

AdAction Drives Ad-Serving Performance with Membase Server

SUMMARY

AdAction, a leader in the ad-serving business, tracks consumer behavior online and delivers the right advertisements to the right people at the right time. To achieve this, the company must store massive amounts of consumer data – for roughly 75 million consumers each month – and be able to access it, analyze it, and ultimately serve up highly targeted online ads – all in real time. Finding their initial server-side solutions too unstable, slow and complex, AdAction deployed Membase Server running on Ubuntu 10.04 Server Edition. The combined solution enables AdAction to consistently exceed customer service-level agreements (SLAs) for performance and uptime, while reducing administrative overheads – particularly as the volume of business grows.

CHALLENGE

Since 2002, AdAction has optimized internet marketing for companies such as American Express, Scandinavian Airlines, Volkswagen, Universal Pictures, Travelocity and many more. AdAction's core product provides ad-serving solutions for its customers. The company only earns revenue when customers' online ads convert to sales. To maximize revenues, AdAction must present consumers with highly targeted ads every time.

To make this possible, AdAction collects end-user profile data from consumers, and this user information is typically stored in cookies in browsers. However, there are some scenarios where that is not possible. "Often, people will disable cookies or the cookies simply grow too large for the browser," says Wouter de Bie, Systems Developer for AdAction, "In such cases, we store end users' cookies ourselves on our powerful server-side infrastructure and use them to inform ad-serving decisions."

AdAction needs to store and retrieve customer data at lightning speed to meet its SLA of serving 99.99% of ads in fewer than 100 milliseconds. "Low latency is critical for us – in fact, it's our primary objective," says de Bie, "Consumers should never have to wait for online content as our ads load. If they have to wait, they'll leave; if they leave, our customers lose sales and we lose revenue."

AdAction has used several NoSQL data management systems to store and retrieve the profile data used by its ad serving system. The most recent contender was Apache Cassandra, which AdAction deployed with hopes of supporting their latency goals and enabling automatic cluster expansion as user and data volumes increased. However, auto-expansion degraded performance and rebalancing was a non-trivial exercise. "Implementing and maintaining the Cassandra cluster was a nightmare, with lots of knobs and dials to deal with," says de Bie.

"We needed a system that was simpler to use and manage, capable of providing low latency and high throughput, and able to support our business at any scale," says de Bie, "Our future success is tied to our ability to deploy new nodes seamlessly on demand, with no downtime or time-consuming manual re-balancing."

i Since 2002 AdAction has optimized the internet marketing for companies such as American Express, Scandinavian Airlines, Volkswagen, Universal Pictures and Travelocity, among others, in Europe's Nordic region. AdAction's core product provides ad serving solutions for its customers. The company stores massive amounts of consumer data (from 75 million consumers each month) that needs to be accessed and analyzed, and ultimately serve up highly targeted online ads—all in real time. Moreover, AdAction's business model is "pay for performance" – the company earns revenue when their customers' ads convert to sales. To maximize revenues, AdAction must present consumers with highly targeted ads every time.

<http://www.adaction.se/>

RESULTS

Zero downtime

Ubuntu and Membase Server have provided zero downtime since they were deployed and service can be maintained if nodes fail or need to be replaced, or if the cluster is expanded. “If our service is interrupted, we can’t serve ads and we don’t get paid,” says de Bie, “By eliminating downtime altogether, Ubuntu and Membase help us deliver the best results for our clients and maximize our revenues.”

Reduced manual administration

Because Apache Cassandra quickly became unbalanced, nodes frequently went down. “As well as impacting on our ability to serve ads to end users, our technicians were forever working nights and weekends to deal with outages,” says de Bie, “Now, with Membase Server and Ubuntu Server, that’s a thing of the past.”

Membase Server’s simplicity was an added plus: a Membase Server cluster can be configured with just a few clicks in the user interface. “It’s fast and intuitive to install Membase Server on Ubuntu and our team needed no additional training after the swap over,” says de Bie, “It’s also very easy to monitor performance and see what’s going on inside the cluster, which wasn’t possible with the previous solution.”

Faster end-user experience

With Apache Cassandra, it typically took 40 to 50 milliseconds – and sometimes as much as 100 milliseconds – to retrieve the operational data, eating up a huge portion of the time budget allotted for serving up the ad. With the new solution, AdAction saw nearly a 10x improvement in data processing speed, ensuring plenty of headroom for the ad-serving logic to do its job.

Scalability and agility

When AdAction signs a new customer, the number of users grows as data volumes skyrocket. Now, the company can quickly expand its infrastructure and maintain excellent service levels. “Sometimes, our data increases by as much as 10% overnight,” says de Bie, “With Ubuntu and Membase Server, we can quickly push in new cluster nodes and have them up and running in no time, with no downtime and no impact on performance.”

Rapid deployment

AdAction was able to migrate to Membase Server quickly and easily in phases over just two weeks. “We started off by running Membase in parallel to Apache Cassandra to minimize risk,” says de Bie, “When we were ready, we simply fed our data into the new system and carried on working.”

Low total cost of ownership

Ubuntu Server is completely free to download and deploy. What’s more, Membase Server and Ubuntu are compatible with cost-effective, commoditised hardware, minimizing the total cost of ownership for the AdAction solution.

“Wouter de Bie, systems developer for AdAction, says “We needed a system that is simple to use and manage, provides low latency and high throughput, and expands to support our business at any scale. Our future success is tied to our ability to deploy new Membase Server nodes seamlessly, on demand, with no downtime or time-consuming manual re-balancing. The new infrastructure using enables us to deliver on our promise – highly targeted ads served within 100 milliseconds 99.99% of the time. As a result, we are delivering a consistently excellent service for our clients and their end customers.”

“Johan Stille, system developer at AdAction, says “When it comes to serving ads, time is money, so AdAction requires the highest availability and lowest latency to meet our obligations. Membase Server provides fast and reliable performance for our millions of users. We no longer have to worry about working odd hours to restart cluster nodes and we can easily scale operations when traffic increases dramatically overnight.”

Who we are

COUCHBASE

ABOUT COUCHBASE

Couchbase Couchbase is the name of the new NoSQL database company and product family created through the merger of CouchOne and Membase. Couchbase products, which are built on Apache CouchDB, Membase, and memcached open source software, represent the most comprehensive family of data management solutions for building scalable web and mobile applications, with indexing, flexible querying and ease of use that developers love; and elastic clustering, robust storage management and consistently high performance relied on by system administrators and operators. Couchbase is a privately held company funded by Accel Partners, Mayfield Fund, North Bridge Venture Partners and Redpoint Ventures.

ABOUT MEMBASE SERVER

Membase Server is a distributed key-value NoSQL database optimized for the data management needs of interactive web applications. Its API is a superset of memcached, the most widely deployed distributed key-value caching technology for web applications. But Membase goes well beyond in-memory-only caching to scale out and support live cluster topology changes while continuing to service data operations without performance degradation. Membase Server is also ultra fast and absolutely consistent. No wonder it has become the most popular choice for ops teams looking for a practical approach to NoSQL adoption.

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