

Qlik Cloud Data Integration

Architecture Guide

October 2022

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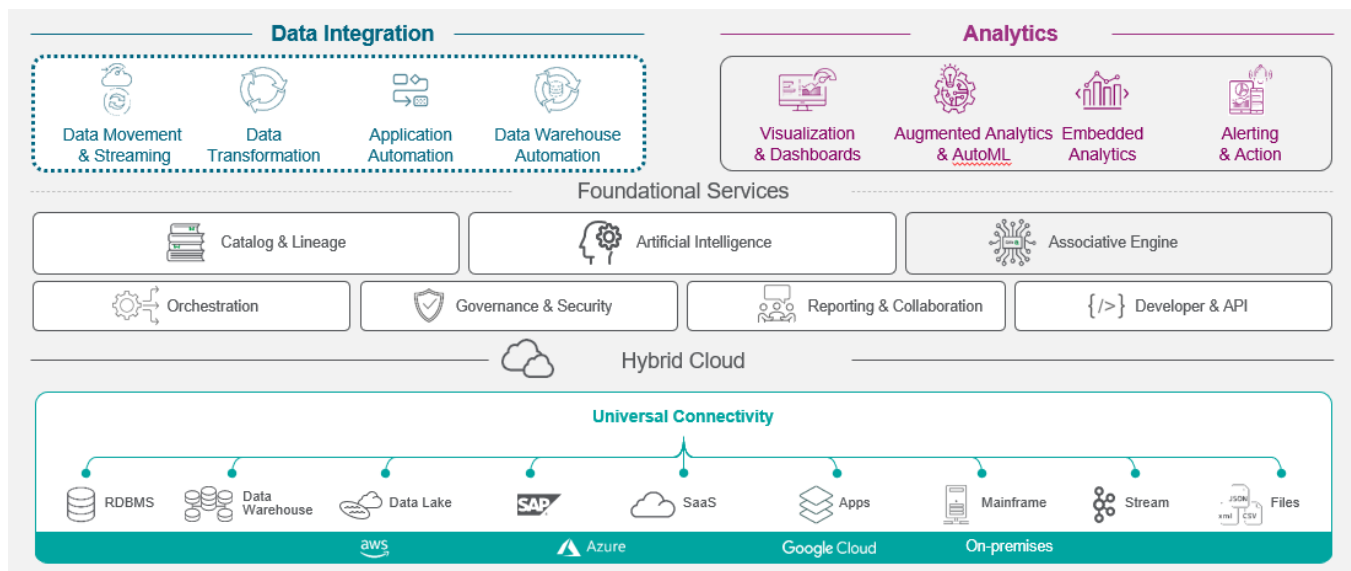
Summary

- Qlik Cloud Data Integration turns raw data into trusted, actionable data that's easy to find, current, and immediately available to Qlik Sense®, Tableau, Power BI, and beyond..
- Qlik's cloud-agnostic and hybrid deployment options provide maximum choice and flexibility.
- Move on-prem data to cloud data warehouses or for use by analytics services with Data Movement and Streaming.
- Connect to cloud applications, integrate, and automate processes with Qlik Application Automation.
- Accelerate and simplify data warehouse lifecycles or realize a faster return on data lake investments with Data Warehouse Automation.
- Convert source format data to formats within data warehouses and other targets and refine to meet needs with powerful data transformation features.

Qlik Cloud[®] Overview

Qlik Cloud closes the gaps between data, insights, and action with the only cloud platform built for Active Intelligence. Turn raw data into informed action in one platform. Seize every business moment with Qlik's end-to-end data integration and analytics cloud platform that enables you to shift from a passive set of tools to an active system built to deliver real-time information and drive immediate action.

Qlik offers a cloud platform without cloud vendor lock-in. Users benefit from an open SaaS platform with cloud-agnostic and hybrid deployment options that provide maximum choice and flexibility in how and where you deploy, store and analyze data across one or multiple clouds.



We group Qlik Cloud services into logical groups for data integration, analytics, and shared foundational services.

Data Integration

Activate your data with market-leading integration and iPaaS capabilities with Qlik Cloud Data Integration.

Organizations collect vast amounts of data. But most of the data that can guide decisions and actions isn't analytics-ready or accessible. Qlik operationalizes DataOps for analytics, turning raw data into trusted, actionable data that's easy to find, current, and immediately available to Qlik Sense[®], Tableau, PowerBI, and beyond — on any cloud you choose.

Qlik Cloud Data Integration accelerates the delivery of data for analytics by providing real-time data movement, application automation, and catalog capabilities that form the essential foundation of Active Intelligence.

Qlik Cloud Data Integration includes SaaS and client-managed hybrid solutions that provide data movement and integration and includes Data Movement & Streaming, Application Automation, and Data Transformation available today, and Data Warehouse Automation, available in the future.

Analytics

The current and future Qlik Cloud Analytics services include Visualization & Dashboards, Augmented Analytics & AutoML, Embedded Analytics, and Alerting & Action. Qlik Sense powers these services to set the benchmark for a new generation of analytics. Empower users at any skill level to freely explore data with powerful AI combined with the industry's most powerful analytics engine. Bring actionable insights into every decision with the industry's most complete platform for modern BI – on our cloud or anywhere you choose.

Foundational Services

These services support data integration and analytics needs and enable users to create end-to-end analytical data pipelines.

The service most relevant to Qlik Cloud Data Integration is the Catalog and Lineage service.

Catalog and Lineage

This service is the central source to manage and discover all your datasets while maintaining security and compliance standards within Qlik Cloud. Users can:

- View business metadata and lineage to improve understanding and trust.
- Apply personalized tags, properties, and business metadata for greater utilization.
- Browse dataset samples and profile statistics to ensure that data sets contain the expected information.

Qlik Data Movement and Streaming

Replicate data in near real-time from on-premises and cloud data sources into Qlik Cloud or a cloud data warehouse. Automatically and continuously ingest data without the need for job scheduling or scripting. Data is automatically cataloged, transformed, and ready for consumption by Qlik analytics applications. Your analytics are continually updated without manual intervention whenever the source data changes to ensure you have the most up-to-date insights and seize those critical business moments.

This service automatically ingests on-premises data into your tenant, catalogs it, and transforms it into a QlikView Data (QVD) format within Qlik Cloud, a Qlik proprietary format for storing data tables in an indexed, highly compressed state. QVD files can be Qlik managed inside Qlik Cloud Service or customer-managed AWS S3 buckets. It is immediately ready for Qlik analytics consumption without job scheduling or scripting.

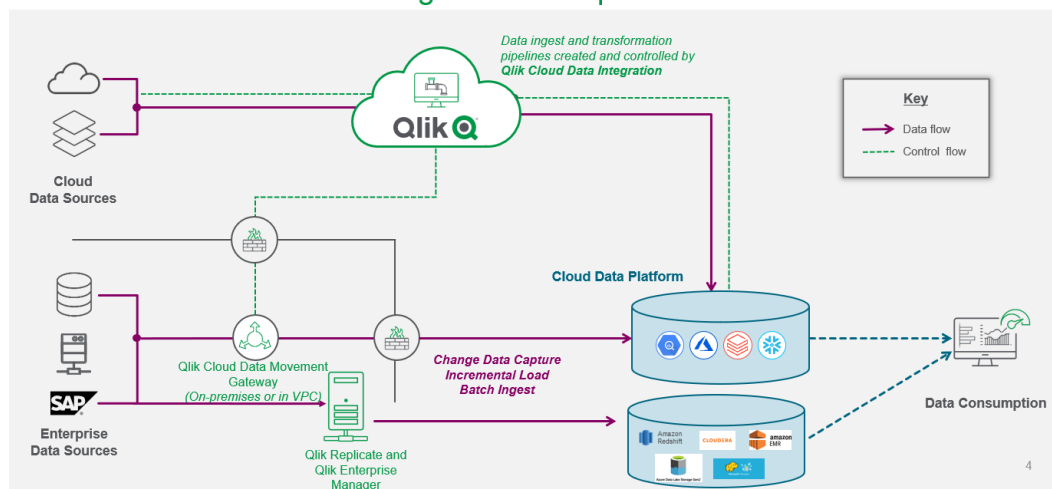
The service can also move data to popular cloud data warehouses and lakes such as Snowflake, Microsoft Azure Synapse, Google BigQuery, and Databricks.

Hence this service is primarily used for two use cases:

1. Move on-premises data to:
 - a. Cloud data warehouses and lakes such as Snowflake, Microsoft Azure Synapse, Google BigQuery or Databricks
 - b. Qlik Cloud for use by Qlik Analytics
2. Move data from cloud sources such as SaaS applications and cloud databases to:
 - a. Cloud data warehouses and lakes such as Snowflake, Microsoft Azure Synapse, Google BigQuery or Databricks
 - b. To Qlik Cloud for use by Qlik Analytics Services

Data Movement & Streaming Hybrid Architecture

Data movement to cloud targets from on-premise and cloud sources



Note: More details on Client Managed products shown in this architecture are available here - [Qlik Replicate®](#) and [Qlik Enterprise Manager®](#)

Benefits

The solution offers:

1. Real-time movement from all enterprise sources, including relational databases, SAP, mainframe, and SaaS applications
2. Point and click, no code analytic data pipeline configuration for rapid deployment
3. Integrated data cataloging and profiling for better efficiency and utilization

Technical Summary

You can deliver data ready for consumption to Qlik Cloud or to cloud data warehouses, such as Snowflake, Google Cloud BigQuery, and Azure Synapse Analytics with Qlik Cloud Data Integration.

Data sources can be on-premises or in the cloud. The data can be kept up to date without manual intervention using CDC (Change Data Capture) or batch technologies, such as scheduled reloads. You can create a data pipeline and perform fit-for-purpose transformations and create data marts.

- *Data spaces* – Governed areas of the Qlik Cloud tenant used to create and store data projects, create data connections and manage access to data movement gateways.
- *Data projects* – Where you create your data pipeline and associate it with the output target.
- *Data assets* – Fit-for-purpose collection of data sets including landing (copy of source data), storage (ready-to-consume data sets typically in a data warehouse), transform (row-level reusable transformations resulting in materialized data sets or views), and data mart (summarized data)
- *Connections* - Connecting to data sources in Qlik Cloud Data Integration – Data connections are created to access data sources and external storage and cloud data warehouses
 - *Qlik Data Gateway* – Data movement source connections require setting up Qlik Data Gateway. The landing starts with a full load. You can then keep the data up to date using CDC technology.

**Move on-
premises and
cloud data to
cloud data
warehouses or
Qlik Cloud for
use by Qlik
Analytics
services with
Data Movement
& Streaming**

- *Qlik Cloud source connections* - Do not require using Qlik Data Gateway and can only perform full loads that can be scheduled to reload periodically.

Qlik Application Automation

Service to connect to cloud applications, integrate and automate processes by delivering concise, contextually relevant insights at key decision points

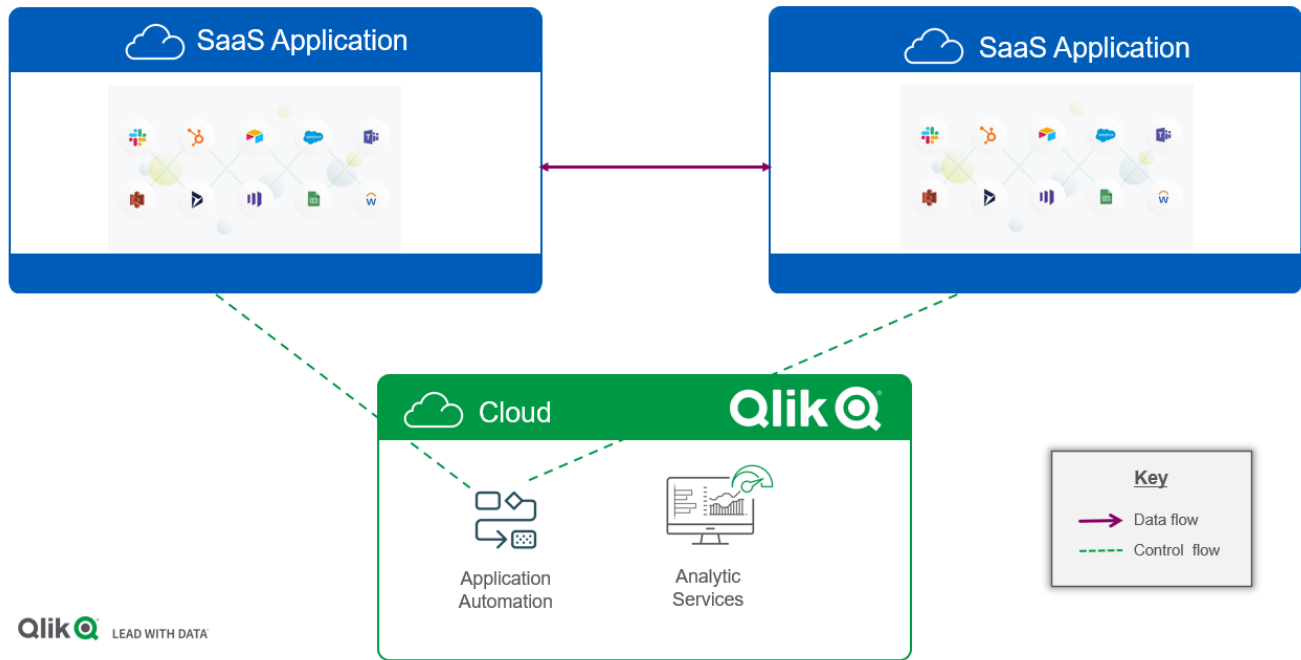
Easily create workflows with a no-code visual editor that streamlines and optimizes your data and analytics processes. Quickly integrate automated flows that span market-leading SaaS applications to trigger alerts and invoke downstream processes that react to changes in your business. Consequently, you spend less time programming back-office tasks that drive automated actions, leaving you more time for data analysis.

Use Case #1 – Application Integration

Orchestrate the sharing of data between two SaaS applications in different clouds

Application Automation Architecture

Use Case #1 - Application Integration

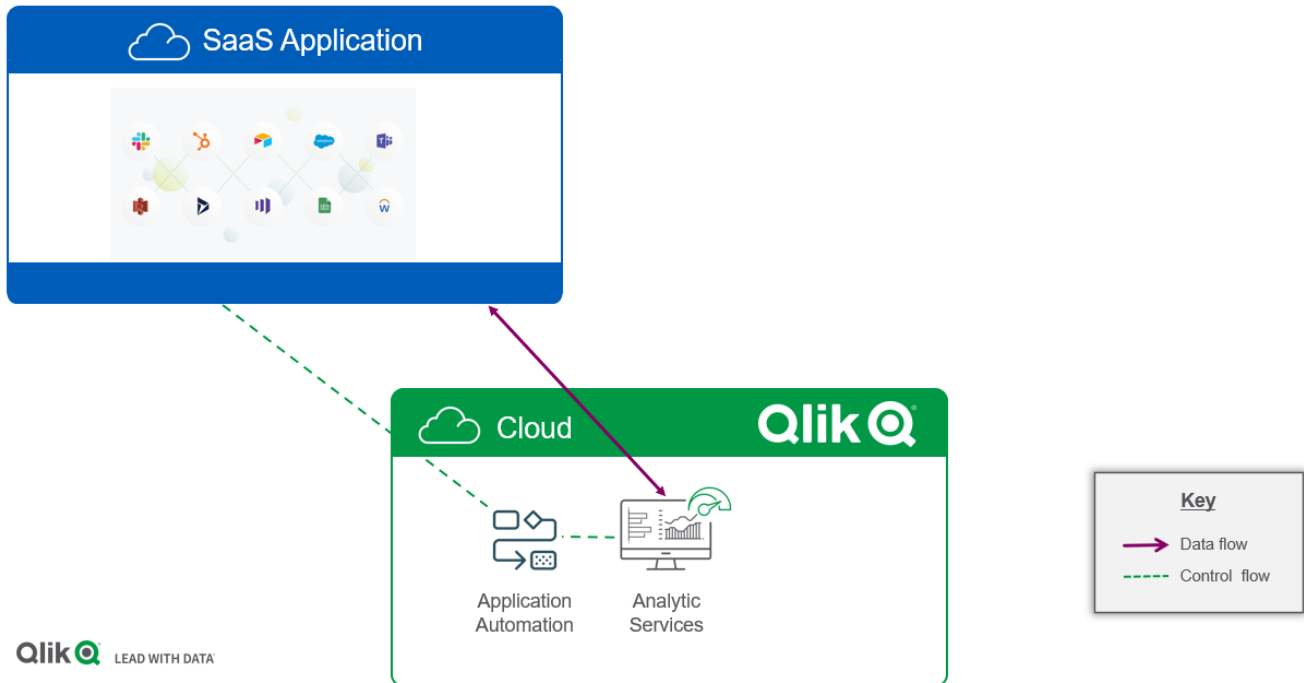


Use Case #2 – Insight to Action

Integrate insights from Qlik Sense SaaS with a business process workflow to trigger immediate action

Application Automation Architecture

Use Case #2 - Insight to Action



Benefits

With this service you can:

1. Drive insights to action by embedding integrations to other applications directly in your Qlik Sense application and trigger context-aware downstream processes.
2. Simplify SaaS integrations without the need to understand their low-level APIs through drag and drop of smart blocks to build powerful workflow logic.
3. Increase analytics DevOps productivity by orchestrating both your tenant administration and Qlik Sense app development tasks with ease.

Connect to cloud applications, integrate, and automate processes with Qlik Application Automation

Technical Summary

Quickly build automation within Qlik Cloud that leverage powerful APIs to automate your analytics and integration processes. Operationalize tenant administration, streamline application development, intelligently respond to events, and improve collaboration processes.

Application automation task blocks available for Qlik Cloud Data Integration enable interaction with Qlik Cloud data assets, sets and stores.

Automation templates offer a library of pre-built, Qlik-curated, automation workflows that users can easily configure to support a variety of use cases.

Templates ⓘ

- Reporting
- Machine Learning
- Tenant Administration ●
- CONNECTORS ^
- Qlik Cloud Services
- Slack
- Microsoft Teams
- Mail
- ServiceNow
- Amazon S3
- GitHub
- HubSpot
- Salesforce
- Dropbox
- Qlik Reporting
- Microsoft SharePoint
- Microsoft Excel
- Qlik AutoML(Legacy)
- Marketo
- MySQL
- Expert.ai
- Qlik Enterprise Manager

< Back **Qlik Cloud Services**

Search for blocks

List Get Create Or Update Delete

Data Users Items Spaces Apps

Reloads Raw Api **Catalog**

Selections Bookmarks

Automation with Qlik Cloud Services blocks

```
graph TD; Start[Start] --> DoReload[Do Reload Qlik Cloud]; DoReload --> Wait[Wait For Reloads To Complete Qlik Cloud]; Wait --> List[List Reloads Qlik Cloud]; List --> Output[Output]; Output --> CreateSpace[Create Space Qlik Cloud]; CreateSpace --> Publish[Publish App To Managed Space Qlik Cloud];
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Home / Blends / New Blend / Editor Editor Output Settings

< Back **Qlik Cloud Services**

Search for blocks

Data Users Items Spaces Apps

Reloads Raw Api **Catalog**

Selections Bookmarks

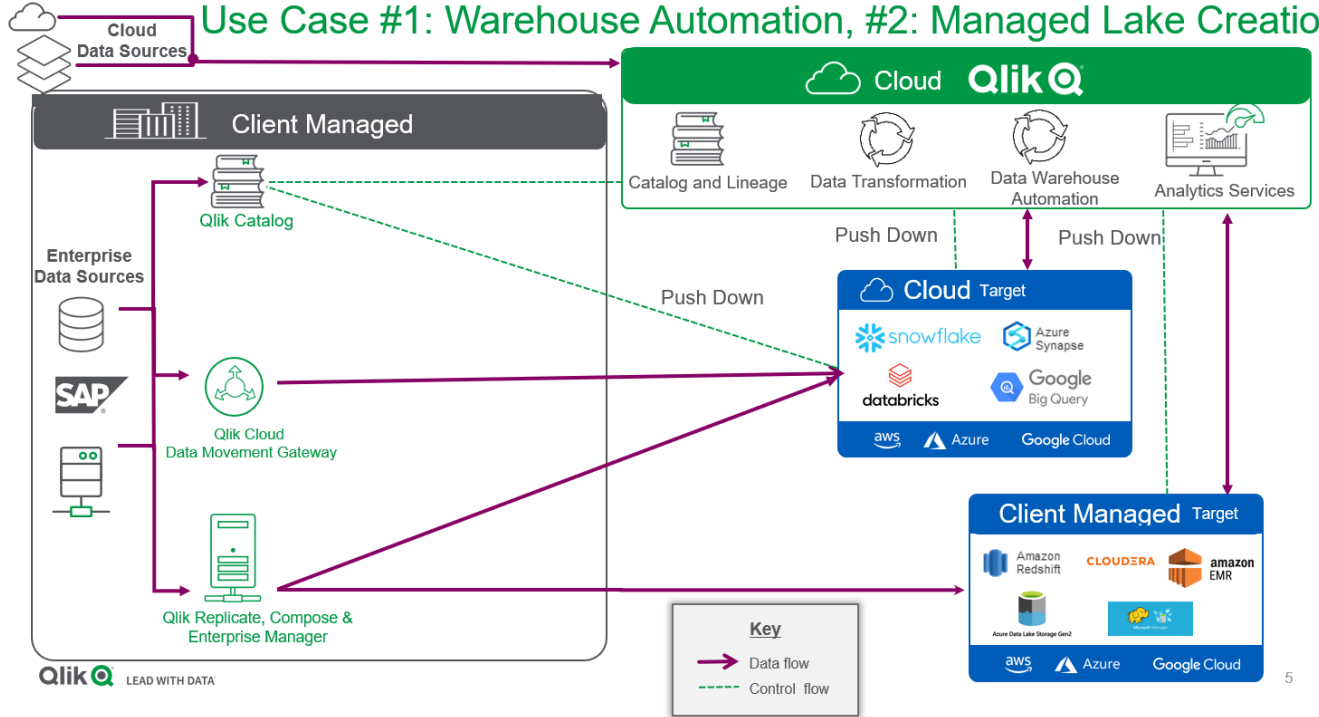
- Create Data Asset
- Create Data Store
- Create Dataset
- Delete Data Asset
- Delete Data Assets By Data Store

Data Warehouse Automation

Currently this offering is a combination of client-managed Qlik Data Integration and Qlik Cloud Data Integration, to create and maintain data warehouses and data lakes across various cloud data warehouses and cloud data lakes.

Data Warehouse Automation Hybrid Architecture

Use Case #1: Warehouse Automation, #2: Managed Lake Creation



Note: More details on Client Managed products shown in this architecture are available here - [Qlik Replicate](#), [Qlik Enterprise Manager](#), [Qlik Compose® for Data Warehouses](#), [Qlik Compose for Data Lakes](#), and [Qlik Catalog™](#)

Use Case #1 - Warehouse Automation

Data warehouse automation is a client-managed offering that accelerates and simplifies the data warehouse lifecycle for faster insights. This service enables users to quickly design, build, deploy, manage and catalog purpose-built data warehouses (especially cloud-based) faster than traditional solutions. Consequently, data engineers can meet or exceed the demands for analytics-ready data marts that enable data-driven insights at the speed of change.

Benefits

1. Increases data availability for analytics, machine learning, digital transformation, and cloud migration.
2. Improves data engineer productivity with no-coding data mart creation
3. Improves operational efficiency via data warehouse automation
4. Establishes best practices for keeping data marts fresh and up to date.
5. Future-proof flexibility that adapts to changing data environment.
6. Greater resiliency by rapidly propagating source or model changes through the data warehouse environment.
7. Understand the content and quality of your data warehouse for regulations like GDPR and CCPA
8. Improve data consumers' ability to find, understand, and gain insights from their data warehouse.

Use Case #2 - Managed Lake Creation

Managed Lake Creation Service helps enterprises realize a faster return on their data lake investment by continuously providing accurate, timely, and trusted transactional data sets for business analytics. This service automates the entire data pipeline from real-time data ingestion to creating and provisioning analytics-ready datasets, eliminating the need for manual scripting. Data engineers can now meet growing demands for analytics-ready data sets in real-time with confidence.

Benefits

1. Immediate availability of transactional data for analytics
2. Trusted data that provides analytics-ready certainty
3. Improves operational efficiency with re-usable, automated pipelines
4. Establishes best practices for keeping data in the lake fresh and up to date
5. Future-proof flexibility that adapts to changing data lake technology
6. Greater resiliency by rapidly propagating source or model changes through the data lake environment
7. Understand the content and quality of your data for regulations like GDPR and CCPA
8. Improve data consumer's ability to find, understand, and gain insights from their data in the data lake

Technical Summary

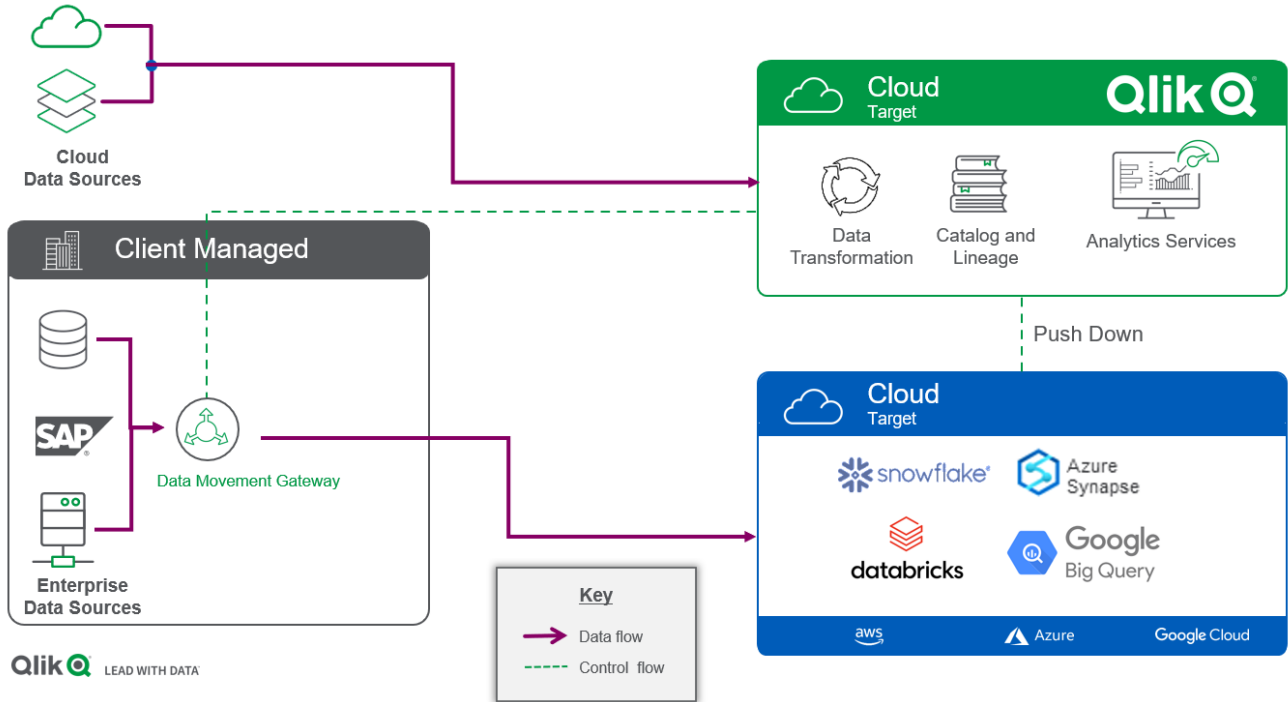
The solution supports virtually all industry-standard data sources and targets, profiles & catalogs all the data in the data lake. It maintains end-to-end lineage to ensure data confidence.

**Accelerate and
simplify data
warehouse
lifecycles and
realize a faster
return on data lake
investments with
Data Warehouse
Automation**

Data Transformation

Turn raw records into consumption-ready data via no-code, auto-generated, push-down SQL. Data from the source system format is transformed into the required structure of a destination system such as data warehouses and other targets to meet data demands.

Data Transformation Architecture



Benefits

The service offers users:

1. Immediate production data available for analytics and microservices
2. Continuous, real-time data transformation with minimal impact on production operations
3. Ability to address new real-time and modern analytics use cases

Convert source data into the optimal format for the target system and refine to meet business needs with Data Transformation

Technical Summary

Deliver common transformations of data moved to cloud targets. Examples of such changes include:

- *Heterogeneous data type mapping* – Enables you to migrate data from one vendor's data store to another vendor's data store of the same or different technology by mapping different data types or column names
- *Standardization* – Expression based data transformations include adding a new column, modifying an existing column, renaming table and column names to allow data consumers to research, utilize and analyze the data
- *Enrichment* – Add new calculated columns to existing data or do primary lookups against third-party data to obtain relevant context for existing data to become more valuable and insightful.
- *Filtering* – Apply row filters or exclude individual columns with sensitive data to improve quality and govern data for viewing or analysis.
- *Global rules* – Make changes or filter data across multiple tables and columns in the same task

Conclusion

Qlik Cloud Data Integration will continue to evolve in the next 12 – 24 months with more choice between client-managed products and cloud services to architect for data gravity and various use cases within client environments. More information on Qlik's latest innovation and strategic direction for the future is available [here](#).

Resources

For more information about Qlik Cloud Data Integration, check out:

- [Qlik Continuous Classroom](#) has a variety of self-paced courses addressing various topics, from overviews of Qlik Replicate to introductions to Qlik Compose for Data Lakes and more.
- [Qlik Training](#) has all the expertly designed coursework and training materials you'll need to adopt Qlik products faster and maximize their capabilities.
- [Qlik Community](#) is the global online community for Qlik Inc. employees, experts, customers, partners, developers, and evangelists to collaborate.
- [Data Literacy Project](#) is a global community dedicated to making the language of data understood and communicated effectively by all.
- [Active Intelligence™](#) is our vision for creating in-the-moment awareness about every aspect of the business. It delivers a state of continuous intelligence from real-time, up-to-date information designed to trigger immediate actions.



About Qlik

Qlik's vision is a data-literate world, where everyone can use data and analytics to improve decision-making and solve their most challenging problems. Qlik offers real-time data integration and analytics solutions, powered by Qlik Cloud, to close the gaps between data, insights and action. By transforming data into Active Intelligence, businesses can drive better decisions, improve revenue and profitability, and optimize customer relationships. Qlik serves more than 38,000 active customers in over 100 countries

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