

■ HubSpot: Monitoring Over 300 Microservices with TraceView

Company Background

HubSpot was founded in 2006 out of MIT, only a short train ride from AppNeta's Boston HQ. Famous for coining the term "Inbound Marketing", HubSpot's platform for marketing and sales teams includes analytics, blogging, content management, email nurture, marketing automation and social media integration. Following their successful IPO in 2014, HubSpot now supports over 15,000 customers in 90 countries, and boasts over \$115 million in revenue.

The Challenge

HubSpot's success relies on the performance of their business critical web apps and performance degradation or login failures often result in end users that are unable to work. As HubSpot added new users and employees, their complex distributed architecture of over 300 web services experienced sporadic outages and performance issues, many due to the growing number of 3rd party API calls and dependencies in their Java stack.

HubSpot now employs over 100 engineers broken up into agile teams working on separate Amazon EC2 hosted microservices that communicate on RESTful JSON APIs to make up platform components like their CMS, Analytics, Lead Management, and the HubSpot CRM. The small teams are given a high level of autonomy for development and deployment, and full responsibility for operating their services in Production. While some teams began using ad hoc performance monitoring to varying success, HubSpot realized that without a coordinated approach to code-level monitoring, it would become increasingly difficult to deal with latency and performance issues.

As their product became more complex HubSpot began looking into a dedicated application performance monitoring solution to ensure good end user experience.

The Solution

HubSpot realized that with diverse agile teams they couldn't expect each one to take ownership of application performance monitoring without mixed results for the end users. To remedy this, they created a Site Reliability Engineering team of just a few engineers under Director of Reliability Ian Marlier.

"The focus of the Site Reliability Engineering team is on application stability, scalability, and performance" Marlier explains. The team works across all engineering groups as an application



performance consultant. Not only do they consult on current or past performance issues, but they help teams determine potential performance issues that may arise.

The team needed a single monitoring solution that could span HubSpot's massive architecture, and AppNeta demonstrated its ability to support key functionality that HubSpot couldn't find elsewhere in the APM market. Specifically, HubSpot's web apps rely on a wide variety of technologies with heavy use of Java and asynchronous data stores like HBase and memcache.

TraceView provides the support that HubSpot needs with the visibility essential to keep their apps running, while allowing the Site Reliability Engineering team to instrument, deploy and teach the teams to use TraceView quickly to fix issues and improve performance.

The Result

HubSpot's SRE team is able to consult on performance improvements across dozens of small teams and hundreds of microservices, despite being a team of only three. The SRE team seeks out performance and visibility issues as they occur in near real-time, as well as strategic ways to improve application performance. With thousands of servers and hundreds of Production deploys per day, TraceView allows individual teams to monitor the performance of their own services without requiring the team to be directly involved.

For performance, Marlier stated that "HubSpot has a Java-based API stack and we use TraceView to identify places within that stack where performance problems or visibility problems are being introduced." With the code-level visibility of individual elements in their otherwise complex application stack, the team is able to fight fires quickly. With less time spent on short-term issues, the Site Reliability Engineering team can spend more time identifying components and interactions for optimization.

"The focus of the site reliability engineering is on application stability, application scalability, and application performance"

Ian Marlier
Director of Reliability





Whether it's in the database, cache, application or end user layer, TraceView offers end-to-end visibility that allows them to scale effectively. "TraceView gives us visibility into where in that application we are spending time and the things we can do within that application to make it more efficient as we scale" mentioned Marlier.

With TraceView, Marlier's team is now focused on being a source of knowledge and expertise on performance within the company. The Site Reliability Engineering team's access within HubSpot and deep understanding of TraceView allows them to internally distribute the tool and philosophy of advanced application performance monitoring.

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AppNeta is the Full Stack Application Performance Management (APM) technology leader, providing integrated performance visibility into the application code, through the network, to the end user. AppNeta's SaaS solutions give Development, Application and IT Operations teams broad, detailed performance data to see across their web, mobile and cloud-delivered application environments and pinpoint tough performance bottlenecks. With AppNeta, customers have all of the performance data they need to assure ongoing and exceptional delivery of business critical applications and end user experience. For more information or to get started today, please visit appneta.com.

