Hewlett Packard Enterprise

adMarketplace chooses HPE Vertica to drive search advertising success

How high-speed analytics powers a real-time bidding engine

Objective
Find data storage for real-time analytics engine

Approach
Evaluate vendors and find a fast, reliable analytics engine compatible with company's proprietary solution

IT Matters
- System loads nearly 2 TBs of data per hour into the Advertiser 3D's analytics engine
- Responds to 500 million search queries per day
- 95% of performance advertisers provide tracking data

Business Matters
- With the HPE Vertica analytics engine behind its flagship product, the company experienced 118% Performance Revenue Growth from FY 2012 to FY 2013 following the launch of its Advertiser 3D system in Q4 2012
- 60% of Google top spenders use adMarketplace as part of their search advertising strategy; system serves ads to over 100 million unique users per month
- Introduced the first programmatic marketplace for search advertising with the launch of BidSmart, allowing advertisers to bid algorithmically in real-time
- Solution increased leads for, e.g., Mazda by 38% and at a lower cost per KPI than Google's Search Partner Network

adMarketplace, a New York based ad-tech company, provides a search advertising marketplace for the more than 50% of internet searches that occur outside major search engines. Designed as the original search advertising engine for eBay, adMarketplace currently offers the largest search advertising solution of its kind outside of Google and Yahoo/Bing, as well as the first and only programmatic marketplace for search. adMarketplace uses HPE Vertica as the analytics engine behind its data and predictive ad platform to provide an end-to-end search advertising solution for major brands and publishers.

This combination of precision, flexibility and transparency gives adMarketplace a competitive edge, with performance-based power that lies at the heart of adMarketplace's Big Data model. adMarketplace uses HPE Vertica's clustered columnar data warehouse as their analytics engine, primarily because Vertica meets adMarketplace's stringent latency requirements for data analytics.

Most Advertiser 3D queries execute in less than two seconds, so advertisers can access their data in real time. adMarketplace also uses data stored in Vertica for their algorithmic bidding system, BidSmart, which predicts relevancy, competitive bid-landscape, and click value for advertisers.

"Our Big Data platform supports highly analytical customers working within a very data-intensive business. Companies that have near-real-time access to this data are the ones that win, especially when combined with an array of possible optimization actions."

— Mike Yudin, CTO, adMarketplace

The business of search advertising

A recent *Harvard Business Review* article explains the strength of search advertising by analyzing the effectiveness of ad spending by a "consumer electronics giant": "TV ate up 85% of the budget in one new-product campaign, whereas YouTube ads—a 6% slice of the budget—were nearly twice as effective at prompting online searches that led to purchases. And search ads, at 4% of the company's total advertising budget, generated 25% of sales."

Search partner network advertising is a form of "performance advertising," in which the goal is some form of transaction with an online consumer. In contrast to "brand advertising," where the goal is simply mind-share and brand awareness, performance advertising has the potential to produce immediate results for a business. An effective search ad will inspire customers to register for a newsletter, fill out a form, sign up for a test drive, or complete a purchase. These ads are only valuable if a user clicks on them, and compelling clicks is a mix of art and Big Data science.

adMarketplace displays effective ads by using a set of complex algorithms working in concert with Big Data analytics to present an offer tailored to an individual's tastes and interests. This service is provided to hundreds of advertisers through the algorithmic bidding and matching system BidSmart, which integrates with Advertiser 3D analytics data to ensure that ads are matched, displayed, analyzed, and recorded in real time.

"Our platform handles over a hundred million requests for ads per day, so where there's a spot on a website for an ad, that's the location of a real-time auction that occurs in milliseconds, based on user, location and device type," explains Mike Yudin, CTO for adMarketplace. "Each of these requests is matched to the millions of available ads and keywords, from hundreds of advertising companies."

The need for analytics

Advertiser 3D offers granular control over more parameters than adMarketplace's current competition, which not only makes it very powerful, but also underlies the critical need for Big Data analytics. The myriad combinations of keywords, user types, device types, and user locations creates massive volumes of data that must be collected and analyzed almost instantly. Algorithms automate the process, determining if a company wants to match a given keyword or user location. These decisions are made in 15 milliseconds to 20 milliseconds, and the most relevant ad is presented and displayed to the potential customer at the same moment that activity is reported back to the advertiser.

"If the user clicks on the ad, the match was a success; if the user performs a designated action, we report a conversion," says Yudin. "All of these granular data points become available on the client dashboards. At a top level, our customers see how much they've spent on adMarketplace, how many potential customers have converted, how much this has cost per click. Within our Advertiser 3D system, customers also have the ability to go deeper into a very granular view of the data, and the data storage that Vertica provides is critical for housing all that data."

So critical, in fact, that adMarketplace chose to develop its own data aggregation, transformation, and loading facility rather than using open source or commercially available products. "We needed something much faster than we could source elsewhere, so we built it ourselves." For the data analytics engine, they chose HPE Vertica. "Some companies will use Hadoop for data analysis, but the complex queries we need would take too many minutes to satisfy our algorithms and dashboards, which have very low latency requirements. Vertica is able to satisfy those requirements," Yudin explains.

Every hour, the Advertiser 3D system loads nearly two TBs of data into the analytics engine. adMarketplace's own, custom-built system, Advertiser 3D, processes these results for visualization, real-time optimization, and static reporting.

Results = more transparency, more control

adMarketplace developed Advertiser 3D to provide more transparency and control than other search advertising platforms. "Our Big Data platform supports highly analytical customers working within a very data-intensive business," Yudin notes. "Companies that have near-real-time access to this data are the ones that win, especially when combined with an array of possible optimization actions."

Vertica helps adMarketplace accomplish real-time analytics and it meets Advertiser 3D's low latency requirements. For example, in Advertiser 3D, an account manager can click a button in the dashboard display to increase the price of a click from a Galaxy Note on a client's ad by 15%, and this new profile action will take effect within two minutes. "You just can't do this with static BI systems," Yudin says. "Traditionally, a business executive would have to pick up the phone and say, 'Joe, increase the bid by 15%.' That takes too long, and simply can't scale in this business." The algorithmic bidding platform BidSmart further optimizes this process by using predictive algorithms along with the data stored in Vertica to automate the bidding, thereby making the whole process more efficient.

Most importantly, adMarketplace customers are seeing results consistent with the HBR article noted above. Here are several examples:

Netflix
Netflix was looking to expand its reach outside of Google for its search advertising portfolio. With adMarketplace, Netflix bid strategically across multiple device types to capture interested users searching on non-branded terms for immediate access to their favorite shows and movies. On average, **mobile and tablet conversions grew by 36%**, month over month. With the ability to bid by traffic source, keyword, and device type, adMarketplace enabled Netflix to generate memberships from users searching on non-branded terms from any device, with the same lifetime value as Google AdWords.

Customer at a glance

Software
• HPE Vertica Analytics Platform

Lenovo

Limin Zhao, Global Paid Search Manager at Lenovo said, "I have been working with adMarketplace for about a year. These guys have done a really good job of driving incremental opportunities. Right now, my traffic percentage from adMarketplace in North America is about 7%. While Google and Bing have about 12%." In other words, **adMarketplace has been able to drive more than half the traffic that search behemoths Google and Bing** are able to drive.

Mazda

Garage Team Mazda partnered with adMarketplace to increase user engagement and lead generation via search syndication. Mazda tracked adMarketplace's performance using five Key Performance Indicators (KPIs): request a quote, locate closest dealer, search inventory, build your Mazda, and compare vehicles. To reach Mazda's campaign goals on both a national and local level, adMarketplace analysts optimized each KPI separately and determined that each geographic region behaves differently. After gathering sufficient, actionable performance data for each local campaign, analysts focused spending on top-performing traffic sources for each geographic region. **adMarketplace increased leads for Mazda by 38% at a lower cost per KPI** than Google's Search Partner Network.

Innovation on tap, for the high-speed online marketplace

adMarketplace's Advertiser 3D grants advertisers a level of control that is unprecedented in the search advertising industry. They can see everything that's going on in their account, and they can make or suggest changes. Advertisers have the ability to optimize across tens of thousands of traffic sources and price and match differently on each traffic source—and the results of these adjustments occur in milliseconds-long bid/price/match events, thousands of times each day.

These real time optimizations would not be possible without the high speed analytics provided by HPE Vertica. adMarketplace was the first company to allow advertisers to separate bids by phone, tablet, and desktop, and differentiate between browsers. This type of precision requires powerful data storage, and adMarketplace's decision to partner with HPE Vertica is a strong testament to Vertica's capabilities in high speed data analysis.

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