



THE SERVER SIDE OF DEVOPS

ABOUT THE AUTHOR

An ambitious risk taker both personally and professionally, Aaron has co-founded several companies and currently leads Pythian's DevOps team. Aaron's clients and colleagues can rely on him to find the opportunity in what seems like adversity and rally teams to make the necessary changes to realize these opportunities. In his spare time, Aaron is an avid motorcyclist who began building and racing motorcycles at the age of 10.

FROM A SECURITY PERSPECTIVE, WHAT SHOULD DEVOPS TEAMS BE TRAINED IN AND BE AWARE OF?

DevOps teams should first and foremost be capable of responding correctly and swiftly to vulnerabilities and security incidents. Even in mature organizations that have dedicated security teams, DevOps engineers are still integral in resolving security or compliance issues. For that reason, DevOps professionals must understand the implementation of secure architectures and processes.

But security alone isn't enough. Compliance is also critical to almost every industry, but there are many pitfalls in the implementation of high-velocity automation that can render a company noncompliant. To ensure compliance, senior DevOps engineers should be broadly familiar with ISO 9001 and 27001, Sarbanes-Oxley Act, Payment Card Industry, and the Health Insurance Portability and Accountability Act (HIPAA).

Finally, it is critical to know what you don't know. Even if your OpenSSL-fu is sublime, you still need to know how to implement a reliable public key infrastructure or perform a comprehensive vulnerability assessment.

CAN YOU TALK ABOUT SCALABILITY AND DEVOPS. WHAT ARE SOME OF THE MOST IMPORTANT POINTS TO CONSIDER AND BEST PRACTICES THEREIN FOR DEVOPS LEADERS TO KNOW?

There are two kinds of scalability that DevOps engineers tend to address: application and organization.

1. An app's scalability is really a question of how long it takes and how much it costs to build and operate a system that successfully delivers a certain level of concurrency (i.e., one that matches or exceeds user demand over some time period). Estimating answers to these questions is a critical success factor for many companies, and the ability to do so often goes unrecognized until it's too late.

The truth is that scalability is everyone's problem—the business and technology folks have to agree on the right balance of functionality, time to market, cost, and risk tolerance. To address scalability questions, make sure you have the right measurable objectives—this many users and that many concurrent requests over those endpoints for our demand pattern.

2. Proving scalability is hard and requires strong coordination between development and operations, which makes it the natural domain of a DevOps engineer. Efficient scalability is like quality and security, since it can't be "tested in" at the last minute. In addition, an application is only as scalable as its weakest dependency. For these reasons, a best practice is to establish a performance and capacity regression test as part of a company's continuous integration cycle for any service it develops. This ensures that engineers are exposed early and often to the scaling characteristics and dependencies of each application and that significant regressions are caught and fixed well before code hits live.

In general, make sure the write paths are sufficiently wide, and that everything else scales horizontally at an acceptable ratio, and drill down from there.

3. Performance and capacity testing depends on properly creating and managing test datasets. For the most meaningful testing to occur, the size and composition of test datasets must match as closely as possible to the conditions we expect in real-world operations.
4. One of the most important things you can do is to reduce the need for big-bang testing by creating a platform that allows for the controlled exposure of new functionalities. While the use of canaries is important, the most sophisticated players have more advanced capabilities that allow them to roll out new features and functionalities to specific user segments and control the rate of exposure according to the actual performance of the feature.

HOW CAN IT ORGANIZATIONS STRUCTURE THEMSELVES TO BETTER ENABLE DEVOPS?

It's all about aligning incentives for the results that you want. At Pythian, we use five key performance indicators to help our clients drive their strategies: velocity, availability, performance, cost efficiency, and security/compliance.

Measuring results in these areas and moving strategically to improve them leads naturally to a commitment to a modern infrastructure and process automation focus. This is the moment when people within an organization

accept that change needs to happen, and that they should play a role in it. DevOps is a natural outgrowth of Agile and Lean philosophies that happened to recognize the opportunity presented by commoditizing infrastructure automation capabilities, such as the cloud. One of the critical success factors of both Agile and Lean has been a focus on consistent, incremental, and measurable results. The most important thing IT organizations can do is to start failing fast, meaning that their efforts to adopt DevOps should focus on producing meaningful wins in the shortest possible timeframe while iterating toward the strategic goal of an entirely software-driven platform infrastructure that enables each organizational role to serve their own needs, and therefore maximize productivity. First focus on doing what will change people's lives the most, in order to make almost any development process, on-call shift, and end-user experience better.

YOUR FAVORITE BEST PRACTICE ABOUT DEVOPS THAT YOU'D LIKE TO PUT FORTH?

Companies must first identify the outcomes that will have the greatest impacts on their organizations, and then work to make those outcomes a reality.

Additionally, the DevOps engineer's most important skill is empathy. Remember, you can't lead if no one follows. A DevOps engineer's job is to help others understand how to align themselves for success and to provide the tools that support a shared understanding of how to produce that success.

ABOUT PYTHIAN

Pythian is a global leader in data consulting and managed services. Since 1997, we have specialized in planning, deploying, and managing business-critical data systems for large and mid-market enterprises. Learn more about Pythian and its elite teams of data experts at www.pythian.com.

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