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Cloud

Oracle's Top 10 Cloud Predictions 2019

Predicting the future of the enterprise cloud by 2025—your company in the cloud.

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Your Company in the Cloud

Shifting toward a whole-enterprise cloud.

Cloud technology and its adoption have been transformative for nearly every business, industry, and product. From running applications that are always-on and available, to limitless infrastructure scalability, today's enterprise technology norm is defined by these cloud capabilities.

We've reached a remarkable tipping point, where enterprises are now outpacing consumers in their adoption of emerging technologies—including artificial intelligence (AI), blockchain, digital assistants, containers, serverless, and the Internet of Things (IoT).

They're no longer experimenting with these new technologies in a sandbox; they're applying them in meaningful ways across their operations, driving new business, creating new value, and building more sophisticated applications than ever before. By 2025, we expect to see both cloud providers and the enterprises they serve move toward a next-generation cloud model where they have access to these new technologies, better security, improved price performance, and deep automation capabilities.

In "Oracle's Top 10 Cloud Predictions 2019," we explore what the enterprise IT world will look like by 2025 as the adoption of cloud rises. Together, these predictions demonstrate the need for a complete enterprise cloud approach in the years to come, and provide a future-facing view of how businesses will need to plan their move to a cloud-native IT environment.
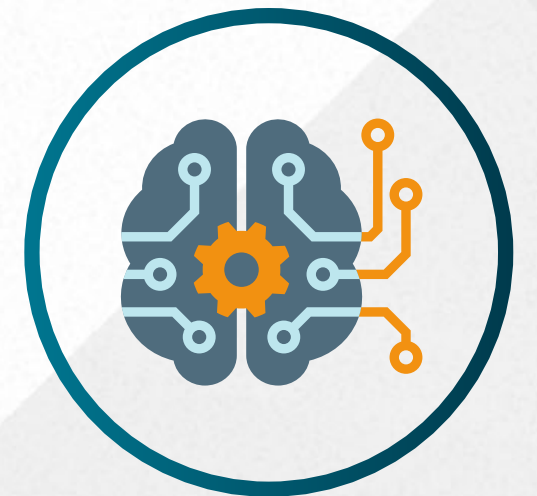
Prediction #1

Second-generation cloud providers will offer 100% data-center replacement.

Prediction #1

There's an almost limitless number of ways to use the cloud. But no matter how your journey begins, all routes eventually lead to the same destination—running your entire company in the cloud.

100% data-center replacement is only possible when cloud solutions are afforded at least the same level of reliability and performance as on-premises technology. Everything you run in the cloud needs to be secure from core to edge, leveraging the latest advances in automation technology.

The design principles for many first-generation clouds were opportunistic: commodity servers, storage, network, shared tenancy, and best-efforts management. These early capabilities successfully captured the market's attention for low-risk workloads.

Second-generation clouds enable highly complex workloads and mission-critical systems. They deliver better guarantees for security, continuity, control, and price performance. In addition, this provides access to innovations spanning autonomous database, AI, machine learning (ML), blockchain, IoT, and human interfaces. Ultimately, IT organizations will have the confidence and new capabilities to completely rely on the cloud for their mission-critical operations.

Further Reading

Video: Oracle OpenWorld Announcement: Gen 2 Cloud

White Paper: Next-Generation Cloud Delivers Enterprise Scale

IPaper: Oracle Cloud Infrastructure Cloud Essentials

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Prediction #2

80% of all enterprise (and mission-critical) workloads will move to the cloud.

Further Reading

Press Release: Oracle and Top-Flight Customers Lead the Charge in Cloud Applications

IPaper: Cloud Essentials for Migrating Any Application to the Cloud

Report: Moving Critical Apps to the Cloud: Understanding the Benefits and Challenges

Assessment Tool: Oracle Cloud Confidence Tool

Learn More: Why Oracle Cloud?

Prediction #2

We are now in an era of coexistence among private data centers, managed cloud environments, and self-service public clouds. Enterprises almost universally consume public-cloud resources today, and mission-critical workloads are an increasing part of that consumption.

Mission-critical applications that cannot afford to suffer any downtime are leaving the enterprise data center behind. This shift is inexorable, and it's increasingly a major part of the conversation about moving enterprise IT forward in terms of efficiency and reliability.

The migration of applications and workloads from all corners of enterprise IT has created demand for a new breed of integration and migration tools that can ease an enterprise's path to the cloud.

The considerations from moving all and critical workloads to the cloud come from its flexibility, reliability, and performance capabilities. These core capabilities of the cloud provide the foundational infrastructure needed for all types of workloads—AI, traditional, mission-critical, performance-intensive, and high-performance computing (HPC).

From point-of-sale systems for retail operations to high-speed transaction systems for financial services, these critical enterprise applications will benefit most from moving to the cloud.
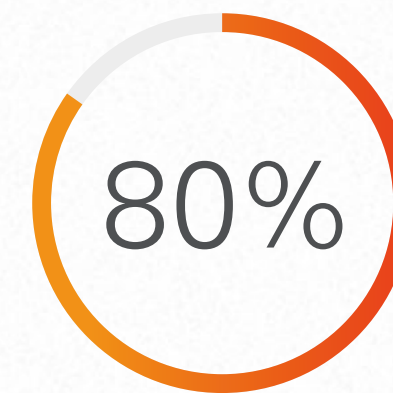
80% *of all enterprise (and mission-critical) workloads will move to the cloud.*

Prediction #3

All applications will incorporate AI—further distancing themselves from legacy applications.

Prediction #3

Today, we collect more data than ever before. When applied intelligently, that data informs our processes and provides us with the insights needed to work more quickly, efficiently, and flexibly.

To this end, artificial intelligence is finishing what business intelligence started. By gathering, contextualizing, understanding, and acting on huge quantities of data, AI has given rise to a new breed of applications—one that's continuously improving and adapting to the conditions around it.

We're already seeing applications change before our very eyes. Conventional back-office applications are becoming legacy. They're being reinvented with innovative front ends and aggressive commercial automation. Looking ahead, transformation is only going to become more widespread.

AI is being applied in many exciting ways today, and it's hard to visualize a future where it's not an important part of every application. Whether AI is a sophisticated algorithm based on deep learning that can analyze product quality, or a new cognitive user-engagement paradigm for speech, vision, gesture, or touch, we predict it will be at the foundation of all next-generation applications.
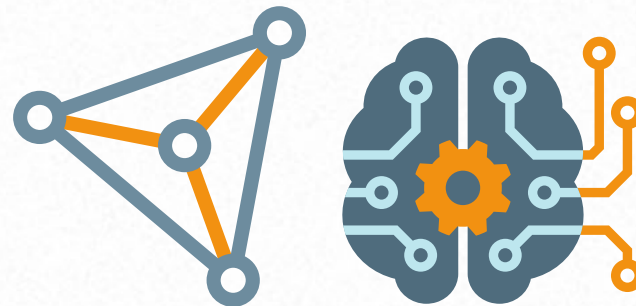
Further Reading
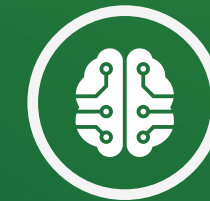
IPaper: Oracle Cloud Essentials; Artificial Intelligence: The Next Generation

Research Paper: MIT Tech Review: Machine Learning-Driven Analytics

White Paper: Harvard Business Review: Using Digital Platforms and Artificial Intelligence to Outpace Rivals

Report: Forrester: The CIO's Guide to Automation Driving Business Value Requires Investments in Strategic Competencies

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Prediction #4

AI (and emerging technologies) will double our productivity.

Further Reading

Blog: A Practical Path to AI Podcast Series

Blog: Trying to Understand Blockchain? Here's a Simple Explanation

Report: Cloud Development: The Key to Rapid Innovation

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Prediction #4

AI augmentation already has immense power to increase human productivity—and as AI capabilities keep improving, those productivity gains are only going to get bigger, and be experienced by more people.

As the volume and depth of data available to businesses grow, AI will become better at making decisions—seeing it evolve from a technology used to reduce human effort into something that can truly reduce human bias.

AI changes the productivity equation for many jobs by automating activities and adapting current jobs to solve more complex and time-consuming problems, from recruiters being able to source better candidates faster to financial analysts eliminating manual error-prone reporting. This type of automation will not replace all jobs but will invent new ones.

This enables businesses to reduce the time to complete tasks and the costs of maintenance, and will lead to the creation of higher-value jobs and new engagement models.

With built-in AI and more integration of emerging technologies like blockchain for secure high-trust transactions, this will enable companies to shift resources to focus on business growth and innovation.

As we move forward, these converging efficiency gains will culminate in a huge productivity boost across the business. We predict that by 2025, the productivity gains delivered by AI, emerging technologies, and augmented experiences could double compared to today's operations.

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Prediction #5

85% of customer interactions will be automated.

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Prediction #5

For customers and employees alike, AI is ushering in a new era of experiences—one characterized by natural interactions, easy engagements, predictive recommendations, and friction-free journeys.

In fact, AI has already had a profound impact on how businesses and customers interact. Today, 89% of people use voice assistants for customer service, and 69% of enterprise customer service functions use chatbots for anywhere, anytime engagement.

This widespread adoption has seen automation quickly go from being a nice to have to becoming a basic customer expectation across nearly all markets.

The key element for successful automated engagement is to continuously understand context and intent, no matter how the

conversation naturally wanders or how an individual communicates. As AI technology gets better at tracking and understanding that context, more and more customer interactions can be automated effectively.

With AI-driven analytics helping businesses understand customer needs, IoT bringing customers closer to companies directly, and digital assistants providing humanized digital experiences, automation of customer engagement is going be extremely common by 2025. We predict that 85% of all interactions will be automated.
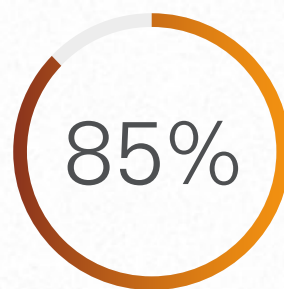
85% *of customer interactions will be automated.*

Further Reading

Video: Exelon Readies AI-Driven Chatbots for Millions of Customers

Video: Oracle Digital Assistant: The Power of AI at Your Fingertips

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Prediction #6

***The developer community will expand 10×
and productivity will increase by 400%***

Further Reading

Learn More: Step Up to Modern Cloud Development

Blog: Step Up to Modern Cloud Development

Video: Interviews and presentations on key development trends.

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Prediction #6

Despite huge growth in the number of developers working today, demand for applications continues to outpace the supply of trained developers. Between 2012 and 2018, GitHub went from 5 million to 31 million users, but even this level of growth in developer numbers isn't enough to keep up with increasing demand for modern technical skills.

The newest innovations require mastery of new technologies as well as knowledge disciplines. For example, adding natural interfaces, such as language processing or data-enhanced imagery (augmented reality), requires advanced degrees in artificial intelligence and image processing—a level of expertise and qualification that's certainly not widespread.

With the next-generation environments, they hide the technical underpinnings and simply allow dragging and dropping of intelligent components into an application. This visual "no-code" approach to development will see nonprofessional developers start to reduce the application backlog, and even encourage line-of-business experts to build their own solutions where necessary.

Automation will take this to the next level. Developers will be able to work in a virtual world of coding components and simulations that span the entire development lifecycle. Using gestures and conversation, future programmers will select software modules where they can be evaluated, assembled, and debugged.

With these new tools, 2025 will see a larger developer community than ever before—and that community will be far more effective, due to immersive, AI-driven development experiences.

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Prediction #7

More than 50% of data will be managed autonomously.

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Prediction #7

The motivation to deliver high availability and to protect our technology ecosystems has never been higher. However, looking forward, it will no longer be necessary to expect IT organizations to respond to these demands with people, training, and process.

Data is a crucial organizational asset and it must always be available, trusted, and secure. The first step to ensure higher availability is to eliminate a broad collection of maintenance activities, such as patching, updates, and upgrades while the system is running.

For small companies with big ideas (and big companies with experimental ideas), autonomy will become a crucial factor for business continuity and low operational costs. Put simply, autonomy enables them to bring applications online faster, cheaper, and more reliably, without investing in additional skills or people.

Oracle has taken the next step in extreme automation with the Oracle Autonomous Database. It is the industry's first database that is self-driving, self-securing, and self-repairing. Looking forward, we expect a huge proportion of businesses to explore similar capabilities for every aspect of data management.

>50% *of data will be managed autonomously*

Further Reading

Video: Autonomous Database: Larry Ellison at Oracle OpenWorld 2018 Highlights

Video: Sound Familiar? Larry Shares the Oracle Autonomous Database Story

Press Release: Larry Ellison Charts a Course for the Future of Cloud

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Prediction #8

90% of enterprises will use a single identity platform that bridges premises and the cloud.

Further Reading

White Paper: Manage Identities Across the Hybrid Cloud

Report: Oracle and KPMG Cloud Threat Report

IPaper: Cloud Essentials for Securing SaaS at Scale

Report: Oracle Database Security Assessment

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Prediction #8

The "Oracle and KPMG Cloud Threat Report, 2018" highlighted that the number one identity and access challenge organizations deal with today is the use of multiple identity provisioning platforms, both on premises and in the cloud. Over a third cited how cloud has greatly added complexity in how they can manage the real-time needs of provisioning and deprovisioning.

Organizations are now starting to leverage technologies in the identity and access management (IAM) space that cross the hybrid cloud and grant the ability to deliver a unified identity that stretches into all applications and services.

By 2025, privacy regulations that require immediate audit capabilities of users across apps and services will drive these organizations into a unified platform out of liability needs, as well as to help speed up provisioning of new apps, users, and devices.
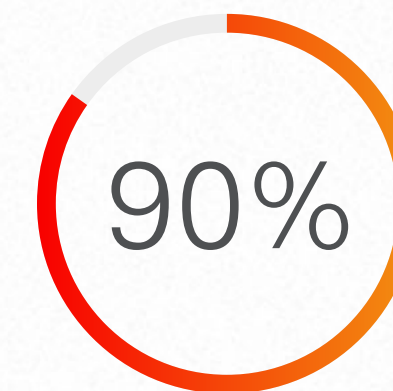
90% *of enterprises will use a single identity platform that bridges premises and the cloud.*

09

Prediction #9

The number of security events will increase 100×, and automation will become the most reliable way of preventing, detecting, and mitigating threats.

Prediction #9

Today's organizations face an overwhelming number of security-related events every single day. This volume makes timely prioritization and troubleshooting a unique challenge, because every event needs to be evaluated and either acted upon or disregarded.

In the "Oracle and KPMG Cloud Threat Report, 2018," the number one challenge to respondents was analyzing security event telemetry at scale. This is further reinforced by McAfee's 2019 Cloud Adoption and Risk Report, which showed the average organization will find only 1 out of 100 million events to be a threat. So how can security teams identify the real threats among all this noise?

By 2025, malicious traffic will use AI to hide within the mass of regular and legitimate human-based traffic.

Bad actors will use nonlinear (usually AI-based) techniques that inject randomness into the pattern of behavior of botnets to launch an unprecedented number of extremely difficult-to-detect attacks.

We predict that moving forward, organizations will also have to employ cloud-based AI to help defend against these threats. The most effective way to defeat a highly automated network of attackers is for enterprises to turn over the mass analysis of events to intelligent AI-driven analysis platforms that span the entire enterprise IT estate.

We should expect that many enterprises will embrace a core-to-edge security model by 2025, to ensure customers' data is secure from the core of the infrastructure to the edge of the cloud.

Further Reading

Ebook: Cloud Security for Dummies

IPaper: Cloud Essentials: Secure and Manage Hybrid Clouds

Assessment Tool: Take the Cloud Security Assessment

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Prediction #10

70% of IT functions will be completely automated.

Further Reading

Video: Accelerating Growth in the Cloud: Mark Hurd at Oracle OpenWorld 2018

Article: WSJ: For Chinese Property Developer, the Cloud Opens New Data-Driven Opportunities

White Paper: The Autonomous Advantage: The Rise of the Strategic DBA

Video: Oracle Cloud: The Future Is Autonomous: Steve Daheb at OpenWorld 2018

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Prediction #10

Every year, billions of work hours are spent performing necessary, extremely complex, routine IT tasks. These tasks take up a huge amount of IT's time, making them a perfect target for automation.

Cloud services are evolving to include lifecycle and advanced run-time automation such as self-patching and real-time tuning, and as automation capabilities improve, so will reliability, availability, scalability, and ultimately application SLAs.

By 2025, automated software and hardware lifecycle management will be the norm. In this world of 100% managed services, SLAs will increase and security threats will decrease. This will enable both cloud providers and their customers to have more time to focus on improving business outcomes.

For companies running entirely in the cloud, this will be invaluable. Once all high-value enterprise processes can be attended to in the cloud as truly managed services, businesses will have a huge volume of resources that can be reallocated to innovation projects and delivering further digital transformations.
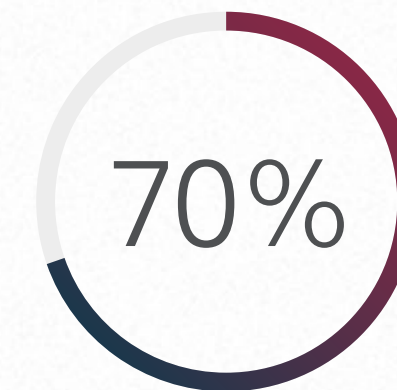
70% *of IT functions will be completely automated.*

Conclusion

Companies have moved beyond the questions of why they should be using cloud and emerging technologies, to arriving at the more important question of: "How do I get there?"

With Oracle, that path is as simple as an upgrade. Oracle provides a simple upgrade path for customers, leveraging their existing investments and skills to move to new versions that upgrade their capabilities and experience, while reducing risk and driving greater business value.

It's all part of Oracle's mission to support customers' journeys to the cloud—wherever their starting point might be.

Oracle provides a complete, open, and integrated cloud solution infused with intelligence at every layer. Customers have access to all three layers of the cloud, spanning applications, platform services and infrastructure services. We deliver stronger security controls from built-in core-to-edge, workload-migration tools to protect our customers' investments, and superior economics with automation, performance, reliability, and other advantages that lead the industry.

Oracle provides customers with multiple paths to the cloud and access to an AI-based future today.

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