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SUMMIT
21-22 GIUGNO 2022

DAAN04

Come ottenere il massimo del valore dai propri dati senza dover gestire un proprio datawarehouse

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“In 2020, 64.2ZB[*] of data was created or replicated [...]”

Source: IDC Modern Data Platform 2021

[*] 1 Zettabyte = 10^{12} GB = 1 Trillion GB

“More data is created per hour now than in an entire year just two decades ago”

Source: The Seagate Rethink Data Survey, IDC, January 2020

“Analytics requirements are coming in from all corners. We don’t have enough specialized skills”

“How do I derive value from growing, diverse data, living in data silos?”

“Performance has to be consistently fast. Costs are hitting the roof”

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Support your organization with future-proof modern data architecture

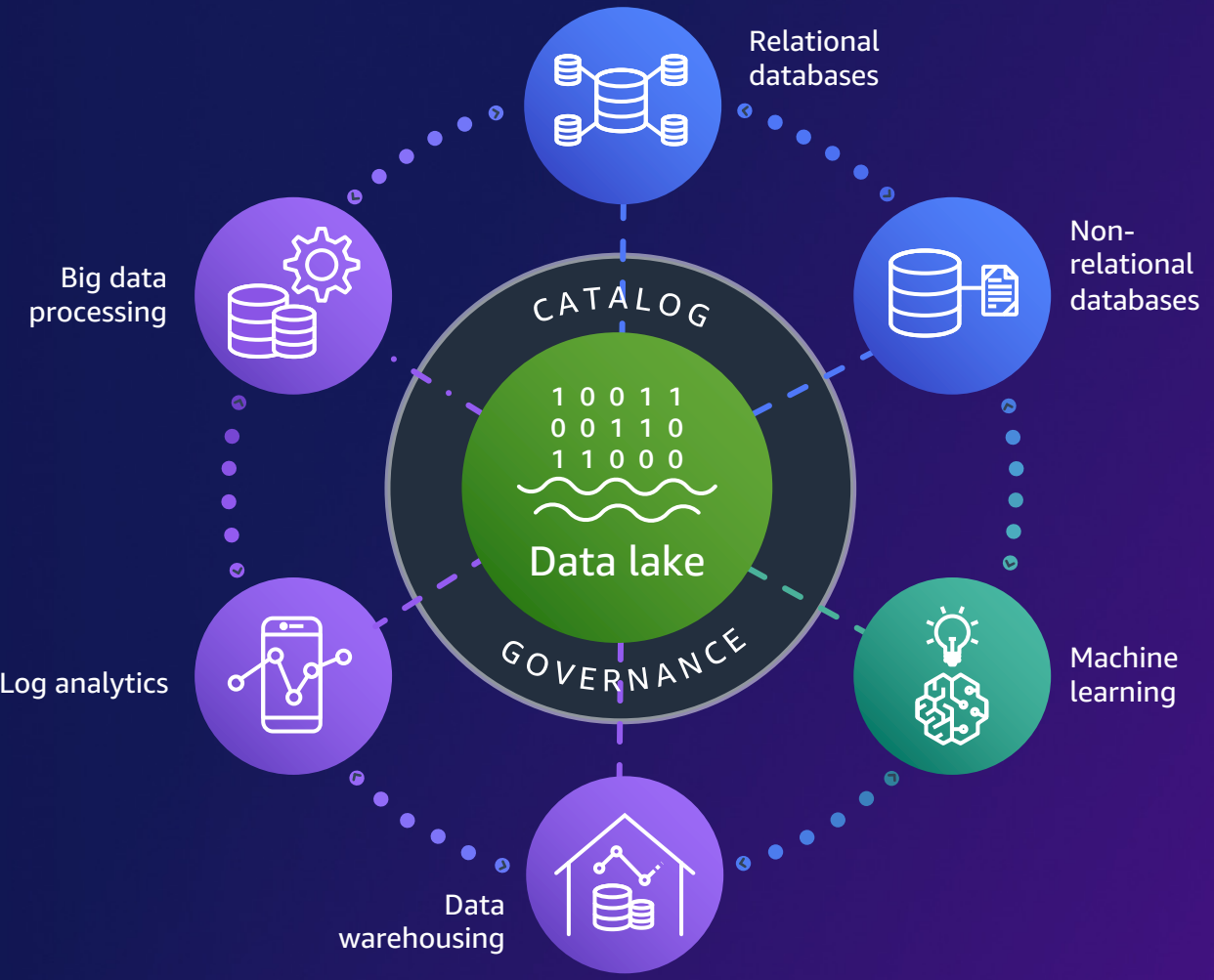
Data at any scale

The best price-performance

Seamless data access

Unified governance

AI and ML to solve business challenges



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Why Amazon Redshift for your data needs?

Fast, easy, and secure cloud data warehousing at scale

Easy analytics for everyone

Focus on getting from data to insights in seconds, without worrying about managing your data warehouse

Analyze all your data

Break through data silos and run real-time and predictive analytics on all your data across operational databases, data lake, and data warehouse

Performance at any scale

Gain up to 3x better price performance than other cloud data warehouses, and dynamically scale to improve query speed for complex and critical workloads

Amazon Redshift

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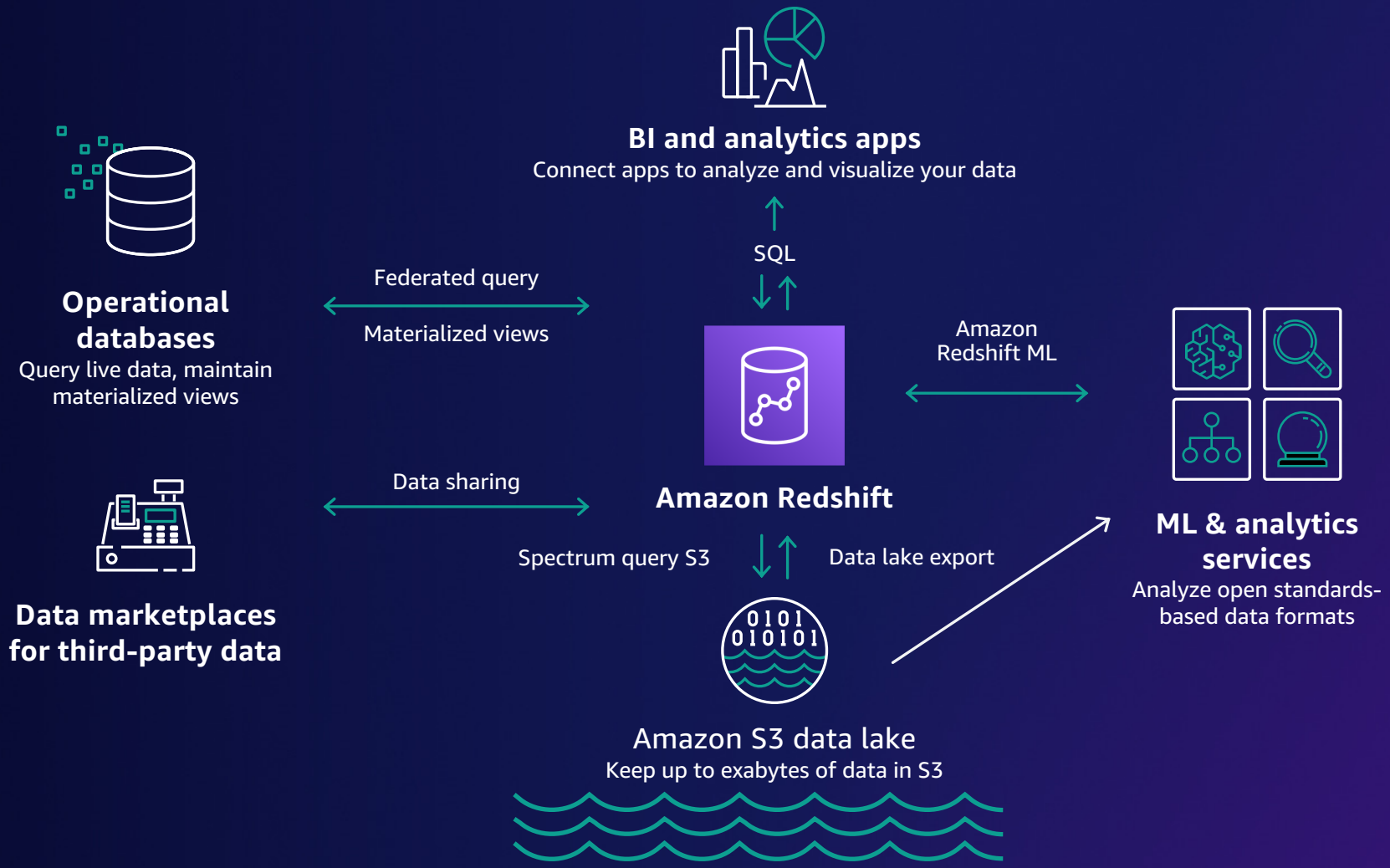
Analyze all your data

WITH AWS SERVICES INTEGRATION



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It’s still Day 1 and we keep innovating for you

Easy analytics for everyone

- NEW! Serverless
- NEW! Query Editor v2
- Updated! Automated DW Management
- NEW! Automatic Materialized Views
- Data API
- Updated! Redshift Advisor
- Updated! Cloud Formation templates
- NEW! Grafana Plugin

Analyze all your data

- Updated! Data sharing
- NEW! ADX Integration
- NEW! Streaming Ingestion
- Updated! Amazon Redshift ML
- Updated! Federated Query
- Updated! Geospatial enhancements
- SUPER data type with JSON

Performance at any scale

- Updated! RA3 nodes & managed storage
- AQUA
- Updated! Workload Management enhancements
- NEW! Concurrency scaling for Writes
- Updated! SQL Enhancements & migration support
- Security, Governance, & Compliance

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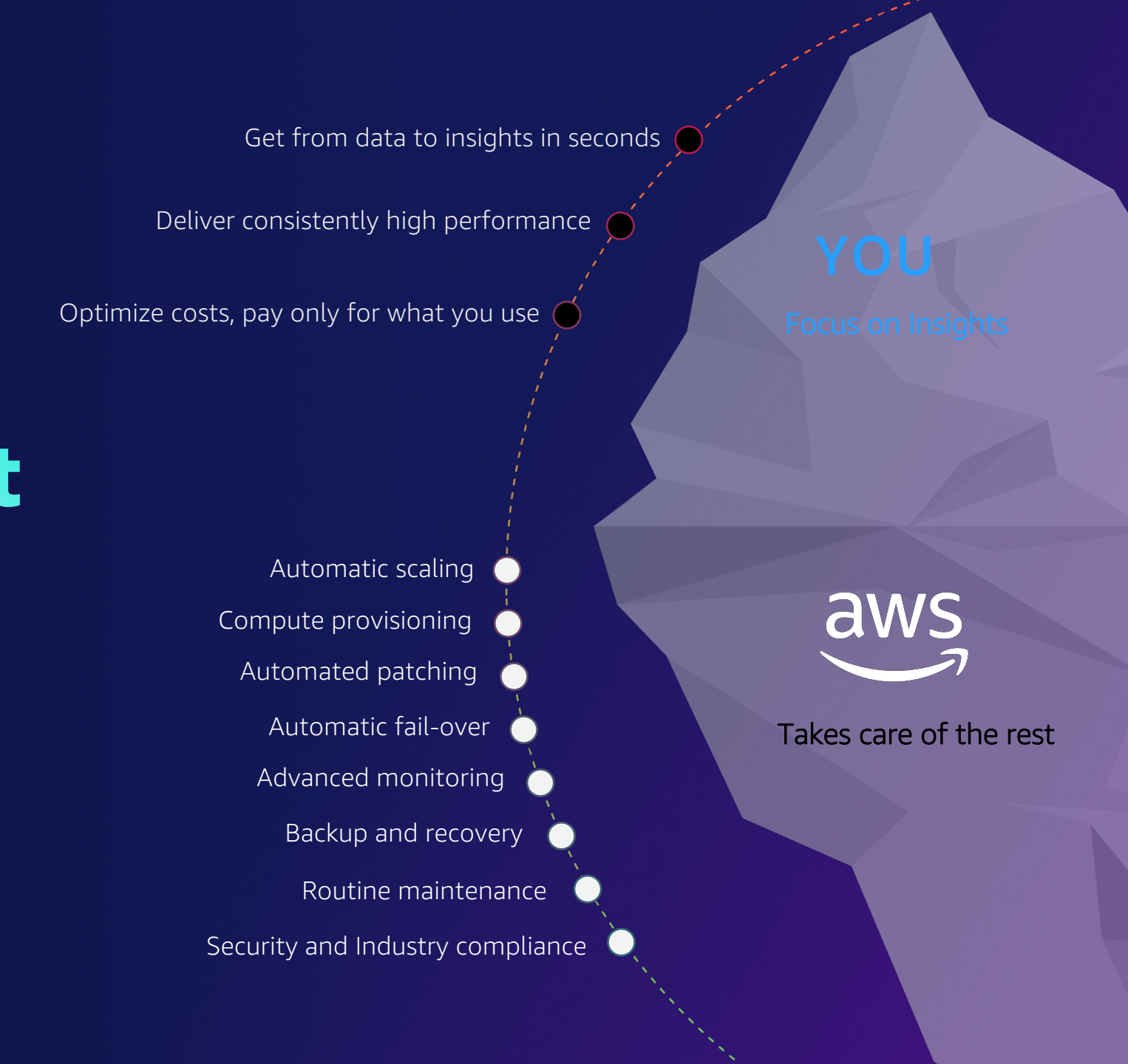
Amazon Redshift Serverless

Automatically and intelligently provisions and scales data warehouse capacity



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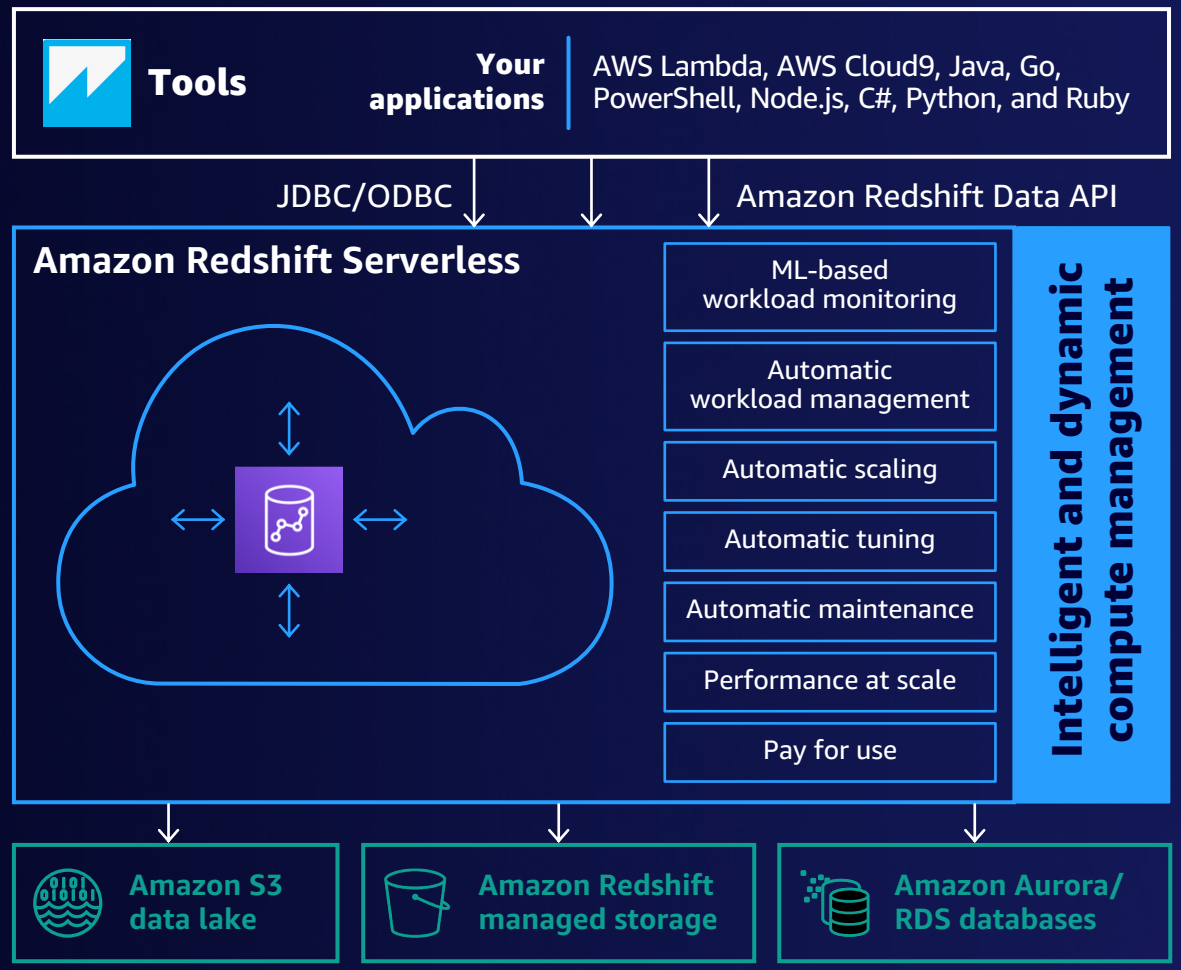
Amazon Redshift Serverless

NEW PREVIEW

A NEW SERVERLESS OPTION FOR AMAZON REDSHIFT



Simply point applications to the Amazon Redshift Serverless endpoint and start running

All Amazon Redshift SQL functionality applies

- Security and user management
- Complex joins
- Semi-structured data
- Data sharing
- Machine learning functions
- Data lake queries
- Federated query
- Durability and transactional guarantees
- JDBC/ODBC and Data API
- And more

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All of Amazon Redshift's benefits with an easy get started experience

NEW PREVIEW

No compromises

SQL features | Performance at scale | Scalability | Analyze all your data | Security

Easy to get started

Developer, business analyst

Enable Amazon Redshift serverless for your AWS account

BI tool

Connect from your favorite BI tool or Amazon Redshift Query Editor

Amazon Redshift

Amazon Redshift Serverless executes queries by automatically provisioning capacity

Pay

Pay for compute and storage used during analysis

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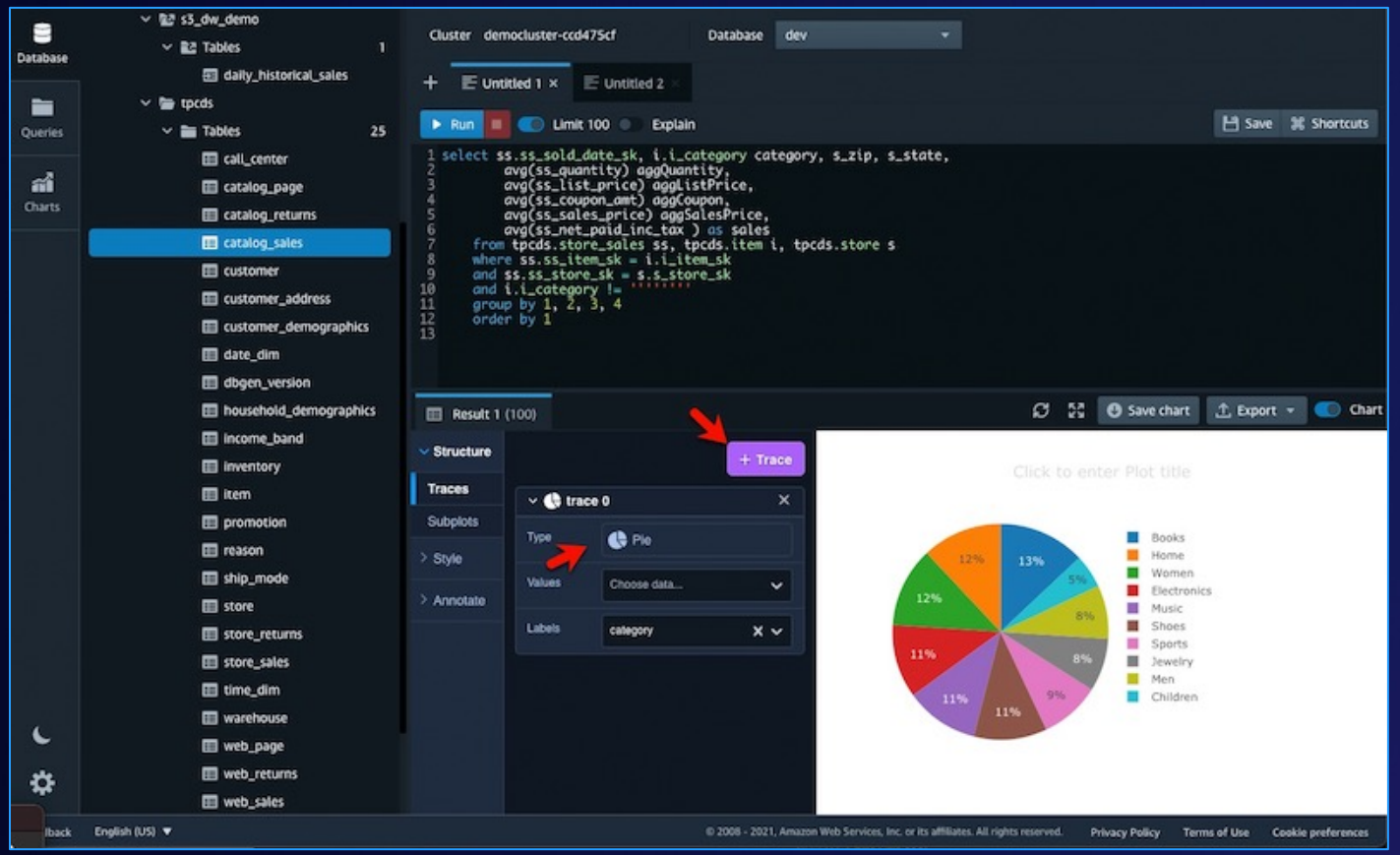
Amazon Redshift Query Editor v2.0

NEW

FREE WEB-BASED ANALYST WORKBENCH FOR DATA EXPLORATION AND ANALYSIS USING SQL



Web-based tool for data analysts, data scientists, and database developers to explore, analyze, and collaborate on data

Share and collaborate on queries and analysis, and track changes with built in version control

Browse, create schema and tables, load data, author SQL queries & stored procedures, and visualize query results with charts

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Automated performance tuning

UPDATED

ML-BASED OPTIMIZATIONS TO GET STARTED EASILY AND GET THE FASTEST PERFORMANCE QUICKLY

Automatic vacuum delete

ATO: Automatic distribution keys

ATO: Automatic sort keys

Auto workload manager

Automatic table sort

ATO: Automatic column encoding

Auto Analyze

Auto refresh & re-write Materialized Views

Automates physical data design and optimization

Optimizes for peak performance as data and workloads scale

Leverages machine learning to adapt to shifting workloads

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Amazon Redshift ML

EASILY CREATE AND TRAIN ML MODELS USING SQL QUERIES WITH AMAZON SAGEMAKER

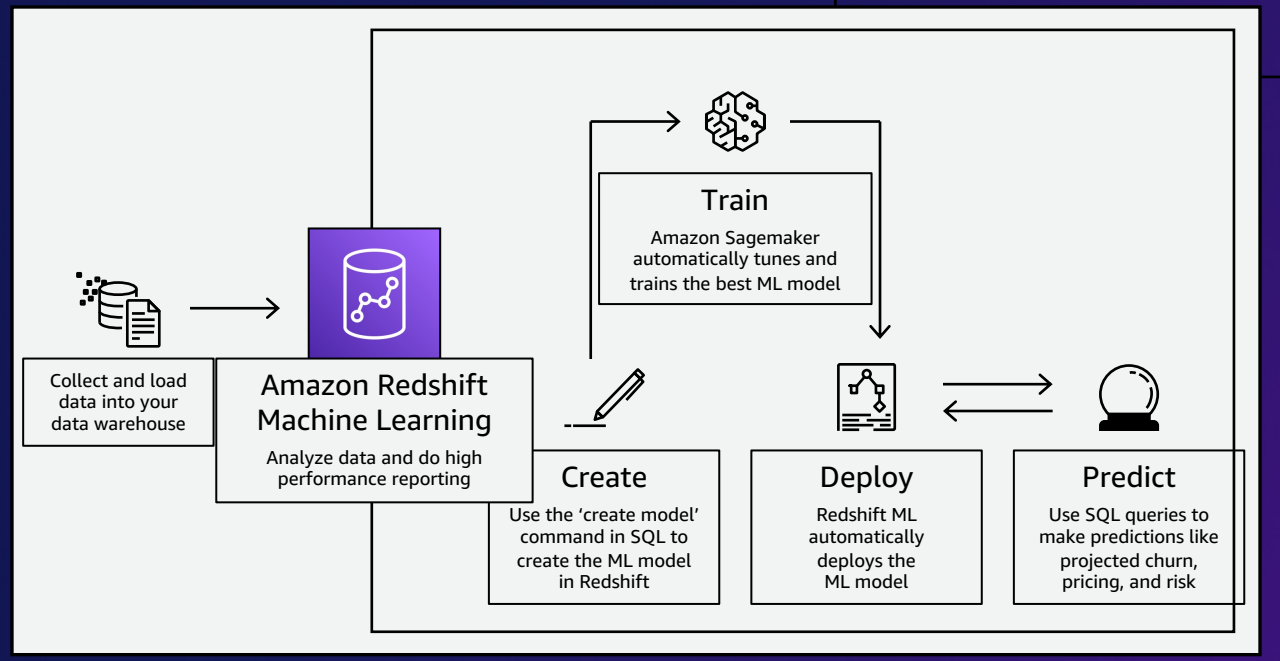
Use case: Product recommendations, fraud prevention, reduce customer churn

Train and apply ML models using SQL

Automatic pre-processing, creation, training, deployment of your model

Deploy inference models locally in Amazon Redshift

Also, supports ability to bring your SageMaker models for either in-database or remote inference




```
CREATE MODEL customer_churn
FROM (SELECT c.age, c.zip, c.monthly_spend, c.monthly_cases,
c.active FROM customer_info_table c)
TARGET c.active
FUNCTION predict_customer_churn
…;
```

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Amazon Redshift Data API

SIMPLIFIES DATA ACCESS FROM WEB SERVICES BASED APPLICATIONS

Simplifies data access from web-services based application without requiring to worry about configuring drivers, connection pools

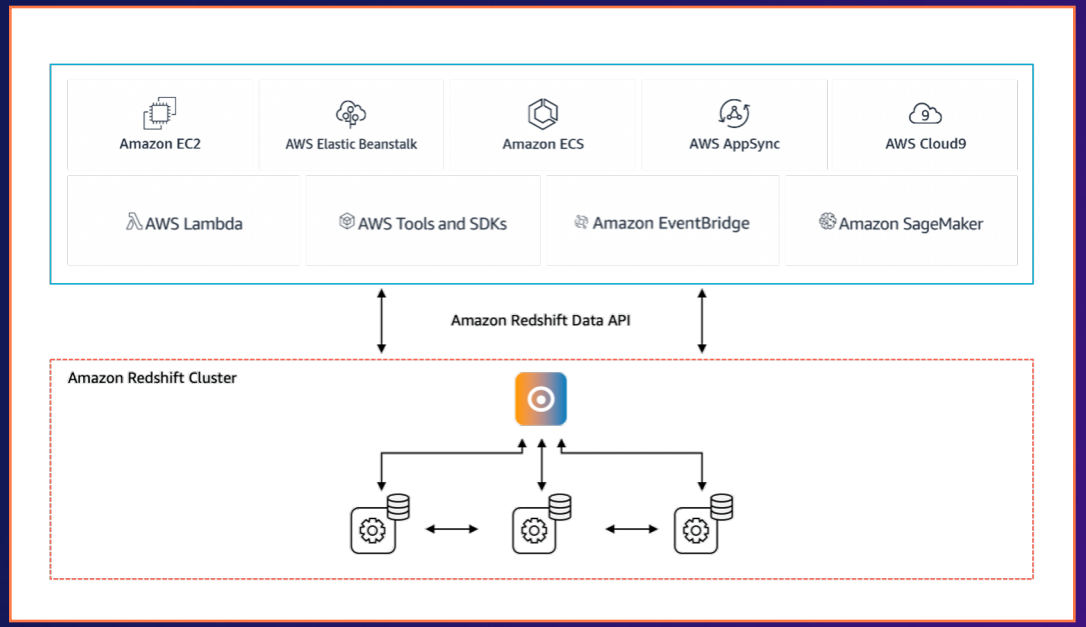
Build your ETL pipeline with Lambda, AWS step functions

Build event-driven applications with EventBridge and Lambda

Simpler access to data from data science tools such as SageMaker and Jupyter Notebooks

Schedule SQL scripts to simplify data load, unload and refreshing of materialized views

```
aws redshift-data execute-statement
--database [DATABASE]
--query [QUERY]
--secret-arn [CREDENTIALS_ARN]
```



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Amazon Redshift and AWS Data Exchange (ADX) integration

NEW PREVIEW

Data providers can package their Redshift data as data products, with pricing terms & conditions

Data subscribers can search and subscribe to data products available in AWS Data Exchange

Get automated ‘live access’ to the data in your Redshift cluster or data lake (via Glue). No ETL or data ingestion necessary

Data providers can update their data directly at the source, without having to ETL or generate new file

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AQUA (Advanced Query Accelerator)

NEW HARDWARE-ACCELERATED CACHE THAT DELIVERS UP TO 10X BETTER QUERY PERFORMANCE THAN OTHER CLOUD DATA WAREHOUSES

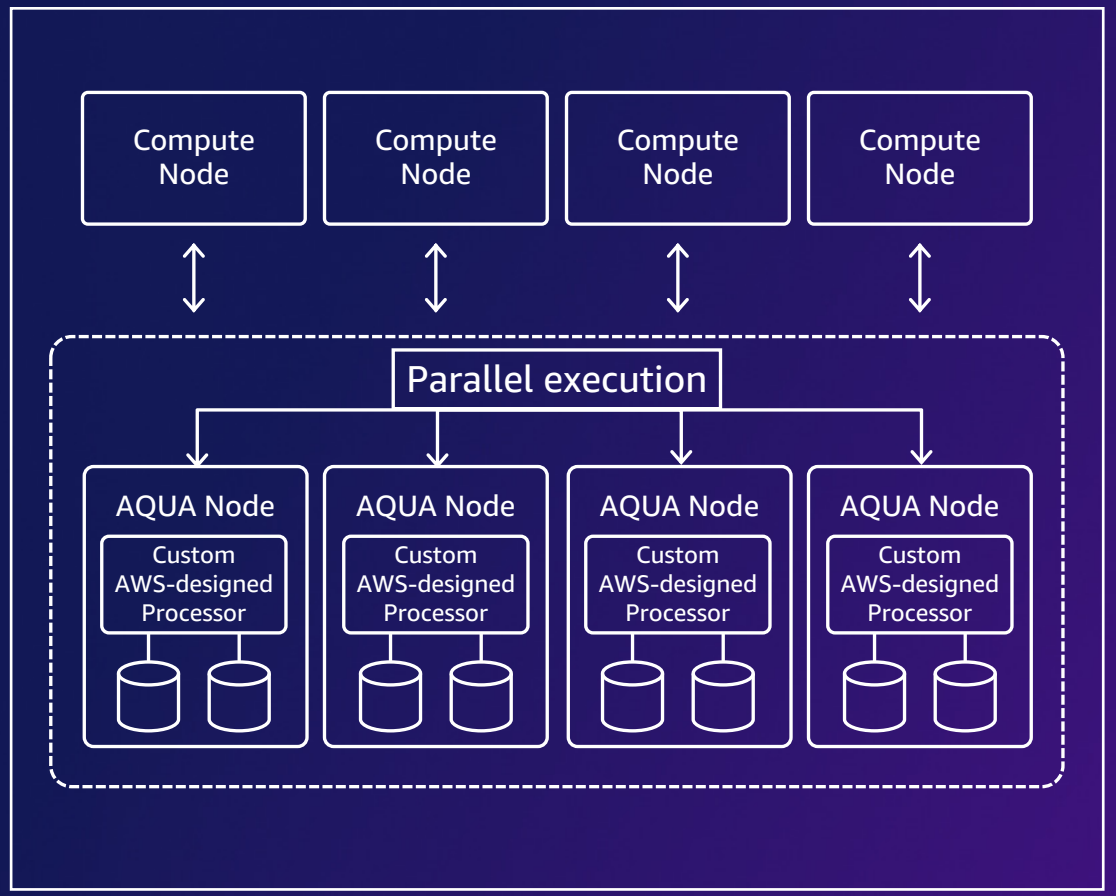
Minimize data movement over the network by pushing down operations to AQUA Nodes

---

AQUA Nodes with custom AWS-designed analytics processors to make operations (compression, encryption, scans filtering, and aggregations) faster than traditional CPUs

---

Available with RA3 & Redshift Serverless, no code changes required, no additional cost



FOX accenture SISENSE

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Use case: Autostrade per l'Italia

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The company

2.855 km
of motorway in Italy

3 Billion €
of revenues

6,1 Billion €
+110% of investiments
in 2020/24 vs 2015/19

2,5 Billion €
+60% of maint. costs
in 2020/24 vs 2015/19

nearly **5.300**
employees

204
Service Areas

4.991
cameras

autostrade per l'italia

Autostrade per l'Italia is one of Europe's leading concessionaries for the construction and management of toll motorways, with **around 3,000 km of network managed in Italy**.

The Autostrade per l'Italia group includes **five other motorway concession companies** and **eight companies** that provide ancillary services to the core motorway business and **play a key role in implementing the Company's transformation plan**.

THE GROUP

- Società Italiana Traforo del Montebianco
- Raccordo Autostradale Valle d'Aosta
- Tangenziale di Napoli
- Autostrade Meridionali
- Società Autostradale Tirrenica
- Movyon
- Tecne
- Amplia
- Elgea
- Free-to-Experience
- Admoving
- Esse di Esse
- Giove clear

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«Next to Digital» initiative

The Next To Digital initiative is included in the wide **Transformation Plan of Autostrade per l'Italia.**

This initiative is the fundamental lever to guide and promote a deep **change** in ASPI at multiple levels: **new ways of working, new technological capabilities, new skills** to develop, new ways of addressing all stakeholders (internal and external) and, finally, **a significant cultural change.**

It concerns the **digitalization of processes and services**, transformation of the road network into a "smart" infrastructure through the most advanced technologies.

NtD initiative address these aims:

- **Internal efficiency**
- **Civil infrastructure management and security**
- **Customer experience**

200 Million €
of investment by 2024

+ 40 Agile Room
to develop End-to-End innovative projects

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«ASPI datalake» project

ASPI datalake was **the first digital transformation project** which took place in AWS.

The aim was to realize a **data platform** which would have enabled the implementation of a KPI dashboard inspired on data democratization approach in order to have specific data for driving strategic decisions.

Therefore, **data become central assets** for Autostrade clearing the way for a Company **data driven approach**.

Process & Data
on the same level

Data as Asset

Data as Strategic Factor to drive business decisions

Data Democratisation
to generate awarness and improve internal and external communicaton

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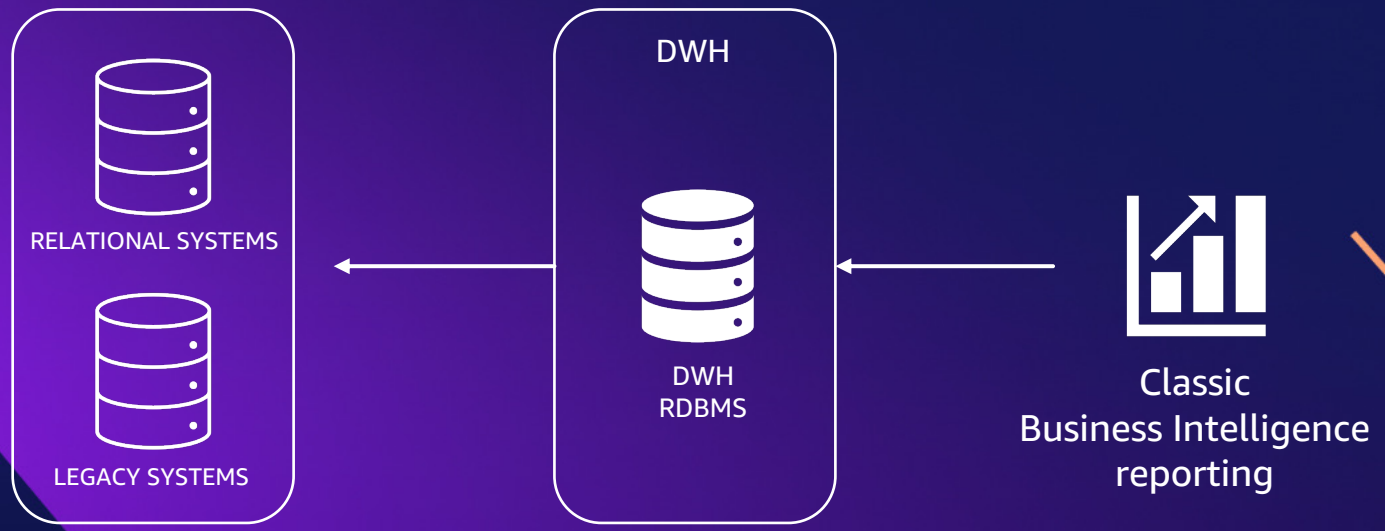
Datawarehouse Architecture



Classic DWH architecture

- All aggregations at source
- Static data
- Analysis agreed and pre-packaged
- Performance query issues

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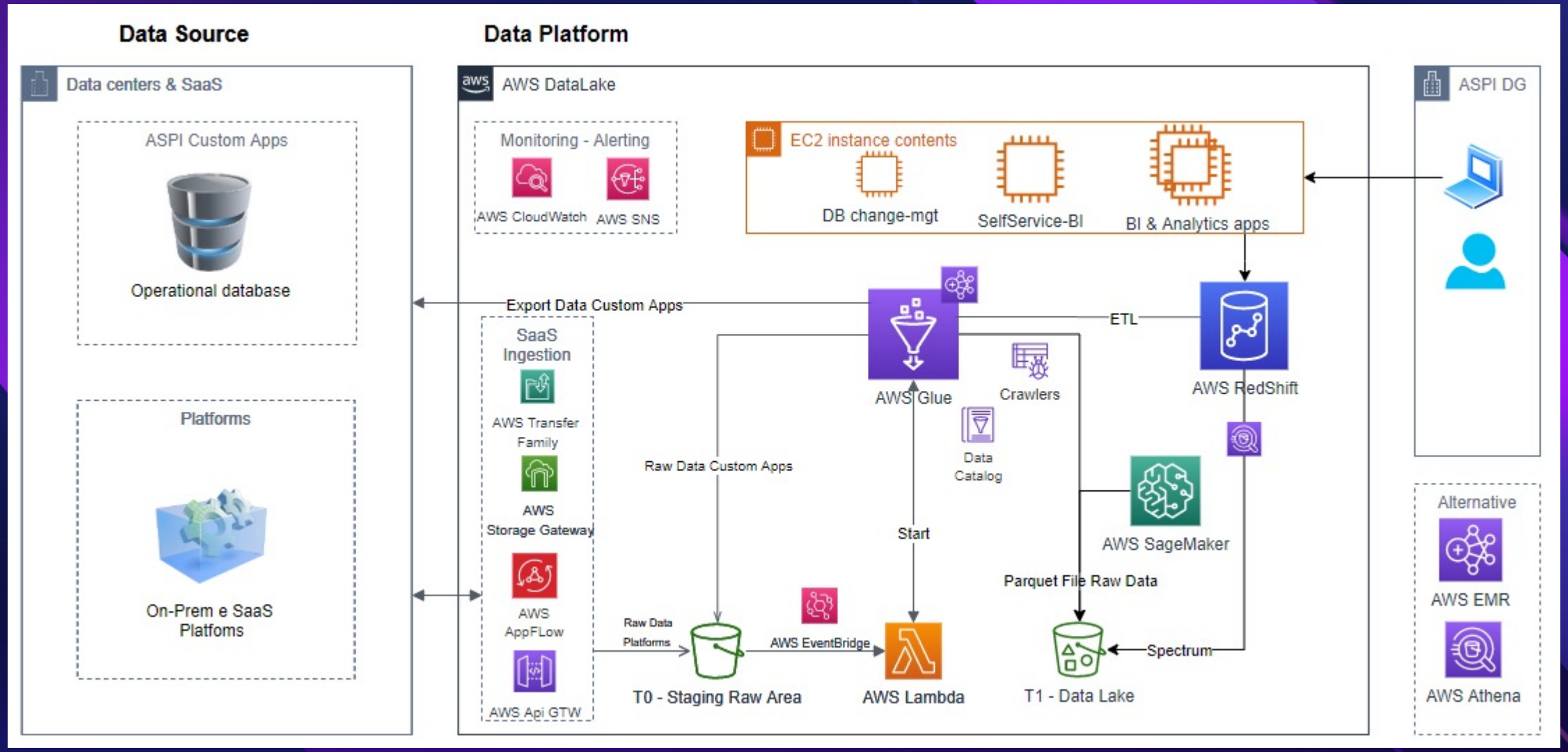
Data Lake Architecture



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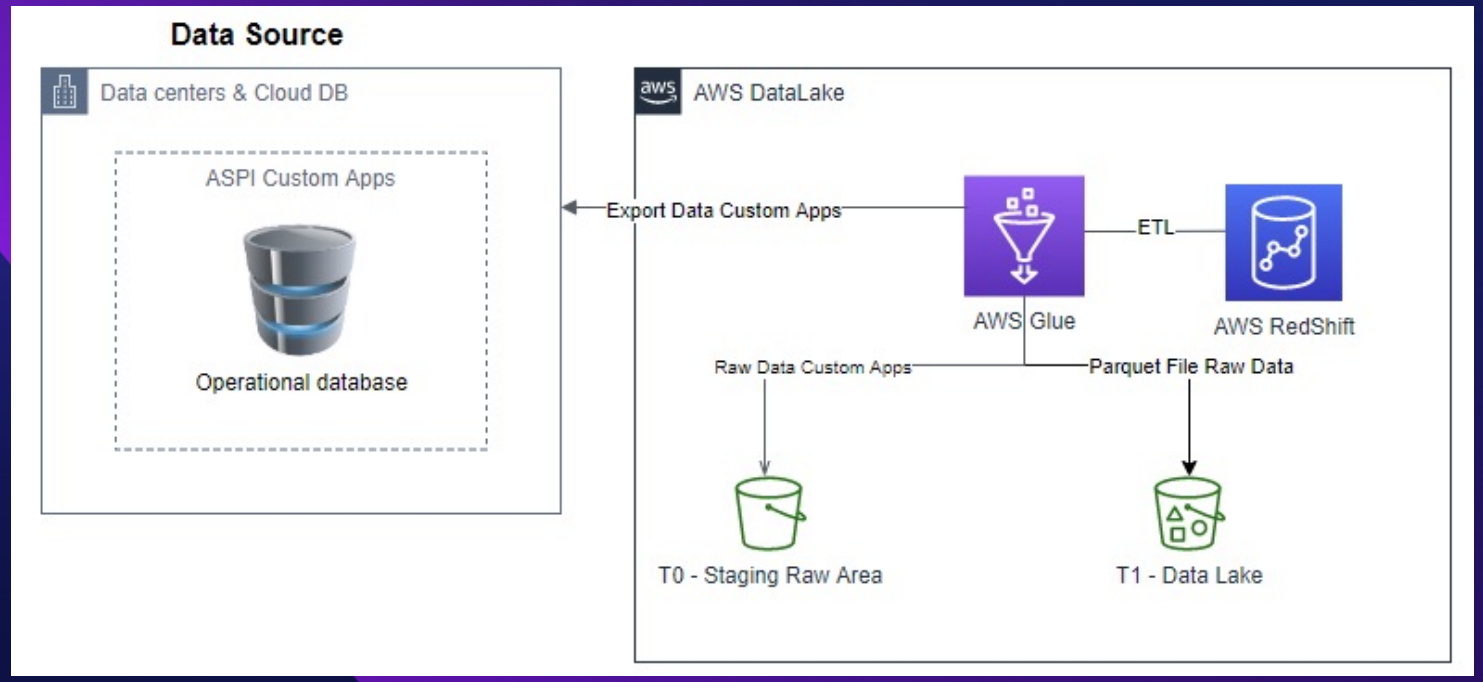
Data Ingestion – Custom APPS



- Different integration patterns
- Three Tier of data life cycle
- Reuse of data for Reporting, ML, and other future use-case

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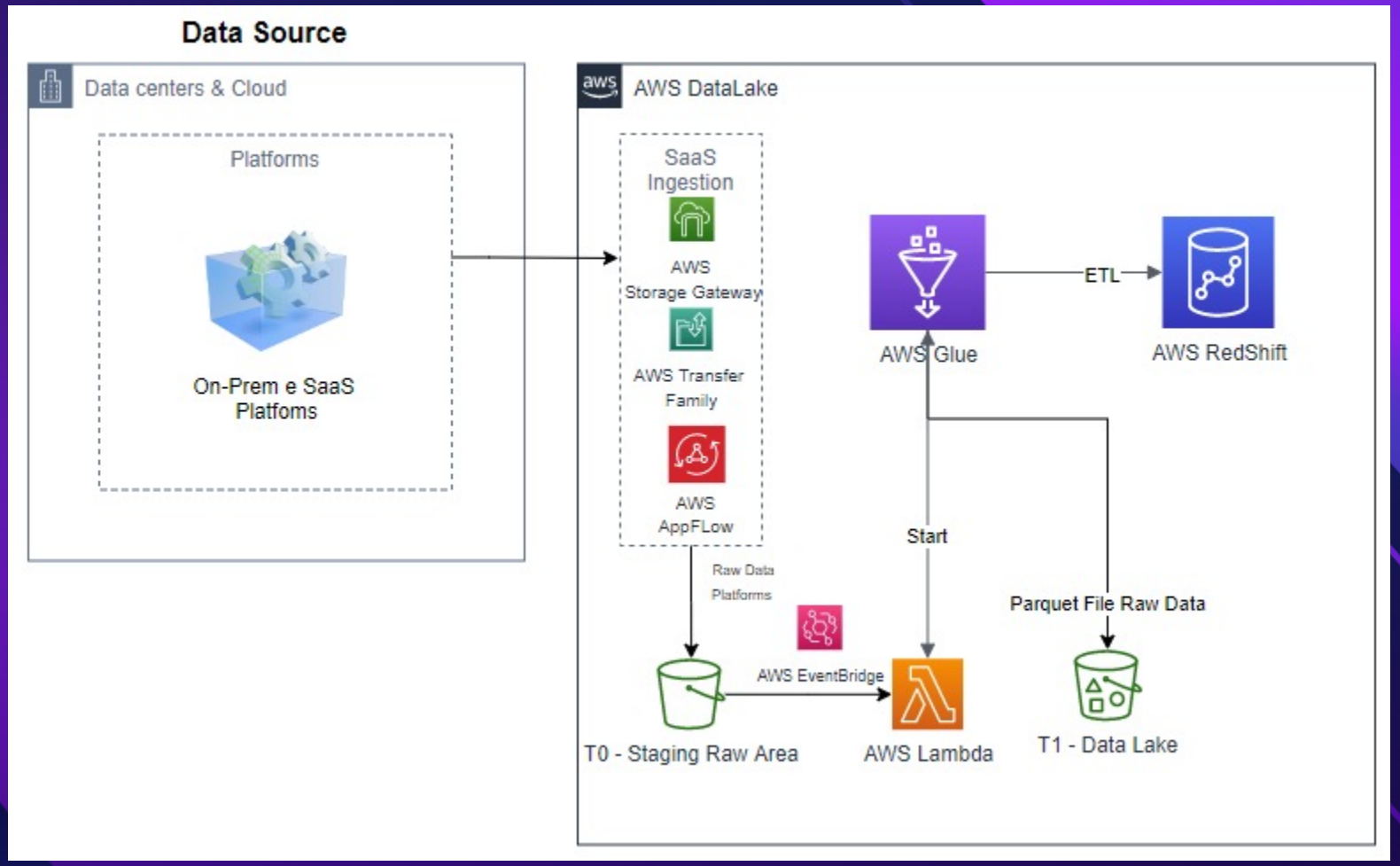
Data Ingestion #2 – Platforms



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RedShift advantages – Next Step

ADVANTAGES…

- Suitable for all analytical workload with **columnar tecnlogy**
- Using **REDSHIFT SPECTRUM** for access raw data in AWS S3
- Using **AQUA** for query acceleration and avoid IN-MEMORY report

… AND NEXT STEPS

- Improve security Data Access with **AWS Lake Formation**
- Balancing workload between GLUE and **EMR**
- Use of **AWS Data Exchange for Amazon RedShift** in OpenData's use-case

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