

MARKET NOTE

Oracle Autonomous Transaction Processing: Foolproofing the Database

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EXECUTIVE SNAPSHOT

FIGURE 1

Executive Snapshot: Oracle Autonomous Transaction Processing Announcement

This IDC Market Note reviews the content of Oracle Corp.'s announcement regarding the availability of the Oracle Autonomous Database Service for transactions, called Oracle Autonomous Transaction Processing (ATP). The announcement was made at Oracle headquarters in the conference center at 350 Oracle Parkway in Redwood Shores, California. The announcement was made by Oracle's cofounder, executive chairman, and chief technology officer Larry Ellison. It detailed the expansion of the Oracle Autonomous Database Cloud Service to include transaction processing in addition to data warehouse management.

Key Takeaways

- At Oracle OpenWorld 2017, Oracle announced the availability of Oracle Autonomous Data Warehouse (ADW), an Oracle Cloud service. It features self-tuning, self-healing, and automated patching, driven and refined by machine learning (ML) processes. This announcement represents the next phase.
- Oracle has announced a corresponding service, called Oracle Autonomous Transaction Processing, for OLTP support. It also features ML-driven self-tuning, self-healing, and operational optimization and immediate automatic security patch application. The patching function does not interrupt service.
- Like the data warehouse service, ATP is platformed on Exadata, but that detail is not significant to the user. The physical environment is uniform and optimized for databases, enabling Oracle to provide nonstop maintenance by moving workloads around while systems are being upgraded or patches are being applied.
- Oracle argues that ATP delivers three key benefits to users: relief of all operational activity, including systems management; relief of the DBA from all database tuning and troubleshooting, allowing the DBA to concentrate on higher-value application enhancement; and the automated and immediate application of security patches ensures that the database always has the latest protection, eliminating operational delays and human error in the process.

Source: IDC, 2018

IN THIS MARKET NOTE

This IDC Market Note reviews the content of Oracle's announcement regarding the availability of the Oracle Autonomous Database Service for transaction processing, called Oracle Autonomous Transaction Processing. The announcement was held at the Oracle Corporate Conference Center at 350 Oracle Parkway in Redwood Shores, California, on August 7, 2018. In attendance were select customers, analysts, and members of the press.

The announcement was made by Larry Ellison and was followed by the testimony of a panel of customers of the existing Oracle Autonomous Database Service, known as Oracle Autonomous Data Warehouse.

In his talk, Ellison announced the availability of ATP and highlighted its key benefits to users. These benefits include the following:

- The database can be set up by a development team with no detailed technical knowledge, indeed no knowledge at all, regarding how to allocate resources and initialize the database; those things are all done automatically. Ellison stated that this capability overcomes a major advantage that NoSQL products have had in attracting new developer teams.
- It is "truly elastic" – you pay only for what you use. In fact, Ellison asserts that this system satisfies a key requirement of a "serverless" database: while no one is using the database, no hardware resources are allocated to it, so it can scale down to zero servers.
- Ellison pointed to various studies showing much higher performance for Oracle Database generally, which is why even Oracle competitors depend on Oracle Database for their internal transaction processing.
- The combination of the Exadata as a physical platform – with its easy-to-manage interconnects, tuned and optimized by machine learning – is what make this service continuously available, even when being maintained, and continuously improving its performance.
- Automatic threat detection and automatic nonstop security patching make this system much safer from a security perspective than any manually managed system. Ellison pointed out that most of the time, users defer the application of security patches because they are disruptive operationally, can force outages, and are prone to human error. He pointed to a study that showed that 85% of database breaches took place well after the relevant vulnerability had appeared in a published common vulnerabilities and exposures (CVE) report.
- Ellison reminded us that, with Database Vault, Oracle Database offers protection from access to data by people with DBA privileges, unlike other database systems.

Ellison also pointed out that this service could be run either in the Oracle Cloud datacenter or in the user's datacenter within an Oracle Cloud-managed appliance called Oracle Cloud@Customer.

After Ellison's announcement, the user panel took the stage, moderated by Steve Daheb, senior vice president of the Oracle Cloud Business Group. The panel included Connie Santilli, vice president of Engineering and Operations at Gap Inc., Fakir Nooruddin, VP and chief architect also at Gap, David VanWiggeren, CEO of Drop Tank, a customer loyalty program service for gas stations, and Marc Caruso, CTO at Data Intensity, a firm that offers data management consultancy services with a special emphasis on cloud deployment. Although no one is using ATP in production, Nooruddin indicated very good results in testing, and all the panelists were very happy with the ADW service. Caruso said that

ADW requires only half of the resources demanded formerly by their data warehouse and delivers five times the performance experienced previously.

IDC'S POINT OF VIEW

ADW and ATP are examples of autonomic computing; that is, computing systems that are self-managing, self-tuning, and self-healing. Such functionality is hard to achieve in the database realm because databases are so complex, with many factors that affect operation and performance and can cause service degradation or failure. Ellison's choice to call these services "autonomous" arises from his desire to see this capability linked with that of self-driving cars, which are also called "autonomous" and which have captured the public imagination.

ADW, announced last fall at Oracle OpenWorld, represented a considerable achievement in this area, adding to the normal range of autonomic capabilities such as self-tuning and continuous self-improvement through the use of ML. With this ATP announcement, Oracle has introduced a considerably higher and more difficult level of autonomic function by applying it to transaction processing. This is because, even though OLTP databases are typically smaller and somewhat simpler than data warehouses, their content is constantly changing, and transaction throughput is a major performance metric. So now the automated tuning must take into account the activity associated with insert, update, and delete; the activity associated with index maintenance as data changes; and the impact of resource and lock contention. Also, OLTP systems usually have complex workloads that include reporting and batch in addition to conventional transactions.

Assuming that the claims made in this announcement are true and that a full, large-scale production OLTP database can operate on ATP with as good or better performance than can be achieved by expert DBAs and can do so without requiring any human intervention whatsoever, this product represents a major achievement in the history of database management. It is important for Oracle that this be so because it, along with the pay-as-you-go charging model, would provide a major argument for nearly all existing Oracle Database customers to move to the Oracle Cloud and neutralize complaints regarding the charging models of the past. It would also prove very attractive to smaller prospects looking to build up their database capacity that are not in a position to scale up a corresponding operational and DBA staff to support it.

This is a "bet the business" move by Oracle, and time alone will reveal if the bet will pay off.

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Related Research

- *Worldwide Relational Database Management Systems Forecast, 2018-2022* (IDC #US44076818, July 2018)
- *Worldwide Relational Database Management Systems Software Market Shares, 2017: The Race to the Cloud* (IDC #US43992318, June 2018)
- *SQL at Scale: Mixed-Mode RDBMSs That Rival NoSQL Scalability* (IDC #US43640618, March 2018)
- *Oracle's Autonomous Database: AI-Based Automation for Database Management and Operations* (IDC #US43571317, February 2018)
- *Cloud Database Adoption Trends* (IDC #US42074617, November 2017)

Synopsis

This IDC Market Note reviews the content of Oracle's announcement regarding the availability of the Oracle Autonomous Database Service for transaction processing, called Oracle Autonomous Transaction Processing (ATP). It includes a summary of the announcement and event contents along with analysis and commentary.

"ADW, announced last fall at Oracle OpenWorld, represented a considerable achievement in this area, adding to the normal range of autonomic capabilities that of self-tuning and continuous self-improvement through the use of ML," says Carl Olofson, research vice president for Data Management Software research at IDC. "With this ATP announcement, Oracle has introduced a considerably higher and more difficult level of autonomic function by applying it to transaction processing."

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