MESOSPHERE + ShiftLeft

ShiftLeft Enables DevOps Agility and Reduces IT costs by 50% with Mesosphere

Innovative App Security Startup ShiftLeft Goes Live with Staging and Production Environments in 2 Weeks

Introduction

Companies in stealth startup mode are operating at breakneck speed to bring their offering to market. That was the case for ShiftLeft, an innovative Security-as-a-Service startup that unveiled its unique application security solution in 2016.

Delivered as Software-as-a-Service (SaaS), ShiftLeft provides a new model for protecting cloud or datacenter hosted software by understanding the Security DNA of each new version of any application or micro-service and limiting its attack surface at runtime. This helps businesses increase the speed at which security issues can be identified and automatically triaged.

ShiftLeft Project At-a-Glance

Customer
ShiftLeft

Industry
Security

Challenge
Go live with production infrastructure in a one-person DevOps environment

Solution
Mesosphere DC/OS Enterprise

Impact
Enabling DevOps agility and 50% reduction in IT costs

Challenge

Designing and Implementing a Scalable CI/CD Pipeline and Cloud Infrastructure

When Davy Hua joined ShiftLeft as its first DevOps Engineer, he hit the ground running. His first and immediate order of business was designing and implementing the Continuous Integration and Continuous Deployment (CI/CD) pipeline and subsequent cloud infrastructure to support the company's various development and production stacks. Implementing a CI/CD pipeline would save ShiftLeft countless hours of manual, error-prone development work, automatically building and testing the software's code every time it was changed. Additionally, as a team of one, Hua was dealing with an incredibly heavy workload and huge responsibilities, while working on an aggressive schedule.

Once he had established and started running ShiftLeft's CI/CD pipeline, Hua embarked on the next phase of his DevOps challenge: designing, implementing and maintaining ShiftLeft's SaaS offering in a production environment.

ShiftLeft needed resilient, highly available production infrastructure satisfying a number of criteria:

- **Built-in security**
- **Infrastructure-as-code**
- **Lifecycle management of cloud resources**
- **Maximized resiliency and self-healing**
- **Centralized log management for easy debugging**
- **Comprehensive service and system monitoring**

- **Application performance monitoring**
- **Global availability across regions**
- **Application load balancing**

As a lean startup, ShiftLeft needed a way to maintain and manage this complex production stack featuring containerized services.

Solution

Building a Secure, but Flexible, Foundation with Mesosphere

Hua explored Kubernetes but didn't have the confidence to run it in production. According to Hua, "Everyone was talking about Kubernetes but I was not fully sold on it in late 2016. I could look at Kubernetes documentation one day and things would be different the next, making it a difficult choice as the foundation of our infrastructure."

Hua also looked at one of the large public cloud providers as a possibility but ruled it out. In addition to concern about vendor lock-in and pricing, he needed a way to support customers who choose to use ShiftLeft on premise. "We built our solution to be cloud agnostic and want the ability to make shifts as needed. If we went with one of the large public cloud providers, we would lose that ability to pivot," Hua explains.

Due to his familiarity with the stability of the open source project, Apache Mesos, Hua turned his sights to Mesosphere DC/OS. Since Mesosphere DC/OS is based on Mesos, he felt it was the right choice for ShiftLeft. Moreover, he was swayed by the Mesosphere catalog listing services including Kafka, PostgreSQL and Redis. Since all are key services in the ShiftLeft infrastructure, Hua appreciated being able to simply point and click to install and manage all of them together in one place.

Impact

Quickly Getting Core Infrastructure Up and Running with a Team of One

After reviewing the Mesosphere documentation online, Hua started deploying the open source version of DC/OS. Within two weeks, he had a working stack online.

"Mesosphere amplified my ability, enabling me to confidently build the entire infrastructure on my own," he says.

As Hua explains, with all staging and production running on Mesosphere, the solution was core to ShiftLeft launching its initial product offering. According to him, Mesosphere is just as—if not more—effective than Kubernetes. "One of the main advantages of

Mesosphere is its portability. If I want to spin up Mesosphere on Azure, Google Cloud or even on prem, I can easily do it. I can even point new members of my team to Mesosphere and they will know what to do without getting lost in the documentation."

Since first using Mesosphere, ShiftLeft upgraded to Enterprise DC/OS for its role-based access controls (RBAC), which Hua plans to implement in the future as they scale. Additionally, Hua took advantage of the ability to merge his staging and production stacks. "This was possible because Mesosphere enabled me to customize various node pools for different instances," Hua continues.

> **"Mesosphere amplified my ability, enabling me to confidently build the entire infrastructure on my own." —Davy Hua, DevOps Engineer, ShiftLeft**

According to Hua, when you immerse yourself in Mesosphere, you understand its sophistication. Yet Mesosphere makes it easy and fast to pick up and use. "I live in the command line API. At the same time, the UI is incredibly user-friendly, making it simple to hand off to my core team for the on-call rotation. If something happens, they don't need to understand the command line tool—they can use the UI and follow the playbook to handle any fixes," he says.

Since implementing Mesosphere, and with a bit of optimization of his end, Hua has reduced the cost of running his stack by 50%.

"I customized a template within Mesosphere to spin up my Amazon Web Services stack so I have multiple instance types instead of just one set. This makes it possible to choose between compute-intensive and memory-intensive workloads," explains Hua.

"In hindsight, it was quite a feat to implement the entire infrastructure on my own. Mesosphere made it easy to spin up a stack, subsequently manage and administer it, and handle day-to-day operations. Because of Mesosphere, I handled all of this effectively when I was the only one in DevOps during our first year," he concludes.

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