



# Infrastructure as Code

simplified by conventions

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Kraków, 2018-10-16



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# \$ whoami

- Infrastructure Lead at Devskiller
- Working with infrastructure since 2008
- FOSS and Open Hardware enthusiast
- Automation freak
- Co-organizer of the Warsaw DevOps Coffee
- Co-organizer of the WarLUG (<http://warszawa.linux.org.pl>)

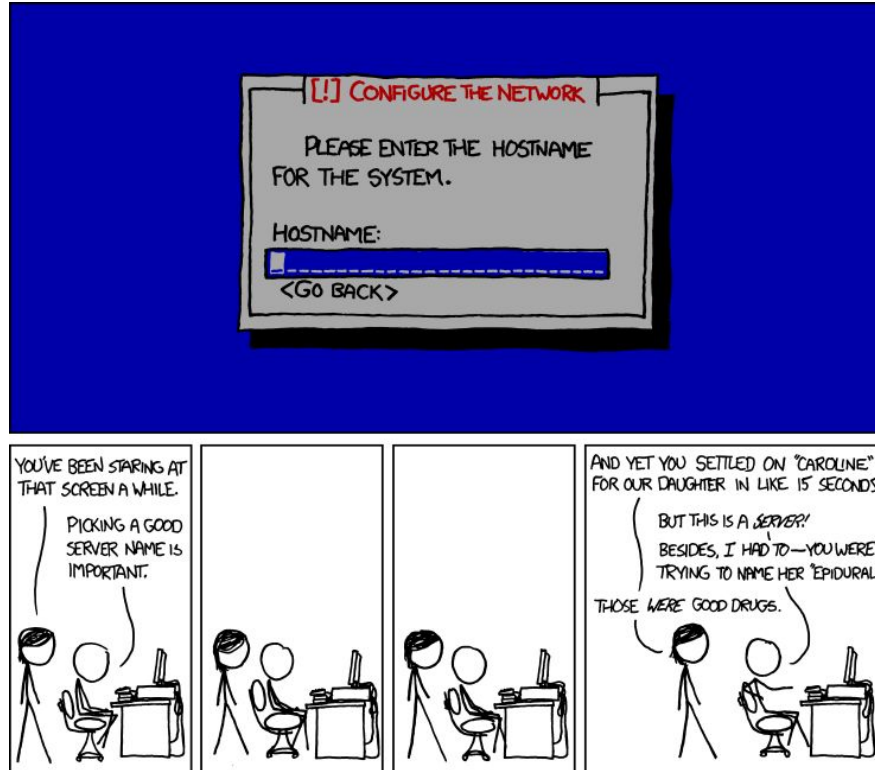


Infrastructure...

# The Iron Age

- Handcrafted servers treated as pets
- Have carefully chosen names and their dedicated owners (sysadmins)
- Bare-metal in most cases
- Long life-span - higher uptime == better server

# The Iron Age



# The Cloud Age

- Dynamic infrastructure - servers are created and destroyed with a single click
- Servers treated as cattle
- VMs and Containers
- Changed can be made in minutes/seconds - no more waiting for new pizza-boxes to arrive...

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# The Cloud Age

- SaaS - Software as a Service
- PaaS - Platform as a Service
- IaaS - Infrastructure as a Service
  - Public Cloud - AWS, Azure, GCP, DigitalOcean
  - Private Cloud - OpenStack, VMware
  - Bare-metal Cloud - FAI, Cobbler, Foreman

...as Code

# Infrastructure as Code pillars

- Systems can be easily reproduced/rebuilt
- Systems are disposable
- Processes are repeatable
- Systems are adjusting to changes

# Infrastructure as Code

- Treat infrastructure as your code
- Pets vs Cattle
- Use well established software development tools and practices
  - Version all the things! Put your infra into a VCS
  - TDD
  - CI/CD
  - Deploy small changes
- Automate all the things!

# Infrastructure as Code

- Save time and eliminate toil
- Support and enable change
- Changes to the systems should be routine - *#nodrama*
- Self-service for users - they can define and provision infrastructure themselves
- Fast recovery from failures + disaster recovery
- Continuous improvement
- Changes to the systems are tested, versioned and monitored
- Self-documenting systems

but...

# Infrastructure challenges

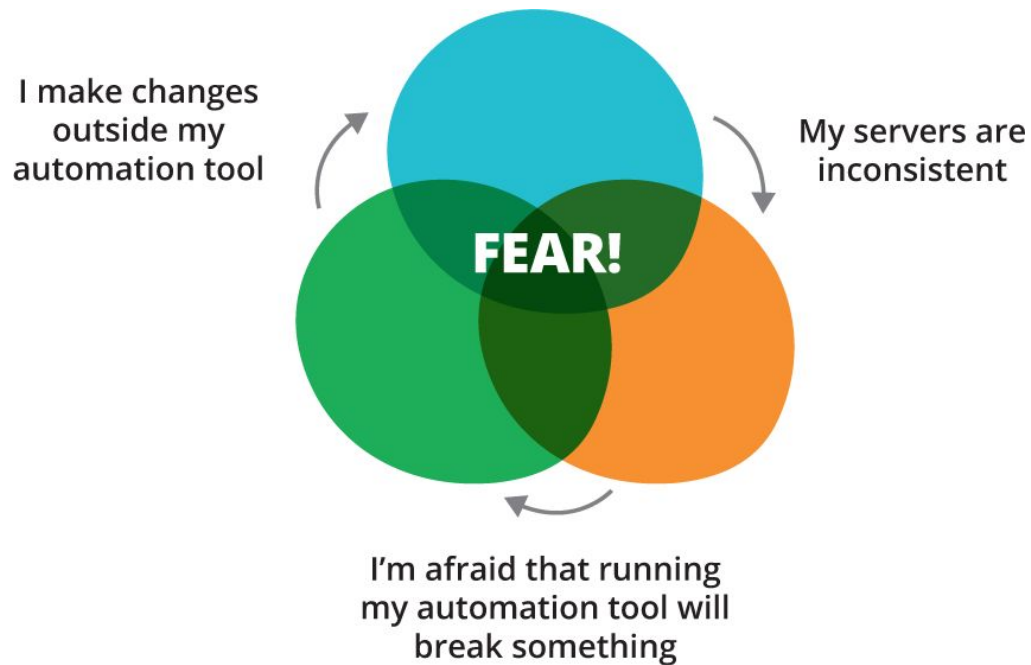
- Configuration drift
- Snowflake servers
- Fragile infrastructure
- Server sprawl
- Erosion
- Automation fear

# Infrastructure challenges

- Configuration drift
- Snowflake servers
- Fragile infrastructure
- Server sprawl
- Erosion
- **Automation fear**



# Infrastructure challenges



# Tools

# Tools

- Infrastructure definition
- Server configuration
- Orchestration
- Testing

# Infrastructure definition

- In-house solutions - bash scripts, etc.
- Terraform
- AWS CloudFormation
- Azure Resource Manager templates
- Packer
- Vagrant
- Docker
- ...

# Server configuration

- CFEngine
- Puppet
- Chef
- SaltStack
- Ansible
- Bash scripts
- ...

# Orchestration

- Kubernetes
- Mesos
- Nomad
- ...

# Testing

- Bats
- ServerSpec
- InSpec
- TestInfra
- ...

DEMO



Questions



# Thank you!

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- IRC: wybczu@freenode
- <https://keybase.io/wybczu>
- GPG key ID: 0x2EB8C2A248AD1541  
Key fingerprint = 5BEA 0D72 A27F ABB6 2F23 FF2A 2EB8 C2A2 48AD 1541