

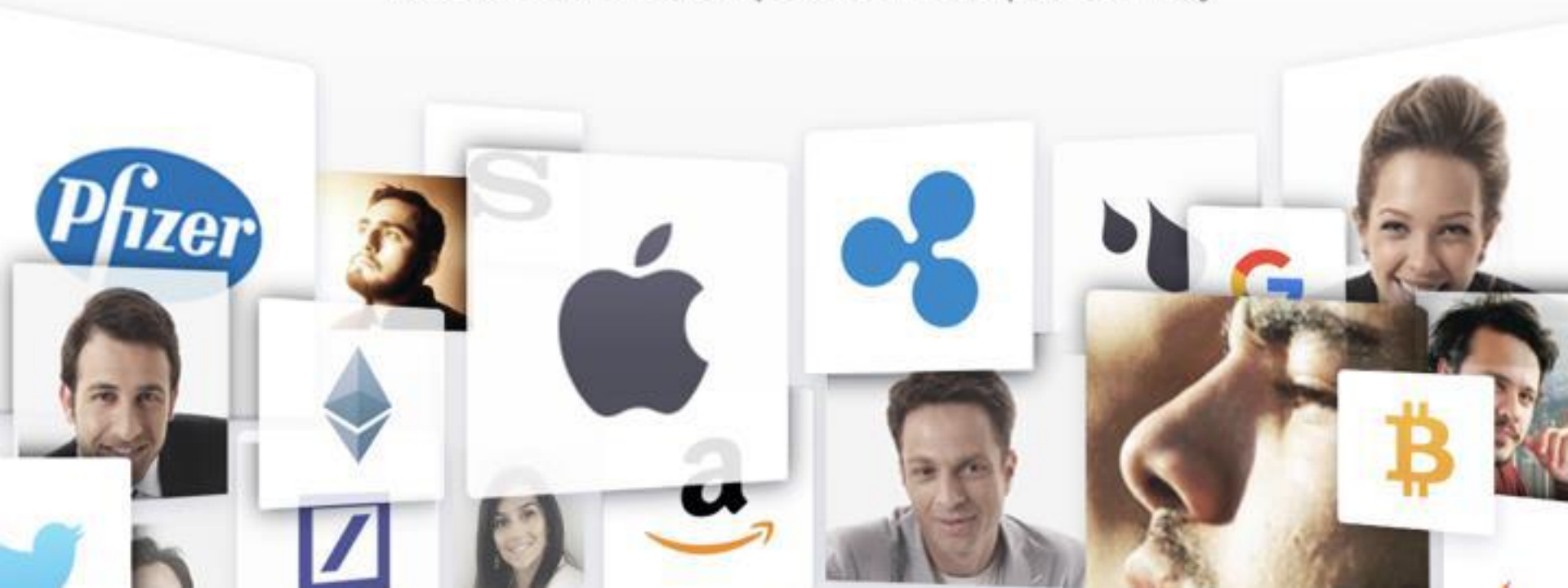
Scalable Environments using Kubernetes and VMSS on Azure Cloud



The World's Leading
Social Trading platform

OUR VISION

Opening the global markets for everyone to trade and invest in a simple and transparent way



OUR MISSION

Building The World's Leading Social Trading Network



eToro
TODAY

10M

REGISTERED USERS

140

COUNTRIES

280M

OPEN TRADES

650

EMPLOYEES

\$162M

RAISED CAPITAL



Featured Markets



EOS EOS
14.11 -0.62 (-4.21%)

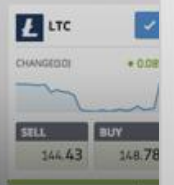
PEOPLE FROM: Everywhere | WHO INVEST IN: Any Market | GAINED AT LEAST: 10% | DURING THE: Last 12M | GO!

Top Investors



| | | | | |
|------------------------------------|--|--------------------------------------|---|--|
| SafeSignal guerino cecon | Jean-marcLenfant Jean-marc Lenfant | NoAimlessEnvy Melissa Boag | InvestmentsPro Mindaugas Drezas | JannikMS Jannik Maximilian St. |
| 13.23% RETURN (LAST 30D) | 13.04% | 13.35% | 30.98% | 22.71% |
| 7 COPIERS +133.33% LAST 7D | | | | |

Crypto

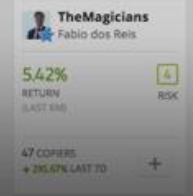


Indices

USDOLLAR

Invest

Trending



Most Copied

Introducing CopyFunds™
Our next generation investment product

[Learn More](#)

CopyFunds™ is a portfolio management product. Investing in CopyFunds™ will automatically copy multiple markets or traders... [Read More](#)

Market CopyFunds

Built around an idea, performance metric or an algorithm that picks its top performing assets

CRISPR-Tech
Genome Engineering

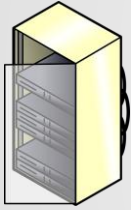
CryptoFund
Crypto CopyFund

OutSmartNSDQ
Nasdaq Smart Beta by ...

34.85% | 198.05% | 51.05%

Portfolio - Invest in CopyFunds

Infrastructure Distribution



London



West
Europe



North
Europe



US
West



US
East

Base Code



CI / CD, Configuration management tools and scripting languages



Agenda

- **Challenge #1** - Development and QA
- **Challenge #2** - QA Automation
- **Challenge #3** - Production Readiness

Challenge #1

Development and QA
Personal environments



Challenge #1

Development and QA

- Growing Number of QA employees
 - Each QA person needs 4 servers (For now), 1 for each environment.
- Limited number of VMs
 - High Costs
 - Resource Management



New market structure experiment



Solution

Personal environment by demand

How?



Docker on Kubernetes



Kubernetes



John Arundel

@bitfield

Following



Kubernetes is like sex in high school: people talk about it a lot more than they actually do it, and for many of the same reasons

Kubernetes on Azure (AKS)

- Managed
- Dynamic Scale
- Simple Deployment



Ingress

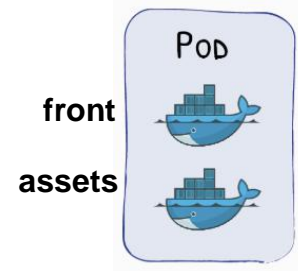
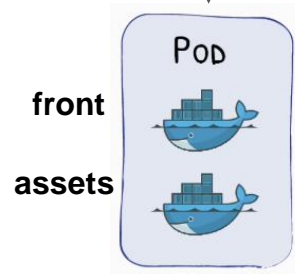
Service_user n

...

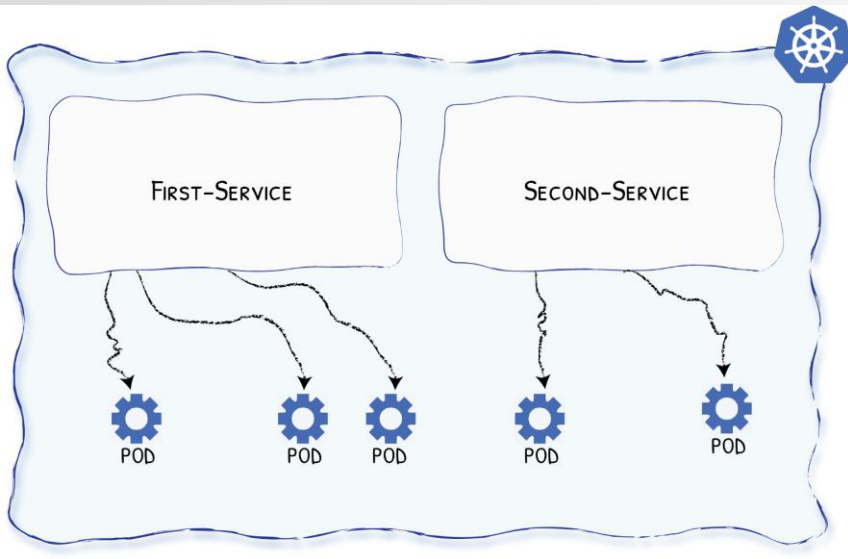
Service_user 2

Service_user 1

Service_DG



Services



Ingress

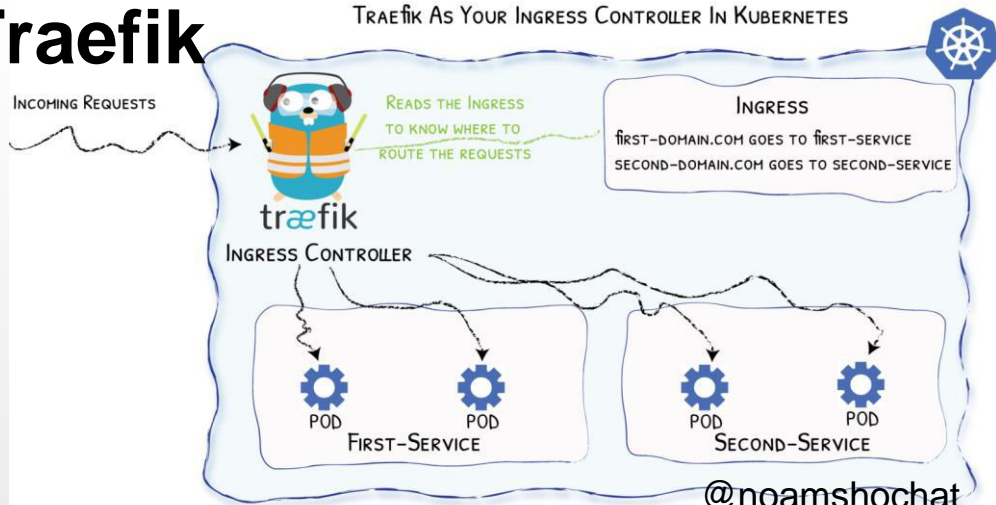


INGRESS

HOST IS PADAWAN.COM? ASK SERVICE YODA.
HEADERS CONTAIN THE RING? ASK SERVICE FRODO.
PS: WE DON'T ACCEPT BALROGS.

Traefik

TRAEFIK AS YOUR INGRESS CONTROLLER IN KUBERNETES



Traefik

A reverse proxy / load balancer that's easy, dynamic, automatic, fast, full-featured, open source, production proven, provides metrics, and integrates with every major cluster technology...



Jenkins Pipeline

Pipeline reToro_qa_deploy

This build requires parameters:

TAG_FRONT

TAG_ASSETS

VERSION

ENVIRONMEN

- ✓ integration
- staging
- production
- production-2

Build

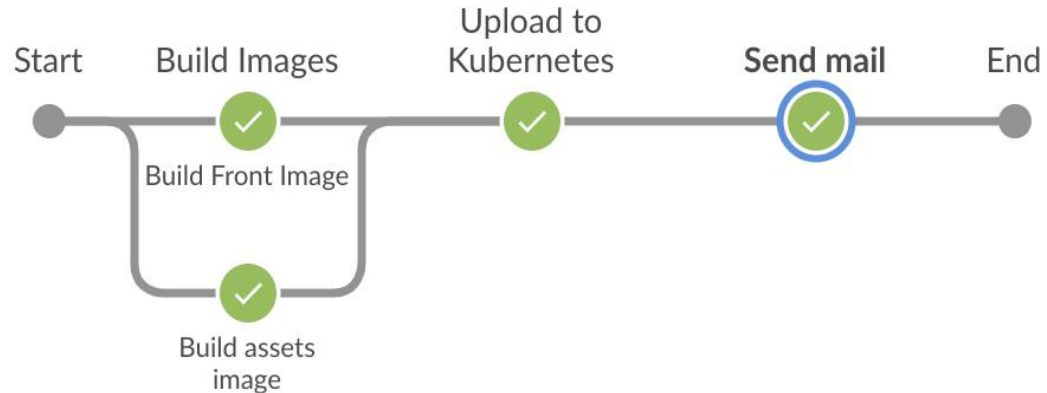
Jenkins Pipeline

🕒 3m 22s

No changes

🕒 7 hours ago

Started by user Priscilla Zhao



Users Private DNS

- DNS-1: front\${USER_ID}.int.costco.com
- DNS-2: front\${USER_ID}.dev.costco.com
- DNS-3: front\${USER_ID}.prod.costco.com
- DNS-3: front\${USER_ID}-2.prod.costco.com

Pods ☰

| Name ↕ | Node | Status ↕ | Restarts | Age ↕ | CPU (cores) | Memory (bytes) | |
|------------------------------------|--------------------------|----------|----------|------------|-------------|----------------|-----|
| ✓ chanigo-integration-deploy... | aks-agentpool-16143674-1 | Running | 0 | 29 minutes | 0.004 | 335.289 Mi | ☰ ⋮ |
| ✓ haimaz-integration-deploy... | aks-agentpool-16143674-0 | Running | 0 | 2 hours | 0.002 | 359.590 Mi | ☰ ⋮ |
| ✓ priscillazh-production-deploy... | aks-agentpool-16143674-0 | Running | 0 | 12 hours | 0 | 362.402 Mi | ☰ ⋮ |
| ✓ haimaz-staging-deployment... | aks-agentpool-16143674-0 | Running | 0 | a day | 0.005 | 476.773 Mi | ☰ ⋮ |
| ✓ jolinzh-production-deployme... | aks-agentpool-16143674-2 | Running | 0 | a day | 0 | 385.254 Mi | ☰ ⋮ |
| ✓ danaho-production-deploy... | aks-agentpool-16143674-0 | Running | 0 | 2 days | 0.001 | 384.188 Mi | ☰ ⋮ |
| ✓ gittysa-integration-deployme... | aks-agentpool-16143674-2 | Running | 0 | 2 days | 0.002 | 373.605 Mi | ☰ ⋮ |
| ✓ chanigo-staging-deployment... | aks-agentpool-16143674-0 | Running | 0 | 5 days | 0.003 | 384.590 Mi | ☰ ⋮ |
| ✓ priscillazh-staging-deployme... | aks-agentpool-16143674-0 | Running | 0 | 5 days | 0.003 | 377.422 Mi | ☰ ⋮ |
| ✓ danaho-production-2-deploy... | aks-agentpool-16143674-1 | Running | 0 | 6 days | 0 | 378.387 Mi | ☰ ⋮ |

1 - 10 of 32 |< < > >|



Ingress

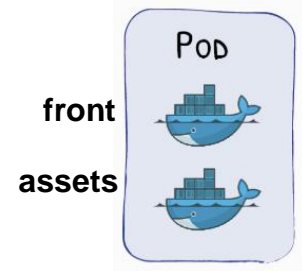
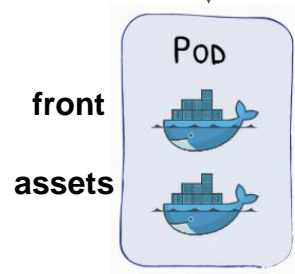
Service_user n

...

Service_user 2

Service_user 1

Service_DG



Benefits

- Self service
- Better use of resources
- Almost unlimited environments
- Faster deployment times
- Simplicity
- If it's not working Blame the developer :-)



Challenge #2

QA Automation



Challenge # 2

QA Automation

- Simulating client behavior
 - Variable number of VMs for different runs
 - Hundreds of tests
 - Windows OS VMs
 - Make it cost effective and fast



Solution

- Azure VMSS Solution



Virtual Machine Scale Set

VMSS is an Azure solution for managing a group of identical, load balanced VMs with elastic autoscale

- Easy to create and manage multiple VMs
- Provides high availability and application resiliency
- Dynamic and large scale support
- Automatic (templates, events driven, mgmt)

QA Automation Flow

2. Creating VMSS cluster



1. Initiate test scenario



3. VMs connect to the master as Jenkins slaves

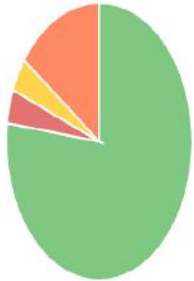
4. Download test code to each VM simultaneously

5. Destroy VMs once tests are complete and results are reported

QA Automation Tests results

Charts

Execution Charts



Test Status Pie

■ = Success ■ = Warning
■ = Failure ■ = Error



Execution Trend
Test Status per Execution

Diffido Execution Reports Kikara Last Reports

Difido Execution Reports

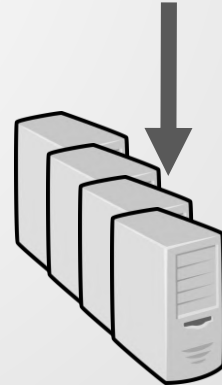
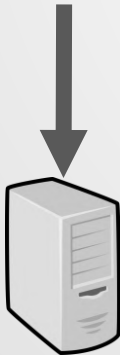
🏠 🔍 🗑️ 📄 📊 📅 🔖 🔒

Show 25 entries Search:

| ID | Description | Date | Time | Duration | # Tests | # Successful | # Warnings | # Failed | # Machines | Active | Locked |
|----|----------------|------------|--------------|----------|---------|--------------|------------|----------|------------|--------|--------|
| 6 | KYCUS | 19/03/2019 | 10:19:49:192 | 0h10m7s | 0 | 0 | 0 | 0 | 0 | false | false |
| 5 | KYCIWithdrawal | 19/03/2019 | 10:19:49:183 | 0h10m7s | 0 | 0 | 0 | 0 | 0 | false | false |
| 4 | KYCIRegression | 19/03/2019 | 10:19:49:180 | 0h10m7s | 0 | 0 | 0 | 0 | 0 | false | false |
| 3 | KYCIWithdraw | 19/03/2019 | 10:19:49:175 | 1h1m7s | 60 | 10 | 0 | 50 | 8 | false | false |
| 2 | KYCIDeposit | 19/03/2019 | 10:19:49:170 | 0h61m7s | 72 | 2 | 0 | 70 | 8 | false | false |
| 1 | KYCCopy | 19/03/2019 | 10:19:49:131 | 1h42m37s | 72 | 5 | 0 | 67 | 10 | false | false |

QA Automation Time Saved

26 hours → 1.5 hour



$$\hat{f}(\xi) = \int_{-\infty}^{\infty} f(x) e^{-2\pi i x \xi} dx$$

Challenge # 3

Production Readiness



Challenge # 3

Production Readiness

- 1...N VMs
- move from Classic Cloud service
- Make it cost effective
- Redundant
- Scale in/out
- Self service

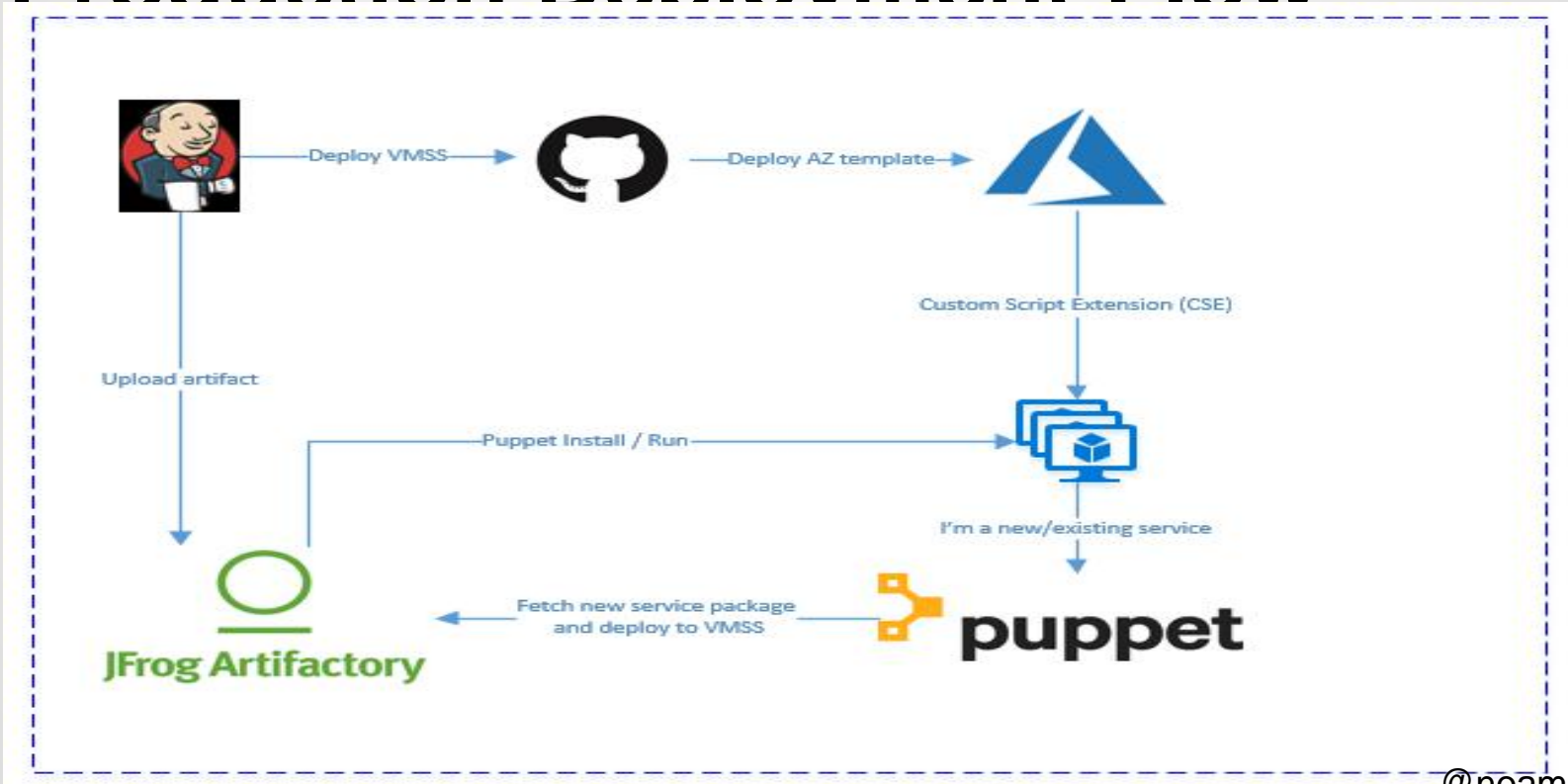


Solution

- Azure VMSS Solution



Production Deployment Flow

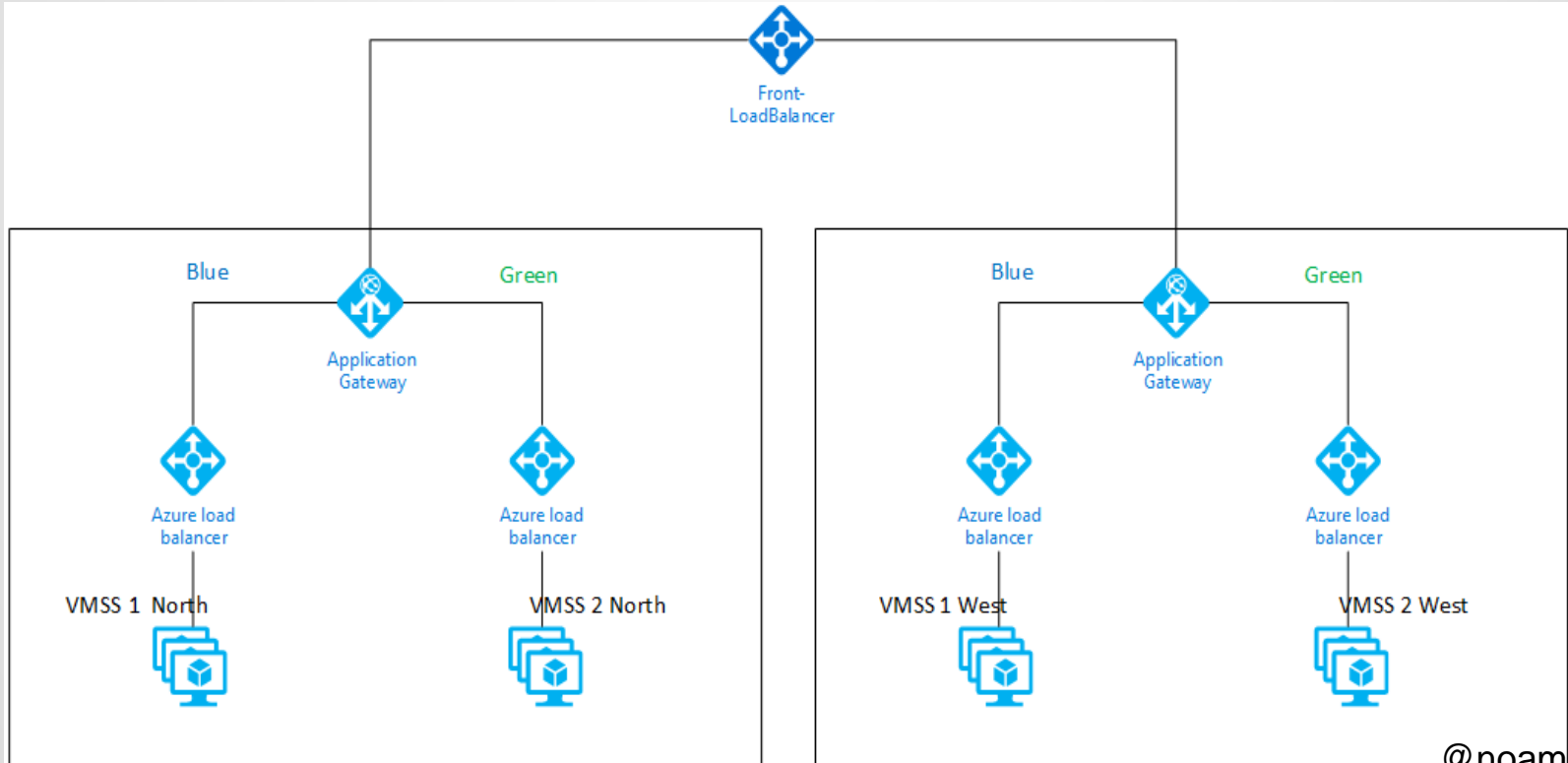




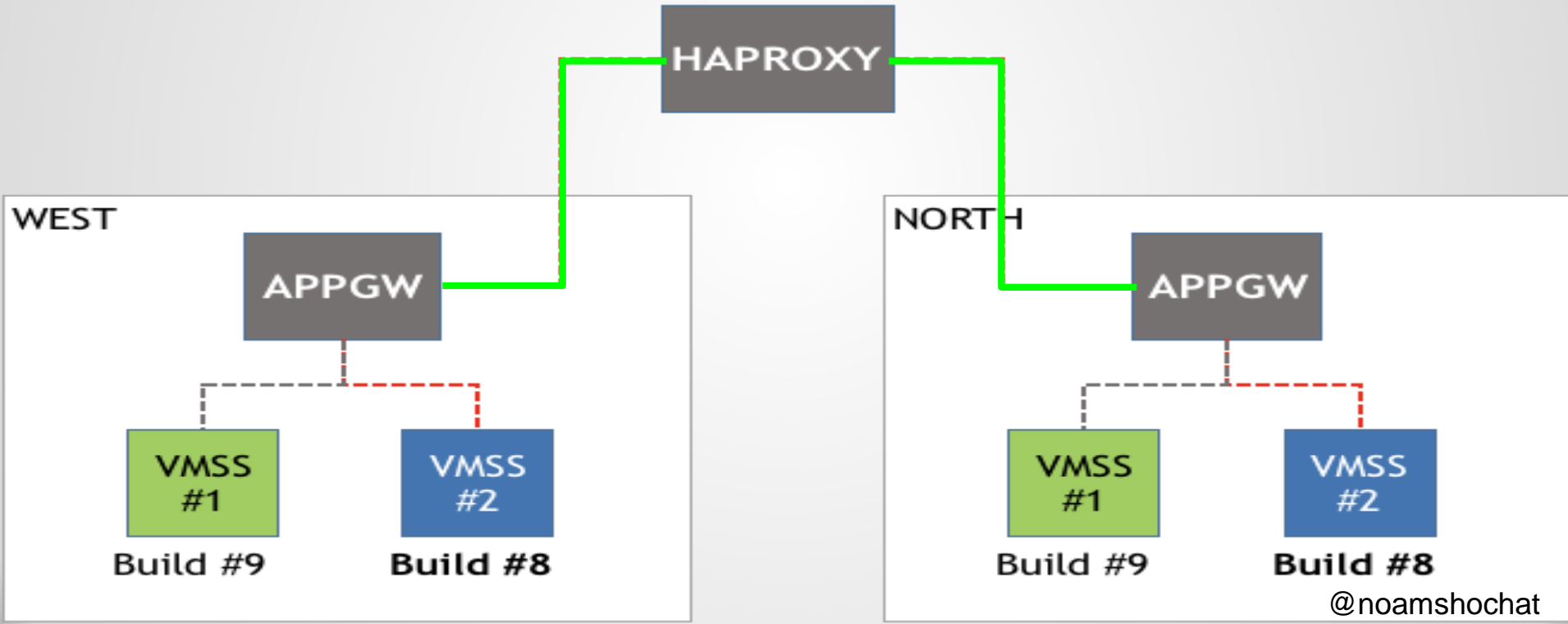
Deployment Template

```
"parameters": {  
  "instanceCount": {  
    "value": 2  
  },  
  "adminUser": {  
    "value": ██████████  
  },  
  "adminPassword": {  
    "value": "none"  
  },  
  "_artifactsLocation": {  
    "value": "http://██████████/artifactory/vmss-pack"  
  },  
  "_artifactsLocationsubfolder": {  
    "value": "/aggregator/integration/"  
  },  
  "_artifactsLocationSasToken": {  
    "value": "none"  
  },  
  "customscriptname": {  
    "value": "puppetagent.ps1"  
  },  
  "subnetId": {  
    "value": "/subscriptions/██████████:Groups/Integration-RG"  
  },  
  "vmssname": {  
    "value": "length of 9"  
  },  
  "ServiceName": {  
    "value": "length of 9"  
  },  
  "Deployment": {  
    "value": "prod dev test"  
  },  
  "Version": {  
    "value": "x.y.z"  
  },  
  "BlueGreen": {  
    "value": "blue or green"  
  }  
}
```

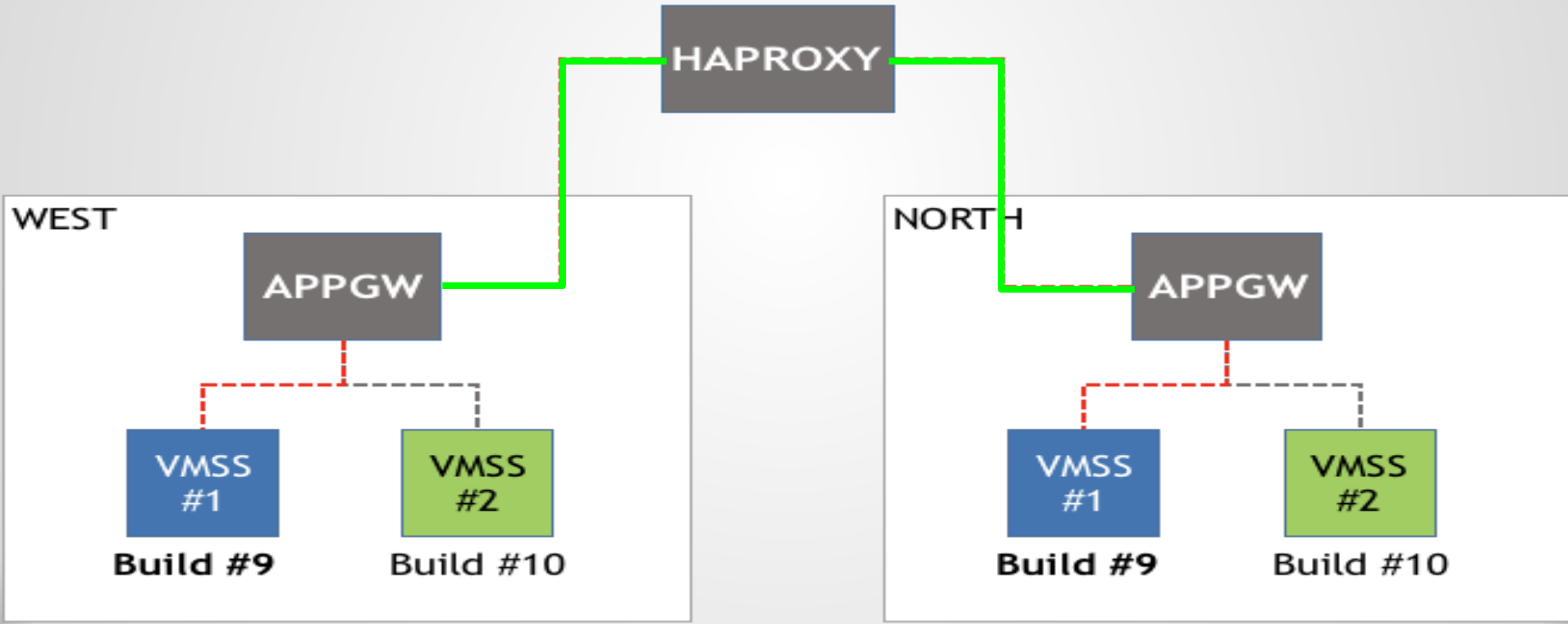
Multi Regional Architecture



Multi Regional Architecture



Multi Regional Architecture



Benefits

- Large number of VMs
- Repeatable deployment
- Easy rollback
- Faster deployment times
- Cost effective
- Infrastructure as code
- Easy to maintain
- Automatic scale



Thank You



If you Q I will A