



# Application Development with Oracle Cloud

Cloud **Essentials**

**ORACLE**<sup>®</sup>  
Cloud

When technology visionary Marc Andreessen penned his famous essay “Why Software Is Eating the World,” businesses everywhere acknowledged the importance of developing software applications that can accelerate business processes and differentiate services. Today, cloud computing can provide much of the infrastructure and platform services required for software development.

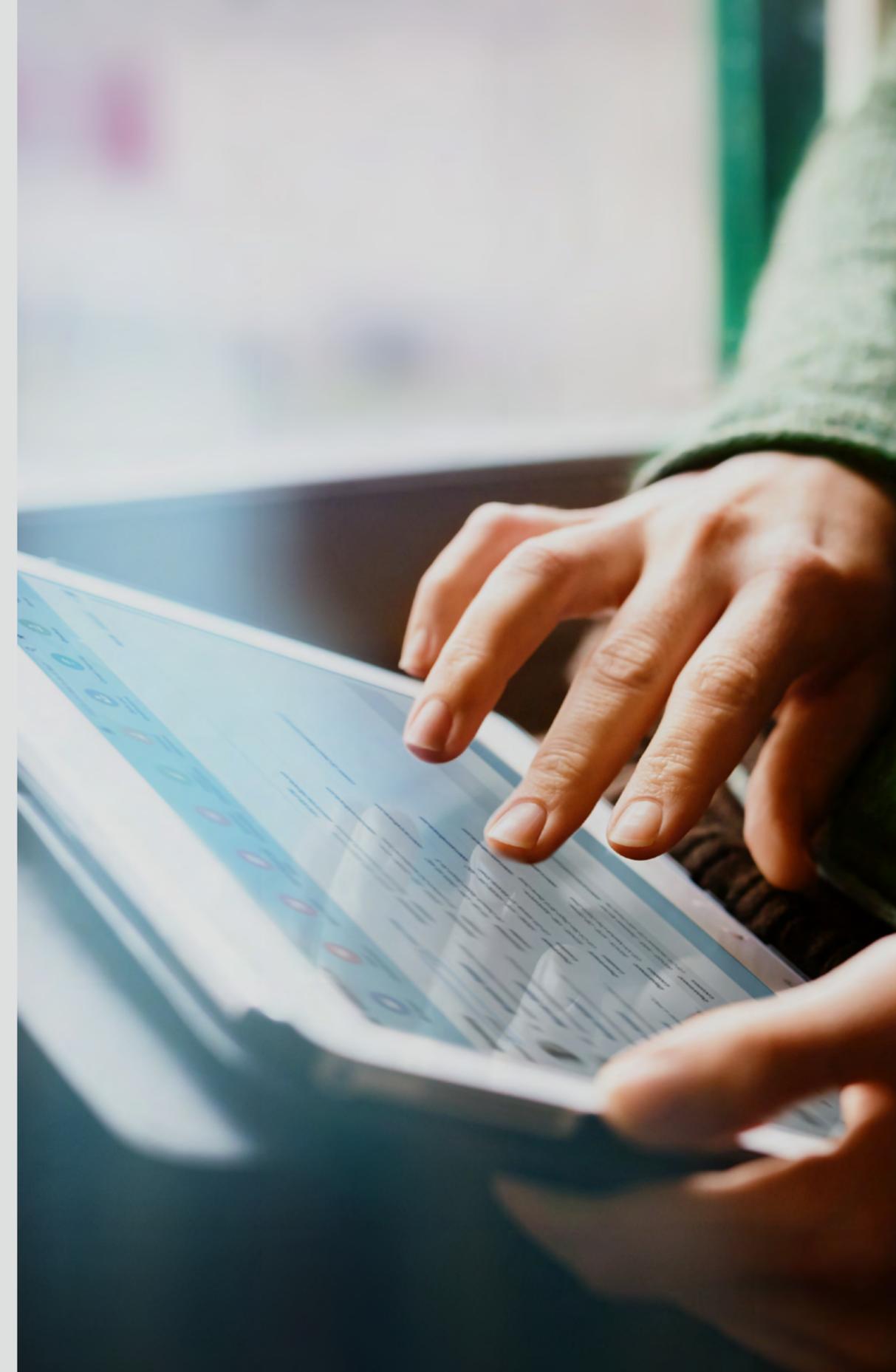
Therefore, it’s no surprise that software is increasingly developed and deployed in the cloud.

Businesses value the ability to develop and test their apps in the cloud, and then run production workloads on premises. In addition to shifting development and testing (DevTest) to the cloud, some of these businesses have made the decision to migrate applications to the cloud as well—including on-premises apps, packaged apps, web-based apps, Java Enterprise Edition apps, open source-based apps, and many other traditional applications. Once migrated, these applications can be integrated with other on-premises and cloud apps.

Businesses are also choosing to mobile-enable and extend their existing apps. In addition, many businesses are building new applications in the cloud—commonly called *cloud-native applications*.

Typically, these apps are developed based on microservices architecture and run in containers. Moreover, many IT shops have formed DevOps teams in which application developers collaborate with operations personnel to create, test, troubleshoot, and improve applications as part of a continuous application development and deployment process through the entire application lifecycle. In conjunction with these initiatives, line-of-business owners and citizen developers are demanding a development and publishing platform that allows them to create new web and mobile applications and extend SaaS applications.

This brief explains how you can utilize Oracle Cloud to accelerate the development of web, mobile, and enterprise applications while dramatically simplifying your IT environment. Oracle’s subscription-based cloud services require minimal investment and deliver maximum productivity and speed. Read on to learn how you can leverage Oracle’s complete, open, and integrated cloud portfolio to meet your current and future application development needs.





## Are You Confronting These App Development Challenges?

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If you think your organization might be a candidate for application DevTest in the cloud, ask yourself these questions:

- Does it take too long to set up and provision your development environment, including application servers, server infrastructure, storage, databases, and management tools?
- Is lack of development agility affecting your ability to respond quickly to business needs?
- Is your data center too large, needlessly complex, or expensive to maintain?
- Do your development and operations teams have difficulty coordinating their activities to properly support production applications?

## Accelerate Application Delivery with DevTest on Oracle Cloud

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Oracle Cloud represents the industry's most comprehensive cloud-based application development offering. It spans the infrastructure (IaaS), platform (PaaS), and application (SaaS) layers and includes private, public, and hybrid cloud deployment options, with the same underlying technology in each category for easy interoperability among them. Oracle Cloud supports many different applications, languages, operating systems, tools, utilities, and data types, including open source technology. It's ideal for developing and deploying both Oracle and third-party applications—and you can migrate finished apps from Oracle Cloud to your own data center and back again, unchanged.

With Oracle Cloud, you can create a highly responsive development organization while reducing capital costs and operational expenses. Oracle Developer Cloud Service for professional programmers provides a streamlined team development and delivery platform. At the touch of a button, you can create a fully provisioned development platform, complete with infrastructure. No matter how many development teams you have, they can instantly access your development environment in the cloud and follow DevOps processes using Oracle's cloud-based tools, as if they were all in the same room. Within a robust and secure platform, your teams use the best industry-standard tools as part of a reliable and integrated infrastructure for the life of your entire development process.

## Further Increase Efficiency and Productivity with the DevOps Model

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Oracle Cloud facilitates the DevOps model by enabling software developers to collaborate with quality assurance and operations personnel, streamlining application development and delivery. For example, your developers can commit changes to a shared Git repository, create tasks and assign them to team members, define and collaborate

on projects through wiki services, and continuously build and deploy applications with Hudson. You can use Oracle Management Cloud to monitor deployments and prevent production problems, maintaining conceptual consistency across production environments via metrics, logs, and topological flow maps.

"It takes my development team weeks to set up development environments."

"My team needs standards so that they can deploy anywhere."

"We need to get products and services in the marketplace faster in order to compete."

"I need my development teams to collaborate easily and share information efficiently."

"I want my developers to focus on creative solutions—not patching, backup, and recovery."

"I need a way to get around our backlogged development organization."



## Build Modern, Cloud-Native Applications

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Cloud-native applications are specifically developed to run on cloud platforms. Oracle allows developers to build application components or microservices using the tools and technologies they are comfortable with. Applications and services can be deployed on containers—and these containers can be created much faster than hypervisor-based instances. This makes for a much more agile environment and facilitates DevOps. You can use traditional and dynamic scripting languages such as Java, JavaScript, Ruby, PHP, and Python in a multilingual or polyglot environment, along with a wide array of data management options including MySQL, NoSQL, Hadoop, and more.

With a comprehensive platform for fast, flexible application development and deployment, you can focus on creating applications rather than infrastructure details. It's easy to take advantage of Oracle Cloud services for collaboration, bug tracking, version tracking, container orchestration, and other essential DevTest functions. Oracle even allows developers to move dockerized containers and application packages directly to Oracle Cloud, with built-in support for Kubernetes, CoreOS, PortWorx, and other popular containers.

## Develop Microservices-Based, Cloud-Native Apps

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- Build modern, cloud-native applications quickly and efficiently
- Code in any language and use popular, open source development tools such as Hudson, Maven, GitHub, JUnit, and more
- Utilize a built-in API platform for inbound and outbound interactions with microservices
- Follow DevOps continuous integration/continuous delivery (CI/CD) practices and utilize Oracle Developer Cloud Service to track issues, review peer code, merge requests, and develop dashboards, with automatic configuration and scaling to improve the effectiveness of the development process
- Enjoy extreme high performance and scalability with Oracle Cloud Infrastructure as a Service (IaaS)—and bring your own containers
- Utilize integrated monitoring tools to continuously refine apps in production
- Run container applications on enterprise-grade Oracle Container Engine for Kubernetes
- Store and share Docker container images on Oracle Cloud Infrastructure Registry
- Create and manage build pipelines with Oracle Container Pipelines



## Maximize Productivity for Developers and Business Analysts

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Oracle Cloud includes robust development tools that enable professional programmers to create enterprise Java apps and cloud-native apps using standard JavaScript and HTML, as well as code-free, visual tools that empower citizen developers and business analysts to develop and deploy complete applications in minutes.

For example, nontechnical staff members can use Oracle Mobile Hub and Oracle Visual Builder to create applications for smartphones and tablets via a browser-based, declarative environment, and then leverage standard APIs to integrate enterprise data sources in a simple and intuitive manner.

- Oracle Mobile Hub simplifies software development for mobile app developers, backend service developers, and line-of-business owners. It's easy to create web and mobile apps that securely connect to enterprise systems via industry standards such as REST and SOAP. Built-in mobile services include push notifications, location-based services, storage, offline and sync, and user management.
- Oracle Digital Assistant makes it easy to build AI-powered chatbots that use natural language processing to establish conversational interfaces with humans. Guided self-learning capabilities—based on user behavior, context, preferences, and data sets—allow these assistants to make relevant recommendations, as well as to connect and retrieve relevant data from backend applications. Oracle SaaS applications offer prebuilt Digital Assistant Skills that deliver an immediate out-of-the-box conversational interface to application functionality. Oracle Digital Assistant works with text and speech-based interfaces such as Amazon Alexa, Apple Siri, Google Assistant, Facebook Messenger, Slack, SMS, and WeChat.
- Oracle Visual Builder empowers developers to create and deploy web and mobile apps directly from their browsers via an intuitive, visual development environment. They can combine custom data objects with data from existing applications. And because both the development environment and the associated runtime platform are hosted in the cloud, there is no need to set up and maintain client-side software.

Seamless integration with Oracle SaaS applications makes these development tools even more valuable. Customers can use these advanced cloud services to automate many routine application functions, from employee onboarding to sales force automation. Automated links minimize IT dependencies and reduce infrastructure costs associated with traditional DevTest and deployment processes. The end result is better and faster services for your customers and employees.

## Your Applications on Steroids

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**Accelerate:** Instantly subscribe to secure, high-performance cloud services to augment or replace your on-premises infrastructure. Servers, storage, databases, and other key platform services can be rapidly provisioned and ready for use in minutes.

**Choose:** In addition to using Oracle Cloud for DevTest, you can choose where you deploy your apps—in the public cloud, a private cloud, or an on-premises cloud, with an instance of Oracle Cloud behind your firewall.

**Respond:** You can monitor public cloud services using the same tools that you use to monitor your on-premises systems, and control everything from a single console: database, middleware, operating systems, virtual machines, and applications.

**Save:** Oracle's "pay-as you-grow" model requires zero up-front capital expenses. These cloud services are affordable and efficient, and you never have to worry about purchasing too much or too little capacity, or getting stuck with a huge CapEx bill.





## Low-Risk Migrations—with Flexible Deployment Options

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Oracle enables you to move applications from your data center to the public cloud and back again with automated migration tools. You don't have to throw away on-premises investments, or perform expensive application rewrites to move your IT assets to the cloud. You can bring your own licenses and third-party applications to Oracle Cloud and migrate customized stacks to Oracle Cloud IaaS intact, including Oracle E-Business Suite as well as Oracle's JD Edwards, PeopleSoft, and Siebel applications. You can install the same operating systems, middleware, databases, and applications that you use on premises to build complete IT environments in the cloud.

While the management tools from other cloud vendors only support their specific cloud infrastructure—forcing you to invest in multiple solutions for third-party hardware and software—Oracle Management Cloud gives you complete visibility into Oracle and third-party environments.

If corporate policies or industry regulations prohibit you from moving sensitive workloads to a public cloud, Oracle can bring the cloud to you by deploying and operating an instance of Oracle Cloud behind your firewall with Oracle Cloud Machine. Rather than purchasing hardware and software, you can simply subscribe to it and let Oracle handle every aspect of installation, configuration, patching, lifecycle management, upgrading, and monitoring. You get Oracle Cloud—all fully managed—behind your firewall.

## Why Migrate On-Premises Assets to Oracle Cloud?

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- Decrease the cost and risk of migrating workloads to the cloud with automated migration tools
- Migrate data, custom apps, packaged apps, dockerized apps, and third-party workloads
- Choose your deployment options: public, private, or hybrid clouds with full workload portability between on-premises and Oracle Cloud environments
- Utilize integrated monitoring tools that run seamlessly on premises and in the cloud to continuously refine apps in production
- Minimize risk, prevent application outages, and improve IT stability

## Challenges with Third-Party Clouds

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- Limited deployment choices and capabilities
- Lack of out-of-the-box integration
- Nominal support for open source tools and utilities
- Limited or no compatibility between on-premises and cloud environments
- Fragmented management tools
- Inconsistent performance
- Gaps in security, visibility, and control
- Lack of availability and redundancy for critical workloads
- Cumbersome, manual migration and integration

## The Superiority of Oracle Cloud

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- Complete, open, integrated, secure stack with multiple deployment options
- Easy interoperability with on-premises assets
- Unified management tools for monitoring applications and infrastructure—on premises and in the cloud
- Consistent reliability, availability, scalability, and performance between cloud and on-premises offerings
- Superior utilities for capacity planning, compliance, scheduling, and log analytics
- Compute services that are up to 11.5 times faster than commodity servers, yet cost up to 20 percent less
- Storage capacity for as low as one-seventh the cost of commodity cloud alternatives





## Case Study: Building Mobile Apps in the Cloud

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**The Organization:** Headquartered in Nashville, Tennessee, Rogers Group provides crushed stone, sand, gravel, asphalt, and highway construction materials throughout the southeastern United States.

**The Challenge:** Rogers Group's foremen are the main conduit to business activities during construction projects, but delivering mobile computer technology on the jobsite has been challenging. Previously, data on crew members, construction equipment, and other critical variables was tracked with paper forms and then manually entered into an Oracle E-Business Suite application. Site managers often waited a week to receive, enter, approve, and analyze each submission.

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**"Being able to plug Oracle E-Business Suite functionality into Oracle Mobile Cloud Service has made it much easier to bring data to our business."**

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— Kim Lockhart, Applications Development Manager

**The Strategy:** Rogers Group used Oracle Mobile Cloud Service and Oracle partner AuraPlayer to create new mobile apps and integrate them with the on-premises Oracle E-Business Suite application via REST services—without making any changes to Oracle E-Business Suite. Now the foremen can enter data about hours worked and equipment used via tablets in the field. Their mobile apps synchronize with Oracle E-Business Suite, giving them instant access to metrics about the progress of each job, along with financial and budget information from the home office.

**The Success:** Rogers Group is using Oracle Cloud to move critical information throughout the business. Managers have immediate insight into jobsite performance and can make knowledgeable decisions by comparing production costs with proposed budgets. Thanks to this high degree of integration and automation, data collection and processing time has decreased from one week to one day.

## Why Put Application Development in the Cloud?

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**Innovation:** Accelerate business transformation and innovation



**Agility:** Boost agility in rapidly changing environments



**Cost:** Improve resource utilization to save time and money



**Transformation:** Create valuable business processes, not infrastructure headaches



**Risk:** Reduce risk with single-vendor accountability

## Focus on Your Business, Not on Technology and Infrastructure

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While cloud services have quickly gained popularity for DevTest activities, Oracle Cloud is an ideal platform for deploying production applications as well. You can begin by moving DevTest operations to the cloud and then use the cloud to expand your analytics capabilities or to establish a cloud archive for backup data.

After that, you can gradually move key applications to the cloud to extend on-premises infrastructure with new cloud platforms. You can also utilize Oracle Cloud to simplify data center operations—without making major investments in new hardware and software. Oracle gives you the same level of control that you are accustomed to with your on-premises DevTest practices and unlimited expandability for the future.

Everyone's path to the cloud is different. That's why Oracle offers a variety of options to help you reach your goals, with industry-leading tools for rapid provisioning, development, testing, integration, migration, and management. With Oracle Cloud, you get a state-of-the-art platform to develop cloud-native apps quickly, but also to move your existing apps to the cloud, so you can easily modernize them with social, mobile, and analytic capabilities.



## Oracle Cloud Platform

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- ✓ **Complete:** Best-of-breed and integrated solutions in every cloud category—data, software, platform, and infrastructure
- ✓ **Open:** Standard-based platform that supports all workloads, apps, languages, open source, and data types
- ✓ **Secure:** Automatic, always-on protection that extends throughout the entire cloud stack, all the way down to the silicon layer
- ✓ **Choice:** Flexible deployment options—public, private, Oracle Cloud at Customer, and hybrid cloud
- ✓ **Intelligent:** Artificial intelligence and machine learning in every cloud category—data, software, platform, and infrastructure

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Thousands of customers, including some of the world's most recognizable brands, have embarked on the journey to transform their business processes with Oracle's robust cloud platform.

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## Cloud Essentials

Contact your Oracle account manager to start your journey to the cloud, or visit [oracle.com/cloud/application-development](https://oracle.com/cloud/application-development) to learn more.

Try Oracle Cloud today. Go to [cloud.oracle.com/try it](https://cloud.oracle.com/try-it).

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