New features in Elasticsearch 1.0

@lucacavanna

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elasticsearch.

what is elasticsearch?

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RESTful

document oriented

analytics

schema-free

search

Lucene

open source

distributed

real-time

JSON

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Setup

```
$ wget https://download.elasticsearch.org/
elasticsearch/elasticsearch/elasticsearch-1.0.1.zip

$ unzip elasticsearch-1.0.1.zip

$ cd elasticsearch-1.0.1

$ bin/elasticsearch
```

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Setup

```
$ curl localhost:9200

{
  "status" : 200,
  "name" : "Moondark",
  "version" : {
    "number" : "1.0.1",
    "build_hash" : "5c03844e1978e5cc924dab2a423dc63ce881c42b",
    "build_timestamp" : "2014-02-25T15:52:53Z",
    "build_snapshot" : false,
    "lucene_version" : "4.6"
  },
  "tagline" : "You Know, for Search"
}
```

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Index

```
$ curl -XPUT localhost:9200/twitter/tweet/1 -d '
{
  "tweet" : "New features in elasticsearch 1.0",
  "name" : "Luca Cavanna",
  "nick" : "lucacavanna",
  "date" : "2014-03-18",
  "location" : {
    "lat" : "13.4",
    "lon" : "52.5"
  },
  "retweets" : 50
}
'
```

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Get

```
$ curl -XGET localhost:9200/twitter/tweet/1
```

Delete

```
$ curl -XDELETE localhost:9200/twitter/tweet/1
```

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Search

```
$ curl -XGET localhost:9200/_search?q=elasticsearch
```

```
$ curl -XGET localhost:9200/_search -d '
{
  "query" : {
    "query_string" : {
      "query" : "elasticsearch AND features"
    }
  }
}
'
```

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Search - query DSL

```
$ curl -XGET localhost:9200/_search -d '
{
  "query" : {
    "filtered" : {
      "query" : {
        "bool" : {
          "must" : [
            { "match" : {
                "tweet" : {
                  "query" : "elasticsearch features",
                  "operator" : "AND"
            }}}
          ],
          "should" : [
            { "match" : {"tweet" : "pizza"} }
          ]
        }
      },
      "filter" : {
        "range" : { "date" : {"from" : "2014-03-01"} }
      }
    }
  }
}
'
```

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v1.0

12 Feb 2014

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snapshot & restore

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backup in 0.90

- disable flush
- find all primary shards location (optional)
- copy files (rsync)
- re-enable flush

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backup in 1.0 - repository

```
$ curl -XPUT localhost:9200/_snapshot/local -d '
{
  "type" : "fs",
  "settings" : {
    "location" : "/data/es/backup"
  }
}
'
```

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backup in 1.0 - snapshot

```
$ curl -XPUT localhost:9200/_snapshot/local/backup_1 -d '
{
  "indices" : "*,-twitter*"
}
'
```

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restore in 0.90

- close the index
- find all existing shards
- replace files with ones from backup
- re-open the index

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restore in 1.0

- close the index/indices

```
$ curl -XPOST localhost:9200/2014-*/_close
```

- restore existing snapshot

```
$ curl -XPOST localhost:9200/_snapshot/local/backup_1/_restore -d '
{
  "indices" : "2014-*"
}
'
```

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aggregations

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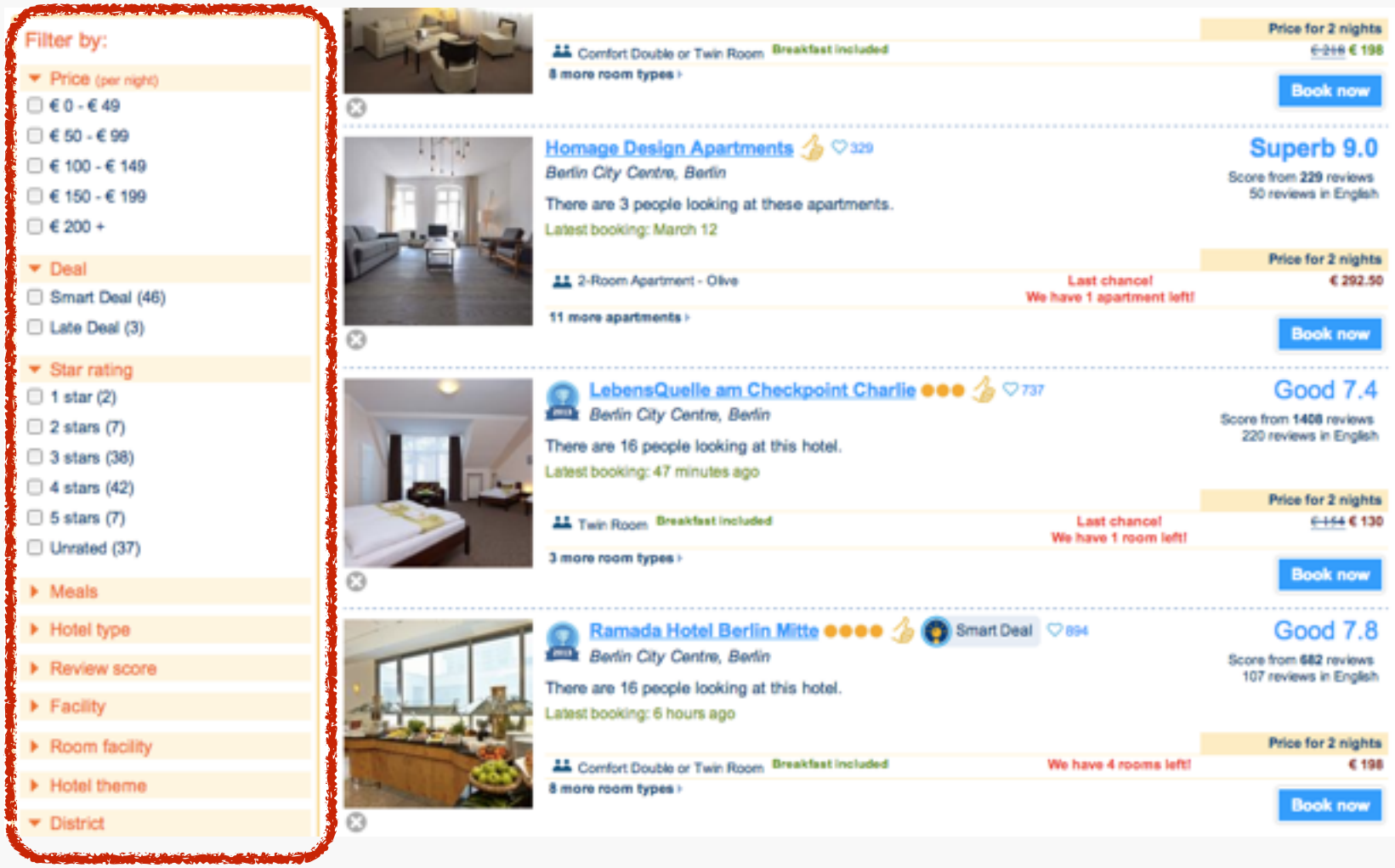
Facets in 0.90



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Facets in 0.90

- terms / terms stats
- range
- histogram / date histogram
- statistical
- geo distance
- filter / query

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retweets stats per user

```
$ curl -XGET localhost:9200/twitter/_search -d '
{
  "facets" : {
    "retweets_per_user" : {
      "terms_stats" : {
        "key_field" : "nick",
        "value_field" : "retweets"
      }
    }
  }
}
'
```

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retweets stats per user

```
{
  "facets" : {
    "retweets_per_user" : {
      "_type" : "terms_stats",
      "missing" : 0,
      "terms" : [{
        "term" : “lucacavanna”,
        "count" : 1,
        "total_count" : 1,
        "min" : 50.0,
        "max" : 50.0,
        "total" : 50.0,
        "mean" : 50.0
      }]
    }
  }
}
```

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What’s wrong?

Nothing!

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cool, then…

give me the retweets stats per user, grouped by month…

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The answer is…

aggregations

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retweets stats per user per month

```
$ curl -XGET localhost:9200/twitter/_search -d '
{
  "aggs" : {
    "month" : {
      "date_histogram" : {
        "field" : "date", "interval" : "month"
      },
      "aggs" : {
        "user" : {
          "terms" : { "field" : "nick" }
        },
        "aggs" : {
          "retweets" : {
            "stats" : { "field" : "retweets" }
          }
        }
      }
    }
  }
}
'
```

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retweets stats per user per month

```
{
  "aggregations" : {
    "month" : {
      "buckets" : [ {
          "key" : 1393632000000,
          "doc_count" : 1,
          "user" : {
            "buckets" : [ {
                "key" : "lucacavanna",
                "doc_count" : 1,
                "retweets" : {
                  "count" : 1,
                  "min" : 50,
                  "max" : 50,
                  "avg" : 50,
                  "sum" : 50
                }
            } ]
          }
      } ]
    }
  }
}
```

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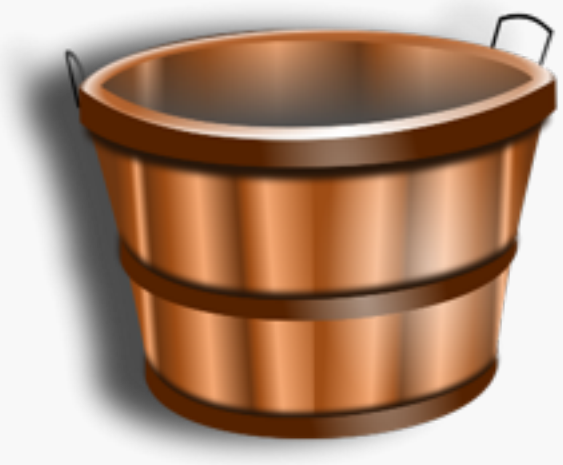
aggregations



buckets

metrics

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buckets

- global
- filter
- missing
- terms
- range
- date_range
- ip_range
- histogram
- date_histogram
- geo_distance
- nested

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metrics

- value_count
- stats
- extended_stats
- avg
- min
- max
- sum

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distributed percolator

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register query

```
$ curl -XPUT localhost:9200/twitter/.percolator/es-features -d '
{
  "query" : {
    "query_string" : {
      "query" : "elasticsearch AND features"
    }
  },
  "alert_type" : "mention"
}
'
```

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percolate document

```
$ curl -XGET localhost:9200/twitter/tweet/_percolate -d '
{
  "doc" : {
    "tweet" : "New features in elasticsearch 1.0",
    "name" : "Luca Cavanna",
    "nick" : "lucacavanna",
    "date" : "2014-03-18",
    "retweets" : 50
  }
}
'
```

```
{ …
  "total" : 1,
  "matches" : [{
    "_index" : "twitter", "_id" : "es-features"
  }]
}
```

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0.90 VS 1.0

- single shard
- sequential execution
- _percolator index
- single index percolation

- arbitrary number of shards
- parallel execution
- .percolator type (any index)
- multi index percolation

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new percolation features in 1.0

- percolate existing documents
- percolate count api
- filter support (in addition to queries)
- highlighting
- scoring
- multi percolate
- support for aggregations

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cat/* api

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Which node is the master?

```
$ curl localhost:9200/cluster/_state/nodes,master_node?pretty

{
  "cluster_name" : "elasticsearch",
  "master_node" : "yT4GUfIWTY6aJdQtWVEFpw",
  "nodes” : {
    "R-5_0LiORAWmr_cYLXO69Q" : {
      "name" : "Woodgod",
      "transport_address" : "inet[/192.168.0.12:9302]",
      "attributes" : {}
    },
    "yT4GUfIWTY6aJdQtWVEFpw" : {
      "name” : "Moondark",
      "transport_address" : "inet[/192.168.0.12:9300]",
      "attributes" : {}
    },
    "pR0NmKeGTVGget2O1qSqCQ" : {
      "name" : "Adaptoid",
      "transport_address" : "inet[/192.168.0.12:9301]",
      "attributes" : {}
    }
  }
}
```

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Which node is the master? (0.90)

```
$ curl localhost:9200/cluster/_state/nodes,master_node?pretty

{
  "cluster_name" : "elasticsearch",
  "master_node" : "yT4GUfIWTY6aJdQtWVEFpw",
  "nodes” : {
    "R-5_0LiORAWmr_cYLXO69Q" : {
      "name" : "Woodgod",
      "transport_address" : "inet[/192.168.0.12:9302]",
      "attributes" : {}
    },
    "yT4GUfIWTY6aJdQtWVEFpw" : {
      "name” : "Moondark",
      "transport_address" : "inet[/192.168.0.12:9300]",
      "attributes" : {}
    },
    "pR0NmKeGTVGget2O1qSqCQ" : {
      "name" : "Adaptoid",
      "transport_address" : "inet[/192.168.0.12:9301]",
      "attributes" : {}
    }
  }
}
```

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Which node is the master? (0.90)

```
$ curl localhost:9200/cluster/_state/nodes,master_node?pretty

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  "nodes” : {
    "R-5_0LiORAWmr_cYLXO69Q" : {
      "name" : "Woodgod",
      "transport_address" : "inet[/192.168.0.12:9302]",
      "attributes" : {}
    },
    "yT4GUfIWTY6aJdQtWVEFpw" : {
      "name” : "Moondark",
      "transport_address" : "inet[/192.168.0.12:9300]",
      "attributes" : {}
    },
    "pR0NmKeGTVGget2O1qSqCQ" : {
      "name" : "Adaptoid",
      "transport_address" : "inet[/192.168.0.12:9301]",
      "attributes" : {}
    }
  }
}
```

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Which node is the master? (0.90)

```
$ curl localhost:9200/cluster/_state/nodes,master_node?pretty

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  "nodes” : {
    "R-5_0LiORAWmr_cYLXO69Q" : {
      "name" : "Woodgod",
      "transport_address" : "inet[/192.168.0.12:9302]",
      "attributes" : {}
    },
    "yT4GUfIWTY6aJdQtWVEFpw" : {
      "name” : "Moondark",
      "transport_address" : "inet[/192.168.0.12:9300]",
      "attributes" : {}
    },
    "pR0NmKeGTVGget2O1qSqCQ" : {
      "name" : "Adaptoid",
      "transport_address" : "inet[/192.168.0.12:9301]",
      "attributes" : {}
    }
  }
}
```

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Which node is the master? (1.0)

```
$ curl localhost:9200/_cat/master

yT4GUfIWTY6aJdQtWVEFpw Lucas-MacBook-Air.local 192.168.0.12 Moondark
```

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_cat*/api

- /_cat/allocation
- /_cat/aliases
- /_cat/count
- /_cat/indices
- /_cat/recovery
- /_cat/shards
- /_cat/health
- /_cat/thread_pool
- /_cat/pending_tasks
- /_cat/master
- /_cat/nodes

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thank you!

@lucacavanna

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