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Kristin Dahl, Solutions Architect

Roberto Salcido, Solutions Architect

October 13, 2021

Housekeeping

- Questions encouraged!
- This is meant to be a discussion
- If we do not answer your question during the call, we will follow-up with you afterwards to get you the information you need!
- Participate in the polls!

Agenda

- 11:00 AM PT | Introduction & Databricks Delta SQL Overview
- 11:30 AM PT | Delta Streaming Pipeline
- 12:00 AM PT | SQL Analytics
- 12:30 AM PT | Event concludes

Meet the Presenters

Kristin Dahl
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Solutions Architect
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Databricks SQL: Public Preview Available!

We are pleased to announce that Databricks SQL is now available to all Databricks customers using **premium** and **enterprise** workspaces without the need to request access.

Databricks SQL allows users to operate a multi-cloud lakehouse architecture that provides data warehousing performance at data lake economics with up to 6x better price/performance than traditional cloud data warehouses. This enables you to not only simplify your architecture, but also perform BI directly on the freshest and most complete data.

For more information, please visit https://databricks.com/product/sql-analytics

New Blog Series: Databricks SQL

Databricks is launching a new blog series on performance improvements and enhancements in Databricks SQL

https://databricks.com/blog/2021/09/08/new-performance-improvements-in-databricks-sql.html

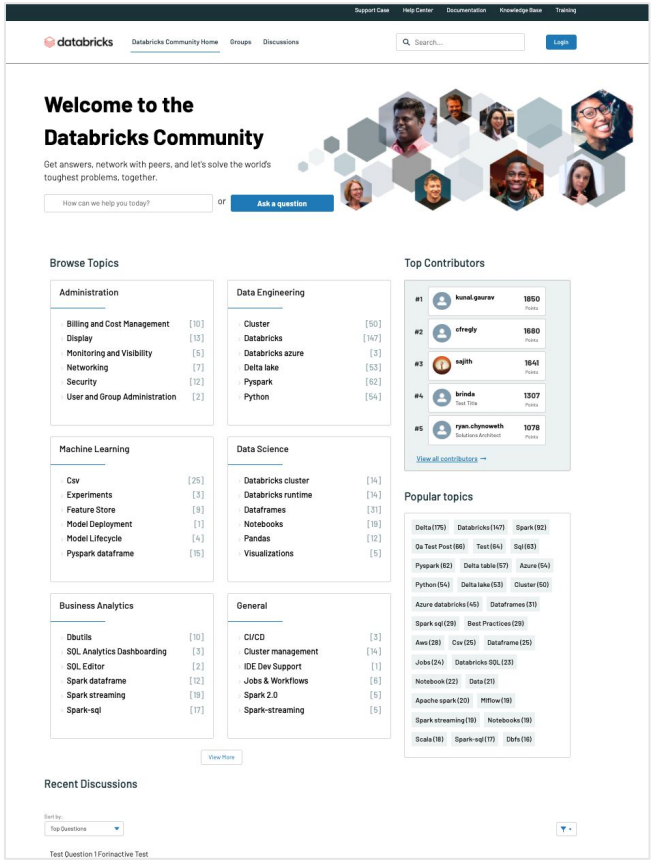
New Performance Improvements in Databricks SQL

by Reynold Xin, Can Efeoglu, Cyrielle Simeone and Bilal Aslam
September 8, 2021

Originally announced at Data + AI Summit 2020 Europe, Databricks SQL lets you operate a multi-cloud lakehouse architecture that provides data warehousing performance at data lake economics. Our vision is to give data analysts a simple yet delightful tool for obtaining and sharing insights from their lakehouse using a purpose-built SQL UI and world-class support for popular BI tools.

This blog is the first of a series on Databricks SQL that aims at covering the innovations we constantly bring to achieve this vision: performance, ease of use and governance. This blog will cover recent performance optimizations as part of Databricks SQL for:

Databricks Community (community.databricks.com)



Now live!

- Strong **cross-functional participation** across Databricks means expert advice available at scale
- **Federated search** across Documentation, Knowledge Base, Community posts + Academy (coming on roadmap!)
- Seamless account provisioning from workspaces, starting for AWS
- **Organized Topics** by use cases and features with participation from Databricks SMEs, partners and savvy practitioners
- Gamified Top Contributors to **celebrate and motivate** participation with exportable badges and recognitions (coming on roadmap!)
- Public and private **Groups with peers** for related conversations and deeper relationships
- Other than in private groups, all content will be public and indexed in search engines to **improvement discoverable for users**

Evolution of Data Management

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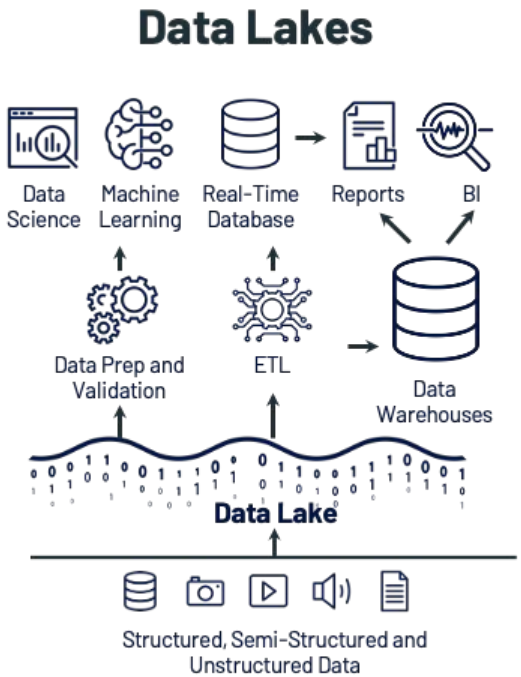
purpose-built for BI and reporting, however...

- No support for video, audio, text
- No support for data science, ML
- Limited support for streaming
- Closed & proprietary formats

Therefore, most data is stored in data lakes & blob stores

could handle all your data for data science and ML, however…



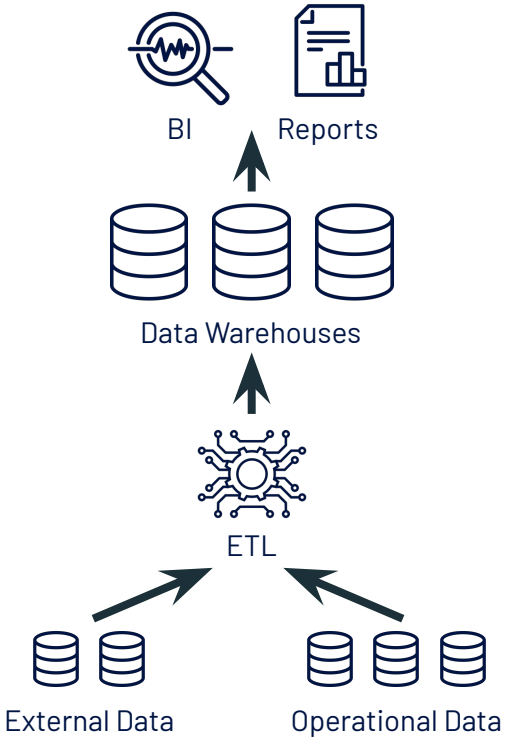
- Poor BI support
- Complex to set up
- Poor performance
- Unreliable data swamps

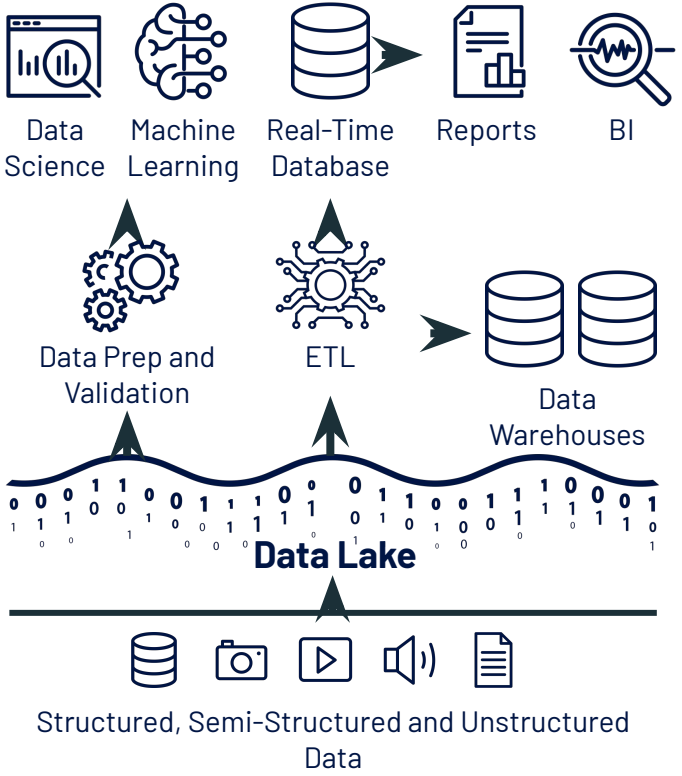
Let's summarize our data challenges

With traditional Data Warehouses and Data Lakes we still lack:

- Reliability (lack of ACID, pipeline fragmentation for batch + stream)
- Performance (small files problem, object store limitations, etc.)
- Support for Data Science, Machine Learning & BI under one roof
- Openness (vs proprietary software and tooling)

Coexistence is not a desirable strategy





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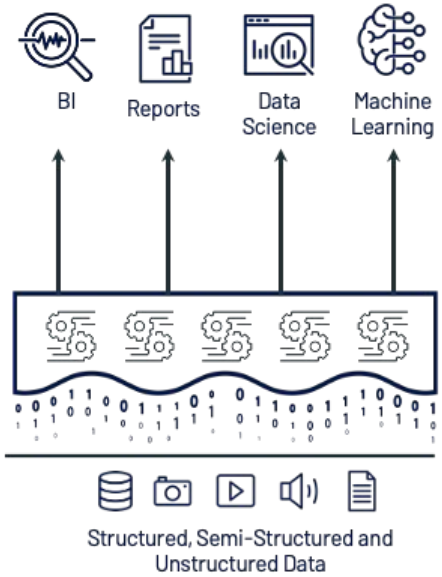
Data Warehouse

Data Lakes

Lakehouse



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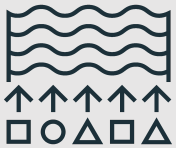
Data Lake

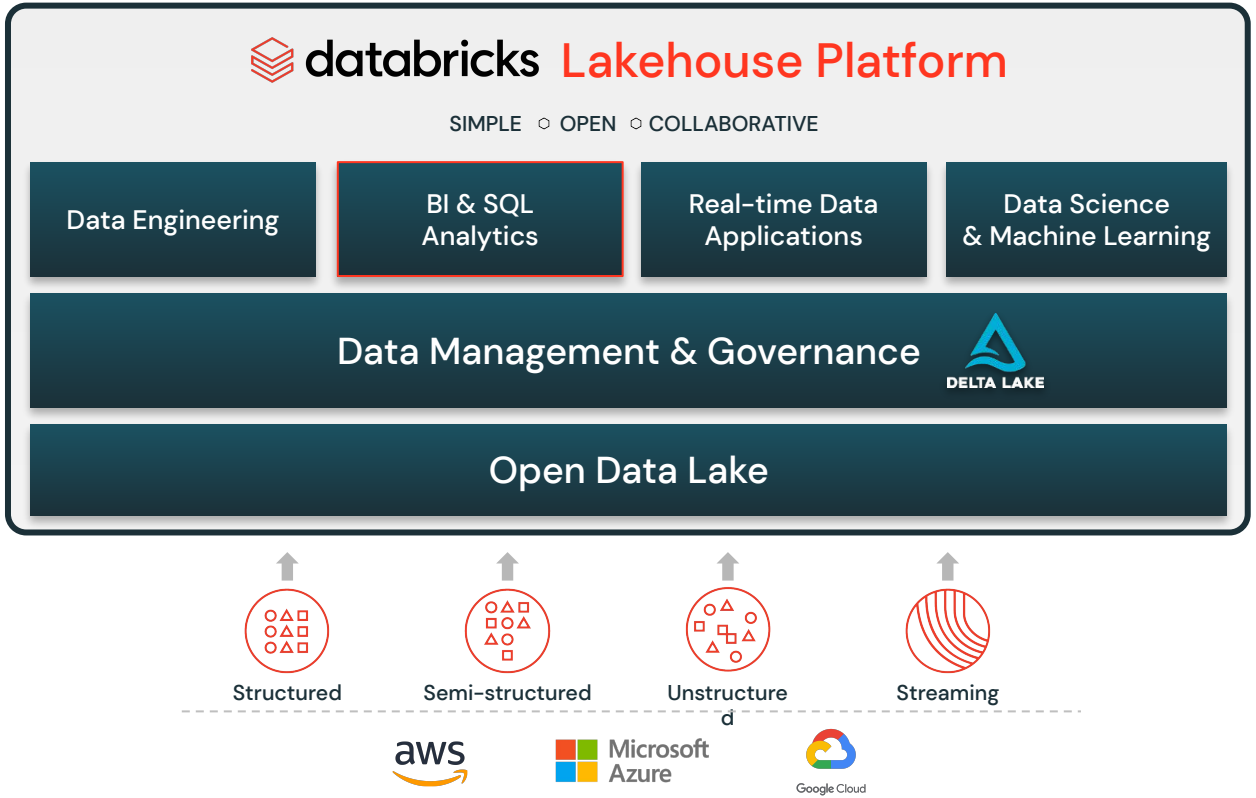


Lakehouse

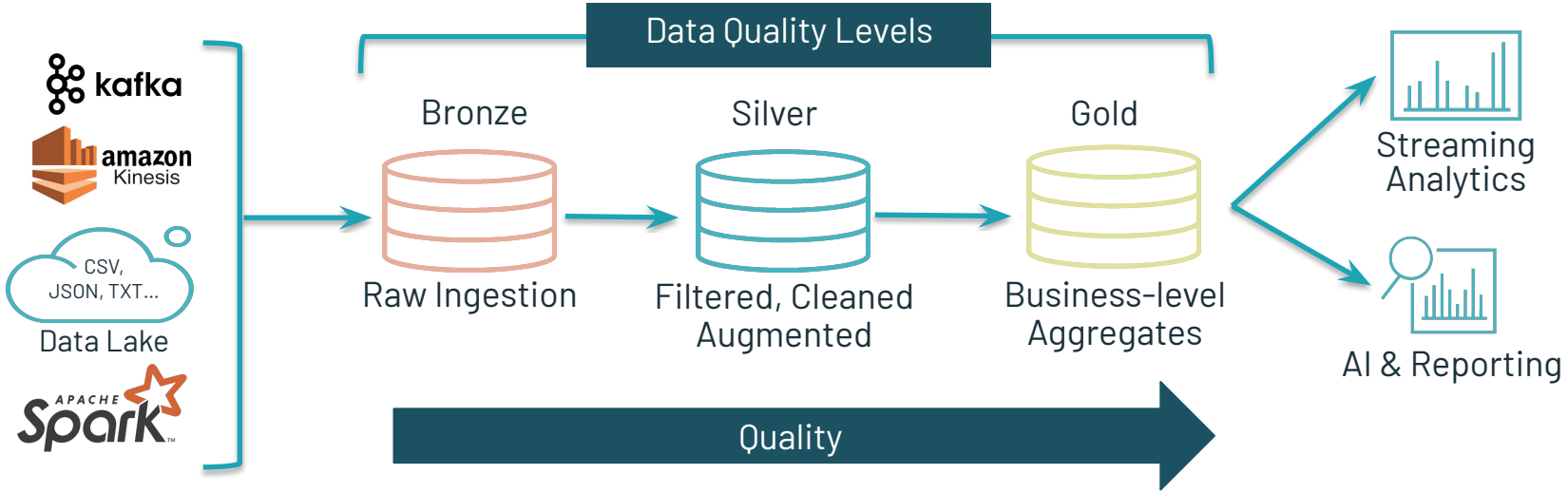
One platform to unify all of your data, analytics, and AI workloads

Data Warehouse

Data Lakehouse is the foundation for BI & SQL Analytics

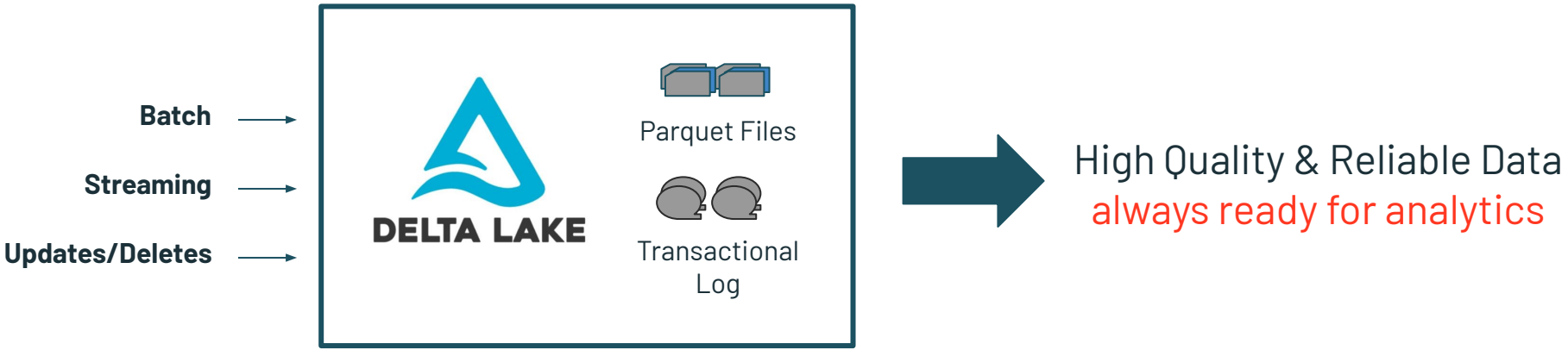


The Delta Lake



Delta Lake allows you to *incrementally* improve the quality of your data until it is ready for consumption.

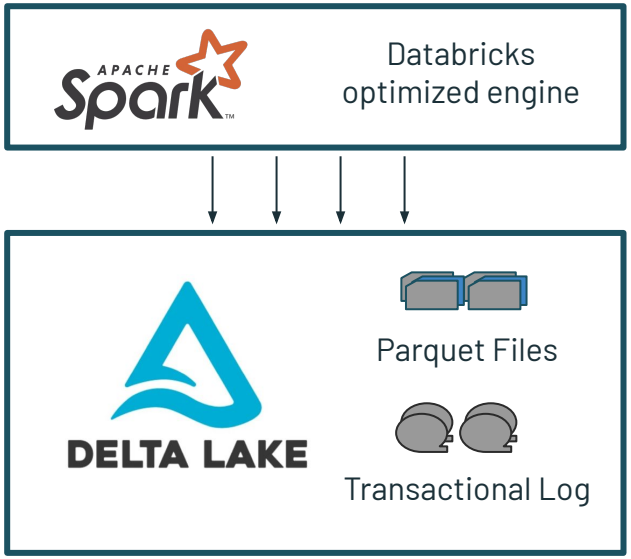
Delta Lake ensures data reliability



Key Features

- ACID Transactions
- Schema Enforcement
- Unified Batch & Streaming
- Time Travel/Data Snapshots

Delta Lake optimizes performance



Highly Performant queries at scale

Automatically managed through databricks

Key Features

- Indexing
- Compaction
- Data skipping
- Caching

What is your architecture today?

- Data warehouse centric
- Data lake centric
- Lakehouse centric
- N/A

Databricks SQL Overview

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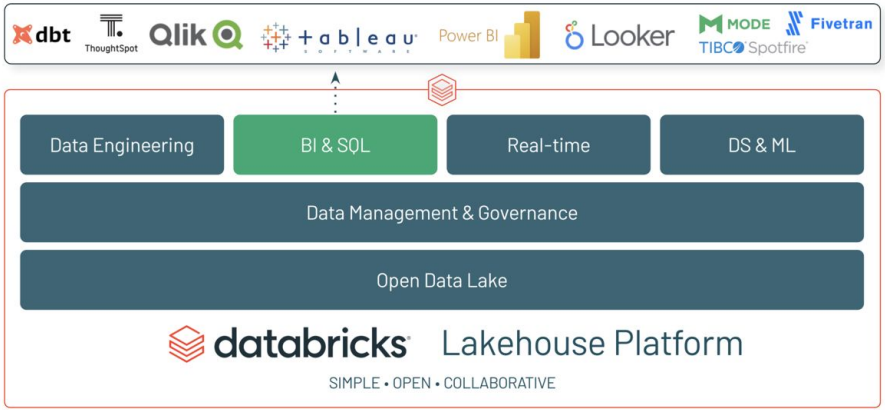
Databricks SQL

Analytics on the latest and most complete data with data warehouse performance and data lake economics

- Fast and reliable performance for all queries
- Simplified administration and governance
- Analytics on all your data with your tools of choice



Use Cases

Query data lake data with your existing BI tools

"Databricks is core to our business because its lakehouse architecture provides us a unified way to access, store and share actionable data. It's going to be the core of our analytics strategy going forward. No question about that."

– Jagan Mangalampalli, Director of Big Data, Punchh

Enable governed self-served analytics for everyone

"As a company focused on providing data-driven research to our customers, the massive amount of data in our data lake is our lifeblood. By leveraging Databricks and Delta Lake, we have already been able to democratize data at scale, while lowering the cost of running production workloads by 60%, saving us millions of dollars. We're excited to build on this momentum by leveraging the Databricks lakehouse architecture that will further empower everyone across our organization – from research analysts to data scientists – to interchangeably use the same data, helping us to provide innovative insights to our customers faster than ever before."

— Steve Pulec, Chief Technology Officer, YipitData

Build data-enhanced applications

"At Atlassian, we have proven that there is no longer a need for two separate data things. Technology has advanced far enough for us to consider one single unified lakehouse architecture."

— Rohan Dhupelia, Data Platform Senior Manager, Atlassian

LEARN MORE:
https://databricks.com/product/databricks-sql

Fast and predictable performance for all queries

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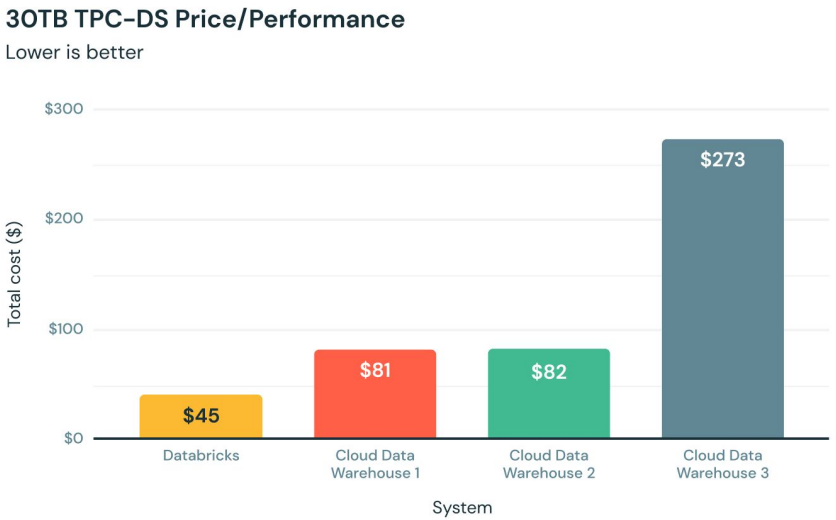
Better price / performance

Query and analyze your most complete and freshest data with **up to 6x better price/performance** than legacy cloud data warehouses.

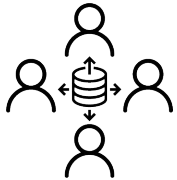


Source: Performance Benchmark with Barcelona Supercomputing Center

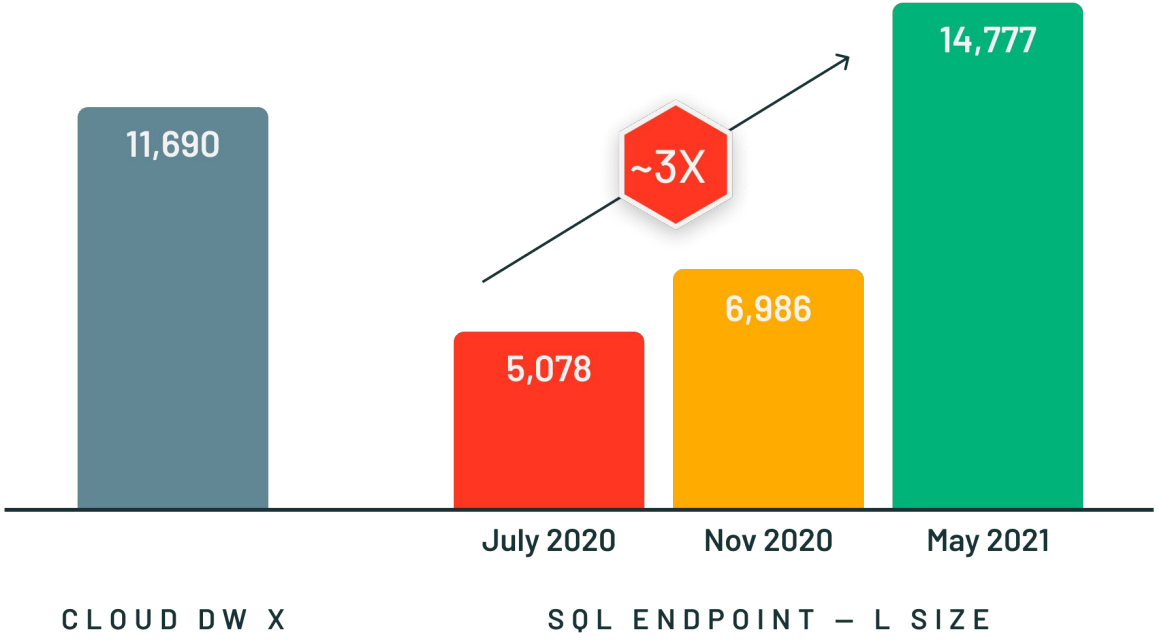
Fast and predictable performance for all queries

Beyond large query performance

Small Queries



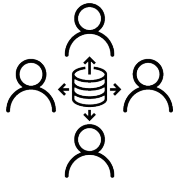
Shaving system overhead off and improving QpH by 3X



Fast and predictable performance for all queries

Beyond large query performance

Small Queries



Shaving system overhead off and improving QpH by 3X

Mixed Workloads

Dual queue to **avoid large queries blocking small ones**

Fast and predictable performance for all queries

Beyond large query performance

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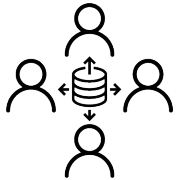

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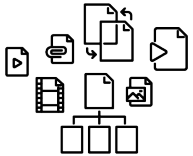
IO Performance

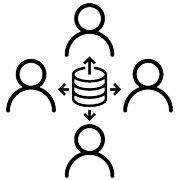


Async I/O for faster **small files** and **cold read** cases (~12x)

Fast and predictable performance for all queries

Beyond large query performance

Small Queries



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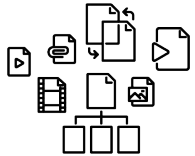
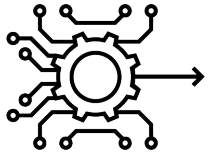


Async I/O for faster **small files** and **cold read** cases (~12x)

BI Results Retrieval



Cloud fetch to improve fetch throughput (10x)

Simplified administration and governance

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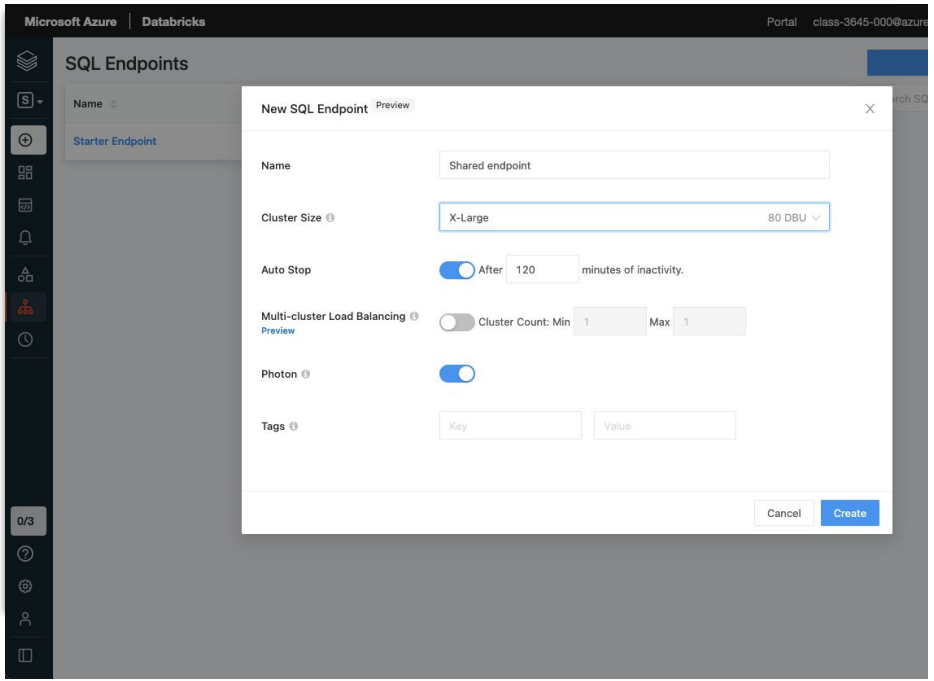
Get started quick with "No resource" management

- Quickly setup optimized compute resources with Databricks SQL endpoints (Powered by Photon)
- Easily and automatically scale to your needs with elasticity and concurrency scaling built-in
- Coming soon in Serverless !



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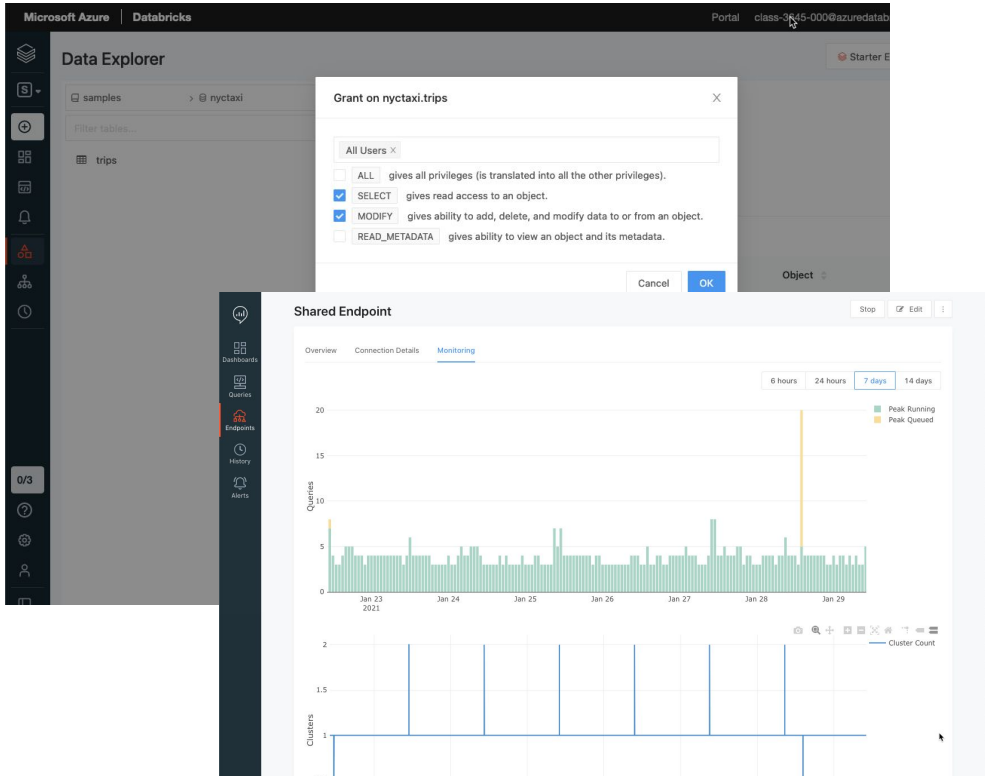
Easy to govern self-served analytics

- Confidently onboard new users, discover, secure, and govern data in one place
- Manage costs and usage effectively with endpoints monitoring and query history
- Meet compliance needs with built-in audit trail



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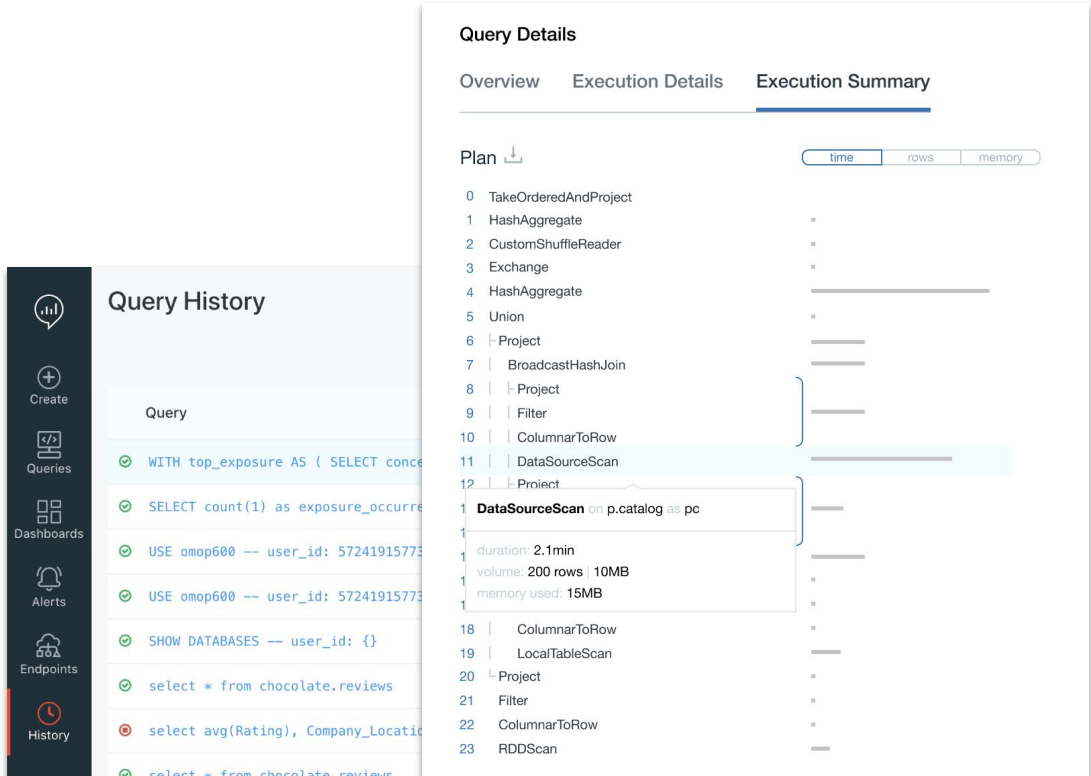
Easily troubleshoot and optimize queries

- Get full visibility into query execution with in-depth breakdown at operation levels
- Identify bottlenecks and expensive operations to optimize queries
- Analyze by query duration, data volumes & resource usage



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Analytics on all your data with your tools of choice

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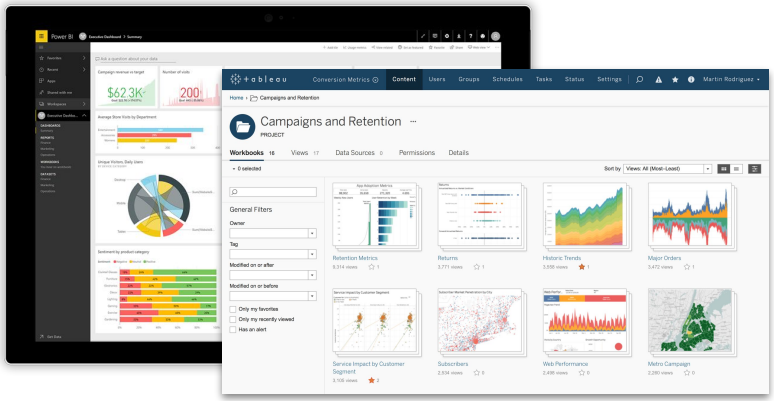
A platform for your BI tools of choice

Tap into one source of truth for all your data. Databricks SQL also provides fast performance, low latency, and high user concurrency for **your existing BI tools**.



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+ a b l e a u

Power BI

Qlik

TIBCO Spotfire

MicroStrategy

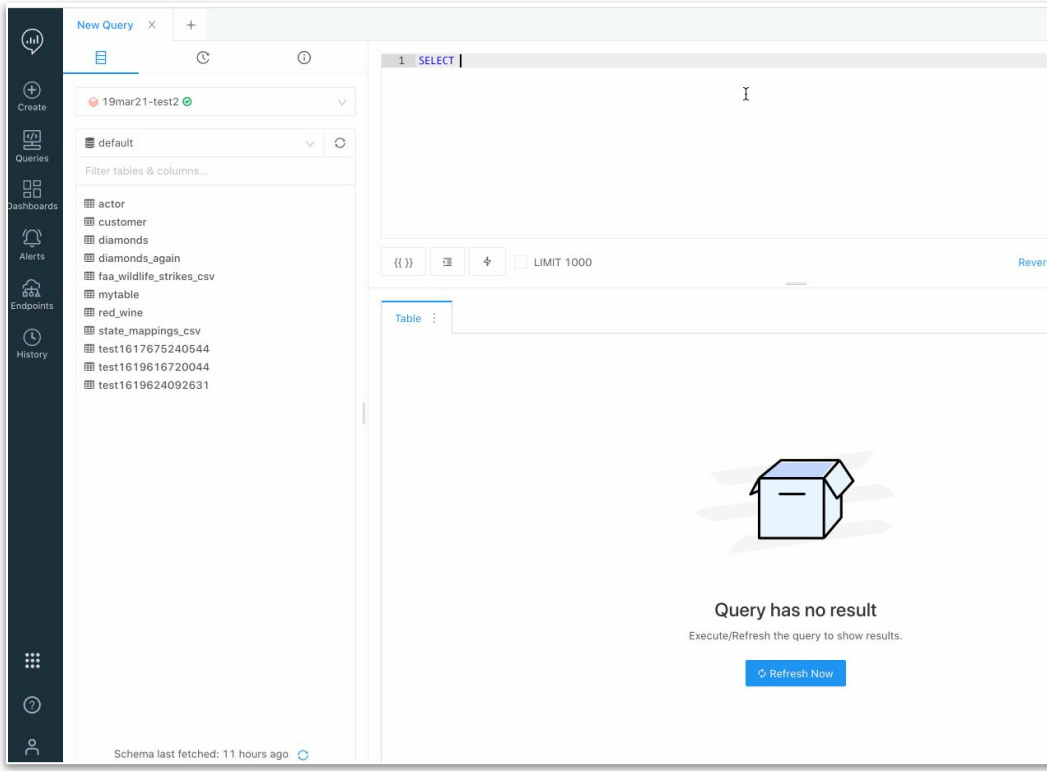
Looker

Coming soon:

ThoughtSpot

First-class SQL development experience

- Quickly **perform exploratory analysis** with the built-in SQL query editor, visualizations and dashboards.
- Trigger alerts for critical changes, and respond to business needs faster.



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Delta & SQL Analytics - Lab Prep

Start your clusters now!

How to Import a Notebook

Notebook Link

SQLA Documentation

New JSON SQL Operators

Persona QuickStarts

Billable Usage Delivery

Audit Log Delivery

OverWatch

If you have any questions or need assistance getting features turned on please contact the SA's giving this workshop


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