Using PMM to monitor production MongoDB environments

Percona University
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Santo Leto

- Open-source database user & contributor with 20 years of experience in **GTM**, Product & Engineering roles
  - Worked at multiple open-source database vendors:
    - MySQL at Oracle, Neo4j, OrientDB, ArangoDB, Dgraph Labs, Percona
- BSc in physics & MBA in International Business

- At **Percona** since 2020
  - Technical Account Manager (**TAM**) focused on MongoDB and post-EOL support programs
  - Cross-functional work to ensure **technical success** of the customers I am assigned to

- Remote-working since 2004
- Lived in, and visited, multiple countries
- I speak Italian, Spanish, English

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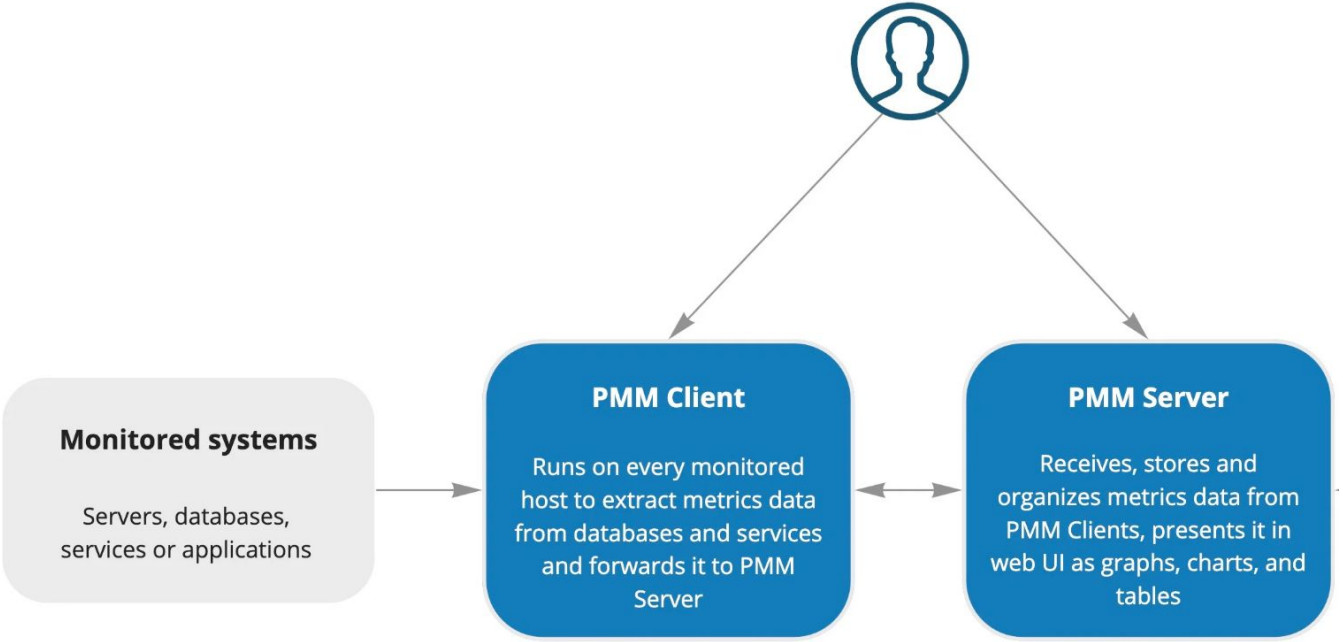
linkedin.com/in/sleto

Agenda

1. PMM Introduction
2. What's new & what's coming
3. Main MongoDB dashboards in PMM
4. MongoDB alerts in PMM
5. Additional Resources

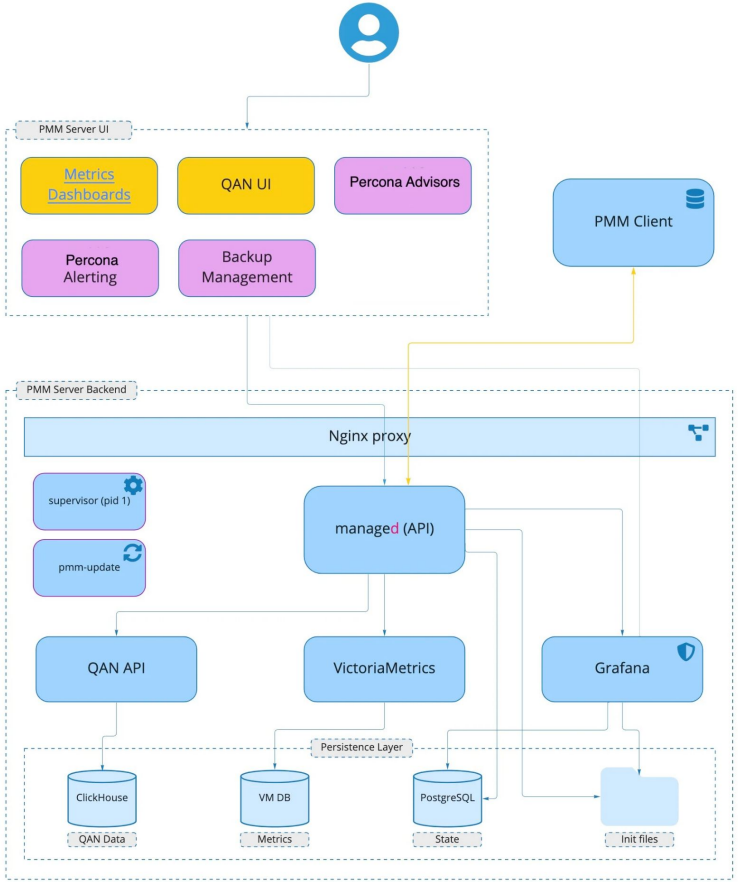
1. PMM Introduction

PMM Client / Server Architecture



Learn more: https://docs.percona.com/percona-monitoring-and-management/3/api/index.html

PMM Server Component Based View



Learn more: https://docs.percona.com/percona-monitoring-and-management/3/api/index.html

Current Version

- Latest major:
  - **PMM v3**
    - Currently on v3.1.0 released on 2025-03-31
    - v3.2.0 expected in Q2 FY25 with PBM backup dashboard

- Previous major:
  - **PMM v2**
    - Currently on v2.44.1 released on 2025-04-24
    - **EOL on July 30, 2025** - upgrade to v3!

Learn more: https://docs.percona.com/percona-monitoring-and-management/3/release-notes/index.html
https://www.percona.com/blog/percona-monitoring-and-management-2-clarifying-the-end-of-life-and-transition-to-pmm-3/

PMM Deployment options

- Different ways to deploy
- **PMM Server**:
  - Docker, Podman, OVA, Helm, AWS Marketplace
- **PMM Client**:
  - Package, Tarball, Docker
- After starting PMM Server:
  - Connect to the web interface, e.g: https://localhost
  - Change the *admin* password

Learn more: https://docs.percona.com/percona-monitoring-and-management/3/install-pmm/index.html

Adding Services

- On each MongoDB node you'll monitor:
  - Ensure the PMM client is up and running:

```
sudo systemctl status pmm-agent
```

  - Register your node in PMM:

```
pmm-admin config \
   --server-insecure-tls \
   --server-url=https://admin:yourPWD@X.X.X.X:443
```

MongoDB requirements:
- v6.0 or higher

Learn more: https://docs.percona.com/percona-monitoring-and-management/3/install-pmm/install-pmm-client/connect-database/mongodb.html

Adding Services

- On each node you'll monitor:
  - Create dedicated MongoDB role / user so PMM can connect to your MongoDB
  - Add service:

```
pmm-admin add mongodb \
   --username=pmm \
   --password=your_secure_password \
   --cluster=my_cluster_name \
   --replication-set=rs1  # Optional replication set name
```

Learn more: https://docs.percona.com/percona-monitoring-and-management/3/install-pmm/install-pmm-client/connect-database/mongodb.html

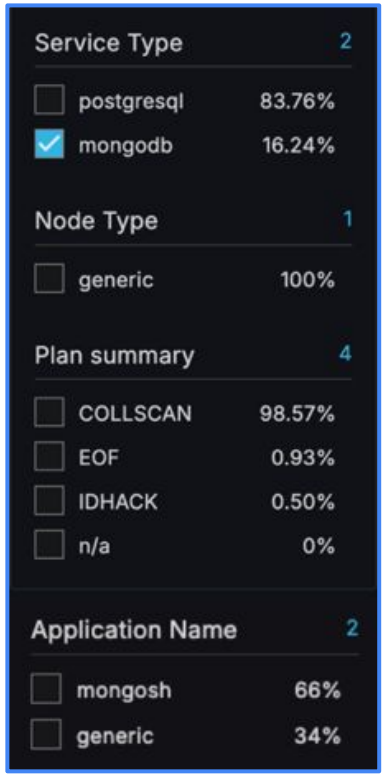
2. What’s new & what’s coming

Recent MongoDB-related PMM improvements

Query Analytics (QAN) improvements – PMM v3.1:

- **New metrics (Query execution, Response, Lock statistics & Storage metrics)**
  - Better identify inefficient query patterns, evaluate query response efficiency, detect lock contention issues, analyze I/O performance

- **New filters (Plan Summary, Application Name, User, Database)**
  - Better pinpoint problematic queries based on application, client, user, or plan summary



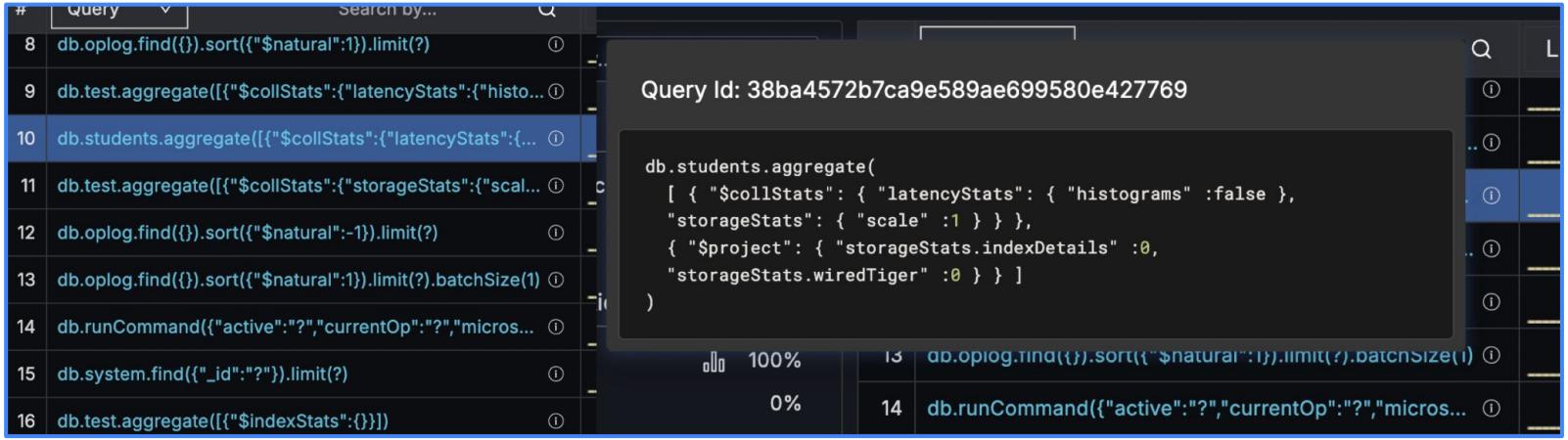
Learn more: https://docs.percona.com/percona-monitoring-and-management/3/release-notes/3.1.0.html

Recent MongoDB-related PMM improvements

Learn More

Query Analytics (QAN) improvements - PMM v3.1:

- **Improved query fingerprint & query examples visualization**
  - The actual query structure, including operators and field names is now displayed, similar to the format used in a MongoDB shell

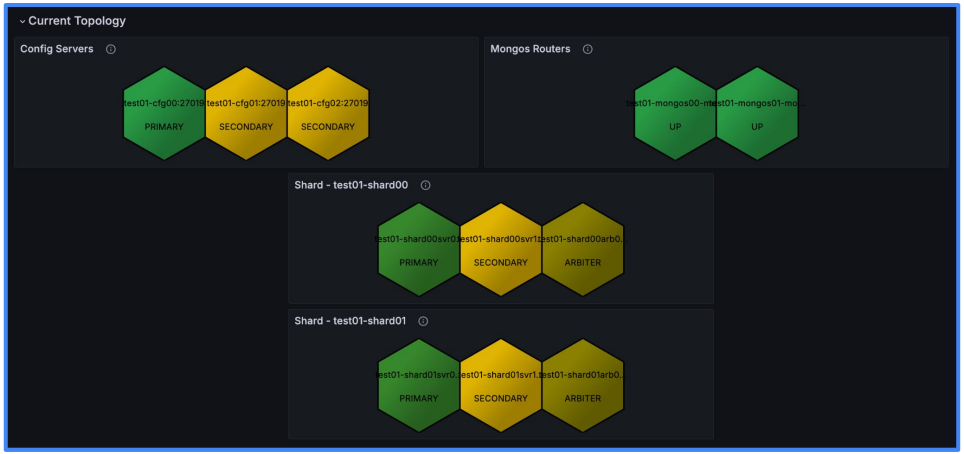


Recent MongoDB-related PMM improvements

Learn More

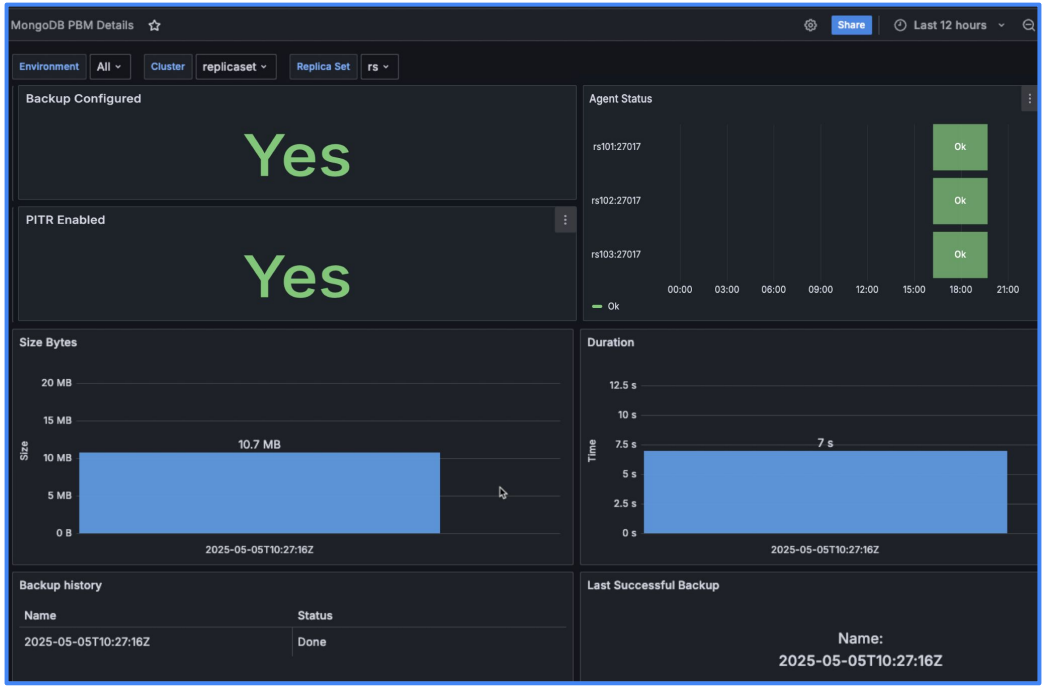
MongoDB dashboard improvements - PMM v3.1:

- **Improved MongoDB cluster topology visualization**
- **Improved dashboard visualization & filtering capabilities**



Soon-to-be released MongoDB-related PMM improvements

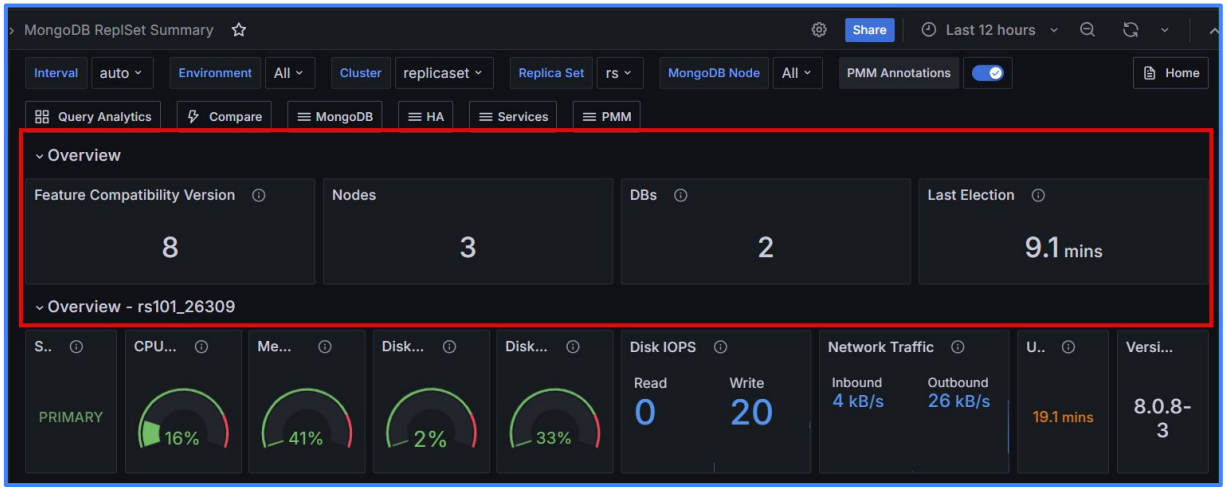
New MongoDB PBM Details dashboard - PMM v3.2:



Soon-to-be released MongoDB-related PMM improvements

MongoDB dashboard improvements - PMM v3.2:

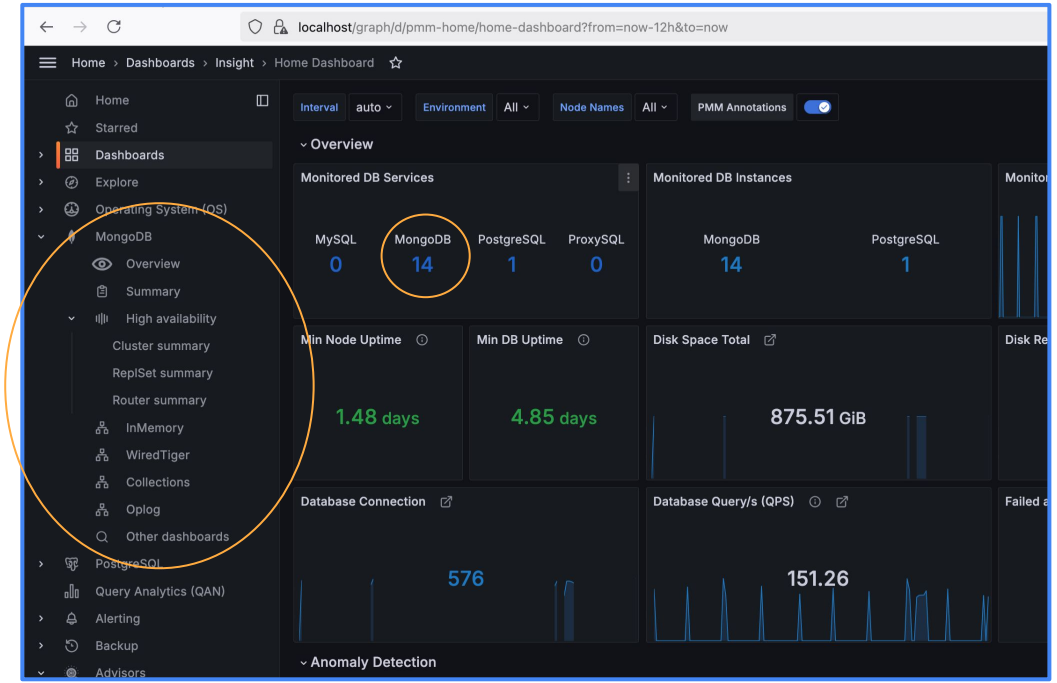
- **New panels:** Feature Compatibility Version (FCV), Nodes & Databases count, Last election time (dashboards: "*Replica Set*" & "*Sharded Cluster Summary*")
- **Fixes** in the "*MongoDB Collections Overview*" dashboard



3. Main MongoDB dashboards in PMM

Introduction

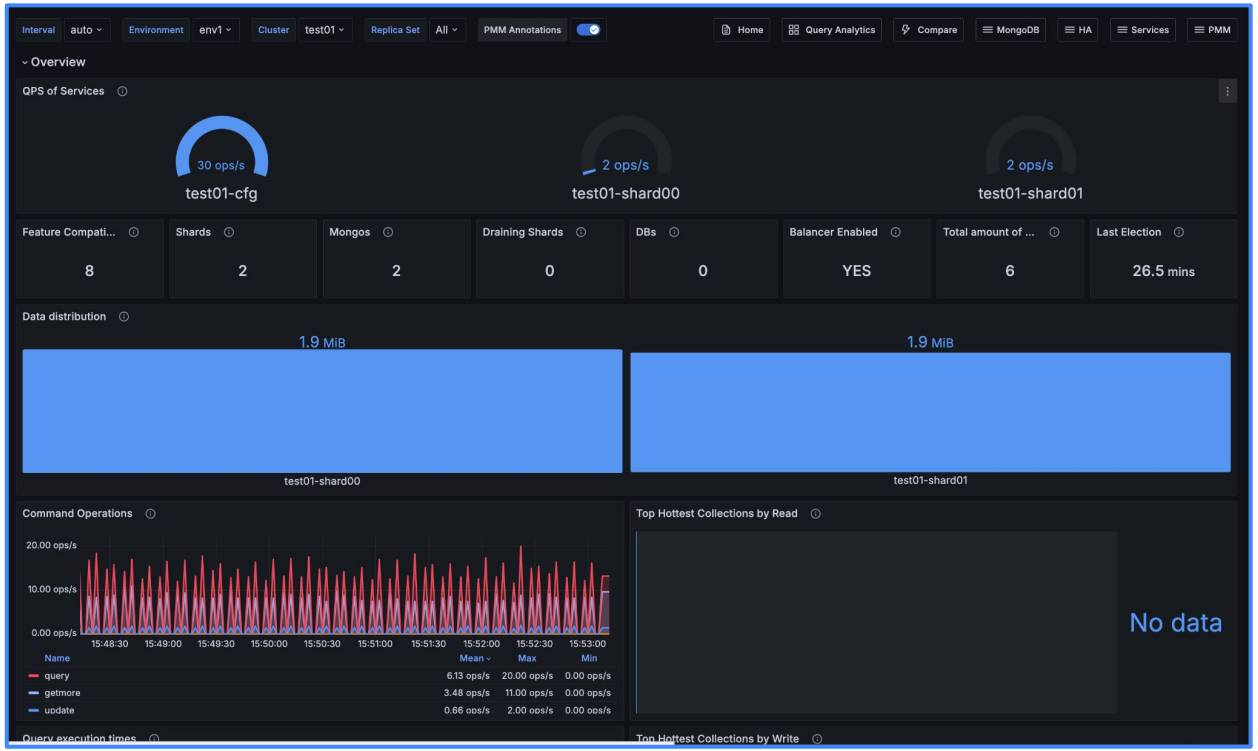
- Use the “MongoDB” menu in the left panel to open one of the MongoDB dashboards
- Overview / Summary are good initial dashboards
- You're probably using replica sets or clusters → check the dashboards under “**High availability**”



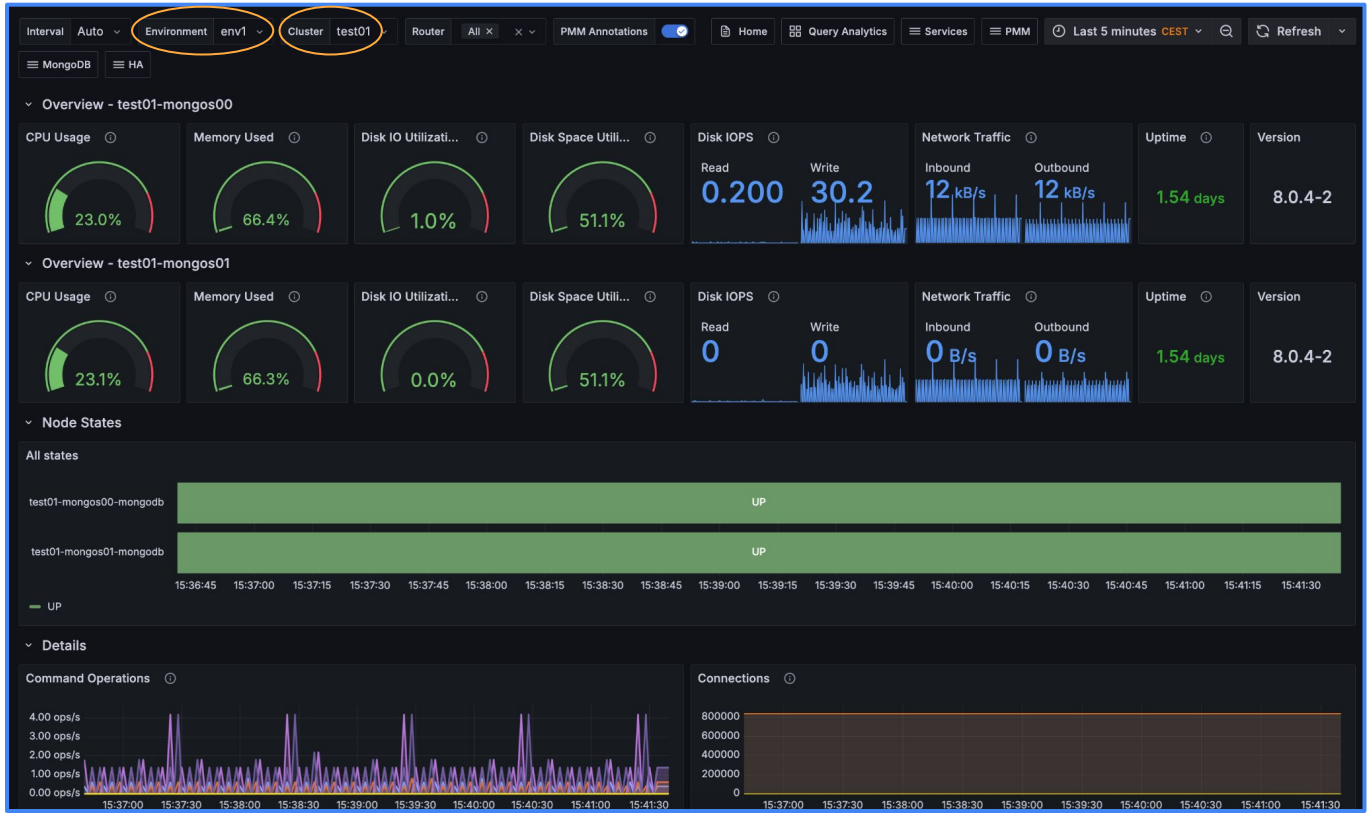
MongoDB ReplSet Summary

scroll

MongoDB Sharded Cluster Summary



MongoDB Router Summary



4. MongoDB alerts in PMM

Available MongoDB alert templates

Template name	Description	Available for
MongoDB down	Detects when a MongoDB instance becomes unavailable, enabling rapid response to maintain database accessibility. When monitoring MongoDB sharded clusters, alerts using this template detect outages in any cluster component (configuration servers, Mongos routers, data-bearing nodes, and arbiters).	All users
Memory used by MongoDB connections	Tracks MongoDB connection memory usage and alerts when it exceeds configurable thresholds. Helps identify and address potential performance issues caused by high memory consumption.	All users
Memory used by MongoDB	Monitors overall MongoDB memory usage and alerts when it exceeds 80% of total system memory. Provides details about specific MongoDB services and nodes experiencing high memory consumption, aiding in resource optimization.	All users
MongoDB restarted	Detects recent MongoDB restarts, alerting if an instance has been restarted within the last 5 minutes (default threshold). Facilitates investigation of unexpected downtime and potential issues.	All users

Learn more: https://docs.percona.com/percona-monitoring-and-management/3/alert/index.html

Available MongoDB alert templates

Template name	Description	Available for
MongoDB DBPath disk space utilization	Monitors disk space usage in MongoDB's data directory and alerts when it exceeds set thresholds. Helps prevent storage-related issues and ensures adequate space for database operations.	Customers-only
MongoDB host SSL certificate expiry	Tracks SSL certificate expiration dates for MongoDB hosts and alerts when certificates are approaching expiry. Enables timely certificate renewal to maintain secure connections.	Customers-only
MongoDB oplog window	Monitors the oplog window size and alerts when it falls below the recommended threshold (typically 24-48 hours). Ensures sufficient time for secondary nodes to replicate data and maintain cluster consistency.	Customers-only
MongoDB read tickets	Tracks read ticket availability in the WiredTiger storage engine and alerts when it falls below set thresholds. Helps optimize read performance and identify potential bottlenecks.	Customers-only

Learn more: https://docs.percona.com/percona-monitoring-and-management/3/alert/index.html

Available MongoDB alert templates

Template name	Description	Available for
MongoDB replication lag is high	Monitors replication lag and alerts when it exceeds acceptable thresholds. Crucial for maintaining data consistency across replicas and identifying synchronization issues.	Customers-only
MongoDB ReplicaSet has no primary	Detects when a replica set loses its primary node and alerts users. Indicates that the cluster is in read-only mode, potentially affecting write operations and overall database functionality.	Customers-only
MongoDB member is in unusual state	Identifies and alerts when replica set members enter unusual states such as Recovering, Startup, or Rollback. Helps maintain cluster health and performance by enabling quick intervention.	Customers-only
MongoDB write tickets	Monitors write ticket availability in the WiredTiger storage engine and alerts when it falls below set thresholds. Aids in optimizing write performance and identifying potential bottlenecks.	Customers-only
MongoDB too many chunk migrations	Monitors amount of chunk migrations in a MongoDB sharded cluster and alerts if they are more than set thresholds.	Customers-only

Learn more: https://docs.percona.com/percona-monitoring-and-management/3/alert/index.html

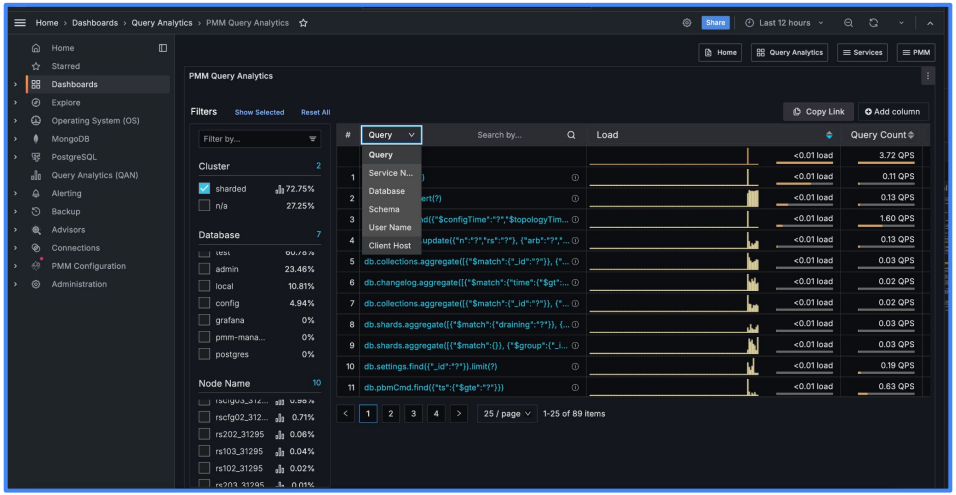
Available MongoDB alert templates

Template name	Description	Available for
MongoDB PBM Agent down	Monitors the status of Percona Backup for MongoDB (PBM) Agents and alerts when an Agent becomes unresponsive. This indicates potential issues with the host system or with the PBM Agent itself.	All users
MongoDB PBM backup duration	Monitors the time taken to complete a backup and alerts when it exceeds set thresholds. If the backup did not complete, no alerts are sent.	All users
MongoDB PBM backup size	Monitors the amount of disk space taken by a completed backup and alerts when it exceeds set thresholds. If the backup did not complete, no alerts are sent.	All users

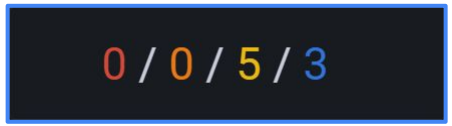
Learn more: https://docs.percona.com/percona-monitoring-and-management/3/alert/index.html

5. Additional Resources

Query Analytics (QAN) & MongoDB Advisors



Query Analytics >>



MongoDB Advisors >>

Percona Software for MongoDB

- Percona Server for MongoDB
- Percona Backup for MongoDB
- Percona Toolkit for MongoDB
- Percona Operator for MongoDB
- Percona Monitoring & Management
- Percona Everest

The Enterprise-Grade MongoDB Alternative

Percona software for MongoDB includes a source-available MongoDB alternative and Percona-built open source management and observation tools. Powerful alone, better together, zero lock-in.

Learn more: https://www.percona.com/compare/mongodb-alternative

Percona Support & Services for MongoDB

- Percona Support for MongoDB
- Percona Managed Services for MongoDB
- Percona Consulting for MongoDB
- Percona Training for MongoDB

MongoDB Services That Actually Put Your Needs First

We'll help you reliably run MongoDB the way you want, no matter the size or complexity of your projects.

Learn more: https://www.percona.com/mongodb/support-and-services

MongoDB Runs Better With Percona Services

If you build business applications that need to scale quickly on MongoDB, chances are you're paying dearly for enterprise licenses. In fact, proprietary license fees are ever-increasing. If this sounds familiar, you'll want to read this White Paper.

Percona works with companies to achieve peak application performance and scale, without vendor lock-in. Our experts bring in-depth knowledge of MongoDB, along with open source tools, to support any development environment.

PERCONA
for MongoDB

Link to White Paper >

Contributing

- Submit a doc or code PRs on GitHub
- Answer topics in Percona Forums
- Write a blog post, create a video
- Join us at one of our community events
- Leave us a review

Percona Community web site >

Thank you

Stay in touch:
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