

Magic Quadrant for Cloud Database Management Systems

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Initiatives: [Data Management Solutions](#); [Evolve Technology and Process Capabilities to Support D&A](#)

With continued innovation and increased breadth and depth of function, the cloud database management systems market continues to provide new business benefits. This Magic Quadrant will help data and analytics leaders make the right cloud DBMS choices in this highly dynamic market.

This Magic Quadrant is related to other research:

[Critical Capabilities for Cloud Database Management Systems for Operational Use Cases](#)

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(03 April 2024)

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- [What Supply Chain Executives Need to Know About Data Management Strategies](#)

Strategic Planning Assumptions

By 2025, 90% of new data and analytics deployments will be through an established data ecosystem, causing consolidation across the data and analytics market.

By 2025, 55% of IT will adopt data ecosystems, consolidating the vendor landscape by 40%, thereby reducing cost while reducing choice.

By 2027, 75% of DBMS purchases will be made by line-of-business domain leaders, up from 55% in 2022.

By 2027, worldwide enterprise spend on infrastructure as a service (IaaS) and platform as a service (PaaS) will triple, compared with spend in 2022, thereby driving demand for database platform as a service (dbPaaS).

By 2027, relational database management system (RDBMS) offerings will feature 80% of the practical functionality of their NoSQL competitors, up from 60% in 2022.

Market Definition/Description

Gartner defines the market for cloud database management systems (DBMSs) as the market for software products that store and manipulate data and that are primarily delivered as software as a service (SaaS) in the cloud. Cloud DBMSs may optionally be capable of running on-premises, or in hybrid, multicloud or intercloud configurations. They can be used for transactional work and/or analytical work. They may have features that enable them to participate in a wider data ecosystem.

Cloud DBMSs help organizations execute optimization strategies to support transactional and/or analytical processing for the following use cases:

- **Online transaction processing (OLTP) transactions:** This use case has a centralized transaction focus, with fixed, stable schema. High speed, high volume, concurrency, data insert/update capabilities, atomicity, consistency, isolation and durability (ACID) properties, and security are important.
- **Lightweight transactions:** This use case supports very high volumes of simple transactions with high concurrency, potentially with relaxed consistency. It may involve the ability to process fast-moving events captured from the edge.
- **Operational intelligence:** This use case requires the ability to handle large numbers of concurrent users running short analytic queries, while still meeting appropriate performance SLAs for operational workloads. It relates to transactional databases that can perform predictive model execution and online analytical processing (OLAP, formerly known as augmented transactions). It also relates to analytical databases that can support large numbers of users running highly concurrent workloads of simple queries.

- **Traditional data warehouse:** This use case manages structured historical data from multiple sources in a single DBMS instance. Data is structured to make it flexibly available to a wide variety of other use cases and support high performance.
- **Logical data warehouse:** This use case manages the variety and volume of structured data and other types of content data, acting as a logical tier for a variety of data sources, internal and external. Data is distributed across multiple platforms and/or repositories. Increasingly, this use case will involve analytics across the data ecosystem.
- **Data lake and machine learning:** This use case involves the storage and processing of data of all different structures. It encompasses data engineering, data science and other use cases, at scale.

A cloud DBMS must support at least one of the use cases listed above.

Must-Have Capabilities

Must-have capabilities for this market include:

- Availability as SaaS on provider-managed public or private cloud systems.
- Management of data within cloud storage — that is, cloud DBMSs are not hosted in infrastructure as a service (IaaS), such as in a virtual machine or a container managed by the customer.

Standard Capabilities

Standard capabilities for this market include:

- The ability to persist data within storage controlled by the cloud DBMS itself, rather than the ability to handle data “in flight.”
- The ability for cloud DBMSs to stand in their own right as data management components that store, read, update and manage data. This is in contrast to systems embedded within other software, such as business intelligence tools.
- The ability to support transactional or analytical database operations, or both.

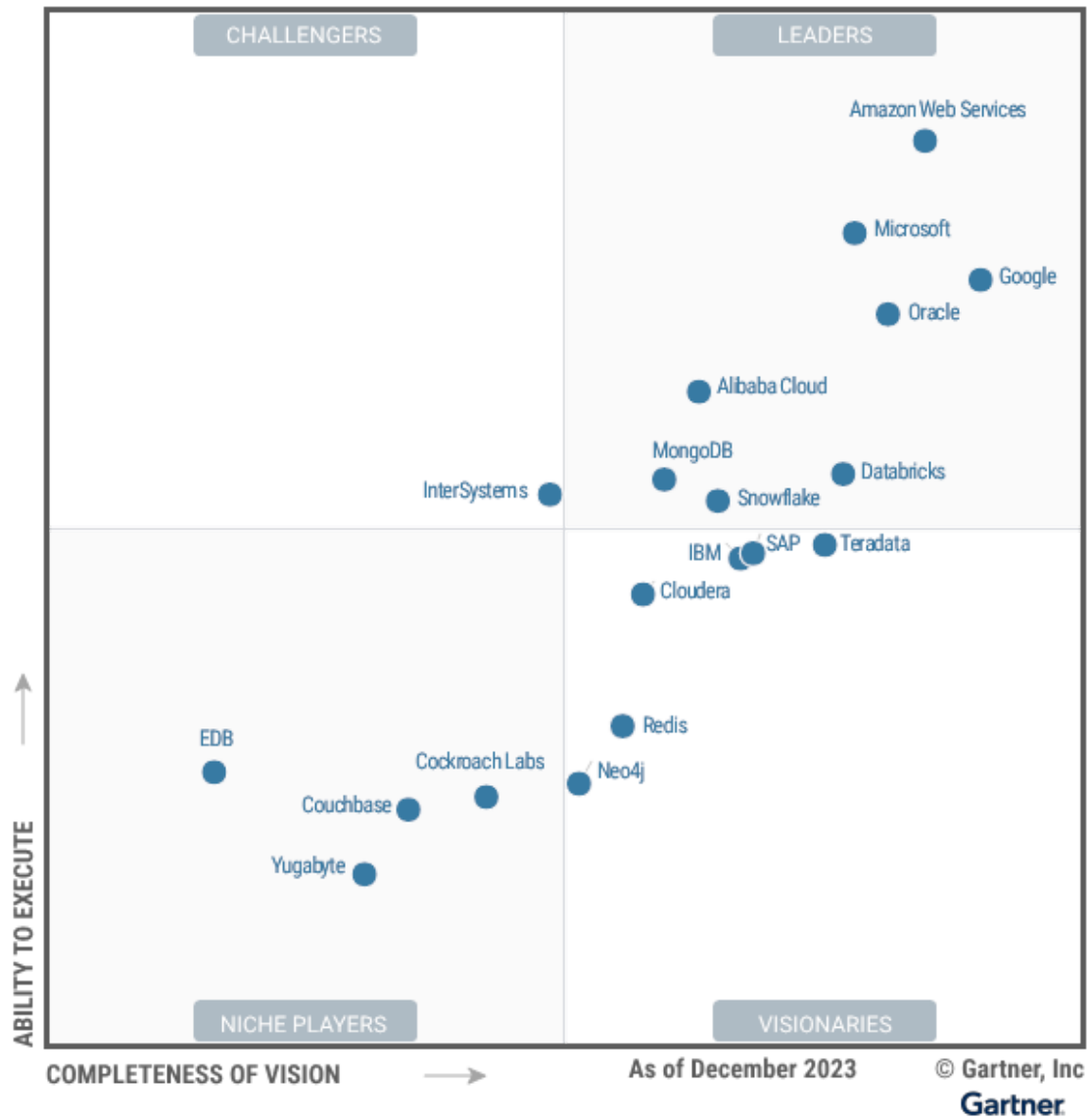
Optional Capabilities

Optional capabilities for this market include:

- Support for multiple data models and data types – relational, nonrelational (document, key value, wide column, graph), geospatial, time series and others.

Magic Quadrant

Figure 1: Magic Quadrant for Cloud Database Management Systems



Vendor Strengths and Cautions

Alibaba Cloud

Alibaba Cloud is a Leader in this Magic Quadrant. As one of the global prominent cloud service providers, its DBMS offerings include Alibaba Cloud ApsaraDB for RDS (Relational Database Service) and PolarDB for operational use cases. For analytical use cases, it offers AnalyticDB and MaxCompute. It also provides Lindorm, Graph Database (GDB) and Tair for nonrelational and real-time use cases. Alibaba Cloud's operations are primarily based in China, but it also has a presence in Asia/Pacific and Japan, Middle East, Europe and North America, and its global headquarters are in Singapore. Its DBMS customers cover a wide range of industries and different organization scales.

Strengths

- **Leading cloud-native DBMS innovations:** Alibaba Cloud has been generously investing in cloud-native DBMS capabilities such as more flexible resource elasticity, augmented FinOps and hybrid cloud capabilities. These continuous innovations have shifted the vendor from a cloud DBMS follower to a provider of original native cloud solutions.
- **Broad and differentiated vertical presence:** Alibaba Cloud has delivered DBMS success stories in a wide range of industries including finance, public sector, retail, gaming and automotive. At the same time, its deep engagement in some forefront industrial applications (such as autopilot) makes it highly competitive in specific data-intensive use cases.
- **Ecosystem enhancement:** Alibaba Cloud's recent enhanced partnership with independent software vendors (ISVs), such as MongoDB, ClickHouse and PingCAP, has demonstrated improvement in its cloud ecosystem. This provides more choice in third-party D&A solutions with less integration effort on Alibaba Cloud.

Cautions

- **Less coherent product portfolio:** Alibaba Cloud has made some improvements to unify its diverse D&A products including DBMS from different open-source engines. However, the market recognition of its D&A products as a coherent brand is still lagging compared to its global peers.
- **Organizational restructuring uncertainty:** Alibaba Group has announced the decision to split into six business entities with respective business independence, including Alibaba Cloud. The transitioning spin-off process as well as potential IPO bring a certain extent of uncertainty to its business strategy for the next one to two years.

- **Geopolitical headwinds:** Although clearly not something it can control, overall geopolitical tensions remain high, which impacts Alibaba Cloud's global business expansion, especially in North America and Europe. This usually manifests as data security, data sovereignty or other local digital compliance concerns.

Amazon Web Services

Amazon Web Services (AWS) is a Leader in this Magic Quadrant. It offers a comprehensive suite of database services with over 15 purpose-built engines to support operational, transactional, analytical and streaming applications. AWS's extensive selection of database services supports a broad spectrum of customer needs, encompassing both specialized demands and extensive use cases, delivering scalability, flexibility, and a variety of options to both small and large enterprises. AWS is the world's largest cloud service provider with a global reach, dedicated industry teams and service delivery partners to help organizations migrate their databases to AWS. It also provides extended AWS-based solutions through continuous improvements and innovation to deliver the scale, latency, security, compliance and integration needs of its customers.

Strengths

- **Continued market presence leadership:** AWS's global presence, extensive offerings and services, paired with the community of partners, third-party tools and services, deliver complete, compliant and secured database applications and solutions across a wide variety of organizations.
- **Flexible database engines and models:** AWS provides purpose-built database engines to support diverse data models, including relational, key-value, document, in-memory, graph, time series, wide column and ledger databases. This flexibility, and interoperability between the databases, helps users choose the best-fit databases for building their applications.
- **Resources to integrate data ecosystem:** AWS has the resources to move toward a more integrated set of solutions, building on the work started with Amazon DataZone, a common metadata framework and integration between services.

Cautions

- **Limited offerings beyond AWS cloud:** AWS offers data and query connectors through native services such as Amazon Athena, AWS Glue and Amazon AppFlow across on-premises and other clouds. However, AWS customers continue to rely upon third-party solutions for unified and complex data management and orchestration for data spanning across hybrid and multicloud.

- **Breadth of choice of services adds to complexity:** AWS's breadth of choices and extensive services offerings provide flexibility and interoperability, as noted in the Strengths section above. However, it can be overwhelming for some as it requires a significant effort to integrate data across its broad range of service offerings. AWS has continued to progress in this area but hasn't fully mitigated the complexity of managing the overall cloud platform.
- **Alleviating lock-in concerns:** Clients considering AWS must ensure alignment with specific long-term needs and constraints, particularly with leading cloud providers like AWS, as they offer comprehensive services for a complete end-to-end data ecosystem deployment that bring stickiness. This may create a degree of dependence and lock-in; however, the general myths about lock-in don't reflect the reality of current cloud environments. AWS adopts and supports open formats and standards for ease of portability. Also, the cost and complexity of switching to a different environment often outweighs the risks of remaining in the incumbent environment, however complex it may be.

Cloudera

Cloudera is a Visionary in this Magic Quadrant. Cloudera Data Platform (CDP) runs on AWS, Azure, Google Cloud Platform (GCP) and Red Hat OpenShift. The data ecosystem comprises distributed storage and processing layers with multiple engines to support transactional and analytics workloads. Cloudera continues to invest in its open-source leadership to drive innovation through the community with open standards in its data ecosystem delivering portable data and AI services across all cloud data architectures. With a centralized control plane across all clouds and on-premises, it delivers integrated security, metadata and governance with applied observability and an open data ecosystem. Cloudera serves multiple industries and geographies.

Strengths

- **Hybrid and multicloud with scale:** Cloudera's value proposition is to deliver a scalable data platform in both hybrid and multicloud deployments. Cloudera is a major driver of and contributes a significant portion of its R&D to open-source projects to drive enterprise extensions. Cloudera customers have petabytes of data under management.

- **Portable deployment strategy:** Cloudera's portable deployment strategy lets organizations run workloads across hybrid and multicloud environments without redevelopment, eliminating significant effort, potential errors and increased costs. It is primarily helpful for organizations where privacy, security and other regulations force them to refrain from moving or replacing their workloads. It provides the flexibility to run governed workloads between on-premises and clouds.
- **Flexible and frictionless billing:** Cloudera's frictionless application of customer investment across any deployment model allows the free exchange of credits and subscriptions based on a common unit, regardless of whether it is purchased directly from Cloudera or through marketplaces.

Cautions

- **Core offerings and complexity:** CDP customers continue to have challenges in navigating the complexity of its core offerings with its breadth of capabilities. However, the integrated security, metadata and governance with applied observability with SDX experience simplifies the user experience and cloud, hybrid and intercloud deployments.
- **More competing choices available:** All cloud service providers (CSPs) offer alternatives that compete with Cloudera's offerings, frequently in a delivery form factor that is more tightly integrated with the CSP ecosystem and easier to use. However, Cloudera's strong focus on multicloud and hybrid operations with ease of portability on workloads is an effective counterbalance to this competitive pressure that will require sustained effort to remain effective.
- **Operational use cases:** Cloudera is well-known for its portfolio of analytics capabilities and not as well-known for its operational capabilities with Apache HBase and the SQL interface supported by Apache Phoenix. Cloudera is typically not used as a general-purpose operational DBMS. It is more prevalent in high-volume, lightweight transaction lookups and large-scale batch operations supporting operational intelligence paired with its shared unified SDX experience across analytical and operational applications.

Cockroach Labs

Cockroach Labs is a Niche Player in this Magic Quadrant. It offers CockroachDB, a distributed transactional DBMS compatible with PostgreSQL, which can be deployed in public and private clouds and on-premises. Its dbPaaS deployment option is available on the three most popular cloud platforms: Amazon Web Services, Google Cloud Platform and Microsoft Azure, while its self-hosted offering can be run on-premises, in hybrid, object-oriented multicloud, and in intercloud deployments. Established in 2015, Cockroach Labs now has a client base across multiple industries spanning finance, high tech, retail and gaming. Its business is mainly in North America and Europe, but it also has a presence in Asia/Pacific and Latin America.

Strengths

- **Distributed transactions for mission-critical systems:** CockroachDB is well-suited for organizations' core systems, which have extremely high requirements for availability, scale, data consistency, data residency and security. The perception that distributed transactional DBMS are not suitable for organizations' most mission-critical applications has changed, and CockroachDB is well-positioned to take advantage of this trend.
- **Full multicloud, hybrid cloud and intercloud operations:** Cockroach Labs is continuously evolving its capabilities for hybrid environments, such as intercloud resource efficiency and intercloud data security. These efforts are enhancing its position as a cloud-agnostic transactional database in complex infrastructure environments.
- **Easier to operate:** Cockroach Labs has enhanced its out-of-box features to more easily realize expected resilience, performance, correctness and elasticity benefits. The majority of feedback from Gartner clients regarding its configuration complexity has been positive this year.

Cautions

- **Competition from other vendors:** Elasticity and high availability are not unique benefits of distributed transactional DBMSs today. New cloud DBMS products offered by CSPs, independent DBMS vendors and traditional vendors are also innovating in these areas. Cockroach Labs needs to respond to this aggressive competition to remain competitive in this market.

- **Lack of vertical ecosystem:** Vertical industry solutions built on CockroachDB are rare, despite efforts from the vendor to establish vertical industry partnerships. As a result, most successful deployments require custom-made approaches to solve industry challenges.
- **Dedicated operational DBMS use cases:** Cockroach Labs continues to prioritize its innovation in online transaction processing (OLTP) use cases for relational data. A concentrated business strategy is good for a specialized technology vendor, but it also means additional integration efforts are needed for clients looking for a more comprehensive use of different data models or query patterns.

Couchbase

Couchbase is a Niche Player in this Magic Quadrant. Couchbase offers the Capella cloud DBMS service as well as a self-managed version of both Couchbase Server and Couchbase Mobile, an embedded version of Couchbase for iOS, Android devices and Internet of Things (IoT) devices. Couchbase's operations are primarily based in North America, but it has a substantial presence in Europe and growth in the Asia/Pacific region. It is broadly represented across major market sectors, but is particularly strong in large-scale consumer-facing and back-end enterprise applications. Couchbase Capella provides SQL++, its query language for leveraging developers' familiarity with SQL while being able to work with JSON document-modeled data. Couchbase provides multidocument ACID consistency compliance.

Strengths

- **Mobile capabilities:** Couchbase has positioned itself as a leading player in the mobile and edge space, allowing for synchronization with edge data stores even if they are periodically not connected to a central service. This capability is available from server to server as well as between mobile devices running Android or iOS and servers. Couchbase is unique in its peer-to-peer sync offerings for this space.
- **Strong capabilities for user engagement:** Couchbase Capella offers rich capabilities not typically offered in a single product that address large-scale customer interactions. The union of a strong cache, SQL++ query language, document, key value and search models in a single product, deployable at scale in the cloud and on mobile devices, is powerful and leveraged effectively by many enterprises. Couchbase remains one of the most popular database systems globally.

- **Distributed intercloud approach across multiple clouds:** Capella offers sophisticated replication and high availability configurations that span multiple clouds, which make it a good choice for systems that need a high level of scalability and availability.

Cautions

- **Market awareness:** Couchbase's market awareness has improved, but there is opportunity to do better. Its new focus has yet to generate significant market awareness or capture the growth in usage captured by some of its other open-source peers, as indicated by the number of incoming inquiries to Gartner about the product.
- **Lack of ecosystem support:** Couchbase does not have a full-fledged capability to access data nor provide data to engines outside of the Couchbase world, although they are on its roadmap. The ability to broadly interact with multiple engines across an ecosystem is driving increasing flexibility and efficiency in multiple use cases, most prominently analytics and AI. Other nonrelational products also have this limitation.
- **Competition from other multimodel databases:** A selection of other databases now offer significant multimodel support including JSON document model support and in-memory, real-time features. This has increased the competition in this area.

Databricks

Databricks is a Leader in this Magic Quadrant. It offers Databricks Lakehouse Platform on Alibaba Cloud, Amazon Web Services, Google Cloud Platform, and as a first-party product with Microsoft as Azure Databricks. The Databricks Lakehouse Platform includes Unity Catalog and Delta Live Tables. Unity Catalog is a metadata catalog and governance hub for data in Databricks and outside repositories, and Delta Live Tables simplifies ingest and extraction, transformation and loading (ETL) with declarative pipeline development for streaming and batch data as well as support for end-to-end AI workloads. The Lakehouse Platform consists of data stored in a data lake in open-source Delta Lake table format, which adds metadata and structures to the underlying data to deliver the capabilities of a traditional data warehouse. Databricks SQL provides a serverless data warehouse for data analysts to run SQL and business intelligence (BI) applications at scale directly on the data lake. Databricks focuses on analytical use cases, in multiple industries, operating worldwide.

Strengths

- **Data science and AI:** Databricks has strong roots in data science. Its vision for the future includes the ability to use Databricks-developed large language models (LLM) to train on a customer's own data and use the results of this training to customize other models as well as allow nontechnical users to query the Lakehouse Platform with natural language.
- **Unity Catalog:** Databricks embraces data ecosystem support via its Unity Catalog, which provides fine-grained access control and metadata management and lineage for Databricks tables, files, notebooks, machine learning models and data in federated databases. Unity Catalog can access any data source that uses standard storage objects, like Parquet and Delta Lake, as well as other data sources such as MySQL, Microsoft SQL Server and Snowflake.
- **Scalability:** With its platform built on a highly scalable data lake foundation, Databricks has provided its customers with an extreme level of scalability for appropriate tasks. Databricks customers have systems that can process petabytes of data a day or as little as a few gigabytes.

Cautions

- **Less mature relational capabilities:** The relational capabilities of the Databricks Lakehouse are still relatively new and not as well-established as other leaders in this area for traditional relational workloads.
- **Product breadth can complicate focus:** Because Databricks provides such a broad set of capabilities in a single, unified platform, users may find it challenging to understand its full range of capabilities or to find the right components to use for a particular use case.
- **Pricing models:** As Databricks increases its pricing flexibility with additional options, such as a serverless option to go along with its standard consumption-based model, discovering and using the most optimal model for a particular set of use cases can be challenging. The serverless option is available for SQL warehouses, data science, machine learning and AI model serving, but not for other operations.

EDB

EDB is a Niche Player in this Magic Quadrant. EDB is a privately held company based in Bedford, Massachusetts. It offers EDB BigAnimal, a fully managed PostgreSQL implementation in the cloud. BigAnimal runs on Amazon Web Services, Microsoft Azure and Google Cloud Platform. EDB BigAnimal can also run in distributed mode as EDB Postgres Distributed (PGD), and also provides its database software and tooling on-premises. EDB BigAnimal is suited to both operational transaction and analytics applications, and mixes of the two. EDB support operations assist customers with mission-critical systems on a worldwide basis. EDB is a major supporter of the open-source movement and provides a large proportion of the contributions to the PostgreSQL codebase. Established in 2004, EDB serves a wide range of industries worldwide, with a main presence in North America and Europe and a presence in Asia/Pacific.

Strengths

- **Leading vendor for PostgreSQL:** EDB is a go-to vendor for PostgreSQL solutions, and interest in PostgreSQL and PostgreSQL-compatible databases is growing. While characterized as a niche vendor within the Magic Quadrant, this is relative to the overall size of the cloud DBMS market, which is very broad and deep in its features and its overall value. EDB specializes in providing fully supported and managed cloud solutions for the PostgreSQL databases, enabling many deployment choices and migration paths.
- **Support and community:** EDB is well-regarded for the support that it provides. In addition, it is valued for the contributions it makes to PostgreSQL and the way that it balances open-source community involvement and the provision of products and services.
- **Ease of migration:** EDB has successfully put in a great deal of effort to extend PostgreSQL with optional compatibility features for other DBMS, most notably Oracle. This makes migration to EDB easier by reducing the amount of code conversion needed to support a migration.

Cautions

- **PostgreSQL-compatible competitors:** Many customers are adopting PostgreSQL and PostgreSQL-compatible DBMSs, which opens up many more migration paths. Other vendors also offer PostgreSQL-compatible DBMS, which provides competition in this space for customers who want the migration options but not necessarily PostgreSQL itself.

- **Late to cloud:** EDB was relatively late in providing a cloud-based offering and thus has had a shorter amount of time to grow this side of the business and establish its presence.
- **Suited to organizations with an open-source strategy:** EDB is best suited to organizations that have and are comfortable with an open-source software strategy.

Google

Google is a Leader in this Magic Quadrant. It operates globally, with the exception of China, across many industries. Google Cloud provides an extended outreach to on-premises and other cloud service providers and offers managed container services to support applications portability. Google Cloud supports over a dozen database engines for different storage and processing needs such as AlloyDB, Cloud SQL (PostgreSQL, MySQL and SQL Server), Cloud Spanner, Cloud Bigtable, BigQuery, Dataproc, BigLake, Firestore and Firebase Realtime Database. Dataplex is a metadata/governance layer and an integrated data ecosystem providing unified metadata, security and governance across the enterprise.

Strengths

- **Openness:** Google has redefined the lakehouse by breaking down the data silos with BigLake, unifying data warehouses, data lakes and multicloud data across other cloud service providers with integrated access within Google Cloud. This is enhanced by a strategy of open support for PostgreSQL across relational databases such as AlloyDB and a common storage layer that supports unified transactional and analytical workloads.
- **Unified data management and governance:** Google Cloud unifies data management and governance use cases with its Dataplex offering. Dataplex's unified and centralized metadata storage management allows the governed access of metadata and data for multiple data management workloads across Google's proprietary and open-source tools.
- **Industry-leading cloud infrastructure:** Google has established a reputation through its AI research and innovation, partnerships, contribution to open-source data technologies and differentiation in its cloud infrastructure. Google Cloud offers an industry-leading 99.999% uptime SLA for products including Cloud Spanner, Cloud Bigtable and Firestore.

Cautions

- **Market perception:** While Google Cloud continues to expand its capabilities through native services and through partner integrations, some still do not view GCP as a choice for complex enterprise-scale applications. This is no longer the case, and evaluators should ensure that they correctly assess Google Cloud against their actual requirements.
- **Focused range of services:** Google Cloud has a narrower range of services than other CSPs and partners with third parties to provide integrated capabilities for specialized needs, such as Graph DBMS. GCP has a concise set of clearly defined products with little overlap compared to other vendors. For evaluators, this can be a benefit and should be judged on its merits.
- **Simplicity of pricing:** Google Cloud offers a simple pricing and deployment scheme with serverless and consumption models. It also offers capacity-based pricing for those who prefer predictable costs. Google's focus on simplicity should not be seen as a lack in capability, but is often preferred.

IBM

IBM is a Visionary in this Magic Quadrant. It offers Cloud Pak for Data, a unified integration layer for containerized DBMS including IBM Db2 on Cloud, IBM Db2 Warehouse on Cloud, IBM Cloud Data Engine, IBM Cloudant, IBM Netezza, the IBM Cloud Database family and IBM Event Streams. It also offers managed services for third-party offerings. IBM has unified its data management for AI under Watsonx.ai, Watsonx.data and Watsonx.governance to provide integration, lakehouse and modern AI capabilities in a complementary and integrated manner. The IBM Cloud Database family provides a wide variety of other managed data technologies, including PostgreSQL, MongoDB, Elasticsearch, Redis, RabbitMQ, SingleStore, DataStax and EnterpriseDB. IBM operates globally, and in all industries and organization sizes. It addresses both operational and analytical use cases.

Strengths

- **Technical depth and expertise:** IBM remains one of the most technically accomplished vendors in the world and is able to bring to bear significant lab research on fundamental research for innovation.
- **Industry knowledge:** IBM operates in a wide variety of industries and in many cases can provide specialist offerings to assist in building business solutions using IBM technology. The business data models from IBM remain among the best and most comprehensive in the industry and can be used by multiple database technologies.

- **Portability:** IBM Cloud Pak for Data is an innovative offering that provides a complete and portable platform that can be run in public and private clouds, on-premises and in virtualized environments.

Cautions

- **Market awareness:** IBM maintains a considerable presence in the overall DBMS market. Nevertheless, newer entrants, including large cloud-native service providers, are growing their cloud DBMS presence more rapidly and at above-market rates. While IBM strives to keep pace with the expansion, there is still room to improve and adjust to the growing market demands of the DBMS in the cloud.
- **Product choice and selection:** IBM offers a wide variety of cloud DBMS systems – both its own and from third parties – and the diversity of database engines allows customers more choices. IBM must do more to help its customers understand how multiple database offerings can work to solve varying customer needs with the best fit and right product selection.
- **Regaining momentum:** IBM data strategy is now moving much more clearly into alignment with the direction of the cloud DBMS market. However, it needs to do more to set the pace in regaining the mind share and momentum it deserves by expanding its market influence and direction in data management technology deployments.

InterSystems

InterSystems is a Challenger in this Magic Quadrant. It offers InterSystems IRIS, a multimodel hybrid DBMS and a variety of solution-focused cloud services built on IRIS. InterSystems has a global presence in healthcare and is active in supply chain, finance, manufacturing and other industries. InterSystems IRIS is available as a public, fully managed dbPaaS cloud service on Amazon Web Services, Google Cloud Platform, Microsoft Azure and Tencent. A private, fully managed dbPaaS version is also available. InterSystems provides support for both operational and analytical use cases and operates worldwide, with predominance in North America, Europe and Asia/Pacific.

Strengths

- **Solutions:** InterSystems is offering a fairly unique, modular approach to solutions. It offers frameworks and data models for healthcare, supply chain and financial asset management that all run on IRIS. Additionally, it offers cloud services such as supply-chain forecasting, health record exchange and others that work over those same frameworks. The combination allows for significant flexibility versus packaged applications while leveraging the value of prebuilt solutions.

- **Continuing and enhanced strength in healthcare:** Gartner's client inquiries continue to show customer reliance on the support and functionality InterSystems offers for key healthcare concerns, including graph-based support for the Fast Healthcare Interoperability Resources (FHIR) standard API for sharing healthcare data. This includes providing these capabilities to other DBMS vendors. InterSystems has a growing recognition in financial services and supply chain.
- **Simpler development:** InterSystems customers are leveraging embedded Python and SQL at an increasing rate, allowing development with less IRIS-specific skills and syntax. This flexibility has also been supported by significant increases in performance for IRIS.

Cautions

- **Limited availability of skills:** Customers may struggle to find personnel skilled with InterSystems IRIS and other InterSystems products. This continues to be a challenge that potential customers must consider. While Python and SQL support provides familiar access for many developers, the architecture of IRIS is unique and very different from alternatives.
- **Analytics considerations:** While InterSystems has made improvements in analytics, including data lakehouse capabilities, Gartner clients still report a need to bring data outside of InterSystems for some analytic use cases. InterSystems has partnered with others for data lake and lakehouse capabilities, such as AWS HealthLake.
- **Learning curve, documentation and complexity:** Reviewers on Gartner's Peer Insights platform report some issues around quality of documentation and initial support. Coupled with a relatively steep learning curve on a complex offering, customers report more effort is required to implement successfully. Once implemented, customers generally report a very high level of satisfaction.

Microsoft

Microsoft is a Leader in this Magic Quadrant. It provides a broad range of cloud DBMS offerings including Azure SQL, Azure Database for PostgreSQL, Azure Database for MySQL, Azure Database for MariaDB, Azure Cache for Redis, Azure Managed Instance for Apache Cassandra, and Azure Cosmos DB. It also provides integrated D&A solutions with built-in DBMS such as Azure Synapse Analytics and Microsoft Fabric (in preview as of the evaluation date). Headquartered in Redmond, Washington, Microsoft is a leading cloud service provider with geographically diversified business operations throughout the world. Its customers are spread across a wide range of industries and deployment sizes.

Strengths

- **A trustworthy global partner:** Microsoft's broad global presence with highly localized business operations all over the world makes it one of the limited trustworthy global DBMS partners in today's world with digital geopolitics in play. Its broad partnership with ISVs/service providers has also enhanced its leadership in the DBMS market for traditional industries like financial services, healthcare and manufacturing.
- **A more open and unified data ecosystem:** Microsoft continues to enhance the compatibility and interoperability between its DBMSs and other Microsoft products such as Microsoft 365, Power BI and Purview. This enables a more consistent experience for its clients. At the same time, the "one lake" direction in Microsoft Fabric brings more openness to data in non-Microsoft systems, which has the potential to reduce its clients' vendor lock-in concerns.
- **Innovation in AI-augmented data management:** Microsoft is one of the pioneers innovating AI-augmented data management capabilities in its DBMS and D&A solutions. Microsoft Fabric (in preview) will use generative-AI-based automation and other copilot-style technology to automate data management tasks from simple DBMS administration to complex data integration.

Cautions

- **Pace of brand upgrading:** In the past few years, Microsoft has announced many new data and analytics offerings, such as Azure Synapse Analytics (December 2020), Microsoft Intelligent Data Platform (May 2022), and Microsoft Fabric (May 2023), which include overlapping DBMS products. This frequent rebranding and evolution has resulted in concerns around roadmap and delivery for customers who have or are building on existing versions of Microsoft D&A solutions.
- **Performance and cost challenges:** In feedback from Gartner clients, performance and cost challenges continue to be the most frequently voiced concerns. Less predictable cost and performance for scaled data consumption spanning its DBMS and data management products still have room to improve compared to its peers.
- **Deployment challenges:** Feedback from Gartner inquiries and Peer Insights highlights the complexity of configuration and tool utilization to fully realize its claimed integrated ecosystem capabilities. Some clients who lack deep configuration knowledge are demanding more enhanced performance, security and cost control from its out-of-box solutions.

MongoDB

MongoDB is a Leader in this Magic Quadrant. It offers the document-based nonrelational MongoDB Atlas on Amazon Web Services, Google Cloud Platform and Microsoft Azure; the on-premises MongoDB Enterprise Server; and Community Edition, which is source-available and free to use. It also offers MongoDB Atlas Charts, Atlas Data Federation, Atlas Search, Atlas Online Archive, Atlas App Services and Atlas Device Sync and Device SDKs (formerly Realm), a mobile object database for remote and edge use. Application-driven analytics and time series collections are also supported. Vector search and stream processing are in preview as of October 2023 with the former scheduled to be generally available in December 2023. Its operations are global. MongoDB is in wide use across all industry segments and in enterprises of all sizes.

Strengths

- **Market presence and momentum:** MongoDB continues to occupy a significant presence in the marketplace and grow at above-market rates. It has established itself as a standard for nonrelational databases in the application development stack. MongoDB has a strong following, and this engenders good availability of skills.
- **Hybrid, multicloud and intercloud deployment choice:** MongoDB can be run on a wide variety of cloud platforms including AWS, Azure, GCP, IBM, Alibaba, and several geosovereign and industry-focused clouds, as well as on-premises in private clouds and using containerized and virtualized environments. This provides a lot of flexibility in placing development and production instances and the connections between them.
- **Expanded product vision:** MongoDB has expanded its data platform with new capabilities such as queryable encryption and support for time-series workloads. The MongoDB Atlas SQL Interface, Connectors and Drivers enable query, analysis and visualization of Atlas data in SQL-based BI tools, thus spanning the relational and nonrelational worlds. Roadmap items include vector search, stream processing and additional edge capabilities.

Cautions

- **The document model is different:** MongoDB adopts the nonrelational JSON document approach to data storage and representation; it eliminates the impedance mismatch between the database and programming languages. This can seem strange to developers used to the relational model. However, MongoDB provides tools and assists with training and intellectual capital dealing with a relational approach to document model mapping and migration of associated application code.

- **Increased competition:** MongoDB has become a de facto standard for document database-oriented application development. That has caused other vendors in the market to offer MongoDB-compatible interfaces to their products with a view to allowing customers to be able to port MongoDB-based applications to their competitive products. This has increased competition, but evaluators should examine just how compatible and complete these interfaces are.
- **The rise of multimodel DBMS:** It is becoming more common for DBMS to support multiple models, not just relational and not just document. MongoDB itself now offers SQL for analytics. As most major DBMS products now support document models, MongoDB will need to rely on articulating its particular advantages in implementation and approach rather than the advantages of the document model itself.

Neo4j

Neo4j is a Visionary in this Magic Quadrant. The AuraDB managed service, available on GCP, AWS and Azure, became generally available in September 2019. The company also offers the Neo4j graph database on-premises and for private clouds, and the AuraDS “data science as a service” offering for integrated AI/ML. Its support for ACID transactions makes it suitable beyond the typical data science use cases associated with graph databases. Neo4j has customers worldwide across several vertical markets including financial services, transportation and warehousing, and professional, technical and scientific services.

Strengths

- **Graph market leadership:** Neo4j has a broad community of users and loyal customers. Its Cypher and openCypher property graph query language is used by a dozen other vendors in their own graph offerings. While the graph DBMS market is still relatively small, Neo4j’s broad presence spanning the open-source community, enterprise users, third-party developers and cloud service providers is unmatched by other independent vendors in the graph DBMS market.
- **Graph data science productivity:** Neo4j provides a robust set of algorithms for analytics and data science over graph data, providing significant productivity and performance gains versus alternative approaches for analyzing graph data. It has robust connectors supporting integration with Spark as well as common ML platforms including Amazon SageMaker, Databricks and Google Cloud Vertex AI.

- **Strong customer satisfaction:** Peer Insights reviewers of the on-premises offering consistently praise Neo4j for its integration and deployment services, and for its service and support. The graphical representation and speed to develop were cited as useful features.

Cautions

- **Business model concerns:** Gartner clients express dissatisfaction with AuraDB's pricing. AuraDB's self-service, pay-as-you-go options are restricted to a version with limited capabilities. Their more capable enterprise version is only available through traditional enterprise channels or as a one-year reservation through cloud marketplaces. AuraDS is only available for self-service in a single cloud, GCP. While AuraDB Enterprise is available in AWS, Azure and GCP, it is sold only through traditional enterprise channels. Further, Alibaba's hosted Neo4j offering is a different product than AuraDB. Customers need to be aware of the varying offerings and pricing approaches as they consider AuraDB.
- **Growing competitive landscape:** Numerous graph DBMS competitors have entered the market, and increased graph analytics functionality is available within Spark. While Neo4j has partnered with all major CSPs, Google Cloud has chosen Neo4j as its main graph offering. Customers still prefer the native graph DBMS products when offered by a CSP before looking at independent software vendors. In addition, there are several open-source graph DBMS and analytics products gaining substantial user bases.
- **Lack of turnkey solution focus:** While Neo4j has shown substantial success across some key use cases, such as fraud detection and recommendation engines, there is still significant work left for the customer to apply their technology and realize the potential benefits. Also, graph databases tend not to expand outside of the use cases for which they are especially suited.

Oracle

Oracle is a Leader in this Magic Quadrant. Oracle Autonomous Database includes Autonomous Transaction Processing, Autonomous Data Warehouse, Autonomous JSON Database and APEX Application Development services. Oracle Exadata Database services are available in Oracle Cloud Infrastructure (OCI), and on the Oracle Exadata Cloud@Customer (ExaCC) and OCI Dedicated Region private clouds. Oracle also offers Oracle MySQL HeatWave, Oracle NoSQL Database services, OCI Cache for Redis managed service and OCI PostgreSQL Service (currently in limited availability). Oracle is active in all areas of the world, and its database offerings address a wide variety of vertical industries and use cases.

Strengths

- **Proven feature breadth and depth:** The Oracle DBMS has one of the richest sets of technologies in the market, an advantage that continues in its cloud offering. Oracle's rich feature set has been proven over decades of production operation, including most of the world's largest OLTP, operational intelligence, data warehouse and JSON systems.
- **Pricing model:** The Oracle Autonomous Database allows customers to get the price and predictability of a resource-based model with the automatic scalability of a consumption-based model, delivering excellent price and performance. On top of this flexible blended pricing model, Oracle offers a credit for on-premises support costs in relation to a customer's spend on the Oracle Database Cloud offerings, and there are no initial charges for data egress.
- **Hybrid and multicloud capabilities:** Oracle has a number of database offerings that run in a customer's data center or any public cloud data center. These range from a standard client-managed model to Oracle Exadata Cloud@Customer, which implements a fully managed solution within a customer data center, to its strong partnership with Microsoft Azure. Additionally, MySQL HeatWave runs in Amazon Web Services, Microsoft Azure and Oracle Cloud Infrastructure.

Cautions

- **Legacy perception of cost:** Oracle continues to refine and modernize its pricing model for cloud and provides competitive pricing. However, Gartner clients and reviews on Gartner's Peer Insights platform regularly cite cost and expense as a primary negative factor. Oracle needs to improve marketing communications and account management to counter this legacy perception.

- **Not top of mind for cloud:** Oracle was later to move to the cloud than other providers. The three largest cloud service providers by DBMS revenue and more recent entrants as well as others have captured much of the mind share in this market. This hurts Oracle since it results in its absence on default vendor shortlists. The recent Oracle Database@Azure announcement should help for those cases where Azure is the strategic CSP for a client.
- **Slower growth than some hyperscaler competitors:** Oracle's growth has been respectable, slightly above overall cloud market growth, but some high-profile competitors have been growing faster. Oracle's ability to transition a very large on-premises customer base has the potential to accelerate the future growth of OCI.

Redis

Redis is a Visionary in this Magic Quadrant. Redis Cloud, a fully managed cloud dbaaS offering based on the popular open-source database Redis, is available on AWS, GCP, Azure, and can be deployed alongside on-premises, hybrid and multicloud environments. It is a multimodel DBMS that is specialized in real-time transactional use cases. Redis' operations are primarily in North America, but it also has a substantial footprint in EMEA and the Asia/Pacific region, with a broad range of industry adoptions. Its open-source product is one of the most popular open-source databases and is widely used all over the world.

Strengths

- **Popularity:** Redis is one of the most widely deployed databases worldwide. Offered by all cloud providers, it's used by millions of programmers, and is a key part of many large and small applications. This popularity is served by Redis, Inc. to drive enterprise extensions, modern data type and processing engine capabilities on top of open-source Redis, and enrich them with various frameworks, integrations and tools.
- **Real-time capability:** Redis is well-known for its in-memory data processing capability, which is widely used to sustain modern real-time use cases in most industries. Amplified by its ease-of-use cloud offering and AI capabilities, Redis Cloud is a significant tool for building responsive applications. This strength is furthered by widespread support within application frameworks, enabling integration of Redis Cloud on top of other databases.
- **Popularity in AI/ML use cases:** Redis Cloud has become popular for usage in AI/ML, driven by real-time capabilities for storing values as well as its early availability of vector search capabilities as compared to many other products.

Cautions

- **Unchanged market recognition:** Despite the innovations to cover broader workloads, the popularity of Redis is based on requirements for cache, real-time and in-memory. While Redis has expanded the functionality of Redis Enterprise beyond these core capabilities, this broader footprint has not been recognized by the market.
- **Limited vertical engagement:** The vertical partnership for the enterprise use of Redis is still limited in the market. Despite the popularity of its open-source version, many clients are lacking vertical service providers or ISVs to help them build industrial applications.
- **Significant competition:** Despite its popularity and high-standard SLA, many customers turn to other providers when deploying Redis in the cloud. These other vendors, most prominently the major CSPs, are developing increased efficiency and functionality on Redis or their own API-compatible products in customers' implementations.

SAP

SAP is a Visionary in this Magic Quadrant. Its products include SAP HANA Cloud, SAP Datasphere, SAP Adaptive Server Enterprise, SAP IQ and SAP SQL Anywhere. Products address both operational and analytical DBMS use cases. SAP HANA Cloud is a managed database service that supports both transactional and analytical workloads in one solution including multimodel support. For business data fabric use cases, SAP offers SAP Datasphere for the unification of both SAP and non-SAP data, which also incorporates non-SAP partner ecosystem software. It also offers SAP BW/4HANA, a packaged data warehouse application that can be deployed on-premises and in the cloud. SAP operates on a global basis from diverse locations. It has enterprise customers of all sizes from all industries. SAP is best suited for organizations with a mature SAP-focused ERP strategy.

Strengths

- **Multicloud, intercloud and hybrid:** SAP HANA-based database systems are available for deployment on a wide variety of cloud service providers including AWS, Azure, GCP and Alibaba as both a managed database service via SAP HANA Cloud and bring-your-own software model. They can also be deployed on-premises and in containerized or virtualized environments. The ability to work across clouds is valued by organizations with global supply chains.

- **Market presence:** SAP has greatly increased its presence in the data management market through the adoption of SAP HANA Cloud as the underlying engine for SAP business applications. SAP has a very large customer base for its applications, and it is natural for SAP customers to adopt SAP HANA Cloud to run those applications.
- **SAP data ecosystem:** The SAP Datasphere strategy is built upon and powered by SAP HANA Cloud. Thus, SAP is now much more open in its ability to import and export data between SAP and non-SAP environments via file exchange, replication and federation. SAP Datasphere is most applicable to organizations with a significant SAP technology presence.

Cautions

- **Limited adoption outside of SAP ecosystem:** SAP has been less successful in penetrating the general market because organizations that do not already use SAP are unlikely to adopt SAP for data management. However, this does not detract from the value of SAP data management for those organizations that are or are not SAP customers.
- **Marketing and sales messaging:** SAP clients continue to tell Gartner that they are not being fully informed about SAP's data management offerings. Customers of SAP applications should ensure that they properly assess the SAP data management offerings, as some variants allow simpler solutions, especially for data integration.
- **Unfamiliarity with SAP HANA:** SAP HANA has been in the market for over a decade, and it is a general-purpose ANSI SQL database. However, there are still several concepts that may be unfamiliar to developers – in particular, the use of the native multimodel engines, multitier data storage and processing architecture, and augmented transactional capabilities. Developers that are not familiar with these capabilities may not be taking full advantage of the platform. Adopters should familiarize themselves with these and other concepts with SAP HANA Cloud, which provides a simplified cloud-native environment to leverage these capabilities.

Snowflake

Snowflake is a Leader in this Magic Quadrant. The Snowflake Data Cloud addresses analytics, data warehousing and data lake requirements. Its operations are geographically diversified, and its clients are of all sizes. Snowflake is active globally, predominantly in North America and Europe. It is active in multiple industries including finance, healthcare, retail, telecommunications and manufacturing. Snowflake offers data warehouse, data lake and AI/ML processing within the Snowflake Data Cloud together with data sharing capabilities that allow the sharing of data within and between clouds. Snowflake also has expanded its vision and strategy to include transactional working, native low-code application development and sharing, plus GenAI.

Strengths

- **Ease of use:** Snowflake continues to lead in the ease with which its analytical systems can be implemented and operated. Ease of use is now a major theme in this marketplace, due largely to the initiative that Snowflake took when it entered the market. Snowflake will continue to benefit from this trend as one of its main exponents.
- **Growing market mind share:** Interest in Snowflake continues to grow at a rapid pace, with revenue growth significantly outpacing the general growth in the market. Gartner receives many inquiries from clients that are considering adopting Snowflake.
- **Integrated solution with robust ecosystem:** Snowflake promotes the philosophy of an easy-to-use integrated solution complemented by a robust data-sharing and data marketplace story. The Kubernetes and co-processor approach enhances this.

Cautions

- **Predicting spend:** While improvements have been made to the Snowflake DBMS, Gartner still gets reports that it can be challenging to predict spend. However, some clients are doing this successfully. There is now a market for financial operations (FinOps) vendors emerging to address this for Snowflake and other cloud vendors. Snowflake has partners in this space and is enhancing its product for improved support.
- **Progression of new features to production:** Snowflake regularly introduces many new features. While this is a good thing, the pace of the features through private preview, public preview and into production can appear slow. Evaluators should be clear on when functionality will be ready to use in production.

- **Lack of an on-premises offering:** A section of the market still requires some kind of on-premises presence to assist in the transition to cloud, and cannot move to cloud without it. This type of organization operates in a regulatory regime that requires on-premises for at least some of its processing.

Teradata

Teradata is a Visionary in this Magic Quadrant. Teradata is focused on analytics, data warehousing, lakehouses and data lake requirements. Its operations are worldwide, and its clients tend to be of all sizes but are often very large organizations with very demanding analytical workloads. Also provided are vertical industry offerings such as the Teradata Industry Data Models (iDMs) including data models for finance, retail, telecommunications, manufacturing and healthcare. Teradata clients operate in a wide variety of business sectors including retail, manufacturing, telecommunications, healthcare and financial services. Teradata also provides distributed capability via its Teradata QueryGrid feature. Teradata is active in many countries around the world and operates on a global basis.

Strengths

- **Optimized ecosystem:** Teradata's QueryGrid implements access to data outside of Teradata efficiently by intelligently pushing down processing where appropriate, offloading cycles from the Teradata machine and reducing the amount of data that has to be returned to Teradata. Teradata is now extending this for optimal placement of workloads inside and outside of Teradata using its global planner. This capability provides Teradata with the ability to challenge the leaders who are shaping the market.
- **Depth and breadth of analytic capabilities:** Teradata has long been the leader in providing the most advanced analytic capabilities to its customer base, including integrated AI/ML, robust mixed workload management and distributed access. Its customers have tended to be very sophisticated in their use of analytics, setting up a synergistic virtuous circle of product enhancement and deployment.
- **Workload management:** Based on its architectural history, Teradata has the best workload management for analytic workloads in the market. This strength allows it to handle very demanding workloads with efficient use of resources as well as control costs in the cloud.

Cautions

- **Lack of buyer awareness:** Gartner inquiries show that Teradata is rarely at the top of a shortlist for cloud vendors, and the number of Gartner inquiries concerning this vendor has declined.
- **Lateness to the cloud:** Teradata was relatively late in offering a full cloud version of its product. This meant that if its customers wanted to move to the cloud early in the cycle, they looked elsewhere. This continues to have an effect on Teradata's market awareness. Buyers need to ensure they are evaluating Teradata's most recent cloud-native offering to get a full understanding of its capabilities.
- **Product sophistication requires educated buyers:** The strengths listed above are significant. But those strengths are not necessarily apparent in simplistic comparisons, so buyers need to take the time to understand the differentiation and the demands of enterprise workloads.

Yugabyte

Yugabyte is a Niche Player in this Magic Quadrant. Founded in 2016 and headquartered in Sunnyvale, California, it offers YugabyteDB, a PostgreSQL open-source SQL database that runs in the public cloud and can also run on-premises. YugabyteDB runs on Amazon Web Services, Google Cloud Platform and Microsoft Azure, and can be used in both a multicloud and intercloud mode with nodes in multiple clouds and on-premises all connected to provide a single distributed database instance. Operations are worldwide, predominantly in North America, Canada and Europe. Yugabyte also has a presence in Asia/Pacific, Japan and Latin America, and some presence in the Middle East. Yugabyte appeals to a wide range of customer types but predominantly arts, entertainment and recreation, finance and insurance, information providers, and retail. Such organizations need highly available and high-throughput transaction systems.

Strengths

- **PostgreSQL compatibility:** YugabyteDB is runtime compatible with PostgreSQL, including stored procedures, user-defined functions and triggers, which makes it compatible with many PostgreSQL tools. PostgreSQL compatibility is itself a trend in the cloud DBMS market.
- **Distributed database functionality:** Distributed database management systems (DDBMS) are now accepted for mainstream applications. Not so long ago, DDBMS were seen as specialist and esoteric, but now they are considered proven and suitable for large mission-critical applications. YugabyteDB is well-established in this market.

- **Hybrid, multicloud and intercloud:** Inherent in the distributed model is the ability to spread a single application database over multiple clouds and on-premises. This provides an opportunity to move workloads between these different locations, which can be advantageous for optimizing resources and for having procurement choice.

Cautions

- **Size:** Yugabyte is still a relatively small company in the cloud DBMS market, and buyers should check that they are happy with its support and roadmap.
- **Competition for large, high-concurrency workloads:** The DDBMS approach is undoubtedly very effective for very large transactional workloads. However, improvements in nondistributed transactional systems, particularly from the hyperscalers, means that these competitors can cover many of these large opportunities too.
- **Ensure configuration for distributed systems:** While YugabyteDB implements a proven distributed solution, it is still necessary for system designers to properly understand the principles of distributed systems, especially in the areas of performance, data sovereignty, high availability and recovery. This is not a concern, simply an area to attend to when using these types of systems.

Vendors Added and Dropped

We review and adjust our inclusion criteria for Magic Quadrants as markets change. As a result of these adjustments, the mix of vendors in any Magic Quadrant may change over time. A vendor's appearance in a Magic Quadrant one year and not the next does not necessarily indicate that we have changed our opinion of that vendor. It may be a reflection of a change in the market and, therefore, changed evaluation criteria, or of a change of focus by that vendor.

Added

The following vendors were added this year because they met this Magic Quadrant's inclusion criteria, including the customer interest index:

- EDB
- Yugabyte

Dropped

While they met this Magic Quadrant's other inclusion criteria, the following vendors were not among the top 20 organizations in a Customer Interest Index defined by Gartner for this Magic Quadrant:

- Progress (MarkLogic)
- Tencent Cloud
- TigerGraph

Data inputs used to calculate customer interest include the following measures, among others:

- Gartner customer search and inquiry volume and trend data
- Volume of job listings on a range of employment websites in the U.S., Europe and China
- Frequency of mentions as a competitor to other cloud DBMS vendors in reviews on Gartner's Peer Insights forum during the year ending March 2023

Noninclusion due to the Customer Interest Index should not be seen to reflect negatively on these vendors. Gartner methodology restricts the Magic Quadrant to 20 vendors.

Inclusion and Exclusion Criteria

Gartner Magic Quadrants identify and analyze the most relevant providers in a market. Gartner imposes an upper limit of 20 vendors to aid in identification of the most relevant providers. The following inclusion criteria represent the specific attributes that Gartner analysts consider necessary for a vendor to be included in this Magic Quadrant.

Inclusion Criteria

To qualify for inclusion in this Magic Quadrant, a vendor had to:

- Offer a generally available software product that met Gartner’s definition of a cloud DBMS. Gartner defines the market for cloud database management systems as software products that store and manipulate data and are delivered as software as a service in the cloud as their primary delivery mechanism. They may optionally be capable of running on-premises or in hybrid, multicloud or intercloud configurations. They can be used for transaction work, for analytical work or for both. The cloud DBMS may also have features that allow it to participate in a wider data ecosystem. Capabilities that are supported include the following.
 - The must-have capabilities for this market include:
 - Must be offered as software as a service on provider-managed public or private cloud systems.
 - They manage their data on cloud storage. That is, they are not hosted in infrastructure as a service (IaaS), such as in a virtual machine or container managed by the customer.
 - The standard capabilities for this market include:
 - Cloud DBMS products persist data within storage controlled by them rather than handle data in flight.
 - They are databases that stand in their own right as data management components that store, read, update and manage data. This contrasts with systems embedded within other software such as BI tools.
 - The cloud DBMS should support transactional or analytical database operations, or both.
 - The optional capabilities for this market include:
 - Vendors may cater to multiple data models and data types – relational, nonrelational (document, key value, wide column, graph), geospatial, time series and others.

- The cloud DBMS must also support more than one of the following cloud DBMS use cases:
 - OLTP transactions
 - Lightweight transactions
 - Operational intelligence
 - Traditional data warehouse
 - Logical data warehouse
 - Data lake

- Rank among the top 20 organizations in a Customer Interest Indicator (CII) defined by Gartner for this Magic Quadrant. Noninclusion due to the CII should not reflect negatively on vendors. Gartner methodology limits the number of vendors who can appear in the Magic Quadrant to 20. Data inputs used in the CII include the following measures, among others:
 - Gartner customer search and inquiry volume and trend data.
 - Volume of job listings on a range of employment websites in the U.S., Europe and China.
 - Frequency of mentions as a competitor to other cloud DBMS vendors in reviews on Gartner's Peer Insights forum during the year ending March 2023.

- Have market presence in at least three of the following regions (regional market presence is defined as the existence of dedicated sales offices or distribution partnerships in a specific region) and a minimum of 5% of the cloud revenue from each region:
 - North America (Canada, Mexico and the U.S.)
 - Central and South America
 - Europe (including Western Europe and Eastern Europe)
 - Middle East and Africa (including North Africa)
 - Asia/Pacific
 - Japan

- Have a cloud DBMS service generally available as of midnight, U.S. Eastern Daylight Time on 1 July 2023. This includes any new functionality added to the service(s) by the specified date. We do not consider beta, “early access,” “technology preview,” or other not generally available functionality or services. Additionally:
 - Any acquired product or service must have been acquired and offered by the acquiring vendor as of 1 July 2023. Acquisitions after this date were considered under their preacquisition identities, if appropriate, and are represented separately until the publication of the following year’s Magic Quadrant.

Exclusion Criteria

Vendors marketing only products from the list below are explicitly excluded from this Magic Quadrant and Critical Capabilities research.

They include:

- Streaming services, whose use cases are dominated by immediate event processing, and which are rarely if ever used for subsequent management of the data involved
- Prerelational DBMS products
- Object-oriented DBMS products

- Data grid products
- BI and analytical solutions that offer a cloud DBMS that is limited specifically to the vendor's own BI and analytical tools
- Analytics query accelerators (SQL interfaces to object stores or file systems)
- Vendors of data virtualization, data fabric and data federation that do not provide data persistence of their own

Additionally, this market does not include vendors that only provide DBMSs hosted in infrastructure as a service, such as in a virtual machine or container managed by the customer.

Honorable Mentions

The vendors mentioned below were either featured in the 2022 edition of this Magic Quadrant or have a presence in the market that will make them of interest to organizations in addition to the vendors covered in this year's Magic Quadrant.

While they met this Magic Quadrant's other inclusion criteria, the following vendors were not among the top 20 organizations in the CII defined by Gartner for this Magic Quadrant. Data inputs used to determine customer interest include the following measures, among others:

- Gartner customer search and inquiry volume and trend data
- Volume of job listings on a range of employment websites in the U.S., Europe and China
- Frequency of mentions as a competitor to other cloud DBMS vendors in reviews on Gartner's Peer Insights forum during the year ending March 2023

Noninclusion due to the CII should not reflect negatively on these vendors or products.

The following list does not include all notable vendors absent from this Magic Quadrant. Gartner clients are encouraged to request inquiry calls to discuss these and other notable vendors. The list is in alphabetical order.

Aiven

Founded in 2016 and headquartered in Helsinki, Finland, Aiven offers a range of open-source cloud-based products and services. It operates worldwide with offices in Amsterdam, Auckland, Berlin, Boston, Paris, Singapore, Sydney, Tokyo and Toronto.

Aiven provides a unified platform to deploy and manage cloud database services including ClickHouse, Apache Cassandra, Apache Flink, Apache Kafka, Redis, InfluxDB, MySQL, OpenSearch, PostgreSQL, and the M3 time series database. Its platform, which also supports event streaming, is available on Amazon Web Services, Google Cloud Platform and Microsoft Azure, as well as several smaller providers. It offers these managed cloud services in customers' own public cloud accounts as well as its own. Aiven focuses on open-source data management services, and also makes its own integration software and tools – such as Apache Kafka connectors and a PostgreSQL backup and restore tool – available under an open-source license.

ClickHouse

ClickHouse, incorporated in 2021, is headquartered in the Bay Area of San Francisco, California, and has European headquarters in Amsterdam, the Netherlands. It provides the ClickHouse Cloud, based on the popular ClickHouse open-source database system, which is designed for analytics with an emphasis on OLAP and real-time reporting. ClickHouse's open-source system is based on the open-source Apache project launched in 2016.

Originally aiming to be particularly good at aggregating and filtering very large volumes of data, ClickHouse achieves high performance using a combination of compression, column store, parallel processing and other techniques focused on detailed consideration of data types and layouts.

The ClickHouse Cloud is available on AWS and GCP, with a roadmap to also be hosted on Azure. In addition to Aiven, managed ClickHouse is also available from other cloud service providers, including Alibaba and others.

Huawei Cloud

Huawei Cloud is a leading cloud service provider in China. It offers a wide variety of DBMS products, including GaussDB and GaussDB (for MySQL) for OLTP use cases, GaussDB(DWS) for analytical use cases, GaussDB(for Mongo), GaussDB(for Influx), GaussDB(for Cassandra) and GaussDB(for Redis) for nonrelational use cases. In addition, it provides UGO and DRS for database migration, FusionInsight MRS for data lake, and DataArts Studio for governance. All are available on Huawei Cloud and Huawei Cloud Stack for on-premises deployment.

Huawei's operations are primarily in China, but it also has footprints in Asia/Pacific, Japan, Europe, South America and Africa. Its two flagship products, GaussDB and GaussDB(DWS), are mainly deployed as the replacement of aging global competitor solutions for local organizations in China, and gained steady growth last year. At the same time, its DBaaS deployment on public cloud is growing rapidly in China, especially for the manufacturing, retail and gaming industries. However, geopolitical concerns still remain a challenge for Huawei to extend its global business effectively in the cloud DBMS market.

OceanBase

OceanBase is headquartered in Beijing, China, and offers OceanBase Database, a distributed transactional database that is compatible with both MySQL and Oracle. OceanBase is one of the pioneers in distributed SQL technologies, with strong innovations in performance, elasticity, availability and disaster recovery. Its product has been widely used by Chinese organizations in finance, telecom, energy and public sector to replace aging mainframe relational databases, especially for mission-critical systems.

OceanBase started exploring the global market in 2022 but still has a limited presence outside China at the moment. Coming from Ant Group, OceanBase was used to sustain many data-intensive applications across the Alibaba Group and Ant Group. In 2020, OceanBase was registered as a business entity owned by Ant Group, and is now transitioning to be an independent technology vendor. Currently, it offers a fully managed cloud database service on Alibaba Cloud and Amazon Web Services.

OpenText

OpenText offers the OpenText Vertica Analytics Platform. Vertica was originally developed in 2005. Micro Focus acquired Vertica in 2017, which OpenText then acquired in 2023. The core analytical platform within the OpenText software portfolio is OpenText Vertica, a massively parallel processing (MPP) column store analytical database. It can run in Alibaba Cloud, Amazon Web Services, Google Cloud Platform or Microsoft Azure public clouds; as Kubernetes containers; on virtual machines; and on on-premises or hybrid environments leveraging its separation of compute and storage architecture. It is compatible with many modern extraction, transformation and loading (ETL) and BI tools. OpenText Vertica's unified analytical approach combines data in the data warehouse and data lake for SQL, ML and AI.

PingCAP

PingCAP is the company behind TiDB, an open-source, distributed transactional database that is compatible with MySQL. With over 34,000 GitHub stars and more than 1,200 contributors globally, TiDB is a popular open-source database. Headquartered in Sunnyvale, California, PingCAP is a global company with regional offices and business in APAC, Japan, China and Europe. TiDB is available on all the major public cloud platforms, on-premises and as a fully managed cloud service. It is mainly deployed for demanding modern applications, but also has been used in some mission-critical workloads across e-commerce, gaming, logistics and financial services.

Progress (MarkLogic)

MarkLogic was founded in 2001 and was acquired by Progress in 2023. It focuses on solving complex data problems. Its MarkLogic Cloud service is primarily offered on the AWS and Azure clouds, and is supported on OpenShift, GCP, Docker Hub and Kubernetes. Progress focuses on data management. It is built around a multimodel data platform and an integration hub. Both the integration hub and the platform enable users to access data stored remotely through a universal index, which enables reduced remote data movement through optimization of remote access. Progress's MarkLogic operations are primarily in North America and Europe. It has customers in a range of industries, but is particularly strong in management of regulated data in the national security, finance, insurance and life science sectors.

SingleStore

SingleStore is headquartered in San Francisco, California, and offers SingleStoreDB Cloud, a fully managed, on-demand cloud database service that is compatible with the MySQL and MongoDB wire protocols. It is designed to undertake mixed operational transactional and analytical workloads, as its name implies. It is offered as a managed service on Amazon Web Services, Google Cloud Platform and Microsoft Azure, and as a self-managed offering on private clouds, IBM Cloud Pak for Data and Red Hat OpenShift. SingleStore's operations are spread across North America, Europe and Asia/Pacific. It has hundreds of customers including global enterprises across 30 verticals, with the top three verticals being financial services, media and telecommunications, and SaaS technology companies. SingleStore provides its Universal Storage technology, which combines the attributes of in-memory row store, on-disk column store and cloud object storage in a single table storage type to support high-performance use cases for both transactions and analytics. SingleStoreDB also has had support for vector functions since 2017 with a number of customers running GenAI use cases including semantic search, image recognition and real-time recommendations.

Tencent Cloud

Tencent Cloud is a leading cloud service provider in China. Tencent Distributed SQL (TDSQL) is an OLTP DBMS service available on both Tencent Cloud and private cloud. Its analytical DBMS offerings include TCHouse for data warehousing, and Tencent Big Data Suite (TBDS) for a unified big data and data lake use case. Its DBMS product family includes nonrelational products like KeeWiDB for key-value store, CTSDDB for time series, and KonisGraph for graph. Its flagship product TDSQL is a specific offering suite compatible with MySQL, PostgreSQL and Oracle. It is a leading DBMS solution to replace legacy global relational databases, and has been deployed to sustain mission-critical applications, such as core banking systems, for many Chinese organizations. Tencent Cloud also has a global presence outside China, with its main focus on APAC, Japan and Europe.

TigerGraph

TigerGraph is a private company based in Redwood City, California, that operates in the Americas, Europe and Asia/Pacific. TigerGraph offers a native graph DBMS platform that runs on-premises or as TigerGraph Cloud, a fully managed service on Amazon Web Services, Google Cloud Platform and Microsoft Azure. It also offers TigerGraph Machine Learning Workbench for developing graph ML solutions, and TigerGraph Insights for visualization and self-service graph analytics. The TigerGraph platform is capable of both operational and analytical workloads with real-time capability. TigerGraph and its graph-oriented solutions are mainly used for four use cases: financial crime (uncovering hidden networks of criminals); connected customer (connecting customers, products and services to optimize personalization and recommendations); agile operations (analyzing data across silos to speed up cross-functional decision making); and OEM (powering partners' applications with an embedded TigerGraph engine).

Evaluation Criteria

Ability to Execute

Product or Service: Core goods and services that compete in and/or serve the defined market are reviewed. This includes current product and service capabilities, quality, feature sets, and skills. We look at products and services that address both operational and analytic use cases. We focus on features influencing performance, scalability, availability, security and integration.

Overall Viability: Viability includes an assessment of the organization's overall financial health as well as the financial and practical success of the business unit. It considers the likelihood of the organization to continue to offer and invest in the product, as well as the product position in the current portfolio. We use Gartner published estimates on revenue, as well as our assessment of share of market and trends in revenue. Changes in organization structure, personnel and roadmap are also reviewed.

Sales Execution/Pricing: The organization's capabilities in all sales activities and the structure that supports them are considered. This includes deal management, pricing and negotiation, presales support, and the overall effectiveness of the sales channel. We also evaluate the variety and suitability of a vendor's pricing models.

Market Responsiveness/Record: This covers the vendor's ability to respond, change direction, be flexible, and achieve competitive success as opportunities develop, competitors act, customer needs evolve, and market dynamics change. This criterion also considers the vendor's history of responsiveness to changing market demands. Timely creation of and fielding of a cloud offering, and competitive feature development and delivery in "cloud release cadence" are considered.

Marketing Execution: The clarity, quality, creativity and efficacy of programs designed to deliver the organization's message in order to influence the market, promote the brand, increase awareness of products, and establish a positive identification in the minds of customers are reviewed. This "mind share" can be driven by a combination of publicity, promotional activity, thought leadership, social media, referrals and sales activities. We compare the consistency, channels, volume and differentiation of marketing messages heard by prospects to those presented to analysts.

Customer Experience: This covers products and services and/or programs that enable customers to achieve anticipated results with the products evaluated. Specifically, this includes quality supplier/buyer interactions, technical support, or account support. This may also include ancillary tools, customer support programs, availability of user groups and service-level agreements.

Operations: The ability of the organization to meet goals and commitments is reviewed. Factors include quality of the organizational structure, skills, experiences, programs, systems and other vehicles that enable the organization to operate effectively and efficiently.

Table 1: Ability to Execute Evaluation Criteria

<i>Evaluation Criteria</i> ↓	<i>Weighting</i> ↓
Product or Service	High
Overall Viability	Medium
Sales Execution/Pricing	Medium
Market Responsiveness/Record	High
Marketing Execution	Medium
Customer Experience	Medium
Operations	Low

Source: Gartner (December 2023)

Completeness of Vision

Market Understanding: This involves the ability to understand customer needs and translate them into products and services. It covers whether vendors show a clear vision of their market – listen, understand customer demands, and can shape or enhance market changes with their added vision. We look for vendor awareness of customer concerns about such issues as price transparency, license portability, migration assessment, execution and cost, security gaps, and multicloud, intercloud and hybrid operations.

Marketing Strategy: We look for clear, differentiated messaging that is consistently communicated internally, and externalized through social media, advertising, customer programs, and positioning statements. We assess the clarity and consistency of messages that articulate the value of the cloud DBMS, especially as compared to similar on-premises products where they exist and to other cloud DBMS offerings.

Sales Strategy: This includes a sound strategy for selling that uses the appropriate networks such as direct and indirect sales, marketing, service, and communication as well as partners that extend the scope and depth of market reach, expertise, technologies, services and customer base. We evaluate relationships between CSPs, ISVs and SIs; use of app stores and co-marketing; and degree of focus on ease of onboarding.

Offering (Product) Strategy: We look for approach to product development and delivery that emphasizes market differentiation, functionality, methodology, and features as they map to current and future requirements. We evaluate if the product strategy builds on existing product strengths and moves toward addressing emerging market needs. This includes the response to such issues as separation of compute and storage, CSP-managed instance definitions and availability, and response to security requirements for object storage.

Business Model: The design, logic and execution of the organization's business proposition to achieve continued success is evaluated. We consider relationships to CSPs, financial model changes, geographic and vertical adjustments driven by cloud opportunities, and design of engineering and support to leverage cloud realities.

Vertical/Industry Strategy: This involves the strategy to direct resources (sales, product, development), skills and products to meet the specific needs of individual market segments, including verticals. We look at breadth and depth of vertical and industry focus. This includes information on specific successes in particular verticals or industries.

Innovation: We evaluate direct, related, complementary, and synergistic layouts of resources, expertise or capital for investment, consolidation, defensive or preemptive purposes. Innovation is judged based on truly new capabilities or combinations in the market, rather than matching capabilities of existing products from other vendors.

Geographic Strategy: The vendor’s strategy to direct resources, skills and offerings to meet the specific needs of geographies outside the “home” or native geography, either directly or through partners, channels and subsidiaries, as appropriate for that geography and market is considered. We examine such manifestations as local language support, on-the-ground resources, and marketing focus on multiple geographies.

Table 2: Completeness of Vision Evaluation Criteria

<i>Evaluation Criteria</i> ↓	<i>Weighting</i> ↓
Market Understanding	High
Marketing Strategy	Medium
Sales Strategy	High
Offering (Product) Strategy	High
Business Model	Medium
Vertical/Industry Strategy	Low
Innovation	High
Geographic Strategy	Low

Source: Gartner (December 2023)

Quadrant Descriptions

Leaders

Leaders generally demonstrate support for a broad range of DBMS use cases, including a mix of operational and analytical processing, based on support for a wide range of data types and/or diversity of deployment models (such as multicloud, intercloud and hybrid). They may support a number of different cloud DBMS offerings. They may represent diverse cloud ecosystems, of which their cloud DBMS are a part, or have good interoperability with such systems. These vendors demonstrate consistently high customer satisfaction and strong customer support. Many have mature products created for the cloud or migrated to be cloud native. They incorporate or lead advanced features and architectures. Leaders generally represent the lowest risk for customers in the areas of performance, scalability, reliability and support. As the market's demands change, Leaders demonstrate strong vision in support not only of the market's current needs, but also of emerging trends. These include requirements for serverless DBMS and financial governance with effective and understandable pricing models and support for AI/ML and, more recently, GenAI. Finally, the marketing messages, product research and development, and delivery of Leaders suit today's market for public and private cloud services.

Challengers

Challengers are vendors with strong, established offerings, but they are somewhat lacking in vision for the cloud DBMS market. It can be difficult for some vendors to improve both vision and execution at the same time. It is normal for some to have high scores for Ability to Execute one year and high scores for Completeness of Vision another year. Challengers normally show strong corporate viability and financial stability, and demonstrate strong customer support. However, they lack some features to support the latest trends in the cloud DBMS market, such as support for a broad set of use cases or a roadmap for moving to multicloud/intercloud implementations. Although they may be lacking in relation to some of the market's innovative concepts, Challengers have strengths in relation to many of the Ability to Execute criteria. They can become a threat to the leaders by widening their vision and by market innovation.

Visionaries

Visionaries have a strong market understanding and a robust roadmap for the cloud DBMS market. They have innovative ideas about functionality and demonstrate advanced use of new deployment models. They may be young/small vendors and have fewer customers than Leaders. Although lacking the market presence of Leaders, they have the potential for growth in the market due to elements of their vision that are market leading. Alternatively, they may be large companies that have been overtaken in the market by other cloud DBMS providers – but crucially, they retain the potential to regain their former leadership position. Both types of Visionaries can improve their execution and growing market share with innovative ideas that push the market in new directions. Both are a threat to the Leaders.

Niche Players

Niche Players generally deliver a highly specialized product with a particular limited market appeal. Often a Niche Player will not support multiple cloud DBMS use cases, but will support one, two or more use cases particularly well. They may offer a more restricted range of products. Niche Players may be sizable and financially successful companies but have a particular focus within which they are successful.

Niche Players may lack one or all of the following:

- A strong or large customer base and, consequently, market share
- The breadth of functionality of Leaders
- Penetration of a broad range of industries or geographies
- Proven, mature products that present low risk

However, if an organization has a need for the specific set of capabilities that a Niche Player provides, then it can be a good fit.

Context

This Magic Quadrant evaluates vendors that supply fully managed cloud DBMS services (dbPaaS offerings) for some or all operational and analytical use cases. It will interest anyone involved in defining, purchasing, building or managing a cloud DBMS as part of a wider cloud data management environment. This includes data and analytics leaders such as heads of data management, CIOs, CTOs, CDAOs, infrastructure managers, database and application architects, database administrators, IT purchasing managers – and, increasingly, business leaders who are involved in acquiring cloud DBMS technology.

This Magic Quadrant assesses vendor capabilities on the basis of their execution in 2022 and early 2023 plus their future development plans. Because vendors and the market are evolving, the assessments may be valid for a limited duration.

Readers should not use this Magic Quadrant in isolation as a tool for selecting vendors and products. They should treat it as one reference point among many required to identify the most suitable vendor and product.

Use this Magic Quadrant, which evaluates vendors, in combination with the two related documents that evaluate particular products:

- [Critical Capabilities for Cloud DBMS for Operational Use Cases](#)
- [Critical Capabilities for Cloud DBMS for Analytical Use Cases](#)

We also recommend using Gartner's client inquiry service for a more detailed discussion of technology choices. In addition, we recommend referring to Gartner Peer Insights for peer comments on products and services, available on [gartner.com](https://www.gartner.com).

2020 was the first year that Gartner combined the assessment of vendors offering analytical DBMS and vendors offering operational DBMS. This was in line with the observation that the database market was converging, with vendors providing solutions for both types of DBMS – sometimes with the same product, and sometimes with separate products. In 2022-2023, this trend has become stronger. Although it is advantageous for a vendor to address both operational and analytical use cases, it is not essential. A vendor can still be a Leader if it serves its single chosen market particularly well.

The evaluation of the vendors in the Magic Quadrant is relative, not absolute. Typically all vendors advance from year to year — the Magic Quadrant is a snapshot of their new relative positions. If a vendor's dot appears to go down or to the left in a year, it usually does not mean that it has degraded its execution or vision. Usually, it means that the vendor advanced but other peer vendors advanced more. The overall aggregate capability of the market represents major new capabilities for organizations.

Market Overview

This Magic Quadrant covers cloud DBMS services. That is, database management systems providers of products that are managed services offered as database as a service. Those successful in this market will typically have one or more database services in the cloud, a good market presence, good growth, and represent differentiated and novel feature sets. Often, they represent companies with an extensive cloud ecosystem, of which the cloud DBMS is one element, or they may have good linkages to such ecosystems.

There has been a major improvement in capabilities across the market. In particular, cloud DBMS systems are developing in the direction of support for the broader data ecosystems that surround them. This does not mean that the cloud DBMS is taking on the functionality of surrounding data management components; rather, they now consciously aim to interoperate with them.

This market continues to show growth in cloud revenue, growth in the percentage of vendor revenue in the cloud versus overall DBMS revenue, and, correspondingly, the decreasing interest in on-premises products.

According to Gartner's DBMS market numbers: ^{1,2}

- The overall database management system market saw strong growth of 14.4% in 2022 to reach \$91 billion.
- The 2022 growth in this market exceeds the overall software market growth rate of 11.3%.
- Cloud database platform as a service share has now reached 55% of the overall 2022 market.
- For 2022, 98% of the overall DBMS market growth came from dbPaaS, up from 85% in 2021.

- Database software now accounts for 12.9% of the overall software market.
- By the end of 2023, the DBMS market is expected to exceed \$100 billion.

The Magic Quadrant selection criteria does not rely on size of revenue but, rather, on those vendors that generate a high degree of interest. Interest can either be because of a large worldwide presence, which does usually reflect in revenue and market share, or it can be because of owning a particularly innovative technology. Gartner methodology restricts participants to the Magic Quadrant to 20, thus, noninclusion may simply mean that the focus of interest was elsewhere this year. Some well-known and financially successful vendors may not appear because they did not generate enough end-user discussion as measured by our Customer Interest Index. This may be because their offerings and positioning are already well-understood. Noninclusion should not be taken as a negative reflection on those vendors and products. For this reason, we suggest also reviewing the honorable mentions section and joining Gartner in inquiries to ensure that all options are considered in your plans.

Buyers in the cloud DBMS market are presented with a rich set of functionality, including:

- Data ecosystem support. Cloud DBMS systems are already beginning to be aware of, and collaborate with, the other data management components around them. This does not mean that the cloud DBMS systems will subsume the functions of those other systems; rather, they will be aware of them and add more value by interoperating with them (see [Innovation Insight: Cloud DBMS Must Interoperate With Ecosystems and Fabrics](#)). If anything, progress toward this is faster than expected, with many significant vendor announcements since last year's cloud DBMS Magic Quadrant.
- Analytical DBMS features such as the ability to access remote databases, low-code/no-code, efficient workload management and multimodel.
- Operational DBMS features such as the ability to do distributed transactions across many processors and geographic areas and to take advantage of hyperscale architectures as well as the ability to do hundreds or thousands of transactions per second.
- The ability for DBMS to invoke machine learning to train, monitor and execute predictive models.

- Generative AI (GenAI) and large language models (LLMs). While this has yet to be fully worked out, it is clear that GenAI will have a transformative effect on data management. Advanced vendors in this market are already articulating plans for major improvements in their products and services through its use and demonstrating early usage in practical situations.
- Financial governance. Gartner clients are increasingly demanding the ability to predict, monitor and control costs for their cloud DBMS (see [Financial Governance for Successful Cloud Data and Analytics](#) and [The State of FinOps for Data and Analytics](#)).
- The convergence between operational and analytical systems by vendors offering both, by DBMS systems being able to do both, or for the two types of systems to interoperate. This is why this single Magic Quadrant evaluates vendors for both types of DBMS together with two Critical Capabilities reports. This trend was identified in 2020 and continues even more strongly in 2023.
- The trend toward open-source DBMS and open-source DBMS interface adoption. PostgreSQL and MySQL compatible interfaces to proprietary systems are increasingly desired because of the exit and migration strategies that they open up.

For buyers of cloud DBMS in 2023 and beyond, the market is providing greater choice, benefits and features than ever before. It is an exciting and rewarding market to participate in.

Evidence

Gartner client inquiry service data recorded from June 2022 through June 2023.

¹ [Market Share: Database Management Systems, Worldwide, 2022](#)

² [Market Share Analysis: Database Management Systems, Worldwide, 2022](#) and [Forecast Analysis: Database Management Systems, Worldwide](#)

Evaluation Criteria Definitions

Ability to Execute

Product/Service: Core goods and services offered by the vendor for the defined market. This includes current product/service capabilities, quality, feature sets, skills and so on, whether offered natively or through OEM agreements/partnerships as defined in the market definition and detailed in the subcriteria.

Overall Viability: Viability includes an assessment of the overall organization's financial health, the financial and practical success of the business unit, and the likelihood that the individual business unit will continue investing in the product, will continue offering the product and will advance the state of the art within the organization's portfolio of products.

Sales Execution/Pricing: The vendor's capabilities in all presales activities and the structure that supports them. This includes deal management, pricing and negotiation, presales support, and the overall effectiveness of the sales channel.

Market Responsiveness/Record: Ability to respond, change direction, be flexible and achieve competitive success as opportunities develop, competitors act, customer needs evolve and market dynamics change. This criterion also considers the vendor's history of responsiveness.

Marketing Execution: The clarity, quality, creativity and efficacy of programs designed to deliver the organization's message to influence the market, promote the brand and business, increase awareness of the products, and establish a positive identification with the product/brand and organization in the minds of buyers. This "mind share" can be driven by a combination of publicity, promotional initiatives, thought leadership, word of mouth and sales activities.

Customer Experience: Relationships, products and services/programs that enable clients to be successful with the products evaluated. Specifically, this includes the ways customers receive technical support or account support. This can also include ancillary tools, customer support programs (and the quality thereof), availability of user groups, service-level agreements and so on.

Operations: The ability of the organization to meet its goals and commitments. Factors include the quality of the organizational structure, including skills, experiences, programs, systems and other vehicles that enable the organization to operate effectively and efficiently on an ongoing basis.

Completeness of Vision

Market Understanding: Ability of the vendor to understand buyers' wants and needs and to translate those into products and services. Vendors that show the highest degree of vision listen to and understand buyers' wants and needs, and can shape or enhance those with their added vision.

Marketing Strategy: A clear, differentiated set of messages consistently communicated throughout the organization and externalized through the website, advertising, customer programs and positioning statements.

Sales Strategy: The strategy for selling products that uses the appropriate network of direct and indirect sales, marketing, service, and communication affiliates that extend the scope and depth of market reach, skills, expertise, technologies, services and the customer base.

Offering (Product) Strategy: The vendor's approach to product development and delivery that emphasizes differentiation, functionality, methodology and feature sets as they map to current and future requirements.

Business Model: The soundness and logic of the vendor's underlying business proposition.

Vertical/Industry Strategy: The vendor's strategy to direct resources, skills and offerings to meet the specific needs of individual market segments, including vertical markets.

Innovation: Direct, related, complementary and synergistic layouts of resources, expertise or capital for investment, consolidation, defensive or pre-emptive purposes.

Geographic Strategy: The vendor's strategy to direct resources, skills and offerings to meet the specific needs of geographies outside the "home" or native geography, either directly or through partners, channels and subsidiaries as appropriate for that geography and market.

Document Revision History

[Magic Quadrant for Cloud Database Management Systems - 13 December 2022](#)

[Magic Quadrant for Cloud Database Management Systems - 14 December 2021](#)

[Magic Quadrant for Cloud Database Management Systems - 23 November 2020](#)

Recommended by the Authors

Some documents may not be available as part of your current Gartner subscription.

[How Markets and Vendors Are Evaluated in Gartner Magic Quadrants](#)

[The Impacts of Data Ecosystems: A Cloud Architectural Perspective](#)

[Infographic: Top Trends in Data and Analytics, 2022](#)

[There Is Only One DBMS Market](#)

[The Future of the DBMS Market Is Cloud](#)

[Financial Governance for Successful Cloud Data and Analytics](#)

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Table 1: Ability to Execute Evaluation Criteria

<i>Evaluation Criteria</i> ↓	<i>Weighting</i> ↓
Product or Service	High
Overall Viability	Medium
Sales Execution/Pricing	Medium
Market Responsiveness/Record	High
Marketing Execution	Medium
Customer Experience	Medium
Operations	Low

Source: Gartner (December 2023)

Table 2: Completeness of Vision Evaluation Criteria

<i>Evaluation Criteria</i> ↓	<i>Weighting</i> ↓
Market Understanding	High
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Geographic Strategy	Low

Source: Gartner (December 2023)