

Welcome to ...

# AWS re:INVENT

Building a Healthcare Compliant

Framework

Cloud Engineering, Change Healthcare  
Enterprise Solutions Architect, AWS

# Building a secure healthcare compliant framework to accelerate the adoption of our cloud-first strategy on **AWS**.

## Agenda

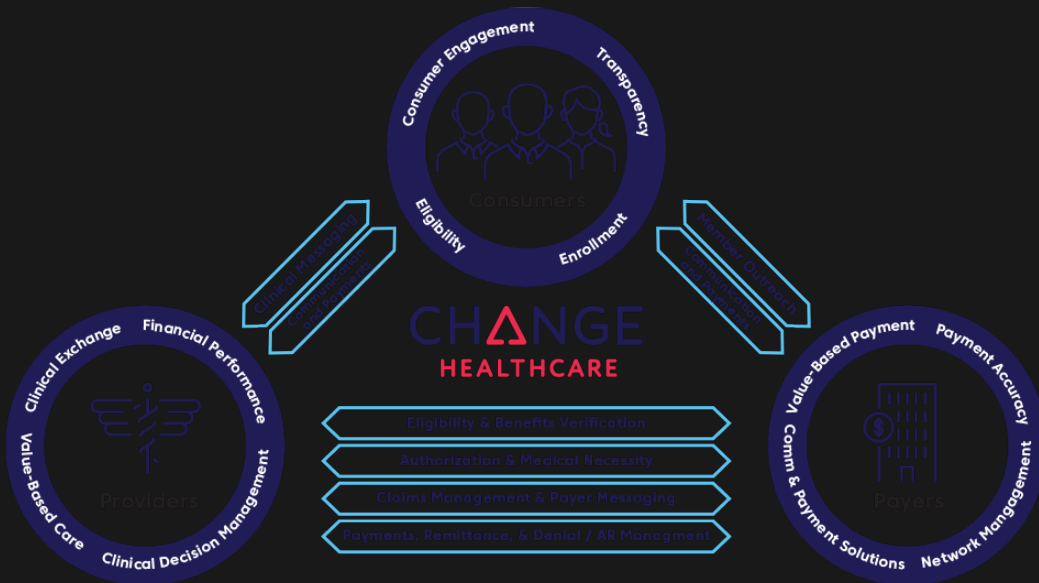
- Introductions
- A brief history of our journey to the **Cloud**
- Establishing a **Cloud** Center of Excellence
- Heuristics: **Cloud-First** and Security by Design
- Automation in all things
- Tools, Operations, and Teams
- Teams building secure applications
- Q&A

# Change Healthcare

Championing improvement before, after, and in-between care episodes and helping provide a visible measure of **quality** and **value**

- 5,500 Hospitals
- 130,000 Dentists
- 800,000 Physicians
- 600 Laboratories

- 2,100 Payer Connections
- 1 in 5 US Patient Records
- \$2.0 trillion Healthcare Claims
- 12 billion Healthcare Transactions

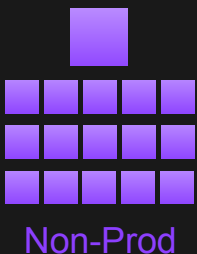


# A brief history of our journey to the Cloud



# A brief history of our journey to the Cloud

2015



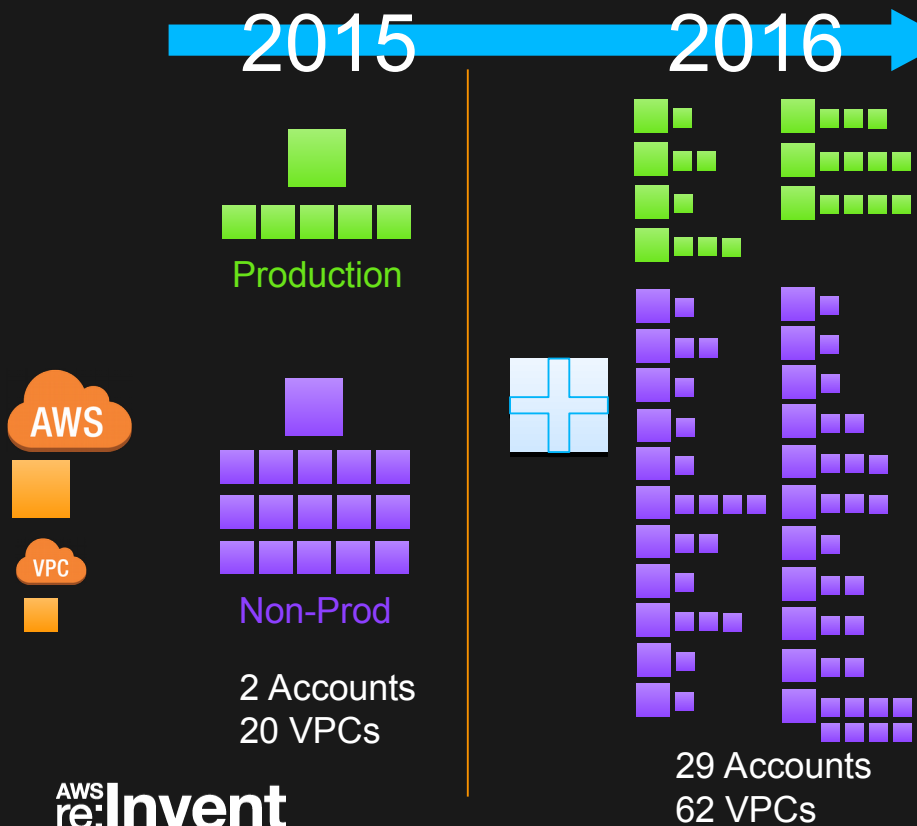
2 Accounts  
20 VPCs

**AWS**  
**re:Invent**

© 2017, Amazon Web Services, Inc. or its Affiliates. All rights reserved.

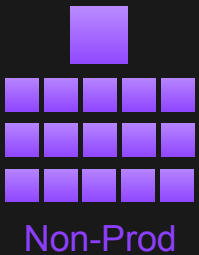


# A brief history of our journey to the Cloud



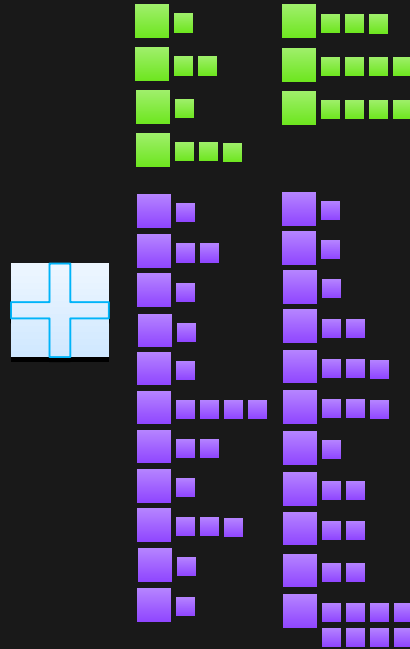
# A brief history of our journey to the Cloud

2015



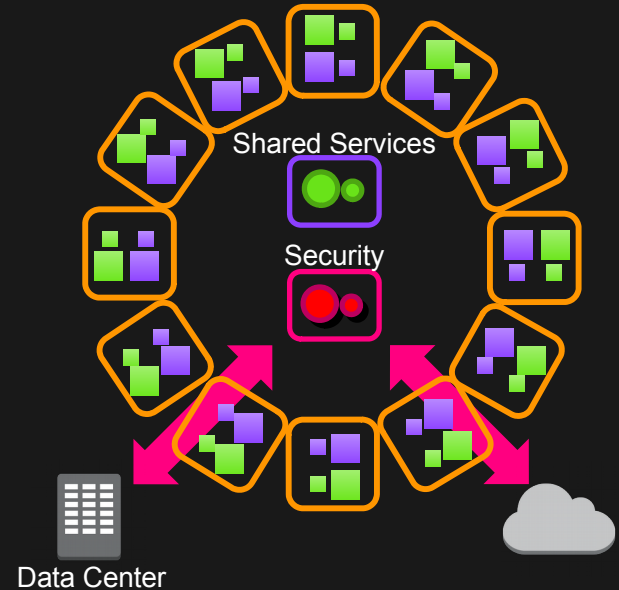
2 Accounts  
20 VPCs

2016



29 Accounts  
62 VPCs

2017



35 Accounts  
35 VPCs

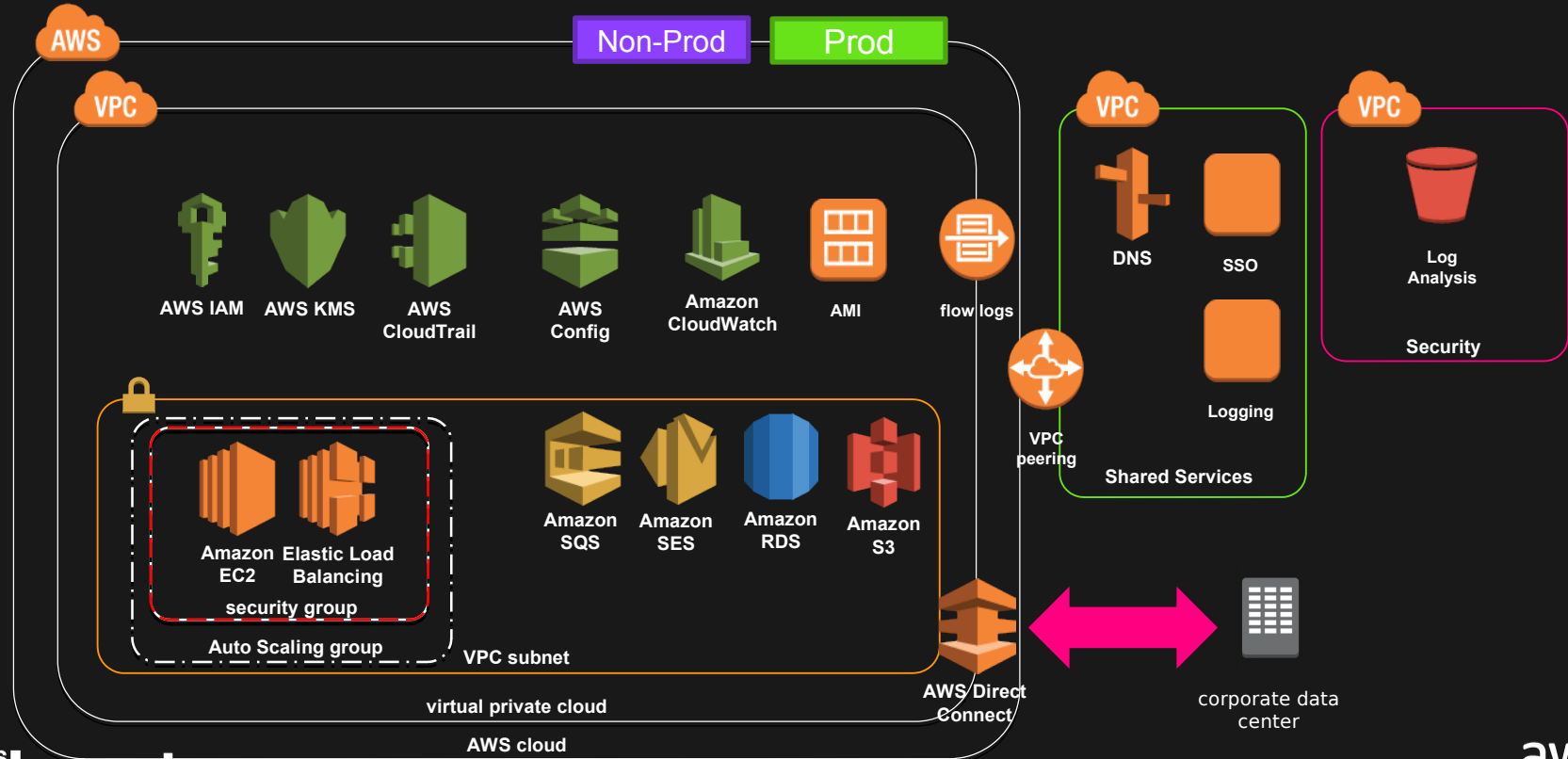


AWS re:Invent

© 2017, Amazon Web Services, Inc. or its Affiliates. All rights reserved.

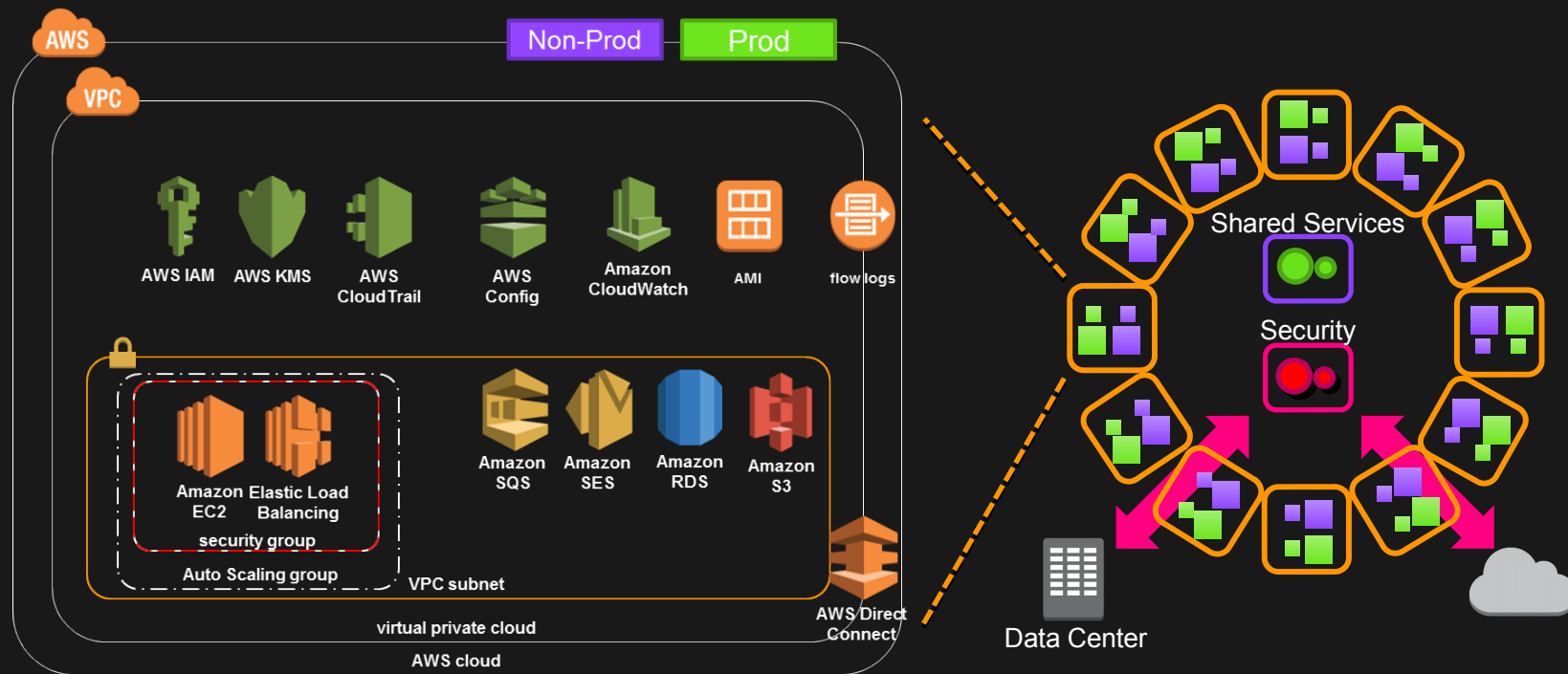


# Where we are today





# Where we are today



# Establishing a **Cloud** Center of Excellence

## Organization

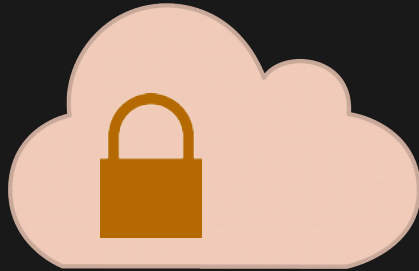
- Cloud Steering Committee
  - InfoSec, Strategic Programs, IT, Finance, Office of the CTO, Engineering
  - Set the “North star” for our Cloud strategy
  - Created core Cloud policies
  - Reviews and approves (mostly denies) exceptions to Cloud policies
- Cloud Infrastructure Engineering – Tools
  - Encodes as code, Cloud policies into Cloud environment
  - Builds automation to manage Cloud policies and team Cloud on-boarding
- Cloud Infrastructure Engineering – Ops
  - Uses the above tools to manage those components of the Cloud that are centrally controlled
  - Interface between application teams and on-boarding to the Cloud
- Strategic Programs – Cloud
  - Provides high level oversight and coordination for all applications in or going to the Cloud

# Heuristics: **Cloud-First** & Security by Design

Establishment of Engineering Heuristics – Rules you won't break

- Cloud First – the cloud is not just another data center with virtual machines
  - Leverage managed services
  - For every problem, ask, how do we best solve this in the Cloud using current best practices?
  - Let the modern tools solve the old, hard problems
- Security by Design
  - Secure every part all the time
  - Apply the principle of Least Privilege
- Automate Everything
  - Build everything as Infrastructure as Code
  - Do not log into the console and make changes
  - Never log into a server

# Heuristics: **Cloud-First** & Security by Design



Secure



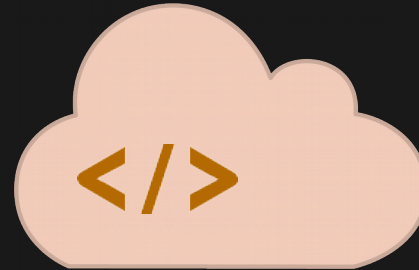
Managed



Standards

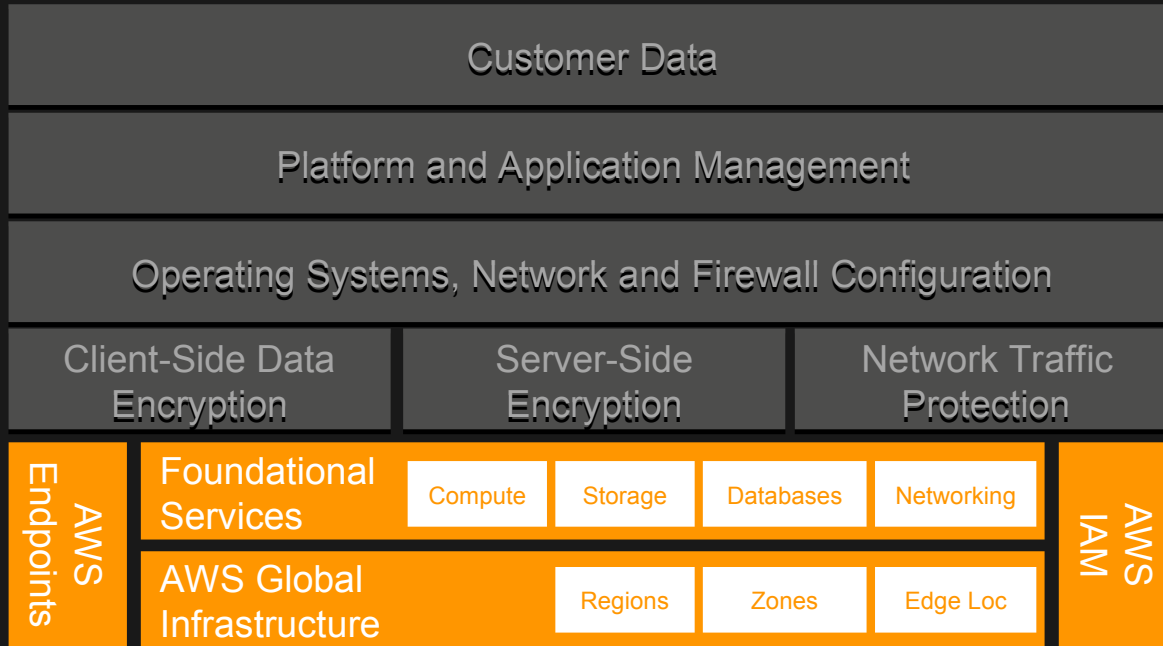


Documented

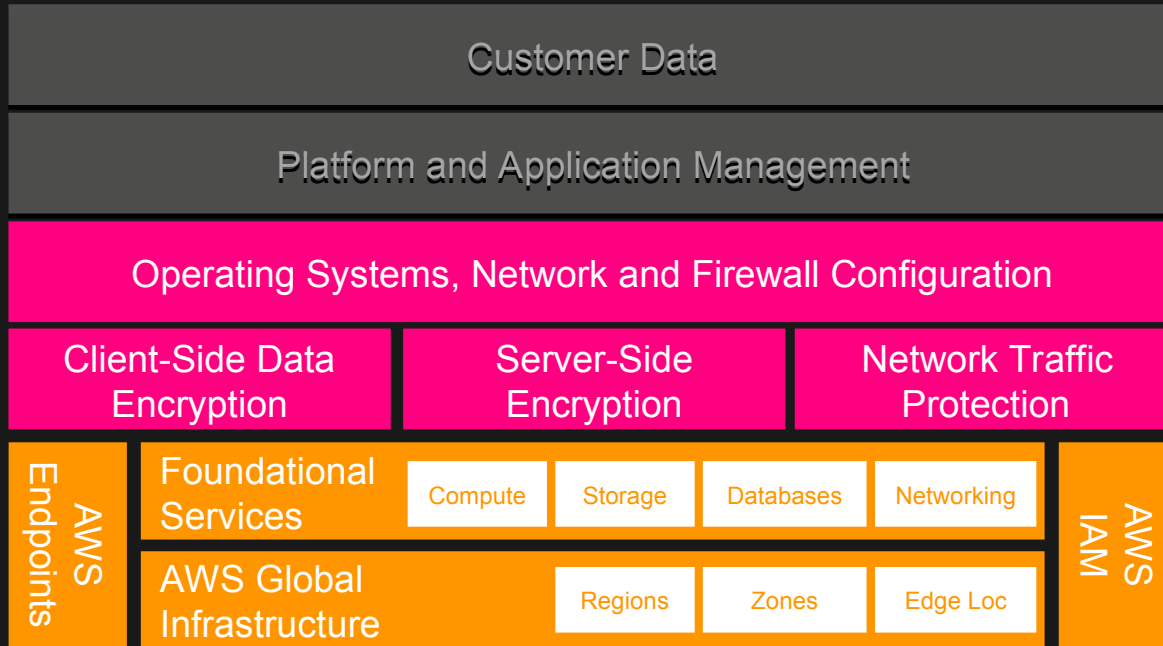


Infrastructure as Code

# Shared Responsibility: Infrastructure Services



# Shared Responsibility: Infrastructure Services



Automatically build and deploy:

- Encryption – always on
- Direct Connect
- Edge Firewalls
- OS AMIs (Gold Base)
- “Secured” VPCs

# Automate Everything!

# Automate Everything: Example

Commit 423a8693 authored 50 minutes ago by Dickinson, Alan

## Merge branch 'addTorsten' into 'master'

Fixing account numbers and adding Torsten to ReadOnly

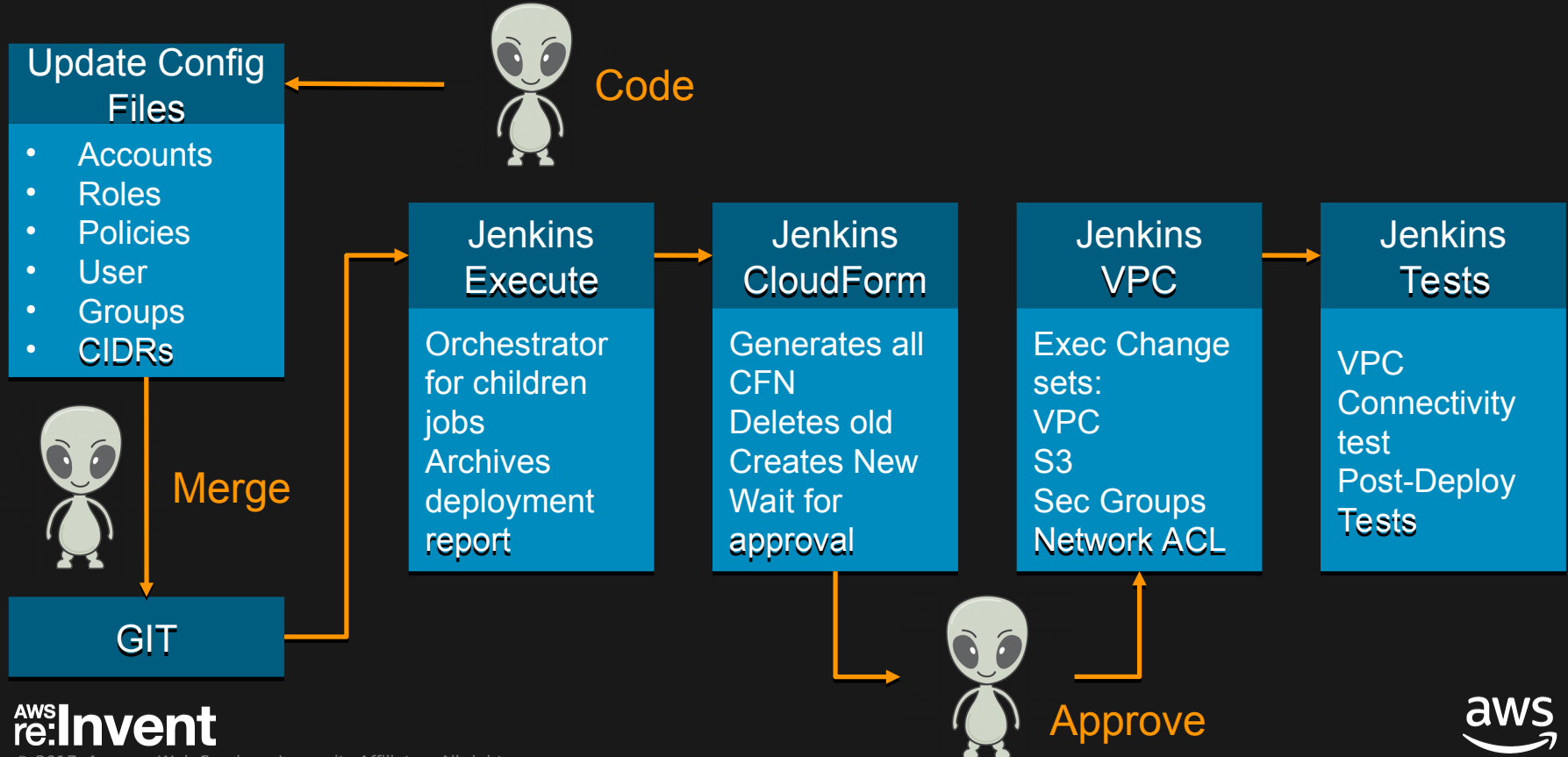
Showing 1 changed file with 3 additions and 1 deletions

common/team/nimbus/trust\_relationships/readonly.j2

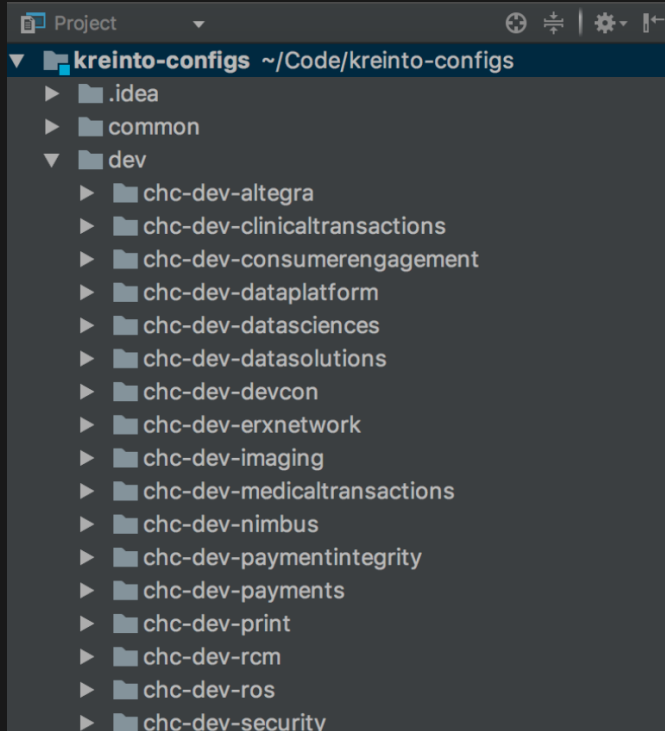
```
...      ...      @@ -6,5 +6,7 @@ Statement:
6         6         - arn:aws:iam:457169392547:role/Cie-EcsInstance
7         7         - arn:aws:iam:457169392547:role/Cie-EcsInstance
8         8         - arn:aws:sts:457169392547:assumed-role/ReadOnly/wsullivan
9         -         - arn:aws:sts:457169392547:assumed-role/ReadOnly/wsullivan
          9         +         - arn:aws:sts:469757148159:assumed-role/ReadOnly/wsullivan
          10        +         - arn:aws:sts:459977064112:assumed-role/Developers/tkablitz
          11        +         - arn:aws:sts:459757148159:assumed-role/Developers/tkablitz
10        12        Action: sts:AssumeRole
```



# Automated Everything – AWS Account Mgt



# Automated Everything – AWS Account Mgt



All the configurations for all of the product teams are in one place.

AWS  
re:Invent

THANK YOU!

AWS  
re:Invent

© 2017, Amazon Web Services, Inc. or its Affiliates. All rights reserved.

