Couchbase and Rails

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Couchbase

What is Couchbase

Easy Scalability

Grow cluster without application changes, without downtime


Bonanza!

Consistent High Performance

Sub-millisecond read/write response & high throughput

Always On 24x365

No downtime for software upgrades, hardware maintenance, etc

Flexible Data Model

JSON document model with no fixed schema

gem i couchbase

Basic K/V Operations

```
Couchbase.bucket.incr("user:#{id}:hits", :initial => 1)
Couchbase.bucket.set("user:#{id}:ip", "192.0.43.10")
Couchbase.bucket.get("user:#{id}:token", :ttl => 1.day)
```

Rails Cache Store

```
config.cache_store = :couchbase_store,
                     :bucket => 'cache',
                     :expires_in => 1.hour
```

Rails Session Store

```
config.session_store :couchbase_store,
                     :namespace => "session:",
                     :couchbase => {
                       :bucket => 'sessions',
                       :default_format => :json
                     }
```

```
gem i couchbase-model
```

Generate Configuration

```
$ rails generate couchbase:config
      create  config/couchbase.yml
```

config/couchbase.yml

```
common: &common
  node_list:
    - example.com:8091
    - example.org:8091
    - example.net:8091
  username:
  password:

development:
  <<: *common
  bucket: example_development

production:
  <<: *common
  bucket: example_test
```

Modeling

```
class Beer < Couchbase::Model
  attribute :name
  attribute :abv, :default => 0
  attribute :ibu, :default => 0
  attribute :category

  belongs_to :brewery

  view :all, :limit => 31

  before_save do |doc|
    doc.abv = doc.abv.to_f
    doc.ibu = doc.ibu.to_f
  end
end
```

Views: Generator

```
$ rails generate couchbase:view beer avg_by_category
      create  app/models/beer/avg_by_category/map.js
      create  app/models/beer/avg_by_category/reduce.js
```

Views: Map

Find average Alcohol by Volume (ABV) for each category

```
function(doc, meta) {
  if (doc.type == "beer" && doc.category && doc.abv > 0) {
    emit(doc.category, doc.abv);
  }
}
```

Views: Reduce. The Hard Way

```
function (keys, values, rereduce) {
  var ret = {sum: 0, count: 0};
  if (rereduce) {
    for (var i = 0; i < values.length; ++i) {
      ret.sum += values[i].sum;
      ret.count += values[i].count;
    }
  } else {
    ret.sum = sum(values);
    ret.count = values.length;
  }
  ret.avg = ret.sum / ret.count;
  return ret;
}
```

Native Built-in Reducers

http://www.couchbase.com/docs/couchbase-devguide-2.0/using-built-in-reduces.html

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`_stats`

Views: Reduce. Built-in _stats

```
{
  rows: [
    {
      key: "Belgian and French Ale",
      value: {
        sum: 1972.86,
        count: 267,
        min: 3.5,
        max: 16,
        sumsqr: 15772.54060000001
      }
    },
    ....
```

Views: Model

```
class Beer < Couchbase::Model
  ...

  view :avg_by_category, :group => true,
                         :include_docs => false

  ...
end
```

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Views: Execution

```
Beer.avg_by_category.each do |beer|
  avg = beer.value["sum"] / beer.value["count"]
  printf("%s: %.2f\n", beer.key, avg)
end
```

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Belgian and French Ale: 7.39
British Ale: 6.93
German Ale: 5.67
German Lager: 6.22
Irish Ale: 5.94
North American Ale: 6.79
North American Lager: 4.97
Other Lager: 4.55
Other Style: 5.82
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function(doc, meta) {
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    emit([doc.country, doc.city], 1);
  }
}
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_count
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Views: Grouping: group_level = 2

```
# in this case group_level=2 behaves like group=true
Brewery.by_location(:group_level => 2).each do |doc|
  puts [doc.key, doc.value].inspect
end
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end
```

```
[["Argentina", "Mendoza"], 1]
[["Argentina", "San Martin"], 1]
[["Australia", "Adelaide"], 1]
[["Australia", "Camperdown"], 1]
[["Australia", "Canning Vale"], 1]
[["Belgium", "Blaugies"], 1]
[["Belgium", "Breendonk"], 2]
...
```

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```

Views: Grouping: `group_level = 1`

```
Brewery.by_location(:group_level => 1).each do |doc|
  puts [doc.key, doc.value].inspect
end
```

Views: Grouping: group_level = 1

```
Brewery.by_location(:group_level => 1).each do |doc|
  puts [doc.key, doc.value].inspect
end
```

```
[["Argentina"], 2]
[["Australia"], 13]
[["Austria"], 10]
[["Belgium"], 98]
[["Belize"], 1]
[["Brazil"], 2]
[["Canada"], 45]
[["China"], 2]
...
```

Views: Grouping: group_level = 1

```
Brewery.by_location(:group_level => 1).each do |doc|
  puts [doc.key, doc.value].inspect
end
```

```
[["Argentina"], 2]
[["Australia"], 13]
[["Austria"], 10]
[["Belgium"], 98]
[["Belize"], 1]
[["Brazil"], 2]
[["Canada"], 45]
[["China"], 2]
...
```

Views: Grouping: group_level = 0

```
# group_level=0 is default behaviour
Brewery.by_location(:group_level => 0).each do |doc|
  puts [doc.key, doc.value].inspect
end
```

Views: Grouping: group_level = 0

```
# group_level=0 is default behaviour
Brewery.by_location(:group_level => 0).each do |doc|
  puts [doc.key, doc.value].inspect
end
```

```
[nil, 1390]
```

Views: Grouping: group_level = 0

```
# group_level=0 is default behaviour
Brewery.by_location(:group_level => 0).each do |doc|
  puts [doc.key, doc.value].inspect
end
```

```
[nil, 1390]
```

Links

- couchbase gem sources
  https://github.com/couchbase/couchbase-ruby-client
- couchbase issue tracker
  http://couchbase.com/issues/browse/RCBC
- couchbase-model gem sources
  https://github.com/couchbase/couchbase-ruby-model
- demo rails application
  https://github.com/couchbaselabs/couchbase-beer.rb

And Even More

Query your geo data

http://couchbase.com/docs/couchbase-manual-2.0/couchbase-views-writing-geo.html

```
function(doc, meta) {
  if (doc.geo && doc.geo.lng && doc.geo.lat && doc.name) {
    var key = {type: "Point",
               coordinates: [doc.geo.lng, doc.geo.lat]};
    var val = {name: doc.name, geo: doc.geo};
    emit(key, val);
  }
}
```

Rich queries with ElasticSearch

http://couchbase.com/docs/couchbase-elasticsearch/

Thank you

Questions?