DevOps and Higher Ed
NERCOMP 2017

This presentation contains audience responses from the NERCOMP 2017 conference session on March 28, 2017. Polls are no longer live.
Do you DevOps?

What's your IT organization's status in regards to DevOps?

- **A**: All in. CI/CD pipelines, automated testing, collabo...
- **B**: We are working on implementing DevOps tools a...
- **C**: I've heard of DevOps but I don't get it yet or know i...
- **D**: I have no idea what DevOps is. This was just the lea...

Respond at PollEv.com/davidblezard893

Text DAVIDBLEZARD893 to 37607 once to join, then A, B, C, or D
What is DevOps?

What does DevOps mean to you?

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The Pats references are a joke from my audience!
Agile

And then magic happens...

http://www.intelegain.com/agile/
What is DevOps?

Development + Operations
Deliver value quickly
People, Process, and Tools
Automation & pipelines
Metrics
Short-feedback cycles
Continuous integration, deployment, delivery
Infrastructure as code

By Kharnagy - Own work, CC BY-SA 4.0, https://commons.wikimedia.org/w/index.php?curid=51215412
DevOps Mindset

Development
- Always changing things
- “It works fine on my system”
- Little knowledge or appreciation of scaling

Operations
- Focus on stability & uptime
- Must support many applications
- Must scale for the real world
DevOps Mindset

Development + Operations

End-user focused
Shared goals
Shared understanding
Communication and collaboration
No blame
DevOps Benefits

High-performing teams deploy more frequently and have much faster lead times.

- 200x more frequent deployments
- 2,555x shorter lead times

They make changes with fewer failures, and recover faster from failures.

- 3x lower change failure rate
- 24x faster recovery from failures

DevOps Benefits

High-performing teams spend less time fixing security issues.

That’s because they address security at every stage of the software development and delivery cycle, instead of retrofiting security at the end.

High-performing teams spend less time on unplanned work and rework than low-performing teams.

That means they can get more new work done. In fact, they spend 29 percent more time on new work than low-performing teams. Yet they’re doing that without sacrificing quality or making their systems less secure.

Some DevOps Tools

- JIRA
- Rundeck
- Ansible
- git
- graylog
- Chef
- Docker
- GitHub
- Slack
- GitLab
- Jenkins
- Vagrant
- Kubernetes
- Puppet Labs
- Apache JMeter
- StrongLoop
- Nagios
- Maven
Containers

Think VMs but lightweight
- Shared underlying OS
- Isolated applications with libraries, etc

Easy to create on demand and automatically from definitions
- Infrastructure as code

Containerized environments can run on ANY platform

Benefits for DevOps
1. Identical & disposable development, test, staging, production
2. Supports breaking down monolithic applications or shared infrastructure
Cats vs Cattle
Cats vs Cattle
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So DevOps in Higher Ed?

Do we have large development teams?

Are we trying to beat competitors to market?

Do we really need to update daily (or even weekly)?
So DevOps in Higher Ed?

How often do you update and release your application/site/code?

- **Daily**: A (57.4%)
- **Weekly**: B (5%)
- **Monthly**: C (16%)
- **A few times a year**: D (63%)
- **Annually**: E
- **Less than once a year**: F (16%)

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Poll Everywhere
University of New Hampshire
So DevOps in Higher Ed?

Is that fast enough?

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Text DAVIDBLEZARD893 to 37607 once to join, then A or B

Yes A 33%

No B 67%
UNH’s DevOps Manifesto

• Increasing the speed with which software can get updated, including freeing ourselves from the one-day-per-week-only rollouts

• Removing repetitive, non-productive tasks from developer and system administrator workloads primarily via automation

• Increasing value to our clients by delivering more utility, higher quality, more consistency, more quickly

Any efforts, tools, techniques, processes, or communications means that can accomplish these goals are possible within the scope of this overall effort.
After 1 year of development, stress tests show significant performance issues. Cooperative solution to add a caching layer. Found and resolved within 1 week. Site launched on time.
DevOps Wins - DataHub

Central system for source enterprise data
- Courses
- Directory listings
- Enrollments

Speeds time to delivery vs. ad hoc access to ERP data

Now adding API to standardize mechanisms

Student data and enrollments for Disability Services application
- 8 months

vs

Feeds for access based on course enrollments
- < 2 weeks
DevOps for UNH Web Infrastructure

2011
- Shared resources for DB, apps, load balancing, dev/test/prod for 100’s of websites

2014
- VMs with separate functions - DB vs apps vs...
- Separate environments - dev/test/prod

2017
- Container sets for each website from shared code, but having isolated function
- Create dev, test, production as needed
What do you want?

How do you wish your application/site/code development, deployment, and management was different?

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The Phoenix Project. 2013. Gene Kim, George Spafford, and Kevin Behr


The DevOps 2.0 Toolkit. 2016. Viktor Farcic

The DevOps 2.1 Toolkit: Docker Swarm. 2017. Viktor Farcic

devopsinstitute.com
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#devops