



# The DevOps Course: Deployment

*taught by Prof. Eugene Callahan*

## **Deployment Team Members:**

Sneha Ghosh (sg3533)

Saniya Alekar (ssa428)

Ravish Bhatia (rb3719)

Srinivas (spg349)



# Exploring tools..

We started off by exploring the following tools, studying their pros and cons and finally deciding which tool would be good to use for deploying the DevOps website.

- Kubernetes
- Chef
- Ansible
- Puppet

A blue parallelogram and a light green parallelogram are positioned in the upper-left corner of the slide. The blue shape is partially behind the green one. Both shapes are oriented diagonally, with their longer sides running from the top-left towards the bottom-right.

# Deployment + Clusters

# What is deployment? Set(Activities) $\Rightarrow$ Customer

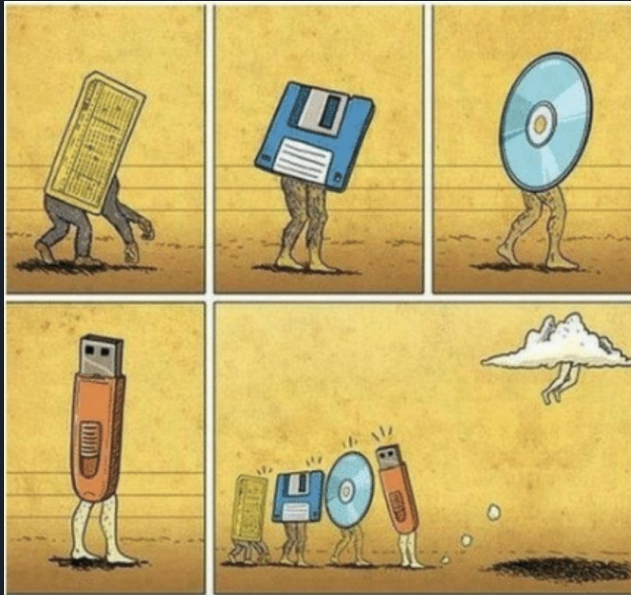
Analogy?



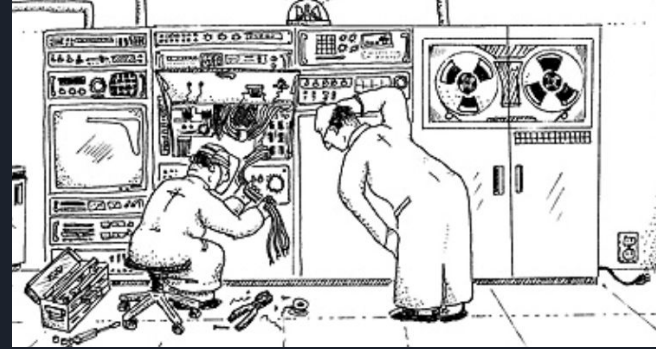
Overhead?

# History - traceback?

Age of Micro Computers <User>



Age of Large Computers <Manu>

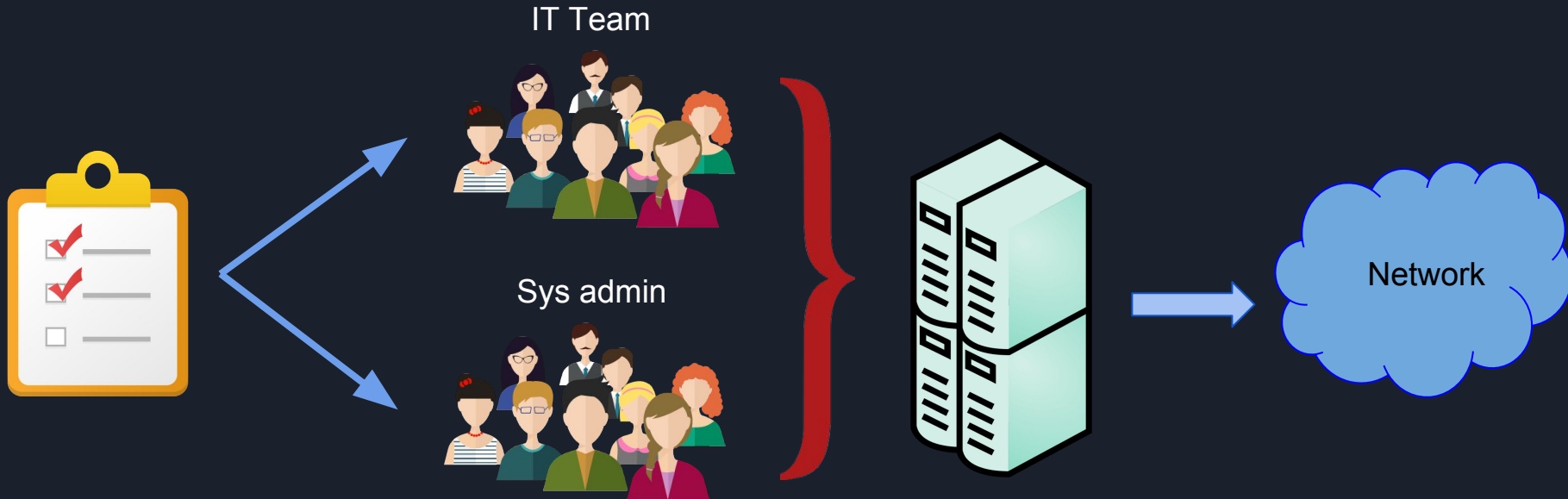
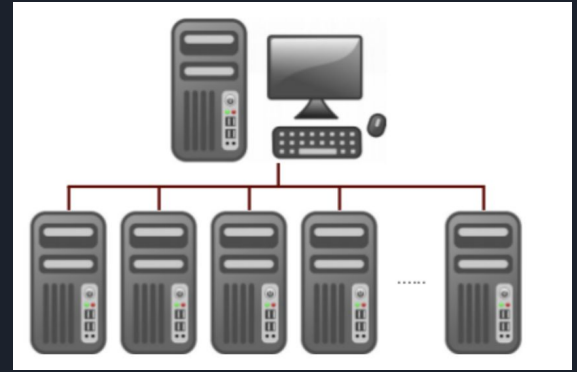


Age of Cloud Computing + Internet Boom <Manu>



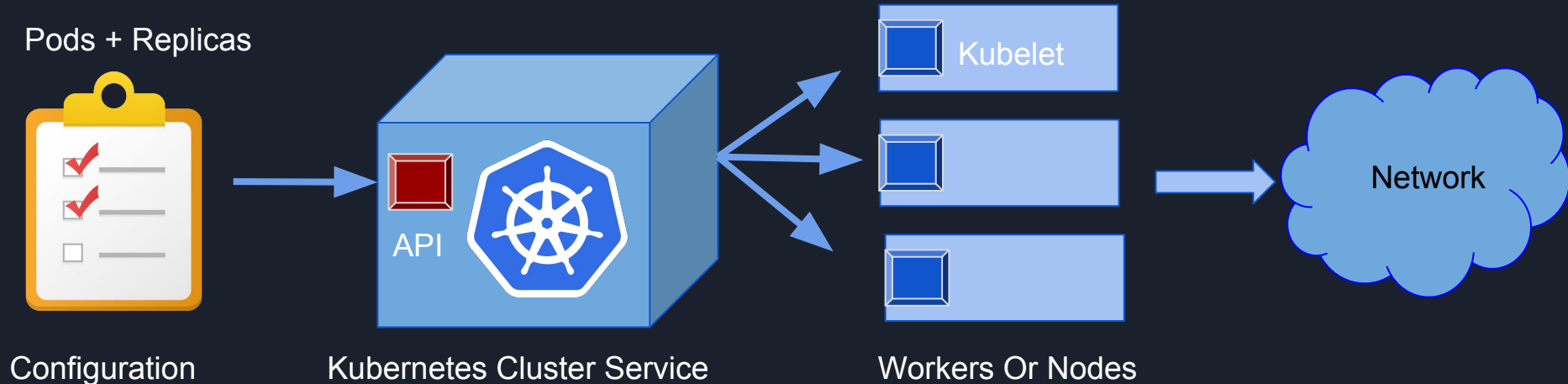
# Deployment in Clusters:

**Clusters?** group(computer) => work together



# Kubernetes

“Automation => deployment + scaling + management of containerized applications”





# Kubernetes vs Docker Swarm

## Why Kubernetes?

- Complex setup - to bring up a setup and altering the configuration with respect to kubernetes
- Success stories at Google, Pokemon
- Logging and monitoring tools are provisioned

## Why DockerSwarm?

- Native docker implementation, response times are faster
- Easy transition from docker-compose to swarm deployment



Chef

# How Chef Works





# Chef Advantages

- Meant to be used by programmers
- Useful for large-scale development
- Good version control capabilities



# Chef Disadvantages

- Complicated tool to use
- Familiarity with Ruby is required
- Documentation can be overwhelming



# Ansible

- Ansible is a radically simple IT automation platform that makes your applications and systems easier to deploy.
- Why?

It is a free open source application

YAML based – simple and human readable

Highly flexible and scalable configuration management of systems.

Large number of ready to use modules for system management

Custom modules can be added if needed

Configuration roll-back in case of error

# Bash v/s Ansible

```
$ sudo vi /etc/hosts
```

```
192.168.56.1    ubuntu.tecmint.lan
192.168.56.10  centos.tecmint.lan
```

## DNS Configuration on a linux host

```
- hosts: host_block
  tasks:
    - name: configure name servers
      net_system:
        name_servers:
          - 218.86.11.16
          - 8.8.8.8
```

Image source:

<https://www.tecmint.com/setup-local-dns-using-etc-hosts-file-in-linux/>



# Puppet Advantages

- Stable and mature solution
- Easy installation and setup
- Supports all major operating systems
- Most complete web UI
- Well-established support community through Puppet Labs



# Puppet Disadvantages

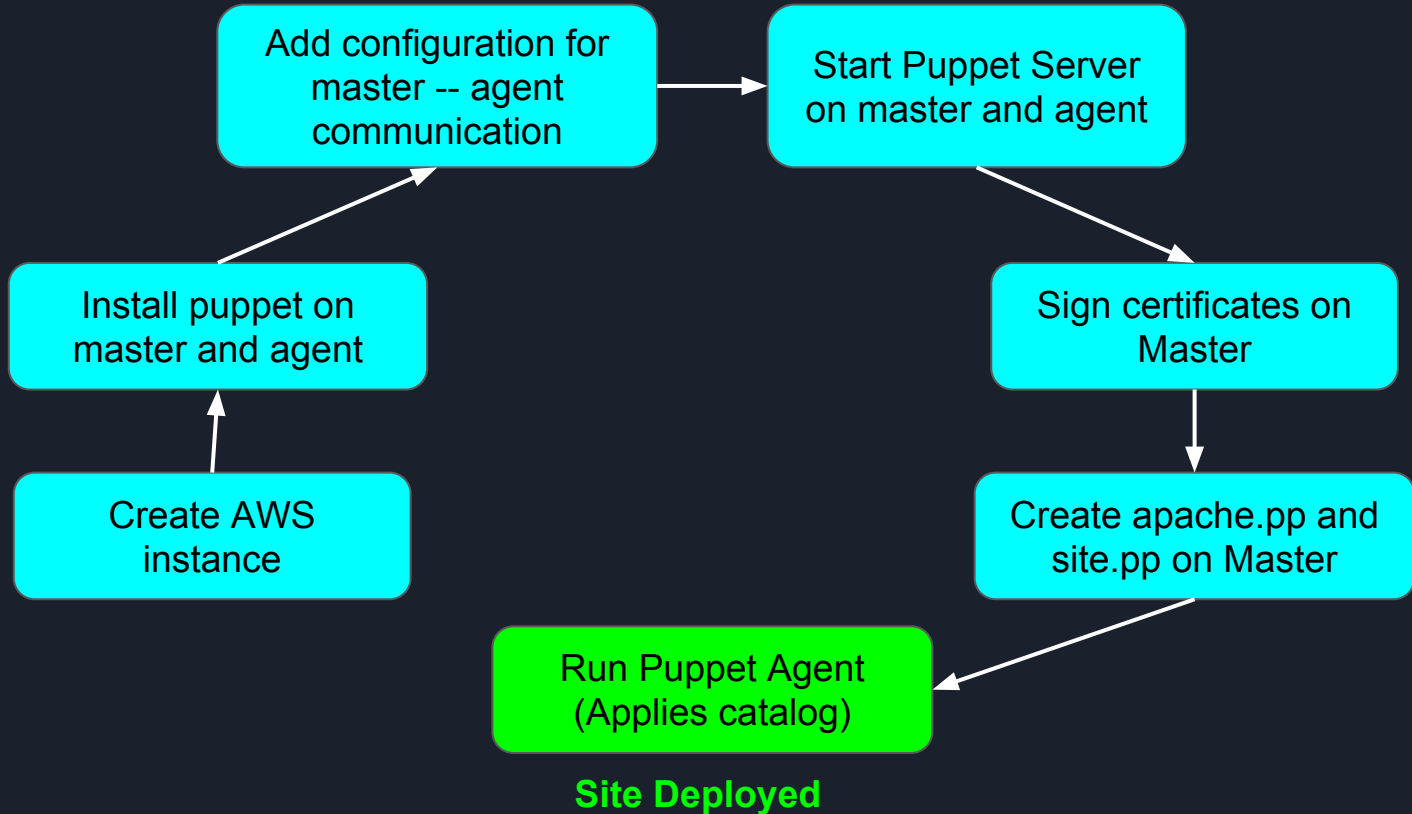
- Ruby-based, unlike other tools that are Python-based
- New users must learn Puppet DSL
- Codebase can become complex
- Model based - less control
- Pull model - runs at intervals



# Demo



# Puppet workflow





# Thank you!

## References:

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- Picture 2 - <https://qz.com/1209330/spacexs-falcon-heavy-rocket-is-the-envy-of-china-and-europe-why-isnt-nasa-on-board/>
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- Kubernetes in 5 mins - <https://youtu.be/PH-2FfFD2PU>
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