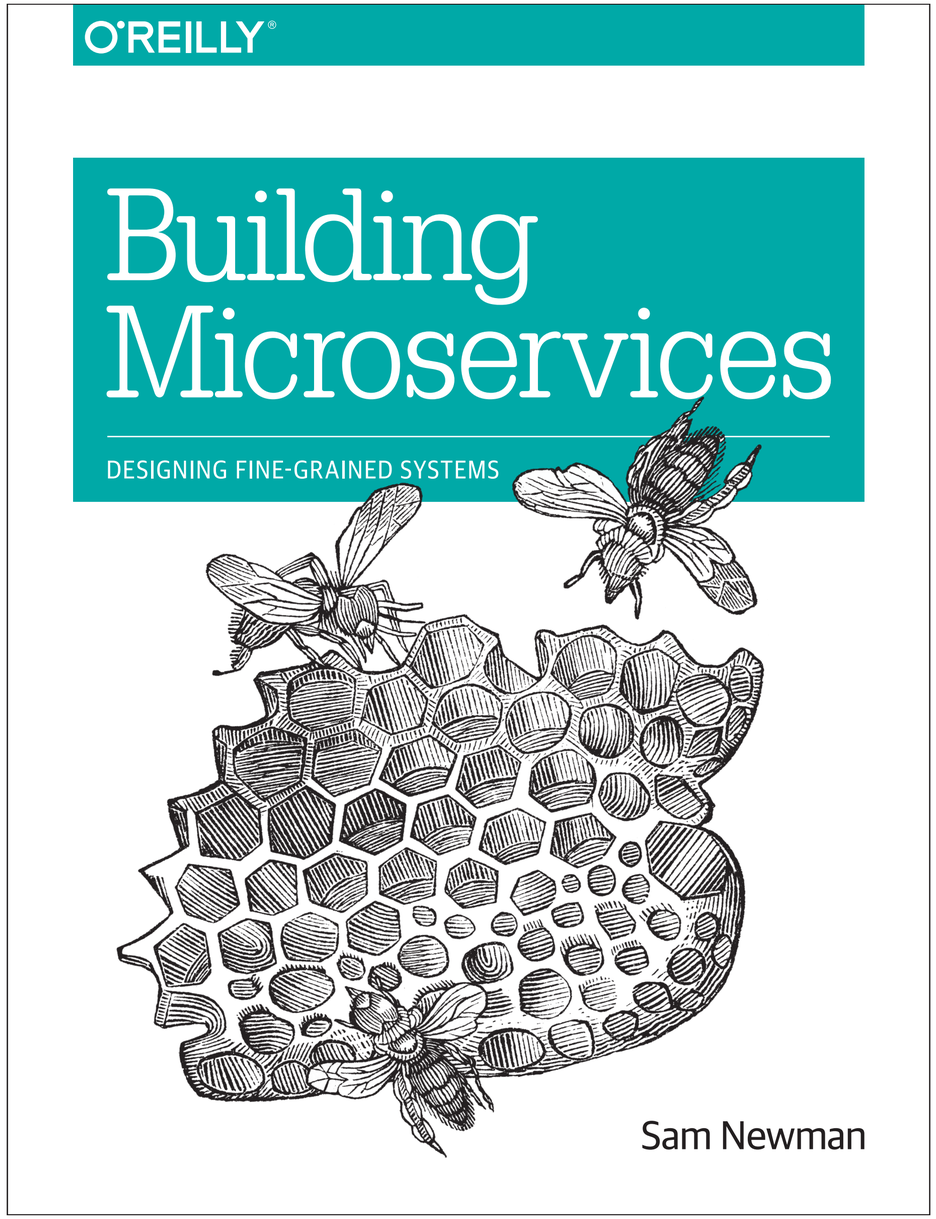
IT'S A TRAP!

SUNK COST FALLACY AND THE PRIVATE CLOUD

Sam Newman



Sam Newman
& Associates

NEW BOOK!

Monolith To Microservices.

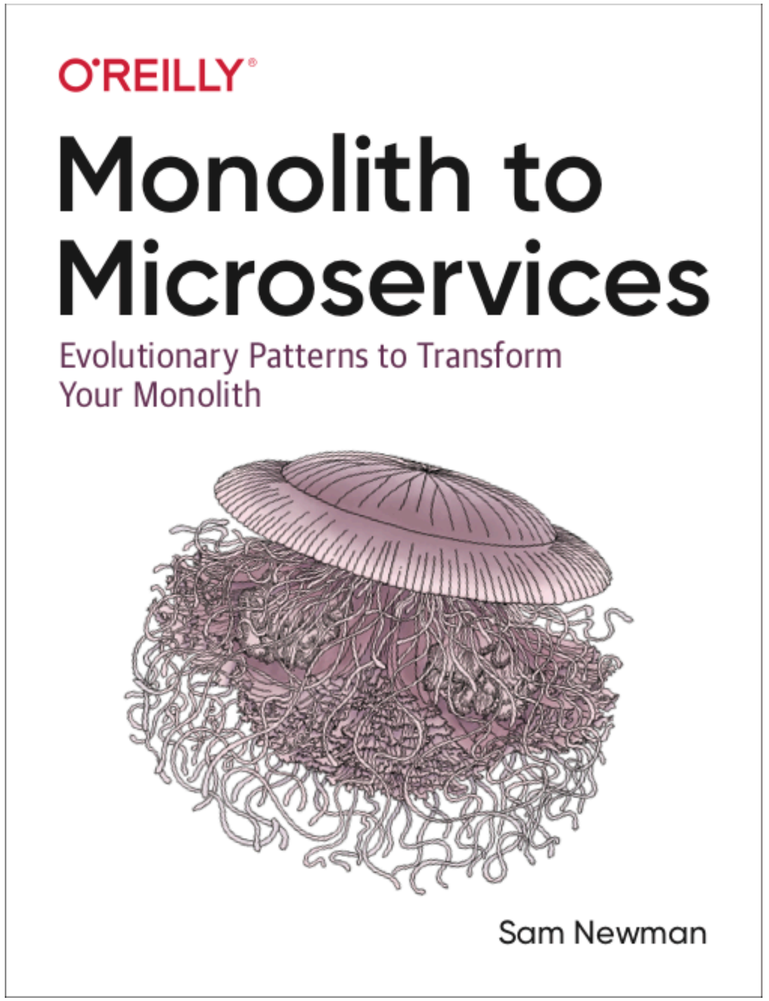
Monolith To Microservices is a forthcoming book on system decomposition from O'Reilly

How do you detangle a monolithic system and migrate it to a microservices architecture? How do you do it while maintaining business-as-usual? As a companion to Building Microservices, this new book details a multiple approaches for helping you transition from existing monolthic systems to microservice architectures. This book is ideal if you're looking to evolve your existing systems, rather than just rewriting everything from scratch.

Topics include:

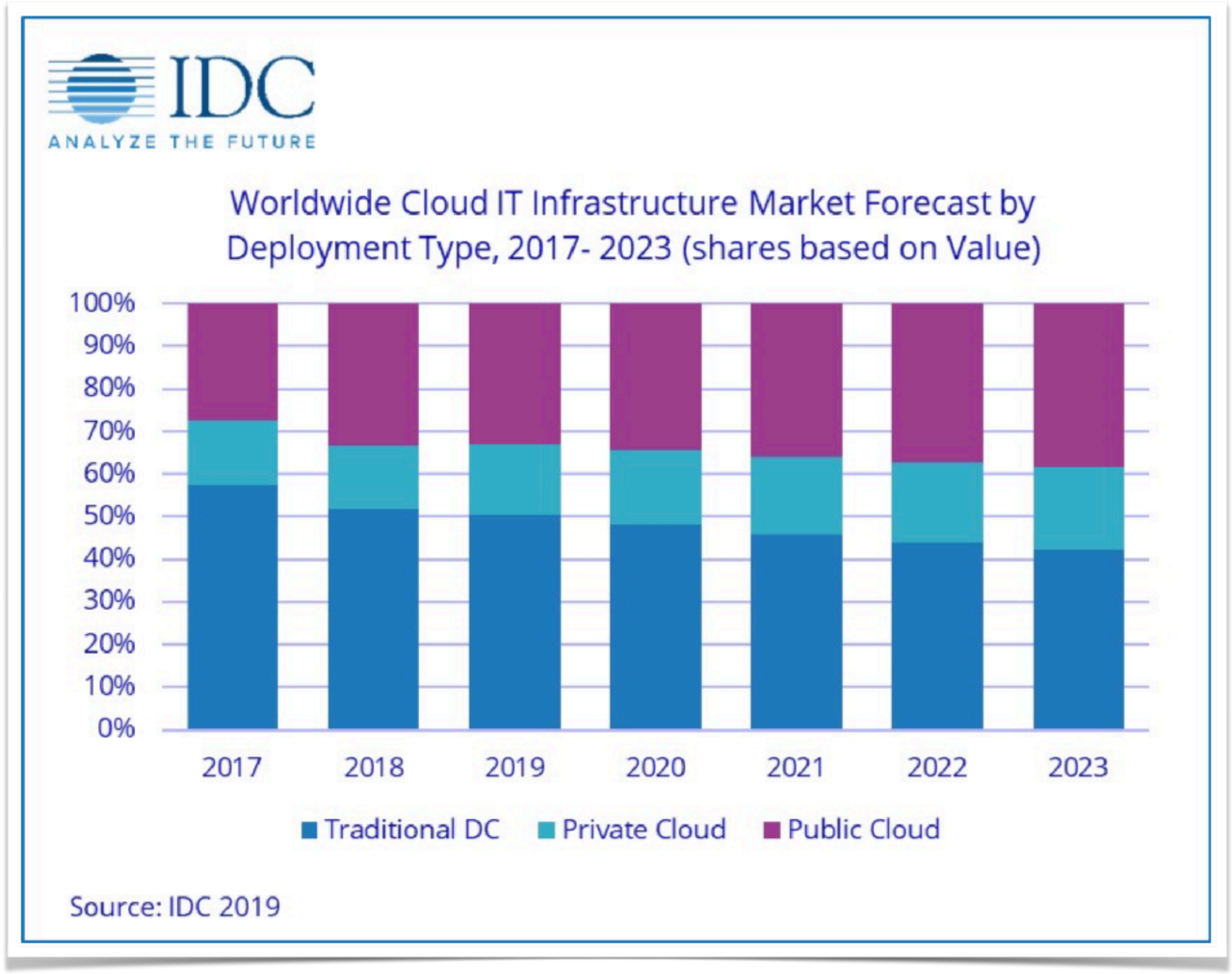
- Should you migrate to microservices, and if you should, how do you prioritise where to start
- How do you incrementally decompose an application
- Discusses multiple migration patterns and where they apply
- Delves into details of database decomposition, including the impact of breaking referential and transactional integrity, new failure modes, and more
- The growing pains you'll experience as your microservice architecture grows

Read The Early Access Version!



https://samnewman.io/books/monolith-to-microservices/

PUBLIC CLOUD IS COMING - SLOWER THAN YOU MIGHT THINK



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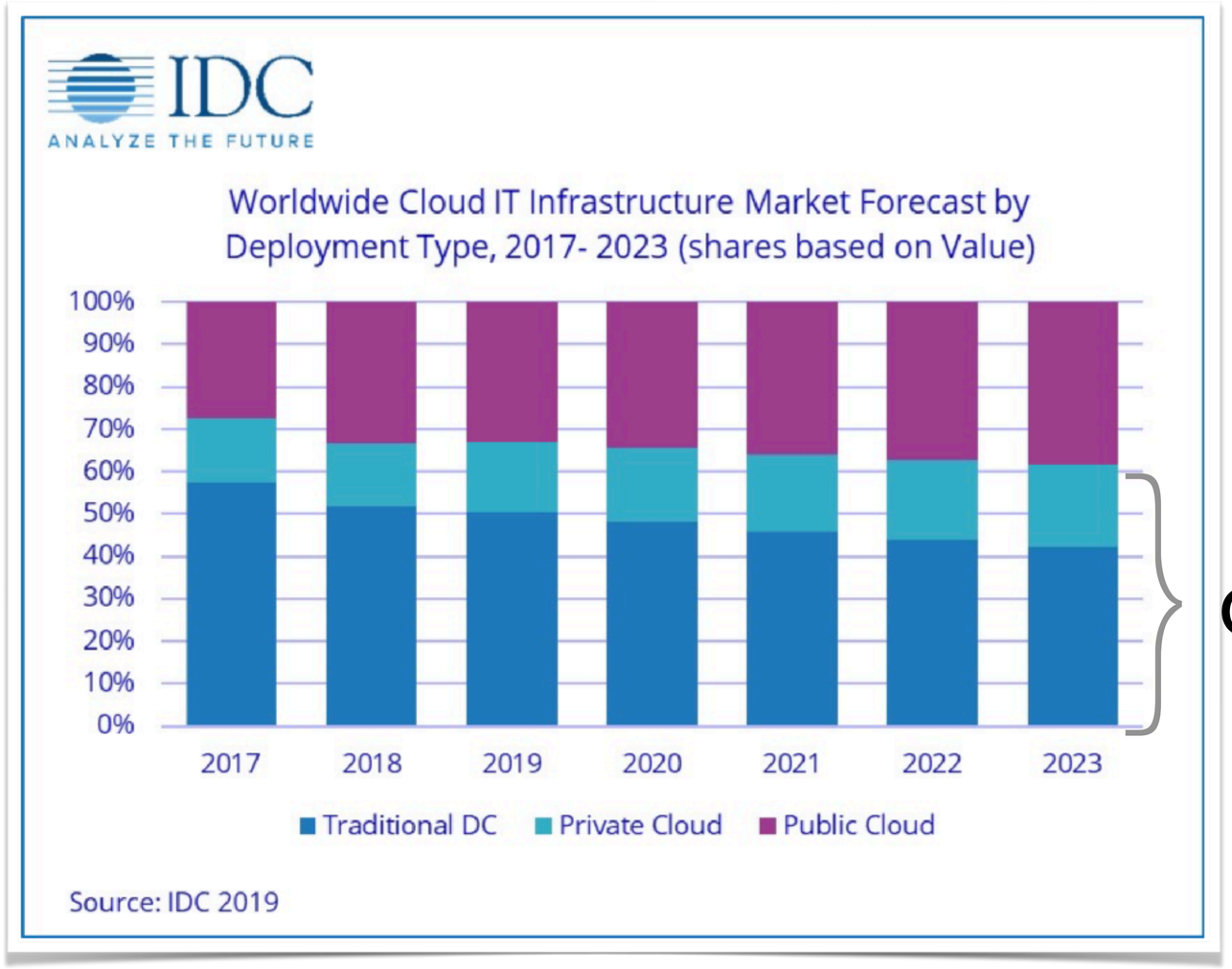

On-premise spend

https://www.idc.com/getdoc.jsp?containerId=prUS45293719

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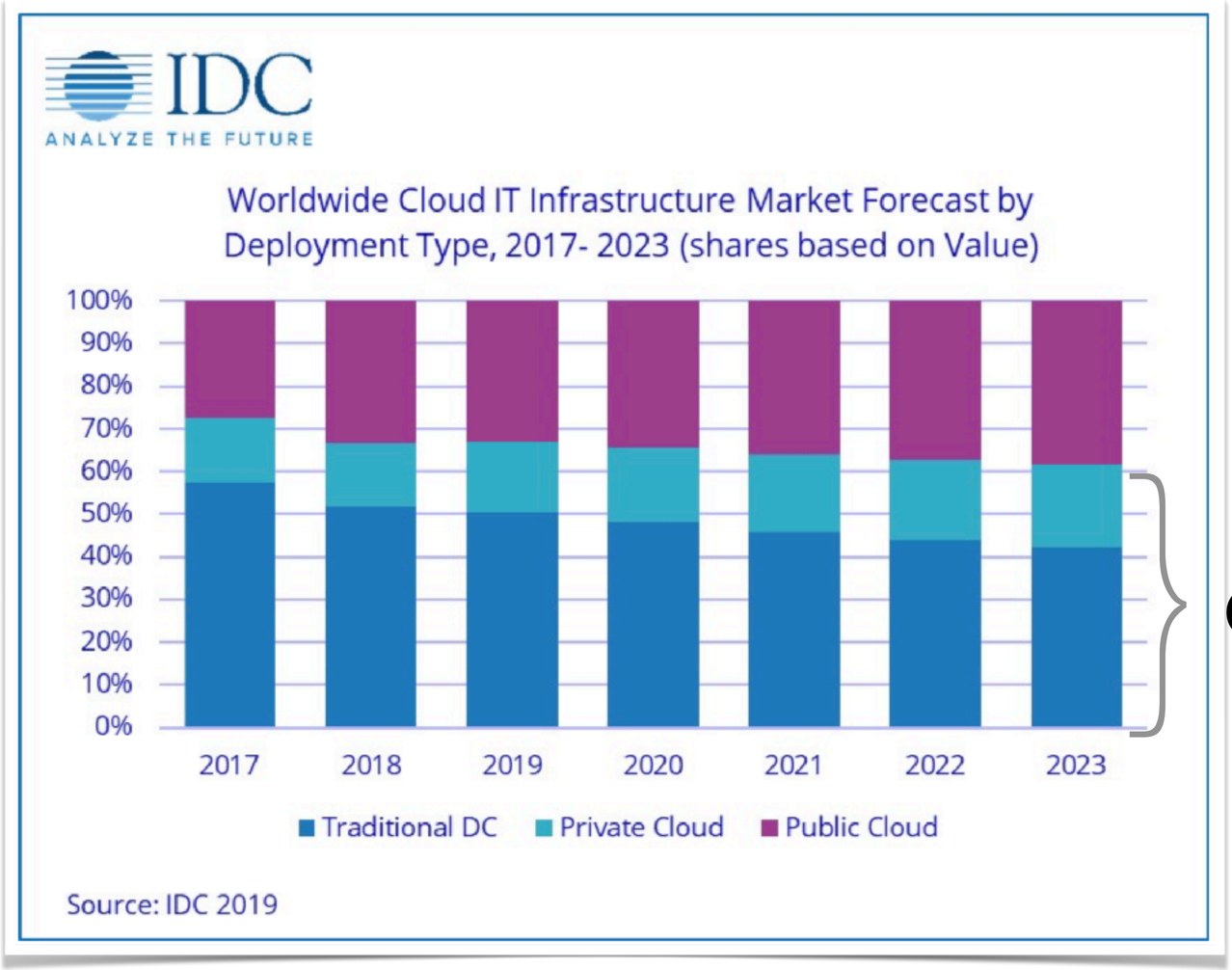

70% of all IT spend is on premise as of 2019

On-premise spend

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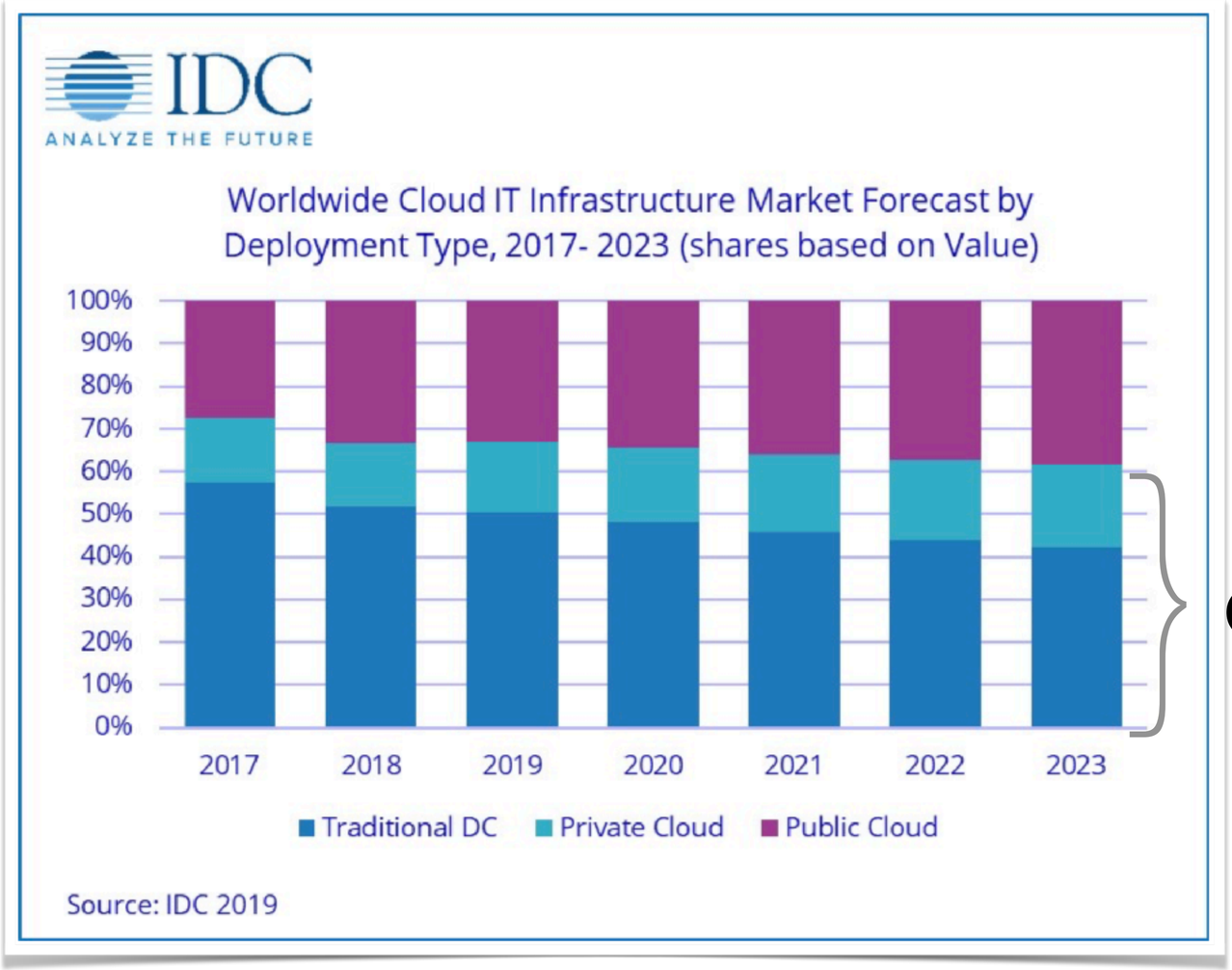

70% of all IT spend is on premise as of 2019

Little change since 2018, despite forecasts

On-premise spend

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The proportion of IT spend on public cloud is increasing…

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…albeit slower than we might expect…

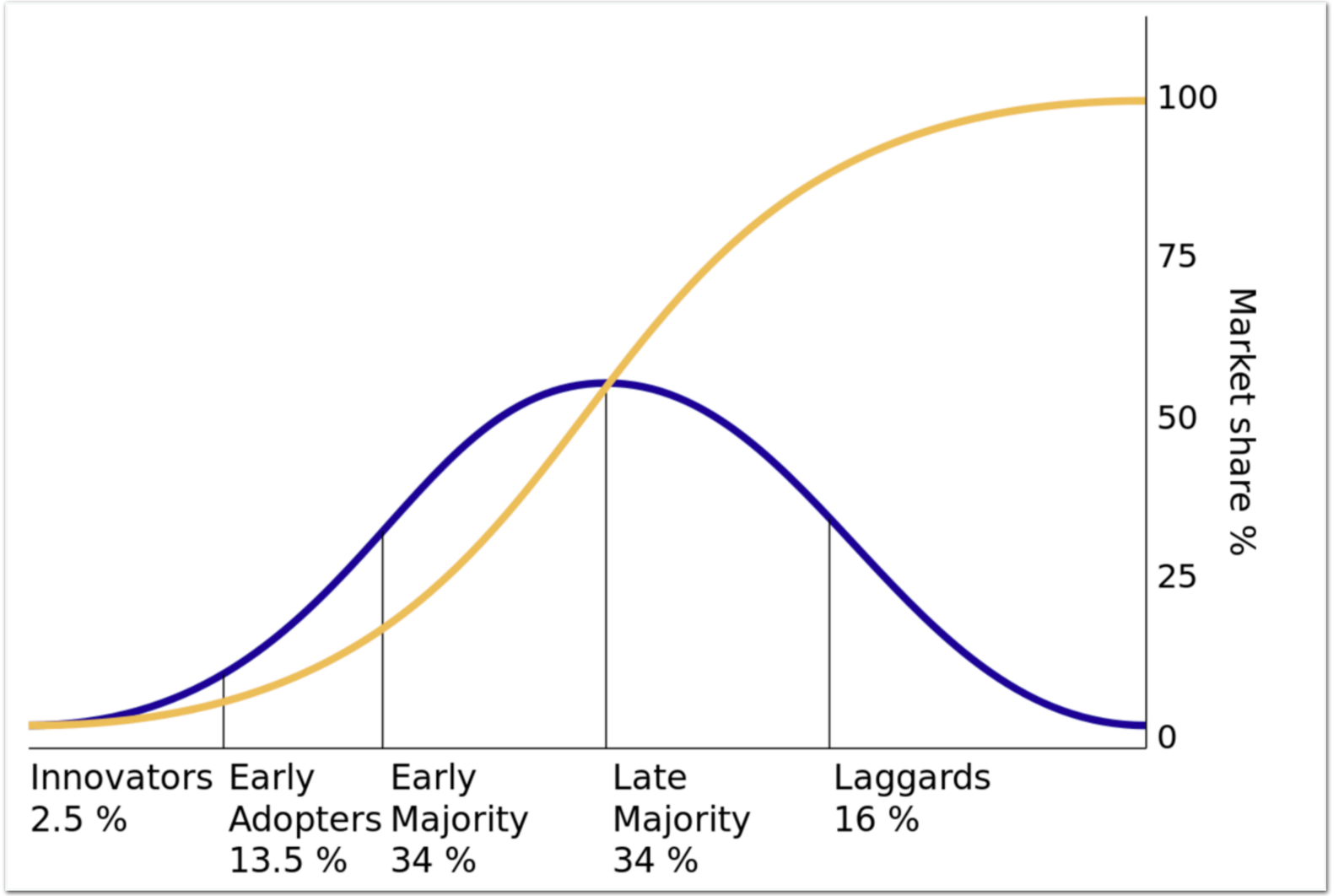
The proportion of IT spend on public cloud is increasing…

…albeit slower than we might expect…

…but the overall market is growing, so we're spending more on "private" infrastructure year on year

So what’s going on?

LAGGING ADOPTERS?



https://en.wikipedia.org/wiki/Diffusion_of_innovations

Or maybe we should blame…

kubernetes

Too many of us are indulging in a fantasy that we can have our own private cloud

ELITE PERFORMERS USE CLOUD!

https://cloud.google.com/devops/state-of-devops/

ELITE PERFORMERS USE CLOUD!

4

Cloud continues to be a differentiator for elite performers and drives high performance.

The use of cloud—as defined by NIST Special Publication 800-145—is predictive of software delivery performance and availability. The highest performing teams were 24 times more likely than low performers to execute on all five capabilities of cloud computing.

https://cloud.google.com/devops/state-of-devops/

ELITE PERFORMERS USE CLOUD!

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by
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https://cloud.google.com/devops/state-of-devops/

But Sam, they didn’t say you had to use public cloud!

“The higher performing teams were 24 times more likely than low performers to execute on all five capabilities of cloud computing

“The higher performing teams were 24 times more likely than low performers to execute on all five capabilities of cloud computing

How many of you are using a private cloud?

NIST DEFINITION OF THE CLOUD

On-demand self-service

ON-DEMAND SELF-SERVICE

"A consumer can unilaterally provision computing capabilities, such as server time and network storage, as needed automatically without requiring human interaction with each service's provider."

- The NIST Definition of Cloud Computing

https://www.nist.gov/sites/default/files/documents/itl/cloud/cloud-def-v15.pdf

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https://en.wikipedia.org/wiki/Facepalm#/media/File:Paris_Tuileries_Garden_Facepalm_statue.jpg

NIST DEFINITION OF THE CLOUD

On-demand self-service

NIST DEFINITION OF THE CLOUD

On-demand self-service

Broad network access

NIST DEFINITION OF THE CLOUD

On-demand self-service

Broad network access

Resource pooling

RESOURCE POOLING

"The provider's computing resources are pooled to serve multiple consumers using a multi-tenant model, with different physical and virtual resources dynamically assigned and reassigned according to consumer demand."

- The NIST Definition of Cloud Computing

https://www.nist.gov/sites/default/files/documents/itl/cloud/cloud-def-v15.pdf

KUBERNETES & MULTI-TENANCY?

“Kubernetes is not designed with multi-tenancy in mind”

- Alexis Richardson, CEO Weave, ex-chair of the CNCF Technical Committee

NIST DEFINITION OF THE CLOUD

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Rapid Elasticity

RAPID ELASTICITY

"Capabilities can be rapidly and elastically provisioned, in some cases automatically, to quickly scale out and rapidly released to quickly scale in. To the consumer, the capabilities available for provisioning often appear to be unlimited and can be purchased in any quantity at any time."

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NIST DEFINITION OF THE CLOUD

On-demand self-service

Broad network access

Resource pooling

Rapid Elasticity

NIST DEFINITION OF THE CLOUD

On-demand self-service

Broad network access

Resource pooling

Rapid Elasticity

Measured Service

So many “private clouds” fail at these things

WHY DO PRIVATE CLOUDS FAIL?

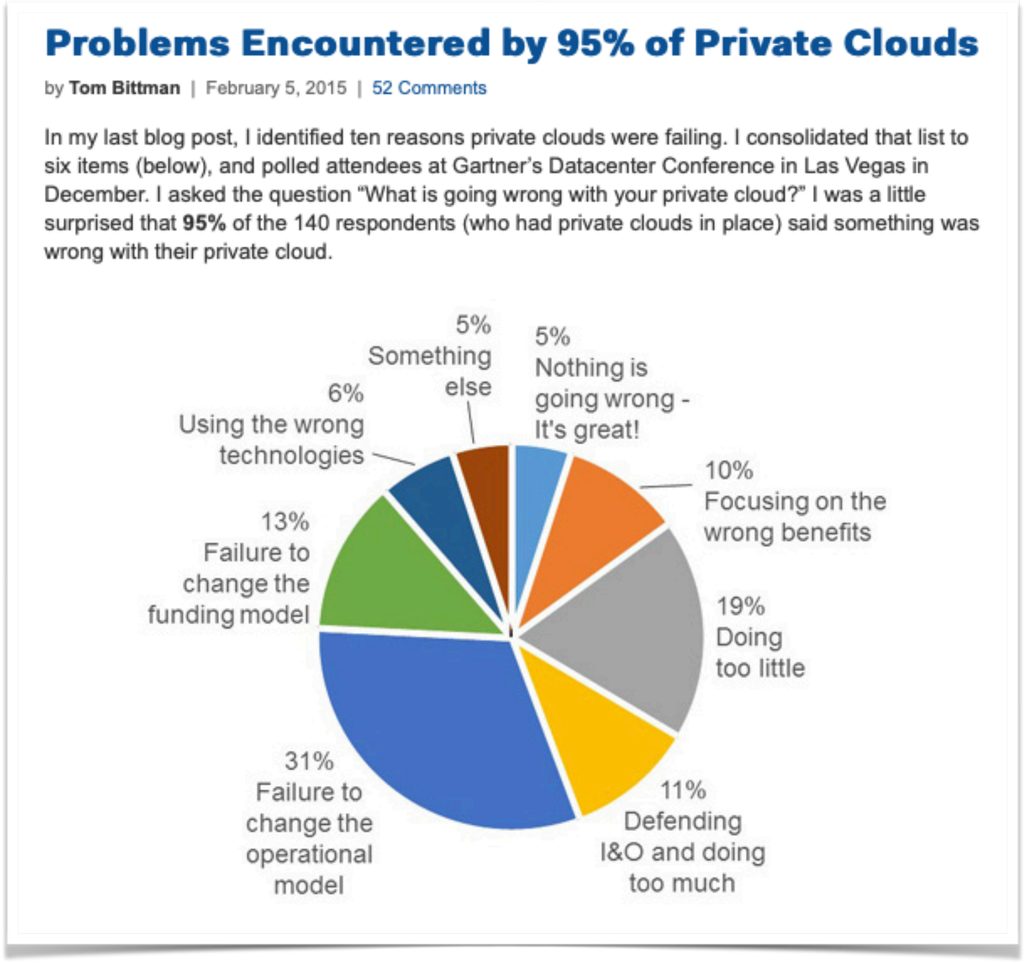
Problems Encountered by 95% of Private Clouds

by **Tom Bittman** | February 5, 2015 | 52 Comments

In my last blog post, I identified ten reasons private clouds were failing. I consolidated that list to six items (below), and polled attendees at Gartner's Datacenter Conference in Las Vegas in December. I asked the question "What is going wrong with your private cloud?" I was a little surprised that **95%** of the 140 respondents (who had private clouds in place) said something was wrong with their private cloud.

https://blogs.gartner.com/thomas_bittman/2015/02/05/why-are-95-of-private-clouds-failing/

WHY DO PRIVATE CLOUDS FAIL?



Focusing on the wrong thing - cost-savings, not "agility"

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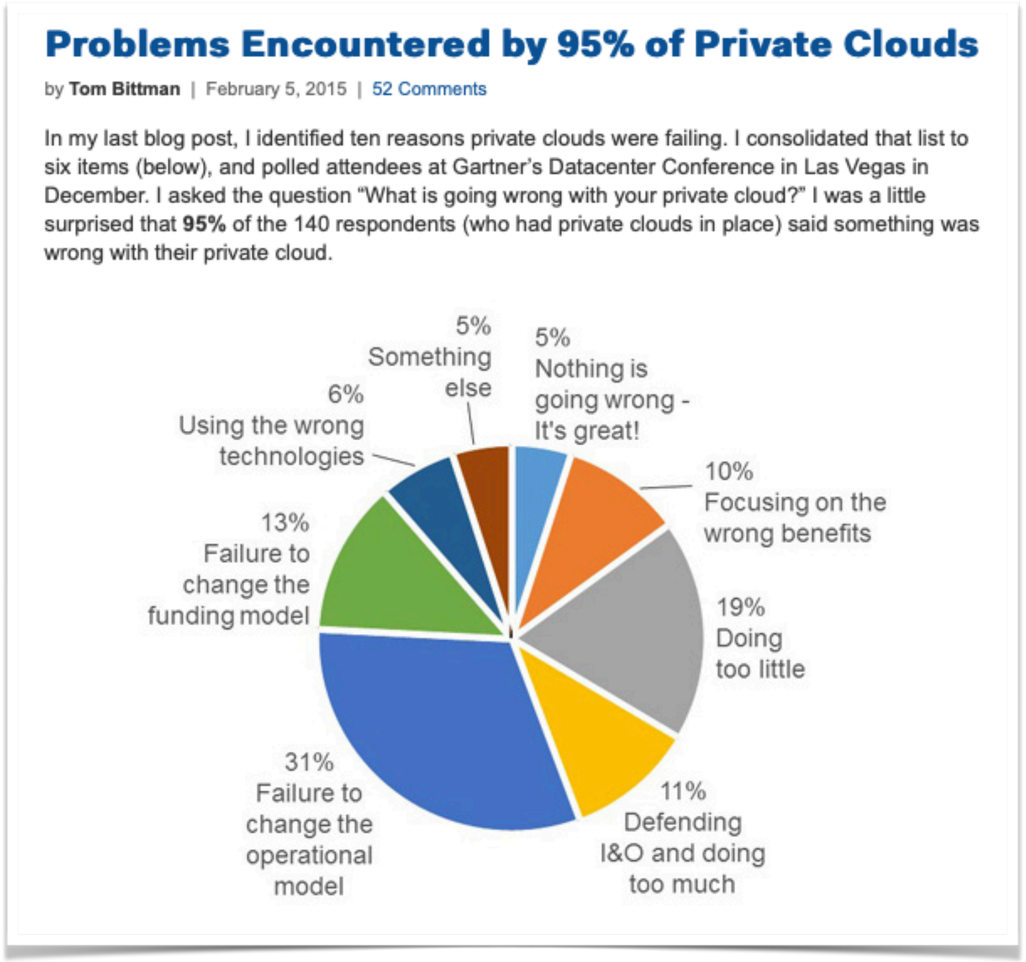
WHY DO PRIVATE CLOUDS FAIL?



Focusing on the wrong thing - cost-savings, not “agility”

Not changing the operational or funding models

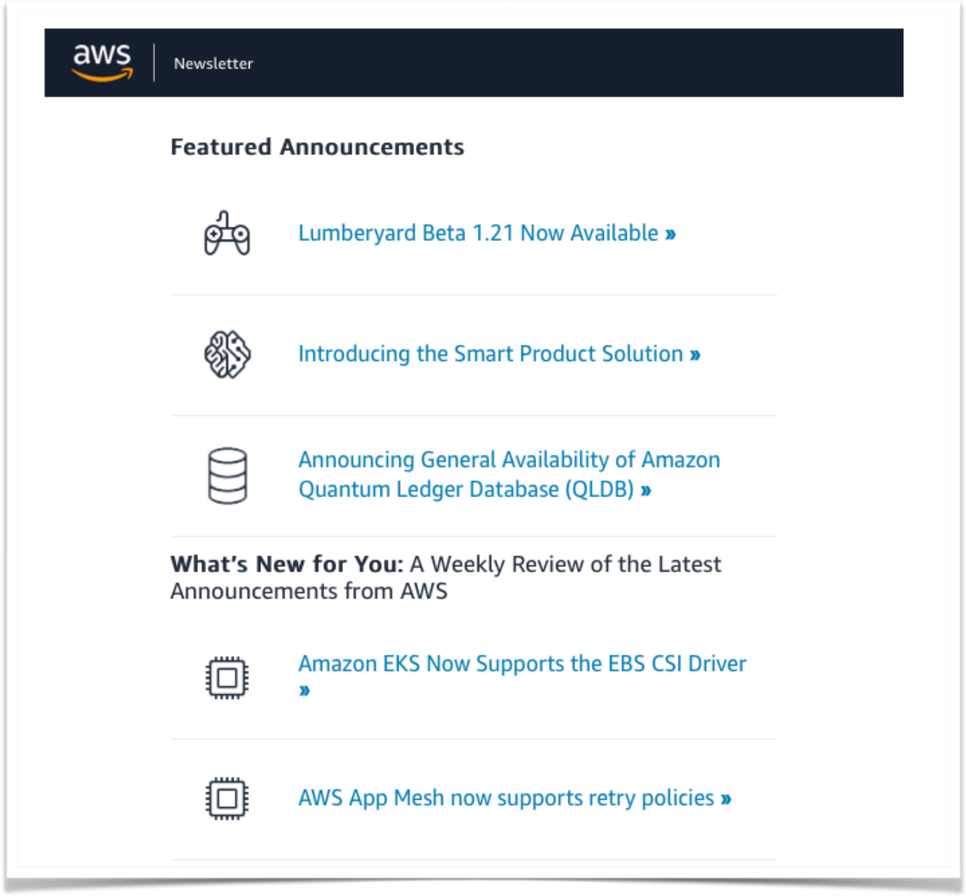
https://blogs.gartner.com/thomas_bittman/2015/02/05/why-are-95-of-private-clouds-failing/

Public cloud forces us into new ways of doing things

Private cloud lets us stick to old working practices

Public cloud used well, delivers on these promises

More features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Introducing the Smart Product Solution »
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AWS App Mesh now supports retry policies »


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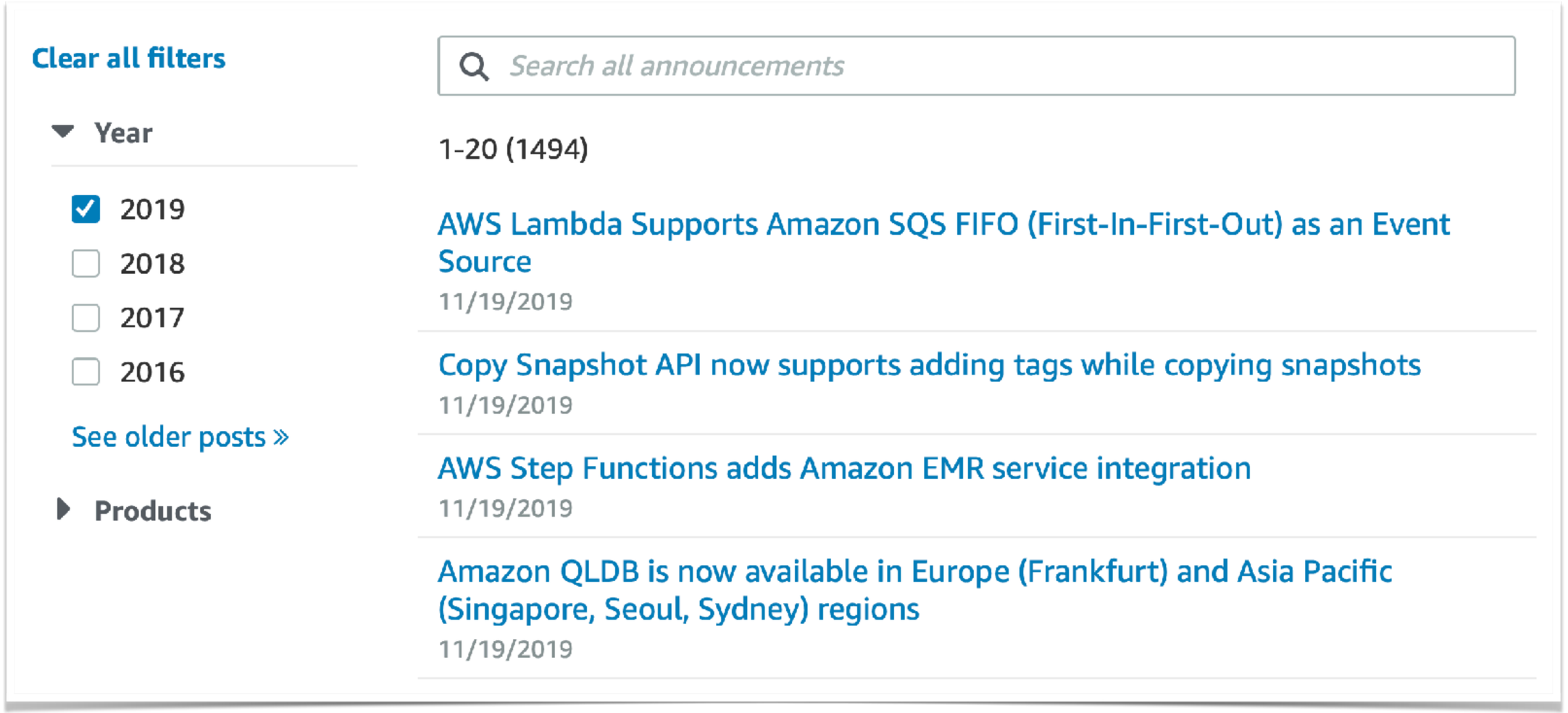
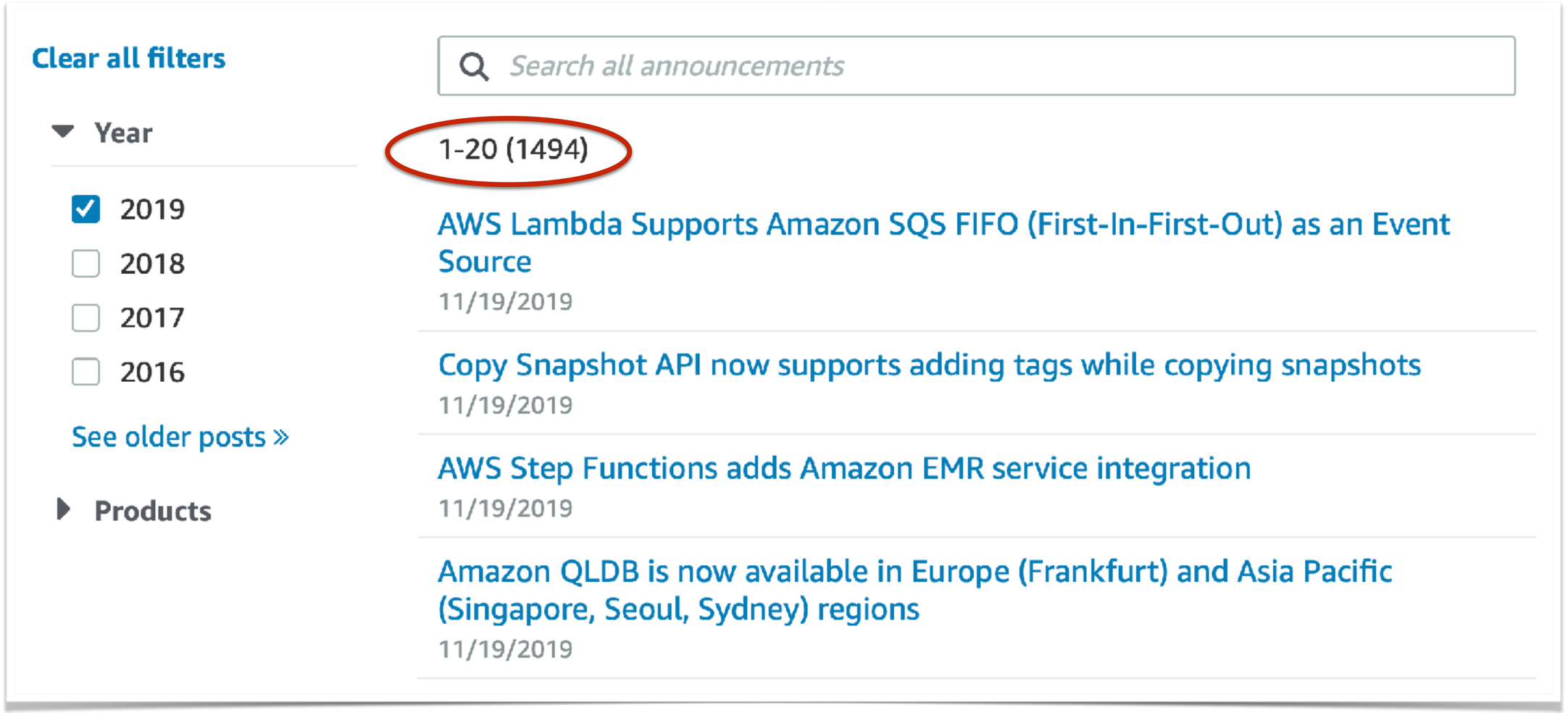
What's New for Yo
Announcements fron
Amazon
»
AWS App
Now Add Additional Metadata to Amazon VPC
Flow Logs »
Manage your Am
Service Quotas »
AWS Storage Gat
Protect on Linux,
AWS Storage Gat
CloudWatch logg
Gateway »
Amazon Pinpoint
Push
d Balar
now su
using
ental M
col »
ental M
4K/UH
AWS RoboMaker now supports connectivity to
a simulation job »
Updated Training Courses Help APN Partners
Gain New Customer Opportunities »
New Quick Start deploys clickstream analytics
on the AWS Cloud »
AWS Marketplace Makes It Easier to Deploy
Lambda Functions with AMIs »
AISPL Now Accepts Netbanking Payments »
Amazon Athena is now available in Asia Pacific
(Hong Kong) region »
Amazon QuickSight Launches Leve
Calculations, Larger SPICE Data Set
»
Amazon SNS Now Supports the Ne
push-type Header Field in Apple Pu
Notification Service »
WorkMail Message Flow SDK »
Amazon AppStream 2.0 enables AV
and Access Management Role supp
Image Builders and Fleets »
AWS CodePipeline is Now Available
(Stockholm) Region »
NXP i.MX-RT1060, i.MX-RT1050, ar
K64 are Qualified for Amazon Freel
AWS Transfer for SFTP now suppor
directories for Amazon S3 »
AWS Elemental MediaStore Now Supports
Stale Manifest Deletion »
AWS Elemental MediaTailor Server-Side Ad
Insertion Now Supports Live Pre-roll »
AWS Service Catalog Announces Budget
Visibility »
Amazon GuardDuty Now Available in AWS
Middle East (Bahrain) Region »
Amazon SageMaker Now Supports More
Refined Access Control using Amazon
SageMaker-specific Condition Keys »
Amazon FreeRTOS Now Available in the
Americas (São Paulo), Americas (Montreal),
Americas (Northern California), Europe (Paris),
and Europe (Stockholm) Regions »
Announcing AWS PrivateLink support for
Amazon Rekognition »
AWS IoT Core and AWS IoT Device
Management Now Available in the AWS Asia
Pacific (Hong Kong) Region »

That was just one week’s worth of new feature releases



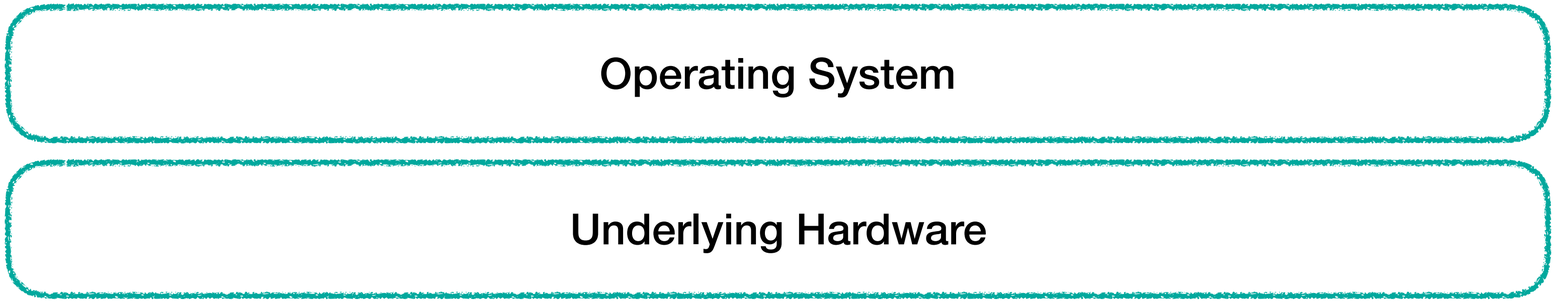
https://aws.amazon.com/new/

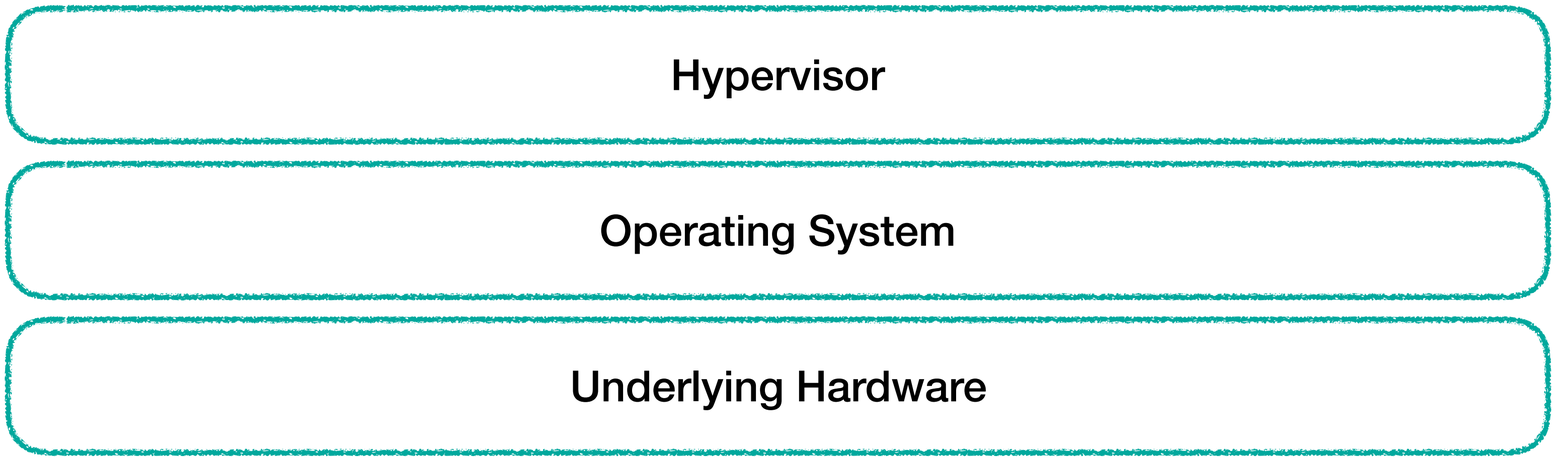


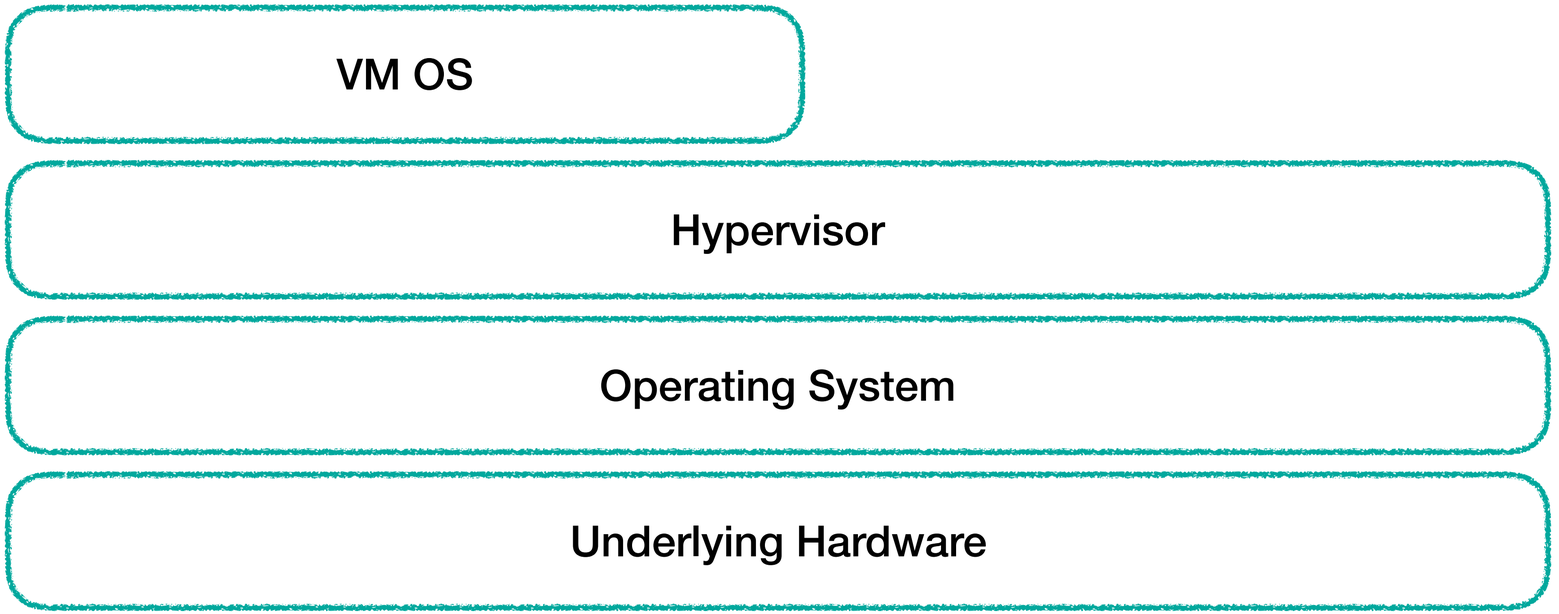
https://aws.amazon.com/new/

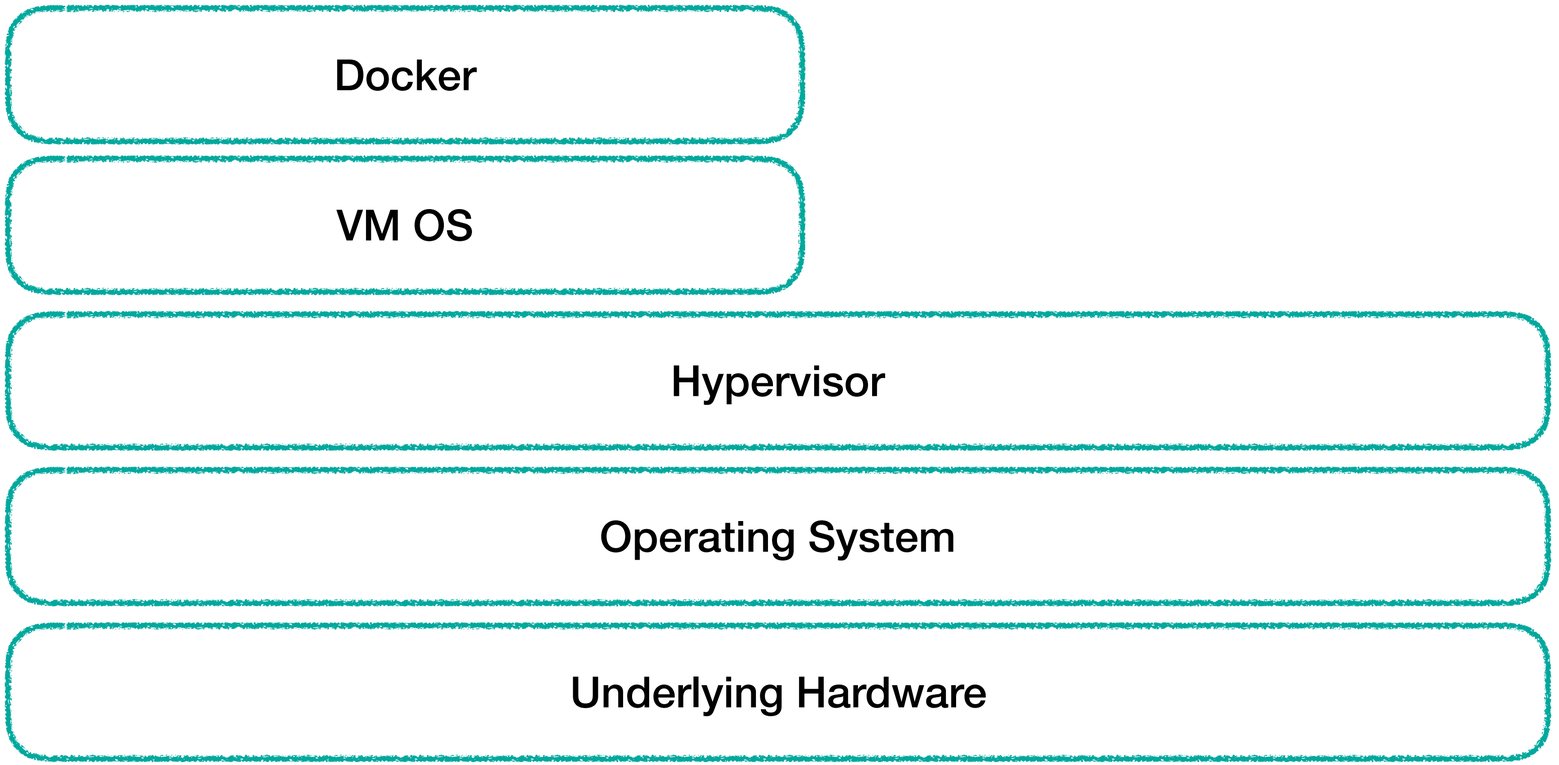
Better security

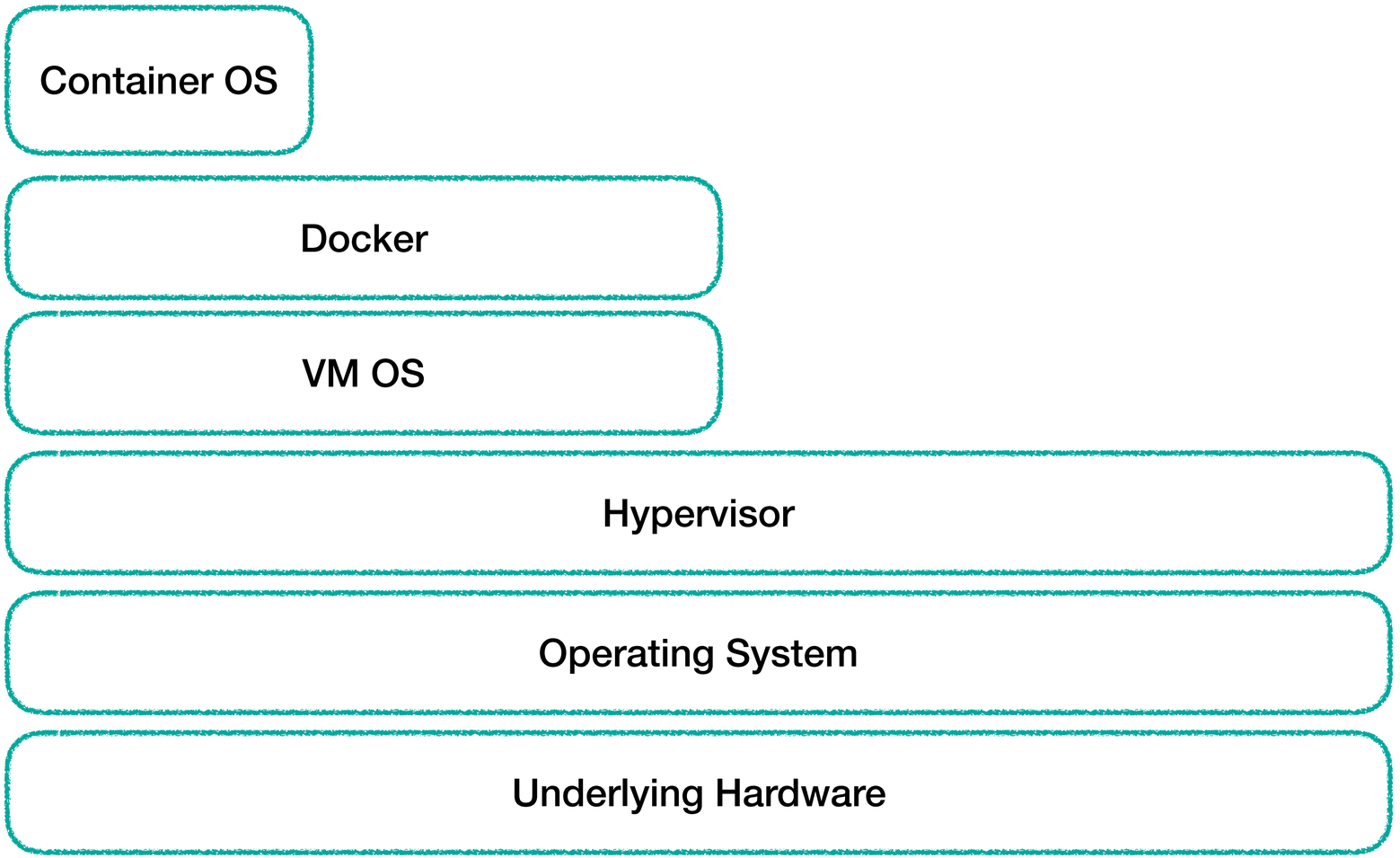
Underlying Hardware

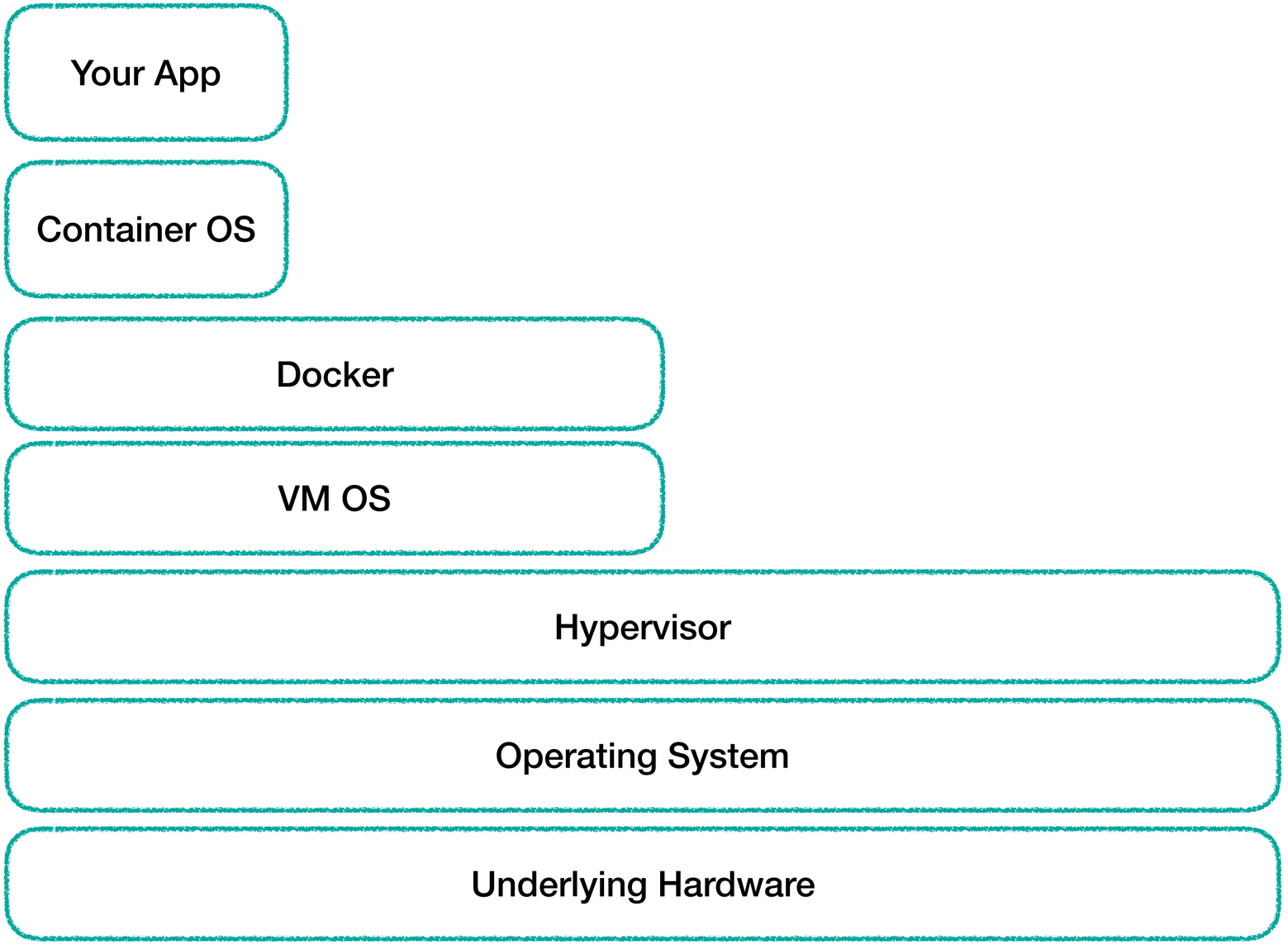

Operating System
Underlying Hardware

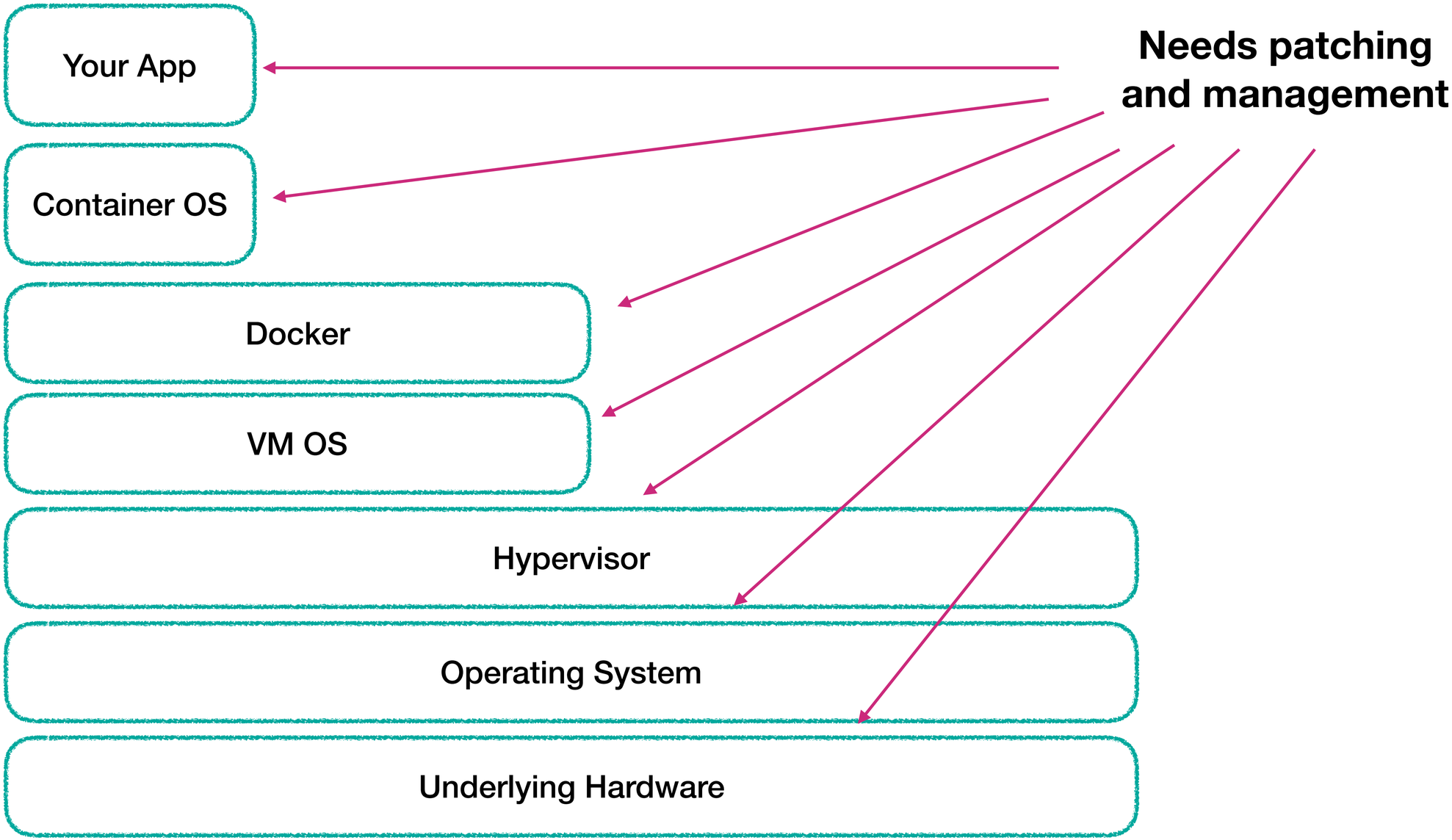

Hypervisor
Operating System
Underlying Hardware


VM OS
Hypervisor
Operating System
Underlying Hardware

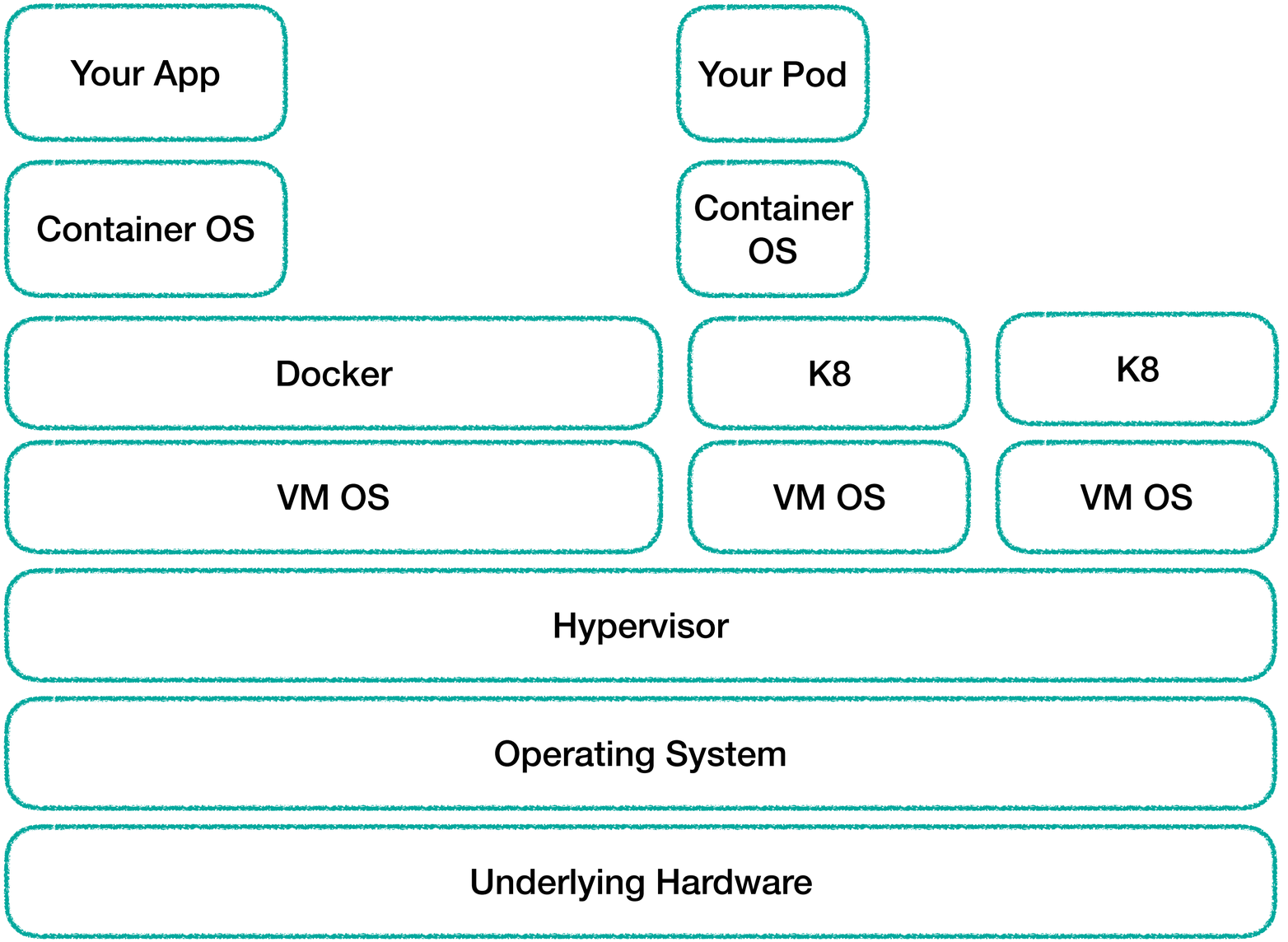

Docker
VM OS
Hypervisor
Operating System
Underlying Hardware


Container OS
Docker
VM OS
Hypervisor
Operating System
Underlying Hardware


Your App
Container OS
Docker
VM OS
Hypervisor
Operating System
Underlying Hardware


Your App
Container OS
Docker
VM OS
Hypervisor
Operating System
Underlying Hardware
Needs patching
and management

BETTER ON THE CLOUD?



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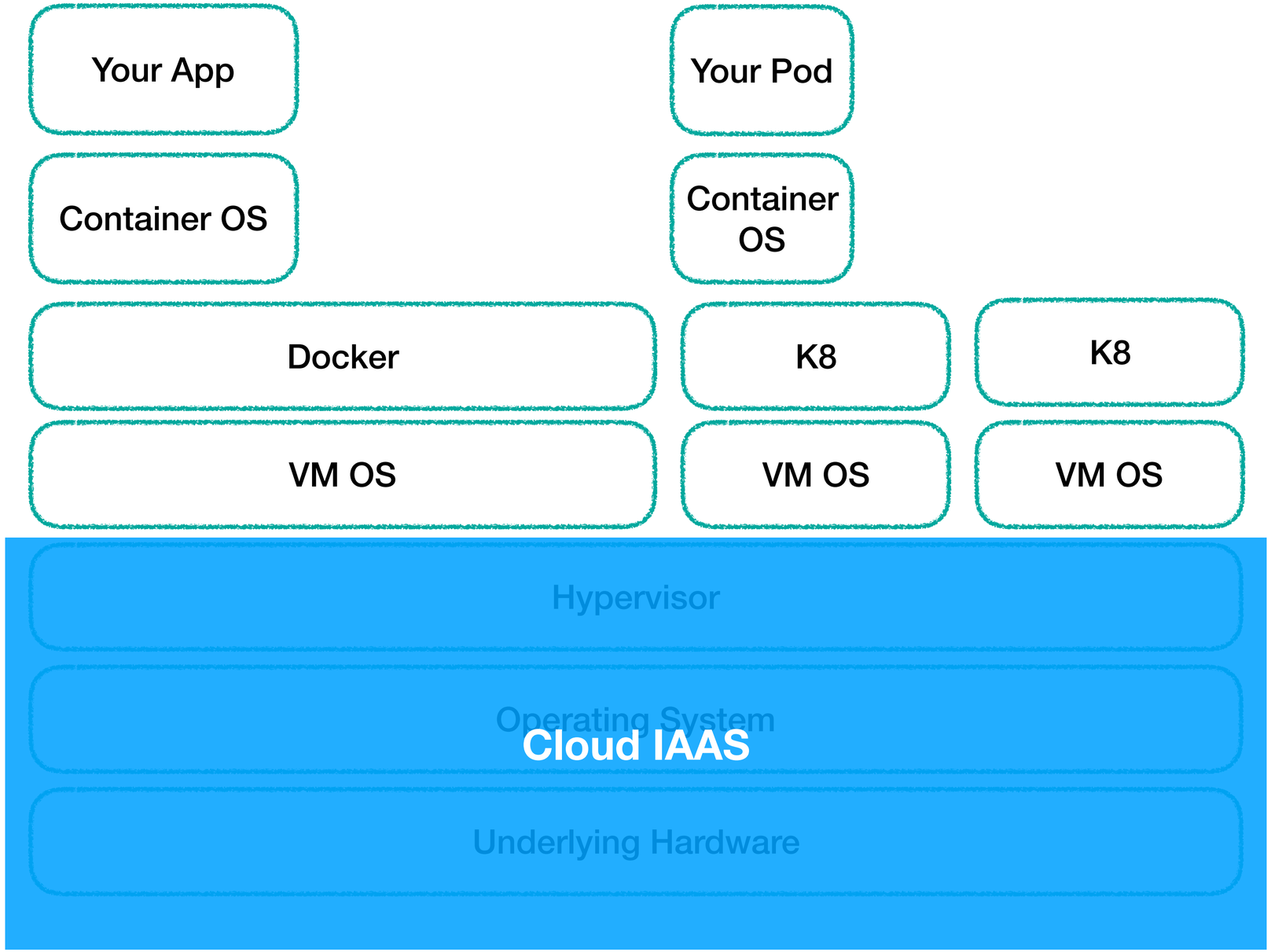
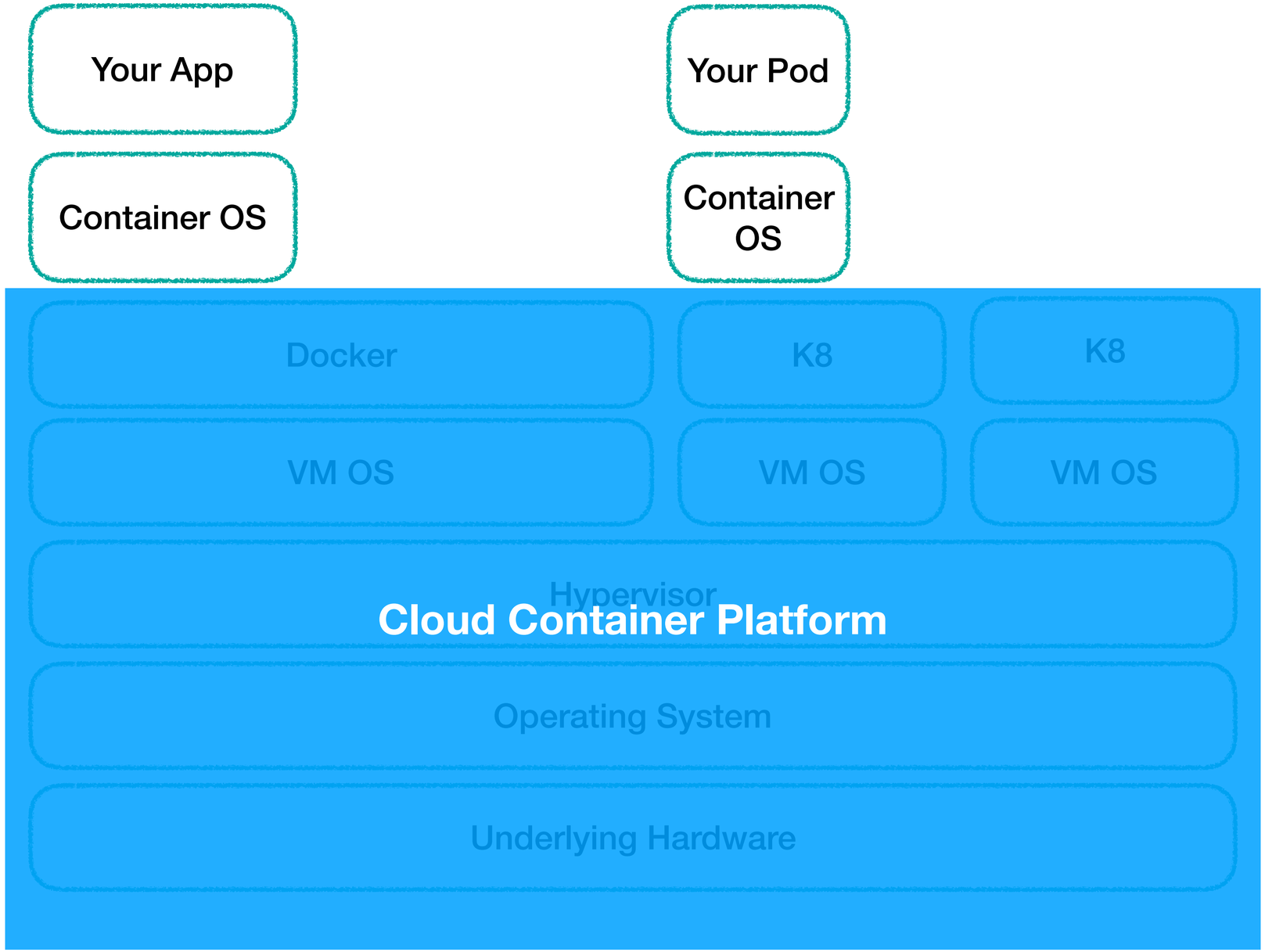
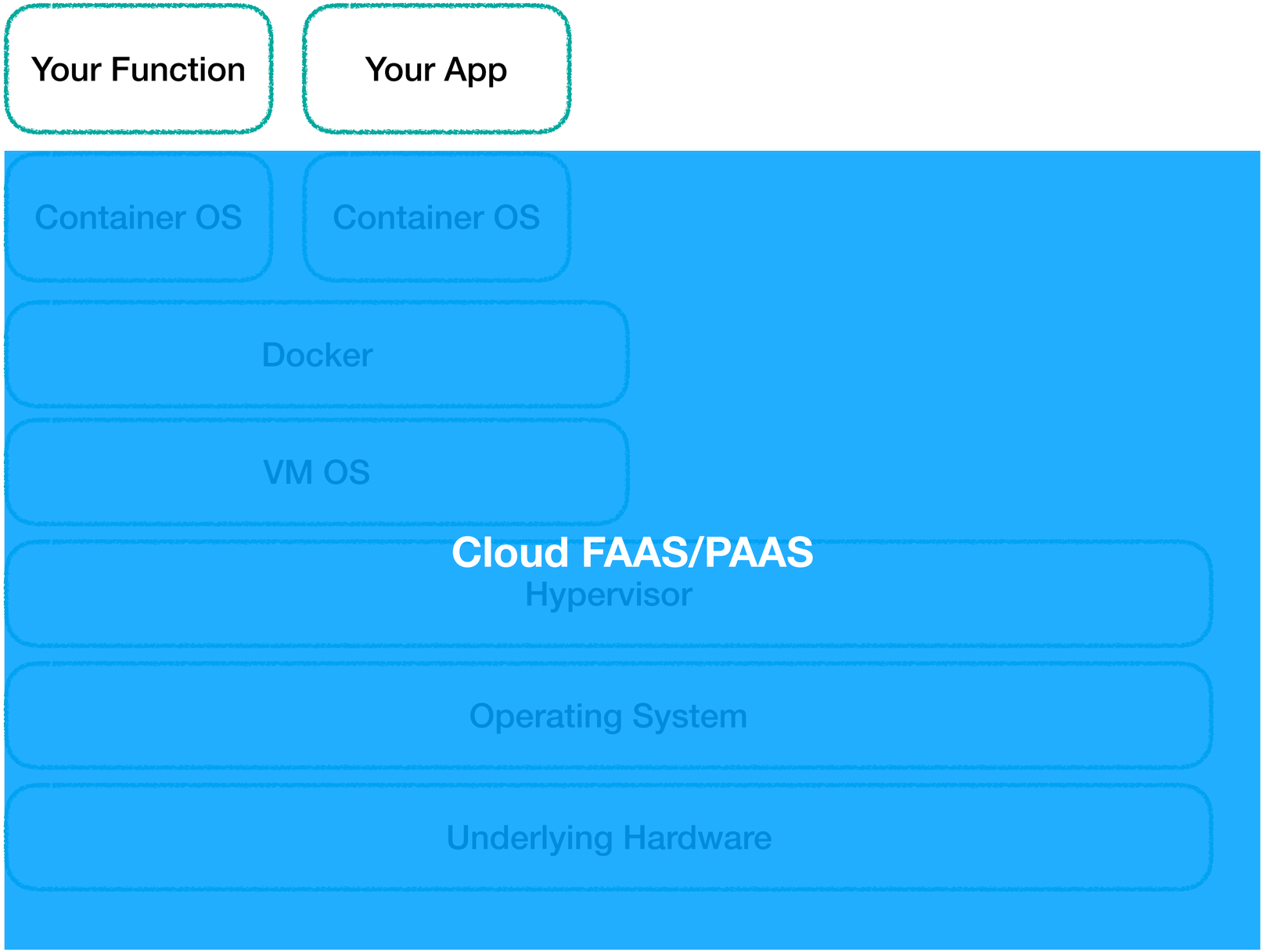
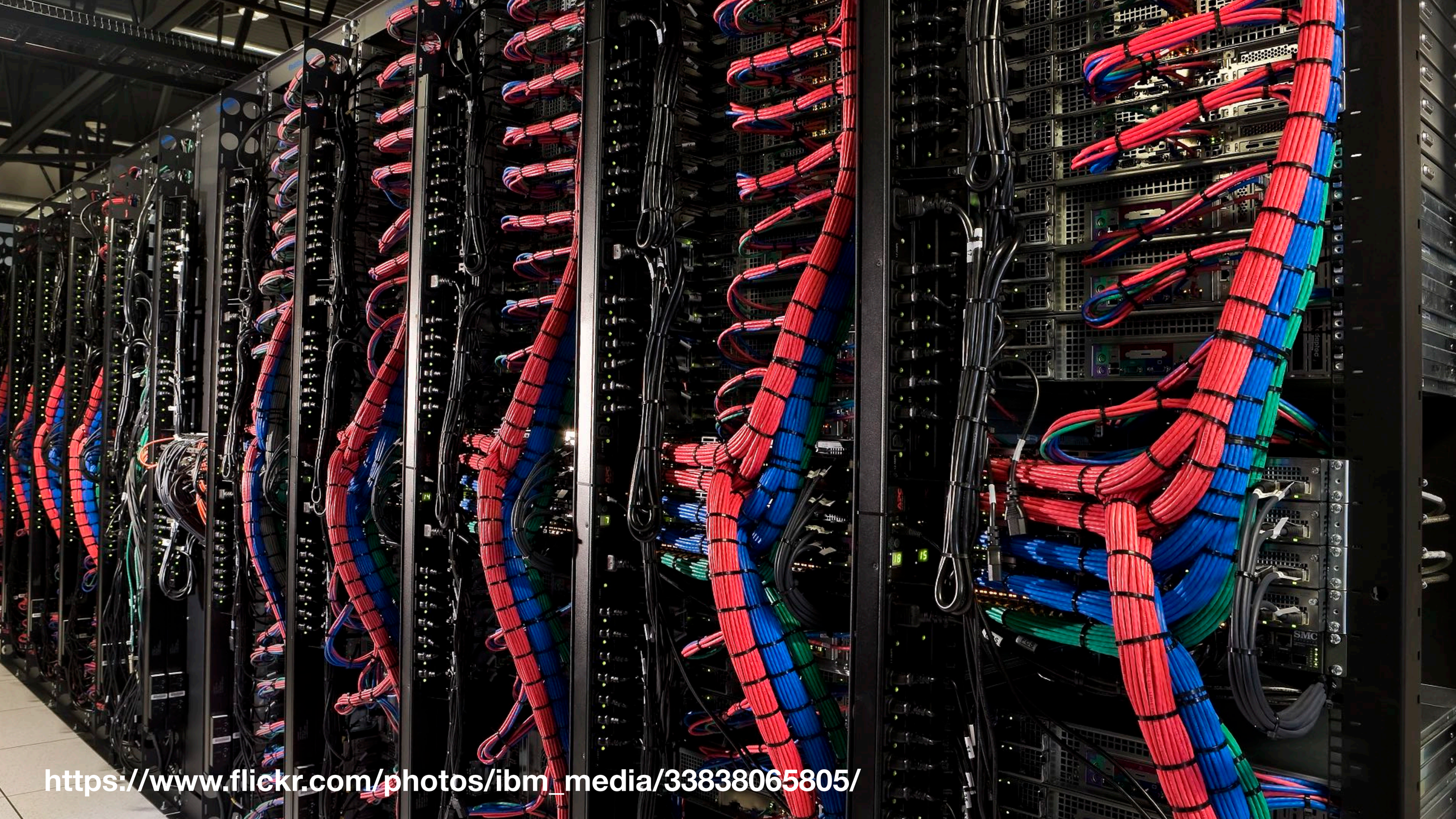


BETTER ON THE CLOUD?



BETTER WITH FAAS?





https://www.flickr.com/photos/ibm_media/33838065805/

So why doesn’t everyone use a public cloud vendor?

We already have computers!

I don’t want to be locked in!

FEARS OF A LOCK IN

They'll learn all about my business then take my business away from me!

FEARS OF A LOCK IN

They'll learn all about my business then take my business away from me!

They might turn the service off

FEARS OF A LOCK IN

They'll learn all about my business then take my business away from me!

They might turn the service off

The prices might go up!

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They'll learn all about my business then take my business away from me!

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The prices might go up!

PRICES ACTUALLY SEEM FLAT

ALT + E S V

IaaS Pricing Patterns and Trends 2019

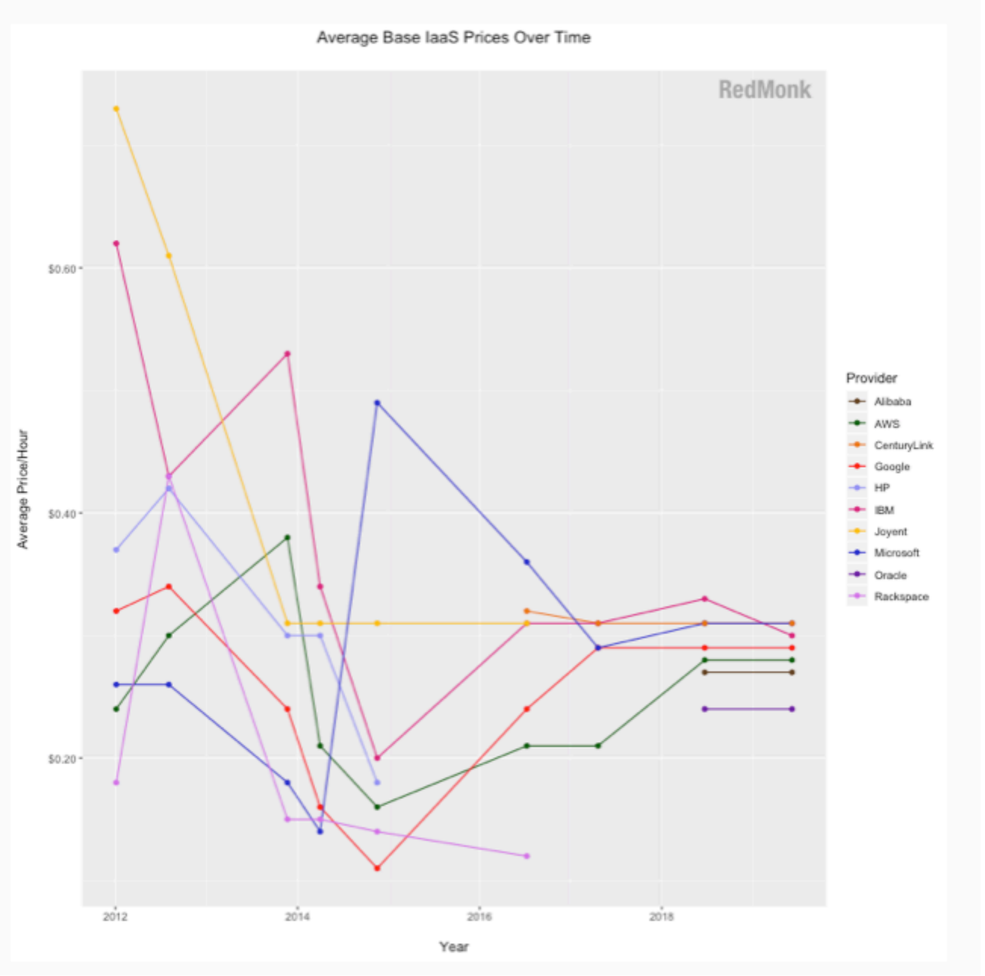
By Rachel Stephens | @rstephensme | August 1, 2019

Since our last update of infrastructure as a service pricing trends, adoption of cloud compute continues to grow. A growing number of enterprises across verticals are pursing cloud strategies and taking advantage of cloud services.

However, it can be difficult to properly assess how competitive cloud providers are with one another because their non-standardized packaging makes it effectively impossible to compare services on an equal footing.

To this end we offer the following deconstruction of IaaS cloud pricing models. This analysis is intended not as a literal expression of cost per service; this is not an attempt to estimate the actual component costs for compute, disk, and memory per provider. Such numbers would be speculative and unreliable, as they would rely on non-public information. Instead, this analysis compares base, retail hourly instance costs against the individual service offerings.

What this attempts to highlight is how providers may be differentiating from each other via their pricing models. In other words, it's an attempt to answer the question **for a given hourly cost, who's offering the most compute, disk or memory?**



https://redmonk.com/rstephens/2019/08/01/iaas-pricing-patterns-and-trends-2019/

It’s not lock-in that’s the problem, it’s the potential impact *if* you have to change vendors

Think less about lock-in, more about *potential* migration cost

Use a cloud product today? Benefit now, maybe pay later

Use a cloud product today? Benefit now, maybe pay later

Don’t use a cloud product today? Avoid potential migration cost later, but pay the cost now

Don't get locked up into avoiding lock-in

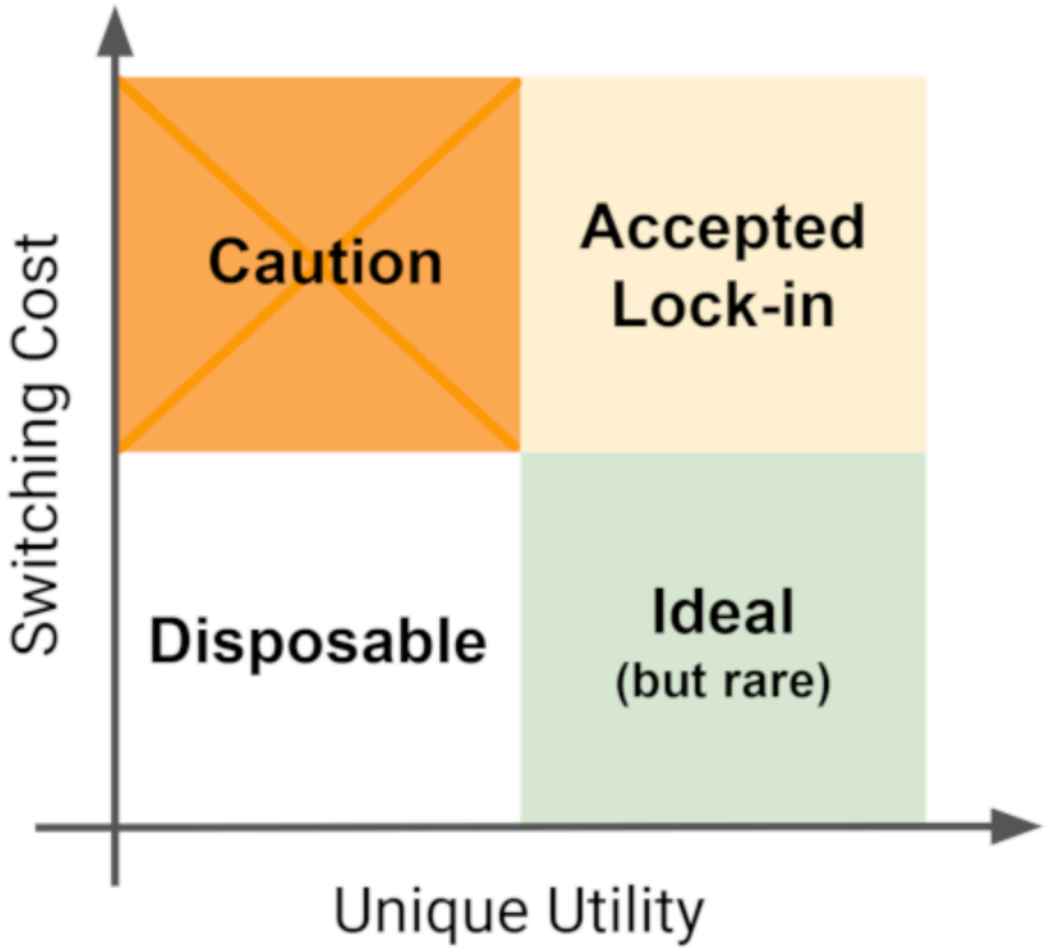
A significant share of architectural energy is spent on reducing or avoiding lock-in. That's a rather noble objective: architecture is meant to give us options and lock-in does the opposite. However, lock-in isn't a simple true-or-false matter: avoiding being locked into one aspect often locks you into another. Also, popular notions, such as open source automagically eliminating lock-in, turn out to be not entirely true. Time to have a closer look at lock-in, so you don't get locked up into avoiding it!

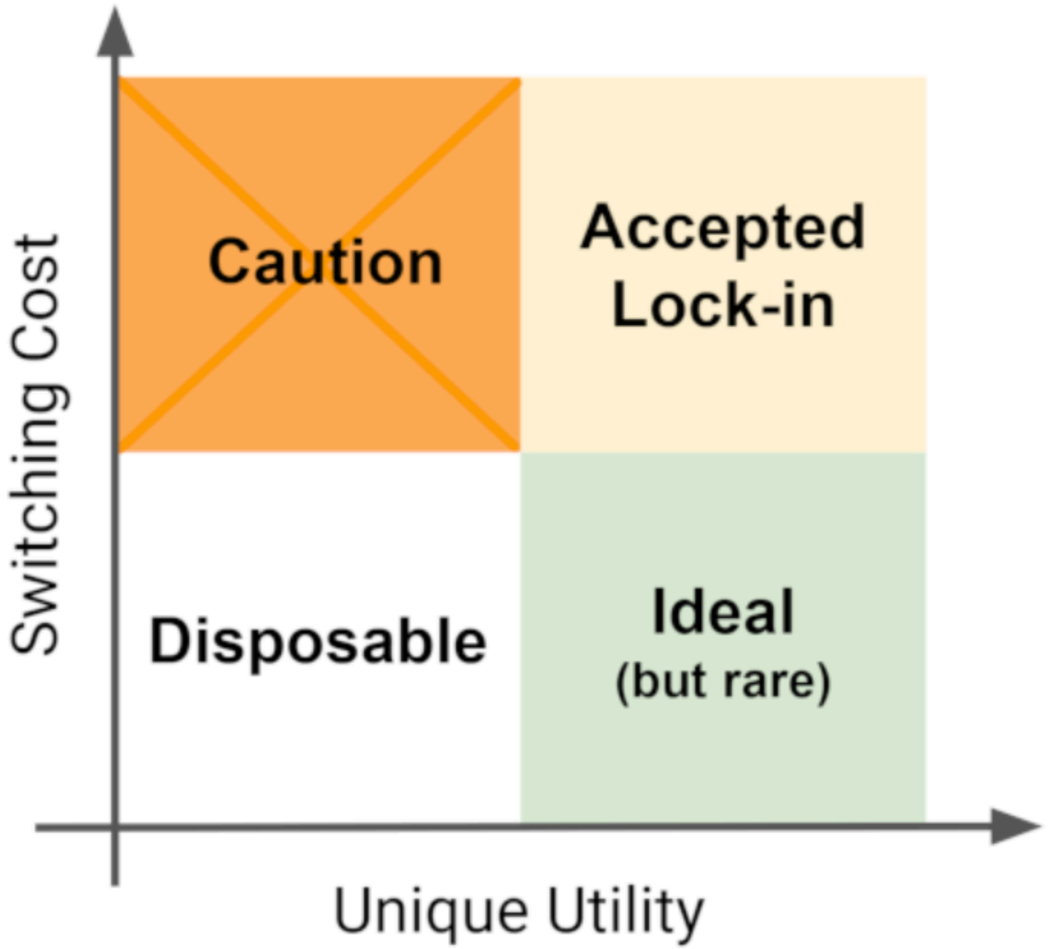
09 September 2019

Gregor Hohpe

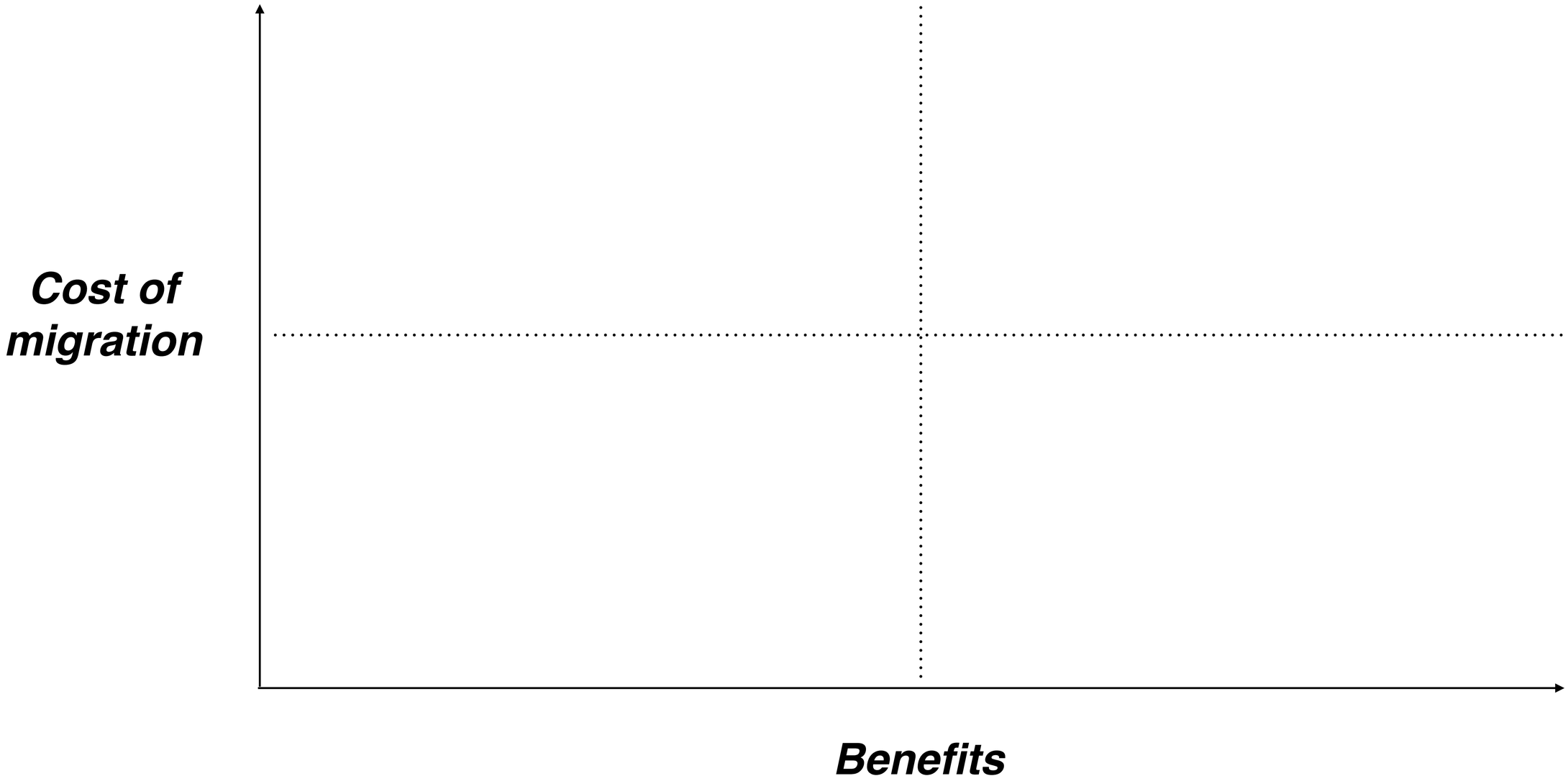
CONTENTS

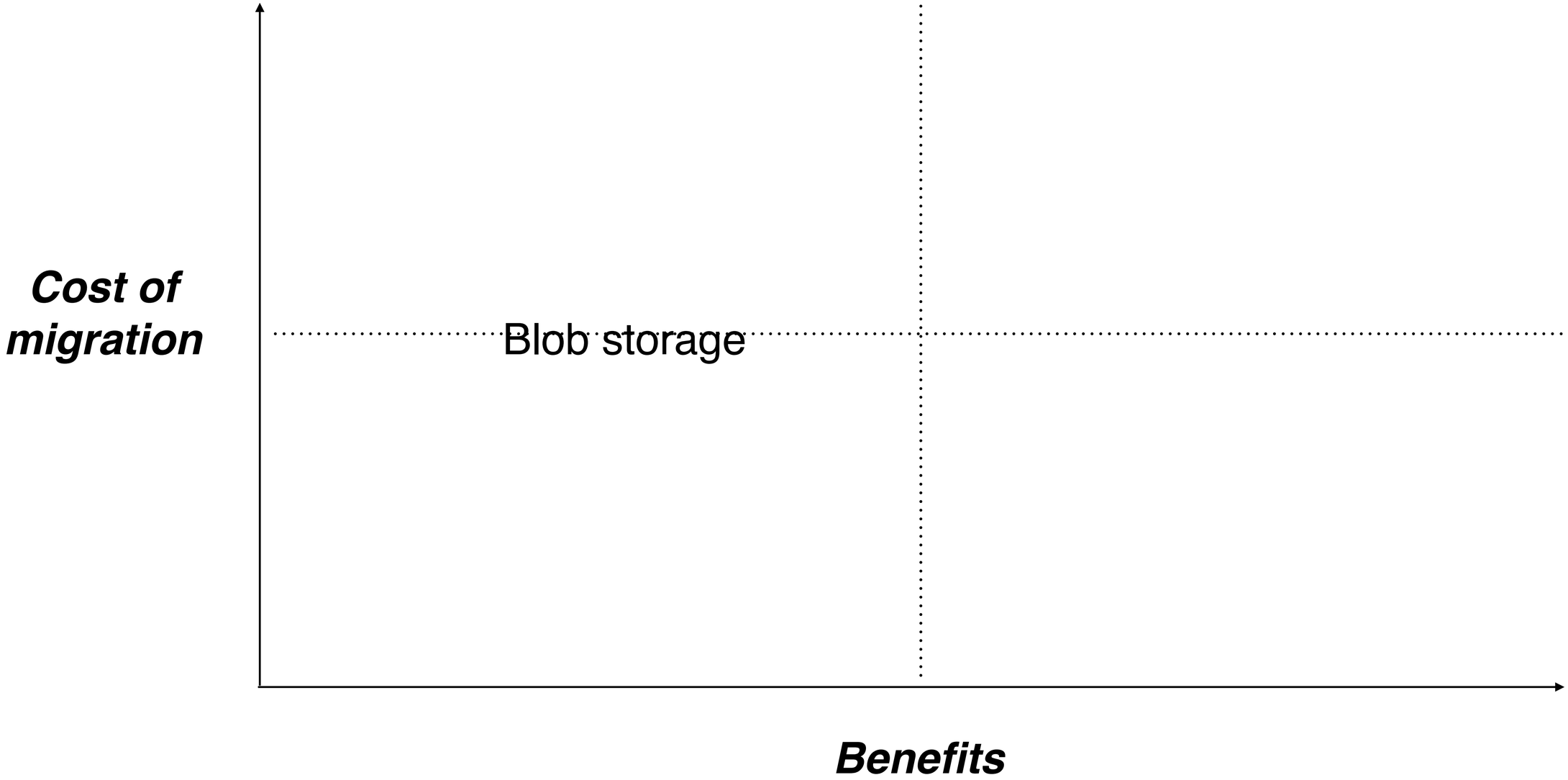
https://martinfowler.com/articles/oss-lockin.html

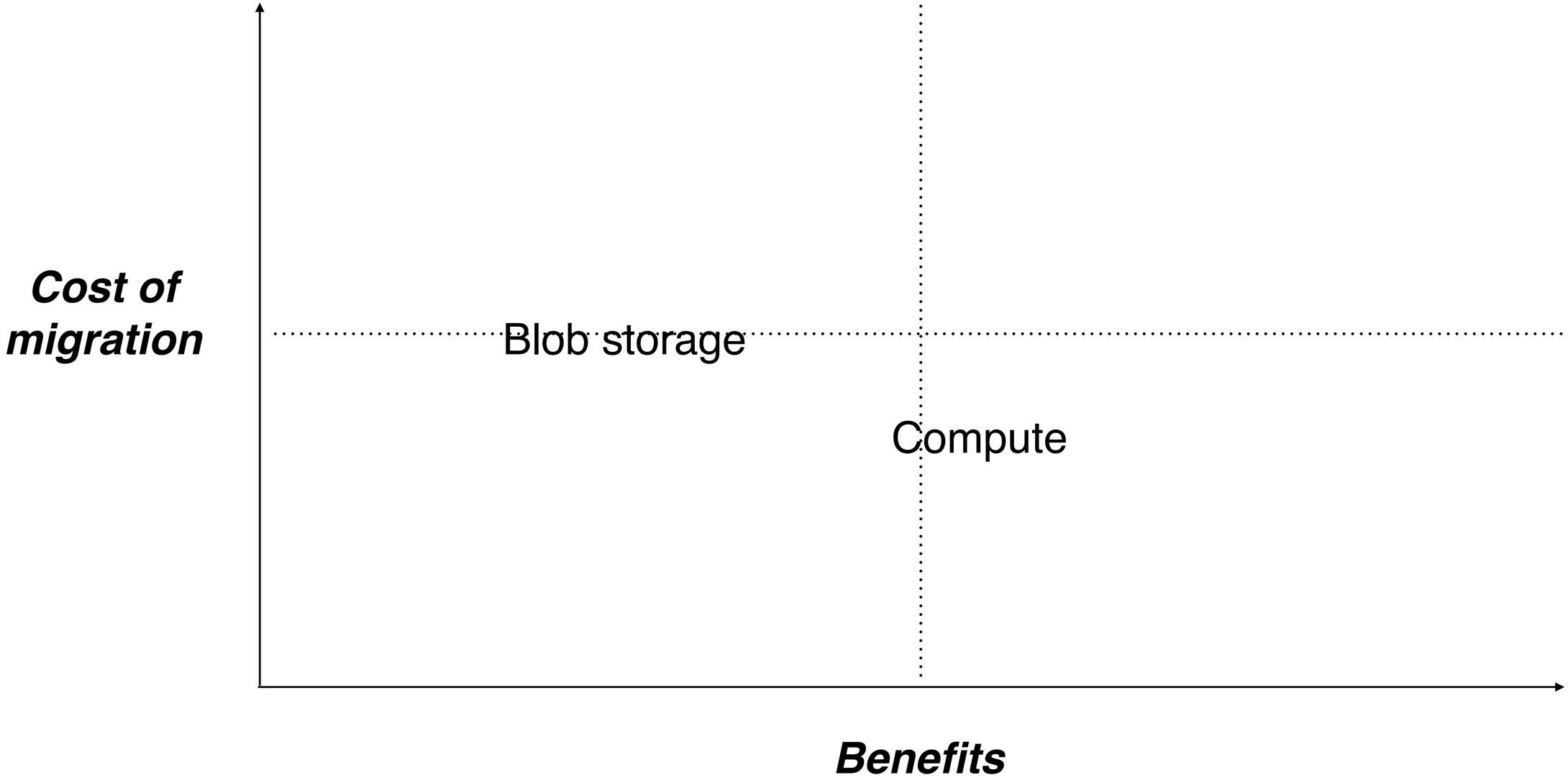

Caution
Accepted
Lock-in
Disposable
Ideal
(but rare)
Switching Cost
Unique Utility

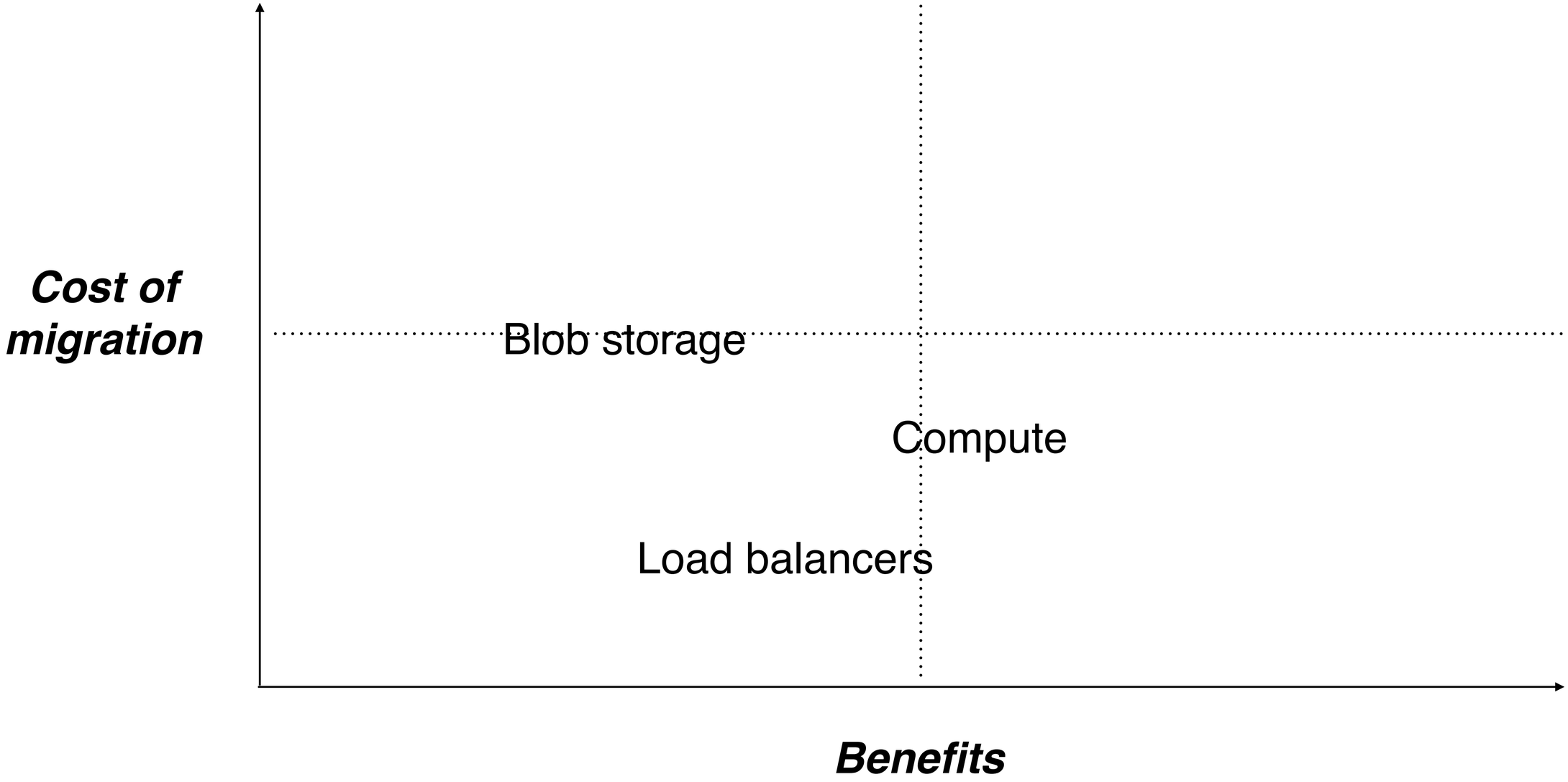

Switching Cost
Caution
Accepted Lock-in
Disposable
Ideal (but rare)
Unique Utility

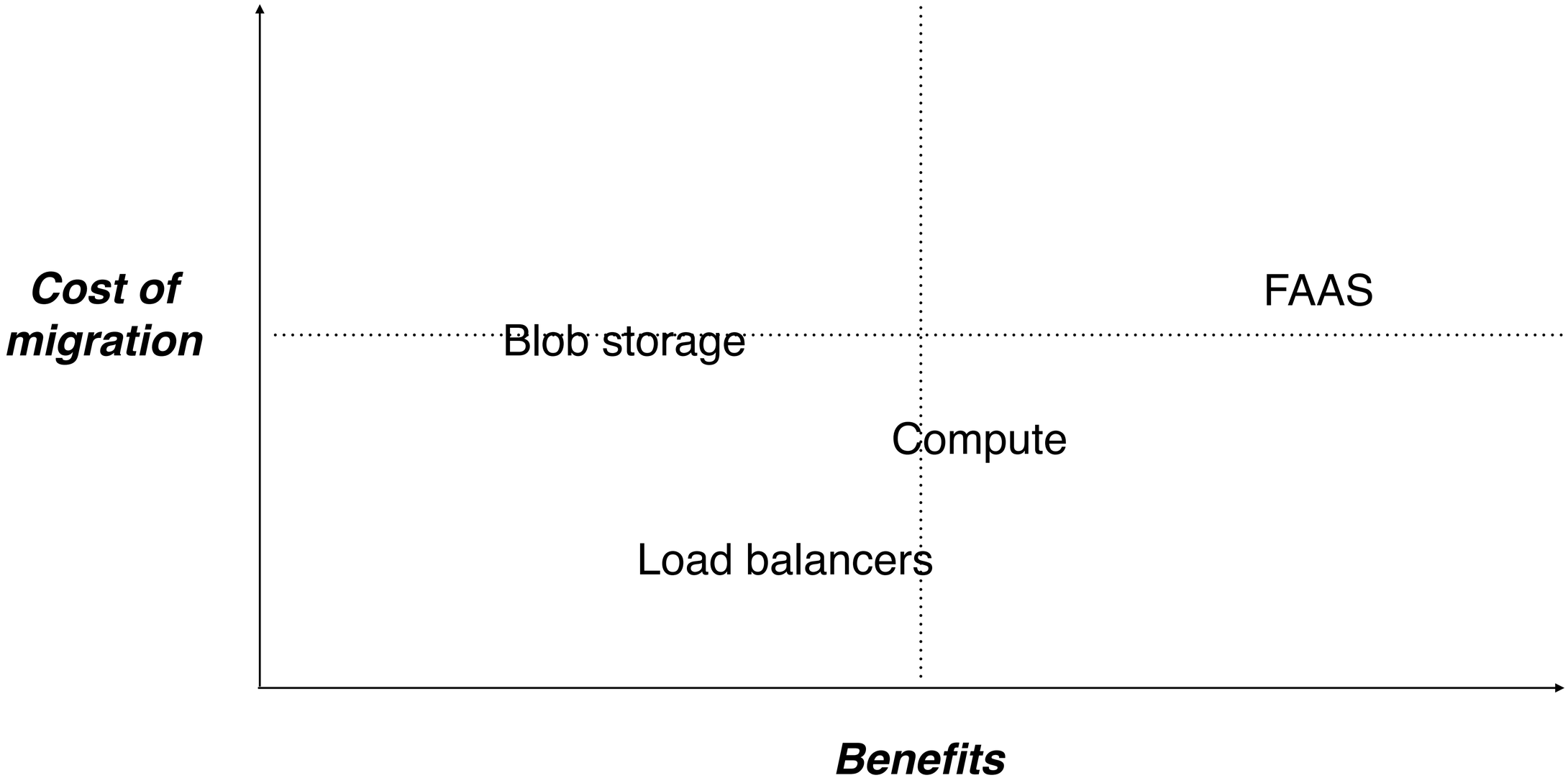

Switching Cost
verizon
Sprint
T··Mobile·
at&t
9:41
Unique Utility

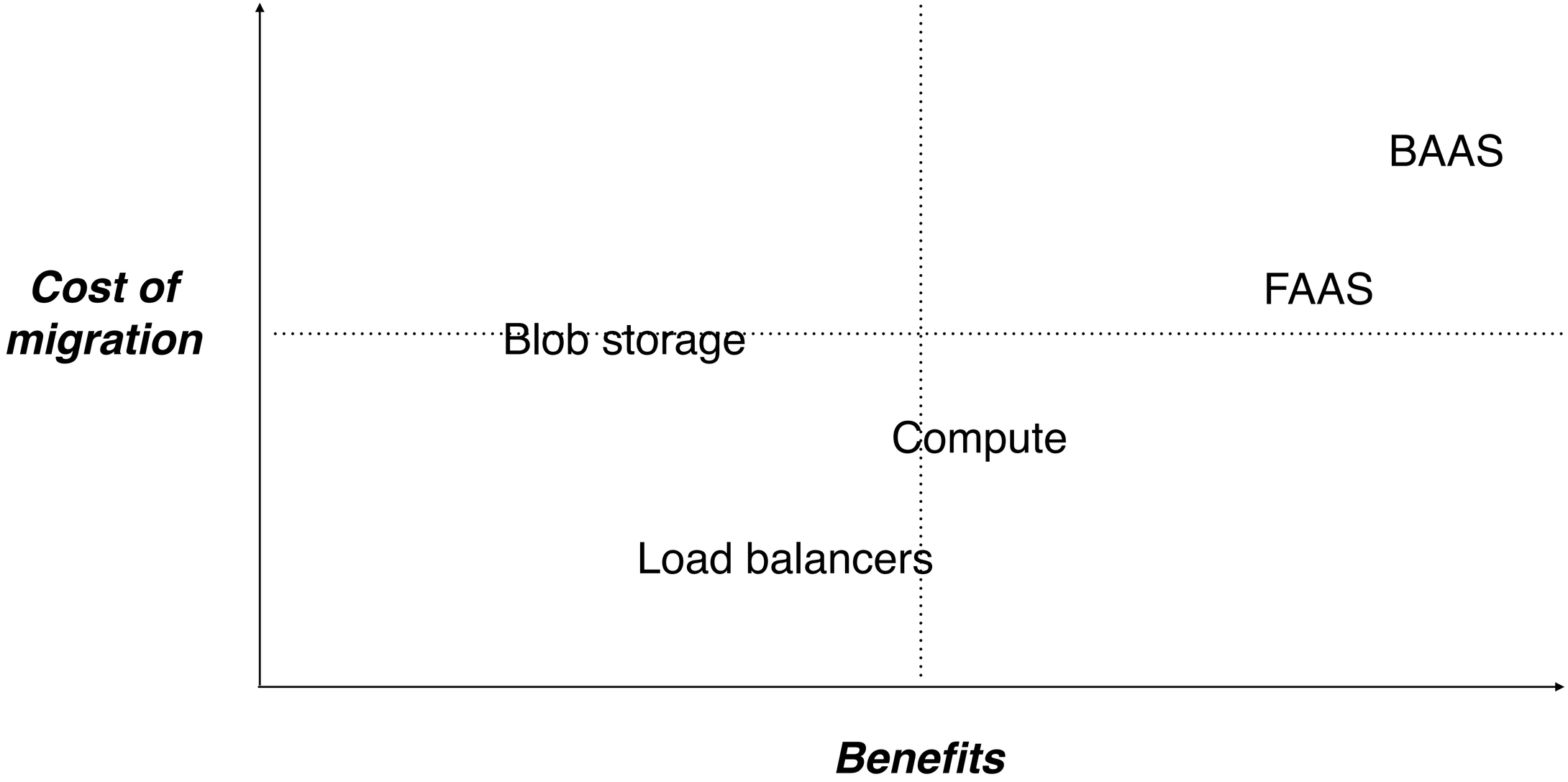

Cost of migration
Benefits


Cost of migration
Blob storage
Benefits


Cost of migration
Blob storage
Compute
Benefits


Cost of migration
Blob storage
Compute
Load balancers
Benefits


Cost of migration
FAAS
Blob storage
Compute
Load balancers
Benefits


BAAS
Cost of migration
FAAS
Blob storage
Compute
Load balancers
Benefits

But our private cloud is nearly good!

We’ve spent so much money, we can’t stop now…

https://commons.wikimedia.org/wiki/Concorde#/media/File:Concorde_1977.jpg

“To those waiting with bated breath for that favourite media catchphrase, the 'U-turn', I have only one thing to say: 'You turn [U-turn] if you want to. The lady's NOT for turning.’”

- Margaret Thatcher

Don’t mention Brexit!


Brexit!
Don’t mention Brexit!
BREXIT!
Brexit!
Brexit!

EVOLUTION OF THE PRIVATE CLOUD

Physical Infrastructure

EVOLUTION OF THE PRIVATE CLOUD

Physical Infrastructure

Virtualised Infrastructure

Early 2000

EVOLUTION OF THE PRIVATE CLOUD

Physical Infrastructure

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OpenStack

2010s

EVOLUTION OF THE PRIVATE CLOUD

Physical Infrastructure

Virtualised Infrastructure

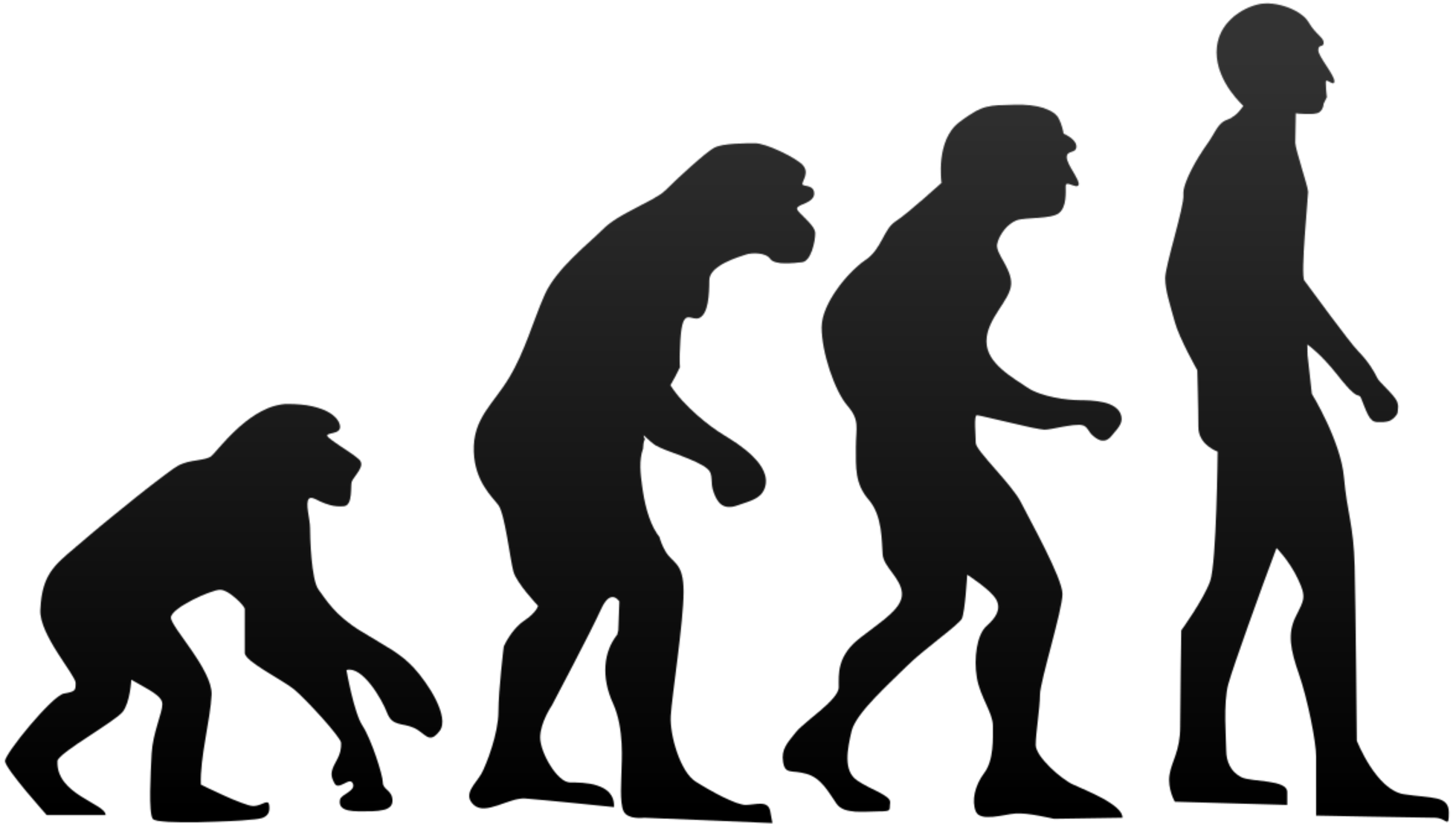
Early 2000

OpenStack

2010s

Kubernetes-based platforms

2018+



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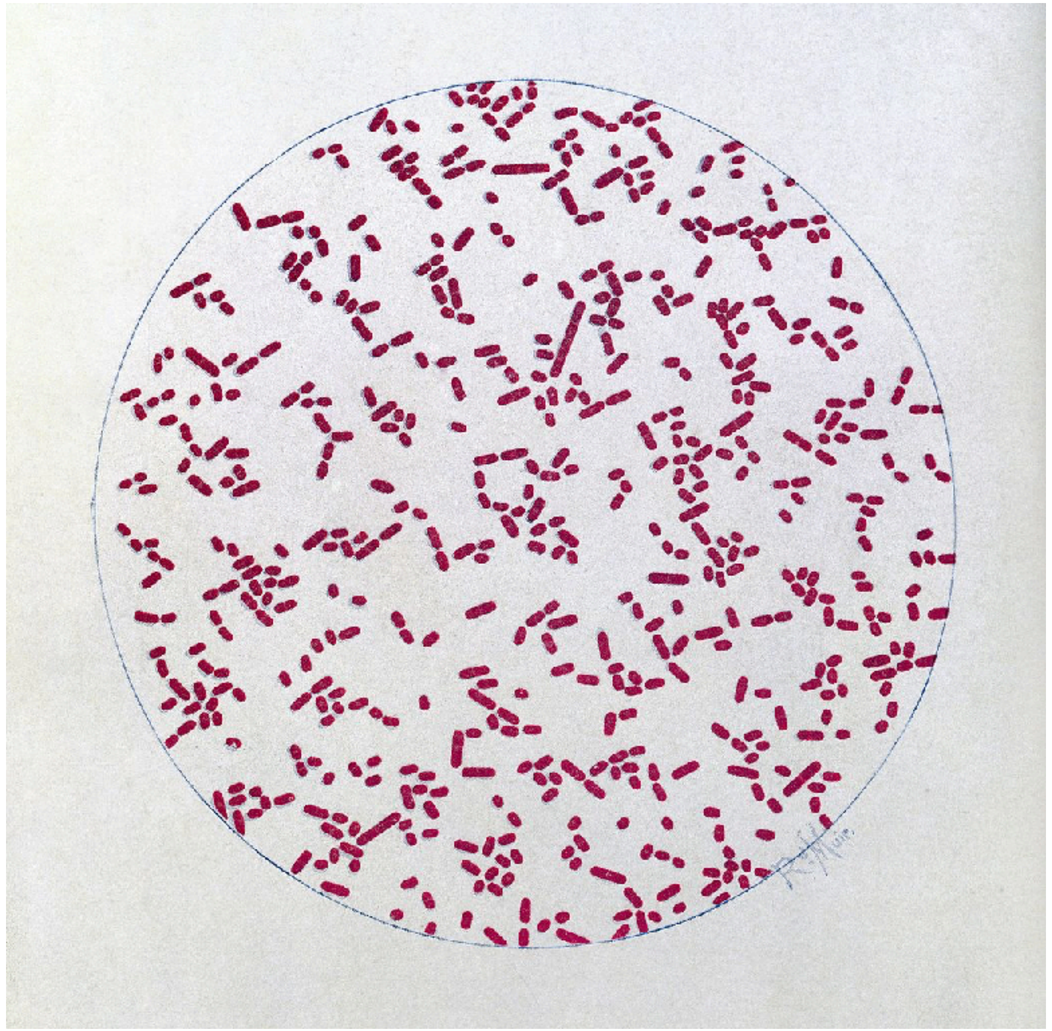

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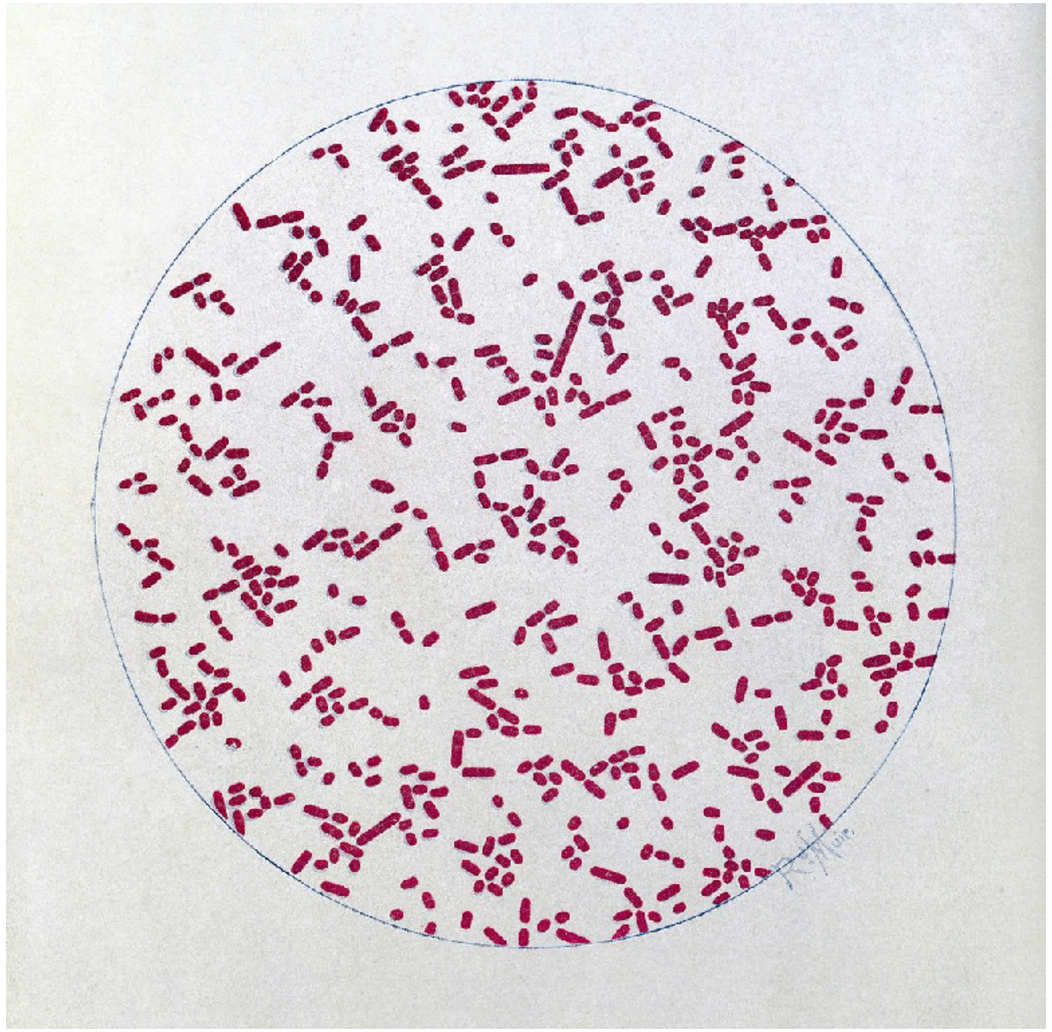

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GOOD REASONS TO AVOID PUBLIC CLOUD?

I want my data in country

GOOD REASONS TO AVOID PUBLIC CLOUD?

I want my data in country

I’m worried about the US patriot act

GOOD REASONS TO AVOID PUBLIC CLOUD?

I want my data in country

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We’re doing something *really* specialised

GOOD REASONS TO AVOID PUBLIC CLOUD?

I want my data in country

I’m worried about the US patriot act

We’re doing something *really* specialised

I’m worried about monopolies!

Hyperscalers!

HYPERSCALE, HYPERSCALE, HYPERSCALE!

HPC wire

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Hyperscalers Emerging From 'Hype Phase'

By George Leopold

April 12, 2017

The number of companies fitting the description of "hyperscale" now accounts for 68 percent of the cloud infrastructure services market, a researcher found.

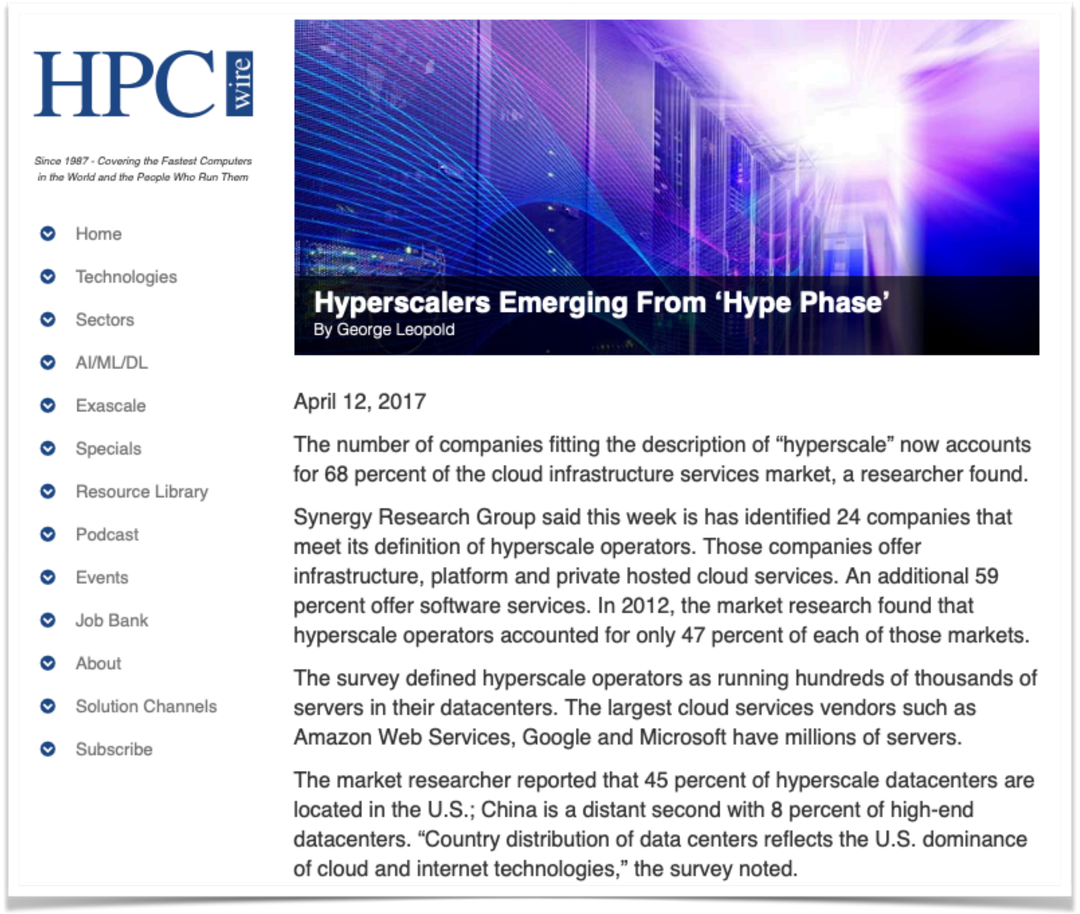
Synergy Research Group said this week is has identified 24 companies that meet its definition of hyperscale operators. Those companies offer infrastructure, platform and private hosted cloud services. An additional 59 percent offer software services. In 2012, the market research found that hyperscale operators accounted for only 47 percent of each of those markets.

The survey defined hyperscale operators as running hundreds of thousands of servers in their datacenters. The largest cloud services vendors such as Amazon Web Services, Google and Microsoft have millions of servers.

The market researcher reported that 45 percent of hyperscale datacenters are located in the U.S.; China is a distant second with 8 percent of high-end datacenters. "Country distribution of data centers reflects the U.S. dominance of cloud and internet technologies," the survey noted.

https://www.hpcwire.com/2017/04/12/hyperscalers-emerging-hype-phase/

HYPERSCALE, HYPERSCALE, HYPERSCALE!



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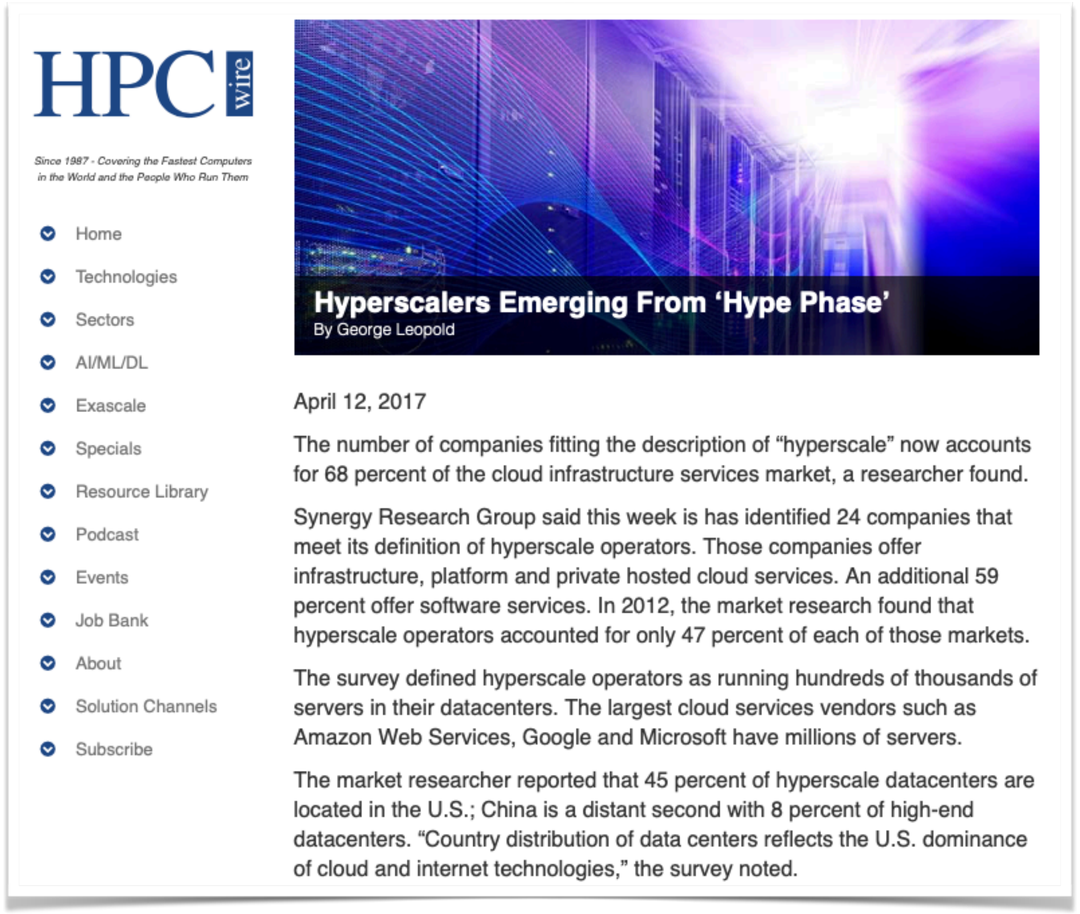

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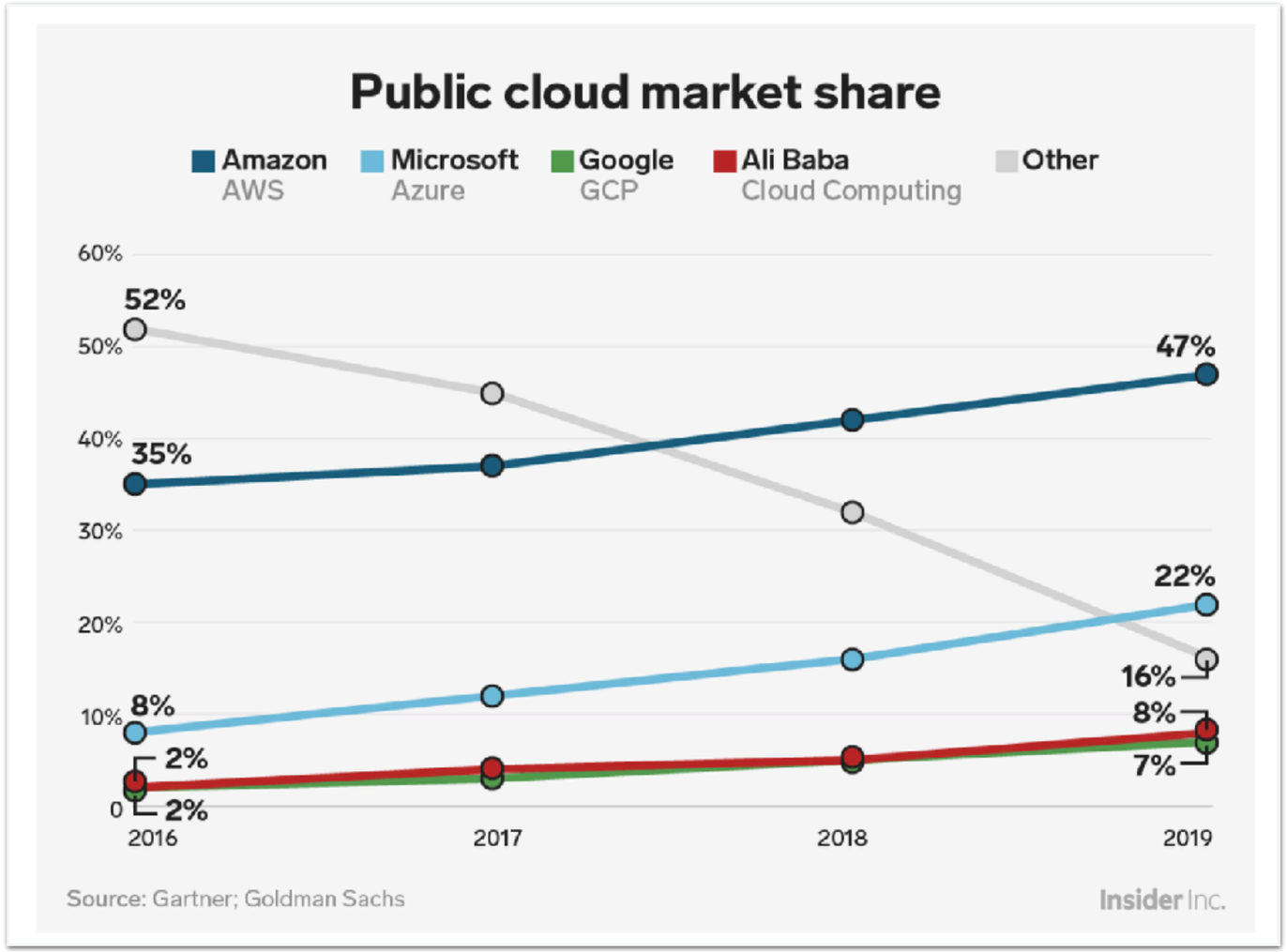
Shared amongst just 24 companies

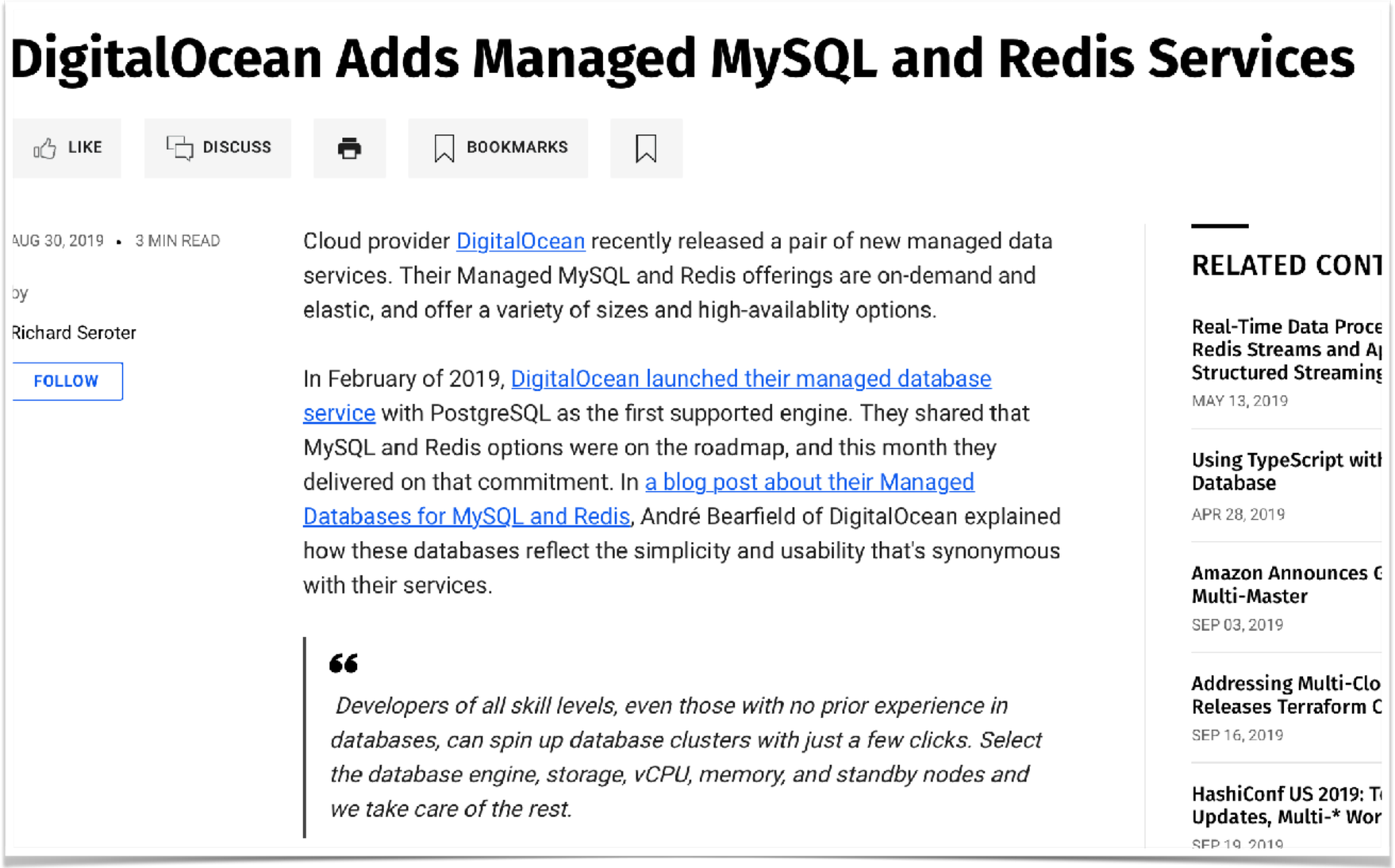
https://www.hpcwire.com/2017/04/12/hyperscalers-emerging-hype-phase/

NOT GOOD NEWS FOR SMALLER PLAYERS?



https://www.parkmycloud.com/blog/aws-vs-azure-vs-google-cloud-market-share/

SMALLER FEATURESET/LATE TO THE PARTY



DigitalOcean Adds Managed MySQL and Redis Services

LIKE DISCUSS BOOKMARKS

AUG 30, 2019 • 3 MIN READ

by

Richard Seroter

FOLLOW

Cloud provider DigitalOcean recently released a pair of new managed data services. Their Managed MySQL and Redis offerings are on-demand and elastic, and offer a variety of sizes and high-availablity options.

In February of 2019, DigitalOcean launched their managed database service with PostgreSQL as the first supported engine. They shared that MySQL and Redis options were on the roadmap, and this month they delivered on that commitment. In a blog post about their Managed Databases for MySQL and Redis, André Bearfield of DigitalOcean explained how these databases reflect the simplicity and usability that's synonymous with their services.

> *Developers of all skill levels, even those with no prior experience in databases, can spin up database clusters with just a few clicks. Select the database engine, storage, vCPU, memory, and standby nodes and we take care of the rest.*

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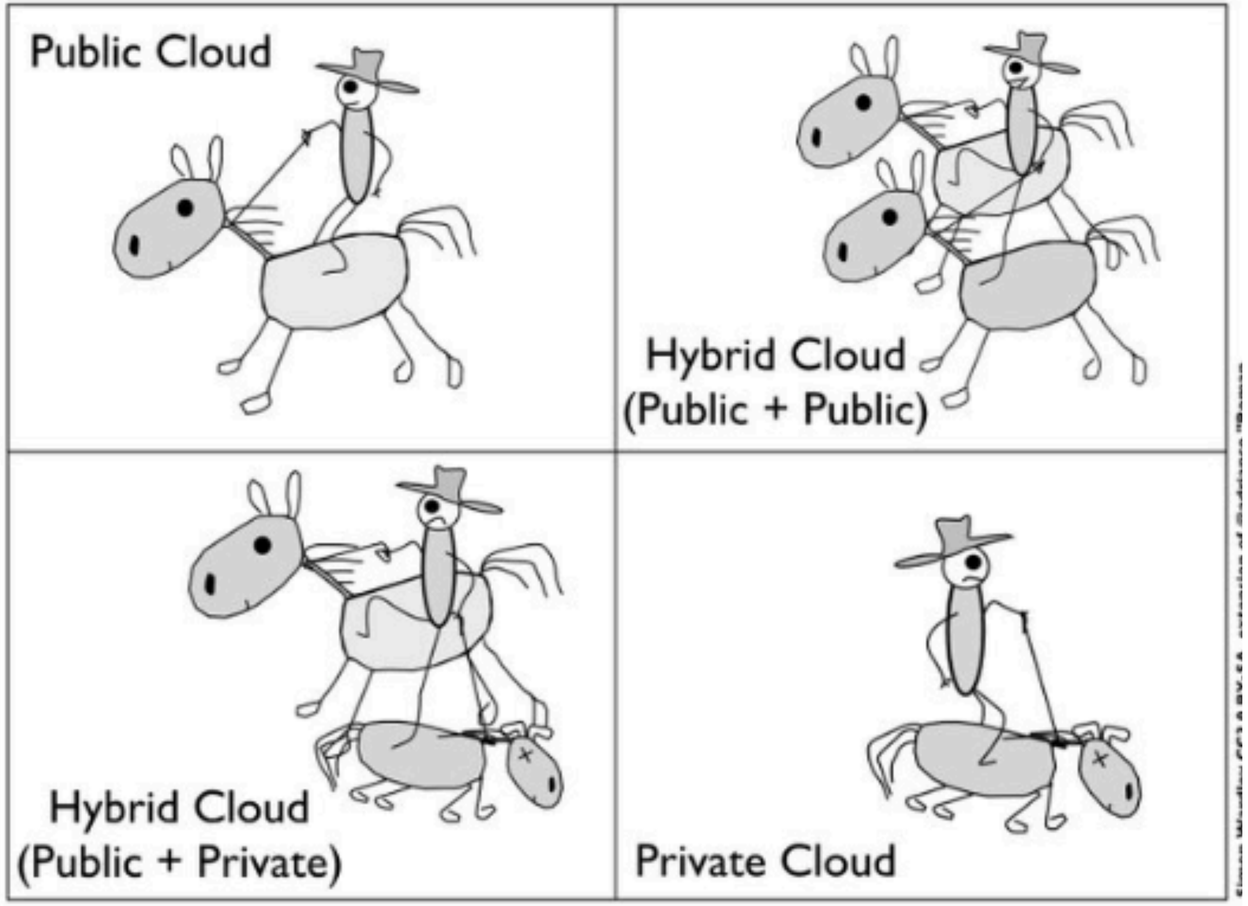
SEP 19, 2019

https://www.infoq.com/news/2019/08/digitalocean-mysql-redis/

Don’t confuse a multi-cloud strategy with multi-cloud apps

Simon Wardley #EEA
@swardley

X : What do you think of hybrid cloud?
Me : You're kidding? This is 2017 not 2010. I'll summarise in one diagram.



https://twitter.com/swardley/status/908031162668474368

FIGHT YOUR OWN NEED FOR INFRASTRUCTURE

TECOSYSTEMS

What is OpenStack?

By Stephen O'Grady | @sogrady | June 16, 2015

In the wake of the OpenStack Summit, held in Vancouver this year, two major questions remained. First and perhaps most obviously, why in the holy hell aren't there more technology conferences held in Vancouver? Sure, it's marginally more difficult to get into than San Francisco by air – at least if your primary carrier is JetBlue, which doesn't service Vancouver. But this is the view from the conference center, which is itself quite impressive.

(*click to embiggen*)

Not that I have anything against California as a conference destination, mind. If Las Vegas is Mos Eisely, San Francisco is Shangri-La. But there is not a venue in San Francisco that can hold a candle to the Vancouver Conference Center and its absurd backdrop of mountains, water and lazily circling float planes.

https://redmonk.com/sogrady/2015/06/16/what-is-openstack/

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"…there are legions of IT staffers that will be protecting what they believe is their livelihood – the private infrastructure – at all costs. Unless technical leadership is willing to wage total war on its own infrastructure, then, private infrastructure will continue to be a thing."

- Stephen O'Grady, Redmonk

https://redmonk.com/sogrady/2015/06/16/what-is-openstack/

SUMMARY

Most people are likely better off making use of a public cloud provider

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Don’t let sunk cost fallacy hold you back

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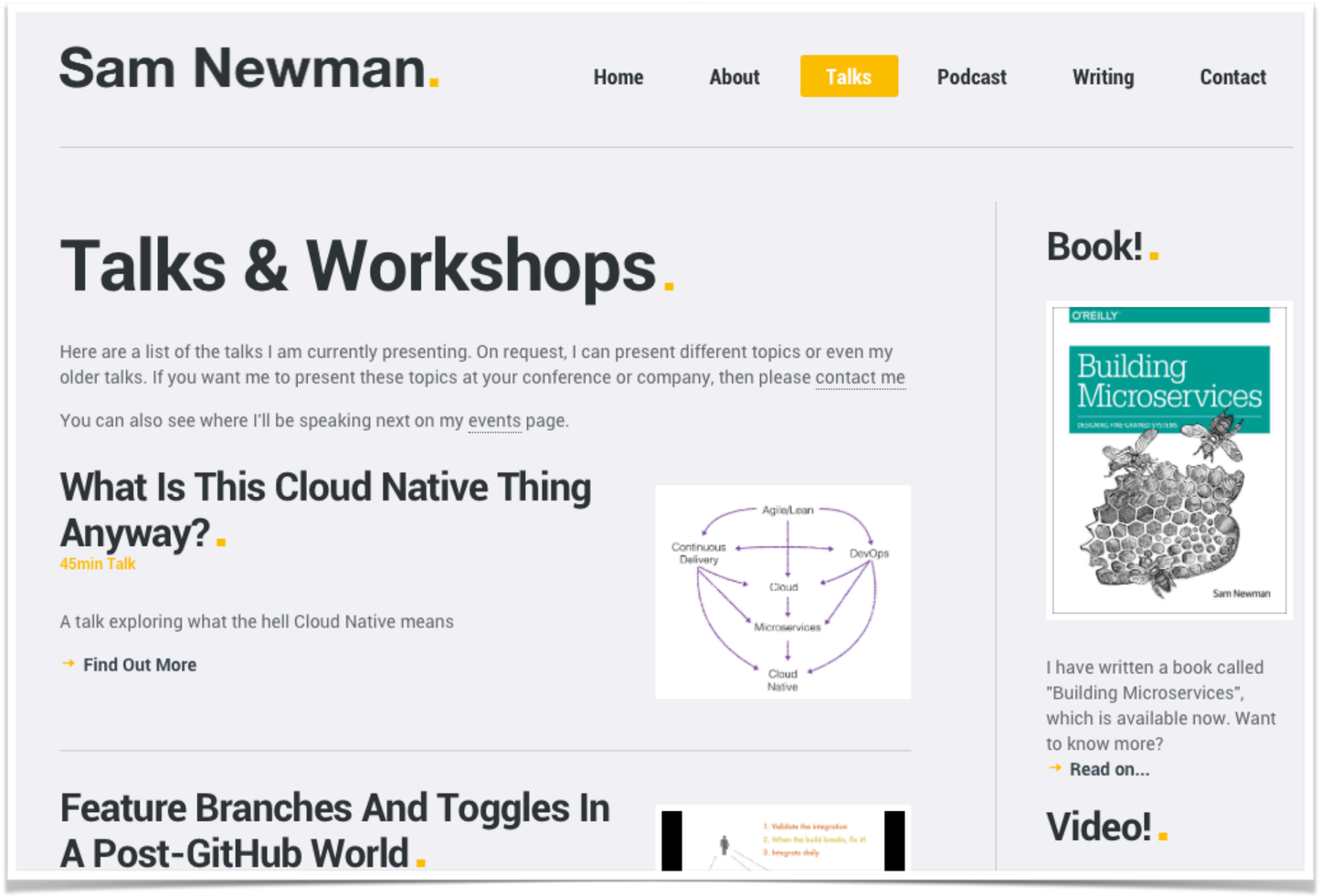
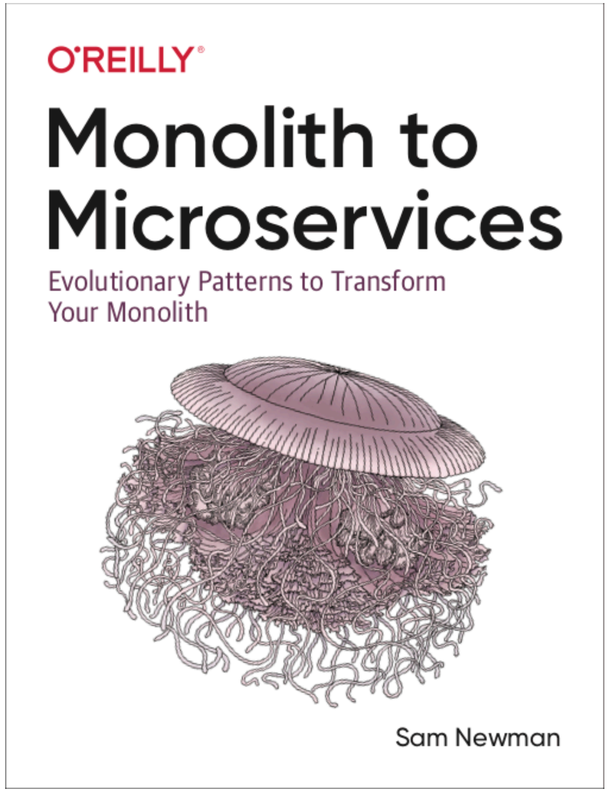
Many of the concerns about public cloud adoption are unfounded

Don’t let sunk cost fallacy hold you back

You can balance your risks by being smart

THANKS!





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