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DevOps Performance: The Importance of Measuring Throughput and Stability

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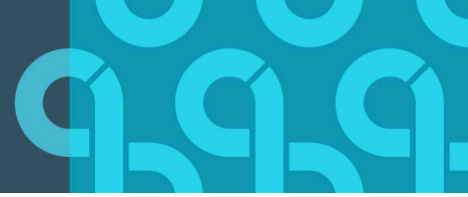
Companies of all sizes strive to innovate in order to gain an edge – to take market share from their competitors and drive revenue – either by developing new products or entering new markets. One strategy sits at the top of the list: To improve the customer experience by engaging them in their preferred digital channels and providing the services they want, when they want them. This has driven companies to adopt a digital transformation – to integrate digital technology into all areas of a business, fundamentally changing how they operate and deliver value to customers.

But it's not just about transforming how organizations do business. It's also about making better connections to the ecosystem, having IT operations support the initiative and providing the the visibility to learn and improve how your business runs. At the center of it all is software. Companies need to deliver quality software and applications to their customers quickly, making the traditional waterfall methodology of development slow and cumbersome, unable to deliver value on a regular cadence and stay engaged with customers.

ADOPTING DEVOPS CULTURE

Leading companies are now moving from the waterfall methodology to adopting DevOps and continuous integration/continuous delivery (CI/CD) which are key transformational areas for efficient software delivery. Indeed, "By 2021, 80% of organizations will have implemented a DevOps initiative, up from 41% in 2017," stated a 2018 Gartner, Inc. report, *Competitive Landscape: Agile and DevOps Services*.

Of course, this is easier said than done. Dev and Ops represent a pretty large mismatch in the way they see themselves and how they operate. Developers are innovators, who want to move fast and be agents of change. On the other hand, operations folks adhere to governance, guidelines, security and stability; they are tasked with maintaining uptime and continuity.

> " By 2021, 80% of organizations will have implemented a DevOps initiative, up from 41% in 2017. "
>
> Source: Gartner, Inc.

The bottom line is IT leaders are investing time, effort, resources and budget to implement the practices and tools needed to achieve modern software development based on agile and DevOps. And while DevOps has now proven to be critical in supporting the goal of delivering software with ever improving quality and pace, organizations still do not know if they are applying CD and other DevOps best practices to accomplish the outcome they want.

MEASURING DEVOPS IMPACT IS A CHALLENGE

Product and engineering leaders continue to struggle with measuring and managing their software delivery capability. They lack value stream management (VSM) insight to determine where the blockages are, is the software delivery process improving and is value being delivered to customers and back to the organization.

Source: Microsoft blog on Value Stream Mapping

Additionally, engineering teams lack visibility across the development process to help in their day-to-day activities, as well as have a view into what other teams are doing. The complexity of decentralized teams, multiple tools and pipelines means the whole process is disconnected. Unfortunately the current practice to report on the status of any product development is reliant on the manual effort of compiling data across

various sources, leading to information that is subjective and static, so teams can't react properly. The end result is the ongoing problem of tracking DevOps performance. Even after investing in DevOps tools, they still face challenges:

- » **Poor visibility** into the value streams and across the software delivery process makes it difficult to measure and manage DevOps performance - to identify improvements, leverage best practices and support collaboration across teams.

- » **Struggle to report** on the relationship between value streams, teams and tools means intensive, error-prone methods of collecting static data for measuring and managing the organization's continuous delivery capabilities.

- » **Difficulty** in end-to-end value stream management resulting in lack of information to track flow of value from idea to production, and guesswork on identifying bottlenecks and wait times, leading to increased waste and delays in delivering value.

- » **Lack** of real-time performance metrics to benchmark and track DevOps performance based on industry standard indicators related to throughput and stability.

Ultimately these organizations really do not know if the investment in DevOps makes an impact for the business. Getting visibility across the software delivery process with actionable insights based on industry standard DevOps performance metrics can help.

Key Indicators to Measure DevOps Performance

Today software is the backbone of an organization and dictates its ability to innovate, improve and react to changes in the market. That puts a big burden on the company's IT organization to deliver high-quality software quickly and frequently.

Continuous delivery performance matters not only for IT organizations but also a company's ability to be competitive. Indeed, the DevOps Research and Assessment (DORA) consultants released its *2018 Accelerate: State of DevOps* report which details the correlation between software delivery and organizational performance.

The report shows that high software delivery performance can be achieved regardless of vertical industry or type of company. It highlights the importance of throughput and stability and shows there doesn't have to be trade-offs, but rather they enable each other.

The ability to measure throughput and stability of software delivery performance and gain insights into how to improve these measurements is critical to monitor progress on the DevOps transformation journey.

2018 ACCELERATE: STATE OF DEVOPS

DORA segmented its survey respondents into four different buckets including elite performers, high performers, medium performers and low performers. The elite performers is a new emerging subset of the high performers who have been able to improve their level of software delivery performance even over the high performers. This emerging group strives for excellence in optimizing their software delivery and were able to improve in all key performance metrics.

> " Our analysis shows that implementing DevOps practices and capabilities during technology transformations pays off in terms of organizational performance as well as quality outcomes. "

Source: DevOps Research and Assessment LLC

Here are the highlights of how elite and high performers compared:

Throughput performance metrics

Deployment Frequency (DF) defines how often your organization deploys code to production.

» Elite performers deploy on-demand multiple times a day.

» High performers deploy between once per hour and once per day.

Lead Time for Changes/Mean Lead Time (MLT) defines how long it takes for a code commit to be deployed to production.

» Elite performers have a lead time of less than an hour.

» High performers have a lead time between one day and one week.

Stability performance metrics

Mean Time to Recover (MTTR) defines how long it takes to restore the service after a service incident occurred.

» Elite performers restore service in less than an hour.

» High performers restore service in less than one day.

Change Failure Rate (CFR) defines what percentage of changes result either in degraded service or subsequently require remediation (e.g. leads to impairment or outage, requires hotfix, rollback, fix forward).

» Elite performers have a change failure rate between 0% and 15%.

» High performers have a change failure rate between 0% and 15%.

COMPARING THE ELITE GROUP AGAINST THE LOW PERFORMERS, WE FIND THAT ELITE PERFORMERS HAVE...

46 TIMES MORE
frequent code deployments

2,555 TIMES FASTER
lead time from commit to deploy

7 TIMES LOWER
change failure rate
(changes are 1/7 as likely to fail)

2,604 TIMES FASTER
time to recover from incidents

Source: DevOps Research and Assessment LLC

Being able to measure and understand these metrics is not only critical when embarking on the DevOps transformation, but also to excel in the market. Having access to and understanding these key performance metrics will give organizations that visibility and actionable insights into their underlying CD process, leading to improved business outcomes.

IMPROVEMENT REQUIRES CONTINUOUS MEASUREMENT

To achieve a higher level of DevOps performance, organizations need the ability to automatically gather data from across their DevOps processes and continuous delivery pipelines so they get a comprehensive understanding on how they are deploying quality software with speed. Ideally the data should be as real-time as possible to get the most up-to-date insights to see where the trouble spots reside, the areas that cause delay and why.

While you can't manage what you don't measure, you also cannot measure once and think you're moving in the right direction. It should be no surprise to learn that continuous delivery requires continuous data acquisition, measurement and the use of throughput and stability metrics to provide insight so that DevOps tools, processes and collaboration can continuously improve.

Using CloudBees DevOptics to Analyze Key DevOps Metrics

Enterprises today are engaged in one of the most transformative and disruptive times in business. Those that master software development and delivery will be the ones to thrive and grow. Leveraging key standard DevOps performance metrics to measure, manage and improve their continuous delivery capabilities can further this objective.

At CloudBees®, we have seen how these performance metrics can truly be important indicators for organizational performance. CloudBees DevOptics® uncovers these key performance metrics and gives in-depth insights to get a better handle on value stream management and the underlying CD process. It shows how your code changes flow through the system and how your CD platform performs. CloudBees DevOptics lets you identify critical areas of improvements to turn your company into a high or even an elite performer.
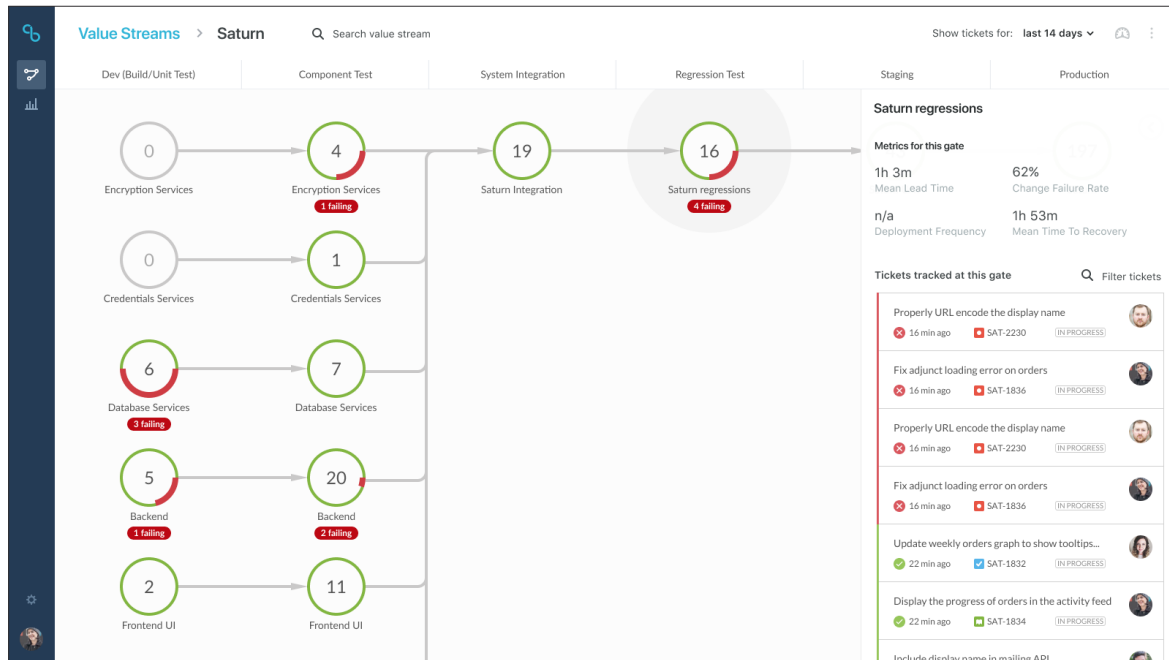
Performance Metrics for the Value Stream
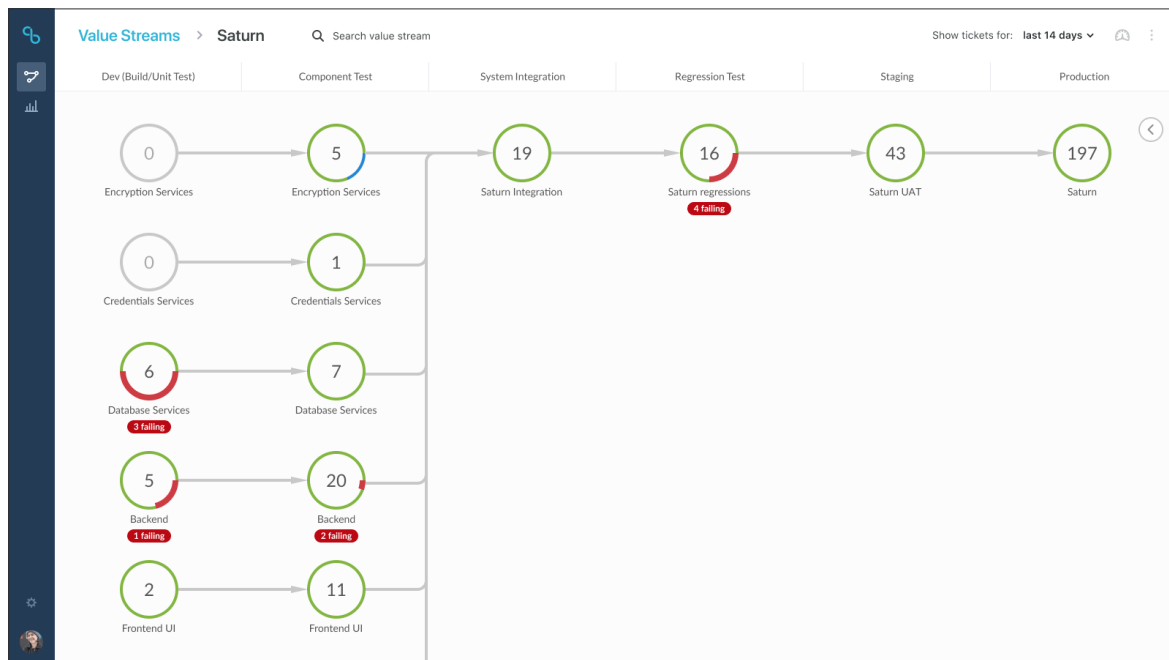
Source: CloudBees, Inc.

Value Stream Visibility

Identify the blockage, drill into it and see the Jira ticket and assignment.

Source: CloudBees, Inc.

Conclusion

As you continue your CI/CD journey through DevOps adoption, a phrase from the management consultant Peter Drucker comes to mind: "You can't manage what you don't measure." In this case, if you don't have visibility across your software delivery process, how can you improve your DevOps performance? CloudBees DevOptics give you:

» **Visibility** into the value streams and across the software delivery process to measure, manage and improve the overall software delivery process.

» **Connection among teams, tools and applications** to get one view with automatic, real-time data for reporting on the organization's continuous delivery capabilities.

» **Value stream management** to track flow of value from idea to production, quickly identify bottlenecks and wait times and reduce waste in the process.

» **Real-time performance metrics** to benchmark and track DevOps performance based on industry standard indicators related to throughput (Deployment Frequency, Mean Lead Time) and stability. (Mean Time To Recover, Change Failure Rate).

Traditional continuous delivery tools surface only developer-centric views and data, which are typically neither relevant nor interesting to non-engineering audiences, including CIOs, CTOs vice presidents and other senior managers. Value streams in CloudBees DevOptics brings transparency and insight into the continuous delivery process in a visual manner easily consumable by everybody. This helps align the entire organization around value-based delivery while still satisfying the productivity and tracking requirements of engineering teams.

Learn More

Download the whitepaper
Real-time Visualization of Value Streams with CloudBees DevOptics

Watch the video
Learn more about CloudBees DevOptics

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