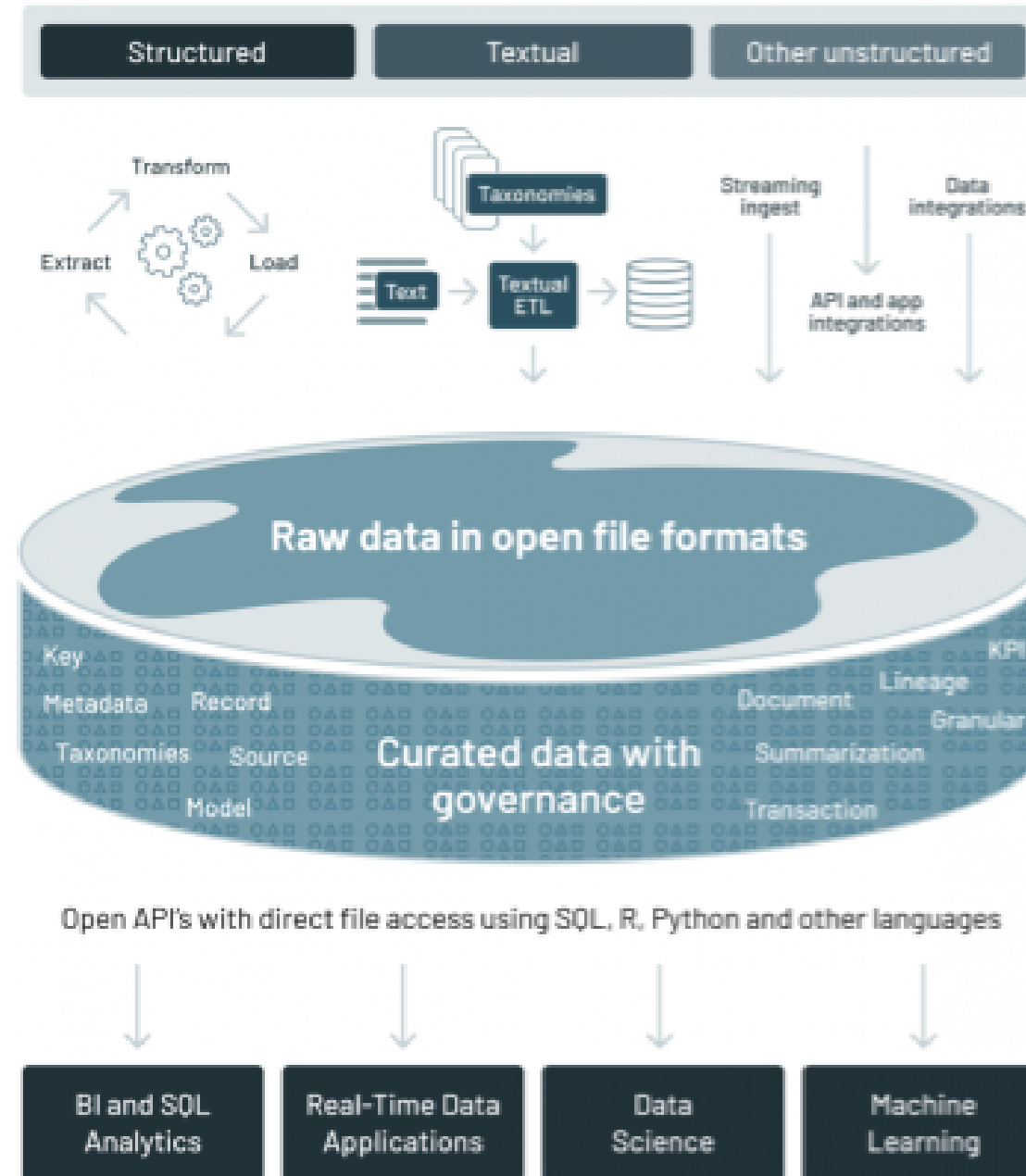


Overview of Databricks SQL

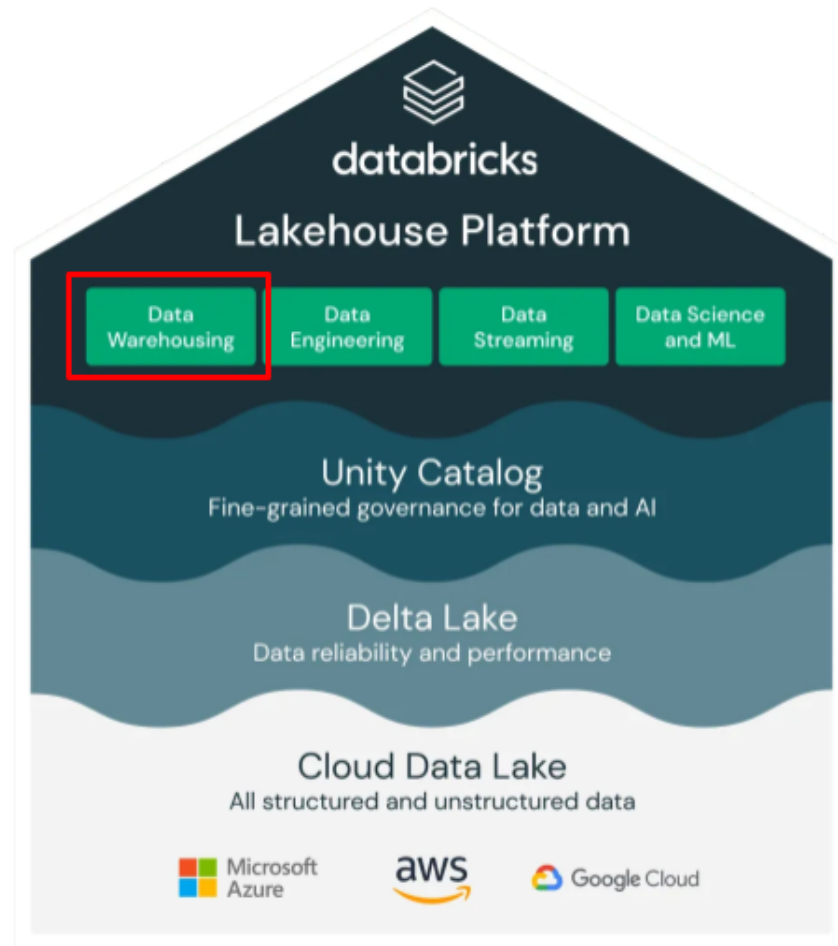
INTRODUCTION TO DATABRICKS

Kevin Barlow
Data Practitioner

Data Lakehouse



Databricks for SQL Users



Databricks SQL

- Data Warehousing for the Lakehouse
- Familiar environment for SQL users
- SQL-optimized performance (Photon)
- Connect to your favorite BI tools

Comes built into the platform!

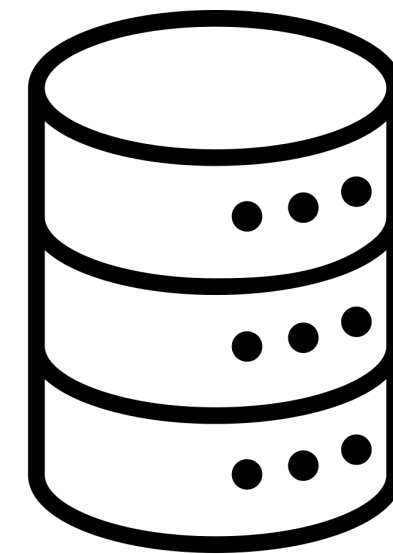
Databricks SQL vs. other databases

Databricks SQL

- Open file format (Delta)

Other Data Warehouses

- Proprietary data format



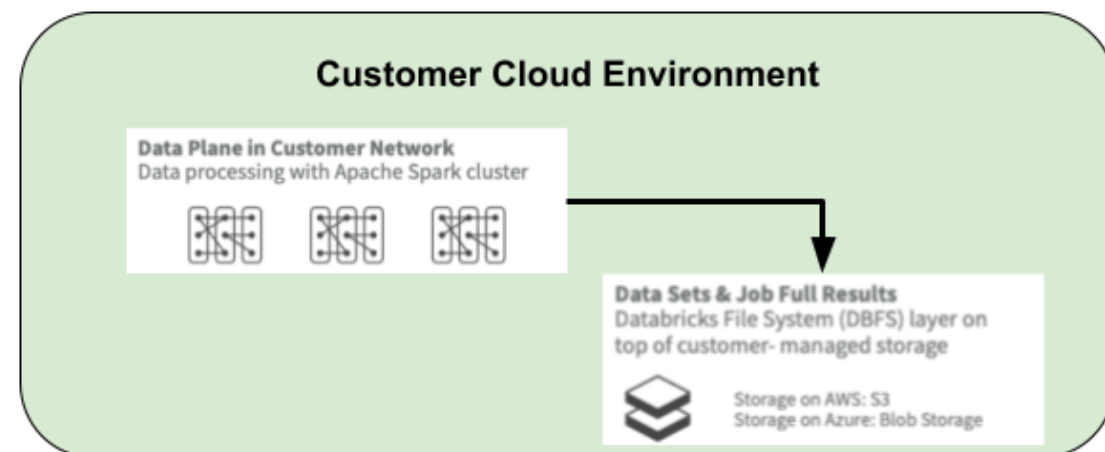
Databricks SQL vs. other databases

Databricks SQL

- Open file format (Delta)
- Separation of compute and storage

Other Data Warehouses

- Proprietary data format
- Storage often tied to compute



Databricks SQL vs. other databases

Databricks SQL

- Open file format (Delta)
- Separation of compute and storage
- ANSI SQL

Other Data Warehouses

- Proprietary data format
- Storage often tied to compute
- Tech-specific SQL



```
UPDATE clause [UPDATE country  
SET clause [SET population = population + 1  
WHERE clause [WHERE name = 'USA';
```

Diagram illustrating SQL syntax components:

- Expression**: population + 1
- Predicate**: name = 'USA'
- Statement**: The entire clause structure is grouped as a statement.

Databricks SQL vs. other databases

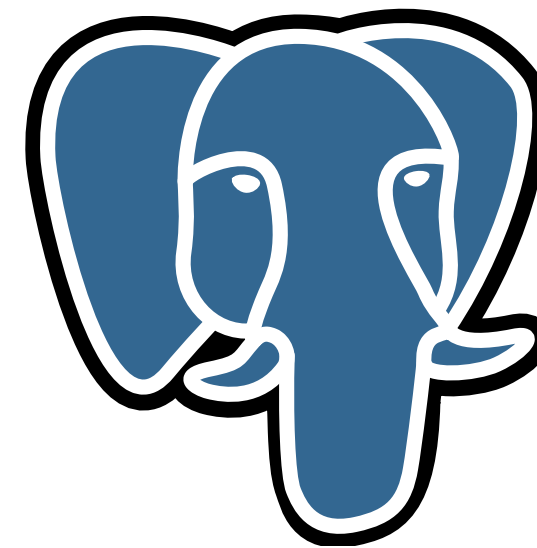
Databricks SQL

- Open file format (Delta)
- Separation of compute and storage
- ANSI SQL
- Integrated into other data workloads

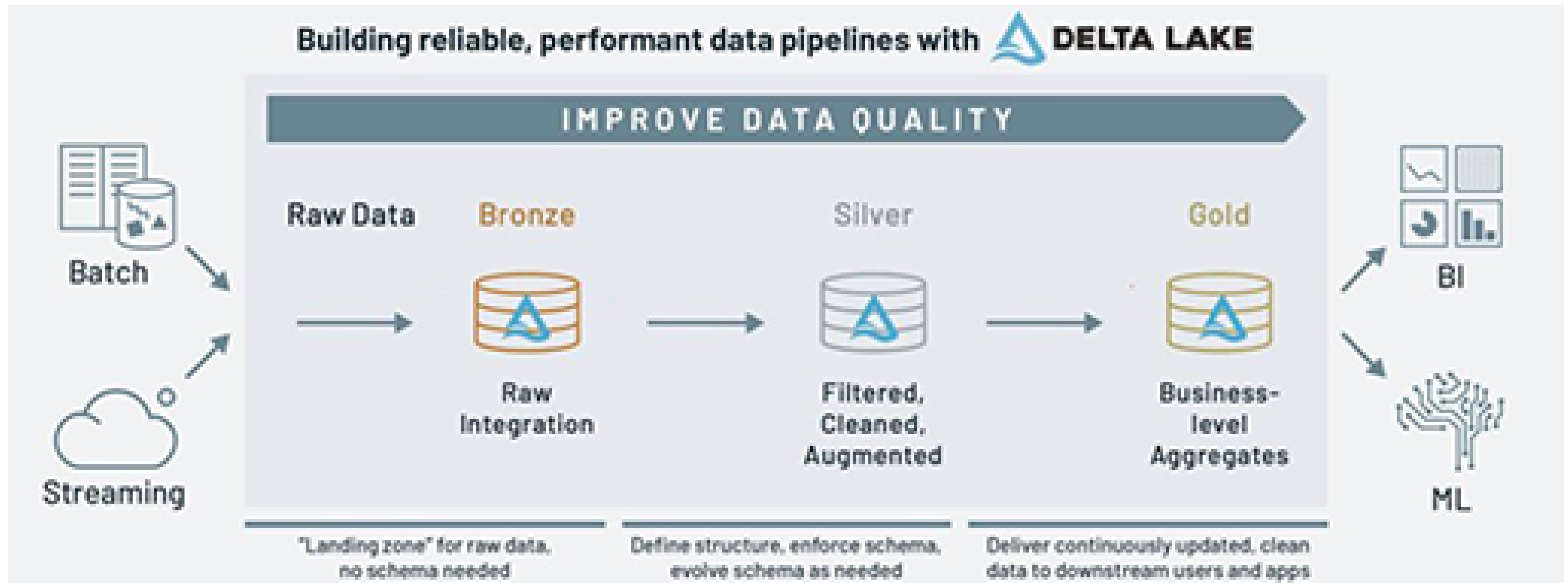


Other Data Warehouses

- Proprietary data format
- Storage often tied to compute
- Tech-specific SQL
- Usually lacking advanced analytics



SQL in the Lakehouse Architecture



Let's review!

INTRODUCTION TO DATABRICKS

Getting started with Databricks SQL

INTRODUCTION TO DATABRICKS

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Data Practitioner

SQL Compute vs. General Compute

Designing compute clusters for data science or data engineering workloads...

is inherently different than designing compute for SQL workloads

```
import pyspark.sql.functions as F

spark_df = (spark
            .read
            .table('user_table'))

spark_df = (spark_df
            .withColumn('score',
                        F.flatten(...))
            )
```

```
SELECT *
FROM user_table u
LEFT JOIN product_use p
      ON u.userId = p.userId
WHERE country = 'USA'
AND utilization >= 0.6
```

SQL Warehouse

New SQL warehouse



Name

SQL warehouse name

Cluster size ⓘ

X-Large

80 DBU / h ▾

Auto stop



After 10 minutes of inactivity.

Scaling ⓘ

Min.

1

Max.

1

clusters (80 DBU)

Type



Serverless ⓘ



Pro ⓘ



Classic

Advanced options >

Cancel

Create

SQL Warehouse

SQL Warehouse Configuration Options

1. Cluster Name
2. Cluster Size (S, M, L, etc.)
3. Scaling behavior

New SQL warehouse



Name

SQL warehouse name

Cluster size ⓘ

X-Large

80 DBU / h ▾

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Create

SQL Warehouse

SQL Warehouse Configuration Options

1. Cluster Name
2. Cluster Size (S, M, L, etc.)
3. Scaling behavior
4. Cluster Type

New SQL warehouse

Name

SQL warehouse name

Cluster size ⓘ

X-Large

80 DBU / h ▾

Auto stop

After 10 minutes of inactivity.

Scaling ⓘ

Min. 1

Max. 1

clusters (80 DBU)

Type

•

 Serverless ⓘ

 Pro ⓘ

 Classic

Advanced options >

Cancel

Create

SQL Warehouse Types

Different types provide different benefits

Pro

- More advanced features than Classic
- In customer cloud

Classic

- Most basic SQL compute
- In customer cloud

Serverless

- Cutting edge features
- In Databricks cloud
- Most cost performant

SQL Editor

New

Workspace

Recents

Data

Workflows

Compute

SQL

SQL Editor

Queries

Dashboards

Alerts

Query History

SQL Warehouses

Data Engineering

Job Runs

Data Ingestion

Delta Live Tables

Machine Learning

Experiments

Features

Models

Serving

Marketplace

Partner Connect

Disable new UI

Provide feedback

Data

Type to filter

For you

All data

> __databricks_internal

> hive_metastore

> main

> samples

> system

Disable new schema browser

Clickstream Query

Clickstream Clean Query

+>

Run

hive_metastore.wikipedia

Starter Warehouse

Pro

2XS

Save

Schedule

Share

1 SELECT * FROM top_spark_referrers

Results

Top Clicked Pages

Click Count Histogram

+>

#	referrer	click_count
1	other-google	14361
2	other-empty	1543
3	Apache_Hadoop	901
4	Spark	725
5	other-other	587
6	other-wikipedia	350
7	Akka_(toolkit)	222
8	other-bing	186
9	MapReduce	181
10	Apache_Mahout	150

15 s 820 ms | 10 rows returned

Refreshed just now

Common SQL Commands

COPY INTO

- Grab raw data and put into Delta
- The Extract of ETL

```
COPY INTO my_table
FROM '/path/to/files'
FILEFORMAT = <format>
FORMAT_OPTIONS ('mergeSchema' = 'true')
COPY_OPTIONS ('mergeSchema' = 'true');
```

CREATE <entity> AS

- Create a Table or View
- The Transform in ETL

```
CREATE TABLE events
  USING DELTA
  AS (
    SELECT *
    FROM raw_events
    WHERE ...
  )
```

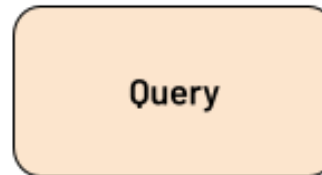
Let's practice!
INTRODUCTION TO DATABRICKS

Databricks SQL queries and dashboards

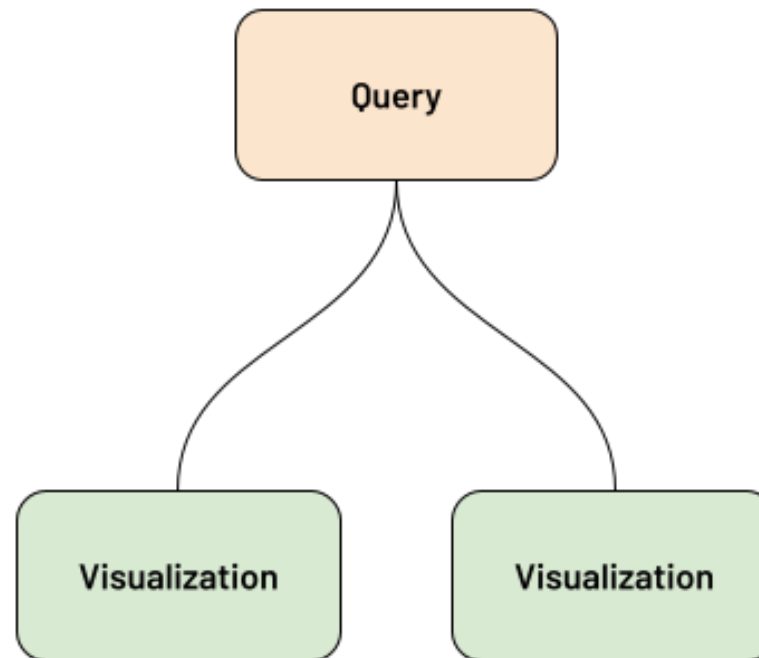
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Databricks SQL Assets

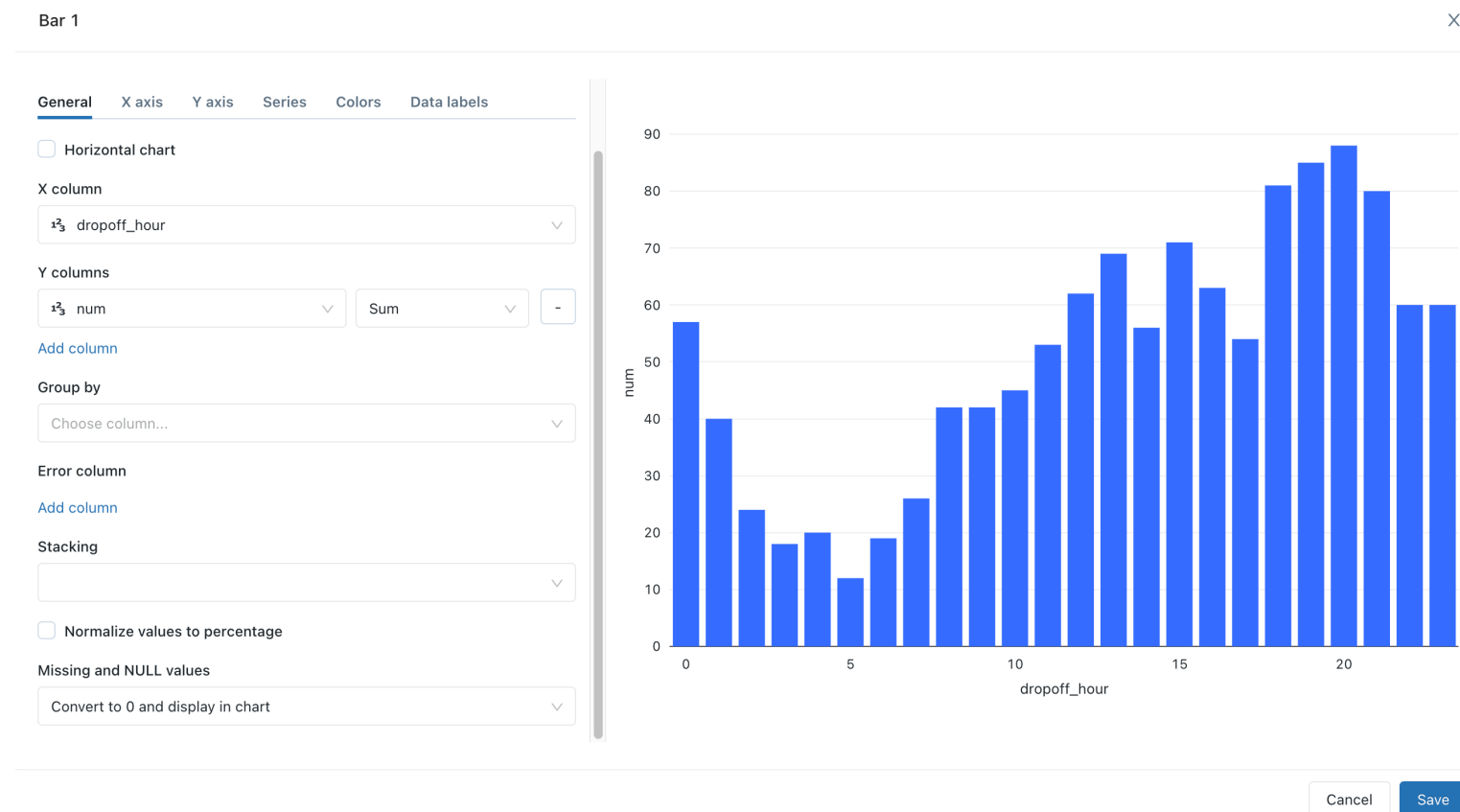


Databricks SQL Assets

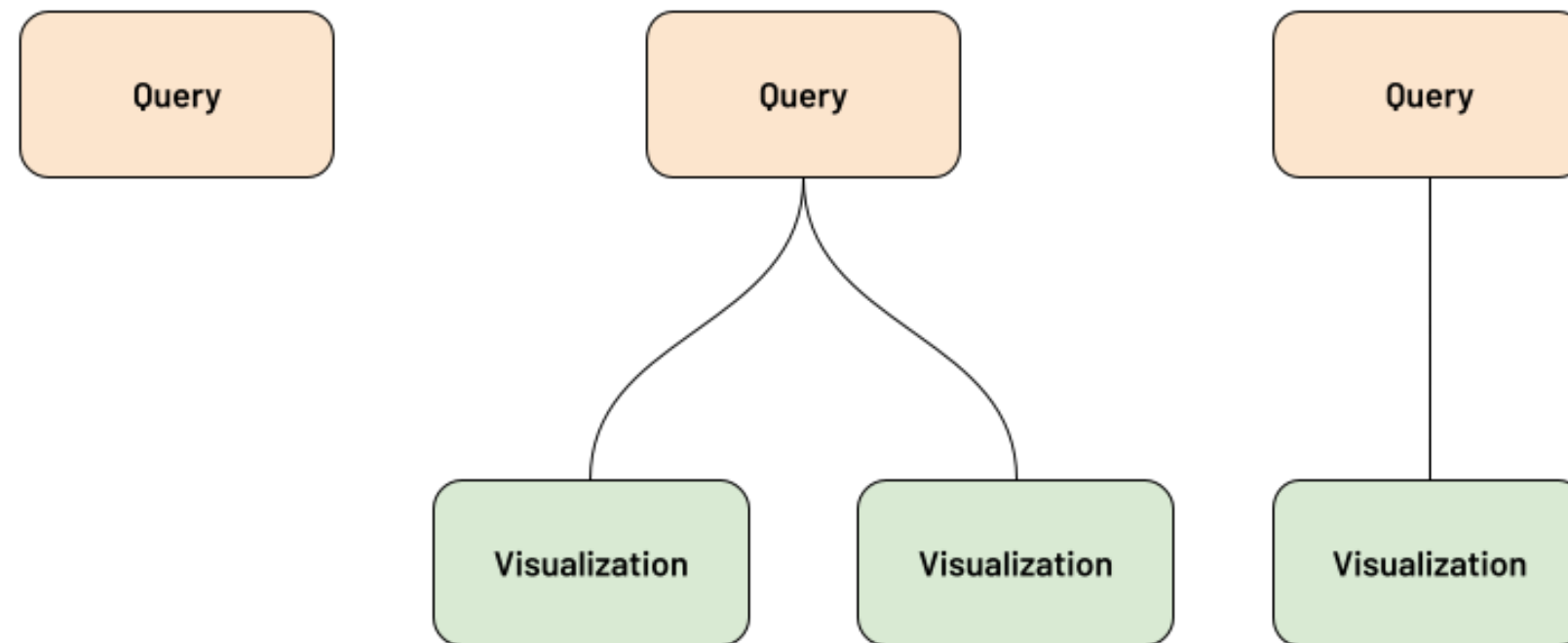


Visualizations

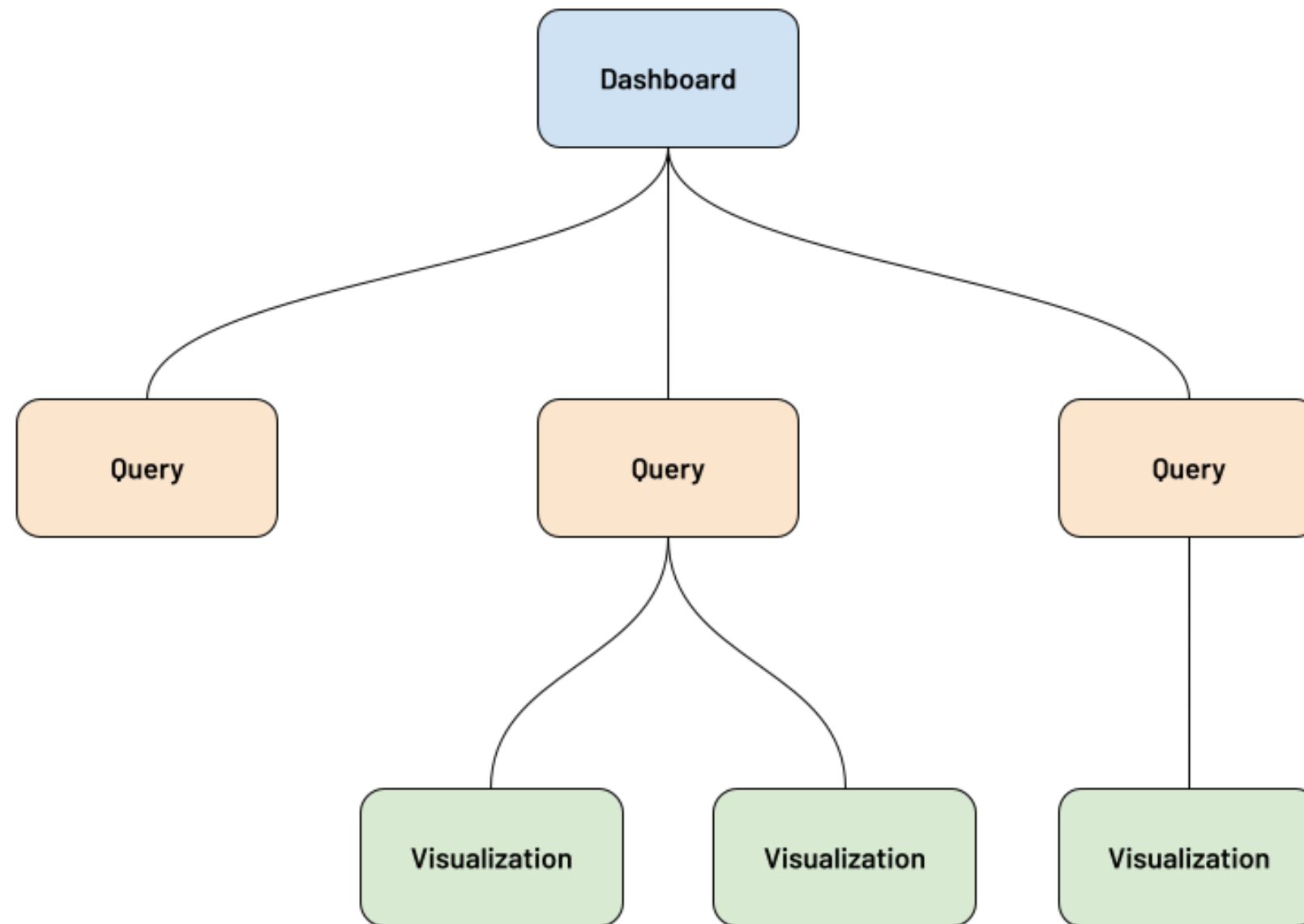
- Lightweight, in-platform visualizations
- Support for standard visual types
- Ability to quickly comprehend data in a graphical way



Databricks SQL Assets

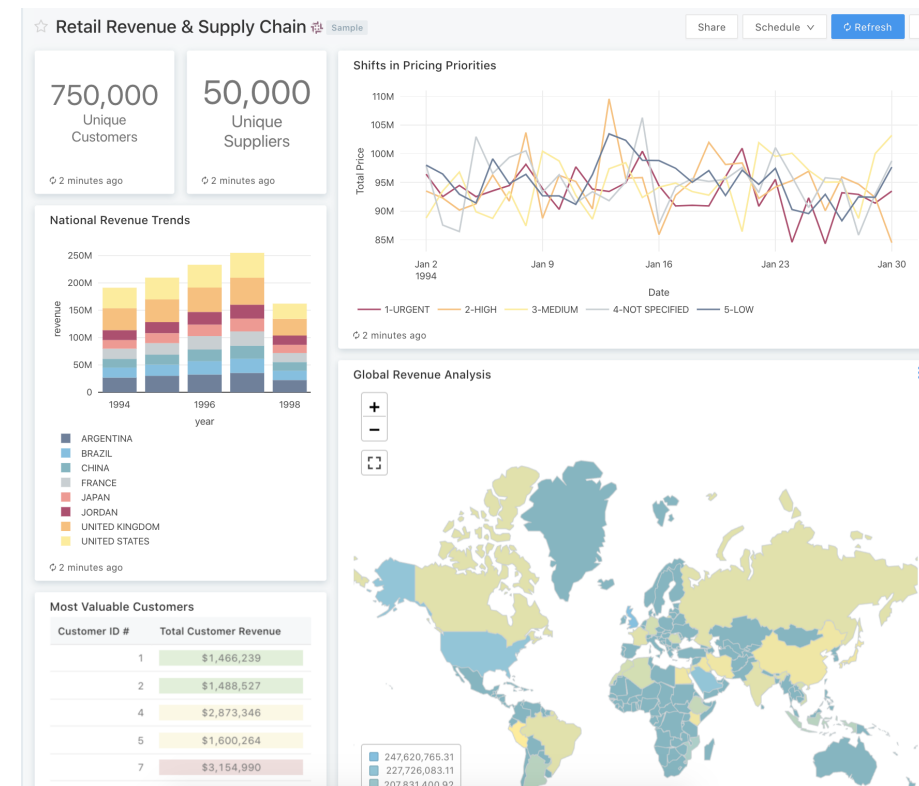


Databricks SQL Assets



Dashboards

- Lightweight, easily created dashboards
- Ability to share and govern across your organization
- Scalable and performant



Query Filters

Filters

- Interactive query / dashboard components that allow the user to reduce the size of the result dataset
- Works on the client-side, so is very fast
- Supports single select, multi-select, text fields, and date / time pickers

pickup_zip 

10103 

dropoff_zip 







10023 

```
SELECT *  
FROM nyctaxi.trips  
WHERE pickup_zip = 10103  
AND dropoff_zip = 10023
```

Query Parameters

Parameters

- More flexible than filters, and supports more kinds of selectors
- Allow the user to provide a value that is input into the underlying SQL query text
- Created in the query by using the `{{ }}` syntax

pickup_zip  10103 
dropoff_zip  10023 
Null check  trip_distance 

```
SELECT *  
FROM nyctaxi.trips  
WHERE pickup_zip = 10103  
AND dropoff_zip = 10023  
AND {{ nullCheck }} IS NOT NULL
```

Let's practice!
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Creating a Databricks SQL Dashboard

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Let's practice!
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