



The Purpose-Built Database Era: [Pick the right tool for the job](#)

Stepping into the purpose-built era



As data becomes a strategic asset, databases are becoming increasingly crucial to understanding data and converting it to valuable insights. IT leaders need to look for ways to get more value from their data. If you're running legacy databases on-premises, you're likely finding that provisioning, operating, scaling, and managing databases is time-consuming and expensive. Moving on-premises data to managed databases built for the cloud can help you reduce time and costs. These modern database solutions allow you to spend time innovating and building new applications—not managing infrastructure.

Migrating to cloud-native databases

Once your databases are on the cloud, you can innovate and build new applications faster. Migrating to the cloud is the first step toward entering the era of purpose-built databases. But once on the cloud, how do you know which types of databases to use for which functions? Read on to learn more about a number of purpose-built database types—and how you can ensure a smooth

transition into this new era of innovation, performance, and business success.

Moving beyond relational only

Before we begin discussing purpose-built databases, let's examine the status quo—using relational databases for just about every function. Relational databases were designed for tabular data with consistent structure and fixed schema. They work for problems that are well defined at the onset. Traditional applications like ERP, CRM, and e-commerce need relational databases to log transactions and store structured data, typically gigabytes and occasionally terabytes in size.

Ready for modern applications

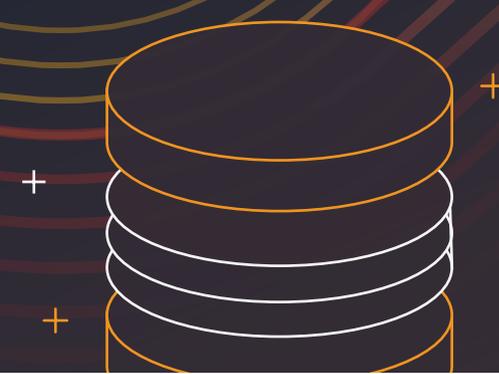
While relational databases are still essential, in today's world, a "relational only" approach no longer works. With the rapid growth of data—not just in volume and velocity but also in

variety, complexity, and interconnectedness—the needs of databases have changed. Many new applications that have social, mobile, IoT, and global access requirements cannot function properly on a relational database alone.

These modern applications need databases that can store terabytes to petabytes of new types of data, provide access to data with millisecond latency, process millions of requests per second, and scale to support millions of users anywhere in the world. To create applications that meet these demands, developers must choose between a number of emerging purpose-built database models. They must understand which database type to use when selecting the right tool for the job.



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The right database for the job

Relational

- Provides high integrity, accuracy, and consistency; limitless indexing
- Useful for ERP, CRM, finance, transactions, and data warehousing

Key value

- Fast read/write; value can be anything
- Useful for real-time bidding, shopping cart, product catalog, and customer preferences

Document

- Flexible, semi-structured, hierarchical, evolves with application needs, powerful indexing, fast querying
- Useful for catalogs, content management systems, user profiles, personalization, and mobile

In-Memory

- Sub-millisecond latency, millions of operations per second, simple instruction set, support for rich commands (Redis), works with any type

of database

- Useful for caching, session store, leaderboards, geospatial, and real-time analytics

Graph

- Make frequent schema changes, manage huge volumes, real-time query response time
- Useful for fraud detection, social networking, recommendations, and knowledge graphs

Time Series

- High scalability for data that accumulates quickly
- Useful for DevOps, application monitoring, industrial telemetry, and IoT applications

Ledger

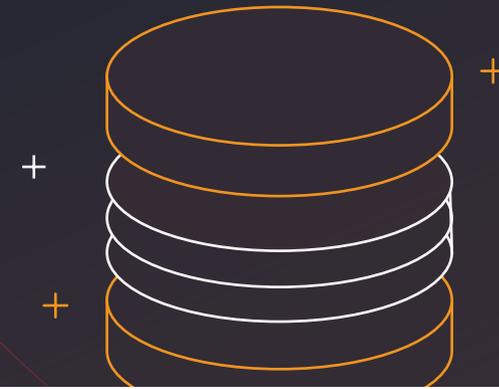
- Ensures accurate history, transparent, immutable, verifiable, and highly scalable
- Useful for finance, manufacturing, insurance, HR and payroll, retail, and supply chains

Benefits of purpose-built databases:

- ✓ Right tool for the job
- ✓ Better performance
- ✓ Cloud scale
- ✓ More functionality
- ✓ Easier to debug and monitor
- ✓ Independence between teams
- ✓ Faster time to market
- ✓ Lower TCO
- ✓ Reduced operations



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Getting the most from purpose-built databases

The one-size-fits-all approach of using relational databases for every application no longer works. Modern applications must consider social, mobile, IoT, and global access. Purpose-built database models are designed to perform the specific functions these applications require—more efficiently than relational databases. Today's developers need diverse data models that match a variety of use cases. Finding the right tool for the job can be challenging, but we hope this document helps you simplify the process.

Why so many developers choose AWS

AWS offers a broad range of database services that are purpose-built for every major use case. These fully managed services allow you to build applications that scale easily and provide deep functionality—so you get the high availability, performance, reliability, and security required by production workloads.

Ready to see how it works?

Visit [AWS Database](#) to learn more about how to choose the purpose-built databases for all your application needs.

RELATIONAL	KEY-VALUE	DOCUMENT	IN-MEMORY	GRAPH	TIME SERIES	LEDGER
Amazon Aurora	Amazon DynamoDB	Amazon DocumentDB	Amazon ElastiCache	Amazon Neptune	Amazon Timestream	Amazon QLDB