



PALOMINO

OPERATIONAL EXCELLENCE
FOR DATABASES

Scaling Redis

mysqlnosqlcloud
by Emanuel Calvo



Palomino - Service Offerings

- Monthly Support:
 - Being renamed to Palomino DBA as a service.
 - Eliminating 10 hour monthly clients.
 - Discounts are based on spend per month (0-80, 81-160, 161+)
 - We will be penalizing excessive paging financially.
 - Quarterly onsite day from Palomino executive, DBA and PM for clients using 80 hours or more per month.
 - Clients using 80-160 hours get 2 New Relic licenses. 160 hours plus get 4.
- Adding annual support contracts:
 - Consultation as needed.
 - Emergency pages allowed.
 - Small bucket of DBA hours (8, 16 or 24)

For more information, please go to: [Spreadsheet](#)

“Advanced Technology Partner” for Amazon Web Services



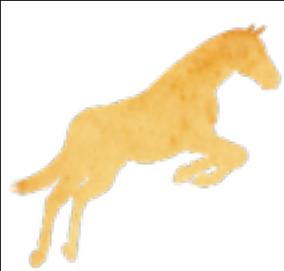
About me:

- Operational DBA at PalominoDB.
 - MySQL, Maria and PostgreSQL databases (and others)
- Community member
- Check out my LinkedIn Profile at: <http://es.linkedin.com/in/ecbcbcb/>



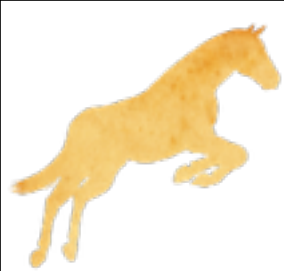
What is redis ?

- key/value store database
- Low persistence / in memory
 - Persistence via async snapshots or
 - AOF (append only file)
 - I love to say: “Flexible persistence”
- Extremely fast
- Wide set of commands feature
- Manage it's own Virtual Memory



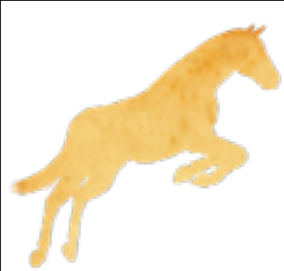
Features

- Handles huge workloads easily
 - Ideal for write-heavy workloads
- Support for atomic operations
- Supports for transactions
- pub/sub functionality for messaging
- Single threaded (aync).
- Sorts
- Run several instances in the same machine is possible
 - cores/2 ?



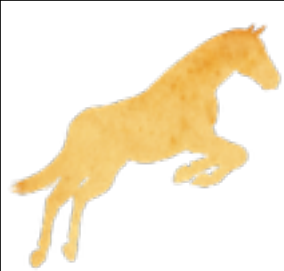
Where you can use Redis?

- message bus
- live statistics
- caching
- data structure
- State
- Pre-database system
- state share between processes
- scheduler



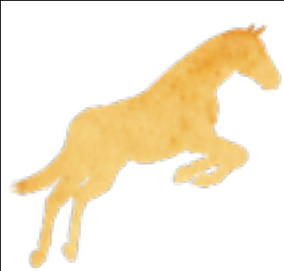
Supported types

- The main object are strings, basically.
- Types:
 - lists
 - sets
 - sorted sets
 - hash tables
 - append-able buffers



Persistence

- RDB performs point in time snapshots of the data set at specified intervals
 - Dump each 60 seconds if 1000 keys changed:
 - save 60 1000
- AOF (append only file, redis protocol format)
persistence write every operation that will be played at server startup for dataset reconstruction.
 - More durable, different levels of fsync
 - Option: “appendonly yes”
- Disable ALL THE PERSISTENCE!
- Mixed RDB and AOF to gain the same level of durability as PostgreSQL



Persistence (2)

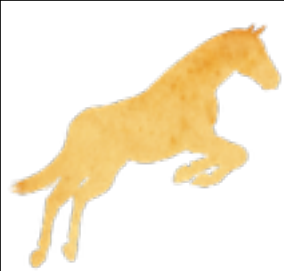
- AOF different levels of fsync:
 - # appendfsync always
 - appendfsync everysec
 - # appendfsync no



Virtual Memory

- It can handle the swapping on its own
 - Keys remain in memory and least used values are swapped to disk.
- Swapping IO happens in separate threads

NOTE: If you need swapping is because you don't have enough hardware for your solution or... you don't need Redis?



Scaling features

- Master/Slave Async replication
- Client Side sharding with fixed hashing
- Consistent ring sharding
- Object versioning



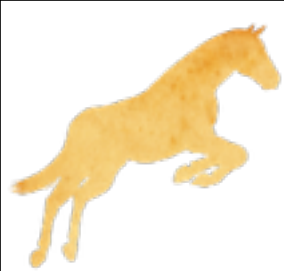
Replication

- Can't be easier!
 - If the “requirepass” is set on the master, then:
 - Slave 127.0.0.1:6379> config set masterauth pepe
 - On the slave:
 - slaveof <masterip> 6379
 - SYNC (on the master)
- 2.8 highlight feature:
 - Only accept writes if N slaves servers are connected.
 - min-slaves-to-write <number of slaves>
 - min-slaves-max-lag <number of seconds>



Sharding / Cluster

- <http://redis.io/topics/cluster-spec>
 - Not yet productive, not even stable.
 - Keep your eye in this project.
- <https://github.com/kni/redis-sharding>
 - Interesting project for hash based sharding.



Installing

- Before run the make/install, first compile the dependencies:
 - `cd deps; make hiredis lua jemalloc linenoise`
 - Then, make as usual



Puppet and Redis

- One of our engineers at Palomino already published a module for Redis on Puppet:
 - <https://github.com/narcisbcn/puppet-redis>



Greetins

- Santiago Lertora (He proposed this talk)
- Dvir Volk (I took some stuff from his presentation)