

Eating Your Own Dogfood

[MongoDB Monitoring Service](#) (MMS)



photo credit: [laffy4k](#)

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Overview

- What is MMS
- MMS @ 10gen
- Design Requirements
- Technologies Used
- System Overview
- Application Internals
- Schema Design
- Leaving the Cloud
- Roadmap
- Questions?

What is MMS?

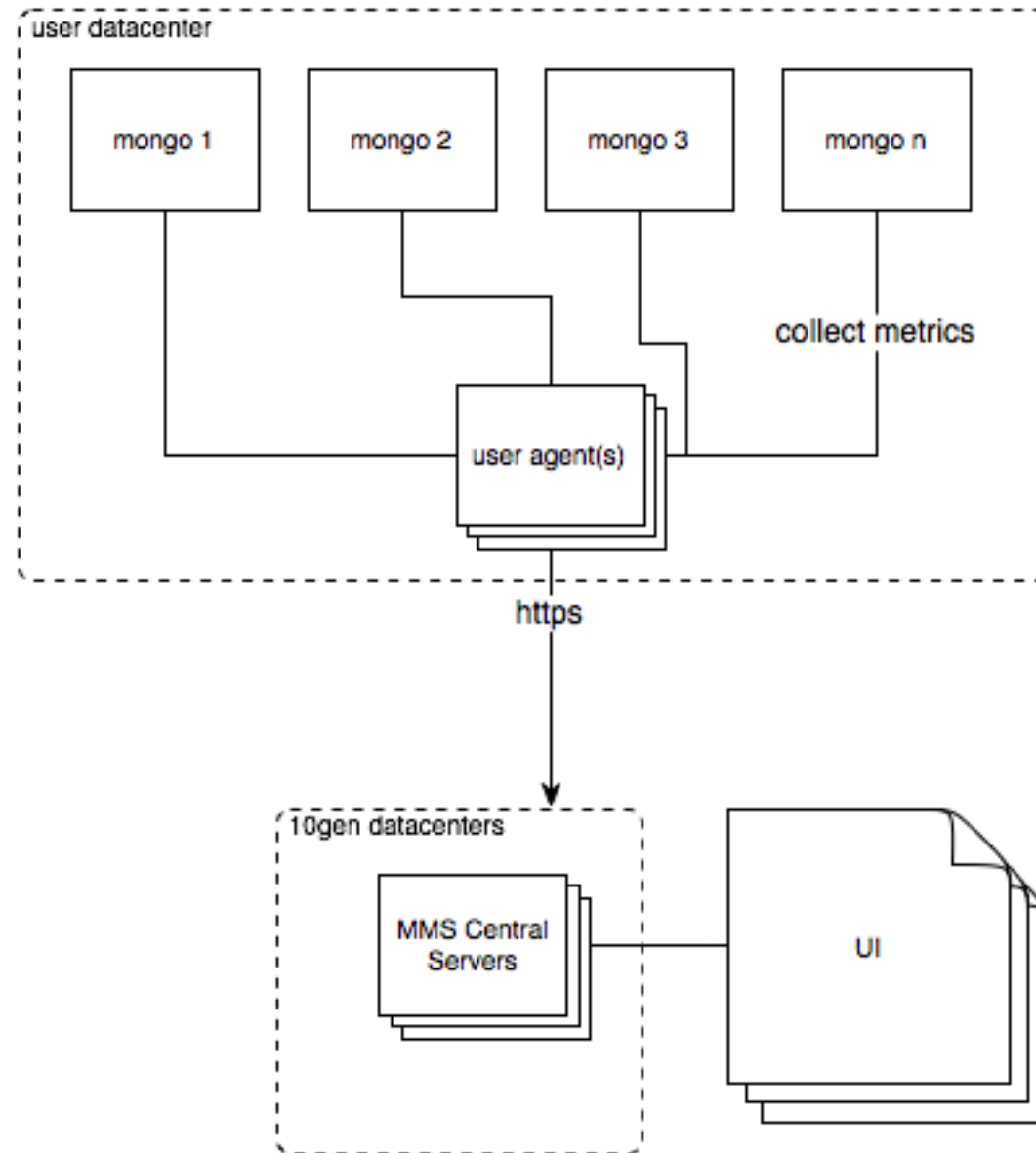
- **Free** MongoDB monitoring [Saas](#) solution
- Real-time*
- Secure
- Current and historical metric views
- Alerting
- Event tracking/display
- Dashboards
- Host Management

* alerts and a few management features are batch processed

What is MMS?

- Metrics are collected by agent in user datacenter
- Only one primary/active agent at time
 - Central MMS servers handle primary/secondary
- Agent designed to require minimal change to system
- Optional support for hardware charts (munin-node)

What is MMS?



MMS @ 10gen

- Customer support
- Free support
- Helping the entire MongoDB community
- Testing Java driver releases
- Testing Python driver releases
- Testing MongoDB release candidates

Design Requirements

- Must use MongoDB :-^
- Must scale horizontally
- Needs to be fast
- Cannot require a large development team
- Service is **free**... must be **C-H-E-A-P** to run

(yes... these the requirements for all systems :-^)

Technologies Used

Database

- [MongoDB](#) :-^

Application Server

- Java
- [Jetty](#) (embedded http server)
- [Google Guice](#) (ioc framework)
- [Jersey](#) (web framework)

User Interface

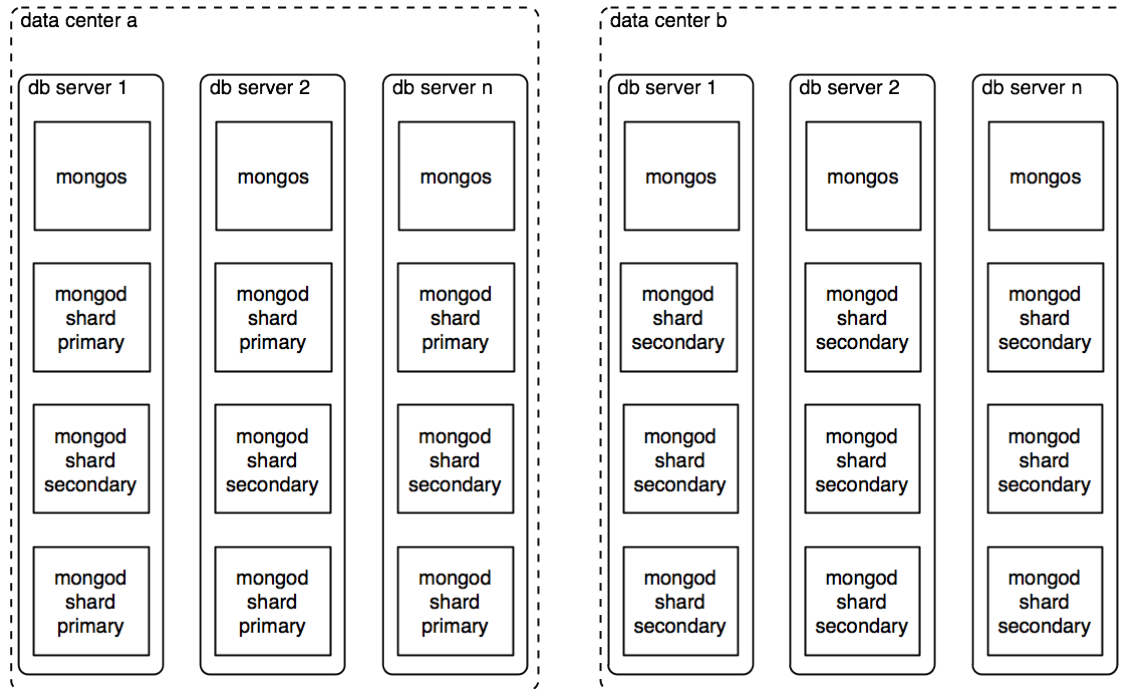
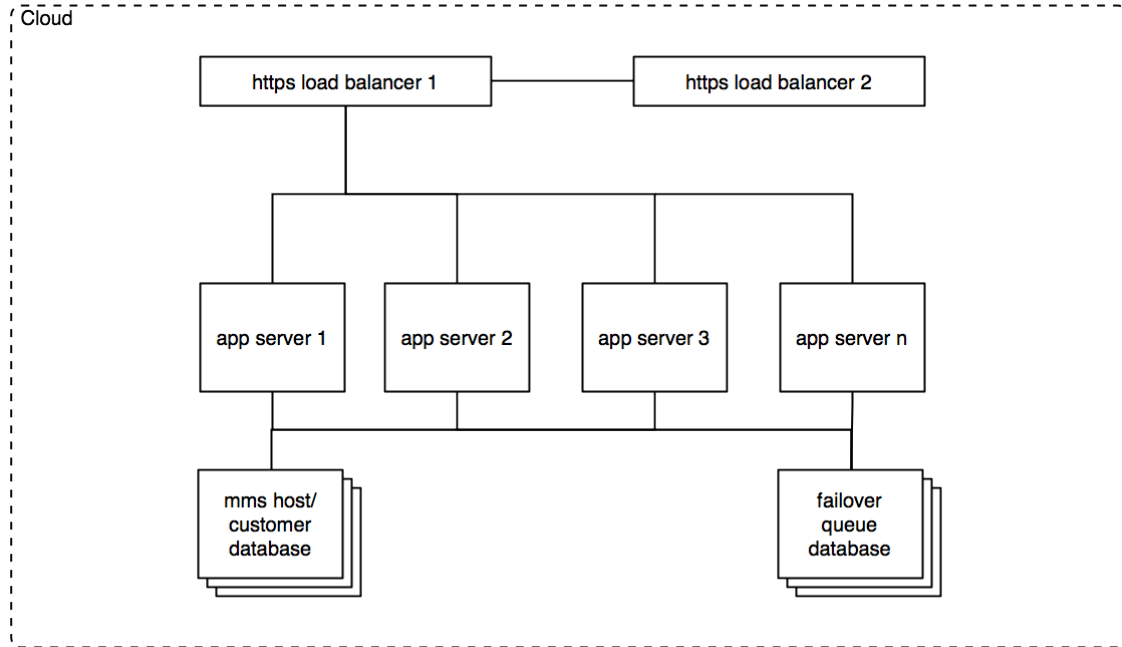
- [jQuery](#) (ui display)
- [dygraphs](#) (html5/canvas charting lib)

Agent

- Python
- Pymongo (python driver)
- Munin (agent hardware data collection)

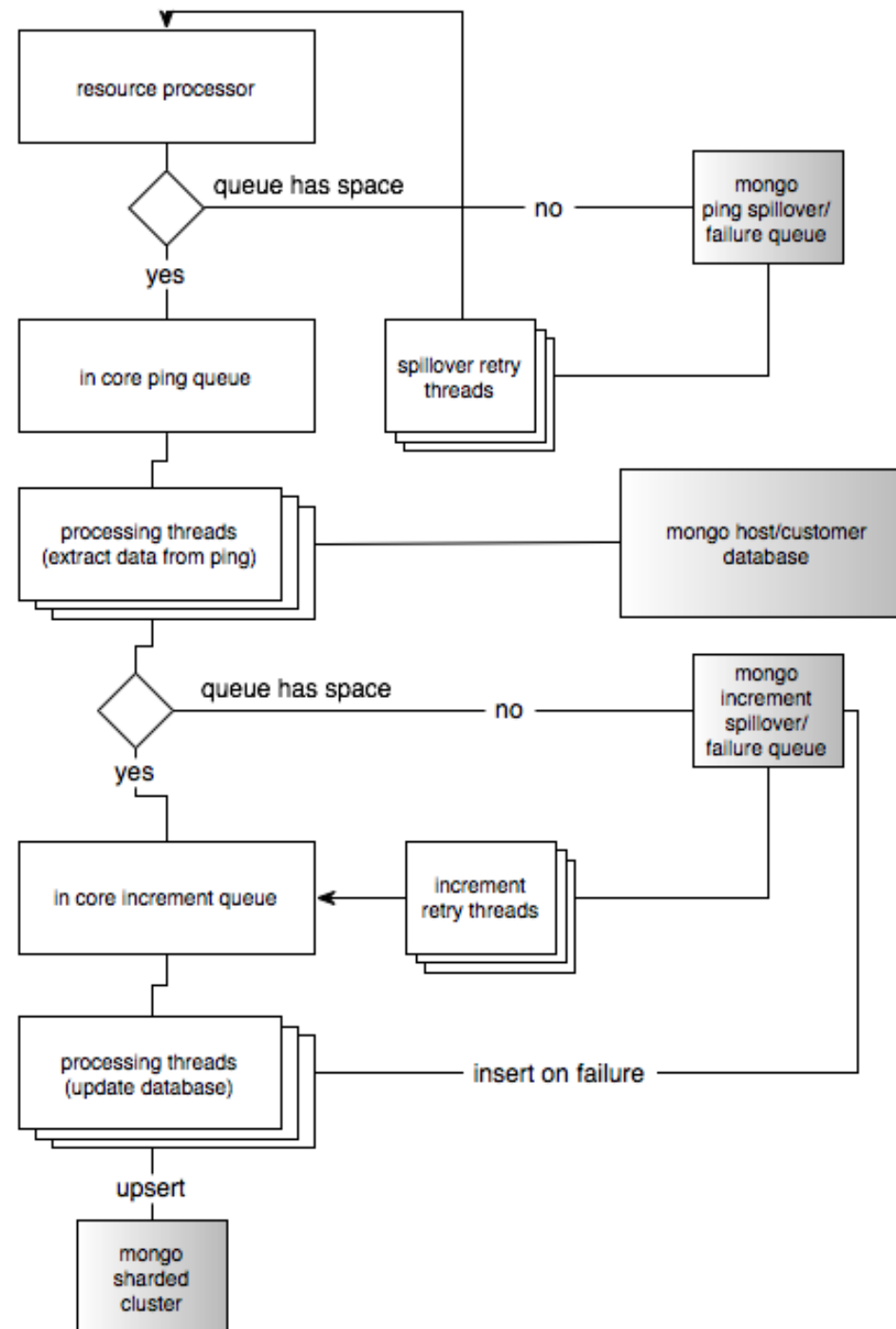
System Overview

- Agent collects metrics from user's MongoDBs
- Central servers receive and process data
- Central servers provide UI features, event tracking and alerting



Application Internals

- Data is received once per minute from each agent (ping)
- App server processes agent ping data at once to provide an entire view of user system/cluster.
- Massive parallelization required to handle processing all ping data at once (some users have 500+ MongoDBs per ping/agent).



Schema Design

- Minute level data stored in day document
- Hour level data stored in day document
- Day level data stored in month document

Schema Design

Example minute doc:

```
{
  "_id" : "489dc5ee0e54f976be85f0c442ab5972-2695db1ef4b393372d11d06a6d34c2e3-20111006-
commitsInWriteLock-dur",
  "customerId" : ObjectId("4e0c1c4a14587819403c95cb"),
  "date" : "20111006",
  "group" : "dur",
  "hostId" : "2695db1ef3b393372d11d06a6d34c2e3",
  "identity" : "commitsInWriteLock",
  "minutes" : {
    ....
    "1" : {
      "0" : {
        "number" : 1,
        "total" : NumberLong(0)
      }
      ...
      "23" : {
        ....
        "1439" : {
          "number" : 1,
          "total" : NumberLong(0)
        }
      }
    }
  }
}
```

Schema Design

Example hour doc:

```
{
  "_id" : "bd104e2f4e94ea322fa7d0ba5f1b3417-6829be6e5b729025d4d2b11981c888e4-20111108-
clientCursors_size-cursors",
  "date" : "20111108",
  "group" : "cursors",
  "identity" : "clientCursors_size",
  "customerId" : ObjectId("4e0bc33114587819403c85be"),
  "hostId" : "6929be6e5b729025d4d2b11981c888e2",
  "hours" : {
    "0" : {
      "number" : 60,
      "total" : NumberLong(199)
    },
    ...
    "23" : {
      "number" : 62,
      "total" : NumberLong(50)
    }
  }
}
```

Schema Design

Example day doc:

```
{
  "_id" : "43553186dbabb8f9076cb2f9df1752a2-4b569834d79c5149f7a8b9b129d757d4-201111-
virtual-mem",
  "date" : "201111",
  "group" : "mem",
  "identity" : "virtual",
  "customerId" : ObjectId("4e3155ba14587819403c8cc8"),
  "hostId" : "4b569824d79c5249f7a8b9b129d757d4",
  "days" : {
    "1" : {
      "number" : 1510,
      "total" : NumberLong(462960)
    },
    ...
    "30" : {
      "number" : 1275,
      "total" : NumberLong(543150)
    }
  }
}
```


Leaving the Cloud

- Missing high throughput/low latency storage (SSDs)
- Plenty of noisy neighbors
- Inconsistent network performance
- Missing modern CPUs (or too \$\$)
- \$\$\$
- We have lots of experience with real datacenters
- System has fairly predictable growth
- Enterprise customers don't go down with the cloud

Roadmap

Coming Soon

- Advanced alerting
- Better cluster display

Questions?

Please feel free to reach out if you have questions later.

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MongoDB Monitoring Service - <https://mms.10gen.com/>