THE ROLE OF MICROSERVICES IN DEVOPS

The world seems to be spinning faster these days since the advent of the internet and the incredible boom of information and technology that came along immediately afterward. Cloud networking has caused yet another burst of tech advancements as new uses for this technology continue to be found. Businesses are struggling to keep up with the mad pace set by technology and the expectations of modern consumers. This climate is what necessitated the creation of new systems like Agile and DevOps for helping enterprises to keep stride with consumer expectations.

DevOps Basics

DevOps is a combination of a shift to corporate cultures that revolve around the importance of communication and the tools that support these new collaborative environments. More specifically, DevOps teams are composed of cross-disciplined team members who all bring their unique perspective to work on bite-sized deliverables one project at a time. This shift results in a faster-paced environment in which deployments are made at steady, regular intervals so updates can be pushed through in a continuous integration or continuous delivery (CI/CD) system.

This increase in production speeds results in the creation of software as a service (SaaS) business models where customers pay for access to an ever-improving system that receives the constant quality of life, functionality, and performance updates. All of this is empowered by the DevOps approach to software development. While this may make DevOps sound like the perfect solution for all your tech industry woes, it isn't as simple as just flipping a switch. The power of DevOps is thanks to the various tools and practices that empower it.

Tools for Powering Up DevOps

We mentioned cloud networking earlier as a technological advancement for which engineers are continuing to find new implementations. Enterprise DevOps systems have a lot to gain from integrating the power of the cloud into their technology stack. The cloud not only provides users with access to on-demand computing resources, but it also allows for work and collaboration to occur from users on secure networks spread across the globe. Secure cloud gateway networks provide constant access to valuable company resources so team members can remain connected at all times.

Version control is another key tool for DevOps teams and the breakneck pace of development they maintain. Git is invaluable for empowering teams to work on the same project simultaneously while providing the tools necessary for documenting each change made. Version control helps developers understand what changes were made so as to avoid confusion and prevent them from stepping on each other's toes. Additionally, proper use of version control also allows for easy rollbacks in the case of errors being found after deployment.

One of the core methods for powering up DevOps practices is the use of automation. DevOps teams should constantly be on the lookout for processes that have much to gain from their automation. Reducing the time spent manually doing rote tasks frees up more capacity for the creative work to take place. Automating repetitive tasks reduces the chances for human error to occur while simultaneously boosting morale by allowing team members to spend more time utilizing their full capacity and less time bashing their head onto a keyboard.

Containerization is another important tool which DevOps teams should consider utilizing. Breaking programs into containerized segments that allow for developing and testing to occur in a simulated live environment empowers DevOps teams to increase the rate of their successful deployments. The portable environments created through the use of containerization allow for more optimized resource allocation along with the reduction of dependencies which creates more stable environments that can run independently.

DevOps can extend their use of containerization to switch from a service-oriented architecture (SOA) to a microservices architecture (MSA). Through the power of isolated and resource-controlled containers, microservice based applications can be implemented for increased scalability and independence.

Microservices Rundown

Monolithic services are the polar opposite of microservices and were the industry standard for as long as there has been an industry. Monolithic services are massive applications that are developed as singular entities with changes being folded into the application structure each time a modification is made or new functionality is implemented. This structure functions well when perfectly balanced, but any changes made to any aspect of the monolithic service can impact the entire system. The complexity of the system grows with each change and a new feature.

Microservices, on the other hand, are characterized by applications that are independently scalable and decentralized. They are applications intended to be readily replaceable thanks to their independent and autonomous nature. Microservices are an extension of containerized applications and are functional components with standardized interfaces to enable the disparate services to function as a singular whole from the user's perspective. Instead of creating a massive, complex

beast of a program, the microservice architectural style promotes the creation of a single application in the form of a suite of smaller services that each run their own processes.

Breaking apart the system architecture into smaller pieces of microservice apps allows for the rapid development of new capabilities that don't require large teams or major deployments for implementation. Additionally, microservices function independently. This allows them to be changed out with new systems or replaced altogether without impacting the primary service structure. The modular components of a microservice system provide for simpler testing and maintenance upkeep due to the relative simplicity of each microservice compared to the complexity of larger, monolithic systems.

How Microservices Fit Into DevOps

DevOps practices reinforce the idea of breaking large problems into smaller pieces and tackling them one at a time as a team. Microservices fits perfectly into the DevOps ideals of utilizing small teams to create functional changes to the enterprise's services one step at a time. Microservices empower the implementation of small teams collaborating together in an environment of increased developer freedom. Furthermore, microservices can readily scale up or down without impacting resource allocations for the rest of the system.

The independent pieces created through MSA provide plug and play functionality as each new component is created. This creates an environment where continuous delivery pipelines can maintain their steady flow of deployments thanks to the reduction in complexity of each deliverable and the lack of dependencies. Containerized microservices allow for speedy deployment and built-in functionality that is system agnostic - allowing for the new services to be immediately operational on any system or device.

Automation of operations empowers the microservice approach. On-demand provisioning also works in conjunction with the MSA approach to create an adaptable and easily scalable environment where rapid and stable deployments are the name of the game. Combining the DevOps and microservices approaches into a system for developing, testing, and deploying updates is an ideal method for increasing the throughput of your teams and the overall quality of your services.

DevOps: Solutions for You

If DevOps sounds like a good fit for your organization's needs but you want to make sure you get it right the first time, BMC is the IT solution partner you need. Read more about how automation and DevOps systems can help increase the rate at which you deploy products with BMC's free eBook: *Automate Cloud and DevOps Initiatives*. For more information on microservices and how they work, check out Netflix's Director of Operations Engineering, Josh Evans, talk: *A Netflix Guide to Microservices*.

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