Understanding Amazon NoSQL data stores

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AWS provides the broadest selection of managed NoSQL databases, allowing you to save, grow, and innovate faster. With Amazon NoSQL databases, you get high performance, enterprise-grade security, automatic, and instant scalability. The following table lists some of the AWS managed NoSQL database services offered, and their key characteristics:

Table 1 — AWS database service comparison

AWS database service	Use cases	Strengths	Security	Performance	Cross-Region resiliency
Amazon DocumentDB (with MongoDB compatibility)* • Mid TB range • Data format: JSCO, BSON, XML • NoSQL type: document • Consistency: strong/eventual	User profile/personalization, catalogs, mobile, and content management, retail and marketing (for example, tracking customers who purchase similar items)	Flexible schema and indexing, ad hoc queries on any attributes, including nested attributes	Capability to enable data encryption at rest and in transit	Millions of requests per second with millisecond latency	DocumentDB Global clusters

AWS database service	Use cases	Strengths	Security	Performance	Cross-Region resiliency
Amazon DynamoDB* • High TB range • Data format: JSON, BSON, or XML • NoSQL type: key-value, document • Consistency: strong/eventual	• User preferences • Session management • Shopping cart • Product catalog • High-traffic web apps • Near real-time bidding	• Performance at scale • Serverless • Simple data model	Encrypts all data at rest by default, row/column level security	Single digit millisecond at any scale, In-memory acceleration with DynamoDB (DAX) for low latency access to eventually consistent data	Global tables
Amazon Keyspaces (for Apache Cassandra) • Data format: JSON • NoSQL type: wide column • Consistency: one, local_one, local-quorum	High scalable apps for: • Equipment maintenance • Fleet management • Route optimization	• Extreme write speeds with relatively less velocity reads • Being serverless, allocates storage and read/write throughput directly to tables	• Tables are encrypted by default • Capability to enable data encryption at rest and in transit	Single digit millisecond response at any scale	Multi-Region Replication (https://docs.aws.amazon.com/keyspaces/latest/devguide/multiRegion-replication.html)

AWS database service	Use cases	Strengths	Security	Performance	Cross-Region resiliency
Amazon Neptune* • Mid TB range • Data format: Germalin, RDF, open Cypher • NoSQL type: graph • Consistency: immediate consistency	• Recommendations • Social patterns • relationship traversal • Fraud detection • Risk assessment	• Highly connected data is locally indexed and purpose-built to answer questions about relationships • Optimized for efficient storage and retrieval	Capability to enable data encryption at rest and in transit	High throughput, low latency	• Cross-Region snapshot • Neptune streams to replicate data between cross-Region clusters
Amazon Timestream* • NoSQL type: TimeSeries • Consistency: eventual	• Server metrics • Application performance monitoring • Network data • IoT apps • Sensor data • Events • Clicks • Financial forecasting • Many other types of analytics data	Analytics over time series data	Encrypts all data by default	Capable of ingesting trillions of events daily. The adaptive SQL query engine provides rapid point-in-time queries with its in-memory store, and fast analytical queries through its magnetic store	Cross-Region backup
Amazon ElastiCache for Memcached	• Caching repeat requests • Sticky sessions (to store session state)	• Simple caching model • Multi-threaded performance	Capability to enable data encryption at	Sub-millisecond response time	N/A

AWS database service	Use cases	Strengths	Security	Performance	Cross-Region resiliency
• Low TB range • NoSQL type: in-memory, key-value			rest and in transit		
Amazon ElastiCache for Redis • Low TB range • NoSQL type: in-memory, key-value	• Gaming leaderboards • Geospatial applications	• Complex data structures • Sorting and ranking • Pub/sub messaging • Geospatial capabilities	Capability to enable data encryption at rest and in transit	Sub-millisecond response time	Global datastores
Amazon MemoryDB for Redis • NoSQL type: in-memory, database • Consistency: strong/eventual	• High concurrency • Streaming media • Data feeds	• Durable database • Complex data structures	Capability to enable data encryption at rest and in transit	Microsecond read and single-digit millisecond write latency	Cross-Region snapshot

* ACID compliant

NoSQL databases

- Amazon DynamoDB (./amazon-dynamodb.html)
- Amazon Keyspaces (for Apache Cassandra) (./amazon-keyspaces.html)
- Amazon Neptune (./amazon-neptune.html)

- Amazon Timestream (./amazon-timestream.html)
- Amazon ElastiCache (./amazon-elasticache.html)
- Amazon DocumentDB (with MongoDB compatibility) (./amazon-documentdb.html)
- Amazon MemoryDB for Redis (./amazon-memorydb-for-redis.html)