



NUCLEUS
RESEARCH

THE OPERATIONAL VALUE OF ORACLE HEATWAVE

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THE BOTTOM LINE

Nucleus interviewed multiple organizations using Oracle HeatWave and found a 30 times improvement in processing time in OLAP queries and 100 times for hybrid OLTP/OLAP queries. HeatWave's ability to process hundreds of terabytes of data enables customers to keep their data consolidated in one data management system, reducing complexity and data transfer processes. HeatWave's high-performance and unified data platform directly translates into cost savings for customers by eliminating the need for separate analytic databases, complex and time-consuming ETL processes to move data between databases, potential egress costs, and reducing the computing power used per hour for data processing.

OVERVIEW

With the exponential increase in the scale of data that companies collect and utilize, there is an ever-growing need to process data quickly for both storage and analysis. The data processing landscape is evolving as organizations seek to consolidate their data workloads and improve efficiency. Traditionally, customers relied on separate databases for Online Transaction Processing (OLTP) and Online Analytical Processing (OLAP), requiring costly data migration between systems to meet analytical and transactional needs. This fragmented approach not only raises expenses but also creates inefficiencies, as organizations seek to handle real-time data at scale. Companies are now prioritizing solutions that can manage both OLTP and OLAP workloads within a single platform to reduce complexity and improve cost efficiency. Oracle HeatWave MySQL is positioned as a solution designed to meet these modern data processing needs by offering an integrated platform that allows organizations to perform both transactional and analytical tasks in a consolidated database.

**100x faster processing
time in hybrid
OLTP/OLAP query**

ORACLE HEATWAVE

Oracle HeatWave provides automated, integrated, and secure generative AI and machine learning in one cloud service for transactions and lakehouse scale analytics. The HeatWave data processing engine implements algorithms for distributed query processing that provides high-end performance. Using HeatWave MySQL, organizations can run OLTP and OLAP workloads in a single database, instead of the typically required separate databases model, eliminating the need to move data between systems for analytical and transactional processes. This consolidation combined with the rapid processing speeds of HeatWave provides customers with the ability to manage and conduct analytics on real time data, while also reducing operational complexity and costs. HeatWave MySQL is designed to empower organizations of all sizes, enabling them to scale their data effectively by employing its quick and unified data processing capabilities. In addition, HeatWave customers can take advantage of integrated machine learning, lakehouse, and generative AI capabilities in one cloud service. They can gain insights from all their data, improve productivity, and rapidly build new innovative applications leveraging AI.

KEY BENEFITS

Oracle HeatWave customers experience increased query performance together with reduced complexity and costs. They also benefit from integrated machine learning, lakehouse, generative AI capabilities.

QUERY PERFORMANCE

Nucleus found customers using HeatWave MySQL have seen a 30 to 100 times reduction in processing time for OLAP and hybrid OLTP/OLAP queries. These performance improvements enable new use cases that require lower latency and allow customers to run more complex queries in less time. Additionally, the enhanced efficiency both accelerates data processing and reduces the cost of running existing queries, resulting in better performance at a reduced cost. One large public entity interviewed by Nucleus reported a 97 percent cost reduction in OLAP queries. This combination of speed and cost-effectiveness enables organizations to gain greater value from their data analytic operations.

INTEGRATED ML, LAKEHOUSE, GENERATIVE AI, AND AUTOMATION

HeatWave enables organizations to integrate machine learning, build lakehouses, and incorporate generative AI using all their data with HeatWave AutoML, HeatWave Lakehouse, and HeatWave GenAI. The built-in HeatWave Autopilot provides workload-aware, machine learning-powered automation, boosting the productivity of developers and DBAs while further improving performance. Employing these built-in HeatWave capabilities customers can automate complex tasks, streamline decision-making processes, optimize operations, and accelerate innovation at no additional cost. This results in improved efficiency for organizations and their customers, helping enhance customer experiences while providing faster, more accessible data insights.

ELIMINATED EGRESS COSTS, REDUCED COMPLEXITY, AND CLOUD CHOICE

HeatWave eliminates egress costs for customers by offering the flexibility to use the platform in multiple cloud environments, including Oracle Cloud Infrastructure (OCI), Amazon Web Services (AWS), and Microsoft Azure. For example, this multi-cloud compatibility enables AWS customers to seamlessly deploy their applications and HeatWave natively in AWS, eliminating the typically high costs associated with transferring data from AWS to another cloud provider. Multi-cloud options allow customers to simplify data management operations. Reducing complexity across the data estate also decreases the employee costs that come with fragmented databases, such as the larger and more skilled workforce that is required to manage such systems.

CUSTOMER PROFILES

INDEPENDENT SOFTWARE PROVIDER

Nucleus interviewed an independent software vendor that provides data analysis and customer experience monitoring software to businesses that offer free WiFi. Dealing with substantial amounts of data—database tables with 70 million rows of data points—the company needed to find a way to query their vast databases quickly. Before implementing HeatWave, the company did not have the ability to query data as quickly as they needed. They considered other options such as SingleStore, Amazon Redshift, and HeatWave, and ultimately decided to proceed with HeatWave. This choice was due to the avoidance of having to modify their existing database, being able to have a single database for Online Transaction Processing (OLTP) and Online Analytical Processing (OLAP), and the availability of HeatWave natively on AWS eliminating data egress fees.

After implementing HeatWave and its built-in HeatWave AutoML functionality, the company was able to better identify WiFi router placement and leverage machine learning. Using HeatWave AutoML they could determine if users of a businesses' free WiFi were actually customers by rapidly analyzing the location and strength of the connection data. With this enhanced insight, they could then implement security measures to only allow a business's actual customers to connect to their WiFi and keep bystanders or other nearby business employees off.

GOVERNMENT TRUST FUND

A major national government-backed trust fund that provides credit guarantees to financial institutions lending to micro and small enterprises needed to find a way to increase their data querying performance, data manageability, and reduce the overall cost of their data systems. A few options considered included SingleStore and HeatWave but the customer decided on implementing HeatWave due to the lower cost and simplicity of not having to migrate their data, since they were already using Oracle Cloud Infrastructure. Since the adoption of HeatWave this government-backed trust fund has seen a 30 times improvement in OLAP query performance. This enabled new use cases that require lower latency and reduced the cost of existing OLAP queries by 97 percent. Also, HeatWave has enabled them to integrate machine learning to provide deeper insights on their vast amount of data.

**97 percent reduced
cost in OLAP queries**

LOOKING AHEAD

Oracle HeatWave customers have seen immediate improvements in query processing speeds for OLTP and OLAP. In the evolving world of data analytics and continuously rising data collection sizes, there is a significant need to provide low latency operations and real-time analytics, to reduce the use of outdated data, and improve scalability. These swift processing speeds directly reduce costs as most data services charge on a computing power used per hour basis, providing organizations with the ability to employ the savings elsewhere.

In addition, HeatWave's seamless integration of machine learning and generative AI capabilities along with transactions and analytics across databases and data lakes, enables companies to innovate with AI while keeping their data consolidated. Being able to keep and analyze all your data in one place helps reduce costs and data management complexity. We are expecting to see companies continuously shift in this direction due to these realized benefits. With the unified platform that HeatWave provides, Oracle continues to bolster itself in the data and AI markets. Along with Oracle's competitive database offerings, providing a data processing system with high-end performance that reduces costs further positions Oracle to capture market share and be a competitive choice for businesses.