Microservices

@Steve_Upton

Spotlight on...

- Technologies
- Practices
- Architectures

NETFLIX

Netflix Scale

81 million+ members in 190+ countries (3 AWS regions, 9 availability zones)

125 million hours of viewing per day (4 billion hours per month)

⅓ of US downstream traffic

500+ microservices

100s to 1000s of productions deploys per day

Goal of 99.99% availability

1200 engineers

Netflix Principles

Buy vs. Build

Services should be Stateless

Scale Out vs. Scale Up

Redundancy and Isolation for Resiliency

Automate destructive testing

Apache Cassandra

Moved from traditional RDBMS (Oracle)

Scalable NoSQL

Available and Partition Tolerant

Tunable consistency (per read/write)

Apache Cassandra

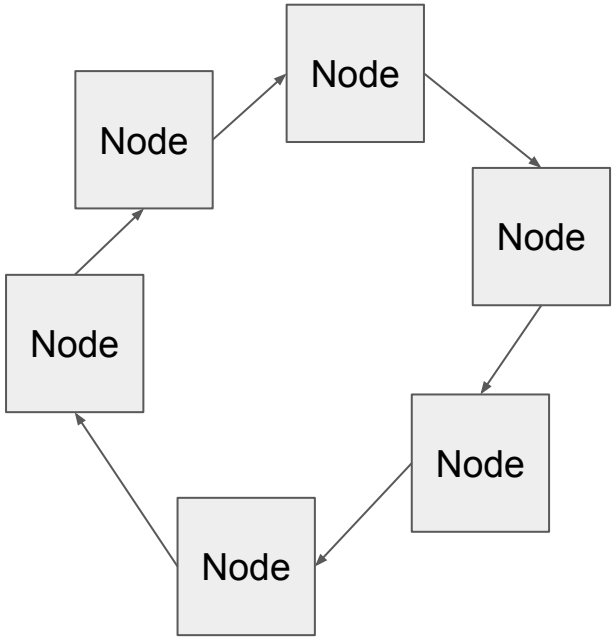
Moved from traditional RDBMS (Oracle)

Scalable NoSQL

Available and Partition Tolerant

Tunable consistency (per read/write)

Gossip based



NGINX

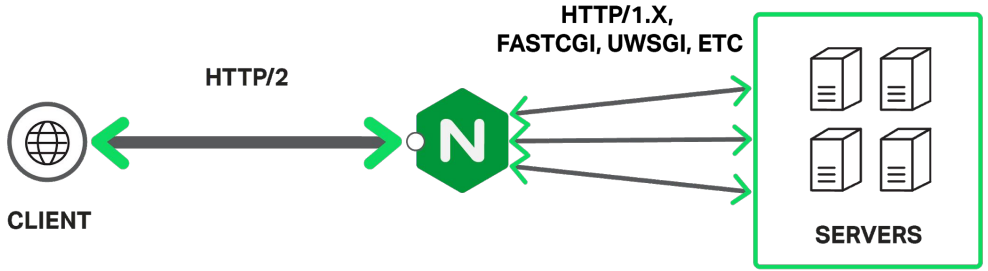
NGINX

It’s a web server…

NGINX

It’s a web server…

… and a reverse proxy

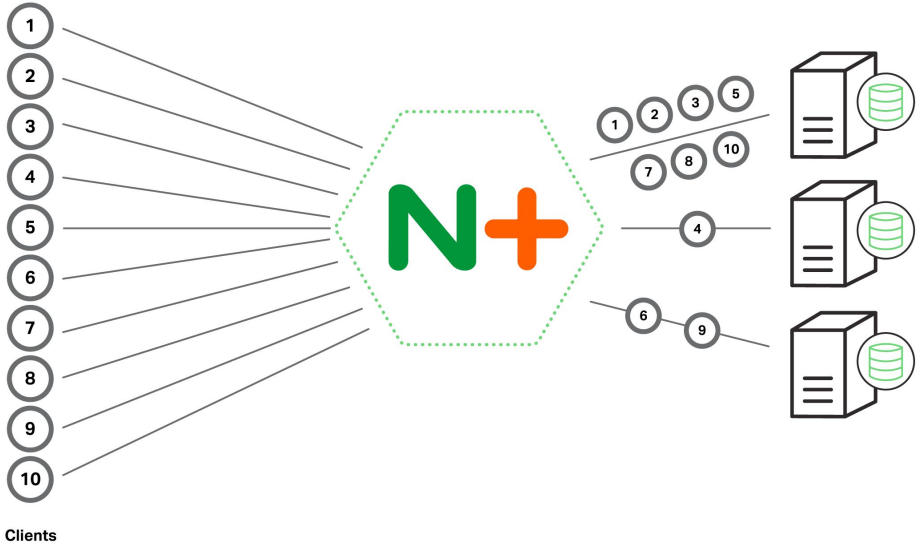


NGINX

It’s a web server…

… and a reverse proxy

… load balancer



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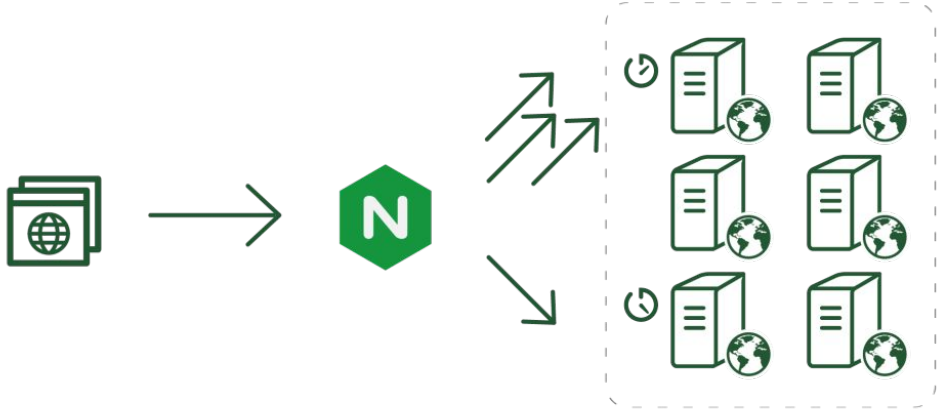

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It’s a web server…

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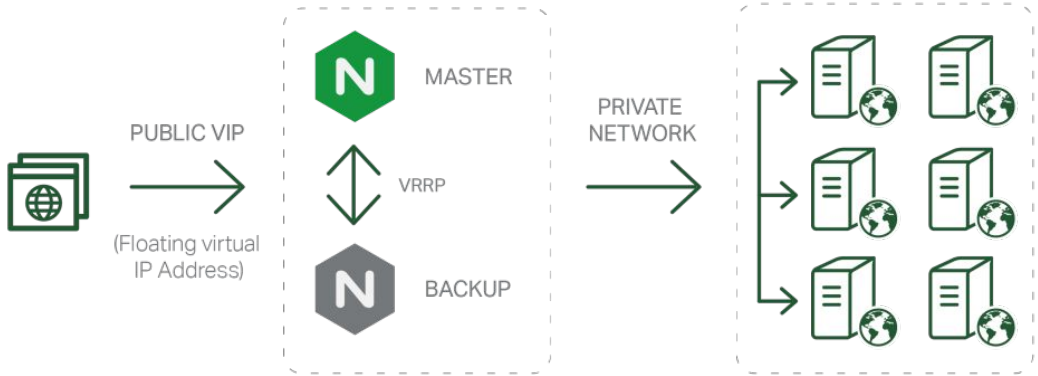
… provides high-availability



NGINX

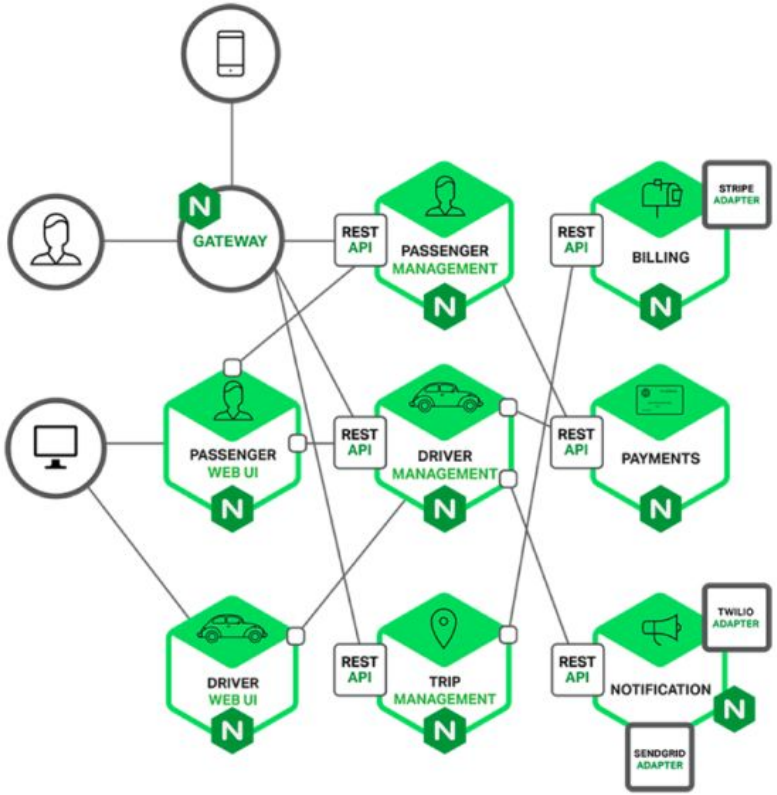
It’s a web server…

… and a reverse proxy

… load balancer

… provides high-availability

… gateway for microservices



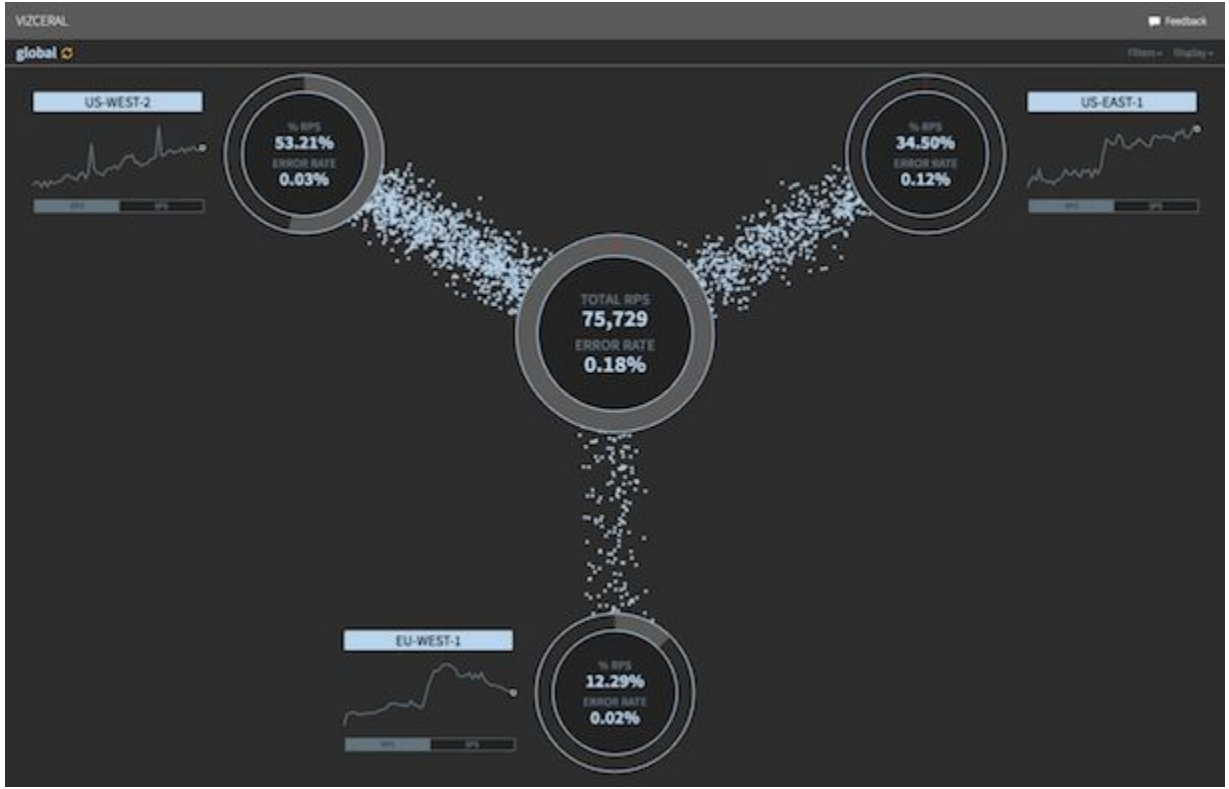
Vizceral

“Operational visibility”

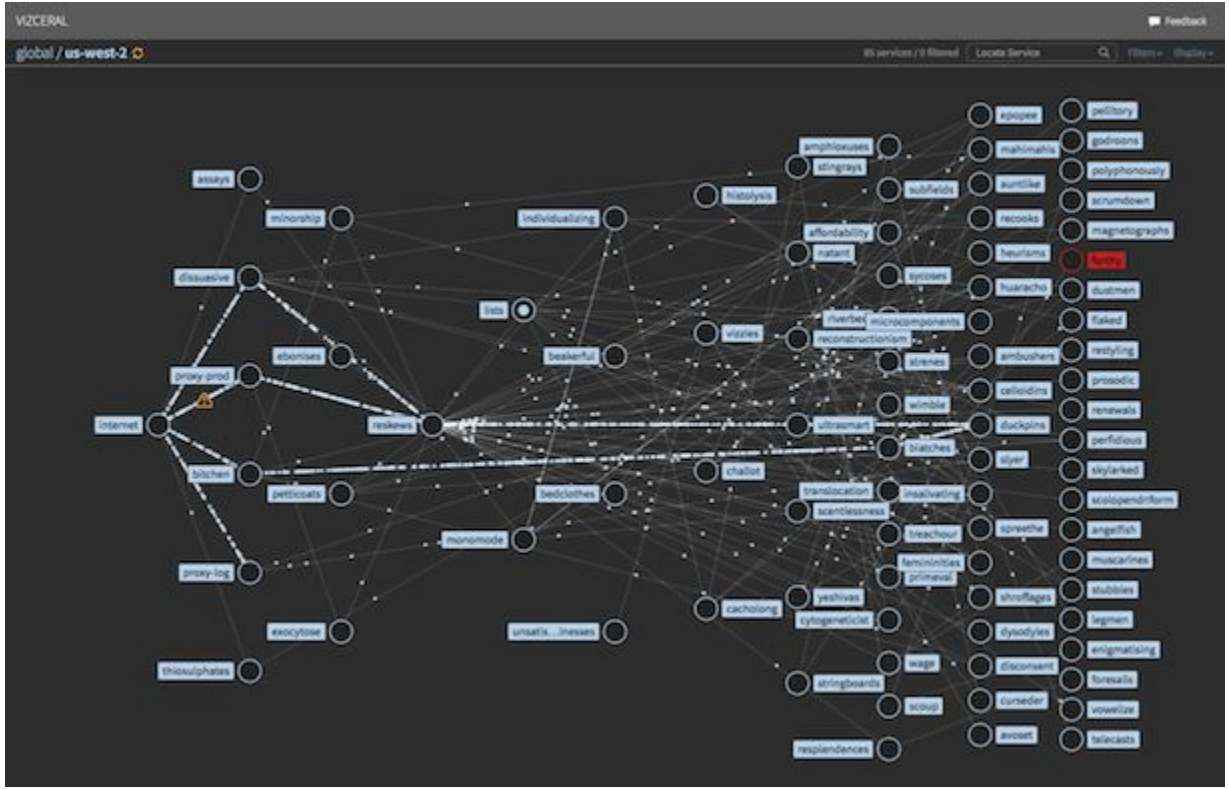
Impossible to understand everything

Need to visualise the important

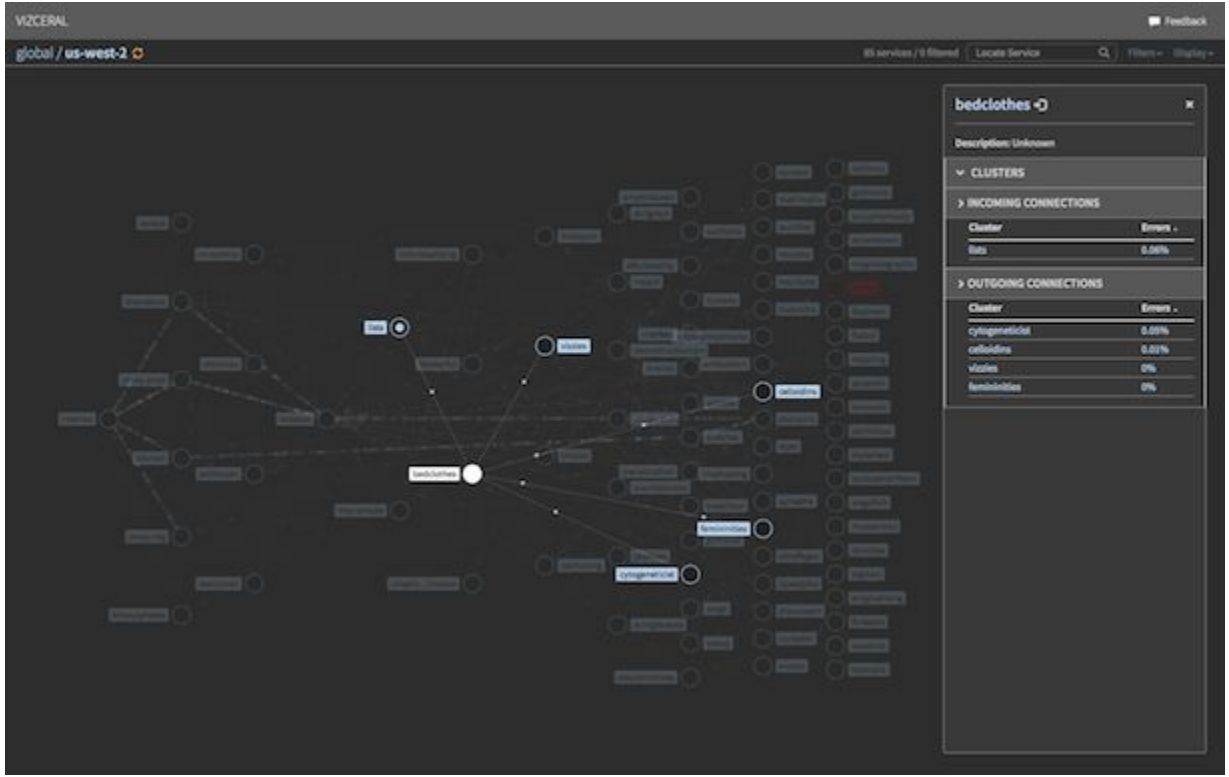
Vizceral


VIZCERAL
Feedback
global
US-WEST-2
% RPS
53.21%
ERROR RATE
0.03%
US-EAST-1
% RPS
34.50%
ERROR RATE
0.12%
TOTAL RPS
75,729
ERROR RATE
0.18%
EU-WEST-1
% RPS
12.29%
ERROR RATE
0.02%

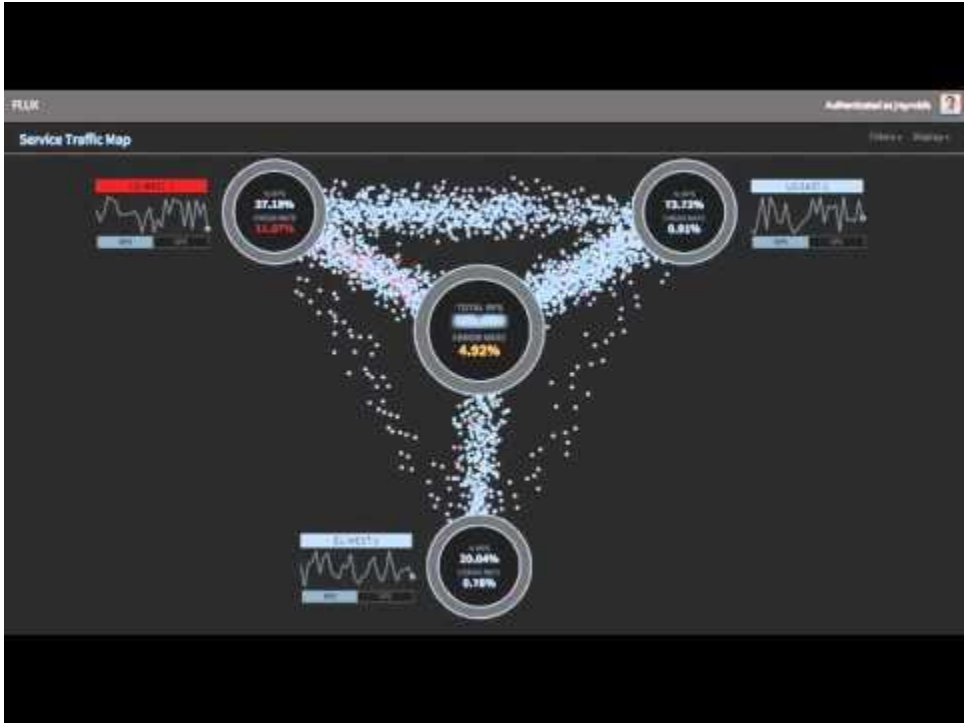
Vizceral


VIZCERAL
Feedback
global / us-west-2
Locate Service
assays
minorship
dissuasive
ebonises
proxy-prod
internet
reskinni
bitchen
petticoats
proxy-log
exocytose
thiosulphates
individualising
lists
beakerful
bedclothes
monomode
unsati...inesses
histolysis
vizzies
chaliot
cachoiong
amphioxuses
stingrays
affordability
natant
riverbe
reconstructionism
translocation
scentlessness
yeshivas
cytogeneticist
stringboards
resplendences
subfields
tycoses
microcomponents
strenes
wimble
ultrasmart
biatches
insalivating
treachour
famininities
primeval
wage
scoup
epopee
mahimahis
auntlike
recooks
heurisms
huaracho
ambushers
colloidins
duckpins
slyer
sprweth
shroffages
dysodyles
disconsent
curseder
avoset
pellitory
godroons
polyphonously
scrumdown
magnetographs
dustmen
flaked
restyling
prosodic
renewals
perfidious
skylarked
scolopendriform
angelfish
muscarines
stubbles
legmen
enigmatising
foresails
vowelize
telecasts

Vizceral


VIZCERAL
Feedback
global / us-west-2
Locate Service
bedclothes
Description: Unknown
CLUSTERS
INCOMING CONNECTIONS
Cluster
Errors
fists
0.06%
OUTGOING CONNECTIONS
Cluster
Errors
cytogeneticist
0.05%
celloidins
0.01%
vizzies
0%
femininities
0%

Vizceral



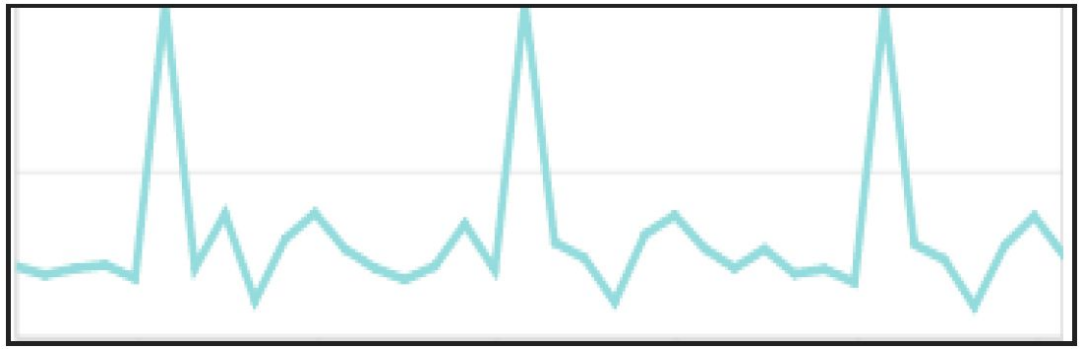
GILT

Gilt

Premium Flash Sales

Sales go live 12:00 daily

Massive load spikes



Gilt 2007

Ruby on Rails

Postgres

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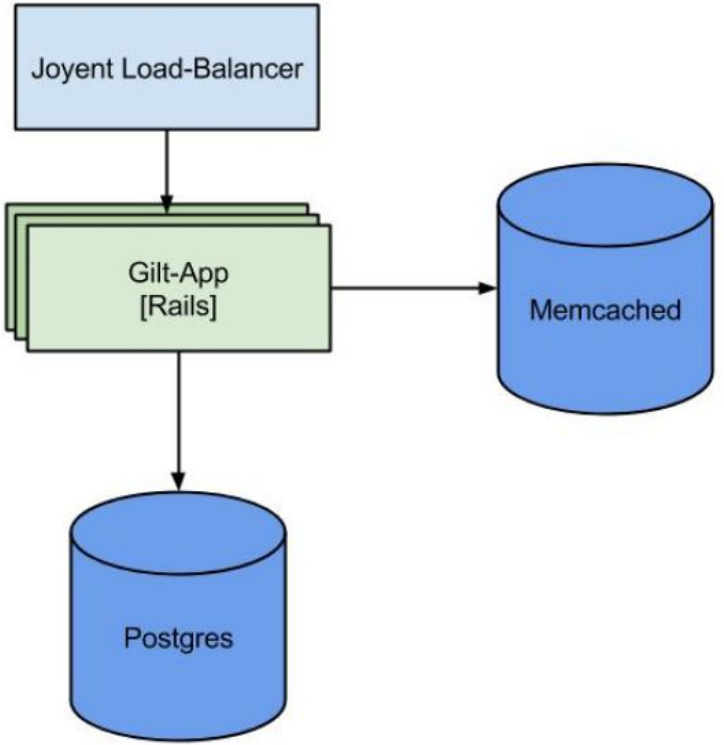


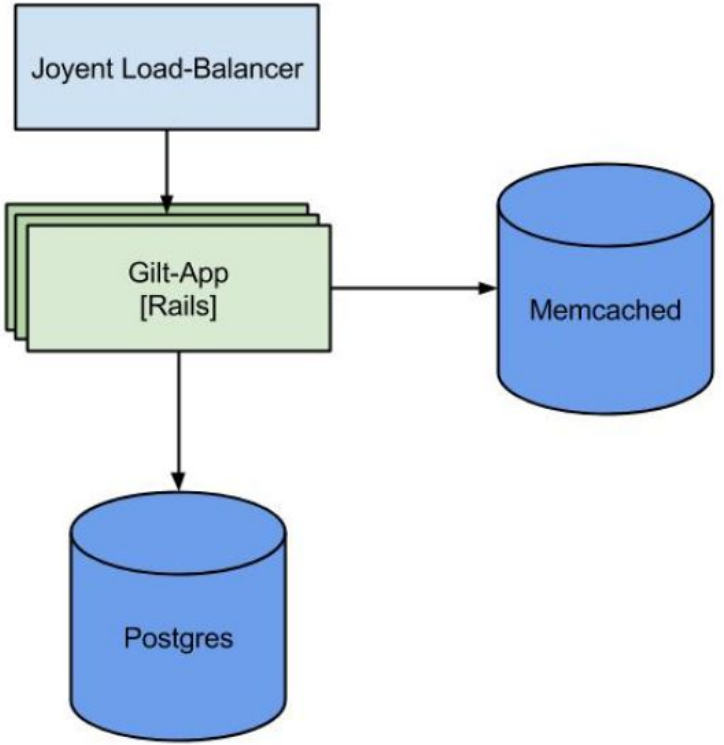
Gilt 2007

Ruby on Rails

Postgres

1000s of Ruby processes needed

Postgres overloaded



Gilt 2015

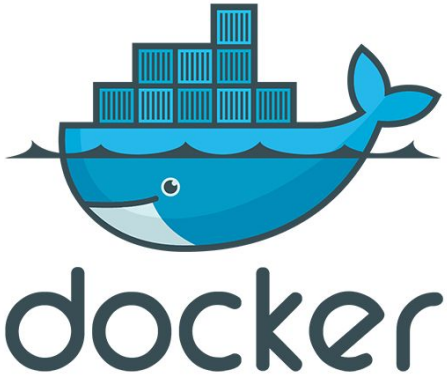
Scala

Play Framework

Docker

Elastic Beanstalk

300 services



Elastic
Beanstalk

Gilt 2015

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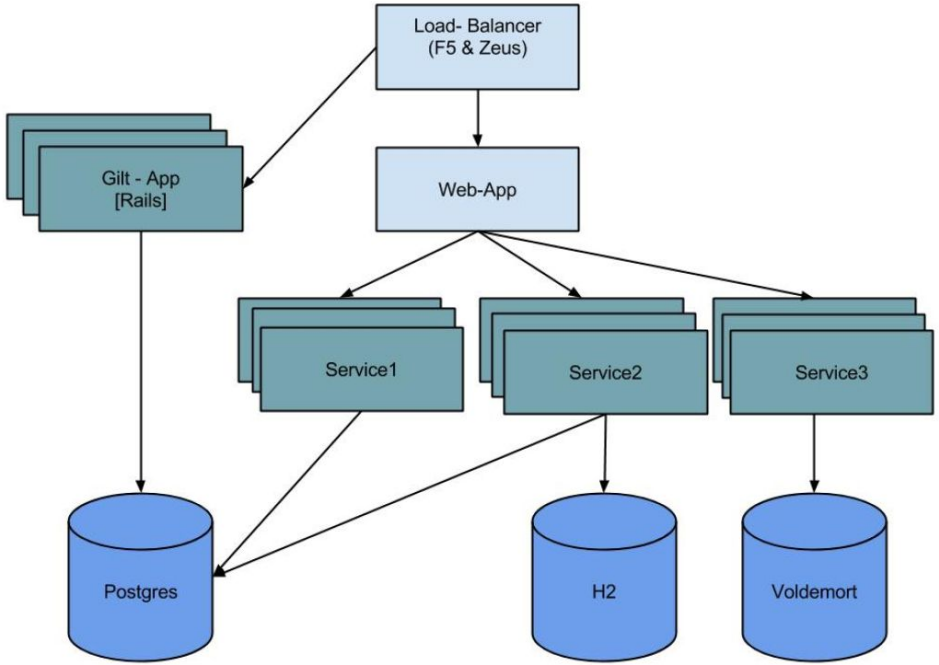

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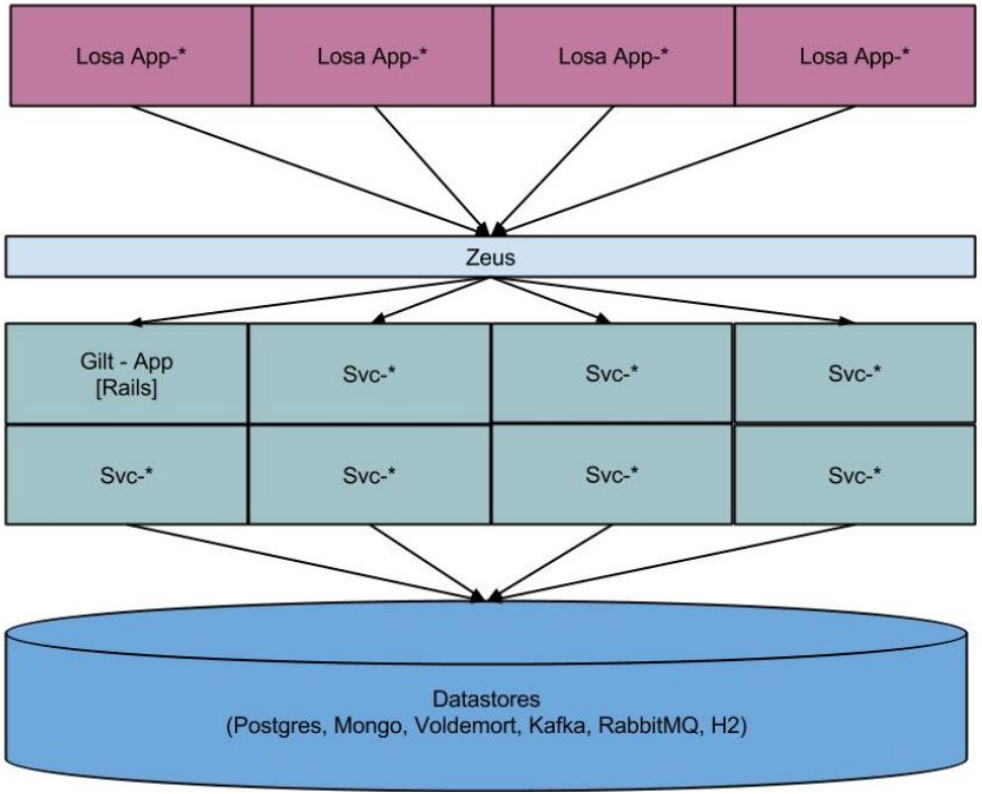


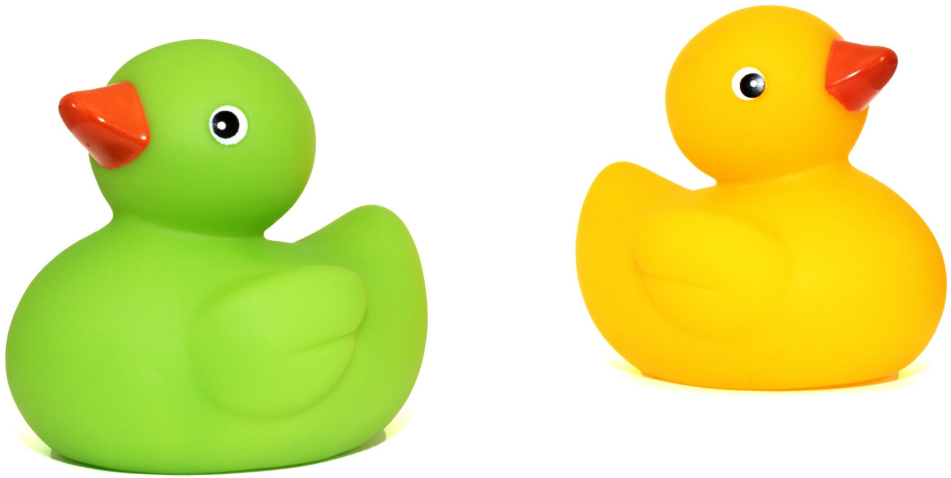
here

HERE - Duck Cloud

You are a “Rubber Duck” farmer

Need to keep track of your ducks

Internet of Ducks



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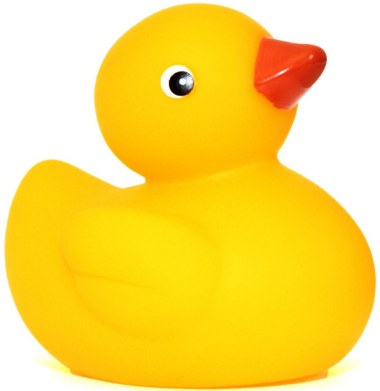
Internet of Ducks

Where my ducks at?

What are my ducks up to?



HERE - Duck Cloud

MQTT

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~~MQTT~~

Kafka

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~~MQTT~~

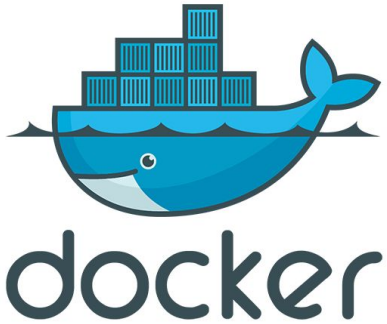
Kafka

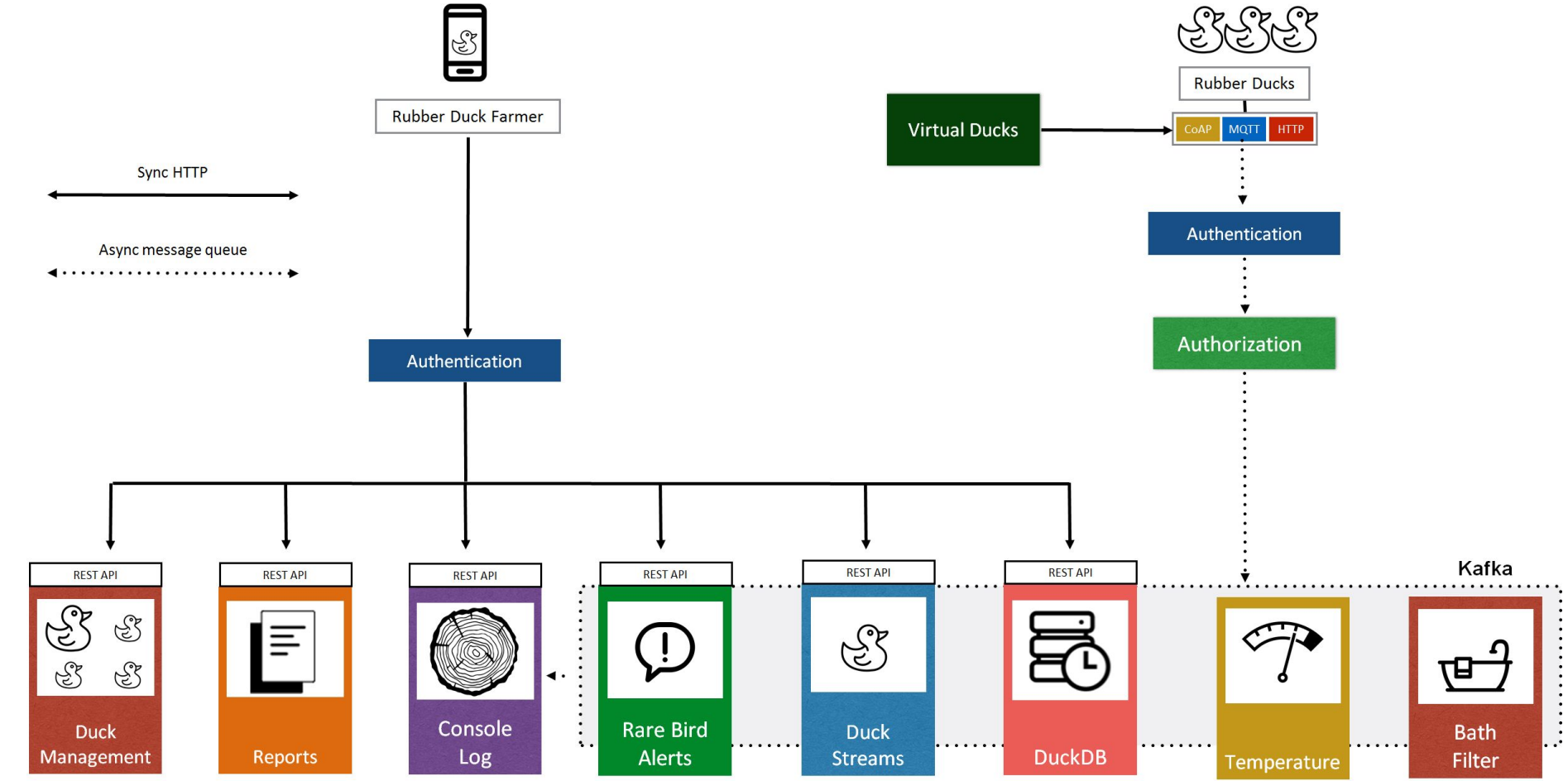
Docker

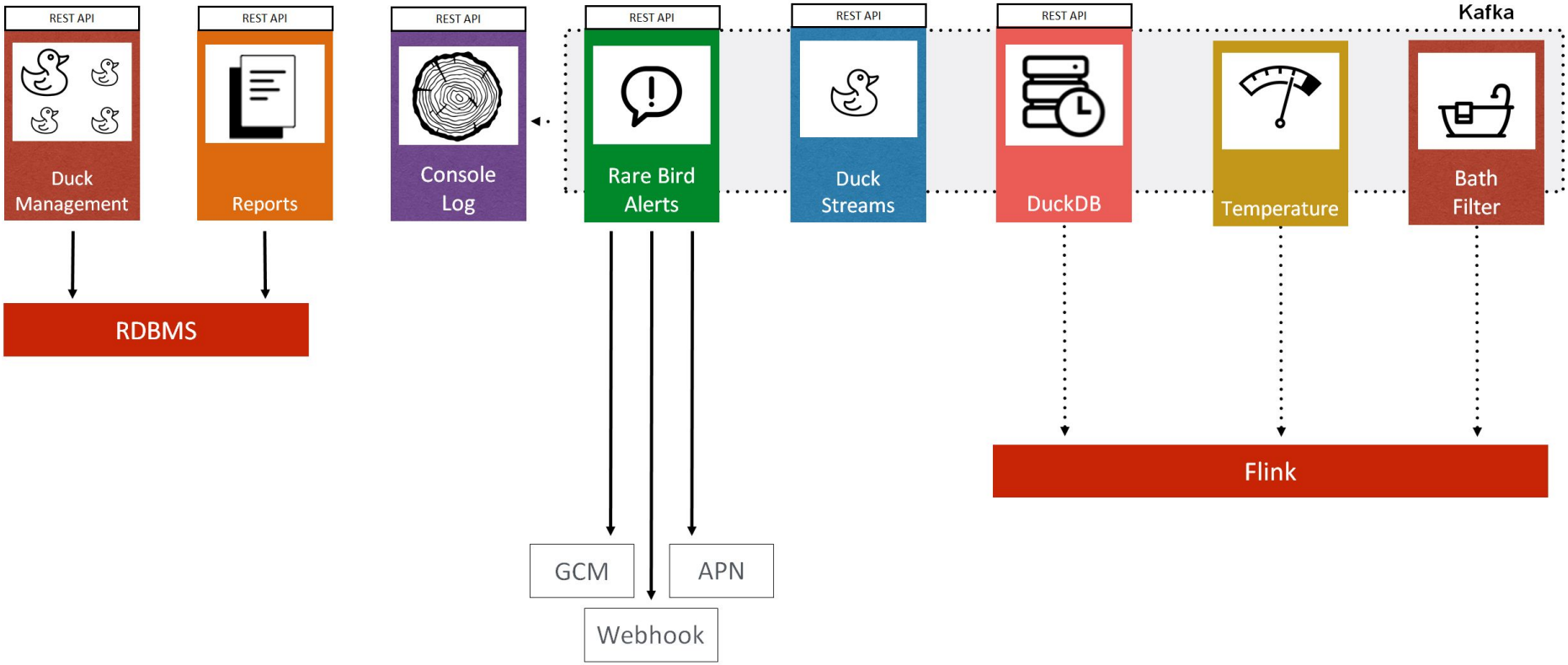
Jenkins

Flink

Jenkins




Rubber Duck Farmer
Sync HTTP
Async message queue
Authentication
Virtual Ducks
Rubber Ducks
CoAP
MQTT
HTTP
Authentication
Authorization
REST API
Duck Management
REST API
Reports
REST API
Console Log
REST API
Rare Bird Alerts
REST API
Duck Streams
REST API
DuckDB
Kafka
Temperature
Bath Filter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DuckDB
Kafka
Temperature
Bath Filter
RDBMS
GCM
APN
Webhook
Flink

Questions?

@Steve_Upton

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References

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https://www.infoq.com/presentations/microservice-arch-gilt

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