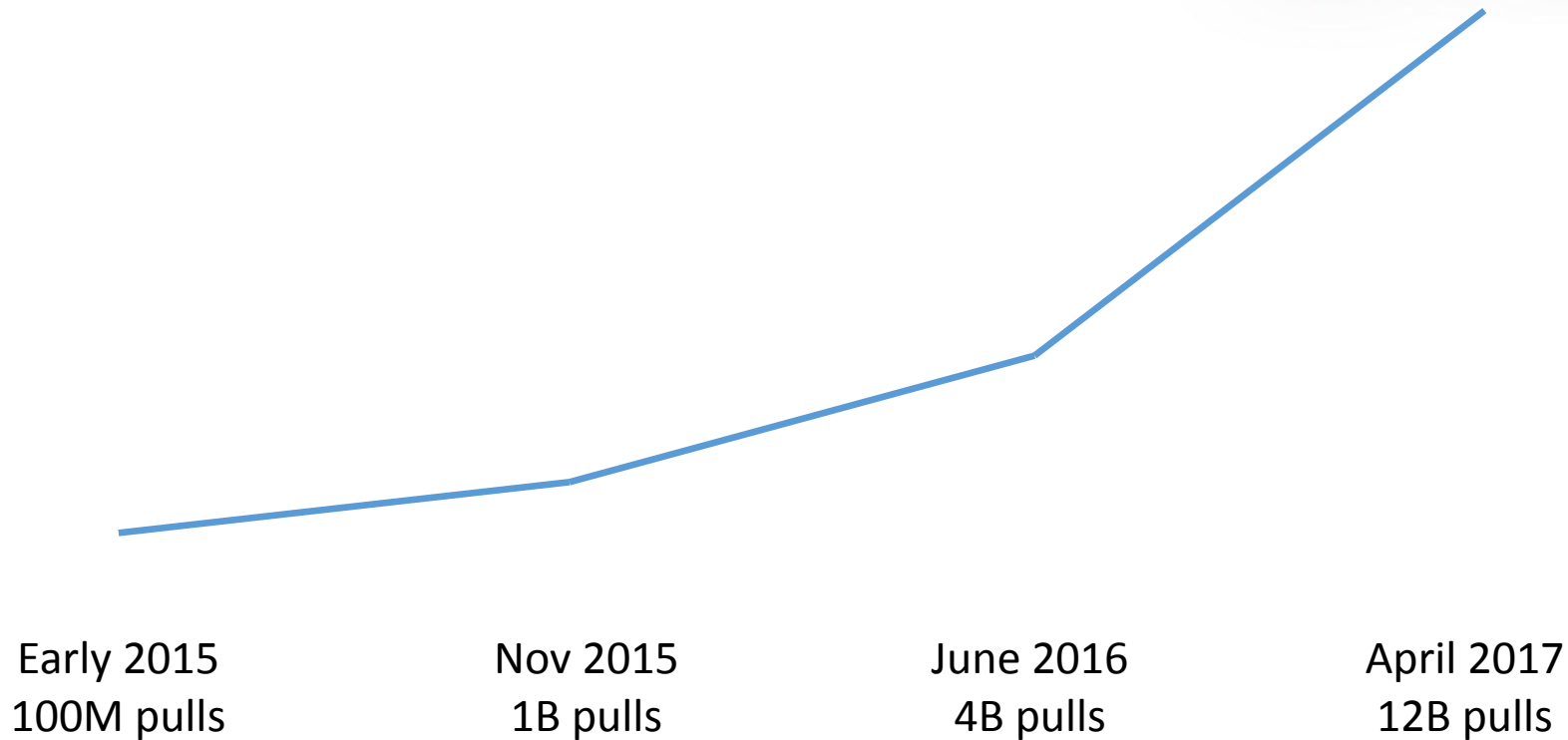


How Simplicity Will Unlock the True Potential of Container Cloud

Sheng Liang, Rancher Labs

May 18 2017



Google Trends

Compare



Kubernetes
Search term

Docker Swarm
Search term

Mesos
Search term

+ Add comparison

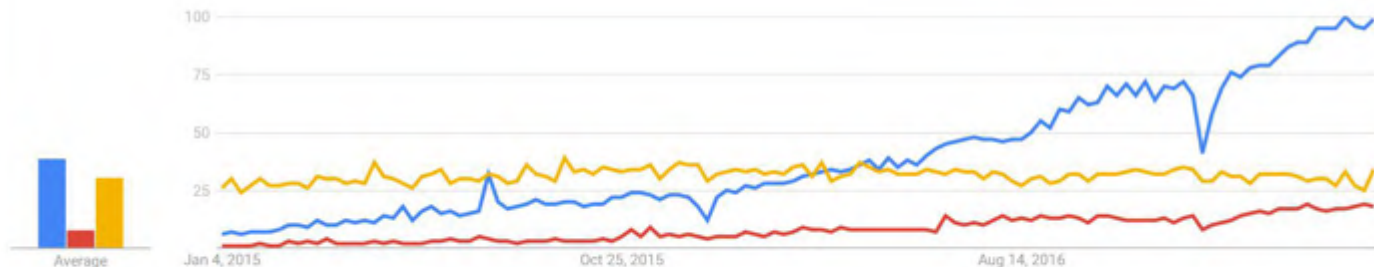
Worldwide

1/1/15 - 5/4/17

All categories

Web Search

Interest over time





Amazon
EC2 Container
Service (ECS)



Aliyun (Alibaba Cloud) Container Service

阿里云容器服务

China

<http://www.aliyun.com/product/containerse...>

Announcing
Azure Container Service

- Standard Docker tooling and API support
- Streamlined provisioning of Apache Mesos Clusters
- Integrated app management and scaling
- Linux and Windows server containers
- Azure and Azure Stack

Azure
MESOS

The graphic features a dark blue background. On the left, there is white text announcing Azure Container Service and a list of features. On the right, there is a white cloud icon with a blue 'A' inside, connected by a yellow line to a blue circle containing a white 'M' and the word 'MESOS' below it.

Products Solutions

Cloud Container Engine (CCE)




Google Container Engine
(GKE)

Google Container Registry



☰ Keynote: Kubernetes is Still Hard (for Developers) - Michelle Noorali, Software Engineer, Deis



The video player displays a presentation slide with the following text:

- YAML
- minikube
- Docker
- manifests
- Replica Sets
- Helm
- kubectl
- Deployments
- container registries
- Pods
- Charts
- Services
- Container runtimes

The speaker, Michelle Noorali, is visible on the right side of the slide. The video player interface includes a progress bar at the bottom showing 9:44 / 14:00, and social media sharing icons for YouTube, Facebook, and Twitter. Logos for Cloud Native Con and KubeCon are also present.

300,000 sites switched to DigitalOcean between April and May 2017

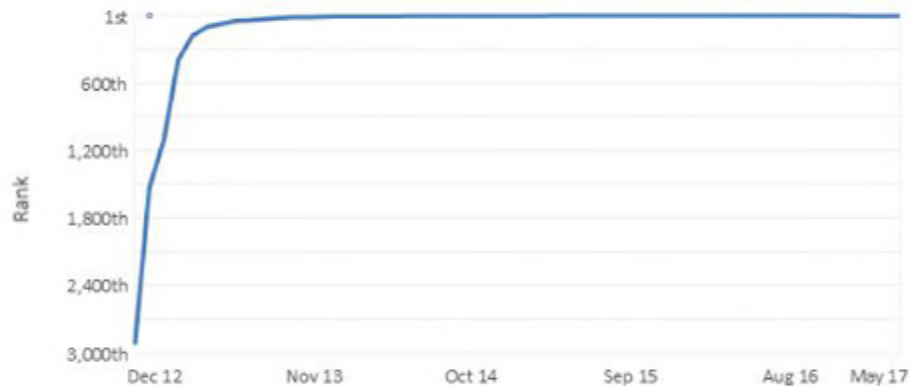
World US

DigitalOcean's Worldwide Growth









y-axis (scale)

DigitalOcean's Worldwide Rank



Retrieved from <http://trends.netcraft.com/www.digitalocean.com> on May 12, 2017

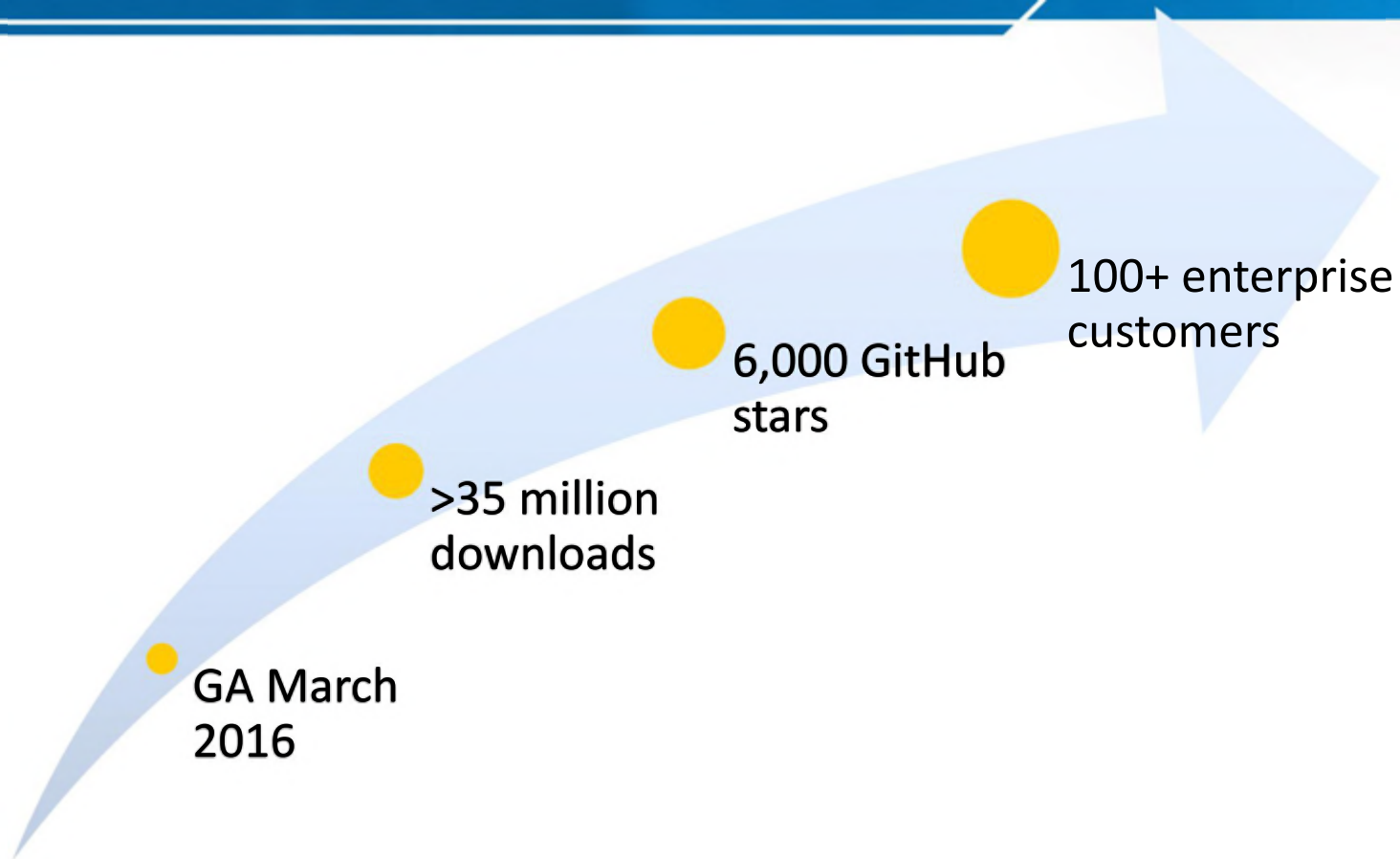
The screenshot shows the DigitalOcean web interface for managing Droplets. The browser address bar shows the URL `https://cloud.digitalocean.com/droplets?i=b9b676`. The navigation menu includes links for Droplets, Images, Networking, Monitoring, API, and Support. A green 'Create Droplet' button is visible in the top right. Below the navigation, there is a search bar labeled 'Search by Droplet name'. The main content area shows a list of droplets under the 'Droplets' tab. The table below contains the following data:

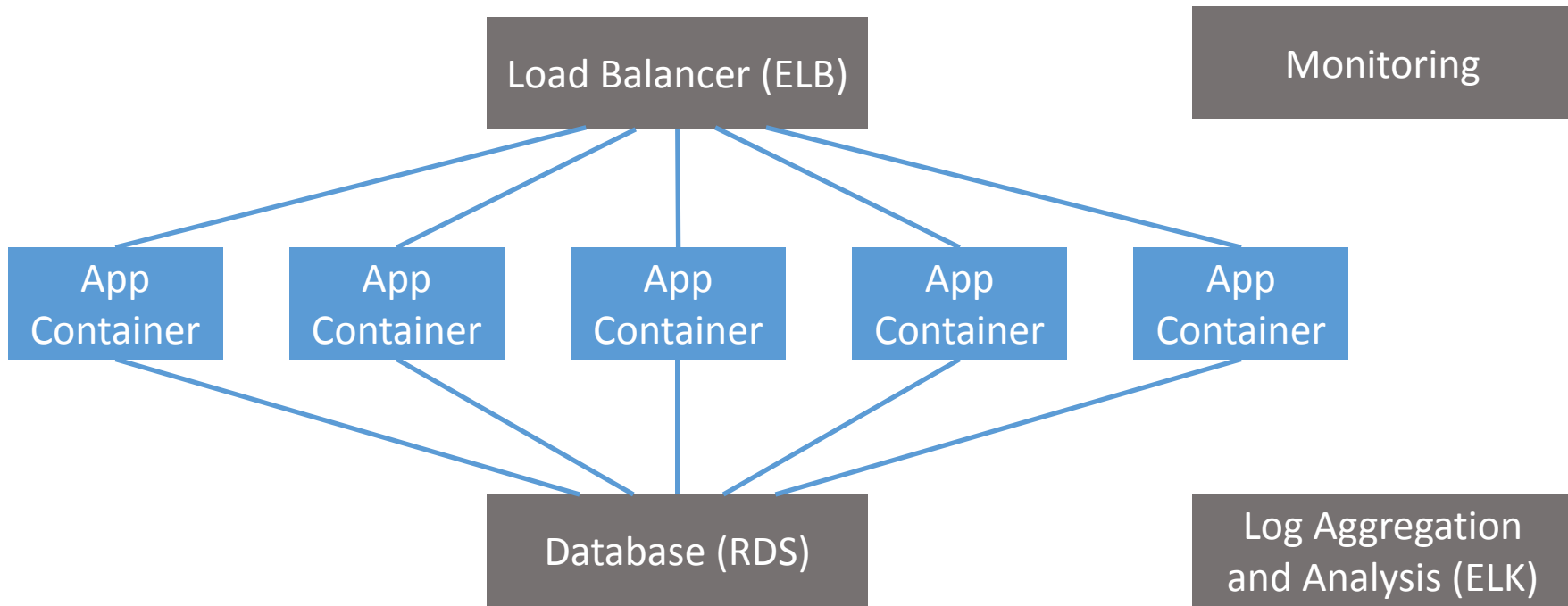
Name	IP Address	Created	Tags
 denise-demo2 1 GB / 30 GB Disk / NYC3 - Ubuntu 16.04.2 x64	104.236.57.165	Yesterday	More ▾
 denise-demo1 1 GB / 30 GB Disk / NYC3 - Ubuntu 16.04.2 x64	104.236.24.178	Yesterday	More ▾
 denise-demo3 1 GB / 30 GB Disk / NYC3 - Ubuntu 16.04.2 x64	104.131.162.14	Yesterday	More ▾
 josh-coreos-2gb-sfo2-02 2 GB / 40 GB Disk / SFO2 - CoreOS 1353.7.0 (stable)	138.68.228.65	2 days ago	More ▾
 latest-default-tests1 1 GB / 30 GB Disk / NYC3 - Ubuntu 16.04.2 x64	104.236.73.152	3 days ago	More ▾
 latest-default-tests2 1 GB / 30 GB Disk / NYC3 - Ubuntu 16.04.2 x64	104.236.50.171	3 days ago	More ▾



docker



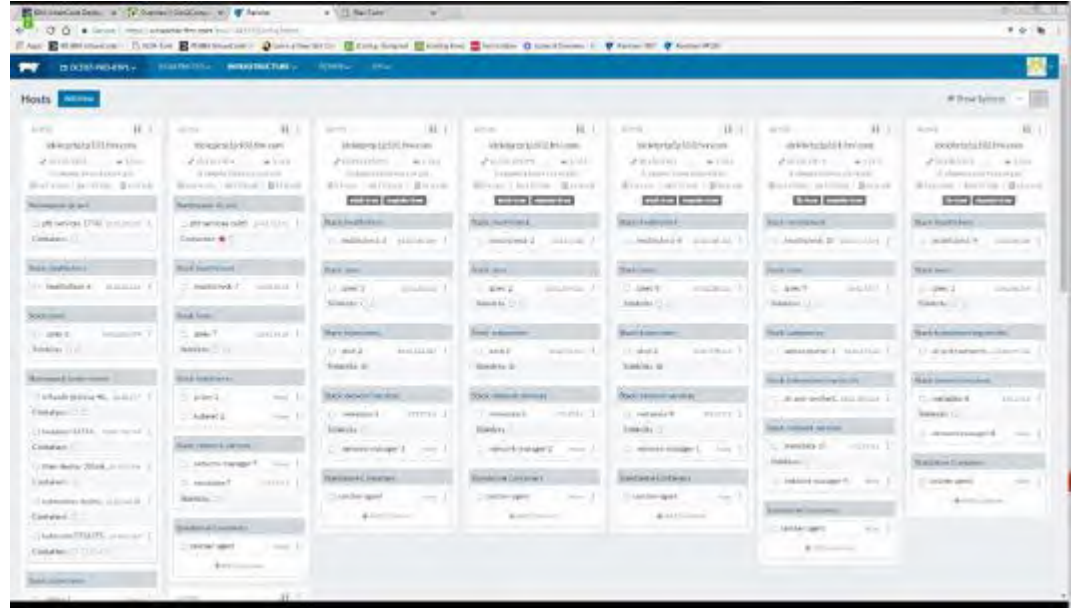




3 etcd hosts, 2 load balancer hosts, 2 kubelet hosts, Rancher HA setup 3 servers, database servers, and a custom registry deployment

Almost 100 containers in total

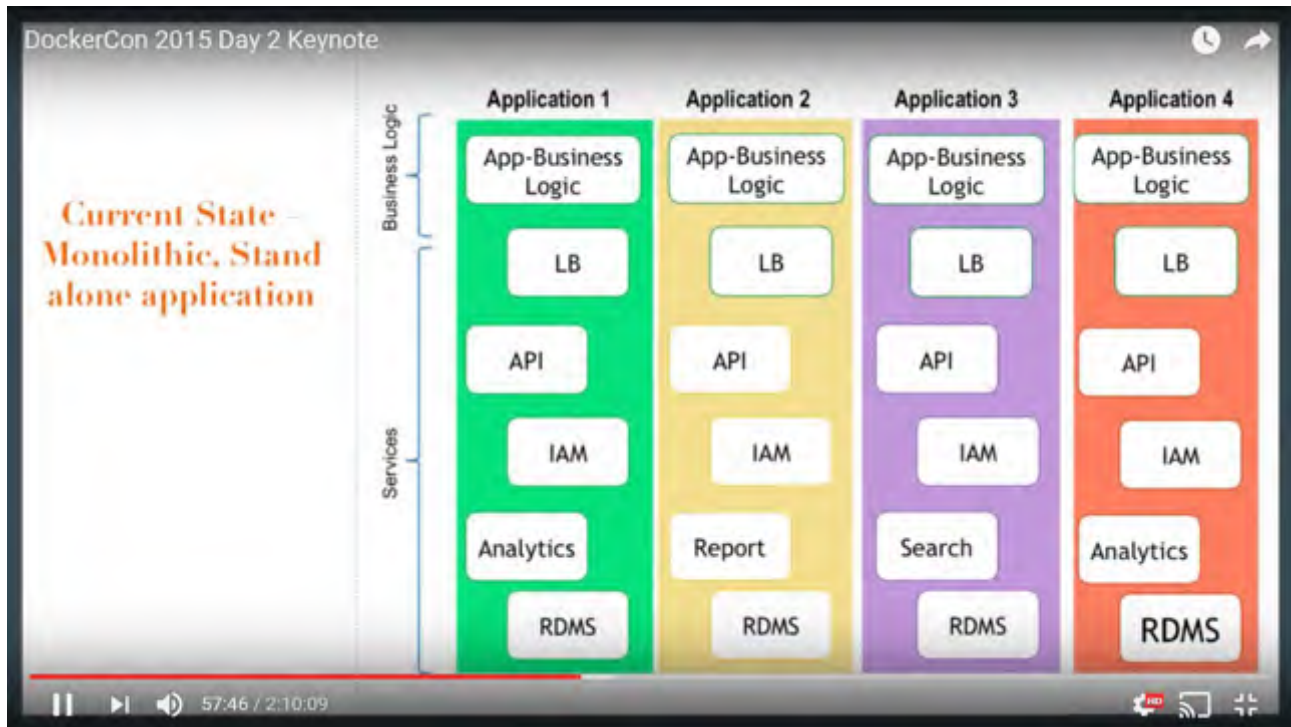
All of this to manage just 2 application containers!



Monolithic application architecture used by US government

Nirmal Mehta

Booz Allen Hamilton



At least 50%
of our
customers
run
traditional
apps

Ben Golub,
Docker

Enabling a Journey

	MICROSERVICES	AGILE TRADITIONAL APPS	TRADITIONAL APPS
Cloud or New Infrastructure			
Old Infrastructure			

dockercon17

“Orchestration by Code”

Introducing the etcd Operator: Simplify etcd cluster configuration and management

November 03, 2016 • By Hongchao Deng

Tags: *Announcements*

Today, CoreOS introduced a new class of software in the Kubernetes community called an *Operator*. An Operator builds upon the basic Kubernetes resource and controller concepts but includes application domain knowledge to take care of common tasks. They reduce the complexity of running distributed systems and help you focus on the desired configuration, not the details of manual deployment and lifecycle management.

etcd is a distributed key-value store. In fact, *etcd* is the primary datastore of Kubernetes; storing and replicating all Kubernetes cluster state. As a critical component of a Kubernetes cluster having a reliable automated approach to its configuration and management is imperative.

As a distributed consensus-based system, the cluster configuration of *etcd* can be complicated. Bootstrapping, maintaining quorum, reconfiguring cluster membership, creating backups, handling disaster recovery, and monitoring

The screenshot shows the 'Add Environment' page in the Rancher UI. The top navigation bar includes a home icon, 'Default', 'STACKS', 'CATALOG', 'INFRASTRUCTURE', 'ADMIN' (with a red notification icon), and 'API'. The main content area is titled 'Add Environment' and contains two input fields: 'Name' (with the placeholder 'e.g. lab') and 'Description' (with the placeholder 'e.g. Environment for developer experimentation'). Below these fields is the 'Environment Template' section, which displays five icons for different orchestrators: Cattle (selected with a green checkmark), Kubernetes, Mesos, Swarm (marked 'EXPERIMENTAL'), and Windows (marked 'EXPERIMENTAL'). Underneath the icons, the configuration is summarized as: 'Orchestration: Cattle', 'Framework: Network Services, Scheduler, Healthcheck Service', and 'Networking: Rancher IPsec'. At the bottom left, there is an 'Access Control' section.



Stack: MyApp

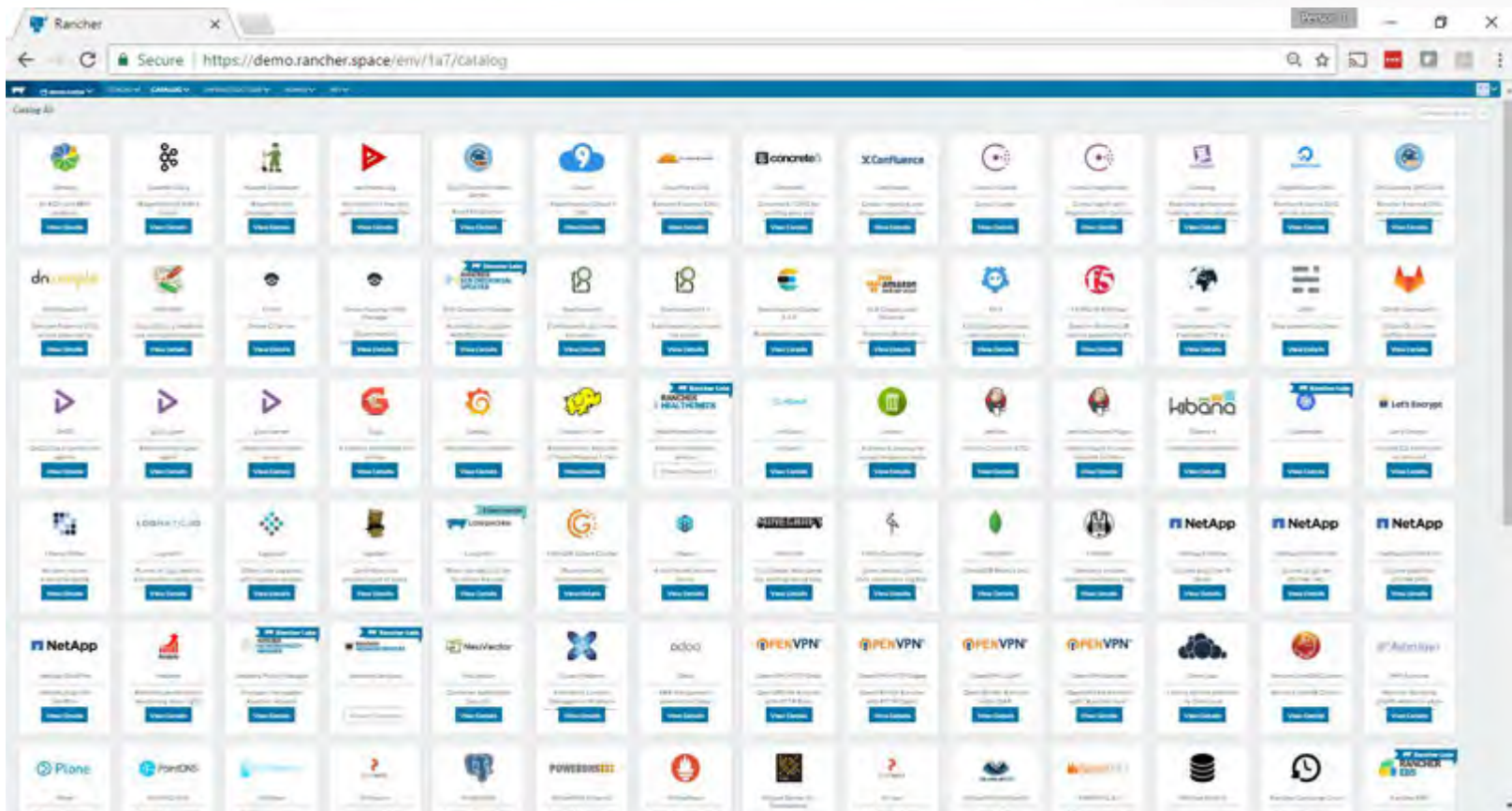
ACTIVE

docker-compose.yml

```
version: "2"
services:
  MyAppV3:
    image: rancher/cattle
    stdin_open: true
    tty: true
    links:
      - mysql
      - indexservice
    labels:
      io.rancher.container.pull_image: "true"
  MyAppV2:
    image: rancher/cattle
    stdin_open: true
    tty: true
    links:
      - mysql
      - indexservice
    labels:
      io.rancher.container.pull_image: "true"
  IndexService:
    image: rancher/cattle
  MySQL:
    image: rancher/mysql
```

rancher-compose.yml

```
version: "2"
services:
  MyAppV3:
    scale: 2
    start_on_create: true
  MyAppV2:
    scale: 3
    start_on_create: true
  IndexService:
    external_ips:
      - 10.10.10.10
    start_on_create: true
  LB:
    scale: 2
    start_on_create: true
    lb_config:
      certs: []
      port_rules:
        - hostname: "*"
          priority: 1
          protocol: http
          service: indexservice
          source_port: 80
          target_port: 80
        - priority: 2
          protocol: http
          service: indexservice
          source_port: 80
          target_port: 80
    health_check:
      response_timeout: 2000
      healthy_threshold: 2
```



Reason for Cattle's popularity: Simplicity

Service as basic unit of operation



Container as basic unit of operation

Service reconciliation



Scaling group

Service discovery and service aliases



Load balancer and DNS

Search

State ▾	Name ▾	Image ▾	
Running	Default-mysql-1	mysql 10.42.2.156 / caas-demo-aws-2 / Created a month ago	⋮
Running	Default-nginx-1	nginx 10.42.70.165 / caas-demo-aws-3 / Created a month ago	⋮
Running	elasticsearch-2-elasticsearch-clients-1	rancher/elasticsearch-conf:v0.5.0 10.42.168.109 / caas-demo-aws-2 / Created a month ago	⋮
Running	elasticsearch-2-elasticsearch-clients-elasticsearch-base-clients-1	elasticsearch:2.4.3-alpine caas-demo-aws-2 / Created a month ago	⋮
Started-Once	elasticsearch-2-elasticsearch-clients-elasticsearch-datavolume-cl...	elasticsearch:2.4.3-alpine 10.42.126.39 / caas-demo-aws-2 / Created a month ago	⋮
Running	elasticsearch-2-elasticsearch-datanodes-1	rancher/elasticsearch-conf:v0.5.0 10.42.137.29 / caas-demo-aws-1 / Created a month ago	⋮
Running	elasticsearch-2-elasticsearch-datanodes-elasticsearch-base-data...	elasticsearch:2.4.3-alpine caas-demo-aws-1 / Created a month ago	⋮
Started-Once	elasticsearch-2-elasticsearch-datanodes-elasticsearch-datavolum...	elasticsearch:2.4.3-alpine 10.42.246.11 / caas-demo-aws-1 / Created a month ago	⋮
Running	elasticsearch-2-elasticsearch-masters-1	rancher/elasticsearch-conf:v0.5.0 10.42.240.160 / caas-demo-aws-3 / Created a month ago	⋮
Running	elasticsearch-2-elasticsearch-masters-elasticsearch-base-master-1	elasticsearch:2.4.3-alpine caas-demo-aws-3 / Created a month ago	⋮

Developer cloud
services are
consumer Internet
services





**There is no
compression
algorithm for
experience.**

- Andy Jassy, CEO AWS



Browser





Container Cloud



