Couchbase and Rails

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What is Couchbase

Easy Scalability

Grow cluster without application changes, without downtime

Bonanza!
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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

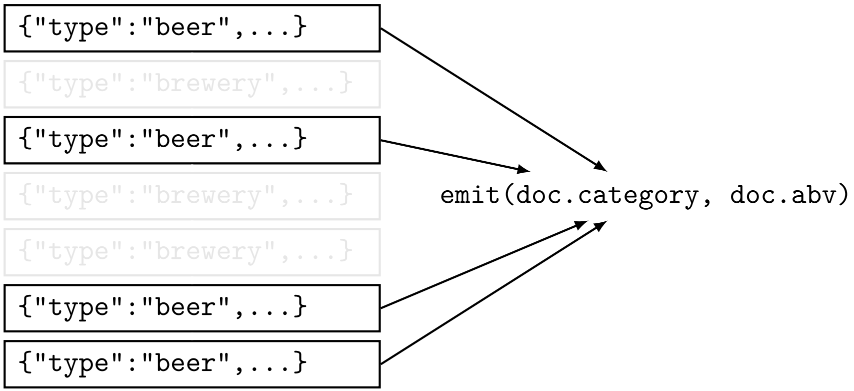
  view :all, :limit => 31

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

Views: How It Works: Map

```
{"type":"beer",...}
{"type":"brewery",...}
{"type":"beer",...}
{"type":"brewery",...}
{"type":"brewery",...}
{"type":"beer",...}
{"type":"beer",...}
```

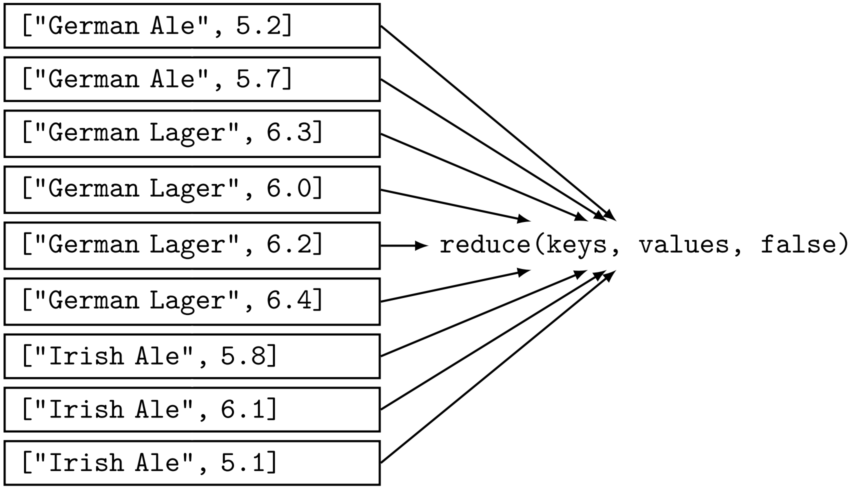
Views: How It Works: Map



Views: How It Works: Reduce

```
["German Ale", 5.2]
["German Ale", 5.7]
["German Lager", 6.3]
["German Lager", 6.0]
["German Lager", 6.2]
["German Lager", 6.4]
["Irish Ale", 5.8]
["Irish Ale", 6.1]
["Irish Ale", 5.1]
```

Views: How It Works: Reduce



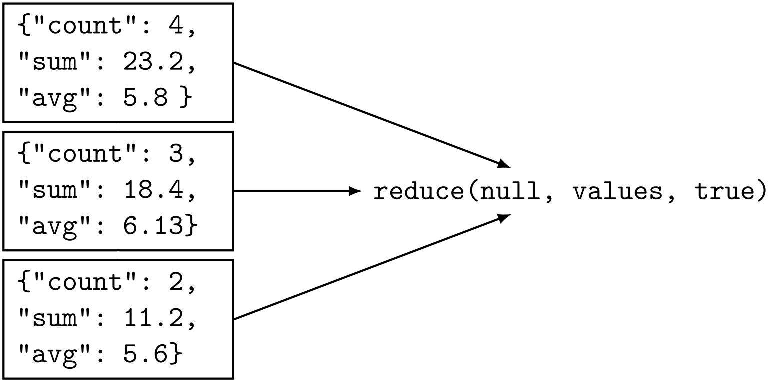
Views: How It Works: Rereduce

```
{"count": 4,
"sum": 23.2,
"avg": 5.8 }
```

```
{"count": 3,
"sum": 18.4,
"avg": 6.13}
```

```
{"count": 2,
"sum": 11.2,
"avg": 5.6}
```

Views: How It Works: Rereduce



```
{"count": 4,
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{"count": 3,
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```

```
{"count": 2,
"sum": 11.2,
"avg": 5.6}
```

```
reduce(null, values, true)
```

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

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

Views: Reduce

```
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;
}
```

Views: Reduce

```
function (keys, values, rereduce) {
  var ret = {sum: 0, count: 0};
  if (rereduce) { // false
    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;
}
```

Views: Reduce

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function (keys, values, rereduce) {
  var ret = {sum: 0, count: 0};
  if (rereduce) { // true
    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;
}
```

Views: Model

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

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


  ...
end
```

Views: Execution

```
001:0> Beer.avg_by_category.each do |beer|
002:1*   printf("%s: %.2f\n", beer.key, beer.value["avg"])
003:1> end
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
nil
```

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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);
  }
}
```

ElasticSearch Integration

Rich queries with ElasticSearch

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

Thank you

Questions?