Welcome

來自 MongoDB 的最新訊息 & MongoDB 7.0 重磅登場

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The evolution of MongoDB

STACK OVERFLOW SURVEY | MOST WANTED DATABASE

2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021-2022 | 2022-2023 | 2023-2024

You may be thinking this about us...

"It doesn't have transactions!"

"It doesn't do relationships!"

"It lacks replication"

"It's insecure!" "It loses data!"

"It's just a document store"

3.0 & 3.2

Doc-Level Concurrency
RAFT / Fast Failover
$lookup
Ops Manager
Compression
≤50 replicas
Aggregation ++
Encrypted and In-Memory storage engines
BI Connector
Compass

3.4

Views Graph Processing
Zones ++Aggregation ++
Auto-balancing ++
Linearizable Reads Decimal
Intra-cluster Compression
Log Redaction Spark
Connector ++ BI Connector ++

3.6

Change Streams
Retryable Writes
Schema Validation Expressive
$lookUp
Query Expressivity
Causal Consistency Consistent
Sharded Secondary Reads
Query Advisor
End to End Compression
WiredTiger 1m+ Collections
MongoDB BI Connector ++
R Driver
Charts (post GA)
Atlas X-Region Replication
Atlas Auto Storage Scaling

4.0

Replica set transactions
Atlas global clusters
40% Faster Shard Migrations
Atlas HIPAA
Atlas LDAP
Atlas Audit
Atlas Enc. Storage Engine
Atlas Backup Snapshots
Type Conversions
Snapshot Reads
Non-Blocking Sec. Reads
SHA-2 & TLS 1.1+
Compass Agg Pipeline Builder
Compass Export to Code
Free Monitoring Cloud Service
Ops Manager K8s Beta

4.2

Distributed Transactions
Client-Side Field Level Encryption
Materialized Views
Wildcard Indexes
Global PIT Reads
Large Transactions
Mutable Shard Key Values
Atlas Data Lake (Beta)
Atlas Auto Scaling (Beta)
Atlas Search (Beta)
Multi-CAs
Expressive Updates
Apache Kafka Connector
MongoDB Charts GA
Retryable Reads & Writes
New Index Builds
10x Faster stepDown
Storage Node Watchdog
Zstandard Compression

4.4

Union
Custom Agg Expressions
Refinable Shard Keys
Compound Hashed Shard Keys
Mirrored Reads
Hedged Reads
Resumable Initial Sync
Time-Based Oplog Retention
Simultaneous Indexing
Hidden Indexes
Streaming Replication
Global Read/Write Concerns
Rust & Swift Drivers GA
TLS 1.3 & Faster Client Auth
OCSP Stapling
Kerberos Utility
Atlas Online Archive
Auto-Scaling
Schema Recommendations
AWS IAM Auth & Atlas x509
Federated Queries
Multi-cloud clusters

5.x

Time Series collections
Clustered indexes
Window functions
Live resharding
Client-Side FLE KMIP & cloud KMS
Atlas Serverless (preview)
Atlas Search fast facets, function scores, synonyms
Long running snapshot reads
Sharded $lookup & $graphlookup
Majority write concern default
4x faster initial sync
Schema validation diagnostics
New MongoDB Shell GA
Resumable index builds
Rewritten Swift driver
Rewritten C# LINQ provider and .NET Analyzer
PyMongoArrow API
New accumulator operators
Charts on Data Lake
x509 certificate rotation
Auditing ++
Atlas K8S controller
Ops Manager migration wizard

6.x

Queryable encryption (preview)
Atlas Serverless GA
Column store indexes
Cluster-to-cluster Sync
Independent analytic nodes scaling
Flexible sync GA
Asymmetric sync preview
Kotlin and Flutter SDKs for Realm
$lookup perf improvements
Atlas CLI GA
Atlas Data API GA
Secondary index on measurements for time series
Time series read perf +
Atlas Data Lake with fully managed storage
Atlas Data Federation
Atlas Charts dashboard embedding
Atlas SQL interface
Encrypted audit log
Change streams improvements
Announcement of relational to MongoDB migrator

7.x

System variable: User Role
Compound Wildcard Indexes
Change Streams large event handling
Improved Query Execution
Approximate Percentiles
Time series performance and scalability
Shard Key Analysis Commands
updateOne without shard key
Shard chunk auto-merger
OpenID Connect Support
AWS, Azure, GCP ID Management
Make X.509 Parameters Configurable for Intra-node Auth and Client-to-node Auth
OpenSSL 3.0 support in Server
Cluster-to-Cluster Sync updates
Live Migration supports 6.0+ migrations

WiredTiger (Acquisition + Integration)

MongoDB Atlas

ACID (Transactions)

Multi-Cloud

Stable API & Rapid Releases

Developer Data Platform

Vector Search

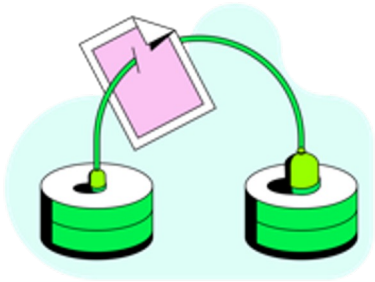
LOVE YOUR

DEVELOPERS

These new features and improvements together, enhance 4 key areas

Streamlined Developer Experience

Performance



Migrations

Security

Streamlined Developer Experience

New in Query: operators, variables and indexes

New operators including $dateTrunc, $setField and $dateDiff

$expr can use indexes for better performance

New stages: $fill, $densify

Atlas Search across multiple collections

$lookup and $graphlookup on sharded collections

Timestamp conversion using $convert/$toDate

New accumulators including $topN, $bottomN and $firstN

New array operators including $firstN, $maxN, and $sortArray

Compound Wildcard Indexes

Bitwise operators

Approximate percentile operators

$$USER_ROLES variable

Update/Delete support in Time Series

Improved Query execution for find and prefix of aggregations

Approximate Percentiles in aggregation

- Across documents when grouping or over a window
- On array of values
- Single or multiple percentiles
- Approximate percentile using t-digest

Calculate 50th, 80th, 95th percentiles of vacation rental prices for each city

```
db.listings.aggregate([
{
   $group: {
     _id: "$address.city",
     price_percentiles: {
       $percentile: {
         input: '$price',
         p: [0.5, 0.8, 0.95],
         method: "approximate"
       }
     }
   }
 }
])
```

Time Series Collections

- Support for arbitrary deletes, including deletes of single or multiple records
- Enhanced Scalability
- Performance Optimizations
- Partial TTL Indexes

Support for updates is coming soon

Learn More:
Implementing Time Series: Practical Use Cases Across Multiple Industries

Change Streams

In 6.0 we introduced ability to include in the event pre-image of the changed document.

In 7.0 we are adding handling of large events exceeding 16Mb

Shard key advisor commands

Choosing a shard key is difficult due to complex data access patterns and tradeoffs

New commands and metrics available to make selecting a shard key easier

Enhanced Performance

Improved query execution for better performance

Grouping and Reshaping

$group
$project

Filtering and sorting

$match
$sort

Lookups in replica sets

$lookups

Learn more: *Under the Hood: How We're Modernizing Our Query Engine*

Sharding
chunk auto-merger

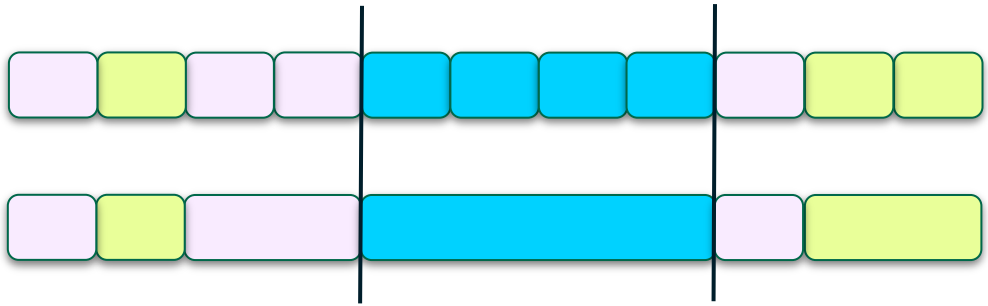
Improves overall performance by reducing the number of chunks via automatic defragmenting

Fewer chunks translate into a faster MongoDB

Auto-Merger Builds on Defragmentation

Merge all the ranges of contiguous chunks that reside on the same shard

- Fast to execute
- Has the largest impact out of all the phases defragmentation
- No migrations



From: 11 chunks (entries in routing table) across 3 shards

To: 6 chunks across 3 shards

Stronger Security

Queryable Encryption

End-to-end fully randomized encryption

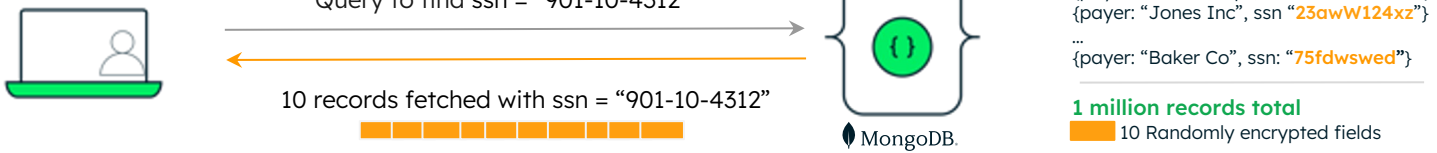
Rich querying capabilities on encrypted data

Faster application development

Queryable Encryption

- Encrypt the sensitive data (fields)
- Easy development cycle
- No crypto experience required
- Encrypted throughout the data lifecycle
- Rich expressive queries

- MongoDB is the only platform to implement fast searchable encryption scheme
- Server-side processing of encrypted data
- Server does not know anything about the data



MongoDB’s Approach

OpenID Connect Support

Workforce Identity Federation with OpenID Connect support for database access

Database access for your workforce via your preferred SSO provider

Driver support for OIDC SASL

Streamlined Migrations

Relational Migrator

Bring your relational workloads to MongoDB with confidence

Design an effective MongoDB schema, derived from an existing relational schema.

Migrate data from Oracle, SQL Server, MySQL, PostgreSQL, and SAP Sybase ASE* to MongoDB, while transforming to the target schema.

Generate code artifacts to reduce the time required to update application code.

** through integration with Arcion*

Supported databases and scenarios

Sources
(Cloud or on-premises)

ORACLE

Microsoft SQL Server

MySQL

PostgreSQL

SYBASE *

Destinations
(Cloud or on-premises)

MongoDB Atlas

Self-managed MongoDB

Scenarios

Snapshot
For simple migrations (<1TB) with downtime

Continuous/CDC
For no-downtime migrations by replaying updates during sync (recommended <1 week)

** through integration with Arcion*

Cluster-to-Cluster Sync (mongosync)

Provides you with **continuous**, **uni-directional** data sync between two MongoDB clusters in the same or different environments.

Active-Passive architecture where writes can only occur on source cluster

Filtered sync saves time by only syncing specific data

```
curl -X POST
"http://localhost:27182/api/v1/
start" --data '
{
    "source": "cluster0",
    "destination": "cluster1",
    "includeNamespaces" : [
    {
        "database" : "sales",
        "collections": [
        "EMEA", "APAC" ]
    },
    {
        "database" : "service"
    }]
} '
```

Unlike topology support makes syncing easier

- Between two sharded clusters with same or different number of shards in each cluster
  - m to m shards
  - m to n shards
- From a replica set to a sharded cluster

We put developers ahead of everything

MongoDB was built by developers, for developers.

Invest in your developers

Build smarter applications

Your feedback matters!
Please rate the session.

來自 MongoDB 的最新訊息 & MongoDB 7.0 重磅登場

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