

Case Study

As Pandemic Up-Ends Travel Industry, Booking Website Uses Autonomous Business Monitoring to Optimize Spending

The Challenge

GetYourGuide realized they were taking too long to spot issues in their business data. They needed a real-time, automated solution that could help them:

- Control cloud costs
- Track product usage for changing revenue
- Monitor marketing activity and ad spend

Engineers would regularly inspect dashboards, looking for anomalous patterns, but issues that weren't easily apparent in top-line KPIs could easily go unnoticed. That led to delays that would bleed revenue in their cloud services and marketing budgets, or negatively impact user experience.

The Solution

GetYourGuide has used Anodot Autonomous Business Monitoring for more than two years. The engineering team continues to find additional uses for anomaly detection, from monitoring revenue to watching for brand hijacking and affiliate fraud. Anodot alerts bring attention to the underlying issues much more quickly than any other method, which is helping prevent financial loss and keeping their global business running smoothly.

About GetYourGuide

Travelers the world over use the GetYourGuide booking platform to connect with the best things to do wherever they're headed—including skip-the-line tickets to the world's most iconic attractions, walking tours by top local experts, immersive food and beverage tours, cooking and craft classes, bucket-list experiences, and niche offerings not found anywhere else.

The Teams

- **Engineering Manager -**
Data Platform
- **Associate Engineering Manager -**
Data Platform
- **Senior Engineering Manager -**
Performance Marketing

The Pandemic Puts Budgets Front & Center

GetYourGuide helps travelers to truly immerse themselves in the places they visit. Since 2009, travelers from 170+ countries have booked more than 40 million tours, activities, and attraction tickets through GetYourGuide. The service offers more than 40,000 activities in locales around the globe. Powered by a Team of more than 500 travel experts and technologists, the company is headquartered in Berlin, Germany and has offices in 16 countries around the world.

With that many activities and transactions, GetYourGuide has a lot of data and detailed metrics that can tell them how the company is performing and whether they are losing revenue opportunities or accruing excessive costs. There are three key areas that

GetYourGuide system engineers have focused on to prevent such losses and to sustain the business as it undergoes many changes prompted by the global pandemic. Those areas are cloud costs, product usage, revenue, and marketing and ad spend.

Before the pandemic and shutdowns, GetYourGuide was thriving with thousands of bookings each day. In the first quarter of 2020, business abruptly halted when the pandemic forced global lockdowns and travel took a hiatus. The company used this work stoppage to get its cloud infrastructure in order and to further build out its anomaly alerting with Anodot.

Use Case

Reducing Cloud Costs With Real-Time Detection

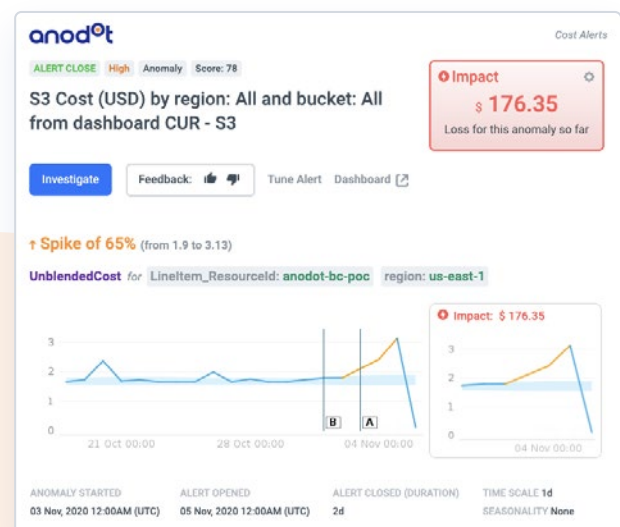
GetYourGuide is powered by infrastructure hosted in AWS. The company monitors cloud usage to avoid incurring unnecessary costs.

As Senior Engineering Manager of the Data Platform, Yonatan Aharon leads initiatives across GetYourGuide to leverage data for insights and to ensure that teams are using those insights to guide decision-making. Engineering Manager Thiago Rigo is largely responsible for managing and optimizing cloud usage and costs.

Rigo says that the native monitoring tools available with AWS don't deliver the information needed to quickly catch spikes in usage and costs.

"We have been using Databricks to monitor our daily EC2 usage, which comprises the majority

Anodot Alert Sheds Light on Granular Details, Cost Impact of Cloud Usage Spike



of our AWS spend,” says Rigo. “We use AWS Cost Explorer to directly monitor our S3 usage every few days. We created an internal cost dashboard where we combined these metrics in one place. While we get a good overview of the workloads and pipelines where costs are spiking, it’s a late view that doesn’t enable quick intervention to prevent cost overruns. We also found that many native tools don’t provide alerts, so we have to do manual inspections to look for unusual spikes.”

Where AWS tools have shortcomings, Anodot fills the monitoring need nicely.

“Today we are alerted, in real time, on important changes in our cloud usage. This enables us to be proactive and save costs before anyone notices,” according to Rigo.

In one case, Anodot reported a 154 percent spike in the S3 bucket size. This helped GetYourGuide quickly identify and fix the problem.

The chart above shows what AWS Monitoring provided. It’s rather uninformative.

In a second example, Anodot reported a doubling of normal S3 ListRequest usage in a single day. Engineers could quickly identify and fix the problem. They estimate that, prior to Anodot, it would take about two days to identify

these kinds of problems given Databricks monitoring and other SLAs they measure on their production pipelines.

The chart below shows the ListRequest spike in a report from Anodot.

GetYourGuide used the slow business times of the pandemic to re-architect its main application, breaking it up from monolithic code into microservices.

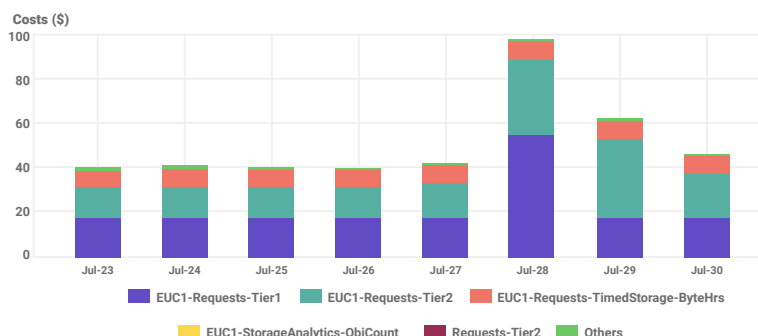
“This is a process where we can unintentionally break many things,” says Aharon. “A big challenge is that we don’t want to lose any data. Anodot doesn’t care if we move data to a different place. It still continues looking at the patterns. If we see alerts going off about the data, meaning we broke a process, we can reach out to the responsible team to fix the problem.”



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—Thiago Rigo, Engineering Manager

AWS Monitoring Offers Limited Insights into Cloud Usage Spike



Use Case

Solving Product Issues Faster for Seamless Customer Experience

GetYourGuide's revenue is based on commission for the tours and activities that it sells. An entry to the marketplace begins with a supplier agreement on the commission assessed when a customer books the activity through GetYourGuide. This amount is manually entered into the supplier management system—a process that is subject to human error. For example, suppose a commission should be entered as €20 but is mistakenly entered as €2. This represents a significant loss of revenue for each occurrence of the activity being sold.

Given the volume of activity flowing through GetYourGuide's systems every day, this single error would be difficult to spot without automated anomaly detection. However, if this particular activity is booked often enough with the incorrect price, the accrued revenue loss could be significant. Anodot helps GetYourGuide identify the anomaly quickly so that a correction can be made and revenue loss is held to a minimum for the activity. "We are claiming back our revenue and fixing the issue," says Aharon.

GetYourGuide offers some tours in the marketplace for free. This is by design, not an

error. "Anodot helps us monitor the ratio of free vs. for-fee activities to help us balance our offerings," says Aharon.

Revenue can be lost when code changes are made to the system that disrupt the "add to cart" feature, thus preventing the completion of purchase transactions. When sales dropped suddenly after one such code change, Anodot helped GetYourGuide identify the issue in near real time. Without the alert, this incident would have likely taken another day before the team noticed, in one specific case, *costing them approximately 24,000.*

At the onset of the pandemic, the platform recognized the sudden drop in business as anomalous, but over time, its self-learning algorithms quickly adjusted each metric's baseline. "For a few days in late March, we got alerts that indicated everything was dropping," says Aharon, "but Anodot adjusted to the new normal pretty quickly. In fact, the algorithms adjusted to the situation faster than the business did." As lockdowns have eased and business slowly picks up, the models are independently adjusting once again to new data patterns.



"You might not see something in a higher level report, and it might be too late to make a difference. But getting alerts when something is happening gives you the opportunity to react and change the course of problems."

—Yonatan Aharon, Senior Engineering Manager



Use Case

Locating Revenue Bleed Across Ad Campaigns

Roman Fuchs leads the performance marketing team at GetYourGuide. He is tasked with driving company growth through performance marketing with data-driven solutions and automation. Prior to using Anodot, his group monitored marketing activity and ad spend through daily reports and some alerts set up in Datadog.

“Previously, it was difficult to find something that was broken on a dynamic search ads campaign or a brand campaign for a specific language,” says Fuchs. “It would typically take at least a day to detect an issue, and some problems could go undetected for weeks. Then I saw the opportunity to put Anodot to work on marketing and ad spend scenarios.”



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—Roman Fuchs, Director of Engineering, Growth

Fuchs says they have built alerts for cost per campaign type, cost per landing page type, cost by device, cost by top locations,

cost by language and geography, and more. “After the initial setup, we mostly just act on the alerts. We now have very timely alerts and reports on things like the impact of brand hijacking and affiliate fraud. That’s not something we would have noticed in an aggregate report, but it would add up if we didn’t act on it right away, and now we can.”

In one case, the cost of German brand campaigns increased from about €300 to about €1,100 per day.

“The relative spike showed us that the cost per click was out of line,” says Fuchs. “We should get these clicks much cheaper. The quick alert let us address the issue right away.”

Anodot Use Cases Keep Expanding at GetYourGuide

As the GetYourGuide engineers gain more experience with the Anodot system, they can see even more opportunities across the company.

“This tool can support many use cases, such as production systems anomaly detection, fraud prevention, forecasting, and tracking of more complex revenue drivers, such as breakage, pricing and availability,” says Aharon. He foresees going deeper into AWS costs and resource utilizations. Another future use is to bridge the gap between mission teams who are responsible for sending the data and the Analytics department, which is a data consumer.

For those just getting started with anomaly detection, Aharon recommends looking into past incidents to try to understand how you will be able to catch similar events using automated anomaly detection.

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Business metrics are notoriously hard to monitor because of their unique context and volatile nature. Anodot's Business Monitoring platform uses machine learning to constantly analyze and correlate every business parameter, providing real-time alerts and forecasts, in their context. Our patented technology is trusted by Fortune 500 companies, from digital business to telecom.

Anodot reduces detection and resolution for revenue-critical issues by as much as 80%. We have your back, so you're free to play the offense and grow your business.

Anodot is headquartered in Silicon Valley with sales offices worldwide.

To learn more, visit us at www.anodot.com

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