O'REILLY®

Velocity

CONFERENCE

BUILD RESILIENT SYSTEMS AT SCALE

velocity.oreilly.com.cn

#velocityconf

Moving to the Cloud

George Schlossnagle, Message Systems

About Message Systems

- World's largest provider of email messaging infrastructure
- Traditionally delivered as on-premise software, moved into the cloud recently
  - ~ 30B message per day on-premise, ~250M messages per day in the cloud
- Platform fully accessible through multiple developer-focused APIs
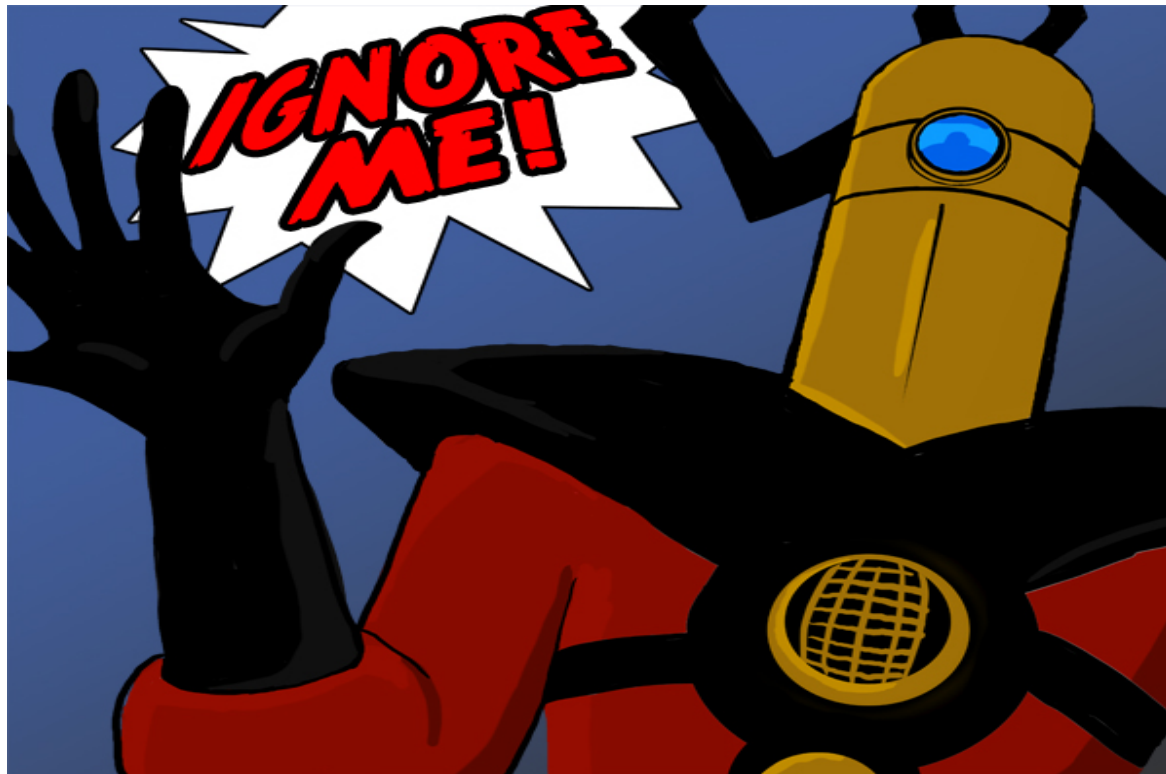
Some of our Customers

O'REILLY®
Velocity

Moving to the cloud is easy, right?

O'REILLY®
Velocity

What it takes to run email in the cloud

- People
  - Operations
  - SRE
  - Deliverability and Compliance
- Process
  - Deployments
  - SLAs
- Technology
  - Rock-solid software
  - Automation
  - Monitoring

O'REILLY®
Velocity

Running any cloud service

What our customer sees

- The front door of a cloud service
  - APIs
    - And documentation
  - Reporting UI
  - Customer support
  - TAM

What our customer shouldn't see

- Variable performance
- Downtime
- Unexpected responses
- Anything other than what's expected or documented

Behind the curtain

- Our software is a complex system
- Running a production service takes a bunch of other scaffolding
  - Network
  - Servers
  - Management and Automation
  - Deployments
  - Monitoring
  - Compliance/Deliverability

Our Infrastructure Stack

- AWS
  - EC2
  - Route53
- Configuration Management
  - Ansible
- Automation
  - Puppet, Terraform
- Monitoring
  - Circonus, OpsGenie
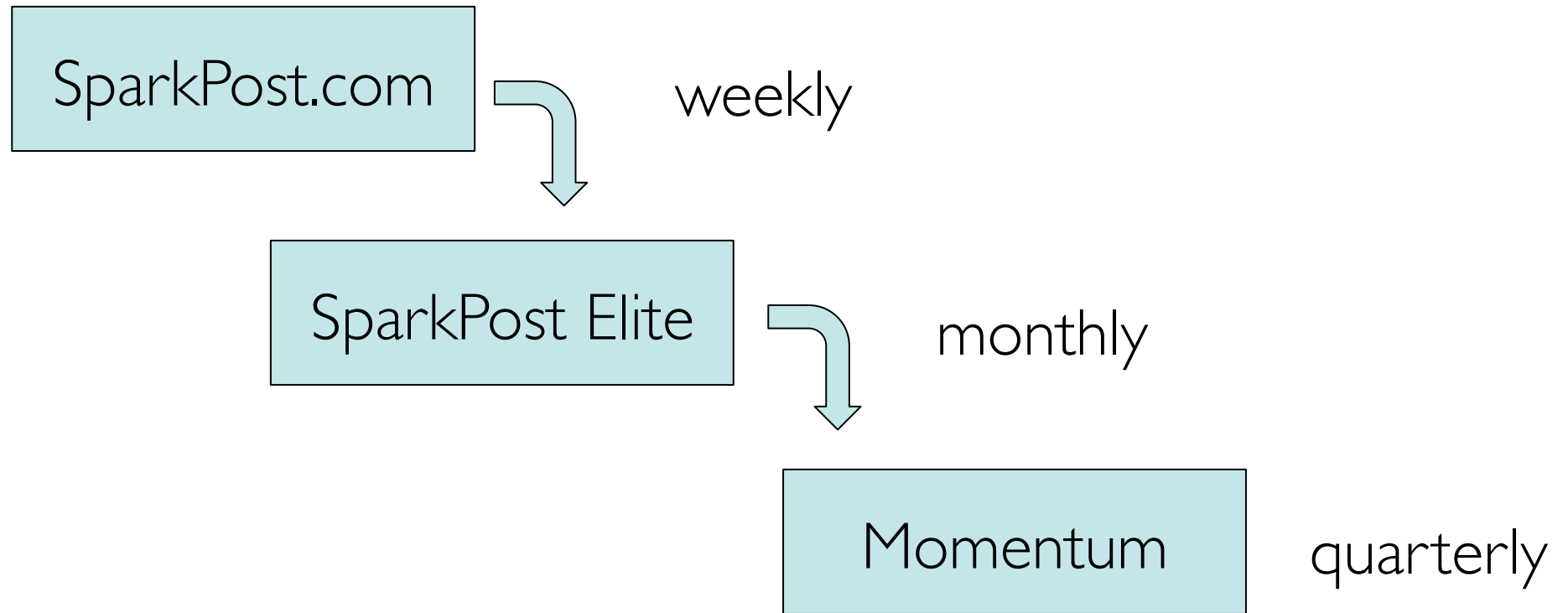- Reporting
  - SumoLogic

The Problems We Expected

Expected Challenge:
Overcoming risk aversion.

O'REILLY®
Velocity

Outcome:

Faster deployments, less bugs.

O'REILLY®
Velocity

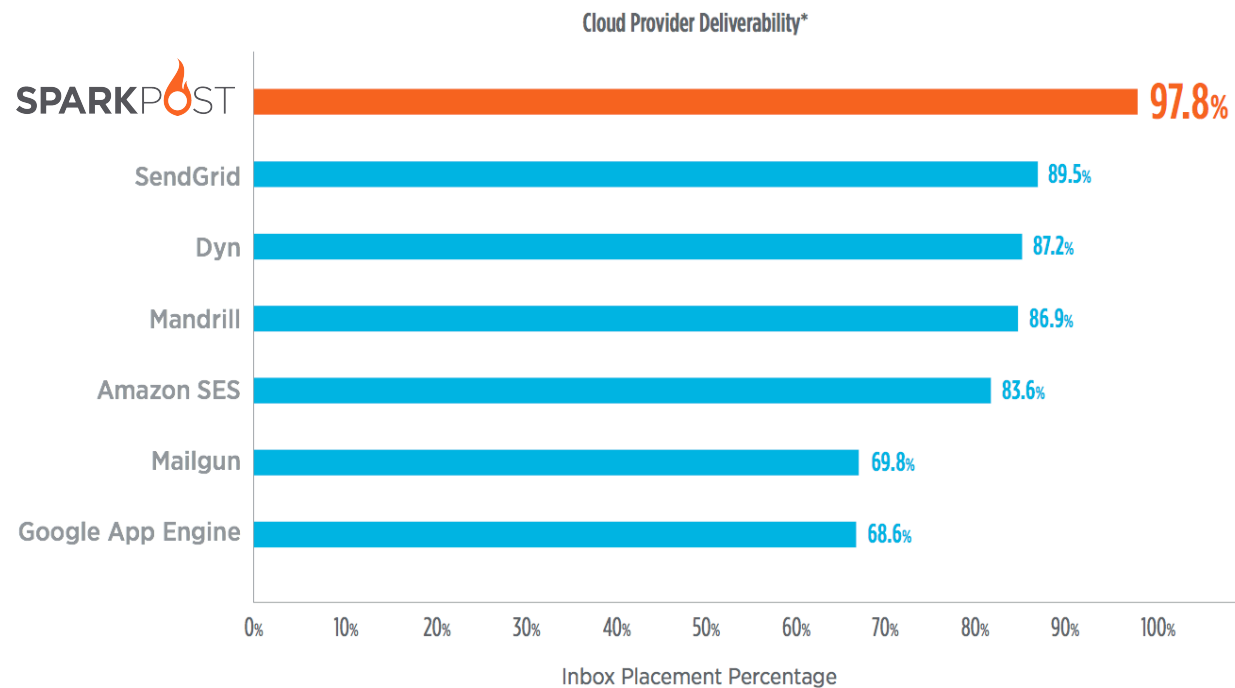Expected Challenge:

You can't run email in AWS

O'REILLY®
Velocity

O'REILLY®
Velocity

Combating Poor Reputation

- People
  - Compliance and Deliverability Teams
- Standards
  - Most stringent best practices in the industry
- Process
  - Aggressive enforcement of standards
  - Proactive support from deliverability
- Technology
  - Heavy automation

O'REILLY®
Velocity

Cloud Provider Deliverability*

SPARKPOST — 97.8%
SendGrid — 89.5%
Dyn — 87.2%
Mandrill — 86.9%
Amazon SES — 83.6%
Mailgun — 69.8%
Google App Engine — 68.6%

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

Inbox Placement Percentage

Data provided by eDatasource

#velocityconf

O'REILLY®
Velocity

Outcome
Best Deliverability in Market

The Problems We Didn't Expect

Unexpected Challenge:
# Our Networking Challenges Were Unexpectedly Unique

Networking in the Cloud

- Cloud networking is different from traditional datacenter networking
- Cloud services are generally used by traditional 'pull' web services
- Email turns that model on its head
  - The need to source large volumes of connections from arbitrary addresses is something AWS specifically doesn't do well
  - Furthermore, our model requires SNAT
- Some very challenging configuration scenarios

Solution:

Write our own SOCKS-ish Proxy

O'REILLY®
Velocity

Unexpected Challenge:

AWS billing is … very challenging

"like a teenager with his first credit card"

O'REILLY®
Velocity
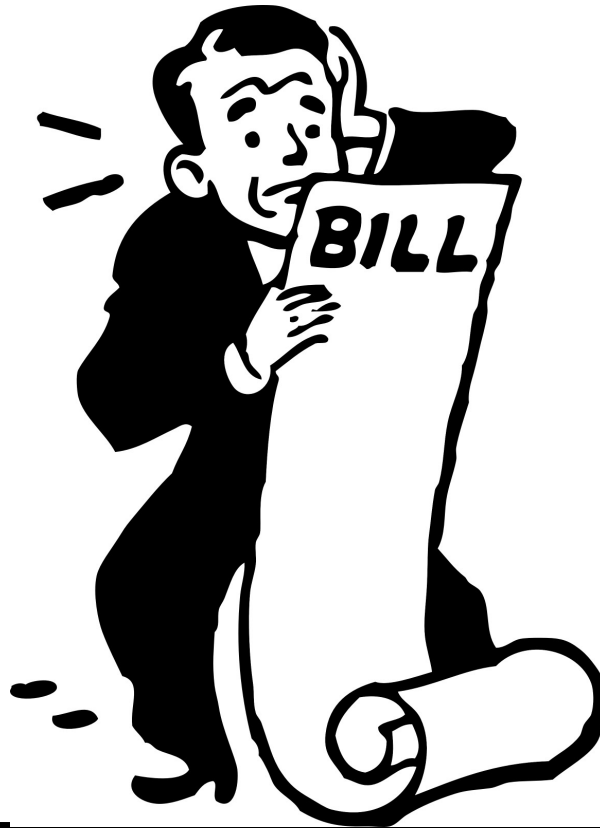
Outcome:

Way more time invested in building our own internal consumption monitoring tools than planned.

O'REILLY®
Velocity

Unexpected Challenge:

The state of automation tools isn't where we expected

O'REILLY®
Velocity

Automation Challenges

The higher level automation tools (puppet, ansible, etc) still have little awareness of cloud computing, so you need a parallel stack for spinning up/spinning down instances. Those tools are very powerful but demand quite a bit of investment to make a fully functioning environment that suits your needs.

Outcome:

Still lots of room for improvement here

O'REILLY®
Velocity

In Summary

- This has been a really interesting journey for us so far

- We have learned a lot about our own business and our products

- The journey to the cloud has actually improved our traditional on-premise product tremendously, both in terms of quality but also usability

- The journey is ongoing

O'REILLY®
Velocity

Thanks!

Questions?

O'REILLY®
Velocity