



# How Next-Generation Cloud Paves the Way to the 'Digital First' Enterprise

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***The goal for forward-thinking CIOs:***  
faster time to business insight by running their most demanding workloads predictably and securely



## **PART 1:** *Introducing Next-Generation Cloud*

**As IT leaders look to run** mission-critical workloads in the cloud, they are most often challenged by the current first-generation cloud capabilities that were built on decade-old technology, where performance, security, and migration options were afterthoughts. First-generation clouds were principally aimed at two types of customers: those building new businesses on a cloud-native foundation and those shifting non-essential workloads from on-premises deployment.

Because the cloud is now the default platform for running nearly every new enterprise software application, it is increasingly the first choice for production workloads as well. Gartner **forecasts** that the worldwide public cloud market will reach \$331 billion in 2022, with infrastructure services growing at an annual rate of 27.5%, faster than any other segment of the market. Cisco **predicts** that 94% of enterprise workloads will be processed by cloud data centers by 2021. And an **IDG Research survey** of 550 IT decision-makers found that 38% said they're considering migrating all applications and infrastructure to the cloud.

As the cloud has gone mainstream, the weaknesses of first-generation clouds and business models have been exposed, creating concerns for CIOs that cloud platforms are neither robust nor secure enough to merit their mission-critical business. A **Deloitte survey** found that the majority of cloud workloads are still non-mission-critical applications. Among the top concerns CIOs often cite about moving more aggressively to the cloud are data migration challenges, security requirements, and application optimization. CIOs unquestionably want to make the move but fear that they will lose the flexibility and control that their on-premises environments provide.

The workloads under consideration for cloud migration today are also more complex than those of just a few years ago.

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“The number of variables we’re dealing with today is very different,” says Isaac Sacolick, president of StarCIO, a consultancy that helps organizations achieve digital transformation. “Some companies want to move fast and experiment, while others need to focus on compliance while operating in 30 geographies with petabytes of data.”

These demands have given rise to a next-generation cloud, built and optimized specifically to help enterprises run their most demanding workloads predictably and securely. A next-generation cloud is the foundation of a “digital first” strategy that puts data at the center of all business decisions and customer interactions. Becoming digital-first is an essential step toward achieving the ultimate goal of digital transformation.

The need for new platforms to support these initiatives is clear. IDG’s latest **Digital Business** study found that 91% of organizations have adopted, or plan to adopt, a digital-first business strategy.

The top drivers of digital business strategies include creating better customer experiences (cited by 67% of the respondents), improving process efficiency through automation (53%), and driving new revenue (48%). Among the emerging technologies and solutions that most interest enterprise CIOs are 5G wireless networks, artificial intelligence/machine learning, augmented reality, and the Internet of Things.

Next-generation cloud platforms promise to deliver on their demands through **five critical functions**.

**Protect existing investments.** Many enterprises have decades’ worth of investments in on-premises technology that they have no interest in abandoning. Cloud providers must offer bare-metal options that give enterprises the opportunity to move their existing investments to new platforms that take advantage of the scalability, automation, and management features of cloud services.

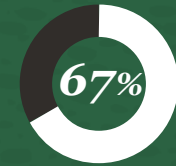
**World-class security.** Most first-generation clouds operate under a shared responsibility model in which customers assume the full burden of protecting data and maintaining applications. This understandably concerns IT executives who are expected to secure their critical applications and data without having on-site control. A next-generation cloud is built with end-to-end encryption, security controls at every layer of the operating stack, configurable identity management, and fully transparent reporting.

**Fast and predictable performance.** All layers of infrastructure—including processors, storage, operating systems, databases, and networks—need to be integrated and aligned toward achieving the highest-possible performance levels. Many first-generation cloud platforms relied upon commodity servers and piecemeal collections of infrastructure components that worked together unpredictably, thereby degrading performance and making them poorly suited for mission-critical workloads.

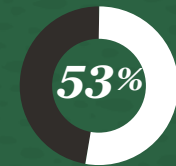
**Enterprise expertise.** Large corporations have distinct needs in areas such as data migration, systems management, data protection, interoperability, and performance. First-generation cloud providers focused mainly upon rapid delivery of infrastructure. Today, professional services and rich partner ecosystems are table stakes for any cloud provider serving enterprise customers. “CIOs are not just looking for inexpensive compute but partners to help them optimize costs over time,” says Sacolick.

**Openness.** This goes beyond using open-source software. Next-generation clouds should also adhere to de facto standards that make it easy for customers to move and manage workloads, orchestrate them across hybrid and multiple clouds, and apply automation consistently.

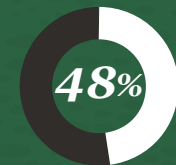
## Top Drivers of Digital Business Strategies



CREATING BETTER CUSTOMER EXPERIENCES



IMPROVING PROCESS EFFICIENCY THROUGH AUTOMATION



DRIVING NEW REVENUE

### AREAS OF MOST INTEREST



5G WIRELESS NETWORKS



ARTIFICIAL INTELLIGENCE/MACHINE LEARNING



AUGMENTED REALITY



THE INTERNET OF THINGS





## PART 2: CIO Strategic Priorities for 2020

**In 2003 the Harvard Business Review** published a controversial essay by Nicholas Carr entitled “**IT Doesn’t Matter**,” which made the case that the evolution of information technology was following a pattern similar to that of railroads and electric power. While early adopters gained some competitive advantage from using new technology, Carr argued, those infrastructure components invariably became invisible commodities that were essential but not strategic.

In retrospect, that argument appears almost absurd. IT is now not only a major source of competitive advantage in nearly every market but also the lifeblood of web-scale companies that are reshaping the retail, transportation, and hospitality industries, among others. This transformation of the IT function demonstrates how much technology has reshaped the business landscape in just a few years.

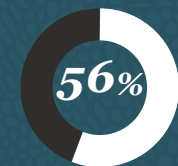
The growing centrality of IT to business strategy is supported by research such as IDG’s **2020 State of the CIO survey**.

- **95%** of responding CIOs say **their role is expanding** beyond traditional IT responsibilities.
- **56%** are **more involved in leading** digital transformation initiatives than their business counterparts, up from 47% a year earlier.
- **57%** see their role as **being a strategic advisor**.
- **78%** say they are **communicating with boards of directors** more than ever.
- **57%** manage a team tasked with **revenue generation** or serve as an active member of a revenue-generating group.
- **67%** say that creating new revenue-generating initiatives is among their job responsibilities.

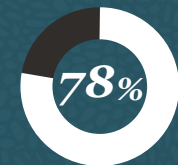
### 2020 State of the CIO Survey



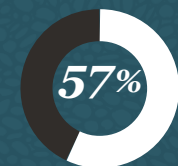
ROLE IS EXPANDING BEYOND  
TRADITIONAL IT RESPONSIBILITIES



MORE INVOLVED IN LEADING  
DIGITAL TRANSFORMATION

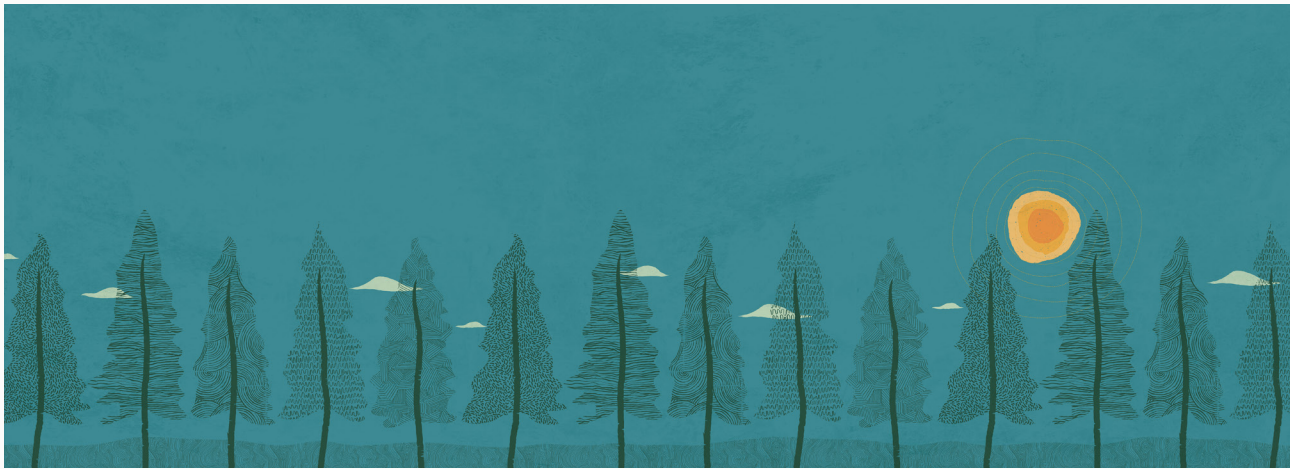


COMMUNICATING MORE WITH  
BOARDS OF DIRECTORS



MANAGE A TEAM TASKED WITH  
REVENUE GENERATION





“I feel strongly that this next generation of CIOs are business leaders first and technologists second,” says Jay Ferro, CIO of concrete manufacturer Quikrete. “The burden is on us to embed ourselves where we can add the most value.”

Ferro advocates getting IT staff out into the field to meet customers and see how they interact with the organization, and then bring that knowledge back to the applications they build. “It’s important for IT to really understand how your organization makes money and services customers,” he says.

As IT leaders take on more strategic roles, they are eagerly shedding traditional caretaker tasks associated with maintaining data centers and patching software. This is one of the important dynamics driving cloud adoption. But the value of the cloud is increasingly being regarded as far greater than just relieving monotony.

Cloud platforms are now valued as enablers of business agility. Customers use them to rapidly prototype and test new ideas without the cost and delay of provisioning hardware and installing software. Cloud infrastructure gives them the ability to scale computing resources up and down as needed without incurring large fixed costs. Cloud-native development tools enable new applications to be developed with features such as limitless scalability, automation, and portability built in.

“Cloud providers give me a level of agility that our own internal staff couldn’t provide,” Ferro says. “We’re not a technology company.”

Equally important is that cloud infrastructure and SaaS platforms give customers access to a wide range of ecosystem partners that innovate on top of the underlying platform. Customers can take advantage of this functionality to extend or customize applications on a pay-as-you-go basis, greatly accelerating the innovation process.

All these factors are central to creating data-centric businesses and laying the path to digital transformation. However, enterprises still face some imposing challenges on their journey to the cloud.

***“I feel strongly that this next generation of CIOs are business leaders first and technologists second. The burden is on us to embed ourselves where we can add the most value.”***

***— Jay Ferro, CIO of concrete manufacturer Quikrete***





### **PART 3:** *Top Enterprise Challenges Hindering Cloud Adoption*

**In its recent report, “Moving Beyond ‘as a Service’ with Cloud 2.0,”** analyst firm Ovum found that global enterprises are moving more slowly toward adopting the public cloud than small and midsize enterprises (SMEs) while continuing to invest a larger percentage of their IT budgets in on-premises infrastructure in a quest for the right balance of cost savings and control. The firm found that whereas only 10% of SMEs report that infrastructure spending will increase by 6% or more in the coming 12 months, nearly one-quarter of global enterprises plan such increases.

Large firms face more obstacles than small ones in navigating the course toward new technology paradigms. Many are heavily siloed due to acquisitions or legacy lines of business. Some long-term employees resist change that they see as a threat to their influence or even their job. Cloud adoption also requires new skills that many organizations don’t have in-house.

Ovum found that people factors are a far bigger impediment to cloud adoption than technology issues, with 45% of respondents citing skills shortages and cultural resistance as their biggest challenges. That was closely followed by lack of organizational readiness for change, concerns about trusting cloud providers to minimize business risk, and the ability of their people to understand the cloud’s impact.

Quikrete’s Ferro says he’s seen those issues come up in the past year.

“You run into the attitude that the cloud is the Wild West; it’s scary, and we can trust our team more,” he says.

Business users also struggle with the shift from capital to operational budgeting and data ownership. The answer isn’t to shift all responsibility to the cloud provider but to make IT the first line of defense.

**“You run into the attitude that the cloud is the Wild West; it’s scary, and we can trust our team more.”**

**— Jay Ferro, CIO of concrete manufacturer Quikrete**



“The IT department needs to still be on top of things, even if workloads are somewhere else,” Ferro says.

Many of the skills issues can be addressed through automation. Although all cloud infrastructure providers apply automation to the tasks of provisioning and managing infrastructure, there are significant differences in the degree of integration between those tools as well as with business applications. As the cloud infrastructure market has grown, some providers have adopted open-source or commercial third-party software on a case-by-case basis, resulting in a patchwork of automation. They promote this multiplicity of options as customer choice, but customers don't always want choice. In many cases, they want an integrated stack that works reliably and doesn't require extensive customization or fine-tuning.

Next-generation cloud infrastructure is based on automation at every layer, including databases, applications, and security. Equally important is that the approach to automation is unified to give customers a single point of control. Patches are automatically applied, and performance tuning is transparent to the user. Security is automated from data encryption to issues detection, network segmentation, and even network infrastructure. This enables IT professionals to focus on enabling end users to handle more of their reporting needs rather than on patching and troubleshooting.

The second highest-rated challenge—organizational readiness—is best addressed through organizational transparency and clearly defined roles and responsibilities.

“Where organizations fail is when the processes are too complex and involved, while the people are unclear on the exact role they are being asked to perform,” writes Ovum's Roy Illsley.

Cloud platforms provide a consistent framework and toolset for performing tasks across an organization. In much the same way that enterprise resource planning resets the foundation upon which organizations operate, cloud platforms reduce complexity and simplify choices. When organizations make well-reasoned platform and architecture selections, applying automation wherever possible, and migrating in stages at a comfortable speed, disruption can be minimized.

Trusting cloud providers to minimize business risk, which was the third most highly rated barrier to cloud adoption identified by Ovum, is growing in importance as organizations move more critical workloads to the cloud and seek to take advantage of the full range of services available there. IDG's “2020 State of the CIO” survey found that 89% of IT leaders say they increasingly need to rely upon trusted advisors to help them navigate new technologies, processes, and methodologies. Ovum found that 53% of IT executives put reputation as a top criterion in vendor selection.

However, cloud platform providers still have some work to do in this area. Despite the industry's rapid growth, customers often complain that vendors aren't fully transparent with them.

- **Egress fees**, which are surcharges that some cloud providers impose on customers for moving data off their platforms, are seen by many customers as unwarranted penalties that offer no corresponding value. Egress fees can add thousands of dollars to the cost of moving a customer's own data to a different platform.

***“Where organizations fail is when the processes are too complex and involved, while the people are unclear on the exact role they are being asked to perform.”***

***— Roy Illsley, analyst at analyst firm Ovum***



- A related concern is **lock-in**, or the fear that a customer will become too dependent on a particular cloud provider's infrastructure and thus be unable to shift workloads elsewhere. Lock-in concern is one of the major reasons customers hedge their bets and spread workloads across multiple clouds, **according to Gartner**.
- **Complex contracts, hidden surcharges, and failure to alert customers to costly oversights** such as unused instances are among the reasons 35% of cloud spending is wasted, **according to Flexera**. Its "2019 State of the Cloud Report" found that managing cloud spending was the #1 challenge of enterprises using the cloud, with 84% reporting it as an issue.
- **The shared security responsibility model** used by some cloud providers has been a point of confusion for many customers. The model delegates responsibility for application and data security to customers, but the terms are often misunderstood. A **survey** by Enterprise Management Associates found that 53% of IT and security professionals erroneously believed that cloud platform providers assume most or all of the responsibility for security. Some CIOs think that in the rush to grow their businesses, first-generation cloud providers delegated too much responsibility to the customer and paid too little attention to education. "Cloud companies should be accountable for educating engineers about what buttons to push," Sacolick says. "They should provide robust environments but also protect the data."
- In a related issue, cloud providers' sometimes **poorly documented configuration controls and inconsistency in alerting customers to misconfiguration problems** led to inadvertent data exposures totaling more than 3.2 billion records in the first half of 2019 alone, up 54% from the previous year, according to **Risk Based Security**.

- Many customers have **only a vague understanding** of what cloud providers do with their data. A **survey** by the Independent Oracle Users Group found that 58% of respondents don't know if providers access their data, and only 38% are confident that they will be notified of security breaches.

Some of these failures can be chalked up to growing pains, but they collectively give customers pause about moving mission-critical workloads into an environment they don't fully control or even understand. Openness, trust, and accountability are essential to the success of a next-generation cloud.

"Transparency is a cloud provider's best friend," Ferro says. Working with vendors should be no different than any other type of commerce. "When you buy a car or a home or even clothes for your kids, you want a frictionless experience," he says. "The cloud should be no different."

CIOs' preference for doing business with a small number of trusted partners is evidenced by the fact that most enterprise technology markets are dominated by one or two players. These companies have earned the loyalty of their customers over years of experience. Cloud providers need to clearly articulate to customers the cost of using their services as well as any additional extra service charges. Customers should have 24 x 7 support from engineers who have the expertise to solve their problems. Contracts should be unambiguous, and surcharges clearly explained. Most importantly, cloud providers should provide constant feedback to customers about costs and opportunities for savings.

*Openness, trust, and accountability are essential to the success of the next-generation cloud.*







## PART 4: Security Priorities Dominate Cloud Decisions

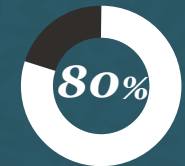
**Despite the \$124 billion** that **Gartner estimates** organizations spent on cybersecurity in 2019, it was the **worst year ever** for data breaches. Traditional approaches to perimeter defense are proving less and less effective as perimeters become less well-defined, a problem that the profusion of cloud services has exacerbated. For example, a contractor accessing an enterprise SaaS solution from a coffee shop never touches the corporate perimeter but still accesses corporate data.

Also, having to contend with a shortage of skilled security professionals that is approaching crisis proportions, many organizations feel less capable than ever to stop intruders. A recent **global survey** of 1,900 senior IT decision-makers and IT security professionals by CrowdStrike found that it takes organizations an average of 162 hours to detect and fully contain a cyber incident, and that 80% of respondents admitted that they were unable to prevent intruders from accessing critical data within the past 12 months. It's not surprising, then, that only 47% of IT leaders are highly confident in the security of the data their organization holds, according to **an Oracle survey**.

### Cybersecurity snapshot



**162 hours**  
TO DETECT AND FULLY CONTAIN  
A CYBER INCIDENT



**80%**  
ADMITTED THAT THEY WERE  
UNABLE TO PREVENT  
INTRUDERS FROM ACCESSING  
CRITICAL DATA



**AND ONLY**  
**47%**  
**ARE HIGHLY CONFIDENT IN**  
**THE SECURITY OF THEIR DATA**





IDG's **"2019 Security Priorities Study"** documented how attitudes toward security are changing. Attention is turning from fighting fires to enforcing best practices and complying with regulations. Although perimeter defenses remain in place, organizations are actively researching such new practices as zero trust, deception technology, and behavioral analysis, which focus either on locking down access or detecting and containing intruders before they can do any damage.

Respondents also indicated that they need to do a better job of addressing security during application development, employee on-boarding, testing new technology, and improving communication between the security organization and lines of business.

Top priorities for the next 12 months include better protecting confidential and sensitive data, increasing security awareness programs, and boosting overall corporate resiliency. Many are also looking to make better use of data and analytics to understand what is transpiring on their networks.

The security of cloud platforms has long been a question among IT leaders. Although many now agree that cloud infrastructure is at least as secure as on-premises environments, there are natural concerns that handing stewardship of data over to a third party is inherently risky. Although cloud providers have invested extensively in security, the black-box nature of some controls, combined with the misconfiguration risks noted earlier, still hold some organizations back from migrating sensitive workloads.

The SANS Institute's **"2019 Cloud Security Survey"** found that security issues still dominate concerns related to the use of public cloud for business applications. Among the biggest reservations IT managers expressed were unauthorized access by outsiders, lack of visibility into where data is being processed, unauthorized access by other cloud tenants, and inability to respond to incidents. More than one-quarter of the respondents have been the victim of misconfigurations or poorly configured interfaces or APIs, which are technically outside of the provider's domain under the shared responsibility model, but which many customers believe should be part of the base service. The potential consequences of human errors in the cloud are seen by some as a vulnerability because most public cloud infrastructure is shared.

***Security issues still dominate concerns related to the use of public cloud for business applications.***





## **PART 5:** *How Oracle Cloud Infrastructure Enables the Digital-First Enterprise*

**The business models redefining** entire industries today wouldn't be possible without the cloud. These innovations are resetting customer expectations and driving every business to be more nimble, responsive, and personalized.

Consider next-day order delivery, a standard part of the online buying experience that was either impossible or prohibitively expensive just a few years ago. A customer's order triggers an inventory lookup, generates a pick order, and simultaneously notifies a delivery service for pickup. A tracking application pinpoints the location of the package at each scan point or even in route using GPS data. Customers can monitor the status of their orders along the way and receive text notifications or even photos of their packages when they reach the front door.

A process with so many moving parts would be economically impractical for nearly any organization to build on its own. Thanks to the cloud, however, online retailers can now order up similar capabilities as a service.

Cloud computing has also given birth to an entirely new class of companies that are based entirely on innovative uses of data. For example, **Credit Karma** offers free credit monitoring and financial management services to consumers, including tax preparation, monitoring of unclaimed property databases, and services to find and dispute credit reporting errors. It accomplishes this by tapping into a multitude of data sources and applying cloud-based analytics and messaging services to deliver personalized experiences to millions of customers.

Ride-sharing services, a market that is **expected to reach \$220 billion by 2025**, have almost no physical assets but create value by assimilating data from millions of devices in the cloud and delivering personal experiences to each customer. GPS navigation software does the same thing for users in their vehicles. All the data collection, processing, and transmission uses cloud platforms.

*Consider next-day order delivery, a standard part of the online buying experience that was either impossible or prohibitively expensive just a few years ago.*



But the value of the cloud isn't just in building new business models. Customers can realize significant business efficiencies by standardizing on best-in-class infrastructure and SaaS applications. For example, Oracle has **transformed its internal operations** by moving to an integrated set of business applications in the cloud. Using Oracle ERP Cloud has enabled the company to reduce the time frame for closing its books and reporting earnings to 12 days or fewer compared to weeks previously. AI-based process optimization in Oracle ERP Cloud has eliminated more than 30% of manual accounting activities.

Oracle's Human Capital Management Cloud has helped the company substantially increase employee satisfaction levels and achieve all-time record efficiencies in hiring and on-boarding. It's also reduced the time needed to complete the talent review process by more than 70%. All told, cloud applications are saving more than 20,000 hours of management time each year through an accelerated job offer process.

Oracle's next-generation cloud infrastructure features industry-leading scalability and availability as well as integrated governance, control, and reliability backed by end-to-end SLAs. Oracle brings some unique strengths to the cloud. The company's 30+ years of leadership in database management makes the Oracle Database the gold standard for enterprise data management, used by most of the world's largest corporations. Oracle Database instances scale to many times the storage capacity and performance of other products, reaching up to 40 terabytes of capacity and millions of input/output operations per second per instance.



## Key Use Cases for Oracle Cloud Infrastructure

**When Cisco Systems** was looking to move its Tetration real-time data center analytics platform to the cloud to run as a service, the company tested the database-intensive application on every major infrastructure-as-a-service offering.

"When we started in Oracle Cloud Infrastructure, we saw dramatic improvement," **said Navindra Yadav**, founder of Cisco Tetration Analytics. The performance improvement was about 60 times compared to [other] leading cloud providers."

Oracle's built-in automation also reduced the amount of infrastructure Cisco had to provision and pay for.

"We got steady 70% to 75% utilization on our CPUs compared to 5% on other cloud providers," Yadav said. "This allowed us to have a much more functional solution, reduced our costs, and we could pass those savings on to our customers."

Customers of Tetration Analytics in the cloud are seeing cost savings of up to 90% compared to running on-premises, he said, and Oracle Cloud supports the data-intensive machine learning algorithms the company requires with superior performance.

### Performance to the Extreme

Database migration is just one of the use cases where Oracle Cloud customers are seeing outstanding success. Scientists and engineers who work with demanding high-performance computing applications like seismic analysis and crash simulations are using Oracle Cloud's bare metal instances to support applications that require high core counts, large amounts of memory, and high memory bandwidth. They're also taking advantage of Oracle Cloud's support for graphic processing units for demanding machine learning workloads.

That's important to YellowDog, a rapidly growing enterprise that helps customers with high-performance needs find the best compute sources for hybrid and multi-cloud workloads. It took only about two hours to get the company service up and running on Oracle Cloud Infrastructure.

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Oracle Autonomous Database, launched in 2018, brings unprecedented levels of automation to data management, making it possible for customers to focus on building sophisticated applications. It uses machine learning and automation to dramatically reduce labor, error rates, and complexity while ensuring the highest levels of reliability, security, and operational efficiency. Built as a converged database, the same engine supports transactions, analytics, and emerging technologies such as machine learning, blockchain, and streaming data from intelligent devices. With 75% of commercial databases expected to be running in the cloud by 2022, **according to Gartner**, Oracle Cloud is well positioned for where customers are moving.

The intelligence that underlies Oracle Autonomous Database is integrated throughout Oracle's next-generation cloud offering. Designed from the ground up to deliver enterprise-grade scalability, resilience, and security, Oracle Cloud is distinctive from other cloud providers' offerings on multiple levels.

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Many of YellowDog's customers are film companies that require extremely high levels of compute power to turn around animation and editing projects overnight. Since adopting Oracle Cloud "we've been able to render at half the time that we've seen with other providers," said Chief Technical Officer Simon Ponsford. Uptime has been 100%.

Because customers' assets are intellectual property, security is a vital consideration, said Chief Commercial Officer Tom Rockhill.

"Oracle delivers a shelf of protocols that prevents data breaches," he said. "Partnering with Oracle shows our customers we're serious about security."

#### **The Data-Centric Enterprise**

The road to digital transformation is paved with data. Organizations that seek to improve customer engagement and streamline operational efficiency put analytics at the center of their decision-making process. Oracle's industry-leading database products run the gamut of enterprise needs, from high-performance transactions to data warehousing, enterprise data lakes, and data science solutions supporting new applications like machine learning. Oracle Cloud Infrastructure is purpose-built to run machine learning workloads that deliver insights from mining massive volumes of data. Customers can connect multiple data sources to make more informed business decisions.

Wiggle, the leading European online sports retailer, has used a suite of business and analytics applications in the Oracle Cloud to manage its hypergrowth and deliver customized products and recommendations to

every customer. Implementation was initially expected to take three years but was completed in just months. Wiggle can now monitor inventory hour by hour and manage product pricing in real time. Predictive analytics enable it to personalize offers to customers.

By leveraging the cloud, "We are no longer behind somebody else who has just bought [a product with] the latest bells and whistles," **said Jeff Wollen**, Wiggle's CIO. "We will always have that when we partner with a leading provider like Oracle."

#### **Free Your People**

International Data Corp. has **estimated** that as much as 75% of the total cost of database management is labor-related. The autonomous features of Oracle's line of database products cut administrative costs by up to 80%, while the combination of self-optimization and pay-per-use in the cloud reduces runtime costs by up to 90%. That frees database administrators and developers to focus on adding value to the business instead of tuning software.

Oracle Autonomous Transaction Processing, combined with Microsoft Azure Interconnect, has helped MESTEC, a cloud-based manufacturing software provider, cut labor and infrastructure costs in half compared to an equivalent on-premises environment while running workloads up to 600% faster with half as many CPUs.

"Oracle Autonomous Transaction Processing patches, maintains, and tunes itself, allowing us to focus our resources on developing innovative solutions for our customers," said Mark Carleton, MESTEC's chief operating officer. ●



## Superior Performance

Oracle Cloud is built on the Oracle Exadata Database Machine, a scale-out high-performance class of database servers that use intelligent storage, PCI flash memory, and an ultra-fast InfiniBand internal fabric to connect all servers and storage. Exadata is optimized for all types of database workloads including online transaction processing, data warehousing, and in-memory analytics, as well as consolidation of mixed workloads. It is a full-stack system optimized for the cloud with automated performance tuning that eliminates much of the manual effort required to build “roll your own” (RYO) infrastructure based upon commodity components.

David Floyer, CTO of analyst firm Wikibon, **wrote** that Oracle’s latest generation of Exadata X8M infrastructure “together with the Oracle Autonomous Database and multi-cloud innovations is the most profound update in Oracle’s history” and “strongly recommends Exadata X8M as a platform for next generation enterprise applications... These systems will offer enterprises significantly greater business orchestration and business automation of current and future business models.

“Oracle provides Exadata infrastructure in both shared and dedicated (bare metal) configurations. These options enable both new and legacy applications to take advantage of cloud-native features such as extreme scalability, on-demand provisioning, and modern development tools.

## Superior Economics

Because the infrastructure is automatically optimized, workloads deployed on Oracle Cloud Infrastructure require fewer compute servers and block-storage volumes, which lowers cost and improves performance. Oracle’s architecture overcomes bottlenecks caused by switching and reduces the risk of network noise impacting customer environments. That all adds up to lower total cost of ownership, particularly when running Oracle Database workloads. In awarding Oracle Cloud an **Editor’s Choice designation**, Storage Review estimated that Oracle Database instances run faster on Oracle infrastructure at up to 66% lower cost when compared to Amazon Web Services, noting “there’s nothing that is as fast as what we’ve seen with the Oracle Cloud bare metal instances.”

## End-to-End Security

Many enterprises wrestle with integrating a portfolio of dozens of security products from a variety of vendors, each with different file formats and control dashboards. The situation is much the same in many public clouds. In contrast, Oracle’s next-generation cloud was built from the ground up with security integrated into the infrastructure. The service provides full-stack protection such as customer isolation, internal-threat detection, end-to-end encryption, and automated threat remediation. Compute and network resources are isolated from each other to ensure that data and traffic are never exposed. Code, data, and resources are also shielded from the management layer so attacks on infrastructure can never compromise customer instances.

**“These systems will offer enterprises significantly greater business orchestration and business automation of current and future business models.”**

**— David Floyer, CTO of analyst firm Wikibon**



Security is layered with built-in firewalls and distributed-denial-of-service detection and prevention. Customers can establish identity at the perimeter and use adaptive authentication to automatically add further verification requirements when using a “zero trust” approach. Oracle also has one of the industry’s broadest portfolios of security services both in the cloud and on-premises.

### **Openness**

As the steward of such open-source standards as the MySQL database, the Java programming language, and the Oracle APEX low-code development platform, Oracle is a leading advocate of openness for customer choice. That commitment extends to the cloud through Oracle’s support of the Linux operating stack, the CloudEvents serverless specification, Terraform infrastructure manager, Docker containers, Kubernetes container orchestration manager, Jupiter notebooks, and Kafka stream processing platform.

Oracle also believes that openness doesn’t just mean open source. It’s also about the tools and platforms that customers use. That’s why Oracle partnered with VMware to bring VMware’s Cloud Foundation to Oracle Cloud Infrastructure. The jointly engineered solution delivers a full-stack software-defined data center that includes VMware’s vSphere, NSX, and vSAN across consistent infrastructure and operations. Customers can migrate and modernize applications, seamlessly moving workloads between on-premises environments and Oracle Cloud.

Oracle also fully supports customer choice when it comes to using multiple clouds. Through a partnership with Microsoft, customers can migrate to the cloud or build new applications leveraging technologies like the Oracle Autonomous Database and Microsoft’s Azure cloud platform with seamless interoperability along with unified identity, fast interconnect, and collaborative support. A high-speed interconnect enables rapid data transfer between cloud platforms without costly egress fees.

### **Applications**

When choosing a cloud platform provider, customers need to consider the company’s ability to support their mission-critical applications. This is a stark difference between providers like Amazon Web Services, which builds none of its own business applications, and companies like Microsoft and Oracle, which have robust SaaS offerings. As the number one provider of business software with a broad portfolio of enterprise solutions that span nearly every industry, Oracle has deep experience in helping 430,000 customers in 175 countries manage their mission-critical business applications and data.

*Oracle fully supports customer choice when it comes to using multiple clouds.*





For on-premises users of Oracle Database who are looking to move workloads to the cloud, Oracle Cloud is unquestionably the best option for performance, security, and TCO. The company's 38,000 developers and engineers and 12,000 support and service specialists ensure that customers benefit from a constant flow of innovative new features and 24x7 availability of expert support. Oracle also has a broad portfolio of industry-specific applications. That's why all of the top 10 companies in the automotive, communications, consumer goods, education and research, financial services, healthcare, high-technology, insurance, life sciences, public sector, retail, and utilities industries use Oracle products.

"We're all looking for simplicity and ways to reduce recovery times and put up the best defense," Sacolick says. "When Oracle can say that they can give soup-to-nuts support with a good SLA and cost model, I think CIOs with a lot riding on Oracle have to seriously consider that option."

### Conclusion

The economic value being generated by cloud services is so vast that organizations that aren't moving aggressively to the cloud are at a competitive disadvantage. As we have explored in this CIO Playbook, the limitations of first-generation platforms inhibit many companies from exploiting cloud's full potential.

The first wave of web-scale businesses had to build most of their services painstakingly by hand. The good news is that businesses that are migrating today can choose from a much more robust line of next-generation cloud options that incorporate advanced levels of automation, performance tuning, scaling, and security as part of the basic service. This enables them to shift workloads more quickly, completely, and securely than they could just a few years ago. The selection of the right cloud partners is fundamental to the success of the business. Not only does IT matter, it's often all that matters in distinguishing leaders from laggards. ●

To learn more, go to [www.oracle.com/cloud](http://www.oracle.com/cloud).

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