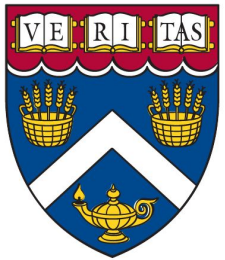


HARVARD
Extension School

Week 9
AWS Services - DevOps Tools And Strategies

Load Balancer and Auto scale

Load balancer created in at least two availability zone.

Load balancer sends the traffic to instances in a Target group.

Autoscaling create EC2 instances in subnets using a launch configuration, then put the instances in the Target group

Load Balancer and the Autoscaling should use the same availability zone

Git Repository

https://code.harvard.edu/fas799/cscie91

https://code.harvard.edu/fas799/cscie91/tree/master/cloudFormation/labs

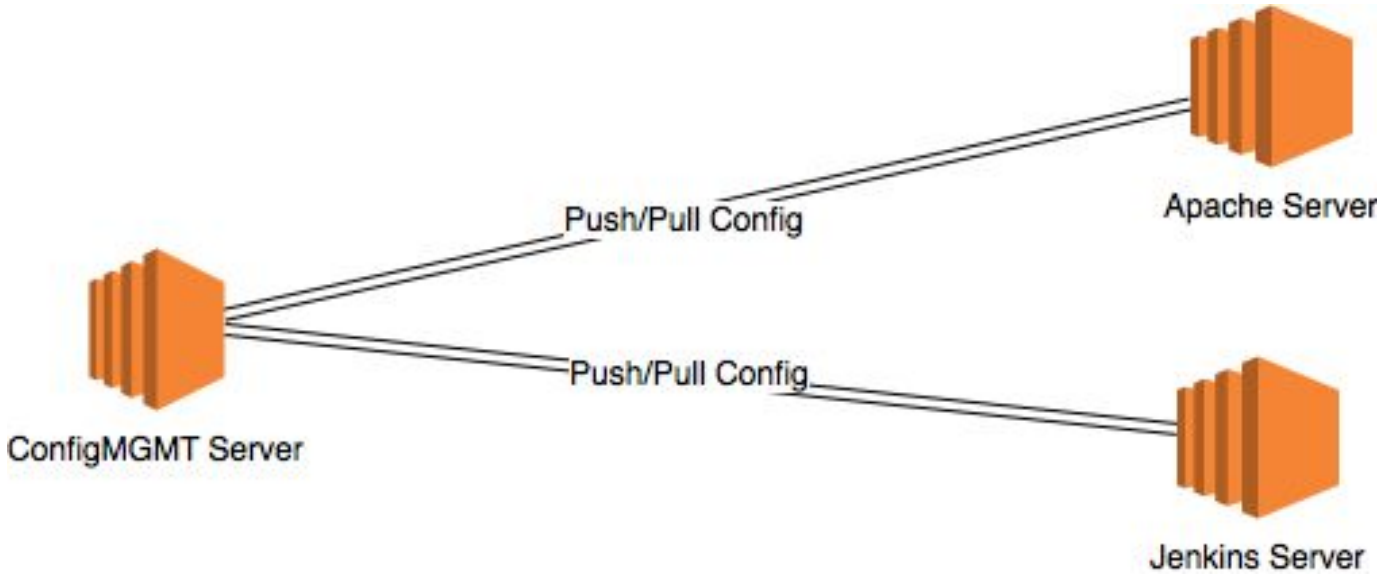
https://code.harvard.edu/fas799/cscie91/tree/master/cloudFormation/labs/lab-5-loadBalancer-autoScaling

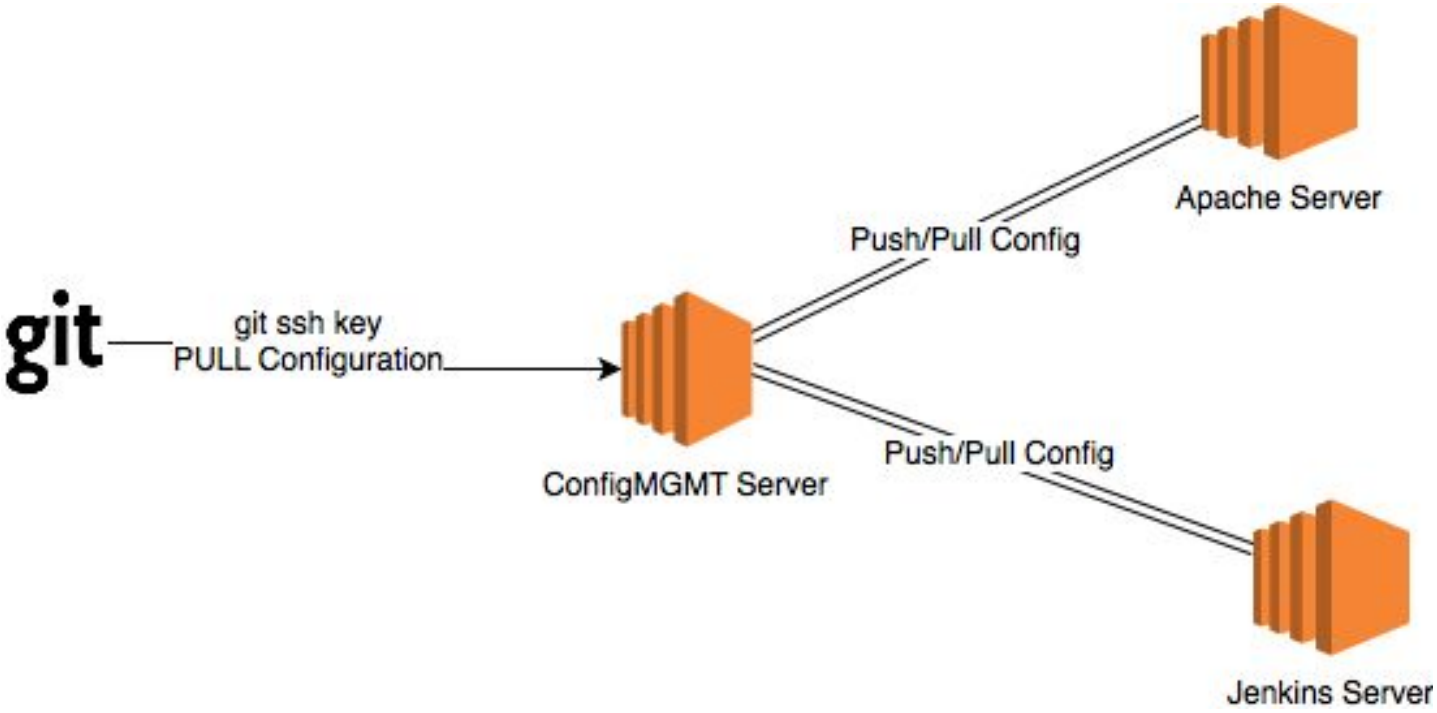
Monitoring and Logging

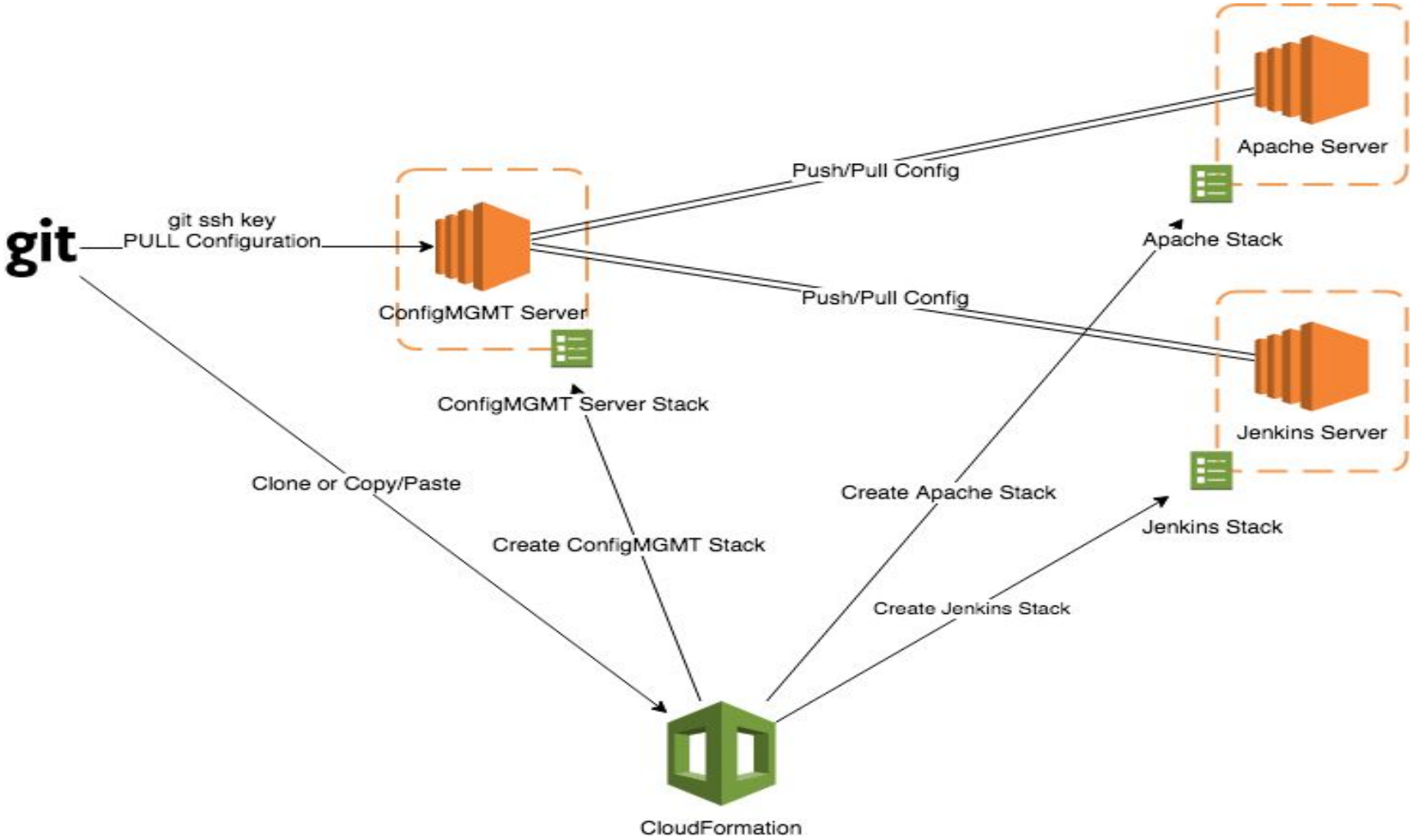
- CloudTrail
- CloudWatch
- CloudConfig
- ElasticSearch

Configuration Management

- Continues configuration
- Configuration tracking
- Avoid duplication
- Disaster recovery and system restoration
- Automation


Push/Pull Config
Apache Server
Push/Pull Config
ConfigMGMT Server
Jenkins Server


git
git ssh key
PULL Configuration
ConfigMGMT Server
Push/Pull Config
Apache Server
Push/Pull Config
Jenkins Server


git
git ssh key
PULL Configuration
ConfigMGMT Server
ConfigMGMT Server Stack
Push/Pull Config
Push/Pull Config
Apache Server
Apache Stack
Jenkins Server
Jenkins Stack
Clone or Copy/Paste
Create ConfigMGMT Stack
Create Apache Stack
Create Jenkins Stack
CloudFormation

How Does it work

1) Everything is in version control - Git
    a) CloudFormation Stacks
    b) Ansible configuration management
2) CloudFormation used to build my infrastructure
    a) EC2 instances (Apache or Jenkins)
    b) Load Balancers and Auto scaling if exists
    c) Even the Ansible EC2 Server
3) Configuration Management system (Ansible, puppet) to deply software stacks and configuration on the servers:
    a) Apache
    b) Jenkins
    c) etc

Red Hat Ansible

https://www.ansible.com

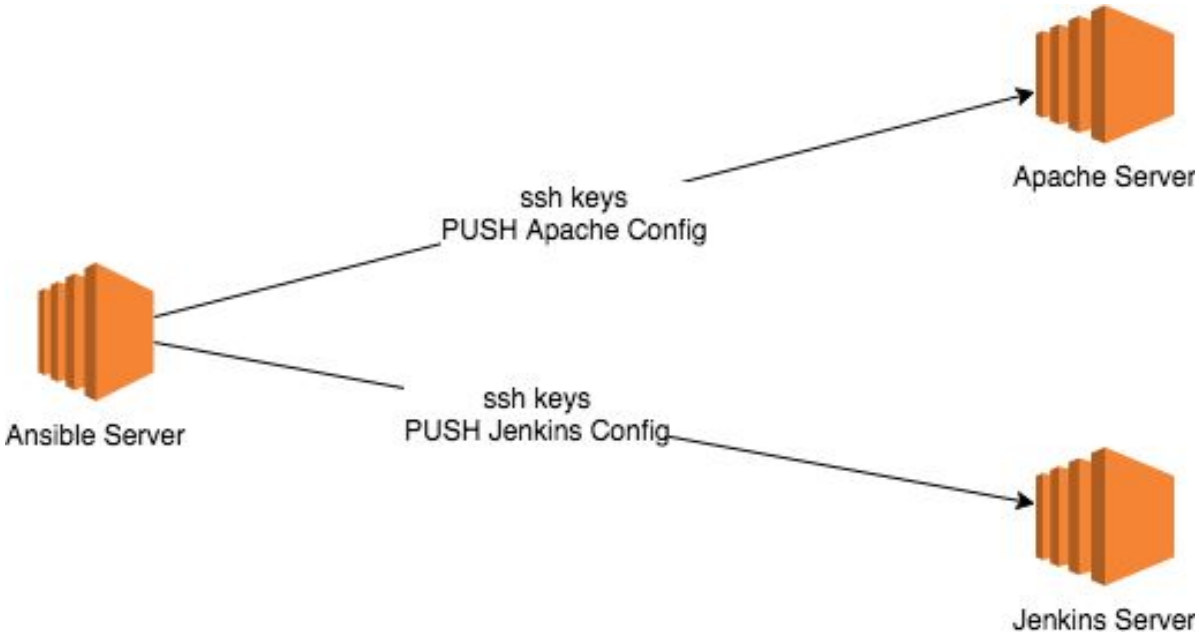
Simple

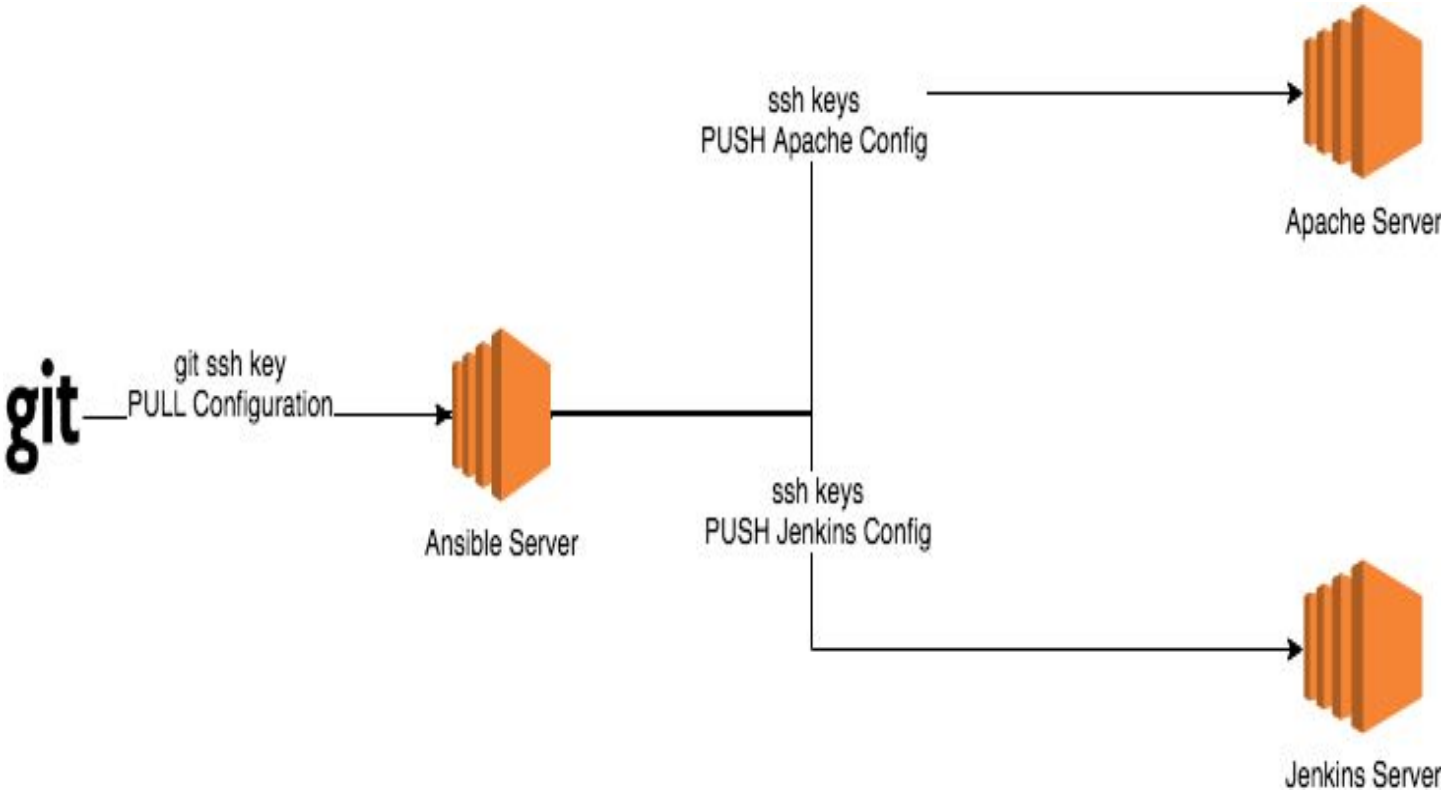
OpenSSH

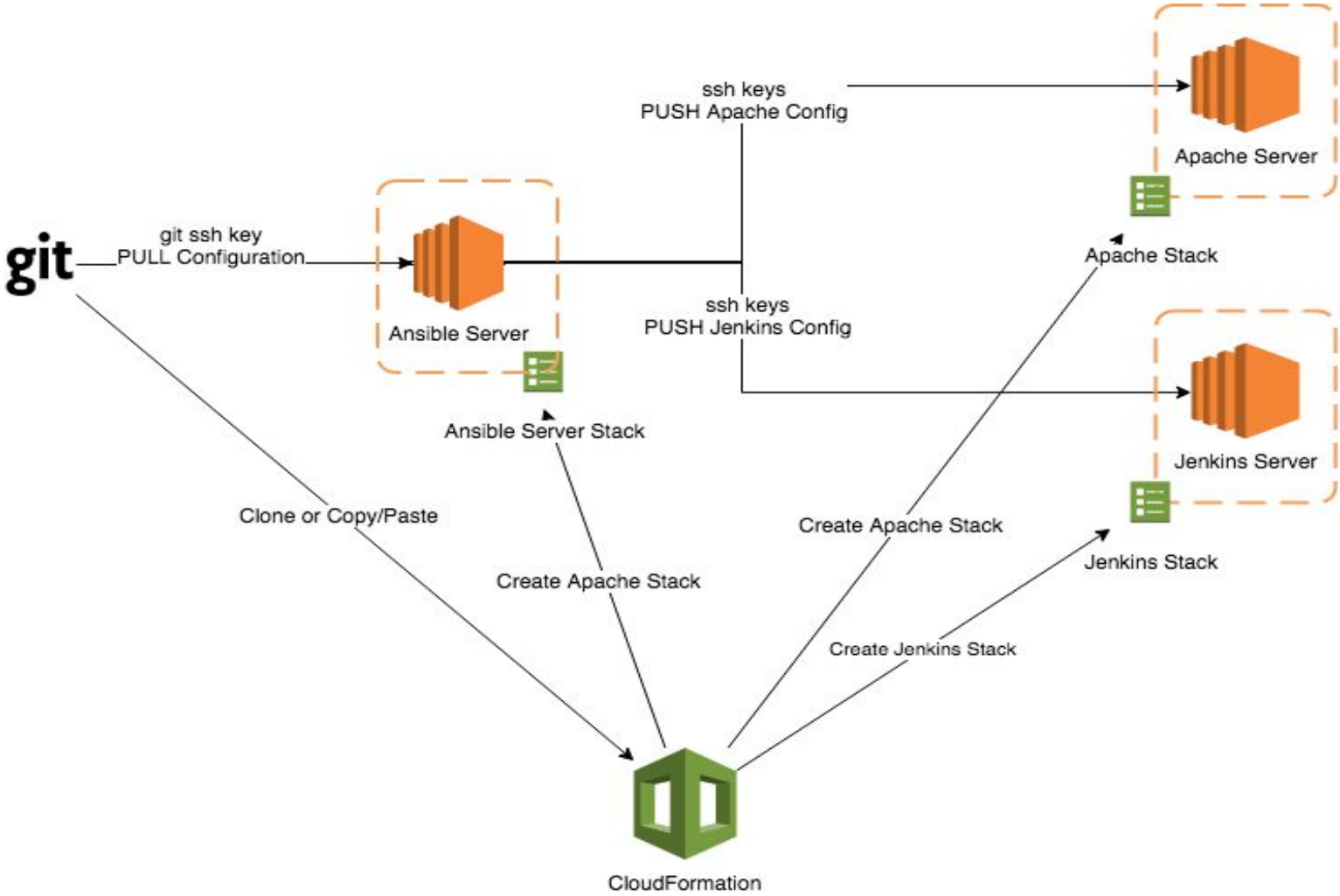
Windows Remote Management

Agentless

https://www.ansible.com/overview/it-automation


Apache Server
ssh keys
PUSH Apache Config
Ansible Server
ssh keys
PUSH Jenkins Config
Jenkins Server


ssh keys
PUSH Apache Config
Apache Server
git
git ssh key
PULL Configuration
Ansible Server
ssh keys
PUSH Jenkins Config
Jenkins Server


git
git ssh key
PULL Configuration
Ansible Server
Ansible Server Stack
ssh keys
PUSH Apache Config
ssh keys
PUSH Jenkins Config
Apache Server
Apache Stack
Jenkins Server
Jenkins Stack
Clone or Copy/Paste
Create Apache Stack
Create Apache Stack
Create Jenkins Stack
CloudFormation

Ansible config and modules

https://code.harvard.edu/fas799/cscie91/tree/master/ansible

Ansible

Ansible Configuration

Playbooks

- Tasks and Handlers
- Files and Templates
- Variables

Inventories

Roles

Variables

Challenges

What if the machines was an EC2s behind a load balancer and auto scaling, How does ansible server will update the inventory ?

Puppet

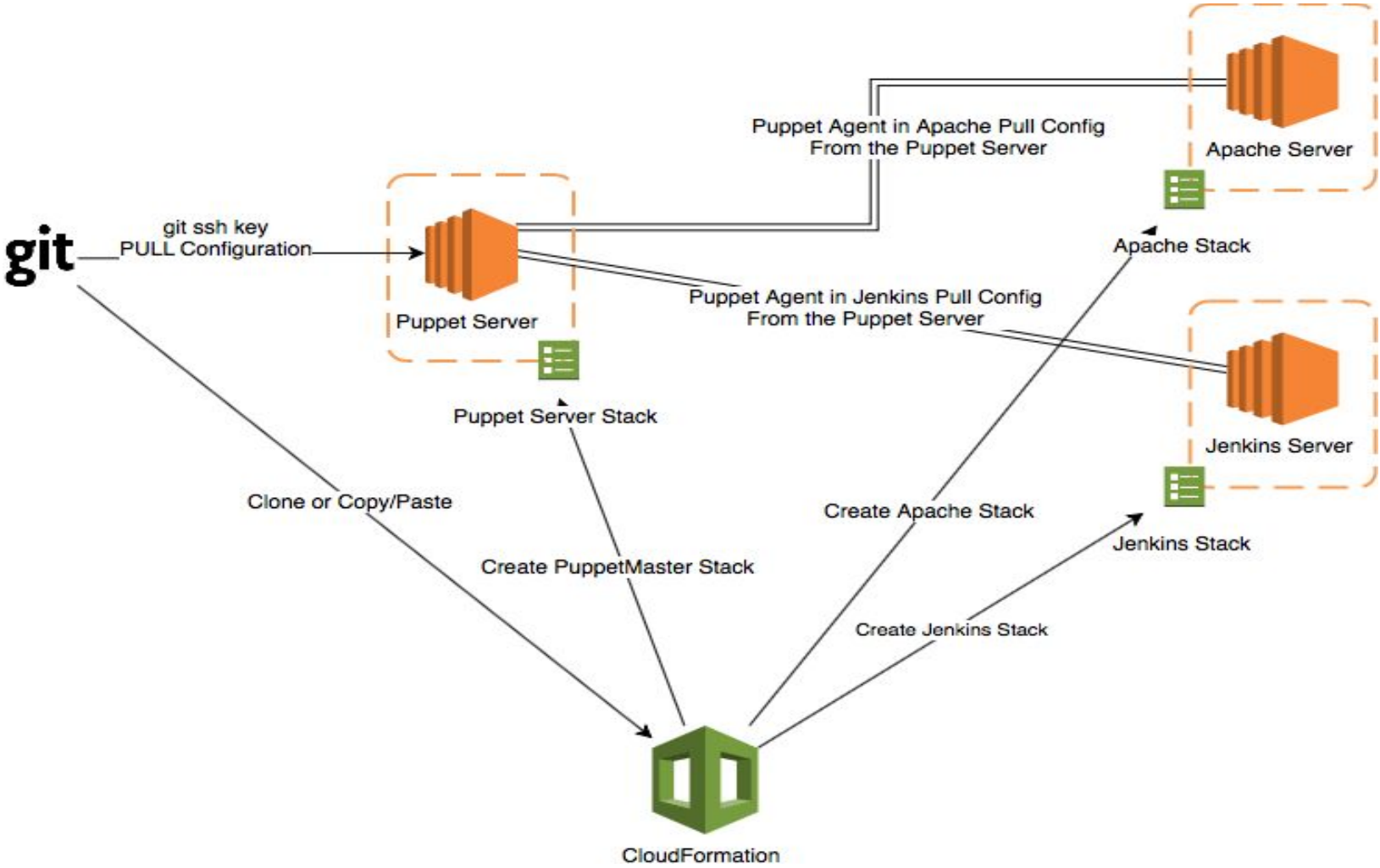
One of the first 2005

Descriptive Language

Written in Ruby Language

Agent based/Client-Server

Over SSL


git
git ssh key
PULL Configuration
Puppet Server
Puppet Server Stack
Puppet Agent in Apache Pull Config
From the Puppet Server
Apache Server
Apache Stack
Puppet Agent in Jenkins Pull Config
From the Puppet Server
Jenkins Server
Jenkins Stack
Clone or Copy/Paste
Create PuppetMaster Stack
Create Apache Stack
Create Jenkins Stack
CloudFormation

Puppet config and modules

https://code.harvard.edu/fas799/cscie91/tree/master/puppet

Puppet

Manifests

Modules

- Apache
  - Manifest
  - Files
  - Templates
- Roles
- Profiles

Challenges

Port 8140 (yet another port open)

Server DNS

Client DNS

SSL Certificate