Stop building infrastructure

Evan Jones



Warning: Zero facts ahead

Stop building infrastructure

Infrastructure

Software used by developers to run applications

Databases

Load balancers

Service orchestration

Application developers:

Cloud vendors are better at it than you

Infrastructure vendors:

Only cloud vendors will profit in the next ~5-10 years



CTO of DeepChainLearning Inc

Service running on AWS

Need a data warehouse product

What do you do?



Redshift Dashboard

Resources

Clusters

Snapshots

Security

Parameter Groups

Reserved Nodes

Events

Connect Client

You are using the following Amazon Redshift resources in the EU West (Ireland) reg

Clusters (0) Increase cluster limit Snapshots (0) Manual (0) Automated (0)

Launch Cluster

Security Subnet Groups (1) HSM Connections (0) HSM Certificates (0)

Amazon Redshift is a fast, fully managera, petabyte-scale data warehouse solution i efficiently analyze all your data using your existing business intelligence tools.

Launch Cluster

Who wins? App Developers

Who loses? Database vendors

Advantages of using an existing vendor

Advantages of using an existing vendor



Charity Majors @mipsytipsy

Replying to @mipsytipsy and @mccv

"We can't spend \$800 on your service to replace \$20k in ec2 costs, because we don't have to justify *ec2* spend" <-LITERALLY SAID TO ME

2:47 AM · Aug 11, 2017 from San Francisco, CA

Advantages of using an existing vendor

Tools/APIs

Support

Authentication

Billing

. . .



E-commerce marketing software

~4 years

~140 employees

~35 engineers

Bluecore Engineering's vendors



Google Cloud Platform







Monitoring at Bluecore

~2015: Google Stackdriver: free

June 2016: "Premium" pricing announced

January 2017: Datadog: Cheaper (also more features)

Bundled and "good enough" wins

How did we get here?

Sun E10K; ~2000

CPUs: 4-64; 250-466 MHz UltraSPARC-II

Memory: 2-64 GiB

Price (2000): ~\$1M USD

Used by eBay and others



Google; ~2000

Off the shelf Intel servers

Connected with Ethernet



What changed?





Networking got dramatically cheaper

Index of price per switch port (1996 = 100)



Source: "Prices for Local Area Network Equipment", Federal Reserve Bank of SF, June 2003

Cheap networks → Cheap data center computing



Internet services

Before: Applications served internal business users

After: Applications serve the public

100X more users: Everyone needs a data center

Cheap networks \rightarrow Cheap data center computingInternet \rightarrow Demand for computing

Application				
App Server	DB		Caches	
Cluste Schedul	r ler Load Bal		d Balancer	
Operating System				
Server				
Power	Cooling		Network	
Building				

Application				
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Vendor opportunity

	Applica	tion		Built in house	
App Server	DB	Caches			
Cluste Schedul	r er l	Load Balancer			
Ope	erating	System		Vandar appartunity	Buy it?
	Serve	er	_		Open source?
Power	Coolir	ng Network			•
	Buildii	ng			



Buy it? - Vendor opportunity Build it? Open source?

Application				
App Server	DB		Caches	
Cluste Schedul	r ler Load Balance			
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Building				



Vendor opportunity?

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Cloud vendors aggregate IT

Economies of scale for physical infrastructure

Better developer experience:

Integrated, ready to use components

Industrialization of IT

Before electricity, each factory produced its own power



Industrialization of IT

Before cloud, each company built its own data center

How does this affect me?

If you are an academic ...

... real-world impact via cloud vendors, not startups

If you work at Amazon ...

... build "good enough" infrastructure

If you work at Microsoft, Google ...

... build infrastructure meaningfully better than Amazon on some dimension

... help everyone by forcing Amazon to improve

If you work at another cloud vendor ...

... find another job

If you work at an infrastructure vendor ...

... find your "niche"

On premise? Flat or shrinking but will still be large

"Extreme" performance (latency, throughput, etc)?

Industry-specific verticals?



Cloud is the industrialization of IT

Default is a huge advantage



Source: The Innovator's Dilemma, Clayton Christensen

Thanks! (Please tell me why I am wrong)

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