Stealing the Best Ideas from DevOps
A Guide for Sysadmins without Developers

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Christine Hogan

stack overflow

at&t
Who are we?

Tom Limoncelli
- SRE Manager at Stack Overflow
- Sysadmin since 1988 (Google, AT&T/Bell Labs, Mentor)
- Blog: EverythingSysadmin.com
- Twitter: @YesThatTom
- Author...

Christina Hogan
- Principal Network Engineer at AT&T (Switzerland)
- Sysadmin for 20 years
- Ex- Formula 1 race car aerodynamics designer
- Author...
The Principles of Punk Rock
The Principles of Punk Rock + Music = The Clash
1# DO IT YOURSELF
2# ANYONE CAN DO IT
3# EVERYONE CAN BE AN ARTIST
The Principles of Punk Rock + Music = The Clash

The Principles of Punk Rock + Music = RAMONES

Leather Jackets
Swearing
Heavy drinking
Sniffing glue
The Principles of Punk Rock + Music = The Clash

The Principles of Punk Rock + Music = The Ramones

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The Principles of Punk Rock + Music = [Images of The Ramones]

The Principles of Punk Rock + Poetry = [Images of The Ramones]

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The Principles of Punk Rock + Poetry = Patti Smith

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The Principles of Punk Rock + Literature = Zines

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The Principles of DevOps
The Principles of DevOps + Software Engineering
The Principles of DevOps + Software Engineering = E
The Principles of DevOps + Software Engineering = E

The Principles of DevOps
The Principles of DevOps + Software Engineering = E
The Principles of DevOps + Software Engineering = Netflix

Walmart
The DevOps Principles

(1) The Three Ways of DevOps
(2) The Small Batches Principle
(3) Minimum Viable Product
The Principles of DevOps + Software Engineering = E

The Principles of DevOps + Software Engineering = Netflix

Git
CI/CD / Jenkins
Puppet/Chef/CfEng
Docker/Containers

Walmart
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The Principles of DevOps + New Employee Onboarding = Walmart

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+ Git
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Walmart

Productivity
The DevOps Principles

(1) The Three Ways of DevOps
(2) The Small Batches Principle
(3) Minimum Viable Product
(1) The Three Ways of DevOps
The Three Ways of DevOps

(you really should read this book)
The Three Ways of DevOps
(a way to improve complex processes)
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The Three Ways of DevOps

System Thinking

Amplify Feedback Loops

Culture of Continual Experimentation and Learning
The Three Ways of DevOps

The Process

Amplify Feedback Loops

Culture of Continual Experimentation and Learning
The Three Ways of DevOps

The Process

Communication

Culture of Continual Experimentation and Learning
The Three Ways of DevOps

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Communication

Trying New Things
The Three Ways of DevOps

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The Process

Communication

Trying New Things

Suck

Awesome
The Three Ways of DevOps

The Process
Suck - Awesome

Communication
Lacking - Comprehensive

Trying New Things
The Three Ways of DevOps

The Process
- Suck
- Awesome

Communication
- Lacking
- Comprehensive

Trying New Things
- Resisted
- Constant
The Three Ways of DevOps

The Process
- Nonexistent
- Suck
- Awesome

Communication
- Punished
- Lacking
- Comprehensive

Trying New Things
- Paralysis
- Resisted
- Constant
The Three Ways of DevOps
(a way to improve complex processes)

Recruiting HR IT Team
New Employee Onboarding

- **Process:** Ad hoc. Improvised. Broken.
- **Communication:** Terrible. IT given no warning about arrivals.
- **Trying New Things:** Out of the question.

- **Result:**
  - New employees unproductive for 4 weeks.
  - First impression: I just joined a company of idiots.
  - Everyone blames the IT department.
New Employee Onboarding

- **Process:** Got agreement on a “onboarding timeline”. Automated OS install/config for workstations.

- **Communication:** ID’ed process owner. Communication channels.

- **Trying New Things:** Google Sheets -> Trello -> Custom app. Efficiency through alignment: Monday is Start Day.

- **Improvements:**
  - New employees: Productive on day #1.
  - First impression: Excellence/cooperation/efficiency.
  - Less work for everyone involved!
  - Opened the door to software to manage accounts, machines, etc.
And more...

Customer support escalations:
- Cust
- Support
- 2nd Tier
- PM/Dev

Product fulfillment:
- Sales
- CFO
- Make
- Shipping
(1) The Three Ways of DevOps
(2) The Small Batches Principle
The Small Batches Principle:

Doing work in small batches is better than big batches.

[Work. Check. Work. Check. Work. Check.] is better than

[Work, work, work, work, Check.]
StackOverflow.com

NY

CO

The Internet
StackOverflow.com

NY

The Internet

CO
Big Batch Failovers

• The NY Datacenter fails less than once a year.

• In that time:
  
  • “unintentional differences” accumulate.

  • New SRE team members are hired
The 2013 failover was a “big batch”

- Took 10+ hours (15 minutes user-visible down-time)
- Required “hands on” by 3 teams.
- Found 30+ “improvements needed”
- Certain people were S.P.O.F.
Needed: “small batch” failovers

- More frequent failovers == smaller accumulation of differences.

- So…. we **Force Failovers Frequently** to achieve our “small batches”
Drill Results

Bugs Filed

Labor Hours

10  5  2  1

30  20  12  5
Why?

- Each drill “surfaces” areas of improvement.
- Each member of the team gains experience and builds confidence.
- Highlighted automation, documentation, and resource needs.
- Frequency reduces risk!
Other applications of SBP

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<td>Weight Loss</td>
<td>“I’ll lose 40 pounds”</td>
<td>“I’ll lose 5 pounds, again and again”</td>
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(2) The Small Batches Principle
(3) Minimum Viable Product
Minimum Viable Product

Delivering some value sooner is better than all value later.
Minimum Viable Product

Delivering some value sooner
is better than all value later.

features, stuff, the goods, benefits
10 months

Start

Launch

Boo!
Not what we wanted!
Yuck!
10 months

Start

Launch!

Boo!
Not what we wanted!
Yuck!

Start

Launch!
10 months

Start

Launch

Boo!
Not what we wanted!
Yuck!
Benefits

- You help people sooner! (“Accelerated Delivery of Value”)
  - One feature *now* is better than all features *later!*

- Earlier Feedback!
  - Validates assumptions.

- A chance to pivot!
  - Users don’t like it? Change direction!

- SREs get a chance to develop operational expertise:
  - Run-book, Upgrade process, Failover practice, Documentation, etc.
1. Less waste! People are being helped!
2. Happy users advocate for you.
3. The last 20% is “would be nice.”
OS Install Automation

1. Replace “carrying DVD to desktop” with netboot.
   • Only a specific VLAN.
   • No OS customization.
   • No RAID/special NICs.
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2. Eliminate all prompts.

3. Customize OS.

4. Start Puppet.
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2. Eliminate all prompts.
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4. Start Puppet.

- Activate for more VLANs.
- Handle RAID controllers.
- Dual NICs.
- Replicate in other buildings.
- Add host to inventory.
- Choice of disk layouts.
- Other operating systems.
- Boot LiveCD.
The Monitoring Project

6 months in:
The Monitoring Project

6 months in:

• A lot of debates.
The Monitoring Project

6 months in:

- A lot of debates.
- A lot of disagreements.
The Monitoring Project

6 months in:

- A lot of debates.
- A lot of disagreements.
- A lot of specification documents.
The Monitoring Project

6 months in:

- A lot of debates.
- A lot of disagreements.
- A lot of specification documents.
- Nothing is being monitored.
The Monitoring Project II

1. Install open source system.
2. Monitor 1 server.
   1. Discover SNMP disabled.
4. No dashboards?
5. Change software.
6. Focus on self-service dashboards.
7. Monitor more devices.
8. …
9. …
10. …
11. …
12. …
13. …
14. …
15. …
The Book Project
2001

2006

2nd Edition

2014

2016

The Practice of System and Network Administration

The Practice of System and Network Administration

Second Edition

Updated and Revised

Thomas A. Limoncelli
Christine Hogan

Updated and Revised

Thomas A. Limoncelli - Christine I. Hogan - Strata X. Ong

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2001

2006

2014

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2nd Edition

3rd Edition

“Volume 2”
SRE/Cloud/Web

Nov 4th
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“Volume 1”
Enterprise/IT/Helpdesk

2016

“Volume 2”
SRE/Cloud/Web

Nov 4th
2 Months from Deadline

80% done

Rush to finish!
3rd Edition Goals

1. Fix Chapter Order
2. New chapters (22)
3. Replaced outdated chapters (6)
4. Update all other chapters
Project Phases

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Most enjoyable writing experience yet.
(3) Minimum Viable Product
Summary

The Three Ways of DevOps: *Improves Complex Process*
- Software Engineering
- Support Escalations
- Restaurant Logistics
- Product Fulfillment
- New Employee Onboarding

Small Batches Principle: *Reduce Risk/Better Quality*
- Failovers
- Desktop PC Upgrades
- Migrating Users
- Relationships
- Losing Weight

Minimum Viable Product: *Deliver Value Faster*
- Software Releases
- OS Installation
- Controversial Projects
- Unclear Requirements
- Writing Books
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Vol 1
Vol 2