Mydbops
Scaling Databases

MongoDB

MYWEBINAR #56

MongoDB 9.0: What's New and What to Check Before You Upgrade

A practical tour of MongoDB 9.0: what got faster, the new guardrails, and the behaviour changes DBAs and developers should test first.

8.0 · Previous major

9.0 GA · Sep 28, 2026

Latest patch 9.0.4 · Oct 13, 2026

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Friday, Oct 30, 2026
03:30-4:15 PM IST · Live Webinar

YOUR HOST FOR THIS SESSION

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Database Engineer leading the Data Infra Engineering team at Mydbops.

Focus for this session

A grounded look at MongoDB 9.0: what is faster, what is safer, and what breaks on upgrade.

About Mydbops

ISO-certified managed database services and consulting for MySQL, MariaDB, PostgreSQL, MongoDB, and TiDB.

MYDBOPS AT A GLANCE

10+

Years of database expertise

6000+

Servers managed

800+

Clients

AGENDA

What we will walk through

01 Release status & 9.0 at a glance

02 Faster and smarter for developers

03 Guardrails & security

04 Upgrade: what breaks, what's fixed

05 Key takeaways & sources

06 Live Q&A

SECTION 1

01 Release status & 9.0 at a glance

Where 9.0 sits in the release line, what changed, and the numbers MongoDB published.



MongoDB

How we got here, and what's next

Oct 2024 — **MongoDB 8.0**
Previous major release. MongoDB says nearly 80% of the Atlas fleet runs it.

2025–2026 — **8.2 and 8.3 minor releases**
Shipped Atlas-first. 8.2 previewed encrypted prefix, suffix and substring search.

Sep 28, 2026 — **9.0 GA, with 9.0.1 and 9.0.2**
Available on Atlas, Enterprise Advanced and Community Edition.

Sep 30, 2026 — **Launch announcement**
Atlas Infinite (public preview) announced alongside 9.0: separate compute and storage scaling.

Oct 13, 2026 — **9.0.4 released [NEW]**
Five CVEs and a shard step-up hang fixed. Our recommended production target.

Next — **9.1 in development**
9.0 gets the five-year support lifecycle MongoDB applies from 8.0 onward.

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MongoDB 9.0 at a glance

A hardening release: faster core paths, new guardrails, fewer surprises in production.

Faster core ops

Up to 2x throughput, zero code changes

Constraint rules

Every document must pass the schema

Per-shape timeouts

Cap one slow query shape from the server

Write query stats

$queryStats now covers insert, update, delete

Memory limit

1 GB or 20% of RAM per operation

Transaction cap

New transactions rejected past 10,000 open

Encrypted search

Prefix, suffix, substring queries now GA

Time series rename

One real namespace; rename now works

MongoDB

MongoDB 9.0, quantified

Performance figures: MongoDB internal tests on public benchmarks. Limits: documented defaults.

2x

Large-instance throughput

Up to, vs 8.0

35%

Faster find-one queries

Latency, up to

30%

Faster update-one queries

Latency, up to

20%

Transaction throughput

Higher, up to

1 GB

Per-operation memory limit

Or 20% of server memory, whichever is greater

10,000

Open transaction cap

New error past the cap: TooManyOpenTransactions

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MongoDB 8.0 → 9.0: what actually changes

Capability	MongoDB 8.0	MongoDB 9.0
Schema validation	strict: checks new writes only	constraint: every document
Per-query time limit	maxTimeMS set by the app	Per-shape maxTimeMS and queryKnobs
Query stats	Read shapes only	Reads plus insert, update, delete
Memory per operation	Per-stage 100 MB only	Plus 1 GB / 20% per operation
Open transactions	No hard cap	10,000 by default
Encrypted string search	Equality and range	Plus prefix, suffix, substring (GA)
Server-side JS dates	Host time zone	UTC (WASM engine)
Time series storage	View + system.buckets	One namespace; rename works
Change streams after election	Cursor keeps reading	Read preference enforced (error 11602)

MongoDB

SECTION 2

02

Faster and smarter for developers



The same code runs faster, and the database takes on schema rules, query limits and write visibility.

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Faster with zero code changes

9.0 speeds up the operations every OLTP app runs most, and uses large instances better. No schema or query rewrite needed.

- Before buying a bigger instance, re-test on 9.0
- Replay real traffic on 8.0 and 9.0 staging
- Compare p99 latency, not averages



MongoDB internal tests on public benchmarks · “up to” · results vary by workload

MongoDB

Schema rules on every document

The new validationLevel 'constraint' guarantees every document in the collection passes, not just new writes.

```
db.runCommand({
  collMod: 'customers',
  validator: { $jsonSchema: {
    required: ['email','country'] }},
  validationLevel: 'constraint'
})
```

8.0 'strict' only: old bad docs stay

9.0 Invalid insert → Document failed validation



A document missing a required field is rejected at the gate

MongoDB

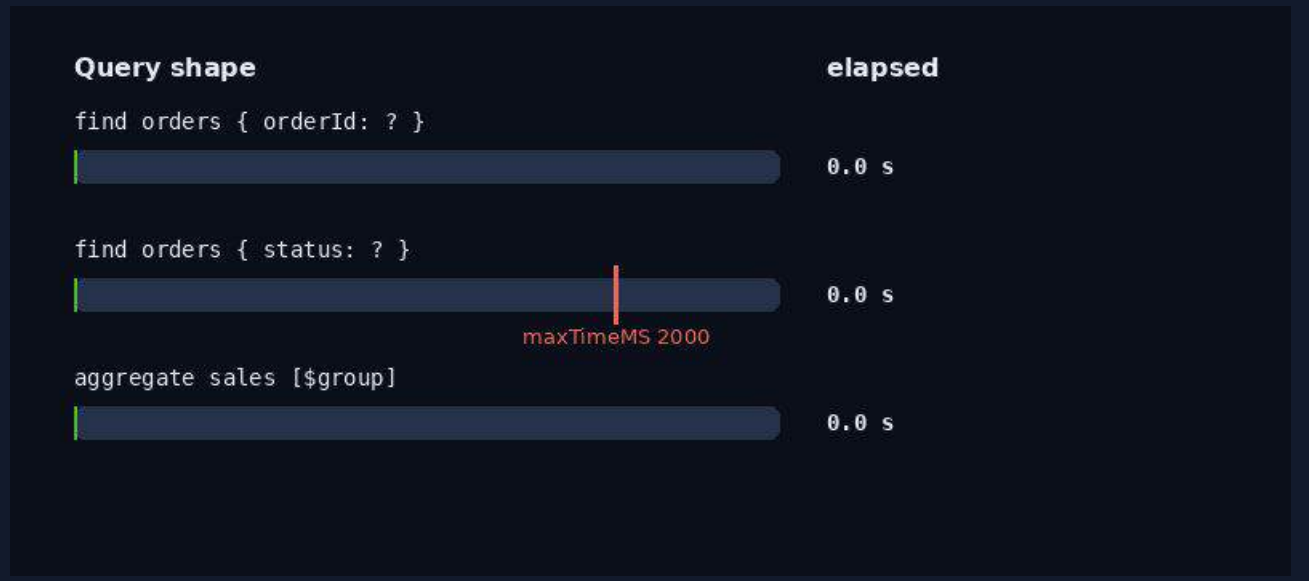
Cap a runaway query, server-side

Stored query settings now accept maxTimeMS and queryKnobs per query shape (needs FCV 9.0).

```
db.adminCommand({
  setQuerySettings: {
    find: 'orders',
    filter: { status: 'PENDING' },
    $db: 'shop' },
  settings: { maxTimeMS: 2000 }
})
```

8.0 Unknown field 'maxTimeMS'

9.0 Slow shape stops: MaxTimeMSExpired



Only the capped query shape is stopped; everything else runs

MongoDB

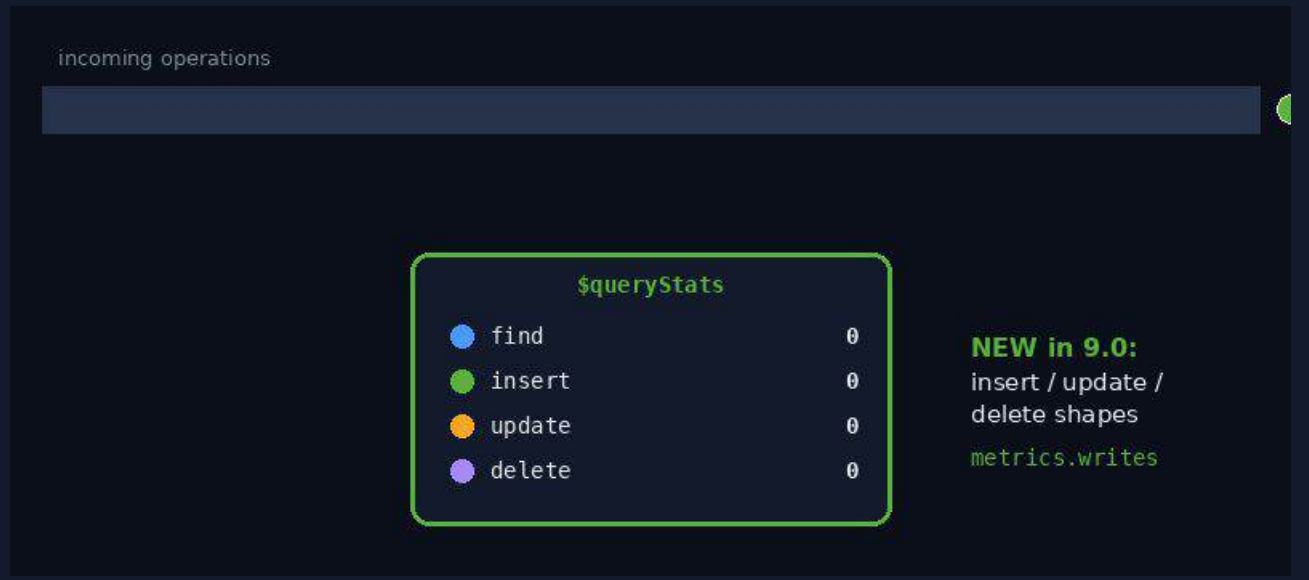
$queryStats now sees writes

On by default. Insert, update and delete shapes are recorded, sampled at 1%, under metrics.writes.

```
db.getSiblingDB('admin').aggregate([
  { $queryStats: {} },
  { $match: {
    'key.queryShape.command':
      'update' } }
])
```

8.0 [] : read shapes only

9.0 Update shapes with execCount



Animation sped up for clarity; the real default sample rate is 1%

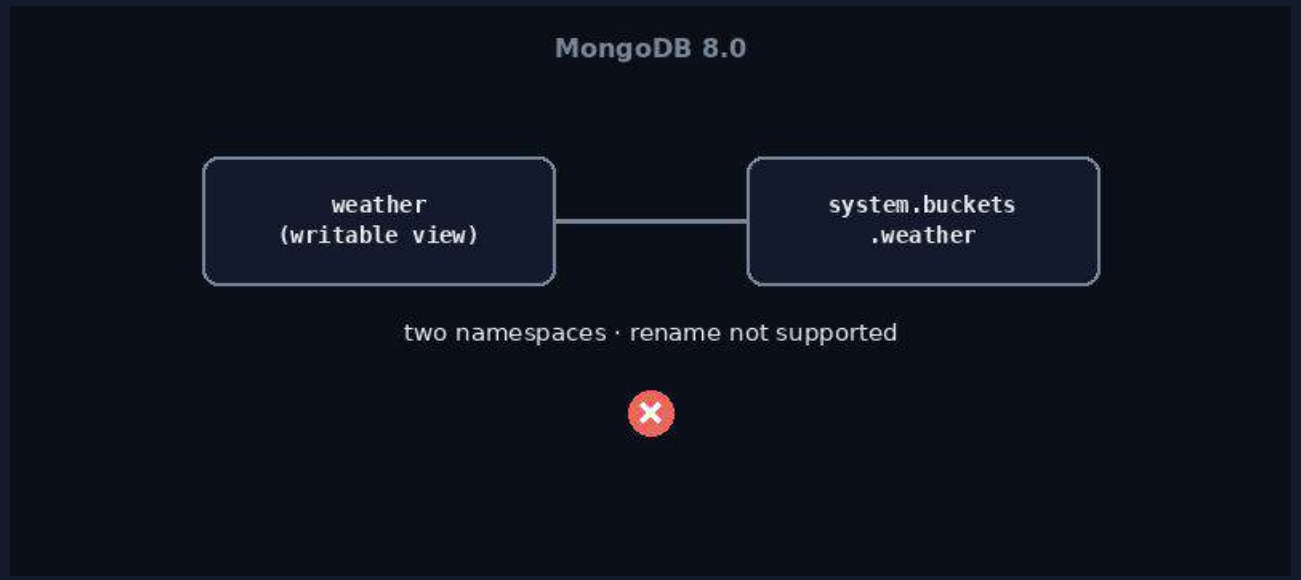
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Time series: one real collection

9.0 stores a time series collection as one namespace of compressed buckets instead of a writable view.

```
db.weather.renameCollection(
  'weather_2026')
```

8.0	weather + system.buckets.weather; rename refused
9.0	One namespace; { ok: 1 }



The view and buckets collection become one namespace

SECTION 3

03

Guardrails & security



New limits stop one bad query or traffic spike from taking down a cluster, and encrypted data becomes searchable.

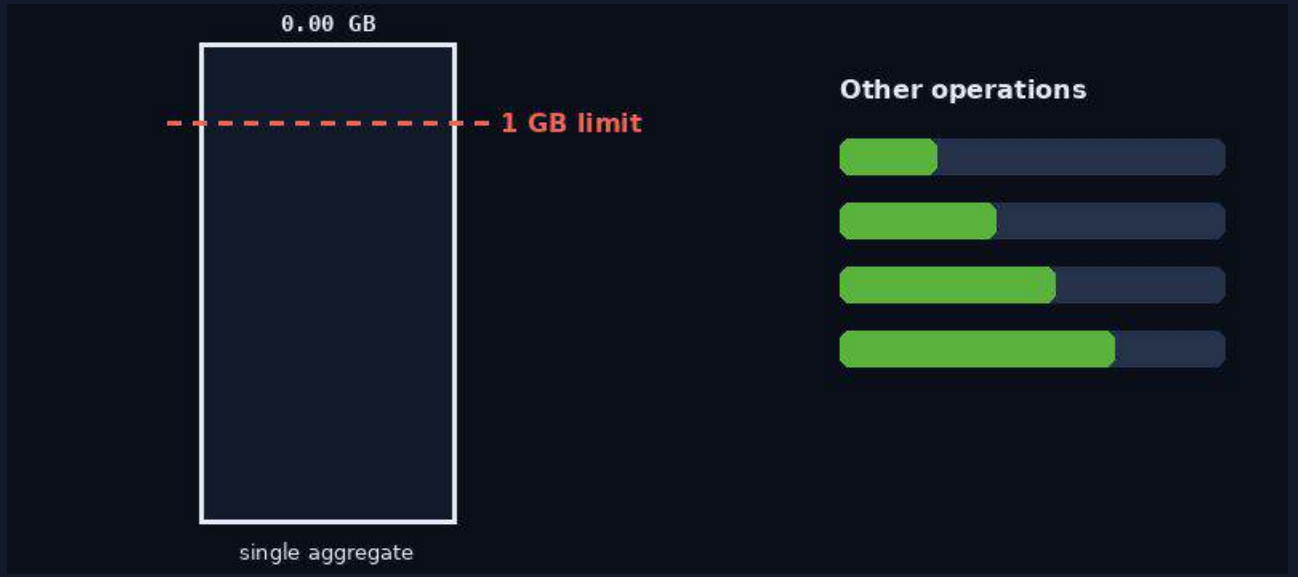
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One query can’t eat all the RAM

Each operation is capped at 1 GB or 20% of server memory, whichever is greater. The 100 MB per-stage limit and spill-to-disk are unchanged.

```
db.serverStatus().metrics.query
  .operationsFailedDueToMemoryLimit
```

8.0	No per-operation cap; memory keeps growing
9.0	ExceededMemoryLimit; node stays up



Only the heavy query fails; other operations keep running

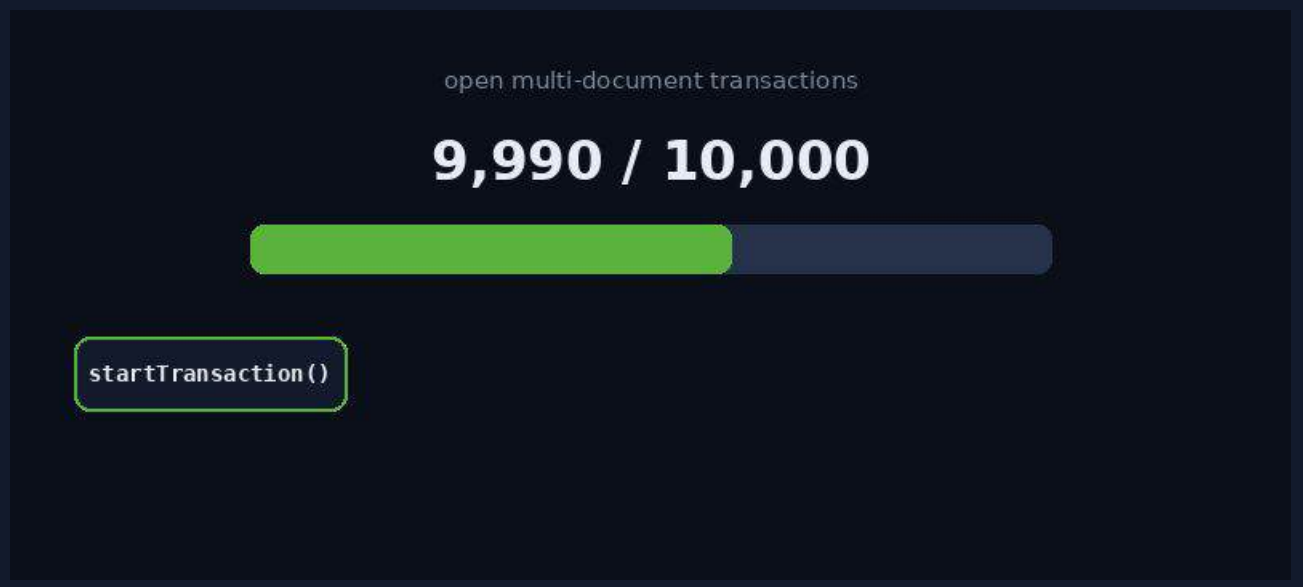
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A ceiling on open transactions

A new server parameter caps open multi-document transactions at 10,000 by default. Apps that leak sessions will now see errors.

```
const s = db.getMongo().startSession()
s.startTransaction()  // #10,001
```

8.0	Opens; only the 60 s lifetime limit applies
9.0	TooManyOpenTransactions



At the cap, new transactions are rejected until others close

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Search inside encrypted strings

Queryable Encryption prefix, suffix and substring queries are GA. The server matches on ciphertext; only the client decrypts.

```
db.customers.find({ $expr: {
  $encStrEndsWith: {
    input: '$phone',
    suffix: '4321' } } })
```

8.0 Equality and range queries only

9.0 Match without plaintext on the server



The server only ever sees ciphertext

SECTION 4

04 Upgrade: what breaks, what's fixed



The behaviour changes to test, the bugs fixed in 9.0 patches, and a safe path from 8.0.

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Same JavaScript, different answer

Server-side JS ($function, $where, mapReduce) now runs on a WASM engine where local Date methods use UTC. No error is raised.

```
// fix that works on 8.0 and 9.0
{ $hour: { date: '$occurredAt',
  timezone: 'America/New_York' } }
```

8.0 getHours() → 8 (host TZ): match

9.0 getHours() → 13 (UTC): no match



Stored value: 2024-01-15T13:30:00Z on a New York host

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Behaviour changes to test first

Change	Impact	Action
Server-side JS dates in UTC	Different results, no error	Use $hour with a timezone
JS removed on ppc64le	$function, $where, mapReduce fail	Rewrite as aggregation
Change streams after election	Resumable error 11602	Use resumeAfter in loops
Field turns multikey mid-query	Query may fail: QueryKilledError	Add retry logic
2dsphere key extraction	Codes 16755/16756 → 510/511	Update error handling
$group empty accumulator name	Now an error	Fix pipelines
Cross-database rename	Exclusive lock for the whole run	Schedule off-peak
5,000+ time series collections	Slow upgrade, write spikes	Drop unused ones first

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Bugs fixed in 9.0 patch releases

SEP 28, 2026

9.0.1

- Fixes CVE-2026-89099
- SERVER-134063: validator constants handled during parsing

SEP 28, 2026

9.0.2

- SERVER-134533: draining during movePrimary could break metadata
- SERVER-134808: invalid UTF-8 database names
- Two change stream feature flags turned off

OCT 13, 2026

9.0.4

- Five CVEs fixed
- SERVER-133518: shard step-up hang
- Three resharding and migration deadlocks
- $out, $bucket and count-on-view fixes

Recommendation: run 9.0.4 or later in production.

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Known issues and a safe upgrade path

OPEN AS OF 9.0.4

SERVER-89953

Mongoose syncIndexes() rebuilds indexes at start

→ Mongoose 9.10.4 / 8.24.5

SERVER-136226

Extra connections from nodes to config servers

→ Set config-server pool min size to 1

SERVER-136961

Crash loop in file-copy initial sync

→ Use logical initial sync

8.0 → 9.0, REPLICA SET

1. **Confirm FCV 8.0**
   getParameter: featureCompatibilityVersion
2. **Upgrade drivers, back up**
   Use 9.0-compatible drivers and ODMs
3. **Rolling binary upgrade**
   Secondaries, then step down the primary
4. **Soak at FCV 8.0**
   Downgrade is still a binary swap here
5. **Set FCV 9.0**
   setFeatureCompatibilityVersion '9.0', confirm: true

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Key takeaways

1	**Faster for free**	Up to 2x throughput on large instances, with no code changes.
2	**Guardrails protect the cluster**	Per-operation memory, transaction and per-shape time limits.
3	**The database enforces more**	Constraint validation and searchable encrypted strings.
4	**Test four behaviour changes**	UTC dates, change stream resumes, ODM index sync, new error codes.
5	**Target 9.0.4 or later**	And soak at FCV 8.0 before raising it.

REFERENCES

Official sources

Every figure in this deck traces back to MongoDB's own release notes and launch pages.

`mongodb.com/docs/upcoming/release-notes/9.0`

Official 9.0 release notes and patch fixes

`…/release-notes/9.0-compatibility`

Compatibility and behaviour changes

`…/release-notes/9.0-upgrade-from-8.0`

Upgrade procedure from 8.0

`…/release-notes/9.0-changelog`

Full list of fixed issues

`mongodb.com/products/updates/version-release`

9.0 product page with benchmark figures

`mongodb.com/company/blog (Sep 30, 2026)`

Launch blog: Atlas Infinite and MongoDB 9.0

Questions?

Thank you for joining MyWebinar #56. Reach out for an upgrade readiness review before you move to MongoDB 9.0.

 www.mydbops.com

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