



Introduction to OceanBase

Partner with Next-Gen Distributed DBMS



02

About OceanBase

Database Modernization to assist in Enterprise Digital Transformation



Ten years later, Alipay is still the most popular digital wallet in the world



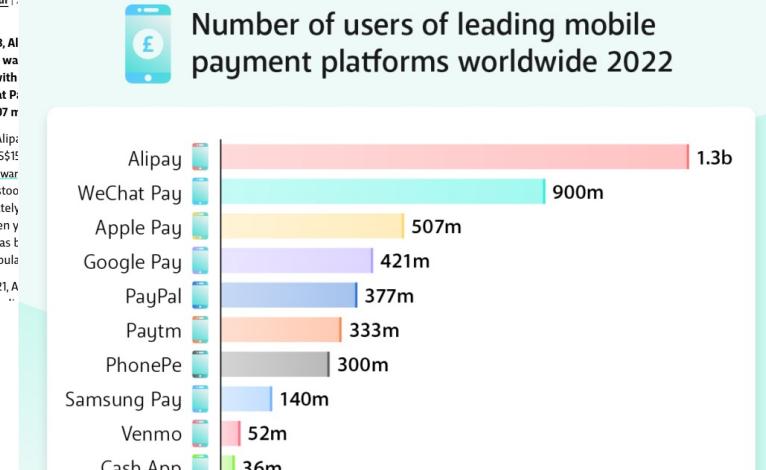
By Dashveenjit Kaur | .

- In 2013, Alipay became the first digital wallet with over one billion users.
- WeChat Pay and Alipay have over 900 million users each.
- Alipay has over 507 million users.

In 2013, Alipay's user base was nearly US\$1 billion. The user volume started to decline immediately after the launch, almost ten years ago. However, Alipay has become the most popular digital wallet in the world.

As of 2021, Alipay has over 1.3 billion users.

Number of users of leading mobile payment platforms worldwide 2022



Ant Group - Digital Technologies



Banking



E-Government



Digital Media /Content



Healthcare & Medical Insurance



Supply Chain Finance



Smart Manufacturing

	ZOLOZ	mPaaS	Antchain	Trusple	Morse	
Product	e-KYC e-KYB AML	Risk control Fraud prevention Mobile security App hardening	mPaaS Content mod	Traceability Anti counterfeiting	Web 3.0 Open Lab	Trusple Secure Multi-party Computing (credit risk rating, etc)
Applied Technology	AI	Cloud	Blockchain	Data Analytics		

Infrastructure

Multi Cloud

Quick Glance of OceanBase

No.1

Two-time world record winner of the TPC-C benchmark test,
a first for a distributed relational database



11 years

supporting Singles' Day with a
peak record of 61M TPS

3M+

100% self-developed distributed
database with open-source code

Unique

Simultaneously breaking the TPC-C and
TPC-H test world records

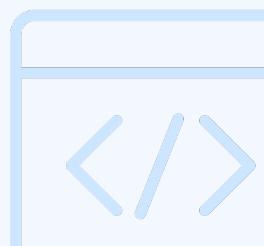


500+

Database patents

14 years+

Core R&D team with distributed database industry
experience

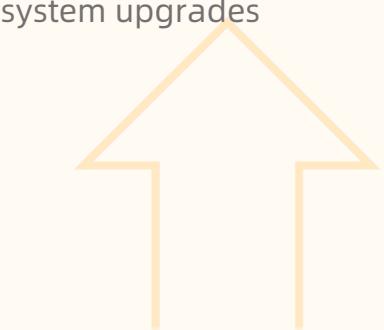


35,000+

Database talent certifications

1,000+

Industry clients achieve critical
business system upgrades





模型分类

全部

关系型

文档

键值

列簇

图

空间

向量

时序

搜索

多模型

报告统计

模型趋势

分类统计

推荐产品

	排行	上月	半年前	名称	模型	数据处理	部署方式	商业模式	专利	论文	案例	资质	书籍	得分
关系型	1	1	1	OceanBase	关系型	HP	%Cloud	SOA	151	26	43	14	1	845.99
文档	2	2	2	PolarDB	关系型	HP	%Cloud%Edge	SOA	592	70	72	14	2	789.13
键值	3	3	3	openGauss	关系型	TP	%Edge	SAAS	573	11	30	7	6	596.44
列簇	4	4	4	TiDB	关系型	HP	%Cloud	SOA	40	54	18	8	1	588.51
图	5	5	↑↑ 7	人大金仓	关系型	TP AP	%Cloud%Edge	SOA	419	1	25	12	3	577.59
空间	6	↑ 7	↑↑ 8	GBASE	关系型	AP TP	%Cloud%Edge	SOA	191	0	46	13	0	479.62
向量	7	↓ 6	↓ 6	达梦数据库	关系型	TP	%Cloud%Edge	SOA	518	0	12	8	11	449.27
时序	8	↑ 9	↑↑ 10	GoldenDB	关系型	HP	%Cloud	SOA	656	76	73	11	2	400.43
搜索	9	↓ 8	↓↓↓ 5	GaussDB	关系型	HP	%Cloud	SOA	630	14	10	9	4	396.50
多模型	10	10	↑ 11	TDSQL	关系型	HP	%Cloud	SOA	136	19	16	12	0	263.83
报告统计	11	11	↓↓ 9	AntDB	关系型	HP	%Cloud%Edge	SOA	71	1	21	6	1	202.91
模型趋势	12	12	12	AnalyticDB	关系型	AP	%Cloud	SOA	480	54	2	6	1	168.15
分类统计	13	13	13	TDengine	时序	-	%Edge	SOA	9	4	37	1	0	156.34

Assisting 1,000+ Customers with Mission-Critical Workload

中国工商银行 INDUSTRIAL AND COMMERCIAL BANK OF CHINA	中国建设银行 CHINA CONSTRUCTION BANK	交通银行 BANK OF COMMUNICATIONS	中国人寿 CHINA LIFE	PICC 中国人民保险	北京银行 BANK OF BEIJING	金华银行 JHBank	天津银行 BANK OF TIANJIN	中国民生银行 CHINA MINSHENG BANK	苏州银行 BANK OF SUZHOU
中国人民银行 数字货币研究所 INSTITUTE OF DIGITAL MONEY THE PEOPLE'S BANK OF CHINA	国家电网公司 STATE GRID CORPORATION OF CHINA	中国石化 SINOPEC	中国移动 CHINA MOBILE	中华保险 CHINA INSURANCE	太平洋保险 CPIC	河北省卫生健康委员会 Health Commission of Hebei Province	吉林省政务服务和数字化建设管理局 吉林省营商环境建设办公室	浙江省大数据发展管理局	湖南省卫生健康委员会
西安银行 BANK OF XI'AN	南京银行 BANK OF NANJING	China Unicom 中国联通	云南红塔银行 YUNNAN HONGTA BANK	江西省人力资源和社会保障厅 JIANGXI PROVINCIAL HUMAN RESOURCES AND SOCIAL SECURITY DEPARTMENT	鼎和保险 DINGHE INSURANCE	华安保险 SINOSAFE INSURANCE	阳光保险集团 Sunshine Insurance Group	新华保险 NCI XINHUA INSURANCE	中国太平 CHINA TAIPING
招商证券 China Merchants Securities	方正证券 FOUNDER SECURITIES	安信证券 ESSENCE SECURITIES	广发证券 GF SECURITIES	浙商证券 ZESHANG SECURITIES	國泰產險 CATHAY CENTURY INSURANCE	中再集团 CHINA RE	天安财险 TIAN AN REINSURANCE	上投摩根 基金 管理	浦银安盛基金 浦银安盛基金
华泰证券 HUATAI SECURITIES	中信建投证券 CHINA SECURITIES	Fund易方达	天弘基金 TIANHONG FUND MANAGEMENT	博时基金 BOSERA FUNDS	POP MART	海底捞 HAI DILAO	Li Auto	翼支付	携程旅行
郑州商品交易所 Zhengzhou Commodity Exchange	中国期货市场监控中心 China Futures Market Monitoring	中银消费金融 BOC CONSUMER FINANCE	粤港澳大湾区国际能源交易中心 GBAEC	贵州习酒 GUIGUO JIXIU	哈啰出行	致欧	eBaotech make insurance easy	有赞	
Alipay™	网商银行	淘宝 Taobao	蚂蚁集团 ANT GROUP	Cainiao 菜鸟	老乡鸡	作业帮	怪兽充电 ENERGY MONSTER	vivo	萬家數科 Vanguard DTech
高德地图	湖南省农村信用社联合社	河南省农村信用社 HENAN RURAL CREDIT UNION	中国联合航空 CHINA UNITED AIRLINES	大连地铁 DALIAN METRO	快手	sixlens	用友 YONYOU	eco empower education online	多点DMALL
北京地铁 BEIJING SUBWAY	东莞地铁 DONGGUAN SUBWAY	EPTECH 雄帝科技	中国结算 CSDC	农信资金清算中心 RURAL CREDIT BANKS OF CHINA CLEARMING CENTER	跨越速运 KUAYUE-EXPRESS	美年大健康 Health 100	贝壳 BELL	客如云 KERUYUN	二维火 2Dfire.com
大连商品交易所 DALIAN COMMODITY EXCHANGE	富滇银行 FUDIAN BANK	四川农信 SICHUAN RURAL CREDIT	中国进出口银行 THE EXPORT-IMPORT BANK OF CHINA	平安银行 PING AN BANK	澳門通 MACAU PASS	利楚商服 LICHU BUSINESS SERVICES	出行365	一亩田 YIMUTIAN	掌玩科技 XIAOYAN TECHNOLOGY
东莞银行 BANK OF DONGGUAN	顺德农商银行 SHUNDE RURAL COMMERCIAL BANK	SRCB 深圳农商银行	江西·农商银行 JIANGXI RURAL COMMERCIAL BANK	常熟农商银行	纵腾集团 ZONGTENG GROUP	IMAGE DT	映宇宙 INKERVERSE	递四方 4PX	洋葱集团 ONION GLOBAL
中原银行 ZHONGYUAN BANK	广西北部湾银行 GUANGXI BEIBU GULF BANK	泉州银行 BANK OF QUANZHOU	Touch NGo eWallet	2C2P	蚂蚁银行 ANT BANK	easypaisa	DANA	GCash	PalmPay

OceanBase Milestones

Period 1.0

Distributed engine

Distributed KV storage

Period 2.0

Native distributed database

SQL engine, high availability with multiple replicas

Period 3.0

HTAP Engine

Compatibility, scalability, multi-site disaster recovery

Period 4.0

Integrated architecture, multi-cloud deployment

Batch processing, enterprise-level features, HTAP

2010

Product initiation

OceanBase's first customer

2013

Expansion of scope

Served dozens of eCommerce platforms of Alibaba Group

2014

Core transactions go live

Supported Alipay's core transaction system, handling 10% of Singles' Day transaction volume
Achieved RPO=0 and RTO < 30s for the first time

2016

Full business coverage

Launched Alipay's core accounting and payment systems
Supporting a payment peak of 120,000 transactions per second and transaction peak of 175,000 transactions per second

2017

Multiple financial clients

Completed the final Oracle core replacement for Ant Group's core systems
Nanjing Bank became the first online user
Singles' Day set a peak record of 42 million transactions per second

2019

Breaks world records

Oracle compatible
Public cloud in service
TPC-C 60.88 million tpmC topped the list.
Singles' Day sets a peak record of 61 million transactions per second

2020

Independent commercialization

TPC-C 7.07 tpmC, breaking its own world record, surpassing Oracle by 23 times
Launches core systems for top customers

2021

Large-scale expansion

Releasing the HTAP engine
TPC-H 1,526 tpmC topped the list, becoming the only distributed database to top both TPC-C and TPC-H
Community edition released, access to 3 million lines of core code
Piloting overseas customers

2022

Public cloud released, Expands overseas

Single-server distributed integrated architecture
Public cloud launched, North American site goes live
Listed on AWS Marketplace

2023

Integrated product for single-server distribution

Number of customers surpasses 1,000
Ranked No. 1 by market share in the finance industry

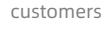
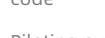
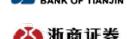
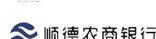
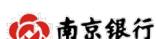
淘宝

淘宝



Tmall

Tmall



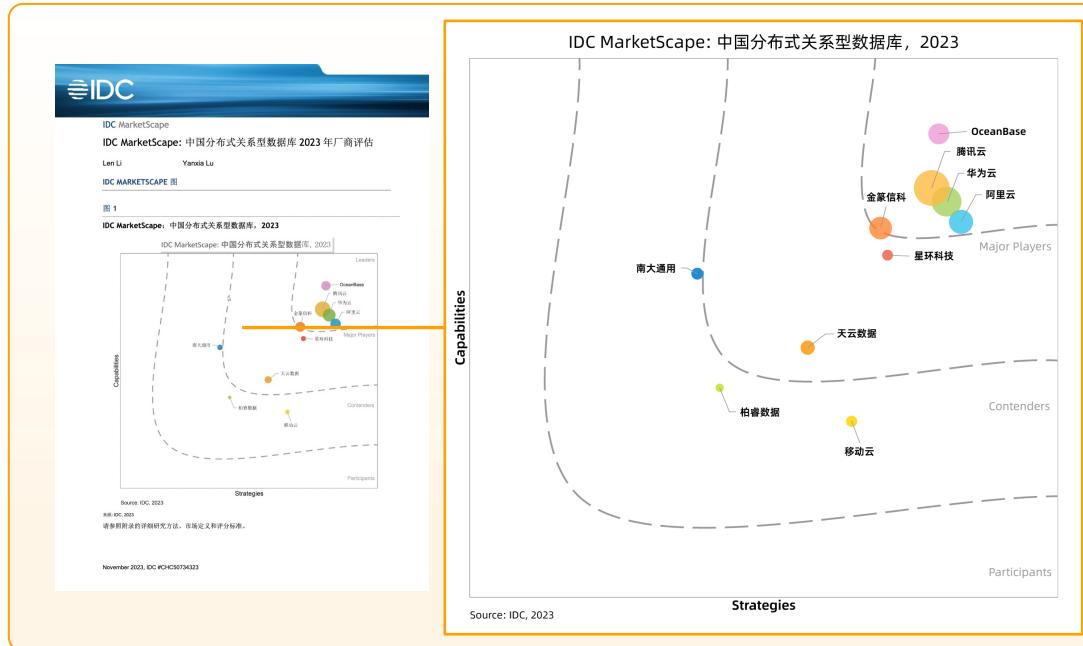
Leader in Global Distributed Database

IDC

OceanBase is recognized as a leader in the industry. As a native distributed database, OceanBase excels in product capabilities and holds a leading position.

Gartner

In 2023, OceanBase was selected as Honorable Mention in the Gartner® Magic Quadrant for Cloud Database Management Systems.



Source: "IDC MarketScape: China Distributed Relational Database 2023 Vendor Assessment." IDC, founded in 1964, is a globally renowned provider of information technology, telecommunications, and consumer technology consulting, advisory, and event services.



Source: Gartner "Magic Quadrant for Cloud Database Management Systems, 18 December 2023." Gartner is one of the world's most authoritative IT research and advisory consulting firms, with research covering the entire IT industry, providing clients with objective, impartial argument reports and market research reports.

More Industry Recognitions

Gartner

The database management system is thriving in China, and OceanBase, as one of the representatives of Chinese database vendors, provides buyers with excellent choices.



Table 2: 代表性的中国数据库厂商
(Enlarged table in Appendix)

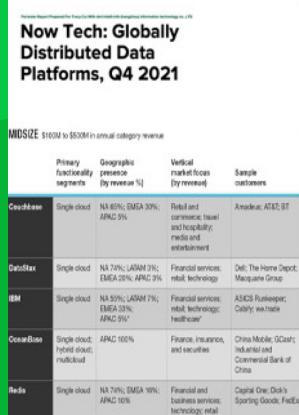
厂商名称	总部地点	示例
甲骨文	美国	
阿里云	中国杭州	
腾讯	中国	
京东云	中国	
OceanBase	北京	Oce
阿里巴巴	中国杭州	
蚂蚁集团	中国	
平安集团	中国	
中国人寿	中国	
建设银行	中国	
浦发银行	中国上海	
平安银行	中国	
民生银行	中国	
广发银行	中国	
招商银行	中国	
光大银行	中国	
中信银行	中国	

Source: Gartner "2023 China Database Management System Market Guide"

OceanBase selected as a representative Chinese database vendor

Forrester

The only Chinese database vendor in the medium revenue category of distributed data processing platforms; one of the only three vendors in the world with the capability to achieve full coverage of distributed database segmentation functions as defined by Forrester.



Source: Forrester (Now Tech:Globally Distributed Data Platforms,Q4 2021)

One of only three vendors globally with full coverage of distributed database segmentation functions

dbaplus

OceanBase holds the top position in China with a 19.60% share among domestically deployed or planned distributed database products. It also ranks first with a high supplier satisfaction rate of 40.18%. Among the factors considered by enterprises when selecting a database, OceanBase ranks first in reliability and stability, overall cost, and compatibility.

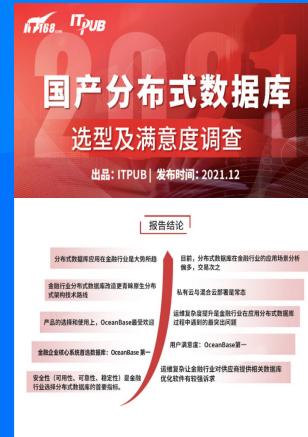


Source: DBAPlus "2023 Survey Report on the Current Situation of Domestic Distributed Database Applications"

First in domestically deployed distributed databases, first in supplier satisfaction, first in selection fit

IT168 & ITPUB

A survey of 1,391 database industry practitioners shows that OceanBase ranks first in user satisfaction among domestically distributed databases, and is the first choice for core system databases in financial enterprises.



Source: IT168 & ITPUB "2021 Survey on Selection and Satisfaction of Domestic Distributed Databases"

First in user satisfaction for domestically distributed databases

Forrester TEI Summary

Percentage of Data Storage Cost Savings

70 %



The average database cost per registered user reduces by:

53.9 %



Year 1

54.5 %



Year 2

54.7 %



Year 3

Key Statistics*



218 %

Return on Investment (ROI)



\$3.65 M

Net present value (NPV)

"OceanBase has a very powerful data storage compression capability, only consuming 1/3 to 1/9 of the original database. Even with three replicas, the storage consumption is greatly reduced, leading to a significant decrease in device requirements."

— head of data, insurance group



"In the high availability architecture of OceanBase, any abnormality in nodes has minimal impact on business operations. The database automatically switches, isolating problematic nodes, which greatly simplifies operational tasks compared to before."

— head of data, insurance group



"In scenarios with small business volumes, we can utilize a single-machine deployment form. As business pressures change, we can then scale up to a multi-machine distributed setup. This approach helps us avoid large-scale adjustments in both architecture and applications, enabling us to effectively control technology costs and personnel investment."

— storage solution architect, digital bank



"In addition to the product itself, we also require our suppliers to provide the necessary service support. The technical expertise and service quality of the OceanBase team are crucial for our smooth database migration. They have assisted us in resolving numerous challenges and have contributed to the rapid growth of my team."

— head of database architecture, Fintech



* Combined multiple OceanBase customers to form a single composite organization that is a financial services organization with more than 20 million customers and estimated total assets of \$15 billion

Source: "Forrester: OceanBase Total Economic Impact™ Report". Forrester is one of the world's most influential independent research consulting firms, with its products, services, and consulting solutions centered around insight-driven research reports. It is dedicated to helping clients understand market dynamics, expand their perspectives, formulate strategies, and execute efficiently.

Digital Transformation and Upgrades

4 Key Benefits



Cost-Effectiveness

Reduces storage costs by 70%-90%



Multi-level Scaling

Support vertical, horizontal, and tenant-level scalability



Hybrid Cloud Deployment

Support private cloud, hybrid cloud, and public cloud



Real-time Analysis

One engine supports both OLTP and OLAP

6 Application Scenarios

Reduce Database Costs

Customers aim to minimize database costs, optimize resource utilization, and enhance overall organizational efficiency.

Advantage: Advanced compression, public cloud, native multi-tenancy, auto-scaling, and more.

Unified Infrastructure Management

Supports large-scale multi-infrastructure deployments, simplifying underlying technology complexity and avoiding vendor lock-in.

Advantage: Compatible with AWS, Tencent Cloud, and other major cloud providers, 24/7 professional maintenance, flexible MaaS and DBaaS management modes.

Overcoming Sharding Performance Bottleneck

Distributed database capabilities effectively address performance issues during rapid business expansion and significant data growth, eliminating the need for sharding and its associated challenges.

Advantage: Supports distributed transactions, eliminates single points of failure enables smooth scaling and automatic load balancing, with applications unaware of the underlying architecture.

Managing Traffic Peaks

Cloud services offer rapid scaling capabilities, enabling quick responses to sudden traffic peaks like promotions or product launches. This ensures seamless scaling and high scalability to meet business demands.

Advantage: Shared-nothing architecture, transparent horizontal scaling, multi-server auto-scaling, temporary scaling, and serverless product capabilities.

Enhancing Business Availability

Critical businesses require high database availability to ensure business continuity and reduce pressure on high availability guarantees.

Advantage: Paxos algorithm, tolerates data center-level failures, RPO=0, RTO<8s, supports online DDL, multi-data center/single data center/dual data center multi-copy disaster recovery solution.

Resolving MySQL Analysis Limitations

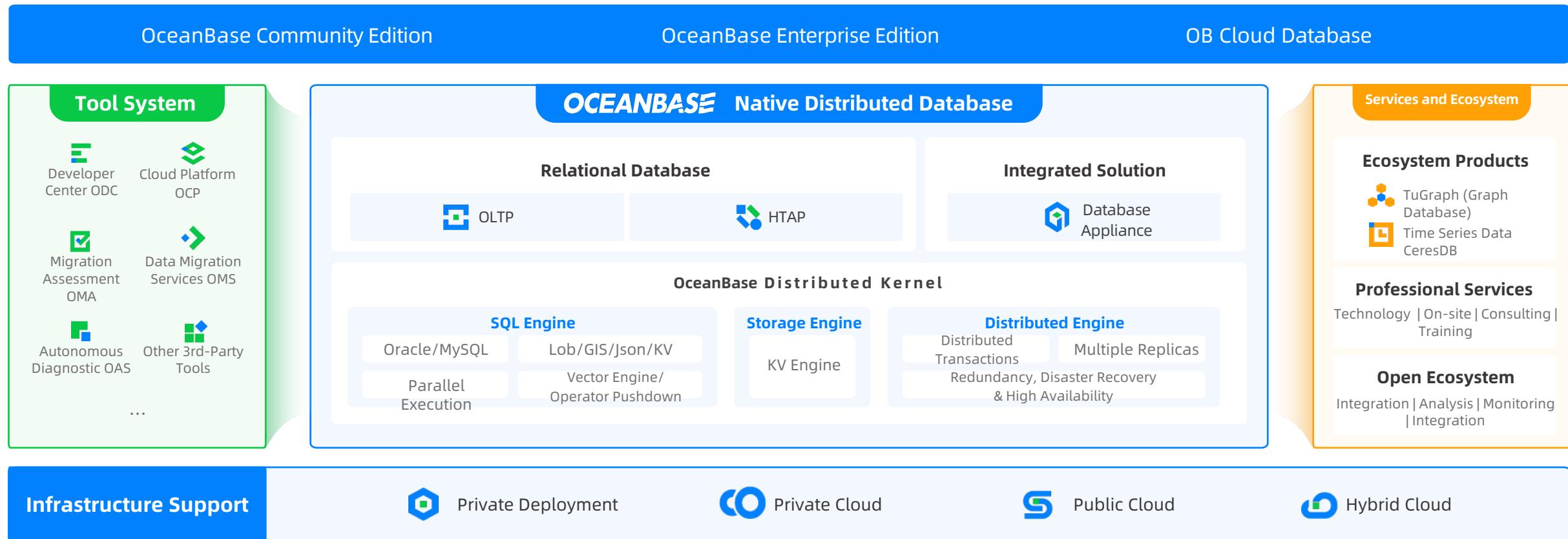
MySQL's analysis capabilities are limited. HTAP capabilities eliminate the need for additional synchronization links, reducing costs and enhancing real-time analysis efficiency.

Advantage: HTAP enables data for transaction processing and real-time analysis, supporting vectorized engines to address slow SQL issues.

OceanBase Products

The solution for all data management scenarios

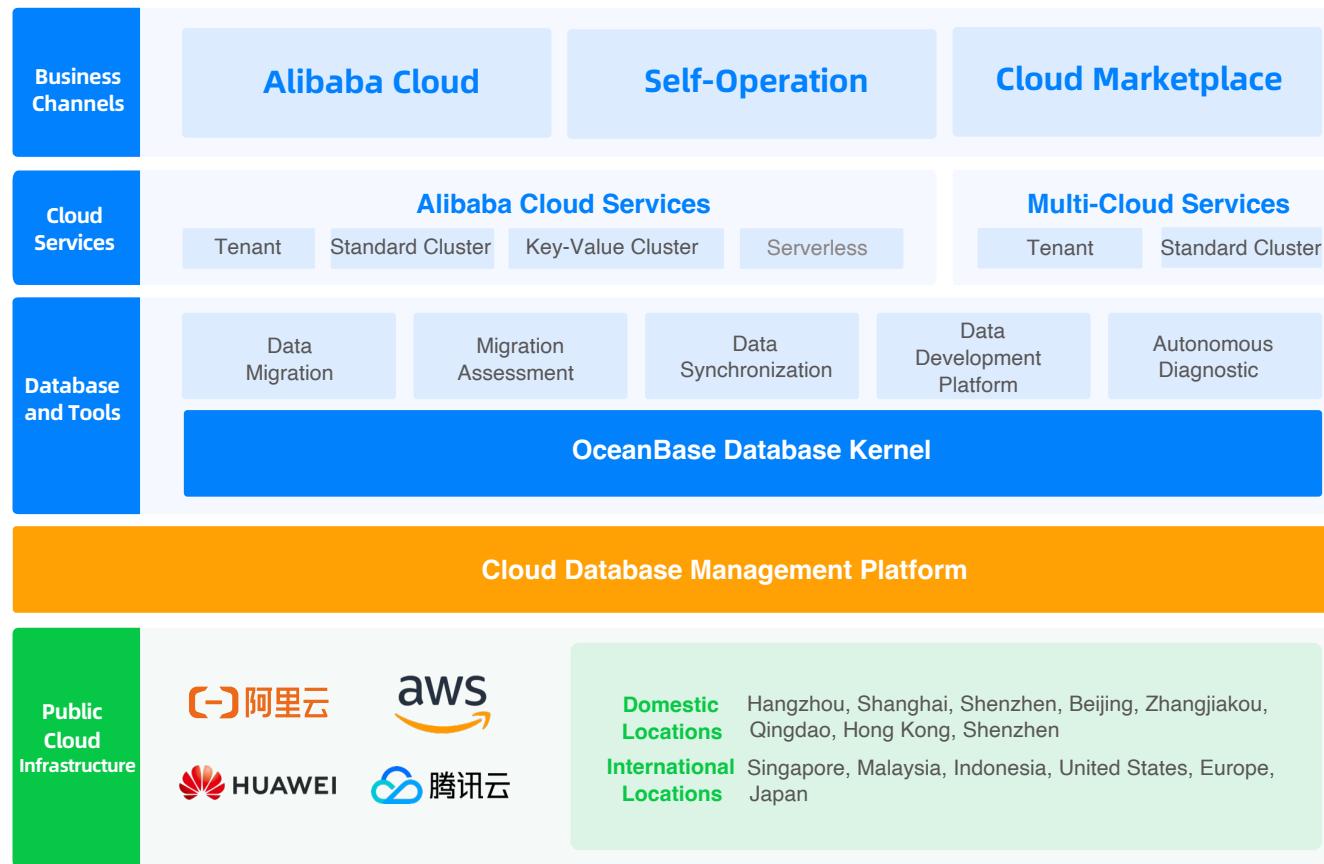
OceanBase offers a comprehensive enterprise-level database solution, including the Enterprise Edition, OB Cloud, and Community Edition distributed database products. It supports various deployment options, including independent deployment, cloud services, and database appliances. OceanBase's database tool system supports a wide range of data lifecycle management tasks, such as data development, evaluation, migration, operation, maintenance and diagnosis. Also, professional consulting and delivery services are available to meet diverse business needs at different stages of development.



OB Cloud Database: Integrated Database for Multiple Infrastructures

OB Cloud Database is constructed on leading global public cloud infrastructures like Alibaba Cloud, AWS, and Tencent Cloud. It leverages a native distributed database to reduce costs and enhance performance. Features like multi-tenancy, high compression storage, multi-level scalability, and HTAP ensure high performance. The cloud platform integrates assessment, migration, monitoring, diagnosis, backup and recovery, and operation and maintenance optimization tools, simplifying database management.

Product Architecture



Core Features

Multi-Level Scalability

Supports multi-read and multi-write, achieving on-demand scalability and linear performance growth under high-concurrency scenarios. The TPC-C benchmark test reached 7.07 billion tpmC, providing faster and more stable performance for intensive workloads.

Economies of Scale

The multi-tenant capability improves resource utilization, management efficiency, and security. Advanced data compression technology can achieve storage savings of up to 70-90%. In scenarios where business scale exceeds 30C, the TCO is reduced by more than 30% compared to general-purpose RDS, offering a better choice for cost reduction of massive data.

Leading Business Continuity

Industry-leading RPO = 0 and RTO < 8 seconds automatic recovery capability ensures continuous availability in the event of failures, avoiding costly and complex issues of data loss.

Supports Multi-Infrastructure Architecture

Supports deployment on local data centers, Alibaba Cloud, AWS, and other infrastructures, reducing complexity through consistent architecture and management. Provides standard tools for easy data migration and operation and maintenance with lightweight transformation.

HTAP Real-time Analysis Capability

One set of data supports both transaction processing and real-time analysis workloads, eliminating the need for complex ETL and redundant data. It does not interfere with critical business or incur additional costs and has an enterprise-level optimizer that supports complex SQL processing.

Single-server distributed integration

Competitive Advantage 3

Adaptable to various stages of enterprise business scale

Traditional distributed databases prioritize horizontal scalability over single-server performance, potentially causing delays for single transactions, especially in interactive OLTP scenarios where low latency is crucial. Replacing a single-server database with a distributed one often requires many nodes to maintain the original business scale, increasing costs without always improving performance metrics. OceanBase's single-server distributed integrated architecture adapts to various business scales, enabling a single database product to support enterprise growth.

Comparable Performance Between Single-Server Deployments and Databases

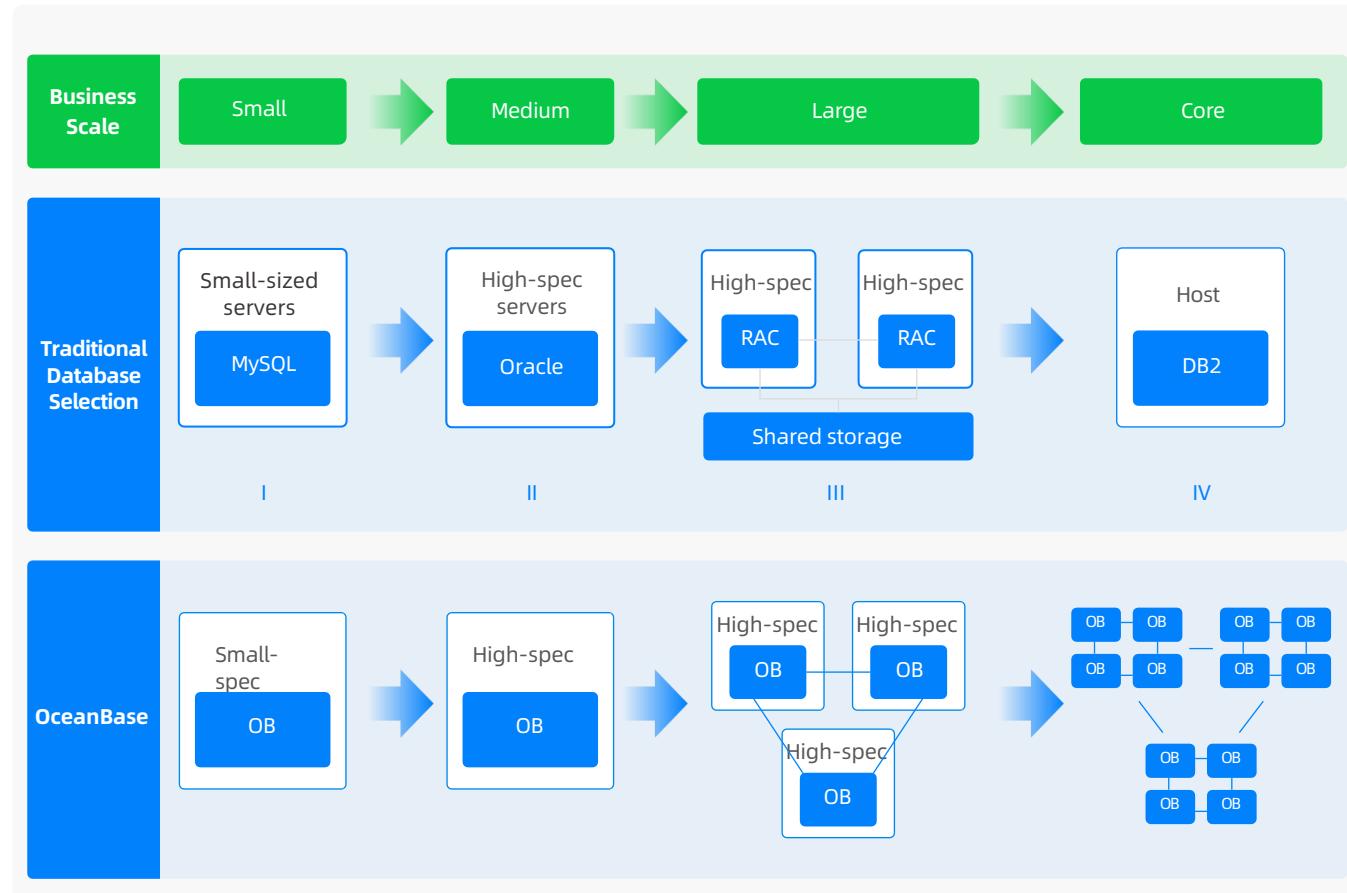
When deployed on a single server, OceanBase's single-server distributed integrated architecture offers performance comparable to a single-server database and sometimes even outperforms certain popular open-source single-server databases.

- Deploying OceanBase with 3 servers and 3 replicas offers comparable performance to traditional master-slave configurations but with improved high availability.
- Upgrading the specifications of node servers allows OceanBase to achieve linear vertical scalability.
- Deploying multiple nodes in each zone enables OceanBase to achieve linear horizontal scalability.

Distributed Deployment Outperforms Other Databases

In distributed deployments, OceanBase outperforms other distributed databases, especially in queries and transaction processing, as it avoids the overhead of multi-node access in specific scenarios:

- For SQL statements involving partitions within a single server, data read/write does not require network transmission.
- Transactions involving partitions within a single server incur no overhead from distributed commit protocols during commits.
- Consistency snapshot reads based on multi-version concurrency control for transactions involving partitions within a single server do not require remote access to a global timestamp service.



OceanBase Key Features — High Availability



Flexible DR Tolerance

3 replica in 1
IDC

3 IDCs in 1
city

3 IDCs in 2
cities

Dual IDCs in master/standby
mode

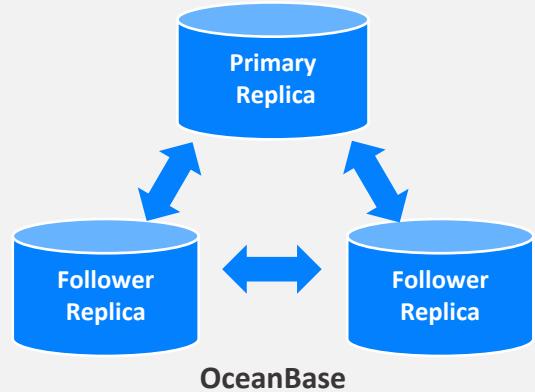
5 IDCs in 3
cities

RPO=0 RTO<30s



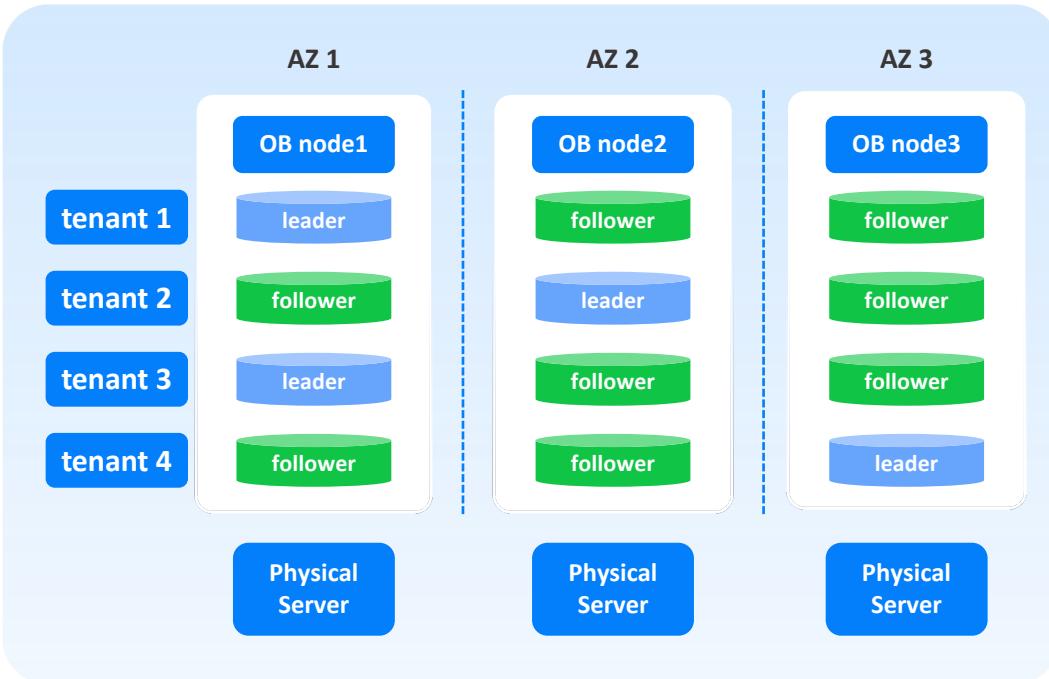
Monolithic database

- **Data Loss:** Cannot guarantee consistency in case of failure
- **FO cost:** High maintenance cost for cold standby

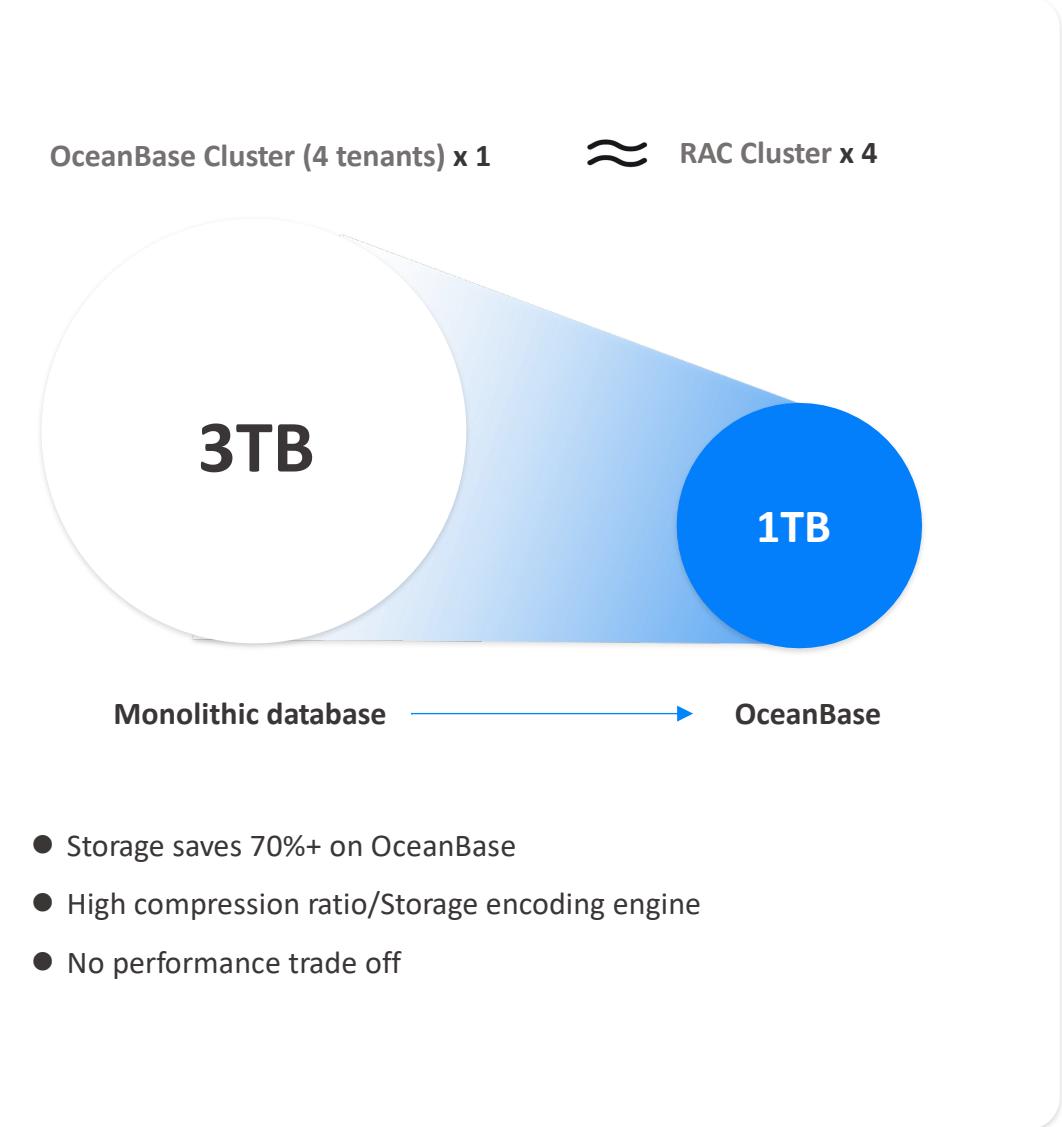


- **Zero data loss:** Consensus protocol based on Multi Paxos
- **Unattended HA:** Available when a minority of nodes fails RPO = 0, RTO <30s
- **Peer Node:** All replicas are active

OceanBase Key Features — High Efficiency



- Multi-tenancy (CPU/Mem resource isolated)
- Max resource utilization
- Instance on-demand configuration (effective immediately)
- Read-write separation on follower node



- Storage saves 70%+ on OceanBase
- High compression ratio/Storage encoding engine
- No performance trade off

Smooth Migration from Oracle/MySQL

Competitive Advantage 5

Low-cost application and data migration

As industries undergo digital transformation, business systems are pervasive throughout enterprises, often relying on traditional databases. While distributed databases are the future, transitioning to them may require significant modification or even reconstruction of business logic in enterprise applications, necessitating cost reduction in transformation efforts.

Application compatibility: supports Oracle and MySQL

Compatibility reduces migration risks. OceanBase is compatible with the open-source MySQL ecosystem and the commercial Oracle ecosystem. Customers can create MySQL-compatible or Oracle-compatible tenants in a single cluster. This compatibility extends to SQL syntax, commands, objects, usage habits, and supports features like stored procedures, C language interfaces, and precompilers. Applications can be migrated to OceanBase with minimal or no changes, saving enterprises significant time and manpower costs.

Compatible with complex data types:
JSON/GIS/XML/LOB/NCHAR/NVARCHAR, etc.

Compatible with character sets and functions:
GB18030-2022, Latin, 30+ system functions

Open-source ecosystem



- A single OceanBase cluster can support both MySQL and Oracle tenant modes
- Fully compatible with all data types, SQL syntax, and usage habits
- Supports advanced compatibility features such as PL/SQL, OCI, Pro*C



OceanBase
cluster



Commercial ecosystem

* OceanBase is the top Chinese distributed database vendor in terms of compatibility with Oracle, supporting over 95% of common functionalities.

Smooth migration: OMA evaluation, OMS automatic migration

OceanBase seamlessly integrates into existing architectures. Upstream adaptation involves docking and parsing capabilities with the original database. Downstream integration deeply integrates into business scenarios, aligning with online/offline data systems and application architectures. Application and data migration is typically time-consuming and labor-intensive, with inherent risks. To address these challenges, OceanBase offers:

OMA presents migration issues and suggestions in a pre-migration report, aiding customers in advance assessment and timely issue resolution.

OMS enables automatic data migration, visual verification, and supports reverse synchronization through graphical means. This ensures quick migration back to the original system without data loss or manual intervention, enhancing migration efficiency and security.

Automated migration tools

Low-cost transformation

C++ / Java / Python

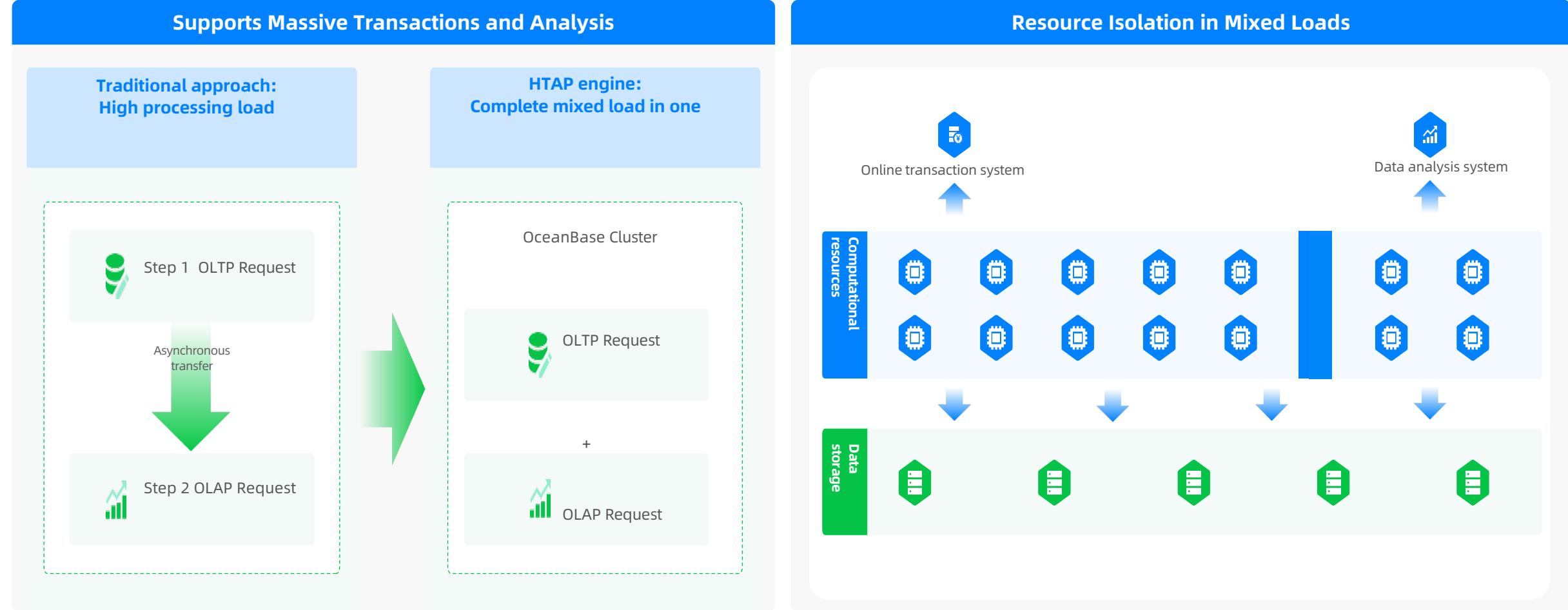
Full data migration + incremental real-time synchronization



Supports multiple scenario evaluations and load playback, offering intelligent, systematic evaluation and analysis, as well as automatic migration and rollback capabilities. OMA provides targeted pre-evaluation, while OMS offers migration synchronization and return protection.

HTAP: Hybrid Transaction and Real-Time Analysis Processing

A system that handles OLTP and OLAP business operations



Thank you

