CASE STUDY

How Skyhook Delivers Geospatial Insights

SKYHOOK

Highlights:

- Runs 5-10 billion transactions daily, or around 100k transactions per second
- Interacts rapidly with 500M rows at 500k row speeds
- Eases ingestion and setup, making OmniSci ideal for both large and small datasets
- Improves client relationships with data interactivity and a customizable dashboard

"OmniSci lets us analyze in real time, to a much larger data foot-print than had been possible before."

— **Rich Sutton, VP, Geospatial**

Skyhook Wireless (Skyhook) is a mobile positioning and location provider. The company leverages Wi-Fi, cellular, and other sensor and technology data to refine user and device locations.

The Challenge of Precision Location & Geospatial Insights at Scale

A global positioning system (GPS) is great when it's available. But when a device is indoors, or in a crowded city, GPS loses its ability to accurately pinpoint that device. That's where Skyhook steps in. Leveraging over two billion Wi-Fi access points and cellular towers, Skyhook enhances the accuracy of GPS positioning when the signal is weak, or replaces it entirely when the signal is unavailable.

"We put the blue dot on your phone" claims Rich Sutton, VP of Geospatial at Skyhook. The company has powered location-based services for Apple, Samsung, Sony, HP, MapQuest, and many others. It enables precision location from mobile phones, wearables, and IoT devices. The company also provides geospatial insights from this data to enable new revenue streams, such as location-based advertising campaigns.

Providing both precision location and geospatial insights, Skyhook runs 5-10 billion transactions daily, or around 100k transactions a second. The data it generates from its vast network is licensed to customers looking to add location-based services to improve offerings or to optimize sales.

Apart from running extremely fast queries at scale, Skyhook also requires a way to rapidly present this data visually, and to perform integrity checks along the way.

Yet traditional analytic solutions limited the amount of data Skyhook could display at any given time, slowing their quality assurance operations and harming the dependability of its point mapping.

Because existing geospatial solutions limited the dependability of its point mapping, Skyhook was forced to down-sample and display an inordinately small slice of data. This limited its ability to accurately visualize data during client meetings, which affected sales. To overcome this challenge, Skyhook was faced with a "build-or-buy" business development challenge.

Meeting the Challenge through Extreme Speed at Extreme Scale

Skyhook is no stranger to cutting-edge database and geospatial technologies. "We use anything you can probably name," claims Rich. This includes an entire suite of premiere geographic information systems products. Each of Skyhook's vendor technologies is chosen to serve a particular need. OmniSci's ability to map billions of data points on real-time interactive geo charts matched the company's unmet need. "We chose OmniSci for its speed and dependability in point mapping," adds Rich. "We use it heavily for visualization." Geospatial analysts, data scientists, and engineers at Skyhook all rely on OmniSci to rapidly present data both internally and to customers and clients.

"It's important that OmniSci is on the market," says Rich. "It gets our analysis closer to true."

Skyhook leverages OmniSci's advanced SQL engine to deliver exceptional, dependable performance to its users, despite the extreme size of its data. These users are able to visualize and interact with their data in ways that are familiar for 50k or 500k row data sets, but unthinkable for 50M or 500M row tables without OmniSci's GPU in-memory solution.

"With OmniSci, we can take much bigger gulps of data," argues Rich. These bigger gulps allow Skyhook to improve the quality of its point mapping. That accuracy is a boon to its customers seeking a competitive edge through geospatial insights. OmniSci helps Skyhook improve its relationship with these customers, who rely on the easy-to-use OmniSci Immerse dashboard to optimize advertising spend, conversion rates, and campaign performance.

"Data interactivity and customizable dashboards are everything to our clients," adds Rich. "We don't sell widgets. We develop relationships with our clients, because they each have a different set of use cases and requirements. OmniSci is malleable enough to meet those requirements."

OmniSci has an unexpected benefit for Skyhook as well. Though OmniSci is designed for datasets of extreme scale, the ease of ingestion and intuitive setup have made it preferable to geospatial applications designed for smaller data.

"I find myself frequently loading up small datasets in Immerse just to see if they're where they're supposed to be, to see if they pass the straight face test. Everybody's tools run fine against a few thousand records. But dropping a table into OmniSci is just as easy, or easier, and I can be interrogating the data in useful ways in seconds," adds Rich. "It seems silly to fire up the rocket just to ride into town, but Immerse makes OmniSci useful for the little stuff too."

The Watershed Moment in Geospatial Analytics

Rich jokes that OmniSci hasn't saved Skyhook any time. "We work the same amount of time, but now we can dive deeper into our data. We can provide much greater analytical depth to our customers."

"This is a watershed moment for geospatial analytics. OmniSci is probably the most important advance in the last 15 years for a geospatial analyst who needs to tear into very large data tables and get answers in real time. Accurately and quickly examining millions of features directly out of GPU, without the traditional pains of downsampling, or complexity of ingestion, is a sea change," concludes Rich.

Skyhook is now looking to expand its use of OmniSci and exploring additional ways it can integrate the technology into its product stack.

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About Skyhook

Skyhook, a Boston-based Liberty Broadband company, is a pioneer in location technology and intelligence. Skyhook provides a cloud-based, hybrid location system leveraging WiFi and cellular data through a massive glo-bal network. The company delivers real-time services and analytical insights to businesses across all industries to help increase customer retention and satisfaction, improve user experience, and provide actionable intel-ligence. The company is focused on delivering speed, precision, and practicality of location services with con-stant attention to and respect for individual privacy.

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