



Horizontal vs Vertical Scaling

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Basic Definitions

... What are we talking about here?

Performance vs Scalability

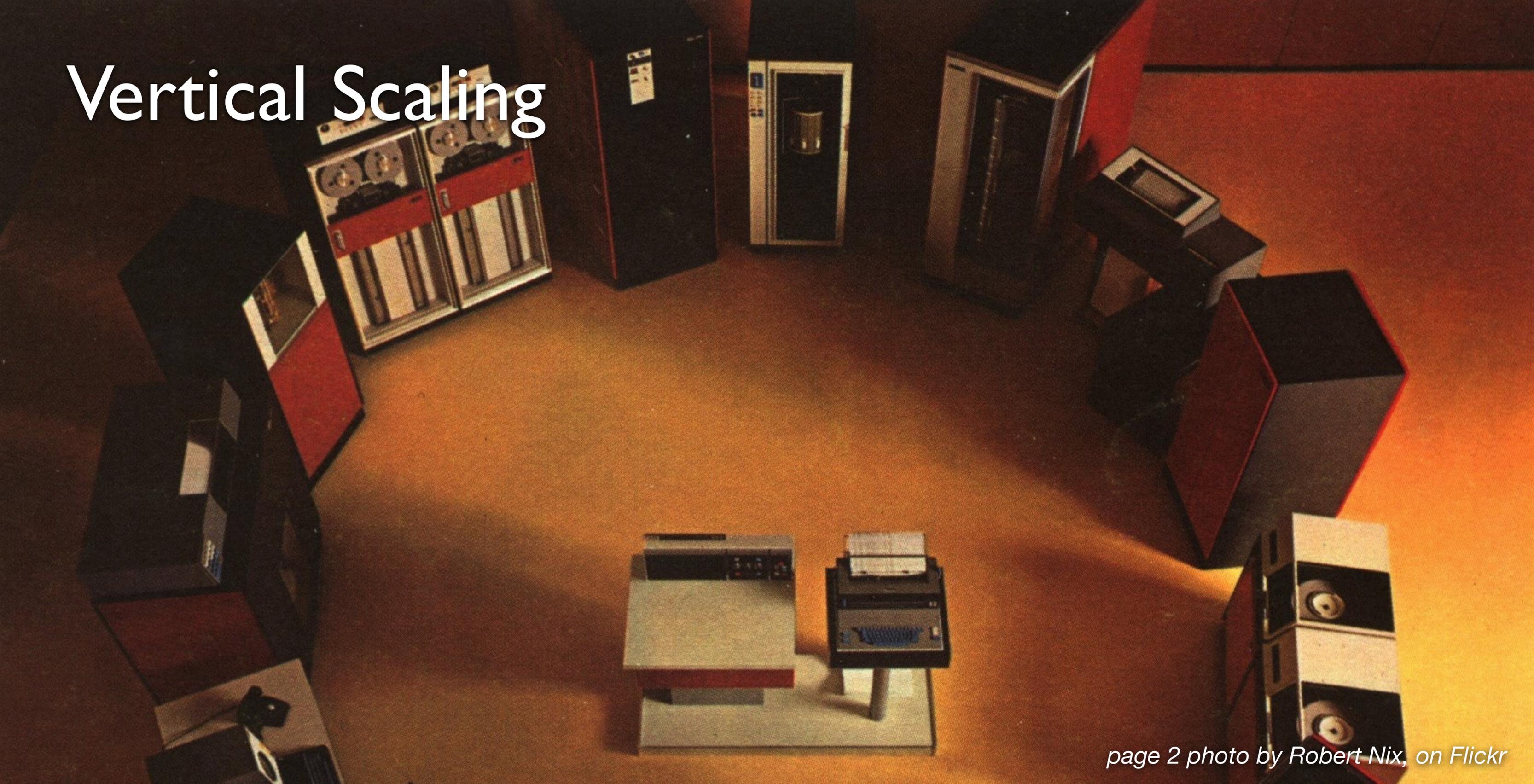
Performance

Measurement of how long it takes for results to be rendered for your user.

Scalability

The ability for your application to maintain consistent performance while the number of active users varies.

Vertical Scaling

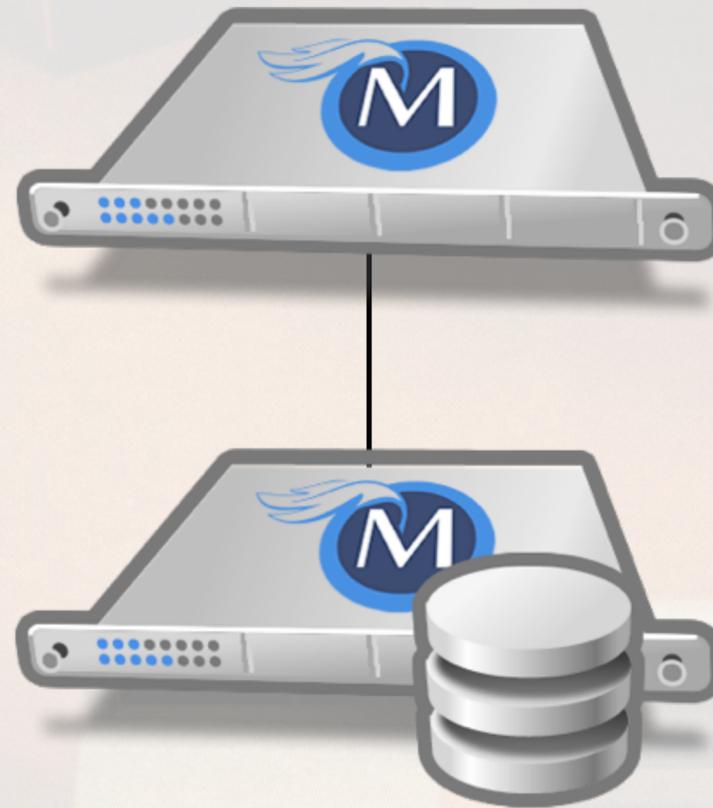


page 2 photo by Robert Nix, on Flickr

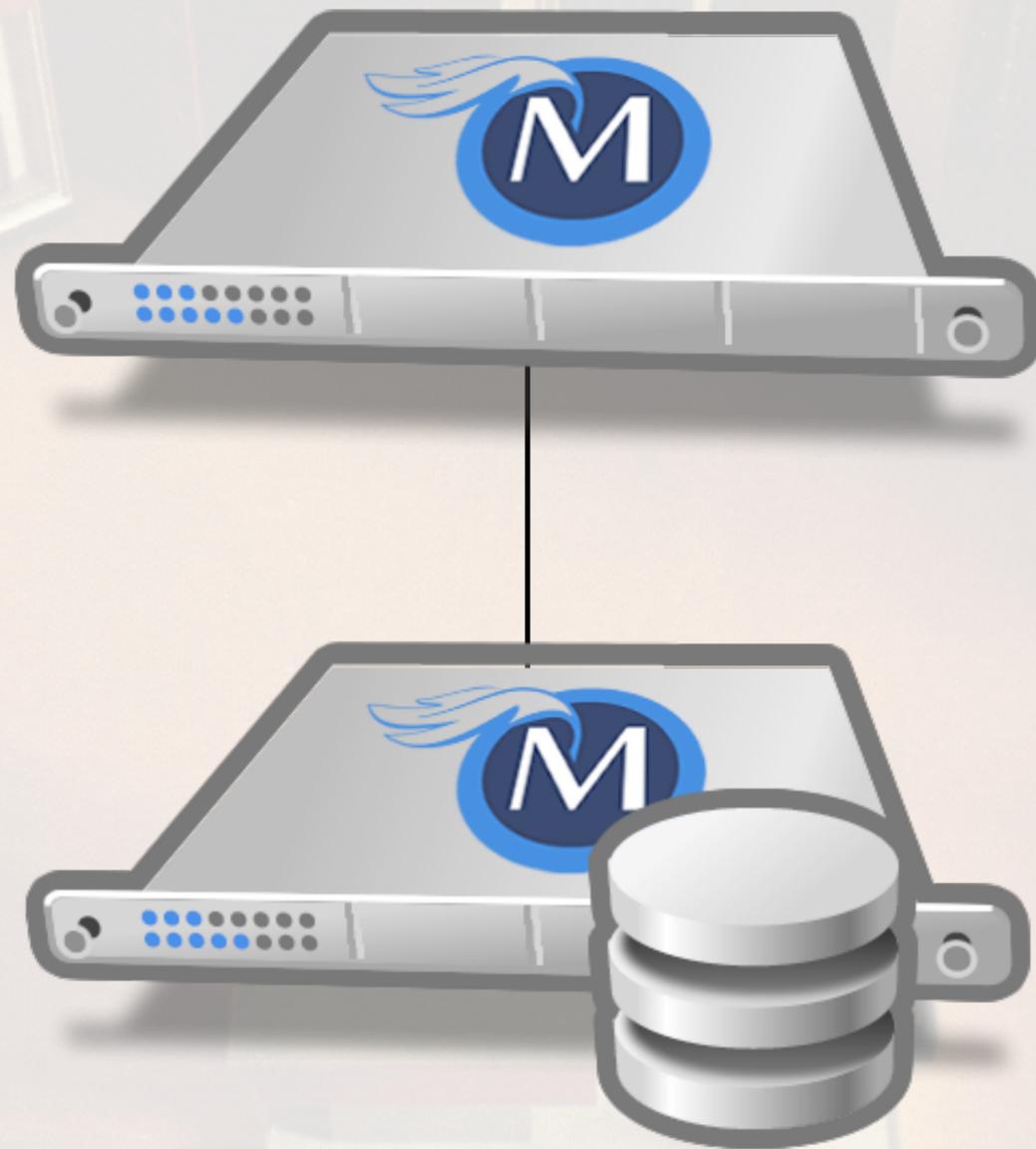
Vertical Scaling



Vertical Scaling



Vertical Scaling



Vertical Scaling



Horizontal Scaling

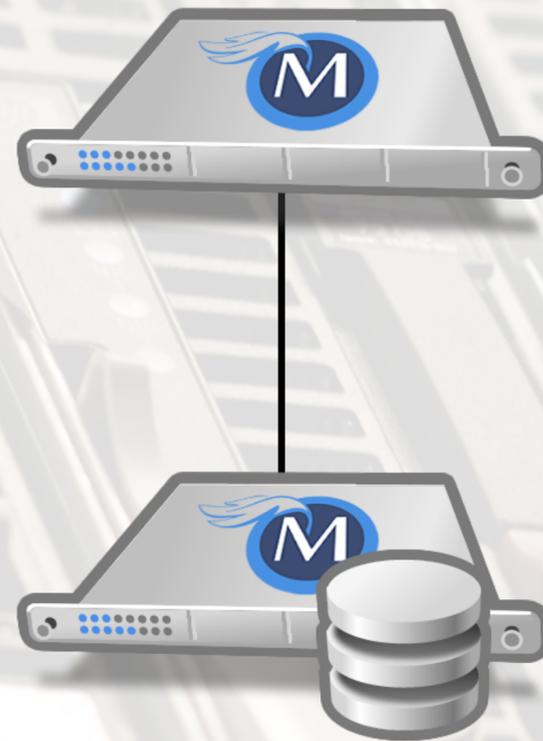


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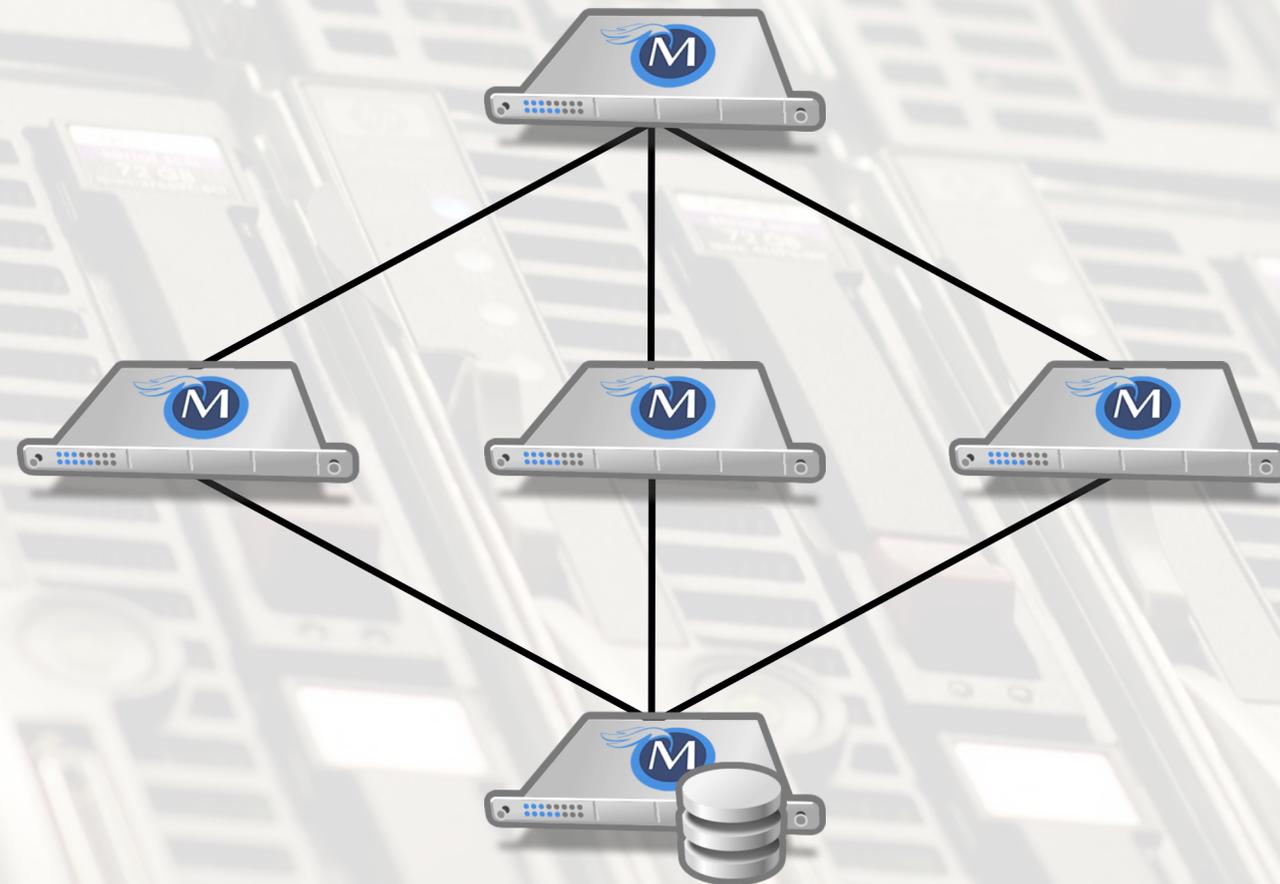
Horizontal Scaling



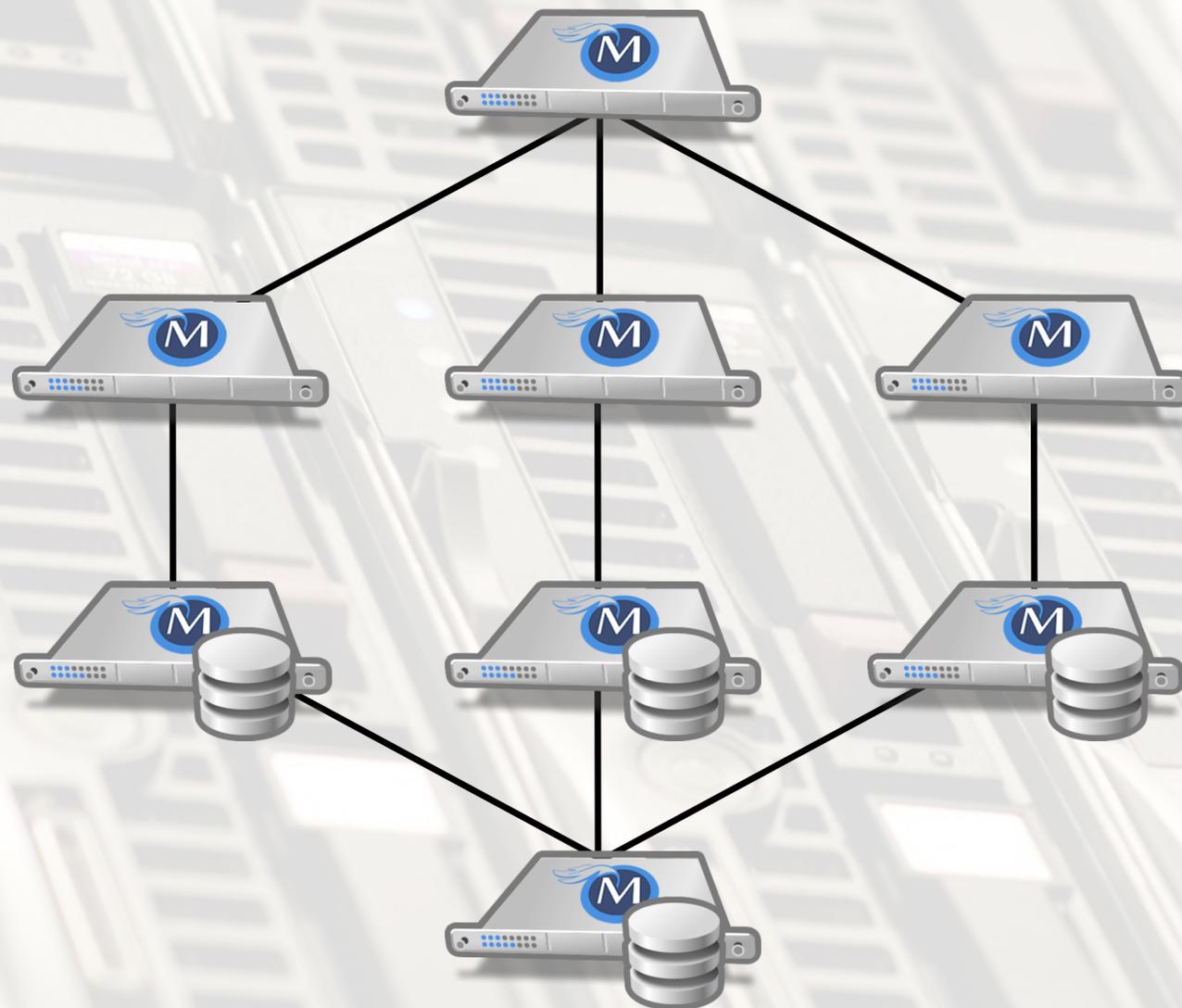
Horizontal Scaling



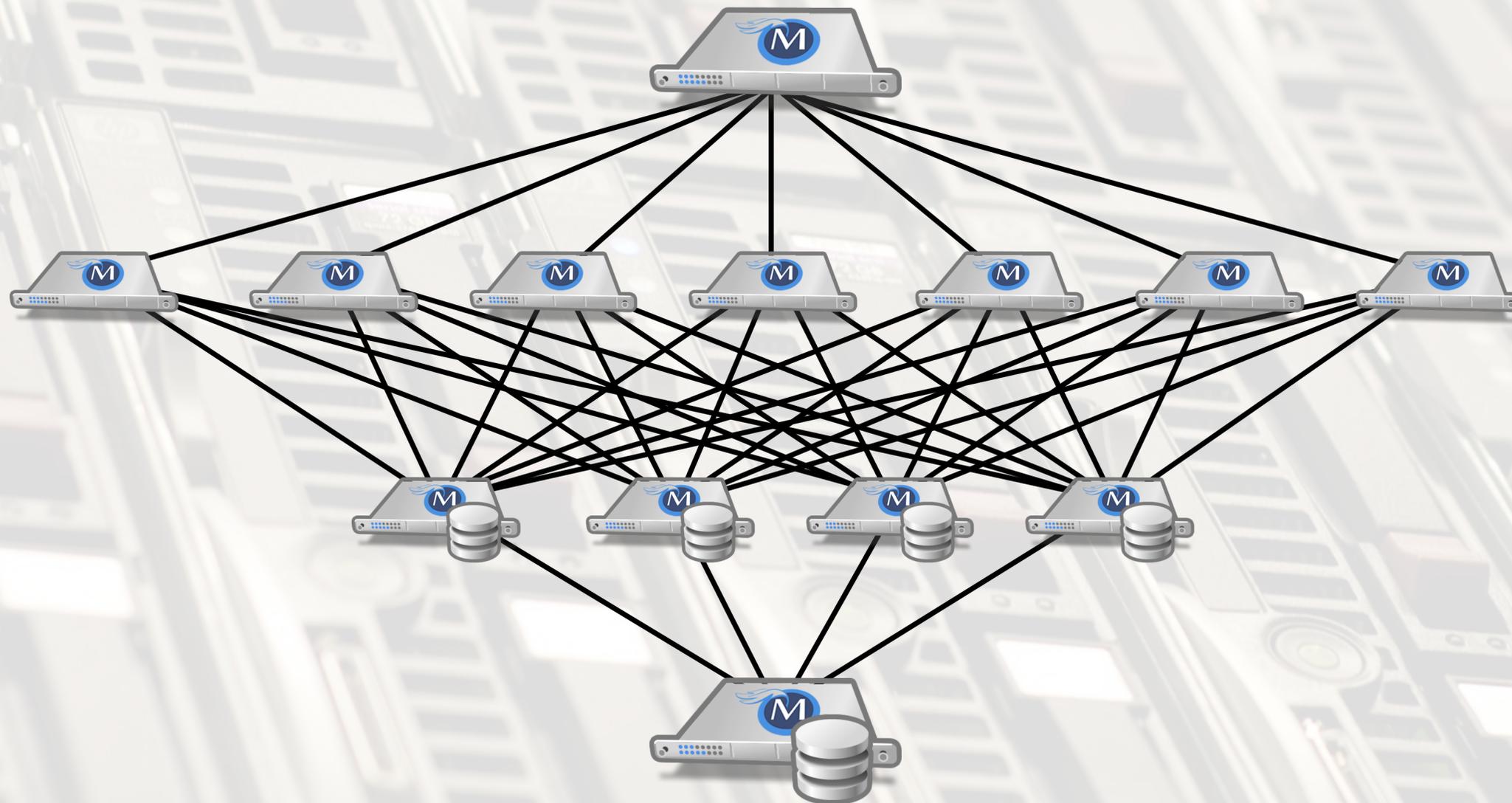
Horizontal Scaling



Horizontal Scaling



Horizontal Scaling





Applies to all servers

Different Colors by Simon Claessen, on Flickr

Horizontal Scaling

... the *Modern* scaling pattern

Characteristics of Horizontal Scaling

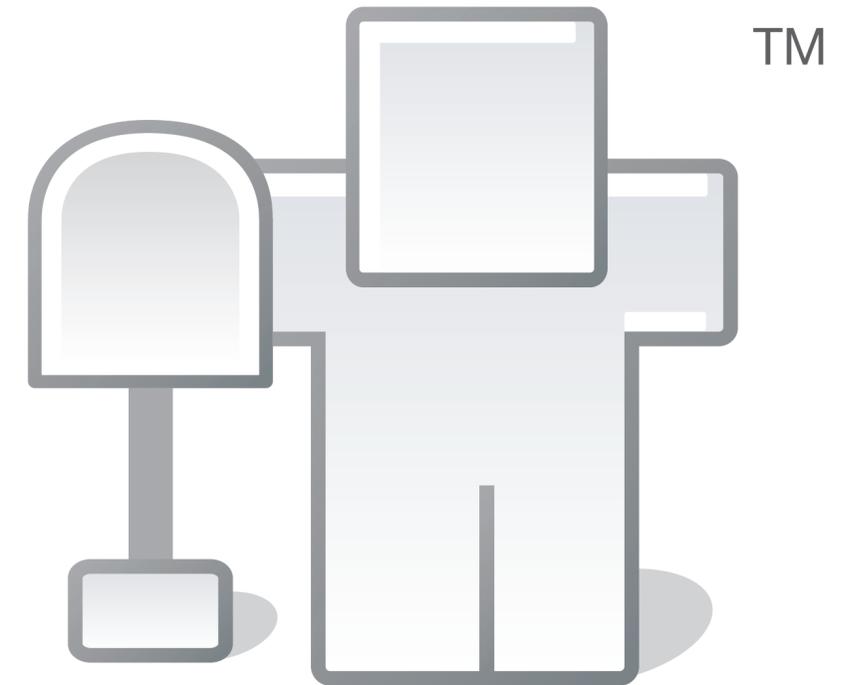
It uses commodity servers

Web servers are put behind a load balancer / proxy

Database servers are set up in master / slave

Continue adding servers as needed to whatever pool

diggy™



Pros of Horizontal Scaling

Very Flexible

Lower cost & pay as you need it

Quick to react to changes

Ability to Scale Down

Easy to increase scalability, just add another

Cons of Horizontal Scaling

Maintenance costs are higher

Does not increase speed

Can't rely on benefits of single-server setups

Vertical Scaling

... the *Traditional* scaling pattern

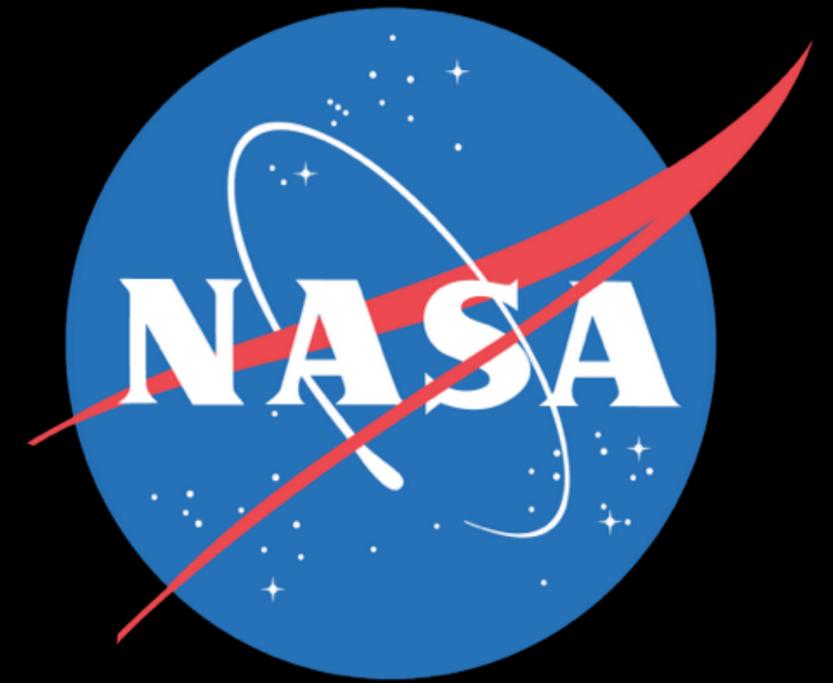
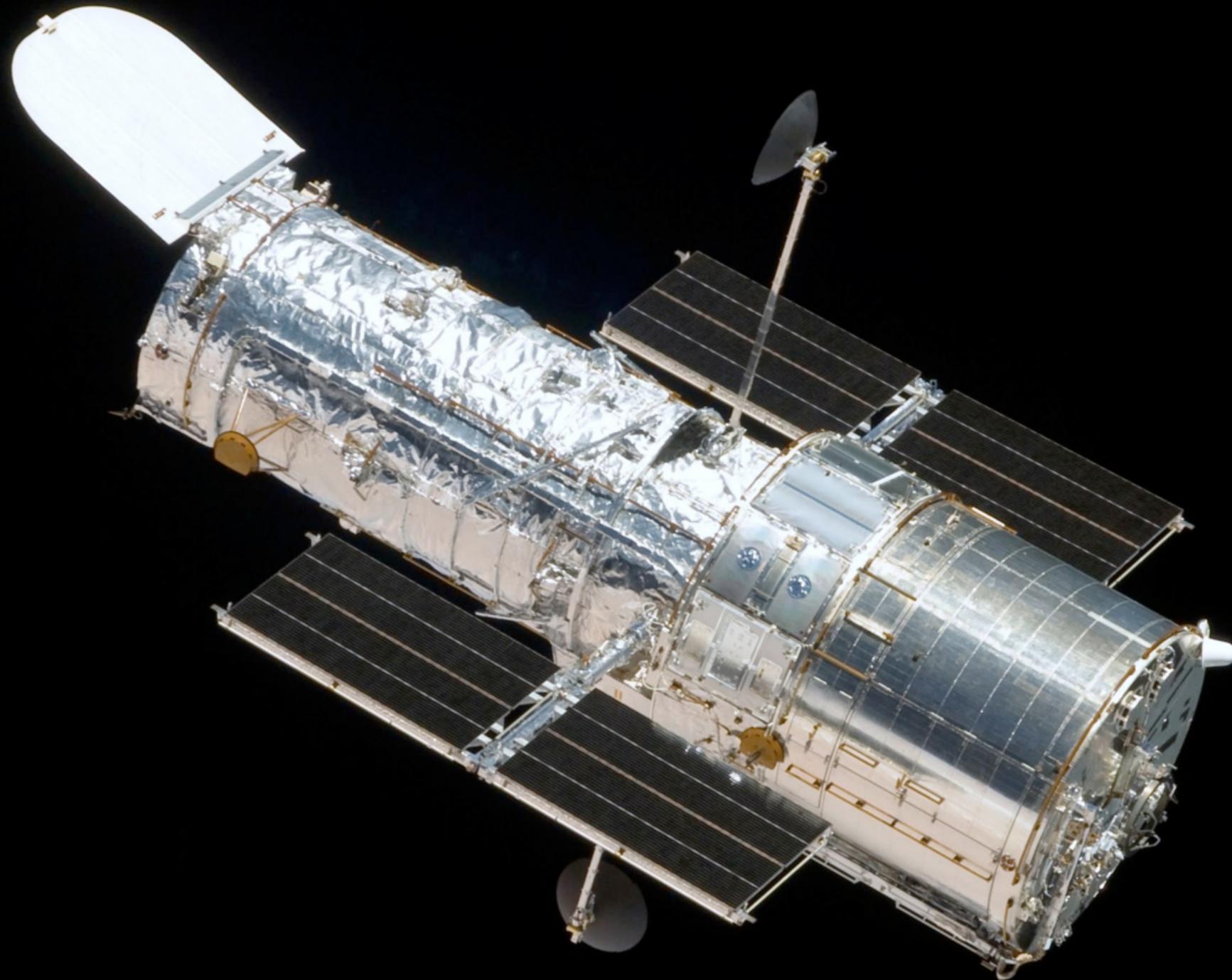
Characteristics of Vertical Scaling

Buy larger capacity as you need it

Need to buy 50%-100% larger each time to stay ahead

Plan around cost + effort for switchover to upgrade





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Pros of Vertical Scaling

Easier to maintain, just one server

Can directly increase speed, as well as scalability

Easier coding mentality, can trust consistency

Some OTS designed around this (Magento, Django)

Cons of Vertical Scaling

Eventually can hit max-capacity issues

Costs more to upgrade

Traditionally downtime needed to upgrade

Need to overbuy & no way to scale back

Potential development machine overhead

The Changes the Cloud Brought

... besides the constant rain showers

Both Types are Easier



Bluslo I by geir tønnessen, on Flickr

Horizontal



Stretch by Julie, on Flickr

Vertical



Flying cat! by Jorbasa Fotografie, on Flickr



Easy to Mix

Mixing it all Together by Zak Greant, on Flickr

In Summary

... aka What should I do with this knowledge?



Every Situation is Different

beer-flight.jpg by theNerdPatrol, on Flickr

Do what is right for You!



The people I meet in the mountains by Thank you for visiting my page, on Flickr

Questions?

For this presentation & more:
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