



# Apache *cassandra*

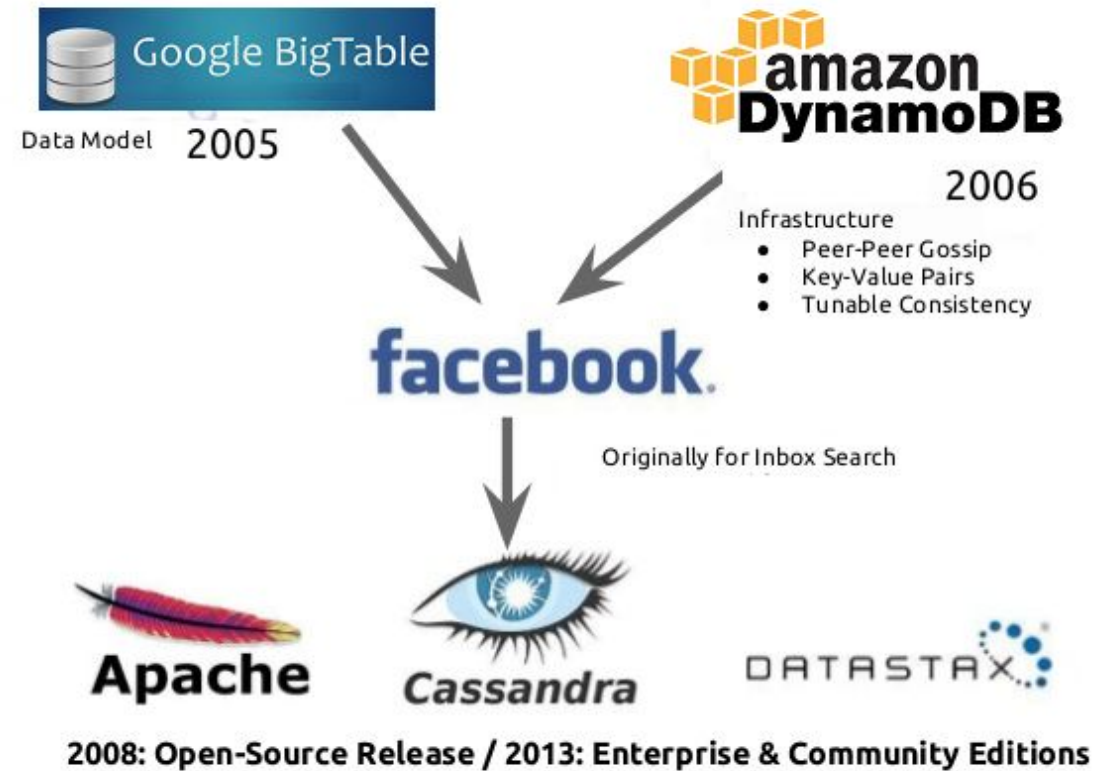
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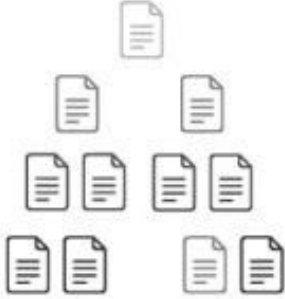
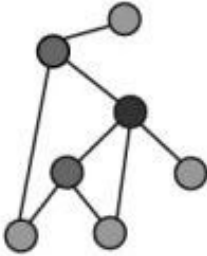
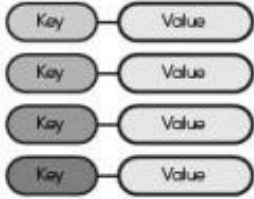

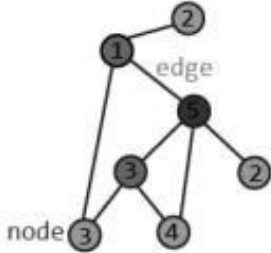
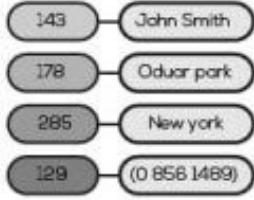
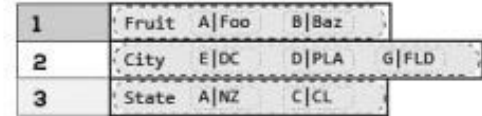






## WHAT IS APACHE CASSANDRA?

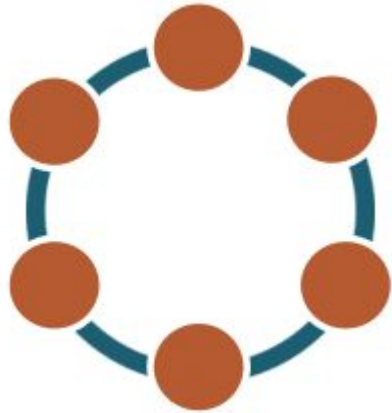
- Free and open-source distributed NoSQL database management system
- Designed to handle large amounts of data across many commodity servers
- Provide high availability with no single point of failure
- Originally developed at Facebook for inbox search
- Store data in Wide Column format

### The Evolution of Cassandra



Document	Graph	Key-Value	Wide-Column
			
<pre>{   "user": {     "id": "143",     "name": "improgrammer",     "city": "New York"   } }</pre>			
			

## WHY CASSANDRA?



Masterless 'ring' architecture

- **Scalable Architecture**

Cassandra has a masterless design where all nodes are the same

- **Schema-less**

Users can create columns at their own will within the rows

- **High Performance & Fault Tolerance**  
Every node is capable of performing all read & write

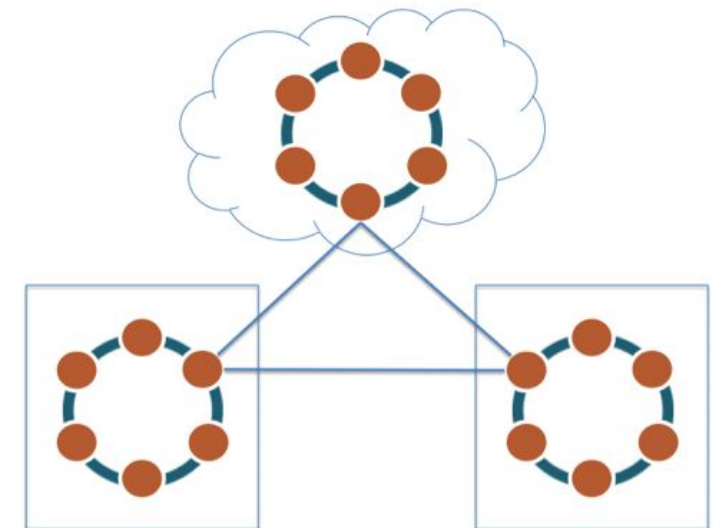
- **Multiple data centre replication**

Cassandra gives great support for replication across multiple data centres (in multiple geographies) and multi-cloud availability zones for writes/reads.

- **Distributed**

Can run on multiple machines while appearing as unified whole to users

- **Cassandra Query Language (CQL)**  
Similar to SQL (which is mostly used for RDBMS) and hence makes it very easy for developers new to Cassandra to get working with it quickly



Multi-data-center and cloud deployments

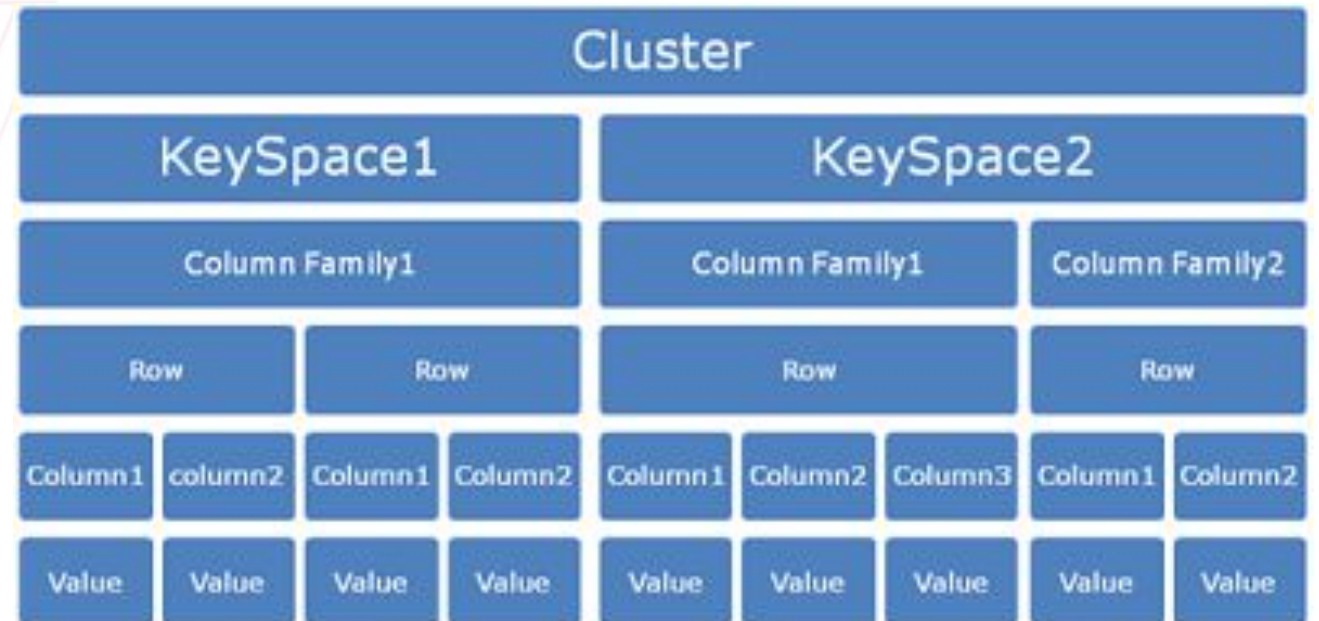


Cluster is a container for Keyspaces

Keyspace corresponds to database

Set of rows with a similar structure

## Tables in Cassandra Query Language



## WHERE AND WHO USE CASSANDRA?



## PREREQUISITE

- Python 3
- [Java 8](#)
  - Cassandra requires JRE 8
  - Make sure JAVA\_HOME is set (On Windows only)
- [Cassandra 4](#)
  - Cassandra 3 only supports python 2.7
  - Cassandra 4 support python 3.8

### DOWNLOAD

[https://cassandra.apache.org/\\_/download.html](https://cassandra.apache.org/_/download.html)

### DOCUMENTATION

<https://cassandra.apache.org/doc/latest/index.html>

1. Register / Log in
2. Create database
3. Connect using Python driver
4. Generate token and download secure connection bundle

### ASTRA DB

<https://astra.datastax.com/register>

The Astra DB logo features the word "Astra" in a bold, orange, sans-serif font, followed by "DB" in a smaller, white, sans-serif font. The background is a dark blue rectangle.

Multi-cloud DBaaS Built on Apache Cassandra™

### YOUTUBE

[https://youtu.be/3KsR59Y2\\_Uw](https://youtu.be/3KsR59Y2_Uw)



# INSTALLATION USING DOCKER

1. Pull the docker image.

```
docker pull cassandra:latest
```

2. Start Cassandra with a docker run command

```
docker exec -it cass_cluster cqlsh
```

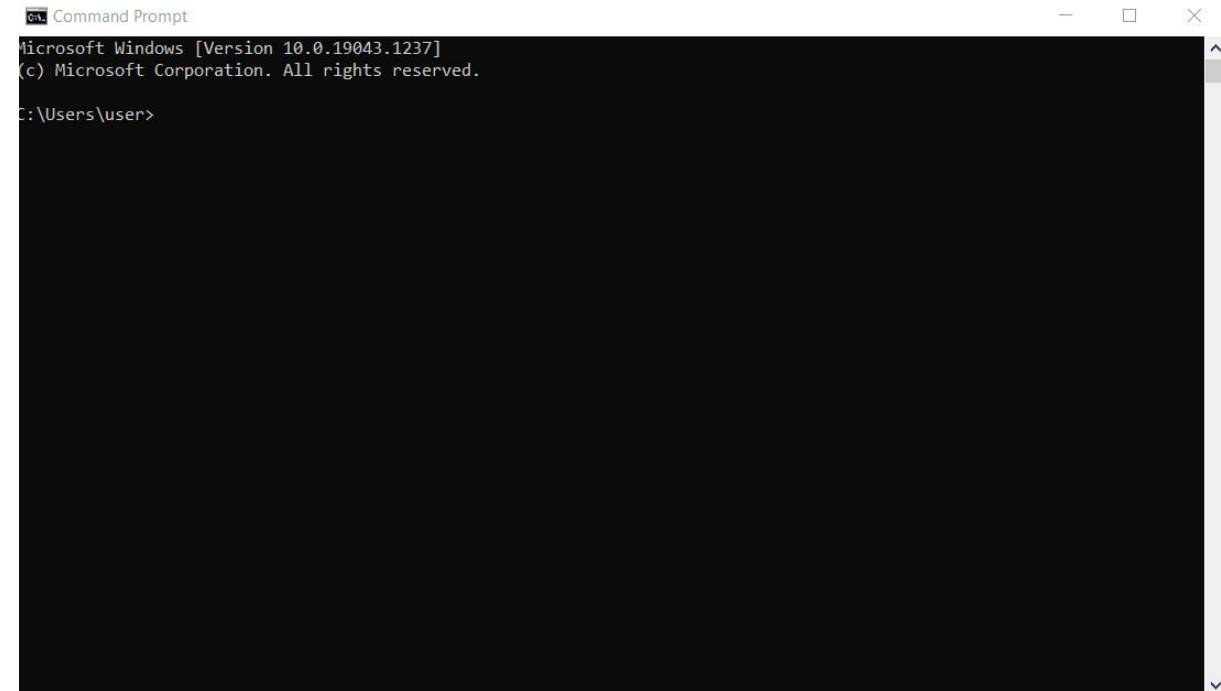
3. Start the CQL shell, cqlsh to interact with the Cassandra node created

```
docker exec -it cass_cluster cqlsh
```

4. Cassandra is now running



cass\_cluster cassandra:latest  
RUNNING



# SAMPLE TABLE

Sample data for CRUD demo

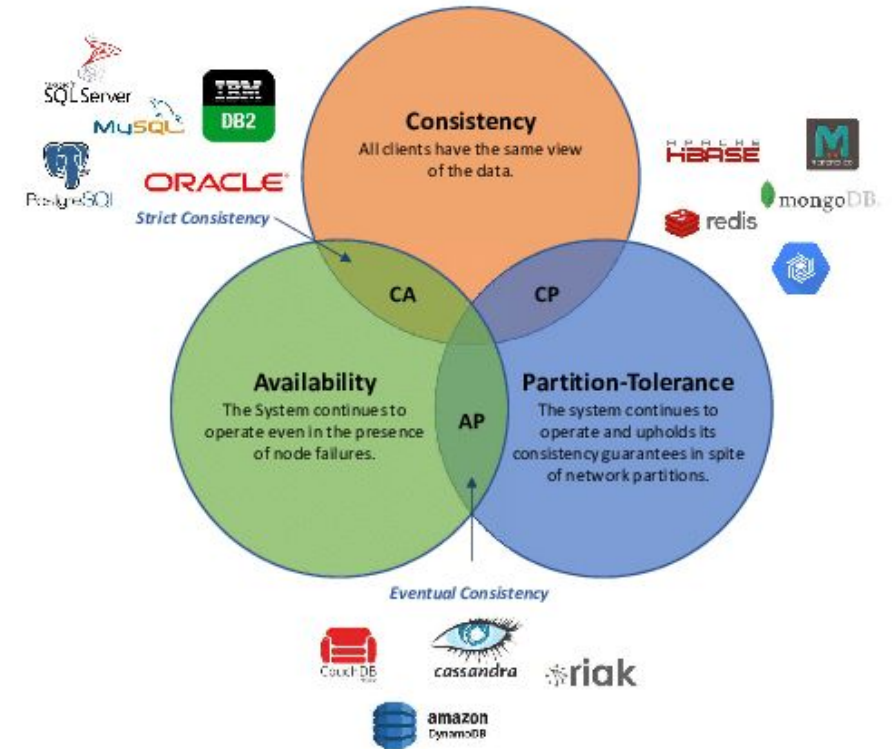
Gender	User	Age	State	Job
male	Azman	20	johor	chef
female	Mira	25	perak	
male	Hakim		selangor	teacher
female	Fatin	24		nurse
male	Umar			athlete

## WHEN TO USE CASSANDRA?

- One of the system requirements is to have a very heavy data write system and we want to have a quite responsive reporting system on top of that stored data

## WHEN TO NOT USE CASSANDRA?

- If the system have strong requirements for ACID properties (ex: Financial Data) because Cassandra is based on NoSQL and does not provide relational data properties.



**TRY IT OUT**

<https://www.datastax.com/try-it-out>