The Three C's of DevOps

Nathen Harvey, Community Director, Chef
@nathenharvey
Agile 2014 – Please provide feedback

• Were you able to attend this session at Agile 2014?
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• I’d love to hear your feedback:
  • http://feedback.agilealliance.org/1941
Nathen Harvey

- Community Director, Chef
- Co-host of the Food Fight Show Podcast

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- bit.ly/farmer-nathen
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What is DevOps?
DevOp with Me!

- I f*%$ing hate DevOps!
- Which DevOps tool should we use?
- A job title at your company includes:
  - DevOps Engineer
  - DevOps Lead
- Your company has a “DevOps Team”
Product Management
Development
Quality Assurance
DevOps

http://www.flickr.com/photos/docsearls/5500714140
Product
Management

Development

$ sudo su -

DevOps
Product Management

DevOps

Not DevOps!

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http://www.flickr.com/photos/bontempscharly/8094444618
PROCESS BASICS

All processes, with params + hierarchy
ps auxww -H
Show all ruby-related PIDs and processes
pgrep -fI ruby
What is a process doing?
strace -f -p $PID
What files does a process have open?
(also detects ruby version of a process)
lsof -p $PID
Flavors of kill
kill xxxx
kill xxxx yyyy zzzz
kill <name of process>
pkill <word in processname>
Keep an eye on a process
watch 'ps aux | grep ruby'

TIPS N TRICKS

Run Previous command as root
sudo !!
Change to last working dir
cd -
Run something forever
while true;do ruby ghetto.rb;done

MEMORY

How much mem is free?
free -m
Are we swapping?
First line is avg since boot.
vmstat 1
List the top 10 memory hogs
ps aux --sort=-resident|head -11
Detect OOM and other bad things
for i in messages kern.log syslog; do egrep -i "s\[ie\] g\[oo(m|ps)\]" /var/log/$i{,.0}; done
Disable OOM killer for a process
echo -17 > /proc/$PID/oom_adj

TERMINAL & SCREEN

Start a screen session as the current user
screen -x
Join/re-attach to a screen session
screen -r
Record a terminal session
script filename.out 2> filename.timing
Playback a recorded terminal session
scriptplay filename.timing.filename.out

DISK/FILES

Check reads/writes per disk
iostat -nmk 5
Files (often logs) marked for deletion but not yet deleted
lsinfo | grep delete
Overview of all disks
df -h
Usage of this dir and all subdirs
du -hs
Find files over 100MB
find . -size +100M
Low hanging fruit for free space. Check /var/log too.
ls -al /tmp
Find files created within the last 7 days
find . -mtime -7
Find files older than 14 days
find . -mtime +14 -type f -name '*.gz'
Delete files older than 14 days
find . -mtime +14 -type f -exec rm () ;
Monitor a log file for an IP or anything else
watch -f file.log | grep 192.168.1.1

NETWORK

TCP sockets in use
lsof -nP | tcp
Get IP/Ethernet info
ip addr
ipconfig
host <-> IP resolution
host 192.168.1.1
host MyRouter
Curl, display headers (I), follow redirects (L)
curl -LI http://google.com
Traceroute with stats over time (top for traceroute) Requires install
traceroute google.com
Traceroute TCP to avoid ICMP blockage
tcptraceroute google.com
List any IP blocks/rules
iptables -L
Drop any network requests from IP
iptables -I INPUT -s 66.75.84.220 -j DROP
Show traffic by port
iftop
Show all ports listening with process PID
netstat -tlnp
D/L speed test (don't run in prod!)
wget cachefly.cachefly.net/100mb.test -O /dev/null
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Rails Devops Cheatsheet
A curated collection of command line tips and time-saving snippets
Live version with filtering at http://rubytune.com/cheat
Corrections and tips-off to sudara@rubytune.com
http://rubytune.com/assets/cheats/Rubytune-Cheatsheet-v2-c928e96837707104caeb9054cd8b782d.pdf
DevOps is not…

• A new name for
  • System Administration
  • Operations
  • Release Engineering
  • Site Reliability Engineering
• A tool
• A team
DevOps is not…

• A new name for
  • System Administration
  • Operations
  • Release Engineering
  • Site Reliability Engineering
• A tool
• A team*

* Except when it is a team, sometimes that's OK
DevOps

- Is a cultural and professional movement
- Development and Operations working together toward a common goal
- Leveraging ideas & processes from other industries
- Enabling things like continuous delivery
Three C’s of DevOps

• Cultural and professional movement
• Development & Operations working together toward a common goal
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Three C’s of DevOps

• **Cultural** and professional movement
• Development & Operations working together toward a **common goal**
• Leveraging ideas & processes from other industries
• Enabling things like **continuous delivery**
Three C’s of DevOps

• Culture
Three C’s of DevOps

• Culture
• Common Goal
Three C’s of DevOps

• Culture
• Common Goal
• Continuous Delivery
Three C’s of DevOps

• Culture
• Common Goal
• Continuous Delivery
• Chef
Three C’s of DevOps

- Culture Character
- Common Goal
- Continuous Delivery
- Chef
Three C’s of DevOps

• Culture
• Character
• Common Goal
• Communication
• Continuous Delivery
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Three C’s of DevOps

• Culture
• Character
• Common Goal
• Communication
• Continuous Delivery
• Improvement
• Chef
Three C’s of DevOps

- Culture
- Character
- Common Goal
- Communication
- Continuous Delivery
- Improvement
- Chef (we have a constraint of 3!)
Character
the mental and moral qualities distinctive to an individual
Trust others to behave responsibly

https://www.flickr.com/photos/devnull/2775952906
Perseverance

• Curiosity
• Learning
• Troubleshooting

https://www.flickr.com/photos/kalleboo/4611613067/
Lift Up

• Mentor and help those around you

• Hire people smarter than you

http://www.flickr.com/photos/sarahhoss/8082394829/
Respect

You don’t have to *like* each other but you do need to recognize contributions and treat each other well.
Empathy

The action of understanding, being aware of, being sensitive to, and vicariously experiencing the feelings, thoughts, and experience of another

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Empathy

The action of understanding, being aware of, being sensitive to, and vicariously experiencing the feelings, thoughts, and experience of another

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Character

- Trust
- Learning & Curiosity
- Perseverance
- Mentoring
- Respect
- Empathy
Character Traits – In Practice

• Test-driven development
• Automated deployment
• Hack days
Character Traits – In Tools

• Distributed Version Control Systems
• Automated build, test, and deployment pipelines
• Metrics and data that are freely available
Three C’s of DevOps

• Character
• Common Goal
• Communication
• Continuous Delivery
• Improvement
• Chef (we have a constraint of 3!)
Communication

the imparting or exchanging of information or news
Aligning Objectives

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http://www.flickr.com/photos/mroach/106771711
Communication

• Current Infrastructure and Process are documented
Infrastructure as Code

```erb
template "/etc/apache2/apache2.conf" do
  source "apache2.conf.erb"
  owner "root"
  group "root"
  mode "0644"
  variables(:allow_override => "All")
  notifies :reload, "service[apache2]"
end
```

- Current Infrastructure and Process are documented
Infrastructure as Code

```ruby
machine 'db' do
  recipe 'mysql'
end

1.upto(50) do |i|
  machine "web-#{i}" do
    recipe 'apache'
  end
end
```

• Current Infrastructure and Process are documented
Sit Together
Eat Together

http://www.flickr.com/photos/libraryman/5460313574
Water Cooler

http://www.flickr.com/photos/pieterdewit/3507446040/
Alignment

- Is my work aligned with the objectives of the business?
- How does this task help make the customer experience more awesome?

http://www.flickr.com/photos/sonyasonya/5124085745
The No Asshole Rule

• Assholes target people less powerful than themselves

• After encountering one, people feel oppressed, humiliated, or otherwise worse about themselves

Effective Communication

• Lead with questions, not statements
• Understand the effort and time others have invested
• Avoid the passive snark
Beware of Cruel Empathy

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Communication

- Aligned Objectives
- Coded Infrastructure and Process
- Metrics for All
- Co-location
- Know your co-workers
- Fire or shun assholes
Communication – In Practice

- Code Sharing
- Metrics Sharing
- Lunch and Learn
- Make the work visible
- More than just development and operations
- Game Days
- Team Building
Communication – In Tools

- Infrastructure as code
- Big, visible monitors with
  - Build status
  - Business metrics
- Group Chat
- Visibility of work – Kanban Board
  - Ability to tie work to business priorities
Three C’s of DevOps

• Character
• Communication
• Continuous Delivery Improvement
• Chef (we have a constraint of 3!)
Continuous Improvement

ongoing effort to improve products, services or processes. These efforts can seek “incremental” improvement over time or “breakthrough” improvement all at once.
Key to Improvement

https://www.flickr.com/photos/oriol_gascon/2138361521
Kaizen

- Change for the better
- Continuous Improvement

http://www.flickr.com/photos/koiquest10/7742356874

https://github.com/adamhjk/good-at-ops
Kaizen – Small Improvements

• Evaluate a process, make it better.
• Try using the scientific method
  • Ask a question
  • Do research
  • Construct a hypothesis
  • Test your hypothesis
  • Analyze data and draw a conclusion
  • Communicate your results

https://github.com/adamhjk/good-at-ops
Kaizen

• Anyone can do it!
Kaikaku – Radical Change

• Recognize when desired results are beyond incremental improvement.

• Start fresh, incorporate a new process, then do Kaizen
Continuous Improvement – In Practice

• Continuous Integration
• Shorter Feedback Loops
• Rotations in other departments
• Experiencing your products as a new customer
• Game Day
• Post Mortems
Continuous Improvement – In Tools

- Continuous Integration servers
- Real User Monitoring
- Supportive HR and management policies
Three C’s of DevOps

- Character
- Communication
- Continuous Improvement
- Chef (we have a constraint of 3!)
The Back Office Becomes The Front Office

“In ten years, I’m certain every COO worth their salt will have come from IT. Any COO who doesn’t intimately understand the IT systems that actually run the business is just an empty suit, relying on someone else to do their job.”

Kim, Gene; Behr, Kevin; Spafford, George (2013-01-10). The Phoenix Project: A Novel About IT, DevOps, and Helping Your Business Win
Culture & Tools

https://www.flickr.com/photos/lwr/3077084978
Making DevOps Work

• Strong cultures of personal empowerment and accountability
• Treat failure as a learning opportunity, not as a dangerous thing to be avoided
• Web-oriented architectures
• Allergy to things that make you slow
• Addicted to data
DevOps – To Do

• Put dev and ops in the same room
• Take a whole-systems view of your technology platform
• Reinforce culture with technology, and vice versa
• Take responsibility
• Trust your teammates
DevOps – To Stop Doing

• Mislabeling things
• Hoarding information
• Looking for someone to blame
• Waiting for someone else to transform your business
Web-scale IT

The future is already here – it’s just not very evenly distributed
Web-scale IT

The influence of DevOps on IT culture, tools, processes and organizational structure is resulting in the acceleration of application delivery and an environment of continuous experimentation.

Combining new software architectures with DevOps-style approaches can become the catalysts to improve an IT organization's ability to adapt to change.

http://www.gartner.com/newsroom/id/2675916
Historically, enterprise IT has been focused on managing risk... However, the major DevOps underpinnings...are enabling these same enterprises to realize they can be fast and 'safe.' Embracing risk is not as risky as it sounds with a DevOps mindset. Having the architecture of the application being more resilient in the first place enables IT operations teams to implement and support leaner and more agile processes that might otherwise be viewed as inappropriate for conservatively minded organizations.

http://www.gartner.com/newsroom/id/2675916
Walk This Way

Walk This Way

“Oh, hell no! This is hillbilly gibberish”
Walk This Way

“Oh, hell no! This is hillbilly gibberish”

“I don’t understand this code”

Walk This Way

“Oh, hell no! This is hillbilly gibberish”

“I don’t understand this code”


Walk This Way

“Oh, hell no! This is hillbilly gibberish”

“What the hell are they doing to our song?”

“I don’t understand this code”


Walk This Way

“Oh, hell no! This is hillbilly gibberish”

“What the hell are they doing to our song?”

“I don’t understand this code”

“It works fine on my machine”


Bring The Noise
Is the **cultural and professional movement** that grew directly from the collective experience of the pioneers of this transition.

It's application to traditional IT is **1:1**.

The **business adaptations** encapsulated in DevOps will eventually be **ubiquitous**.

...At least, if you want to be great at the next couple decades of global economic growth.
MONDAY, JULY 28 @ 10:45AM
“The Three C’s of DevOps”
Presented by:
Nathen Harvey, Chef Community Director

STOP BY THE CHEF BOOTH FOR A T-SHIRT!
Ask us about delivering speed, scale and consistency to your infrastructure.

FIND US @ AGILE 2014

JULY 28 @ 3:45PM
Awesome Chef: Fletcher Nichol presents
“Agile Infrastructure Development with Test Kitchen”

JULY 31 @ 9:00AM
Community Member: Jeffrey Hulten presents
“Reducing Resistance: Deployment as a Surface”
Thank You

• What questions do you have?

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Bonus Round!

• Community
• Infrastructure as Code
• Stages of Learning
• Hiring DevOps

• Ask me anything about…
  • Chef
  • DevOps
Community
Community

• Meetups
• Podcasts
• Conferences
• Code Sharing
Road Trip!

http://www.flickr.com/photos/smemon/4834936917
Engineer Exchange
Job Interviews

http://www.flickr.com/photos/usfbps/4607150722
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Infrastructure as Code
Infrastructure as Code

• Programmatically provision and configure components

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Infrastructure as Code

• Treat like any other code base

http://www.flickr.com/photos/louisb/4555295187/
Infrastructure as Code

- Reconstruct business from code repository, data backup, and compute resources

http://www.flickr.com/photos/louisb/4555295187/
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Stages of Learning
Shuhari

- First learn, then detach, and finally transcend
- shu - "obey" - traditional wisdom
- ha - "detach" - break with tradition
- ri - "separate" - transcend
Bonus Round!

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Hiring DevOps
Grow your own!

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