

**Thailand Distributed Cloud-based
Database Market Report, 2025**

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Thailand Distributed Cloud Database Market Report

- **Thailand is strategically located in the center of Southeast Asia, serving as a key hub connecting China, India, and other ASEAN countries.** In 2024, Thailand's digital economy is expected to grow by 19%, making it the second-largest digital economy in Southeast Asia and a major participant in the global digital economy. At the same time, Thailand launched the "Thailand 4.0" strategy and the "Eastern Economic Corridor (EEC)" initiative, designating the digital economy as a key development industry—demonstrating the country's strong emphasis on digital growth. In addition to directly supporting digital development, the Thai government is also actively advancing infrastructure such as big data hubs and digital service platforms to serve as the foundation of its digital economy. Thailand also aims to position itself as a regional data and cloud service hub for the Asia-Pacific.
- In Thailand, various industries are witnessing different growth surges (1/2) :
 - Thailand's financial sector is mainly supervised by the Bank of Thailand (BOT) and the Securities and Exchange Commission (SEC). Bangkok is a major financial hub in Southeast Asia with a well-established banking and capital market system. In recent years, Thailand has actively promoted digital payments, achieving initial success. The country's QR code usage rate ranks third globally, after China and Malaysia. Additionally, Thailand's leading banks are beginning to develop digital lending and expand their digital financial services, in line with the broader push toward digital payments.
 - Thailand's telecom sector is dominated by AIS and True, both of which have recently focused on 5G network deployment and development. They are also helping enterprise clients in various industries accelerate digital transformation through 5G applications. These initiatives have attracted investments from companies like Huawei. Huawei and other Chinese tech firms are actively building smart factories in Thailand and promoting the integration of 5G with AI technologies across industries.

Thailand Distributed Cloud Database Market Report

- In Thailand, various industries are witnessing different growth surges (1/2) :
 - Thailand's retail e-commerce market is booming. In 2024, the country's e-commerce sales are projected to grow by 19%, reaching \$26 billion. By 2030, the market size is expected to reach \$60 billion. Additionally, live-streaming commerce is developing rapidly in Thailand, with e-commerce's share of total retail expected to rise from under 5% in 2022 to 20% in 2024—becoming a key driver of digital economic growth. High-frequency microtransactions are seen as a major direction for e-commerce development, with hopes of leveraging these trends to build a more stable digital ecosystem.
 - Thailand's public sector is also advancing digital transformation. Under the “Thailand 4.0” strategy and the “Digital Government 2027” plan, the country is accelerating e-government services and aims to integrate siloed data systems across departments. By improving high-performance infrastructure and intelligent tools, the goal is to raise peak processing efficiency and address delays during high-traffic periods or emergencies.
 - With the rapid emergence of new technologies and increasingly complex business needs in the Thai market, **Frost & Sullivan takes enterprise core systems—particularly databases—as the entry point to assess fundamental IT requirements.** By leveraging trend-based insights, we identify the technical backbone supporting stable enterprise development and closely monitor evolving technology trends, including innovations in database architecture, upgrades in data processing (e.g., real-time processing and analytics), and the convergence of databases with emerging technologies (e.g., AI-integrated databases). These insights not only offer recommendations for customer product and technology selection but also inform competitive strategy planning for database vendors. Ultimately, the goal is to help enterprises navigate dynamic market environments with stable development while driving the database industry toward greater efficiency, intelligence, and flexibility.

Thailand Distributed Cloud Database Market Report

Key Objectives

1

Market Analysis

- **Report Overview** 2
A summary of the report structure, main content, and research approach
- **Overview of the Thai Market Landscape**..... 3、 4、 5
Introduces financial, governmental, and retail sectors as drivers of rising demand for distributed cloud databases in Thailand
- **Definition of Distributed Cloud Databases**..... 6
Clarifies the scope of the distributed cloud database market, development path, and product advantages
- **Industry-specific Demand Overview for Distributed Cloud Databases** 7
Explores specific needs for distributed cloud databases across different sectors
- **Competitive Advantages of Distributed Cloud Databases**..... 8
In-depth analysis of the core strengths of distributed cloud databases
- **Key Success Factors for Distributed Cloud Databases**..... 9
Explores success factors through market capability, technical architecture, and service delivery
- **Overview of Local Players in the Thai Market**..... 10
Categorization and mapping of key distributed cloud database vendors in Thailand
- **Future Trends (1/2): Market Trends in Distributed Cloud Databases**.....11
Focuses on macro market trends driving future growth in Thailand
- **Future Trends (2/2): Technology Trends in Distributed Cloud Databases**...12
Forecasts product and technical development directions

2

Competitive Landscape Analysis

- **Competitive Landscape of Distributed Cloud Databases in Thailand**..... 13
Presents the competitive dynamics of Thailand’s distributed cloud database market through market ranking
- **Key Distributed Cloud Database Providers in Thailand**... 14、 15、 16、 17、 18
Introduces major vendors through customer case studies, product portfolios, and core strengths

Research Methodology

- **Primary Research:** In-depth interviews with industry experts, distributed cloud database vendors, and other relevant professionals from various sectors.
- **Secondary Research:** Review and analysis of publicly available materials and information, including annual reports, press releases, and news articles.
- Measurement Model:
 - **Market Share Assessment:** Ranking of major participants in the distributed cloud database sector across different domains.

Notes:

- **The data in this study is current as of December 31, 2024.**
- *In analyzing the application of databases across industries, we categorized typical sectors based on their respective demands for database products (primarily including finance, e-commerce retail, and public sector). Among them, the public sector was selected as a scenario with high security requirements; **the e-commerce retail sector was chosen for its rapid technological iteration and strong innovation demands**; the finance sector was selected as one that requires both high security and innovation. Other sectors (such as operations, which are also covered in this report) are not analyzed in detail.*
- *This study defines the distributed cloud databases covered as follows:*
 - ✓ **Cloud-native databases:** Databases deployed on cloud infrastructure that support flexible deployment across public, private, or hybrid clouds based on customer needs.
 - ✓ **Distributed databases:** Databases with native distributed storage and processing capabilities, meaning data can be partitioned across multiple physical nodes, with each node independently processing its data to form a logically unified whole.
 - ✓ **Centralized cloud databases:** Databases built on centralized architectures within a cloud computing platform, where data is centrally stored and managed via a single logical node, and controlled through centralized services.
- *This report primarily focuses on **distributed cloud database products and solutions**.*

Overview of the Thai Market Environment: A Supportive Ecosystem for Growth

Driven by the growth of digital lending and cross-border FX settlement, financial institutions in Thailand are seeking databases that support flexible service scaling, comprehensive data storage, and agile operations.

Case Study of Leading Local Financial Institution in Thailand

 **Siam Commercial Bank (SCB)** is one of the oldest banks in Thailand, founded by the Thai royal family in 1907, and is currently the **listed bank with the highest market value in Thailand**. Due to strong regulatory oversight in the financial industry, SCB has long adopted an on-premises deployment model to meet compliance, data sovereignty, and high-availability requirements for its core systems. However, with the rapid development of financial technology and the increasing demands for agility in innovative services (such as internet credit, mobile payments), traditional databases are now facing problems such as insufficient elasticity of resource provisioning, high maintenance costs, architecture incompatibility, and threats to business continuity.



User
struggles



Core needs

Requirements for Databases

- **Support for Horizontal Expansion of Modular Units to Rapidly Scale Based on Business Demand:** To achieve agile scaling, resources must be prepared with appropriate levels of isolation and granularity. Cloud-native resource provisioning has become the mainstream trend. The performance loss rate of linear scalability should be below 20%.
- **Core Financial Systems Must Meet Regulatory Requirements for Data Localization and Classification-Based Protection.** Therefore, a **controllable on-premises environment remains the first choice**. For innovative business models, sandbox environments can be used to **quickly verify business models**, thereby reducing trial-and-error costs. As such, the dual-mode architecture of **“core on-premises + innovation in the cloud”** will continue to be strengthened. The hybrid database deployment of on-premises and cloud environments has become a key technical cornerstone to support agile business innovation and compliant, stable growth.
- **Support the Mixed Storage of Structured Data (e.g., credit reports, transaction records) and Unstructured Data (e.g., social media texts)** Based on data usage needs, unstructured data should be stored in a rational way, aiming for better data querying and utilization rather than simple storage.
- **Ensure Highly Reliable Systems under Various Fault and Disaster Scenarios.** With effective consistency checking tools and data discrepancy tracing mechanisms, the goal is to ensure that core data is “accurate, orderly, and intact.”
- After database deployment, maintenance tools must support capabilities such as diagnostics, observability, and serviceability, so that problems can be quickly located and root causes analyzed, in order to prevent recurrence of the same issues.

01

Digital Lending Operations: Facing Bottlenecks in High-Concurrency Processing and Data Integration

- **High-Concurrency Processing Bottleneck:** Under the backdrop of inclusive finance promotion by the Bank of Thailand, during peak periods of SCB’s digital lending operations, the system must handle hundreds of thousands of loan requests (such as year-end shopping season), and process tasks related to verifying transaction details and payment histories of customers, querying account information, and conducting repayment analysis. Traditional databases face performance bottlenecks when managing real-time data processing under such scenarios.
- **Multi-Source Credit Identification and Data Integration Bottleneck:** SCB’s multi-dimensional risk control framework aims to identify borrowers not only within SCB but also across other financial institutions. This process involves integrating third-party data (such as e-commerce platforms). Traditional databases struggle to efficiently store and analyze the combination of structured data (e.g., credit reports) and unstructured data (e.g., social media texts,), and capabilities in this area still need to be enhanced.



Elasticity and
scalability

02

Cross-Border Foreign Exchange Operations: Challenges in Data Security Supervision and Maintenance Efficiency

- **Cross-Border Data Compliance and Security:** Thailand’s *Personal Data Protection Act* requires sensitive data (such as customer ID numbers) to be stored within the country. This means that for banks engaging in cross-border foreign exchange settlement services, they must comply with data localization while also ensuring secure real-time data transmission. This is especially challenging during the FX settlement process, where the system needs to handle frequent and large-scale transaction requests every second. Traditional centralized databases struggle to support such throughput demands.
- **Disaster Recovery and Operations Management:** According to the *Notification No. FPG 21/2562* issued by the Bank of Thailand on “IT Risk Management for Financial Institutions,” if a bank identifies or suspects that there is a major system fault or a critical economic impact caused by a system vulnerability or failure, it must submit a formal incident report to regulators within 7 business days. This imposes higher demands on the bank’s operational and maintenance capabilities for its database systems.



Comprehensive
Data Storage



Agile System
Operations

Overall Analysis of the Thai Market Environment: A Fertile Ground for Adaptive Growth

Driven by the dual momentum of mobile shopping and growing demand for digital payments, e-commerce enterprises in Thailand are calling for databases that offer high-concurrency and “stable” response, as well as real-time and “rapid” decision-making capabilities.

Case Study of a Leading Thai E-Commerce Retailer



Shopee is a flagship platform under Sea Group, characterized by its core model of “socialized shopping,” offering a wide range of product categories (such as electronics, household goods, and fashion apparel). As mobile shopping continues to gain penetration and digital payments rise steadily, e-commerce platforms are placing increasingly higher demands on database agility and real-time capabilities, posing multiple challenges to traditional database systems.



User struggles



Core needs

Requirements for Databases

01 Mobile Shopping: "High-Frequency Microtransactions" Challenge Database Throughput and Responsiveness

- Mobile is the most commonly used online shopping method among Thai netizens, accounting for 65.9% of all transactions. Consumer behavior on mobile reflects a pattern of frequent microtransactions — with average order values under USD 30, but high transaction frequency and cumulative data volume. This high-frequency model places demanding requirements on database throughput and millisecond-level response capability. During promotional periods (e.g., Songkran, 11.11, Black Friday), peak transaction volume may require processing at the million TPS level (transactions per second). In addition, mobile traffic is highly volatile (e.g., flash sales with sudden surges), making traditional static resource allocation models insufficient.
- Localized Mobile Application Design: Thai users prefer Thai-language interfaces and localized festive promotions (e.g., Songkran).As such, Shopee must build multilingual data models, dynamically match product descriptions, promotional rules, etc., and optimize via A/B testing and other localization strategies.



High-Concurrency and “Stable” Response

02 Rise of Digital Payments: Challenges in Data Integration and Real-Time Processing

- Increased Use of E-Wallets Creates Data Integration Burdens: From 2017 to 2022, the usage rate of e-wallets rose from 20% to 23%, accounting for 25% of total digital payment volume. Traditional banks primarily interface with systems using batch-processed transaction logs (e.g., TXT/CSV), with settlement cycles typically taking 1–3 business days. In contrast, e-wallets (such as ShopeePay, AirPay) generate streaming transaction data (JSON/API), requiring millisecond-level responsiveness. Payment platforms must integrate both types of data, posing challenges for traditional databases in terms of real-time data integration.
- Cross-Border Payments Raise Higher Real-Time Data Demands: According to statistics, cross-border consumption accounts for more than half of merchants' revenue. Cross-border transactions and multi-currency settlements (e.g., Thai Baht, USD, INR) require real-time exchange rate access and on-the-fly recalibration during order placement. For instance, Thai users purchasing European products must have real-time updates of EUR-to-THB exchange rates to ensure data consistency.



Real-Time and “Rapid” Insight

- Million-Level QPS Support: During high-demand periods such as “Double Day Promotions”, database queries per second (QPS) must scale from a typical few tens of thousands to over 100K+, with support for linear scalability to potentially reach tens of millions of QPS in the future as business grows.
- Multidimensional Query Load Balancing: To support real-time filtering based on dimensions such as brand, seller, product tags, etc., across hundreds of millions of product records (including complex schemas with dozens of fields), databases must ensure query performance does not degrade significantly as data volume increases.
- Millisecond-Level Response Stability: 99% of query response times (P99) must be under 60 ms. Even during high-concurrency write scenarios (e.g., flash sales), the system must still guarantee non-blocking execution of key operations such as order creation and inventory deduction.
- Cluster Processing Capacity Must Scale from tens of thousands of TPS to hundred of thousands of TPS to handle peak transaction surges during promotional events (e.g., “Double Day Promotions” where order volumes can exceed 1 million per minute).
- End-to-end processing latency must be compressed to within 3 seconds, enabling the operations team to capture dynamic, cross-time-zone market changes in Southeast Asia (e.g., consumption-trend differences between Chiang Mai and Bangkok).
- For complex aggregate queries (such as site-wide GMV breakdowns by category/region), P99 latency must stay below 200 ms; for simple queries (such as real-time sales of a single SKU), latency must be ≤ 50 ms.

Overview of the Thai Market Environment: An Adaptive Setting for Sustainable Growth

Driven by the dual needs of government coordination and new business expansion, Thai public sector users are calling for databases that enable cross-domain “robust” collaboration, elastic and “stable” scalability, and agile system operations.

Case Study of a Leading Thai Government Agency



The Ministry of Finance of Thailand is a central department within the Thai government, established in the late 19th century. It is responsible for managing the national fiscal system, taxation policies, state-owned assets, and financial regulatory affairs. In the field of public administration, core business systems (such as social security, taxation, and population management) must comply with regulatory requirements for data sovereignty and system stability. These traditionally rely on centralized databases. However, under digital transformation, emerging services (e.g., **e-government services**) demand greater agility and scalability. Cloud-based distributed databases are playing an increasingly important role in improving resource utilization efficiency, reducing redundancy, enhancing performance, and facilitating interdepartmental coordination.



User struggles



Core needs

01 Government Coordination: Challenges of Data Silos and Peak Performance Bottlenecks

- **Policy-driven Digital Transformation:** 1) In August 2024, the Thai government proposed the “Cloud First Policy” as a core national strategy for digital transformation. The policy encourages both central and industry-specific departments to accelerate cloud adoption to achieve digital governance goals. 2) Thailand has made rapid progress in government digitalization in recent years. According to the 2024 *UN E-Government Development Index (EGDI)*, Thailand ranks 52nd globally and **2nd among ASEAN countries**. Furthermore, the government is promoting a **Master Data** initiative to improve interdepartmental coordination, enhance digital service efficiency, and accelerate government-wide service collaboration.
- **System Fragmentation and Data Silos:** traditional e-government infrastructure has limited capability in terms of scalability and data security. Department-centered systems have led to the emergence of fragmented data silos and rigid, file-based frameworks. For example, departments like Taxation, Customs, Marine Affairs, and Audit operate 8 separate systems. Cross-department data exchange often requires manual Excel exports, leading to severe data fragmentation and inefficiency.
- **New Agency to Accelerate Collaboration:** Thailand’s **Investment and Economic Service Center (TIESC)** was established in March 2025. The agency offers services such as tax consultation and investment approval coordination, working with the Ministry of Finance, Customs, and other departments to enable interdepartmental data sharing. This supports improved collaboration and advances system operation and maintenance efficiency.

02 Digital Tax Reform: Elastic Scalability Challenges During Peak Periods

- **Insufficient Elastic Scalability:** Under the rollout of Thailand’s cross-border digital tax reform and enforced e-invoicing policies, the Ministry of Finance’s systems are facing explosive data pressure. During peak tax declaration periods for individuals and enterprises, there is a high demand for electronic invoice validation services. However, current systems only support **linear scaling** and must temporarily disable non-core functions to cope with surging traffic, resulting in a **2–3x delay** in invoice validation for small and medium-sized enterprises.



Cross-Domain
“Robust”
Collaboration



Elastic and
“Stable”
Scalability



Agile System
Operations

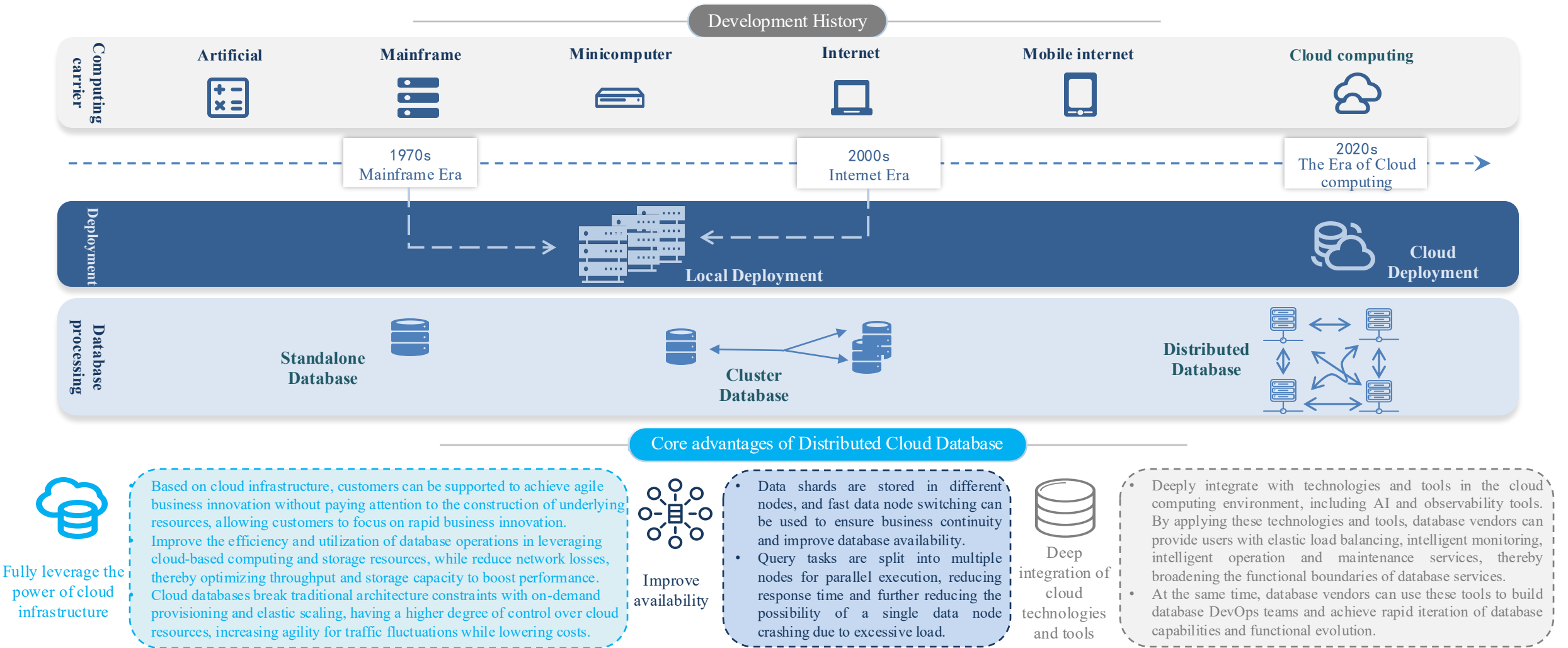
Requirements for Databases

- **Enable interconnected data sharing across subordinate departments under the Ministry of Finance** (such as Treasury Department), allowing information resource databases to interoperate and integrate. This will consolidate siloed data across use cases like fiscal loan guarantees and electronic invoice validation, **break down data silos**, improve unified management and comprehensive resource utilization, and **avoid resource duplication, waste, and redundant infrastructure construction**.
- **Compared to traditional architectures, cloud computing offers significant advantages such as fast on-line, low CAPEX, elastic scaling, and enhanced system security.** It enables flexible and dynamic resource allocation to handle high-concurrency scenarios such as cross-border trade settlement and electronic invoice validation.
- **During peak periods of budget preparation and debt management, computing nodes must automatically scale.** Query latency must be controlled at the millisecond level. (For example, during Thailand’s 2025 budget compilation period, over 313 billion Thai Baht of data needed to be processed.)
- **Databases need deeply integrated intelligent O&M tools** to enable automatic resource allocation, flexible scaling, and distribution. This helps reduce operational costs, improve business efficiency, and free enterprises from low-level technical maintenance, allowing them to focus more on unlocking the value of data and realizing business logic.

Definition of Distributed Cloud Database

Distributed cloud databases fully leverage the advantages of cloud infrastructure, improve database availability, and deeply integrate cloud technologies and tools to better adapt to data processing needs in the cloud computing era.

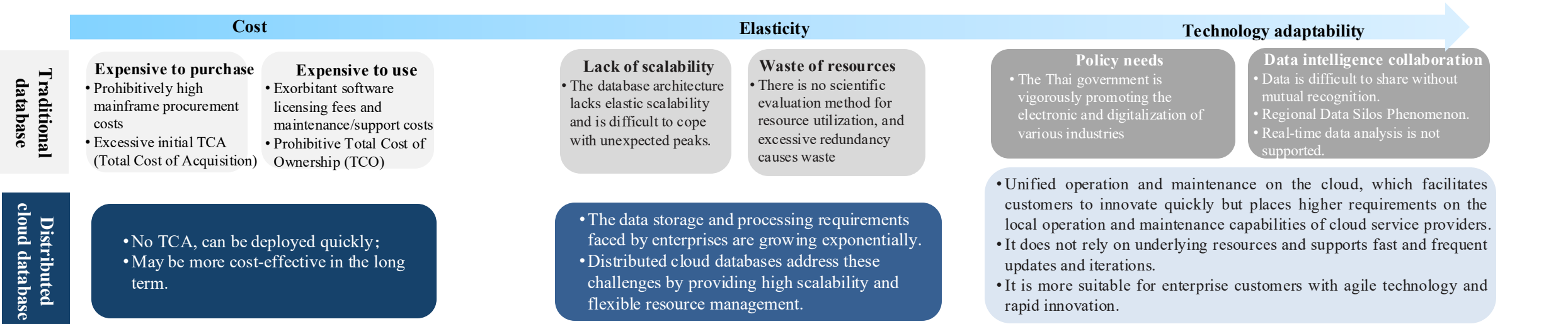
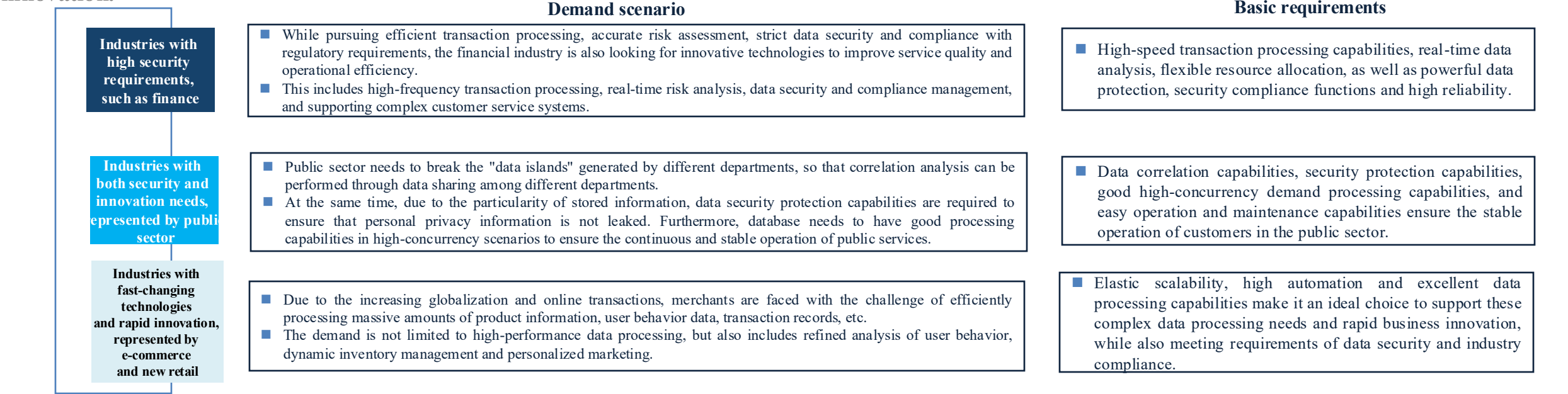
Key Definition: A distributed cloud database is a database that is optimized or deployed in a virtual computing environment and has horizontal sharding capabilities. Distributed cloud databases use the characteristics of cloud computing to virtualize database resources and horizontally distribute data across different sharding data nodes, achieving pay-as-you-go and on-demand expansion. It also offers advantages such as high availability and storage integration. With distributed cloud databases, users can easily manage and maintain large amounts of data, improving data processing efficiency and flexibility.



Source: Frost & Sullivan

The core value of Distributed Cloud Database

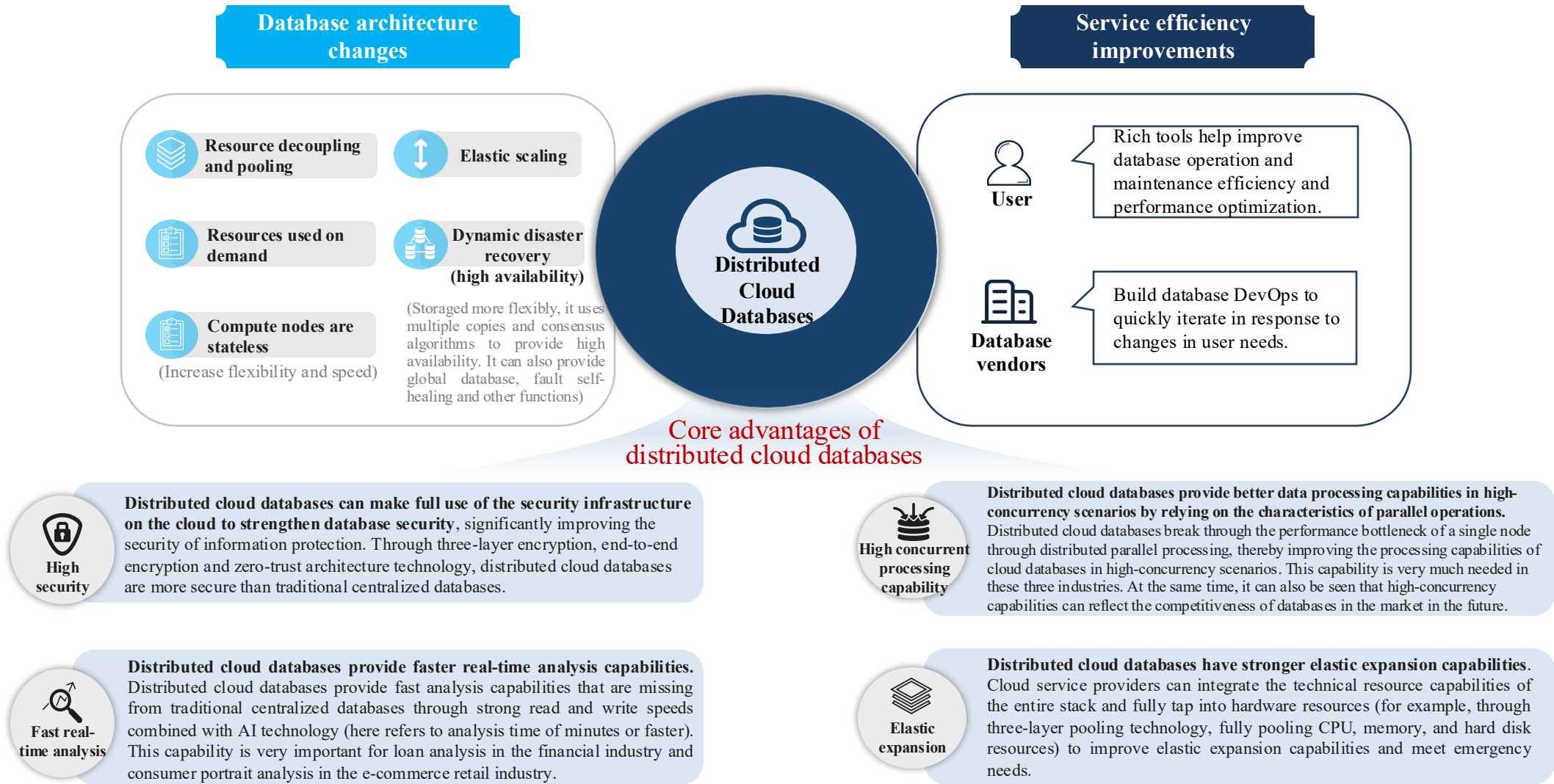
From the perspective of cost, elasticity, and technical adaptability, distributed cloud databases meet the financial industry's needs for security, compliance, and reliability, the government industry's needs for easy operation and maintenance capabilities, and the e-commerce business's needs for rapid business innovation.



Core advantages of Distributed Cloud Database

Compared with traditional centralized stand-alone databases, distributed cloud database has developed four advantages(high security, fast real-time analysis, high concurrent processing capabilities, and elastic expansion) through two core aspects (database architecture changes and service efficiency improvements).

Two core elements of distributed cloud database



The Right Choice: The Key to Success for Distributed Cloud Databases

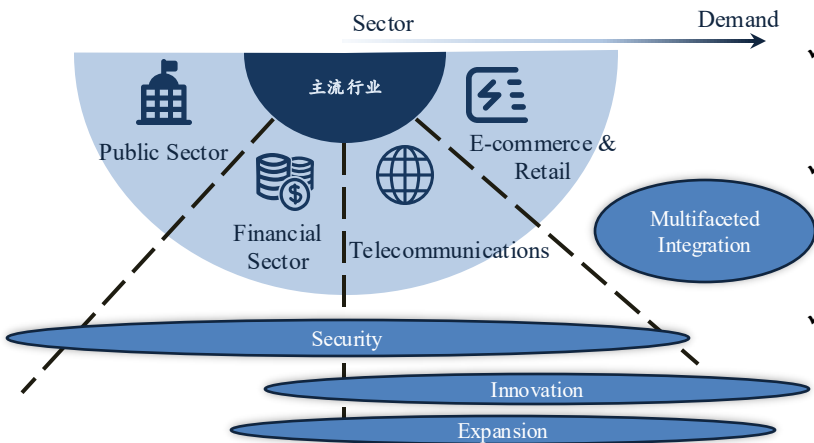
Distributed cloud databases take advantage of better services, both in terms of the needs of the different industries in the market, as well as in terms of technology and ecosystems for customers.

“ The use of distributed cloud databases undoubtedly provides a way for enterprises with high data security and protection needs to have the ability to expand capacity to a certain extent, but also to carry out a slow step to the cloud to migrate the database, which is more reflective of the collaborative evolution of distributed cloud databases.

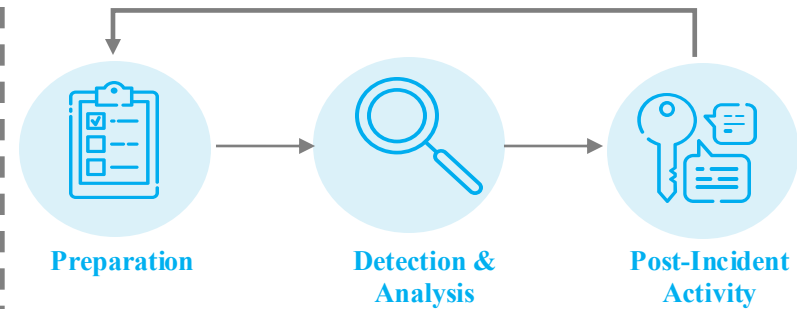
Market capacity

Distributed cloud databases with co-evolution capabilities can meet the needs of mainstream industries in Thailand for security, scalability, and hybrid links:

- ✓ **Financial industry:** The main demand for database in the financial industry is based on the security performance, and at the same time, it is also required for the innovation ability and capacity expansion ability.
- ✓ **Telecommunications industry:** both to ensure the security of data transmission, but also for business innovation and database capacity expansion ability to carry out high standard requirements.
- ✓ **E-commerce & retail industry:** the e-commerce & retail industry needs database to improve the efficiency of the supply chain through multi-convergence, and at the same time, the database can keep up with the industry's rapid expansion of business capacity.
- ✓ **Public sector:** mainly for the database security guarantee ability to put forward high requirements.



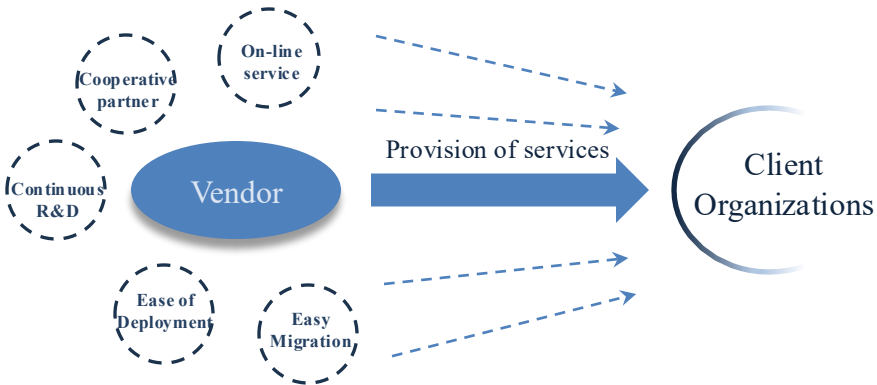
Technical capacity



- ✓ **High Availability, High O&M:** Provide a more convenient environment for business innovation and more controllable costs.
- ✓ **Security:** Access control, encryption, multi-factor authentication, data loss prevention, network monitoring, incident response plans, etc.
- ✓ **Expandability:** Ability to combine with advanced AI technology models through interfaces and allow AI models to run at full capacity.
- ✓ **Architecture evolution advantage:** support for public cloud, private cloud, and the same architecture evolution, more conducive to smooth access to the enterprise switch hybrid cloud database.
- ✓ **Distributed architecture:** The parallel capability provided by the cloud database with a distributed architecture can reduce the load pressure of a single node and further improve the high availability of the database.

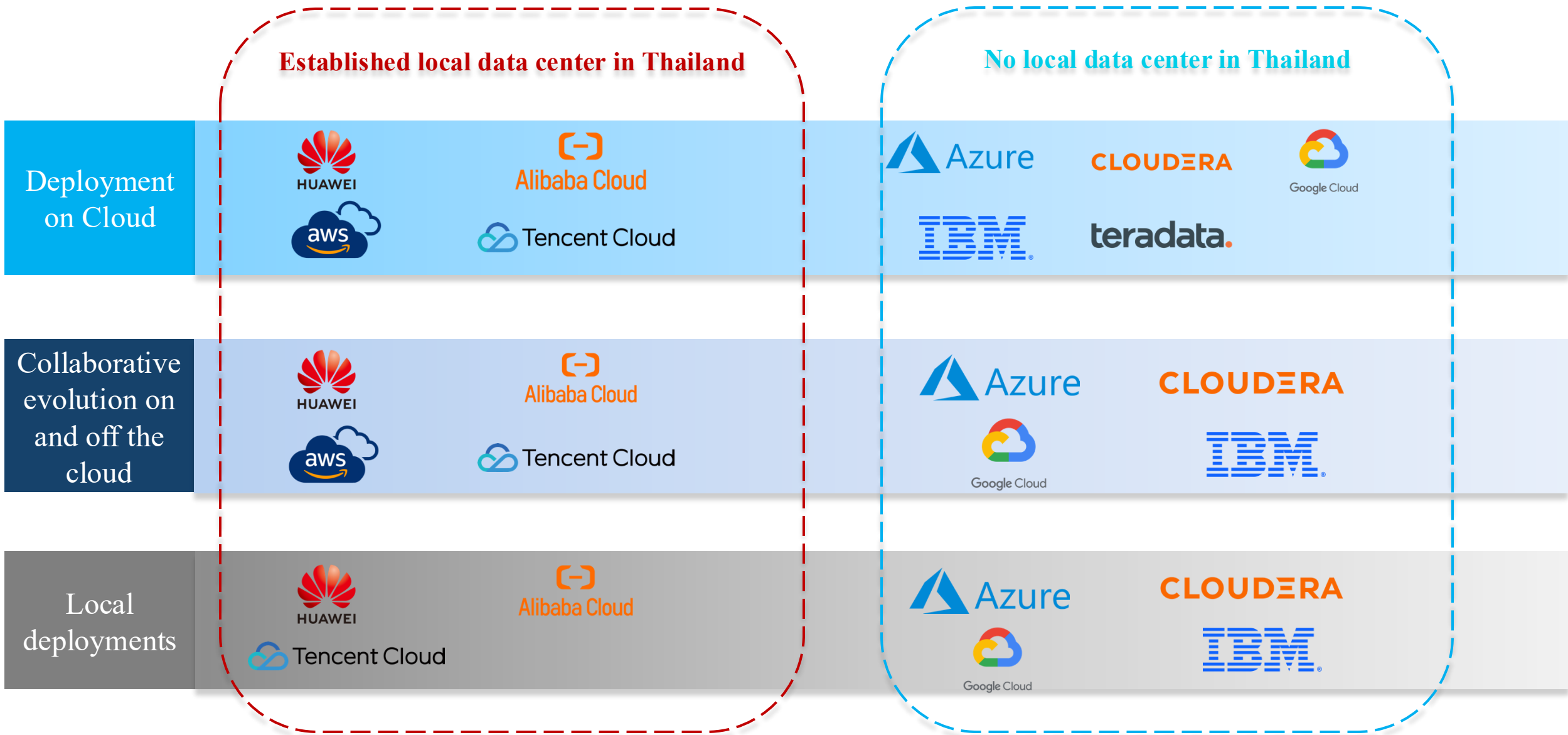
Service Ecology

- ✓ **Localized team support:** Provides excellent customer support and services to assist customers in managing their hybrid cloud environments, and has a local Thai operations team to help organizations resolve cloud database usage issues.
- ✓ **Good eco-network:** Build partnerships with multiple companies to help the supplier eco-network and provide a complete range of services.
- ✓ **Continuous R&D:** Continuous investment in R&D to meet emerging customer needs.
- ✓ **Easy to deploy, easy to migrate:** allow enterprises to quickly enable the cloud database can also be seamlessly compatible with the mainstream commercial database syntax, to avoid changes in the database caused by business lag.



Distributed Cloud Database Local Market Player Distribution in Thailand

Database vendors that have set up local data centers in Thailand and can flexibly scale up and down according to business needs and process analytics in real time have core competencies



Note: The vendors here are all companies with distributed cloud database products as key products

Source: Frost & Sullivan

Future Trends (1/2): Distributed Cloud Database Market Trends

Distributed cloud database with its security, scaling capacity and AI convergence ability will help more customers to solve the pain points of data proliferation, low intelligence and low provisioning efficiency in the future, thus receiving more popularity from industry customers in the future.

High security needs	Public Sector	Data Security Assurance Needs	❑ The Thai government requires critical government data (e.g., citizen information, public safety data) to be stored in in-country data centers, which requires cloud databases to provide local deployment capabilities. ❑ Government data needs to support full-link encryption, anti-tampering, and fine-grained rights management.
		Consolidation of dispersed data centers	❑ Integration of decentralized government data centers to improve resource utilization and reduce maintenance costs requires bridging data silos and completing cross-departmental data sharing and collaboration.
		Intelligent Technology Integration	❑ It is hoped that the integration of AI native database technology will enhance intelligence and improve the efficiency of government data processing.
High innovation needs	E-commerce retail industry	Improve supply chain efficiency	❑ Cross-border e-commerce accounts for nearly one-third of Thailand's e-commerce market, but cross-border customs clearance, warehousing and return processing are still pain points, and companies need to set up regional logistics hubs (e.g., linkage with the China-Laos Railway) or co-operate with cross-border specialized routes, where cloud databases are needed for the storage and synchronization of merchandise information and logistics information.
		Omni-channel retail model expansion	❑ Thai consumers expect to seamlessly switch between online and offline scenarios, which requires merchants to have the ability to handle merged information from multiple sources and to process and filter the information.
		Intelligent Requirements	❑ Customers in the retail industry in Thailand want to be able to analyze stored data through AI and then optimize personalized recommendations, and want to increase repurchase rates through CDP (Customer Data Platform), which requires databases that can fully support AI technology for efficient analysis. ❑ Customers in Thailand's e-commerce industry want to apply IoT technology to track the traceability of agricultural products and meet the growing demand for the e-commerce fresh produce category.
The need for both security and innovation	Financial industry	Ensuring data sovereignty	❑ The 'Cloud-First' strategy pursued by the Thai government emphasizes data sovereignty, requiring financial institutions to retain sensitive data (such as customer transaction records) in local private clouds, while using public cloud elastic resources for non-core business.
		Cross-cloud disaster recovery capability	❑ Thailand's financial sector needs to address the risk of future natural disasters and cyberattacks.
		Ability to handle high concurrency	❑ Cloud databases in Thailand's financial industry will need to handle more trading and analytical tasks in the future while supporting higher-volume transaction requests.
	Telecommunications industry	Enhance the business experience	❑ In the future, Thai operators will improve the efficiency of data access through the use of more advanced database products so that consumers can enjoy digital services provided by operators more quickly and smoothly.
		Digital service innovation	❑ Thai operators are accelerating the deployment of mobile payments, cloud computing and AI-driven customer services, but again, advanced database products are needed as a data pedestal to better present these services to consumers.

Source: Frost & Sullivan

Future Trends (2/2): Distributed Cloud Database Core Technology

Show the technical development trend of distributed cloud databases through more advanced AI technology, storage technology, security services, and peripheral technology, to reflect that the distributed cloud database is more advanced in technology.



Bidirectional empowerment



AI For DATA

- AI4DB mainly optimizes database operation and maintenance through artificial intelligence technology, reduces the operation's threshold, and realizes database self-management and operation and maintenance. Through machine learning algorithms, in the automation technology of database parameters, index recommendations, and other aspects of targeted adjustment, for key parameter adjustment and SQL tuning.
- Intelligent database operations and maintenance through AI is also a direction of enhancement. For example, AI can be used to help automate SQL review at the development validation stage.
- Distributed cloud databases provide more interfaces that support AI links for easy access to AI for use.

DATA For AI

- The DB4AI direction mainly focuses on enhancing the deployment of large language models through database technology development, improving retrieval accuracy, and facilitating efficient modelling of artificial intelligence.
- Meanwhile, the database system can provide efficient data storage and query functions to support large-scale machine learning and deep learning applications.



Cost Reduction and Empowerment



Support the evolution of the same architecture on and off the cloud

- Distributed cloud database supports the evolution of public cloud database and private cloud database with the same architecture, so that customers can provide great support in the slow replacement of distributed cloud database, and also to meet the security needs of enterprises in terms of confidential data.
- Meanwhile, the distributed cloud database has the characteristics of massive volume, no capacity limit, no need to expand capacity, on-demand supply, high efficiency, smooth access to the big data ecosystem, pay-as-you-go, and extreme cost reduction through the lifecycle strategy of automatic settlement.

Increased storage efficiency

- While reducing the cost of scaling up, distributed cloud databases also further reduce the cost of cloud databases while ensuring or even improving the storage efficiency of databases through some more advanced storage technologies.
- Efficient storage technologies include data compression, deduplication, tiered storage, and other means to reduce storage costs while improving storage efficiency.
- Thai enterprises will continue to explore efficient storage solutions to reduce storage costs and improve performance through data compression, deduplication, and intelligent storage management.



Business Forms



Multimodal Technology

- Distributed cloud database address the need to access different types of databases, provides the ability to support a variety of data models (such as relational, NoSQL, temporal, graph, etc.) for storage to meet the needs of different application scenarios, reduce the complexity of database operations, improve the efficiency of data management, and also improve the adaptability of the distributed cloud database for different data usage scenarios.

Edge Computing Technology

- IoT edge device data processing can be carried out through distributed cloud database services for data fusion, breaking data silos, data reception, aggregation and processing through the main control terminal, which is more conducive to the control of edge devices.
- The distributed cloud database is also better to improve the edge-end cloud synergy problems, so that the edge device better serves the customer enterprise.



Data Encryption

- The distributed cloud database system will pay more attention to the data encryption function to ensure the security and privacy of data.
- Through encryption technology, data is always encrypted during storage and transmission to prevent data leakage.
- Users can automatically encrypt important data fields through the key, and the database is in a ciphertext state throughout the whole process, the business application is transparent and non-perceptive, further preventing the possibility of data leakage, but the whole process does not affect the basic operation of the data, the operation reduces the sense of blocking of switching to encrypted state, and improves the smoothness of the user's use.

Security Service



Access Controls

- Distributed cloud database will also pass the functions of access control and security audit, which can guarantee the security performance of the distributed cloud database from another angle.
- At the same time, a distributed cloud database supports combining with local database or a private cloud database, which can put private data in a private cloud database, and then set restrictions on the access rights to the private cloud database, so as to further improve the security of the distributed cloud database through access control.

Services Guarantee



Localized Operational Services

- Through the local technical team, we help vendors set up the cloud database service to better fit the actual needs of the localized industries in Thailand, through the local service team, to improve the industry's adaptability.
- During the service period, there are problems local operation team can address faster to reduce the problems arising from the operation, reduce the database problems for the customer to bring greater losses.

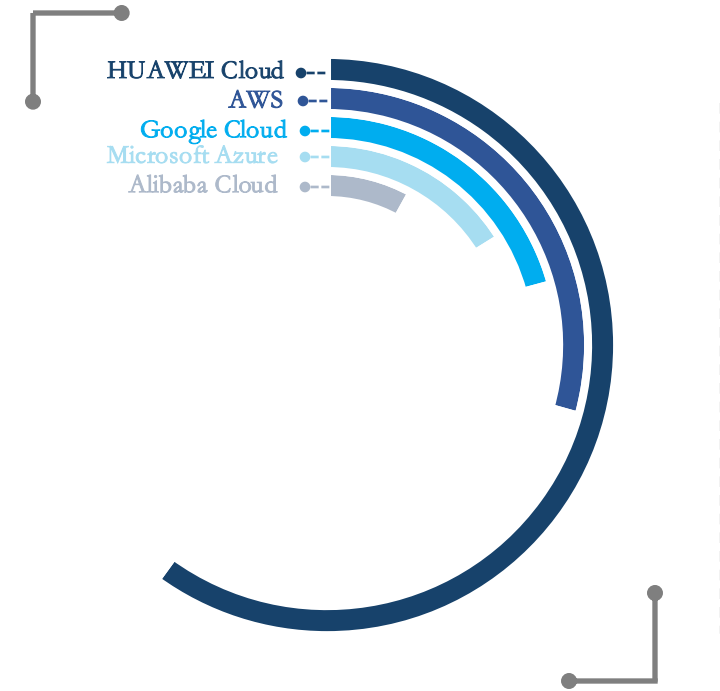
Thailand Distributed Cloud Database Competitive Landscape

Huawei Cloud, AWS and Microsoft Azure respectively hold leading position in Thailand’s distributed cloud database market across the financial sector, telecommunications sector, and e-commerce & retail sector.

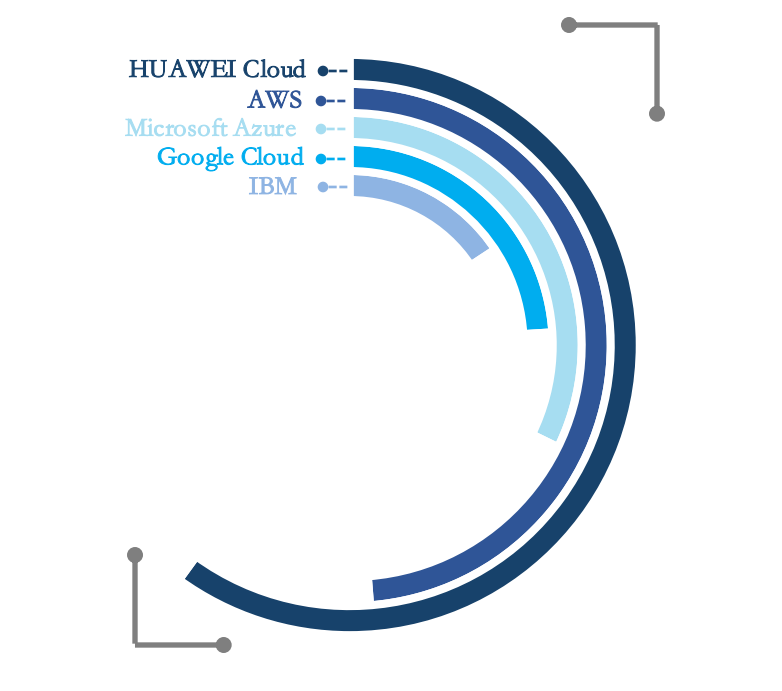
2024 Revenue of Distributed Cloud Database Providers , Segmented by Application Sector

Unit: Million USD

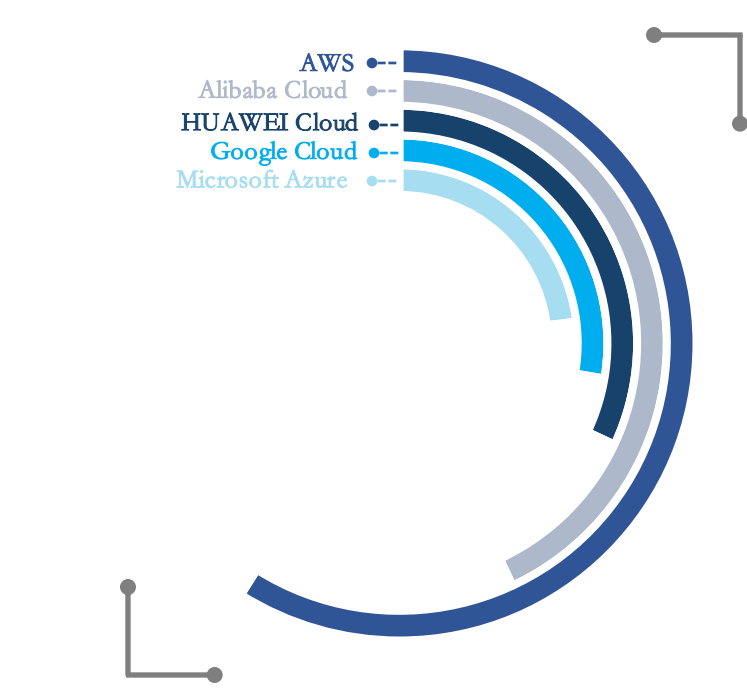
2024 Revenue of Distributed Cloud Database Providers in the Financial Sector



2024 Revenue of Distributed Cloud Database Providers in the Telecommunications Sector



2024 Revenue of Distributed Cloud Database Providers in the E-commerce & Retail Sector



Key Distributed Cloud Database Vendor Analysis

Huawei Cloud database services have been widely adopted across multiple industries in Thailand, thanks to their leading technologies, safe operating record and mature customer support.

Key Customer Case Studies in Thailand



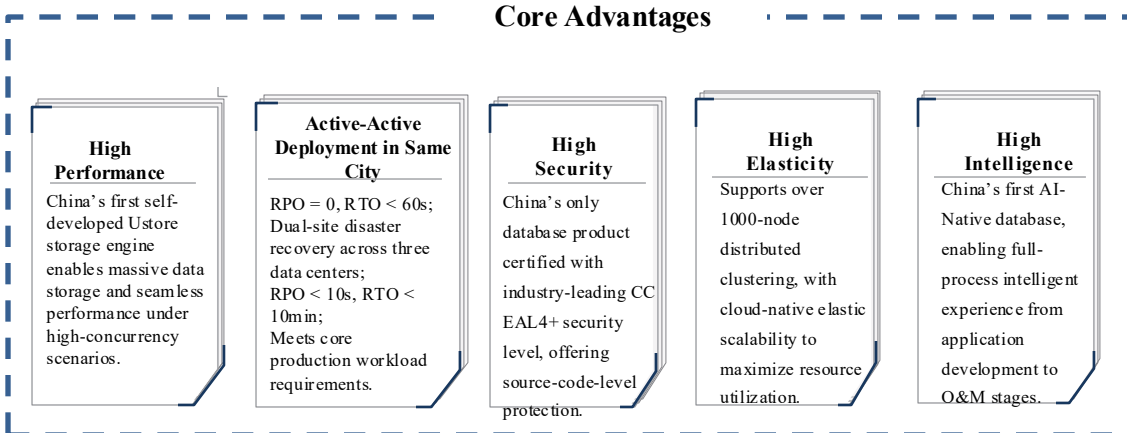
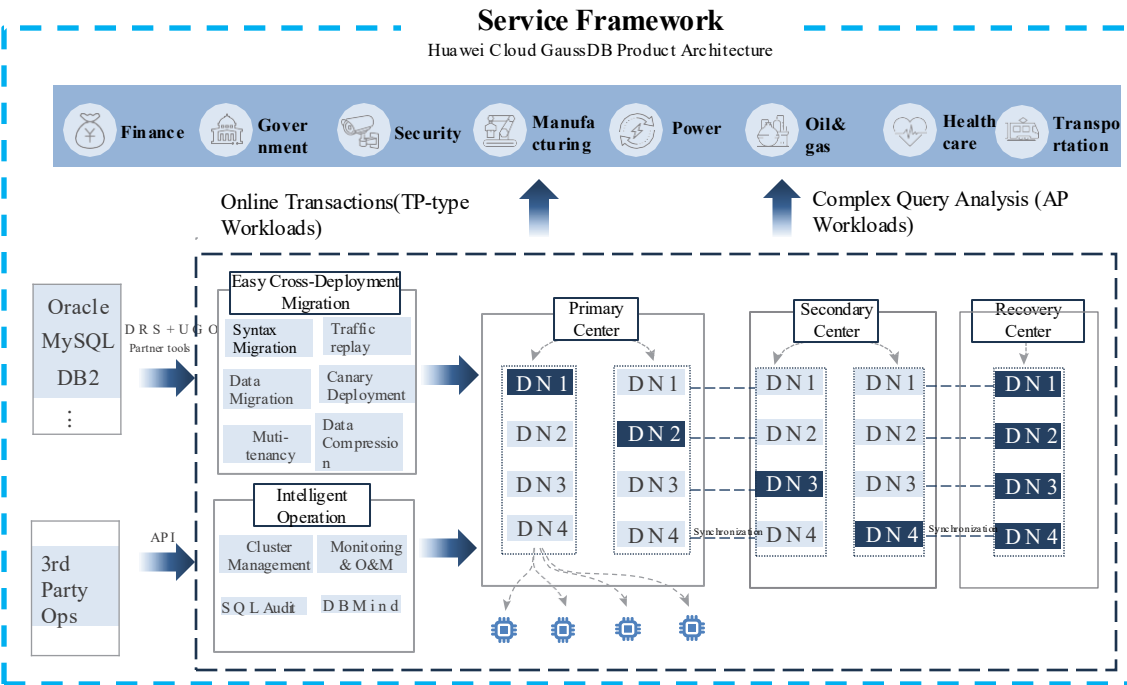
- SCB Thailand Achieves “Digital” Business Growth Through Distributed Databases
- **Product:** Huawei Cloud RDS for MySQL
- **Impact:** Huawei Cloud’s solution supports SCB in scaling its digital lending business by providing distributed database capabilities with high concurrency, elasticity, and efficient resource use. The cloud-native architecture ensures flexible deployment, reliable performance, and scalability—addressing SCB’s key challenges in digital transformation.



- Enhancing Customer Experience for Dohome in Thailand
- **Product:** Huawei Cloud RDS for MySQL
- **Impact:** By utilizing local data centers in Thailand, Huawei Cloud improved data transmission efficiency and avoided cross-border latency, helping Dohome deliver a better customer experience. In addition, Huawei provided a local support team, enabling rapid on-site expert response based on SLA requirements, significantly reducing issue resolution time.



- True IDC Becomes Huawei Cloud’s Highest-Level Strategic Partner in Thailand
- **Product:** Huawei Cloud GaussDB
- **Impact:** True IDC, a leading Thai data center and cloud provider under True Group, has formed a top-level strategic partnership with Huawei Cloud. By adopting Huawei’s database technologies, including GaussDB, and integrating with local infrastructure, the partnership delivers flexible, scalable multi-cloud solutions for customers.



Source: Huawei Cloud, Frost & Sullivan

Analysis of key Distributed Cloud Database vendors

Amazon Cloud Database relies on its years of cloud database accumulation and continues to follow up on the integration with AI technology to launch cloud database solutions with a wide selection of database types on the cloud in the Thailand region

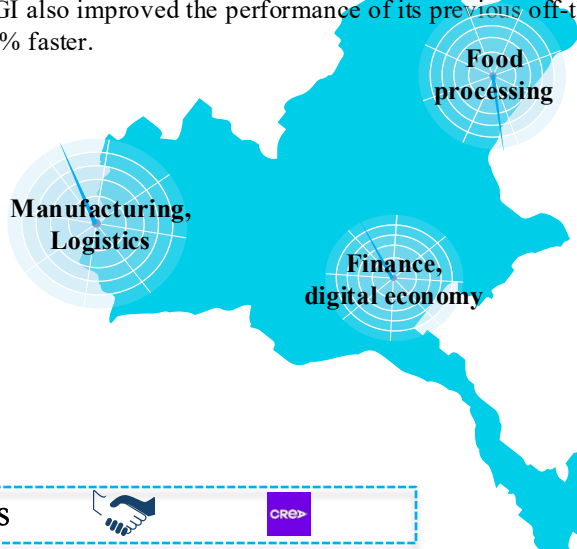


AWS





- VGI leverages Customer Data Platform on AWS to drive advertising revenue for digital signage network
- Industry: Online advertising promotion industry
- Results: By building CDP on AWS, VGI saved 30% of operating costs compared to a similar on-premises architecture. In addition, by building the solution on AWS and using serverless functions, the organization reduced platform management time by 40%, freeing up significant resources for innovation. VGI also improved the performance of its previous off-the-shelf solution, making data warehouse queries 30% faster.





AWS





- The1, a subsidiary of Central Group, rebuilt its loyalty program on AWS
- Industry: Advertising industry
- Results: The data team began using Amazon Redshift as a data warehouse, reducing query time from 2 hours to 15 minutes. With more and more data points processed every day, The1 can better target loyalty members and provide more customer-centric offers.

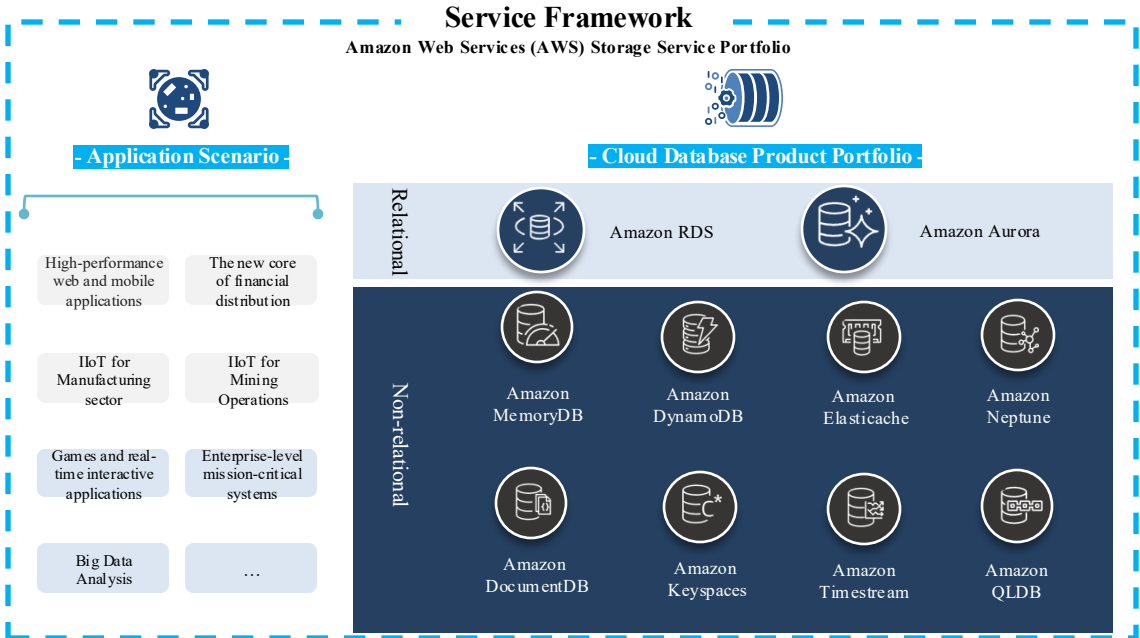


AWS





- CREA provides seamless, scalable e-commerce solutions on AWS for global retail brands
- Industry: E-commerce industry
- Results: Use Amazon RDS to easily create test environments and deliver new features. Since adopting AWS, CREA has successfully expanded its business and managed 15 times the normal order volume during peak periods. CREA also uses Amazon Simple Storage Service (Amazon S3) to manage lifecycle configuration and expand storage, Amazon Relational Database Service (Amazon RDS) to regularly test and add new features, and Amazon API Gateway to expose its APIs to customers in a secure and efficient manner. This enables the company to always maintain its industry leadership and attract internationally renowned brands.



- Service Value

 - Amazon Web Services, with its deep technology and experience in database and cloud computing, has created a cloud-native database solution that not only meets the core performance requirements of the database, but also adapts to diverse application scenarios and user needs by deeply integrating databases with big data, AI and other tools.
- Service Advantages

 - Specialized database for special purpose, ultimate performance:** Modern applications require specially built databases, and specialized databases for special purpose bring ultimate performance and cost-effectiveness.
 - Serverless, agile innovation:** Serverless architecture does not require operation and maintenance and has dynamic scaling capabilities to protect unpredictable workloads and business growth.
 - Global architecture, one-click deployment:** Support global business expansion, one-click database read expansion to the world, improve the access experience of users in multiple regions, and can achieve global-level disaster recovery and improve global business continuity.
 - Data linkage, extensive integration:** Cloud-native databases are widely integrated with other cloud services, such as big data analysis.

Source: AWS, Frost & Sullivan

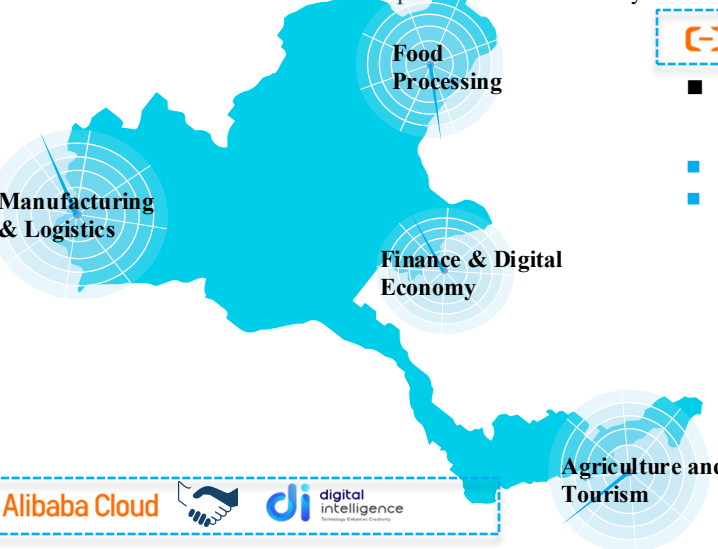
Key Distributed Cloud Database Vendor Analysis

Alibaba Cloud Database Services delivers comprehensive and high-performance cloud database solutions to Thailand’s e-commerce retail sector through its three core offerings: PolarDB, Lindorm, and Tair.



Helping Com7 Address the Challenges of Rapid Business Growth (IT Consumer Electronics Retail industry)

- Product:** Alibaba Cloud PolarDB
- Impact:** Through this collaboration, **Com7** has optimized its IT infrastructure using Alibaba Cloud’s solution. By leveraging Alibaba Cloud’s comprehensive Infrastructure as a Service (IaaS) and Platform as a Service (PaaS) offerings, Com7 significantly improved its scalability, reliability, and security. In addition, Alibaba Cloud’s **local data center in Thailand** enhanced the performance and stability of Com7’s digital marketing solutions by **20%**.





Supporting Youpik Thailand’s Evolving Business Demands (Social E-Commerce Platform industry)

- Product:** Alibaba Cloud PolarDB
- Impact:** Alibaba Cloud **PolarDB** provides a high-performance, elastically scalable cloud database with high-speed read/write capabilities, ensuring smooth access across a variety of business scenarios. By using **PolarDB**, Youpik was able to **resolve performance bottlenecks caused by sudden pressure spikes on the database**, avoiding issues such as **response latency or server unavailability**, and significantly improving user experience.



Helping Digital Intelligence Thailand Effectively Meet Customer Needs and Expand from Local to Global Markets (Digital Marketing & SaaS Technology Provider industry)

- Product:** Alibaba Cloud ApsaraDB RDS
- Impact:** Through **ApsaraDB RDS**, Digital Intelligence provides its web servers with **high-performance and stable storage and computing capabilities**, including support for real-time streaming. Meanwhile, Alibaba Cloud’s **globally integrated infrastructure** ensures **scalability**, enabling Digital Intelligence to **handle multi-country service requests through a unified solution**.



Easy of use

Stability

Elasticity

Cost efficiency

Integration

Relational Cloud-Native Database: PolarDB

- 100% MySQL compatible
- One-click RDS migration
- Second-level backup (restore by timestamp)
- Table recovery
- Instant DDL
- Parallel DDL

- China’s largest self-developed cloud-native database
- 10,000+ enterprise users, validated over millions of real-world cases
- Cross-data-center, multi-regional, multi-layered disaster recovery architecture
- Leverages more stable zero-copy replication
- Default setup includes 6 cross-region data replicas

- PolarDB Serverless: Instant scaling, on-demand resource allocation
- PolarDB multi-tenant multi-writer:** Active-active architecture with unified primary-backup nodes and node integration

- Compression-aware SmartSSD for fine-grained table compression ratios
- High-compression LSM engine: X-Engine
- Tiered storage architecture with cold-hot separation OSS engine

- High-speed RDMA networking
- HTAP/ePQ
- HTAP/MCI
- Multi-master cluster
- Polar4AI



Lindorm

Designed for IoT data, AIGC, and multi-model data processing

- Supports wide tables, time series, inverted index, and other PB-scale storage models
- Reduces storage costs by 80%, offering flexible compute-storage separation
- Millisecond-level real-time response with ultra-high concurrency and data ingestion



Tair

An in-memory database optimized for data security, operations, and high availability

- Offers in-memory, persistent, and cloud-native deployment options with flexible selection
- Provides capabilities such as data flashback and hotspot data optimization to ensure stability
- Equipped with comprehensive pre-, during-, and post-event security protection mechanisms

Source: Alibaba Cloud & Frost & Sullivan

FROST & SULLIVAN

18

Analysis of Key Distributed Cloud-Based Database Vendors

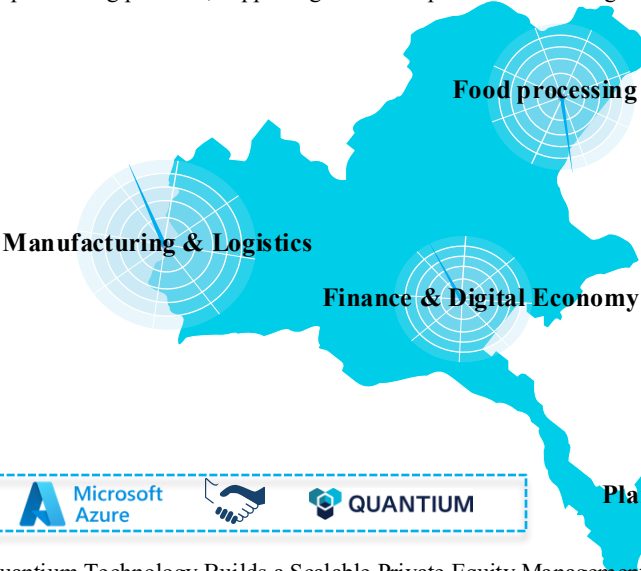
Microsoft Cloud Databases have secured a position in Thailand’s cloud-based database market through deep integration with Microsoft’s software ecosystem and infrastructure, while offering global deployment capabilities and seamless integration of AI-driven R&D.



Key customer cases in Thailand

SABINA

- The Thai lingerie brand Sabina leverages Microsoft Azure to gain actionable insights from its production and sales data.
- **Industry:** Retail
- **Result:** Sabina utilizes Azure Data Lake to collect and store data, which is then processed through Azure Data Factory, queried using Azure SQL, and analyzed with Azure Machine Learning. This data-driven approach enables more efficient and accurate forecasting. Azure’s analytics provide guidance on optimal inventory levels and in-store placement for high-performing products, supporting the development of an intelligent product lifecycle management system.



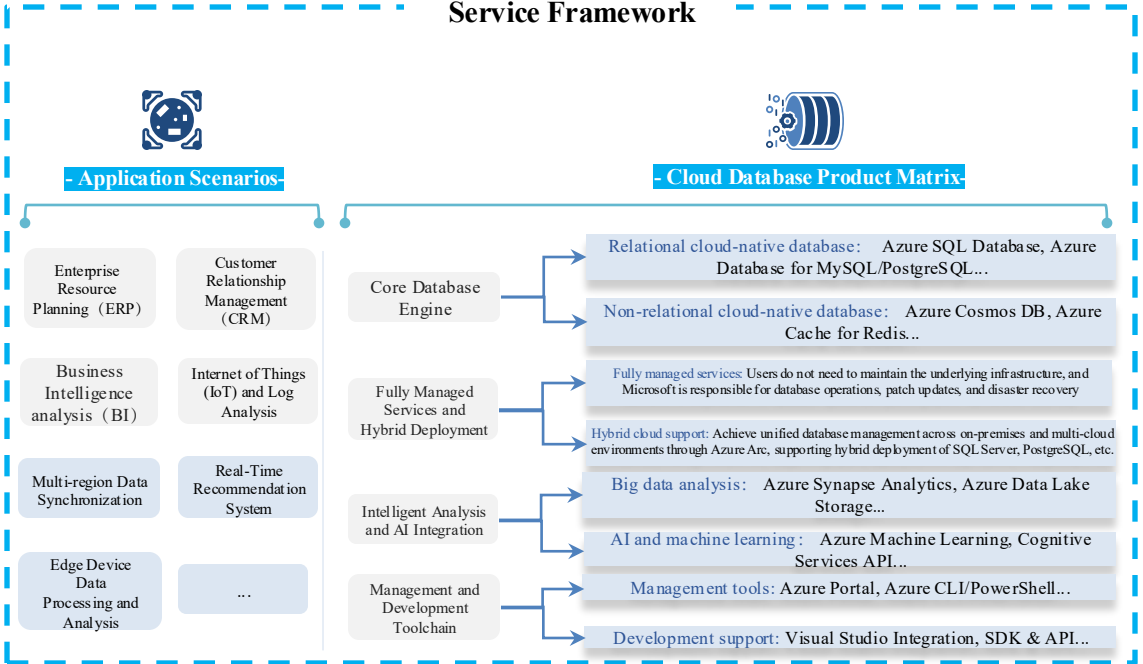
KAO

- Supporting Kao’s Migration from ECC 6.0 to S/4HANA in Thailand
- **Industry:** Retail
- **Result:** Azure NetApp Files (ANF) offers significantly higher availability compared to traditional NFS storage servers on Linux-based virtual machines, while also reducing the total cost of database storage. It enables seamless synchronization with disaster recovery sites, greatly enhancing business continuity. Fully compatible with SAP HANA Snapshots, ANF allows rapid creation of backup images for volumes containing HANA databases, ensuring reliable, efficient, and resilient data protection.

QUANTUM

- Quantum Technology Builds a Scalable Private Equity Management Platform with Microsoft Azure
- **Industry:** Financial services
- **Impact:** Developed from the ground up using Azure SQL Database as its foundational storage engine, Quantum’s platform delivers fast and reliable data access. By leveraging Azure App Service and hosting capabilities, the company ensures high availability for its web-based applications. Previously time-consuming tasks, such as compiling investor asset-level exposure data, which took days, can now be completed in minutes. Azure’s solutions empower Quantum to publish fund and account summaries to investor portals swiftly, enabling near real-time reporting.

Service Framework



Core Advantages

- **Seamless Integration with the Microsoft Ecosystem:** Fully compatible with Microsoft’s software suite, users can access Azure database data directly in Excel and perform ETL operations using Power Query. This tight integration streamlines reporting processes and enhances data productivity across familiar Microsoft tools.
- **Global Deployment and High-Availability Architecture:** Backed by Microsoft Azure’s global network of over 60 data centers, the platform enables cross-region replica synchronization for ultra-low-latency local access (as low as single-digit milliseconds). It also supports compliance with data sovereignty regulations, including adaptation to Thailand’s PDPA.
- **Multi-Model Database Engine Support:** The platform provides tailored data products for both relational and NoSQL storage needs. Azure Synapse Analytics supports petabyte-scale data warehousing and integrates the Apache Spark engine, enabling real-time data storage and analytics with greater efficiency and flexibility.
- **Intelligent Analytics and AI Integration:** With built-in AI capabilities, data can be processed directly within the database to streamline model training and deployment. Features such as Query Performance Insight and automatic index tuning significantly improve the efficiency of complex queries.

Source : Microsoft Azure , Frost & Sullivan

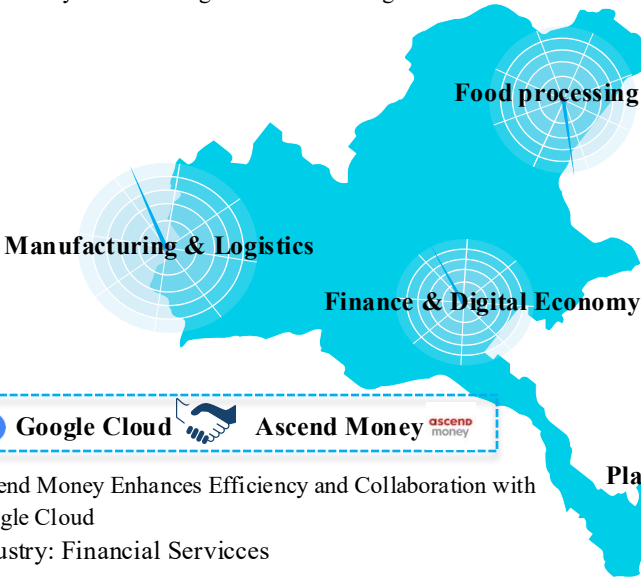
Analysis of Key Distributed Cloud-Based Database Vendors

Leveraging its robust capabilities in large-scale data analysis and processing, along with embedded AI technologies, Google Cloud Database effectively supports data-driven insights and user persona profiling across diverse industries in Thailand

**Google Cloud**

**King's Stella**

- King's Stella: Leveraging Google Cloud Analytics to Enhance Business Insight
- Industry: Retail
- Result: King's Stella undertook a robust data modernization initiative, migrating all corporate data from on-premises servers to Cloud SQL—chosen for its flexibility and scalability as a relational database. This transformation enables seamless data integration with BigQuery, empowering the company with real-time insights across its dynamic business operations—from inventory demand forecasting to customer behavior analysis and strategic decision-making.



**Google Cloud**

**FINNOMENA**

- FINNOMENA Empowers Growth and Innovation with Google Cloud
- Industry: Financial Services
- Result: By adopting containerization, automated deployment, and centralized logging, FINNOMENA successfully reduced its operational workload by up to 80%. Migrating MySQL databases to Cloud SQL further streamlined operations, eliminating the need for engineers to manually optimize and manage virtual machines—allowing the team to focus on innovation and scale operations efficiently in line with business growth.

**Google Cloud**

**Ascend Money**

- Ascend Money Enhances Efficiency and Collaboration with Google Cloud
- Industry: Financial Services
- Google Cloud—particularly BigQuery—was chosen based on its value, usability, performance, and support for team collaboration, aligning well with Ascend Money’s operational needs. By leveraging Google Cloud, Ascend Money processes 12GB of daily batch data and integrates inputs from 200 Thai data marts. The Google Kubernetes Engine enables containerized elastic scaling, optimizing both cost and infrastructure investment. The platform’s “write once, deploy anywhere” functionality further streamlines operations through Kubernetes orchestration.

**- Application Scenarios -**

**- Cloud Database Product Matrix -**

Payment and Transaction Systems	Risk Control	Core Database Engine	Relational cloud-native database: Cloud SQL、Cloud Spanner...
Order Management	User Behavior Analysis		Non-relational cloud-native database: Firestore、Cloud Datastore...
Intelligent Recommendation System	Cross-border Services	Data Warehousing and Analysis	BigQuery、Cloud Bigtable ...
Gaming and Social Applications	...	In-memory Database	Memorystore...
		Other Databases	Cloud Pub/Sub、Firestore...
		Database Ecosystem Tools	Database Migration Service、Dataflow、AI Integration...

Core Advantages

- Seamless Integration of Advanced AI and Machine Learning:** Users can seamlessly invoke Vertex AI models—including the Gemini series—via SQL or Python APIs. This integration streamlines data analysis workflows, enhances data utilization efficiency, and enables faster, more intelligent problem-solving through advanced AI capabilities.
- Global High-Performance Infrastructure and Network:** Google Cloud operates a network of over 200 data centers worldwide, spanning multiple regions and availability zones. This architecture ensures low-latency access and high service availability. It also enables cross-region, strongly consistent transaction processing, making it ideal for mission-critical and globally distributed business applications.
- Fully Managed and Intelligent Operations:** Delivers automated backup, seamless version upgrades, and intelligent fault recovery capabilities—minimizing manual intervention and significantly reducing operational overhead.
- Open ecosystem and industry adaptability:** Supports a wide range of databases—including relational (Cloud SQL, Spanner), NoSQL (Firestore, Bigtable), and time-series databases—enabling flexibility across industries such as finance, retail, and IoT. Seamlessly integrates with open-source frameworks like LangChain and Apache Kafka to broaden AI application potential. Fully compatible with managed services for popular open-source databases like Redis and MySQL.