

Devops

What Why and How?

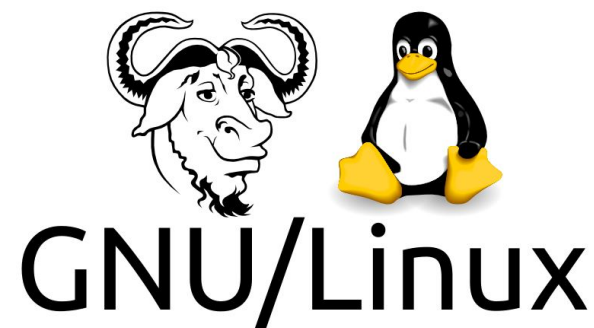
Minto Joseph

whoami

Devops Engineer

Pythian
love your data

Over 17 years in IT industry



WORKED IN MY DEV SERVER

.. NOW OPS ISSUE

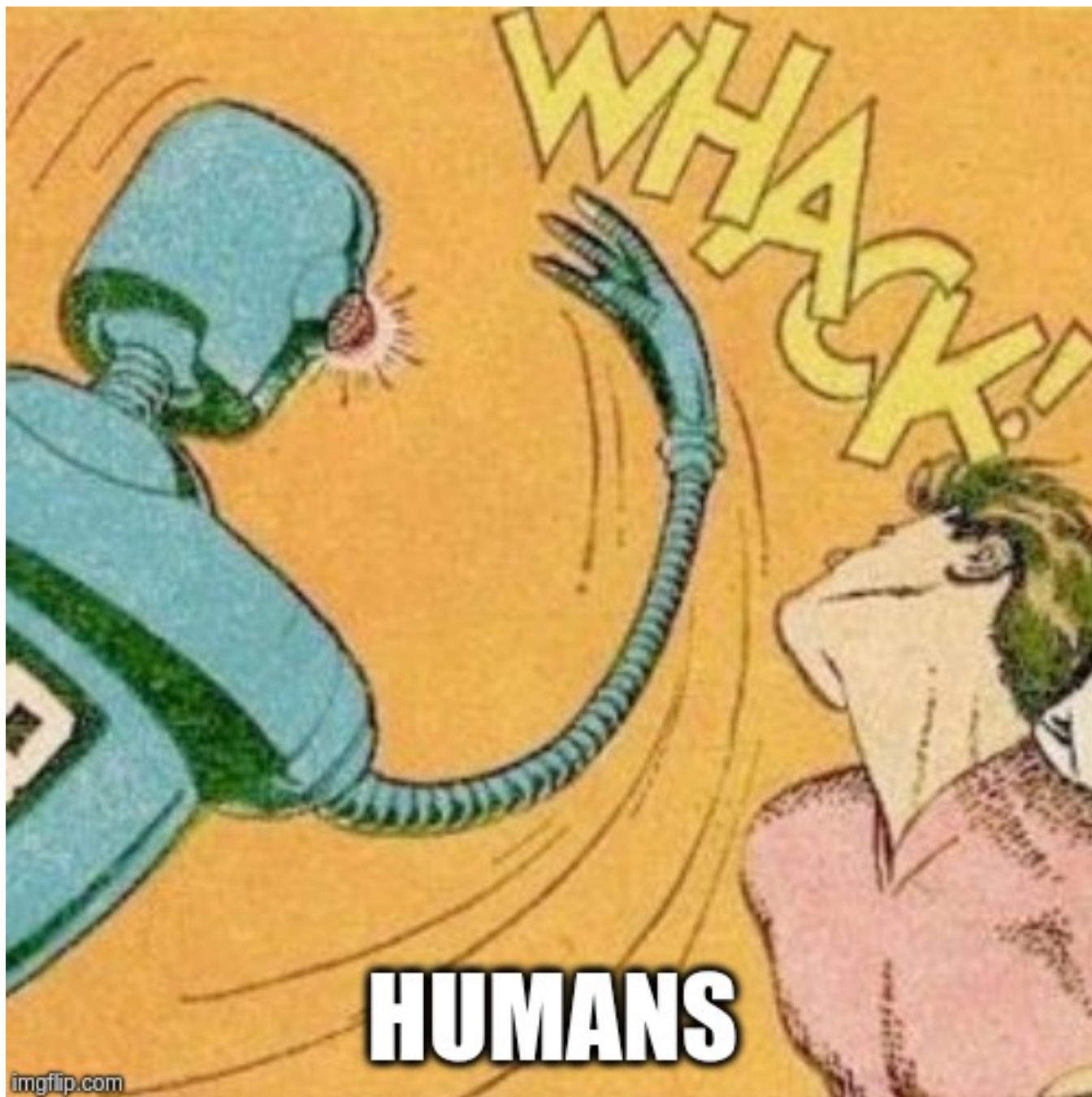
KEEP YOUR FANCY NEW CODE



.. OUT OF MY SERVER ROOM

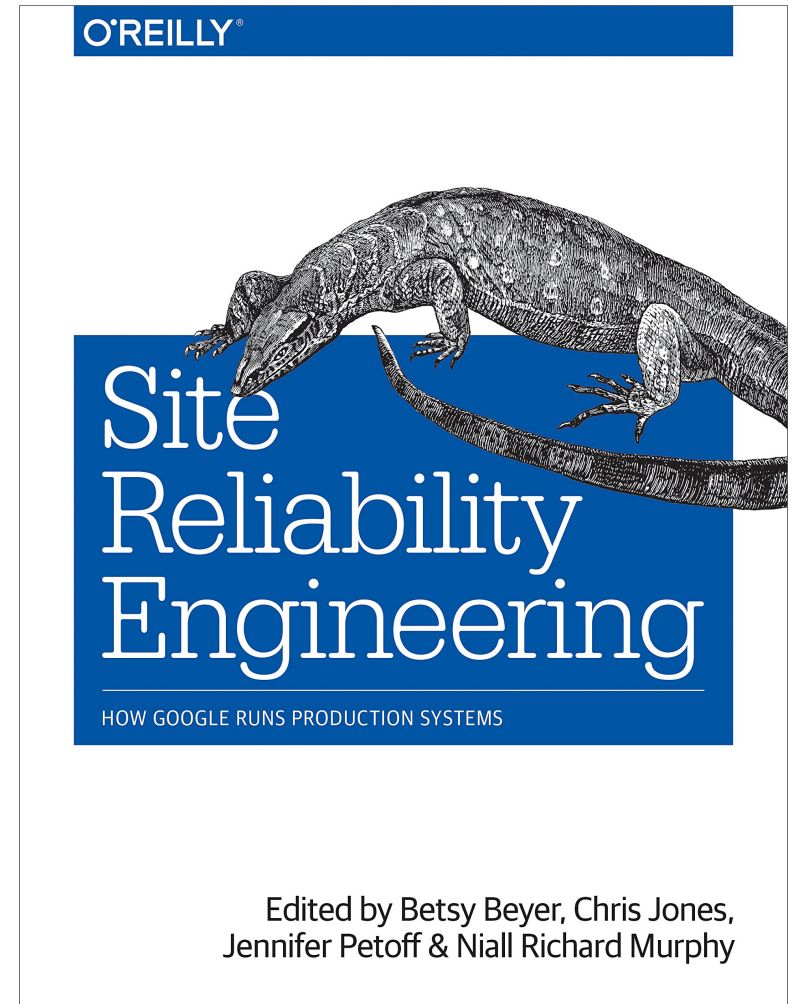
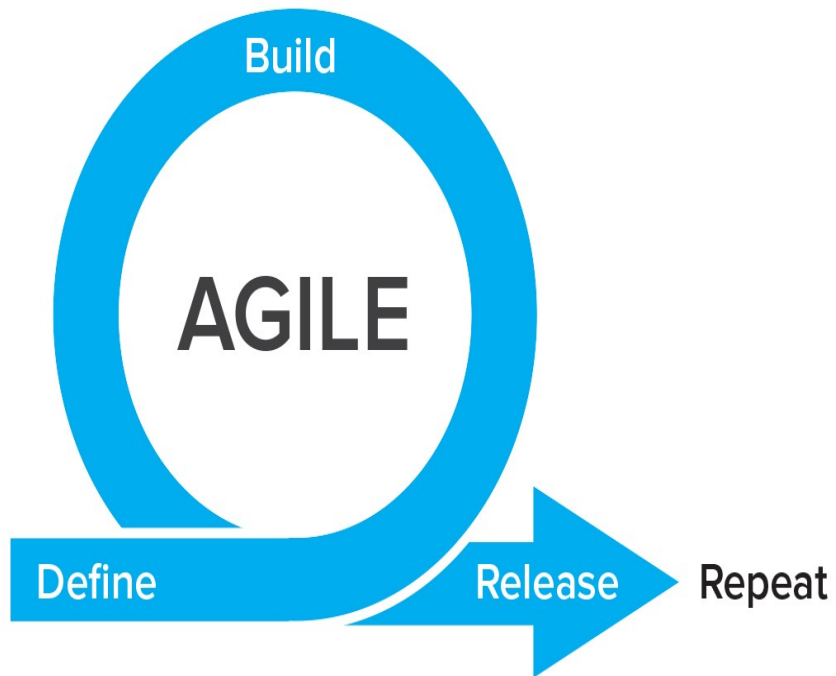
Possible reasons

- Dev used different library versions for testing
- Ops made changes in production.
- Configuration mistakes
- Bug in the Code only manifested now (Bad luck?)



HUMANS

Ideas



Cloud Computing



Tools and Technology



HashiCorp

Terraform



kubernetes



ANSIBLE



Jenkins



puppet



elasticsearch

Devops Practice

- Dev + Ops
- Small frequent changes and releases
- Automation
- Infrastructure as Code
- CI/CD



AUTOMATE EVERYTHING

**PROVISIONING, BUILDING,
DEPLOYING, TESTING, MONITORING**

Infrastructure as code

Configuration



ANSIBLE

Infrastructure



HashiCorp

Terraform

Image



HashiCorp

Packer

```

{
  "builders": [
    {
      "access_key": "{{user `aws_access_key`}}",
      "ami_name": "packer-linux-aws-demo-{{timestamp}}",
      "instance_type": "t2.micro",
      "region": "us-east-1",
      "secret_key": "{{user `aws_secret_key`}}",
      "source_ami_filter": {
        "filters": {
          "virtualization-type": "hvm",
          "name": "ubuntu/images/*ubuntu-xenial-16.04-amd64-server-
*",
          "root-device-type": "ebs"
        },
        "owners": ["099720109477"],
        "most_recent": true
      },
      "ssh_username": "ubuntu",
      "type": "amazon-ebs"
    }
  ],
  "provisioners": [
    {
      "type": "shell",
      "script": "./example.sh"
    }
  ]
}

```

packer build hello.json


```
provider "aws" {  
  region = "us-west-2"  
}  
  
data "aws_ami" "ubuntu" {  
  most_recent = true  
  
  filter {  
    name   = "name"  
    values = ["packer-linux-aws-demo-1566490783"]  
  }  
  
  filter {  
    name   = "virtualization-type"  
    values = ["hvm"]  
  }  
  
  owners = ["099720109479"]  
}  
  
resource "aws_instance" "web" {  
  ami           = "${data.aws_ami.ubuntu.id}"  
  instance_type = "t2.micro"  
  
  tags = {  
    Name = "HelloWorld"  
  }  
}
```

```
# terraform plan  
# terraform apply
```

```
---
- hosts: apache
  sudo: yes
  tasks:
    - name: install apache2
      apt: name=apache2 update_cache=yes state=latest

    - name: enabled mod_rewrite
      apache2_module: name=rewrite state=present
      notify:
        - restart apache2

  handlers:
    - name: restart apache2
      service: name=apache2 state=restarted
```

```
$ ansible-playbook apache.yml --ask-sudo-pass
```

CI CD

Continuous Integration

Code Build Integrate Test

Continuous Delivery

Code Build Integrate Test Staging Release

Continuous Deployment

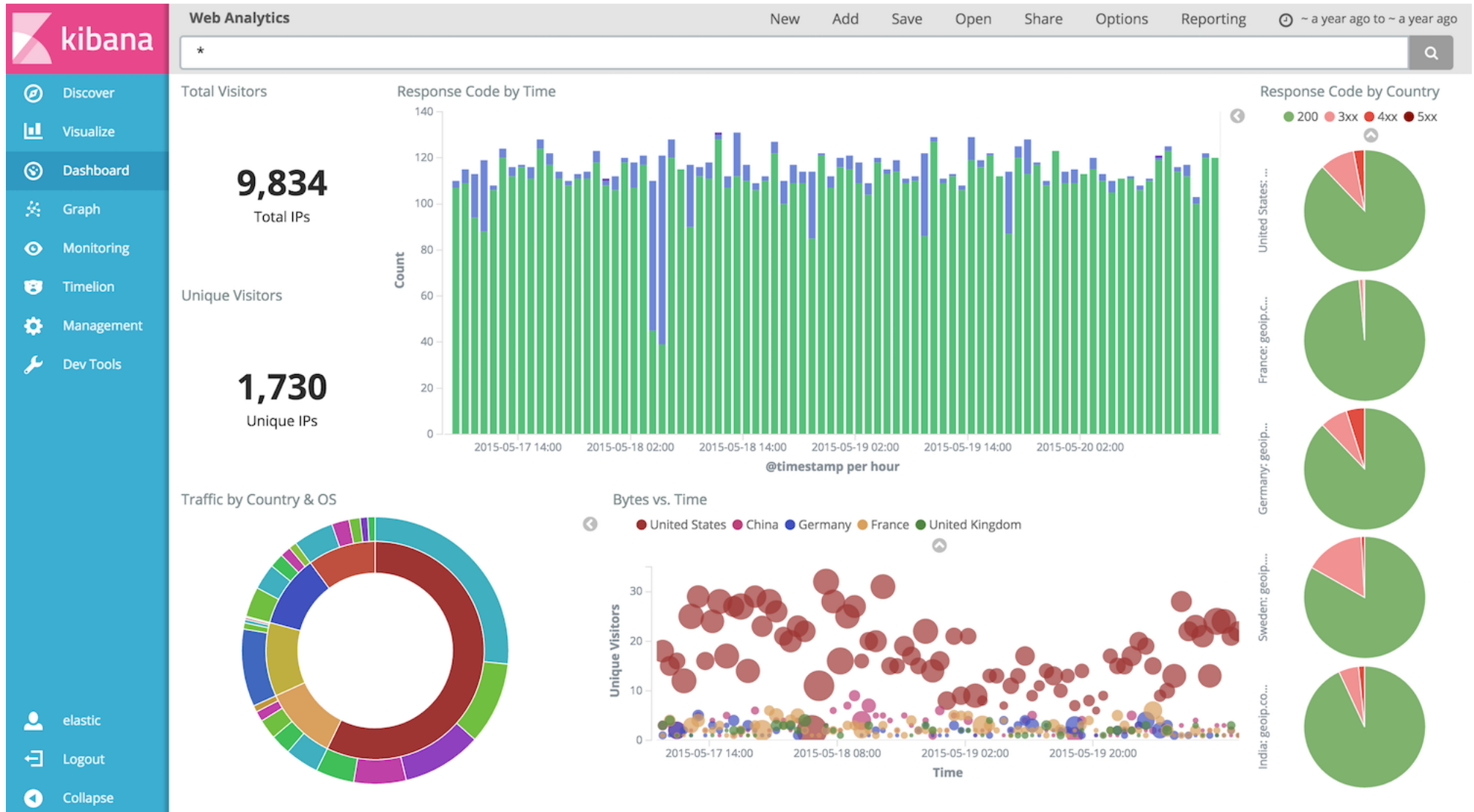
Code Build Integrate Test Staging Release Deploy

Jenkins UI

[\(just show failures\)](#) [enlarge](#)

| Average stage times: (Average <u>full</u> run time: ~1min 12s) | | Clone the project | Compilation and Analysis | Checkstyle | Tests and Deployment | Runing unit tests | Runing integration tests | Staging |
|--|----------------------------|-------------------|--------------------------|------------|----------------------|-------------------|--------------------------|---------|
| | | 4s | 169ms | 23s | 69ms | 20s | 41s | 42s |
| #37 | Nov 30 06:47 No Changes | 5s | 216ms | 23s | 69ms | 21s | 39s | 40s |
| #36 | Nov 30 06:20 No Changes | 4s | 122ms | 23s | 70ms | 20s | 44s | 44s |

Monitoring



BEFORE DEVOPS



AFTER DEVOPS



Thank You Dev Cluster



