Delivering Value

with BizDevOps

Prepared for
APPDYNAMICS

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Introduction

Software no longer supports businesses; it runs them. It’s now common for users – both employees and customers – to interact with enterprises exclusively through apps and Web sites that they access via mobile devices. As cloud computing, mobility and social networking become pervasive, and the Internet of Things (IoT) looms on the near horizon, software will be even more intertwined with people and processes to define and differentiate business models.

This software-defined business makes user experience paramount. Software reduces barriers to entry, causing market disruption. It enables faster innovation brought to market through more efficient delivery systems. Competition intensifies, giving users even more choice and voice, which raises the stakes on providing exceptional user experience. And that user experience is delivered by software.

This environment warrants a new approach to software development and delivery. DevOps practices are being rapidly adopted with the goal of building higher quality software faster and more efficiently. But the key to DevOps success is less about technology and more about people. Communication, collaboration and trust are the key characteristics of high-performing IT teams.

The concept of BizDevOps adds business outcomes to the DevOps equation. Bringing business owners (product managers, marketing professionals) together with DevOps increases accountability and improves application governance as the entire team focuses on how application performance and user experience impact the business.

Business transactions provide a common language between DevOps and business teams. Business transactions are what make operations run in a software-defined business. Both DevOps and business teams understand that user transaction completion is the most relevant metric to determine customer satisfaction and operating performance.

Enriching transactions with metadata that adds business context, the AppDynamics Application Intelligence Platform provides IT and business teams with deeper insights into how transaction performance impacts business outcomes. Teams can rapidly discover and remediate performance issues to ensure business execution.
**DevOps is Business-Led Change**

Expanded choice is changing the enterprise business software market. Companies are shunning monolithic software suites with multi-year maintenance lock-ins and limited innovation. In the software-driven economy there’s simply no budget or time for this.

Modern architecture based on loosely coupled services demands greater speed and agility. Companies are shifting investment away from static, database-centric systems of record that focus on historical reporting toward real-time, event-driven systems of engagement that drive faster, nimbler and better decision-making to improve customer service and loyalty.

Today, four out of five developers use open source. And the new software development model is driven by time-to-value. It is defined by iterative, frequent release cycles that are more flexible and responsive to application governance.

Using both lean and agile methodologies, DevOps brings software development, IT operations and quality assurance (QA) teams together to create a more collaborative process to deliver software and services in a faster and more continuous fashion. DevOps aims to break down IT data and organizational silos by making change and state processes across the entire application delivery chain more transparent. The end result is continuous delivery, an operational concept that is key to the software-defined business.

![Figure 1. The Purpose of DevOps](image)

The Puppet Labs 2014 State of DevOps report bears out this change. The survey of over 9,200 respondents from 110 countries reaffirmed last year’s key findings that high-performing organizations deploy code 30 times more often and experience 50% fewer failures than their less-performing counterparts. This allows DevOps teams to spend 33% more time on infrastructure improvements that drive business initiatives as opposed to troubleshooting performance issues.
TechTonic Advisors

An IDC survey conducted in the fall of 2014 confirmed that the business value companies can derive from DevOps practices is driving rapid adoption of a continuous delivery approach. The survey, which included respondents from development, testing and operations staff at over 20 Fortune 1000 companies across multiple industries found that 43% of the respondents are already using DevOps practices, with another 40% currently evaluating adoption.

Improved customer experience, lower IT costs and improved productivity were cited by respondents as the primary business outcomes they expect DevOps to deliver.

**Figure 2. Expected Business Outcomes**

<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>

Source: IDC DevOps Best Practices Metrics: Fortune 1000 Survey

To achieve these business outcomes, over one-third (36%) of respondents who work at Fortune 1000 companies said their IT organization already has a DevOps team, a functional area that didn't exist five years ago. The conclusion from both of these studies is that more companies are organizing themselves around DevOps and that this trend will continue.

**DevOps is More About People than Technology**

The risk to DevOps is that it creates yet another functional silo. A strong emphasis on and commitment to communication and collaboration is the key to preventing this from happening. It has led to the CALMS (Culture, Automation, Lean, Measurement and Sharing) Model for DevOps. CALMS is a nod to the founder of the DevOps movement, Patrick Debois, who has repeatedly said that DevOps is a human problem.
Notably, culture was a major factor in the Puppet Labs report and the IDC survey. The more performance-oriented a company is the more successful the business outcomes of its DevOps initiative. These organizations foster a culture based on communication, collaboration and trust. They tend not to fear failure; instead embrace it as learning experiences for continuous improvement.

A more stable environment begets higher-performing IT teams. This results in better communication and processes, driving stronger business performance, which leads to greater stability.
Puppet Labs identifies these top five predictors or IT performance:

1. **Peer-reviewed change approval process.** When technical teams hold themselves accountable for the quality of code through peer reviews, performance improves. In contrast, when external approval (change control boards) is required, IT performance decreases. External change approval does not improve restore times or failure rates and barely affects stability.

2. **Version control for all production artifacts.** Centralized version control equates to a “golden record” so that the source of failure can be identified quickly and changed back to the last good state. Version control for systems and apps improves collaboration between teams.

3. **Proactive monitoring.** A unified approach to monitoring across the entire application delivery chain results in higher accountability and extends mean time between failures (MTBF). When performance issues do occur, problems are identified faster, reducing mean time to resolution (MTTR). The object is to resolve performance issues before internal users or customers are impacted.

4. **High-trust organizational culture.** As culture is a major success factor for DevOps, it is one of the strongest predictors of not only IT performance, but the entire business. Information flows in a collaborative environment that shares responsibility and does not fear failure are determinants of success.

5. **Win-win relationship between dev and ops.** When teams work together in a stable environment, data silos are obliterated as all members focus on achieving the common business goals.
IT performance is measured by throughput and stability. Deployment frequency and lead time for changes measure throughput, while stability is measured by mean time to recover from failure.

The 2014 report also finds a high correlation between DevOps and financial outperformance. Puppet Labs looked at over 1,000 participants who volunteered their company name and whose companies are publicly traded. Analysis revealed that 355 of those companies with high-performing IT teams outperformed the S&P 500 over a 3-year period.

These companies also realized 50% higher market cap growth than companies with lower-performing IT teams. This market performance reflects that companies with high IT performance are twice as likely to exceed their profitability, market share and productivity goals.

**DevOps Growth is Accelerating**

These factors explain why more companies are adopting DevOps practices. While the IDC survey shows that Fortune 1000 companies are further along in DevOps adoption, the Puppet Labs survey revealed that 16% of respondents work in a DevOps department. A recent Gartner study reinforces this growth, predicting that DevOps was becoming a mainstream strategy that 25% of Global 2000 companies will be using by next year.

Looking ahead, DevOps-ready tools will continue to fuel rapid adoption as they are designed and built with out-of-the-box functionality. The emergence of container technology will also be an important catalyst for DevOps acceleration.

Container technologies such as Docker and CoreOS let applications to be rapidly assembled in any application language while abstracting the application away from the underlying OS and infrastructure, which means less dependencies and complexity. The result is that containerized apps are easier to manage and deliver.

Container-based stacks facilitate microservices architecture, where single-purpose, API-accessible services replace monolithic frameworks. This makes DevOps easier because microservices architecture relies on simpler, more developer-friendly protocols such as REST and JSON.
Application Governance with BizDevOps

More enterprises are demanding that their application development teams be more aligned with business objectives, allowing them to start realizing value from an early stage of the lifecycle. To achieve business agility, enterprises need a strategy that spans the entire value chain – from business requirements to deployment.

This makes collaboration a crucial element among stakeholders that are part of this lifecycle and contribute value at each phase of business delivery. Many IT shops, however, still tend to stress automation above all else in their DevOps practices. Automation tools such as Chef, Puppet and CFEngine do bring ground-breaking efficiencies to IT infrastructure management. But automation is only one part of the value chain.

The challenge – and opportunity – is to find and eliminate bottlenecks so that the process can move forward. To achieve this, teams must look at business use cases. This means involving application owners.

BizDevOps underscores the need to more closely align IT and business groups with business performance. BizDevOps bridges operational data with business data to provide a deeper understanding of how application performance and user experience directly impact business outcomes. It holds both teams accountable for delivering customer satisfaction and operating results.

Examples of how this data provides relevant feedback to IT and business teams include:

- Revenues generated by an application can be mapped to each release of the application to measure effectiveness;
- Customer experience metrics, such as usage patterns or star ratings can be monitored from application release through regular checkpoints to validate that business goals are being achieved;
- In addition to application reliability (MTBF) and resolution (MTTR) data, teams can track the cost of down time and whether they are improving with each new release.
BizDevOps not only brings effective collaboration between business, development, operations and assurance teams but also provides automation and a tight feedback loop. Sharing transactional data with business teams accelerates the feedback loop from all application stakeholders, including internal users, customers and partners.

Better application governance is essential for all constituents to make changes about what capabilities the application should have. The DevOps team can then make adjustments faster and more continuously while maintaining focus on optimizing the user experience. Better communication and collaboration between teams increases business agility, improves efficiency and raises predictability.

**Business Transaction is the Most Critical Metric**

Business transactions are the common language that brings DevOps and business teams into productive collaboration. A business transaction is the interaction between a business and its customers, vendors, partners or employees that provides a desired outcome of mutual benefit.

In a software-defined business, transactions are executed by applications. Depending on the application, transactions can be as simple as users entering information into a database or highly complex, such as online trading that involves multiple systems and applications that are mutually dependent. As a result, the successful completion of business transactions is the most critical metric for IT and business success.

As enterprise applications become more numerous, intertwined and complex, IT organizations are placing more emphasis than ever on finding new approaches to manage applications and optimize their availability and performance. As a result, application performance management (APM) has become an essential part of enterprise IT framework since it directly involves all key stakeholder groups, including application owners, application developers and application users.

It is widely accepted that 80% of application outages are caused by release, change and configuration processes. Monitoring business transactions across the entire application delivery chain is the only way to ensure end-to-end user experience.

Left shifting Business Transaction monitoring in the development lifecycle alerts DevOps teams to dependencies and operational or quality issues in the pre-pre-production phase to identify potential bottlenecks. Transaction metrics can be used to establish key performance indicators (KPIs) against which the production environment can be measured. This allows the DevOps team, working in concert with the business owners, to build models in accordance with KPIs.
Every Business Transaction impacts user experience and operating performance. By understand why and where a transaction delay or failure resulted in a missed opportunity or operating loss can help prevent future service outages. Depending on the industry sector, slow responsiveness or complete outage (brownouts or downtime) of a company’s most business critical application can cost between $100,000 and $1 million per hour. The fallout from poor transaction performance can be a loss of customers, regulatory fines and damage to firm reputation.

A Unified Approach to User Experience Drives Financial Returns

The Puppet Labs study revealed a correlation between successful DevOps execution and financial performance. A study conducted by Tech-Tonics last year found a similar correlation in S&P 500 companies. Those companies that take a unified approach to user experience outperform their peer group in revenue growth, profitability and market valuation.

Key finding among the outperformers included:

- Their revenue growth is 15% faster than the peer group average;
- Their operating margin is 17% higher than the peer group average;
- Their higher profitability is rewarded with multiple valuation premiums of up to 29%; and,
- Their unified approach to user experience led to 41% stock market outperformance.

The study also found that companies with a unified approach to performance management and user experience deploy a fewer number of tools. The majority of these have consolidated onto a core platform from one vendor, with tactical deployments of other vendor solutions for specific use cases, departments or technologies.
The AppDynamics Application Intelligence Platform

The Application Intelligence Platform joins transaction monitoring with real business context to determine whether the application delivers the desired outcomes for the end user and the business. The company refers to this as application intelligence.

Built on big data technology, the platform can collect, store, correlate and analyze transaction data from the largest-scale application environments. Dynamically tagging and following a business transaction that flows through a highly distributed application environment addresses the needs of BizDevOps with unified monitoring and data management capabilities. The platform provides deep visibility into transaction completion by correlating what’s happening from the user click down to every business system that is involved in processing that click.

With real user monitoring (RUM), the Application Intelligence Platform understands user experience and demand, providing detail to how customers or employees interact with apps. It provides performance intelligence from all perspectives – from the user, through to application performance and how the application interacts with the underlying infrastructure to information on how the business is performing.

The platform’s cloud auto-scaling feature then automatically scales up application capacity based on demand. This flexibility assures user experience even during heavy utilization periods. The platform also provides automated response and remediation to application issues, speeding MTTR and safeguarding MTBF before users and the business are impacted.

The Application Intelligence Platform adheres to three core principles:

Figure 7. Core Principles of the Application Intelligence Platform

<table>
<thead>
<tr>
<th>SEE</th>
<th>ACT</th>
<th>KNOW</th>
</tr>
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<tbody>
<tr>
<td>MONITOR</td>
<td>RESPOND</td>
<td>ANALYZE</td>
</tr>
<tr>
<td>User Experience</td>
<td>Production</td>
<td>User Experience</td>
</tr>
<tr>
<td>Application</td>
<td>DevOps</td>
<td>IT Operations</td>
</tr>
<tr>
<td>Infrastructure</td>
<td>Remediation</td>
<td>Business Metrics</td>
</tr>
</tbody>
</table>

Source: AppDynamics
• **See** – The platform is able to safeguard and optimize application performance from the end-user (customer or employee) through to the infrastructure workload and database/data store backend. This gives it the ability to detect potential issues before they impact the customer.

• **Act** – Heavy use of automation allows the platform to quickly identify and resolve performance issues. The war room feature facilitates BizDevOps communication and collaboration by ensuring that teams are looking at the same information in real-time so that issues can be resolved rapidly.

• **Know** – Integrated analytics provides context tailored to the audience. Granularity can be adjusted to the person viewing the performance data – from IT staff to business teams.

The Application Intelligence Platform has several new features that make it easier for DevOps teams to collaborate in full context. A self-learning business transaction engine automatically learns business normal and abnormal behavior to accelerate MTTR. This Virtual War Room allows teams to view, annotate and collaborate better to make systems changes in real-time in accordance with how performance is impacting the business. Cross-application flow provides data visualization and app-to-app metrics, enabling DevOps to gain deeper insights into application dependences. Smart dashboards and advanced analytics make it easier for teams to see how apps are interacting with shared services at a high level.

Another recent introduction is support for mobile applications. Mobile APM provides real-time insights into mobile apps in any location and allows data retrieval to be sorted by platform (i.e. iOS or Android), device type and region to pinpoint application performance issues. It also provides specific insights into users’ devices, operating systems, application version and carriers with deep-dive crash reporting and deep-dive root cause analytics. Customers can also configure Mobile APM to provide custom metrics.
Conclusion

The software-driven business is being fueled by widespread adoption of cloud computing, mobility and social networking. The increased choice and voice it has given users raises the stakes for applications to perform to user expectations in order to drive overall business objectives.

To be more competitive in this environment, companies are changing how they develop and deliver software. DevOps promises to allow companies to create higher-quality software faster and more efficiently. It breaks down IT data silos by promoting a culture of shared resources based on strong communication and collaboration. Companies that are successful with DevOps are more stable, with higher-performing IT teams that work better together to drive stronger operating results.

BizDevOps adds business perspective and accountability to the process. It ensures that both IT and business teams stay focused on how application performance and user experience impact business outcomes. BizDevOps assures better execution against business objectives to strengthen competitiveness and operating results. By developing a culture of collaboration between teams, BizDevOps aims to nurture shared interests in an enterprise.

Whether it’s improving customer satisfaction or operational performance to minimize costly downtime and drive business objectives, business transaction completion is the most relevant metric that all team members can understand. Monitoring business transactions across the entire application delivery chain is the only way IT and business owners can ensure end-to-end user experience and that business objectives are being met.

Successful DevOps practices coupled with a unified approach to user experience enables companies to outperform their peer groups in financial performance and market valuation. The AppDynamics Application Intelligence Platform is a unified approach to transaction monitoring and analysis. It tightly integrates with the needs of the software-driven enterprise by facilitating BizDevOps principles to increase agility, efficiency and operational performance.
About

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