SCALR

Case Study: Think Through Learning Inc.

The Challenge: Growing Pains

Think Through Math was originally developed using .NET. As the team looked for more agility, the Think Through Math team transitioned the platform to Ruby On Rails, and deployed it on a Platform As A Service (PaaS), Heroku. As the user load increased, the performance that Think Through Math was getting out of Heroku was unsatisfying. Their response times during peak load had climbed to an unacceptable average of 600ms. Consequently, Think Through Math was considering transitioning off of Heroku and onto Infrastructure-as-a-Service (aka IaaS).

The Think Through Math infrastructure team identified two requirements:

- Limiting the number of new technologies developers would have to adopt while retaining the level of agility that they were accustomed to with Heroku.
- Executing the transition over a limited timeframe of 3 months (summer break).

After initial evaluation, the Think Through Math infrastructure selected Amazon Web Services as their infrastructure provider, but concluded that they needed a higher-level management interface to meet their agility goals. The effort to adopt Scalr at Think Through Math was led by Andre Henry, leader of the company's Systems Engineering team.

Why Scalr?

Rapid Adoption

To migrate their existing front-end applications off of Heroku and onto Scalr, the Think Through Math team took advantage of Scalr's extensibility through its Orchestration Engine. In doing so, they were able to migrate and reuse their pre-existing processes and automation, such as build and deployment scripts.

For their backend, Think Through Math needed to replace their costly database. For this, they leveraged Scalr's integration with Postgres.

Henry indicates that it "strikes a perfect balance between automation and flexibility:" Scalr automates master / slave arrangements and failovers for him, while he remains in control of fine tuning the database. The migration from Heroku Postgres to Scalr-managed instances only took a few hours.

TTM
Think Through Math

About Think Through Learning

Think Through Learning is a successful EdTech startup based in Pittsburgh, PA. The company's flagship program — Think Through Math — is a SaaS adaptive math learning platform. Since its inception in 2003, the company has grown to more than two million students using the platform every year.

"Adopting Scalr increased developer agility, as it made it easy for us to continuously deploy our applications to production, thanks to its very flexible orchestration framework."

– Chris Geihsler, Senior Software Engineer at Think Through Math

Finally, once the existing Think Through Math infrastructure had been transitioned to Scalr, Henry and his systems engineering team trained the entire Think Through Math engineering team in less than three weeks. Henry attributes this velocity to the fact that Scalr integrates several tools into its platform.

"Because Scalr integrates several tools into their platform, my team did not need to learn a variety of new orchestration tools, such as Capistrano," said Henry.

Developer Agility

Think Through Math is taking advantage of Scalr's auto-scaling to scale their front-end infrastructure down after traffic peaks and save on cloud expenditure. This process is facilitated by Scalr's management of their load balancing tier: they use ELB, but Scalr automatically registers and deregisters instances as it launches or terminates them.

In order to make auto-scaling relevant, servers must be automatically configured. To that end, Think Through Math uses Scalr's Orchestration Engine for server configuration and application deployment. So far, the extensibility of Scalr's Orchestration Engine has saved them from having to use a configuration management tool, but they're considering taking advantage of Scalr's integration with Chef for the future.

Naturally, agile infrastructure isn't relevant without agile development practices. To facilitate continuous integration, the Think Through Math systems engineering team built upon the Scalr API and extended its capabilities with their own client: ttmscalr.

Benefits

Using Scalr and AWS, Think Through Math has succeeded in reducing average response times during peak load to one third of what they used to be, reaching an average of 200ms.

The migration was done in a timely fashion: the Think Through Math learning platform went live on Scalr in July 2013, and was ready for students when school resumed.

Now that performance is stabilized, the Think Through Math team is able to return their focus to innovation and increasing functionality.

Key Scalr Benefits

- **Increased agility.**
  3 months to increase application performance by 300%.
- **Scalr fosters rapid adoption:**
  3 weeks to onboard all developers.
- **Scalr is highly extensible:**
  Orchestration framework and comprehensive API.

About Scalr

The Scalr Enterprise-Grade Cloud Management Platform enables today's enterprises to achieve cost-effective, automated and standardized application deployments across multi-cloud environments. Scalr utilizes a hierarchical, top-down approach to policy enforcement that empowers administrators to find the balance between the needs of finance, security, IT and development teams. Founded in 2007, leading global organizations have selected the Scalr platform, including Samsung, Expedia, NASA JPL, Gannett and Food & Drug Administration.