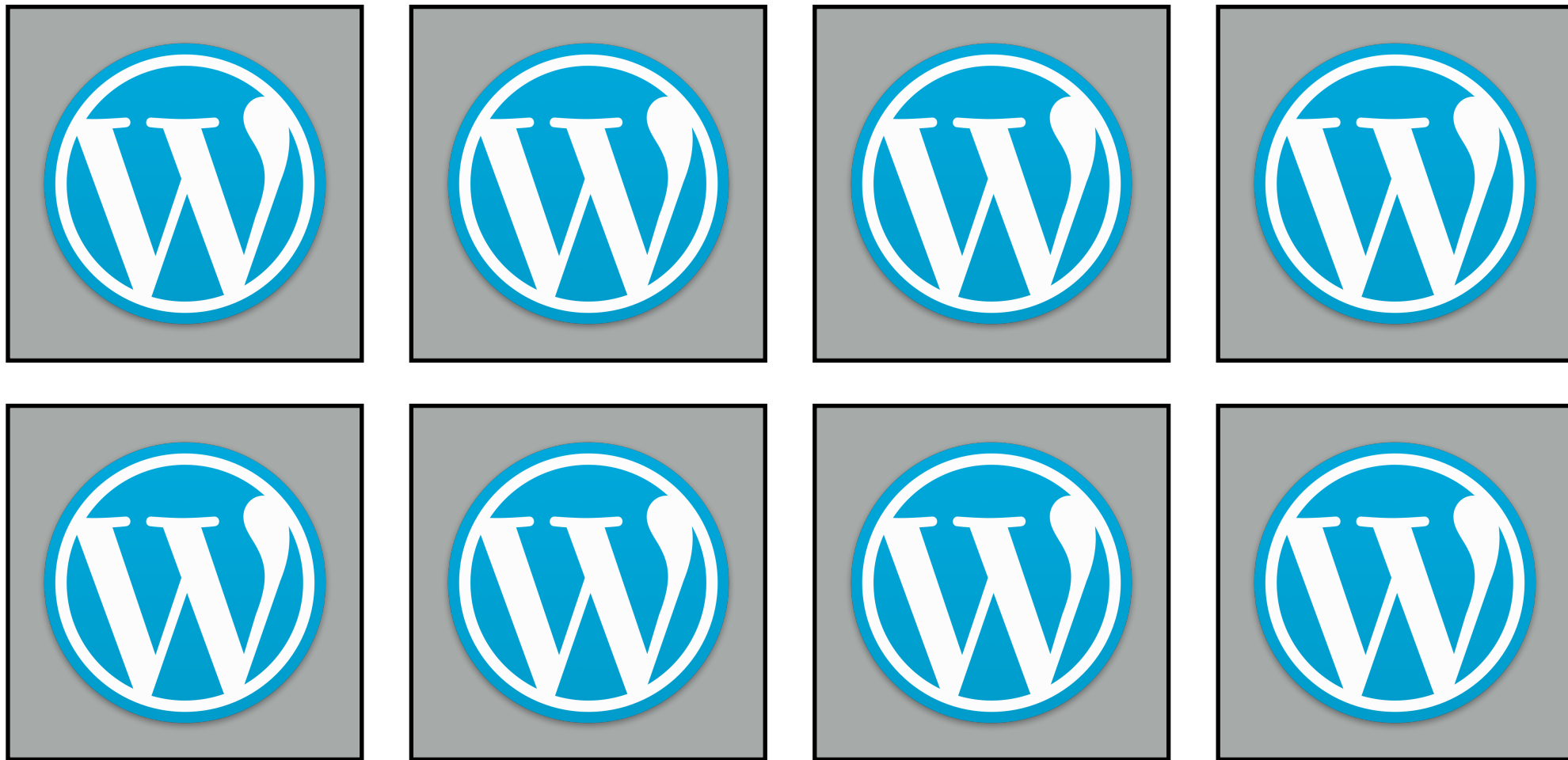


Horizontal Scaling

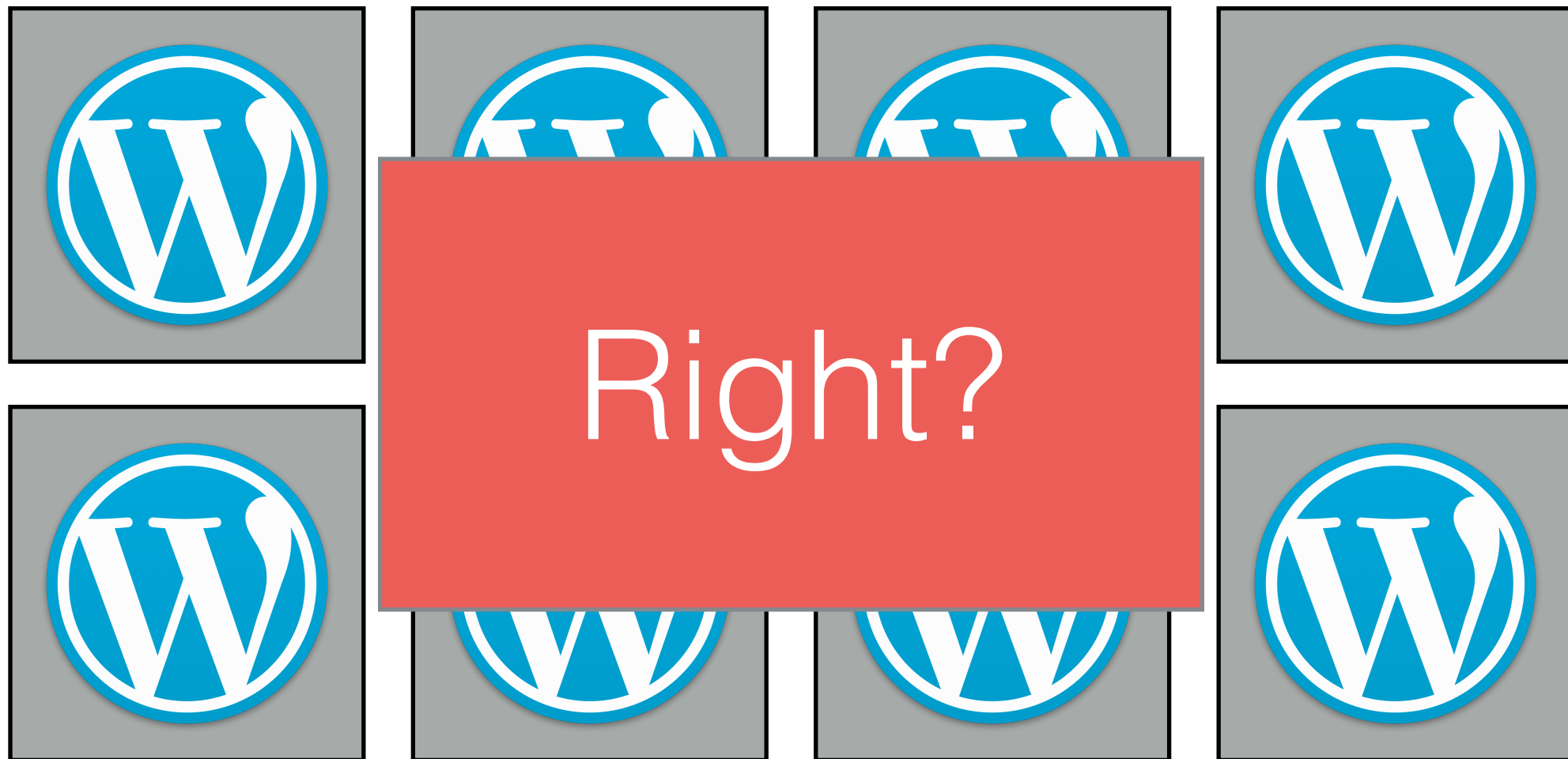




Billion User Blog



Billion User Blog



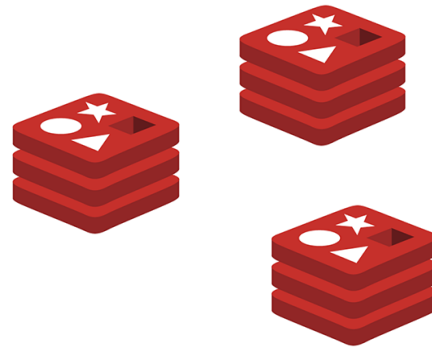
Nope.

“Some apps just haven’t been
designed to scale.”

– me

But I want Wordpress! 🥲

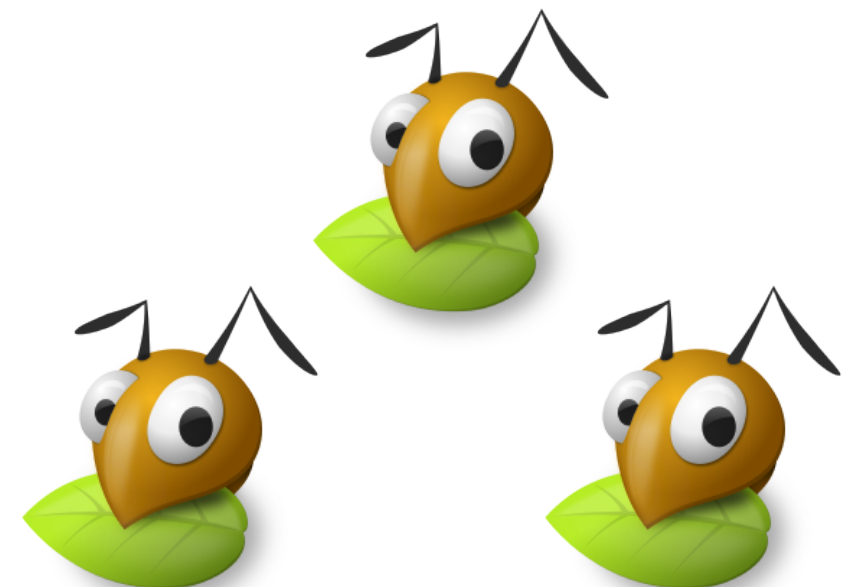
But I want Wordpress! 🥲



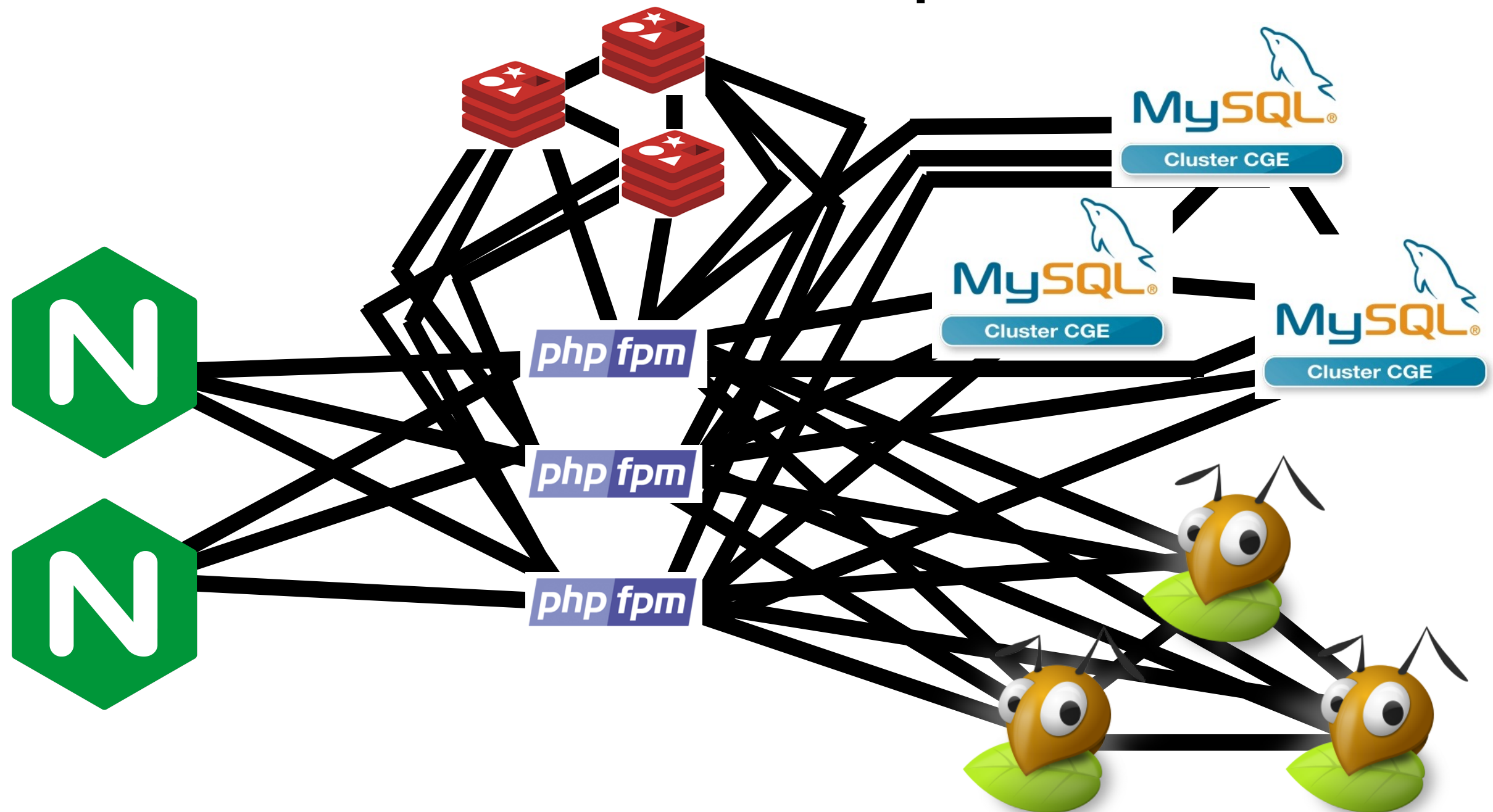
php fpm

php fpm

php fpm



But I want Wordpress! 🥲










Free

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Just start creating: get a free site and be on your way to publishing your content in less than five minutes.

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- ✓ Email & Live Chat Support 
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Best for Entrepreneurs & Freelancers:

Build a unique website with advanced design tools, CSS editing, lots of space for audio and video, and the ability to monetize your site with ads.

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- ✓ Jetpack Essential Features 
- ✓ Email & Live Chat Support 
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- ✓ Unlimited Premium Themes 
- ✓ Advanced Design Customization 

“Some apps just haven’t been
designed to scale.”

– me

What you need

(Ideally)

- Multi-DC, Cross-Continent Environment
- General Purpose Compute Nodes
- High capacity links (both intra- and inter- DC)

Software Design

What's different

- Mostly everything

What's different

- You **have** to split your app into lots of pieces
- As many app components as possible must be stateless
- You **must not** have one of anything. Anything.
- You should avoid slaves. It's not 1864.

year slavery was abolished



All

Images

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Settings

Tools

About 463.000 results (0,76 seconds)

1865

1865: December: US abolishes slavery with the Thirteenth Amendment to the United States Constitution; about 40,000 remaining slaves are affected. 1866: Slavery abolished in Indian Territory (now Oklahoma).

[Abolition of slavery timeline - Wikipedia](https://en.wikipedia.org/wiki/Abolition_of_slavery_timeline)

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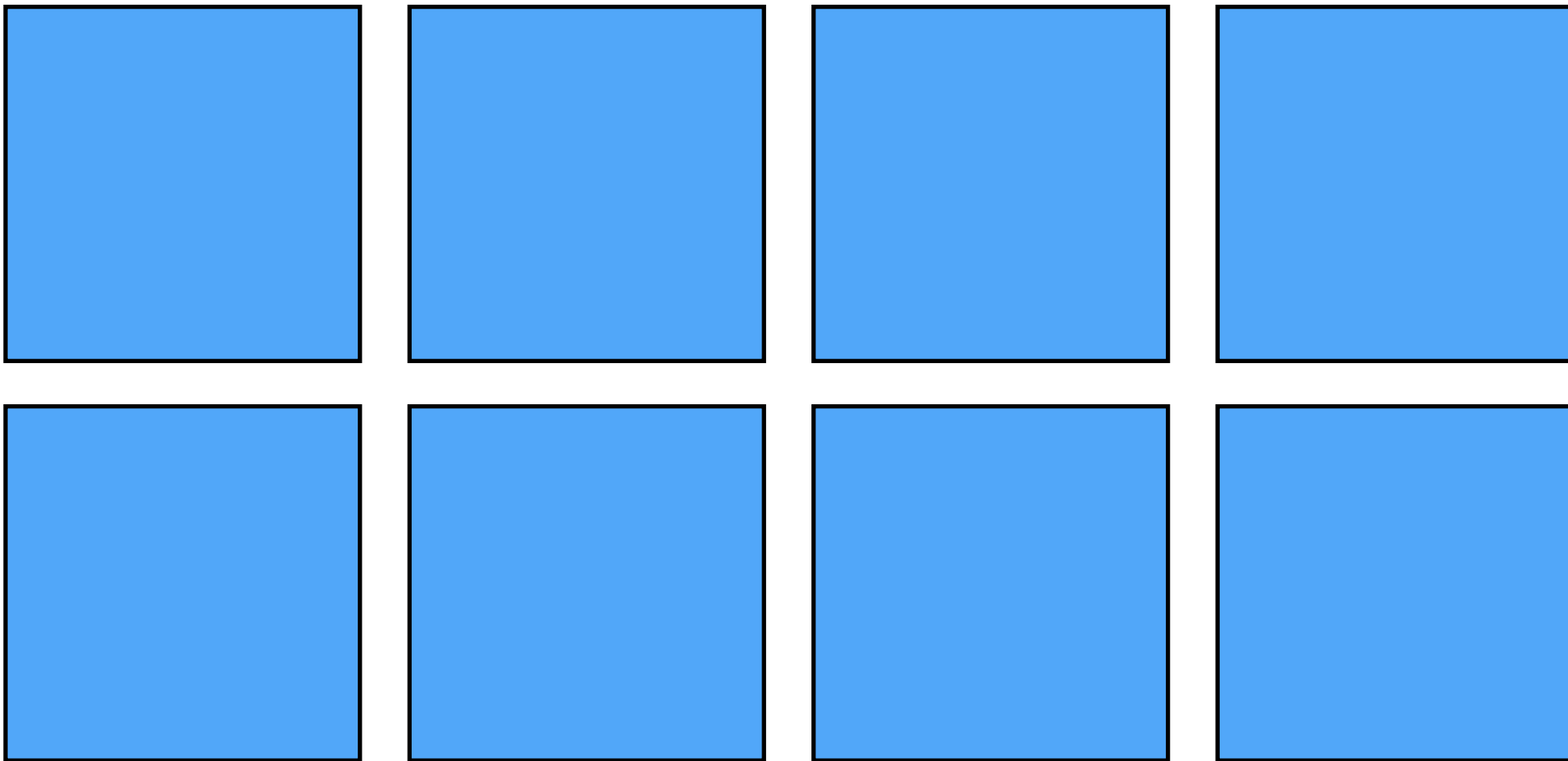


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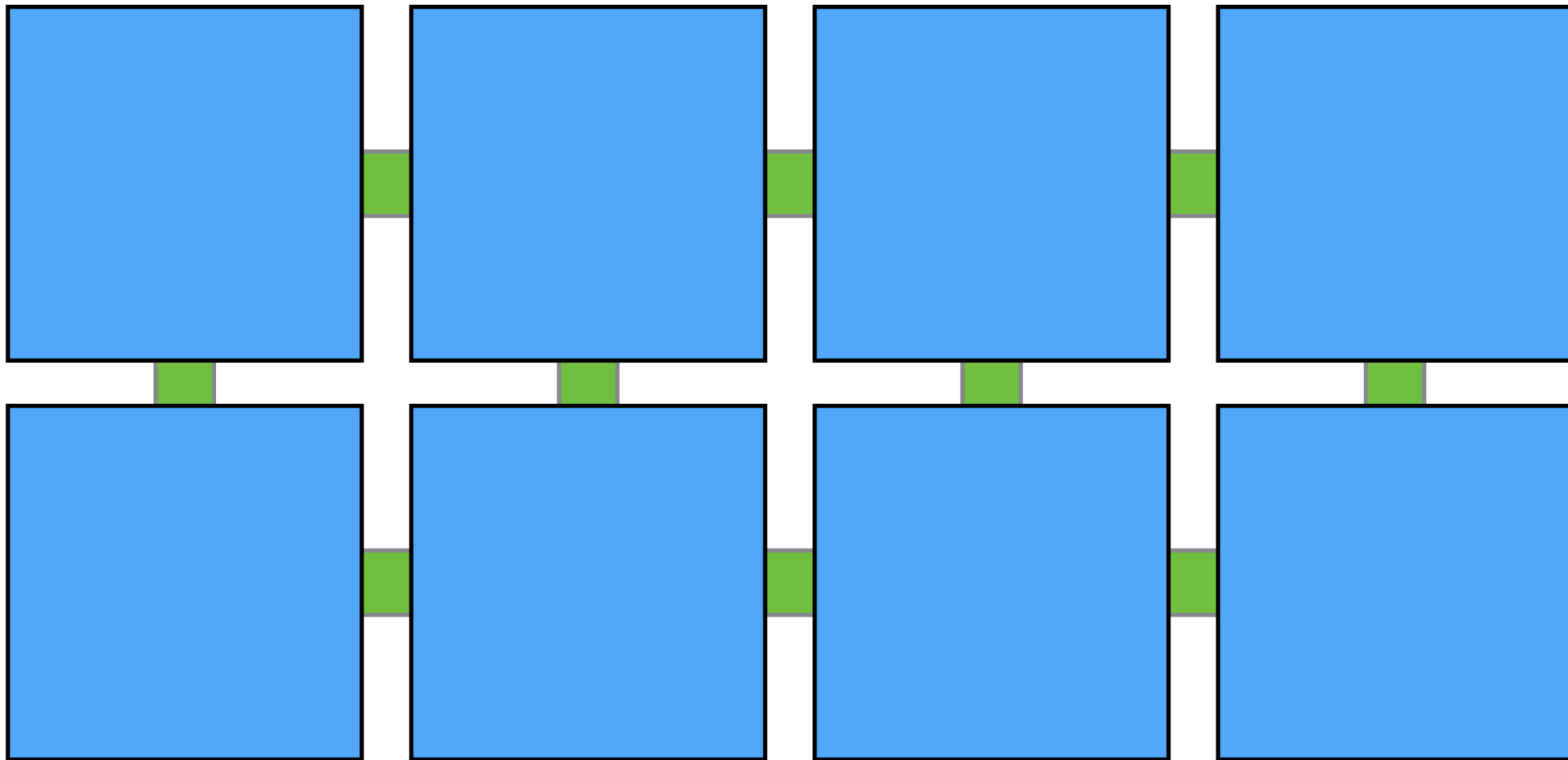
Writing Code

- Write using performant languages / frameworks
 - Don't just use one!
- Minimize cross-component communication overhead
- Optimize your code and use proper data structures
- Pick the right tools (RDBMS / NoSQL / ...)
 - Don't be afraid to create tools or study existing ones

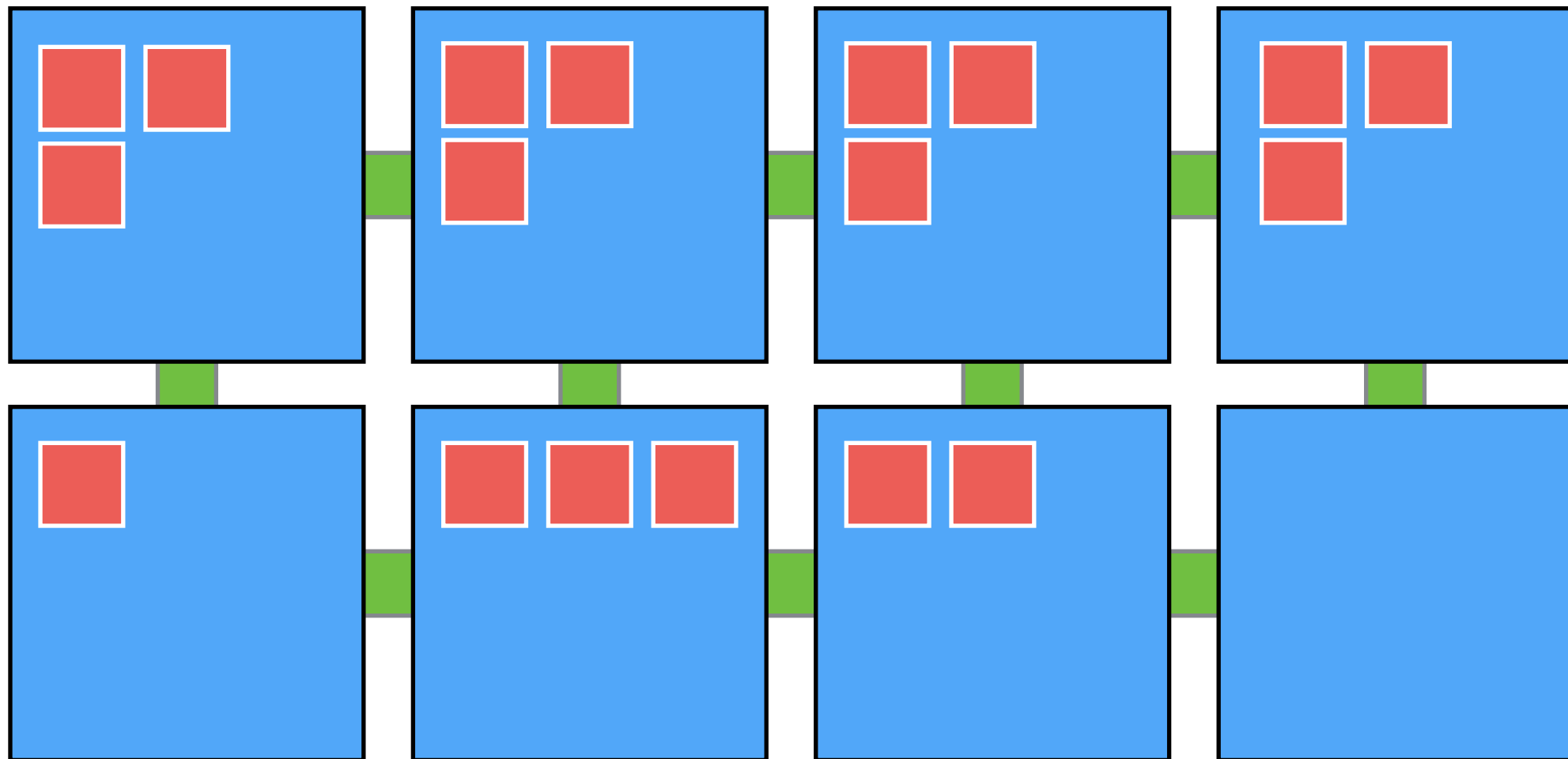
To Sum Up



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There's a ton more!

Alternatives



Thank you!