The Oracle DevOps Portfolio

Streamline software development, delivery, and maintenance.

Cloud Essentials
Application development teams are challenged to deliver apps in short timeframes, while IT operations teams struggle to keep those apps online, updated and secure. To streamline this constant interplay, many IT shops have formed DevOps teams in which developers collaborate with operations professionals to create, test, troubleshoot, and improve applications as part of a continuous flow. They use agile development methodologies to accelerate the rollout of new software to customers, and they standardize on integrated frameworks to simplify deployment and maintenance activities.

If you answer yes to any of the following questions, it's time to take a look at the DevOps capabilities available in Oracle Cloud.

- Do your development and operations teams have difficulty coordinating their activities?
- Does it take too long to provision hardware and software resources for new projects?
- Can you confidently support production applications as business requirements change?
- Are you keeping up with the relentless barrage of alerts and applying security patches as necessary?

Read on to learn how having a well-automated DevOps cycle can streamline the delivery of new applications, minimize routine maintenance chores, and eliminate delays when deploying both infrastructure and software.
Create an Agile Culture—Linked by Cloud-Based Tools

Oracle Cloud encourages an agile DevOps culture in which software can be quickly built, tested, and released as part of a continuous integration (CI) cycle. By establishing a unified platform for development and operations, Oracle Cloud facilitates collaboration among software developers and other IT professionals while automating the process of software delivery, modification, and improvement.

Oracle Cloud aligns disparate teams, giving everybody the freedom to work independently, yet collaborate on important tasks. For example, developers can commit changes to a shared Git repository, create tasks, and assign them to team members. They can define and collaborate on projects through wiki services and continuously build and deploy applications with Hudson and other tools. The entire DevOps team can use Oracle Management Cloud to monitor these deployments and resolve production problems, maintaining conceptual consistency across production environments via metrics, logs, and flow maps.

At the heart of Oracle’s DevOps offering is Oracle Developer Cloud Service, a subscription-based cloud service that you can use for virtually any type of software project. This mature, cloud-based platform supports the first five tasks in the DevOps cycle—plan, code, build, test, and release. Other Oracle solutions help with the remaining three tasks.

Oracle’s cloud-based tools can also help you deploy, operate, and monitor your software applications, as well as manage your infrastructure through integration with industry standards such as Docker, Kubernetes, and Terraform, as well as with Oracle-specific application programming interfaces (APIs) and Oracle command line interfaces. These versatile tools support all types of workloads, applications, languages, operating system platforms, data types, and open source environments. You are never locked into a proprietary technology stack—plus you can use the same tools, utilities, and skill sets on-premises and in the cloud.

Enabling an Agile DevOps Cycle

1. Plan
2. Code
3. Build
4. Test
5. Release
6. Deploy
7. Operate
8. Monitor

Oracle Cloud supports an agile culture that empowers DevOps teams to continually build, test, and release new software. Oracle Developer Cloud Service automates five key tasks in the cycle.
1. Plan Ahead by Coordinating Team Activities

Oracle Developer Cloud Service anchors an integrated DevOps platform for managing development teams, software, and infrastructure from a single location. This cloud service enables agile planning for DevOps teams by providing automated tools for essential tasks, including:

- Issue and task-tracking tools for version management
- Automated build/test tools for managing teams and sprints
- Continuous integration with peer code review
- Continuous delivery with associated documentation and a wiki
- Continuous provisioning via an automated team activity channel

For example, an issue-tracking system helps DevOps professionals organize to-do items, set priorities, and assign action items to specific releases and resources. Oracle Developer Cloud Service also offers sprint-planning dashboards for running Scrum methodologies that coordinate the execution of a development cycle. The Oracle software enforces key performance indicators (KPIs) to measure progress. Additionally, an associated wiki makes it easy for teams to conduct online discussions, upload documents, and collaborate effectively.
2. Code New Applications with Your Favorite Tools

Typically, new apps are developed in a microservices architecture, allowing diverse teams to independently create, test, and deploy applications in small increments. Oracle solutions enable developers to create microservices using the tools and technologies they are comfortable with. Developers can use traditional and dynamic scripting languages such as Java, JavaScript, Ruby, PHP, and Python along with a wide array of data management options including Oracle Database, MySQL, NoSQL, Hadoop, and others.

Rapid provisioning of containerized environments allows developers to focus on coding, not on the platform or infrastructure. Oracle tools even allow developers to move Docker containers and application packages directly to Oracle Cloud, and offer built-in support for Kubernetes, CoreOS, PortWorx, and other container frameworks. Container services include Oracle Cloud Infrastructure Container Engine for Kubernetes and Oracle Cloud Infrastructure Registry.

With an easy-to-use web interface and integration with popular development tools, Oracle Developer Cloud Service helps deliver better applications faster. It includes a tracking system for issues and tasks along with process management dashboards, team communication utilities, source control management functions, a code review system, a continuous integration engine, and automated build utilities. It’s easy to track tasks, manage agile development sprints, track code changes and reviews, and automate build/test/delivery processes. Business professionals and “citizen developers” can use Oracle Visual Builder Cloud Service to rapidly design, prototype, and publish web and mobile apps—without the need for sophisticated coding skills. Mobile services include offline data sync, push notifications, lifecycle management, a shared API catalog, and built-in analytics that track adoption, usage, and performance patterns for continuous application optimization.

Oracle Developer Cloud Service also provides a Git repository for version management that allows DevOps organizations to manage versions and branches, as well as easily tag and merge code, compare changes, and create reusable snippets. A code review tool supports peer review so various team members can approve or reject changes, leave comments, resolve conflicts, and iterate throughout the code-development process.

Team/Agile Management Capabilities
- Issue tracking
- Agile process management
- Peer code review
- Wiki
- Activity stream

Code/Continuous Integration Management Capabilities
- Version management
- Build automation
- Test automation
- Deployment and provisioning
- Continuous integration engine with pipelines
3. Build Applications Rapidly by Automating Essential Tasks

Building software is an end-to-end process that involves many distinct functions, including version control, code quality verification, and compilation. Oracle solutions help developers build applications rapidly by automating these key application development tasks. Developers can visually design applications and take advantage of automatic identification and remediation of security issues. This open environment supports a variety of popular build frameworks such as Maven, Gradle, Ant, Node.js, and Gran, so they can quickly create deliverables using their favorite tools. These frameworks are part of a continuous integration engine that automates the execution of application builds. As changes are committed, the code is automatically compiled and linked, and executables are created. It’s easy to upload code from Oracle Visual Builder Cloud Service into the Git repository, and then publish the code to Oracle Cloud Platform or another destination with a single click.

### Development Infrastructure
- Version management
- Automated build/test
- Continuous integration
- Continuous delivery
- Continuous provisioning

### Team Infrastructure
- Issue and task tracking
- Team/spring management
- Peer code review
- Documentation/wiki
- Team activity channel

Oracle Developer Cloud Service

With an easy-to-use web interface and integration with popular development tools, Oracle Developer Cloud Service helps developers build robust applications fast.
4. Test Applications Through Collaborative Processes

DevOps cycles require automation and monitoring at every stage, along with integration testing, deployment, and management of the IT infrastructure. Successful DevOps teams are able to shorten the time needed to create production applications. That means establishing quality assurance (QA) practices that can expose defects quickly, resulting in better quality applications.

Oracle tools enable software development and testing to take place simultaneously by facilitating ongoing collaboration among development, operations, and QA stakeholders. The Oracle DevOps environment integrates with popular test frameworks such as JUnit, Selenium, FindBugs, and Sonar, giving IT pros a comprehensive environment to analyze code, detect bugs, and make sure all software executables pass rigorous quality tests.

“Cloud native application development is evolving rapidly to a microservices and container-driven model that provides scalability, performance, and security. Our research finds that while this model is supported by AWS, Azure, and Oracle, Oracle provides a richer set of integrated DevOps services for the development lifecycle and operational management of not only cloud native applications but also traditional enterprise applications.”

Dao Research

5. Release Software Continuously via Integrated Methods

Once software artifacts pass testing, they can be packaged as a software release and deployed into production. However, a complete DevOps cycle doesn’t stop there. DevOps teams also need to deploy cloud platform services, such as application servers and databases, as well as provision server, storage, and network infrastructure.

From Oracle Database applications to Java applications to cloud native apps, Oracle Cloud empowers IT departments to roll out modern business applications and utilize container services designed to optimize developer productivity. With support for Java, Microsoft .NET, and many types of container services, Oracle Developer Cloud Service can connect to other clouds as well. In addition, you can use Oracle Java Cloud Service to deploy Java workloads and Oracle Container Engine for Kubernetes to deploy containers.
6. Deploy Software Applications in Conjunction with PaaS and IaaS Assets

In addition to tools for rapidly deploying new software apps, Oracle Cloud also has tools to help DevOps professionals provision and configure hardware infrastructure (IaaS) and cloud platform services (PaaS). For example, Oracle Developer Cloud Service can help you manage your infrastructure through integration with industry standards such as Docker, Kubernetes, and Terraform, as well as with Oracle-specific APIs, a PaaS service manager, and an Oracle Cloud Infrastructure command line interface to call Oracle Forms applications. You can deploy Docker containers directly to Oracle Cloud Infrastructure and provision bare metal servers to obtain maximum control. Oracle’s container-based apps work identically on-premises and in Oracle Cloud. The deployment choice is yours.

This comprehensive environment lets you provision computing infrastructure, establish network connectivity, and associate essential Oracle PaaS services for database management, integration, identity, and other functions. For example, you can use Oracle Java Cloud Service to install the latest software patches on an Oracle WebLogic Server instance. If you need to accommodate third-party environments from other vendors, Oracle API Platform Cloud Service enables hybrid deployments across Oracle Cloud as well as on-premises infrastructure and third-party clouds. Existing scripts and Docker images will run on Oracle Cloud and other vendor clouds, so you are never locked into a proprietary environment.

“Oracle Java Cloud Service and Oracle Database Cloud Service bring us speed and flexibility, which ultimately brings us quicker time to market for our clients. The additional benefit is that our development implementation folks don’t know if they’re on the cloud or off the cloud. The processes and tools they use are precisely the same.”

Steven Zeh, senior vice president, SEI

DevOps teams continually monitor the performance and availability of software applications, with the goal of detecting and diagnosing issues before they impact service levels. Most teams collect metrics to gauge application performance and make sure there is adequate capacity to support shifting application workloads to avoid resource bottlenecks.

Oracle Cloud Platform automates these important operations tasks—and many others as well. For example, Oracle Autonomous Database Cloud is the world’s first cloud-based, autonomous data management system to automate patching, upgrades, and tuning. It performs routine database maintenance tasks autonomously, while the system is running, without human intervention. Machine learning algorithms automatically diagnose security alerts, install software patches, and optimize database performance.

DevOps professionals can minimize maintenance and maximize productivity with Oracle’s self-driving, self-securing, self-repairing database.
8. Monitor Your Entire Environment Through a Single Pane of Glass

DevOps cycles never end. Even stable applications need to be continually monitored and maintained. Oracle Management Cloud gives you insight into all of your cloud services as well as on-premises applications, providing support for application performance monitoring, infrastructure monitoring, log analytics, task orchestration, IT analytics, configuration and compliance, and security monitoring and analytics, all through one integrated console. This synergistic management environment is invaluable to DevOps teams that are deluged with data from code-debugging tools, QA tools, application performance monitoring tools, log analytics tools, and other sources. It uses analytics powered by purpose-built machine learning tools to quickly diagnose the root cause of issues from the massive volume of machine data and application data. It can automatically discover patterns and give IT experts the insight they need to address threats, maintain outstanding service levels, and keep complex environments running optimally.

Oracle’s cloud-based tools streamline routine administrative tasks while providing a comprehensive understanding of how applications and databases are performing, backed by automated remediation capabilities.

Business Benefits

- Improved team collaboration
- Greater insight into the progress of development processes
- Automated continuous integration and delivery
- Support for multiple languages and build utilities
- Enhanced code management
- Integrated software and infrastructure management
- DevOps and agile tooling in one platform
- Easy to get started with zero install
Innovation Aided by Emerging Technologies

The Oracle DevOps portfolio is a key component of Oracle Cloud Platform, a suite of platform services that dramatically transforms how companies innovate by simplifying processes, boosting efficiencies, and freeing IT resources for strategic purposes. The portfolio is anchored by Oracle Autonomous Database, which 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, and the complete elimination of administrative errors.

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<th>Self-Driving</th>
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Your Automated Future

Artificial intelligence (AI) technology is fundamentally altering enterprise computing by transforming how organizations receive, manage, and secure business data. By 2020, Oracle predicts that 90 percent of all applications and services will incorporate AI at some level—and that more than half of all enterprise data will be managed autonomously.

Oracle Autonomous Database represents an entirely new category of software based on machine learning that allows you to focus on your core business and worry less about day-to-day operations, enabling opportunities for innovation. Oracle Cloud puts these emerging technologies to work by allowing customers to establish new IT capabilities quickly, affordably, and securely.

Intelligence at Every Layer

Oracle’s complete, integrated cloud platform includes intelligent solutions that span the SaaS, PaaS, and IaaS layers. For example, Oracle embeds intelligence into all its apps. Oracle also extends intelligence into the platform, making it available for any developer to build upon. The goal is to make cloud technologies simpler to access, easier to create, and more efficient to secure, manage, and run—so you can achieve real business outcomes.

Bring Your Own License

Oracle recently introduced two new programs to make it easier to buy and consume cloud services, helping you get more value from your hardware and software investments.

• **Oracle Universal Credit Pricing** 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-premises software licenses to equivalent Oracle services in the cloud.

These popular programs alleviate cloud adoption challenges by simplifying the way your organization purchases and consumes cloud services.
Operations professionals need timely, relevant data to troubleshoot problems in production applications. Development teams need this same information to build better applications. Under the DevOps model, both organizations can collaborate and share responsibility for ensuring that new applications thrive in a production setting.

Oracle’s DevOps portfolio empowers development and operations teams to deliver new apps, build test environments, automate and orchestrate jobs, run quality tests, store artifacts and build a repository, and rapidly deploy apps to production environments.