What Autonomous Database Does for Developers

Oracle recently announced the move toward autonomy for its flagship database product, Oracle Database. This change is a whole new direction in self-driving, self-securing, and self-repairing databases. For decades, Oracle Database has remained the best database on the planet. It provides state-of-the-art enterprise functionality for the needs of the biggest systems that run the world. Oracle Database is the only database that offers functionalities like fully online changes to the data model, real-time monitoring of workloads, rolling patching of database clusters, and sophisticated tuning advisors that tell the user how to get the best performance out of the system. All of these innovations might not seem important at the beginning of a new project, but they prove to be invaluable for running massive and/or mission-critical systems. These features and many more are the reason why Oracle Database is the number one choice for more than 400,000 companies worldwide that trust it to run their most critical workloads. Financial institutions, hospitals, telecommunications, airlines, nuclear power plants, governments, militaries, research — they all rely on Oracle Database.

SO WHAT IS DIFFERENT ABOUT ORACLE AUTONOMOUS DATABASE?

It is the *self* in *self-driving, self-securing,* and *self-repairing*. Albeit Oracle Database has had many features for years, which help automate repetitive tasks and optimizing workloads. Until now, it was left to the user to act on many of these recommendations. With Oracle Autonomous Database, Oracle is going the next step to let the database itself decide what steps to perform for the best of the user's workload and data. Machine learning algorithms are used to help the database to decide how to tune a workload, how to secure the data, and how to take counter measures to preserve the agreed-on SLA levels. This kind of functionality is nothing new when it comes to the SQL query optimizer, for example, which makes choices in how to access the data for the best performance by itself.

WHY IS THE STEP TO AUTONOMOUS IMPORTANT FOR DEVELOPERS?

With the database being autonomous, bad surprises are a thing of the past. Developers no longer have to worry about whether their database will perform. Or miss an important security fix that leaves the database and data inside it vulnerable. They no longer have to be concerned about whether or not they will achieve the agreed-on performance goals on the day the system is going live.

Oracle Autonomous Database sets new standards for the time it takes to provision and create a database environment. What used to take minutes or even hours is now done in a few seconds, with just some simple clicks or an API call.

Traditionally, developers had to think carefully about the shape and size of their database when creating it. Changing these requirements later on was practically impossible, yet getting them wrong could be a serious threat to SLAs and future growth. Oracle Autonomous Database introduces a new industry standard when it comes to elasticity, making hard-to-predict up-front sizing exercises a thing of the past. In an autonomous database environment, developers can, at any point in time, change the shape of the environment, fully online and with **no interruption** to the workload. If there is a need for more processing power—whether for a minute, an hour, a day—no problem. The environment can be instantly scaled up and, when the larger capacity is no longer needed, also scaled down again without any downtime. The database itself will be fully aware of the changes in capacity and will reoptimize and tune the workloads accordingly, with no interventions needed. Oracle Autonomous Database allows developers to scale processing power and storage capacity independently**.** Whether there is demand for more CPUs or the need for more storage, developers can scale these independently to the needs of their applications and are no longer tied to scale up to the next service level and interrupt their workload.

Thanks to Oracle Autonomous Database, developers can finally fully concentrate on the applications they write and the business's requirements, rather than having to think about the data tier.

WHY ORACLE AUTONOMOUS DATABASE?

Oracle Autonomous Database provides the most advanced SQL engine on the planet. It complies with the latest ISO SQL standard, making it not only the most comprehensive database, but also the most open one. It supports highly sophisticated analytics alongside and with no impact on OLTP workloads, eliminating the need to develop and orchestrate complex, fragile, and inconsistent data movement between different specialized data stores. Oracle's SQL engine ships with integrated machine learning algorithms and allows developers to easily apply them on the data directly, hence moving the computation to the data—rather than having to pull the data out of the database and perform the calculation within the application. Using this capability, developers can create real-time prediction models directly on the data itself and act on insights more quickly and easily than ever before. Oracle Autonomous Database supports fully consistent data with ACID transaction guarantees and consistent queries. This greatly simplifies application development compared to NoSQL stores. Native JSON support makes up a cornerstone for flexible schema support and Internet of Things (IoT) workloads, enabling developers to simply load JSON documents into the database natively and analyze them later on, with the full power of Oracle SQL. Oracle's PL/SQL engine is yet another powerful tool for bringing computations to the data and providing an easy and standardized interface to them via simple SQL function or procedure calls. Interfaces such as REST allow for easy communication and integration with Oracle Autonomous Database. These can be created automatically on top of tables, as well as stored procedures, giving developers the flexibility on how and what data to expose to consuming services.

CONCLUSION

Oracle Autonomous Database sets a new level for modern data management requirements. Its comprehensive and advanced SQL capabilities enable developers to get the most out of their data more efficiently than ever before. Instant provisioning, full elasticity in both directions, and built-in autonomy make Oracle Autonomous Database the perfect platform to handle any workload. Oracle Autonomous Database is now the simplest and the most powerful data management system in the world, enabling developers to build new applications quicker and easier than with any other NoSQL or relational database solution.

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