Playing Football with Couchbase

Eran Keydar - INPLAY

Agenda

- About INPLAY & me
- NoSQL What and Why?
- Couchbase Overview
- Coding examples
- Conclusions

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- “Whatsapp” for football fans
- Chat application with unique tools for football fans:
  - predictions
  - special stickers
  - social media stream
- Successful campaign with ONE

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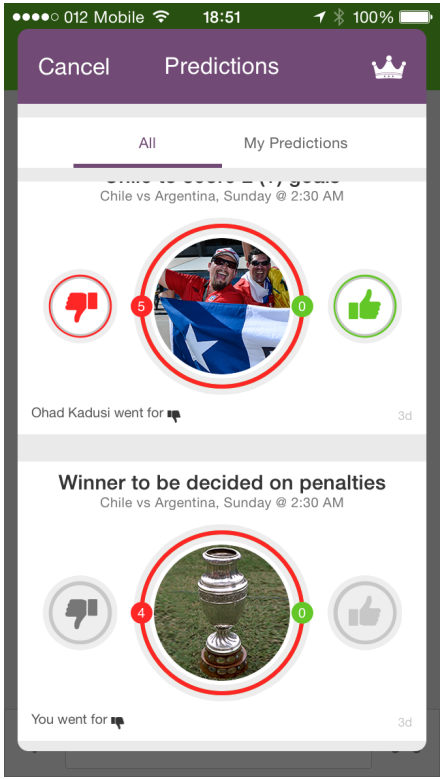
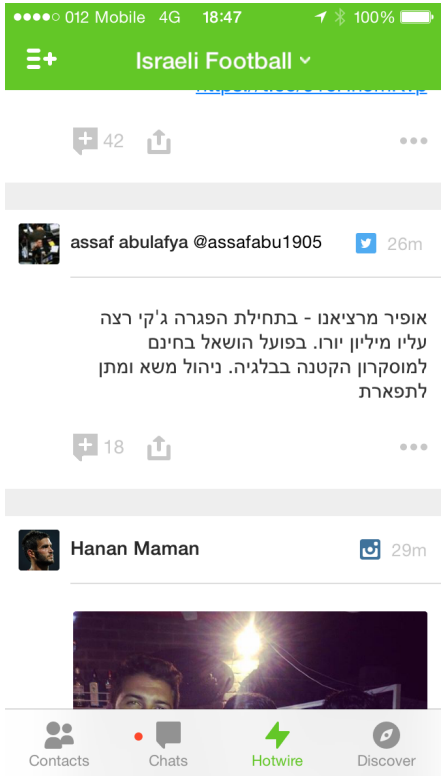
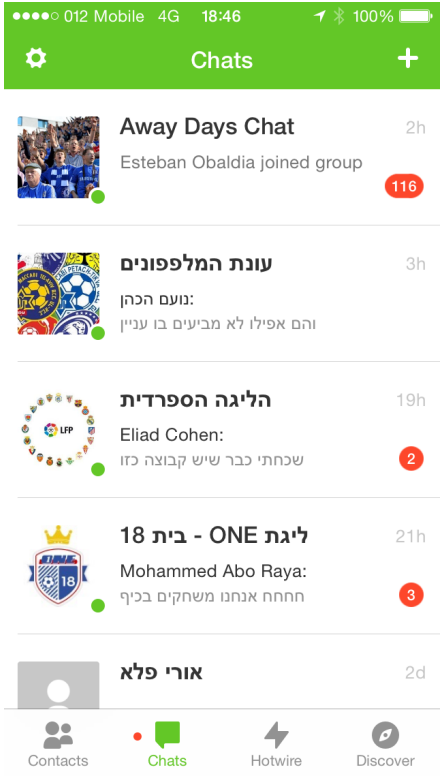
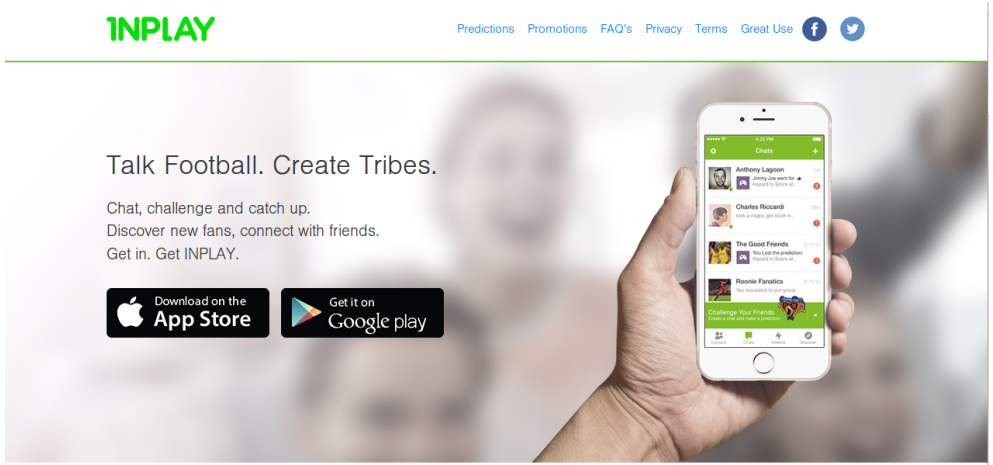

012 Mobile 18:51 100%
Cancel
Predictions
All
My Predictions
Chile vs Argentina, Sunday @ 2:30 AM
5
0
Ohad Kadusi went for
3d
Winner to be decided on penalties
Chile vs Argentina, Sunday @ 2:30 AM
4
0
You went for
3d


012 Mobile 4G 18:47 100%
Israeli Football
42
assaf abulafya @assafabu1905
26m
אופיר מרציאנו - בתחילת הפגרה ג'קי רצה עליו מיליון יורו. בפועל הושאל בחינם למוסקרון הקטנה בבלגיה. ניהול משא ומתן לתפארת
18
Hanan Maman
29m
Contacts
Chats
Hotwire
Discover


012 Mobile 4G 18:46 100%
Chats
Away Days Chat
2h
Esteban Obaldia joined group
116
עונת המלפפונים
3h
נועם הכהן:
והם אפילו לא מביעים בו עניין
הליגה הספרדית
19h
Eliad Cohen:
שכחתי כבר שיש קבוצה כזו
2
ליגת ONE - בית 18
21h
Mohammed Abo Raya:
מחחח אנחנו משחקים בכיף
3
אורי פלא
2d
Contacts
Chats
Hotwire
Discover



ליגת ONE באפליקציית INPLAY מחכה לכם

הצטרפו לליגת ONE באפליקציה שמשגעת את האוהדים בישראל, שחקו במשחק הפרדיקשנס ואולי תצאו עם פלייסטיישן 4 או אייפון 6. הוואטס אפ של הכדורגל (0 תגובות)

מאת מערכת ONE 11:19 18/05/2015

עוד ברשת

- Eran Keydar
- Worked 10 years in Verisity/Cadence
- Moved to server side developing and worked in INPLAY
- Active in Public Knowledge Workshop

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NoSQL

From Wikipedia, the free encyclopedia

> *"Structured storage" redirects here. For the Microsoft technology also known as structured storage, see COM Structured Storage.*

A **NoSQL** (often interpreted as **Not only SQL**[1][2]) database provides a mechanism for storage and retrieval of data that is modeled in means other than the tabular relations used in relational databases. Such databases have existed since the late 1960s, but did not obtain the "NoSQL" moniker until their surge in popularity in the early twenty-first century,[3] triggered by the storage needs of Web 2.0 companies such as Facebook, Google and Amazon.com.[4]

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NoSQL Examples

Document Store

Key/Value Store

elastic

Column-Based

Graph DB

Document Store

& more….

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NoSQL

- RDBMS is hard to scale
- Flexible data model (semi-structured or not-structured) - no migrations
- Built to be distributed, horizontal scaling on commodity HW
- Built for web
- Big Data

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Should I use NoSQL

Let’s discuss….

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Couchbase

- Membase + Couchdb = Couchbase
- Key/Value Store + Document Store

Membase: persistent version of memcache, e. g. caching with disk durability

CocuhDB: document store, which uses json as query language, through map reduce

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High Level Architecture

Couchbase Cluster is a set of **nodes**.

Bucket is the container of the **data**.

Data is composed of **documents**, each document has user defined **key**

Each **key** is hashed and assigned to one of 1024 **vBucket**-s

hash: key space => 1..1024 vBuckets

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For each **vBucket**, there is **active** copy one one node and **replicate**-s on 1-3 other nodes.

All nodes are “equal”, each node holds active copies of **vBucket**-s and replicates of some **vBucket**s

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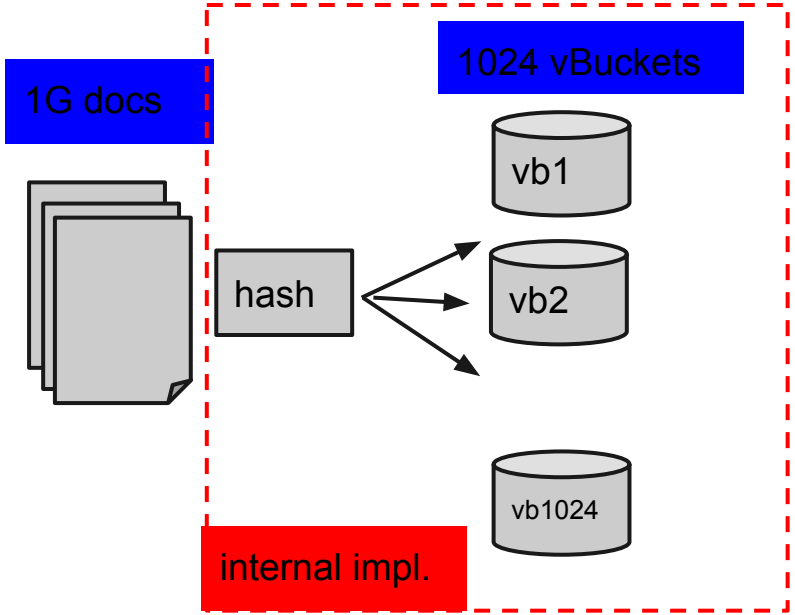
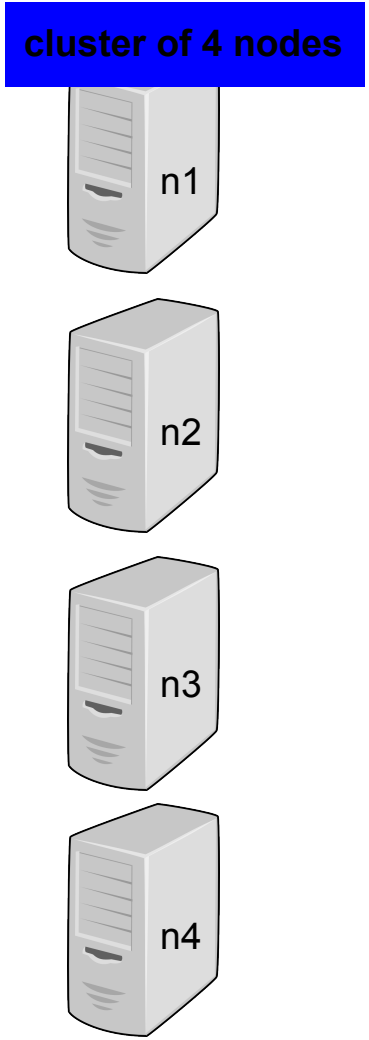
Bucket with 1G docs
replicate = 2

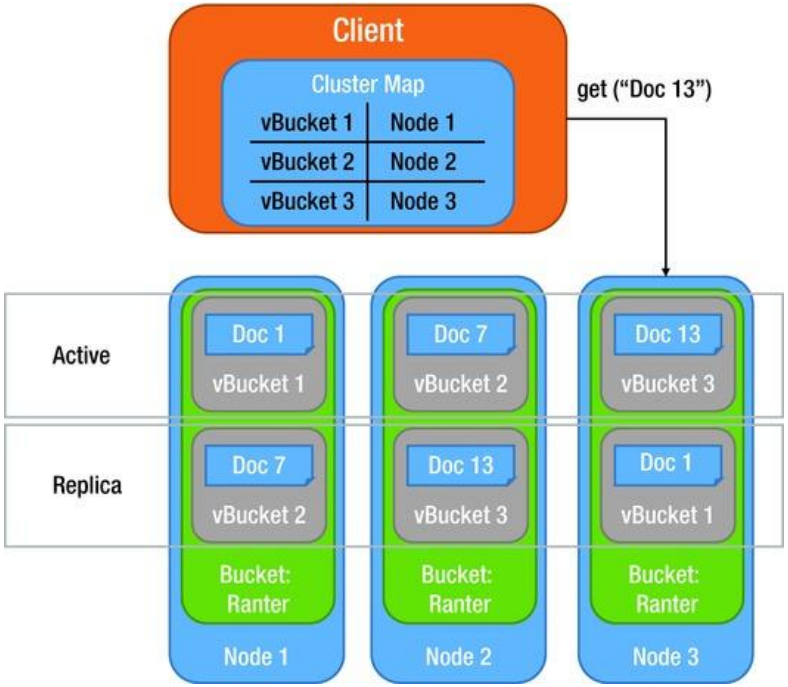


Cluster Map			
VB	A	R1	R2
1	n1	n2	n3
2	n2	n3	n4
3	n3	n1	n4
...			
1024	n1	n3	n4



1024 vBuckets => Each node 256 active copies of vBuckets
2048 replicas => Each node 512 replicas.

vBuckets



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Why Couchbase (IMHO)

- Very Very fast
- Strong Consistency
- Cache & DB
- TTL
- “Hard” to do slow Operations
- Easy to use and deploy

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Pitfalls...

- Objects has to fully read in order to modify
  - to add item to list, you need to read the full list
- Since everything in memory, better to delete what you don’t use
  - Use TTL, whenever you can
- Enterprise Edition vs. Community Edition

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Couchbase Mobile -

Not covered here…

Couchbase mobile is DB for mobile clients (instead of sqlite).

You can also sync it with the cloud.

We did not use it, and it is not covered here, but just to mention…

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Let’s code

How Can We:

- count users per country and send message to IL users
- count users per join year/join month/join day
  - e.g. 2015?
  - e.g March 2015?
  - e.g. 14 March 2014?
- Find all chats of user?

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We can do some manually, like the phone, but:

- big lists
- need to maintain sorted
- need to update every time user change name or country
- Need to transfer the full list in one chunk
- List can be too big for one couchbase doc (20 MB)

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Solution: Views

- Views are a way to define secondary indexes using Javascript and map-reduce
- Views are eventual consistent
- Prior to couchbase 3.0, there was big latency, but in couchbase 3.0 latency is very small

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Views are defined/edited and checked in development mode, and then moved to production

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What’s more?

- N1QL - Query language for the data
- Integration with search engines and other 3rd party?
- Couchbase 4.0 - now in beta

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