by Alexei Balaganski | September 2022

The HeatWave is Spreading

Just over a month ago, I wrote about the **partnership between Oracle Cloud and Microsoft Azure** that has finally enabled their customers to create "properly multi-cloud" applications without any hidden costs or limitations of earlier architectures. Well, unfortunately, announcements like that aren't heard often, simply because the very idea of such partnerships goes against cloud service providers' traditional business interests. This obviously has worked remarkably well for Oracle and Microsoft, but at least to a certain extent because there is no rivalry between them in these areas, where they are traditionally strong. Connecting a business application running on Azure to a database backend on OCI is a win-win situation for both companies, and their customers can reap the benefits of that, too.

What if multi-cloud is not an option?

Unfortunately, this approach won't necessarily be as successful with other potential partners. Take AWS, for example. The company offers a massive range of database services: over 15 purpose-built database engines for different data models and business use cases. Some of them compete directly with Oracle's core products like the Oracle Database and MySQL. The rivalry between the companies has a long and quite bitter history. I can only imagine that establishing a mutually beneficial partnership here might take a few more years…

However, what are the ordinary customers supposed to do? In my last blog post I casually mentioned that "you can run SAP on AWS or Oracle on Azure," as if it was somehow an inferior alternative to the real multi-cloud. Yes, it is usually not a fully managed service and is more difficult to set up, maintain, and operate than a native cloud service from the appropriate vendor. However, when no other options are available, this still can be a very sensible solution for many potential use cases. Provided, of course, that the vendor hasn't cut any corners when migrating their service to the competitor's cloud and there is some kind of feature parity guarantee between different deployment options.

Some vendors might go even further and design their products in an entirely cloud-agnostic way – those can be deployed to any cloud, and their customers can just choose where their tenant will be spun up. This approach has obvious advantages, but also one big downside: by design, it is created for the lowest common denominator across all supported clouds, not optimized for any particular cloud, and with no

support for native services each CSP offers – such as identity, observability, or security, for example. This might work for some scenarios (Kubernetes is an example of a great success) but will fall short in others. I firmly believe that databases belong to the latter – ensuring the highest degree of performance, data protection, and regulatory compliance is not possible without strong optimization and native service integrations for a specific cloud provider.

What is MySQL HeatWave?

MySQL HeatWave is a managed database service created by Oracle that extends the standard MySQL engine with support for in-database high-performance transactional workloads, analytics, machine learning, and automation. Simply put, it can transparently **make an existing MySQL database 1000x faster** without any effort from the customer and avoid ETLs across databases. We've already reviewed the service about a year ago, when it was announced publicly, but the company continued to add new features to provide customers with a scalable, robust offering and make optimizations for enhanced performance ever since.

For example, with support for real-time elasticity and compression, MySQL HeatWave is now suitable for even larger (or smaller) data volumes. And auto-reload and auto-recovery capabilities ensure consistent availability even after upgrades or failures. But most importantly, **MySQL HeatWave is now also available on AWS in addition to OCI**.

If the mountain will not come to Muhammad…

How exactly does it work? Well, as an old proverb goes, "If the mountain will not come to Muhammad, then Muhammad must go to the mountain". While many customers of AWS do migrate to OCI to run MySQL HeatWave, for many customers this can be expensive due to high AWS egress fees. To accommodate such customers, the MySQL HeatWave service is offered as a native AWS service. The data plane, control plane, and interactive console are optimized and deployed on AWS infrastructure as a fully managed service supported by the MySQL engineering team. Through the new interactive console, users can issue queries, monitor performance and resource utilization, manage Autopilot, and access their AWS account.

Customers can provision a new MySQL HeatWave instance on AWS with a few clicks with a similar user experience as on OCI before, but at all times, their data and network traffic will be confined to the AWS cloud, with the expected low latency for any application running there as well. Oracle refers to this as a "native experience." I'm not sure if I can agree with this statement, since HeatWave isn't (yet?) integrated into the AWS console, and there is no consolidated support and billing like Oracle offers with Azure. However, it works with AWS CloudWatch, S3, PrivateLink and we can expect it to be integrated with a growing number of other native AWS services in the future.

Oracle claims that MySQL HeatWave runs 20x faster than Amazon Redshift (which is AWS's own managed PostgreSQL service and running on AWS' own infrastructure). However, as an analyst focused on cybersecurity and data protection, I'm more interested in the fact that HeatWave is a fully self-contained database service – there is no need to move data between different database engines to support analytics or machine-learning workloads. This feature alone has massive **security and**

compliance benefits. In addition, Oracle has brought advanced security features to MySQL HeatWave on AWS such as data masking, de-identification, asymmetric encryption support, and MySQL firewall, making sensitive data even more secure—all within the database.

The availability of MySQL HeatWave on AWS is great news for everyone dreaming of the future where cloud providers eliminate walls between each other and make their services available wherever customers want them. HeatWave offers users a unique combination of the familiar MySQL experience with Oracle's latest developments in machine learning, automation, and security. Now all this is available for AWS customers not only without the latency and data egress overhead and fees of a multi-cloud architecture, but also with the ability for customers to tightly integrate with existing AWS services. The HeatWave is spreading; it's available on OCI, AWS, and will next be available on Azure. With so many cloud choices—as well as an on-premises cloud deployment option with Dedicated Region – what's not to like?

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