Etsy

Migrating a Monolith to the Cloud

Keyur Govande | Chief Architect

@keyurdg
8 months
Google contract signed

DC shutdown
20 months
Google contract signed

20 months

8 months

8 months

DC shutdown
Giant rewrites are hard
Lift + Shift

(Refactor later)
The global marketplace for unique and creative goods
Our Community

60 million unique items
~2 million sellers
~39 million buyers
$3.9B transacted in ‘18

Etsy Sellers

87% women
97% work from home
80% are businesses of one

Championing Diversity

~ 30% of Etsy engineers are women
4 out of 6 executives are women
Gender parity on the Board
Home grown tech
Etsy’s Architecture
Etsy’s Architecture
curl_multi_info_read() is my new event loop.
We were data center focused

- Budget: 6 – 12 months out
- Order: 3 – 6 months out
- Receive: 1 month out
- Install: 1 week out
How on earth do we migrate?
PARTNERSHIP
DEC 2017

CUTOVER
AUG 19, 2018
Google & Etsy partnership
Compute

Observability

Storage

Provisioning

Deployments

Traffic

Security
We created a migration squad
No large architecture changes

Migrate the fewest systems needed

Stay compliant (SOX, PCI)
Things we learned really quickly:

Infrastructure as code can be hard

Dependency tracking is hard

Performance? 🤔
Sorry
We're
Closed
PARTNERSHIP
DEC 2017

NEW TOOLS

ETSY MIGRATION SQUAD
JAN 2018

LOAD + PERF. TESTING
FUNCTIONAL TESTING

CUTOVER
AUG 19, 2018
Projected vs. simulated load
CPU architecture matters
99.99% may not be good enough
The unexpected cutover
August 13

14 15 16
17 18 19 20 21
22 23 24

- Full freeze on feature development
- Soft freeze
- Planned downtime for cutover 3am - 7am ET
- Heightened monitoring and on-call staffing
Cutover day: August 19, 2018
Turn off Etsy.com in the data center

Validation + testing

Ramp up on GCP

Cutover #1

Roll Fwd Or Roll Back?
Turn off Etsy.com in the data center
Turn off Etsy.com in the data center

Validation + testing
Turn off Etsy.com in the data center

Validation + testing

Out of memory!
Turn off Etsy.com in the data center

Validation + testing

Ramp up on GCP

90

180

60

Roll Fwd
Or
Roll Back?
Turn off Etsy.com in the data center
Turn off Etsy.com in the data center

Validation + testing

Too few threads!

```
sudo
nslcd
```

```
threads 60
uid nsclcd
gid ldap
```
Turn off Etsy.com in the data center

Validation + testing

Too many threads!
Turn off Etsy.com in the data center

Validation + testing

Ramp up on GCP

And we’re live!
Site performance was stable
Roll Fwd
Or
Roll Back?
PARTNERSHIP
DEC 2017

ETSY
MIGRATION
SQUAD
JAN 2018

NEW TOOLS

LOAD + PERF TESTING

FUNCTIONAL TESTING

CUTOVER
AUG 19, 2018

TUNING
Optimizing syscalls
MySQL mutex contention surprise
Network performance surprise
PARTNERSHIP DEC 2017

ETSY MIGRATION SQUAD JAN 2018

NEW TOOLS

LOAD + PERF. TESTING

FUNCTIONAL TESTING

TUNING

CUTOVER AUG 19, 2018
7+ months
Live migrations
“Infinite capacity”
Long lived flows
Upcoming challenges

● Situate better in the cloud
  ○ Tech-debt paydown
  ○ Cloud-native refactoring
  ○ Cost management

● Organizational structure
  ○ SRE
We are hiring!

etsy.com/careers
Thank you
@keyurdg