Oracle Data Cloud

Data management platform handles 500,000 requests per second on Oracle Cloud Infrastructure

Oracle Data Cloud (ODC) provides the world's largest cloud-based data management platform for marketing, which helps enterprises personalize online, offline, and mobile marketing campaigns with richer and more actionable information about targeted audiences. The platform is used by top retailers, consumer packaged goods, and automotive industry, and has moved its sizable infrastructure to Oracle Cloud Infrastructure.

Unifying infrastructure with Oracle

The web front-end "Targeting Servers" are custom Linux-based applications that process billions of requests per day. Because the application includes support for businesses serving web pages to customers in real time, the workload is very sensitive to latency. A customer delayed could be a customer lost.

More than 200 data providers and a network of over 15 million worldwide domains aggregate more than 50,000 categories for more than 5 billion global IDs. That results in 7.5 trillion data points collected monthly. The infrastructure handles 43 billion API calls per day, each of which is evaluated against tens of thousands of campaigns. This involves thousands of servers and petabytes of data

The back-end includes a Hadoop cluster that reads & stores 30 Billion Kafka messages each day, while the pipeline aggregates & summarizes logs, with 300 TB read and 150TB written per day, with 11 petabytes of total back-end storage.

ODC includes several acquisitions, based on various technologies. Accordingly, part of the integration process involved replatforming from several other leading cloud providers to improve performance and control costs.

The benefits of a new platform – both planned and unforeseen

A portion of ODC was previously deployed on a bare metal solution from another vendor, with thousands of physical servers across three regions in North America. Server deployments and network configurations required submitting a ticket, and waiting 24 hours or longer. The new deployment consists of 2,200 bare metal compute instances.

During the replatforming, the team discovered they could improve the architecture of the product to leverage the performance of NVMe SSD local storage, available to them for the first time on Oracle Cloud Infrastructure.

"Thousands of servers with over 20 petabytes of data handing 43 billion request per day –our deployment is a large one. Oracle Cloud Infrastructure handles it all with aplomb."

- Matt Abrams, VP Engineering, Oracle Data Cloud

WHY ORACLE?

- Consolidated from 3 datacenters down to 2 Oracle Cloud regions
- Three Availability Domains in each region help ensure uptime
- Rapid deployments – up to 750 servers in less than 12 minutes

ORACLE

The new infrastructure handles over 500,000 requests per second at an average latency of under 50 milliseconds. Oracle's breadth of compute options – from small VMs to very large bare metal servers, 25 Gbps networking infrastructure, Load Balancer, DNS, and Availability Domains enabled the ODC team to seamlessly migrate and operate one of the largest data platforms in the ad-tech industry.

"When you're processing 500,000 requests per second, any downtime impacts a lot of customers. Our former environment didn't provide availability domains to help us improve availability at the time. On Oracle Cloud Infrastructure we're using availability domains within each region to run highly reliable workloads with the availability our customers demand," said Matt Abrams, VP Engineering, Oracle Data Cloud.

Security was also a concern. Running directly on bare metal servers avoids "noisy neighbor" problems that might impact performance, and ensures no one else's code is running on the hardware. The procedures Oracle uses to securely erase NVMe drives and other storage helps ensure data security.

"Oracle Cloud Infrastructure hardware is simply on another level. From the bare metal servers with NVMe SSD drives to the network backbone. We obtain fabulous performance with very low latency for our end customers. Dense I/O compute instances with 25GBps bandwidth and millions of both read and write IOPS is a game changer for big data workloads like ours," said Matt Abrams.

Speed of deployment also saw a big improvement. The team often spins up and tears down compute instances. At one point during the project, the team was able to deploy 750 servers in less than 12 minutes on Oracle Cloud Infrastructure. They now do development, test, and production in the cloud utilizing a high velocity development approach style with continuous integration.

SOLUTION

- Oracle Database Cloud Service
- Oracle Cloud Infrastructure Compute - bare metal and virtual machine compute instances
- Oracle Cloud Infrastructure Load Balancing
- Oracle Cloud Infrastructure FastConnect

About Oracle Data Cloud

Oracle Data Cloud helps the world's leading marketers and publishers deliver better results by reaching the right audiences, measuring the impact of their campaigns, and improving their digital strategies. By leveraging $5 trillion in consumer purchasing data, we help marketers connect their ads with sales. Oracle Data Cloud also operates the world's largest data marketplace, powered by more than 15 million websites in our global network and more than 1,500 online and offline data providers. The Oracle ID Graph connects more than two billion consumers around the world across their devices each month. Our brands include AddThis, BlueKai, Crosswise, Datalogix and Moat.

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