



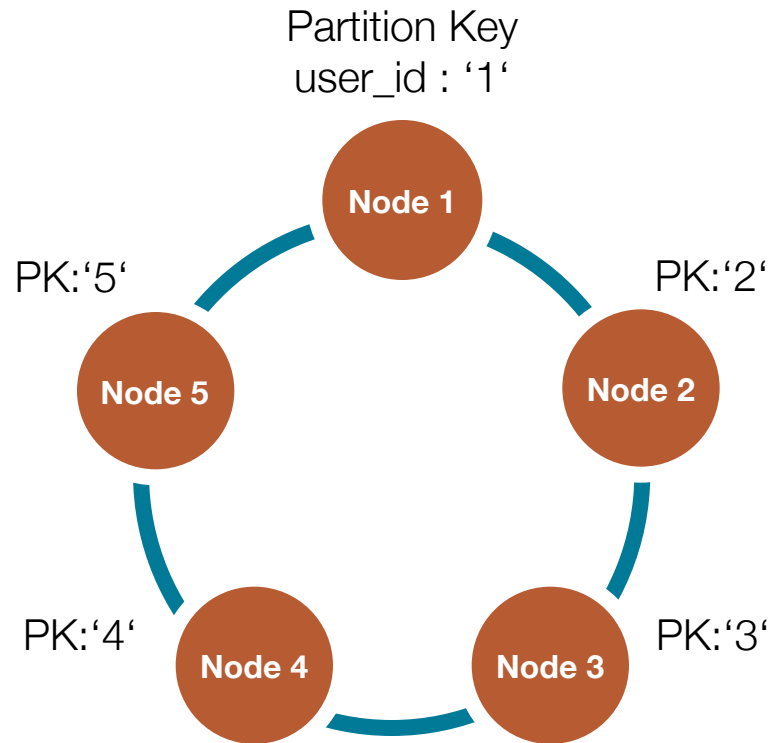
DataStax Enterprise Search

Aaron Regis & Richard Henderson

Agenda

- 1 Introduction DSE Search
 - 2 Lab 5: Hands-on DSE Search
-

The data model is important



```
create table users (  
  user_id int,  
  name text,  
  age int,  
  gender boolean,  
  PRIMARY KEY (user_id) )
```

```
SELECT name FROM users WHERE user_id=1
```

```
SELECT * FROM users WHERE name="Thomas"
```

Not possible out of the box without secondary
Index or further extra tables

```
SELECT * FROM users WHERE age>45 and name="Thomas"
```

No problem with DSE Search

What is the value of DSE Search?

Multi-criteria WHERE Constraints

- WHERE constraints with multiple columns
- No extra tables needed

Full Text Search

- **Wildcards** ? *, like or Lemmatisation
- **Faceting**, Slice and Dice

Suggester

- Implement type-ahead functionality with **Fuzzy** or **AnalyticInFix** Lookup Factories

Geospatial queries

- Queries with coordinates and distances search

Integrated with CQL

1. Create core, schema.xml and solrconfig.xml.
2. [optional] customize schema.xml, solrconfig.xml
3. Start indexing, re-indexing

Wildcard search

```
cqlsh> select * from sales where solr_query = 'name:gre*'
```

Facet query

```
cqlsh> SELECT * FROM sales WHERE solr_query='{ "q": "name:*", "facet": { "field": "item" } }';
```

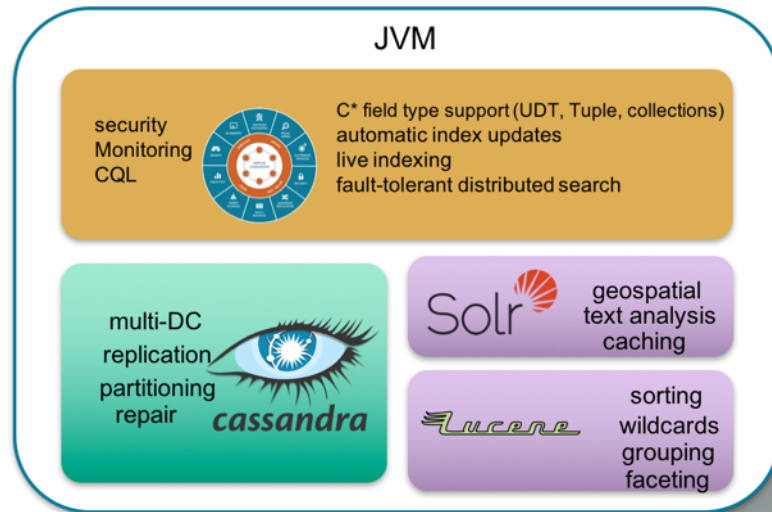
Range query

```
Cqlsh> SELECT * FROM sales WHERE solr_query='{ "q": "dt:[2017-01-01 TO 2017-01-10]" }';
```

Geo search

```
cqlsh> select * from sales where solr_query =  
      ' { "q": "*:*", "fq": "point:\\"IsWithin(BUFFER(POINT(4.0 49.0), 10.0))\\""} '
```

DSE Search Architecture



Integrated in the the same JVM

- Data Locality (TokenRanges) and Shared Memory
- High Available, no master needed
- Index is sharded to all nodes

Transparency

- Access via CQL or REST API

Automated indexing with INSERT / UPDATE

- No extra ETL Process needed

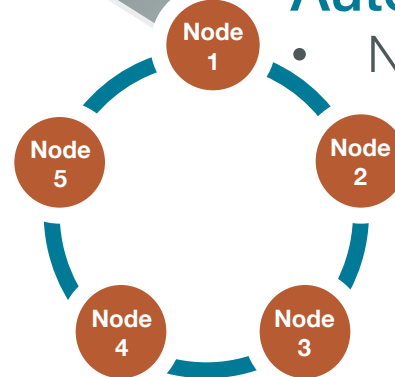
With all benefits:

High Available

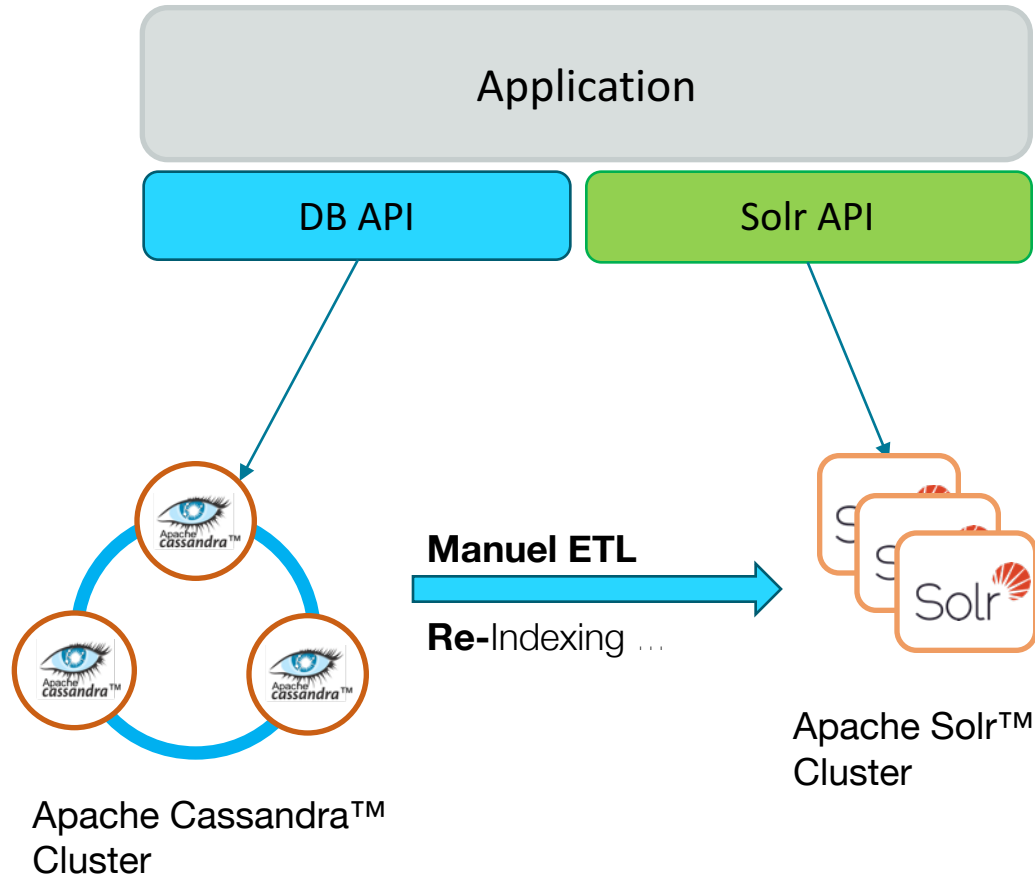
Scalable

Multi Data Center

Index Security



The Open Source Way



Separated Search Cluster

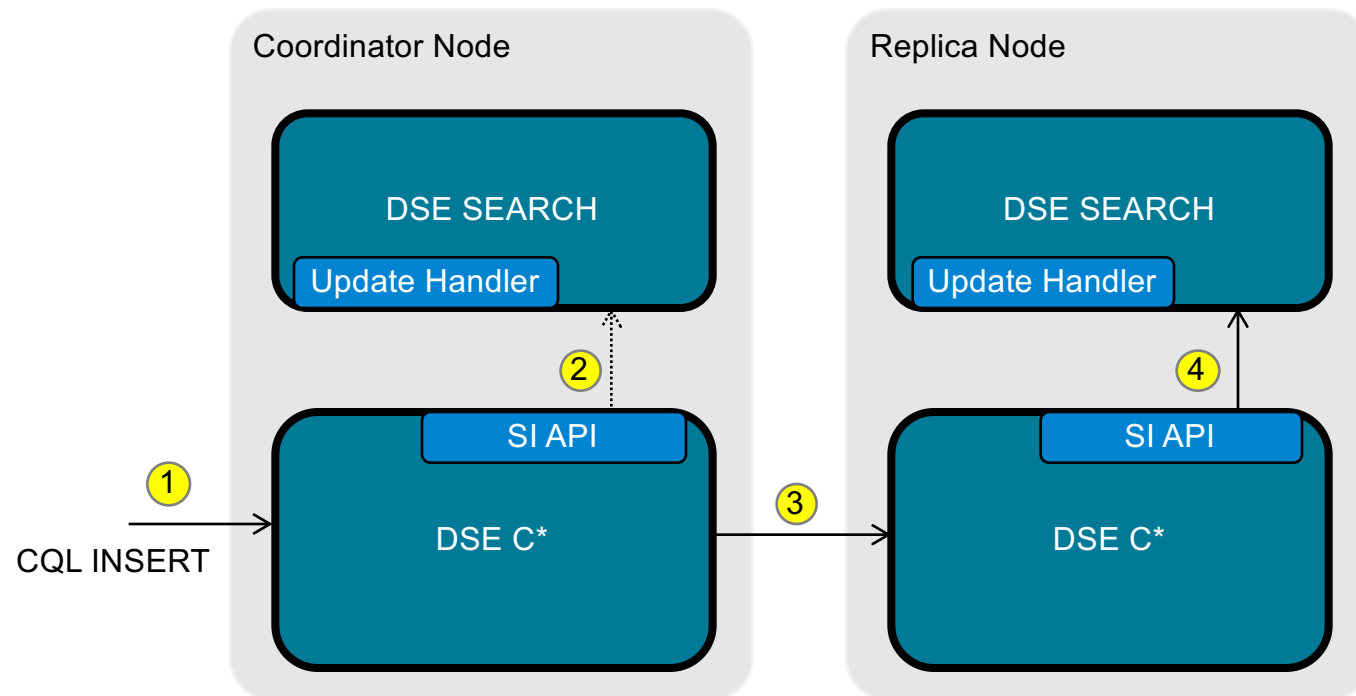
- “Split Brain” risk, data inconsistency
- ETL to generate, update and re-create index

Complex application

Two separated APIs, driver, read paths

https://docs.datastax.com/en/datastax_enterprise/5.0/datastax_enterprise/srch/searchOssSolrDiff.html

Inserting through CQL



Querying through CQL

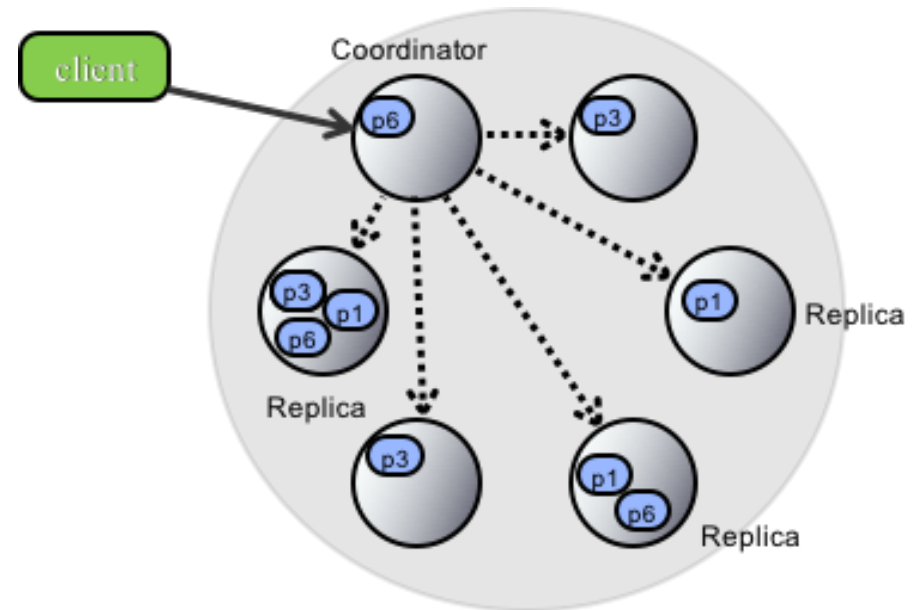
```
SELECT title FROM solr WHERE solr_query='title:natio*';
```

title

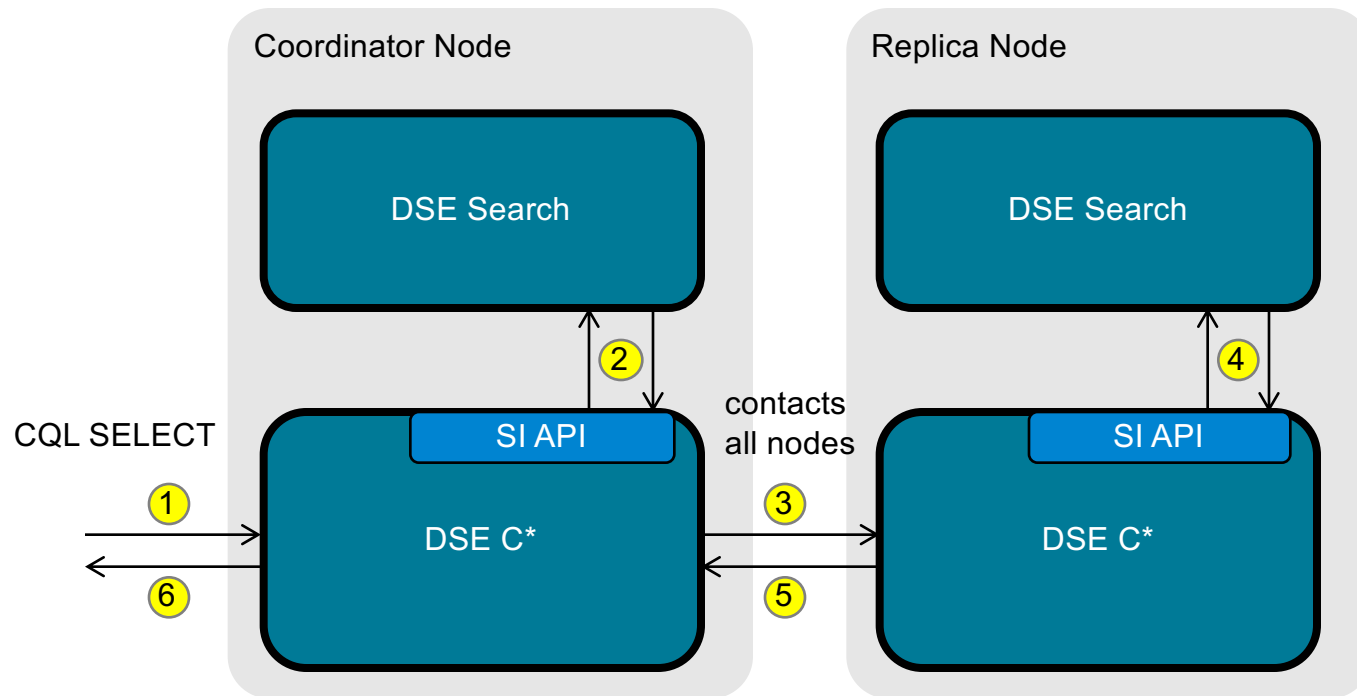
Bolivia national football team 2002
List of French born footballers who have played for other national teams
Lithuania national basketball team at Eurobasket 2009
Bolivia national football team 2000
Kenya national under-20 football team
Bolivia national football team 1999
Israel men's national inline hockey team
Bolivia national football team 2001

How many nodes to contact?

- We don't know the primary key
- Theory:
 - contact at least one replica for every token range
- Cassandra contacts all nodes
- **Our custom Solr SearchComponent does intelligent shard selection**



Querying through CQL



Lab 5 : Hands-on DSE Search

Thank You!