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Oracle Research Perspective

The Rise of the Next-Generation Cloud

Oracle research perspective on the global cloud challenges in 2020, investments and adoption plans for the next five years.



Like mobile computing and the internet, the cloud is one of those transformational technologies that has forever changed the way we live, work, and communicate. To discover how pervasive cloud computing has become, and to gain insight into the investments, benefits, and gaps seen to date, Oracle commissioned Longitude to consolidate and analyze insights from 1,150 senior executives in 19 countries, gathered during one of the most volatile years in recent history. The top-level insights were revealing:

- More than half of the businesses surveyed had migrated most or all of their crucial workloads to the cloud
- More than two-thirds said that cloud native deployments are integral to their competitiveness
- One quarter of these businesses deployed an autonomous database, and another third view autonomous database technology as a strategic priority

[Download the research report](#)

Longitude also learned about some of the frustrations with first-generation clouds. While early cloud offerings set a new course for the industry, these cloud services have not kept up with modern demands for cloud native application development, nor can they easily accommodate all applications and workload types.

The cost models popular with first-generation clouds are also problematic because they require users in effect to rent servers and storage devices—and to pay for those resources even when they are not in use.

Welcome to the next generation

First-generation clouds have proven their ability to improve scalability, lower costs, and streamline the deployment of new business applications.

With their promise of autonomous capabilities, next-generation clouds do much more.

Oracle's next-generation cloud has been architected for modern application development and deployment. All layers of the technology stack—including compute, network, storage, database, and applications—have been engineered to work together.



Autonomous systems: eliminating human error and manual labor

As data continues to gain value, some of the most important cloud advancements center around creating automated database-management systems. 32 percent of the respondents to the survey said they look to the cloud to optimize their data-management and analytics practices—and automation is a plus. So it’s no surprise that an important feature of a next-generation cloud is its support for autonomous systems that are intelligent, self-governing, and powered by AI and machine learning (ML) technology.

Since Oracle launched Oracle Autonomous Database over two years ago, it has been widely recognized for its automated patching, scaling, and configuration. These capabilities have liberated technology professionals from mundane administrative tasks, as they demonstrated the true power and potential of autonomous technology to businesses. Without the constraints of database management, senior IT decision makers have become strategic contributors to their organizations to help drive innovation. “Self-driving, self-securing, and self-repairing” has become the mantra of the modern database administrator.

Oracle has been simplifying the management, tuning, and administration of Oracle Database for decades, and many of the sophisticated technologies designed to streamline activities for DBAs are now fully automated. Oracle Autonomous Database is now the linchpin of Oracle’s next-generation cloud.

In addition to simplifying database-management activities, autonomous technologies impact every part of Oracle’s cloud technology stack:

- At the **application layer**, Oracle is infusing AI and machine learning (ML) technologies into its analytics offerings and SaaS apps. These cloud services not only automatically identify patterns and correlations in your data, but explain the insights in simple terms.
- At the **platform layer**, Oracle is adding autonomous capabilities to its database, security platform, management utilities, and operating system. For example, Oracle Autonomous Linux continuously detects exploits, tracks and remediates operating-system vulnerabilities, and patches the OS while it’s running. Oracle Autonomous Database can automatically provision, configure, tune, scale, patch, encrypt, and repair databases while they are online.
- At the **infrastructure layer**, Oracle Cloud Infrastructure serves as the foundation for Oracle Cloud, delivering exceptional performance, consistently lower costs, and easier cloud migration for existing on-premises applications.

At Oracle, autonomous technology has one overriding goal: to make IT projects faster, easier, and more secure than ever before. Autonomous technologies impact every aspect of IT operations and play a decisive role in all cloud services.

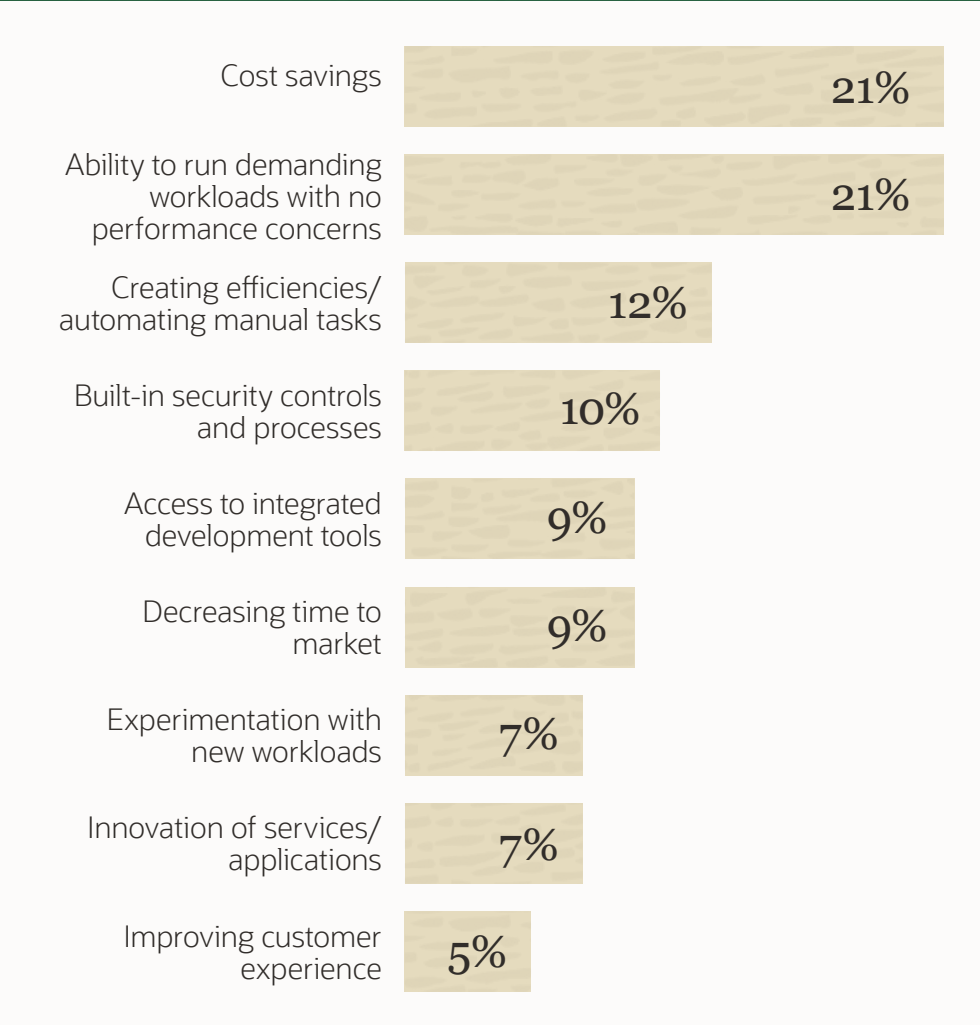


Figure 1 – Primary motivations for using autonomous technologies.
Source: “2020: Cloud Accelerated with Urgency,” an Oracle research report commissioned with Longitude.
Note: Due to rounding, numbers do not add up to exactly 100%.



Cloud native application development and deployment

According to the research, another important facet of a next-generation cloud is its support for a cloud native application architecture. This enables applications to be developed and deployed directly in the cloud using technologies such as microservices, containers, and autoprovisioning.

Cloud native tools enable digital innovations that are fundamental to advanced analytics, mobile apps, and chatbots. DevOps practices remove most of the management tasks associated with maintaining a complex software platform. Software development, deployment, and testing activities reside in the cloud and can be expanded or contracted at will.

More than two-thirds of the survey respondents believe that shifting their applications, DevOps, and workloads to a cloud native architecture is integral to their firms' competitiveness. The "cloud leader" firms in the Longitude study ranked integrated DevOps as the key shift that will enhance their cloud capabilities in the years ahead.

Automated security

Security used to be a hindrance to cloud adoption, but with a growing number of employees now working remotely, making it a priority is key. Now, more than half of the firms in the survey reported that their cybersecurity profile has improved with their cloud deployments, and 63 percent said the cloud environment has improved their protection from cyberattacks.

Oracle Autonomous Database applies security updates automatically. Data is encrypted automatically, on disk as well as on backups. Other Oracle Database technologies mask sensitive data from developers and QA professionals. For example, when applications make calls to the database, sensitive data can be redacted or removed so that unauthorized users can't see it or access it.

Oracle Cloud Infrastructure is designed for *least privilege*—meaning each region is a separate network, with no sharing of resources among networks. Oracle Cloud receives extensive certifications and accreditations designed to protect services, information, and data. Database firewalls monitor and block SQL injection attacks and privilege escalations. Multitenant capabilities ensure that customer data can be sequestered and maintained separately from other customer data.

From the silicon to the firmware to the operating system to the applications and databases, always-on security is woven into the fabric of Oracle's next-generation cloud.

According to the Oracle and KPMG Cloud Threat Report 2020, 87 percent of IT professionals see AI and ML capabilities as a must-have for new security purchases.¹ Oracle Autonomous Database works in harmony with other security technologies to protect against threats and maintain up-to-date security configurations.

Oracle Cloud uses AI technology to automatically detect, investigate, and remediate a broad range of security threats. It can identify patterns in the data, detect security risk indicators based on predefined threat models, and recognize abnormal events. These automated capabilities bring greater visibility and intelligence to cybersecurity activities, and because they're continuously running, they offer greater reliability..

Oracle Cloud learns what constitutes typical behavior for each application, user, and device, and then defines baselines against which deviations can be measured. For example, if the database suspects that somebody's legitimate account credentials have been hacked, it can take action to lock out that user or minimize the impact of a security breach.

¹Oracle, "Oracle and KPMG Cloud Threat Report 2020," <https://www.oracle.com/security/cloud-threat-report-2020.html>



Better price performance

Is your cloud truly “pay as you go”? Can you scale, compute, and utilize storage resources on demand, independently?

Within Oracle’s next-generation cloud, Oracle dynamically manages the allocation of resources based on each customer’s moment-to-moment needs. Customers can spin up new cloud instances in minutes, eliminating the need to provision, build, and manage in-house compute, network, and storage systems. Oracle’s next-generation cloud runs faster and scales more easily, which makes it more affordable.

Now it’s your turn to be a cloud leader

Many forward-looking organizations are discovering the value of Oracle’s next-generation cloud. What do these organizations have in common? According to the findings of our research with Longitude, cloud leaders are:

- Ahead in developing applications in a cloud environment
- At a clear advantage in adopting technologies, including an autonomous database
- More advanced in their use of AI and ML

- More likely to have moved all crucial workloads to the cloud
- More likely to use ML and data-science capabilities to enhance their cloud operations

The right cloud solution enables continuous innovation so you can be the change-maker your organization needs. Oracle's next-generation cloud runs the most demanding workloads autonomously with unmatched security, performance, and cost savings to make data and cloud the engine of business agility.

While first-generation clouds claim to offer flexible, pay-as-you-go pricing, a head-to-head comparison reveals that Oracle Cloud is consistently less expensive for popular cloud workloads, mainly due to lower networking egress charges and better price performance for compute and memory resources—particularly for high-performance workloads.

Source: Oracle, "Oracle Cloud Infrastructure vs AWS", oracle.com/cloud/economics.



To gain more insights into the unique capabilities of a next-generation cloud—including the investments cloud leaders are expected to make between now and 2025—download the **“Cloud Accelerated with Urgency”** report. You'll learn how companies like yours used the latest cloud technology to adapt to unprecedented change in an uncertain year.

“As we move from one generation of computing to the next, our goal is to protect your investment in data and applications and make it easy to move into the next generation. We did that with Gen 2 Cloud.”

Larry Ellison, Oracle Executive Chairman and CTO

And to learn about a true enterprise-ready, next-generation cloud, visit **oracle.com/cloud**

