Kyligence

Augmented OLAP for Big Data

Li Yang

Kyligence CTO

Agenda

- About Kyligence
- Pains in Big Data Analysis
- Kyligence's solution: Augmented OLAP
  - Video Demo
  - Benchmark
- Use Cases

Kyligence = Kylin + Intelligence

- Extreme multi-dimensional OLAP engine for big data
- Rank 1 from googling “big data OLAP”
- Rank 1 from googling “hadoop OLAP”
- 1000+ adoptions world wide

- Founded in 2016 by the team who created Apache Kylin
- CRN Top 10 Big Data Startups 2018
- Leading VCs: Redpoint Ventures, Cisco,
  CBC Capital and Shunwei Capital, Eight Roads Ventures
  (Fidelity International Arm), Coatue

Trusted by Fortune 500

Telecom

中国电信 CHINA TELECOM

#33 of Fortune 500

中国移动 China Mobile

#47 of Fortune 500

China unicom 中国联通

Finance

太平洋保险 CPIC

#252 of Fortune 500

UnionPay 银联

招商银行 CHINA MERCHANTS BANK

陆金所 LU.com

华泰证券 HUATAI SECURITIES

Retail & Manufactory

L'ORÉAL PARIS

#392 Fortune 500

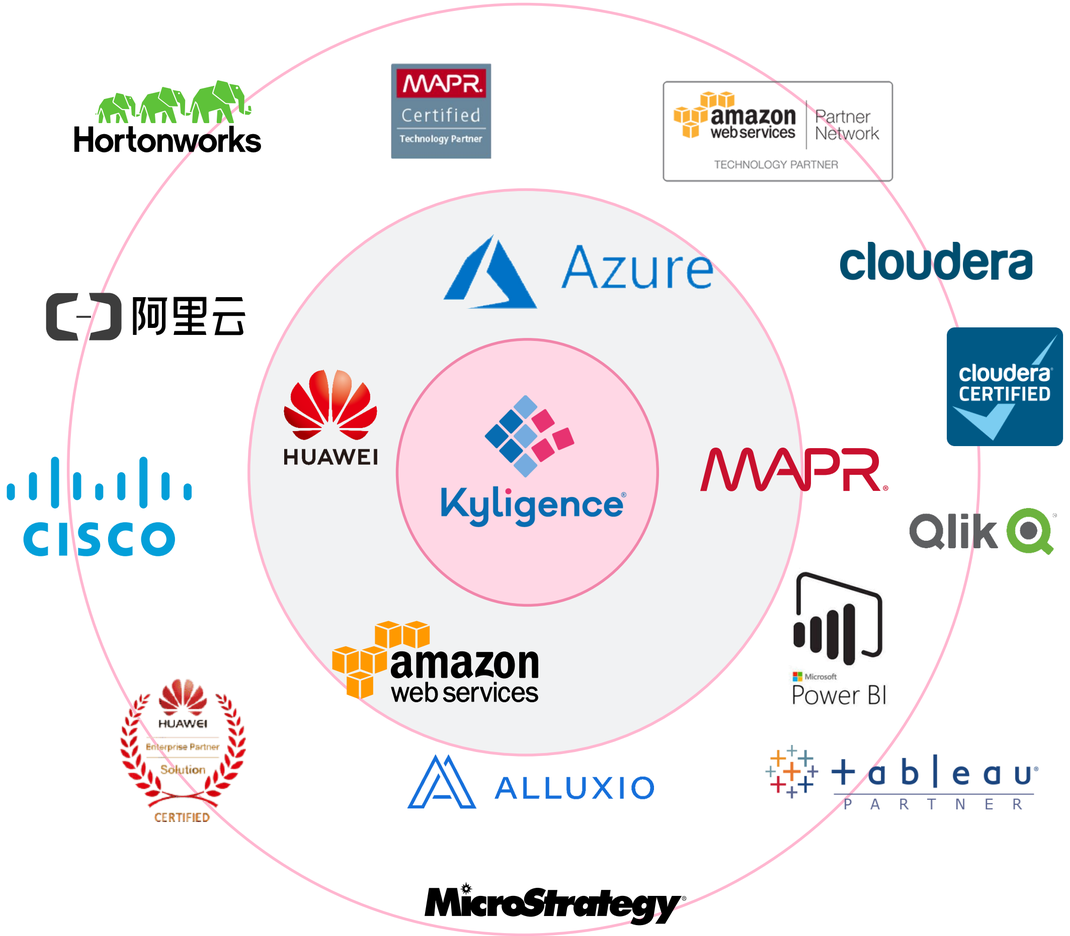
HUAWEI

#83 of Fortune 500

Lenovo

#226 of Fortune 500

Global Partners



- Microsoft Global Gold Partner
- Amazon Web Service Technology Partner
- Tableau Technology Partner
- Cloudera Silver Partner
- MapR Converge Partner
- Hortonworks Community Partner
- Huawei Solution Partner

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Why my report is so slow?

Fast and Changing

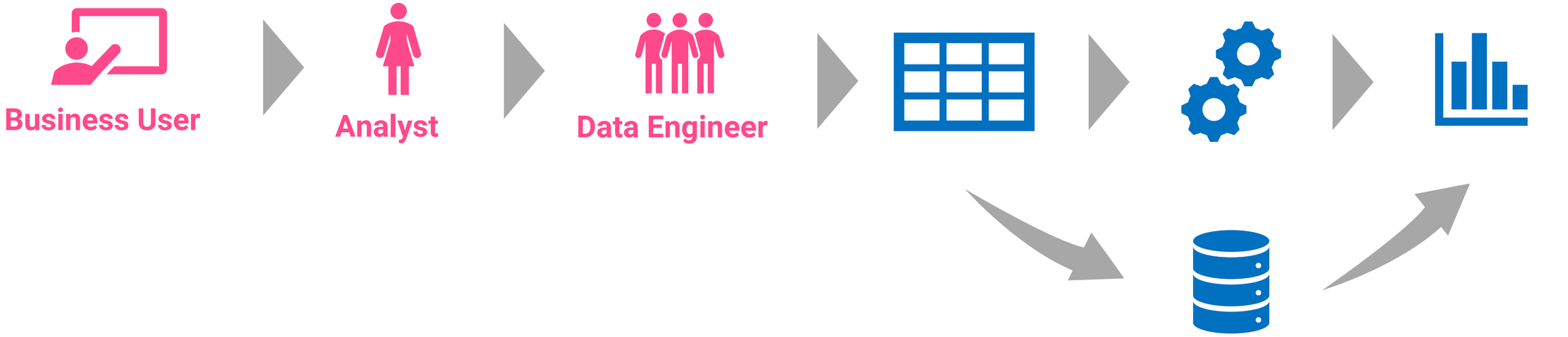
Analysis Demand

VS

Slow and Heavy

Big Data Operations

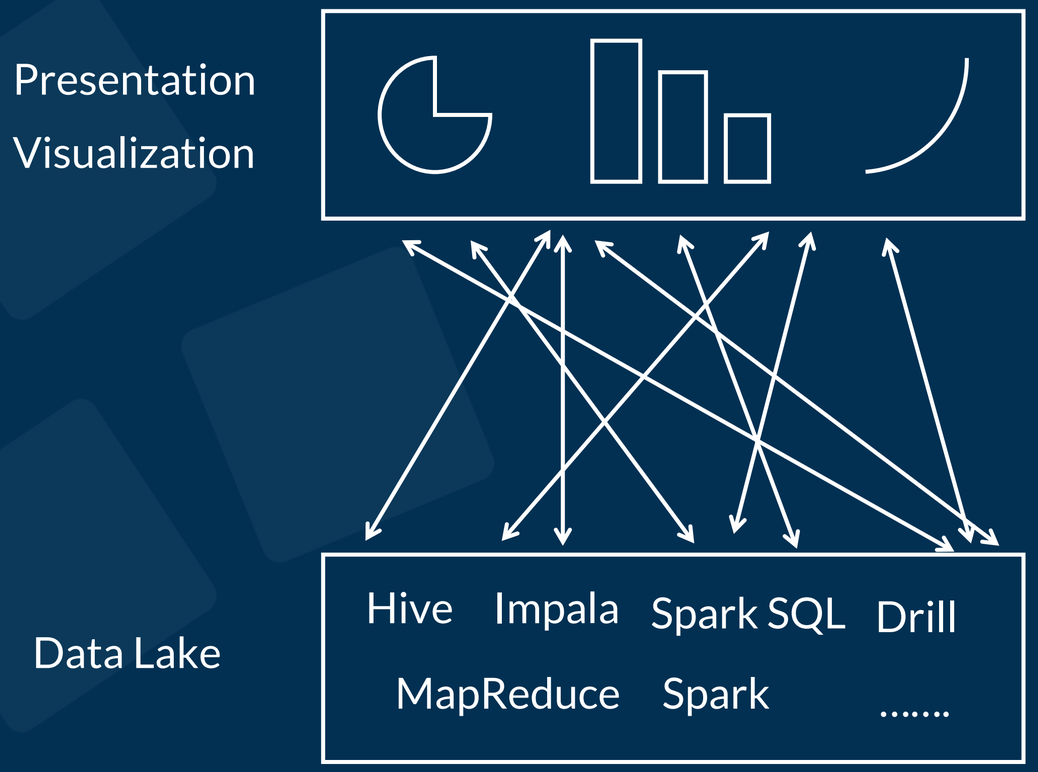
The Typical “Throw in some People” Approach



Business Analysis → Data Modeling → Lake → Warehouse → Mart → Reporting

High Cost : $$$

Pains in the “Throw in some People” Approach



Time-to-value Pain

Weeks of waiting breaks the “online” promise.

Collaboration Pain

Hard to reuse asset across teams. Each team fights their own path.

Resource Pain

Hard to scale. Where to find so many skilled big data engineers?

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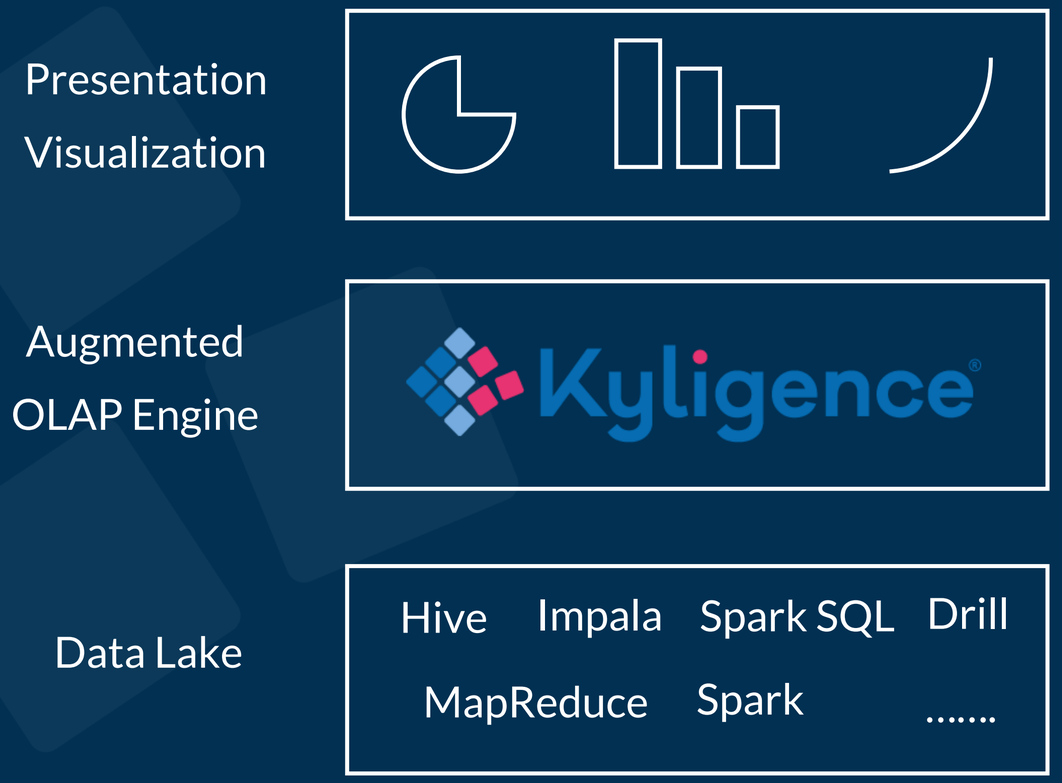
Throw in some Intelligence!



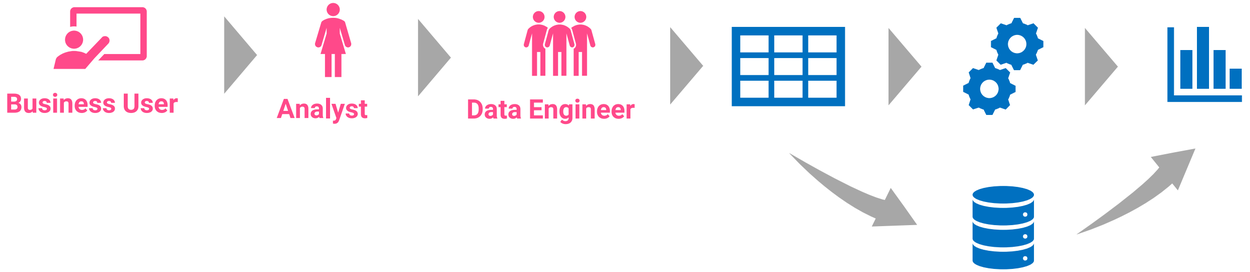
Let a system replace the people.

- Transparent SQL Acceleration
- On-demand Data Preparation
- Interactive Query Performance
- High Concurrency
- Centralized Semantic Layer

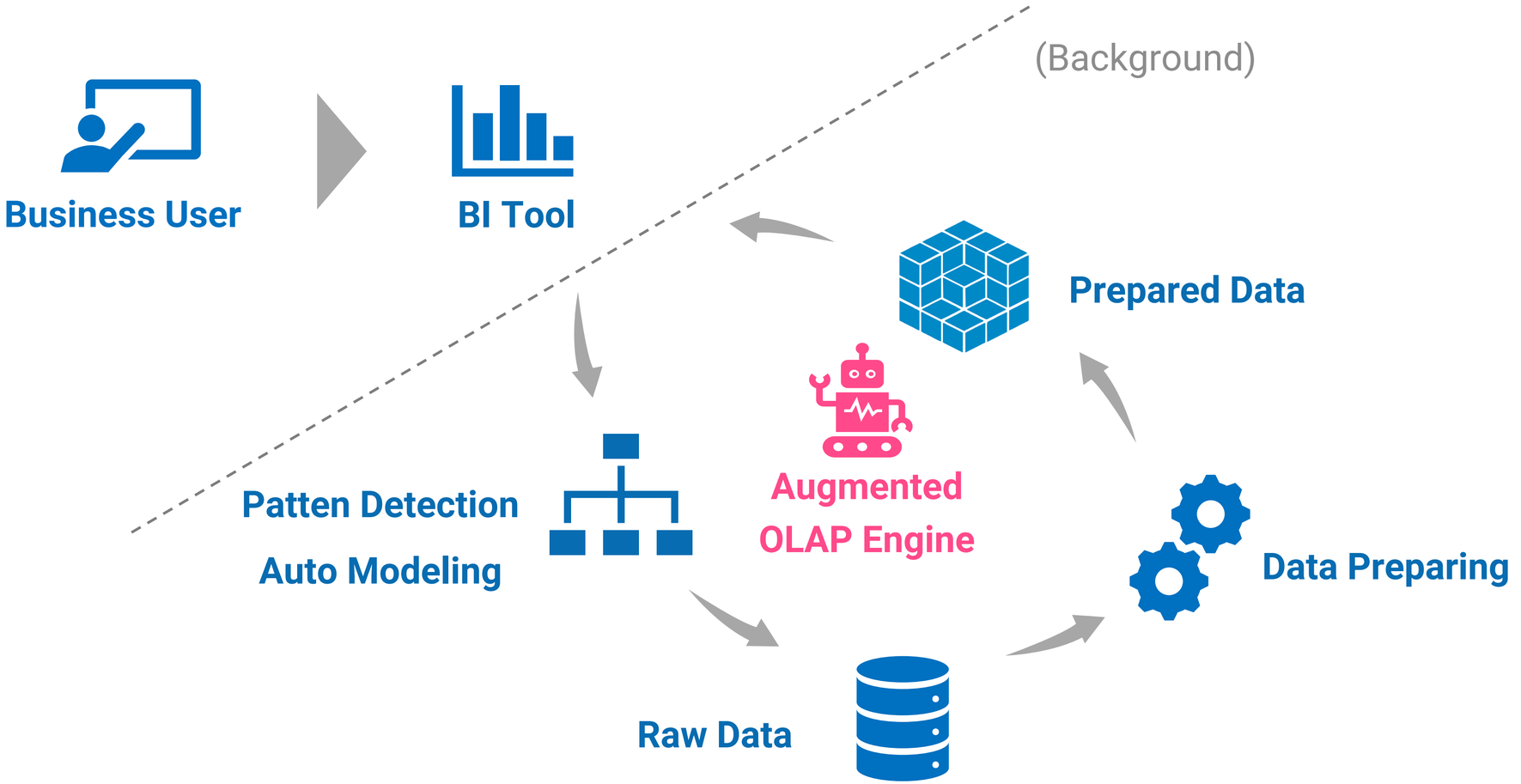
Faster time to market. Stay “online”.

A Learning OLAP System

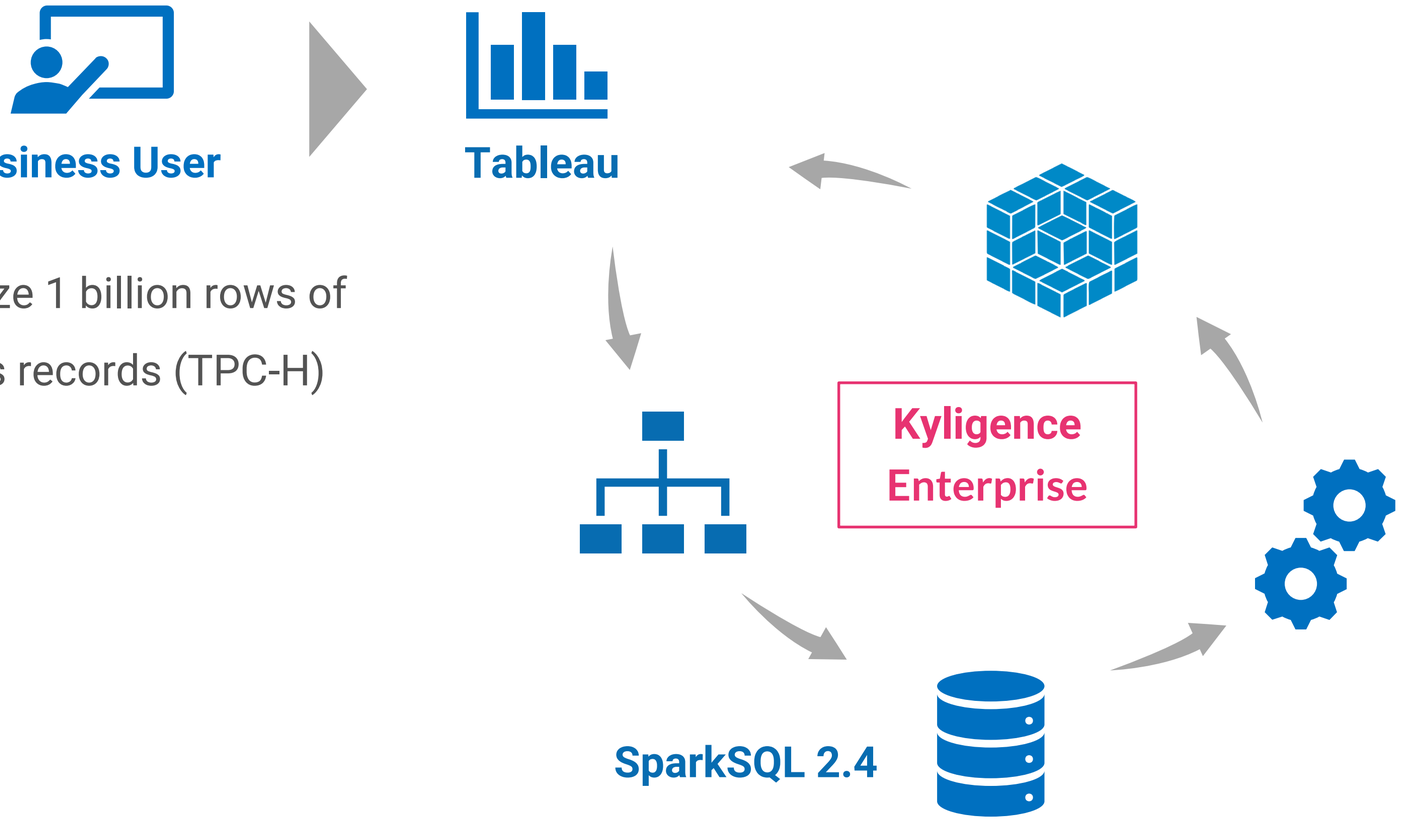
VS



A Learning OLAP System



Demo Setup



Analyze 1 billion rows of sales records (TPC-H)

Slow First Exploration

Demo FAQ

How to improve the first slow exploration?

What if the analyst operates differently the second time?

More comprehensive performance benchmark?

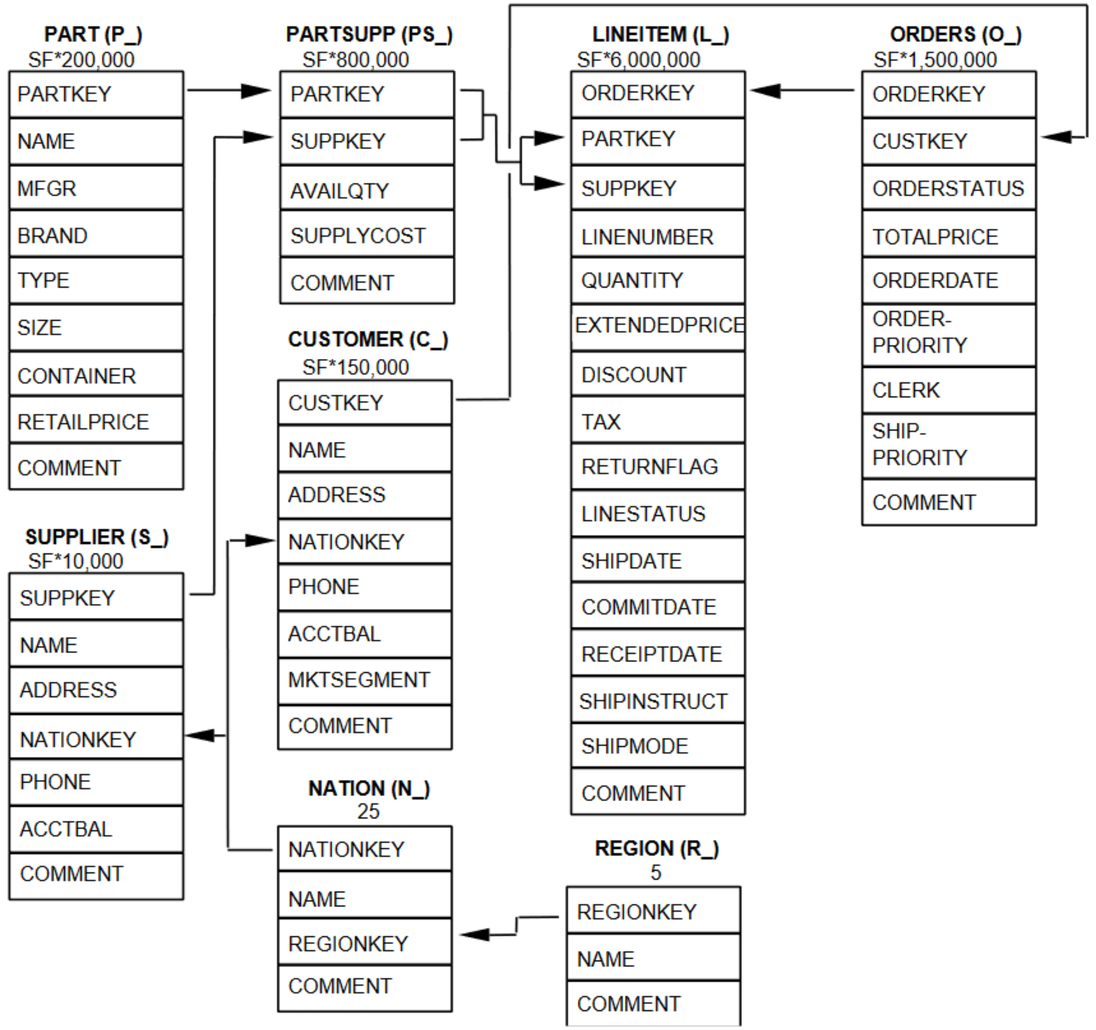
TPC-H Decision Support Benchmark

TPC-H Benchmark

- Examine large volumes of data
- High complexity queries
- Answers critical business questions
- 22 decision making queries

E.g. The Shipping Priority Query

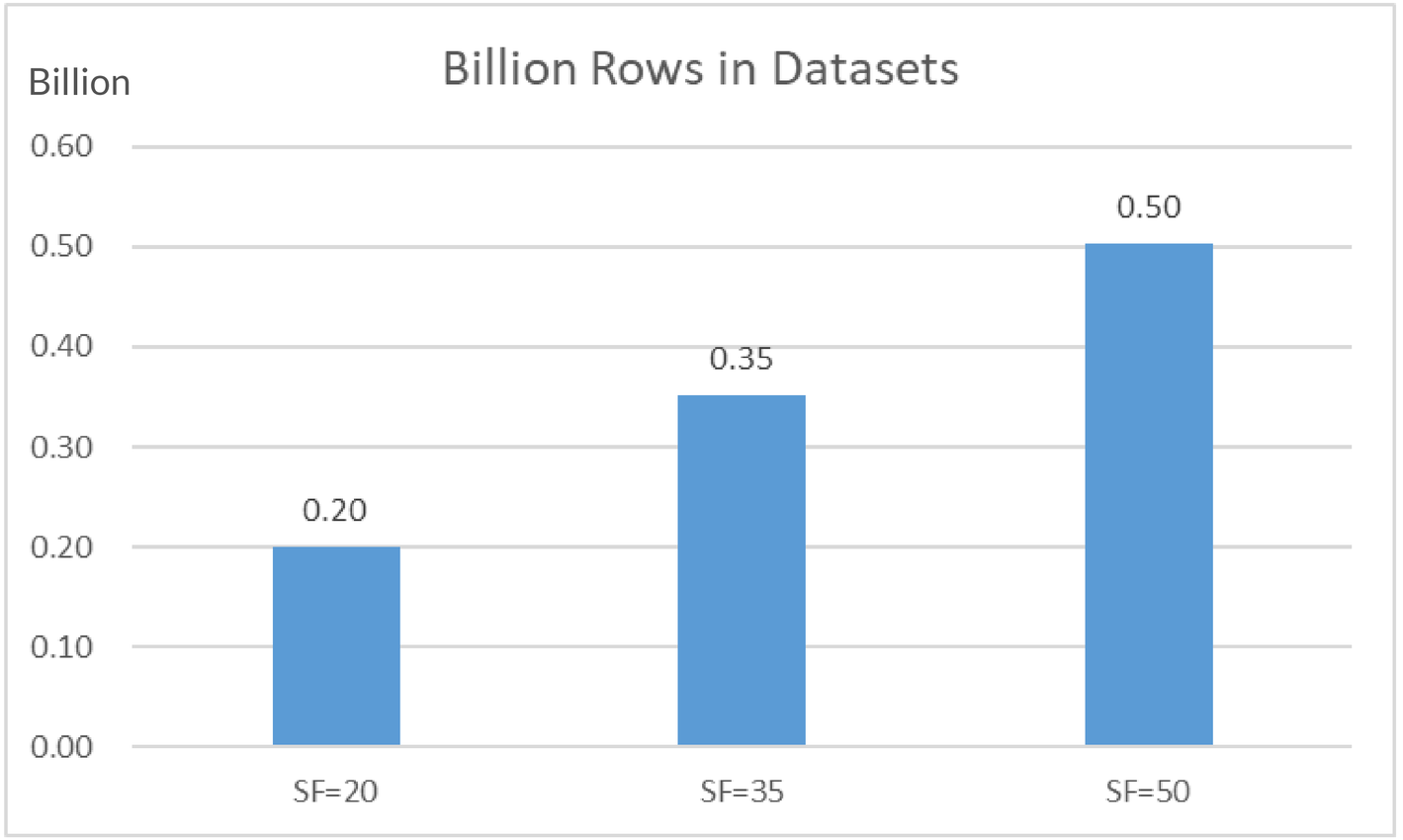
retrieves the shipping priority and potential revenue of the orders having the largest revenue among those that had not been shipped as of a given date. Top 10 orders are listed in decreasing order of revenue.



Kyligence Enterprise 4 Beta vs SparkSQL 2.4

To see the trend as data grows

- 3 datasets
- Scale Factor = 20, 35, 50



Hardware Configurations

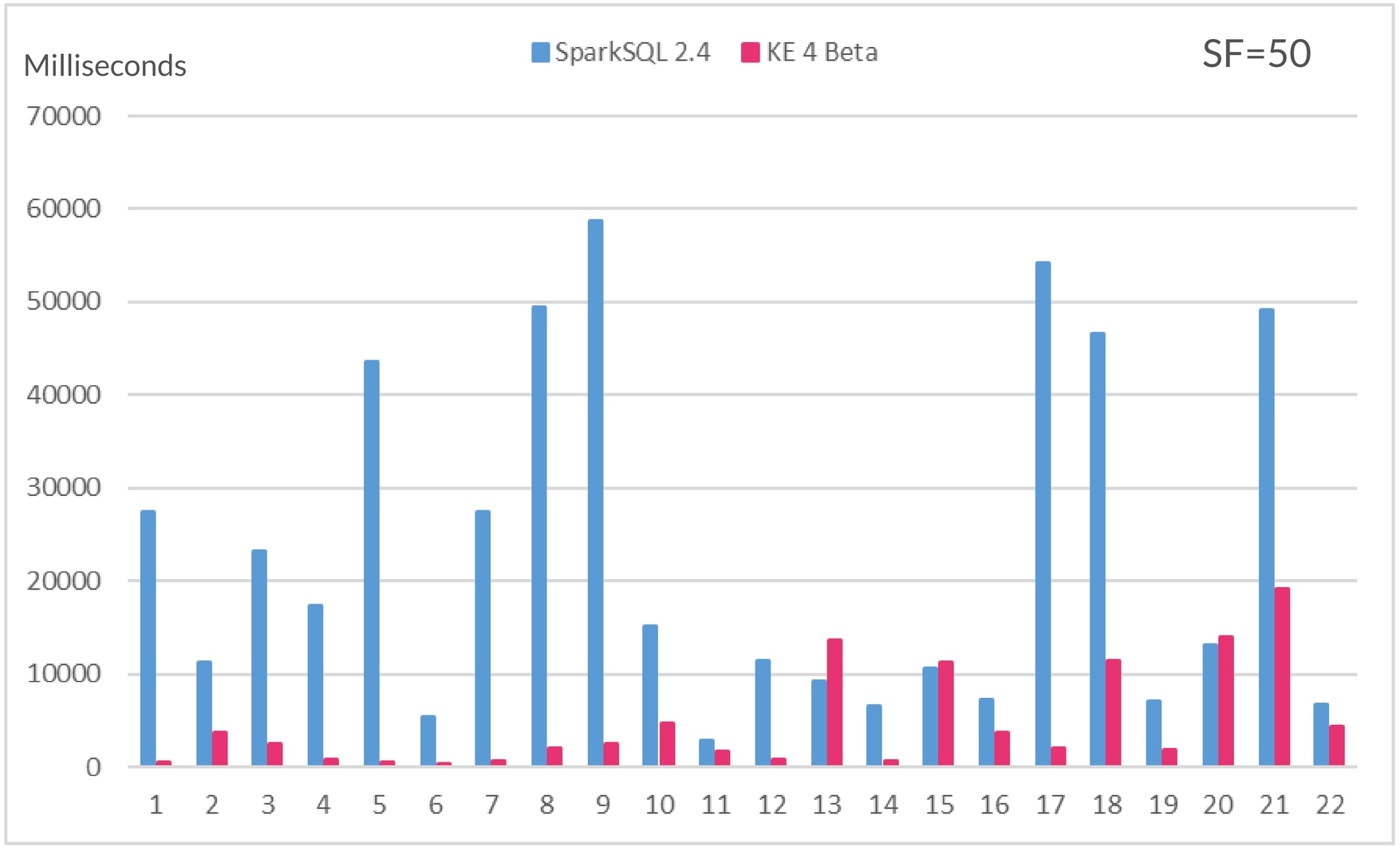
Same 4 physical nodes

- Intel(R) Xeon(R) CPU E5-2630 v4 @ 2.20GHz * 2
- Totally 86 vCores, 188 GB mem

Same Spark configuration for both KE 4 Beta and SparkSQL 2.4

- spark.driver.memory=16g
- spark.executor.memory=8g
- spark.yarn.executor.memoryOverhead=2g
- spark.yarn.am.memory=1024m
- spark.executor.cores=5
- spark.executor.instances=17

Query Response Time | KE 4 Beta vs. SparkSQL 2.4



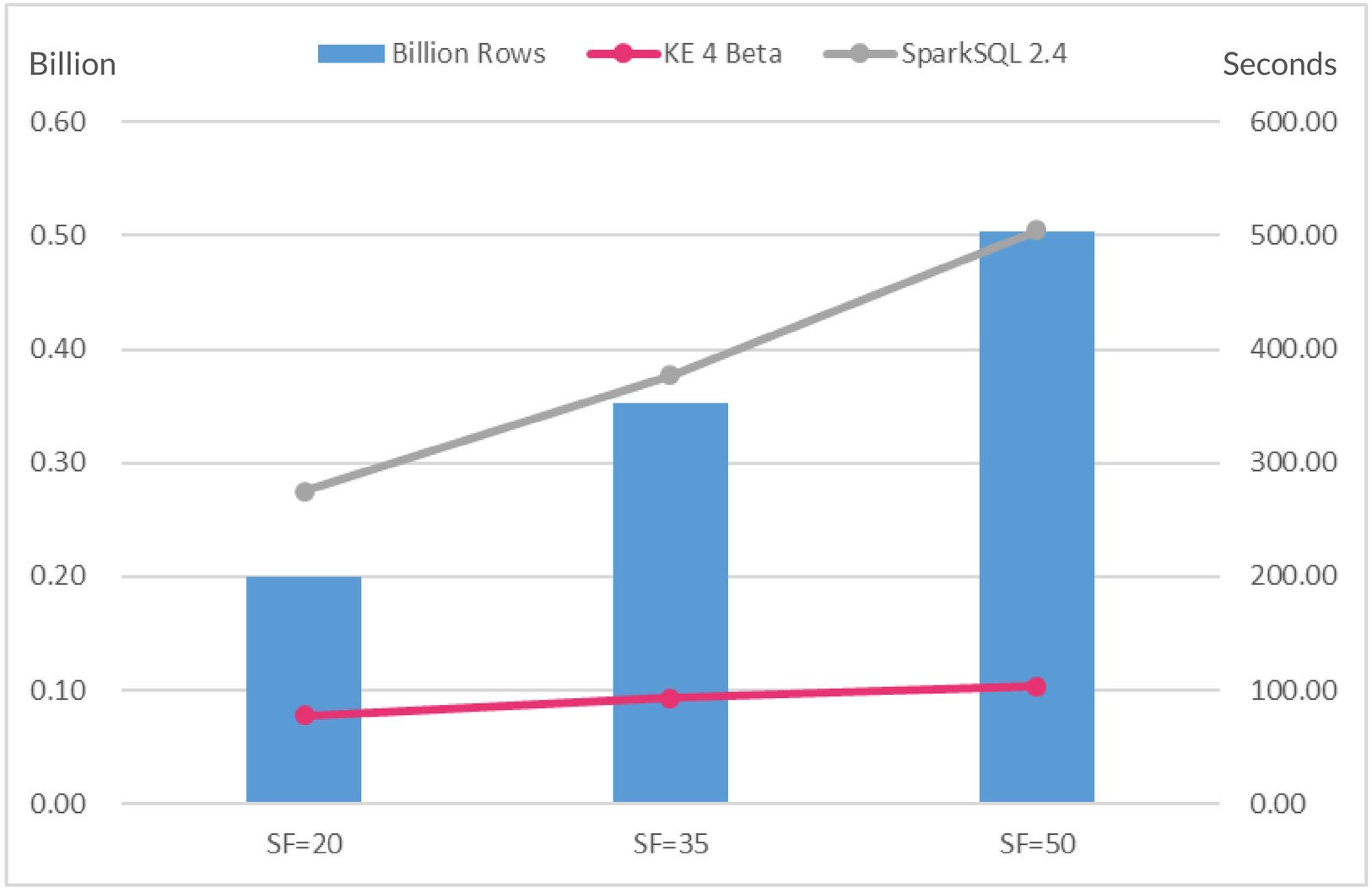
TPC-H 22 queries

For each dataset

- Run each query 3 times
- Record the average time
- No warm up

Lower is better.

Total Response Time | KE 4 Beta vs. SparkSQL 2.4

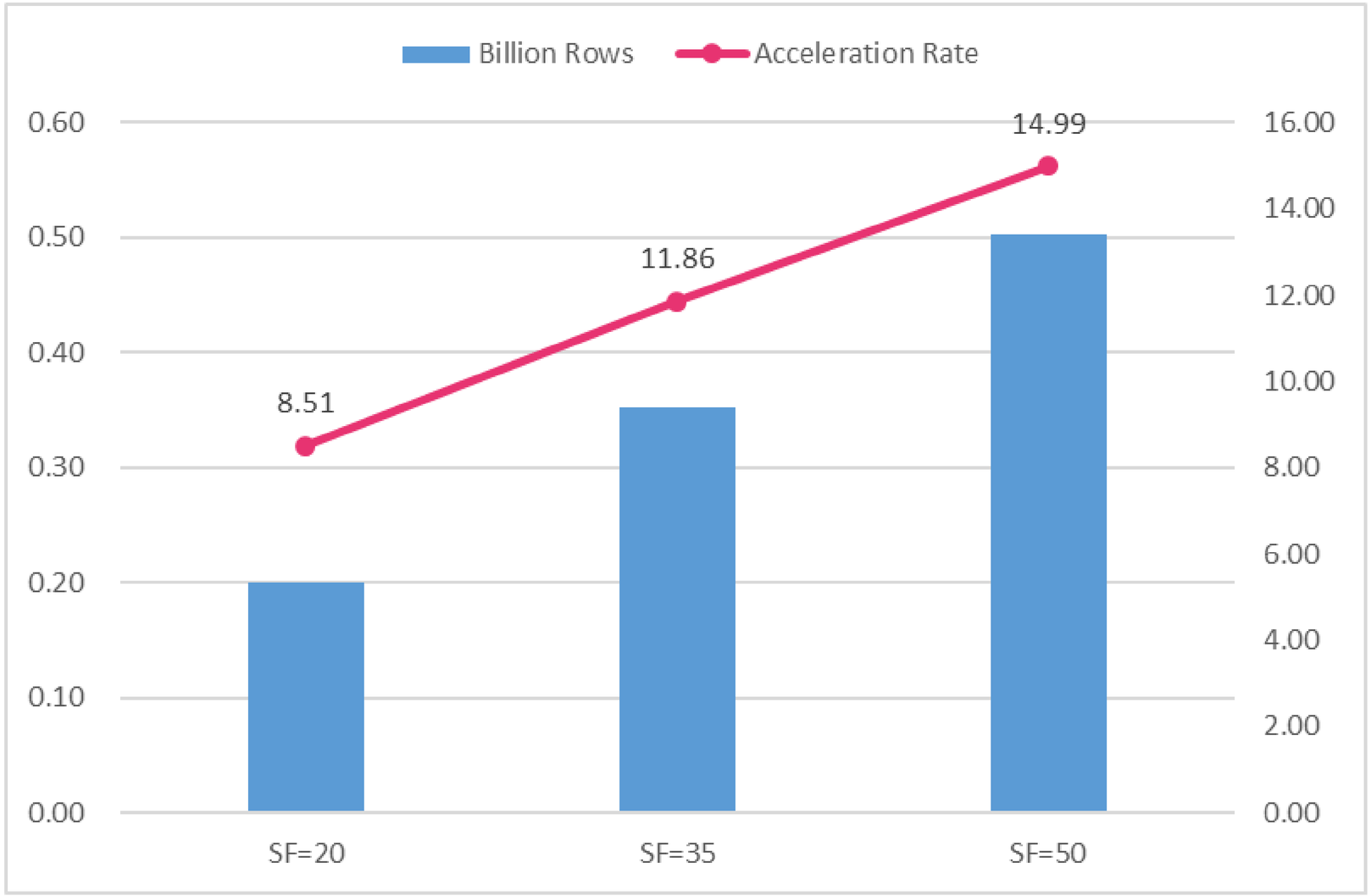


Total response time is the sum of 22 queries' response time.

Compare over the size of datasets and feel the trend.

Scale out for the future.

Avg. Acceleration Rate | KE 4 Beta vs. SparkSQL 2.4



Acceleration Rate

= SparkSQL time / KE time

Take average of the 22 and compare over size of datasets.

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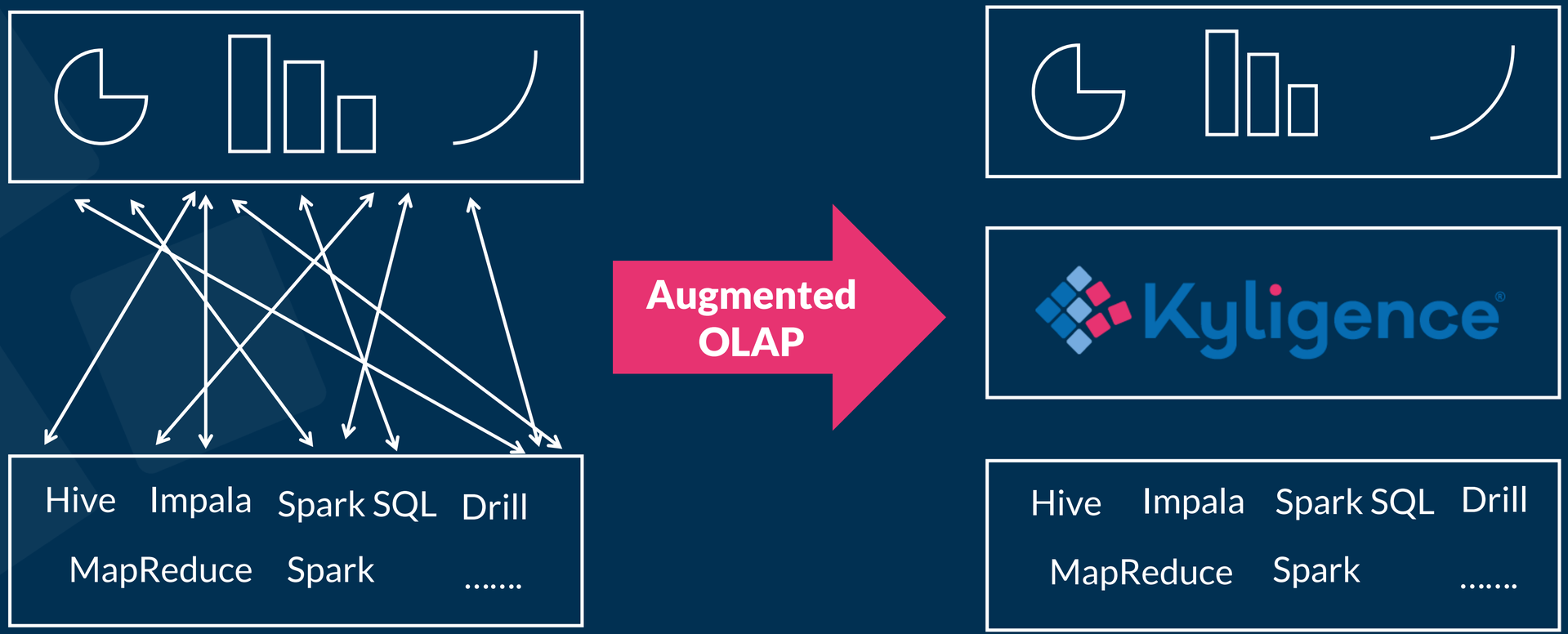
A Successful Transition: China UnionPay



Use Case: China UnionPay

Self-Service Big Data Warehouse

PB level (300B records) big data warehouse of both self-service aggregation query and raw data query by business analysts

Merchant or Card Multi-dimensional Analytics

Support analysis on high granularity dimensions such as **Merchant (10M cardinality) and Card (10B cardinality)**

Efficient IT Operation

Significantly increase IT operation efficiency as **1 Kyligence cube replacing 800 Cognos cubes** with unified data access management

More scalable Architecture

Kyligence scale-out architecture provide best flexibility for IT infrastructure when faced with **increasing data and concurrent analysis demands**

Use Case: China UnionPay

Card Transaction Analysis Portfolio

Functional Scene


Org. Daily Cube


Merch. Daily Cube


Channel Daily Cube


Region Daily Cube

Time Scene


Org. Monthly Cube


Merch. Monthly Cube


Channel Monthly Cube

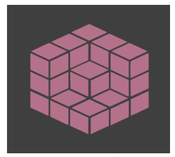

Region Monthly Cube

Geo Scene


Shanghai Merchants

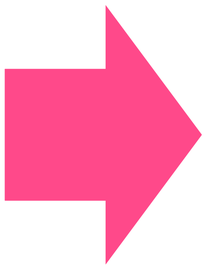

Zhejiang Merchants


Anhui Merchants


Guangdong Merchants

... ...

800+ Cognos Cube, 1000+ ETL jobs



Kyligence

One Card Tx Model

Dimensions: 167

Measures: 20

Thank You!

Homepage: **http://kyligence.io**

Twitter: **@kyligence**

Booth: **#1327**