# Top Use Cases for Development in the Cloud

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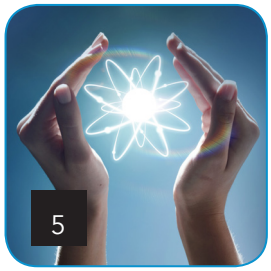


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# Chapter 1: Easing the Application Backlog: Moving Development and Testing to the Cloud

Businesses today must quickly develop and deploy new applications to their staff and customers. Such applications, particularly apps that allow mobile access to enterprise resources, are essential in order to retain and attract new customers, improve worker productivity, and streamline operations.

Unfortunately, the demand for apps is outstripping available development capacity, making quick creation of apps even more challenging. By the end of 2017, market demand for app development services will grow at least five times faster than internal IT organizations' capacity to deliver them.

Competitive pressures to get new applications out the door are causing problems. Traditional approaches to application development and testing are notoriously slow. Developers and testers need quick spin up and tear down of environments to develop and test new applications, but are often at the mercy of IT and Ops. In particular, developers and testers need suitable hardware (including servers, storage, and networking gear), as well as OS software, drivers, databases, middleware, and development tools. They need access to most often used development languages such as JavaScript, Java, Node.js, and others.

The time to get these systems in place can greatly extend the time needed to bring an app from concept to deployment. In most organizations, IT and Ops are bogged down with other work. The growing number of new app development efforts in most organizations adds to the problem as numerous dev/testing projects might be in a queue before yours.

**How the cloud can help**

To meet today's fast-paced development and testing

requirements, organizations are turning to cloud services. Regardless where the application will eventually be deployed, cloud services offer fast access to fully-configured environments for development and testing.

One option is to use an infrastructure-as-a-service (IaaS) offering. Most IaaS offerings enable on-demand allocation of compute, storage, and network resources. These resources are managed by the service provider. Such services still require a decent amount of work before developers and testers can get down to work. Typically, middleware, database management systems, and developer tools and languages must be loaded and configured before work can get underway.

Another option is to use platform-as-a-service (PaaS). PaaS offerings complement IaaS offerings by adding the required database, middleware, and development tools needed to create and test new business applications.

Using PaaS offers many benefits. New applications and services can be brought to market in much shorter times compared to using a traditional IT environment. Companies have increased agility to meet changing market conditions without incurring the large upfront investment charges of traditional development/testing environments. There is increased flexibility since services and capacity can be scaled up or down to meet evolving requirements.

**Oracle as your technology partner**

With its many benefits, companies are rapidly turning to PaaS for their development and testing needs. To put the adoption of PaaS services into perspective, consider that the PaaS market is currently estimated to be worth $2.8 billion and is expected to reach a value of $68.3 billion by 2026.

However, the features of a PaaS solution can vary greatly from provider to provider. That is why partnering with the right provider is essential. The provider must support the most common development tools and languages and deliver the performance, availability, and security required for the enterprise.

These are all areas where Oracle can help. Oracle offers a broad portfolio of subscription-based PaaS offerings allowing companies to develop, test, and deploy all types of applications. Oracle's cloud products are based on prevailing Java standards, so organizations can use familiar architectures and utilities and then deploy their apps on-premises or to the public cloud. Additionally, Oracle Cloud Platform Services are enterprise-grade, open standards-based, and designed to be easy-to-use.

Given the dominance of Java Enterprise Edition (EE) applications in business, one commonly used service for testing applications is Oracle Java Cloud Service. With the **Oracle Java Cloud Service**, organizations can create a production-ready environment for enterprise applications within minutes.

Oracle Java Cloud Services is based on Oracle WebLogic Server, the industry's leading application server, and is in fact the same product and platform in the cloud as it is on-premise.

Complementing these services, Oracle Developer Cloud Service lets organizations automatically provision a development platform, manage tasks, track builds, and collaborate with other developers. Oracle Developer Cloud Services is included with each Oracle Java Cloud Service subscription. To make development easier, the service offers support integration with commonly used IDEs (Integrated Development Environments) including Eclipse, NetBeans, and Oracle JDeveloper.

Realizing that organizations want support for different development and deployment scenarios, Oracle offers the Application Container Cloud for JavaScript and Node.js workloads

**Oracle Application Container Cloud** leverages Docker containers and currently includes **Java SE (Standard Edition) Cloud Service**, which is designed to run Java code that does not require a full Java EE infrastructure. Java SE Cloud Service includes support for Spring, Jersey, Tomcat, Play, and can run JVM-based languages like JRuby, Jython, and Closure - just build, zip and deploy, according to Oracle. Oracle Application Container Cloud also offers **Node Cloud Service**. This service is optimized to run JavaScript-based server side functionality using the popular Node.js platform.

In summary, Oracle Cloud Platform Services give organizations a way to accelerate innovation, avoid complexity, and lower development and testing costs.

*To learn more about speeding up your application development and testing efforts using the cloud, visit: https://cloud.oracle.com/developer_service*

# Chapter 2: Why Cloud Native is the Best Approach for Cutting-Edge Apps

Many organizations are developing cloud native apps to meet a wide variety of business needs. The apps are designed to take advantage of cloud computing frameworks and are often composed of loosely-coupled cloud services.

A big factor that makes cloud native apps so popular is that such apps can be quickly developed, tested, and deployed. The apps are also cost-effective because services and resources for computation and storage can be scaled out as needed. This negates the need for over-provisioning hardware. Virtual servers can quickly be added for development and testing efforts. Once a cloud native app is tested, it can be deployed and brought to market quickly.

Additionally, updates are much easier compared to traditional client or web apps. After enhancements or changes are made, they are automatically available to users the next time they access the application.

**Points to consider when developing apps in the cloud**

Many apps today are now born and live in the cloud. With that being the case, development, testing, and deployment of cloud native apps can be greatly simplified and sped up if the right cloud platform is selected.

The reason: Many cloud apps are essentially numerous smaller apps or services "wired" together. Developing an app that aggregates different services requires APIs, middleware, and services to provide core functions (such as authentication services, database management systems, etc.).

Furthermore, because many cloud apps are composites of interworking smaller apps, development and

testing of the different components is often done by different groups that do not necessarily work together closely. For example, a financial services firm might develop inter-connected apps for different services such as banking, stocks, loans, and insurance. When this compartmentalized approach is used, the dev and testing functions must still be uniform across an organization to ensure continuity.

To make use of this approach, developers must make their applications available as services that can be called on by other applications. By breaking the application into smaller services it makes it easier to update and scale the services. In some cases, an app may be developed to perform a single task. Such microservices are often developed as an independent service, which can then be used and re-used throughout the larger site, as needed.

With this approach to application development,

developers need access to the services and an assurance that the smaller apps and microservices can indeed be aggregated into a larger app. To accomplish this, organizations need to use cloud services with standards-based tools and services, and those services must make use of standards-based APIs and middleware, provide access to core functions like database services and the most commonly used development languages.

**Keys to success**

Most organizations are using some form of IaaS or PaaS already and their use is growing. Workloads in the cloud are easier to monitor and are more measurable, manageable, and elastically stackable. In addition, PaaS and IaaS offerings are increasingly adding pre-integrated development tools to support development and testing. Such features are essential for the application-as-a-service approach being used today.

Automation is essential at every stage of development and deployment in the cloud. Providers that offer high degrees of automation help ensure that deployment can be fast and error free. Other features and services that help make one provider's offerings more useful than another's include application management tools, monitoring and log tracking and analysis tools, and project and version management tools

These are all areas where Oracle can help. **Oracle Cloud Platform Services** deliver the benefits a PaaS solution can bring to cloud native applications. Oracle Cloud offers a variety of platform services that are enterprise-grade, open standards-based, and designed to be easy-to-use. All of the services are available on a subscription basis.

Given that most business applications are Java applications, Oracle offers **Oracle Java Cloud Service**. With the Oracle Java Cloud Service, organizations can create a production-ready environment for enterprise applications within minutes.

Beyond development, cloud native applications have very dynamic lifecycles. The apps must be quickly deployed, scaled, and frequently updated. Other Oracle PaaS services can help here. In particular, **Oracle Developer Cloud Service** is designed for the building and delivery of modern applications that leverage modern continuous delivery workflows.

Use of such cloud services can help organizations speed development and testing of their cloud native applications, make it easier to deploy and update the apps, and make those applications available as services to be used for more complex applications that integrate several smaller apps-as-a-service.

One additional factor to consider when evaluating PaaS services for cloud native applications is how to support the explosive use of mobile applications. Mobile apps will need to access new cloud native apps. Regardless of which client is used (iOS, Android, HTML5, etc.), the primary communication between the mobile client and back-end application is asynchronous HTTP with REST/JSON protocol and the leading technology that serves mobile apps is Node.js.

To help leverage these popular technologies and trends, Oracle offers Oracle Mobile Cloud Service, a Node.js-based environment that accelerates the development of rich mobile applications. Oracle Mobile Cloud Service also includes services for developers to easily access enterprise applications such as ERP, CRM, and HCM. Oracle provides the tools and frameworks to expose backend services as mobile-friendly REST/JSON APIs.

Services like these will be essential in helping organizations meet the demand for cloud native applications.

*To learn more about speeding up your application development and testing efforts using the cloud, visit: https://cloud.oracle.com/developer_service*

# Chapter 3: Extending SaaS apps with PaaS

Software-as-a-Service (SaaS) is becoming a common model for delivering most new applications and extending access to many existing applications.

With SaaS, applications are easily accessible to employees and customers from any device. Licensing is typically on a per user basis. The apps are centrally hosted, managed, and secured. Updates are made in one place and instantly propagated to all users the next time they access the application. And SaaS apps can be reused and made easily available to other apps.

However, to reap the full benefits of SaaS apps, some issues must be addressed.

To start, many SaaS applications are developed using techniques or are hosted using proprietary platform making it hard to extend those applications. This is a major issue today as many applications are apps comprised of multiple smaller apps coupled together.

SaaS applications on proprietary platforms often require lots of customization work to make them accessible and reusable. This diverts developers and testers from their work on new applications. It also adds to development and testing costs and extends development and testing timelines.

One way to get around these issues is to develop and test apps using a Platform-as-a-Service (PaaS) offering that is designed to easily extend SaaS apps. Keep in mind there are many PaaS choices. The one selected must have certain features and characteristics -- including support for Java -- and make use of standard middleware and robust APIs. Additionally, many organizations want a PaaS that is easy to use. In particular, they need a PaaS that offers development tools that let lines of business

and citizen developers extend solutions on their own.

**Oracle as your technology partner**

Finding the right PaaS provider will let an organization quickly develop, modify or extend SaaS apps and then make them available to users as a SaaS offering. One provider that has focused on this issue and developed a PaaS for today's modern applications is Oracle.

**Oracle Cloud Platform Services** are enterprise-grade, open standards-based, and designed to be easy-to-use. All of the services are available on a subscription basis.

With Java being widely used in SaaS applications and application extensions, organizations can leverage one such service, **Oracle Java Cloud Service**, to run any Java EE application in Oracle Cloud.

Oracle Java Cloud Service is based on Oracle WebLogic Server, the industry's leading application server, and supports popular development frameworks. To make development easier, the service offers support integration with commonly used IDEs (Integrated Development Environments) including Eclipse, NetBeans, and Oracle JDeveloper. Developers can use Oracle Java and Developer Cloud Services to build new Java applications or use them to extend SaaS applications deployed in Oracle Cloud.

Complementing these services is **Oracle Java Cloud Service - SaaS Extension**. Java Cloud Service - SaaS Extension natively understands the services exposed by common application services. These can be standard Web Services, RESTful services, or direct interaction. The platform makes it simple and easy to invoke these services available from SaaS applications. This allows for easy extension of Oracle Fusion applications.

To that end, the service makes use of a Java platform specially built to deploy extensions for Oracle SaaS offerings including Sales Cloud, Service Cloud, and Marketing Cloud. The offering is fully managed by Oracle, including all platform lifecycle operations like backup and patching.

Rather than reinventing the wheel over and over, organizations can benefit from the large number of extensions pre-built by Oracle partners. Oracle Cloud Marketplace includes popular extensions that can easily be deployed against SaaS apps.

**Summary**

Oracle Cloud Platform and Oracle Java Cloud service can be used to test new SaaS application extensions, and make existing application data available for consumption. Oracle Java Cloud Service – SaaS Extension simplifies deployment and maintenance of enterprise SaaS extensions. It enables enterprises to deploy applications to a service instance, then secure and manage those instances without worrying about the underlying infrastructure.

*To learn more about speeding up your SaaS application development and extending your applications through PaaS, visit: https://cloud.oracle.com/java*