

RediSearch



Agenda

- Why??
- Example Use Case
- Autocompletion
- Loading Data
- Searching
- Aggregating
- RedisLabs Extras

Why Search?

Search

RDBMS

Where's my data?

Give me *this* data

Index data but also store

Store data but also index

Built for de-normalized data

Optimized for normalized data

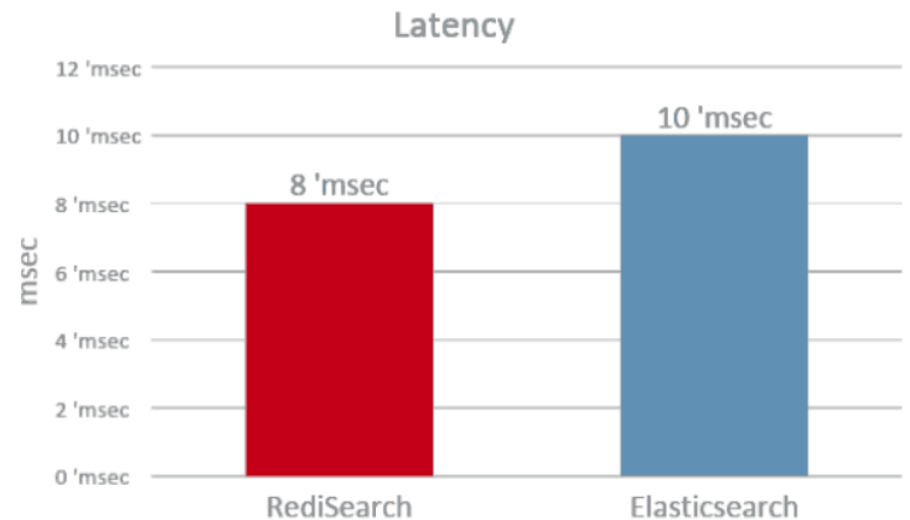
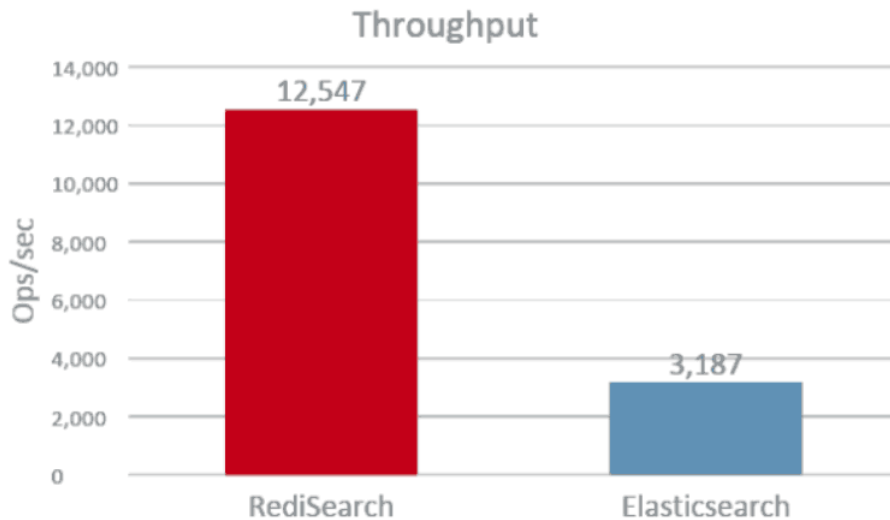
AP in CAP Theorum

CP in CAP Theorum



Why Search in Redis??

Speed !!



Why Search in Redis??

Now !!

Documents are available for reading *immediately*

Why Search in Redis??

Easy !!

Load the RediSearch module and go

Example Use Case

Fortune 500 Companies

- Rank
- CEO
- Sector
- Industry
- Ticker

Set Up Autocompletion

```
> FT.SUGLEN ac
0
> FT.SUGADD ac Walmart 1.0
1
> FT.SUGADD ac "Berkshire Hathaway" 1.0
2
> FT.SUGADD ac "Apple" 1.0
3
...
> FT.SUGLEN ac
500
```


Query the Autocompleter

```
> FT.SUGGET ac birk  
(empty list or set)  
  
# No matches - Let's try Fuzzy matching  
> FT.SUGGET ac birk FUZZY  
1) "Berkshire Hathaway"
```

Code Example

```
from redisearch import AutoCompleter, Suggestion
ac = AutoCompleter(
    'ac',
    conn = client.redis
)

if ac.len() < 1:
    load_data()

for row in csv_reader:
    ac.add_suggestions(Suggestion(row[1], 1.0))
```

Loading Data

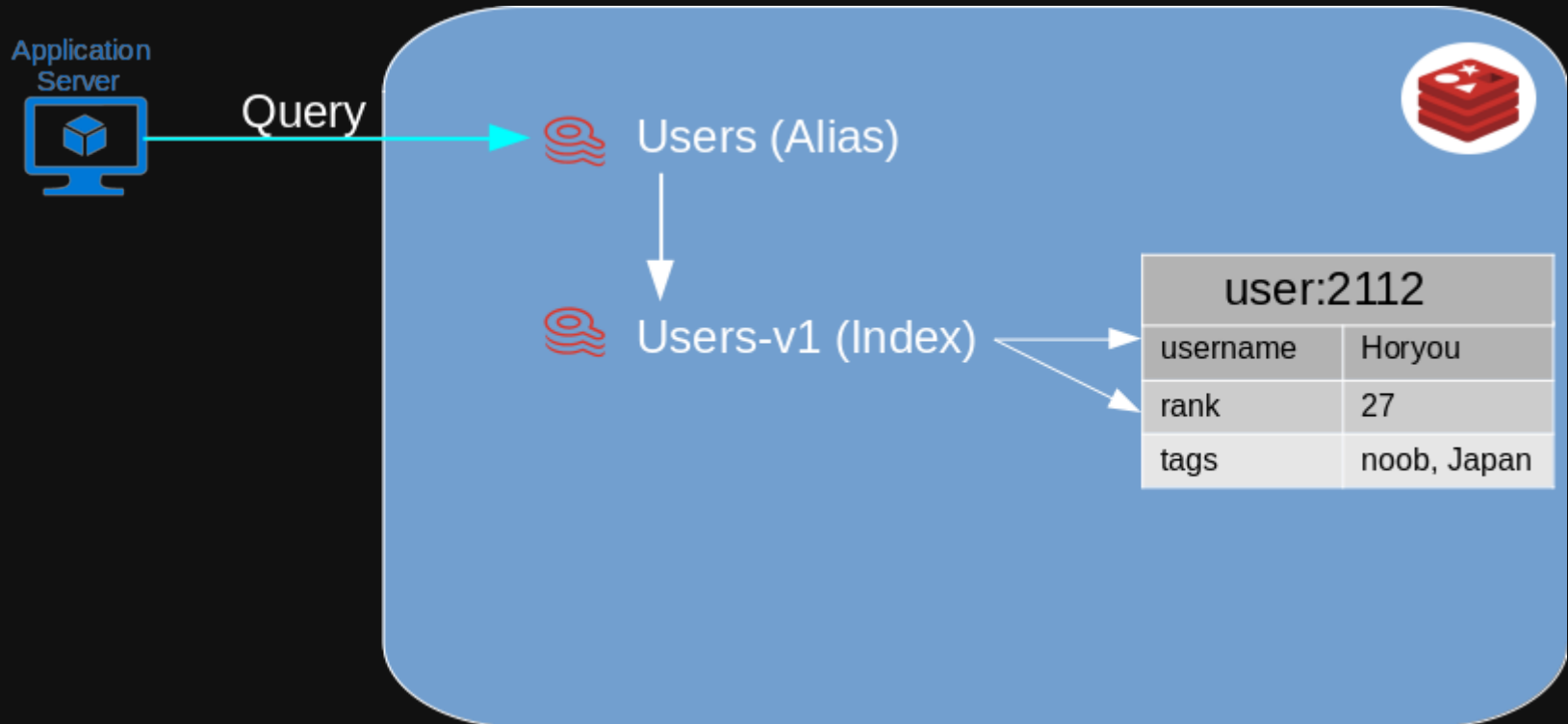
Pro-Tip

Consider aliasing your Index
before you need to re-index your data

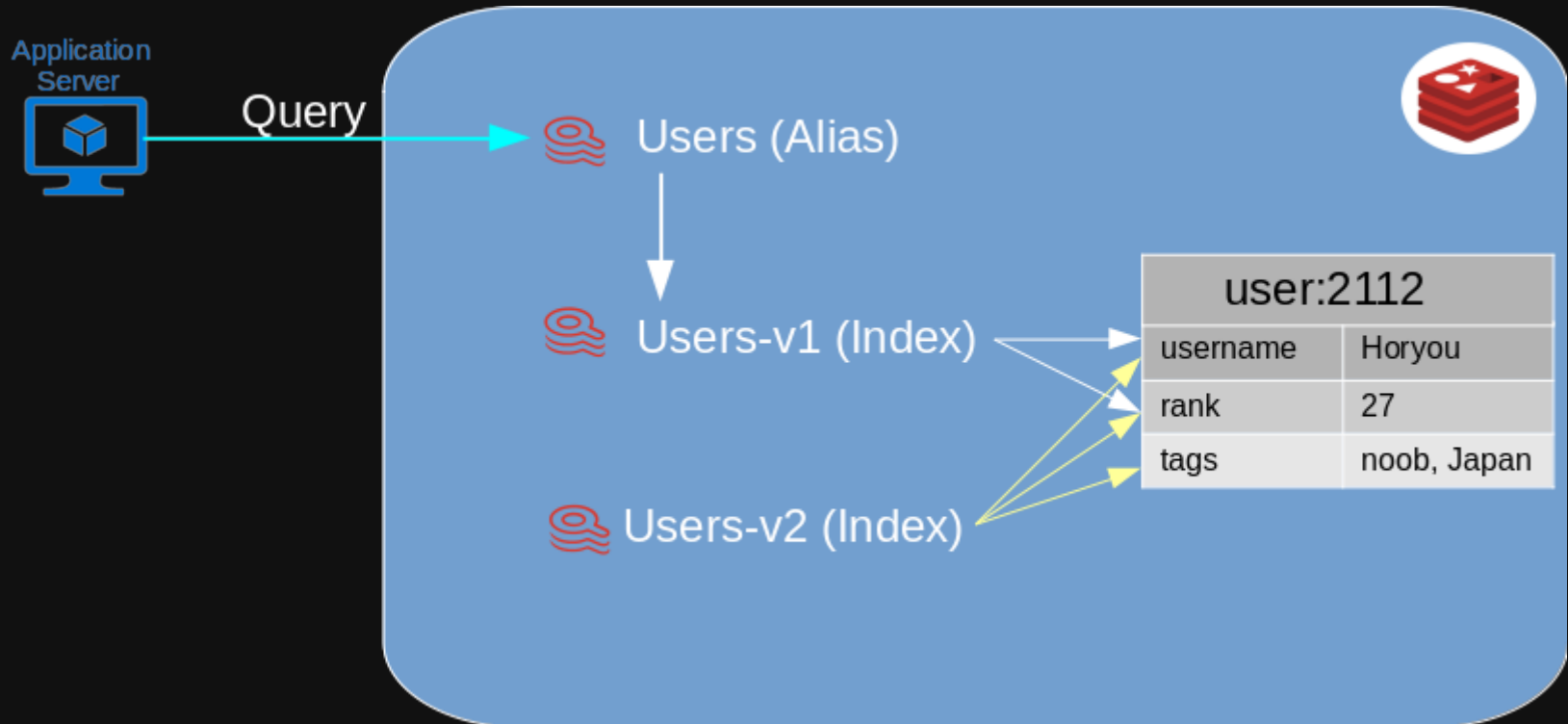
Why Alias?

- I want to modify my schema without application changes
- I want to future proof my application

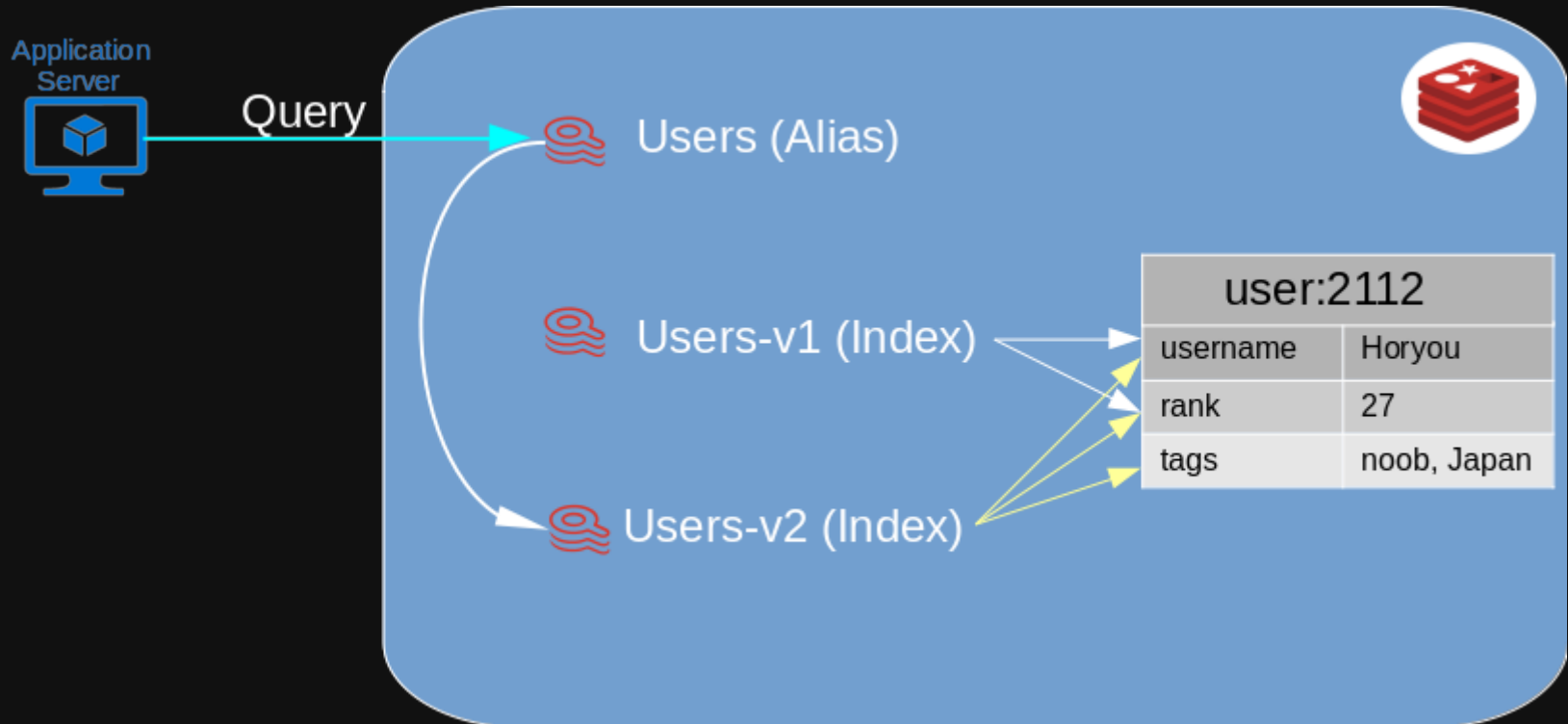
Alias: Initial



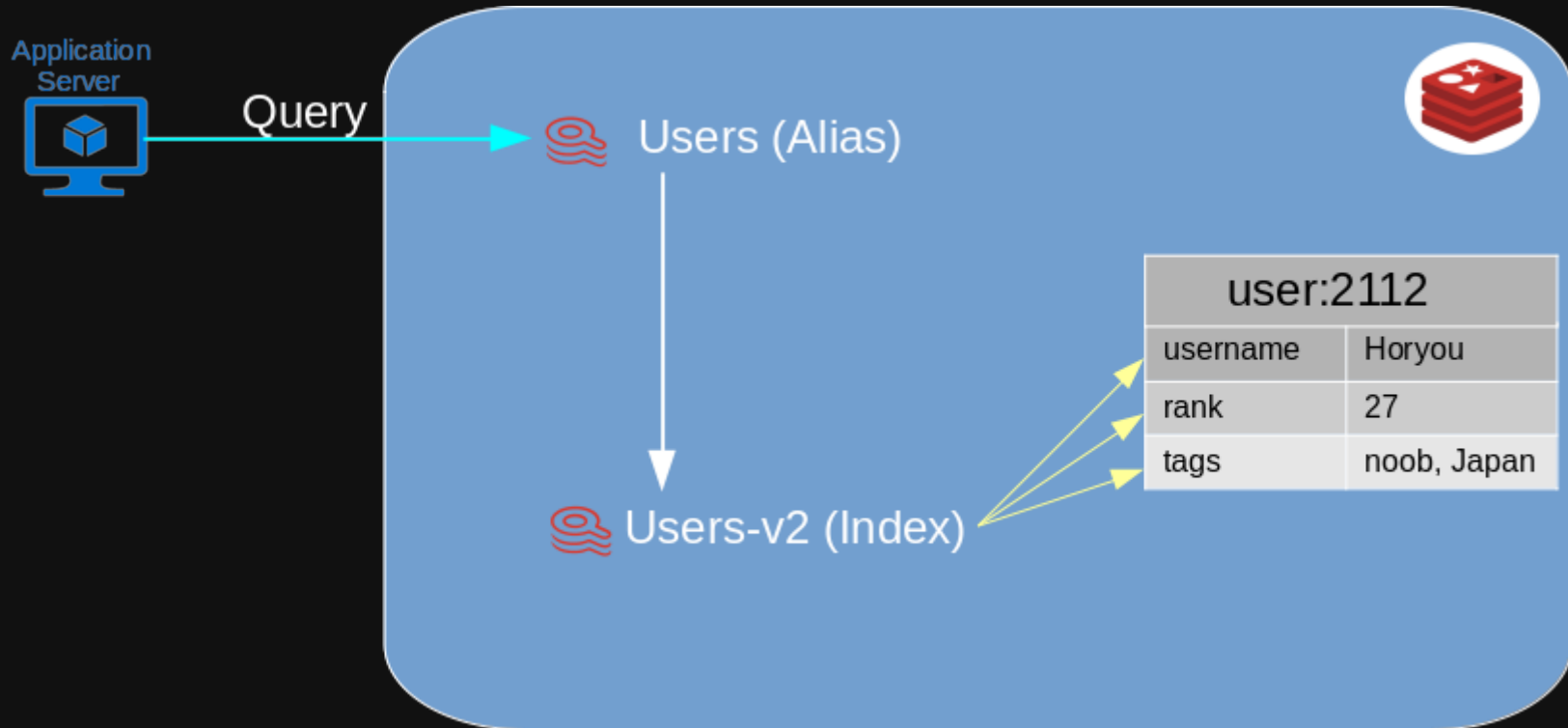
Alias: Create New Index with tags too



Alias: Flip Alias to New Index



Alias: Remove old index



By default, `FT.DROPINDEX` **does not delete** the document hashes associated with the index.

Adding the `DD` option deletes the hashes as well.

Create our Schema

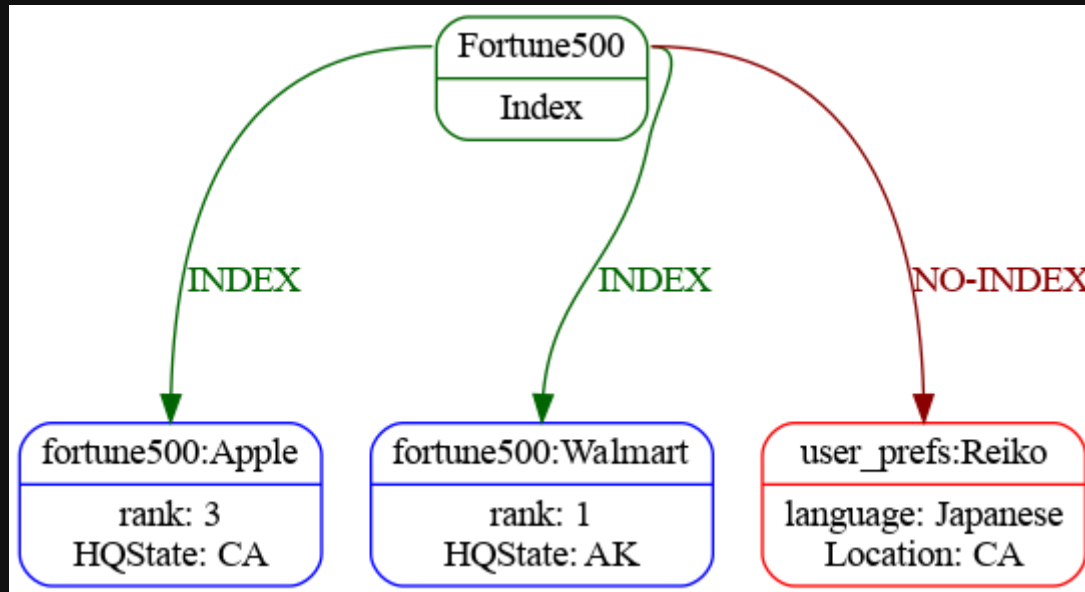
```
FT.CREATE fortune500
  ON HASH PREFIX 1 fortune500:
  LANGUAGE English
  SCORE_FIELD title SCORE 0.5
  SCHEMA
    title TEXT WEIGHT 5.0
    employees NUMERIC SORTABLE
```

Schema breakdown

```
FT.CREATE INDEX_NAME  
  ON HASH PREFIX count PREFIX1 PREFIX2
```

```
FT.CREATE myIndex  
  ON HASH PREFIX 3 end_user: admin_user: ro_user:
```

Prefixes?!?



- Writing applications do not have to be search aware
- Add search indices on “legacy” data
- Flexibility to add new fields or un-indexed fields

Languages

```
FT.CREATE fortune500  
...  
LANGUAGE English  
...
```

Arabic	Danish	Dutch	English	Finnish
French	German	Hungarian	Italian	Norwegian
Portuguese	Romanian	Russian	Spanish	
Swedish	Tamil	Turkish	Chinese	

Languages - Why?

Stemming

- search going will return “going”, “go”, “gone”
- plurals, verb forms
- suffixes eg: ational ation ator: replace by ate
- custom dictionaries are possible

Scoring

```
FT.CREATE fortune500  
...  
SCORE_FIELD title SCORE 0.5  
...
```

Scoring

```
> FT.SEARCH fortune500 "%computer%" WITHSCORES
2) "fortune500:ComputerSciences"
3) "2.5"
4) 1) "rank"
   2) "379"
   3) "website"
   4) "http://www.dxc.technology"
   ...
5) "fortune500:ActivisionBlizzard"
6) "0.5"
7) 1) "rank"
   2) "406"
   ...
10) "Computer Software"
```


Searching

https://oss.redislabs.com/redisearch/Query_Syntax/

Searching

Range Match

```
@assets:[20000, 30000]
```

Negative Match

```
-@hqstate:(NY|CA)
```

Searching

Optional Match

```
~@sector:\"Health Care\"
```

Fuzzy Match

```
~@ceo:%%Brian%%
```

Searching - Find Everything

```
> FT.SEARCH fortune500 "*" LIMIT 0 1
1) (integer) 500
2) "fortune500:TollBrothers"
3) 1) "rank"
   2) "497"
   3) "website"
   4) "http://www.tollbrothers.com"
   5) "employees"
   6) "4200"
   7) "sector"
   8) "Engineering & Construction"
   9) "industry"
   ...
```

Searching - Query by field

```
> FT.SEARCH fortune500 "@assets:[20000, 30000]
    -@hqstate:NY ~@sector:\"Health Care\"" WITHSCORES
2) "fortune500:CommunityHealthSystems"
3) "0.2000000000000000001"
4) 1) "rank"
    2) "130"
    7) "sector"
    8) "Health Care"
29) "fortune500:Level3Communications"
30) "0.1000000000000000001"
31) 1) "rank"
    2) "336"
    7) "sector"
    8) "Telecommunications"
```

Searching - Code

```
from redisearch import Client, Query
client = Client('fortune500')
client.search(Query("technology").limit_fields('sector')).docs
```

Searching - Tags

Pros

Easy to add tags

Super efficient search

Low storage requirements

Cons

Low cardinality is critical

Only exact matches

Aggregations

<https://oss.redislabs.com/redisearch/Aggregations/>

Aggregations

```
> FT.AGGREGATE fortune500 "*" GROUPBY 1 @hqstate
  REDUCE COUNT 0 AS my_count SORTBY 2 @my_count DESC LIMIT 0 2
1) (integer) 37
2) 1) "hqstate"
   2) "ny"
   3) "my_count"
   4) "54"
3) 1) "hqstate"
   2) "ca"
   3) "my_count"
   4) "53"
```

Aggregations with functions

```
> FT.AGGREGATE fortune500 "*" APPLY "upper(@hqstate)" AS state
GROUPBY 1 @state REDUCE COUNT 0 AS my_count
SORTBY 2 @my_count DESC LIMIT 0 2
1) (integer) 37
2) 1) "state"
   2) "NY"
   3) "my_count"
   4) "54"
3) 1) "state"
   2) "CA"
   3) "my_count"
   4) "53"
```

Aggregations with functions

```
from redisearch import Client, aggregation, reducers
client = Client('fortune500')
ar = aggregation.AggregateRequest().
    group_by("@hqcity", reducers.count().alias('my_count')).
    sort_by(aggregation.Desc('@my_count'))
client.aggregate(ar).rows
```

Aggregations Caveat



RedisLabs Extras



Redis Insight

<https://redislabs.com/redisinsight/>

Free!

redisinsight

search

OVERVIEW

BROWSE

Browser

CLI

Streams

RedisGraph

RedisGears β

RedisTimeSeries

RediSearch

ANALYSE

Memory Analysis

Profiler

Slowlog

BULK ACTIONS β

DATABASE

Configuration

Client List

SETTINGS

AGGREGATE

fortune500

Execute Query

Use Shift+Enter to format your query in multiple lines

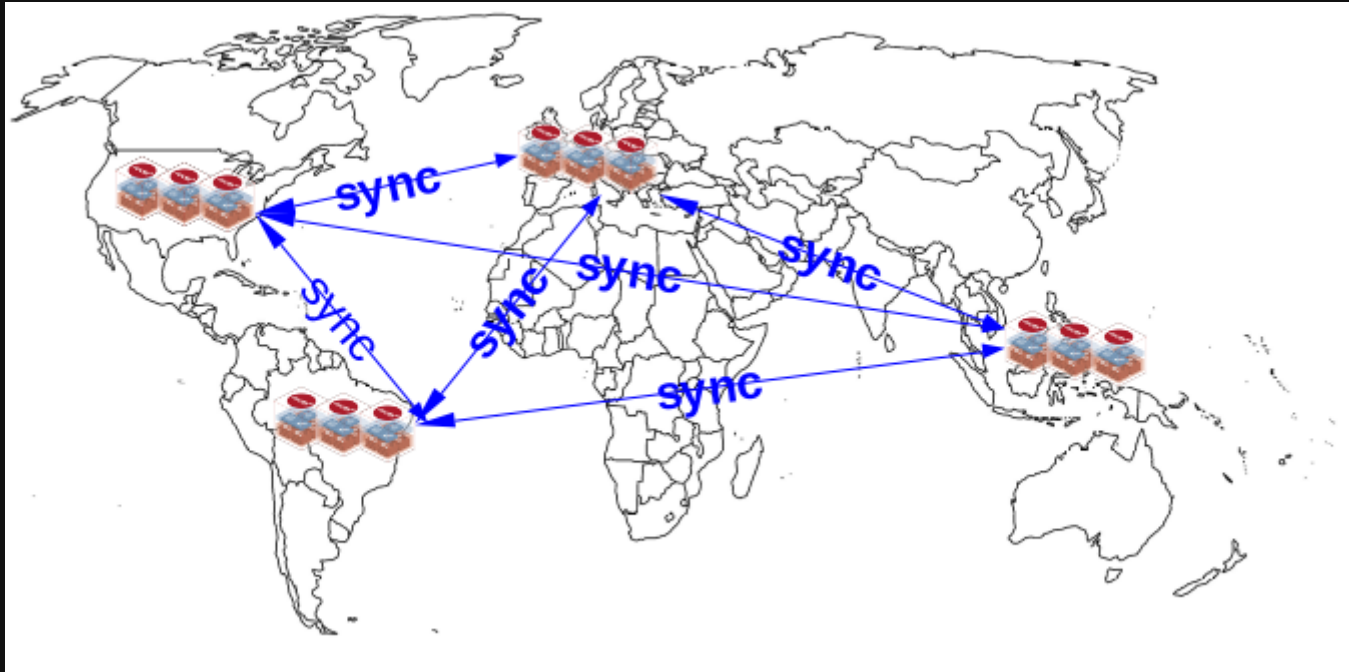
FT.AGGREGATE fortune500: "*" GROUPBY 2 @hqstate @industry REDUCE COUNT 0 AS my_count SORTBY 4 @... [] ↺ ^ (x)

hqstate	industry	my_count
tx	petroleum refining	6
ny	commercial banks	6
ny	diversified financials	6
ny	insurance: property and casualty (stock)	6
ca	semiconductors and other electronic components	6
tx	pipelines	5
tx	mining, crude-oil production	5
mi	motor vehicles and parts	5
ca	computer software	5
ca	internet services and retailing	5

Total Documents Matched: 365

See More

Redis Enterprise Active/Active



- Based off of CRDTs
- Used for
 - Disaster Recovery
 - Data Migration
 - Enhanced Uptime

Thank you