Data-Driven DevOps: Improve Velocity and Quality of Software Delivery with Metrics and Feedback

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Abstract (Hidden)

Much of the value of DevOps comes from a (renewed) focus on measurement, sharing, and continuous feedback loops. In increasingly complex DevOps workflows and environments, and especially in larger, regulated, or more crystallized organizations, these core concepts become even more critical.

This session will show how, by focusing on 'metrics that matter,' you can provide objective, transparent, and meaningful feedback on DevOps processes to all stakeholders. Learn from real-life examples how to use the data generated throughout application delivery to continuously identify, measure, and improve deployment speed, code quality, process efficiency, outsourcing value, security coverage, audit success, customer satisfaction, and business alignment.
Defining DevOps

Methods for Improving

Collaboration

Communication

Integration

Between Dev and Ops
CAMS – as close to prescriptive as DevOps gets
Shared Feedback Enables ‘The Three Ways’

The First Way:
Systems Thinking

The Second Way:
Amplify Feedback Loops

The Third Way:
Culture Of Continual Experimentation And Learning

DevOps Workflow is Becoming Complex and Opaque

**Continuous Integration (CI) / Continuous Delivery (CD)**
- **Plan** (Jira, Rally)
- **Code** (Git, MS-TFS)
- **Build** (Jenkins, Bamboo)
- **Test/QA** (Cucumber, SonarQube)
- **Stage** (Pivotal, AWS)
- **Release** (Jenkins, Octopus)
- **Config** (Puppet, Ansible)
- **Monitor** (NewRelic, Dynatrace)

**Site Reliability Engineering**
- **Data Center**
- **Cloud Services**
- **Network Services**
- **Security/Compliance**
- **API Services**

**Business Impact Monitoring**
- **Application Data**
- **www/HTTP Data**
- **Device Data**
- **Wire Data**
- **Social Sentiment**
- **Engagement Data**
DevOps complexity raises risk of failure

- Slower Speed
- Longer MTTR
- Lower Quality
- Reduced Agility
- Poor Visibility
- Hard to Scale
- Increased Waste
- Impaired Collaboration

WHAT DATA DRIVES YOUR DEVOPS DECISIONS?
I’m working super hard!!

That’s my stapler.
Yeah, but ...  
... what are you achieving?

I'm gonna need you to come in Sunday.
Gartner’s DevOps ‘Metrics that Matter’
IDC’s DevOps ‘Metrics that Matter’

Q. What business outcomes do you expect DevOps practices to deliver?

<table>
<thead>
<tr>
<th>Outcome</th>
<th>% of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improved customer experience</td>
<td>67</td>
</tr>
<tr>
<td>Lower IT costs</td>
<td>61</td>
</tr>
<tr>
<td>Improved employee productivity</td>
<td>44</td>
</tr>
<tr>
<td>Higher profits</td>
<td>39</td>
</tr>
<tr>
<td>Improved IT employee satisfaction</td>
<td>39</td>
</tr>
<tr>
<td>Faster/increased revenue growth</td>
<td>33</td>
</tr>
<tr>
<td>Improved security and risk mitigation</td>
<td>33</td>
</tr>
<tr>
<td>Improved career development</td>
<td>28</td>
</tr>
<tr>
<td>Higher service availability</td>
<td>22</td>
</tr>
<tr>
<td>Improved EPS</td>
<td>11</td>
</tr>
</tbody>
</table>

n = 18

Note: Multiple responses were allowed.

Source: IDC’s DevOps Best Practice Metrics: Fortune 1000 Survey, December 2014
More DevOps Metrics that Might Matter

**Culture**
e.g.
- Retention
- Satisfaction
- Callouts

**Process**
e.g.
- Idea-to-cash
- MTTR
- Deliver time

**Quality**
e.g.
- Tests passed
- Tests failed
- Best/worst

**Systems**
e.g.
- Throughput
- Uptime
- Build times

**Activity**
e.g.
- Commits
- Tests run
- Releases

**Impact**
e.g.
- Signups
- Checkouts
- Revenue
One Constant: Machine Data

From every tool, every process, every component, on-prem or off
Visibility Across the Whole Dev Lifecycle

Common Data Fabric

SDKs  UI  API

Other Tools

Plan  Code  Build  Test/QA  Stage  Release  Config  Monitor

Confluence  service now  pagerduty

Escalation/ Collaboration

Solarwinds

Nagios

APIs

SDKs

UI

Common Data Fabric
Visibility Across the Whole Ops Environment

SDKs  UI  API

Common Data Fabric

Other Tools
Data From Dev and Ops Tools
Data From Provisioning and Config
Data from Release Servers

Project A Production Overview

Production Average RT

191.37 ms

Production Maximum RT

23916.57 ms

Production Commits to GitHub

Production Jenkins Build Status

Production TOX Test Results

Production Errors in Tox Testing

Application A Test Results
Data from Infrastructure Systems
Data from Customer Systems

Business Status (Medium)

Store Status
- Health score: 87.69
- Revenue per minute: 780.1 USD
- Checkouts per minute (Last 1 hour): 13

Website Component
- Revenue per minute: 409.4 USD
- Checkouts per minute (Last 1 hour): 9

Mobile Component
- Revenue per minute: 370.7 USD
- Checkouts per minute (Last 1 hour): 4
Finding Your Metrics That Matter

- Work from business backwards
- Mine realtime machine data
- Close the feedback loops
Data drives objective feedback loops

Show you when you deliver. And when you don’t.

**Velocity**
Deliver on time & on budget

IT is delivering on time, on budget

**Quality**
Deliver the quality you promised

We deliver a quality experience for users

**Impact**
Deliver code for business needs

IT is achieving business goals

IT and Business Leaders

Dev and Ops Organizations

IT and Business Leaders, Customers, Staff
Objective data enables continuous improvement
Data clearly identifies ‘waste’
Data ensures transparency between all stakeholders

- Release when ready, not a date!
- Best / worst developers
- Best / worst providers
- Impact of new code on ops
- Impact of new code on biz
Data-driven feedback accelerates velocity

Product Managers identify new opportunities

Continuously delivered to market

Pivot & improve with Continuous Insights

... and Auditors are “happy”
Data-driven feedback improves quality

Developer checks in code

White Box
- Code quality scans
- Static security scans

Black Box
- Automated Acceptance Tests
- Dynamic Security Scans
- “Chaos Monkey” tests

Production
- QA Pattern Library
- QA Prod Pattern

Pattern library used for test and QA

Test Fail: Return
- Test Pass: Promote
- Test Pass: Promote to Production
Data-driven feedback shows business Impact
Data-driven DevOps allows rapid innovation

HOW IS OUR:
• Security?
• Quality?
• Stability?
• Performance?
• Compliance?

HOW IS OUR:
• Market Launch?
• Feature Usage?
• Marketing Changes?
• Prioritization?
• Customer Sat?

Fast-feedback loop for actionable commercial insights
Data-driven DevOps decisions help you ...  

**Improve Application Velocity**
Visibility across silos, tools, and processes exposes bugs and bottlenecks so you can remediate, iterate, and innovate faster.

**Improve Application Quality**
Track quality across multiple teams, tools, systems, and service providers, so you can find and fix more issues before production.

**Improve Application Impact**
Real-time analytics correlates application delivery with business goals, so you can drive better experience and iterate faster.
Further Reading

- Gartner Inc., Data-Driven DevOps: Use Metrics to Help Guide Your Journey, 29 May 2014 G00264319, Analyst(s): Cameron Haight | Tapati Bandopadhyay
- DevOps and the Cost of Downtime: Fortune 1000, IDC
- Blogs.splunk.com
- Splunk.com/DevOps
- Pleasediscuss.com/andimann