CASE STUDY

How Etsy keeps their global community engaged with a high-performance data platform

Etsy is a marketplace where people around the world gather to make, sell, and buy unique goods. Etsy's emphasis on creating a more meaningful economy by connecting independent vendors and shoppers has grown it into one of the internet's busiest e-commerce platforms. Etsy values craftsmanship in engineering, too, and works to inspire other companies to follow their example. Concrete illustrations of this include their engineers' strong presence at conferences, their variety of open-source code and tools, and their focus on platform performance.

Etsy's commitment to system performance and observability are well-known in the industry. They created and open-sourced StatsD, one of the most popular components in the typical open-source monitoring stack. They share their quarterly performance reports on their blog for the world to see, analyze, and learn from. Their engineers and leaders have published books on performance. It's no exaggeration to say Etsy's team members are thought leaders in performance. They've shaped how engineers of all types think about system performance in their daily lives.

Why such a focus on performance? For Etsy's sellers and customers to form and maintain their relationships, Etsy knows using their platform must be a great experience, and performance is a key part of user experience. Therefore, Etsy's systems must stay online and be fast. To achieve this, among other things, Etsy practices DevOps, a culture with values including collaboration, quality, and tight feedback loops between development and production.

As part of their DevOps culture, Etsy's developers deploy code frequently—often dozens of times every day. In this type of environment, perhaps the most difficult systems to observe and optimize are the databases. Hundreds of shared database servers back Etsy's platform, all working in concert to handle Etsy's demanding workload. Keeping the platform available, reliable, and fast means the databases must be high-performance around the clock, even under load and while teams deploy platform changes.

Etsy

Industry: Internet eCommerce

Location: Brooklyn, NY

Company Size:
501 – 1000 employees

> *"With [SolarWinds® Database Performance Monitor (DPM)], I don't have to wait for an end user, or a developer, or a log line to tell me that something is not OK. I have instant information… [DPM] has given us an entirely new dimension on our upgrade testing that we didn't have before. The value of that can't be overstated."*
>
> — Jeremy Tinley
> Sr. MySQL Ops Engineer, Etsy

ETSY'S ENGINEERING TEAMS RELY ON **DATABASE PERFORMANCE MONITOR**

Etsy has three full-time database administrators (DBAs), who work as an extension of the operations team and support the larger engineering teams. Etsy entrusts their DBAs with maintaining awareness of the database's status and performance, and how it responds to changes in the platform and user activity. Examples of projects frequently involving the DBAs include MySQL version upgrades, schema changes, evaluating new hardware platforms, and working strategically with Etsy's other teams.

The DBAs rely on SolarWinds Database Performance Monitor (DPM) to accomplish these projects more effectively. For example, when Etsy evaluated a hardware change—switching from traditional spinning-disk storage to SSDs—the DBAs used DPM to A/B test the change and analyze exactly how the system performance would change with the new hardware. Similarly, when Etsy upgraded their databases to a new version of MySQL, DPM helped them analyze and confirm whether and how performance would change—including finding any buried needle-in-the-haystack performance regressions in particular types of queries.

And if a problem should appear in the databases, Etsy's engineering teams need a way to find and diagnose it, fast. Etsy relies on Database Performance Monitor's high-resolution, query-level performance metrics to surface and explain changes or problems hidden within the flurry of activity. And because DPM retains query performance metrics for long-term trend analysis, automatically aggregates them into top-level views and displays them in summary dashboards, Etsy has immediate visibility into what's going on now within all those databases, plus historical data about how it has changed over time.

As a result, Etsy's marketplace is always available and reliable for shoppers across the world, at all hours of the day and night.

> *"With [DPM], I can get buy-in from non-DBAs, and I don't have to spend time building and running reports—the ROI on time saved is crucial. It also helps build confidence between teams. Because [DPM] retains historical performance data, I don't have to worry about manually recording any reports. I can print or email results or share them with somebody in a meeting. They then instantly have the same confidence level."*
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> — Jeremy Tinley
> Sr. MySQL Ops Engineer, Etsy

SOLVING VISIBILITY CHALLENGES AT SCALE

Databases are hard to monitor. Because Etsy has so many database servers and their platform is so busy, traditional methods for monitoring database performance are too superficial or take too long to produce the insights the engineering teams need. “If something is performing terribly,” Jeremy said, “I don’t want it to run for a minute. I need to know immediately so I can immediately roll back the change.”

For instance, Jeremy noted a MySQL replication limitation that Database Performance Monitor helped solve. MySQL’s internal measurements of replication latency can make it difficult to understand the impact of a code change. Before using DPM, when Etsy pushed a code change into production, the team couldn’t see the effects on replication delay until too late, when it was suddenly clear the replicated data had fallen behind. The only way to get visibility into such complex system behavior is a monitoring product specifically designed with knowledge of the database’s intricate inner workings. DPM provides such a solution, showing Etsy immediately when replication lags, even though MySQL’s own measurements of delay show nothing. “[DPM] gives us real-time visibility into our database’s performance and workload metrics, down to the microsecond,” Jeremy said. “We get immediate feedback, and we can provide more detailed information to engineers about how code changes have impacted the system.”

During events such as schema migrations, Etsy’s engineering teams need to analyze before-and-after performance, both immediately and longer-term, to ensure there are no resulting spikes in workload metrics or server faults. Before using DPM, Jeremy said, Etsy’s engineering teams handled these comparisons with TCP packet capture: they captured network data, ran a report, then waited until the changes completed. Then, they repeated the process. In addition to being slow and laborious, this method offered less precision and wasn’t available if the need hadn’t been anticipated. Etsy requires high-precision query latency measurements to ensure they can keep end users’ experiences fast and stable, or they’ll miss small but important problems or changes. “To accomplish these goals without [DPM],” Jeremy told us, “was painful and challenging.”

Before having DPM’s always-on, high-resolution, visual, easily shareable workload analytics and performance metrics, Etsy’s DBA team sometimes felt they were at risk of becoming an operations bottleneck. To avoid this problem, Etsy’s DBAs told us, they knew it was vital to equip other teams with a monitoring solution they could use themselves. Allowing every engineer and manager to answer their own questions about database performance supports core DevOps principles. Democratizing visibility empowers everyone to make decisions on code deploys based on firsthand visibility, rather than asking someone else for help. Database Performance Monitor gives the entire Etsy team access, insights, and confidence in a way that makes these independent evaluations possible.

ELIMINATING UNCERTAINTY, CREATING CLARITY

With Database Performance Monitor, Etsy's engineering teams equip themselves with high-resolution charts and metrics, intelligent SQL parsing and heuristics, and execution plan analytics. They have access to the complete picture of database performance, including information on errors, warnings, connections per second, commands, replication delay, and highly detailed query latency metrics. Demanding projects such as capacity planning exercises are more streamlined, because DPM is already instrumented to provide information on historical activity like disk usage or CPU, giving Jeremy confidence in how future changes will pan out.

Etsy relies less on hypotheses, and more on data—the DBA team can discover exactly where a database issue is coming from. In schema migrations, they use Database Performance Monitor for real-time feedback. And with DPM's powerful historical performance metrics and trending, they don't need to take screenshots—they can use permanent links into the UI to quickly share and discuss what they're seeing with colleagues.

"There just aren't other tools that give you what [Database Performance Monitor] does," Jeremy told us. He noted although manual monitoring methods like packet capture, pt-query-digest, and slow query logs are available, they don't offer the same kind of visibility. Part of the reason is the impact they cause on systems, which used to cause companies like Etsy to capture only a portion of their database traffic for analysis. "If we sample fifty percent of our traffic, what are we going to miss?" Jeremy asked rhetorically. "Fifty percent is a significant amount. Being able to instead see everything is a huge boost in confidence." To support Etsy's community and marketplace, many monitoring options might provide partial visibility. But for Etsy? "I think the difference is that we want all the information," Jeremy said. "That's what [DPM] provides."

> "**[Database Performance Monitor]** *has always given us a 'smoking gun.' You often have a suspicion that something in the system is causing an issue, but* **[DPM]** *is the nail in the coffin, confirming the hunch. If I see a query beginning to require thirty seconds when it used to need just one, I go right to* **[DPM]**. "
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> — Jeremy Tinley
> Sr. MySQL Ops Engineer, Etsy

ABOUT SOLARWINDS

SolarWinds (NYSE:SWI) is a leading provider of powerful and affordable IT infrastructure management software. Our products give organizations worldwide, regardless of type, size, or IT infrastructure complexity, the power to monitor and manage the performance of their IT environments, whether on-prem, in the cloud, or in hybrid models. We continuously engage with all types of technology professionals—IT operations professionals, DevOps professionals, and managed service providers (MSPs)—to understand the challenges they face maintaining high-performing and highly available IT infrastructures. The insights we gain from engaging with them, in places like our THWACK online community, allow us to build products that solve well-understood IT management challenges in ways that technology professionals want them solved. This focus on the user and commitment to excellence in end-to-end hybrid IT performance management has established SolarWinds as a worldwide leader in network management software and MSP solutions. Learn more today at www.solarwinds.com.

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