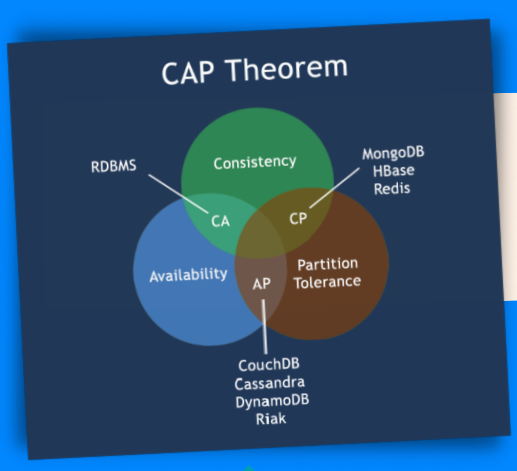
NO SQL DATABASES

Not only SQL

Relational databases couldn't scale up to suit the needs of modern day's Velocity, Variety & Volume of data which paved the way for NoSQL Databases



NOSQL as distributed systems adheres to the **CAP theorem -** tradeoff between Consistency and Availability during a partition tolerance

- **No need to design your database Schema upfront.**
- **Highly Scalable (Horizontally)**
- **Better performance while handling huge data**
- **High Availability**
- **Cloud-Compatible**

- **Less Mature**
- **Lack of Standardization - different NoSQL products**
- **Lacks Consistency - not all adhere to ACID properties**

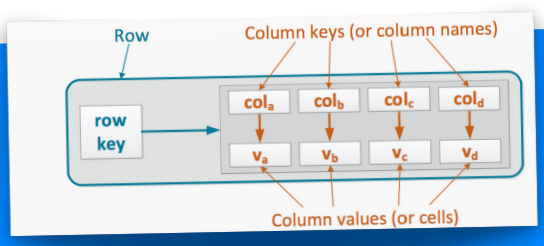
MAIN NOSQL DATABASE TYPES

COLUMN-OREINTED / TABULAR STORE

- Data is stored in cells which are grouped as **columns** and shared/distributed by their KEY .
- Columns are grouped into column families logically.
- Offer very high performance and highly scalable architecture.

Spotify ,Facebook, Outbrains

cassandra · APACHE HBASE



DOCUMENT STORE

- Data is stored in structured/semi-structured format -**JSON,XML,BSON**
- Values are **documents** and can be grouped to collections.
- **NO Schema** - allows different structures
- Values are identified by a KEYS
- Perfect for mainly Reads and less Writes

SEGA, Cisco(VSRM), The Weather channel

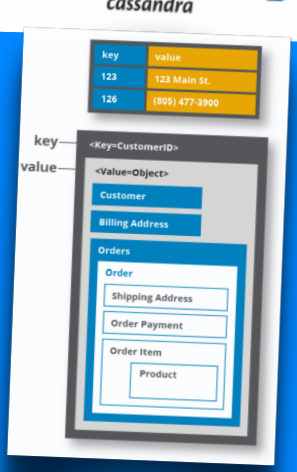
elastic · mongoDB · Couchbase

KEY-VALUE STORE

- Data is stored as **key -value** pairs
- Each key is associated with one value in collection (LIKE DICTIONARY)
- Uses hash table to store unique keys and pointers with respect to each data value
- Directly GET/PUT/UPDATE/DELETE commands
- Faster retrieval - **Good performance and easily Scalable**

Twitter, Quora, Pinterest, Coinbase

redis · cassandra · DynamoDB



GRAPH STORE

- Data are represented as a graphs (nodes, edges)
- Highly connected(pre-connected)
- Nodes - entities, Connection/joins - relationship among entities
- Each node has a lists of relationship records- quicker search-match
- Faster Querying

Walmart , Medium, Cisco

neo4j

SOURCES:

- Main NoSQL databases - https://studio3t.com/knowledge-base/articles/nosql-database-types/
- Workshop introduction to NoSQL - Datastax Developer academy
- Different types of NoSQL databases - https://www.opensourceforu.com/2017/05/different-types-nosql-databases/
- Key-value Store - https://hazelcast.com/glossary/key-value-store/
- Graph Database - https://www.tigergraph.com/blog/what-is-a-graph-database-and-why-should-you-care/
- Limitations of NoSQL - https://www.channelfutures.com/cloud-2/the-limitations-of-nosql-database-storage-why-nosqls-not-perfect