



Cloud **Essentials**

# Run Critical Databases in the Cloud

Oracle Cloud is ideal for OLTP and analytic applications—and it's ready for your enterprise workloads.

**ORACLE**<sup>®</sup>

Cloud computing is transforming business practices and simplifying data center operations. However, when it comes to moving critical database assets to the cloud, many IT leaders are leery—and rightly so. They have seen the limitations of popular commodity cloud solutions, which mostly consist of fragmented hardware and software offerings that must be manually configured. IT pros must build their own platforms on top of the service provider's commodity infrastructure, migrate their data, and then figure out how to keep everything in sync with the apps and data still maintained on premises.

Can a public cloud offer turnkey database functionality along with the high levels of security, availability, scalability, and performance that you are accustomed to in your own data center? Can it ensure consistency with your on-premises applications and databases, and give you the tools to easily move workloads between the two?

With Oracle Cloud the answer is yes. Oracle's proven cloud database services guarantee enterprise-caliber scalability, security, and performance—often beyond what you can achieve in your own data center. You can subscribe to complete database platforms with a few clicks, eliminating the need to provision, build, and manage in-house databases and storage systems. With pay-as-you-grow configurations—all managed by Oracle experts—your organization will obtain operational flexibility with zero up-front capital expenses. It's a great way to lower operational costs because you pay only for what you use.

Read on to discover what Oracle Database Cloud can do for your business.





## Oracle's Complete Spectrum of Database-as-a-Service Offerings

- **Oracle Database Cloud Service:**  
A dedicated, single-node or clustered database designed for development, testing, and deployment of existing applications.
- **Oracle Bare Metal Cloud Database Service:**  
On-demand, pay-per-use database services with the performance and reliability of dedicated hardware, non-volatile memory express (NVMe) storage, and Oracle Real Application Clusters (RAC), all on a low-latency, highly configurable, secure virtual cloud network.
- **Oracle Database Exadata Cloud Service:**  
A high-performance, high-availability database designed for mission-critical applications and high-density database consolidation.
- **Oracle Database Exadata Cloud Machine:**  
The world's most advanced database cloud, ideal for customers who require their databases to be on premises. This cloud offering uniquely combines the world's #1 database technology with Oracle Exadata, the most powerful database platform, giving you the simplicity, agility, and elasticity of a cloud-based deployment in your own data center.
- **Oracle Database Express Cloud Service:**  
A fully managed Oracle Database, Enterprise Edition running the latest database release on an Oracle Exadata platform, packed with features for modern application development and suitable for small- to medium-sized data management.
- **Oracle Database Backup Cloud Service:**  
Redundant, unlimited capacity for data storage and backup, with transparent management, data security, and privacy protection.

## The World's Most Complete Database-as-a-Service Offering

Oracle's mature database-as-a-service (DBaaS) offerings satisfy various levels of availability, scalability, and performance. You can set up and tear down databases on an as-needed basis, and let Oracle handle all the details of configuring and managing servers and storage resources.

All Oracle Cloud database offerings are 100 percent compatible with the Oracle Database instances that you have deployed on premises, ensuring a smooth transition to the cloud and a flexible, hybrid management strategy. You can migrate your databases to Oracle Cloud with a single click, and then monitor the DBaaS environment in the same way that you monitor your on-premises databases—all from a single console. You can do it yourself, or you can let Oracle handle everything for you, including backups, software patches, and upgrades.

## Oracle Hybrid Cloud Management

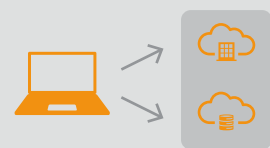
### Simple



#### Move to Oracle Cloud

Migrate workloads to Oracle Cloud and back with one click

### Reliable



#### Monitor Oracle Cloud

Ensure quality of service for Oracle Cloud Services

### Comprehensive



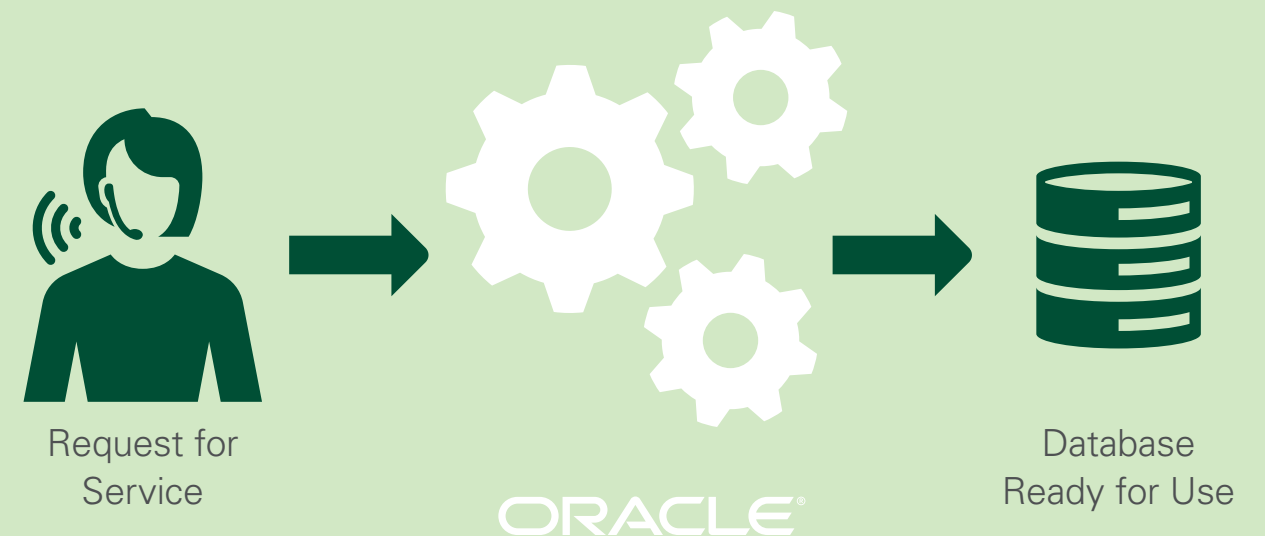
#### Control Hybrid Cloud

Enjoy single-pane-of-glass management for private and public clouds

## Rapid Provisioning Processes

Provisioning an on-premises database is often a lengthy process, including finding space in the data center, procuring hardware resources, setting up storage volumes, allocating memory, configuring database instances, and much more. Oracle simplifies the provisioning process via a cloud portal interface and APIs that integrate with any management or orchestration tool. You can have a fully configured Oracle Database 12c instance up and running in an hour or less. After that, new database instances can be provisioned in minutes. This highly efficient model avoids the burden of having to maintain extra capacity.

## Automated Database Provisioning



## The Oracle Difference

Once your cloud database is online, you have the option to manage your own database with one-click patching to apply the latest software updates, and you can easily set up a script to patch hundreds or even thousands of databases automatically. You can also allow Oracle to perform the database updates and upgrades for you.

Oracle Database Cloud Service is preconfigured for automated backup and recovery. No set up is required, and you can restore the database to any point in time. Built-in integration with Oracle's Recovery Manager (RMAN) utility, Oracle Data Guard, Oracle Active Data Guard, and other maximum availability architecture (MAA) capabilities ensure top-notch reliability and performance.



- **Comprehensive data management** with support for both structured and unstructured data with mixed workloads such as online transaction processing (OLTP) and analytics; Oracle Exadata options for high-end demands such as big data and Internet of Things applications
- **Unmatched performance** for database workloads that can be deployed on elastic cloud in a virtualized environment, on bare metal for predictable performance, or on Oracle Database Exadata Cloud Service for extreme performance
- **Easy migrations** with no code change to your applications when you move them to the cloud, which preserves investments and eliminates costly recoding efforts
- **Familiar management tools** that deliver comprehensive visibility for software, databases, and applications
- **Industry-leading innovations** such as pluggable databases for portability, in-memory technology for performance, and engineered systems optimized for mission-critical workloads
- **Deployment choice** as you migrate workloads among private clouds, Oracle Public Clouds, and Oracle Cloud at Customer hybrid environments—with the same products, architecture, and skills across all environments, giving you flexibility for the future
- **Exceptional protection** with Oracle defense-in-depth security, including encryption of at-rest and in-transit data to keep your information safe

## A Cloud for All Uses

You can migrate any OLTP or data warehouse workload to Oracle Database Cloud and scale it as needed. Some of the more popular DBaaS use cases include the following.

### Application Development and Testing

DevTest is one of the leading use cases for public cloud. Many companies form DevOps teams for developers to collaborate with operations personnel in creating, testing, troubleshooting, and improving applications as part of a continuous flow. These nimble teams rely on elastic cloud services such as Oracle Application Express and Oracle Database to gain database and compute services that can be rapidly provisioned, easily scaled, and run in a cost-effective Oracle Database Exadata Express Cloud Service environment.

## Sandbox Environment

Some Oracle Database customers use Oracle Database Cloud as a staging ground to practice upgrade procedures or try out new database features, such as transportable table spaces and pluggable databases. If you make a mistake you can easily delete the database instance and start over.

### Data Warehouses

Oracle Cloud is ideal for data warehouse workloads, especially when a diverse or geographically dispersed workgroup needs to access analytic services. Oracle Cloud reduces the cost and complexity of managing the infrastructure, allowing analysts to focus on extracting value from their data. Once your data warehouse is in the cloud, people can access it from anywhere, allowing your entire team to utilize data warehouse assets. Having your data warehouse in the cloud enables data to flow easily to key destination points—including to Oracle's cloud-based business intelligence engine.



## High-Performance Data Management

For high-performance data warehouses and OLTP applications, consider Oracle Database Exadata Cloud Service. It includes preconfigured hardware and software to eliminate costly data warehouse builds and delivers extreme performance for instant analytics.

## Backup and Disaster Recovery Services

Oracle Database Backup Cloud Service gives you enterprise-grade data encryption, compression, and protection for backing up your on-premises data to a secure cloud database. You can also use Oracle Cloud to establish an offsite disaster recovery service, complete with Oracle Data Guard and Oracle Active Data Guard. Many customers use their backups as standby databases for reporting and analytics.

## Migrating Existing Workloads to the Cloud



Enterprise Data Warehousing



Sandbox Environment



Line-of-Business Data Marts

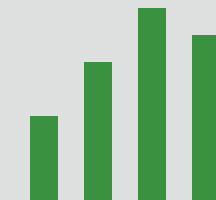


Backup and Disaster Recovery to the Cloud

## Discover New Monetization Opportunities



Data Warehousing + Cloud Compute Analytics



High-Performance Data Management



Expansion of Data Warehouse to Big Data Cloud Service



## Big Data Analytics in Oracle Cloud

Today's analytics implementations often include Hadoop and NoSQL databases that exist side by side with relational databases. Oracle Big Data Cloud Service can help you capture the value of Hadoop as you integrate new data streams with traditional data consumption models.

All Oracle Cloud customers can take advantage of Oracle's versatile data management and analytics solutions including Oracle Database Exadata Cloud Service, Oracle Big Data Cloud Service, and Oracle Big Data SQL Cloud Service. You can also use Oracle's cloud-based tools for data discovery, data preparation, and data integration.

Once your data is stored in Oracle Cloud, you will find it is especially efficient to use these unique cloud services, anchored by Oracle Database 12c, Oracle Exadata, and Oracle Big Data Appliance. For example, you can use Oracle Big Data SQL Cloud Service to simultaneously query Oracle Database, Hadoop, and NoSQL databases.

Of course, Oracle Cloud supports much more than just Oracle applications and data. You can run many popular third-party platforms for big data analytics, along with Oracle Big Data SQL technology, to extend SQL tools to your entire data management environment.

## Big Capabilities for Big Data

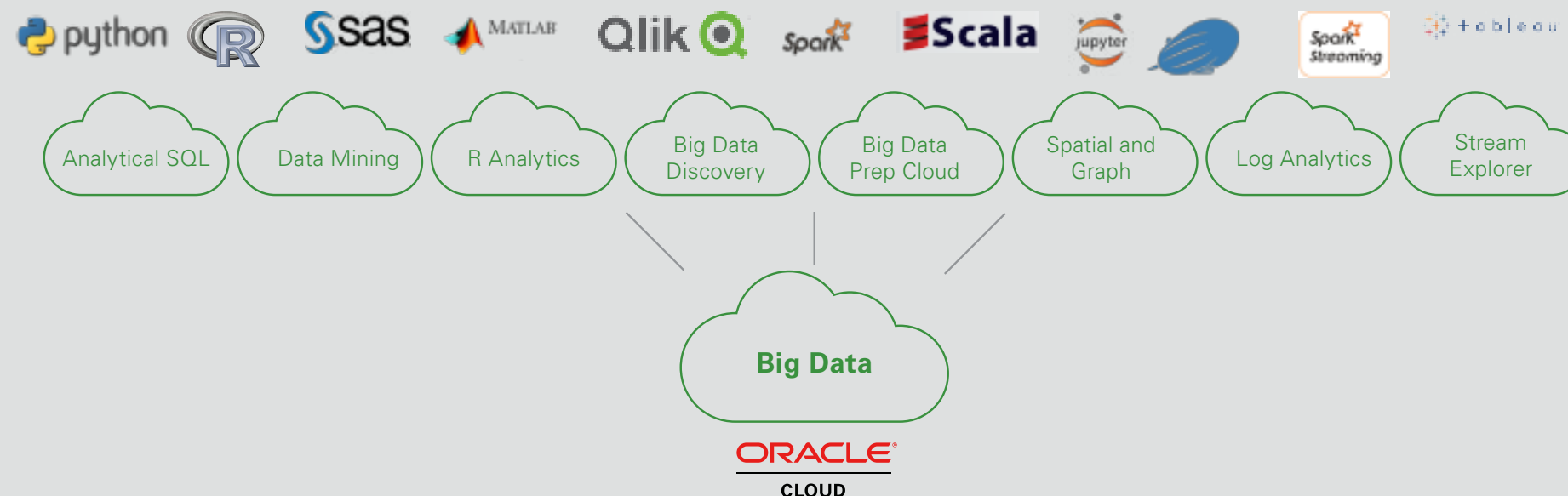
Oracle Cloud has what you need for all types of big data projects.

**Dedicated:** You can enjoy autonomous database instances, networks, and direct-attached disks for consistent performance.

**Optimized:** Your configuration is optimized based on your specific compute and storage needs, ensuring fast time to value.

**Secure:** Your big data workload resides on a secure and encrypted Hadoop cluster, with optional Oracle Database security.

**Comprehensive:** Oracle Big Data Cloud Service includes Cloudera Hadoop in conjunction with key Oracle software such as Oracle Data Integration, Oracle R Advanced Analytics for Hadoop, and Oracle Spatial and Graph.



## Solid Security for Your Data

Oracle's multilevel security strategy protects your data throughout its lifecycle, and all database access is monitored, recorded, and can be audited at any time. As part of Oracle Database Cloud Service, all data is encrypted both in transit and while at rest, along with redaction of sensitive application-layer data, restriction of privileged-user capabilities, subsetting and masking of data in nonproduction environments, and monitoring of user activities.

Administrative access to your Oracle Database environment includes multiple security zones to restrict access on a need-to-know basis for all IT staff. Logical access controls encrypt data on staff computers, along with personal firewalls, two-factor authentication, and role-based accounts.

## Cloud security for the entire lifecycle of data...

- Data encrypted by default in the cloud
- Data encryption in transit and at rest
- Data masking for DevTest activities

## ...with controlled access for authorized users

- Access keys using Oracle Key Vault
- Audit trails using Oracle Audit Vault and Database Firewall
- Collection of audit records stored on premises



## Performance and Compatibility You Can't Get from Other Vendors

Commodity cloud vendors offer generic infrastructure services that are not always compatible with on-premises deployments, increasing complexity and raising operational costs. By contrast, Oracle's integrated infrastructure (IaaS), platform (PaaS), and application (SaaS) offerings give you instant access to a robust database platform fully optimized for Oracle workloads. You will have 100 percent compatibility between the Oracle Databases maintained in Oracle Cloud and the databases in your own data center.

All of Oracle's DBaaS solutions utilize the same architecture and software platform, enabling you to migrate database workloads from one to another. You can leverage the same management tools and utilities, whether you deploy the solutions on premises, in a private cloud, or in Oracle Public Cloud.

Amazon Web Services, in contrast, is set up for generic, do-it-yourself deployments on Amazon only. To get started with this service you have to set up your own platform services before you can migrate your data or applications. Furthermore, the performance pales in comparison to Oracle Cloud, especially for running Oracle Database workloads. Benchmark tests reveal that Oracle Database Cloud performs up to 105 times faster for analytic workloads and up to 35 times faster for OLTP workloads.<sup>1</sup>

<sup>1</sup> "Comparison of Database Cloud Services: Testing Overview," Oracle white paper, September 2016, [oracle.com/us/products/database/database-cloud-services-comparison-3227721.pdf](https://oracle.com/us/products/database/database-cloud-services-comparison-3227721.pdf)





## The Organization

DoDream System, an IT service developer in Korea, provides cloud applications to customers in the public sector, including an electronic library system and an asset management system.

## The Challenge

DoDream needed a new database platform to streamline the delivery of its electronic library system to overseas customers. IT leaders knew that an effective cloud database would simplify IT maintenance, reduce costs, and make it easier to manage the rollout of new services.

## The Solution

DoDream decided to standardize on Oracle Database Cloud not only because it is the most commonly used database among the company's customer base, but also because its evaluation revealed Oracle Database Cloud to be the most reliable, secure, and highest performing cloud database available. According to Tae-Seok Lee, CEO at DoDream Systems, the company selected the Oracle Cloud platform over Microsoft Azure because Oracle provides a more cost-effective and optimized platform for existing Oracle Database users.

Oracle Database Cloud Service has allowed DoDream's in-house IT personnel to focus on improving its core information systems, while Oracle handles routine database chores—with the corollary benefits of improved reliability for critical applications, lower deployment costs, and a fourfold decrease in onsite computing resources.

## The Success

DoDream not only increased the memory and storage capacity of its electronic library system, but also lowered operating costs for 100 customer sites. The company now has the resources to manage up to 400 customer sites with Oracle Public Cloud Services and can scale up as needed.

Automating database administration tasks such as patching and upgrades has cut labor and maintenance costs significantly—with only seven system administrators doing the work that previously took 50 people. Oracle Cloud has improved service quality, accelerated application development projects, and maximized the performance and availability of business-critical applications.

Using the same Oracle Database on premises as it does in the cloud has made it easier for DoDream to migrate customers to Oracle Public Cloud services. It has also reduced risk by minimizing database failures. Oracle's instantaneous technical support ensures reliable, round-the-clock cloud services to customers—making it easier to successfully reach an expanding global market.

“By migrating to Oracle Cloud Platform rather than Microsoft Azure, we have increased elibrary system capacity by 4 times and improved the reliability and efficiency of our service delivery. It also helped us to reduce maintenance costs for 100 customer sites and support global expansion.”

— Tae-Seok Lee, CEO, DoDream System



## Oracle Brings the Cloud to You

Sometimes you can't move your data to the public cloud due to sovereignty laws, industry regulations, or corporate security policies. Fortunately, you can still take advantage of the scalability, affordability, and ease of Oracle Database Cloud by utilizing Oracle Cloud at Customer, a unique service that brings Oracle Cloud technology to your data center.

You get all the benefits of DBaaS with complete control over your data—the same robust cloud platform services, the same automatic software updates, and the same subscription-based pricing model.

Rather than purchasing hardware and database software, you can simply subscribe to a cloud service and let Oracle handle every aspect of installation, configuration, patching, lifecycle management, upgrading, and monitoring.

## Extreme Performance from a Cloud Machine in Your Data Center

If you need extreme availability and performance, you can utilize Oracle Database Exadata Cloud Machine, a cloud-on-premises version of Oracle Exadata that brings you the most powerful database platform available in the cloud—all controlled by Oracle Cloud software and managed by Oracle Cloud experts.

Oracle's top-of-the-line database management system platform consists of hardware and software that have been engineered together to deliver maximum performance. It includes essential tools for development and deployment such as Oracle Application Express, Oracle SQL Developer, Oracle Java Cloud, and RESTful web services.

With Oracle Exadata at the foundation of your cloud, it's easy to consolidate OLTP, data warehousing, in-memory analytics, and mixed or hybrid workloads into a single, cohesive system. You can use Oracle's proven migration tools to perform a logical migration via Oracle Data Pump and Oracle GoldenGate, or make a physical byte-by-byte copy of your data via Oracle's RMAN utility, transportable technologies, and Oracle Data Guard. Simply add your data with Oracle's automated migration tools and get ready for a new era of affordable, high-performance cloud simplicity.

# Cloud Essentials

## Oracle Cloud Platform

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

Discover the many advantages of moving your data management activities to the cloud while learning what sets Oracle apart from other DBaaS providers.

Learn more about [Oracle Database Cloud Service](#), or [check out our blog](#) to see what your peers have to say about Oracle DBaaS.

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



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