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# PaaS

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Evolve your  
business to the cloud

Transform your  
business with AI

Accelerate your digital  
transformation journey



Lawrence Miller

2nd Oracle  
Special Edition

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# PaaS

2nd Oracle Special Edition

**by Lawrence Miller, CISSP**

for  
**dummies**<sup>®</sup>  
A Wiley Brand

# PaaS For Dummies®, 2nd Oracle Special Edition

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# Introduction

Cloud transformation has created massive change for businesses and changed the way people work. Millennials, for example, have different expectations of the workplace than previous generations. Digital innovation is making new business models possible, like Uber, Airbnb, and Spotify. This kind of change creates disruption in many markets.

Organizations can *lead* the transformation of their businesses and industries with digital technologies like social and mobile services, blockchain, artificial intelligence (AI)/machine learning (ML), big data, and the Internet of Things (IoT). At the same time, organizations are under constant pressure to drive down costs through economies of scale and superior IT automation. Industry leaders are embracing Platform as a Service (PaaS) at an ever-increasing pace to drive cost efficiencies and create and exploit new business opportunities.

Key to enabling this transformation is empowering organizations with a modern PaaS that *accelerates* the creation of new products and services for customers, employees, and partners — and delivers capabilities never before imaginable.

Achieving industry leadership and accelerating innovation requires adopting flexible platform services that seamlessly *integrate* with existing enterprise solutions



and optimize IT by allowing workloads to run where they run best (on-premises or in the cloud).

## About This Book

*PaaS For Dummies*, 2nd Oracle Special Edition, explains how PaaS enables organizations to embrace the efficiency, speed of service, and information availability that cloud computing offers in a way that delivers to today's growing business demands. This book also explores key PaaS use cases, describes what to look for in a PaaS solution, examines some real-world PaaS success stories, and reveals best practices to help you succeed with PaaS in your organization!

## Foolish Assumptions

Every author assumes a few things about his readers. I'm no exception.

First, I assume that you have some familiarity with cloud computing environments and that your organization is considering or is already using the cloud for developing or deploying enterprise applications, among other uses.

Next, I assume that one of the following describes you:

- » An IT professional who wants a cloud platform to help you respond faster to business needs and lower costs
- » A developer or development manager who wants a cloud platform to reduce operational tasks and accelerate innovation
- » A business professional who wants a cloud platform that can extend or integrate a Software as a Service (SaaS) application to better support end-to-end business processes, collaboration, and business insight

If any of these assumptions describes you, then this book is for you!

## Icons Used in This Book

Throughout this book, I occasionally use icons to call out important information. Here's what to expect.



REMEMBER

This icon points out information you should commit to your nonvolatile memory, your gray matter, or your noggin — along with anniversaries and birthdays!



TECHNICAL  
STUFF

You won't find a map of the human genome or the secret to cold fusion here, but if you seek to attain the seventh level of NERDvana, perk up! This icon explains the jargon beneath the jargon.



TIP

Tips are appreciated, never expected — and I sure hope you'll appreciate these tips! This icon points out useful nuggets of information.

## Beyond the Book

There's only so much I can cover in 80 short pages, so if you find yourself at the end of this book thinking "Gosh, this is an amazing book; where can I learn more?" just go to [www.oracle.com/paas](http://www.oracle.com/paas). There, you can learn more about PaaS and the Oracle Cloud Platform. You can give PaaS a try at <http://cloud.oracle.com/tryit>.

## Where to Go from Here

If you don't know where you're going, any chapter will get you there — but Chapter 1 might be a good place to start! However, if you see a particular topic that piques your interest, feel free to jump ahead to that chapter. Each chapter is written to stand on its own, so you can read this book in any order that suits you.

- » Defining PaaS
- » Recognizing the business need for PaaS

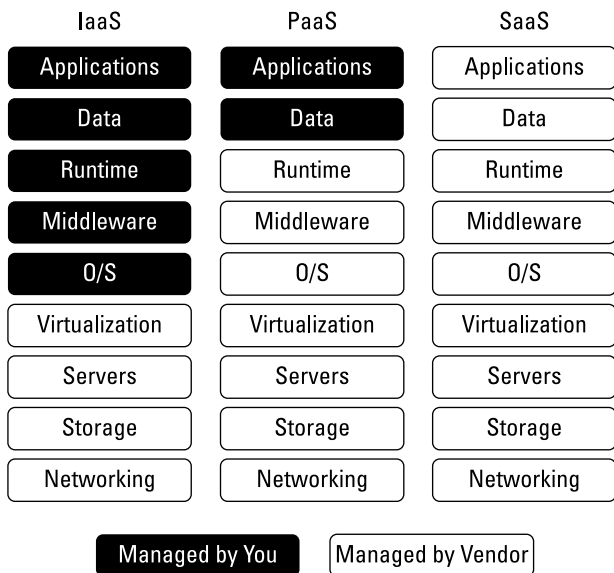
# Chapter 1

## Driving Innovation with PaaS

Innovation, business agility, cost efficiencies, a better customer experience — these potential benefits of cloud computing have made it a key component in enterprise IT strategies. In this chapter, you learn all about Platform as a Service (PaaS) and how it delivers those benefits.

# What Is PaaS?

PaaS is a category of cloud computing services that provides a platform to develop, deploy, and run applications without the cost and complexity of deploying and managing the required infrastructure. In cloud environments, PaaS is the layer that commonly exists between Infrastructure as a Service (IaaS) and Software as a Service (SaaS), as shown in Figure 1-1.



**FIGURE 1-1:** Comparing IaaS, PaaS, and SaaS.



IaaS provides cloud-based infrastructure services that provide compute, storage, and network capacity. The cloud subscriber is usually responsible for installing, configuring, securing, and maintaining any software on the cloud-based infrastructure, such as database, middleware, and application software.



SaaS provides cloud-based business applications, like a human resources, sales, or financial application, running on platform software (such as database and middleware) and infrastructure that are hosted and fully managed by the SaaS provider. The SaaS subscriber typically has little to no visibility into or control of the underlying platform and infrastructure.

A complete PaaS solution provides integrated, cloud-based platform services that include preinstalled and configured database and middleware (such as application and web servers) software — all provided on a cost-effective subscription basis. It can also provide a platform for developing, testing, deploying, and securing different kinds of enterprise applications, such as transactional and analytics applications.

PaaS includes self-service, web-based tools that enable businesses to select appropriate configurations for their database and middleware requirements. With PaaS, many

software-development tools are often accessible via a web browser.



TIP

In case you're wondering, here's the difference between public PaaS and private PaaS: Public PaaS runs on an infrastructure that is shared by many organizations, whereas private PaaS runs on an infrastructure that is used exclusively by a single organization. Oracle provides a complete PaaS offering so customers have a choice of deployment type and location — either public or on-premises.

## What's Driving the Need for PaaS?

Businesses today are constantly challenged by quickly changing markets and business requirements. To stay competitive, businesses need greater agility and innovation, but they still need to keep their IT costs in check.

PaaS offers IT organizations cloud and mobile solutions for their new and legacy applications while accelerating their time to market and delivering speed, scale, and agility to react to the digital disruptions. PaaS is also helping IT meet increasing business-side demands to speed application development, delivery, revision, and maintenance.

PaaS enables significant IT cost savings by offering a subscription pricing model and by enabling developers, for example, to focus on application development instead of procuring and managing infrastructure. PaaS provides the option to use and pay for the environments only when needed. Businesses using PaaS have reported significant operational savings compared to individual development teams managing internal technology stacks.

PaaS provides speed, scale, and agility by offering simpler, instant access to application development and deployment environments in the cloud. PaaS also allows rapid scale up and scale down of these environments as needed, providing significant flexibility that would otherwise not be possible. PaaS solutions further allow you to extend and integrate SaaS and on-premises applications to drive improved decision making, business agility, and company innovation.

IT professionals and architects can use PaaS to move existing applications to the cloud more securely, which can result in simplified IT, lower costs, reduced risk, and streamlined operations. This paradigm shift allows businesses to refocus their resources to innovate faster and take advantage of new markets and business opportunities.

Business professionals can use PaaS to help lead business transformation needed to stay competitive in their



industries. PaaS can help businesses increase productivity and data visibility through greater process automation, content and collaboration capabilities, and analytics that deliver real-time business insight.



REMEMBER

PaaS provides a cloud platform that enables users to develop, deploy, and run applications without the complexity of deploying and managing the underlying infrastructure.

In the cloud, modern PaaS offerings aid productivity for businesses through integrated tools, with built-in artificial intelligence (AI) frameworks and open-source support. Data is the new business currency. As companies become inundated with data, it's crucial to have appropriate tools to meet current and future needs, and intelligent services can carry much of that burden.



REMEMBER

AI is the ability of a computer to learn patterns and apply those learnings to answer future questions. You can observe it across all aspects of daily life, from self-driving cars to package-delivery drones to intelligent refrigerators.

With these additional capabilities, developers now can use ready-to-use programming components that allow them to build new capabilities into their applications,

including emerging technologies such as chatbots, block-chain, and Internet of Things (IoT).

Benefits of AI directly built into PaaS offerings are not just limited to developers. IT organizations and line of business users now can use AI-fueled platform services to create an adaptive, augmented, and autonomous enterprise — one that is data driven, responsive, secure, and optimized to further reduce business risk, lower cost, accelerate innovation, and get predictive insights, truly transforming a business into an agile and intelligent enterprise ready to take on the challenges and opportunities digital revolution has to offer.



TIP

Business drivers for PaaS adoption include the need for the following:

- » Greater agility, flexibility, and innovation through automated processes, increased collaboration, higher productivity, and real-time business insights
- » Accelerated application innovation and time to market
- » Improved security to help reduce risk
- » Simplified IT, lower costs, and streamlined operations, including integration and connectivity with existing on-premises applications

# DISPELLING A FEW MYTHS ABOUT PAAS

Though understanding and awareness about PaaS and its capabilities have increased, there are still lingering myths that can lead to decisions that result in a whole new set of problems. It's important to understand all your options and how each impacts your business.

**Myth #1: PaaS requires a patchwork of vendor solutions.** Some cloud vendor offerings are piecemeal and require different solutions from multiple vendors that then lack the integration and comprehensive capabilities that companies need. However, you can choose a complete PaaS offering from a single vendor that provides the built-in integration, connectivity, and extensibility that organizations require among all their services, as well as with any on-premises infrastructure.

**Myth #2: Cloud will lock you in.** Without question, some cloud service providers would like nothing better than to lock you into their proprietary cloud platform. But businesses have lots of options that will allow them to avoid lock-in — provided they prioritize solutions that:

- **Are complete**, offering integrated solutions that reduce complexity
- **Are open**, delivering optimum flexibility as the organization changes over time
- **Offer choice**, allowing for coexistence of private and public cloud installations
- **Are secure**, deploying multiple layers of physical and logical controls from the data-center to access controls

**Myth #3: All clouds provide the same cost-performance benefit.** Using low-cost commodity servers is an approach many cloud providers favor. However, cloud environments run on servers and infrastructure of all kinds. Choosing the right cloud service provider with the right infrastructure for your business is critical. Here are two important questions to consider when choosing a cloud platform:

- Are you getting the best price/performance possible?
- How does your quality of service (scalability, performance, availability, reliability) compare against other clouds?

*(continued)*

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As you dig into these questions, you may discover that commodity hardware doesn't always provide the best value in terms of scalability, performance, availability, and reliability. Infrastructure that is optimized and specifically engineered for higher performance and efficiency often delivers the best value in the cloud.

**Myth #4: Pay-per-use is the way to go for PaaS.** Paying for the use of PaaS on a per-minute or hourly basis may sound economical, but the costs are variable and can add up very quickly. Pay-per-use makes a lot of sense for short-term usage, or large fluctuations in capacity needs. But fixed monthly or annual costs are often the better choice for long-term application deployments. Prepaid subscriptions can also offer significant cost benefits. So consider what's most economical for your particular application and weigh your options.

**Myth #5: PaaS isn't secure.** Security has long been one of the top concerns among organizations considering a move to the cloud. The fact is that businesses often improve application and data security by leveraging enterprise-grade public clouds. Many corporate data centers have limited security resources and expertise, are

challenged when meeting regulatory requirements, have outdated software and hardware, and don't perform regular security audits and assessments. On the other hand, security is a must for any public cloud provider, replete with the following:

- A dedicated team of cloud security experts
- Processes that ensure compliance with regulatory and industry standards
- Comprehensive measures that include layers of physical and logical security controls
- Third-party security audits
- Automatic updates for managed hardware and software

Still, not all cloud security is equal and the best advice is to review your cloud provider's security technology and practices to understand any potential security risks.

**Myth #6: The biggest benefit of PaaS is lower IT costs.** Reducing operational and capital costs are certainly good reasons for adopting cloud computing. But these days, adopting cloud-based solutions is rarely just about saving money. Businesses are realizing that ease of use

*(continued)*

*(continued)*

supported by a predefined service catalog, self-service provisioning, and auto-scaling drives speed of deployment, business innovation, and adaptability to changing business needs. Others view PaaS as a way to gain flexibility and agility. The biggest benefit of PaaS may differ from one business to the next and is usually directly tied to whatever issue is driving businesses to adopt PaaS in the first place.

## IN THIS CHAPTER

- » Migrating from on-premises to the cloud
- » Integrating PaaS and IaaS
- » Analyzing business data
- » Managing the hybrid cloud

# Chapter 2

## Exploring PaaS Use Cases

In this chapter, you discover several common business use cases for leveraging Platform as a Service (PaaS).

## Developing and Testing New Applications

Developing and testing applications in the cloud is the most common use case for PaaS today. Businesses develop



and test new applications or Software as a Service (SaaS) application extensions in the cloud or just move the testing of on-premises deployed applications to the cloud while deploying their production environment in their own data centers. This approach enables application developers to quickly and easily spin up development and testing environments in the cloud, usually in minutes. Because there is no need to procure, deploy, and maintain additional infrastructure and software licenses, businesses can often create new innovative applications in the cloud significantly faster, safer, and at a fraction of the cost of an on-premises environment. Plus, with ready-to-use programming components covering a wide range of emerging innovative technologies such as artificial intelligence (AI), blockchain, Internet of Things (IoT), and chatbots, developers are able to build new capabilities into their applications, further increasing productivity.

Key benefits include the following:

- » Lower development costs
- » Acceleration of application development with instant access to new dev/test environments
- » Increase in developer/IT productivity by eliminating the need to set up and manage infrastructure for dev/test
- » Improved security by masking sensitive production data for nonproduction use

Check out the Magrabi Optical customer success story in Chapter 4 for a real-world example of this use case.

## Lifting and Shifting Applications to the Cloud

This PaaS use case involves taking an existing on-premises application and moving it to the cloud. This generally means taking existing databases, middleware, and applications and simply redeploying them onto a cloud-based platform without changing any code.



REMEMBER

The key to making this possible is having the same technology across on-premises and cloud environments.

For example, instead of spending resources to re-create application user accounts and entitlements, some identity management solutions will enable a more seamless user experience when supporting cloud applications. This means accounts can easily be moved from on-premises to the cloud, or the two can operate in a synchronized model.

Key benefits can include the following:

- » Lower total cost of ownership (TCO) by reducing data center footprint and need for in-house hardware for enterprise apps

- » Faster on-boarding of cloud apps and users by synchronizing on-premises identity repositories
- » Capability to leverage existing investments in platform, applications, and technical skills
- » True application portability, not only from development to test to production, but also between different prototyping and proof-of-concept (POC) environments
- » Increase performance, scalability, availability, and reliability of existing enterprise applications

## Extending SaaS Applications

Many businesses have requirements that aren't addressed by standard functionality in the SaaS applications they've previously deployed, particularly as needs change over time. In such cases, businesses can leverage application development cloud services to develop and deploy custom code, or complete application extensions that broaden and customize the functionality of their SaaS applications. Businesses can also extend SaaS applications with platform services that provide additional capabilities such as document sharing or analytics.



TIP

Businesses can also use integration cloud services to integrate their SaaS applications (data and business processes) with on-premises applications, as well as other cloud and mobile applications.

Key benefits include the following:

- » Better support for the business by addressing unique application requirements quickly and cost-effectively.
- » Enable secure applications using standards-based identity and API management cloud services.
- » Capability to extend and enhance embedded static reports in cloud applications (SaaS) with advanced, multiperiod, cross-functional analytics, discovery, content, and social collaboration, process automation, mobility, and data visualization.
- » Capability to eliminate data silos and fragmented business processes.
- » Increased productivity and connectivity with machine learning (ML)-based smarter process automation and pre-built integrations.

Head to Chapter 4 to find out how Avaya extended its SaaS applications with PaaS.

# Integrating PaaS and IaaS

The move to Infrastructure as a Service (IaaS) is picking up speed as enterprises realize they can lose their competitive edge with a business-as-usual IT infrastructure. Industry analysis shows the growing importance of IaaS for moving any workload to run in a cloud environment, and businesses are seeing the benefits.

One scenario for using IaaS is to run a custom-built infrastructure, perhaps running a mix of different products. Perhaps you want to move an existing on-premises workload to the cloud, but the existing platform environment doesn't support your current environment release level. Moving it to a tailor-made IaaS environment allows you to implement exactly what your application needs, and once the workload is in the cloud, it's much easier to integrate that workload with other applications you may be choosing to run on the PaaS environment. This capability to leverage and integrate with the other applications running on the platform is a key advantage to using IaaS as well.

Seamless integration between PaaS and IaaS provides businesses with key benefits, including

- » Lower integration and maintenance costs
- » Simplified deployment and operation of integrated business applications in the cloud

# Analyzing Business Data from Any Source

Analytics platforms provide valuable consumer, product, behavioral, and many other insights. Today, analytics defines the modern organization by harnessing its collective intelligence. This next-generation collaboration combines the wisdom of people with the power of ML and AI.



REMEMBER

Analytics technologies allow people to combine data from any source — cloud, mobile, on-premises, big data repositories, Hadoop, the IoT, or local files — for a complete view of their business.

Key benefits include the following:

- » Faster and greater insight across every area and dimension of the business to drill down and through every level of information — from big-picture summary to detailed records
- » Efficient discovery of hidden patterns and trends through end-user data visualization and exploration
- » Complex data made more accessible, understandable, and usable when it's converted from static numbers into charts, timelines, and other visual formats

- » Leveraging PaaS compute resources for analysis of large datasets from multiple disparate sources
- » Leveraging visual data exploration with ML and AI to discover insights and reveal the significance of all data

Learn more about this use case with an actual example from SoftBank in Chapter 4.

## Sandboxing for Testing Platform Upgrades

Every business with on-premises application deployments has to deal with upgrades. For most IT organizations, platform upgrades represent risk, uncertainty, and increased cost.



REMEMBER

Increasingly, businesses are turning to PaaS to provide low-cost, low-risk sandbox environments for testing application platform (database and middleware) upgrades.

Key benefits include the following:

- » Reduces cost and risk of testing software upgrades
- » Accelerates testing of software upgrades

- » Increases frequency of uneventful, successful upgrades
- » Focuses IT resources on supporting the business rather than being IT infrastructure experts

See how Flexagon uses PaaS for sandboxing in Chapter 4.

## Managing the Hybrid Cloud

IT operations professionals struggle to piece together effective management approaches as their organizations adopt cloud delivery. Part of the problem is that most customers already have multiple older-generation systems management tools that weren't designed for cloud computing.

In addition, as more organizations transition to the cloud, this has created challenges for managing the security of on-premises and cloud environments in a consistent model, without repetitive efforts. Security solutions such as identity management create the basis for application controls both in the cloud and on-premises, so identifying a model where one can either synchronize these identity repositories or select an identity and access management (IAM) solution designed for a hybrid cloud will mean faster onboarding of cloud apps and users, while ensuring consistency with the on-premises model.



As more organizations focus on the digital experience first and adopt cloud and DevOps practices, eliminating management data silos and embracing ML is the only way they can keep up. This is systems management delivered in the cloud.

Key benefits include the following:

- » Your scarce staff resources can become proactive and plan for the future more accurately through ML and big data analytics approaches designed specifically for IT.
- » You can effectively manage service-level agreements (SLAs) through early detection of application and infrastructure changes.
- » You gain better visibility and manage all your technology investments in one place, whether for new development or workload migration in the cloud, or traditional IT deployed in your data centers.
- » You can bring development, quality assurance, and operations teams closer by eliminating their respective data silos so developers can focus on applications.

- » Developing applications
- » Securing the cloud experience
- » Analyzing business data
- » Collaborating in the digital workplace

## Chapter 3

# Introducing Oracle Cloud Platform

Oracle Cloud Platform with built-in artificial intelligence (AI) and machine learning (ML) algorithms enables developers, IT professionals, and business users to develop, extend, connect, and secure cloud applications, share data, and gain insights across applications and devices. By extending autonomous capabilities (such as self-driving, self-securing, and self-repairing) across the entire cloud platform, Oracle now enables companies to innovate faster, increase

productivity, lower costs, and benefit from enhanced security features with the most complete and open Platform as a Service (PaaS) offerings. Oracle Cloud Platform offers the same capabilities in the cloud and on premises for the greatest choice and most flexible access.

Oracle Autonomous Cloud Platform Services have built-in advanced AI and ML capabilities, making them:

- » **Self-driving to lower costs and increase productivity:** Eliminate human labor to provision, secure, monitor, back up, recover, and troubleshoot. Automatically upgrade and patch itself while running. Instantly grow and shrink compute or storage without downtime.
- » **Self-securing to lower risk:** Protect from external attacks and malicious internal users. Automatically apply security updates while running to protect against cyberattacks, and automatically encrypt all data.
- » **Self-repairing for higher availability:** Provide automated protection from all planned and unplanned downtime with up to 99.995 percent availability, resulting in less than 2.5 minutes of downtime per month including planned maintenance.

# Oracle Cloud Platform for Application Development and Deployment

One of the true “killer” use cases for cloud computing is application development and testing. The payback from using a cloud platform to quickly build, test, and deploy applications is compelling especially when it includes the following capabilities:

- » Self-provision development and testing environments, so you can start building applications without having to wait for IT to set up hardware and software.
- » Enable agile IT and DevOps through the use of containers, build pipelines, and microservices.
- » Leverage on-premises security profiles (identity) in the cloud for rapid onboarding of applications, devices, users, and groups, before shifting into production.
- » Integrate application security rapidly through secure application programming interfaces (APIs) or cloud access security brokers (CASBs) that analyze user behavior of cloud apps against approved usage policies.

- » Quickly get applications into production and auto-scale those applications as required.
- » Collaborate with other developers and architects on the creation of the application.

Here's what to look for when evaluating a PaaS solution for developing and deploying business applications:

- » The capability to develop and deploy nearly any type of application, including enterprise apps, lightweight container apps, web apps, mobile apps, and more.
- » Support for *polyglot* (multi-language) development environments.
- » Layers of security defense from silicon up to applications, and consistent security policies across hybrid cloud environments.
- » Support for Java standards, so DevOps teams can use familiar architectures, utilities, and products — including integrated development environments (IDEs).
- » The same support for technology and standards across public and private clouds, resulting in maximum flexibility. Look for full compatibility for applications and databases from on-premises to cloud to support a hybrid cloud strategy.

- » The capability for business users to build simple and secure apps without requiring coding experience.
- » Support for complete application life-cycle development and management.



TECHNICAL  
STUFF

The 12-factor app is a methodology for building Software as a Service (SaaS) apps. Learn more about the 12-factor methodology at <https://12factor.net>.

## Securing the Oracle Cloud Platform

According to the Oracle and KPMG Cloud Threat Report 2018, 87 percent of organizations have a cloud-first orientation. As more organizations move to the cloud, security remains high on the list of concerns. As a result, many organizations are faced with the need to close the gap between their organizations' use of the cloud and their readiness to secure a growing cloud footprint. This requires a retooling of people, processes, and technologies. Data is the most valuable asset an organization possesses; security must be a foundational requirement to address new threat vectors. Each new application establishes a new user provisioning system, event/alert repository, and application database — increasing the risk of exposure to customer and financial information.

As organizations scale their infrastructure, applications, and users, the security requirements are lagging and further challenged to scale at the same rate. A comprehensive security strategy across all these elements becomes a necessity.



TIP

Migrating to the Oracle Cloud provides an opportunity for organizations to secure and manage heterogeneous hybrid cloud environments with an intelligent platform that is intended to detect, prevent, respond to, and predict risks with minimal burden to overwhelmed staff.

This opportunity starts with improving visibility into your SaaS/PaaS/Infrastructure as a Service (IaaS) security practices across the entire cloud footprint. Oracle Cloud Access Security Broker (CASB) Cloud Service helps manage real-time analysis of application requests, and examines how both sanctioned and unsanctioned (shadow IT) applications are used, on a per-user basis, to determine if corporate policies are being enforced. It expands to modernize your security operations centers as you pivot to the cloud. Security Operations Centers (SOCs) have a daunting task, keeping pace with the security challenges and highly sophisticated and persistent attackers. Oracle provides a suite of Autonomous Security cloud services that can help modernize a SOC's pivot to the cloud by securing all users, applications, data, and infrastructure.

The final step is audit and analytics. No matter whether the data is on-premises or in the cloud, a complete audit trail must be collected for reporting and compliance. Oracle Configuration and Compliance Cloud Service helps ensure your organization is meeting required corporate and regulatory compliance and security baseline goals. This service is built on Oracle Management Cloud's secure, unified big data platform.

Oracle's identity-based SOC framework provides comprehensive monitoring, threat detection, analytics, and remediation tools across hybrid environments that include on-premises and cloud resources. Oracle security cloud services are designed to unify both activity and contextual threat, user, and operational data from multiple sources and enable SOC's to respond in real time to emerging threats.

### Oracle can help

- » Improve visibility into Oracle and third-party SaaS/PaaS/IaaS security practices.
- » Enhance efforts to discover shadow IT processes throughout the enterprise and enforce rigorous cloud security protocols.
- » Enforce data protection controls to help address strict regulatory and compliance mandates, such as the requirements under the EU GDPR.



- » Enforce access controls by authenticating and authorizing cloud applications and IT resources.

Strengthening your security posture in the cloud stems from understanding the responsibilities of each party. The Oracle cloud is securely architected and managed, but for cloud customers, there are several responsibilities to maintain proper configurations and user controls across your cloud environments. The Oracle cloud security tools can help safeguard these configurations and autonomously monitor user behavior. Oracle's cloud security solutions are designed to be powerful stand-alone products, but they can also be seamlessly linked together to provide a single view of your users, apps, data, and infrastructure.

A holistic approach to PaaS security enables the following:

- » Preventing unauthorized access to sensitive data to reduce risk and exposure
- » Detecting suspicious behavior on cloud scale with ML and provide automated remediation to ensure swift actions
- » Responding to real-time threats by analyzing data and events across the organization, repeatedly normalizing and correlating to find patterns

- » Predicting future threats with user and entity behavioral analytics and ML
- » Creating a baseline for policies and correctly configuring cloud applications to adhere across the organization

**Look for a comprehensive cloud-based security solution that**

- » Utilizes a multi-layered security approach that autonomously secures the entire cloud stack — including users, apps, data, and infrastructure — and all environments, whether on premises or in the cloud
- » Provides a single pane of glass to manage security threats across the entire infrastructure
- » Provides a heterogeneous and open platform with a comprehensive security program that entails the best security technology, people, and process, down to the physical security of the data centers
- » Secures your users, apps, data, and infrastructure while enforcing consistent security policies and controls across hybrid cloud environments
- » Provides visibility into your entire environment — on premises and in the cloud

- » Protects data with strong security controls and prevents unauthorized access, helping clients maintain confidentiality and data integrity while addressing regulatory and privacy law
- » Provides complete end-to-end life-cycle management of identities on premises and in the cloud
- » Automatically detects advanced threats and vulnerabilities by continuously monitoring and analyzing events and alerts across the organization
- » Responds automatically to remediate suspicious activity
- » Analyzes the behaviors of applications against acceptable policies and configurations established for each cloud service and user

## Oracle Cloud Platform Data Management

As the volume and variety of enterprise data grow, organizations need a broad range of capabilities to capture and manage this valuable asset.

Oracle Cloud Platform Data Management offers the world's first autonomous database. Oracle Autonomous Database Cloud delivers a self-driving, self-securing,

and self-repairing data management environment, fully integrated to manage data for development or for production deployment to the cloud. Oracle Autonomous Database Cloud helps businesses extract more value from their data faster and much more easily by eliminating the manual management to simplify access for line of business (LOB), IT, and developers. With Oracle Cloud Platform for Data Management, organizations can choose to store business-critical data on premises, in the Oracle Cloud, or in a hybrid environment. Businesses can preserve their existing investment with the same Oracle Database capabilities in the cloud as Oracle Databases deployed on premises — the same software, architecture, and tools.



REMEMBER

Data is your most valuable asset. Oracle Autonomous Database Cloud can help you easily manage and get more value from your data to enable data-driven decisions at the speed of thought.

## Oracle Cloud Platform for Integration

The rapid shift from on-premises data, process, and APIs to a hybrid mix of SaaS and on-premises business systems has introduced significant new integration

challenges for companies engaged in digital transformation. Oracle Cloud Platform for Integration with autonomous capabilities simplifies connectivity and automation of end-to-end business processes.



REMEMBER

One reason this challenge exists is the ease with which lines of business (LOBs, such as marketing, sales, customer support, and others) can subscribe to multiple, disparate cloud services with little or no involvement from enterprise IT.

When the business starts using the data service, SaaS application, or API, however, there is often a need to integrate with existing systems of record — and then the real challenges surface, including the following:

- »» Integration platforms have historically been too complex and fragmented for effective business and enterprise IT collaboration.
- »» Data couldn't be moved easily between cloud and on-premises when business conditions require quick adjustments.
- »» SaaS investments create new "Silos as a Service" without the ability to easily share data among themselves or with on-premises systems of record.

- » Business process automation is typically not aligned with API-first application and data integration.
- » Analytics are rarely based on real-time or streaming data, and they don't typically span applications or departments.
- » API design, management, and security have been treated as distinct areas, making secure monetization of new services complex and risky.

These challenges translate into quantifiable, negative business impacts, including abandoned cloud applications, missed deadlines, security issues, and outright failure to integrate cloud data, processes, and APIs with on-premises systems of record.



TIP

To speed digital transformation, look for a simple, agile, and hybrid integration platform.

Some of the things to look for include the following:

- » Prebuilt integration, adapters, and business process templates so you don't have to start all your integration and process automation efforts from scratch

- » ML-powered recommendations based on successful integration and automation projects completed by others that incorporate crowdsourced insight and experience
- » Connectivity between your SaaS applications, data, and integration platform with a single cloud provider that offers both PaaS and SaaS
- » Simple user experience so more employees, including business and enterprise IT application developers, can collaborate with integration developers and architects
- » Flexibility in servicing data requirements for analytics, data lakes, streaming, and real-time solutions
- » Open deployment options with public, private, and hybrid cloud portability to support ever-changing business and regulatory requirements



TIP

With Oracle Cloud Platform for Integration, organizations can jump right in and integrate faster using prebuilt adapters, recipes, and templates. You don't have to be an integration expert to start connecting your business with autonomous data mapping.



TIP

For more information, see *Cloud Integration & API Management For Dummies*, 2nd Oracle Special Edition, available at [www.oracle.com/goto/cloud-integration-dummies](http://www.oracle.com/goto/cloud-integration-dummies).

# Oracle Autonomous Analytics Cloud

Simplify. Connect. Scale.

When it comes to analytics, every organization is trying to find insights and make decisions from a mass amount of data. Businesses need to simplify their analytic processes with less IT intervention to find answers faster with deeper insights and at lower costs.

Collaboration with intelligent data enrichment accelerates analytics processes to improve time to value.

You need to be able to handle all data, at any size, in any location. An analytics platform needs to support, cloud and hybrid deployment scenarios and enable rapid access to internal and external users along with efficiencies of scale.



TIP

To meet these goals, you need a robust, intelligent cloud platform that supports the entire analytic process with the security, flexibility, reliability, and speed to insights that you expect. Long gone are the days when *analytics* referred to static, embedded reports and charts. Today, an analytics platform must not only deliver traditional reports and dashboards, but also include ML and various other proactive and self-service tools within a single, unified analytics platform. ML-enabled



analytics augments user skills and speeds time to insights with automated discovery, intelligent data enrichment, hidden pattern recognition, and predictive analytics. A complete analytics platform also includes self-service visualization and proactive anytime, anywhere access with a mobile application.

The platform must be quick to provision and easy to administer — but it also has to offer self-service so you can empower your users to do their own analyses without sacrificing governance.

But how can you gain the benefits of a proven enterprise-class system without enterprise-class costs and infrastructure? The cloud gives you the power of the enterprise, without the infrastructure or maintenance burden, for a predictable cost, based on your cyclical needs.



TIP

Instead of spending your time worrying about upgrades or wondering if your analytics platform will perform during busy periods, you can use your time better if you have an enterprise-grade analytics solution.

When your analytics are in the cloud, you want the best end-to-end solution that can span across on-premises to applications in the cloud and is capable of generating analytics in seconds to enable faster and smarter business decisions.

You need a PaaS analytics solution like Oracle Analytics Cloud to do the following:

- » **Access to all data sources with governance governed:** No compromise. Most users want unrestrained access to data at any time, but some other data sources require curation and governance.
- » **Data preparation and enrichment:** A true analytics cloud platform allows users to establish a data pipeline and make it easy for anyone to manage and blend data. Additionally, users can manage and augment data with easy tools to review and create flows, whether the data source is in the cloud, on-premises, in a third-party location, or on any device.
- » **Visual presentation:** The experience should be as simple as combining the data you need and letting the system automatically recommend the best way to represent it graphically from a gallery of dynamic visualizations, or selecting the graphic you want. Visually sharing the story behind your data should take just a few easy steps starting from rich, self-blended data from any corporate or external source.
- » **Business scenario modeling:** Create new applications directly from Excel and easily model varied scenarios, including what-if analysis.

» **Make it mobile:** Just as analytics have evolved to be fully dynamic and proactive, they've also moved beyond the desktop. Fully functional analysis on any device is the “new normal.” This means that your analytics platform must include a seamless solution for mobile device access anytime, anywhere, from any device.

In this way, a cloud analytics platform will help organizations understand and uncover insights from any data to build optimized business models, thereby transforming data into an asset.

## Oracle Cloud Platform for Mobile and Conversational Interfaces

Oracle Mobile Cloud is a platform for extending any backend system, and enhancing customer engagement through the development, deployment, management, and analysis of mobile applications and conversational interfaces. With a cloud-based platform, Mobile Cloud enables the conversation from any location, while AI-powered chatbots provide the means to automate customer engagements, intelligently responding at scale, in a personalized manner, and managers can fine-tune access and gain insight through built-in analytics.

Oracle Mobile Cloud capabilities include the following:

- » **Built-in AI:** With Oracle Mobile Cloud, a built-in AI engine can understand each user's intent and main context, allowing for instant, scaled, and personalized responses to multiple inquiries. AI learning also ensures higher accuracy, allowing for seamless handoffs of complex questions to human agents. It also can use sophisticated algorithms to create simple QnA chatbots from unstructured data.
- » **Built-in micro services:** Most apps tend to share similar use cases that apply to most applications. Commonly used mobile services such as storage, data offline and sync, push notification, user management, and location services help developers build better apps faster.
- » **Mobile and chatbot-ready backend services:** Extend new and existing backend systems by shaping and publishing web services as mobile or bot-ready RESTful APIs and publish/share them in an API catalog that client developers browse, access, and use.
- » **Multichannel analytics:** Monitor, measure, and optimize app performance and user behavior across channels to improve future revisions and engage customers more effectively.

» **Accelerated mobile and chatbot development:**

Get ready for the growing trend toward developing apps without writing any code. Given the high demand for mobile apps and advanced chatbots that function as digital assistants, you quickly build and deploy apps and bots with declarative visual tools and *Instant Apps* (web forms exposed in a bot conversation flow) for iOS, Android, and the web.

## Oracle Cloud Platform for Content and Experience

A digital workplace requires a unified solution of content and experience management capabilities that enable business users to easily collaborate anywhere, simplify business automation, and communicate more effectively.

A holistic PaaS solution for content and experience enables the following:

» **Increased productivity:** Drive better decisions through frictionless yet secure information exchange, social collaboration, and mobility.

» **Increased efficiency:** Enable faster decision making, streamlined and simplified process automation, reduced cost of operations, and

improved work effectiveness with contextual collaboration.

- » **Rapid innovation:** Deliver new products and services to market faster, and create compelling communications and engagement.

Look for a comprehensive cloud-based content and experience management solution that

- » **Optimizes existing investments:** Easily integrates with current on-premises and SaaS applications and extends current enterprise content management, business processes, and applications without creating new information and governance silos.
- » **Empowers business users:** Drives content collaboration, business process automation, and effective communications without coding or IT customization.
- » **Contains inherent security and compliance:** Provides granular security controls for information at rest, in transit, and at access points, even on mobile devices. Ensure presence of global, secure data centers for data residency and other regulatory compliance.

The Oracle Cloud Platform for Content and Experience includes Oracle Content and Experience Cloud, which is a cloud-based content hub to drive omni-channel content

management and accelerate experience delivery. Powerful collaboration and workflow management capabilities streamline the creation and delivery of content and improve customer and employee engagement.

## **Oracle Cloud Platform for Systems Management**

Oracle Management Cloud represents a new generation of systems management tools designed for today's agile IT organizations. It's the culmination of Oracle's Autonomous Cloud vision to provide customers with a complete solution for managing and securing heterogeneous environments with minimal effort.

With a unified big data platform, powered by trained ML capabilities, Oracle Management Cloud provides a comprehensive and intelligent management platform that delivers zero-effort operational insights and automated preventative and corrective actions. IT Operations and DevOps professionals automatically benefit from autonomous anomaly detection, big data techniques to isolate and resolve issues across the entire operational and security data set — eliminating the limitations imposed by traditional management tools.

This comprehensive management environment increases DevOps agility, reduces risk, and eliminates disruption during periods of growth and change.



Oracle Management Cloud uses a broad array of ML techniques, including the following:

- » **Anomaly detection:** Flags unusual resource usage and identifies configuration changes
- » **Clustering:** Filters out signal from noise; aggregates topology-based data
- » **Correlation:** Groups alerts on related symptoms; discovers dependencies
- » **Prediction:** Forecasts outages before they happen; plans capacity and resources

Oracle Management Cloud provides a unified platform of pre-integrated services that can be consumed independently but become exponentially more powerful when used together.



These services help businesses keep customers and internal users happy by resolving issues more quickly, as well as enabling IT to run more efficiently. Offering a massively scalable platform in the cloud supports companies with small and large environments, and Oracle Cloud Platform for Systems Management complements existing on-premises tools, like Oracle Enterprise Manager.



# Oracle's Cloud at Customer Portfolio

Cloud at Customer brings Oracle Cloud services to your data center. Providing a version of the Oracle public cloud behind your firewall, it enables all the innovations of the public cloud, while meeting business and regulatory requirements. The portfolio of solutions is designed to enable organizations to remove one of the biggest obstacles to cloud adoption: data privacy concerns related to where the data is stored. Organizations are eager to move their enterprise workloads to the public cloud, but many have been constrained by business, legislative, and regulatory requirements that have prevented them from being able to adopt the technology. These first-of-a-kind services provide organizations with choice in where their data and applications reside and a natural path to easily move business-critical applications eventually to the public cloud.

Oracle Cloud at Customer can be particularly useful for highly regulated industries, such as financial services, healthcare, and the public sector, which need to comply with data sovereignty, data residency, and other data protection requirements. These customers may need complete isolation of their infrastructure to comply with security frameworks, such as Sarbanes-Oxley (SOX), Payment Card Industry (PCI), and the Health Insurance Portability and Accountability Act (HIPAA).

Additionally, customers want control. They may need to maintain full control of their data, as well as their systems. Customers want to use their own firewalls and load balancers, and may need to meet specific service-level agreement (SLA) guarantees for their customers.



REMEMBER

This approach addresses those businesses that have data residency and compliance issues, while allowing them to leverage the agility and cost-savings features of a cloud implementation.

In addition to IaaS, customers have access to all of Oracle's major PaaS categories on Cloud at Customer, including Data Management, Big Data and Analytics, Application Development, Enterprise Integration, and Security. Oracle has also made available the ability for customers to consume Oracle SaaS services such as Enterprise Resource Planning, Human Capital Management, Customer Management, and Supply Chain Management in their own data centers. The Cloud at Customer portfolio consists of Oracle Cloud at Customer, Oracle Exadata Cloud at Customer, Oracle Big Data Cloud at Customer, and SaaS at Customer.

## IN THIS CHAPTER

- » Developing and testing new apps in the cloud
- » Making SaaS and PaaS work together seamlessly
- » Analyzing data to drive innovation
- » Testing software upgrades

# Chapter 4

# Oracle Cloud Platform Success Stories

In this chapter, I share just a small sampling of Oracle Cloud Platform customer success stories and show you how Platform as a Service (PaaS) is helping companies accelerate innovation, lower IT costs, drive productivity, and increase business insight.

# Magrabi Optical: Developing and Testing New Apps

Magrabi Optical is a large optical retail company in the Middle East and North Africa. Recently, Magrabi started using Oracle Database and Java Cloud Services for development and testing, which enabled it to do business faster and at a lower cost.

## Challenges

- » New hardware took about two months to deploy on premises and could be held up in customs for days or weeks.
- » Applications installed on premises in a country would go down if there was a problem in that country.

## Solutions

- » Oracle Database
- » Oracle Java Cloud Services

## Results

- » A new environment can be provisioned in the cloud in as little as 30 minutes.
- » Hosting in the cloud is safer and lower cost than hosting on premises.
- » Cloud solutions can be easily scaled up and down as business needs change.

## Avaya: Extending and Integrating SaaS with PaaS

Avaya is a global provider of solutions for customer and team engagement. The company provides technologies for unified communications and collaboration, contact center and customer experience management, and networking. It also offers related services to large enterprises, midmarket companies, small businesses, and government organizations around the world. Avaya has an intricate sales and service model in which the bulk of its sales depends on its channel of more than 20,000 worldwide partners.

# Challenges

Avaya needed to address the needs of its midmarket segment while replacing an existing cloud-based customer relationship management (CRM) solution with the Oracle Sales Cloud. At the same time, its enterprise partner business required particular functionality that wasn't included in the Oracle Sales Cloud/Partner Relationship Management (PRM) solution. Avaya needed the capability to build custom application extensions to complement the functionality in the Oracle Sales Cloud. In addition, Avaya needed an easy, cost-effective way to integrate the Oracle Sales Cloud with other enterprise applications.

# Solutions

- » Oracle Java Cloud Service—Software as a Service (SaaS) Extension
- » Oracle Cloud Integration Service
- » Oracle Sales Cloud Service

# Results

For its extension platform, Avaya selected Oracle Java Cloud—SaaS Extension as a way to build additional functionality without making significant changes to the core Oracle PRM application. Avaya also chose Oracle Cloud Integration Service as its cloud integration

platform for integrating Oracle Sales Cloud with its other enterprise applications, including an on-premises SAP implementation.

“With the Oracle Cloud solution, integrated with our own engagement solutions, we expect to take our partner experience to the next level while reducing about 80 percent of customizations and 30 percent of ongoing costs,” said Fari Ebrahimi, senior vice president and global chief information officer at Avaya.

## **SoftBank: Analyzing Business Data**

The small, quiet island of Teshima in Japan’s Inland Sea has become the proving ground for a new business model for energy distribution, as well as remote analytics and telemetry, used to ensure that tourists visiting a popular international art festival don’t get stranded on the remote island.

Teshima, accessible only via a 30- to 45-minute ferry ride, is ideal for day trips, but public transportation on the island is limited. SoftBank, a Japanese telecommunications and technology company, and PS Solutions, a subsidiary of SoftBank, recently launched an eco-friendly electric motorcycle sharing service called Setouchi Karen. The service lets visitors rent electric scooters, which are rechargeable and connected to the Internet of Things (IoT).

# Challenges

SoftBank wanted to develop a model for how various energy providers (in some cases, private citizens) can set and adjust rates based on user needs. That model found an application in Ubiden, a smart-grid transaction engine that can adjust the cost of the energy based on the use of the appliance plugged into the system.

SoftBank hopes to extend the program to local home and business owners, so it can provide its electric power to scooter drivers looking for a recharge. Ubiden would serve as a broker for the transaction, providing a point-of-sale system that measures and charges a rate for the power used.

The electric scooters run approximately 18 miles (30 kilometers) before they need a 20-minute recharge, so Teshima's small size made the island a perfect location for the pilot. The plan was environmentally friendly, more economical than building gas stations on the island to fuel gas-powered scooters, and a great way to get around.

However, if visitors get stuck on the island, they're in trouble. Ferries run only a few times a day, and lodging is very limited. Thus, scooter riders needed to receive an alert if they were running out of charge, so they wouldn't find themselves stranded in a remote part of the island.



## Solutions

SoftBank needed an IoT platform that would connect the scooters to a central system that collected, displayed, and analyzed driving data, location information, and power consumption in real-time. The Oracle IoT Cloud platform integrates all this information and provides predictive analytics as well.

The IoT system's two-way communications technology connects with the scooters every few seconds to gather information on their location and battery usage. If the battery is running low, the operator can see the warning from the system so that the operator can do the action.

The scooters put the predictive functionality of the Oracle IoT Cloud to use in a unique way. Some riders may want to go to several sightseeing spots without considering the remaining battery of the scooter. Oracle IoT Cloud identifies the scooters that are being operated in this manner and flags the riders who may have difficulty getting back to the battery station.

## Results

Ultimately, SoftBank would like to expand this startup to other locations where pollution is a concern and where building a formal infrastructure to charge the electric vehicles (EVs) is cost-prohibitive.

# Flexagon: Sandboxing for Testing Platform Upgrades

Flexagon delivers DevOps and application release automation solutions that help organizations automate the software delivery life cycle and improve the productivity and quality of software development. Using Flexagon solutions, including FlexDeploy, organizations can deliver their software faster, reduce costs, improve quality and agility, and drive value to their businesses.

## Challenges

- » Maximize resources focused on software development, Flexagon's core business, as opposed to infrastructure management to drive greater innovation and faster time to market for new DevOps and application release automation solutions and capabilities.
- » Give the firm's software developer customers the ability to quickly ramp up or tear down environments to accelerate their software projects and reduce costs.
- » Pivot effectively to the cloud to satisfy customer demand for faster software development innovation.

- » Accelerate the evaluation and sales cycle for FlexDeploy, the company's flagship DevOps and continuous delivery solution.
- » Reduce software development cost and risk.

## Solutions

Flexagon selected Oracle Infrastructure as a Service (IaaS) and Oracle PaaS to accelerate development, testing, and deployment of its FlexDeploy DevOps and application release automation solution.

## Results

- » Flexagon and its software developer customers were empowered to accelerate solution delivery, ensure high-quality software initiatives, and reduce development and deployment costs and risks with the option to consume FlexDeploy via the cloud.
- » An instance of FlexDeploy was deployed in Oracle Java Cloud Service in just 15 minutes when first undertaking certification of the product in the cloud, four times faster than without using Oracle Java Cloud Service.
- » The stage was set for faster sales cycles by giving customers the opportunity to more thoroughly

and easily evaluate FlexDeploy, thanks to Oracle Compute Cloud Service and Oracle Storage Cloud Service.

- »» The ability to add features and enhancements to the FlexDeploy solution was accelerated, affording a competitive advantage to the software development company.
- »» IT complexity was reduced and the move from Flexagon's development and testing environments to production was streamlined thanks to seamless integration between Oracle IaaS and Oracle PaaS solutions, which, in turn, speeds software development and deployment.
- »» Users have the flexibility to instantly stand up storage and compute environments in the cloud, provision Oracle WebLogic Server, deploy an application, run a test, and then decommission automatically — paying only for what they use — thanks to Oracle's integrated cloud solutions.

- » Building a sustainable strategy
- » Investing in flexibility
- » Delivering results faster

## Chapter 5

# Ten Best Practices for PaaS Success

**T**his chapter gives you a few best practices to help you deploy a Platform as a Service (PaaS) solution for your enterprise — and “pass” with flying colors!

## Choose an Enterprise-Ready Solution

Enterprises need enterprise capabilities. Meeting service-level agreements (SLAs), risk mitigation, and

business continuity are minimum requirements in enterprise computing — and not all cloud technologies are capable. Whether you're using the cloud for a single-user developer platform or running millions of consumer user production systems, cloud computing is the means to upgrade your IT capabilities, as well as your professional reputation. Technology stacks must be integrated to be enterprise-ready.



TIP

You must either investigate and certify every component and integration in the cloud stack yourself — or find platforms that have it ready to go.

A ComputerWorld Cloud Computing Survey found that service-level guarantees are rated as important or very important by 82 percent of organizations choosing to run applications in the cloud. Don't assume that your cloud platform will provide the capabilities you require — demand these same capabilities.

## Ensure Portability and Interoperability

With many enterprises adopting hybrid and multicloud models, application and data portability and coexistence of cloud and on-premises IT have become essential requirements. Open-source and multivendor technology

stacks make this flexibility extremely complex, if not impossible.

Just as traditional silo lock-in was a problem to avoid, so it is with cloud platforms as silos. The best enterprise investments are designed to mitigate these types of risks. And as cloud-native open-source technologies migrate onto the cloud, enterprise-level support is needed.



TIP

Oracle apps and data can move between public clouds and on-premises environments — easily and without changing any application configurations, security policies, or virtualization templates.

## Anticipate Hybrid Scenarios

To be as agile and efficient as possible, modern systems design should minimize infrastructure dependencies. As systems evolve, price performance, peak performance, networking costs, latency, and SLA objectives may suggest re-platforming in a way that was not anticipated.

Your cloud transition requires an integrated and complete enterprise technology stack in addition to native multiplatform implementation. Outside of interoperable tools and apps, don't forget that large data sets for testing and analytics need to move at high speeds across platforms and data centers.



REMEMBER

The success of the PaaS service layer will be measured by the ease with which you can manage change. The best services support creating a dynamic, hybrid environment.

## **Choose an Open, Integrated PaaS with Built-In AI/ML Capabilities**

PaaS should reduce the time and cost of deploying and managing applications — not add to them. Choosing an open PaaS solution with a comprehensive set of fully integrated services will help avoid the complexity among multiple cloud vendor services. Platform services should not only work seamlessly with each other, but they should also be well integrated with underlying Infrastructure as a Service (IaaS) and with any Software as a Service (SaaS) applications built to run on them. This will bring simplicity to your complex IT environment.

Keeping up with innovations, a cloud platform with built-in artificial intelligence (AI)/machine learning (ML) capabilities like Oracle Autonomous Cloud Platform, with its full stack of enterprise-grade services, can offer great value to organizations because businesses can now pair the agility that cloud has to offer with exceptional intelligence.



Having complete, integrated cloud services with built-in AI allows business users and developers to cost-effectively build, deploy, and manage workloads seamlessly on premises or in the cloud — with superior choice, openness, maximum security, and built-in intelligence.



TIP

Oracle Autonomous Cloud Platform uses AI and built-in ML algorithms to deliver a cloud platform that is self-driving, self-securing, and self-repairing — truly helping organizations achieve their digital transformation journey faster with greater levels of efficiency.

## Move Development and Testing to PaaS First

Often, the bottleneck in applications development is provisioning resources. There's never enough, they're never the right size, and they're never delivered in a timely manner. Development in the cloud eliminates these problems, and the gains can be dramatic. Aside from having resources available, Oracle's data cloning and preparation features — the most time-consuming task in dev, test, and support operations — can also be significantly reduced. In the end, developer productivity improves and costs per bug decrease.

In addition, application development and testing workloads are ideal candidates for early migration to the cloud

because they inherently carry lower risk and often only require temporary environments.



TIP

With Oracle Cloud Platform, developers can quickly provision databases as well as every other aspect of the deployment platform, and focus on building and deploying applications with the click of a button instead of waiting for resources to be provisioned for them or having to provision and manage the underlying infrastructure themselves. Developers can quickly create development environments to simplify and accelerate the entire development life cycle, and then choose to deploy the applications on Oracle Java Cloud Service, Oracle Container Cloud Service, Oracle Developer Cloud Service, and Oracle Database Cloud Service, or even in house.

## Build a Database Foundation

Database administration is easier in the cloud. If your cloud starting point has been nonproduction use cases, such as development and testing, it's time to look again. The state of the art now supports large-scale enterprise workloads in production environments. All Oracle Database options are now available in PaaS, including Real Application Clusters (RAC), partitioning, management, and more, which means that any on-premises database use cases can be supported in the Oracle Cloud. The

spectrum of database services enables developers to gain instant access to a fully configured Oracle Database. For database administrators (DBAs), familiar management tools, including automated cloud tooling, provide the same level of control and at the same time make it much easier to manage high-end production workloads for online transaction processing (OLTP) and data warehousing.

## Migrate On-Premises Portfolios

Adopting a cloud platform should be a smooth transition. However, migrating an on-premises portfolio to a new platform can be challenging. It involves understanding dependencies, recertifying security policies, and evolving personnel skill sets. A lot of these tasks and risks can be mitigated if you can be assured that your destination is the same as your starting point. To do this, choose a cloud provider with a native environment that matches your own. Doing so will leverage your people, their skills, and your portfolio without your having to rewrite or reconfigure it.



**TIP**

Oracle Cloud Data Management hybrid design ensures 100 percent compatibility for Oracle Database and Oracle applications, which doesn't require any code changes. Automated migration tools combined with familiar

management features to those used for on-premises, make migration easy and seamless.



**TIP**

Oracle's on-premises tools and technologies are natively supported in the Oracle Cloud. And Oracle's capability to blueprint an entire IaaS landscape (using Ravello), along with its associated PaaS layer, enables a smooth migration to the cloud.

## Explore New Technologies

PaaS enables you to easily experiment with technologies that you've perhaps never tried before or have had limited exposure to, such as the following:

- » Big data
- » Internet of Things (IoT)
- » AI/ML
- » Blockchain
- » Mobility
- » Citizen developer tools
- » Agile team collaboration tools
- » Containers

Quickly spin up a new platform technology to see if it solves a business need or may have some other useful application within the business.

## Improve IT Responsiveness



REMEMBER

PaaS is more than a collection of technologies. It contains the enabling capabilities for everything at the top of the business agenda: business process modernization, customer engagement, deeper analytics, and even risk mitigation.

When it comes to cloud adoption, it isn't surprising that cloud-based development has been so successful. But the value proposition has shifted from faster provisioning to faster release cycles. PaaS services gave IT the tools to be even more responsive. Today, apps are cloud native, engaging more users than ever, and have become the standard for business as usual. Consequently, expectations for IT have never been higher.



REMEMBER

Don't think of PaaS services as a collection of discrete services. Think of PaaS as a platform at the center of your cloud and hybrid cloud delivery model. As a platform, the services should be integrated and managed consistently. Think architecturally about interoperability, standards, and service integration.

Choosing a standards-based and integrated PaaS platform will be critical to your success.



TIP

Many companies buy into cloud strategies, but they have concerns about their data residing in the public cloud or they are too far from a data center for ongoing operations. Oracle Cloud at Customer may be the solution in these cases. It brings Oracle Cloud to *your* data center, thereby eliminating any data sovereignty or governance concerns, as well as latency or performance issues, while providing all the value of a subscription-based cloud model.

## Complete Projects Faster

Cloud projects tend to move faster not just because investment and technology barriers are removed through rapid provisioning and simplified management, but because the cloud offers a more productive development environment. These characteristics of cloud projects align well with Agile development shops that are defined by swarms of developers racing to meet rapid and short release sprints and support app development. Other important development characteristics that align well with an integrated IaaS and PaaS cloud strategy include the following:

- » Containers that conveniently package code and dependencies, and consume less run-time resources
- » Accelerated code-release cycles due to integrated cloud-native tooling
- » Experimentation with new technologies (see “Explore New Technologies” earlier in this chapter), such as mobile and big data analytics
- » Proliferation of open-source solutions with a collaborative community eager to share modern coding techniques, code, and tools



TIP

As you adopt new tools and techniques, be on the lookout for active communities of interest, as well as enterprise support for emerging standards.

Oracle provides enterprise support across a wide variety of development tools, platforms, and processes. Oracle Developer Cloud Service includes support for

- » Cloud hosted Git repositories for source control and versioning
- » Build automation with support for a variety of popular build frameworks such as Maven, Gradle, Ant, npm, bower, gulp, and others for application dependencies and libraries

- » Continuous integration engine that supports running and orchestrating integration and delivery pipelines
- » Platform support for Docker container creations, which in turn enables Mesos and Kubernetes
- » A task tracking system with agile project management dashboards and reports
- » Team collaboration tools such as peer code review, wiki, and activity stream



# Drive innovation and business transformation in the cloud

This updated edition of PaaS For Dummies explains how organizations can embrace the efficiency, speed of service, and information availability that cloud computing offers, with the right cloud platform. This book also explores key PaaS use cases, describes what to look for in a PaaS solution, examines some real-world PaaS success stories, and reveals best practices to help you succeed with PaaS in your organization!

## Inside...

- Explore how a cloud platform with built-in AI/ML capabilities can augment your cloud with exceptional intelligence
- Discover how you can avoid complexity with an open platform
- Learn how leveraging hybrid environments can elevate your business

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