

Shopify-selected Expert Partner Seed-CMS Saves 66% and Helps Sneakerheads Grab Un-bot-able Deals with SingleStore

66%

savings in high-scale expenses

Half a million

database entries processed in real time

1,000+

concurrent users

1,000+

rows ingested per second

“The summary dashboard used to take hours to load because of the database timeouts or processing of 500,000 entries. We were trying to jam it onto Google Firebase and get it back as fast as possible, so that was a major bottleneck. Now with SingleStore, the raffle submission data is processed in real time.”



[Robert White](#)

Chief Technology Officer and Co-Founder, SeedCMS

Based in Irvine, California, USA, [SeedCMS](#) was founded by [Robert White](#) and [Sanjay Ghataode](#) in 2012. Bringing more than 20 years of experience in website design, development, and e-commerce, SeedCMS has proven to be one of the most reliable and effective agencies on the Shopify platform. One of the very first Shopify Experts nearly 12 years ago, and with years of dedicated focus to streetwear, fashion, jewelry, and apparel, SeedCMS quickly became one of the first agencies hand-selected by Shopify to integrate with the Shopify platform. To this day SeedCMS is a trusted resource to the Shopify team, providing a reliable development source for enterprise-level clients and operating many top Shopify stores.

Challenges/Goals

Sneaker enthusiasts, known in the industry as Sneakerheads, eagerly await exclusive online releases. Coveted collaborations and hyped new designs build quite the buzz around new drops. Enter into the fray unscrupulous operators of [sneaker bots](#), who buy up inventory and resell athletic shoes through sites such as StockX, creating and profiting off a hyperinflated market they've created by causing artificial shortages and significantly driving up prices. In an era where supply chains and costs have already been battered by the pandemic, this accelerates and exacerbates an already difficult situation for buyers and sellers.

“Where sneakers are concerned, there's a gray market. Bots typically drive the sneaker price up 3-4X higher, and on really popular sneakers it can hit 10X the normal resale value. Unfortunately, it's great money for bot operators,” said White.

In an attempt to beat the bots and give actual customers the chance to buy these exclusive products, rather than simply selling athletic shoes online some eCommerce sneaker company merchants have turned to raffles, where customers enter for the chance to buy their favorite shoes. However, sneaker bots have adapted to this new strategy and have flooded raffle entries. When this happens, true human buyers are shut out because raffle forms take vastly longer times to submit or simply time out, preventing buyers from entering the drawing. This destroys customer experience and hurts sneaker merchants in another way when these human users, unaware of the behind-the-scenes bot drama, take to social media in droves to complain about the merchants.

In addition to hurting their market image, the bots hit merchants in a third way that threatens their core operations: this unwelcome bot traffic also drastically increases the data volume they have to deal with, taxing systems that were not built to stand up to the incredible growth in data traffic. Merchants deal with slow dashboards, and like everything else in this data supply chain, queries that generate raffle winners take forever or simply time out.

Merchants have grown desperate to cut through the bot-generated data noise to get to their actual customers.

SeedCMS, which already provides a wide array of services to merchants across the eCommerce landscape, including custom theme design and development, backend development, Shopify Plus launches, and a multitude of other capabilities, was poised to come to the rescue. It launched an application to keep the bots out of online purchases and raffles by processing entries, cross-referencing data against raffle campaigns, and integrating with Shopify data to isolate bots and lock them out of the process.

Problem: much in the way the bots flood the process, filtering data and performing random queries against up to 1.5 million database records to choose winners flooded the existing SeedCMS database solutions: MySQL, Google Firebase, and MongoDB.

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Technology Requirements

To help top Shopify merchants beat the bots and sell their products to legitimate customers, SeedCMS needed real-time dashboards and high scalability, but its existing data fabric was holding it back. The application originally used a simple MySQL database on Amazon Web Services (AWS) when it was released four years ago. However, during the first launch, the spike in traffic was too great and autoscaling crashed due to the performance bottleneck.

Following that experience, SeedCMS moved from MySQL to Google Firebase. The scalability and pricing worked for the team at the time, and they stuck with it for two years, but “once we started onboarding more merchants, Google Firebase became problematic,” said White. “We couldn’t do random queries easily in Firebase; nor could we do date range queries. While it’s fast and responsive in terms of providing campaign data on the front end, when it came to filtering massive volumes of raffle entries, it was unusable.”

SeedCMS was on the hunt for a new database solution that could support this data filtering workload. The technical requirements the team was searching for included:

- **Affordability:** SeedCMS is self-funded without investor backing, so the database had to be cost-efficient at scale.
- **Real-time analytics:** Both the merchant and customer experience suffered from performance bottlenecks, so improving the application’s responsiveness was a must.
- **MySQL compatibility:** Since the application was originally built to support a MySQL database, this compatibility would reduce how much code would need to be rewritten.

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Why SingleStore

Initially, SeedCMS added MongoDB alongside Google Firebase to try to fix the issues with the raffle submissions. While MongoDB is a NoSQL solution, it did offer the randomized and date range queries the team was looking for, while Google Firebase handled the visual display components of the application, such as the campaign data and product information. However, “it was slow running those randomized and date range queries on MongoDB. Our only option was to scale up to a really large instance, and we didn’t want to do that,” said White.

SeedCMS continued its search for a suitable database, turning its attention to two MySQL-compatible solutions: SingleStoreDB and Oracle MySQL Heatwave. SingleStore is a cloud-native modern distributed database built for speed, scale, and data intensity, while Heatwave is an Oracle MySQL database-as-a-service (DBaaS) solution with an in-memory query accelerator.

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For White and the SeedCMS team, SingleStore’s support and time-to-market were the deciding factors.

“I worked with both the SingleStore and the Oracle teams, but SingleStore’s customer service was superior. They were more willing to jump in, get their hands dirty, get things up and running quickly, and help us migrate data. Oracle was just a much slower process. They did have a team in place, but it was going to take a couple of months to facilitate the move,” White explained.

SeedCMS also had no database administrators (DBAs) on staff, so having highly responsive and knowledgeable support was essential for getting the most out of its chosen database technology. “We’re mostly full stack developers at SeedCMS, so it was important for our business to have a strong connection to a team knowledgeable on how databases can work and can be tweaked and fine-tuned,” said White.



For [Stüssy](#), SeedCMS has provided custom theme design & development, Adobe Magento migration & custom backend development, and Shopify Plus launch, and provides ongoing design and development services

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Solution

SeedCMS selected [SingleStoreDB Cloud](#) running on [Google Cloud](#) to solve the major issues its customers were facing — form submissions taking far too long, and dashboards being painfully slow — and to gain the benefits of a fully managed experience. It deployed one SingleStore S2 cluster with a baseline S4, loading varying data volumes daily.

How It Works

SingleStore is SeedCMS's database of choice for its raffle submissions and bot mitigation processes while Firebase supports visualizations. Here's how it works:

- 1. The merchant integrates the SeedCMS app into its Shopify store.** It's branded to look like part of the store, rather than a separate application. During raffles, once a customer submits a giveaway entry, the data goes to Google Cloud Functions, which saves it to SingleStore as a process. This load is distributed to Google Cloud Functions in Pub/Sub in the event of huge traffic spikes, as it's able to horizontally scale for ultra-fast processing.
- 2. At this point SingleStore kicks in for bot mitigation.** Fraudulent and disallowed submissions are filtered out in real time with SingleStore. Outside of obvious bot traffic, submissions may be disallowed due to geographic restrictions or other limits to the campaign. The application also has a block list that includes filtering out previous winners, duplicate names, blocked emails, and duplicated IP addresses.
- 3. If an entry makes it past these filters, the application gathers customer information from Shopify** verify that raffle entrants have existing orders in the system so SeedCMS can confirm they are legitimate human buyers. All of this dashboard information is the result of queries completed in real time in SingleStore, including a real-time update of how many entries merchants have, how many have been blocklisted, and how many are in the potential winners pool.

SingleStore Support Provides Expert Help and Recommendations

SingleStore Support has helped SeedCMS continually improve its database implementation. For example, when SeedCMS ran into some issues with partitioning, SingleStore Support provided expert recommendations on the appropriate configuration. "That helped speed up queries and also helped with scalability," said White. "At one point we had major campaigns running and were scaling up to V8 or V12 right before the point of no return max scale, where you can't scale back down to accommodate a change in traffic volume. After those campaigns subsided, we were able to evaluate the structure of the database and make the appropriate adjustments with the SingleStore Support team."



For [Topsy Elves](#), SeedCMS has provided custom Shopify Plus Storefront 2.0 design & development and migration to Shopify Plus from the M19 platform

Outcomes

Choosing SingleStore is delivering business and technical benefits to SeedCMS and optimized experiences for its merchants and online shoppers:

Cost-Savings of 66%

As SeedCMS grows and onboards new merchants, SingleStore helps it scale cost-effectively. Its costs associated with high-scale workloads dropped 66% after implementing SingleStore. Controlling the cost of scaling its system is crucial, as SeedCMS charges merchants a monthly fixed fee.

Reduced Dashboard Responses From Hours to Sub-Second

Merchants no longer have to watch a spinning wheel for hours waiting to access summary dashboards of raffle submissions. With SingleStore, SeedCMS has transformed an hours-long slog into a real-time experience, reduced the impact of sneaker bots, and allowed merchants to quickly choose actual human buyers as winners.

Ingesting Thousands of Rows per Second to Keep Up with the Pace of eCommerce

Larger events and campaigns can easily attract hundreds of thousands to millions of entries FAST, adding thousands of rows per second. With SingleStore, SeedCMS can now easily keep pace with these high-data-traffic events.

Delivering Optimized Merchant and Customer Experiences

By implementing a database capable of keeping up with data-intensive demands, SeedCMS can easily handle thousands of concurrent user requests in real-time. Merchants have instant dashboards and can send out prizes quickly, and customers don't encounter any slowdowns (and thus, no social media complaints) with their giveaway entries.

“We could not run this part of our business properly before SingleStore,” said White. “Merchants can now close their campaigns, select winners, and send out the invoices to the customers they picked in minutes, not hours.”

Freeing Developers from DBA Tasks Gives Back 20 Hours/Month

As SeedCMS doesn't have anyone in a dedicated DBA role on-staff, SingleStoreDB Cloud and SingleStore Support have reduced the time developers need to spend debugging or fixing database issues, freeing up 20 developer hours per month for more strategic, value-adding work.



For *Just Water*, SeedCMS has provided custom Shopify Plus and Recharge design, development, and implementation

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Support for Larger Merchant Campaigns

As it continues to grow, SeedCMS is exploring the possibility of using more SingleStore features, such as [SingleStore Workspaces](#). “We have events three to four times per year that see much higher than normal traffic, such as seven million entries in 24 hours, which is 10X our normal volume. With Workspaces, we have the potential to deploy a larger infrastructure for those peak time periods. Then we can switch back to our baseline metrics once those campaigns end.”



SingleStore is helping companies compete and win across every vertical. [Learn More >](#)