Provide a Flexible Solution to Suit a Service-Based Architecture and Scale With a Rapidly Growing Business

Airbnb (www.airbnb.com) is a leading community-driven hospitality company where people can list, discover, and book unique accommodations around the world. Whether travelers want an apartment for a night, a castle for a week, or a villa for a month, Airbnb connects people to unique travel experiences in more than 34,000 cities in 190 countries. And with its inviting website and world-class customer service, Airbnb is the easiest way for people to monetize their spare space and showcase it to an audience of millions.

To keep services operational 24×7, Airbnb's support philosophy is similar to that of many other technology companies: the engineers who built an application are ultimately responsible for fixing it. According to Dave Augustine, Engineering Manager at Airbnb, "The implications of users not being able to reach our website can be serious because, if we don't fix issues quickly, travelers can miss out on once-in-a-lifetime trips or not feel supported on their vacations."

The Need: Standard Systems for a Service-Based Architecture

To be able to adapt quickly to new business opportunities while maintaining the reliability of their services, Airbnb developed a service-based architecture for some components of the site, while other components have continued to be part of their main application. Separate engineering teams were created to support the separate components and features. The engineering team had a central dashboard application, but each individual team must contribute its own operational and business metrics to create the full picture. With time, teams utilized more open source projects that came with their own dashboards, which added much complexity.

"Over time we added many different systems for monitoring, some reporting to the central dashboard application, others being more standalone." Augustine recalls. "When it became clear this approach would be difficult, if not impossible to scale, we decided to look for a comprehensive and more holistic operations performance solution. But we didn't want to just add another tool that no one would use." After evaluating several different options, Augustine found a combination that would meet Airbnb's needs: Datadog and PagerDuty.

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Simplicity That Enhances Scalability

The team at Airbnb knew that standardization would be essential as Airbnb scaled its customer base and infrastructure. They also knew it was necessary that the solution be easy to use and easy to scale along with their growing business. So when Augustine showed Datadog and PagerDuty to the various teams, he was quite pleased when they all recognized just how powerful yet easy these tools are to use. "They embraced both platforms out-of-the-box and began putting them to use right away," says Augustine.

One of the reasons Airbnb chose to go with the combination of Datadog and PagerDuty was that in addition to providing comprehensive monitoring, reliable alerting and on-call management, each could also be customized to enhance their ease-of-use and effectiveness. For example, published APIs made it easy for engineers to write their own plugins and integrate these into the combined system. "Airbnb is a data-informed company, and this combination gives us the ability to collect and correlate metrics from 15 different systems into Datadog dashboards, and then aggregate incidents from any |system in PagerDuty and notify the right person at the right time," adds Augustine.

Optimized On-Call Workflow Improves Productivity

With the combination of some on-call duty being voluntary, while others are scheduled, and multiple teams' responsibility for different parts of the stack, Airbnb needed a central location to manage their on-call workflow. PagerDuty gives Airbnb employees the flexibility they need by associating the teams with their services and allowing engineers to be notified in the ways that work for them. With Datadog and PagerDuty, on-call engineers and support staff can customize what metrics are monitored and what thresholds need to be crossed before being notified. By optimizing the way incidents are aggregated, organized and routed, engineers are now notified for real problems, resulting in far better productivity and responsiveness. "Having all of Sysops using a single set of incident management systems has helped us reduce the time it takes to act on and ultimately resolve critical issues," Augustine notes. The teams continuously assess their own processes to identify bottlenecks that might exist throughout the incident resolution lifecycle, and improve response times and effectiveness.

PagerDuty distills the data it receives from Datadog to identify critical issues and routes alerts to the appropriate engineers and teams. "With comprehensive incident trend data to identify critical versus nuisance issues, we've been able to cut out additional noise and focus on those that require immediate attention, and to route them to the right engineer so we don't bother the wrong people," says Augustine. "So now when engineers hear from PagerDuty, they know it's the real thing." The Airbnb team occasionally re-evaluates these incidents and their thresholds, so time is no longer spent filtering through noise to determine what's critical versus informational. Engineers can then focus on continuing to build out Airbnb's product and protecting its back-end.

Infrastructure-Wide Visibility

Airbnb wanted to have full infrastructure visibility in order to lower their resolution times and provide a highly available service. The large and growing number of integrations available for Datadog and PagerDuty including Amazon Web Services, StatsD, and Redis are valuable to Augustine because they connect to a wide assortment of commercial and open source software. Now Airbnb engineers don't need to check multiple different tools for the information they need to solve the problem.

In addition to the broad visibility, Datadog and PagerDuty help with getting the detailed insight they also need. According to Augustine, "Datadog is finding relevant details we could not have noticed before, and it also correlates variables to reveal dependencies that were previously concealed. PagerDuty takes that information and then automates the process, while giving us much better understanding on teams

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and service performance." These powerful capabilities have made Datadog and PagerDuty indispensable at Airbnb.

The full-view and detailed metrics give them the tools they need to identify common problems and better their operations performance.

Flexibility for the Future

Airbnb made a strategic decision to be hosted entirely on Amazon Web Services and its Relational Database Service (RDS) to take advantage of the wide variety of services. This helps give the company the flexibility it needs to grow quickly and efficiently. "We try to make sure that the systems and tools we adopt will not only meet our current needs, but will also continue to grow with us as our needs expand and evolve," explains Augustine.

With Datadog and PagerDuty, Airbnb has been able to improve its availability and ensure its customers are getting the best experience possible. This powerful pair of tools is now fully ingrained in Airbnb's engineering culture and processes, and the engineering team continues to benefit from a combination of more insightful monitoring and more actionable alerting that together have led to increased uptime. So just as travelers and hosts trust Airbnb as a reliable place to plan and book their next adventure, Airbnb's engineering team trusts Datadog and PagerDuty to help enhance and grow the company's services well into the future.