



NEBULAWORKS



# End to End Immutable Infrastructure Testing

January 2020

**So there I was...**



HI, MY NAME IS DREW



# OVERVIEW

## **Tell & Show:**

- why: testing
- what: is/are we testing
- how: demo
- questions

# ASSUMPTIONS

## **Good at:**

- config mgmt
- deployment via code
- Packer
- git

## **Know some about:**

- Continuous Integration
- Terraform
- Vagrant
- Azure
- Immutable Infrastructure

# WHY TESTING? (engineer version)

Code change

Developers change

Dependencies change

Testing is about taking back **control**



# WHY TESTING? ( manager version)

deployment confidence -> reduced stress

short-lived development environments

documents your infrastructure

ease of refactoring

Testing is about reducing **risk**

# ALTERNATE PRESENTATION NAMES

Technically coping with change: a memoir

How I sleep at night (as a infra. eng.)

Cowboy deploy to tried and *tested*

# 4 KINDS OF TESTS

- 
- 
- 
-



# PARTICIPATION AWARD



**CONGRATULATIONS <YOUR NAME>!**

# 4 KINDS OF INFRASTRUCTURE TESTS

1. Eyeballing it

2. Linting → BEFORE your code merges

3. Unit Testing → BEFORE your code runs

4. Integration Testing → AFTER your code runs



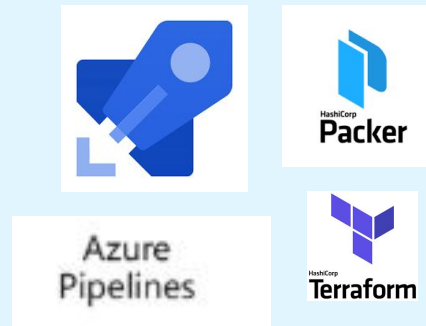
you, a scientist,  
eyeballing it

# OVERVIEW

## Local



## CI



## Post Deployment



# TOOLS

"The Specs"



**RSpec**



**Inspec**



**Goss** (no cool logo)

**Terratest** (no cool logo)



(not a cool logo)

Ruby Gem

Developed by  
Chef

Native integrations with:

- Packer
- Ansible Molecule
- Chef Suite

**Cloud Resource Testing!**

INSPEC  
FACTS

# INSPEC PRIMER

**PROFILE** a distinct module of inspec code

**CONTROL** a single or grouping of distinct tests

**RESOURCE** the inspec resource with properties to verify

**MATCHER** used to compare resource values to expectations

**TARGETS** native connection / auth methods to launch tests

```
inspec exec my-azure-profile -t azure://<subscription_id>  
inspec exec my-vm-ssh-profile -t ssh://user@ip:port
```

## Profile

```
control 'tmp' do  
  title 'Verify /tmp exists'  
  desc 'A detailed description'
```

```
  describe file('/tmp') do  
    it { should be_directory }  
  end  
end
```

```
control 'home' do  
  title 'Verify /home exists'  
  ...
```

# DEMO TIME!



# SHUT UP!

# RETROSPECTIVE

# WHAT NEXT?

## Start writing tests!

1. Use your **eyeballing** tests
2. Write a test for every configuration change you make. **Every** one
3. Think and **talk** about it with your team and write more tests
4. Write tests for things that you **miss**
5. **Seek guidance** from compliance and security teams, partner with them (do at your own peril)
6. Rely upon **external** profiles and open-source yours  
<https://github.com/dev-sec/linux-baseline/releases>

**Important:** Don't merge code without tests



# THANK YOU!

QUESTIONS?

email: [drew@nebulaworks.com](mailto:drew@nebulaworks.com)

code & slides: <https://github.com/drewmullen/infra-testing-demo>