Cloud **Essentials**

A Second-Generation Cloud

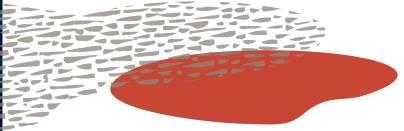Built for an intelligent and productive enterprise.

ORACLE
Cloud

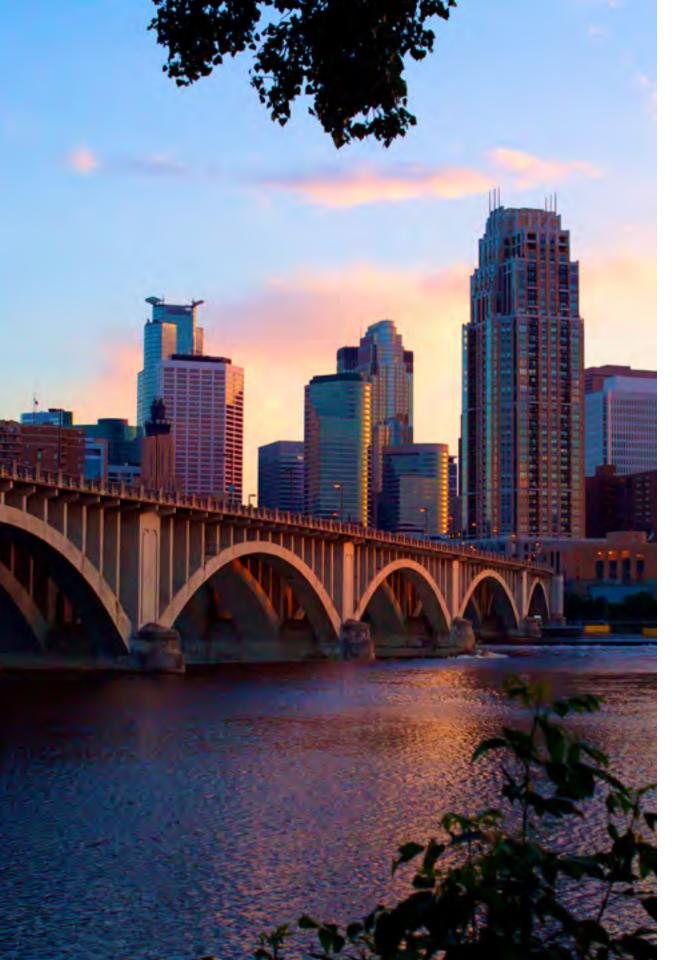# Enabling the
Autonomous Enterprise

AI technology is fundamentally altering enterprise computing by changing the way organizations receive, manage, and secure business data. Many enterprises want to take advantage of AI and machine learning (ML) capabilities, but are held back by the enormous cost and complexity of their current technology environments. Business leaders can envision more-productive ways to develop applications, gain predictive insights, and bring new revenue-producing services to market. Yet technology professionals are preoccupied with mundane operational tasks such as backing up, scaling, tuning, monitoring, and securing critical information systems.

Meanwhile, intelligent automated systems are quickly taking hold in many industries, driving paradigm shifts in systems design, logistics, manufacturing, infrastructure, and more. It's important to understand the difference between autonomous and automatic. Automatic refers to predefined procedures that a human agent sets in motion to complete designated tasks, such as setting up automatic backups to run at designated times. These procedures generally require some level of operator oversight.

Autonomous systems, by contrast, are intelligent and self-governing, which means they can carry out multiple automated sequences without human initiation or intervention. In that vein, the AI and ML capabilities of Oracle Cloud technology work behind the scenes, all the time, to keep your information systems running optimally. And best of all, your team can take advantage of these sophisticated cloud capabilities without having to develop advanced skills.

A New Cloud Design

Oracle has delivered to the market a **second-generation cloud** representing a fundamental rearchitecture of the conventional public cloud. It's built on years of experience gained in helping our customers and partners deploy and run workloads in their own data centers, as well as migrating them effectively to our own cloud platform.

It provides both a new infrastructure and a full set of platform capabilities. This is what continues to set Oracle apart from other vendors; it includes all of the technology required to build, extend, and connect apps. Additionally, Oracle's Gen 2 Cloud is a comprehensive security solution that addresses the needs of all users, apps, data, and infrastructure. It provides a complete set of solutions for managing data across diverse data types, and provides rich AI-based visual analytics.

Gen 2 Cloud spans multiple services. There's app dev, which includes mobile, blockchain, AI/ML, and chatbots. There's integration for Oracle and non-Oracle apps, both on premise and in the cloud. When it comes to analytics, we give our customers a way to connect multiple data sources. We're able to bring together the data in order for them to analyze and make informed business decisions. We have layers of defense that provide a secure platform for applications and data that can help offload security responsibilities from organizations. And finally, Gen 2 Cloud serves as the infrastructure for Oracle Autonomous Database.

No Human Labor—No Human Error—No Data Loss

Oracle Autonomous Database is the defining technology of the second-generation cloud and it marks a new generation in computer technology. And when you're looking at these autonomous systems, they are enabled by machine learning and AI—ultimately creating something fundamentally different from what came before.

Oracle Autonomous Database automates many routine tasks: patching, backups, scalability, and tuning are all handled without human intervention or errors. This level of automation comes with enormous benefits including lower total cost of ownership, lower risk of security breaches, as well as auto encryption of data at rest and in motion. This enables you to accelerate innovation by focusing on your business rather than on never-ending operational tasks.

The past: IT professionals manually managed information systems.

- Manual configuration
- Manual monitoring
- Manual management
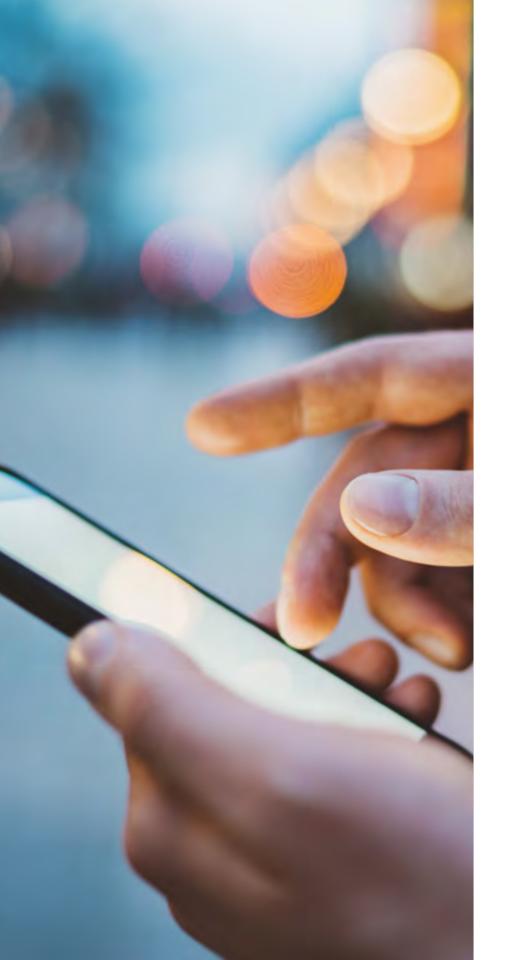- Manual scaling
- Manual systems management

The future: Autonomous software monitors and manages information systems automatically.

- Automatic configuration
- Automatic tuning
- Automatic predictions to avoid problems
- Automatic scaling
- Automatic systems management

Automation Based on Machine Learning

As the flagship in Oracle's growing set of autonomous capabilities, Oracle Autonomous Database is characterized by three unique attributes:

- It's **self-driving,** which means it automatically provisions, secures, monitors, tunes, and upgrades itself—lowering costs and increasing productivity.

- It's **self-securing,** reducing risks by protecting cloud resources from external attacks and malicious internal users. This includes automatically applying security patches with no downtime, automatically encrypting all data, and intercepting data leaks with preventive controls.

- It's **self-repairing,** maximizing uptime and productivity with 99.995 percent availability. That's less than 2.5 minutes of both planned and unplanned downtime per month—while completely eliminating administrative errors.

These attributes help you reduce administrative costs by up to 80 percent and save up to 70 percent of ongoing runtime costs by dynamically adjusting and scaling resources. Oracle also reduces risk and accelerates time to insight. For example, by provisioning a data warehouse in seconds, you can accelerate time to innovation, time to market, and time to action.

A Robust Cloud Infrastructure

Oracle Gen 2 Cloud Infrastructure is an enterprise-grade public cloud that has been architected specifically to run enterprise applications and databases. It includes tools and utilities for constructing new cloud-native and mobile apps, all on a unified platform and networking fabric.

Oracle also offers tools to upgrade existing applications to the cloud—without forcing you to rearchitect those applications—along with focused cloud support for Oracle applications such as Oracle E-Business Suite, JD Edwards, PeopleSoft, Siebel, and more.

You'll gain the benefits of public cloud (self-service, on-demand availability, scalability) with the advantages usually associated with on-premise environments (predictability, performance, and control).

Keeping operating systems patched and secure is one of the biggest operational challenges that IT organizations can face. With Oracle Autonomous Linux in Oracle Cloud Infrastructure, you can minimize the availability and security risks that stem from missed or incorrectly applied patches by using more automation such as autoscaling, lifecycle management across pools, and monitoring.

Oracle Gen 2 Cloud Infrastructure takes advantage of high-scale, high-bandwidth networks that connect cloud servers to high-performance local, file, block, and object storage. Customers obtain the highest possible performance for traditional and distributed applications, as well as highly available databases—including Oracle Autonomous Database.

Oracle Gen 2 Cloud infrastructure is architected to support the applications enterprises have been running for years, as well as those they are creating for the future. You can choose everything from small virtual machines (VMs) to large bare-metal clusters and highly available databases—all running on the same isolated networks.

Rapid Expansion
Around the World

Oracle Gen 2 Cloud continues to expand rapidly around the world. Oracle continues to offer more choices by delivering true multicloud innovation for the enterprise. Our recent partnerships with Microsoft Azure and VMware enable you to leverage your existing investments and connect best-in-class cloud services.

Oracle continues to expand its regional presence with 36 regions available coming soon. Ultimately, this provides better availability and disaster recovery for those customers who want to store their data in-country or in-region.

Anchoring Autonomous Data Management Services

Oracle Autonomous Database is the world's first cloud-based autonomous data management system to deliver automated provisioning, patching, upgrades, and tuning—including performing all routine database maintenance tasks while the system is running—without human intervention. With our autonomous services, it marks a new generation of technology where the systems are more secure, data loss is preventable, risk is reduced, and labor costs are eliminated.

With Oracle, you have a single database to support mixed workloads, such as data warehousing and online transaction processing. Oracle Autonomous Data Warehouse empowers business users to build their own data warehouses, data marts, and sandboxes in a few minutes. Developers can use Oracle Autonomous Transaction Processing to instantly provision an entire database environment for new application development. Oracle makes it easy to update existing Oracle databases to the cloud because it is the same software that customers run on premise. No complex management or tuning is required.

Security and Management

Emerging technologies such as the cloud, AI, and the Internet of Things (IoT), enable organizations to drive innovation and reduce costs. However, these innovations bring about the potential for increased risks related to data sprawl, expanded attack surfaces, performance degradation, and outages. Cybercriminals are using these same technologies to wage a highly sophisticated war on corporate information systems. Security and management teams are struggling to keep pace with a growing number of persistent attacks. Many of these teams rely on manual processes that can introduce human error, and it takes an excessive amount of time to accurately detect and respond to threats and outages.

Oracle has been building security in its solutions and protecting its customers' sensitive data for decades. It's focused on automation, data defense and integration. Oracle pursues a layered secure-by-design approach; one that begins with securing the core data repositories, followed by layered controls within the application ecosystem to detect and prevent fraud and risks. Oracle's cloud security helps prevent, detect, respond to, and predict sophisticated security threats. It features automated encryption, adaptive authentication, visibility into application usage, and automation to detect anomalies, ensuring that the customer's sensitive data is safe and their applications are resilient. It also includes security monitoring and analytics—providing continuous compliance, API security controls, and data security for hybrid clouds. Oracle is unique in its approach to holistic data security and app visibility across heterogeneous environments, whether data is on premise or in any cloud (Oracle or third-party).

Integration

Oracle Integration provides intelligent automation and integration to enable you to deliver your digital modernization projects faster and easier. Through a combination of innovative machine learning, prebuilt integration, and a powerful library of run-ready application adapters, Oracle Integration unifies your SaaS and on-premise applications, robotic and human process automation, and your business partners into a connected business. The embedded ML recommendation capability learns from other users to make recommendations for mapping. From purchasing to human resources to supply chain planning, applications teams can leverage the intuitive Oracle Integration platform to easily integrate applications such as Oracle ERP Cloud, Oracle Engagement Cloud, Oracle Marketing Cloud, Oracle E-Business Suite, Siebel, PeopleSoft, JD Edwards—and many non-Oracle applications, including Salesforce, ServiceNow, and SAP.

Oracle automates routine business processes and tasks with capabilities that enable connected business flows and streamlined essential activities. Oracle's integrated cloud solution is well suited for non-developers to rapidly connect their business in just a few days. Deployment times that would have taken months are now reduced to a fraction of that time. And finally, Oracle solutions offer business users the visual capabilities to connect systems, map processes, and build web, mobile and interactive apps. Businesses can extend capabilities, differentiate themselves in the market, and create model experiences for customers and employees.

Application Development

Oracle offers an open, modern, standards-based integrated development platform. This enables you to build, deploy, and manage applications. The platform gives developers the ability to use containers, microservices, API-based and serverless architectures, ML, and DevOps processes and tools. It also boosts developer productivity by embedding integration, automation, and AI tools. Developers can get started in minutes and build on top of rich platform functionality to avoid reinventing the wheel. They can also use familiar developer tools and frameworks to shorten the learning curve.

Oracle's integrated and standards-based solutions for developing and deploying apps are technology-agnostic, providing more choice in development environments. Oracle supports all major open-source tools and technologies, as well as modern programming languages such as Java, PHP, Python, Ruby, Node.js, and C#/.NET. Built with DevOps in mind, they include automation tools for continuous deployment, as well as integrated security and management tools for monitoring, compliance, and governance. With Oracle, you can build modern cloud native apps, including microservices, APIs, mobile apps, and chatbots. And with advanced AI and analytics, you can predict and identify faults with newly deployed apps.

Additionally, Oracle APEX allows developers to quickly build scalable and secure enterprise apps using only a few lines of code. With APEX, users can deliver compelling reports and data visualizations, with features like SQL grouping to automatically calculate counts, strategic algorithms to choose the best facets to use, prefiltered data and more. Build sophisticated applications without the expertise of a vast array of web technologies, from simple web apps to mission-critical apps that are accessed daily by hundreds and thousands of users. With Oracle SQL Developer Web, users can easily run queries, create tables, and generate schema diagrams. Finally, with native Oracle REST Data Services support, developers can develop and deploy RESTful services for Oracle Autonomous Database, making it easy to create modern REST interfaces for relational data.

Emerging Technologies

Today, we're seeing emerging technologies and automation permeate every aspect of work and life. The real opportunity of these technologies—which include AI, ML, IoT, blockchain, containers and serverless, and human interfaces—is to enable our customers to embrace innovation on a scale we've never seen before. They allow us to change our approaches to IT and, as a result, focus on what makes our products and our companies unique in ways we never thought possible. These technologies help us reimagine what's possible in work and in life—from self-driving cars to personalized medicine, to precision agriculture, and new smart cities that are changing the way we experience our world.

This has become one of the greatest areas of change for businesses and people. We're seeing these technologies permeate every aspect of work and life. Enterprises have gone from experimenting with these technologies in a sandbox to implementing them for mission-critical applications, to building new business models, and creating new business value.

Our **strategic approach** is to make new emerging technologies pervasive throughout all of our cloud layers. Oracle has done the hard work of implementing emerging technologies, including AI, ML, blockchain, IoT and human interfaces, into all of our business applications and throughout our platform services as well. It's about making these services and tools available to everyone, and the cloud is the great equalizer that enables everyone to use these new technologies instantly so they can access all kinds of innovation.

Blockchain

Oracle Blockchain Platform is a preassembled enterprise-grade solution for building blockchain networks. It is built on top of The Linux Foundation's Hyperledger Fabric, and it has all the underlying infrastructure dependencies, container lifecycle management, event services, identity management and REST proxy, and a number of operations and monitoring tools integrated under a single console. Oracle Blockchain Platform leverages Oracle's decades of experience across industries and its extensive partner ecosystem to reliably share and conduct trusted transactions with suppliers, banks, and other trade partners through blockchain. With Oracle, you will get end-to-end visibility into multienterprise supply-chain networks, establish trust between participating trading partners, and reduce development time.

Digital Assistant

Oracle Digital Assistant provides the platform to easily build AI-powered assistants that enable naturally expressive conversations with all your back-end applications. Powered by a sophisticated semantic parser, and AI-trained on enterprise-specific vocabulary, Oracle Digital Assistant offers text and voice conversational interfaces.

Analytics

Organizations need to be able to support all available data, of any size, in any location. An analytics platform needs to support cloud and hybrid deployment scenarios and enable self-service access to business users along with efficiencies of scale.

Oracle Analytics meets these goals with a robust, intelligent cloud platform that supports the entire analytic process with by delivering the security, flexibility, reliability, and speed to gain insights. Oracle Analytics integrates across any data type—relational or big data, NoSQL, object storage, and data lakes—and is integrated with all departmental applications, including applications from Oracle.

Oracle Analytics combines embedded ML and AI to augment and automate the entire analytics process. This changes the way information is collected and processed, providing organizations with faster, modern self-service access to both data and analytics.

Oracle Analytics provides:

- Augmented data preparation; enrichment recommends new data sets to include in your analysis

- Rapid chart recommendations based on data sets and results

- Instant explanation of key drivers for results

- Natural-language interfaces to easily ask questions of the data and quickly explain charts in text format

- Predictive analytics with one-click forecasting

- Proactive mobile analytics that provide a personalized assistant with speech-to-text for mobile voice-based queries

- Business scenario modeling, such as what-if analysis

- Access to all available data sources with governance

Better Together

The Oracle Cloud is the world's only second-generation cloud. It's completely integrated across applications, platform, Oracle Autonomous Database, and infrastructure—and it's better together. It's all in one place and it all works together. We're simplifying IT and business functions by engineering all of our products to work together from the beginning, with each piece benefiting from the capability of its underlying platform. In addition, we provide richer and higher-quality data across all lines of business. With Oracle Cloud, it's designed around your needs, providing improved experiences, lower costs for the enterprise, and better productivity.

Oracle has several programs that make it easier to buy and consume cloud services, helping you get more value from your hardware and software investments.

- **Oracle Universal Credits** enables you to access current and future Oracle Cloud Platform and Oracle Cloud Infrastructure services under a single umbrella contract.

- **Oracle's Bring Your Own License program** enables you to apply your on-premise software licenses to equivalent Oracle services in the cloud.

- **Oracle's SOAR program** enables you to rapidly move databases and applications to Oracle Cloud. With automation and accelerators, you can move your environment as-is to Oracle Cloud Infrastructure for immediate business results and cost savings. Your migration to the cloud requires near-zero downtime. The best part is: You only pay when your migration is complete.

These popular programs alleviate cloud-adoption challenges by simplifying the way your organization purchases and consumes cloud services.

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Learn more about Oracle Gen 2 Cloud.

Build, test, and deploy applications on Oracle Cloud—for free. Sign up once, get access to two free offers. Go to oracle.com/cloud/free

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