

MongoDB

The new M in the LAMP stack

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Find this presentation at bit.ly/mongodb-linuxtag

Fault-tolerance



<http://browsertoolkit.com/fault-tolerance.png>

What is MongoDB?

From <http://mongodb.org>

MongoDB (from “humongous”) is a scalable, high-performance, open source, document-oriented database

In other words, a non-relational database for the masses

General

- High performance with large data sets
 - Wordnik.com has 1.5TB in over 5 Billion docs
 - Sustained 100,000 inserts per second during loading
 - Sustained 250,000 fetches per second during testing
 - Production Queries are 4x faster than old MySQL setup
- Less knobs that need tweaking
- Monitoring plugins for Munin, Ganglia, Nagios, and Cacti
- Background index building and object removal
- 24/7 Support for when you get that 2:00 call

Backup

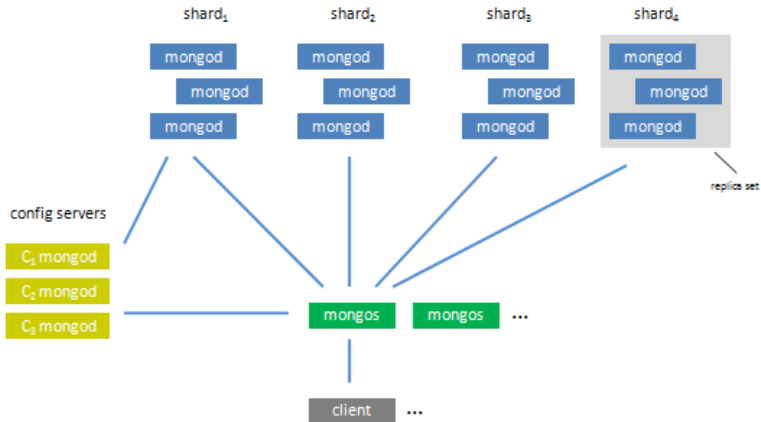
- *mongodump* for live backup
- *mongoexport* for JSON dump
- `fsync-lock` command for FS-level snapshots
 - Best used with LVM/EBS snapshots
 - But also works with *tar* and *rsync*
 - Can continue reading while locked

Replication

- Very easy to set up
- Works across data-centers
- Automatic fail-over
 - Replica Pairs (Deprecated)
 - Replica Sets (Coming in 1.6)
- Slaves do an initial sync then pull operations
- Initial sync can be skipped if starting from snapshot
- Delayed Replication for “Oh Scheiße!” moments.

Sharding: Details

- No single point of failure
- Automatic range-based partitioning
- Your app connects to a *mongos* rather than a *mongod*
- You pick which collections are sharded
- You pick a shard-key for those collections
- No other changes are necessary in your app
- We handle the rest!



Inserting

```
db.posts.insert( {  
  by: 'mstearn',  
  posted: Date(12345),  
  text: 'Mongo_is_Better_than_Your_Database',  
  tags: [ 'MongoDB', '#win' ],  
  votes: 100,  
  comments: [  
    { by: 'joe_schmoe',  
      text: 'Why?',  
      votes: 10 }  
  ]  
})
```

```
db.posts.find({by: 'mstearn'})  
db.posts.find({by: 'mstearn'}).sort({posted:-1})  
db.posts.find({'comments.by': 'joe_schmoe'})  
  
db.posts.find().sort({votes: -1}).limit(10)  
db.posts.find({votes: {$gte: 40, $lt: 50}})  
  
db.posts.find({text: /mongodb/i})  
  
db.posts.ensureIndex({tags: 1})  
db.posts.find({tags: 'MongoDB'})  
db.posts.find({tags: {$in: ['MongoDB', 'MySQL']}})  
db.posts.find({tags: {$all: ['MongoDB', 'MySQL']}})
```

Pretty Python Queries with MongoMagic

Shameless self-promotion

<http://github.com/RedBeard0531/MongoMagic/>

```
db.posts.find( M.by == 'mstearn' )  
db.posts.find( 40 <= M.votes < 50 )  
db.posts.find( M.comments.by == 'joe_schmoe' )  
db.posts.find( M.tags.IN( 'MongoDB', 'MySQL' ) )
```

2D Geospatial Queries

```
db.zips.insert({_id: '10011', loc: [43, -74]})
```

```
db.zips.ensureIndex({loc: '2d'})
```

```
db.zips.find({loc: {$near: [43, -74]}})
```

```
var box = [[x1, y1], [x2, y2]]  
db.zips.find({loc: {$within: {$box: box}}})
```

```
var circle = [[x,y], radius]  
db.zips.find({loc: {$within: {$center: circle}}})
```

Questions?

Links

- <http://bit.ly/mongodb-linuxtag>
- <http://github.com/RedBeard0531/MongoMagic>
- <http://try.mongodb.org> (Try mongo in your browser)
- <http://www.mongodb.org>
- #mongodb on irc.freenode.net
- mongodb-user on google groups

Contact

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