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Autonomous
Database

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The Rise of the Strategic DBA

Innovate rather than Administrate

For decades, the database has been at the heart of the technology stack for most businesses. As data takes on greater and greater importance, having comprehensive database technology is at the top of the CIO agenda—and, increasingly, on the CEO radar as well. Some of these executives see the potential of Oracle Autonomous Database, which utilizes artificial intelligence (AI) and machine learning (ML) technologies to bring a high degree of automation to routine administrative tasks. This puts database administrators (DBAs) at an interesting inflection point. These technology professionals have always had to deal with shifting technology, and adjust to increasing automation, from Automated Storage Management to Real Application Clusters to engineered systems. Now, with the transition to Oracle Autonomous Database, generic database and infrastructure tasks—such as provisioning new databases, upgrading or patching existing databases, and making backups—are no longer necessary.

Clearly, working with an autonomous database will require an adjustment. But while some DBAs may be unsure about an incursion into their traditional administrative domain, others see the potential to liberate themselves from routine maintenance tasks so they can focus on new business initiatives. This ipaper combines expert insights with first-hand accounts from DBAs and other IT professionals who see the wisdom of embracing autonomous database technology. You will hear from master DBAs, database product experts, and Oracle ACE Directors—top-tier advocates who engage closely with Oracle and are well versed in the Oracle Database roadmap. As you will see, Oracle Autonomous Database is not an assault on your career; it's an opportunity to shed mundane responsibilities and embrace positive change.

"The illiterate of the 21st century will not be those who cannot read and write, but those who cannot learn, unlearn, and relearn."

—De'Onn Griffin,
Research Director, Gartner[1]

[1]De'Onn Griffin and Mark Coleman, "How We Will Work in 2028," Gartner, Inc., February 27, 2018, gartner.com/doc/3861479/work- (registration required).

Expert Insight

With the advent of a self-driving database that automates provisioning, scaling, performance tuning, backups, availability, and security, many database administrators are wondering what is left for them to do. We asked five experts to weigh in.

—Jim Czuprynski,
Data Enterprise Architect,
Zero Defect Computing

—Maria Colgan,
Master Product Manager,
Oracle

—Mark Rittman,
CEO, JR Analytics

—Michelle Malcher,
Data Security Architect,
Extreme Scale Solutions

—Francisco Alvarez,
Director of Innovation,
Data Intensity

Jim Czuprynski

"Fewer knobs to turn isn't a bad thing. A lot of DBAs are scared of autonomous. But I see it as a force multiplier."

—Jim Czuprynski,
Data Enterprise Architect, Zero Defect Computing

Read the complete article, "A Veteran DBA's Insights On Oracle's New Autonomous Data Warehouse." →

Jim Czuprynski has been testing Oracle Autonomous Data Warehouse with some relatively small test databases, and he is getting ready to try it with larger databases that contain billions of rows—and possibly on dozens of Oracle Exadata systems within a financial data center. "I'm ready to take Oracle Autonomous Database to the next level," he explains. "We are using the TPC-DS decision-support schema for data warehousing, and we want to see how it responds to different partitioning schemes, both for performance and Information Lifecycle Management purposes."

As an experienced database architect, Oracle ACE Director, and author of several books on Oracle Database technology, Czuprynski maintains that automating routine database operations is a good thing because there is less for DBAs to screw up. For example, Oracle Database 18*c* can intelligently compress data that hasn't been touched in days or weeks or even months. When running on an Oracle Exadata system, it uses Hybrid Columnar Compression and heat mapping to predict what the database instance should do.

Yet even more important than eliminating human error, Oracle Autonomous Database frees IT professionals to focus on things that they never had time to work on before, such as helping developers build better applications and making sure the IT department meets its service level agreements. They can build better systems, better processes, and more-agile development techniques so that systems don't get called back once they reach production mode. They can devise better ways to predict how information systems will perform during normal conditions, peak conditions, and outlier conditions.

"We can finally get the DBA out of the back room and into the forefront of design," Czuprynski told a reporter at Forbes. "But we can't do that if we are spending the majority of our time worrying about turning knobs. DBAs who have been embracing database technologies such as visual interfaces and advanced monitoring tools will see the opportunity in taking the next step of automating the database maintenance work."

Maria Colgan

"A DBA's knowledge of data sources, formats, and policies is in high demand by data scientists and business analysts. With less time spent managing databases and more time helping the company use data to innovate, DBAs can become valuable partners for developers and business leaders."

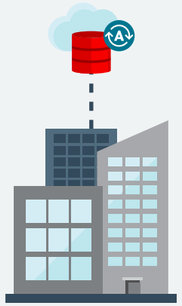
—Maria Colgan,
Master Product Manager, Oracle

Today's enterprises have more in-house developers than ever before, and they all need access to data and database services. As these enterprises transition to autonomous services, DBAs will spend less time provisioning, patching, and tuning databases, and more time helping developers understand how to maximize the potential of what the database can do, which makes everybody more efficient.

As Maria Colgan pointed out in an interview with *Oracle Magazine*, DBAs can create value by making more data available to more people, along with managing security. Enterprises still need experts who understand where the data lives, what the data represents, and which people and applications should receive access to that information. As machine learning becomes more prevalent, the DBA role will evolve even further, enabling DBAs to transition to data engineers who can advise stakeholders about how to use data to drive the business forward. "DBAs working with Oracle Autonomous Database are going to become more involved with their development teams and work hand in hand with them, as well as with the business, to execute more projects, reduce backlogs, and get more value from their company's data," she says.

Read the complete article, "Self-Driving Databases Are Coming: What Next for DBAs?" →

Mark Rittman



"If companies want to compete with startups, they need to move at the same speed. Oracle Autonomous Data Warehouse completely removes the friction for people in the organization who want to think up ideas and do data analysis, particularly people leading innovation projects and doing data science work."

—Mark Rittman, CEO, MJR Analytics

Overworked DBAs can't always find time to architect and deploy a new data warehouse. Oracle Autonomous Database handles these essential tasks in seconds, in response to a few simple prompts. To use Oracle Autonomous Data Warehouse, an analyst simply specifies the size, name, and use of the database. A complete Oracle database will be provisioned within a minute, optimized for data warehousing. A pay-as-you-go pricing model makes enterprise-scale analytics capabilities available to all types and sizes of businesses, from startup ventures to Fortune companies.

As Mark Rittman points out, Oracle's new database gives these organizations the scale, security, and predictability they're used to, but without needing to involve a DBA for the basic repeatable stuff. However, these technology professionals still have an important role to play by helping business professionals discern trends and patterns, bringing in public data or data from a data-as-a-service company, as well as connecting outside analytics tools. "It just gets out of the way and lets you work immediately," Rittman says. "It's about agility, grabbing cloud-based resources and analytical tools, and scaling up without having to build database architectures or maintain hardware."

Read the complete article, "How a Big Business Can Use an Autonomous Database to Move Like a Startup." →

Michelle Malcher

"Now you can run all available security features of the database by default."

—Michelle Malcher,
Data Security Architect, Extreme Scale Solutions

According to Michelle Malcher, a data security architect at Extreme Scale Solutions, as well as an Oracle ACE Director for database security, Oracle Autonomous Database eliminates much of the effort involved in securing data. This cloud-based service puts routine security operations on autopilot, including encrypting data and applying security patches. In addition, Oracle's advanced cloud-based security and management services can intelligently collect and analyze operational and security data from multiple applications, databases, and clouds. This enables enterprises to automatically detect anomalous activities, monitor user risk scores, and introduce adaptive controls for additional layers of defense.

While Malcher considers autonomous patching to be the "killer app" of Oracle's new database service, she believes it is just one of many comprehensive security capabilities of Oracle Autonomous Database, which automatically runs essential security features by default, including encryption, backups, and Oracle Database Vault. "Because there are no humans involved, you avoid exploitable mistakes in the setup," she says.

This security posture is further improved by managing the database with log monitoring and machine learning in Oracle Cloud. For example, the database automatically notices if data is moved or permissions are changed unexpectedly. Machine-learning algorithms deliver insights to streamline diagnostics, capacity planning, operational forecasting, and business analytics. "It learns patterns of behavior over time," Malcher adds.

Read the complete article, "What an Autonomous Database Means to Me." →

Franciso Alvarez

"DBAs are no longer merely database administrators, but are morphing into database architects. If you want to become more successful and competitive in the market, you need to understand architectural design, cloud, networks, storage, licensing, versioning, automation, and much more. The more knowledge you have, the better opportunities you will find."

—Francisco Alvarez,
Director of Innovation, Data Intensity

For the past 10 years, Francisco Alvarez has been advising DBAs to automate what he calls "business as usual" tasks and to concentrate on becoming as proactive as possible. Especially in a world of autonomous technologies, he thinks DBAs should focus on important projects such as security, performance tuning, high availability, migrations, and upgrades. "Many DBAs spend their time as 'firefighters'—fixing problems and responding to user requests—rather than doing proactive work," he notes.

Alvarez, who is active in several Oracle User Group communities, believes successful DBAs adopt the following skills and habits:

Business skills:

- A professional attitude: Always think positive and always look for solutions
- A willingness to do research: Investigate, search the internet, read manuals
- A desire to innovate: Don't wait for others to do your job, learn to become a leader
- The ability to communicate: Learn how to communicate effectively, but first learn to listen

Technology skills:

- Become familiar with several RDBMS technologies (such as MySQL, SQL Server, DB2, etc.) and NoSQL technologies (including Cassandra, Druid, HBase, and MongoDB)
- Focus on availability (including recovering backups and documenting disaster plans)
- Learn on how to review and implement security operations
- Be open to new technologies (such as Kafka, microservices, containers, and virtualization)
- Learn about XML, Java, Python, PHP, HTML, Linux, Unix, and Windows scripting
- Learn how to architect, deploy, and maintain cloud environments (IaaS, DBaaS, PaaS and SaaS)

Read the blog, "The Forgotten Link to the Cloud." →

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10 Ways to Advance Your Career in an Era of Autonomous Database Technology →

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