Oracle Database as a Service

Empowered Users. Simplified IT.
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The adoption of DBaaS is a multiphased process, from standardization and the creation of service catalogs to migration and implementation.
Introduction: Database as a Service—Why Now?

Cloud computing is revolutionizing how information is consumed, delivered, and created. The connected culture of “click to results” and demands for instant access to information are also driving changes that impact IT processes and infrastructures, as well as how information is analyzed and the way applications and databases are developed and delivered.

The traditional data center with databases running on dedicated servers and storage creates an inflexible database and application divide that slows down deployment, blocks resource sharing, and keeps businesses from responding effectively to rapidly changing conditions.

Many companies are embracing database as a service (DBaaS) in the cloud and the trend is on the increase. In fact, 52 percent of businesses are expected to adopt public DBaaS clouds by 2016.

Why the strong momentum toward DBaaS adoption?

- Proven dramatic reduction or even elimination of capital expenses
- Lower operational expense and risk with simplified management
- Agile environment for rapid change to better compete and innovate

All signs point to the cloud:

52% of businesses will adopt public DBaaS clouds by 2016

Source: Computer World

52% of businesses will use the public cloud for development/testing by 2016

Source: Computer World
The Benefits of DBaaS

DBaaS eliminates the need to purchase, build, and manage disparate silos of server and storage systems. It makes database resources and capabilities available online so users can consume them whenever and wherever they’re needed.

The instant availability of database resources frees up both developers and database administrators to focus on the higher-value tasks that provide more-direct value to the business. For businesses, the benefits of DBaaS are as follows:

- **On-demand self-service** empowers DBAs and developers to quickly provision the database resources they need—without having to know anything about the inner workings of the database management system.

- **Rapid elasticity** enables users to add, remove, and reassign databases as well as compute, memory, and storage resources on demand.

- **Measured usage** enables both users and providers to measure resource consumption—CPU, disk, memory, and bandwidth—to help control costs and implement charge-backs.

- **Resource pooling** offers a flexible, shared architecture that can expand and contract as needed, rather than hard-to-manage silos of dedicated resources.

A Platform for Innovation

The benefits of self-service database provisioning and automation ripple throughout the organization—from developers to CIOs. Application developers can set up their own databases in minutes rather than waiting days or weeks for a DBA to do it for them. And once users have a database up and running, they never have to worry about managing, controlling, or even understanding the underlying infrastructure (network, servers, operating system, storage, and so on).

As a result, DBAs can focus on more strategic activities and developers can immediately start creating and deploying new applications. Lines of business (LOB) leaders get their business software up and running faster, IT managers can boost productivity and innovation, and executives increase business agility while reducing operating expenses.
### Public, Private, or Hybrid Cloud?

Database cloud deployment models include private, public, and hybrid.

<table>
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<tr>
<th>Private Cloud</th>
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<td>A business typically owns and manages its own pool of cloud computing resources (network, servers, operating systems, storage, and more) on premises, and uses the private cloud to deliver DBaaS to its users or consumers of database services.</td>
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**Customer Video:** e-DBA Achieves DBaaS with Oracle Multitenant

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<th>Public Cloud</th>
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<td>A DBaaS provider owns both the database hardware and the software on behalf of the customer, which the customer accesses as a service through a network.</td>
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**Press Release:** “DX Marketing Selects Oracle Cloud as the Foundation for Its Data-Driven Marketing Platform.”
Oracle Database Cloud Service and Oracle Marketing Cloud help firm reduce time to market by up to 70 percent.

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<th>Hybrid Cloud</th>
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<td>Many organizations may want to adopt a hybrid cloud model to take advantage of both private and public cloud resources. For example, businesses may want to keep sensitive data and mission-critical applications on premises in private clouds. At the same time, they may use DBaaS for development and/or testing environments, less-critical applications, and cloud bursting, which lets organizations leverage fast, elastic capacity.</td>
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**Customer Video:** Lift & Shift in Hybrid Cloud Environments
Learn how Oracle Enterprise Manager 12c provides a “single pane of glass” managing on-premises and cloud-based IT using the same familiar interface you know and use on premises every day.
Chapter 1: The Business Case for Database as a Service

Whether organizations choose a public, private, or hybrid cloud model, DBaaS unleashes enormous potential value, maximizing the use of IT dollars and driving higher productivity and innovation across the organization.

Forbes Article: “Why Cloud Databases Are in Your Future”

Innovation and Top-Line Growth

Businesses are under more pressure than ever to bring technologies, services, and products to market as quickly as possible. But all too often, DBAs, developers, and testers are left waiting until IT can provide the database resources they need, which can be a serious drag on productivity and delay time to market. All that changes when users provision their own databases quickly and easily.

Video: Plug Into The Cloud for Dramatic Cost Savings and Agility (Pulte & eDBA). Listen to Oracle customers describe the dramatic costs savings and agility they achieved with Oracle Multitenant. Learn how quickly and easily eDBA can now deploy database services while Pulte saved an amazing US$1.7 million on its IT innovation project.

Overburdened DBAs are freed up from routine provisioning and deprovisioning tasks. Users can get right to work on the task at hand. And IT staff can focus on value-add innovations instead of routine tasks.

Pay as You Grow—Eliminate CapEx

Building and staffing data centers is a hugely expensive endeavor. With database as a service, you only pay for capacity as needed, to meet application and business demands. This flexibility allows you to scale up or scale out your business without the costly up-front CapEx.
Calculate your Savings

**Assessment Tool:**
*Oracle Database as a Service ROI Calculator*

Calculate the business benefits of Oracle Database as a Service in the Cloud. Follow a few simple steps to calculate the benefits for your company.

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**Web: Oracle Public Cloud Customers**

**Operational Flexibility**

Besides lowering costs, both public and private cloud environments provide far greater scalability than traditional siloed models.

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When an organization requires more compute or storage resources, IT no longer needs to rip and replace existing systems or create a series of siloed systems, each with its own planning and implementation processes. Instead, the enterprise can incrementally expand its current pool of infrastructure resources with unprecedented speed and simplicity.
Simplified Management, Lower OpEx

When organizations transition from a legacy database environment to a private database cloud, it’s important that they be able to provision database services in a standardized, repeatable fashion. This keeps their database environments predictable and services consistent, improving service levels and reducing management costs.

Public DBaaS customers can take savings a step further. They no longer have to buy or manage any hardware infrastructure, and typically don’t have to pay for database licenses.

But as they consider public DBaaS providers, customers should think about two key factors:

1. **Management simplicity**: Public DBaaS customers should still be able to control deployed applications and hosting environment configurations, and select database management functions. This lets them meet evolving needs without ever having to manage a complex, disparate infrastructure.

2. **Transparent migration between private and public database clouds**: Along the journey to the cloud, public DBaaS customers may want to migrate workloads from private to public DBaaS environments, and vice versa. They need a provider that lets them do this quickly and transparently, without changes to user access, management tools, or application code.

**White Paper: Guide to Database as a Service (DBaaS)**

Learn how Rapid Home Provisioning allows the key people in the IT organization to focus on innovative activities that bring the most value when you automate and standardize administrative tasks related to database software distribution and deployment.

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**Chapter 1: The Business Case for Database as a Service**
Chapter 2: Why Choose Oracle Database as a Service?

Not all databases are created equal. The same is true for DBaaS solutions—especially when it comes to supporting flexible cloud deployments.

As the world’s #1 database company, and one of the very few that can offer leading technologies, expertise, and cloud services at every level of the IT stack—infrastructure as a service (IaaS), platform as a service (PaaS), and software as a service (SaaS)—Oracle is uniquely positioned to deliver the most comprehensive and integrated DBaaS offerings in the industry.

Database Innovation and Leadership

The strengths of Oracle’s DBaaS offerings begin with Oracle Database itself. For nearly four decades, Oracle’s database technologies have led the industry, with continuous innovations that have increasingly boosted efficiency, performance, availability, and security for hundreds of thousands of customers.

Article: “Oracle Database Is Designed for the Cloud”

The Oracle Multitenant Advantage

Designed for the cloud, Oracle Multitenant delivers a groundbreaking architecture that simplifies database consolidation, provides unmatched density, and greatly reduces the number of individual databases that administrators have to manage.

Oracle’s database technologies have led the industry for almost four decades

The benefits of managing many databases as one extend across the data center. Oracle Multitenant lets you quickly and easily create “container” databases that can accommodate many “pluggable” application-level databases. All pluggable databases share common resources within the same container database. Yet each one can host its own workloads—fully isolated from the other pluggable databases.
A database cloud built on Oracle Multitenant technology also greatly simplifies security management compared to traditional environments. Benefits include:

**Data isolation**—each pluggable database represents a fully isolated application data set to protect data access.

**Easier patching**—each pluggable database inherits the security attributes of its container database, so patching is easier and more effective.

**Faster security upgrades**—upgrading security is as simple as unplugging a database from its container and replugging it into a security-enhanced database container.

At the same time, you minimize costs and risks by achieving:

**Maximum resource utilization**—support more applications per server to reduce capital expenditures.

**The ability to manage many databases as one**—perform upgrades, backups, recovery, and other time-consuming tasks as a single entity to scale database operations to unprecedented levels.

**Defense-in-depth security**—historically, security has been a key roadblock to cloud adoption; in contrast, Oracle’s DBaaS solutions actually strengthen your security posture by offering the industry’s most advanced technology, from encryption to strong defenses against insider threats.
Transparent Database Migration Across Hybrid Clouds

When it comes to highly sensitive and/or mission-critical workloads, organizations often want maximum control and prefer to deploy and manage resources on-premises. But they probably have a range of other less-sensitive and less-critical workloads that can leverage the scalability and cost-effectiveness of a public cloud for better business results and value.

Video: Hybrid Cloud
Watch Oracle’s Executive Chairman and CTO Larry Ellison describe easy coexistence and migration between on-premises and Oracle Cloud, allowing users to transparently move workloads.

But what if you want to share data across public and private clouds? For example, you may want to keep sensitive client data for a private cloud application on premises but analyze that data using a business intelligence application hosted in a public cloud. Or, at some point in the future, you may want to move workloads from private to public clouds, or vice versa. For example, changing regulatory policies may require you to bring some data workloads back in-house.

Not surprisingly, hybrid cloud environments, which offer the best of both worlds, are growing faster than pure public or pure private cloud environments.

Because its' public and private DBaaS offerings are built on shared standards and technologies, Oracle is uniquely able to offer the most effective hybrid cloud environment. Oracle Database works exactly the same in all scenarios, and you get data and application portability between on-premises and cloud environments to make the best use of a hybrid environment. That means DBAs can leverage their existing skills in both environments. You can even manage databases in both on- premises and public environments using a single pane of glass within the familiar Oracle Enterprise Manager interface.
Chapter 3: Oracle Database Cloud Service Overview

With its industry-leading engineered systems, enterprise management tools, and advanced database technology—and a true multitenant architecture—Oracle is uniquely able to deliver comprehensive, secure, enterprise-grade database services in a private, public or hybrid cloud environment.

Oracle Database as a Service

Imagine a complete instance of the familiar Oracle Database in the cloud, including access to all of the most advanced Oracle Database 12c features and options of the industry’s #1 database—available with a simple pay-as-you-go model.

That’s what Oracle Database Cloud Service delivers. You can be up and running in minutes, without purchasing and maintaining hardware. There are no changes to Oracle Database, whether it is running on premises or in Oracle Database Cloud Service. And that means there are no new tools or skills to learn. It’s the same software with the same standards, and there are no code changes.

In addition, there’s no need to understand backup and recovery commands or manually perform other complex tasks such as database software upgrades and patching. Why? Because all of these tasks can be automated.
Oracle Database Cloud Exadata Service

No other cloud provider in the industry can match the scalability, performance, and availability of Oracle Database running on Oracle Database Cloud Exadata Service. By leveraging the full power of the Oracle Exadata Database Machine platform, you can run your most important applications and consolidate databases and applications in the cloud with confidence.

Oracle Database Backup Cloud Service

Shrinking backup windows, incomplete recovery, lost data, and backup management headaches are now distant memories. Oracle Database Backup Cloud Service gives you a low-cost, highly secure, and scalable solution to store backups from on-premises Oracle databases or databases in Oracle Cloud using the same process you use to back up to disk or tape. Your data is encrypted at the source and triple-mirrored in the cloud so it’s safe and always recoverable.
No other public DBaaS provider can offer all of the following:

**Faster provisioning.** Empower users with provisioning wizards to create a new database schema or database instance with just a few clicks—simplifying a process that would require more than 50 steps for an on-premises database.

**Rapid application development.** Quickly create Java applications and easily deploy robust, scalable web applications via a simple browser interface with Oracle Application Express. Easily access Oracle Database data and features via the internet or open APIs to run web and mobile apps using RESTful web services.

**Automation.** Unique cloud tooling provides automation not offered by other public database cloud providers. You can perform patching, upgrades, backups, and more—all with a single click.

**Elastic capacity.** Add CPU, memory, and storage resources on demand to support database growth while avoiding disruption.

**Enterprise-class capabilities.** Choose from cloud service offerings that deliver the broadest spectrum of Oracle Database performance, availability and security capabilities to meet your specific service-level requirements.

**Easy backup and recovery.** Gain one-click, automated, secure backup to cloud storage with point-in-time recovery.

**Optimized database infrastructure.** Avoid the cost and complexity of managing disparate components with an integrated database environment that optimizes performance, scalability, availability and security. And with Oracle Database Cloud Exadata Service, every component comes preintegrated and pretuned, from compute, storage, and networking to data protection and disaster recovery.

**Full hybrid cloud support.** Avoid training time and costs by leveraging the same Oracle Database tools used for on-premises solutions, such as Oracle Enterprise Manager, Oracle SQL Developer, Oracle Data Pump, and the SQL*Loader feature in Oracle Database. Enable seamless database migration and management across private and public clouds via a single console.

**An unbeatable technology stack.** Oracle has decades of experience developing Oracle Database. Who better to trust for your database cloud? We also have technology leadership across all layers of the IT stack—infrastructure, middleware, and applications—all of which are offered as Oracle Cloud services that are tightly integrated with Oracle’s public database cloud solutions.

**Simplified support.** Because support is included with Oracle’s public DBaaS offering, you can rapidly address any potential issues with a single call when running Oracle Database in the cloud. Other database cloud providers can’t offer this type of streamlined support for fast resolution.
Flexible Management, Lower OpEx

With Oracle Database Cloud Service you can quickly configure and deploy database environments, such as development and testing, without the cost and complexity of purchasing and maintaining hardware. Developers and QA professionals gain quick, easy access to the resources they need. But the business only pays for the resources it actually uses—and avoids a long-term commitment to on-premises maintenance and support.

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Advanced but simple-to-use tools enable you to monitor your Oracle Database instance, providing a wide spectrum of information about virtual machine (VM) and Oracle Database usage, status, and more.

Unlike other cloud offerings, Oracle Database Cloud Service also enables you to retain administrative control of the service (root OS and SYS database access). You can even script and automate complex operations.
Chapter 4: Database as a Service Use Cases

Oracle Database Cloud Service gives you the power and flexibility of Oracle Database in the cloud. You choose whether you want a dedicated database instance running on a virtual machine with full administrative control, or a dedicated schema ideal for smaller environments and fully managed by Oracle.

The speed of deployment, extensive automation and flexible choices offered by Oracle Database Cloud Service make it an ideal platform for many use cases:

New application development and testing. Businesses demand faster innovation and want to develop and deploy apps as quickly as possible to retain or improve their competitive edge. The streamlined provisioning and automated administration offered by Oracle Database Cloud Service enables your developers to spin up database schemas or full database instances for dev/test with just a few clicks. Within minutes you get a robust database cloud service with integrated tools that enable developers to rapidly build and run Oracle Application Express and Java applications right out of the box. Oracle Application Express, which is included with Oracle Database Cloud Service, lets developers build web applications using a simple, browser-based process without requiring extensive programming experience.

Lift and shift. In addition to developing new applications in the cloud, organizations are increasingly interested in moving their existing on-premises dev/test environments as well as production applications to the cloud. The hybrid cloud model offered by Oracle Database Cloud Service greatly simplifies this process. You can “lift and shift” databases to Oracle Cloud—and back on premises as needed—with a few clicks using familiar tools such as Oracle Enterprise Manager 12c or Oracle SQL Developer.

Customer Success Story: Zamil Industrial Investment Company:

“When we compared Oracle’s cloud offerings with other vendors we found that only Oracle’s cloud technology frees us entirely from licensing, configuring, and managing our business-critical database and application server environment.”

—Zaki Sabbagh, CIO, Zamil Industrial Investment Company
And because Oracle Database works exactly the same way in the Oracle Cloud as it does on-premises, no new database tools or application code changes are required when you move databases between on-premises environments and the cloud.

**Video: Oracle Database Cloud Exadata Service—Exadata Power, Cloud Simplicity.**
Click the link to watch the Oracle Cloud Platform series and get the full Oracle Cloud Platform story. Oracle Database Cloud Exadata Service gives you the power of the world’s #1 database on the fastest, most available cloud platform.

**Running business-critical workloads.** Many businesses are eager to use the cloud for more than just dev/test and smaller workloads. Oracle Database Cloud Service supports this goal by offering Oracle Database 12c enterprise-class capabilities—advanced performance, security, and high-availability features and options—that no other cloud provider can deliver.

Oracle Database Cloud Exadata Service takes these capabilities even further by enabling you to deploy and run Oracle Database on the fastest and most scalable and reliable platform in the industry.

Now you have the confidence to run large-scale, mission-critical workloads in the cloud, including online transaction processing (OLTP), data warehouses and in-memory analytics. You can also consolidate dev/test and mixed application workloads.

With Oracle Database Cloud Exadata Service you can achieve:

**Rapid deployment.** Industry-standard database servers, intelligent storage servers, and high-speed network fabric are preconfigured, pretuned, and pretested by Oracle experts. You can eliminate weeks or months of effort typically required to deploy a high-performance system.

**Extreme performance.** Unique technology inherent in Oracle Database In-Memory offloads data-intensive SQL operations for real-time analytics.

**Learn More: Oracle Database Cloud Exadata Service**

**Database backup.** Just about every organization experiences challenges with backup and recovery—from data corruption to slow recovery to data loss. Oracle Database Backup Service is a scalable, on-demand storage solution that eliminates these headaches and enables you to securely back up data from Oracle databases running on premises or in Oracle Database Cloud—and completely restore your data to any point in time.
Oracle Exadata Cloud Service for Business Critical Workloads

With Oracle Exadata Cloud Service, for example, you access the world’s highest-performing and most-available platform for running Oracle Database—all with the flexibility and simplicity of Oracle Public Cloud.

You gain

- Extreme performance.
- Fast time to value with prebuilt support for business-critical enterprise workloads.
- Lower capex with the ability to fully tailored configurations.
- 100-percent compatibility for applications and databases—no code changes.

Database backup. Just about every organization experiences challenges with backup and recovery—from data corruption to slow recovery to data loss. Oracle Database Backup Service is a scalable, on-demand storage solution that eliminates these headaches and enables you to securely back up data from Oracle databases running on premises or in Oracle Database Cloud—and completely restore your data to any point in time.
This service is a cost-effective alternative to storing tape backups off-site and can be used to consolidate storage infrastructure or as an integral part of a multilayer database backup and recovery strategy. You can also use cloud backups to clone databases and create custom test, development, or QA environments in Oracle Cloud.

**Video: Secure Backup in Oracle Cloud**

**Testing Oracle Database 12c and/or Oracle Exadata.** Many organizations are hesitant to upgrade to the latest database version (or to move to a new database platform) due to concerns about cost and potential risk. Oracle Database Cloud Service provides a risk-free, cost-effective way for you to test-drive or train your IT staff on Oracle Database 12c and the Oracle Exadata system without paying for on-premises infrastructure or software licenses.

Within minutes your team can have access to the full suite of advanced Oracle Database 12c capabilities in Oracle Cloud, including Oracle In-Memory Database and Oracle Multitenant, enabling you to accelerate your database upgrade process.
Chapter 5: Journey to the Cloud

Oracle Consulting for Oracle Database

Whether your organization is considering public, private, or hybrid clouds, Oracle Consulting helps you define a strategy that takes maximum business advantage of cloud technologies—and delivers lifecycle services from architecture and planning to implementation and migration.

Wherever your organization may be on its journey to DBaaS, Oracle Consulting for Oracle Database works with you to build an architecture strategy designed specifically for your business objectives.

The Oracle Architecture Blueprint and Roadmap Service for Oracle Cloud provides a detailed, practical roadmap including:

- A service catalog
- Charge-back models
- A governance plan to ensure:
  - high performance
  - high availability
  - operational success

Data Sheet: “Consulting Services for Oracle Service Cloud”
Ensuring Cloud Success

Try out Oracle Database Cloud Service with a 30-day free trial by visiting cloud.oracle.com, or have an Oracle sales representative create a purchase order for you.

For information about subscribing, see Trial and Paid Subscriptions for Oracle Cloud Services at cloud.oracle.com.

Watch the Videos:
- Video: Get Started with Database as a Service
- Video: Create a Service Instance
- Video: Connect to the Database Instance in a Service Instance
- Video: Monitor the Database Instance in a Service Instance

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