DevOps Evolution

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DevOps Evolution

• Is DevOps a tooling or a cultural movement?
• How does automation play a role?
• How do you move beyond automation into continuous delivery?
• Where should you get started?
What Is DevOps?

DevOps is a **Culture** of Trust and Collaboration in which **People** use the Right **Tools** for Automation to achieve **Continuous Delivery**

A simple working definition: **Infrastructure as code**

SOURCE: HTTP://ROHITGHATOL.GITHUB.IO/DEVOPS-GETTING-STARTED/##/1

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Is DevOps a Tools or Cultural Movement?

DevOps tools are increasingly popular
- Led by open source tools
- Most commonly provisioning tools

The Phoenix Project is the DevOps bible
- A business novel modeled after Eliyahu Goldratt’s *The Goal*
Where Do You Start?

Strong Culture + No Tools = Fail

ITIL Culture + DevOps Tools = Fail

...but people change is the long pole
Like a Carrier, or Like a Cloud?

When something goes wrong, is your instinct to:

**Ctrl-Z:** Back out the change and try again at the next maintenance window?  
**OR**  
**Roll forward:** Identify the problem, and quickly make the next change?
Correctness vs. Resilience

Designing for Correctness

Avoid failure at all costs
- Focus on qualification and integration
- Create process gates to catch errors
- When a change doesn’t work, regroup and use the process

Designing for Resilience

Failure is a certainty
- During failure, service should be resilient
- Simulate failures to test
- When a change doesn’t work, roll forward
What about Automation?

- DevOps often gets lumped in with automation initiatives
- DevOps is infrastructure as code
- Automation is about executing workflows automatically

Both are important, but they are different. Be clear on what your objectives are.
Automation Starts with Workflows

• Most network automation discussions start with the network
• You automate the act of doing something
  – The network is noun not a verb
• A workflow is a set of tasks strung together to achieve some objective
  – Typical examples: provisioning and troubleshooting
Which Workflows Should You Start With?

Out of Box
- Initial provisioning
  - Ex: Ansible playbooks
- Planning
  - Ex: Inventory collection

Troubleshooting
- Collecting diagnostics
  - Ex: Counters, stats
- Remediation
  - Ex: Policy application

Key Tools
- Most tools represent an entry point to workflows
  - Ex: Logging tools lead to troubleshooting
  - Ex: Server and app provisioning tools lead to edge policy

- Deploy a server
- Add an app instance
- Deploy a service
- Validate
What Does Automation Require?

Data Distribution
- How do the elements talk to each other?
- Not all elements communicate
- Not all communication is all the time

Normalization
- What language do the elements speak?
- Even similar constructs can be formatted in different ways

Logic
- If this, then that
- Requires rich set of triggers (or sensors)
- Template-based set of actions
What Can Be Automated?

IFTTT

Rules

Workflows

Audit

Actions

Sensors

Security

Networking

git

JIRA

PAGERDUTY

VictorOps

Networking

kubernetes

Sensu

New Relic

Splunk

OOC

Sumologic

Docker

CoreOS

Mesosphere

openstack

Amazon Web Services

Microsoft

VMware

vSphere

Cloud Foundry

Puppet Labs

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Automation Example

Event: “low disk on web301”

Web301 is “low disk”

Resolve known cases, fast. Is it /var/log? Clean up!

Unknown problem, need a human

Wake up, buddy. Something real is going on…

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Moving from Automation to DevOps
A_1 B_1 C_1 D_1 = Network_1

A_1 B_2 C_1 D_1 = Network_2
Tools Supporting a Single System Image

Modify Code
- Configuration management or provisioning
  Examples: CFEngine, Puppet, Chef, Ansible, Salt

Unit Test
- Requires a test description language
- Automated test harness
- Commercially unsolved for networking

Validate
- Network and SLA monitoring
- Data collection and analysis
  Examples: Nagios, OpenNMS, Zabbix

Compile
- Configuration rollout and deployment
  Examples: Otto, Jenkins, Maven, Ant

Source Code Management
- Configuration versioning
- Aligned to management domains
  Examples: Git, Mercurial, Perforce
DevOps Evolution

• Be clear about whether your company really wants DevOps
• Fight the temptation to start with tools—people first!
• Automation is about workflows, not infrastructure
• Consider using your favorite tools to identify workflows
• Build modularly and expand
• Involve more than just the networking team
Thank you