

ThoughtWorks®

N.A. Away Day 2014

Lift and Shift? Try Resize to Fit

*Lessons learned moving Mingle from on-premise
to The Cloud*

Sadique Ali + Bill DePhillips

Origin of the Title

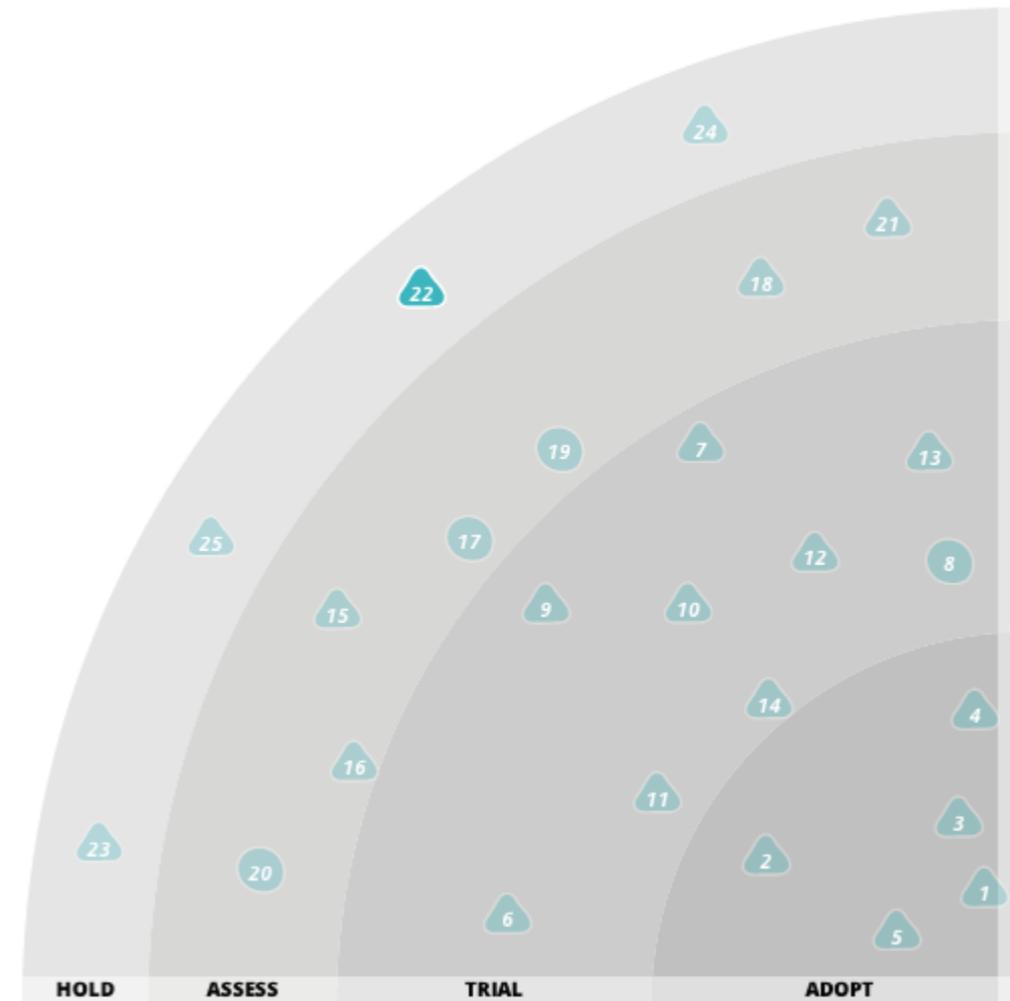
● HOLD

22. Cloud lift and shift **NEW**

23. Ignoring OWASP Top 10 **NEW**

24. Siloed metrics **NEW**

25. Velocity as productivity **NEW**



Goals of This Talk

- Share the shortcomings of our initial “lift and shift” approach
- Repeatable lessons for those of you undertaking similar migrations or designing greenfield SaaS systems

The Orange App?

The screenshot displays the Mingle Event Management interface. At the top, there is a navigation bar with the Mingle logo and 'Event Management' text. Below this is a secondary navigation bar with tabs for Overview, Feature Tree, Story Backlog, Story Wall (selected), All, History, and Murmurs*. A search bar and 'Project admin' link are also present. The main content area features a Kanban board with three columns: 'New (6)', 'Open (5)', and 'Closed (6)'. Each column contains several story cards. A modal window is open over the 'Close event registration' story (#8) in the 'New' column. The modal shows the story title, a '(no description)' field, and metadata including 'Type: Story', 'Status: New', 'Priority: Should', 'Feature Tree Feature: #18 Event Creation', and 'Planning Tree Release: #22 Release 1 Sprint: #29 Sprint 5'. At the bottom of the modal, there is an 'OPEN' button and a 'Move Story to Open' button.

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Explore Mingle Need help? Community About Log a support request

Mingle Today

mingle Mingle - Z&Y Murmurs Bill "16 Candy Colors!!!" | Sign out

Our wall Overview All History Project admin

Hide grid settings Help Select tree: None List Grid

Group rows by: Stream Row Aggregate: Count Sort by: Rank Color by: Type

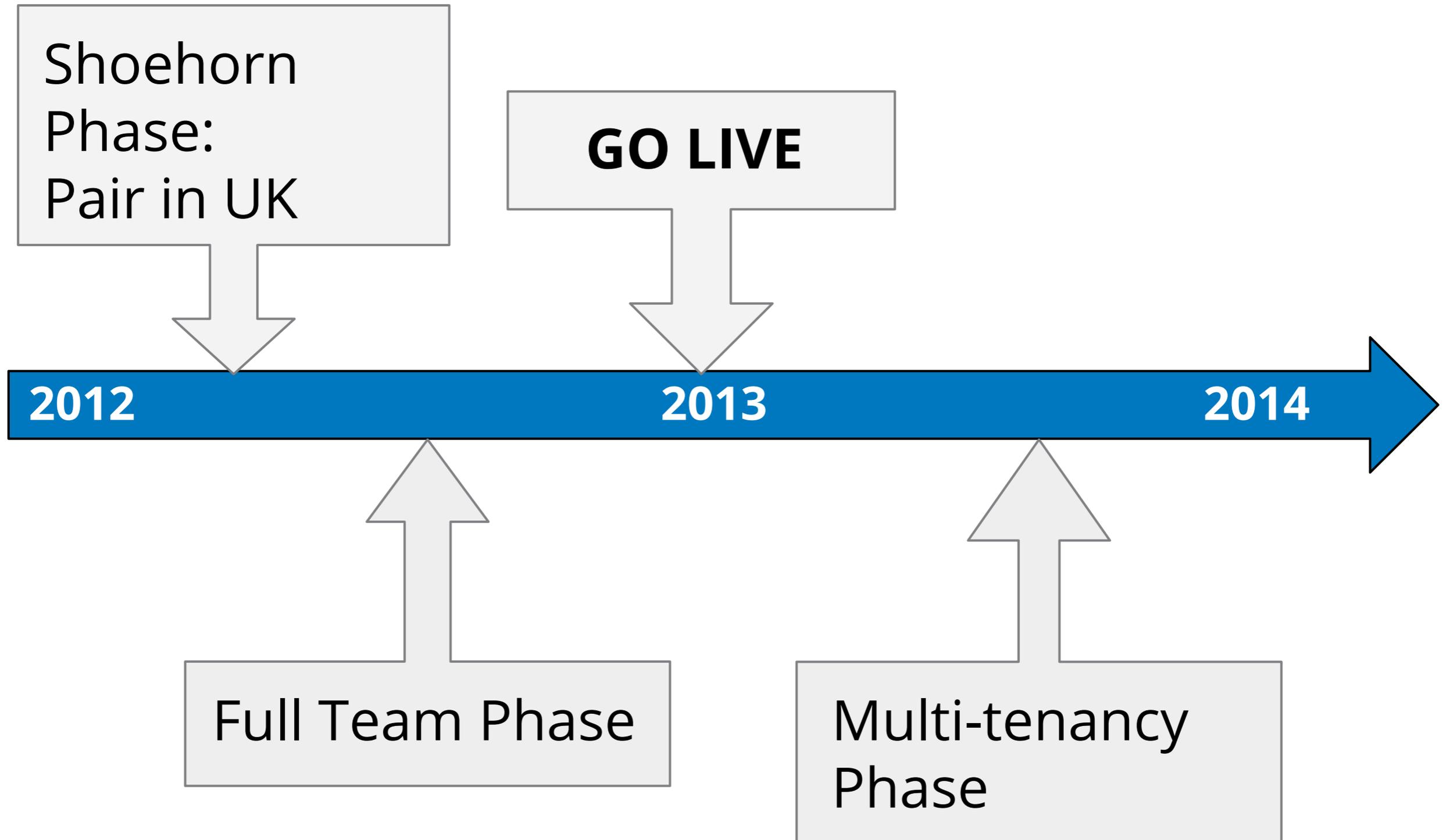
Group columns by: Status Column Aggregate: Count

Rank cards Maximize Update URL Cycle Time

	Ready for dev (25)	In Dev (16)	Testing (11)	Verify on Staging (10)	Verify on Production (27)
	<p>Tag color banner #619</p>	<p>Allow inline edit of the card popup properties #595</p>	<p>[Git] build github webhook service #567</p>	<p>Drag drop to assign user properties #577</p>	<p>Automatically assign colours #509</p>
	<p>Card Wall - Rank and Zoom Sliders #623</p>	<p>Live notifications that something has changed #622</p>	<p>Hide more than 5 properties on card popup behind More... #594</p>	<p>Drag user off card to unassign #621</p>	<p>Recover changes (fka: Autosave) #512</p>
	<p>Project dropdown new project link should copy project name from autocomplete text field #627</p>	<p>[github] Add 'Connect to github' button to create a webhook from Mingle for github integration #682</p>	<p>New Murmurs popup and list for all pages to replace Murmurs tab #618</p>	<p>[Git] build git hook post-receive script to push changes to Mingle #568</p>	<p>Solution interview the new property creation wizard with a TWer #586</p>
6+ (22)	<p>Add full icon url in API #628</p>		<p>More changes to Agile and Scrum templates #631</p>		<p>Update agile and scrum templates to use plvs in card defaults #626</p>
	<p>inline edit tag #684</p>				<p>Remove table layout and neat to fix card content breaking layout #646</p>

Add Card How We Hack Contact us Help About

Timeline

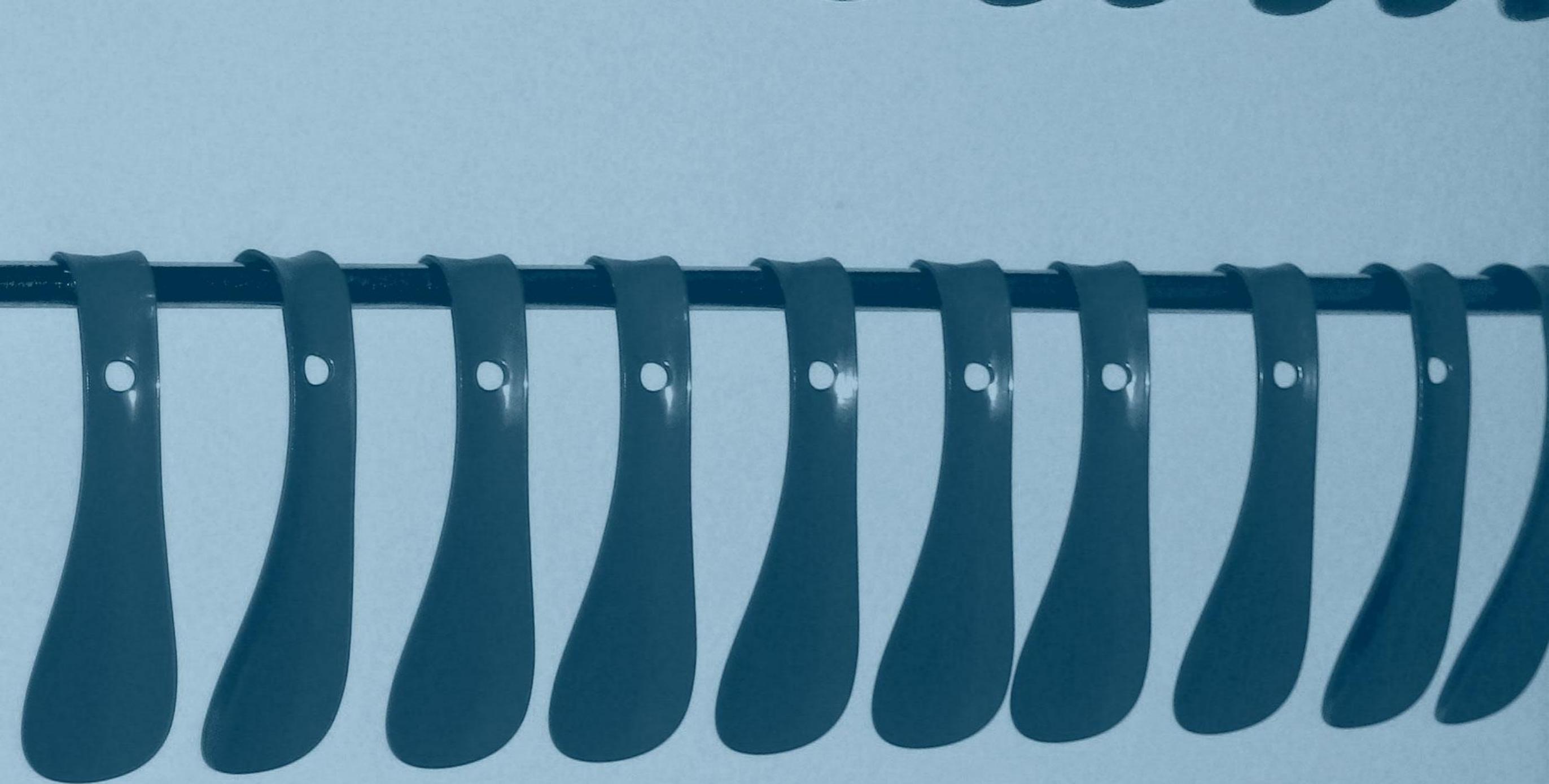


Current Scale

Organizations (25,579 created users) (3,477 active users)

Showing 200 of 8566 matched records

Name	Age	Edition	Allowed Users	Total Users	Active User %
expedia	11 months	Mingle Enterprise	5000	1275	7%
entertainment-partners	11 months	Mingle Enterprise	500	409	29%
careerbuilder	11 months	Mingle Enterprise	350	314	84%
mingle	11 months	Mingle Enterprise	1000	260	1%
moneysupermarket	11 months	Mingle Enterprise	283	211	88%
ewe	11 months	Mingle Enterprise	5000	192	26%
wikipedia-world-women	11 months	Mingle Enterprise	500	169	0%
leo	11 months	Mingle Enterprise	2000	164	0%
pearson	11 months	Mingle Enterprise	144	142	45%
bcg	11 months	Mingle Enterprise	300	135	0%
trecom	11 months	Mingle Enterprise	124	125	49%



Shoehorn Phase

CC BY 2.0 <https://www.flickr.com/photos/calliope/>

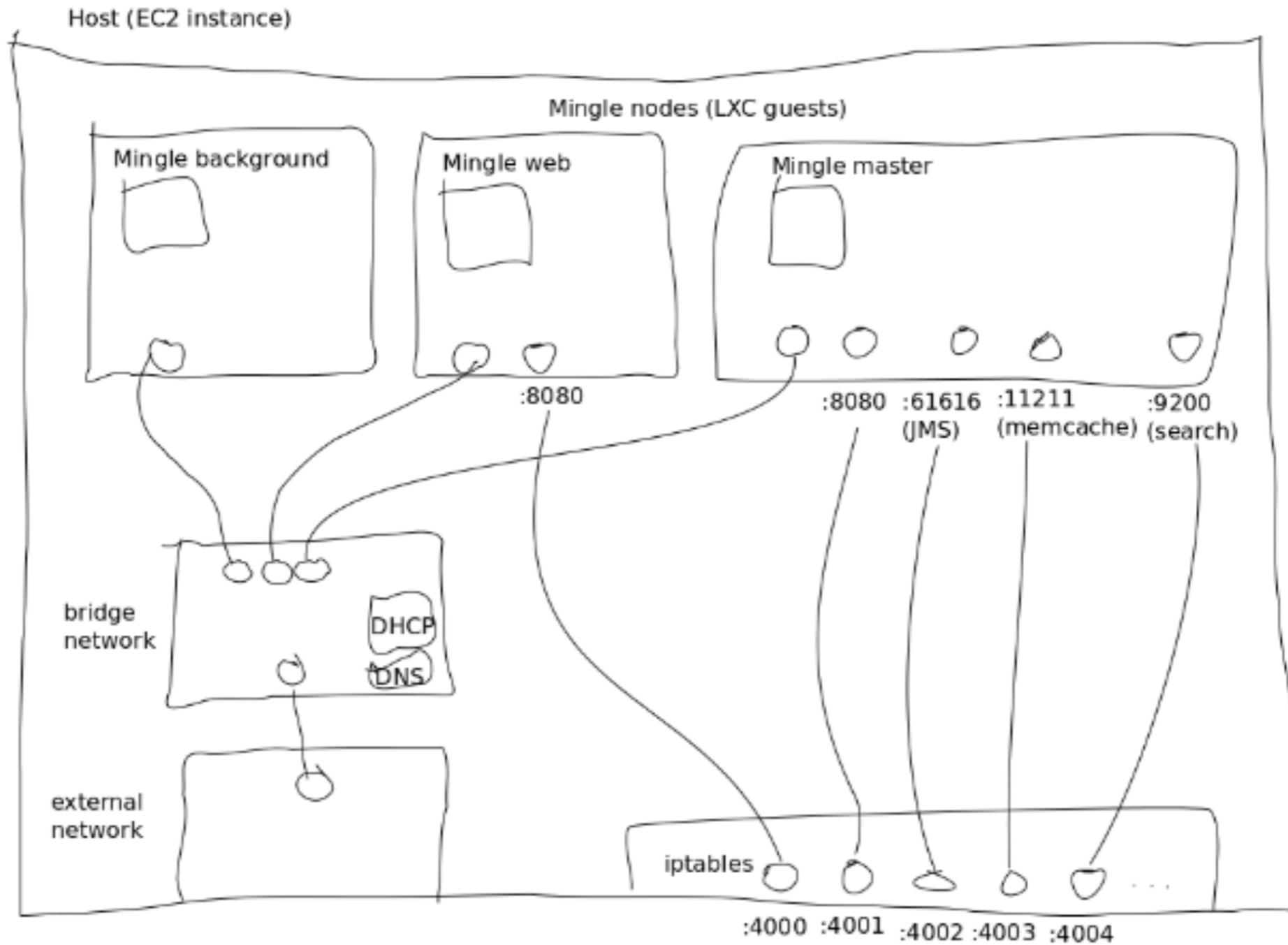
Project Constraints

- The two devs weren't core Mingle developers
- Couldn't change Mingle
- Distributed team in UK

Models to Follow

- Rackspace hosted instances
- Trial provisioning system

Initial Design



The “Master Node”

- A container allocated more resources that ran the application services
 - ActiveMQ
 - ElasticSearch
 - Memcache

Initial Changes

- Use AWS services instead of those in the JVM
 - File system → S3
 - Memcache → ElastiCache
 - ActiveMQ → SQS

Limitations

- Complex configuration
- Inefficient resource usage
- Individual self-managed databases



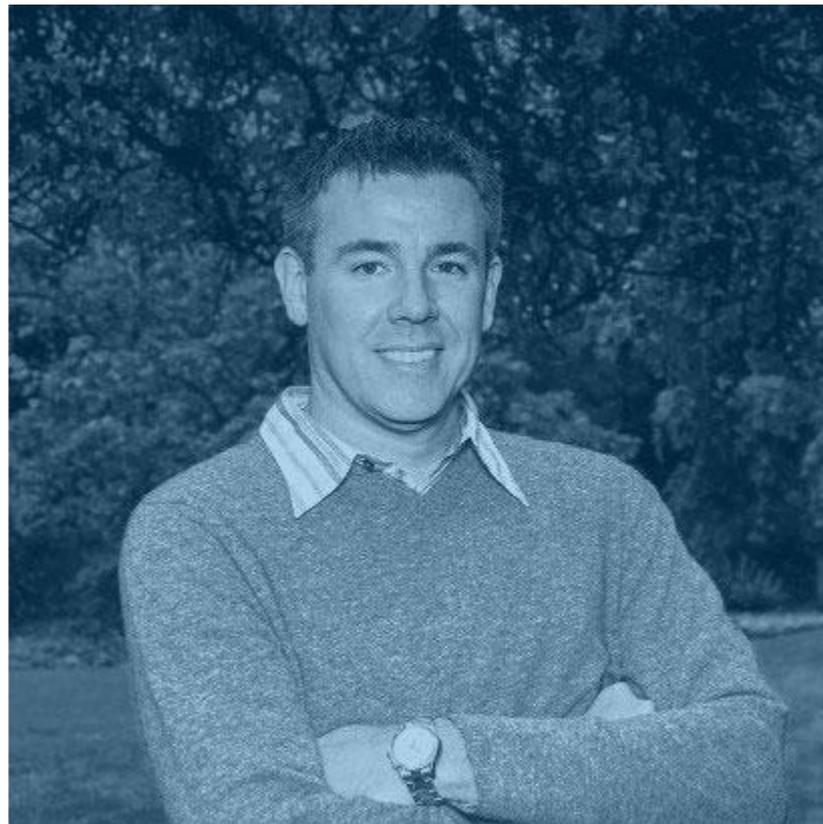
Full Team Phase

Founding Principles

- monitoring over testing
- ad-hoc environments
- no shared infrastructure
- cookie cutter environments
- we are not special
- automate everything
- immutable machines

Initial Milestone

- Get real customer online



Outcome

- Success: could be sold to new prospects
- Very expensive per customer
- Deployments could only be done weekly

*Turning point came at
AWS Re:invent*

Features We'd Have To Build Ourselves

- Autoscaling
- Zero downtime deployment
- Customer creation



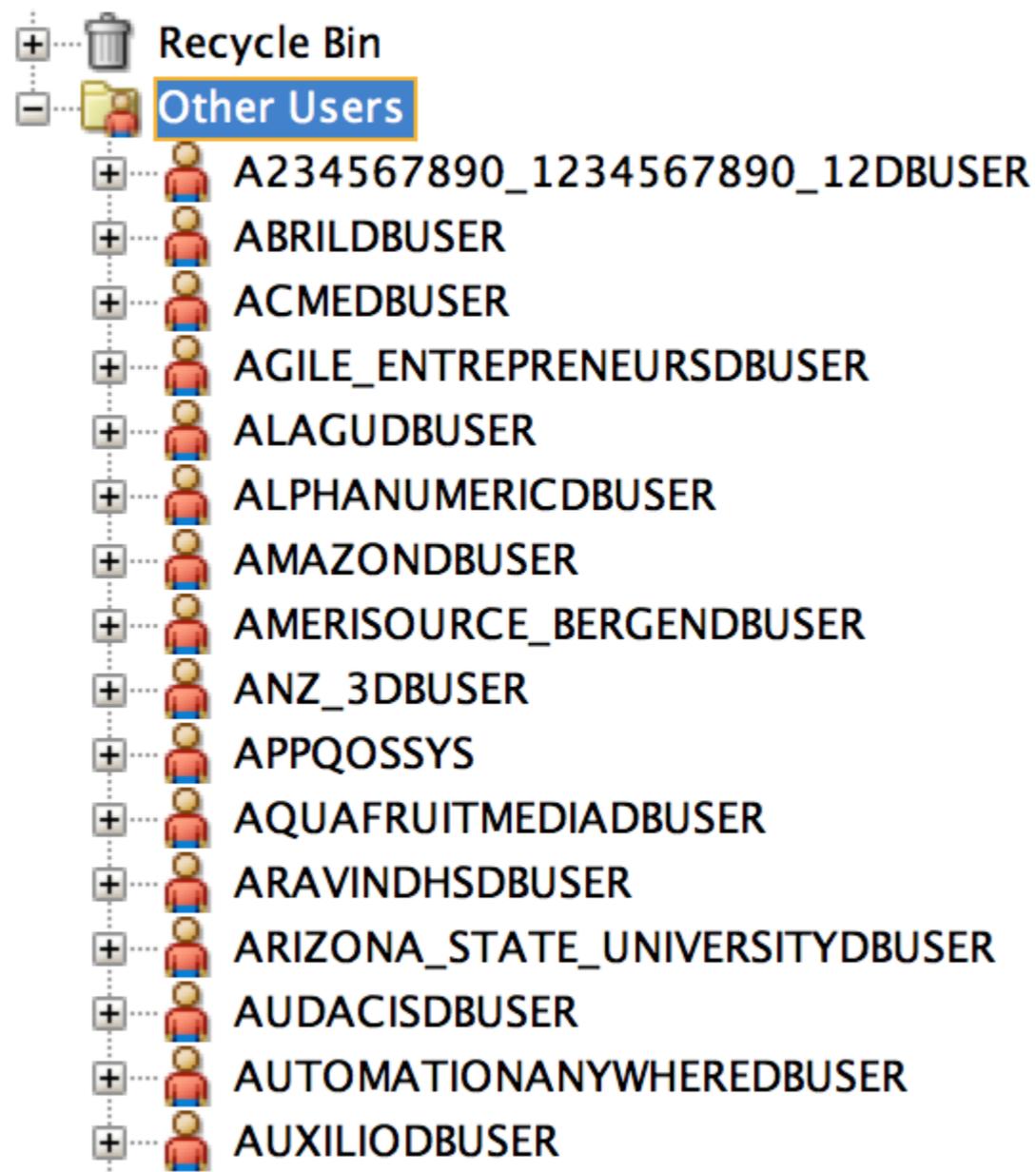
Multitenancy Phase

http://www.google.com/about/datacenters/gallery/images/_2000/IDI_018.jpg

Architectural Changes

Schema per tenant

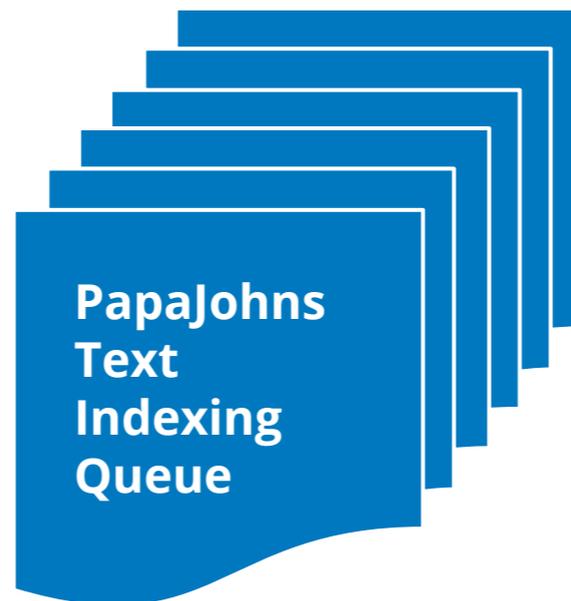
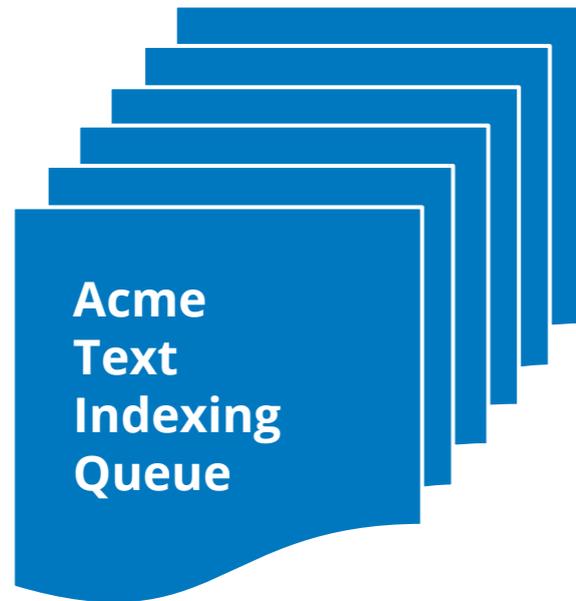
- Switch Oracle schemas per request



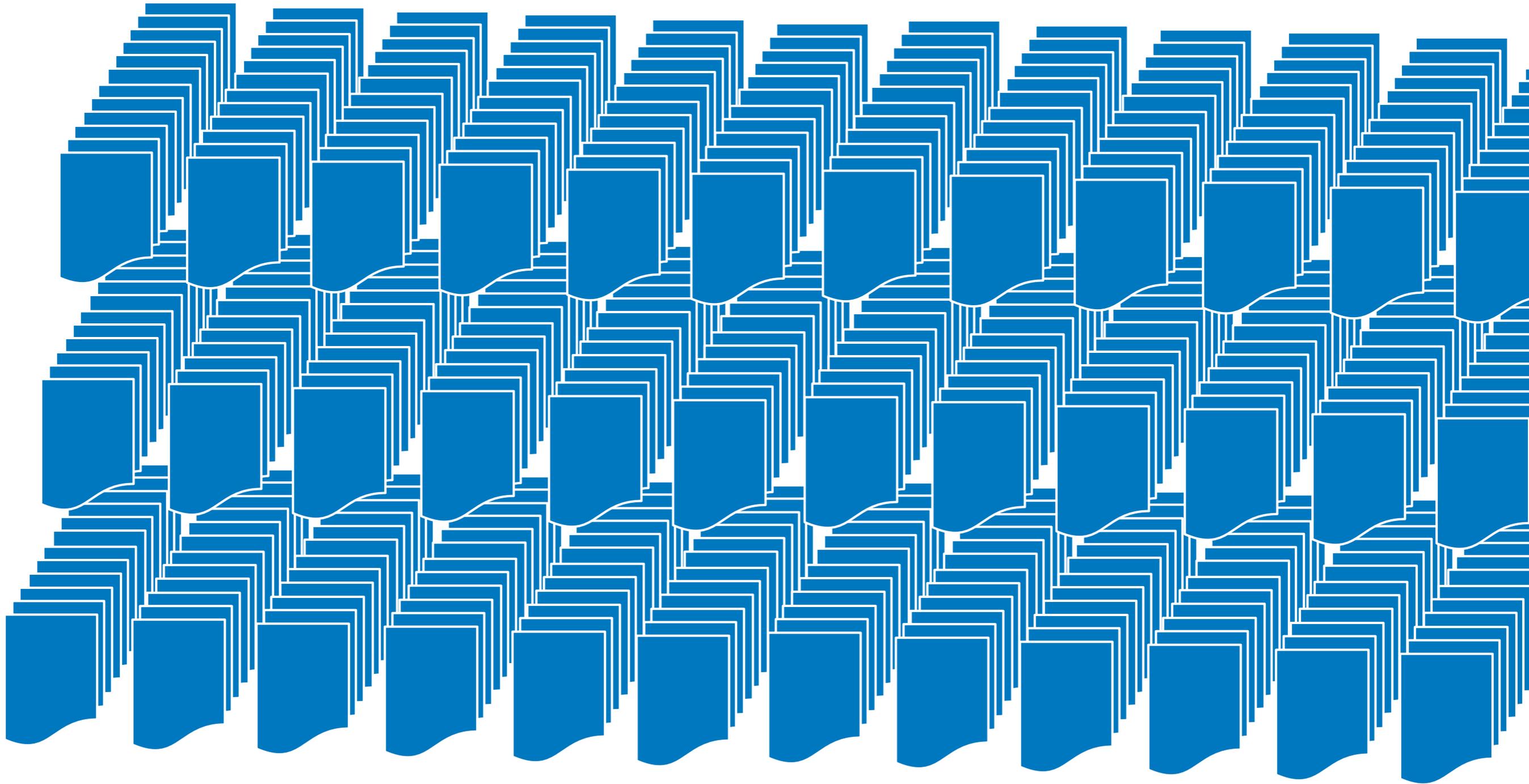
Schema per tenant

- Rack middleware
- ***tenant-name***.mingle.thoughtworks.com

Job Queues

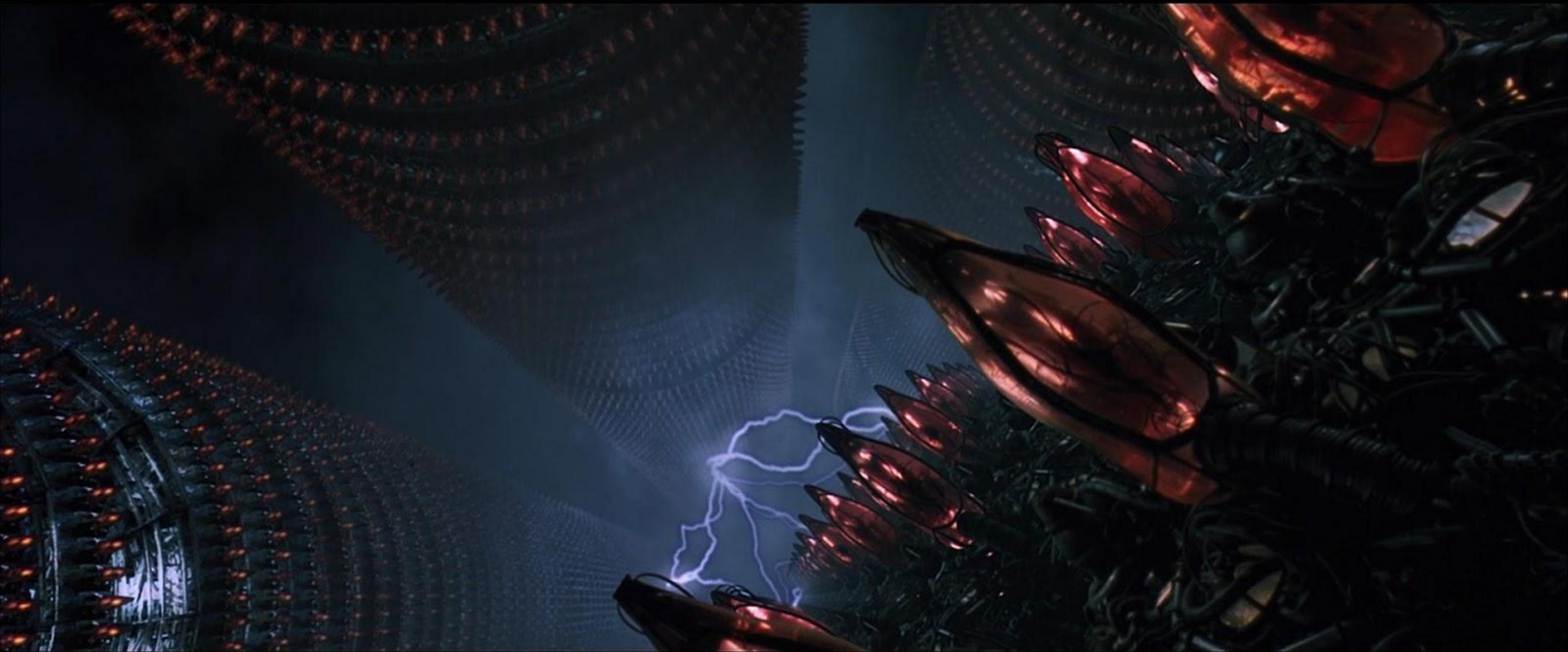


Job Queues

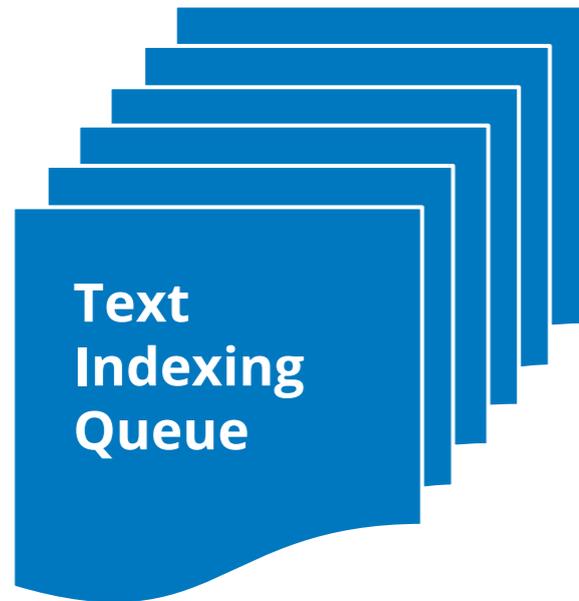


Job Queues - Before

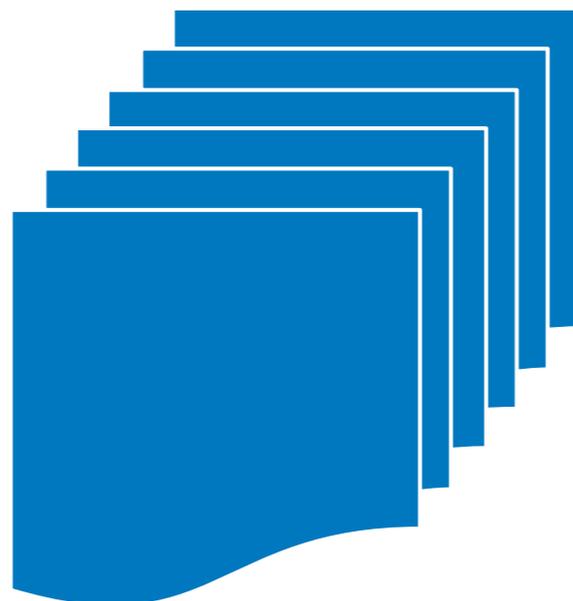
Over 50,000



Multi-tenant Job Queues



47

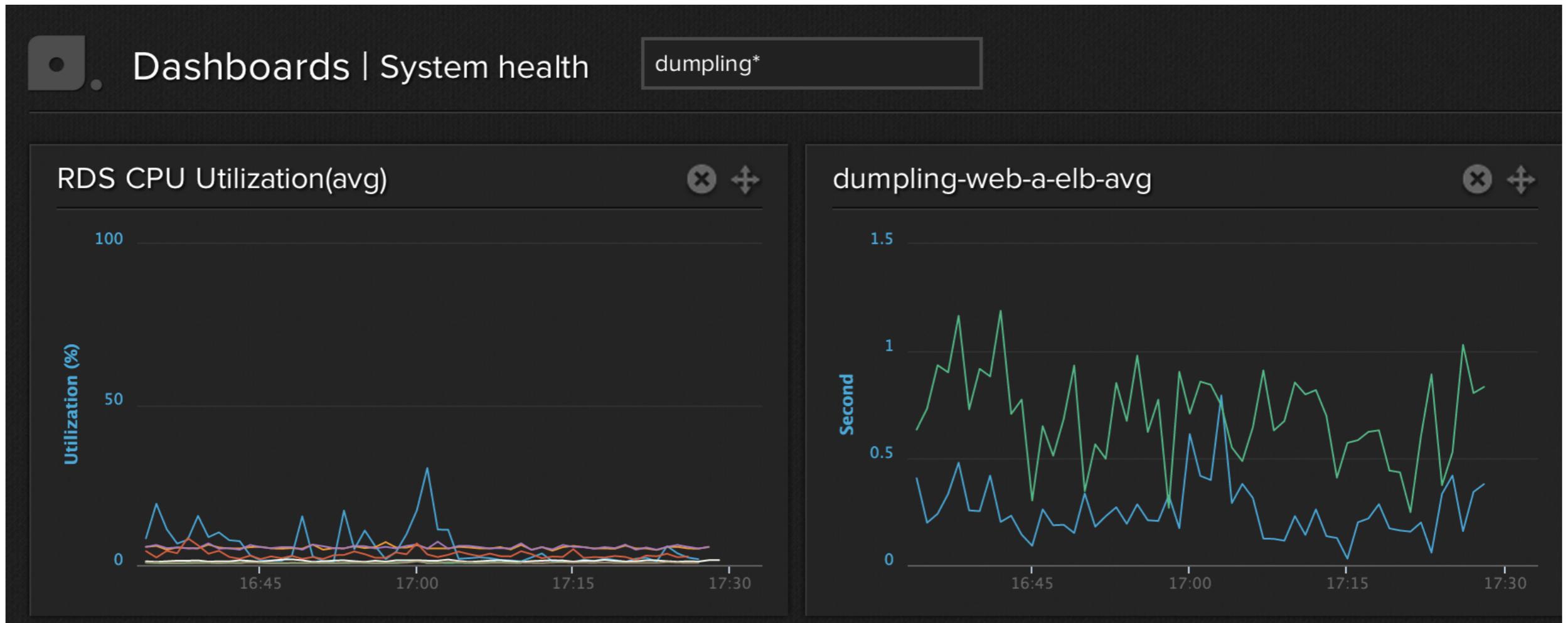


Dynamo DB - Tenant Info

```
{
  tenant: "tenant",
  configs: {
    database_username: "MIN_1046FT3KJ",
    db_config: {
      url: "jdbc:oracle:@....."
    }
  }
}
```

Operational Changes

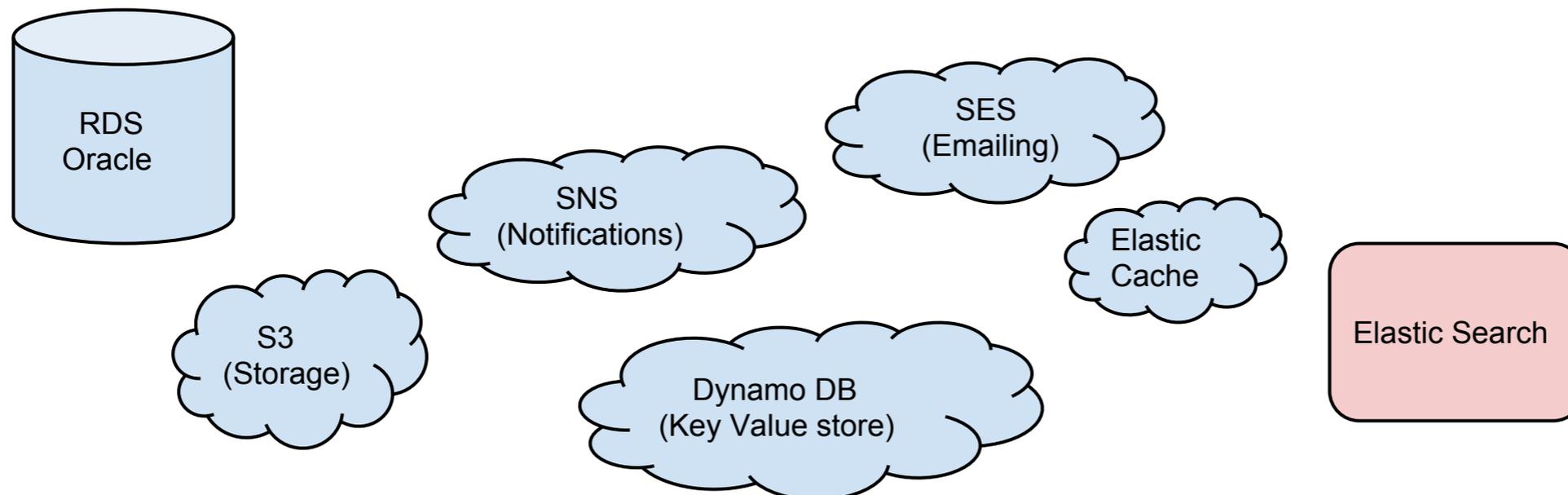
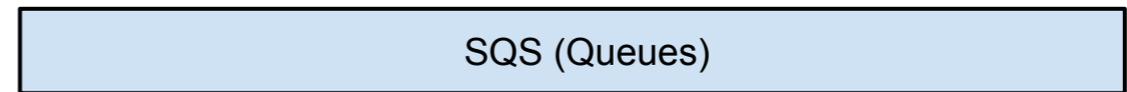
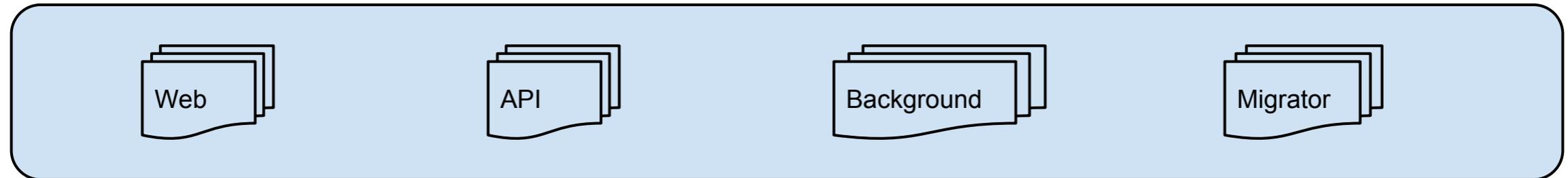
Settling on Librato and built-in AWS monitoring



Outcome

- Economically scale
- New customers onto additional RDS instances
- Use conventional deployment

Present Architecture



Deployment Changes

- Move to highly convention-based ElasticBeanstalk
- Open sourced a tool for EB blue/green deployments
 - github.com/ThoughtWorksStudios/eb_deployer

eb_deployer

```
--
70 # Defining a smoke test is high recommended for serious usage. The
71 # simplest one could just be checking server landing page using curl, e.g.
72 smoke_test: |
73   curl_http_code = "curl -s -o /dev/null -w \"#{http_code}\" http://#{host_name}"
74   Timeout.timeout(600) do
75     until ['200', '302'].include?("#{curl_http_code}".strip)
76       sleep 5
77     end
78   end
79
80 # Elastic Beanstalk settings that will apply to the environments you
81 # deploying.
82 # For all available options take a look at
83 # http://docs.aws.amazon.com/elasticbeanstalk/latest/dg/command-options.html
84 option_settings:
85   # Following is an option_settings example which changes EC2 instance type
86   # from t1.micro (default) to m1.small. Instances with t1.micro type sometime
87   # are not very responsible, so m1.small is suggested for saving time.
88   # But if you care about the marginal cost difference you can comment this out to
89   # go back to t1.micro.
90   - namespace: aws:autoscaling:launchconfiguration
91     option_name: InstanceType
92     value: m1.small
93
94   # - namespace: aws:autoscaling:launchconfiguration
95   #   option_name: EC2KeyName
96   #   value: my-ec2-keypair-in-this-region
97
98   # jvm settings
99   - namespace: aws:elasticbeanstalk:container:tomcat:jvmoptions
100     option_name: Xms
101     value: 512m
102   - namespace: aws:elasticbeanstalk:container:tomcat:jvmoptions
103     option_name: Xmx
104     value: 1024m
105   - namespace: aws:elasticbeanstalk:container:tomcat:jvmoptions
106     option_name: XX:MaxPermSize
107     value: 128m
108
```

Following the Principles

The most important one turned out to be...

we are not special

We had to change our app to not be as special.

THANKS

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@sdqali
@wdephillips

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